



## FREMONT COUNTY COLLOCATION OF ANTENNA ON AN EXISTING TOWER APPLICATION

1. Name and Number of Existing SRU Permit CANON CITY EAST SRU 07-002; TC 23-007; TC 16-001; TC
2. Name: Global Signal Acquisition Address: 2000 Corporate Drive  
City: Canonsburg State: PA Zip Code: 15317  
Telephone #: 801-979-9077 Facsimile #: \_\_\_\_\_  
Name of Contact: Craig Chagnon Email Address: Craig.Chagnon@crowncastle.com
3. The Applicant Applying for Collocation is:  
Name: T-Mobile Address: 2000 Corporate Drive  
City: Canonsburg State: PA Zip Code: 15317  
Telephone #: 801-979-9077 Facsimile #: \_\_\_\_\_  
Name of Contact: Craig Chagnon Email Address: Craig.Chagnon@crowncastle.com
4. Property Owner: MACKENZIE RANCH LLLP Address: 1340 COLLEGE AVE  
City: CANON CITY State: CO Zip Code: 81212-3541  
Telephone #: \_\_\_\_\_ Facsimile #: \_\_\_\_\_  
Name of Contact: \_\_\_\_\_ Email Address: \_\_\_\_\_
5. Consultant: none Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Telephone #: \_\_\_\_\_ Facsimile #: \_\_\_\_\_  
Name of Contact: \_\_\_\_\_ Email Address: \_\_\_\_\_

### Please read prior to completion of this application

An application for Special Review Use Permit, instead of a Collocation Application, will be required for the following:

1. An increase in the height of the existing tower;
2. The relocation of an existing tower;
3. The placement of an additional tower on the existing tower site;
4. An attachment of an antenna on an existing non-commercial tower, which is less than one-hundred (100) feet in height.

Any application which is not complete or does not include all minimum submittal requirements will not be accepted by the Fremont County Department of Planning and Zoning (Department).

The applicant shall provide one (1) original document of the application and all of its attachments (*copies of deeds, contracts, leases etcetera are acceptable*) at the time of application submittal. After submittal, the Department will review the application and all attachments and prepare a Department Submittal Deficiency and Comment Letter (D & C Letter), which will list the deficiencies, comments and questions

about the application, which must be addressed by the applicant. The applicant shall provide one (1) original document of all requirements of the D & C letter to the Department.

Attachments can be made to this application to provide expanded narrative for any application item including supportive documentation or evidence for provided application item answers. Please indicate at the application item that there is an attachment and label it as an exhibit with the application item number, a period and the number of the attachment for that item (*as an example, the first attached document providing evidence in support of the answer given at application item number 22 would be marked - Exhibit 22.1, the fifth attached document supporting the narrative provided for application item 22 would be marked - Exhibit 22.5*). **Please label all exhibits in the lower right-hand corner of the page.**

An additional review fee of two-hundred fifty dollars (\$250.00) will be charged to the applicant, if all deficiencies as per the initial D & C Letter are not adequately addressed or provided. Each subsequent D & C Letter, based on resubmitted items, will result in another two-hundred fifty dollar (\$250.00) review fee. All such fees shall be paid along with the deficiency submittal, prior to any further review of the application.

If the application is approved by the Department, with contingencies and the contingencies are not submitted or addressed within six (6) months after approval, an additional fee of one-hundred fifty dollars (\$150.00) will be charged to the applicant for a request for an extension of time to submit the contingencies. All such fees shall be paid along with a written request, explaining the need for extension.

The Department may require additional information at any time during the application process as may be deemed necessary in determining if the application is in compliance with all applicable regulations and to make an informed decision with regard to recommendations, approval or disapproval of the application.

6. The legal description and/or address of the existing site is: \_\_\_\_\_  
Parcel Number 99404208 / 3435 GRANDVIEW AVE  
\_\_\_\_\_
7. The type of construction of the existing tower is: IIB Exhibit 7.1 Plans
8. The total height of the existing tower (*with antenna*) is 107 feet.
9. What will be the total height of the tower (*with antenna(s)*) after collocation? 107 feet.
10. The existing tower currently has 23 antennas.
11. After the proposed collocation the tower would house 29 antennas.
12. Please provide documentation from a Licensed Professional Engineer demonstrating that the tower is capable of accommodating the proposed number of antennas. (*Mark as EXHIBIT 13.1*)
13. The existing site contains 2 accessory structures.
14. Will the proposed collocation require additional accessory structures? ☐ Yes --- ☒ No If yes, please provide how many, the sizes, the heights, the location and the reason such additional structures are necessary (*a new site plan may be required*): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

15. If a design plan addressing materials, colors, textures, screening and landscaping in the design of the tower or antenna was required with the issuance of the original permit, will it be adequate for the proposed collocation? ☒ Yes --- ☐ No If no, it may be required to comply with the original design plan.
16. The existing site contains 2 off-street parking spaces.
17. Will the proposed collocation require additional off-street parking spaces? ☐ Yes --- ☒ No If yes, please provide how many additional spaces will be necessary: \_\_\_\_\_ off-street parking spaces.
18. Was surfacing, lighting and or landscaping of driveways and parking areas required with issuance of the original permit? ☐ Yes --- ☒ No If no, was it waived by the Board? ☐ Yes --- ☐ No
19. Will the surfacing, lighting and or landscaping of driveways and parking areas required with issuance of the original permit be adequate for the proposed collocation? ☒ Yes --- ☐ No Please explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
20. Will the existing access to the site be adequate for the proposed collocation? ☒ Yes --- ☐ No If No, what is the proposed access for the proposed collocation? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
21. Was a stormwater drainage plan required and approved with the issuance of the original permit? ☐ Yes --- ☒ No If yes, will the stormwater drainage plan required and approved with the issuance of the original permit be adequate with the addition of the accessory structures (if any)? ☐ Yes --- ☐ No Please explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
22. Please explain how the existing tower and additional uses meet the minimum requirements of the Federal Aviation Administration. DETERMINATION OF NO HAZARD TO AIR NAVIGATION on file.  
\_\_\_\_\_  
\_\_\_\_\_
23. If the existing permit holder is not the site property owner, does the agreement, lease, or the like between the site property owner and the existing permit holder allow the collocation? ☒ Yes --- ☐ No Please show (highlight) in the agreement, lease or the like that grants the permission to collocate.
24. Please attach a copy of a lease or agreement between the permit holder and the collocation applicant as to right to use of the tower by the collocation applicant, marked as Exhibit 25.1.
25. A submittal fee of \$250.00 must accompany this application (Check # \_\_\_\_\_ ☐ cash)

**Collocation Applicant's Endorsement:**

By signing this Application, the Applicant, or the agent/representative acting with due authorization on behalf of the Applicant, hereby certifies that all information contained in the application and any attachments to the Application, is true and correct to the best of Applicant's knowledge and belief.

Fremont County hereby advises Applicant that if any material information contained herein is determined to be misleading, inaccurate or false, the Board of Commissioners may take any and all reasonable and appropriate steps to declare actions of the Board regarding the Application to be null and void.

Further the applicant understands that if collocation is approved the applicant must comply with the conditions of the original permit, as issued or as may be amended, and applicable regulations of the Fremont County Zoning Resolution.

Signing this Application is a declaration by the Applicant to conform to all plans, drawings, and commitments submitted with or contained within this Application, provided that the same is in conformance with the Fremont County Zoning Resolution.

Craig Chagnon

Applicant Printed Name

Permit Specialist / Crown Castle

Applicant Title & Company Name

03/07/25

Date

Applicant Signature

**Existing Permit Holder's Endorsement:**

By signing this Application, the Permit Holder, or the agent/representative acting with due authorization on behalf of the Permit Holder, hereby certifies that all information contained in the application and any attachments to the Application, is true and correct to the best of Permit Holder's knowledge and belief.

Fremont County hereby advises Permit Holder that if any material information contained herein is determined to be misleading, inaccurate or false, the Board of Commissioners may take any and all reasonable and appropriate steps to declare actions of the Board regarding the Application to be null and void.

Further the existing permit holder understands that if collocation is approved the applicant and existing permit holder must comply with the conditions of the original permit, as issued or as may be amended, and applicable regulations of the Fremont County Zoning Resolution.

Signing this Application is a declaration by the Permit Holder to conform to all plans, drawings, and commitments submitted with or contained within this Application, provided that the same is in conformance with the Fremont County Zoning Resolution.

***THIS SIGNATURE ALSO SERVES AS THE EXISTING PERMIT HOLDERS APPROVAL FOR COLLOCATION.***

Craig Chagnon

Permit Holder Printed Name

Craig Chagnon

Permit Holder Signature

Permit Specialist, Crown Castle

Permit Holder Title & Company Name

03/07/25

Date



Mail Processing Center  
Federal Aviation Administration  
Southwest Regional Office  
Obstruction Evaluation Group  
10101 Hillwood Parkway  
Fort Worth, TX 76177

Aeronautical Study No.  
2023-ANM-2935-OE  
Prior Study No.  
2011-ANM-1356-OE

Issued Date: 05/09/2023

Keally Binotto  
Crown Castle USA (KB)  
1500 Corporate Drive  
Canonsburg, PA 15317

**\*\* DETERMINATION OF NO HAZARD TO AIR NAVIGATION \*\***

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Tower ZOD_ALLTEL_CO04_CANONCITY EAST - 858492
Location:	CANON CITY, CO
Latitude:	38-26-52.51N NAD 83
Longitude:	105-10-09.67W
Heights:	5568 feet site elevation (SE) 108 feet above ground level (AGL) 5676 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Emissions from this site must be in compliance with the parameters set by collaboration between the FAA and telecommunications companies and reflected in the FAA 5G C band compatibility evaluation process (such as power, frequencies, and tilt angle). Operational use of this frequency band is not objectionable provided the Wireless Providers (WP) obtain and adhere to the parameters established by the FAA 5G C band compatibility evaluation process. **Failure to comply with this condition will void this determination of no hazard.**

**See attachment for additional condition(s) or information.**

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 .

This determination does not constitute authority to transmit on the frequency(ies) identified in this study. The proponent is required to obtain a formal frequency transmit license from the Federal Communications Commission (FCC) or National Telecommunications and Information Administration (NTIA), prior to on-air operations of these frequency(ies).

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best

Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

If we can be of further assistance, please contact Steven Landry, at (404) 305-6249, or Steven.L-ctr.Landry@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2023-ANM-2935-OE.

**Signature Control No: 581496936-584726366**

( DNE )

Mike Helvey

Manager, Obstruction Evaluation Group

Attachment(s)

Additional Information

Frequency Data

Map(s)

cc: FCC

## **Additional information for ASN 2023-ANM-2935-OE**

Part 77 authorizes the FAA to evaluate a structure or object's potential electromagnetic effects on air navigation, communication facilities, and other surveillance systems. It also authorizes study of impact on arrival, departure, and en route procedures for aircraft operating under visual or instrument flight rules, as well as the impact on airport traffic capacity at existing public use airports. Broadcast in the 3.7 to 3.98 GHz frequency (5G C band) currently causes errors in certain aircraft radio altimeters and the FAA has determined they cannot be relied upon to perform their intended function when experiencing interference from wireless broadband operations in the 5G C band. The FAA has adopted Airworthiness Directives for all transport and commuter category aircraft equipped with radio altimeters that prohibit certain operations when in the presence of 5G C band

This determination of no hazard is based upon those mitigations implemented by the FAA and operators of transport and commuter category aircraft, and helicopters operating in the vicinity of your proposed location. It is also based on telecommunication industry and FAA collaboration on acceptable power levels and other parameters as reflected in the FAA 5G C band evaluation process.

The FAA 5G C band compatibility evaluation is a data analytics system used by FAA to evaluate operational hazards related to aircraft design. The FAA 5G C band compatibility evaluation process refers to the process in which the telecommunication companies and the FAA have set parameters, such as power output, locations, frequencies, and tilt angles for antenna that mitigate the hazard to aviation. As the telecommunication companies and FAA refine the tools and methodology, the allowable frequencies and power levels may change in the FAA 5G C band compatibility evaluation process. Therefore, your proposal will not have a substantial adverse effect on the safe and efficient use of the navigable airspace by aircraft provided the equipment and emissions are in compliance with the parameters established through the FAA 5G C band compatibility evaluation process.

Any future changes that are not consistent with the parameters listed in the FAA 5G C band compatibility evaluation process will void this determination of no hazard.

# Frequency Data for ASN 2023-ANM-2935-OE

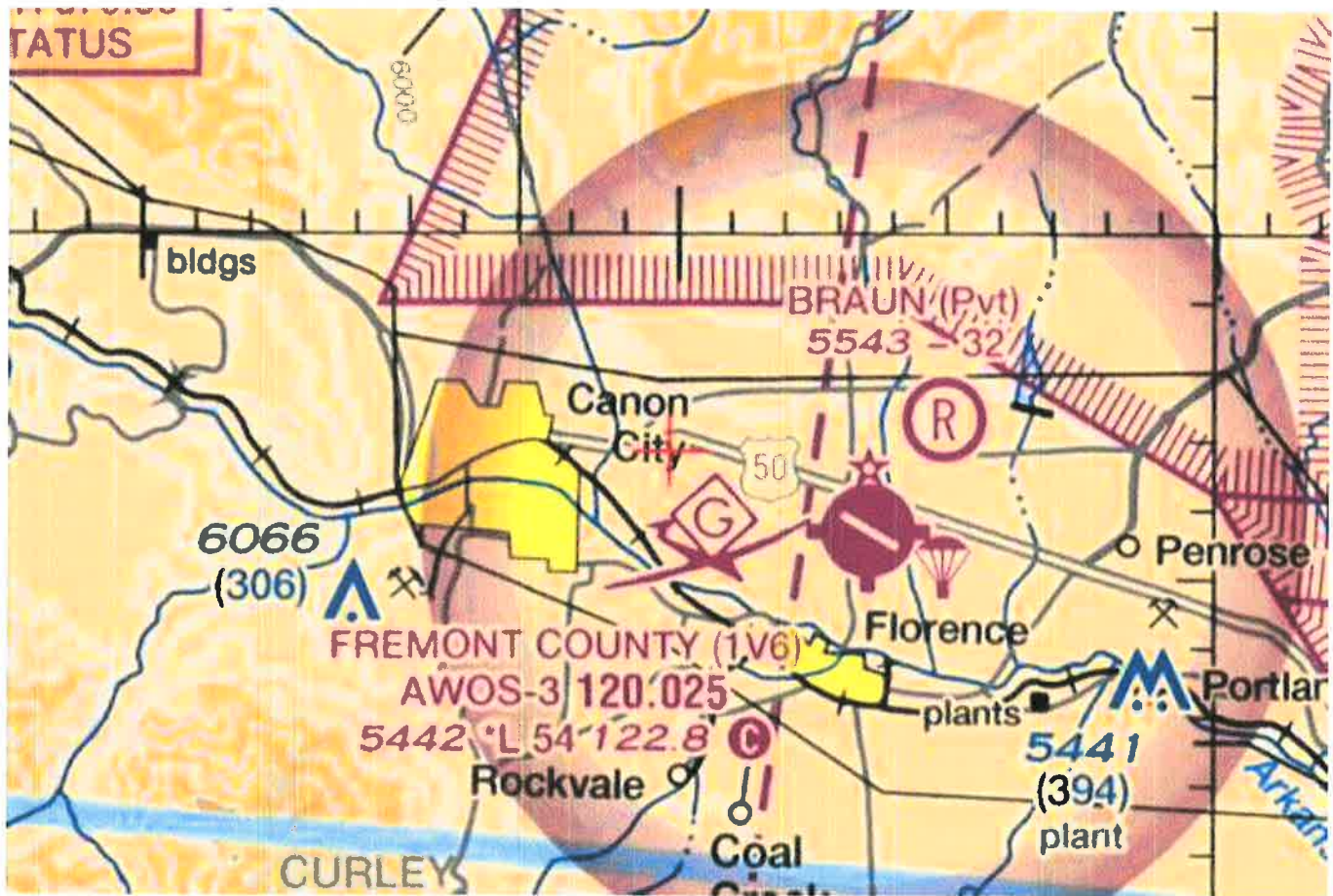
LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
6	7	GHz	55	dBW
6	7	GHz	42	dBW
10	11.7	GHz	55	dBW
10	11.7	GHz	42	dBW
17.7	19.7	GHz	55	dBW
17.7	19.7	GHz	42	dBW
21.2	23.6	GHz	55	dBW
21.2	23.6	GHz	42	dBW
614	698	MHz	2000	W
614	698	MHz	1000	W
698	806	MHz	1000	W
806	901	MHz	500	W
806	824	MHz	500	W
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W
896	901	MHz	500	W
901	902	MHz	7	W
929	932	MHz	3500	W
930	931	MHz	3500	W
931	932	MHz	3500	W
932	932.5	MHz	17	dBW
935	940	MHz	1000	W
940	941	MHz	3500	W
1670	1675	MHz	500	W
1710	1755	MHz	500	W
1850	1910	MHz	1640	W
1850	1990	MHz	1640	W
1930	1990	MHz	1640	W
1990	2025	MHz	500	W
2110	2200	MHz	500	W
2305	2360	MHz	2000	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W
2496	2690	MHz	500	W
3700	3980	MHz	1640	W



TOPO Map for ASN 2023-ANM-2935-OE



## Sectional Map for ASN 2023-ANM-2935-OE





8020 Katy Freeway  
Houston, TX 77024

Phone: (801) 979-9077  
www.crowncastle.com

March 7, 2025

COUNTY OF FREMONT, CO  
PLANNING  
161 JUSTICE CENTER ROAD  
CANNON CITY, CO 81212

Via Mail/FedEx

**\*\*\*\*\*NOTICE OF ELIGIBLE FACILITIES REQUEST\*\*\*\*\***

RE: Request for Minor Modification to Existing Wireless Facility – Section 6409  
Site Address: 3396 EAST UNITED STATES HIGHWAY 50, CANON CITY, CO 81212  
Crown Site Number: 858492 / Crown Site Name: ZOD\_ALLTEL\_CO04\_CANONCITY EAST  
Customer Site Number: DNO4816A / Application Number: 682629

On behalf of T-Mobile Central LLC (“T-Mobile” or “Applicant”), Crown Castle USA Inc. (“Crown Castle”) is pleased to submit this request to modify the existing wireless facility noted above through the collocation, replacement and/or removal of the Applicant’s equipment as an eligible facilities request for a minor modification under Section 6409<sup>1</sup> and the rules of the Federal Communications Commission (“FCC”).<sup>2</sup>

Section 6409 mandates that state and local governments must approve any eligible facilities request for the modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station. Under Section 6409, to toll the review period, if the reviewing authority determines that the application is incomplete, it must provide written notice to the applicant within 30 days, which clearly and specifically delineates all missing documents or information reasonably related to whether the request meets the federal requirements.<sup>3</sup> Additionally, if a state or local government, fails to issue any approvals required for this request within 60 days, these approvals are deemed granted. The FCC has clarified that the 30-day and 60-day deadlines begins when an applicant: (1) takes the first step required under state or local law; and (2) submits information sufficient to inform the jurisdiction that this modification qualifies under the federal law<sup>4</sup>. Please note that with the submission of this letter and enclosed items, the thirty and sixty-day review periods have started.

<sup>1</sup> Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6409 (2012) (codified at 47 U.S.C. § 1455).

<sup>2</sup> *Acceleration of Broadband Deployment by Improving Wireless Facility Siting Policies*, 29 FCC Rcd. 12865 (2014) (codified at 47 CFR § 1.6100); and *Implementation of State & Local Governments’ Obligation to Approve Certain Wireless Facility Modification Requests Under Section 6409(a) of the Spectrum Act of 2012*, WT Docket No. 19-250 (June 10, 2020).

<sup>3</sup> See 47 CFR § 1.6100 (c)(3). <sup>4</sup> See 2020 Upgrade Order at paragraph 16.

The Foundation for a Wireless World.

CrownCastle.com



8020 Katy Freeway  
Houston, TX 77024

Phone: (801) 979-9077  
[www.crowncastle.com](http://www.crowncastle.com)

The proposed scope of work for this project includes:

Collocation of antennas, ancillary equipment and ground equipment as per plans for a new carrier on an existing wireless communication facility.

**TOWER SCOPE OF WORK:**

- INSTALL (3) ERICSSON - 840590966 ANTENNA
- INSTALL (3) NOKIA - AEHC ANTENNA
- INSTALL (3) NOKIA - AHLOB RADIO
- INSTALL (3) NOKIA - AHFII RADIO
- INSTALL (2) RFS/CELWAVE - HB158-21U6S24-XXM\_TMO CABLES
- INSTALL (1) PLATFORM MOUNT (PV-LPPGS-12M-HR2-AP2)

**GROUND SCOPE OF WORK:**

- INSTALL PLATFORM - 8'X8' 2110JWIC-88 W/ 2' EXTENSION & ICE CANOPY WITHIN A PROPOSED 10'-0"X15'-0" LEASE AREA WITHIN EXISTING FENCED COMPOUND
- INSTALL ICE BRIDGE W/ FEEDLINE TRAPEEZE
- INSTALL (1) DELTA - HPL3.05 SITE SUPPORT CABINET
- INSTALL (1) DELTA - LB3 BATTERY CABINET
- INSTALL (1) 24 POSITION 200A PPC W/ 200A BREAKER
- INSTALL (1) FIBER CABINET
- INSTALL (1) FIBER HANDHOLE
- INSTALL (1) GPS ANTENNA

At the end of this letter is a checklist outlining the applicable substantial change criteria under Section 6409. Additionally, the following items are included in support of this request:

- Construction Drawings
  - a. Site Plan, Elevations, Equipment Detail, E-Sheets, Mount Drawings
- Structural Analysis
- Grant of Easement & Assignment of Lease
  - a. Crown Castle via Global Signal Acquisitions IV LLC owns an exclusive, perpetual easement and assignment of the lease for this tower site, including attorney-in-fact language to execute land use applications
- FAA Determination of No Hazard
- Flash Drive with documents and photos

As these documents indicate, (i) the modification involves the collocation, removal or replacement of transmission equipment; and (ii) such modification will not substantially change the physical dimensions of such tower or base station.

The Foundation for a Wireless World.  
[CrownCastle.com](http://CrownCastle.com)



8020 Katy Freeway  
Houston, TX 77024

Phone: (801) 979-9077  
[www.crowncastle.com](http://www.crowncastle.com)

As such, it is an "eligible facilities request" as defined in the FCC's rules to which the 60-day deadline for approval applies. Accordingly, Applicant requests all authorization necessary for this proposed minor modification under Section 6409.

Our goal is to work with you to obtain approvals earlier than the deadline. We will respond promptly to any request for related information you may have in connection with this request. Please let us know how we can work with you to expedite the approval process. We look forward to working with you on this important project, which will improve wireless telecommunication services in your community using collocation on existing infrastructure. If you have any questions, please do not hesitate to contact me.

Regards,

*Craig Chagnon*

Craig Chagnon  
Permitting Specialist, Tower Services  
Crown Castle, Agent for T-Mobile  
(801) 979-9077  
[Craig.Chagnon@crowncastle.com](mailto:Craig.Chagnon@crowncastle.com)





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Houston, TX 77024

Phone: (801) 979-9077  
www.crowncastle.com

### **Section 6409 Substantial Change Checklist for Towers Outside of the Public Right of Way**

The Federal Communications Commission has determined that a modification substantially changes the physical dimension of a wireless tower or base station under 47 U.S.C. § 1455(a) if it meets one of six enumerated criteria under 47 C.F.R. § 1.6100.

#### **Criteria for Towers Outside of the Public Rights of Way**

YES/NO <b>NO</b>	Does the modification increase the height of the tower by more than the greater of: (a) 10%; or (b) the height of an additional antenna array plus separation of up to 20 feet from the top of the nearest existing antenna?
YES/NO <b>NO</b>	Does the modification add an appurtenance to the body of the tower that would protrude from the edge of the tower more than 20 feet or more than the width of the tower structure at the level of the appurtenance, whichever is greater?
YES/NO <b>NO</b>	Does the modification involve the installation of more than the standard number of new equipment cabinets for the technology involved or add more than four new equipment cabinets?
YES/NO <b>NO</b>	Does the modification entail any excavation or deployment outside the current site by more than 30 feet in any direction, not including any access or utility easements?
YES/NO <b>NO</b>	Does the modification defeat the concealment elements of the eligible support structure?
YES/NO <b>NO</b>	Does the modification violate conditions associated with the siting approval for the tower or base station other than as specified in 47 C.F.R. § 1.6100(c)(7)(i) – (iv)?

If all questions in the above section are answered "NO," then the modification does not constitute a substantial change to the existing tower under 47 C.F.R. § 1.6100.

**RECORDING REQUESTED BY AND  
WHEN RECORDED MAIL TO:**

WHEN RECORDED RETURN TO:  
OLD REPUBLIC TITLE  
ATTN: POST CLOSING  
690 SOUTH MAIN STREET  
SUITE 1031  
AKRON, OH 44311

Prepared by:  
Lake & Cobb, PLC  
1095 W. Rio Salado Pkwy, Suite 206  
Tempe, Arizona 85281

SPACE ABOVE THIS LINE RESERVED FOR RECORDER'S USE

SINCE THIS DOCUMENT IS FOR AN EASEMENT AND THE ASSIGNMENT OF A LEASE, NO DOCUMENTARY FEE IS REQUIRED. See CRS Section 39-13-104(1)(i) and 39-13-104(1)(o).

