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Also admitted in Massachusetts
and New York

January 13, 2025

Via U.S. and Electronic Mail

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

Re: **Request of Cellco Partnership d/b/a Verizon Wireless for an Order to Approve the Shared Use of an Approved Tower at 13 (a/k/a 15) Pomeroy Avenue, Meriden, Connecticut**

Dear Attorney Bachman:

Pursuant to Connecticut General Statutes (“C.G.S.”) §16-50aa, as amended, Cellco Partnership d/b/a Verizon Wireless (“Cellco”) hereby requests an order from the Siting Council (“Council”) to approve the shared use of an existing telecommunications tower located on a 0.66-acre parcel at 13 (a/k/a 15) Pomeroy Avenue in Meriden (the “Property”). The tower is owned by TowerNorth Development, LLC (“TowerNorth”). The tower was approved by the Siting Council (“Council”) in December of 2023 (Petition No. 1520). A copy of the Council’s approval is included in Attachment 1. Cellco identifies this site as its “Meriden 2 Relo 2 Facility”¹.

Cellco requests that the Council find that the proposed shared use of the tower satisfies the criteria of C.G.S. § 16-50aa and issue an order approving this request. A copy of this filing is being sent to Meriden’s Mayor, Kevin Scarpato and Jasmine Peele, Assistant Planning Director. A copy of this letter is being sent to TowerNorth, the owner of the tower. The Property is owned by the City of Meriden.

¹ Cellco intends to remove its existing and related equipment from the rooftop at 900 East Main Street.

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Background

Cellco is licensed by the Federal Communications Commission (“FCC”) to provide wireless services throughout the State of Connecticut. Cellco and TowerNorth have agreed to the proposed shared use of the tower pursuant to mutually acceptable terms and conditions. Likewise, TowerNorth and Cellco have agreed to the proposed installation of Cellco’s equipment on the ground near the base of the tower. TowerNorth has authorized Structure Consulting Group, acting agent to Cellco, to apply for all necessary permits and approvals that may be required to share the tower. (See Attachment 2).

Cellco proposes to install nine (9) antennas and six (6) remote radio heads (“RRHs”) at a centerline height of 130 feet above ground level (“AGL”). Cellco will also install equipment and battery cabinets on a concrete pad in the facility compound. Included in Attachment 3 is a set of Project Plans showing the location of Cellco’s proposed site improvements. Attachment 4 contains specifications for Cellco’s proposed antennas and RRHs.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, “if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such shared use.” Cellco respectfully submits that the shared use of the tower satisfies these criteria.

A. Technical Feasibility. The existing tower is structurally capable of supporting Cellco’s antennas, RRHs, antenna mounts and related equipment. The proposed shared use of this tower is, therefore, technically feasible. A Structural Analysis Report (“SA”) confirms that the tower and foundation can support Cellco’s proposed antennas and related equipment installed at the 130-foot level. Likewise, a New/Replacement Antenna Mount Analysis Report (“MA”) confirms that the proposed antenna and RRH mounting system can support Cellco’s proposed shared use. Copies of the SA and MA are included in Attachment 5.

B. Legal Feasibility. Under C.G.S. § 16-50aa, the Council has been authorized to issue orders approving the shared use of a tower, such as the Pomeroy Avenue tower. This authority complements the Council’s prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council’s jurisdiction. In addition, § 16-50x(a) directs the Council to “give such consideration to other state laws and municipal regulations as it shall deem appropriate” in ruling on requests for the shared use of approved tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

Melanie A. Bachman, Esq.

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C. Environmental Feasibility. The proposed shared use of the existing tower would have minimal environmental effects, for the following reasons:

1. The proposed installation of nine (9) antennas and six (6) RRHs at a height of 130 feet AGL on the existing 150-foot tower would have an insignificant incremental visual impact on the area around the Property. As mentioned above, all of Cellco's equipment will be located near the base of the tower within an existing security fence line. Cellco's shared use of the tower would, therefore, not cause any significant change or alteration in the physical or environmental characteristics of the approved facility.
2. Noise associated with Cellco's proposed facility will comply with State and local noise standards.
3. Operation of Cellco's antennas at this site would not exceed the RF emissions standards adopted by the Federal Communications Commission ("FCC"). Included in Attachment 6 of this filing is a Calculated Radio Frequency Emissions Report that demonstrates that the modified facility will operate well within the FCC's safety standards.
4. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the proposed installations would not generate any increased traffic to the facility other than periodic maintenance visits to the cell site.

The proposed shared use of the tower would, therefore, have a minimal environmental effect, and is environmentally feasible.

D. Economic Feasibility. As previously mentioned, Cellco has entered into an agreement with TowerNorth for the shared use of the approved tower subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible.

E. Public Safety Concerns. As discussed above, the tower and antenna mounts are structurally capable of supporting Cellco's antennas and all related equipment. Cellco is not aware of any public safety concerns relative to the proposed sharing of the existing Pomeroy Avenue tower. In fact, the provision of new and improved wireless service through Cellco's shared use of the tower would enhance the safety and welfare of area residents and members of the general public living in or traveling through the City of Meriden.

Melanie A. Bachman, Esq.
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A Certificate of Mailing verifying that a copy of this filing was sent to the municipal officials is included in Attachment 7.

Conclusion

For the reasons discussed above, the proposed shared use of the tower at the Property satisfies the criteria stated in C.G.S. § 16-50aa and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the proposed shared use.

Thank you for your consideration of this matter.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Kenneth C. Baldwin', with a stylized, flowing script.

Kenneth C. Baldwin

Enclosures

Copy to:

Kevin Scarpati, Mayor
Jasmine Peele, Assistant Planning Director
TowerNorth, LLC, Tower Owner
Alex Tyurin, Verizon Wireless
Phil Cotto, Structure Consulting Group

ATTACHMENT 1



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

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL & CERTIFIED MAIL
RETURN RECEIPT REQUESTED

December 21, 2023

Daniel Patrick, Esq.
Lucia Chiocchio, Esq.
Cuddy & Feder LLP
445 Hamilton Ave
14th Floor
White Plains, New York 10601
dpatrik@cuddyfeder.com
lchiocchio@cuddyfeder.com

RE: **PETITION NO. 1590** – TowerNorth Development, LLC and New Cingular Wireless, PCS d/b/a AT&T petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the replacement of an existing municipal communications tower located at 13 Pomeroy Avenue, Meriden, Connecticut. **Final Decision.**

Dear Attorneys Patrick & Chiocchio:

At a public meeting held on December 21, 2023, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need with the following conditions:

1. Approval of any project changes be delegated to Council staff;
2. Deployment of any 5G services must comply with FCC and FAA guidance relative to air navigation, as applicable;
3. Submit a structural analysis for the replacement tower and foundation inclusive of AT&T's equipment that is stamped and signed by a Professional Engineer duly licensed in the State of Connecticut prior to commencement of construction;
4. Submit the final structural design drawings that include a yield point to ensure that the tower setback radius remains within the boundaries of the host parcel prior to commencement of construction;
5. Unless otherwise approved by the Council, the existing lattice tower at 13 Pomeroy Avenue and the existing non-tower antenna array (NTAA) at 900 East Main Street shall be removed within 180 days of the installation of the new steel monopole tower;
6. The Council shall be notified in writing within 45 days of when the existing lattice tower at 13 Pomeroy Avenue and existing NTAA at 900 East Main Street have been removed and the new steel monopole tower is operational, **along with a representative photograph of the facility**, unless a written request for an extension is submitted to the Council within that timeframe;

7. The Council shall be notified in writing at least two weeks prior to the commencement of site construction activities;
8. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.
9. Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the City of Meriden.
10. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by AT&T shall be removed within 60 days of the date the antenna ceased to function;
11. The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v;
12. If the facility ceases to be used for signal transmission or reception in the electromagnetic spectrum pursuant to a Federal Communications Commission license for a period of one year, the facility owner/operator shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of signal transmission or reception. The facility owner/operator may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period; and
13. This Declaratory Ruling may be transferred or partially transferred, provided both the facility owner/operator/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. The Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer. Both the facility owner/operator/transferor and the transferee shall provide the Council with a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility, including contact information for the individual acting on behalf of the transferee.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition dated August 31, 2023, and additional information received on November 9, 2023.

Enclosed for your information is a copy of the staff report on this project.

Sincerely,



Melanie A. Bachman
Executive Director

MAB/ANM/dll

Enclosure: Staff Report dated December 21, 2023

c: The Honorable Kevin M. Scarpati, Mayor, City of Meriden (kscarpati@meridenct.gov)
Emily Holland, Acting City Manager, City of Meriden (eholland@meridenct.gov)

STATE OF CONNECTICUT

)

: ss. Southington, Connecticut

December 22, 2023

COUNTY OF HARTFORD

)

I hereby certify that the foregoing is a true and correct copy of the Decision and Staff Report in Petition No. 1590 issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:



Melanie A. Bachman
Executive Director
Connecticut Siting Council

STATE OF CONNECTICUT

)

: ss. New Britain, Connecticut

December 22, 2023

COUNTY OF HARTFORD

)

I certify that a copy of the Connecticut Siting Council Decision and Staff Report in Petition No. 1590 has been forwarded by Certified First Class Return Receipt Requested mail, on December 22, 2023, to each party and intervenor, or its authorized representative, as listed on the attached service list, dated September 5, 2023.

ATTEST:



Dakota LaFountain
Clerk Typist
Connecticut Siting Council

LIST OF PARTIES AND INTERVENORS
SERVICE LIST

Status Granted	Document Service	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Petitioners	☒ E-mail	TowerNorth Development, LLC and New Cingular Wireless, PCS d/b/a AT&T	Daniel Patrick, Esq. Lucia Chiocchio, Esq. Cuddy & Feder LLP 445 Hamilton Ave 14 th Floor White Plains, New York 10601 Phone: (914) 761-1300 dpatrick@cuddyfeder.com lchiocchio@cuddyfeder.com



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

Web Site: portal.ct.gov/csc

Petition No. 1590

**TowerNorth Development, LLC and New Cingular Wireless PCS, LLC
13 Pomeroy Avenue
Meriden, Connecticut**

**Staff Report
December 21, 2023**

Introduction

On August 31, 2023, TowerNorth Development, LLC (TowerNorth) and New Cingular Wireless PCS, LLC d/b/a AT&T (AT&T) (collectively, Petitioners) submitted a petition to the Connecticut Siting Council (Council) for a declaratory ruling pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k for the proposed replacement of an existing municipal communications tower located at 13 Pomeroy Avenue, Meriden, Connecticut (Petition or Project).

Specifically, Petitioners propose to replace and extend the height of the existing municipal communications tower to support AT&T's equipment and structurally accommodate the potential collocation of additional tenants. The existing 60-foot lattice municipal communications tower has limited structural capacity and is not tall enough to support collocation of AT&T and future tenants.

Pursuant to Regulations of Connecticut State Agencies (RCSA) §16-50j-40, on or about August 30, 2023, Petitioners provided notice to the abutting property owners and City of Meriden (City) officials.

On September 5, 2023, the Council sent correspondence to the City stating that the Council has received the Petition and invited the municipality to contact the Council with any questions or comments by October 1, 2023. No comments were received.

On September 28, 2023, the Council on Environmental Quality submitted comments on the Project related to the implementation of best management practices during construction to protect wetlands.¹

The Council issued interrogatories to Petitioners on October 25, 2023. Petitioners submitted responses to the Council's interrogatories on November 9, 2023.

Pursuant to CGS §4-176(e) of the Uniform Administrative Procedure Act, an administrative agency is required to take an action on a petition for a declaratory ruling within 60 days of receipt. During a regular meeting held on October 12, 2023, pursuant to CGS §4-176(e), the Council voted to set the date by which to render a decision on the Petition as no later than February 28, 2024, which is the 180-day statutory deadline for a final decision under CGS §4-176(i).

Jurisdiction

¹ https://portal.ct.gov/-/media/CSC/3_Petitions-medialibrary/Petitions_MediaLibrary/MediaPetitionNos1501-1600/PE1590/ProceduralCorrespondence/PE1590_STATEMEMO-CommentsRecd_a.pdf

Pursuant to CGS §§16-50i(a)(6) and 16-50x, the Council has exclusive jurisdiction over telecommunications towers, including associated equipment, owned or operated by the state, a public service company or a certified telecommunications provider or used in a cellular system.

Under RCSA §16-50j-2a (30), "Tower" means a structure, whether free standing or attached to a building or another structure, that has a height greater than its diameter and that is high relative to its surroundings, or that is used to support antennas for sending or receiving radio frequency signals, or for sending or receiving signals to or from satellites, or any of these, which is or is to be:

- a) Used principally to support one or more antennas for receiving or sending radio frequency signals, or for sending or receiving signals to or from satellites, or any of these, and
- b) Owned or operated by the state, a public service company as defined in Section 16-1 of the Connecticut General Statutes, or a certified telecommunications provider, or used in a cellular system, as defined in Section 16-50i(a) of the Connecticut General Statutes.

The proposed replacement tower will be used principally to support antennas and used in a cellular system. Thus, the Council has jurisdiction over the proposed replacement facility. Pursuant to the tower sharing policy of the state under CGS §16-50aa, the Council must examine whether the proposed replacement facility may be shared with any public or private entity that provides service to the public, provided such shared use is technically, legally, environmentally and economically feasible and meets public safety concerns, to promote the immediate and shared use of telecommunications facilities and avoid the unnecessary proliferation of such facilities in the state. The proposed replacement facility is designed to accommodate four wireless carriers and municipal antennas.

Existing Municipal Communications Tower and Site

The existing municipal communications tower was approved by the City and constructed in 1968.

It is a 60-foot self-supporting lattice tower located on the western portion of an approximately 0.66-acre parcel owned by the City that hosts the Chief Leonard A. Petrucelli Memorial Firehouse Fire Station #5 (Fire Station). The host parcel, zoned Commercial Highway (C-3), is located southwest of the Pomeroy Avenue and East Main Street intersection. It is developed with one building, a parking area and the existing municipal communications tower. The tower is located about 59 feet south of the Fire Station building and is enclosed within a chain link fence.

The existing tower currently supports the City's public safety and emergency services communications equipment.

Existing Rooftop Non-Tower Antenna Array

AT&T currently maintains a non-tower antenna array (NTAA) on a sign support structure mounted to the rooftop of the Comfort Inn & Suites at 900 East Main Street. AT&T's antennas are located at 69 feet and 50 feet above ground level (agl). The existing sign support structure is inadequate to support additional AT&T equipment. The building owner does not plan to complete the structural modifications required to accommodate AT&T's equipment upgrades.

The proposed replacement facility at the Fire Station on Pomeroy Avenue would allow AT&T to remove its equipment from the roof of the Comfort Inn & Suites. If the replacement facility is approved, AT&T would decommission its existing NTAA once the replacement facility became operational.

Proposed Replacement Facility

AT&T established a search ring in September of 2020. It evaluated four other tower sites located at the Red Roof Inn at 10 Bee Street where a 140-foot tower would be required to meet coverage objectives; 934 and 965 East Main Street where a lease could not be negotiated with the property owner; and 366 Bee Street where a 150-foot tower would be required to meet coverage objectives.

Under a lease agreement with the City, TowerNorth would own and operate the proposed replacement facility. It intends to replace the existing 60-foot self-supporting lattice tower with a 150-foot monopole, within a paved parking lot and lawn area, approximately 15 feet south of the existing municipal communications tower location and approximately 68 feet southwest of the Fire Station building. The proposed replacement tower would have a diameter of 4-feet 6-inches at the base and 2-feet at the top.

The City is not proposing to install antennas and equipment on the tower or in the compound at this time.

AT&T would install 9 antennas and 12 RRUs at a centerline height of 141-feet agl on the replacement tower. AT&T's proposed antennas would provide services in the 700/850/1900/2100/2300 MHz frequencies and would be capable of providing 5G services. AT&T's antenna installation on the proposed replacement facility would supplant its existing rooftop NTAA located at 900 East Main Street, which would be decommissioned.

Coverage maps indicate AT&T's equipment upgrade would improve its existing 700 MHz coverage area by approximately 0.27 square miles at -83dBm and 0.57 square miles at -93dBm. The proposed facility would provide additional 700 MHz coverage to approximately 1.5 miles along State Highway 15, 0.9 miles along Pomeroy Avenue/Paddock Avenue, 0.7 miles along Bee Street, 0.6 miles along Interstate 91 (I-91), and along Mattabasset Drive.

Petitioners would utilize existing access and utilities to the site. Telephone and electric service would be routed through underground conduits to connect the tower compound to an existing utility pole to the east of the parcel along Pomeroy Avenue. A 100-foot retaining wall would be constructed along the east edge of the Fire Station parking lot to enable an expansion of the parking lot to allow for circulation of vehicles. A total of 14 parking spaces would be created within the expanded parking area.

The new 1,230 square foot compound would be established at the base of the replacement tower and enclosed by a 6-foot tall chain link fence with two 12-foot wide double gates at the eastern side of the facility compound. The compound would be constructed within a 1,250 square foot area.

AT&T would install a walk-in equipment cabinet on a concrete pad as well as a 15-kilowatt diesel-fueled emergency backup generator with a 54 gallon double walled base tank within the compound. AT&T's generator would be exercised weekly during daylight hours and would be capable of providing up to 50 hours of backup time before refueling. AT&T has a battery backup capable of supplying power for up to

three hours. A GPS antenna, telco/electric lines and conduits, utility meter, and ice bridge would also be installed.

Commercial Mobile Radio Service (CMRS) providers are licensed by and are under the jurisdiction and authority of the Federal Communications Commission (FCC). At present, no standards for backup power for CMRS providers have been promulgated by the FCC.

Verizon Wireless and the City Fire Department have expressed interest in locating on the proposed facility in the future.

The existing 60-foot self-supporting lattice tower would be removed down to the foundation bolts and decommissioned during the construction of the proposed replacement facility. The existing tower foundation would be left in place to avoid further land disturbance.

The total estimated cost of the proposed replacement facility is \$840,000. Cost associated with TowerNorth is estimated to be \$710,000. Cost associated with AT&T is estimated to be \$130,000.

Neither the Project, nor any portion thereof, is proposed to be undertaken by state departments, institutions, or agencies, or funded in whole or in part, by the state through any contract or grant. TowerNorth and AT&T are private entities.

Facility Construction

The Project would take approximately three to four months to complete. Typical construction hours/days of the week would be 8:00 AM to 5:00 PM, Monday-Friday.

A temporary facility will not be required to maintain wireless services during construction of the proposed replacement facility.

Environmental Effects and Mitigation Measures

Construction would occur within the existing developed area. One tree would be removed for the parking lot expansion.

The Project site is not located within a Connecticut Department of Energy and Environmental Protection (DEEP) Natural Diversity Data Base buffered area. The proposed facility is not within a DEEP designated Aquifer Protection Area.

The nearest Important Bird Area is Wangunk Meadows located approximately 8.5-miles northeast of the site. The proposed replacement tower would comply with the United States Fish and Wildlife Service recommended best practices for Communication Tower Design, Siting, Construction, Operation, Maintenance and Decommissioning.

A visibility study determined that, compared to the existing tower, the proposed 150-foot replacement tower would have additional visibility along approximately 0.33 miles in either direction along East Main Street and 0.25 miles to the south along Pomeroy Avenue. Additional visibility along Paddock Avenue, a residential area to the west, and Arlington Street North, to the north, is not expected.

A monopole would provide the structural capacity to maximize tower sharing potential. The galvanized steel finish would weather to a dull gray and blend in with the varying sky colors, any available painted colors would become more visible with varying weather conditions. AT&T considered a flagpole design but determined it would limit opportunities for collocation by additional carriers, limit the number of antennas and/or other equipment that can be installed per level and require a larger diameter pole. Municipal whip antennas cannot be installed inside a flagpole.

The existing municipal communications tower is approximately 3 feet east of a wetland. The proposed replacement facility would be 5 feet east of the wetland. Relocation of the proposed replacement facility toward the road to increase the distance to the wetland would impede fire department operations. Erosion and sedimentation controls including 8-inch diameter straw wattles would be installed along the length of the parking lot to protect the wetland area consistent with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Controls*.

The site is not within a Federal Emergency Management Agency-designated flood zone.

No properties listed on the National Register of Historic Places are located proximate to the existing site.

Public Safety

The Project would be constructed in accordance with the current Connecticut State Building Code, Telecommunications Industry Association (TIA) 222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the National Electrical Code, the Connecticut State Fire Safety Code, and the Occupational Safety and Health Administration standards (OSHA).

The existing municipal communications tower is located approximately 70 feet from the I 91/Route 15 off-ramp. The proposed replacement tower would be located approximately 80 feet from the I-91/Route 15 off-ramp. The existing municipal communications tower is located approximately 59 feet from the Fire Station building. The proposed replacement tower would be located approximately 68 feet from the Fire Station building.

The existing municipal communications tower is located about 19 feet from the nearest property line. The proposed replacement tower would be located about 33 feet from the nearest property line. The tower setback radius would extend beyond the host parcel. The replacement tower can be designed with a yield point at 75 feet agl so that the tower setback radius remains within the boundaries of the host parcel.

Construction of the replacement tower would not impact or interfere with any existing nearby public utilities. Prior to commencement of construction, all existing utilities and infrastructure locations will be identified using Call Before You Dig to ensure that proper construction measures can be incorporated to avoid impacts and interference.

Access to the facility site would be restricted to the tenants and TowerNorth personnel. AT&T's equipment would be fitted with silent intrusion alarms.

A Federal Aviation Administration Determination (FAA) found the replacement tower would not be a hazard to air navigation and would not require obstruction marking or lighting. If the City installs antennas in the future that exceed a height of 154 feet agl, a new FAA Determination would be required.

The proposed replacement facility and associated equipment would comply with DEEP Noise Control Standards. The proposed emergency backup generator is exempt from DEEP Noise Control Regulations §22a-69-1.8.

AT&T's antennas would support text-to-911 service and would comply with E911 requirements and the intent of the Warning, Alert and Response Network Act of 2006.

AT&T would provide FirstNet Services² from the proposed replacement tower.

The calculated cumulative worst-case power density from the operation of AT&T's antennas would be 5.02% of the applicable exposure limit established by the Federal Communications Commission at ground level using a far field approximation.

Conclusion

If approved, staff recommends the following conditions:

- 1) Approval of any project changes be delegated to Council staff;
- 2) Deployment of any 5G services must comply with FCC and FAA guidance relative to air navigation, as applicable;
- 3) Submit a structural analysis for the replacement tower and foundation inclusive of AT&T's equipment that is stamped and signed by a Professional Engineer duly licensed in the State of Connecticut prior to commencement of construction;
- 4) Submit the final structural design drawings that include a yield point to ensure that the tower setback radius remains within the boundaries of the host parcel prior to commencement of construction;
- 5) Unless otherwise approved by the Council, the existing lattice tower at 13 Pomeroy Avenue and the existing NTAA at 900 East Main Street shall be removed within 180 days of the installation of the new steel monopole tower; and
- 6) The Council shall be notified in writing within 45 days of when the existing lattice tower at 13 Pomeroy Avenue and existing NTAA at 900 East Main Street have been removed and the new steel monopole tower is operational unless a written request for an extension is submitted to the Council within that timeframe.

² FirstNet is a subscriber service available to local emergency response entities that would allow preferred wireless service on AT&T's 700 MHz system during emergencies.

Figure 1 – Existing Municipal Self-Supporting Lattice Tower.

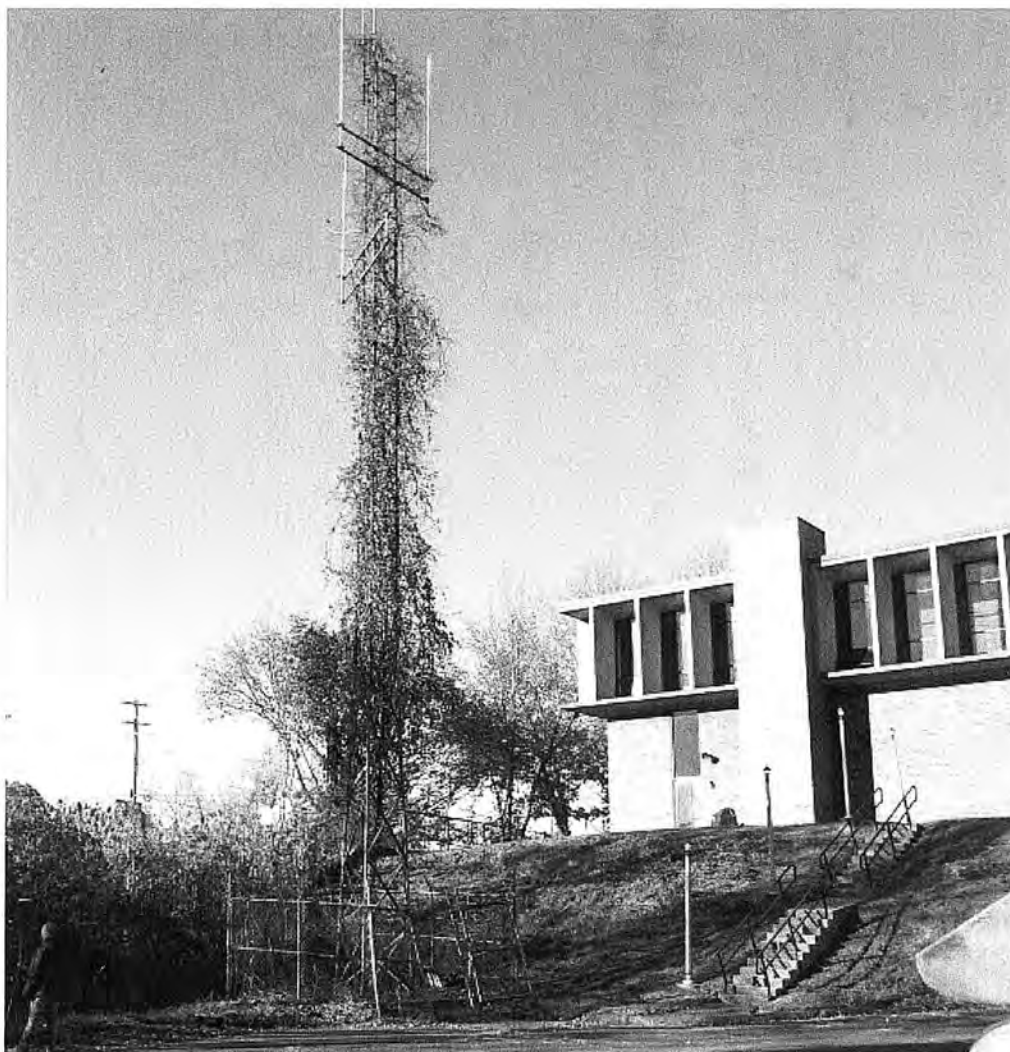


Figure 2 - Proposed Site Plan with Replacement Tower Location

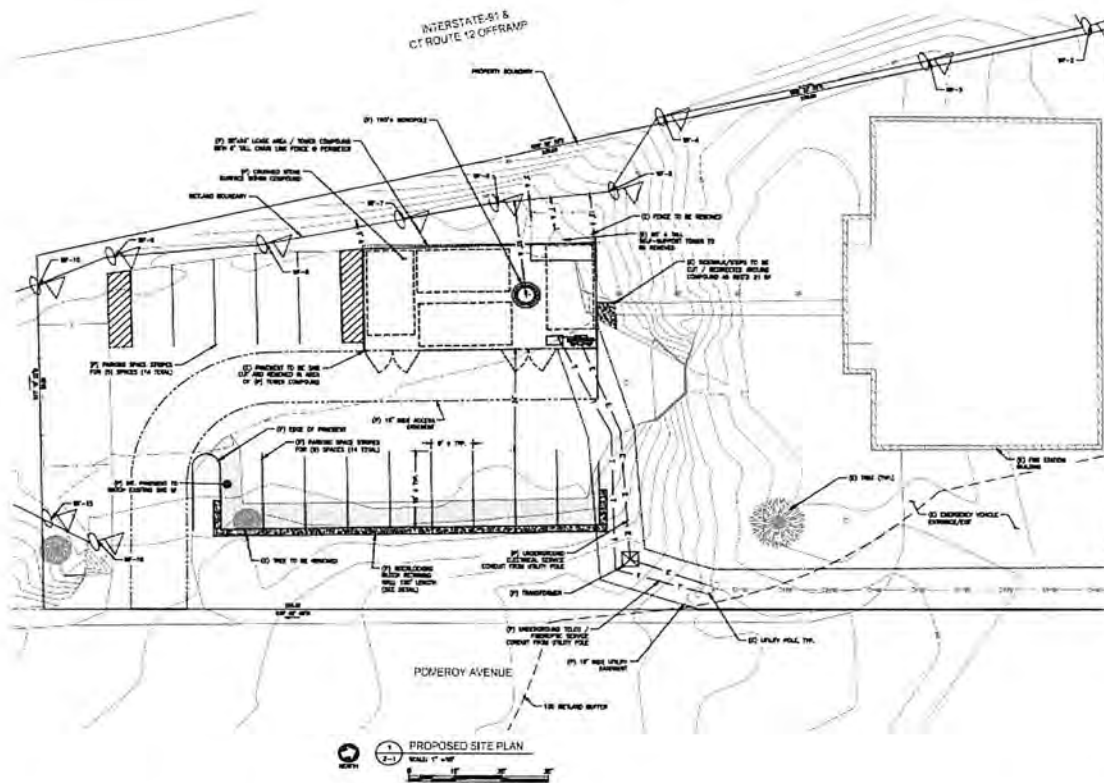


Figure 3 - Proposed Compound Plan

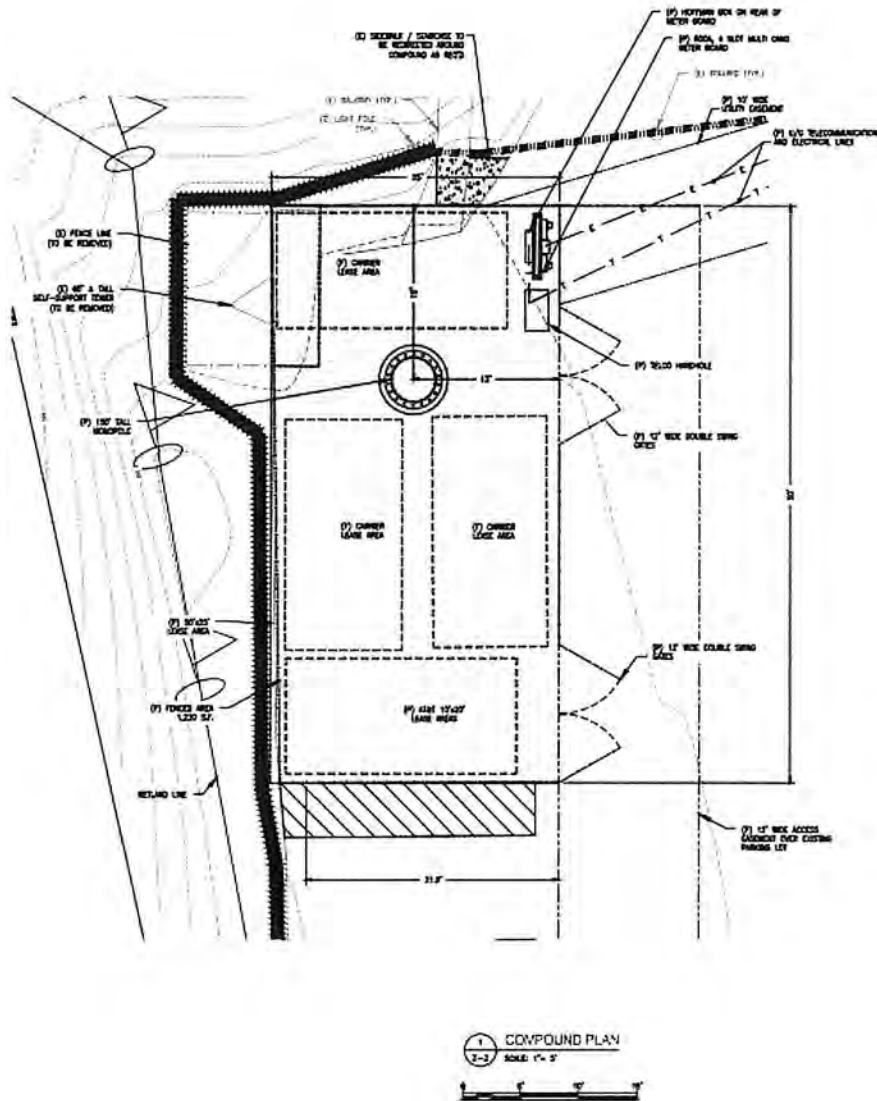


Figure 4 – Proposed Erosion &Grading Plan

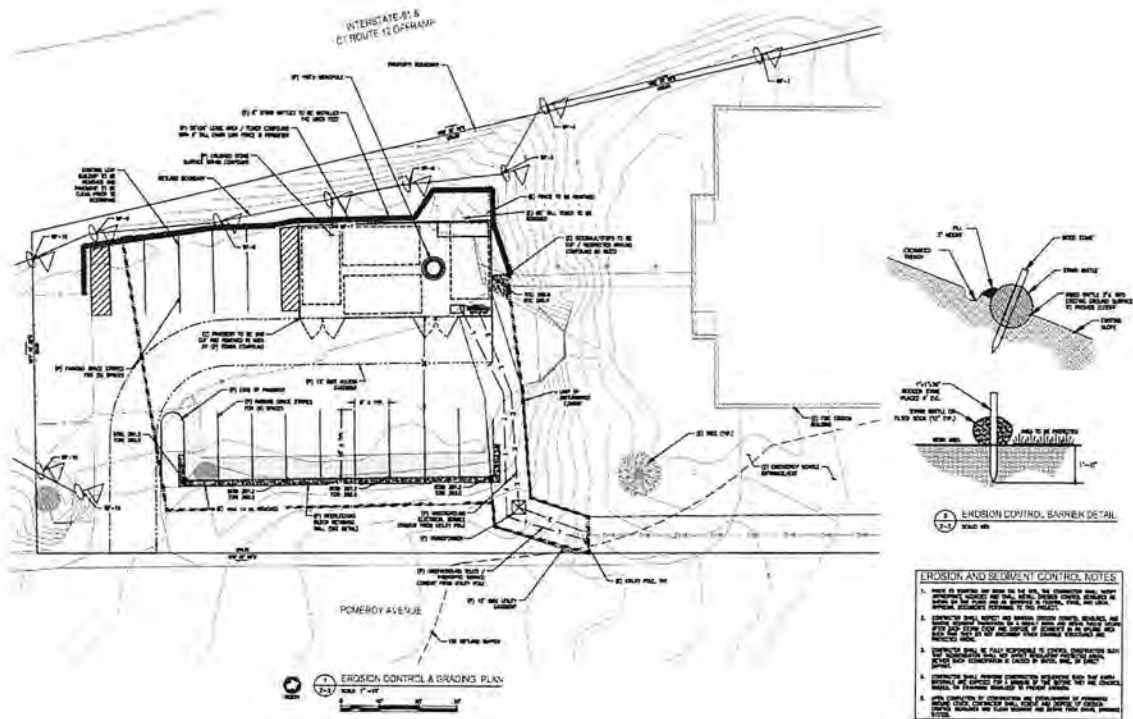
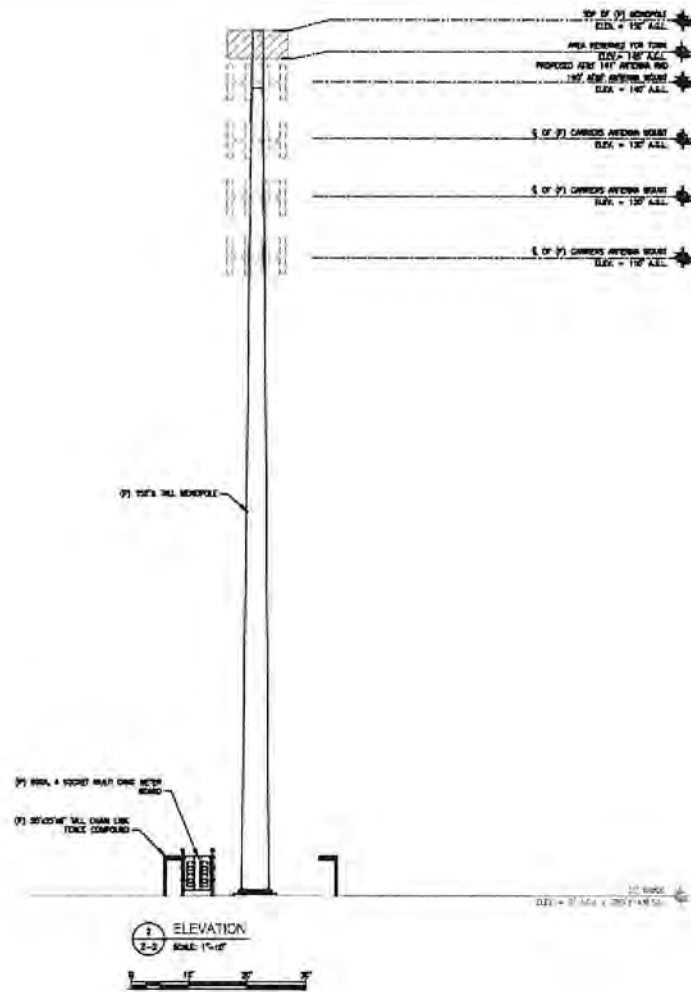
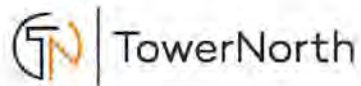


Figure 5 - Proposed Replacement Tower Elevation Drawing



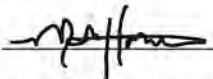
ATTACHMENT 2



LETTER OF AUTHORIZATION/AGENT AFFIDAVIT

SITE ID: CT0005-A
SITE NAME: Meriden Fire Dept.
ADDRESS: 15 Pomeroy Ave, Meriden, CT 06450
PARCEL ID: 1007-0322-0001-0000
TOWN: Meriden **COUNTY:** New Haven County **STATE:** CT

TowerNorth, LLC, owner of the above-described site, authorize **Structure Consulting Group** and/or its Counsel or agents, to act as our nonexclusive agent for the sole purpose of filing and consummating any, zoning, land use or building permit application(s) necessary to obtain approval for the installation of a new wireless communications facility and related telecommunications equipment on the above-described property.

Signature: _____

Print Name: **Matthew Hamilton**

Title: **Director of Tower Operations**

Date: **12/10/2024**

ATTACHMENT 3



SITE NAME: MERIDEN 2 RELO 2 CT
LOCATION CODE (PSLC): 727538
PROJECT ID: 16962750
ADDRESS: 13 POMEROY AVENUE
MERIDEN, CT 06451
CO-LOCATION ON A EXISTING MONOPOLE
(MERIDEN FIRE DEPARTMENT)

DRAWING INDEX		
SHEET	DESCRIPTION	REVISION
T-1	TITLE SHEET	1
Z-1	ABUTTERS PLAN	1
Z-2	PARTIAL SITE PLAN AND ELEVATION	1
D-1	EQUIPMENT LAYOUT & DETAILS	1
D-2	EQUIPMENT DETAILS	1

GENERAL NOTES	
1.	CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER & OWNER REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
2.	ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL BEFORE YOU DIG (800) 4-A-DIG (4363) OR 800-4-A-DIG (4363) 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY. DIG SAFE SYSTEM (MA, ME, NH, RI, VT) 1-888-344-7233 (OR 811) CALL BEFORE YOU DIG (CT): 1-800-922-4455.
3.	ALL WORK TO BE PERFORMED IN ACCORDANCE WITH THE LATEST VERIZON WIRELESS CONSTRUCTION GUIDELINES.
4.	NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES: BUILDING CODE: 2021 CONNECTICUT STATE BUILDING CODE (IBC 2021) AND AMENDMENTS ELECTRICAL CODE: 7602 REC (NFPA-70) WITH CONNECTICUT AMENDMENTS FIRE CODE: 2021 CONNECTICUT STATE FIRE CODE (IFC 2021) AND AMENDMENTS
5.	REFER TO STRUCTURAL ANALYSIS REPORT PREPARED FOR TOWNERNORTH DEVELOPMENT PREPARED BY B+T GROUP DATED JANUARY 9, 2025.
6.	REFER TO MOISTURE ANALYSIS REPORT PREPARED BY COLLIER ENGINEERING & DESIGN DATED OCTOBER 10, 2024.
7.	THE CONSTRUCTION SHOWN HEREIN MAY REQUIRE SPECIAL INSPECTIONS UNDER THE STATE BUILDING CODE. APPLICANT/CONTRACTOR SHALL VERIFY WITH THE STATE BUILDING CODE OFFICE THAT THE SPECIAL INSPECTIONS ARE REQUIRED AND ENGAGE THE INSPECTOR AND/OR APPROPRIATE 3RD PARTIES AS MAY BE REQUIRED.
8.	THESE CO-LOCATION PLANS ARE SUBMITTED ON A CONSTRUCTION OF A TOWER FACILITY PROJECT BY TOWER OWNER IN ACCORDANCE WITH CONNECTICUT FIRE CODE (CFC) PETITION NO. 1590 INCLUDING ANY CONDITIONS OF THE FINAL DECISION AS APPLICABLE.

VICINITY MAP



PROJECT INFORMATION

SITE TYPE:	CO-LOCATION ON A EXISTING MONOPOLE AND WITHIN A EXISTING FENCED COMPOUND
SITE NAME:	MERIDEN 2 RELO 2 CT
LOCATION CODE (PSLC):	727538
PROJECT ID:	16962750
RFDS DATE:	02/26/24 REV1
SITE ADDRESS:	13 POMEROY AVENUE MERIDEN, CT 06451
COUNTY:	NEW HAVEN
MAP LOT:	1087-0322-0001-0000
(P) & TOWER LATITUDE:	41° 31' 31.88" N (41.525544± N) (RECORD PLANS)
(P) & TOWER LONGITUDE:	72° 48' 03.86" W (72.767259± W) (RECORD PLANS)
(P) TOWER GROUND ELEVATION:	280.1 ANSL (RECORD PLANS)
DATUM:	NAD83/NAVD83
STRUCTURE HEIGHT:	150'± (TOP OF MONOPOLE TOWER)
HIGHEST APPURTENANCE:	154'± (TOP OF LIGHTNING ROD)
PROPERTY OWNER:	NYC CITY OF MERIDEN FIRE STATION 13 POMEROY AVENUE MERIDEN, CT 06451
TOWER OWNER:	TOWNERNORTH
TOWER OWNER ADDRESS:	TOWNERNORTH DEVELOPMENT 750 W CENTER STREET, SUITE 301 W BRIDGEWATER, MA 02379
APPLICANT:	CELCO PARTNERSHIP, A DELAWARE GENERAL PARTNERSHIP, DBA VERIZON WIRELESS SECOND FLOOR WALLINGFORD, CT 06492
SITE ENGINEER:	PROTERRA DESIGN GROUP, LLC 4 BAY ROAD, SUITE 200 BRIDGEWATER, MA 01905 (413) 320-4818

E-911 ADDRESS
THE E-911 ADDRESS FOR THE SUBJECT PROPERTY IS: 13 POMEROY AVENUE MERIDEN, CT 06451

PERMITTING

ProTerra DESIGN GROUP, LLC 100 Main Street Meriden, CT 06451 Tel: (413) 320-4818	CONSULTANTS:	NO. DATE REVISIONS 1 01/10/23 ISSUED FOR PERMITTING 2 02/27/24 ISSUED FOR PERMITTING 3 02/27/24 PERMITTING REVIEW 4 02/27/24 PERMITTING REVIEW	Verizon CELCO PARTNERSHIP, A DELAWARE GENERAL PARTNERSHIP, DBA VERIZON WIRELESS SECOND FLOOR WALLINGFORD, CT 06492 APPLICANT	Meriden 2 Relo 2 CT LOCATION CODE: 727538 ADDRESS: 13 POMEROY AVENUE MERIDEN, CT 06451	Meriden 2 Relo 2 CT LOCATION CODE: 727538 ADDRESS: 13 POMEROY AVENUE MERIDEN, CT 06451	DATE: 01/10/23 DRAWN: RDP/PH CHECKED: JAM/TEJ SCALE: SET PLAN JOB NO.: 13-030 SHEET TITLE:	TITLE SHEET T-1
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NO.	DATE	REVISIONS	PERMITTING REVIEW	ISSUED FOR PERMITTING
1	08/08/24			
0	08/08/24			
1	01/10/25			

MERIDEN 2 RELD 2 CT
 LOCATION CODE: 727538
 ADDRESS: 13 POMEROY AVE
 MERIDEN, CT 06461



DATE: 01/10/25
DRAWN: TBD/PH
CHECK: JMM/TEJ
SCALE: SEE PLAN
JOB NO.: 13-030

BUTTERS
PLAN

Z-1

GENERAL NOTES

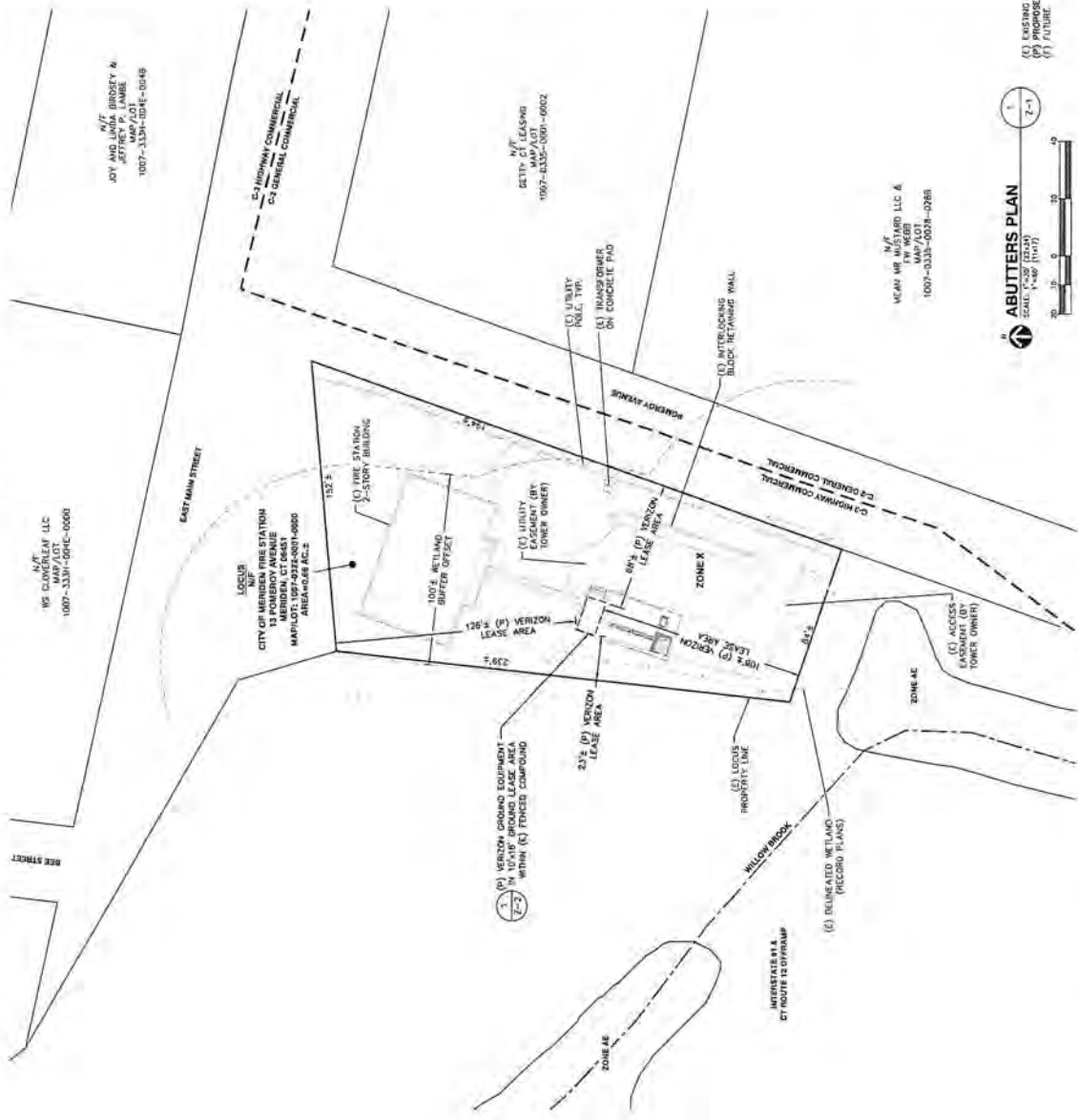
1. THE TYPE, INDESTRUCTIBLE, MOUNTING HARDWARE, AND PROVISIONS OF ALL PROJECT OWNERS' EQUIPMENT ARE SHOWN IN ILLUSTRATIVE FASHION. ACTUAL HARDWARE DETAILS AND TAILORCATIONS MAY DIFFER SLIGHTLY FROM WHAT IS SHOWN.
2. THE PROJECT OWNER'S FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT FACILITY. THE PROJECT OWNER'S FACILITY IS NOT TO BE USED FOR ANY OTHER PURPOSES, MAINTENANCE, AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING EQUIPMENT SEWER AND REQUIREMENTS.
3. THE DESIGN OF THE TOWER TRANSDUCER AND ANTENNA OPERATING HARDWARE WILL MEET THE DESIGN OF THE TOWER TRANSDUCER FOR STRUCTURAL ANALYSIS, SUPPORTING STRUCTURES, AND STATE BUILDING CODE REQUIREMENTS. DETAILED CONSTRUCTION DETAILS WILL BE PROVIDED BY THE PROJECT OWNER. THE PROJECT OWNER WILL PROVIDE A PROFESSIONAL ENGINEER AND SUBMIT WITH A BUILDING PERMIT APPLICATION FOR REVIEW AND APPROVAL BY THE LOCAL BUILDING CODE DEPARTMENT OFFICIAL.
4. ONCE THE FACILITY BEGINS FULL OPERATIONAL NORMAL AND REGULAR MAINTENANCE BY OWNER OWNERS AND CARBERT'S TECHNICIANS WILL BE PERFORMED. THE ESTIMATED COST OF THE FACILITY WILL BE \$100,000 TO \$150,000 TO BE LIES WITH THE PROJECT OWNER. THE FACILITY WILL BE A SINGLE-FAMILY DWELLING.
5. THE PROPOSED INSTALLATION WILL BE CO-LOCATED ON A EXISTING UNOCCUPIED TOWER AND WITHIN A EXISTING TENDED COMPARTMENT. IT HAS BEEN ASSUMED THAT THE EXISTING TOWER WILL BE USED FOR THE PROJECT. THE PROJECT OWNER WILL BE RESPONSIBLE FOR THE EXISTING TOWER INCLUDING THE CONNECTING STING CABLE (FSC).
6. THE PROPOSED INSTALLATION TO BE IN COMPLIANCE WITH CODE 2022 CONNECTICUT STATE BUILDING CODE (IBC 2021) AND AMENDMENTS.
7. PROPERTY LINE INFORMATION IS COMPILED FROM A PARTIAL FIELD BOUNDARY SURVEY. A FULL BOUNDARY SURVEY IS REQUIRED.
8. THE PURPOSES OF THIS SURVEY IS TO SUPPORT THE DESIGN AND CONSTRUCTION OF A TOWER TRANSDUCER FACILITY, USE OF THIS SURVEY BY ANYONE OTHER THAN YORZON TELECOM & ITS AFFILIATES, AND ASSOCIATED USE AND USE OF THE SURVEY FOR ANY PURPOSE OTHER THAN THE PURPOSES OF THIS SURVEY IS NOT PERMITTED.

