County of Sandoval

Macro Wireless Facilities
Permit Application Checklist

1500 Idalia Road, Building D
Bernalillo, NM 87004
Phone: (505) 867-7628

INSTRUCTIONS:

Applicants must submit the Application Cover Page and this Application Checklist, together with all information and materials provided in the Application Guidelines. County staff may deem the application incomplete if the applicant fails to include any required information or materials.

Applicants may submit applications by appointment only. For an appointment, contact the Planning Department.

Applicant:

Name: _Scott Quinn for Verizon Wireless and Sun State Towers

Company: _Pinnacle Consulting (Sun State Towers) & Verizon Wireless

Mailing Address: _1426 N Marvin St, #101

City, State, Zip: __Gilbert, AZ 85233

Phone: _602-909-8885 Fax: NA E-mail: _scott.quinn@pinnacleco.net

Site Location and Description:

Project Address: __221 165 HWY ST, Placitas, NM 87043

APN: ___102-307-302-8180

Pole Coordinates (if applicable): __ 35.309466,-106.495432 Pole #: NA

Zoning District: _____ CD-WP

Present Use of Site Location: _Vacant with adjacent Strip Mall.

Project Description: _Communication Antennas concealed in a Rustic NM Architecture w/ associated ground equipment coyote style wood fence.

APPLICATION CHECKLIST – REQUIRED MATERIALS

X APPLICATION FORM AND FEE - Item 1 attached

x PROJECT PLANS - Item 2 attached

NA ADDITIONAL PROJECT PLANS FOR AN MWF IN THE PUBLIC RIGHT-OF-WAY

x SITE PHOTOS AND PHOTO SIMULATIONS- Item 3 attached

x REGULATORY AUTHORIZATIONS AND APPROVALS - Item 4 attached

x PROPERTY OWNER'S AUTHORIZATION / TITLE REPORT - Item 5 attached RF

x COMPLIANCE REPORT - Item 6 attached

Ξ PROJECT EVALUATION - Item 7, 8, 9 attached

x

□ PROJECT PURPOSE AND TECHNICAL OBJECTIVES - Item 7, 8, 9 attached

□ ALTERNATIVES ANALYSIS - Item 7, 8, 9 attached

Ξ ACOUSTIC ANALYSIS - Item 10 attached

Ξ STRUCTURAL ANALYSIS - Item 11 attached

Ξ LANDSCAPE PLANS - Item 12 attached

Ξ MAILING INFORMATION - Item 13 attached

STAFF USE ONLY

Pre-Application Meeting No. 1 _____ **Application Submittal Date** _____

Pre-Application Meeting No. 2 _____ **Completeness Review DUE** _____

COUNTY OF SANDOVAL

MACRO WIRELESS FACILITIES APPLICATION GUIDELINES
REQUIRED MATERIALS

Proposals to construct, install, modify and/or operate wireless communication facilities require additional information and materials in order to evaluate compliance with County of Sandoval Code subject to certain federal and state laws. These Application Guidelines specify those requirements that any applicant must submit for a complete permit application for a macro wireless facility ("**MWF**"), pursuant to the rules and regulations in the County of Sandoval Code as may be amended or superseded. It is the applicant's responsibility to be aware of and familiar with the requirements in the Sandoval County Code of Ordinances including without limitation to Article III (Wireless Telecommunications Facilities). You may view the Code of Ordinances online at:

https://library.municode.com/nm/sandoval_county/codes/code_of_ordinances

For the County to deem complete any permit application for a Macro Wireless Facility, the applicant must submit all the applicable application materials listed below with the following instructions in these Application Guidelines. **Applications that do not contain all applicable materials in these Application Guidelines and the County Code may be deemed incomplete.**

I. APPLICATION FORM AND FEE

Instructions: Complete the Macro Wireless Facilities Permit Application Cover Page available on the County's website at https://www.sandovalcountynm.gov/departments/planning-zoning/ or in-person at the County's Planning and Zoning Department. The applicant must submit the appropriate permit application fee based on the County's Fee Schedule for current year (available on the County's website at https://www.sandovalcountynm.gov/wp-content/uploads/2021/07/WirelessTelecommOrdinance.pdf. The permit application fee will be based on a "time and material" calculation and will require the applicant to fund a deposit with the County for further assessed fees related to the application.

II. FOR PROJECTS FOR AN MWF NOT IN THE PUBLIC RIGHT OF WAY

Instructions: Provide two sets of complete 24 x 36-inch project plans with digital files in legible portable document format (PDF) that contain all the following:

1. Cover Sheet

A complete cover sheet must include at a minimum:

- ☐ a detailed project description that specifies the proposed installation and/or modifications;
- ☐ site information that includes the site address, assessor's parcel number, site latitude and longitude, zoning classification, pole number (if applicable), site map, and project team contact information.

2. Site Development Plan

Only a New Mexico Registered Civil Engineer or licensed land surveyor may prepare, sign, and seal the site development plan. A complete site development plan must include:

- ☐ a north arrow, date, scale and legend;
- ☐ plan-view drawings, which include:
  - ☐ the entire property or right-of-way block with the proposed project improvements;
  - ☐ detailed before-and-after views of the any and all poles, posts, pedestals, traffic signals, towers, streets, sidewalks, pedestrian ramps, driveways, curbs, gutters, drains, handholes, utility holes, fire hydrants, equipment cabinets, antennas, cables, trees and other landscape features;
  - ☐ detailed before-and-after views for each antenna sector;
  - ☐ detailed before-and-after views for any equipment pads, shelters, enclosures, rooms, vaults and/or platforms;
  - ☐ all existing and proposed equipment (including the point of origin and point of connection for all power and telco utilities) with all dimensions, labels and ownership identifications clearly called out;
  - ☐ boundaries for all areas leased/licensed in connection with the wireless site with all dimensions clearly shown and called out;
  - ☐ boundaries for all easements, encroachments and/or other rights-of-way for access and utilities in connection with the wireless site with all dimensions clearly shown and called out;
  - ☐ all existing and proposed primary and backup utilities, including without limitation all cables, connectors, risers, conduits, cable shrouds, trays, bridges and/or doghouses, transformers, disconnect switches, panels, meters, pedestals, cabinets, vaults, handholes, generators and/or generator sockets;
- ☐ detailed before-and-after elevation drawings from all four cardinal directions, which include:
  - ☐ all existing and proposed structures, improvements and/or fixtures with all dimensions clearly called out for the proposed project site;
  - ☐ detailed before-and-after depictions of the any and all poles, posts, pedestals, traffic signals, towers, streets, sidewalks, pedestrian ramps, driveways, curbs, gutters, drains, handholes, utility holes, fire hydrants, equipment cabinets, antennas, cables, trees and other landscape features;
  - ☐ all existing and proposed equipment with all dimensions, labels and ownership

identifications clearly called out;

- for projects in the public right-of-way, all existing and proposed fiber optic cables, conduits, risers, guy wires, anchors, primary and secondary power lines clearly called out;

- callouts and notes for any proposed new or extended concealment elements;

- depictions of the applicant's plan for electric and data backhaul utilities, which includes the locations for all conduits, cables, wires, handholes, junctions, transformers, meters, disconnect switches and points of connection;

- a demonstration that proposed project will be in full compliance with all applicable health and safety laws, regulations or other rules, which includes without limitation all building codes, electric codes, local street standards and specifications, and public utility regulations and orders.

3. Equipment Inventory

All equipment must be inventoried with the following information for each component in a separate cut sheet:

- manufacturer and model number;

- dimensions (height, width, length) and weight.

III. FOR PROJECTS FOR AN MWF IN THE PUBLIC RIGHT-OF-WAY

1. Site Survey

Only a New Mexico Registered Civil Engineer or licensed land surveyor may prepare, sign, and seal the site survey. A complete site survey must include:

- a north arrow, date, scale and legend;

- private and public property boundaries and right-of-way boundaries with all bearings, distances, monuments, iron rods, caps or other markers clearly shown and called out from the proposed project site;

- location of all traffic lane markings for the proposed project site;

- location of above and below-grade utilities and related structures and infrastructure from the proposed project site;

- location of all fire hydrants, roadside call boxes and other public safety infrastructure from the proposed project site;

- location of all streetlights, decorative poles, traffic signals and permanent signage, sidewalks, driveways, parkways, curbs, gutters and storm drains, benches, trash cans, mailboxes, kiosks and other street furniture from the proposed project site;

- location of all existing trees, planters and other landscaping features from the proposed project site, including any trees at least 4 inches in diameter at a point approximately 4.5 feet above ground;

- boundaries for all areas leased/licensed in connection with the wireless site with all dimensions clearly shown and called out;

- boundaries for all easements and/or dedications with all dimensions clearly shown and called out;

- all access points and/or access routes to the nearest public right-of-way;

- approximate topographical contour lines with elevations called out;

- all structures or improvements on the property;

- all structures or improvements within the public right-of-way within any block partially or entirely occupied by the project and any elements thereof;

- all structures or improvements on adjacent parcels from the property line;

- wet stamp and wet signature from preparer;

- general specifications and notes identifying the applicable public health and safety codes and standards.

2. Traffic Control Plans

Provide engineered traffic control plans that show the traffic control for the project. The plans must be drawn in accordance with the latest version of the New Mexico Manual on Uniform Traffic Control Devices by a registered New Mexico civil engineer or traffic engineer. The preparer's stamp and signature must be shown on the plans.

3. Fiber Network Plan

To the extent that the project requires running new fiber optic cables to the proposed node, the plans must include a street map view that shows all the proposed nodes in the deployment, clearly labeled with pole number and/or site ID, the hub or base station that serves the nodes in the deployment, all fiber optic cable routes that connect the nodes to the hub, and a legend that identifies any symbols, colors or other items on the map. The fiber plans should clearly identify all meet-me points and points of connection. Even if the fiber deployment is performed by a third-party vendor, the applicant for wireless nodes must disclose all known or reasonably foreseeable fiber network elements.

IV. SITE PHOTOS AND PHOTO SIMULATIONS

Instructions: Provide site photos and photo simulations that would allow the County to visualize the applicant's proposed project as constructed. The photo simulations must be in a high-resolution format and show the proposed facility from reasonable line-of-sight locations that would accurately and reliably reflect

the appearance of the proposed facility and/or modifications as-built. Label these photo simulations "**Attachment 1 – Photos and Photo Simulations**" and attach them to this application. Except as otherwise provided, photo simulations must contain all the following:

1. Current Site Photos

Current site photos must include:

- ☐ photos of the existing site from at least three different reasonable line-of-sight locations from public streets or other publicly available areas;

- ☐ a map detail showing each location where a photograph was taken, the proposed site and the direction to the site from each photo location.

2. Photo Simulations

Photo simulations must include:

- ☐ an accurate and reliable visual representation of the proposed MWF from the same reasonable line-of-sight locations used in the current site photos and must include without limitation all interconnecting cables, conduits, brackets, and electronic equipment such as antennas, radio units and powering equipment;

- ☐ at least one photo simulation depicting the proposed MWF from a vantage point approximately 50 feet from the proposed support structure or location;

- ☐ a map detail showing each location where a photograph was taken, the proposed site and the direction to the site from each photo location.

V. REGULATORY AUTHORIZATIONS AND APPROVALS

Instructions: Provide true and correct copies of all the following:

1. Local Regulatory Approvals

Provide copies of all permits and/or other regulatory approvals issued by the County (or other local public agency with jurisdiction over the proposed site) for installation, construction, modification, or maintenance of the proposed MWF. Such permits include, but are not limited to public right-of-way permits, encroachment permits, building permits, and electrical permits. Label this documentation "**Attachment 2a –Local Regulatory Approvals**" and attach it to this application.

2. FCC Licenses

If the applicant proposes to operate transmission equipment in FCC-licensed spectrum, provide proof of licenses for all planned operating bands in the applicable geographic market(s). Alternatively, the applicant may provide a URL address or written instructions on where to find each such license in publicly available FCC resources. Label this documentation "**Attachment 2b – FCC Licenses**" and attach it to this application.

3. FAA Forms

If the proposed wireless facility requires the applicant to file FAA form 7460 or other documentation under Federal Aviation Regulation Part 77.13 *et seq*., or under other FCC rules, provide such documentation. If no such notice and approval is required, so state. Label this documentation "**Attachment 2c – FAA Forms**" and attach it to this application.

4. State Regulatory Authorization

For facilities proposed in the public rights-of-way, the applicant must submit evidence of the applicant's regulatory status New Mexico law to provide the services and construct the facility proposed in the application. Applicants may provide a URL address or written instructions on where to find the applicable regulatory status in publicly available resources. Label this documentation "**Attachment 2d – State Regulatory Authorization**" and attach it to this application.

VI. PROPERTY OWNER'S AUTHORIZATION / TITLE REPORT

Instructions: Provide evidence of the property owner's authorization to file this application. If the property owner is a corporation, the names, addresses and titles of all officers of the corporation must accompany this application. If the property owner is a general partner, the names and addresses of all general partners must accompany this application.

1. Property Owner's Authorization

If the applicant does not own the subject property or support structure, provide a written authorization executed by the property owner(s) that authorizes the applicant to file the application and perform the work to the extent described in the application. The property owner's signature must be an original and duly notarized. For an MWF on a joint utility pole, the applicant may submit the standard authorization form issued in the regular course of business to demonstrate that the applicant has the authority to perform the installation or modification. Label this authorization "**Attachment 3a – Property Owner's Authorization**" and attach it to this application.

2. Title Report

Provide a duly certified title report prepared within the thirty days prior to the application filing date that clearly describes the subject property and identifies the current owner(s) of the property. County staff will use the title report to verify the property owner's identity. Label this documentation "**Attachment 3b – Title Report**" and attach it to this application. This attachment is not required for a project proposed in the public right-of-way.

VII. RADIO FREQUENCY ("RF") COMPLIANCE REPORT

Instructions: Provide an RF exposure compliance report prepared, signed, and certified by an RF engineer that certifies that the proposed facility, as well as any collocated facilities, will comply with applicable federal RF exposure standards and exposure guidelines. Label this report "**Attachment 4 – RF Compliance Report**" and attach it to this application.

The RF compliance report must include:

- ☐ the actual frequency and power levels (in watts effective radiated power [ERP], not effective isotropic radiated power [EIRP]) for all existing and proposed antennas at the site;

- ☐ exhibits that show:

    - ☐ the location, centerline transmission height, and azimuth orientation (degrees relative to true north) of all transmitting antennas;

    - ☐ the boundaries of areas with RF exposures in excess of the uncontrolled/general population guidelines (as that term is defined by the FCC);

    - ☐ the boundaries of areas with RF exposures in excess of the controlled/occupational guidelines (as that term is defined by the FCC);

    - ☐ Indicate all structures (without limitation to building, poles, signs, light standards, etc.) subject to RF exposure in excess of the uncontrolled/general population guidelines (as that term is defined by the FCC)

Note: Each such boundary must be clearly marked and identified for every transmitting antenna at the project site.

VIII. PROJECT EVALUATION

Instructions: Provide a detailed written analysis that describes how the proposed MWF complies with all the requirements in the County Code, which includes without limitation the County Code location and design requirements and federal and state law, as applicable. Label this analysis "**Attachment 5 – Project Evaluation**" and attach it to this application.

IX. PROJECT PURPOSE AND TECHNICAL OBJECTIVES

Instructions: Provide the following information to demonstrate the intended technical service objectives and the nature of the existing service capabilities of the applicant's network in the area that would be served by the proposed facility or enhanced by the proposed modification. Label this analysis "**Attachment 6 – Project Purpose and Technical Objectives**" and attach it to the application.

1. Dominant Project Purpose

Identify and describe the dominant project purpose. Possible responses may analyze whether the proposed facility or modification will:

- ☐ add new personal wireless service coverage to an area in which the licensee does not currently provide any personal wireless service coverage;

- ☐ add new personal wireless service capacity to an area in which the licensee currently provides personal wireless service coverage.

If the project has a different dominant purpose from the options described above, provide such purpose in full detail.

In all cases, if a significant gap is asserted, describe in technical detail and with signal levels in units of -dBm the boundary of the asserted significant gap. Indicate whether the technical details of the asserted gap are the same as applied by the Applicant throughout the State of New Mexico, or such smaller area (with locational details).

2. Technical Objectives

Provide a detailed written statement that describes the technical objectives the applicant intends the proposed wireless facility to achieve and the factual reasons why the proposed location, centerline height and equipment configuration are necessary to achieve those objectives. In addition, the statement must include all the following required information and/or materials:

- a street-level map that shows the general geographic area of the service area(s) to be improved through the proposed wireless facility (the "**Service Area**");

- full-color signal propagation maps in scale with the street level map that show current and predicted service coverage in the area for all active frequencies in RSRP (or other relevant signal level or quality indicator) and with a legend that describes the objective signal levels in dBm that correspond to any colors used to depict signal levels on such propagation maps;

- a written narrative that describes the uses (commercial, residential, primary thoroughfare, highway, etc.) within the Service Area, and the manner in which those uses would be negatively affected if the Service Area were to remain unaddressed;

- a statement as to whether the applicant conducted any drive test(s) and, if so, all drive test results and data (in .XLS or .CSV or similar format) together with a report that describes how and when the applicant conducted such test(s).

X. ALTERNATIVES ANALYSIS

Instructions: Where required by the County Code (see: Code of Ordinances online at https://library.municode.com/nm/sandoval_county/codes/code_of_ordinances), provide a detailed written analysis that describes how the proposed MWF complies with all the requirements in the County Code of all the alternative locations and designs considered before the applicant submitted this application. Label this analysis "**Attachment 7 – Alternatives Analysis**" and attach it to the application.

The analysis must include all the following required information and/or materials:

- an aerial map that shows the general geographic area of the proposed location annotated to show:

    - all existing wireless facilities within the County;

    - the search ring used for this particular project;

    - all locations for each alternative considered for this particular project;

- for each alternative site considered, a detailed written description that includes, without limitation

all the following:

- ☐ the physical address or coordinates;
- ☐ zoning district or plan area designation;
- ☐ the property owner's name, contact information used in attempts to inquire about interest in a lease or other agreement to use the property for a wireless facility, when such attempts were made and the response, if any, received from the property owner;
- ☐ support structure type considered;
- ☐ general design concept and concealment elements/techniques considered;
- ☐ overall height and achievable antenna centerline height;
- ☐ the factual reasons why the applicant considered the potential alternative site location and/or design to be unacceptable, infeasible, unavailable or not in accordance with the standards in the Madera County Code and this application.

  ***Note**:* This explanation must include a meaningful comparative analysis and such technical information and other factual justification as are necessary to document the reasons why each alternative is unacceptable, infeasible, unavailable, or not as consistent with the standards in the Madera County Code and this application. Conclusory statements that a particular alternative is unacceptable, infeasible, unavailable or not in accordance with the standards in the County Code and this application will be deemed incomplete;
  ***Note**:* If a less preferred MWF location is proposed, the applicant must present fact-based, reliable evidence to support its selection of the less preferred MWF location.

- ☐ for each alternative site *within the search ring*, signal propagation maps in scale with the street level map that show current and predicted service coverage in the area for all active frequencies in RSSI, RSRP, and other relevant signal level or quality indicator with and without the alternative site and with a legend that describes the objective signal levels in dBm that correspond to any colors used to depict signal levels on such propagation maps. The signal propagation maps required must be directly comparable with the signal propagation maps submitted to show before-and-after service from the applicant's proposed site. If the applicant did not locate any alternatives within the search ring, the analysis must expressly state that no such alternatives were considered.

XI. ACOUSTIC ANALYSIS

Instructions: Provide a report prepared and certified by an engineer (or other qualified personnel acceptable to the County) that measures all noise-emitting equipment related to the wireless facility and would operate at the site. Such equipment includes without limitation all environmental control units, sump pumps, temporary backup power generators, and permanent backup power generators. The acoustic analysis must include an analysis of the manufacturers' specifications for all noise-emitting equipment and a depiction of the proposed equipment relative to all adjacent property lines.

In lieu of a certified report, the applicant may submit evidence from the equipment manufacturer that the ambient noise emitted from all the proposed equipment will not, both individually and cumulatively, exceed the applicable ambient noise limits. In addition, describe whether the equipment will be passively or actively cooled if any equipment will be enclosed in a shroud, cabinet, pedestal or other enclosure. If the equipment is actively cooled, the applicant must include the manufacturer's specifications for all active cooling mechanisms. Label this analysis "**Attachment 8 – Acoustic Analysis**" and attach it to the application.

XII. STRUCTURAL ANALYSIS

Instructions: Provide a report prepared and certified by an engineer (or other qualified personnel acceptable to the County) that evaluates whether the underlying pole, support structure or base station has the structural integrity to support all the proposed equipment and attachments. At a minimum, the analysis must be consistent with all applicable requirements in the most current versions of the CPUC General Order 95 (including, but not limited to, load and pole overturning calculations), the National Electric Safety Code, the California Building Code and any safety and construction standards required by all state and local regulations. Label this analysis "**Attachment 9 – Structural Analysis**" and attach it to this application.

XIII. Landscape PLANS

Instructions: Provide a detailed written landscape plan with landscape features when the MWF is proposed to be placed in a landscaped area. The landscape plan must include existing vegetation, and vegetation proposed to be removed or trimmed, and the landscape plan must identify proposed landscaping by species type, size and location. Label this analysis "**Attachment 10 – Landscape Plans**" and attach it to the application.

XIV. MAILING INFORMATION

Instructions: Provide a map of all properties within a 1500-foot radius of the subject property for an MWF permit, keyed to a list of names and addresses of the current property owner(s); two sets of adhesive mailing labels and one copy of the list of names and addresses for all properties and property owners within the required radius; certification that the names and addresses provided are those of the property owner(s) currently listed on the latest available Tax Assessor's records; and unaddressed business envelopes sufficient for two mailings, stamped with first class postage, of sufficient number to contact every property owner within the required radius, the subject property owner(s), and the applicants. Label this analysis "**Attachment 11 – Notice Information**" and attach it to the application.

XV. CERTIFICATION OF ACCURACY AND RELIABILITY

The undersigned certifies on behalf of itself, the applicant, the Carrier (if not the applicant) and the owner of the property (if the property owner is not the County of Sandoval) that the information provided in response to this application form is true and complete to the best of the undersigned's knowledge, and the information provided here should be relied upon by the County as being accurate and complete when the County evaluates this application.

_____	_____
Signature	Title
_____	_____
Individual Name	Company Name
_____	
Date Signed	

Scott Quinn

From: Chris Curiel <chris.curiel@pinnacleco.net>
Sent: Thursday, July 24, 2025 7:58 AM
To: Scott Quinn
Subject: FW: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Zoning Fee & Escrow Account Status Confirmation_ 8-2-24

Christopher D. Curiel
Site Acquisition Manager
mobile: 480-479-6181
chris.curiel@pinnacleco.net
PINNACLE CONSULTING, INC

From: Daniel Beaman <dbeaman@sandovalcountynm.gov>
Sent: Tuesday, August 6, 2024 1:52 PM
To: Chris Curiel <chris.curiel@pinnacleco.net>
Cc: Robert Naumann <yhc-inc@outlook.com>; Doraida Arias <darias@sandovalcountynm.gov>; Amy Griffin <AGriffin@sandovalcountynm.gov>
Subject: RE: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Zoning Fee & Escrow Account Status Confirmation_ 8-2-24

Hi Chris,

Yes, I can confirm that the fees are still in place to move forward with this new candidate review.

Sincerely,

Daniel J. Beaman
Director of Planning and Zoning
Sandoval County | New Mexico | US
https://www.sandovalcountynm.gov/
dbeaman@sandovalcountynm.gov
Office: (505) 404-5828
Direct: (505) 867-7617

Hello Daniel.

I am trying to confirm paid fees & escrow balance for Bob Naumann to continue zoning review for a new candidate of a past wireless project.
Please let me know if you can confirm that the fees are still in place to move forward with this new candidate review.

Will forward any information needed and hope to get confirmation on the accounts soon to move forward.

Thank you!

Christopher D. Curiel
Site Acquisition Manager
mobile: 480-479-6181
chris.curiel@pinnacleco.net

From: Chris Curiel
Sent: Thursday, July 11, 2024 3:05 PM
To: Daniel Beaman <dbeaman@sandovalcountynm.gov>
Subject: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Zoning Fee & Escrow Account Status (Refund ever sent?)

Hello Daniel.

Can you please confirm that no money has been refunded for a proposed wireless facility project we started in Sandoval County?
- I am pending our accounting confirmation, but it is hard due to unknown amount of refund (if ever sent) and or timeframe.
- We originally sent check(s) for $5000 County Review Fee and $8500 Escrow Fee (3rd Party Reviewer).

Original Site (Sandoval County Fire Station):
County removed site from consideration due to inability to agree to lease terms.
CMS project: Sandoval Cty NM Verizon 463 NM-165 NEW

463 NM-165
Placitas, NM 87043
APN #: 1025073080120

We since have been reviewing another site with Robert Naumann. He asked us to confirm the account status prior to him reviewing.

Thank you.

Christopher D. Curiel
Site Acquisition Manager
mobile: 480-479-6181
chris.curiel@pinnacleco.net

From: Chris Curiel <chris.curiel@pinnacleco.net>
Sent: Wednesday, July 10, 2024 6:56 PM
To: Robert Naumann <yhc-inc@outlook.com>
Subject: Re: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Site Walk Request (7-10 @ 3pm).

We really did not get response on the process or went through any steps to recoup.

I will double check with accounting tomorrow.
Thanks again and will respond asap.

Chris Curiel

Get Outlook for iOS

From: Robert Naumann <yhc-inc@outlook.com>
Sent: Wednesday, July 10, 2024 7:47:39 PM
To: Chris Curiel <chris.curiel@pinnacleco.net>
Subject: Re: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Site Walk Request (7-10 @ 3pm).

Chris,

I just realized that you sent in this request last October. (see email below)

If the money was refunded then we need to reestablish escrow and application fees.

Can you confirm this has been completed? If not I will need to stop all work until it has been restored.

Robert Naumann

> **From:** Chris Curiel <chris.curiel@pinnacleco.net>
> **Sent:** Wednesday, October 11, 2023 5:22 PM
> **To:** Makita Hill <mhill@sandovalcountynm.gov>; Daniel Beaman <dbeaman@sandovalcountynm.gov>
> **Cc:** Robert Naumann <yhc-inc@outlook.com>; Michelle Lamoureux <michelle.lamoureux@pinnacleco.net>
> **Subject:** NM01-148 Blaze / ABQ Tierre Madre- Parcel #1025073080120- Wireless Site Cancellation- Review Refund Request- 10.11.2023
>
> Wireless Review Cancellation Refund
> APN#: 1025073080120
> Owner: Sandoval County, NM
>
> Hello Makita,
>
> Unfortunately, we were not able to finalize a lease agreement.
> **Can we please start the refund process for the wireless review.**
>
> Fees Paid to Sandoval County:
> **Process application fee ($5,000) + escrow deposit ($8,500).**

From: Chris Curiel <chris.curiel@pinnacleco.net>
Sent: Tuesday, July 9, 2024 1:47 PM

To: Robert Naumann <yhc-inc@outlook.com>
Subject: RE: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Site Walk Request (7-10 @ 3pm).

Hello Robert.

Will see you tomorrow (10th) at 3pm on site.

Thanks again for meeting me.

Christopher D. Curiel

Site Acquisition Manager

mobile: 480-479-6181

chris.curiel@pinnacleco.net

From: Robert Naumann <yhc-inc@outlook.com>
Sent: Wednesday, July 3, 2024 2:04 PM
To: Chris Curiel <chris.curiel@pinnacleco.net>
Subject: Re: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Site Walk Request (7-10 @ 3pm).

That works for me.

Robert

From: Chris Curiel <chris.curiel@pinnacleco.net>
Sent: Wednesday, July 3, 2024 11:46 AM
To: Robert Naumann <yhc-inc@outlook.com>
Subject: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Site Walk Request (7-10 @ 3pm).

Ok, thank you Robert.

Can we please schedule it for Wednesday, 07-10-24, at 3:00pm?

Much appreciated!

Christopher D. Curiel

Site Acquisition Manager

mobile: 480-479-6181

chris.curiel@pinnacleco.net

From: Robert Naumann <yhc-inc@outlook.com>
Sent: Wednesday, July 3, 2024 10:10 AM
To: Chris Curiel <chris.curiel@pinnacleco.net>
Subject: Re: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Site Walk Request (07-09 thru 07-11) ?

Tuesday - Thursday (July 9th thru 11th) works for me

After 2:30pm is OK as well.

Robert Naumann

From: Chris Curiel <chris.curiel@pinnacleco.net>
Sent: Tuesday, July 2, 2024 10:52 AM
To: Robert Naumann <yhc-inc@outlook.com>
Subject: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Site Walk Request (07-09 thru 07-11) ?

Hello Robert.

Hope all is well and that you have a good 4th of July weekend.

We just got the owner to confirm location, design, and execute the lease.

Can we walk the site next week?

Does Tuesday - Thursday (July 9th thru 11th) work?

Preferred meeting time would be after 2:30pm to allow time for the drive (if possible).

I will get over the narrative and application packet as required.

Please review the site plans, photosims, and candidate package attached.

Thank you.

Christopher D. Curiel

Site Acquisition Manager

mobile: 480-479-6181

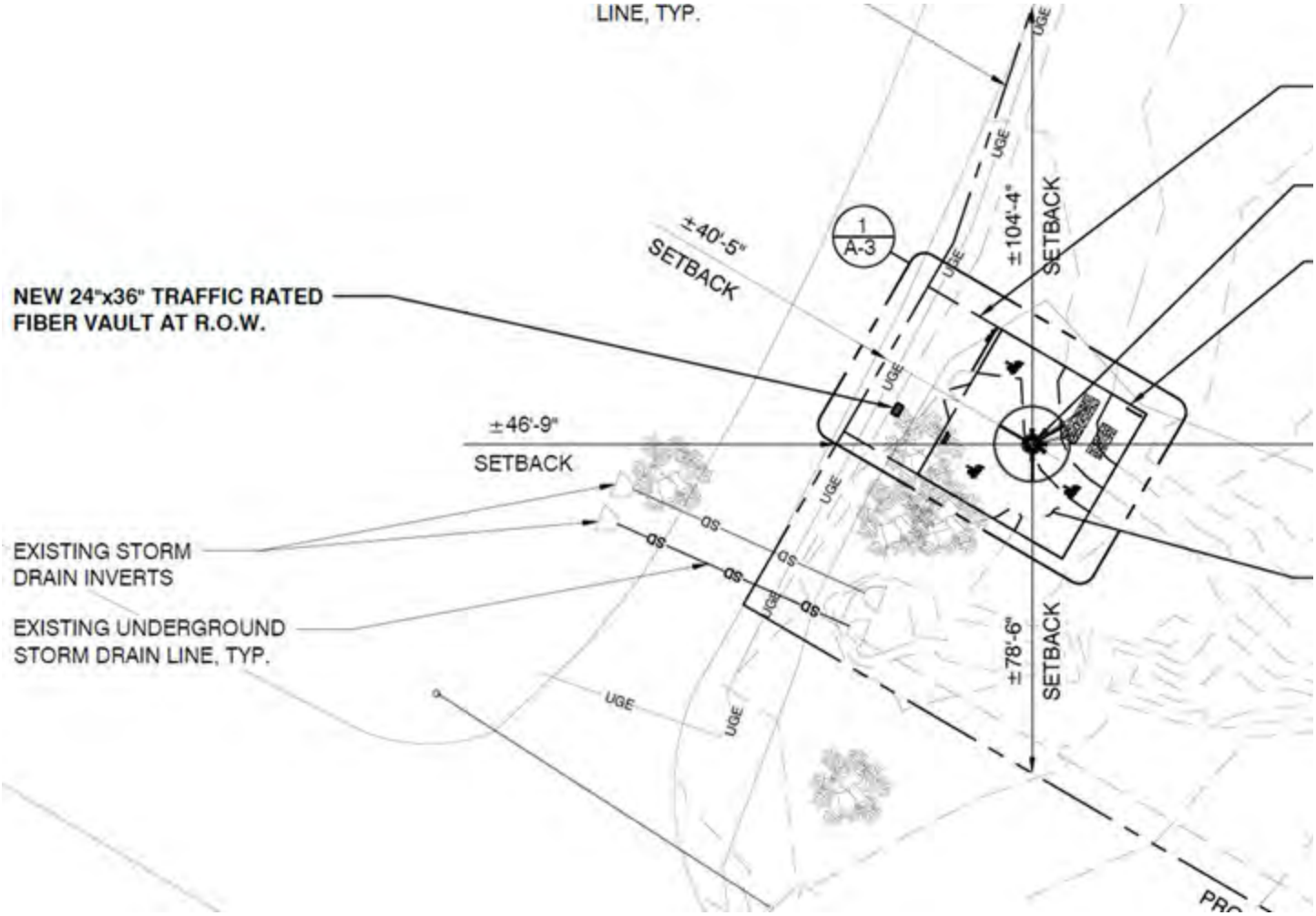
chris.curiel@pinnacleco.net

PINNACLE CONSULTING, INC

COORDINATES			
TOWER COORDINATES:			
LATITUDE	35.309466°	35° 18' 34.077" N	[NAD83]
LONGITUDE	-106.495432°	-106° 29' 43.557" W	[NAD83]
GROUND ELEVATION		5503'	[NAVD88]
FIBER MMP (MEET ME POINT) COORDINATES:			
LATITUDE	35.309488°	35° 18' 34.157" N	[NAD83]
LONGITUDE	-106.495540°	-106° 29' 43.945" W	[NAD83]

Strahl Ave
Tierra Madre Rd
Placitas
35.309466, -106.495432
165
299 ft

Tierra Madre Rd
Tierra Madre Rd
35.309466, -106.495432
150 ft



SETBACK TABLE	
NORTH	±104'-4"
SOUTH	±78'-6"
WEST	±46'-9"
EAST	±470'-11"
NORTHWEST	±40'-5"

From: Robert Naumann <yhc-inc@outlook.com>
Sent: Thursday, June 20, 2024 5:44:20 PM
To: Chris Curiel <chris.curiel@pinnacleco.net>
Subject: Re: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Updates 5.3024

Chris,

It is the same as the last visit.

I will be the only one to attend for the County.

Just give me some dates and I will try to make it work.

Robert Naumann

From: Chris Curiel <chris.curiel@pinnacleco.net>
Sent: Tuesday, June 18, 2024 9:12 AM
To: Robert Naumann <yhc-inc@outlook.com>
Subject: RE: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Updates 5.3024

Yes, definitely. Please advise on what is needed to schedule.

I can get over that asap.

Sorry, for delay on following up as I was out of the office due to a funeral and then being ill for some time.

Christopher D. Curiel

Site Acquisition Manager

mobile: 480-479-6181

chris.curiel@pinnacleco.net

From: Robert Naumann <yhc-inc@outlook.com>
Sent: Tuesday, June 18, 2024 7:52 AM
To: Chris Curiel <chris.curiel@pinnacleco.net>
Subject: Re: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Updates 5.3024

Chris,

Are you still intending to have a site visit at the new location?

Robert Naumann

From: Robert Naumann <yhc-inc@outlook.com>
Sent: Friday, June 7, 2024 11:02 AM
To: Chris Curiel <chris.curiel@pinnacleco.net>; Makita Hill <mhill@sandovalcountynm.gov>
Subject: Re: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Updates 5.3024

Chris,

Some of your questions are best answered after I have seen the site.

As for the balloon test a scissors lift is just fine.

Robert Naumann

From: Chris Curiel <chris.curiel@pinnacleco.net>
Sent: Friday, May 31, 2024 11:26 AM
To: Robert Naumann <yhc-inc@outlook.com>; Makita Hill <mhill@sandovalcountynm.gov>
Subject: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Updates 5.3024

Hello Robert.

Thank you for the comments and understand it is just an initial review.

We will schedule another site walk and Pre-App as needed for this site (following zoning parameters you previously sent).

Your initial input helps a lot to avoid wasted time and location pitfalls.

This search ring has been really hard to find a feasible site due to limited options in the area.

Please review questions below and will relay comments to the team. Thank you both!

- - - -

Weather Balloons are hard to control. We recently did this on another site with good results.

Site Context:

Started reviewing sites with Judy and Orville almost a year ago, then were passed to Racquel Huslig, the new owner.

Finally got to an agreed place in location, design, and lease terms, which we wanted to ensure prior to the application process.

We have reviewed multiple sites on this lot and the adjacent retail parcels she is buying (rare commercial parcels in the area).

Tucking the facility in the SW corner near access will prevent the least visibility interference to neighbors.

Design / Location:

Location chosen by owner for least disruption to neighbors, future development, and visibility.

- Site has utilities, access, street frontage, commercial use, limited visibility interference, and low development impact.

Wireless Facility:

Dark Copper / Brown Concealed Cannister Design built with space for (2) carriers.

If needed, can extend cannister down to hide the 3rd carrier.

Engineered to a fall zone within property lines. Rusted design for rural western towns.

Wireless Compound:

Coyote Fence Compound similar to homes in area, will screen and secure all ground equipment.

- - - -

Pinnacle Consulting, Inc.
1426 N Marvin Street #101
Gilbert, AZ 85233

PINNACLE CONSULTING, INC

Stealth Design Wireless Facility - (Monoelm) Built Example

Monoelm: Wireless Stealth Design

- Conceals Wireless Antennas / Radios
- Preferred by Jurisdictions when Suitable
- Blends in with Community Context
- Variegated Leaves (for multiple seasons)
- Designed with Community Approval
- Compound to be Locked & Secured
- Made with Durable Building Materials
- Fuller Canopy (typically more branches)

Christopher D. Curiel

Site Acquisition Manager

mobile: 480-479-6181

chris.curiel@pinnacleco.net

From: Robert Naumann <yhc-inc@outlook.com>
Sent: Friday, May 31, 2024 8:58 AM
To: Chris Curiel <chris.curiel@pinnacleco.net>; Makita Hill <mhill@sandovalcountynm.gov>
Subject: Re: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Zoning Review (PLEASE) 5.29.24

Chris,

This site is considerable more visible and I am not sure the stealth design proposed is a good concept.

Since this is a new location, (approx 2 miles west of the original location), it may be worth another site visit.

Also, keep in mind the requirements for balloon test etc… (Nothing has changed for zoning requirements.)

You asked: "**Can you please review to ensure this new location is feasible with zoning guidelines?"**

It is feasible but it may or may not be approved and / or satisfy all the zoning requirements. That is what the application process is all about.

Robert Naumann

From: Chris Curiel <chris.curiel@pinnacleco.net>
Sent: Wednesday, May 29, 2024 1:58 PM
To: Makita Hill <mhill@sandovalcountynm.gov>; Robert Naumann <yhc-inc@outlook.com>
Subject: NM01-148 Spike / ABQ Tierra Madre_ New Wireless Facility Site_ Parcel #102-307-302-8180_ Zoning Review (PLEASE) 5.29.24

Sun State Towers / Verizon Wireless

New 75' Tall Wireless Facility

Stealth Design with Concealed Equipment

Compound: (40' x 40' x 8' Tall)

Property Details

APN #: 102-307-302-8180

Owner: Racquel Huslig / Judy & Orville McCallister

Zone: CD-WP with SUP overlay

Use: Vacant / Retail Development-- Coming Soon

Hello Makita & Robert.

Hope all has been well since last we spoke. Things have been a little crazy in the wireless world.

As we know, the previous site for this project was unable to move forward due to lease agreement issues.

We are working on submitting a new wireless communication site for this project.

Can you please review to ensure this new location is feasible with zoning guidelines?

Parcel #: 102-307-302-8180

Coordinates: 35.309466, -106.495432

Proposed location and design are based on owner's preference for the least amount of site disruption.

We are close to finalizing our lease agreement with the owner, Racquel Huslig (she is in contract with Judy / Orville).

THANK YOU! We really appreciate all your help and guidance.

Wireless facility is located as close to the access road as possible with a reduced fall-zone.

The fall zone will be engineered & certified to ensure facility will fall inside the property lines for safety.

Location is tucked in SW corner to prevent least amount of visual interference to the mountains southward.

40' Setback – Meets Fall Zone setback within property lines.

Needs Setback Reduction Zoning Approval.

Owner prefers this site for future development and less view interruption to the south.

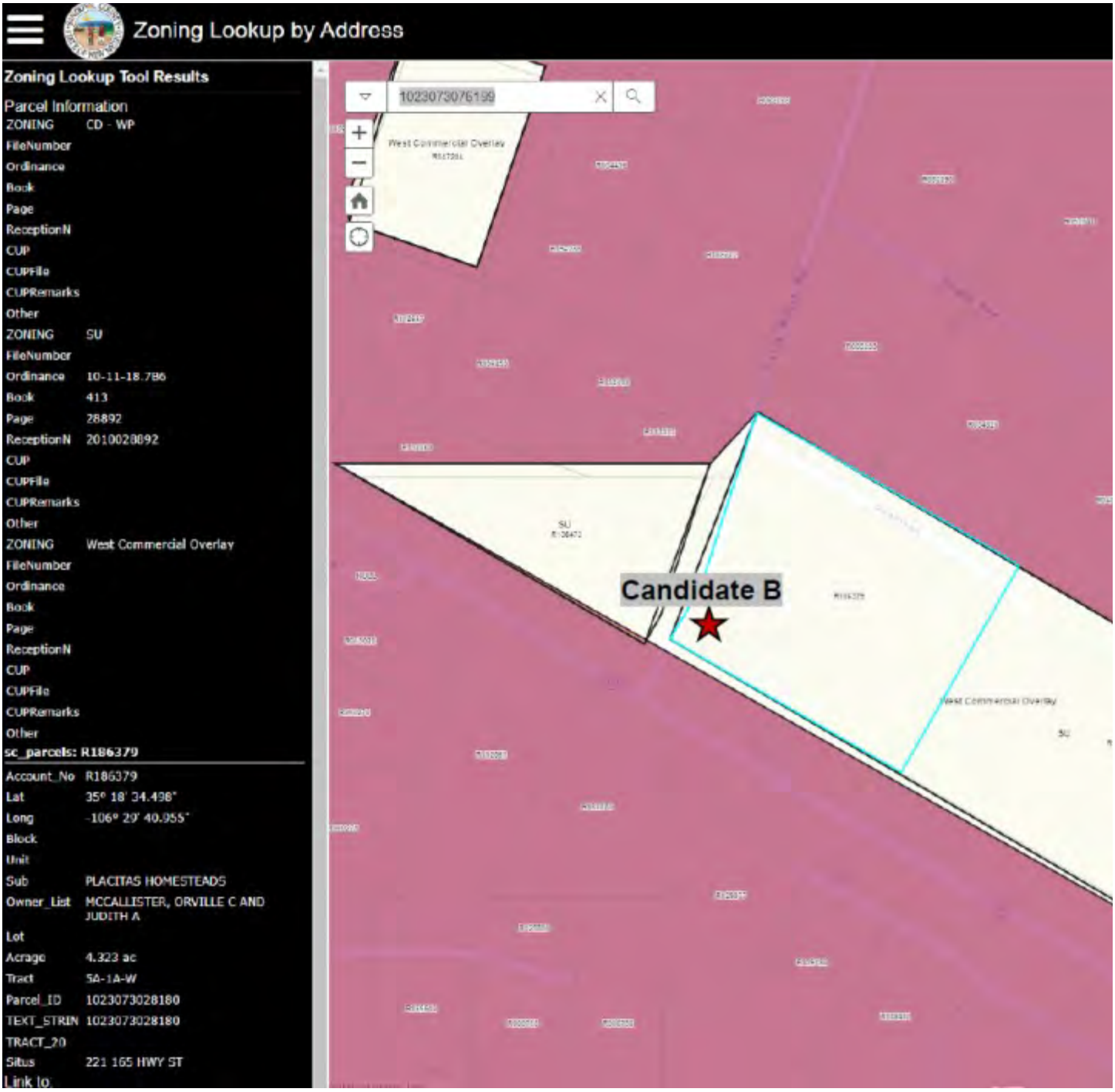
35.309466, -106.495432

83’ Setback– 110% Fall Zone (Meets Setback by Code)

35.309483, -106.495253 | OWNER DID NOT APPROVE | Disrupts Views to the Mountains (southward) and affects Future Development.

Strahl Ave
Tierra Madre Rd
Placitas
40' setback
83' setback
165
165
165
165

Sandoval County Tax Parcel Viewer
550
260


Zoning Lookup by Address
Zoning Lookup Tool Results
Parcel Information
ZONING CD - WP
FileNumber
Ordinance
Book
Page
ReceptionN
CUP
CUPFile
CUPRemarks
Other
ZONING SU
FileNumber
Ordinance 10-11-18.786
Book 413
Page 28892
ReceptionN 2010028892
CUP
CUPFile
CUPRemarks
Other
ZONING West Commercial Overlay
FileNumber
Ordinance
Book
Page
ReceptionN
CUP
CUPFile
CUPRemarks
Other
sc_parcels: R186379
Account_No R186379
Lat 35° 18' 34.498"
Long -106° 29' 40.955"
Block
Unit
Sub PLACITAS HOMESTEADS
Owner_List MCCALLISTER, ORVILLE C AND JUDITH A
Lot
Acrage 4.323 ac
Tract 5A-1A-W
Parcel_ID 1023073028180
TEXT_STRIN 1023073028180
TRACT_20
Situs 221 165 HWY ST
Link to
1023073076199
Candidate B

Site: NM01-148 Spike / ABQ Tierra Madre

SUN STATE TOWERS

Address: 221 165 Hwy St. ~ Placitas, NM 87043

Location Map

Existing

Proposed

Notes: 140' from proposed site,

These depictions are fo
They are to be used in addition to the engineer

Applicant

Sun State Towers
1426 North Marvin Street, Suite 101
Gilbert, AZ 85233

CASE STUDY: BUILT CONCEALED EXAMPLE

CASE STUDY: BUILT CONCEALED EXAMPLE

Christopher D. Curiel

Site Acquisition Manager

mobile: 480-479-6181

chris.curiel@pinnacleco.net

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SUN STATE
TOWERS

NM01-148 SPIKE / ABQ TIERRA MADRE

APN: 102-307-302-8180

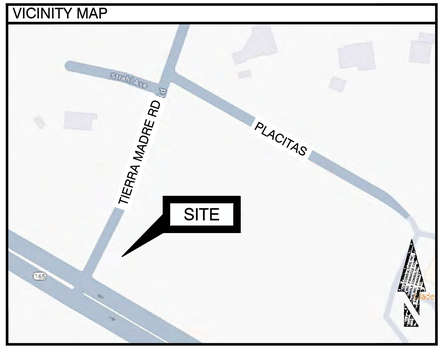
221 165 HWY ST

PLACITAS, NM 87043
SANDOVAL COUNTY

SITE DIRECTIONS

DEPART ALBUQUERQUE INTERNATIONAL SUNPORT, 2200 SUNPORT BLVD SE, ALBUQUERQUE, NM 87043, TAKE THE RAMP ON THE RIGHT FOR I-25 N / US-85 N. AT EXIT 242, HEAD RIGHT ON THE RAMP FOR NM-165 / STATE HIGHWAY 165 TOWARD PLACITAS. TURN LEFT ONTO TIERRA MADRE RD. ARRIVE AT LOCATION ON THE RIGHT.

VICINITY MAP



PROJECT DESCRIPTION

SCOPE OF WORK

- REMOVE [3] EXISTING TREES
- INSTALL PROPOSED 75'-0" SUN STATE MONOPOLE W/ CONCEALMENT SHROUD
- INSTALL PROPOSED 8'-0" TALL COYOTE STYLE WOODEN FENCE
- INSTALL PROPOSED 4'-0"x12'-0" CONCRETE PAD
- INSTALL [3] PROPOSED H-FRAMES
- INSTALL PROPOSED RF CABINET
- INSTALL PROPOSED POWER CABINET
- INSTALL PROPOSED GPS ANTENNA
- INSTALL [12] PROPOSED PANEL ANTENNAS
- INSTALL [12] PROPOSED REMOTE RADIO HEADS
- INSTALL [1] PROPOSED OVP-12
- INSTALL PROPOSED ANTENNA MOUNT
- INSTALL PROPOSED ELECTRICAL SERVICE
- INSTALL PROPOSED TELCO SERVICE

SHEET INDEX

T-1	PROJECT INFORMATION
LS-1	OVERALL SITE PLAN
LS-2	SURVEY DETAIL
Z-1	OVERALL SITE PLAN
Z-2	EXISTING SITE PLAN
Z-3	PROPOSED SITE PLAN
Z-4	ENLARGED SITE PLAN AND ANTENNA PLAN
Z-5	ELEVATIONS
Z-6	ELEVATIONS

CONTACT INFORMATION

SUN STATE TOWERS
1426 N. MARVIN STREET #101
GILBERT, AZ 85233
CONTACT: CHAD WARD
PHONE: [480] 664-9588 EXT. 214

PROPERTY OWNER:
MCCALLISTER, ORVILLE C AND JUDITH A
71 TUNNEL SPRINGS RD
PLACITAS, NM 87043
PHONE: [505] 238-6021

CARRIER:
VERIZON WIRELESS
2600 W. GERONIMO PL
CHANDLER, AZ 85224
CONTACT: JEFF DEWALT
PHONE: [505] 250-0004

TOWER OWNER:
SUN STATE TOWERS
1426 N. MARVIN STREET #101
GILBERT, AZ 85233
CONTACT: CHAD WARD
PHONE: [480] 664-9588 EXT. 214

SITE ACQUISITION:
PINNACLE CONSULTING, INC.
1426 N. MARVIN STREET #101
GILBERT, AZ 85233
CONTACT: MICHELLE JOHNSON
PHONE: [480] 664-9588 ext. 230

ENGINEERING FIRM:
PINNACLE CONSULTING, INC.
1426 N. MARVIN STREET #101
GILBERT, AZ 85233
ENGINEER: KYLE FORTIN, PE
PHONE: [623] 217-4235

PROJECT DATA

ZONING:	CD-WP
PARCEL #:	102-307-302-8180
USE:	UNMANNED COMMUNICATIONS
NEW LEASE AREA:	1600 SQ. FT
JURISDICTION:	SANDOVAL COUNTY
GOVERNING CODES:	2018 IBC, 2018 IFC, 2018 IMC, 2018 NEC

ALL BUILDING CODES LISTED ABOVE SHALL INCLUDE AMENDMENTS BY THE GOVERNING JURISDICTION

COORDINATES

TOWER COORDINATES:		
LATITUDE	35.309466°	35° 18' 34.077" N [NAD83]
LONGITUDE	-106.495432°	-106° 29' 43.557" W [NAD83]
GROUND ELEVATION		5503' [NAVD88]
FIBER MMP (MEET ME POINT) COORDINATES:		
LATITUDE	35.309488°	35° 18' 34.157" N [NAD83]
LONGITUDE	-106.495540°	-106° 29' 43.945" W [NAD83]

GENERAL NOTES

1. THIS WIRELESS TELECOMMUNICATIONS FACILITY WILL MEET THE HEALTH AND SAFETY STANDARDS FOR ELECTROMAGNETIC FIELD EMISSIONS AS ESTABLISHED BY THE FEDERAL COMMUNICATIONS COMMISSION OR ANY SUCCESSOR THEREOF, AND ANY OTHER FEDERAL OR STATE AGENCY.
2. THIS WIRELESS TELECOMMUNICATIONS FACILITY WILL MEET THE REGULATIONS OF THE FEDERAL COMMUNICATIONS COMMISSION REGARDING PHYSICAL AND ELECTROMAGNETIC INTERFERENCE.
3. LIGHTING OR SIGNS WILL BE PROVIDED ONLY AS REQUIRED BY FEDERAL OR STATE AGENCIES.
4. DEVELOPMENT AND CONSTRUCTION OF THIS PROJECT WILL COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES.
5. EXISTING PARKING IS NOT AFFECTED BY THIS PROJECT.
6. THIS PROJECT DOES NOT INCLUDE WATER OR SEWER.
7. THIS PROJECT INCLUDES C-BAND INSTALLATION.

APPROVALS

[RF]: _____ DATE: _____

[CONST.]: _____ DATE: _____

[RE]: _____ DATE: _____

LANDLORD: _____ DATE: _____

PREPARED FOR
SUN STATE TOWERS
1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: 480-664-9588 - FAX 480-664-9850

CARRIER
verizon
2600 W. GERONIMO PL., CHANDLER, AZ 85224
PHONE: (480) 777-4360
FAX: (480) 777-4391

A&E CONSULTING FIRM & SITE ACQUISITION
PINNACLE CONSULTING, INC
Site Acquisition | Engineering | Construction
1426 NORTH MARVIN STREET # 101
GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.G.
CHECKED BY:	KF

REV	DATE	DESCRIPTION	BY
A	04/23/24	FINAL ZONING	M.G.
0	05/15/24	FINAL ZONING	CDA
1	09/17/25	FINAL ZONING	M.G.

FINAL

FOR ZONING

ONLY

NM01-148 SPIKE /
ABQ TIERRA MADRE

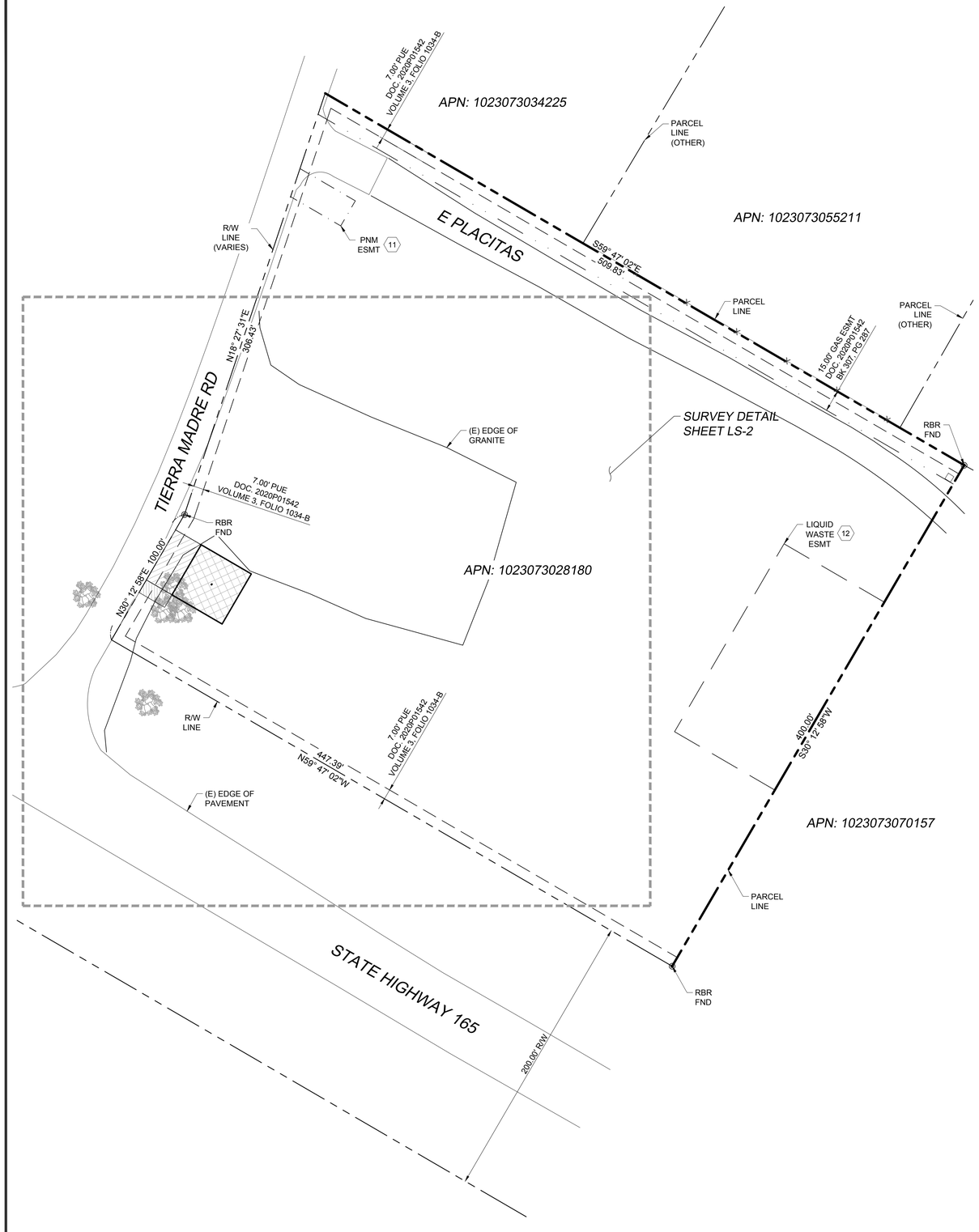
221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

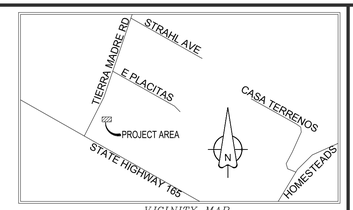
SHEET TITLE

PROJECT INFORMATION

SHEET NUMBER

T-1





VICINITY MAP
N.T.S.

LESSOR'S LEGAL DESCRIPTION

TRACT 5A-1A-W, PLACITAS HOMESTEADS, AS SHOWN ON THE CLAIM OF EXEMPTION LOT LINE ADJUSTMENT PLAT TRACTS 5A-1A-E & 5A-1A-W, PLACITAS HOMESTEADS, IN SECTION 35, T.13N., R.4E., N.M.P.M., SANDOVAL COUNTY, NEW MEXICO, FILED IN THE OFFICE OF THE COUNTY CLERK OF SANDOVAL COUNTY, NEW MEXICO, ON JUNE 12, 2020, IN PLAT BOOK 3, PAGE 4546.

SCHEDULE B EXCEPTIONS

1. RIGHTS OR CLAIMS OF PARTIES IN POSSESSION NOT SHOWN BY THE PUBLIC RECORDS. (NON-PLOTTABLE)
2. EASEMENTS, OR CLAIMS OF EASEMENTS, NOT SHOWN BY THE PUBLIC RECORDS. (NON-PLOTTABLE)
3. ENCROACHMENTS, OVERLAPS, CONFLICTS IN BOUNDARY LINES, SHORTAGES IN AREA, OR OTHER MATTERS WHICH WOULD BE DISCLOSED BY AN ACCURATE SURVEY AND INSPECTION OF THE PREMISES. (NON-PLOTTABLE)
4. ANY LIEN, CLAIM OR RIGHT TO A LIEN, FOR SERVICES, LABOR OR MATERIAL HERETOFORE OR HEREAFTER FURNISHED, IMPOSED BY LAW AND NOT SHOWN BY THE PUBLIC RECORDS. (NON-PLOTTABLE)
5. COMMUNITY PROPERTY, SURVIVORSHIP OR HOMESTEAD RIGHTS, IF ANY, OF ANY SPOUSE OF THE INSURED (OR VESTEE IN A LEASEHOLD OR LOAN POLICY). (NON-PLOTTABLE)
6. WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT DISCLOSED BY THE PUBLIC RECORDS. (NON-PLOTTABLE)
7. TAXES FOR YEAR 2022, AND THEREAFTER. (NOT A SURVEY MATTER)
8. DEFECTS, LIENS, ENCUMBRANCES, ADVERSE CLAIMS OR OTHER MATTERS, IF ANY, CREATED, FIRST APPEARING IN THE PUBLIC RECORDS OR ATTACHING SUBSEQUENT TO THE EFFECTIVE DATE BUT PRIOR TO THE DATE THE PROPOSED INSURED ACQUIRES FOR VALUE OF RECORD THE ESTATE OR INTEREST OR MORTGAGE THEREON COVERED BY THIS COMMITMENT. (NON-PLOTTABLE)
9. RESERVATIONS, EXCEPTIONS AND PROVISIONS CONTAINED IN THE PATENT FROM THE UNITED STATES OF AMERICA, AND IN THE ACTS AUTHORIZING THE ISSUANCE THEREOF. (NON-PLOTTABLE)
10. TITLE TO ALL THE OIL, GAS AND OTHER MINERALS IN, UNDER AND THAT MAY BE PRODUCED FROM THE LAND, TOGETHER WITH ALL RIGHTS, PRIVILEGES AND IMMUNITIES RELATING THERETO HERETOFORE RESERVED UNTO AND OR CONVEYED BY PREDECESSORS IN TITLE. (NON-PLOTTABLE)
11. PUBLIC SERVICE OF NEW MEXICO EASEMENT GRANTED TO PUBLIC SERVICE COMPANY OF NEW MEXICO, A NEW MEXICO CORPORATION, FILED AUGUST 12, 2003, RECORDED AS INSTRUMENT #20032787, RECORDS OF SANDOVAL COUNTY, NEW MEXICO. (AS SHOWN ON SURVEY)
12. SUBSURFACE EASEMENT , FILED DECEMBER 15, 1999, RECORDED IN BOOK 402, PAGE 80462 RECORDS OF SANDOVAL COUNTY, NEW MEXICO.
13. GRANT OF EASEMENT, FILED JULY 16, 2021, RECORDED AS INSTRUMENT #2021025156, RECORDS OF SANDOVAL COUNTY, NEW MEXICO.
14. RIGHTS OR CLAIMS OF PARTIES IN POSSESSION NOT SHOWN BY THE PUBLIC RECORDS.
15. ANY RIGHTS, INTERESTS OR CLAIMS WHICH A CORRECT SURVEY WOULD DISCLOSE AND ARE NOT DISCLOSED BY THE PUBLIC RECORDS.

FLOOD ZONE DESIGNATION

THE PROPOSED LEASE PREMISES SHOWN HEREON APPEAR TO BE WITHIN FLOOD ZONE "X" AS DELINEATED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM MAP NO. 35043C1950D DATED 03/18/08.

FLOOD ZONE "X" IS DEFINED AS: AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN; DETERMINED TO BE OUTSIDE THE 1% AND 0.2% ANNUAL CHANCE FLOODPLAINS.

PROJECT META DATA

1. ELEVATIONS SHOWN HEREON ARE REPRESENTED IN *NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)* ESTABLISHED FROM GPS DERIVED ELLIPSOID HEIGHTS, APPLYING GEOID 18B SEPARATIONS CONSTRAINING TO NGS CORS STATIONS PROVIDED IN THE "ONLINE POSITIONING USER SERVICE" (OPUS) SOLUTION FOR THIS SPECIFIC SITE.
2. BEARINGS SHOWED HEREON ARE BASED UPON U.S. STATE PLANE NAD83 COORDINATE SYSTEM *NEW MEXICO STATE PLANE COORDINATE ZONE CENTRAL*, DETERMINED BY GPS OBSERVATIONS.
3. FIELD WORK FOR THIS PROJECT WAS PERFORMED ON 04/10/24.

SURVEYOR NOTES

1. ALL TITLE INFORMATION IS BASED UPON A COMMITMENT FOR TITLE INSURANCE PREPARED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY, ORDER NO.: 5000003786 EFFECTIVE DATE: 02/03/2024.
2. SURVEYOR HAS NOT PERFORMED A SEARCH OF PUBLIC RECORDS TO DETERMINE ANY DEFECT IN TITLE.
3. THE BOUNDARY SHOWN HEREON IS PLOTTED FROM RECORD INFORMATION AND DOES NOT CONSTITUTE A BOUNDARY SURVEY OF THE PROPERTY.
4. SURVEYOR DOES NOT GUARANTEE THAT ALL UTILITIES ARE SHOWN OR THEIR LOCATIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND DEVELOPER TO CONTACT BLUE STAKE AND ANY OTHER INVOLVED AGENCIES TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION. REMOVAL, RELOCATION AND/ OR REPLACEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR.

NORTH

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

SUN STATE TOWERS
1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: 480-664-9588 - FAX 480-664-9850

PINNACLE CONSULTING, INC.
Construction - Project Management - Site Development
1426 N. MARVIN STREET # 101
GILBERT, AZ 85233

FIELD BY:	PAC
DRAWN BY:	JMM
CHECKED BY:	RLF

REVISIONS

NO	DATE	DESCRIPTION
2	08/07/24	REVISION
1	05/15/24	FINAL
0	04/16/24	PRELIMINARY

RLF CONSULTING
LAND SURVEY • MAPPING SOLUTIONS
www.RLFCONSULTING.COM • 480-448-0186

STEVE WOOD
NEW MEXICO
14407
08/07/24
REGISTERED PROFESSIONAL SURVEYOR

EXPIRES 12/31/25

REUSE OF DOCUMENT
THE IDEAS & DESIGN INCORPORATED HEREON, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF RLF CONSULTING, LLC & IS NOT TO BE USED FOR ANY OTHER PROJECT WITHOUT WRITTEN AUTHORIZATION OF RLF CONSULTING, LLC.

PROJECT No.
2400250

SITE NAME:
NM01-148 SPIKE

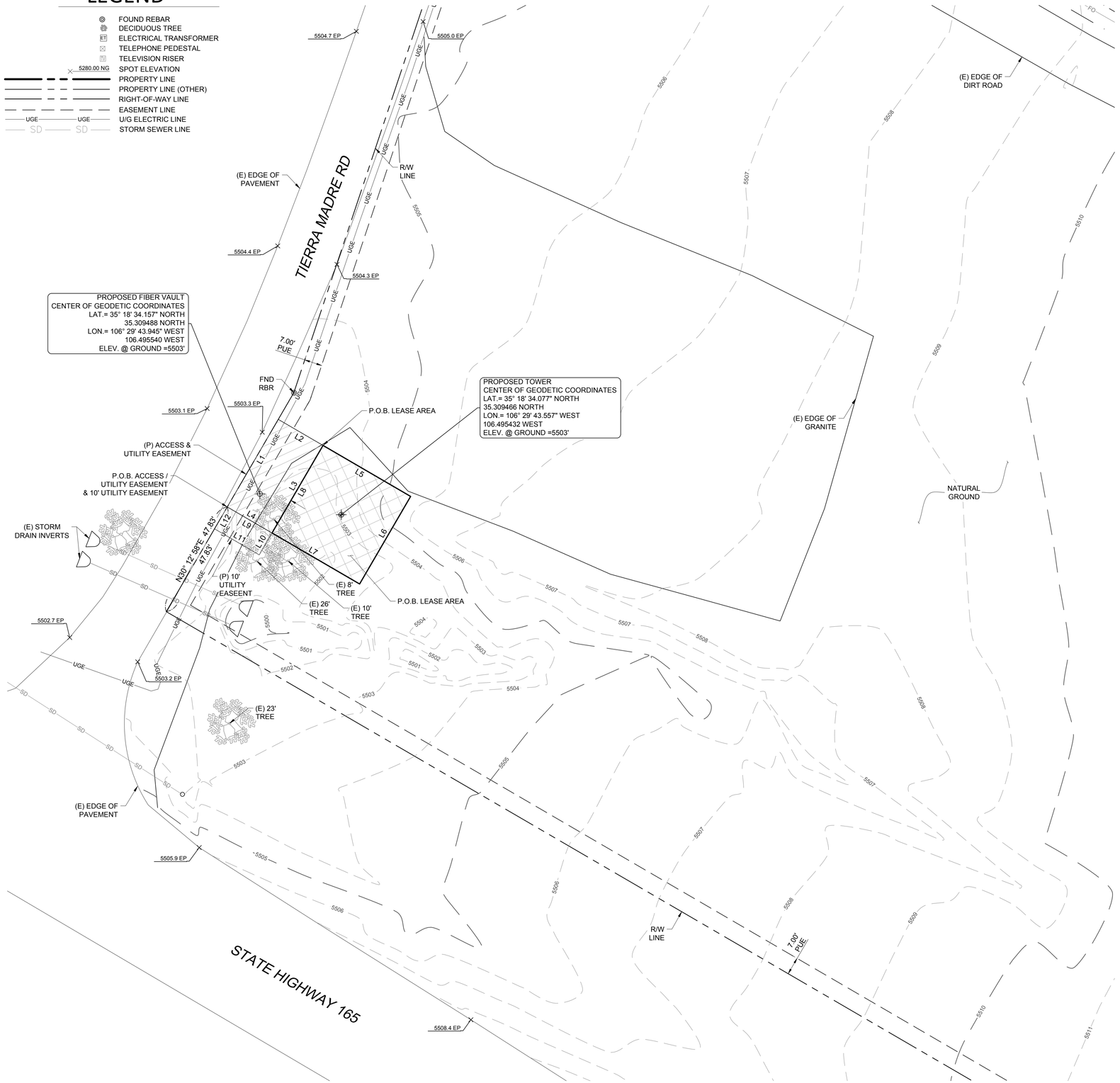
SITE ADDRESS:
221 165 HWY ST
PLACITAS, NM 87043

SHEET TITLE:
SURVEY BOUNDARY

SHEET NO.	REVISION:
LS-1	

LEGEND

- FOUND REBAR
- DECIDUOUS TREE
- ELECTRICAL TRANSFORMER
- TELEPHONE PEDESTAL
- TELEVISION RISER
- 5280.00 NG — SPOT ELEVATION
- PROPERTY LINE
- PROPERTY LINE (OTHER)
- RIGHT-OF-WAY LINE
- EASEMENT LINE
- UGE — U/G ELECTRIC LINE
- SD — STORM SEWER LINE



LINE TABLE		
LINE	LENGTH	BEARING
L1	40.00	N30° 12' 58"E
L2	20.43	S59° 47' 02"E
L3	40.00	S30° 12' 58"W
L4	20.43	N59° 47' 02"W
L5	40.00	S59° 47' 02"E
L6	40.00	S30° 12' 58"W

LINE TABLE		
LINE	LENGTH	BEARING
L7	40.00	N59° 47' 02"W
L8	40.00	N30° 12' 58"E
L9	20.43	S59° 47' 02"E
L10	10.00	S30° 12' 58"W
L11	20.43	N59° 47' 02"W
L12	10.00	N30° 12' 58"E

NORTH

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

LESSEE'S ACCESS & UTILITY EASEMENT DESCRIPTION

A TRACT OF LAND BEING A PORTION OF TRACT 5A-1A-W, PLACITAS HOMESTEADS, AS SHOWN ON THE CLAIM OF EXEMPTION LOT LINE ADJUSTMENT PLAT TRACTS 5A-1A-E & 5A-1A-W, PLACITAS HOMESTEADS, IN SECTION 35, T.13N., R.4E., N.M.P.M., SANDOVAL COUNTY, NEW MEXICO, FILED IN THE OFFICE OF THE COUNTY CLERK OF SANDOVAL COUNTY, NEW MEXICO, ON JUNE 12, 2020, IN PLAT BOOK 3, PAGE 4546, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A REBAR OF THE SOUTHEAST CORNER OF SAID DESCRIBED PARCEL WHICH THE NORTHEAST CORNER OF SAID PARCEL BEARS NORTH 30°12'58" EAST, A DISTANCE OF 400 FEET; THENCE NORTH 59°47'02" WEST, A DISTANCE OF 447.39 FEET; THENCE NORTH 30°12'58" EAST, A DISTANCE OF 47.83 FEET TO THE POINT OF BEGINNING;

THENCE NORTH 30°12'58" EAST, A DISTANCE OF 40.00 FEET;
THENCE SOUTH 59°47'02" EAST, A DISTANCE OF 20.43 FEET;
THENCE SOUTH 30°12'58" WEST, A DISTANCE OF 40.00 FEET;
THENCE NORTH 59°47'02" WEST, A DISTANCE OF 20.43 FEET TO THE POINT OF BEGINNING.

CONTAINING 817 SQUARE FEET OR 0.019 ACRES, MORE OR LESS.

LESSEE'S LEASE AREA DESCRIPTION

A TRACT OF LAND BEING A PORTION OF TRACT 5A-1A-W, PLACITAS HOMESTEADS, AS SHOWN ON THE CLAIM OF EXEMPTION LOT LINE ADJUSTMENT PLAT TRACTS 5A-1A-E & 5A-1A-W, PLACITAS HOMESTEADS, IN SECTION 35, T.13N., R.4E., N.M.P.M., SANDOVAL COUNTY, NEW MEXICO, FILED IN THE OFFICE OF THE COUNTY CLERK OF SANDOVAL COUNTY, NEW MEXICO, ON JUNE 12, 2020, IN PLAT BOOK 3, PAGE 4546, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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THENCE NORTH 30°12'58" EAST, A DISTANCE OF 40.00 FEET;
THENCE SOUTH 59°47'02" EAST, A DISTANCE OF 20.43 FEET TO THE POINT OF BEGINNING;

THENCE SOUTH 59°47'02" EAST, A DISTANCE OF 40.00 FEET;
THENCE SOUTH 30°12'58" WEST, A DISTANCE OF 40.00 FEET;
THENCE NORTH 59°47'02" WEST, A DISTANCE OF 40.00 FEET;
THENCE NORTH 30°12'58" EAST, A DISTANCE OF 40.00 FEET TO THE POINT OF BEGINNING.

CONTAINING 1600 SQUARE FEET OR 0.037 ACRES, MORE OR LESS.

LESSEE'S 10' UTILITY EASEMENT DESCRIPTION

A TRACT OF LAND BEING A PORTION OF TRACT 5A-1A-W, PLACITAS HOMESTEADS, AS SHOWN ON THE CLAIM OF EXEMPTION LOT LINE ADJUSTMENT PLAT TRACTS 5A-1A-E & 5A-1A-W, PLACITAS HOMESTEADS, IN SECTION 35, T.13N., R.4E., N.M.P.M., SANDOVAL COUNTY, NEW MEXICO, FILED IN THE OFFICE OF THE COUNTY CLERK OF SANDOVAL COUNTY, NEW MEXICO, ON JUNE 12, 2020, IN PLAT BOOK 3, PAGE 4546, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A REBAR OF THE SOUTHEAST CORNER OF SAID DESCRIBED PARCEL WHICH THE NORTHEAST CORNER OF SAID PARCEL BEARS NORTH 30°12'58" EAST, A DISTANCE OF 400 FEET; THENCE NORTH 59°47'02" WEST, A DISTANCE OF 447.39 FEET; THENCE NORTH 30°12'58" EAST, A DISTANCE OF 47.83 FEET TO THE POINT OF BEGINNING;

THENCE SOUTH 59°47'02" EAST, A DISTANCE OF 20.43 FEET;
THENCE SOUTH 30°12'58" WEST, A DISTANCE OF 10.00 FEET;
THENCE NORTH 59°47'02" WEST, A DISTANCE OF 20.43 FEET;
THENCE NORTH 30°12'58" EAST, A DISTANCE OF 10.00 FEET TO THE POINT OF BEGINNING.

CONTAINING 204 SQUARE FEET OR 0.005 ACRES, MORE OR LESS.

SUN STATE TOWERS
1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: 480-664-9588 - FAX 480-664-9850

PINNACLE CONSULTING, INC.
Construction - Project Management - Site Development
1426 N. MARVIN STREET # 101
GILBERT, AZ 85233

FIELD BY:	PAC
DRAWN BY:	JMM
CHECKED BY:	RLF

REVISIONS

NO.	DATE	DESCRIPTION
2	08/07/24	REVISION
1	05/15/24	FINAL
0	04/16/24	PRELIMINARY

RLF CONSULTING
LAND SURVEY • MAPPING SOLUTIONS
WWW.RLFCONSULTING.COM • 480-445-0150

STEVE WOOD
NEW MEXICO
14407
08/07/24
REGISTERED PROFESSIONAL SURVEYOR
EXPIRES 12/31/25

REUSE OF DOCUMENT
THE IDEAS & DESIGN INCORPORATED HEREON, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF RLF CONSULTING, LLC & IS NOT TO BE USED FOR ANY OTHER PROJECT WITHOUT WRITTEN AUTHORIZATION OF RLF CONSULTING, LLC.

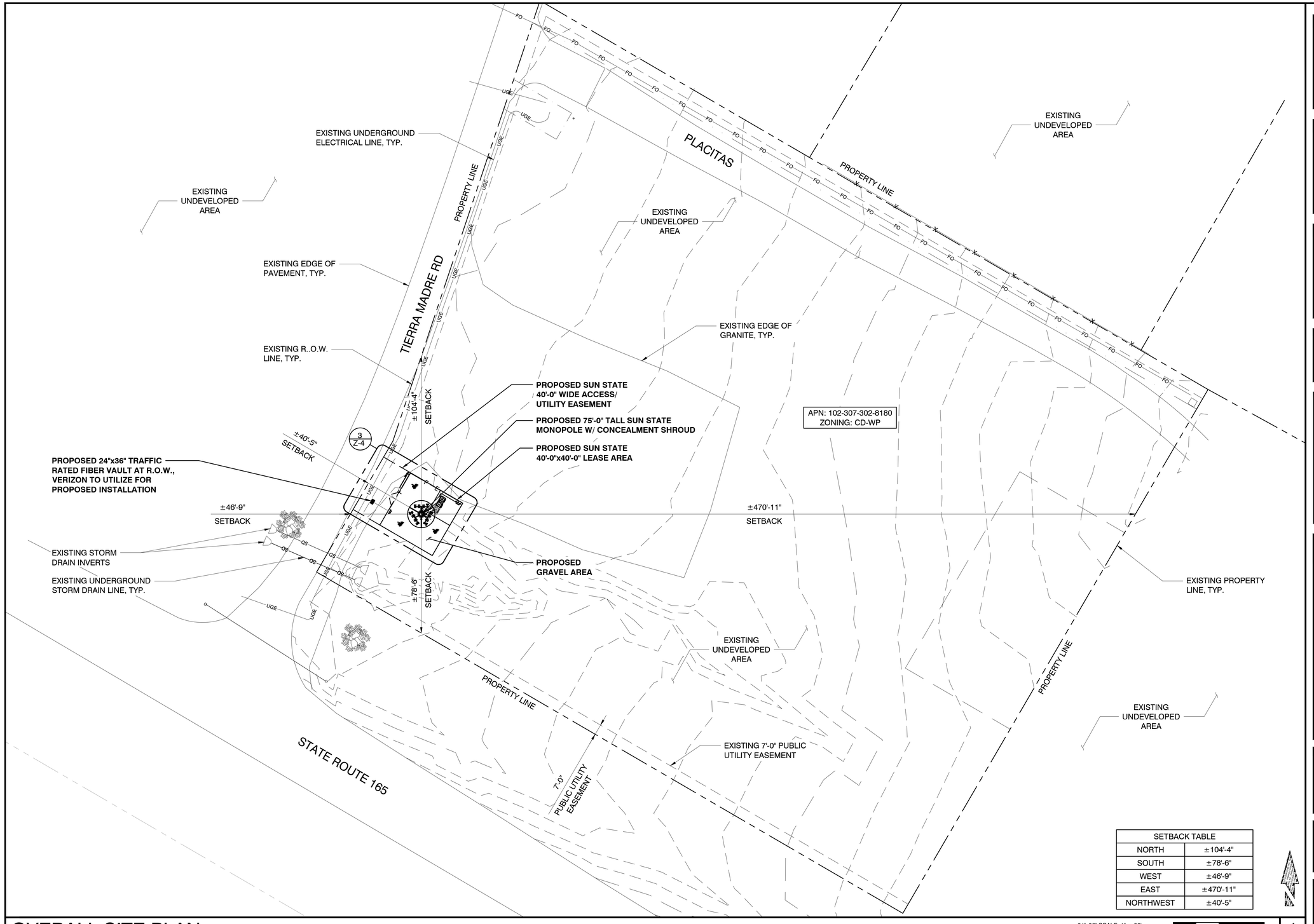
PROJECT No.
2400250

SITE NAME:
NM01-148 SPIKE

SITE ADDRESS:
221 165 HWY ST
PLACITAS, NM 87043

SHEET TITLE:
SURVEY DETAIL

SHEET NO.	REVISION:
LS-2	



SETBACK TABLE	
NORTH	±104'-4"
SOUTH	±78'-6"
WEST	±46'-9"
EAST	±470'-11"
NORTHWEST	±40'-5"

24"x36" SCALE: 1" = 30'
11"x17" SCALE: 1" = 60'
30' 15' 0' 30'

OVERALL SITE PLAN

1

PREPARED FOR
SUN STATE TOWERS
1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: 480-664-9588 - FAX 480-664-9850

CARRIER
verizon
2600 W. GERONIMO PL., CHANDLER, AZ 85224
PHONE: (480) 777-4360
FAX: (480) 777-4391

A&E CONSULTING FIRM & SITE ACQUISITION
PINNACLE CONSULTING, INC
Site Acquisition | Engineering | Construction
1426 NORTH MARVIN STREET # 101
GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.G.
CHECKED BY:	KF

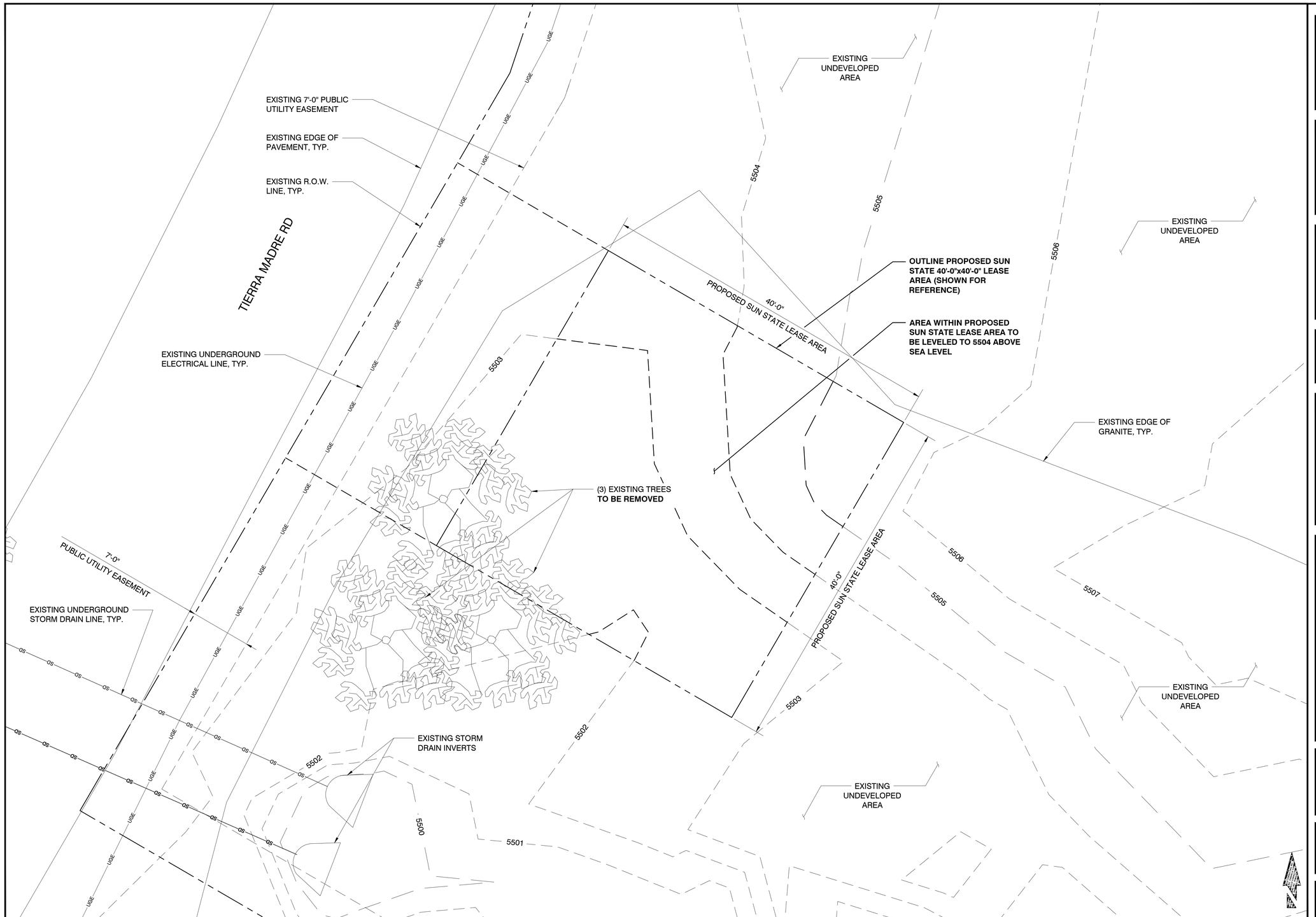
REV	DATE	DESCRIPTION	BY
A	04/23/24	FINAL ZONING	M.G.
0	05/15/24	FINAL ZONING	CDA
1	09/17/25	FINAL ZONING	M.G.

FINAL FOR ZONING ONLY

NM01-148 SPIKE / ABQ TIERRA MADRE
221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
Z-1



EXISTING SITE PLAN

24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"

1

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SUN STATE TOWERS
1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: 480-664-9588 - FAX 480-664-9850

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PINNACLE CONSULTING, INC
Site Acquisition | Engineering | Construction
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GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.G.
CHECKED BY:	KF

REV	DATE	DESCRIPTION	BY
A	04/23/24	FINAL ZONING	M.G.
0	05/15/24	FINAL ZONING	CDA
1	09/17/25	FINAL ZONING	M.G.

FINAL FOR ZONING ONLY

NM01-148 SPIKE / ABQ TIERRA MADRE

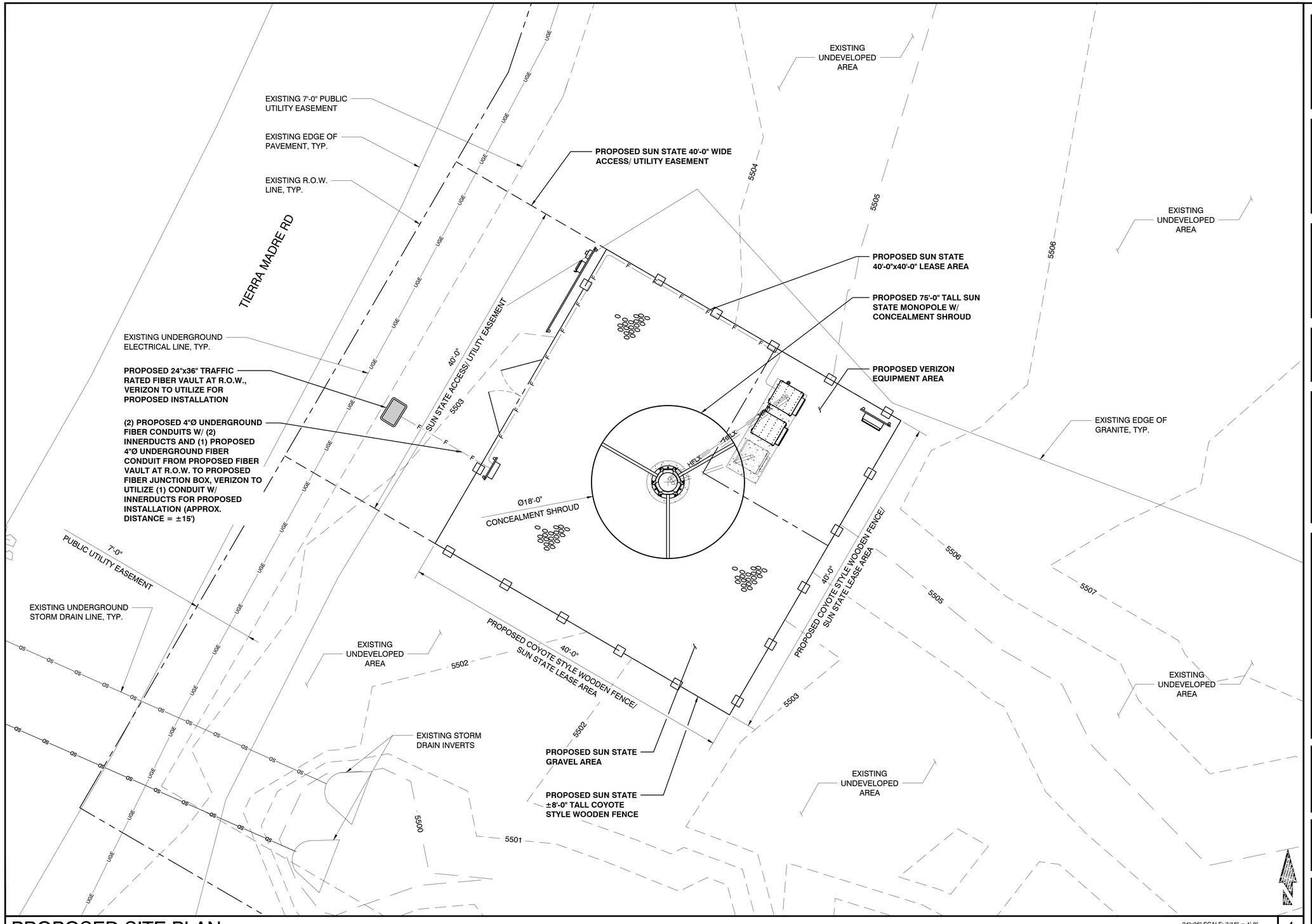
221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SHEET TITLE

EXISTING SITE PLAN

SHEET NUMBER

Z-2



PROPOSED SITE PLAN

24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"

1

PREPARED FOR

SUN STATE TOWERS
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GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.G.
CHECKED BY:	KF

REV	DATE	DESCRIPTION	BY
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0	05/15/24	FINAL ZONING	CDA
1	09/17/25	FINAL ZONING	M.G.

FINAL FOR ZONING ONLY

NM01-148 SPIKE / ABQ TIERRA MADRE

221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SHEET TITLE

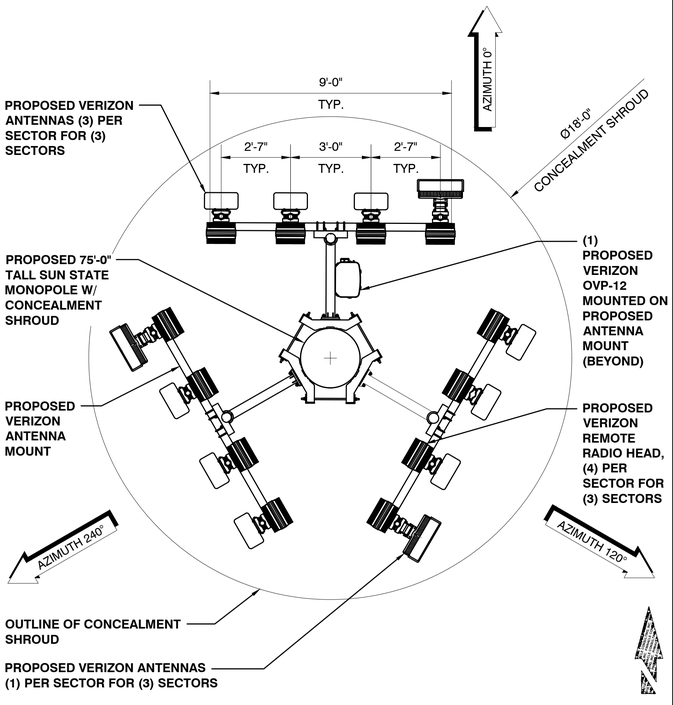
PROPOSED SITE PLAN

SHEET NUMBER

Z-3

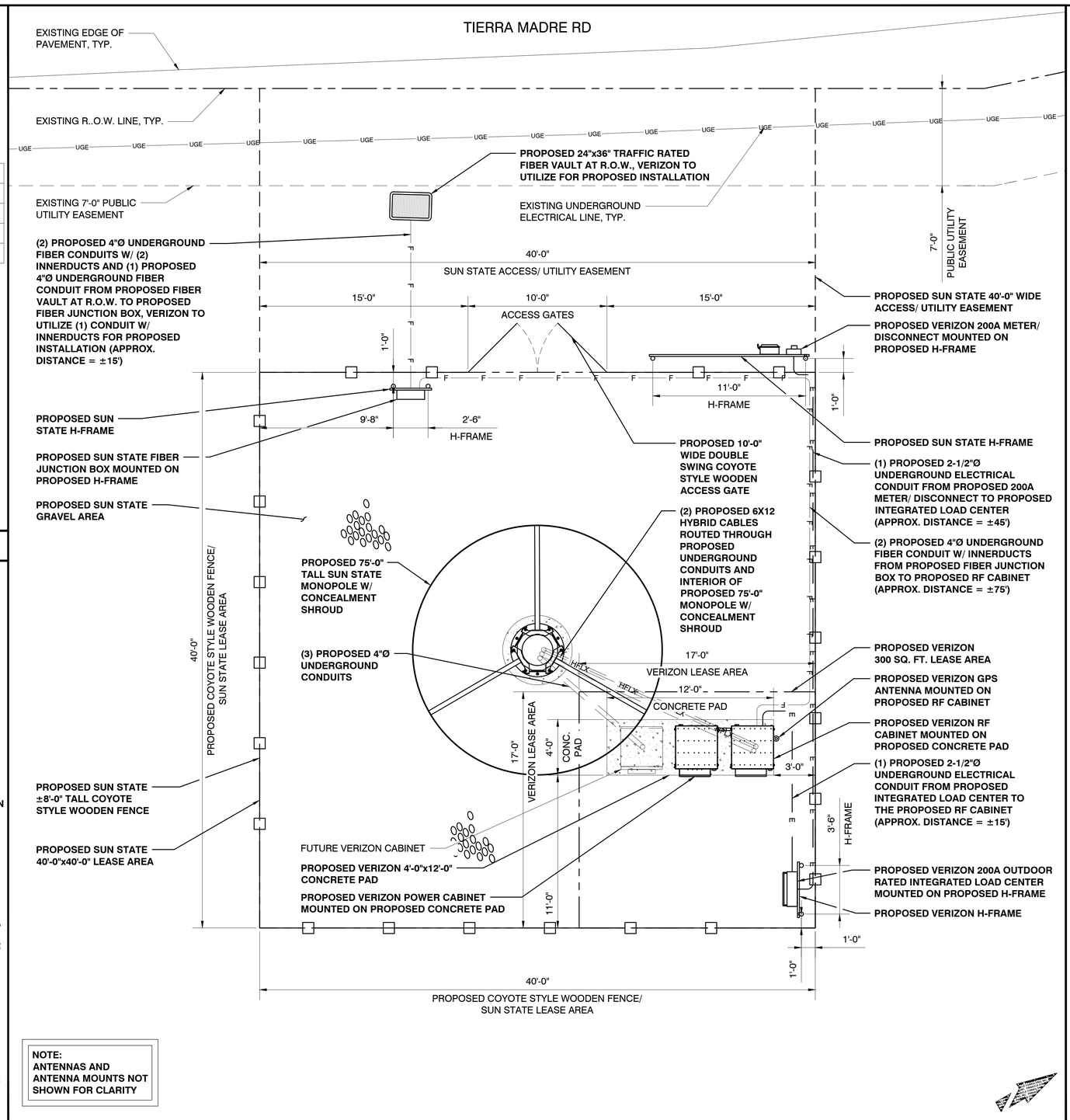
NEW HYBRID CABLE SCHEDULE					
SECTOR	AZIMUTH	LENGTH	QTY.	SIZE	TYPE
ALPHA	0°	±85'	2	1 1/4"Ø	6X12 HYBRID CABLE
BETA	120°				
GAMMA	240°				

CABLING DETAIL 1



ANTENNA PLAN 2

24"x36" SCALE: 3/8" = 1'-0"
11"x17" SCALE: 3/16" = 1'-0"



NOTE:
ANTENNAS AND ANTENNA MOUNTS NOT SHOWN FOR CLARITY

ENLARGED SITE PLAN 3

24"x36" SCALE: 1/4" = 1'-0"
11"x17" SCALE: 1/8" = 1'-0"

PREPARED FOR
SUN STATE TOWERS
1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: 480-664-9588 - FAX 480-664-9850

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verizon
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A&E CONSULTING FIRM & SITE ACQUISITION
PINNACLE CONSULTING, INC
Site Acquisition | Engineering | Construction
1426 NORTH MARVIN STREET # 101
GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.G.
CHECKED BY:	KF

REV	DATE	DESCRIPTION	BY
A	04/23/24	FINAL ZONING	M.G.
0	05/15/24	FINAL ZONING	CDA
1	09/17/25	FINAL ZONING	M.G.

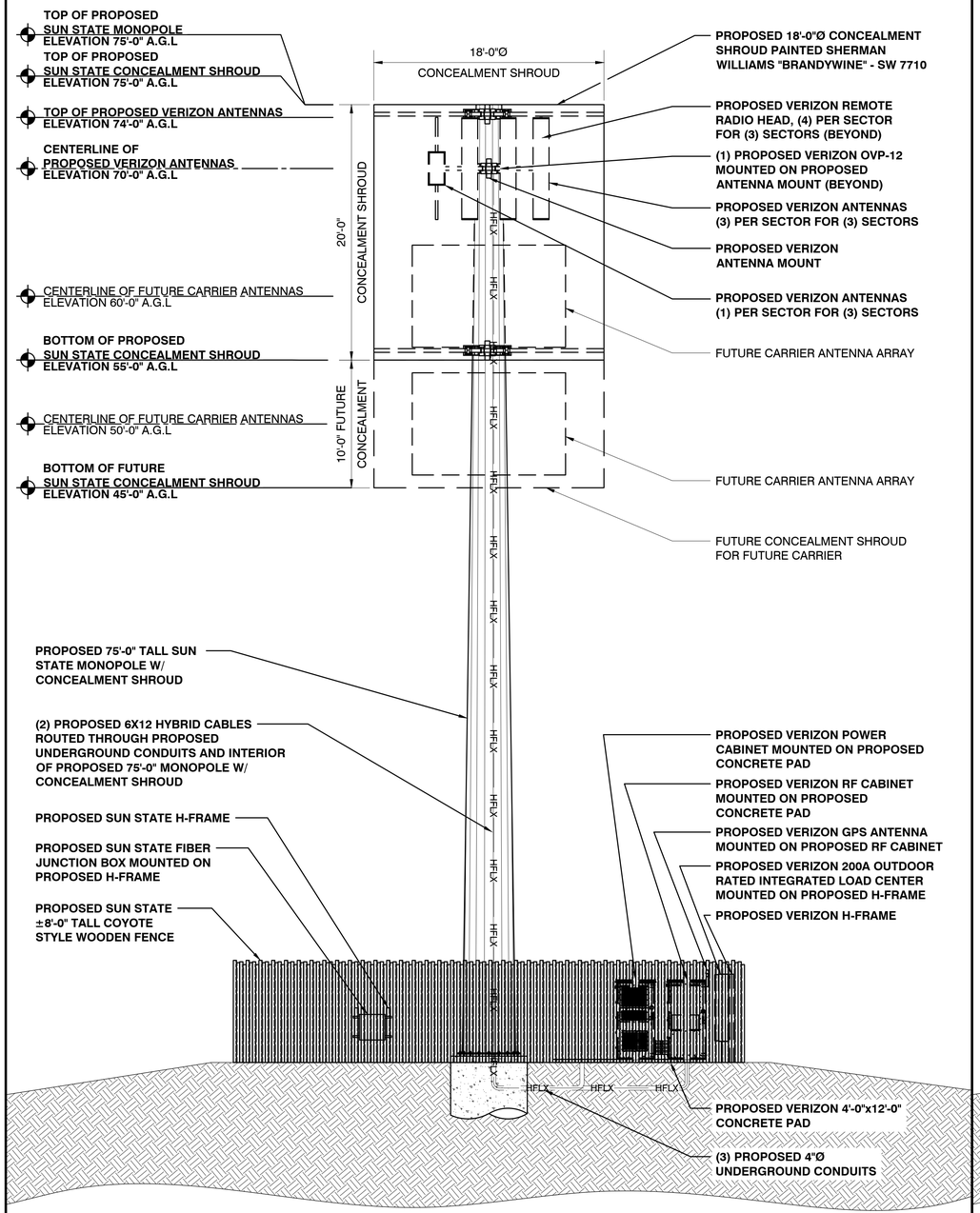
FINAL
FOR ZONING
ONLY

NM01-148 SPIKE /
ABQ TIERRA MADRE

221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SHEET TITLE
ENLARGED SITE PLAN AND ANTENNA PLAN

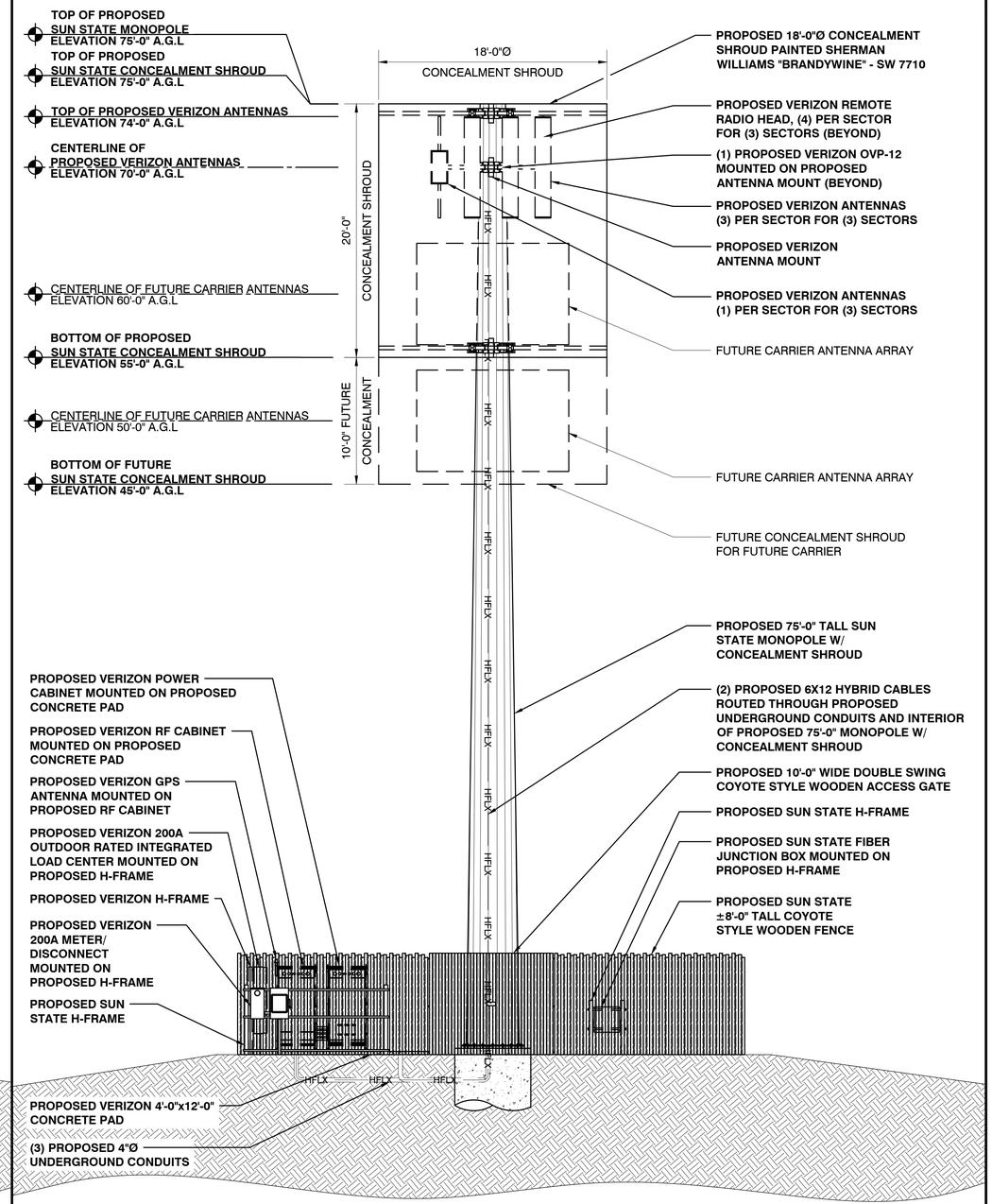
SHEET NUMBER
Z-4



NEW SOUTHEAST ELEVATION

24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"

1



NEW NORTHWEST ELEVATION

24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"

2

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A&E CONSULTING FIRM & SITE ACQUISITION
PINNACLE CONSULTING, INC
Site Acquisition | Engineering | Construction
1426 NORTH MARVIN STREET # 101
GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.G.
CHECKED BY:	KF

REV	DATE	DESCRIPTION	BY
A	04/23/24	FINAL ZONING	M.G.
0	05/15/24	FINAL ZONING	CDA
1	09/17/25	FINAL ZONING	M.G.

FINAL

FOR ZONING

ONLY

NM01-148 SPIKE /
ABQ TIERRA MADRE

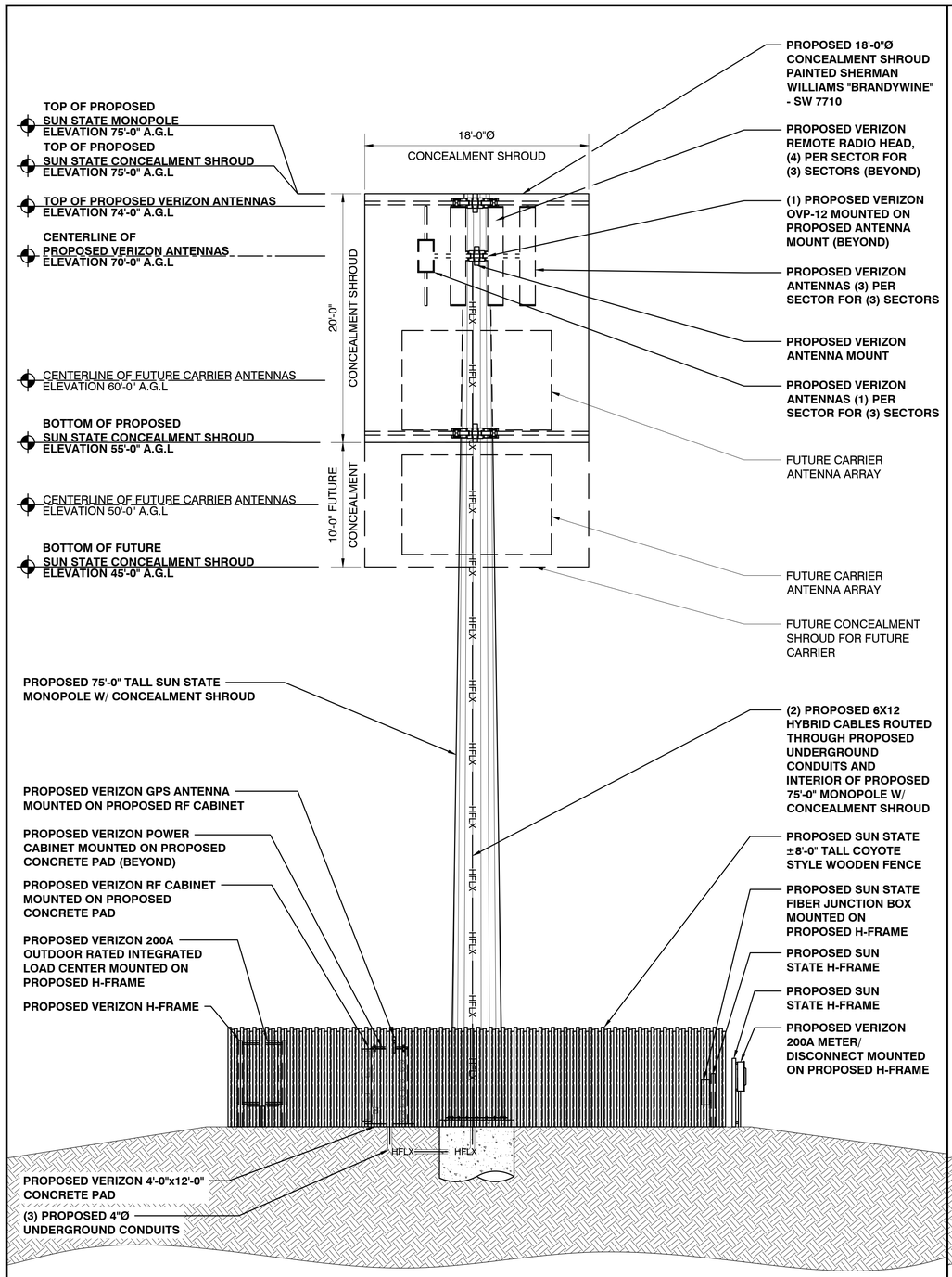
221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SHEET TITLE

ELEVATIONS

SHEET NUMBER

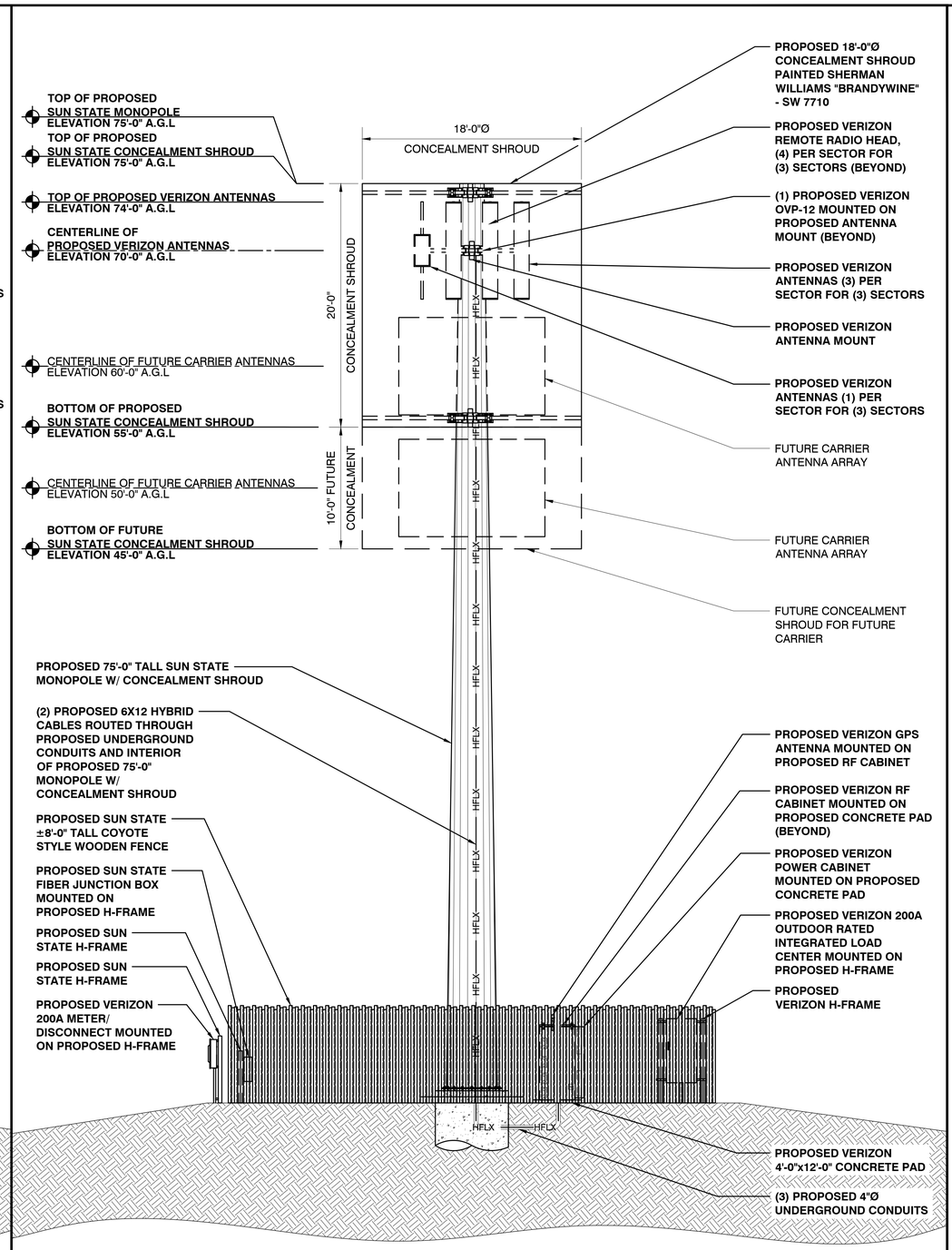
Z-5



NEW NORTHEAST ELEVATION

24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"

1



NEW SOUTHWEST ELEVATION

24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"

2

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1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: 480-664-9588 - FAX 480-664-9850

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A&E CONSULTING FIRM & SITE ACQUISITION
PINNACLE CONSULTING, INC
Site Acquisition | Engineering | Construction
1426 NORTH MARVIN STREET # 101
GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.G.
CHECKED BY:	KF

REV	DATE	DESCRIPTION	BY
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0	05/15/24	FINAL ZONING	CDA
1	09/17/25	FINAL ZONING	M.G.

FINAL

FOR ZONING

ONLY

NM01-148 SPIKE /
ABQ TIERRA MADRE

221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SHEET TITLE

ELEVATIONS

SHEET NUMBER

Z-6

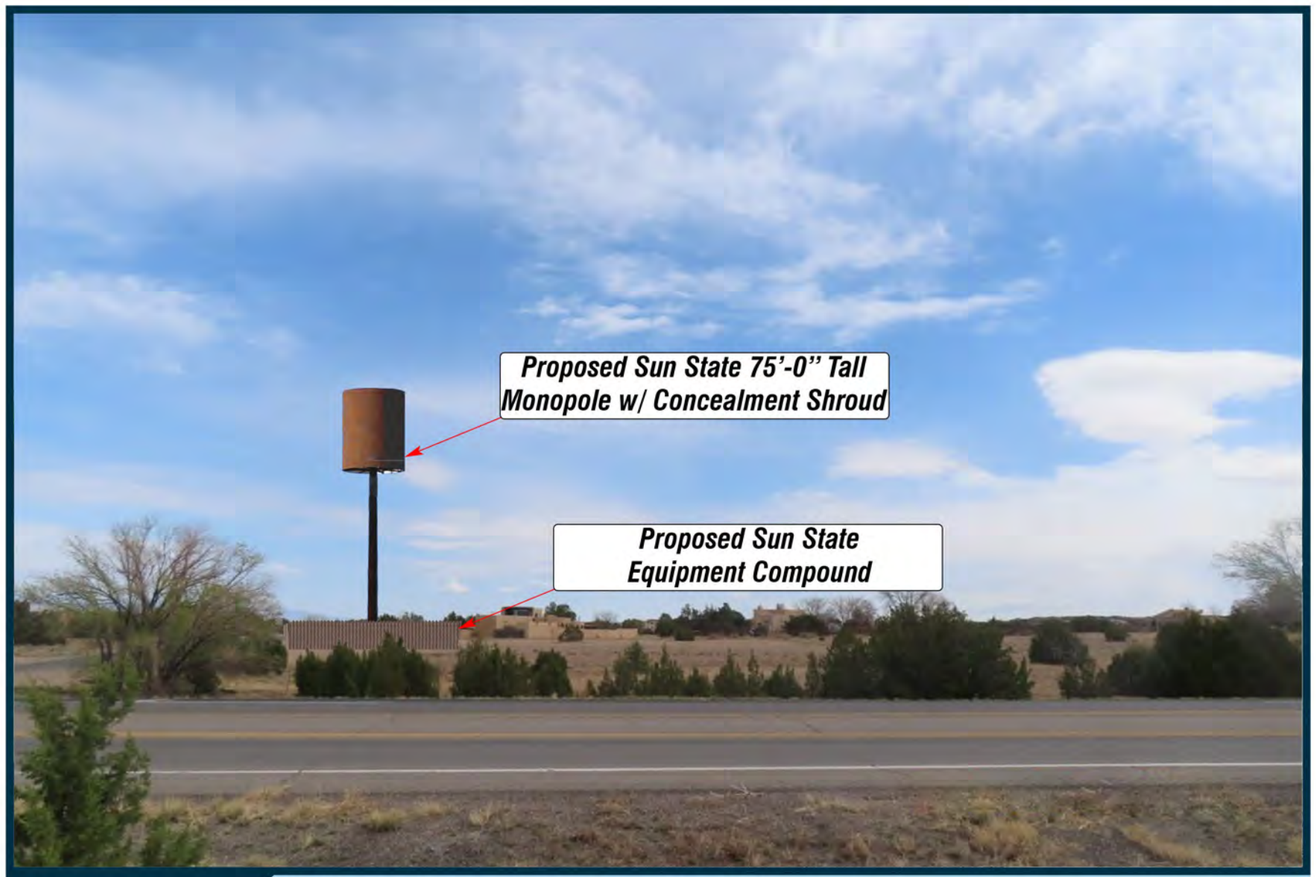
Site: NM01-148 Spike / ABQ Tierra Madre

SUN STATE TOWERS

Address: 221 165 Hwy St. ~ Placitas, NM 87043

05/08/2024 **View 1**

Location Map



Proposed **Notes: 215' from proposed site, looking North.**

Existing

These depictions are for demonstrative purposes only.
They are to be used in addition to the engineering drawings for an accurate representation of the site

Applicant

Sun State Towers
1426 North Marvin Street, Suite 101
Gilbert, AZ 85233

Contact

PINNACLE CONSULTING, INC
1426 North Marvin Street, Suite 101
Gilbert, AZ 85233

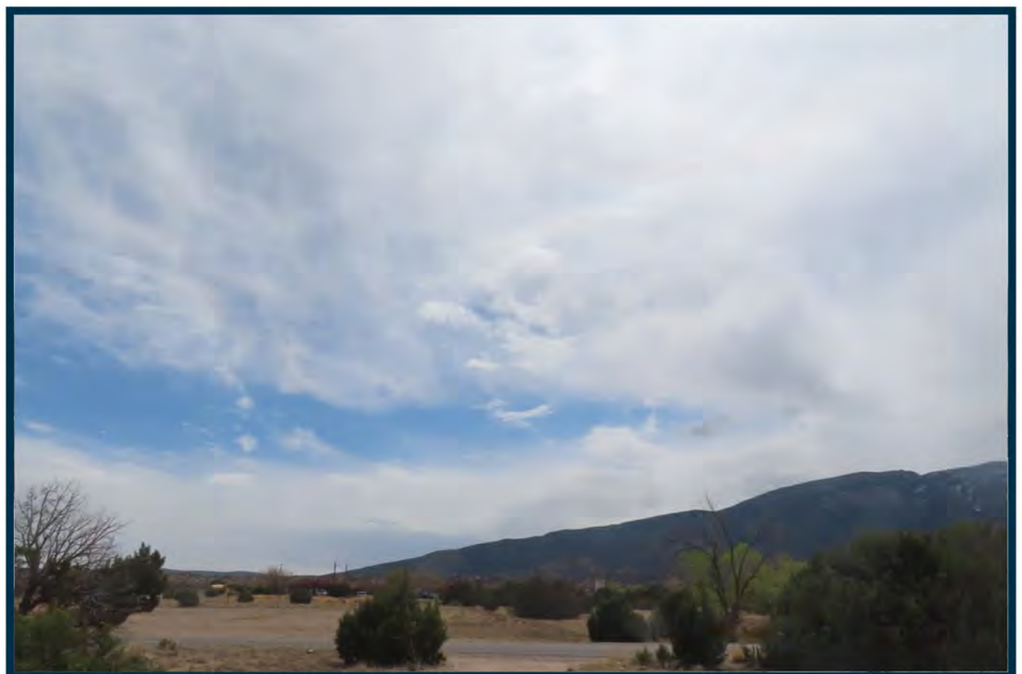
Site: NM01-148 Spike / ABQ Tierra Madre

Address: 221 165 Hwy St. ~ Placitas, NM 87043

SUN STATE TOWERS

05/08/2024 | ***View 2***

Location Map



Existing

Proposed | ***Notes: 140' from proposed site, looking East.***

These depictions are for demonstrative purposes only.
They are to be used in addition to the engineering drawings for an accurate representation of the site

Applicant

Sun State Towers
1426 North Marvin Street, Suite 101
Gilbert, AZ 85233

Contact

PINNACLE CONSULTING, INC
1426 North Marvin Street, Suite 101
Gilbert, AZ 85233

Site: NM01-148 Spike / ABQ Tierra Madre

Address: 221 165 Hwy St. ~ Placitas, NM 87043

SUN STATE TOWERS

05/08/2024 | ***View 3***

Location Map

Existing

Proposed | ***Notes: 240' from proposed site, looking Southwest.***

These depictions are for demonstrative purposes only.
They are to be used in addition to the engineering drawings for an accurate representation of the site

Applicant

Sun State Towers
1426 North Marvin Street, Suite 101
Gilbert, AZ 85233

Contact

PINNACLE CONSULTING, INC
1426 North Marvin Street, Suite 101
Gilbert, AZ 85233

Site: NM01-148 Spike / ABQ Tierra Madre

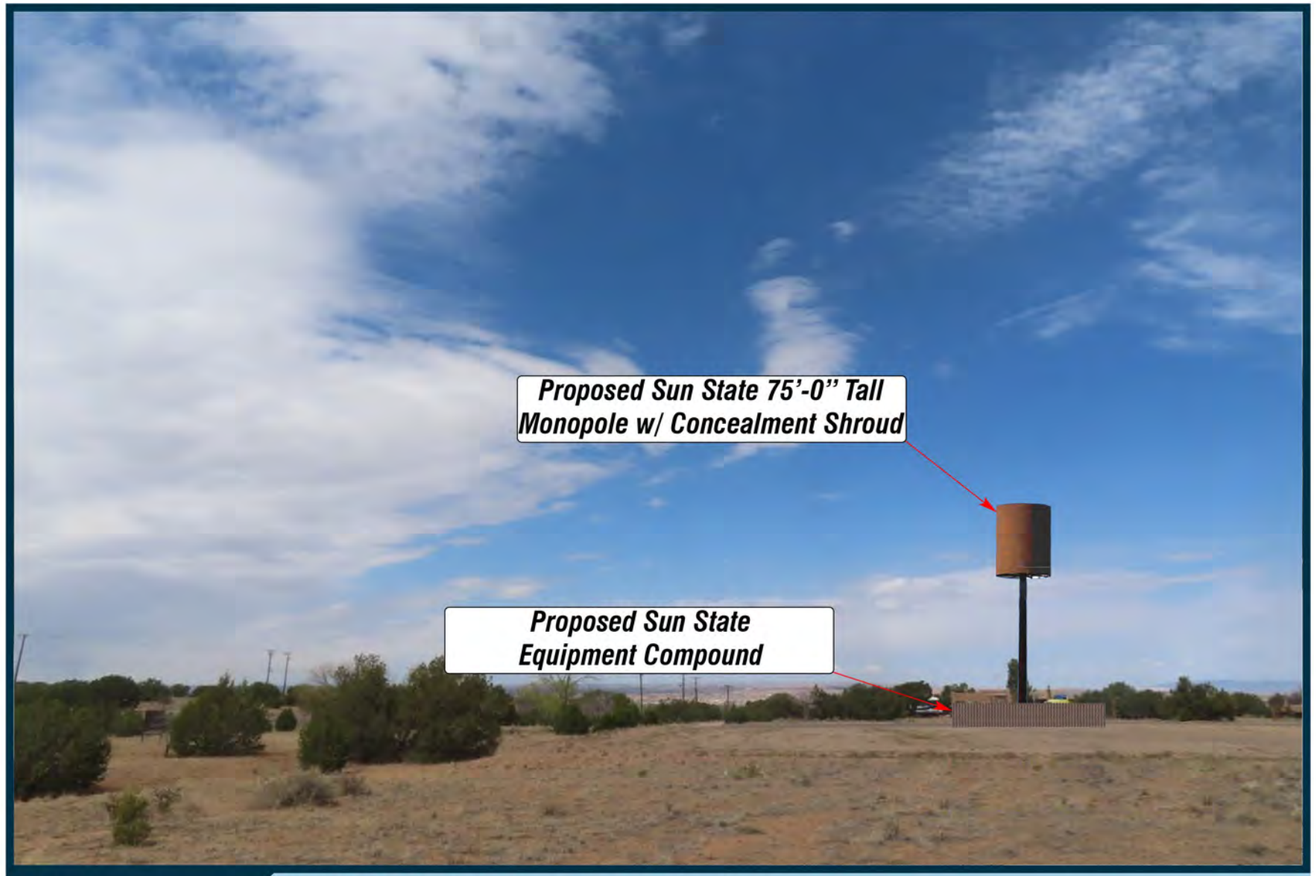
Address: 221 165 Hwy St. ~ Placitas, NM 87043

SUN STATE TOWERS

05/08/2024 — ***View 4***

Location Map

Existing



Proposed — ***Notes: 300' from proposed site, looking West.***

These depictions are for demonstrative purposes only.
They are to be used in addition to the engineering drawings for an accurate representation of the site

Applicant

Sun State Towers
1426 North Marvin Street, Suite 101
Gilbert, AZ 85233

Contact

PINNACLE CONSULTING, INC
1426 North Marvin Street, Suite 101
Gilbert, AZ 85233

Pinnacle Consulting, Inc
1426 N Marvin St., Suite 101
Gilbert, AZ 85233

Project: VERIZON ABQ_TIERRA MADRE (Sun State Tower NM01-148 SPIKE)
Parcel: 102-307-302-8180
Address: 221 165 HWY ST, Placitas, NM 87043 Facility
75' Tall Wireless Facility Concealed with 40' x 40' Compound

Sun State Towers confirms it will adhere to all required local and federal regulations as outlined by the FAA / FCC to build and operate the proposed wireless facility to ensure compliance and safety.

SUN STATE TOWERS

Health and Safety January 2024

Wireless technology has been in widespread use since the 1940's. The technology is constantly reviewed by organizations world-wide. The technology typically operates at a fraction of the power guidelines set by the Federal Communications Commission for safe operation.

FCC
Measurements made near typical cellular and PCS (personal communication service) cell sites have shown that ground-level power densities are well below the exposure limits recommended by RF/microwave safety standards used by the FCC. (FCC Consumer Facts)

FCC guidelines are based on federal health and safety agencies including the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) and non-governmental organizations such as the Institute of Electrical and Electronics Engineers (IEEE) and the National Council on Radiation Protection and Measurements (NCRP).

WHO
Recent surveys indicate that RF exposures from base stations and wireless devices in publicly accessible areas (fncluding schools and hospitals) are normally thousands of times below international standards." Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects. (World Health Organization Fact Sheet)

Site Name: Spike
Site Number: NM01-148

LEASE AGREEMENT

THIS LEASE AGREEMENT ("***Prime Lease***") is made effective as of the date of the latter signature hereof (the "***Execution Date***") and is by and between Landlord and Sun State Towers.

RECITALS

A. WHEREAS, Landlord is the owner of that certain parcel of land (the "***Property***") located in the County of Sandoval, State of New Mexico, as more particularly described on Exhibit A;

B. WHEREAS, Landlord desires to lease to Sun State Towers a portion of the Property (the "***Compound***"), together with easements for ingress and egress and the installation and maintenance of utilities (the "***Easement***" and together with the Compound, the "***Site***") as legally described on Exhibit B and as generally depicted on Exhibit D (the "***Site Plan***"); and

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, and other good and valuable consideration, the receipt, adequacy and sufficiency of all of which are hereby acknowledged, the parties hereto hereby agree as follows:

1. Business and Defined Terms. For the purposes of this Prime Lease, the following capitalized terms have the meanings set forth in this paragraph 1.

(a) ***Sun State Towers***: Sun State Towers IV, LLC,
a Delaware limited liability company

(b) ***Notice Address of Sun State Towers***: Sun State Towers IV, LLC
1426 North Marvin Street #101
Gilbert, AZ 85233
Attn: Land Management

(c) ***Landlord:*** Racquel Huslig, an unmarried woman

(d) ***Notice Address of Landlord:*** Racquel Huslig
45 Camino De Las Piedras
Placitas, NM 87043

(e) ***Initial Option Period***: Twelve (12) months

(f) ***Renewal Option Period:*** Twelve (12) months

(g) ***Option Period***: The Initial Option Period and any Renewal Option Period(s)

(h) ***Option Consideration (Initial Option Period):*** $1000.00

(i) ***Option Extension Consideration (Renewal Option Period(s)):*** $1000.00

(j) ***Commencement Date***: The date specified in the written notice by Sun State Towers to Landlord exercising the Option constitutes the Commencement Date of the Term.

(k) ***Initial Term:*** Intentionally deleted.

(l) ***Renewal Terms:*** Intentionally deleted.

(m) ***Term***: Ninety-nine (99) years, commencing on the Commencement Date and continuing until midnight of the day immediately prior to the ninety-ninth (99^{th}) anniversary of the Commencement Date.

(n) ***Rent:*** The one-time lump sum amount of $225,000.00 for the entire Term, to be paid in accordance with paragraph 4.

(o) ***Increase Amount:*** Intentionally deleted.

2. Option to Lease.

(a) Grant of Option. Landlord hereby gives and grants to Sun State Towers and its assigns, an exclusive and irrevocable option to lease the Site during the Initial Option Period (the "***Option***").

(b) Extension of Option. The Initial Option Period will automatically be extended for each Renewal Option Period unless Sun State Towers provides Landlord written notice of its intent not to extend the Option.

(c) Consideration for Option. Option Consideration is due and payable in full within thirty (30) days of the Execution Date and Sun State Towers will pay Landlord any Option Extension Consideration within thirty (30) days of the commencement of any Renewal Option Period.

(d) Option Period Inspections and Investigations.