**GRANT OF EASEMENT AND ASSIGNMENT OF LEASE**

Grantor: MacKenzie Ranch, LLLP, a Colorado limited liability limited partnership; Marc E. Lyerly, Trustee of the Ann M. Emmerson Trust under Trust Agreement dated September 19, 2002; and Elizabeth Passantino, Marc E. Lyerly and Robert T. Emmerson, as sole beneficiaries under the Ann M. Emmerson Trust under Trust Agreement dated September 19, 2002

Grantee: Global Signal Acquisitions IV LLC, a Delaware limited liability company

Site Address: 3396 E. United States Hwy 50, Canon City, Colorado 81212

Site County: Fremont

Assessor's Tax Parcel ID #: 000099404208

Prior Recorded Document(s) in Fremont County: November 19, 2008 at Instrument No. 857570

Site ID: ZOD\_Alltel\_CO04\_CanonCity East (858492)

**This Grant of Easement conveys a right of first refusal.**

858492-E

### GRANT OF EASEMENT AND ASSIGNMENT OF LEASE

THIS GRANT OF EASEMENT AND ASSIGNMENT OF LEASE (the "Easement") is made effective this 17 day of September 2015 ("Effective Date"), by and between **MACKENZIE RANCH, LLLP**, a Colorado limited liability limited partnership, and **MARC E. LYERLY**, Trustee of the Ann M. Emmerson Trust under Trust Agreement dated September 19, 2002, and **Elizabeth Passantino, Marc E. Lyerly and Robert T. Emmerson**, as sole beneficiaries under the Ann M. Emmerson Trust under Trust Agreement dated September 19, 2002, having a mailing address of 2570 SW 27th Street, Cape Coral, FL 33914 (hereinafter collectively referred to as "Grantor") and **GLOBAL SIGNAL ACQUISITIONS IV LLC**, a Delaware limited liability company, having a mailing address of 2000 Corporate Drive, Canonsburg, Pennsylvania 15317 ("GSA IV or Grantee").

1. **Description of Grantor's Property.** Grantor is the owner of that certain land and premises in Canon City, County of Fremont, State of Colorado, the description of said property is attached hereto as Exhibit "A" (hereinafter "Grantor's Property").

2. **Description of Easement.** For the amount of Ten and 00/100 Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which the parties hereby acknowledge, Grantor grants and conveys unto GSA IV, its successors and assigns, forever, an exclusive, perpetual easement for the use of a portion of Grantor's Property, that portion being described as a sixty-two (62) feet by fifty (50) feet parcel within Grantor's Property (the "Tower Easement"), as such Tower Easement is more particularly shown in the Site Plan attached hereto as Exhibit "B" and described by metes and bounds in Exhibit "C-1" attached hereto. The Grantor also grants to GSA IV, its successors and assigns, as part of this Easement, the following rights and interests: (i) a non-exclusive, perpetual right-of-way for ingress and egress, seven days per week, twenty-four hours per day, on foot or motor vehicle, including trucks, along a twenty (20) foot wide right-of-way extending from the nearest public right-of-way, together with the right to install, replace and maintain utility wires, poles, cables, conduits and pipes (the "Access Easement"); and (ii) a non-exclusive, perpetual utility easement, along a fifteen (15) foot wide right-of-way, including with the right to install, replace and maintain utility wires, poles, cables, conduits and pipes (the "15 foot Utility Easement"). The Access Easement and 15 foot Utility Easement are more particularly shown in the Site Plan attached hereto as Exhibit "B" and described by metes and bounds in Exhibit "C-2" (hereinafter the term "Easement Area" shall be deemed to also include the Tower Easement, Access Easement and 15 foot Utility Easement unless stated to the contrary). In the event GSA IV or any public utility is unable to use the above-described Access Easement, Grantor hereby agrees to grant an additional right-of-way, in form satisfactory to GSA IV, to GSA IV or at GSA IV's request, directly to a public utility, at no cost to GSA IV and in a location acceptable to GSA IV and Grantor, which acceptance as to location shall not be unreasonably withheld (the "Additional Access Easement"). For any such Additional Access Easement to be effective, such easement shall be recorded among the Public Records of Fremont County, Colorado. Also, Grantor hereby grants to GSA IV, its successors and assigns a non-exclusive construction and maintenance easement over such portion of Grantor's Property that is reasonably necessary, on a temporary basis, for



any construction, repair, maintenance, replacement, demolition and removal related to the Permitted Use (defined below), and GSA IV shall restore such portion of Grantor's Property to its original condition after its use of the temporary construction and maintenance easement.

3. **Easement Area.** The Tower Easement and 15' Utility Easement shall be used for constructing, maintaining and operating communications facilities, including without limitation, tower structures, antenna support structures, cabinets, meter boards, buildings, antennas, cables, equipment, and uses incidental thereto for GSA IV's use and the use of its lessees, licensees, and/or sub-easement holders (the "Permitted Use"). It is the intent of the parties that GSA IV's communications facilities shall not constitute a fixture. Grantor acknowledges that Grantor has no right to object to or approve any improvements to be constructed by GSA IV on the Tower Easement or utility improvements within the 15' Utility Easement. GSA IV agrees that all improvements will comply with all applicable local, state and/or federal laws and regulations. If requested by GSA IV, Grantor will execute, at GSA IV's sole cost and expense, all documents required by any governmental authority in connection with any development of, or construction on, the Easement Area, including documents necessary to petition the appropriate public bodies for certificates, permits, licenses and other approvals deemed necessary by GSA IV in GSA IV's absolute discretion to utilize the Easement Area for the Permitted Use. Grantor agrees to be named applicant if requested by GSA IV. In furtherance of the foregoing, Grantor hereby appoints GSA IV as Grantor's attorney-in-fact to execute all land use applications, permits, licenses and other approvals on Grantor's behalf for improvements within the Tower Easement or the 15' Utility Easement. Subject to the rights of any parties under any existing lease, sublease, license or other similar agreement for all or a portion of the Easement Area, Grantee shall obtain prior written consent from Grantor for any Major Modification to be conducted within the Easement Area. Grantor shall have a period of ten (10) calendar days (excluding weekends and national holidays) after receipt of Grantee's written request for approval of a Major Modification ("Major Modification Request") to reasonably approve or reject such Major Modification Request. If Grantor fails to respond to any such Major Modification Request within said ten (10) day period, time being of the essence, then Grantor shall be deemed to have approved the Major Modification Request and irrevocably appointed Grantee as Grantor's attorney in fact to execute the documents necessary to complete the Major Modification. Any Major Modification which is approved or deemed approved in accordance with the terms of this Section shall not be deemed a waiver of the requirement to seek Grantor's approval for any future Major Modification. As used herein, the term "Major Modification" shall mean a significant structural alteration or addition to the tower or structure (including but not limited to the adding of height to the tower or adding a story to any existing building) or other alteration or addition resulting in a significant change in the communication facilities (such as, by way of example, the conversion of the tower into a "tree," "bell tower" or lattice structure or material change in the color of the facility). A Major Modification shall not include (i) the adding, decreasing, altering, replacing, or upgrading of (a) existing antennas on the tower (or of related cable or other antenna accessories), (b) cabinets or other equipment inside the Tower Easement, or (c) equipment storage structures inside the Tower Easement (excluding any new building); or (ii) modifications to the tower for safety or to increase load capacity, provided that the height of the tower is not increased. Grantor shall be entitled to no further consideration with respect to any of the foregoing matters.

4. **Perpetual Easement.** This Easement and GSA IV's rights and privileges hereunder shall be perpetual and may be terminated only as provided for herein.

5. **GSA IV's Right to Terminate.** GSA IV shall have the unilateral right to terminate this Easement for any reason. Said termination shall be effective upon GSA IV providing written notice of termination to Grantor. Upon termination of this Easement, this Easement shall become null and void and all of the parties shall have no further obligations to each other. Upon termination of this Easement, GSA IV shall, within a reasonable time, but in no event more than one hundred eighty (180) days, remove its building(s), tower and above ground property and restore the surface of the Easement Area to its original condition, reasonable wear and tear excepted.

6. **Hazardous Materials.**

a) GSA IV shall not (either with or without negligence) cause or permit the use, storage, generation, escape, disposal or release of any Hazardous Materials in any manner not sanctioned by law. In all events, GSA IV shall indemnify and hold Grantor harmless from any and all claims, damages, fines, judgments, penalties, costs, liabilities or losses (including, without limitation, any and all sums paid for settlement of claims, attorneys' fees, and consultants' and experts' fees) from the presence or release of any Hazardous Materials on the Easement Area if caused by GSA IV or persons acting under GSA IV. GSA IV shall execute such affidavits, representations and the like from time to time as Grantor may reasonably request concerning GSA IV's best knowledge and belief as to the presence of Hazardous Materials within the Easement Area.

b) Grantor shall not (either with or without negligence) cause or permit the use, storage, generation, escape, disposal or release of any Hazardous Materials in any manner not sanctioned by law. In all events, Grantor shall indemnify and hold GSA IV harmless from any and all claims, damages, fines, judgments, penalties, costs, liabilities or losses (including, without limitation, any and all sums paid for settlement of claims, attorneys' fees, and consultants' and experts' fees) from the presence or release of any Hazardous Materials on Grantor's Property unless caused by GSA IV or persons acting under GSA IV. Grantor shall execute such affidavits, representations and the like from time to time as GSA IV may reasonably request concerning Grantor's best knowledge and belief as to the presence of Hazardous Materials on Grantor's Property.

c) For purposes of this Easement, the term "Hazardous Materials" means any substance which is (i) designated, defined, classified or regulated as a hazardous substance, hazardous material, hazardous waste, pollutant or contaminant under any Environmental Law, as currently in effect or as hereafter amended or enacted, (ii) a petroleum hydrocarbon, including crude oil or any fraction thereof and all petroleum products, (iii) PCBs, (iv) lead, (v) asbestos, (vi) flammable explosives, (vii) infectious materials, or (viii) radioactive materials. "Environmental Law(s)" means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Sections 9601, et seq., the Resource Conservation and Recovery Act of 1976, 42 U.S.C. Sections 6901, et seq., the Toxic Substances Control Act, 15

U.S.C. Sections 2601, et seq., the Hazardous Materials Transportation Act, 49 U.S.C. 5101, et seq., and the Clean Water Act, 33 U.S.C. Sections 1251, et seq., as said laws have been supplemented or amended to date, the regulations promulgated pursuant to said laws and any other federal, state or local law, statute, rule, regulation or ordinance which regulates or proscribes the use, storage, disposal, presence, clean-up, transportation or release or threatened release into the environment of Hazardous Materials.

7. **Insurance.** At all times, GSA IV, at its sole expense, shall obtain and keep in force insurance which may be required by any federal, state or local statute or ordinance of any governmental body having jurisdiction in connection with the operation of GSA IV's business upon the Easement Area.

8. **Security of GSA IV's Communications Facilities.** GSA IV may construct a chain link or comparable fence around the perimeter of GSA IV's communications facilities.

9. **Removal of Obstructions.** GSA IV has the right to remove obstructions, including but not limited to vegetation, which may encroach upon, interfere with or present a hazard to GSA IV's use of the Easement Area. GSA IV shall be responsible for disposing of any materials related to the removal of obstructions.

10. **Assignment of Lease Agreement.** The parties hereby acknowledge that certain Communications Site Lease Agreement dated February 6, 2008 by and between NCWPCS MPL 33 - Year Sites Tower Holdings LLC, as successor lessee to Alltel Communications, Inc., a Delaware corporation, and Grantor, as successor lessor to Jean M. Colon (aka Jean MacKenzie Colon) individually, and Thomas H. Emmerson and Marc E. Lyerly, Trustees of the Ann M. Emmerson Trust under Trust Agreement dated September 19, 2002 ("Lease Agreement"), a memorandum of which was recorded on November 19, 2008 at Instrument No. 857570 in the official records of Fremont County, Colorado. Grantor hereby assigns to GSA IV all of Grantor's right, title and interest in the Lease Agreement, including but not limited to, the right to amend the Lease Agreement: (i) to extend the term length; (ii) to increase the size of the leased premises within the Easement Area; and/or (iii) in any other manner deemed necessary by GSA IV.

11. **Right of First Refusal.** If Grantor elects to sell all or any portion of the Easement Area, whether separate or as part of a larger parcel of property, GSA IV shall have the right of first refusal to meet any bona fide offer of sale on the same terms and conditions of such offer. If GSA IV fails to meet such bona fide offer within thirty days after written notice thereof from Grantor, Grantor may sell that property or portion thereof to such third person in accordance with the terms and conditions of the offer, which sale shall be under and subject to this Easement and GSA IV's rights hereunder.

12. **Real Estate Taxes.** Grantor shall pay all real estate taxes on Grantor's Property; provided GSA IV agrees to reimburse Grantor for any documented increase in real estate taxes levied against Grantor's Property that are directly attributable to the presence of wireless communications facilities within the Easement Area. Grantor agrees to provide GSA IV any

documentation evidencing the increase and how such increase is attributable to GSA IV's use. GSA IV reserves the right to challenge any such assessment, and Grantor agrees to cooperate with GSA IV in connection with any such challenge. In the event that Grantor fails to pay all real estate taxes on Grantor's Property prior to such taxes becoming delinquent, GSA IV may, at its option, pay such real estate taxes (the "Delinquent Taxes") and GSA IV shall have the right to collect the Delinquent Taxes from Grantor together with interest on the Delinquent Taxes at the rate of 12% per annum (calculated from the date GSA IV pays the Delinquent Taxes until Grantor repays such sums due to GSA IV) and shall have a lien against Grantor's Property with respect thereto.

13. **Waiver of Subrogation.** The parties hereby waive any and all rights of action for negligence against the other which may hereafter arise on account of damage to the Easement Area or any other portion of Grantor's Property, including improvements and personal property located thereon, resulting from any fire or other casualty of the kind covered by property insurance policies with extended coverage regardless of whether or not, or in what amount, such insurance is now or hereafter carried by the parties.

14. **Enforcement.** In the event Grantor fails to cure any violation of the terms of this Easement within ten (10) calendar days (excluding weekends and national holidays) after written notice from GSA IV, GSA IV shall have the right to injunctive relief, to require specific performance of this Easement, to collect damages from Grantor, and to take such actions as may be necessary in GSA IV's discretion to cure such violation and charge Grantor with all reasonable costs and expenses incurred by GSA IV as a result of such violation (including, without limitation, GSA IV's reasonable attorneys' fees). All rights and remedies provided under this Easement are cumulative and may be pursued singularly, in any combination, and in any order. The failure to enforce any of the terms and provisions contained herein shall in no event be deemed to be a waiver of the right to thereafter strictly enforce the terms and provisions hereof.

15. **Limitation on Damages.** In no event shall either party be liable to the other for consequential, indirect, speculative or punitive damages in connection with or arising from this Easement, the Permitted Use or the Easement Area.

16. **Recording.** Grantor acknowledges that GSA IV intends to record this Easement with the appropriate recording officer upon execution of this Easement.

17. **Hold Harmless.** Grantor hereby indemnifies, holds harmless, and agrees to defend GSA IV against all damages asserted against or incurred by GSA IV by reason of, or resulting from: (i) the breach by Grantor of, any representation, warranty, or covenant of Grantor contained herein or (ii) any negligent act or omission of Grantor, excepting however such damages as may be due to or caused by the acts of GSA IV or its agents. GSA IV hereby indemnifies, holds harmless, and agrees to defend Grantor against all damages asserted against or incurred by Grantor by reason of, or resulting from: (i) the breach by GSA IV of any representation, warranty, or covenant of GSA IV contained herein or (ii) any negligent act or

omission of GSA IV, excepting however such damages as may be due to or caused by the acts of Grantor or its agents.

18. **Grantor's Covenant of Title.** Grantor covenants: (a) Grantor is seized of fee simple title to the Grantor's Property of which the Easement Area is a part and has the right and authority to grant this Easement; (b) that this Easement is and shall be free and clear of all liens, claims, encumbrances and rights of third parties of any kind whatsoever; (c) subject to the terms and conditions of this Easement, GSA IV shall have quiet possession, use and enjoyment of the Easement Area; (d) there are no aspects of title that might interfere with or be adverse to GSA IV's interests in and intended use of the Easement Area; and (e) that Grantor shall execute such further assurances thereof as may be required.

19. **Non-Interference.** From and after the date hereof and continuing until this Easement is terminated (if ever), Grantor shall not permit (i) the construction, installation or operation of any communications facilities that emit radio frequencies within five hundred (500) radius feet of the Tower Easement, other than communications facilities constructed, installed and/or operated on the Easement Area pursuant to this Easement or the Lease Agreement or; (ii) any condition on Grantor's Property which interferes with GSA IV's Permitted Use. Each of the covenants made by Grantor in this Section is a covenant running with the land for the benefit of the Easement Area and shall be binding upon Grantor and each successive owner of any portion of Grantor's Property and upon each person having any interest therein derived through any owner thereof.

20. **Eminent Domain.** If the whole or any part of the Easement Area shall be taken by right of eminent domain or any similar authority of law, the entire award for the value of the Easement Area and improvements so taken shall belong to GSA IV.

21. **Grantor's Property.** Grantor shall not do or permit anything that will interfere with or negate any special use permit or approval pertaining to the Easement Area or cause any communications facilities on the Easement Area to be in nonconformance with applicable local, state, or federal laws. Grantor covenants and agrees that it shall not subdivide the Grantor's Property if any such subdivision will adversely affect the Easement Area's compliance (including any improvements located thereon) with applicable laws, rules, ordinances and/or zoning, or otherwise adversely affects GSA IV's ability to utilize Grantor's Property for its intended purposes. Grantor shall not initiate or consent to any change in the zoning of Grantor's Property or any property of Grantor contiguous to, surrounding, or in the vicinity of Grantor's Property, or impose or consent to any other restriction that would prevent or limit GSA IV from using the Easement Area for the uses intended by GSA IV.

22. **Entire Agreement.** Grantor and GSA IV agree that this Easement contains all of the agreements, promises and understandings between Grantor and GSA IV. No verbal or oral agreements, promises or understandings shall be binding upon either Grantor or GSA IV in any dispute, controversy or proceeding at law. Any addition, variation or modification to this Easement shall be void and ineffective unless made in writing and signed by the parties hereto.

23. **Construction of Document.** Grantor and GSA IV acknowledge that this document shall not be construed in favor of or against the drafter and that this document shall not be construed as an offer until such time as it is executed by one of the parties and then tendered to the other party.

24. **Applicable Law.** This Easement and the performance thereof shall be governed, interpreted, construed and regulated by the laws of the State where the Easement is located. The parties agree that the venue for any litigation regarding this Easement shall be Fremont County, Colorado.

25. **Notices.** All notices hereunder shall be in writing and shall be given by (i) established express delivery service which maintains delivery records, (ii) hand delivery, or (iii) certified or registered mail, postage prepaid, return receipt requested. Notices may also be given by facsimile transmission, provided that the notice is concurrently given by one of the above methods. Notices are effective upon receipt, or upon attempted delivery if delivery is refused or if delivery is impossible because of failure to provide reasonable means for accomplishing delivery. The notices shall be sent to the parties at the following addresses:

If to Grantor:

Ann M. Emmerson Trust  
Attn: Jeff Passantino  
2570 SW 27th Street  
Cape Coral, FL 33914

MacKenzie Ranch, LLLP  
Attn: Will Colon  
1340 College Avenue  
Canon City, CO 81212

If to Grantee:

Global Signal Acquisitions IV LLC  
c/o Crown Castle USA Inc.  
E. Blake Hawk, General Counsel  
Attn: Legal – Real Estate Dept.  
2000 Corporate Drive  
Canonsburg, PA 15317

26. **Assignment.** The parties hereto expressly intend that the easements granted herein shall be easements in gross, and as such, are transferable, assignable, inheritable, divisible and apportionable. GSA IV has the right, within its sole discretion, to sell, assign, lease, convey, license or encumber any of its interest in the Easement Area without consent. In addition, GSA IV has the right, within its sole discretion, to grant sub-easements over any portion of the Easement Area without consent. Any such sale, assignment, lease, license, conveyance, sub-easement or encumbrance shall be binding upon the successors, assigns, heirs and legal representatives of the respective parties hereto. An assignment of this Easement shall be effective upon GSA IV sending written notice thereof to Grantor at Grantor's mailing address stated above and shall relieve GSA IV from any further liability or obligation accruing hereunder on or after the date of the assignment.

27. **Partial Invalidity.** If any term of this Easement is found to be void or invalid, then such invalidity shall not affect the remaining terms of this Easement, which shall continue in full force and effect.

28. **Mortgages.** This Easement shall be subordinate to any mortgage given by Grantor which currently encumbers Grantor's Property including the Easement Area, provided that any mortgagee holding such a mortgage shall recognize the validity of this Easement in the event of foreclosure of Grantor's interest and GSA IV's rights under this Easement. In the event that the Easement Area is or shall be encumbered by such a mortgage, Grantor shall obtain and furnish to GSA IV a non-disturbance agreement for each such mortgage, in recordable form.

29. **Successors and Assigns.** The terms of this Easement shall constitute a covenant running with the Grantor's Property for the benefit of GSA IV and its successors and assigns and shall extend to and bind the heirs, personal representatives, successors and assigns of the parties hereto and upon each person having any interest therein derived through any owner thereof. Any sale, mortgage, lease or other conveyance of Grantor's Property shall be under and subject to this Easement and GSA IV's rights hereunder.

30. **Construction of Easement.** The captions preceding the Sections of this Easement are intended only for convenience of reference and in no way define, limit or describe the scope of this Easement or the intent of any provision hereof. Whenever the singular is used, the same shall include the plural and vice versa and words of any gender shall include the other gender. As used herein, "including" shall mean "including, without limitation." This document may be executed in multiple counterparts, each of which shall be deemed a fully executed original.

**[Signature Pages Follow]**

**IN WITNESS WHEREOF**, Grantor and GSA IV, having read the foregoing and intending to be legally bound hereby, have executed this Grant of Easement as of the day and year first written above.

**GRANTOR:**

MACKENZIE RANCH, LLLP, a Colorado  
limited liability limited partnership

By: 

Print Name: William M. Colon

Title: General Partner

STATE OF

Colorado

)

COUNTY OF

Fremont

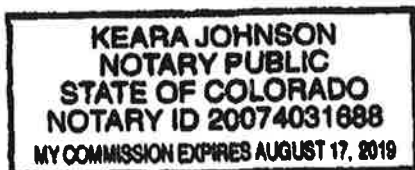
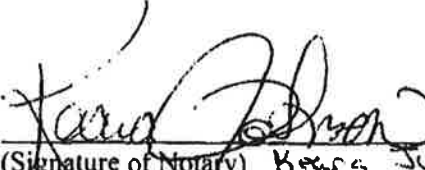
)ss.

)

On this 15th day of September 2015, before me, the subscriber, a Notary Public in and for said State and County, personally appeared William M. Colon, the General Partner of MACKENZIE RANCH, LLLP, known or identified to me to be the person whose name is subscribed to the foregoing Grant of Easement and Assignment of Lease, and in due form of law acknowledged that he is authorized on behalf of said company to execute all documents pertaining hereto and acknowledged to me that he executed the same as his voluntary act and deed on behalf of said company.

**IN TESTIMONY WHEREOF**, I have hereunto set my hand and affixed my seal in said State and County on the day and year last above written.

Notary Seal

(Signature of Notary)  Keara JohnsonMy Commission Expires: August 17, 2019



**GRANTOR:**

MARC E. LYERLY, as sole surviving trustee  
of the Ann M. Emmerson Trust under Trust  
Agreement dated September 19, 2002

By: M E. L

Print Name: Marc E. Lyerly

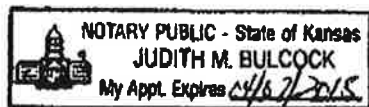
Title: Trustee

STATE OF Kansas )  
COUNTY OF Johnson )ss.  
)

On this 17<sup>th</sup> day of September 2015, before me, the subscriber, a Notary Public in and for said State and County, personally appeared Marc E. Lyerly, Trustee of the Ann M. Emmerson Trust under Trust Agreement dated September 19, 2002, known or identified to me to be the person whose name is subscribed to the foregoing Grant of Easement and Assignment of Lease, and in due form of law acknowledged that he/she is authorized on behalf of said company to execute all documents pertaining hereto and acknowledged to me that he/she executed the same as his/her voluntary act and deed on behalf of said company.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my seal in said State and County on the day and year last above written.

Notary Seal



Judith M. Bulcock  
(Signature of Notary) Judith M. Bulcock

My Commission Expires: 04/07/2018

**GRANTOR:**

MARC E. LYERLY, as heir of the Estate of  
Ann M. Emmerson and beneficiary of the Ann  
M. Emmerson Trust under Trust Agreement  
dated September 19, 2002

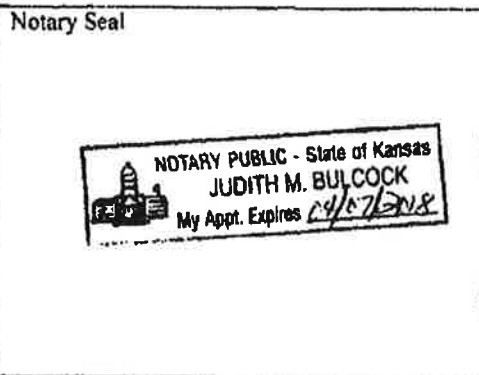
By: M. E. L.

Print Name: Marc E. Lyerly

STATE OF Kansas )  
COUNTY OF Johnson ) ss.

On this 17<sup>th</sup> day of September 2015, before me, the subscriber, a Notary Public in and for said State and County, personally appeared Marc E. Lyerly, known or identified to me to be the person whose name is subscribed to the foregoing Grant of Easement and Assignment of Lease, and in due form of law acknowledged that he executed the same as his voluntary act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my seal in said State and County on the day and year last above written.