REFERENCES

CONSTRUCTION DOCUMENT RECORD PLANS, MENARD THE CITY OF MEMPHIS, FIRST ADOPTED BY THE CITY OF MEMPHIS 6-29-1981, AMENDMENTS W/01 THRU 04, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832,

CSC DIMENSIONS

ASSESSORS ID MAP#01: 007-0327-0001-0000	
(P) USE: WIRELESS COMMUNICATION FACILITY	
ADJACENT (RIGHT) (HIGHEST ADJUTANTAGE)	150' E (150'±)
EXISTING SITE ACCESS LENGTH	147'±
PROPOSED SITE ACCESS LENGTH	117'±
NUMBER OF TRUCKS OVER 6' HIGH TO BE REMOVED	0
NUMBER OF RESIDENCES WITHIN 1000 FEET, OR 1/4	8±
CLOSEST TOWN OR CITY TO LOCUS PARELLI	5.48E±1 (MIDDLEFIELD)
ADJACENT DISTANCES (OPTION) LEASE AREA	
NEAREST WETLANDS (ON LOCUS PROPERTY)	37±
NORTHERN PROPERTY BOUNDARY	135±
SOUTHERN PROPERTY BOUNDARY	100'±
WESTERN PROPERTY BOUNDARY	237±
EASTERN PROPERTY BOUNDARY	65±
CLOSEST ROADS	607± (N/2 1003-3339-000-0-0000)
CLOSEST SCHOOL, OR DAYCARE	135±
CLOSEST TOWN OR CITY	5.48E±1 (MIDDLEFIELD)



CONSULTANTS

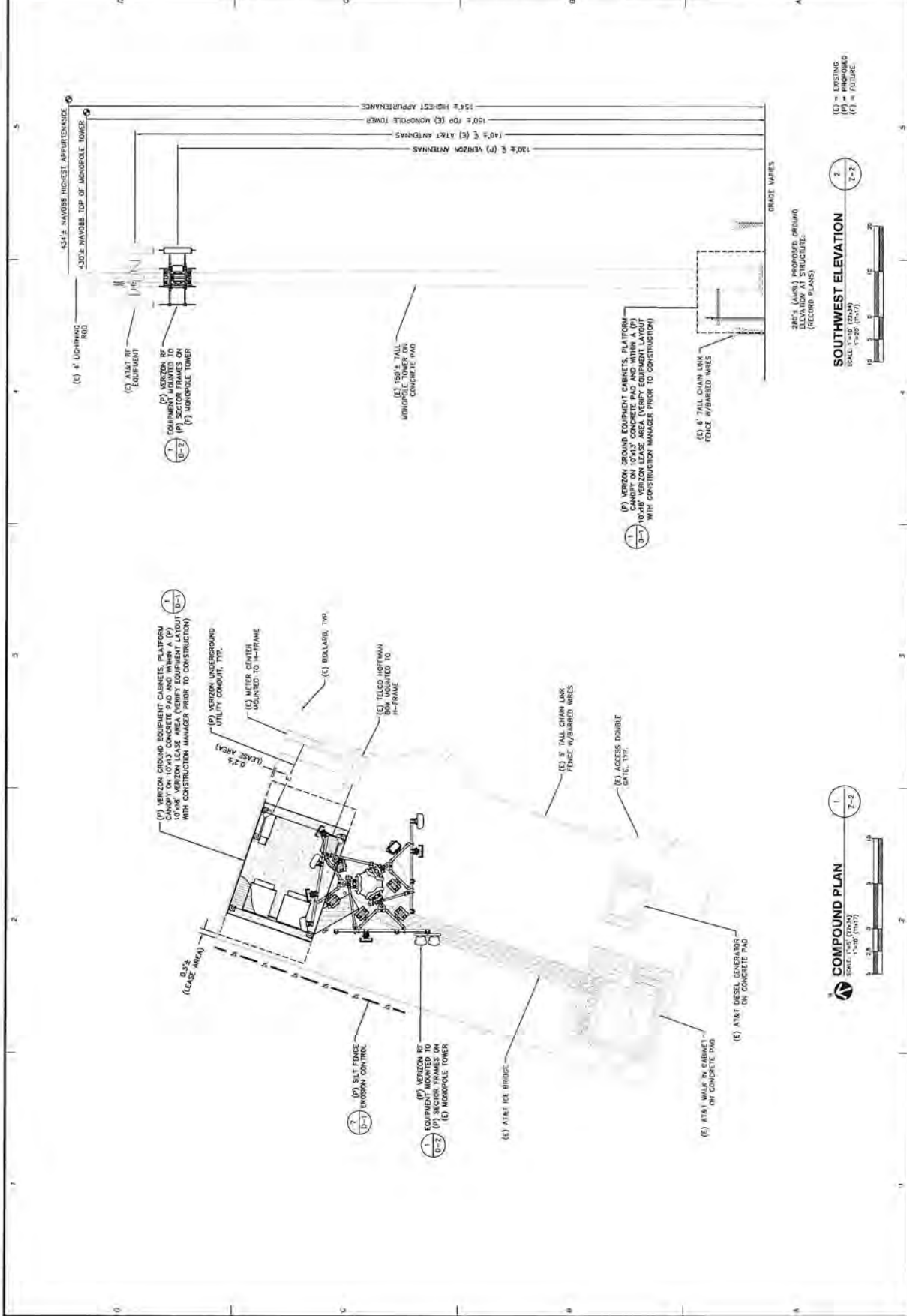
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VERIZON
Cello Partnership A
Dataway General
Partnership
400 Alexander Drive
Second Floor
Allentown, CT 06451



DATE:	01/10/25
TRAIN:	TRD/PN
CHECK:	UNU/TEJ
SCALE:	SFE PLAN
JOB NO.:	13-030
SHEET FILE:	

**PARTIAL SITE
PLAN &
ELEVATION**



NO.	DATE	REVISIONS
1	01/10/23	ISSUED FOR PERMITTING
2	01/10/23	ISSUED FOR PERMITTING
3	01/10/23	ISSUED FOR PERMITTING
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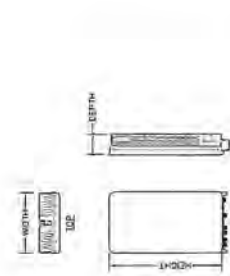
Verizon
WIRELESS
COMMUNICATIONS
DIVISION
13 FORTY-FOUR AVENUE
MERRIDEN, CT 06451
LOCATION CODE 727538
MERRIDEN 2 REL 2 CT
CT 06451



DATE: 01/10/23
DRAWN: TDD/PN
CHECKED: JMM/PEJ
SCALE: SEE PLAN
JOB NO: 13-000
SHEET NO: 1

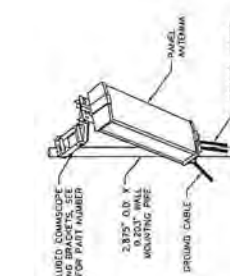
**EQUIPMENT
DETAILS**

D-2



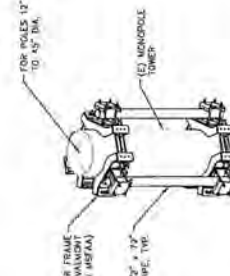
QTY	MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
1	WPA43-77A	28.0'	15.0'	5.5'	575lbs

L-SUB6 ANTENNA DETAIL
SCALE: NONE

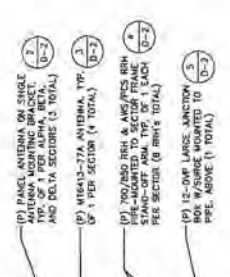


QTY	MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT	MOUNT BRACKET
3	JMA WYBRO45-100	72.0'	8.0'	8.0'	604lbs	JMA 9190034-13
2	JMA WYBRO45-100	71.5'	10.0'	10.0'	683lbs	JMA 9190034-12 (1)

PANEL ANTENNA DETAIL
SCALE: NONE

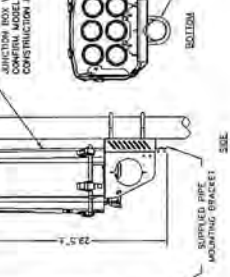
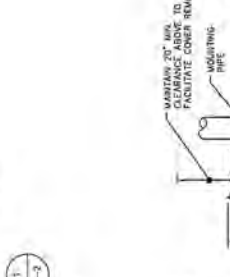


SECTOR FRAME MOUNT AND ATTACHMENT DETAIL
SCALE: NONE

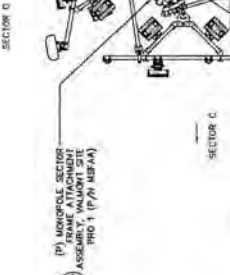


QTY	MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT	MOUNT BRACKET
3	JMA WYBRO45-100	72.0'	8.0'	8.0'	604lbs	JMA 9190034-13
2	JMA WYBRO45-100	71.5'	10.0'	10.0'	683lbs	JMA 9190034-12 (1)

PANEL ANTENNA DETAIL
SCALE: NONE

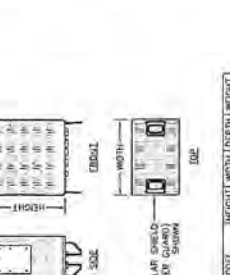


SECTOR FRAME MOUNT AND ATTACHMENT DETAIL
SCALE: NONE



QTY	MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT	MOUNT BRACKET
3	JMA WYBRO45-100	72.0'	8.0'	8.0'	604lbs	JMA 9190034-13
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PANEL ANTENNA DETAIL
SCALE: NONE

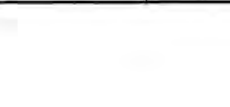
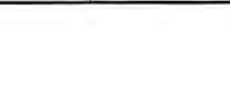


SECTOR FRAME MOUNT AND ATTACHMENT DETAIL
SCALE: NONE



QTY	MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT	MOUNT BRACKET
3	JMA WYBRO45-100	72.0'	8.0'	8.0'	604lbs	JMA 9190034-13
2	JMA WYBRO45-100	71.5'	10.0'	10.0'	683lbs	JMA 9190034-12 (1)

PANEL ANTENNA DETAIL
SCALE: NONE



SECTOR FRAME MOUNT AND ATTACHMENT DETAIL
SCALE: NONE

ATTACHMENT 4

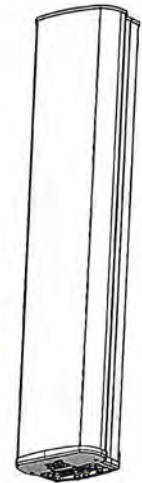
MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

X-Pol Hex-Port 6 ft 60° Fast Roll Off antenna with independent tilt on 700 & 850 MHz:

2 ports 698-798, 824-894 MHz and 4 ports 1695-2180 MHz

- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Compatible with dual band 700/850 MHz radios with independent low band EDT without external diplexers
- Fully integrated (iRETs) with independent RET control for low and high bands for ease of network optimization
- SON-Ready array spacing supports beamforming capabilities
- Suitable for LTE/CDMA/PCS/UMTS/GSM air interface technologies
- Integrated Smart Bias-Ts reduce leasing costs



NWAV

Fast Roll-Off antennas increase data throughput without compromising coverage

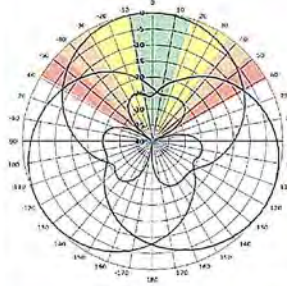
The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors.

Non-FRO antenna

Large traditional antenna pattern overlap creates harmful interference.

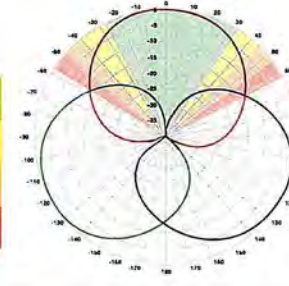
JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

JMA FRO antenna



LTE throughput	SINR	Speed (bps/Hz)	Speed increase	CQI
Excellent	>18	>4.5	333+%	8-10
Good	15-18	3.3-4.5	277%	6-7
Fair	10-15	2-3.3	160%	4-6
Poor	<10	<2	0%	1-3

The LTE radio automatically selects the best throughput based on measured SINR.



Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	14.4	14.0	17.6	18.0	18.2
Horizontal beamwidth (HBW), degrees	60.5	53.0	55.0	55.0	55.5
Front-to-back ratio, co-polar power @180°± 30°, dB	>24	>24.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>15.0	>14.2	>18	>18	>15
Sector power ratio, percent	<3.5	<3.0	<3.7	<3.8	<3.6
Vertical beamwidth (VBW), degrees ¹	13.1	11.8	6.0	5.5	5.5
Electrical downtilt (EDT) range, degrees	2-14	2-14	0-9		
First upper side lobe (USLS) suppression, dB ¹	≤-15.0	≤-16.5	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB ¹	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports, watts	1500				

¹ Typical value over frequency and tilt

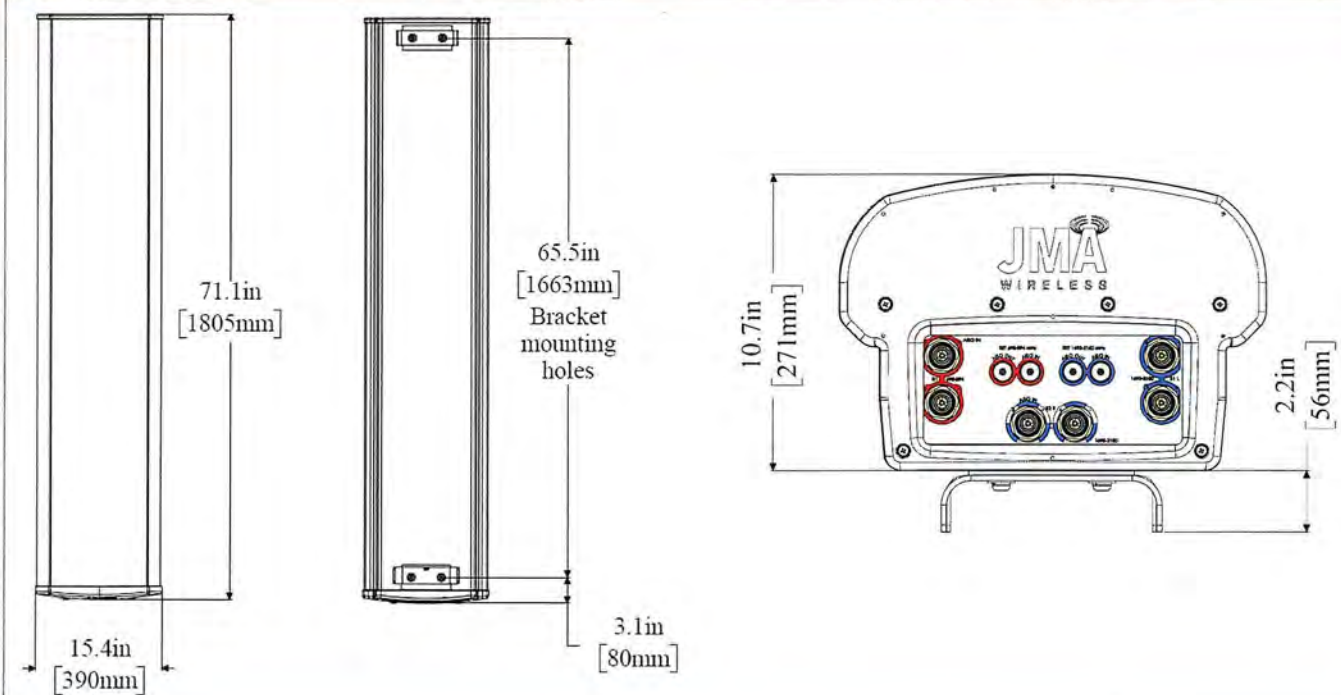
Mechanical specifications

Dimensions height/width/depth, inches (mm)	71.3/ 15.4/ 10.7 (1811/ 392/ 273)
Shipping dimensions length/width/height, inches (mm)	82/ 20/ 15 (2083/ 508/ 381)
No. of RF input ports, connector type, and location	6 x 4.3-10 female, bottom
RF connector torque	96 lbf·in (10.85 N·m or 8 lbf·ft)
Net antenna weight, lb (kg)	60 (27.0)
Shipping weight, lb (kg)	90 (41.0)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	18 (8.18)
Range of mechanical up/down tilt	-2° to 14°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal, lateral, and rear wind loading @ 150 km/h, lbf (N)	154 (685), 73 (325), 158 (703)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	2.6

Front view

Back view

Bottom view



Ordering information

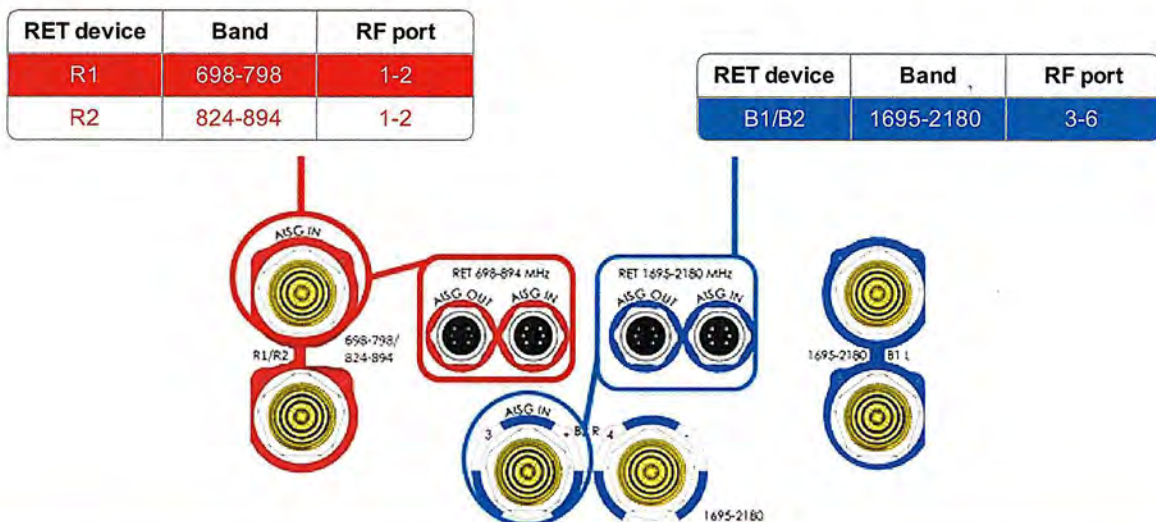
Antenna model	Description
MX06FRO660-03	6F X-Pol HEX FRO 60° independent tilt 700/850 RET, 4.3-10 & SBT
Optional accessories	
<u>AISG cables</u>	M/F cables for AISG connections
<u>PCU-1000 RET controller</u>	Stand-alone controller for RET control and configurations

Remote electrical tilt (RET 1000) information

RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	2 pairs of AISG male/female connectors
RET interface connector location	Bottom of the antenna
Total no. of internal RETs (low bands)	2
Total no. of internal RETs (high bands)	1
RET input operating voltage, vdc	10-30
RET max power consumption, idle state, W	≤ 2.0
RET max power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0 / 3GPP

RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF port as shown below:

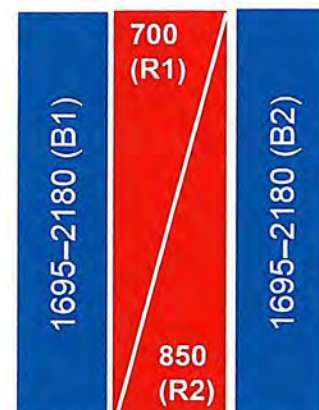


Array topology

3 sets of radiating arrays

R1/R2: 698-894 MHz
B1: 1695-2180 MHz
B2: 1695-2180 MHz

Band	RF port
1695-2180	3-4
698-894	1-2
1695-2180	5-6



X-Pol 16-Port 6 ft, 45° Fast Roll-Off, with Smart Bias Ts, 698-3980 MHz:

4 ports 698-894 MHz, 8 ports 1695-2690 MHz, and 4 ports 3400-3980 MHz

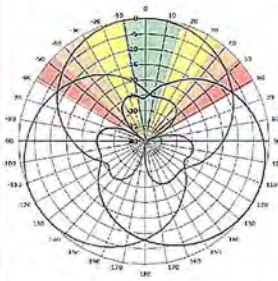
- 16-Port antenna offering the same functionality as 2 Hex Port antennas and CBRS in a single unit
- Full low-band arrays for maximum gain
- Fully integrated (iRETs) with independent RET control for low band and mid band
- Optimized CBRS radiation patterns for improved RSRP and maximum EIRP
- FET configured with internal RET for CBRS and ease of future network optimization
- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Suitable for 3G, 4G, and 5G interface technologies
- Integrated Smart Bias-Ts reduce leasing costs and improved reliability
- Optimized form factor for reduced wind loading



Fast Roll-Off antennas increase data throughput without compromising coverage

The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors

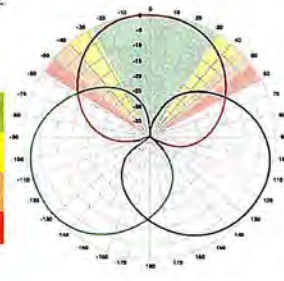
Non-FRO antenna



Large traditional antenna pattern overlap creates harmful interference.

JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

JMA FRO antenna



LTE throughput SINR Speed (bps/Hz) Speed increase CQI

Excellent	>18	>4.5	333+%	8-10
Good	15-18	3.3-4.5	277%	6-7
Fair	10-15	2-3.3	160%	4-6
Poor	<10	<2	0%	1-3

The LTE radio automatically selects the best throughput based on measured SINR.

NWAV

Electrical specification (minimum/maximum)	Ports 1, 2, 3, 4		Ports 5, 6, 7, 8, 9, 10, 11, 12				
Frequency bands, MHz	698-806	806-894	1695-1880	1850-1990	1920-2180	2300-2360	2496-2690
Polarization	± 45°		± 45°				
Average gain over all tilts, dBi	14.8	15.6	17.0	17.5	18.2	18.5	19.0
Horizontal beamwidth (HBW), degrees ¹	45	39	43	41	37	32	30
Front-to-back ratio, co-polar power @180°± 30°, dB	>25.0	>25.0	>25.0	>25.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>20.0	>18.0	>18	>18	>18	>18	>18
Vertical beamwidth (VBW), degrees ¹	11.5	10.5	10.0	9.5	8.9	8.5	7.8
Electrical downtilt (EDT) range, degrees	2-14		2-12				
First upper side lobe (USLS) suppression, dB ¹	≤-15.0	≤-15.0	≤-16.0	≤-16.0	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB ¹	25	25	25	25	25	25	25



MX16FRO645-xx

NWAV™ X-Pol 16-Port Antenna

Electrical specification (minimum/maximum)	Ports 1, 2, 3, 4	Ports 5, 6, 7, 8, 9, 10, 11, 12
Max VSWR / return loss, dB	1.5:1 / -14.0	1.5:1 / -14.0
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153	-153
Max input power per any port, watts	300	250
Total composite power all ports, watts	1500	

¹ Typical value over frequency and tilt

* For ports 13-16, the electrical downtilt is FET configured with internal RET, where the required electrical downtilt is defined at the time of order per the ordering information below.

Electrical specification (minimum/maximum)	Ports 13, 14, 15, 16		
Frequency bands, MHz	3400-3550	3550-3700	3700-3980
Polarization	± 45°		
Average gain over all tilts, dBi	14.4	14.5	14.6
Horizontal beamwidth (HBW), degrees	37	37	36
Front-to-back ratio, co-polar power @180°± 30°, dB	>25	>25	>25
Vertical beamwidth (VBW), degrees ¹	18.0	18.0	17.0
Electrical downtilt (EDT) range, degrees	2-12 orderable in 1 deg increments		
First upper side lobe (USLS) suppression, dB ¹	≤-15	≤-15	≤-15
Cross-polar isolation, port-to-port, dB ¹	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		
Max input power per any port, watts	150		
Total composite power all ports (1-10), watts	1500		

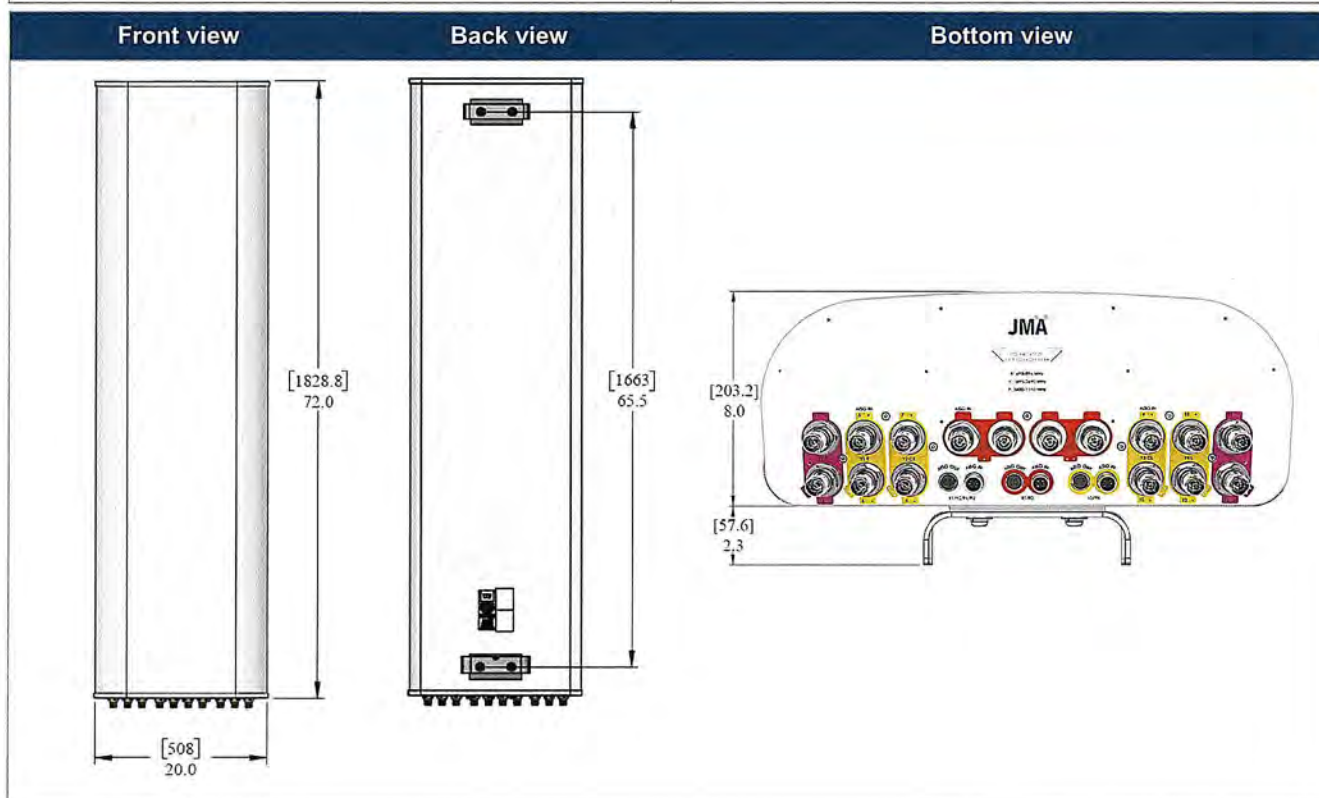
Ordering information	
Antenna model	Description
MX16FRO645-xx (xx represents the FET in one degree increments for 3.4-3.98 GHz)	6F X- Pol 16 PORT FRO 45° 2-14°/ 2-12°/2-12°, 4.3-10 & SBT xx=02 thru 12 for each 1 degree tilt 3.4-3.98 GHz Examples: MX16FRO645-02 – 2deg, MX16FRO645-09 – 9deg, MX16FIT665-12-12deg
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations
91900314-02	Dual Mount Bracket (see 91900314 bracket document for details)



MX16FRO645-xx

NWAV™ X-Pol 16-Port Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	72.0/ 20.0/ 8.0 (1828.8/ 508.0/ 203.2)
Shipping dimensions length/width/height, inches (mm)	77.3/ 23.8/ 14.5 (1963.42/ 605/ 368)
No. of RF input ports, connector type, and location	16 x 4.3-10 female, bottom
RF connector torque	96 lbf-in (10.85 N·m or 8 lbf-ft)
Net antenna weight, lb (kg)	60 (27.2)
Shipping weight, lb (kg)	101 (45.8)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	18 (8.2)
Range of mechanical up/down tilt	-2° to 12°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal and lateral wind loading @ 150 km/h, lbf (N)	129.2 (574.7), 59.8 (266.0)
EPA frontal and lateral, ft ² , (m ²)	5.8 (0.54), 2.7 (0.25)

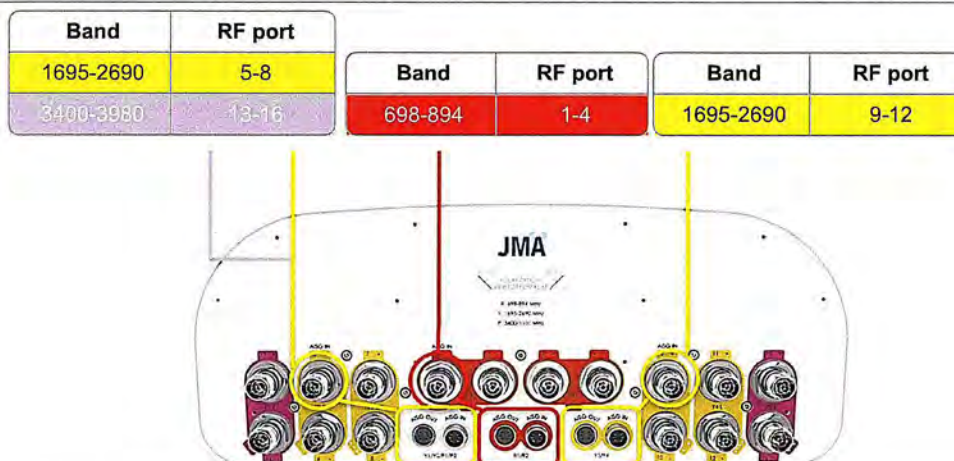


Remote electrical tilt (RET 1000) information

RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9 or RF port bias-t
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	3 pairs of AISG male/female connectors and 3 RF port Bias Ts
RET interface connector location	Bottom of the antenna
Total no. of internal RETs 698-894 MHz	1
Total no. of internal RETs 1695-2690 MHz	2
Total no. of internal RETs 3400-3980 MHz	1
RET input operating voltage, vdc	10-30
RET max power consumption, idle state, W	≤ 2.0
RET max power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0 / 3GPP

RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF smart bias-t port as shown below:



Note: The RET Device for 3400-3980 MHz is connected via the 1695-2690 Port 5 Bias T port or 1695-2690/3400-3980 MHz AISG ports.

Array topology

6 sets of radiating arrays

R1: 698-894 MHz
R2: 698-894 MHz
Y1: 1695-2690 MHz
Y2: 1695-2690 MHz
Y3: 1695-2690 MHz
Y4: 1695-2690 MHz
P1: 3400-3980 MHz
P2: 3400-3980 MHz

Band	RF port
698-894	1-4
1695-2690	5-12
3400-3980	13-16



C-band 64T64R

Gen 2

SAMSUNG

Gen 2 : Higher conducted power radio with reduced size/volume/weight vs Gen 1 and also SOC embedded for flexibility to support new features

Item	Gen 2 64T64R (MT6413-77A)
Air Technology	NR n77/TDD
Frequency	3700 ~ 3980 MHz
IBW	200 MHz
OBW	200 MHz
Carrier Bandwidth	>70(HW ready)/40/60/80/100 MHz
# of Carriers	2 carriers
Layer	DL : 16L, UL : 16RX (8L)
RF Chain	64T64R
Antenna Configuration	4V16H with 192 AE
EIRP	80.5 dBm @320W (55 dBm + 25.5 dBi)
Conductive Power	320W
Spectrum Analyzer	TX/RX support
RX Sensitivity	Typical -97.8dBm @1Rx, 18.36MHz with 30kHz 51RBs)
Modulation	DL 256QAM support, (DL 1024QAM with 1~2dB power back-off)
Function Split	DL/UL option 7-2x
Input Power	-48 VDC (-38 VDC to -57 VDC)
Power Consumption	1,287W (100% load, room temp.)
Size (WHD)	400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)
Volume	41.1L
Weight	26kg (57.3 lb)
Operating Temperature	-40°C ~ 55°C (w/o solar load)
Cooling	Natural convection 3GPP 38.104
Unwanted Emission	FCC 47 CFR 27.53 : < -13dBm/MHz < -40 dBm/MHz @ above 4 GHz < -50 dBm /MHz @ 4,040 ~ 4,050 MHz < -60 dBm /MHz @ above 4,050 MHz
Optic Interface	15km, 4 ports (25Gbps x 4), SFP28, single mode, Bi-di (Option: Duplex)
Mounting Options	Pole, wall
NB-IoT	Not support
External Alarm	4RX
Fronthaul Interface	eCPRI

※ Preliminary Design: External appearance and mechanical design can be subject to change

Gen 2. 64T64R C-band MMU Dimensions	
Size (WxHxD)	400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)
Weight	26kg (57.3 lb)

SAMSUNG

AWS/PCS MACRO RADIO

DUAL-BAND AND HIGH POWER
FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This AWS/PCS 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code RF4439d-25A



Homepage
samsungnetworks.com

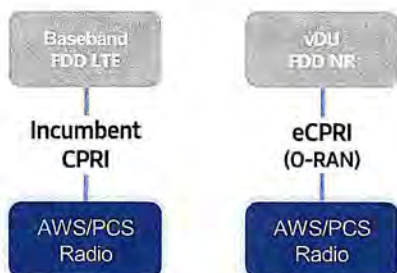


Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

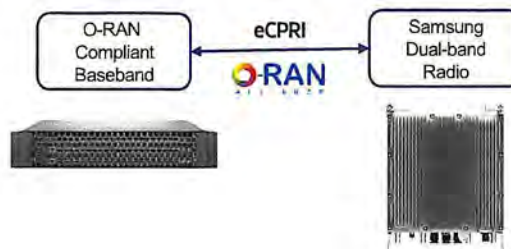
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

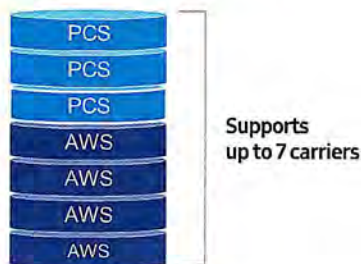
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

The number of required carriers varies according to site (region). Supporting many carriers is essential for using all frequencies that the operator has available.

The new AWS/PCS dual-band radio can support up to 3 carriers in the PCS (1.9GHz) band and 4 carriers in the AWS (2.1GHz) band, respectively.



Brand New Features in a Compact Size

Samsung's AWS/PCS macro radio offers several features, such as dual connectivity for baseband for both CDU and vDU, O-RAN capability, more carriers and an enlarged PCS spectrum, combined into an incumbent radio volume of 36.8L.



- + - 2 FH connectivity
- O-RAN capability
- More carriers and spectrum

Same as an incumbent radio volume

Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B25(PCS), B66(AWS)
Frequency Band	DL: 1930 – 1995MHz, UL: 1850 – 1915MHz DL: 2110 – 2200MHz, UL: 1710 – 1780MHz
RF Power	(B25) 4 × 40W or 2 × 60W (B66) 4 × 60W or 2 × 80W
IBW/OBW	(B25) 65MHz / 30MHz (B66) DL 90MHz, UL 70MHz / 60MHz
Installation	Pole, Wall
Size/Weight	14.96 x 14.96 x 10.04inch (36.8L) / 74.7lb

700/850 4T4R Macro 320W ORU - New Filter (RF4461d-13A)

SAMSUNG

Specifications



Item	Specification
Air Interface	LTE, NR(HW resource ready)
Band	Band13 (700MHz) DL: 869~894MHz UL: 824~849MHz
Frequency	DL: 746~756MHz UL: 777~787MHz
IBW	10MHz
OBW	10MHz
Carrier Bandwidth	LTE/NR 5*/10MHz
# of carriers	2C*
Total # of carriers	4C + B13 (SDL) 1C 4T4R/2T4R/2T2R/1T2R
RF Chain	2T2R+2T2R bi-sector Total : 320W
RF Output Power	4 x 40W or 2 x 60W 4 x 40W or 2 x 60W
Spectrum Analyzer	TX/RX Support
RX Sensitivity	Typ. -104.5dBm @1Rx (25RBs 5MHz)
Modulation	256QAM support, (1024QAM with 1~2dB power back-off)
Input Power	-48VDC (-38VDC to -57VDC)
Power Consumption	1,165 Watt @ 100% RF load, room temperature
Size (WHD)	380 x 380 x 260 mm (14.96 x 14.96 x 10.23 inch)
Volume	37.5 L
Weight (W/o Solar Shield & finger guard)	35.9 kg (79.1 lb)
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (Without solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 FCC 47 CFR 27.53 c), f)
CPRI Cascade	3GPP 36.104 FCC 47 CFR 22.917
Optic Interface	-69 dBm/100 kHz per path @ 896 ~901MHz
RET & TMA Interface	Not supported
Blas-T	Not supported
Mounting Options	4 ports (2 ports per band)
NB-IoT	AIIS 3.0
PIM Cancellation	Pole, wall
# of antenna port	Support
External Alarm	4
Fronthaul Interface	Opt. 8 CPRI / Opt. 7-2x selectable (not simultaneous support)
CPRI compression	Not Support

* 5MHz supporting in B13(700MHz) depends on 3Gpp std. and UE capability.
External filters in interferer and victim sides for Mexican boarder to support 5MHz service need to be considered
** Finger guard is not needed.

ATTACHMENT 5

Date: **January 09, 2025**

Cassandra Rosenkranz
TowerNorth Development
750 W Center Street Suite 301
West Bridgewater, MA 02379



MTS Engineering P.L.L.C
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Subject: **Structural Analysis Report**

Carrier Designation: **AT&T Co-Locate**
Site Number: CT1445
Site Name: Meriden Tower North

TowerNorth Designation: **Site Number:** CT0005-A
Site Name: Meriden Fire Dept

Engineering Firm Designation: **Project Number:** 172847.001.01.0003

Site Data: **13 Pomeroy Ave, Meriden, New Haven County, CT**
Latitude 41° 31' 31.96", Longitude -72° 46' 3.86"
149 Foot - Monopole Tower

Dear Cassandra,

We are pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above-mentioned tower.

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

Proposed Equipment Configuration

Sufficient Capacity

The jurisdiction has adopted the 2021 International Building Code (2022 Connecticut State Building Code). This analysis has been performed in accordance with the TIA-222-H Standard.

Structural analysis prepared by: Morgan Eubanks

Respectfully submitted by: MTS Engineering P.L.L.C



Chad E. Tuttle, P.E.

tnxTower Report - version 8.2.4.3

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3.2) Assumptions

4) ANALYSIS RESULTS

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4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 149 ft. Monopole designed by Sabre.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	119 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
141.0	143.0	3	Ericsson	AIR 6419 B77G	6 2	0.92 DC 0.5 Fiber
	141.0	3	Ericsson	4415 B30		
		3	Ericsson	4478 B14		
		3	Sitepro1	VFA12-WLL-30120		
		3	Cci Antennas	OPA65R-BU8DA-K		
		3	Ericsson	2012 B29		
		3	Ericsson	4490 B5/B12		
		3	Ericsson	4890 B25/B66		
		3	Quintel Tech.	QD8616-7		
		2	Raycap	DC9-48-60-24-8C-EV		
		2	Valmont	LWRM Ring Mount		
		6	Valmont	MM01 Stand Off		
	139.0	3	Ericsson	AIR 6419 B77D		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
130.0	130.0	3	SitePro1	VFA12-HD	2	Hybrid
		2	Jma Wireless	MX06FRO660-03		
		3	Jma Wireless	MX16FRO645-xx		
		1	Raycap	RVZDC-6627-PF-48		
		4	Samsung Telecomm.	MT6413-77A		
		4	Samsung Telecomm.	RF4439d 25A		
		4	Samsung Telecomm.	RF4461D-13A		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Tower Data	Manufacturer Drawing by Sabre, Job No. 539014	Date: 03/01/2024	TowerNorth
	Manufacturer Drawing by Sabre, Job No. 539014	Date: 04/22/2024	TowerNorth
Foundation Data	Foundation Drawing by Sabre, Job No. 539014	Date: 03/01/2024	TowerNorth
	Foundation Drawing by Sabre, Job No. 539014	Date: 04/22/2024	TowerNorth
Soil Properties	Geotech Report by AEG, Project File No. 24-01019	Date: 04/11/2024	TowerNorth
Existing Loading	Structural Analysis by MTS Engineering, Project Number: 172847.001.01.0002	Date: 10/20/2024	On File
Proposed Loading	CT0005-A-003-TowerNorth Application	Date: 10/16/2023	TowerNorth

3.1) Analysis Method

tnxTower (version 8.2.4.3), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	149 - 96.25	Pole	TP31.14x18.25x0.25	1	-13.915	1452.003	44.8	Pass
L2	96.25 - 47.25	Pole	TP42.62x29.54x0.375	2	-23.090	2981.338	39.4	Pass
L3	47.25 - 0	Pole	TP53.42x40.403x0.438	3	-39.105	4519.211	37.5	Pass
							Summary	
						Pole (L1)	44.8	Pass
						Rating =	44.8	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	36.1	Pass
1,2	Base Plate	Base	37.3	Pass
1,2,3	Base Foundation (Structure)	Base	22.1	Pass
1,2,3	Base Foundation (Soil Interaction)	Base	47.1	Pass

Structure Rating (max from all components) =	47.1%
---	--------------

Notes:

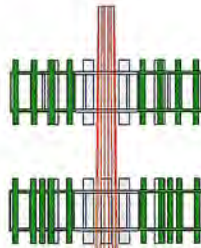
- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H Section 15.5.
- 3) It is unknown whether the foundation is a drilled shaft or pier and pad. Both designs were analyzed and determined to be sufficient.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

149.0 ft



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

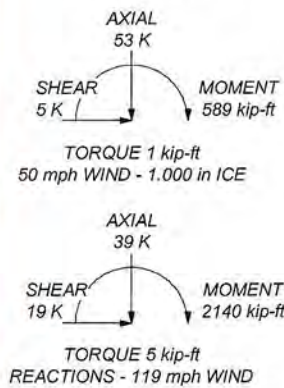
TOWER DESIGN NOTES

1. Tower is located in New Haven, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 44.8%

96.2 ft

47.2 ft

0.0 ft

ALL REACTIONS
ARE FACTORED

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	52.750	18	0.250	4.500	18.250	31.140		3.5
2	53.500	18	0.375	6.000	29.540	42.620	A572-65	7.7
3	53.250	18	0.438	40.403	53.420			11.7
								22.9

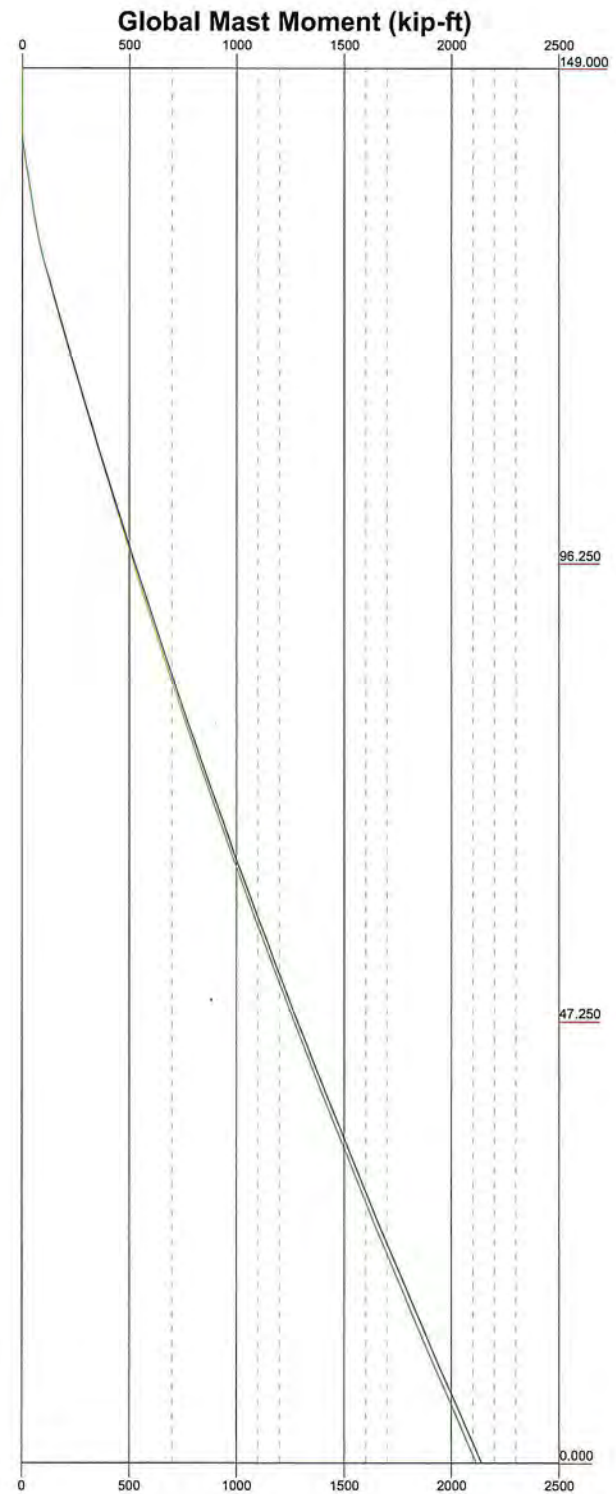
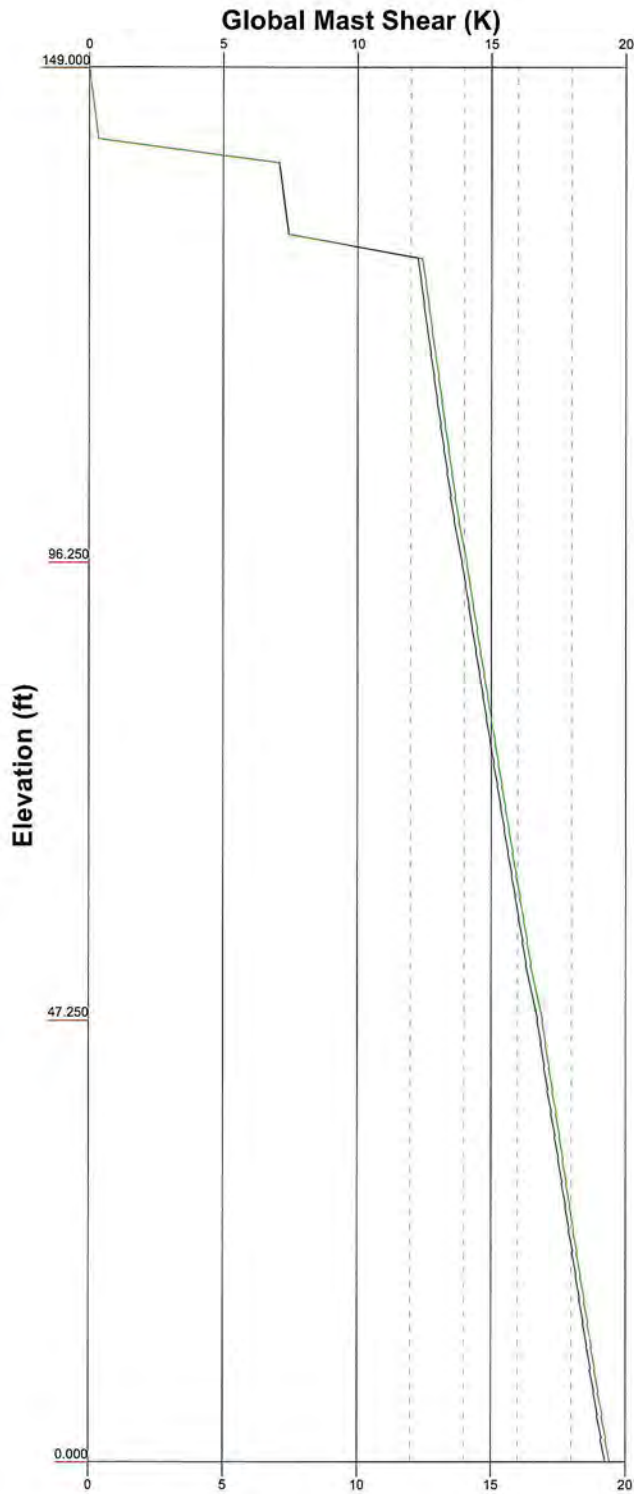
 MTS Engineering P.L.L.C. 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265		Job: 172847.001.01.0003 - Meriden Fire Dept, CT (Site# CT0005-4)			
Project: TowerNorth Development Client: ANANDRAY SHET Code: TIA-222-H Path:		Drawn by: ANANDRAY SHET Date: 01/08/25 Scale: NTS Dwg No: E-1		App'd:	

Vx

Vz

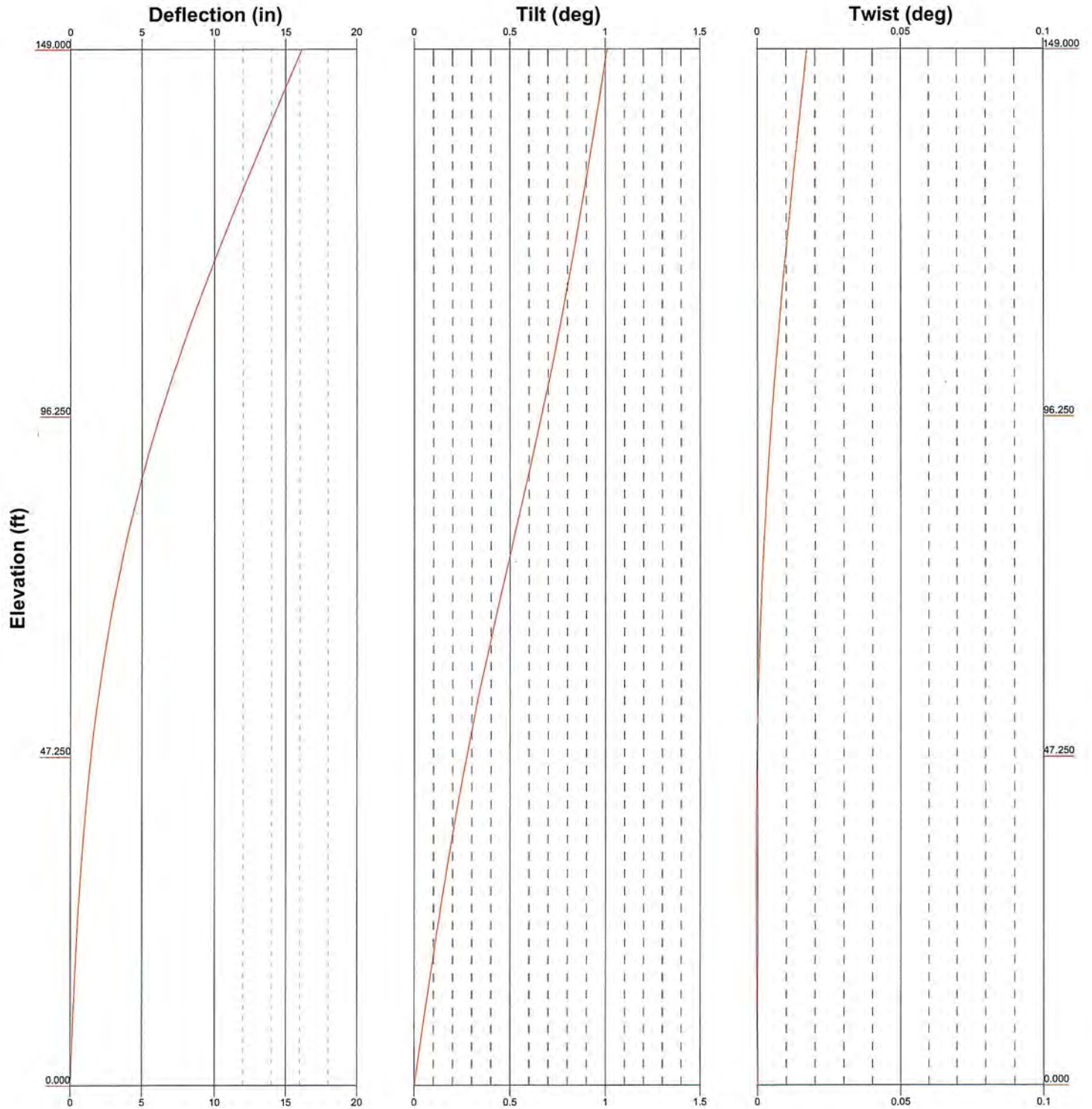
Mx

Mz



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 Client: TowerNorth Development
 Code: TIA-222-H
 Path:
 Drawn by: ANANDRAY SHET
 Date: 01/08/25
 App'd:
 Scale: NTS
 Dwg No. E-4

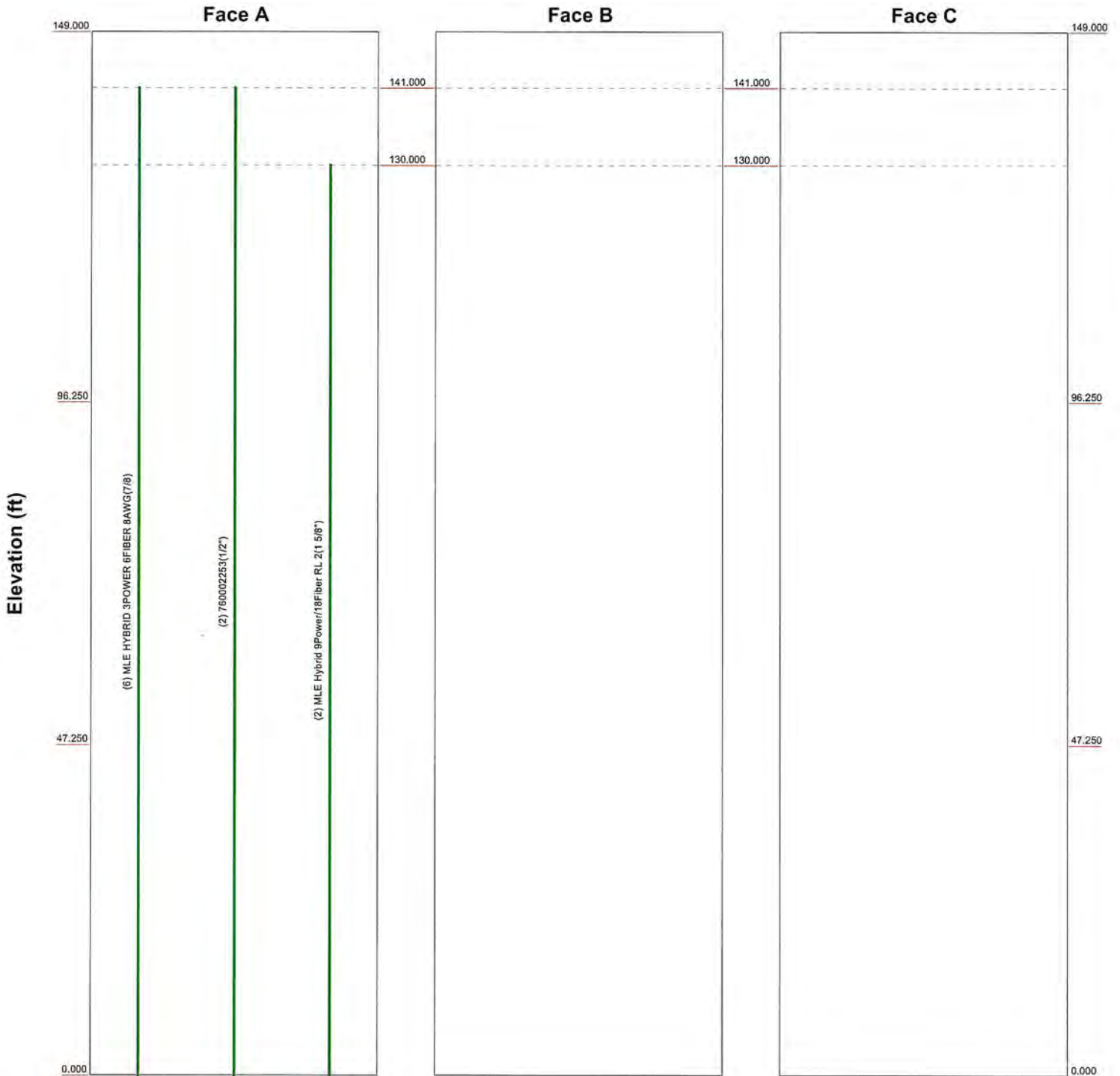


 B+T GRP	MTS Engineering P.L.L.C. 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265			Job: 172847.001.01.0003 - Meriden Fire Dept, CT (Site# CT0005-)		
	Project:			Client: TowerNorth Development		
	Code: TIA-222-H			Drawn by: ANANDRAY SHET		App'd:
	Path:			Date: 01/08/25		Scale: NTS
						Dwg No: E-5