(i) During the Option Period, Landlord will provide Sun State Towers with any keys or access codes necessary for access to the Property.

(ii) During the Option Period, Sun State Towers and its officers, agents, employees and independent contractors may enter upon the Property to perform or cause to be performed test borings of the soil, environmental audits, engineering studies and to conduct a metes and bounds survey of the Site and/or the Property (the "***Survey***"), provided that Sun State Towers will not unreasonably interfere with Landlord's use of the Property in conducting these activities. At Sun State Towers discretion, the legal description of the Site as shown on the Survey may replace Exhibit B of this Prime Lease and be added as Exhibit B of the Memorandum of Lease.

(iii) Sun State Towers may not begin any construction activities on the Site during the Option Period other than those activities described in, or related to, this paragraph 2(d).

(e) Exercise of Option. Sun State Towers may, in its sole discretion, exercise the Option by delivery of written notice to Landlord at any time during the Option Period. If Sun State Towers exercises the Option, then Landlord will lease the Site to Sun State Towers subject to the terms and conditions of this Prime Lease. If Sun State Towers does not exercise the Option, this Prime Lease will terminate.

3. **Term**. The Term is as provided in paragraph 1(m).

4. **Consideration**. Sun State Towers will pay the one-time lump sum payment of Rent for the entire Term within ninety (90) days of the Commencement Date.

5. **Use**.

(a) Sun State Towers will be permitted to use the Site for the purpose of constructing, maintaining, removing, replacing, securing, and operating a communications facility and uses incidental thereto, including, but not limited to, the construction or installation and maintenance of a telecommunications tower (the "***Tower***"), structural tower base(s), guy anchors, guy wires, communications equipment, one or more buildings or equipment cabinets, equipment, radio transmitting and receiving antennas, personal property and related improvements and facilities on the Compound (collectively, the "***Tower Facilities***"), to facilitate the use of the Site as a site for the transmission and receipt of communication signals including, but not limited to, voice, data and internet transmissions and for any other uses which are incidental to the transmission and receipt of communication signals of any kind and frequency (the "***Intended Use***"). The Intended Use shall include Sun State's ability to install utilities (including, but not limited to, electricity and electric power sources or creation of any kind, fiber optic lines, cable lines, and any cabling or transmission conduits of any kind or type) in, on, and to the Site. The Intended Use shall also include the Sun State's right to access, ingress, and egress the Site at its sole discretion 24 hours a day, seven (7) days a week, 365 days a year.

(b) Sun State Towers, at its sole discretion, will have the right, without prior notice or the consent of Landlord, to license or sublease all or a portion of the Site or the Tower Facilities to other parties (each, a "***Collocator***" and collectively, the "***Collocators***"). The Collocators will be entitled to modify the Tower Facilities and to erect additional improvements on the Compound, including, but not limited to antennas, dishes, cabling, additional buildings or shelters ancillary to the Intended Use. The Collocators will be entitled to all rights of ingress and egress to the Site and the right to install utilities on, in, and to the Site that Sun State Towers has under this Prime Lease, and shall have all rights and inclusions of the Site's Intended Use described herein including, but not limited to, the use of any easement described below and on the same terms as Sun State Towers, and to all other rights set forth herein.

(c) The parties agree that should Sun State Towers desire to lease additional ground space to accommodate an additional Collocator, Landlord will lease space to Sun State Towers at the then current rent per square foot rental rate.

6. **Tower Facilities**.

(a) Sun State Towers will have the right, at Sun State Towers sole cost and expense, to erect the Tower Facilities which will be the exclusive property of Sun State Towers throughout the Term as well as upon the expiration or termination of this Prime Lease.

(b) Landlord grants Sun State a non-exclusive easement in, over, across and through the Property, as more particularly described and/or depicted on Exhibit B, and other real property owned by Landlord contiguous to the Site as may be reasonably required for construction, installation, maintenance, and operation of the Tower Facilities including: (i) access to the Site for construction

machinery and equipment, (ii) storage of construction materials and equipment during construction of the Tower Facilities, and (iii) use of a staging area for construction, installation and removal of equipment.

(c) Sun State Towers may, at its sole expense, use any and all appropriate means of restricting access to the Compound or the Tower Facilities, including, without limitation, construction of a fence and may install and maintain identifying signs or other signs required by any governmental authority on or about the Site, including any access road to the Site.

(d) Sun State Towers will maintain the Compound, including the Tower Facilities, in a reasonable condition throughout the Term. Sun State Towers is not responsible for reasonable wear and tear or damage from casualty and condemnation. Landlord grants Sun State the right to clear all trees, undergrowth, or other obstructions and to trim, cut, and keep trimmed all tree limbs which may interfere with or fall upon the Tower Facilities or the Site.

(e) Sun State Towers (and any Collocators — which are collectively referred to herein as "***Sun State***") may replace and augment Sun State's equipment or portions thereof and add or modify the frequencies upon which such equipment operates as needed to meet Sun State's business objectives, whether such equipment or frequencies are specified or not on any attachments to the applicable site lease supplement with a respective Collocator. Sun State shall be permitted to make "***Equipment Modifications***" (as defined below) without incurring any increase in the then current Rent, and without Landlord's approval thereof conditioned upon any extension of the remaining Term or other change to the terms and conditions of any such supplement (including the terms and conditions of this Prime Lease). For purposes of this Prime Lease, "***Equipment Modifications***" means removal of Sun State's equipment installed at the Site, (collectively, the "***Old Equipment***"), and replacing the same with new equipment (collectively, the "***Replacement Equipment***").

(f) Sun State Towers will remove or cause to be removed all of the above-ground portions of the Tower Facilities within one hundred eighty (180) days following the expiration or termination of this Prime Lease.

7. **Utilities**.

(a) Sun State will have the right to install utilities, at Sun State Towers expense, and to improve present utilities on the Property and the Site. Sun State will have the right to permanently place utilities on (or to bring utilities across or under) the Site to service the Compound and the Tower Facilities.

(b) If utilities necessary to serve the equipment of Sun State cannot be located within the Site, Landlord agrees to allow the installation of utilities on the Property or other real property owned by Landlord without requiring additional compensation from Sun State. Landlord will, upon Sun State Towers' request, execute a separate recordable written easement or lease to the utility company providing such service evidencing this right.

(c) Sun State may install backup generator(s).

8. Access.

(a) In the event that the Site loses access to a public right of way during the Term, Landlord and Sun State Towers will amend this Prime Lease, at no imposed cost to either Party, to provide access to a public way by: (i) amending the location of the Easement; or (ii) granting an additional easement to Sun State.

(b) To the extent damage (including wear and tear caused by normal usage) to the Easement or any other route contemplated hereunder intended to provide Sun State with access to the Site and the Tower Facilities is caused by Landlord or Landlord's tenants, licensees, invites or agents, Landlord will repair the damage at its own expense.

(c) Landlord will maintain access to the Compound from a public way in a free and open condition so that no interference is caused to Sun State by Landlord or lessees, licensees, invitees or agents of Landlord. In the event that Sun State's access to the Compound is impeded or denied by Landlord or Landlord's lessees, licensees, invitees or agents, in addition to any and all rights and remedies set forth in this Prime Lease, Sun State shall have the right to pursue any and all rights and remedies that it may have at law or in equity.

9. Representations and Warranties of Landlord. Landlord represents and warrants to Sun State and Sun State's successors and assigns:

(a) Landlord has the full right, power, and authority to execute this Prime Lease;

(b) There are no pending or threatened administrative actions, including bankruptcy or insolvency proceedings under state or federal law, suits, claims or causes of action against Landlord or which may otherwise affect the Property;

(c) The Property is not presently subject to an option, lease or other contract which may adversely affect Landlord's ability to fulfill its obligations under this Prime Lease, and the execution of this Prime Lease by Landlord will not cause a breach or an event of default of any other agreement to which Landlord is a Party. Landlord agrees that it will not grant an option or enter into any contract or agreement which will have any adverse effect on the Intended Use or Sun State's rights under this Prime Lease;

(d) No licenses, rights of use, covenants, restrictions, easements, servitudes, subdivision rules or regulations, or any other encumbrances relating to the Property prohibit or will interfere with the Intended Use;

(e) Landlord has good and marketable fee simple title to the Site, the Property and any other property across which Landlord may grant an easement to Sun State, free and clear of all liens and encumbrances. Landlord covenants that Sun State will have the quiet enjoyment of the Compound during the term of this Prime Lease. If Landlord fails to keep the Site free and clear of any liens and encumbrances, Sun State Towers will have the right, but not the obligation, to satisfy any such lien or encumbrance and to deduct the full amount paid by Sun State Towers on Landlord's behalf from future installments of Rent;

(f) Sun State will at all times during this Prime Lease enjoy ingress, egress, and access from the Site twenty four (24) hours a day, seven (7) days a week, three hundred sixty five (365 days a year, to an open and improved public road which is adequate to service the Site and the Tower Facilities; and

(g) These representations and warranties of Landlord survive the termination or expiration of this Prime Lease.

10. Interference. Landlord will not use, nor will Landlord permit its tenants, licensees, invitees or agents to use any portion of the Property in any way which interferes with the Intended Use, including, but not limited to, any use on the Property or surrounding property that causes electronic or physical obstruction or degradation of the communications signals from the Tower Facilities ("***Interference***"). Interference will be deemed a material breach of this Prime Lease by Landlord and Landlord will have the responsibility to terminate Interference immediately upon written notice from Sun State Towers. Notwithstanding anything in this Prime Lease to the contrary, if the Interference does not cease or is not rectified as soon as possible, but in no event longer than 24 hours after Sun State Towers written notice to Landlord, Landlord acknowledges that continuing Interference will cause irreparable injury to Sun State, and Sun State Towers will have the right, in addition to any other rights that it may have at law or in equity, to bring action to enjoin the Interference.

11. Termination. This Prime Lease may be terminated, without any penalty or further liability upon written notice as follows:

(a) By either Party upon a default of any covenant or term of this Prime Lease by the other Party which is not cured within sixty (60) days of receipt of written notice of default (without, however, limiting any other rights available to the parties in law or equity); provided, that if the defaulting Party commences efforts to cure the default within such period and diligently pursues such cure, the non-defaulting Party may not terminate this Prime Lease as a result of that default.

(b) Upon thirty (30) days' written notice by Sun State Towers to Landlord if Sun State Towers is unable to obtain, maintain, renew or reinstate any agreement, easement, permit, certificates, license, variance, zoning approval, or any other approval which may be required from any federal, state or local authority necessary to the construction and operation of the Tower Facilities or to the Intended Use (collectively, the "***Approvals***"); or

(c) Upon thirty (30) days' written notice from Sun State Towers to Landlord if the Site is or becomes unsuitable, in Sun State Towers' sole, but reasonable judgment for use as a wireless communications facility by Sun State or by Sun State's licensee(s) or sublessee(s).

(d) In the event of termination by Sun State Towers or Landlord pursuant to this provision, Sun State shall be relieved of all further liability hereunder, except for its obligation to remove all above ground structures and equipment within one hundred eighty (180) days following termination or expiration. In the event of termination as hereinabove provided, no refund of any Rent shall be owed by Landlord to Sun State Towers.

12. Taxes.

(a) Sun State Towers will pay any personal property taxes assessed on or attributable to the Tower Facilities. Sun State Towers will reimburse Landlord for any increase to Landlord's real

property taxes that are directly attributable to Sun State Towers' Site and/or Tower Facilities upon receipt of the following: (1) a copy of Landlord's tax bill; (2) proof of payment; and (3) written documentation from the assessor of the amount attributable to Sun State Towers. Sun State Towers shall have no obligation to reimburse Landlord for any taxes paid by Landlord unless Landlord requests reimbursement within twelve (12) months of the date said taxes were originally due. Additionally, as a condition precedent to Landlord having the right to receive reimbursement, Landlord shall, within three (3) days of receipt of any notice from the taxing authority of any assessment or reassessment, provide Sun State Towers with a copy of said notice. Sun State Towers shall have the right to appeal any assessment or reassessment relating to the Site or Tower Facilities and Landlord shall either (i) designate Sun State Towers as its attorney-in-fact as required to effect standing with the taxing authority, or (ii) join Sun State Towers in its appeal.

(b) Landlord will pay when due all real property taxes, rental taxes and all other fees and assessments attributable to the Property, the Compound, the Easement and the anticipated use thereof. If Landlord fails to pay when due any such taxes affecting the Property or the Site, Sun State Towers will have the right, but not the obligation, to pay such taxes and either: (i) deduct the full amount of the taxes paid by Sun State Towers on Landlord's behalf from future installments of Rent, or (ii) collect such taxes by any lawful means.

13. Environmental Compliance.

(a) Landlord represents and warrants that:

(i) No Hazardous Materials have been used, generated, stored or disposed of, on, under or about the Property in violation of any applicable law, regulation or administrative order (collectively, "***Environmental Laws***") by either Landlord or to Landlord's knowledge, any third party; and

(ii) To Landlord's knowledge, no third party been permitted to use, generate, store or dispose of any Hazardous Materials on, under, about or within the Property in violation of any Environmental Laws.

(b) Landlord will not, and will not permit any third party to use, generate, store or dispose of any Hazardous Materials on, under, about or within the Property in violation of any Environmental Laws.

(c) Sun State Towers agrees that it will not use, generate, store or dispose of any Hazardous Material on, under, about or within the Site in violation of any applicable laws, regulations or administrative orders.

(d) The term "***Hazardous Material(s)***" means any: material, substance, chemical or waste, including, but not limited to, contaminants, oils, asbestos, PCBs, or any other hazardous substances or wastes, as defined by federal, state or local environmental laws, regulations or administrative orders or other materials the removal of which is required or the maintenance of which is prohibited or regulated by any federal, state or local government authority having jurisdiction over the Property.

14. Indemnification.

(a) General.

(i) Landlord, its heirs, grantees, successors, and assigns will exonerate, hold harmless, indemnify, and defend Sun State from any claims, obligations, liabilities, costs, demands, damages, expenses, suits or causes of action, including costs and reasonable attorney's fees, which may arise out of: (A) any injury to or death of any person; (B) any damage to property, if such injury, death or damage arises out of or is attributable to or results from the acts or omissions of Landlord, or Landlord's principals, employees, invitees, agents or independent contractors; or (C) any breach of any representation or warranty made by Landlord in this Prime Lease.

(ii) Sun State Towers, its grantees, successors, and assigns will exonerate, hold harmless, indemnify, and defend Landlord from any claims, obligations, liabilities, costs, demands, damages, expenses, suits or causes of action, including costs and reasonable attorney's fees, which may arise out of: (A) any injury to or death of any person; (B) any damage to property, if such injury, death or damage arises out of or is attributable to or results from the negligent acts or omissions of Sun State Towers, or Sun State Towers' employees, agents or independent contractors; or (C) any breach of any representation or warranty made by Sun State Towers in this Prime Lease.

(b) Environmental Matters.

(i) Landlord, its heirs, grantees, successors, and assigns will indemnify, defend, reimburse and hold harmless Sun State from and against any and all damages arising from the presence of Hazardous Materials upon, about or beneath the Property or migrating to or from the Property or arising in any manner whatsoever out of the violation of any Environmental Laws, which conditions exist or existed prior to or at the time of the execution of this Prime Lease or which may occur at any time in the future through no fault of Sun State Towers. Notwithstanding the obligation of Landlord to indemnify Sun State pursuant to this Prime Lease, Landlord will, upon demand of Sun State Towers, and at Landlord's sole cost and expense, promptly take all actions to remediate the Property which are required by any federal, state or local governmental agency or political subdivision or which are reasonably necessary to mitigate environmental damages or to allow full economic use of the Site, which remediation is necessitated from the presence upon, about or beneath the Property of a Hazardous Material. Such actions include but not be limited to the investigation of the environmental condition of the Property, the preparation of any feasibility studies, reports or remedial plans, and the performance of any cleanup, remediation, containment, operation, maintenance, monitoring or actions necessary to restore the Property to the condition existing prior to the introduction of such Hazardous Material upon, about or beneath the Property notwithstanding any lesser standard of remediation allowable under applicable law or governmental policies.

(ii) Sun State Towers, its grantees, successors, and assigns will indemnify, defend, reimburse and hold harmless Landlord from and against environmental damages caused by the presence of Hazardous Materials on the Compound in violation of any Environmental Laws and

arising solely as the result of Sun State Towers' activities after the execution of this Prime Lease.

(iii) Landlord be responsible for all obligations of compliance with any and all environmental and industrial hygiene laws, including any regulations, guidelines, standards, or policies of any governmental authorities regulating or imposing standards of liability or standards of conduct with regard to any environmental or industrial hygiene conditions or concerns as may now or at any time hereafter be in effect, that are or were in any way related to activity now conducted in, on, or in any way related to the Site or Property, unless such conditions or concerns are caused by the specific activities of Sun State Towers in the Site.

(iv) In the event that abatement of Hazardous Materials is required in connection with the construction of the Site, Landlord shall take responsibility as generator of the waste resulting from the abatement and shall cooperate with any necessary abatement procedures, including signing all necessary documents and manifest required for abatement.

15. Casualty.

In the event of damage by fire or other casualty to the Site or Property that cannot reasonably be expected to be repaired within forty-five (45) days following same or, if the Property is damaged by fire or other casualty so that such damage may reasonably be expected to disrupt Sun State's operations at the Site for more than forty-five (45) days, then Sun State may, at any time following such fire or other casualty, provided Landlord has not completed the restoration required to permit Sun State to resume its operation at the Site, terminate this Prime Lease upon fifteen (15) days prior written notice to Landlord. Any such notice of termination shall cause this Prime Lease to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Prime Lease and the parties shall make an appropriate adjustment, as of such termination date, with respect to payments due to the other under this Prime Lease. Notwithstanding the foregoing, the rent shall abate during the period of repair following such fire or other casualty in proportion to the degree to which Sun State's use of the Site is impaired.

16. Right of First Refusal; Sale of Property.

(a) During the Term, prior to selling the Site or any portion of or interest in the Site, including but not limited to a leasehold interest or easement, or otherwise transfer Landlord's interest in Rent, and prior to assigning the Rent or any portion of Rent to a third party, Landlord shall notify Sun State Towers in writing of the sale price and terms offered by a third party (the "***Offer***"), together with a copy of the Offer. Sun State Towers will have the right of first refusal to purchase the real property interest in the Site or Rent or portion of Rent being sold by Landlord to such third party on the same financial terms of the Offer. Sun State Towers will exercise its right of first refusal within sixty (60) days of receipt of Landlord's notice and if Sun State Towers does not provide notice within sixty (60) days, Sun State Towers will be deemed to have not exercised its right of first refusal. If Sun State Towers does not exercise its right of first refusal, paragraph 16(b) of this Prime Lease will control the terms of the sale.

(b) Landlord may sell the Property or a portion thereof to a third party, provided: (i) the sale is made subject to the terms of this Prime Lease; and (ii) if the sale does not include the assignment of

Landlord's full interest in this Prime Lease the purchaser must agree to perform, without requiring compensation from Sun State, any obligation of the Landlord under this Prime Lease, including Landlord's obligation to cooperate with Sun State as provided hereunder, which obligation Landlord would no longer have the legal right or ability to perform following the sale without requiring compensation from Sun State to be paid to such purchaser.

17. Assignment.

(a) Any sublease, license or assignment of this Prime Lease that is entered into by Landlord or Sun State Towers is subject to the provisions of this Prime Lease.

(b) Landlord may assign this Prime Lease in its entirety to any third party in conjunction with a sale of the Property in accordance with paragraph 16 of this Prime Lease. Landlord will not otherwise assign less than Landlord's full interest in this Prime Lease without the prior written consent of Sun State Towers.

(c) Sun State Towers may assign this Prime Lease without prior notice to or the consent of Landlord. Upon assignment, Sun State Towers shall be relieved of all liabilities and obligations hereunder and Landlord shall look solely to the assignee for performance under this Prime Lease and all obligations hereunder.

(d) Sun State Towers may mortgage or grant a security interest in this Prime Lease and the Tower Facilities, and may assign this Prime Lease and the Tower Facilities to any such mortgagees or holders of security interests including their successors and assigns (collectively, "***Secured Parties***"). If requested by Sun State Towers, Landlord will execute such consent to such financing as may reasonably be required by Secured Parties. In addition, if requested by Sun State Towers, Landlord agrees to notify Sun State Towers and Sun State Towers Secured Parties simultaneously of any default by Sun State Towers and to give Secured Parties the same right to cure any default as Sun State Towers. If a termination, disaffirmance or rejection of the Prime Lease by Sun State Towers pursuant to any laws (including any bankruptcy or insolvency laws) occurs, or if Landlord will terminate this Prime Lease for any reason, Landlord will give to Secured Parties prompt notice thereof and Secured Parties will have the right to enter upon the Compound during a 30-day period commencing upon Secured Parties' receipt of such notice for the purpose of removing any Tower Facilities. Landlord acknowledges that Secured Parties are third-party beneficiaries of this Prime Lease.

18. Condemnation. In the event of any condemnation of all or any portion of the Property, and as a result of such condemnation, Sun State Towers, in Sun State Towers' sole discretion, is unable to use the Site for the purposes intended hereunder, or if such condemnation may reasonably be expected to disrupt Sun State Towers' operations at the Site for more than forty-five (45) days, Sun State Towers may, at Sun State Towers' option, to be exercised in writing within fifteen (15) days after Landlord shall have given Sun State Towers written notice of such taking (or in the absence of such notice, within fifteen (15) days after the condemning authority shall have taken possession), terminate this Prime Lease effective as of the date the condemning authority takes such possession. Sun State Towers shall be entitled to and shall receive and retain that part of the award or price paid by the condemning authority which is attributable to the improvements, fixtures, conduits, antennas, equipment; and all other things of Sun State Towers situated on the Site or the Property which cannot be removed, as well as Sun State Towers' relocation costs, damages and losses, and the loss of its leasehold interest

(collectively, "***Losses***"). In addition, Sun State Towers may on its own behalf make a claim for its Losses in any condemnation proceeding involving the Site. Any such notice of termination shall cause this Prime Lease to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Prime Lease and the Parties shall make an appropriate adjustment as of such termination date with respect to payments due to each other under this Prime Lease. If Sun State Towers does not terminate this Prime Lease in accordance with the foregoing, this Prime Lease shall remain in full force and effect as to the portion of the Site remaining, except that the rent shall be reduced in the same proportion as the rentable area of the Site taken bears to the total rentable area of the Site. In the event that this Prime Lease is not terminated by reason of such condemnation, Landlord shall promptly repair any damage to the Site caused by such condemning authority. In the event this Prime Lease is not terminated, Sun State Towers shall also be entitled to an award for its Losses.

19. Insurance.

(a) Sun State Towers will purchase and maintain in full force and effect throughout the Option Period and the Term such general liability and property damage policies as Sun State Towers may deem necessary. Said policy of general liability insurance will at a minimum provide a combined single limit of $1,000,000.00.

(b) Landlord will purchase and maintain in full force and effect throughout the Option Period and the Term such general liability and property damage policies as Landlord may deem necessary. Said policy of general liability insurance will at a minimum provide a combined single limit of $1,000,000.00.

20. Waiver of Damages.

(a) In the event that Sun State Towers does not exercise its Option: (i) Landlord's sole compensation and damages will be fixed and liquidated to the sums paid by Sun State Towers to Landlord as consideration for the Option; and (ii) Landlord expressly waives any other remedies it may have for a breach of this Prime Lease including specific performance and damages for breach of contract.

(b) Neither Landlord nor Sun State will be responsible or liable to the other Party for any loss or damage arising from any claim to the extent attributable to any acts of omissions of other licensees or tower users occupying the Tower Facilities or vandalism or for any structural or power failures or destruction or damage to the Tower Facilities except to the extent caused by the negligence or willful misconduct of such Party.

(c) EXCEPT WITH RESPECT TO INDEMNIFICATION OF THIRD PARTY CLAIMS UNDER THIS PRIME LEASE OR A VIOLATION OF LAW, IN NO EVENT SHALL EITHER LANDLORD OR SUN STATE BE LIABLE TO THE OTHER, THE OTHER'S EMPLOYEES, SUBCONTRACTORS, AND/OR AGENTS, OR ANY THIRD PARTY, FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, RELIANCE, PUNITIVE/EXEMPLARY OR TREBLE DAMAGES, LOSS OF FINANCING, LOSS OF REVENUE, LOSS OF TECHNOLOGY, RIGHTS OR SERVICES, LOSS OF DATA, OR LOST PROFITS, OR INTERRUPTION OR LOSS OF USE OF SERVICE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, FOR

ANY CLAIM OR DEMAND OF ANY NATURE OR KIND, AND WHETHER UNDER THEORY OF CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THIS PRIME LEASE INCLUDING ANY SUPPLEMENT HEREUNDER OR THE PERFORMANCE OR BREACH HEREOF OR THEREOF.

21. Confidentiality. Notwithstanding anything to the contrary contained in this Prime Lease, Landlord agrees and acknowledges that all of the terms of this Prime Lease and any information furnished to Landlord by Sun State Towers in connection therewith are confidential. Landlord shall not disclose any such terms or information without Sun State Tower's prior written consent, except (i) to Landlord's attorney, accountant, lender and/or a prospective fee simple purchaser of Landlord's Property, provided that such party agrees to adhere to the terms and provisions of this section, or (ii) as otherwise required by law. The terms and provisions of this section shall survive the execution and delivery of this Prime Lease.

22. Subordination Agreements.

(a) If the Site is encumbered by a mortgage or deed of trust, within thirty (30) days of receipt of a written request from Sun State Towers, Landlord agrees to execute and obtain the execution by its lender of a non-disturbance and attornment agreement in the form provided by Sun State Towers, to the effect that Sun State and Sun State's sublessees and licensees will not be disturbed in their occupancy and use of the Site by any foreclosure or to provide information regarding the mortgage to Sun State Towers.

(b) Should a subordination, non-disturbance and attornment agreement be requested by Landlord or a lender working with Landlord on a loan to be secured by the Property and entered into subsequent to the Execution Date, Sun State Towers will use good faith efforts to provide Landlord or Landlord's lender with Sun State Towers form subordination, non-disturbance and attornment agreement executed by Sun State Towers within thirty (30) days of such request.

23. Recording. Landlord agrees to execute a Memorandum of this Prime Lease which Sun State Towers may record with the appropriate officer. The date set forth in the Memorandum of Lease is for recording purposes only and bears no reference to commencement of either the Term or rent payments.

24. Notices. All notices or demands by or from Sun State Towers to Landlord, or Landlord to Sun State Towers, required under this Prime Lease will be in writing and sent (United States mail postage pre-paid, certified with return receipt requested or by reputable national overnight carrier service, transmit prepaid) to the other Party at the addresses set forth in paragraph 1 of this Prime Lease or to such other addresses as the parties may, from time to time, designate consistent with this paragraph 24, with such new notice address being effective thirty (30) days after receipt by the other Party. Notices will be deemed to have been given upon either receipt or rejection.

25. Further Acts.

(a) Within fifteen (15) days after receipt of a written request from Sun State Towers, Landlord will execute any document necessary or useful to protect Sun State's rights under this Prime Lease or to facilitate the Intended Use including documents related to title, zoning and other Approvals, and will otherwise cooperate with Sun State in its exercise of its rights under this Prime Lease.

(b) In the event that Landlord fails to execute any such document(s), as required by paragraph 25(a) above, within fifteen (15) days following receipt of a written request from Sun State Towers, such document(s) will be deemed consented to and approved by Landlord, and, in addition to any and all rights and remedies set forth in this Prime Lease, Sun State shall additionally have the right to pursue any and all rights and remedies that it may have at law or in equity.

26. Memorandum of Lease. Simultaneously with the execution of this Prime Lease, the parties will enter into the Memorandum of Lease attached to this Prime Lease as Exhibit C which Sun State Towers may record in the public records of the county of the Property. Landlord acknowledges and agrees that after Landlord signs the Memorandum of Lease but before Sun State Towers records the Memorandum of Lease, Sun State Towers may add both: (a) a reference to the recording granting Landlord its interest in the Property; (b) a legal description of the Property as Exhibit A to the Memorandum of Lease, and (c) a legal description of the Site as Exhibit B to the Memorandum of Lease. Landlord agrees to execute and return to Sun State Towers a recordable amendment to the Memorandum of Lease in form supplied by Sun State Towers if: (i) the information included in the Memorandum of Lease changes, or (ii) if it becomes clear that such information is incorrect or incomplete or if this Prime Lease is otherwise amended.

27. Miscellaneous.

(a) This Prime Lease runs with the Property and is binding upon and will inure to the benefit of the parties, their respective heirs, successors, personal representatives and assigns.

(b) Sun State Towers may, at Sun State Towers' sole cost and expense, procure an abstract of title, a commitment to issue a policy of title insurance, or an owner's policy of title insurance with respect to Sun State Towers' leasehold interest in the Property (collectively "***Title Coverage***"). Landlord agrees to furnish to Sun State Towers, within ten (10) days after request, such customary title affidavits and other documentation as reasonably requested or required by the title company in connection with Sun State Towers' Title Coverage.

(c) Landlord hereby waives any and all lien rights it may have, statutory or otherwise, in and to the Tower Facilities or any portion thereof, regardless of whether or not same is deemed real or personal property under applicable laws.

(d) The substantially prevailing Party in any litigation arising hereunder is entitled to its reasonable attorney's fees and court costs, including appeals, if any.

(e) Each Party agrees to furnish to the other, within thirty (30) days after request, such estoppel information as the other may reasonably request.

(f) This Prime Lease constitutes the entire agreement and understanding of Landlord and Sun State Towers with respect to the subject matter of this Prime Lease, and supersedes all offers, negotiations and other agreements. There are no representations or understandings of any kind not stated in this Prime Lease. Any amendments to this Prime Lease must be in writing and executed and delivered by Landlord and Sun State Towers.

(g) If either Landlord or Sun State Towers is represented by a real estate broker in this transaction, that Party is fully responsible for any fees due such broker and will hold the other Party harmless from any claims for commission by such broker.

(h) The Prime Lease will be construed in accordance with the laws of the state in which the Site is situated.

(i) Landlord recognizes that this Prime Lease is a lease of real property under which Sun State, in addition to all rights and privileges it receives herein, is entitled to all rights and protections under 11 U.S.C. § 365(h), as amended from time to time.

(j) If any term of the Prime Lease is found to be void or invalid, the remainder of this Prime Lease will continue in full force and effect.

(k) With respect to Sun State Towers' acquisition of Title Coverage, Landlord will cooperate by promptly executing any documentation required by the title insurance company.

(l) This Prime Lease may be executed in two (2) or more counterparts, all of which are considered one and the same agreement and become effective when one or more counterparts have been signed by each of the parties, it being understood that all parties need not sign the same counterpart.

(m) Landlord will not, during the Option Period or the Term, enter into any other lease, license, or other agreement for the same or similar purpose as the Intended Use, on or adjacent to the Property.

(n) Failure or delay on the part of either Party to exercise any right, power or privilege hereunder will not operate as a waiver thereof and waiver of breach of any provision hereof under any circumstances will not constitute a waiver of any subsequent breach.

(o) The parties agree that irreparable damage would occur if any of the provisions of this Prime Lease were not performed in accordance with their specified terms or were otherwise breached. Therefore, the parties agree the parties will be entitled to an injunction(s) in any court in the state in which the Site is located to prevent breaches of the provisions of this Prime Lease and to enforce specifically the terms and provisions of the Prime Lease, this being in addition to any other remedy to which the parties are entitled at law or in equity.

(p) Each Party executing this Prime Lease acknowledges that it has full power and authority to do so and that the person executing on its behalf has the authority to bind the Party.

(q) The parties agree that a scanned or electronically reproduced copy or image of this Prime Lease will be deemed an original and may be introduced or submitted in any action or proceeding as competent evidence of the execution, terms and existence hereof notwithstanding the failure or inability to produce or tender an original, executed counterpart of this Prime Lease and without the requirement that the unavailability of such original, executed counterpart of this Prime Lease first be proven.

[SIGNATURES APPEAR ON NEXT PAGE]

Site Name: Spike
Site Number: NM01-148

IN WITNESS WHEREOF, Landlord and Sun State Towers have each executed this Prime Lease as of the respective dates written below.

LANDLORD:

Racquel Huslig, an unmarried woman

By:_____

Name: Racquel Huslig

Date: 6-21-24

STATE OF New Mexico

COUNTY OF San Juan

Before me, James A. Gomez the undersigned, a Notary Public for the State, personally appeared Racquel Huslig, who is personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument, the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official stamp or seal, this 21 day of June, 2024.

[Affix Notary Seal]

_____
Notary Public
My commission expires:
12/19/27

STATE OF NEW MEXICO
NOTARY PUBLIC
James Gomez
Commission No. 1093905
Expires: December 19, 2027

Site Name: Spike
Site Number: NM01-148

SUN STATE TOWERS:

SUN STATE TOWERS IV, LLC,
a Delaware limited liability company

By: _____

Name: Chad A. Ward

Title: CEO

Date: 7/8/24

STATE OF ARIZONA

COUNTY OF MARICOPA

Before me, NANCY L. FULKS the undersigned, a Notary Public for the State, personally appeared Chad A. Ward, who is the CEO of SUN STATE TOWERS IV, LLC, a Delaware limited liability company, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument, the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official stamp or seal, this 8th day of July, 2024.

[Affix Notary Seal]

Notary Public State of Arizona
Maricopa County
Nancy L Fulks
My Commission Expires 7/5/2027
Commission Number 650816

Nancy L Fulks
Notary Public
My commission expires:
July 5, 2027

EXHIBITS

The following exhibits are attached to this Prime Lease and incorporated into this Prime Lease:

Exhibit A Description of Property

Exhibit B Description of Site

Exhibit C Memorandum of Lease

Exhibit D Site Plan

Site Name: Spike
Site Number: NM01-148

EXHIBIT A

DESCRIPTION OF PROPERTY

TRACT 5A-1A-W, PLACITAS HOMESTEADS, AS SHOWN ON THE CLAIM OF EXEMPTION LOT LINE ADJUSTMENT PLAT TRACTS 5A-1A-E & 5A-1A-W, PLACITAS HOMESTEADS, IN SECTION 35, T.13N., R.4E., N.M.P.M., SANDOVAL COUNTY, NEW MEXICO, FILED IN THE OFFICE OF THE COUNTY CLERK OF SANDOVAL COUNTY, NEW MEXICO, ON JUNE 12, 2020, IN PLAT BOOK 3, PAGE 4546.

Site Name: Spike
Site Number: NM01-148

EXHIBIT B

DESCRIPTION OF SITE

SUN STATE TOWERS LEASE AREA LEGAL DESCRIPTION:

A TRACT OF LAND BEING A PORTION OF TRACT 5A-1A-W, PLACITAS HOMESTEADS, AS SHOWN ON THE CLAIM OF EXEMPTION LOT LINE ADJUSTMENT PLAT TRACTS 5A-1A-E & 5A-1A-W, PLACITAS HOMESTEADS, IN SECTION 35, T.13N., R.4E., N.M.P.M., SANDOVAL COUNTY, NEW MEXICO, FILED IN THE OFFICE OF THE COUNTY CLERK OF SANDOVAL COUNTY, NEW MEXICO, ON JUNE 12, 2020, IN PLAT BOOK 3, PAGE 4546, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A REBAR OF THE SOUTHEAST CORNER OF SAID DESCRIBED PARCEL WHICH THE NORTHEAST CORNER OF SAID PARCEL BEARS NORTH 30°12'58" EAST, A DISTANCE OF 400 FEET; THENCE NORTH 59°47'02" WEST, A DISTANCE OF 447.39 FEET; THENCE NORTH 30°12'58" EAST, A DISTANCE OF 47.83 FEET;
THENCE NORTH 30°12'58" EAST, A DISTANCE OF 40.00 FEET;
THENCE SOUTH 59°47'02" EAST, A DISTANCE OF 20.43 FEET TO THE POINT OF BEGINNING;

THENCE SOUTH 59°47'02" EAST, A DISTANCE OF 40.00 FEET;
THENCE SOUTH 30°12'58" WEST, A DISTANCE OF 40.00 FEET;
THENCE NORTH 59°47'02" WEST, A DISTANCE OF 40.00 FEET;
THENCE NORTH 30°12'58" EAST, A DISTANCE OF 40.00 FEET TO THE POINT OF BEGINNING.

CONTAINING 1600 SQUARE FEET OR 0.037 ACRES, MORE OR LESS.

Site Name: Spike
Site Number: NM01-148

EXHIBIT B CON'T

DESCRIPTION OF SITE

SUN STATE TOWERS ACCESS/UTILITY EASEMENT LEGAL DESCRIPTION:

A TRACT OF LAND BEING A PORTION OF TRACT 5A-1A-W, PLACITAS HOMESTEADS, AS SHOWN ON THE CLAIM OF EXEMPTION LOT LINE ADJUSTMENT PLAT TRACTS 5A-1A-E & 5A-1A-W, PLACITAS HOMESTEADS, IN SECTION 35, T.13N., R.4E., N.M.P.M., SANDOVAL COUNTY, NEW MEXICO, FILED IN THE OFFICE OF THE COUNTY CLERK OF SANDOVAL COUNTY, NEW MEXICO, ON JUNE 12, 2020, IN PLAT BOOK 3, PAGE 4546, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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THENCE SOUTH 30°12'58" WEST, A DISTANCE OF 40.00 FEET;
THENCE NORTH 59°47'02" WEST, A DISTANCE OF 20.43 FEET TO THE POINT OF BEGINNING.

CONTAINING 817 SQUARE FEET OR 0.019 ACRES, MORE OR LESS.

Site Name: Spike
Site Number: NM01-148

EXHIBIT C

MEMORANDUM OF LEASE

[*see following pages*]

Prepared by and Return To:
Sun State Towers IV, LLC
1426 North Marvin Street #101
Gilbert, AZ 85233
Site # NM01-148
Site Name: Spike
Tax Parcel No.: 1-023-073-028-180

Memorandum of Lease Agreement

THIS MEMORANDUM OF LEASE AGREEMENT ("***Memorandum***") is executed this 8th day of JULY, 2024, by and between Racquel Huslig, an unmarried woman, with a mailing address of 45 Camino De Las Piedras ("***Landlord***") and SUN STATE TOWERS IV, LLC, a Delaware limited liability company, with a mailing address of 1426 North Marvin Street #101, Gilbert, AZ 85233 ("***Sun State Towers***") and evidences that on the 8th day of JULY, 2024, a Lease Agreement ("***Agreement***") was entered into by and between Landlord and Sun State Towers.

1. **Option.** The initial term of the Option is twelve (12) months from the date of the Agreement. This Option can be extended by Sun State Towers for one (1) additional period of twelve (12) months and for such other periods as the Landlord and Sun State Towers mutually agree.

2. **Property**. Landlord owns certain real property described in Exhibit A ("***Property***"). Subject to the terms of the Agreement, Landlord has granted to Sun State Towers an option to lease a portion of the Property ("***Compound***") and to acquire certain easements for ingress, egress and utilities for the benefit of Sun State Towers and Sun State Towers' sublessees and invitees ("***Easements***" and collectively with the Compound, the "***Site***", as shown on Exhibit B), a license to use certain other portions of the Property and a right of first refusal to purchase the Site and/or the Property.

3. **Lease**. Should Sun State Towers exercise its Option, the Agreement will constitute a lease of the Site. The term of the lease will be for ninety-nine (99) years commencing upon the date Sun State Towers specifies in a written notice to Landlord.

4. **Notices**. All notices, requests, demands, and other communications to Landlord or Sun State Towers will be made at the following addresses:

Landlord:	Racquel Huslig 45 Camino De Las Piedras Placitas, NM 87043
Sun State Towers:	Sun State Towers IV, LLC 1426 North Marvin Street #101 Gilbert, AZ 85233 Attn: Land Management

5. **Construction of Memorandum**. This Memorandum is not a complete summary of the terms and conditions contained in the Agreement. Provisions in the Memorandum will not be used in interpreting the Agreement provisions. In the event of a conflict between this Memorandum and the Agreement, the Agreement will control.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the parties have executed this Memorandum as of the date first set forth above.

LANDLORD:

RACQUEL HUSLIG, an unmarried woman

By: _____

Name: Racquel Huslig

Date: 6-21-24

STATE OF New Mexico

COUNTY OF Sandoval

Before me, James A. Gomez the undersigned, a Notary Public for the State, personally appeared Racquel Huslig, who is personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument, the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official stamp or seal, this 21 day of June, 2024.

[Affix Notary Seal]

STATE OF NEW MEXICO
NOTARY PUBLIC
James Gomez
Commission No. 1093905
Expires: December 19, 2027

_____
Notary Public
My commission expires:

12.19.27

SUN STATE TOWERS:

SUN STATE TOWERS IV, LLC,
a Delaware limited liability company

By: _____
Name: Chad A. Ward
Title: CEO
Date: 7/8/24

STATE OF ARIZONA

COUNTY OF MARICOPA

Before me, NANCY L. FULKS the undersigned, a Notary Public for the State, personally appeared Chad A. Ward, who is the CEO of SUN STATE TOWERS IV, LLC, a Delaware limited liability company, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument, the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official stamp or seal, this 8th day of July, 2024.

[Affix Notary Seal]

Notary Public State of Arizona
Maricopa County
Nancy L Fulks
My Commission Expires 7/5/2027
Commission Number 650816

Nancy L Fulks
Notary Public
My commission expires:
July 5, 2027

EXHIBIT A

DESCRIPTION OF PROPERTY

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THENCE NORTH 30°12'58" EAST, A DISTANCE OF 40.00 FEET TO THE POINT OF BEGINNING.

CONTAINING 1600 SQUARE FEET OR 0.037 ACRES, MORE OR LESS.

EXHIBIT B CON'T

DESCRIPTION OF SITE

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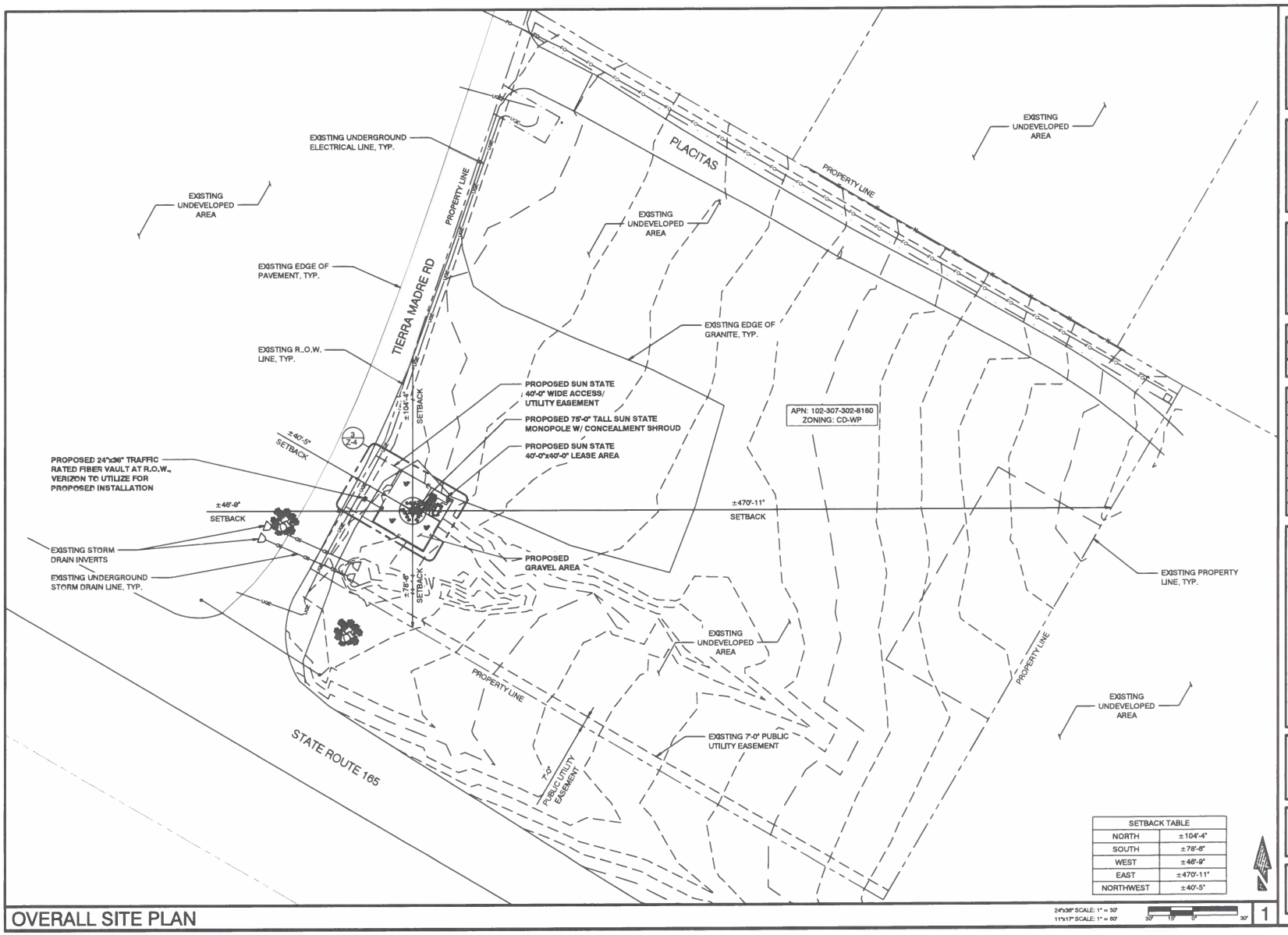
CONTAINING 817 SQUARE FEET OR 0.019 ACRES, MORE OR LESS.

EXHIBIT D

SITE PLAN

[*see following pages*]



SETBACK TABLE	
NORTH	±104'-4"
SOUTH	±78'-8"
WEST	±46'-9"
EAST	±470'-11"
NORTHWEST	±40'-5"

OVERALL SITE PLAN

24"x36" SCALE: 1" = 30'
11"x17" SCALE: 1" = 60'

30' 15' 0' 30'

1

PREPARED FOR

SUN STATE TOWERS
1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: 480-664-9588 - FAX 480-664-9850

CARRIER

verizon

6955 W. MORELOS PL, CHANDLER, AZ 85226.
PHONE: (480) 777-4360
FAX: (480) 777-4391

A&E CONSULTING FIRM & SITE ACQUISITION

PINNACLE CONSULTING, INC
Site Acquisition | Engineering | Construction
1426 NORTH MARVIN STREET # 101
GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.G.
CHECKED BY:	KF

REV	DATE	DESCRIPTION	BY
A	04/23/24	FINAL ZONING	M.G.
0	05/15/24	FINAL ZONING	CDA

FINAL FOR ZONING ONLY

NM01-148 SPIKE / ABQ TIERRA MADRE

221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SHEET TITLE

OVERALL SITE PLAN

SHEET NUMBER

Z-1

Biwabkos Consultants LLC

Attachment 4 RF Compliance Report

September 23, 2025

Site: NM01-148 SPIKE

Placitas, NM

Prepared for:

SUN STATE TOWERS

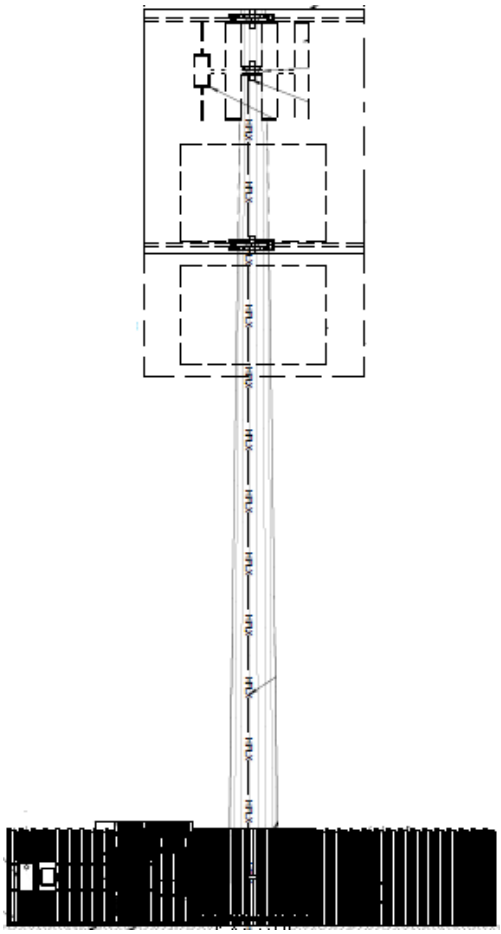


Table of Contents

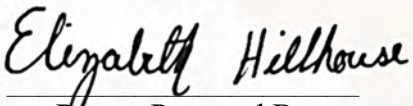
1 Certification 3
2 Executive Summary 5
2.1 Conclusion and Recommendations: 5
3 Introduction 6
3.1 Site Description: 6
3.2 Site Configuration Being Modeled: 6
3.3 Assumptions: 6
4 Predictive Analysis Details: 7
4.1 Analysis Locations: 7
4.2 Antenna Inventory: 7
4.3 RF Emissions Diagram(s)- All Transmitters: 9
5 Signage/ Mitigation: 10
5.1 Signage/ Barrier Detail 11
5.2 Signage/ Barrier Diagram 12
6 Conclusions and Recommendations: 13
7 Appendix A: FCC Compliance and RF Safety Policies 13
8 Appendix B: Overview of RoofView® Functions and Assumptions 16
9 References 17
10 Limited Warranty 18

1 Certification

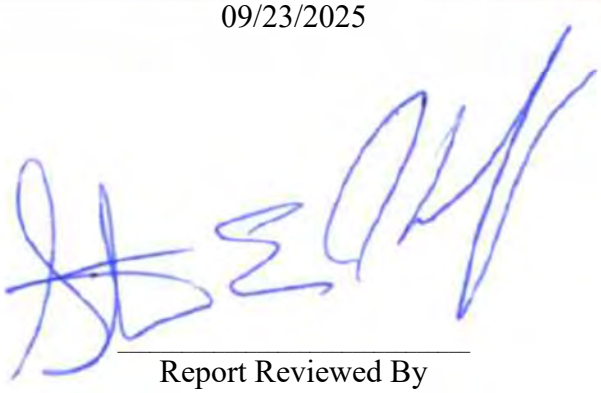
This report, prepared by Biwabkos Consultants LLC for **Pinnacle Consulting**, is intended to document compliance, and evaluate power density levels as outlined in the report. The computations, analysis, and resulting report and conclusions were based on applicable FCC guidelines and regulations for maximum permissible exposure to humans consistent with FCC 19-126 and OET-65.

Additionally, Biwabkos Consultants LLC certifies that the assumptions are valid, and that the data used within Biwabkos Consultants' control are accurate, including information collected as part of Biwabkos Consultants' field surveys (if applicable). Biwabkos Consultants LLC does not, however, certify the accuracy or correctness of any data provided to Biwabkos Consultants LLC for this analysis and report by Pinnacle Consulting.

I certify that the attached RF exposure analysis and report is correct to the best of my knowledge, and all calculations, assumptions and conclusions are based on generally acceptable engineering practices:



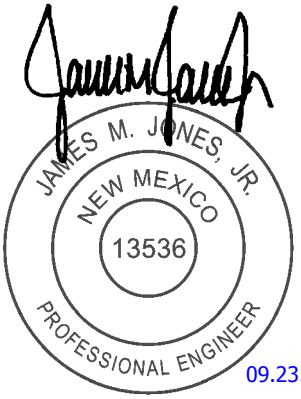
Report Prepared By
Elizabeth Hillhouse, RF Engineer
09/23/2025



Report Reviewed By
Steven Kennedy, Engineering Manager
09/23/2025

This analysis and report were completed by Elizabeth Hillhouse an RF Engineer. The analysis and report were also peer reviewed by Steven Kennedy an RF Engineer with over 35 years of experience in Wireless Network Engineering.

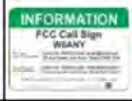
I certify that the attached RF analysis and report is correct to the best of my knowledge, and all calculations, assumptions and conclusions are based on generally acceptable engineering practices:



2 Executive Summary

This report provides the results of an RF power density analysis performed for **Pinnacle Consulting** at site **Tenaya (CA700867)** in accordance with the Federal Communications Commission (FCC) rules and regulations for RF emissions described in FCC 19-126

This report addresses RF safety for two classified groups defined by FCC 19-126: Occupational/ Controlled and General Population/ Uncontrolled. Based on the analysis, this site will be **Compliant** with FCC rules and regulations and Pinnacle Consulting's Signage and Barrier Policy since the mitigation details provided in Table 1 are implemented.

Minimum Required For Compliance							
Mitigation Information							
	Notice	Caution	Warning	Guidelines	Site Info	Barrier	Marker
Access Point	X			X	X		
Alpha							
Beta							
Gamma							
Delta							
Omni							

Notes/ Additional Compliance Requirements(s):
No Mitigation Required Adding RF Guidelines, Site Info and Blue Notice signs on the Access Gate is recommended.

Table 1: Mitigation Requirements for Compliance

2.1 Conclusion and Recommendations:

- The results of the analysis indicate that the power density levels in the generally accessible areas on the Ground level will not exceed the FCC's MPE limit for both General Population and Occupational environment.
- The max theoretical % MPE (Occupational) is 1.3% inside the compound which is not accessible to the General Public.
- No mitigation is required.
- This site will operate in general compliance with FCC 19-126 and Pinnacle Consulting's Signage and Barrier policy.

3 Introduction

The purpose of this analysis and report is to evaluate the cumulative power density levels of all non-excluded antennas located on the Monopole and identify any areas of concern that require mitigation. This report also assesses the Monopole's compliance with FCC 19-126 ; "Guidelines for Human Exposure to Radio-frequency Electromagnetic Fields".

The power density simulation performed for this site utilized RoofView® analysis software. All antennas were assigned an operating frequency and transmit power and were deemed to be operating at 100% of their rated output power.

3.1 Site Description:

- **Site Name:** ABQ TIERRA MADRE (NM01-148 SPIKE)
- **Street Address:** 221 165 HWY ST
  PLACITAS, NM 87043
- **Latitude:** 35° 18' 34.077" N
- **Longitude:** -106° 29' 43.557" W
- **Structure Type**: Monopole
- **Structure Height**: 75' AGL
- **BTS Equipment Location**: Within the shelter inside the fenced-in compound.
- **Co-Locators/ Other Antennas**: Total of (1) co-locators and (9) antennas
- **Access**: Access is through a locked gate on the Northwest side of the fenced-in compound.
- **Other Notes**: There are no other adjacent structures where the General Population would get within an unsafe distance.

3.2 Site Configuration Being Modeled:

- This site has (1) carrier with (3) sectors
- There is a total of (9) antennas
- Each sector supports various LTE carriers including, but not limited to 600 MHz, 700 MHz, 850 MHz, 1900 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3700 MHz, and 3800MHz frequencies.
- All LTE supports MIMO.

3.3 Assumptions:

- The fenced-in compound will remain locked and is not accessible to the General Population.

4 Predictive Analysis Details:

For purposes of this analysis, RoofView® was configured to provide an output based on the appropriate MPE limit(s) published in the FCC's guidelines. The antenna information was loaded into RoofView®, an MPE predictive analysis tool by Richard Tell and Associates, Inc.

4.1 Analysis Locations:

Number of Elevations Analyzed: 1

- The Ground level is accessible to the General Population outside the fenced-in compound and is accessible to the Occupational population within the fenced-in compound.

4.2 Antenna Inventory:

The following table contains the technical data used to simulate the power density that may be encountered with all antennas simultaneously operating at full rated power with the exception of any excluded antennas cited in this document. If Co-Locator antennas exist and specific antenna details could not be secured, generic antennas, frequencies, and Tx powers were used for modeling. The assumptions used are based on past experience with communications carriers.

Alpha Sector – 70' AGL – 0 degree azimuth
Beta Sector – 70' AGL – 120 degree azimuth
Gamma Sector – 70' AGL – 240 degree azimuth

Table 2- Antenna Inventory

ID	Name	(MHz) Freq	Trans Power	Trans Count	Mfg	Model	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir
VZA1A	L700	730	40	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	13.75	61;35
VZA1B	L1900	1960	60	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	15.75	55;35
VZA2A	C850	850	20	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	14.05	57;50
VZA2B	L2100	2150	80	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	15.85	55.5;50
VZA3A	L3700	3700	5	64	Ericsson	AIR6419	68.69915	Multibean	2.601708	22.85	65;50
VZA3B	L3800	3800	5	64	Ericsson	AIR6419	68.69915	Multibean	2.601708	22.85	65;50
VZB1A	L700	730	40	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	13.75	61;110
VZB1B	L1900	1960	60	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	15.75	55;110
VZB2A	C850	850	20	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	14.05	57;110
VZB2B	L2100	2150	80	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	15.85	55.5;110
VZB3A	L3700	3700	5	64	Ericsson	AIR6419	68.69915	Multibean	2.601708	22.85	65;110
VZB3B	L3800	3800	5	64	Ericsson	AIR6419	68.69915	Multibean	2.601708	22.85	65;110
VZC1A	L700	730	40	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	13.75	61;290
VZC1B	L1900	1960	60	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	15.75	55;290
VZC2A	C850	850	20	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	14.05	57;290
VZC2B	L2100	2150	80	4	JMA WIREL	MX10FRO8	66.02083	Ten-Port	7.958333	15.85	55.5;290
VZC3A	L3700	3700	5	64	Ericsson	AIR6419	68.69915	Multibean	2.601708	22.85	65;290
VZC3B	L3800	3800	5	64	Ericsson	AIR6419	68.69915	Multibean	2.601708	22.85	65;290

4.3 RF Emissions Diagram(s)- All Transmitters:

The following Diagram(s) represent the theoretical spatially averaged Maximum Permissible Exposure (MPE) percentages that are expected for each study's elevation from all Transmitters.

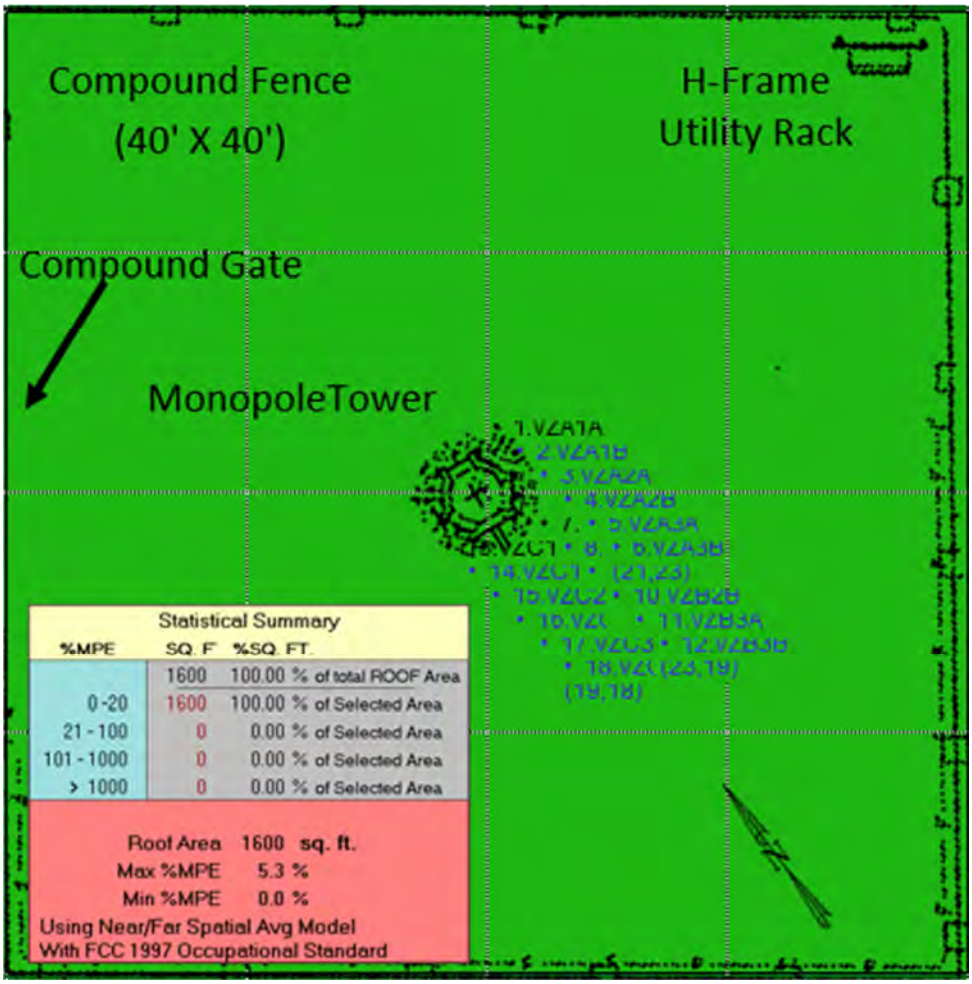


Diagram 1- MPE% (Occupational) for Ground Level

Green ≤ 20% Occupational Limit (≤ 100% General Population Limit) Blue > 20% through 100% Occupational Limit (> 100% General Population Limit) Yellow > 100% through 1000% Occupational Limit Red > 1000% Occupational Limit

Analysis Area – General Public

The analysis area was increased to 150’ each direction and the calculations were done for General Public levels.

The following Diagram(s) represent the theoretical spatially averaged Maximum Permissible Exposure (MPE) percentages that are expected for each study’s elevation from all Transmitters.

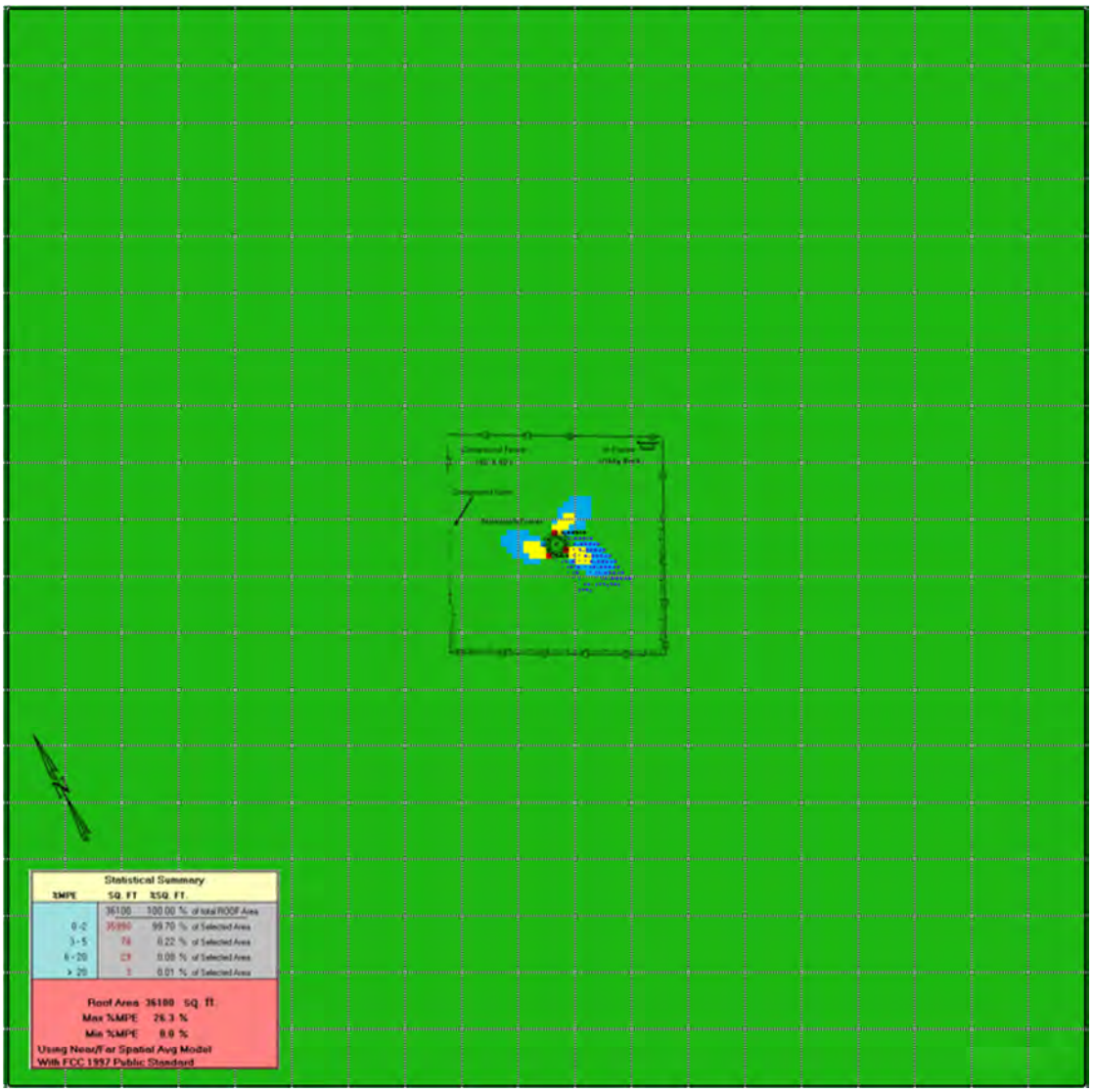


Diagram 1- MPE% (Public) for Ground Level

Green ≤ 2% General Public Limit (≤ 100% General Population Limit)
Blue > 5% through 20% Public Limit (> 100% General Population Limit)
Yellow > 20% through 100% Public Limit
Red > 1000% Public Limit

The diagram above shows MPE% for general population around the site at antenna height. MPE is proximity based. As you move farther away from the transmitter the less exposure there is. The model does not go out passed 200' as the levels of RF Energy are so low they cannot be modeled.

As you can see from the diagram above the areas where general public show greater than 20% public limit are within 2' of the antenna at height. This site does not exceed FCC allowed limits for Occupational or General Public.

5 Signage/ Mitigation:

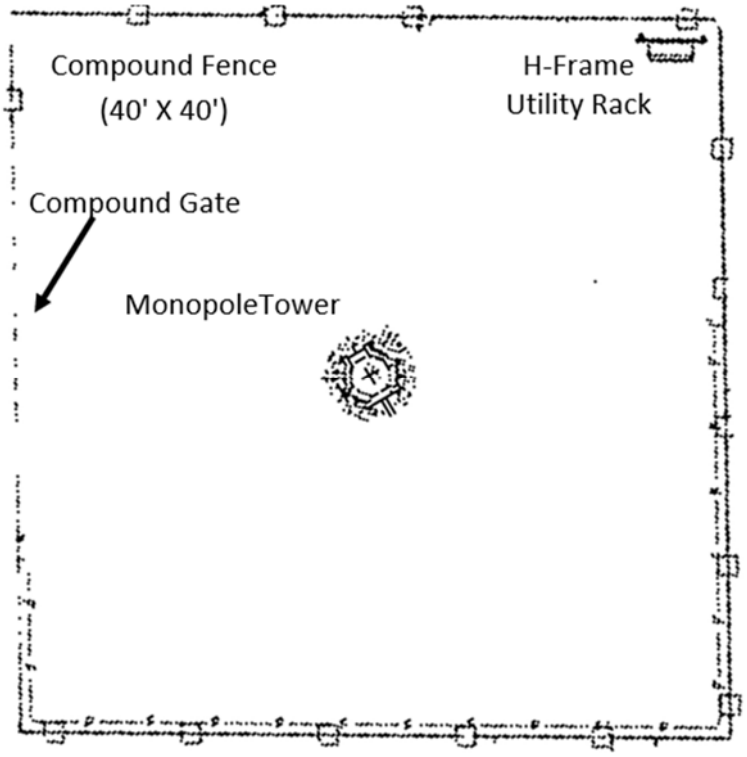
5.1 Signage/ Barrier Detail

Minimum Required For Compliance							
Mitigation Information							
	Notice	Caution	Warning	Guidelines	Site Info	Barrier	Marker
Access Point	X			X	X		
Alpha							
Beta							
Gamma							
Delta							
Omni							

Table 3-Mitigation Requirements for Compliance

Notes/ Additional Mitigation Details from Audit:
No Mitigation Required Adding RF Guidelines, Site Info and Blue Notice signs on the Access Gate is recommended.

5.2 Signage/ Barrier Diagram



Conclusions and Recommendations:

- The results of the analysis indicate that the power density levels in the generally accessible areas on the Ground level will not exceed the FCC's MPE limit for both General Population and Occupational environment.
- The max theoretical % MPE (Occupational) is 1.3% inside the compound which is not accessible to the General Public.
- No mitigation is required.
- This site will operate in general compliance with FCC 19-126 and Pinnacle Consulting's Signage and Barrier policy.

Note: Modifications to the site; and/or increases in channel counts or power levels exceeding those listed in this report will require additional evaluation to determine compliance

6 Appendix A: FCC Compliance and RF Safety Policies

In August of 1997, the FCC published OET Bulletin 65 Edition 97-01 to regulate methods for evaluating compliance with FCC guidelines for human exposure to radiofrequency (RF) electromagnetic fields. The FCC guidelines for human exposure to RF electromagnetic fields incorporate two categories of limits; namely "Controlled" (a.k.a. Occupational) and "Uncontrolled" (a.k.a. General Public). The guidelines offer suggested methods for evaluating fixed RF transmitters to insure that the controlled and uncontrolled limits deemed safe by the FC for human exposure are not exceeded.

OET Bulletin 65 recommended guidelines are intended to allow an applicant to "make a reasonably quick determination as to whether a proposed facility is in compliance with the limits." In addition, the guidelines offer alternate supplementary considerations and procedures such as field measurements and more detailed analysis that should be used for multiple emitter situations.

These guidelines define RF as emissions in the frequency range of 300 kHz to 100 GHz. The FCC define Maximum Permissible Exposure (MPE) limits within this frequency range based on limits recommended by the National Council on Radiation Protection and Measurement, the Institute of Electrical and Electronics Engineers (IEEE), and by the American National Standards Institute (ANSI).

The specific MPE limits defined by the FCC are as follows:

Limits for Occupational/Controlled Exposure				
Frequency Range [MHz]	**Electric Field Strength (E) [V/m]**	**Magnetic Field Strength (H) [A/m]**	**Power Density (S) [mW/Cm^2]**	**Averaging Time |E|^2, |H|^2 or S [minutes]**
0.3 - 3.0	614	1.63	100*	6
3.0 - 30	1842/f	4.89/f	900/f^2*	6
30 - 300	61.4	0.163	1	6
300 - 1,500	-	-	f/300	6
1,500 - 100,000	-	-	5	6

Limits for General Population/Uncontrolled Exposure				
Frequency Range [MHz]	**Electric Field Strength (E) [V/m]**	**Magnetic Field Strength (H) [A/m]**	**Power Density (S) [mW/Cm^2]**	**Averaging Time |E|^2, |H|^2 or S [minutes]**
0.3 - 3.0	614	1.63	100*	30
3.0 - 30	842/f	2.19/f	180/f^2*	30
30 - 300	27.5	0.073	0.2	30
300 - 1,500	-	-	f/1500	30
1,500 - 100,000	-	-	1	30

f = frequency *Plane-wave equivalent power density

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

For General Population/ Uncontrolled limits, the FCC states that "General Population/ Uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not fully be aware of the potential for exposure or cannot exercise control over their exposure."

For purposes of this analysis, all limits are evaluated against the Power Density limits.

Typical guidelines for determining whether Occupational/ Controlled limits can be applied include insuring the environment (such as a rooftop) as limited/controlled access via locked doors or physical barrier that are preferably controlled by a landlord that is aware of the situation and can inform anyone going through the locked door of the existence of the RF emissions. Such notification/awareness is typically accomplished by means of signage on the door, or other access to the area of concern, as well as signage on or near the antennas. Examples of such signs include the following:

Standards for when to use each of the above signs for Occupational situations are as follows:

No sign required: <20% of Occupational MPE
Blue Sign, Notice: 20% to <100% of MPE
Yellow Sign, Caution: 100% to <1000% of MPE
Red Sign, Warning: >1000% of MPE

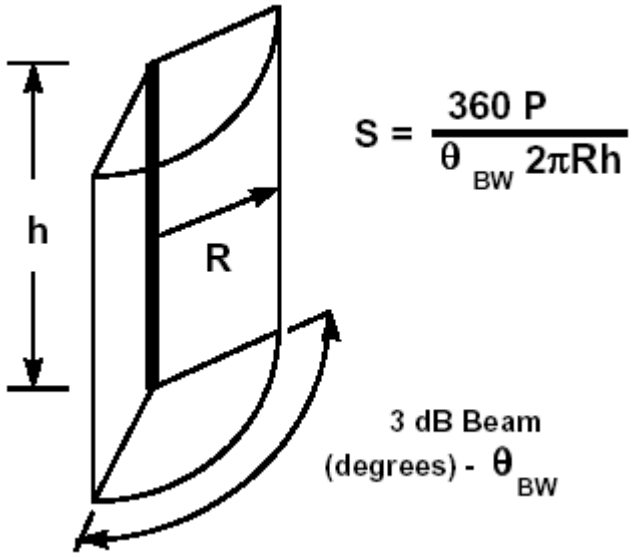
All MPE references are to the FCC Occupational limits.

7 Appendix B: Overview of RoofView® Functions and Assumptions

RoofView® is a tool developed and supported by Richard Tell Associates, Inc. to be used for analysis of RF field levels at telecommunications sites produced by antennas of the type commonly used in cellular, paging, SMR, PCS and two-way radio communications services. Although its name suggests that the tool is only for use in evaluating emissions for roof top applications, it can also be used to evaluate ground level effects of tower facilities.

RoofView® allows the user to apply near field, far field, or a combination of near and far field computational methods as desired by the user. For this analysis, near field computations are used for areas within the near field, and far field computations are used beyond the near field. Specific break points are dynamic based on the aperture of the antenna being analyzed.

The near field methodology is based on a cylindrical model that assumes the power into an antenna is distributed as a cylinder around the aperture of the antenna. Research by Richard Tell Associates, Inc. found that using such a model, along with corrections for height and antenna pattern, is very accurate, if not slightly conservative in estimating RF exposure. FCC Bulletin 65 recognizes the use of the cylindrical model for near field calculations. The following picture and corresponding equation summarizes the computations used by RoofView® on a bin-by-bin basis when the near field method is used:



$$S = \frac{360\ P}{\theta_{BW}\ 2\pi Rh}$$

Each bin's results are then also adjusted by spatially averaging the portion of a 6 foot tall human that intercepts the aperture over 6 feet. Once the antenna is completely above (or below) the height that corresponds to a 6 foot tall human, the cylindrical results are reduced

to 10% of their results and then dissipated inversely in proportion to the square of the distance.

Once bins being analyzed fall outside of the near field (as determined by a method and variable that is user-selectable; see below for method and variable used in this analysis), a far-field spatial average is calculated. Spatially averaged power density in the far-field is calculated by reducing the spatially averaged power density inversely, by the square of the distance from the antenna(s).

There are several input variables to RoofView® that can impact the results produced when evaluating specific cell sites. Those variables are summarized accordingly:

Standard
FCC 1997 Occupational (default)
FCC 1997 General Population (as applicable)

Model
Near/Far Spatial Average

Uptime
100% (vary as applicable)

Near/Far Field Transition Method
X ApHt

Near/Far Field Transition At Ht Factor
1.5

8 References

FCC (1997). "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields"; Federal Communications Commission; Office of Engineering and Technology, OET Bulletin 65, Edition 97-01, August.

Richard Tell Associates, Inc. (2003). RoofView® User Guide Version 4.15, Richard Tell Associates, Inc., February 10, 2003.

9 Limited Warranty

Biwabkos Consultants LLC warrants that this analysis was performed in good faith using the methodologies and assumptions covered in this report and that data used for the analysis and report were obtained by Biwabkos Consultants LLC employees or representatives via site surveys or research of Pinnacle Consulting available information. In the event that specific third party details were not available, best efforts were made to use assumptions that are based on industry experience of various carriers' standards without violating any confidential information obtained under non-disclosure terms.

Biwabkos Consultants LLC also warrants that this analysis was performed in accordance with industry acceptable standards and methods.

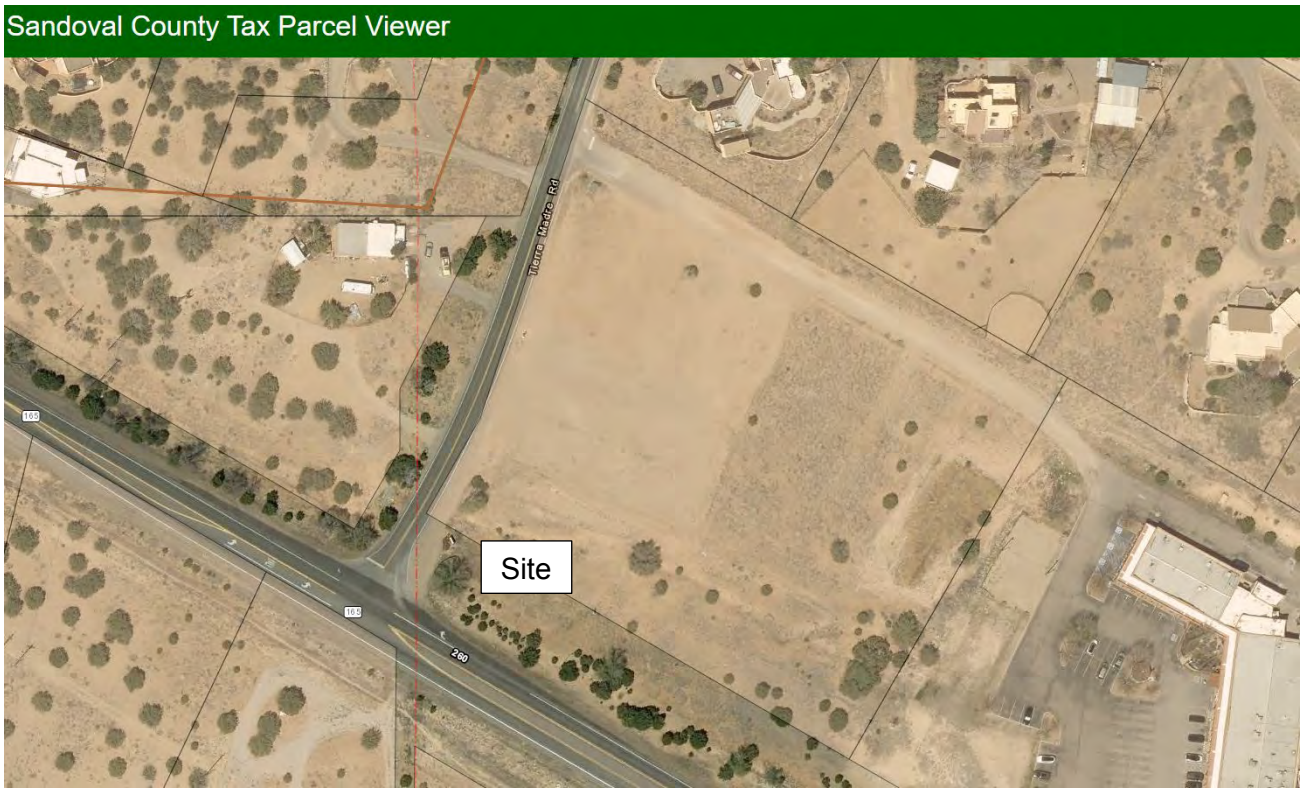
There are no other warranties, express or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose, relating to this agreement or to the services rendered by Biwabkos Consultants hereunder. In no event shall Biwabkos Consultants be held liable to Pinnacle Consulting, or to any third party, for any indirect, special, incidental, or consequential damages, including but not limited to loss of profits, loss of data, loss of good will, and increased expenses. In no event shall Biwabkos Consultants be liable to Pinnacle Consulting for damages, whether based in contract, tort, negligence, strict liability, or otherwise, exceeding the amount payable hereunder for the services giving rise to such liability.

DEVELOPMENT NARRATIVE REPORT

PROJECT NAME: VERIZON ABQ_TIERRA MADRE (NM01-148 SPIKE)

APPLICANT: Sunstate Towers/ Pinnacle Consulting on behalf of Verizon Wireless

REQUEST: New Wireless Communication Facility located at
221 165 HWY ST, Placitas, NM 87043 (Assessor Parcel #: 102-307-302-8180)



09.30.2025

PINNACLE CONSULTING, INC
Scott Quinn | Site Acquisition Manager
Site Acquisitions | Engineering | Construction
1426 N Marvin St, #101, Gilbert, AZ 85233
Scott.quinn@pinnacleco.net | 602-909-8885

PINNACLE CONSULTING, INC

Purpose of the Request

This WCF is needed to provide the latest service for Wireless Communication, E911 and data customers in the area for Verizon Wireless and future providers.
The Radio Frequency Coverage Maps clearly show a deficiency in coverage for the area. The new facility will provide a much-needed boost in quality, reliability and strength of signal both in and outdoors. The concealed structure will be built in the corner of the property to allow for the future development on the parcel and to minimize impact to surrounding properties with existing streets being used as natural distance buffers.

Verizon Wireless is proposing a 75' tower concealed/stealth design as rustic shroud that is well received in other communities, and consistent with the Sandoval County Ordinance NO. 03-10-016-11A. Subject proposal meets the intent of a stealth/concealed structure.
The proposed facility will enhance wireless coverage and increase network capacity in an area experiencing deficiencies or high traffic for Verizon and is collocatable for future providers such as AT&T and T-Mobiles to utilize the stealth structure. The equipment is designed to reduce the visual impact for surrounding areas and the subject property.

Project Description

Sun State Towers will own and operate this site for the purpose of expanding wireless coverage to the area identified as having high demand for Verizon Wireless Services both Voice and Data. The proposed WCF will consist of a stealth 75-foot tower structure in a 40' x 40' lease area.
This is a site that will be able to co-locate up to 3 carriers within the same defined screened lease area the is enclosed with a 8-foot-high Coyote Style Wooden Fence. The proposed location is out of the way so that property can be further developed to service the community with other types of business for the area. All antennas will be completely screened from view by the stealth structure.
Other options were considered before Sun State Towers finalized the stealth design where the subject proposal won out based on the character of area and the Sandoval County Ordinance requirements. Many other locations were reviewed but eliminated due to lack of property interest, ordinance limitations, and line of site connectivity to surrounding sites. The subsequent height is a result of radio frequency engineer design to optimize cellular and E911 services for the area.
The intent for a stealth structure is to be able to have 3 carriers is to make the antennas less noticeable and compatible with its surroundings consistent with community aesthetics and the wireless ordinance goal of reducing wireless infrastructure visual impacts.

Relationship to Surrounding Properties

The proposed facility will provide much needed enhanced wireless communication and E911 services for the subject and surrounding areas.

- The proposed site will be near the far Southwest corner of the very large parcel.
- The residential lots to South, West, and North are across surrounding streets and larger residential lots.
- The parcel to the East is an existing developed Strip Mall.
- There are no colocation opportunities that will service Verizon's needs in the area. Please refer to the RF Justification document provided for further details.

The facility shall have few, if any impacts, beyond providing service to the Verizon Wireless customers. There should be no discernible impacts to pedestrian or vehicular transit, and the facility will not emit odor, dust, gas, noise, vibration, smoke, heat or glare. Beyond a once-a-month operations inspection, the site should generate no activity or impact, and will not utilize connections to water, sewer or refuse utilities/services. Parking to be located at the facility and typically only used once a month for routine maintenance.

LOCATION AND ACCESSIBILITY

See drawings/survey and exhibits.

CIRCULATION SYSTEM

There will be no effect on traffic.

DEVELOPMENT SCHEDULE

Applicant intends to construct the improvement as soon as all permits have been received.

COMMUNITY FACILITIES AND SERVICES

Facility will support wireless and E911 communications in the community.

PUBLIC UTILITIES AND SERVICES

Power and telco access are the only utilities required by the facility where no water or gas use is required.

HOURS OF OPERATION

The proposed site will operate 24 hours a day, 7 days a week with no personnel onsite. The site will be connected to and monitored by a central switching center.

SITE DESIGN

Please refer to the supplemental site plan documentation outlining the design of the proposed facility.

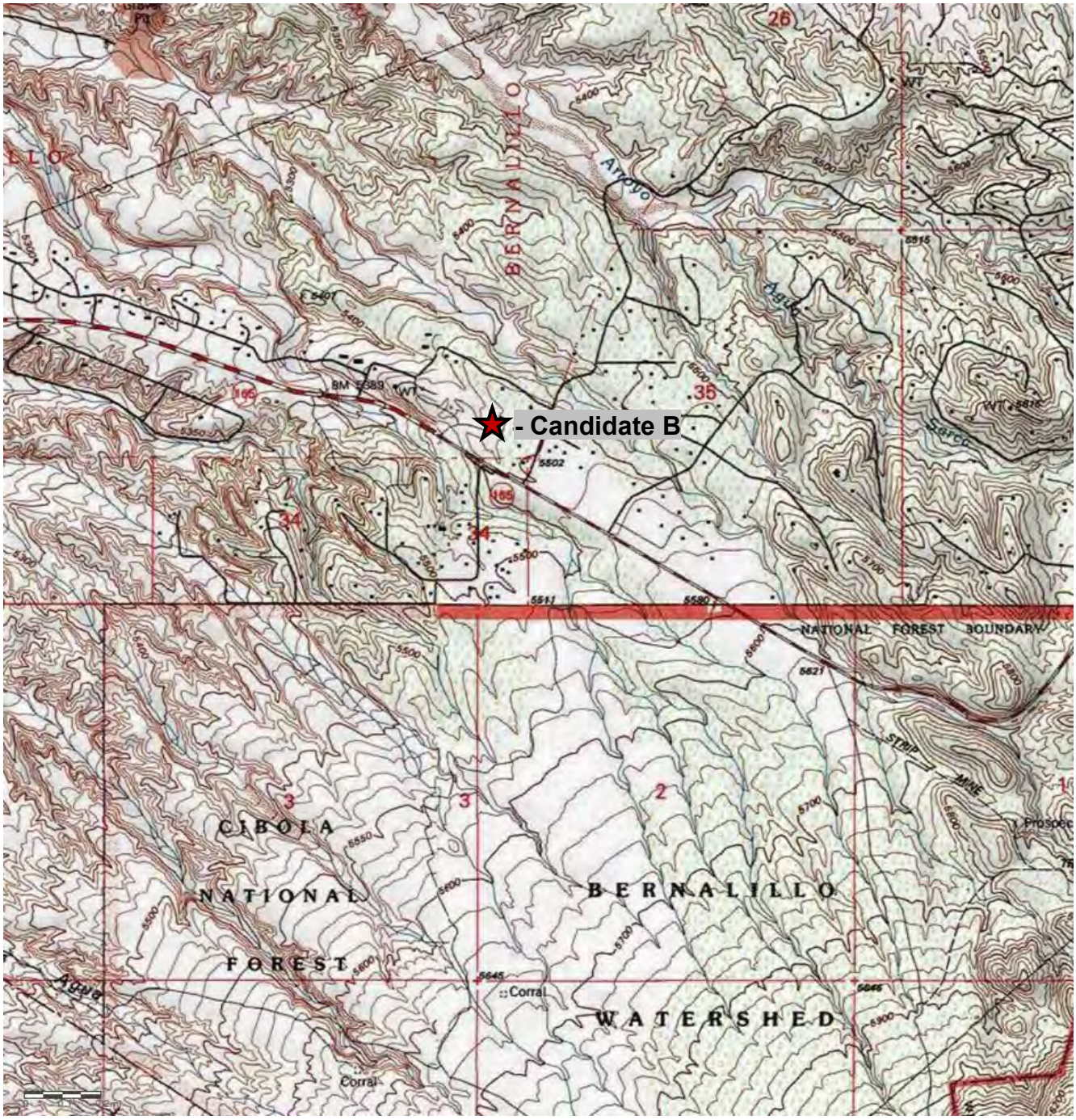
09.30.2025

PINNACLE CONSULTING, INC
Scott Quinn | Site Acquisition Manager
Site Acquisitions | Engineering | Construction
1426 N Marvin St, #101, Gilbert, AZ 85233
Scott.quinn@pinnacleco.net | **602-909-8885**

AERIAL PHOTO MAP

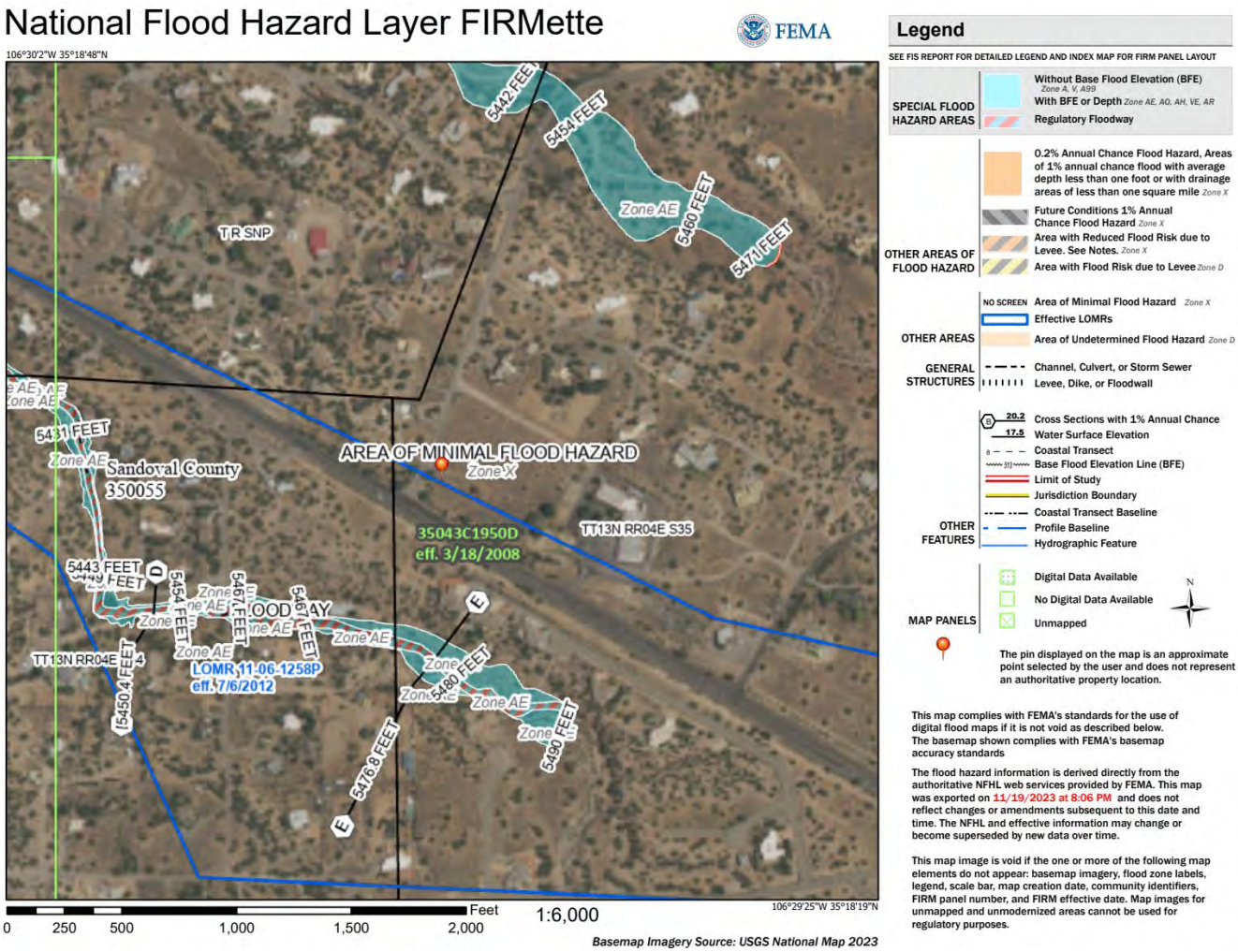
STREET MAP ATTACHMENT

USGS TOPO MAP ATTACHMENT



FEMA FLOOD HAZARD MAP ATTACHMENT

Zone X: (No Screen) Area of Minimal Flood Hazard



OWNERSHIP VERIFICATION ATTACHMENT

Welcome to Sandoval County
State of New Mexico
Remembering the Past • Preparing for the Future • Enjoying the Present

Account Search | View Created Report(s) | Help? | Logout Public | Sandoval County | Assessor Web Page | Forms | Treasurer Web Search

Sandoval County Assessors Office

Location	Owner Information	Assessment History
Parcel Number 1-023-073-028-180	**Owner Name** MCCALLISTER, ORVILLE C AND JUDITH A	**Actual Value** (2021) $470,807
Tax Area 802HL_NR - 802HL_NR	**In Care Of Name** HUSLIG, RACQUEL	**Primary Taxable** $156,936
Situs Address 221 165 HWY ST	**Owner Address** 71 TUNNEL SPRINGS RD	**Tax Area:** 802HL_NR **Mill Levy**: 26.622
Legal Summary Legal: S: 35 T: 13N R: 4E Subd: PLACITAS HOMESTEADS Lot: 5A-1A-W	PLACITAS, NM 87043-8831	**Type** **Actual** **Assessed**
	UNITED STATES OF AMERICA	Non-Residential Land $470,807 $156,936

Transfers

Sale Date	Doc Description
12/06/2021	QUIT CLAIM DEED
07/16/2021	REAL ESTATE CONTRACT
	PLAT
	PLAT
	PLAT
	WARRANTY DEED
	PLAT
	MISCELLANEOUS
	PLAT
01/24/1968	SPECIAL WARRANTY DEED
	QUIT CLAIM DEED
	DEED
	WARRANTY DEED
10/05/1955	WARRANTY DEED
04/01/1939	PATENT

Account Information

Sandoval County Assessors Office

Address:

1500 Idalia Building D

Bernalillo, NM 87004

Phone:

505-867-7562

Office Hours:

Monday-Friday, 8am- 5pm

Account Summary
Account Detail
Owner Information
Assessment History

This page can be printed using your internet browser or by CTL + P
Account: R186379 Ownership Information

Owner Name
MCCALLISTER, ORVILLE C AND JUDITH A
In Care Of Name
HUSLIG, RACQUEL
Address

Owner Address
Address1

Address2
71 TUNNEL SPRINGS RD
City
PLACITAS
State
NM
Zip
870438831
Country
UNITED STATES OF AMERICA

This page can be printed using your internet browser or by CTL + P
Account: R186379 QUIT CLAIM DEED

Document Date
12/06/2021
Reception Number
2021042204

Sale Date
12/06/2021

Book
424
Page
42204

Grantor	Grantee
HOMESTEAD VILLAGE INC	MCCALLISTER ORVILLE C
	MCCALLISTER JUDITH A

Remarks

Account Number
R186379

Parcel Number
1023073028180

ASSESSMENT & PROPERTY TAX INFO ATTACHMENT

This page can be printed using your internet browser or by CTL + P
Account: R186379

Location	Owner Information	Assessment History
Parcel Number 1-023-073-028-180	**Owner Name** MCCALLISTER, ORVILLE C AND JUDITH A	**Actual Value** (2021) $470,807
Tax Area 802HL_NR - 802HL_NR	**In Care Of Name** HUSLIG, RACQUEL	**Primary Taxable** $156,936
Situs Address 221 165 HWY ST	**Owner Address** 71 TUNNEL SPRINGS RD	**Tax Area:** 802HL_NR **Mill Levy** 26.622
Legal Summary Legal: S: 35 T: 13N R: 4E Subd: PLACITAS HOMESTEADS Lot: 5A-1A-W	PLACITAS, NM 87043-8831 UNITED STATES OF AMERICA	**Type** / **Actual** / **Assessed**: Non-Residential Land $470,807 $156,936

Transfers

Sale Date	Doc Description
12/06/2021	QUIT CLAIM DEED
07/16/2021	REAL ESTATE CONTRACT
	PLAT
	PLAT
	WARRANTY DEED
	PLAT

Images

Tax Year	Taxes
*2023	$4,177.96
2022	$4,216.88

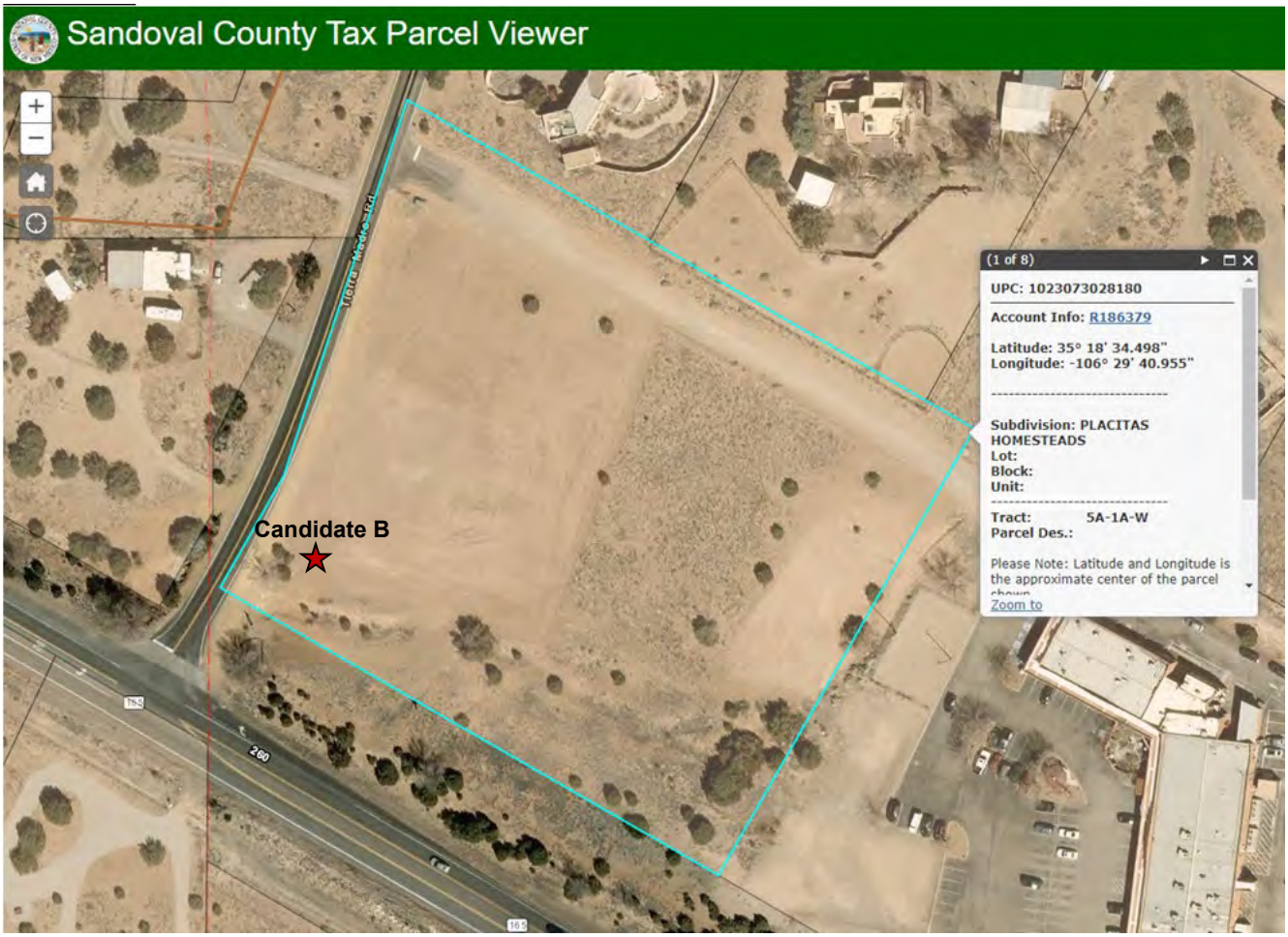
* Estimated

Map | GIS

Focusing On: *221 165 HWY ST PLACITAS 87043*

TAX MAP ATTACHMENT

Sandoval County Assessor Website



PHOTOS OF SITE

Looking North at Site Area

PHOTOS OF SITE

Looking East at Site Area

PHOTOS OF SITE

Looking South at Site Area

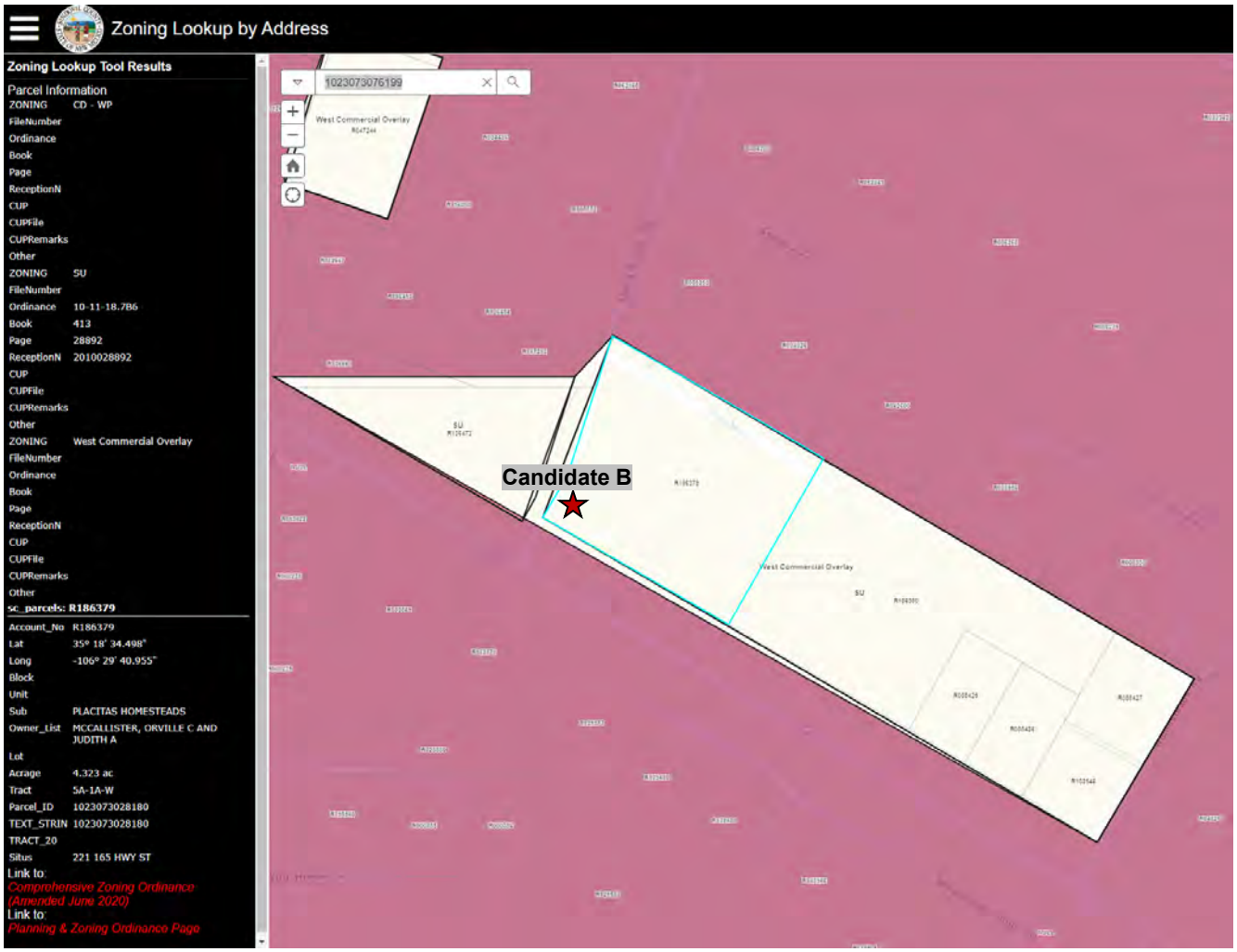
PHOTOS OF SITE

Looking West at Proposed Site

PHOTOS OF POWER & TELCO

Power Transformer & Telco NW Corner of Parcel

ZONING DISTRICT MAP ATTACHMEN



ZONING HEARING CALENDAR

SANDOVAL COUNTY

PLANNING & ZONING COMMISSION

2023 MEETING DATES

TUESDAY, JANUARY 24, 2023

TUESDAY, FEBRUARY 21, 2023*

TUESDAY, MARCH 21, 2023*

TUESDAY, APRIL 25, 2023

TUESDAY, MAY 23, 2023

TUESDAY, JUNE 20, 2023*

TUESDAY, JULY 25, 2023

TUESDAY, AUGUST 22, 2023

TUESDAY, SEPTEMBER 26, 2023

TUESDAY, OCTOBER 24, 2023

TUESDAY, NOVEMBER 14, 2023*

TUESDAY, DECEMBER 12, 2023*

NOTE: All meetings will be held at 4:30 p.m. in the Third Floor Commission Chambers at the Sandoval County Administration Building, 1500 Idalia Road, Building D, Bernalillo, New Mexico, 87004. Meetings are scheduled for the Fourth Tuesday of each month except for the months indicated with an asterisk ("*") above. Other special meetings may be called at anytime providing the effective Open Meeting Act requirements are met.

ZONING ORDINANCE EXCERPTS

Book- 406 Page- 178758
8 of 33
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Section 7. Conditional Use Permit Application and Other Requirements.

A) All Applicants for a Conditional Use Permit for Wireless Telecommunications Facilities or any modification of such facility shall comply with the requirements set forth in this section. The County Commission is the officially designated agency or body of the County to whom applications for a Conditional Use Permit for Wireless Telecommunications Facilities must be made, and that is authorized to review, analyze, evaluate and make decisions with respect to granting or not granting, recertifying or not recertifying, or revoking Conditional Use permits for Wireless Telecommunications Facilities. The County may at its discretion delegate or designate other official agencies of the County or others to accept, review, analyze, evaluate and make recommendations to the County Commission with respect to the granting or not granting, recertifying or not

Section 9. Location of Wireless Telecommunications Facilities.

A) Applicants for Wireless Telecommunications Facilities shall locate, site and erect said Wireless Telecommunications Facilities in accordance with the following priorities in each of the Telecommunications Districts, one (1) being the highest priority and six (6) being the lowest priority.

1) On existing Towers or other structures without increasing the height of the tower or structure;
2) On County-owned properties;
3) On properties in areas zoned for Heavy Industrial use
4) On properties in areas zoned for Commercial use
5) On properties in areas zoned for Agricultural use
6) On properties in areas zoned for Residential use

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15 of 33
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W) There shall be a pre-application meeting. The purpose of the pre-application meeting will be to address issues, which will help to expedite the review and permitting process. A pre-application meeting shall also include a site visit if there has not been a prior site visit for the requested site. Costs of the County's consultants to prepare for and attend the pre-application meeting will be borne by the applicant.

SECTION 10. SU - SPECIAL USE DISTRICT.

A. **Intent.** This zone district accommodates developments that require special consideration because of their magnitude, unusual nature, infrequent operations, questionable impact on surrounding property, or other similar reason. The boundaries of this district shall be determined on a case-by-case basis following amendment procedures provided in Section 19 of this Ordinance. Special conditions may be imposed by the County Board following recommendation by the Zoning Commission. The County Board may not grant a Zone Map Amendment for establishment of a Special Use District unless satisfactory provisions have been made:

BUILDING CODE EXCERPTS

Hello,

I hope you are well. I have visited with our Telecommunications Consultant, Robert Naumann, on your application for a new tower.
There are a number of things that have to happen before we can go to the Planning and Zoning Commission which I neglected to report to you sooner.
The items and timelines involved will require that your request be moved to the October 25 Planning and Zoning Commission hearing, tentatively.

The items are:

- Full technical review: the conditional use permit application for the tower requires a full technical review and site visit with our consultant as stipulated in our Telecommunications ordinance. Part of this review is to establish a justification for the new tower if there are other towers in the area.
- Fees for this review are: $5,000.00 County Application Fee, $8,500.00 Escrow fee for consultant review. Checks must be made payable to Sandoval County.

Please reach out to Robert Naumann, we have discussed you case and the sooner we can start the better.
Thanks,
Makita

Makita Hill
Interim Director
Sandoval County Planning and Zoning Department
1500 Idalia Rd, Bldg. D
Bernalillo, NM 87004
(505) 867-7656 Office
(505) 252-1891 Cell
mhill@sandovalcountynm.gov

BUILDING PERMITS

Building permits for construction in unincorporated areas of Sandoval County are issued through the New Mexico Regulation & Licensing Department's Construction Industries Division (CID). Prior to the submittal of a building permit application to CID, a Zoning Compliance and Floodplain Determination Checklist must be submitted to Sandoval County P&Z to ensure all County regulations and requirements are fulfilled.

VERIZON – ABQ TIERRA MADRE

221 165 HWY ST – PLACITAS, NM

CELL TOWER NOISE STUDY

verizon

SEPTEMBER 29, 2025

PREPARED FOR:
SUN STATE TOWERS

PREPARED BY:
ACOUSTICS GROUP, INC.
CONSULTANTS IN ACOUSTICS, NOISE & VIBRATION

VERIZON – ABQ TIERRA MADRE
221 165 HWY ST, PLACITAS, NM
CELL TOWER NOISE STUDY

Prepared for:
Chad Ward
Sun State Towers
1426 North Marvin Street #101
Gilbert, AZ 85233

Prepared by:
ROBERT WOO – Principal Acoustical Consultant, INCE
ANGELICA NGUYEN – Senior Acoustical Consultant

ACOUSTICS GROUP, INC.
CONSULTANTS IN ACOUSTICS, NOISE & VIBRATION
(877) 595-9988

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1
INTRODUCTION 2
NOISE 3
NOISE STANDARDS 5
AMBIENT AND equipment NOISE SURVEY 5
Methodology 5
Ambient Noise Survey 5
Equipment Noise Survey 7
NOISE ANALYSIS 7
Methodology 7
Predicted Cell Tower Equipment Noise Level 8
IMPACT ASSESSMENT 9
NOISE CONTROL RECOMMENDATIONS 10
CONCLUSION 10
REFERENCES 11
APPENDIX 12

Figures

Figure 1. Location of the Project Site 2
Figure 2. Site Plan 3
Figure 3. Typical A-weighted Noise Levels 4
Figure 4. Noise Measurement Locations 6
Figure 5. Predicted Cell Tower Equipment Noise Level 8

Tables

Table 1. Measured Existing Ambient Noise Levels 7
Table 2. Measured Equipment Noise Levels 7
Table 3. Equipment Sound Level Input Data 8
Table 4. Cell Tower Noise Levels and Impact Assessment 9

EXECUTIVE SUMMARY

Acoustics Group, Inc., (AGI) was retained to conduct a noise study of the Cell Tower Project located at 221 165 HWY ST in Placitas, NM. AGI has reviewed the noise criteria, analyzed the noise levels from the proposed equipment, assessed the impact of the future noise, and identified noise control measures.

The cell tower will produce equipment noise levels as high as 30, 23 and 25 dBA at the nearest residential property boundaries to the west, north and south, respectively. The cell tower noise level will result in a +2.5, +0.6 and +1.0 dB increase above the lowest nighttime ambient noise level, Leq at the same residential property boundaries, respectively. At the nearest residential boundary to the west, the noise level increase would be barely noticeable during the quietest night time hour and would comply with the noise standard. During the daytime and evening hours, the cell tower noise would not be noticeable and would comply with the noise standards. At the nearest residential boundaries to the north and south, the cell tower noise increase would also not be noticeable and would also comply with the noise standard. At the shopping center boundary to the east, the cell tower noise level will be approximately 19 dBA and would result in an 0.3 dB increase above ambient noise levels. This amount of increase would not be noticeable and would also comply with the noise standard.

The final engineering design of the project should be reviewed by as qualified Acoustical Consultant to ensure compliance with the Sandoval County Noise Standards.

INTRODUCTION

The Project proposes to install a new Verizon cell tower at 221 165 Hwy St in Placitas, NM. Refer to Figure 1 for the location of the project site and to Figure 2 for the Site Plan. The main concern is future noise from the cell tower equipment affecting the nearby residences to the north, east, south and northwest and the adjacent industrial properties. Refer to the Appendix for the Project Site Plan.

Figure 1. Location of the Project Site

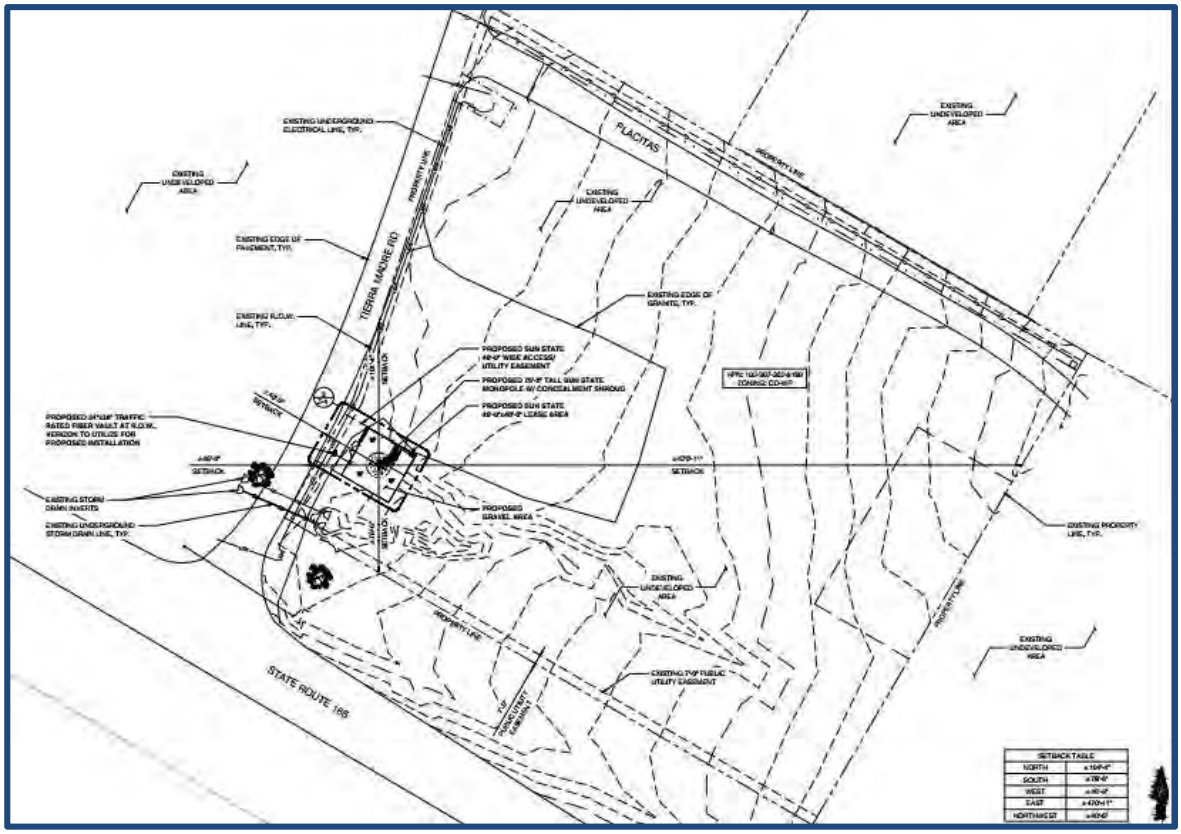
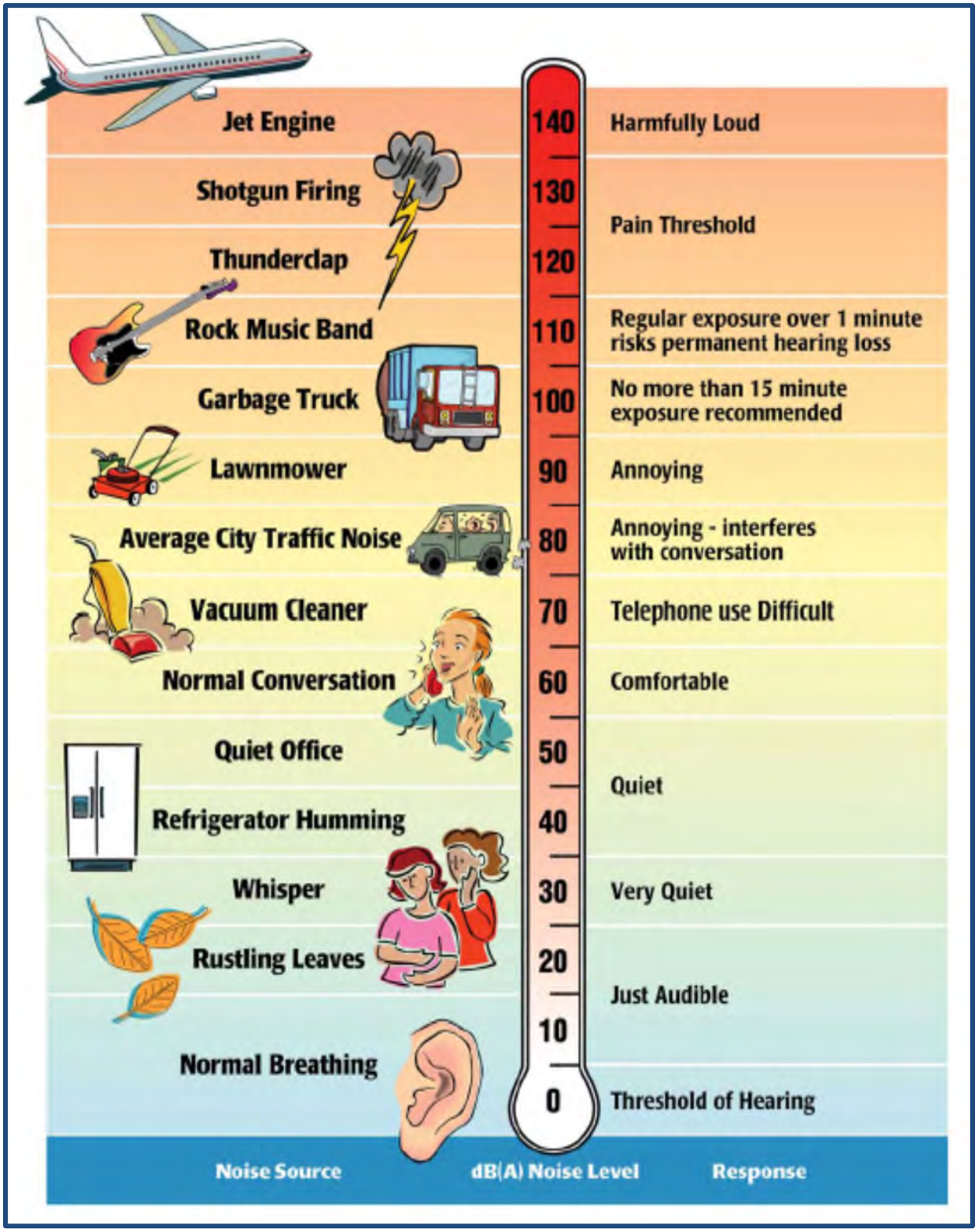


Figure 2. Site Plan

NOISE

The magnitude by which noise affects its surrounding environment is measured on a logarithmic scale in decibels (dB). Because the human ear is limited to hearing a specific range of frequencies, the A-weighted filter system is used to form relevant results. A-weighted sound levels are represented as dBA. Figure 3 shows typical A-weighted exterior and interior noise levels that occur in human environments.

Several noise metrics have been developed to evaluate noise. L_{eq} is the energy average noise level and corresponds to a steady-state sound level that has the same acoustical energy as the sum of all the time varying noise events. L_{max} is the maximum noise level measured during a sampling period, and L_{xx} are the statistical noise levels that are exceeded xx-% of the time of the measurement. L_{50} is the average noise level that is exceeded 50% of the time, 30 minutes in a 60 minute period.



Source: Melville Branch and R. Beland, 1970. EPA/ONAC 550/9-74-004, March 1974.

Figure 3. Typical A-weighted Noise Levels

NOISE STANDARDS

The nearest noise sensitive receptors (residential uses) to the proposed cell tower are located directly to the north, east, south and west directions. Further to the east is a retail shopping center.

The Municipal Code for the Placitas region within Sandoval County, NM specifies the following noise standard:

> *Section 2. Building Design, b. General Requirements, item 4 - Accessory equipment capable of generating noise and vibrations shall be properly insulated and the noise and vibrations shall not be apparent from adjacent properties or the public right-of-way.*

Industry noise guidelines recognize the following:

- A +3 dB increase in noise level is just noticeable in a controlled environment.
- A +5 dB increase in noise level is clearly noticeable.
- A +10 dB increase in noise level is considered twice as loud.

For this study, a +5 dB increase above the ambient background noise level will be considered a significant noise increase and impact.

AMBIENT AND EQUIPMENT NOISE SURVEY

Methodology

Brüel & Kjær Model 2250 and 2270 Acoustical Analyzers were used to conduct the ambient noise survey. The analyzers are precision Type 1 instruments that were calibrated to laboratory standards. The instrument systems were field calibrated before and after the measurements to ensure accuracy and were operated per manufacturer's recommendations.

Ambient Noise Survey

AGI conducted a noise survey on August 13 to 14, 2025, to document baseline ambient noise levels at the project site. A long-term continuous 24-hour ambient noise measurement was conducted at the northwest corner of the property (NM1). Two brief short-term noise measurements were conducted near the westerly (ST1) and center (ST2) of the project site. Refer to Figure 4 for the location of the noise measurement locations. These measurement locations were selected to be representative of the setback of residential structures from Hwy 165 and Tierra Madre Rd.

Figure 4. Noise Measurement Locations

At NM1, the measured ambient hourly Leq ranged from 31.0 to 55.6 dBA. Daytime noise levels from 6 AM to 7 PM were in the 50 dBA range and was primarily attributed to vehicular traffic and to a lesser extent distant aircraft, birds and insects. Evening noise levels from 8 PM to 11 PM were in the high 40 dBA range, while Nighttime - early Morning noise levels between Midnight to 5 AM fluctuated from the low 30 dBA to high 40 dBA range. This is a typical diurnal pattern for rural areas that have a low population density. The noise measured at NM1 is representative of the ambient background noise that is experienced at the home's setback from Hwy 165. At ST1, a short-term Leq of 53 dBA was measured during the noon time hour. A short-term Leq of 52 was measured at ST2 during the same noon time hour. Table 2 summarizes the ambient noise measurement data. Refer to the Appendix for the field data sheet.

Table 1. Measured Existing Ambient Noise Levels

Receiver		Existing Ambient Noise Levels, dBA				Description
		Time	Leq	Lmin	Lmax	
NM1	Northwest Project Site Boundary	August 13 – 14, 2025	31.0 - 55.9	23.3	83.2	Vehicular Traffic, birds, insects
ST1	West Project Site Boundary	August 13, 2025 12:00 PM –12:05 PM	53	-	-	Vehicular Traffic, birds, insects
ST2	Center of Project Site	August 13, 2025 12:20 PM –12:25 PM	52	-	-	Vehicular Traffic, birds, insects

Equipment Noise Survey

An equipment noise survey was conducted at a cell tower site in Albuquerque, NM to quantify the noise produced by a similar facility that is currently operating. The equipment survey resulted in an Leq of 75.7 and 81.0 dBA at the equipment cabinet exhaust and intake faces, respectively. Table 3 summarizes the octave band sound levels and Leq measured from the operating cell tower. Refer to the Appendix for the field data sheet for the equipment survey.

Table 2. Measured Equipment Noise Levels

Verizon Cell Tower Cabinet	Octave Band Sound Pressure Level, dB									Leq, dBA
	31.5	63	125	250	500	1k	2k	4k	8k	
RF Box at Exhaust Grill	71.7	86.2	80.1	75.3	71.5	67.5	64.4	61.1	48.8	75.7
RF Box at Intake Grill	71.1	81.1	80.8	76.7	74.2	75.0	73.5	67.1	58.3	81.0

NOISE ANALYSIS

Methodology

The methodology used to analyze and predict operations noise from the future Project involved the use of the CadnaA computer noise model. CadnaA can simulate the physical environment by factoring in x, y, and z geometrics of a particular site to simulate the buildings, obstacles, and typography. The model uses industry recognized algorithms (ISO 9613) to perform acoustical analyses. The noise generated by future operations was calculated by inputting acoustical source data obtained from the survey and from the manufacturer in their proposed future locations. Noise control was evaluated by modeling engineering controls. The Project's Site Plan previously shown in Figure 2 was used to

identify the relative locations of the future cell tower equipment relative to the site boundaries.

The cell tower equipment was evaluated using the sound power data summarized in Table 3.

Table 3. Equipment Sound Level Input Data

Noise Source	Sound Power Level, dB re: 1 picoWatt at Octave Band Center Frequency, Hz								
	31.5	63	125	250	500	1k	2k	4k	8k
RF Box at Exhaust Grill	63.5	78.0	71.9	67.1	63.3	59.3	56.2	52.9	40.6
RF Box at Intake Grill	62.9	73.0	72.6	68.6	66.0	66.9	65.4	58.9	50.2

Predicted Cell Tower Equipment Noise Level

The cell tower will produce equipment noise levels as high as 30, 23 and 25 dBA at the nearest residential property boundaries to the west, north and south, respectively. At the shopping center boundary to the east, the cell tower noise level will be approximately 19 dBA. Figure 5 shows the predicted cell tower equipment noise contour map.

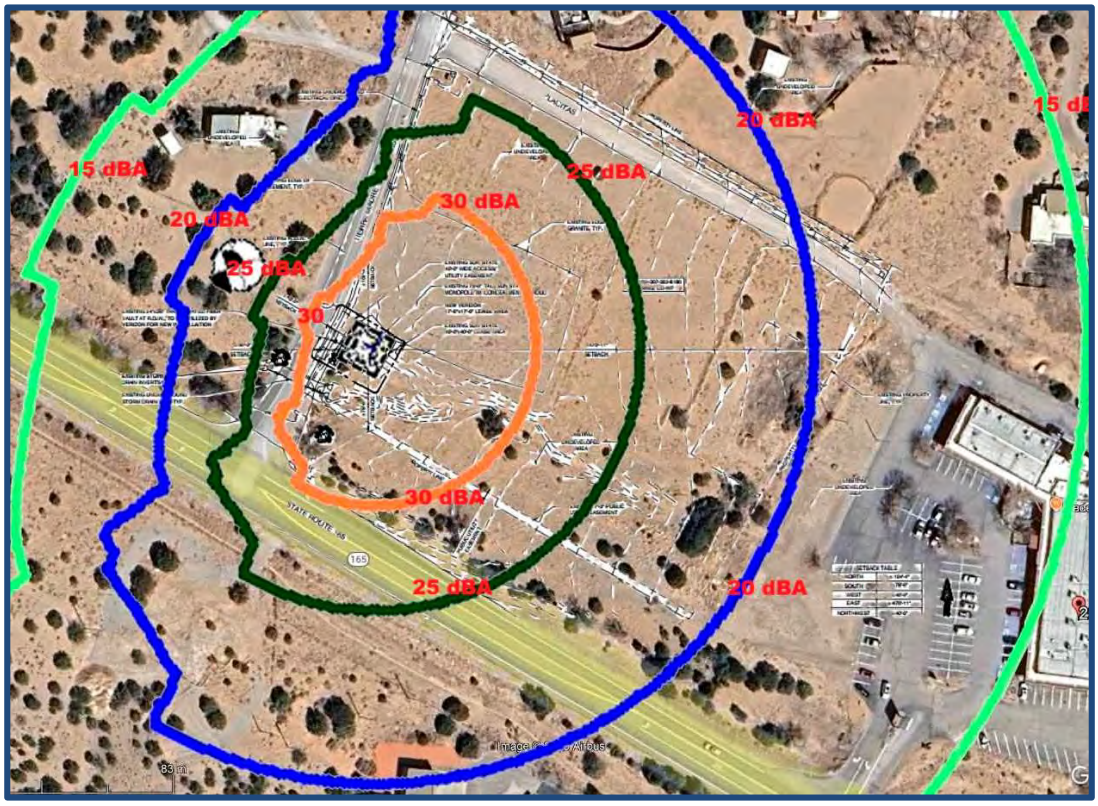


Figure 5. Predicted Cell Tower Equipment Noise Level

IMPACT ASSESSMENT

The cell tower will produce equipment noise levels as high as 30, 23 and 25 dBA at the nearest residential property boundaries to the west, north and south, respectively. The cell tower noise level will result in a +2.5, +0.6 and +1.0 dB increase above the lowest nighttime ambient noise level, Leq at the same residential property boundaries, respectively. At the nearest residential boundary to the west, the noise level increase would be barely noticeable during the quietest night time hour and would comply with the noise standard. During the daytime and evening hours, the cell tower noise would not be noticeable and would comply with the noise standards. At the nearest residential boundaries to the north and south, the cell tower noise increase would also not be noticeable and would also comply with the noise standard. At the shopping center boundary to the east, the cell tower noise level will be approximately 19 dBA and would result in an 0.3 dB increase above ambient noise levels. This amount of increase would not be noticeable and would also comply with the noise standard. Table 4 lists the estimated cell tower noise levels and impact assessment.