Judith M. Bulcock  
(Signature of Notary) Judith M. Bulcock

My Commission Expires: 04/07/2018

**GRANTOR:**

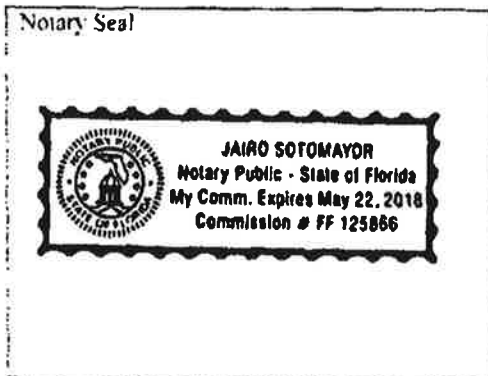
ELIZABETH PASSANTINO, as heir of the  
Estate of Ann M. Emmerson and beneficiary of  
the Ann M. Emmerson Trust under Trust  
Agreement dated September 19, 2002

By: Elizabeth Passantino  
Print Name: Elizabeth Passantino

STATE OF Florida )  
COUNTY OF Lee )ss.

On this 16<sup>th</sup> day of September 2015, before me, the subscriber, a Notary Public  
in and for said State and County, personally appeared Elizabeth Passantino, known or identified  
to me to be the person whose name is subscribed to the foregoing Grant of Easement and  
Assignment of Lease, and in due form of law acknowledged that she executed the same as her  
voluntary act and deed.

**IN TESTIMONY WHEREOF**, I have hereunto set my hand and affixed my seal in said  
State and County on the day and year last above written.



Jairo Sotomayor  
(Signature of Notary) Jairo Sotomayor  
My Commission Expires: May 22, 2018

**GRANTOR:**

ROBERT T. EMMERSON, as heir of the  
Estate of Ann M. Emmerson and beneficiary of  
the Ann M. Emmerson Trust under Trust  
Agreement dated September 19, 2002

By: *[Signature]*

Print Name: Robert T. Emmerson

STATE OF Florida )  
COUNTY OF LEE ) ss.

On this 16<sup>th</sup> day of September 2015, before me, the subscriber, a Notary Public in and for said State and County, personally appeared Robert T. Emmerson, known or identified to me to be the person whose name is subscribed to the foregoing Grant of Easement and Assignment of Lease, and in due form of law acknowledged that he executed the same as his voluntary act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my seal in said State and County on the day and year last above written.

Notary Seal



*[Signature]*  
(Signature of Notary) Jairo Sotomayor

My Commission Expires: MAY 22, 2018

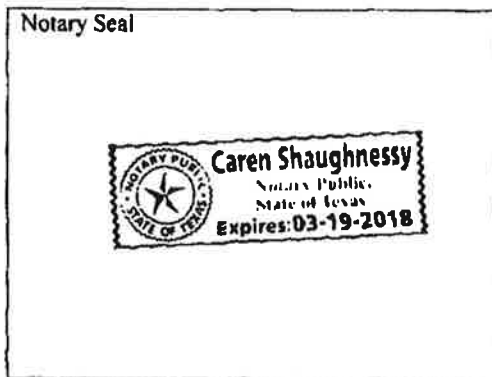
**GSA IV**  
**GLOBAL SIGNAL ACQUISITIONS IV LLC,**  
a Delaware limited liability company

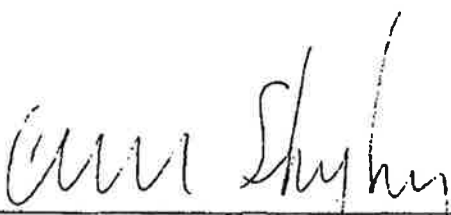
By:   
Print Name: Helen Smith  
Title: Helen Smith  
Real Estate Transaction Manager

STATE OF TEXAS )  
 )ss.  
COUNTY OF HARRIS )

On this 16 day of September 2015, before me, the subscriber, a Notary Public in and for said State and County, personally appeared Helen Smith, the RET Mgr. of GLOBAL SIGNAL ACQUISITIONS IV LLC, known or identified to me to be the person whose name is subscribed to the foregoing Grant of Easement and Assignment of Lease, and in due form of law acknowledged that he/she is authorized on behalf of said company to execute all documents pertaining hereto and acknowledged to me that he/she executed the same as his/her voluntary act and deed on behalf of said company.

**IN TESTIMONY WHEREOF**, I have hereunto set my hand and affixed my seal in said State and County on the day and year last above written.



  
(Signature of Notary) Caren Shaughnessy  
My Commission Expires: 3-19-18

**EXHIBIT "A"**  
**TO GRANT OF EASEMENT**

**[Description of Grantor's Property]**

SITUATED IN THE COUNTY OF FREMONT AND STATE OF COLORADO:

TOWNSHIP 18, SOUTH RANGE 70 WEST OF THE 6TH P.M.

SECTION 25: THAT PART OF THE S 1/2 SW 1/4 AND THE S 1/2 SE 1/4 LYING SOUTH  
OF U.S. HIGHWAY 50

SECTION 36: W 1/2 NE 1/4, NE 1/4 NE 1/4, N 1/2 SE 1/4 NE 1/4

TAX I.D. NUMBER: 99404208

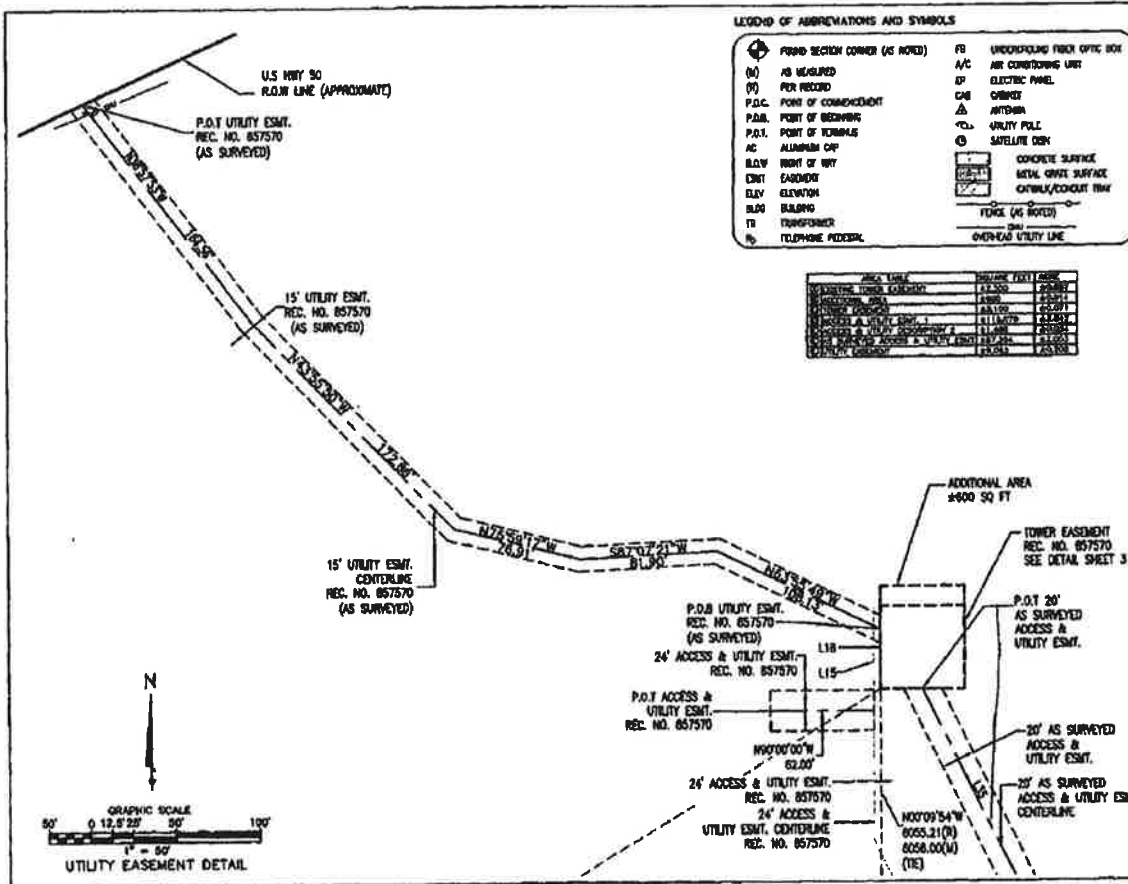
**EXHIBIT "B"**  
**TO GRANT OF EASEMENT**

**[Site sketch including access road to property]**

Site Name: ZOD\_Altel\_CO04\_CanonCity East  
BUN: 858492







**SURVEY PLAN**  
 IN SECTION 10  
 TOWNSHIP 14 SOUTH, RANGE 58 WEST  
 FOR: CROWN CASTLE  
 SITE: 200 ALLIED COMM. CANYON CITY EAST  
 BLVD. 80640  
 ADDRESS: 3306 E. UNITED STATES HWY 50  
 CANYON CITY, COLORADO 81312  
 FREMONT COUNTY

**CROWN CASTLE**  
 1100 17TH ST. SUITE 200 CANYON CITY, CO 81302  
 (719) 770-1100 FAX (719) 770-1101  
 NATIONAL BROADCASTING CORPORATION

**GEOLINE SURVEYING, INC.**  
 14325 VINE STREET SUITE 200 BLDG. 2, BRIGHTON, CO 80601  
 (303) 439-1100 FAX (303) 439-1101  
 2000 10TH ST. SUITE 200 BRIGHTON, CO 80601

**POWER SURVEYING, INC.**  
 1100 17TH ST. SUITE 200 CANYON CITY, CO 81302  
 (719) 770-1100 FAX (719) 770-1101

**SURVEYOR'S NOTES**  
 1. BASED ON RECORD PLANS AND THE SHOWN UPON THE SOUTH LINE OF THE FOREMOST QUARTER OF SECTION 10, TOWNSHIP 14 SOUTH, RANGE 58 WEST OF THE 6TH PRINCIPAL MERIDIAN, THIS LINE BEARS NORTH 72° 59' 17" WEST, A DISTANCE OF 172.50 FEET, MEASURED AT THE WEST QUARTER CORNER OF SAID SECTION 10 BY A PLUMB L&L ALUMINUM CAP, SHOWN FULLY EXPOSED AND AT THE CENTER QUARTER CORNER OF SAID SECTION BY A PLUMB L&L ALUMINUM CAP SHOWN FULLY EXPOSED, WITH ALL BEARINGS CONTAINED HEREIN BEING RELIABLE RESULTS.

2. NO RECONSTRUCTION INVESTIGATION WAS PERFORMED TO LOCATE UNDERGROUND UTILITIES. UTILITIES SHOWN HEREON ARE SHOWN TO AND ARE FOR CONVEYANCE PURPOSES ONLY.

3. THIS SURVEY DOES NOT REPRESENT A BOUNDARY SURVEY OF THE POWER PLANT.

4. ALL MOBILE PHONE EQUIPMENT AND IMPROVEMENTS ARE CONTAINED WITHIN THE DESCRIBED AREA.

**SURVEYOR'S CERTIFICATION**  
 I, POWER SURVEYING, INC. DO HEREBY CERTIFY TO CROWN CASTLE AND ALL RELEVANT TITLE INSURANCE COMPANY

POWER SURVEYING, INC. INC.  
 RECORD & GROUND  
 LAND SURVEYOR - COLORADO # 2000  
 Date: 08/24/15  
 Revision: 0-15-15

**COLORADO REGISTERED LAND SURVEYOR**  
 08/24/15  
 37929

**SHEET 2 OF 5**



**EXHIBIT "C-1"**  
**TO GRANT OF EASEMENT**

**[Description of Easement Area]**

A TRACT OF LAND BEING LOCATED IN THE S1/2 SE1/4 LYING SOUTH OF U.S HIGHWAY 50 LOCATED WITHIN SECTION 25 TOWNSHIP 18 SOUTH, RANGE 70 WEST OF THE 6TH P.M., FREMONT COUNTY, COLORADO BEING 10 FEET ON EITHER SIDE OF THE FOLLOWING DESCRIBED CENTERLINE:

BASIS OF BEARINGS: BEARINGS ARE BASED UPON THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 36, TOWNSHIP 18 SOUTH, RANGE 70 WEST OF THE 6TH PRINCIPAL MERIDIAN, SAID LINE BEARS NORTH 89°50'16" EAST, A DISTANCE OF 2664.22 FEET, MONUMENTED AT THE WEST QUARTER CORNER OF SAID SECTION 36 BY A FOUND 2.0 ALUMINUM CAP, STAMPED P.L.S #23890 AND AT THE CENTER QUARTER CORNER OF SAID SECTION BY A FOUND 3.25 ALUMINUM CAP STAMPED P.L.S # 35261, WITH ALL BEARINGS CONTAINED HERE IN BEING RELATIVE THERETO.

COMMENCING AT THE NORTH QUARTER CORNER OF SAID SECTION 36; THENCE NORTH 58°19'07" EAST, A DISTANCE OF 752.60 FEET TO THE POINT OF BEGINNING; THENCE NORTH 00°00'00" EAST, A DISTANCE OF 62.00 FEET; THENCE NORTH 90°00'00" EAST, A DISTANCE OF 50.00 FEET; THENCE SOUTH 00°00'00" WEST, A DISTANCE OF 62.00 FEET; THENCE SOUTH 90°00'00" WEST, A DISTANCE OF 50.00 FEET TO THE POINT OF BEGINNING.

CONTAINING ±3,100 SQUARE FEET OR ±0.071 ACRES MORE OR LESS

**EXHIBIT "C-2"**  
**TO GRANT OF EASEMENT**

**[Description of Access and Utility Easements]**

**ACCESS EASEMENT DESCRIPTION**

A TRACT OF LAND 20 FEET IN WIDTH BEING LOCATED IN THE S1/2 SE1/4 LYING SOUTH OF U.S HIGHWAY 50 LOCATED WITHIN SECTION 25 TOWNSHIP 18 SOUTH, RANGE 70 WEST OF THE 6TH P.M. AND THE W1/2 NE1/4 AND THE SE1/4 NW1/4 OF SECTION 36, TOWNSHIP 18 SOUTH, RANGE 70 WEST OF THE 6TH P.M., FREMONT COUNTY, COLORADO BEING 10 FEET ON EITHER SIDE OF THE FOLLOWING DESCRIBED CENTERLINE:

BASIS OF BEARINGS: BEARINGS ARE BASED UPON THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 36, TOWNSHIP 18 SOUTH, RANGE 70 WEST OF THE 6TH PRINCIPAL MERIDIAN, SAID LINE BEARS NORTH 89°50'16" EAST, A DISTANCE OF 2664.22 FEET, MONUMENTED AT THE WEST QUARTER CORNER OF SAID SECTION 36 BY A FOUND 2.0 ALUMINUM CAP, STAMPED P.L.S #23890 AND AT THE CENTER QUARTER CORNER OF SAID SECTION BY A FOUND 3.25 ALUMINUM CAP STAMPED P.L.S # 35261, WITH ALL BEARINGS CONTAINED HERE IN BEING RELATIVE THERETO.

COMMENCING AT SAID CENTER OF SECTION 36, THENCE NORTH 49°01'41" WEST, A DISTANCE OF 38.00 FEET MORE OR LESS TO THE NORTHERLY RIGHT OF WAY LINE OF GRANDVIEW AVENUE AND THE POINT OF BEGINNING;  
THENCE NORTH 00°00'00" EAST, A DISTANCE OF 20.00 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT;  
THENCE ALONG THE ARC OF SAID CURVE TO THE RIGHT HAVING A RADIUS OF 14.45 FEET, AN ARC LENGTH OF 21.58 FEET AND A CENTRAL ANGLE OF 85°35'58", WITH A CHORD BEARING NORTH 42°47'59" EAST A DISTANCE OF 19.63 FEET;  
THENCE NORTH 82°58'53" EAST, A DISTANCE OF 24.67 FEET; THENCE SOUTH 88°24'56" EAST, A DISTANCE OF 64.73 FEET; THENCE SOUTH 85°20'26" EAST, A DISTANCE OF 150.11 FEET; THENCE SOUTH 87°12'21" EAST, A DISTANCE OF 155.74 FEET; THENCE NORTH 89°55'53" EAST, A DISTANCE OF 627.78 FEET TO THE BEGINNING OF A NON-TANGENT CURVE TO THE LEFT;  
THENCE ALONG THE CURVE OF SAID NON-TANGENT CURVE TO THE LEFT, HAVING A RADIUS OF 180.11 FEET, AN ARC LENGTH OF 361.05 FEET AND A CENTRAL ANGLE OF 114°51'17", WITH A CHORD BEARING OF NORTH 42°13'44" EAST, A DISTANCE 303.56 FEET;  
THENCE NORTH 11°27'11" WEST, A DISTANCE OF 336.41 FEET TO THE BEGINNING OF A NON-TANGENT CURVE TO THE RIGHT;  
THENCE ALONG THE ARC OF SAID NON-TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 174.62 FEET, AN ARC LENGTH OF 184.83 FEET AND A CENTRAL

Site Name: ZOD\_Alltel\_CO04\_CanonCity East  
BUN: 858492

ANGLE OF 60°38'43", WITH A CHORD BEARING OF N11°03'13" EAST A DISTANCE OF 176.32 FEET TO A POINT OF REVERSE CURVE;  
THENCE ALONG THE ARC OF SAID REVERSE CURVE HAVING A RADIUS OF 427.50 FEET, AN ARC LENGTH OF 335.06 FEET AND A CENTRAL ANGLE OF 44°54'22", WITH A CHORD BEARING OF NORTH 18°55'23" WEST A DISTANCE OF 326.55 FEET;  
THENCE NORTH 07°26'56" WEST, A DISTANCE OF 626.12 FEET; THENCE NORTH 03°08'19" EAST, A DISTANCE OF 304.15 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE LEFT;  
THENCE ALONG THE ARC OF SAID TANGENT CURVE TO THE LEFT HAVING A RADIUS OF 626.07 FEET, AN ARC LENGTH OF 418.77 FEET AND A CENTRAL ANGLE OF 38°19'27", WITH A CHORD BEARING OF NORTH 15°13'30" EAST A DISTANCE OF 411.00 FEET;  
THENCE NORTH 40°30'56" WEST, A DISTANCE OF 315.00 FEET; THENCE NORTH 25°49'02" WEST, A DISTANCE OF 461.69 FEET TO THE POINT OF TERMINUS.  
SIDELINES TO BE LENGTHENED OR SHORTENED TO PREVENT GAPS OR OVERLAPS.

CONTAINING ±87,254 SQUARE FEET OR ±2.003 ACRES MORE OR LESS

#### UTILITY EASEMENT DESCRIPTION

AN ACCESS AND UTILITY EASEMENT OVER AND ACROSS THAT PART OF THE S1/2 SE1/4, LYING SOUTH OF U.S. HIGHWAY 50 OF SECTION 25, TOWNSHIP 18 SOUTH, RANGE 70 WEST OF THE 6TH P.M., THE W1/2NE1/4 AND THE SE1/4 NW1/4 OF SECTION 36, TOWNSHIP 18 SOUTH, RANGE 70 WEST OF THE 6TH P.M., BEING 24 FEET IN WIDTH, 12 FEET ON EITHER SIDE OF THE FOLLOWING DESCRIBED CENTERLINE:

BASIS OF BEARINGS: BEARINGS ARE BASED UPON THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 36, TOWNSHIP 18 SOUTH, RANGE 70 WEST OF THE 6TH PRINCIPAL MERIDIAN, SAID LINE BEARS NORTH 89°50'16" EAST, A DISTANCE OF 2664.22 FEET, MONUMENTED AT THE WEST QUARTER CORNER OF SAID SECTION 36 BY A FOUND 2.0 ALUMINUM CAP, STAMPED P.L.S #23890 AND AT THE CENTER QUARTER CORNER OF SAID SECTION BY A FOUND 3.25 ALUMINUM CAP STAMPED P.L.S # 35261, WITH ALL BEARINGS CONTAINED HERE IN BEING RELATIVE THERETO.

COMMENCING AT THE NORTH QUARTER CORNER OF SAID SECTION 36; THENCE NORTH 58°19'07" EAST, A DISTANCE OF 752.60 FEET; THENCE NORTH 00°00'00" EAST A DISTANCE OF 35.91 FEET TO THE POINT OF BEGINNING;

N63°55'49"W, A DISTANCE OF 108.13 FEET; THENCE S 87°07'21"W, A DISTANCE OF 81.90 FEET; THENCE N75°59'17"W, A DISTANCE OF 76.91 FEET; THENCE N43°55'50"W,

Site Name: ZOD\_Alltel\_CO04\_CanonCity East  
BUN: 858492

A DISTANCE OF 172.86 FEET; THENCE N36°57'53"W, A DISTANCE OF 164.56 FEET TO THE POINT OF TERMINUS ON THE SOUTH RIGHT-OF-WAY LINE OF U.S HIGHWAY 50.

CONTAINING ±9,065 SQ. FEET OR ±0.208 ACRES MORE OR LESS.

The legal descriptions set forth on Exhibits C-1 and C-2 above were prepared by:

Power Surveying Company, Inc.  
120 W. 84<sup>th</sup> Avenue  
Thornton, CO 80260  
Phone: 303-702-1617  
Fax: 303-702-1488

Site Name: ZOD\_Altel\_CO04\_CanonCity East  
BUN: 858492

Date: December 16, 2024



**Stantec**

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

**Subject:** Structural Analysis Report

**Carrier Designation:** T-Mobile Co-Locate  
**Site Number:** DN04816A

**Crown Castle Designation:** BU Number: 858492  
Site Name: ZOD\_Alltel\_CO04\_Canoncity East  
JDE Job Number: 2127496  
Work Order Number: 2348641  
Order Number: 682629 Rev. 0

**Engineering Firm Designation:** Morrison Hershfield Project Number: CN11-120R2 / 2400001

**Site Data:** 3396 East United States Highway 50, Canon City, Fremont County,  
CO 81212  
Latitude 38° 26' 52.5", Longitude -105° 10' 9.7"  
99 Foot – Sabre Monopole Tower

Morrison Hershfield is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above-mentioned tower.

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

LC7: Proposed Equipment Configuration

**Sufficient Capacity**

This analysis has been performed in accordance with the 2021 International Building Code based upon an ultimate 3-second gust wind speed of 106 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

G. Lance Cooke, P.E. (CO License No.44803)  
Senior Engineer



Digitally signed by  
G. Lance Cooke  
Date: 2024.12.16  
15:20:08'00'

EXP 10/31/25

## **TABLE OF CONTENTS**

### **1) INTRODUCTION**

### **2) ANALYSIS CRITERIA**

Table 1 - Proposed Equipment Configuration

Table 2 - Other Considered Equipment

### **3) ANALYSIS PROCEDURE**

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### **4) ANALYSIS RESULTS**

Table 4 - Section Capacity (Summary)

Table 5 - Tower Component Stresses vs. Capacity – LC7

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 99 ft monopole tower designed by Sabre Communications, Inc.

The tower was modified per reinforcement drawings prepared by B+T Group, in January of 2017. Reinforcement consists of addition of shaft reinforcement from 0 ft to 30.5 ft and 51 ft to 66 ft and additional anchor rods. Per the post modification inspection completed by Sinnott Gering and Schmitt Tower, Inc. in September of 2017, these modifications have been properly installed and were considered in this analysis.