Feed Line Distribution Chart

0' - 149'

Round Flat App In Face App Out Face Truss Leg



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	Project: TowerNorth Development		
	Client: TIA-222-H	Drawn by: ANANDRAY SHET	App'd:
	Code: TIA-222-H	Date: 01/08/25	Scale: NTS
	Path:	Dwg No. E-7	

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	Client TowerNorth Development	Designed by ANANDRAY SHET

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- Tower is located in Henry County, Georgia.
- Tower base elevation above sea level: 281.000 ft.
- Basic wind speed of 119 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.000 ft.
- Nominal ice thickness of 1.000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.000 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50.000 °F.
- Deflections calculated using a wind speed of 60 mph.
- TIA-222-H Annex S.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric Distribute Leg Loads As Uniform | <ul style="list-style-type: none"> Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurtenances Alternative Appurt. EPA Calculation Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs Use ASCE 10 X-Brace Ly Rules | <ul style="list-style-type: none"> Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption Poles ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets ✓ Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|---|---|---|

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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	149.000-96.250	52.750	4.500	18	18.250	31.140	0.250	1.000	A572-65 (65 ksi)
L2	96.250-47.250	53.500	6.000	18	29.540	42.620	0.375	1.500	A572-65 (65 ksi)
L3	47.250-0.000	53.250		18	40.403	53.420	0.438	1.750	A572-65 (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	18.493	14.283	584.658	6.390	9.271	63.063	1170.085	7.143	2.772	11.088
	31.582	24.511	2954.868	10.966	15.819	186.791	5913.624	12.258	5.041	20.163
L2	31.055	34.714	3730.599	10.354	15.007	248.599	7466.106	17.360	4.539	12.104
	43.220	50.282	11337.090	14.997	21.651	523.630	22689.097	25.146	6.841	18.243
L3	42.448	55.497	11199.079	14.188	20.525	545.637	22412.894	27.754	6.341	14.494
	54.177	73.573	26092.745	18.809	27.137	961.506	52219.824	36.793	8.632	19.73

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 149.000-96.250				1	1	1			
L2 96.250-47.250				1	1	1			
L3 47.250-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
*											

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _{AA}	Weight klf
MLE HYBRID	A	No	No	Inside Pole	141.000 - 0.000	6	No Ice 0.000	0.001

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		$C_A A_A$ ft ² /ft	Weight klf
3POWER 6FIBER 8AWG(7/8) 760002253(1/2")	A	No	No	Inside Pole	141.000 - 0.000	2	1/2" Ice 1" Ice No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000 0.000 0.000	0.001 0.001 0.000 0.000 0.000
* MLE Hybrid 9Power/18Fiber RL 2(1 5/8") *	A	No	No	Inside Pole	130.000 - 0.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L1	149.000-96.250	A	0.000	0.000	0.000	0.000	0.253
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L2	96.250-47.250	A	0.000	0.000	0.000	0.000	0.303
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L3	47.250-0.000	A	0.000	0.000	0.000	0.000	0.292
		B	0.000	0.000	0.000	0.000	0.000
		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	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L1	149.000-96.250	A	0.968	0.000	0.000	0.000	0.000	0.253
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L2	96.250-47.250	A	0.918	0.000	0.000	0.000	0.000	0.303
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L3	47.250-0.000	A	0.820	0.000	0.000	0.000	0.000	0.292
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	149.000-96.250	0.000	0.000	0.000	0.000

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Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L2	96.250-47.250	0.000	0.000	0.000	0.000
L3	47.250-0.000	0.000	0.000	0.000	0.000

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front	C _{AA} Side	Weight K
							ft ²	ft ²	
QD8616-7_TIA w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	19.052 19.793 20.543	11.738 13.269 14.825	0.183 0.316 0.460
QD8616-7_TIA w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	19.052 19.793 20.543	11.738 13.269 14.825	0.183 0.316 0.460
QD8616-7_TIA w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	19.052 19.793 20.543	11.738 13.269 14.825	0.183 0.316 0.460
AIR 6419 B77G_TIA w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	3.870 4.178 4.497	2.324 2.720 3.132	0.078 0.113 0.152
AIR 6419 B77G_TIA w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	3.870 4.178 4.497	2.324 2.720 3.132	0.078 0.113 0.152
AIR 6419 B77G_TIA w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	3.870 4.178 4.497	2.324 2.720 3.132	0.078 0.113 0.152
AIR 6419 B77D_TIA w/ Mount Pipe	A	From Leg	4.000 0.000 -2.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	3.985 4.297 4.619	2.479 2.880 3.298	0.078 0.114 0.155
AIR 6419 B77D_TIA w/ Mount Pipe	B	From Leg	4.000 0.000 -2.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	3.985 4.297 4.619	2.479 2.880 3.298	0.078 0.114 0.155
AIR 6419 B77D_TIA w/ Mount Pipe	C	From Leg	4.000 0.000 -2.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	3.985 4.297 4.619	2.479 2.880 3.298	0.078 0.114 0.155
OPA65R-BU8DA-K_TIA w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	18.109 18.843 19.586	10.260 11.781 13.327	0.111 0.233 0.364
OPA65R-BU8DA-K_TIA w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	18.109 18.843 19.586	10.260 11.781 13.327	0.111 0.233 0.364
OPA65R-BU8DA-K_TIA w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	18.109 18.843 19.586	10.260 11.781 13.327	0.111 0.233 0.364
4478 B14	A	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	2.021 2.200 2.386	1.246 1.396 1.554	0.059 0.077 0.097
4478 B14	B	From Leg	4.000 0.000	0.000	141.000	No Ice 1/2" Ice	2.021 2.200	1.246 1.396	0.059 0.077

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
4478 B14	C	From Leg	0.000 4.000 0.000 0.000	0.000	141.000	1" Ice 2.386 No Ice 2.021 1/2" Ice 2.200 1" Ice 2.386	1.554 1.246 1.396 1.554	0.097 0.059 0.077 0.097
2012 B29	A	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1.856 1/2" Ice 2.027 1" Ice 2.204	0.695 0.814 0.939	0.043 0.056 0.072
2012 B29	B	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1.856 1/2" Ice 2.027 1" Ice 2.204	0.695 0.814 0.939	0.043 0.056 0.072
2012 B29	C	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1.856 1/2" Ice 2.027 1" Ice 2.204	0.695 0.814 0.939	0.043 0.056 0.072
4490 B5/B12	A	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.202 1/2" Ice 2.387 1" Ice 2.580	0.853 0.978 1.111	0.021 0.038 0.058
4490 B5/B12	B	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.202 1/2" Ice 2.387 1" Ice 2.580	0.853 0.978 1.111	0.021 0.038 0.058
4490 B5/B12	C	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.202 1/2" Ice 2.387 1" Ice 2.580	0.853 0.978 1.111	0.021 0.038 0.058
4890 B25/B66	A	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.695 1/2" Ice 2.901 1" Ice 3.113	1.221 1.372 1.531	0.067 0.087 0.111
4890 B25/B66	B	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.695 1/2" Ice 2.901 1" Ice 3.113	1.221 1.372 1.531	0.067 0.087 0.111
4890 B25/B66	C	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.695 1/2" Ice 2.901 1" Ice 3.113	1.221 1.372 1.531	0.067 0.087 0.111
4415 B30	A	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1.643 1/2" Ice 1.803 1" Ice 1.971	0.639 0.750 0.867	0.043 0.055 0.069
4415 B30	B	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1.643 1/2" Ice 1.803 1" Ice 1.971	0.639 0.750 0.867	0.043 0.055 0.069
4415 B30	C	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 1.643 1/2" Ice 1.803 1" Ice 1.971	0.639 0.750 0.867	0.043 0.055 0.069
DC9-48-60-24-8C-EV	A	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.737 1/2" Ice 2.963 1" Ice 3.196	4.785 5.065 5.352	0.026 0.063 0.104
DC9-48-60-24-8C-EV	B	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.737 1/2" Ice 2.963 1" Ice 3.196	4.785 5.065 5.352	0.026 0.063 0.104
(2) 10' x 2.875" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.875 1/2" Ice 3.907 1" Ice 4.956	2.875 3.907 4.956	0.058 0.079 0.107
(2) 10' x 2.875" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.875 1/2" Ice 3.907 1" Ice 4.956	2.875 3.907 4.956	0.058 0.079 0.107
(2) 10' x 2.875" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	141.000	No Ice 2.875 1/2" Ice 3.907 1" Ice 4.956	2.875 3.907 4.956	0.058 0.079 0.107
VFA12-WLL-30120	A	From Leg	2.000 0.000	0.000	141.000	No Ice 13.200 1/2" Ice 19.500	9.200 14.600	0.658 0.804

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
VFA12-WLL-30120	B	From Leg	0.000 2.000 0.000 0.000	0.000	141.000	1" Ice No Ice 1/2" Ice 1" Ice	25.800 13.200 19.500 25.800	19.500 9.200 14.600 19.500	1.015 0.658 0.804 1.015
VFA12-WLL-30120	C	From Leg	2.000 0.000 0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	13.200 19.500 25.800	9.200 14.600 19.500	0.658 0.804 1.015
(2) Side Arm Mount [SO 102-3]	C	None	0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	3.600 4.180 4.750	3.600 4.180 4.750	0.075 0.105 0.135
Side Arm Mount [SO 901-3]	C	None	0.000	0.000	141.000	No Ice 1/2" Ice 1" Ice	1.140 1.490 1.910	1.140 1.490 1.910	0.316 0.339 0.369
*									
(2) MX16FRO645-xx w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	14.795 15.415 16.001	11.157 12.354 13.265	0.086 0.208 0.340
MX16FRO645-xx w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	14.795 15.415 16.001	11.157 12.354 13.265	0.086 0.208 0.340
(2) MT6413-77A w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	3.996 4.310 4.634	2.155 2.555 2.971	0.070 0.103 0.141
MT6413-77A w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	3.996 4.310 4.634	2.155 2.555 2.971	0.070 0.103 0.141
MT6413-77A w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	3.996 4.310 4.634	2.155 2.555 2.971	0.070 0.103 0.141
MX06FRO660-03_T1A w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	10.109 10.683 11.221	8.987 10.154 11.030	0.103 0.191 0.286
MX06FRO660-03_T1A	C	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	9.872 10.342 10.819	7.338 7.784 8.237	0.078 0.147 0.222
(2) RF4439d 25A	A	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	2.326 2.517 2.715	1.561 1.724 1.895	0.075 0.096 0.121
RF4439d 25A	B	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	2.326 2.517 2.715	1.561 1.724 1.895	0.075 0.096 0.121
RF4439d 25A	C	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	2.326 2.517 2.715	1.561 1.724 1.895	0.075 0.096 0.121
(2) RF4461D-13A	A	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	1.865 2.035 2.212	1.275 1.419 1.570	0.079 0.098 0.119
RF4461D-13A	B	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	1.865 2.035 2.212	1.275 1.419 1.570	0.079 0.098 0.119
RF4461D-13A	C	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	1.865 2.035 2.212	1.275 1.419 1.570	0.079 0.098 0.119
RVZDC-6627-PF-48	B	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	3.792 4.044 4.303	2.514 2.727 2.947	0.032 0.063 0.099
(2) 5'x2 1/2" Pipe Mount	A	From Leg	4.000	0.000	130.000	No Ice	1.328	1.328	0.029

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
5'x2 1/2" Pipe Mount	B	From Leg	0.000	0.000	130.000	1/2" Ice	1.632	1.632	0.040
			0.000			1" Ice	1.946	1.946	0.054
			4.000			No Ice	1.328	1.328	0.029
			0.000			1/2" Ice	1.632	1.632	0.040
5'x2 1/2" Pipe Mount	C	From Leg	0.000	0.000	130.000	1" Ice	1.946	1.946	0.054
			4.000			No Ice	1.328	1.328	0.029
			0.000			1/2" Ice	1.632	1.632	0.040
			0.000			1" Ice	1.946	1.946	0.054
(2) 8' x 2.875" Mount Pipe	B	From Leg	4.000	0.000	130.000	No Ice	2.300	2.300	0.041
			0.000			1/2" Ice	3.132	3.132	0.057
			0.000			1" Ice	3.620	3.620	0.080
			4.000			No Ice	2.300	2.300	0.041
(2) 8' x 2.875" Mount Pipe	C	From Leg	0.000	0.000	130.000	1/2" Ice	3.132	3.132	0.057
			0.000			1" Ice	3.620	3.620	0.080
			4.000			No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
(2) 6' x 2" Mount Pipe	A	From Leg	0.000	0.000	130.000	1" Ice	2.294	2.294	0.048
			2.000			No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
(2) 6' x 2" Mount Pipe	C	From Leg	2.000	0.000	130.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
			2.000			No Ice	1.425	1.425	0.022
VFA12-HD	A	From Leg	0.000	0.000	130.000	1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
			2.000			No Ice	13.200	9.200	0.658
			0.000			1/2" Ice	19.500	14.600	0.804
VFA12-HD	B	From Leg	0.000	0.000	130.000	1" Ice	25.800	19.500	1.015
			2.000			No Ice	13.200	9.200	0.658
			0.000			1/2" Ice	19.500	14.600	0.804
			0.000			1" Ice	25.800	19.500	1.015
VFA12-HD	C	From Leg	2.000	0.000	130.000	No Ice	13.200	9.200	0.658
			0.000			1/2" Ice	19.500	14.600	0.804
			0.000			1" Ice	25.800	19.500	1.015
			2.000			No Ice	13.200	9.200	0.658
Pipe Mount [PM 601-3]	C	None	0.000	0.000	130.000	1/2" Ice	19.500	14.600	0.804
			0.000			1" Ice	25.800	19.500	1.015
			0.000			No Ice	3.170	3.170	0.195
			0.000			1/2" Ice	3.790	3.790	0.232
						1" Ice	4.420	4.420	0.279
*									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	149 - 96.25	Pole	Max Tension	2	0.000	0.000	-0.000
			Max. Compression	26	-23.527	-0.112	3.023
			Max. Mx	20	-13.931	458.244	1.335
			Max. My	2	-13.915	0.208	463.792
			Max. Vy	20	-13.625	458.244	1.335
			Max. Vx	2	-13.789	0.208	463.792
			Max. Torque	13			5.317
L2	96.25 - 47.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	+34.546	-0.115	3.086
			Max. Mx	20	-23.098	1169.414	1.330
			Max. My	2	-23.090	0.209	1182.717
			Max. Vy	20	-16.332	1169.414	1.330
			Max. Vx	2	-16.494	0.209	1182.717

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L3	47.25 - 0	Pole	Max. Torque	13			5.307
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-53.049	-0.115	3.086
			Max. Mx	20	-39.106	2117.845	1.343
			Max. My	2	-39.105	0.211	2139.642
			Max. Vy	20	-19.257	2117.845	1.343
			Max. Vx	2	-19.413	0.211	2139.642
			Max. Torque	13			5.298

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	53.049	0.000	5.429
	Max. H _x	20	39.115	19.237	-0.000
	Max. H _z	2	39.115	-0.000	19.393
	Max. M _x	2	2139.642	-0.000	19.393
	Max. M _z	8	2117.429	-19.237	-0.000
	Max. Torsion	13	5.296	-9.672	-16.753
	Min. Vert	11	29.337	-16.685	-9.633
	Min. H _x	8	39.115	-19.237	-0.000
	Min. H _z	14	39.115	-0.000	-19.393
	Min. M _x	14	-2137.002	-0.000	-19.393
	Min. M _z	20	-2117.845	19.237	-0.000
	Min. Torsion	25	-5.295	9.672	16.753

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _y K	Shear _x K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	32.596	0.000	0.000	-1.045	0.165	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	39.115	0.000	-19.393	-2139.642	0.211	0.264
0.9 Dead+1.0 Wind 0 deg - No Ice	29.337	0.000	-19.393	-2118.372	0.155	0.260
1.2 Dead+1.0 Wind 30 deg - No Ice	39.115	9.682	-16.769	-1850.033	-1067.186	-4.835
0.9 Dead+1.0 Wind 30 deg - No Ice	29.337	9.682	-16.769	-1831.593	-1056.786	-4.844
1.2 Dead+1.0 Wind 60 deg - No Ice	39.115	16.702	-9.643	-1063.508	-1839.568	-1.480
0.9 Dead+1.0 Wind 60 deg - No Ice	29.337	16.702	-9.643	-1052.764	-1821.617	-1.491
1.2 Dead+1.0 Wind 90 deg - No Ice	39.115	19.237	0.000	-1.343	-2117.429	2.273
0.9 Dead+1.0 Wind 90 deg - No Ice	29.337	19.237	0.000	-0.987	-2096.771	2.263
1.2 Dead+1.0 Wind 120 deg - No Ice	39.115	16.685	9.633	1059.312	-1836.843	-1.744
0.9 Dead+1.0 Wind 120 deg - No Ice	29.337	16.685	9.633	1049.284	-1818.927	-1.751

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Load Combination	Vertical K	Shear _x K	Shear _y K	Overturning Moment, M _x kip-ft	Overturning Moment, M _y kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 150 deg - No Ice	39.115	9.672	16.753	1844.712	-1065.554	-5.293
0.9 Dead+1.0 Wind 150 deg - No Ice	29.337	9.672	16.753	1826.995	-1055.190	-5.296
1.2 Dead+1.0 Wind 180 deg - No Ice	39.115	0.000	19.393	2137.002	0.211	-0.264
0.9 Dead+1.0 Wind 180 deg - No Ice	29.337	0.000	19.393	2116.432	0.155	-0.260
1.2 Dead+1.0 Wind 210 deg - No Ice	39.115	-9.682	16.769	1847.427	1067.543	4.835
0.9 Dead+1.0 Wind 210 deg - No Ice	29.337	-9.682	16.769	1829.678	1057.049	4.845
1.2 Dead+1.0 Wind 240 deg - No Ice	39.115	-16.702	9.643	1060.879	1839.978	1.480
0.9 Dead+1.0 Wind 240 deg - No Ice	29.337	-16.702	9.643	1050.832	1821.918	1.491
1.2 Dead+1.0 Wind 270 deg - No Ice	39.115	-19.237	0.000	-1.343	2117.845	-2.272
0.9 Dead+1.0 Wind 270 deg - No Ice	29.337	-19.237	0.000	-0.987	2097.077	-2.263
1.2 Dead+1.0 Wind 300 deg - No Ice	39.115	-16.685	-9.633	-1061.937	1837.268	1.744
0.9 Dead+1.0 Wind 300 deg - No Ice	29.337	-16.685	-9.633	-1051.212	1819.239	1.751
1.2 Dead+1.0 Wind 330 deg - No Ice	39.115	-9.672	-16.753	-1847.313	1066.038	5.292
0.9 Dead+1.0 Wind 330 deg - No Ice	29.337	-9.672	-16.753	-1828.906	1055.545	5.295
1.2 Dead+1.0 Ice+1.0 Temp	53.049	0.000	-0.000	-3.086	-0.115	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	53.049	0.000	-5.429	-589.250	-0.119	0.054
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	53.049	2.713	-4.699	-510.354	-292.929	-0.824
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	53.049	4.689	-2.707	-295.266	-505.996	-0.266
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	53.049	5.407	-0.000	-3.199	-583.214	0.363
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	53.049	4.686	2.705	288.569	-505.473	-0.319
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	53.049	2.711	4.696	503.439	-292.622	-0.916
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	53.049	0.000	5.429	582.855	-0.119	-0.053
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	53.049	-2.713	4.699	503.962	292.687	0.824
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	53.049	-4.689	2.707	288.872	505.759	0.266
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	53.049	-5.407	-0.000	-3.199	582.977	-0.363
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	53.049	-4.686	-2.705	-294.963	505.236	0.320
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	53.049	-2.711	-4.696	-509.830	292.389	0.916
Dead+Wind 0 deg - Service	32.596	0.000	-4.643	-510.072	0.172	0.063
Dead+Wind 30 deg - Service	32.596	2.318	-4.015	-441.137	-253.889	-1.167
Dead+Wind 60 deg - Service	32.596	3.999	-2.309	-253.920	-437.739	-0.358
Dead+Wind 90 deg - Service	32.596	4.606	0.000	-1.094	-503.877	0.546
Dead+Wind 120 deg - Service	32.596	3.995	2.307	251.362	-437.091	-0.421
Dead+Wind 150 deg - Service	32.596	2.316	4.011	438.306	-253.513	-1.276
Dead+Wind 180 deg - Service	32.596	0.000	4.643	507.887	0.172	-0.063
Dead+Wind 210 deg - Service	32.596	-2.318	4.015	438.953	254.231	1.167

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Load Combination	Vertical K	Shear _x K	Shear _y K	Overturning Moment, M _x kip-ft	Overturning Moment, M _y kip-ft	Torque kip-ft
Dead+Wind 240 deg - Service	32.596	-3.999	2.309	251.735	438.083	0.358
Dead+Wind 270 deg - Service	32.596	-4.606	0.000	-1.094	504.222	-0.546
Dead+Wind 300 deg - Service	32.596	-3.995	-2.307	-253.546	437.436	0.421
Dead+Wind 330 deg - Service	32.596	-2.316	-4.011	-440.490	253.860	1.276

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-32.596	0.000	0.000	32.596	0.000	0.000%
2	0.000	-39.115	-19.393	-0.000	39.115	19.393	0.000%
3	0.000	-29.337	-19.393	-0.000	29.337	19.393	0.000%
4	9.682	-39.115	-16.769	-9.682	39.115	16.769	0.000%
5	9.682	-29.337	-16.769	-9.682	29.337	16.769	0.000%
6	16.702	-39.115	-9.643	-16.702	39.115	9.643	0.000%
7	16.702	-29.337	-9.643	-16.702	29.337	9.643	0.000%
8	19.237	-39.115	0.000	-19.237	39.115	-0.000	0.000%
9	19.237	-29.337	0.000	-19.237	29.337	-0.000	0.000%
10	16.685	-39.115	9.633	-16.685	39.115	-9.633	0.000%
11	16.685	-29.337	9.633	-16.685	29.337	-9.633	0.000%
12	9.672	-39.115	16.753	-9.672	39.115	-16.753	0.000%
13	9.672	-29.337	16.753	-9.672	29.337	-16.753	0.000%
14	0.000	-39.115	19.393	-0.000	39.115	-19.393	0.000%
15	0.000	-29.337	19.393	-0.000	29.337	-19.393	0.000%
16	-9.682	-39.115	16.769	9.682	39.115	-16.769	0.000%
17	-9.682	-29.337	16.769	9.682	29.337	-16.769	0.000%
18	-16.702	-39.115	9.643	16.702	39.115	-9.643	0.000%
19	-16.702	-29.337	9.643	16.702	29.337	-9.643	0.000%
20	-19.237	-39.115	0.000	19.237	39.115	-0.000	0.000%
21	-19.237	-29.337	0.000	19.237	29.337	-0.000	0.000%
22	-16.685	-39.115	-9.633	16.685	39.115	9.633	0.000%
23	-16.685	-29.337	-9.633	16.685	29.337	9.633	0.000%
24	-9.672	-39.115	-16.753	9.672	39.115	16.753	0.000%
25	-9.672	-29.337	-16.753	9.672	29.337	16.753	0.000%
26	0.000	-53.049	0.000	-0.000	53.049	0.000	0.000%
27	0.000	-53.049	-5.429	0.000	53.049	5.429	0.000%
28	2.713	-53.049	-4.699	-2.713	53.049	4.699	0.000%
29	4.689	-53.049	-2.707	-4.689	53.049	2.707	0.000%
30	5.407	-53.049	0.000	-5.407	53.049	0.000	0.000%
31	4.686	-53.049	2.705	-4.686	53.049	-2.705	0.000%
32	2.711	-53.049	4.696	-2.711	53.049	-4.696	0.000%
33	0.000	-53.049	5.429	0.000	53.049	-5.429	0.000%
34	-2.713	-53.049	4.699	2.713	53.049	-4.699	0.000%
35	-4.689	-53.049	2.707	4.689	53.049	-2.707	0.000%
36	-5.407	-53.049	0.000	5.407	53.049	0.000	0.000%
37	-4.686	-53.049	-2.705	4.686	53.049	2.705	0.000%
38	-2.711	-53.049	-4.696	2.711	53.049	4.696	0.000%
39	0.000	-32.596	-4.643	0.000	32.596	4.643	0.000%
40	2.318	-32.596	-4.015	-2.318	32.596	4.015	0.000%
41	3.999	-32.596	-2.309	-3.999	32.596	2.309	0.000%
42	4.606	-32.596	0.000	-4.606	32.596	0.000	0.000%
43	3.995	-32.596	2.307	-3.995	32.596	-2.307	0.000%
44	2.316	-32.596	4.011	-2.316	32.596	-4.011	0.000%
45	0.000	-32.596	4.643	0.000	32.596	-4.643	0.000%
46	-2.318	-32.596	4.015	2.318	32.596	-4.015	0.000%
47	-3.999	-32.596	2.309	3.999	32.596	-2.309	0.000%
48	-4.606	-32.596	0.000	4.606	32.596	0.000	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
49	-3.995	-32.596	-2.307	3.995	32.596	2.307	0.000%
50	-2.316	-32.596	-4.011	2.316	32.596	4.011	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00020467
3	Yes	4	0.00000001	0.00008467
4	Yes	5	0.00000001	0.00019430
5	Yes	5	0.00000001	0.00009191
6	Yes	5	0.00000001	0.00023030
7	Yes	5	0.00000001	0.00011002
8	Yes	4	0.00000001	0.00074043
9	Yes	4	0.00000001	0.00048882
10	Yes	5	0.00000001	0.00020300
11	Yes	5	0.00000001	0.00009639
12	Yes	5	0.00000001	0.00027261
13	Yes	5	0.00000001	0.00013177
14	Yes	4	0.00000001	0.00020403
15	Yes	4	0.00000001	0.00008456
16	Yes	5	0.00000001	0.00026793
17	Yes	5	0.00000001	0.00012929
18	Yes	5	0.00000001	0.00020600
19	Yes	5	0.00000001	0.00009778
20	Yes	4	0.00000001	0.00074064
21	Yes	4	0.00000001	0.00048890
22	Yes	5	0.00000001	0.00023214
23	Yes	5	0.00000001	0.00011099
24	Yes	5	0.00000001	0.00019278
25	Yes	5	0.00000001	0.00009129
26	Yes	4	0.00000001	0.00001313
27	Yes	5	0.00000001	0.00008989
28	Yes	5	0.00000001	0.00010050
29	Yes	5	0.00000001	0.00010057
30	Yes	5	0.00000001	0.00008843
31	Yes	5	0.00000001	0.00009765
32	Yes	5	0.00000001	0.00009985
33	Yes	5	0.00000001	0.00008744
34	Yes	5	0.00000001	0.00009964
35	Yes	5	0.00000001	0.00009774
36	Yes	5	0.00000001	0.00008832
37	Yes	5	0.00000001	0.00010039
38	Yes	5	0.00000001	0.00010031
39	Yes	4	0.00000001	0.00001397
40	Yes	4	0.00000001	0.00008448
41	Yes	4	0.00000001	0.00008365
42	Yes	4	0.00000001	0.00004443
43	Yes	4	0.00000001	0.00005867
44	Yes	4	0.00000001	0.00014206
45	Yes	4	0.00000001	0.00001380
46	Yes	4	0.00000001	0.00013440
47	Yes	4	0.00000001	0.00005927
48	Yes	4	0.00000001	0.00004450
49	Yes	4	0.00000001	0.00008722

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50 Yes 4 0.00000001 0.00009132

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 96.25	16.128	39	1.010	0.016
L2	100.75 - 47.25	6.892	39	0.700	0.005
L3	53.25 - 0	1.789	39	0.317	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
141.000	QD8616-7_TIA w/ Mount Pipe	39	14.458	0.963	0.014	32678
130.000	(2) MX16FRO645-xx w/ Mount Pipe	39	12.205	0.897	0.011	13759

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 96.25	67.595	2	4.228	0.067
L2	100.75 - 47.25	28.923	2	2.938	0.020
L3	53.25 - 0	7.509	2	1.331	0.006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
141.000	QD8616-7_TIA w/ Mount Pipe	2	60.605	4.033	0.058	7895
130.000	(2) MX16FRO645-xx w/ Mount Pipe	2	51.174	3.759	0.046	3323

Compression Checks

Pole Design Data

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	149 - 96.25 (1)	TP31.14x18.25x0.25	52.750	0.000	0.0	23.639	-13.915	1382.860	0.010
L2	96.25 - 47.25 (2)	TP42.62x29.54x0.375	53.500	0.000	0.0	48.536	-23.090	2839.370	0.008
L3	47.25 - 0 (3)	TP53.42x40.403x0.438	53.250	0.000	0.0	73.573	-39.105	4304.010	0.009

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M _{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	149 - 96.25 (1)	TP31.14x18.25x0.25	463.792	1010.300	0.459	0.000	1010.300	0.000
L2	96.25 - 47.25 (2)	TP42.62x29.54x0.375	1182.717	2916.150	0.406	0.000	2916.150	0.000
L3	47.25 - 0 (3)	TP53.42x40.403x0.438	2139.642	5564.200	0.385	0.000	5564.200	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V _u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T _u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	149 - 96.25 (1)	TP31.14x18.25x0.25	13.789	406.217	0.034	0.265	1082.325	0.000
L2	96.25 - 47.25 (2)	TP42.62x29.54x0.375	16.494	839.610	0.020	0.264	3041.933	0.000
L3	47.25 - 0 (3)	TP53.42x40.403x0.438	19.413	1291.200	0.015	0.264	5991.108	0.000

Pole Interaction Design Data

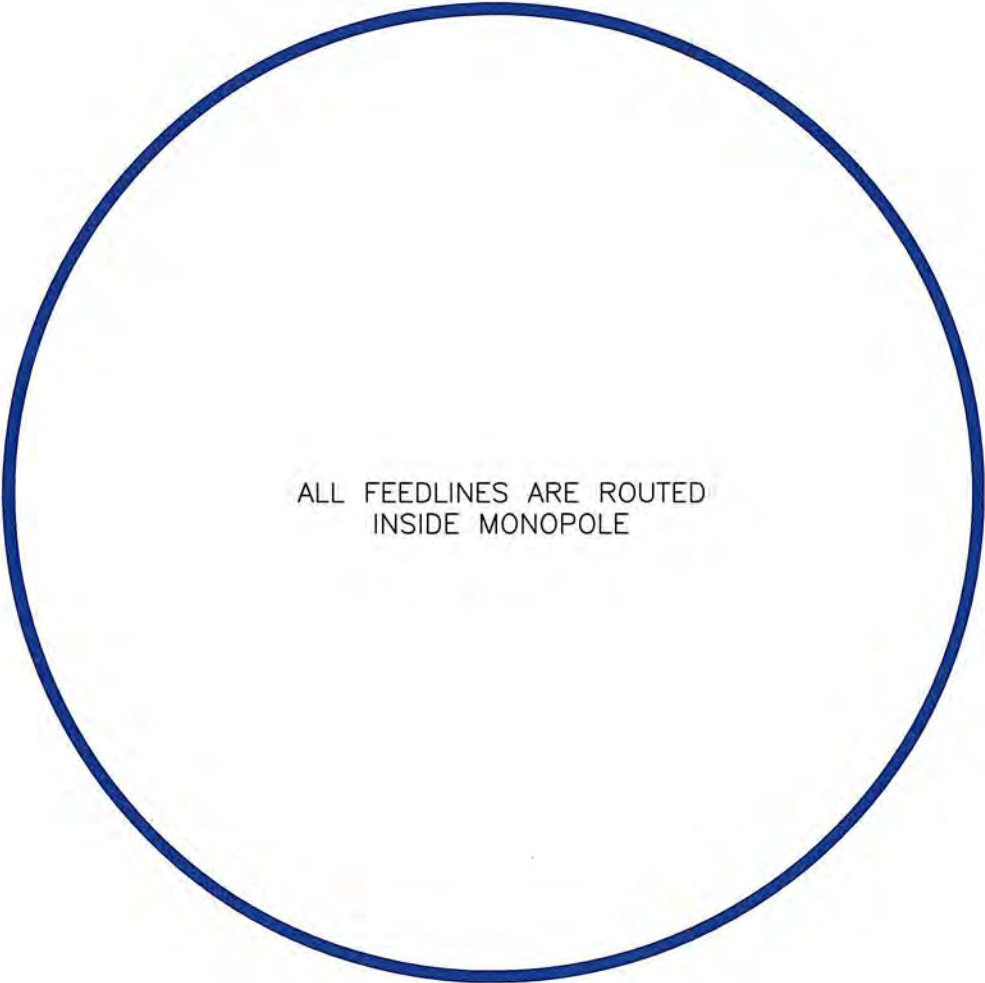
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	149 - 96.25 (1)	0.010	0.459	0.000	0.034	0.000	0.470	1.050	
L2	96.25 - 47.25 (2)	0.008	0.406	0.000	0.020	0.000	0.414	1.050	
L3	47.25 - 0 (3)	0.009	0.385	0.000	0.015	0.000	0.394	1.050	

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Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	149 - 96.25	Pole	TP31.14x18.25x0.25	1	-13.915	1452.003	44.8	Pass
L2	96.25 - 47.25	Pole	TP42.62x29.54x0.375	2	-23.090	2981.338	39.4	Pass
L3	47.25 - 0	Pole	TP53.42x40.403x0.438	3	-39.105	4519.211	37.5	Pass
							Summary	
							Pole (L1)	44.8 Pass
							RATING =	44.8 Pass

APPENDIX B
BASE LEVEL DRAWING



ALL FEEDLINES ARE ROUTED
INSIDE MONOPOLE

PROJECT NUMBER: 172847.001.01.0003

APPENDIX C
ADDITIONAL CALCULATIONS

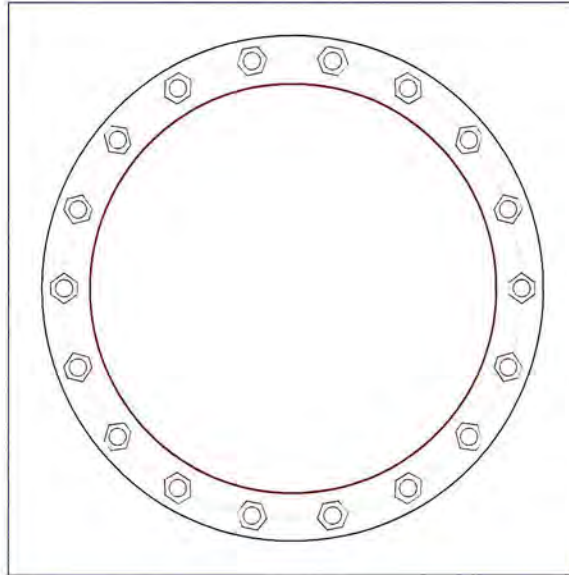
Monopole Base Plate Connection

Site Info		
Project #	172847.001.01.0003	
Site Name	Meriden Fire Dept, CT	
County:	New Haven	

Analysis Considerations		
TIA-222 Revision	H	
Grout Considered:	No	
l_{ar} (in)	0	

Applied Loads		
Moment (kip-ft)	2139.64	
Axial Force (kips)	39.11	
Shear Force (kips)	19.41	

*TIA-222-H Section 15.5 Applied



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(18) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 60.25" BC		$Pu_t = 92.47$	$\phi Pn_t = 243.75$ Stress Rating
Base Plate Data		$Vu = 1.08$	$\phi Vn = 149.1$ 36.1%
66" OD x 2.25" Plate (A572-50; $F_y=50$ ksi, $F_u=65$ ksi)		$Mu = n/a$	$\phi Mn = n/a$ Pass
Stiffener Data		Base Plate Summary	
N/A		Max Stress (ksi):	17.63 (Flexural)
Pole Data		Allowable Stress (ksi):	45
53.42" x 0.4375" 18-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)		Stress Rating:	37.3% Pass

Drilled Pier Foundation

Project#	2847.001.01.0003
Site Name:	Meriden Fire Dept. CT
County	New Haven
TIA-222 Revision:	H
Tower Type:	Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	2140	-
Axial Force (kips)	39	-
Shear Force (kips)	19	-

Material Properties	
Concrete Strength, f_c :	4.5 ksi
Rebar Strength, F_y :	60 ksi
Tie Yield Strength, F_{yt} :	60 ksi

Pier Design Data	
Depth	24 ft
Ext. Above Grade	0.5 ft
Pier Section 1	
From 0.5' above grade to 24' below grade	
Pier Diameter	8 ft
Rebar Quantity	44
Rebar Size	10
Clear Cover to Ties	3 in
Tie Size	5
Tie Spacing	7 in

Rebar & Pier Options
Embedded Pole Inputs
Belled Pier Inputs

Check Limitation	
Apply TIA-222-H Section 15.5:	N/A
Design Options	
Input Effective Depths (else Actual):	☐
Consider non-lapped moment capacity:	☐
Check Shear along Depth of Pier:	☒
Utilize Shear-Friction Methodology:	☐
Override Critical Depth:	☐
Go to Soil Calculations	

Analysis Results			
Soil Lateral Check		Compression	Uplift
D_{req} (ft from TOC)		6.33	-
Soil Safety Factor		2.69	-
Max Moment (kip-ft)		2277.07	-
Rating*		47.1%	-
Soil Vertical Check		Compression	Uplift
Skin Friction (kips)		99.90	-
End Bearing (kips)		263.89	-
Weight of Concrete (kips)		138.86	-
Total Capacity (kips)		363.80	-
Axial (kips)		177.86	-
Rating*		46.6%	-
Reinforced Concrete Flexure		Compression	Uplift
Critical Depth (ft from TOC)		6.24	-
Critical Moment (kip-ft)		2277.01	-
Critical Moment Capacity		10323.37	-
Rating*		21.0%	-
Reinforced Concrete Shear		Compression	Uplift
Critical Depth (ft from TOC)		17.92	-
Critical Shear (kip)		274.04	-
Critical Shear Capacity		1178.44	-
Rating*		22.1%	-
Structural Foundation Rating*		22.1%	-
Soil Interaction Rating*		47.1%	-
*Rating per TIA-222-H Section 15.5			

Soil Profile	
# of Layers	6

Groundwater Depth	2
-------------------	---

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	2	4	2	47.6	87.6	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	4	5	1	47.6	87.6	0	28	0.000	0.000	0.08	0.07			Cohesionless
4	5	10	5	47.6	87.6	0	35	0.000	0.000	0.17	0.14			Cohesionless
5	10	15	5	47.6	87.6	0	36	0.000	0.000	0.26	0.21			Cohesionless
6	15	24	9	47.6	87.6	0	38	0.000	0.000	0.34	0.27	7		Cohesionless

Pier and Pad Foundation

Project # : 172847.001.01.000
 Site Name: Meriden Fire Dept,
 County: New Haven

TIA-222 Revision: H
 Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	39	kips
Base Shear, V_u comp:	19	kips
Moment, M_u :	2140	ft-kips
Tower Height, H :	149	ft
BP Dist. Above Fdn, bp_{dist} :	3	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, $dpier$:	8	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	10	
Pier Rebar Quantity, mc :	44	
Pier Tie/Spiral Size, St :	5	
Pier Tie/Spiral Quantity, mt :	20	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	6	ft
Pad Width, W_1 :	30	ft
Pad Thickness, T :	2	ft
Pad Rebar Size (Bottom dir. 2), Sp_2 :	10	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	31	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60	ksi
Concrete Compressive Strength, F'_c :	4.5	ksi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	110	pcf
Ultimate Net Bearing, Q_{net} :	4.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	34	degrees
SPT Blow Count, N_{blows} :		
Base Friction, μ :		
Neglected Depth, N :	4.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	2	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	194.66	19.00	9.3%	Pass
Bearing Pressure (ksf)	3.31	1.00	28.8%	Pass
Overturning (kip*ft)	6196.68	2268.25	36.6%	Pass
Pier Flexure (Comp.) (kip*ft)	10244.60	2225.50	20.7%	Pass
Pier Compression (kip)	35992.10	72.19	0.2%	Pass
Pad Flexure (kip*ft)	3231.01	798.46	23.5%	Pass
Pad Shear - 1-way (kips)	691.70	114.33	15.7%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.201	0.040	19.0%	Pass
Flexural 2-way (Comp) (kip*ft)	2980.20	1335.30	42.7%	Pass

*Rating per TIA-222-H Section 15.5

Structural Rating*:	42.7%
Soil Rating*:	36.6%

←Toggle between Gross and Net

ASCE Hazards Report

Address:

No Address at This Location

Standard:

ASCE/SEI 7-16

Risk Category: II

Soil Class:

D - Default (see Section 11.4.3)

Latitude:

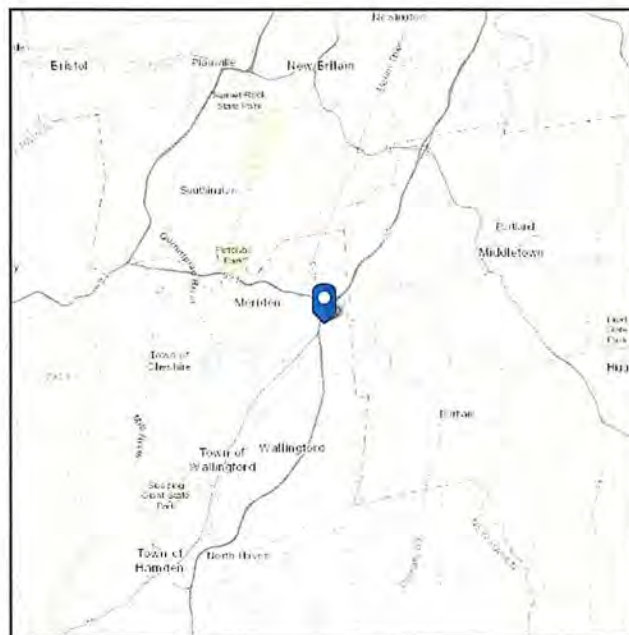
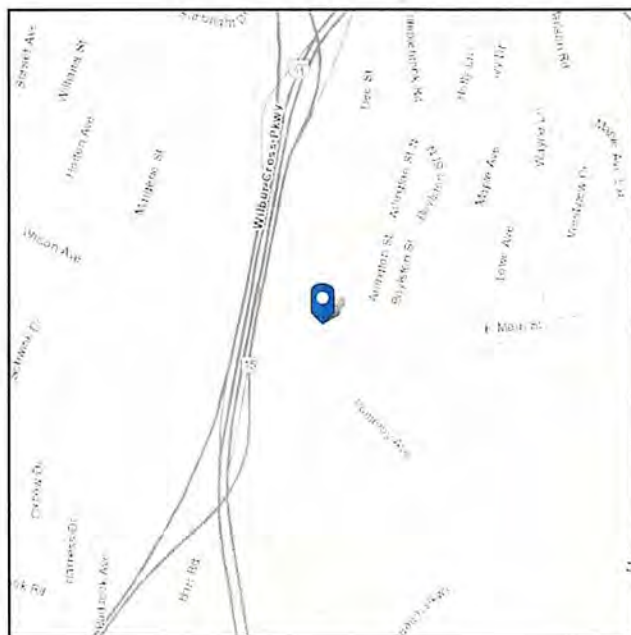
41.525622

Longitude:

-72.76764

Elevation:

280.7995242775792 ft (NAVD 88)



Wind

Results:

Wind Speed	119 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source:

ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed:

Thu Oct 17 2024

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

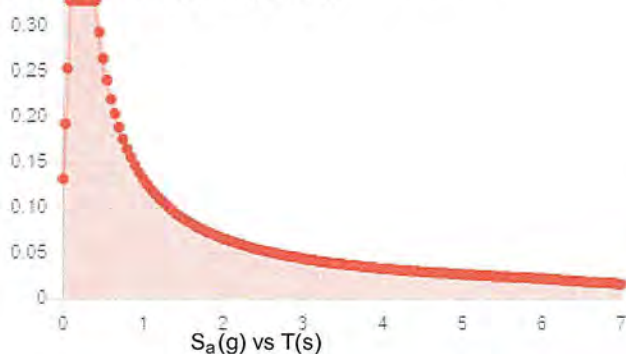
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

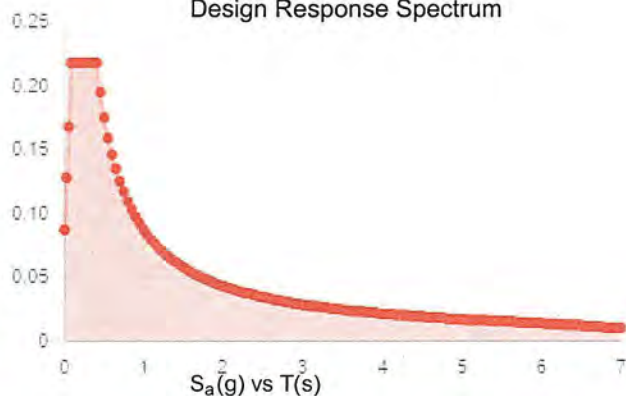
Results:

S_S :	0.206	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.114
F_v :	2.4	PGA _M :	0.18
S_{MS} :	0.329	F_{PGA} :	1.571
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.219	C_v :	0.711

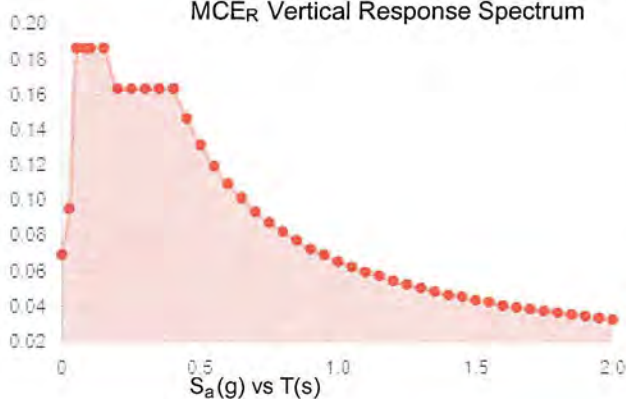
Seismic Design MCE_R Response Spectrum



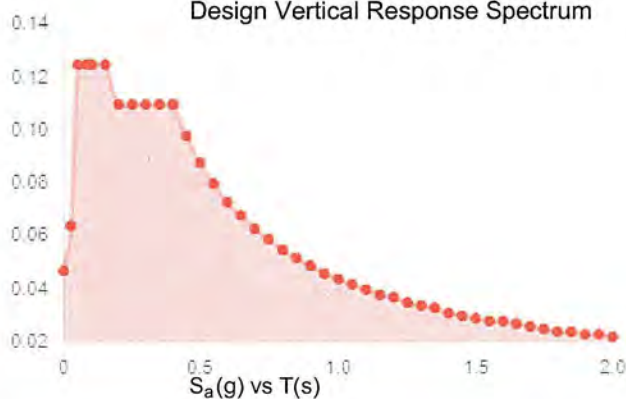
Design Response Spectrum



MCE_R Vertical Response Spectrum



Design Vertical Response Spectrum



Data Accessed: Thu Oct 17 2024

Date Source:

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

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Thu Oct 17 2024

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

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

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

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

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



Colliers Engineering & Design, Architecture,
Landscape Architecture, Surveying, CT P.C.
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ 08054
856.797.0412
sean.osullivan@collierseng.com

New/Replacement Antenna Mount Analysis Report and PMI Requirements

Mount Analysis-N

SMART Tool Project #: 10255617
Colliers Engineering & Design Project #: 24777432

October 10, 2024

Site Information

Site ID: 5000911748-VZW / MERIDEN 2 RELO2 CT
Site Name: MERIDEN 2 RELO2 CT
Carrier Name: Verizon Wireless
Address: 13 Pomeroy Ave
Meriden, Connecticut 06451
New Haven County
Latitude: 41.525591°
Longitude: -72.767797°

Structure Information

Tower Type: 150-Ft Monopole
Mount Type: 12.50-Ft Sector Frame

FUZE ID # 16962750

Analysis Results

Sector Frame: **55.3% Pass w/ Mount Replacement***
(3) Site Pro 1: VFA12-HD

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

*****Contractor PMI Requirements:**

Included at the end of this MA report

Available & Submitted via portal at <https://pmi.vzwsmart.com>

For additional questions and support, please reach out to:

pmisupport@colliersengineering.com

Report Prepared By: Selene Chen

Digitally signed by Grant Walters
Date: 2024.10.10 14:55:45-05'00'

Executive Summary:

The objective of this report is to determine the capacity of the proposed antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards. The proposed mount was assumed to be installed properly to the existing tower per the manufacturer's instructions. Colliers Engineering & Design cannot verify that the proposed mount will fit properly and is not liable for any fit-up issues during installation.

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: 617329217, dated February 26, 2024
Construction Drawings	ProTerra Design Group, LLC., Job #: 13-030, dated August 8, 2024
Mount Specifications	Site Pro 1, P/N: VFA12-HD & MSFAA

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H 2022 Connecticut State Building Code (CSBC), Effective October 1, 2022
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT} : 120 mph Ice Wind Speed (3-sec. Gust): 50 mph Design Ice Thickness: 1.00 in Risk Category: II Exposure Category: C Topographic Category: 1 Topographic Feature Considered: N/A Topographic Method: N/A Ground Elevation Factor, K_e : 0.990
Seismic Parameters:	S_s : 0.203 g S_1 : 0.055 g
Maintenance Parameters:	Wind Speed (3-sec. Gust): 30 mph Maintenance Load, L_v : 250 lbs. Maintenance Load, L_m : 500 lbs.
Analysis Software:	RISA-3D (V22)

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
130.00	130.00	4	Samsung	MT6413-77A	Added
		2	JMA Wireless	MX06FRO660-03	
		3	JMA Wireless	MX16FRO645-xx	
		4	Samsung	RF4439d-25A	
		4	Samsung	RF4461d-13A	
		1	Raycap	RVZDC-6627-PF-48	

Any proposed antennas not currently installed should be mounted such that the centerline of the antennas does not exceed 6 inches vertically from the center of the antenna mount(s).

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

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

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Colliers Engineering & Design and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Colliers Engineering & Design to verify deviation will not adversely impact the analysis.
2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.
3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped in accordance with the NSTD-446 Standard, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.
4. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.
6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Colliers Engineering & Design is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

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

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

Analysis Results:

Component	Utilization %	Pass/Fail
<i>Face Horizontal</i>	31.3%	<i>Pass</i>
<i>Standoff Plate</i>	55.3%	<i>Pass</i>
<i>Standoff Horizontal</i>	25.8%	<i>Pass</i>
<i>Standoff Diagonal</i>	7.8%	<i>Pass</i>
<i>Mount Pipe</i>	24.0%	<i>Pass</i>
<i>Standoff Vertical</i>	6.0%	<i>Pass</i>
<i>RRU Pipe</i>	3.8%	<i>Pass</i>
<i>Mast Pipe</i>	10.9%	<i>Pass</i>
<i>Tieback</i>	5.5%	<i>Pass</i>
<i>Connection Check</i>	13.8%	<i>Pass</i>
Structure Rating – (Controlling Utilization of all Components)		55.3%

Mount Connection Envelope Reactions:

Connection Description	Elev. AGL (Ft)	Node Label	Envelope Wind Reactions				Envelope Wind + Ice Reactions			
			Axial (Lbs)	Lateral (Lbs)	Moment (K-Ft)	Torsion (K-Ft)	Axial (Lbs)	Lateral (Lbs)	Moment (K-Ft)	Torsion (K-Ft)
Sector A Top Connection	132.5	N70	800	2238	1.026	0.260	1366	1935	0.518	0.179
Sector A Bottom Connection	127.5	N72	815	2169	0.958	0.262	1386	1907	0.503	0.180
Sector C Top Connection	132.5	N91	671	2050	0.953	0.282	1144	1761	0.551	0.178
Sector C Bottom Connection	127.5	N93	695	1954	0.867	0.275	1158	1724	0.525	0.176
Sector B Top Connection	132.5	N159	643	1983	0.886	0.262	1089	1495	0.435	0.083
Sector B Bottom Connection	127.5	N161	678	1853	0.783	0.255	1108	1452	0.406	0.080

Notes:

- Axial loads act along the axis of the tower
- Lateral reactions act perpendicular to the tower
- Moment loads introduce bending moment to the tower
- Torsion loads introduce twisting moment to the tower
- Batch solutions by individual load cases are included at the end of this document

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

Ice Thickness (In)	Mount Pipes Excluded		Mount Pipes Included	
	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)
0	40.1	35.4	62.2	57.5
0.5	61.9	58.0	92.9	86.5
1	81.9	77.0	121.0	112.8

Notes:

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

Requirements:

The proposed antenna mounts are **SUFFICIENT** for the final loading configuration (attachment 2) upon completion of the mount replacement (attachment 3) and requirements below.

Refer to document at the end of this form for special instructions. Contact EOR if special instructions are not available.

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

Attachments:

1. **Contractor Required Post Installation Inspection (PMI) Report Deliverables**
2. Antenna Placement Diagrams
3. Mount Manufacturer Drawings
4. Analysis Calculations

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – **New Mount Passing MA**

Electronic pdf version of this can be downloaded at <https://pmi.vzwsmart.com>

For additional questions and support, please reach out to pmisupport@colliersengineering.com

MDG #: 5000911748

SMART Project #: 10255617

Fuze Project ID: 16962750

Purpose – to provide SMART Tool structural vendor 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 installation was completed in accordance with this Passing Mount Analysis.
- Contractor shall relay any data that can impact the performance of the mount, this includes safety issues.