Table 4. Cell Tower Noise Levels and Impact Assessment

Receptor	Predicted Cell Tower Equipment Noise Level, dBA	Range in Hourly Ambient Noise Level, dBA	Project Increase Above Lowest Ambient Noise Level, dB	Assessment
Residential Property Line to the West	30	31 - 59	+2.5	**Compliance**
Residential Property Line to the North	23	31 - 59	+0.6	**Compliance**
Residential Property Line to the South	25	31 - 59	+1.0	**Compliance**
Retail Commercial Property Line to the East	19	31 - 59	0.3	**Compliance**

NOISE CONTROL RECOMMENDATIONS

The following noise control measures are suggested to ensure that the cell tower operations are in compliance with the noise standards:

1. The final engineering design of the project should be reviewed by a qualified Acoustical Consultant to ensure compliance with the Sandoval County Noise Standards.

CONCLUSION

Acoustics Group, Inc., (AGI) was retained to conduct a noise study of the Cell Tower Project located at 221 165 HWY ST in Placitas, NM. AGI has reviewed the noise criteria, analyzed the noise levels from the proposed equipment, assessed the impact of the future noise, and identified noise control measures.

The cell tower will produce equipment noise levels as high as 30, 23 and 25 dBA at the nearest residential property boundaries to the west, north and south, respectively. The cell tower noise level will result in a +2.5, +0.6 and +1.0 dB increase above the lowest nighttime ambient noise level, Leq at the same residential property boundaries, respectively. At the nearest residential boundary to the west, the noise level increase would be barely noticeable during the quietest night time hour and would comply with the noise standard. During the daytime and evening hours, the cell tower noise would not be noticeable and would comply with the noise standards. At the nearest residential boundaries to the north and south, the cell tower noise increase would also not be noticeable and would also comply with the noise standard. At the shopping center boundary to the east, the cell tower noise level will be approximately 19 dBA and would result in an 0.3 dB increase above ambient noise levels. This amount of increase would not be noticeable and would also comply with the noise standard.

The final engineering design of the project should be reviewed by as qualified Acoustical Consultant to ensure compliance with the Sandoval County Noise Standards.

REFERENCES

1. Melville Branch and R. Beland, 1970. EPA/ONAC 550/9-74-004, March 1974.
2. Project Drawings.

APPENDIX

NOISE STANDARDS

NOISE MEASUREMENT DATA

MODELING INPUT & OUTPUT

MANUFACTURER INFORMATION

ARCHITECTURAL DRAWINGS

NOISE STANDARDS

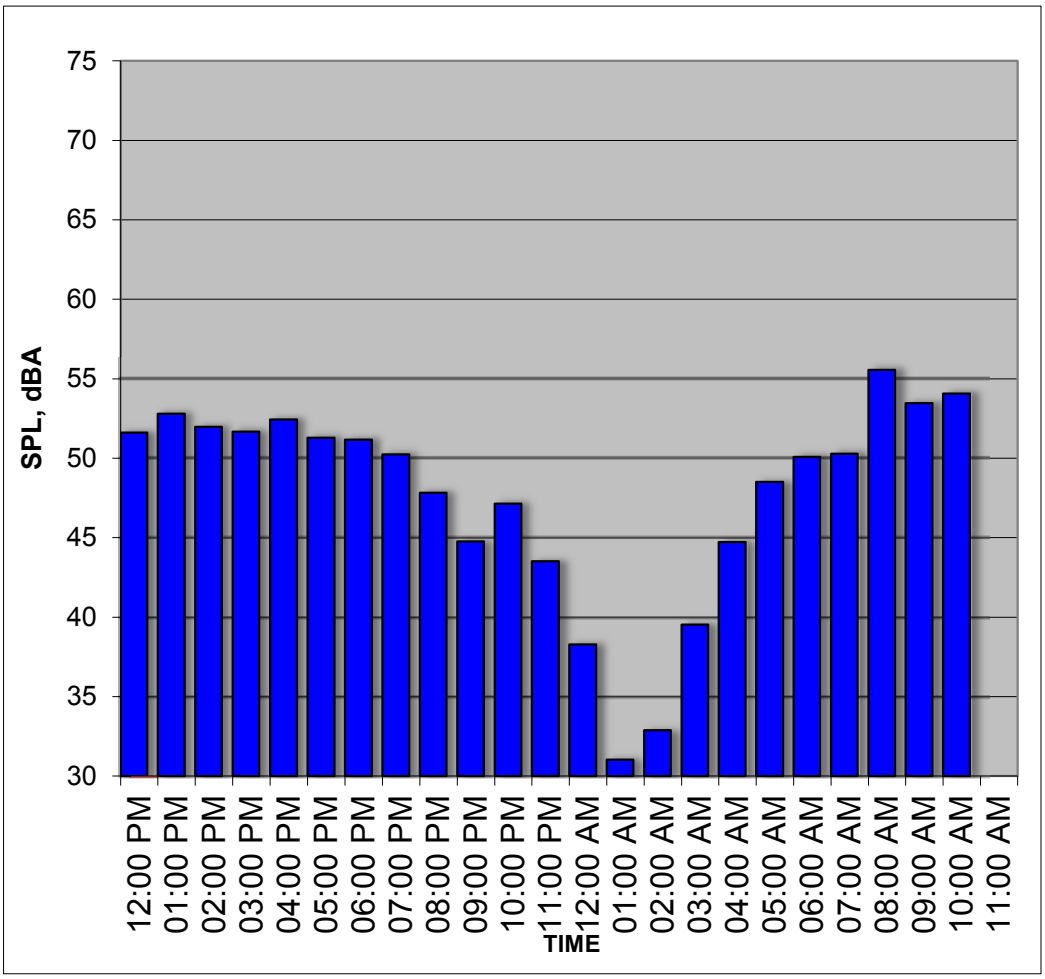
development on adjacent land uses.

2. *Building Design.*
   a. *Intent.* The intent of this section is to establish standards to encourage the orderly and harmonious appearance of structures along the County's major thoroughfares.
   b. *General Requirements.*
      1. The architecture of buildings shall not be prescribed and the County encourages variety in the style of structures. The architectural character of a proposed structure, however, shall be in harmony with and compatible to those in the immediate proximity.
      2. The building facades of large, massive structures shall be architecturally styled to achieve a smaller scale. Large building walls shall be broken to reduce scale and provide variety to the streetscape by use of landscaping, architectural treatment or murals.
      3. Mechanical equipment, whether ground-level or roof-mounted, shall be screened from public view and be so located as to be perceived as an integral part of the building.
      4. Accessory equipment capable of generating noise and vibrations shall be properly insulated and the noise and vibrations shall not be apparent from adjacent properties or the public right-of-way.

NOISE MEASUREMENT DATA

MEASUREMENT DATA - HOURLY NOISE LEVELS

Project:	**Sun State Towers - Verizon ABQ Tierra Madre Project**		
Address:	**221 NM-165, Placitas, NM 87043**	**Date:**	**8/13/2025**
Location:	**Northwest of Property**		**- 8/14/2025**
Noise		**Position:**	**NM1**
Sources:	**Vehicular Traffic, Insects & Distant Aircraft**		



TIME	*Leq, dB(A)*
12:00 - 01:00 PM	*51.6*
01:00 - 02:00 PM	*52.8*
02:00 - 03:00 PM	*52.0*
03:00 - 04:00 PM	*51.7*
04:00 - 05:00 PM	*52.4*
05:00 - 06:00 PM	*51.3*
06:00 - 07:00 PM	*51.2*
07:00 - 08:00 PM	*50.2*
08:00 - 09:00 PM	*47.8*
09:00 - 10:00 PM	*44.8*
10:00 - 11:00 PM	*47.1*
11:00 - 12:00 AM	*43.5*
12:00 - 01:00 AM	*38.3*
01:00 - 02:00 AM	*31.0*
02:00 - 03:00 AM	*32.9*
03:00 - 04:00 AM	*39.5*
04:00 - 05:00 AM	*44.7*
05:00 - 06:00 AM	*48.5*
06:00 - 07:00 AM	*50.1*
07:00 - 08:00 AM	*50.3*
08:00 - 09:00 AM	*55.6*
09:00 - 10:00 AM	*53.5*
10:00 - 11:00 AM	*54.1*
11:00 - 12:00 PM	------

Notes:

Source: Acoustics Group, Inc.

MODELING INPUT & OUTPUT

SUN STATE VERIZON INUT OUTPUT

RECEIVERS

Name	Coordinates			Height	
	X	Y	Z		
	(m)	(m)	(m)	(m)	
R Far Field	260.55	383.06	0	1.5	r
R W	209.63	267.64	0	1.5	r
R N	465.71	204.43	0	1.5	r

SOURCES

Name	Coordinates		Height	Result. PWL	Lw / Li		Correction
	X	Y		Day	Type	Value	Day
	(m)	(m)	(m)	(dBA)			dB(A)
RF1e	1208.03	1203.3	1.5	95	Lw	G50L	0
RF1i	1207.93	1203.3	0.5	75.4	Lw	RFI	0
RF2e	1210.48	1203.3	1.5	69.8	Lw	RFE	0
RF2i	1210.31	1203.3	0.5	75.4	Lw	RFI	0

	Octave Band Lw, dB									
Desc	31.5	63	125	250	500	1000	2000	4000	8000	Leq
RF Box SPL at E›	63	78	72	67	63	59	56	53	41	75.7
RF Box SPL at In	63	73	73	69	66	67	65	59	50	81

BARRIER

Name

RF1	x (m)	y (m)	z (m)	Ground (m)
	1207.55	1203.55	1.92	0
	1207.58	1204.41	1.92	0
	1208.48	1204.44	1.92	0
	1208.48	1203.55	1.92	0
	1207.55	1203.52	1.92	0

Battery	x (m)	y (m)	z (m)	Ground (m)
	1208.8	1203.54	1.92	0
	1208.8	1204.42	1.92	0
	1209.71	1204.42	1.92	0
	1209.71	1203.51	1.92	0
	1208.8	1203.54	1.92	0

RF2	x (m)	y (m)	z (m)	Ground (m)
	1209.96	1203.56	1.92	0

1209.98	1204.47	1.92	0
1210.91	1204.44	1.92	0
1210.91	1203.57	1.92	0
1209.96	1203.56	1.92	0

OUTPUT

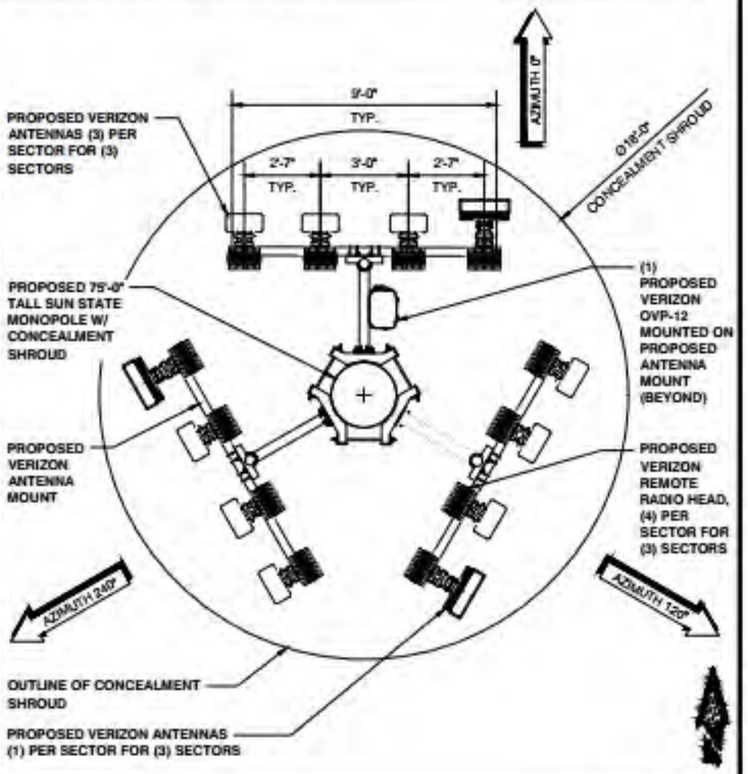
CELL TOWER WITH EMERGENCY GENERATOR

Receiver Name	Lr w/o Noise Control Day dB(A)
R W	30
R N	23
R S	25
R E	19

MANUFACTURER'S INFORMATION

NEW HYBRID CABLE SCHEDULE					
SECTOR	AZIMUTH	LENGTH	QTY.	SIZE	TYPE
ALPHA	0°	±85'	2	1 1/4"Ø	6X12 HYBRID CABLE
BETA	120°				
GAMMA	240°				

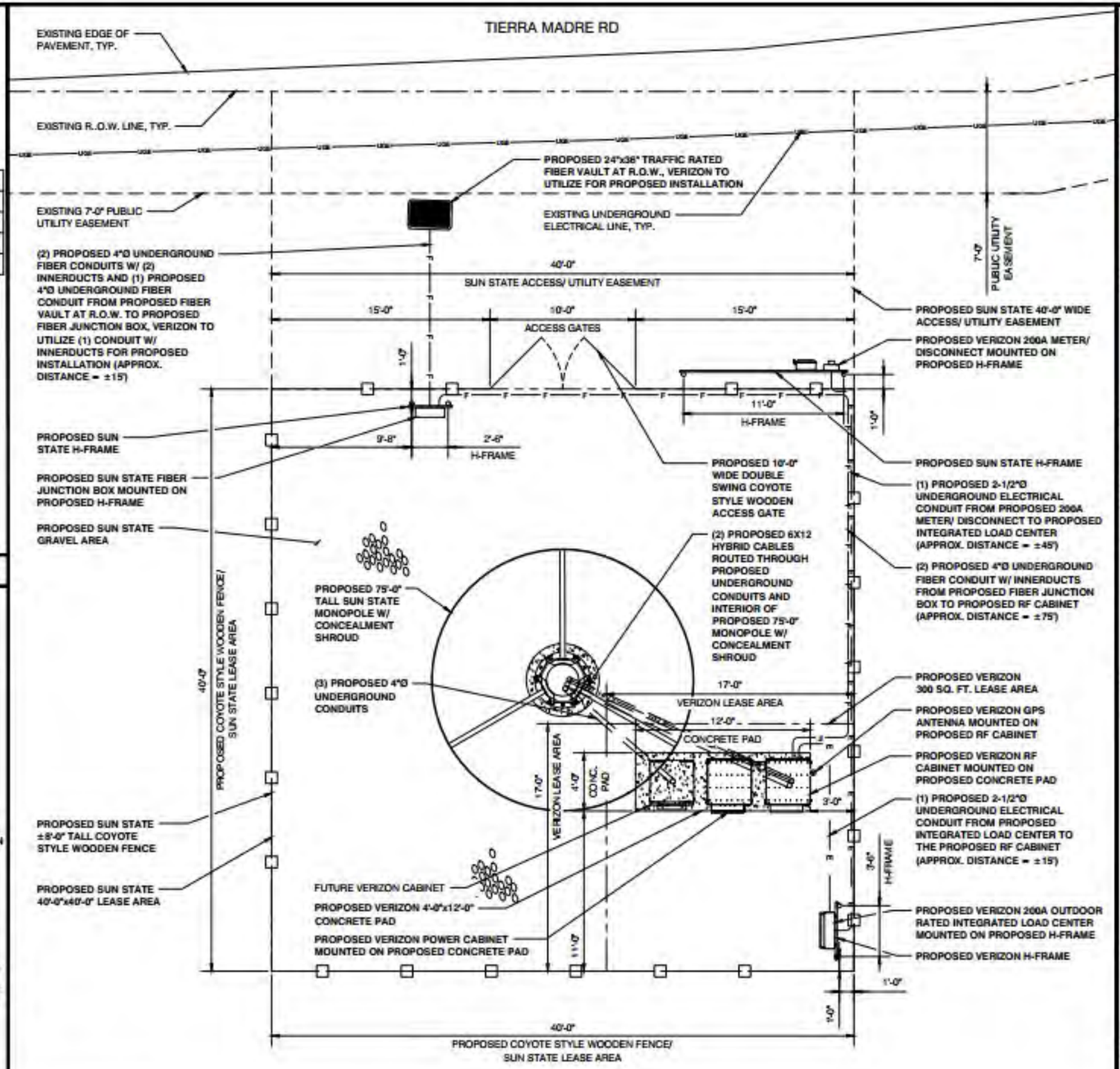
CABLING DETAIL 1



ANTENNA PLAN

24"x36" SCALE: 3/8" = 1'-0"
11"x17" SCALE: 3/16" = 1'-0"

2



NOTE:
ANTENNAS AND ANTENNA MOUNTS NOT SHOWN FOR CLARITY

ENLARGED SITE PLAN

24"x36" SCALE: 1/4" = 1'-0"
11"x17" SCALE: 1/8" = 1'-0"

3

PREPARED FOR
SUN STATE TOWERS
1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: 480-664-9588 - FAX 480-664-9650

CARRIER
verizon
9600 W. GERONIMO PL., CHANDLER, AZ 85224
PHONE: (480) 777-4360
FAX: (480) 777-4361

A&E CONSULTING FIRM & SITE ACQUISITION
PINNACLE CONSULTING, INC.
Site Acquisition | Engineering | Construction
1426 NORTH MARVIN STREET # 101
GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.G.
CHECKED BY:	KF

REV	DATE	DESCRIPTION	BY
A	04/03/24	FINAL ZONING	M.G.
B	05/15/24	FINAL ZONING	CDA
1	09/17/25	FINAL ZONING	M.G.

FINAL
FOR ZONING
ONLY

NM01-148 SPIKE /
ABQ TIERRA MADRE
321 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SHEET TITLE
ENLARGED SITE PLAN AND ANTENNA PLAN

SHEET NUMBER
Z-4

ARCHITECTURAL DRAWINGS

SUN STATE TOWERS

NM01-148 SPIKE / ABQ TIERRA MADRE

APN: 102-307-302-8180

221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SITE DIRECTIONS

DEPART ALBUQUERQUE INTERNATIONAL SUNPORT, 2200 SUNPORT BLVD SE, ALBUQUERQUE, NM 87045, TAKE THE RAMP ON THE RIGHT FOR I-25 N / US-85 N. AT EXIT 242, HEAD RIGHT ON THE RAMP FOR NM-165 / STATE HIGHWAY 165 TOWARD PLACITAS. TURN LEFT ONTO TIERRA MADRE RD. ARRIVE AT LOCATION ON THE RIGHT.

PROJECT DESCRIPTION

SCOPE OF WORK

- REMOVE (3) EXISTING TREES
- INSTALL PROPOSED 75'-0" SUN STATE MONOPOLE W/ CONCEALMENT SHROUD
- INSTALL PROPOSED 8'-0" TALL COYOTE STYLE WOODEN FENCE
- INSTALL PROPOSED 4'-0"x 12'-0" CONCRETE PAD
- INSTALL (3) PROPOSED H-FRAMES
- INSTALL PROPOSED RF CABINET
- INSTALL PROPOSED POWER CABINET
- INSTALL PROPOSED GPS ANTENNA
- INSTALL (12) PROPOSED PANEL ANTENNAS
- INSTALL (12) PROPOSED REMOTE RADIO HEADS
- INSTALL (1) PROPOSED OVP-12
- INSTALL PROPOSED ANTENNA MOUNT
- INSTALL PROPOSED ELECTRICAL SERVICE
- INSTALL PROPOSED TELCO SERVICE

CONTACT INFORMATION

SUN STATE TOWERS
1426 N. MARVIN STREET #101
GILBERT, AZ 85233
CONTACT: CHAD WARD
PHONE: (480) 664-9588 EXT. 214

PROPERTY OWNER:
MCCALLISTER, ORVILLE C AND JUDITH A
71 TUNNEL SPRINGS RD
PLACITAS, NM 87043
PHONE: (505) 238-6001

CARRIER:
VERIZON WIRELESS
2600 W. GERONIMO PL
CHANDLER, AZ 85224
CONTACT: JEFF DEWALT
PHONE: (505) 350-0004

TOWER OWNER:
SUN STATE TOWERS
1426 N. MARVIN STREET #101
GILBERT, AZ 85233
CONTACT: CHAD WARD
PHONE: (480) 664-9588 EXT. 214

SITE ACQUISITION:
PINNACLE CONSULTING, INC.
1426 N. MARVIN STREET #101
GILBERT, AZ 85233
CONTACT: MICHELLE JOHNSON
PHONE: (480) 664-9588 ext. 236

ENGINEERING FIRM:
PINNACLE CONSULTING, INC.
1426 N. MARVIN STREET #101
GILBERT, AZ 85233
ENGINEER: KYLE FORTIN, PE
PHONE: (623) 217-6235

PROJECT DATA

ZONING:	CD-RP
PARCEL #:	102-307-302-8180
USE:	UNMANNED COMMUNICATIONS
NEW LEASE AREA:	1600 SQ. FT
JURISDICTION:	SANDOVAL COUNTY
GOVERNING CODES:	2018 IBC, 2018 IFC, 2018 IMC, 2018 NEC

ALL BUILDING CODES LISTED ABOVE SHALL INCLUDE AMENDMENTS BY THE GOVERNING JURISDICTION

COORDINATES

TOWER COORDINATES:
LATITUDE 35.309460° 35° 18' 34.077" N (NAD83)
LONGITUDE -106.495402° -106° 29' 43.567" W (NAD83)
GROUND ELEVATION 5502' (NAVD88)
FIBER MMP (MEET ME POINT) COORDINATES:
LATITUDE 35.309468° 35° 18' 34.157" N (NAD83)
LONGITUDE -106.495540° -106° 29' 43.940" W (NAD83)

GENERAL NOTES

1. THIS WIRELESS TELECOMMUNICATIONS FACILITY WILL MEET THE HEALTH AND SAFETY STANDARDS FOR ELECTROMAGNETIC FIELD EMISSIONS AS ESTABLISHED BY THE FEDERAL COMMUNICATIONS COMMISSION OR ANY SUCCESSOR THEREOF, AND ANY OTHER FEDERAL OR STATE AGENCY.
2. THIS WIRELESS TELECOMMUNICATIONS FACILITY WILL MEET THE REGULATIONS OF THE FEDERAL COMMUNICATIONS COMMISSION REGARDING PHYSICAL AND ELECTROMAGNETIC INTERFERENCE.
3. LIGHTING OR SIGNS WILL BE PROVIDED ONLY AS REQUIRED BY FEDERAL OR STATE AGENCIES.
4. DEVELOPMENT AND CONSTRUCTION OF THIS PROJECT WILL COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES.
5. EXISTING PARKING IS NOT AFFECTED BY THIS PROJECT.
6. THIS PROJECT DOES NOT INCLUDE WATER OR SEWER.
7. THIS PROJECT INCLUDES C-BAND INSTALLATION.

VICINITY MAP

SHEET INDEX

T-1	PROJECT INFORMATION
LS-1	OVERALL SITE PLAN
LS-2	SURVEY DETAIL
Z-1	OVERALL SITE PLAN
Z-2	EXISTING SITE PLAN
Z-3	PROPOSED SITE PLAN
Z-4	ENLARGED SITE PLAN AND ANTENNA PLAN
Z-5	ELEVATIONS
Z-6	ELEVATIONS

APPROVALS

[RF]: _____ DATE: _____

[CONST.]: _____ DATE: _____

[RE]: _____ DATE: _____

LANDLORD: _____ DATE: _____

PREPARED FOR: SUN STATE TOWERS
1426 NORTH MARVIN STREET #101
GILBERT, AZ 85233
PHONE: (480) 664-9588 • FAX: (480) 497-6682

CARRIER: verizon
2600 W. GERONIMO PL, CHANDLER, AZ 85224
PHONE: (480) 777-4388
FAX: (480) 777-4391

A&E CONSULTING FIRM & SITE ACQUISITION: PINNACLE CONSULTING, INC
Site Acquisition | Engineering | Construction
1426 NORTH MARVIN STREET • 101
GILBERT, AZ 85233

PROJECT NO:	NM01-148
DRAWN BY:	M.C.
CHECKED BY:	KF

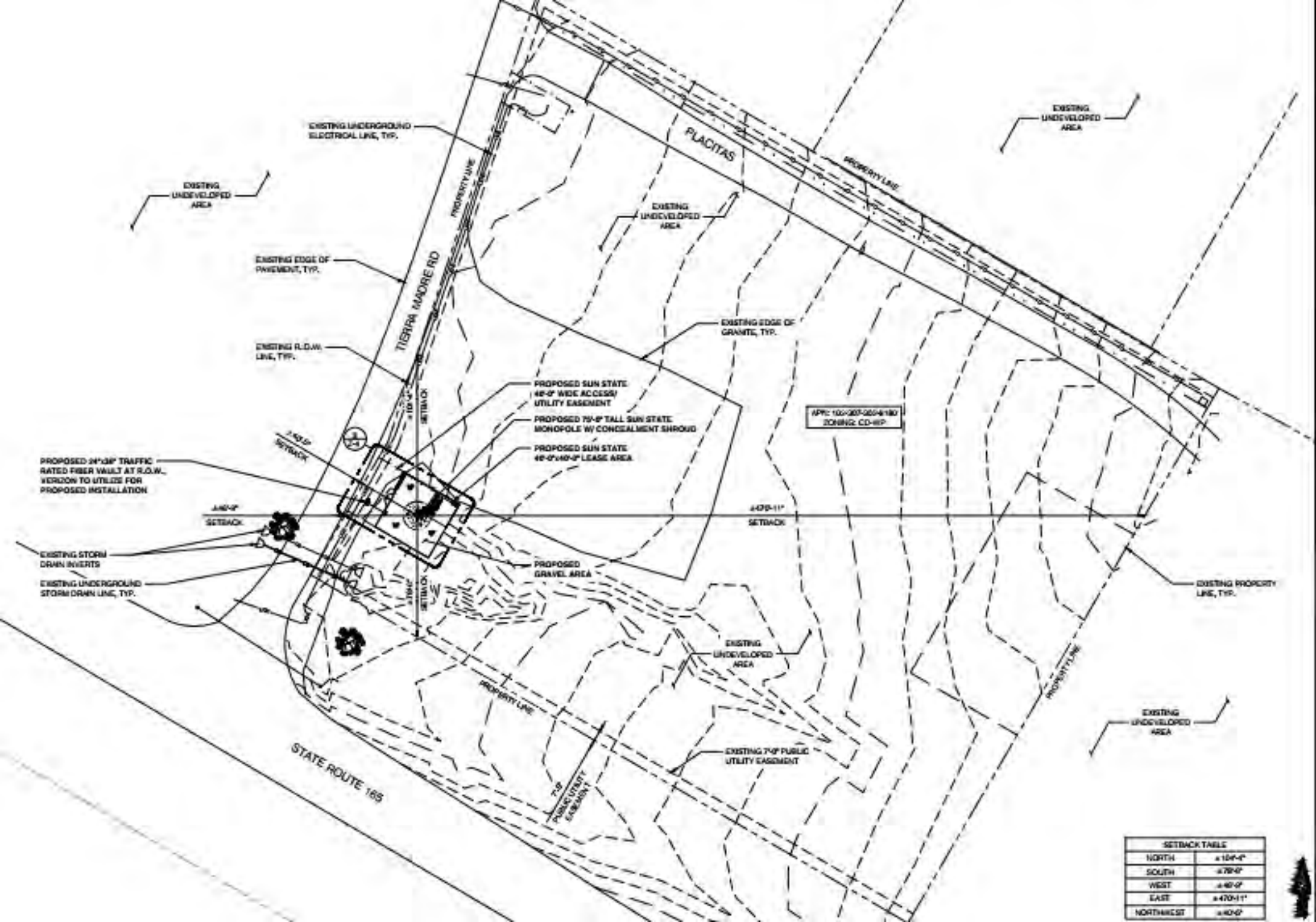
REV	DATE	DESCRIPTION	BY
A	04/23/24	FINAL ZONING	M.C.
B	09/18/24	FINAL ZONING	CDK
1	09/27/24	FINAL ZONING	M.C.

FINAL FOR ZONING ONLY

NM01-148 SPIKE / ABQ TIERRA MADRE
221 165 HWY ST
PLACITAS, NM 87043
SANDOVAL COUNTY

SHEET TITLE: PROJECT INFORMATION

SHEET NUMBER: T-1



SETBACK TABLE	
NORTH	±104'-4"
SOUTH	±78'-0"
WEST	±40'-0"
EAST	±470'-11"
NORTHWEST	±40'-0"

STRUCTURAL CALCULATIONS
for
NM01-148 SPIKE

at
221 NEW MEXICO 165
PLACITAS, NM 87043
for
PINNACLE CONSULTING, INC.
&
RAYCAP (SS24-01302H-00R1)

10/24/2024

BY: **JACOB PROCTOR, P.E.**
PROFESSIONAL ENGINEER

PROJECT #: **U0142.2054.242**

DATE: **October 24, 2024**

DESIGNED BY MAR; CHECKED BY KJG

Note:
The calculations presented in this package are intended for a single use at the location indicated above, for the client listed above. These calculations shall not be reproduced, reused, "card filed", sold to a third party, or altered in any way without the written authorization of Vector Structural Engineering, LLC and Raycap.

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JOB NO.: U0142.2054.242

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PROJECT: NM01-148 SPIKE

Design Criteria:

Code: Structural design is based on the 2021 New Mexico Commerical Building Codes (2021 IBC) and the TIA-222-H standard.

Wind: Basic wind speed = 104 mph (3-second gust) per the TIA-222-H standard
Risk Category: II
Wind exposure: C
Topographic category: 1
Crest height: 0 ft

Ice: 0.25" radial ice @ 30 mph basic wind speed (3-second gust) per the TIA-222-H standard

Seismic: Seismic importance factor, I = 1
Risk Category: II
Mapped spectral response accelerations: S_S = 0.487g S_1 = 0.16g
Site class: C
Spectral response coefficients: S_{DS} = 0.422g S_{D1} = 0.16g
Seismic design category: C
Basic seismic-force-resisting-system: Telecom: Steel Pole
Seismic base shear, V = 5.17 k
Seismic response coefficient, Cs = 0.282
Response modification factor, R = 1.5
Analysis procedure: Equivalent Lateral Force

General Notes:

1 The contractor shall verify dimensions, conditions and elevations before starting work. The engineer shall be notified immediately if any discrepancies are found.
2 The typical notes and details shall apply in all cases unless specifically detailed elsewhere. Where no detail is shown, the construction shall be as shown for other similar work and as required by the building code.
3 These calculations are limited to the structural members shown in these calculations only.
4 The contractor shall be responsible for compliance with local construction safety orders. Approval of shop drawings by the architect or structural engineer shall not be construed as accepting this responsibility.
5 All structural framing members shall be adequately shored and braced during erection and until full lateral and vertical support is provided by adjoining members.

JOB NO.: U0142.2054.242

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PROJECT: NM01-148 SPIKE

Structural Steel:

1 All structural steel code checks based on the AISC, 15th Edition per the TIA-222-H standard
2 All 18-sided, tapered shaft steel to be per ASTM A572 GR. 65, U.N.O.
3 The design length of slip splices is equal to 1.67 times the inside width of the base of the upper section. Slip splice length tolerance is equal to ± 10% of the design slip splice length.
4 All steel pipe to be per ASTM A500 GR. B (42 KSI), U.N.O.
4 All steel round tubes (HSS) to be per , U.N.O.
5 All steel rectangular tubes (HSS) to be per ASTM A500 GR. B (46 KSI), U.N.O.
5 All steel wide flange shapes to be per , U.N.O.
6 All other structural steel shapes & plates shall be per ASTM A36, U.N.O.
7 All anchor bolts shall be per ASTM A615 GR. 75, U.N.O.
8 All bolts for steel-to-steel connections shall be per ASTM F3125 GR. A325 U.N.O.
9 All bolted connections shall be tightened per the "turn-of-nut" method as defined by AISC.
10 All welding shall be performed by certified welders in accordance with the latest edition of the American Welding Society (AWS) D1.1. Utilize minimum E70XX low-hydrogen electrode U.N.O. or where higher strength electrode is required by AWS D1.1
11 All steel surfaces shall be galvanized in accordance with ASTM A123 and ASTM F2329 standards, thoroughly coated with a zinc-rich primer, or otherwise protected as noted on the structural drawings.

Fiberglass Reinforced Plastic (FRP):

1 All structural shapes shall be Bedford Reinforced Plastics produced using the pultrusion process.
2 The fabricator and contractor shall exercise precautions necessary to protect the fiberglass pultruded structural shapes from abuse to prevent breakage, nicks, gouges, etc. during fabrication, handling, and installation.
3 Structural shapes shall be fabricated and assembled as indicated on the design drawings.
4 FRP threaded rods and nuts shall be tightened to snug tight and turned an additional 1/2 turn and locked with epoxy.

Foundation / Concrete:

1 All concrete mixing, placement, forming, and reinforcing installation shall be performed in accordance with the requirements of “Building Code Requirements for Reinforced Concrete”, ACI 318-19. Foundation installation shall be in accordance with the requirements of "Standard Specifications for the Construction of Drilled Piers", ACI 336, latest edition
2 All concrete shall have a minimum compressive strength of 4000 psi at 28 days.
3 Cement for all concrete shall be II with 6% (+/- 1.5%) entrained air. Maximum aggregate size shall be 3/4".
4 Reinforcing steel shall be per ASTM A615 Gr. 60, U.N.O.
5 Foundation design is based upon the project soils report prepared by:

Geotech: Tower Engineering Professionals, Inc.
Report No: 341545
Date: 31-Jul-24

JOB NO.: U0142.2054.242

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PROJECT: NM01-148 Spike

DESIGN WIND LOADS ON LARGE RADOME CONCEALMENTS:
(Screenwalls/Concealments on Monopoles)

Round Concealment Calculations
Supported on a Pole structure
Design per TIA-222-H

Label: Concealment tower

INPUT DATA:

Basic Wind Speed, V [mph]:	104
Exposure Category:	C
Elevation Above Sea Level [ft]:	5520

Structure:

Supporting Structure:	Pole
Concealment Shape:	Round
Tower Top of Steel (ft):	75
# of Concealments:	3

	Top	2nd	Bottom
Elevation Centerline (ft):	70	60	50
Concealment Height (ft):	10.0	10.0	10.0
Concealment Diameter (ft):	18.0	18.0	18.0
Open Area Top (%):	100%	0%	0%
Open Area Bottom (%):	0%	0%	100%

WIND DESIGN SUMMARY:

	70 ft.	60 ft.	50 ft.
Full Wind Pressure, 1.0W [psf]:	**17.5**	**16.9**	**16.3**
Full Ice Wind Pressure, 1.0W [psf]:	**2.9**	**2.8**	**2.7**
Full Service Wind Pressure, 1.0W [psf]:	**5.8**	**5.6**	**5.4**
Inside Wind Pressure, 1.0W [psf]:	**21.0**	**20.3**	**19.6**
Inside Ice Wind Pressure, 1.0W [psf]:	**3.5**	**3.4**	**3.3**
Inside Service Wind Pressure, 1.0W [psf]:	**7.0**	**6.8**	**6.5**
Wind Force, Outside Face (lbs):	**3151**	**3051**	**2936**
Wind Force, Inside Face (lbs):	**2228**	**0**	**2075**
Total Wind Force (lbs):	**5379**	**3051**	**5011**

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PROJECT: NM01-148 Spike

WEIGHT DESIGN SUMMARY:

Self Weight Only:

	Component:	Densities		Length, Area, Quantity		Self Weight (lb)	Total + 10% (lb)
Top @ 70' Elevation	ESSV Panel: Framing w/o Grating	2.00 3.0	psf psf	Area = ft^2 Area = ft^2	565 254	1131 763	2084
22d @ 60' Elevation	ESSV Panel: Framing w/o Grating	2.00 3.0	psf psf	Area = ft^2 Area = ft^2	565 254	1131 763	2084
Bottom @ 50' Elevation	ESSV Panel: Framing w/o Grating	2.00 3.0	psf psf	Area = ft^2 Area = ft^2	565 254	1131 763	2084
						W_p =	6251

Ice Weight Only:

	Component:	Ice Density		Length, Area		Ice Weight (lb)	Total Weight (lb)
Top @ 70' Elevation	ESSV Panel: Framing w/o Grating	1.3 1.3	psf psf	Area = ft^2 Area = ft^2	565 254	711 320	1031
22d @ 60' Elevation	ESSV Panel: Framing w/o Grating	1.3 1.3	psf psf	Area = ft^2 Area = ft^2	565 254	711 320	1031
Bottom @ 50' Elevation	ESSV Panel: Framing w/o Grating	1.3 1.3	psf psf	Area = ft^2 Area = ft^2	565 0	711 0	711
						W_p =	2774

Total W_p =	9025

JOB NO.: U0142.2054.242

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PROJECT: NM01-148 SPIKE

ASCE 7-16

Seismic Base Shear Calculations:

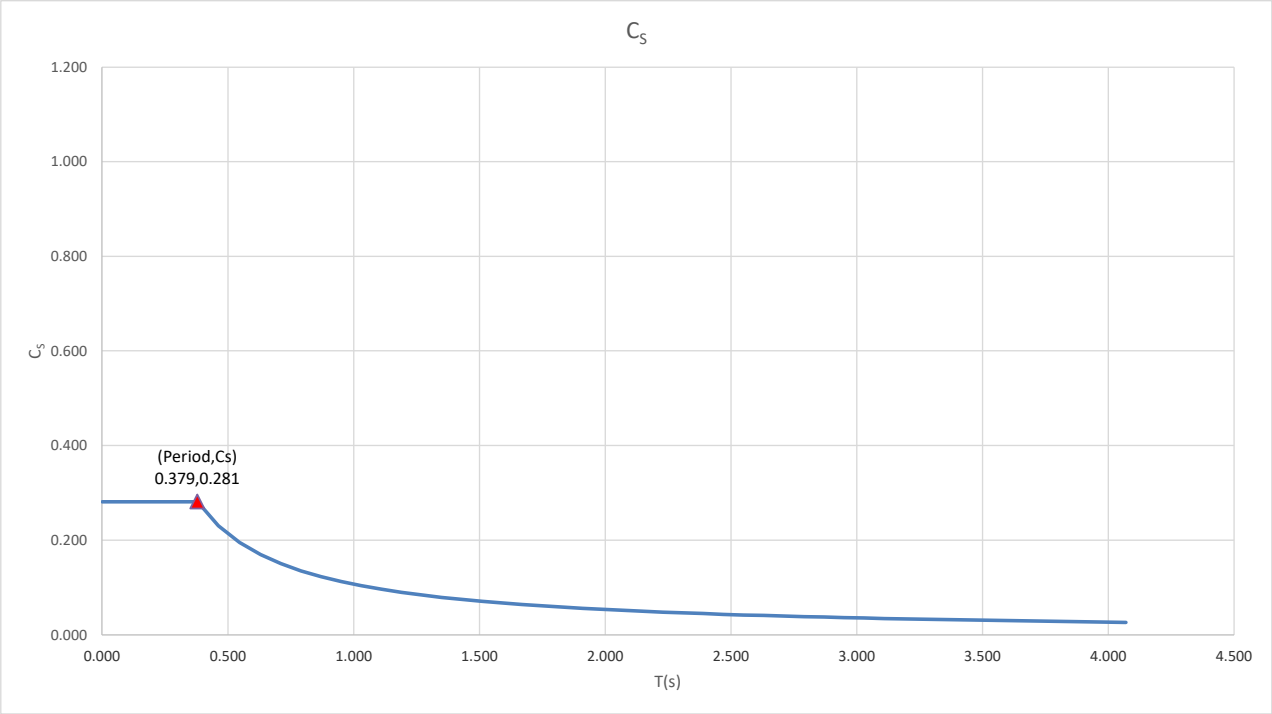
Seismic Parameters:

Risk Category=	II		S_s =	0.487	g	S_{DS} =	0.422	g
Seismic Design Category:	C		S_1 =	0.160	g	S_{D1} =	0.160	g
Importance, I =	1.00		S_{MS} =	0.633	g	F_a =	1.30	
Site Class:	C		SM1 =	0.240	g	F_v =	1.50	
R =	1.5							
T_L =	6							

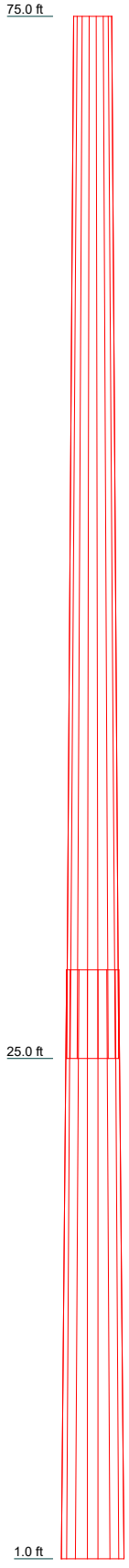
Seismic Base Shear:

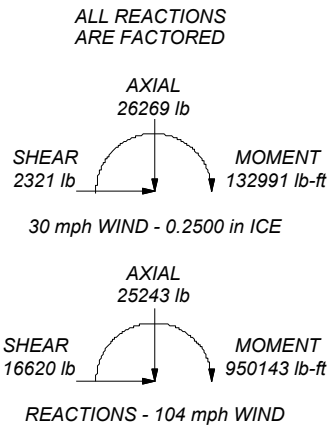
Structure Type =	Telecom: Steel Pole							
Period Type =	Worst Case Cs							
h =	74.0	ft				f_1 =	2.64	Hz
E =	29000	ksi	W_t =	13.9	k	T=	0.38	sec.
			W_L =	13.9	k	k_e=	1.00	
C_s=	0.282							
Seismic Shear, $V_{s(final)}$ =	3.9	k	**ratio =**	0.24				
Wind Shear =	16.6	k						

Wind Controls, No Seismic Analysis Required



Section	1	2
Length (ft)	50.00	28.25
Number of Sides	18	18
Thickness (in)	0.1875	0.2500
Socket Length (ft)	4.25	
Top Dia (in)	21.0000	29.5463
Bot Dia (in)	30.7500	35.0550
Grade	A572-65	
Weight (lb)	2601.0	2444.8





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Concealment Loading @ 75 ft	75	(4) Generic RRU (Enclosed, 75 lbs)	60
(4) Generic Panel (Enclosed, 115 lbs)	70	(4) Generic RRU (Enclosed, 75 lbs)	60
(4) Generic Panel (Enclosed, 115 lbs)	70	(4) Generic RRU (Enclosed, 75 lbs)	60
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	70	(4) Generic Panel (Enclosed, 115 lbs)	60
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	70	(4) Generic Panel (Enclosed, 115 lbs)	60
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	70	(4) Generic Panel (Enclosed, 115 lbs)	60
(4) Generic RRU (Enclosed, 75 lbs)	70	Concealment Loading @ 55 ft	55
(4) Generic RRU (Enclosed, 75 lbs)	70	Concealment Loading @ 55 ft	55
(4) Generic RRU (Enclosed, 75 lbs)	70	(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	50
(4) Generic Panel (Enclosed, 115 lbs)	70	(4) Generic RRU (Enclosed, 75 lbs)	50
Concealment Loading @ 65 ft	65	(4) Generic RRU (Enclosed, 75 lbs)	50
Concealment Loading @ 65 ft	65	(4) Generic RRU (Enclosed, 75 lbs)	50
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60	(4) Generic Panel (Enclosed, 115 lbs)	50
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60	(4) Generic Panel (Enclosed, 115 lbs)	50
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60	(4) Generic Panel (Enclosed, 115 lbs)	50
		(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	50
		(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	50
		Concealment Loading @ 45 ft	45

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Sandoval County, New Mexico.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 104 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 30 mph basic wind with 0.25 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 74.5%

Vector Structural Engineering
651 W Galena Park Blvd
Draper, UT 84020
Phone: (801) 990-1775
FAX: (801) 990-1776

Job: **Spike**			
Project: ***U0142.2054.242***			
Client: Raycap	Drawn by: mririe	App'd:	
Code: TIA-222-H	Date: 10/24/24	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

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

Tower is located in Sandoval County, New Mexico.
Tower base elevation above sea level: 5521.00 ft.
Basic wind speed of 104 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 0.2500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 30 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
Non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	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
Kz In Exposure D Hurricane Region	Alternative Appurt. EPA Calculation	Use TIA-222-H Tension Splice Exemption
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
√ Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Pole Without Linear Attachments
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	√ Pole With Shroud Or No Appurtenances
Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules	Outside and Inside Corner Radii Are Known
Use Special Wind Profile		

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	75.00-25.00	50.00	4.25	18	21.0000	30.7500	0.1875	0.7500	A572-65 (65 ksi)
L2	25.00-1.00	28.25		18	29.5463	35.0550	0.2500	1.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	21.2950	12.3860	677.8263	7.3884	10.6680	63.5383	1356.5444	6.1942	3.3660	17.952
	31.1954	18.1885	2146.4080	10.8497	15.6210	137.4053	4295.6403	9.0960	5.0820	27.104
L2	30.8050	23.2466	2520.6960	10.4002	15.0095	167.9401	5044.7089	11.6255	4.7601	19.041
	35.5572	27.6178	4226.7766	12.3558	17.8079	237.3535	8459.1149	13.8115	5.7297	22.919

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 75.00-25.00				1	1	1			
L2 25.00-1.00				1	1	1			

User Defined Loads

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °		Weight lb	F_x lb	F_z lb	Wind Force lb	C_AA_C ft^2
Concealment Loading @ 75 ft	75.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	2690.00	**90.54**
				Ice	516.00	0.00	0.00	355.00	**143.59**
				Service	1042.00	0.00	0.00	895.00	**106.48**
Concealment Loading @ 65 ft	65.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	2690.00	**93.31**
				Ice	516.00	0.00	0.00	355.00	**147.99**
				Service	1042.00	0.00	0.00	895.00	**109.73**
Concealment Loading @ 65 ft	65.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	1525.00	**52.90**
				Ice	516.00	0.00	0.00	254.00	**105.88**
				Service	1042.00	0.00	0.00	508.00	**62.28**
Concealment Loading @ 55 ft	55.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	1525.00	**54.79**
				Ice	516.00	0.00	0.00	254.00	**109.67**
				Service	1042.00	0.00	0.00	508.00	**64.51**
Concealment Loading @ 55 ft	55.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	2506.00	**90.04**
				Ice	356.00	0.00	0.00	331.00	**142.92**
				Service	1042.00	0.00	0.00	834.00	**105.91**
Concealment Loading @ 45 ft	45.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	2506.00	**93.92**
				Ice	356.00	0.00	0.00	331.00	**149.09**
				Service	1042.00	0.00	0.00	834.00	**110.48**

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(4) Generic Panel (Enclosed, 115 lbs)	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	B	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	C	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	B	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	C	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(4) Generic RRU (Enclosed, 75 lbs)	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	B	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	C	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
***									
(4) Generic Panel (Enclosed, 115 lbs)	A	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	B	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	C	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	A	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	B	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	C	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(4) Generic RRU (Enclosed, 75 lbs)	A	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	B	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	C	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
***									
(4) Generic Panel (Enclosed,	A	From Face	3.00	0.0000	50.00	No Ice	0.00	0.00	115.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
115 lbs)			0.00 0.00			1/2" Ice	0.00	0.00	115.00
(4) Generic Panel (Enclosed, 115 lbs)	B	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	C	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	A	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	B	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	C	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(4) Generic RRU (Enclosed, 75 lbs)	A	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	B	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	C	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 75.00-25.00	49.10	1.090	24	109.355	A	0.000	109.355	109.355	100.00	0.000	0.000
					B	0.000	109.355		100.00	0.000	0.000
					C	0.000	109.355		100.00	0.000	0.000
L2 25.00-1.00	12.71	0.850	19	66.362	A	0.000	66.362	66.362	100.00	0.000	0.000
					B	0.000	66.362		100.00	0.000	0.000
					C	0.000	66.362		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 75.00-25.00	49.10	1.090	2	0.2601	111.523	A	0.000	111.523	111.523	100.00	0.000	0.000
						B	0.000	111.523		100.00	0.000	0.000
						C	0.000	111.523		100.00	0.000	0.000
L2 25.00-1.00	12.71	0.850	2	0.2273	67.403	A	0.000	67.403	67.403	100.00	0.000	0.000
						B	0.000	67.403		100.00	0.000	0.000
						C	0.000	67.403		100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 75.00-25.00	49.10	1.090	7	109.355	A	0.000	109.355	109.355	100.00	0.000	0.000
					B	0.000	109.355		100.00	0.000	0.000
					C	0.000	109.355		100.00	0.000	0.000
L2 25.00-1.00	12.71	0.850	5	66.362	A	0.000	66.362	66.362	100.00	0.000	0.000
					B	0.000	66.362		100.00	0.000	0.000
					C	0.000	66.362		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	24	1	1	109.355	2151.37	43.03	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	19	1	1	66.362	1027.02	42.79	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	115508.37 lb-ft	3178.39		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	24	1	1	109.355	2151.37	43.03	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	19	1	1	66.362	1027.02	42.79	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	115508.37 lb-ft	3178.39		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	24	1	1	109.355	2151.37	43.03	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	19	1	1	66.362	1027.02	42.79	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	115508.37 lb-ft	3178.39		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	24	1	1	109.355	2151.37	43.03	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	19	1	1	66.362	1027.02	42.79	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	115508.37 lb-ft	3178.39		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3020.56	A	1	1.2	2	1	1	111.523	300.11	6.00	C
75.00-25.00			B	1	1.2		1	1	111.523			
			C	1	1.2		1	1	111.523			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L2 25.00-1.00	0.00	2666.54	A	1	1.2	2	1	1	67.271	142.40	5.93	C
			B	1	1.2		1	1	67.271			
			C	1	1.2		1	1	67.271			
Sum Weight:	0.00	5687.10						OTM	16102.78 lb-ft	442.51		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3020.56	A	1	1.2	2	1	1	111.523	300.11	6.00	C
75.00-25.00			B	1	1.2		1	1	111.523			
			C	1	1.2		1	1	111.523			
L2 25.00-1.00	0.00	2666.54	A	1	1.2	2	1	1	67.271	142.40	5.93	C
			B	1	1.2		1	1	67.271			
			C	1	1.2		1	1	67.271			
Sum Weight:	0.00	5687.10						OTM	16102.78 lb-ft	442.51		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3020.56	A	1	1.2	2	1	1	111.523	300.11	6.00	C
75.00-25.00			B	1	1.2		1	1	111.523			
			C	1	1.2		1	1	111.523			
L2 25.00-1.00	0.00	2666.54	A	1	1.2	2	1	1	67.271	142.40	5.93	C
			B	1	1.2		1	1	67.271			
			C	1	1.2		1	1	67.271			
Sum Weight:	0.00	5687.10						OTM	16102.78 lb-ft	442.51		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3020.56	A	1	1.2	2	1	1	111.523	300.11	6.00	C
75.00-25.00			B	1	1.2		1	1	111.523			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	1	1.2		1	1	111.523			
L2 25.00-1.00	0.00	2666.54	A	1	1.2	2	1	1	67.271	142.40	5.93	C
			B	1	1.2		1	1	67.271			
			C	1	1.2		1	1	67.271			
Sum Weight:	0.00	5687.10						OTM	16102.78 lb-ft	442.51		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	7	1	1	109.355	608.65	12.17	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	5	1	1	66.362	290.56	12.11	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	32678.96 lb-ft	899.21		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	7	1	1	109.355	608.65	12.17	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	5	1	1	66.362	290.56	12.11	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	32678.96 lb-ft	899.21		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	7	1	1	109.355	608.65	12.17	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	5	1	1	66.362	290.56	12.11	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	32678.96 lb-ft	899.21		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	7	1	1	109.355	608.65	12.17	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	5	1	1	66.362	290.56	12.11	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	32678.96 lb-ft	899.21		

Discrete Appurtenance Pressures - No Ice $G_H = 1.100$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft²	C_AA_C Side ft²
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.39	-1.96	70.00	1.174	27	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.39	-1.96	70.00	1.174	27	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	3.92	70.00	1.174	27	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.39	-1.96	70.00	1.174	27	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.39	-1.96	70.00	1.174	27	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	3.92	70.00	1.174	27	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.39	-1.96	70.00	1.174	27	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.39	-1.96	70.00	1.174	27	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	3.92	70.00	1.174	27	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.46	-2.00	60.00	1.137	26	0.00	0.00
Generic Panel (Enclosed,	60.0000	460.00	3.46	-2.00	60.00	1.137	26	0.00	0.00

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
115 lbs)									
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.00	60.00	1.137	26	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.46	-2.00	60.00	1.137	26	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.46	-2.00	60.00	1.137	26	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	4.00	60.00	1.137	26	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.46	-2.00	60.00	1.137	26	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.46	-2.00	60.00	1.137	26	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.00	60.00	1.137	26	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.53	-2.04	50.00	1.094	25	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.53	-2.04	50.00	1.094	25	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.08	50.00	1.094	25	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.53	-2.04	50.00	1.094	25	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.53	-2.04	50.00	1.094	25	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	4.08	50.00	1.094	25	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.53	-2.04	50.00	1.094	25	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.53	-2.04	50.00	1.094	25	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.08	50.00	1.094	25	0.00	0.00
	Sum Weight:	9738.00							

Discrete Appurtenance Pressures - With Ice $G_H = 1.100$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	3.92	70.00	1.174	2	0.00	0.00	0.2695
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	753.52	-3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	753.52	3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	753.52	0.00	3.92	70.00	1.174	2	0.00	0.00	0.2695
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
Generic RRU (Enclosed,	180.0000	300.00	0.00	3.92	70.00	1.174	2	0.00	0.00	0.2695

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
75 lbs)										
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.00	60.00	1.137	2	0.00	0.00	0.2654
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	746.92	-3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	746.92	3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	746.92	0.00	4.00	60.00	1.137	2	0.00	0.00	0.2654
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.00	60.00	1.137	2	0.00	0.00	0.2654
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.08	50.00	1.094	2	0.00	0.00	0.2606
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	739.24	-3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	739.24	3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	739.24	0.00	4.08	50.00	1.094	2	0.00	0.00	0.2606
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.08	50.00	1.094	2	0.00	0.00	0.2606
	Sum Weight:	13559.01								

Discrete Appurtenance Pressures - Service $G_H = 1.100$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.39	-1.96	70.00	1.174	8	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.39	-1.96	70.00	1.174	8	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	3.92	70.00	1.174	8	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.39	-1.96	70.00	1.174	8	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.39	-1.96	70.00	1.174	8	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	3.92	70.00	1.174	8	0.00	0.00
Generic RRU (Enclosed,	300.0000	300.00	-3.39	-1.96	70.00	1.174	8	0.00	0.00

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
75 lbs)									
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.39	-1.96	70.00	1.174	8	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	3.92	70.00	1.174	8	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.46	-2.00	60.00	1.137	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.46	-2.00	60.00	1.137	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.00	60.00	1.137	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.46	-2.00	60.00	1.137	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.46	-2.00	60.00	1.137	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	4.00	60.00	1.137	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.46	-2.00	60.00	1.137	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.46	-2.00	60.00	1.137	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.00	60.00	1.137	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.53	-2.04	50.00	1.094	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.53	-2.04	50.00	1.094	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.08	50.00	1.094	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.53	-2.04	50.00	1.094	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.53	-2.04	50.00	1.094	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	4.08	50.00	1.094	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.53	-2.04	50.00	1.094	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.53	-2.04	50.00	1.094	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.08	50.00	1.094	7	0.00	0.00
	Sum Weight:	9738.00							

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	5045.74					
Bracing Weight	0.00					
Total Member Self-Weight	5045.74			0.00	0.00	
Total Weight	21035.74			0.00	0.00	
Wind 0 deg - No Ice		0.00	-16620.39	-912266.37	0.00	0.00
Wind 30 deg - No Ice		8310.20	-14393.68	-790045.85	-456133.19	0.00
Wind 45 deg - No Ice		11752.39	-11752.39	-645069.74	-645069.74	0.00
Wind 60 deg - No Ice		14393.68	-8310.20	-456133.19	-790045.85	0.00

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Wind 90 deg - No Ice		16620.39	0.00	0.00	-912266.37	0.00
Wind 120 deg - No Ice		14393.68	8310.20	456133.19	-790045.85	0.00
Wind 135 deg - No Ice		11752.39	11752.39	645069.74	-645069.74	0.00
Wind 150 deg - No Ice		8310.20	14393.68	790045.85	-456133.19	0.00
Wind 180 deg - No Ice		0.00	16620.39	912266.37	0.00	0.00
Wind 210 deg - No Ice		-8310.20	14393.68	790045.85	456133.19	0.00
Wind 225 deg - No Ice		-11752.39	11752.39	645069.74	645069.74	0.00
Wind 240 deg - No Ice		-14393.68	8310.20	456133.19	790045.85	0.00
Wind 270 deg - No Ice		-16620.39	0.00	0.00	912266.37	0.00
Wind 300 deg - No Ice		-14393.68	-8310.20	-456133.19	790045.85	0.00
Wind 315 deg - No Ice		-11752.39	-11752.39	-645069.74	645069.74	0.00
Wind 330 deg - No Ice		-8310.20	-14393.68	-790045.85	456133.19	0.00
Member Ice	641.36					
Total Weight Ice	22022.11			0.00	0.00	
Wind 0 deg - Ice		0.00	-2322.51	-127502.78	0.00	0.00
Wind 30 deg - Ice		1161.25	-2011.35	-110420.65	-63751.39	0.00
Wind 45 deg - Ice		1642.26	-1642.26	-90158.08	-90158.08	0.00
Wind 60 deg - Ice		2011.35	-1161.25	-63751.39	-110420.65	0.00
Wind 90 deg - Ice		2322.51	0.00	0.00	-127502.78	0.00
Wind 120 deg - Ice		2011.35	1161.25	63751.39	-110420.65	0.00
Wind 135 deg - Ice		1642.26	1642.26	90158.08	-90158.08	0.00
Wind 150 deg - Ice		1161.25	2011.35	110420.65	-63751.39	0.00
Wind 180 deg - Ice		0.00	2322.51	127502.78	0.00	0.00
Wind 210 deg - Ice		-1161.25	2011.35	110420.65	63751.39	0.00
Wind 225 deg - Ice		-1642.26	1642.26	90158.08	90158.08	0.00
Wind 240 deg - Ice		-2011.35	1161.25	63751.39	110420.65	0.00
Wind 270 deg - Ice		-2322.51	0.00	0.00	127502.78	0.00
Wind 300 deg - Ice		-2011.35	-1161.25	-63751.39	110420.65	0.00
Wind 315 deg - Ice		-1642.26	-1642.26	-90158.08	90158.08	0.00
Wind 330 deg - Ice		-1161.25	-2011.35	-110420.65	63751.39	0.00
Total Weight	21035.74			0.00	0.00	
Wind 0 deg - Service		0.00	-5373.21	-297864.96	0.00	0.00
Wind 30 deg - Service		2686.61	-4653.34	-257958.62	-148932.48	0.00
Wind 45 deg - Service		3799.43	-3799.43	-210622.33	-210622.33	0.00
Wind 60 deg - Service		4653.34	-2686.61	-148932.48	-257958.62	0.00
Wind 90 deg - Service		5373.21	0.00	0.00	-297864.96	0.00
Wind 120 deg - Service		4653.34	2686.61	148932.48	-257958.62	0.00
Wind 135 deg - Service		3799.43	3799.43	210622.33	-210622.33	0.00
Wind 150 deg - Service		2686.61	4653.34	257958.62	-148932.48	0.00
Wind 180 deg - Service		0.00	5373.21	297864.96	0.00	0.00
Wind 210 deg - Service		-2686.61	4653.34	257958.62	148932.48	0.00
Wind 225 deg - Service		-3799.43	3799.43	210622.33	210622.33	0.00
Wind 240 deg - Service		-4653.34	2686.61	148932.48	257958.62	0.00
Wind 270 deg - Service		-5373.21	0.00	0.00	297864.96	0.00
Wind 300 deg - Service		-4653.34	-2686.61	-148932.48	257958.62	0.00
Wind 315 deg - Service		-3799.43	-3799.43	-210622.33	210622.33	0.00
Wind 330 deg - Service		-2686.61	-4653.34	-257958.62	148932.48	0.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice

Comb. No.	Description
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 45 deg - No Ice
7	0.9 Dead+1.0 Wind 45 deg - No Ice
8	1.2 Dead+1.0 Wind 60 deg - No Ice
9	0.9 Dead+1.0 Wind 60 deg - No Ice
10	1.2 Dead+1.0 Wind 90 deg - No Ice
11	0.9 Dead+1.0 Wind 90 deg - No Ice
12	1.2 Dead+1.0 Wind 120 deg - No Ice
13	0.9 Dead+1.0 Wind 120 deg - No Ice
14	1.2 Dead+1.0 Wind 135 deg - No Ice
15	0.9 Dead+1.0 Wind 135 deg - No Ice
16	1.2 Dead+1.0 Wind 150 deg - No Ice
17	0.9 Dead+1.0 Wind 150 deg - No Ice
18	1.2 Dead+1.0 Wind 180 deg - No Ice
19	0.9 Dead+1.0 Wind 180 deg - No Ice
20	1.2 Dead+1.0 Wind 210 deg - No Ice
21	0.9 Dead+1.0 Wind 210 deg - No Ice
22	1.2 Dead+1.0 Wind 225 deg - No Ice
23	0.9 Dead+1.0 Wind 225 deg - No Ice
24	1.2 Dead+1.0 Wind 240 deg - No Ice
25	0.9 Dead+1.0 Wind 240 deg - No Ice
26	1.2 Dead+1.0 Wind 270 deg - No Ice
27	0.9 Dead+1.0 Wind 270 deg - No Ice
28	1.2 Dead+1.0 Wind 300 deg - No Ice
29	0.9 Dead+1.0 Wind 300 deg - No Ice
30	1.2 Dead+1.0 Wind 315 deg - No Ice
31	0.9 Dead+1.0 Wind 315 deg - No Ice
32	1.2 Dead+1.0 Wind 330 deg - No Ice
33	0.9 Dead+1.0 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service
66	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	75 - 25	Pole	Max Tension	35	0.03	0.00	-0.01
			Max. Compression	34	-22726.73	0.00	0.00
			Max. Mx	10	-21530.49	-488072.86	0.00
			Max. My	2	-21530.49	0.00	488072.86
			Max. Vy	10	16039.32	-488072.86	0.00
			Max. Vx	2	-16039.32	0.00	488072.86
			Max. Torque	16			0.00
L2	25 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	34	-26268.53	0.00	0.00
			Max. Mx	10	-25231.11	-950122.99	0.00
			Max. My	18	-25231.11	0.00	-950122.99
			Max. Vy	10	16637.89	-950122.99	0.00
			Max. Vx	18	16637.89	0.00	-950122.99
			Max. Torque	16			0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	34	26268.53	0.00	0.00
	Max. H_x	27	18932.16	16620.17	0.00
	Max. H_z	3	18932.16	0.00	16620.17
	Max. M_x	2	950122.99	0.00	16620.05
	Max. M_z	10	950122.99	-16620.05	0.00
	Max. Torsion	16	0.00	-8310.17	-14393.63
	Min. Vert	3	18932.16	0.00	16620.17
	Min. H_x	11	18932.16	-16620.17	0.00
	Min. H_z	19	18932.16	0.00	-16620.17
	Min. M_x	18	-950122.99	0.00	-16620.05
	Min. M_z	26	-950122.99	16620.05	0.00
	Min. Torsion	20	-0.00	8310.17	-14393.63

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	21035.74	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	25242.87	0.00	-16620.05	-950122.99	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	18932.16	0.00	-16620.17	-940156.89	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	25242.88	8310.17	-14393.63	-822848.26	-475071.71	0.00
0.9 Dead+1.0 Wind 30 deg - No Ice	18932.16	8310.18	-14393.65	-814210.56	-470084.71	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 45 deg - No Ice	25242.88	11752.35	-11752.35	-671852.82	-671852.82	0.00
0.9 Dead+1.0 Wind 45 deg - No Ice	18932.16	11752.37	-11752.37	-664800.16	-664800.16	0.00
1.2 Dead+1.0 Wind 60 deg - No Ice	25242.88	14393.63	-8310.17	-475071.71	-822848.26	-0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	18932.16	14393.65	-8310.18	-470084.71	-814210.56	-0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	25242.87	16620.05	-0.00	0.00	-950122.99	0.00
0.9 Dead+1.0 Wind 90 deg - No Ice	18932.16	16620.17	-0.00	0.00	-940156.89	0.00
1.2 Dead+1.0 Wind 120 deg - No Ice	25242.88	14393.63	8310.17	475071.71	-822848.26	0.00
0.9 Dead+1.0 Wind 120 deg - No Ice	18932.16	14393.65	8310.18	470084.71	-814210.56	0.00
1.2 Dead+1.0 Wind 135 deg - No Ice	25242.88	11752.35	11752.35	671852.82	-671852.82	0.00
0.9 Dead+1.0 Wind 135 deg - No Ice	18932.16	11752.37	11752.37	664800.16	-664800.16	0.00
1.2 Dead+1.0 Wind 150 deg - No Ice	25242.88	8310.17	14393.63	822848.26	-475071.71	-0.00
0.9 Dead+1.0 Wind 150 deg - No Ice	18932.16	8310.18	14393.65	814210.56	-470084.71	-0.00
1.2 Dead+1.0 Wind 180 deg - No Ice	25242.87	0.00	16620.05	950122.99	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	18932.16	0.00	16620.17	940156.89	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	25242.88	-8310.17	14393.63	822848.26	475071.71	0.00
0.9 Dead+1.0 Wind 210 deg - No Ice	18932.16	-8310.18	14393.65	814210.56	470084.71	0.00
1.2 Dead+1.0 Wind 225 deg - No Ice	25242.88	-11752.35	11752.35	671852.82	671852.82	0.00
0.9 Dead+1.0 Wind 225 deg - No Ice	18932.16	-11752.37	11752.37	664800.16	664800.16	0.00
1.2 Dead+1.0 Wind 240 deg - No Ice	25242.88	-14393.63	8310.17	475071.71	822848.26	-0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	18932.16	-14393.65	8310.18	470084.71	814210.56	-0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	25242.87	-16620.05	-0.00	0.00	950122.99	0.00
0.9 Dead+1.0 Wind 270 deg - No Ice	18932.16	-16620.17	-0.00	0.00	940156.89	0.00
1.2 Dead+1.0 Wind 300 deg - No Ice	25242.88	-14393.63	-8310.17	-475071.71	822848.26	0.00
0.9 Dead+1.0 Wind 300 deg - No Ice	18932.16	-14393.65	-8310.18	-470084.71	814210.56	0.00
1.2 Dead+1.0 Wind 315 deg - No Ice	25242.88	-11752.35	-11752.35	-671852.82	671852.82	0.00
0.9 Dead+1.0 Wind 315 deg - No Ice	18932.16	-11752.37	-11752.37	-664800.16	664800.16	0.00
1.2 Dead+1.0 Wind 330 deg - No Ice	25242.88	-8310.17	-14393.63	-822848.26	475071.71	-0.00
0.9 Dead+1.0 Wind 330 deg - No Ice	18932.16	-8310.18	-14393.65	-814210.56	470084.71	-0.00
1.2 Dead+1.0 Ice	26268.53	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	26268.51	0.00	-2321.28	-132990.58	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	26268.51	1160.64	-2010.29	-115173.23	-66495.30	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 45 deg+1.0 Ice	26268.51	1641.39	-1641.39	-94038.55	-94038.55	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	26268.51	2010.29	-1160.64	-66495.30	-115173.23	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	26268.51	2321.28	0.00	0.00	-132990.58	0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	26268.51	2010.29	1160.64	66495.30	-115173.23	0.00
1.2 Dead+1.0 Wind 135 deg+1.0 Ice	26268.51	1641.39	1641.39	94038.55	-94038.55	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	26268.51	1160.64	2010.29	115173.23	-66495.30	-0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	26268.51	0.00	2321.28	132990.58	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	26268.51	-1160.64	2010.29	115173.23	66495.30	0.00
1.2 Dead+1.0 Wind 225 deg+1.0 Ice	26268.51	-1641.39	1641.39	94038.55	94038.55	0.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	26268.51	-2010.29	1160.64	66495.30	115173.23	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	26268.51	-2321.28	0.00	0.00	132990.58	0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	26268.51	-2010.29	-1160.64	-66495.30	115173.23	0.00
1.2 Dead+1.0 Wind 315 deg+1.0 Ice	26268.51	-1641.39	-1641.39	-94038.55	94038.55	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	26268.51	-1160.64	-2010.29	-115173.23	66495.30	-0.00
Dead+Wind 0 deg - Service	21035.73	0.00	-5372.75	-308215.42	0.00	0.00
Dead+Wind 30 deg - Service	21035.73	2686.37	-4652.93	-266922.40	-154107.74	0.00
Dead+Wind 45 deg - Service	21035.73	3799.11	-3799.11	-217941.24	-217941.24	0.00
Dead+Wind 60 deg - Service	21035.73	4652.93	-2686.37	-154107.74	-266922.40	-0.00
Dead+Wind 90 deg - Service	21035.73	5372.75	-0.00	0.00	-308215.42	0.00
Dead+Wind 120 deg - Service	21035.73	4652.93	2686.37	154107.74	-266922.40	0.00
Dead+Wind 135 deg - Service	21035.73	3799.11	3799.11	217941.24	-217941.24	0.00
Dead+Wind 150 deg - Service	21035.73	2686.37	4652.93	266922.40	-154107.74	-0.00
Dead+Wind 180 deg - Service	21035.73	0.00	5372.75	308215.42	0.00	0.00
Dead+Wind 210 deg - Service	21035.73	-2686.37	4652.93	266922.40	154107.74	0.00
Dead+Wind 225 deg - Service	21035.73	-3799.11	3799.11	217941.24	217941.24	0.00
Dead+Wind 240 deg - Service	21035.73	-4652.93	2686.37	154107.74	266922.40	-0.00
Dead+Wind 270 deg - Service	21035.73	-5372.75	-0.00	0.00	308215.42	0.00
Dead+Wind 300 deg - Service	21035.73	-4652.93	-2686.37	-154107.74	266922.40	0.00
Dead+Wind 315 deg - Service	21035.73	-3799.11	-3799.11	-217941.24	217941.24	0.00
Dead+Wind 330 deg - Service	21035.73	-2686.37	-4652.93	-266922.40	154107.74	-0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-21035.74	0.00	0.00	21035.74	0.00	0.000%
2	0.00	-25242.88	-16620.39	0.00	25242.87	16620.05	0.001%
3	0.00	-18932.16	-16620.39	0.00	18932.16	16620.17	0.001%
4	8310.20	-25242.88	-14393.68	-8310.17	25242.88	14393.63	0.000%
5	8310.20	-18932.16	-14393.68	-8310.18	18932.16	14393.65	0.000%
6	11752.39	-25242.88	-11752.39	-11752.35	25242.88	11752.35	0.000%
7	11752.39	-18932.16	-11752.39	-11752.37	18932.16	11752.37	0.000%
8	14393.68	-25242.88	-8310.20	-14393.63	25242.88	8310.17	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
9	14393.68	-18932.16	-8310.20	-14393.65	18932.16	8310.18	0.000%
10	16620.39	-25242.88	0.00	-16620.05	25242.87	0.00	0.001%
11	16620.39	-18932.16	0.00	-16620.17	18932.16	0.00	0.001%
12	14393.68	-25242.88	8310.20	-14393.63	25242.88	-8310.17	0.000%
13	14393.68	-18932.16	8310.20	-14393.65	18932.16	-8310.18	0.000%
14	11752.39	-25242.88	11752.39	-11752.35	25242.88	-11752.35	0.000%
15	11752.39	-18932.16	11752.39	-11752.37	18932.16	-11752.37	0.000%
16	8310.20	-25242.88	14393.68	-8310.17	25242.88	-14393.63	0.000%
17	8310.20	-18932.16	14393.68	-8310.18	18932.16	-14393.65	0.000%
18	0.00	-25242.88	16620.39	0.00	25242.87	-16620.05	0.001%
19	0.00	-18932.16	16620.39	0.00	18932.16	-16620.17	0.001%
20	-8310.20	-25242.88	14393.68	8310.17	25242.88	-14393.63	0.000%
21	-8310.20	-18932.16	14393.68	8310.18	18932.16	-14393.65	0.000%
22	-11752.39	-25242.88	11752.39	11752.35	25242.88	-11752.35	0.000%
23	-11752.39	-18932.16	11752.39	11752.37	18932.16	-11752.37	0.000%
24	-14393.68	-25242.88	8310.20	14393.63	25242.88	-8310.17	0.000%
25	-14393.68	-18932.16	8310.20	14393.65	18932.16	-8310.18	0.000%
26	-16620.39	-25242.88	0.00	16620.05	25242.87	0.00	0.001%
27	-16620.39	-18932.16	0.00	16620.17	18932.16	0.00	0.001%
28	-14393.68	-25242.88	-8310.20	14393.63	25242.88	8310.17	0.000%
29	-14393.68	-18932.16	-8310.20	14393.65	18932.16	8310.18	0.000%
30	-11752.39	-25242.88	-11752.39	11752.35	25242.88	11752.35	0.000%
31	-11752.39	-18932.16	-11752.39	11752.37	18932.16	11752.37	0.000%
32	-8310.20	-25242.88	-14393.68	8310.17	25242.88	14393.63	0.000%
33	-8310.20	-18932.16	-14393.68	8310.18	18932.16	14393.65	0.000%
34	0.00	-26268.53	0.00	0.00	26268.53	0.00	0.000%
35	0.00	-26268.53	-2322.51	0.00	26268.51	2321.28	0.005%
36	1161.25	-26268.53	-2011.35	-1160.64	26268.51	2010.29	0.005%
37	1642.26	-26268.53	-1642.26	-1641.39	26268.51	1641.39	0.005%
38	2011.35	-26268.53	-1161.25	-2010.29	26268.51	1160.64	0.005%
39	2322.51	-26268.53	0.00	-2321.28	26268.51	0.00	0.005%
40	2011.35	-26268.53	1161.25	-2010.29	26268.51	-1160.64	0.005%
41	1642.26	-26268.53	1642.26	-1641.39	26268.51	-1641.39	0.005%
42	1161.25	-26268.53	2011.35	-1160.64	26268.51	-2010.29	0.005%
43	0.00	-26268.53	2322.51	0.00	26268.51	-2321.28	0.005%
44	-1161.25	-26268.53	2011.35	1160.64	26268.51	-2010.29	0.005%
45	-1642.26	-26268.53	1642.26	1641.39	26268.51	-1641.39	0.005%
46	-2011.35	-26268.53	1161.25	2010.29	26268.51	-1160.64	0.005%
47	-2322.51	-26268.53	0.00	2321.28	26268.51	0.00	0.005%
48	-2011.35	-26268.53	-1161.25	2010.29	26268.51	1160.64	0.005%
49	-1642.26	-26268.53	-1642.26	1641.39	26268.51	1641.39	0.005%
50	-1161.25	-26268.53	-2011.35	1160.64	26268.51	2010.29	0.005%
51	0.00	-21035.74	-5373.21	0.00	21035.73	5372.75	0.002%
52	2686.61	-21035.74	-4653.34	-2686.37	21035.73	4652.93	0.002%
53	3799.43	-21035.74	-3799.43	-3799.11	21035.73	3799.11	0.002%
54	4653.34	-21035.74	-2686.61	-4652.93	21035.73	2686.37	0.002%
55	5373.21	-21035.74	0.00	-5372.75	21035.73	0.00	0.002%
56	4653.34	-21035.74	2686.61	-4652.93	21035.73	-2686.37	0.002%
57	3799.43	-21035.74	3799.43	-3799.11	21035.73	-3799.11	0.002%
58	2686.61	-21035.74	4653.34	-2686.37	21035.73	-4652.93	0.002%
59	0.00	-21035.74	5373.21	0.00	21035.73	-5372.75	0.002%
60	-2686.61	-21035.74	4653.34	2686.37	21035.73	-4652.93	0.002%
61	-3799.43	-21035.74	3799.43	3799.11	21035.73	-3799.11	0.002%
62	-4653.34	-21035.74	2686.61	4652.93	21035.73	-2686.37	0.002%
63	-5373.21	-21035.74	0.00	5372.75	21035.73	0.00	0.002%
64	-4653.34	-21035.74	-2686.61	4652.93	21035.73	2686.37	0.002%
65	-3799.43	-21035.74	-3799.43	3799.11	21035.73	3799.11	0.002%
66	-2686.61	-21035.74	-4653.34	2686.37	21035.73	4652.93	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	10	0.00000001	0.00003952
3	Yes	10	0.00000001	0.00003396
4	Yes	11	0.00000001	0.00006147
5	Yes	11	0.00000001	0.00004591
6	Yes	11	0.00000001	0.00007056
7	Yes	11	0.00000001	0.00005264
8	Yes	11	0.00000001	0.00006147
9	Yes	11	0.00000001	0.00004591
10	Yes	10	0.00000001	0.00003952
11	Yes	10	0.00000001	0.00003396
12	Yes	11	0.00000001	0.00006147
13	Yes	11	0.00000001	0.00004591
14	Yes	11	0.00000001	0.00007056
15	Yes	11	0.00000001	0.00005264
16	Yes	11	0.00000001	0.00006147
17	Yes	11	0.00000001	0.00004591
18	Yes	10	0.00000001	0.00003952
19	Yes	10	0.00000001	0.00003396
20	Yes	11	0.00000001	0.00006147
21	Yes	11	0.00000001	0.00004591
22	Yes	11	0.00000001	0.00007056
23	Yes	11	0.00000001	0.00005264
24	Yes	11	0.00000001	0.00006147
25	Yes	11	0.00000001	0.00004591
26	Yes	10	0.00000001	0.00003952
27	Yes	10	0.00000001	0.00003396
28	Yes	11	0.00000001	0.00006147
29	Yes	11	0.00000001	0.00004591
30	Yes	11	0.00000001	0.00007056
31	Yes	11	0.00000001	0.00005264
32	Yes	11	0.00000001	0.00006147
33	Yes	11	0.00000001	0.00004591
34	Yes	6	0.00000001	0.00000001
35	Yes	8	0.00000001	0.00012999
36	Yes	8	0.00000001	0.00012527
37	Yes	8	0.00000001	0.00012366
38	Yes	8	0.00000001	0.00012527
39	Yes	8	0.00000001	0.00012999
40	Yes	8	0.00000001	0.00012527
41	Yes	8	0.00000001	0.00012366
42	Yes	8	0.00000001	0.00012527
43	Yes	8	0.00000001	0.00012999
44	Yes	8	0.00000001	0.00012527
45	Yes	8	0.00000001	0.00012366
46	Yes	8	0.00000001	0.00012527
47	Yes	8	0.00000001	0.00012999
48	Yes	8	0.00000001	0.00012527
49	Yes	8	0.00000001	0.00012366
50	Yes	8	0.00000001	0.00012527
51	Yes	9	0.00000001	0.00007196
52	Yes	9	0.00000001	0.00005807
53	Yes	9	0.00000001	0.00005262
54	Yes	9	0.00000001	0.00005807
55	Yes	9	0.00000001	0.00007196
56	Yes	9	0.00000001	0.00005807
57	Yes	9	0.00000001	0.00005262

58	Yes	9	0.00000001	0.00005807
59	Yes	9	0.00000001	0.00007196
60	Yes	9	0.00000001	0.00005807
61	Yes	9	0.00000001	0.00005262
62	Yes	9	0.00000001	0.00005807
63	Yes	9	0.00000001	0.00007196
64	Yes	9	0.00000001	0.00005807
65	Yes	9	0.00000001	0.00005262
66	Yes	9	0.00000001	0.00005807

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	75 - 25	10.110	59	1.0418	0.0000
L2	29.25 - 1	1.680	59	0.5258	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
75.00	Concealment Loading @ 75 ft	59	10.110	1.0418	0.0000	21715
70.00	(4) Generic Panel (Enclosed, 115 lbs)	59	8.998	0.9966	0.0000	21715
65.00	Concealment Loading @ 65 ft	59	7.900	0.9506	0.0000	10857
60.00	(4) Generic Panel (Enclosed, 115 lbs)	59	6.830	0.9030	0.0000	7238
55.00	Concealment Loading @ 55 ft	59	5.801	0.8529	0.0000	5428
50.00	(4) Generic Panel (Enclosed, 115 lbs)	59	4.827	0.7996	0.0000	4342
45.00	Concealment Loading @ 45 ft	59	3.922	0.7422	0.0000	3618

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	75 - 25	31.107	18	3.2047	0.0000
L2	29.25 - 1	5.175	18	1.6194	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
75.00	Concealment Loading @ 75 ft	18	31.107	3.2047	0.0000	7094
70.00	(4) Generic Panel (Enclosed, 115 lbs)	18	27.687	3.0660	0.0000	7094
65.00	Concealment Loading @ 65 ft	18	24.310	2.9249	0.0000	3546
60.00	(4) Generic Panel (Enclosed, 115 lbs)	18	21.017	2.7787	0.0000	2364
55.00	Concealment Loading @ 55 ft	18	17.852	2.6251	0.0000	1772
50.00	(4) Generic Panel (Enclosed, 115 lbs)	18	14.857	2.4613	0.0000	1417
45.00	Concealment Loading @ 45 ft	18	12.075	2.2850	0.0000	1180

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	75 - 72.5921	TP30.75x21x0.1875	50.00	0.00	0.0	12.6655	-1215.91	740930.00	0.002
	72.5921 - 70.1842					12.9449	-1336.69	757277.00	0.002
	70.1842 - 67.7763					13.2243	-5349.67	773624.00	0.007
	67.7763 - 65.3684					13.5038	-5476.57	789971.00	0.007
	65.3684 - 62.9605					13.7832	-7872.49	806318.00	0.010
	62.9605 - 60.5526					14.0626	-8008.50	822665.00	0.010
	60.5526 - 58.1447					14.3421	-12038.50	839012.00	0.014
	58.1447 - 55.7368					14.6215	-12183.40	855359.00	0.014
	55.7368 - 53.3289					14.9010	-14623.00	871706.00	0.017
	53.3289 - 50.9211					15.1804	-14782.30	888053.00	0.017
	50.9211 - 48.5132					15.4598	-18838.10	904400.00	0.021
	48.5132 - 46.1053					15.7393	-19009.00	920746.00	0.021
	46.1053 - 43.6974					16.0187	-20322.30	937093.00	0.022
	43.6974 - 41.2895					16.2981	-20509.50	953440.00	0.022
	41.2895 - 38.8816					16.5776	-20702.70	969787.00	0.021
	38.8816 - 36.4737					16.8570	-20901.70	986134.00	0.021
	36.4737 - 34.0658					17.1364	-21106.10	1002480.00	0.021
	34.0658 - 31.6579					17.4159	-21315.80	1018830.00	0.021
	31.6579 -					17.6953	-21530.40	1035170.00	0.021

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
	29.25								
	29.25 - 25					18.1885	-9629.96	1064030.00	0.009
L2	29.25 - 25	TP35.055x29.5463x0.25	28.25	0.00	0.0	23.9042	-12657.20	1398400.00	0.009
	25 - 23.7368					24.0996	-22439.40	1409830.00	0.016
	23.7368 - 22.4737					24.2951	-22583.80	1421260.00	0.016
	22.4737 - 21.2105					24.4905	-22729.60	1432700.00	0.016
	21.2105 - 19.9474					24.6860	-22876.60	1444130.00	0.016
	19.9474 - 18.6842					24.8814	-23025.00	1455560.00	0.016
	18.6842 - 17.4211					25.0769	-23174.60	1467000.00	0.016
	17.4211 - 16.1579					25.2723	-23325.50	1478430.00	0.016
	16.1579 - 14.8947					25.4678	-23477.70	1489870.00	0.016
	14.8947 - 13.6316					25.6633	-23631.10	1501300.00	0.016
	13.6316 - 12.3684					25.8587	-23785.70	1512730.00	0.016
	12.3684 - 11.1053					26.0542	-23941.50	1524170.00	0.016
	11.1053 - 9.84211					26.2496	-24098.60	1535600.00	0.016
	9.84211 - 8.57895					26.4451	-24256.90	1547040.00	0.016
	8.57895 - 7.31579					26.6405	-24416.30	1558470.00	0.016
	7.31579 - 6.05263					26.8360	-24576.90	1569900.00	0.016
	6.05263 - 4.78947					27.0314	-24738.70	1581340.00	0.016
	4.78947 - 3.52632					27.2269	-24901.70	1592770.00	0.016
	3.52632 - 2.26316					27.4223	-25065.80	1604210.00	0.016
	2.26316 - 1					27.6178	-25231.10	1615640.00	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	75 - 72.5921	TP30.75x21x0.1875	6755.77	392386.67	0.017	0.00	392386.67	0.000
	72.5921 - 70.1842		13752.08	407269.17	0.034	0.00	407269.17	0.000
	70.1842 - 67.7763		21473.33	422301.67	0.051	0.00	422301.67	0.000
	67.7763 - 65.3684		29477.67	437475.00	0.067	0.00	437475.00	0.000
	65.3684 - 62.9605		46588.42	452781.67	0.103	0.00	452781.67	0.000
	62.9605 - 60.5526		65543.25	468214.17	0.140	0.00	468214.17	0.000

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		lb-ft	lb-ft		lb-ft	lb-ft	
	60.5526 - 58.1447		85125.00	483765.00	0.176	0.00	483765.00	0.000
	58.1447 - 55.7368		105051.67	499426.67	0.210	0.00	499426.67	0.000
	55.7368 - 53.3289		132146.67	515191.67	0.257	0.00	515191.67	0.000
	53.3289 - 50.9211		162520.83	531051.67	0.306	0.00	531051.67	0.000
	50.9211 - 48.5132		193385.83	547000.00	0.354	0.00	547000.00	0.000
	48.5132 - 46.1053		224613.33	563028.33	0.399	0.00	563028.33	0.000
	46.1053 - 43.6974		259356.67	579129.17	0.448	0.00	579129.17	0.000
	43.6974 - 41.2895		297097.50	595295.00	0.499	0.00	595295.00	0.000
	41.2895 - 38.8816		335000.00	611518.33	0.548	0.00	611518.33	0.000
	38.8816 - 36.4737		373056.67	627791.67	0.594	0.00	627791.67	0.000
	36.4737 - 34.0658		411260.00	644107.50	0.638	0.00	644107.50	0.000
	34.0658 - 31.6579		449604.17	660457.50	0.681	0.00	660457.50	0.000
	31.6579 - 29.25		488084.17	676834.17	0.721	0.00	676834.17	0.000
	29.25 - 25		244523.33	705782.50	0.346	0.00	705782.50	0.000
L2	29.25 - 25	TP35.055x29.5463x0.25	311955.83	1029525.00	0.303	0.00	1029525.00	0.000
	25 - 23.7368		576929.17	1043741.67	0.553	0.00	1043741.67	0.000
	23.7368 - 22.4737		597410.00	1058000.00	0.565	0.00	1058000.00	0.000
	22.4737 - 21.2105		617921.67	1072308.33	0.576	0.00	1072308.33	0.000
	21.2105 - 19.9474		638464.17	1086666.67	0.588	0.00	1086666.67	0.000
	19.9474 - 18.6842		659036.67	1101066.67	0.599	0.00	1101066.67	0.000
	18.6842 - 17.4211		679640.00	1115508.33	0.609	0.00	1115508.33	0.000
	17.4211 - 16.1579		700272.50	1130000.00	0.620	0.00	1130000.00	0.000
	16.1579 - 14.8947		720935.00	1144525.00	0.630	0.00	1144525.00	0.000
	14.8947 - 13.6316		741627.50	1159091.67	0.640	0.00	1159091.67	0.000
	13.6316 - 12.3684		762349.17	1173708.33	0.650	0.00	1173708.33	0.000
	12.3684 - 11.1053		783100.00	1188350.00	0.659	0.00	1188350.00	0.000
	11.1053 - 9.84211		803880.00	1203041.67	0.668	0.00	1203041.67	0.000
	9.84211 - 8.57895		824689.17	1217758.33	0.677	0.00	1217758.33	0.000
	8.57895 - 7.31579		845525.00	1232516.67	0.686	0.00	1232516.67	0.000
	7.31579 - 6.05263		866391.67	1247308.33	0.695	0.00	1247308.33	0.000
	6.05263 - 4.78947		887291.67	1262133.33	0.703	0.00	1262133.33	0.000
	4.78947 -		908208.33	1276991.67	0.711	0.00	1276991.67	0.000

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	3.52632							
	3.52632 - 2.26316		929166.67	1291875.00	0.719	0.00	1291875.00	0.000
	2.26316 - 1		950141.67	1306791.67	0.727	0.00	1306791.67	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	75 - 72.5921	TP30.75x21x0.1875	2855.91	222279.00	0.013	0.00	414278.33	0.000
	72.5921 - 70.1842		2956.70	227183.00	0.013	0.00	432760.00	0.000
	70.1842 - 67.7763		3274.97	232087.00	0.014	0.00	451645.00	0.000
	67.7763 - 65.3684		3376.62	236991.00	0.014	0.00	470933.33	0.000
	65.3684 - 62.9605		7824.63	241895.00	0.032	0.00	490625.00	0.000
	62.9605 - 60.5526		7925.58	246799.00	0.032	0.00	510720.00	0.000
	60.5526 - 58.1447		8234.22	251704.00	0.033	0.00	531218.33	0.000
	58.1447 - 55.7368		8330.42	256608.00	0.032	0.00	552120.00	0.000
	55.7368 - 53.3289		12579.60	261512.00	0.048	0.00	573425.00	0.000
	53.3289 - 50.9211		12670.00	266416.00	0.048	0.00	595133.33	0.000
	50.9211 - 48.5132		12946.70	271320.00	0.048	0.00	617245.00	0.000
	48.5132 - 46.1053		13025.50	276224.00	0.047	0.00	639760.00	0.000
	46.1053 - 43.6974		15661.00	281128.00	0.056	0.00	662678.33	0.000
	43.6974 - 41.2895		15731.60	286032.00	0.055	0.00	686000.00	0.000
	41.2895 - 38.8816		15798.80	290936.00	0.054	0.00	709725.00	0.000
	38.8816 - 36.4737		15863.00	295840.00	0.054	0.00	733853.33	0.000
	36.4737 - 34.0658		15924.40	300744.00	0.053	0.00	758385.00	0.000
	34.0658 - 31.6579		15983.30	305648.00	0.052	0.00	783319.17	0.000
	31.6579 - 29.25		16039.80	310552.00	0.052	0.00	808657.50	0.000
	29.25 - 25		7175.33	319208.00	0.022	0.00	854366.67	0.000
L2	29.25 - 25	TP35.055x29.5463x0.25	9028.32	419518.00	0.022	0.00	1106775.00	0.000
	25 - 23.7368		16216.90	422949.00	0.038	0.00	1124941.67	0.000
	23.7368 - 22.4737		16241.60	426379.00	0.038	0.00	1143266.67	0.000
	22.4737 - 21.2105		16266.20	429809.00	0.038	0.00	1161733.33	0.000
	21.2105 - 19.9474		16290.50	433239.00	0.038	0.00	1180350.00	0.000

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
	19.9474 - 18.6842		16314.60	436669.00	0.037	0.00	1199116.67	0.000
	18.6842 - 17.4211		16338.60	440100.00	0.037	0.00	1218033.33	0.000
	17.4211 - 16.1579		16362.30	443530.00	0.037	0.00	1237091.67	0.000
	16.1579 - 14.8947		16386.00	446960.00	0.037	0.00	1256300.00	0.000
	14.8947 - 13.6316		16409.40	450390.00	0.036	0.00	1275658.33	0.000
	13.6316 - 12.3684		16432.80	453820.00	0.036	0.00	1295158.33	0.000
	12.3684 - 11.1053		16456.00	457250.00	0.036	0.00	1314816.67	0.000
	11.1053 - 9.84211		16479.10	460681.00	0.036	0.00	1334616.67	0.000
	9.84211 - 8.57895		16502.10	464111.00	0.036	0.00	1354566.67	0.000
	8.57895 - 7.31579		16525.00	467541.00	0.035	0.00	1374658.33	0.000
	7.31579 - 6.05263		16547.80	470971.00	0.035	0.00	1394908.33	0.000
	6.05263 - 4.78947		16570.50	474401.00	0.035	0.00	1415300.00	0.000
	4.78947 - 3.52632		16593.10	477831.00	0.035	0.00	1435841.67	0.000
	3.52632 - 2.26316		16615.70	481262.00	0.035	0.00	1456525.00	0.000
	2.26316 - 1		16638.20	484692.00	0.034	0.00	1477366.67	0.000

Pole Interaction Design Data

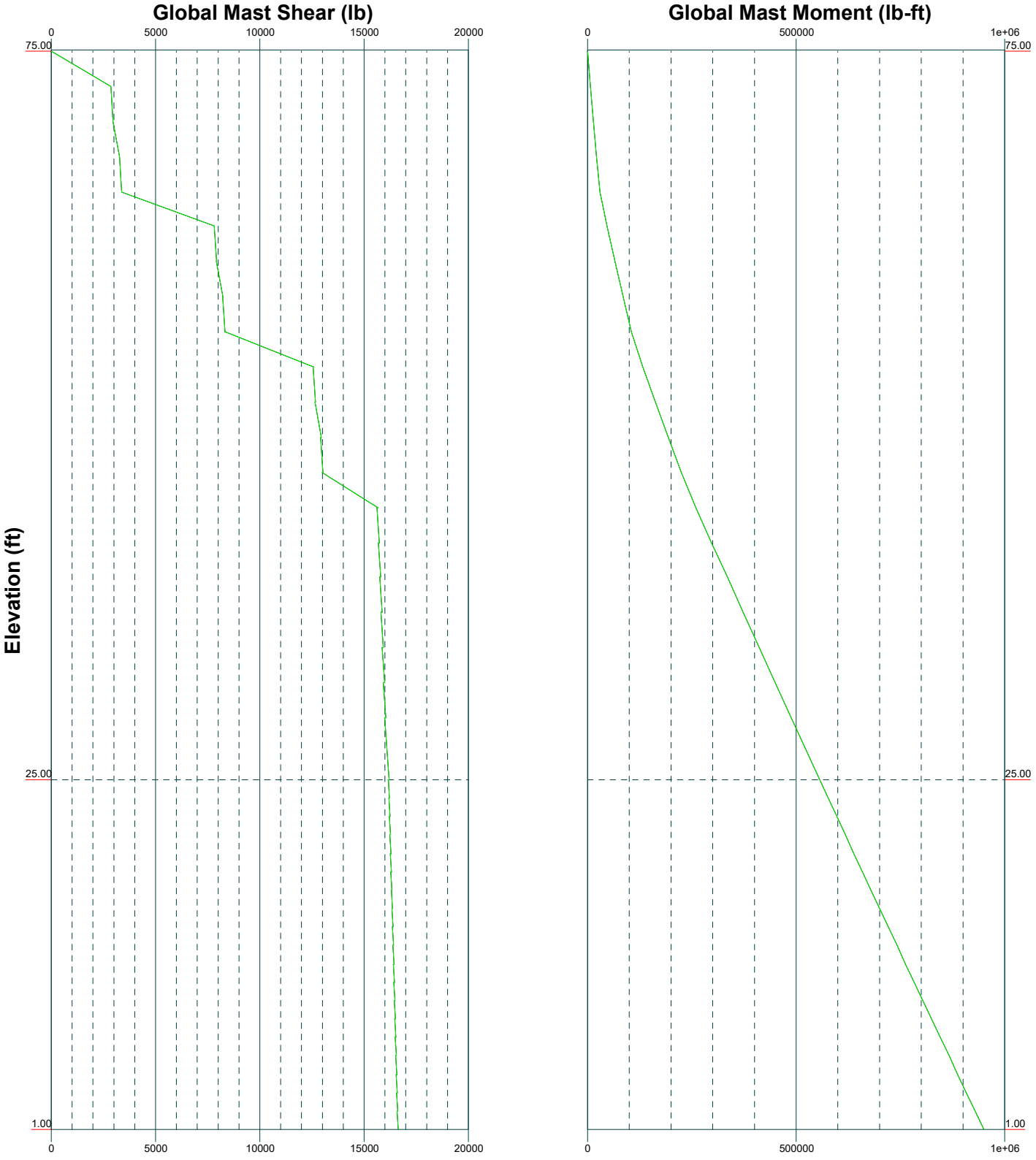
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	75 - 72.5921	0.002	0.017	0.000	0.013	0.000	0.019 ✔	1.000	✔
	72.5921 - 70.1842	0.002	0.034	0.000	0.013	0.000	0.036 ✔	1.000	✔
	70.1842 - 67.7763	0.007	0.051	0.000	0.014	0.000	0.058 ✔	1.000	✔
	67.7763 - 65.3684	0.007	0.067	0.000	0.014	0.000	0.075 ✔	1.000	✔
	65.3684 - 62.9605	0.010	0.103	0.000	0.032	0.000	0.114 ✔	1.000	✔
	62.9605 - 60.5526	0.010	0.140	0.000	0.032	0.000	0.151 ✔	1.000	✔
	60.5526 - 58.1447	0.014	0.176	0.000	0.033	0.000	0.191 ✔	1.000	✔
	58.1447 - 55.7368	0.014	0.210	0.000	0.032	0.000	0.226 ✔	1.000	✔
	55.7368 -	0.017	0.257	0.000	0.048	0.000	0.276	1.000	✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	53.3289						✔		
	53.3289 - 50.9211	0.017	0.306	0.000	0.048	0.000	0.325	1.000	✔
	50.9211 - 48.5132	0.021	0.354	0.000	0.048	0.000	✔ 0.377	1.000	✔
	48.5132 - 46.1053	0.021	0.399	0.000	0.047	0.000	✔ 0.422	1.000	✔
	46.1053 - 43.6974	0.022	0.448	0.000	0.056	0.000	✔ 0.473	1.000	✔
	43.6974 - 41.2895	0.022	0.499	0.000	0.055	0.000	✔ 0.524	1.000	✔
	41.2895 - 38.8816	0.021	0.548	0.000	0.054	0.000	✔ 0.572	1.000	✔
	38.8816 - 36.4737	0.021	0.594	0.000	0.054	0.000	✔ 0.618	1.000	✔
	36.4737 - 34.0658	0.021	0.638	0.000	0.053	0.000	✔ 0.662	1.000	✔
	34.0658 - 31.6579	0.021	0.681	0.000	0.052	0.000	✔ 0.704	1.000	✔
	31.6579 - 29.25	0.021	0.721	0.000	0.052	0.000	✔ 0.745	1.000	✔
	29.25 - 25	0.009	0.346	0.000	0.022	0.000	✔ 0.356	1.000	✔
L2	29.25 - 25	0.009	0.303	0.000	0.022	0.000	✔ 0.313	1.000	✔
	25 - 23.7368	0.016	0.553	0.000	0.038	0.000	✔ 0.570	1.000	✔
	23.7368 - 22.4737	0.016	0.565	0.000	0.038	0.000	✔ 0.582	1.000	✔
	22.4737 - 21.2105	0.016	0.576	0.000	0.038	0.000	✔ 0.594	1.000	✔
	21.2105 - 19.9474	0.016	0.588	0.000	0.038	0.000	✔ 0.605	1.000	✔
	19.9474 - 18.6842	0.016	0.599	0.000	0.037	0.000	✔ 0.616	1.000	✔
	18.6842 - 17.4211	0.016	0.609	0.000	0.037	0.000	✔ 0.626	1.000	✔
	17.4211 - 16.1579	0.016	0.620	0.000	0.037	0.000	✔ 0.637	1.000	✔
	16.1579 - 14.8947	0.016	0.630	0.000	0.037	0.000	✔ 0.647	1.000	✔
	14.8947 - 13.6316	0.016	0.640	0.000	0.036	0.000	✔ 0.657	1.000	✔
	13.6316 - 12.3684	0.016	0.650	0.000	0.036	0.000	✔ 0.667	1.000	✔
	12.3684 - 11.1053	0.016	0.659	0.000	0.036	0.000	✔ 0.676	1.000	✔
	11.1053 - 9.84211	0.016	0.668	0.000	0.036	0.000	✔ 0.685	1.000	✔
	9.84211 - 8.57895	0.016	0.677	0.000	0.036	0.000	✔ 0.694	1.000	✔
	8.57895 -	0.016	0.686	0.000	0.035	0.000	✔ 0.703	1.000	✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	7.31579						✔		
	7.31579 - 6.05263	0.016	0.695	0.000	0.035	0.000	0.711 ✔	1.000	✔
	6.05263 - 4.78947	0.016	0.703	0.000	0.035	0.000	0.720 ✔	1.000	✔
	4.78947 - 3.52632	0.016	0.711	0.000	0.035	0.000	0.728 ✔	1.000	✔
	3.52632 - 2.26316	0.016	0.719	0.000	0.035	0.000	0.736 ✔	1.000	✔
	2.26316 - 1	0.016	0.727	0.000	0.034	0.000	0.744 ✔	1.000	✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	75 - 25	Pole	TP30.75x21x0.1875	1	-21530.40	1035170.00	74.5	Pass
L2	25 - 1	Pole	TP35.055x29.5463x0.25	2	-25231.10	1615640.00	74.4	Pass
						Summary		
						Pole (L1)	74.5	Pass
						RATING =	**74.5**	**Pass**



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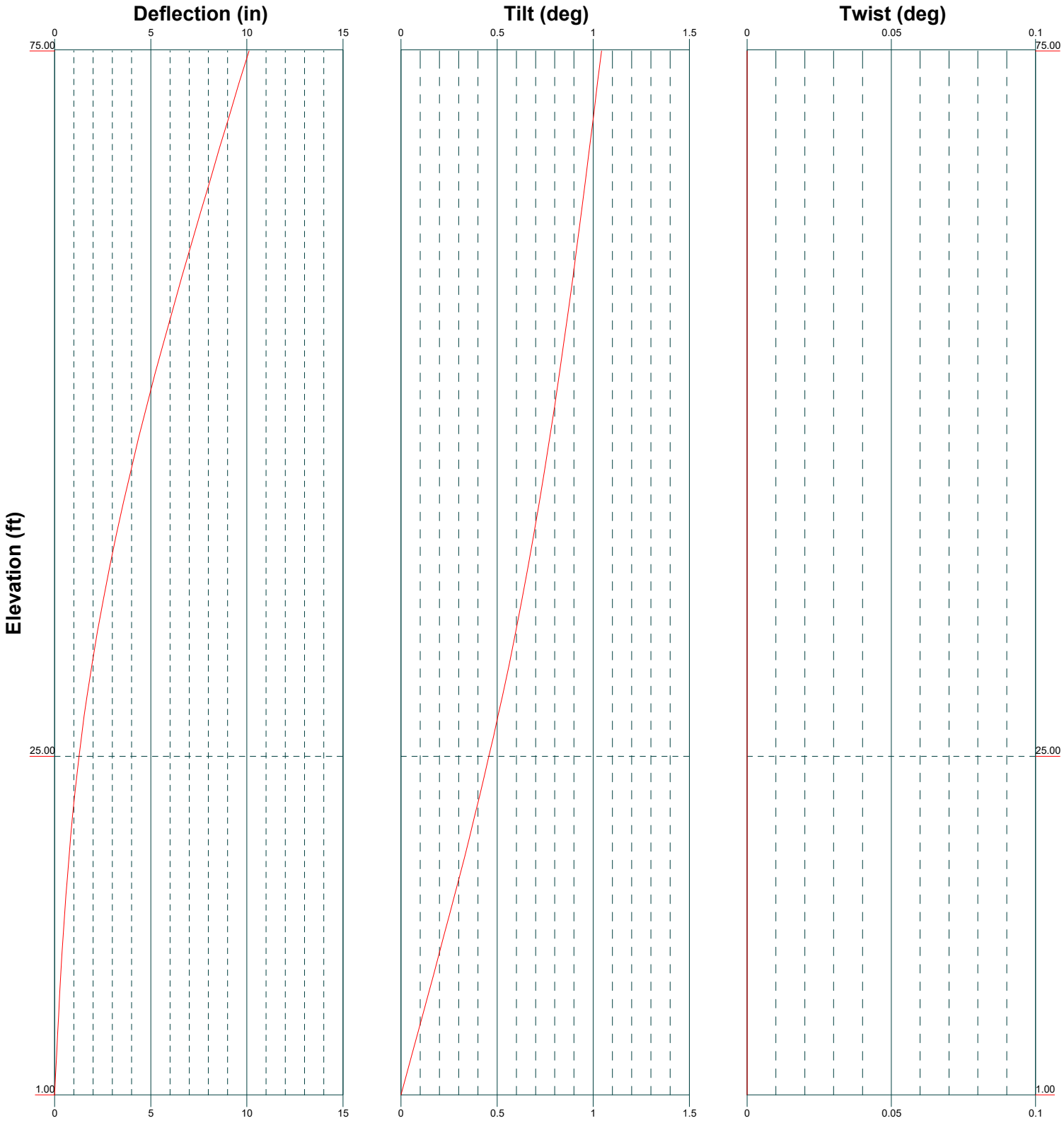
Job: ***Spike***		
Project: ***U0142.2054.242***		
Client: Raycap	Drawn by: mririe	App'd:
Code: TIA-222-H	Date: 10/24/24	Scale: NTS
Path:		Dwg No. E-4



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FAX: (801) 990-1776

Job: ***Spike***		
Project: ***U0142.2054.242***		
Client: Raycap	Drawn by: mririe	App'd:
Code: TIA-222-H	Date: 10/24/24	Scale: NTS
Path:		Dwg No. E-5

JOB NO.: U0142.2054.242

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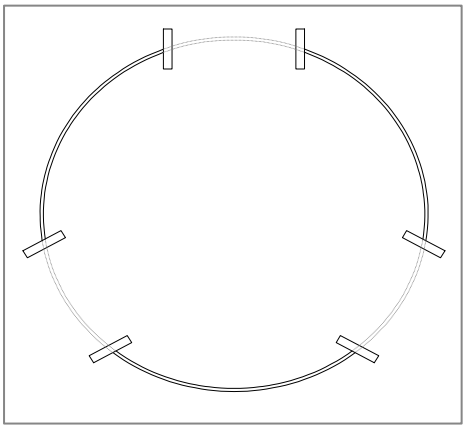
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 70 ft A.G.L.

Geometry Input

Elevation of Port, AGL	70.00	ft
Pole Diameter	21.975	in
Pole Thickness	0.1875	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	11.0	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	3/8	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	3	

	Port 1	Port 2	Port 3
Azimuth (°)	0	120	240
Height (in)	12	12	12
Width (in)	8	8	8
Depth (in)	2.5	2.5	2.5
Thickness (in)	0.5	0.5	0.5
Projection (in)	0.5	0.5	0.5
Reinforcing Area (in^2)	2.5	2.5	2.5
Pole Area Removed (in^2)	1.54	1.54	1.54
Dist. From Center to Reinf. (in)	10.2375	10.2375	10.2375
Area Check	**79.9%**	**79.9%**	**79.9%**
MOI Check	**85.0%**	**85.0%**	**85.0%**
Individual Port Weights (lbs)	14	14	14
Reduction in Pole Weight (lbs)	16		
Total Port Weight (lbs)	27		

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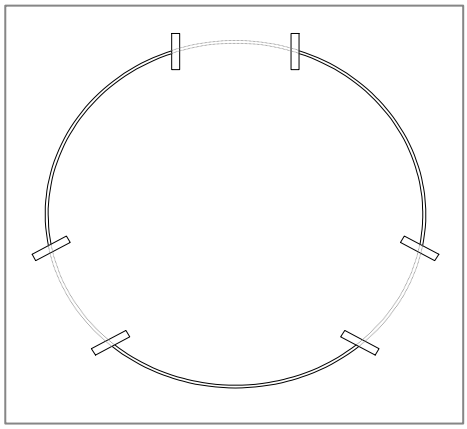
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 60 ft A.G.L.

Geometry Input

Elevation of Port, AGL	60.00	ft
Pole Diameter	23.925	in
Pole Thickness	0.1875	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	11.0	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	3/8	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	3	

	Port 1	Port 2	Port 3
Azimuth (°)	0	120	240
Height (in)	12	12	12
Width (in)	8	8	8
Depth (in)	2.5	2.5	2.5
Thickness (in)	0.5	0.5	0.5
Projection (in)	0.5	0.5	0.5
Reinforcing Area (in^2)	2.5	2.5	2.5
Pole Area Removed (in^2)	1.53	1.53	1.53
Dist. From Center to Reinf. (in)	11.2125	11.2125	11.2125
Area Check	**79.6%**	**79.6%**	**79.6%**
MOI Check	**84.2%**	**84.2%**	**84.2%**
Individual Port Weights (lbs)	14	14	14
Reduction in Pole Weight (lbs)	16		
Total Port Weight (lbs)	27		

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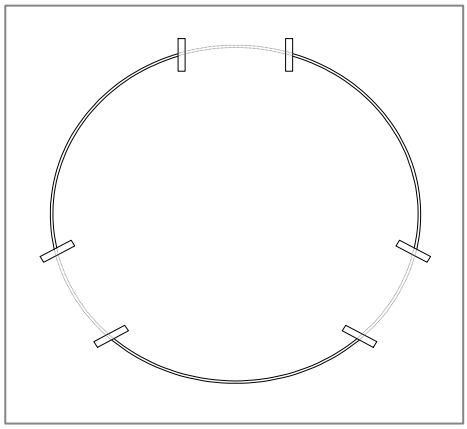
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 50 ft A.G.L.

Geometry Input

Elevation of Port, AGL	50.00	ft
Pole Diameter	25.875	in
Pole Thickness	0.1875	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	11.0	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	3/8	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	3	

	Port 1	Port 2	Port 3
Azimuth (°)	0	120	240
Height (in)	12	12	12
Width (in)	8	8	8
Depth (in)	2.5	2.5	2.5
Thickness (in)	0.5	0.5	0.5
Projection (in)	0.5	0.5	0.5
Reinforcing Area (in^2)	2.5	2.5	2.5
Pole Area Removed (in^2)	1.53	1.53	1.53
Dist. From Center to Reinf. (in)	12.1875	12.1875	12.1875
Area Check	**79.3%**	**79.3%**	**79.3%**
MOI Check	**83.6%**	**83.6%**	**83.6%**
Individual Port Weights (lbs)	14	14	14
Reduction in Pole Weight (lbs)	16		
Total Port Weight (lbs)	27		

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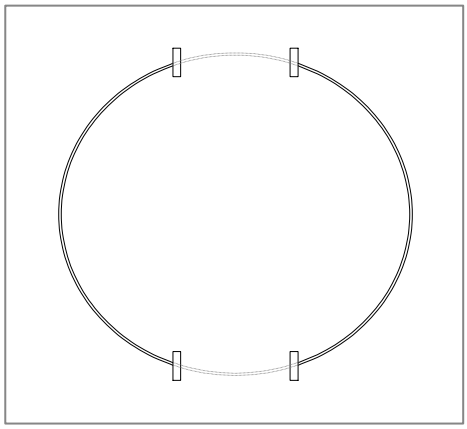
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 7 ft A.G.L.

Geometry Input

Elevation of Port, AGL	7.00	ft
Pole Diameter	33.885	in
Pole Thickness	0.25	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	14.6	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	1/2	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	2	

	Port 1	Port 2
Azimuth (°)	0	180
Height (in)	24	24
Width (in)	12	12
Depth (in)	3	3
Thickness (in)	0.75	0.75
Projection (in)	0.5	0.5
Reinforcing Area (in^2)	4.5	4.5
Pole Area Removed (in^2)	3.07	3.07
Dist. From Center to Reinf. (in)	15.9425	15.9425
Area Check	**88.6%**	**88.6%**
MOI Check	**93.5%**	**93.5%**
Individual Port Weights (lbs)	46	46
Reduction in Pole Weight (lbs)	42	
Total Port Weight (lbs)	50	

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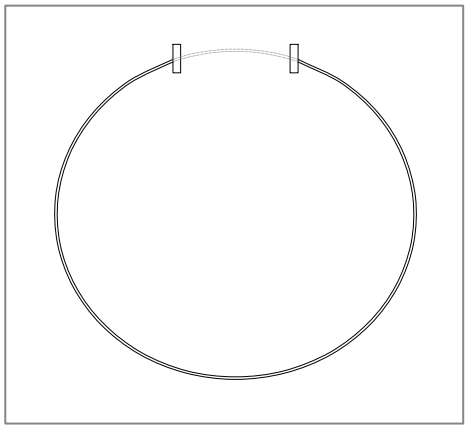
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 3 ft A.G.L.

Geometry Input

Elevation of Port, AGL	3.00	ft
Pole Diameter	34.665	in
Pole Thickness	0.25	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	14.6	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	1/2	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	1	

	Port 1
Azimuth (°)	0
Height (in)	24
Width (in)	12
Depth (in)	3
Thickness (in)	0.75
Projection (in)	0.5
Reinforcing Area (in^2)	4.5
Pole Area Removed (in^2)	3.06
Dist. From Center to Reinf. (in)	16.3325
Area Check	**88.5%**
MOI Check	**93.3%**
Individual Port Weights (lbs)	46
Reduction in Pole Weight (lbs)	23
Total Port Weight (lbs)	23

VECTOR ENGINEERS

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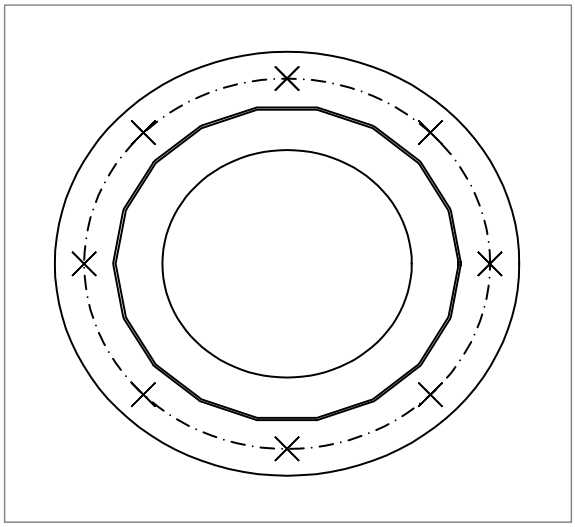
PROJECT: NM01-148 SPIKE

Monopole Baseplate & Anchorage Design per TIA-222-H Annex Q & TIA-222-H Section 4.9.9

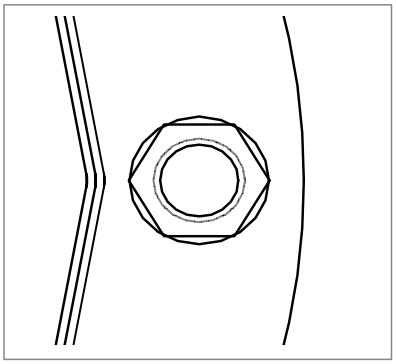
	Quantity	Symbol	Value	Units
Basic Input & Geometry	Number of sides		18	
	Flat O.D.	D_T	35.06	in
	Pole wall thickness	t_T	0.25	in
	Pole yield strength	F_{yp}	65	ksi
	Bend Radius		1	in
	Base plate fillet weld size		0.25	in
	Anchor diameter	d	2.25	in
	Number of anchors	n	8	
	Anchor grade		A615-75	
	Base plate thickness	t_{TP}	2.25	in
	Base plate yield strength	F_{yf}	50	ksi
	Anchor hole diameter		2.625	in
	Slotted to outside edge?		No	
	Flat washer diameter		4	
	Zinc drain hole diameter		2.625	
	Zinc drain circle		30.5	in
	Bolt circle diameter	D_{BC}	41.5	in
	Plate O.D.	D_{OD}	47.5	in
	Plate I.D.		25.5	in

Base Plate Illustration



			Wind		Seismic	
LRFD Loads	Axial down	$R_{u,c}$	26.27	k	0.00	k
	Axial up	$R_{u,t}$	0	k	0.00	k
	Shear	V_u	16.62	k	0.00	k
	Moment	M_u	950.14	k-ft	0.00	k-ft
	Member mom. capacity	ΦM_n	1325	k-ft		

Fit Check



Check:	Dist.	Result
Washer vs weld	0.5339	OK
Washer vs OD	0.8125	OK
Washer covers hole	0.5	OK

Checks	Plate stress ratio	**46.8%**	OK	
	Anchor unity check	**55.0%**	OK	
	Min. number of sides	18	OK	6 minimum
	Min. number of anchors	8	OK	8 minimum
	Max. anchor rod to pole distance	3.1"	OK	13.5" maximum
	Min. anchor diameter	2.25"	OK	0.75" minimum
	Max. anchor rod spacing	16.3"	NG	13.5" maximum
	Min. anchor rod spacing	15.88"	OK	6.75" minimum
	Min. base plate thickness	2.25"	OK	2" minimum
	Min. inside diameter	25.5"	OK	10.52" minimum
	Max. inside diameter	25.5"	OK	31.125" maximum

Note: when number of anchors is less than minimum and when maximum anchor rod spacing is exceeded, adjustments are made to the effective plate width calculations as if requirements of TIA-222-H Annex Q were met.

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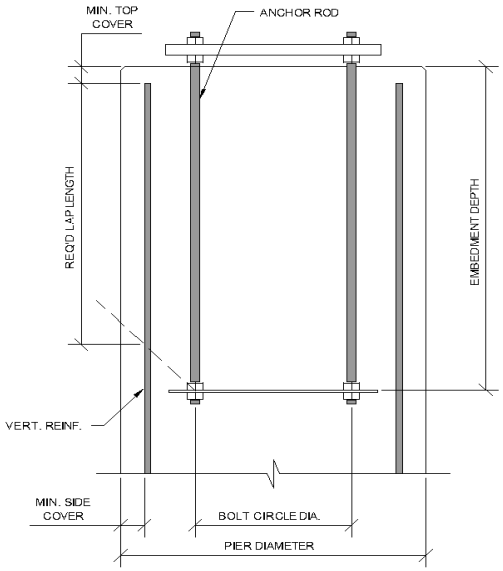
PROJECT: NM01-148 SPIKE

Anchorage Embedment Design

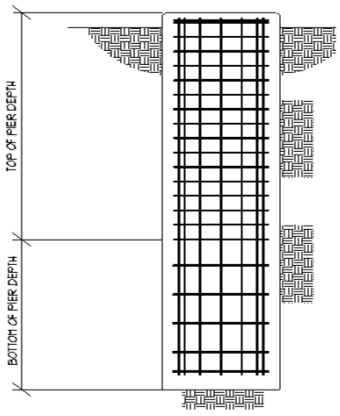
(per ACI 318-19)

Vertical Bar Size:	#8	
# of Vertical Bars:	22	
Concrete Compressive Strength [psi]:	4000	
Pier Diameter [ft]:	5.5	
Pier Depth [ft]:	20	
Top of Pier Elevation [in]:	6	
Concrete Volume [yd^3]:	18.0	
Side Concrete Cover [in]:	4	
Top Concrete Cover [in]:	2	
Horizontal Tie Size:	#4	
Bolt Circle Diameter [in]:	41.5	
# of Anchor Rods:	8	
Anchor Rod Diameter [in]:	2.25	
ψ_t (bar location factor):	1.0	Table 25.4.2.4
ψ_e (epoxy coating factor):	1.0	Table 25.4.2.4
ψ_s (bar size factor):	1.0	Table 25.4.2.4
λ (concrete type factor):	1.0	Table 25.4.2.4
Vertical Bar Diameter [in]:	1.0	
Horizontal Tie Diameter [in]:	0.500	
Buffer [in]:	4.25	
Req'd Lap Length [in]:	37.0	in (Section 25.4.2.2)
Min. Req'd Embedment Depth [in]:	**46.2**	



Transverse Reinforcement Design

Seismic Design Category:	C
Apply Seismic Detailing?	No
Site Class:	C
Type of Transverse Reinforcement:	Spiral
Transverse f_{yt} [ksi]:	60
Seismic Hooks Required?	No
Tie Size OK?	Yes
Spacing at Top of Pier [in]:	12
Spacing at Bottom of Pier [in]:	12
Total Pier Length [ft]:	20.5
Top Pier Length [ft]:	20.5
Bottom Pier Length [ft]:	0



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Project: NM01-148 SPIKE

Drilled Pier Design:

Applied Loads:

Max. shear, V:	22.2	k	Design methodology:	LRFD
Max. moment, M:	1,266.9	k-ft	Maximum foundation rating:	100%
Max. down, P_{down}:	35.0	k		
Max. uplift, P_{uplift}:	0.0	k		

Pier Properties:

Pier shape	Round		Volume of concrete:	487	ft^3
Pier diameter, b:	5.5	ft	Volume of concrete:	18.0	yd^3
Min. pier diameter, bmin (opt'l):	0.0	ft	Weight of concrete:	73.1	k
b:	5.5				
Top of pier elevation:	0.5	ft			
Pier depth, d:	20	ft			
Min. pier depth, d_{min} (opt'l):	0.0	ft			

Soil Properties & Analysis:

Allow. bearing pressure:	65,600	psf	F.S.: 1
Gross or net?	Net		
1/3 increase for short term loads?	No		
Skin friction (down):	0	psf	F.S.: 1
Skin friction (uplift):	0	psf	F.S.: 1
Top length to ignore:	2.75	ft	
1/3 increase for short term loads?	No		
Combine skin friction w/ end bearing?	No		
Bearing capacity:	1,558.5	k	
Uplift capacity:	65.8	k	

Results:

Bearing capacity OK.
Uplift capacity OK.