## 2) ANALYSIS CRITERIA

**TIA-222 Revision:** TIA-222-H  
**Risk Category:** II  
**Wind Speed:** 106 mph  
**Exposure Category:** C  
**Topographic Factor:** 5  
**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)
37.0	37.0	3	ericsson	4003_840590966_TMO	2	1-5/8
		3	nokia	AEHC		
		3	nokia	AHFII B25/66 4T4R_TMO		
		3	nokia	AHLOB B71/65 4T4R_TMO		
		1	Perfect Vision	12.5' Platform Mount [#PV-LPPGS-12M-HR2-AP2]		

**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)
98.0	100.0	4	commscope	NNH4-65C-R6-V3_CCIV2 w/ Mount Pipe	6 6 3 6	7/8 3/4 3/8 2C
		2	commscope	RV4PX310R-V2 w/ Mount Pipe		
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe		
		3	nokia	AHFIB_CCIV2		
		3	nokia	AHLBBA_CCIV2		
	99.0	2	commscope	NNH4-65C-R6-V3_CCIV2 w/ Mount Pipe		
		1	commscope	RV4PX310R-V2 w/ Mount Pipe		
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe		
		3	alcatel lucent	B25 RRH4x30-4R		
		3	alcatel lucent	RRH4X25-WCS-4R		
		3	raycap	DC6-48-60-18-8F		
		3	nokia	AHCA_CCIV3		
	98.0	1	-	Platform Mount [LP 304-1_KCKR-HR-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
72.0	77.0	1	antel	BCD-87010	1	7/8
	72.0	1	-	Side Arm Mount [SO 303-1]		
69.0	69.0	1	-	Pipe Mount [PM 601-1]	2	EWP90 2C
	68.0	1	andrew	VHLPX6-11/A	2	
56.0	58.0	6	commscope	NHH-65C-R2B_CCIV2	2	1-1/4
		3	ericsson	AIR 6449 B77D_CCIV2 w/ Mount Pipe		
		3	ericsson	4449 B5 B13 VZ		
		3	ericsson	8843 B2 B66A VZ		
		1	raycap	RVZDC-6627-PF-48_CCIV2		
	56.0	1	-	T-Arm Mount [TA 702-3]		
45.0	45.0	1	andrew	VHLPX6-11/A	1	EWP90
		1	-	Pipe Mount [PM 601-1]		
30.0	30.0	1	cambium networks	C030045A101A_CCIV2 w/ Mount Pipe	3 1	1/4 23/64
		1	ubiquiti	AF-11G35_CCIV2		
		1	ubiquiti	AF-60		
		1	-	Side Arm Mount [SO 103-3]		
25.0	25.0	1	commscope	MD-S3	-	-
		1	-	Side Arm Mount [SO 102-3]		
20.0	21.0	1	rfs/celwave	SPF2-52BN	1	1/2
	20.0	1	-	Pipe Mount [PM 601-1]		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4577446	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	6042512	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4577445	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4860548	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6648758	CCISITES
4-POST-MODIFICATION INSPECTION	7056984	CCISITES

#### 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. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

TnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

### 3.2) Assumptions

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

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

### 4) ANALYSIS RESULTS

**Table 4 - Section Capacity (Summary)**

S.No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	99 - 94	Pole	TP17.015x16x0.1875	Pole	16.8	Pass
L2	94 - 89	Pole	TP18.031x17.015x0.1875	Pole	29.4	Pass
L3	89 - 84	Pole	TP19.046x18.031x0.1875	Pole	40.2	Pass
L4	84 - 79	Pole	TP20.061x19.046x0.1875	Pole	49.5	Pass
L5	79 - 74	Pole	TP21.077x20.061x0.1875	Pole	57.5	Pass
L6	74 - 69	Pole	TP22.092x21.077x0.1875	Pole	65.1	Pass
L7	69 - 64	Pole	TP23.107x22.092x0.1875	Pole	73.5	Pass
L8	64 - 63.75	Pole + Reinf.	TP23.158x23.107x0.4	Reinf. 2 Tension Rupture	57.5	Pass
L9	63.75 - 58.75	Pole + Reinf.	TP24.173x23.158x0.3938	Reinf. 2 Tension Rupture	64.2	Pass
L10	58.75 - 53.75	Pole + Reinf.	TP25.189x24.173x0.3813	Reinf. 2 Tension Rupture	72.5	Pass
L11	53.75 - 53.25	Pole + Reinf.	TP25.95x25.189x0.3813	Reinf. 2 Tension Rupture	73.4	Pass
L12	53.25 - 49	Pole	TP25.777x24.915x0.3125	Pole	56.3	Pass
L13	49 - 44	Pole	TP26.792x25.777x0.3125	Pole	60.3	Pass
L14	44 - 39	Pole	TP27.807x26.792x0.3125	Pole	64.4	Pass
L15	39 - 34	Pole	TP28.821x27.807x0.3125	Pole	69.2	Pass
L16	34 - 29	Pole	TP29.836x28.821x0.3125	Pole	73.9	Pass
L17	29 - 28.5	Pole	TP29.937x29.836x0.3125	Pole	74.3	Pass
L18	28.5 - 28.25	Pole + Reinf.	TP29.988x29.937x0.4875	Reinf. 1 Tension Rupture	72.7	Pass
L19	28.25 - 23.25	Pole + Reinf.	TP31.002x29.988x0.4875	Reinf. 1 Tension Rupture	77.8	Pass
L20	23.25 - 18.25	Pole + Reinf.	TP32.017x31.002x0.475	Reinf. 1 Tension Rupture	82.6	Pass
L21	18.25 - 13.25	Pole + Reinf.	TP33.031x32.017x0.475	Reinf. 1 Tension Rupture	87.0	Pass
L22	13.25 - 8.25	Pole + Reinf.	TP34.046x33.031x0.4625	Reinf. 1 Tension Rupture	91.0	Pass
L23	8.25 - 3.25	Pole + Reinf.	TP35.061x34.046x0.4625	Reinf. 1 Tension Rupture	94.6	Pass
L24	3.25 - 3	Pole + Reinf.	TP35.111x35.061x0.4625	Reinf. 1 Tension Rupture	94.8	Pass
L25	3 - 2.75	Pole + Reinf.	TP35.162x35.111x0.3938	Pole	82.2	Pass
L26	2.75 - 0	Pole + Reinf.	TP35.72x35.162x0.3938	Pole	83.9	Pass
					Summary	
				Pole	83.9	Pass
				Reinforcement	94.8	Pass
				Overall	94.8	Pass

**Table 5 - Tower Component Stresses vs. Capacity – LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	84.9	Pass
1	Base Plate		65.6	Pass
1	Base Foundation (Structure)	0	77.4	Pass
1	Base Foundation (Soil Interaction)		38.1	Pass
Structure Rating (max from all components) =				94.8%*

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.

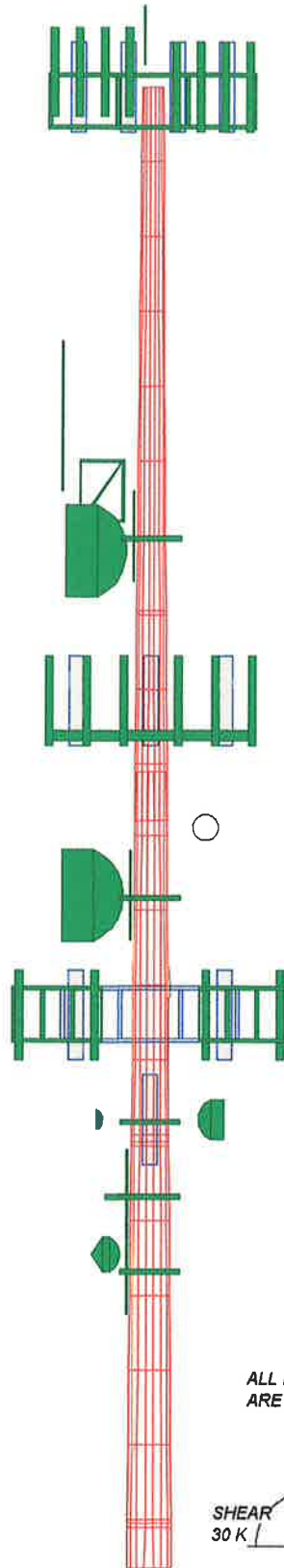
#### 4.1) Recommendations

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

**APPENDIX A**  
**TNXTOWER OUTPUT**

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.1875	3.25	16.0000	17.0153	16.0000	0.2
2	5.00	18	0.1875		17.0153	18.0306	17.0153	0.2
3	5.00	18	0.1875		18.0306	19.0459	18.0306	0.2
4	5.00	18	0.1875		19.0459	20.0612	19.0459	0.2
5	5.00	18	0.1875		20.0612	21.0765	20.0612	0.2
6	5.00	18	0.1875		21.0765	22.0918	21.0765	0.2
7	5.00	18	0.1875		22.0918	23.1071	22.0918	0.2
8	5.00	18	0.1875		23.1071	24.1224	23.1071	0.2
9	5.00	18	0.1875		24.1224	25.1377	24.1224	0.2
10	5.00	18	0.1875		25.1377	26.1530	25.1377	0.2
11	5.00	18	0.1875		26.1530	27.1683	26.1530	0.2
12	5.00	18	0.1875		27.1683	28.1836	27.1683	0.2
13	5.00	18	0.1875		28.1836	29.1989	28.1836	0.2
14	5.00	18	0.1875		29.1989	30.2142	29.1989	0.2
15	5.00	18	0.1875		30.2142	31.2295	30.2142	0.2
16	5.00	18	0.1875		31.2295	32.2448	31.2295	0.2
17	5.00	18	0.1875		32.2448	33.2601	32.2448	0.2
18	5.00	18	0.1875		33.2601	34.2754	33.2601	0.2
19	5.00	18	0.1875		34.2754	35.2907	34.2754	0.2
20	5.00	18	0.1875		35.2907	36.3060	35.2907	0.2
21	5.00	18	0.1875		36.3060	37.3213	36.3060	0.2
22	5.00	18	0.1875		37.3213	38.3366	37.3213	0.2
23	5.00	18	0.1875		38.3366	39.3519	38.3366	0.2
24	5.00	18	0.1875		39.3519	40.3672	39.3519	0.2
25	5.00	18	0.1875		40.3672	41.3825	40.3672	0.2
26	5.00	18	0.1875		41.3825	42.3978	41.3825	0.2
27	5.00	18	0.1875		42.3978	43.4131	42.3978	0.2
28	5.00	18	0.1875		43.4131	44.4284	43.4131	0.2
29	5.00	18	0.1875		44.4284	45.4437	44.4284	0.2
30	5.00	18	0.1875		45.4437	46.4590	45.4437	0.2
31	5.00	18	0.1875		46.4590	47.4743	46.4590	0.2
32	5.00	18	0.1875		47.4743	48.4896	47.4743	0.2
33	5.00	18	0.1875		48.4896	49.5049	48.4896	0.2
34	5.00	18	0.1875		49.5049	50.5202	49.5049	0.2
35	5.00	18	0.1875		50.5202	51.5355	50.5202	0.2
36	5.00	18	0.1875		51.5355	52.5508	51.5355	0.2
37	5.00	18	0.1875		52.5508	53.5661	52.5508	0.2
38	5.00	18	0.1875		53.5661	54.5814	53.5661	0.2
39	5.00	18	0.1875		54.5814	55.5967	54.5814	0.2
40	5.00	18	0.1875		55.5967	56.6120	55.5967	0.2
41	5.00	18	0.1875		56.6120	57.6273	56.6120	0.2
42	5.00	18	0.1875		57.6273	58.6426	57.6273	0.2
43	5.00	18	0.1875		58.6426	59.6579	58.6426	0.2
44	5.00	18	0.1875		59.6579	60.6732	59.6579	0.2
45	5.00	18	0.1875		60.6732	61.6885	60.6732	0.2
46	5.00	18	0.1875		61.6885	62.7038	61.6885	0.2
47	5.00	18	0.1875		62.7038	63.7191	62.7038	0.2
48	5.00	18	0.1875		63.7191	64.7344	63.7191	0.2
49	5.00	18	0.1875		64.7344	65.7497	64.7344	0.2
50	5.00	18	0.1875		65.7497	66.7650	65.7497	0.2
51	5.00	18	0.1875		66.7650	67.7803	66.7650	0.2
52	5.00	18	0.1875		67.7803	68.7956	67.7803	0.2
53	5.00	18	0.1875		68.7956	69.8109	68.7956	0.2
54	5.00	18	0.1875		69.8109	70.8262	69.8109	0.2
55	5.00	18	0.1875		70.8262	71.8415	70.8262	0.2
56	5.00	18	0.1875		71.8415	72.8568	71.8415	0.2
57	5.00	18	0.1875		72.8568	73.8721	72.8568	0.2
58	5.00	18	0.1875		73.8721	74.8874	73.8721	0.2
59	5.00	18	0.1875		74.8874	75.9027	74.8874	0.2
60	5.00	18	0.1875		75.9027	76.9180	75.9027	0.2
61	5.00	18	0.1875		76.9180	77.9333	76.9180	0.2
62	5.00	18	0.1875		77.9333	78.9486	77.9333	0.2
63	5.00	18	0.1875		78.9486	79.9639	78.9486	0.2
64	5.00	18	0.1875		79.9639	80.9792	79.9639	0.2
65	5.00	18	0.1875		80.9792	81.9945	80.9792	0.2
66	5.00	18	0.1875		81.9945	83.0098	81.9945	0.2
67	5.00	18	0.1875		83.0098	84.0251	83.0098	0.2
68	5.00	18	0.1875		84.0251	85.0404	84.0251	0.2
69	5.00	18	0.1875		85.0404	86.0557	85.0404	0.2
70	5.00	18	0.1875		86.0557	87.0710	86.0557	0.2
71	5.00	18	0.1875		87.0710	88.0863	87.0710	0.2
72	5.00	18	0.1875		88.0863	89.1016	88.0863	0.2
73	5.00	18	0.1875		89.1016	90.1169	89.1016	0.2
74	5.00	18	0.1875		90.1169	91.1322	90.1169	0.2
75	5.00	18	0.1875		91.1322	92.1475	91.1322	0.2
76	5.00	18	0.1875		92.1475	93.1628	92.1475	0.2
77	5.00	18	0.1875		93.1628	94.1781	93.1628	0.2
78	5.00	18	0.1875		94.1781	95.1934	94.1781	0.2
79	5.00	18	0.1875		95.1934	96.2087	95.1934	0.2
80	5.00	18	0.1875		96.2087	97.2240	96.2087	0.2
81	5.00	18	0.1875		97.2240	98.2393	97.2240	0.2
82	5.00	18	0.1875		98.2393	99.2546	98.2393	0.2
83	5.00	18	0.1875		99.2546	100.2699	99.2546	0.2
84	5.00	18	0.1875		100.2699	101.2852	100.2699	0.2
85	5.00	18	0.1875		101.2852	102.3005	101.2852	0.2
86	5.00	18	0.1875		102.3005	103.3158	102.3005	0.2
87	5.00	18	0.1875		103.3158	104.3311	103.3158	0.2
88	5.00	18	0.1875		104.3311	105.3464	104.3311	0.2
89	5.00	18	0.1875		105.3464	106.3617	105.3464	0.2
90	5.00	18	0.1875		106.3617	107.3770	106.3617	0.2
91	5.00	18	0.1875		107.3770	108.3923	107.3770	0.2
92	5.00	18	0.1875		108.3923	109.4076	108.3923	0.2
93	5.00	18	0.1875		109.4076	110.4229	109.4076	0.2
94	5.00	18	0.1875		110.4229	111.4382	110.4229	0.2
95	5.00	18	0.1875		111.4382	112.4535	111.4382	0.2
96	5.00	18	0.1875		112.4535	113.4688	112.4535	0.2
97	5.00	18	0.1875		113.4688	114.4841	113.4688	0.2
98	5.00	18	0.1875		114.4841	115.4994	114.4841	0.2
99	5.00	18	0.1875		115.4994	116.5147	115.4994	0.2
100	5.00	18	0.1875		116.5147	117.5300	116.5147	0.2

98.0 ft  
94.0 ft  
89.0 ft  
84.0 ft  
79.0 ft  
74.0 ft  
69.0 ft  
64.0 ft  
58.8 ft  
53.8 ft  
50.0 ft  
44.0 ft  
39.0 ft  
34.0 ft  
29.0 ft  
23.2 ft  
18.2 ft  
13.2 ft  
8.2 ft  
3.2 ft  
0.0 ft



ALL REACTIONS  
ARE FACTORED

AXIAL  
30 K  
SHEAR  
30 K  
MOMENT  
1822 kip-ft  
TORQUE 9 kip-ft  
REACTIONS - 106 mph WIND

## MATERIAL STRENGTH

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

## TOWER DESIGN NOTES

1. Tower is located in Fremont County, Colorado.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 106 mph basic wind in accordance with the TIA-222-H Standard.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 5 with Crest Height of 190.00 ft
7. CCIPOLE RATING: 94.8%

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

Job: **CN11-120R2 / 2400001**  
Project: **858492 / ZOD Alltel CO04 Canoncity East**  
Client: **Crown Castle USA**  
Code: **TIA-222-H**  
Path:  
Drawn by: **amalladi**  
Date: **12/16/24**  
App'd:  
Scale: **NTS**  
Dwg No: **E-1**

## Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower is located in Fremont County, Colorado.

Tower base elevation above sea level: 5576.00 ft.

Basic wind speed of 106 mph.

Risk Category II.

Exposure Category C.

Crest Height: 190.00 ft.

Rigorous Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Feature: Flat Topped Ridge.

Slope Distance L: 560.00 ft.

Distance from Crest x: 0.00 ft.

Horizontal Distance Downwind: No.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used:  $K_{es}(F_w) = 0.95$ .

Maximum demand-capacity ratio is: 1.05.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

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

## Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	99.00-94.00	5.00	0.00	18	16.0000	17.0153	0.1875	0.7500	A572-65 (65 ksi)
L2	94.00-89.00	5.00	0.00	18	17.0153	18.0306	0.1875	0.7500	A572-65 (65 ksi)
L3	89.00-84.00	5.00	0.00	18	18.0306	19.0459	0.1875	0.7500	A572-65 (65 ksi)
L4	84.00-79.00	5.00	0.00	18	19.0459	20.0612	0.1875	0.7500	A572-65 (65 ksi)
L5	79.00-74.00	5.00	0.00	18	20.0612	21.0765	0.1875	0.7500	A572-65 (65 ksi)
L6	74.00-69.00	5.00	0.00	18	21.0765	22.0918	0.1875	0.7500	A572-65 (65 ksi)

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
L7	69.00-64.00	5.00	0.00	18	22.0918	23.1071	0.1875	0.7500	A572-65 (65 ksi)
L8	64.00-63.75	0.25	0.00	18	23.1071	23.1579	0.4000	1.6000	A572-65 (65 ksi)
L9	63.75-58.75	5.00	0.00	18	23.1579	24.1732	0.3937	1.5750	A572-65 (65 ksi)
L10	58.75-53.75	5.00	0.00	18	24.1732	25.1885	0.3812	1.5250	A572-65 (65 ksi)
L11	53.75-50.00	3.75	3.25	18	25.1885	25.9500	0.3812	1.5250	A572-65 (65 ksi)
L12	50.00-49.00	4.25	0.00	18	24.9151	25.7774	0.3125	1.2500	A572-65 (65 ksi)
L13	49.00-44.00	5.00	0.00	18	25.7774	26.7920	0.3125	1.2500	A572-65 (65 ksi)
L14	44.00-39.00	5.00	0.00	18	26.7920	27.8065	0.3125	1.2500	A572-65 (65 ksi)
L15	39.00-34.00	5.00	0.00	18	27.8065	28.8211	0.3125	1.2500	A572-65 (65 ksi)
L16	34.00-29.00	5.00	0.00	18	28.8211	29.8356	0.3125	1.2500	A572-65 (65 ksi)
L17	29.00-28.50	0.50	0.00	18	29.8356	29.9371	0.3125	1.2500	A572-65 (65 ksi)
L18	28.50-28.25	0.25	0.00	18	29.9371	29.9878	0.4875	1.9500	A572-65 (65 ksi)
L19	28.25-23.25	5.00	0.00	18	29.9878	31.0023	0.4875	1.9500	A572-65 (65 ksi)
L20	23.25-18.25	5.00	0.00	18	31.0023	32.0169	0.4750	1.9000	A572-65 (65 ksi)
L21	18.25-13.25	5.00	0.00	18	32.0169	33.0314	0.4750	1.9000	A572-65 (65 ksi)
L22	13.25-8.25	5.00	0.00	18	33.0314	34.0460	0.4625	1.8500	A572-65 (65 ksi)
L23	8.25-3.25	5.00	0.00	18	34.0460	35.0605	0.4625	1.8500	A572-65 (65 ksi)
L24	3.25-3.00	0.25	0.00	18	35.0605	35.1113	0.4625	1.8500	A572-65 (65 ksi)
L25	3.00-2.75	0.25	0.00	18	35.1113	35.1620	0.3937	1.5750	A572-65 (65 ksi)
L26	2.75-0.00	2.75		18	35.1620	35.7200	0.3937	1.5750	A572-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L1	16.2179	9.4104	297.2674	5.6134	8.1280	36.5733	594.9259	4.7061	2.4860	13.259
	17.2489	10.0146	358.2846	5.9739	8.6438	41.4500	717.0406	5.0083	2.6647	14.212
L2	17.2489	10.0146	358.2846	5.9739	8.6438	41.4500	717.0406	5.0083	2.6647	14.212
	18.2798	10.6189	427.1274	6.3343	9.1596	46.6319	854.8169	5.3105	2.8434	15.165
L3	18.2798	10.6189	427.1274	6.3343	9.1596	46.6319	854.8169	5.3105	2.8434	15.165
	19.3108	11.2231	504.2680	6.6947	9.6753	52.1190	1009.1996	5.6126	3.0221	16.118
L4	19.3108	11.2231	504.2680	6.6947	9.6753	52.1190	1009.1996	5.6126	3.0221	16.118
	20.3418	11.8274	590.1786	7.0552	10.1911	57.9112	1181.1337	5.9148	3.2008	17.071
L5	20.3418	11.8274	590.1786	7.0552	10.1911	57.9112	1181.1337	5.9148	3.2008	17.071
	21.3727	12.4316	685.3312	7.4156	10.7069	64.0085	1371.5642	6.2170	3.3795	18.024
L6	21.3727	12.4316	685.3312	7.4156	10.7069	64.0085	1371.5642	6.2170	3.3795	18.024
	22.4037	13.0358	790.1981	7.7760	11.2227	70.4110	1581.4359	6.5191	3.5582	18.977
L7	22.4037	13.0358	790.1981	7.7760	11.2227	70.4110	1581.4359	6.5191	3.5582	18.977
	23.4347	13.6401	905.2514	8.1365	11.7384	77.1186	1811.6939	6.8213	3.7369	19.93
L8	23.4347	13.6401	905.2514	8.1365	11.7384	77.1186	1811.6939	6.8213	3.7369	19.93
	23.4019	28.8290	1877.9838	8.0610	11.7384	159.9860	3758.4387	14.4172	3.3629	8.407
	23.4534	28.8934	1890.6075	8.0791	11.7642	160.7083	3783.7028	14.4495	3.3718	8.429
L9	23.4534	28.8934	1890.6075	8.0791	11.7642	160.7083	3783.7028	14.4495	3.3718	8.429
	24.4854	28.4498	1862.6005	8.0813	11.7642	158.3276	3727.6519	14.2276	3.3828	8.591
	24.4854	29.7187	2123.1034	8.4417	12.2800	172.8913	4249.0004	14.8622	3.5615	9.045
L10	24.4854	29.7187	2123.1034	8.4417	12.2800	172.8913	4249.0004	14.8622	3.5615	9.045
	24.4873	28.7904	2058.9468	8.4461	12.2800	167.6668	4120.6028	14.3979	3.5835	9.399
	25.5183	30.0190	2333.9480	8.8066	12.7958	182.4000	4670.9670	15.0123	3.7622	9.868
L11	25.5183	30.0190	2333.9480	8.8066	12.7958	182.4000	4670.9670	15.0123	3.7622	9.868



Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L12	26.2915	30.9404	2555.5402	9.0769	13.1826	193.8571	5114.4430	15.4732	3.8962	10.22
	25.9208	24.4027	1866.0996	8.7339	12.6568	147.4380	3734.6546	12.2036	3.8350	12.272
L13	26.1269	25.2580	2069.2894	9.0400	13.0949	158.0222	4141.3016	12.6314	3.9868	12.758
	27.1571	26.2643	2326.6021	9.4002	13.6103	170.9440	4656.2656	13.1347	4.1654	13.329
L14	27.1571	26.2643	2326.6021	9.4002	13.6103	170.9440	4656.2656	13.1347	4.1654	13.329
	28.1873	27.2706	2604.4076	9.7604	14.1257	184.3736	5212.2421	13.6379	4.3439	13.901
L15	28.1873	27.2706	2604.4076	9.7604	14.1257	184.3736	5212.2421	13.6379	4.3439	13.901
	29.2175	28.2769	2903.4910	10.1205	14.6411	198.3110	5810.8025	14.1412	4.5225	14.472
L16	29.2175	28.2769	2903.4910	10.1205	14.6411	198.3110	5810.8025	14.1412	4.5225	14.472
	30.2477	29.2832	3224.6376	10.4807	15.1565	212.7562	6453.5183	14.6444	4.7011	15.043
L17	30.2477	29.2832	3224.6376	10.4807	15.1565	212.7562	6453.5183	14.6444	4.7011	15.043
	30.3507	29.3839	3257.9960	10.5167	15.2080	214.2286	6520.2789	14.6947	4.7189	15.101
L18	30.3237	45.5681	4992.9342	10.4546	15.2080	328.3090	9992.4383	22.7884	4.4109	9.048
	30.3752	45.6465	5018.7800	10.4726	15.2338	329.4503	10044.163	22.8276	4.4199	9.066
L19	30.3752	45.6465	5018.7800	10.4726	15.2338	329.4503	10044.163	22.8276	4.4199	9.066
	31.4054	47.2164	5554.5969	10.8328	15.7492	352.6909	11116.502	23.6127	4.5984	9.433
L20	31.4073	46.0246	5418.8252	10.8372	15.7492	344.0700	10844.780	23.0166	4.6204	9.727
	32.4375	47.5541	5977.2490	11.1974	16.2646	367.5009	11962.362	23.7816	4.7990	10.103
L21	32.4375	47.5541	5977.2490	11.1974	16.2646	367.5009	11962.362	23.7816	4.7990	10.103
	33.4677	49.0837	6572.7770	11.5575	16.7800	391.7036	13154.202	24.5465	4.9775	10.479
L22	33.4697	47.8104	6407.1836	11.5620	16.7800	381.8351	12822.797	23.9097	4.9995	10.81
	34.4999	49.2997	7024.7963	11.9221	17.2954	406.1664	14058.836	24.6545	5.1781	11.196
L23	34.4999	49.2997	7024.7963	11.9221	17.2954	406.1664	14058.836	24.6545	5.1781	11.196
	35.5301	50.7891	7680.8753	12.2823	17.8108	431.2493	15371.857	25.3994	5.3567	11.582
L24	35.5301	50.7891	7680.8753	12.2823	17.8108	431.2493	15371.857	25.3994	5.3567	11.582
	35.5816	50.8635	7714.7098	12.3003	17.8365	432.5231	15439.570	25.4366	5.3656	11.601
L25	35.5922	43.3887	6607.1024	12.3247	17.8365	370.4254	13222.898	21.6985	5.4866	13.934
	35.6437	43.4521	6636.1067	12.3427	17.8623	371.5148	13280.945	21.7302	5.4955	13.957
L26	35.6437	43.4521	6636.1067	12.3427	17.8623	371.5148	13280.945	21.7302	5.4955	13.957
	36.2103	44.1494	6960.7743	12.5408	18.1458	383.6033	13930.707	22.0789	5.5937	14.206