Base Requirements:

- If installation will cause damage to the structure, the climbing facility, or safety climb if present or any installed system, SMART Tool vendor to be notified prior to install. Any special photos outside of the standard requirements will be indicated on the drawings.
- Provide “as built mount drawings” showing contractor’s name, contact information, preparer’s signature, and date. Any deviations from the drawings (Proposed modification) shall be shown. NOTE: If loading is different than what is conveyed in the passing mount analysis (MA) contact the SMART Tool vendor immediately.
- Each photo should be time and date stamped.
- Photos should be high resolution.
- 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. If there is conflict, contact the SMART Tool engineer for recommendations.
- The PMI can be accessed at the following portal: <https://pmi.vzwsmart.com>

Photo Requirements:

- Photos taken at ground level
 - Photo of Gate Signs showing the tower owner, site name, and number.
 - Overall tower structure after installation.
 - Photos of the mount after installation; if the mounts are at different rad elevations, pictures must be provided for all elevations that equipment was installed.
- Photos taken at Mount Elevation
 - Photos showing the safety climb wire rope above and below the mount prior to installation.
 - Photos showing the climbing facility and safety climb if present.
 - Photos showing each individual sector after installation of mounts. Each entire sector shall be in one photo to show the interconnection of members.

- These photos shall also certify that the placement and geometry of the equipment on the mount is as depicted in the antenna placement diagram in this form.
- Photos that show the model number of each antenna and piece of equipment installed per sector.
- Photos of each installed mount; pictures shall also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
- Photos showing the installed mount elevation.

Antenna & Equipment Placement and Geometry Confirmation:

- The contractor shall certify that the antenna & equipment placement and geometry is in accordance with the sketch and table as included in the mount analysis and noted below.
- ☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the sketch and table included in this form and with the mount analysis provided.

OR

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

Special Instructions / Validation as required from the MA or any other information the contractor deems necessary to share that was identified:

Issue:

Refer to document at the end of this form for special instructions. Contact EOR if special instructions are not available.

Response:

Special Instruction Confirmation:

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

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

- ☐ Yes ☐ No

Contractor certifies no new damage created during the current installation:

- ☐ Yes ☐ No

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

☐ Safety Climb in Good Condition

☐ Safety Climb Damaged

Comments:

New Mount Certification:

- ☐ The contractor certifies that the New Mount installed is as specified in the Passing Mount Analysis.
- ☐ The contractor notes that the New Mount installed is not as specified and engineering approval was received for the New Mount installed.

Contractor to provide measurement from top of the highest equipment/steel to the bottom of the lowest equipment/steel by documenting it using the most appropriate illustration below along with supporting photos:

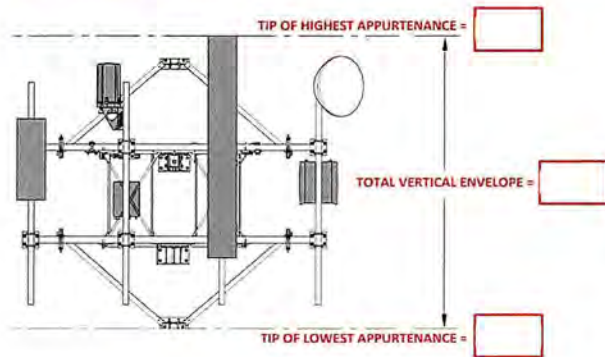


Illustration #1

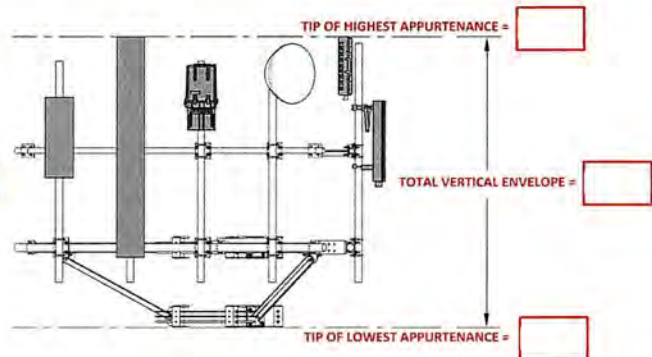


Illustration #2

Certifying Individual:

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



MDG #: 5000911748

Site Name: *MERIDEN 2 RELO2 CT*

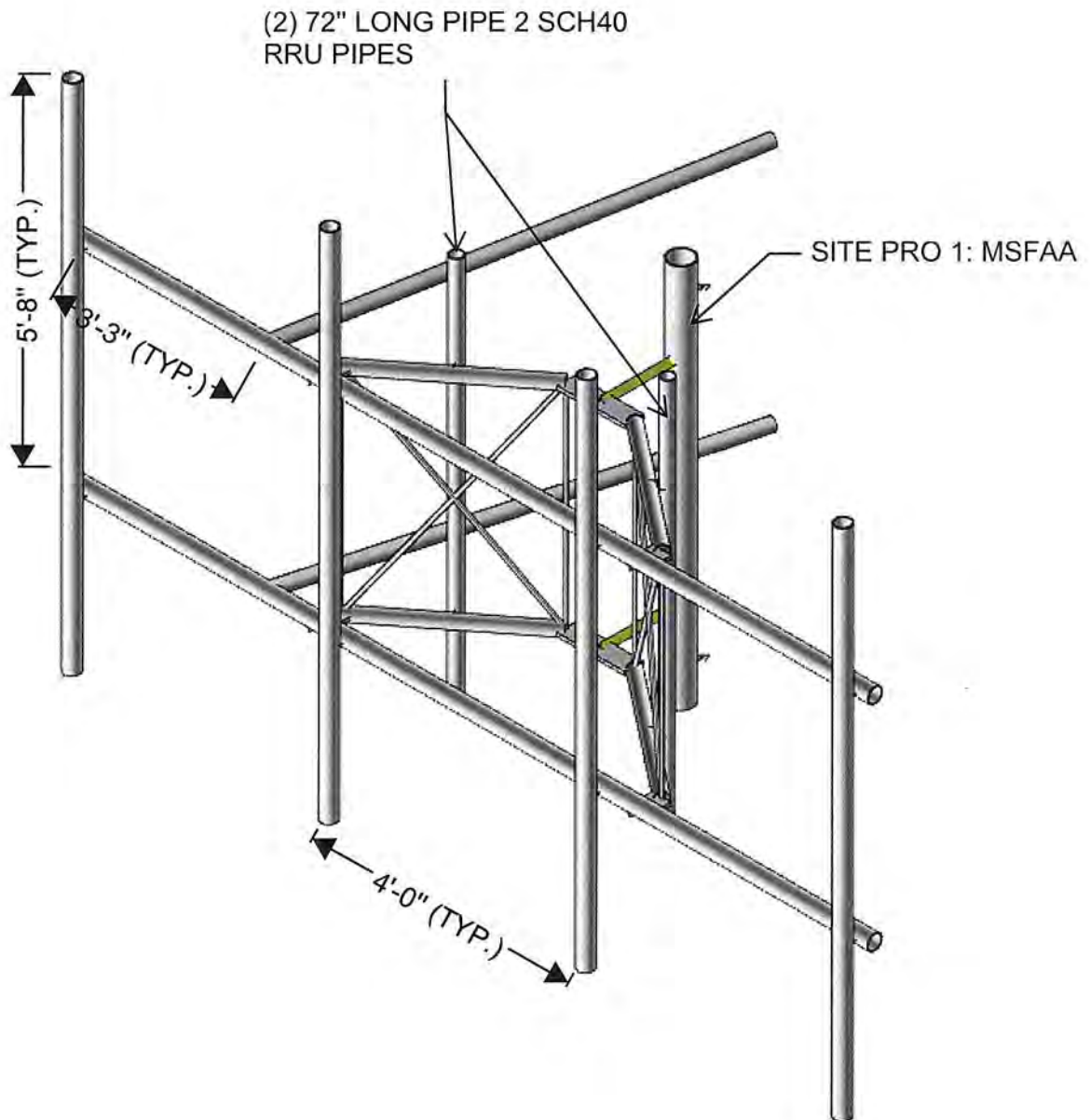
Fuze ID #: **16962750**

Colliers Engineering & Design Project #: 24777432

PMI INSTRUCTIONS:

1. Contractor shall install the proposed sector frame (Site Pro 1, Part #: VFA12-HD) mounts in accordance with manufacturer specifications and the Mount Installation Sketch. Contact EOR if these documents are not available.
2. Contractor shall install proposed sector frame mounts (Site Pro 1, Part #: VFA12-HD) on a new monopole sector frame attachment assembly (Site Pro 1, Part #: MSFAA) per manufacturer specifications.
3. Contractor shall install (4) 96" long PIPE 2-1/2 SCH40 mount pipes per mount. Refer to placement diagrams and Mount Installation Sketch. Contact EOR if these documents are not available.
4. Contractor shall install (2) 72" long PIPE 2 SCH40 RRU pipes per sector on welded tab of standoff horizontals. Attach with 1/2" Dia. U-Bolt at each connection.
5. Attach tiebacks to adjacent mast pipe. Proposed tieback shall extend no more than 12" beyond the mast pipe. Contractor shall trim as required and protect cut end with two (2) coats of cold galvanization (zinga or zinc kote).
6. Contractor shall inspect climbing facilities and safety climb and ensure they are in good condition. Contractor shall install safety climb wire rope guides in locations where wire rope is rubbing against the mount or mount-to-tower connection steel. Wire brush clean any observed corrosion and protect with two (2) coats of cold galvanization (Zinga or Zinc Kote). Contractor shall provide photos of wire rope guide installation as part of PMI documents. Contact EOR if additional guidance is required.
7. Proposed threaded rods shall be trimmed to extend no more than 3" beyond the lock nut. Treat all cut ends with (2) coats of cold galvanization (zinga or zinc kote).

MOUNT INSTALLATION SKETCH



MOUNT ISOMETRIC VIEW
N.T.S

Sector: A

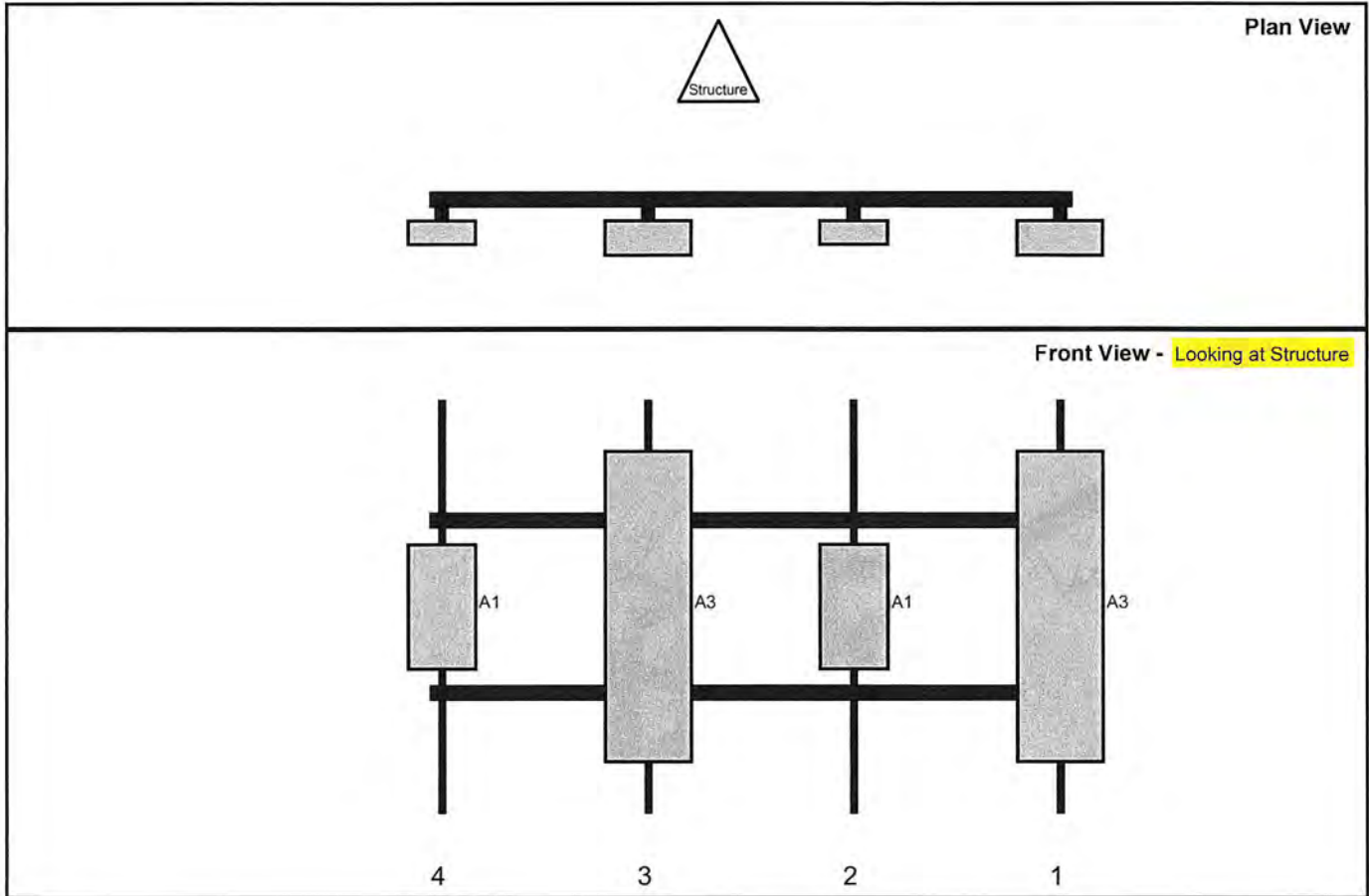
10/8/2024

Structure Type: Monopole

10255617

Mount Elev: 130.00

Page: 1



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
A3	MX16FRO645-xx	72	20	147	1	a	Front	48	0	Added	
A1	MT6413-77A	28.9	15.8	99	2	a	Front	48	0	Added	
A3	MX16FRO645-xx	72	20	51	3	a	Front	48	0	Added	
A1	MT6413-77A	28.9	15.8	3	4	a	Front	48	0	Added	
A1	RF4439d-25A	15	15		Member					Added	
A1	RF4461d-13A	15	15		Member					Added	
A2	RF4461d-13A	15	15		Member					Added	
A2	RF4439d-25A	15	15		Member					Added	

Sector: B

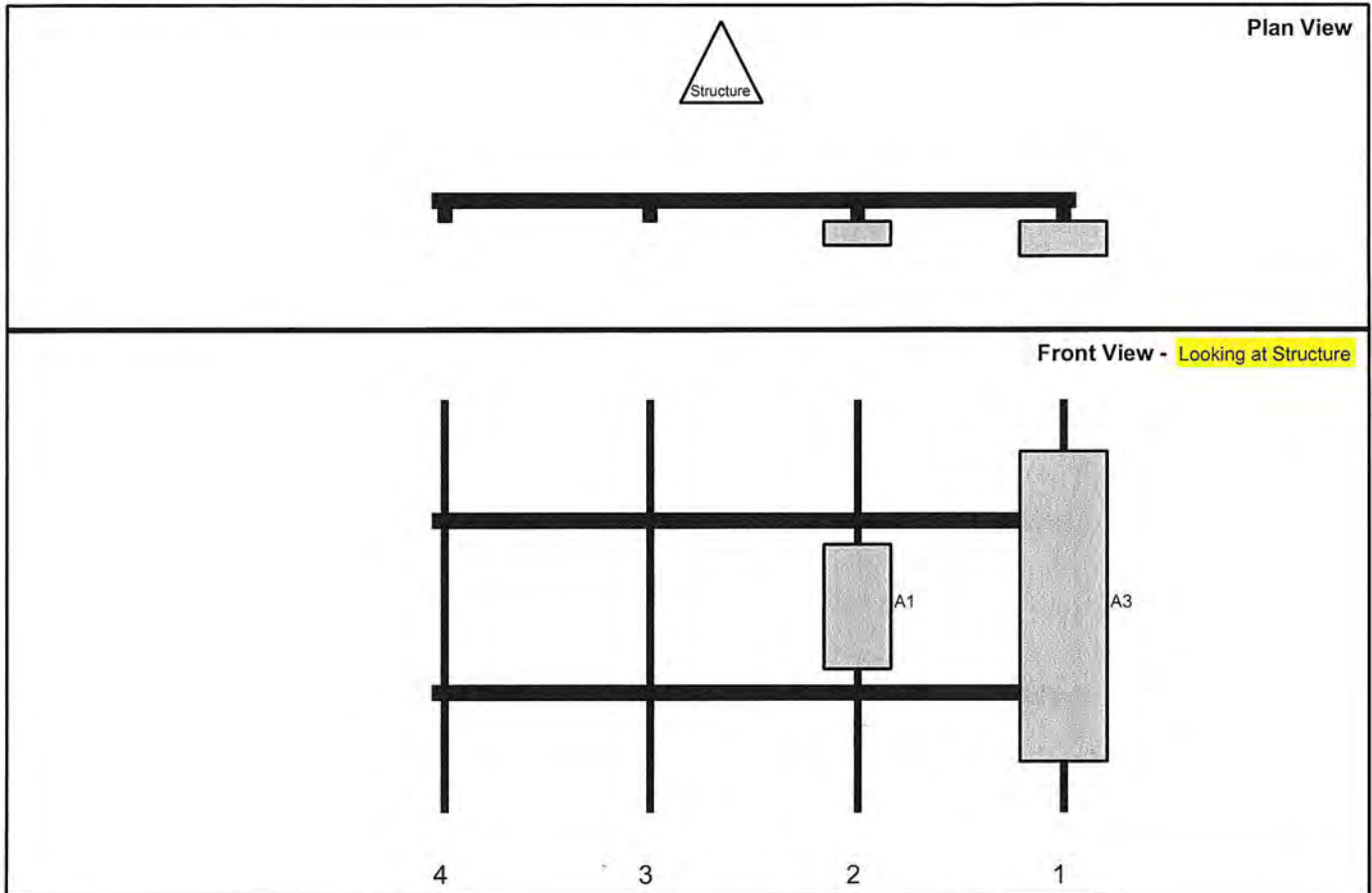
10/8/2024

Structure Type: Monopole

10255617

Mount Elev: 130.00

Page: 2



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
A3	MX16FRO645-xx	72	20	147	1	a	Front	48	0	Added	
A1	MT6413-77A	28.9	15.8	99	2	a	Front	48	0	Added	
B1	RVZDC-6627-PF-48	29.5	16.5		Member					Added	
B2	RF4461d-13A	15	15		Member					Added	
B1	RF4439d-25A	15	15		Member					Added	

Sector: C

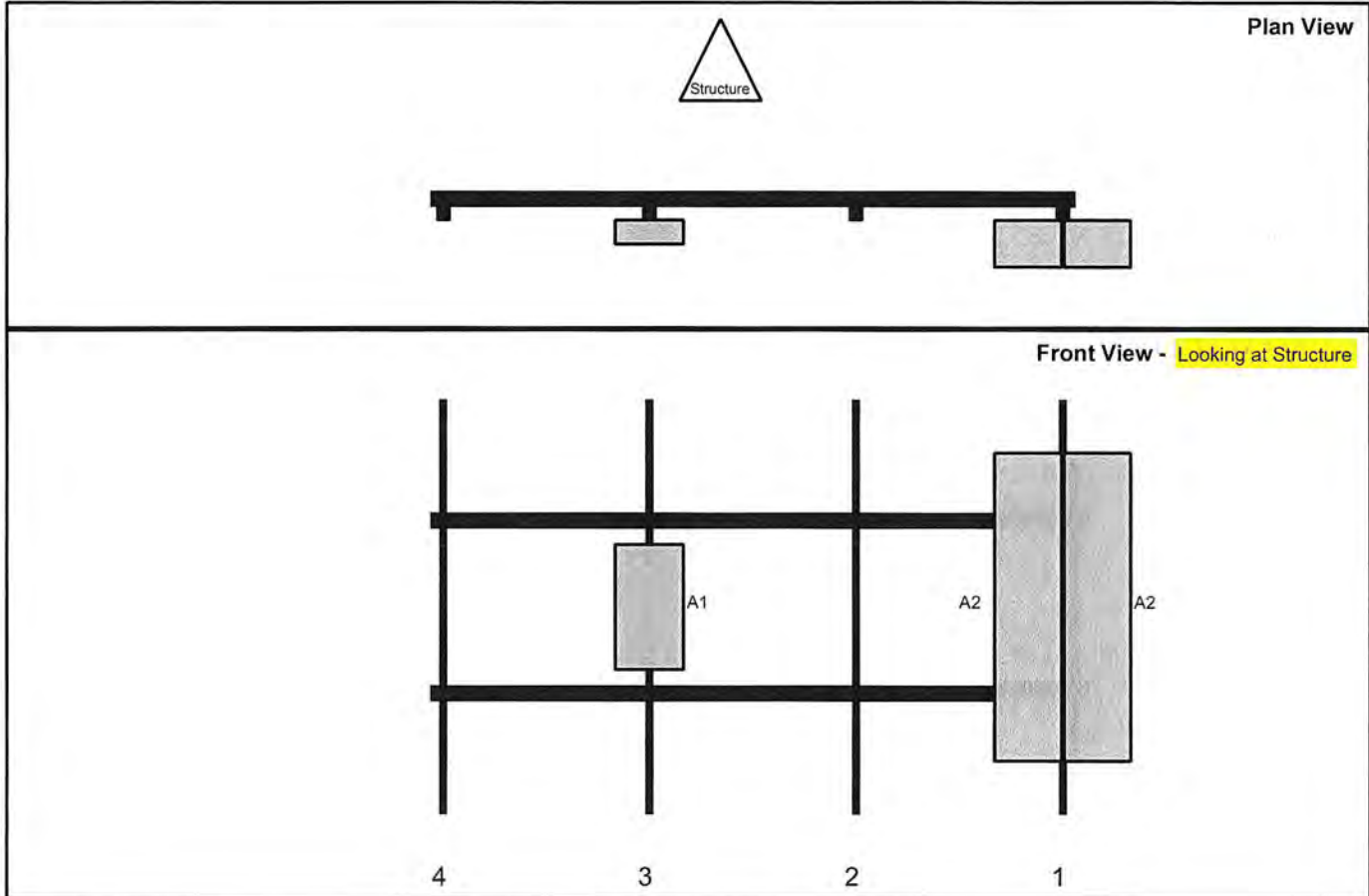
10/8/2024

Structure Type: Monopole

10255617

Mount Elev: 130.00

Page: 3



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
A2	MX06FRO660-03	71.3	15.4	147	1	a	Front	48	8	Added	
A2	MX06FRO660-03	71.3	15.4	147	1	b	Front	48	-8	Added	
A1	MT6413-77A	28.9	15.8	51	3	a	Front	48	0	Added	
C1	RF4439d-25A	15	15		Member					Added	
C2	RF4461d-13A	15	15		Member					Added	

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

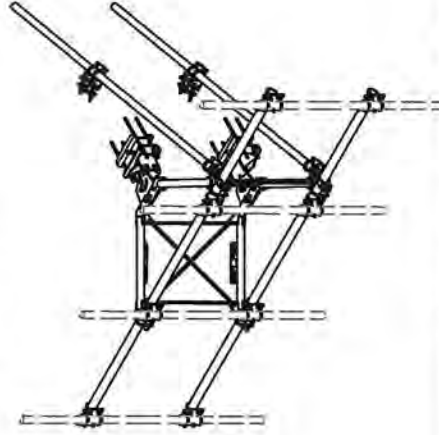
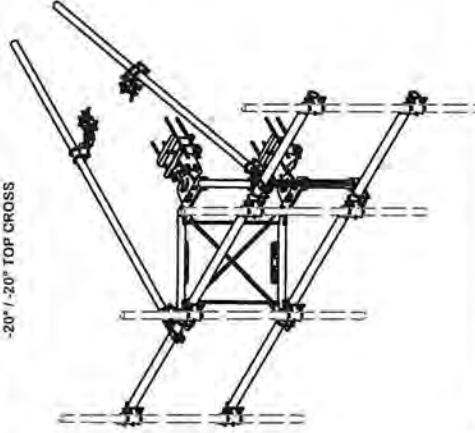
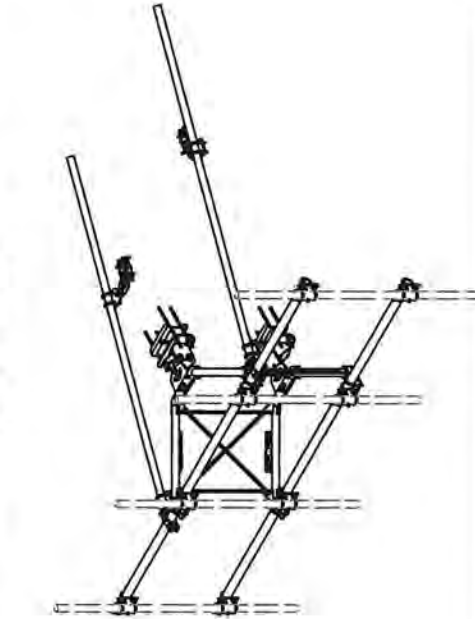
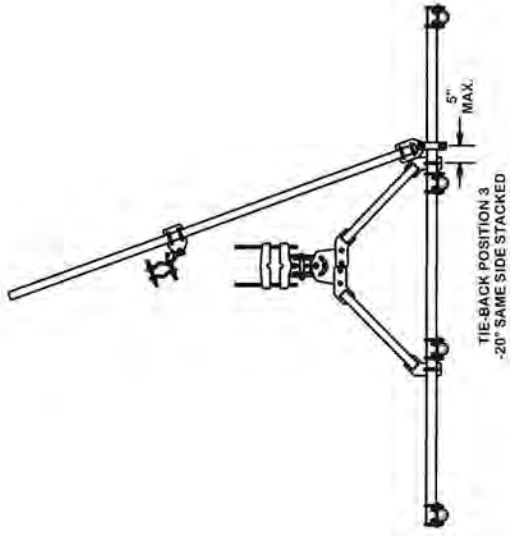
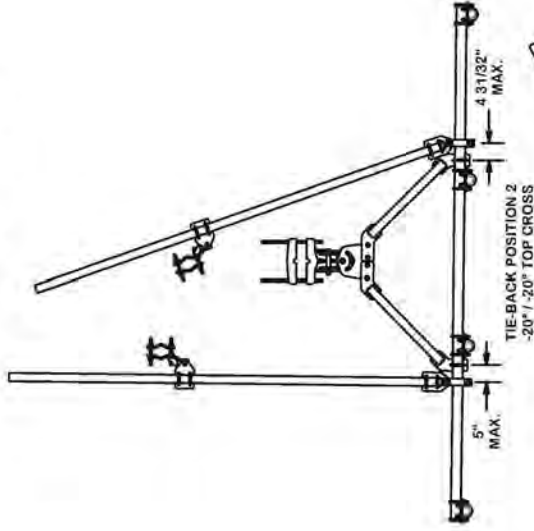
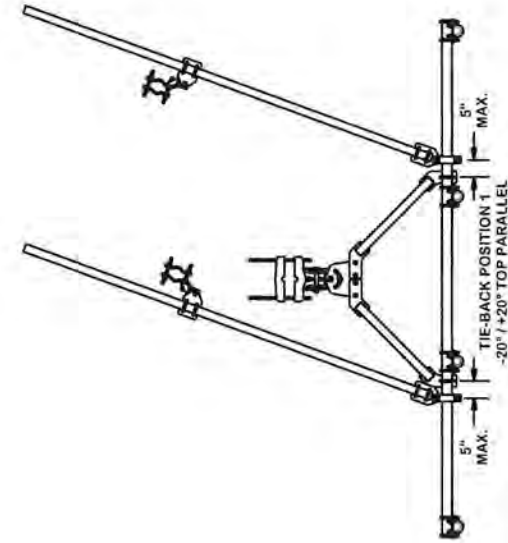
PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND ARE CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/22/2017

DESCRIPTION	12" 6" HEAVY DUTY V-FRAME ASSEMBLY WITH TWO STIFF ARMS		ENGINEER	DATE	CHECKED BY	DATE
	DRAWN BY	CEK	1/25/2017	DRAWING USAGE	CUSTOMER	BMC 12/13/2017

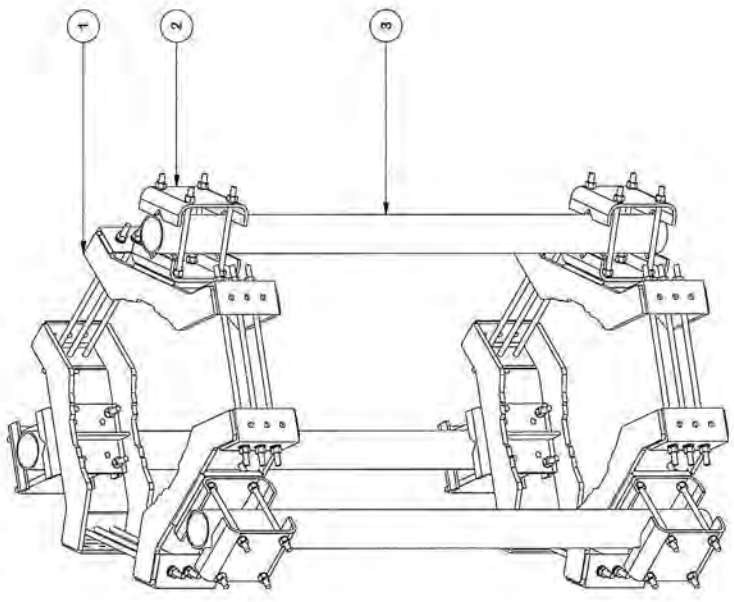
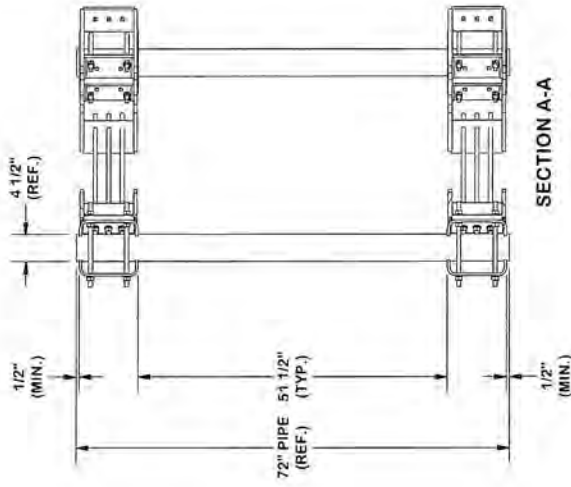
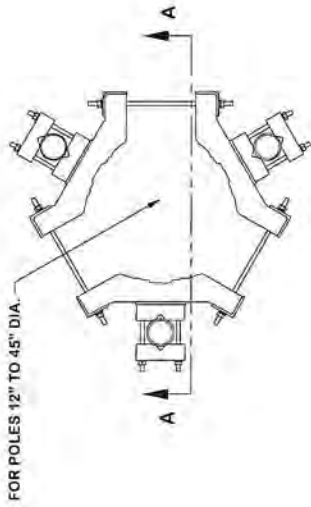
	PAGE 1 OF 5
A valmont COMPANY	VFA12-HD DWG. NO.
Locations: NY Atlanta, GA Los Angeles, CA Plymouth, IN Tampa, FL Dallas, TX Engineering Support Team: 1-866-765-7446	FART NO. DWG. NO.

TIE-BACK POSITIONS



DESCRIPTION 12" 6" HEAVY DUTY V-FRAME ASSEMBLY WITH TWO STIFF ARMS		PART NO. VFA12-HD		PAGE 2 OF 5	
		DWG. NO. VFA12-HD			
CPD NO. 81	SUB 02	CLASS 81	DRAWING USAGE CUSTOMER	CHECKED BY BMC	DATE 12/13/2017
TOLERANCE NOTES TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE: SAWED, SHEARED AND GAS CUT EDGES (± 0.0307) DRILLED AND GAS CUT EDGES (± 0.0307) - NO CORNING OF HOLES LASER CUT EDGES AND HOLES (± 0.0107) - NO CORNING OF HOLES BENDS ARE $\pm 1/2$ DEGREE ALL OTHER MACHINING (± 0.0307) ALL OTHER ASSEMBLY (± 0.0607) REVISIONS AND NOTES: 1. ALL DIMENSIONS ARE TO BE TAKEN FROM THE CENTER OF THE MEMBER UNLESS OTHERWISE NOTED. 2. ALL DIMENSIONS ARE TO BE TAKEN FROM THE CENTER OF THE MEMBER UNLESS OTHERWISE NOTED. 3. ALL DIMENSIONS ARE TO BE TAKEN FROM THE CENTER OF THE MEMBER UNLESS OTHERWISE NOTED. 4. ALL DIMENSIONS ARE TO BE TAKEN FROM THE CENTER OF THE MEMBER UNLESS OTHERWISE NOTED. 5. ALL DIMENSIONS ARE TO BE TAKEN FROM THE CENTER OF THE MEMBER UNLESS OTHERWISE NOTED.					
REVISION HISTORY					
REV D	DESCRIPTION OF REVISIONS UPDATED BCAM VERSION 1 TO BCAM VERSION 2	CPD CEK	BY CEK	DATE 6/29/2018	
REV C	DESCRIPTION OF REVISIONS UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION	CPD CEK	BY CEK	DATE 12/7/2017	
REV B	DESCRIPTION OF REVISIONS CHANGED TIE-BACK BACK CONNECTION	CPD CEK	BY CEK	DATE 7/31/2017	
REV A	DESCRIPTION OF REVISIONS CHANGED TIE-BACK FRONT CONNECTION	CPD CEK	BY CEK	DATE 2/2/2017	

SITE PRO 1 A valmont COMPANY	Locations: New York, NY Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
Engineering Support Team 1-888-753-7448	PART NO. VFA12-HD
DWG. NO. VFA12-HD	PAGE 2 OF 5



PARTS LIST				
ITEM	QTY	PART NO.	PART DESCRIPTION	UNIT WT.
1	2	LWRM	UNIVERSAL RING MOUNT	266.30
2	3	FMA2	FLUSH MOUNT ADAPTER DUAL LEVEL	81.51
3	3	P472	4-1/2" X 72" SCH. 40 GALVANIZED PIPE (Fy = 35 ksi min.)	64.81
TOTAL WT. #				788.53

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 FRACTIONS: ± 1/16" (MIN.)
 DECIMALS: ± 0.005" (MIN.)
 DRILLED AND GAS CUT HOLES: ± 0.005" (MIN.)
 LASER CUT EDGES AND HOLES: ± 0.010" (MIN.)
 ALL OTHER MACHINING: ± 0.005" (MIN.)
 ALL OTHER ASSEMBLY: ± 0.005" (MIN.)

PATENT INFORMATION: WWW.SITEPRO1.COM/PATENTS

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION

MONOPOLE SECTOR FRAME
 ATTACHMENT ASSEMBLY

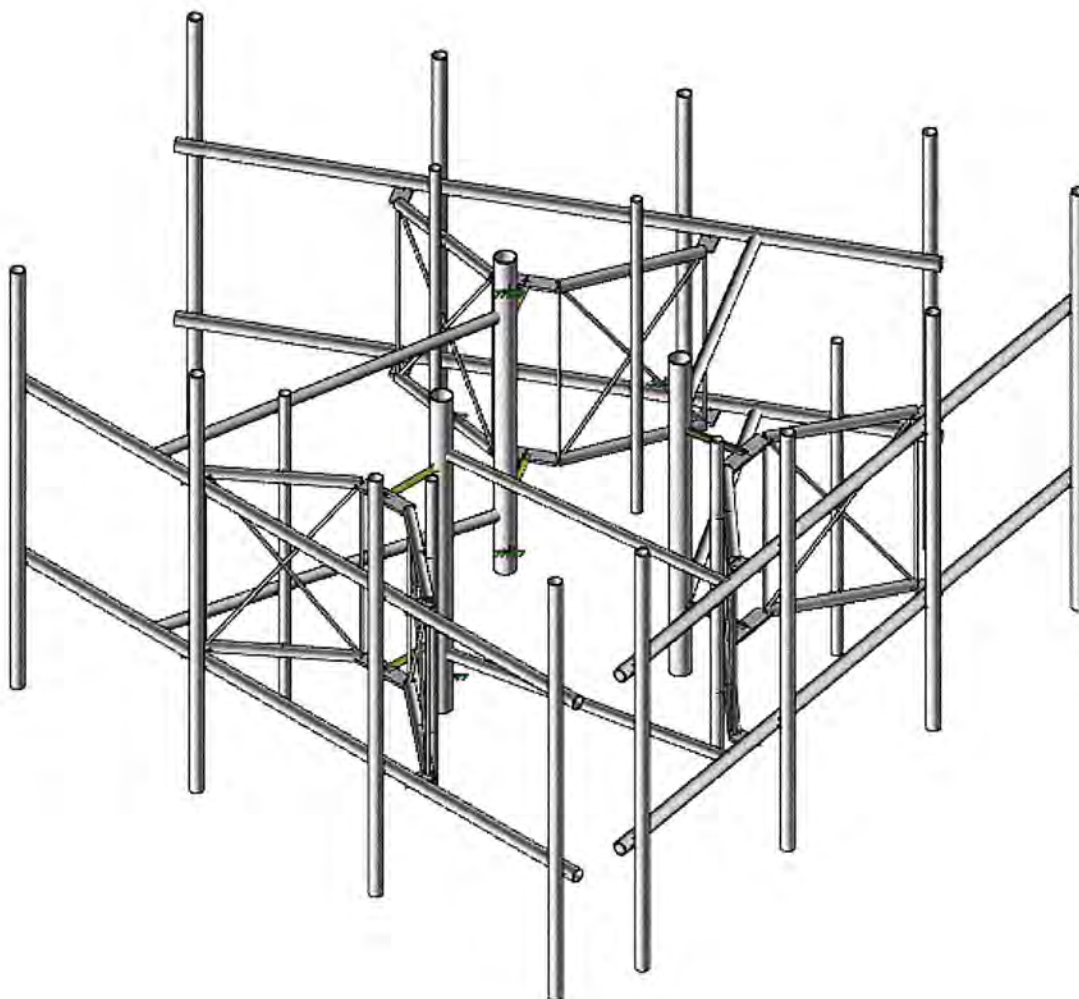
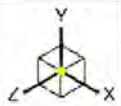
CPD NO.	DRAWN BY	ENG. APPROVAL
SP1	CMFL	9/5/2024
CLASS	SUB	CHECKED BY
87	02	JET
DRAWING USAGE		9/5/2024
SHOP		



Engineering
 Support Team:
 sp1engineering@valmont.com

PART NO.	PAGE
MSFAA	1 OF 7
DWG. NO.	
MSFAA	

REV	DESCRIPTION	DATE
A	UPDATED ASSEMBLY REPRESENTATIONS	9/5/2024
REVISION HISTORY		



Envelope Only Solution



Colliers Engineering & De...

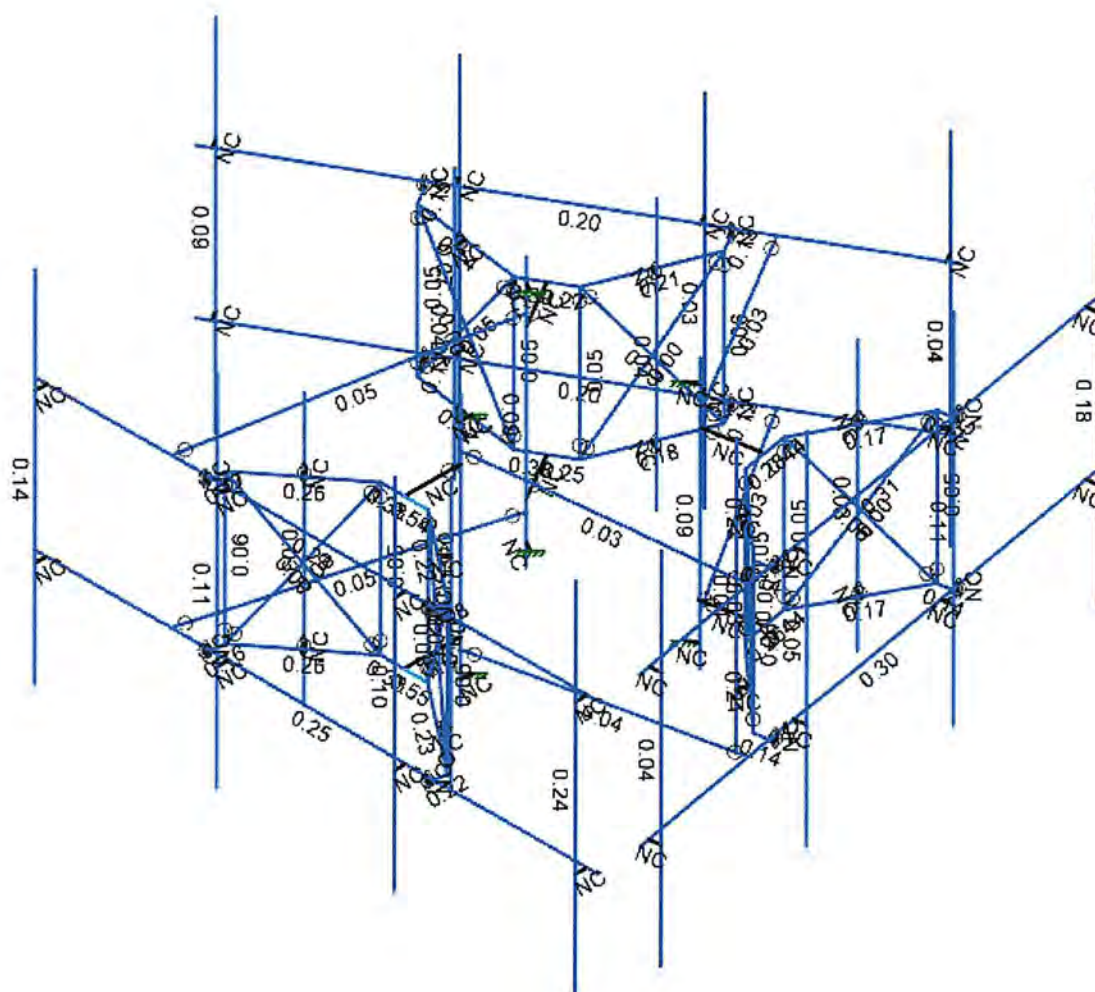
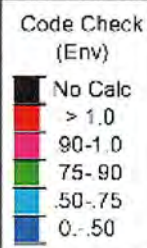
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SK-1

Oct 10, 2024 at 12:06 PM

Project No. 10255617

5000911748-VZW_MT_LO_...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution



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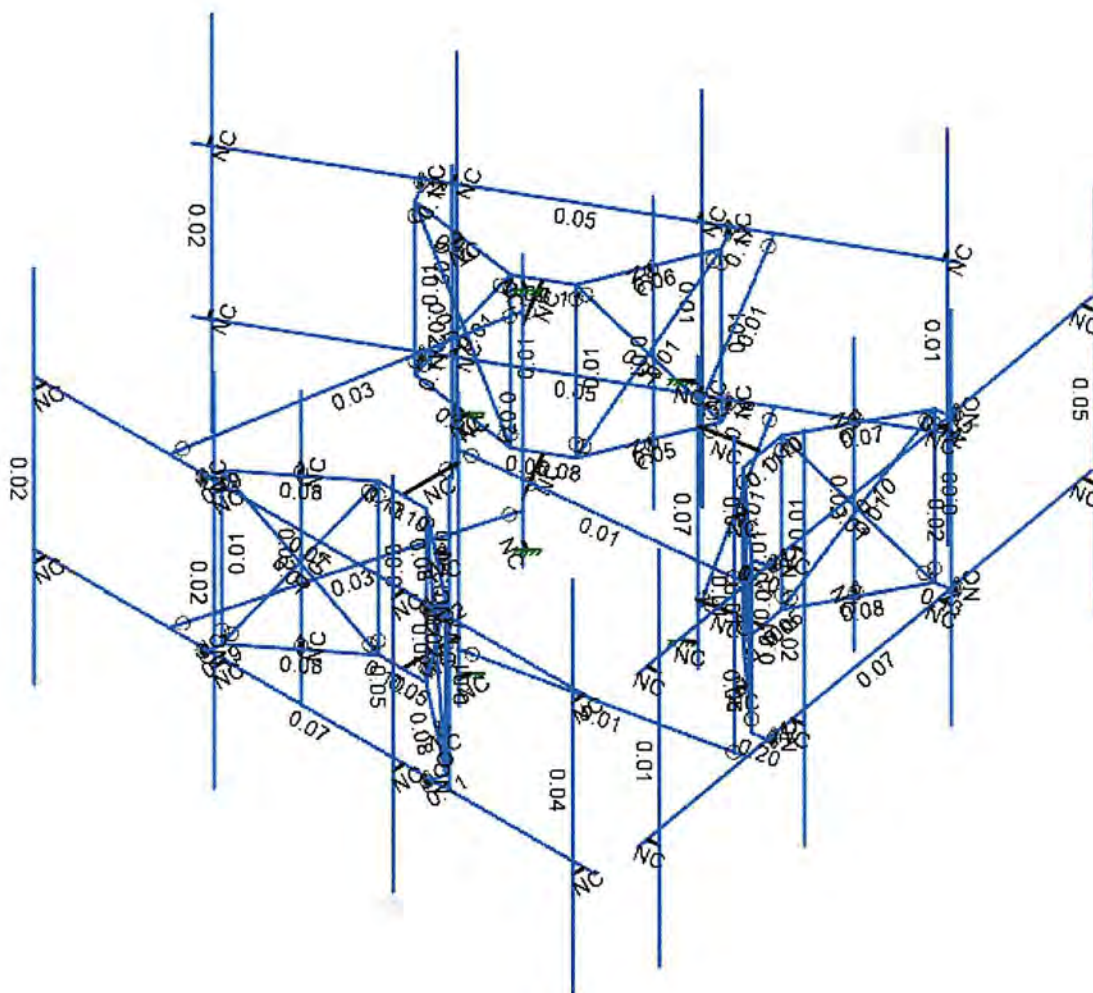
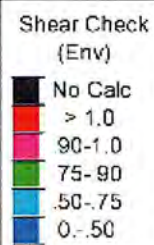
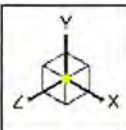
Project No. 10255617

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SK-2

Oct 10, 2024 at 12:06 PM

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Member Shear Checks Displayed (Enveloped)
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Project No. 10255617

5000911748-VZW_MT_LO_H

SK-3

Oct 10, 2024 at 12:07 PM

5000911748-VZW_MT_LO_...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
1	Antenna D	None				81	
2	Antenna Di	None				81	
3	Antenna Wo (0 Deg)	None				81	
4	Antenna Wo (30 Deg)	None				81	
5	Antenna Wo (60 Deg)	None				81	
6	Antenna Wo (90 Deg)	None				81	
7	Antenna Wo (120 Deg)	None				81	
8	Antenna Wo (150 Deg)	None				81	
9	Antenna Wo (180 Deg)	None				81	
10	Antenna Wo (210 Deg)	None				81	
11	Antenna Wo (240 Deg)	None				81	
12	Antenna Wo (270 Deg)	None				81	
13	Antenna Wo (300 Deg)	None				81	
14	Antenna Wo (330 Deg)	None				81	
15	Antenna Wi (0 Deg)	None				81	
16	Antenna Wi (30 Deg)	None				81	
17	Antenna Wi (60 Deg)	None				81	
18	Antenna Wi (90 Deg)	None				81	
19	Antenna Wi (120 Deg)	None				81	
20	Antenna Wi (150 Deg)	None				81	
21	Antenna Wi (180 Deg)	None				81	
22	Antenna Wi (210 Deg)	None				81	
23	Antenna Wi (240 Deg)	None				81	
24	Antenna Wi (270 Deg)	None				81	
25	Antenna Wi (300 Deg)	None				81	
26	Antenna Wi (330 Deg)	None				81	
27	Antenna Wm (0 Deg)	None				81	
28	Antenna Wm (30 Deg)	None				81	
29	Antenna Wm (60 Deg)	None				81	
30	Antenna Wm (90 Deg)	None				81	
31	Antenna Wm (120 Deg)	None				81	
32	Antenna Wm (150 Deg)	None				81	
33	Antenna Wm (180 Deg)	None				81	
34	Antenna Wm (210 Deg)	None				81	
35	Antenna Wm (240 Deg)	None				81	
36	Antenna Wm (270 Deg)	None				81	
37	Antenna Wm (300 Deg)	None				81	
38	Antenna Wm (330 Deg)	None				81	
39	Structure D	None		-1			
40	Structure Di	None					93
41	Structure Wo (0 Deg)	None					186
42	Structure Wo (30 Deg)	None					186
43	Structure Wo (60 Deg)	None					186
44	Structure Wo (90 Deg)	None					186
45	Structure Wo (120 Deg)	None					186
46	Structure Wo (150 Deg)	None					186
47	Structure Wo (180 Deg)	None					186
48	Structure Wo (210 Deg)	None					186
49	Structure Wo (240 Deg)	None					186
50	Structure Wo (270 Deg)	None					186
51	Structure Wo (300 Deg)	None					186
52	Structure Wo (330 Deg)	None					186
53	Structure Wi (0 Deg)	None					186
54	Structure Wi (30 Deg)	None					186
55	Structure Wi (60 Deg)	None					186

Basic Load Cases (Continued)

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
56 Structure Wi (90 Deg)	None					186
57 Structure Wi (120 Deg)	None					186
58 Structure Wi (150 Deg)	None					186
59 Structure Wi (180 Deg)	None					186
60 Structure Wi (210 Deg)	None					186
61 Structure Wi (240 Deg)	None					186
62 Structure Wi (270 Deg)	None					186
63 Structure Wi (300 Deg)	None					186
64 Structure Wi (330 Deg)	None					186
65 Structure Wm (0 Deg)	None					186
66 Structure Wm (30 Deg)	None					186
67 Structure Wm (60 Deg)	None					186
68 Structure Wm (90 Deg)	None					186
69 Structure Wm (120 Deg)	None					186
70 Structure Wm (150 Deg)	None					186
71 Structure Wm (180 Deg)	None					186
72 Structure Wm (210 Deg)	None					186
73 Structure Wm (240 Deg)	None					186
74 Structure Wm (270 Deg)	None					186
75 Structure Wm (300 Deg)	None					186
76 Structure Wm (330 Deg)	None					186
77 Lm1	None				1	
78 Lm2	None				1	
79 Lv1	None				1	
80 Lv2	None				1	
81 Antenna Ev	None				81	
82 Antenna Eh (0 Deg)	None				54	
83 Antenna Eh (90 Deg)	None				54	
84 Structure Ev	ELY		-0.044			
85 Structure Eh (0 Deg)	ELZ			-0.11		
86 Structure Eh (90 Deg)	ELX	0.11				

Load Combinations

Description	Solve	P-Delta	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
1 1.2D+1.0Wo (0 Deg)	Yes	Y	1	1.2	39	1.2	3	1	41	1									
2 1.2D+1.0Wo (30 Deg)	Yes	Y	1	1.2	39	1.2	4	1	42	1									
3 1.2D+1.0Wo (60 Deg)	Yes	Y	1	1.2	39	1.2	5	1	43	1									
4 1.2D+1.0Wo (90 Deg)	Yes	Y	1	1.2	39	1.2	6	1	44	1									
5 1.2D+1.0Wo (120 Deg)	Yes	Y	1	1.2	39	1.2	7	1	45	1									
6 1.2D+1.0Wo (150 Deg)	Yes	Y	1	1.2	39	1.2	8	1	46	1									
7 1.2D+1.0Wo (180 Deg)	Yes	Y	1	1.2	39	1.2	9	1	47	1									
8 1.2D+1.0Wo (210 Deg)	Yes	Y	1	1.2	39	1.2	10	1	48	1									
9 1.2D+1.0Wo (240 Deg)	Yes	Y	1	1.2	39	1.2	11	1	49	1									
10 1.2D+1.0Wo (270 Deg)	Yes	Y	1	1.2	39	1.2	12	1	50	1									
11 1.2D+1.0Wo (300 Deg)	Yes	Y	1	1.2	39	1.2	13	1	51	1									
12 1.2D+1.0Wo (330 Deg)	Yes	Y	1	1.2	39	1.2	14	1	52	1									
13 1.2D + 1.0Di + 1.0Wi (0 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	15	1	53	1					
14 1.2D + 1.0Di + 1.0Wi (30 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	16	1	54	1					
15 1.2D + 1.0Di + 1.0Wi (60 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	17	1	55	1					
16 1.2D + 1.0Di + 1.0Wi (90 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	18	1	56	1					
17 1.2D + 1.0Di + 1.0Wi (120 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	19	1	57	1					
18 1.2D + 1.0Di + 1.0Wi (150 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	20	1	58	1					
19 1.2D + 1.0Di + 1.0Wi (180 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	21	1	59	1					
20 1.2D + 1.0Di + 1.0Wi (210 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	22	1	60	1					
21 1.2D + 1.0Di + 1.0Wi (240 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	23	1	61	1					

Load Combinations (Continued)

[illegible]

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	I _{yy} [in ⁴]	I _{zz} [in ⁴]	J [in ⁴]
1	Mount Pipe	PIPE 2.5	Column	HSS Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89
2	Face Horizontal	PIPE 2.5	Beam	Pipe	Q235	Typical	1.61	1.45	1.45	2.89
3	Standoff Horizontal	PIPE 2.0	Beam	Pipe	Q235	Typical	1.02	0.627	0.627	1.25
4	Standoff Diagonal	SR 0.75	Column	BAR	Q235	Typical	0.442	0.016	0.016	0.031
5	Tieback	PIPE 2.0	Beam	Pipe	Q235	Typical	1.02	0.627	0.627	1.25
6	Standoff Vertical	SR 0.625	Column	BAR	Q235	Typical	0.307	0.007	0.007	0.015
7	Standoff Plate	PL5/8X3.5	Beam	RECT	Q235	Typical	2.188	0.071	2.233	0.253
8	RRU Pipe	PIPE 2.0	Column	HSS Pipe	A53 Gr. B	Typical	1.02	0.627	0.627	1.25
9	Mast Pipe	PIPE 4.0	Column	HSS Pipe	Q235	Typical	2.96	6.82	6.82	13.6