Lateral analysis in LPile

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PROJECT: NM01-148 Spike

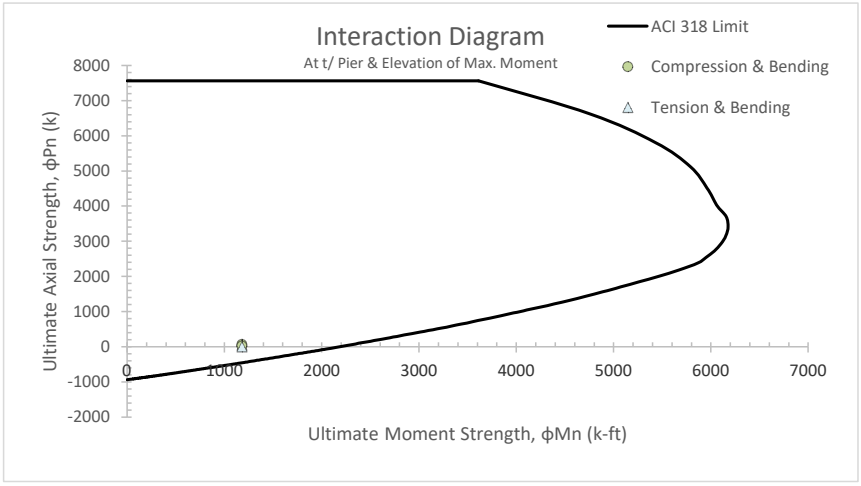
Drilled Pier Reinforcement:

Design Requirements:

Max. Moment, M (k-ft):	950.1	Max. Down, P_{down} (k):	26.3	Required Foundation UC Limit:	100%
Max. Shear, V (k):	16.6	Max. Uplift, P_{up} (k):	0.0	Mu, M+V*H+Pmax*E (k-ft):	1180.1
Height of V (ft):	13.833	Eccentricity for P (in):	0	(Uplift is negative for comparison w/	
		Concrete Self-weight (k):	47.7 (0.145 pcf)	Interaction Diagram)	

Pier Properties:

Code Reference:	ACI 318-19	
Pier Diameter (ft):	5.5	
Top of Pier Elevation (in):	6	
Pier Depth (ft):	20	
Vertical Bar Size:	#8	
Bar Diameter (in):	1	
Bar Area (in^2):	0.79	
Seismic Design Category:	C	
# of Vertical Bars:	22	
Vert. Yield Strength (psi):	60000	
Horizontal Reinf. Type:	Spiral	
Horizontal Reinf. Size:	#4	
Horizontal Reinf. Diameter (in):	0.5	
Side Concrete Cover (in):	4	
Vert. Edge Distance (in):	4.5	
Conc. Comp. Strength, f'c (psi):	4000	
Angle Between Bars, δ (radians):	0.286	
Area of Steel (in^2):	17.4	
Gross Column Area (in^2):	3421.2	
Min. Reinforcement Ratio:	0.50%	(IBC Sections 1810.3.9.4.1 and 1810.3.9.4.2)
β_1:	0.85	Table 22.2.2.4.3
Concrete Yield Strain, ε_{cu} (in/in):	0.003	Section 22.2.2.1
P_o (k):	12616	Eqn. 22.4.2.2
ϕ:	0.75	Table 21.2.2
Pn Factor:	0.80	Table 22.4.2.1
ϕP_u (pure compression, k):	7569	
Es (ksi):	29000	
Steel Yield Strain, ε_{ty} (in/in):	0.002069	Section 21.2.2.1
Number of verticals in top row:	1	



Axial & Bending Checks:

Steel/Concrete Ratio: 0.51% **> Min. Reinf. Ratio**

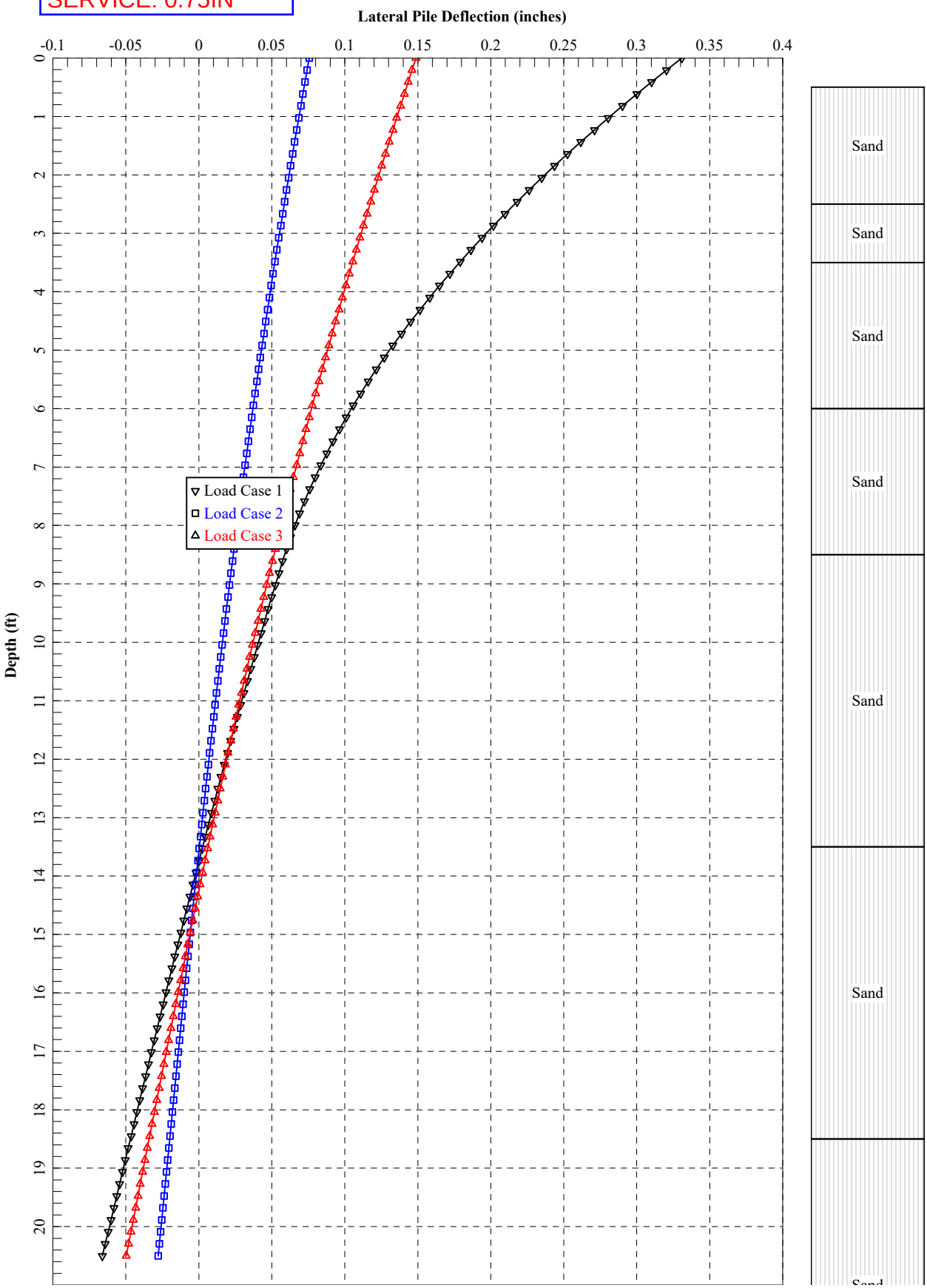
Compression & Bending

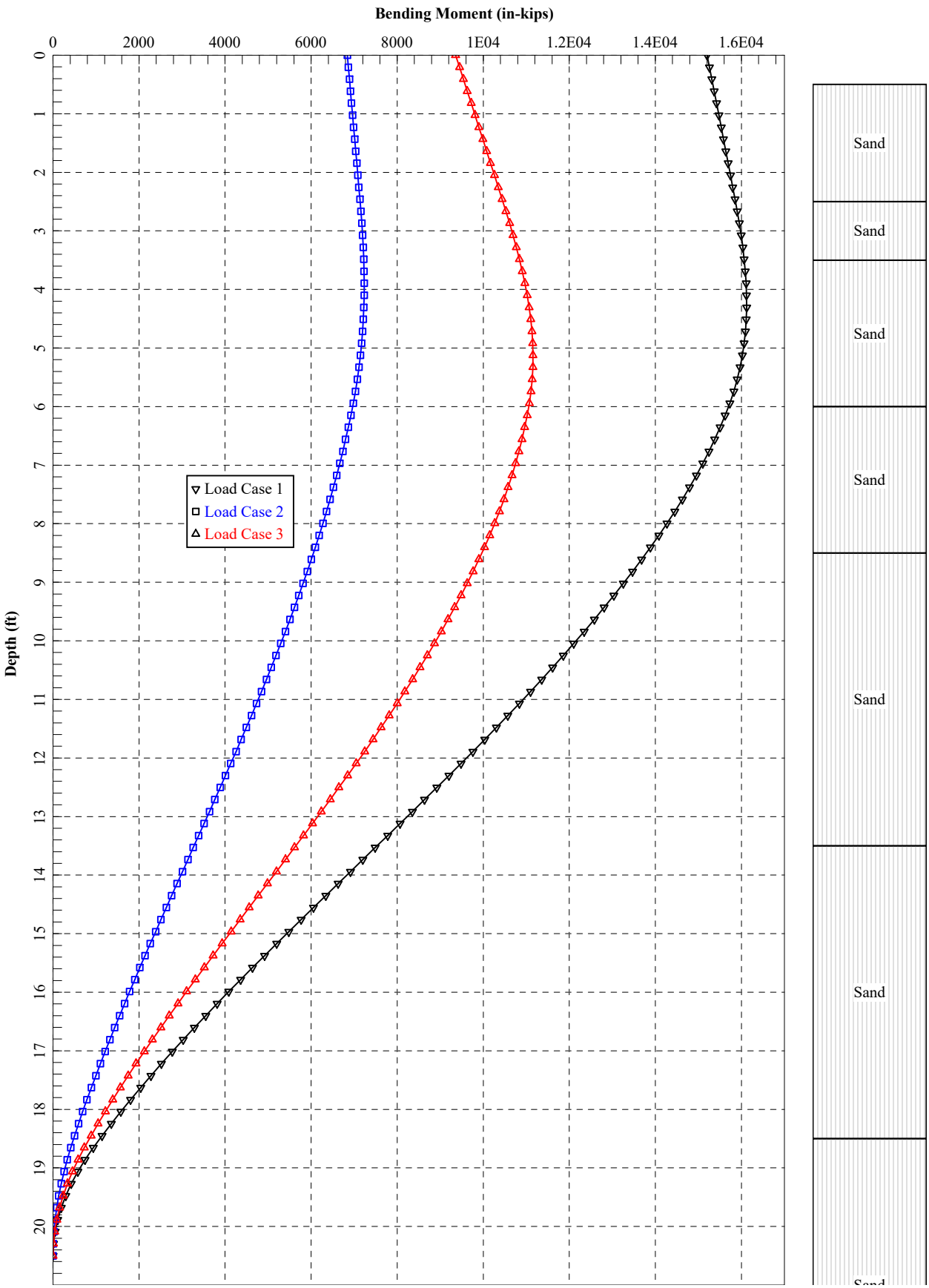
	@ t/ Pier	@ Max. M		
ϕPn (k):	19.7	62.6		
ϕMn (k-ft):	2222.8	2310.2		
UC:	53.1%	51.1%	**OK, Adequate**	$(Pu^2+Mu^2)^{0.5}/(\phi Pn^2+\phi Mn^2)^{0.5}$

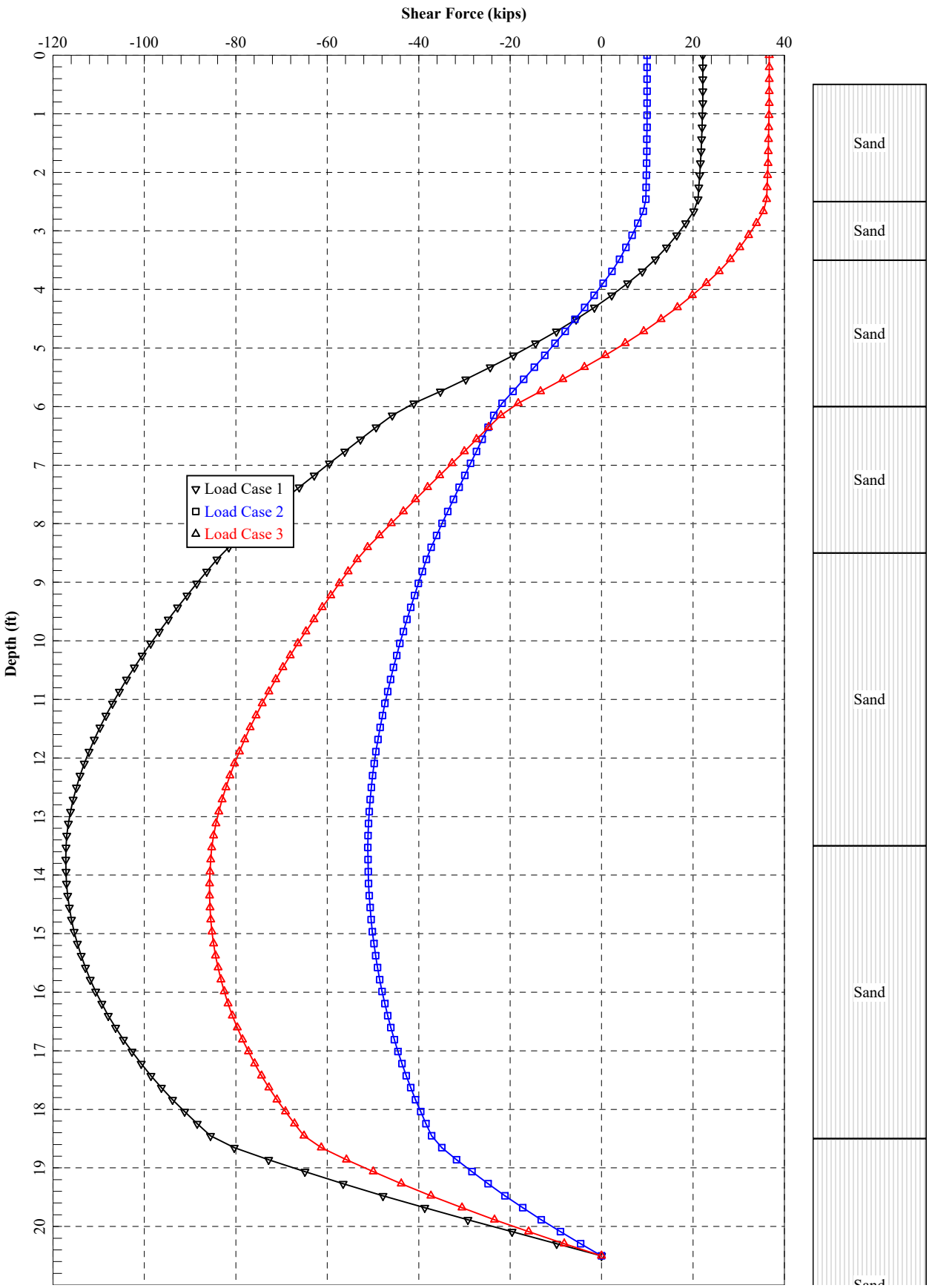
Tension & Bending

	@ t/ Pier	@ Max. M		
ϕPn (k):	0.0	42.9		
ϕMn (k-ft):	2182.5	2270.1		
UC:	54.1%	52.0%	**OK, Adequate**	$(Pu^2+Mu^2)^{0.5}/(\phi Pn^2+\phi Mn^2)^{0.5}$

MAX DEFLECTIONS:
LRFD: 6IN
ASD: 1IN
SERVICE: 0.75IN




Bending Moment (in-kips)
0
2000
4000
6000
8000
1E04
1.2E04
1.4E04
1.6E04
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Load Case 1
Load Case 2
Load Case 3
Sand
Sand
Sand
Sand
Sand
Sand


Shear Force (kips)
-120
-100
-80
-60
-40
-20
0
20
40
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Load Case 1
Load Case 2
Load Case 3
Sand
Sand
Sand
Sand
Sand
Sand

```
================================================================================

                     LPile for Windows, Version 2019-11.001

                 Analysis of Individual Piles and Drilled Shafts
                Subjected to Lateral Loading Using the p-y Method
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================================================================================

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--------------------------------------------------------------------------------
                            Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:
\\VSEFILES.vector.local\Projects\2024 Projects\U0142 Raycap\U0142-2054-242
SS24-01302H-00R0 NM1-148 Spike (NM, Monopole with screening)\ENG\

Name of input data file:
lpileInputFile.lp11

Name of output report file:
lpileInputFile.lp11

Name of plot output file:
lpileInputFile.lp11

Name of runtime message file:
lpileInputFile.lp11



--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------

                Date:  October 24, 2024           Time:  17:21:52


--------------------------------------------------------------------------------
                                    Problem Title
--------------------------------------------------------------------------------

Project Name: NM01-148 Spike


Job Number: U0142.2054.242


Client: Raycap


Engineer: Draper


Description:




--------------------------------------------------------------------------------
                            Program Options and Settings
--------------------------------------------------------------------------------

Computational Options:
 - Use unfactored loads in computations (conventional analysis)
Engineering Units Used for Data Input and Computations:
 - US Customary System Units (pounds, feet, inches)

Analysis Control Options:
 - Maximum number of iterations allowed                =          500
 - Deflection tolerance for convergence                =   1.0000E-05 in
 - Maximum allowable deflection                        =     100.0000 in
 - Number of pile increments                           =          100

Loading Type and Number of Cycles of Loading:
 - Static loading specified
```

```
 - Use of p-y modification factors for p-y curves not selected
 - Analysis uses layering correction (Method of Georgiadis)
 - No distributed lateral loads are entered
 - Loading by lateral soil movements acting on pile not selected
 - Input of shear resistance at the pile tip not selected
 - Input of moment resistance at the pile tip not selected
 - Computation of pile-head foundation stiffness matrix not selected
 - Push-over analysis of pile not selected
 - Buckling analysis of pile not selected

Output Options:
 - Output files use decimal points to denote decimal symbols.
 - Values of pile-head deflection, bending moment, shear force, and
   soil reaction are printed for full length of pile.
 - Printing Increment (nodal spacing of output points) = 1
 - No p-y curves to be computed and reported for user-specified depths
 - Print using wide report formats



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                      =           1
Total length of pile                                 =      20.500 ft
Depth of ground surface below top of pile            =      0.5000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over
the length of the pile. A summary of values of pile diameter vs. depth follows.

            Depth Below          Pile
Point        Pile Head         Diameter
 No.            feet            inches
-----      -------------     -------------
  1             0.000          66.0000
  2            20.500          66.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                 =    20.500000 ft
   Shaft Diameter                                    =    66.000000 in
   Shear capacity of section                         =       0.0000 lbs



--------------------------------------------------------------------------------
                       Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                                   =        0.000 degrees
                                                     =        0.000 radians

Pile Batter Angle                                    =        0.000 degrees
                                                     =        0.000 radians


--------------------------------------------------------------------------------
                       Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 13 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer         =     0.500000 ft
   Distance from top of pile to bottom of layer      =     2.500000 ft
   Effective unit weight at top of layer             =   118.000000 pcf
   Effective unit weight at bottom of layer          =   118.000000 pcf
   Friction angle at top of layer                    =    28.000000 deg.
   Friction angle at bottom of layer                 =    28.000000 deg.
   Subgrade k at top of layer                        =       0.0000 pci
   Subgrade k at bottom of layer                     =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 2 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer         =     2.500000 ft
   Distance from top of pile to bottom of layer      =     3.500000 ft
   Effective unit weight at top of layer             =   118.000000 pcf
   Effective unit weight at bottom of layer          =   118.000000 pcf
   Friction angle at top of layer                    =    42.000000 deg.
   Friction angle at bottom of layer                 =    42.000000 deg.
   Subgrade k at top of layer                        =       0.0000 pci
   Subgrade k at bottom of layer                     =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 3 is sand, p-y criteria by Reese et al., 1974
```

```
   Distance from top of pile to top of layer          =     3.500000 ft
   Distance from top of pile to bottom of layer       =     6.000000 ft
   Effective unit weight at top of layer              =   115.000000 pcf
   Effective unit weight at bottom of layer           =   115.000000 pcf
   Friction angle at top of layer                     =    45.000000 deg.
   Friction angle at bottom of layer                  =    45.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 4 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =     6.000000 ft
   Distance from top of pile to bottom of layer       =     8.500000 ft
   Effective unit weight at top of layer              =   118.000000 pcf
   Effective unit weight at bottom of layer           =   118.000000 pcf
   Friction angle at top of layer                     =    38.000000 deg.
   Friction angle at bottom of layer                  =    38.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 5 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =     8.500000 ft
   Distance from top of pile to bottom of layer       =    13.500000 ft
   Effective unit weight at top of layer              =   114.000000 pcf
   Effective unit weight at bottom of layer           =   114.000000 pcf
   Friction angle at top of layer                     =    36.000000 deg.
   Friction angle at bottom of layer                  =    36.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 6 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    13.500000 ft
   Distance from top of pile to bottom of layer       =    18.500000 ft
   Effective unit weight at top of layer              =   114.000000 pcf
   Effective unit weight at bottom of layer           =   114.000000 pcf
   Friction angle at top of layer                     =    34.000000 deg.
   Friction angle at bottom of layer                  =    34.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 7 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    18.500000 ft
   Distance from top of pile to bottom of layer       =    23.500000 ft
   Effective unit weight at top of layer              =   116.000000 pcf
   Effective unit weight at bottom of layer           =   116.000000 pcf
   Friction angle at top of layer                     =    41.000000 deg.
   Friction angle at bottom of layer                  =    41.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 8 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    23.500000 ft
   Distance from top of pile to bottom of layer       =    28.500000 ft
   Effective unit weight at top of layer              =   116.000000 pcf
   Effective unit weight at bottom of layer           =   116.000000 pcf
   Friction angle at top of layer                     =    40.000000 deg.
   Friction angle at bottom of layer                  =    40.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 9 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    28.500000 ft
   Distance from top of pile to bottom of layer       =    33.500000 ft
   Effective unit weight at top of layer              =   115.000000 pcf
   Effective unit weight at bottom of layer           =   115.000000 pcf
   Friction angle at top of layer                     =    38.000000 deg.
   Friction angle at bottom of layer                  =    38.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 10 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    33.500000 ft
   Distance from top of pile to bottom of layer       =    38.500000 ft
   Effective unit weight at top of layer              =   118.000000 pcf
   Effective unit weight at bottom of layer           =   118.000000 pcf
   Friction angle at top of layer                     =    45.000000 deg.
   Friction angle at bottom of layer                  =    45.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci
```

NOTE: Default values for subgrade k will be computed for this layer.

Layer 11 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	38.500000 ft
Distance from top of pile to bottom of layer	=	43.500000 ft
Effective unit weight at top of layer	=	118.000000 pcf
Effective unit weight at bottom of layer	=	118.000000 pcf
Friction angle at top of layer	=	45.000000 deg.
Friction angle at bottom of layer	=	45.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 12 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	43.500000 ft
Distance from top of pile to bottom of layer	=	48.500000 ft
Effective unit weight at top of layer	=	118.000000 pcf
Effective unit weight at bottom of layer	=	118.000000 pcf
Friction angle at top of layer	=	45.000000 deg.
Friction angle at bottom of layer	=	45.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 13 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	48.500000 ft
Distance from top of pile to bottom of layer	=	50.000000 ft
Effective unit weight at top of layer	=	118.000000 pcf
Effective unit weight at bottom of layer	=	118.000000 pcf
Friction angle at top of layer	=	45.000000 deg.
Friction angle at bottom of layer	=	45.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

(Depth of the lowest soil layer extends 29.500 ft below the pile tip)

Summary of Input Soil Properties

Layer Num.	Soil Type (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand	0.5000	118.0000	28.0000	default
	(Reese, et al.)	2.5000	118.0000	28.0000	default
2	Sand	2.5000	118.0000	42.0000	default
	(Reese, et al.)	3.5000	118.0000	42.0000	default
3	Sand	3.5000	115.0000	45.0000	default
	(Reese, et al.)	6.0000	115.0000	45.0000	default
4	Sand	6.0000	118.0000	38.0000	default
	(Reese, et al.)	8.5000	118.0000	38.0000	default
5	Sand	8.5000	114.0000	36.0000	default
	(Reese, et al.)	13.5000	114.0000	36.0000	default
6	Sand	13.5000	114.0000	34.0000	default
	(Reese, et al.)	18.5000	114.0000	34.0000	default
7	Sand	18.5000	116.0000	41.0000	default
	(Reese, et al.)	23.5000	116.0000	41.0000	default
8	Sand	23.5000	116.0000	40.0000	default
	(Reese, et al.)	28.5000	116.0000	40.0000	default
9	Sand	28.5000	115.0000	38.0000	default
	(Reese, et al.)	33.5000	115.0000	38.0000	default
10	Sand	33.5000	118.0000	45.0000	default
	(Reese, et al.)	38.5000	118.0000	45.0000	default
11	Sand	38.5000	118.0000	45.0000	default
	(Reese, et al.)	43.5000	118.0000	45.0000	default
12	Sand	43.5000	118.0000	45.0000	default
	(Reese, et al.)	48.5000	118.0000	45.0000	default
13	Sand	48.5000	118.0000	45.0000	default
	(Reese, et al.)	50.0000	118.0000	45.0000	default

Static Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length

```
---------------
   1     1     V =       22160. lbs   M =    15202288. in-lbs            35025.
    No
   2     1     V =        9972. lbs   M =     6841030. in-lbs            21891.
    No
   3     1     V =       36672. lbs   M =     9359280. in-lbs            13890.
    No

V = shear force applied normal to pile axis
M = bending moment applied to pile head
y = lateral deflection normal to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applied to pile head
Values of top y vs. pile lengths can be computed only for load types with
specified shear loading (Load Types 1, 2, and 3).
Thrust force is assumed to be acting axially for all pile batter angles.



--------------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
--------------------------------------------------------------------------------

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:
-------------------

Dimensions and Properties of Drilled Shaft (Bored Pile):
--------------------------------------------------------

Length of Section                                  =    20.500000 ft
Shaft Diameter                                     =    66.000000 in
Concrete Cover Thickness (to edge of long. rebar)  =     4.500000 in
Number of Reinforcing Bars                         =           22 bars
Yield Stress of Reinforcing Bars                   =      60000. psi
Modulus of Elasticity of Reinforcing Bars          =    29000000. psi
Gross Area of Shaft                                =       3421. sq. in.
Total Area of Reinforcing Steel                    =    17.380000 sq. in.
Area Ratio of Steel Reinforcement                  =         0.51 percent
Edge-to-Edge Bar Spacing                           =     6.969631 in
Maximum Concrete Aggregate Size                    =     0.750000 in
Ratio of Bar Spacing to Aggregate Size             =         9.29
Offset of Center of Rebar Cage from Center of Pile =       0.0000 in

Axial Structural Capacities:
----------------------------

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As    =    12615.769 kips
Tensile Load for Cracking of Concrete                  =    -1473.828 kips
Nominal Axial Tensile Capacity                         =    -1042.800 kips


Reinforcing Bar Dimensions and Positions Used in Computations:

     Bar          Bar Diam.      Bar Area          X             Y
    Number         inches         sq. in.        inches        inches
  ----------     ----------     ----------     ----------    ----------
      1           1.000000       0.790000      28.000000       0.00000
      2           1.000000       0.790000      26.865803       7.888512
      3           1.000000       0.790000      23.555099      15.137943
      4           1.000000       0.790000      18.336101      21.160988
      5           1.000000       0.790000      11.631620      25.469696
      6           1.000000       0.790000       3.984815      27.715000
      7           1.000000       0.790000      -3.984815      27.715000
      8           1.000000       0.790000     -11.631620      25.469696
      9           1.000000       0.790000     -18.336101      21.160988
     10           1.000000       0.790000     -23.555099      15.137943
     11           1.000000       0.790000     -26.865803       7.888512
     12           1.000000       0.790000     -28.000000       0.00000
     13           1.000000       0.790000     -26.865803      -7.888512
     14           1.000000       0.790000     -23.555099     -15.137943
     15           1.000000       0.790000     -18.336101     -21.160988
     16           1.000000       0.790000     -11.631620     -25.469696
     17           1.000000       0.790000      -3.984815     -27.715000
     18           1.000000       0.790000       3.984815     -27.715000
     19           1.000000       0.790000      11.631620     -25.469696
     20           1.000000       0.790000      18.336101     -21.160988
     21           1.000000       0.790000      23.555099     -15.137943
     22           1.000000       0.790000      26.865803      -7.888512


NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero =  6.970 inches
between bars 15 and 16.

Ratio of bar spacing to maximum aggregate size = 9.29


Concrete Properties:
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Compressive Strength of Concrete                       =        4000. psi
Modulus of Elasticity of Concrete                      =     3604997. psi
Modulus of Rupture of Concrete                         =  -474.341649 psi
Compression Strain at Peak Stress                      =     0.001886
Tensile Strain at Fracture of Concrete                 =   -0.0001154
```

Maximum Coarse Aggregate Size = 0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	13.890
2	21.891
3	35.025

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318, Section 10.3.4.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 13.890 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Stress in-kip ksi	Bending Moment	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg
4.16667E-07	1712.	4109759588.	35.2380330	0.00001468	-0.00001282		
0.0614501	0.3659804						
8.33333E-07	3417.	4100112352.	34.1223928	0.00002844	-0.00002656		
0.1185413	0.7049995						
0.00000125	5113.	4090427782.	33.7505281	0.00004219	-0.00004031		
0.1752158	1.0440191						
0.00000167	6801.	4080733859.	33.5646062	0.00005594	-0.00005406		
0.2314735	1.3830393						
0.00000208	8481.	4071036194.	33.4530615	0.00006969	-0.00006781		
0.2873145	1.7220600						
0.00000250	10153.	4061336658.	33.3787055	0.00008345	-0.00008155		
0.3427388	2.0610811						
0.00000292	11817.	4051636054.	33.3256001	0.00009720	-0.00009530		
0.3977463	2.4001028						
0.00000333	13473.	4041934781.	33.2857765	0.0001110	-0.0001090		
0.4523371	2.7391251						
0.00000375	13473.	3592830916.	14.2401968	0.00005340	-0.0001941		
0.2181743	-5.0905662	C					
0.00000417	13473.	3233547824.	14.1088487	0.00005879	-0.0002162		
0.2397881	-5.6720558	C					
0.00000458	13473.	2939588931.	13.9996353	0.00006416	-0.0002383		
0.2613071	-6.2537776	C					
0.00000500	13473.	2694623187.	13.9091623	0.00006955	-0.0002605		
0.2827754	-6.8354214	C					
0.00000542	13473.	2487344480.	13.8331064	0.00007493	-0.0002826		
0.3041928	-7.4169870	C					
0.00000583	13473.	2309677017.	13.7683794	0.00008032	-0.0003047		
0.3255594	-7.9984741	C					
0.00000625	13473.	2155698550.	13.7127165	0.00008570	-0.0003268		
0.3468750	-8.5798826	C					
0.00000667	13473.	2020967390.	13.6644194	0.00009110	-0.0003489		
0.3681396	-9.1612122	C					
0.00000708	13473.	1902086956.	13.6221892	0.00009649	-0.0003710		
0.3893531	-9.7424628	C					
0.00000750	13473.	1796415458.	13.5850156	0.0001019	-0.0003931		
0.4105155	-10.3236341	C					
0.00000792	13473.	1701867276.	13.5521013	0.0001073	-0.0004152		
0.4316267	-10.9047259	C					
0.00000833	13473.	1616773912.	13.5223786	0.0001127	-0.0004373		
0.4526722	-11.4858418	C					
0.00000875	13473.	1539784678.	13.4946244	0.0001181	-0.0004594		
0.4736255	-12.0671765	C					
0.00000917	13473.	1469794466.	13.4697097	0.0001235	-0.0004815		
0.4945282	-12.6484271	C					
0.00000958	13473.	1405890358.	13.4472648	0.0001289	-0.0005036		
0.5153803	-13.2295934	C					
0.00001000	13473.	1347311594.	13.4269820	0.0001343	-0.0005257		
0.5361817	-13.8106754	C					
0.00001042	13473.	1293419130.	13.4086025	0.0001397	-0.0005478		
0.5569323	-14.3916724	C					
0.00001083	13473.	1243672240.	13.3919075	0.0001451	-0.0005699		
0.5776321	-14.9725842	C					
0.00001125	13473.	1197610305.	13.3767106	0.0001505	-0.0005920		
0.5982810	-15.5534108	C					
0.00001167	13473.	1154838509.	13.3628519	0.0001559	-0.0006141		
0.6188789	-16.1341519	C					
0.00001208	13473.	1115016491.	13.3501937	0.0001613	-0.0006362		
0.6394257	-16.7148072	C					
0.00001250	13473.	1077849275.	13.3386167	0.0001667	-0.0006583		
0.6599215	-17.2953766	C					

```
0.00001292       13473.   1043079943.    13.3280168     0.0001722    -0.0006803
0.6803660   -17.8758596 C
0.00001333       13473.   1010483695.    13.3183031     0.0001776    -0.0007024
0.7007592   -18.4562562 C
0.00001375       13473.    979862977.    13.3093956     0.0001830    -0.0007245
0.7211011   -19.0365660 C
0.00001417       13473.    951043478.    13.3012239     0.0001884    -0.0007466
0.7413916   -19.6167889 C
0.00001458       13473.    923870807.    13.2937254     0.0001939    -0.0007686
0.7616306   -20.1969245 C
0.00001500       13473.    898207729.    13.2868447     0.0001993    -0.0007907
0.7818180   -20.7769726 C
0.00001542       13473.    873931844.    13.2805321     0.0002047    -0.0008128
0.8019538   -21.3569330 C
0.00001583       13473.    850933638.    13.2747434     0.0002102    -0.0008348
0.8220378   -21.9368053 C
0.00001625       13473.    829114827.    13.2694389     0.0002156    -0.0008569
0.8420701   -22.5165894 C
0.00001708       13473.    788670201.    13.2601426     0.0002265    -0.0009010
0.8819789   -23.6758920 C
0.00001792       13473.    751987866.    13.2523965     0.0002374    -0.0009451
0.9216796   -24.8348382 C
0.00001875       13473.    718566183.    13.2459977     0.0002484    -0.0009891
0.9611716   -25.9934263 C
0.00001958       13473.    687988899.    13.2407779     0.0002593    -0.0010332
1.0004543   -27.1516540 C
0.00002042       13473.    659907719.    13.2365965     0.0002702    -0.0010773
1.0395270   -28.3095193 C
0.00002125       13473.    634028985.    13.2333346     0.0002812    -0.0011213
1.0783892   -29.4670200 C
0.00002208       13473.    610103363.    13.2308918     0.0002922    -0.0011653
1.1170401   -30.6241539 C
0.00002292       13473.    587917786.    13.2291818     0.0003032    -0.0012093
1.1554792   -31.7809187 C
0.00002375       13473.    567289092.    13.2281308     0.0003142    -0.0012533
1.1937057   -32.9373123 C
0.00002458       13473.    548058953.    13.2276750     0.0003252    -0.0012973
1.2317191   -34.0933324 C
0.00002542       13473.    530089807.    13.2277589     0.0003362    -0.0013413
1.2695187   -35.2489768 C
0.00002625       13473.    513261559.    13.2283342     0.0003472    -0.0013853
1.3071039   -36.4042430 C
0.00002708       13473.    497468896.    13.2293583     0.0003583    -0.0014292
1.3444738   -37.5591289 C
0.00002792       13506.    483808020.    13.2307942     0.0003694    -0.0014731
1.3816280   -38.7136320 C
0.00002875       13896.    483355860.    13.2326088     0.0003804    -0.0015171
1.4185657   -39.8677499 C
0.00002958       14286.    482919553.    13.2347728     0.0003915    -0.0015610
1.4552861   -41.0214802 C
0.00003042       14676.    482497747.    13.2372605     0.0004026    -0.0016049
1.4917887   -42.1748206 C
0.00003125       15065.    482089231.    13.2400485     0.0004138    -0.0016487
1.5280727   -43.3277685 C
0.00003208       15454.    481692920.    13.2431163     0.0004249    -0.0016926
1.5641374   -44.4803214 C
0.00003292       15843.    481307841.    13.2464450     0.0004360    -0.0017365
1.5999822   -45.6324768 C
0.00003375       16231.    480933112.    13.2500182     0.0004472    -0.0017803
1.6356062   -46.7842322 C
0.00003458       16620.    480567939.    13.2538205     0.0004584    -0.0018241
1.6710088   -47.9355850 C
0.00003542       17007.    480211601.    13.2578385     0.0004695    -0.0018680
1.7061892   -49.0865326 C
0.00003625       17395.    479863443.    13.2620597     0.0004807    -0.0019118
1.7411467   -50.2370723 C
0.00003708       17782.    479522869.    13.2664730     0.0004920    -0.0019555
1.7758805   -51.3872014 C
0.00003792       18169.    479189333.    13.2710681     0.0005032    -0.0019993
1.8103900   -52.5369173 C
0.00003875       18556.    478862337.    13.2758357     0.0005144    -0.0020431
1.8446743   -53.6862172 C
0.00003958       18942.    478541425.    13.2807674     0.0005257    -0.0020868
1.8787326   -54.8350984 C
0.00004042       19328.    478226177.    13.2858554     0.0005370    -0.0021305
1.9125643   -55.9835580 C
0.00004125       19714.    477916206.    13.2910926     0.0005483    -0.0021742
1.9461684   -57.1315932 C
0.00004208       20099.    477611158.    13.2964724     0.0005596    -0.0022179
1.9795443   -58.2792012 C
0.00004292       20485.    477310701.    13.3019890     0.0005709    -0.0022616
2.0126911   -59.4263790 C
0.00004375       20848.    476523099.    13.3031114     0.0005820    -0.0023055
2.0450211   -60.0000000 CY
0.00004458       21156.    474522218.    13.2930034     0.0005926    -0.0023499
2.0756188   -60.0000000 CY
0.00004542       21450.    472285595.    13.2806633     0.0006032    -0.0023943
2.1056302   -60.0000000 CY
0.00004625       21702.    469229599.    13.2602803     0.0006133    -0.0024392
2.1342688   -60.0000000 CY
0.00004708       21919.    465535009.    13.2335368     0.0006231    -0.0024844
2.1617307   -60.0000000 CY
0.00004792       22134.    461935729.    13.2076255     0.0006329    -0.0025296
2.1889756   -60.0000000 CY
0.00004875       22350.    458456148.    13.1827959     0.0006427    -0.0025748
2.2160441   -60.0000000 CY
0.00004958       22565.    455090214.    13.1589944     0.0006525    -0.0026200
2.2429358   -60.0000000 CY
0.00005292       23216.    438718274.    13.0300668     0.0006895    -0.0028030
2.3425108   -60.0000000 CY
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0.00005625       23793.    422980521.    12.9047218     0.0007259    -0.0029866
2.4374378   -60.0000000 CY
0.00005958       24300.    407837437.    12.7746265     0.0007612    -0.0031713
2.5266875   -60.0000000 CY
0.00006292       24654.    391856839.    12.6244797     0.0007943    -0.0033582
2.6079919   -60.0000000 CY
0.00006625       25007.    377465662.    12.4909898     0.0008275    -0.0035450
2.6872378   -60.0000000 CY
0.00006958       25359.    364435252.    12.3717831     0.0008609    -0.0037316
2.7644065   -60.0000000 CY
0.00007292       25679.    352170841.    12.2579095     0.0008938    -0.0039187
2.8383104   -60.0000000 CY
0.00007625       25879.    339395966.    12.1216728     0.0009243    -0.0041082
2.9044723   -60.0000000 CY
0.00007958       26074.    327631512.    11.9936884     0.0009545    -0.0042980
2.9681532   -60.0000000 CY
0.00008292       26268.    316803144.    11.8770406     0.0009848    -0.0044877
3.0301084   -60.0000000 CY
0.00008625       26462.    306802231.    11.7704267     0.0010152    -0.0046773
3.0903232   -60.0000000 CY
0.00008958       26654.    297536276.    11.6727383     0.0010457    -0.0048668
3.1487822   -60.0000000 CY
0.00009292       26846.    288926052.    11.5830261     0.0010763    -0.0050562
3.2054698   -60.0000000 CY
0.00009625       27017.    280693744.    11.4906644     0.0011060    -0.0052465
3.2586473   -60.0000000 CY
0.00009958       27130.    272439852.    11.3870505     0.0011340    -0.0054385
3.3069214   -60.0000000 CY
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3.3973883   -60.0000000 CY
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3.5603937   -60.0000000 CY
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3.7536716   -60.0000000 CY
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3.7796510   -60.0000000 CY
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3.8260796   -60.0000000 CY
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3.9160138   -60.0000000 CY
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3.9544099   -60.0000000 CY
 0.0001796       28707.    159853250.     9.8466116     0.0017683    -0.0100842
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3.9761724   -60.0000000 CY
 0.0003629       29490.     81259363.     8.6356853     0.0031340    -0.0208185
3.9945503   -60.0000000 CYT
 0.0003829       29513.     77073410.     8.5762621     0.0032840    -0.0219885
3.9975748   -60.0000000 CYT
 0.0004029       29532.     73294679.     8.5275720     0.0034359    -0.0231566
3.9727101   -60.0000000 CYT
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    0.0004229        29549.     69870221.     8.4858100     0.0035888    -0.0243237
   3.9859499   -60.0000000 CYT
    0.0004429        29566.     66751866.     8.4501693     0.0037427    -0.0254898
   3.9978568   -60.0000000 CYT
    0.0004629        29580.     63898562.     8.4207053     0.0038981    -0.0266544
   3.9918793   -60.0000000 CYT


Axial Thrust Force =     21.891 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  4.16667E-07         1712.   4109593760.    36.5272120    0.00001522   -0.00001228
   0.0637104     0.3815580
  8.33333E-07         3417.   4100028689.    34.7689070    0.00002897   -0.00002603
   0.1207918     0.7206236
   0.00000125         5113.   4090371637.    34.1828334    0.00004273   -0.00003977
   0.1774565     1.0596902
   0.00000167         6801.   4080691489.    33.8898141    0.00005648   -0.00005352
   0.2337045     1.3987577
   0.00000208         8481.   4071002090.    33.7140159    0.00007024   -0.00006726
   0.2895356     1.7378259
   0.00000250        10153.   4061308064.    33.5968282    0.00008399   -0.00008101
   0.3449499     2.0768950
   0.00000292        11817.   4051611393.    33.5131322    0.00009775   -0.00009475
   0.3999474     2.4159649
   0.00000333        13473.   4041913069.    33.4503687     0.0001115    -0.0001085
   0.4545281     2.7550356
   0.00000375        13473.   3592811617.    14.9885161    0.00005621    -0.0001913
   0.2297379    -5.0091864 C
   0.00000417        13473.   3233530455.    14.7940674    0.00006164    -0.0002134
   0.2515192    -5.5892585 C
   0.00000458        13473.   2939573141.    14.6293426    0.00006705    -0.0002354
   0.2731318    -6.1700790 C
   0.00000500        13473.   2694608712.    14.4925936    0.00007246    -0.0002575
   0.2946926    -6.7508239 C
   0.00000542        13473.   2487331119.    14.3773654    0.00007788    -0.0002796
   0.3162015    -7.3314930 C
   0.00000583        13473.   2309664611.    14.2790475    0.00008329    -0.0003017
   0.3376584    -7.9120861 C
   0.00000625        13473.   2155686970.    14.1942589    0.00008871    -0.0003238
   0.3590632    -8.4926030 C
   0.00000667        13473.   2020956534.    14.1164850    0.00009411    -0.0003459
   0.3803090    -9.0738129 C
   0.00000708        13473.   1902076738.    14.0480322    0.00009951    -0.0003680
   0.4014974    -9.6549875 C
   0.00000750        13473.   1796405808.    13.9875508     0.0001049    -0.0003901
   0.4226346   -10.2360827 C
   0.00000792        13473.   1701858134.    13.9337831     0.0001103    -0.0004122
   0.4437206   -10.8170981 C
   0.00000833        13473.   1616765227.    13.8857228     0.0001157    -0.0004343
   0.4647552   -11.3980336 C
   0.00000875        13473.   1539776407.    13.8425555     0.0001211    -0.0004564
   0.4857384   -11.9788890 C
   0.00000917        13473.   1469786570.    13.8036147     0.0001265    -0.0004785
   0.5066701   -12.5596641 C
   0.00000958        13473.   1405882806.    13.7683499     0.0001319    -0.0005006
   0.5275503   -13.1403586 C
   0.00001000        13473.   1347304356.    13.7363023     0.0001374    -0.0005226
   0.5483789   -13.7209723 C
   0.00001042        13473.   1293412182.    13.7070867     0.0001428    -0.0005447
   0.5691558   -14.3015050 C
   0.00001083        13473.   1243665560.    13.6803768     0.0001482    -0.0005668
   0.5898809   -14.8819566 C
   0.00001125        13473.   1197603872.    13.6558950     0.0001536    -0.0005889
   0.6105542   -15.4623267 C
   0.00001167        13473.   1154832305.    13.6334031     0.0001591    -0.0006109
   0.6311756   -16.0426152 C
   0.00001208        13473.   1115010502.    13.6126960     0.0001645    -0.0006330
   0.6517450   -16.6228219 C
   0.00001250        13473.   1077843485.    13.5935958     0.0001699    -0.0006551
   0.6722624   -17.2029465 C
   0.00001292        13473.   1043074340.    13.5759475     0.0001754    -0.0006771
   0.6927276   -17.7829891 C
   0.00001333        13473.   1010478267.    13.5596157     0.0001808    -0.0006992
   0.7131407   -18.3629489 C
   0.00001375        13473.    979857714.    13.5444811     0.0001862    -0.0007213
   0.7335016   -18.9428259 C
   0.00001417        13473.    951038369.    13.5304387     0.0001917    -0.0007433
   0.7538101   -19.5226200 C
   0.00001458        13473.    923865844.    13.5166310     0.0001971    -0.0007654
   0.7740237   -20.1026539 C
   0.00001500        13473.    898202904.    13.5037671     0.0002026    -0.0007874
   0.7941843   -20.6826115 C
   0.00001542        13473.    873927150.    13.4917955     0.0002080    -0.0008095
   0.8142931   -21.2624808 C
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   0.8343502   -21.8422617 C
   0.00001625        13473.    829110373.    13.4702568     0.0002189    -0.0008536
   0.8543555   -22.4219541 C
   0.00001708        13473.    788665965.    13.4515365     0.0002298    -0.0008977
   0.8942101   -23.5810721 C
   0.00001792        13473.    751983827.    13.4352454     0.0002407    -0.0009418
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0.00002042       13473.    659904174.    13.3980086     0.0002735    -0.0010740
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0.00002125       13473.    634025579.    13.3887262     0.0002845    -0.0011180
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1.2054946   -32.8409726 C
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 0.0002229       29319.    131523341.     9.4591782     0.0021086    -0.0126039
3.9994827   -60.0000000 CY
 0.0002429       29458.    121266939.     9.3069230     0.0022608    -0.0137717
3.9992238   -60.0000000 CY
 0.0002629       29527.    112304620.     9.1600518     0.0024083    -0.0149442
3.9918242   -60.0000000 CY
 0.0002829       29573.    104528496.     9.0337628     0.0025558    -0.0161167
3.9949856   -60.0000000 CY
 0.0003029       29613.     97758474.     8.9316867     0.0027056    -0.0172869
3.9927371   -60.0000000 CY
 0.0003229       29644.     91802310.     8.8332759     0.0028524    -0.0184601
3.9977807   -60.0000000 CY
 0.0003429       29671.     86524153.     8.7485569     0.0030000    -0.0196325
3.9806977   -60.0000000 CYT
 0.0003629       29695.     81822247.     8.6766417     0.0031489    -0.0208036
3.9966288   -60.0000000 CYT
 0.0003829       29716.     77604589.     8.6164019     0.0032994    -0.0219731
3.9927559   -60.0000000 CYT
 0.0004029       29735.     73798533.     8.5664251     0.0034516    -0.0231409
3.9700470   -60.0000000 CYT
 0.0004229       29752.     70349279.     8.5235527     0.0036048    -0.0243077
3.9896757   -60.0000000 CYT
 0.0004429       29768.     67208312.     8.4869607     0.0037590    -0.0254735
3.9991580   -60.0000000 CYT
 0.0004629       29781.     64333632.     8.4570881     0.0039149    -0.0266376
3.9865988   -60.0000000 CYT


Axial Thrust Force =     35.025 kips

     Bending       Bending       Bending      Depth to      Max Comp      Max Tens
   Max Conc      Max Steel  Run
    Curvature      Moment       Stiffness      N Axis        Strain        Strain
    Stress        Stress    Msg
      rad/in.       in-kip        kip-in2         in           in/in         in/in
       ksi           ksi
-------------- ------------- ------------- ------------- ------------- -------------
-------------- ------------- ---
  4.16667E-07         1712.   4109164111.    38.6435700    0.00001610   -0.00001140
   0.0674195     0.4071306
  8.33333E-07         3417.   4099810927.    35.8302177    0.00002986   -0.00002514
   0.1244849     0.7462719
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```
0.00000125        5113.   4090225380.    34.8924949    0.00004362   -0.00003888
0.1811335    1.0854154
0.00000167        6801.   4080581079.    34.4236645    0.00005737   -0.00005263
0.2373653    1.4245605
0.00000208        8481.   4070913202.    34.1423886    0.00007113   -0.00006637
0.2931801    1.7637068
0.00000250       10153.   4061233532.    33.9548898    0.00008489   -0.00008011
0.3485781    2.1028545
0.00000292       11817.   4051547116.    33.8209775    0.00009864   -0.00009386
0.4035592    2.4420035
0.00000333       13473.   4041856479.    33.7205568     0.0001124    -0.0001076
0.4581234    2.7811538
0.00000375       13473.   3592761315.    16.1339999    0.00006050    -0.0001870
0.2474044   -4.8846150 C
0.00000417       13473.   3233485184.    15.8408633    0.00006600    -0.0002090
0.2694053   -5.4627707 C
0.00000458       13473.   2939531985.    15.6015752    0.00007151    -0.0002310
0.2913518   -6.0408531 C
0.00000500       13473.   2694570986.    15.3969983    0.00007698    -0.0002530
0.3131283   -6.6196852 C
0.00000542       13473.   2487296295.    15.2202744    0.00008244    -0.0002751
0.3347611   -7.1990860 C
0.00000583       13473.   2309632274.    15.0692377    0.00008790    -0.0002971
0.3563406   -7.7784123 C
0.00000625       13473.   2155656789.    14.9387517    0.00009337    -0.0003191
0.3778668   -8.3576637 C
0.00000667       13473.   2020928240.    14.8235839    0.00009882    -0.0003412
0.3993027   -8.9371071 C
0.00000708       13473.   1902050108.    14.7180271     0.0001043    -0.0003632
0.4205629   -9.5173594 C
0.00000750       13473.   1796380658.    14.6245533     0.0001097    -0.0003853
0.4417709  -10.0975346 C
0.00000792       13473.   1701834307.    14.5412553     0.0001151    -0.0004074
0.4629265  -10.6776326 C
0.00000833       13473.   1616742592.    14.4666077     0.0001206    -0.0004294
0.4840296  -11.2576531 C
0.00000875       13473.   1539754849.    14.3993755     0.0001260    -0.0004515
0.5050802  -11.8375960 C
0.00000917       13473.   1469765993.    14.3385481     0.0001314    -0.0004736
0.5260782  -12.4174609 C
0.00000958       13473.   1405863123.    14.2832908     0.0001369    -0.0004956
0.5470235  -12.9972479 C
0.00001000       13473.   1347285493.    14.2329081     0.0001423    -0.0005177
0.5679161  -13.5769566 C
0.00001042       13473.   1293394073.    14.1866317     0.0001478    -0.0005397
0.5887484  -14.1566425 C
0.00001083       13473.   1243648148.    14.1418879     0.0001532    -0.0005618
0.6094315  -14.7369652 C
0.00001125       13473.   1197587105.    14.1007093     0.0001586    -0.0005839
0.6300628  -15.3172060 C
0.00001167       13473.   1154816137.    14.0627146     0.0001641    -0.0006059
0.6506420  -15.8973649 C
0.00001208       13473.   1114994891.    14.0275749     0.0001695    -0.0006280
0.6711692  -16.4774414 C
0.00001250       13473.   1077828395.    13.9950054     0.0001749    -0.0006501
0.6916442  -17.0574355 C
0.00001292       13473.   1043059737.    13.9647579     0.0001804    -0.0006721
0.7120671  -17.6373469 C
0.00001333       13473.   1010464120.    13.9366154     0.0001858    -0.0006942
0.7324377  -18.2171753 C
0.00001375       13473.    979843995.    13.9103871     0.0001913    -0.0007162
0.7527559  -18.7969206 C
0.00001417       13473.    951025054.    13.8859046     0.0001967    -0.0007383
0.7730217  -19.3765825 C
0.00001458       13473.    923852910.    13.8630187     0.0002022    -0.0007603
0.7932351  -19.9561608 C
0.00001500       13473.    898190329.    13.8415970     0.0002076    -0.0007824
0.8133958  -20.5356552 C
0.00001542       13473.    873914914.    13.8215213     0.0002131    -0.0008044
0.8335040  -21.1150656 C
0.00001583       13473.    850917154.    13.8026859     0.0002185    -0.0008265
0.8535594  -21.6943917 C
0.00001625       13473.    829098765.    13.7849957     0.0002240    -0.0008485
0.8735621  -22.2736332 C
0.00001708       13473.    788654923.    13.7527179     0.0002349    -0.0008926
0.9134087  -23.4318618 C
0.00001792       13473.    751973299.    13.7240988     0.0002459    -0.0009366
0.9530433  -24.5897494 C
0.00001875       13473.    718552263.    13.6986542     0.0002568    -0.0009807
0.9924653  -25.7472942 C
0.00001958       13473.    687975571.    13.6759821     0.0002678    -0.0010247
1.0316740  -26.9044943 C
0.00002042       13473.    659894935.    13.6557464     0.0002788    -0.0010687
1.0706688  -28.0613476 C
0.00002125       13473.    634016703.    13.6376636     0.0002898    -0.0011127
1.1094492  -29.2178522 C
0.00002208       13473.    610091544.    13.6214930     0.0003008    -0.0011567
1.1480145  -30.3740063 C
0.00002292       13473.    587906397.    13.6070291     0.0003118    -0.0012007
1.1863640  -31.5298077 C
0.00002375       13473.    567278102.    13.5940951     0.0003229    -0.0012446
1.2244970  -32.6852550 C
0.00002458       13473.    548048336.    13.5825384     0.0003339    -0.0012886
1.2624131  -33.8403450 C
0.00002542       13473.    530079538.    13.5722262     0.0003450    -0.0013325
1.3001116  -34.9950762 C
0.00002625       13473.    513251616.    13.5630428     0.0003560    -0.0013765
1.3375917  -36.1494465 C
0.00002708       13533.    499665126.    13.5548866     0.0003671    -0.0014204
1.3748529  -37.3034539 C
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0.00002792       13923.    498724451.    13.5476684     0.0003782    -0.0014643
1.4118944   -38.4570962 C
0.00002875       14313.    497828344.    13.5413091     0.0003893    -0.0015082
1.4487157   -39.6103712 C
0.00002958       14702.    496972991.    13.5357386     0.0004004    -0.0015521
1.4853159   -40.7632768 C
0.00003042       15091.    496154991.    13.5308947     0.0004116    -0.0015959
1.5216945   -41.9158108 C
0.00003125       15480.    495371239.    13.5265142     0.0004227    -0.0016398
1.5578293   -43.0681589 C
0.00003208       15869.    494619083.    13.5227364     0.0004339    -0.0016836
1.5937383   -44.2201582 C
0.00003292       16257.    493896112.    13.5195705     0.0004450    -0.0017275
1.6294266   -45.3717558 C
0.00003375       16646.    493200112.    13.5169738     0.0004562    -0.0017713
1.6648934   -46.5229494 C
0.00003458       17033.    492529084.    13.5149078     0.0004674    -0.0018151
1.7001380   -47.6737362 C
0.00003542       17421.    491881218.    13.5133376     0.0004786    -0.0018589
1.7351596   -48.8241136 C
0.00003625       17808.    491254871.    13.5122316     0.0004898    -0.0019027
1.7699575   -49.9740789 C
0.00003708       18195.    490648546.    13.5115611     0.0005011    -0.0019464
1.8045309   -51.1236294 C
0.00003792       18581.    490060878.    13.5112998     0.0005123    -0.0019902
1.8388792   -52.2727624 C
0.00003875       18968.    489490618.    13.5114237     0.0005236    -0.0020339
1.8730015   -53.4214750 C
0.00003958       19354.    488936622.    13.5119112     0.0005348    -0.0020777
1.9068970   -54.5697644 C
0.00004042       19739.    488397840.    13.5127420     0.0005461    -0.0021214
1.9405649   -55.7176278 C
0.00004125       20125.    487873306.    13.5138977     0.0005574    -0.0021651
1.9740045   -56.8650622 C
0.00004208       20510.    487362130.    13.5153616     0.0005688    -0.0022087
2.0072150   -58.0120648 C
0.00004292       20895.    486863493.    13.5171180     0.0005801    -0.0022524
2.0401956   -59.1586326 C
0.00004375       21268.    486115433.    13.5167354     0.0005914    -0.0022961
2.0726341   -60.0000000 CY
0.00004458       21585.    484159579.    13.5052298     0.0006021    -0.0023404
2.1033520   -60.0000000 CY
0.00004542       21883.    481817697.    13.4901618     0.0006127    -0.0023848
2.1332989   -60.0000000 CY
0.00004625       22150.    478920272.    13.4696839     0.0006230    -0.0024295
2.1622161   -60.0000000 CY
0.00004708       22368.    475074965.    13.4398314     0.0006328    -0.0024747
2.1895511   -60.0000000 CY
0.00004792       22583.    471304706.    13.4106649     0.0006426    -0.0025199
2.2166334   -60.0000000 CY
0.00004875       22798.    467659966.    13.3826935     0.0006524    -0.0025651
2.2435387   -60.0000000 CY
0.00004958       23013.    464134401.    13.3558578     0.0006622    -0.0026103
2.2702665   -60.0000000 CY
0.00005292       23683.    447543353.    13.2195979     0.0006995    -0.0027930
2.3697791   -60.0000000 CY
0.00005625       24259.    431268557.    13.0839788     0.0007360    -0.0029765
2.4640519   -60.0000000 CY
0.00005958       24786.    415983141.    12.9553725     0.0007719    -0.0031606
2.5542775   -60.0000000 CY
0.00006292       25141.    399595253.    12.8027095     0.0008055    -0.0033470
2.6359063   -60.0000000 CY
0.00006625       25493.    384804803.    12.6610270     0.0008388    -0.0035337
2.7144654   -60.0000000 CY
0.00006958       25844.    371413230.    12.5344286     0.0008722    -0.0037203
2.7909397   -60.0000000 CY
0.00007292       26172.    358924843.    12.4156123     0.0009053    -0.0039072
2.8644443   -60.0000000 CY
0.00007625       26382.    345999917.    12.2819286     0.0009365    -0.0040960
2.9314266   -60.0000000 CY
0.00007958       26579.    333982272.    12.1536591     0.0009672    -0.0042853
2.9953946   -60.0000000 CY
0.00008292       26773.    322891900.    12.0311755     0.0009976    -0.0044749
3.0566155   -60.0000000 CY
0.00008625       26966.    312649145.    11.9191887     0.0010280    -0.0046645
3.1160889   -60.0000000 CY
0.00008958       27158.    303159269.    11.8165390     0.0010586    -0.0048539
3.1737994   -60.0000000 CY
0.00009292       27349.    294341117.    11.7222331     0.0010892    -0.0050433
3.2297310   -60.0000000 CY
0.00009625       27529.    286012988.    11.6325552     0.0011196    -0.0052329
3.2833735   -60.0000000 CY
0.00009958       27653.    277688467.    11.5344410     0.0011486    -0.0054239
3.3325913   -60.0000000 CY
 0.0001029       27749.    269624494.    11.4293001     0.0011763    -0.0056162
3.3777566   -60.0000000 CY
 0.0001063       27844.    262061478.    11.3314765     0.0012040    -0.0058085
3.4214632   -60.0000000 CY
 0.0001096       27939.    254953635.    11.2403097     0.0012318    -0.0060007
3.4636984   -60.0000000 CY
 0.0001129       28033.    248260586.    11.1552171     0.0012596    -0.0061929
3.5044495   -60.0000000 CY
 0.0001163       28126.    241946584.    11.0756831     0.0012875    -0.0063850
3.5437037   -60.0000000 CY
 0.0001196       28219.    235979863.    11.0012498     0.0013156    -0.0065769
3.5814478   -60.0000000 CY
 0.0001229       28312.    230332103.    10.9315093     0.0013437    -0.0067688
3.6176683   -60.0000000 CY
 0.0001263       28402.    224969148.    10.8634871     0.0013715    -0.0069610
3.6519397   -60.0000000 CY
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 0.0001296        28491.    219863495.    10.7953104     0.0013989    -0.0071536
3.6840381   -60.0000000 CY
 0.0001329        28578.    215009975.    10.7311621     0.0014264    -0.0073461
3.7146755   -60.0000000 CY
 0.0001363        28666.    210390034.    10.6707541     0.0014539    -0.0075386
3.7438389   -60.0000000 CY
 0.0001396        28752.    205986883.    10.6138258     0.0014815    -0.0077310
3.7715145   -60.0000000 CY
 0.0001429        28815.    201623774.    10.5524647     0.0015081    -0.0079244
3.7966409   -60.0000000 CY
 0.0001462        28871.    197406472.    10.4919730     0.0015345    -0.0081180
3.8200505   -60.0000000 CY
 0.0001496        28911.    193278987.    10.4299394     0.0015601    -0.0083124
3.8414944   -60.0000000 CY
 0.0001529        28952.    189328946.    10.3710890     0.0015859    -0.0085066
3.8616360   -60.0000000 CY
 0.0001562        28991.    185544956.    10.3152227     0.0016118    -0.0087007
3.8804637   -60.0000000 CY
 0.0001596        29031.    181916576.    10.2621583     0.0016377    -0.0088948
3.8979657   -60.0000000 CY
 0.0001629        29069.    178427518.    10.2093510     0.0016633    -0.0090892
3.9138890   -60.0000000 CY
 0.0001662        29105.    175064958.    10.1551089     0.0016883    -0.0092842
3.9281270   -60.0000000 CY
 0.0001696        29140.    171832535.    10.1034343     0.0017134    -0.0094791
3.9411171   -60.0000000 CY
 0.0001729        29175.    168722700.    10.0541837     0.0017385    -0.0096740
3.9528479   -60.0000000 CY
 0.0001762        29210.    165728469.    10.0072246     0.0017638    -0.0098687
3.9633076   -60.0000000 CY
 0.0001796        29244.    162843375.     9.9624344     0.0017891    -0.0100634
3.9724842   -60.0000000 CY
 0.0001829        29278.    160061422.     9.9196997     0.0018145    -0.0102580
3.9803655   -60.0000000 CY
 0.0002029        29473.    145248483.     9.7011934     0.0019685    -0.0114240
3.9952030   -60.0000000 CY
 0.0002229        29651.    133015032.     9.5308300     0.0021246    -0.0125879
3.9944750   -60.0000000 CY
 0.0002429        29793.    122647238.     9.3767775     0.0022778    -0.0137547
3.9999026   -60.0000000 CY
 0.0002629        29864.    113586966.     9.2282634     0.0024263    -0.0149262
3.9949014   -60.0000000 CY
 0.0002829        29908.    105714258.     9.0989706     0.0025743    -0.0160982
3.9892016   -60.0000000 CY
 0.0003029        29947.     98862522.     8.9937986     0.0027244    -0.0172681
3.9957393   -60.0000000 CY
 0.0003229        29981.     92845079.     8.9068882     0.0028762    -0.0184363
3.9903280   -60.0000000 CY
 0.0003429        30006.     87503728.     8.8193064     0.0030243    -0.0196082
3.9871838   -60.0000000 CYT
 0.0003629        30030.     82745446.     8.7449730     0.0031737    -0.0207788
3.9989908   -60.0000000 CYT
 0.0003829        30050.     78475908.     8.6833266     0.0033250    -0.0219475
3.9847213   -60.0000000 CYT
 0.0004029        30068.     74624978.     8.6312428     0.0034777    -0.0231148
3.9788650   -60.0000000 CYT
 0.0004229        30084.     71135001.     8.5865591     0.0036314    -0.0242811
3.9946189   -60.0000000 CYT
 0.0004429        30099.     67956888.     8.5484234     0.0037862    -0.0254463
4.0000000   -60.0000000 CYT
 0.0004629        30099.     65020857.     8.6109392     0.0039861    -0.0265664
3.9642696   -60.0000000 CYT


-------------------------------------------------------------------------------
   Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1
-------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.
  No.              kips                in-kip               Strain
 ----        ----------------     ------------------     ------------
   1               13.890             29468.186           0.00300000
   2               21.891             29670.570           0.00300000
   3               35.025             30002.344           0.00300000

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318, Section
9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial     Resist.       Nominal     Ult. (Fac)    Ult. (Fac)   Bend. Stiff.
Load      Factor      Moment Cap    Ax. Thrust    Moment Cap    at Ult Mom
 No.    for Moment      in-kips        kips         in-kips      kip-in^2
-----  ------------  ------------  ------------  ------------  ------------
   1       0.65            29468.      9.028500        19154.    478368257.
   2       0.65            29671.     14.229150        19286.    482283662.
   3       0.65            30002.     22.766250        19502.    488730170.
```

1	0.75	29468.	9.723000	22101.	462491641.
2	0.75	29671.	15.323700	22253.	466359420.
3	0.75	30002.	24.517500	22502.	472733941.
1	0.90	29468.	10.417500	26521.	303931279.
2	0.90	29671.	16.418250	26704.	306543473.
3	0.90	30002.	26.268750	27002.	310864093.

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent Top Depth Below Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer lbs	F1 Integral for Layer lbs
1	0.5000	0.00	N.A.	No	0.00	9670.
2	2.5000	1.3782	Yes	No	9670.	21218.
3	3.5000	2.1831	Yes	No	30887.	133411.
4	6.0000	5.8100	Yes	No	164299.	190587.
5	8.5000	8.8541	Yes	No	354885.	531402.
6	13.5000	14.9471	Yes	No	886287.	665036.
7	18.5000	15.3183	Yes	No	1551323.	431069.
8	23.5000	23.0000	No	No	1982391.	0.00
9	28.5000	28.0000	No	No	0.00	0.00
10	33.5000	33.0000	No	No	0.00	0.00
11	38.5000	38.0000	No	No	0.00	0.00
12	43.5000	43.0000	No	No	0.00	0.00
13	48.5000	48.0000	No	No	0.00	N.A.

Notes: The F0 integral of Layer n+1 equals the sum of the F0 and F1 integrals for Layer n. Layering correction equivalent depths are computed only for soil types with both shallow-depth and deep-depth expressions for peak lateral load transfer. These soil types are soft and stiff clays, non-liquefied sands, and cemented c-phi soil.

Computed Values of Pile Loading and Deflection for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 22160.0 lbs
Applied moment at pile head = 15202288.0 in-lbs
Axial thrust load on pile head = 35025.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Spr. Distrib. p
Es*h	Lat. Load						
feet	inches	in-lbs	lbs	radians	psi*	in-lb^2	
lb/inch	lb/inch	lb/inch					
0.00	0.3309	1.52E+07	22160.	-0.00428	0.00	4.96E+11	
0.00	0.00	0.00					
0.2050	0.3204	1.53E+07	22160.	-0.00421	0.00	4.96E+11	
0.00	0.00	0.00					
0.4100	0.3102	1.53E+07	22160.	-0.00413	0.00	4.96E+11	
0.00	0.00	0.00					
0.6150	0.3001	1.54E+07	22152.	-0.00406	0.00	4.96E+11	
-6.4592	52.9453	0.00					
0.8200	0.2902	1.54E+07	22123.	-0.00398	0.00	4.95E+11	
-17.3812	147.3261	0.00					
1.0250	0.2805	1.55E+07	22067.	-0.00390	0.00	4.95E+11	
-27.5631	241.7068	0.00					
1.2300	0.2710	1.55E+07	21988.	-0.00383	0.00	4.95E+11	
-37.0266	336.0876	0.00					
1.4350	0.2617	1.56E+07	21886.	-0.00375	0.00	4.95E+11	
-45.7937	430.4683	0.00					
1.6400	0.2526	1.56E+07	21764.	-0.00367	0.00	4.95E+11	
-53.8863	524.8491	0.00					
1.8450	0.2436	1.57E+07	21622.	-0.00359	0.00	4.95E+11	
-61.3266	619.2298	0.00					
2.0500	0.2349	1.57E+07	21463.	-0.00352	0.00	4.95E+11	
-68.1366	713.6106	0.00					
2.2550	0.2263	1.58E+07	21287.	-0.00344	0.00	4.95E+11	
-74.3389	807.9913	0.00					
2.4600	0.2180	1.59E+07	21098.	-0.00336	0.00	4.95E+11	
-79.9556	902.3721	0.00					
2.6650	0.2098	1.59E+07	20176.	-0.00328	0.00	4.95E+11	
-669.5263	7850.	0.00					
2.8700	0.2018	1.60E+07	18414.	-0.00320	0.00	4.94E+11	
-763.0213	9300.	0.00					
3.0750	0.1941	1.60E+07	16422.	-0.00312	0.00	4.94E+11	
-856.3219	10855.	0.00					
3.2800	0.1865	1.60E+07	14201.	-0.00304	0.00	4.94E+11	
-949.0512	12520.	0.00					
3.4850	0.1791	1.61E+07	11754.	-0.00296	0.00	4.94E+11	
-1041.	14297.	0.00					
3.6900	0.1719	1.61E+07	8929.	-0.00288	0.00	4.94E+11	
-1256.	17971.	0.00					

3.8950	0.1649	1.61E+07	5705.	-0.00280	0.00	4.94E+11
-1365.	20365.	0.00				
4.1000	0.1581	1.61E+07	2213.	-0.00272	0.00	4.94E+11
-1474.	22929.	0.00				
4.3050	0.1515	1.61E+07	-1550.	-0.00264	0.00	4.94E+11
-1585.	25740.	0.00				
4.5100	0.1451	1.61E+07	-5586.	-0.00256	0.00	4.94E+11
-1696.	28744.	0.00				
4.7150	0.1389	1.61E+07	-9891.	-0.00248	0.00	4.94E+11
-1804.	31950.	0.00				
4.9200	0.1329	1.61E+07	-14460.	-0.00240	0.00	4.94E+11
-1911.	35365.	0.00				
5.1250	0.1271	1.60E+07	-19289.	-0.00232	0.00	4.94E+11
-2015.	38998.	0.00				
5.3300	0.1215	1.60E+07	-24371.	-0.00224	0.00	4.94E+11
-2117.	42857.	0.00				
5.5350	0.1161	1.59E+07	-29700.	-0.00216	0.00	4.95E+11
-2216.	46951.	0.00				
5.7400	0.1109	1.58E+07	-35268.	-0.00208	0.00	4.95E+11
-2311.	51286.	0.00				
5.9450	0.1058	1.57E+07	-41068.	-0.00200	0.00	4.95E+11
-2404.	55872.	0.00				
6.1500	0.1010	1.56E+07	-45788.	-0.00193	0.00	4.95E+11
-1434.	34930.	0.00				
6.3550	0.09636	1.55E+07	-49296.	-0.00185	0.00	4.95E+11
-1418.	36198.	0.00				
6.5600	0.09190	1.54E+07	-52762.	-0.00177	0.00	4.96E+11
-1400.	37465.	0.00				
6.7650	0.08763	1.52E+07	-56180.	-0.00170	0.00	4.96E+11
-1380.	38733.	0.00				
6.9700	0.08355	1.51E+07	-59549.	-0.00162	0.00	4.96E+11
-1359.	40000.	0.00				
7.1750	0.07966	1.50E+07	-62863.	-0.00155	0.00	4.96E+11
-1336.	41267.	0.00				
7.3800	0.07594	1.48E+07	-66122.	-0.00147	0.00	4.97E+11
-1313.	42535.	0.00				
7.5850	0.07241	1.46E+07	-69323.	-0.00140	0.00	4.97E+11
-1289.	43802.	0.00				
7.7900	0.06905	1.45E+07	-72465.	-0.00133	0.00	4.98E+11
-1265.	45070.	0.00				
7.9950	0.06587	1.43E+07	-75547.	-0.00126	0.00	4.98E+11
-1241.	46337.	0.00				
8.2000	0.06286	1.41E+07	-78569.	-0.00119	0.00	4.98E+11
-1216.	47604.	0.00				
8.4050	0.06003	1.39E+07	-81532.	-0.00112	0.00	4.99E+11
-1193.	48872.	0.00				
8.6100	0.05736	1.37E+07	-84125.	-0.00105	0.00	4.99E+11
-915.4690	39261.	0.00				
8.8150	0.05486	1.35E+07	-86355.	-0.00101	0.00	3.12E+12
-897.6743	40254.	0.00				
9.0200	0.05238	1.33E+07	-88540.	-0.00100	0.00	4.04E+12
-878.2992	41246.	0.00				
9.2250	0.04993	1.30E+07	-90675.	-9.94E-04	0.00	4.04E+12
-857.2675	42239.	0.00				
9.4300	0.04749	1.28E+07	-92756.	-9.86E-04	0.00	4.05E+12
-834.5973	43231.	0.00				
9.6350	0.04507	1.26E+07	-94779.	-9.79E-04	0.00	4.05E+12
-810.3059	44224.	0.00				
9.8400	0.04268	1.23E+07	-96740.	-9.71E-04	0.00	4.05E+12
-784.4102	45216.	0.00				
10.0450	0.04030	1.21E+07	-98636.	-9.64E-04	0.00	4.05E+12
-756.9262	46208.	0.00				
10.2500	0.03793	1.19E+07	-100462.	-9.56E-04	0.00	4.05E+12
-727.8691	47201.	0.00				
10.4550	0.03559	1.16E+07	-102215.	-9.49E-04	0.00	4.05E+12
-697.2535	48193.	0.00				
10.6600	0.03326	1.14E+07	-103891.	-9.42E-04	0.00	4.05E+12
-665.0934	49186.	0.00				
10.8650	0.03095	1.11E+07	-105486.	-9.36E-04	0.00	4.06E+12
-631.4020	50178.	0.00				
11.0700	0.02866	1.08E+07	-106996.	-9.29E-04	0.00	4.06E+12
-596.1915	51171.	0.00				
11.2750	0.02638	1.06E+07	-108417.	-9.22E-04	0.00	4.06E+12
-559.4736	52163.	0.00				
11.4800	0.02412	1.03E+07	-109746.	-9.16E-04	0.00	4.06E+12
-521.2593	53155.	0.00				
11.6850	0.02188	1.00E+07	-110980.	-9.10E-04	0.00	4.06E+12
-481.5586	54148.	0.00				
11.8900	0.01965	9759115.	-112114.	-9.04E-04	0.00	4.06E+12
-440.3810	55140.	0.00				
12.0950	0.01743	9482060.	-113145.	-8.98E-04	0.00	4.06E+12
-397.7351	56133.	0.00				
12.3000	0.01523	9202598.	-114069.	-8.92E-04	0.00	4.07E+12
-353.6288	57125.	0.00				
12.5050	0.01304	8920995.	-114883.	-8.87E-04	0.00	4.07E+12
-308.0692	58118.	0.00				
12.7100	0.01086	8637527.	-115583.	-8.82E-04	0.00	4.07E+12
-261.0627	59110.	0.00				
12.9150	0.00870	8352479.	-116166.	-8.76E-04	0.00	4.07E+12
-212.6149	60102.	0.00				
13.1200	0.00655	8066144.	-116627.	-8.72E-04	0.00	4.07E+12
-162.7307	61095.	0.00				
13.3250	0.00441	7778823.	-116964.	-8.67E-04	0.00	4.07E+12
-111.4143	62087.	0.00				
13.5300	0.00229	7490828.	-117155.	-8.62E-04	0.00	4.08E+12
-43.6074	46886.	0.00				
13.7350	1.73E-04	7202569.	-117213.	-8.58E-04	0.00	4.08E+12
-3.3432	47623.	0.00				
13.9400	-0.00193	6914289.	-117170.	-8.53E-04	0.00	4.08E+12
37.9795	48361.	0.00				

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   14.1450   -0.00403   6626239.   -117025.  -8.49E-04       0.00   4.08E+12
80.3596     49099.       0.00
   14.3500   -0.00611   6338674.   -116774.  -8.45E-04       0.00   4.08E+12
123.7967     49836.       0.00
   14.5550   -0.00819   6051858.   -116414.  -8.42E-04       0.00   4.08E+12
168.2907     50574.       0.00
   14.7600   -0.01025   5766061.   -115944.  -8.38E-04       0.00   4.09E+12
213.8422     51312.       0.00
   14.9650   -0.01231   5481557.   -115361.  -8.35E-04       0.00   4.09E+12
260.4522     52049.       0.00
   15.1700   -0.01436   5198629.   -114662.  -8.32E-04       0.00   4.09E+12
308.1219     52787.       0.00
   15.3750   -0.01640   4917566.   -113844.  -8.29E-04       0.00   4.09E+12
356.8535     53525.       0.00
   15.5800   -0.01844   4638661.   -112904.  -8.26E-04       0.00   4.09E+12
406.6490     54262.       0.00
   15.7850   -0.02046   4362218.   -111842.  -8.23E-04       0.00   4.09E+12
457.5114     55000.       0.00
   15.9900   -0.02248   4088543.   -110652.  -8.20E-04       0.00   4.10E+12
509.4437     55737.       0.00
   16.1950   -0.02450   3817950.   -109334.  -8.18E-04       0.00   4.10E+12
562.4494     56475.       0.00
   16.4000   -0.02651   3550761.   -107884.  -8.16E-04       0.00   4.10E+12
616.5325     57213.       0.00
   16.6050   -0.02851   3287303.   -106299.  -8.14E-04       0.00   4.10E+12
671.6973     57950.       0.00
   16.8100   -0.03051   3027910.   -104578.  -8.12E-04       0.00   4.10E+12
727.9483     58688.       0.00
   17.0150   -0.03251   2772922.   -102716.  -8.10E-04       0.00   4.10E+12
785.2905     59426.       0.00
   17.2200   -0.03450   2522685.   -100713.  -8.09E-04       0.00   4.10E+12
843.7291     60163.       0.00
   17.4250   -0.03649   2277555.    -98564.  -8.07E-04       0.00   4.10E+12
903.2696     60901.       0.00
   17.6300   -0.03847   2037891.    -96267.  -8.06E-04       0.00   4.11E+12
963.9176     61639.       0.00
   17.8350   -0.04045   1804060.    -93820.  -8.05E-04       0.00   4.11E+12
1026.     62376.       0.00
   18.0400   -0.04243   1576435.    -91219.  -8.04E-04       0.00   4.11E+12
1089.     63114.       0.00
   18.2450   -0.04440   1355399.    -88463.  -8.03E-04       0.00   4.11E+12
1153.     63852.       0.00
   18.4500   -0.04638   1141337.    -85547.  -8.02E-04       0.00   4.11E+12
1218.     64589.       0.00
   18.6550   -0.04835    934644.    -80372.  -8.01E-04       0.00   4.11E+12
2990.    152117.       0.00
   18.8600   -0.05032    746044.    -72824.  -8.01E-04       0.00   4.11E+12
3147.    153835.       0.00
   19.0650   -0.05229    576488.    -64886.  -8.01E-04       0.00   4.11E+12
3307.    155553.       0.00
   19.2700   -0.05426    426941.    -56553.  -8.00E-04       0.00   4.11E+12
3469.    157270.       0.00
   19.4750   -0.05623    298387.    -47816.  -8.00E-04       0.00   4.11E+12
3634.    158988.       0.00
   19.6800   -0.05820    191824.    -38670.  -8.00E-04       0.00   4.11E+12
3802.    160706.       0.00
   19.8850   -0.06016    108269.    -29206.  -8.00E-04       0.00   4.11E+12
3892.    159155.       0.00
   20.0900   -0.06213     48268.    -19576.  -8.00E-04       0.00   4.11E+12
3937.    155882.       0.00
   20.2950   -0.06410     12093.     -9839.  -8.00E-04       0.00   4.11E+12
3979.    152724.       0.00
   20.5000   -0.06607       0.00       0.00  -8.00E-04       0.00   4.11E+12
4019.     74834.       0.00

* This analysis computed pile response using nonlinear moment-curvature rela-
  tionships. Values of total stress due to combined axial and bending stresses
  are computed only for elastic sections only and do not equal the actual
  stresses in concrete and steel. Stresses in concrete and steel may be inter-
  polated from the output for nonlinear bending properties relative to the
  magnitude of bending moment developed in the pile.


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.33089507 inches
Computed slope at pile head      =    -0.00428466 radians
Maximum bending moment           =      16120892. inch-lbs
Maximum shear force              =       -117213. lbs
Depth of maximum bending moment  =     4.30500000 feet below pile head
Depth of maximum shear force     =    13.73500000 feet below pile head
Number of iterations             =            124
Number of zero deflection points =              1


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                 Computed Values of Pile Loading and Deflection
                   for Lateral Loading for Load Case Number 2
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Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head                                =       9972.0 lbs
Applied moment at pile head                             =    6841030.0 in-lbs
Axial thrust load on pile head                          =      21891.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
```

Es*h feet	Lat. Load inches	in-lbs	lbs	radians	psi*	in-lb^2 lb/inch	lb/inch	lb/inch
0.00	0.07571	6841030.	9972.	-5.99E-04	0.00	4.08E+12	0.00	0.00	0.00
0.2050	0.07424	6865593.	9972.	-5.95E-04	0.00	4.08E+12	0.00	0.00	0.00
0.4100	0.07279	6890156.	9972.	-5.91E-04	0.00	4.08E+12	0.00	0.00	0.00
0.6150	0.07134	6914719.	9970.	-5.86E-04	0.00	4.08E+12	-1.5354	52.9453	0.00
0.8200	0.06990	6939272.	9963.	-5.82E-04	0.00	4.08E+12	-4.1863	147.3261	0.00
1.0250	0.06847	6963800.	9950.	-5.78E-04	0.00	4.08E+12	-6.7280	241.7068	0.00
1.2300	0.06706	6988287.	9930.	-5.74E-04	0.00	4.08E+12	-9.1615	336.0876	0.00
1.4350	0.06565	7012718.	9905.	-5.70E-04	0.00	4.08E+12	-11.4882	430.4683	0.00
1.6400	0.06426	7037079.	9874.	-5.65E-04	0.00	4.08E+12	-13.7092	524.8491	0.00
1.8450	0.06287	7061358.	9837.	-5.61E-04	0.00	4.08E+12	-15.8257	619.2298	0.00
2.0500	0.06150	7085540.	9796.	-5.57E-04	0.00	4.08E+12	-17.8389	713.6106	0.00
2.2550	0.06013	7109614.	9750.	-5.53E-04	0.00	4.08E+12	-19.7500	807.9913	0.00
2.4600	0.05878	7133568.	9699.	-5.48E-04	0.00	4.08E+12	-21.5604	902.3721	0.00
2.6650	0.05743	7157392.	9103.	-5.44E-04	0.00	4.08E+12	-463.0113	19832.	0.00
2.8700	0.05610	7178413.	7924.	-5.40E-04	0.00	4.08E+12	-495.0914	21710.	0.00
3.0750	0.05478	7196438.	6669.	-5.35E-04	0.00	4.08E+12	-525.2389	23587.	0.00
3.2800	0.05347	7211284.	5343.	-5.31E-04	0.00	4.08E+12	-553.4785	25465.	0.00
3.4850	0.05217	7222781.	3949.	-5.27E-04	0.00	4.08E+12	-579.8349	27343.	0.00
3.6900	0.05088	7230768.	2290.	-5.22E-04	0.00	4.08E+12	-768.7227	37170.	0.00
3.8950	0.04960	7234103.	363.3943	-5.18E-04	0.00	4.08E+12	-797.5520	39558.	0.00
4.1000	0.04833	7232612.	-1631.	-5.13E-04	0.00	4.08E+12	-824.0799	41947.	0.00
4.3050	0.04707	7226133.	-3688.	-5.09E-04	0.00	4.08E+12	-848.3379	44336.	0.00
4.5100	0.04582	7214520.	-5802.	-5.05E-04	0.00	4.08E+12	-870.3569	46724.	0.00
4.7150	0.04459	7197640.	-7968.	-5.00E-04	0.00	4.08E+12	-890.1678	49113.	0.00
4.9200	0.04336	7175373.	-10179.	-4.96E-04	0.00	4.08E+12	-907.8013	51502.	0.00
5.1250	0.04215	7147612.	-12431.	-4.92E-04	0.00	4.08E+12	-923.2878	53890.	0.00
5.3300	0.04094	7114263.	-14719.	-4.87E-04	0.00	4.08E+12	-936.6574	56279.	0.00
5.5350	0.03975	7075246.	-17037.	-4.83E-04	0.00	4.08E+12	-947.9397	58667.	0.00
5.7400	0.03856	7030492.	-19381.	-4.79E-04	0.00	4.08E+12	-957.1640	61056.	0.00
5.9450	0.03739	6979945.	-21744.	-4.75E-04	0.00	4.08E+12	-964.3592	63445.	0.00
6.1500	0.03623	6923563.	-23563.	-4.71E-04	0.00	4.08E+12	-514.4336	34930.	0.00
6.3550	0.03508	6864066.	-24831.	-4.66E-04	0.00	4.08E+12	-516.1429	36198.	0.00
6.5600	0.03393	6801447.	-26101.	-4.62E-04	0.00	4.08E+12	-516.8198	37465.	0.00
6.7650	0.03280	6735699.	-27372.	-4.58E-04	0.00	4.08E+12	-516.4788	38733.	0.00
6.9700	0.03168	6666825.	-28641.	-4.54E-04	0.00	4.08E+12	-515.1336	40000.	0.00
7.1750	0.03057	6594835.	-29905.	-4.50E-04	0.00	4.08E+12	-512.7982	41267.	0.00
7.3800	0.02947	6519740.	-31163.	-4.46E-04	0.00	4.08E+12	-509.4858	42535.	0.00
7.5850	0.02837	6441562.	-32411.	-4.42E-04	0.00	4.08E+12	-505.2095	43802.	0.00
7.7900	0.02729	6360327.	-33647.	-4.38E-04	0.00	4.08E+12	-499.9823	45070.	0.00
7.9950	0.02622	6276065.	-34870.	-4.35E-04	0.00	4.08E+12	-493.8165	46337.	0.00
8.2000	0.02515	6188816.	-36076.	-4.31E-04	0.00	4.08E+12	-486.7243	47604.	0.00
8.4050	0.02410	6098620.	-37263.	-4.27E-04	0.00	4.08E+12	-478.7175	48872.	0.00
8.6100	0.02305	6005527.	-38304.	-4.23E-04	0.00	4.08E+12	-367.8833	39261.	0.00
8.8150	0.02201	5910208.	-39200.	-4.20E-04	0.00	4.09E+12	-360.2078	40254.	0.00
9.0200	0.02098	5812709.	-40076.	-4.16E-04	0.00	4.09E+12	-351.8420	41246.	0.00
9.2250	0.01996	5713080.	-40930.	-4.13E-04	0.00	4.09E+12	-342.7941	42239.	0.00
9.4300	0.01895	5611377.	-41761.	-4.10E-04	0.00	4.09E+12	-333.0720	43231.	0.00
9.6350	0.01795	5507658.	-42568.	-4.06E-04	0.00	4.09E+12			

-322.6830	44224.	0.00				
9.8400	0.01695	5401986.	-43348.	-4.03E-04	0.00	4.09E+12
-311.6345	45216.	0.00				
10.0450	0.01597	5294428.	-44101.	-4.00E-04	0.00	4.09E+12
-299.9333	46208.	0.00				
10.2500	0.01499	5185054.	-44823.	-3.97E-04	0.00	4.09E+12
-287.5860	47201.	0.00				
10.4550	0.01402	5073940.	-45515.	-3.93E-04	0.00	4.09E+12
-274.5989	48193.	0.00				
10.6600	0.01305	4961165.	-46173.	-3.90E-04	0.00	4.09E+12
-260.9780	49186.	0.00				
10.8650	0.01210	4846809.	-46798.	-3.87E-04	0.00	4.09E+12
-246.7289	50178.	0.00				
11.0700	0.01115	4730961.	-47387.	-3.85E-04	0.00	4.09E+12
-231.8571	51171.	0.00				
11.2750	0.01020	4613709.	-47938.	-3.82E-04	0.00	4.09E+12
-216.3674	52163.	0.00				
11.4800	0.00927	4495148.	-48450.	-3.79E-04	0.00	4.09E+12
-200.2646	53155.	0.00				
11.6850	0.00834	4375374.	-48922.	-3.76E-04	0.00	4.09E+12
-183.5531	54148.	0.00				
11.8900	0.00742	4254490.	-49353.	-3.74E-04	0.00	4.09E+12
-166.2370	55140.	0.00				
12.0950	0.00650	4132600.	-49740.	-3.71E-04	0.00	4.09E+12
-148.3200	56133.	0.00				
12.3000	0.00559	4009811.	-50082.	-3.69E-04	0.00	4.10E+12
-129.8054	57125.	0.00				
12.5050	0.00469	3886238.	-50377.	-3.66E-04	0.00	4.10E+12
-110.6963	58118.	0.00				
12.7100	0.00379	3761994.	-50626.	-3.64E-04	0.00	4.10E+12
-90.9956	59110.	0.00				
12.9150	0.00289	3637199.	-50824.	-3.62E-04	0.00	4.10E+12
-70.7056	60102.	0.00				
13.1200	0.00201	3511976.	-50973.	-3.60E-04	0.00	4.10E+12
-49.8285	61095.	0.00				
13.3250	0.00112	3386452.	-51069.	-3.58E-04	0.00	4.10E+12
-28.3661	62087.	0.00				
13.5300	2.46E-04	3260756.	-51110.	-3.56E-04	0.00	4.10E+12
-4.6974	46886.	0.00				
13.7350	-6.26E-04	3135032.	-51100.	-3.54E-04	0.00	4.10E+12
12.1222	47623.	0.00				
13.9400	-0.00149	3009380.	-51049.	-3.52E-04	0.00	4.10E+12
29.3741	48361.	0.00				
14.1450	-0.00236	2883907.	-50955.	-3.50E-04	0.00	4.10E+12
47.0580	49099.	0.00				
14.3500	-0.00322	2758718.	-50817.	-3.48E-04	0.00	4.10E+12
65.1735	49836.	0.00				
14.5550	-0.00407	2633923.	-50634.	-3.47E-04	0.00	4.10E+12
83.7208	50574.	0.00				
14.7600	-0.00492	2509635.	-50405.	-3.45E-04	0.00	4.10E+12
102.6999	51312.	0.00				
14.9650	-0.00577	2385968.	-50128.	-3.44E-04	0.00	4.10E+12
122.1113	52049.	0.00				
15.1700	-0.00662	2263040.	-49804.	-3.42E-04	0.00	4.10E+12
141.9555	52787.	0.00				
15.3750	-0.00746	2140971.	-49429.	-3.41E-04	0.00	4.11E+12
162.2334	53525.	0.00				
15.5800	-0.00829	2019884.	-49005.	-3.40E-04	0.00	4.11E+12
182.9460	54262.	0.00				
15.7850	-0.00913	1899904.	-48529.	-3.39E-04	0.00	4.11E+12
204.0943	55000.	0.00				
15.9900	-0.00996	1781159.	-48000.	-3.38E-04	0.00	4.11E+12
225.6798	55737.	0.00				
16.1950	-0.01079	1663780.	-47418.	-3.37E-04	0.00	4.11E+12
247.7039	56475.	0.00				
16.4000	-0.01162	1547900.	-46781.	-3.36E-04	0.00	4.11E+12
270.1684	57213.	0.00				
16.6050	-0.01244	1433654.	-46088.	-3.35E-04	0.00	4.11E+12
293.0750	57950.	0.00				
16.8100	-0.01326	1321182.	-45338.	-3.34E-04	0.00	4.11E+12
316.4258	58688.	0.00				
17.0150	-0.01408	1210625.	-44531.	-3.33E-04	0.00	4.11E+12
340.2227	59426.	0.00				
17.2200	-0.01490	1102127.	-43664.	-3.32E-04	0.00	4.11E+12
364.4681	60163.	0.00				
17.4250	-0.01572	995834.	-42737.	-3.32E-04	0.00	4.11E+12
389.1643	60901.	0.00				
17.6300	-0.01654	891896.	-41749.	-3.31E-04	0.00	4.11E+12
414.3138	61639.	0.00				
17.8350	-0.01735	790466.	-40698.	-3.31E-04	0.00	4.11E+12
439.9191	62376.	0.00				
18.0400	-0.01816	691698.	-39584.	-3.30E-04	0.00	4.11E+12
465.9828	63114.	0.00				
18.2450	-0.01897	595749.	-38405.	-3.30E-04	0.00	4.11E+12
492.5078	63852.	0.00				
18.4500	-0.01979	502781.	-37160.	-3.30E-04	0.00	4.11E+12
519.4967	64589.	0.00				
18.6550	-0.02060	412957.	-34955.	-3.29E-04	0.00	4.11E+12
1274.	152117.	0.00				
18.8600	-0.02141	330840.	-31741.	-3.29E-04	0.00	4.11E+12
1339.	153835.	0.00				
19.0650	-0.02222	256825.	-28367.	-3.29E-04	0.00	4.11E+12
1405.	155553.	0.00				
19.2700	-0.02302	191310.	-24829.	-3.29E-04	0.00	4.11E+12
1472.	157270.	0.00				
19.4750	-0.02383	134703.	-21124.	-3.29E-04	0.00	4.11E+12
1540.	158988.	0.00				
19.6800	-0.02464	87418.	-17249.	-3.29E-04	0.00	4.11E+12
1610.	160706.	0.00				
19.8850	-0.02545	49874.	-13202.	-3.29E-04	0.00	4.11E+12

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1680.    162423.       0.00
   20.0900   -0.02626     22500.     -8980.  -3.29E-04       0.00   4.11E+12
1752.    164141.       0.00
   20.2950   -0.02707      5728.     -4580.  -3.29E-04       0.00   4.11E+12
1825.    165859.       0.00
   20.5000   -0.02788       0.00       0.00  -3.29E-04       0.00   4.11E+12
1899.     83788.       0.00

* This analysis computed pile response using nonlinear moment-curvature rela-
  tionships. Values of total stress due to combined axial and bending stresses
  are computed only for elastic sections only and do not equal the actual
  stresses in concrete and steel. Stresses in concrete and steel may be inter-
  polated from the output for nonlinear bending properties relative to the
  magnitude of bending moment developed in the pile.


Output Summary for Load Case No. 2:

Pile-head deflection             =     0.07571248 inches
Computed slope at pile head      =    -0.00059881 radians
Maximum bending moment           =       7234103. inch-lbs
Maximum shear force              =        -51110. lbs
Depth of maximum bending moment  =     3.89500000 feet below pile head
Depth of maximum shear force     =    13.53000000 feet below pile head
Number of iterations             =              6
Number of zero deflection points =              1



--------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 3
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Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head                              =      36672.0 lbs
Applied moment at pile head                           =    9359280.0 in-lbs
Axial thrust load on pile head                        =      13890.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
      Es*h     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      in-lb^2
lb/inch    lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ---------- ----------
     0.00     0.1487   9359280.     36672.   -0.00108       0.00   4.07E+12
0.00       0.00       0.00
    0.2050     0.1461   9449530.     36672.   -0.00108       0.00   4.07E+12
0.00       0.00       0.00
    0.4100     0.1434   9539780.     36672.   -0.00107       0.00   4.06E+12
0.00       0.00       0.00
    0.6150     0.1408   9630030.     36668.   -0.00107       0.00   4.06E+12
-3.0299    52.9453       0.00
    0.8200     0.1382   9720261.     36654.   -0.00106       0.00   4.06E+12
-8.2743   147.3261       0.00
    1.0250     0.1356   9810441.     36628.   -0.00105       0.00   4.06E+12
-13.3195   241.7068       0.00
    1.2300     0.1330   9900541.     36589.   -0.00105       0.00   4.06E+12
-18.1671   336.0876       0.00
    1.4350     0.1304   9990531.     36539.   -0.00104       0.00   4.06E+12
-22.8189   430.4683       0.00
    1.6400     0.1278   1.01E+07     36477.   -0.00104       0.00   4.06E+12
-27.2765   524.8491       0.00
    1.8450     0.1253   1.02E+07     36405.   -0.00103       0.00   4.06E+12
-31.5418   619.2298       0.00
    2.0500     0.1228   1.03E+07     36322.   -0.00102       0.00   4.06E+12
-35.6164   713.6106       0.00
    2.2550     0.1203   1.03E+07     36230.   -0.00102       0.00   4.06E+12
-39.5022   807.9913       0.00
    2.4600     0.1178   1.04E+07     36128.   -0.00101       0.00   4.06E+12
-43.2010   902.3721       0.00
    2.6650     0.1153   1.05E+07     35375.   -0.00100       0.00   4.06E+12
-569.0555    12142.       0.00
    2.8700     0.1128   1.06E+07     33874.  -9.99E-04       0.00   4.06E+12
-650.7864    14189.       0.00
    3.0750     0.1104   1.07E+07     32172.  -9.92E-04       0.00   4.06E+12
-732.9902    16336.       0.00
    3.2800     0.1079   1.08E+07     30268.  -9.86E-04       0.00   4.06E+12
-815.3700    18581.       0.00
    3.4850     0.1055   1.08E+07     28161.  -9.79E-04       0.00   4.06E+12
-897.6324    20925.       0.00
    3.6900     0.1031   1.09E+07     25718.  -9.72E-04       0.00   4.06E+12
-1088.     25962.       0.00
    3.8950     0.1007   1.10E+07     22918.  -9.66E-04       0.00   4.06E+12
-1188.     29008.       0.00
    4.1000    0.09838   1.10E+07     19873.  -9.59E-04       0.00   4.06E+12
-1288.     32203.       0.00
    4.3050    0.09603   1.11E+07     16576.  -9.52E-04       0.00   4.06E+12
-1392.     35666.       0.00
    4.5100    0.09369   1.11E+07     13023.  -9.46E-04       0.00   4.06E+12
-1496.     39291.       0.00
    4.7150    0.09137   1.11E+07      9215.  -9.39E-04       0.00   4.06E+12
-1600.     43081.       0.00
    4.9200    0.08907   1.11E+07      5151.  -9.32E-04       0.00   4.06E+12
-1703.     47040.       0.00
    5.1250    0.08679   1.12E+07   835.9854  -9.25E-04       0.00   4.06E+12
-1805.     51170.       0.00
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    5.3300    0.08452   1.12E+07     -3729.  -9.19E-04       0.00   4.06E+12
-1906.     55474.       0.00
    5.5350    0.08227   1.11E+07     -8486.  -9.12E-04       0.00   4.06E+12
-1962.     58667.       0.00
    5.7400    0.08003   1.11E+07    -13343.  -9.05E-04       0.00   4.06E+12
-1986.     61056.       0.00
    5.9450    0.07781   1.11E+07    -18254.  -8.98E-04       0.00   4.06E+12
-2007.     63445.       0.00
    6.1500    0.07561   1.10E+07    -22043.  -8.92E-04       0.00   4.06E+12
-1074.     34930.       0.00
    6.3550    0.07343   1.10E+07    -24693.  -8.85E-04       0.00   4.06E+12
-1080.     36198.       0.00
    6.5600    0.07126   1.09E+07    -27357.  -8.78E-04       0.00   4.06E+12
-1085.     37465.       0.00
    6.7650    0.06910   1.08E+07    -30030.  -8.72E-04       0.00   4.06E+12
-1088.     38733.       0.00
    6.9700    0.06697   1.08E+07    -32707.  -8.65E-04       0.00   4.06E+12
-1089.     40000.       0.00
    7.1750    0.06485   1.07E+07    -35385.  -8.59E-04       0.00   4.06E+12
-1088.     41267.       0.00
    7.3800    0.06274   1.06E+07    -38057.  -8.52E-04       0.00   4.06E+12
-1085.     42535.       0.00
    7.5850    0.06065   1.05E+07    -40720.  -8.46E-04       0.00   4.06E+12
-1080.     43802.       0.00
    7.7900    0.05858   1.04E+07    -43368.  -8.40E-04       0.00   4.06E+12
-1073.     45070.       0.00
    7.9950    0.05652   1.03E+07    -45998.  -8.33E-04       0.00   4.06E+12
-1065.     46337.       0.00
    8.2000    0.05448   1.02E+07    -48604.  -8.27E-04       0.00   4.06E+12
-1054.     47604.       0.00
    8.4050    0.05245   1.00E+07    -51183.  -8.21E-04       0.00   4.06E+12
-1042.     48872.       0.00
    8.6100    0.05044   9900103.    -53455.  -8.15E-04       0.00   4.06E+12
-805.0103     39261.       0.00
    8.8150    0.04844   9766196.    -55420.  -8.09E-04       0.00   4.06E+12
-792.6686     40254.       0.00
    9.0200    0.04646   9627493.    -57353.  -8.03E-04       0.00   4.06E+12
-778.9588     41246.       0.00
    9.2250    0.04449   9484075.    -59251.  -7.97E-04       0.00   4.06E+12
-763.8951     42239.       0.00
    9.4300    0.04253   9336035.    -61110.  -7.92E-04       0.00   4.07E+12
-747.4908     43231.       0.00
    9.6350    0.04059   9183470.    -62927.  -7.86E-04       0.00   4.07E+12
-729.7592     44224.       0.00
    9.8400    0.03867   9026490.    -64698.  -7.81E-04       0.00   4.07E+12
-710.7127     45216.       0.00
   10.0450    0.03675   8865208.    -66422.  -7.75E-04       0.00   4.07E+12
-690.3635     46208.       0.00
   10.2500    0.03485   8699748.    -68093.  -7.70E-04       0.00   4.07E+12
-668.7232     47201.       0.00
   10.4550    0.03296   8530241.    -69710.  -7.65E-04       0.00   4.07E+12
-645.8029     48193.       0.00
   10.6600    0.03109   8356826.    -71269.  -7.60E-04       0.00   4.07E+12
-621.6130     49186.       0.00
   10.8650    0.02923   8179649.    -72767.  -7.55E-04       0.00   4.07E+12
-596.1636     50178.       0.00
   11.0700    0.02738   7998864.    -74201.  -7.50E-04       0.00   4.07E+12
-569.4643     51171.       0.00
   11.2750    0.02554   7814633.    -75567.  -7.45E-04       0.00   4.07E+12
-541.5240     52163.       0.00
   11.4800    0.02371   7627124.    -76864.  -7.40E-04       0.00   4.08E+12
-512.3510     53155.       0.00
   11.6850    0.02190   7436515.    -78087.  -7.36E-04       0.00   4.08E+12
-481.9533     54148.       0.00
   11.8900    0.02009   7242989.    -79233.  -7.31E-04       0.00   4.08E+12
-450.3381     55140.       0.00
   12.0950    0.01830   7046737.    -80301.  -7.27E-04       0.00   4.08E+12
-417.5122     56133.       0.00
   12.3000    0.01651   6847959.    -81286.  -7.23E-04       0.00   4.08E+12
-383.4817     57125.       0.00
   12.5050    0.01474   6646860.    -82186.  -7.19E-04       0.00   4.08E+12
-348.2523     58118.       0.00
   12.7100    0.01298   6443653.    -82998.  -7.15E-04       0.00   4.08E+12
-311.8290     59110.       0.00
   12.9150    0.01122   6238560.    -83719.  -7.11E-04       0.00   4.08E+12
-274.2163     60102.       0.00
   13.1200    0.00948   6031806.    -84346.  -7.07E-04       0.00   4.08E+12
-235.4182     61095.       0.00
   13.3250    0.00774   5823628.    -84875.  -7.04E-04       0.00   4.09E+12
-195.4380     62087.       0.00
   13.5300    0.00602   5614267.    -85257.  -7.00E-04       0.00   4.09E+12
-114.6717     46886.       0.00
   13.7350    0.00430   5404212.    -85500.  -6.97E-04       0.00   4.09E+12
-83.2042     47623.       0.00
   13.9400    0.00259   5193653.    -85665.  -6.94E-04       0.00   4.09E+12
-50.8632     48361.       0.00
   14.1450   8.84E-04   4982787.    -85749.  -6.91E-04       0.00   4.09E+12
-17.6497     49099.       0.00
   14.3500  -8.11E-04   4771813.    -85751.  -6.88E-04       0.00   4.09E+12
16.4357     49836.       0.00
   14.5550   -0.00250   4560939.    -85668.  -6.85E-04       0.00   4.09E+12
51.3930     50574.       0.00
   14.7600   -0.00418   4350376.    -85497.  -6.82E-04       0.00   4.09E+12
87.2222     51312.       0.00
   14.9650   -0.00586   4140340.    -85237.  -6.80E-04       0.00   4.10E+12
123.9240     52049.       0.00
   15.1700   -0.00753   3931054.    -84886.  -6.77E-04       0.00   4.10E+12
161.4992     52787.       0.00
   15.3750   -0.00919   3722746.    -84442.  -6.75E-04       0.00   4.10E+12
199.9492     53525.       0.00
```

```
   15.5800   -0.01085   3515647.    -83901.  -6.73E-04       0.00   4.10E+12
239.2755     54262.       0.00
   15.7850   -0.01250   3309997.    -83263.  -6.71E-04       0.00   4.10E+12
279.4800     55000.       0.00
   15.9900   -0.01415   3106038.    -82525.  -6.69E-04       0.00   4.10E+12
320.5650     55737.       0.00
   16.1950   -0.01579   2904018.    -81685.  -6.67E-04       0.00   4.10E+12
362.5331     56475.       0.00
   16.4000   -0.01743   2704193.    -80741.  -6.65E-04       0.00   4.10E+12
405.3870     57213.       0.00
   16.6050   -0.01907   2506820.    -79689.  -6.64E-04       0.00   4.10E+12
449.1299     57950.       0.00
   16.8100   -0.02070   2312166.    -78530.  -6.62E-04       0.00   4.10E+12
493.7651     58688.       0.00
   17.0150   -0.02232   2120499.    -77259.  -6.61E-04       0.00   4.11E+12
539.2964     59426.       0.00
   17.2200   -0.02395   1932096.    -75875.  -6.60E-04       0.00   4.11E+12
585.7274     60163.       0.00
   17.4250   -0.02557   1747238.    -74376.  -6.59E-04       0.00   4.11E+12
633.0624     60901.       0.00
   17.6300   -0.02719   1566210.    -72760.  -6.58E-04       0.00   4.11E+12
681.3057     61639.       0.00
   17.8350   -0.02881   1389306.    -71023.  -6.57E-04       0.00   4.11E+12
730.4616     62376.       0.00
   18.0400   -0.03042   1216822.    -69165.  -6.56E-04       0.00   4.11E+12
780.5348     63114.       0.00
   18.2450   -0.03204   1049061.    -67182.  -6.55E-04       0.00   4.11E+12
831.5300     63852.       0.00
   18.4500   -0.03365    886333.    -65072.  -6.55E-04       0.00   4.11E+12
883.4522     64589.       0.00
   18.6550   -0.03526    728951.    -61304.  -6.54E-04       0.00   4.11E+12
2180.    152117.       0.00
   18.8600   -0.03687    584763.    -55786.  -6.54E-04       0.00   4.11E+12
2305.    153835.       0.00
   19.0650   -0.03848    454526.    -49958.  -6.54E-04       0.00   4.11E+12
2433.    155553.       0.00
   19.2700   -0.04008    339013.    -43814.  -6.53E-04       0.00   4.11E+12
2563.    157270.       0.00
   19.4750   -0.04169    239008.    -37347.  -6.53E-04       0.00   4.11E+12
2694.    158988.       0.00
   19.6800   -0.04330    155308.    -30554.  -6.53E-04       0.00   4.11E+12
2829.    160706.       0.00
   19.8850   -0.04490     88726.    -23428.  -6.53E-04       0.00   4.11E+12
2965.    162423.       0.00
   20.0900   -0.04651     40086.    -15964.  -6.53E-04       0.00   4.11E+12
3103.    164141.       0.00
   20.2950   -0.04812     10227.     -8157.  -6.53E-04       0.00   4.11E+12
3244.    165859.       0.00
   20.5000   -0.04972      0.00       0.00  -6.53E-04       0.00   4.11E+12
3387.     83788.       0.00
```

```
* This analysis computed pile response using nonlinear moment-curvature rela-
  tionships. Values of total stress due to combined axial and bending stresses
  are computed only for elastic sections only and do not equal the actual
  stresses in concrete and steel. Stresses in concrete and steel may be inter-
  polated from the output for nonlinear bending properties relative to the
  magnitude of bending moment developed in the pile.


Output Summary for Load Case No. 3:

Pile-head deflection             =     0.14870795 inches
Computed slope at pile head      =    -0.00108325 radians
Maximum bending moment           =      11156368. inch-lbs
Maximum shear force              =        -85751. lbs
Depth of maximum bending moment  =     5.12500000 feet below pile head
Depth of maximum shear force     =    14.35000000 feet below pile head
Number of iterations             =              7
Number of zero deflection points =              1


--------------------------------------------------------------------------------
           Summary of Pile-head Responses for Conventional Analyses
--------------------------------------------------------------------------------

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians


Load Load                Load                  Axial    Pile-head  Pile-head  Max
Shear Max Moment
Case Type   Pile-head    Type     Pile-head   Loading  Deflection  Rotation    in
Pile    in Pile
 No.  1      Load 1       2        Load 2       lbs      inches     radians      lbs
     in-lbs
---- ----- ---------- ---------- ---------- ---------- ---------- ----------
---------- ----------
  1  V, lb     22160.  M, in-lb    1.52E+07     35025.     0.3309   -0.00428
-117213.   1.61E+07
  2  V, lb      9972.  M, in-lb    6841030.     21891.    0.07571  -5.99E-04
-51110.   7234103.
  3  V, lb     36672.  M, in-lb    9359280.     13890.     0.1487   -0.00108
-85751.   1.12E+07
```

```
Maximum pile-head deflection = 0.3308950711 inches
Maximum pile-head rotation   = -0.0042846605 radians = -0.245493 deg.

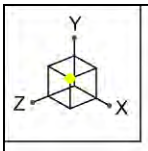
--------------------------------------------------------------------------------
                          Summary of Warning Messages
--------------------------------------------------------------------------------

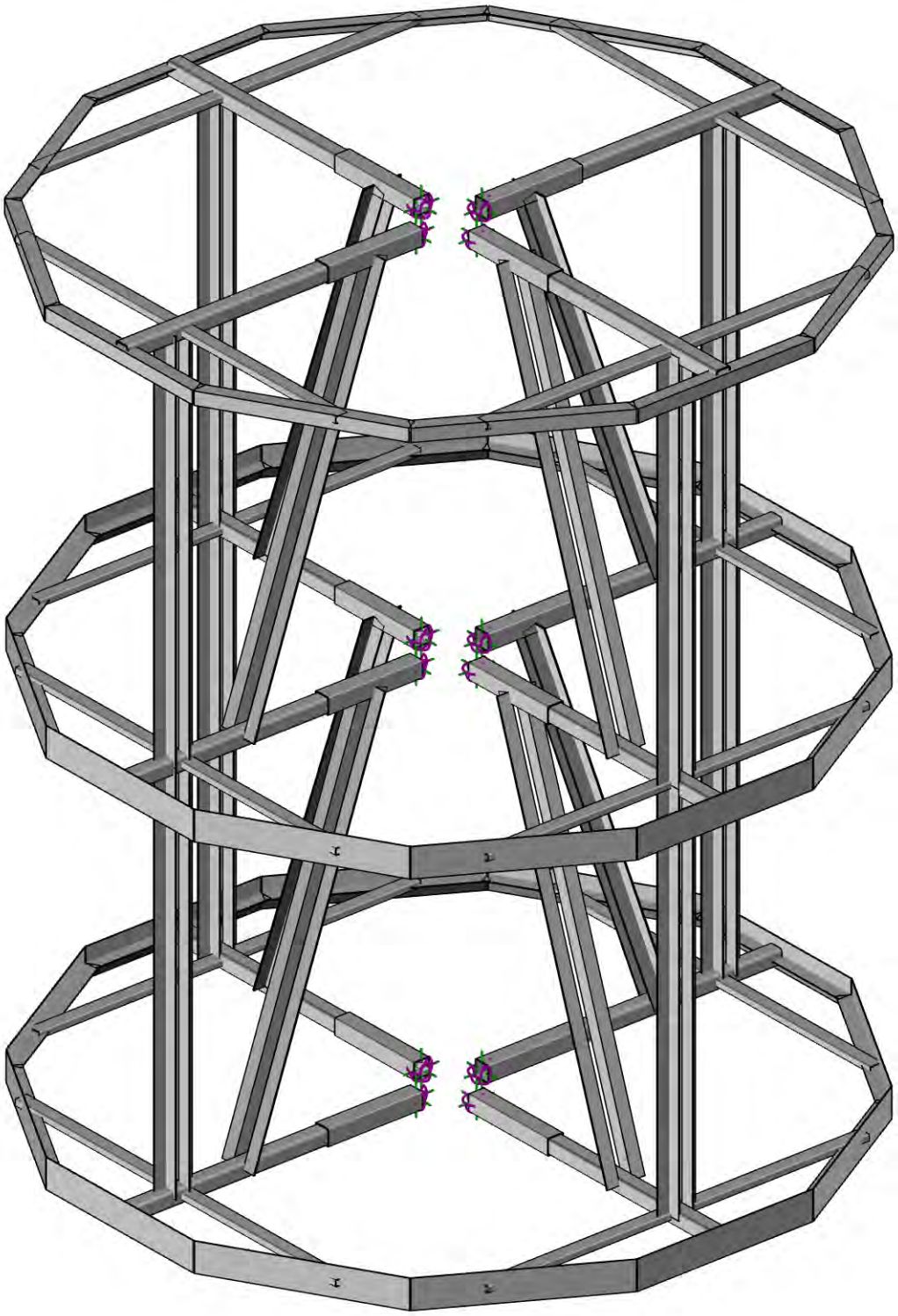
The following warning was reported 189 times

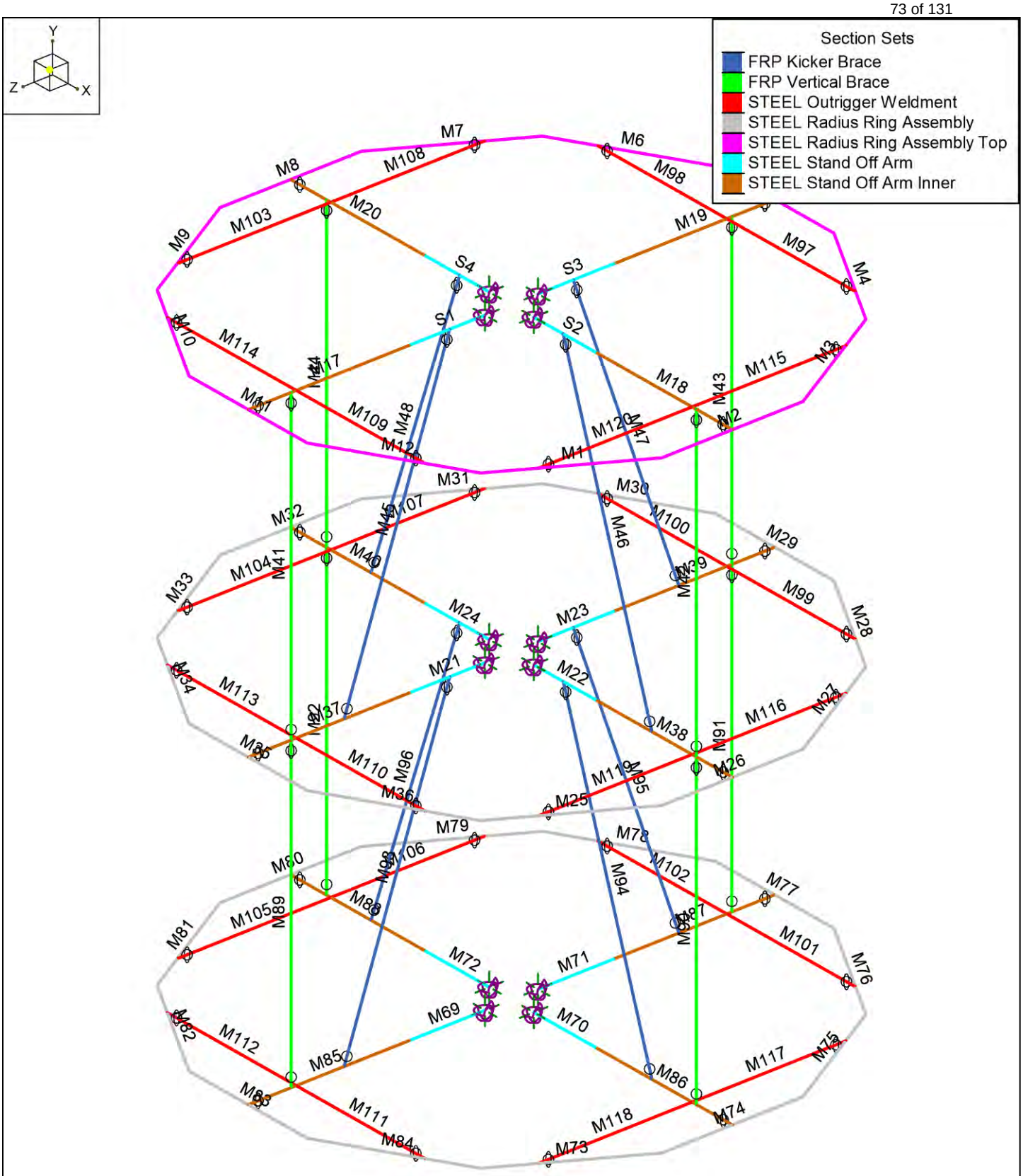
**** Warning ****

The input value for friction angle is either smaller than 29 degrees or
higher than 41 degrees and no value of k has been specified for a soil layer
defined using the sand criteria. Program will assume an internal default value,
for k, but the friction angle is outside the range of data available.
Please check your input data for correctness.

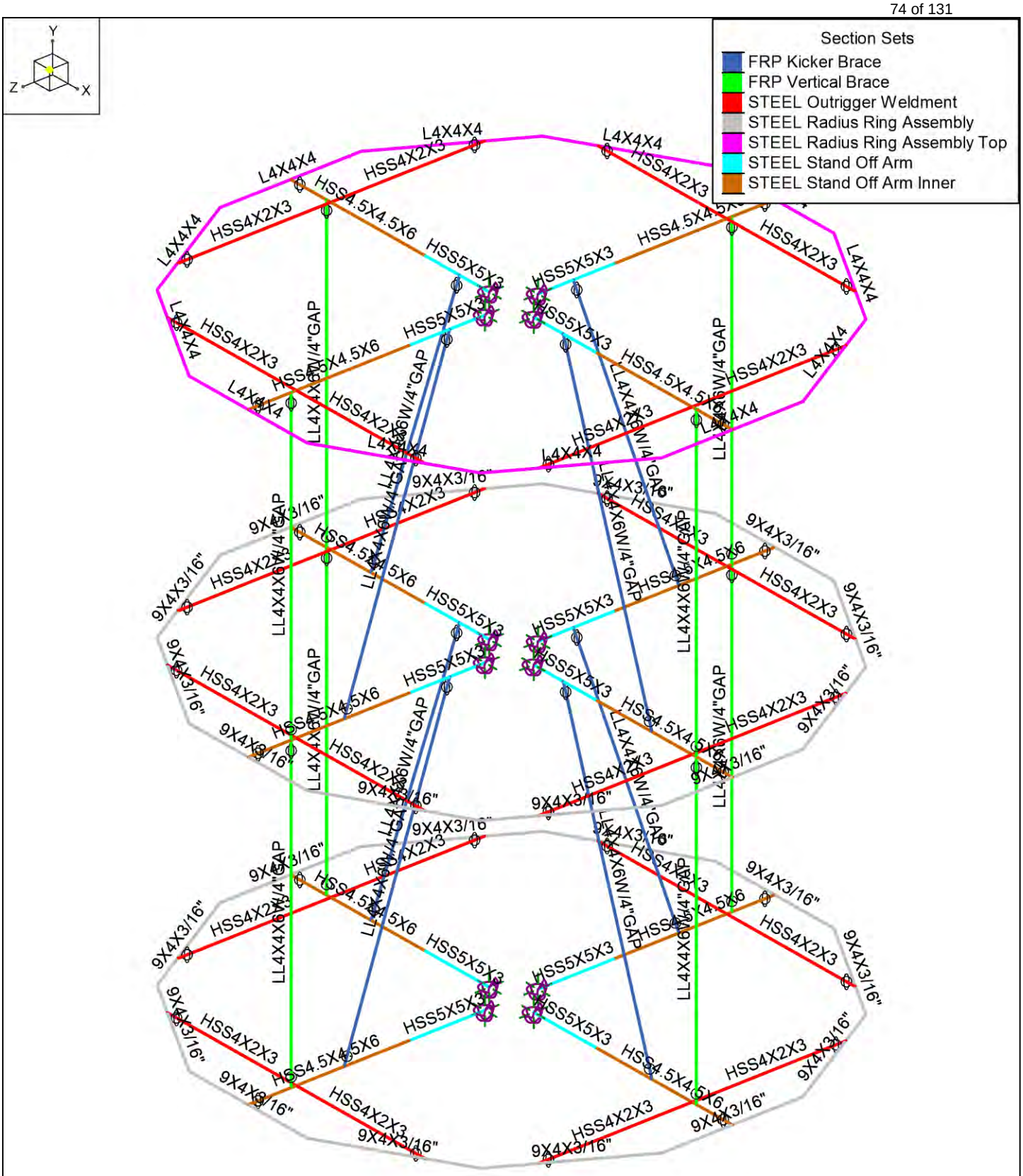

The analysis ended normally.
```


Y
Z
X





IRISA	Vector SE		SK-2
			Oct 24, 2024 at 10:53 AM
			NM1-148 Spike Concealmen…



RISA	Vector SE		SK-3
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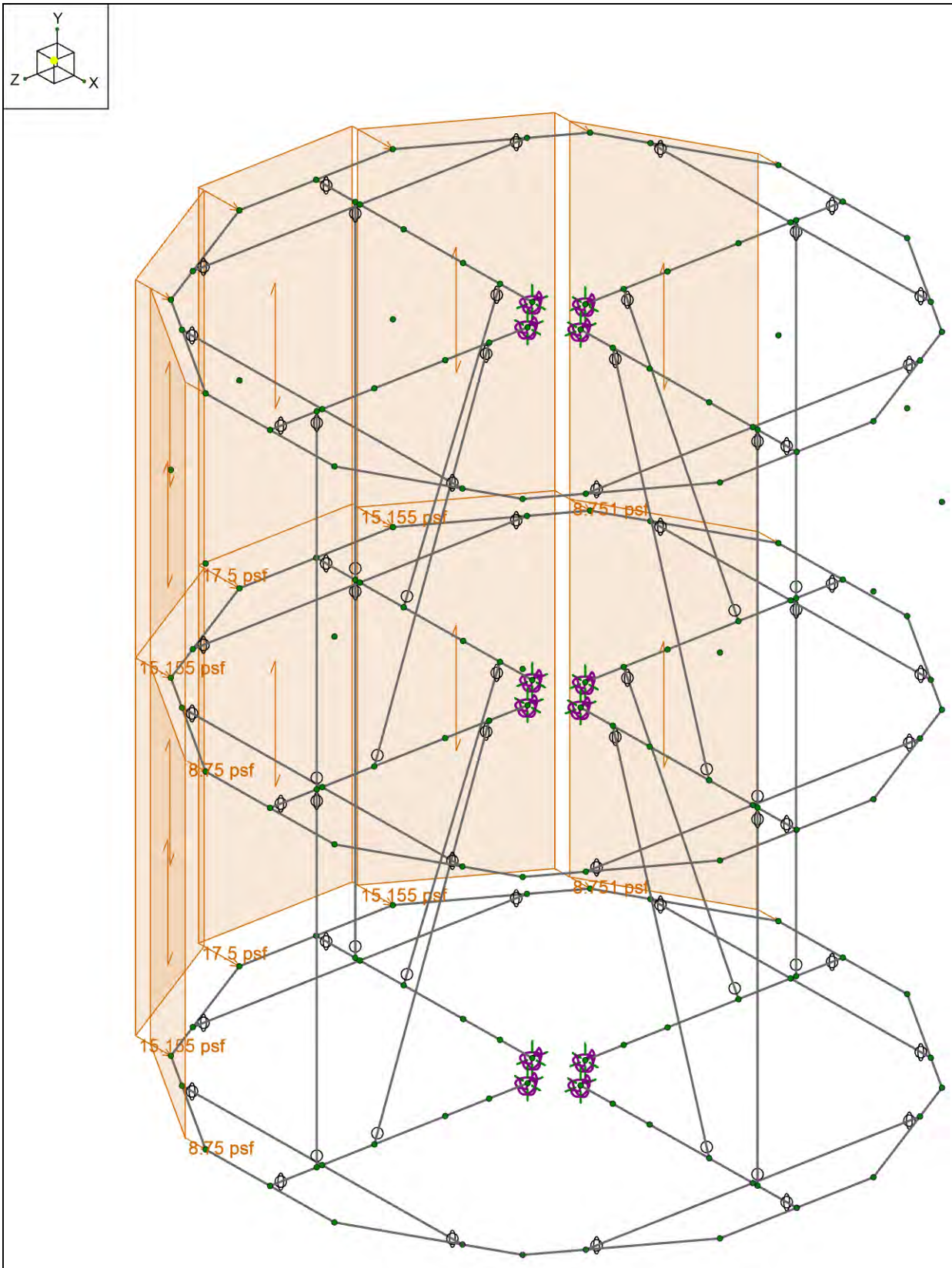

Loads: BLC 2, WLX

IRISA	Vector SE		SK-4
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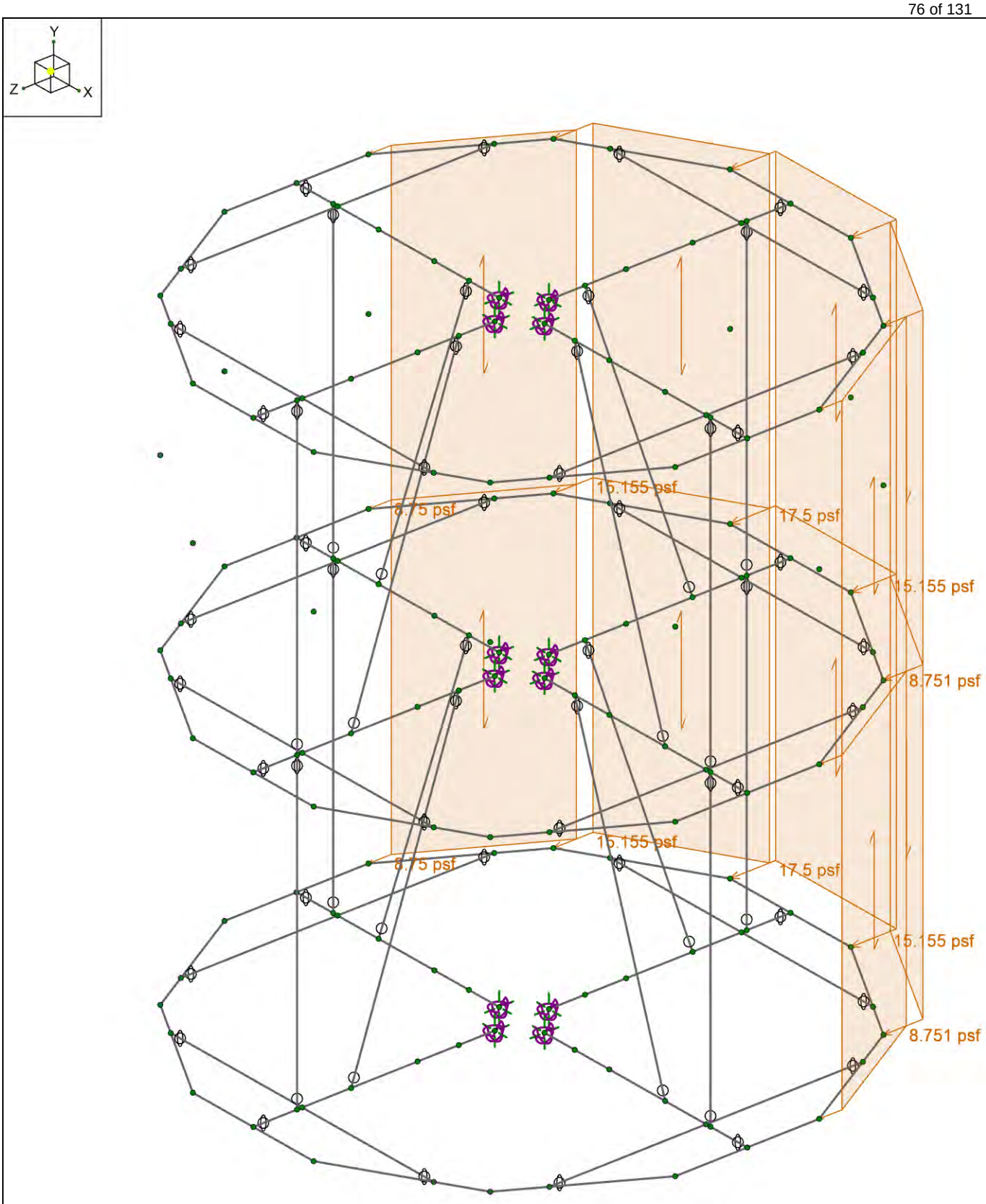
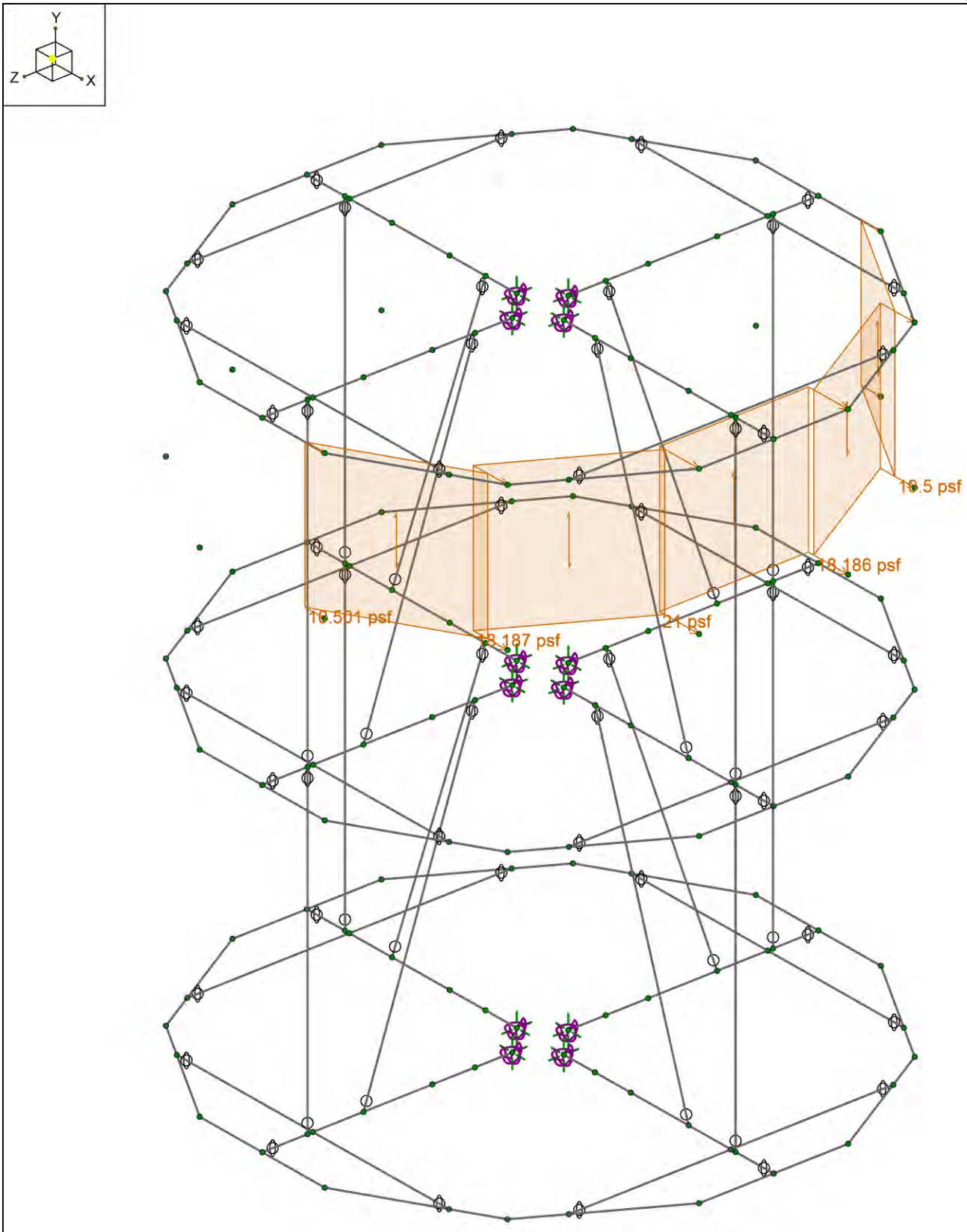
			NM1-148 Spike Concealmen…