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft <sup>2</sup>	in							
L1 99.00- 94.00				1	1	1			
L2 94.00- 89.00				1	1	1			
L3 89.00- 84.00				1	1	1			
L4 84.00- 79.00				1	1	1			
L5 79.00- 74.00				1	1	1			
L6 74.00- 69.00				1	1	1			
L7 69.00- 64.00				1	1	1			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor $A_r$	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
ft	ft <sup>2</sup>	in							
L8 64.00- 63.75				1	1	0.940378			
L9 63.75- 58.75				1	1	0.934597			
L10 58.75- 53.75				1	1	0.945376			
L11 53.75- 50.00				1	1	0.943527			
L12 50.00- 49.00				1	1	1			
L13 49.00- 44.00				1	1	1			
L14 44.00- 39.00				1	1	1			
L15 39.00- 34.00				1	1	1			
L16 34.00- 29.00				1	1	1			
L17 29.00- 28.50				1	1	1			
L18 28.50- 28.25				1	1	1.03918			
L19 28.25- 23.25				1	1	1.02594			
L20 23.25- 18.25				1	1	1.03981			
L21 18.25- 13.25				1	1	1.02791			
L22 13.25- 8.25				1	1	1.04382			
L23 8.25-3.25				1	1	1.03302			
L24 3.25-3.00				1	1	1.0325			
L25 3.00-2.75				1	1	1.20545			
L26 2.75-0.00				1	1	1.19895			

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
*****										
Safety Line 3/8	A	No	Surface Ar (CaAa)	99.00 - 0.00	1	1	0.450 0.450	0.3750		0.22
Climbing Pegs	A	No	Surface Ar (CaAa)	99.00 - 0.00	1	1	0.400 0.500	0.7050		1.80
***										
0027950(23/64)	B	No	Surface Ar (CaAa)	30.00 - 0.00	1	1	0.210 0.210	0.3580		0.09
TOUGH CABLES CAT 5(1/4)	B	No	Surface Ar (CaAa)	30.00 - 0.00	3	3	0.220 0.260	0.2680		0.10
****										
LDF4-50A(1/2)	A	No	Surface Ar (CaAa)	20.00 - 0.00	1	1	-0.170 -0.170	0.6250		0.15
****										
CCI-SFP-06010030	A	No	Surface Af (CaAa)	30.60 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-06010030	B	No	Surface Af (CaAa)	30.60 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-06010030	C	No	Surface Af (CaAa)	30.60 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-04510015	A	No	Surface Af (CaAa)	66.00 - 51.00	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-AFP-04510015	B	No	Surface Af (CaAa)	66.00 - 51.00	1	1	0.000 0.000	4.5000	11.0000	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
CCI-AFP-04510015	C	No	Surface Af (CaAa)	66.00 - 51.00	1	1	0.000 0.000	4.5000	11.0000	0.00
*****										

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	CaAa ft²/ft	Weight plf
*****								
LDF5-50A(7/8)	A	No	No	Inside Pole	98.00 - 0.00	6	No Ice	0.33
FB-L98B-002-XXX(3/8)	A	No	No	Inside Pole	98.00 - 0.00	2	No Ice	0.06
FB-L98B-002-XXX(3/8)	A	No	No	Inside Pole	98.00 - 0.00	1	No Ice	0.06
WR-VG86ST-BRD(3/4)	A	No	No	Inside Pole	98.00 - 0.00	4	No Ice	0.58
WR-VG86ST-BRD(3/4)	A	No	No	Inside Pole	98.00 - 0.00	2	No Ice	0.58
CONDUIT(2)	A	No	No	Inside Pole	98.00 - 0.00	6	No Ice	2.80
***								
LDF5-50A(7/8)	A	No	No	Inside Pole	72.00 - 0.00	1	No Ice	0.33
*****								
EWP90(ELLIPTIC AL)	A	No	No	Inside Pole	69.00 - 45.00	2	No Ice	0.32
*****								
HB114-13U6-S12F18(1-1/4)	B	No	No	Inside Pole	56.00 - 0.00	2	No Ice	1.51
*****								
EWP90(ELLIPTIC AL)	A	No	No	Inside Pole	45.00 - 0.00	1	No Ice	0.32
***								
HB158-21U6S24-xxM_TMO(1-5/8)	A	No	No	Inside Pole	37.00 - 0.00	2	No Ice	2.50
*****								

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft²	A <sub>F</sub> ft²	CaAa In Face ft²	CaAa Out Face ft²	Weight K
L1	99.00-94.00	A	0.000	0.000	0.540	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	94.00-89.00	A	0.000	0.000	0.540	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	89.00-84.00	A	0.000	0.000	0.540	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	84.00-79.00	A	0.000	0.000	0.540	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L5	79.00-74.00	A	0.000	0.000	0.540	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L6	74.00-69.00	A	0.000	0.000	0.540	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L7	69.00-64.00	A	0.000	0.000	2.040	0.000	0.13
		B	0.000	0.000	1.500	0.000	0.00

Tower Sectio n	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L8	64.00-63.75	C	0.000	0.000	1.500	0.000	0.00
		A	0.000	0.000	0.214	0.000	0.01
		B	0.000	0.000	0.188	0.000	0.00
L9	63.75-58.75	C	0.000	0.000	0.188	0.000	0.00
		A	0.000	0.000	4.290	0.000	0.13
		B	0.000	0.000	3.750	0.000	0.00
L10	58.75-53.75	C	0.000	0.000	3.750	0.000	0.00
		A	0.000	0.000	4.290	0.000	0.13
		B	0.000	0.000	3.750	0.000	0.01
L11	53.75-50.00	C	0.000	0.000	3.750	0.000	0.00
		A	0.000	0.000	2.467	0.000	0.10
		B	0.000	0.000	2.062	0.000	0.01
L12	50.00-49.00	C	0.000	0.000	2.062	0.000	0.00
		A	0.000	0.000	0.108	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
L13	49.00-44.00	C	0.000	0.000	0.000	0.000	0.00
		A	0.000	0.000	0.540	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.02
L14	44.00-39.00	C	0.000	0.000	0.000	0.000	0.00
		A	0.000	0.000	0.540	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.02
L15	39.00-34.00	C	0.000	0.000	0.000	0.000	0.00
		A	0.000	0.000	0.540	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.02
L16	34.00-29.00	C	0.000	0.000	0.000	0.000	0.00
		A	0.000	0.000	2.140	0.000	0.15
		B	0.000	0.000	1.716	0.000	0.02
L17	29.00-28.50	C	0.000	0.000	1.600	0.000	0.00
		A	0.000	0.000	0.554	0.000	0.02
		B	0.000	0.000	0.558	0.000	0.00
L18	28.50-28.25	C	0.000	0.000	0.500	0.000	0.00
		A	0.000	0.000	0.277	0.000	0.01
		B	0.000	0.000	0.279	0.000	0.00
L19	28.25-23.25	C	0.000	0.000	0.250	0.000	0.00
		A	0.000	0.000	5.540	0.000	0.15
		B	0.000	0.000	5.581	0.000	0.02
L20	23.25-18.25	C	0.000	0.000	5.000	0.000	0.00
		A	0.000	0.000	5.649	0.000	0.15
		B	0.000	0.000	5.581	0.000	0.02
L21	18.25-13.25	C	0.000	0.000	5.000	0.000	0.00
		A	0.000	0.000	5.853	0.000	0.15
		B	0.000	0.000	5.581	0.000	0.02
L22	13.25-8.25	C	0.000	0.000	5.000	0.000	0.00
		A	0.000	0.000	5.853	0.000	0.15
		B	0.000	0.000	5.581	0.000	0.02
L23	8.25-3.25	C	0.000	0.000	5.000	0.000	0.00
		A	0.000	0.000	5.853	0.000	0.15
		B	0.000	0.000	5.581	0.000	0.02
L24	3.25-3.00	C	0.000	0.000	5.000	0.000	0.00
		A	0.000	0.000	0.293	0.000	0.01
		B	0.000	0.000	0.279	0.000	0.00
L25	3.00-2.75	C	0.000	0.000	0.250	0.000	0.00
		A	0.000	0.000	0.293	0.000	0.01
		B	0.000	0.000	0.279	0.000	0.00
L26	2.75-0.00	C	0.000	0.000	0.250	0.000	0.00
		A	0.000	0.000	3.219	0.000	0.08
		B	0.000	0.000	3.070	0.000	0.01
		C	0.000	0.000	2.750	0.000	0.00

### Feed Line Center of Pressure

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice in	Ice in
L1	99.00-94.00	-0.0857	-0.8155	-0.0542	-0.5155
L2	94.00-89.00	-0.0860	-0.8184	-0.0543	-0.5162
L3	89.00-84.00	-0.0863	-0.8209	-0.0543	-0.5169
L4	84.00-79.00	-0.0865	-0.8232	-0.0544	-0.5175
L5	79.00-74.00	-0.0867	-0.8253	-0.0544	-0.5180
L6	74.00-69.00	-0.0869	-0.8273	-0.0545	-0.5185
L7	69.00-64.00	-0.0545	-0.5184	-0.0397	-0.3774
L8	64.00-63.75	-0.0354	-0.3368	-0.0285	-0.2710
L9	63.75-58.75	-0.0359	-0.3413	-0.0288	-0.2740
L10	58.75-53.75	-0.0368	-0.3499	-0.0294	-0.2794
L11	53.75-50.00	-0.0443	-0.4214	-0.0340	-0.3231
L12	50.00-49.00	-0.0877	-0.8341	-0.0547	-0.5204
L13	49.00-44.00	-0.0878	-0.8349	-0.0547	-0.5206
L14	44.00-39.00	-0.0879	-0.8361	-0.0548	-0.5209
L15	39.00-34.00	-0.0880	-0.8372	-0.0548	-0.5212
L16	34.00-29.00	0.0619	-0.5589	0.0442	-0.3988
L17	29.00-28.50	0.3117	-0.3369	0.2525	-0.2730
L18	28.50-28.25	0.3123	-0.3376	0.2530	-0.2735
L19	28.25-23.25	0.3157	-0.3413	0.2552	-0.2759
L20	23.25-18.25	0.2533	-0.3581	0.2041	-0.2885
L21	18.25-13.25	0.1316	-0.3833	0.1058	-0.3081
L22	13.25-8.25	0.1341	-0.3904	0.1074	-0.3127
L23	8.25-3.25	0.1366	-0.3973	0.1090	-0.3171
L24	3.25-3.00	0.1379	-0.4009	0.1098	-0.3193
L25	3.00-2.75	0.1380	-0.4012	0.1099	-0.3195
L26	2.75-0.00	0.1387	-0.4032	0.1103	-0.3208

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	2	Safety Line 3/8	94.00 - 99.00	1.0000	1.0000
L1	3	Climbing Pegs	94.00 - 99.00	1.0000	1.0000
L2	2	Safety Line 3/8	89.00 - 94.00	1.0000	1.0000
L2	3	Climbing Pegs	89.00 - 94.00	1.0000	1.0000
L3	2	Safety Line 3/8	84.00 - 89.00	1.0000	1.0000
L3	3	Climbing Pegs	84.00 - 89.00	1.0000	1.0000
L4	2	Safety Line 3/8	79.00 - 84.00	1.0000	1.0000
L4	3	Climbing Pegs	79.00 - 84.00	1.0000	1.0000
L5	2	Safety Line 3/8	74.00 - 79.00	1.0000	1.0000
L5	3	Climbing Pegs	74.00 - 79.00	1.0000	1.0000
L6	2	Safety Line 3/8	69.00 - 74.00	1.0000	1.0000
L6	3	Climbing Pegs	69.00 - 74.00	1.0000	1.0000
L7	2	Safety Line 3/8	64.00 - 69.00	1.0000	1.0000
L7	3	Climbing Pegs	64.00 - 69.00	1.0000	1.0000
L7	30	CCI-AFP-04510015	64.00 - 66.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L7	31	CCI-AFP-04510015	64.00 - 66.00	1.0000	1.0000
L7	32	CCI-AFP-04510015	64.00 - 66.00	1.0000	1.0000
L8	2	Safety Line 3/8	63.75 - 64.00	1.0000	1.0000
L8	3	Climbing Pegs	63.75 - 64.00	1.0000	1.0000
L8	30	CCI-AFP-04510015	63.75 - 64.00	1.0000	1.0000
L8	31	CCI-AFP-04510015	63.75 - 64.00	1.0000	1.0000
L8	32	CCI-AFP-04510015	63.75 - 64.00	1.0000	1.0000
L9	2	Safety Line 3/8	58.75 - 63.75	1.0000	1.0000
L9	3	Climbing Pegs	58.75 - 63.75	1.0000	1.0000
L9	30	CCI-AFP-04510015	58.75 - 63.75	1.0000	1.0000
L9	31	CCI-AFP-04510015	58.75 - 63.75	1.0000	1.0000
L9	32	CCI-AFP-04510015	58.75 - 63.75	1.0000	1.0000
L10	2	Safety Line 3/8	53.75 - 58.75	1.0000	1.0000
L10	3	Climbing Pegs	53.75 - 58.75	1.0000	1.0000
L10	30	CCI-AFP-04510015	53.75 - 58.75	1.0000	1.0000
L10	31	CCI-AFP-04510015	53.75 - 58.75	1.0000	1.0000
L10	32	CCI-AFP-04510015	53.75 - 58.75	1.0000	1.0000
L11	2	Safety Line 3/8	50.00 - 53.75	1.0000	1.0000
L11	3	Climbing Pegs	50.00 - 53.75	1.0000	1.0000
L11	30	CCI-AFP-04510015	51.00 - 53.75	1.0000	1.0000
L11	31	CCI-AFP-04510015	51.00 - 53.75	1.0000	1.0000
L11	32	CCI-AFP-04510015	51.00 - 53.75	1.0000	1.0000
L12	2	Safety Line 3/8	49.00 - 50.00	1.0000	1.0000
L12	3	Climbing Pegs	49.00 - 50.00	1.0000	1.0000
L13	2	Safety Line 3/8	44.00 - 49.00	1.0000	1.0000
L13	3	Climbing Pegs	44.00 - 49.00	1.0000	1.0000
L14	2	Safety Line 3/8	39.00 - 44.00	1.0000	1.0000
L14	3	Climbing Pegs	39.00 - 44.00	1.0000	1.0000
L15	2	Safety Line 3/8	34.00 - 39.00	1.0000	1.0000
L15	3	Climbing Pegs	34.00 - 39.00	1.0000	1.0000
L16	2	Safety Line 3/8	29.00 - 34.00	1.0000	1.0000
L16	3	Climbing Pegs	29.00 - 34.00	1.0000	1.0000
L16	22	0027950(23/64)	29.00 - 30.00	1.0000	1.0000
L16	23	TOUHCABLES CAT 5(1/4)	29.00 - 30.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L16	27	CCI-SFP-06010030	29.00 - 30.60	1.0000	1.0000
L16	28	CCI-SFP-06010030	29.00 - 30.60	1.0000	1.0000
L16	29	CCI-SFP-06010030	29.00 - 30.60	1.0000	1.0000
L17	2	Safety Line 3/8	28.50 - 29.00	1.0000	1.0000
L17	3	Climbing Pegs	28.50 - 29.00	1.0000	1.0000
L17	22	0027950(23/64)	28.50 - 29.00	1.0000	1.0000
L17	23	TOUHCABLES CAT 5(1/4)	28.50 - 29.00	1.0000	1.0000
L17	27	CCI-SFP-06010030	28.50 - 29.00	1.0000	1.0000
L17	28	CCI-SFP-06010030	28.50 - 29.00	1.0000	1.0000
L17	29	CCI-SFP-06010030	28.50 - 29.00	1.0000	1.0000
L18	2	Safety Line 3/8	28.25 - 28.50	1.0000	1.0000
L18	3	Climbing Pegs	28.25 - 28.50	1.0000	1.0000
L18	22	0027950(23/64)	28.25 - 28.50	1.0000	1.0000
L18	23	TOUHCABLES CAT 5(1/4)	28.25 - 28.50	1.0000	1.0000
L18	27	CCI-SFP-06010030	28.25 - 28.50	1.0000	1.0000
L18	28	CCI-SFP-06010030	28.25 - 28.50	1.0000	1.0000
L18	29	CCI-SFP-06010030	28.25 - 28.50	1.0000	1.0000
L19	2	Safety Line 3/8	23.25 - 28.25	1.0000	1.0000
L19	3	Climbing Pegs	23.25 - 28.25	1.0000	1.0000
L19	22	0027950(23/64)	23.25 - 28.25	1.0000	1.0000
L19	23	TOUHCABLES CAT 5(1/4)	23.25 - 28.25	1.0000	1.0000
L19	27	CCI-SFP-06010030	23.25 - 28.25	1.0000	1.0000
L19	28	CCI-SFP-06010030	23.25 - 28.25	1.0000	1.0000
L19	29	CCI-SFP-06010030	23.25 - 28.25	1.0000	1.0000
L20	2	Safety Line 3/8	18.25 - 23.25	1.0000	1.0000
L20	3	Climbing Pegs	18.25 - 23.25	1.0000	1.0000
L20	22	0027950(23/64)	18.25 - 23.25	1.0000	1.0000
L20	23	TOUHCABLES CAT 5(1/4)	18.25 - 23.25	1.0000	1.0000
L20	25	LDF4-50A(1/2)	18.25 - 20.00	1.0000	1.0000
L20	27	CCI-SFP-06010030	18.25 - 23.25	1.0000	1.0000
L20	28	CCI-SFP-06010030	18.25 - 23.25	1.0000	1.0000
L20	29	CCI-SFP-06010030	18.25 - 23.25	1.0000	1.0000
L21	2	Safety Line 3/8	13.25 - 18.25	1.0000	1.0000
L21	3	Climbing Pegs	13.25 - 18.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>s</sub> No Ice	K <sub>s</sub> Ice
L21	22	0027950(23/64)	13.25 - 18.25	1.0000	1.0000
L21	23	TOUHCABLES CAT 5(1/4)	13.25 - 18.25	1.0000	1.0000
L21	25	LDF4-50A(1/2)	13.25 - 18.25	1.0000	1.0000
L21	27	CCI-SFP-06010030	13.25 - 18.25	1.0000	1.0000
L21	28	CCI-SFP-06010030	13.25 - 18.25	1.0000	1.0000
L21	29	CCI-SFP-06010030	13.25 - 18.25	1.0000	1.0000
L22	2	Safety Line 3/8	8.25 - 13.25	1.0000	1.0000
L22	3	Climbing Pegs	8.25 - 13.25	1.0000	1.0000
L22	22	0027950(23/64)	8.25 - 13.25	1.0000	1.0000
L22	23	TOUHCABLES CAT 5(1/4)	8.25 - 13.25	1.0000	1.0000
L22	25	LDF4-50A(1/2)	8.25 - 13.25	1.0000	1.0000
L22	27	CCI-SFP-06010030	8.25 - 13.25	1.0000	1.0000
L22	28	CCI-SFP-06010030	8.25 - 13.25	1.0000	1.0000
L22	29	CCI-SFP-06010030	8.25 - 13.25	1.0000	1.0000
L23	2	Safety Line 3/8	3.25 - 8.25	1.0000	1.0000
L23	3	Climbing Pegs	3.25 - 8.25	1.0000	1.0000
L23	22	0027950(23/64)	3.25 - 8.25	1.0000	1.0000
L23	23	TOUHCABLES CAT 5(1/4)	3.25 - 8.25	1.0000	1.0000
L23	25	LDF4-50A(1/2)	3.25 - 8.25	1.0000	1.0000
L23	27	CCI-SFP-06010030	3.25 - 8.25	1.0000	1.0000
L23	28	CCI-SFP-06010030	3.25 - 8.25	1.0000	1.0000
L23	29	CCI-SFP-06010030	3.25 - 8.25	1.0000	1.0000
L24	2	Safety Line 3/8	3.00 - 3.25	1.0000	1.0000
L24	3	Climbing Pegs	3.00 - 3.25	1.0000	1.0000
L24	22	0027950(23/64)	3.00 - 3.25	1.0000	1.0000
L24	23	TOUHCABLES CAT 5(1/4)	3.00 - 3.25	1.0000	1.0000
L24	25	LDF4-50A(1/2)	3.00 - 3.25	1.0000	1.0000
L24	27	CCI-SFP-06010030	3.00 - 3.25	1.0000	1.0000
L24	28	CCI-SFP-06010030	3.00 - 3.25	1.0000	1.0000
L24	29	CCI-SFP-06010030	3.00 - 3.25	1.0000	1.0000
L25	2	Safety Line 3/8	2.75 - 3.00	1.0000	1.0000
L25	3	Climbing Pegs	2.75 - 3.00	1.0000	1.0000
L25	22	0027950(23/64)	2.75 - 3.00	1.0000	1.0000
L25	23	TOUHCABLES CAT 5(1/4)	2.75 - 3.00	1.0000	1.0000
L25	25	LDF4-50A(1/2)	2.75 - 3.00	1.0000	1.0000
L25	27	CCI-SFP-06010030	2.75 - 3.00	1.0000	1.0000
L25	28	CCI-SFP-06010030	2.75 - 3.00	1.0000	1.0000
L25	29	CCI-SFP-06010030	2.75 - 3.00	1.0000	1.0000
L26	2	Safety Line 3/8	0.00 - 2.75	1.0000	1.0000
L26	3	Climbing Pegs	0.00 - 2.75	1.0000	1.0000
L26	22	0027950(23/64)	0.00 - 2.75	1.0000	1.0000
L26	23	TOUHCABLES CAT 5(1/4)	0.00 - 2.75	1.0000	1.0000
L26	25	LDF4-50A(1/2)	0.00 - 2.75	1.0000	1.0000
L26	27	CCI-SFP-06010030	0.00 - 2.75	1.0000	1.0000
L26	28	CCI-SFP-06010030	0.00 - 2.75	1.0000	1.0000
L26	29	CCI-SFP-06010030	0.00 - 2.75	1.0000	1.0000



### Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L7	30	CCI-AFP-04510015	64.00 - 66.00	Auto	0.1775
L7	31	CCI-AFP-04510015	64.00 - 66.00	Auto	0.1775
L7	32	CCI-AFP-04510015	64.00 - 66.00	Auto	0.1775
L8	30	CCI-AFP-04510015	63.75 - 64.00	Auto	0.2517
L8	31	CCI-AFP-04510015	63.75 - 64.00	Auto	0.2517
L8	32	CCI-AFP-04510015	63.75 - 64.00	Auto	0.2517
L9	30	CCI-AFP-04510015	58.75 - 63.75	Auto	0.2284
L9	31	CCI-AFP-04510015	58.75 - 63.75	Auto	0.2284
L9	32	CCI-AFP-04510015	58.75 - 63.75	Auto	0.2284
L10	30	CCI-AFP-04510015	53.75 - 58.75	Auto	0.1838
L10	31	CCI-AFP-04510015	53.75 - 58.75	Auto	0.1838
L10	32	CCI-AFP-04510015	53.75 - 58.75	Auto	0.1838
L11	30	CCI-AFP-04510015	51.00 - 53.75	Auto	0.1530
L11	31	CCI-AFP-04510015	51.00 - 53.75	Auto	0.1530
L11	32	CCI-AFP-04510015	51.00 - 53.75	Auto	0.1530
L16	27	CCI-SFP-06010030	29.00 - 30.60	Auto	0.2213
L16	28	CCI-SFP-06010030	29.00 - 30.60	Auto	0.2213
L16	29	CCI-SFP-06010030	29.00 - 30.60	Auto	0.2213
L17	27	CCI-SFP-06010030	28.50 - 29.00	Auto	0.2150
L17	28	CCI-SFP-06010030	28.50 - 29.00	Auto	0.2150
L17	29	CCI-SFP-06010030	28.50 - 29.00	Auto	0.2150
L18	27	CCI-SFP-06010030	28.25 - 28.50	Auto	0.2641
L18	28	CCI-SFP-06010030	28.25 - 28.50	Auto	0.2641
L18	29	CCI-SFP-06010030	28.25 - 28.50	Auto	0.2641
L19	27	CCI-SFP-06010030	23.25 - 28.25	Auto	0.2485
L19	28	CCI-SFP-06010030	23.25 - 28.25	Auto	0.2485
L19	29	CCI-SFP-06010030	23.25 - 28.25	Auto	0.2485
L20	27	CCI-SFP-06010030	18.25 - 23.25	Auto	0.2151
L20	28	CCI-SFP-06010030	18.25 - 23.25	Auto	0.2151
L20	29	CCI-SFP-06010030	18.25 - 23.25	Auto	0.2151
L21	27	CCI-SFP-06010030	13.25 - 18.25	Auto	0.1853
L21	28	CCI-SFP-06010030	13.25 - 18.25	Auto	0.1853

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L21	29	CCI-SFP-06010030	13.25 - 18.25	Auto	0.1853
L22	27	CCI-SFP-06010030	8.25 - 13.25	Auto	0.1519
L22	28	CCI-SFP-06010030	8.25 - 13.25	Auto	0.1519
L22	29	CCI-SFP-06010030	8.25 - 13.25	Auto	0.1519
L23	27	CCI-SFP-06010030	3.25 - 8.25	Auto	0.1221
L23	28	CCI-SFP-06010030	3.25 - 8.25	Auto	0.1221
L23	29	CCI-SFP-06010030	3.25 - 8.25	Auto	0.1221
L24	27	CCI-SFP-06010030	3.00 - 3.25	Auto	0.1065
L24	28	CCI-SFP-06010030	3.00 - 3.25	Auto	0.1065
L24	29	CCI-SFP-06010030	3.00 - 3.25	Auto	0.1065
L25	27	CCI-SFP-06010030	2.75 - 3.00	Auto	0.0848
L25	28	CCI-SFP-06010030	2.75 - 3.00	Auto	0.0848
L25	29	CCI-SFP-06010030	2.75 - 3.00	Auto	0.0848
L26	27	CCI-SFP-06010030	0.00 - 2.75	Auto	0.0759
L26	28	CCI-SFP-06010030	0.00 - 2.75	Auto	0.0759
L26	29	CCI-SFP-06010030	0.00 - 2.75	Auto	0.0759