Hot Rolled Steel Properties

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

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N2	N1		Face Horizontal	Beam	Pipe	Q235	Typical
2	M2	N4	N3		Face Horizontal	Beam	Pipe	Q235	Typical
3	M3	N5	N13		RIGID	None	None	RIGID	Typical
4	M4	N6	N14		RIGID	None	None	RIGID	Typical
5	M5	N8	N16		RIGID	None	None	RIGID	Typical
6	M6	N7	N15		RIGID	None	None	RIGID	Typical
7	M9	N10	N18		RIGID	None	None	RIGID	Typical
8	M10	N9	N17		RIGID	None	None	RIGID	Typical
9	M11	N12	N20		RIGID	None	None	RIGID	Typical
10	M12	N11	N19		RIGID	None	None	RIGID	Typical
11	M13	N22	N26	90	Standoff Plate	Beam	RECT	Q235	Typical
12	M14	N21	N25	90	Standoff Plate	Beam	RECT	Q235	Typical
13	M15	N23	N27	90	Standoff Plate	Beam	RECT	Q235	Typical
14	M16	N24	N28	90	Standoff Plate	Beam	RECT	Q235	Typical
15	M51	N26	N32		Standoff Horizontal	Beam	Pipe	Q235	Typical
16	M18	N25	N31		Standoff Horizontal	Beam	Pipe	Q235	Typical
17	M19	N27	N33		Standoff Horizontal	Beam	Pipe	Q235	Typical
18	M52	N28	N34		Standoff Horizontal	Beam	Pipe	Q235	Typical
19	M21	N32	N30	90	Standoff Plate	Beam	RECT	Q235	Typical
20	M22	N34	N30	90	Standoff Plate	Beam	RECT	Q235	Typical
21	M23	N31	N29	90	Standoff Plate	Beam	RECT	Q235	Typical
22	M24	N33	N29	90	Standoff Plate	Beam	RECT	Q235	Typical
23	M25	N31	N26		Standoff Diagonal	Column	BAR	Q235	Typical
24	M26	N32	N25		Standoff Diagonal	Column	BAR	Q235	Typical
25	M27	N33	N28		Standoff Diagonal	Column	BAR	Q235	Typical
26	M28	N27	N34		Standoff Diagonal	Column	BAR	Q235	Typical
27	M29	N29	N35		RIGID	None	None	RIGID	Typical
28	M30	N30	N36		RIGID	None	None	RIGID	Typical
29	MP4A	N39	N43		Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
30	MP3A	N40	N44		Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
31	MP2A	N41	N45		Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
32	MP1A	N42	N46		Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
33	M44	N25	N26		Standoff Vertical	Column	BAR	Q235	Typical
34	M45	N31	N32		Standoff Vertical	Column	BAR	Q235	Typical
35	M46	N33	N34		Standoff Vertical	Column	BAR	Q235	Typical
36	M47	N27	N28		Standoff Vertical	Column	BAR	Q235	Typical
37	M47B	N22	N60		RIGID	None	None	RIGID	Typical
38	M48A	N21	N59		RIGID	None	None	RIGID	Typical
39	M49A	N24	N62		RIGID	None	None	RIGID	Typical
40	M50A	N23	N61		RIGID	None	None	RIGID	Typical
41	M43	N56	N55A		RIGID	None	None	RIGID	Typical
42	M44A	N56A	N55B		RIGID	None	None	RIGID	Typical
43	A2	N57	N58		RRU Pipe	Column	HSS Pipe	A53 Gr. B	Typical
44	M46A	N60A	N59A		RIGID	None	None	RIGID	Typical
45	M47A	N62A	N61B		RIGID	None	None	RIGID	Typical
46	A1	N63	N64		RRU Pipe	Column	HSS Pipe	A53 Gr. B	Typical
47	M49	N67	N68		Mast Pipe	Column	HSS Pipe	Q235	Typical
48	M50	N70	N69		RIGID	None	None	RIGID	Typical
49	M53	N72	N71		RIGID	None	None	RIGID	Typical
50	M55	N98	N134		RIGID	None	None	RIGID	Typical
51	M56	N91	N90		RIGID	None	None	RIGID	Typical
52	M57	N123	N122	340	Standoff Vertical	Column	BAR	Q235	Typical
53	M58	N93	N92		RIGID	None	None	RIGID	Typical
54	C2	N77	N112	20	RRU Pipe	Column	HSS Pipe	A53 Gr. B	Typical
55	M60	N88	N89		Mast Pipe	Column	HSS Pipe	Q235	Typical
56	M61	N101	N135		RIGID	None	None	RIGID	Typical
57	M62	N140	N106		RIGID	None	None	RIGID	Typical
58	M63	N79	N75		Face Horizontal	Beam	Pipe	Q235	Typical
59	M64	N124	N125	340	Standoff Vertical	Column	BAR	Q235	Typical
60	M65	N131	N103		RIGID	None	None	RIGID	Typical
61	M66	N121	N110	90	Standoff Plate	Beam	RECT	Q235	Typical
62	M67	N80	N83		RIGID	None	None	RIGID	Typical
63	M68	N97	N136		RIGID	None	None	RIGID	Typical
64	M69	N118	N94	90	Standoff Plate	Beam	RECT	Q235	Typical
65	MP4C	N74	N126	20	Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
66	M71	N117	N122		Standoff Horizontal	Beam	Pipe	Q235	Typical
67	M72	N94	N123		Standoff Horizontal	Beam	Pipe	Q235	Typical
68	M73	N124	N111	90	Standoff Plate	Beam	RECT	Q235	Typical
69	M74	N122	N94		Standoff Diagonal	Column	BAR	Q235	Typical
70	MP3C	N114	N127	20	Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
71	M76	N94	N117	340	Standoff Vertical	Column	BAR	Q235	Typical
72	M77	N120	N110	340	Standoff Vertical	Column	BAR	Q235	Typical
73	MP1C	N107	N128	20	Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
74	M79	N76	N102		RIGID	None	None	RIGID	Typical
75	M80	N96	N95		Face Horizontal	Beam	Pipe	Q235	Typical
76	M81	N108	N117	90	Standoff Plate	Beam	RECT	Q235	Typical
77	M82	N119	N120	90	Standoff Plate	Beam	RECT	Q235	Typical
78	M83	N120	N124		Standoff Horizontal	Beam	Pipe	Q235	Typical
79	M84	N110	N125		Standoff Horizontal	Beam	Pipe	Q235	Typical
80	M85	N122	N81	90	Standoff Plate	Beam	RECT	Q235	Typical
81	M86	N125	N81	90	Standoff Plate	Beam	RECT	Q235	Typical
82	M87	N123	N111	90	Standoff Plate	Beam	RECT	Q235	Typical
83	M88	N123	N117		Standoff Diagonal	Column	BAR	Q235	Typical
84	M89	N124	N110		Standoff Diagonal	Column	BAR	Q235	Typical
85	M90	N120	N125		Standoff Diagonal	Column	BAR	Q235	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
86	C1	N129	N113	20	RRU Pipe	Column	HSS Pipe	A53 Gr. B	Typical
87	M92	N130	N133		RIGID	None	None	RIGID	Typical
88	M93	N132	N105		RIGID	None	None	RIGID	Typical
89	M94	N78	N137		RIGID	None	None	RIGID	Typical
90	M98	N82	N99		RIGID	None	None	RIGID	Typical
91	M99	N115	N116		RIGID	None	None	RIGID	Typical
92	MP2C	N85	N109	20	Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
93	M101	N81	N87		RIGID	None	None	RIGID	Typical
94	M102	N111	N86		RIGID	None	None	RIGID	Typical
95	M104	N166	N202		RIGID	None	None	RIGID	Typical
96	M105	N159	N158		RIGID	None	None	RIGID	Typical
97	M106	N191	N190	330	Standoff Vertical	Column	BAR	Q235	Typical
98	M107	N161	N160		RIGID	None	None	RIGID	Typical
99	B2	N145	N180	30	RRU Pipe	Column	HSS Pipe	A53 Gr. B	Typical
100	M109	N156	N157		Mast Pipe	Column	HSS Pipe	Q235	Typical
101	M110	N169	N203		RIGID	None	None	RIGID	Typical
102	M111	N208	N174		RIGID	None	None	RIGID	Typical
103	M112	N147	N143		Face Horizontal	Beam	Pipe	Q235	Typical
104	M113	N192	N193	330	Standoff Vertical	Column	BAR	Q235	Typical
105	M114	N199	N171		RIGID	None	None	RIGID	Typical
106	M115	N189	N178	90	Standoff Plate	Beam	RECT	Q235	Typical
107	M116	N148	N151		RIGID	None	None	RIGID	Typical
108	M117	N165	N204		RIGID	None	None	RIGID	Typical
109	M118	N186	N162	90	Standoff Plate	Beam	RECT	Q235	Typical
110	MP4B	N142	N194	30	Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
111	M120	N185	N190		Standoff Horizontal	Beam	Pipe	Q235	Typical
112	M121	N162	N191		Standoff Horizontal	Beam	Pipe	Q235	Typical
113	M122	N192	N179	90	Standoff Plate	Beam	RECT	Q235	Typical
114	M123	N190	N162		Standoff Diagonal	Column	BAR	Q235	Typical
115	MP3B	N182	N195	30	Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
116	M125	N162	N185	330	Standoff Vertical	Column	BAR	Q235	Typical
117	M126	N188	N178	330	Standoff Vertical	Column	BAR	Q235	Typical
118	MP1B	N175	N196	30	Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
119	M128	N144	N170		RIGID	None	None	RIGID	Typical
120	M129	N164	N163		Face Horizontal	Beam	Pipe	Q235	Typical
121	M130	N176	N185	90	Standoff Plate	Beam	RECT	Q235	Typical
122	M131	N187	N188	90	Standoff Plate	Beam	RECT	Q235	Typical
123	M132	N188	N192		Standoff Horizontal	Beam	Pipe	Q235	Typical
124	M133	N178	N193		Standoff Horizontal	Beam	Pipe	Q235	Typical
125	M134	N190	N149	90	Standoff Plate	Beam	RECT	Q235	Typical
126	M135	N193	N149	90	Standoff Plate	Beam	RECT	Q235	Typical
127	M136	N191	N179	90	Standoff Plate	Beam	RECT	Q235	Typical
128	M137	N191	N185		Standoff Diagonal	Column	BAR	Q235	Typical
129	M138	N192	N178		Standoff Diagonal	Column	BAR	Q235	Typical
130	M139	N188	N193		Standoff Diagonal	Column	BAR	Q235	Typical
131	B1	N197	N181	30	RRU Pipe	Column	HSS Pipe	A53 Gr. B	Typical
132	M141	N198	N201		RIGID	None	None	RIGID	Typical
133	M142	N200	N173		RIGID	None	None	RIGID	Typical
134	M143	N146	N205		RIGID	None	None	RIGID	Typical
135	M147	N150	N167		RIGID	None	None	RIGID	Typical
136	M148	N183	N184		RIGID	None	None	RIGID	Typical
137	MP2B	N153	N177	30	Mount Pipe	Column	HSS Pipe	A53 Gr. B	Typical
138	M150	N149	N155		RIGID	None	None	RIGID	Typical
139	M151	N179	N154		RIGID	None	None	RIGID	Typical
140	M144	N121	N206	100	RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
141	M145	N108	N207	100	RIGID	None	None	RIGID	Typical
142	M146	N118	N210	100	RIGID	None	None	RIGID	Typical
143	M152	N119	N211	100	RIGID	None	None	RIGID	Typical
144	M153	N189	N212	210	RIGID	None	None	RIGID	Typical
145	M154	N176	N213	210	RIGID	None	None	RIGID	Typical
146	M155	N186	N214	210	RIGID	None	None	RIGID	Typical
147	M156	N187	N215	210	RIGID	None	None	RIGID	Typical
148	M157	N61A	N218		Tieback	Beam	Pipe	Q235	Typical
149	M149	N209	N216		Tieback	Beam	Pipe	Q235	Typical
150	M158	N217	N219	359.79	Tieback	Beam	Pipe	Q235	Typical
151	M159	N220	N221	0.796	Tieback	Beam	Pipe	Q235	Typical
152	M160	N222	N223	359.653	Tieback	Beam	Pipe	Q235	Typical
153	M161	N224	N225	1.315	Tieback	Beam	Pipe	Q235	Typical

Member Advanced Data

	Label	I Release	J Release	Col-Wall Vert Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
1	M1					Yes	N/A	None
2	M2					Yes	N/A	None
3	M3					Yes	** NA **	None
4	M4					Yes	** NA **	None
5	M5					Yes	** NA **	None
6	M6					Yes	** NA **	None
7	M9					Yes	** NA **	None
8	M10					Yes	** NA **	None
9	M11					Yes	** NA **	None
10	M12					Yes	** NA **	None
11	M13					Yes	Default	None
12	M14					Yes	Default	None
13	M15					Yes	Default	None
14	M16					Yes	Default	None
15	M51					Yes	Default	None
16	M18					Yes	N/A	None
17	M19					Yes	N/A	None
18	M52					Yes	Default	None
19	M21					Yes	Default	None
20	M22					Yes	Default	None
21	M23					Yes	N/A	None
22	M24					Yes	N/A	None
23	M25	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
24	M26	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
25	M27	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
26	M28	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
27	M29		OOOXXO			Yes	** NA **	None
28	M30		OOOXXO			Yes	** NA **	None
29	MP4A					Yes	** NA **	None
30	MP3A					Yes	** NA **	None
31	MP2A					Yes	** NA **	None
32	MP1A					Yes	** NA **	None
33	M44	BenPIN	BenPIN			Yes	** NA **	None
34	M45	BenPIN	BenPIN			Yes	** NA **	None
35	M46	BenPIN	BenPIN			Yes	** NA **	None
36	M47	BenPIN	BenPIN			Yes	** NA **	None
37	M47B		OOOXXO			Yes	** NA **	None
38	M48A		OOOXXO			Yes	** NA **	None
39	M49A		OOOXXO			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Col-Wall Vert Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
40	M50A		OOOXOX			Yes	** NA **	None
41	M43	OOOXOX				Yes	** NA **	None
42	M44A	OOOXOX				Yes	** NA **	None
43	A2					Yes	** NA **	None
44	M46A	OOOXOX				Yes	** NA **	None
45	M47A	OOOXOX				Yes	** NA **	None
46	A1					Yes	** NA **	None
47	M49					Yes	** NA **	None
48	M50					Yes	** NA **	None
49	M53					Yes	** NA **	None
50	M55					Yes	** NA **	None
51	M56					Yes	** NA **	None
52	M57	BenPIN	BenPIN			Yes	** NA **	None
53	M58					Yes	** NA **	None
54	C2					Yes	** NA **	None
55	M60					Yes	** NA **	None
56	M61					Yes	** NA **	None
57	M62	OOOXOX				Yes	** NA **	None
58	M63					Yes	N/A	None
59	M64	BenPIN	BenPIN			Yes	** NA **	None
60	M65					Yes	** NA **	None
61	M66					Yes	Default	None
62	M67					Yes	** NA **	None
63	M68					Yes	** NA **	None
64	M69					Yes	Default	None
65	MP4C					Yes	** NA **	None
66	M71					Yes	Default	None
67	M72					Yes	N/A	None
68	M73					Yes	N/A	None
69	M74	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
70	MP3C					Yes	** NA **	None
71	M76	BenPIN	BenPIN			Yes	** NA **	None
72	M77	BenPIN	BenPIN			Yes	** NA **	None
73	MP1C					Yes	** NA **	None
74	M79	OOOXOX				Yes	** NA **	None
75	M80					Yes	N/A	None
76	M81					Yes	Default	None
77	M82					Yes	Default	None
78	M83					Yes	N/A	None
79	M84					Yes	Default	None
80	M85					Yes	Default	None
81	M86					Yes	Default	None
82	M87					Yes	N/A	None
83	M88	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
84	M89	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
85	M90	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
86	C1					Yes	** NA **	None
87	M92					Yes	** NA **	None
88	M93					Yes	** NA **	None
89	M94					Yes	** NA **	None
90	M98	OOOXOX				Yes	** NA **	None
91	M99	OOOXOX				Yes	** NA **	None
92	MP2C					Yes	** NA **	None
93	M101		OOOOXO			Yes	** NA **	None
94	M102		OOOOXO			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Col-Wall Vert Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
95	M104					Yes	** NA **	None
96	M105					Yes	** NA **	None
97	M106	BenPIN	BenPIN			Yes	** NA **	None
98	M107					Yes	** NA **	None
99	B2					Yes	** NA **	None
100	M109					Yes	** NA **	None
101	M110					Yes	** NA **	None
102	M111	OOOXOX				Yes	** NA **	None
103	M112					Yes	N/A	None
104	M113	BenPIN	BenPIN			Yes	** NA **	None
105	M114					Yes	** NA **	None
106	M115					Yes	Default	None
107	M116					Yes	** NA **	None
108	M117					Yes	** NA **	None
109	M118					Yes	Default	None
110	MP4B					Yes	** NA **	None
111	M120					Yes	Default	None
112	M121					Yes	N/A	None
113	M122					Yes	N/A	None
114	M123	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
115	MP3B					Yes	** NA **	None
116	M125	BenPIN	BenPIN			Yes	** NA **	None
117	M126	BenPIN	BenPIN			Yes	** NA **	None
118	MP1B					Yes	** NA **	None
119	M128	OOOXOX				Yes	** NA **	None
120	M129					Yes	N/A	None
121	M130					Yes	Default	None
122	M131					Yes	Default	None
123	M132					Yes	N/A	None
124	M133					Yes	Default	None
125	M134					Yes	Default	None
126	M135					Yes	Default	None
127	M136					Yes	N/A	None
128	M137	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
129	M138	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
130	M139	BenPIN	BenPIN		Euler Buckling	Yes	** NA **	None
131	B1					Yes	** NA **	None
132	M141					Yes	** NA **	None
133	M142					Yes	** NA **	None
134	M143					Yes	** NA **	None
135	M147	OOOXOX				Yes	** NA **	None
136	M148	OOOXOX				Yes	** NA **	None
137	MP2B					Yes	** NA **	None
138	M150		OOOXOX			Yes	** NA **	None
139	M151		OOOXOX			Yes	** NA **	None
140	M144		OOOXOX			Yes	** NA **	None
141	M145		OOOXOX			Yes	** NA **	None
142	M146		OOOXOX			Yes	** NA **	None
143	M152		OOOXOX			Yes	** NA **	None
144	M153		OOOXOX			Yes	** NA **	None
145	M154		OOOXOX			Yes	** NA **	None
146	M155		OOOXOX			Yes	** NA **	None
147	M156		OOOXOX			Yes	** NA **	None
148	M157	BenPIN	BenPIN			Yes	Default	None
149	M149	BenPIN	BenPIN			Yes	Default	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Col-Wall Vert Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
150	M158	BenPIN	BenPIN			Yes	Default	None
151	M159	BenPIN	BenPIN			Yes	Default	None
152	M160	BenPIN	BenPIN			Yes	Default	None
153	M161	BenPIN	BenPIN			Yes	Default	None

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	Y	-28.65	3
2	MP2A	My	-0.022	3
3	MP2A	Mz	0.01	3
4	MP2A	Y	-28.65	5
5	MP2A	My	-0.022	5
6	MP2A	Mz	0.01	5
7	MP2B	Y	-28.65	3
8	MP2B	My	0.023	3
9	MP2B	Mz	-0.006	3
10	MP2B	Y	-28.65	5
11	MP2B	My	0.023	5
12	MP2B	Mz	-0.006	5
13	MP3C	Y	-28.65	3
14	MP3C	My	0.006	3
15	MP3C	Mz	0.023	3
16	MP3C	Y	-28.65	5
17	MP3C	My	0.006	5
18	MP3C	Mz	0.023	5
19	MP4A	Y	-28.65	3
20	MP4A	My	-0.023	3
21	MP4A	Mz	-0.006	3
22	MP4A	Y	-28.65	5
23	MP4A	My	-0.023	5
24	MP4A	Mz	-0.006	5
25	MP1C	Y	-39	2
26	MP1C	My	0.034	2
27	MP1C	Mz	0.025	2
28	MP1C	Y	-39	6
29	MP1C	My	0.034	6
30	MP1C	Mz	0.025	6
31	MP1C	Y	-39	2
32	MP1C	My	-0.017	2
33	MP1C	Mz	0.038	2
34	MP1C	Y	-39	6
35	MP1C	My	-0.017	6
36	MP1C	Mz	0.038	6
37	MP1A	Y	-39	2
38	MP1A	My	-0.029	2
39	MP1A	Mz	0.014	2
40	MP1A	Y	-39	6
41	MP1A	My	-0.029	6
42	MP1A	Mz	0.014	6
43	MP1B	Y	-39	2
44	MP1B	My	0.031	2
45	MP1B	Mz	-0.008	2
46	MP1B	Y	-39	6
47	MP1B	My	0.031	6
48	MP1B	Mz	-0.008	6

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
49	MP3A	Y	-39	2
50	MP3A	My	-0.031	2
51	MP3A	Mz	-0.008	2
52	MP3A	Y	-39	6
53	MP3A	My	-0.031	6
54	MP3A	Mz	-0.008	6
55	A1	Y	-74.7	2
56	A1	My	0	2
57	A1	Mz	0	2
58	A1	Y	-79.1	4
59	A1	My	0	4
60	A1	Mz	0	4
61	B1	Y	-32	2
62	B1	My	0	2
63	B1	Mz	0	2
64	A2	Y	-74.7	2
65	A2	My	0	2
66	A2	Mz	0	2
67	B1	Y	-74.7	4
68	B1	My	0	4
69	B1	Mz	0	4
70	C1	Y	-74.7	3
71	C1	My	0	3
72	C1	Mz	0	3
73	A2	Y	-79.1	4
74	A2	My	0	4
75	A2	Mz	0	4
76	B2	Y	-79.1	3
77	B2	My	0	3
78	B2	Mz	0	3
79	C2	Y	-79.1	3
80	C2	My	0	3
81	C2	Mz	0	3

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	Y	-29.575	3
2	MP2A	My	-0.022	3
3	MP2A	Mz	0.01	3
4	MP2A	Y	-29.575	5
5	MP2A	My	-0.022	5
6	MP2A	Mz	0.01	5
7	MP2B	Y	-29.575	3
8	MP2B	My	0.024	3
9	MP2B	Mz	-0.006	3
10	MP2B	Y	-29.575	5
11	MP2B	My	0.024	5
12	MP2B	Mz	-0.006	5
13	MP3C	Y	-29.575	3
14	MP3C	My	0.006	3
15	MP3C	Mz	0.024	3
16	MP3C	Y	-29.575	5
17	MP3C	My	0.006	5
18	MP3C	Mz	0.024	5
19	MP4A	Y	-29.575	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
20	MP4A	My	-0.024	3
21	MP4A	Mz	-0.006	3
22	MP4A	Y	-29.575	5
23	MP4A	My	-0.024	5
24	MP4A	Mz	-0.006	5
25	MP1C	Y	-81.92	2
26	MP1C	My	0.07	2
27	MP1C	Mz	0.052	2
28	MP1C	Y	-81.92	6
29	MP1C	My	0.07	6
30	MP1C	Mz	0.052	6
31	MP1C	Y	-81.92	2
32	MP1C	My	-0.035	2
33	MP1C	Mz	0.08	2
34	MP1C	Y	-81.92	6
35	MP1C	My	-0.035	6
36	MP1C	Mz	0.08	6
37	MP1A	Y	-87.68	2
38	MP1A	My	-0.066	2
39	MP1A	Mz	0.031	2
40	MP1A	Y	-87.68	6
41	MP1A	My	-0.066	6
42	MP1A	Mz	0.031	6
43	MP1B	Y	-87.68	2
44	MP1B	My	0.071	2
45	MP1B	Mz	-0.019	2
46	MP1B	Y	-87.68	6
47	MP1B	My	0.071	6
48	MP1B	Mz	-0.019	6
49	MP3A	Y	-87.68	2
50	MP3A	My	-0.071	2
51	MP3A	Mz	-0.019	2
52	MP3A	Y	-87.68	6
53	MP3A	My	-0.071	6
54	MP3A	Mz	-0.019	6
55	A1	Y	-44.59	2
56	A1	My	0	2
57	A1	Mz	0	2
58	A1	Y	-45.063	4
59	A1	My	0	4
60	A1	Mz	0	4
61	B1	Y	-87.325	2
62	B1	My	0	2
63	B1	Mz	0	2
64	A2	Y	-44.59	2
65	A2	My	0	2
66	A2	Mz	0	2
67	B1	Y	-44.59	4
68	B1	My	0	4
69	B1	Mz	0	4
70	C1	Y	-44.59	3
71	C1	My	0	3
72	C1	Mz	0	3
73	A2	Y	-45.063	4
74	A2	My	0	4

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
75	A2	Mz	0	4
76	B2	Y	-45.063	3
77	B2	My	0	3
78	B2	Mz	0	3
79	C2	Y	-45.063	3
80	C2	My	0	3
81	C2	Mz	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	3
2	MP2A	Z	-58.295	3
3	MP2A	Mx	-0.021	3
4	MP2A	X	0	5
5	MP2A	Z	-58.295	5
6	MP2A	Mx	-0.021	5
7	MP2B	X	0	3
8	MP2B	Z	-63.069	3
9	MP2B	Mx	0.014	3
10	MP2B	X	0	5
11	MP2B	Z	-63.069	5
12	MP2B	Mx	0.014	5
13	MP3C	X	0	3
14	MP3C	Z	-26.026	3
15	MP3C	Mx	-0.021	3
16	MP3C	X	0	5
17	MP3C	Z	-26.026	5
18	MP3C	Mx	-0.021	5
19	MP4A	X	0	3
20	MP4A	Z	-63.069	3
21	MP4A	Mx	0.014	3
22	MP4A	X	0	5
23	MP4A	Z	-63.069	5
24	MP4A	Mx	0.014	5
25	MP1C	X	0	2
26	MP1C	Z	-75.527	2
27	MP1C	Mx	-0.048	2
28	MP1C	X	0	6
29	MP1C	Z	-75.527	6
30	MP1C	Mx	-0.048	6
31	MP1C	X	0	2
32	MP1C	Z	-75.527	2
33	MP1C	Mx	-0.074	2
34	MP1C	X	0	6
35	MP1C	Z	-75.527	6
36	MP1C	Mx	-0.074	6
37	MP1A	X	0	2
38	MP1A	Z	-109.466	2
39	MP1A	Mx	-0.039	2
40	MP1A	X	0	6
41	MP1A	Z	-109.466	6
42	MP1A	Mx	-0.039	6
43	MP1B	X	0	2
44	MP1B	Z	-116.686	2
45	MP1B	Mx	0.025	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
46	MP1B	X	0	6
47	MP1B	Z	-116.686	6
48	MP1B	Mx	0.025	6
49	MP3A	X	0	2
50	MP3A	Z	-116.686	2
51	MP3A	Mx	0.025	2
52	MP3A	X	0	6
53	MP3A	Z	-116.686	6
54	MP3A	Mx	0.025	6
55	A1	X	0	2
56	A1	Z	-63.257	2
57	A1	Mx	0	2
58	A1	X	0	4
59	A1	Z	-76.373	4
60	A1	Mx	0	4
61	B1	X	0	2
62	B1	Z	-130.162	2
63	B1	Mx	0	2
64	A2	X	0	2
65	A2	Z	-63.257	2
66	A2	Mx	0	2
67	B1	X	0	4
68	B1	Z	-63.257	4
69	B1	Mx	0	4
70	C1	X	0	3
71	C1	Z	-63.257	3
72	C1	Mx	0	3
73	A2	X	0	4
74	A2	Z	-76.373	4
75	A2	Mx	0	4
76	B2	X	0	3
77	B2	Z	-76.373	3
78	B2	Mx	0	3
79	C2	X	0	3
80	C2	Z	-76.373	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	18.616	3
2	MP2A	Z	-32.244	3
3	MP2A	Mx	-0.025	3
4	MP2A	X	18.616	5
5	MP2A	Z	-32.244	5
6	MP2A	Mx	-0.025	5
7	MP2B	X	22.274	3
8	MP2B	Z	-38.579	3
9	MP2B	Mx	0.026	3
10	MP2B	X	22.274	5
11	MP2B	Z	-38.579	5
12	MP2B	Mx	0.026	5
13	MP3C	X	22.274	3
14	MP3C	Z	-38.579	3
15	MP3C	Mx	-0.026	3
16	MP3C	X	22.274	5

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
17	MP3C	Z	-38.579	5
18	MP3C	Mx	-0.026	5
19	MP4A	X	31.535	3
20	MP4A	Z	-54.619	3
21	MP4A	Mx	-0.014	3
22	MP4A	X	31.535	5
23	MP4A	Z	-54.619	5
24	MP4A	Mx	-0.014	5
25	MP1C	X	43.139	2
26	MP1C	Z	-74.719	2
27	MP1C	Mx	-0.01	2
28	MP1C	X	43.139	6
29	MP1C	Z	-74.719	6
30	MP1C	Mx	-0.01	6
31	MP1C	X	43.139	2
32	MP1C	Z	-74.719	2
33	MP1C	Mx	-0.092	2
34	MP1C	X	43.139	6
35	MP1C	Z	-74.719	6
36	MP1C	Mx	-0.092	6
37	MP1A	X	38.808	2
38	MP1A	Z	-67.218	2
39	MP1A	Mx	-0.053	2
40	MP1A	X	38.808	6
41	MP1A	Z	-67.218	6
42	MP1A	Mx	-0.053	6
43	MP1B	X	44.339	2
44	MP1B	Z	-76.797	2
45	MP1B	Mx	0.052	2
46	MP1B	X	44.339	6
47	MP1B	Z	-76.797	6
48	MP1B	Mx	0.052	6
49	MP3A	X	58.343	2
50	MP3A	Z	-101.053	2
51	MP3A	Mx	-0.025	2
52	MP3A	X	58.343	6
53	MP3A	Z	-101.053	6
54	MP3A	Mx	-0.025	6
55	A1	X	27.021	2
56	A1	Z	-46.801	2
57	A1	Mx	0	2
58	A1	X	32.811	4
59	A1	Z	-56.83	4
60	A1	Mx	0	4
61	B1	X	58.214	2
62	B1	Z	-100.83	2
63	B1	Mx	0	2
64	A2	X	27.021	2
65	A2	Z	-46.801	2
66	A2	Mx	0	2
67	B1	X	27.021	4
68	B1	Z	-46.801	4
69	B1	Mx	0	4
70	C1	X	27.021	3
71	C1	Z	-46.801	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
72	C1	Mx	0	3
73	A2	X	32.811	4
74	A2	Z	-56.83	4
75	A2	Mx	0	4
76	B2	X	32.811	3
77	B2	Z	-56.83	3
78	B2	Mx	0	3
79	C2	X	32.811	3
80	C2	Z	-56.83	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	20.339	3
2	MP2A	Z	-11.743	3
3	MP2A	Mx	-0.019	3
4	MP2A	X	20.339	5
5	MP2A	Z	-11.743	5
6	MP2A	Mx	-0.019	5
7	MP2B	X	22.539	3
8	MP2B	Z	-13.013	3
9	MP2B	Mx	0.021	3
10	MP2B	X	22.539	5
11	MP2B	Z	-13.013	5
12	MP2B	Mx	0.021	5
13	MP3C	X	54.619	3
14	MP3C	Z	-31.535	3
15	MP3C	Mx	-0.014	3
16	MP3C	X	54.619	5
17	MP3C	Z	-31.535	5
18	MP3C	Mx	-0.014	5
19	MP4A	X	38.579	3
20	MP4A	Z	-22.274	3
21	MP4A	Mx	-0.026	3
22	MP4A	X	38.579	5
23	MP4A	Z	-22.274	5
24	MP4A	Mx	-0.026	5
25	MP1C	X	84.03	2
26	MP1C	Z	-48.515	2
27	MP1C	Mx	0.042	2
28	MP1C	X	84.03	6
29	MP1C	Z	-48.515	6
30	MP1C	Mx	0.042	6
31	MP1C	X	84.03	2
32	MP1C	Z	-48.515	2
33	MP1C	Mx	-0.083	2
34	MP1C	X	84.03	6
35	MP1C	Z	-48.515	6
36	MP1C	Mx	-0.083	6
37	MP1A	X	49.214	2
38	MP1A	Z	-28.414	2
39	MP1A	Mx	-0.047	2
40	MP1A	X	49.214	6
41	MP1A	Z	-28.414	6
42	MP1A	Mx	-0.047	6

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
43	MP1B	X	52.541	2
44	MP1B	Z	-30.335	2
45	MP1B	Mx	0.049	2
46	MP1B	X	52.541	6
47	MP1B	Z	-30.335	6
48	MP1B	Mx	0.049	6
49	MP3A	X	76.797	2
50	MP3A	Z	-44.339	2
51	MP3A	Mx	-0.052	2
52	MP3A	X	76.797	6
53	MP3A	Z	-44.339	6
54	MP3A	Mx	-0.052	6
55	A1	X	38.82	2
56	A1	Z	-22.413	2
57	A1	Mx	0	2
58	A1	X	47.519	4
59	A1	Z	-27.435	4
60	A1	Mx	0	4
61	B1	X	88.937	2
62	B1	Z	-51.348	2
63	B1	Mx	0	2
64	A2	X	38.82	2
65	A2	Z	-22.413	2
66	A2	Mx	0	2
67	B1	X	38.82	4
68	B1	Z	-22.413	4
69	B1	Mx	0	4
70	C1	X	38.82	3
71	C1	Z	-22.413	3
72	C1	Mx	0	3
73	A2	X	47.519	4
74	A2	Z	-27.435	4
75	A2	Mx	0	4
76	B2	X	47.519	3
77	B2	Z	-27.435	3
78	B2	Mx	0	3
79	C2	X	47.519	3
80	C2	Z	-27.435	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	30.8	3
2	MP2A	Z	0	3
3	MP2A	Mx	-0.023	3
4	MP2A	X	30.8	5
5	MP2A	Z	0	5
6	MP2A	Mx	-0.023	5
7	MP2B	X	26.026	3
8	MP2B	Z	0	3
9	MP2B	Mx	0.021	3
10	MP2B	X	26.026	5
11	MP2B	Z	0	5
12	MP2B	Mx	0.021	5
13	MP3C	X	63.069	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
14	MP3C	Z	0	3
15	MP3C	Mx	0.014	3
16	MP3C	X	63.069	5
17	MP3C	Z	0	5
18	MP3C	Mx	0.014	5
19	MP4A	X	26.026	3
20	MP4A	Z	0	3
21	MP4A	Mx	-0.021	3
22	MP4A	X	26.026	5
23	MP4A	Z	0	5
24	MP4A	Mx	-0.021	5
25	MP1C	X	97.03	2
26	MP1C	Z	0	2
27	MP1C	Mx	0.083	2
28	MP1C	X	97.03	6
29	MP1C	Z	0	6
30	MP1C	Mx	0.083	6
31	MP1C	X	97.03	2
32	MP1C	Z	0	2
33	MP1C	Mx	-0.042	2
34	MP1C	X	97.03	6
35	MP1C	Z	0	6
36	MP1C	Mx	-0.042	6
37	MP1A	X	67.889	2
38	MP1A	Z	0	2
39	MP1A	Mx	-0.051	2
40	MP1A	X	67.889	6
41	MP1A	Z	0	6
42	MP1A	Mx	-0.051	6
43	MP1B	X	60.669	2
44	MP1B	Z	0	2
45	MP1B	Mx	0.049	2
46	MP1B	X	60.669	6
47	MP1B	Z	0	6
48	MP1B	Mx	0.049	6
49	MP3A	X	60.669	2
50	MP3A	Z	0	2
51	MP3A	Mx	-0.049	2
52	MP3A	X	60.669	6
53	MP3A	Z	0	6
54	MP3A	Mx	-0.049	6
55	A1	X	44.826	2
56	A1	Z	0	2
57	A1	Mx	0	2
58	A1	X	54.87	4
59	A1	Z	0	4
60	A1	Mx	0	4
61	B1	X	102.695	2
62	B1	Z	0	2
63	B1	Mx	0	2
64	A2	X	44.826	2
65	A2	Z	0	2
66	A2	Mx	0	2
67	B1	X	44.826	4
68	B1	Z	0	4

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
69	B1	Mx	0	4
70	C1	X	44.826	3
71	C1	Z	0	3
72	C1	Mx	0	3
73	A2	X	54.87	4
74	A2	Z	0	4
75	A2	Mx	0	4
76	B2	X	54.87	3
77	B2	Z	0	3
78	B2	Mx	0	3
79	C2	X	54.87	3
80	C2	Z	0	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	44.914	3
2	MP2A	Z	25.931	3
3	MP2A	Mx	-0.025	3
4	MP2A	X	44.914	5
5	MP2A	Z	25.931	5
6	MP2A	Mx	-0.025	5
7	MP2B	X	38.579	3
8	MP2B	Z	22.274	3
9	MP2B	Mx	0.026	3
10	MP2B	X	38.579	5
11	MP2B	Z	22.274	5
12	MP2B	Mx	0.026	5
13	MP3C	X	38.579	3
14	MP3C	Z	22.274	3
15	MP3C	Mx	0.026	3
16	MP3C	X	38.579	5
17	MP3C	Z	22.274	5
18	MP3C	Mx	0.026	5
19	MP4A	X	22.539	3
20	MP4A	Z	13.013	3
21	MP4A	Mx	-0.021	3
22	MP4A	X	22.539	5
23	MP4A	Z	13.013	5
24	MP4A	Mx	-0.021	5
25	MP1C	X	74.719	2
26	MP1C	Z	43.139	2
27	MP1C	Mx	0.092	2
28	MP1C	X	74.719	6
29	MP1C	Z	43.139	6
30	MP1C	Mx	0.092	6
31	MP1C	X	74.719	2
32	MP1C	Z	43.139	2
33	MP1C	Mx	0.01	2
34	MP1C	X	74.719	6
35	MP1C	Z	43.139	6
36	MP1C	Mx	0.01	6
37	MP1A	X	86.376	2
38	MP1A	Z	49.869	2
39	MP1A	Mx	-0.048	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
40	MP1A	X	86.376	6
41	MP1A	Z	49.869	6
42	MP1A	Mx	-0.048	6
43	MP1B	X	76.797	2
44	MP1B	Z	44.339	2
45	MP1B	Mx	0.052	2
46	MP1B	X	76.797	6
47	MP1B	Z	44.339	6
48	MP1B	Mx	0.052	6
49	MP3A	X	52.541	2
50	MP3A	Z	30.335	2
51	MP3A	Mx	-0.049	2
52	MP3A	X	52.541	6
53	MP3A	Z	30.335	6
54	MP3A	Mx	-0.049	6
55	A1	X	46.801	2
56	A1	Z	27.021	2
57	A1	Mx	0	2
58	A1	X	56.83	4
59	A1	Z	32.811	4
60	A1	Mx	0	4
61	B1	X	100.83	2
62	B1	Z	58.214	2
63	B1	Mx	0	2
64	A2	X	46.801	2
65	A2	Z	27.021	2
66	A2	Mx	0	2
67	B1	X	46.801	4
68	B1	Z	27.021	4
69	B1	Mx	0	4
70	C1	X	46.801	3
71	C1	Z	27.021	3
72	C1	Mx	0	3
73	A2	X	56.83	4
74	A2	Z	32.811	4
75	A2	Mx	0	4
76	B2	X	56.83	3
77	B2	Z	32.811	3
78	B2	Mx	0	3
79	C2	X	56.83	3
80	C2	Z	32.811	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	32.805	3
2	MP2A	Z	56.819	3
3	MP2A	Mx	-0.005	3
4	MP2A	X	32.805	5
5	MP2A	Z	56.819	5
6	MP2A	Mx	-0.005	5
7	MP2B	X	31.535	3
8	MP2B	Z	54.619	3
9	MP2B	Mx	0.014	3
10	MP2B	X	31.535	5

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
11	MP2B	Z	54.619	5
12	MP2B	Mx	0.014	5
13	MP3C	X	13.013	3
14	MP3C	Z	22.539	3
15	MP3C	Mx	0.021	3
16	MP3C	X	13.013	5
17	MP3C	Z	22.539	5
18	MP3C	Mx	0.021	5
19	MP4A	X	22.274	3
20	MP4A	Z	38.579	3
21	MP4A	Mx	-0.026	3
22	MP4A	X	22.274	5
23	MP4A	Z	38.579	5
24	MP4A	Mx	-0.026	5
25	MP1C	X	37.763	2
26	MP1C	Z	65.408	2
27	MP1C	Mx	0.074	2
28	MP1C	X	37.763	6
29	MP1C	Z	65.408	6
30	MP1C	Mx	0.074	6
31	MP1C	X	37.763	2
32	MP1C	Z	65.408	2
33	MP1C	Mx	0.048	2
34	MP1C	X	37.763	6
35	MP1C	Z	65.408	6
36	MP1C	Mx	0.048	6
37	MP1A	X	60.264	2
38	MP1A	Z	104.38	2
39	MP1A	Mx	-0.009	2
40	MP1A	X	60.264	6
41	MP1A	Z	104.38	6
42	MP1A	Mx	-0.009	6
43	MP1B	X	58.343	2
44	MP1B	Z	101.053	2
45	MP1B	Mx	0.025	2
46	MP1B	X	58.343	6
47	MP1B	Z	101.053	6
48	MP1B	Mx	0.025	6
49	MP3A	X	44.339	2
50	MP3A	Z	76.797	2
51	MP3A	Mx	-0.052	2
52	MP3A	X	44.339	6
53	MP3A	Z	76.797	6
54	MP3A	Mx	-0.052	6
55	A1	X	31.628	2
56	A1	Z	54.782	2
57	A1	Mx	0	2
58	A1	X	38.187	4
59	A1	Z	66.141	4
60	A1	Mx	0	4
61	B1	X	65.081	2
62	B1	Z	112.723	2
63	B1	Mx	0	2
64	A2	X	31.628	2
65	A2	Z	54.782	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
66	A2	Mx	0	2
67	B1	X	31.628	4
68	B1	Z	54.782	4
69	B1	Mx	0	4
70	C1	X	31.628	3
71	C1	Z	54.782	3
72	C1	Mx	0	3
73	A2	X	38.187	4
74	A2	Z	66.141	4
75	A2	Mx	0	4
76	B2	X	38.187	3
77	B2	Z	66.141	3
78	B2	Mx	0	3
79	C2	X	38.187	3
80	C2	Z	66.141	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	3
2	MP2A	Z	58.295	3
3	MP2A	Mx	0.021	3
4	MP2A	X	0	5
5	MP2A	Z	58.295	5
6	MP2A	Mx	0.021	5
7	MP2B	X	0	3
8	MP2B	Z	63.069	3
9	MP2B	Mx	-0.014	3
10	MP2B	X	0	5
11	MP2B	Z	63.069	5
12	MP2B	Mx	-0.014	5
13	MP3C	X	0	3
14	MP3C	Z	26.026	3
15	MP3C	Mx	0.021	3
16	MP3C	X	0	5
17	MP3C	Z	26.026	5
18	MP3C	Mx	0.021	5
19	MP4A	X	0	3
20	MP4A	Z	63.069	3
21	MP4A	Mx	-0.014	3
22	MP4A	X	0	5
23	MP4A	Z	63.069	5
24	MP4A	Mx	-0.014	5
25	MP1C	X	0	2
26	MP1C	Z	75.527	2
27	MP1C	Mx	0.048	2
28	MP1C	X	0	6
29	MP1C	Z	75.527	6
30	MP1C	Mx	0.048	6
31	MP1C	X	0	2
32	MP1C	Z	75.527	2
33	MP1C	Mx	0.074	2
34	MP1C	X	0	6
35	MP1C	Z	75.527	6
36	MP1C	Mx	0.074	6

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
37	MP1A	X	0	2
38	MP1A	Z	109.466	2
39	MP1A	Mx	0.039	2
40	MP1A	X	0	6
41	MP1A	Z	109.466	6
42	MP1A	Mx	0.039	6
43	MP1B	X	0	2
44	MP1B	Z	116.686	2
45	MP1B	Mx	-0.025	2
46	MP1B	X	0	6
47	MP1B	Z	116.686	6
48	MP1B	Mx	-0.025	6
49	MP3A	X	0	2
50	MP3A	Z	116.686	2
51	MP3A	Mx	-0.025	2
52	MP3A	X	0	6
53	MP3A	Z	116.686	6
54	MP3A	Mx	-0.025	6
55	A1	X	0	2
56	A1	Z	63.257	2
57	A1	Mx	0	2
58	A1	X	0	4
59	A1	Z	76.373	4
60	A1	Mx	0	4
61	B1	X	0	2
62	B1	Z	130.162	2
63	B1	Mx	0	2
64	A2	X	0	2
65	A2	Z	63.257	2
66	A2	Mx	0	2
67	B1	X	0	4
68	B1	Z	63.257	4
69	B1	Mx	0	4
70	C1	X	0	3
71	C1	Z	63.257	3
72	C1	Mx	0	3
73	A2	X	0	4
74	A2	Z	76.373	4
75	A2	Mx	0	4
76	B2	X	0	3
77	B2	Z	76.373	3
78	B2	Mx	0	3
79	C2	X	0	3
80	C2	Z	76.373	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-18.616	3
2	MP2A	Z	32.244	3
3	MP2A	Mx	0.025	3
4	MP2A	X	-18.616	5
5	MP2A	Z	32.244	5
6	MP2A	Mx	0.025	5
7	MP2B	X	-22.274	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
8	MP2B	Z	38.579	3
9	MP2B	Mx	-0.026	3
10	MP2B	X	-22.274	5
11	MP2B	Z	38.579	5
12	MP2B	Mx	-0.026	5
13	MP3C	X	-22.274	3
14	MP3C	Z	38.579	3
15	MP3C	Mx	0.026	3
16	MP3C	X	-22.274	5
17	MP3C	Z	38.579	5
18	MP3C	Mx	0.026	5
19	MP4A	X	-31.535	3
20	MP4A	Z	54.619	3
21	MP4A	Mx	0.014	3
22	MP4A	X	-31.535	5
23	MP4A	Z	54.619	5
24	MP4A	Mx	0.014	5
25	MP1C	X	-43.139	2
26	MP1C	Z	74.719	2
27	MP1C	Mx	0.01	2
28	MP1C	X	-43.139	6
29	MP1C	Z	74.719	6
30	MP1C	Mx	0.01	6
31	MP1C	X	-43.139	2
32	MP1C	Z	74.719	2
33	MP1C	Mx	0.092	2
34	MP1C	X	-43.139	6
35	MP1C	Z	74.719	6
36	MP1C	Mx	0.092	6
37	MP1A	X	-38.808	2
38	MP1A	Z	67.218	2
39	MP1A	Mx	0.053	2
40	MP1A	X	-38.808	6
41	MP1A	Z	67.218	6
42	MP1A	Mx	0.053	6
43	MP1B	X	-44.339	2
44	MP1B	Z	76.797	2
45	MP1B	Mx	-0.052	2
46	MP1B	X	-44.339	6
47	MP1B	Z	76.797	6
48	MP1B	Mx	-0.052	6
49	MP3A	X	-58.343	2
50	MP3A	Z	101.053	2
51	MP3A	Mx	0.025	2
52	MP3A	X	-58.343	6
53	MP3A	Z	101.053	6
54	MP3A	Mx	0.025	6
55	A1	X	-27.021	2
56	A1	Z	46.801	2
57	A1	Mx	0	2
58	A1	X	-32.811	4
59	A1	Z	56.83	4
60	A1	Mx	0	4
61	B1	X	-58.214	2
62	B1	Z	100.83	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
63	B1	Mx	0	2
64	A2	X	-27.021	2
65	A2	Z	46.801	2
66	A2	Mx	0	2
67	B1	X	-27.021	4
68	B1	Z	46.801	4
69	B1	Mx	0	4
70	C1	X	-27.021	3
71	C1	Z	46.801	3
72	C1	Mx	0	3
73	A2	X	-32.811	4
74	A2	Z	56.83	4
75	A2	Mx	0	4
76	B2	X	-32.811	3
77	B2	Z	56.83	3
78	B2	Mx	0	3
79	C2	X	-32.811	3
80	C2	Z	56.83	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-20.339	3
2	MP2A	Z	11.743	3
3	MP2A	Mx	0.019	3
4	MP2A	X	-20.339	5
5	MP2A	Z	11.743	5
6	MP2A	Mx	0.019	5
7	MP2B	X	-22.539	3
8	MP2B	Z	13.013	3
9	MP2B	Mx	-0.021	3
10	MP2B	X	-22.539	5
11	MP2B	Z	13.013	5
12	MP2B	Mx	-0.021	5
13	MP3C	X	-54.619	3
14	MP3C	Z	31.535	3
15	MP3C	Mx	0.014	3
16	MP3C	X	-54.619	5
17	MP3C	Z	31.535	5
18	MP3C	Mx	0.014	5
19	MP4A	X	-38.579	3
20	MP4A	Z	22.274	3
21	MP4A	Mx	0.026	3
22	MP4A	X	-38.579	5
23	MP4A	Z	22.274	5
24	MP4A	Mx	0.026	5
25	MP1C	X	-84.03	2
26	MP1C	Z	48.515	2
27	MP1C	Mx	-0.042	2
28	MP1C	X	-84.03	6
29	MP1C	Z	48.515	6
30	MP1C	Mx	-0.042	6
31	MP1C	X	-84.03	2
32	MP1C	Z	48.515	2
33	MP1C	Mx	0.083	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
34	MP1C	X	-84.03	6
35	MP1C	Z	48.515	6
36	MP1C	Mx	0.083	6
37	MP1A	X	-49.214	2
38	MP1A	Z	28.414	2
39	MP1A	Mx	0.047	2
40	MP1A	X	-49.214	6
41	MP1A	Z	28.414	6
42	MP1A	Mx	0.047	6
43	MP1B	X	-52.541	2
44	MP1B	Z	30.335	2
45	MP1B	Mx	-0.049	2
46	MP1B	X	-52.541	6
47	MP1B	Z	30.335	6
48	MP1B	Mx	-0.049	6
49	MP3A	X	-76.797	2
50	MP3A	Z	44.339	2
51	MP3A	Mx	0.052	2
52	MP3A	X	-76.797	6
53	MP3A	Z	44.339	6
54	MP3A	Mx	0.052	6
55	A1	X	-38.82	2
56	A1	Z	22.413	2
57	A1	Mx	0	2
58	A1	X	-47.519	4
59	A1	Z	27.435	4
60	A1	Mx	0	4
61	B1	X	-88.937	2
62	B1	Z	51.348	2
63	B1	Mx	0	2
64	A2	X	-38.82	2
65	A2	Z	22.413	2
66	A2	Mx	0	2
67	B1	X	-38.82	4
68	B1	Z	22.413	4
69	B1	Mx	0	4
70	C1	X	-38.82	3
71	C1	Z	22.413	3
72	C1	Mx	0	3
73	A2	X	-47.519	4
74	A2	Z	27.435	4
75	A2	Mx	0	4
76	B2	X	-47.519	3
77	B2	Z	27.435	3
78	B2	Mx	0	3
79	C2	X	-47.519	3
80	C2	Z	27.435	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-30.8	3
2	MP2A	Z	0	3
3	MP2A	Mx	0.023	3
4	MP2A	X	-30.8	5

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
5	MP2A	Z	0	5
6	MP2A	Mx	0.023	5
7	MP2B	X	-26.026	3
8	MP2B	Z	0	3
9	MP2B	Mx	-0.021	3
10	MP2B	X	-26.026	5
11	MP2B	Z	0	5
12	MP2B	Mx	-0.021	5
13	MP3C	X	-63.069	3
14	MP3C	Z	0	3
15	MP3C	Mx	-0.014	3
16	MP3C	X	-63.069	5
17	MP3C	Z	0	5
18	MP3C	Mx	-0.014	5
19	MP4A	X	-26.026	3
20	MP4A	Z	0	3
21	MP4A	Mx	0.021	3
22	MP4A	X	-26.026	5
23	MP4A	Z	0	5
24	MP4A	Mx	0.021	5
25	MP1C	X	-97.03	2
26	MP1C	Z	0	2
27	MP1C	Mx	-0.083	2
28	MP1C	X	-97.03	6
29	MP1C	Z	0	6
30	MP1C	Mx	-0.083	6
31	MP1C	X	-97.03	2
32	MP1C	Z	0	2
33	MP1C	Mx	0.042	2
34	MP1C	X	-97.03	6
35	MP1C	Z	0	6
36	MP1C	Mx	0.042	6
37	MP1A	X	-67.889	2
38	MP1A	Z	0	2
39	MP1A	Mx	0.051	2
40	MP1A	X	-67.889	6
41	MP1A	Z	0	6
42	MP1A	Mx	0.051	6
43	MP1B	X	-60.669	2
44	MP1B	Z	0	2
45	MP1B	Mx	-0.049	2
46	MP1B	X	-60.669	6
47	MP1B	Z	0	6
48	MP1B	Mx	-0.049	6
49	MP3A	X	-60.669	2
50	MP3A	Z	0	2
51	MP3A	Mx	0.049	2
52	MP3A	X	-60.669	6
53	MP3A	Z	0	6
54	MP3A	Mx	0.049	6
55	A1	X	-44.826	2
56	A1	Z	0	2
57	A1	Mx	0	2
58	A1	X	-54.87	4
59	A1	Z	0	4

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
60	A1	Mx	0	4
61	B1	X	-102.695	2
62	B1	Z	0	2
63	B1	Mx	0	2
64	A2	X	-44.826	2
65	A2	Z	0	2
66	A2	Mx	0	2
67	B1	X	-44.826	4
68	B1	Z	0	4
69	B1	Mx	0	4
70	C1	X	-44.826	3
71	C1	Z	0	3
72	C1	Mx	0	3
73	A2	X	-54.87	4
74	A2	Z	0	4
75	A2	Mx	0	4
76	B2	X	-54.87	3
77	B2	Z	0	3
78	B2	Mx	0	3
79	C2	X	-54.87	3
80	C2	Z	0	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-44.914	3
2	MP2A	Z	-25.931	3
3	MP2A	Mx	0.025	3
4	MP2A	X	-44.914	5
5	MP2A	Z	-25.931	5
6	MP2A	Mx	0.025	5
7	MP2B	X	-38.579	3
8	MP2B	Z	-22.274	3
9	MP2B	Mx	-0.026	3
10	MP2B	X	-38.579	5
11	MP2B	Z	-22.274	5
12	MP2B	Mx	-0.026	5
13	MP3C	X	-38.579	3
14	MP3C	Z	-22.274	3
15	MP3C	Mx	-0.026	3
16	MP3C	X	-38.579	5
17	MP3C	Z	-22.274	5
18	MP3C	Mx	-0.026	5
19	MP4A	X	-22.539	3
20	MP4A	Z	-13.013	3
21	MP4A	Mx	0.021	3
22	MP4A	X	-22.539	5
23	MP4A	Z	-13.013	5
24	MP4A	Mx	0.021	5
25	MP1C	X	-74.719	2
26	MP1C	Z	-43.139	2
27	MP1C	Mx	-0.092	2
28	MP1C	X	-74.719	6
29	MP1C	Z	-43.139	6
30	MP1C	Mx	-0.092	6