Loads: BLC 3, WLZ

RISA	Vector SE		SK-5
			Oct 24, 2024 at 10:53 AM
			NM1-148 Spike Concealmen…



Loads: BLC 4, WLX Inside

IRISA	Vector SE		SK-6
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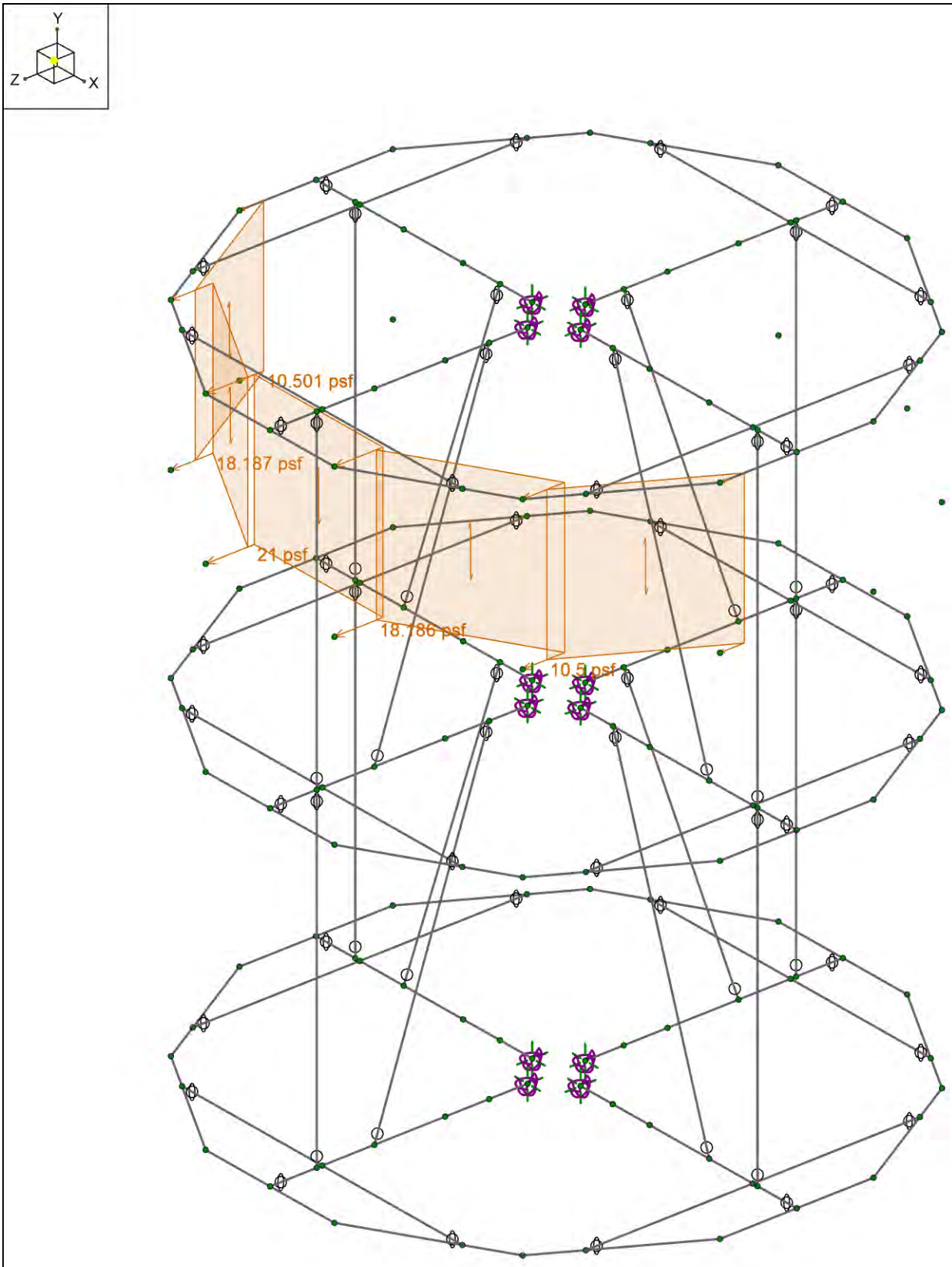
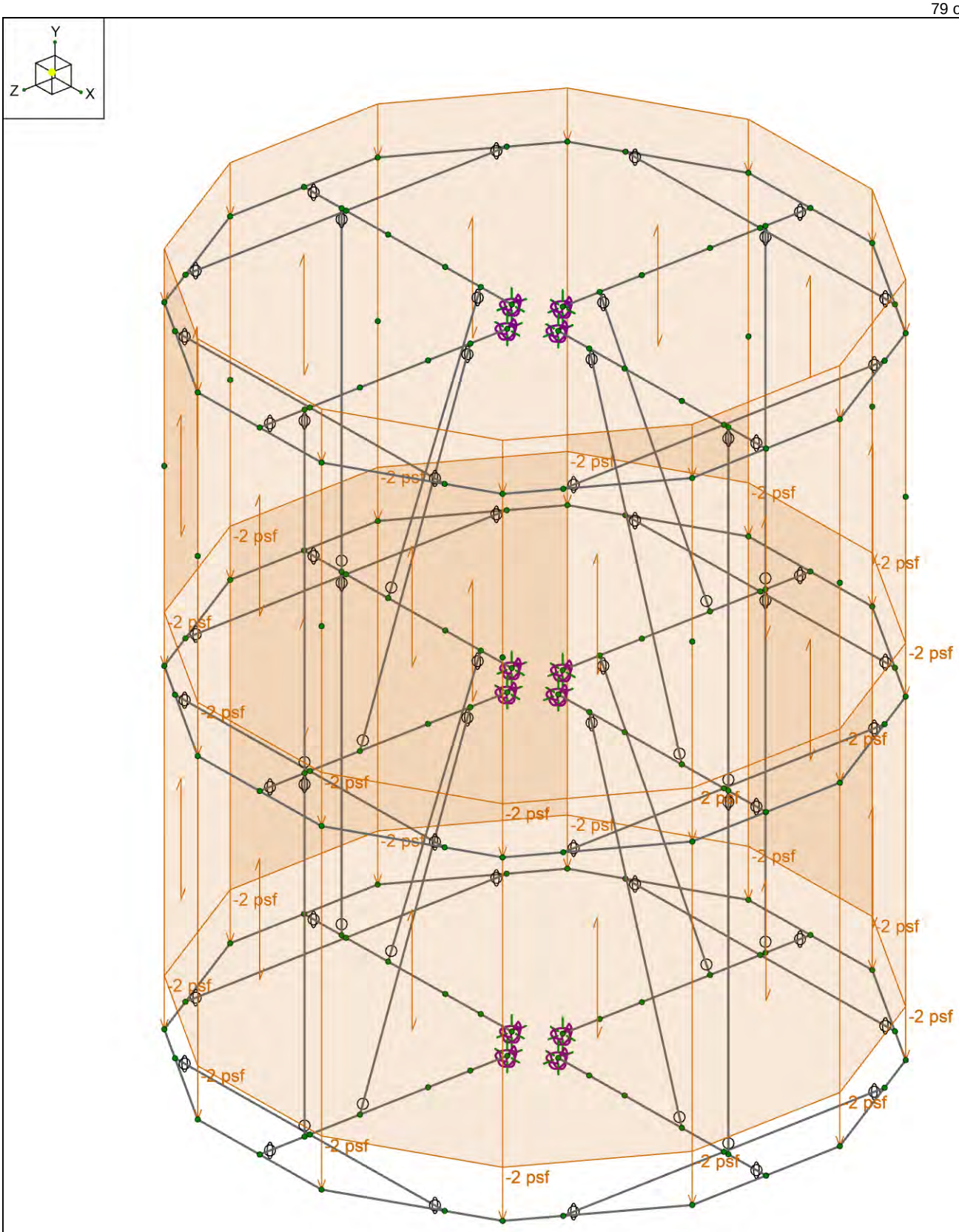
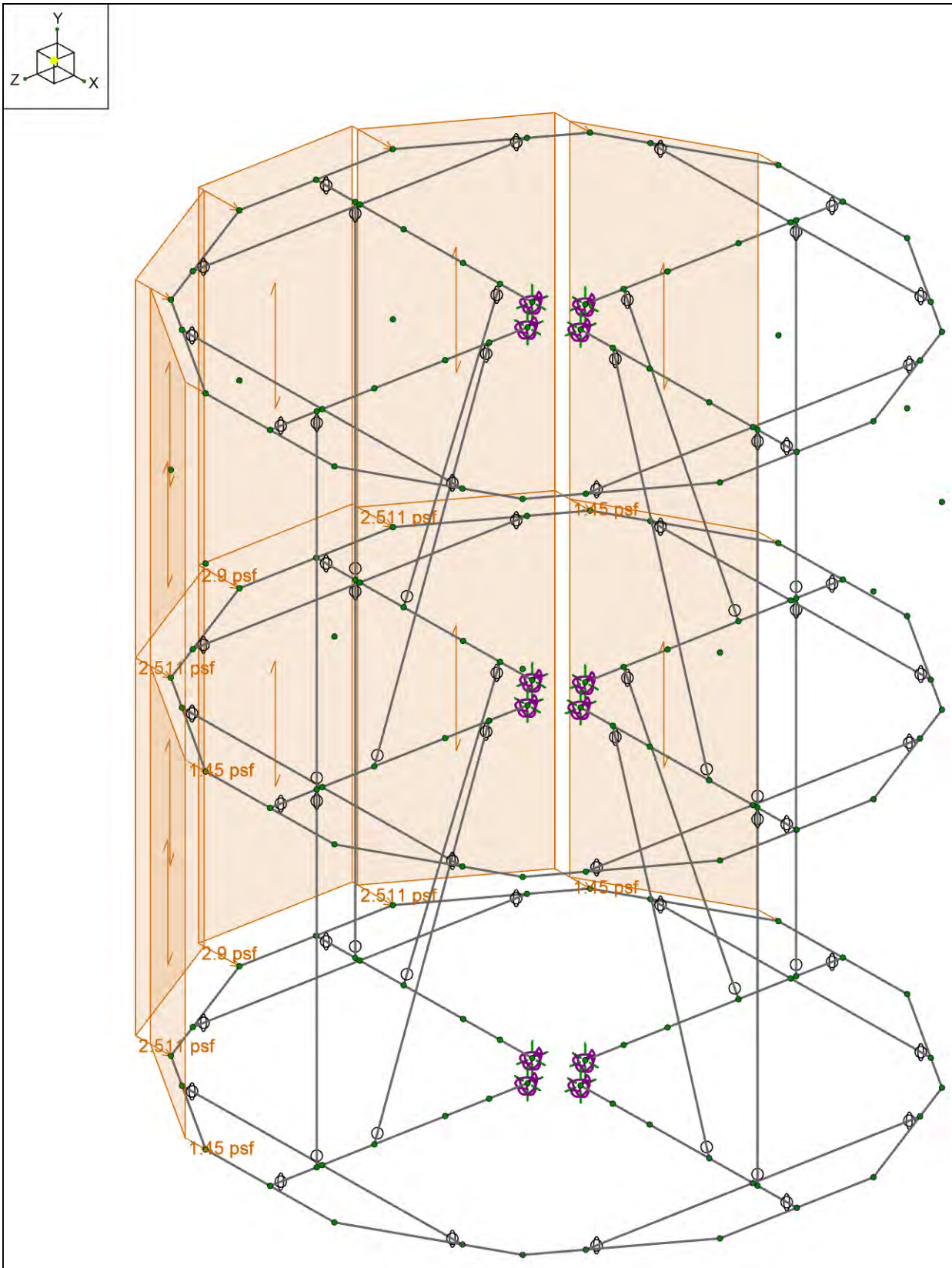
			NM1-148 Spike Concealmen…



Loads: BLC 5, WLZ Inside

RISA	Vector SE		SK-7
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…


Y
Z
X
-2 psf
-2 psf
-2 psf



Loads: BLC 8, WLX Ice

RISA	Vector SE		SK-9
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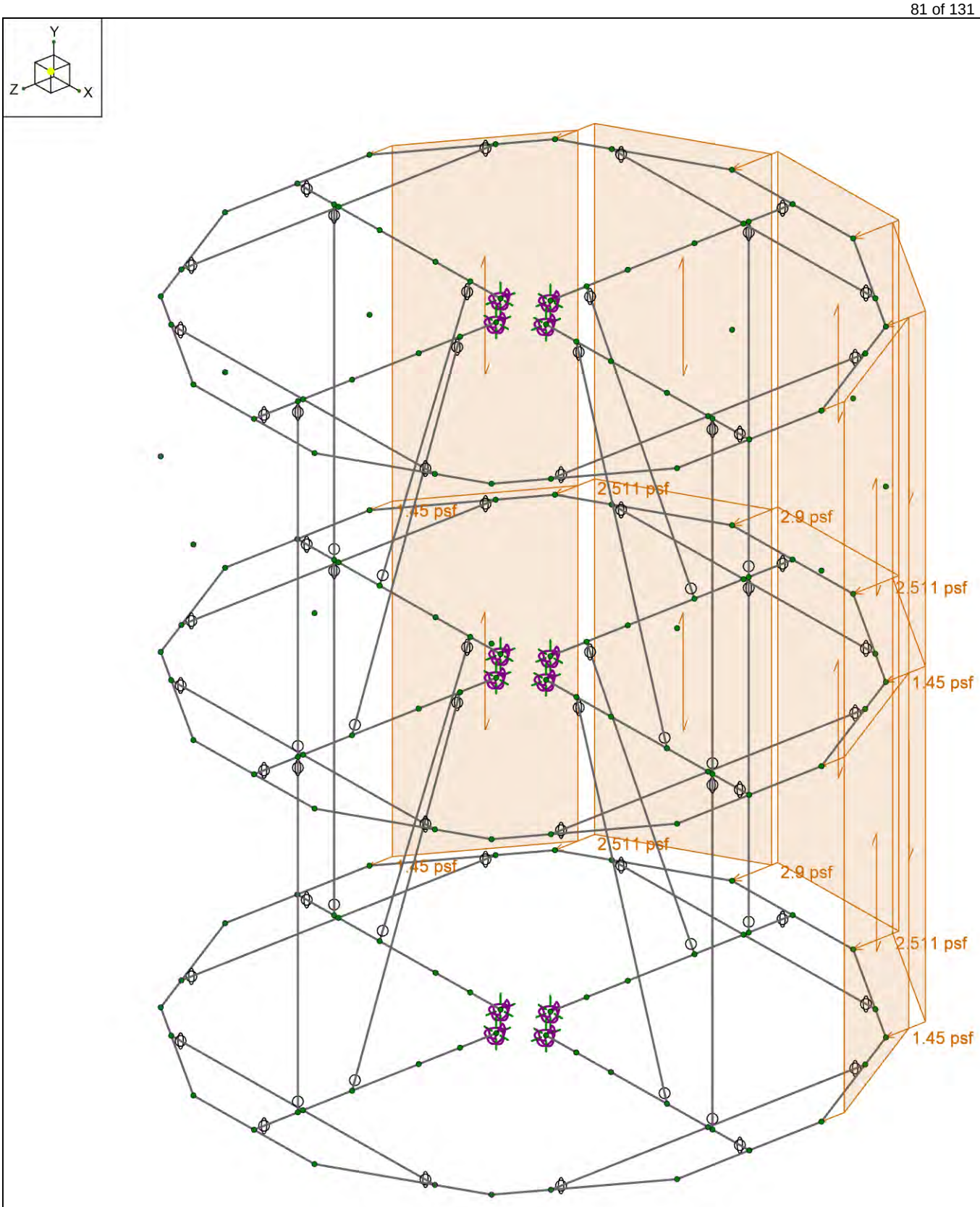
			NM1-148 Spike Concealmen…



Loads: BLC 9, WLZ Ice

RISA	Vector SE		SK-10
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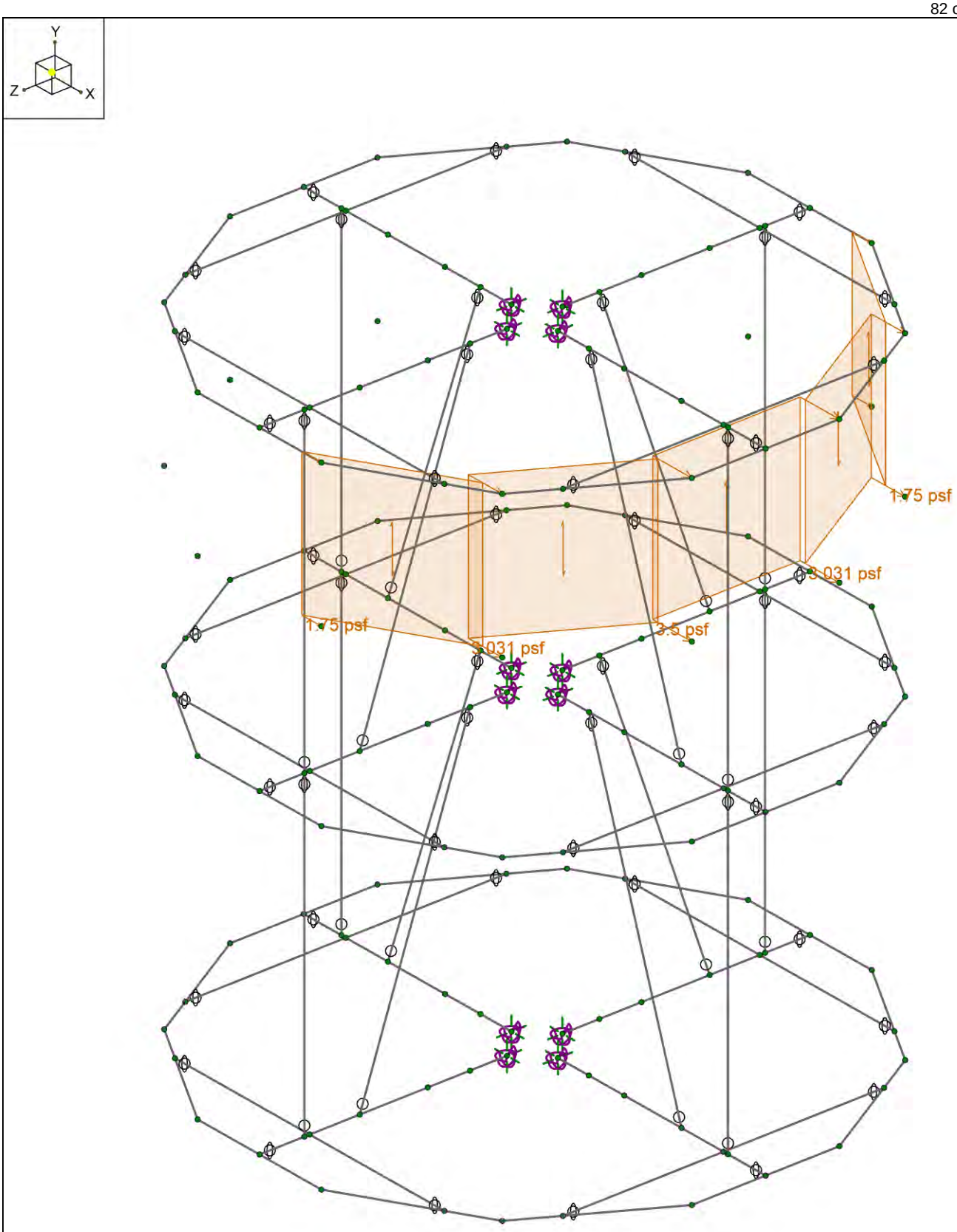
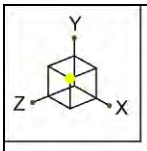
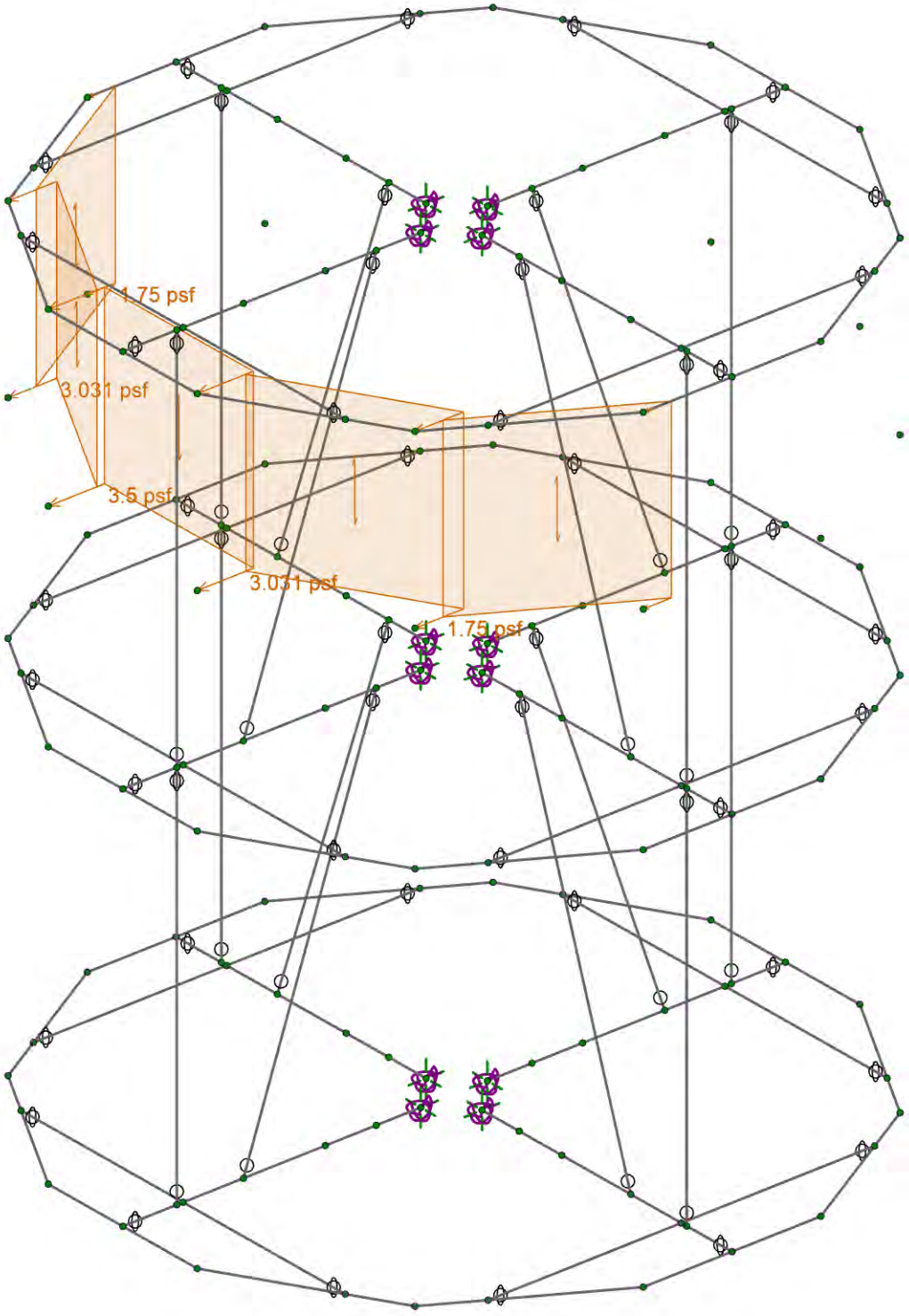
			NM1-148 Spike Concealmen…



Loads: BLC 10, WLX Ice Inside

RISA	Vector SE		SK-11
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…





Loads: BLC 11, WLZ Ice Inside

RISA	Vector SE		SK-12
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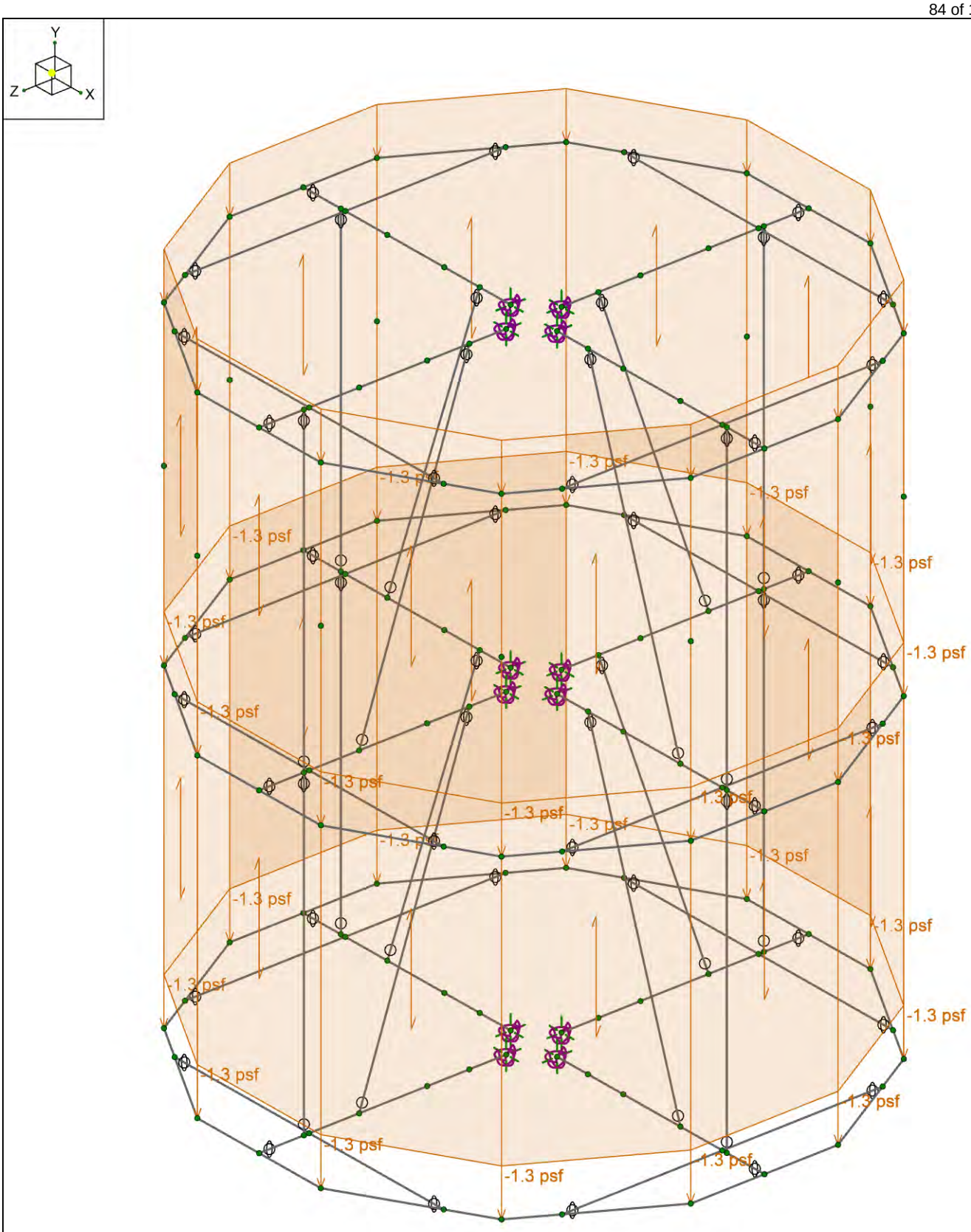
			NM1-148 Spike Concealmen…



Loads: BLC 12, Ice Weight

RISA	Vector SE		SK-13
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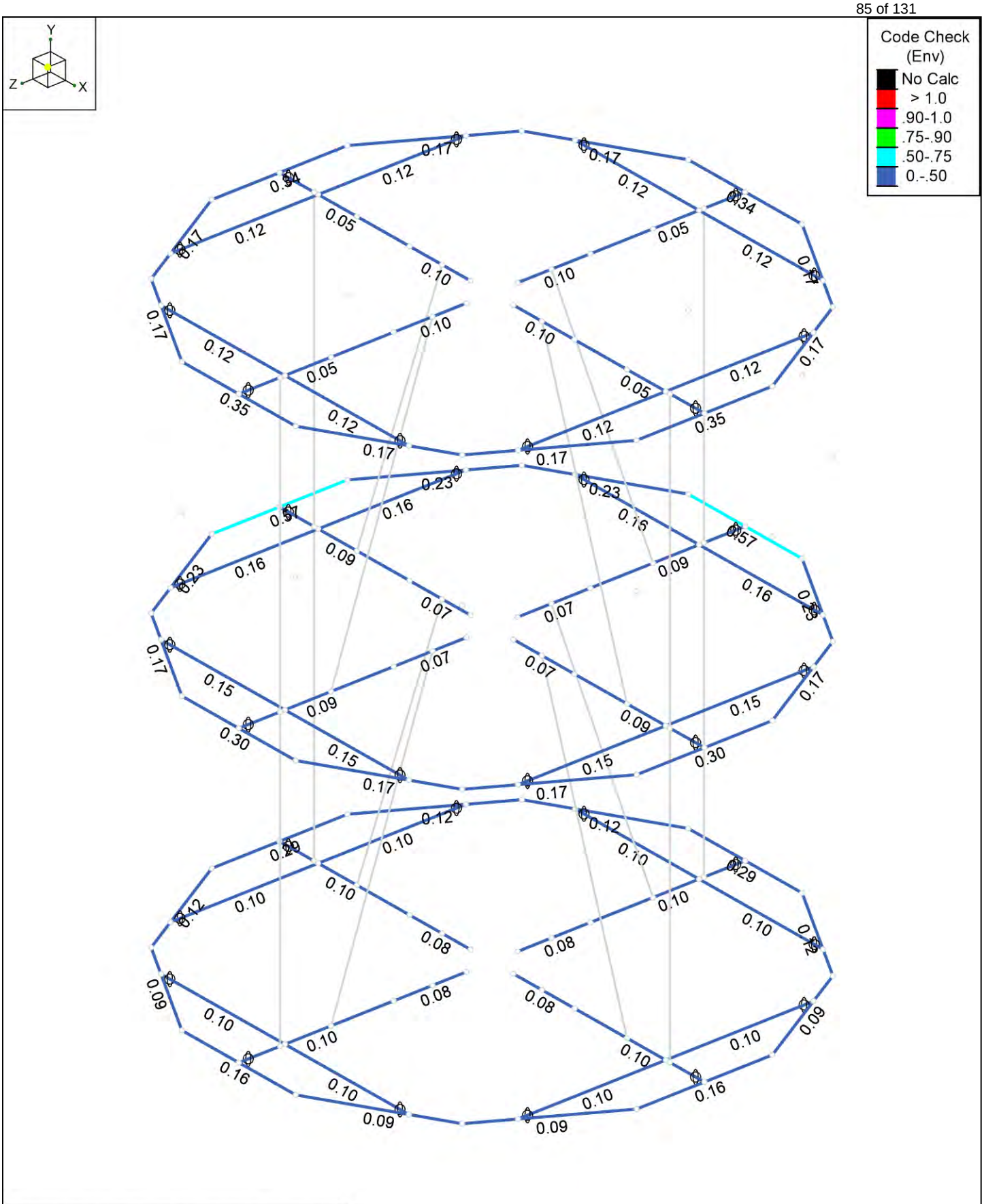
			NM1-148 Spike Concealmen…



Member Code Checks Displayed (Enveloped)

IRISA	Vector SE		SK-14
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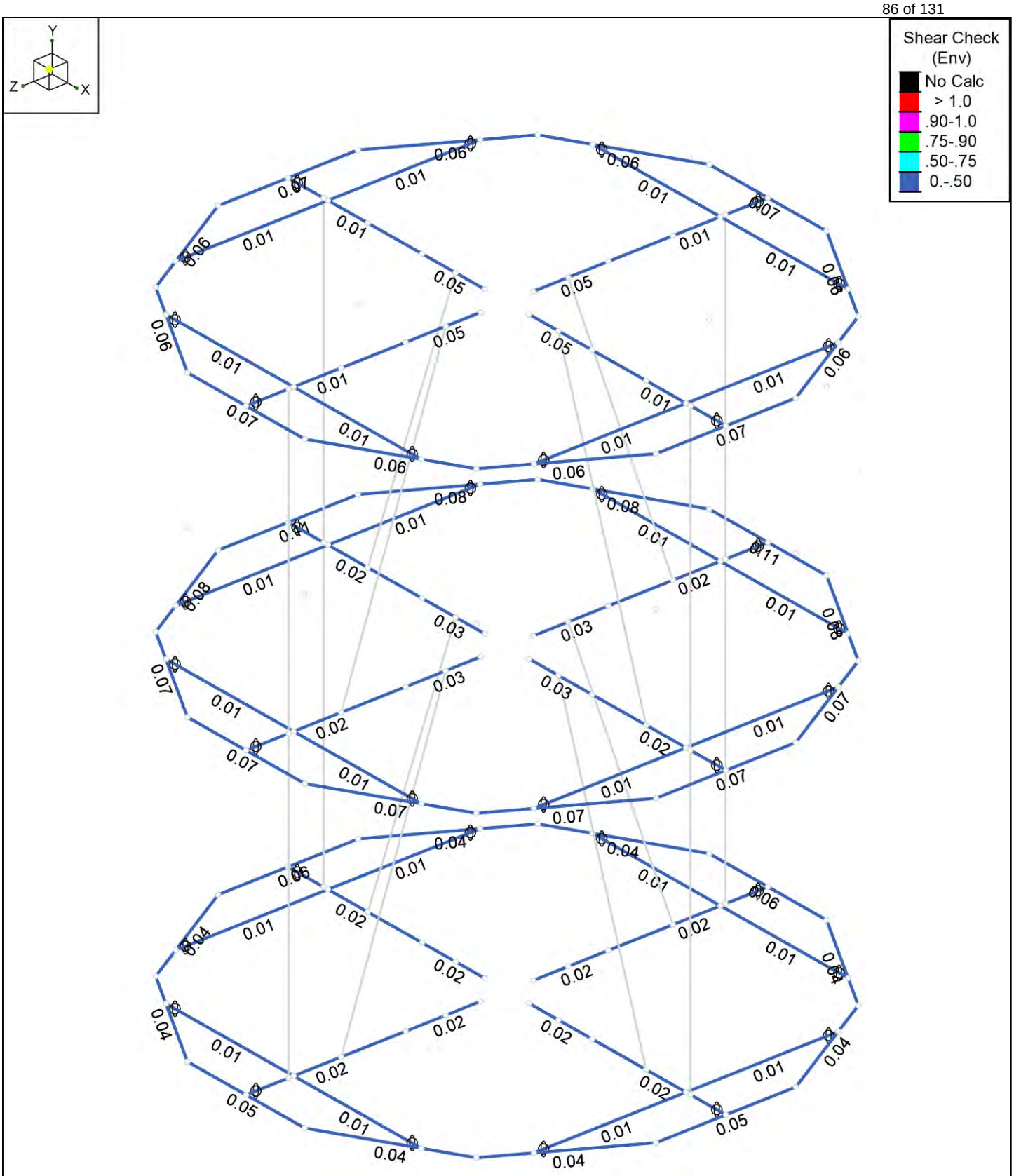

Member Shear Checks Displayed (Enveloped)

IRISA	Vector SE		SK-15
			Oct 24, 2024 at 10:55 AM
			NM1-148 Spike Concealmen…

Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	No
Maximum	Yes

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Global

Hot Rolled Steel	AISC 15th (360-16): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	None
Cold Formed Steel	None
Stiffness Adjustment	Yes (Iterative)
Wood	None
Temperature	< 100F
Concrete	None
Masonry	None
Aluminum	None
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	None
Stiffness Adjustment	Yes (Iterative)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-16
Risk Category	I or II
Drift Cat	Other

Company : Vector SE
Designer :
Job Number :
Model Name :

10/24/2024
10:55:17 AM
Checked By : _____

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A500 Gr.B RECT	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
3	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
4	FRP	2800	450	0.3	0.65	0.11	10	1.2	30	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	FRP Kicker Brace	LL4X4X6W/4"GAP	VBrace	None	FRP	Typical	5.719	65.042	8.717	0.251
2	FRP Vertical Brace	LL4X4X6W/4"GAP	VBrace	None	FRP	Typical	5.719	65.042	8.717	0.251
3	STEEL Outrigger Weldment	HSS4X2X3	Beam	None	A500 Gr.B RECT	Typical	1.89	1.22	3.66	3.08
4	STEEL Radius Ring Assembly	9X4X3/16"	Beam	None	A36 Gr.36	Typical	2.409	11.423	2.887	0.028
5	STEEL Radius Ring Assembly Top	L4X4X4	Beam	None	A36 Gr.36	Typical	1.93	3	3	0.044
6	STEEL Stand Off Arm	HSS5X5X3	Beam	None	A500 Gr.B RECT	Typical	3.28	12.6	12.6	19.9
7	STEEL Stand Off Arm Inner	HSS4.5X4.5X6	Beam	None	A500 Gr.B RECT	Typical	5.48	15.3	15.3	25.7

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
1	1.0D	Yes	Y	DL	1				
2	1.4D	Yes	Y	DL	1.4				
3	1.2D+1.6L	Yes	Y	DL	1.2	LL	1.6		
4	1.2D + 0.5LL + 1.0WLx	Yes	Y	DL	1.2	LL	0.5	WLX	1
5	1.2D + 0.5LL + 1.0WLz	Yes	Y	DL	1.2	LL	0.5	WLZ	1
6	1.2D + 0.5LL - 1.0WLx	Yes	Y	DL	1.2	LL	0.5	WLX	-1
7	1.2D + 0.5LL - 1.0WLz	Yes	Y	DL	1.2	LL	0.5	WLZ	-1
8	1.2D + 1.0WLx	Yes	Y	DL	1.2	WLX	1		
9	1.2D + 1.0WLz	Yes	Y	DL	1.2	WLZ	1		
10	1.2D - 1.0WLx	Yes	Y	DL	1.2	WLX	-1		
11	1.2D - 1.0WLz	Yes	Y	DL	1.2	WLZ	-1		
12	0.9D + 1.0WLx	Yes	Y	DL	0.9	WLX	1		
13	0.9D + 1.0WLz	Yes	Y	DL	0.9	WLZ	1		
14	0.9D - 1.0WLx	Yes	Y	DL	0.9	WLX	-1		
15	0.9D - 1.0WLz	Yes	Y	DL	0.9	WLZ	-1		
16	1.2D + 1.0Di + 1.0Wix	Yes	Y	DL	1.2	OL1	1	OL2	1
17	1.2D + 1.0Di + 1.0Wiz	Yes	Y	DL	1.2	OL1	1	OL3	1
18	1.2D + 1.0Di - 1.0Wix	Yes	Y	DL	1.2	OL1	1	OL2	-1
19	1.2D + 1.0Di - 1.0Wiz	Yes	Y	DL	1.2	OL1	1	OL3	-1

Envelope Maximum Member Section Forces

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
1	M96	max	-1414.201	0	14	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
2		min	-2362.771	10.59	16	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
3	M94	max	-1418.207	0	12	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
4		min	-2361.772	10.59	18	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
5	M93	max	-1418.207	0	13	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
6		min	-2361.772	10.59	19	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
7	M95	max	-1414.201	0	15	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
8		min	-2362.771	10.59	17	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
9	M48	max	-1446.854	0	14	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
10		min	-2384.567	10.59	16	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
11	M47	max	-1446.854	0	15	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
12		min	-2384.567	10.59	17	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2

Envelope Maximum Member Section Forces (Continued)

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
13	M46	max	-1448.261	0	12	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
14		min	-2383.898	10.59	18	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
15	M45	max	-1448.261	0	13	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
16		min	-2383.898	10.59	19	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
17	M89	max	905.681	0	19	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
18		min	501.605	10	13	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
19	M90	max	905.681	0	18	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
20		min	501.605	10	12	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
21	M91	max	906.079	0	17	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
22		min	499.864	10	15	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
23	M42	max	1083.508	0	18	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
24		min	640.67	10	12	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
25	M41	max	1083.508	0	19	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
26		min	640.67	10	13	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
27	M44	max	1083.507	0	16	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
28		min	640.958	10	14	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
29	M92	max	906.079	0	16	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
30		min	499.864	10	14	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
31	M43	max	1083.507	0	17	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
32		min	640.958	10	15	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
33	M31	max	1072.307	4.658	10	405.526	1.504	12	104.12	4.658	18	19.793	1.456	19	69.031	4.658	19	492.438	4.61	10
34		min	-1058.54	4.658	12	-407.959	1.504	6	-46.96	1.504	16	11.031	1.504	13	-73.859	0	18	-486.494	4.61	12
35	M77	max	471.748	4.659	11	474.391	2.281	11	130.859	2.329	18	11.71	4.659	17	267.953	2.329	17	613.707	2.329	13
36		min	-449.358	2.329	13	-478.653	2.329	7	-131.021	2.329	17	-11.742	0	16	25.126	0	14	-628.635	2.329	7
37	M78	max	545.768	0	11	205.188	3.154	11	30.017	3.154	17	-6.659	3.154	15	42.484	0	17	248.949	0.049	11
38		min	-521.859	0	13	-201.878	3.154	13	-62.515	0	19	-11.009	0	17	-41.088	4.659	16	-241.279	0.097	13
39	M76	max	545.756	4.658	11	201.859	1.504	13	62.514	4.658	16	11.053	4.658	16	42.628	4.658	16	248.914	4.61	11
40		min	-521.851	4.658	13	-205.167	1.504	7	-30.013	1.504	18	6.507	0	14	-41.239	0	16	-241.247	4.561	13
41	M75	max	599.938	3.154	8	127.066	4.659	14	30.011	3.154	17	-6.53	4.659	14	42.578	0	16	179.503	0	8
42		min	-575.737	0	14	-130.845	3.203	4	-62.508	0	19	-11.045	0	16	-41.241	4.659	16	-171.773	0	14
43	M79	max	545.756	4.658	10	201.859	1.504	12	62.512	4.658	18	11.01	4.658	16	42.49	4.658	16	248.914	4.61	10
44		min	-521.851	4.658	12	-205.167	1.504	6	-30.012	1.504	16	6.659	1.504	14	-41.088	0	17	-241.247	4.561	12
45	M36	max	1180.933	3.154	9	256.237	4.659	15	46.928	3.154	18	-10.558	3.154	14	69.514	0	16	353.366	0	9
46		min	-1166.028	0	15	-258.914	3.203	5	-104.087	0	16	-19.946	0	16	-74.426	4.659	17	-347.814	0	15
47	M35	max	1127.185	2.329	9	410.613	2.281	9	214.421	2.281	19	17.487	4.659	16	444.316	2.329	19	592.859	2.329	15
48		min	-1112.848	0	15	-410.626	2.329	5	-216.745	2.329	19	-17.455	0	17	37.464	4.659	14	-603.146	2.329	5
49	M34	max	1181.031	4.658	9	258.942	1.456	9	104.06	4.658	18	19.934	4.658	17	69.437	4.658	17	353.337	4.658	9
50		min	-1166.092	1.504	15	-256.251	0	15	-46.902	1.504	16	10.6	0	15	-74.426	0	17	-347.772	4.658	15
51	M33	max	1072.331	0	10	408	3.154	10	46.968	3.154	16	-10.558	4.659	15	69.514	0	17	492.507	0.049	10
52		min	-1058.591	0	12	-405.576	3.154	12	-104.124	0	18	-19.946	0	17	-74.422	4.659	17	-486.575	0.049	12
53	M32	max	925.705	4.659	10	942.911	2.329	12	214.037	2.281	16	17.487	4.659	17	443.891	2.329	16	1235.293	2.329	12
54		min	-912.475	2.329	12	-950.439	2.329	6	-216.362	2.329	16	-17.374	0	19	37.464	4.659	15	-1246.78	2.329	6
55	M30	max	1072.331	0	11	408	3.154	11	46.968	3.154	17	-11.03	3.154	12	69.023	0	18	492.507	0.049	11
56		min	-1058.591	0	13	-405.576	3.154	13	-104.124	0	19	-19.792	3.203	18	-73.86	4.659	19	-486.575	0.049	13
57	M26	max	1127.185	2.329	8	410.613	2.281	8	215.826	2.329	19	17.456	4.659	16	444.316	2.329	18	592.859	2.329	14
58		min	-1112.848	0	14	-410.626	2.329	4	-216.745	2.329	18	-17.487	0	17	37.468	0	15	-603.146	2.329	4
59	M28	max	1072.307	4.658	11	405.526	1.504	13	104.12	4.658	19	19.948	1.456	16	69.523	4.658	16	492.438	4.61	11
60		min	-1058.54	4.658	13	-407.959	1.504	7	-46.96	1.504	17	10.558	1.504	14	-74.422	0	16	-486.494	4.61	13
61	M29	max	925.705	4.659	11	942.911	2.329	13	215.826	2.329	18	17.375	4.659	18	443.891	2.329	17	1235.293	2.329	13
62		min	-912.475	2.329	13	-950.439	2.329	7	-216.362	2.329	17	-17.487	0	16	37.468	0	14	-1246.78	2.329	7
63	M84	max	599.938	3.154	9	127.066	4.659	15	30.018	3.154	18	-6.506	4.659	14	42.622	0	16	179.503	0	9
64		min	-575.737	0	15	-130.845	3.203	5	-62.517	0	16	-11.052	3.203	16	-41.241	4.659	17	-171.773	0	15
65	M83	max	572.347	2.329	9	208.826	2.281	9	129.698	2.281	19	11.742	4.659	16	268.061	2.329	19	292.337	2.329	15
66		min	-549.693	0	15	-208.837	2.329	5	-131.124	2.329	19	-11.725	0	17	25.123	4.659	14	-306.963	2.329	5
67	M82	max	599.964	4.658	9	130.85	1.456	9	62.506	4.658	18	11.046	4.658	17	42.583	4.658	17	179.477	4.658	9

Envelope Maximum Member Section Forces (Continued)

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
68		min	-575.769	1.504	15	-127.073	0	15	-30.006	1.504	16	6.531	0	15	-41.241	0	17	-171.752	4.658	15
69	M73	max	599.964	4.658	8	130.85	1.456	8	62.514	4.658	17	11.053	1.456	17	42.628	4.658	17	179.477	4.658	8
70		min	-575.769	1.504	14	-127.073	0	14	-30.013	1.504	19	6.507	0	15	-41.241	0	16	-171.752	4.658	14
71	M80	max	471.748	4.659	10	474.391	2.281	10	129.596	2.281	16	11.742	4.659	17	267.953	2.329	16	613.707	2.329	12
72		min	-449.358	2.329	12	-478.653	2.329	6	-131.021	2.329	16	-11.71	0	16	25.123	4.659	15	-628.635	2.329	6
73	M25	max	1181.031	4.658	8	258.942	1.456	8	104.083	4.658	17	19.948	4.658	17	69.523	4.658	17	353.337	4.658	8
74		min	-1166.092	1.504	14	-256.251	0	14	-46.92	1.504	19	10.558	0	15	-74.426	0	16	-347.772	4.658	14
75	M74	max	572.347	2.329	8	208.826	2.281	8	130.859	2.329	19	11.725	4.659	16	268.061	2.329	18	292.337	2.329	14
76		min	-549.693	0	14	-208.837	2.329	4	-131.124	2.329	18	-11.742	0	17	25.126	0	15	-306.963	2.329	4
77	M27	max	1180.933	3.154	8	256.237	4.659	14	46.911	3.154	17	-10.599	3.154	14	69.429	0	16	353.366	0	8
78		min	-1166.028	0	14	-258.914	3.203	4	-104.064	0	19	-19.932	0	16	-74.426	4.659	16	-347.814	0	14
79	M81	max	545.768	0	10	205.188	3.154	10	30.018	3.154	19	-6.506	3.154	15	42.622	0	17	248.949	0.049	10
80		min	-521.859	0	12	-201.878	3.154	12	-62.517	0	17	-11.052	3.203	17	-41.239	4.659	17	-241.279	0.097	12
81	M1	max	1161.402	4.658	8	69.213	4.658	16	306.015	1.504	12	16.22	1.456	16	320.076	4.658	8	263.337	4.658	12
82		min	-1061.695	4.658	14	-17.538	1.504	18	-329.222	1.504	6	7.945	1.504	14	-294.18	4.658	14	-342.409	4.658	6
83	M2	max	1045.489	2.329	8	131.65	2.329	17	733.885	2.329	8	12.733	4.659	16	725.485	2.329	10	482.88	2.329	14
84		min	-970.539	0	14	-131.779	2.329	18	-729.272	2.281	4	-12.732	0	16	-599.268	2.329	12	-901.106	2.329	4
85	M3	max	1161.396	0	8	17.543	3.154	18	329.237	3.154	10	-7.945	3.154	14	320.12	0	8	263.379	0	12
86		min	-1061.658	0	14	-69.215	0	16	-306.041	3.154	12	-16.219	0	16	-294.213	0	14	-342.437	0	6
87	M4	max	1165.957	4.658	11	69.194	4.658	19	297.906	1.504	15	16.226	1.456	19	316.266	4.658	11	259.369	4.658	15
88		min	-1066.18	4.658	13	-17.519	1.504	17	-321.113	1.504	5	7.925	0	13	-290.376	4.658	13	-338.436	4.658	5
89	M5	max	1053.661	2.329	11	131.65	2.329	16	712.497	2.329	11	12.742	4.659	19	707.768	2.329	9	464.888	2.329	13
90		min	-978.646	0	13	-131.805	2.329	17	-708.227	2.281	7	-12.74	0	19	-581.491	2.329	15	-883.085	2.329	7
91	M7	max	1165.957	4.658	10	69.194	4.658	18	297.906	1.504	14	16.226	1.456	18	316.266	4.658	10	259.369	4.658	14
92		min	-1066.18	4.658	12	-17.519	1.504	16	-321.113	1.504	4	7.925	0	12	-290.376	4.658	12	-338.436	4.658	4
93	M8	max	1053.661	2.329	10	131.651	2.329	19	712.497	2.329	10	12.742	4.659	18	707.768	2.329	8	464.888	2.329	12
94		min	-978.646	0	12	-131.805	2.329	16	-708.227	2.281	6	-12.74	0	18	-581.491	2.329	14	-883.085	2.329	6
95	M9	max	1165.931	0	10	17.524	3.154	16	321.12	3.154	8	-7.925	3.154	12	316.303	0	10	259.408	0	14
96		min	-1066.128	0	12	-69.196	0	18	-297.926	3.154	14	-16.225	3.203	18	-290.405	0	12	-338.458	0	4
97	M11	max	1045.489	2.329	9	131.651	2.329	18	733.885	2.329	9	12.733	4.659	17	725.485	2.329	11	482.88	2.329	15
98		min	-970.539	0	15	-131.779	2.329	19	-729.272	2.281	5	-12.732	0	17	-599.268	2.329	13	-901.106	2.329	5
99	M12	max	1161.396	0	9	17.543	3.154	19	329.237	3.154	11	-7.945	3.154	15	320.12	0	9	263.379	0	13
100		min	-1061.658	0	15	-69.215	0	17	-306.041	3.154	13	-16.219	3.203	17	-294.213	0	15	-342.437	0	7
101	M6	max	1165.931	0	11	17.524	3.154	17	321.12	3.154	9	-7.925	3.154	13	316.303	0	11	259.408	0	15
102		min	-1066.128	0	13	-69.196	0	19	-297.926	3.154	15	-16.225	3.203	19	-290.405	0	13	-338.458	0	5
103	M10	max	1161.402	4.658	9	69.213	4.658	17	306.015	1.504	13	16.22	1.456	17	320.076	4.658	9	263.337	4.658	13
104		min	-1061.695	4.658	15	-17.538	1.504	19	-329.222	1.504	7	7.945	1.504	15	-294.18	4.658	15	-342.409	4.658	7
105	S1	max	1442.866	2.5	15	1879.352	0	19	101.831	2.5	8	1.059	2.5	14	243.321	2.5	8	176.863	0	19
106		min	-2229.018	0	5	-412.193	2.5	19	-101.815	1.172	6	-1.062	0	12	-243.288	2.5	6	-2002.893	1.172	19
107	M71	max	1633.182	2.5	9	-346.145	0	15	41.198	1.146	10	0.071	2.5	12	98.775	2.5	10	1506.218	2.5	17
108		min	-538.469	0	15	-623.782	2.5	17	-41.17	0	4	-0.073	0	14	-98.718	2.5	4	-4.198	0	17
109	M70	max	1066.073	2.5	10	-347.767	0	12	41.198	1.146	11	0.071	1.146	13	98.775	2.5	11	1505.203	2.5	18
110		min	28.387	1.172	12	-623.397	2.5	18	-41.17	0	5	-0.073	0	15	-98.718	2.5	5	-4.202	0	18
111	M69	max	1066.073	2.5	11	-347.767	0	13	41.152	1.146	8	0.068	2.5	14	98.681	2.5	8	1505.203	2.5	19
112		min	28.387	1.172	13	-623.397	2.5	19	-41.174	0	6	-0.076	0	12	-98.725	2.5	6	-4.202	0	19
113	S2	max	1442.866	2.5	14	1879.352	0	18	101.818	2.5	11	1.057	1.146	13	243.296	2.5	11	176.863	0	18
114		min	-2229.018	0	4	-412.193	2.5	18	-101.809	1.172	5	-1.064	0	15	-243.287	2.5	13	-2002.893	1.172	18
115	S3	max	1397.253	2.5	13	1879.85	0	17	101.818	2.5	10	1.057	2.5	12	243.296	2.5	10	176.943	0	17
116		min	-2182.479	0	7	-412.317	2.5	17	-101.809	1.172	4	-1.064	0	14	-243.287	2.5	12	-2003.394	1.172	17
117	S4	max	1397.253	2.5	12	1879.85	0	16	101.831	2.5	9	1.059	2.5	15	243.321	2.5	9	176.943	0	16
118		min	-2182.479	0	6	-412.317	2.5	16	-101.815	1.172	7	-1.062	0	13	-243.288	2.5	7	-2003.394	1.172	16
119	M24	max	2646.43	2.5	8	1217.787	0	16	82.329	2.5	9	1.694	1.146	9	197.043	2.5	13	86.87	0	16
120		min	-1999.465	0	14	-1055.776	2.5	16	-82.402	1.172	7	-1.565	0	7	-197.259	2.5	15	-1317.708	1.172	16
121	M23	max	2646.43	2.5	9	1217.787	0	17	82.452	2.5	10	1.555	1.146	10	197.355	2.5	14	86.87	0	17
122		min	-1999.465	0	15	-1055.776	2.5	17	-82.4	1.172	4	-1.705	0	4	-197.171	2.5	12	-1317.708	1.172	17

Envelope Maximum Member Section Forces (Continued)

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
123	M22	max	1515.153	2.5	10	1217.065	0	18	82.452	2.5	11	1.555	1.146	11	197.355	2.5	15	86.789	0	18
124		min	-869.006	0	12	-1055.431	2.5	18	-82.4	1.172	5	-1.705	0	5	-197.171	2.5	13	-1316.949	1.172	18
125	M21	max	1515.153	2.5	11	1217.065	0	19	82.329	2.5	8	1.694	1.146	8	197.043	2.5	12	86.789	0	19
126		min	-869.006	0	13	-1055.431	2.5	19	-82.402	1.172	6	-1.565	0	6	-197.259	2.5	14	-1316.949	1.172	19
127	M72	max	1633.182	2.5	8	-346.145	0	14	41.152	1.146	9	0.068	2.5	15	98.681	2.5	9	1506.218	2.5	16
128		min	-538.469	0	14	-623.782	2.5	16	-41.174	0	7	-0.076	0	13	-98.725	2.5	7	-4.198	0	16
129	M17	max	1442.866	2.105	15	300.484	3.933	19	194.362	5.318	14	1.059	3.712	14	621.371	3.712	8	366.293	3.933	19
130		min	-1584.209	0	5	-723.908	3.878	19	-194.419	3.933	4	-1.062	0	12	-621.316	3.712	6	-1469.424	0	19
131	M18	max	1442.866	2.105	14	300.484	3.933	18	194.377	5.318	13	1.057	3.712	13	621.335	3.712	11	366.293	3.933	18
132		min	-1584.209	0	4	-723.908	3.878	18	-194.368	3.933	15	-1.064	0	15	-621.256	3.712	5	-1469.424	0	18
133	M19	max	1397.253	2.105	13	300.529	3.933	17	194.377	5.318	12	1.057	3.712	12	621.335	3.712	10	366.372	3.933	17
134		min	-1538.546	0	7	-723.861	3.878	17	-194.368	3.933	14	-1.064	0	14	-621.256	3.712	4	-1469.761	0	17
135	M85	max	1066.073	2.105	11	1491.806	2.161	19	86.618	3.878	10	0.068	2.105	14	251.182	3.712	12	2892.162	2.161	19
136		min	-448.314	2.161	5	-678.074	2.105	19	-86.56	3.767	4	-0.076	0	12	-251.102	3.712	14	-23.451	5.318	17
137	M87	max	1633.182	2.105	9	1492.654	2.161	17	86.611	3.878	8	0.071	3.712	12	251.24	3.712	14	2893.737	2.161	17
138		min	-1013.856	2.161	7	-678.338	2.105	17	-86.685	3.767	6	-0.073	2.161	14	-251.3	3.712	12	-23.44	5.318	16
139	M86	max	1066.073	2.105	10	1491.806	2.161	18	86.611	3.878	9	0.071	3.712	13	251.24	3.712	15	2892.162	2.161	18
140		min	-448.314	2.161	4	-678.074	2.105	18	-86.685	3.767	7	-0.073	2.161	15	-251.3	3.712	13	-23.451	5.318	16
141	M20	max	1397.253	3.712	12	300.529	3.933	16	194.362	5.318	15	1.059	2.105	15	621.371	3.712	9	366.372	3.933	16
142		min	-1538.546	2.161	6	-723.861	3.878	16	-194.419	3.933	5	-1.062	2.161	13	-621.316	3.712	7	-1469.761	0	16
143	M37	max	1515.153	2.105	11	1080.883	2.161	17	173.168	5.318	10	1.694	2.105	8	502.544	3.712	8	2392.771	2.161	19
144		min	-880.983	2.161	5	-1110.922	2.105	19	-172.842	3.933	4	-1.565	0	6	-502.325	3.712	6	-34.911	5.318	17
145	M39	max	2646.43	2.105	9	1080.796	2.161	17	173.036	5.318	8	1.555	3.712	10	502.61	3.712	10	2393.101	2.161	17
146		min	-2012.306	2.161	7	-1111.218	2.105	17	-173.304	3.933	6	-1.705	2.161	4	-502.943	3.712	4	-34.824	5.318	16
147	M40	max	2646.43	2.105	8	1080.796	2.161	16	173.168	5.318	11	1.694	3.712	9	502.544	3.712	9	2393.101	2.161	16
148		min	-2012.306	2.161	6	-1111.218	2.105	16	-172.842	3.933	5	-1.565	0	7	-502.325	3.712	7	-34.824	5.318	17
149	M88	max	1633.182	2.105	8	1492.654	2.161	16	86.618	3.878	11	0.068	3.712	15	251.182	3.712	13	2893.737	2.161	16
150		min	-1013.856	2.161	6	-678.338	2.105	16	-86.56	3.767	5	-0.076	2.161	13	-251.102	3.712	15	-23.44	5.318	17
151	M38	max	1515.153	2.105	10	1080.883	2.161	16	173.036	5.318	9	1.555	2.105	11	502.61	3.712	11	2392.771	2.161	18
152		min	-880.983	2.161	4	-1110.922	2.105	18	-173.304	3.933	7	-1.705	2.161	5	-502.943	3.712	5	-34.911	5.318	16
153	M97	max	920.746	5.072	13	57.795	5.072	15	-30.152	5.072	15	0	5.072	19	414.198	0	17	293.137	0	15
154		min	-924.285	0	7	-58.42	0	5	-104.818	0	17	0	0	1	0	5.072	1	-296.308	0	5
155	M98	max	920.67	5.072	13	58.422	5.072	9	-30.15	5.072	15	0	5.072	19	414.194	0	17	296.323	0	9
156		min	-924.243	0	7	-57.8	0	15	-104.816	0	17	0	0	1	0	5.072	1	-293.167	0	15
157	M99	max	1012	5.072	13	56.385	5.072	11	-62.726	5.072	14	0	5.072	19	722.458	0	16	285.986	0	11
158		min	-1018.222	0	7	-55.84	0	13	-165.594	0	16	0	0	1	0	5.072	1	-283.223	0	13
159	M100	max	1012.056	5.072	13	55.851	5.072	13	-62.95	5.072	14	0	5.072	19	722.058	0	16	283.279	0	13
160		min	-1018.245	0	7	-56.393	0	7	-165.514	0	16	0	0	1	0	5.072	1	-286.028	0	7
161	M101	max	502.04	5.072	13	28.455	5.072	11	-42.211	5.072	14	0	5.072	19	494.084	0	16	144.326	0	11
162		min	-514.168	0	7	-27.723	0	13	-120.568	0	16	0	0	1	0	5.072	1	-140.61	0	13
163	M102	max	502.045	5.072	13	27.726	5.072	13	-42.196	5.072	14	0	5.072	19	494.089	0	16	140.629	0	13
164		min	-514.18	0	7	-28.459	0	7	-120.568	0	16	0	0	1	0	5.072	1	-144.347	0	7
165	M103	max	920.67	5.072	12	58.422	5.072	8	-30.15	5.072	14	0	5.072	19	414.194	0	16	296.323	0	8
166		min	-924.243	0	6	-57.8	0	14	-104.816	0	16	0	0	1	0	5.072	1	-293.167	0	14
167	M104	max	1012.056	5.072	12	55.851	5.072	12	-62.723	5.072	15	0	5.072	19	722.451	0	17	283.279	0	12
168		min	-1018.245	0	6	-56.393	0	6	-165.592	0	17	0	0	1	0	5.072	1	-286.028	0	6
169	M105	max	502.045	5.072	12	27.726	5.072	12	-42.21	5.072	15	0	5.072	19	494.079	0	17	140.629	0	12
170		min	-514.18	0	6	-28.459	0	6	-120.566	0	17	0	0	1	0	5.072	1	-144.347	0	6
171	M106	max	502.04	5.072	12	28.455	5.072	10	-42.197	5.072	15	0	5.072	19	494.093	0	17	144.326	0	10
172		min	-514.168	0	6	-27.723	0	12	-120.57	0	17	0	0	1	0	5.072	1	-140.61	0	12
173	M107	max	1012	5.072	12	56.385	5.072	10	-62.952	5.072	15	0	5.072	19	722.065	0	17	285.986	0	10
174		min	-1018.222	0	6	-55.84	0	12	-165.517	0	17	0	0	1	0	5.072	1	-283.223	0	12
175	M108	max	920.746	5.072	12	57.795	5.072	14	-30.152	5.072	14	0	5.072	19	414.198	0	16	293.137	0	14
176		min	-924.285	0	6	-58.42	0	4	-104.818	0	16	0	0	1	0	5.072	1	-296.308	0	4
177	M109	max	926.452	5.072	15	59.872	5.072	11	-29.762	5.072	13	0	5.072	19	414.615	0	19	303.676	0	11

Envelope Maximum Member Section Forces (Continued)

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
178		min	-929.948	0	5	-59.254	0	13	-104.899	0	19	0	0	1	0	5.072	1	-300.543	0	13
179	M110	max	873.921	5.072	15	33.905	5.072	14	-61.921	5.072	15	0	5.072	19	723.818	0	17	171.969	0	14
180		min	-881.283	0	5	-34.491	0	4	-165.861	0	17	0	0	1	0	5.072	1	-174.941	0	4
181	M111	max	433.152	5.072	15	16.757	5.072	14	-42.11	5.072	15	0	5.072	19	494.253	0	17	84.992	0	14
182		min	-445.585	0	5	-17.501	0	4	-120.6	0	17	0	0	1	0	5.072	1	-88.764	0	4
183	M112	max	433.199	5.072	15	15.457	5.072	9	-42.112	5.072	15	0	5.072	19	494.257	0	17	78.399	0	9
184		min	-445.623	0	5	-14.737	0	15	-120.602	0	17	0	0	1	0	5.072	1	-74.746	0	15
185	M113	max	874.015	5.072	15	30.38	5.072	9	-61.923	5.072	15	0	5.072	19	723.825	0	17	154.086	0	9
186		min	-881.422	0	5	-29.883	0	15	-165.864	0	17	0	0	1	0	5.072	1	-151.567	0	15
187	M114	max	926.508	5.072	15	59.247	5.072	13	-29.763	5.072	13	0	5.072	19	414.618	0	19	300.504	0	13
188		min	-929.964	0	5	-59.868	0	7	-104.901	0	19	0	0	1	0	5.072	1	-303.649	0	7
189	M115	max	926.452	5.072	14	59.872	5.072	10	-29.762	5.072	12	0	5.072	19	414.615	0	18	303.676	0	10
190		min	-929.948	0	4	-59.254	0	12	-104.899	0	18	0	0	1	0	5.072	1	-300.543	0	12
191	M116	max	873.921	5.072	14	29.882	5.072	14	-61.921	5.072	14	0	5.072	19	723.818	0	16	151.566	0	14
192		min	-881.283	0	4	-30.376	0	4	-165.861	0	16	0	0	1	0	5.072	1	-154.07	0	4
193	M117	max	433.152	5.072	14	14.737	5.072	14	-42.11	5.072	14	0	5.072	19	494.253	0	16	74.746	0	14
194		min	-445.585	0	4	-15.458	0	4	-120.6	0	16	0	0	1	0	5.072	1	-78.403	0	4
195	M118	max	433.199	5.072	14	17.503	5.072	9	-42.112	5.072	14	0	5.072	19	494.257	0	16	88.776	0	9
196		min	-445.623	0	4	-16.76	0	15	-120.602	0	16	0	0	1	0	5.072	1	-85.009	0	15
197	M119	max	874.015	5.072	14	34.501	5.072	9	-61.923	5.072	14	0	5.072	19	723.825	0	16	174.989	0	9
198		min	-881.422	0	4	-33.912	0	15	-165.864	0	16	0	0	1	0	5.072	1	-172.001	0	15
199	M120	max	926.508	5.072	14	59.247	5.072	12	-29.763	5.072	12	0	5.072	19	414.618	0	18	300.504	0	12
200		min	-929.964	0	4	-59.868	0	6	-104.901	0	18	0	0	1	0	5.072	1	-303.649	0	6

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	R4	max	2182.479	10	1882.085	16	102.294	11	1.062	13	10.868	11	-110.414	14
2		min	-910.27	12	1189.088	14	-102.281	5	-1.059	15	-10.876	5	-176.943	16
3	R1	max	102.294	10	1881.573	18	956.348	15	-110.711	13	10.868	10	1.059	14
4		min	-102.281	4	1190.199	13	-2229.018	5	-176.863	19	-10.876	4	-1.062	12
5	R3	max	102.3	10	1882.085	17	2182.479	11	176.943	17	10.863	8	1.064	14
6		min	-102.263	4	1189.088	15	-910.27	13	110.414	15	-10.871	6	-1.057	12
7	R2	max	956.348	14	1881.573	19	102.3	11	1.057	13	10.863	9	176.863	18
8		min	-2229.018	4	1190.199	12	-102.263	5	-1.064	15	-10.871	7	110.711	12
9	N53	max	81.825	14	1216.824	19	874.296	11	-55.055	13	8.356	14	1.694	8
10		min	-82.28	12	770.079	13	-869.006	13	-86.789	19	-8.351	12	-1.565	6
11	N54	max	874.296	10	1216.824	18	81.872	15	1.555	11	8.386	9	86.789	18
12		min	-869.006	12	770.079	12	-82.345	13	-1.705	5	-8.379	7	55.055	12
13	N55	max	81.872	14	1217.227	17	1999.465	15	86.87	17	8.386	8	1.705	8
14		min	-82.345	12	767.985	15	-2003.773	5	54.646	15	-8.379	6	-1.555	6
15	N56	max	1999.465	14	1217.227	16	81.825	15	1.565	11	8.356	15	-54.646	14
16		min	-2003.773	4	767.985	14	-82.28	13	-1.694	5	-8.351	13	-86.87	16
17	N101	max	40.895	14	-347.766	13	1066.073	11	4.202	19	4.179	10	0.068	14
18		min	-41.014	12	-584.106	19	28.387	13	1.505	13	-4.181	4	-0.076	12
19	N102	max	1066.073	10	-347.766	12	40.919	15	0.071	13	4.19	13	-1.505	12
20		min	28.387	12	-584.106	18	-41.035	13	-0.073	15	-4.191	7	-4.202	18
21	N103	max	40.919	14	-346.152	15	538.469	15	-1.561	15	4.19	12	0.073	14
22		min	-41.035	12	-584.528	17	-1633.182	5	-4.198	17	-4.191	6	-0.071	12
23	N104	max	538.469	14	-346.152	14	40.895	15	0.076	13	4.179	11	4.198	16
24		min	-1633.182	4	-584.528	16	-41.014	13	-0.068	15	-4.181	5	1.561	14
25	Totals:	max	7728.274	10	10057.249	19	7728.274	11						
26		min	-7728.274	12	6452.807	14	-7728.274	13						

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PROJECT: NM01-148 SPIKE

ENCLOSURE CALCULATIONS

FRP Member Design for Compression (RISA):

Label: FRP Kicker Brace

INPUT:

		Notes:
Unbraced Length, L [ft]:	10.6	See RISA model member M48 for max axial force. Force divided by 2 to account for double angles. Force multiplied by 0.6 to convert LRFD forces to ASD
Axial, C [lb]:	692	
K:	1	

Column: 4x4x3/8 FRP Angle

r [in]:	0.79
E [psi]:	2,800,000
A [in^2]:	2.86

OUTPUT:

f_a [psi]:	242	<	F_a [psi]:	356	**OK, 68%**

Select 4x4x3/8 FRP Angle FRP column

FRP Shear Connection w/ Steel Bolts:

Label: Kicker to HSS, typ.

Bearing stress of FRP member controls.

INPUT:

		Notes:
Design Force, P [lb]:	692	Design Force = axial in FRP Kicker Brace, typ.
Steel Bolt Diameter, d_b [in]:	1/2	
# Bolts, n_b:	2	
FRP Web Thickness, t_w [in]:	3/8	
Double Shear:	No	
Bearing Stress:	Lengthwise	
Factor of Safety, FS:	4	

OUTPUT:

f_{brg} [psi]:	1,844	<	F_{brg} [psi]:	7,500	**OK, 25%**

Select (2) 1/2" diameter steel bolts

See attached FRP material and section properties.

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PROJECT: NM01-148 SPIKE

FRP Member Design for Compression (RISA):

Label: FRP Vertical Brace

INPUT:

Unbraced Length, L [ft]:	10.6
Axial, C [lb]:	318
K:	1

Notes:
See RISA model member M42 for max axial force. Force divided by 2 to account for double angles. Force multiplied by 0.6 to convert LRFD forces to ASD

Column: 4x4x3/8 FRP Angle

r [in]:	0.79
E [psi]:	2,800,000
A [in^2]:	2.86

OUTPUT:

f_a [psi]:	111	<	F_a [psi]:	356	**OK, 31%**

Select 4x4x3/8 FRP Angle FRP column

FRP Shear Connection w/ Steel Bolts:

Label: Vertical Brace to HSS, typ.

Bearing stress of FRP member controls.

INPUT:

Design Force, P [lb]:	318
Steel Bolt Diameter, d_b [in]:	1/2
# Bolts, n_b:	2
FRP Web Thickness, t_w [in]:	3/8
Double Shear:	No
Bearing Stress:	Lengthwise
Factor of Safety, FS:	4

Notes:
Design Force = axial in FRP Vertical Brace, typ.

OUTPUT:

f_{brg} [psi]:	847	<	F_{brg} [psi]:	7,500	**OK, 11%**

Select (2) 1/2" diameter steel bolts

See attached FRP material and section properties.

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PROJECT: NM01-148 Spike

DESIGN APPROACH: LRFD

BOLTED SHEAR CONNECTION

Location: STEEL Stand Off Arm

Bolt Grade:	ASTM A325		
Bolt Diameter:	0.625	in	
Number of Bolts:	2		
Double Shear?	No		
Bolt Capacity:	24850	lbs	(AISC Equation J3-1)
Shear Load:	2646	lbs	
Check Bolt:	10.6%		
Result:	**Select (2) 0.625 in. dia. ASTM A325 bolts.**		
Note:	See RISA model section set 'STEEL Stand Off Arm' load combination 4 for max Axial [lb]		

BOLT/PIN BEARING & MATERIAL TENSILE/SHEAR STRENGTH

Location: STEEL Stand Off Arm

Bolt or Pin Diameter:	0.625	in	
Hole Diameter or Slot Width:	0.6875	in	
Number of Bolts or Pins:	2		
Plate Thickness:	0.375	in	
Plate Yield Strength (F_y):	36	ksi	
Plate Ultimate Strength (F_u):	58	ksi	
Bolt/Pin Parallel Edge Distance:	1	in	(measured from center of hole)
Bearing Capacity:	25692	lbs	
Perpendicular Edge Distance:	1	in	(measured from center of hole)
Effective Perp. Edge Distance:	1		
Tensile Rupture Capacity:	42820	lbs	(AISC Equation D5-1)
Shear Rupture Capacity:	37927	lbs	(AISC Equation D5-2)
Load:	2646	lbs	
Check Bearing:	10.3%		
Result:	**Selected connection type is adequate.**		
Note:	See RISA model section set 'STEEL Stand Off Arm' load combination 4 for max Axial [lb]		

Available AISC Checks:

Equation	Check?	Capacity
J3-6a	Yes	12846
J3-6b	No	
J3-6c	No	
J7-1	No	

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PROJECT: NM01-148 Spike

BOLTED SHEAR CONNECTION

Location: STEEL Outrigger Weldment

Bolt Grade:	ASTM A325		
Bolt Diameter:	0.625	in	
Number of Bolts:	1		
Double Shear?	No		
Bolt Capacity:	12425	lbs	(AISC Equation J3-1)
Shear Load:	1018	lbs	
Check Bolt:	8.2%		

Result: **Select (1) 0.625 in. dia. ASTM A325 bolt.**

Note: See RISA model section set 'STEEL Outrigger Weldment' load combination 6 for max Axial [lb]

BOLT/PIN BEARING & MATERIAL TENSILE/SHEAR STRENGTH

Location: STEEL Outrigger Weldment

Bolt or Pin Diameter:	0.625	in	
Hole Diameter or Slot Width:	0.6875	in	
Number of Bolts or Pins:	1		
Plate Thickness:	0.375	in	
Plate Yield Strength (F_y):	36	ksi	
Plate Ultimate Strength (F_u):	58	ksi	
Bolt/Pin Parallel Edge Distance:	1	in	(measured from center of hole)
Bearing Capacity:	12846	lbs	
Perpendicular Edge Distance:	1	in	(measured from center of hole)
Effective Perp. Edge Distance:	1		
Tensile Rupture Capacity:	21410	lbs	(AISC Equation D5-1)
Shear Rupture Capacity:	18963	lbs	(AISC Equation D5-2)
Load:	1018	lbs	
Check Bearing:	7.9%		

Available AISC Checks:

Equation	Check?	Capacity
J3-6a	Yes	12846
J3-6b	No	
J3-6c	No	
J7-1	No	

Result: **Selected connection type is adequate.**

Note: See RISA model section set 'STEEL Outrigger Weldment' load combination 6 for max Axial [lb]

JOB NO.: U0142.2054.242

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PROJECT: NM01-148 Spike

BOLTED SHEAR CONNECTION

Location: STEEL Stand Off Arm Inner

Bolt Grade:	ASTM A325		
Bolt Diameter:	0.75	in	
Number of Bolts:	3		
Double Shear?	No		
Bolt Capacity:	53677	lbs	(AISC Equation J3-1)
Shear Load:	1898	lbs	
Check Bolt:	3.5%		
Result:	**Select (3) 0.75 in. dia. ASTM A325 bolts.**		
Note:	See RISA model section set 'STEEL Stand Off Arm Inner' load combination 6 for max Axial [lb]		

BOLT/PIN BEARING & MATERIAL TENSILE/SHEAR STRENGTH

Location: STEEL Stand Off Arm Inner

Bolt or Pin Diameter:	0.75	in	
Hole Diameter or Slot Width:	0.8125	in	
Number of Bolts or Pins:	3		
Plate Thickness:	0.375	in	
Plate Yield Strength (F_y):	36	ksi	
Plate Ultimate Strength (F_u):	58	ksi	
Bolt/Pin Parallel Edge Distance:	1	in	(measured from center of hole)
Bearing Capacity:	34868	lbs	
Perpendicular Edge Distance:	1	in	(measured from center of hole)
Effective Perp. Edge Distance:	1		
Tensile Rupture Capacity:	58113	lbs	(AISC Equation D5-1)
Shear Rupture Capacity:	56890	lbs	(AISC Equation D5-2)
Load:	1898	lbs	
Check Bearing:	5.4%		
Result:	**Selected connection type is adequate.**		
Note:	See RISA model section set 'STEEL Stand Off Arm Inner' load combination 6 for max Axial [lb]		

Available AISC Checks:

Equation	Check?	Capacity
J3-6a	Yes	11623
J3-6b	No	
J3-6c	No	
J7-1	No	

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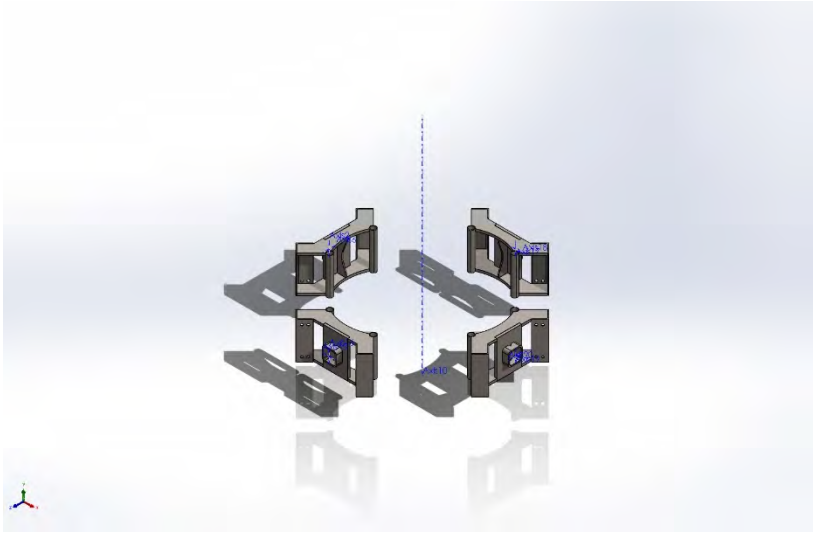

Simulation of MONOPOLE MOUNT

Date: Thursday, October 24, 2024
Designer: JJB
Study name: Static 1
Analysis type: Static

Table of Contents

Description 1
Study Properties 7
Units 7
Material Properties 8
Loads and Fixtures 11
Connector Definitions 15
Interaction Information 25
Mesh information 26
Study Results 28
Conclusion 31

Description

Four-sided Raycap Clamp

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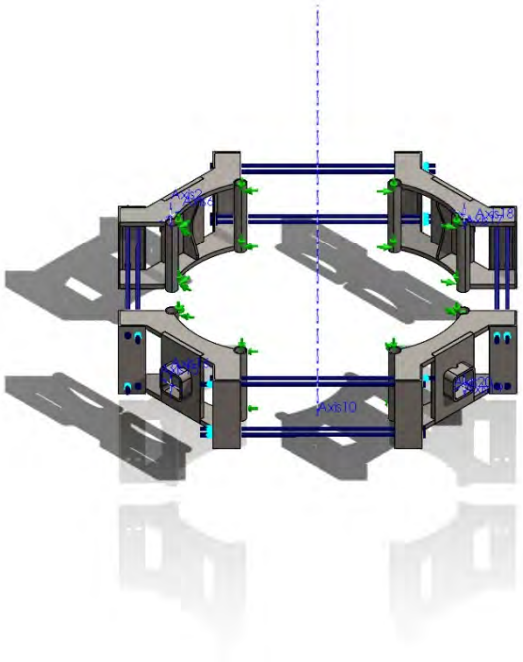

Model name: MONOPOLE MOUNT
Current Configuration: Default

Solid Bodies

Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
Mirror1	Solid Body	**Mass:2.7207 lb** **Volume:9.59348 in^3** **Density:0.283599 lb/in^3** **Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Mirror1	Solid Body	**Mass:2.7207 lb** **Volume:9.59348 in^3** **Density:0.283599 lb/in^3** **Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Cut-Extrude1	Solid Body	**Mass:6.53976 lb** **Volume:23.0598 in^3** **Density:0.283599 lb/in^3** **Weight:6.53532 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt** Oct 23 17:20:18 2024

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Cut-Extrude1	Solid Body	**Mass:6.53976 lb Volume:23.0598 in^3 Density:0.283599 lb/in^3 Weight:6.53532 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt** Oct 23 17:20:18 2024
Boss-Extrude1	Solid Body	**Mass:20.4191 lb Volume:72 in^3 Density:0.283599 lb/in^3 Weight:20.4053 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT PLATE.sldprt** Oct 23 17:42:47 2024
Cut-Extrude1	Solid Body	**Mass:3.18636 lb Volume:11.2354 in^3 Density:0.283599 lb/in^3 Weight:3.18419 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT STEEL TUBE.sldprt** Oct 23 18:11:10 2024
Boss-Extrude1	Solid Body	**Mass:2.33967 lb Volume:8.2499 in^3 Density:0.283599 lb/in^3 Weight:2.33808 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT SUPPORT.sldprt** Oct 24 09:18:20 2024
Boss-Extrude1	Solid Body	**Mass:19.6216 lb Volume:69.1876 in^3 Density:0.283599 lb/in^3 Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror2	Solid Body	**Mass:19.6216 lb Volume:69.1876 in^3 Density:0.283599 lb/in^3 Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror1	Solid Body	**Mass:2.7207 lb Volume:9.59348 in^3 Density:0.283599 lb/in^3 Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
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Cut-Extrude1	Solid Body	**Mass:6.53976 lb Volume:23.0598 in^3**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt**

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		Density:0.283599 lb/in^3 **Weight:6.53532 lbf**	Oct 23 17:20:18 2024
Boss-Extrude1	Solid Body	**Mass:20.4191 lb** **Volume:72 in^3** **Density:0.283599 lb/in^3** **Weight:20.4053 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT PLATE.sldprt** Oct 23 17:42:47 2024
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Boss-Extrude1	Solid Body	**Mass:2.33967 lb** **Volume:8.2499 in^3** **Density:0.283599 lb/in^3** **Weight:2.33808 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT SUPPORT.sldprt** Oct 24 09:18:20 2024
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Mirror2	Solid Body	**Mass:19.6216 lb** **Volume:69.1876 in^3** **Density:0.283599 lb/in^3** **Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror1	Solid Body	**Mass:2.7207 lb** **Volume:9.59348 in^3** **Density:0.283599 lb/in^3** **Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Mirror1	Solid Body	**Mass:2.7207 lb** **Volume:9.59348 in^3** **Density:0.283599 lb/in^3** **Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
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Study Properties

Study name	Static 1
Analysis type	Static
Mesh type	Solid Mesh
Thermal Effect:	On
Thermal option	Include temperature loads
Zero strain temperature	77 Fahrenheit
Include fluid pressure effects from SOLIDWORKS Flow Simulation	Off
Solver type	FFEPlus
Inplane Effect:	Off
Soft Spring:	Off
Inertial Relief:	Off
Incompatible bonding options	Automatic
Large displacement	Off
Compute free body forces	Off
Friction	Off
Use Adaptive Method:	Off
Result folder	SOLIDWORKS document (C:\Users\joshua.blom\Desktop\Raycap Clamp\Results)

Units

Unit system:	English (IPS)
Length/Displacement	in
Temperature	Fahrenheit
Angular velocity	Hertz
Pressure/Stress	ksi

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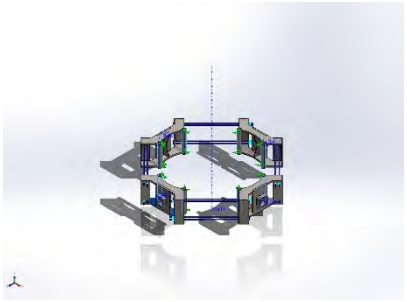
Material Properties

Model Reference	Properties	Components
	**Name:** ASTM A36 Steel **Model type:** Linear Elastic Isotropic **Default failure criterion:** Max von Mises Stress **Yield strength:** 250 N/mm^2 **Tensile strength:** 400 N/mm^2 **Elastic modulus:** 200,000 N/mm^2 **Poisson's ratio:** 0.26 **Mass density:** 7.85 g/cm^3 **Shear modulus:** 79,300 N/mm^2	SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-1/2 x 0.145 - 6-1), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-1/2 x 0.145 - 6-2), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-1/4 - 6-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-1/4 - 6-2), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-1/MONOPOLE MOUNT PLATE-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-1/MONOPOLE MOUNT STEEL TUBE-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-1/MONOPOLE MOUNT SUPPORT-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-1/W PLATE-2), SolidBody 2(Mirror2)(Assem8^MONOPOLE MOUNT-1/W PLATE-2), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-10/2 x 0.145 - 6-1), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-10/2 x 0.145 - 6-2), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-10/4 - 6-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-10/4 - 6-2), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE

		MOUNT-10/MONOPOLE MOUNT PLATE-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-10/MONOPOLE MOUNT STEEL TUBE-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-10/MONOPOLE MOUNT SUPPORT-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-10/W PLATE-2), SolidBody 2(Mirror2)(Assem8^MONOPOLE MOUNT-10/W PLATE-2), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-11/2 x 0.145 - 6-1), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-11/2 x 0.145 - 6-2), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-11/4 - 6-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-11/4 - 6-2), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-11/MONOPOLE MOUNT PLATE-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-11/MONOPOLE MOUNT STEEL TUBE-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-11/MONOPOLE MOUNT SUPPORT-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-11/W PLATE-2), SolidBody 2(Mirror2)(Assem8^MONOPOLE MOUNT-11/W PLATE-2), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-8/2 x 0.145 - 6-1),

		SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-8/2 x 0.145 - 6-2), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-8/4 - 6-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-8/4 - 6-2), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-8/MONOPOLE MOUNT PLATE-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-8/MONOPOLE MOUNT STEEL TUBE-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-8/MONOPOLE MOUNT SUPPORT-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-8/W PLATE-2), SolidBody 2(Mirror2)(Assem8^MONOPOLE MOUNT-8/W PLATE-2)
Curve Data:N/A		

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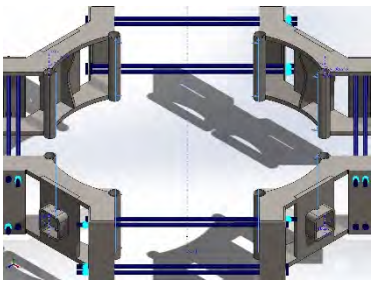
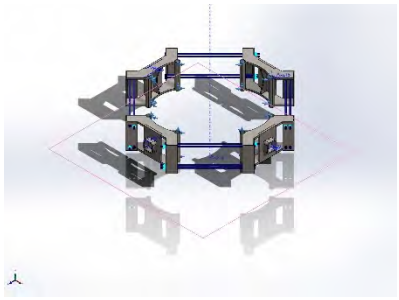
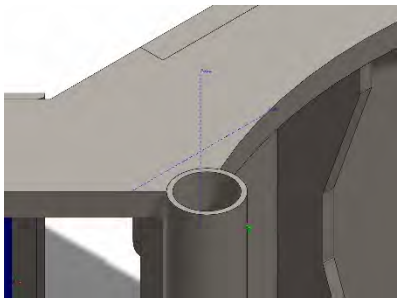
Loads and Fixtures

Fixture name	Fixture Image	Fixture Details
Reference Geometry-2		**Entities:** 8 edge(s) **Reference:** Face< 1 > **Type:** Use reference geometry **Translation:** 0, 0 rad., 0 **Units:** in

Resultant Forces

Components	X	Y	Z	Resultant
Reaction force(lbf)	0.729984	-7,184.11	0.138231	7,184.11
Reaction Moment(lbf.in)	0	0	0	0

Load name	Load Image	Load Details
Gravity-1		**Reference:** Top Plane **Values:** 0 0 -386.22 **Units:** in/s^2
Force-1		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** -2,229 lbf

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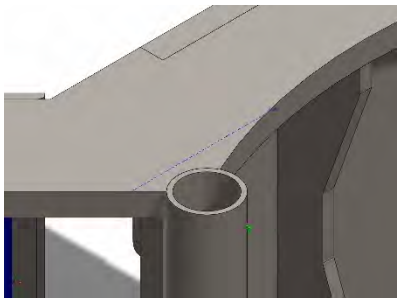
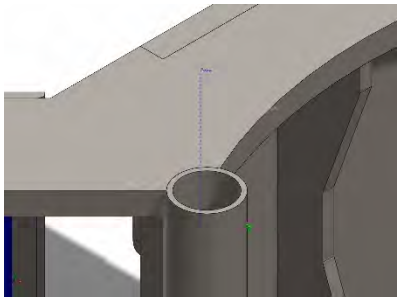
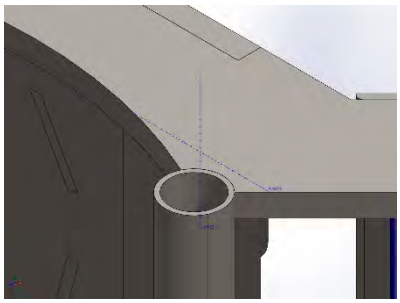
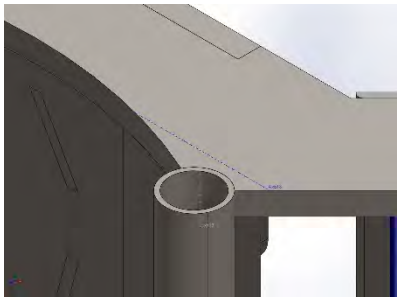
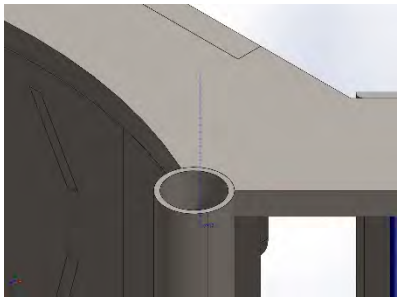
Force-2		**Entities:** 1 face(s) **Reference:** Axis2 **Type:** Apply force **Values:** ---, ---, -1,879.9 lbf
Torque-1		**Entities:** 1 face(s) **Reference:** Axis6 **Type:** Apply torque **Value:** 18,074.6 lbf.in
Copy[1] Force-1		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** -2,229 lbf
Copy[1] Force-2		**Entities:** 1 face(s) **Reference:** Axis17 **Type:** Apply force **Values:** ---, ---, 1,879.9 lbf
Copy[1] Torque-1		**Entities:** 1 face(s) **Reference:** Axis18 **Type:** Apply torque **Value:** 18,074.6 lbf.in

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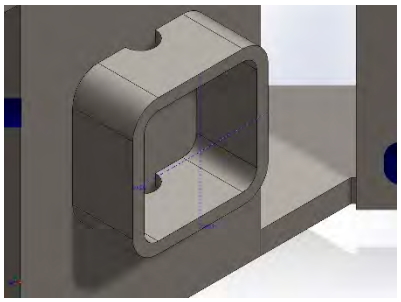
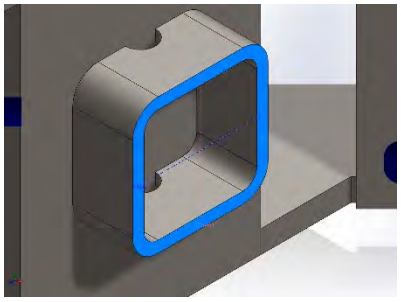
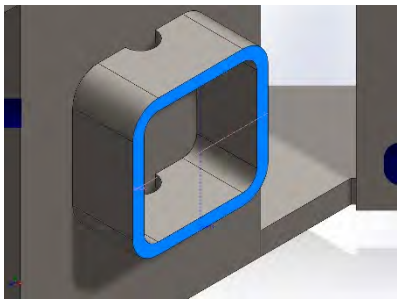
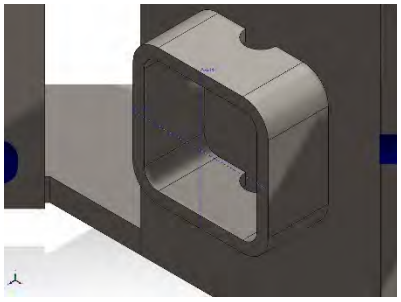
Copy[1] Force-1{1}		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** -2,229 lbf
Copy[1] Force-2{1}		**Entities:** 1 face(s) **Reference:** Axis19 **Type:** Apply force **Values:** ---, ---, 1,879.9 lbf
Copy[1] Torque-1{1}		**Entities:** 1 face(s) **Reference:** Axis20 **Type:** Apply torque **Value:** 18,074.6 lbf.in
Copy[1] Force-1{1}{1}		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** -2,229 lbf

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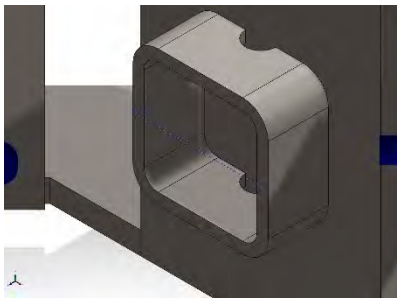
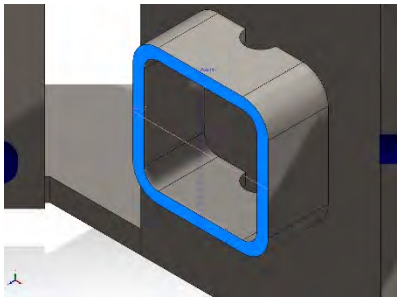
Copy[1] Force-2{1}{1}		**Entities:** 1 face(s) **Reference:** Axis16 **Type:** Apply force **Values:** ---, ---, -1,879.9 lbf
Copy[1] Torque-1{1}{1}		**Entities:** 1 face(s) **Reference:** Axis15 **Type:** Apply torque **Value:** 18,074.6 lbf.in

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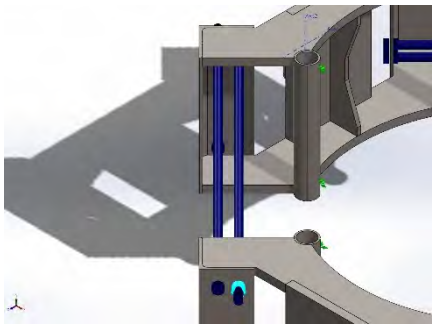
Connector Definitions

Pin/Bolt/Bearing Connector

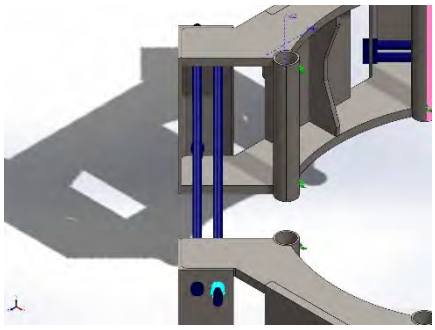
Model Reference	Connector Details	Strength Details
 Pin Connector-1	**Entities:** 2 face(s) **Type:** Pin **With retaining ring (No translation):** Yes **With key (No rotation):** No **Connection Type:** Rigid **Units:** English (IPS) **Rotational stiffness value:** 0	No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	299.43	0	299.43	423.46
Shear Force (lbf)	0.29259	0.15461	-0.29257	0.44171
Torque (lbf.in)	0	0	0	0
Bending moment (lbf.in)	95.95	137.48	-95.95	193.17

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-299.43	-0	-299.43	-423.46
Shear Force (lbf)	-0.29259	-0.15461	0.29257	0.44171
Torque (lbf.in)	4.2204e-06	0	4.2204e-06	5.9685e-06
Bending moment (lbf.in)	-99.197	-125.19	99.197	188.02

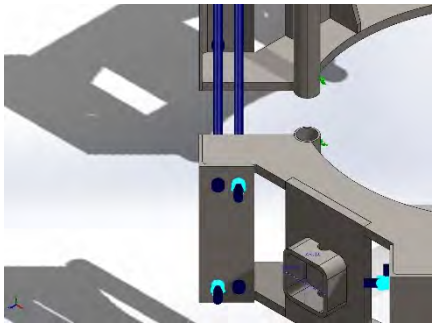
 Pin Connector-2	**Entities:** 2 face(s) **Type:** Pin **With retaining ring (No translation):** Yes **With key (No rotation):** No **Connection Type:** Rigid **Units:** English (IPS) **Rotational stiffness value:** 0	No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	167.08	-0	167.08	-236.29
Shear Force (lbf)	-0.14211	-0.044949	0.14209	0.20592
Torque (lbf.in)	-2.2336e-08	0	-2.2336e-08	3.1589e-08
Bending moment (lbf.in)	50.597	-57.461	-50.597	91.771

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-167.08	0	-167.08	236.29
Shear Force (lbf)	0.14211	0.044949	-0.14209	0.20592
Torque (lbf.in)	6.4084e-08	-0	6.4084e-08	-9.0628e-08
Bending moment (lbf.in)	-51.588	63.724	51.588	96.868



Pin Connector-3

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	148.6	-0	148.6	-210.15
Shear Force (lbf)	0.34643	-0.28745	-0.34642	0.56802
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	-60.912	46.294	60.912	97.794

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-148.6	0	-148.6	210.15
Shear Force (lbf)	-0.34643	0.28745	0.34642	0.56802
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	54.792	-61.043	-54.792	98.644

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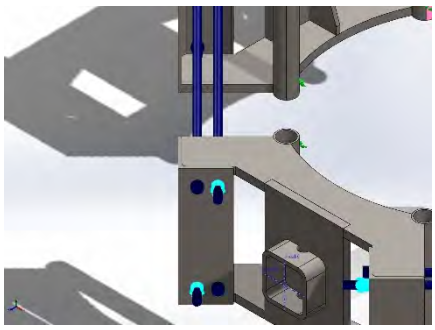
10/24/2024



Pin Connector-4

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

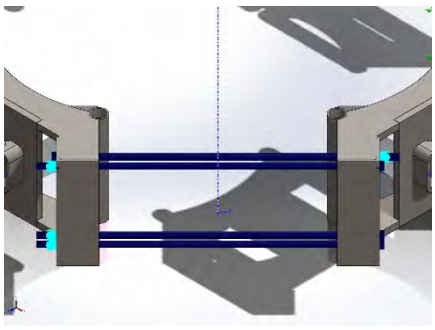
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	8.3205	0	8.3205	11.767
Shear Force (lbf)	-0.13743	0.077944	0.13743	0.2094
Torque (lbf.in)	6.2462e-08	0	6.2462e-08	8.8335e-08
Bending moment (lbf.in)	23.552	-22.282	-23.552	40.073

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-8.3205	-0	-8.3205	-11.767
Shear Force (lbf)	0.13743	-0.077944	-0.13743	0.2094
Torque (lbf.in)	7.6283e-09	0	7.6283e-09	1.0788e-08
Bending moment (lbf.in)	-25.215	16.418	25.215	39.257



Pin Connector-5

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	296.1	0	-296.1	418.75
Shear Force (lbf)	0.17629	-0.14127	0.17627	0.28655
Torque (lbf.in)	0	0	-0	0
Bending moment (lbf.in)	-100.37	124.44	-100.37	188.77

Connector Forces Joint 2

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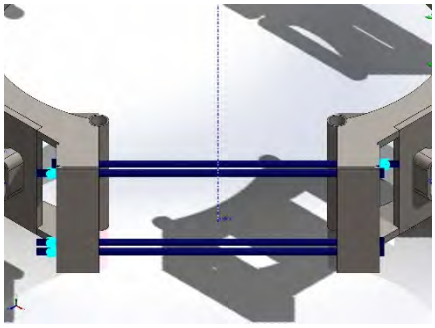
Draper, UT 84020

JJB
10/24/2024

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-296.1	-0	296.1	-418.75
Shear Force (lbf)	-0.17629	0.14127	-0.17627	0.28655
Torque (lbf.in)	0	0	-0	0
Bending moment (lbf.in)	97.468	-131.69	97.468	190.64



Pin Connector-6

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

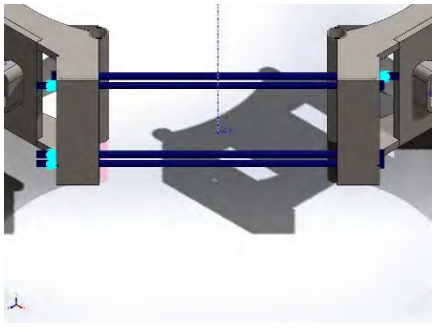
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	177.69	-0	-177.69	-251.29
Shear Force (lbf)	-0.041436	0.011963	-0.041423	0.059799
Torque (lbf.in)	3.2385e-07	-0	-3.2385e-07	-4.5799e-07
Bending moment (lbf.in)	-57.751	-60.293	-57.751	101.52

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-177.69	0	177.69	251.29
Shear Force (lbf)	0.041436	-0.011963	0.041423	0.059799
Torque (lbf.in)	-3.0908e-07	0	3.0908e-07	4.3711e-07
Bending moment (lbf.in)	57.401	57.866	57.401	99.69



Pin Connector-7

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

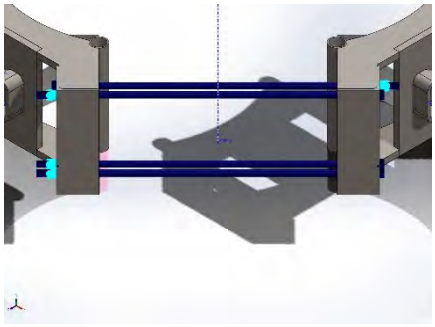
Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant

Axial Force (lbf)	-138.99	-0	138.99	-196.57
Shear Force (lbf)	-0.073459	0.13005	-0.073473	0.16646
Torque (lbf.in)	-2.034e-06	-0	2.034e-06	-2.8765e-06
Bending moment (lbf.in)	-51.875	-49.749	-51.875	88.64

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	138.99	0	-138.99	196.57
Shear Force (lbf)	0.073459	-0.13005	0.073473	0.16646
Torque (lbf.in)	1.913e-06	0	-1.913e-06	2.7054e-06
Bending moment (lbf.in)	54.745	52.992	54.745	93.82



Pin Connector-8

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

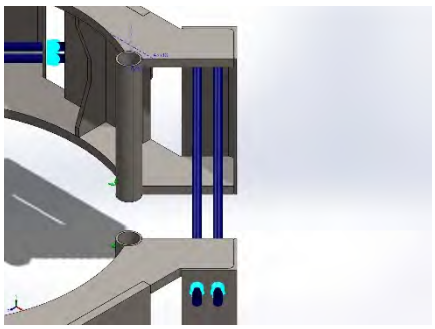
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	12.477	0	-12.477	17.645
Shear Force (lbf)	-0.055332	-0.039551	-0.055333	0.08768
Torque (lbf.in)	0	0	-0	0
Bending moment (lbf.in)	-21.054	-17.502	-21.054	34.538

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-12.477	-0	12.477	-17.645
Shear Force (lbf)	0.055332	0.039551	0.055333	0.08768
Torque (lbf.in)	1.0551e-06	0	-1.0551e-06	1.4921e-06
Bending moment (lbf.in)	20.211	19.861	20.211	34.806



Pin Connector-9

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

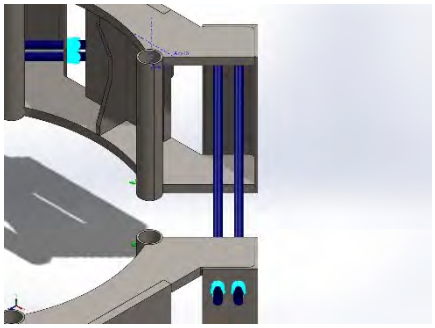
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-289.93	0	-289.93	410.03
Shear Force (lbf)	0.31207	-0.4776	-0.31209	0.6503
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	-97.56	122.94	97.56	184.8

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	289.93	-0	289.93	-410.03
Shear Force (lbf)	-0.31207	0.4776	0.31209	0.6503
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	87.434	-136.17	-87.434	183.94



Pin Connector-10

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

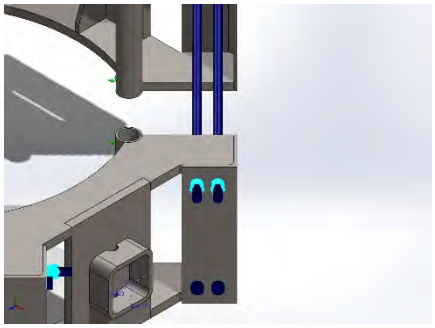
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	195.92	-0	195.92	-277.07
Shear Force (lbf)	0.23139	-0.1846	-0.23138	0.37571
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	63.693	65.093	-63.693	111.13

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-195.92	0	-195.92	277.07
Shear Force (lbf)	-0.23139	0.1846	0.23138	0.37571
Torque (lbf.in)	2.1102e-06	-0	2.1102e-06	-2.9842e-06
Bending moment (lbf.in)	-67.595	-74.877	67.595	121.43



Pin Connector-11

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

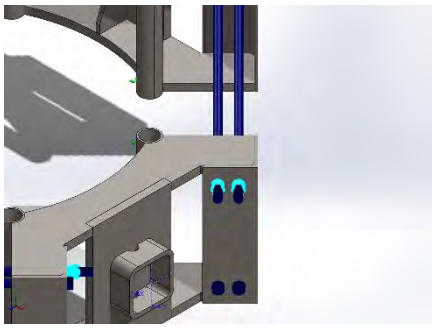
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-140.61	-0	-140.61	-198.85
Shear Force (lbf)	0.40394	0.44276	-0.40395	0.72276
Torque (lbf.in)	0	0	0	0
Bending moment (lbf.in)	51.57	57.884	-51.57	93.11

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	140.61	0	140.61	198.85
Shear Force (lbf)	-0.40394	-0.44276	0.40395	0.72276
Torque (lbf.in)	0	0	0	0
Bending moment (lbf.in)	-61.01	-40.66	61.01	95.382



Pin Connector-12

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant

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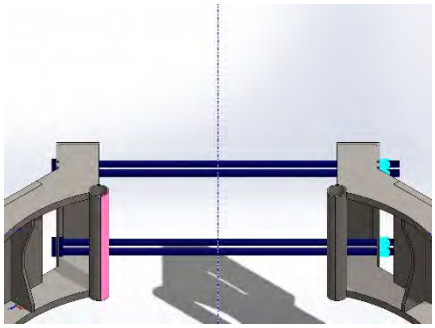
Draper, UT 84020

JJB
10/24/2024

Axial Force (lbf)	21.421	0	21.421	30.293
Shear Force (lbf)	0.19279	0.31392	-0.19279	0.41578
Torque (lbf.in)	-9.8166e-09	-0	-9.8166e-09	-1.3883e-08
Bending moment (lbf.in)	12.75	24.596	-12.75	30.497

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-21.421	-0	-21.421	-30.293
Shear Force (lbf)	-0.19279	-0.31392	0.19279	0.41578
Torque (lbf.in)	-2.3525e-07	-0	-2.3525e-07	-3.327e-07
Bending moment (lbf.in)	-19.452	-16.364	19.452	32.008



Pin Connector-13

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

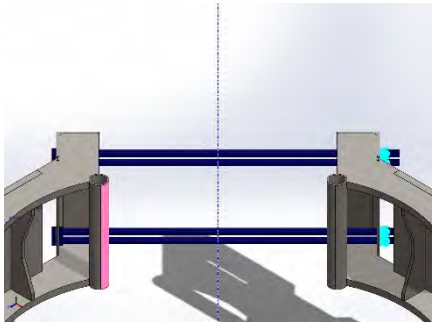
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-4.5667	0	4.5667	6.4583
Shear Force (lbf)	0.29607	1.3987	0.29607	1.46
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-17.015	14.157	-17.015	27.919

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	4.5667	-0	-4.5667	-6.4583
Shear Force (lbf)	-0.29607	-1.3987	-0.29607	1.46
Torque (lbf.in)	-5.2755e-07	0	5.2755e-07	7.4606e-07
Bending moment (lbf.in)	-12.839	-1.5182	-12.839	18.22



Pin Connector-14

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

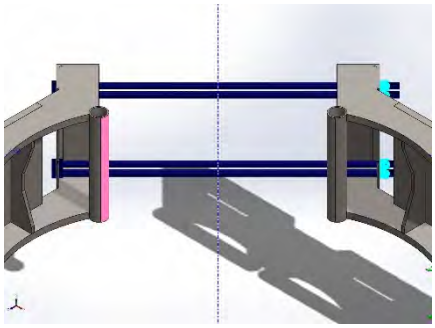
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	11.271	-0	-11.271	-15.94
Shear Force (lbf)	0.2995	1.7639	0.2995	1.814
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-18.251	7.4271	-18.251	26.858

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-11.271	0	11.271	15.94
Shear Force (lbf)	-0.2995	-1.7639	-0.2995	1.814
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-19.398	5.3579	-19.398	27.951



Pin Connector-15

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	4.7067	-0	-4.7067	-6.6563
Shear Force (lbf)	-0.36657	1.48	-0.36657	1.5682
Torque (lbf.in)	-2.8054e-07	0	2.8054e-07	3.9674e-07
Bending moment (lbf.in)	-18.377	-16.867	-18.377	30.983

Connector Forces Joint 2

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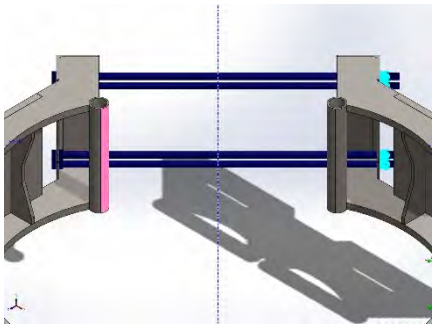
Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-4.7067	0	4.7067	6.6563
Shear Force (lbf)	0.36657	-1.48	0.36657	1.5682
Torque (lbf.in)	2.9124e-08	-0	-2.9124e-08	-4.1187e-08
Bending moment (lbf.in)	-13.208	1.221	-13.208	18.719



Pin Connector-16

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-11.411	0	11.411	16.138
Shear Force (lbf)	-0.22899	1.8998	-0.22899	1.9272
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-21.217	-4.4196	-21.217	30.329

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	11.411	-0	-11.411	-16.138
Shear Force (lbf)	0.22899	-1.8998	0.22899	1.9272
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-19.333	-5.3556	-19.333	27.861

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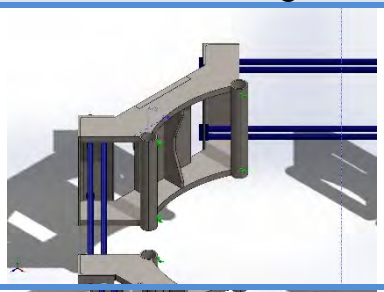
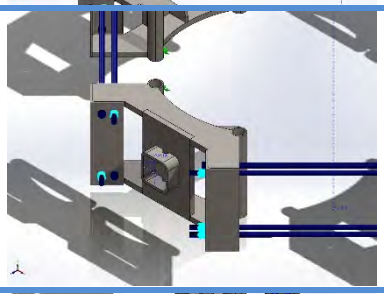
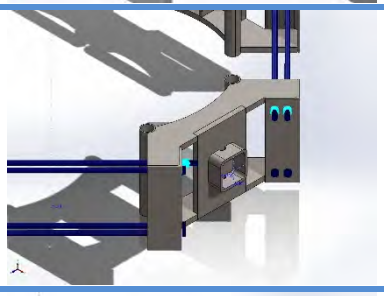
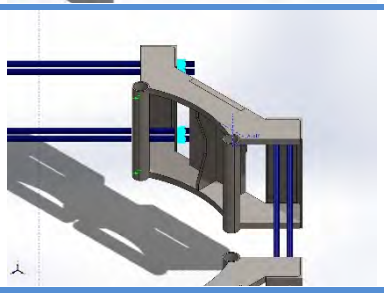
Interaction Information

Interaction	Interaction Image	Interaction Properties
Component Contact-9		**Type:** Bonded **Components:** 5 component(s), 2 Solid Body (s) **Options:** Continuous mesh
Component Interaction-12		**Type:** Bonded **Components:** 8 component(s) **Options:** Independent mesh
Component Interaction-13		**Type:** Bonded **Components:** 8 component(s) **Options:** Independent mesh
Component Interaction-14		**Type:** Bonded **Components:** 8 component(s) **Options:** Independent mesh

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Mesh information

Mesh type	Solid Mesh
Mesher Used:	Curvature-based mesh
Jacobian points for High quality mesh	16 Points
Maximum element size	2 in
Minimum element size	0.4 in
Mesh Quality	High
Remesh failed parts independently	Off

Mesh information - Details

Total Nodes	74378
Total Elements	35555
Maximum Aspect Ratio	53.291
% of elements with Aspect Ratio < 3	49.7
Percentage of elements with Aspect Ratio > 10	3.55
Percentage of distorted elements	0
Time to complete mesh(hh;mm;ss):	00:00:05
Computer name:	VSE096

Mesh Quality Plots

Name	Type	Min	Max
Quality1	Jacobian ratio	1.0 Element: 2023	28.9 Element: 20129

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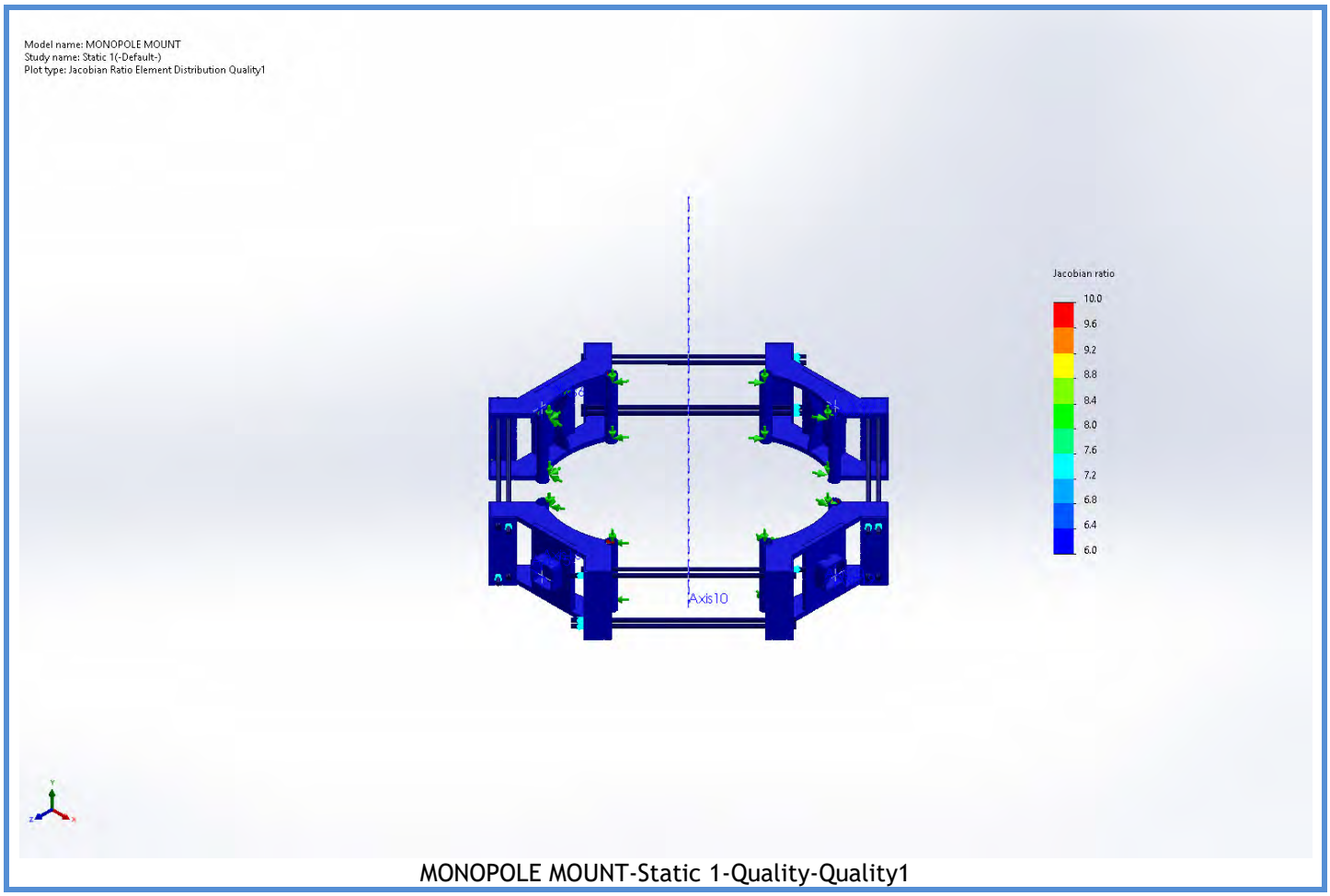

MONOPOLE MOUNT-Static 1-Quality-Quality1

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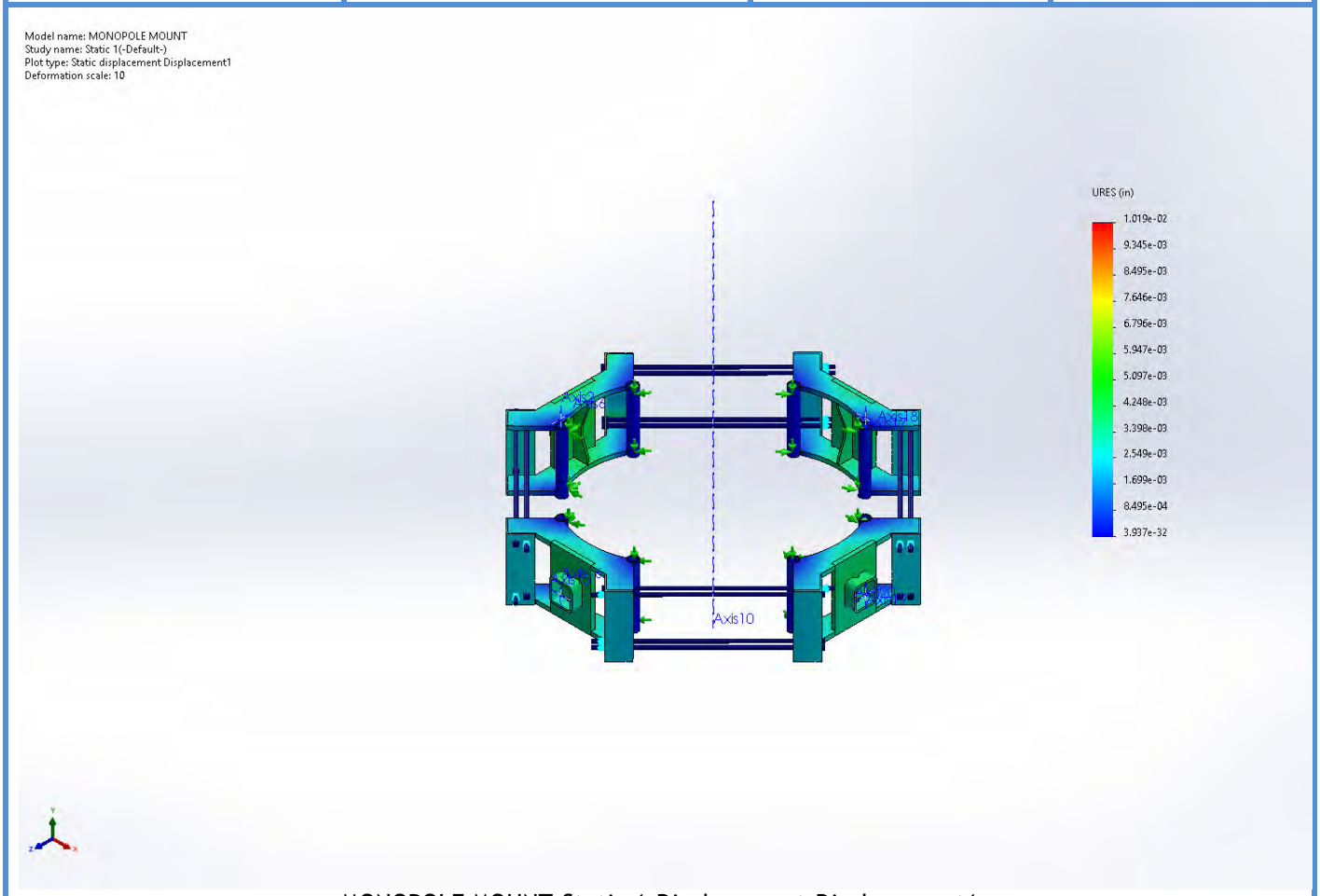
Study Results

Name	Type	Min	Max
Displacement1	URES: Resultant Displacement	0.000e+00in Node: 15	1.019e-02in Node: 8757



MONOPOLE MOUNT-Static 1-Displacement-Displacement1

Name	Type	Min	Max
Stress1	VON: von Mises Stress	0.000ksi Node: 18526	30.273ksi Node: 479

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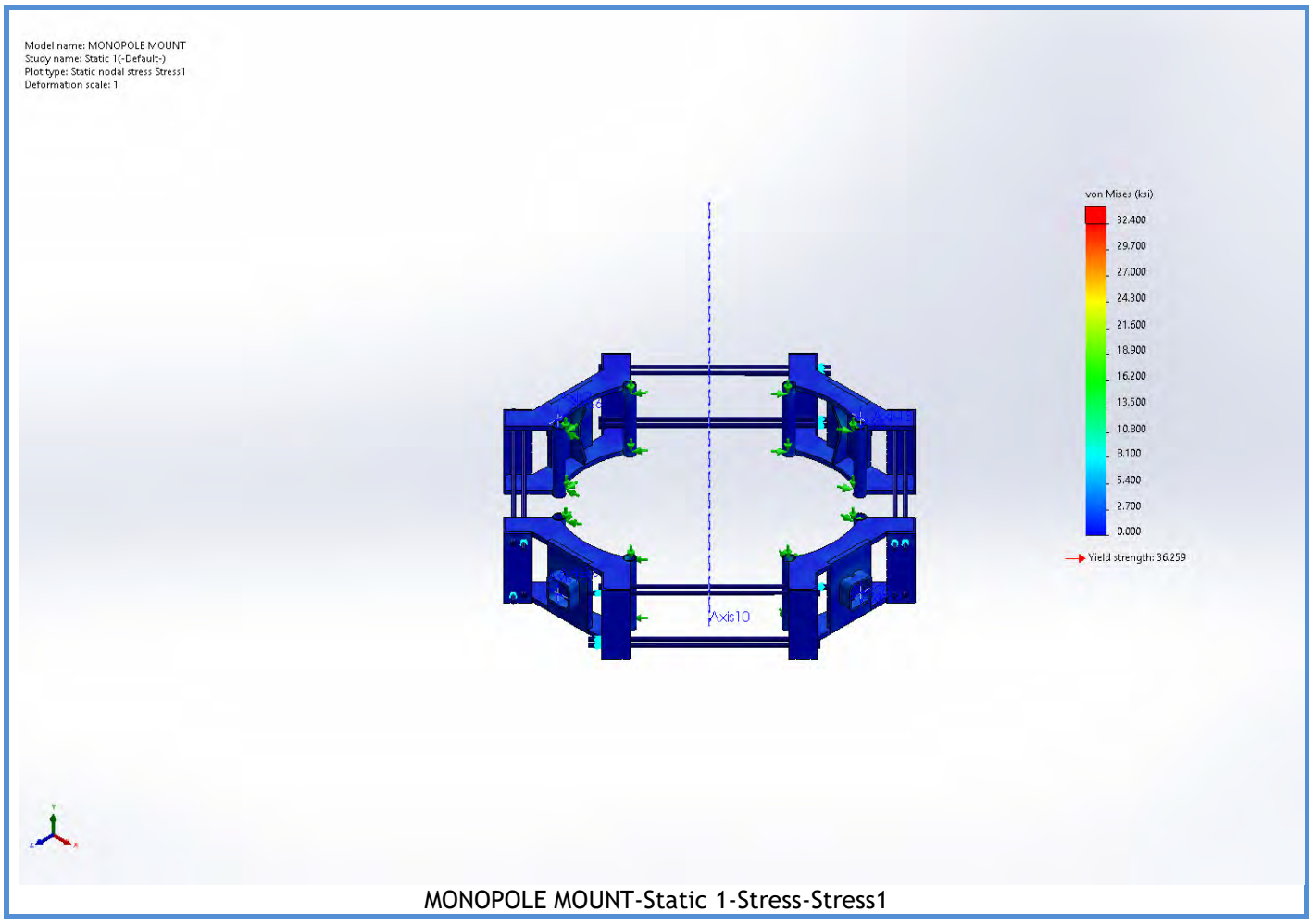

MONOPOLE MOUNT-Static 1-Stress-Stress1

Name	Type	Min	Max
Strain1	ESTRN: Equivalent Strain	1.38e-09 Node: 18526	0.000877 Node: 479

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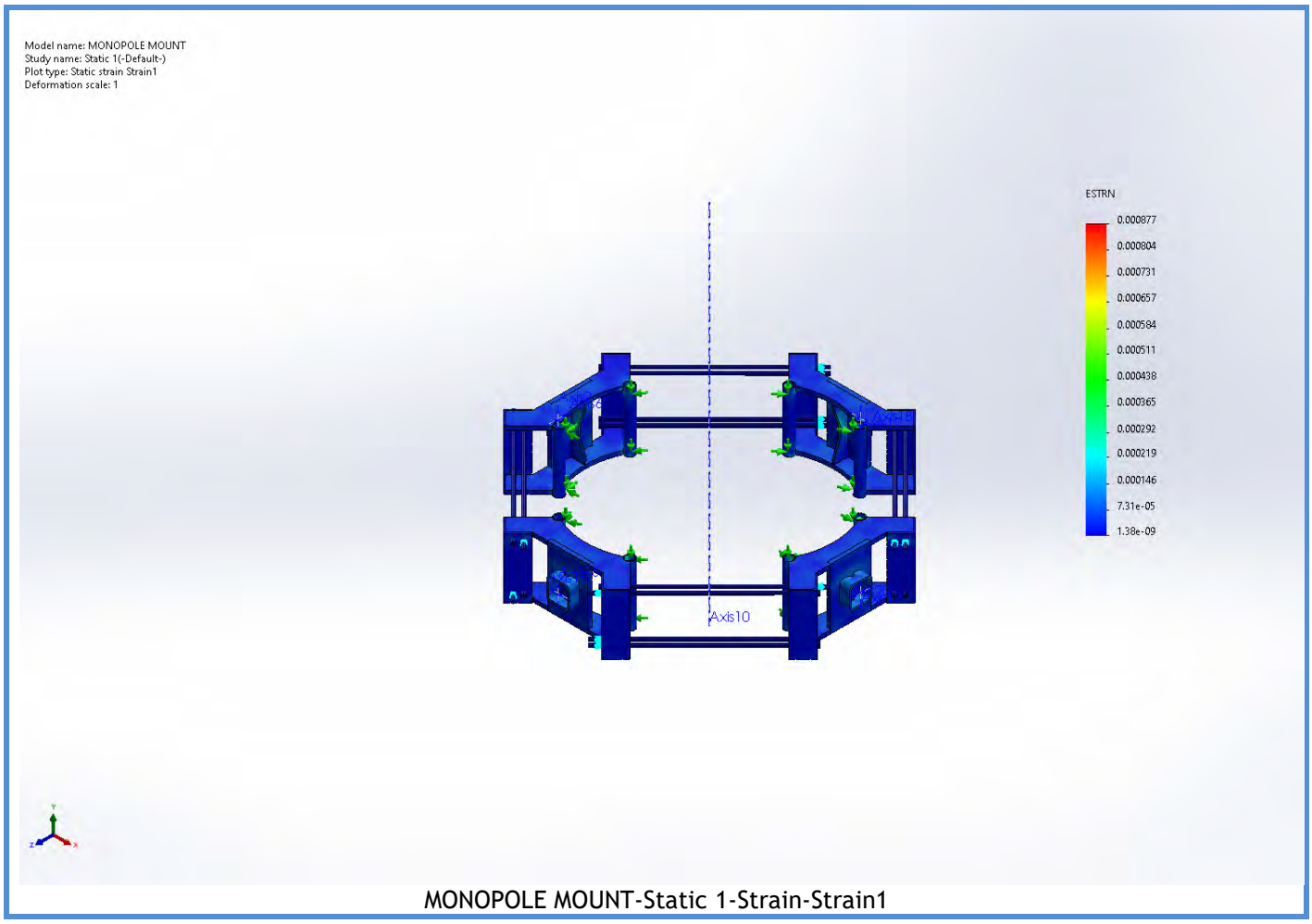

MONOPOLE MOUNT-Static 1-Strain-Strain1

Name	Type	Min	Max
Stress2	VON: von Mises Stress	0.000ksi Node: 18526	30.273ksi Node: 479

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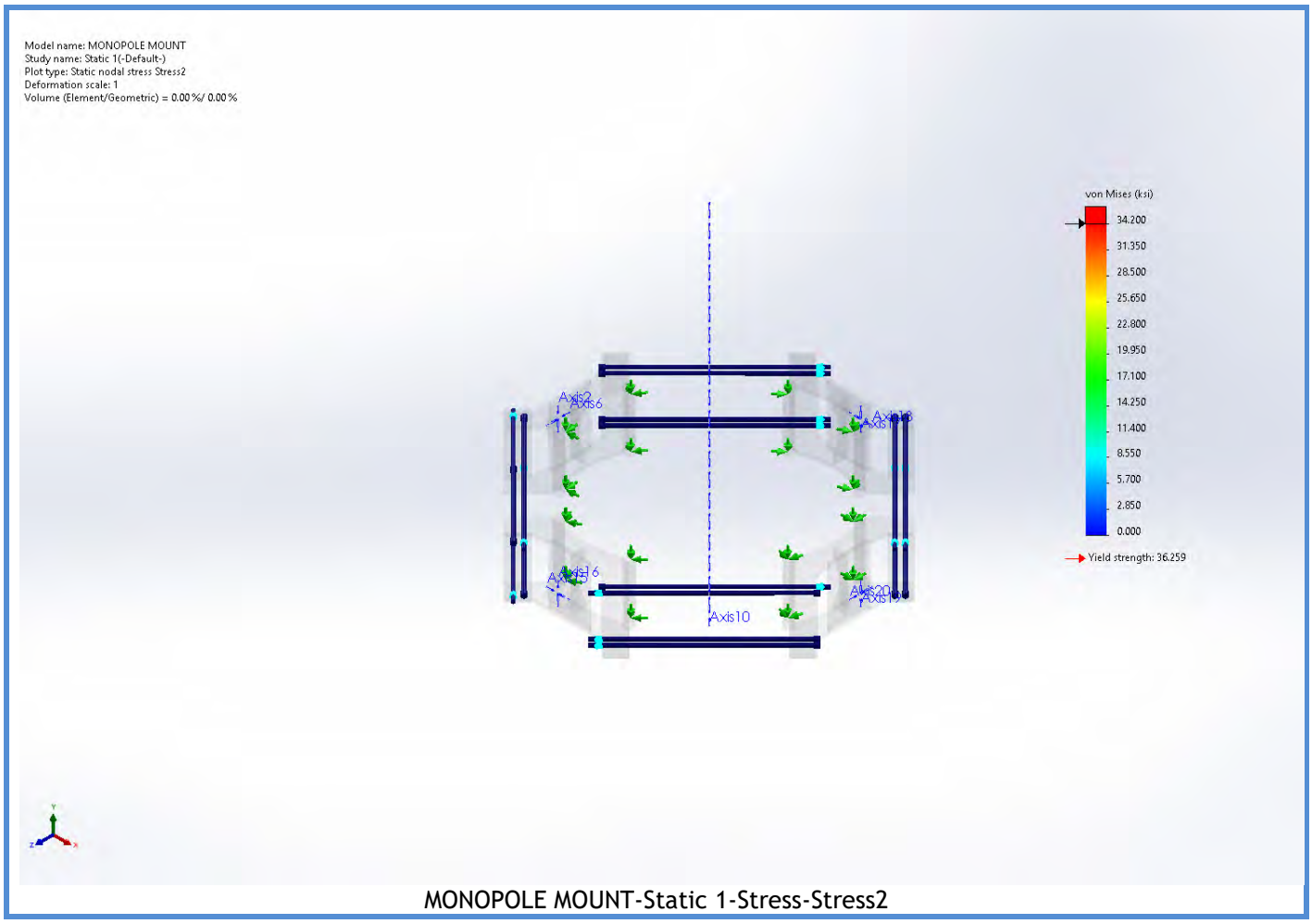


MONOPOLE MOUNT-Static 1-Stress-Stress2

Conclusion

Comments:

No part of the assembly exceeds the permissible Von-Mises stress. Therefore, OK.

ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	35.30946
Risk Category:	II	**Longitude:**	-106.49543
Soil Class:	C - Very Dense Soil and Soft Rock	**Elevation:**	5504.708854228105 ft (NAVD 88)

Wind

Results:

Wind Speed	104 Vmph
10-year MRI	75 Vmph
25-year MRI	82 Vmph
50-year MRI	86 Vmph
100-year MRI	91 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Thu Oct 24 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.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

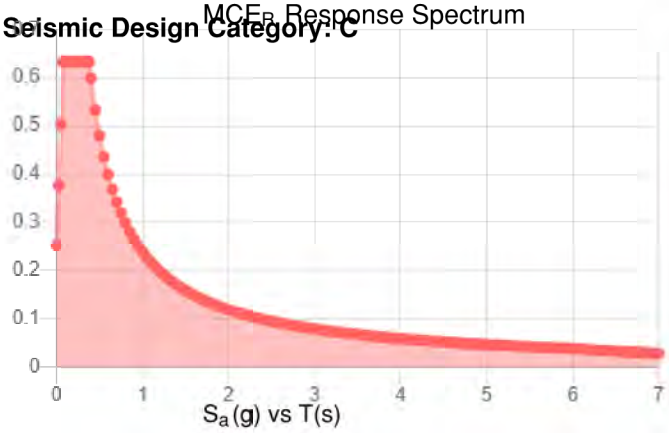
Site Soil Class: C - Very Dense Soil and Soft Rock

Results:

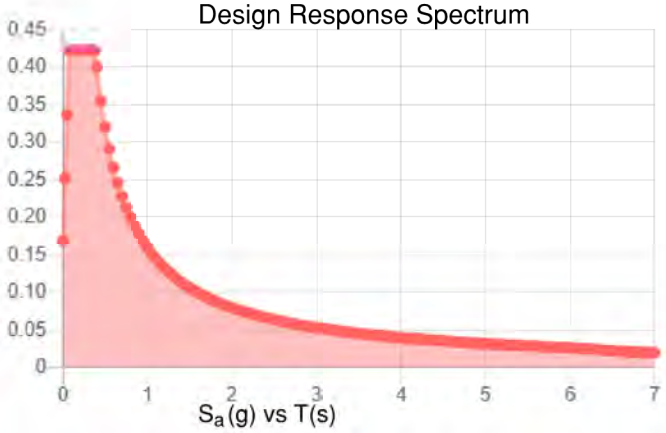
S_S :	0.487	S_{D1} :	0.16
S_1 :	0.16	T_L :	6
F_a :	1.3	PGA :	0.21
F_v :	1.5	PGA_M :	0.252
S_{MS} :	0.633	F_{PGA} :	1.2
S_{M1} :	0.24	I_e :	1
S_{DS} :	0.422	C_v :	0.925

Seismic Design Category: C

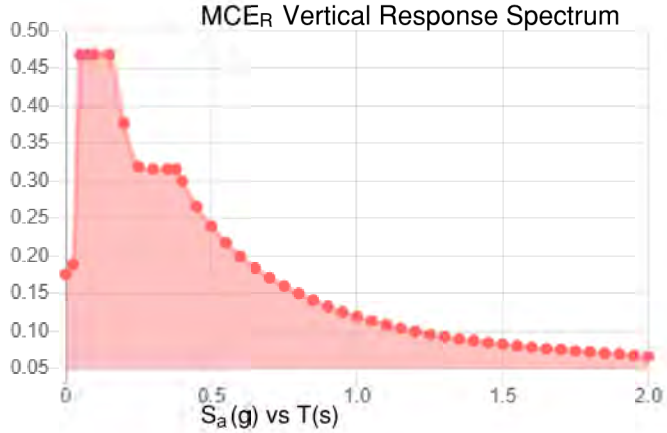
MCE_R Response Spectrum



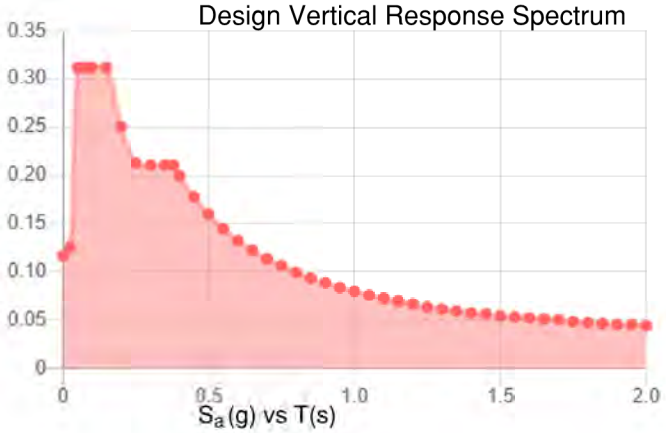
Design Response Spectrum



MCE_R Vertical Response Spectrum



Design Vertical Response Spectrum



Data Accessed: Thu Oct 24 2024

Date Source:

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

Ice

Results:

Ice Thickness:	0.25 in.
Concurrent Temperature:	15 F
Gust Speed	30 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Oct 24 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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STRUCTURAL CALCULATIONS
for
NM01-148 SPIKE

at
221 NEW MEXICO 165
PLACITAS, NM 87043
for
PINNACLE CONSULTING, INC.
&
RAYCAP (SS24-01302H-00R1)

10/24/2024

BY: **JACOB PROCTOR, P.E.**
PROFESSIONAL ENGINEER

PROJECT #: **U0142.2054.242**

DATE: **October 24, 2024**

DESIGNED BY MAR; CHECKED BY KJG

Note:
The calculations presented in this package are intended for a single use at the location indicated above, for the client listed above. These calculations shall not be reproduced, reused, "card filed", sold to a third party, or altered in any way without the written authorization of Vector Structural Engineering, LLC and Raycap.

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PROJECT: NM01-148 SPIKE

Design Criteria:

Code: Structural design is based on the 2021 New Mexico Commerical Building Codes (2021 IBC) and the TIA-222-H standard.

Wind: Basic wind speed = 104 mph (3-second gust) per the TIA-222-H standard
Risk Category: II
Wind exposure: C
Topographic category: 1
Crest height: 0 ft

Ice: 0.25" radial ice @ 30 mph basic wind speed (3-second gust) per the TIA-222-H standard

Seismic: Seismic importance factor, I = 1
Risk Category: II
Mapped spectral response accelerations: S_S = 0.487g S_1 = 0.16g
Site class: C
Spectral response coefficients: S_{DS} = 0.422g S_{D1} = 0.16g
Seismic design category: C
Basic seismic-force-resisting-system: Telecom: Steel Pole
Seismic base shear, V = 5.17 k
Seismic response coefficient, Cs = 0.282
Response modification factor, R = 1.5
Analysis procedure: Equivalent Lateral Force

General Notes:

1 The contractor shall verify dimensions, conditions and elevations before starting work. The engineer shall be notified immediately if any discrepancies are found.
2 The typical notes and details shall apply in all cases unless specifically detailed elsewhere. Where no detail is shown, the construction shall be as shown for other similar work and as required by the building code.
3 These calculations are limited to the structural members shown in these calculations only.
4 The contractor shall be responsible for compliance with local construction safety orders. Approval of shop drawings by the architect or structural engineer shall not be construed as accepting this responsibility.
5 All structural framing members shall be adequately shored and braced during erection and until full lateral and vertical support is provided by adjoining members.

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PROJECT: NM01-148 SPIKE

Structural Steel:

1 All structural steel code checks based on the AISC, 15th Edition per the TIA-222-H standard
2 All 18-sided, tapered shaft steel to be per ASTM A572 GR. 65, U.N.O.
3 The design length of slip splices is equal to 1.67 times the inside width of the base of the upper section. Slip splice length tolerance is equal to ± 10% of the design slip splice length.
4 All steel pipe to be per ASTM A500 GR. B (42 KSI), U.N.O.
4 All steel round tubes (HSS) to be per , U.N.O.
5 All steel rectangular tubes (HSS) to be per ASTM A500 GR. B (46 KSI), U.N.O.
5 All steel wide flange shapes to be per , U.N.O.
6 All other structural steel shapes & plates shall be per ASTM A36, U.N.O.
7 All anchor bolts shall be per ASTM A615 GR. 75, U.N.O.
8 All bolts for steel-to-steel connections shall be per ASTM F3125 GR. A325 U.N.O.
9 All bolted connections shall be tightened per the "turn-of-nut" method as defined by AISC.
10 All welding shall be performed by certified welders in accordance with the latest edition of the American Welding Society (AWS) D1.1. Utilize minimum E70XX low-hydrogen electrode U.N.O. or where higher strength electrode is required by AWS D1.1
11 All steel surfaces shall be galvanized in accordance with ASTM A123 and ASTM F2329 standards, thoroughly coated with a zinc-rich primer, or otherwise protected as noted on the structural drawings.

Fiberglass Reinforced Plastic (FRP):

1 All structural shapes shall be Bedford Reinforced Plastics produced using the pultrusion process.
2 The fabricator and contractor shall exercise precautions necessary to protect the fiberglass pultruded structural shapes from abuse to prevent breakage, nicks, gouges, etc. during fabrication, handling, and installation.
3 Structural shapes shall be fabricated and assembled as indicated on the design drawings.
4 FRP threaded rods and nuts shall be tightened to snug tight and turned an additional 1/2 turn and locked with epoxy.

Foundation / Concrete:

1 All concrete mixing, placement, forming, and reinforcing installation shall be performed in accordance with the requirements of “Building Code Requirements for Reinforced Concrete”, ACI 318-19. Foundation installation shall be in accordance with the requirements of "Standard Specifications for the Construction of Drilled Piers", ACI 336, latest edition
2 All concrete shall have a minimum compressive strength of 4000 psi at 28 days.
3 Cement for all concrete shall be II with 6% (+/- 1.5%) entrained air. Maximum aggregate size shall be 3/4".
4 Reinforcing steel shall be per ASTM A615 Gr. 60, U.N.O.
5 Foundation design is based upon the project soils report prepared by:

Geotech: Tower Engineering Professionals, Inc.
Report No: 341545
Date: 31-Jul-24

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PROJECT: NM01-148 Spike

DESIGN WIND LOADS ON LARGE RADOME CONCEALMENTS:
(Screenwalls/Concealments on Monopoles)

Round Concealment Calculations
Supported on a Pole structure
Design per TIA-222-H

Label: Concealment tower

INPUT DATA:

Basic Wind Speed, V [mph]:	104
Exposure Category:	C
Elevation Above Sea Level [ft]:	5520

Structure:

Supporting Structure:	Pole
Concealment Shape:	Round
Tower Top of Steel (ft):	75
# of Concealments:	3

	Top	2nd	Bottom
Elevation Centerline (ft):	70	60	50
Concealment Height (ft):	10.0	10.0	10.0
Concealment Diameter (ft):	18.0	18.0	18.0
Open Area Top (%):	100%	0%	0%
Open Area Bottom (%):	0%	0%	100%

WIND DESIGN SUMMARY:

	70 ft.	60 ft.	50 ft.
Full Wind Pressure, 1.0W [psf]:	**17.5**	**16.9**	**16.3**
Full Ice Wind Pressure, 1.0W [psf]:	**2.9**	**2.8**	**2.7**
Full Service Wind Pressure, 1.0W [psf]:	**5.8**	**5.6**	**5.4**
Inside Wind Pressure, 1.0W [psf]:	**21.0**	**20.3**	**19.6**
Inside Ice Wind Pressure, 1.0W [psf]:	**3.5**	**3.4**	**3.3**
Inside Service Wind Pressure, 1.0W [psf]:	**7.0**	**6.8**	**6.5**
Wind Force, Outside Face (lbs):	**3151**	**3051**	**2936**
Wind Force, Inside Face (lbs):	**2228**	**0**	**2075**
Total Wind Force (lbs):	**5379**	**3051**	**5011**

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PROJECT: NM01-148 Spike

WEIGHT DESIGN SUMMARY:

Self Weight Only:

	Component:	Densities		Length, Area, Quantity		Self Weight (lb)	Total + 10% (lb)
Top @ 70' Elevation	ESSV Panel: Framing w/o Grating	2.00 3.0	psf psf	Area = ft^2 Area = ft^2	565 254	1131 763	2084
22d @ 60' Elevation	ESSV Panel: Framing w/o Grating	2.00 3.0	psf psf	Area = ft^2 Area = ft^2	565 254	1131 763	2084
Bottom @ 50' Elevation	ESSV Panel: Framing w/o Grating	2.00 3.0	psf psf	Area = ft^2 Area = ft^2	565 254	1131 763	2084
						W_p =	6251

Ice Weight Only:

	Component:	Ice Density		Length, Area		Ice Weight (lb)	Total Weight (lb)
Top @ 70' Elevation	ESSV Panel: Framing w/o Grating	1.3 1.3	psf psf	Area = ft^2 Area = ft^2	565 254	711 320	1031
22d @ 60' Elevation	ESSV Panel: Framing w/o Grating	1.3 1.3	psf psf	Area = ft^2 Area = ft^2	565 254	711 320	1031
Bottom @ 50' Elevation	ESSV Panel: Framing w/o Grating	1.3 1.3	psf psf	Area = ft^2 Area = ft^2	565 0	711 0	711
						W_p =	2774

Total W_p =	9025

JOB NO.: U0142.2054.242

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PROJECT: NM01-148 SPIKE

ASCE 7-16

Seismic Base Shear Calculations:

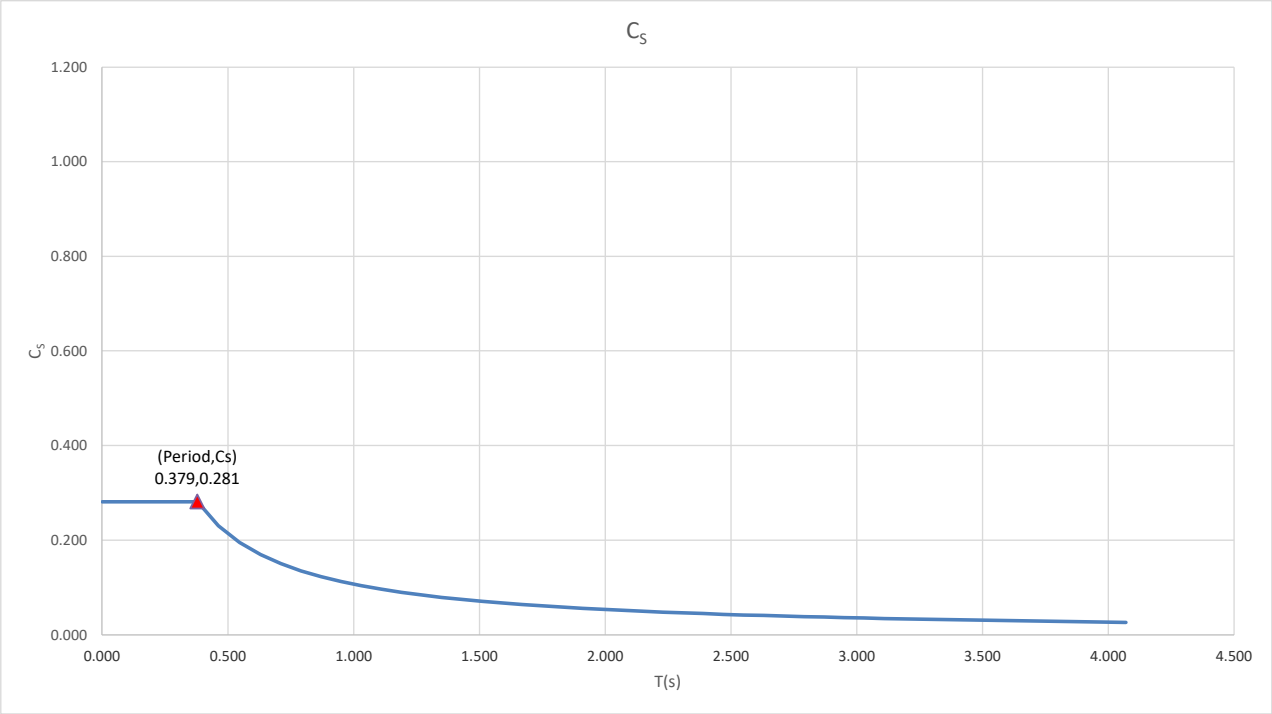
Seismic Parameters:

Risk Category=	II		S_s =	0.487	g	S_{DS} =	0.422	g
Seismic Design Category:	C		S_1 =	0.160	g	S_{D1} =	0.160	g
Importance, I =	1.00		S_{MS} =	0.633	g	F_a =	1.30	
Site Class:	C		SM1 =	0.240	g	F_v =	1.50	
R =	1.5							
T_L =	6							

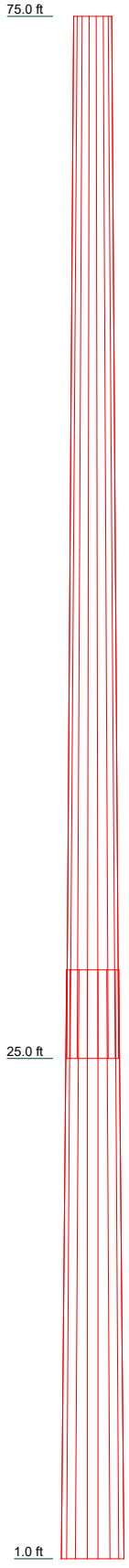
Seismic Base Shear:

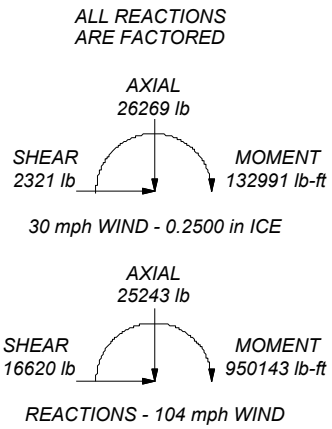
Structure Type =	Telecom: Steel Pole							
Period Type =	Worst Case Cs							
h =	74.0	ft				f_1 =	2.64	Hz
E =	29000	ksi	W_t =	13.9	k	T=	0.38	sec.
			W_L =	13.9	k	k_e=	1.00	
C_s=	0.282							
Seismic Shear, $V_{s(final)}$ =	3.9	k	**ratio =**	0.24				
Wind Shear =	16.6	k						

Wind Controls, No Seismic Analysis Required



Section	1	2
Length (ft)	50.00	28.25
Number of Sides	18	18
Thickness (in)	0.1875	0.2500
Socket Length (ft)	4.25	
Top Dia (in)	21.0000	29.5463
Bot Dia (in)	30.7500	35.0550
Grade	A572-65	
Weight (lb)	2601.0	2444.8





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Concealment Loading @ 75 ft	75	(4) Generic RRU (Enclosed, 75 lbs)	60
(4) Generic Panel (Enclosed, 115 lbs)	70	(4) Generic RRU (Enclosed, 75 lbs)	60
(4) Generic Panel (Enclosed, 115 lbs)	70	(4) Generic RRU (Enclosed, 75 lbs)	60
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	70	(4) Generic Panel (Enclosed, 115 lbs)	60
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	70	(4) Generic Panel (Enclosed, 115 lbs)	60
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	70	(4) Generic Panel (Enclosed, 115 lbs)	60
(4) Generic RRU (Enclosed, 75 lbs)	70	Concealment Loading @ 55 ft	55
(4) Generic RRU (Enclosed, 75 lbs)	70	Concealment Loading @ 55 ft	55
(4) Generic RRU (Enclosed, 75 lbs)	70	(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	50
(4) Generic Panel (Enclosed, 115 lbs)	70	(4) Generic RRU (Enclosed, 75 lbs)	50
Concealment Loading @ 65 ft	65	(4) Generic RRU (Enclosed, 75 lbs)	50
Concealment Loading @ 65 ft	65	(4) Generic RRU (Enclosed, 75 lbs)	50
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60	(4) Generic Panel (Enclosed, 115 lbs)	50
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60	(4) Generic Panel (Enclosed, 115 lbs)	50
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60	(4) Generic Panel (Enclosed, 115 lbs)	50
		(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	50
		(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	50
		Concealment Loading @ 45 ft	45

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Sandoval County, New Mexico.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 104 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 30 mph basic wind with 0.25 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 74.5%

Vector Structural Engineering
651 W Galena Park Blvd
Draper, UT 84020
Phone: (801) 990-1775
FAX: (801) 990-1776

Job: **Spike**			
Project: ***U0142.2054.242***			
Client: Raycap	Drawn by: mririe	App'd:	
Code: TIA-222-H	Date: 10/24/24	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

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

Tower is located in Sandoval County, New Mexico.
Tower base elevation above sea level: 5521.00 ft.
Basic wind speed of 104 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 0.2500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 30 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
Non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	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
Kz In Exposure D Hurricane Region	Alternative Appurt. EPA Calculation	Use TIA-222-H Tension Splice Exemption
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
√ Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Pole Without Linear Attachments
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	√ Pole With Shroud Or No Appurtenances
Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules	Outside and Inside Corner Radii Are Known
Use Special Wind Profile		

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	75.00-25.00	50.00	4.25	18	21.0000	30.7500	0.1875	0.7500	A572-65 (65 ksi)
L2	25.00-1.00	28.25		18	29.5463	35.0550	0.2500	1.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	21.2950	12.3860	677.8263	7.3884	10.6680	63.5383	1356.5444	6.1942	3.3660	17.952
	31.1954	18.1885	2146.4080	10.8497	15.6210	137.4053	4295.6403	9.0960	5.0820	27.104
L2	30.8050	23.2466	2520.6960	10.4002	15.0095	167.9401	5044.7089	11.6255	4.7601	19.041
	35.5572	27.6178	4226.7766	12.3558	17.8079	237.3535	8459.1149	13.8115	5.7297	22.919

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 75.00-25.00				1	1	1			
L2 25.00-1.00				1	1	1			

User Defined Loads

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °		Weight lb	F_x lb	F_z lb	Wind Force lb	C_AA_C ft^2
Concealment Loading @ 75 ft	75.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	2690.00	**90.54**
				Ice	516.00	0.00	0.00	355.00	**143.59**
				Service	1042.00	0.00	0.00	895.00	**106.48**
Concealment Loading @ 65 ft	65.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	2690.00	**93.31**
				Ice	516.00	0.00	0.00	355.00	**147.99**
				Service	1042.00	0.00	0.00	895.00	**109.73**
Concealment Loading @ 65 ft	65.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	1525.00	**52.90**
				Ice	516.00	0.00	0.00	254.00	**105.88**
				Service	1042.00	0.00	0.00	508.00	**62.28**
Concealment Loading @ 55 ft	55.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	1525.00	**54.79**
				Ice	516.00	0.00	0.00	254.00	**109.67**
				Service	1042.00	0.00	0.00	508.00	**64.51**
Concealment Loading @ 55 ft	55.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	2506.00	**90.04**
				Ice	356.00	0.00	0.00	331.00	**142.92**
				Service	1042.00	0.00	0.00	834.00	**105.91**
Concealment Loading @ 45 ft	45.00	0.00	0.0000	No Ice	1042.00	0.00	0.00	2506.00	**93.92**
				Ice	356.00	0.00	0.00	331.00	**149.09**
				Service	1042.00	0.00	0.00	834.00	**110.48**

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(4) Generic Panel (Enclosed, 115 lbs)	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	B	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	C	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	B	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	C	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(4) Generic RRU (Enclosed, 75 lbs)	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	B	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	C	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
***									
(4) Generic Panel (Enclosed, 115 lbs)	A	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	B	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	C	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	A	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	B	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	C	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(4) Generic RRU (Enclosed, 75 lbs)	A	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	B	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	C	From Face	3.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
***									
(4) Generic Panel (Enclosed,	A	From Face	3.00	0.0000	50.00	No Ice	0.00	0.00	115.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
115 lbs)			0.00 0.00			1/2" Ice	0.00	0.00	115.00
(4) Generic Panel (Enclosed, 115 lbs)	B	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(4) Generic Panel (Enclosed, 115 lbs)	C	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	115.00 115.00
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	A	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	B	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(2) 10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	C	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	161.00 561.26
(4) Generic RRU (Enclosed, 75 lbs)	A	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	B	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00
(4) Generic RRU (Enclosed, 75 lbs)	C	From Face	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	75.00 75.00

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 75.00-25.00	49.10	1.090	24	109.355	A	0.000	109.355	109.355	100.00	0.000	0.000
					B	0.000	109.355		100.00	0.000	0.000
					C	0.000	109.355		100.00	0.000	0.000
L2 25.00-1.00	12.71	0.850	19	66.362	A	0.000	66.362	66.362	100.00	0.000	0.000
					B	0.000	66.362		100.00	0.000	0.000
					C	0.000	66.362		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 75.00-25.00	49.10	1.090	2	0.2601	111.523	A	0.000	111.523	111.523	100.00	0.000	0.000
						B	0.000	111.523		100.00	0.000	0.000
						C	0.000	111.523		100.00	0.000	0.000
L2 25.00-1.00	12.71	0.850	2	0.2273	67.403	A	0.000	67.403	67.403	100.00	0.000	0.000
						B	0.000	67.403		100.00	0.000	0.000
						C	0.000	67.403		100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 75.00-25.00	49.10	1.090	7	109.355	A	0.000	109.355	109.355	100.00	0.000	0.000
					B	0.000	109.355		100.00	0.000	0.000
					C	0.000	109.355		100.00	0.000	0.000
L2 25.00-1.00	12.71	0.850	5	66.362	A	0.000	66.362	66.362	100.00	0.000	0.000
					B	0.000	66.362		100.00	0.000	0.000
					C	0.000	66.362		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	24	1	1	109.355	2151.37	43.03	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	19	1	1	66.362	1027.02	42.79	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	115508.37 lb-ft	3178.39		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	24	1	1	109.355	2151.37	43.03	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	19	1	1	66.362	1027.02	42.79	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	115508.37 lb-ft	3178.39		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	24	1	1	109.355	2151.37	43.03	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	19	1	1	66.362	1027.02	42.79	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	115508.37 lb-ft	3178.39		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	24	1	1	109.355	2151.37	43.03	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	19	1	1	66.362	1027.02	42.79	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	115508.37 lb-ft	3178.39		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3020.56	A	1	1.2	2	1	1	111.523	300.11	6.00	C
75.00-25.00			B	1	1.2		1	1	111.523			
			C	1	1.2		1	1	111.523			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L2 25.00-1.00	0.00	2666.54	A	1	1.2	2	1	1	67.271	142.40	5.93	C
			B	1	1.2		1	1	67.271			
			C	1	1.2		1	1	67.271			
Sum Weight:	0.00	5687.10						OTM	16102.78 lb-ft	442.51		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3020.56	A	1	1.2	2	1	1	111.523	300.11	6.00	C
75.00-25.00			B	1	1.2		1	1	111.523			
			C	1	1.2		1	1	111.523			
L2 25.00-1.00	0.00	2666.54	A	1	1.2	2	1	1	67.271	142.40	5.93	C
			B	1	1.2		1	1	67.271			
			C	1	1.2		1	1	67.271			
Sum Weight:	0.00	5687.10						OTM	16102.78 lb-ft	442.51		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3020.56	A	1	1.2	2	1	1	111.523	300.11	6.00	C
75.00-25.00			B	1	1.2		1	1	111.523			
			C	1	1.2		1	1	111.523			
L2 25.00-1.00	0.00	2666.54	A	1	1.2	2	1	1	67.271	142.40	5.93	C
			B	1	1.2		1	1	67.271			
			C	1	1.2		1	1	67.271			
Sum Weight:	0.00	5687.10						OTM	16102.78 lb-ft	442.51		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3020.56	A	1	1.2	2	1	1	111.523	300.11	6.00	C
75.00-25.00			B	1	1.2		1	1	111.523			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	1	1.2		1	1	111.523			
L2 25.00-1.00	0.00	2666.54	A	1	1.2	2	1	1	67.271	142.40	5.93	C
			B	1	1.2		1	1	67.271			
			C	1	1.2		1	1	67.271			
Sum Weight:	0.00	5687.10						OTM	16102.78 lb-ft	442.51		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	7	1	1	109.355	608.65	12.17	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	5	1	1	66.362	290.56	12.11	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	32678.96 lb-ft	899.21		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	7	1	1	109.355	608.65	12.17	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	5	1	1	66.362	290.56	12.11	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	32678.96 lb-ft	899.21		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	7	1	1	109.355	608.65	12.17	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	5	1	1	66.362	290.56	12.11	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	32678.96 lb-ft	899.21		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	2600.97	A	1	0.73	7	1	1	109.355	608.65	12.17	C
75.00-25.00			B	1	0.73		1	1	109.355			
			C	1	0.73		1	1	109.355			
L2 25.00-1.00	0.00	2444.77	A	1	0.73	5	1	1	66.362	290.56	12.11	C
			B	1	0.73		1	1	66.362			
			C	1	0.73		1	1	66.362			
Sum Weight:	0.00	5045.74						OTM	32678.96 lb-ft	899.21		

Discrete Appurtenance Pressures - No Ice $G_H = 1.100$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft²	C_AA_C Side ft²
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.39	-1.96	70.00	1.174	27	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.39	-1.96	70.00	1.174	27	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	3.92	70.00	1.174	27	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.39	-1.96	70.00	1.174	27	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.39	-1.96	70.00	1.174	27	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	3.92	70.00	1.174	27	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.39	-1.96	70.00	1.174	27	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.39	-1.96	70.00	1.174	27	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	3.92	70.00	1.174	27	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.46	-2.00	60.00	1.137	26	0.00	0.00
Generic Panel (Enclosed,	60.0000	460.00	3.46	-2.00	60.00	1.137	26	0.00	0.00

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
115 lbs)									
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.00	60.00	1.137	26	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.46	-2.00	60.00	1.137	26	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.46	-2.00	60.00	1.137	26	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	4.00	60.00	1.137	26	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.46	-2.00	60.00	1.137	26	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.46	-2.00	60.00	1.137	26	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.00	60.00	1.137	26	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.53	-2.04	50.00	1.094	25	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.53	-2.04	50.00	1.094	25	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.08	50.00	1.094	25	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.53	-2.04	50.00	1.094	25	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.53	-2.04	50.00	1.094	25	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	4.08	50.00	1.094	25	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.53	-2.04	50.00	1.094	25	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.53	-2.04	50.00	1.094	25	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.08	50.00	1.094	25	0.00	0.00
	Sum Weight:	9738.00							

Discrete Appurtenance Pressures - With Ice $G_H = 1.100$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	3.92	70.00	1.174	2	0.00	0.00	0.2695
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	753.52	-3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	753.52	3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	753.52	0.00	3.92	70.00	1.174	2	0.00	0.00	0.2695
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.39	-1.96	70.00	1.174	2	0.00	0.00	0.2695
Generic RRU (Enclosed,	180.0000	300.00	0.00	3.92	70.00	1.174	2	0.00	0.00	0.2695

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
75 lbs)										
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.00	60.00	1.137	2	0.00	0.00	0.2654
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	746.92	-3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	746.92	3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	746.92	0.00	4.00	60.00	1.137	2	0.00	0.00	0.2654
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.46	-2.00	60.00	1.137	2	0.00	0.00	0.2654
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.00	60.00	1.137	2	0.00	0.00	0.2654
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.08	50.00	1.094	2	0.00	0.00	0.2606
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	739.24	-3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	739.24	3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	739.24	0.00	4.08	50.00	1.094	2	0.00	0.00	0.2606
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.53	-2.04	50.00	1.094	2	0.00	0.00	0.2606
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.08	50.00	1.094	2	0.00	0.00	0.2606
	Sum Weight:	13559.01								

Discrete Appurtenance Pressures - Service $G_H = 1.100$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.39	-1.96	70.00	1.174	8	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.39	-1.96	70.00	1.174	8	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	3.92	70.00	1.174	8	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.39	-1.96	70.00	1.174	8	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.39	-1.96	70.00	1.174	8	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	3.92	70.00	1.174	8	0.00	0.00
Generic RRU (Enclosed,	300.0000	300.00	-3.39	-1.96	70.00	1.174	8	0.00	0.00

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
75 lbs)									
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.39	-1.96	70.00	1.174	8	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	3.92	70.00	1.174	8	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.46	-2.00	60.00	1.137	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.46	-2.00	60.00	1.137	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.00	60.00	1.137	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.46	-2.00	60.00	1.137	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.46	-2.00	60.00	1.137	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	4.00	60.00	1.137	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.46	-2.00	60.00	1.137	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.46	-2.00	60.00	1.137	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.00	60.00	1.137	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	300.0000	460.00	-3.53	-2.04	50.00	1.094	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	60.0000	460.00	3.53	-2.04	50.00	1.094	7	0.00	0.00
Generic Panel (Enclosed, 115 lbs)	180.0000	460.00	0.00	4.08	50.00	1.094	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	300.0000	322.00	-3.53	-2.04	50.00	1.094	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	60.0000	322.00	3.53	-2.04	50.00	1.094	7	0.00	0.00
10'-0" T-arm EPA = 5.7 ft^2 (161 lbs)	180.0000	322.00	0.00	4.08	50.00	1.094	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	300.0000	300.00	-3.53	-2.04	50.00	1.094	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	60.0000	300.00	3.53	-2.04	50.00	1.094	7	0.00	0.00
Generic RRU (Enclosed, 75 lbs)	180.0000	300.00	0.00	4.08	50.00	1.094	7	0.00	0.00
	Sum Weight:	9738.00							

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	5045.74					
Bracing Weight	0.00					
Total Member Self-Weight	5045.74			0.00	0.00	
Total Weight	21035.74			0.00	0.00	
Wind 0 deg - No Ice		0.00	-16620.39	-912266.37	0.00	0.00
Wind 30 deg - No Ice		8310.20	-14393.68	-790045.85	-456133.19	0.00
Wind 45 deg - No Ice		11752.39	-11752.39	-645069.74	-645069.74	0.00
Wind 60 deg - No Ice		14393.68	-8310.20	-456133.19	-790045.85	0.00

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Wind 90 deg - No Ice		16620.39	0.00	0.00	-912266.37	0.00
Wind 120 deg - No Ice		14393.68	8310.20	456133.19	-790045.85	0.00
Wind 135 deg - No Ice		11752.39	11752.39	645069.74	-645069.74	0.00
Wind 150 deg - No Ice		8310.20	14393.68	790045.85	-456133.19	0.00
Wind 180 deg - No Ice		0.00	16620.39	912266.37	0.00	0.00
Wind 210 deg - No Ice		-8310.20	14393.68	790045.85	456133.19	0.00
Wind 225 deg - No Ice		-11752.39	11752.39	645069.74	645069.74	0.00
Wind 240 deg - No Ice		-14393.68	8310.20	456133.19	790045.85	0.00
Wind 270 deg - No Ice		-16620.39	0.00	0.00	912266.37	0.00
Wind 300 deg - No Ice		-14393.68	-8310.20	-456133.19	790045.85	0.00
Wind 315 deg - No Ice		-11752.39	-11752.39	-645069.74	645069.74	0.00
Wind 330 deg - No Ice		-8310.20	-14393.68	-790045.85	456133.19	0.00
Member Ice	641.36					
Total Weight Ice	22022.11			0.00	0.00	
Wind 0 deg - Ice		0.00	-2322.51	-127502.78	0.00	0.00
Wind 30 deg - Ice		1161.25	-2011.35	-110420.65	-63751.39	0.00
Wind 45 deg - Ice		1642.26	-1642.26	-90158.08	-90158.08	0.00
Wind 60 deg - Ice		2011.35	-1161.25	-63751.39	-110420.65	0.00
Wind 90 deg - Ice		2322.51	0.00	0.00	-127502.78	0.00
Wind 120 deg - Ice		2011.35	1161.25	63751.39	-110420.65	0.00
Wind 135 deg - Ice		1642.26	1642.26	90158.08	-90158.08	0.00
Wind 150 deg - Ice		1161.25	2011.35	110420.65	-63751.39	0.00
Wind 180 deg - Ice		0.00	2322.51	127502.78	0.00	0.00
Wind 210 deg - Ice		-1161.25	2011.35	110420.65	63751.39	0.00
Wind 225 deg - Ice		-1642.26	1642.26	90158.08	90158.08	0.00
Wind 240 deg - Ice		-2011.35	1161.25	63751.39	110420.65	0.00
Wind 270 deg - Ice		-2322.51	0.00	0.00	127502.78	0.00
Wind 300 deg - Ice		-2011.35	-1161.25	-63751.39	110420.65	0.00
Wind 315 deg - Ice		-1642.26	-1642.26	-90158.08	90158.08	0.00
Wind 330 deg - Ice		-1161.25	-2011.35	-110420.65	63751.39	0.00
Total Weight	21035.74			0.00	0.00	
Wind 0 deg - Service		0.00	-5373.21	-297864.96	0.00	0.00
Wind 30 deg - Service		2686.61	-4653.34	-257958.62	-148932.48	0.00
Wind 45 deg - Service		3799.43	-3799.43	-210622.33	-210622.33	0.00
Wind 60 deg - Service		4653.34	-2686.61	-148932.48	-257958.62	0.00
Wind 90 deg - Service		5373.21	0.00	0.00	-297864.96	0.00
Wind 120 deg - Service		4653.34	2686.61	148932.48	-257958.62	0.00
Wind 135 deg - Service		3799.43	3799.43	210622.33	-210622.33	0.00
Wind 150 deg - Service		2686.61	4653.34	257958.62	-148932.48	0.00
Wind 180 deg - Service		0.00	5373.21	297864.96	0.00	0.00
Wind 210 deg - Service		-2686.61	4653.34	257958.62	148932.48	0.00
Wind 225 deg - Service		-3799.43	3799.43	210622.33	210622.33	0.00
Wind 240 deg - Service		-4653.34	2686.61	148932.48	257958.62	0.00
Wind 270 deg - Service		-5373.21	0.00	0.00	297864.96	0.00
Wind 300 deg - Service		-4653.34	-2686.61	-148932.48	257958.62	0.00
Wind 315 deg - Service		-3799.43	-3799.43	-210622.33	210622.33	0.00
Wind 330 deg - Service		-2686.61	-4653.34	-257958.62	148932.48	0.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice

Comb. No.	Description
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 45 deg - No Ice
7	0.9 Dead+1.0 Wind 45 deg - No Ice
8	1.2 Dead+1.0 Wind 60 deg - No Ice
9	0.9 Dead+1.0 Wind 60 deg - No Ice
10	1.2 Dead+1.0 Wind 90 deg - No Ice
11	0.9 Dead+1.0 Wind 90 deg - No Ice
12	1.2 Dead+1.0 Wind 120 deg - No Ice
13	0.9 Dead+1.0 Wind 120 deg - No Ice
14	1.2 Dead+1.0 Wind 135 deg - No Ice
15	0.9 Dead+1.0 Wind 135 deg - No Ice
16	1.2 Dead+1.0 Wind 150 deg - No Ice
17	0.9 Dead+1.0 Wind 150 deg - No Ice
18	1.2 Dead+1.0 Wind 180 deg - No Ice
19	0.9 Dead+1.0 Wind 180 deg - No Ice
20	1.2 Dead+1.0 Wind 210 deg - No Ice
21	0.9 Dead+1.0 Wind 210 deg - No Ice
22	1.2 Dead+1.0 Wind 225 deg - No Ice
23	0.9 Dead+1.0 Wind 225 deg - No Ice
24	1.2 Dead+1.0 Wind 240 deg - No Ice
25	0.9 Dead+1.0 Wind 240 deg - No Ice
26	1.2 Dead+1.0 Wind 270 deg - No Ice
27	0.9 Dead+1.0 Wind 270 deg - No Ice
28	1.2 Dead+1.0 Wind 300 deg - No Ice
29	0.9 Dead+1.0 Wind 300 deg - No Ice
30	1.2 Dead+1.0 Wind 315 deg - No Ice
31	0.9 Dead+1.0 Wind 315 deg - No Ice
32	1.2 Dead+1.0 Wind 330 deg - No Ice
33	0.9 Dead+1.0 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service
66	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	75 - 25	Pole	Max Tension	35	0.03	0.00	-0.01
			Max. Compression	34	-22726.73	0.00	0.00
			Max. Mx	10	-21530.49	-488072.86	0.00
			Max. My	2	-21530.49	0.00	488072.86
			Max. Vy	10	16039.32	-488072.86	0.00
			Max. Vx	2	-16039.32	0.00	488072.86
			Max. Torque	16			0.00
L2	25 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	34	-26268.53	0.00	0.00
			Max. Mx	10	-25231.11	-950122.99	0.00
			Max. My	18	-25231.11	0.00	-950122.99
			Max. Vy	10	16637.89	-950122.99	0.00
			Max. Vx	18	16637.89	0.00	-950122.99
			Max. Torque	16			0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	34	26268.53	0.00	0.00
	Max. H_x	27	18932.16	16620.17	0.00
	Max. H_z	3	18932.16	0.00	16620.17
	Max. M_x	2	950122.99	0.00	16620.05
	Max. M_z	10	950122.99	-16620.05	0.00
	Max. Torsion	16	0.00	-8310.17	-14393.63
	Min. Vert	3	18932.16	0.00	16620.17
	Min. H_x	11	18932.16	-16620.17	0.00
	Min. H_z	19	18932.16	0.00	-16620.17
	Min. M_x	18	-950122.99	0.00	-16620.05
	Min. M_z	26	-950122.99	16620.05	0.00
	Min. Torsion	20	-0.00	8310.17	-14393.63

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	21035.74	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	25242.87	0.00	-16620.05	-950122.99	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	18932.16	0.00	-16620.17	-940156.89	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	25242.88	8310.17	-14393.63	-822848.26	-475071.71	0.00
0.9 Dead+1.0 Wind 30 deg - No Ice	18932.16	8310.18	-14393.65	-814210.56	-470084.71	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 45 deg - No Ice	25242.88	11752.35	-11752.35	-671852.82	-671852.82	0.00
0.9 Dead+1.0 Wind 45 deg - No Ice	18932.16	11752.37	-11752.37	-664800.16	-664800.16	0.00
1.2 Dead+1.0 Wind 60 deg - No Ice	25242.88	14393.63	-8310.17	-475071.71	-822848.26	-0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	18932.16	14393.65	-8310.18	-470084.71	-814210.56	-0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	25242.87	16620.05	-0.00	0.00	-950122.99	0.00
0.9 Dead+1.0 Wind 90 deg - No Ice	18932.16	16620.17	-0.00	0.00	-940156.89	0.00
1.2 Dead+1.0 Wind 120 deg - No Ice	25242.88	14393.63	8310.17	475071.71	-822848.26	0.00
0.9 Dead+1.0 Wind 120 deg - No Ice	18932.16	14393.65	8310.18	470084.71	-814210.56	0.00
1.2 Dead+1.0 Wind 135 deg - No Ice	25242.88	11752.35	11752.35	671852.82	-671852.82	0.00
0.9 Dead+1.0 Wind 135 deg - No Ice	18932.16	11752.37	11752.37	664800.16	-664800.16	0.00
1.2 Dead+1.0 Wind 150 deg - No Ice	25242.88	8310.17	14393.63	822848.26	-475071.71	-0.00
0.9 Dead+1.0 Wind 150 deg - No Ice	18932.16	8310.18	14393.65	814210.56	-470084.71	-0.00
1.2 Dead+1.0 Wind 180 deg - No Ice	25242.87	0.00	16620.05	950122.99	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	18932.16	0.00	16620.17	940156.89	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	25242.88	-8310.17	14393.63	822848.26	475071.71	0.00
0.9 Dead+1.0 Wind 210 deg - No Ice	18932.16	-8310.18	14393.65	814210.56	470084.71	0.00
1.2 Dead+1.0 Wind 225 deg - No Ice	25242.88	-11752.35	11752.35	671852.82	671852.82	0.00
0.9 Dead+1.0 Wind 225 deg - No Ice	18932.16	-11752.37	11752.37	664800.16	664800.16	0.00
1.2 Dead+1.0 Wind 240 deg - No Ice	25242.88	-14393.63	8310.17	475071.71	822848.26	-0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	18932.16	-14393.65	8310.18	470084.71	814210.56	-0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	25242.87	-16620.05	-0.00	0.00	950122.99	0.00
0.9 Dead+1.0 Wind 270 deg - No Ice	18932.16	-16620.17	-0.00	0.00	940156.89	0.00
1.2 Dead+1.0 Wind 300 deg - No Ice	25242.88	-14393.63	-8310.17	-475071.71	822848.26	0.00
0.9 Dead+1.0 Wind 300 deg - No Ice	18932.16	-14393.65	-8310.18	-470084.71	814210.56	0.00
1.2 Dead+1.0 Wind 315 deg - No Ice	25242.88	-11752.35	-11752.35	-671852.82	671852.82	0.00
0.9 Dead+1.0 Wind 315 deg - No Ice	18932.16	-11752.37	-11752.37	-664800.16	664800.16	0.00
1.2 Dead+1.0 Wind 330 deg - No Ice	25242.88	-8310.17	-14393.63	-822848.26	475071.71	-0.00
0.9 Dead+1.0 Wind 330 deg - No Ice	18932.16	-8310.18	-14393.65	-814210.56	470084.71	-0.00
1.2 Dead+1.0 Ice	26268.53	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	26268.51	0.00	-2321.28	-132990.58	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	26268.51	1160.64	-2010.29	-115173.23	-66495.30	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 45 deg+1.0 Ice	26268.51	1641.39	-1641.39	-94038.55	-94038.55	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	26268.51	2010.29	-1160.64	-66495.30	-115173.23	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	26268.51	2321.28	0.00	0.00	-132990.58	0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	26268.51	2010.29	1160.64	66495.30	-115173.23	0.00
1.2 Dead+1.0 Wind 135 deg+1.0 Ice	26268.51	1641.39	1641.39	94038.55	-94038.55	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	26268.51	1160.64	2010.29	115173.23	-66495.30	-0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	26268.51	0.00	2321.28	132990.58	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	26268.51	-1160.64	2010.29	115173.23	66495.30	0.00
1.2 Dead+1.0 Wind 225 deg+1.0 Ice	26268.51	-1641.39	1641.39	94038.55	94038.55	0.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	26268.51	-2010.29	1160.64	66495.30	115173.23	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	26268.51	-2321.28	0.00	0.00	132990.58	0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	26268.51	-2010.29	-1160.64	-66495.30	115173.23	0.00
1.2 Dead+1.0 Wind 315 deg+1.0 Ice	26268.51	-1641.39	-1641.39	-94038.55	94038.55	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	26268.51	-1160.64	-2010.29	-115173.23	66495.30	-0.00
Dead+Wind 0 deg - Service	21035.73	0.00	-5372.75	-308215.42	0.00	0.00
Dead+Wind 30 deg - Service	21035.73	2686.37	-4652.93	-266922.40	-154107.74	0.00
Dead+Wind 45 deg - Service	21035.73	3799.11	-3799.11	-217941.24	-217941.24	0.00
Dead+Wind 60 deg - Service	21035.73	4652.93	-2686.37	-154107.74	-266922.40	-0.00
Dead+Wind 90 deg - Service	21035.73	5372.75	-0.00	0.00	-308215.42	0.00
Dead+Wind 120 deg - Service	21035.73	4652.93	2686.37	154107.74	-266922.40	0.00
Dead+Wind 135 deg - Service	21035.73	3799.11	3799.11	217941.24	-217941.24	0.00
Dead+Wind 150 deg - Service	21035.73	2686.37	4652.93	266922.40	-154107.74	-0.00
Dead+Wind 180 deg - Service	21035.73	0.00	5372.75	308215.42	0.00	0.00
Dead+Wind 210 deg - Service	21035.73	-2686.37	4652.93	266922.40	154107.74	0.00
Dead+Wind 225 deg - Service	21035.73	-3799.11	3799.11	217941.24	217941.24	0.00
Dead+Wind 240 deg - Service	21035.73	-4652.93	2686.37	154107.74	266922.40	-0.00
Dead+Wind 270 deg - Service	21035.73	-5372.75	-0.00	0.00	308215.42	0.00
Dead+Wind 300 deg - Service	21035.73	-4652.93	-2686.37	-154107.74	266922.40	0.00
Dead+Wind 315 deg - Service	21035.73	-3799.11	-3799.11	-217941.24	217941.24	0.00
Dead+Wind 330 deg - Service	21035.73	-2686.37	-4652.93	-266922.40	154107.74	-0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-21035.74	0.00	0.00	21035.74	0.00	0.000%
2	0.00	-25242.88	-16620.39	0.00	25242.87	16620.05	0.001%
3	0.00	-18932.16	-16620.39	0.00	18932.16	16620.17	0.001%
4	8310.20	-25242.88	-14393.68	-8310.17	25242.88	14393.63	0.000%
5	8310.20	-18932.16	-14393.68	-8310.18	18932.16	14393.65	0.000%
6	11752.39	-25242.88	-11752.39	-11752.35	25242.88	11752.35	0.000%
7	11752.39	-18932.16	-11752.39	-11752.37	18932.16	11752.37	0.000%
8	14393.68	-25242.88	-8310.20	-14393.63	25242.88	8310.17	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
9	14393.68	-18932.16	-8310.20	-14393.65	18932.16	8310.18	0.000%
10	16620.39	-25242.88	0.00	-16620.05	25242.87	0.00	0.001%
11	16620.39	-18932.16	0.00	-16620.17	18932.16	0.00	0.001%
12	14393.68	-25242.88	8310.20	-14393.63	25242.88	-8310.17	0.000%
13	14393.68	-18932.16	8310.20	-14393.65	18932.16	-8310.18	0.000%
14	11752.39	-25242.88	11752.39	-11752.35	25242.88	-11752.35	0.000%
15	11752.39	-18932.16	11752.39	-11752.37	18932.16	-11752.37	0.000%
16	8310.20	-25242.88	14393.68	-8310.17	25242.88	-14393.63	0.000%
17	8310.20	-18932.16	14393.68	-8310.18	18932.16	-14393.65	0.000%
18	0.00	-25242.88	16620.39	0.00	25242.87	-16620.05	0.001%
19	0.00	-18932.16	16620.39	0.00	18932.16	-16620.17	0.001%
20	-8310.20	-25242.88	14393.68	8310.17	25242.88	-14393.63	0.000%
21	-8310.20	-18932.16	14393.68	8310.18	18932.16	-14393.65	0.000%
22	-11752.39	-25242.88	11752.39	11752.35	25242.88	-11752.35	0.000%
23	-11752.39	-18932.16	11752.39	11752.37	18932.16	-11752.37	0.000%
24	-14393.68	-25242.88	8310.20	14393.63	25242.88	-8310.17	0.000%
25	-14393.68	-18932.16	8310.20	14393.65	18932.16	-8310.18	0.000%
26	-16620.39	-25242.88	0.00	16620.05	25242.87	0.00	0.001%
27	-16620.39	-18932.16	0.00	16620.17	18932.16	0.00	0.001%
28	-14393.68	-25242.88	-8310.20	14393.63	25242.88	8310.17	0.000%
29	-14393.68	-18932.16	-8310.20	14393.65	18932.16	8310.18	0.000%
30	-11752.39	-25242.88	-11752.39	11752.35	25242.88	11752.35	0.000%
31	-11752.39	-18932.16	-11752.39	11752.37	18932.16	11752.37	0.000%
32	-8310.20	-25242.88	-14393.68	8310.17	25242.88	14393.63	0.000%
33	-8310.20	-18932.16	-14393.68	8310.18	18932.16	14393.65	0.000%
34	0.00	-26268.53	0.00	0.00	26268.53	0.00	0.000%
35	0.00	-26268.53	-2322.51	0.00	26268.51	2321.28	0.005%
36	1161.25	-26268.53	-2011.35	-1160.64	26268.51	2010.29	0.005%
37	1642.26	-26268.53	-1642.26	-1641.39	26268.51	1641.39	0.005%
38	2011.35	-26268.53	-1161.25	-2010.29	26268.51	1160.64	0.005%
39	2322.51	-26268.53	0.00	-2321.28	26268.51	0.00	0.005%
40	2011.35	-26268.53	1161.25	-2010.29	26268.51	-1160.64	0.005%
41	1642.26	-26268.53	1642.26	-1641.39	26268.51	-1641.39	0.005%
42	1161.25	-26268.53	2011.35	-1160.64	26268.51	-2010.29	0.005%
43	0.00	-26268.53	2322.51	0.00	26268.51	-2321.28	0.005%
44	-1161.25	-26268.53	2011.35	1160.64	26268.51	-2010.29	0.005%
45	-1642.26	-26268.53	1642.26	1641.39	26268.51	-1641.39	0.005%
46	-2011.35	-26268.53	1161.25	2010.29	26268.51	-1160.64	0.005%
47	-2322.51	-26268.53	0.00	2321.28	26268.51	0.00	0.005%
48	-2011.35	-26268.53	-1161.25	2010.29	26268.51	1160.64	0.005%
49	-1642.26	-26268.53	-1642.26	1641.39	26268.51	1641.39	0.005%
50	-1161.25	-26268.53	-2011.35	1160.64	26268.51	2010.29	0.005%
51	0.00	-21035.74	-5373.21	0.00	21035.73	5372.75	0.002%
52	2686.61	-21035.74	-4653.34	-2686.37	21035.73	4652.93	0.002%
53	3799.43	-21035.74	-3799.43	-3799.11	21035.73	3799.11	0.002%
54	4653.34	-21035.74	-2686.61	-4652.93	21035.73	2686.37	0.002%
55	5373.21	-21035.74	0.00	-5372.75	21035.73	0.00	0.002%
56	4653.34	-21035.74	2686.61	-4652.93	21035.73	-2686.37	0.002%
57	3799.43	-21035.74	3799.43	-3799.11	21035.73	-3799.11	0.002%
58	2686.61	-21035.74	4653.34	-2686.37	21035.73	-4652.93	0.002%
59	0.00	-21035.74	5373.21	0.00	21035.73	-5372.75	0.002%
60	-2686.61	-21035.74	4653.34	2686.37	21035.73	-4652.93	0.002%
61	-3799.43	-21035.74	3799.43	3799.11	21035.73	-3799.11	0.002%
62	-4653.34	-21035.74	2686.61	4652.93	21035.73	-2686.37	0.002%
63	-5373.21	-21035.74	0.00	5372.75	21035.73	0.00	0.002%
64	-4653.34	-21035.74	-2686.61	4652.93	21035.73	2686.37	0.002%
65	-3799.43	-21035.74	-3799.43	3799.11	21035.73	3799.11	0.002%
66	-2686.61	-21035.74	-4653.34	2686.37	21035.73	4652.93	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	10	0.00000001	0.00003952
3	Yes	10	0.00000001	0.00003396
4	Yes	11	0.00000001	0.00006147
5	Yes	11	0.00000001	0.00004591
6	Yes	11	0.00000001	0.00007056
7	Yes	11	0.00000001	0.00005264
8	Yes	11	0.00000001	0.00006147
9	Yes	11	0.00000001	0.00004591
10	Yes	10	0.00000001	0.00003952
11	Yes	10	0.00000001	0.00003396
12	Yes	11	0.00000001	0.00006147
13	Yes	11	0.00000001	0.00004591
14	Yes	11	0.00000001	0.00007056
15	Yes	11	0.00000001	0.00005264
16	Yes	11	0.00000001	0.00006147
17	Yes	11	0.00000001	0.00004591
18	Yes	10	0.00000001	0.00003952
19	Yes	10	0.00000001	0.00003396
20	Yes	11	0.00000001	0.00006147
21	Yes	11	0.00000001	0.00004591
22	Yes	11	0.00000001	0.00007056
23	Yes	11	0.00000001	0.00005264
24	Yes	11	0.00000001	0.00006147
25	Yes	11	0.00000001	0.00004591
26	Yes	10	0.00000001	0.00003952
27	Yes	10	0.00000001	0.00003396
28	Yes	11	0.00000001	0.00006147
29	Yes	11	0.00000001	0.00004591
30	Yes	11	0.00000001	0.00007056
31	Yes	11	0.00000001	0.00005264
32	Yes	11	0.00000001	0.00006147
33	Yes	11	0.00000001	0.00004591
34	Yes	6	0.00000001	0.00000001
35	Yes	8	0.00000001	0.00012999
36	Yes	8	0.00000001	0.00012527
37	Yes	8	0.00000001	0.00012366
38	Yes	8	0.00000001	0.00012527
39	Yes	8	0.00000001	0.00012999
40	Yes	8	0.00000001	0.00012527
41	Yes	8	0.00000001	0.00012366
42	Yes	8	0.00000001	0.00012527
43	Yes	8	0.00000001	0.00012999
44	Yes	8	0.00000001	0.00012527
45	Yes	8	0.00000001	0.00012366
46	Yes	8	0.00000001	0.00012527
47	Yes	8	0.00000001	0.00012999
48	Yes	8	0.00000001	0.00012527
49	Yes	8	0.00000001	0.00012366
50	Yes	8	0.00000001	0.00012527
51	Yes	9	0.00000001	0.00007196
52	Yes	9	0.00000001	0.00005807
53	Yes	9	0.00000001	0.00005262
54	Yes	9	0.00000001	0.00005807
55	Yes	9	0.00000001	0.00007196
56	Yes	9	0.00000001	0.00005807
57	Yes	9	0.00000001	0.00005262

58	Yes	9	0.00000001	0.00005807
59	Yes	9	0.00000001	0.00007196
60	Yes	9	0.00000001	0.00005807
61	Yes	9	0.00000001	0.00005262
62	Yes	9	0.00000001	0.00005807
63	Yes	9	0.00000001	0.00007196
64	Yes	9	0.00000001	0.00005807
65	Yes	9	0.00000001	0.00005262
66	Yes	9	0.00000001	0.00005807

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	75 - 25	10.110	59	1.0418	0.0000
L2	29.25 - 1	1.680	59	0.5258	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
75.00	Concealment Loading @ 75 ft	59	10.110	1.0418	0.0000	21715
70.00	(4) Generic Panel (Enclosed, 115 lbs)	59	8.998	0.9966	0.0000	21715
65.00	Concealment Loading @ 65 ft	59	7.900	0.9506	0.0000	10857
60.00	(4) Generic Panel (Enclosed, 115 lbs)	59	6.830	0.9030	0.0000	7238
55.00	Concealment Loading @ 55 ft	59	5.801	0.8529	0.0000	5428
50.00	(4) Generic Panel (Enclosed, 115 lbs)	59	4.827	0.7996	0.0000	4342
45.00	Concealment Loading @ 45 ft	59	3.922	0.7422	0.0000	3618

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	75 - 25	31.107	18	3.2047	0.0000
L2	29.25 - 1	5.175	18	1.6194	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
75.00	Concealment Loading @ 75 ft	18	31.107	3.2047	0.0000	7094
70.00	(4) Generic Panel (Enclosed, 115 lbs)	18	27.687	3.0660	0.0000	7094
65.00	Concealment Loading @ 65 ft	18	24.310	2.9249	0.0000	3546
60.00	(4) Generic Panel (Enclosed, 115 lbs)	18	21.017	2.7787	0.0000	2364
55.00	Concealment Loading @ 55 ft	18	17.852	2.6251	0.0000	1772
50.00	(4) Generic Panel (Enclosed, 115 lbs)	18	14.857	2.4613	0.0000	1417
45.00	Concealment Loading @ 45 ft	18	12.075	2.2850	0.0000	1180

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	75 - 72.5921	TP30.75x21x0.1875	50.00	0.00	0.0	12.6655	-1215.91	740930.00	0.002
	72.5921 - 70.1842					12.9449	-1336.69	757277.00	0.002
	70.1842 - 67.7763					13.2243	-5349.67	773624.00	0.007
	67.7763 - 65.3684					13.5038	-5476.57	789971.00	0.007
	65.3684 - 62.9605					13.7832	-7872.49	806318.00	0.010
	62.9605 - 60.5526					14.0626	-8008.50	822665.00	0.010
	60.5526 - 58.1447					14.3421	-12038.50	839012.00	0.014
	58.1447 - 55.7368					14.6215	-12183.40	855359.00	0.014
	55.7368 - 53.3289					14.9010	-14623.00	871706.00	0.017
	53.3289 - 50.9211					15.1804	-14782.30	888053.00	0.017
	50.9211 - 48.5132					15.4598	-18838.10	904400.00	0.021
	48.5132 - 46.1053					15.7393	-19009.00	920746.00	0.021
	46.1053 - 43.6974					16.0187	-20322.30	937093.00	0.022
	43.6974 - 41.2895					16.2981	-20509.50	953440.00	0.022
	41.2895 - 38.8816					16.5776	-20702.70	969787.00	0.021
	38.8816 - 36.4737					16.8570	-20901.70	986134.00	0.021
	36.4737 - 34.0658					17.1364	-21106.10	1002480.00	0.021
	34.0658 - 31.6579					17.4159	-21315.80	1018830.00	0.021
	31.6579 -					17.6953	-21530.40	1035170.00	0.021

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
	29.25								
	29.25 - 25					18.1885	-9629.96	1064030.00	0.009
L2	29.25 - 25	TP35.055x29.5463x0.25	28.25	0.00	0.0	23.9042	-12657.20	1398400.00	0.009
	25 - 23.7368					24.0996	-22439.40	1409830.00	0.016
	23.7368 - 22.4737					24.2951	-22583.80	1421260.00	0.016
	22.4737 - 21.2105					24.4905	-22729.60	1432700.00	0.016
	21.2105 - 19.9474					24.6860	-22876.60	1444130.00	0.016
	19.9474 - 18.6842					24.8814	-23025.00	1455560.00	0.016
	18.6842 - 17.4211					25.0769	-23174.60	1467000.00	0.016
	17.4211 - 16.1579					25.2723	-23325.50	1478430.00	0.016
	16.1579 - 14.8947					25.4678	-23477.70	1489870.00	0.016
	14.8947 - 13.6316					25.6633	-23631.10	1501300.00	0.016
	13.6316 - 12.3684					25.8587	-23785.70	1512730.00	0.016
	12.3684 - 11.1053					26.0542	-23941.50	1524170.00	0.016
	11.1053 - 9.84211					26.2496	-24098.60	1535600.00	0.016
	9.84211 - 8.57895					26.4451	-24256.90	1547040.00	0.016
	8.57895 - 7.31579					26.6405	-24416.30	1558470.00	0.016
	7.31579 - 6.05263					26.8360	-24576.90	1569900.00	0.016
	6.05263 - 4.78947					27.0314	-24738.70	1581340.00	0.016
	4.78947 - 3.52632					27.2269	-24901.70	1592770.00	0.016
	3.52632 - 2.26316					27.4223	-25065.80	1604210.00	0.016
	2.26316 - 1					27.6178	-25231.10	1615640.00	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	75 - 72.5921	TP30.75x21x0.1875	6755.77	392386.67	0.017	0.00	392386.67	0.000
	72.5921 - 70.1842		13752.08	407269.17	0.034	0.00	407269.17	0.000
	70.1842 - 67.7763		21473.33	422301.67	0.051	0.00	422301.67	0.000
	67.7763 - 65.3684		29477.67	437475.00	0.067	0.00	437475.00	0.000
	65.3684 - 62.9605		46588.42	452781.67	0.103	0.00	452781.67	0.000
	62.9605 - 60.5526		65543.25	468214.17	0.140	0.00	468214.17	0.000

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		lb-ft	lb-ft		lb-ft	lb-ft	
	60.5526 - 58.1447		85125.00	483765.00	0.176	0.00	483765.00	0.000
	58.1447 - 55.7368		105051.67	499426.67	0.210	0.00	499426.67	0.000
	55.7368 - 53.3289		132146.67	515191.67	0.257	0.00	515191.67	0.000
	53.3289 - 50.9211		162520.83	531051.67	0.306	0.00	531051.67	0.000
	50.9211 - 48.5132		193385.83	547000.00	0.354	0.00	547000.00	0.000
	48.5132 - 46.1053		224613.33	563028.33	0.399	0.00	563028.33	0.000
	46.1053 - 43.6974		259356.67	579129.17	0.448	0.00	579129.17	0.000
	43.6974 - 41.2895		297097.50	595295.00	0.499	0.00	595295.00	0.000
	41.2895 - 38.8816		335000.00	611518.33	0.548	0.00	611518.33	0.000
	38.8816 - 36.4737		373056.67	627791.67	0.594	0.00	627791.67	0.000
	36.4737 - 34.0658		411260.00	644107.50	0.638	0.00	644107.50	0.000
	34.0658 - 31.6579		449604.17	660457.50	0.681	0.00	660457.50	0.000
	31.6579 - 29.25		488084.17	676834.17	0.721	0.00	676834.17	0.000
	29.25 - 25		244523.33	705782.50	0.346	0.00	705782.50	0.000
L2	29.25 - 25	TP35.055x29.5463x0.25	311955.83	1029525.00	0.303	0.00	1029525.00	0.000
	25 - 23.7368		576929.17	1043741.67	0.553	0.00	1043741.67	0.000
	23.7368 - 22.4737		597410.00	1058000.00	0.565	0.00	1058000.00	0.000
	22.4737 - 21.2105		617921.67	1072308.33	0.576	0.00	1072308.33	0.000
	21.2105 - 19.9474		638464.17	1086666.67	0.588	0.00	1086666.67	0.000
	19.9474 - 18.6842		659036.67	1101066.67	0.599	0.00	1101066.67	0.000
	18.6842 - 17.4211		679640.00	1115508.33	0.609	0.00	1115508.33	0.000
	17.4211 - 16.1579		700272.50	1130000.00	0.620	0.00	1130000.00	0.000
	16.1579 - 14.8947		720935.00	1144525.00	0.630	0.00	1144525.00	0.000
	14.8947 - 13.6316		741627.50	1159091.67	0.640	0.00	1159091.67	0.000
	13.6316 - 12.3684		762349.17	1173708.33	0.650	0.00	1173708.33	0.000
	12.3684 - 11.1053		783100.00	1188350.00	0.659	0.00	1188350.00	0.000
	11.1053 - 9.84211		803880.00	1203041.67	0.668	0.00	1203041.67	0.000
	9.84211 - 8.57895		824689.17	1217758.33	0.677	0.00	1217758.33	0.000
	8.57895 - 7.31579		845525.00	1232516.67	0.686	0.00	1232516.67	0.000
	7.31579 - 6.05263		866391.67	1247308.33	0.695	0.00	1247308.33	0.000
	6.05263 - 4.78947		887291.67	1262133.33	0.703	0.00	1262133.33	0.000
	4.78947 -		908208.33	1276991.67	0.711	0.00	1276991.67	0.000

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	3.52632							
	3.52632 - 2.26316		929166.67	1291875.00	0.719	0.00	1291875.00	0.000
	2.26316 - 1		950141.67	1306791.67	0.727	0.00	1306791.67	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	75 - 72.5921	TP30.75x21x0.1875	2855.91	222279.00	0.013	0.00	414278.33	0.000
	72.5921 - 70.1842		2956.70	227183.00	0.013	0.00	432760.00	0.000
	70.1842 - 67.7763		3274.97	232087.00	0.014	0.00	451645.00	0.000
	67.7763 - 65.3684		3376.62	236991.00	0.014	0.00	470933.33	0.000
	65.3684 - 62.9605		7824.63	241895.00	0.032	0.00	490625.00	0.000
	62.9605 - 60.5526		7925.58	246799.00	0.032	0.00	510720.00	0.000
	60.5526 - 58.1447		8234.22	251704.00	0.033	0.00	531218.33	0.000
	58.1447 - 55.7368		8330.42	256608.00	0.032	0.00	552120.00	0.000
	55.7368 - 53.3289		12579.60	261512.00	0.048	0.00	573425.00	0.000
	53.3289 - 50.9211		12670.00	266416.00	0.048	0.00	595133.33	0.000
	50.9211 - 48.5132		12946.70	271320.00	0.048	0.00	617245.00	0.000
	48.5132 - 46.1053		13025.50	276224.00	0.047	0.00	639760.00	0.000
	46.1053 - 43.6974		15661.00	281128.00	0.056	0.00	662678.33	0.000
	43.6974 - 41.2895		15731.60	286032.00	0.055	0.00	686000.00	0.000
	41.2895 - 38.8816		15798.80	290936.00	0.054	0.00	709725.00	0.000
	38.8816 - 36.4737		15863.00	295840.00	0.054	0.00	733853.33	0.000
	36.4737 - 34.0658		15924.40	300744.00	0.053	0.00	758385.00	0.000
	34.0658 - 31.6579		15983.30	305648.00	0.052	0.00	783319.17	0.000
	31.6579 - 29.25		16039.80	310552.00	0.052	0.00	808657.50	0.000
	29.25 - 25		7175.33	319208.00	0.022	0.00	854366.67	0.000
L2	29.25 - 25	TP35.055x29.5463x0.25	9028.32	419518.00	0.022	0.00	1106775.00	0.000
	25 - 23.7368		16216.90	422949.00	0.038	0.00	1124941.67	0.000
	23.7368 - 22.4737		16241.60	426379.00	0.038	0.00	1143266.67	0.000
	22.4737 - 21.2105		16266.20	429809.00	0.038	0.00	1161733.33	0.000
	21.2105 - 19.9474		16290.50	433239.00	0.038	0.00	1180350.00	0.000

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
	19.9474 - 18.6842		16314.60	436669.00	0.037	0.00	1199116.67	0.000
	18.6842 - 17.4211		16338.60	440100.00	0.037	0.00	1218033.33	0.000
	17.4211 - 16.1579		16362.30	443530.00	0.037	0.00	1237091.67	0.000
	16.1579 - 14.8947		16386.00	446960.00	0.037	0.00	1256300.00	0.000
	14.8947 - 13.6316		16409.40	450390.00	0.036	0.00	1275658.33	0.000
	13.6316 - 12.3684		16432.80	453820.00	0.036	0.00	1295158.33	0.000
	12.3684 - 11.1053		16456.00	457250.00	0.036	0.00	1314816.67	0.000
	11.1053 - 9.84211		16479.10	460681.00	0.036	0.00	1334616.67	0.000
	9.84211 - 8.57895		16502.10	464111.00	0.036	0.00	1354566.67	0.000
	8.57895 - 7.31579		16525.00	467541.00	0.035	0.00	1374658.33	0.000
	7.31579 - 6.05263		16547.80	470971.00	0.035	0.00	1394908.33	0.000
	6.05263 - 4.78947		16570.50	474401.00	0.035	0.00	1415300.00	0.000
	4.78947 - 3.52632		16593.10	477831.00	0.035	0.00	1435841.67	0.000
	3.52632 - 2.26316		16615.70	481262.00	0.035	0.00	1456525.00	0.000
	2.26316 - 1		16638.20	484692.00	0.034	0.00	1477366.67	0.000

Pole Interaction Design Data

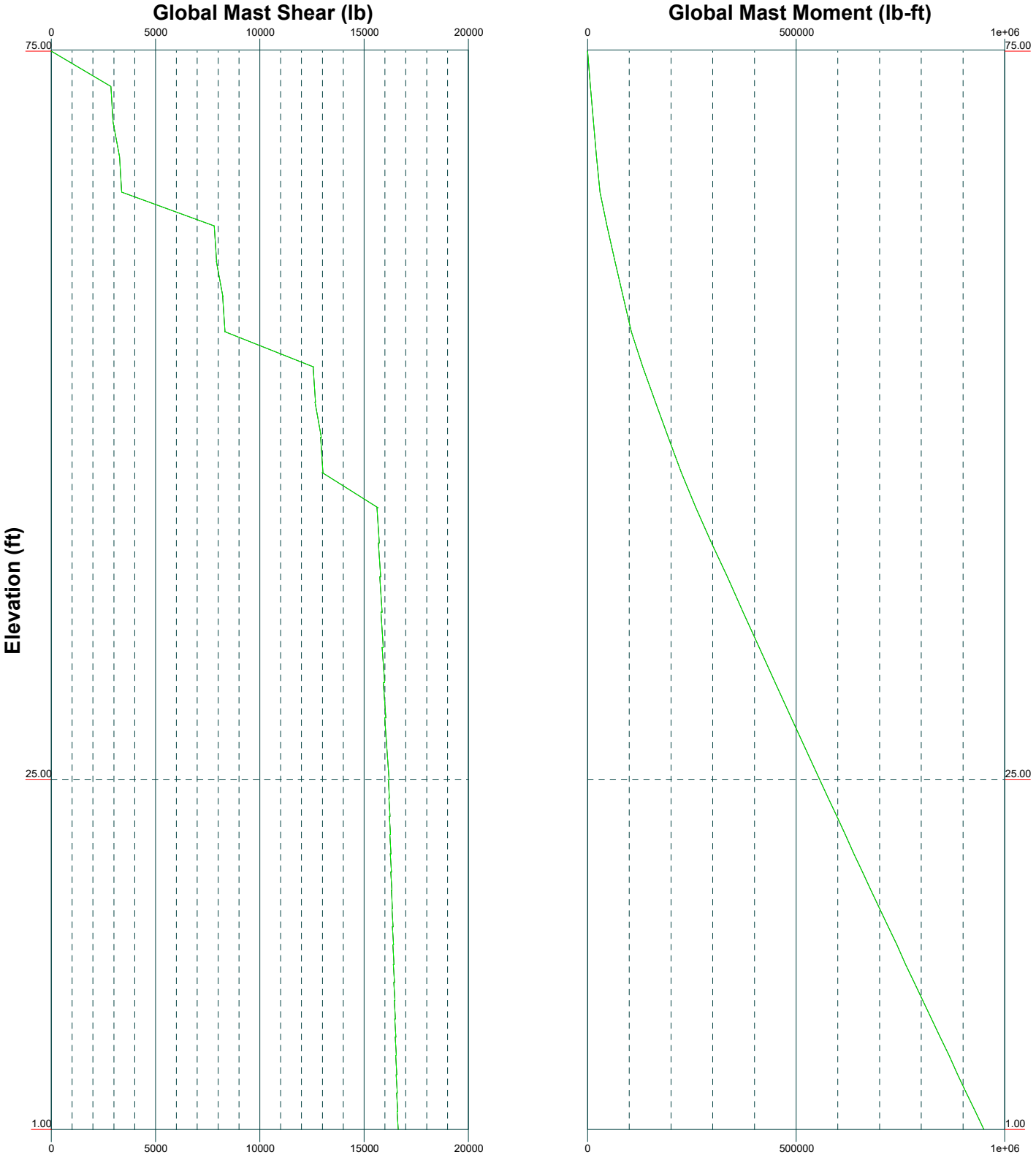
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	75 - 72.5921	0.002	0.017	0.000	0.013	0.000	0.019 ✔	1.000	✔
	72.5921 - 70.1842	0.002	0.034	0.000	0.013	0.000	0.036 ✔	1.000	✔
	70.1842 - 67.7763	0.007	0.051	0.000	0.014	0.000	0.058 ✔	1.000	✔
	67.7763 - 65.3684	0.007	0.067	0.000	0.014	0.000	0.075 ✔	1.000	✔
	65.3684 - 62.9605	0.010	0.103	0.000	0.032	0.000	0.114 ✔	1.000	✔
	62.9605 - 60.5526	0.010	0.140	0.000	0.032	0.000	0.151 ✔	1.000	✔
	60.5526 - 58.1447	0.014	0.176	0.000	0.033	0.000	0.191 ✔	1.000	✔
	58.1447 - 55.7368	0.014	0.210	0.000	0.032	0.000	0.226 ✔	1.000	✔
	55.7368 -	0.017	0.257	0.000	0.048	0.000	0.276	1.000	✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	53.3289						✔		
	53.3289 - 50.9211	0.017	0.306	0.000	0.048	0.000	0.325	1.000	✔
	50.9211 - 48.5132	0.021	0.354	0.000	0.048	0.000	✔ 0.377	1.000	✔
	48.5132 - 46.1053	0.021	0.399	0.000	0.047	0.000	✔ 0.422	1.000	✔
	46.1053 - 43.6974	0.022	0.448	0.000	0.056	0.000	✔ 0.473	1.000	✔
	43.6974 - 41.2895	0.022	0.499	0.000	0.055	0.000	✔ 0.524	1.000	✔
	41.2895 - 38.8816	0.021	0.548	0.000	0.054	0.000	✔ 0.572	1.000	✔
	38.8816 - 36.4737	0.021	0.594	0.000	0.054	0.000	✔ 0.618	1.000	✔
	36.4737 - 34.0658	0.021	0.638	0.000	0.053	0.000	✔ 0.662	1.000	✔
	34.0658 - 31.6579	0.021	0.681	0.000	0.052	0.000	✔ 0.704	1.000	✔
	31.6579 - 29.25	0.021	0.721	0.000	0.052	0.000	✔ 0.745	1.000	✔
	29.25 - 25	0.009	0.346	0.000	0.022	0.000	✔ 0.356	1.000	✔
L2	29.25 - 25	0.009	0.303	0.000	0.022	0.000	✔ 0.313	1.000	✔
	25 - 23.7368	0.016	0.553	0.000	0.038	0.000	✔ 0.570	1.000	✔
	23.7368 - 22.4737	0.016	0.565	0.000	0.038	0.000	✔ 0.582	1.000	✔
	22.4737 - 21.2105	0.016	0.576	0.000	0.038	0.000	✔ 0.594	1.000	✔
	21.2105 - 19.9474	0.016	0.588	0.000	0.038	0.000	✔ 0.605	1.000	✔
	19.9474 - 18.6842	0.016	0.599	0.000	0.037	0.000	✔ 0.616	1.000	✔
	18.6842 - 17.4211	0.016	0.609	0.000	0.037	0.000	✔ 0.626	1.000	✔
	17.4211 - 16.1579	0.016	0.620	0.000	0.037	0.000	✔ 0.637	1.000	✔
	16.1579 - 14.8947	0.016	0.630	0.000	0.037	0.000	✔ 0.647	1.000	✔
	14.8947 - 13.6316	0.016	0.640	0.000	0.036	0.000	✔ 0.657	1.000	✔
	13.6316 - 12.3684	0.016	0.650	0.000	0.036	0.000	✔ 0.667	1.000	✔
	12.3684 - 11.1053	0.016	0.659	0.000	0.036	0.000	✔ 0.676	1.000	✔
	11.1053 - 9.84211	0.016	0.668	0.000	0.036	0.000	✔ 0.685	1.000	✔
	9.84211 - 8.57895	0.016	0.677	0.000	0.036	0.000	✔ 0.694	1.000	✔
	8.57895 -	0.016	0.686	0.000	0.035	0.000	✔ 0.703	1.000	✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	7.31579						✔		
	7.31579 - 6.05263	0.016	0.695	0.000	0.035	0.000	0.711 ✔	1.000	✔
	6.05263 - 4.78947	0.016	0.703	0.000	0.035	0.000	0.720 ✔	1.000	✔
	4.78947 - 3.52632	0.016	0.711	0.000	0.035	0.000	0.728 ✔	1.000	✔
	3.52632 - 2.26316	0.016	0.719	0.000	0.035	0.000	0.736 ✔	1.000	✔
	2.26316 - 1	0.016	0.727	0.000	0.034	0.000	0.744 ✔	1.000	✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	75 - 25	Pole	TP30.75x21x0.1875	1	-21530.40	1035170.00	74.5	Pass
L2	25 - 1	Pole	TP35.055x29.5463x0.25	2	-25231.10	1615640.00	74.4	Pass
						Summary		
						Pole (L1)	74.5	Pass
						RATING =	**74.5**	**Pass**



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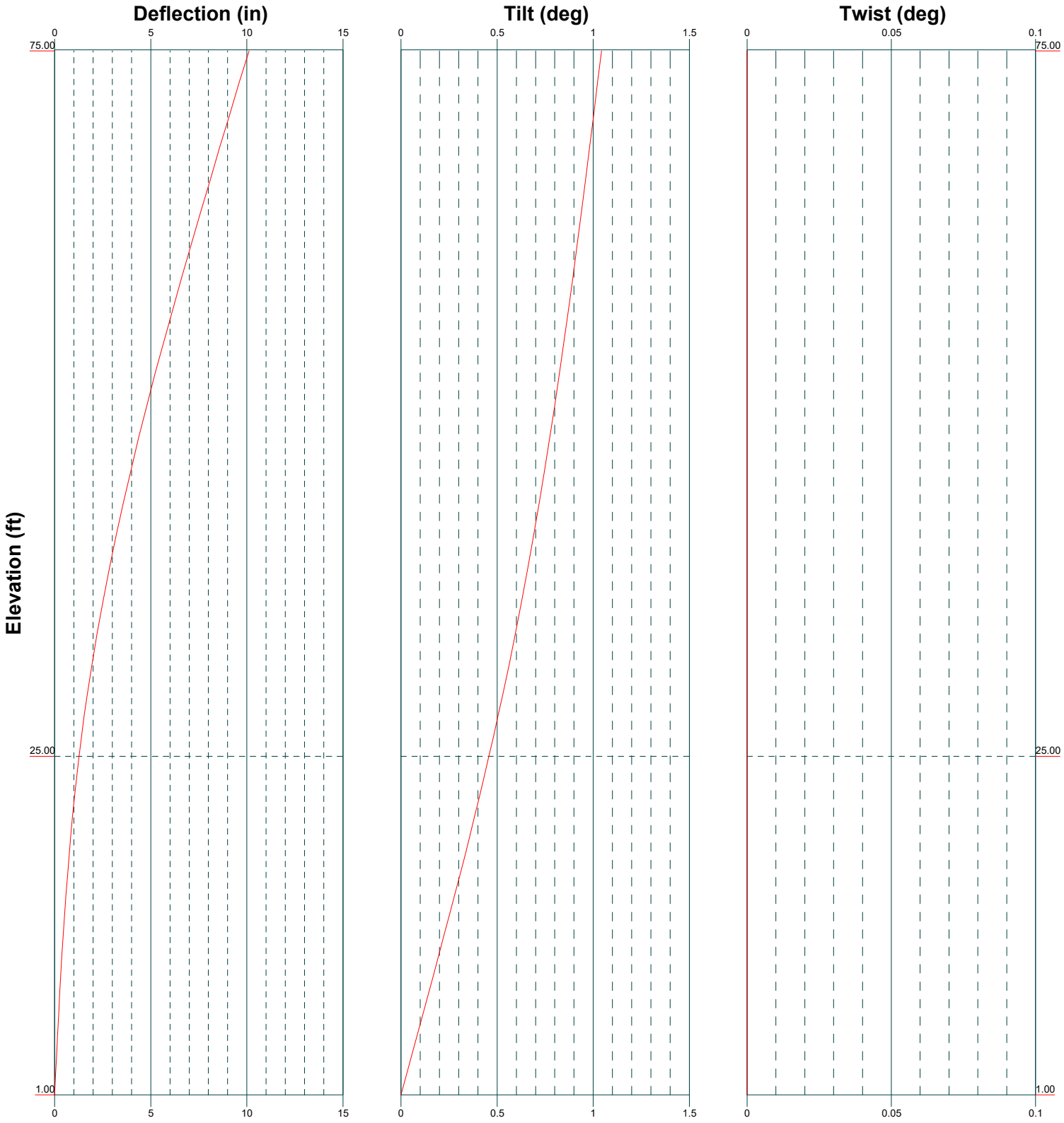
FAX: (801) 990-1776

Job: ***Spike***		
Project: ***U0142.2054.242***		
Client: Raycap	Drawn by: mririe	App'd:
Code: TIA-222-H	Date: 10/24/24	Scale: NTS
Path:		Dwg No. E-4



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FAX: (801) 990-1776

Job: ***Spike***		
Project: ***U0142.2054.242***		
Client: Raycap	Drawn by: mririe	App'd:
Code: TIA-222-H	Date: 10/24/24	Scale: NTS
Path:		Dwg No. E-5

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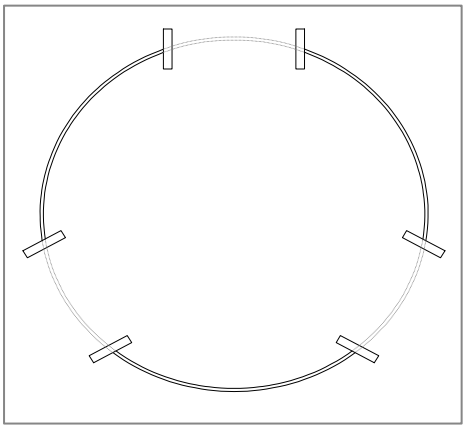
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 70 ft A.G.L.

Geometry Input

Elevation of Port, AGL	70.00	ft
Pole Diameter	21.975	in
Pole Thickness	0.1875	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	11.0	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	3/8	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	3	

	Port 1	Port 2	Port 3
Azimuth (°)	0	120	240
Height (in)	12	12	12
Width (in)	8	8	8
Depth (in)	2.5	2.5	2.5
Thickness (in)	0.5	0.5	0.5
Projection (in)	0.5	0.5	0.5
Reinforcing Area (in^2)	2.5	2.5	2.5
Pole Area Removed (in^2)	1.54	1.54	1.54
Dist. From Center to Reinf. (in)	10.2375	10.2375	10.2375
Area Check	**79.9%**	**79.9%**	**79.9%**
MOI Check	**85.0%**	**85.0%**	**85.0%**
Individual Port Weights (lbs)	14	14	14
Reduction in Pole Weight (lbs)	16		
Total Port Weight (lbs)	27		

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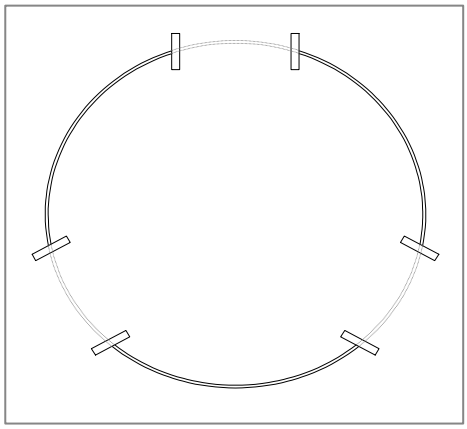
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 60 ft A.G.L.

Geometry Input

Elevation of Port, AGL	60.00	ft
Pole Diameter	23.925	in
Pole Thickness	0.1875	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	11.0	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	3/8	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	3	

	Port 1	Port 2	Port 3
Azimuth (°)	0	120	240
Height (in)	12	12	12
Width (in)	8	8	8
Depth (in)	2.5	2.5	2.5
Thickness (in)	0.5	0.5	0.5
Projection (in)	0.5	0.5	0.5
Reinforcing Area (in^2)	2.5	2.5	2.5
Pole Area Removed (in^2)	1.53	1.53	1.53
Dist. From Center to Reinf. (in)	11.2125	11.2125	11.2125
Area Check	**79.6%**	**79.6%**	**79.6%**
MOI Check	**84.2%**	**84.2%**	**84.2%**
Individual Port Weights (lbs)	14	14	14
Reduction in Pole Weight (lbs)	16		
Total Port Weight (lbs)	27		

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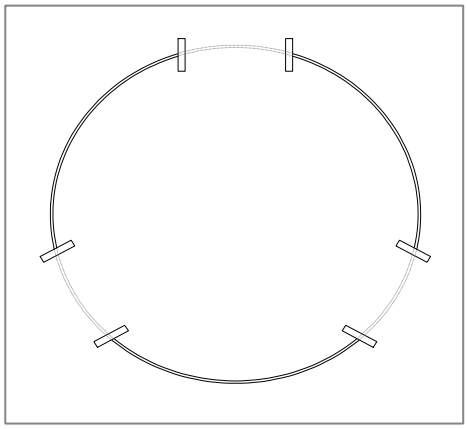
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 50 ft A.G.L.

Geometry Input

Elevation of Port, AGL	50.00	ft
Pole Diameter	25.875	in
Pole Thickness	0.1875	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	11.0	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	3/8	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	3	

	Port 1	Port 2	Port 3
Azimuth (°)	0	120	240
Height (in)	12	12	12
Width (in)	8	8	8
Depth (in)	2.5	2.5	2.5
Thickness (in)	0.5	0.5	0.5
Projection (in)	0.5	0.5	0.5
Reinforcing Area (in^2)	2.5	2.5	2.5
Pole Area Removed (in^2)	1.53	1.53	1.53
Dist. From Center to Reinf. (in)	12.1875	12.1875	12.1875
Area Check	**79.3%**	**79.3%**	**79.3%**
MOI Check	**83.6%**	**83.6%**	**83.6%**
Individual Port Weights (lbs)	14	14	14
Reduction in Pole Weight (lbs)	16		
Total Port Weight (lbs)	27		

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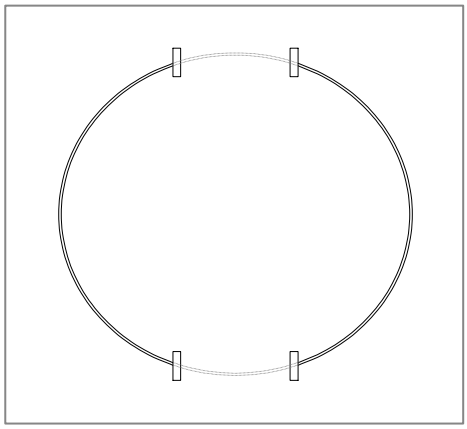
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 7 ft A.G.L.

Geometry Input

Elevation of Port, AGL	7.00	ft
Pole Diameter	33.885	in
Pole Thickness	0.25	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	14.6	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	1/2	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	2	

	Port 1	Port 2
Azimuth (°)	0	180
Height (in)	24	24
Width (in)	12	12
Depth (in)	3	3
Thickness (in)	0.75	0.75
Projection (in)	0.5	0.5
Reinforcing Area (in^2)	4.5	4.5
Pole Area Removed (in^2)	3.07	3.07
Dist. From Center to Reinf. (in)	15.9425	15.9425
Area Check	**88.6%**	**88.6%**
MOI Check	**93.5%**	**93.5%**
Individual Port Weights (lbs)	46	46
Reduction in Pole Weight (lbs)	42	
Total Port Weight (lbs)	50	

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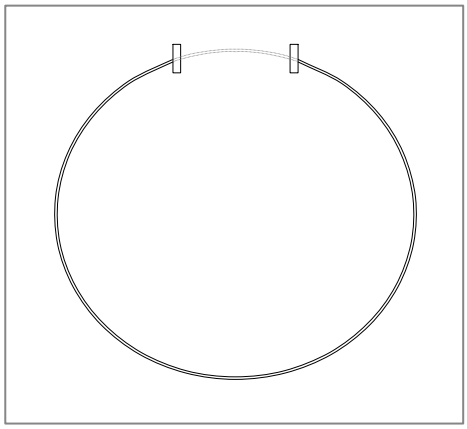
PROJECT: NM01-148 SPIKE

Port Design:



Label: Ports at 3 ft A.G.L.

Geometry Input

Elevation of Port, AGL	3.00	ft
Pole Diameter	34.665	in
Pole Thickness	0.25	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	14.6	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	1/2	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	1	

	Port 1
Azimuth (°)	0
Height (in)	24
Width (in)	12
Depth (in)	3
Thickness (in)	0.75
Projection (in)	0.5
Reinforcing Area (in^2)	4.5
Pole Area Removed (in^2)	3.06
Dist. From Center to Reinf. (in)	16.3325
Area Check	**88.5%**
MOI Check	**93.3%**
Individual Port Weights (lbs)	46
Reduction in Pole Weight (lbs)	23
Total Port Weight (lbs)	23

VECTOR ENGINEERS

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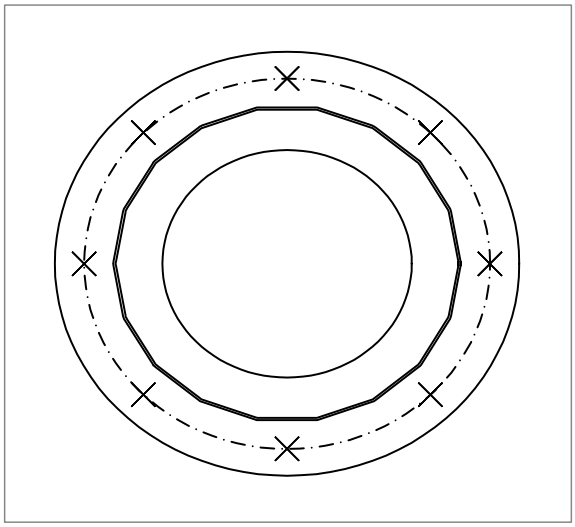
PROJECT: NM01-148 SPIKE

Monopole Baseplate & Anchorage Design per TIA-222-H Annex Q & TIA-222-H Section 4.9.9

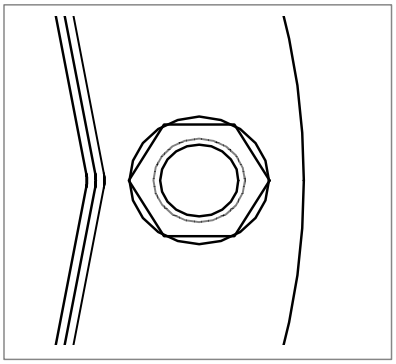
	Quantity	Symbol	Value	Units
Basic Input & Geometry	Number of sides		18	
	Flat O.D.	D_T	35.06	in
	Pole wall thickness	t_T	0.25	in
	Pole yield strength	F_{yp}	65	ksi
	Bend Radius		1	in
	Base plate fillet weld size		0.25	in
	Anchor diameter	d	2.25	in
	Number of anchors	n	8	
	Anchor grade		A615-75	
	Base plate thickness	t_{TP}	2.25	in
	Base plate yield strength	F_{yf}	50	ksi
	Anchor hole diameter		2.625	in
	Slotted to outside edge?		No	
	Flat washer diameter		4	
	Zinc drain hole diameter		2.625	
	Zinc drain circle		30.5	in
	Bolt circle diameter	D_{BC}	41.5	in
	Plate O.D.	D_{OD}	47.5	in
	Plate I.D.		25.5	in

Base Plate Illustration



			Wind		Seismic	
LRFD Loads	Axial down	$R_{u,c}$	26.27	k	0.00	k
	Axial up	$R_{u,t}$	0	k	0.00	k
	Shear	V_u	16.62	k	0.00	k
	Moment	M_u	950.14	k-ft	0.00	k-ft
	Member mom. capacity	ΦM_n	1325	k-ft		

Fit Check



Check:	Dist.	Result
Washer vs weld	0.5339	OK
Washer vs OD	0.8125	OK
Washer covers hole	0.5	OK

Checks	Plate stress ratio	**46.8%**	OK	
	Anchor unity check	**55.0%**	OK	
	Min. number of sides	18	OK	6 minimum
	Min. number of anchors	8	OK	8 minimum
	Max. anchor rod to pole distance	3.1"	OK	13.5" maximum
	Min. anchor diameter	2.25"	OK	0.75" minimum
	Max. anchor rod spacing	16.3"	NG	13.5" maximum
	Min. anchor rod spacing	15.88"	OK	6.75" minimum
	Min. base plate thickness	2.25"	OK	2" minimum
	Min. inside diameter	25.5"	OK	10.52" minimum
	Max. inside diameter	25.5"	OK	31.125" maximum

Note: when number of anchors is less than minimum and when maximum anchor rod spacing is exceeded, adjustments are made to the effective plate width calculations as if requirements of TIA-222-H Annex Q were met.

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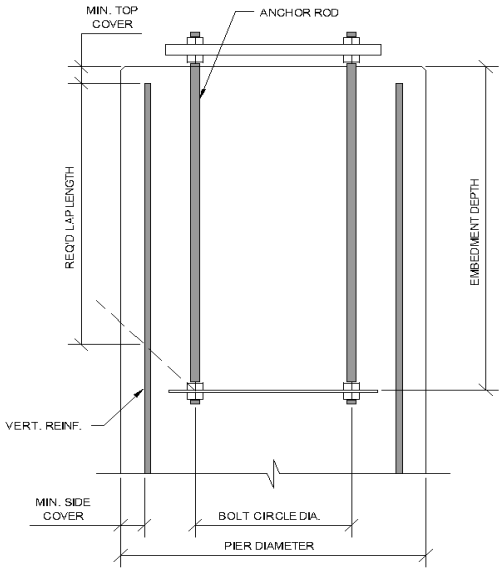
PROJECT: NM01-148 SPIKE

Anchorage Embedment Design

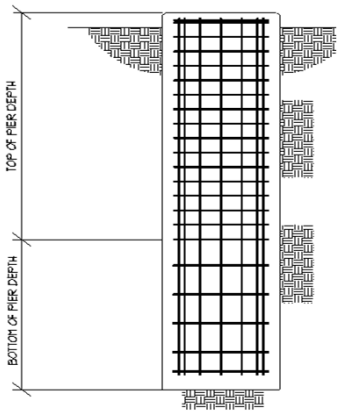
(per ACI 318-19)

Vertical Bar Size:	#8	
# of Vertical Bars:	22	
Concrete Compressive Strength [psi]:	4000	
Pier Diameter [ft]:	5.5	
Pier Depth [ft]:	20	
Top of Pier Elevation [in]:	6	
Concrete Volume [yd^3]:	18.0	
Side Concrete Cover [in]:	4	
Top Concrete Cover [in]:	2	
Horizontal Tie Size:	#4	
Bolt Circle Diameter [in]:	41.5	
# of Anchor Rods:	8	
Anchor Rod Diameter [in]:	2.25	
ψ_t (bar location factor):	1.0	Table 25.4.2.4
ψ_e (epoxy coating factor):	1.0	Table 25.4.2.4
ψ_s (bar size factor):	1.0	Table 25.4.2.4
λ (concrete type factor):	1.0	Table 25.4.2.4
Vertical Bar Diameter [in]:	1.0	
Horizontal Tie Diameter [in]:	0.500	
Buffer [in]:	4.25	
Req'd Lap Length [in]:	37.0	in (Section 25.4.2.2)
Min. Req'd Embedment Depth [in]:	**46.2**	



Transverse Reinforcement Design

Seismic Design Category:	C
Apply Seismic Detailing?	No
Site Class:	C
Type of Transverse Reinforcement:	Spiral
Transverse f_{yt} [ksi]:	60
Seismic Hooks Required?	No
Tie Size OK?	Yes
Spacing at Top of Pier [in]:	12
Spacing at Bottom of Pier [in]:	12
Total Pier Length [ft]:	20.5
Top Pier Length [ft]:	20.5
Bottom Pier Length [ft]:	0



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Project: NM01-148 SPIKE

Drilled Pier Design:

Applied Loads:

Max. shear, V:	22.2	k	Design methodology:	LRFD
Max. moment, M:	1,266.9	k-ft	Maximum foundation rating:	100%
Max. down, P_{down}:	35.0	k		
Max. uplift, P_{uplift}:	0.0	k		

Pier Properties:

Pier shape	Round		Volume of concrete:	487	ft^3
Pier diameter, b:	5.5	ft	Volume of concrete:	18.0	yd^3
Min. pier diameter, bmin (opt'l):	0.0	ft	Weight of concrete:	73.1	k
b:	5.5				
Top of pier elevation:	0.5	ft			
Pier depth, d:	20	ft			
Min. pier depth, d_{min} (opt'l):	0.0	ft			

Soil Properties & Analysis:

Allow. bearing pressure:	65,600	psf	F.S.: 1
Gross or net?	Net		
1/3 increase for short term loads?	No		
Skin friction (down):	0	psf	F.S.: 1
Skin friction (uplift):	0	psf	F.S.: 1
Top length to ignore:	2.75	ft	
1/3 increase for short term loads?	No		
Combine skin friction w/ end bearing?	No		
Bearing capacity:	1,558.5	k	
Uplift capacity:	65.8	k	

Results:

Bearing capacity OK.
Uplift capacity OK.

Lateral analysis in LPile

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PROJECT: NM01-148 Spike

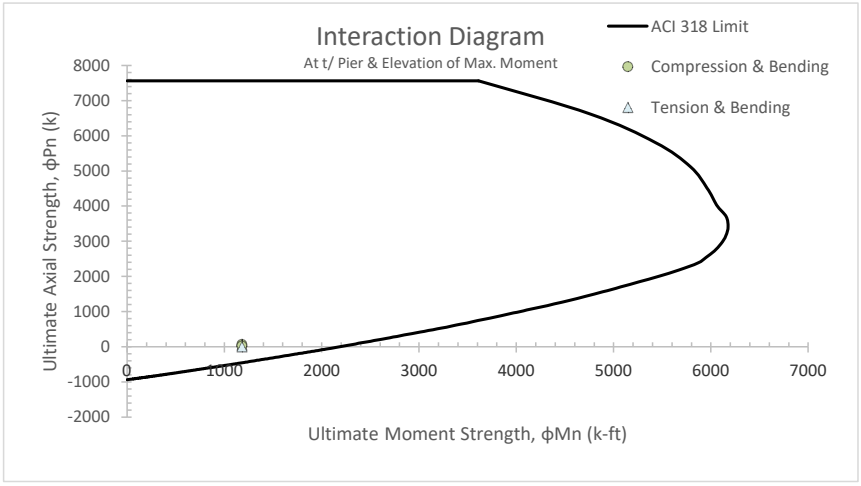
Drilled Pier Reinforcement:

Design Requirements:

Max. Moment, M (k-ft):	950.1	Max. Down, P_{down} (k):	26.3	Required Foundation UC Limit:	100%
Max. Shear, V (k):	16.6	Max. Uplift, P_{up} (k):	0.0	Mu, M+V*H+Pmax*E (k-ft):	1180.1
Height of V (ft):	13.833	Eccentricity for P (in):	0	(Uplift is negative for comparison w/	
		Concrete Self-weight (k):	47.7 (0.145 pcf)	Interaction Diagram)	

Pier Properties:

Code Reference:	ACI 318-19	
Pier Diameter (ft):	5.5	
Top of Pier Elevation (in):	6	
Pier Depth (ft):	20	
Vertical Bar Size:	#8	
Bar Diameter (in):	1	
Bar Area (in^2):	0.79	
Seismic Design Category:	C	
# of Vertical Bars:	22	
Vert. Yield Strength (psi):	60000	
Horizontal Reinf. Type:	Spiral	
Horizontal Reinf. Size:	#4	
Horizontal Reinf. Diameter (in):	0.5	
Side Concrete Cover (in):	4	
Vert. Edge Distance (in):	4.5	
Conc. Comp. Strength, f'c (psi):	4000	
Angle Between Bars, δ (radians):	0.286	
Area of Steel (in^2):	17.4	
Gross Column Area (in^2):	3421.2	
Min. Reinforcement Ratio:	0.50%	(IBC Sections 1810.3.9.4.1 and 1810.3.9.4.2)
β_1:	0.85	Table 22.2.2.4.3
Concrete Yield Strain, ε_{cu} (in/in):	0.003	Section 22.2.2.1
P_o (k):	12616	Eqn. 22.4.2.2
ϕ:	0.75	Table 21.2.2
Pn Factor:	0.80	Table 22.4.2.1
ϕP_u (pure compression, k):	7569	
Es (ksi):	29000	
Steel Yield Strain, ε_{ty} (in/in):	0.002069	Section 21.2.2.1
Number of verticals in top row:	1	



Axial & Bending Checks:

Steel/Concrete Ratio: 0.51% **> Min. Reinf. Ratio**

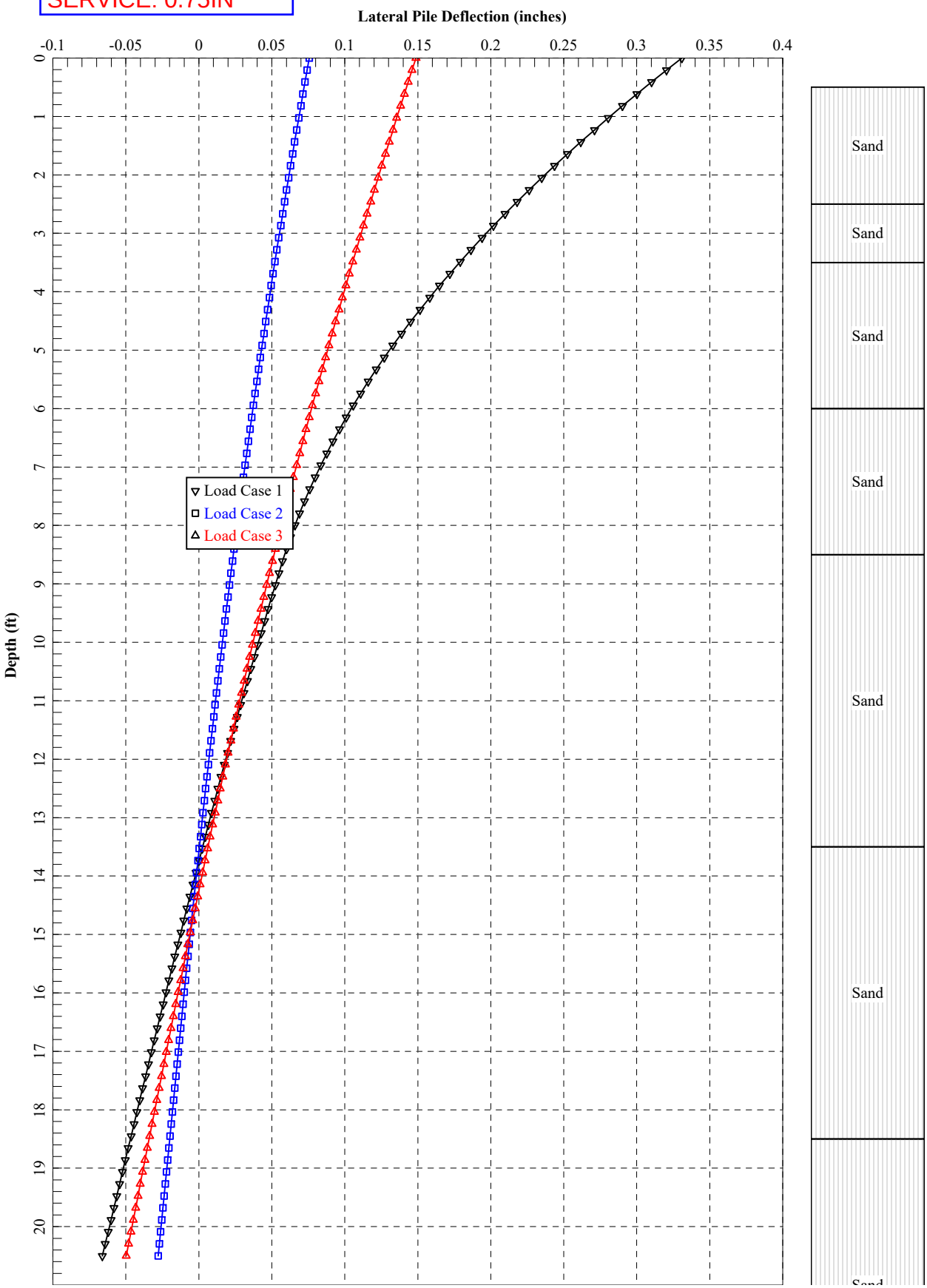
Compression & Bending

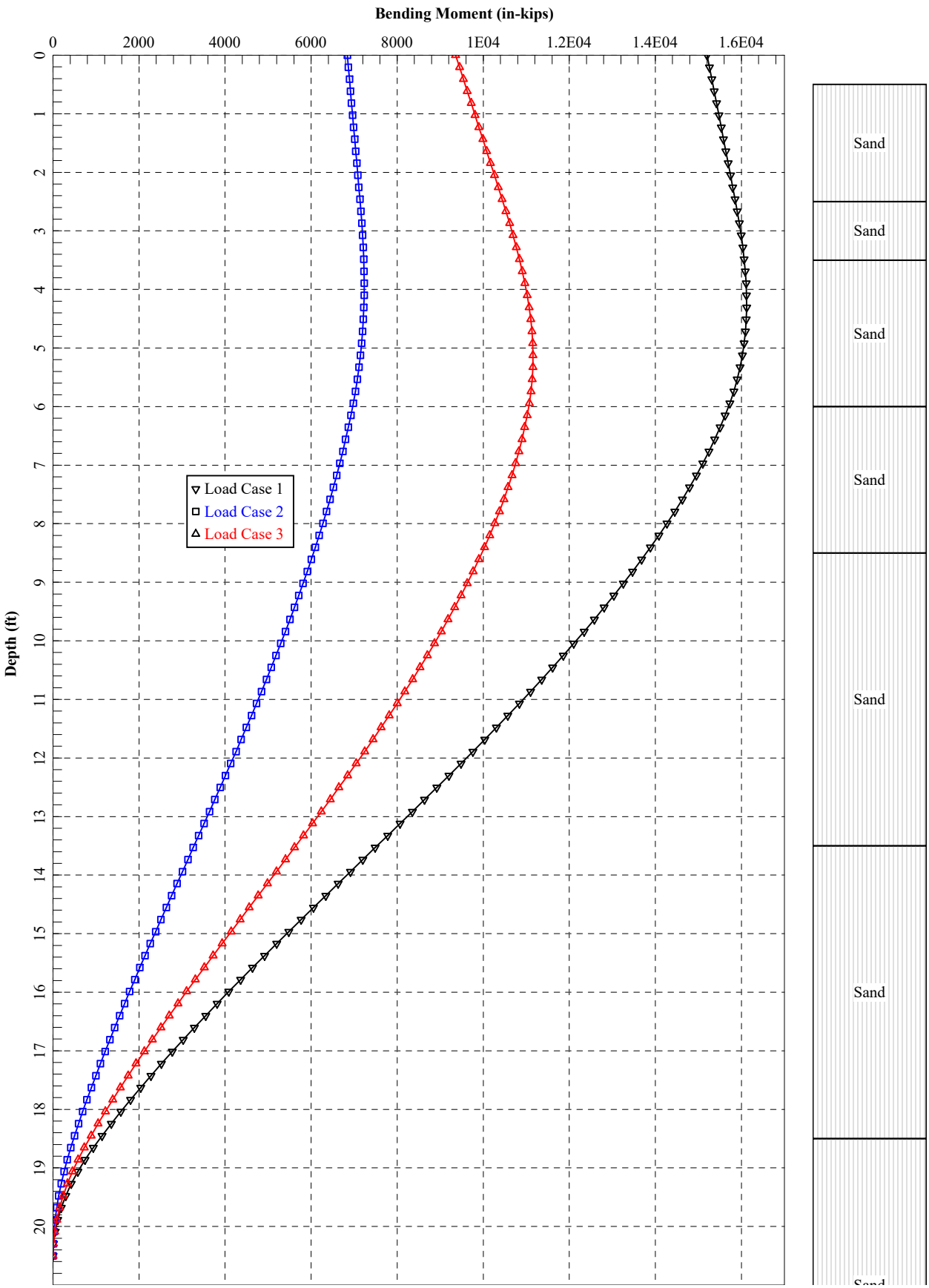
	@ t/ Pier	@ Max. M		
ϕPn (k):	19.7	62.6		
ϕMn (k-ft):	2222.8	2310.2		
UC:	53.1%	51.1%	**OK, Adequate**	$(Pu^2+Mu^2)^{0.5}/(\phi Pn^2+\phi Mn^2)^{0.5}$

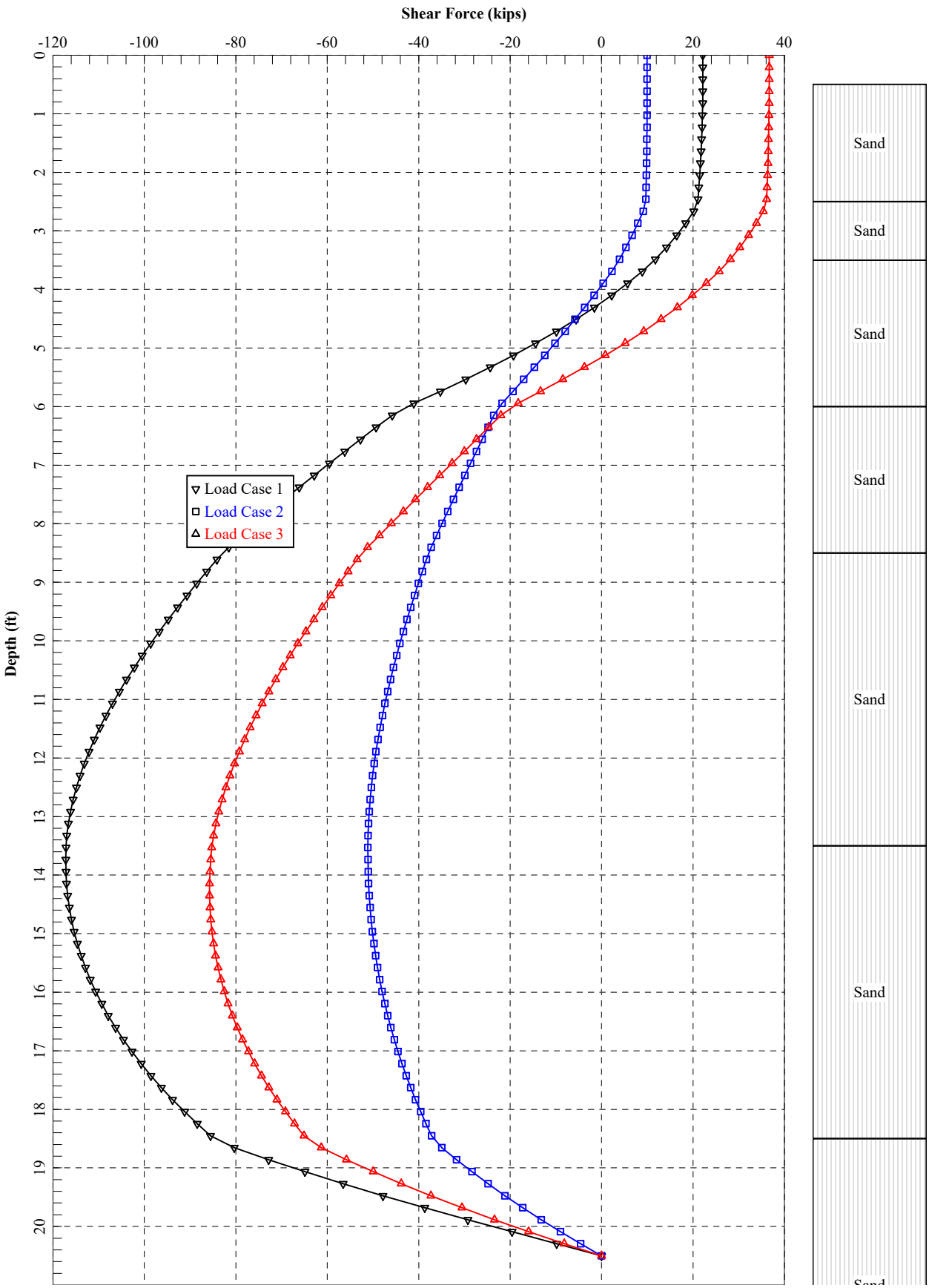
Tension & Bending

	@ t/ Pier	@ Max. M		
ϕPn (k):	0.0	42.9		
ϕMn (k-ft):	2182.5	2270.1		
UC:	54.1%	52.0%	**OK, Adequate**	$(Pu^2+Mu^2)^{0.5}/(\phi Pn^2+\phi Mn^2)^{0.5}$

MAX DEFLECTIONS:
LRFD: 6IN
ASD: 1IN
SERVICE: 0.75IN




Bending Moment (in-kips)
0
2000
4000
6000
8000
1E04
1.2E04
1.4E04
1.6E04
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Load Case 1
Load Case 2
Load Case 3
Sand
Sand
Sand
Sand
Sand
Sand


Shear Force (kips)
-120
-100
-80
-60
-40
-20
0
20
40
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Load Case 1
Load Case 2
Load Case 3
Sand
Sand
Sand
Sand
Sand
Sand

```
================================================================================

                     LPile for Windows, Version 2019-11.001

                 Analysis of Individual Piles and Drilled Shafts
                Subjected to Lateral Loading Using the p-y Method
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================================================================================

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--------------------------------------------------------------------------------
                            Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:
\\VSEFILES.vector.local\Projects\2024 Projects\U0142 Raycap\U0142-2054-242
SS24-01302H-00R0 NM1-148 Spike (NM, Monopole with screening)\ENG\

Name of input data file:
lpileInputFile.lp11

Name of output report file:
lpileInputFile.lp11

Name of plot output file:
lpileInputFile.lp11

Name of runtime message file:
lpileInputFile.lp11



--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------

                Date:  October 24, 2024           Time:  17:21:52


--------------------------------------------------------------------------------
                                    Problem Title
--------------------------------------------------------------------------------

Project Name: NM01-148 Spike


Job Number: U0142.2054.242


Client: Raycap


Engineer: Draper


Description:




--------------------------------------------------------------------------------
                            Program Options and Settings
--------------------------------------------------------------------------------

Computational Options:
 - Use unfactored loads in computations (conventional analysis)
Engineering Units Used for Data Input and Computations:
 - US Customary System Units (pounds, feet, inches)

Analysis Control Options:
 - Maximum number of iterations allowed                =          500
 - Deflection tolerance for convergence                =   1.0000E-05 in
 - Maximum allowable deflection                        =     100.0000 in
 - Number of pile increments                           =          100

Loading Type and Number of Cycles of Loading:
 - Static loading specified
```

```
 - Use of p-y modification factors for p-y curves not selected
 - Analysis uses layering correction (Method of Georgiadis)
 - No distributed lateral loads are entered
 - Loading by lateral soil movements acting on pile not selected
 - Input of shear resistance at the pile tip not selected
 - Input of moment resistance at the pile tip not selected
 - Computation of pile-head foundation stiffness matrix not selected
 - Push-over analysis of pile not selected
 - Buckling analysis of pile not selected

Output Options:
 - Output files use decimal points to denote decimal symbols.
 - Values of pile-head deflection, bending moment, shear force, and
   soil reaction are printed for full length of pile.
 - Printing Increment (nodal spacing of output points) = 1
 - No p-y curves to be computed and reported for user-specified depths
 - Print using wide report formats



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                      =           1
Total length of pile                                 =      20.500 ft
Depth of ground surface below top of pile            =      0.5000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over
the length of the pile. A summary of values of pile diameter vs. depth follows.

            Depth Below          Pile
Point        Pile Head         Diameter
 No.            feet            inches
-----      -------------     -------------
  1             0.000          66.0000
  2            20.500          66.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                 =    20.500000 ft
   Shaft Diameter                                    =    66.000000 in
   Shear capacity of section                         =       0.0000 lbs



--------------------------------------------------------------------------------
                       Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                                   =        0.000 degrees
                                                     =        0.000 radians

Pile Batter Angle                                    =        0.000 degrees
                                                     =        0.000 radians


--------------------------------------------------------------------------------
                       Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 13 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer         =     0.500000 ft
   Distance from top of pile to bottom of layer      =     2.500000 ft
   Effective unit weight at top of layer             =   118.000000 pcf
   Effective unit weight at bottom of layer          =   118.000000 pcf
   Friction angle at top of layer                    =    28.000000 deg.
   Friction angle at bottom of layer                 =    28.000000 deg.
   Subgrade k at top of layer                        =       0.0000 pci
   Subgrade k at bottom of layer                     =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 2 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer         =     2.500000 ft
   Distance from top of pile to bottom of layer      =     3.500000 ft
   Effective unit weight at top of layer             =   118.000000 pcf
   Effective unit weight at bottom of layer          =   118.000000 pcf
   Friction angle at top of layer                    =    42.000000 deg.
   Friction angle at bottom of layer                 =    42.000000 deg.
   Subgrade k at top of layer                        =       0.0000 pci
   Subgrade k at bottom of layer                     =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 3 is sand, p-y criteria by Reese et al., 1974
```

```
   Distance from top of pile to top of layer          =     3.500000 ft
   Distance from top of pile to bottom of layer       =     6.000000 ft
   Effective unit weight at top of layer              =   115.000000 pcf
   Effective unit weight at bottom of layer           =   115.000000 pcf
   Friction angle at top of layer                     =    45.000000 deg.
   Friction angle at bottom of layer                  =    45.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 4 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =     6.000000 ft
   Distance from top of pile to bottom of layer       =     8.500000 ft
   Effective unit weight at top of layer              =   118.000000 pcf
   Effective unit weight at bottom of layer           =   118.000000 pcf
   Friction angle at top of layer                     =    38.000000 deg.
   Friction angle at bottom of layer                  =    38.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 5 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =     8.500000 ft
   Distance from top of pile to bottom of layer       =    13.500000 ft
   Effective unit weight at top of layer              =   114.000000 pcf
   Effective unit weight at bottom of layer           =   114.000000 pcf
   Friction angle at top of layer                     =    36.000000 deg.
   Friction angle at bottom of layer                  =    36.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 6 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    13.500000 ft
   Distance from top of pile to bottom of layer       =    18.500000 ft
   Effective unit weight at top of layer              =   114.000000 pcf
   Effective unit weight at bottom of layer           =   114.000000 pcf
   Friction angle at top of layer                     =    34.000000 deg.
   Friction angle at bottom of layer                  =    34.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 7 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    18.500000 ft
   Distance from top of pile to bottom of layer       =    23.500000 ft
   Effective unit weight at top of layer              =   116.000000 pcf
   Effective unit weight at bottom of layer           =   116.000000 pcf
   Friction angle at top of layer                     =    41.000000 deg.
   Friction angle at bottom of layer                  =    41.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 8 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    23.500000 ft
   Distance from top of pile to bottom of layer       =    28.500000 ft
   Effective unit weight at top of layer              =   116.000000 pcf
   Effective unit weight at bottom of layer           =   116.000000 pcf
   Friction angle at top of layer                     =    40.000000 deg.
   Friction angle at bottom of layer                  =    40.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 9 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    28.500000 ft
   Distance from top of pile to bottom of layer       =    33.500000 ft
   Effective unit weight at top of layer              =   115.000000 pcf
   Effective unit weight at bottom of layer           =   115.000000 pcf
   Friction angle at top of layer                     =    38.000000 deg.
   Friction angle at bottom of layer                  =    38.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci

   NOTE: Default values for subgrade k will be computed for this layer.

Layer 10 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer          =    33.500000 ft
   Distance from top of pile to bottom of layer       =    38.500000 ft
   Effective unit weight at top of layer              =   118.000000 pcf
   Effective unit weight at bottom of layer           =   118.000000 pcf
   Friction angle at top of layer                     =    45.000000 deg.
   Friction angle at bottom of layer                  =    45.000000 deg.
   Subgrade k at top of layer                         =       0.0000 pci
   Subgrade k at bottom of layer                      =       0.0000 pci
```

NOTE: Default values for subgrade k will be computed for this layer.