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horiz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K
***** Lighting Rod 3/4" x 7'	C	From Leg	0.00 0.00 3.50	0.0000	99.00	No Ice	0.53	0.53	0.03
***** P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	7.48	5.29	0.09
P65-17-XLH-RR w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	7.48	5.29	0.09
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	7.48	5.29	0.09
RV4PX310R-V2 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	6.94	5.35	0.11
RV4PX310R-V2 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	6.94	5.35	0.11
RV4PX310R-V2 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	6.94	5.35	0.11
(2) NNH4-65C-R6-V3_CCIV2 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	9.65	5.06	0.16
(2) NNH4-65C-R6-V3_CCIV2 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	9.65	5.06	0.16
(2) NNH4-65C-R6-V3_CCIV2 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	9.65	5.06	0.16
B25 RRH4x30-4R	A	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	2.14	1.31	0.05
B25 RRH4x30-4R	B	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	2.14	1.31	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement  ft		C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight  K
B25 RRH4x30-4R	C	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	2.14	1.31	0.05
RRH4X25-WCS-4R	A	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	3.12	2.38	0.07
RRH4X25-WCS-4R	B	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	3.12	2.38	0.07
RRH4X25-WCS-4R	C	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	3.12	2.38	0.07
AHCA_CCIV3	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice	1.53	0.82	0.04
AHCA_CCIV3	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice	1.53	0.82	0.04
AHCA_CCIV3	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice	1.53	0.82	0.04
AHFIB_CCIV2	A	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	2.79	1.53	0.07
AHFIB_CCIV2	B	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	2.79	1.53	0.07
AHFIB_CCIV2	C	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	2.79	1.53	0.07
AHLBBA_CCIV2	A	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	3.06	1.02	0.10
AHLBBA_CCIV2	B	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	3.06	1.02	0.10
AHLBBA_CCIV2	C	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	3.06	1.02	0.10
DC6-48-60-18-8F	A	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	0.92	0.92	0.02
DC6-48-60-18-8F	B	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	0.92	0.92	0.02
DC6-48-60-18-8F	C	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	0.92	0.92	0.02
4' x 2" Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice	0.79	0.79	0.03
4' x 2" Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice	0.79	0.79	0.03
4' x 2" Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice	0.79	0.79	0.03
4' x 2" Pipe Mount	A	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	0.79	0.79	0.03
4' x 2" Pipe Mount	B	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	0.79	0.79	0.03
4' x 2" Pipe Mount	C	From Leg	4.00 0.00 2.00	0.0000	98.00	No Ice	0.79	0.79	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K
10' x 2" Mount Pipe	A	From Leg	0.00 2.00 0.00 0.00	0.0000	98.00	No Ice	2.38	2.38	0.04
10' x 2" Mount Pipe	B	From Leg	0.00 2.00 0.00 0.00	0.0000	98.00	No Ice	2.38	2.38	0.04
10' x 2" Mount Pipe	C	From Leg	0.00 2.00 0.00 0.00	0.0000	98.00	No Ice	2.38	2.38	0.04
Platform Mount [LP 304- 1_KCKR-HR-1] *****	C	None		0.0000	98.00	No Ice	32.63	32.63	1.88
BCD-87010	C	From Leg	6.00 0.00 5.00	0.0000	72.00	No Ice	2.90	2.90	0.03
Side Arm Mount [SO 303- 1] *****	C	From Leg	3.00 0.00 0.00	0.0000	72.00	No Ice	1.08	5.31	0.12
Side Arm Mount [SO 102- 3] Tie Back	C	None		0.0000	69.00	No Ice	3.60	3.60	0.07
	C	From Leg	0.50 0.00 0.00	0.0000	69.00	No Ice	1.90	0.01	0.03
Pipe Mount [PM 601-1] *****	C	From Leg	0.50 0.00 0.00	0.0000	69.00	No Ice	1.32	1.32	0.07
AIR 6449 B77D_CCIV2 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	3.58	2.31	0.09
AIR 6449 B77D_CCIV2 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	3.58	2.31	0.09
AIR 6449 B77D_CCIV2 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	3.58	2.31	0.09
(2) NHH-65C-R2B_CCIV2	A	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	5.46	3.28	0.06
(2) NHH-65C-R2B_CCIV2	B	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	5.46	3.28	0.06
(2) NHH-65C-R2B_CCIV2	C	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	5.46	3.28	0.06
4449 B5 B13 VZ	C	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	1.97	1.38	0.07
4449 B5 B13 VZ	A	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	1.97	1.38	0.07
4449 B5 B13 VZ	B	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	1.97	1.38	0.07
8843 B2 B66A VZ	A	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	1.97	1.66	0.07
8843 B2 B66A VZ	B	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	1.97	1.66	0.07
8843 B2 B66A VZ	C	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	1.97	1.66	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K
RVZDC-6627-PF-48_CCIV2	A	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	4.06	3.10	0.03
Side By Side Mounting Kit [#BSAMNT-SBS-1-2]	A	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	2.38	2.38	0.04
Side By Side Mounting Kit [#BSAMNT-SBS-1-2]	B	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	2.38	2.38	0.04
Side By Side Mounting Kit [#BSAMNT-SBS-1-2]	C	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	2.38	2.38	0.04
(2) 7"x2" Antenna Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	1.66	1.66	0.03
(2) 7"x2" Antenna Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	1.66	1.66	0.03
(2) 7"x2" Antenna Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	1.66	1.66	0.03
(2) 5' x 2" Pipe Mount	B	From Leg	2.00 0.00 2.00	0.0000	56.00	No Ice	1.19	1.19	0.02
12.5' x 2.375" Horizontal Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	2.98	0.01	0.05
12.5' x 2.375" Horizontal Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	2.98	0.01	0.05
12.5' x 2.375" Horizontal Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	56.00	No Ice	2.98	0.01	0.05
T-Arm Mount [TA 702-3] *****	C	None		0.0000	56.00	No Ice	4.75	4.75	0.34
6' x 2" Horizontal Mount Pipe	B	From Leg	0.50 0.00 0.00	0.0000	45.00	No Ice	1.14	0.01	0.02
Side Arm Mount [SO 102-3] Pipe Mount [PM 601-1]	C	None		0.0000	45.00	No Ice	3.60	3.60	0.07
*****	C	From Leg	0.50 0.00 0.00	0.0000	45.00	No Ice	1.32	1.32	0.07
4003_840590966_TMO	A	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	10.24	3.12	0.14
4003_840590966_TMO	B	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	10.24	3.12	0.14
4003_840590966_TMO	C	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	10.24	3.12	0.14
AEHC	A	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	7.26	1.98	0.10
AEHC	B	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	7.26	1.98	0.10
AEHC	C	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	7.26	1.98	0.10
AHFII B25/66 4T4R_TMO	A	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	3.23	1.41	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K
AHFII B25/66 4T4R_TMO	B	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	3.23	1.41	0.07
AHFII B25/66 4T4R_TMO	C	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	3.23	1.41	0.07
AHLOB B71/65 4T4R_TMO	A	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	3.23	1.48	0.09
AHLOB B71/65 4T4R_TMO	B	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	3.23	1.48	0.09
AHLOB B71/65 4T4R_TMO	C	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	3.23	1.48	0.09
(4) 10'6"x2-3/8" Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	2.49	2.49	0.04
(4) 10'6"x2-3/8" Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	2.49	2.49	0.04
(4) 10'6"x2-3/8" Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	37.00	No Ice	2.49	2.49	0.04
12.5' Platform Mount [#PV- LPPGS-12M-HR2-AP2] *****	C	None		0.0000	37.00	No Ice	19.00	19.00	2.06
C030045A101A_CCIV2 w/ Mount Pipe	A	From Leg	2.50 0.00 0.00	0.0000	30.00	No Ice	5.64	2.32	0.06
Side Arm Mount [SO 103- 3] *****	A	None		0.0000	30.00	No Ice	7.64	7.64	0.23
MD-S3	C	From Leg	1.00 0.00 0.00	0.0000	25.00	No Ice	8.75	4.20	0.26
6' x 2" Mount Pipe	C	From Leg	0.50 0.00 0.00	0.0000	25.00	No Ice	1.43	1.43	0.02
Side Arm Mount [SO 102- 3] *****	C	None		0.0000	25.00	No Ice	3.60	3.60	0.07
Pipe Mount [PM 601-1]	C	From Leg	0.50 0.00 0.00	0.0000	20.00	No Ice	1.32	1.32	0.07
Side Arm Mount [SO 102- 3] *****	C	None		0.0000	20.00	No Ice	3.60	3.60	0.07

### Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft <sup>2</sup>	Weight K
***** VHLPX6-11/A *****	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 -1.00	33.0000		69.00	6.13	No Ice 29.54	0.14

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	No Ice	Aperture Area ft <sup>2</sup>	Weight K
VHLPX6-11/A	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	1.0000		45.00	6.13	No Ice	29.54	0.14
*****											
AF-11G35_CCIV2	B	Paraboloid w/Shroud (HP)	From Leg	2.50 0.00 0.00	-36.0000		30.00	2.66	No Ice	5.55	0.02
AF-60	C	Paraboloid w/o Radome	From Leg	2.50 0.00 0.00	23.0000		30.00	1.35	No Ice	1.44	0.00
*****											
SPF2-52BN	C	Paraboloid w/Radome	From Leg	1.00 0.00 1.00	-45.0000		20.00	2.33	No Ice	4.28	0.02
*****											

## Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	Dead+Wind 0 deg - Service
27	Dead+Wind 30 deg - Service
28	Dead+Wind 60 deg - Service
29	Dead+Wind 90 deg - Service
30	Dead+Wind 120 deg - Service
31	Dead+Wind 150 deg - Service
32	Dead+Wind 180 deg - Service
33	Dead+Wind 210 deg - Service
34	Dead+Wind 240 deg - Service
35	Dead+Wind 270 deg - Service
36	Dead+Wind 300 deg - Service
37	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	99 - 94	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-5.19	-0.02	41.80
			Max. Mx	20	-5.17	42.49	-0.10
			Max. My	14	-5.19	0.14	-41.82
			Max. Vy	8	8.56	-42.45	0.05
			Max. Vx	14	8.54	0.14	-41.82
L2	94 - 89	Pole	Max. Torque	24			0.14
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-5.55	-0.00	85.22
			Max. Mx	20	-5.53	85.99	-0.15
			Max. My	14	-5.55	0.23	-85.23
			Max. Vy	8	8.85	-85.97	0.07
L3	89 - 84	Pole	Max. Vx	14	8.83	0.23	-85.23
			Max. Torque	24			0.14
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-5.93	0.02	130.07
			Max. Mx	20	-5.91	130.93	-0.20
			Max. My	2	-5.93	0.02	130.07
L4	84 - 79	Pole	Max. Vy	8	9.14	-130.92	0.08
			Max. Vx	14	9.12	0.32	-130.07
			Max. Torque	24			0.14
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-6.35	0.04	176.39
			Max. Mx	8	-6.32	-177.34	0.10
L5	79 - 74	Pole	Max. My	2	-6.35	0.04	176.39
			Max. Vy	8	9.44	-177.34	0.10
			Max. Vx	14	9.42	0.42	-176.38
			Max. Torque	24			0.14
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-6.78	0.06	224.20
L6	74 - 69	Pole	Max. Mx	8	-6.75	-225.26	0.11
			Max. My	2	-6.78	0.06	224.20
			Max. Vy	8	9.75	-225.26	0.11
			Max. Vx	14	9.72	0.51	-224.18
			Max. Torque	24			0.14
			Max Tension	1	0.00	0.00	0.00
L7	69 - 64	Pole	Max. Compression	16	-7.39	139.02	-238.72
			Max. Mx	20	-7.38	276.92	-0.37
			Max. My	14	-7.39	0.86	-275.78
			Max. Vy	8	10.33	-275.59	-0.45
			Max. Vx	14	10.41	0.86	-275.78
			Max. Torque	24			2.25
L8	64 - 63.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-8.16	1.08	-334.00
			Max. Mx	20	-8.09	337.52	-0.14
			Max. My	14	-8.16	1.08	-334.00
			Max. Vy	8	12.89	-336.90	-0.98
			Max. Vx	2	-11.97	2.23	332.86
L9	63.75 - 58.75	Pole	Max. Torque	24			5.47
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-8.20	1.08	-336.99
			Max. Mx	20	-8.14	340.65	-0.12
			Max. My	14	-8.20	1.08	-336.99
			Max. Vy	8	12.91	-340.12	-1.01
L10	58.75 - 53.75	Pole	Max. Vx	2	-11.98	2.30	335.85
			Max. Torque	24			5.47
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-8.94	1.12	-397.74
			Max. Mx	8	-8.83	-405.60	-1.52
			Max. My	14	-8.94	1.12	-397.74
L10	58.75 - 53.75	Pole	Max. Vy	8	13.30	-405.60	-1.52
			Max. Vx	2	-12.37	3.68	396.73
			Max. Torque	24			5.47
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-8.94	1.12	-397.74
			Max. Mx	8	-8.83	-405.60	-1.52



Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L11	53.75 - 50	Pole	Max. Compression	14	-11.82	1.06	-474.05
			Max. Mx	8	-11.71	-486.74	-1.95
			Max. My	14	-11.82	1.06	-474.05
			Max. Vy	8	17.07	-486.74	-1.95
			Max. Vx	2	-16.18	4.94	473.39
			Max. Torque	24			5.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-11.90	1.07	-482.14
			Max. Mx	8	-11.80	-495.28	-2.00
			Max. My	14	-11.90	1.07	-482.14
L12	50 - 49	Pole	Max. Vy	8	17.11	-495.28	-2.00
			Max. Vx	2	-16.22	5.08	481.48
			Max. Torque	24			4.99
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-12.88	1.12	-551.74
			Max. Mx	8	-12.78	-568.78	-2.43
			Max. My	14	-12.88	1.12	-551.74
			Max. Vy	8	17.48	-568.78	-2.43
			Max. Vx	2	-16.59	6.25	551.19
			Max. Torque	24			4.99
L13	49 - 44	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-13.95	2.00	-637.08
			Max. Mx	8	-13.81	-658.77	-2.59
			Max. My	14	-13.95	2.00	-637.08
			Max. Vy	8	19.96	-658.77	-2.59
			Max. Vx	2	-18.43	7.01	636.23
			Max. Torque	24			8.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-14.77	4.91	-729.62
			Max. Mx	8	-14.65	-759.46	-0.23
L14	44 - 39	Pole	Max. My	14	-14.77	4.91	-729.62
			Max. Vy	8	20.34	-759.46	-0.23
			Max. Vx	2	-18.80	3.74	729.28
			Max. Torque	24			8.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19.94	7.82	-837.19
			Max. Mx	8	-19.83	-875.19	2.14
			Max. My	2	-19.94	0.46	837.35
			Max. Vy	8	25.10	-875.19	2.14
			Max. Vx	2	-23.56	0.46	837.35
L15	39 - 34	Pole	Max. Torque	24			8.06
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.24	10.72	-955.97
			Max. Mx	8	-21.15	-1002.43	4.77
			Max. My	2	-21.24	-2.95	957.07
			Max. Vy	8	26.36	-1002.43	4.77
			Max. Vx	2	-24.81	-2.95	957.07
			Max. Torque	24			8.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.35	11.02	-968.32
L16	34 - 29	Pole	Max. Mx	8	-21.26	-1015.61	5.02
			Max. My	2	-21.34	-3.33	969.48
			Max. Vy	8	26.39	-1015.61	5.02
			Max. Vx	2	-24.84	-3.33	969.48
			Max. Torque	24			8.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.42	11.18	-974.50
			Max. Mx	8	-21.33	-1022.21	5.15
			Max. My	2	-21.41	-3.51	975.69
			Max. Vy	8	26.40	-1022.21	5.15
L17	29 - 28.5	Pole	Max. Vx	2	-24.85	-3.51	975.69
			Max. Torque	24			8.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-23.10	15.07	-1100.53
			Max. Mx	8	-23.02	-1155.68	7.48
			Max. My	2	-23.10	-6.78	1101.52
			Max. Vy	8	27.46	-1155.68	7.48
			Max. Vx	2	-25.80	-6.78	1101.52
			Max. Torque	24			8.11
			Max Tension	1	0.00	0.00	0.00
L18	28.5 - 28.25	Pole	Max. Compression	14	-23.10	15.07	-1100.53
			Max. Mx	8	-23.02	-1155.68	7.48
			Max. My	2	-23.10	-6.78	1101.52
			Max. Vy	8	27.46	-1155.68	7.48
			Max. Vx	2	-25.80	-6.78	1101.52
			Max. Torque	24			8.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-23.10	15.07	-1100.53
			Max. Mx	8	-23.02	-1155.68	7.48
			Max. My	2	-23.10	-6.78	1101.52
L19	28.25 - 23.25	Pole	Max. Vy	8	27.46	-1155.68	7.48
			Max. Vx	2	-25.80	-6.78	1101.52
			Max. Torque	24			8.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-23.10	15.07	-1100.53
			Max. Mx	8	-23.02	-1155.68	7.48
			Max. My	2	-23.10	-6.78	1101.52
			Max. Vy	8	27.46	-1155.68	7.48
			Max. Vx	2	-25.80	-6.78	1101.52
			Max. Torque	24			8.11

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L20	23.25 - 18.25	Pole	Max. Torque	24			8.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-24.60	18.78	-1230.83
			Max. Mx	8	-24.54	-1294.45	10.49
			Max. My	2	-24.60	-10.85	1232.30
			Max. Vy	8	28.21	-1294.45	10.49
			Max. Vx	2	-26.63	-10.85	1232.30
L21	18.25 - 13.25	Pole	Max. Torque	24			9.19
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.95	22.32	-1364.07
			Max. Mx	8	-25.90	-1436.33	13.67
			Max. My	2	-25.94	-15.09	1366.32
			Max. Vy	8	28.58	-1436.33	13.67
			Max. Vx	2	-27.00	-15.09	1366.32
L22	13.25 - 8.25	Pole	Max. Torque	24			9.19
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-27.32	25.84	-1499.22
			Max. Mx	8	-27.29	-1580.09	16.85
			Max. My	2	-27.32	-19.32	1502.25
			Max. Vy	8	28.96	-1580.09	16.85
			Max. Vx	2	-27.39	-19.32	1502.25
L23	8.25 - 3.25	Pole	Max. Torque	24			9.19
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.72	29.34	-1636.33
			Max. Mx	8	-28.71	-1725.78	20.02
			Max. My	2	-28.72	-23.55	1640.14
			Max. Vy	8	29.35	-1725.78	20.02
			Max. Vx	2	-27.79	-23.55	1640.14
L24	3.25 - 3	Pole	Max. Torque	24			9.19
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.80	29.51	-1643.24
			Max. Mx	8	-28.79	-1733.12	20.18
			Max. My	2	-28.80	-23.76	1647.09
			Max. Vy	8	29.36	-1733.12	20.18
			Max. Vx	2	-27.80	-23.76	1647.09
L25	3 - 2.75	Pole	Max. Torque	24			9.19
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.87	29.69	-1650.15
			Max. Mx	8	-28.86	-1740.46	20.34
			Max. My	2	-28.87	-23.97	1654.04
			Max. Vy	8	29.38	-1740.46	20.34
			Max. Vx	2	-27.82	-23.97	1654.04
L26	2.75 - 0	Pole	Max. Torque	24			9.19
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-29.65	31.61	-1726.52
			Max. Mx	8	-29.65	-1821.53	22.08
			Max. My	2	-29.65	-26.29	1730.85
			Max. Vy	8	29.61	-1821.53	22.08
			Max. Vx	2	-28.06	-26.29	1730.85
			Max. Torque	24			9.19

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	8	29.67	-29.59	0.63
	Max. H <sub>x</sub>	21	22.25	28.83	-0.48
	Max. H <sub>z</sub>	3	22.25	-0.84	28.03
	Max. M <sub>x</sub>	2	1730.85	-0.84	28.03
	Max. M <sub>z</sub>	8	1821.53	-29.59	0.63
	Max. Torsion	24	9.19	14.76	23.75
	Min. Vert	13	22.25	-14.83	-23.79

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H <sub>x</sub>	8	29.67	-29.59	0.63
	Min. H <sub>z</sub>	15	22.25	0.70	-27.88
	Min. M <sub>x</sub>	14	-1726.52	0.70	-27.88
	Min. M <sub>z</sub>	20	-1782.70	28.83	-0.48
	Mln. Torsion	12	-8.07	-14.83	-23.79

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturing Moment, M <sub>x</sub> kip-ft	Overturing Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	24.73	-0.00	0.00	0.78	2.02	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	29.67	0.84	-28.03	-1730.85	-26.29	-5.97
0.9 Dead+1.0 Wind 0 deg - No Ice	22.25	0.84	-28.03	-1715.36	-26.83	-5.94
1.2 Dead+1.0 Wind 30 deg - No Ice	29.67	15.91	-24.16	-1485.43	-964.24	-0.93
0.9 Dead+1.0 Wind 30 deg - No Ice	22.25	15.91	-24.16	-1472.19	-956.32	-0.91
1.2 Dead+1.0 Wind 60 deg - No Ice	29.67	26.02	-14.19	-865.39	-1596.06	2.02
0.9 Dead+1.0 Wind 60 deg - No Ice	22.25	26.02	-14.19	-857.82	-1582.37	2.02
1.2 Dead+1.0 Wind 90 deg - No Ice	29.67	29.59	-0.63	-22.08	-1821.53	3.80
0.9 Dead+1.0 Wind 90 deg - No Ice	22.25	29.59	-0.63	-22.23	-1805.76	3.79
1.2 Dead+1.0 Wind 120 deg - No Ice	29.67	25.81	12.96	823.05	-1591.48	5.68
0.9 Dead+1.0 Wind 120 deg - No Ice	22.25	25.81	12.96	815.17	-1577.79	5.65
1.2 Dead+1.0 Wind 150 deg - No Ice	29.67	14.83	23.79	1477.03	-925.33	8.07
0.9 Dead+1.0 Wind 150 deg - No Ice	22.25	14.83	23.79	1463.32	-917.56	8.04
1.2 Dead+1.0 Wind 180 deg - No Ice	29.67	-0.70	27.88	1726.52	31.60	6.94
0.9 Dead+1.0 Wind 180 deg - No Ice	22.25	-0.70	27.88	1710.57	30.83	6.91
1.2 Dead+1.0 Wind 210 deg - No Ice	29.67	-15.27	23.98	1482.76	933.40	3.38
0.9 Dead+1.0 Wind 210 deg - No Ice	22.25	-15.27	23.98	1469.02	924.46	3.37
1.2 Dead+1.0 Wind 240 deg - No Ice	29.67	-25.28	13.94	854.61	1559.12	-0.67
0.9 Dead+1.0 Wind 240 deg - No Ice	22.25	-25.28	13.94	846.62	1544.44	-0.67
1.2 Dead+1.0 Wind 270 deg - No Ice	29.67	-28.83	0.48	18.76	1782.70	-4.39
0.9 Dead+1.0 Wind 270 deg - No Ice	22.25	-28.83	0.48	18.45	1765.97	-4.37
1.2 Dead+1.0 Wind 300 deg - No Ice	29.67	-25.16	-13.23	-829.19	1557.07	-7.69
0.9 Dead+1.0 Wind 300 deg - No Ice	22.25	-25.16	-13.23	-821.77	1542.40	-7.66
1.2 Dead+1.0 Wind 330 deg - No Ice	29.67	-14.76	-23.75	-1473.51	917.86	-9.19
0.9 Dead+1.0 Wind 330 deg - No Ice	22.25	-14.76	-23.75	-1460.29	908.97	-9.16
Dead+Wind 0 deg - Service	24.73	0.25	-8.46	-519.47	-6.60	-1.81
Dead+Wind 30 deg - Service	24.73	4.80	-7.29	-445.76	-288.39	-0.28
Dead+Wind 60 deg - Service	24.73	7.85	-4.28	-259.50	-478.23	0.61
Dead+Wind 90 deg - Service	24.73	8.93	-0.19	-6.14	-545.98	1.15

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturing Moment, M <sub>x</sub> kip-ft	Overturing Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead+Wind 120 deg - Service	24.73	7.79	3.91	247.78	-476.84	1.72
Dead+Wind 150 deg - Service	24.73	4.48	7.18	444.24	-276.67	2.45
Dead+Wind 180 deg - Service	24.73	-0.21	8.42	519.18	10.82	2.11
Dead+Wind 210 deg - Service	24.73	-4.61	7.24	445.96	281.74	1.02
Dead+Wind 240 deg - Service	24.73	-7.63	4.21	257.26	469.72	-0.21
Dead+Wind 270 deg - Service	24.73	-8.70	0.14	6.16	536.90	-1.33
Dead+Wind 300 deg - Service	24.73	-7.59	-3.99	-248.59	469.11	-2.33
Dead+Wind 330 deg - Service	24.73	-4.45	-7.17	-442.16	277.06	-2.79