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
31	MP1C	X	-74.719	2
32	MP1C	Z	-43.139	2
33	MP1C	Mx	-0.01	2
34	MP1C	X	-74.719	6
35	MP1C	Z	-43.139	6
36	MP1C	Mx	-0.01	6
37	MP1A	X	-86.376	2
38	MP1A	Z	-49.869	2
39	MP1A	Mx	0.048	2
40	MP1A	X	-86.376	6
41	MP1A	Z	-49.869	6
42	MP1A	Mx	0.048	6
43	MP1B	X	-76.797	2
44	MP1B	Z	-44.339	2
45	MP1B	Mx	-0.052	2
46	MP1B	X	-76.797	6
47	MP1B	Z	-44.339	6
48	MP1B	Mx	-0.052	6
49	MP3A	X	-52.541	2
50	MP3A	Z	-30.335	2
51	MP3A	Mx	0.049	2
52	MP3A	X	-52.541	6
53	MP3A	Z	-30.335	6
54	MP3A	Mx	0.049	6
55	A1	X	-46.801	2
56	A1	Z	-27.021	2
57	A1	Mx	0	2
58	A1	X	-56.83	4
59	A1	Z	-32.811	4
60	A1	Mx	0	4
61	B1	X	-100.83	2
62	B1	Z	-58.214	2
63	B1	Mx	0	2
64	A2	X	-46.801	2
65	A2	Z	-27.021	2
66	A2	Mx	0	2
67	B1	X	-46.801	4
68	B1	Z	-27.021	4
69	B1	Mx	0	4
70	C1	X	-46.801	3
71	C1	Z	-27.021	3
72	C1	Mx	0	3
73	A2	X	-56.83	4
74	A2	Z	-32.811	4
75	A2	Mx	0	4
76	B2	X	-56.83	3
77	B2	Z	-32.811	3
78	B2	Mx	0	3
79	C2	X	-56.83	3
80	C2	Z	-32.811	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-32.805	3
2	MP2A	Z	-56.819	3
3	MP2A	Mx	0.005	3
4	MP2A	X	-32.805	5
5	MP2A	Z	-56.819	5
6	MP2A	Mx	0.005	5
7	MP2B	X	-31.535	3
8	MP2B	Z	-54.619	3
9	MP2B	Mx	-0.014	3
10	MP2B	X	-31.535	5
11	MP2B	Z	-54.619	5
12	MP2B	Mx	-0.014	5
13	MP3C	X	-13.013	3
14	MP3C	Z	-22.539	3
15	MP3C	Mx	-0.021	3
16	MP3C	X	-13.013	5
17	MP3C	Z	-22.539	5
18	MP3C	Mx	-0.021	5
19	MP4A	X	-22.274	3
20	MP4A	Z	-38.579	3
21	MP4A	Mx	0.026	3
22	MP4A	X	-22.274	5
23	MP4A	Z	-38.579	5
24	MP4A	Mx	0.026	5
25	MP1C	X	-37.763	2
26	MP1C	Z	-65.408	2
27	MP1C	Mx	-0.074	2
28	MP1C	X	-37.763	6
29	MP1C	Z	-65.408	6
30	MP1C	Mx	-0.074	6
31	MP1C	X	-37.763	2
32	MP1C	Z	-65.408	2
33	MP1C	Mx	-0.048	2
34	MP1C	X	-37.763	6
35	MP1C	Z	-65.408	6
36	MP1C	Mx	-0.048	6
37	MP1A	X	-60.264	2
38	MP1A	Z	-104.38	2
39	MP1A	Mx	0.009	2
40	MP1A	X	-60.264	6
41	MP1A	Z	-104.38	6
42	MP1A	Mx	0.009	6
43	MP1B	X	-58.343	2
44	MP1B	Z	-101.053	2
45	MP1B	Mx	-0.025	2
46	MP1B	X	-58.343	6
47	MP1B	Z	-101.053	6
48	MP1B	Mx	-0.025	6
49	MP3A	X	-44.339	2
50	MP3A	Z	-76.797	2
51	MP3A	Mx	0.052	2
52	MP3A	X	-44.339	6
53	MP3A	Z	-76.797	6
54	MP3A	Mx	0.052	6
55	A1	X	-31.628	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	-54.782	2
57	A1	Mx	0	2
58	A1	X	-38.187	4
59	A1	Z	-66.141	4
60	A1	Mx	0	4
61	B1	X	-65.081	2
62	B1	Z	-112.723	2
63	B1	Mx	0	2
64	A2	X	-31.628	2
65	A2	Z	-54.782	2
66	A2	Mx	0	2
67	B1	X	-31.628	4
68	B1	Z	-54.782	4
69	B1	Mx	0	4
70	C1	X	-31.628	3
71	C1	Z	-54.782	3
72	C1	Mx	0	3
73	A2	X	-38.187	4
74	A2	Z	-66.141	4
75	A2	Mx	0	4
76	B2	X	-38.187	3
77	B2	Z	-66.141	3
78	B2	Mx	0	3
79	C2	X	-38.187	3
80	C2	Z	-66.141	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	3
2	MP2A	Z	-14.063	3
3	MP2A	Mx	-0.005	3
4	MP2A	X	0	5
5	MP2A	Z	-14.063	5
6	MP2A	Mx	-0.005	5
7	MP2B	X	0	3
8	MP2B	Z	-15.075	3
9	MP2B	Mx	0.003	3
10	MP2B	X	0	5
11	MP2B	Z	-15.075	5
12	MP2B	Mx	0.003	5
13	MP3C	X	0	3
14	MP3C	Z	-7.225	3
15	MP3C	Mx	-0.006	3
16	MP3C	X	0	5
17	MP3C	Z	-7.225	5
18	MP3C	Mx	-0.006	5
19	MP4A	X	0	3
20	MP4A	Z	-15.075	3
21	MP4A	Mx	0.003	3
22	MP4A	X	0	5
23	MP4A	Z	-15.075	5
24	MP4A	Mx	0.003	5
25	MP1C	X	0	2
26	MP1C	Z	-30.111	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	-0.019	2
28	MP1C	X	0	6
29	MP1C	Z	-30.111	6
30	MP1C	Mx	-0.019	6
31	MP1C	X	0	2
32	MP1C	Z	-30.111	2
33	MP1C	Mx	-0.029	2
34	MP1C	X	0	6
35	MP1C	Z	-30.111	6
36	MP1C	Mx	-0.029	6
37	MP1A	X	0	2
38	MP1A	Z	-44.342	2
39	MP1A	Mx	-0.016	2
40	MP1A	X	0	6
41	MP1A	Z	-44.342	6
42	MP1A	Mx	-0.016	6
43	MP1B	X	0	2
44	MP1B	Z	-47.078	2
45	MP1B	Mx	0.01	2
46	MP1B	X	0	6
47	MP1B	Z	-47.078	6
48	MP1B	Mx	0.01	6
49	MP3A	X	0	2
50	MP3A	Z	-47.078	2
51	MP3A	Mx	0.01	2
52	MP3A	X	0	6
53	MP3A	Z	-47.078	6
54	MP3A	Mx	0.01	6
55	A1	X	0	2
56	A1	Z	-15.863	2
57	A1	Mx	0	2
58	A1	X	0	4
59	A1	Z	-15.876	4
60	A1	Mx	0	4
61	B1	X	0	2
62	B1	Z	-32.802	2
63	B1	Mx	0	2
64	A2	X	0	2
65	A2	Z	-15.863	2
66	A2	Mx	0	2
67	B1	X	0	4
68	B1	Z	-15.863	4
69	B1	Mx	0	4
70	C1	X	0	3
71	C1	Z	-15.863	3
72	C1	Mx	0	3
73	A2	X	0	4
74	A2	Z	-15.876	4
75	A2	Mx	0	4
76	B2	X	0	3
77	B2	Z	-15.876	3
78	B2	Mx	0	3
79	C2	X	0	3
80	C2	Z	-15.876	3
81	C2	Mx	0	3



Company : Colliers Engineering & Design
Designer :
Job Number : Project No. 10255617
Model Name : 5000911748-VZW_MT_LO_H

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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 16 : Antenna Wi (30 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	4.8	3
2	MP2A	Z	-8.314	3
3	MP2A	Mx	-0.007	3
4	MP2A	X	4.8	5
5	MP2A	Z	-8.314	5
6	MP2A	Mx	-0.007	5
7	MP2B	X	5.575	3
8	MP2B	Z	-9.656	3
9	MP2B	Mx	0.007	3
10	MP2B	X	5.575	5
11	MP2B	Z	-9.656	5
12	MP2B	Mx	0.007	5
13	MP3C	X	5.575	3
14	MP3C	Z	-9.656	3
15	MP3C	Mx	-0.007	3
16	MP3C	X	5.575	5
17	MP3C	Z	-9.656	5
18	MP3C	Mx	-0.007	5
19	MP4A	X	7.538	3
20	MP4A	Z	-13.055	3
21	MP4A	Mx	-0.003	3
22	MP4A	X	7.538	5
23	MP4A	Z	-13.055	5
24	MP4A	Mx	-0.003	5
25	MP1C	X	17.111	2
26	MP1C	Z	-29.637	2
27	MP1C	Mx	-0.004	2
28	MP1C	X	17.111	6
29	MP1C	Z	-29.637	6
30	MP1C	Mx	-0.004	6
31	MP1C	X	17.111	2
32	MP1C	Z	-29.637	2
33	MP1C	Mx	-0.036	2
34	MP1C	X	17.111	6
35	MP1C	Z	-29.637	6
36	MP1C	Mx	-0.036	6
37	MP1A	X	16.138	2
38	MP1A	Z	-27.951	2
39	MP1A	Mx	-0.022	2
40	MP1A	X	16.138	6
41	MP1A	Z	-27.951	6
42	MP1A	Mx	-0.022	6
43	MP1B	X	18.233	2
44	MP1B	Z	-31.58	2
45	MP1B	Mx	0.021	2
46	MP1B	X	18.233	6
47	MP1B	Z	-31.58	6
48	MP1B	Mx	0.021	6
49	MP3A	X	23.539	2
50	MP3A	Z	-40.77	2
51	MP3A	Mx	-0.01	2
52	MP3A	X	23.539	6
53	MP3A	Z	-40.77	6
54	MP3A	Mx	-0.01	6
55	A1	X	6.864	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	-11.888	2
57	A1	Mx	0	2
58	A1	X	6.913	4
59	A1	Z	-11.973	4
60	A1	Mx	0	4
61	B1	X	14.829	2
62	B1	Z	-25.685	2
63	B1	Mx	0	2
64	A2	X	6.864	2
65	A2	Z	-11.888	2
66	A2	Mx	0	2
67	B1	X	6.864	4
68	B1	Z	-11.888	4
69	B1	Mx	0	4
70	C1	X	6.864	3
71	C1	Z	-11.888	3
72	C1	Mx	0	3
73	A2	X	6.913	4
74	A2	Z	-11.973	4
75	A2	Mx	0	4
76	B2	X	6.913	3
77	B2	Z	-11.973	3
78	B2	Mx	0	3
79	C2	X	6.913	3
80	C2	Z	-11.973	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	5.791	3
2	MP2A	Z	-3.343	3
3	MP2A	Mx	-0.006	3
4	MP2A	X	5.791	5
5	MP2A	Z	-3.343	5
6	MP2A	Mx	-0.006	5
7	MP2B	X	6.257	3
8	MP2B	Z	-3.613	3
9	MP2B	Mx	0.006	3
10	MP2B	X	6.257	5
11	MP2B	Z	-3.613	5
12	MP2B	Mx	0.006	5
13	MP3C	X	13.055	3
14	MP3C	Z	-7.538	3
15	MP3C	Mx	-0.003	3
16	MP3C	X	13.055	5
17	MP3C	Z	-7.538	5
18	MP3C	Mx	-0.003	5
19	MP4A	X	9.656	3
20	MP4A	Z	-5.575	3
21	MP4A	Mx	-0.007	3
22	MP4A	X	9.656	5
23	MP4A	Z	-5.575	5
24	MP4A	Mx	-0.007	5
25	MP1C	X	33.196	2
26	MP1C	Z	-19.166	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	0.016	2
28	MP1C	X	33.196	6
29	MP1C	Z	-19.166	6
30	MP1C	Mx	0.016	6
31	MP1C	X	33.196	2
32	MP1C	Z	-19.166	2
33	MP1C	Mx	-0.033	2
34	MP1C	X	33.196	6
35	MP1C	Z	-19.166	6
36	MP1C	Mx	-0.033	6
37	MP1A	X	21.13	2
38	MP1A	Z	-12.199	2
39	MP1A	Mx	-0.02	2
40	MP1A	X	21.13	6
41	MP1A	Z	-12.199	6
42	MP1A	Mx	-0.02	6
43	MP1B	X	22.39	2
44	MP1B	Z	-12.927	2
45	MP1B	Mx	0.021	2
46	MP1B	X	22.39	6
47	MP1B	Z	-12.927	6
48	MP1B	Mx	0.021	6
49	MP3A	X	31.58	2
50	MP3A	Z	-18.233	2
51	MP3A	Mx	-0.021	2
52	MP3A	X	31.58	6
53	MP3A	Z	-18.233	6
54	MP3A	Mx	-0.021	6
55	A1	X	10.039	2
56	A1	Z	-5.796	2
57	A1	Mx	0	2
58	A1	X	10.198	4
59	A1	Z	-5.888	4
60	A1	Mx	0	4
61	B1	X	22.962	2
62	B1	Z	-13.257	2
63	B1	Mx	0	2
64	A2	X	10.039	2
65	A2	Z	-5.796	2
66	A2	Mx	0	2
67	B1	X	10.039	4
68	B1	Z	-5.796	4
69	B1	Mx	0	4
70	C1	X	10.039	3
71	C1	Z	-5.796	3
72	C1	Mx	0	3
73	A2	X	10.198	4
74	A2	Z	-5.888	4
75	A2	Mx	0	4
76	B2	X	10.198	3
77	B2	Z	-5.888	3
78	B2	Mx	0	3
79	C2	X	10.198	3
80	C2	Z	-5.888	3
81	C2	Mx	0	3



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Designer :
Job Number : Project No. 10255617
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Member Point Loads (BLC 17 : Antenna Wi (60 Deg)) (Continued)

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 18 : Antenna Wi (90 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	8.237	3
2	MP2A	Z	0	3
3	MP2A	Mx	-0.006	3
4	MP2A	X	8.237	5
5	MP2A	Z	0	5
6	MP2A	Mx	-0.006	5
7	MP2B	X	7.225	3
8	MP2B	Z	0	3
9	MP2B	Mx	0.006	3
10	MP2B	X	7.225	5
11	MP2B	Z	0	5
12	MP2B	Mx	0.006	5
13	MP3C	X	15.075	3
14	MP3C	Z	0	3
15	MP3C	Mx	0.003	3
16	MP3C	X	15.075	5
17	MP3C	Z	0	5
18	MP3C	Mx	0.003	5
19	MP4A	X	7.225	3
20	MP4A	Z	0	3
21	MP4A	Mx	-0.006	3
22	MP4A	X	7.225	5
23	MP4A	Z	0	5
24	MP4A	Mx	-0.006	5
25	MP1C	X	38.331	2
26	MP1C	Z	0	2
27	MP1C	Mx	0.033	2
28	MP1C	X	38.331	6
29	MP1C	Z	0	6
30	MP1C	Mx	0.033	6
31	MP1C	X	38.331	2
32	MP1C	Z	0	2
33	MP1C	Mx	-0.016	2
34	MP1C	X	38.331	6
35	MP1C	Z	0	6
36	MP1C	Mx	-0.016	6
37	MP1A	X	28.59	2
38	MP1A	Z	0	2
39	MP1A	Mx	-0.022	2
40	MP1A	X	28.59	6
41	MP1A	Z	0	6
42	MP1A	Mx	-0.022	6
43	MP1B	X	25.854	2
44	MP1B	Z	0	2
45	MP1B	Mx	0.021	2
46	MP1B	X	25.854	6
47	MP1B	Z	0	6
48	MP1B	Mx	0.021	6
49	MP3A	X	25.854	2
50	MP3A	Z	0	2
51	MP3A	Mx	-0.021	2
52	MP3A	X	25.854	6
53	MP3A	Z	0	6
54	MP3A	Mx	-0.021	6
55	A1	X	11.591	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	0	2
57	A1	Mx	0	2
58	A1	X	11.776	4
59	A1	Z	0	4
60	A1	Mx	0	4
61	B1	X	26.514	2
62	B1	Z	0	2
63	B1	Mx	0	2
64	A2	X	11.591	2
65	A2	Z	0	2
66	A2	Mx	0	2
67	B1	X	11.591	4
68	B1	Z	0	4
69	B1	Mx	0	4
70	C1	X	11.591	3
71	C1	Z	0	3
72	C1	Mx	0	3
73	A2	X	11.776	4
74	A2	Z	0	4
75	A2	Mx	0	4
76	B2	X	11.776	3
77	B2	Z	0	3
78	B2	Mx	0	3
79	C2	X	11.776	3
80	C2	Z	0	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	10.999	3
2	MP2A	Z	6.35	3
3	MP2A	Mx	-0.006	3
4	MP2A	X	10.999	5
5	MP2A	Z	6.35	5
6	MP2A	Mx	-0.006	5
7	MP2B	X	9.656	3
8	MP2B	Z	5.575	3
9	MP2B	Mx	0.007	3
10	MP2B	X	9.656	5
11	MP2B	Z	5.575	5
12	MP2B	Mx	0.007	5
13	MP3C	X	9.656	3
14	MP3C	Z	5.575	3
15	MP3C	Mx	0.007	3
16	MP3C	X	9.656	5
17	MP3C	Z	5.575	5
18	MP3C	Mx	0.007	5
19	MP4A	X	6.257	3
20	MP4A	Z	3.613	3
21	MP4A	Mx	-0.006	3
22	MP4A	X	6.257	5
23	MP4A	Z	3.613	5
24	MP4A	Mx	-0.006	5
25	MP1C	X	29.637	2
26	MP1C	Z	17.111	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	0.036	2
28	MP1C	X	29.637	6
29	MP1C	Z	17.111	6
30	MP1C	Mx	0.036	6
31	MP1C	X	29.637	2
32	MP1C	Z	17.111	2
33	MP1C	Mx	0.004	2
34	MP1C	X	29.637	6
35	MP1C	Z	17.111	6
36	MP1C	Mx	0.004	6
37	MP1A	X	35.21	2
38	MP1A	Z	20.328	2
39	MP1A	Mx	-0.019	2
40	MP1A	X	35.21	6
41	MP1A	Z	20.328	6
42	MP1A	Mx	-0.019	6
43	MP1B	X	31.58	2
44	MP1B	Z	18.233	2
45	MP1B	Mx	0.021	2
46	MP1B	X	31.58	6
47	MP1B	Z	18.233	6
48	MP1B	Mx	0.021	6
49	MP3A	X	22.39	2
50	MP3A	Z	12.927	2
51	MP3A	Mx	-0.021	2
52	MP3A	X	22.39	6
53	MP3A	Z	12.927	6
54	MP3A	Mx	-0.021	6
55	A1	X	11.888	2
56	A1	Z	6.864	2
57	A1	Mx	0	2
58	A1	X	11.973	4
59	A1	Z	6.913	4
60	A1	Mx	0	4
61	B1	X	25.685	2
62	B1	Z	14.829	2
63	B1	Mx	0	2
64	A2	X	11.888	2
65	A2	Z	6.864	2
66	A2	Mx	0	2
67	B1	X	11.888	4
68	B1	Z	6.864	4
69	B1	Mx	0	4
70	C1	X	11.888	3
71	C1	Z	6.864	3
72	C1	Mx	0	3
73	A2	X	11.973	4
74	A2	Z	6.913	4
75	A2	Mx	0	4
76	B2	X	11.973	3
77	B2	Z	6.913	3
78	B2	Mx	0	3
79	C2	X	11.973	3
80	C2	Z	6.913	3
81	C2	Mx	0	3



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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 20 : Antenna Wi (150 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	7.807	3
2	MP2A	Z	13.522	3
3	MP2A	Mx	-0.001	3
4	MP2A	X	7.807	5
5	MP2A	Z	13.522	5
6	MP2A	Mx	-0.001	5
7	MP2B	X	7.538	3
8	MP2B	Z	13.055	3
9	MP2B	Mx	0.003	3
10	MP2B	X	7.538	5
11	MP2B	Z	13.055	5
12	MP2B	Mx	0.003	5
13	MP3C	X	3.613	3
14	MP3C	Z	6.257	3
15	MP3C	Mx	0.006	3
16	MP3C	X	3.613	5
17	MP3C	Z	6.257	5
18	MP3C	Mx	0.006	5
19	MP4A	X	5.575	3
20	MP4A	Z	9.656	3
21	MP4A	Mx	-0.007	3
22	MP4A	X	5.575	5
23	MP4A	Z	9.656	5
24	MP4A	Mx	-0.007	5
25	MP1C	X	15.056	2
26	MP1C	Z	26.077	2
27	MP1C	Mx	0.029	2
28	MP1C	X	15.056	6
29	MP1C	Z	26.077	6
30	MP1C	Mx	0.029	6
31	MP1C	X	15.056	2
32	MP1C	Z	26.077	2
33	MP1C	Mx	0.019	2
34	MP1C	X	15.056	6
35	MP1C	Z	26.077	6
36	MP1C	Mx	0.019	6
37	MP1A	X	24.267	2
38	MP1A	Z	42.031	2
39	MP1A	Mx	-0.004	2
40	MP1A	X	24.267	6
41	MP1A	Z	42.031	6
42	MP1A	Mx	-0.004	6
43	MP1B	X	23.539	2
44	MP1B	Z	40.77	2
45	MP1B	Mx	0.01	2
46	MP1B	X	23.539	6
47	MP1B	Z	40.77	6
48	MP1B	Mx	0.01	6
49	MP3A	X	18.233	2
50	MP3A	Z	31.58	2
51	MP3A	Mx	-0.021	2
52	MP3A	X	18.233	6
53	MP3A	Z	31.58	6
54	MP3A	Mx	-0.021	6
55	A1	X	7.931	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	13.738	2
57	A1	Mx	0	2
58	A1	X	7.938	4
59	A1	Z	13.749	4
60	A1	Mx	0	4
61	B1	X	16.401	2
62	B1	Z	28.408	2
63	B1	Mx	0	2
64	A2	X	7.931	2
65	A2	Z	13.738	2
66	A2	Mx	0	2
67	B1	X	7.931	4
68	B1	Z	13.738	4
69	B1	Mx	0	4
70	C1	X	7.931	3
71	C1	Z	13.738	3
72	C1	Mx	0	3
73	A2	X	7.938	4
74	A2	Z	13.749	4
75	A2	Mx	0	4
76	B2	X	7.938	3
77	B2	Z	13.749	3
78	B2	Mx	0	3
79	C2	X	7.938	3
80	C2	Z	13.749	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	3
2	MP2A	Z	14.063	3
3	MP2A	Mx	0.005	3
4	MP2A	X	0	5
5	MP2A	Z	14.063	5
6	MP2A	Mx	0.005	5
7	MP2B	X	0	3
8	MP2B	Z	15.075	3
9	MP2B	Mx	-0.003	3
10	MP2B	X	0	5
11	MP2B	Z	15.075	5
12	MP2B	Mx	-0.003	5
13	MP3C	X	0	3
14	MP3C	Z	7.225	3
15	MP3C	Mx	0.006	3
16	MP3C	X	0	5
17	MP3C	Z	7.225	5
18	MP3C	Mx	0.006	5
19	MP4A	X	0	3
20	MP4A	Z	15.075	3
21	MP4A	Mx	-0.003	3
22	MP4A	X	0	5
23	MP4A	Z	15.075	5
24	MP4A	Mx	-0.003	5
25	MP1C	X	0	2
26	MP1C	Z	30.111	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	0.019	2
28	MP1C	X	0	6
29	MP1C	Z	30.111	6
30	MP1C	Mx	0.019	6
31	MP1C	X	0	2
32	MP1C	Z	30.111	2
33	MP1C	Mx	0.029	2
34	MP1C	X	0	6
35	MP1C	Z	30.111	6
36	MP1C	Mx	0.029	6
37	MP1A	X	0	2
38	MP1A	Z	44.342	2
39	MP1A	Mx	0.016	2
40	MP1A	X	0	6
41	MP1A	Z	44.342	6
42	MP1A	Mx	0.016	6
43	MP1B	X	0	2
44	MP1B	Z	47.078	2
45	MP1B	Mx	-0.01	2
46	MP1B	X	0	6
47	MP1B	Z	47.078	6
48	MP1B	Mx	-0.01	6
49	MP3A	X	0	2
50	MP3A	Z	47.078	2
51	MP3A	Mx	-0.01	2
52	MP3A	X	0	6
53	MP3A	Z	47.078	6
54	MP3A	Mx	-0.01	6
55	A1	X	0	2
56	A1	Z	15.863	2
57	A1	Mx	0	2
58	A1	X	0	4
59	A1	Z	15.876	4
60	A1	Mx	0	4
61	B1	X	0	2
62	B1	Z	32.802	2
63	B1	Mx	0	2
64	A2	X	0	2
65	A2	Z	15.863	2
66	A2	Mx	0	2
67	B1	X	0	4
68	B1	Z	15.863	4
69	B1	Mx	0	4
70	C1	X	0	3
71	C1	Z	15.863	3
72	C1	Mx	0	3
73	A2	X	0	4
74	A2	Z	15.876	4
75	A2	Mx	0	4
76	B2	X	0	3
77	B2	Z	15.876	3
78	B2	Mx	0	3
79	C2	X	0	3
80	C2	Z	15.876	3
81	C2	Mx	0	3



Company : Colliers Engineering & Design
Designer :
Job Number : Project No. 10255617
Model Name : 5000911748-VZW_MT_LO_H

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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 22 : Antenna Wi (210 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-4.8	3
2	MP2A	Z	8.314	3
3	MP2A	Mx	0.007	3
4	MP2A	X	-4.8	5
5	MP2A	Z	8.314	5
6	MP2A	Mx	0.007	5
7	MP2B	X	-5.575	3
8	MP2B	Z	9.656	3
9	MP2B	Mx	-0.007	3
10	MP2B	X	-5.575	5
11	MP2B	Z	9.656	5
12	MP2B	Mx	-0.007	5
13	MP3C	X	-5.575	3
14	MP3C	Z	9.656	3
15	MP3C	Mx	0.007	3
16	MP3C	X	-5.575	5
17	MP3C	Z	9.656	5
18	MP3C	Mx	0.007	5
19	MP4A	X	-7.538	3
20	MP4A	Z	13.055	3
21	MP4A	Mx	0.003	3
22	MP4A	X	-7.538	5
23	MP4A	Z	13.055	5
24	MP4A	Mx	0.003	5
25	MP1C	X	-17.111	2
26	MP1C	Z	29.637	2
27	MP1C	Mx	0.004	2
28	MP1C	X	-17.111	6
29	MP1C	Z	29.637	6
30	MP1C	Mx	0.004	6
31	MP1C	X	-17.111	2
32	MP1C	Z	29.637	2
33	MP1C	Mx	0.036	2
34	MP1C	X	-17.111	6
35	MP1C	Z	29.637	6
36	MP1C	Mx	0.036	6
37	MP1A	X	-16.138	2
38	MP1A	Z	27.951	2
39	MP1A	Mx	0.022	2
40	MP1A	X	-16.138	6
41	MP1A	Z	27.951	6
42	MP1A	Mx	0.022	6
43	MP1B	X	-18.233	2
44	MP1B	Z	31.58	2
45	MP1B	Mx	-0.021	2
46	MP1B	X	-18.233	6
47	MP1B	Z	31.58	6
48	MP1B	Mx	-0.021	6
49	MP3A	X	-23.539	2
50	MP3A	Z	40.77	2
51	MP3A	Mx	0.01	2
52	MP3A	X	-23.539	6
53	MP3A	Z	40.77	6
54	MP3A	Mx	0.01	6
55	A1	X	-6.864	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	11.888	2
57	A1	Mx	0	2
58	A1	X	-6.913	4
59	A1	Z	11.973	4
60	A1	Mx	0	4
61	B1	X	-14.829	2
62	B1	Z	25.685	2
63	B1	Mx	0	2
64	A2	X	-6.864	2
65	A2	Z	11.888	2
66	A2	Mx	0	2
67	B1	X	-6.864	4
68	B1	Z	11.888	4
69	B1	Mx	0	4
70	C1	X	-6.864	3
71	C1	Z	11.888	3
72	C1	Mx	0	3
73	A2	X	-6.913	4
74	A2	Z	11.973	4
75	A2	Mx	0	4
76	B2	X	-6.913	3
77	B2	Z	11.973	3
78	B2	Mx	0	3
79	C2	X	-6.913	3
80	C2	Z	11.973	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-5.791	3
2	MP2A	Z	3.343	3
3	MP2A	Mx	0.006	3
4	MP2A	X	-5.791	5
5	MP2A	Z	3.343	5
6	MP2A	Mx	0.006	5
7	MP2B	X	-6.257	3
8	MP2B	Z	3.613	3
9	MP2B	Mx	-0.006	3
10	MP2B	X	-6.257	5
11	MP2B	Z	3.613	5
12	MP2B	Mx	-0.006	5
13	MP3C	X	-13.055	3
14	MP3C	Z	7.538	3
15	MP3C	Mx	0.003	3
16	MP3C	X	-13.055	5
17	MP3C	Z	7.538	5
18	MP3C	Mx	0.003	5
19	MP4A	X	-9.656	3
20	MP4A	Z	5.575	3
21	MP4A	Mx	0.007	3
22	MP4A	X	-9.656	5
23	MP4A	Z	5.575	5
24	MP4A	Mx	0.007	5
25	MP1C	X	-33.196	2
26	MP1C	Z	19.166	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	-0.016	2
28	MP1C	X	-33.196	6
29	MP1C	Z	19.166	6
30	MP1C	Mx	-0.016	6
31	MP1C	X	-33.196	2
32	MP1C	Z	19.166	2
33	MP1C	Mx	0.033	2
34	MP1C	X	-33.196	6
35	MP1C	Z	19.166	6
36	MP1C	Mx	0.033	6
37	MP1A	X	-21.13	2
38	MP1A	Z	12.199	2
39	MP1A	Mx	0.02	2
40	MP1A	X	-21.13	6
41	MP1A	Z	12.199	6
42	MP1A	Mx	0.02	6
43	MP1B	X	-22.39	2
44	MP1B	Z	12.927	2
45	MP1B	Mx	-0.021	2
46	MP1B	X	-22.39	6
47	MP1B	Z	12.927	6
48	MP1B	Mx	-0.021	6
49	MP3A	X	-31.58	2
50	MP3A	Z	18.233	2
51	MP3A	Mx	0.021	2
52	MP3A	X	-31.58	6
53	MP3A	Z	18.233	6
54	MP3A	Mx	0.021	6
55	A1	X	-10.039	2
56	A1	Z	5.796	2
57	A1	Mx	0	2
58	A1	X	-10.198	4
59	A1	Z	5.888	4
60	A1	Mx	0	4
61	B1	X	-22.962	2
62	B1	Z	13.257	2
63	B1	Mx	0	2
64	A2	X	-10.039	2
65	A2	Z	5.796	2
66	A2	Mx	0	2
67	B1	X	-10.039	4
68	B1	Z	5.796	4
69	B1	Mx	0	4
70	C1	X	-10.039	3
71	C1	Z	5.796	3
72	C1	Mx	0	3
73	A2	X	-10.198	4
74	A2	Z	5.888	4
75	A2	Mx	0	4
76	B2	X	-10.198	3
77	B2	Z	5.888	3
78	B2	Mx	0	3
79	C2	X	-10.198	3
80	C2	Z	5.888	3
81	C2	Mx	0	3



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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 24 : Antenna Wi (270 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-8.237	3
2	MP2A	Z	0	3
3	MP2A	Mx	0.006	3
4	MP2A	X	-8.237	5
5	MP2A	Z	0	5
6	MP2A	Mx	0.006	5
7	MP2B	X	-7.225	3
8	MP2B	Z	0	3
9	MP2B	Mx	-0.006	3
10	MP2B	X	-7.225	5
11	MP2B	Z	0	5
12	MP2B	Mx	-0.006	5
13	MP3C	X	-15.075	3
14	MP3C	Z	0	3
15	MP3C	Mx	-0.003	3
16	MP3C	X	-15.075	5
17	MP3C	Z	0	5
18	MP3C	Mx	-0.003	5
19	MP4A	X	-7.225	3
20	MP4A	Z	0	3
21	MP4A	Mx	0.006	3
22	MP4A	X	-7.225	5
23	MP4A	Z	0	5
24	MP4A	Mx	0.006	5
25	MP1C	X	-38.331	2
26	MP1C	Z	0	2
27	MP1C	Mx	-0.033	2
28	MP1C	X	-38.331	6
29	MP1C	Z	0	6
30	MP1C	Mx	-0.033	6
31	MP1C	X	-38.331	2
32	MP1C	Z	0	2
33	MP1C	Mx	0.016	2
34	MP1C	X	-38.331	6
35	MP1C	Z	0	6
36	MP1C	Mx	0.016	6
37	MP1A	X	-28.59	2
38	MP1A	Z	0	2
39	MP1A	Mx	0.022	2
40	MP1A	X	-28.59	6
41	MP1A	Z	0	6
42	MP1A	Mx	0.022	6
43	MP1B	X	-25.854	2
44	MP1B	Z	0	2
45	MP1B	Mx	-0.021	2
46	MP1B	X	-25.854	6
47	MP1B	Z	0	6
48	MP1B	Mx	-0.021	6
49	MP3A	X	-25.854	2
50	MP3A	Z	0	2
51	MP3A	Mx	0.021	2
52	MP3A	X	-25.854	6
53	MP3A	Z	0	6
54	MP3A	Mx	0.021	6
55	A1	X	-11.591	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	0	2
57	A1	Mx	0	2
58	A1	X	-11.776	4
59	A1	Z	0	4
60	A1	Mx	0	4
61	B1	X	-26.514	2
62	B1	Z	0	2
63	B1	Mx	0	2
64	A2	X	-11.591	2
65	A2	Z	0	2
66	A2	Mx	0	2
67	B1	X	-11.591	4
68	B1	Z	0	4
69	B1	Mx	0	4
70	C1	X	-11.591	3
71	C1	Z	0	3
72	C1	Mx	0	3
73	A2	X	-11.776	4
74	A2	Z	0	4
75	A2	Mx	0	4
76	B2	X	-11.776	3
77	B2	Z	0	3
78	B2	Mx	0	3
79	C2	X	-11.776	3
80	C2	Z	0	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-10.999	3
2	MP2A	Z	-6.35	3
3	MP2A	Mx	0.006	3
4	MP2A	X	-10.999	5
5	MP2A	Z	-6.35	5
6	MP2A	Mx	0.006	5
7	MP2B	X	-9.656	3
8	MP2B	Z	-5.575	3
9	MP2B	Mx	-0.007	3
10	MP2B	X	-9.656	5
11	MP2B	Z	-5.575	5
12	MP2B	Mx	-0.007	5
13	MP3C	X	-9.656	3
14	MP3C	Z	-5.575	3
15	MP3C	Mx	-0.007	3
16	MP3C	X	-9.656	5
17	MP3C	Z	-5.575	5
18	MP3C	Mx	-0.007	5
19	MP4A	X	-6.257	3
20	MP4A	Z	-3.613	3
21	MP4A	Mx	0.006	3
22	MP4A	X	-6.257	5
23	MP4A	Z	-3.613	5
24	MP4A	Mx	0.006	5
25	MP1C	X	-29.637	2
26	MP1C	Z	-17.111	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	-0.036	2
28	MP1C	X	-29.637	6
29	MP1C	Z	-17.111	6
30	MP1C	Mx	-0.036	6
31	MP1C	X	-29.637	2
32	MP1C	Z	-17.111	2
33	MP1C	Mx	-0.004	2
34	MP1C	X	-29.637	6
35	MP1C	Z	-17.111	6
36	MP1C	Mx	-0.004	6
37	MP1A	X	-35.21	2
38	MP1A	Z	-20.328	2
39	MP1A	Mx	0.019	2
40	MP1A	X	-35.21	6
41	MP1A	Z	-20.328	6
42	MP1A	Mx	0.019	6
43	MP1B	X	-31.58	2
44	MP1B	Z	-18.233	2
45	MP1B	Mx	-0.021	2
46	MP1B	X	-31.58	6
47	MP1B	Z	-18.233	6
48	MP1B	Mx	-0.021	6
49	MP3A	X	-22.39	2
50	MP3A	Z	-12.927	2
51	MP3A	Mx	0.021	2
52	MP3A	X	-22.39	6
53	MP3A	Z	-12.927	6
54	MP3A	Mx	0.021	6
55	A1	X	-11.888	2
56	A1	Z	-6.864	2
57	A1	Mx	0	2
58	A1	X	-11.973	4
59	A1	Z	-6.913	4
60	A1	Mx	0	4
61	B1	X	-25.685	2
62	B1	Z	-14.829	2
63	B1	Mx	0	2
64	A2	X	-11.888	2
65	A2	Z	-6.864	2
66	A2	Mx	0	2
67	B1	X	-11.888	4
68	B1	Z	-6.864	4
69	B1	Mx	0	4
70	C1	X	-11.888	3
71	C1	Z	-6.864	3
72	C1	Mx	0	3
73	A2	X	-11.973	4
74	A2	Z	-6.913	4
75	A2	Mx	0	4
76	B2	X	-11.973	3
77	B2	Z	-6.913	3
78	B2	Mx	0	3
79	C2	X	-11.973	3
80	C2	Z	-6.913	3
81	C2	Mx	0	3



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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 26 : Antenna Wi (330 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-7.807	3
2	MP2A	Z	-13.522	3
3	MP2A	Mx	0.001	3
4	MP2A	X	-7.807	5
5	MP2A	Z	-13.522	5
6	MP2A	Mx	0.001	5
7	MP2B	X	-7.538	3
8	MP2B	Z	-13.055	3
9	MP2B	Mx	-0.003	3
10	MP2B	X	-7.538	5
11	MP2B	Z	-13.055	5
12	MP2B	Mx	-0.003	5
13	MP3C	X	-3.613	3
14	MP3C	Z	-6.257	3
15	MP3C	Mx	-0.006	3
16	MP3C	X	-3.613	5
17	MP3C	Z	-6.257	5
18	MP3C	Mx	-0.006	5
19	MP4A	X	-5.575	3
20	MP4A	Z	-9.656	3
21	MP4A	Mx	0.007	3
22	MP4A	X	-5.575	5
23	MP4A	Z	-9.656	5
24	MP4A	Mx	0.007	5
25	MP1C	X	-15.056	2
26	MP1C	Z	-26.077	2
27	MP1C	Mx	-0.029	2
28	MP1C	X	-15.056	6
29	MP1C	Z	-26.077	6
30	MP1C	Mx	-0.029	6
31	MP1C	X	-15.056	2
32	MP1C	Z	-26.077	2
33	MP1C	Mx	-0.019	2
34	MP1C	X	-15.056	6
35	MP1C	Z	-26.077	6
36	MP1C	Mx	-0.019	6
37	MP1A	X	-24.267	2
38	MP1A	Z	-42.031	2
39	MP1A	Mx	0.004	2
40	MP1A	X	-24.267	6
41	MP1A	Z	-42.031	6
42	MP1A	Mx	0.004	6
43	MP1B	X	-23.539	2
44	MP1B	Z	-40.77	2
45	MP1B	Mx	-0.01	2
46	MP1B	X	-23.539	6
47	MP1B	Z	-40.77	6
48	MP1B	Mx	-0.01	6
49	MP3A	X	-18.233	2
50	MP3A	Z	-31.58	2
51	MP3A	Mx	0.021	2
52	MP3A	X	-18.233	6
53	MP3A	Z	-31.58	6
54	MP3A	Mx	0.021	6
55	A1	X	-7.931	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	-13.738	2
57	A1	Mx	0	2
58	A1	X	-7.938	4
59	A1	Z	-13.749	4
60	A1	Mx	0	4
61	B1	X	-16.401	2
62	B1	Z	-28.408	2
63	B1	Mx	0	2
64	A2	X	-7.931	2
65	A2	Z	-13.738	2
66	A2	Mx	0	2
67	B1	X	-7.931	4
68	B1	Z	-13.738	4
69	B1	Mx	0	4
70	C1	X	-7.931	3
71	C1	Z	-13.738	3
72	C1	Mx	0	3
73	A2	X	-7.938	4
74	A2	Z	-13.749	4
75	A2	Mx	0	4
76	B2	X	-7.938	3
77	B2	Z	-13.749	3
78	B2	Mx	0	3
79	C2	X	-7.938	3
80	C2	Z	-13.749	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	3
2	MP2A	Z	-3.643	3
3	MP2A	Mx	-0.001	3
4	MP2A	X	0	5
5	MP2A	Z	-3.643	5
6	MP2A	Mx	-0.001	5
7	MP2B	X	0	3
8	MP2B	Z	-3.942	3
9	MP2B	Mx	0.00085	3
10	MP2B	X	0	5
11	MP2B	Z	-3.942	5
12	MP2B	Mx	0.00085	5
13	MP3C	X	0	3
14	MP3C	Z	-1.627	3
15	MP3C	Mx	-0.001	3
16	MP3C	X	0	5
17	MP3C	Z	-1.627	5
18	MP3C	Mx	-0.001	5
19	MP4A	X	0	3
20	MP4A	Z	-3.942	3
21	MP4A	Mx	0.00085	3
22	MP4A	X	0	5
23	MP4A	Z	-3.942	5
24	MP4A	Mx	0.00085	5
25	MP1C	X	0	2
26	MP1C	Z	-4.72	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	-0.003	2
28	MP1C	X	0	6
29	MP1C	Z	-4.72	6
30	MP1C	Mx	-0.003	6
31	MP1C	X	0	2
32	MP1C	Z	-4.72	2
33	MP1C	Mx	-0.005	2
34	MP1C	X	0	6
35	MP1C	Z	-4.72	6
36	MP1C	Mx	-0.005	6
37	MP1A	X	0	2
38	MP1A	Z	-6.842	2
39	MP1A	Mx	-0.002	2
40	MP1A	X	0	6
41	MP1A	Z	-6.842	6
42	MP1A	Mx	-0.002	6
43	MP1B	X	0	2
44	MP1B	Z	-7.293	2
45	MP1B	Mx	0.002	2
46	MP1B	X	0	6
47	MP1B	Z	-7.293	6
48	MP1B	Mx	0.002	6
49	MP3A	X	0	2
50	MP3A	Z	-7.293	2
51	MP3A	Mx	0.002	2
52	MP3A	X	0	6
53	MP3A	Z	-7.293	6
54	MP3A	Mx	0.002	6
55	A1	X	0	2
56	A1	Z	-3.954	2
57	A1	Mx	0	2
58	A1	X	0	4
59	A1	Z	-4.773	4
60	A1	Mx	0	4
61	B1	X	0	2
62	B1	Z	-8.135	2
63	B1	Mx	0	2
64	A2	X	0	2
65	A2	Z	-3.954	2
66	A2	Mx	0	2
67	B1	X	0	4
68	B1	Z	-3.954	4
69	B1	Mx	0	4
70	C1	X	0	3
71	C1	Z	-3.954	3
72	C1	Mx	0	3
73	A2	X	0	4
74	A2	Z	-4.773	4
75	A2	Mx	0	4
76	B2	X	0	3
77	B2	Z	-4.773	3
78	B2	Mx	0	3
79	C2	X	0	3
80	C2	Z	-4.773	3
81	C2	Mx	0	3



Company : Colliers Engineering & Design
Designer :
Job Number : Project No. 10255617
Model Name : 5000911748-VZW_MT_LO_H

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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 28 : Antenna Wm (30 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	1.164	3
2	MP2A	Z	-2.015	3
3	MP2A	Mx	-0.002	3
4	MP2A	X	1.164	5
5	MP2A	Z	-2.015	5
6	MP2A	Mx	-0.002	5
7	MP2B	X	1.392	3
8	MP2B	Z	-2.411	3
9	MP2B	Mx	0.002	3
10	MP2B	X	1.392	5
11	MP2B	Z	-2.411	5
12	MP2B	Mx	0.002	5
13	MP3C	X	1.392	3
14	MP3C	Z	-2.411	3
15	MP3C	Mx	-0.002	3
16	MP3C	X	1.392	5
17	MP3C	Z	-2.411	5
18	MP3C	Mx	-0.002	5
19	MP4A	X	1.971	3
20	MP4A	Z	-3.414	3
21	MP4A	Mx	-0.00085	3
22	MP4A	X	1.971	5
23	MP4A	Z	-3.414	5
24	MP4A	Mx	-0.00085	5
25	MP1C	X	2.696	2
26	MP1C	Z	-4.67	2
27	MP1C	Mx	-0.000636	2
28	MP1C	X	2.696	6
29	MP1C	Z	-4.67	6
30	MP1C	Mx	-0.000636	6
31	MP1C	X	2.696	2
32	MP1C	Z	-4.67	2
33	MP1C	Mx	-0.006	2
34	MP1C	X	2.696	6
35	MP1C	Z	-4.67	6
36	MP1C	Mx	-0.006	6
37	MP1A	X	2.426	2
38	MP1A	Z	-4.201	2
39	MP1A	Mx	-0.003	2
40	MP1A	X	2.426	6
41	MP1A	Z	-4.201	6
42	MP1A	Mx	-0.003	6
43	MP1B	X	2.771	2
44	MP1B	Z	-4.8	2
45	MP1B	Mx	0.003	2
46	MP1B	X	2.771	6
47	MP1B	Z	-4.8	6
48	MP1B	Mx	0.003	6
49	MP3A	X	3.646	2
50	MP3A	Z	-6.316	2
51	MP3A	Mx	-0.002	2
52	MP3A	X	3.646	6
53	MP3A	Z	-6.316	6
54	MP3A	Mx	-0.002	6
55	A1	X	1.689	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	-2.925	2
57	A1	Mx	0	2
58	A1	X	2.051	4
59	A1	Z	-3.552	4
60	A1	Mx	0	4
61	B1	X	3.638	2
62	B1	Z	-6.302	2
63	B1	Mx	0	2
64	A2	X	1.689	2
65	A2	Z	-2.925	2
66	A2	Mx	0	2
67	B1	X	1.689	4
68	B1	Z	-2.925	4
69	B1	Mx	0	4
70	C1	X	1.689	3
71	C1	Z	-2.925	3
72	C1	Mx	0	3
73	A2	X	2.051	4
74	A2	Z	-3.552	4
75	A2	Mx	0	4
76	B2	X	2.051	3
77	B2	Z	-3.552	3
78	B2	Mx	0	3
79	C2	X	2.051	3
80	C2	Z	-3.552	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	1.271	3
2	MP2A	Z	-0.734	3
3	MP2A	Mx	-0.001	3
4	MP2A	X	1.271	5
5	MP2A	Z	-0.734	5
6	MP2A	Mx	-0.001	5
7	MP2B	X	1.409	3
8	MP2B	Z	-0.813	3
9	MP2B	Mx	0.001	3
10	MP2B	X	1.409	5
11	MP2B	Z	-0.813	5
12	MP2B	Mx	0.001	5
13	MP3C	X	3.414	3
14	MP3C	Z	-1.971	3
15	MP3C	Mx	-0.00085	3
16	MP3C	X	3.414	5
17	MP3C	Z	-1.971	5
18	MP3C	Mx	-0.00085	5
19	MP4A	X	2.411	3
20	MP4A	Z	-1.392	3
21	MP4A	Mx	-0.002	3
22	MP4A	X	2.411	5
23	MP4A	Z	-1.392	5
24	MP4A	Mx	-0.002	5
25	MP1C	X	5.252	2
26	MP1C	Z	-3.032	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	0.003	2
28	MP1C	X	5.252	6
29	MP1C	Z	-3.032	6
30	MP1C	Mx	0.003	6
31	MP1C	X	5.252	2
32	MP1C	Z	-3.032	2
33	MP1C	Mx	-0.005	2
34	MP1C	X	5.252	6
35	MP1C	Z	-3.032	6
36	MP1C	Mx	-0.005	6
37	MP1A	X	3.076	2
38	MP1A	Z	-1.776	2
39	MP1A	Mx	-0.003	2
40	MP1A	X	3.076	6
41	MP1A	Z	-1.776	6
42	MP1A	Mx	-0.003	6
43	MP1B	X	3.284	2
44	MP1B	Z	-1.896	2
45	MP1B	Mx	0.003	2
46	MP1B	X	3.284	6
47	MP1B	Z	-1.896	6
48	MP1B	Mx	0.003	6
49	MP3A	X	4.8	2
50	MP3A	Z	-2.771	2
51	MP3A	Mx	-0.003	2
52	MP3A	X	4.8	6
53	MP3A	Z	-2.771	6
54	MP3A	Mx	-0.003	6
55	A1	X	2.426	2
56	A1	Z	-1.401	2
57	A1	Mx	0	2
58	A1	X	2.97	4
59	A1	Z	-1.715	4
60	A1	Mx	0	4
61	B1	X	5.559	2
62	B1	Z	-3.209	2
63	B1	Mx	0	2
64	A2	X	2.426	2
65	A2	Z	-1.401	2
66	A2	Mx	0	2
67	B1	X	2.426	4
68	B1	Z	-1.401	4
69	B1	Mx	0	4
70	C1	X	2.426	3
71	C1	Z	-1.401	3
72	C1	Mx	0	3
73	A2	X	2.97	4
74	A2	Z	-1.715	4
75	A2	Mx	0	4
76	B2	X	2.97	3
77	B2	Z	-1.715	3
78	B2	Mx	0	3
79	C2	X	2.97	3
80	C2	Z	-1.715	3
81	C2	Mx	0	3



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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 30 : Antenna Wm (90 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	1.925	3
2	MP2A	Z	0	3
3	MP2A	Mx	-0.001	3
4	MP2A	X	1.925	5
5	MP2A	Z	0	5
6	MP2A	Mx	-0.001	5
7	MP2B	X	1.627	3
8	MP2B	Z	0	3
9	MP2B	Mx	0.001	3
10	MP2B	X	1.627	5
11	MP2B	Z	0	5
12	MP2B	Mx	0.001	5
13	MP3C	X	3.942	3
14	MP3C	Z	0	3
15	MP3C	Mx	0.00085	3
16	MP3C	X	3.942	5
17	MP3C	Z	0	5
18	MP3C	Mx	0.00085	5
19	MP4A	X	1.627	3
20	MP4A	Z	0	3
21	MP4A	Mx	-0.001	3
22	MP4A	X	1.627	5
23	MP4A	Z	0	5
24	MP4A	Mx	-0.001	5
25	MP1C	X	6.064	2
26	MP1C	Z	0	2
27	MP1C	Mx	0.005	2
28	MP1C	X	6.064	6
29	MP1C	Z	0	6
30	MP1C	Mx	0.005	6
31	MP1C	X	6.064	2
32	MP1C	Z	0	2
33	MP1C	Mx	-0.003	2
34	MP1C	X	6.064	6
35	MP1C	Z	0	6
36	MP1C	Mx	-0.003	6
37	MP1A	X	4.243	2
38	MP1A	Z	0	2
39	MP1A	Mx	-0.003	2
40	MP1A	X	4.243	6
41	MP1A	Z	0	6
42	MP1A	Mx	-0.003	6
43	MP1B	X	3.792	2
44	MP1B	Z	0	2
45	MP1B	Mx	0.003	2
46	MP1B	X	3.792	6
47	MP1B	Z	0	6
48	MP1B	Mx	0.003	6
49	MP3A	X	3.792	2
50	MP3A	Z	0	2
51	MP3A	Mx	-0.003	2
52	MP3A	X	3.792	6
53	MP3A	Z	0	6
54	MP3A	Mx	-0.003	6
55	A1	X	2.802	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	0	2
57	A1	Mx	0	2
58	A1	X	3.429	4
59	A1	Z	0	4
60	A1	Mx	0	4
61	B1	X	6.418	2
62	B1	Z	0	2
63	B1	Mx	0	2
64	A2	X	2.802	2
65	A2	Z	0	2
66	A2	Mx	0	2
67	B1	X	2.802	4
68	B1	Z	0	4
69	B1	Mx	0	4
70	C1	X	2.802	3
71	C1	Z	0	3
72	C1	Mx	0	3
73	A2	X	3.429	4
74	A2	Z	0	4
75	A2	Mx	0	4
76	B2	X	3.429	3
77	B2	Z	0	3
78	B2	Mx	0	3
79	C2	X	3.429	3
80	C2	Z	0	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	2.807	3
2	MP2A	Z	1.621	3
3	MP2A	Mx	-0.002	3
4	MP2A	X	2.807	5
5	MP2A	Z	1.621	5
6	MP2A	Mx	-0.002	5
7	MP2B	X	2.411	3
8	MP2B	Z	1.392	3
9	MP2B	Mx	0.002	3
10	MP2B	X	2.411	5
11	MP2B	Z	1.392	5
12	MP2B	Mx	0.002	5
13	MP3C	X	2.411	3
14	MP3C	Z	1.392	3
15	MP3C	Mx	0.002	3
16	MP3C	X	2.411	5
17	MP3C	Z	1.392	5
18	MP3C	Mx	0.002	5
19	MP4A	X	1.409	3
20	MP4A	Z	0.813	3
21	MP4A	Mx	-0.001	3
22	MP4A	X	1.409	5
23	MP4A	Z	0.813	5
24	MP4A	Mx	-0.001	5
25	MP1C	X	4.67	2
26	MP1C	Z	2.696	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	0.006	2
28	MP1C	X	4.67	6
29	MP1C	Z	2.696	6
30	MP1C	Mx	0.006	6
31	MP1C	X	4.67	2
32	MP1C	Z	2.696	2
33	MP1C	Mx	0.000635	2
34	MP1C	X	4.67	6
35	MP1C	Z	2.696	6
36	MP1C	Mx	0.000635	6
37	MP1A	X	5.399	2
38	MP1A	Z	3.117	2
39	MP1A	Mx	-0.003	2
40	MP1A	X	5.399	6
41	MP1A	Z	3.117	6
42	MP1A	Mx	-0.003	6
43	MP1B	X	4.8	2
44	MP1B	Z	2.771	2
45	MP1B	Mx	0.003	2
46	MP1B	X	4.8	6
47	MP1B	Z	2.771	6
48	MP1B	Mx	0.003	6
49	MP3A	X	3.284	2
50	MP3A	Z	1.896	2
51	MP3A	Mx	-0.003	2
52	MP3A	X	3.284	6
53	MP3A	Z	1.896	6
54	MP3A	Mx	-0.003	6
55	A1	X	2.925	2
56	A1	Z	1.689	2
57	A1	Mx	0	2
58	A1	X	3.552	4
59	A1	Z	2.051	4
60	A1	Mx	0	4
61	B1	X	6.302	2
62	B1	Z	3.638	2
63	B1	Mx	0	2
64	A2	X	2.925	2
65	A2	Z	1.689	2
66	A2	Mx	0	2
67	B1	X	2.925	4
68	B1	Z	1.689	4
69	B1	Mx	0	4
70	C1	X	2.925	3
71	C1	Z	1.689	3
72	C1	Mx	0	3
73	A2	X	3.552	4
74	A2	Z	2.051	4
75	A2	Mx	0	4
76	B2	X	3.552	3
77	B2	Z	2.051	3
78	B2	Mx	0	3
79	C2	X	3.552	3
80	C2	Z	2.051	3
81	C2	Mx	0	3