Layer 11 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	38.500000 ft
Distance from top of pile to bottom of layer	=	43.500000 ft
Effective unit weight at top of layer	=	118.000000 pcf
Effective unit weight at bottom of layer	=	118.000000 pcf
Friction angle at top of layer	=	45.000000 deg.
Friction angle at bottom of layer	=	45.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 12 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	43.500000 ft
Distance from top of pile to bottom of layer	=	48.500000 ft
Effective unit weight at top of layer	=	118.000000 pcf
Effective unit weight at bottom of layer	=	118.000000 pcf
Friction angle at top of layer	=	45.000000 deg.
Friction angle at bottom of layer	=	45.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 13 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	48.500000 ft
Distance from top of pile to bottom of layer	=	50.000000 ft
Effective unit weight at top of layer	=	118.000000 pcf
Effective unit weight at bottom of layer	=	118.000000 pcf
Friction angle at top of layer	=	45.000000 deg.
Friction angle at bottom of layer	=	45.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

(Depth of the lowest soil layer extends 29.500 ft below the pile tip)

Summary of Input Soil Properties

Layer Num.	Soil Type (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand	0.5000	118.0000	28.0000	default
	(Reese, et al.)	2.5000	118.0000	28.0000	default
2	Sand	2.5000	118.0000	42.0000	default
	(Reese, et al.)	3.5000	118.0000	42.0000	default
3	Sand	3.5000	115.0000	45.0000	default
	(Reese, et al.)	6.0000	115.0000	45.0000	default
4	Sand	6.0000	118.0000	38.0000	default
	(Reese, et al.)	8.5000	118.0000	38.0000	default
5	Sand	8.5000	114.0000	36.0000	default
	(Reese, et al.)	13.5000	114.0000	36.0000	default
6	Sand	13.5000	114.0000	34.0000	default
	(Reese, et al.)	18.5000	114.0000	34.0000	default
7	Sand	18.5000	116.0000	41.0000	default
	(Reese, et al.)	23.5000	116.0000	41.0000	default
8	Sand	23.5000	116.0000	40.0000	default
	(Reese, et al.)	28.5000	116.0000	40.0000	default
9	Sand	28.5000	115.0000	38.0000	default
	(Reese, et al.)	33.5000	115.0000	38.0000	default
10	Sand	33.5000	118.0000	45.0000	default
	(Reese, et al.)	38.5000	118.0000	45.0000	default
11	Sand	38.5000	118.0000	45.0000	default
	(Reese, et al.)	43.5000	118.0000	45.0000	default
12	Sand	43.5000	118.0000	45.0000	default
	(Reese, et al.)	48.5000	118.0000	45.0000	default
13	Sand	48.5000	118.0000	45.0000	default
	(Reese, et al.)	50.0000	118.0000	45.0000	default

Static Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length

```
---------------
   1     1     V =       22160. lbs   M =    15202288. in-lbs            35025.
    No
   2     1     V =        9972. lbs   M =     6841030. in-lbs            21891.
    No
   3     1     V =       36672. lbs   M =     9359280. in-lbs            13890.
    No

V = shear force applied normal to pile axis
M = bending moment applied to pile head
y = lateral deflection normal to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applied to pile head
Values of top y vs. pile lengths can be computed only for load types with
specified shear loading (Load Types 1, 2, and 3).
Thrust force is assumed to be acting axially for all pile batter angles.



--------------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
--------------------------------------------------------------------------------

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:
-------------------

Dimensions and Properties of Drilled Shaft (Bored Pile):
--------------------------------------------------------

Length of Section                                  =    20.500000 ft
Shaft Diameter                                     =    66.000000 in
Concrete Cover Thickness (to edge of long. rebar)  =     4.500000 in
Number of Reinforcing Bars                         =           22 bars
Yield Stress of Reinforcing Bars                   =      60000. psi
Modulus of Elasticity of Reinforcing Bars          =    29000000. psi
Gross Area of Shaft                                =       3421. sq. in.
Total Area of Reinforcing Steel                    =    17.380000 sq. in.
Area Ratio of Steel Reinforcement                  =         0.51 percent
Edge-to-Edge Bar Spacing                           =     6.969631 in
Maximum Concrete Aggregate Size                    =     0.750000 in
Ratio of Bar Spacing to Aggregate Size             =         9.29
Offset of Center of Rebar Cage from Center of Pile =       0.0000 in

Axial Structural Capacities:
----------------------------

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As    =    12615.769 kips
Tensile Load for Cracking of Concrete                  =    -1473.828 kips
Nominal Axial Tensile Capacity                         =    -1042.800 kips


Reinforcing Bar Dimensions and Positions Used in Computations:

     Bar          Bar Diam.      Bar Area          X             Y
    Number         inches         sq. in.        inches        inches
  ----------     ----------     ----------     ----------    ----------
      1           1.000000       0.790000      28.000000       0.00000
      2           1.000000       0.790000      26.865803       7.888512
      3           1.000000       0.790000      23.555099      15.137943
      4           1.000000       0.790000      18.336101      21.160988
      5           1.000000       0.790000      11.631620      25.469696
      6           1.000000       0.790000       3.984815      27.715000
      7           1.000000       0.790000      -3.984815      27.715000
      8           1.000000       0.790000     -11.631620      25.469696
      9           1.000000       0.790000     -18.336101      21.160988
     10           1.000000       0.790000     -23.555099      15.137943
     11           1.000000       0.790000     -26.865803       7.888512
     12           1.000000       0.790000     -28.000000       0.00000
     13           1.000000       0.790000     -26.865803      -7.888512
     14           1.000000       0.790000     -23.555099     -15.137943
     15           1.000000       0.790000     -18.336101     -21.160988
     16           1.000000       0.790000     -11.631620     -25.469696
     17           1.000000       0.790000      -3.984815     -27.715000
     18           1.000000       0.790000       3.984815     -27.715000
     19           1.000000       0.790000      11.631620     -25.469696
     20           1.000000       0.790000      18.336101     -21.160988
     21           1.000000       0.790000      23.555099     -15.137943
     22           1.000000       0.790000      26.865803      -7.888512


NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero =  6.970 inches
between bars 15 and 16.

Ratio of bar spacing to maximum aggregate size = 9.29


Concrete Properties:
--------------------

Compressive Strength of Concrete                       =        4000. psi
Modulus of Elasticity of Concrete                      =     3604997. psi
Modulus of Rupture of Concrete                         =  -474.341649 psi
Compression Strain at Peak Stress                      =     0.001886
Tensile Strain at Fracture of Concrete                 =   -0.0001154
```

Maximum Coarse Aggregate Size = 0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	13.890
2	21.891
3	35.025

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318, Section 10.3.4.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 13.890 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Stress in-kip ksi	Bending Moment	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg
4.16667E-07	1712.	4109759588.	35.2380330	0.00001468	-0.00001282		
0.0614501	0.3659804						
8.33333E-07	3417.	4100112352.	34.1223928	0.00002844	-0.00002656		
0.1185413	0.7049995						
0.00000125	5113.	4090427782.	33.7505281	0.00004219	-0.00004031		
0.1752158	1.0440191						
0.00000167	6801.	4080733859.	33.5646062	0.00005594	-0.00005406		
0.2314735	1.3830393						
0.00000208	8481.	4071036194.	33.4530615	0.00006969	-0.00006781		
0.2873145	1.7220600						
0.00000250	10153.	4061336658.	33.3787055	0.00008345	-0.00008155		
0.3427388	2.0610811						
0.00000292	11817.	4051636054.	33.3256001	0.00009720	-0.00009530		
0.3977463	2.4001028						
0.00000333	13473.	4041934781.	33.2857765	0.0001110	-0.0001090		
0.4523371	2.7391251						
0.00000375	13473.	3592830916.	14.2401968	0.00005340	-0.0001941		
0.2181743	-5.0905662	C					
0.00000417	13473.	3233547824.	14.1088487	0.00005879	-0.0002162		
0.2397881	-5.6720558	C					
0.00000458	13473.	2939588931.	13.9996353	0.00006416	-0.0002383		
0.2613071	-6.2537776	C					
0.00000500	13473.	2694623187.	13.9091623	0.00006955	-0.0002605		
0.2827754	-6.8354214	C					
0.00000542	13473.	2487344480.	13.8331064	0.00007493	-0.0002826		
0.3041928	-7.4169870	C					
0.00000583	13473.	2309677017.	13.7683794	0.00008032	-0.0003047		
0.3255594	-7.9984741	C					
0.00000625	13473.	2155698550.	13.7127165	0.00008570	-0.0003268		
0.3468750	-8.5798826	C					
0.00000667	13473.	2020967390.	13.6644194	0.00009110	-0.0003489		
0.3681396	-9.1612122	C					
0.00000708	13473.	1902086956.	13.6221892	0.00009649	-0.0003710		
0.3893531	-9.7424628	C					
0.00000750	13473.	1796415458.	13.5850156	0.0001019	-0.0003931		
0.4105155	-10.3236341	C					
0.00000792	13473.	1701867276.	13.5521013	0.0001073	-0.0004152		
0.4316267	-10.9047259	C					
0.00000833	13473.	1616773912.	13.5223786	0.0001127	-0.0004373		
0.4526722	-11.4858418	C					
0.00000875	13473.	1539784678.	13.4946244	0.0001181	-0.0004594		
0.4736255	-12.0671765	C					
0.00000917	13473.	1469794466.	13.4697097	0.0001235	-0.0004815		
0.4945282	-12.6484271	C					
0.00000958	13473.	1405890358.	13.4472648	0.0001289	-0.0005036		
0.5153803	-13.2295934	C					
0.00001000	13473.	1347311594.	13.4269820	0.0001343	-0.0005257		
0.5361817	-13.8106754	C					
0.00001042	13473.	1293419130.	13.4086025	0.0001397	-0.0005478		
0.5569323	-14.3916724	C					
0.00001083	13473.	1243672240.	13.3919075	0.0001451	-0.0005699		
0.5776321	-14.9725842	C					
0.00001125	13473.	1197610305.	13.3767106	0.0001505	-0.0005920		
0.5982810	-15.5534108	C					
0.00001167	13473.	1154838509.	13.3628519	0.0001559	-0.0006141		
0.6188789	-16.1341519	C					
0.00001208	13473.	1115016491.	13.3501937	0.0001613	-0.0006362		
0.6394257	-16.7148072	C					
0.00001250	13473.	1077849275.	13.3386167	0.0001667	-0.0006583		
0.6599215	-17.2953766	C					

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0.00001292       13473.   1043079943.    13.3280168     0.0001722    -0.0006803
0.6803660   -17.8758596 C
0.00001333       13473.   1010483695.    13.3183031     0.0001776    -0.0007024
0.7007592   -18.4562562 C
0.00001375       13473.    979862977.    13.3093956     0.0001830    -0.0007245
0.7211011   -19.0365660 C
0.00001417       13473.    951043478.    13.3012239     0.0001884    -0.0007466
0.7413916   -19.6167889 C
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0.7616306   -20.1969245 C
0.00001500       13473.    898207729.    13.2868447     0.0001993    -0.0007907
0.7818180   -20.7769726 C
0.00001542       13473.    873931844.    13.2805321     0.0002047    -0.0008128
0.8019538   -21.3569330 C
0.00001583       13473.    850933638.    13.2747434     0.0002102    -0.0008348
0.8220378   -21.9368053 C
0.00001625       13473.    829114827.    13.2694389     0.0002156    -0.0008569
0.8420701   -22.5165894 C
0.00001708       13473.    788670201.    13.2601426     0.0002265    -0.0009010
0.8819789   -23.6758920 C
0.00001792       13473.    751987866.    13.2523965     0.0002374    -0.0009451
0.9216796   -24.8348382 C
0.00001875       13473.    718566183.    13.2459977     0.0002484    -0.0009891
0.9611716   -25.9934263 C
0.00001958       13473.    687988899.    13.2407779     0.0002593    -0.0010332
1.0004543   -27.1516540 C
0.00002042       13473.    659907719.    13.2365965     0.0002702    -0.0010773
1.0395270   -28.3095193 C
0.00002125       13473.    634028985.    13.2333346     0.0002812    -0.0011213
1.0783892   -29.4670200 C
0.00002208       13473.    610103363.    13.2308918     0.0002922    -0.0011653
1.1170401   -30.6241539 C
0.00002292       13473.    587917786.    13.2291818     0.0003032    -0.0012093
1.1554792   -31.7809187 C
0.00002375       13473.    567289092.    13.2281308     0.0003142    -0.0012533
1.1937057   -32.9373123 C
0.00002458       13473.    548058953.    13.2276750     0.0003252    -0.0012973
1.2317191   -34.0933324 C
0.00002542       13473.    530089807.    13.2277589     0.0003362    -0.0013413
1.2695187   -35.2489768 C
0.00002625       13473.    513261559.    13.2283342     0.0003472    -0.0013853
1.3071039   -36.4042430 C
0.00002708       13473.    497468896.    13.2293583     0.0003583    -0.0014292
1.3444738   -37.5591289 C
0.00002792       13506.    483808020.    13.2307942     0.0003694    -0.0014731
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1.4185657   -39.8677499 C
0.00002958       14286.    482919553.    13.2347728     0.0003915    -0.0015610
1.4552861   -41.0214802 C
0.00003042       14676.    482497747.    13.2372605     0.0004026    -0.0016049
1.4917887   -42.1748206 C
0.00003125       15065.    482089231.    13.2400485     0.0004138    -0.0016487
1.5280727   -43.3277685 C
0.00003208       15454.    481692920.    13.2431163     0.0004249    -0.0016926
1.5641374   -44.4803214 C
0.00003292       15843.    481307841.    13.2464450     0.0004360    -0.0017365
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0.00003375       16231.    480933112.    13.2500182     0.0004472    -0.0017803
1.6356062   -46.7842322 C
0.00003458       16620.    480567939.    13.2538205     0.0004584    -0.0018241
1.6710088   -47.9355850 C
0.00003542       17007.    480211601.    13.2578385     0.0004695    -0.0018680
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0.00003625       17395.    479863443.    13.2620597     0.0004807    -0.0019118
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0.00003708       17782.    479522869.    13.2664730     0.0004920    -0.0019555
1.7758805   -51.3872014 C
0.00003792       18169.    479189333.    13.2710681     0.0005032    -0.0019993
1.8103900   -52.5369173 C
0.00003875       18556.    478862337.    13.2758357     0.0005144    -0.0020431
1.8446743   -53.6862172 C
0.00003958       18942.    478541425.    13.2807674     0.0005257    -0.0020868
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0.00004042       19328.    478226177.    13.2858554     0.0005370    -0.0021305
1.9125643   -55.9835580 C
0.00004125       19714.    477916206.    13.2910926     0.0005483    -0.0021742
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0.00004208       20099.    477611158.    13.2964724     0.0005596    -0.0022179
1.9795443   -58.2792012 C
0.00004292       20485.    477310701.    13.3019890     0.0005709    -0.0022616
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2.0756188   -60.0000000 CY
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2.2160441   -60.0000000 CY
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2.6872378   -60.0000000 CY
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2.8383104   -60.0000000 CY
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2.9044723   -60.0000000 CY
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3.0301084   -60.0000000 CY
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3.8471626   -60.0000000 CY
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3.8664827   -60.0000000 CY
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3.8842119   -60.0000000 CY
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3.9160138   -60.0000000 CY
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3.9300647   -60.0000000 CY
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3.9428672   -60.0000000 CY
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3.9544099   -60.0000000 CY
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3.9999573   -60.0000000 CY
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3.9985019   -60.0000000 CY
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3.9999431   -60.0000000 CY
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3.9761724   -60.0000000 CY
 0.0003629       29490.     81259363.     8.6356853     0.0031340    -0.0208185
3.9945503   -60.0000000 CYT
 0.0003829       29513.     77073410.     8.5762621     0.0032840    -0.0219885
3.9975748   -60.0000000 CYT
 0.0004029       29532.     73294679.     8.5275720     0.0034359    -0.0231566
3.9727101   -60.0000000 CYT
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    0.0004229        29549.     69870221.     8.4858100     0.0035888    -0.0243237
   3.9859499   -60.0000000 CYT
    0.0004429        29566.     66751866.     8.4501693     0.0037427    -0.0254898
   3.9978568   -60.0000000 CYT
    0.0004629        29580.     63898562.     8.4207053     0.0038981    -0.0266544
   3.9918793   -60.0000000 CYT


Axial Thrust Force =     21.891 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  4.16667E-07         1712.   4109593760.    36.5272120    0.00001522   -0.00001228
   0.0637104     0.3815580
  8.33333E-07         3417.   4100028689.    34.7689070    0.00002897   -0.00002603
   0.1207918     0.7206236
   0.00000125         5113.   4090371637.    34.1828334    0.00004273   -0.00003977
   0.1774565     1.0596902
   0.00000167         6801.   4080691489.    33.8898141    0.00005648   -0.00005352
   0.2337045     1.3987577
   0.00000208         8481.   4071002090.    33.7140159    0.00007024   -0.00006726
   0.2895356     1.7378259
   0.00000250        10153.   4061308064.    33.5968282    0.00008399   -0.00008101
   0.3449499     2.0768950
   0.00000292        11817.   4051611393.    33.5131322    0.00009775   -0.00009475
   0.3999474     2.4159649
   0.00000333        13473.   4041913069.    33.4503687     0.0001115    -0.0001085
   0.4545281     2.7550356
   0.00000375        13473.   3592811617.    14.9885161    0.00005621    -0.0001913
   0.2297379    -5.0091864 C
   0.00000417        13473.   3233530455.    14.7940674    0.00006164    -0.0002134
   0.2515192    -5.5892585 C
   0.00000458        13473.   2939573141.    14.6293426    0.00006705    -0.0002354
   0.2731318    -6.1700790 C
   0.00000500        13473.   2694608712.    14.4925936    0.00007246    -0.0002575
   0.2946926    -6.7508239 C
   0.00000542        13473.   2487331119.    14.3773654    0.00007788    -0.0002796
   0.3162015    -7.3314930 C
   0.00000583        13473.   2309664611.    14.2790475    0.00008329    -0.0003017
   0.3376584    -7.9120861 C
   0.00000625        13473.   2155686970.    14.1942589    0.00008871    -0.0003238
   0.3590632    -8.4926030 C
   0.00000667        13473.   2020956534.    14.1164850    0.00009411    -0.0003459
   0.3803090    -9.0738129 C
   0.00000708        13473.   1902076738.    14.0480322    0.00009951    -0.0003680
   0.4014974    -9.6549875 C
   0.00000750        13473.   1796405808.    13.9875508     0.0001049    -0.0003901
   0.4226346   -10.2360827 C
   0.00000792        13473.   1701858134.    13.9337831     0.0001103    -0.0004122
   0.4437206   -10.8170981 C
   0.00000833        13473.   1616765227.    13.8857228     0.0001157    -0.0004343
   0.4647552   -11.3980336 C
   0.00000875        13473.   1539776407.    13.8425555     0.0001211    -0.0004564
   0.4857384   -11.9788890 C
   0.00000917        13473.   1469786570.    13.8036147     0.0001265    -0.0004785
   0.5066701   -12.5596641 C
   0.00000958        13473.   1405882806.    13.7683499     0.0001319    -0.0005006
   0.5275503   -13.1403586 C
   0.00001000        13473.   1347304356.    13.7363023     0.0001374    -0.0005226
   0.5483789   -13.7209723 C
   0.00001042        13473.   1293412182.    13.7070867     0.0001428    -0.0005447
   0.5691558   -14.3015050 C
   0.00001083        13473.   1243665560.    13.6803768     0.0001482    -0.0005668
   0.5898809   -14.8819566 C
   0.00001125        13473.   1197603872.    13.6558950     0.0001536    -0.0005889
   0.6105542   -15.4623267 C
   0.00001167        13473.   1154832305.    13.6334031     0.0001591    -0.0006109
   0.6311756   -16.0426152 C
   0.00001208        13473.   1115010502.    13.6126960     0.0001645    -0.0006330
   0.6517450   -16.6228219 C
   0.00001250        13473.   1077843485.    13.5935958     0.0001699    -0.0006551
   0.6722624   -17.2029465 C
   0.00001292        13473.   1043074340.    13.5759475     0.0001754    -0.0006771
   0.6927276   -17.7829891 C
   0.00001333        13473.   1010478267.    13.5596157     0.0001808    -0.0006992
   0.7131407   -18.3629489 C
   0.00001375        13473.    979857714.    13.5444811     0.0001862    -0.0007213
   0.7335016   -18.9428259 C
   0.00001417        13473.    951038369.    13.5304387     0.0001917    -0.0007433
   0.7538101   -19.5226200 C
   0.00001458        13473.    923865844.    13.5166310     0.0001971    -0.0007654
   0.7740237   -20.1026539 C
   0.00001500        13473.    898202904.    13.5037671     0.0002026    -0.0007874
   0.7941843   -20.6826115 C
   0.00001542        13473.    873927150.    13.4917955     0.0002080    -0.0008095
   0.8142931   -21.2624808 C
   0.00001583        13473.    850929067.    13.4806463     0.0002134    -0.0008316
   0.8343502   -21.8422617 C
   0.00001625        13473.    829110373.    13.4702568     0.0002189    -0.0008536
   0.8543555   -22.4219541 C
   0.00001708        13473.    788665965.    13.4515365     0.0002298    -0.0008977
   0.8942101   -23.5810721 C
   0.00001792        13473.    751983827.    13.4352454     0.0002407    -0.0009418
   0.9338564   -24.7398329 C
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1.0125214   -27.0562742 C
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1.0515390   -28.2139501 C
0.00002125       13473.    634025579.    13.3887262     0.0002845    -0.0011180
1.0903458   -29.3712601 C
0.00002208       13473.    610100086.    13.3807192     0.0002955    -0.0011620
1.1289410   -30.5282020 C
0.00002292       13473.    587914628.    13.3738518     0.0003065    -0.0012060
1.1673242   -31.6847736 C
0.00002375       13473.    567286045.    13.3680072     0.0003175    -0.0012500
1.2054946   -32.8409726 C
0.00002458       13473.    548056009.    13.3630847     0.0003285    -0.0012940
1.2434516   -33.9967967 C
0.00002542       13473.    530086960.    13.3589966     0.0003395    -0.0013380
1.2811946   -35.1522437 C
0.00002625       13473.    513258802.    13.3556666     0.0003506    -0.0013819
1.3187228   -36.3073113 C
0.00002708       13473.    497466224.    13.3530276     0.0003616    -0.0014259
1.3560355   -37.4619970 C
0.00002792       13664.    489457081.    13.3510207     0.0003727    -0.0014698
1.3931322   -38.6162986 C
0.00002875       14054.    488836723.    13.3495939     0.0003838    -0.0015137
1.4300122   -39.7702135 C
0.00002958       14444.    488241668.    13.3487008     0.0003949    -0.0015576
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0.00003042       14833.    487669785.    13.3483005     0.0004060    -0.0016015
1.5031189   -42.0768740 C
0.00003125       15222.    487119169.    13.3483563     0.0004171    -0.0016454
1.5393444   -43.2296145 C
0.00003208       15611.    486588115.    13.3488353     0.0004283    -0.0016892
1.5753503   -44.3819586 C
0.00003292       16000.    486075089.    13.3497079     0.0004394    -0.0017331
1.6111359   -45.5339037 C
0.00003375       16388.    485578706.    13.3509478     0.0004506    -0.0017769
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1.6820433   -47.8365866 C
0.00003542       17164.    484630989.    13.3544357     0.0004730    -0.0018645
1.7171637   -48.9873191 C
0.00003625       17551.    484177492.    13.3566423     0.0004842    -0.0019083
1.7520609   -50.1376422 C
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0.00003792       18325.    483306523.    13.3618915     0.0005066    -0.0019959
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0.00003875       18712.    482887413.    13.3649030     0.0005179    -0.0020396
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0.00003958       19098.    482478242.    13.3681539     0.0005292    -0.0020833
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0.00004208       20255.    481304034.    13.3792245     0.0005630    -0.0022145
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0.00004458       21318.    478171843.    13.3732305     0.0005962    -0.0023463
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2.3528437   -60.0000000 CY
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2.4475235   -60.0000000 CY
0.00005958       24485.    410935609.    12.8454228     0.0007654    -0.0031671
2.5375253   -60.0000000 CY
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2.6185729   -60.0000000 CY
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2.6975594   -60.0000000 CY
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2.9784858   -60.0000000 CY
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3.1582752   -60.0000000 CY
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3.3623295   -60.0000000 CY
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3.4065348   -60.0000000 CY
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3.5302974   -60.0000000 CY
 0.0001196       27896.    233279376.    10.9232770     0.0013062    -0.0065863
3.5685579   -60.0000000 CY
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3.6046865   -60.0000000 CY
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3.6387908   -60.0000000 CY
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3.6714530   -60.0000000 CY
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3.7861403   -60.0000000 CY
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3.8099522   -60.0000000 CY
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3.8319777   -60.0000000 CY
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3.8527060   -60.0000000 CY
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3.8721257   -60.0000000 CY
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3.8896743   -60.0000000 CY
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3.9057971   -60.0000000 CY
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3.9206900   -60.0000000 CY
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3.9343417   -60.0000000 CY
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3.9467410   -60.0000000 CY
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3.9578764   -60.0000000 CY
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3.9677360   -60.0000000 CY
 0.0001829       28945.    158239127.     9.8485483     0.0018015    -0.0102710
3.9763079   -60.0000000 CY
 0.0002029       29142.    143616055.     9.6352397     0.0019552    -0.0114373
3.9993989   -60.0000000 CY
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3.9994827   -60.0000000 CY
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3.9992238   -60.0000000 CY
 0.0002629       29527.    112304620.     9.1600518     0.0024083    -0.0149442
3.9918242   -60.0000000 CY
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3.9949856   -60.0000000 CY
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3.9927371   -60.0000000 CY
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3.9977807   -60.0000000 CY
 0.0003429       29671.     86524153.     8.7485569     0.0030000    -0.0196325
3.9806977   -60.0000000 CYT
 0.0003629       29695.     81822247.     8.6766417     0.0031489    -0.0208036
3.9966288   -60.0000000 CYT
 0.0003829       29716.     77604589.     8.6164019     0.0032994    -0.0219731
3.9927559   -60.0000000 CYT
 0.0004029       29735.     73798533.     8.5664251     0.0034516    -0.0231409
3.9700470   -60.0000000 CYT
 0.0004229       29752.     70349279.     8.5235527     0.0036048    -0.0243077
3.9896757   -60.0000000 CYT
 0.0004429       29768.     67208312.     8.4869607     0.0037590    -0.0254735
3.9991580   -60.0000000 CYT
 0.0004629       29781.     64333632.     8.4570881     0.0039149    -0.0266376
3.9865988   -60.0000000 CYT


Axial Thrust Force =     35.025 kips

     Bending       Bending       Bending      Depth to      Max Comp      Max Tens
   Max Conc      Max Steel  Run
    Curvature      Moment       Stiffness      N Axis        Strain        Strain
    Stress        Stress    Msg
      rad/in.       in-kip        kip-in2         in           in/in         in/in
       ksi           ksi
-------------- ------------- ------------- ------------- ------------- -------------
-------------- ------------- ---
  4.16667E-07         1712.   4109164111.    38.6435700    0.00001610   -0.00001140
   0.0674195     0.4071306
  8.33333E-07         3417.   4099810927.    35.8302177    0.00002986   -0.00002514
   0.1244849     0.7462719
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0.00000125        5113.   4090225380.    34.8924949    0.00004362   -0.00003888
0.1811335    1.0854154
0.00000167        6801.   4080581079.    34.4236645    0.00005737   -0.00005263
0.2373653    1.4245605
0.00000208        8481.   4070913202.    34.1423886    0.00007113   -0.00006637
0.2931801    1.7637068
0.00000250       10153.   4061233532.    33.9548898    0.00008489   -0.00008011
0.3485781    2.1028545
0.00000292       11817.   4051547116.    33.8209775    0.00009864   -0.00009386
0.4035592    2.4420035
0.00000333       13473.   4041856479.    33.7205568     0.0001124    -0.0001076
0.4581234    2.7811538
0.00000375       13473.   3592761315.    16.1339999    0.00006050    -0.0001870
0.2474044   -4.8846150 C
0.00000417       13473.   3233485184.    15.8408633    0.00006600    -0.0002090
0.2694053   -5.4627707 C
0.00000458       13473.   2939531985.    15.6015752    0.00007151    -0.0002310
0.2913518   -6.0408531 C
0.00000500       13473.   2694570986.    15.3969983    0.00007698    -0.0002530
0.3131283   -6.6196852 C
0.00000542       13473.   2487296295.    15.2202744    0.00008244    -0.0002751
0.3347611   -7.1990860 C
0.00000583       13473.   2309632274.    15.0692377    0.00008790    -0.0002971
0.3563406   -7.7784123 C
0.00000625       13473.   2155656789.    14.9387517    0.00009337    -0.0003191
0.3778668   -8.3576637 C
0.00000667       13473.   2020928240.    14.8235839    0.00009882    -0.0003412
0.3993027   -8.9371071 C
0.00000708       13473.   1902050108.    14.7180271     0.0001043    -0.0003632
0.4205629   -9.5173594 C
0.00000750       13473.   1796380658.    14.6245533     0.0001097    -0.0003853
0.4417709  -10.0975346 C
0.00000792       13473.   1701834307.    14.5412553     0.0001151    -0.0004074
0.4629265  -10.6776326 C
0.00000833       13473.   1616742592.    14.4666077     0.0001206    -0.0004294
0.4840296  -11.2576531 C
0.00000875       13473.   1539754849.    14.3993755     0.0001260    -0.0004515
0.5050802  -11.8375960 C
0.00000917       13473.   1469765993.    14.3385481     0.0001314    -0.0004736
0.5260782  -12.4174609 C
0.00000958       13473.   1405863123.    14.2832908     0.0001369    -0.0004956
0.5470235  -12.9972479 C
0.00001000       13473.   1347285493.    14.2329081     0.0001423    -0.0005177
0.5679161  -13.5769566 C
0.00001042       13473.   1293394073.    14.1866317     0.0001478    -0.0005397
0.5887484  -14.1566425 C
0.00001083       13473.   1243648148.    14.1418879     0.0001532    -0.0005618
0.6094315  -14.7369652 C
0.00001125       13473.   1197587105.    14.1007093     0.0001586    -0.0005839
0.6300628  -15.3172060 C
0.00001167       13473.   1154816137.    14.0627146     0.0001641    -0.0006059
0.6506420  -15.8973649 C
0.00001208       13473.   1114994891.    14.0275749     0.0001695    -0.0006280
0.6711692  -16.4774414 C
0.00001250       13473.   1077828395.    13.9950054     0.0001749    -0.0006501
0.6916442  -17.0574355 C
0.00001292       13473.   1043059737.    13.9647579     0.0001804    -0.0006721
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0.7324377  -18.2171753 C
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0.00001417       13473.    951025054.    13.8859046     0.0001967    -0.0007383
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0.00001958       13473.    687975571.    13.6759821     0.0002678    -0.0010247
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0.00002708       13533.    499665126.    13.5548866     0.0003671    -0.0014204
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0.00003875       18968.    489490618.    13.5114237     0.0005236    -0.0020339
1.8730015   -53.4214750 C
0.00003958       19354.    488936622.    13.5119112     0.0005348    -0.0020777
1.9068970   -54.5697644 C
0.00004042       19739.    488397840.    13.5127420     0.0005461    -0.0021214
1.9405649   -55.7176278 C
0.00004125       20125.    487873306.    13.5138977     0.0005574    -0.0021651
1.9740045   -56.8650622 C
0.00004208       20510.    487362130.    13.5153616     0.0005688    -0.0022087
2.0072150   -58.0120648 C
0.00004292       20895.    486863493.    13.5171180     0.0005801    -0.0022524
2.0401956   -59.1586326 C
0.00004375       21268.    486115433.    13.5167354     0.0005914    -0.0022961
2.0726341   -60.0000000 CY
0.00004458       21585.    484159579.    13.5052298     0.0006021    -0.0023404
2.1033520   -60.0000000 CY
0.00004542       21883.    481817697.    13.4901618     0.0006127    -0.0023848
2.1332989   -60.0000000 CY
0.00004625       22150.    478920272.    13.4696839     0.0006230    -0.0024295
2.1622161   -60.0000000 CY
0.00004708       22368.    475074965.    13.4398314     0.0006328    -0.0024747
2.1895511   -60.0000000 CY
0.00004792       22583.    471304706.    13.4106649     0.0006426    -0.0025199
2.2166334   -60.0000000 CY
0.00004875       22798.    467659966.    13.3826935     0.0006524    -0.0025651
2.2435387   -60.0000000 CY
0.00004958       23013.    464134401.    13.3558578     0.0006622    -0.0026103
2.2702665   -60.0000000 CY
0.00005292       23683.    447543353.    13.2195979     0.0006995    -0.0027930
2.3697791   -60.0000000 CY
0.00005625       24259.    431268557.    13.0839788     0.0007360    -0.0029765
2.4640519   -60.0000000 CY
0.00005958       24786.    415983141.    12.9553725     0.0007719    -0.0031606
2.5542775   -60.0000000 CY
0.00006292       25141.    399595253.    12.8027095     0.0008055    -0.0033470
2.6359063   -60.0000000 CY
0.00006625       25493.    384804803.    12.6610270     0.0008388    -0.0035337
2.7144654   -60.0000000 CY
0.00006958       25844.    371413230.    12.5344286     0.0008722    -0.0037203
2.7909397   -60.0000000 CY
0.00007292       26172.    358924843.    12.4156123     0.0009053    -0.0039072
2.8644443   -60.0000000 CY
0.00007625       26382.    345999917.    12.2819286     0.0009365    -0.0040960
2.9314266   -60.0000000 CY
0.00007958       26579.    333982272.    12.1536591     0.0009672    -0.0042853
2.9953946   -60.0000000 CY
0.00008292       26773.    322891900.    12.0311755     0.0009976    -0.0044749
3.0566155   -60.0000000 CY
0.00008625       26966.    312649145.    11.9191887     0.0010280    -0.0046645
3.1160889   -60.0000000 CY
0.00008958       27158.    303159269.    11.8165390     0.0010586    -0.0048539
3.1737994   -60.0000000 CY
0.00009292       27349.    294341117.    11.7222331     0.0010892    -0.0050433
3.2297310   -60.0000000 CY
0.00009625       27529.    286012988.    11.6325552     0.0011196    -0.0052329
3.2833735   -60.0000000 CY
0.00009958       27653.    277688467.    11.5344410     0.0011486    -0.0054239
3.3325913   -60.0000000 CY
 0.0001029       27749.    269624494.    11.4293001     0.0011763    -0.0056162
3.3777566   -60.0000000 CY
 0.0001063       27844.    262061478.    11.3314765     0.0012040    -0.0058085
3.4214632   -60.0000000 CY
 0.0001096       27939.    254953635.    11.2403097     0.0012318    -0.0060007
3.4636984   -60.0000000 CY
 0.0001129       28033.    248260586.    11.1552171     0.0012596    -0.0061929
3.5044495   -60.0000000 CY
 0.0001163       28126.    241946584.    11.0756831     0.0012875    -0.0063850
3.5437037   -60.0000000 CY
 0.0001196       28219.    235979863.    11.0012498     0.0013156    -0.0065769
3.5814478   -60.0000000 CY
 0.0001229       28312.    230332103.    10.9315093     0.0013437    -0.0067688
3.6176683   -60.0000000 CY
 0.0001263       28402.    224969148.    10.8634871     0.0013715    -0.0069610
3.6519397   -60.0000000 CY
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 0.0001296        28491.    219863495.    10.7953104     0.0013989    -0.0071536
3.6840381   -60.0000000 CY
 0.0001329        28578.    215009975.    10.7311621     0.0014264    -0.0073461
3.7146755   -60.0000000 CY
 0.0001363        28666.    210390034.    10.6707541     0.0014539    -0.0075386
3.7438389   -60.0000000 CY
 0.0001396        28752.    205986883.    10.6138258     0.0014815    -0.0077310
3.7715145   -60.0000000 CY
 0.0001429        28815.    201623774.    10.5524647     0.0015081    -0.0079244
3.7966409   -60.0000000 CY
 0.0001462        28871.    197406472.    10.4919730     0.0015345    -0.0081180
3.8200505   -60.0000000 CY
 0.0001496        28911.    193278987.    10.4299394     0.0015601    -0.0083124
3.8414944   -60.0000000 CY
 0.0001529        28952.    189328946.    10.3710890     0.0015859    -0.0085066
3.8616360   -60.0000000 CY
 0.0001562        28991.    185544956.    10.3152227     0.0016118    -0.0087007
3.8804637   -60.0000000 CY
 0.0001596        29031.    181916576.    10.2621583     0.0016377    -0.0088948
3.8979657   -60.0000000 CY
 0.0001629        29069.    178427518.    10.2093510     0.0016633    -0.0090892
3.9138890   -60.0000000 CY
 0.0001662        29105.    175064958.    10.1551089     0.0016883    -0.0092842
3.9281270   -60.0000000 CY
 0.0001696        29140.    171832535.    10.1034343     0.0017134    -0.0094791
3.9411171   -60.0000000 CY
 0.0001729        29175.    168722700.    10.0541837     0.0017385    -0.0096740
3.9528479   -60.0000000 CY
 0.0001762        29210.    165728469.    10.0072246     0.0017638    -0.0098687
3.9633076   -60.0000000 CY
 0.0001796        29244.    162843375.     9.9624344     0.0017891    -0.0100634
3.9724842   -60.0000000 CY
 0.0001829        29278.    160061422.     9.9196997     0.0018145    -0.0102580
3.9803655   -60.0000000 CY
 0.0002029        29473.    145248483.     9.7011934     0.0019685    -0.0114240
3.9952030   -60.0000000 CY
 0.0002229        29651.    133015032.     9.5308300     0.0021246    -0.0125879
3.9944750   -60.0000000 CY
 0.0002429        29793.    122647238.     9.3767775     0.0022778    -0.0137547
3.9999026   -60.0000000 CY
 0.0002629        29864.    113586966.     9.2282634     0.0024263    -0.0149262
3.9949014   -60.0000000 CY
 0.0002829        29908.    105714258.     9.0989706     0.0025743    -0.0160982
3.9892016   -60.0000000 CY
 0.0003029        29947.     98862522.     8.9937986     0.0027244    -0.0172681
3.9957393   -60.0000000 CY
 0.0003229        29981.     92845079.     8.9068882     0.0028762    -0.0184363
3.9903280   -60.0000000 CY
 0.0003429        30006.     87503728.     8.8193064     0.0030243    -0.0196082
3.9871838   -60.0000000 CYT
 0.0003629        30030.     82745446.     8.7449730     0.0031737    -0.0207788
3.9989908   -60.0000000 CYT
 0.0003829        30050.     78475908.     8.6833266     0.0033250    -0.0219475
3.9847213   -60.0000000 CYT
 0.0004029        30068.     74624978.     8.6312428     0.0034777    -0.0231148
3.9788650   -60.0000000 CYT
 0.0004229        30084.     71135001.     8.5865591     0.0036314    -0.0242811
3.9946189   -60.0000000 CYT
 0.0004429        30099.     67956888.     8.5484234     0.0037862    -0.0254463
4.0000000   -60.0000000 CYT
 0.0004629        30099.     65020857.     8.6109392     0.0039861    -0.0265664
3.9642696   -60.0000000 CYT


-------------------------------------------------------------------------------
   Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1
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Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.
  No.              kips                in-kip               Strain
 ----        ----------------     ------------------     ------------
   1               13.890             29468.186           0.00300000
   2               21.891             29670.570           0.00300000
   3               35.025             30002.344           0.00300000

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318, Section
9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial     Resist.       Nominal     Ult. (Fac)    Ult. (Fac)   Bend. Stiff.
Load      Factor      Moment Cap    Ax. Thrust    Moment Cap    at Ult Mom
 No.    for Moment      in-kips        kips         in-kips      kip-in^2
-----  ------------  ------------  ------------  ------------  ------------
   1       0.65            29468.      9.028500        19154.    478368257.
   2       0.65            29671.     14.229150        19286.    482283662.
   3       0.65            30002.     22.766250        19502.    488730170.
```

1	0.75	29468.	9.723000	22101.	462491641.
2	0.75	29671.	15.323700	22253.	466359420.
3	0.75	30002.	24.517500	22502.	472733941.
1	0.90	29468.	10.417500	26521.	303931279.
2	0.90	29671.	16.418250	26704.	306543473.
3	0.90	30002.	26.268750	27002.	310864093.

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent Top Depth Below Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer lbs	F1 Integral for Layer lbs
1	0.5000	0.00	N.A.	No	0.00	9670.
2	2.5000	1.3782	Yes	No	9670.	21218.
3	3.5000	2.1831	Yes	No	30887.	133411.
4	6.0000	5.8100	Yes	No	164299.	190587.
5	8.5000	8.8541	Yes	No	354885.	531402.
6	13.5000	14.9471	Yes	No	886287.	665036.
7	18.5000	15.3183	Yes	No	1551323.	431069.
8	23.5000	23.0000	No	No	1982391.	0.00
9	28.5000	28.0000	No	No	0.00	0.00
10	33.5000	33.0000	No	No	0.00	0.00
11	38.5000	38.0000	No	No	0.00	0.00
12	43.5000	43.0000	No	No	0.00	0.00
13	48.5000	48.0000	No	No	0.00	N.A.

Notes: The F0 integral of Layer n+1 equals the sum of the F0 and F1 integrals for Layer n. Layering correction equivalent depths are computed only for soil types with both shallow-depth and deep-depth expressions for peak lateral load transfer. These soil types are soft and stiff clays, non-liquefied sands, and cemented c-phi soil.

Computed Values of Pile Loading and Deflection for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 22160.0 lbs
Applied moment at pile head = 15202288.0 in-lbs
Axial thrust load on pile head = 35025.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Spr. Distrib. p
Es*h	Lat. Load						
feet	inches	in-lbs	lbs	radians	psi*	in-lb^2	
lb/inch	lb/inch	lb/inch					
0.00	0.3309	1.52E+07	22160.	-0.00428	0.00	4.96E+11	
0.00	0.00	0.00					
0.2050	0.3204	1.53E+07	22160.	-0.00421	0.00	4.96E+11	
0.00	0.00	0.00					
0.4100	0.3102	1.53E+07	22160.	-0.00413	0.00	4.96E+11	
0.00	0.00	0.00					
0.6150	0.3001	1.54E+07	22152.	-0.00406	0.00	4.96E+11	
-6.4592	52.9453	0.00					
0.8200	0.2902	1.54E+07	22123.	-0.00398	0.00	4.95E+11	
-17.3812	147.3261	0.00					
1.0250	0.2805	1.55E+07	22067.	-0.00390	0.00	4.95E+11	
-27.5631	241.7068	0.00					
1.2300	0.2710	1.55E+07	21988.	-0.00383	0.00	4.95E+11	
-37.0266	336.0876	0.00					
1.4350	0.2617	1.56E+07	21886.	-0.00375	0.00	4.95E+11	
-45.7937	430.4683	0.00					
1.6400	0.2526	1.56E+07	21764.	-0.00367	0.00	4.95E+11	
-53.8863	524.8491	0.00					
1.8450	0.2436	1.57E+07	21622.	-0.00359	0.00	4.95E+11	
-61.3266	619.2298	0.00					
2.0500	0.2349	1.57E+07	21463.	-0.00352	0.00	4.95E+11	
-68.1366	713.6106	0.00					
2.2550	0.2263	1.58E+07	21287.	-0.00344	0.00	4.95E+11	
-74.3389	807.9913	0.00					
2.4600	0.2180	1.59E+07	21098.	-0.00336	0.00	4.95E+11	
-79.9556	902.3721	0.00					
2.6650	0.2098	1.59E+07	20176.	-0.00328	0.00	4.95E+11	
-669.5263	7850.	0.00					
2.8700	0.2018	1.60E+07	18414.	-0.00320	0.00	4.94E+11	
-763.0213	9300.	0.00					
3.0750	0.1941	1.60E+07	16422.	-0.00312	0.00	4.94E+11	
-856.3219	10855.	0.00					
3.2800	0.1865	1.60E+07	14201.	-0.00304	0.00	4.94E+11	
-949.0512	12520.	0.00					
3.4850	0.1791	1.61E+07	11754.	-0.00296	0.00	4.94E+11	
-1041.	14297.	0.00					
3.6900	0.1719	1.61E+07	8929.	-0.00288	0.00	4.94E+11	
-1256.	17971.	0.00					

3.8950	0.1649	1.61E+07	5705.	-0.00280	0.00	4.94E+11
-1365.	20365.	0.00				
4.1000	0.1581	1.61E+07	2213.	-0.00272	0.00	4.94E+11
-1474.	22929.	0.00				
4.3050	0.1515	1.61E+07	-1550.	-0.00264	0.00	4.94E+11
-1585.	25740.	0.00				
4.5100	0.1451	1.61E+07	-5586.	-0.00256	0.00	4.94E+11
-1696.	28744.	0.00				
4.7150	0.1389	1.61E+07	-9891.	-0.00248	0.00	4.94E+11
-1804.	31950.	0.00				
4.9200	0.1329	1.61E+07	-14460.	-0.00240	0.00	4.94E+11
-1911.	35365.	0.00				
5.1250	0.1271	1.60E+07	-19289.	-0.00232	0.00	4.94E+11
-2015.	38998.	0.00				
5.3300	0.1215	1.60E+07	-24371.	-0.00224	0.00	4.94E+11
-2117.	42857.	0.00				
5.5350	0.1161	1.59E+07	-29700.	-0.00216	0.00	4.95E+11
-2216.	46951.	0.00				
5.7400	0.1109	1.58E+07	-35268.	-0.00208	0.00	4.95E+11
-2311.	51286.	0.00				
5.9450	0.1058	1.57E+07	-41068.	-0.00200	0.00	4.95E+11
-2404.	55872.	0.00				
6.1500	0.1010	1.56E+07	-45788.	-0.00193	0.00	4.95E+11
-1434.	34930.	0.00				
6.3550	0.09636	1.55E+07	-49296.	-0.00185	0.00	4.95E+11
-1418.	36198.	0.00				
6.5600	0.09190	1.54E+07	-52762.	-0.00177	0.00	4.96E+11
-1400.	37465.	0.00				
6.7650	0.08763	1.52E+07	-56180.	-0.00170	0.00	4.96E+11
-1380.	38733.	0.00				
6.9700	0.08355	1.51E+07	-59549.	-0.00162	0.00	4.96E+11
-1359.	40000.	0.00				
7.1750	0.07966	1.50E+07	-62863.	-0.00155	0.00	4.96E+11
-1336.	41267.	0.00				
7.3800	0.07594	1.48E+07	-66122.	-0.00147	0.00	4.97E+11
-1313.	42535.	0.00				
7.5850	0.07241	1.46E+07	-69323.	-0.00140	0.00	4.97E+11
-1289.	43802.	0.00				
7.7900	0.06905	1.45E+07	-72465.	-0.00133	0.00	4.98E+11
-1265.	45070.	0.00				
7.9950	0.06587	1.43E+07	-75547.	-0.00126	0.00	4.98E+11
-1241.	46337.	0.00				
8.2000	0.06286	1.41E+07	-78569.	-0.00119	0.00	4.98E+11
-1216.	47604.	0.00				
8.4050	0.06003	1.39E+07	-81532.	-0.00112	0.00	4.99E+11
-1193.	48872.	0.00				
8.6100	0.05736	1.37E+07	-84125.	-0.00105	0.00	4.99E+11
-915.4690	39261.	0.00				
8.8150	0.05486	1.35E+07	-86355.	-0.00101	0.00	3.12E+12
-897.6743	40254.	0.00				
9.0200	0.05238	1.33E+07	-88540.	-0.00100	0.00	4.04E+12
-878.2992	41246.	0.00				
9.2250	0.04993	1.30E+07	-90675.	-9.94E-04	0.00	4.04E+12
-857.2675	42239.	0.00				
9.4300	0.04749	1.28E+07	-92756.	-9.86E-04	0.00	4.05E+12
-834.5973	43231.	0.00				
9.6350	0.04507	1.26E+07	-94779.	-9.79E-04	0.00	4.05E+12
-810.3059	44224.	0.00				
9.8400	0.04268	1.23E+07	-96740.	-9.71E-04	0.00	4.05E+12
-784.4102	45216.	0.00				
10.0450	0.04030	1.21E+07	-98636.	-9.64E-04	0.00	4.05E+12
-756.9262	46208.	0.00				
10.2500	0.03793	1.19E+07	-100462.	-9.56E-04	0.00	4.05E+12
-727.8691	47201.	0.00				
10.4550	0.03559	1.16E+07	-102215.	-9.49E-04	0.00	4.05E+12
-697.2535	48193.	0.00				
10.6600	0.03326	1.14E+07	-103891.	-9.42E-04	0.00	4.05E+12
-665.0934	49186.	0.00				
10.8650	0.03095	1.11E+07	-105486.	-9.36E-04	0.00	4.06E+12
-631.4020	50178.	0.00				
11.0700	0.02866	1.08E+07	-106996.	-9.29E-04	0.00	4.06E+12
-596.1915	51171.	0.00				
11.2750	0.02638	1.06E+07	-108417.	-9.22E-04	0.00	4.06E+12
-559.4736	52163.	0.00				
11.4800	0.02412	1.03E+07	-109746.	-9.16E-04	0.00	4.06E+12
-521.2593	53155.	0.00				
11.6850	0.02188	1.00E+07	-110980.	-9.10E-04	0.00	4.06E+12
-481.5586	54148.	0.00				
11.8900	0.01965	9759115.	-112114.	-9.04E-04	0.00	4.06E+12
-440.3810	55140.	0.00				
12.0950	0.01743	9482060.	-113145.	-8.98E-04	0.00	4.06E+12
-397.7351	56133.	0.00				
12.3000	0.01523	9202598.	-114069.	-8.92E-04	0.00	4.07E+12
-353.6288	57125.	0.00				
12.5050	0.01304	8920995.	-114883.	-8.87E-04	0.00	4.07E+12
-308.0692	58118.	0.00				
12.7100	0.01086	8637527.	-115583.	-8.82E-04	0.00	4.07E+12
-261.0627	59110.	0.00				
12.9150	0.00870	8352479.	-116166.	-8.76E-04	0.00	4.07E+12
-212.6149	60102.	0.00				
13.1200	0.00655	8066144.	-116627.	-8.72E-04	0.00	4.07E+12
-162.7307	61095.	0.00				
13.3250	0.00441	7778823.	-116964.	-8.67E-04	0.00	4.07E+12
-111.4143	62087.	0.00				
13.5300	0.00229	7490828.	-117155.	-8.62E-04	0.00	4.08E+12
-43.6074	46886.	0.00				
13.7350	1.73E-04	7202569.	-117213.	-8.58E-04	0.00	4.08E+12
-3.3432	47623.	0.00				
13.9400	-0.00193	6914289.	-117170.	-8.53E-04	0.00	4.08E+12
37.9795	48361.	0.00				

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   14.1450   -0.00403   6626239.   -117025.  -8.49E-04       0.00   4.08E+12
80.3596     49099.       0.00
   14.3500   -0.00611   6338674.   -116774.  -8.45E-04       0.00   4.08E+12
123.7967     49836.       0.00
   14.5550   -0.00819   6051858.   -116414.  -8.42E-04       0.00   4.08E+12
168.2907     50574.       0.00
   14.7600   -0.01025   5766061.   -115944.  -8.38E-04       0.00   4.09E+12
213.8422     51312.       0.00
   14.9650   -0.01231   5481557.   -115361.  -8.35E-04       0.00   4.09E+12
260.4522     52049.       0.00
   15.1700   -0.01436   5198629.   -114662.  -8.32E-04       0.00   4.09E+12
308.1219     52787.       0.00
   15.3750   -0.01640   4917566.   -113844.  -8.29E-04       0.00   4.09E+12
356.8535     53525.       0.00
   15.5800   -0.01844   4638661.   -112904.  -8.26E-04       0.00   4.09E+12
406.6490     54262.       0.00
   15.7850   -0.02046   4362218.   -111842.  -8.23E-04       0.00   4.09E+12
457.5114     55000.       0.00
   15.9900   -0.02248   4088543.   -110652.  -8.20E-04       0.00   4.10E+12
509.4437     55737.       0.00
   16.1950   -0.02450   3817950.   -109334.  -8.18E-04       0.00   4.10E+12
562.4494     56475.       0.00
   16.4000   -0.02651   3550761.   -107884.  -8.16E-04       0.00   4.10E+12
616.5325     57213.       0.00
   16.6050   -0.02851   3287303.   -106299.  -8.14E-04       0.00   4.10E+12
671.6973     57950.       0.00
   16.8100   -0.03051   3027910.   -104578.  -8.12E-04       0.00   4.10E+12
727.9483     58688.       0.00
   17.0150   -0.03251   2772922.   -102716.  -8.10E-04       0.00   4.10E+12
785.2905     59426.       0.00
   17.2200   -0.03450   2522685.   -100713.  -8.09E-04       0.00   4.10E+12
843.7291     60163.       0.00
   17.4250   -0.03649   2277555.    -98564.  -8.07E-04       0.00   4.10E+12
903.2696     60901.       0.00
   17.6300   -0.03847   2037891.    -96267.  -8.06E-04       0.00   4.11E+12
963.9176     61639.       0.00
   17.8350   -0.04045   1804060.    -93820.  -8.05E-04       0.00   4.11E+12
1026.     62376.       0.00
   18.0400   -0.04243   1576435.    -91219.  -8.04E-04       0.00   4.11E+12
1089.     63114.       0.00
   18.2450   -0.04440   1355399.    -88463.  -8.03E-04       0.00   4.11E+12
1153.     63852.       0.00
   18.4500   -0.04638   1141337.    -85547.  -8.02E-04       0.00   4.11E+12
1218.     64589.       0.00
   18.6550   -0.04835    934644.    -80372.  -8.01E-04       0.00   4.11E+12
2990.    152117.       0.00
   18.8600   -0.05032    746044.    -72824.  -8.01E-04       0.00   4.11E+12
3147.    153835.       0.00
   19.0650   -0.05229    576488.    -64886.  -8.01E-04       0.00   4.11E+12
3307.    155553.       0.00
   19.2700   -0.05426    426941.    -56553.  -8.00E-04       0.00   4.11E+12
3469.    157270.       0.00
   19.4750   -0.05623    298387.    -47816.  -8.00E-04       0.00   4.11E+12
3634.    158988.       0.00
   19.6800   -0.05820    191824.    -38670.  -8.00E-04       0.00   4.11E+12
3802.    160706.       0.00
   19.8850   -0.06016    108269.    -29206.  -8.00E-04       0.00   4.11E+12
3892.    159155.       0.00
   20.0900   -0.06213     48268.    -19576.  -8.00E-04       0.00   4.11E+12
3937.    155882.       0.00
   20.2950   -0.06410     12093.     -9839.  -8.00E-04       0.00   4.11E+12
3979.    152724.       0.00
   20.5000   -0.06607       0.00       0.00  -8.00E-04       0.00   4.11E+12
4019.     74834.       0.00

* This analysis computed pile response using nonlinear moment-curvature rela-
  tionships. Values of total stress due to combined axial and bending stresses
  are computed only for elastic sections only and do not equal the actual
  stresses in concrete and steel. Stresses in concrete and steel may be inter-
  polated from the output for nonlinear bending properties relative to the
  magnitude of bending moment developed in the pile.


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.33089507 inches
Computed slope at pile head      =    -0.00428466 radians
Maximum bending moment           =      16120892. inch-lbs
Maximum shear force              =       -117213. lbs
Depth of maximum bending moment  =     4.30500000 feet below pile head
Depth of maximum shear force     =    13.73500000 feet below pile head
Number of iterations             =            124
Number of zero deflection points =              1


--------------------------------------------------------------------------------
                 Computed Values of Pile Loading and Deflection
                   for Lateral Loading for Load Case Number 2
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Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head                                =       9972.0 lbs
Applied moment at pile head                             =    6841030.0 in-lbs
Axial thrust load on pile head                          =      21891.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
```

Es*h feet	Lat. Load inches	in-lbs	lbs	radians	psi*	in-lb^2 lb/inch	lb/inch	lb/inch
0.00	0.07571	6841030.	9972.	-5.99E-04	0.00	4.08E+12	0.00	0.00	0.00
0.2050	0.07424	6865593.	9972.	-5.95E-04	0.00	4.08E+12	0.00	0.00	0.00
0.4100	0.07279	6890156.	9972.	-5.91E-04	0.00	4.08E+12	0.00	0.00	0.00
0.6150	0.07134	6914719.	9970.	-5.86E-04	0.00	4.08E+12	-1.5354	52.9453	0.00
0.8200	0.06990	6939272.	9963.	-5.82E-04	0.00	4.08E+12	-4.1863	147.3261	0.00
1.0250	0.06847	6963800.	9950.	-5.78E-04	0.00	4.08E+12	-6.7280	241.7068	0.00
1.2300	0.06706	6988287.	9930.	-5.74E-04	0.00	4.08E+12	-9.1615	336.0876	0.00
1.4350	0.06565	7012718.	9905.	-5.70E-04	0.00	4.08E+12	-11.4882	430.4683	0.00
1.6400	0.06426	7037079.	9874.	-5.65E-04	0.00	4.08E+12	-13.7092	524.8491	0.00
1.8450	0.06287	7061358.	9837.	-5.61E-04	0.00	4.08E+12	-15.8257	619.2298	0.00
2.0500	0.06150	7085540.	9796.	-5.57E-04	0.00	4.08E+12	-17.8389	713.6106	0.00
2.2550	0.06013	7109614.	9750.	-5.53E-04	0.00	4.08E+12	-19.7500	807.9913	0.00
2.4600	0.05878	7133568.	9699.	-5.48E-04	0.00	4.08E+12	-21.5604	902.3721	0.00
2.6650	0.05743	7157392.	9103.	-5.44E-04	0.00	4.08E+12	-463.0113	19832.	0.00
2.8700	0.05610	7178413.	7924.	-5.40E-04	0.00	4.08E+12	-495.0914	21710.	0.00
3.0750	0.05478	7196438.	6669.	-5.35E-04	0.00	4.08E+12	-525.2389	23587.	0.00
3.2800	0.05347	7211284.	5343.	-5.31E-04	0.00	4.08E+12	-553.4785	25465.	0.00
3.4850	0.05217	7222781.	3949.	-5.27E-04	0.00	4.08E+12	-579.8349	27343.	0.00
3.6900	0.05088	7230768.	2290.	-5.22E-04	0.00	4.08E+12	-768.7227	37170.	0.00
3.8950	0.04960	7234103.	363.3943	-5.18E-04	0.00	4.08E+12	-797.5520	39558.	0.00
4.1000	0.04833	7232612.	-1631.	-5.13E-04	0.00	4.08E+12	-824.0799	41947.	0.00
4.3050	0.04707	7226133.	-3688.	-5.09E-04	0.00	4.08E+12	-848.3379	44336.	0.00
4.5100	0.04582	7214520.	-5802.	-5.05E-04	0.00	4.08E+12	-870.3569	46724.	0.00
4.7150	0.04459	7197640.	-7968.	-5.00E-04	0.00	4.08E+12	-890.1678	49113.	0.00
4.9200	0.04336	7175373.	-10179.	-4.96E-04	0.00	4.08E+12	-907.8013	51502.	0.00
5.1250	0.04215	7147612.	-12431.	-4.92E-04	0.00	4.08E+12	-923.2878	53890.	0.00
5.3300	0.04094	7114263.	-14719.	-4.87E-04	0.00	4.08E+12	-936.6574	56279.	0.00
5.5350	0.03975	7075246.	-17037.	-4.83E-04	0.00	4.08E+12	-947.9397	58667.	0.00
5.7400	0.03856	7030492.	-19381.	-4.79E-04	0.00	4.08E+12	-957.1640	61056.	0.00
5.9450	0.03739	6979945.	-21744.	-4.75E-04	0.00	4.08E+12	-964.3592	63445.	0.00
6.1500	0.03623	6923563.	-23563.	-4.71E-04	0.00	4.08E+12	-514.4336	34930.	0.00
6.3550	0.03508	6864066.	-24831.	-4.66E-04	0.00	4.08E+12	-516.1429	36198.	0.00
6.5600	0.03393	6801447.	-26101.	-4.62E-04	0.00	4.08E+12	-516.8198	37465.	0.00
6.7650	0.03280	6735699.	-27372.	-4.58E-04	0.00	4.08E+12	-516.4788	38733.	0.00
6.9700	0.03168	6666825.	-28641.	-4.54E-04	0.00	4.08E+12	-515.1336	40000.	0.00
7.1750	0.03057	6594835.	-29905.	-4.50E-04	0.00	4.08E+12	-512.7982	41267.	0.00
7.3800	0.02947	6519740.	-31163.	-4.46E-04	0.00	4.08E+12	-509.4858	42535.	0.00
7.5850	0.02837	6441562.	-32411.	-4.42E-04	0.00	4.08E+12	-505.2095	43802.	0.00
7.7900	0.02729	6360327.	-33647.	-4.38E-04	0.00	4.08E+12	-499.9823	45070.	0.00
7.9950	0.02622	6276065.	-34870.	-4.35E-04	0.00	4.08E+12	-493.8165	46337.	0.00
8.2000	0.02515	6188816.	-36076.	-4.31E-04	0.00	4.08E+12	-486.7243	47604.	0.00
8.4050	0.02410	6098620.	-37263.	-4.27E-04	0.00	4.08E+12	-478.7175	48872.	0.00
8.6100	0.02305	6005527.	-38304.	-4.23E-04	0.00	4.08E+12	-367.8833	39261.	0.00
8.8150	0.02201	5910208.	-39200.	-4.20E-04	0.00	4.09E+12	-360.2078	40254.	0.00
9.0200	0.02098	5812709.	-40076.	-4.16E-04	0.00	4.09E+12	-351.8420	41246.	0.00
9.2250	0.01996	5713080.	-40930.	-4.13E-04	0.00	4.09E+12	-342.7941	42239.	0.00
9.4300	0.01895	5611377.	-41761.	-4.10E-04	0.00	4.09E+12	-333.0720	43231.	0.00
9.6350	0.01795	5507658.	-42568.	-4.06E-04	0.00	4.09E+12			

-322.6830	44224.	0.00				
9.8400	0.01695	5401986.	-43348.	-4.03E-04	0.00	4.09E+12
-311.6345	45216.	0.00				
10.0450	0.01597	5294428.	-44101.	-4.00E-04	0.00	4.09E+12
-299.9333	46208.	0.00				
10.2500	0.01499	5185054.	-44823.	-3.97E-04	0.00	4.09E+12
-287.5860	47201.	0.00				
10.4550	0.01402	5073940.	-45515.	-3.93E-04	0.00	4.09E+12
-274.5989	48193.	0.00				
10.6600	0.01305	4961165.	-46173.	-3.90E-04	0.00	4.09E+12
-260.9780	49186.	0.00				
10.8650	0.01210	4846809.	-46798.	-3.87E-04	0.00	4.09E+12
-246.7289	50178.	0.00				
11.0700	0.01115	4730961.	-47387.	-3.85E-04	0.00	4.09E+12
-231.8571	51171.	0.00				
11.2750	0.01020	4613709.	-47938.	-3.82E-04	0.00	4.09E+12
-216.3674	52163.	0.00				
11.4800	0.00927	4495148.	-48450.	-3.79E-04	0.00	4.09E+12
-200.2646	53155.	0.00				
11.6850	0.00834	4375374.	-48922.	-3.76E-04	0.00	4.09E+12
-183.5531	54148.	0.00				
11.8900	0.00742	4254490.	-49353.	-3.74E-04	0.00	4.09E+12
-166.2370	55140.	0.00				
12.0950	0.00650	4132600.	-49740.	-3.71E-04	0.00	4.09E+12
-148.3200	56133.	0.00				
12.3000	0.00559	4009811.	-50082.	-3.69E-04	0.00	4.10E+12
-129.8054	57125.	0.00				
12.5050	0.00469	3886238.	-50377.	-3.66E-04	0.00	4.10E+12
-110.6963	58118.	0.00				
12.7100	0.00379	3761994.	-50626.	-3.64E-04	0.00	4.10E+12
-90.9956	59110.	0.00				
12.9150	0.00289	3637199.	-50824.	-3.62E-04	0.00	4.10E+12
-70.7056	60102.	0.00				
13.1200	0.00201	3511976.	-50973.	-3.60E-04	0.00	4.10E+12
-49.8285	61095.	0.00				
13.3250	0.00112	3386452.	-51069.	-3.58E-04	0.00	4.10E+12
-28.3661	62087.	0.00				
13.5300	2.46E-04	3260756.	-51110.	-3.56E-04	0.00	4.10E+12
-4.6974	46886.	0.00				
13.7350	-6.26E-04	3135032.	-51100.	-3.54E-04	0.00	4.10E+12
12.1222	47623.	0.00				
13.9400	-0.00149	3009380.	-51049.	-3.52E-04	0.00	4.10E+12
29.3741	48361.	0.00				
14.1450	-0.00236	2883907.	-50955.	-3.50E-04	0.00	4.10E+12
47.0580	49099.	0.00				
14.3500	-0.00322	2758718.	-50817.	-3.48E-04	0.00	4.10E+12
65.1735	49836.	0.00				
14.5550	-0.00407	2633923.	-50634.	-3.47E-04	0.00	4.10E+12
83.7208	50574.	0.00				
14.7600	-0.00492	2509635.	-50405.	-3.45E-04	0.00	4.10E+12
102.6999	51312.	0.00				
14.9650	-0.00577	2385968.	-50128.	-3.44E-04	0.00	4.10E+12
122.1113	52049.	0.00				
15.1700	-0.00662	2263040.	-49804.	-3.42E-04	0.00	4.10E+12
141.9555	52787.	0.00				
15.3750	-0.00746	2140971.	-49429.	-3.41E-04	0.00	4.11E+12
162.2334	53525.	0.00				
15.5800	-0.00829	2019884.	-49005.	-3.40E-04	0.00	4.11E+12
182.9460	54262.	0.00				
15.7850	-0.00913	1899904.	-48529.	-3.39E-04	0.00	4.11E+12
204.0943	55000.	0.00				
15.9900	-0.00996	1781159.	-48000.	-3.38E-04	0.00	4.11E+12
225.6798	55737.	0.00				
16.1950	-0.01079	1663780.	-47418.	-3.37E-04	0.00	4.11E+12
247.7039	56475.	0.00				
16.4000	-0.01162	1547900.	-46781.	-3.36E-04	0.00	4.11E+12
270.1684	57213.	0.00				
16.6050	-0.01244	1433654.	-46088.	-3.35E-04	0.00	4.11E+12
293.0750	57950.	0.00				
16.8100	-0.01326	1321182.	-45338.	-3.34E-04	0.00	4.11E+12
316.4258	58688.	0.00				
17.0150	-0.01408	1210625.	-44531.	-3.33E-04	0.00	4.11E+12
340.2227	59426.	0.00				
17.2200	-0.01490	1102127.	-43664.	-3.32E-04	0.00	4.11E+12
364.4681	60163.	0.00				
17.4250	-0.01572	995834.	-42737.	-3.32E-04	0.00	4.11E+12
389.1643	60901.	0.00				
17.6300	-0.01654	891896.	-41749.	-3.31E-04	0.00	4.11E+12
414.3138	61639.	0.00				
17.8350	-0.01735	790466.	-40698.	-3.31E-04	0.00	4.11E+12
439.9191	62376.	0.00				
18.0400	-0.01816	691698.	-39584.	-3.30E-04	0.00	4.11E+12
465.9828	63114.	0.00				
18.2450	-0.01897	595749.	-38405.	-3.30E-04	0.00	4.11E+12
492.5078	63852.	0.00				
18.4500	-0.01979	502781.	-37160.	-3.30E-04	0.00	4.11E+12
519.4967	64589.	0.00				
18.6550	-0.02060	412957.	-34955.	-3.29E-04	0.00	4.11E+12
1274.	152117.	0.00				
18.8600	-0.02141	330840.	-31741.	-3.29E-04	0.00	4.11E+12
1339.	153835.	0.00				
19.0650	-0.02222	256825.	-28367.	-3.29E-04	0.00	4.11E+12
1405.	155553.	0.00				
19.2700	-0.02302	191310.	-24829.	-3.29E-04	0.00	4.11E+12
1472.	157270.	0.00				
19.4750	-0.02383	134703.	-21124.	-3.29E-04	0.00	4.11E+12
1540.	158988.	0.00				
19.6800	-0.02464	87418.	-17249.	-3.29E-04	0.00	4.11E+12
1610.	160706.	0.00				
19.8850	-0.02545	49874.	-13202.	-3.29E-04	0.00	4.11E+12

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1680.    162423.       0.00
   20.0900   -0.02626     22500.     -8980.  -3.29E-04       0.00   4.11E+12
1752.    164141.       0.00
   20.2950   -0.02707      5728.     -4580.  -3.29E-04       0.00   4.11E+12
1825.    165859.       0.00
   20.5000   -0.02788       0.00       0.00  -3.29E-04       0.00   4.11E+12
1899.     83788.       0.00

* This analysis computed pile response using nonlinear moment-curvature rela-
  tionships. Values of total stress due to combined axial and bending stresses
  are computed only for elastic sections only and do not equal the actual
  stresses in concrete and steel. Stresses in concrete and steel may be inter-
  polated from the output for nonlinear bending properties relative to the
  magnitude of bending moment developed in the pile.


Output Summary for Load Case No. 2:

Pile-head deflection             =     0.07571248 inches
Computed slope at pile head      =    -0.00059881 radians
Maximum bending moment           =       7234103. inch-lbs
Maximum shear force              =        -51110. lbs
Depth of maximum bending moment  =     3.89500000 feet below pile head
Depth of maximum shear force     =    13.53000000 feet below pile head
Number of iterations             =              6
Number of zero deflection points =              1



--------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 3
--------------------------------------------------------------------------------

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head                              =      36672.0 lbs
Applied moment at pile head                           =    9359280.0 in-lbs
Axial thrust load on pile head                        =      13890.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
      Es*h     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      in-lb^2
lb/inch    lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ---------- ----------
     0.00     0.1487   9359280.     36672.   -0.00108       0.00   4.07E+12
0.00       0.00       0.00
    0.2050     0.1461   9449530.     36672.   -0.00108       0.00   4.07E+12
0.00       0.00       0.00
    0.4100     0.1434   9539780.     36672.   -0.00107       0.00   4.06E+12
0.00       0.00       0.00
    0.6150     0.1408   9630030.     36668.   -0.00107       0.00   4.06E+12
-3.0299    52.9453       0.00
    0.8200     0.1382   9720261.     36654.   -0.00106       0.00   4.06E+12
-8.2743   147.3261       0.00
    1.0250     0.1356   9810441.     36628.   -0.00105       0.00   4.06E+12
-13.3195   241.7068       0.00
    1.2300     0.1330   9900541.     36589.   -0.00105       0.00   4.06E+12
-18.1671   336.0876       0.00
    1.4350     0.1304   9990531.     36539.   -0.00104       0.00   4.06E+12
-22.8189   430.4683       0.00
    1.6400     0.1278   1.01E+07     36477.   -0.00104       0.00   4.06E+12
-27.2765   524.8491       0.00
    1.8450     0.1253   1.02E+07     36405.   -0.00103       0.00   4.06E+12
-31.5418   619.2298       0.00
    2.0500     0.1228   1.03E+07     36322.   -0.00102       0.00   4.06E+12
-35.6164   713.6106       0.00
    2.2550     0.1203   1.03E+07     36230.   -0.00102       0.00   4.06E+12
-39.5022   807.9913       0.00
    2.4600     0.1178   1.04E+07     36128.   -0.00101       0.00   4.06E+12
-43.2010   902.3721       0.00
    2.6650     0.1153   1.05E+07     35375.   -0.00100       0.00   4.06E+12
-569.0555    12142.       0.00
    2.8700     0.1128   1.06E+07     33874.  -9.99E-04       0.00   4.06E+12
-650.7864    14189.       0.00
    3.0750     0.1104   1.07E+07     32172.  -9.92E-04       0.00   4.06E+12
-732.9902    16336.       0.00
    3.2800     0.1079   1.08E+07     30268.  -9.86E-04       0.00   4.06E+12
-815.3700    18581.       0.00
    3.4850     0.1055   1.08E+07     28161.  -9.79E-04       0.00   4.06E+12
-897.6324    20925.       0.00
    3.6900     0.1031   1.09E+07     25718.  -9.72E-04       0.00   4.06E+12
-1088.     25962.       0.00
    3.8950     0.1007   1.10E+07     22918.  -9.66E-04       0.00   4.06E+12
-1188.     29008.       0.00
    4.1000    0.09838   1.10E+07     19873.  -9.59E-04       0.00   4.06E+12
-1288.     32203.       0.00
    4.3050    0.09603   1.11E+07     16576.  -9.52E-04       0.00   4.06E+12
-1392.     35666.       0.00
    4.5100    0.09369   1.11E+07     13023.  -9.46E-04       0.00   4.06E+12
-1496.     39291.       0.00
    4.7150    0.09137   1.11E+07      9215.  -9.39E-04       0.00   4.06E+12
-1600.     43081.       0.00
    4.9200    0.08907   1.11E+07      5151.  -9.32E-04       0.00   4.06E+12
-1703.     47040.       0.00
    5.1250    0.08679   1.12E+07   835.9854  -9.25E-04       0.00   4.06E+12
-1805.     51170.       0.00
```

```
    5.3300    0.08452   1.12E+07     -3729.  -9.19E-04       0.00   4.06E+12
-1906.     55474.       0.00
    5.5350    0.08227   1.11E+07     -8486.  -9.12E-04       0.00   4.06E+12
-1962.     58667.       0.00
    5.7400    0.08003   1.11E+07    -13343.  -9.05E-04       0.00   4.06E+12
-1986.     61056.       0.00
    5.9450    0.07781   1.11E+07    -18254.  -8.98E-04       0.00   4.06E+12
-2007.     63445.       0.00
    6.1500    0.07561   1.10E+07    -22043.  -8.92E-04       0.00   4.06E+12
-1074.     34930.       0.00
    6.3550    0.07343   1.10E+07    -24693.  -8.85E-04       0.00   4.06E+12
-1080.     36198.       0.00
    6.5600    0.07126   1.09E+07    -27357.  -8.78E-04       0.00   4.06E+12
-1085.     37465.       0.00
    6.7650    0.06910   1.08E+07    -30030.  -8.72E-04       0.00   4.06E+12
-1088.     38733.       0.00
    6.9700    0.06697   1.08E+07    -32707.  -8.65E-04       0.00   4.06E+12
-1089.     40000.       0.00
    7.1750    0.06485   1.07E+07    -35385.  -8.59E-04       0.00   4.06E+12
-1088.     41267.       0.00
    7.3800    0.06274   1.06E+07    -38057.  -8.52E-04       0.00   4.06E+12
-1085.     42535.       0.00
    7.5850    0.06065   1.05E+07    -40720.  -8.46E-04       0.00   4.06E+12
-1080.     43802.       0.00
    7.7900    0.05858   1.04E+07    -43368.  -8.40E-04       0.00   4.06E+12
-1073.     45070.       0.00
    7.9950    0.05652   1.03E+07    -45998.  -8.33E-04       0.00   4.06E+12
-1065.     46337.       0.00
    8.2000    0.05448   1.02E+07    -48604.  -8.27E-04       0.00   4.06E+12
-1054.     47604.       0.00
    8.4050    0.05245   1.00E+07    -51183.  -8.21E-04       0.00   4.06E+12
-1042.     48872.       0.00
    8.6100    0.05044   9900103.    -53455.  -8.15E-04       0.00   4.06E+12
-805.0103     39261.       0.00
    8.8150    0.04844   9766196.    -55420.  -8.09E-04       0.00   4.06E+12
-792.6686     40254.       0.00
    9.0200    0.04646   9627493.    -57353.  -8.03E-04       0.00   4.06E+12
-778.9588     41246.       0.00
    9.2250    0.04449   9484075.    -59251.  -7.97E-04       0.00   4.06E+12
-763.8951     42239.       0.00
    9.4300    0.04253   9336035.    -61110.  -7.92E-04       0.00   4.07E+12
-747.4908     43231.       0.00
    9.6350    0.04059   9183470.    -62927.  -7.86E-04       0.00   4.07E+12
-729.7592     44224.       0.00
    9.8400    0.03867   9026490.    -64698.  -7.81E-04       0.00   4.07E+12
-710.7127     45216.       0.00
   10.0450    0.03675   8865208.    -66422.  -7.75E-04       0.00   4.07E+12
-690.3635     46208.       0.00
   10.2500    0.03485   8699748.    -68093.  -7.70E-04       0.00   4.07E+12
-668.7232     47201.       0.00
   10.4550    0.03296   8530241.    -69710.  -7.65E-04       0.00   4.07E+12
-645.8029     48193.       0.00
   10.6600    0.03109   8356826.    -71269.  -7.60E-04       0.00   4.07E+12
-621.6130     49186.       0.00
   10.8650    0.02923   8179649.    -72767.  -7.55E-04       0.00   4.07E+12
-596.1636     50178.       0.00
   11.0700    0.02738   7998864.    -74201.  -7.50E-04       0.00   4.07E+12
-569.4643     51171.       0.00
   11.2750    0.02554   7814633.    -75567.  -7.45E-04       0.00   4.07E+12
-541.5240     52163.       0.00
   11.4800    0.02371   7627124.    -76864.  -7.40E-04       0.00   4.08E+12
-512.3510     53155.       0.00
   11.6850    0.02190   7436515.    -78087.  -7.36E-04       0.00   4.08E+12
-481.9533     54148.       0.00
   11.8900    0.02009   7242989.    -79233.  -7.31E-04       0.00   4.08E+12
-450.3381     55140.       0.00
   12.0950    0.01830   7046737.    -80301.  -7.27E-04       0.00   4.08E+12
-417.5122     56133.       0.00
   12.3000    0.01651   6847959.    -81286.  -7.23E-04       0.00   4.08E+12
-383.4817     57125.       0.00
   12.5050    0.01474   6646860.    -82186.  -7.19E-04       0.00   4.08E+12
-348.2523     58118.       0.00
   12.7100    0.01298   6443653.    -82998.  -7.15E-04       0.00   4.08E+12
-311.8290     59110.       0.00
   12.9150    0.01122   6238560.    -83719.  -7.11E-04       0.00   4.08E+12
-274.2163     60102.       0.00
   13.1200    0.00948   6031806.    -84346.  -7.07E-04       0.00   4.08E+12
-235.4182     61095.       0.00
   13.3250    0.00774   5823628.    -84875.  -7.04E-04       0.00   4.09E+12
-195.4380     62087.       0.00
   13.5300    0.00602   5614267.    -85257.  -7.00E-04       0.00   4.09E+12
-114.6717     46886.       0.00
   13.7350    0.00430   5404212.    -85500.  -6.97E-04       0.00   4.09E+12
-83.2042     47623.       0.00
   13.9400    0.00259   5193653.    -85665.  -6.94E-04       0.00   4.09E+12
-50.8632     48361.       0.00
   14.1450   8.84E-04   4982787.    -85749.  -6.91E-04       0.00   4.09E+12
-17.6497     49099.       0.00
   14.3500  -8.11E-04   4771813.    -85751.  -6.88E-04       0.00   4.09E+12
16.4357     49836.       0.00
   14.5550   -0.00250   4560939.    -85668.  -6.85E-04       0.00   4.09E+12
51.3930     50574.       0.00
   14.7600   -0.00418   4350376.    -85497.  -6.82E-04       0.00   4.09E+12
87.2222     51312.       0.00
   14.9650   -0.00586   4140340.    -85237.  -6.80E-04       0.00   4.10E+12
123.9240     52049.       0.00
   15.1700   -0.00753   3931054.    -84886.  -6.77E-04       0.00   4.10E+12
161.4992     52787.       0.00
   15.3750   -0.00919   3722746.    -84442.  -6.75E-04       0.00   4.10E+12
199.9492     53525.       0.00
```

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   15.5800   -0.01085   3515647.    -83901.  -6.73E-04       0.00   4.10E+12
239.2755     54262.       0.00
   15.7850   -0.01250   3309997.    -83263.  -6.71E-04       0.00   4.10E+12
279.4800     55000.       0.00
   15.9900   -0.01415   3106038.    -82525.  -6.69E-04       0.00   4.10E+12
320.5650     55737.       0.00
   16.1950   -0.01579   2904018.    -81685.  -6.67E-04       0.00   4.10E+12
362.5331     56475.       0.00
   16.4000   -0.01743   2704193.    -80741.  -6.65E-04       0.00   4.10E+12
405.3870     57213.       0.00
   16.6050   -0.01907   2506820.    -79689.  -6.64E-04       0.00   4.10E+12
449.1299     57950.       0.00
   16.8100   -0.02070   2312166.    -78530.  -6.62E-04       0.00   4.10E+12
493.7651     58688.       0.00
   17.0150   -0.02232   2120499.    -77259.  -6.61E-04       0.00   4.11E+12
539.2964     59426.       0.00
   17.2200   -0.02395   1932096.    -75875.  -6.60E-04       0.00   4.11E+12
585.7274     60163.       0.00
   17.4250   -0.02557   1747238.    -74376.  -6.59E-04       0.00   4.11E+12
633.0624     60901.       0.00
   17.6300   -0.02719   1566210.    -72760.  -6.58E-04       0.00   4.11E+12
681.3057     61639.       0.00
   17.8350   -0.02881   1389306.    -71023.  -6.57E-04       0.00   4.11E+12
730.4616     62376.       0.00
   18.0400   -0.03042   1216822.    -69165.  -6.56E-04       0.00   4.11E+12
780.5348     63114.       0.00
   18.2450   -0.03204   1049061.    -67182.  -6.55E-04       0.00   4.11E+12
831.5300     63852.       0.00
   18.4500   -0.03365    886333.    -65072.  -6.55E-04       0.00   4.11E+12
883.4522     64589.       0.00
   18.6550   -0.03526    728951.    -61304.  -6.54E-04       0.00   4.11E+12
2180.    152117.       0.00
   18.8600   -0.03687    584763.    -55786.  -6.54E-04       0.00   4.11E+12
2305.    153835.       0.00
   19.0650   -0.03848    454526.    -49958.  -6.54E-04       0.00   4.11E+12
2433.    155553.       0.00
   19.2700   -0.04008    339013.    -43814.  -6.53E-04       0.00   4.11E+12
2563.    157270.       0.00
   19.4750   -0.04169    239008.    -37347.  -6.53E-04       0.00   4.11E+12
2694.    158988.       0.00
   19.6800   -0.04330    155308.    -30554.  -6.53E-04       0.00   4.11E+12
2829.    160706.       0.00
   19.8850   -0.04490     88726.    -23428.  -6.53E-04       0.00   4.11E+12
2965.    162423.       0.00
   20.0900   -0.04651     40086.    -15964.  -6.53E-04       0.00   4.11E+12
3103.    164141.       0.00
   20.2950   -0.04812     10227.     -8157.  -6.53E-04       0.00   4.11E+12
3244.    165859.       0.00
   20.5000   -0.04972      0.00       0.00  -6.53E-04       0.00   4.11E+12
3387.     83788.       0.00
```

```
* This analysis computed pile response using nonlinear moment-curvature rela-
  tionships. Values of total stress due to combined axial and bending stresses
  are computed only for elastic sections only and do not equal the actual
  stresses in concrete and steel. Stresses in concrete and steel may be inter-
  polated from the output for nonlinear bending properties relative to the
  magnitude of bending moment developed in the pile.


Output Summary for Load Case No. 3:

Pile-head deflection             =     0.14870795 inches
Computed slope at pile head      =    -0.00108325 radians
Maximum bending moment           =      11156368. inch-lbs
Maximum shear force              =        -85751. lbs
Depth of maximum bending moment  =     5.12500000 feet below pile head
Depth of maximum shear force     =    14.35000000 feet below pile head
Number of iterations             =              7
Number of zero deflection points =              1


--------------------------------------------------------------------------------
           Summary of Pile-head Responses for Conventional Analyses
--------------------------------------------------------------------------------

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians


Load Load                Load                  Axial    Pile-head  Pile-head  Max
Shear Max Moment
Case Type   Pile-head    Type     Pile-head   Loading  Deflection  Rotation    in
Pile    in Pile
 No.  1      Load 1       2        Load 2       lbs      inches     radians      lbs
     in-lbs
---- ----- ---------- ---------- ---------- ---------- ---------- ----------
---------- ----------
  1  V, lb     22160.  M, in-lb    1.52E+07     35025.     0.3309   -0.00428
-117213.   1.61E+07
  2  V, lb      9972.  M, in-lb    6841030.     21891.    0.07571  -5.99E-04
-51110.   7234103.
  3  V, lb     36672.  M, in-lb    9359280.     13890.     0.1487   -0.00108
-85751.   1.12E+07
```

```
Maximum pile-head deflection = 0.3308950711 inches
Maximum pile-head rotation   = -0.0042846605 radians = -0.245493 deg.

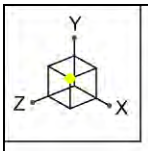
--------------------------------------------------------------------------------
                          Summary of Warning Messages
--------------------------------------------------------------------------------

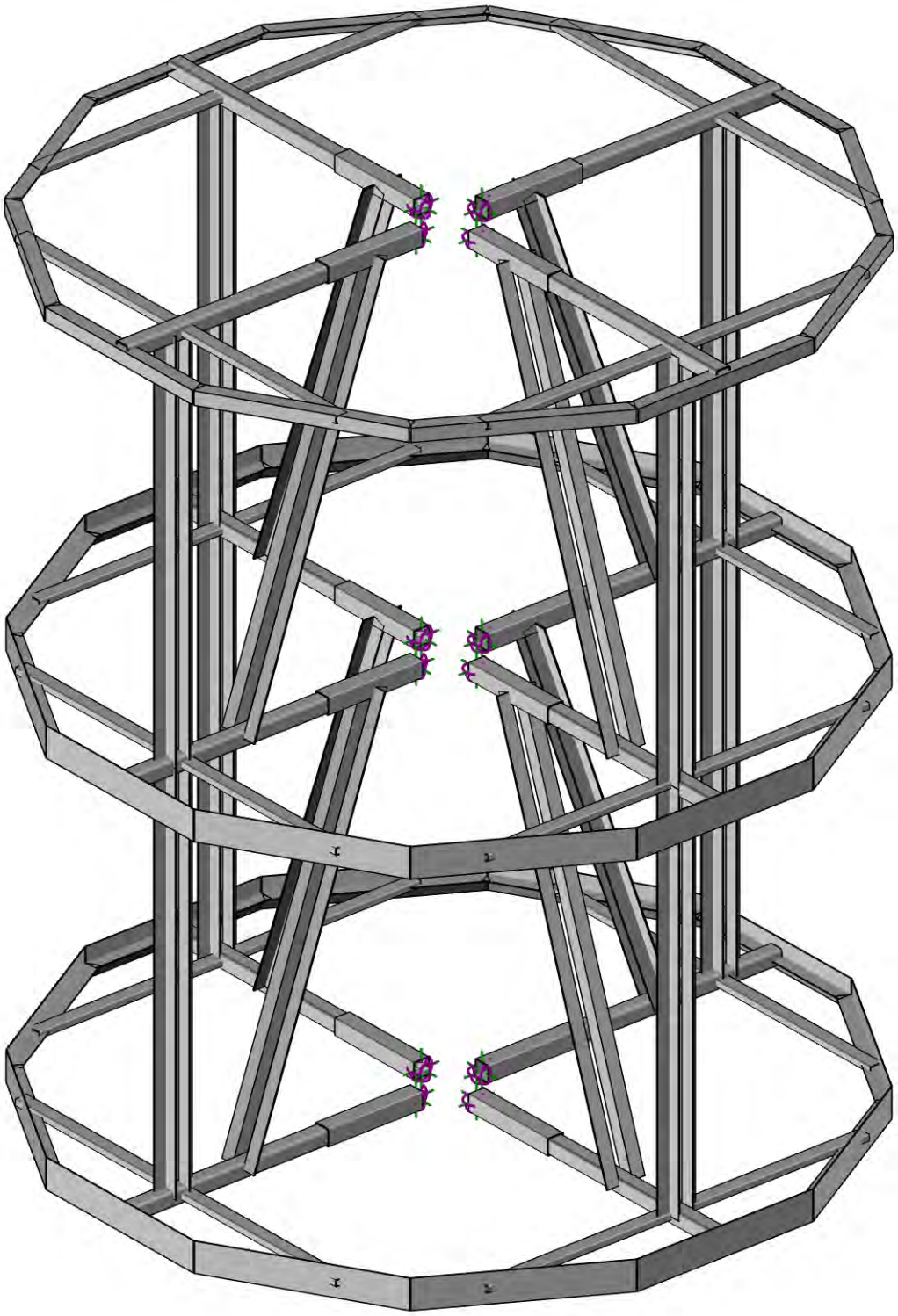
The following warning was reported 189 times

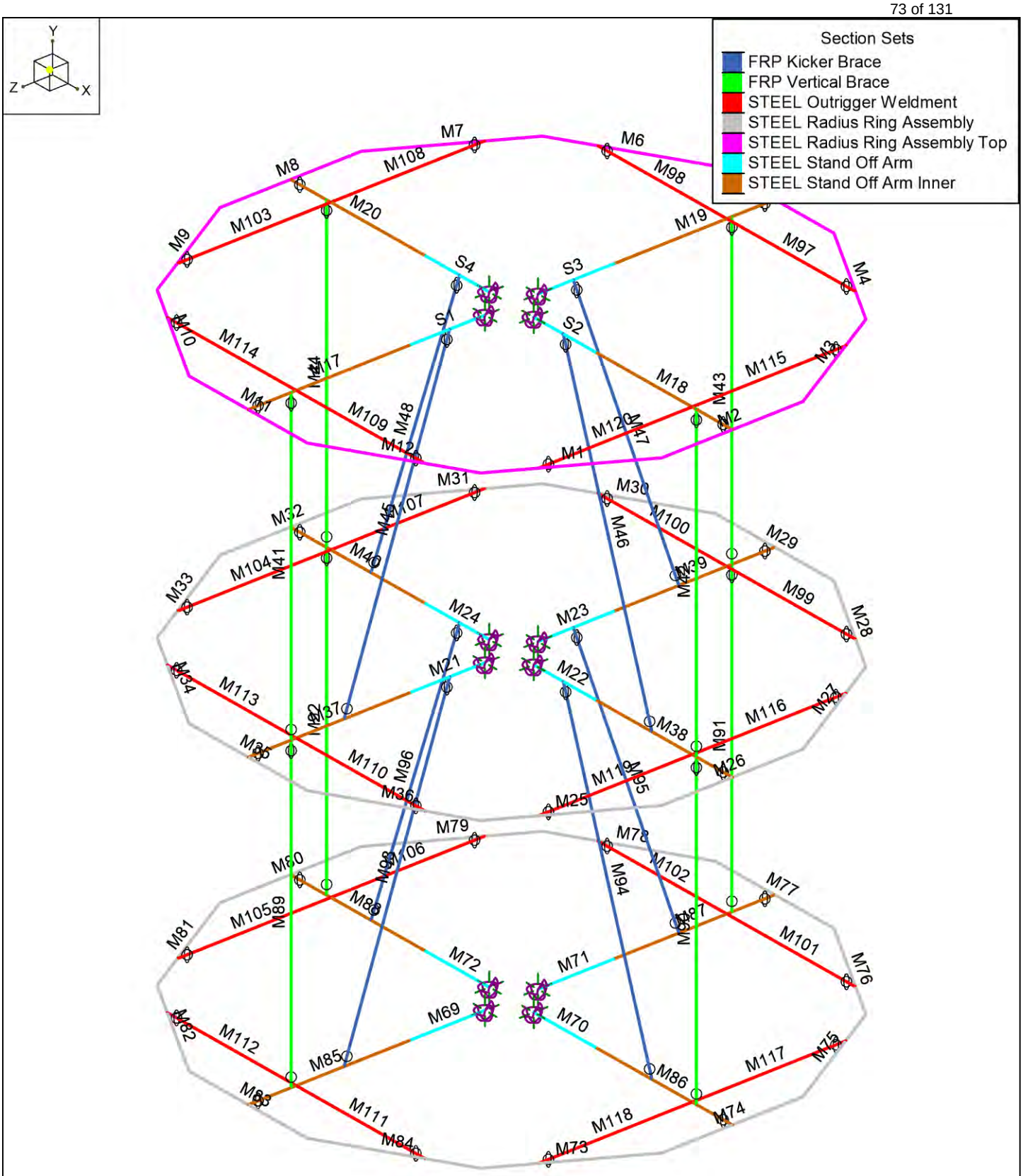
**** Warning ****

The input value for friction angle is either smaller than 29 degrees or
higher than 41 degrees and no value of k has been specified for a soil layer
defined using the sand criteria. Program will assume an internal default value,
for k, but the friction angle is outside the range of data available.
Please check your input data for correctness.


The analysis ended normally.
```


Y
Z
X





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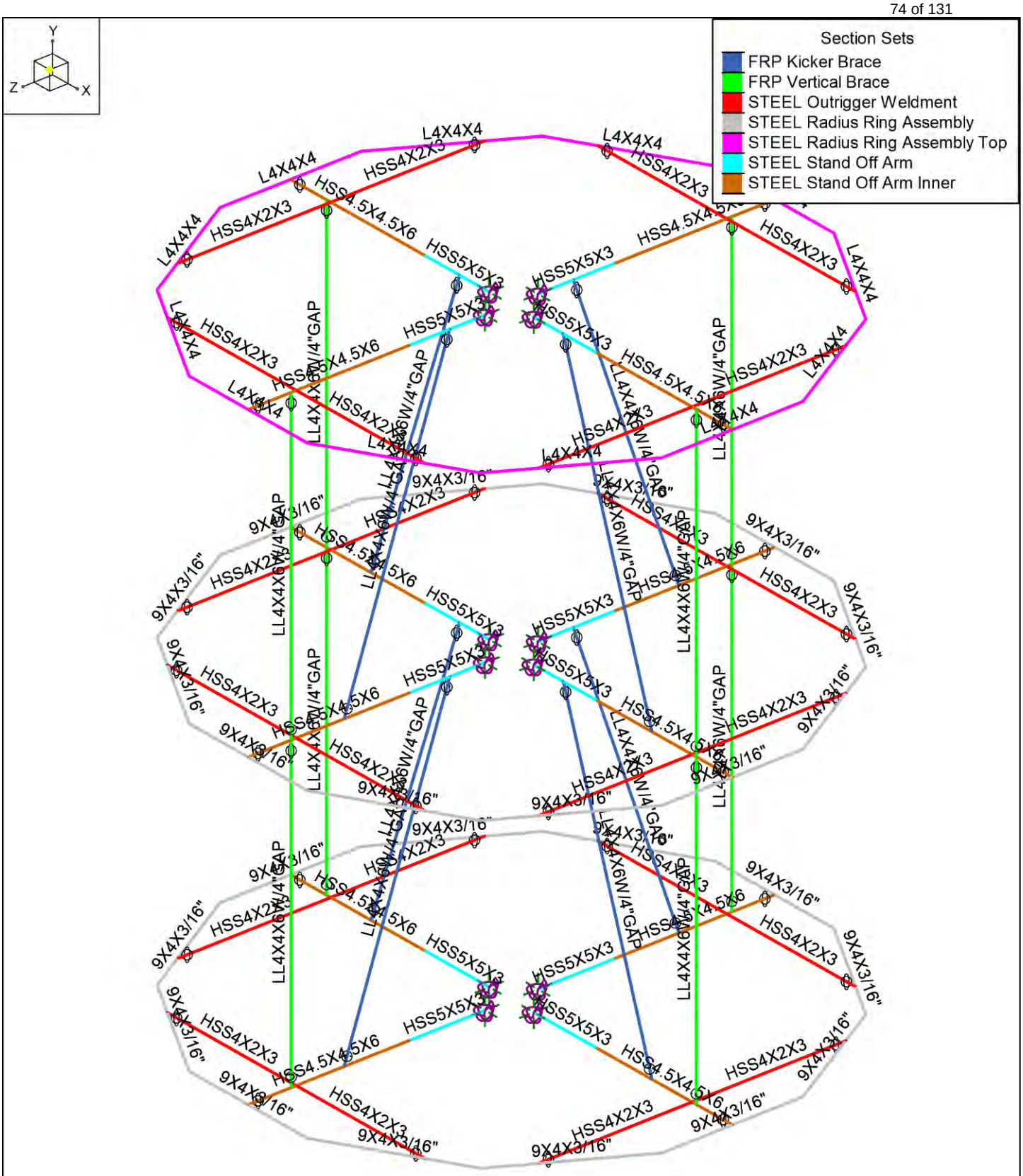
			Oct 24, 2024 at 10:53 AM
			NM1-148 Spike Concealmen…



RISA	Vector SE		SK-3
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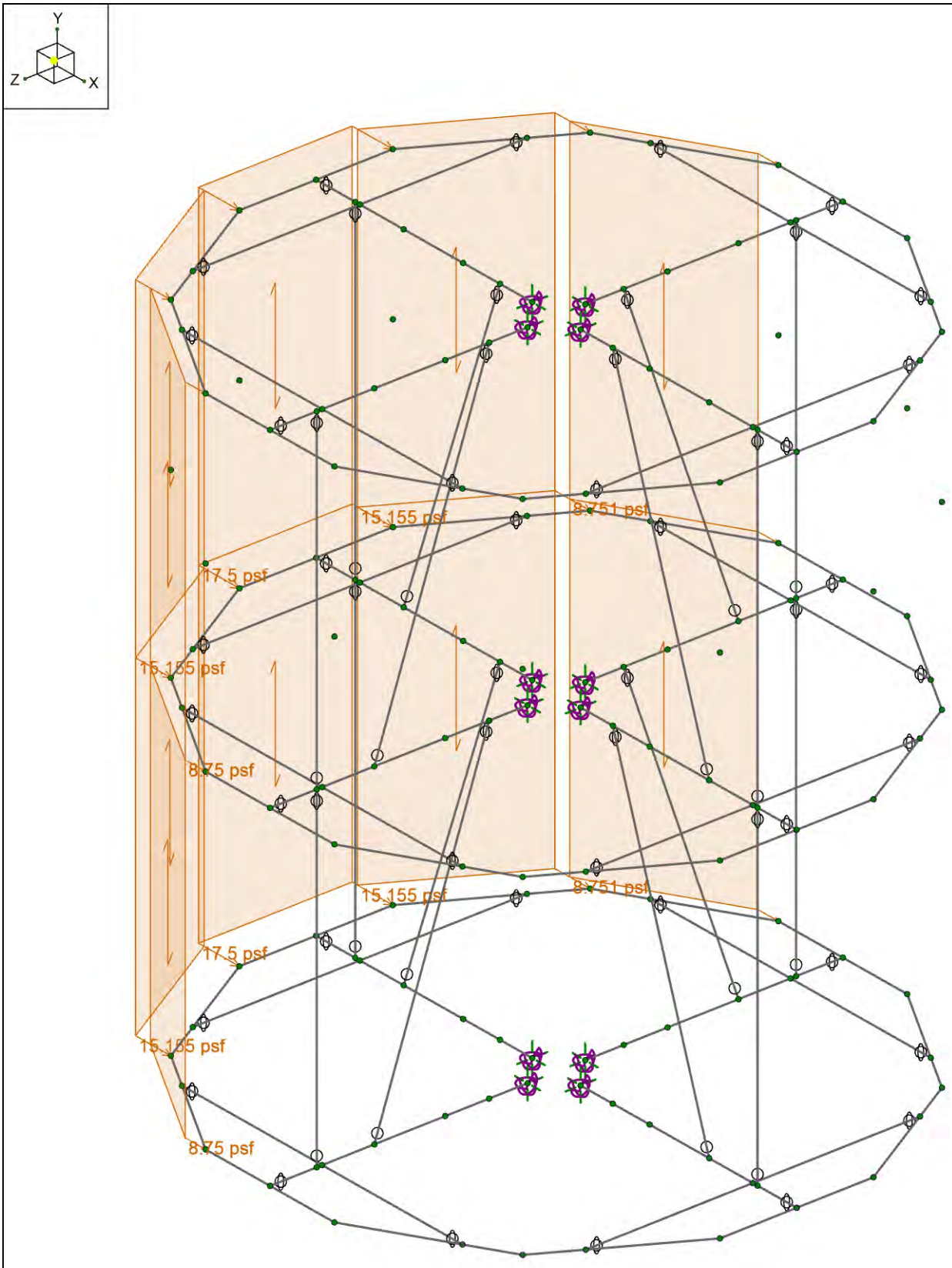
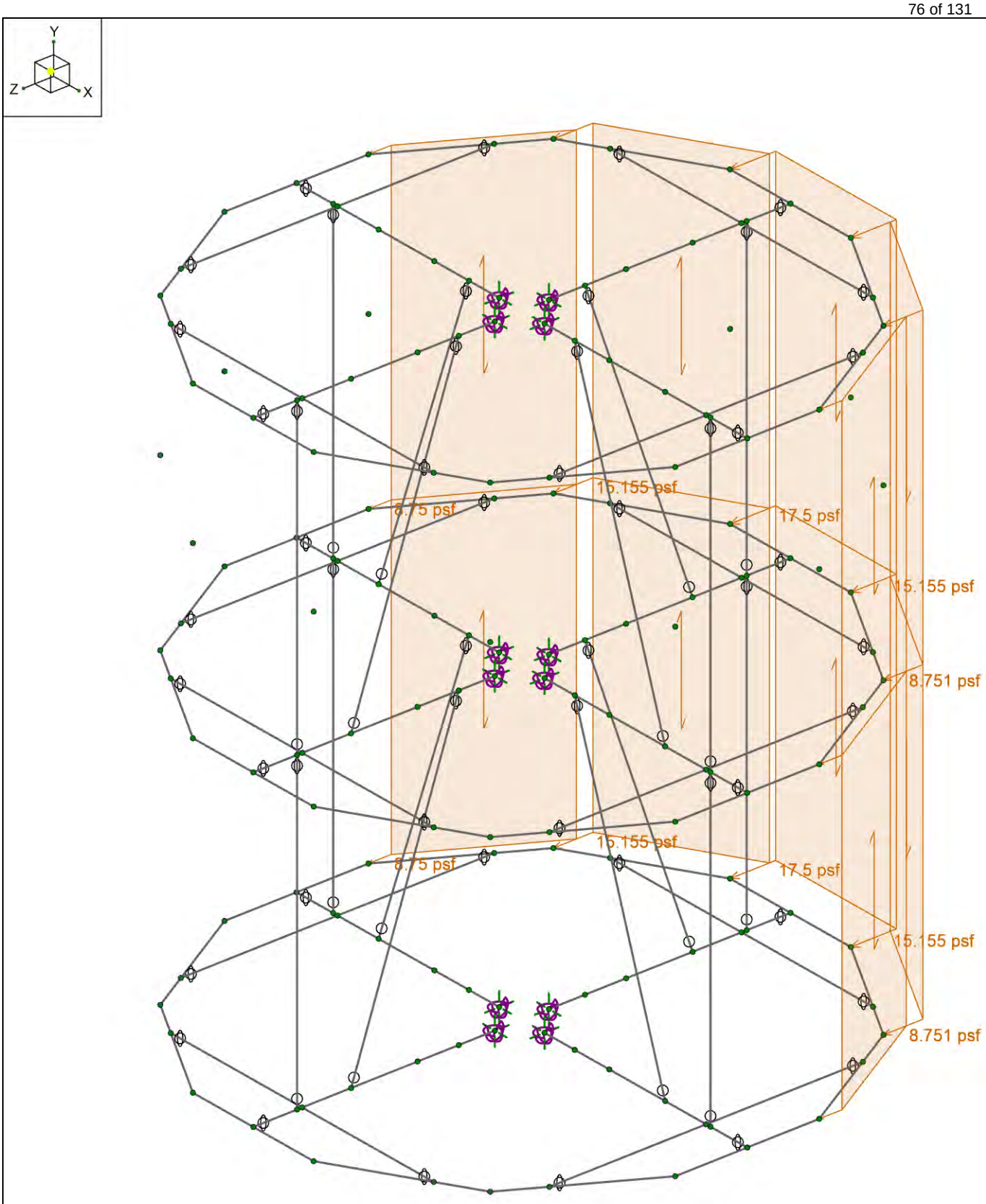
			NM1-148 Spike Concealmen…



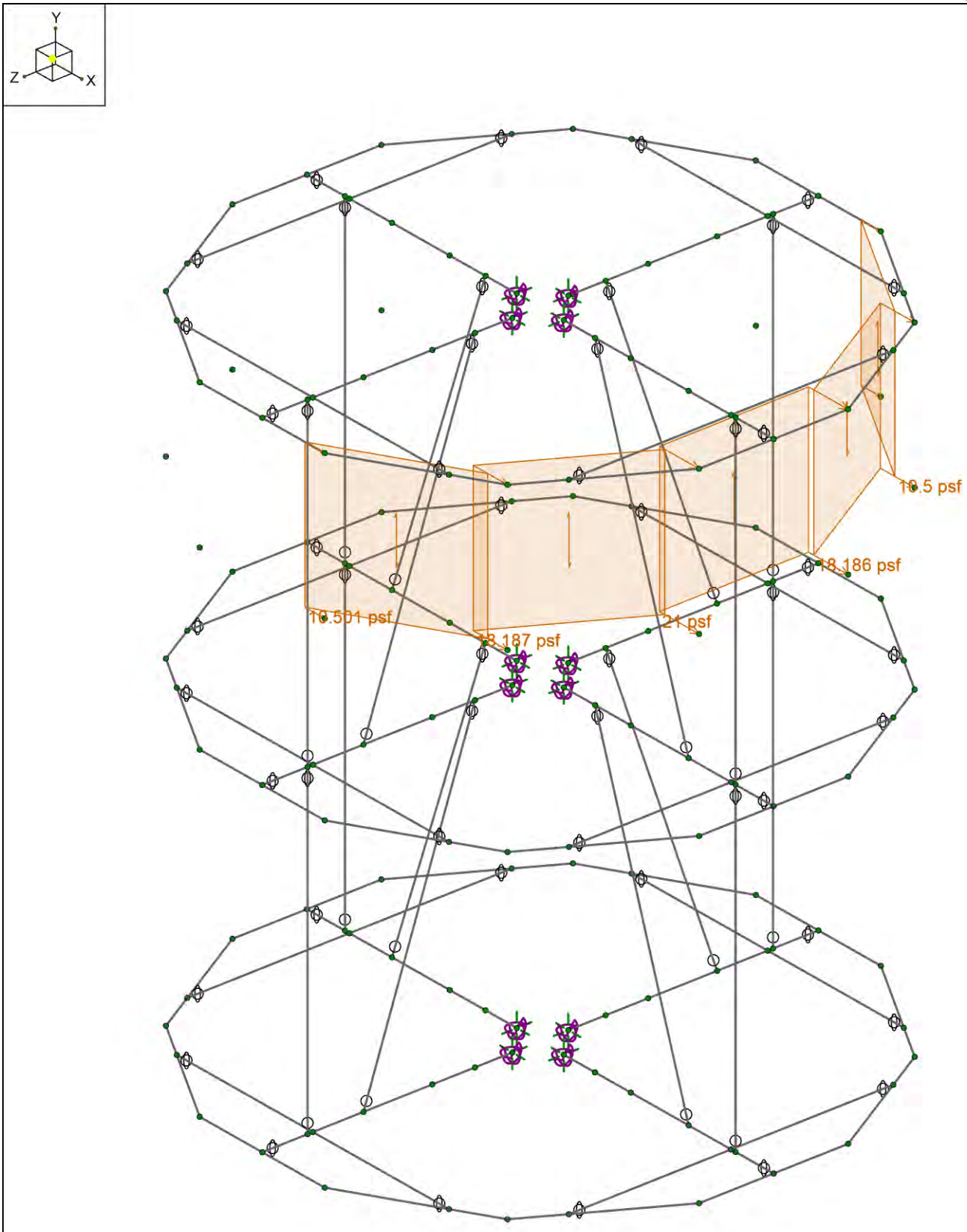
Loads: BLC 2, WLX

IRISA	Vector SE		SK-4
			Oct 24, 2024 at 10:53 AM
			NM1-148 Spike Concealmen…



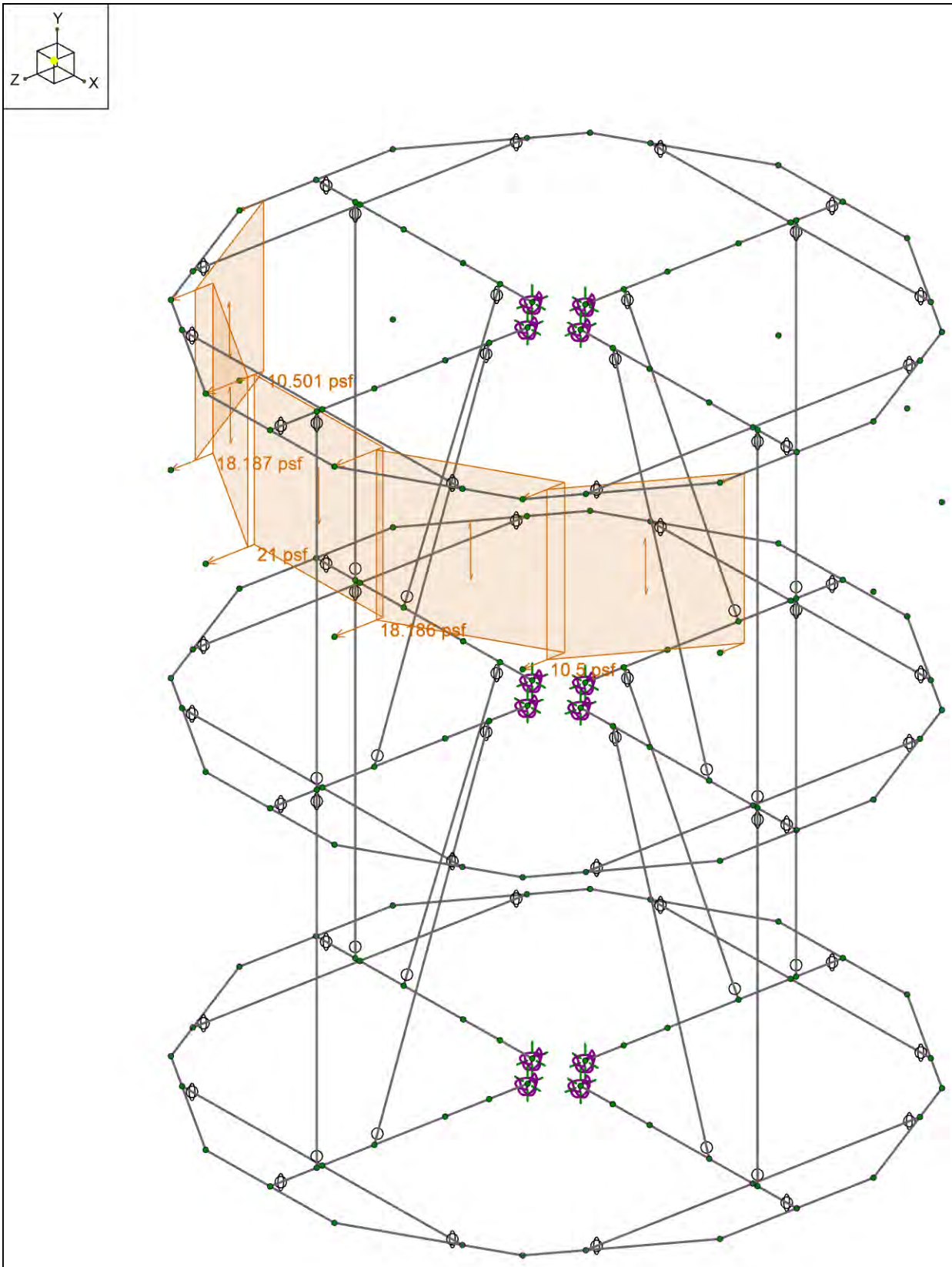
Loads: BLC 3, WLZ

RISA	Vector SE		SK-5
			Oct 24, 2024 at 10:53 AM
			NM1-148 Spike Concealmen…



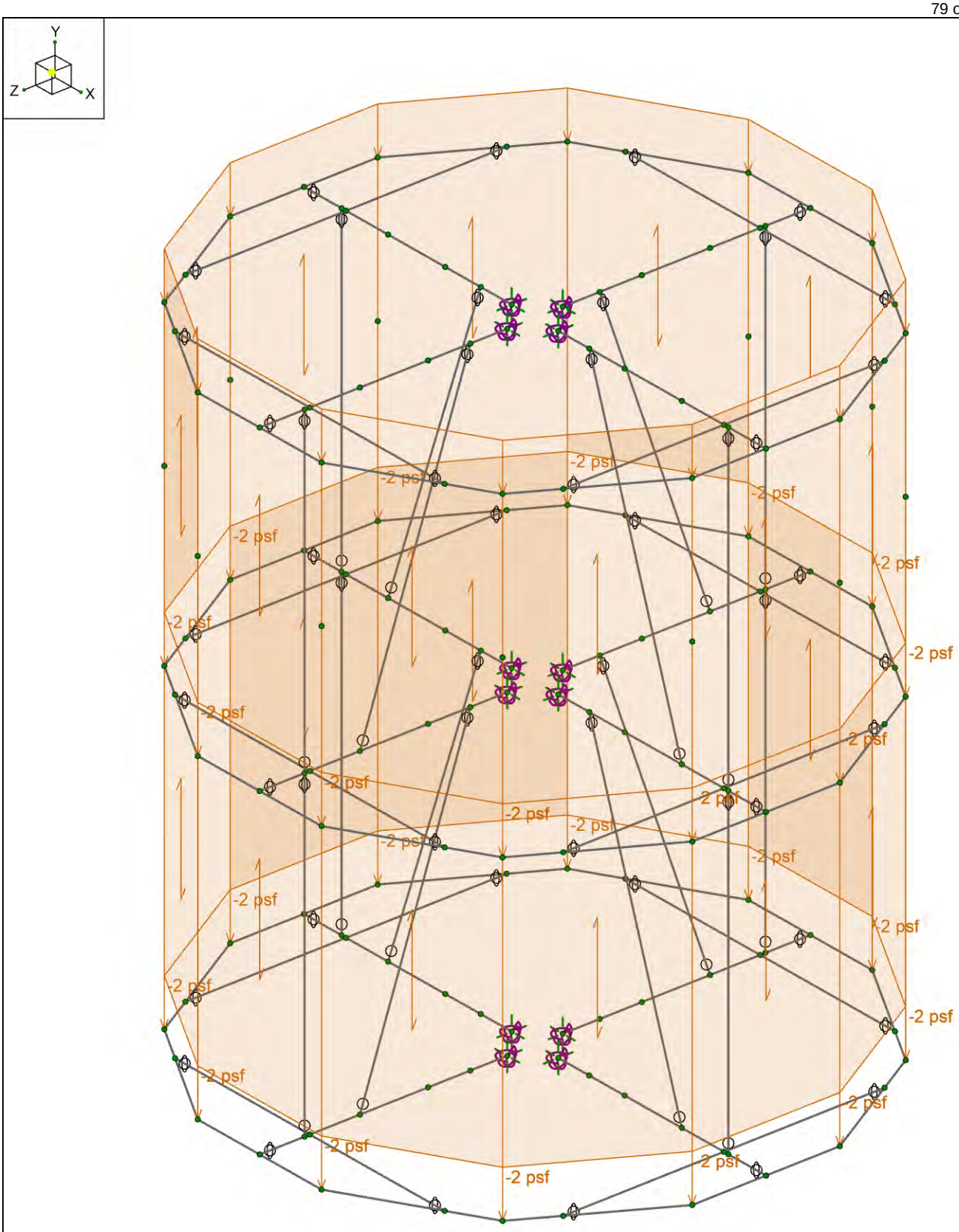
Loads: BLC 4, WLX Inside

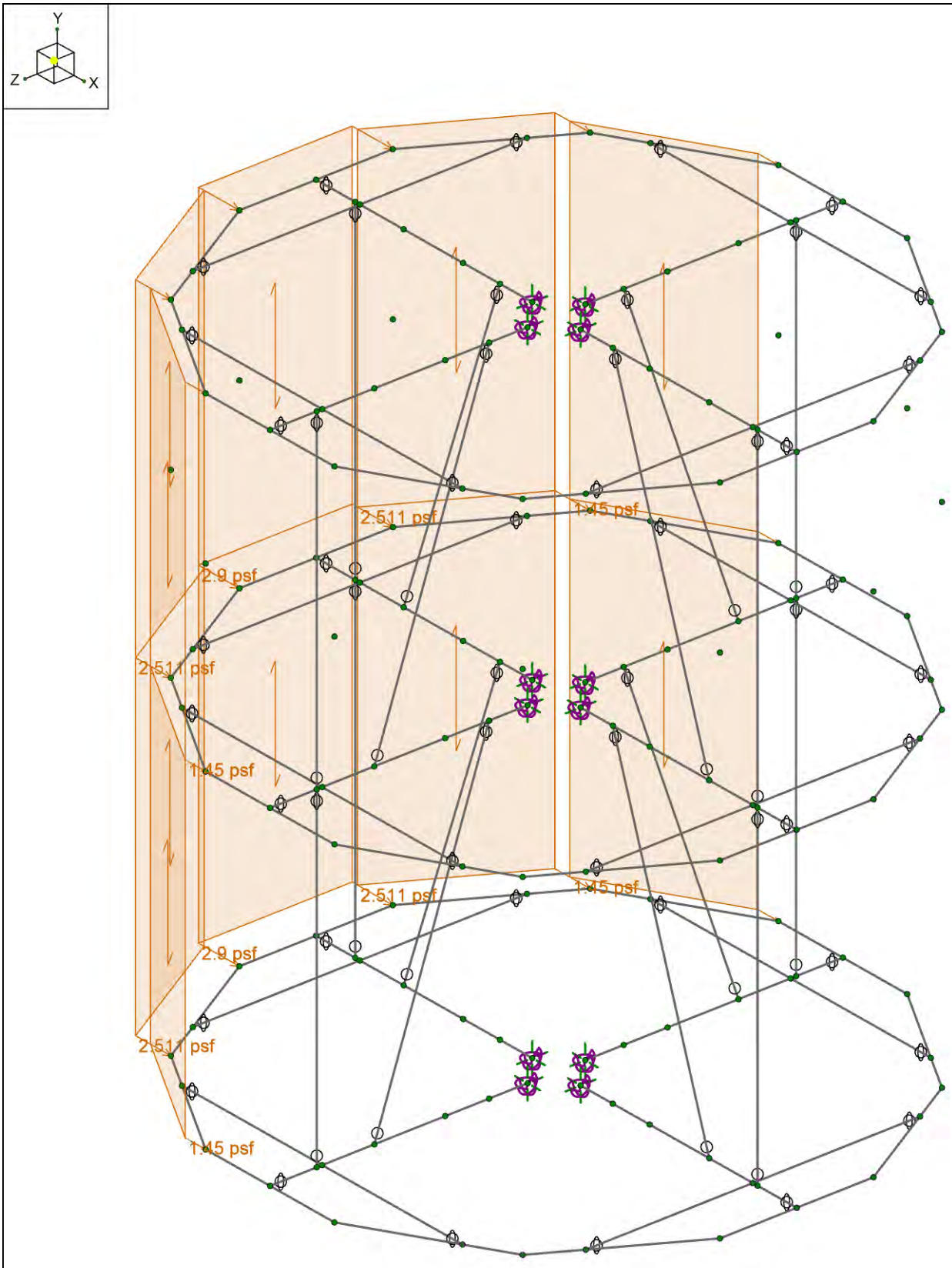
IRISA	Vector SE		SK-6
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…



Loads: BLC 5, WLZ Inside

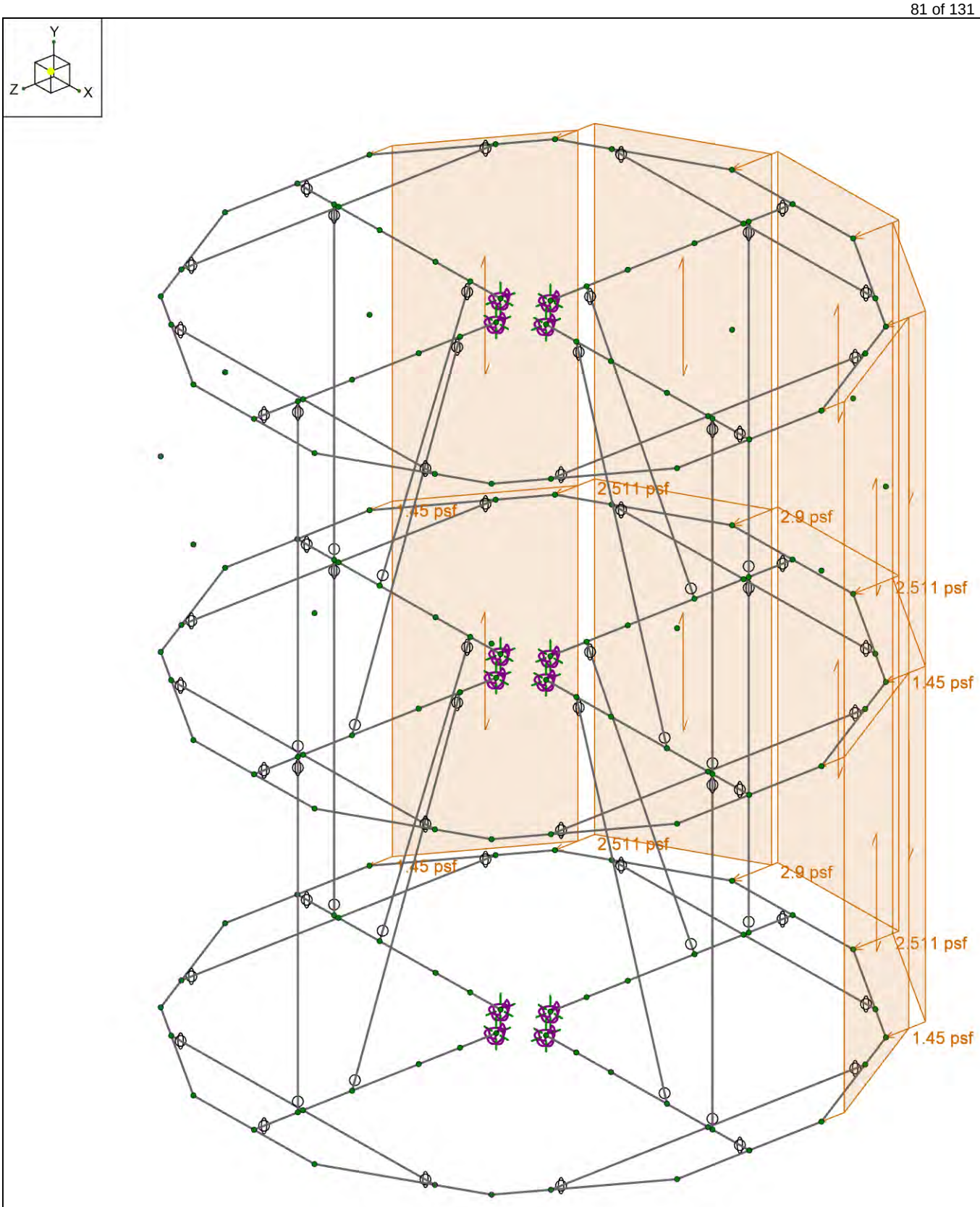
RISA	Vector SE		SK-7
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…


Y
Z
X
-2 psf
-2 psf
-2 psf



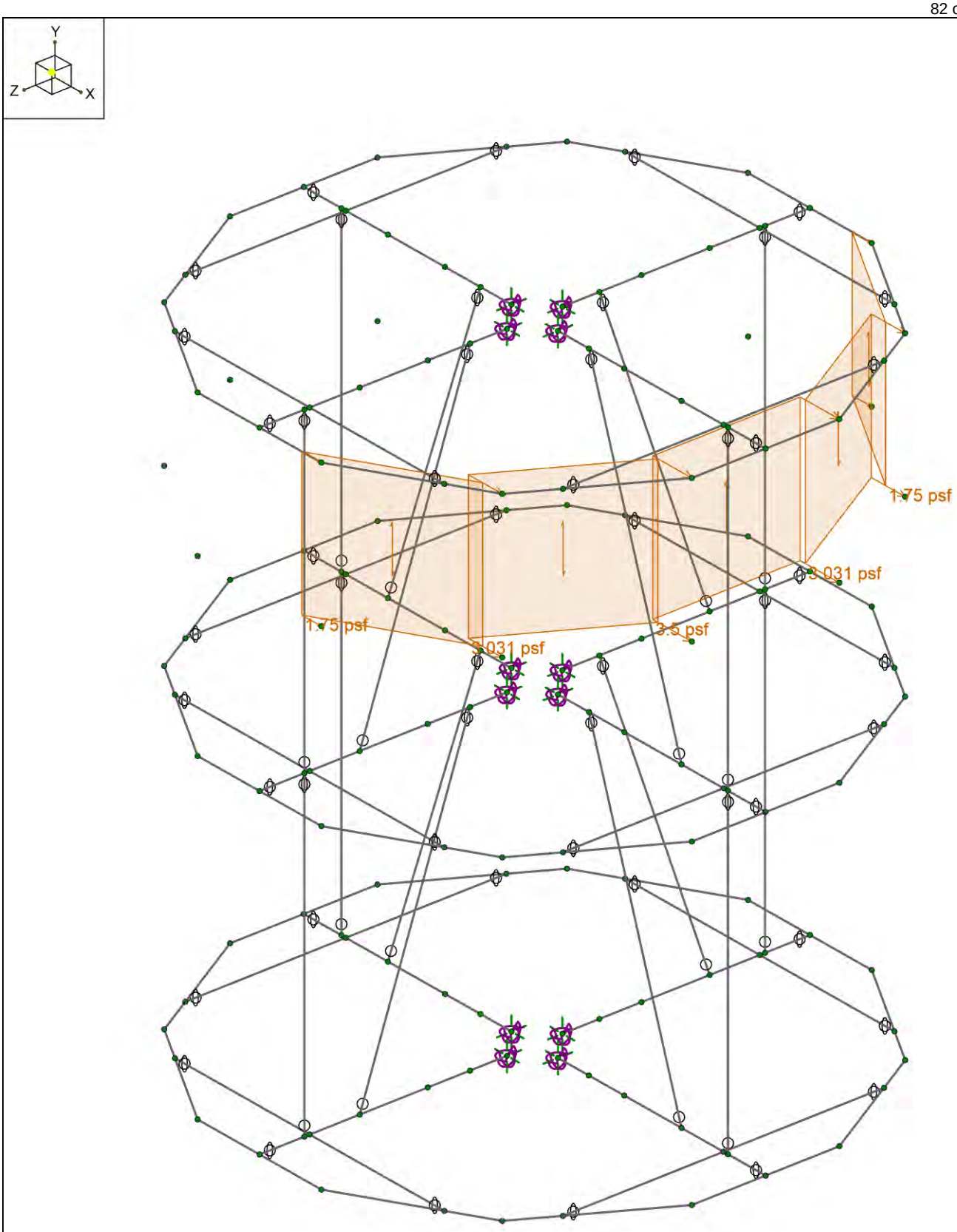
Loads: BLC 8, WLX Ice

RISA	Vector SE		SK-9
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…



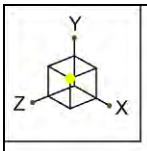
Loads: BLC 9, WLZ Ice

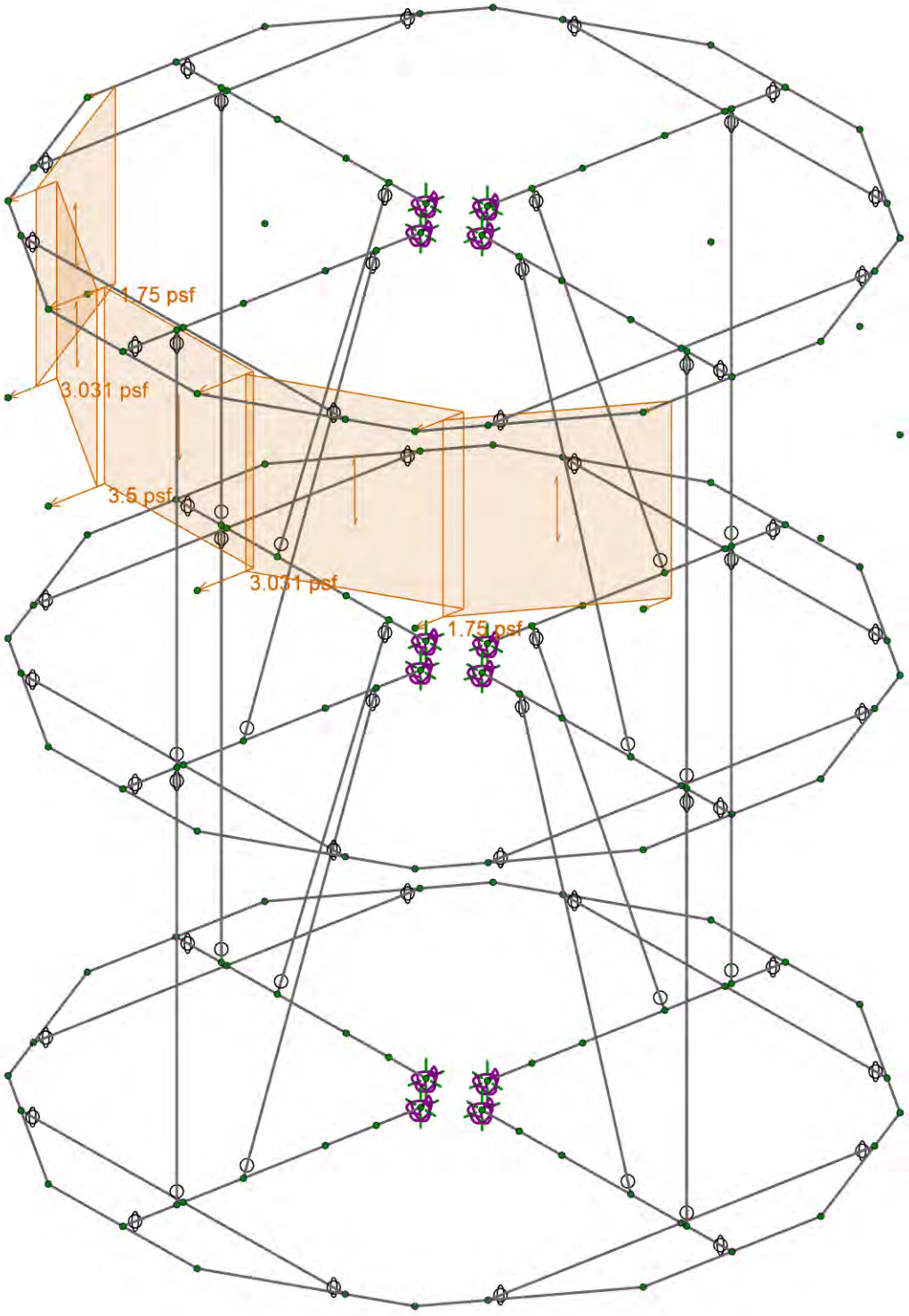
RISA	Vector SE		SK-10
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…



Loads: BLC 10, WLX Ice Inside

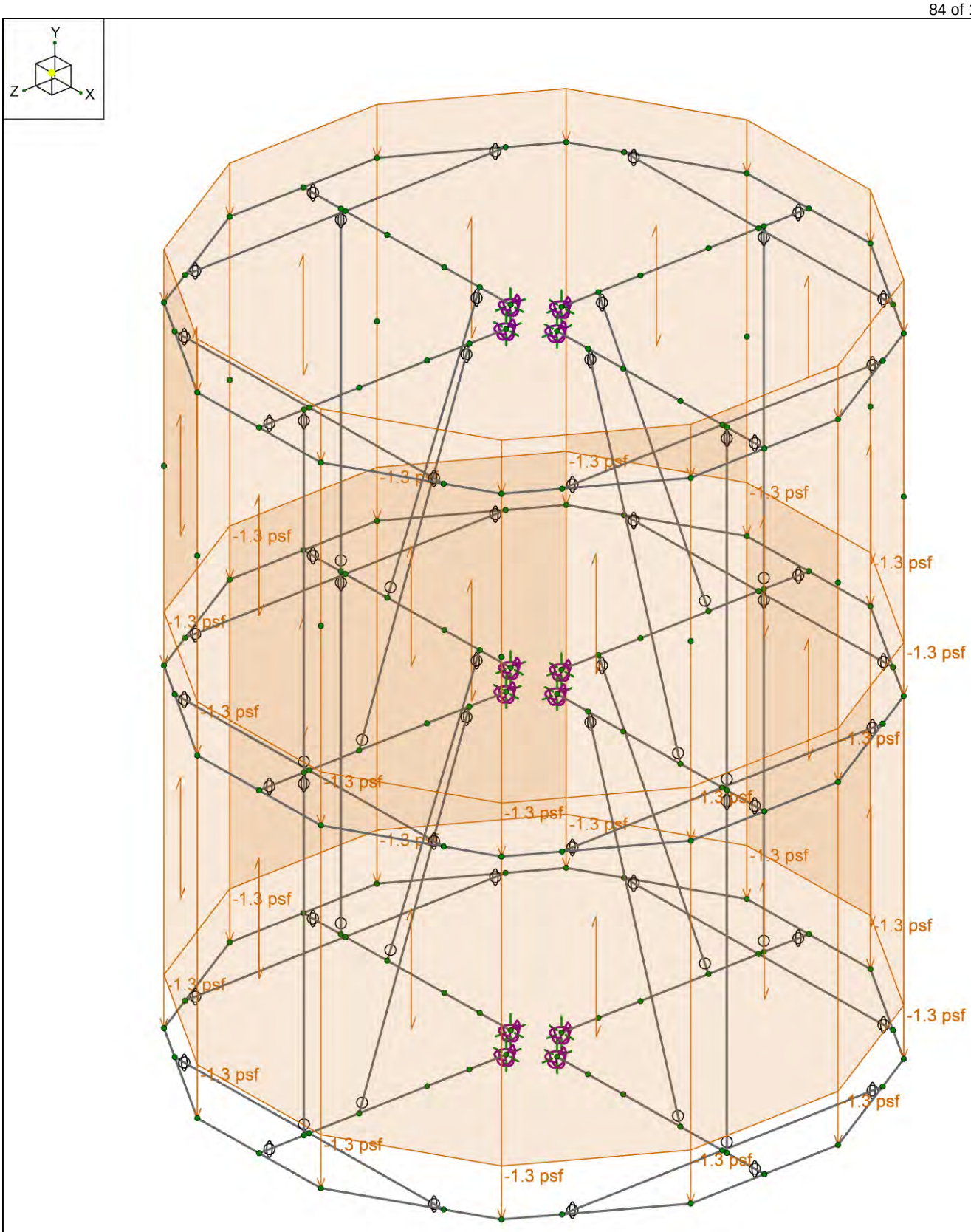
RISA	Vector SE		SK-11
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…