### 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	0.00	-24.73	0.00	0.00	24.73	0.00	0.000%
2	0.84	-29.67	-28.03	-0.84	29.67	28.03	0.000%
3	0.84	-22.25	-28.03	-0.84	22.25	28.03	0.000%
4	15.91	-29.67	-24.16	-15.91	29.67	24.16	0.000%
5	15.91	-22.25	-24.16	-15.91	22.25	24.16	0.000%
6	26.02	-29.67	-14.19	-26.02	29.67	14.19	0.000%
7	26.02	-22.25	-14.19	-26.02	22.25	14.19	0.000%
8	29.59	-29.67	-0.63	-29.59	29.67	0.63	0.000%
9	29.59	-22.25	-0.63	-29.59	22.25	0.63	0.000%
10	25.81	-29.67	12.96	-25.81	29.67	-12.96	0.000%
11	25.81	-22.25	12.96	-25.81	22.25	-12.96	0.000%
12	14.83	-29.67	23.79	-14.83	29.67	-23.79	0.000%
13	14.83	-22.25	23.79	-14.83	22.25	-23.79	0.000%
14	-0.70	-29.67	27.88	0.70	29.67	-27.88	0.000%
15	-0.70	-22.25	27.88	0.70	22.25	-27.88	0.000%
16	-15.27	-29.67	23.98	15.27	29.67	-23.98	0.000%
17	-15.27	-22.25	23.98	15.27	22.25	-23.98	0.000%
18	-25.28	-29.67	13.94	25.28	29.67	-13.94	0.000%
19	-25.28	-22.25	13.94	25.28	22.25	-13.94	0.000%
20	-28.83	-29.67	0.48	28.83	29.67	-0.48	0.000%
21	-28.83	-22.25	0.48	28.83	22.25	-0.48	0.000%
22	-25.16	-29.67	-13.23	25.16	29.67	13.23	0.000%
23	-25.16	-22.25	-13.23	25.16	22.25	13.23	0.000%
24	-14.76	-29.67	-23.75	14.76	29.67	23.75	0.000%
25	-14.76	-22.25	-23.75	14.76	22.25	23.75	0.000%
26	0.25	-24.73	-8.46	-0.25	24.73	8.46	0.000%
27	4.80	-24.73	-7.29	-4.80	24.73	7.29	0.000%
28	7.85	-24.73	-4.28	-7.85	24.73	4.28	0.000%
29	8.93	-24.73	-0.19	-8.93	24.73	0.19	0.000%
30	7.79	-24.73	3.91	-7.79	24.73	-3.91	0.000%
31	4.48	-24.73	7.18	-4.48	24.73	-7.18	0.000%
32	-0.21	-24.73	8.42	0.21	24.73	-8.42	0.000%
33	-4.61	-24.73	7.24	4.61	24.73	-7.24	0.000%
34	-7.63	-24.73	4.21	7.63	24.73	-4.21	0.000%
35	-8.70	-24.73	0.14	8.70	24.73	-0.14	0.000%
36	-7.59	-24.73	-3.99	7.59	24.73	3.99	0.000%
37	-4.45	-24.73	-7.17	4.45	24.73	7.17	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	6	0.00000001	0.00007437
3	Yes	5	0.00000001	0.00067046
4	Yes	6	0.00000001	0.00024455
5	Yes	6	0.00000001	0.00007140
6	Yes	6	0.00000001	0.00023001
7	Yes	6	0.00000001	0.00006675
8	Yes	5	0.00000001	0.00086822
9	Yes	5	0.00000001	0.00037920
10	Yes	6	0.00000001	0.00028972
11	Yes	6	0.00000001	0.00008705
12	Yes	6	0.00000001	0.00022048
13	Yes	6	0.00000001	0.00006362
14	Yes	6	0.00000001	0.00009229
15	Yes	5	0.00000001	0.00083124
16	Yes	6	0.00000001	0.00027605
17	Yes	6	0.00000001	0.00008243
18	Yes	6	0.00000001	0.00024480
19	Yes	6	0.00000001	0.00007217
20	Yes	6	0.00000001	0.00005190
21	Yes	5	0.00000001	0.00046608
22	Yes	6	0.00000001	0.00020358
23	Yes	6	0.00000001	0.00005864
24	Yes	6	0.00000001	0.00032294
25	Yes	6	0.00000001	0.00009856
26	Yes	5	0.00000001	0.00017036
27	Yes	5	0.00000001	0.00018839
28	Yes	5	0.00000001	0.00017345
29	Yes	5	0.00000001	0.00010458
30	Yes	5	0.00000001	0.00029977
31	Yes	5	0.00000001	0.00021477
32	Yes	5	0.00000001	0.00019113
33	Yes	5	0.00000001	0.00025656
34	Yes	5	0.00000001	0.00019944
35	Yes	5	0.00000001	0.00011134
36	Yes	5	0.00000001	0.00019089
37	Yes	5	0.00000001	0.00036608

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	99 - 94	21.489	29	2.0269	0.0169
L2	94 - 89	19.376	29	2.0012	0.0167
L3	89 - 84	17.314	29	1.9321	0.0165
L4	84 - 79	15.340	29	1.8332	0.0164
L5	79 - 74	13.482	29	1.7135	0.0164
L6	74 - 69	11.757	29	1.5792	0.0163
L7	69 - 64	10.178	29	1.4352	0.0154
L8	64 - 63.75	8.754	29	1.2829	0.0128
L9	63.75 - 58.75	8.687	29	1.2791	0.0127
L10	58.75 - 53.75	7.389	29	1.1999	0.0115
L11	53.75 - 50	6.177	29	1.1142	0.0104
L12	53.25 - 49	6.061	29	1.1053	0.0103
L13	49 - 44	5.097	29	1.0492	0.0097
L14	44 - 39	4.060	29	0.9307	0.0085
L15	39 - 34	3.149	29	0.8086	0.0069
L16	34 - 29	2.368	29	0.6828	0.0054
L17	29 - 28.5	1.721	29	0.5525	0.0041
L18	28.5 - 28.25	1.664	29	0.5394	0.0040
L19	28.25 - 23.25	1.635	29	0.5350	0.0040
L20	23.25 - 18.25	1.121	29	0.4474	0.0032
L21	18.25 - 13.25	0.700	29	0.3559	0.0024

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L22	13.25 - 8.25	0.376	29	0.2633	0.0017
L23	8.25 - 3.25	0.150	29	0.1676	0.0010
L24	3.25 - 3	0.025	29	0.0718	0.0004
L25	3 - 2.75	0.021	29	0.0670	0.0004
L26	2.75 - 0	0.018	29	0.0614	0.0004

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
99.00	Lighting Rod 3/4" x 7"	29	21.489	2.0269	0.0203	5827
98.00	P65-17-XLH-RR w/ Mount Pipe	29	21.065	2.0237	0.0202	5827
72.00	BCD-87010	29	11.108	1.5254	0.0190	1984
69.00	Side Arm Mount [SO 102-3]	29	10.178	1.4352	0.0181	1908
68.00	VHLPX6-11/A	29	9.881	1.4004	0.0174	1905
56.00	AIR 6449 B77D_CCVI2 w/ Mount Pipe	29	6.711	1.1537	0.0125	3530
45.00	VHLPX6-11/A	29	4.258	0.9570	0.0100	2418
37.00	4003_840590966_TMO	29	2.821	0.7587	0.0071	2288
30.00	AF-11G35_CCVI2	29	1.839	0.5807	0.0050	2386
25.00	MD-S3	29	1.291	0.4794	0.0040	3168
21.00	SPF2-52BN	29	0.920	0.4062	0.0032	3152
20.00	Pipe Mount [PM 601-1]	29	0.837	0.3880	0.0031	3136

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	99 - 94	71.809	8	6.7832	0.0546
L2	94 - 89	64.751	8	6.6973	0.0540
L3	89 - 84	57.863	8	6.4664	0.0533
L4	84 - 79	51.271	8	6.1362	0.0527
L5	79 - 74	45.060	8	5.7360	0.0521
L6	74 - 69	39.294	8	5.2873	0.0518
L7	69 - 64	34.014	8	4.8048	0.0496
L8	64 - 63.75	29.252	8	4.2925	0.0418
L9	63.75 - 58.75	29.028	8	4.2798	0.0416
L10	58.75 - 53.75	24.689	8	4.0136	0.0376
L11	53.75 - 50	20.637	8	3.7263	0.0341
L12	53.25 - 49	20.249	8	3.6965	0.0338
L13	49 - 44	17.029	8	3.5087	0.0320
L14	44 - 39	13.563	8	3.1119	0.0281
L15	39 - 34	10.519	8	2.7027	0.0227
L16	34 - 29	7.908	8	2.2818	0.0179
L17	29 - 28.5	5.746	8	1.8460	0.0136
L18	28.5 - 28.25	5.555	8	1.8020	0.0132
L19	28.25 - 23.25	5.461	8	1.7875	0.0131
L20	23.25 - 18.25	3.742	8	1.4945	0.0106
L21	18.25 - 13.25	2.337	8	1.1887	0.0080
L22	13.25 - 8.25	1.254	8	0.8790	0.0057
L23	8.25 - 3.25	0.501	8	0.5595	0.0034
L24	3.25 - 3	0.082	8	0.2396	0.0014
L25	3 - 2.75	0.070	8	0.2236	0.0013
L26	2.75 - 0	0.059	8	0.2050	0.0012

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
99.00	Lighting Rod 3/4" x 7'	8	71.809	6.7832	0.0703	1793
98.00	P65-17-XLH-RR w/ Mount Pipe	8	70.392	6.7724	0.0702	1793
72.00	BCD-87010	8	37.122	5.1072	0.0842	604
69.00	Side Arm Mount [SO 102-3]	8	34.014	4.8048	0.0607	582
68.00	VHLPX6-11/A	8	33.019	4.6875	0.0585	581
56.00	AIR 6449 B77D_CCVI2 w/ Mount Pipe	8	22.423	3.8588	0.0414	1065
45.00	VHLPX6-11/A	8	14.223	3.1997	0.0331	726
37.00	4003_840590966_TMO	8	9.422	2.5357	0.0235	686
30.00	AF-11G35_CCVI2	8	6.142	1.9403	0.0165	715
25.00	MD-S3	8	4.309	1.6014	0.0131	949
21.00	SPF2-52BN	8	3.071	1.3569	0.0107	944
20.00	Pipe Mount [PM 601-1]	8	2.793	1.2958	0.0101	939

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L1	99 - 94 (1)	TP17.0153x16x0.1875	5.00	0.00	0.0	10.014 6	-5.17	585.86	0.009
L2	94 - 89 (2)	TP18.0306x17.0153x0.18 75	5.00	0.00	0.0	10.618 9	-5.53	621.21	0.009
L3	89 - 84 (3)	TP19.0459x18.0306x0.18 75	5.00	0.00	0.0	11.223 1	-5.91	656.55	0.009
L4	84 - 79 (4)	TP20.0612x19.0459x0.18 75	5.00	0.00	0.0	11.827 4	-6.33	691.90	0.009
L5	79 - 74 (5)	TP21.0765x20.0612x0.18 75	5.00	0.00	0.0	12.431 6	-6.75	727.25	0.009
L6	74 - 69 (6)	TP22.0918x21.0765x0.18 75	5.00	0.00	0.0	13.035 8	-7.38	762.60	0.010
L7	69 - 64 (7)	TP23.1071x22.0918x0.18 75	5.00	0.00	0.0	13.640 1	-8.09	797.94	0.010
L8	64 - 63.75 (8)	TP23.1579x23.1071x0.4	0.25	0.00	0.0	28.893 4	-8.14	1690.27	0.005
L9	63.75 - 58.75 (9)	TP24.1732x23.1579x0.39 38	5.00	0.00	0.0	29.718 7	-8.83	1738.54	0.005
L10	58.75 - 53.75 (10)	TP25.1885x24.1732x0.38 13	5.00	0.00	0.0	30.019 0	-11.71	1756.11	0.007
L11	53.75 - 50 (11)	TP25.95x25.1885x0.3813	3.75	0.00	0.0	30.141 8	-11.80	1763.30	0.007
L12	50 - 49 (12)	TP25.7774x24.9151x0.31 25	4.25	0.00	0.0	25.258 0	-12.78	1477.59	0.009
L13	49 - 44 (13)	TP26.792x25.7774x0.312 5	5.00	0.00	0.0	26.264 3	-13.81	1536.46	0.009
L14	44 - 39 (14)	TP27.8065x26.792x0.312 5	5.00	0.00	0.0	27.270 6	-14.65	1595.33	0.009
L15	39 - 34 (15)	TP28.8211x27.8065x0.31 25	5.00	0.00	0.0	28.276 9	-19.83	1654.20	0.012
L16	34 - 29 (16)	TP29.8356x28.8211x0.31 25	5.00	0.00	0.0	29.283 2	-21.15	1713.07	0.012
L17	29 - 28.5 (17)	TP29.9371x29.8356x0.31 25	0.50	0.00	0.0	29.383 9	-21.26	1718.96	0.012
L18	28.5 - 28.25 (18)	TP29.9878x29.9371x0.48 75	0.25	0.00	0.0	45.646 5	-21.33	2670.32	0.008
L19	28.25 - 23.25 (19)	TP31.0023x29.9878x0.48 75	5.00	0.00	0.0	47.216 4	-23.02	2762.16	0.008
L20	23.25 - 18.25 (20)	TP32.0169x31.0023x0.47 5	5.00	0.00	0.0	47.554 1	-24.54	2781.92	0.009

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L21	18.25 - 13.25 (21)	TP33.0314x32.0169x0.47 5	5.00	0.00	0.0	49.083 7	-25.90	2871.40	0.009
L22	13.25 - 8.25 (22)	TP34.046x33.0314x0.462 5	5.00	0.00	0.0	49.299 7	-27.29	2884.03	0.009
L23	8.25 - 3.25 (23)	TP35.0605x34.046x0.462 5	5.00	0.00	0.0	50.789 1	-28.71	2971.16	0.010
L24	3.25 - 3 (24)	TP35.1113x35.0605x0.46 25	0.25	0.00	0.0	50.863 5	-28.79	2975.52	0.010
L25	3 - 2.75 (25)	TP35.162x35.1113x0.393 8	0.25	0.00	0.0	43.452 1	-28.86	2541.94	0.011
L26	2.75 - 0 (26)	TP35.72x35.162x0.3938 4	2.75	0.00	0.0	44.149 4	-29.65	2582.74	0.011

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>nx</sub> kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M <sub>uy</sub> kip-ft	φM <sub>ny</sub> kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	99 - 94 (1)	TP17.0153x16x0.1875	42.49	256.63	0.166	0.00	256.63	0.000
L2	94 - 89 (2)	TP18.0306x17.0153x0.18 75	85.99	288.64	0.298	0.00	288.64	0.000
L3	89 - 84 (3)	TP19.0459x18.0306x0.18 75	130.93	318.22	0.411	0.00	318.22	0.000
L4	84 - 79 (4)	TP20.0612x19.0459x0.18 75	177.33	348.71	0.509	0.00	348.71	0.000
L5	79 - 74 (5)	TP21.0765x20.0612x0.18 75	225.26	380.05	0.593	0.00	380.05	0.000
L6	74 - 69 (6)	TP22.0918x21.0765x0.18 75	276.92	412.14	0.672	0.00	412.14	0.000
L7	69 - 64 (7)	TP23.1071x22.0918x0.18 75	337.52	444.92	0.759	0.00	444.92	0.000
L8	64 - 63.75 (8)	TP23.1579x23.1071x0.4	340.65	994.98	0.342	0.00	994.98	0.000
L9	63.75 - 58.75 (9)	TP24.1732x23.1579x0.39 38	405.61	1070.42	0.379	0.00	1070.42	0.000
L10	58.75 - 53.75 (10)	TP25.1885x24.1732x0.38 13	486.74	1129.28	0.431	0.00	1129.28	0.000
L11	53.75 - 50 (11)	TP25.95x25.1885x0.3813	495.29	1138.62	0.435	0.00	1138.62	0.000
L12	50 - 49 (12)	TP25.7774x24.9151x0.31 25	568.78	978.36	0.581	0.00	978.36	0.000
L13	49 - 44 (13)	TP26.792x25.7774x0.312 5	658.78	1058.36	0.622	0.00	1058.36	0.000
L14	44 - 39 (14)	TP27.8065x26.792x0.312 5	759.46	1141.50	0.665	0.00	1141.50	0.000
L15	39 - 34 (15)	TP28.8211x27.8065x0.31 25	875.20	1227.79	0.713	0.00	1227.79	0.000
L16	34 - 29 (16)	TP29.8356x28.8211x0.31 25	1002.44	1317.22	0.761	0.00	1317.22	0.000
L17	29 - 28.5 (17)	TP29.9371x29.8356x0.31 25	1015.62	1326.34	0.766	0.00	1326.34	0.000
L18	28.5 - 28.25 (18)	TP29.9878x29.9371x0.48 75	1022.23	2039.71	0.501	0.00	2039.71	0.000
L19	28.25 - 23.25 (19)	TP31.0023x29.9878x0.48 75	1155.71	2183.60	0.529	0.00	2183.60	0.000
L20	23.25 - 18.25 (20)	TP32.0169x31.0023x0.47 5	1294.49	2275.29	0.569	0.00	2275.29	0.000
L21	18.25 - 13.25 (21)	TP33.0314x32.0169x0.47 5	1436.40	2425.13	0.592	0.00	2425.13	0.000
L22	13.25 - 8.25 (22)	TP34.046x33.0314x0.462 5	1580.18	2514.68	0.628	0.00	2514.68	0.000
L23	8.25 - 3.25 (23)	TP35.0605x34.046x0.462 5	1725.90	2669.97	0.646	0.00	2669.97	0.000
L24	3.25 - 3 (24)	TP35.1113x35.0605x0.46 25	1733.23	2677.86	0.647	0.00	2677.86	0.000



Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{nx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	$M_{uy}$ kip-ft	$\phi M_{ny}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L25	3 - 2.75 (25)	TP35.162x35.1113x0.393 8	1740.58	2300.14	0.757	0.00	2300.14	0.000
L26	2.75 - 0 (26)	TP35.72x35.162x0.3938	1821.67	2374.98	0.767	0.00	2374.98	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	99 - 94 (1)	TP17.0153x16x0.1875	8.56	175.76	0.049	0.07	259.01	0.000
L2	94 - 89 (2)	TP18.0306x17.0153x0.18 75	8.84	186.36	0.047	0.07	291.21	0.000
L3	89 - 84 (3)	TP19.0459x18.0306x0.18 75	9.14	196.97	0.046	0.07	325.29	0.000
L4	84 - 79 (4)	TP20.0612x19.0459x0.18 75	9.43	207.57	0.045	0.07	361.26	0.000
L5	79 - 74 (5)	TP21.0765x20.0612x0.18 75	9.75	218.17	0.045	0.06	399.12	0.000
L6	74 - 69 (6)	TP22.0918x21.0765x0.18 75	10.32	228.78	0.045	1.12	438.86	0.003
L7	69 - 64 (7)	TP23.1071x22.0918x0.18 75	12.51	239.38	0.052	2.65	480.49	0.006
L8	64 - 63.75 (8)	TP23.1579x23.1071x0.4	12.52	507.08	0.025	2.64	1010.62	0.003
L9	63.75 - 58.75 (9)	TP24.1732x23.1579x0.39 38	13.30	521.56	0.025	3.18	1086.15	0.003
L10	58.75 - 53.75 (10)	TP25.1885x24.1732x0.38 13	17.07	526.83	0.032	2.68	1144.54	0.002
L11	53.75 - 50 (11)	TP25.95x25.1885x0.3813	17.11	528.99	0.032	2.68	1153.93	0.002
L12	50 - 49 (12)	TP25.7774x24.9151x0.31 25	17.48	443.28	0.039	2.68	988.55	0.003
L13	49 - 44 (13)	TP26.792x25.7774x0.312 5	19.97	460.94	0.043	3.07	1068.89	0.003
L14	44 - 39 (14)	TP27.8065x26.792x0.312 5	20.34	478.60	0.043	3.07	1152.37	0.003
L15	39 - 34 (15)	TP28.8211x27.8065x0.31 25	25.10	496.26	0.051	3.07	1238.98	0.002
L16	34 - 29 (16)	TP29.8356x28.8211x0.31 25	26.37	513.92	0.051	3.34	1328.73	0.003
L17	29 - 28.5 (17)	TP29.9371x29.8356x0.31 25	26.39	515.69	0.051	3.34	1337.88	0.002
L18	28.5 - 28.25 (18)	TP29.9878x29.9371x0.48 75	26.41	801.10	0.033	3.34	2069.62	0.002
L19	28.25 - 23.25 (19)	TP31.0023x29.9878x0.48 75	27.47	828.65	0.033	3.64	2214.43	0.002
L20	23.25 - 18.25 (20)	TP32.0169x31.0023x0.47 5	28.21	834.58	0.034	3.80	2305.33	0.002
L21	18.25 - 13.25 (21)	TP33.0314x32.0169x0.47 5	28.59	861.42	0.033	3.80	2456.02	0.002
L22	13.25 - 8.25 (22)	TP34.046x33.0314x0.462 5	28.97	865.21	0.033	3.80	2544.65	0.001
L23	8.25 - 3.25 (23)	TP35.0605x34.046x0.462 5	29.36	891.35	0.033	3.80	2700.72	0.001
L24	3.25 - 3 (24)	TP35.1113x35.0605x0.46 25	29.37	892.65	0.033	3.80	2708.64	0.001
L25	3 - 2.75 (25)	TP35.162x35.1113x0.393 8	29.39	762.58	0.039	3.80	2321.93	0.002
L26	2.75 - 0 (26)	TP35.72x35.162x0.3938	29.62	774.82	0.038	3.80	2397.07	0.002

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$	Ratio $M_{ux}$	Ratio $M_{uy}$	Ratio $V_u$	Ratio $T_u$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\phi P_n$	$\phi M_{nx}$	$\phi M_{ny}$	$\phi V_n$	$\phi T_n$			
L1	99 - 94 (1)	0.009	0.166	0.000	0.049	0.000	0.177	1.050	
L2	94 - 89 (2)	0.009	0.298	0.000	0.047	0.000	0.309	1.050	
L3	89 - 84 (3)	0.009	0.411	0.000	0.046	0.000	0.423	1.050	
L4	84 - 79 (4)	0.009	0.509	0.000	0.045	0.000	0.520	1.050	
L5	79 - 74 (5)	0.009	0.593	0.000	0.045	0.000	0.604	1.050	
L6	74 - 69 (6)	0.010	0.672	0.000	0.045	0.003	0.684	1.050	
L7	69 - 64 (7)	0.010	0.759	0.000	0.052	0.006	0.772	1.050	
L8	64 - 63.75 (8)	0.005	0.342	0.000	0.025	0.003	0.348	1.050	
L9	63.75 - 58.75 (9)	0.005	0.379	0.000	0.025	0.003	0.385	1.050	
L10	58.75 - 53.75 (10)	0.007	0.431	0.000	0.032	0.002	0.439	1.050	
L11	53.75 - 50 (11)	0.007	0.435	0.000	0.032	0.002	0.443	1.050	
L12	50 - 49 (12)	0.009	0.581	0.000	0.039	0.003	0.592	1.050	
L13	49 - 44 (13)	0.009	0.622	0.000	0.043	0.003	0.634	1.050	
L14	44 - 39 (14)	0.009	0.665	0.000	0.043	0.003	0.677	1.050	
L15	39 - 34 (15)	0.012	0.713	0.000	0.051	0.002	0.728	1.050	
L16	34 - 29 (16)	0.012	0.761	0.000	0.051	0.003	0.776	1.050	
L17	29 - 28.5 (17)	0.012	0.766	0.000	0.051	0.002	0.781	1.050	
L18	28.5 - 28.25 (18)	0.008	0.501	0.000	0.033	0.002	0.510	1.050	
L19	28.25 - 23.25 (19)	0.008	0.529	0.000	0.033	0.002	0.539	1.050	
L20	23.25 - 18.25 (20)	0.009	0.569	0.000	0.034	0.002	0.579	1.050	
L21	18.25 - 13.25 (21)	0.009	0.592	0.000	0.033	0.002	0.603	1.050	
L22	13.25 - 8.25 (22)	0.009	0.628	0.000	0.033	0.001	0.639	1.050	
L23	8.25 - 3.25 (23)	0.010	0.646	0.000	0.033	0.001	0.657	1.050	
L24	3.25 - 3 (24)	0.010	0.647	0.000	0.033	0.001	0.658	1.050	
L25	3 - 2.75 (25)	0.011	0.757	0.000	0.039	0.002	0.770	1.050	
L26	2.75 - 0 (26)	0.011	0.767	0.000	0.038	0.002	0.780	1.050	

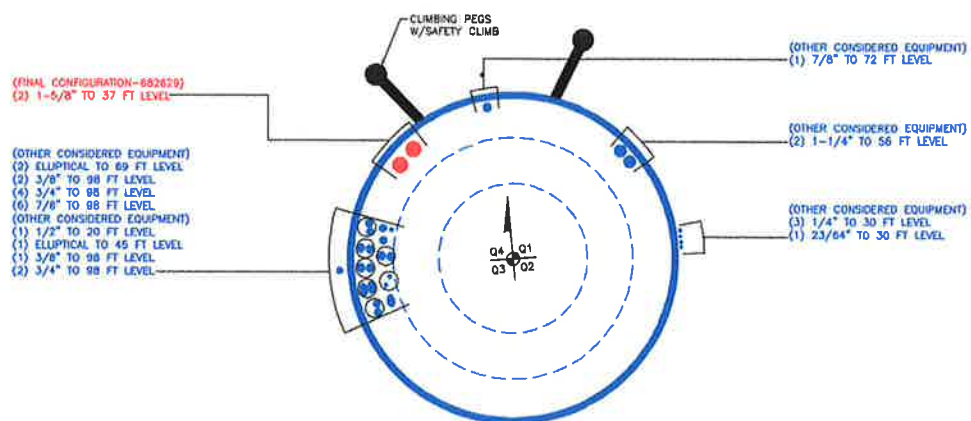
### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	99 - 94	Pole	TP17.0153x16x0.1875	1	-5.17	615.15	16.8	Pass
L2	94 - 89	Pole	TP18.0306x17.0153x0.1875	2	-5.53	652.27	29.4	Pass
L3	89 - 84	Pole	TP19.0459x18.0306x0.1875	3	-5.91	689.38	40.2	Pass
L4	84 - 79	Pole	TP20.0612x19.0459x0.1875	4	-6.33	726.49	49.5	Pass
L5	79 - 74	Pole	TP21.0765x20.0612x0.1875	5	-6.75	763.61	57.5	Pass
L6	74 - 69	Pole	TP22.0918x21.0765x0.1875	6	-7.38	800.72	65.1	Pass
L7	69 - 64	Pole	TP23.1071x22.0918x0.1875	7	-8.09	837.84	73.5	Pass
L8	64 - 63.75	Pole	TP23.1579x23.1071x0.4	8	-8.14	1774.78	33.1	Pass
L9	63.75 - 58.75	Pole	TP24.1732x23.1579x0.3938	9	-8.83	1825.47	36.6	Pass
L10	58.75 - 53.75	Pole	TP25.1885x24.1732x0.3813	10	-11.71	1843.92	41.8	Pass
L11	53.75 - 50	Pole	TP25.95x25.1885x0.3813	11	-11.80	1851.46	42.2	Pass
L12	50 - 49	Pole	TP25.7774x24.9151x0.3125	12	-12.78	1551.47	56.4	Pass
L13	49 - 44	Pole	TP26.792x25.7774x0.3125	13	-13.81	1613.28	60.3	Pass
L14	44 - 39	Pole	TP27.8065x26.792x0.3125	14	-14.65	1675.10	64.4	Pass
L15	39 - 34	Pole	TP28.8211x27.8065x0.3125	15	-19.83	1736.91	69.3	Pass
L16	34 - 29	Pole	TP29.8356x28.8211x0.3125	16	-21.15	1798.72	73.9	Pass
L17	29 - 28.5	Pole	TP29.9371x29.8356x0.3125	17	-21.26	1804.91	74.4	Pass
L18	28.5 - 28.25	Pole	TP29.9878x29.9371x0.4875	18	-21.33	2803.84	48.6	Pass
L19	28.25 - 23.25	Pole	TP31.0023x29.9878x0.4875	19	-23.02	2900.27	51.3	Pass
L20	23.25 - 18.25	Pole	TP32.0169x31.0023x0.475	20	-24.54	2921.02	55.1	Pass
L21	18.25 - 13.25	Pole	TP33.0314x32.0169x0.475	21	-25.90	3014.97	57.4	Pass
L22	13.25 - 8.25	Pole	TP34.046x33.0314x0.4625	22	-27.29	3028.23	60.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L23	8.25 - 3.25	Pole	TP35.0605x34.046x0.4625	23	-28.71	3119.72	62.6	Pass
L24	3.25 - 3	Pole	TP35.1113x35.0605x0.4625	24	-28.79	3124.30	62.7	Pass
L25	3 - 2.75	Pole	TP35.162x35.1113x0.3938	25	-28.86	2669.04	73.3	Pass
L26	2.75 - 0	Pole	TP35.72x35.162x0.3938	26	-29.65	2711.88	74.3	Pass
							Summary	
							Pole (L17)	74.4 Pass
							<b>RATING =</b>	<b>74.4 Pass</b>

\*NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.