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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 32 : Antenna Wm (150 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	2.05	3
2	MP2A	Z	3.551	3
3	MP2A	Mx	-0.000298	3
4	MP2A	X	2.05	5
5	MP2A	Z	3.551	5
6	MP2A	Mx	-0.000298	5
7	MP2B	X	1.971	3
8	MP2B	Z	3.414	3
9	MP2B	Mx	0.00085	3
10	MP2B	X	1.971	5
11	MP2B	Z	3.414	5
12	MP2B	Mx	0.00085	5
13	MP3C	X	0.813	3
14	MP3C	Z	1.409	3
15	MP3C	Mx	0.001	3
16	MP3C	X	0.813	5
17	MP3C	Z	1.409	5
18	MP3C	Mx	0.001	5
19	MP4A	X	1.392	3
20	MP4A	Z	2.411	3
21	MP4A	Mx	-0.002	3
22	MP4A	X	1.392	5
23	MP4A	Z	2.411	5
24	MP4A	Mx	-0.002	5
25	MP1C	X	2.36	2
26	MP1C	Z	4.088	2
27	MP1C	Mx	0.005	2
28	MP1C	X	2.36	6
29	MP1C	Z	4.088	6
30	MP1C	Mx	0.005	6
31	MP1C	X	2.36	2
32	MP1C	Z	4.088	2
33	MP1C	Mx	0.003	2
34	MP1C	X	2.36	6
35	MP1C	Z	4.088	6
36	MP1C	Mx	0.003	6
37	MP1A	X	3.766	2
38	MP1A	Z	6.524	2
39	MP1A	Mx	-0.000547	2
40	MP1A	X	3.766	6
41	MP1A	Z	6.524	6
42	MP1A	Mx	-0.000547	6
43	MP1B	X	3.646	2
44	MP1B	Z	6.316	2
45	MP1B	Mx	0.002	2
46	MP1B	X	3.646	6
47	MP1B	Z	6.316	6
48	MP1B	Mx	0.002	6
49	MP3A	X	2.771	2
50	MP3A	Z	4.8	2
51	MP3A	Mx	-0.003	2
52	MP3A	X	2.771	6
53	MP3A	Z	4.8	6
54	MP3A	Mx	-0.003	6
55	A1	X	1.977	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	3.424	2
57	A1	Mx	0	2
58	A1	X	2.387	4
59	A1	Z	4.134	4
60	A1	Mx	0	4
61	B1	X	4.068	2
62	B1	Z	7.045	2
63	B1	Mx	0	2
64	A2	X	1.977	2
65	A2	Z	3.424	2
66	A2	Mx	0	2
67	B1	X	1.977	4
68	B1	Z	3.424	4
69	B1	Mx	0	4
70	C1	X	1.977	3
71	C1	Z	3.424	3
72	C1	Mx	0	3
73	A2	X	2.387	4
74	A2	Z	4.134	4
75	A2	Mx	0	4
76	B2	X	2.387	3
77	B2	Z	4.134	3
78	B2	Mx	0	3
79	C2	X	2.387	3
80	C2	Z	4.134	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	3
2	MP2A	Z	3.643	3
3	MP2A	Mx	0.001	3
4	MP2A	X	0	5
5	MP2A	Z	3.643	5
6	MP2A	Mx	0.001	5
7	MP2B	X	0	3
8	MP2B	Z	3.942	3
9	MP2B	Mx	-0.00085	3
10	MP2B	X	0	5
11	MP2B	Z	3.942	5
12	MP2B	Mx	-0.00085	5
13	MP3C	X	0	3
14	MP3C	Z	1.627	3
15	MP3C	Mx	0.001	3
16	MP3C	X	0	5
17	MP3C	Z	1.627	5
18	MP3C	Mx	0.001	5
19	MP4A	X	0	3
20	MP4A	Z	3.942	3
21	MP4A	Mx	-0.00085	3
22	MP4A	X	0	5
23	MP4A	Z	3.942	5
24	MP4A	Mx	-0.00085	5
25	MP1C	X	0	2
26	MP1C	Z	4.72	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	0.003	2
28	MP1C	X	0	6
29	MP1C	Z	4.72	6
30	MP1C	Mx	0.003	6
31	MP1C	X	0	2
32	MP1C	Z	4.72	2
33	MP1C	Mx	0.005	2
34	MP1C	X	0	6
35	MP1C	Z	4.72	6
36	MP1C	Mx	0.005	6
37	MP1A	X	0	2
38	MP1A	Z	6.842	2
39	MP1A	Mx	0.002	2
40	MP1A	X	0	6
41	MP1A	Z	6.842	6
42	MP1A	Mx	0.002	6
43	MP1B	X	0	2
44	MP1B	Z	7.293	2
45	MP1B	Mx	-0.002	2
46	MP1B	X	0	6
47	MP1B	Z	7.293	6
48	MP1B	Mx	-0.002	6
49	MP3A	X	0	2
50	MP3A	Z	7.293	2
51	MP3A	Mx	-0.002	2
52	MP3A	X	0	6
53	MP3A	Z	7.293	6
54	MP3A	Mx	-0.002	6
55	A1	X	0	2
56	A1	Z	3.954	2
57	A1	Mx	0	2
58	A1	X	0	4
59	A1	Z	4.773	4
60	A1	Mx	0	4
61	B1	X	0	2
62	B1	Z	8.135	2
63	B1	Mx	0	2
64	A2	X	0	2
65	A2	Z	3.954	2
66	A2	Mx	0	2
67	B1	X	0	4
68	B1	Z	3.954	4
69	B1	Mx	0	4
70	C1	X	0	3
71	C1	Z	3.954	3
72	C1	Mx	0	3
73	A2	X	0	4
74	A2	Z	4.773	4
75	A2	Mx	0	4
76	B2	X	0	3
77	B2	Z	4.773	3
78	B2	Mx	0	3
79	C2	X	0	3
80	C2	Z	4.773	3
81	C2	Mx	0	3



Company : Colliers Engineering & Design
Designer :
Job Number : Project No. 10255617
Model Name : 5000911748-VZW_MT_LO_H

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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 34 : Antenna Wm (210 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-1.164	3
2	MP2A	Z	2.015	3
3	MP2A	Mx	0.002	3
4	MP2A	X	-1.164	5
5	MP2A	Z	2.015	5
6	MP2A	Mx	0.002	5
7	MP2B	X	-1.392	3
8	MP2B	Z	2.411	3
9	MP2B	Mx	-0.002	3
10	MP2B	X	-1.392	5
11	MP2B	Z	2.411	5
12	MP2B	Mx	-0.002	5
13	MP3C	X	-1.392	3
14	MP3C	Z	2.411	3
15	MP3C	Mx	0.002	3
16	MP3C	X	-1.392	5
17	MP3C	Z	2.411	5
18	MP3C	Mx	0.002	5
19	MP4A	X	-1.971	3
20	MP4A	Z	3.414	3
21	MP4A	Mx	0.00085	3
22	MP4A	X	-1.971	5
23	MP4A	Z	3.414	5
24	MP4A	Mx	0.00085	5
25	MP1C	X	-2.696	2
26	MP1C	Z	4.67	2
27	MP1C	Mx	0.000636	2
28	MP1C	X	-2.696	6
29	MP1C	Z	4.67	6
30	MP1C	Mx	0.000636	6
31	MP1C	X	-2.696	2
32	MP1C	Z	4.67	2
33	MP1C	Mx	0.006	2
34	MP1C	X	-2.696	6
35	MP1C	Z	4.67	6
36	MP1C	Mx	0.006	6
37	MP1A	X	-2.426	2
38	MP1A	Z	4.201	2
39	MP1A	Mx	0.003	2
40	MP1A	X	-2.426	6
41	MP1A	Z	4.201	6
42	MP1A	Mx	0.003	6
43	MP1B	X	-2.771	2
44	MP1B	Z	4.8	2
45	MP1B	Mx	-0.003	2
46	MP1B	X	-2.771	6
47	MP1B	Z	4.8	6
48	MP1B	Mx	-0.003	6
49	MP3A	X	-3.646	2
50	MP3A	Z	6.316	2
51	MP3A	Mx	0.002	2
52	MP3A	X	-3.646	6
53	MP3A	Z	6.316	6
54	MP3A	Mx	0.002	6
55	A1	X	-1.689	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	2.925	2
57	A1	Mx	0	2
58	A1	X	-2.051	4
59	A1	Z	3.552	4
60	A1	Mx	0	4
61	B1	X	-3.638	2
62	B1	Z	6.302	2
63	B1	Mx	0	2
64	A2	X	-1.689	2
65	A2	Z	2.925	2
66	A2	Mx	0	2
67	B1	X	-1.689	4
68	B1	Z	2.925	4
69	B1	Mx	0	4
70	C1	X	-1.689	3
71	C1	Z	2.925	3
72	C1	Mx	0	3
73	A2	X	-2.051	4
74	A2	Z	3.552	4
75	A2	Mx	0	4
76	B2	X	-2.051	3
77	B2	Z	3.552	3
78	B2	Mx	0	3
79	C2	X	-2.051	3
80	C2	Z	3.552	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-1.271	3
2	MP2A	Z	0.734	3
3	MP2A	Mx	0.001	3
4	MP2A	X	-1.271	5
5	MP2A	Z	0.734	5
6	MP2A	Mx	0.001	5
7	MP2B	X	-1.409	3
8	MP2B	Z	0.813	3
9	MP2B	Mx	-0.001	3
10	MP2B	X	-1.409	5
11	MP2B	Z	0.813	5
12	MP2B	Mx	-0.001	5
13	MP3C	X	-3.414	3
14	MP3C	Z	1.971	3
15	MP3C	Mx	0.00085	3
16	MP3C	X	-3.414	5
17	MP3C	Z	1.971	5
18	MP3C	Mx	0.00085	5
19	MP4A	X	-2.411	3
20	MP4A	Z	1.392	3
21	MP4A	Mx	0.002	3
22	MP4A	X	-2.411	5
23	MP4A	Z	1.392	5
24	MP4A	Mx	0.002	5
25	MP1C	X	-5.252	2
26	MP1C	Z	3.032	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	-0.003	2
28	MP1C	X	-5.252	6
29	MP1C	Z	3.032	6
30	MP1C	Mx	-0.003	6
31	MP1C	X	-5.252	2
32	MP1C	Z	3.032	2
33	MP1C	Mx	0.005	2
34	MP1C	X	-5.252	6
35	MP1C	Z	3.032	6
36	MP1C	Mx	0.005	6
37	MP1A	X	-3.076	2
38	MP1A	Z	1.776	2
39	MP1A	Mx	0.003	2
40	MP1A	X	-3.076	6
41	MP1A	Z	1.776	6
42	MP1A	Mx	0.003	6
43	MP1B	X	-3.284	2
44	MP1B	Z	1.896	2
45	MP1B	Mx	-0.003	2
46	MP1B	X	-3.284	6
47	MP1B	Z	1.896	6
48	MP1B	Mx	-0.003	6
49	MP3A	X	-4.8	2
50	MP3A	Z	2.771	2
51	MP3A	Mx	0.003	2
52	MP3A	X	-4.8	6
53	MP3A	Z	2.771	6
54	MP3A	Mx	0.003	6
55	A1	X	-2.426	2
56	A1	Z	1.401	2
57	A1	Mx	0	2
58	A1	X	-2.97	4
59	A1	Z	1.715	4
60	A1	Mx	0	4
61	B1	X	-5.559	2
62	B1	Z	3.209	2
63	B1	Mx	0	2
64	A2	X	-2.426	2
65	A2	Z	1.401	2
66	A2	Mx	0	2
67	B1	X	-2.426	4
68	B1	Z	1.401	4
69	B1	Mx	0	4
70	C1	X	-2.426	3
71	C1	Z	1.401	3
72	C1	Mx	0	3
73	A2	X	-2.97	4
74	A2	Z	1.715	4
75	A2	Mx	0	4
76	B2	X	-2.97	3
77	B2	Z	1.715	3
78	B2	Mx	0	3
79	C2	X	-2.97	3
80	C2	Z	1.715	3
81	C2	Mx	0	3



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

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 36 : Antenna Wm (270 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-1.925	3
2	MP2A	Z	0	3
3	MP2A	Mx	0.001	3
4	MP2A	X	-1.925	5
5	MP2A	Z	0	5
6	MP2A	Mx	0.001	5
7	MP2B	X	-1.627	3
8	MP2B	Z	0	3
9	MP2B	Mx	-0.001	3
10	MP2B	X	-1.627	5
11	MP2B	Z	0	5
12	MP2B	Mx	-0.001	5
13	MP3C	X	-3.942	3
14	MP3C	Z	0	3
15	MP3C	Mx	-0.00085	3
16	MP3C	X	-3.942	5
17	MP3C	Z	0	5
18	MP3C	Mx	-0.00085	5
19	MP4A	X	-1.627	3
20	MP4A	Z	0	3
21	MP4A	Mx	0.001	3
22	MP4A	X	-1.627	5
23	MP4A	Z	0	5
24	MP4A	Mx	0.001	5
25	MP1C	X	-6.064	2
26	MP1C	Z	0	2
27	MP1C	Mx	-0.005	2
28	MP1C	X	-6.064	6
29	MP1C	Z	0	6
30	MP1C	Mx	-0.005	6
31	MP1C	X	-6.064	2
32	MP1C	Z	0	2
33	MP1C	Mx	0.003	2
34	MP1C	X	-6.064	6
35	MP1C	Z	0	6
36	MP1C	Mx	0.003	6
37	MP1A	X	-4.243	2
38	MP1A	Z	0	2
39	MP1A	Mx	0.003	2
40	MP1A	X	-4.243	6
41	MP1A	Z	0	6
42	MP1A	Mx	0.003	6
43	MP1B	X	-3.792	2
44	MP1B	Z	0	2
45	MP1B	Mx	-0.003	2
46	MP1B	X	-3.792	6
47	MP1B	Z	0	6
48	MP1B	Mx	-0.003	6
49	MP3A	X	-3.792	2
50	MP3A	Z	0	2
51	MP3A	Mx	0.003	2
52	MP3A	X	-3.792	6
53	MP3A	Z	0	6
54	MP3A	Mx	0.003	6
55	A1	X	-2.802	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	0	2
57	A1	Mx	0	2
58	A1	X	-3.429	4
59	A1	Z	0	4
60	A1	Mx	0	4
61	B1	X	-6.418	2
62	B1	Z	0	2
63	B1	Mx	0	2
64	A2	X	-2.802	2
65	A2	Z	0	2
66	A2	Mx	0	2
67	B1	X	-2.802	4
68	B1	Z	0	4
69	B1	Mx	0	4
70	C1	X	-2.802	3
71	C1	Z	0	3
72	C1	Mx	0	3
73	A2	X	-3.429	4
74	A2	Z	0	4
75	A2	Mx	0	4
76	B2	X	-3.429	3
77	B2	Z	0	3
78	B2	Mx	0	3
79	C2	X	-3.429	3
80	C2	Z	0	3
81	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-2.807	3
2	MP2A	Z	-1.621	3
3	MP2A	Mx	0.002	3
4	MP2A	X	-2.807	5
5	MP2A	Z	-1.621	5
6	MP2A	Mx	0.002	5
7	MP2B	X	-2.411	3
8	MP2B	Z	-1.392	3
9	MP2B	Mx	-0.002	3
10	MP2B	X	-2.411	5
11	MP2B	Z	-1.392	5
12	MP2B	Mx	-0.002	5
13	MP3C	X	-2.411	3
14	MP3C	Z	-1.392	3
15	MP3C	Mx	-0.002	3
16	MP3C	X	-2.411	5
17	MP3C	Z	-1.392	5
18	MP3C	Mx	-0.002	5
19	MP4A	X	-1.409	3
20	MP4A	Z	-0.813	3
21	MP4A	Mx	0.001	3
22	MP4A	X	-1.409	5
23	MP4A	Z	-0.813	5
24	MP4A	Mx	0.001	5
25	MP1C	X	-4.67	2
26	MP1C	Z	-2.696	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
27	MP1C	Mx	-0.006	2
28	MP1C	X	-4.67	6
29	MP1C	Z	-2.696	6
30	MP1C	Mx	-0.006	6
31	MP1C	X	-4.67	2
32	MP1C	Z	-2.696	2
33	MP1C	Mx	-0.000635	2
34	MP1C	X	-4.67	6
35	MP1C	Z	-2.696	6
36	MP1C	Mx	-0.000635	6
37	MP1A	X	-5.399	2
38	MP1A	Z	-3.117	2
39	MP1A	Mx	0.003	2
40	MP1A	X	-5.399	6
41	MP1A	Z	-3.117	6
42	MP1A	Mx	0.003	6
43	MP1B	X	-4.8	2
44	MP1B	Z	-2.771	2
45	MP1B	Mx	-0.003	2
46	MP1B	X	-4.8	6
47	MP1B	Z	-2.771	6
48	MP1B	Mx	-0.003	6
49	MP3A	X	-3.284	2
50	MP3A	Z	-1.896	2
51	MP3A	Mx	0.003	2
52	MP3A	X	-3.284	6
53	MP3A	Z	-1.896	6
54	MP3A	Mx	0.003	6
55	A1	X	-2.925	2
56	A1	Z	-1.689	2
57	A1	Mx	0	2
58	A1	X	-3.552	4
59	A1	Z	-2.051	4
60	A1	Mx	0	4
61	B1	X	-6.302	2
62	B1	Z	-3.638	2
63	B1	Mx	0	2
64	A2	X	-2.925	2
65	A2	Z	-1.689	2
66	A2	Mx	0	2
67	B1	X	-2.925	4
68	B1	Z	-1.689	4
69	B1	Mx	0	4
70	C1	X	-2.925	3
71	C1	Z	-1.689	3
72	C1	Mx	0	3
73	A2	X	-3.552	4
74	A2	Z	-2.051	4
75	A2	Mx	0	4
76	B2	X	-3.552	3
77	B2	Z	-2.051	3
78	B2	Mx	0	3
79	C2	X	-3.552	3
80	C2	Z	-2.051	3
81	C2	Mx	0	3



Company : Colliers Engineering & Design
Designer :
Job Number : Project No. 10255617
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Member Point Loads (BLC 37 : Antenna Wm (300 Deg)) (Continued)

Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
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Member Point Loads (BLC 38 : Antenna Wm (330 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-2.05	3
2	MP2A	Z	-3.551	3
3	MP2A	Mx	0.000298	3
4	MP2A	X	-2.05	5
5	MP2A	Z	-3.551	5
6	MP2A	Mx	0.000298	5
7	MP2B	X	-1.971	3
8	MP2B	Z	-3.414	3
9	MP2B	Mx	-0.00085	3
10	MP2B	X	-1.971	5
11	MP2B	Z	-3.414	5
12	MP2B	Mx	-0.00085	5
13	MP3C	X	-0.813	3
14	MP3C	Z	-1.409	3
15	MP3C	Mx	-0.001	3
16	MP3C	X	-0.813	5
17	MP3C	Z	-1.409	5
18	MP3C	Mx	-0.001	5
19	MP4A	X	-1.392	3
20	MP4A	Z	-2.411	3
21	MP4A	Mx	0.002	3
22	MP4A	X	-1.392	5
23	MP4A	Z	-2.411	5
24	MP4A	Mx	0.002	5
25	MP1C	X	-2.36	2
26	MP1C	Z	-4.088	2
27	MP1C	Mx	-0.005	2
28	MP1C	X	-2.36	6
29	MP1C	Z	-4.088	6
30	MP1C	Mx	-0.005	6
31	MP1C	X	-2.36	2
32	MP1C	Z	-4.088	2
33	MP1C	Mx	-0.003	2
34	MP1C	X	-2.36	6
35	MP1C	Z	-4.088	6
36	MP1C	Mx	-0.003	6
37	MP1A	X	-3.766	2
38	MP1A	Z	-6.524	2
39	MP1A	Mx	0.000547	2
40	MP1A	X	-3.766	6
41	MP1A	Z	-6.524	6
42	MP1A	Mx	0.000547	6
43	MP1B	X	-3.646	2
44	MP1B	Z	-6.316	2
45	MP1B	Mx	-0.002	2
46	MP1B	X	-3.646	6
47	MP1B	Z	-6.316	6
48	MP1B	Mx	-0.002	6
49	MP3A	X	-2.771	2
50	MP3A	Z	-4.8	2
51	MP3A	Mx	0.003	2
52	MP3A	X	-2.771	6
53	MP3A	Z	-4.8	6
54	MP3A	Mx	0.003	6
55	A1	X	-1.977	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	A1	Z	-3.424	2
57	A1	Mx	0	2
58	A1	X	-2.387	4
59	A1	Z	-4.134	4
60	A1	Mx	0	4
61	B1	X	-4.068	2
62	B1	Z	-7.045	2
63	B1	Mx	0	2
64	A2	X	-1.977	2
65	A2	Z	-3.424	2
66	A2	Mx	0	2
67	B1	X	-1.977	4
68	B1	Z	-3.424	4
69	B1	Mx	0	4
70	C1	X	-1.977	3
71	C1	Z	-3.424	3
72	C1	Mx	0	3
73	A2	X	-2.387	4
74	A2	Z	-4.134	4
75	A2	Mx	0	4
76	B2	X	-2.387	3
77	B2	Z	-4.134	3
78	B2	Mx	0	3
79	C2	X	-2.387	3
80	C2	Z	-4.134	3
81	C2	Mx	0	3

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M12	Y	-500	0

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M6	Y	-500	0

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M1	Y	-250	0

Member Point Loads (BLC 80 : Lv2)

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

Member Point Loads (BLC 81 : Antenna Ev)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	Y	-1.259	3
2	MP2A	My	-0.000951	3
3	MP2A	Mz	0.000443	3
4	MP2A	Y	-1.259	5

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
5	MP2A	My	-0.000951	5
6	MP2A	Mz	0.000443	5
7	MP2B	Y	-1.259	3
8	MP2B	My	0.001	3
9	MP2B	Mz	-0.000272	3
10	MP2B	Y	-1.259	5
11	MP2B	My	0.001	5
12	MP2B	Mz	-0.000272	5
13	MP3C	Y	-1.259	3
14	MP3C	My	0.000272	3
15	MP3C	Mz	0.001	3
16	MP3C	Y	-1.259	5
17	MP3C	My	0.000272	5
18	MP3C	Mz	0.001	5
19	MP4A	Y	-1.259	3
20	MP4A	My	-0.001	3
21	MP4A	Mz	-0.000272	3
22	MP4A	Y	-1.259	5
23	MP4A	My	-0.001	5
24	MP4A	Mz	-0.000272	5
25	MP1C	Y	-1.714	2
26	MP1C	My	0.001	2
27	MP1C	Mz	0.001	2
28	MP1C	Y	-1.714	6
29	MP1C	My	0.001	6
30	MP1C	Mz	0.001	6
31	MP1C	Y	-1.714	2
32	MP1C	My	-0.000734	2
33	MP1C	Mz	0.002	2
34	MP1C	Y	-1.714	6
35	MP1C	My	-0.000734	6
36	MP1C	Mz	0.002	6
37	MP1A	Y	-1.714	2
38	MP1A	My	-0.001	2
39	MP1A	Mz	0.000604	2
40	MP1A	Y	-1.714	6
41	MP1A	My	-0.001	6
42	MP1A	Mz	0.000604	6
43	MP1B	Y	-1.714	2
44	MP1B	My	0.001	2
45	MP1B	Mz	-0.00037	2
46	MP1B	Y	-1.714	6
47	MP1B	My	0.001	6
48	MP1B	Mz	-0.00037	6
49	MP3A	Y	-1.714	2
50	MP3A	My	-0.001	2
51	MP3A	Mz	-0.00037	2
52	MP3A	Y	-1.714	6
53	MP3A	My	-0.001	6
54	MP3A	Mz	-0.00037	6
55	A1	Y	-3.283	2
56	A1	My	0	2
57	A1	Mz	0	2
58	A1	Y	-3.476	4
59	A1	My	0	4

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
60	A1	Mz	0	4
61	B1	Y	-1.406	2
62	B1	My	0	2
63	B1	Mz	0	2
64	A2	Y	-3.283	2
65	A2	My	0	2
66	A2	Mz	0	2
67	B1	Y	-3.283	4
68	B1	My	0	4
69	B1	Mz	0	4
70	C1	Y	-3.283	3
71	C1	My	0	3
72	C1	Mz	0	3
73	A2	Y	-3.476	4
74	A2	My	0	4
75	A2	Mz	0	4
76	B2	Y	-3.476	3
77	B2	My	0	3
78	B2	Mz	0	3
79	C2	Y	-3.476	3
80	C2	My	0	3
81	C2	Mz	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	Z	-3.148	3
2	MP2A	Mx	-0.001	3
3	MP2A	Z	-3.148	5
4	MP2A	Mx	-0.001	5
5	MP2B	Z	-3.148	3
6	MP2B	Mx	0.000679	3
7	MP2B	Z	-3.148	5
8	MP2B	Mx	0.000679	5
9	MP3C	Z	-3.148	3
10	MP3C	Mx	-0.003	3
11	MP3C	Z	-3.148	5
12	MP3C	Mx	-0.003	5
13	MP4A	Z	-3.148	3
14	MP4A	Mx	0.000679	3
15	MP4A	Z	-3.148	5
16	MP4A	Mx	0.000679	5
17	MP1C	Z	-4.285	2
18	MP1C	Mx	-0.003	2
19	MP1C	Z	-4.285	6
20	MP1C	Mx	-0.003	6
21	MP1C	Z	-4.285	2
22	MP1C	Mx	-0.004	2
23	MP1C	Z	-4.285	6
24	MP1C	Mx	-0.004	6
25	MP1A	Z	-4.285	2
26	MP1A	Mx	-0.002	2
27	MP1A	Z	-4.285	6
28	MP1A	Mx	-0.002	6
29	MP1B	Z	-4.285	2
30	MP1B	Mx	0.000924	2

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
31	MP1B	Z	-4.285	6
32	MP1B	Mx	0.000924	6
33	MP3A	Z	-4.285	2
34	MP3A	Mx	0.000924	2
35	MP3A	Z	-4.285	6
36	MP3A	Mx	0.000924	6
37	A1	Z	-8.207	2
38	A1	Mx	0	2
39	A1	Z	-8.69	4
40	A1	Mx	0	4
41	B1	Z	-3.516	2
42	B1	Mx	0	2
43	A2	Z	-8.207	2
44	A2	Mx	0	2
45	B1	Z	-8.207	4
46	B1	Mx	0	4
47	C1	Z	-8.207	3
48	C1	Mx	0	3
49	A2	Z	-8.69	4
50	A2	Mx	0	4
51	B2	Z	-8.69	3
52	B2	Mx	0	3
53	C2	Z	-8.69	3
54	C2	Mx	0	3

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	3.148	3
2	MP2A	Mx	-0.002	3
3	MP2A	X	3.148	5
4	MP2A	Mx	-0.002	5
5	MP2B	X	3.148	3
6	MP2B	Mx	0.003	3
7	MP2B	X	3.148	5
8	MP2B	Mx	0.003	5
9	MP3C	X	3.148	3
10	MP3C	Mx	0.000679	3
11	MP3C	X	3.148	5
12	MP3C	Mx	0.000679	5
13	MP4A	X	3.148	3
14	MP4A	Mx	-0.003	3
15	MP4A	X	3.148	5
16	MP4A	Mx	-0.003	5
17	MP1C	X	4.285	2
18	MP1C	Mx	0.004	2
19	MP1C	X	4.285	6
20	MP1C	Mx	0.004	6
21	MP1C	X	4.285	2
22	MP1C	Mx	-0.002	2
23	MP1C	X	4.285	6
24	MP1C	Mx	-0.002	6
25	MP1A	X	4.285	2
26	MP1A	Mx	-0.003	2
27	MP1A	X	4.285	6
28	MP1A	Mx	-0.003	6

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
29	MP1B	X	4.285	2
30	MP1B	Mx	0.003	2
31	MP1B	X	4.285	6
32	MP1B	Mx	0.003	6
33	MP3A	X	4.285	2
34	MP3A	Mx	-0.003	2
35	MP3A	X	4.285	6
36	MP3A	Mx	-0.003	6
37	A1	X	8.207	2
38	A1	Mx	0	2
39	A1	X	8.69	4
40	A1	Mx	0	4
41	B1	X	3.516	2
42	B1	Mx	0	2
43	A2	X	8.207	2
44	A2	Mx	0	2
45	B1	X	8.207	4
46	B1	Mx	0	4
47	C1	X	8.207	3
48	C1	Mx	0	3
49	A2	X	8.69	4
50	A2	Mx	0	4
51	B2	X	8.69	3
52	B2	Mx	0	3
53	C2	X	8.69	3
54	C2	Mx	0	3

Member Area Loads

No Data to Print...

Node Reactions

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N70	-671.224	572.96	487.737	-0.722	-0.168	-0.338
2	1	N72	-457.58	770.211	1840.399	0.526	-0.114	0.24
3	1	N91	-242.097	524.563	458.029	-0.212	-0.069	0.259
4	1	N93	742.673	641.85	-327.776	0.068	-0.023	-0.075
5	1	N159	755.164	635.411	1606.602	-0.702	0.254	0.134
6	1	N161	-126.957	380.624	816.419	0.699	0.192	-0.1
7	1	Totals:	-0.021	3525.62	4881.41			
8	1	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
9	2	N70	-1041.681	562.033	653.095	-0.824	-0.26	-0.612
10	2	N72	-783.74	812.373	2022.34	0.612	-0.196	0.493
11	2	N91	-820.287	574.696	481.313	-0.212	-0.002	-0.067
12	2	N93	213.682	580.945	-314.367	0.057	0.041	0.203
13	2	N159	483.92	586.183	952.84	-0.381	0.146	-0.022
14	2	N161	-336.935	409.389	162.612	0.387	0.077	0.024
15	2	Totals:	-2285.041	3525.619	3957.832			
16	2	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
17	3	N70	-888.925	589.035	357.52	-0.669	-0.222	-0.569
18	3	N72	-586.277	815.226	1759.356	0.467	-0.147	0.43
19	3	N91	-1518.926	633.588	418.789	-0.137	0.099	-0.475
20	3	N93	-433.485	492.961	-374.216	-0.027	0.135	0.546
21	3	N159	267.954	537.815	352.699	-0.057	0.043	-0.134
22	3	N161	-512.841	456.994	-393.808	0.1	-0.022	0.106

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
23	3	Totals:	-3672.499	3525.62	2120.34			
24	3	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
25	4	N70	-505.025	621.805	-24.941	-0.463	-0.126	-0.382
26	4	N72	-161.903	809.145	1403.854	0.275	-0.041	0.225
27	4	N91	-2045.202	671.357	135.105	0.075	0.226	-0.792
28	4	N93	-941.261	424.658	-641.024	-0.239	0.256	0.819
29	4	N159	92.465	498.609	-91.911	0.191	-0.031	-0.222
30	4	N161	-661.561	500.046	-781.098	-0.108	-0.087	0.172
31	4	Totals:	-4222.488	3525.62	-0.015			
32	4	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
33	5	N70	-300.653	664.343	-502.462	-0.2	-0.075	-0.278
34	5	N72	63.691	776.503	964.393	0.043	0.016	0.111
35	5	N91	-1953.313	660.85	-33.504	0.212	0.252	-0.763
36	5	N93	-865.823	409.826	-771.172	-0.363	0.275	0.787
37	5	N159	-71.207	449.624	-653.352	0.522	-0.133	-0.298
38	5	N161	-799.031	564.473	-1270.838	-0.382	-0.176	0.219
39	5	Totals:	-3926.336	3525.62	-2266.935			
40	5	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
41	6	N70	-79.734	730.096	-1240.398	0.214	-0.02	-0.125
42	6	N72	273.282	695.064	278.519	-0.312	0.068	-0.037
43	6	N91	-1373.289	618.945	108.886	0.158	0.148	-0.46
44	6	N93	-311.369	429.359	-581.494	-0.288	0.165	0.504
45	6	N159	-106.282	408.7	-1122.367	0.838	-0.23	-0.289
46	6	N161	-834.175	643.457	-1654.863	-0.626	-0.255	0.185
47	6	Totals:	-2431.567	3525.62	-4211.716			
48	6	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
49	7	N70	407.069	788.791	-1931.736	0.607	0.102	0.215
50	7	N72	723.527	605.694	-384.57	-0.65	0.181	-0.36
51	7	N91	-765.642	573.872	263.383	0.08	0.039	-0.133
52	7	N93	265.299	462.639	-395.516	-0.195	0.053	0.206
53	7	N159	72.039	416.297	-980.022	0.829	-0.221	-0.164
54	7	N161	-702.268	678.328	-1452.948	-0.573	-0.227	0.067
55	7	Totals:	0.024	3525.62	-4881.409			
56	7	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
57	8	N70	776.23	799.888	-2098.686	0.71	0.194	0.489
58	8	N72	1048.28	563.117	-567.933	-0.736	0.262	-0.613
59	8	N91	-185.427	523.516	238.923	0.08	-0.028	0.195
60	8	N93	796.099	524.03	-409.923	-0.184	-0.011	-0.072
61	8	N159	342.865	465.608	-323.777	0.506	-0.113	-0.007
62	8	N161	-493.003	649.462	-796.434	-0.26	-0.111	-0.057
63	8	Totals:	2285.044	3525.62	-3957.83			
64	8	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
65	9	N70	621.014	773.045	-1805.206	0.556	0.155	0.445
66	9	N72	848.306	559.777	-307.117	-0.592	0.212	-0.549
67	9	N91	515.966	464.449	301.39	0.005	-0.13	0.604
68	9	N93	1446.238	612.383	-349.639	-0.1	-0.105	-0.418
69	9	N159	558.516	513.984	278.052	0.182	-0.01	0.104
70	9	N161	-317.539	601.982	-237.819	0.029	-0.012	-0.139
71	9	Totals:	3672.502	3525.62	-2120.339			
72	9	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
73	10	N70	238.717	740.318	-1423.355	0.35	0.06	0.258
74	10	N72	425.672	565.821	47.782	-0.401	0.107	-0.345
75	10	N91	1040.386	426.879	584.625	-0.205	-0.257	0.92
76	10	N93	1952.615	680.377	-83.263	0.111	-0.226	-0.69
77	10	N159	733.97	553.186	723.556	-0.067	0.065	0.193

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
78	10	N161	-168.87	559.037	150.67	0.237	0.053	-0.206
79	10	Totals:	4222.491	3525.62	0.016			
80	10	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
81	11	N70	38.071	697.739	-945.881	0.088	0.01	0.157
82	11	N72	204.266	598.746	487.042	-0.169	0.051	-0.233
83	11	N91	944.458	437.726	754.69	-0.343	-0.282	0.889
84	11	N93	1873.226	694.534	47.967	0.235	-0.245	-0.656
85	11	N159	897.597	602.088	1283.82	-0.397	0.166	0.268
86	11	N161	-31.279	494.786	639.297	0.51	0.142	-0.252
87	11	Totals:	3926.339	3525.62	2266.935			
88	11	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
89	12	N70	-183.127	631.773	-205.764	-0.327	-0.046	0.003
90	12	N72	-5.613	680.633	1174.905	0.187	-0.001	-0.084
91	12	N91	364.283	479.659	614.095	-0.29	-0.179	0.585
92	12	N93	1318.395	674.806	-140.093	0.162	-0.135	-0.373
93	12	N159	933.055	642.919	1749.3	-0.711	0.262	0.259
94	12	N161	4.577	415.828	1019.274	0.752	0.22	-0.219
95	12	Totals:	2431.57	3525.62	4211.716			
96	12	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
97	13	N70	-606.427	1286.648	-1023.767	-0.323	-0.152	-0.289
98	13	N72	203.753	1368.687	1842.235	0.102	0.051	-0.079
99	13	N91	-877.083	1091.338	992.947	-0.29	-0.105	0.217
100	13	N93	1053.358	1137.534	-940.825	-0.182	0.072	0.1
101	13	N159	1058.716	1085.724	937.832	-0.074	0.071	0.073
102	13	N161	-832.322	1005.431	-160.127	0.38	0.069	-0.02
103	13	Totals:	-0.005	6975.361	1648.293			
104	13	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
105	14	N70	-716.379	1282.684	-967.951	-0.358	-0.179	-0.374
106	14	N72	110.698	1383.887	1903.522	0.13	0.028	-0.002
107	14	N91	-1090.848	1109.804	1002.54	-0.291	-0.081	0.095
108	14	N93	855.844	1114.504	-936.165	-0.186	0.095	0.204
109	14	N159	966.723	1069.475	723.584	0.031	0.036	0.019
110	14	N161	-905.723	1015.007	-375.07	0.278	0.031	0.024
111	14	Totals:	-779.685	6975.361	1350.459			
112	14	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
113	15	N70	-655.918	1291.786	-1070.252	-0.304	-0.164	-0.356
114	15	N72	188.551	1385.531	1812.609	0.08	0.047	-0.028
115	15	N91	-1342.135	1130.848	980.71	-0.264	-0.045	-0.051
116	15	N93	621.317	1082.726	-958.606	-0.217	0.13	0.329
117	15	N159	889.586	1053.19	526.894	0.137	0.003	-0.021
118	15	N161	-970.367	1031.279	-558.705	0.183	0	0.055
119	15	Totals:	-1268.966	6975.361	732.649			
120	15	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
121	16	N70	-524.329	1303.535	-1207.745	-0.23	-0.131	-0.292
122	16	N72	335.427	1382.888	1685.191	0.012	0.084	-0.099
123	16	N91	-1521.93	1143.825	886.289	-0.193	-0.002	-0.16
124	16	N93	447.321	1058.829	-1048.186	-0.289	0.171	0.422
125	16	N159	827.454	1039.575	376.159	0.222	-0.022	-0.053
126	16	N161	-1024.043	1046.709	-691.712	0.112	-0.022	0.079
127	16	Totals:	-1460.1	6975.361	-0.004			
128	16	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
129	17	N70	-453.219	1318.933	-1381.126	-0.134	-0.113	-0.254
130	17	N72	414.225	1370.12	1525.789	-0.072	0.104	-0.14
131	17	N91	-1483.201	1139.764	829.754	-0.146	0.006	-0.146
132	17	N93	480.531	1054.126	-1091.433	-0.331	0.176	0.407

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
133	17	N159	771.655	1023.212	194.054	0.33	-0.054	-0.078
134	17	N161	-1071.465	1069.208	-851.564	0.022	-0.051	0.095
135	17	Totals:	-1341.475	6975.361	-774.526			
136	17	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
137	18	N70	-378.588	1341.827	-1639.284	0.011	-0.095	-0.201
138	18	N72	484.786	1340.953	1285.968	-0.196	0.122	-0.191
139	18	N91	-1277.991	1124.758	873.092	-0.161	-0.029	-0.038
140	18	N93	677.356	1061.778	-1030.897	-0.308	0.139	0.307
141	18	N159	757.693	1010.147	53.7	0.428	-0.083	-0.077
142	18	N161	-1084.795	1095.899	-965.564	-0.053	-0.074	0.085
143	18	Totals:	-821.538	6975.361	-1422.986			
144	18	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
145	19	N70	-224.022	1361.948	-1875.683	0.145	-0.056	-0.092
146	19	N72	626.035	1309.722	1059.444	-0.312	0.157	-0.295
147	19	N91	-1060.155	1108.315	919.474	-0.184	-0.067	0.08
148	19	N93	884.972	1074.838	-972.312	-0.279	0.1	0.2
149	19	N159	814.597	1012.955	110.615	0.421	-0.078	-0.036
150	19	N161	-1041.417	1107.583	-889.828	-0.032	-0.063	0.046
151	19	Totals:	0.011	6975.361	-1648.29			
152	19	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
153	20	N70	-114.308	1365.932	-1931.689	0.18	-0.029	-0.007
154	20	N72	718.836	1294.467	997.985	-0.34	0.18	-0.371
155	20	N91	-846.061	1089.818	909.745	-0.184	-0.091	0.201
156	20	N93	1082.784	1097.936	-977.082	-0.274	0.076	0.096
157	20	N159	906.54	1029.213	325.151	0.316	-0.043	0.017
158	20	N161	-968.099	1097.995	-674.566	0.071	-0.026	0.002
159	20	Totals:	779.691	6975.361	-1350.456			
160	20	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
161	21	N70	-175.117	1356.847	-1829.605	0.127	-0.044	-0.025
162	21	N72	640.619	1292.763	1088.673	-0.29	0.161	-0.345
163	21	N91	-594.379	1068.748	931.556	-0.211	-0.127	0.348
164	21	N93	1317.734	1129.764	-954.593	-0.244	0.042	-0.029
165	21	N159	983.627	1045.498	522.016	0.209	-0.01	0.058
166	21	N161	-903.513	1081.741	-490.693	0.166	0.006	-0.029
167	21	Totals:	1268.972	6975.361	-732.646			
168	21	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
169	22	N70	-306.446	1345.104	-1692.182	0.052	-0.077	-0.089
170	22	N72	494.018	1295.407	1216.024	-0.222	0.124	-0.274
171	22	N91	-414.874	1055.8	1025.924	-0.282	-0.17	0.456
172	22	N93	1491.503	1153.613	-865.07	-0.172	0.001	-0.122
173	22	N159	1045.75	1059.112	672.855	0.125	0.015	0.089
174	22	N161	-849.845	1066.326	-357.544	0.237	0.028	-0.053
175	22	Totals:	1460.106	6975.361	0.008			
176	22	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
177	23	N70	-377.038	1329.7	-1518.797	-0.043	-0.094	-0.127
178	23	N72	415.798	1308.218	1375.411	-0.138	0.104	-0.234
179	23	N91	-454.169	1059.906	1082.663	-0.329	-0.178	0.442
180	23	N93	1457.738	1158.222	-821.673	-0.13	-0.005	-0.107
181	23	N159	1101.549	1075.465	854.786	0.016	0.047	0.114
182	23	N161	-802.397	1043.85	-197.861	0.327	0.057	-0.069
183	23	Totals:	1341.481	6975.361	774.53			
184	23	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
185	24	N70	-451.689	1306.779	-1260.372	-0.188	-0.113	-0.179
186	24	N72	345.22	1337.441	1615.476	-0.014	0.087	-0.183
187	24	N91	-659.416	1074.917	1039.536	-0.314	-0.143	0.334

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
188	24	N93	1260.846	1150.547	-882.021	-0.153	0.033	-0.007
189	24	N159	1115.563	1088.518	994.72	-0.082	0.076	0.113
190	24	N161	-788.98	1017.159	-84.351	0.402	0.08	-0.059
191	24	Totals:	821.544	6975.361	1422.989			
192	24	COG (ft):	X: 0.242	Y: 0.115	Z: 0.119			
193	25	N70	-1307.847	1042.701	-849.5	-0.26	-0.327	-0.583
194	25	N72	1238.083	1045.782	993.736	-0.153	0.31	-0.539
195	25	N91	-500.29	547.868	364.539	-0.074	-0.016	0.068
196	25	N93	531.638	558.532	-356.398	-0.053	0.01	0.051
197	25	N159	493.54	540.114	65.011	0.149	-0.048	0.035
198	25	N161	-455.138	540.623	87.703	0.241	0.077	0.015
199	25	Totals:	-0.015	4275.62	305.091			
200	25	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
201	26	N70	-1330.89	1042.046	-839.102	-0.266	-0.333	-0.6
202	26	N72	1217.659	1048.458	1005.129	-0.148	0.304	-0.523
203	26	N91	-536.484	551.008	366.029	-0.074	-0.012	0.048
204	26	N93	498.524	554.711	-355.529	-0.054	0.014	0.068
205	26	N159	476.564	537.006	24.103	0.169	-0.055	0.025
206	26	N161	-468.204	542.391	46.737	0.222	0.07	0.023
207	26	Totals:	-142.83	4275.62	247.367			
208	26	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
209	27	N70	-1321.219	1043.744	-857.552	-0.257	-0.33	-0.597
210	27	N72	1230.026	1048.664	988.796	-0.157	0.308	-0.527
211	27	N91	-580.23	554.694	362.122	-0.069	-0.006	0.022
212	27	N93	457.988	549.201	-359.283	-0.059	0.02	0.09
213	27	N159	463.065	533.97	-13.435	0.19	-0.061	0.018
214	27	N161	-479.175	545.348	11.875	0.204	0.064	0.028
215	27	Totals:	-229.546	4275.62	132.524			
216	27	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
217	28	N70	-1297.225	1045.796	-881.485	-0.244	-0.324	-0.585
218	28	N72	1256.447	1048.288	966.646	-0.169	0.314	-0.54
219	28	N91	-613.065	557.048	344.405	-0.056	0.002	0.003
220	28	N93	426.294	544.941	-375.946	-0.072	0.028	0.107
221	28	N159	452.098	531.515	-41.229	0.205	-0.066	0.012
222	28	N161	-488.468	548.032	-12.389	0.191	0.06	0.032
223	28	Totals:	-263.919	4275.62	0.001			
224	28	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
225	29	N70	-1284.514	1048.455	-911.389	-0.227	-0.321	-0.579
226	29	N72	1270.377	1046.237	939.244	-0.183	0.318	-0.547
227	29	N91	-607.204	556.382	333.825	-0.047	0.004	0.004
228	29	N93	431.123	544.033	-384.112	-0.08	0.029	0.105
229	29	N159	441.877	528.458	-76.261	0.226	-0.072	0.007
230	29	N161	-497.07	552.055	-42.989	0.174	0.054	0.035
231	29	Totals:	-245.411	4275.62	-141.682			
232	29	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
233	30	N70	-1270.705	1052.554	-957.664	-0.201	-0.318	-0.569
234	30	N72	1283.497	1041.115	896.409	-0.206	0.321	-0.556
235	30	N91	-570.948	553.761	342.672	-0.051	-0.003	0.023
236	30	N93	465.787	545.26	-372.305	-0.075	0.022	0.087
237	30	N159	439.704	525.921	-105.463	0.245	-0.078	0.008
238	30	N161	-499.32	557.01	-66.882	0.158	0.049	0.033
239	30	Totals:	-151.985	4275.62	-263.233			
240	30	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
241	31	N70	-1240.314	1056.19	-1001.016	-0.177	-0.31	-0.548
242	31	N72	1311.761	1035.489	854.984	-0.227	0.328	-0.577

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
243	31	N91	-533.008	550.949	352.376	-0.055	-0.01	0.044
244	31	N93	501.801	547.33	-360.631	-0.07	0.015	0.069
245	31	N159	450.885	526.425	-96.574	0.245	-0.077	0.016
246	31	N161	-491.138	559.237	-54.225	0.162	0.051	0.026
247	31	Totals:	-0.012	4275.62	-305.086			
248	31	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
249	32	N70	-1217.275	1056.846	-1011.421	-0.17	-0.304	-0.531
250	32	N72	1332.179	1032.811	843.585	-0.232	0.333	-0.593
251	32	N91	-496.806	547.809	350.881	-0.055	-0.014	0.064
252	32	N93	534.922	551.152	-361.503	-0.069	0.011	0.051
253	32	N159	467.859	529.534	-55.656	0.225	-0.071	0.026
254	32	N161	-478.075	557.468	-13.249	0.181	0.058	0.018
255	32	Totals:	142.803	4275.62	-247.363			
256	32	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
257	33	N70	-1226.956	1055.148	-992.979	-0.18	-0.307	-0.534
258	33	N72	1319.802	1032.604	859.91	-0.223	0.33	-0.589
259	33	N91	-453.049	544.122	354.787	-0.06	-0.02	0.09
260	33	N93	575.47	556.664	-357.748	-0.064	0.005	0.03
261	33	N159	481.358	532.57	-18.111	0.205	-0.064	0.033
262	33	N161	-467.105	554.511	21.622	0.199	0.064	0.013
263	33	Totals:	229.52	4275.62	-132.519			
264	33	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
265	34	N70	-1250.944	1053.097	-969.048	-0.193	-0.313	-0.545
266	34	N72	1293.389	1032.979	882.058	-0.211	0.323	-0.576
267	34	N91	-420.221	541.769	372.503	-0.073	-0.028	0.11
268	34	N93	607.158	560.923	-341.086	-0.05	-0.002	0.013
269	34	N159	492.324	535.025	9.686	0.189	-0.06	0.038
270	34	N161	-457.812	551.829	45.89	0.212	0.068	0.009
271	34	Totals:	263.893	4275.62	0.003			
272	34	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
273	35	N70	-1263.641	1050.437	-939.144	-0.209	-0.316	-0.552
274	35	N72	1279.475	1035.031	909.459	-0.197	0.32	-0.569
275	35	N91	-426.098	542.437	383.088	-0.082	-0.03	0.108
276	35	N93	602.314	561.828	-332.916	-0.043	-0.003	0.015
277	35	N159	502.545	538.082	44.713	0.168	-0.053	0.043
278	35	N161	-449.21	547.806	76.486	0.229	0.074	0.006
279	35	Totals:	245.385	4275.62	141.686			
280	35	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
281	36	N70	-1277.45	1046.338	-892.861	-0.235	-0.319	-0.562
282	36	N72	1266.353	1040.156	952.302	-0.174	0.317	-0.56
283	36	N91	-462.355	545.057	374.248	-0.079	-0.023	0.089
284	36	N93	567.648	560.601	-344.717	-0.047	0.003	0.032
285	36	N159	504.72	540.619	73.902	0.149	-0.047	0.042
286	36	N161	-446.957	542.851	100.364	0.245	0.079	0.008
287	36	Totals:	151.958	4275.62	263.237			
288	36	COG (ft):	X: 1.262	Y: -0.183	Z: 1.146			
289	37	N70	182.99	1048.255	-1165.323	-0.082	0.046	0.062
290	37	N72	-253.713	1068.27	1310.553	-0.02	-0.063	0.1
291	37	N91	-484.281	547.57	366.835	-0.075	-0.019	0.077
292	37	N93	515.631	557.716	-358.704	-0.055	0.013	0.058
293	37	N159	439.005	533.033	386.584	0.019	0.029	-0.006
294	37	N161	-399.628	520.777	-234.858	0.109	-0.002	-0.024
295	37	Totals:	0.004	4275.62	305.088			
296	37	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
297	38	N70	159.853	1047.552	-1154.963	-0.088	0.04	0.045