**APPENDIX B**  
**BASE LEVEL DRAWING**



**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

Site BU: 858492  
Work Order: 2348641

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### Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	99	49	3.25	18	16	25.95	0.1875	Auto	A572-65
2	53.25	53.25	0	18	24.92	35.72	0.3125	Auto	A572-65

### Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	3	28.5	plate	CCI-SFP-060100	3																		
2	53	64	plate	CCI-AFP-045100	3																		
3	0	3	plate	TS 1.25" x 4.75"	3																		
4																							
5																							
6																							
7																							
8																							
9																							
10																							

### Reinforcement Details

	B (in)	H (in)	Gross Area (in <sup>2</sup> )	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in <sup>2</sup> )	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.000	4.750	1.1875	A572-65
2	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	20.000	3.250	1.1875	A572-65
3	1.25	4.75	5.9375	2.375	Welded	n/a	Welded	n/a	0.750	5.938	0.0000	A572-65

### Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (klp)
TS 1.25" x 4.75"	Top	-	-	-	-	80	None	-	-	-	-	35.25	0.313	-
	Bottom	-	-	-	-	80	C/P Groove	9.5	0.5	45	0.5	-	-	-

# TNX Geometry Input

Increment (ft): 5 [Export to TNX](#)

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	99 - 94	5		18	16.000	17.015	0.1875	A572-65	1.000
2	94 - 89	5		18	17.015	18.031	0.1875	A572-65	1.000
3	89 - 84	5		18	18.031	19.046	0.1875	A572-65	1.000
4	84 - 79	5		18	19.046	20.061	0.1875	A572-65	1.000
5	79 - 74	5		18	20.061	21.077	0.1875	A572-65	1.000
6	74 - 69	5		18	21.077	22.092	0.1875	A572-65	1.000
7	69 - 64	5		18	22.092	23.107	0.1875	A572-65	1.000
8	64 - 63.75	0.25		18	23.107	23.158	0.4	A572-65	0.940
9	63.75 - 58.75	5		18	23.158	24.173	0.39375	A572-65	0.935
10	58.75 - 53.75	5		18	24.173	25.189	0.38125	A572-65	0.945
11	53.75 - 53.25	3.75	3.25	18	25.189	25.950	0.38125	A572-65	0.944
12	53.25 - 49	4.25		18	24.915	25.777	0.3125	A572-65	1.000
13	49 - 44	5		18	25.777	26.792	0.3125	A572-65	1.000
14	44 - 39	5		18	26.792	27.807	0.3125	A572-65	1.000
15	39 - 34	5		18	27.807	28.821	0.3125	A572-65	1.000
16	34 - 29	5		18	28.821	29.836	0.3125	A572-65	1.000
17	29 - 28.5	0.5		18	29.836	29.937	0.3125	A572-65	1.000
18	28.5 - 28.25	0.25		18	29.937	29.988	0.4875	A572-65	1.039
19	28.25 - 23.25	5		18	29.988	31.002	0.4875	A572-65	1.026
20	23.25 - 18.25	5		18	31.002	32.017	0.475	A572-65	1.040
21	18.25 - 13.25	5		18	32.017	33.031	0.475	A572-65	1.028
22	13.25 - 8.25	5		18	33.031	34.046	0.4625	A572-65	1.044
23	8.25 - 3.25	5		18	34.046	35.061	0.4625	A572-65	1.033
24	3.25 - 3	0.25		18	35.061	35.111	0.4625	A572-65	1.033
25	3 - 2.75	0.25		18	35.111	35.162	0.39375	A572-65	1.205
26	2.75 - 0	2.75		18	35.162	35.720	0.39375	A572-65	1.199



## TNX Section Forces

Increment (ft): 5		TNX Output		
	Section Height (ft)	P <sub>u</sub> (K)	M <sub>ux</sub> (kip-ft)	V <sub>u</sub> (K)
1	99 - 94	5.17	42.49	8.56
2	94 - 89	5.53	85.99	8.84
3	89 - 84	5.91	130.93	9.14
4	84 - 79	6.32	177.34	9.44
5	79 - 74	6.75	225.26	9.75
6	74 - 69	7.38	276.92	10.32
7	69 - 64	8.09	337.52	12.51
8	64 - 63.75	8.14	340.65	12.52
9	63.75 - 58.75	8.83	405.61	13.30
10	58.75 - 53.75	11.71	486.74	17.07
11	53.75 - 53.25	11.80	495.29	17.11
12	53.25 - 49	12.78	568.78	17.48
13	49 - 44	13.81	658.78	19.97
14	44 - 39	14.65	759.46	20.34
15	39 - 34	19.83	875.20	25.10
16	34 - 29	21.15	1002.44	26.37
17	29 - 28.5	21.26	1015.63	26.39
18	28.5 - 28.25	21.33	1022.22	26.41
19	28.25 - 23.25	23.02	1155.71	27.47
20	23.25 - 18.25	24.54	1294.49	28.21
21	18.25 - 13.25	25.90	1436.40	28.59
22	13.25 - 8.25	27.29	1580.18	28.97
23	8.25 - 3.25	28.71	1725.90	29.36
24	3.25 - 3	28.79	1733.24	29.37
25	3 - 2.75	28.86	1740.58	29.39
26	2.75 - 0	29.65	1821.66	29.62

## Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
99 - 94	Pole	TP17.015x16x0.1875	Pole	16.8%	Pass
94 - 89	Pole	TP18.031x17.015x0.1875	Pole	29.4%	Pass
89 - 84	Pole	TP19.046x18.031x0.1875	Pole	40.2%	Pass
84 - 79	Pole	TP20.061x19.046x0.1875	Pole	49.5%	Pass
79 - 74	Pole	TP21.077x20.061x0.1875	Pole	57.5%	Pass
74 - 69	Pole	TP22.092x21.077x0.1875	Pole	65.1%	Pass
69 - 64	Pole	TP23.107x22.092x0.1875	Pole	73.5%	Pass
64 - 63.75	Pole + Reinf.	TP23.158x23.107x0.4	Reinf. 2 Tension Rupture	57.5%	Pass
63.75 - 58.75	Pole + Reinf.	TP24.173x23.158x0.3938	Reinf. 2 Tension Rupture	64.2%	Pass
58.75 - 53.75	Pole + Reinf.	TP25.189x24.173x0.3813	Reinf. 2 Tension Rupture	72.5%	Pass
53.75 - 53.25	Pole + Reinf.	TP25.95x25.189x0.3813	Reinf. 2 Tension Rupture	73.4%	Pass
53.25 - 49	Pole	TP25.777x24.915x0.3125	Pole	56.3%	Pass
49 - 44	Pole	TP26.792x25.777x0.3125	Pole	60.3%	Pass
44 - 39	Pole	TP27.807x26.792x0.3125	Pole	64.4%	Pass
39 - 34	Pole	TP28.821x27.807x0.3125	Pole	69.2%	Pass
34 - 29	Pole	TP29.836x28.821x0.3125	Pole	73.9%	Pass
29 - 28.5	Pole	TP29.937x29.836x0.3125	Pole	74.3%	Pass
28.5 - 28.25	Pole + Reinf.	TP29.988x29.937x0.4875	Reinf. 1 Tension Rupture	72.7%	Pass
28.25 - 23.25	Pole + Reinf.	TP31.002x29.988x0.4875	Reinf. 1 Tension Rupture	77.8%	Pass
23.25 - 18.25	Pole + Reinf.	TP32.017x31.002x0.475	Reinf. 1 Tension Rupture	82.6%	Pass
18.25 - 13.25	Pole + Reinf.	TP33.031x32.017x0.475	Reinf. 1 Tension Rupture	87.0%	Pass
13.25 - 8.25	Pole + Reinf.	TP34.046x33.031x0.4625	Reinf. 1 Tension Rupture	91.0%	Pass
8.25 - 3.25	Pole + Reinf.	TP35.061x34.046x0.4625	Reinf. 1 Tension Rupture	94.6%	Pass
3.25 - 3	Pole + Reinf.	TP35.111x35.061x0.4625	Reinf. 1 Tension Rupture	94.8%	Pass
3 - 2.75	Pole + Reinf.	TP35.162x35.111x0.3938	Pole	82.2%	Pass
2.75 - 0	Pole + Reinf.	TP35.72x35.162x0.3938	Pole	83.9%	Pass
				Summary	
			Pole	83.9%	Pass
			Reinforcement	94.8%	Pass
			Overall	94.8%	Pass

## Additional Calculations

Section Elevation (ft)	Moment of Inertia (in <sup>4</sup> )			Area (in <sup>2</sup> )			% Capacity*			
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3
99 - 94	358	n/a	358	10.01	n/a	10.01	16.8%			
94 - 89	427	n/a	427	10.62	n/a	10.62	29.4%			
89 - 84	504	n/a	504	11.22	n/a	11.22	40.2%			
84 - 79	590	n/a	590	11.83	n/a	11.83	49.5%			
79 - 74	685	n/a	685	12.43	n/a	12.43	57.5%			
74 - 69	790	n/a	790	13.04	n/a	13.04	65.1%			
69 - 64	905	n/a	905	13.64	n/a	13.64	73.5%			
64 - 63.75	911	997	1908	13.67	13.50	27.17	34.8%		67.5%	
63.75 - 58.75	1037	1081	2118	14.27	13.50	27.77	39.4%		64.2%	
58.75 - 53.75	1175	1169	2344	14.88	13.50	28.38	45.4%		72.5%	
53.75 - 53.25	1189	1178	2367	14.94	13.50	28.44	45.9%		73.4%	
53.25 - 49	2069	n/a	2069	25.26	n/a	25.26	56.3%			
49 - 44	2326	n/a	2326	26.26	n/a	26.26	60.3%			
44 - 39	2604	n/a	2604	27.27	n/a	27.27	64.4%			
39 - 34	2903	n/a	2903	28.28	n/a	28.28	69.2%			
34 - 29	3224	n/a	3224	29.28	n/a	29.28	73.9%			
29 - 28.5	3257	n/a	3257	29.38	n/a	29.38	74.3%			
28.5 - 28.25	3285	1786	5071	29.43	18.00	47.43	49.8%	72.7%		
28.25 - 23.25	3633	1903	5536	30.44	18.00	48.44	53.7%	77.8%		
23.25 - 18.25	4005	2025	6029	31.45	18.00	49.45	57.4%	82.6%		
18.25 - 13.25	4401	2149	6550	32.45	18.00	50.45	60.9%	87.0%		
13.25 - 8.25	4823	2278	7101	33.46	18.00	51.46	64.2%	91.0%		
8.25 - 3.25	5270	2410	7681	34.46	18.00	52.46	67.3%	94.6%		
3.25 - 3	5293	2417	7711	34.51	18.00	52.51	67.4%	94.8%		
3 - 2.75	5421	1333	6754	34.57	17.81	52.38	82.2%			78.4%
2.75 - 0	5682	1373	7055	35.12	17.81	52.93	83.9%			79.8%

Note: Section capacity checked using 5 degree increments.

Rating per TIA-222-H Section 15.5.

## Monopole Base Plate Connection

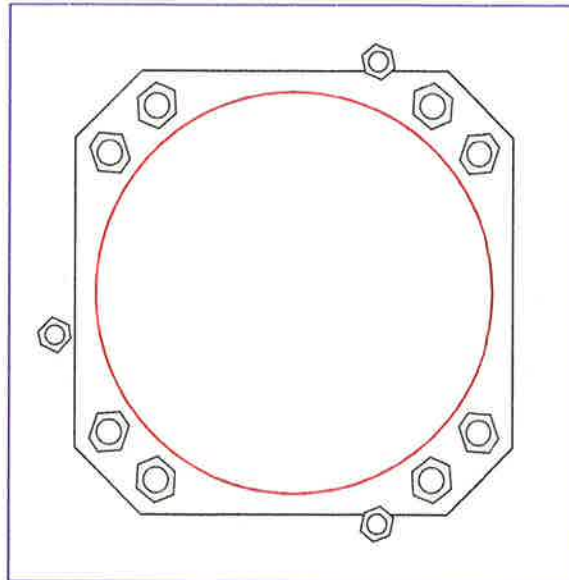


Site Info	
BU #	858492
Site Name	Alltel_CO04_Canonicit
Order #	682629 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
$I_{cr}$ (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	1821.66
Axial Force (kips)	29.65
Shear Force (kips)	29.62

\*TIA-222-H Section 15.5 Applied



Connection Properties		Analysis Results	
<b>Anchor Rod Data</b>		<b>Anchor Rod Summary</b> <small>(units of kips, kip-in)</small>	
GROUP 1: (8) 2-1/4" $\phi$ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 41.5" BC Anchor Spacing: 6 in		GROUP 1:	
GROUP 2: (3) 1-3/4" $\phi$ bolts (A193 Gr. B7 N; $F_y=105$ ksi, $F_u=125$ ksi) on 43.77" BC pos. (deg): 70, 290, 190		$Pu_t = 217.28$	$\phi Pn_t = 243.75$ <b>Stress Rating</b>
		$Vu = 3.7$	$\phi Vn = 149.1$ <b>84.9%</b>
		$Mu = n/a$	$\phi Mn = n/a$ <b>Pass</b>
<b>Base Plate Data</b>		GROUP 2:	
39.5" W x 2.5" Plate (A633 Gr. E; $F_y=60$ ksi, $F_u=70$ ksi); Clip: 6 in		$Pu_t = 132.08$	$\phi Pn_t = 178.13$ <b>Stress Rating</b>
		$Vu = 0$	$\phi Vn = 112.75$ <b>70.6%</b>
		$Mu = n/a$	$\phi Mn = n/a$ <b>Pass</b>
<b>Stiffener Data</b>		<b>Base Plate Summary</b>	
N/A		Max Stress (ksi):	37.19 (Flexural)
<b>Pole Data</b>		Allowable Stress (ksi):	54
35.72" x 0.3125" 18-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)		Stress Rating:	65.6% <b>Pass</b>

# CCiplate

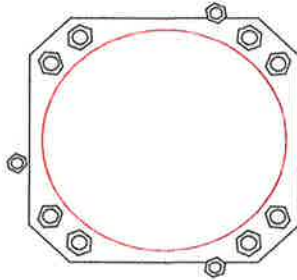
Elevation (ft) 0 (Base)

note: Bending Interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	No	No	
2	No	No	No	No	No	

Custom Bolt Connection										
Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, $\eta$	$I_{br}$ (in)	Thread Type	Area Override, $In^2$	Tension Only
1	1	36.687139	2.25	A615-75	41.5	0.5	0.875	N-Included		No
2	1	53.312861	2.25	A615-75	41.5	0.5	0.875	N-Included		No
3	1	126.68714	2.25	A615-75	41.5	0.5	0.875	N-Included		No
4	1	143.31286	2.25	A615-75	41.5	0.5	0.875	N-Included		No
5	1	216.68714	2.25	A615-75	41.5	0.5	0.875	N-Included		No
6	1	233.31286	2.25	A615-75	41.5	0.5	0.875	N-Included		No
7	1	306.68714	2.25	A615-75	41.5	0.5	0.875	N-Included		No
8	1	323.31286	2.25	A615-75	41.5	0.5	0.875	N-Included		No
9	2	70	1.75	A193 Gr. B7	43.77	0.5	0	N-Included		No
10	2	290	1.75	A193 Gr. B7	43.77	0.5	0	N-Included		No
11	2	190	1.75	A193 Gr. B7	43.77	0.5	0	N-Included		No

## Plot Graphic



## Drilled Pier Foundation

BU #: 855492  
 Site Name: ZOD Atrial C004 Canond  
 Order Number: 882629 Rev. 0  
 TIA-222 Revision: H  
 Tower Type: Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	1821.66	
Axial Force (kips)	29.67	
Shear Force (kips)	29.6	

Material Properties		
Concrete Strength, f <sub>c</sub>	4 ksi	Override (ft)
Rebar Strength, F <sub>y</sub>	60 ksi	
Tie Yield Strength, F <sub>y</sub>	60 ksi	

Pier Design Data		
Depth	21.29 ft	
Ext. Above Grade	0.7 ft	
Pier Section 1		
From 0.7' above grade to 14.75' below grade		
Pier Diameter	5 ft	
Rebar Quantity	26	
Rebar Size	7	
Clear Cover to Ties	5 in	
Tie Size	4	
Tie Spacing	12 in	
Rebar Quantity	3	
Rebar Size	14	
Rebar Cage Diameter	43.5 in	
Pier Section 2		
From 14.75' below grade to 21.29' below grade		
Pier Diameter	5 ft	
Rebar Quantity	26	
Rebar Size	7	
Clear Cover to Ties	5 in	
Tie Size	4	
Tie Spacing	12 in	

Rebar & Pier Options  
 Embedded Reinforcement  
 Rolled End Caps

Analysis Results		
Soil Lateral Check		
D <sub>req</sub> (ft from TOC)	5.26	-
Soil Safety Factor	3.32	-
Max Moment (kip-ft)	1980.71	-
Rating*	39.1%	-
Soil Vertical Check		
Skin Friction (kips)	76.17	-
End Bearing (kips)	682.68	-
Weight of Concrete (kips)	77.72	-
Total Capacity (kips)	738.85	-
Axial (kips)	107.39	-
Rating*	13.6%	-
Reinforced Concrete Flexure		
Critical Depth (ft from TOC)	7.38	-
Critical Moment (kip-ft)	1906.24	-
Critical Moment Capacity	2345.44	-
Rating*	77.4%	-
Reinforced Concrete Shear		
Critical Depth (ft from TOC)	15.43	-
Critical Shear (kip)	228.96	-
Critical Shear Capacity	329.91	-
Rating*	69.1%	-
Structural Foundation Rating*	77.4%	
Soil Interaction Rating*	39.1%	

\*Rating per TIA-222-H Section 15.5



Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
N/A:	<input type="checkbox"/>
Design Options	
Input Effective Depths (see Actual):	<input type="checkbox"/>
Consider non-tapered moment capacity:	<input type="checkbox"/>
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

Soil Profile													
Groundwater Depth		N/A		# of Layers		3							
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	V <sub>soil</sub> (pcf)	V <sub>corrected</sub> (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
1	0	3.33	3.33	120	150	0	0	0.000	0.000	0.00	0.00		
2	3.33	8	4.67	120	150	2.016	0	1.109	1.109	0.36	0.36		
3	8	21.29	13.29	125	150	0	34	0.000	0.000	0.36	0.36	45	
													Soil Type
													Cohesionless
													Cohesive
													Cohesionless

# ASCE Hazards Report

**Address:**

No Address at This Location

**Standard:** ASCE/SEI 7-16

**Risk Category:** II

**Soil Class:** D - Stiff Soil

**Latitude:** 38.447917

**Longitude:** -105.169361

**Elevation:** 5575.94977973288 ft (NAVD 88)



## Wind

**Results:**

Wind Speed	106 Vmph
10-year MRI	77 Vmph
25-year MRI	83 Vmph
50-year MRI	88 Vmph
100-year MRI	93 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:** Mon Dec 16 2024

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

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

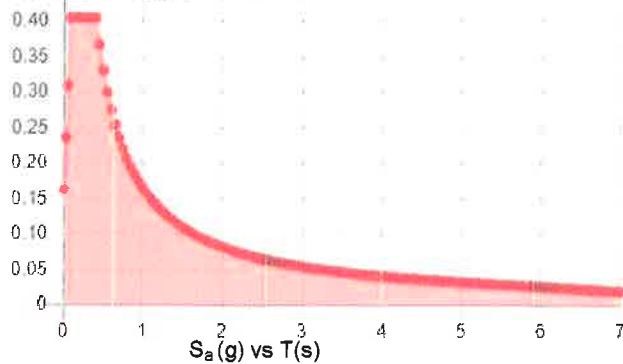


**Site Soil Class:** D - Stiff Soil

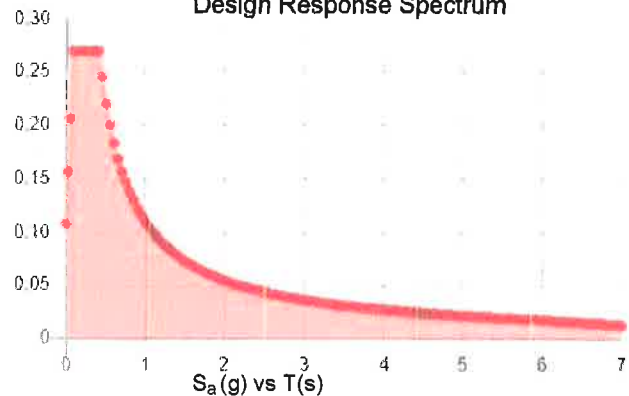
**Results:**

$S_s$ :	0.253	$S_{D1}$ :	0.11
$S_1$ :	0.069	$T_L$ :	6
$F_a$ :	1.597	$PGA$ :	0.142
$F_v$ :	2.4	$PGA_M$ :	0.216
$S_{MS}$ :	0.405	$F_{PGA}$ :	1.516
$S_{M1}$ :	0.165	$I_e$ :	1
$S_{DS}$ :	0.27	$C_v$ :	0.807

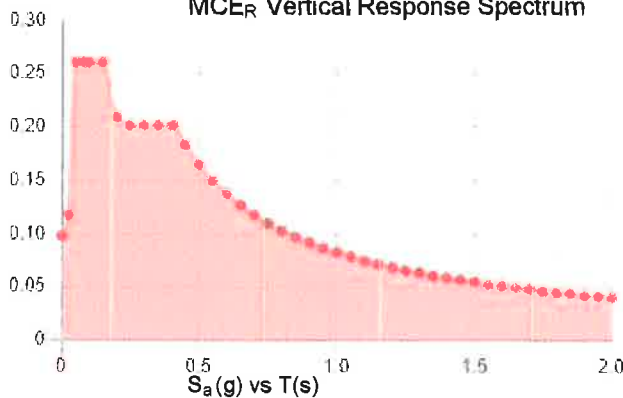
**Seismic Design Category: B**  $MCE_R$  Response Spectrum



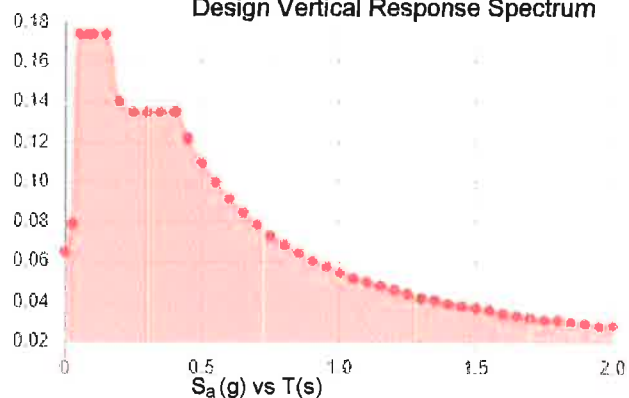
**Design Response Spectrum**



$MCE_R$  Vertical Response Spectrum



**Design Vertical Response Spectrum**



**Data Accessed:** Mon Dec 16 2024

**Date Source:**

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



## Ice

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### Results:

Ice Thickness: 0.25 in.

Concurrent Temperature: 5 F

Gust Speed 50 mph

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

**Date Accessed:** Mon Dec 16 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.

In the mountain west, ice thicknesses may exceed the mapped values in the foothills and passes. However, at elevations above 5,000 ft, freezing rain is unlikely.

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.

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