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
298	38	N72	-274.04	1070.905	1321.987	-0.015	-0.069	0.116
299	38	N91	-520.475	550.71	368.325	-0.075	-0.015	0.057
300	38	N93	482.518	553.895	-357.836	-0.056	0.017	0.076
301	38	N159	422.068	529.966	345.661	0.039	0.022	-0.016
302	38	N161	-412.735	522.591	-275.809	0.089	-0.009	-0.016
303	38	Totals:	-142.811	4275.62	247.364			
304	38	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
305	39	N70	169.475	1049.229	-1173.363	-0.079	0.042	0.048
306	39	N72	-261.624	1071.092	1305.603	-0.024	-0.065	0.112
307	39	N91	-564.222	554.396	364.419	-0.071	-0.008	0.031
308	39	N93	441.982	548.385	-361.589	-0.061	0.023	0.097
309	39	N159	408.581	526.949	308.101	0.059	0.016	-0.023
310	39	N161	-423.719	525.569	-310.649	0.071	-0.015	-0.011
311	39	Totals:	-229.527	4275.62	132.521			
312	39	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
313	40	N70	193.42	1051.275	-1197.231	-0.066	0.048	0.06
314	40	N72	-235.153	1070.71	1283.384	-0.036	-0.059	0.1
315	40	N91	-597.057	556.75	346.702	-0.058	0	0.011
316	40	N93	410.289	544.126	-378.252	-0.074	0.03	0.114
317	40	N159	397.616	524.5	280.281	0.075	0.011	-0.029
318	40	N161	-433.014	528.258	-334.885	0.058	-0.019	-0.007
319	40	Totals:	-263.9	4275.62	-0.001			
320	40	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
321	41	N70	206.091	1053.937	-1227.055	-0.049	0.052	0.066
322	41	N72	-221.183	1068.661	1255.899	-0.05	-0.055	0.093
323	41	N91	-591.197	556.084	336.121	-0.049	0.001	0.013
324	41	N93	415.118	543.218	-386.418	-0.082	0.032	0.112
325	41	N159	387.389	521.44	245.22	0.095	0.005	-0.033
326	41	N161	-441.61	532.279	-365.452	0.041	-0.025	-0.004
327	41	Totals:	-245.392	4275.62	-141.684			
328	41	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
329	42	N70	219.941	1058.063	-1273.196	-0.023	0.055	0.076
330	42	N72	-208.106	1063.564	1212.927	-0.073	-0.052	0.083
331	42	N91	-554.941	553.464	344.968	-0.052	-0.005	0.032
332	42	N93	449.783	544.445	-374.61	-0.077	0.025	0.094
333	42	N159	385.185	518.878	215.996	0.115	-0.001	-0.033
334	42	N161	-443.827	537.207	-389.321	0.026	-0.03	-0.006
335	42	Totals:	-151.966	4275.62	-263.236			
336	42	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
337	43	N70	250.445	1061.753	-1316.415	0.001	0.063	0.097
338	43	N72	-179.958	1057.984	1171.366	-0.094	-0.045	0.063
339	43	N91	-517	550.652	354.67	-0.057	-0.012	0.053
340	43	N93	485.796	546.515	-362.935	-0.071	0.018	0.076
341	43	N159	396.315	519.335	224.885	0.115	-0.001	-0.025
342	43	N161	-435.591	539.381	-376.66	0.029	-0.028	-0.013
343	43	Totals:	0.007	4275.62	-305.089			
344	43	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
345	44	N70	273.577	1062.456	-1326.781	0.008	0.068	0.114
346	44	N72	-159.637	1055.347	1159.927	-0.099	-0.04	0.047
347	44	N91	-480.798	547.511	353.175	-0.057	-0.016	0.073
348	44	N93	518.916	550.338	-363.807	-0.071	0.014	0.058
349	44	N159	413.251	522.402	265.818	0.095	0.006	-0.015
350	44	N161	-422.487	537.566	-335.697	0.049	-0.021	-0.021
351	44	Totals:	142.822	4275.62	-247.365			
352	44	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
353	45	N70	263.945	1060.78	-1308.389	-0.002	0.066	0.112
354	45	N72	-172.063	1055.158	1176.302	-0.09	-0.043	0.051
355	45	N91	-437.04	543.824	357.081	-0.062	-0.023	0.099
356	45	N93	559.464	555.849	-360.052	-0.066	0.008	0.037
357	45	N159	426.737	525.42	303.385	0.074	0.012	-0.008
358	45	N161	-411.504	534.589	-300.849	0.067	-0.014	-0.026
359	45	Totals:	229.539	4275.62	-132.522			
360	45	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
361	46	N70	240.007	1058.734	-1284.523	-0.015	0.06	0.1
362	46	N72	-198.527	1055.54	1198.518	-0.078	-0.05	0.064
363	46	N91	-404.212	541.471	374.797	-0.075	-0.031	0.118
364	46	N93	591.152	560.107	-343.39	-0.052	0	0.02
365	46	N159	437.701	527.868	331.208	0.059	0.017	-0.003
366	46	N161	-402.209	531.9	-276.609	0.08	-0.01	-0.03
367	46	Totals:	263.912	4275.62	0			
368	46	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
369	47	N70	227.35	1056.072	-1254.7	-0.031	0.057	0.093
370	47	N72	-212.48	1057.59	1226.003	-0.064	-0.053	0.071
371	47	N91	-410.088	542.139	385.383	-0.084	-0.032	0.117
372	47	N93	586.307	561.012	-335.221	-0.045	-0.001	0.022
373	47	N159	447.928	530.928	366.265	0.038	0.023	0.002
374	47	N161	-393.613	527.88	-246.046	0.097	-0.005	-0.033
375	47	Totals:	245.404	4275.62	141.684			
376	47	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
377	48	N70	213.499	1051.945	-1208.55	-0.057	0.053	0.084
378	48	N72	-225.558	1062.689	1268.982	-0.041	-0.056	0.08
379	48	N91	-446.345	544.759	376.543	-0.08	-0.026	0.098
380	48	N93	551.64	559.785	-347.022	-0.049	0.006	0.04
381	48	N159	450.134	533.49	395.475	0.018	0.029	0.002
382	48	N161	-391.393	522.952	-222.193	0.112	0	-0.031
383	48	Totals:	151.977	4275.62	263.235			
384	48	COG (ft):	X: -0.141	Y: -0.183	Z: 1.146			
385	49	N70	442.187	871.346	-1132.942	0.034	0.111	0.191
386	49	N72	-442.197	884.833	1133.037	0.006	-0.111	0.189
387	49	N91	-497.456	549.082	361.975	-0.067	-0.016	0.067
388	49	N93	497.523	552.031	-362.042	-0.064	0.016	0.068
389	49	N159	395.818	522.479	461.652	0.005	0.051	-0.043
390	49	N161	-395.865	520.846	-461.68	0.007	-0.053	-0.045
391	49	Totals:	0.01	3900.617	-0.001			
392	49	COG (ft):	X: -0.371	Y: -0.055	Z: 0.731			
393	50	N70	-136.288	868.618	-969.892	-0.059	-0.034	-0.064
394	50	N72	136.213	873.545	969.92	-0.062	0.034	-0.063
395	50	N91	-503.933	549.196	360.881	-0.066	-0.015	0.063
396	50	N93	504	552.344	-360.943	-0.063	0.015	0.066
397	50	N159	417.166	526.301	297.521	0.069	0.012	-0.012
398	50	N161	-417.156	530.615	-297.487	0.072	-0.013	-0.015
399	50	Totals:	0.002	3900.62	0			
400	50	COG (ft):	X: 0.23	Y: -0.055	Z: 0.731			
401	51	N70	-154.799	794.642	-845.716	-0.065	-0.039	-0.072
402	51	N72	154.714	802.116	845.695	-0.074	0.039	-0.07
403	51	N91	-587.832	640.776	421.297	-0.077	-0.018	0.074
404	51	N93	587.924	644.375	-421.371	-0.074	0.017	0.076
405	51	N159	483.218	613.595	368.129	0.073	0.019	-0.017
406	51	N161	-483.224	617.719	-368.034	0.075	-0.02	-0.02
407	51	Totals:	0.002	4113.223	0			

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
408	51	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
409	52	N70	-178.452	699.663	-680.046	-0.097	-0.045	-0.085
410	52	N72	92.932	716.881	817.105	-0.031	0.023	-0.04
411	52	N91	-492.571	567.288	399.264	-0.089	-0.025	0.085
412	52	N93	549.961	578.661	-354.879	-0.047	0.008	0.052
413	52	N159	444.163	551.334	399.267	0.022	0.031	-0.009
414	52	N161	-416.032	540.911	-257.916	0.105	-0.004	-0.021
415	52	Totals:	0.001	3654.737	322.795			
416	52	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
417	53	N70	-201.554	697.913	-657.683	-0.11	-0.05	-0.102
418	53	N72	73.183	721.081	839.293	-0.02	0.018	-0.024
419	53	N91	-541.067	571.049	386.005	-0.08	-0.016	0.058
420	53	N93	504.11	574.611	-369.253	-0.056	0.017	0.076
421	53	N159	431.537	549.315	369.98	0.035	0.026	-0.017
422	53	N161	-427.603	540.768	-288.801	0.091	-0.01	-0.013
423	53	Totals:	-161.395	3654.737	279.541			
424	53	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
425	54	N70	-207.502	698.336	-660.446	-0.109	-0.052	-0.11
426	54	N72	70.662	723.048	837.935	-0.022	0.018	-0.018
427	54	N91	-584.536	574.348	369.62	-0.069	-0.007	0.033
428	54	N93	463.158	570.016	-385.005	-0.068	0.025	0.098
429	54	N159	418.326	546.187	329.209	0.055	0.019	-0.024
430	54	N161	-439.645	542.802	-329.916	0.071	-0.017	-0.006
431	54	Totals:	-279.536	3654.737	161.397			
432	54	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
433	55	N70	-194.702	700.818	-687.593	-0.095	-0.049	-0.105
434	55	N72	86.045	722.256	813.398	-0.035	0.021	-0.024
435	55	N91	-611.34	576.3	354.498	-0.057	0	0.017
436	55	N93	438.069	566.107	-397.917	-0.079	0.031	0.112
437	55	N159	408.07	542.787	287.87	0.078	0.011	-0.029
438	55	N161	-448.931	546.468	-370.256	0.05	-0.025	-0.003
439	55	Totals:	-322.789	3654.737	0			
440	55	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
441	56	N70	-166.581	704.695	-731.852	-0.07	-0.042	-0.089
442	56	N72	115.211	718.917	772.254	-0.056	0.029	-0.04
443	56	N91	-614.287	576.383	344.692	-0.048	0.002	0.013
444	56	N93	435.575	563.931	-404.527	-0.087	0.033	0.114
445	56	N159	403.519	540.026	257.042	0.097	0.005	-0.03
446	56	N161	-452.971	550.784	-399.008	0.033	-0.03	-0.003
447	56	Totals:	-279.534	3654.737	-161.398			
448	56	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
449	57	N70	-130.682	708.927	-781.353	-0.042	-0.033	-0.066
450	57	N72	150.339	713.927	725.537	-0.081	0.038	-0.063
451	57	N91	-592.592	574.573	342.829	-0.045	0	0.024
452	57	N93	456.339	564.073	-403.066	-0.089	0.03	0.103
453	57	N159	405.89	538.644	244.984	0.108	0.002	-0.027
454	57	N161	-450.686	554.592	-408.471	0.025	-0.033	-0.008
455	57	Totals:	-161.393	3654.737	-279.541			
456	57	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
457	58	N70	-96.618	712.381	-822.846	-0.019	-0.024	-0.043
458	58	N72	182.022	708.621	685.754	-0.101	0.046	-0.085
459	58	N91	-552.061	571.356	349.405	-0.048	-0.007	0.046
460	58	N93	494.805	566.494	-393.926	-0.084	0.023	0.084
461	58	N159	414.545	539.011	254.926	0.107	0.003	-0.02
462	58	N161	-442.69	556.873	-396.109	0.028	-0.031	-0.015

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
463	58	Totals:	0.003	3654.737	-322.795			
464	58	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
465	59	N70	-73.519	714.131	-845.207	-0.006	-0.018	-0.025
466	59	N72	201.766	704.422	663.569	-0.112	0.05	-0.101
467	59	N91	-503.555	567.594	362.662	-0.057	-0.016	0.073
468	59	N93	540.664	570.545	-379.555	-0.075	0.014	0.059
469	59	N159	427.167	541.029	284.214	0.094	0.008	-0.012
470	59	N161	-431.125	557.015	-365.224	0.042	-0.026	-0.023
471	59	Totals:	161.398	3654.736	-279.54			
472	59	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
473	60	N70	-67.571	713.709	-842.449	-0.006	-0.017	-0.018
474	60	N72	204.287	702.453	664.921	-0.11	0.051	-0.107
475	60	N91	-460.081	564.295	379.045	-0.069	-0.025	0.098
476	60	N93	581.622	575.141	-363.805	-0.063	0.006	0.038
477	60	N159	440.372	544.158	324.991	0.074	0.015	-0.005
478	60	N161	-419.09	554.981	-324.1	0.062	-0.018	-0.029
479	60	Totals:	279.539	3654.736	-161.397			
480	60	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
481	61	N70	-80.367	711.227	-815.31	-0.021	-0.02	-0.023
482	61	N72	188.909	703.244	689.45	-0.097	0.047	-0.101
483	61	N91	-433.28	562.343	394.167	-0.08	-0.031	0.114
484	61	N93	606.708	579.05	-350.892	-0.052	0	0.024
485	61	N159	450.627	547.558	366.337	0.051	0.023	0
486	61	N161	-409.804	551.315	-283.752	0.083	-0.011	-0.033
487	61	Totals:	322.792	3654.736	0.001			
488	61	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
489	62	N70	-108.485	707.35	-771.054	-0.045	-0.027	-0.039
490	62	N72	159.747	706.583	730.591	-0.076	0.04	-0.085
491	62	N91	-430.342	562.261	403.976	-0.089	-0.034	0.118
492	62	N93	609.195	581.224	-344.279	-0.044	-0.002	0.022
493	62	N159	455.182	550.319	397.165	0.032	0.029	0
494	62	N161	-405.759	547	-255	0.1	-0.005	-0.032
495	62	Totals:	279.538	3654.737	161.398			
496	62	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
497	63	N70	-144.384	703.117	-721.547	-0.073	-0.036	-0.061
498	63	N72	124.619	711.575	777.313	-0.051	0.031	-0.062
499	63	N91	-452.043	564.071	405.841	-0.092	-0.031	0.107
500	63	N93	588.424	581.081	-345.738	-0.042	0.001	0.032
501	63	N159	452.817	551.701	409.217	0.021	0.032	-0.003
502	63	N161	-408.037	543.192	-245.545	0.108	-0.003	-0.028
503	63	Totals:	161.396	3654.737	279.541			
504	63	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
505	64	N70	-135.555	479.434	-445.74	-0.078	-0.034	-0.065
506	64	N72	50.076	494.702	582.783	-0.011	0.013	-0.021
507	64	N91	-329.703	389.71	282.542	-0.068	-0.02	0.065
508	64	N93	387.051	400.165	-238.133	-0.026	0.003	0.031
509	64	N159	310.283	381.287	297.275	0.002	0.026	-0.005
510	64	N161	-282.151	369.8	-155.932	0.084	0.001	-0.015
511	64	Totals:	0	2515.098	322.795			
512	64	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
513	65	N70	-158.653	477.687	-423.371	-0.092	-0.04	-0.082
514	65	N72	30.322	498.903	604.964	0	0.008	-0.004
515	65	N91	-378.199	393.471	269.283	-0.059	-0.011	0.038
516	65	N93	341.199	396.116	-252.506	-0.036	0.012	0.055
517	65	N159	297.658	379.266	267.984	0.014	0.021	-0.012

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
518	65	N161	-293.722	369.655	-186.812	0.071	-0.004	-0.007
519	65	Totals:	-161.395	2515.098	279.541			
520	65	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
521	66	N70	-164.596	478.112	-426.129	-0.091	-0.041	-0.09
522	66	N72	27.797	500.871	603.601	-0.001	0.007	0.002
523	66	N91	-421.67	396.769	252.896	-0.047	-0.002	0.013
524	66	N93	300.25	391.522	-268.257	-0.048	0.02	0.077
525	66	N159	284.447	376.137	227.212	0.035	0.014	-0.02
526	66	N161	-305.763	371.687	-227.926	0.051	-0.011	-0.001
527	66	Totals:	-279.536	2515.098	161.397			
528	66	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
529	67	N70	-151.795	480.595	-453.273	-0.076	-0.038	-0.085
530	67	N72	43.178	500.08	579.061	-0.014	0.011	-0.005
531	67	N91	-448.479	398.721	237.771	-0.036	0.005	-0.004
532	67	N93	275.164	387.613	-281.166	-0.059	0.026	0.091
533	67	N159	274.188	372.737	185.874	0.058	0.006	-0.024
534	67	N161	-315.047	375.353	-268.266	0.029	-0.019	0.003
535	67	Totals:	-322.79	2515.098	-0.001			
536	67	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
537	68	N70	-123.675	484.47	-497.532	-0.052	-0.031	-0.069
538	68	N72	72.346	496.741	537.917	-0.036	0.018	-0.021
539	68	N91	-451.43	398.804	227.963	-0.027	0.007	-0.007
540	68	N93	272.675	385.438	-287.774	-0.066	0.028	0.093
541	68	N159	269.634	369.977	155.05	0.077	0	-0.025
542	68	N161	-319.084	379.669	-297.022	0.012	-0.025	0.002
543	68	Totals:	-279.535	2515.098	-161.398			
544	68	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
545	69	N70	-87.779	488.699	-547.036	-0.024	-0.022	-0.046
546	69	N72	107.476	491.75	491.203	-0.06	0.027	-0.043
547	69	N91	-429.739	396.994	226.097	-0.024	0.005	0.004
548	69	N93	293.443	385.579	-286.311	-0.068	0.025	0.082
549	69	N159	272.002	368.597	142.997	0.088	-0.003	-0.022
550	69	N161	-316.796	383.478	-306.491	0.004	-0.027	-0.002
551	69	Totals:	-161.393	2515.098	-279.541			
552	69	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
553	70	N70	-53.719	492.15	-588.534	-0.001	-0.013	-0.023
554	70	N72	139.163	486.442	451.425	-0.08	0.035	-0.065
555	70	N91	-389.21	393.778	232.673	-0.027	-0.002	0.025
556	70	N93	331.911	388	-277.17	-0.064	0.018	0.062
557	70	N159	280.655	368.967	152.945	0.087	-0.002	-0.016
558	70	N161	-308.798	385.761	-294.133	0.008	-0.025	-0.009
559	70	Totals:	0.002	2515.098	-322.795			
560	70	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
561	71	N70	-30.625	493.897	-610.901	0.013	-0.008	-0.005
562	71	N72	158.913	482.241	429.247	-0.091	0.04	-0.082
563	71	N91	-340.705	390.016	245.93	-0.035	-0.011	0.052
564	71	N93	377.771	392.051	-262.8	-0.054	0.01	0.038
565	71	N159	293.276	370.988	182.236	0.074	0.003	-0.008
566	71	N161	-297.232	385.906	-263.253	0.021	-0.02	-0.017
567	71	Totals:	161.397	2515.098	-279.54			
568	71	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
569	72	N70	-24.681	493.473	-608.149	0.012	-0.006	0.002
570	72	N72	161.437	480.271	430.604	-0.09	0.04	-0.088
571	72	N91	-297.228	386.717	262.315	-0.047	-0.02	0.077
572	72	N93	418.726	396.646	-247.051	-0.043	0.001	0.017

Node Reactions (Continued)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
573	72	N159	306.482	374.117	223.015	0.054	0.01	-0.001
574	72	N161	-285.198	383.873	-222.131	0.041	-0.013	-0.024
575	72	Totals:	279.538	2515.098	-161.397			
576	72	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
577	73	N70	-37.479	490.991	-581.013	-0.003	-0.009	-0.003
578	73	N72	146.061	481.061	455.136	-0.077	0.037	-0.081
579	73	N91	-270.423	384.765	277.44	-0.059	-0.026	0.094
580	73	N93	443.809	400.554	-234.141	-0.031	-0.005	0.003
581	73	N159	316.739	377.518	264.36	0.031	0.018	0.004
582	73	N161	-275.914	380.209	-181.782	0.063	-0.005	-0.027
583	73	Totals:	322.792	2515.098	0.001			
584	73	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
585	74	N70	-65.596	487.116	-536.757	-0.027	-0.016	-0.019
586	74	N72	116.898	484.401	496.277	-0.055	0.029	-0.065
587	74	N91	-267.48	384.684	287.251	-0.068	-0.029	0.097
588	74	N93	446.29	402.728	-227.531	-0.024	-0.007	0.001
589	74	N159	321.297	380.278	295.184	0.011	0.024	0.005
590	74	N161	-271.872	375.893	-153.026	0.08	0.001	-0.027
591	74	Totals:	279.537	2515.098	161.398			
592	74	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			
593	75	N70	-101.492	482.886	-487.246	-0.055	-0.025	-0.041
594	75	N72	81.767	489.394	542.996	-0.031	0.02	-0.043
595	75	N91	-289.178	386.493	289.119	-0.071	-0.026	0.086
596	75	N93	425.516	402.585	-228.992	-0.022	-0.004	0.011
597	75	N159	318.935	381.657	307.23	0.001	0.027	0.002
598	75	N161	-274.154	372.083	-143.566	0.087	0.003	-0.022
599	75	Totals:	161.395	2515.098	279.541			
600	75	COG (ft):	X: 0.255	Y: 0.101	Z: 0.228			

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N70	max	776.23	8	1365.932	20	653.095	2	0.71	8	0.194	8	0.489	8
2		min	-1330.89	26	477.687	65	-2098.686	8	-0.824	2	-0.333	26	-0.612	2
3	N72	max	1332.179	32	1385.531	15	2022.34	2	0.612	2	0.333	32	0.493	2
4		min	-783.74	2	480.271	72	-567.933	8	-0.736	8	-0.196	2	-0.613	8
5	N91	max	1040.386	10	1143.825	16	1082.663	23	0.212	5	0.252	5	0.92	10
6		min	-2045.202	4	384.684	74	-33.504	5	-0.343	11	-0.282	11	-0.792	4
7	N93	max	1952.615	10	1158.222	23	47.967	11	0.235	11	0.275	5	0.819	4
8		min	-941.261	4	385.438	68	-1091.433	17	-0.363	5	-0.245	11	-0.69	10
9	N159	max	1115.563	24	1088.518	24	1749.3	12	0.838	6	0.262	12	0.268	11
10		min	-106.282	6	368.597	69	-1122.367	6	-0.711	12	-0.23	6	-0.298	5
11	N161	max	4.577	12	1107.583	19	1019.274	12	0.752	12	0.22	12	0.219	5
12		min	-1084.795	18	369.655	65	-1654.863	6	-0.626	6	-0.255	6	-0.252	11
13	Totals:	max	4222.491	10	6975.361	17	4881.41	1						
14		min	-4222.488	4	2515.098	72	-4881.409	7						

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

Member	Shape	Code Check	Loc [ft]	LC	Shear	Check	Loc [ft]	LC	Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	PIPE 2.5	0.246	12.24	31	0.074	3.776	44	14558.792	50715	3.596	3.596	1	H1-1b
2	M2	PIPE 2.5	0.231	12.24	35	0.071	8.724	30	14558.792	50715	3.596	3.596	1	H1-1b
3	M13	PL5/8X3.5	0.172	0.422	9	0.188	0.422	y 3	66184.77	68906.25	0.897	5.024	1.667	H1-1b
4	M14	PL5/8X3.5	0.162	0.422	8	0.189	0.422	y 9	66184.77	68906.25	0.897	5.024	1.667	H1-1b
5	M15	PL5/8X3.5	0.223	0	25	0.113	0.422	y 1	66184.77	68906.25	0.897	5.024	1.667	H1-1b

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

Member	Shape	Code	Check	Loc	ft	LC	Shear	Check	Loc	ft	Dir	LC	phi*	Pnc	[lb]	phi*	Pnt	[lb]	phi*	Mn	y-y	[k-ft]	phi*	Mn	z-z	[k-ft]	Cb	Eqn
6	M16	PL5/8X3.5	0.181	0	25	0.121	0.422	y	7	66184.77	68906.25	0.897	5.024	1.667	H1-1b													
7	M51	PIPE 2.0	0.257	2.501	27	0.079	0	15	31128.25	32130	1.872	1.872	1	H1-1b														
8	M18	PIPE 2.0	0.258	2.501	33	0.077	0	3	31128.25	32130	1.872	1.872	1	H1-1b														
9	M19	PIPE 2.0	0.226	2.501	36	0.084	0	36	31128.25	32130	1.872	1.872	1	H1-1b														
10	M52	PIPE 2.0	0.221	2.501	30	0.076	0	27	31128.25	32130	1.872	1.872	1	H1-1b														
11	M21	PL5/8X3.5	0.381	0.531	9	0.134	0.531	y	8	67591.76	68906.25	0.897	5.024	1.354	H1-1b													
12	M22	PL5/8X3.5	0.545	0.531	30	0.096	0.531	y	7	67591.76	68906.25	0.897	5.024	1.327	H1-1b													
13	M23	PL5/8X3.5	0.378	0.531	49	0.1	0.531	y	9	67591.76	68906.25	0.897	5.024	1.372	H1-1b													
14	M24	PL5/8X3.5	0.553	0.531	36	0.054	0	y	20	67591.76	68906.25	0.897	5.024	1.321	H1-1b													
15	M25	SR 0.75	0	4.167	75	0.011	4.167	5	8911.663	13916.259	0.174	0.174	1	H1-1a														
16	M26	SR 0.75	0.063	0	44	0.011	4.167	30	8911.663	13916.259	0.174	0.174	1	H1-1b*														
17	M27	SR 0.75	0	4.167	75	0.013	4.167	34	8911.663	13916.259	0.174	0.174	1	H1-1a														
18	M28	SR 0.75	0.078	4.167	31	0.015	4.167	27	8911.663	13916.259	0.174	0.174	1	H1-1b*														
19	MP4A	PIPE 2.5	0.142	5.667	49	0.024	2.333	9	30038.461	50715	3.596	3.596	1	H1-1b														
20	MP3A	PIPE 2.5	0.109	2.333	25	0.024	2.333	9	30038.461	50715	3.596	3.596	1	H1-1b														
21	MP2A	PIPE 2.5	0.096	2.333	30	0.051	2.333	31	30038.461	50715	3.596	3.596	1	H1-1b														
22	MP1A	PIPE 2.5	0.24	2.333	29	0.043	5.667	34	30038.461	50715	3.596	3.596	1	H1-1b														
23	M44	SR 0.625	0.06	1.667	9	0.007	3.333	28	2158.269	9664.074	0.101	0.101	1	H1-1b														
24	M45	SR 0.625	0.047	1.667	1	0.029	3.333	27	2158.269	9664.074	0.101	0.101	1	H1-1b														
25	M46	SR 0.625	0.047	1.667	2	0.028	3.333	26	2158.269	9664.074	0.101	0.101	1	H1-1b														
26	M47	SR 0.625	0.048	1.667	7	0.008	3.333	28	2158.269	9664.074	0.101	0.101	1	H1-1b														
27	A2	PIPE 2.0	0.032	4	7	0.017	1.5	25	20866.733	32130	1.872	1.872	1	H1-1b														
28	A1	PIPE 2.0	0.032	4	7	0.016	1.5	6	20866.733	32130	1.872	1.872	1	H1-1b														
29	M49	PIPE 4.0	0.109	4.688	14	0.08	0.5	8	83097.932	93240	10.631	10.631	1	H1-1b														
30	M57	SR 0.625	0.049	1.667	10	0.014	3.333	15	2158.269	9664.074	0.101	0.101	1	H1-1b														
31	C2	PIPE 2.0	0.037	3	6	0.014	1.5	24	20866.733	32130	1.872	1.872	1	H1-1b														
32	M60	PIPE 4.0	0.093	4.688	22	0.073	0.5	4	83097.932	93240	10.631	10.631	1	H1-1b														
33	M63	PIPE 2.5	0.313	8.724	4	0.095	8.724	15	14558.792	50715	3.596	3.596	1	H1-1b														
34	M64	SR 0.625	0.047	1.667	11	0.011	3.333	24	2158.269	9664.074	0.101	0.101	1	H1-1b														
35	M66	PL5/8X3.5	0.175	0.422	16	0.143	0.018	y	4	66184.77	68906.25	0.897	5.024	1.667	H1-1b													
36	M69	PL5/8X3.5	0.143	0.422	5	0.197	0.422	y	5	66184.77	68906.25	0.897	5.024	1.667	H1-1b													
37	MP4C	PIPE 2.5	0.042	5.667	24	0.011	5.667	24	30038.461	50715	3.596	3.596	1	H1-1b														
38	M71	PIPE 2.0	0.219	2.501	11	0.069	1.25	11	31128.25	32130	1.872	1.872	1	H1-1b														
39	M72	PIPE 2.0	0.21	2.501	5	0.059	1.25	11	31128.25	32130	1.872	1.872	1	H1-1b														
40	M73	PL5/8X3.5	0.44	0.531	21	0.051	0.531	y	10	67591.76	68906.25	0.897	5.024	1.374	H1-1b													
41	M74	SR 0.75	0.033	0	17	0.006	4.167	3	8911.663	13916.259	0.174	0.174	1	H1-1b*														
42	MP3C	PIPE 2.5	0.045	5.667	23	0.017	5.667	8	30038.461	50715	3.596	3.596	1	H1-1b														
43	M76	SR 0.625	0.06	1.667	5	0.006	3.333	14	2158.269	9664.074	0.101	0.101	1	H1-1b														
44	M77	SR 0.625	0.045	1.667	4	0.005	3.333	13	2158.269	9664.074	0.101	0.101	1	H1-1b														
45	MP1C	PIPE 2.5	0.18	2.333	15	0.051	2.333	13	30038.461	50715	3.596	3.596	1	H1-1b														
46	M80	PIPE 2.5	0.298	8.724	10	0.072	8.724	15	14558.792	50715	3.596	3.596	1	H1-1b														
47	M81	PL5/8X3.5	0.139	0.422	5	0.199	0.422	y	11	66184.77	68906.25	0.897	5.024	1.667	H1-1b													
48	M82	PL5/8X3.5	0.135	0	22	0.132	0.018	y	10	66184.77	68906.25	0.897	5.024	1.667	H1-1b													
49	M83	PIPE 2.0	0.168	2.501	20	0.079	0	21	31128.25	32130	1.872	1.872	1	H1-1b														
50	M84	PIPE 2.0	0.168	2.501	15	0.067	0	23	31128.25	32130	1.872	1.872	1	H1-1b														
51	M85	PL5/8X3.5	0.278	0.531	5	0.115	0.531	y	5	67591.76	68906.25	0.897	5.024	1.395	H1-1b													
52	M86	PL5/8X3.5	0.442	0.531	15	0.095	0.531	y	4	67591.76	68906.25	0.897	5.024	1.379	H1-1b													
53	M87	PL5/8X3.5	0.261	0.531	11	0.1	0.531	y	5	67591.76	68906.25	0.897	5.024	1.387	H1-1b													
54	M88	SR 0.75	0	4.167	75	0.008	4.167	1	8911.663	13916.259	0.174	0.174	1	H1-1a														
55	M89	SR 0.75	0	4.167	75	0.01	4.167	6	8911.663	13916.259	0.174	0.174	1	H1-1a														
56	M90	SR 0.75	0.061	4.167	16	0.013	4.167	23	8911.663	13916.259	0.174	0.174	1	H1-1b*														
57	C1	PIPE 2.0	0.031	3	6	0.017	1.5	15	20866.733	32130	1.872	1.872	1	H1-1b														
58	MP2C	PIPE 2.5	0.105	2.333	15	0.017	2.333	16	30038.461	50715	3.596	3.596	1	H1-1b														
59	M106	SR 0.625	0.049	1.667	6	0.01	3.333	20	2158.269	9664.074	0.101	0.101	1	H1-1b														
60	B2	PIPE 2.0	0.038	3	1	0.012	1.5	19	20866.733	32130	1.872	1.872	1	H1-1b														



Company : Colliers Engineering & Design
 Designer :
 Job Number : Project No. 10255617
 Model Name : 5000911748-VZW_MT_LO_H

10/10/2024
 12:10:08 PM
 Checked By : _____

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

Member	Shape	Code	Check	Loc	LC	Shear	Check	Loc	Dir	LC	phi*	Pnc	[lb]	phi*	Pnt	[lb]	phi*	Mn	y-y	[k-ft]	phi*	Mn	z-z	[k-ft]	Cb	Eqn
61	M109	PIPE 4.0	0.087	0.5	12	0.071	0.5	12	83097.932	93240	10.631	10.631	1	H1-1b												
62	M112	PIPE 2.5	0.204	8.724	12	0.055	8.724	24	14558.792	50715	3.596	3.596	1	H1-1b												
63	M113	SR 0.625	0.048	1.667	6	0.007	3.333	20	2158.269	9664.074	0.101	0.101	1	H1-1b												
64	M115	PL5/8X3.5	0.15	0.422	24	0.124	0.422	y	12	66184.77	68906.25	0.897	5.024	1.667	H1-1b											
65	M118	PL5/8X3.5	0.121	0.422	1	0.163	0.422	y	1	66184.77	68906.25	0.897	5.024	1.667	H1-1b											
66	MP4B	PIPE 2.5	0.038	5.667	21	0.009	5.667	20	30038.461	50715	3.596	3.596	1	H1-1b												
67	M120	PIPE 2.0	0.209	2.501	8	0.061	1.25	7	31128.25	32130	1.872	1.872	1	H1-1b												
68	M121	PIPE 2.0	0.185	2.501	2	0.055	1.25	7	31128.25	32130	1.872	1.872	1	H1-1b												
69	M122	PL5/8X3.5	0.384	0.531	18	0.055	0	y	13	67591.76	68906.25	0.897	5.024	1.411	H1-1b											
70	M123	SR 0.75	0.032	0	13	0.006	4.167	5	8911.663	13916.259	0.174	0.174	1	H1-1b*												
71	MP3B	PIPE 2.5	0.026	2.333	1	0.009	2.333	13	30038.461	50715	3.596	3.596	1	H1-1b												
72	M125	SR 0.625	0.056	1.667	1	0.006	3.333	21	2158.269	9664.074	0.101	0.101	1	H1-1b												
73	M126	SR 0.625	0.049	1.667	12	0.005	3.333	20	2158.269	9664.074	0.101	0.101	1	H1-1b												
74	MP1B	PIPE 2.5	0.093	2.333	22	0.024	2.333	22	30038.461	50715	3.596	3.596	1	H1-1b												
75	M129	PIPE 2.5	0.201	3.776	1	0.055	3.646	1	14558.792	50715	3.596	3.596	1	H1-1b												
76	M130	PL5/8X3.5	0.129	0.422	1	0.169	0.422	y	7	66184.77	68906.25	0.897	5.024	1.667	H1-1b											
77	M131	PL5/8X3.5	0.121	0.422	19	0.112	0.422	y	6	66184.77	68906.25	0.897	5.024	1.667	H1-1b											
78	M132	PIPE 2.0	0.122	2.501	17	0.071	0	18	31128.25	32130	1.872	1.872	1	H1-1b												
79	M133	PIPE 2.0	0.137	2.501	11	0.066	0	19	31128.25	32130	1.872	1.872	1	H1-1b												
80	M134	PL5/8X3.5	0.273	0.531	1	0.108	0.531	y	1	67591.76	68906.25	0.897	5.024	1.371	H1-1b											
81	M135	PL5/8X3.5	0.389	0.531	24	0.093	0.531	y	12	67591.76	68906.25	0.897	5.024	1.415	H1-1b											
82	M136	PL5/8X3.5	0.247	0.531	7	0.084	0.531	y	1	67591.76	68906.25	0.897	5.024	1.377	H1-1b											
83	M137	SR 0.75	0	4.167	75	0.008	4.167	9	8911.663	13916.259	0.174	0.174	1	H1-1a												
84	M138	SR 0.75	0	4.167	75	0.011	4.167	2	8911.663	13916.259	0.174	0.174	1	H1-1a												
85	M139	SR 0.75	0.053	4.167	24	0.013	4.167	8	8911.663	13916.259	0.174	0.174	1	H1-1b*												
86	B1	PIPE 2.0	0.036	2.75	6	0.023	1.5	12	20866.733	32130	1.872	1.872	1	H1-1b												
87	MP2B	PIPE 2.5	0.07	2.333	24	0.017	2.333	11	30038.461	50715	3.596	3.596	1	H1-1b												
88	M157	PIPE 2.0	0.048	3.358	10	0.034	6.716	49	18707.794	32130	1.872	1.872	1	H1-1b												
89	M149	PIPE 2.0	0.055	3.364	10	0.034	6.727	49	18675.112	32130	1.872	1.872	1	H1-1b												
90	M158	PIPE 2.0	0.033	2.863	1	0.007	5.725	16	21688.739	32130	1.872	1.872	1	H1-1b												
91	M159	PIPE 2.0	0.04	0	5	0.008	5.738	22	21650.849	32130	1.872	1.872	1	H1-1b*												
92	M160	PIPE 2.0	0.028	2.582	3	0.006	5.164	3	23337.016	32130	1.872	1.872	1	H1-1b												
93	M161	PIPE 2.0	0.031	2.589	3	0.008	5.178	1	23296.246	32130	1.872	1.872	1	H1-1b												

I. Mount-to-Tower Connection Check

Custom Orientation Required

No

Tower Connection Bolt Checks

Yes

Bolt Orientation

Parallel

Bolt Quantity per Reaction:

4

d_x (in) (Delta X of typ. bolt config. sketch):

6

d_y (in) (Delta Y of typ. bolt config. sketch):

6

Bolt Type:

A307

Bolt Diameter (in):

0.625

Required Tensile Strength / bolt (kips):

1.4

Required Shear Strength / bolt (kips):

0.6

Tensile Capacity / bolt (kips):

10.4

Shear Capacity / bolt (kips):

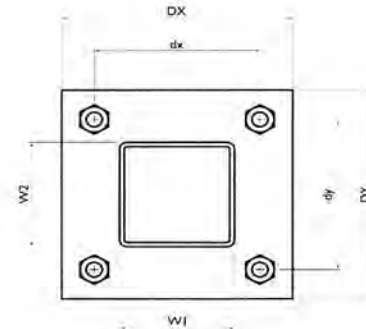
6.2

Bolt Overall Utilization:

13.8%

Tower Connection Baseplate Checks

No



ATTACHMENT 6



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Calculated Radio Frequency Emissions Report



Meriden 2 Relo
13 Pomeroy Ave, Meriden, CT

December 17, 2024

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of Verizon's antenna array mounted at 130' on the approved monopole tower located at 13 Pomeroy Ave in Meriden, CT. The coordinates of the tower are 41° 31' 32.13" N, 72° 46' 4.07" W.

Verizon is proposing the following:

- 1) Install nine (9) directional panel antenna (two (2) antenna per sector on alpha, beta, delta sector and three (3) antenna on gamma sector) to support its LTE and 5G network.

This report considers the planned antenna configuration for Verizon¹ as well as existing antenna configuration² for AT&T to derive the resulting % Maximum Permissible Exposure (MPE) of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm²). The general population exposure limits for the various frequency ranges are defined in the documents referenced in Attachment A of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B of this report contains excerpts from OET Bulletin 65 and presents the Maximum Exposure Limits.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

¹ As referenced to Verizon's Radio Frequency Design Sheet, dated 02/26/2024.

² As referenced in the C Squared System's Calculated Radio Frequency Emissions Report, filed with Petition No. 1590, dated August 31, 2024, in support of TowerNorth Development, LLC and New Cingular Wireless, PCS d/b/a AT&T for the proposed replacement tower located at 13 Pomeroy Avenue, Meriden CT.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{\text{GRF}^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{H^2 + V^2}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor (GRF) of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

The percent of MPE values presented in this report reflect levels that one may encounter from one sector of a carrier's antennas. Most carriers use 3 or 4 sectors per site with azimuths approximately 90 or 120 degrees apart, respectively; therefore, one could not be standing in the main beam of all sectors at the same time. In cases where antenna models are not uniform across all sectors, the antenna model with the highest gain was used for the calculations. This results in a conservative or "worst case" assumption for percent of MPE calculations.

4. Antenna Inventory

Table 1 below outlines Verizon's proposed antenna configuration for the site. The associated antenna model data and antenna patterns for these specific antenna models are included in Attachment C.

Operator	Sector / Azimuth	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 30°	750	160	14.8	4832	MX16FRO645-xx	45	0	6	130
		850	160	15.6	5809		39			
		1900	160	18.2	10571		37			
		2100	240	18.2	15857		37			
		3700	320	25.5	113540	MT6413-77A	-	0	2.46	130
	Beta / 180°	750	160	14.8	4832	MX16FRO645-xx	45	0	6	130
		850	160	15.6	5809		39			
		1900	160	18.2	10571		37			
		2100	240	18.2	15857		37			
		3700	320	25.5	113540	MT6413-77A	-	0	2.46	130
	Gamma / 270°	750	160	14.4	4407	MX06FRO660-03	60.5	0	5.9	130
		850	160	14	4019		53			
		1900	160	18	10095		55			
		2100	240	18.2	15857		55.5			
		3700	320	25.5	113540	MT6413-77A	-	0	2.46	130
	Delta / 350°	750	160	14.8	4832	MX16FRO645-xx	45	0	6	130
		850	160	15.6	5809		39			
		1900	160	18.2	10571		37			
		2100	240	18.2	15857		37			
		3700	320	25.5	113540	MT6413-77A	-	0	2.46	130

Table 1: Proposed Antenna Inventory^{3,4}

³ Antenna heights are in referenced to Verizon's Radio Frequency Design Sheet, dated 02/26/2024.

⁴ Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

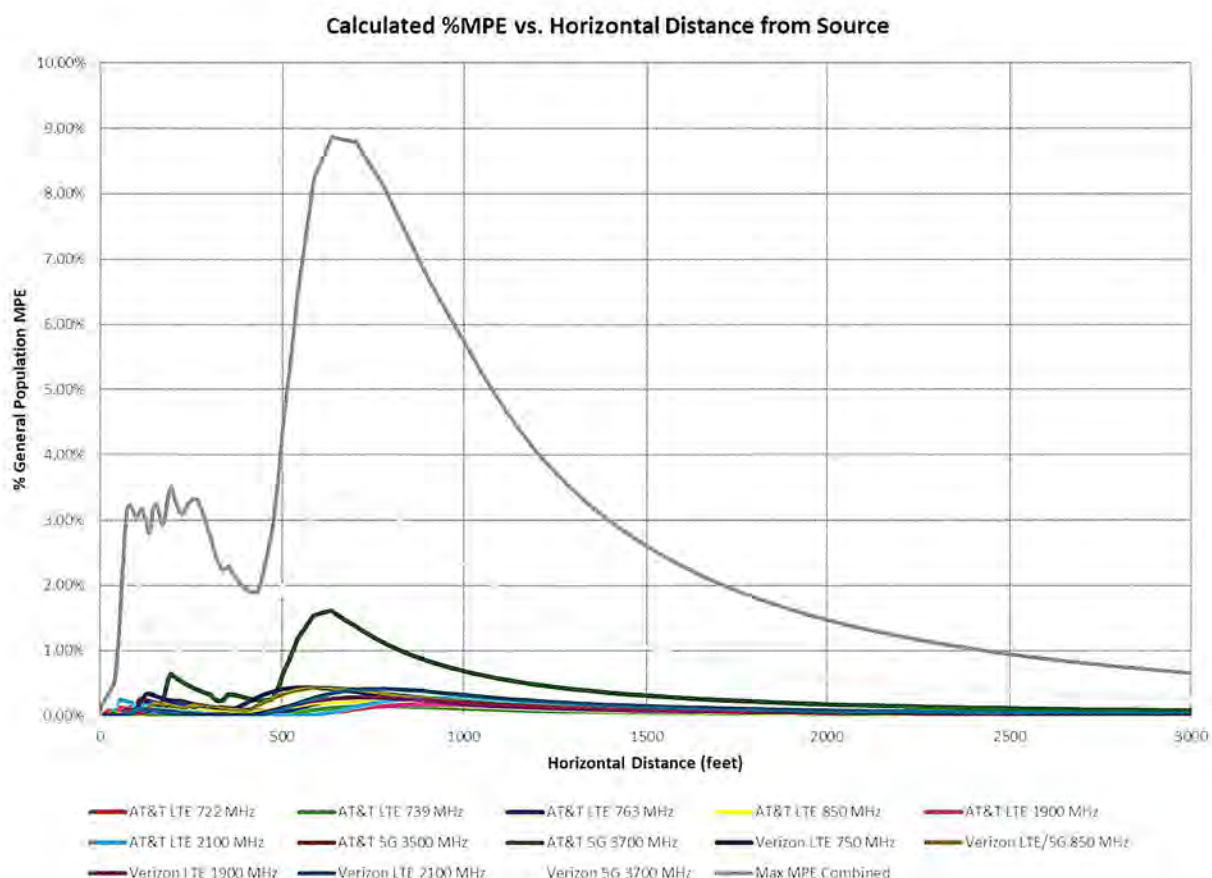


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (8.87% of the General Population limit) is calculated to occur at a horizontal distance of 636 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1200 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 636 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm ²)	Limit (mW/cm ²)	% MPE
AT&T 5G 3500 MHz	1	86.5	141.0	636	0.016038	1.000	1.60%
AT&T 5G 3700 MHz	1	86.5	141.0	636	0.016038	1.000	1.60%
AT&T LTE 1900 MHz	1	160.0	141.0	636	0.000509	1.000	0.05%
AT&T LTE 2100 MHz	1	240.0	141.0	636	0.000585	1.000	0.06%
AT&T LTE 722 MHz	1	160.0	141.0	636	0.001100	0.481	0.23%
AT&T LTE 739 MHz	1	80.0	141.0	636	0.000589	0.493	0.12%
AT&T LTE 763 MHz	1	160.0	141.0	636	0.001242	0.509	0.24%
AT&T LTE 850 MHz	1	160.0	141.0	636	0.001209	0.567	0.21%
Verizon 5G 3700 MHz	1	320.0	130.0	636	0.033097	1.000	3.31%
Verizon LTE 1900 MHz	1	160.0	130.0	636	0.002615	1.000	0.26%
Verizon LTE 2100 MHz	1	240.0	130.0	636	0.003406	1.000	0.34%
Verizon LTE 750 MHz	1	160.0	130.0	636	0.002044	0.500	0.41%
Verizon LTE/5G 850 MHz	1	160.0	130.0	636	0.002397	0.567	0.42%
Total							8.87%

Table 2: Maximum Percent of General Population Exposure Values^{5,6,7}

⁵ Frequencies listed are representative of the operating band and are not the specific operating frequency.

⁶ The total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

⁷ In cases where antenna models are not uniform across all sectors, the antenna model with the highest gain was used for the calculations.

6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **8.87%** of the FCC limit (General Population/Uncontrolled). This maximum cumulative percent of MPE value is calculated to occur 636 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



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December 16, 2024
Date



Reviewed/Approved By: Martin Lavin
Senior RF Engineer
C Squared Systems, LLC

December 17, 2024
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2019, IEEE Standard Safety Levels With Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2021, IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure⁸

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

(B) Limits for General Population/Uncontrolled Exposure⁹

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

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

Table 3: FCC Limits for Maximum Permissible Exposure

⁸ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

⁹ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

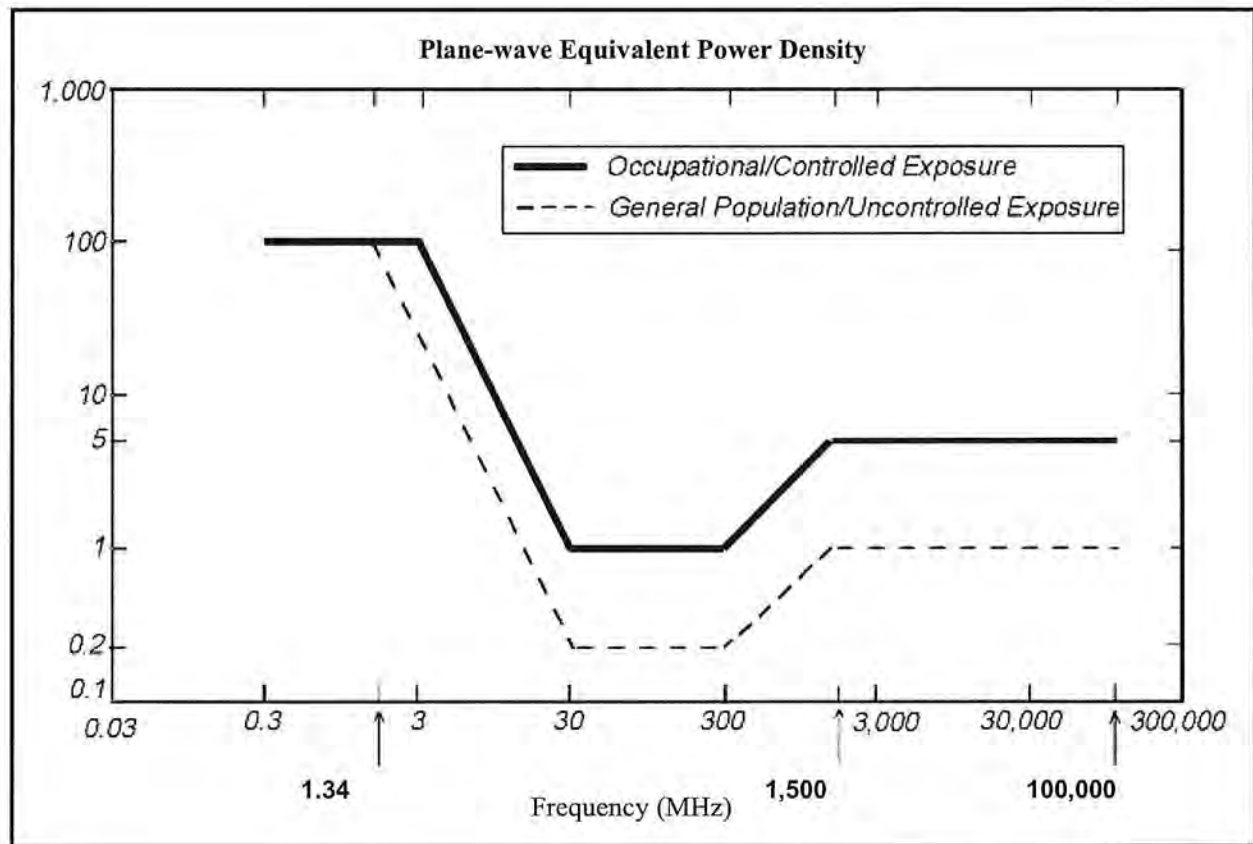
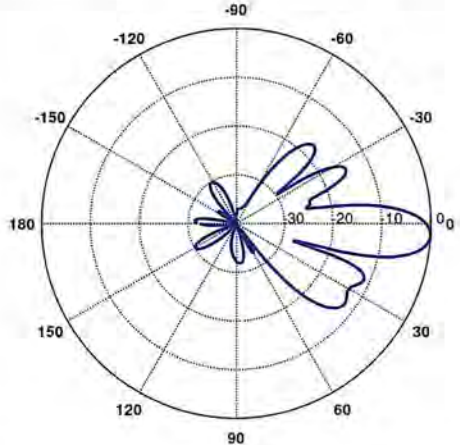
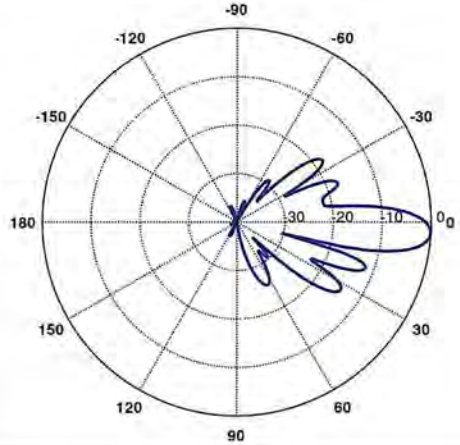
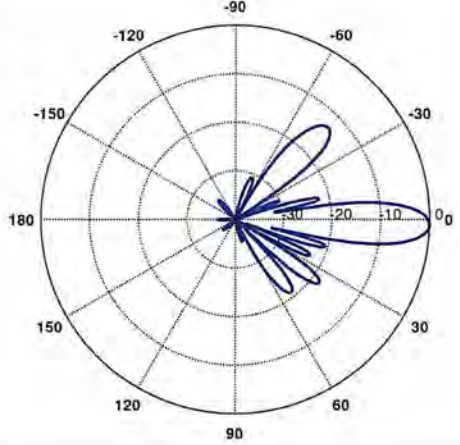


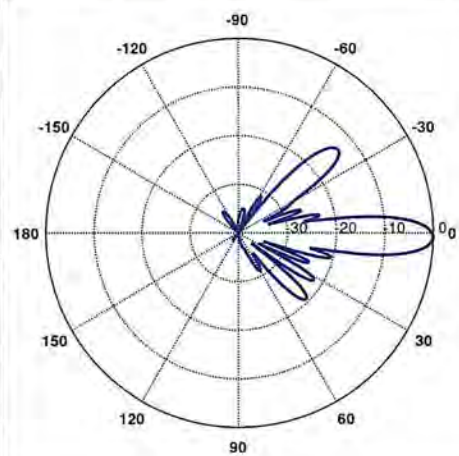
Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data and Electrical Patterns

750 MHz Manufacturer: JMA Model #: MX16FRO645-xx Frequency Band: 698-806 MHz Gain: 14.8 dBi Electrical Down-Tilt: 2° Vertical Beamwidth: 11.5° Horizontal Beamwidth: 45° Polarization: ±45° Dimensions (L x W x D): 72.0" x 20.0" x 8.0"	
850 MHz Manufacturer: JMA Model #: MX16FRO645-xx Frequency Band: 806-894 MHz Gain: 15.6 dBi Electrical Down-Tilt: 2° Vertical Beamwidth: 10.5° Horizontal Beamwidth: 39° Polarization: ±45° Dimensions (L x W x D): 72.0" x 20.0" x 8.0"	
1900 MHz Manufacturer: JMA Model #: MX16FRO645-xx Frequency Band: 1920-2180 MHz Gain: 18.2 dBi Electrical Down-Tilt: 0° Vertical Beamwidth: 8.9° Horizontal Beamwidth: 37° Polarization: ±45° Dimensions (L x W x D): 72.0" x 20.0" x 8.0"	

2100 MHz

Manufacturer: JMA
 Model #: MX16FRO645-xx
 Frequency Band: 1920-2180 MHz
 Gain: 18.2 dBi
 Electrical Down-Tilt: 0°
 Vertical Beamwidth: 8.9°
 Horizontal Beamwidth: 37°
 Polarization: ±45°
 Dimensions (L x W x D): 72.0" x 20.0" x 8.0"



3700 MHz

Manufacturer: SAMSUNG
 Model #: MT6413-77A
 Frequency Band: 3700-3980 MHz
 Gain: 25.5 dBi
 Electrical Down-Tilt: 1°
 Vertical Beamwidth: N/A°
 Horizontal Beamwidth: N/A°
 Polarization: N/A°
 Dimensions (L x W x D): N/A

N/A

ATTACHMENT 7



Certificate of Mailing — Firm

Name and Address of Sender Kenneth C. Baldwin, Esq. Robinson & Cole LLP One State Street Hartford, CT 06103		TOTAL NO. of Pieces Listed by Sender 3	TOTAL NO. of Pieces Received at Post Office™ 3	Affix Stamp Here Postmark with Date of Receipt.			
Postmaster, per (name of receiving employee) 							
USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift		
1.	Kevin Scarpato, Mayor City of Meriden 142 East Main Street Meriden, CT 06450						
2.	Jasmine Peele, Assistant Planning Director City of Meriden 142 East Main Street Meriden, CT 06450						
3.	TowerNorth Development, LLC Attn: Matthew Hamilton, Director of Tower Operations 750 West Center Street, Suite 301 West Bridgewater, MA 02379						
4.							
5.							
6.							