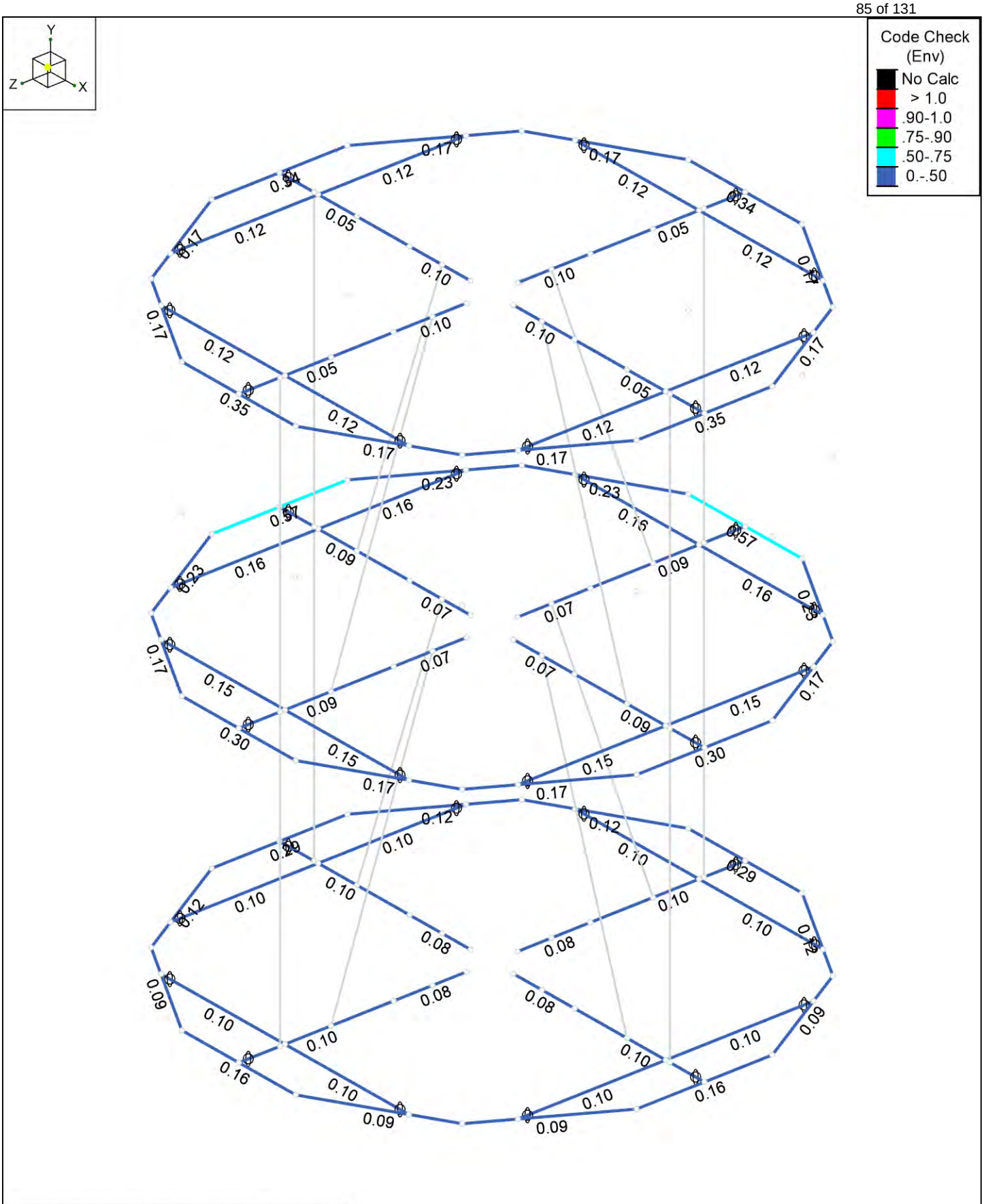
Loads: BLC 11, WLZ Ice Inside

RISA	Vector SE		SK-12
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…



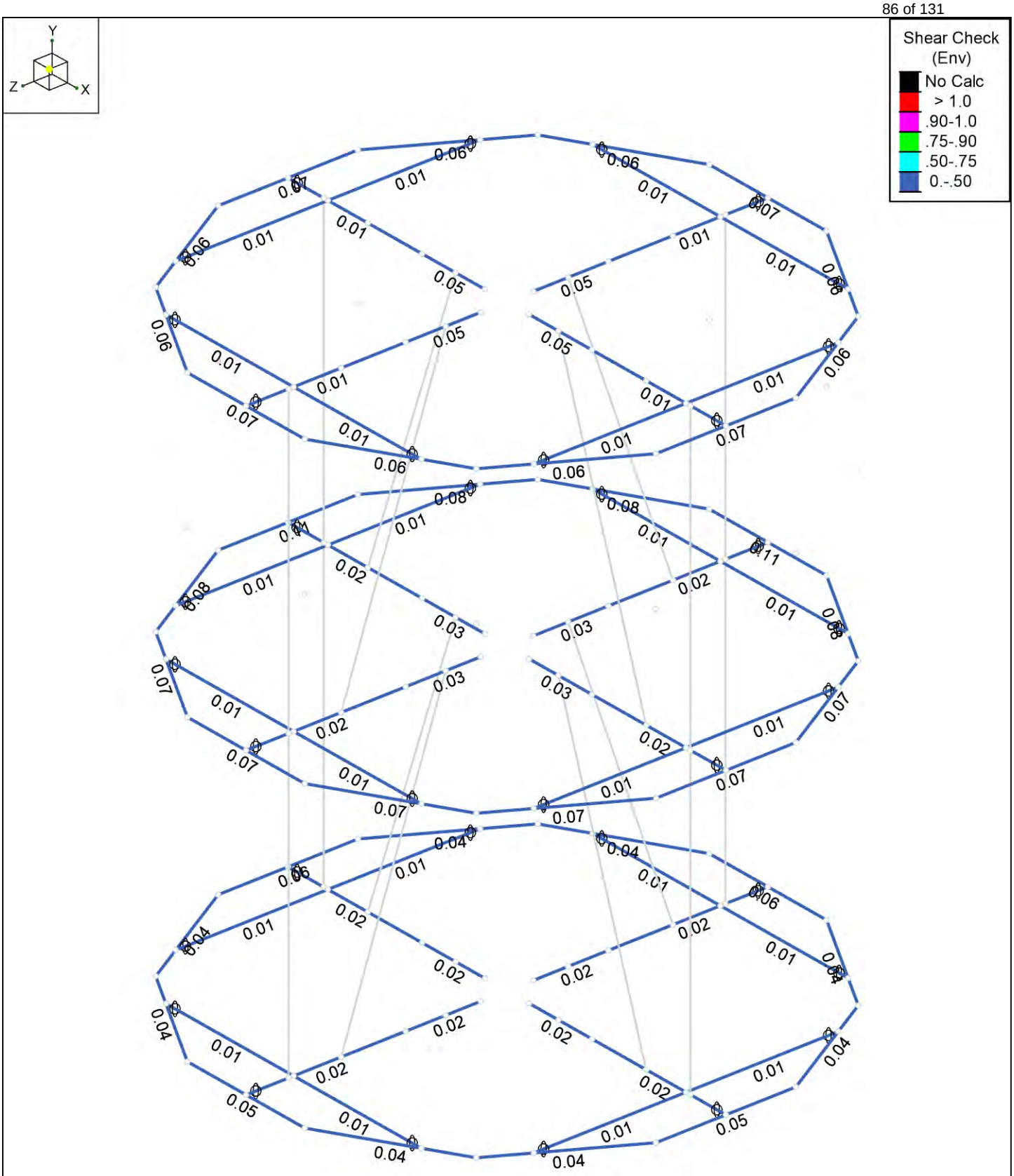
Loads: BLC 12, Ice Weight

RISA	Vector SE		SK-13
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…



Member Code Checks Displayed (Enveloped)

IRISA	Vector SE		SK-14
			Oct 24, 2024 at 10:54 AM
			NM1-148 Spike Concealmen…



Member Shear Checks Displayed (Enveloped)

IRISA	Vector SE		SK-15
			Oct 24, 2024 at 10:55 AM
			NM1-148 Spike Concealmen…

Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	No
Maximum	Yes

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Global

Hot Rolled Steel	AISC 15th (360-16): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	None
Cold Formed Steel	None
Stiffness Adjustment	Yes (Iterative)
Wood	None
Temperature	< 100F
Concrete	None
Masonry	None
Aluminum	None
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	None
Stiffness Adjustment	Yes (Iterative)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-16
Risk Category	I or II
Drift Cat	Other

Company : Vector SE
Designer :
Job Number :
Model Name :

10/24/2024
10:55:17 AM
Checked By : _____

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A500 Gr.B RECT	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
3	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
4	FRP	2800	450	0.3	0.65	0.11	10	1.2	30	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	FRP Kicker Brace	LL4X4X6W/4"GAP	VBrace	None	FRP	Typical	5.719	65.042	8.717	0.251
2	FRP Vertical Brace	LL4X4X6W/4"GAP	VBrace	None	FRP	Typical	5.719	65.042	8.717	0.251
3	STEEL Outrigger Weldment	HSS4X2X3	Beam	None	A500 Gr.B RECT	Typical	1.89	1.22	3.66	3.08
4	STEEL Radius Ring Assembly	9X4X3/16"	Beam	None	A36 Gr.36	Typical	2.409	11.423	2.887	0.028
5	STEEL Radius Ring Assembly Top	L4X4X4	Beam	None	A36 Gr.36	Typical	1.93	3	3	0.044
6	STEEL Stand Off Arm	HSS5X5X3	Beam	None	A500 Gr.B RECT	Typical	3.28	12.6	12.6	19.9
7	STEEL Stand Off Arm Inner	HSS4.5X4.5X6	Beam	None	A500 Gr.B RECT	Typical	5.48	15.3	15.3	25.7

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
1	1.0D	Yes	Y	DL	1				
2	1.4D	Yes	Y	DL	1.4				
3	1.2D+1.6L	Yes	Y	DL	1.2	LL	1.6		
4	1.2D + 0.5LL + 1.0WLx	Yes	Y	DL	1.2	LL	0.5	WLX	1
5	1.2D + 0.5LL + 1.0WLz	Yes	Y	DL	1.2	LL	0.5	WLZ	1
6	1.2D + 0.5LL - 1.0WLx	Yes	Y	DL	1.2	LL	0.5	WLX	-1
7	1.2D + 0.5LL - 1.0WLz	Yes	Y	DL	1.2	LL	0.5	WLZ	-1
8	1.2D + 1.0WLx	Yes	Y	DL	1.2	WLX	1		
9	1.2D + 1.0WLz	Yes	Y	DL	1.2	WLZ	1		
10	1.2D - 1.0WLx	Yes	Y	DL	1.2	WLX	-1		
11	1.2D - 1.0WLz	Yes	Y	DL	1.2	WLZ	-1		
12	0.9D + 1.0WLx	Yes	Y	DL	0.9	WLX	1		
13	0.9D + 1.0WLz	Yes	Y	DL	0.9	WLZ	1		
14	0.9D - 1.0WLx	Yes	Y	DL	0.9	WLX	-1		
15	0.9D - 1.0WLz	Yes	Y	DL	0.9	WLZ	-1		
16	1.2D + 1.0Di + 1.0Wix	Yes	Y	DL	1.2	OL1	1	OL2	1
17	1.2D + 1.0Di + 1.0Wiz	Yes	Y	DL	1.2	OL1	1	OL3	1
18	1.2D + 1.0Di - 1.0Wix	Yes	Y	DL	1.2	OL1	1	OL2	-1
19	1.2D + 1.0Di - 1.0Wiz	Yes	Y	DL	1.2	OL1	1	OL3	-1

Envelope Maximum Member Section Forces

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
1	M96	max	-1414.201	0	14	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
2		min	-2362.771	10.59	16	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
3	M94	max	-1418.207	0	12	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
4		min	-2361.772	10.59	18	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
5	M93	max	-1418.207	0	13	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
6		min	-2361.772	10.59	19	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
7	M95	max	-1414.201	0	15	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
8		min	-2362.771	10.59	17	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
9	M48	max	-1446.854	0	14	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
10		min	-2384.567	10.59	16	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
11	M47	max	-1446.854	0	15	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
12		min	-2384.567	10.59	17	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2

Envelope Maximum Member Section Forces (Continued)

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
13	M46	max	-1448.261	0	12	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
14		min	-2383.898	10.59	18	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
15	M45	max	-1448.261	0	13	11.722	0	2	0	10.59	19	0	10.59	19	0	10.59	19	0	10.59	19
16		min	-2383.898	10.59	19	-11.722	10.59	2	0	0	1	0	0	1	0	0	1	-31.034	5.295	2
17	M89	max	905.681	0	19	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
18		min	501.605	10	13	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
19	M90	max	905.681	0	18	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
20		min	501.605	10	12	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
21	M91	max	906.079	0	17	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
22		min	499.864	10	15	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
23	M42	max	1083.508	0	18	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
24		min	640.67	10	12	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
25	M41	max	1083.508	0	19	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
26		min	640.67	10	13	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
27	M44	max	1083.507	0	16	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
28		min	640.958	10	14	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
29	M92	max	906.079	0	16	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
30		min	499.864	10	14	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
31	M43	max	1083.507	0	17	0	10	19	0	10	19	0	10	19	0	10	19	0	10	19
32		min	640.958	10	15	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1
33	M31	max	1072.307	4.658	10	405.526	1.504	12	104.12	4.658	18	19.793	1.456	19	69.031	4.658	19	492.438	4.61	10
34		min	-1058.54	4.658	12	-407.959	1.504	6	-46.96	1.504	16	11.031	1.504	13	-73.859	0	18	-486.494	4.61	12
35	M77	max	471.748	4.659	11	474.391	2.281	11	130.859	2.329	18	11.71	4.659	17	267.953	2.329	17	613.707	2.329	13
36		min	-449.358	2.329	13	-478.653	2.329	7	-131.021	2.329	17	-11.742	0	16	25.126	0	14	-628.635	2.329	7
37	M78	max	545.768	0	11	205.188	3.154	11	30.017	3.154	17	-6.659	3.154	15	42.484	0	17	248.949	0.049	11
38		min	-521.859	0	13	-201.878	3.154	13	-62.515	0	19	-11.009	0	17	-41.088	4.659	16	-241.279	0.097	13
39	M76	max	545.756	4.658	11	201.859	1.504	13	62.514	4.658	16	11.053	4.658	16	42.628	4.658	16	248.914	4.61	11
40		min	-521.851	4.658	13	-205.167	1.504	7	-30.013	1.504	18	6.507	0	14	-41.239	0	16	-241.247	4.561	13
41	M75	max	599.938	3.154	8	127.066	4.659	14	30.011	3.154	17	-6.53	4.659	14	42.578	0	16	179.503	0	8
42		min	-575.737	0	14	-130.845	3.203	4	-62.508	0	19	-11.045	0	16	-41.241	4.659	16	-171.773	0	14
43	M79	max	545.756	4.658	10	201.859	1.504	12	62.512	4.658	18	11.01	4.658	16	42.49	4.658	16	248.914	4.61	10
44		min	-521.851	4.658	12	-205.167	1.504	6	-30.012	1.504	16	6.659	1.504	14	-41.088	0	17	-241.247	4.561	12
45	M36	max	1180.933	3.154	9	256.237	4.659	15	46.928	3.154	18	-10.558	3.154	14	69.514	0	16	353.366	0	9
46		min	-1166.028	0	15	-258.914	3.203	5	-104.087	0	16	-19.946	0	16	-74.426	4.659	17	-347.814	0	15
47	M35	max	1127.185	2.329	9	410.613	2.281	9	214.421	2.281	19	17.487	4.659	16	444.316	2.329	19	592.859	2.329	15
48		min	-1112.848	0	15	-410.626	2.329	5	-216.745	2.329	19	-17.455	0	17	37.464	4.659	14	-603.146	2.329	5
49	M34	max	1181.031	4.658	9	258.942	1.456	9	104.06	4.658	18	19.934	4.658	17	69.437	4.658	17	353.337	4.658	9
50		min	-1166.092	1.504	15	-256.251	0	15	-46.902	1.504	16	10.6	0	15	-74.426	0	17	-347.772	4.658	15
51	M33	max	1072.331	0	10	408	3.154	10	46.968	3.154	16	-10.558	4.659	15	69.514	0	17	492.507	0.049	10
52		min	-1058.591	0	12	-405.576	3.154	12	-104.124	0	18	-19.946	0	17	-74.422	4.659	17	-486.575	0.049	12
53	M32	max	925.705	4.659	10	942.911	2.329	12	214.037	2.281	16	17.487	4.659	17	443.891	2.329	16	1235.293	2.329	12
54		min	-912.475	2.329	12	-950.439	2.329	6	-216.362	2.329	16	-17.374	0	19	37.464	4.659	15	-1246.78	2.329	6
55	M30	max	1072.331	0	11	408	3.154	11	46.968	3.154	17	-11.03	3.154	12	69.023	0	18	492.507	0.049	11
56		min	-1058.591	0	13	-405.576	3.154	13	-104.124	0	19	-19.792	3.203	18	-73.86	4.659	19	-486.575	0.049	13
57	M26	max	1127.185	2.329	8	410.613	2.281	8	215.826	2.329	19	17.456	4.659	16	444.316	2.329	18	592.859	2.329	14
58		min	-1112.848	0	14	-410.626	2.329	4	-216.745	2.329	18	-17.487	0	17	37.468	0	15	-603.146	2.329	4
59	M28	max	1072.307	4.658	11	405.526	1.504	13	104.12	4.658	19	19.948	1.456	16	69.523	4.658	16	492.438	4.61	11
60		min	-1058.54	4.658	13	-407.959	1.504	7	-46.96	1.504	17	10.558	1.504	14	-74.422	0	16	-486.494	4.61	13
61	M29	max	925.705	4.659	11	942.911	2.329	13	215.826	2.329	18	17.375	4.659	18	443.891	2.329	17	1235.293	2.329	13
62		min	-912.475	2.329	13	-950.439	2.329	7	-216.362	2.329	17	-17.487	0	16	37.468	0	14	-1246.78	2.329	7
63	M84	max	599.938	3.154	9	127.066	4.659	15	30.018	3.154	18	-6.506	4.659	14	42.622	0	16	179.503	0	9
64		min	-575.737	0	15	-130.845	3.203	5	-62.517	0	16	-11.052	3.203	16	-41.241	4.659	17	-171.773	0	15
65	M83	max	572.347	2.329	9	208.826	2.281	9	129.698	2.281	19	11.742	4.659	16	268.061	2.329	19	292.337	2.329	15
66		min	-549.693	0	15	-208.837	2.329	5	-131.124	2.329	19	-11.725	0	17	25.123	4.659	14	-306.963	2.329	5
67	M82	max	599.964	4.658	9	130.85	1.456	9	62.506	4.658	18	11.046	4.658	17	42.583	4.658	17	179.477	4.658	9

Envelope Maximum Member Section Forces (Continued)

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
68		min	-575.769	1.504	15	-127.073	0	15	-30.006	1.504	16	6.531	0	15	-41.241	0	17	-171.752	4.658	15
69	M73	max	599.964	4.658	8	130.85	1.456	8	62.514	4.658	17	11.053	1.456	17	42.628	4.658	17	179.477	4.658	8
70		min	-575.769	1.504	14	-127.073	0	14	-30.013	1.504	19	6.507	0	15	-41.241	0	16	-171.752	4.658	14
71	M80	max	471.748	4.659	10	474.391	2.281	10	129.596	2.281	16	11.742	4.659	17	267.953	2.329	16	613.707	2.329	12
72		min	-449.358	2.329	12	-478.653	2.329	6	-131.021	2.329	16	-11.71	0	16	25.123	4.659	15	-628.635	2.329	6
73	M25	max	1181.031	4.658	8	258.942	1.456	8	104.083	4.658	17	19.948	4.658	17	69.523	4.658	17	353.337	4.658	8
74		min	-1166.092	1.504	14	-256.251	0	14	-46.92	1.504	19	10.558	0	15	-74.426	0	16	-347.772	4.658	14
75	M74	max	572.347	2.329	8	208.826	2.281	8	130.859	2.329	19	11.725	4.659	16	268.061	2.329	18	292.337	2.329	14
76		min	-549.693	0	14	-208.837	2.329	4	-131.124	2.329	18	-11.742	0	17	25.126	0	15	-306.963	2.329	4
77	M27	max	1180.933	3.154	8	256.237	4.659	14	46.911	3.154	17	-10.599	3.154	14	69.429	0	16	353.366	0	8
78		min	-1166.028	0	14	-258.914	3.203	4	-104.064	0	19	-19.932	0	16	-74.426	4.659	16	-347.814	0	14
79	M81	max	545.768	0	10	205.188	3.154	10	30.018	3.154	19	-6.506	3.154	15	42.622	0	17	248.949	0.049	10
80		min	-521.859	0	12	-201.878	3.154	12	-62.517	0	17	-11.052	3.203	17	-41.239	4.659	17	-241.279	0.097	12
81	M1	max	1161.402	4.658	8	69.213	4.658	16	306.015	1.504	12	16.22	1.456	16	320.076	4.658	8	263.337	4.658	12
82		min	-1061.695	4.658	14	-17.538	1.504	18	-329.222	1.504	6	7.945	1.504	14	-294.18	4.658	14	-342.409	4.658	6
83	M2	max	1045.489	2.329	8	131.65	2.329	17	733.885	2.329	8	12.733	4.659	16	725.485	2.329	10	482.88	2.329	14
84		min	-970.539	0	14	-131.779	2.329	18	-729.272	2.281	4	-12.732	0	16	-599.268	2.329	12	-901.106	2.329	4
85	M3	max	1161.396	0	8	17.543	3.154	18	329.237	3.154	10	-7.945	3.154	14	320.12	0	8	263.379	0	12
86		min	-1061.658	0	14	-69.215	0	16	-306.041	3.154	12	-16.219	0	16	-294.213	0	14	-342.437	0	6
87	M4	max	1165.957	4.658	11	69.194	4.658	19	297.906	1.504	15	16.226	1.456	19	316.266	4.658	11	259.369	4.658	15
88		min	-1066.18	4.658	13	-17.519	1.504	17	-321.113	1.504	5	7.925	0	13	-290.376	4.658	13	-338.436	4.658	5
89	M5	max	1053.661	2.329	11	131.65	2.329	16	712.497	2.329	11	12.742	4.659	19	707.768	2.329	9	464.888	2.329	13
90		min	-978.646	0	13	-131.805	2.329	17	-708.227	2.281	7	-12.74	0	19	-581.491	2.329	15	-883.085	2.329	7
91	M7	max	1165.957	4.658	10	69.194	4.658	18	297.906	1.504	14	16.226	1.456	18	316.266	4.658	10	259.369	4.658	14
92		min	-1066.18	4.658	12	-17.519	1.504	16	-321.113	1.504	4	7.925	0	12	-290.376	4.658	12	-338.436	4.658	4
93	M8	max	1053.661	2.329	10	131.651	2.329	19	712.497	2.329	10	12.742	4.659	18	707.768	2.329	8	464.888	2.329	12
94		min	-978.646	0	12	-131.805	2.329	16	-708.227	2.281	6	-12.74	0	18	-581.491	2.329	14	-883.085	2.329	6
95	M9	max	1165.931	0	10	17.524	3.154	16	321.12	3.154	8	-7.925	3.154	12	316.303	0	10	259.408	0	14
96		min	-1066.128	0	12	-69.196	0	18	-297.926	3.154	14	-16.225	3.203	18	-290.405	0	12	-338.458	0	4
97	M11	max	1045.489	2.329	9	131.651	2.329	18	733.885	2.329	9	12.733	4.659	17	725.485	2.329	11	482.88	2.329	15
98		min	-970.539	0	15	-131.779	2.329	19	-729.272	2.281	5	-12.732	0	17	-599.268	2.329	13	-901.106	2.329	5
99	M12	max	1161.396	0	9	17.543	3.154	19	329.237	3.154	11	-7.945	3.154	15	320.12	0	9	263.379	0	13
100		min	-1061.658	0	15	-69.215	0	17	-306.041	3.154	13	-16.219	3.203	17	-294.213	0	15	-342.437	0	7
101	M6	max	1165.931	0	11	17.524	3.154	17	321.12	3.154	9	-7.925	3.154	13	316.303	0	11	259.408	0	15
102		min	-1066.128	0	13	-69.196	0	19	-297.926	3.154	15	-16.225	3.203	19	-290.405	0	13	-338.458	0	5
103	M10	max	1161.402	4.658	9	69.213	4.658	17	306.015	1.504	13	16.22	1.456	17	320.076	4.658	9	263.337	4.658	13
104		min	-1061.695	4.658	15	-17.538	1.504	19	-329.222	1.504	7	7.945	1.504	15	-294.18	4.658	15	-342.409	4.658	7
105	S1	max	1442.866	2.5	15	1879.352	0	19	101.831	2.5	8	1.059	2.5	14	243.321	2.5	8	176.863	0	19
106		min	-2229.018	0	5	-412.193	2.5	19	-101.815	1.172	6	-1.062	0	12	-243.288	2.5	6	-2002.893	1.172	19
107	M71	max	1633.182	2.5	9	-346.145	0	15	41.198	1.146	10	0.071	2.5	12	98.775	2.5	10	1506.218	2.5	17
108		min	-538.469	0	15	-623.782	2.5	17	-41.17	0	4	-0.073	0	14	-98.718	2.5	4	-4.198	0	17
109	M70	max	1066.073	2.5	10	-347.767	0	12	41.198	1.146	11	0.071	1.146	13	98.775	2.5	11	1505.203	2.5	18
110		min	28.387	1.172	12	-623.397	2.5	18	-41.17	0	5	-0.073	0	15	-98.718	2.5	5	-4.202	0	18
111	M69	max	1066.073	2.5	11	-347.767	0	13	41.152	1.146	8	0.068	2.5	14	98.681	2.5	8	1505.203	2.5	19
112		min	28.387	1.172	13	-623.397	2.5	19	-41.174	0	6	-0.076	0	12	-98.725	2.5	6	-4.202	0	19
113	S2	max	1442.866	2.5	14	1879.352	0	18	101.818	2.5	11	1.057	1.146	13	243.296	2.5	11	176.863	0	18
114		min	-2229.018	0	4	-412.193	2.5	18	-101.809	1.172	5	-1.064	0	15	-243.287	2.5	13	-2002.893	1.172	18
115	S3	max	1397.253	2.5	13	1879.85	0	17	101.818	2.5	10	1.057	2.5	12	243.296	2.5	10	176.943	0	17
116		min	-2182.479	0	7	-412.317	2.5	17	-101.809	1.172	4	-1.064	0	14	-243.287	2.5	12	-2003.394	1.172	17
117	S4	max	1397.253	2.5	12	1879.85	0	16	101.831	2.5	9	1.059	2.5	15	243.321	2.5	9	176.943	0	16
118		min	-2182.479	0	6	-412.317	2.5	16	-101.815	1.172	7	-1.062	0	13	-243.288	2.5	7	-2003.394	1.172	16
119	M24	max	2646.43	2.5	8	1217.787	0	16	82.329	2.5	9	1.694	1.146	9	197.043	2.5	13	86.87	0	16
120		min	-1999.465	0	14	-1055.776	2.5	16	-82.402	1.172	7	-1.565	0	7	-197.259	2.5	15	-1317.708	1.172	16
121	M23	max	2646.43	2.5	9	1217.787	0	17	82.452	2.5	10	1.555	1.146	10	197.355	2.5	14	86.87	0	17
122		min	-1999.465	0	15	-1055.776	2.5	17	-82.4	1.172	4	-1.705	0	4	-197.171	2.5	12	-1317.708	1.172	17

Envelope Maximum Member Section Forces (Continued)

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
123	M22	max	1515.153	2.5	10	1217.065	0	18	82.452	2.5	11	1.555	1.146	11	197.355	2.5	15	86.789	0	18
124		min	-869.006	0	12	-1055.431	2.5	18	-82.4	1.172	5	-1.705	0	5	-197.171	2.5	13	-1316.949	1.172	18
125	M21	max	1515.153	2.5	11	1217.065	0	19	82.329	2.5	8	1.694	1.146	8	197.043	2.5	12	86.789	0	19
126		min	-869.006	0	13	-1055.431	2.5	19	-82.402	1.172	6	-1.565	0	6	-197.259	2.5	14	-1316.949	1.172	19
127	M72	max	1633.182	2.5	8	-346.145	0	14	41.152	1.146	9	0.068	2.5	15	98.681	2.5	9	1506.218	2.5	16
128		min	-538.469	0	14	-623.782	2.5	16	-41.174	0	7	-0.076	0	13	-98.725	2.5	7	-4.198	0	16
129	M17	max	1442.866	2.105	15	300.484	3.933	19	194.362	5.318	14	1.059	3.712	14	621.371	3.712	8	366.293	3.933	19
130		min	-1584.209	0	5	-723.908	3.878	19	-194.419	3.933	4	-1.062	0	12	-621.316	3.712	6	-1469.424	0	19
131	M18	max	1442.866	2.105	14	300.484	3.933	18	194.377	5.318	13	1.057	3.712	13	621.335	3.712	11	366.293	3.933	18
132		min	-1584.209	0	4	-723.908	3.878	18	-194.368	3.933	15	-1.064	0	15	-621.256	3.712	5	-1469.424	0	18
133	M19	max	1397.253	2.105	13	300.529	3.933	17	194.377	5.318	12	1.057	3.712	12	621.335	3.712	10	366.372	3.933	17
134		min	-1538.546	0	7	-723.861	3.878	17	-194.368	3.933	14	-1.064	0	14	-621.256	3.712	4	-1469.761	0	17
135	M85	max	1066.073	2.105	11	1491.806	2.161	19	86.618	3.878	10	0.068	2.105	14	251.182	3.712	12	2892.162	2.161	19
136		min	-448.314	2.161	5	-678.074	2.105	19	-86.56	3.767	4	-0.076	0	12	-251.102	3.712	14	-23.451	5.318	17
137	M87	max	1633.182	2.105	9	1492.654	2.161	17	86.611	3.878	8	0.071	3.712	12	251.24	3.712	14	2893.737	2.161	17
138		min	-1013.856	2.161	7	-678.338	2.105	17	-86.685	3.767	6	-0.073	2.161	14	-251.3	3.712	12	-23.44	5.318	16
139	M86	max	1066.073	2.105	10	1491.806	2.161	18	86.611	3.878	9	0.071	3.712	13	251.24	3.712	15	2892.162	2.161	18
140		min	-448.314	2.161	4	-678.074	2.105	18	-86.685	3.767	7	-0.073	2.161	15	-251.3	3.712	13	-23.451	5.318	16
141	M20	max	1397.253	3.712	12	300.529	3.933	16	194.362	5.318	15	1.059	2.105	15	621.371	3.712	9	366.372	3.933	16
142		min	-1538.546	2.161	6	-723.861	3.878	16	-194.419	3.933	5	-1.062	2.161	13	-621.316	3.712	7	-1469.761	0	16
143	M37	max	1515.153	2.105	11	1080.883	2.161	17	173.168	5.318	10	1.694	2.105	8	502.544	3.712	8	2392.771	2.161	19
144		min	-880.983	2.161	5	-1110.922	2.105	19	-172.842	3.933	4	-1.565	0	6	-502.325	3.712	6	-34.911	5.318	17
145	M39	max	2646.43	2.105	9	1080.796	2.161	17	173.036	5.318	8	1.555	3.712	10	502.61	3.712	10	2393.101	2.161	17
146		min	-2012.306	2.161	7	-1111.218	2.105	17	-173.304	3.933	6	-1.705	2.161	4	-502.943	3.712	4	-34.824	5.318	16
147	M40	max	2646.43	2.105	8	1080.796	2.161	16	173.168	5.318	11	1.694	3.712	9	502.544	3.712	9	2393.101	2.161	16
148		min	-2012.306	2.161	6	-1111.218	2.105	16	-172.842	3.933	5	-1.565	0	7	-502.325	3.712	7	-34.824	5.318	17
149	M88	max	1633.182	2.105	8	1492.654	2.161	16	86.618	3.878	11	0.068	3.712	15	251.182	3.712	13	2893.737	2.161	16
150		min	-1013.856	2.161	6	-678.338	2.105	16	-86.56	3.767	5	-0.076	2.161	13	-251.102	3.712	15	-23.44	5.318	17
151	M38	max	1515.153	2.105	10	1080.883	2.161	16	173.036	5.318	9	1.555	2.105	11	502.61	3.712	11	2392.771	2.161	18
152		min	-880.983	2.161	4	-1110.922	2.105	18	-173.304	3.933	7	-1.705	2.161	5	-502.943	3.712	5	-34.911	5.318	16
153	M97	max	920.746	5.072	13	57.795	5.072	15	-30.152	5.072	15	0	5.072	19	414.198	0	17	293.137	0	15
154		min	-924.285	0	7	-58.42	0	5	-104.818	0	17	0	0	1	0	5.072	1	-296.308	0	5
155	M98	max	920.67	5.072	13	58.422	5.072	9	-30.15	5.072	15	0	5.072	19	414.194	0	17	296.323	0	9
156		min	-924.243	0	7	-57.8	0	15	-104.816	0	17	0	0	1	0	5.072	1	-293.167	0	15
157	M99	max	1012	5.072	13	56.385	5.072	11	-62.726	5.072	14	0	5.072	19	722.458	0	16	285.986	0	11
158		min	-1018.222	0	7	-55.84	0	13	-165.594	0	16	0	0	1	0	5.072	1	-283.223	0	13
159	M100	max	1012.056	5.072	13	55.851	5.072	13	-62.95	5.072	14	0	5.072	19	722.058	0	16	283.279	0	13
160		min	-1018.245	0	7	-56.393	0	7	-165.514	0	16	0	0	1	0	5.072	1	-286.028	0	7
161	M101	max	502.04	5.072	13	28.455	5.072	11	-42.211	5.072	14	0	5.072	19	494.084	0	16	144.326	0	11
162		min	-514.168	0	7	-27.723	0	13	-120.568	0	16	0	0	1	0	5.072	1	-140.61	0	13
163	M102	max	502.045	5.072	13	27.726	5.072	13	-42.196	5.072	14	0	5.072	19	494.089	0	16	140.629	0	13
164		min	-514.18	0	7	-28.459	0	7	-120.568	0	16	0	0	1	0	5.072	1	-144.347	0	7
165	M103	max	920.67	5.072	12	58.422	5.072	8	-30.15	5.072	14	0	5.072	19	414.194	0	16	296.323	0	8
166		min	-924.243	0	6	-57.8	0	14	-104.816	0	16	0	0	1	0	5.072	1	-293.167	0	14
167	M104	max	1012.056	5.072	12	55.851	5.072	12	-62.723	5.072	15	0	5.072	19	722.451	0	17	283.279	0	12
168		min	-1018.245	0	6	-56.393	0	6	-165.592	0	17	0	0	1	0	5.072	1	-286.028	0	6
169	M105	max	502.045	5.072	12	27.726	5.072	12	-42.21	5.072	15	0	5.072	19	494.079	0	17	140.629	0	12
170		min	-514.18	0	6	-28.459	0	6	-120.566	0	17	0	0	1	0	5.072	1	-144.347	0	6
171	M106	max	502.04	5.072	12	28.455	5.072	10	-42.197	5.072	15	0	5.072	19	494.093	0	17	144.326	0	10
172		min	-514.168	0	6	-27.723	0	12	-120.57	0	17	0	0	1	0	5.072	1	-140.61	0	12
173	M107	max	1012	5.072	12	56.385	5.072	10	-62.952	5.072	15	0	5.072	19	722.065	0	17	285.986	0	10
174		min	-1018.222	0	6	-55.84	0	12	-165.517	0	17	0	0	1	0	5.072	1	-283.223	0	12
175	M108	max	920.746	5.072	12	57.795	5.072	14	-30.152	5.072	14	0	5.072	19	414.198	0	16	293.137	0	14
176		min	-924.285	0	6	-58.42	0	4	-104.818	0	16	0	0	1	0	5.072	1	-296.308	0	4
177	M109	max	926.452	5.072	15	59.872	5.072	11	-29.762	5.072	13	0	5.072	19	414.615	0	19	303.676	0	11

Envelope Maximum Member Section Forces (Continued)

	Member		Axial[lb]	Loc[ft]	LC	y Shear[lb]	Loc[ft]	LC	z Shear[lb]	Loc[ft]	LC	Torque[lb-ft]	Loc[ft]	LC	y-y Moment[lb-ft]	Loc[ft]	LC	z-z Moment[lb-ft]	Loc[ft]	LC
178		min	-929.948	0	5	-59.254	0	13	-104.899	0	19	0	0	1	0	5.072	1	-300.543	0	13
179	M110	max	873.921	5.072	15	33.905	5.072	14	-61.921	5.072	15	0	5.072	19	723.818	0	17	171.969	0	14
180		min	-881.283	0	5	-34.491	0	4	-165.861	0	17	0	0	1	0	5.072	1	-174.941	0	4
181	M111	max	433.152	5.072	15	16.757	5.072	14	-42.11	5.072	15	0	5.072	19	494.253	0	17	84.992	0	14
182		min	-445.585	0	5	-17.501	0	4	-120.6	0	17	0	0	1	0	5.072	1	-88.764	0	4
183	M112	max	433.199	5.072	15	15.457	5.072	9	-42.112	5.072	15	0	5.072	19	494.257	0	17	78.399	0	9
184		min	-445.623	0	5	-14.737	0	15	-120.602	0	17	0	0	1	0	5.072	1	-74.746	0	15
185	M113	max	874.015	5.072	15	30.38	5.072	9	-61.923	5.072	15	0	5.072	19	723.825	0	17	154.086	0	9
186		min	-881.422	0	5	-29.883	0	15	-165.864	0	17	0	0	1	0	5.072	1	-151.567	0	15
187	M114	max	926.508	5.072	15	59.247	5.072	13	-29.763	5.072	13	0	5.072	19	414.618	0	19	300.504	0	13
188		min	-929.964	0	5	-59.868	0	7	-104.901	0	19	0	0	1	0	5.072	1	-303.649	0	7
189	M115	max	926.452	5.072	14	59.872	5.072	10	-29.762	5.072	12	0	5.072	19	414.615	0	18	303.676	0	10
190		min	-929.948	0	4	-59.254	0	12	-104.899	0	18	0	0	1	0	5.072	1	-300.543	0	12
191	M116	max	873.921	5.072	14	29.882	5.072	14	-61.921	5.072	14	0	5.072	19	723.818	0	16	151.566	0	14
192		min	-881.283	0	4	-30.376	0	4	-165.861	0	16	0	0	1	0	5.072	1	-154.07	0	4
193	M117	max	433.152	5.072	14	14.737	5.072	14	-42.11	5.072	14	0	5.072	19	494.253	0	16	74.746	0	14
194		min	-445.585	0	4	-15.458	0	4	-120.6	0	16	0	0	1	0	5.072	1	-78.403	0	4
195	M118	max	433.199	5.072	14	17.503	5.072	9	-42.112	5.072	14	0	5.072	19	494.257	0	16	88.776	0	9
196		min	-445.623	0	4	-16.76	0	15	-120.602	0	16	0	0	1	0	5.072	1	-85.009	0	15
197	M119	max	874.015	5.072	14	34.501	5.072	9	-61.923	5.072	14	0	5.072	19	723.825	0	16	174.989	0	9
198		min	-881.422	0	4	-33.912	0	15	-165.864	0	16	0	0	1	0	5.072	1	-172.001	0	15
199	M120	max	926.508	5.072	14	59.247	5.072	12	-29.763	5.072	12	0	5.072	19	414.618	0	18	300.504	0	12
200		min	-929.964	0	4	-59.868	0	6	-104.901	0	18	0	0	1	0	5.072	1	-303.649	0	6

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	R4	max	2182.479	10	1882.085	16	102.294	11	1.062	13	10.868	11	-110.414	14
2		min	-910.27	12	1189.088	14	-102.281	5	-1.059	15	-10.876	5	-176.943	16
3	R1	max	102.294	10	1881.573	18	956.348	15	-110.711	13	10.868	10	1.059	14
4		min	-102.281	4	1190.199	13	-2229.018	5	-176.863	19	-10.876	4	-1.062	12
5	R3	max	102.3	10	1882.085	17	2182.479	11	176.943	17	10.863	8	1.064	14
6		min	-102.263	4	1189.088	15	-910.27	13	110.414	15	-10.871	6	-1.057	12
7	R2	max	956.348	14	1881.573	19	102.3	11	1.057	13	10.863	9	176.863	18
8		min	-2229.018	4	1190.199	12	-102.263	5	-1.064	15	-10.871	7	110.711	12
9	N53	max	81.825	14	1216.824	19	874.296	11	-55.055	13	8.356	14	1.694	8
10		min	-82.28	12	770.079	13	-869.006	13	-86.789	19	-8.351	12	-1.565	6
11	N54	max	874.296	10	1216.824	18	81.872	15	1.555	11	8.386	9	86.789	18
12		min	-869.006	12	770.079	12	-82.345	13	-1.705	5	-8.379	7	55.055	12
13	N55	max	81.872	14	1217.227	17	1999.465	15	86.87	17	8.386	8	1.705	8
14		min	-82.345	12	767.985	15	-2003.773	5	54.646	15	-8.379	6	-1.555	6
15	N56	max	1999.465	14	1217.227	16	81.825	15	1.565	11	8.356	15	-54.646	14
16		min	-2003.773	4	767.985	14	-82.28	13	-1.694	5	-8.351	13	-86.87	16
17	N101	max	40.895	14	-347.766	13	1066.073	11	4.202	19	4.179	10	0.068	14
18		min	-41.014	12	-584.106	19	28.387	13	1.505	13	-4.181	4	-0.076	12
19	N102	max	1066.073	10	-347.766	12	40.919	15	0.071	13	4.19	13	-1.505	12
20		min	28.387	12	-584.106	18	-41.035	13	-0.073	15	-4.191	7	-4.202	18
21	N103	max	40.919	14	-346.152	15	538.469	15	-1.561	15	4.19	12	0.073	14
22		min	-41.035	12	-584.528	17	-1633.182	5	-4.198	17	-4.191	6	-0.071	12
23	N104	max	538.469	14	-346.152	14	40.895	15	0.076	13	4.179	11	4.198	16
24		min	-1633.182	4	-584.528	16	-41.014	13	-0.068	15	-4.181	5	1.561	14
25	Totals:	max	7728.274	10	10057.249	19	7728.274	11						
26		min	-7728.274	12	6452.807	14	-7728.274	13						

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PROJECT: NM01-148 SPIKE

ENCLOSURE CALCULATIONS

FRP Member Design for Compression (RISA):

Label: FRP Kicker Brace

INPUT:

		Notes:
Unbraced Length, L [ft]:	10.6	See RISA model member M48 for max axial force. Force divided by 2 to account for double angles. Force multiplied by 0.6 to convert LRFD forces to ASD
Axial, C [lb]:	692	
K:	1	

Column: 4x4x3/8 FRP Angle

r [in]:	0.79
E [psi]:	2,800,000
A [in^2]:	2.86

OUTPUT:

f_a [psi]:	242	<	F_a [psi]:	356	**OK, 68%**

Select 4x4x3/8 FRP Angle FRP column

FRP Shear Connection w/ Steel Bolts:

Label: Kicker to HSS, typ.

Bearing stress of FRP member controls.

INPUT:

		Notes:
Design Force, P [lb]:	692	Design Force = axial in FRP Kicker Brace, typ.
Steel Bolt Diameter, d_b [in]:	1/2	
# Bolts, n_b:	2	
FRP Web Thickness, t_w [in]:	3/8	
Double Shear:	No	
Bearing Stress:	Lengthwise	
Factor of Safety, FS:	4	

OUTPUT:

f_{brg} [psi]:	1,844	<	F_{brg} [psi]:	7,500	**OK, 25%**

Select (2) 1/2" diameter steel bolts

See attached FRP material and section properties.

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PROJECT: NM01-148 SPIKE

FRP Member Design for Compression (RISA):

Label: FRP Vertical Brace

INPUT:

Unbraced Length, L [ft]:	10.6
Axial, C [lb]:	318
K:	1

Notes:
See RISA model member M42 for max axial force. Force divided by 2 to account for double angles. Force multiplied by 0.6 to convert LRFD forces to ASD

Column: 4x4x3/8 FRP Angle

r [in]:	0.79
E [psi]:	2,800,000
A [in^2]:	2.86

OUTPUT:

f_a [psi]:	111	<	F_a [psi]:	356	**OK, 31%**

Select 4x4x3/8 FRP Angle FRP column

FRP Shear Connection w/ Steel Bolts:

Label: Vertical Brace to HSS, typ.

Bearing stress of FRP member controls.

INPUT:

Design Force, P [lb]:	318
Steel Bolt Diameter, d_b [in]:	1/2
# Bolts, n_b:	2
FRP Web Thickness, t_w [in]:	3/8
Double Shear:	No
Bearing Stress:	Lengthwise
Factor of Safety, FS:	4

Notes:
Design Force = axial in FRP Vertical Brace, typ.

OUTPUT:

f_{brg} [psi]:	847	<	F_{brg} [psi]:	7,500	**OK, 11%**

Select (2) 1/2" diameter steel bolts

See attached FRP material and section properties.

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PROJECT: NM01-148 Spike

DESIGN APPROACH: LRFD

BOLTED SHEAR CONNECTION

Location: STEEL Stand Off Arm

Bolt Grade:	ASTM A325		
Bolt Diameter:	0.625	in	
Number of Bolts:	2		
Double Shear?	No		
Bolt Capacity:	24850	lbs	(AISC Equation J3-1)
Shear Load:	2646	lbs	
Check Bolt:	10.6%		
Result:	**Select (2) 0.625 in. dia. ASTM A325 bolts.**		
Note:	See RISA model section set 'STEEL Stand Off Arm' load combination 4 for max Axial [lb]		

BOLT/PIN BEARING & MATERIAL TENSILE/SHEAR STRENGTH

Location: STEEL Stand Off Arm

Bolt or Pin Diameter:	0.625	in	
Hole Diameter or Slot Width:	0.6875	in	
Number of Bolts or Pins:	2		
Plate Thickness:	0.375	in	
Plate Yield Strength (F_y):	36	ksi	
Plate Ultimate Strength (F_u):	58	ksi	
Bolt/Pin Parallel Edge Distance:	1	in	(measured from center of hole)
Bearing Capacity:	25692	lbs	
Perpendicular Edge Distance:	1	in	(measured from center of hole)
Effective Perp. Edge Distance:	1		
Tensile Rupture Capacity:	42820	lbs	(AISC Equation D5-1)
Shear Rupture Capacity:	37927	lbs	(AISC Equation D5-2)
Load:	2646	lbs	
Check Bearing:	10.3%		
Result:	**Selected connection type is adequate.**		
Note:	See RISA model section set 'STEEL Stand Off Arm' load combination 4 for max Axial [lb]		

Available AISC Checks:

Equation	Check?	Capacity
J3-6a	Yes	12846
J3-6b	No	
J3-6c	No	
J7-1	No	

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PROJECT: NM01-148 Spike

BOLTED SHEAR CONNECTION

Location: STEEL Outrigger Weldment

Bolt Grade:	ASTM A325		
Bolt Diameter:	0.625	in	
Number of Bolts:	1		
Double Shear?	No		
Bolt Capacity:	12425	lbs	(AISC Equation J3-1)
Shear Load:	1018	lbs	
Check Bolt:	8.2%		

Result: **Select (1) 0.625 in. dia. ASTM A325 bolt.**

Note: See RISA model section set 'STEEL Outrigger Weldment' load combination 6 for max Axial [lb]

BOLT/PIN BEARING & MATERIAL TENSILE/SHEAR STRENGTH

Location: STEEL Outrigger Weldment

Bolt or Pin Diameter:	0.625	in	
Hole Diameter or Slot Width:	0.6875	in	
Number of Bolts or Pins:	1		
Plate Thickness:	0.375	in	
Plate Yield Strength (F_y):	36	ksi	
Plate Ultimate Strength (F_u):	58	ksi	
Bolt/Pin Parallel Edge Distance:	1	in	(measured from center of hole)
Bearing Capacity:	12846	lbs	
Perpendicular Edge Distance:	1	in	(measured from center of hole)
Effective Perp. Edge Distance:	1		
Tensile Rupture Capacity:	21410	lbs	(AISC Equation D5-1)
Shear Rupture Capacity:	18963	lbs	(AISC Equation D5-2)
Load:	1018	lbs	
Check Bearing:	7.9%		

Available AISC Checks:

Equation	Check?	Capacity
J3-6a	Yes	12846
J3-6b	No	
J3-6c	No	
J7-1	No	

Result: **Selected connection type is adequate.**

Note: See RISA model section set 'STEEL Outrigger Weldment' load combination 6 for max Axial [lb]

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PROJECT: NM01-148 Spike

BOLTED SHEAR CONNECTION

Location: STEEL Stand Off Arm Inner

Bolt Grade:	ASTM A325		
Bolt Diameter:	0.75	in	
Number of Bolts:	3		
Double Shear?	No		
Bolt Capacity:	53677	lbs	(AISC Equation J3-1)
Shear Load:	1898	lbs	
Check Bolt:	3.5%		
Result:	**Select (3) 0.75 in. dia. ASTM A325 bolts.**		
Note:	See RISA model section set 'STEEL Stand Off Arm Inner' load combination 6 for max Axial [lb]		

BOLT/PIN BEARING & MATERIAL TENSILE/SHEAR STRENGTH

Location: STEEL Stand Off Arm Inner

Bolt or Pin Diameter:	0.75	in	
Hole Diameter or Slot Width:	0.8125	in	
Number of Bolts or Pins:	3		
Plate Thickness:	0.375	in	
Plate Yield Strength (F_y):	36	ksi	
Plate Ultimate Strength (F_u):	58	ksi	
Bolt/Pin Parallel Edge Distance:	1	in	(measured from center of hole)
Bearing Capacity:	34868	lbs	
Perpendicular Edge Distance:	1	in	(measured from center of hole)
Effective Perp. Edge Distance:	1		
Tensile Rupture Capacity:	58113	lbs	(AISC Equation D5-1)
Shear Rupture Capacity:	56890	lbs	(AISC Equation D5-2)
Load:	1898	lbs	
Check Bearing:	5.4%		
Result:	**Selected connection type is adequate.**		
Note:	See RISA model section set 'STEEL Stand Off Arm Inner' load combination 6 for max Axial [lb]		

Available AISC Checks:

Equation	Check?	Capacity
J3-6a	Yes	11623
J3-6b	No	
J3-6c	No	
J7-1	No	

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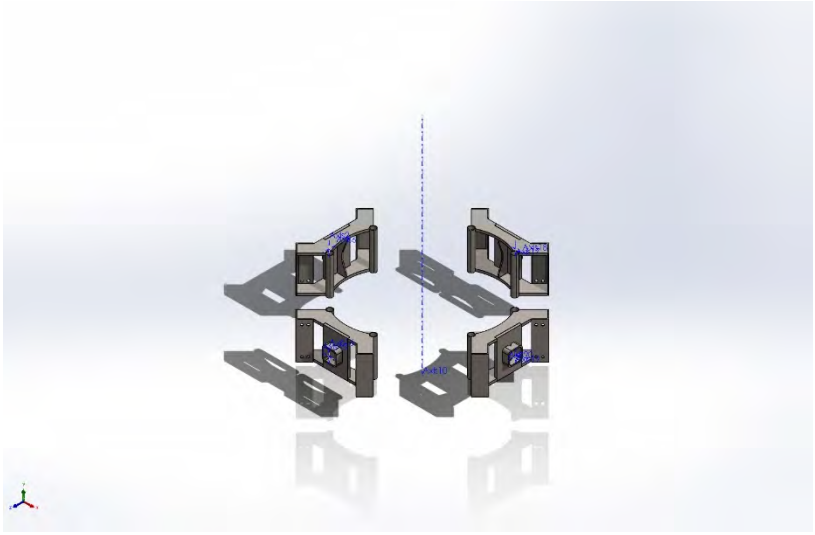

Simulation of MONOPOLE MOUNT

Date: Thursday, October 24, 2024
Designer: JJB
Study name: Static 1
Analysis type: Static

Table of Contents

Description 1
Study Properties 7
Units 7
Material Properties 8
Loads and Fixtures 11
Connector Definitions 15
Interaction Information 25
Mesh information 26
Study Results 28
Conclusion 31

Description

Four-sided Raycap Clamp

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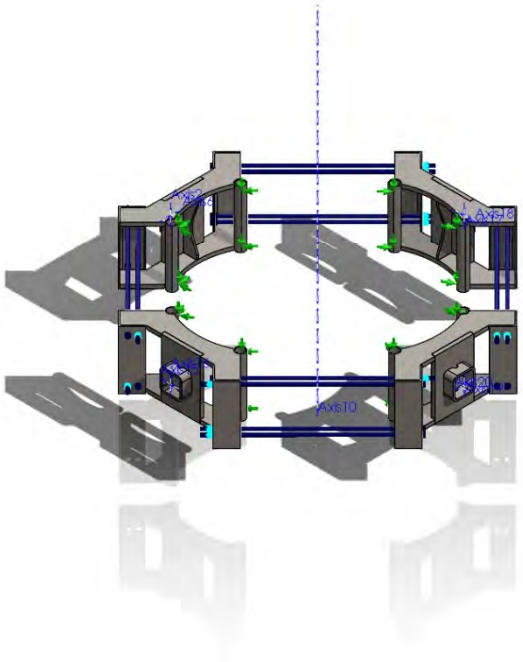
10/24/2024



Model name: MONOPOLE MOUNT
Current Configuration: Default

Solid Bodies

Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
Mirror1	Solid Body	**Mass:2.7207 lb** **Volume:9.59348 in^3** **Density:0.283599 lb/in^3** **Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Mirror1	Solid Body	**Mass:2.7207 lb** **Volume:9.59348 in^3** **Density:0.283599 lb/in^3** **Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Cut-Extrude1	Solid Body	**Mass:6.53976 lb** **Volume:23.0598 in^3** **Density:0.283599 lb/in^3** **Weight:6.53532 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt** Oct 23 17:20:18 2024

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Cut-Extrude1	Solid Body	**Mass:6.53976 lb Volume:23.0598 in^3 Density:0.283599 lb/in^3 Weight:6.53532 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt** Oct 23 17:20:18 2024
Boss-Extrude1	Solid Body	**Mass:20.4191 lb Volume:72 in^3 Density:0.283599 lb/in^3 Weight:20.4053 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT PLATE.sldprt** Oct 23 17:42:47 2024
Cut-Extrude1	Solid Body	**Mass:3.18636 lb Volume:11.2354 in^3 Density:0.283599 lb/in^3 Weight:3.18419 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT STEEL TUBE.sldprt** Oct 23 18:11:10 2024
Boss-Extrude1	Solid Body	**Mass:2.33967 lb Volume:8.2499 in^3 Density:0.283599 lb/in^3 Weight:2.33808 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT SUPPORT.sldprt** Oct 24 09:18:20 2024
Boss-Extrude1	Solid Body	**Mass:19.6216 lb Volume:69.1876 in^3 Density:0.283599 lb/in^3 Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror2	Solid Body	**Mass:19.6216 lb Volume:69.1876 in^3 Density:0.283599 lb/in^3 Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror1	Solid Body	**Mass:2.7207 lb Volume:9.59348 in^3 Density:0.283599 lb/in^3 Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Mirror1	Solid Body	**Mass:2.7207 lb Volume:9.59348 in^3 Density:0.283599 lb/in^3 Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Cut-Extrude1	Solid Body	**Mass:6.53976 lb Volume:23.0598 in^3 Density:0.283599 lb/in^3 Weight:6.53532 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt** Oct 23 17:20:18 2024
Cut-Extrude1	Solid Body	**Mass:6.53976 lb Volume:23.0598 in^3**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt**

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		Density:0.283599 lb/in^3 **Weight:6.53532 lbf**	Oct 23 17:20:18 2024
Boss-Extrude1	Solid Body	**Mass:20.4191 lb** **Volume:72 in^3** **Density:0.283599 lb/in^3** **Weight:20.4053 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT PLATE.sldprt** Oct 23 17:42:47 2024
Cut-Extrude1	Solid Body	**Mass:3.18636 lb** **Volume:11.2354 in^3** **Density:0.283599 lb/in^3** **Weight:3.18419 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT STEEL TUBE.sldprt** Oct 23 18:11:10 2024
Boss-Extrude1	Solid Body	**Mass:2.33967 lb** **Volume:8.2499 in^3** **Density:0.283599 lb/in^3** **Weight:2.33808 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT SUPPORT.sldprt** Oct 24 09:18:20 2024
Boss-Extrude1	Solid Body	**Mass:19.6216 lb** **Volume:69.1876 in^3** **Density:0.283599 lb/in^3** **Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror2	Solid Body	**Mass:19.6216 lb** **Volume:69.1876 in^3** **Density:0.283599 lb/in^3** **Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror1	Solid Body	**Mass:2.7207 lb** **Volume:9.59348 in^3** **Density:0.283599 lb/in^3** **Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Mirror1	Solid Body	**Mass:2.7207 lb** **Volume:9.59348 in^3** **Density:0.283599 lb/in^3** **Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Cut-Extrude1	Solid Body	**Mass:6.53976 lb** **Volume:23.0598 in^3** **Density:0.283599 lb/in^3** **Weight:6.53532 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt** Oct 23 17:20:18 2024
Cut-Extrude1	Solid Body	**Mass:6.53976 lb** **Volume:23.0598 in^3** **Density:0.283599 lb/in^3** **Weight:6.53532 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt** Oct 23 17:20:18 2024

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Boss-Extrude1	Solid Body	**Mass:20.4191 lb Volume:72 in^3 Density:0.283599 lb/in^3 Weight:20.4053 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT PLATE.sldprt** Oct 23 17:42:47 2024
Cut-Extrude1	Solid Body	**Mass:3.18636 lb Volume:11.2354 in^3 Density:0.283599 lb/in^3 Weight:3.18419 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT STEEL TUBE.sldprt** Oct 23 18:11:10 2024
Boss-Extrude1	Solid Body	**Mass:2.33967 lb Volume:8.2499 in^3 Density:0.283599 lb/in^3 Weight:2.33808 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT SUPPORT.sldprt** Oct 24 09:18:20 2024
Boss-Extrude1	Solid Body	**Mass:19.6216 lb Volume:69.1876 in^3 Density:0.283599 lb/in^3 Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror2	Solid Body	**Mass:19.6216 lb Volume:69.1876 in^3 Density:0.283599 lb/in^3 Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror1	Solid Body	**Mass:2.7207 lb Volume:9.59348 in^3 Density:0.283599 lb/in^3 Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Mirror1	Solid Body	**Mass:2.7207 lb Volume:9.59348 in^3 Density:0.283599 lb/in^3 Weight:2.71886 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\2 x 0.145 - 6.sldprt** Oct 24 13:00:27 2024
Cut-Extrude1	Solid Body	**Mass:6.53976 lb Volume:23.0598 in^3 Density:0.283599 lb/in^3 Weight:6.53532 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt** Oct 23 17:20:18 2024
Cut-Extrude1	Solid Body	**Mass:6.53976 lb Volume:23.0598 in^3 Density:0.283599 lb/in^3 Weight:6.53532 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\4 - 6.sldprt** Oct 23 17:20:18 2024

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Boss-Extrude1	Solid Body	**Mass:20.4191 lb Volume:72 in^3 Density:0.283599 lb/in^3 Weight:20.4053 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT PLATE.sldprt** Oct 23 17:42:47 2024
Cut-Extrude1	Solid Body	**Mass:3.18636 lb Volume:11.2354 in^3 Density:0.283599 lb/in^3 Weight:3.18419 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT STEEL TUBE.sldprt** Oct 23 18:11:10 2024
Boss-Extrude1	Solid Body	**Mass:2.33967 lb Volume:8.2499 in^3 Density:0.283599 lb/in^3 Weight:2.33808 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\MONOPOLE MOUNT SUPPORT.sldprt** Oct 24 09:18:20 2024
Boss-Extrude1	Solid Body	**Mass:19.6216 lb Volume:69.1876 in^3 Density:0.283599 lb/in^3 Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024
Mirror2	Solid Body	**Mass:19.6216 lb Volume:69.1876 in^3 Density:0.283599 lb/in^3 Weight:19.6083 lbf**	**C:\Users\joshua.blom\Desktop\Raycap Clamp\W PLATE.sldprt** Oct 24 09:10:00 2024

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Study Properties

Study name	Static 1
Analysis type	Static
Mesh type	Solid Mesh
Thermal Effect:	On
Thermal option	Include temperature loads
Zero strain temperature	77 Fahrenheit
Include fluid pressure effects from SOLIDWORKS Flow Simulation	Off
Solver type	FFEPlus
Inplane Effect:	Off
Soft Spring:	Off
Inertial Relief:	Off
Incompatible bonding options	Automatic
Large displacement	Off
Compute free body forces	Off
Friction	Off
Use Adaptive Method:	Off
Result folder	SOLIDWORKS document (C:\Users\joshua.blom\Desktop\Raycap Clamp\Results)

Units

Unit system:	English (IPS)
Length/Displacement	in
Temperature	Fahrenheit
Angular velocity	Hertz
Pressure/Stress	ksi

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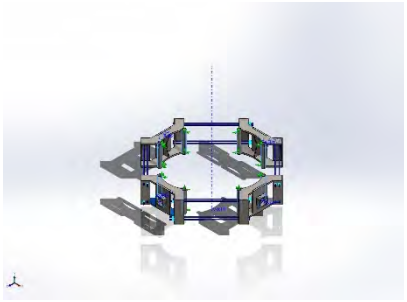
Material Properties

Model Reference	Properties	Components
	**Name:** ASTM A36 Steel **Model type:** Linear Elastic Isotropic **Default failure criterion:** Max von Mises Stress **Yield strength:** 250 N/mm^2 **Tensile strength:** 400 N/mm^2 **Elastic modulus:** 200,000 N/mm^2 **Poisson's ratio:** 0.26 **Mass density:** 7.85 g/cm^3 **Shear modulus:** 79,300 N/mm^2	SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-1/2 x 0.145 - 6-1), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-1/2 x 0.145 - 6-2), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-1/4 - 6-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-1/4 - 6-2), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-1/MONOPOLE MOUNT PLATE-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-1/MONOPOLE MOUNT STEEL TUBE-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-1/MONOPOLE MOUNT SUPPORT-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-1/W PLATE-2), SolidBody 2(Mirror2)(Assem8^MONOPOLE MOUNT-1/W PLATE-2), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-10/2 x 0.145 - 6-1), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-10/2 x 0.145 - 6-2), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-10/4 - 6-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-10/4 - 6-2), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE

		MOUNT-10/MONOPOLE MOUNT PLATE-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-10/MONOPOLE MOUNT STEEL TUBE-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-10/MONOPOLE MOUNT SUPPORT-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-10/W PLATE-2), SolidBody 2(Mirror2)(Assem8^MONOPOLE MOUNT-10/W PLATE-2), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-11/2 x 0.145 - 6-1), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-11/2 x 0.145 - 6-2), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-11/4 - 6-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-11/4 - 6-2), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-11/MONOPOLE MOUNT PLATE-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-11/MONOPOLE MOUNT STEEL TUBE-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-11/MONOPOLE MOUNT SUPPORT-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-11/W PLATE-2), SolidBody 2(Mirror2)(Assem8^MONOPOLE MOUNT-11/W PLATE-2), SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-8/2 x 0.145 - 6-1),

		SolidBody 1(Mirror1)(Assem8^MONOPOLE MOUNT-8/2 x 0.145 - 6-2), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-8/4 - 6-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-8/4 - 6-2), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-8/MONOPOLE MOUNT PLATE-1), SolidBody 1(Cut-Extrude1)(Assem8^MONOPOLE MOUNT-8/MONOPOLE MOUNT STEEL TUBE-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-8/MONOPOLE MOUNT SUPPORT-1), SolidBody 1(Boss-Extrude1)(Assem8^MONOPOLE MOUNT-8/W PLATE-2), SolidBody 2(Mirror2)(Assem8^MONOPOLE MOUNT-8/W PLATE-2)
Curve Data:N/A		

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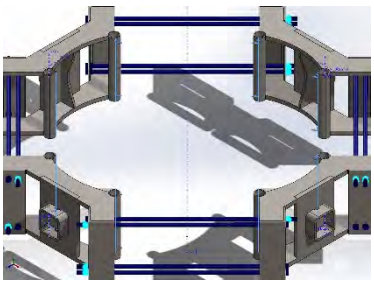
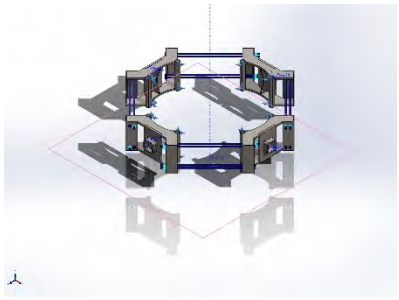
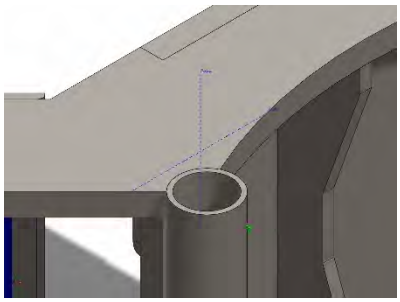
Loads and Fixtures

Fixture name	Fixture Image	Fixture Details
Reference Geometry-2		**Entities:** 8 edge(s) **Reference:** Face< 1 > **Type:** Use reference geometry **Translation:** 0, 0 rad., 0 **Units:** in

Resultant Forces

Components	X	Y	Z	Resultant
Reaction force(lbf)	0.729984	-7,184.11	0.138231	7,184.11
Reaction Moment(lbf.in)	0	0	0	0

Load name	Load Image	Load Details
Gravity-1		**Reference:** Top Plane **Values:** 0 0 -386.22 **Units:** in/s^2
Force-1		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** -2,229 lbf

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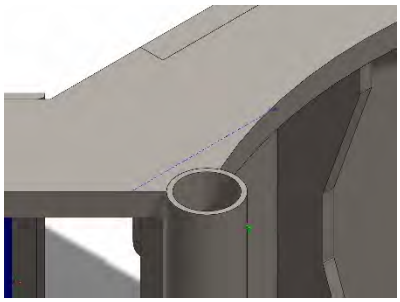
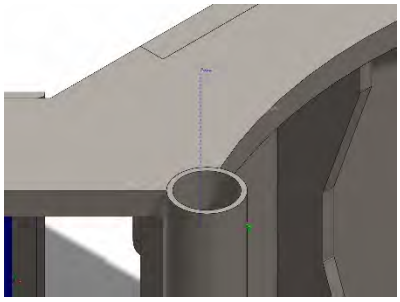
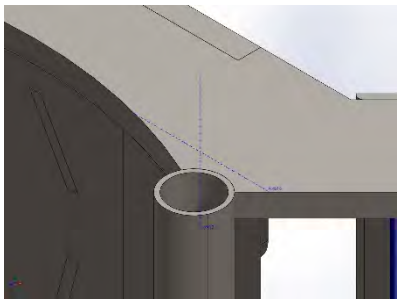
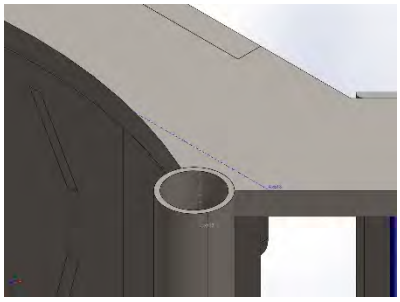
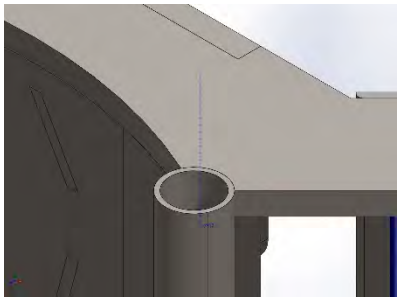
Force-2		**Entities:** 1 face(s) **Reference:** Axis2 **Type:** Apply force **Values:** ---, ---, -1,879.9 lbf
Torque-1		**Entities:** 1 face(s) **Reference:** Axis6 **Type:** Apply torque **Value:** 18,074.6 lbf.in
Copy[1] Force-1		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** -2,229 lbf
Copy[1] Force-2		**Entities:** 1 face(s) **Reference:** Axis17 **Type:** Apply force **Values:** ---, ---, 1,879.9 lbf
Copy[1] Torque-1		**Entities:** 1 face(s) **Reference:** Axis18 **Type:** Apply torque **Value:** 18,074.6 lbf.in

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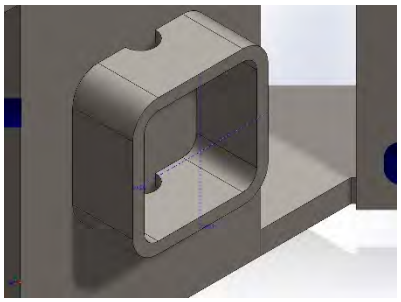
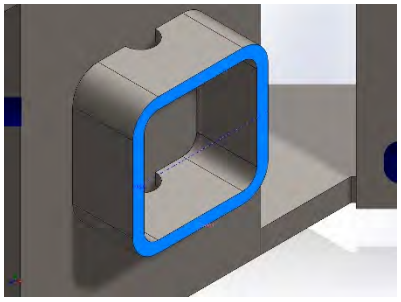
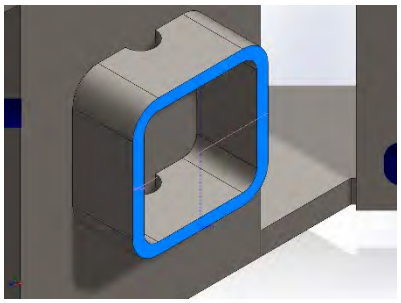
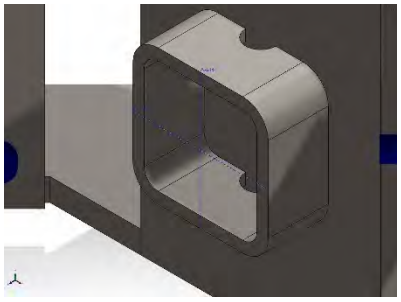
Copy[1] Force-1{1}		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** -2,229 lbf
Copy[1] Force-2{1}		**Entities:** 1 face(s) **Reference:** Axis19 **Type:** Apply force **Values:** ---, ---, 1,879.9 lbf
Copy[1] Torque-1{1}		**Entities:** 1 face(s) **Reference:** Axis20 **Type:** Apply torque **Value:** 18,074.6 lbf.in
Copy[1] Force-1{1}{1}		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** -2,229 lbf

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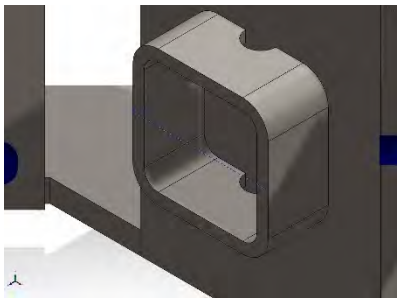
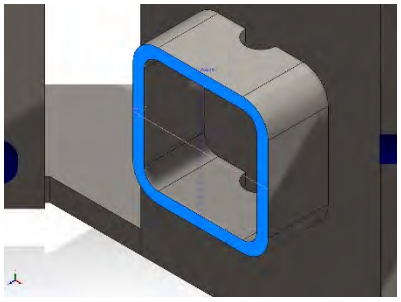
Copy[1] Force-2{1}{1}		**Entities:** 1 face(s) **Reference:** Axis16 **Type:** Apply force **Values:** ---, ---, -1,879.9 lbf
Copy[1] Torque-1{1}{1}		**Entities:** 1 face(s) **Reference:** Axis15 **Type:** Apply torque **Value:** 18,074.6 lbf.in

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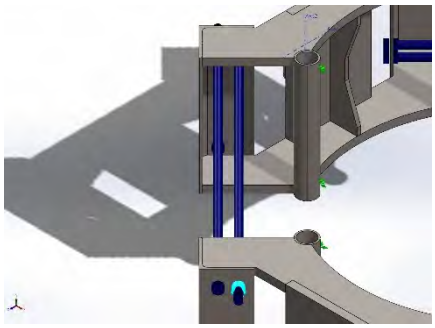
Connector Definitions

Pin/Bolt/Bearing Connector

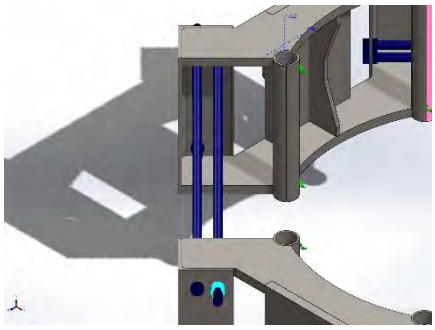
Model Reference	Connector Details	Strength Details
 Pin Connector-1	**Entities:** 2 face(s) **Type:** Pin **With retaining ring (No translation):** Yes **With key (No rotation):** No **Connection Type:** Rigid **Units:** English (IPS) **Rotational stiffness value:** 0	No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	299.43	0	299.43	423.46
Shear Force (lbf)	0.29259	0.15461	-0.29257	0.44171
Torque (lbf.in)	0	0	0	0
Bending moment (lbf.in)	95.95	137.48	-95.95	193.17

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-299.43	-0	-299.43	-423.46
Shear Force (lbf)	-0.29259	-0.15461	0.29257	0.44171
Torque (lbf.in)	4.2204e-06	0	4.2204e-06	5.9685e-06
Bending moment (lbf.in)	-99.197	-125.19	99.197	188.02

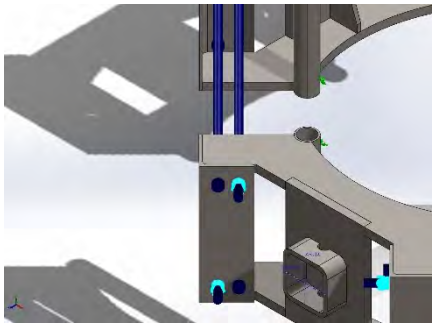
 Pin Connector-2	**Entities:** 2 face(s) **Type:** Pin **With retaining ring (No translation):** Yes **With key (No rotation):** No **Connection Type:** Rigid **Units:** English (IPS) **Rotational stiffness value:** 0	No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	167.08	-0	167.08	-236.29
Shear Force (lbf)	-0.14211	-0.044949	0.14209	0.20592
Torque (lbf.in)	-2.2336e-08	0	-2.2336e-08	3.1589e-08
Bending moment (lbf.in)	50.597	-57.461	-50.597	91.771

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-167.08	0	-167.08	236.29
Shear Force (lbf)	0.14211	0.044949	-0.14209	0.20592
Torque (lbf.in)	6.4084e-08	-0	6.4084e-08	-9.0628e-08
Bending moment (lbf.in)	-51.588	63.724	51.588	96.868



Pin Connector-3

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	148.6	-0	148.6	-210.15
Shear Force (lbf)	0.34643	-0.28745	-0.34642	0.56802
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	-60.912	46.294	60.912	97.794

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-148.6	0	-148.6	210.15
Shear Force (lbf)	-0.34643	0.28745	0.34642	0.56802
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	54.792	-61.043	-54.792	98.644

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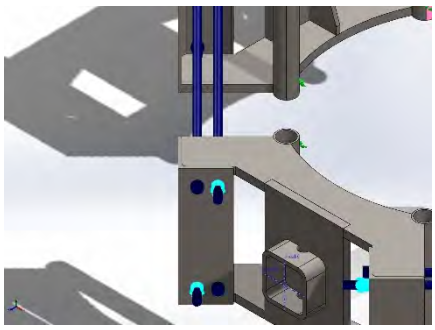


Pin Connector-4

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

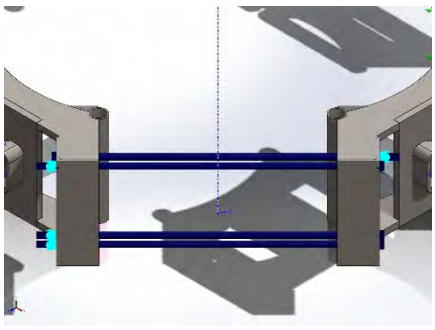
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	8.3205	0	8.3205	11.767
Shear Force (lbf)	-0.13743	0.077944	0.13743	0.2094
Torque (lbf.in)	6.2462e-08	0	6.2462e-08	8.8335e-08
Bending moment (lbf.in)	23.552	-22.282	-23.552	40.073

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-8.3205	-0	-8.3205	-11.767
Shear Force (lbf)	0.13743	-0.077944	-0.13743	0.2094
Torque (lbf.in)	7.6283e-09	0	7.6283e-09	1.0788e-08
Bending moment (lbf.in)	-25.215	16.418	25.215	39.257



Pin Connector-5

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	296.1	0	-296.1	418.75
Shear Force (lbf)	0.17629	-0.14127	0.17627	0.28655
Torque (lbf.in)	0	0	-0	0
Bending moment (lbf.in)	-100.37	124.44	-100.37	188.77

Connector Forces Joint 2

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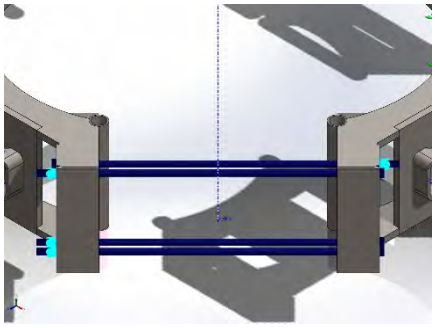
Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-296.1	-0	296.1	-418.75
Shear Force (lbf)	-0.17629	0.14127	-0.17627	0.28655
Torque (lbf.in)	0	0	-0	0
Bending moment (lbf.in)	97.468	-131.69	97.468	190.64



Pin Connector-6

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

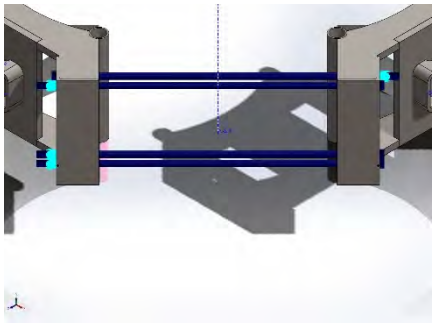
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	177.69	-0	-177.69	-251.29
Shear Force (lbf)	-0.041436	0.011963	-0.041423	0.059799
Torque (lbf.in)	3.2385e-07	-0	-3.2385e-07	-4.5799e-07
Bending moment (lbf.in)	-57.751	-60.293	-57.751	101.52

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-177.69	0	177.69	251.29
Shear Force (lbf)	0.041436	-0.011963	0.041423	0.059799
Torque (lbf.in)	-3.0908e-07	0	3.0908e-07	4.3711e-07
Bending moment (lbf.in)	57.401	57.866	57.401	99.69



Pin Connector-7

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

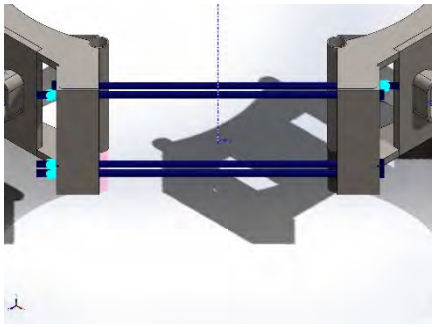
Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant

Axial Force (lbf)	-138.99	-0	138.99	-196.57
Shear Force (lbf)	-0.073459	0.13005	-0.073473	0.16646
Torque (lbf.in)	-2.034e-06	-0	2.034e-06	-2.8765e-06
Bending moment (lbf.in)	-51.875	-49.749	-51.875	88.64

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	138.99	0	-138.99	196.57
Shear Force (lbf)	0.073459	-0.13005	0.073473	0.16646
Torque (lbf.in)	1.913e-06	0	-1.913e-06	2.7054e-06
Bending moment (lbf.in)	54.745	52.992	54.745	93.82



Pin Connector-8

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

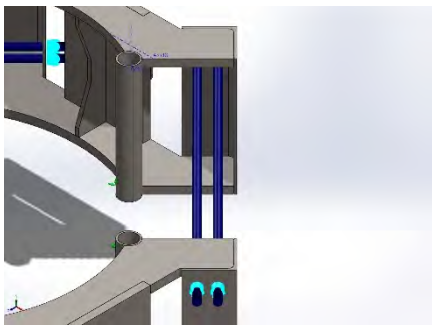
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	12.477	0	-12.477	17.645
Shear Force (lbf)	-0.055332	-0.039551	-0.055333	0.08768
Torque (lbf.in)	0	0	-0	0
Bending moment (lbf.in)	-21.054	-17.502	-21.054	34.538

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-12.477	-0	12.477	-17.645
Shear Force (lbf)	0.055332	0.039551	0.055333	0.08768
Torque (lbf.in)	1.0551e-06	0	-1.0551e-06	1.4921e-06
Bending moment (lbf.in)	20.211	19.861	20.211	34.806



Pin Connector-9

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

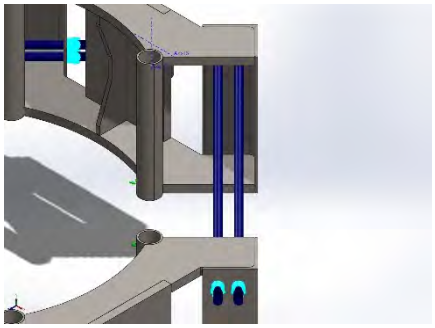
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-289.93	0	-289.93	410.03
Shear Force (lbf)	0.31207	-0.4776	-0.31209	0.6503
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	-97.56	122.94	97.56	184.8

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	289.93	-0	289.93	-410.03
Shear Force (lbf)	-0.31207	0.4776	0.31209	0.6503
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	87.434	-136.17	-87.434	183.94



Pin Connector-10

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

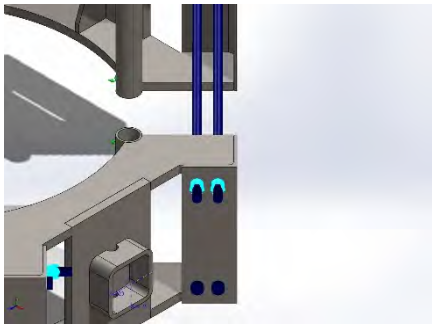
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	195.92	-0	195.92	-277.07
Shear Force (lbf)	0.23139	-0.1846	-0.23138	0.37571
Torque (lbf.in)	-0	0	-0	0
Bending moment (lbf.in)	63.693	65.093	-63.693	111.13

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-195.92	0	-195.92	277.07
Shear Force (lbf)	-0.23139	0.1846	0.23138	0.37571
Torque (lbf.in)	2.1102e-06	-0	2.1102e-06	-2.9842e-06
Bending moment (lbf.in)	-67.595	-74.877	67.595	121.43



Pin Connector-11

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

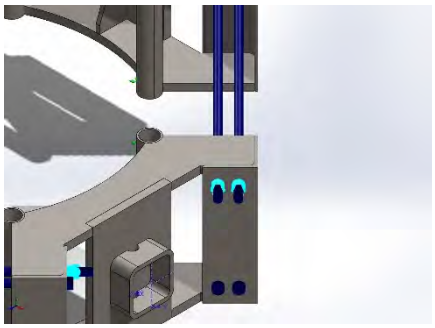
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-140.61	-0	-140.61	-198.85
Shear Force (lbf)	0.40394	0.44276	-0.40395	0.72276
Torque (lbf.in)	0	0	0	0
Bending moment (lbf.in)	51.57	57.884	-51.57	93.11

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	140.61	0	140.61	198.85
Shear Force (lbf)	-0.40394	-0.44276	0.40395	0.72276
Torque (lbf.in)	0	0	0	0
Bending moment (lbf.in)	-61.01	-40.66	61.01	95.382



Pin Connector-12

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant

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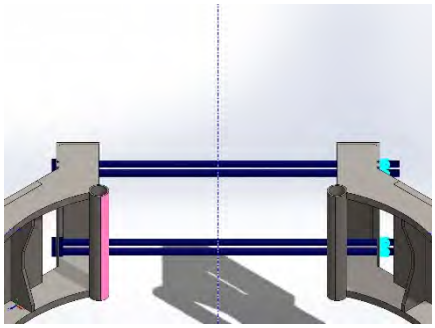
Axial Force (lbf)	21.421	0	21.421	30.293
Shear Force (lbf)	0.19279	0.31392	-0.19279	0.41578
Torque (lbf.in)	-9.8166e-09	-0	-9.8166e-09	-1.3883e-08
Bending moment (lbf.in)	12.75	24.596	-12.75	30.497

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-21.421	-0	-21.421	-30.293
Shear Force (lbf)	-0.19279	-0.31392	0.19279	0.41578
Torque (lbf.in)	-2.3525e-07	-0	-2.3525e-07	-3.327e-07
Bending moment (lbf.in)	-19.452	-16.364	19.452	32.008



Pin Connector-13

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

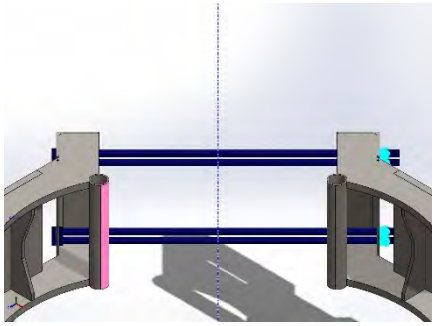
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-4.5667	0	4.5667	6.4583
Shear Force (lbf)	0.29607	1.3987	0.29607	1.46
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-17.015	14.157	-17.015	27.919

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	4.5667	-0	-4.5667	-6.4583
Shear Force (lbf)	-0.29607	-1.3987	-0.29607	1.46
Torque (lbf.in)	-5.2755e-07	0	5.2755e-07	7.4606e-07
Bending moment (lbf.in)	-12.839	-1.5182	-12.839	18.22



Pin Connector-14

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

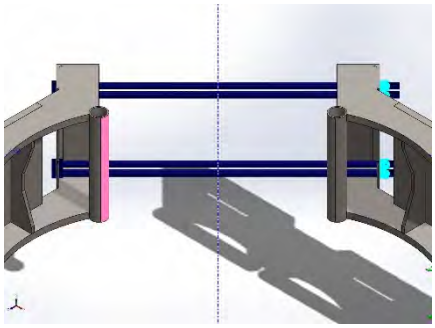
No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	11.271	-0	-11.271	-15.94
Shear Force (lbf)	0.2995	1.7639	0.2995	1.814
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-18.251	7.4271	-18.251	26.858

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-11.271	0	11.271	15.94
Shear Force (lbf)	-0.2995	-1.7639	-0.2995	1.814
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-19.398	5.3579	-19.398	27.951



Pin Connector-15

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	4.7067	-0	-4.7067	-6.6563
Shear Force (lbf)	-0.36657	1.48	-0.36657	1.5682
Torque (lbf.in)	-2.8054e-07	0	2.8054e-07	3.9674e-07
Bending moment (lbf.in)	-18.377	-16.867	-18.377	30.983

Connector Forces Joint 2

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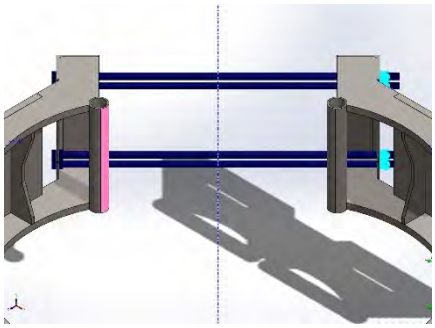
Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-4.7067	0	4.7067	6.6563
Shear Force (lbf)	0.36657	-1.48	0.36657	1.5682
Torque (lbf.in)	2.9124e-08	-0	-2.9124e-08	-4.1187e-08
Bending moment (lbf.in)	-13.208	1.221	-13.208	18.719



Pin Connector-16

Entities:	2 face(s)
Type:	Pin
With retaining ring (No translation):	Yes
With key (No rotation):	No
Connection Type:	Rigid
Units:	English (IPS)
Rotational stiffness value:	0

No Data

Connector Forces Joint 1

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	-11.411	0	11.411	16.138
Shear Force (lbf)	-0.22899	1.8998	-0.22899	1.9272
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-21.217	-4.4196	-21.217	30.329

Connector Forces Joint 2

Type	X-Component	Y-Component	Z-Component	Resultant
Axial Force (lbf)	11.411	-0	-11.411	-16.138
Shear Force (lbf)	0.22899	-1.8998	0.22899	1.9272
Torque (lbf.in)	-0	0	0	0
Bending moment (lbf.in)	-19.333	-5.3556	-19.333	27.861

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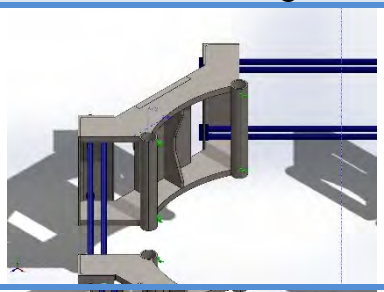
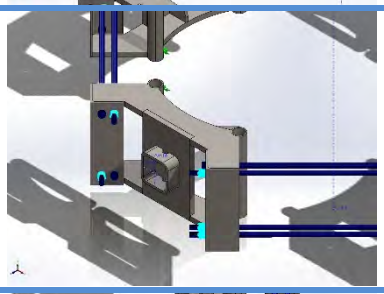
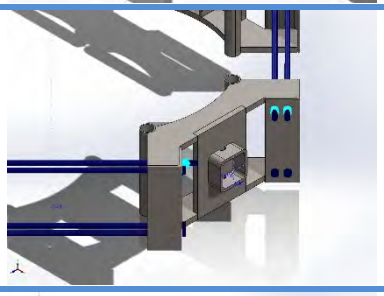
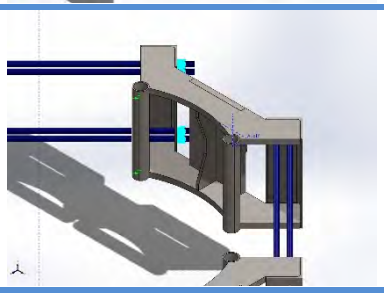
Interaction Information

Interaction	Interaction Image	Interaction Properties
Component Contact-9		**Type:** Bonded **Components:** 5 component(s), 2 Solid Body (s) **Options:** Continuous mesh
Component Interaction-12		**Type:** Bonded **Components:** 8 component(s) **Options:** Independent mesh
Component Interaction-13		**Type:** Bonded **Components:** 8 component(s) **Options:** Independent mesh
Component Interaction-14		**Type:** Bonded **Components:** 8 component(s) **Options:** Independent mesh

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Mesh information

Mesh type	Solid Mesh
Mesher Used:	Curvature-based mesh
Jacobian points for High quality mesh	16 Points
Maximum element size	2 in
Minimum element size	0.4 in
Mesh Quality	High
Remesh failed parts independently	Off

Mesh information - Details

Total Nodes	74378
Total Elements	35555
Maximum Aspect Ratio	53.291
% of elements with Aspect Ratio < 3	49.7
Percentage of elements with Aspect Ratio > 10	3.55
Percentage of distorted elements	0
Time to complete mesh(hh;mm;ss):	00:00:05
Computer name:	VSE096

Mesh Quality Plots

Name	Type	Min	Max
Quality1	Jacobian ratio	1.0 Element: 2023	28.9 Element: 20129

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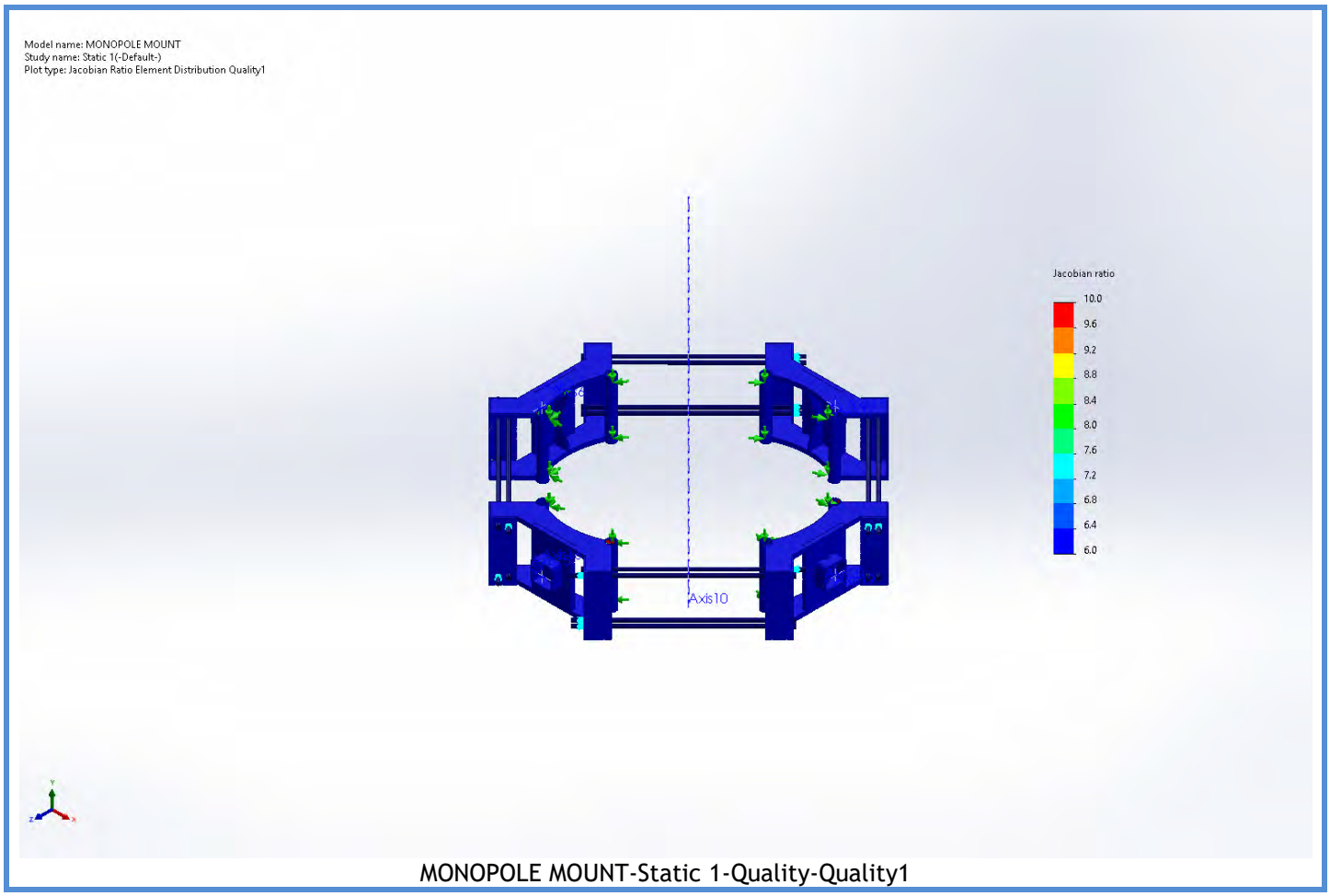

MONOPOLE MOUNT-Static 1-Quality-Quality1

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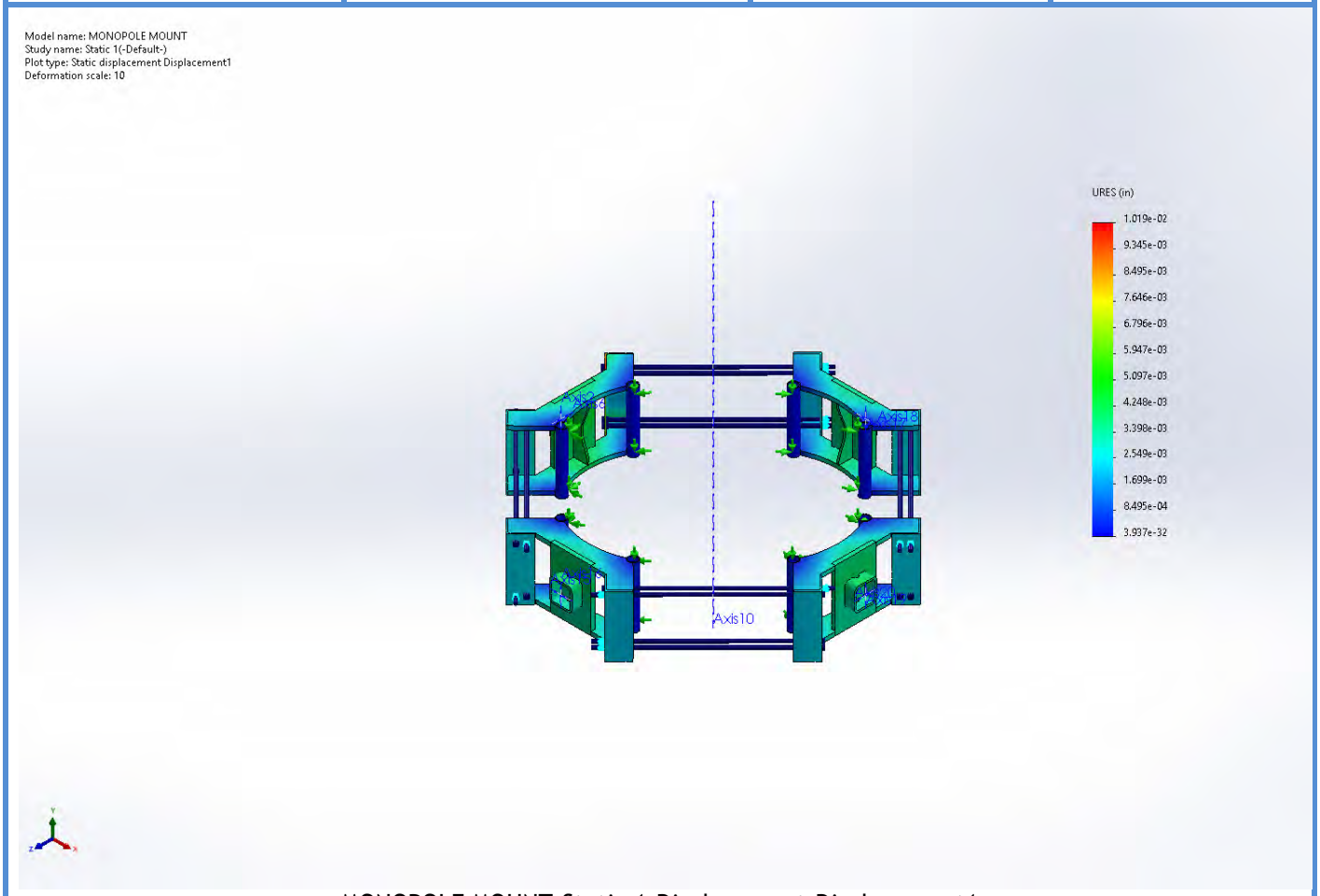
Study Results

Name	Type	Min	Max
Displacement1	URES: Resultant Displacement	0.000e+00in Node: 15	1.019e-02in Node: 8757



MONOPOLE MOUNT-Static 1-Displacement-Displacement1

Name	Type	Min	Max
Stress1	VON: von Mises Stress	0.000ksi Node: 18526	30.273ksi Node: 479

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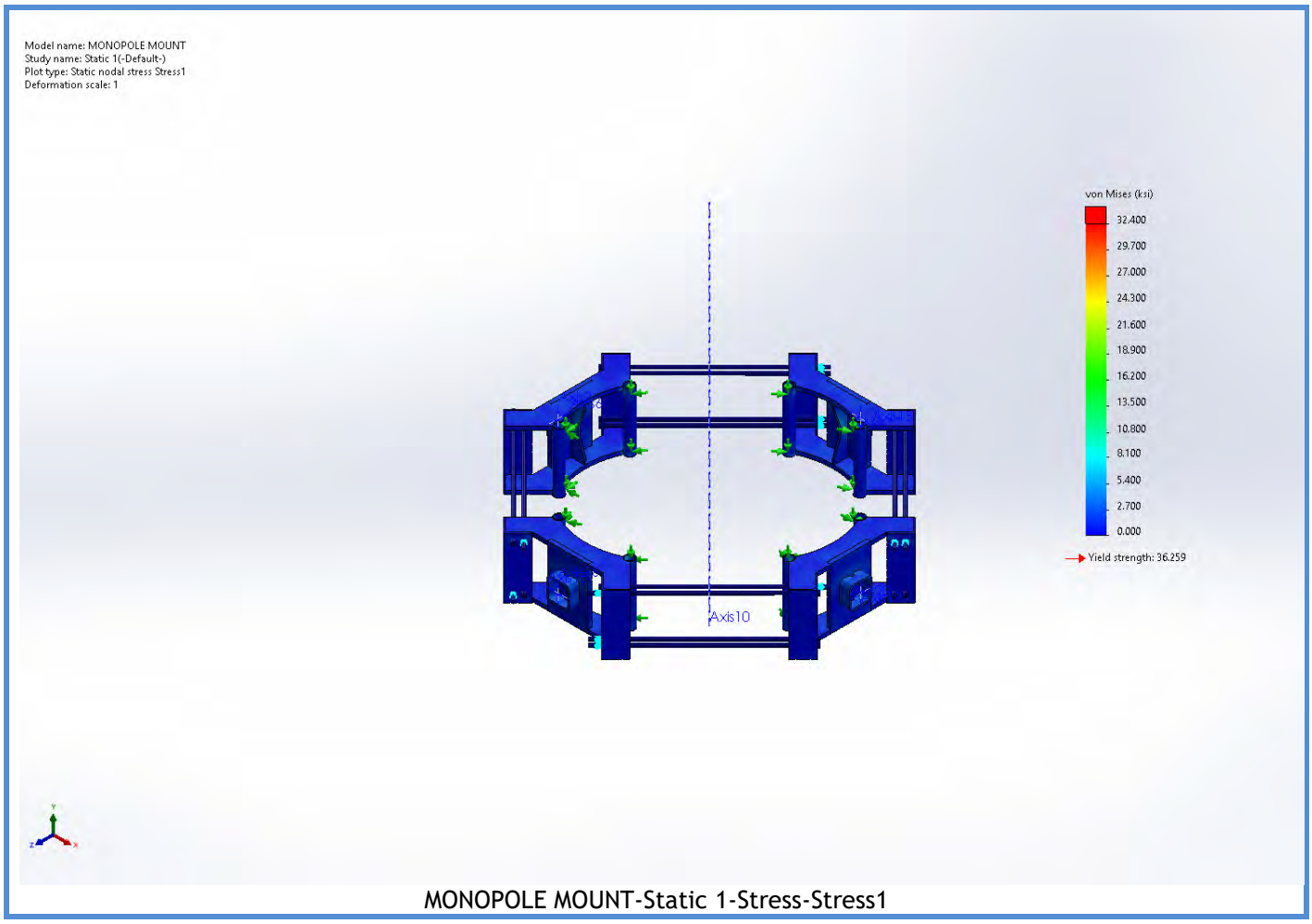

MONOPOLE MOUNT-Static 1-Stress-Stress1

Name	Type	Min	Max
Strain1	ESTRN: Equivalent Strain	1.38e-09 Node: 18526	0.000877 Node: 479

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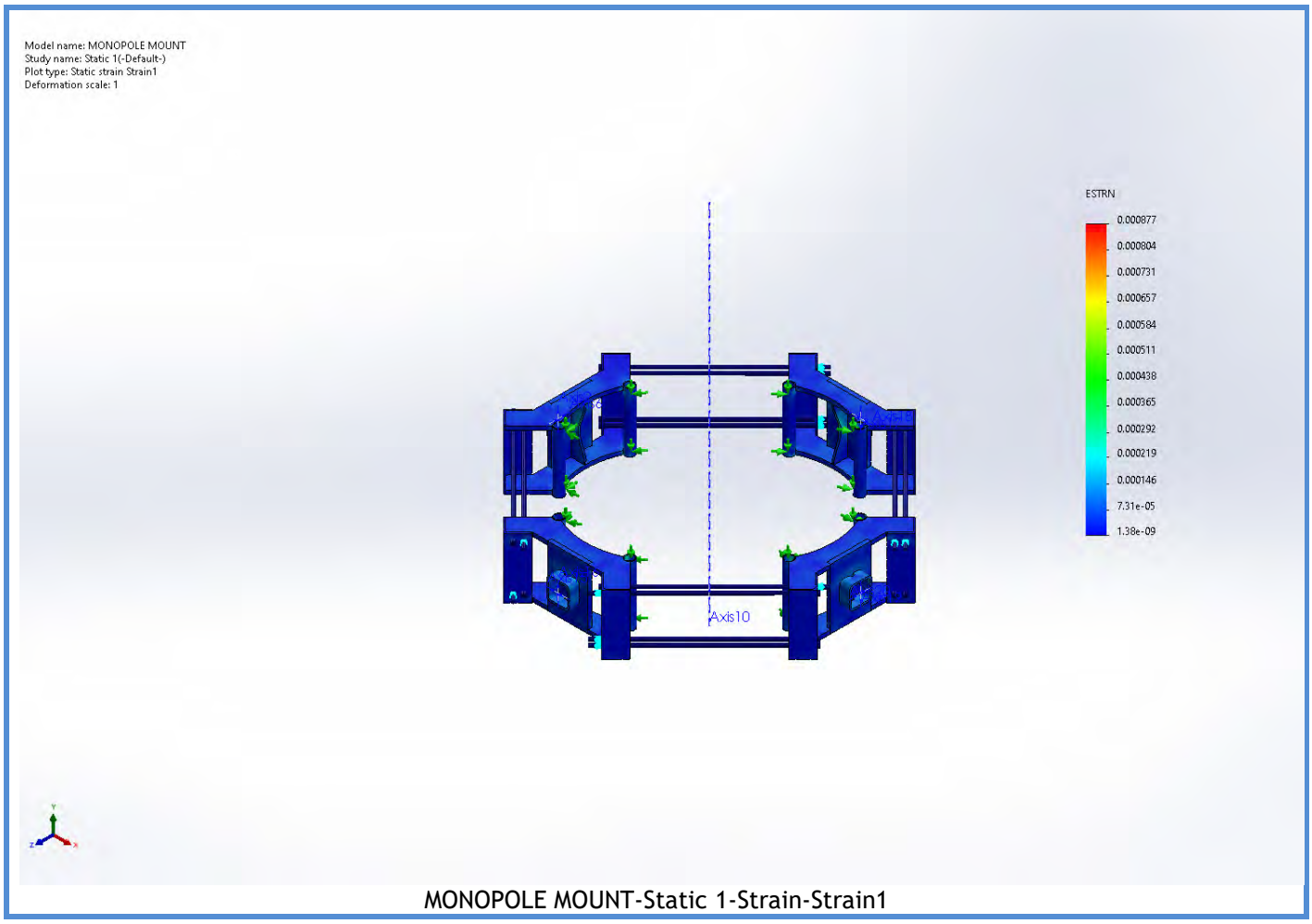

MONOPOLE MOUNT-Static 1-Strain-Strain1

Name	Type	Min	Max
Stress2	VON: von Mises Stress	0.000ksi Node: 18526	30.273ksi Node: 479

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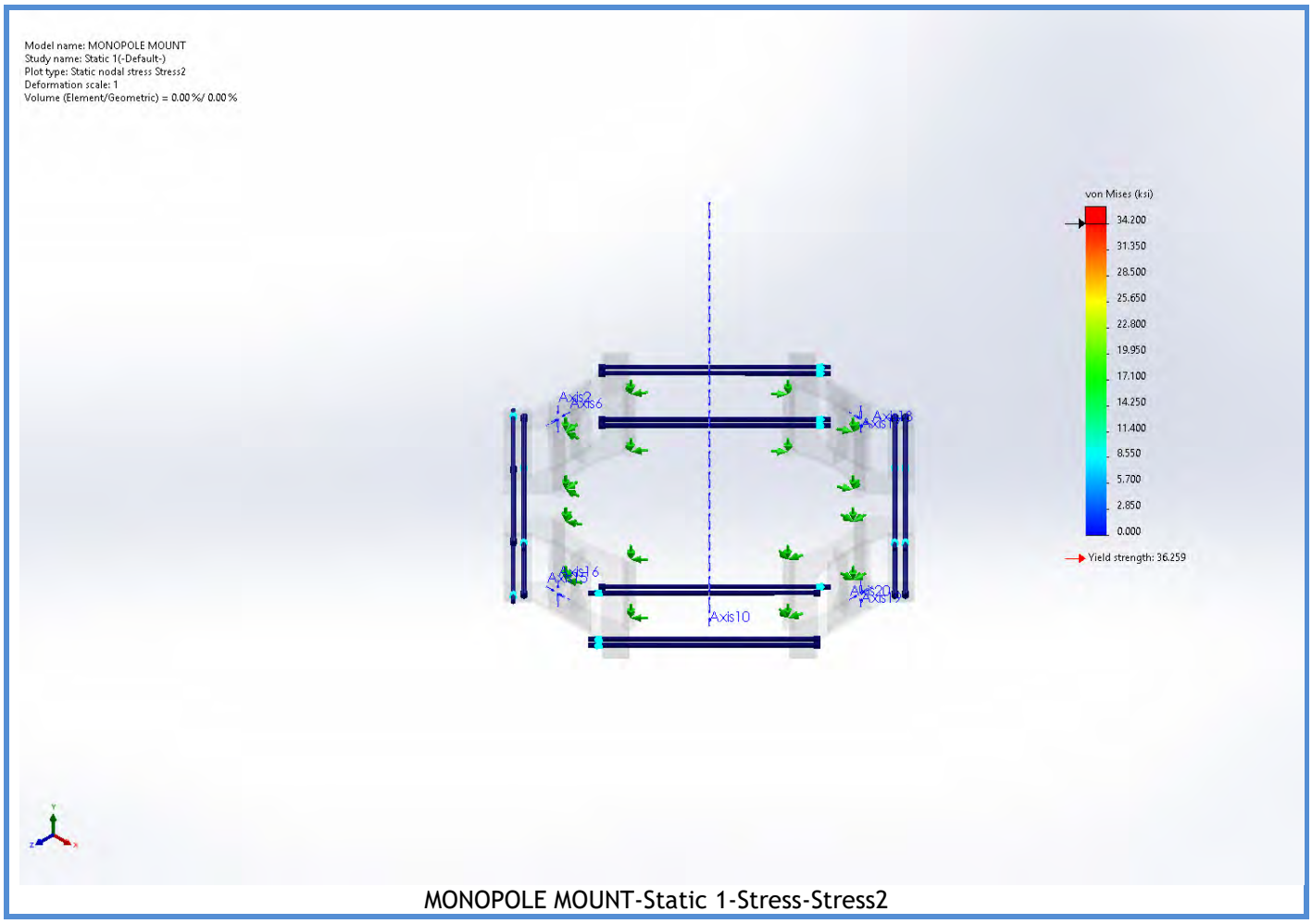

MONOPOLE MOUNT-Static 1-Stress-Stress2

Conclusion

Comments:

No part of the assembly exceeds the permissible Von-Mises stress. Therefore, OK.

ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	35.30946
Risk Category:	II	**Longitude:**	-106.49543
Soil Class:	C - Very Dense Soil and Soft Rock	**Elevation:**	5504.708854228105 ft (NAVD 88)

Wind

Results:

Wind Speed	104 Vmph
10-year MRI	75 Vmph
25-year MRI	82 Vmph
50-year MRI	86 Vmph
100-year MRI	91 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Thu Oct 24 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.

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Seismic

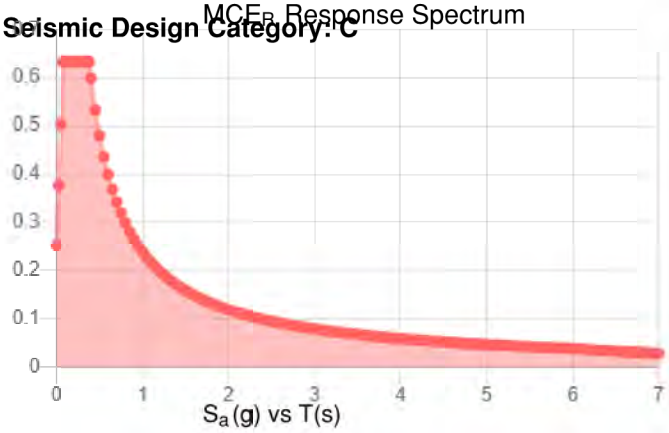
Site Soil Class: C - Very Dense Soil and Soft Rock

Results:

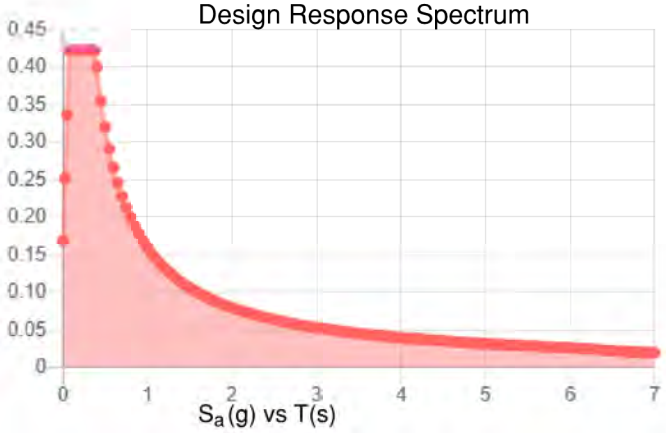
S_S :	0.487	S_{D1} :	0.16
S_1 :	0.16	T_L :	6
F_a :	1.3	PGA :	0.21
F_v :	1.5	PGA_M :	0.252
S_{MS} :	0.633	F_{PGA} :	1.2
S_{M1} :	0.24	I_e :	1
S_{DS} :	0.422	C_v :	0.925

Seismic Design Category: C

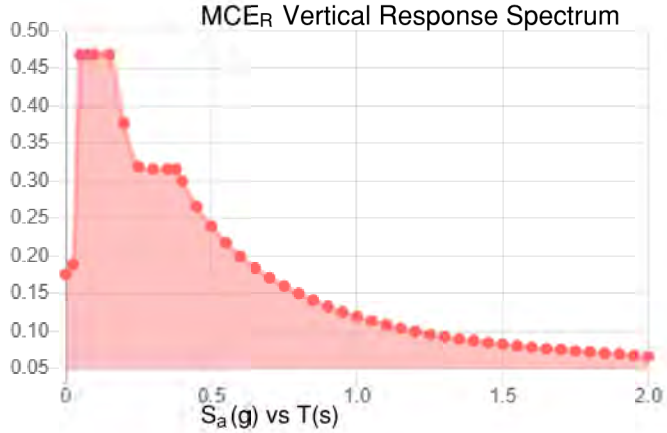
MCE_R Response Spectrum



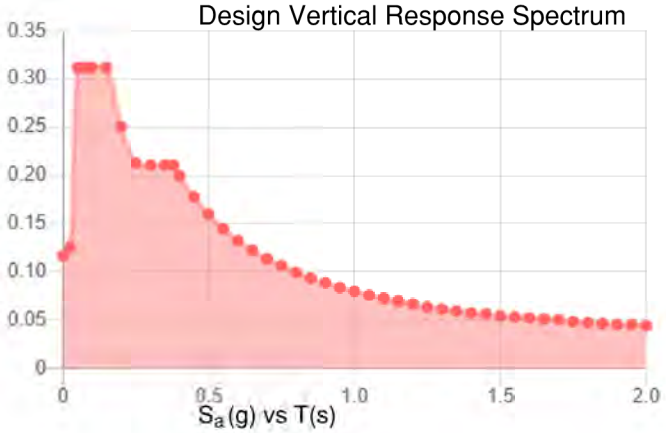
Design Response Spectrum



MCE_R Vertical Response Spectrum



Design Vertical Response Spectrum



Data Accessed: Thu Oct 24 2024

Date Source:

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

Ice

Results:

Ice Thickness:	0.25 in.
Concurrent Temperature:	15 F
Gust Speed	30 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Oct 24 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.

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

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

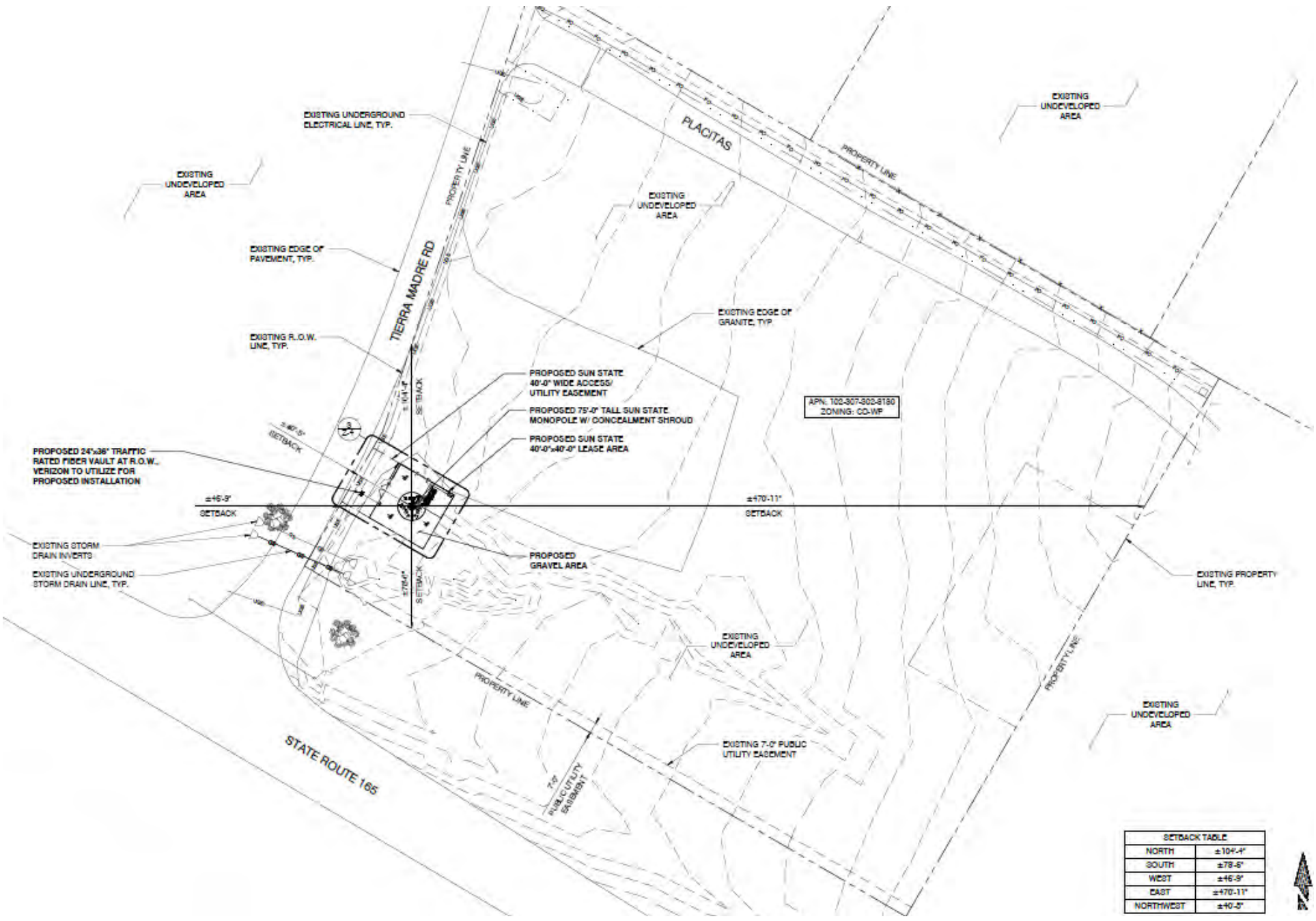
In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from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

LANDSCAPE

Property owner is currently working on plans to develop the parcels. Natural landscape already exist which is also the character of the area.

EXISTING AERIAL AND LOCATIONS FROM WHERE SIMULATION PHOTOS TAKEN

PROPOSED SITE PLAN



SETBACK TABLE	
NORTH	±104'-4"
SOUTH	±78'-6"
WEST	±46'-9"
EAST	±470'-11"
NORTHWEST	±40'-5"

PROPOSED SCREENING

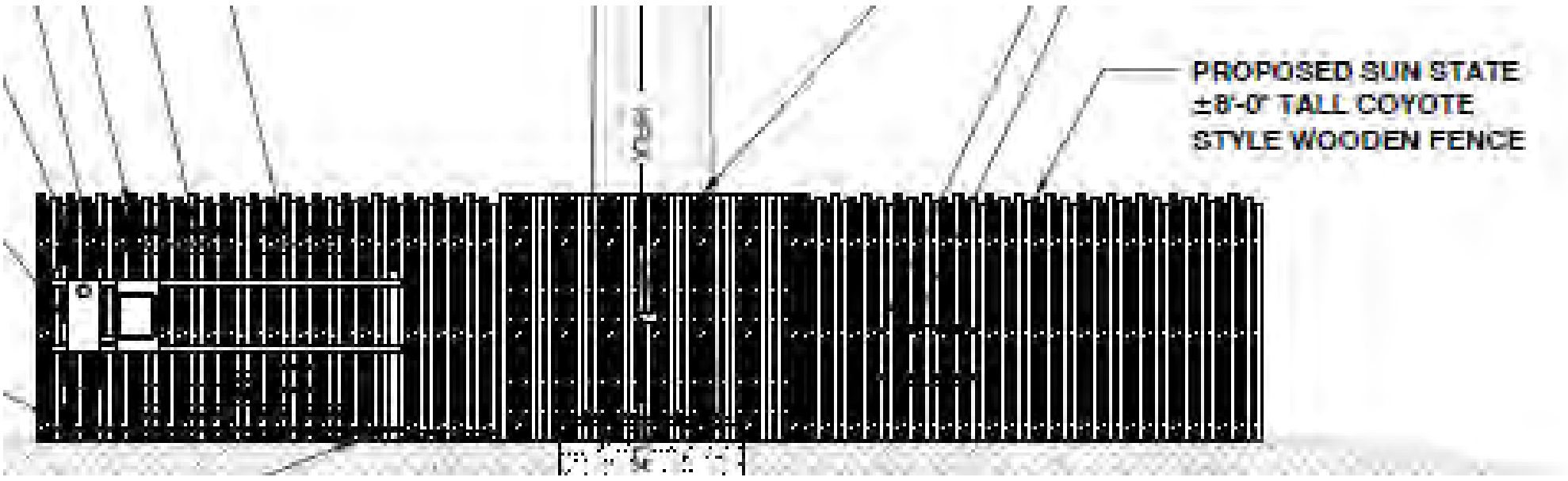


PHOTO SIMS OF THE PROPOSED SCREENING LOOKING EAST

PHOTO SIMS OF THE PROPOSED SCREENING LOOKING SOUTHWEST

PHOTO SIMS OF THE PROPOSED SCREENING LOOKING WEST

LOOKING NORTH

WIRELESS NETWORK CONSULTING

NM01-148 Spike / ABQ_TIERRA-MADRE
Coverage Site

RF DESIGN ANALYSIS

2024

Coverage vs Capacity

- **Capacity is providing bandwidth or processing capacity to service the customers in the area.**
  - Areas where large numbers of users are in a specific geographic areas
  - Areas where users are demanding higher data rates for services
  - Areas with a large amount of indoor users
- **Coverage is Providing Service where service does not exist, calls drop, or "no service".**
  - Areas where sites are farther apart
  - Areas where terrain or buildings block signals
  - Areas where indoor service is low or nonexistent

Objective of new site

- **Capacity**
  - Provide additional bandwidth for customers in the area surrounding the proposed site
  - Provide better throughput for indoor users in the area
  - Offload surrounding sites in area.
- **Coverage**
  - Provide additional in-vehicle coverage along Hwy 165
  - Provide additional indoor coverage in surrounding homes and businesses
- **Why is this site important?**
  - 96% of Americans own a Cellular Phone
  - 57% of American Homes rely exclusively on cellular phones
  - 84% or more of 9-1-1 emergency calls are made from wireless devices

Proposed Site

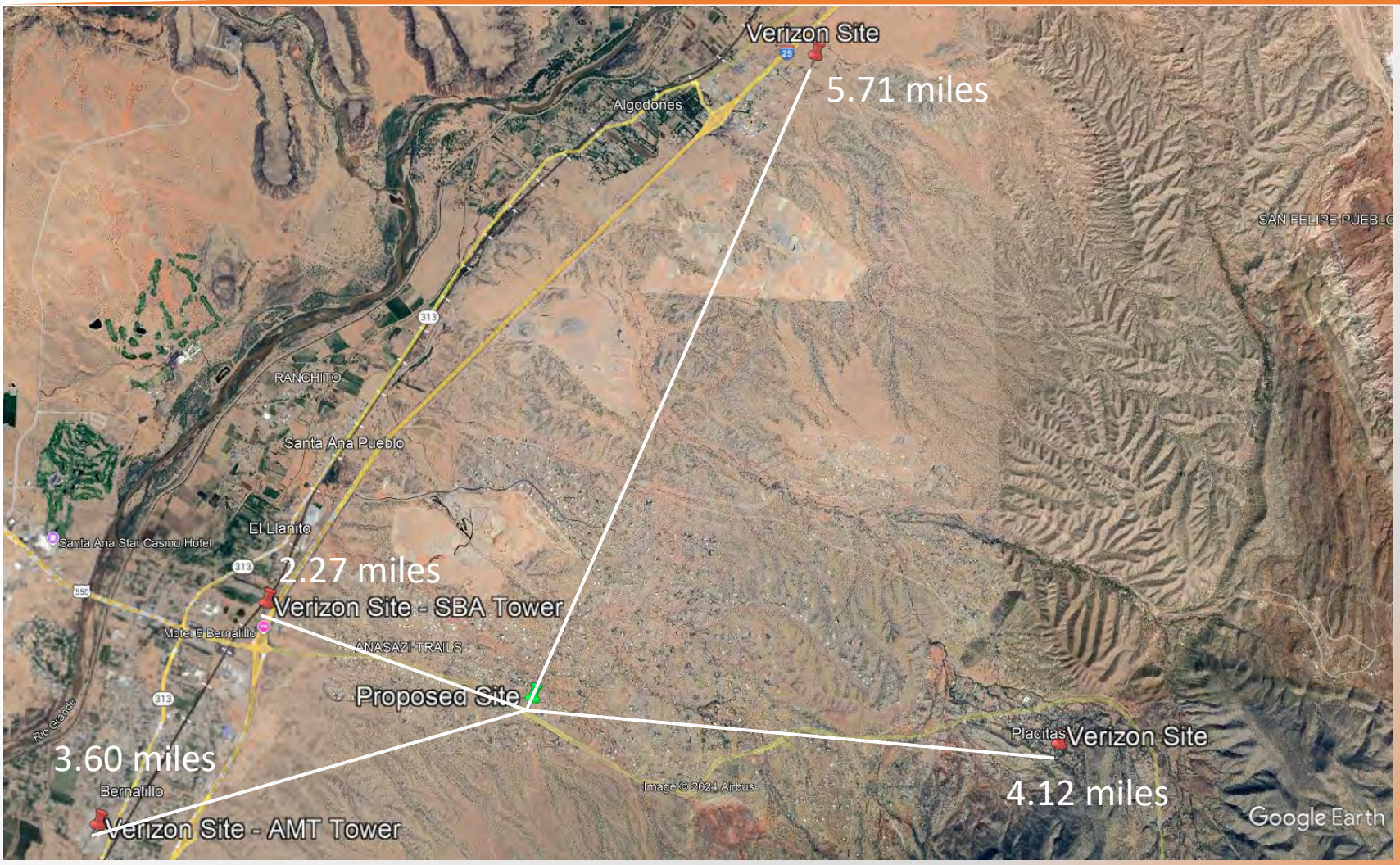
- 75’ Monopole tower
- With concealment shroud
  - 221 165 Hwy St, Placitas, NM 87043
    - Latitude: 35.309466 N (NAD83)
    - Longitude: -106.495432 W (NAD83)
    - Ground Elevation: 5503' (NAVD88)
    - Anchor tenant is Verizon
  - Antenna Centerline at 71’ AGL

Why here?

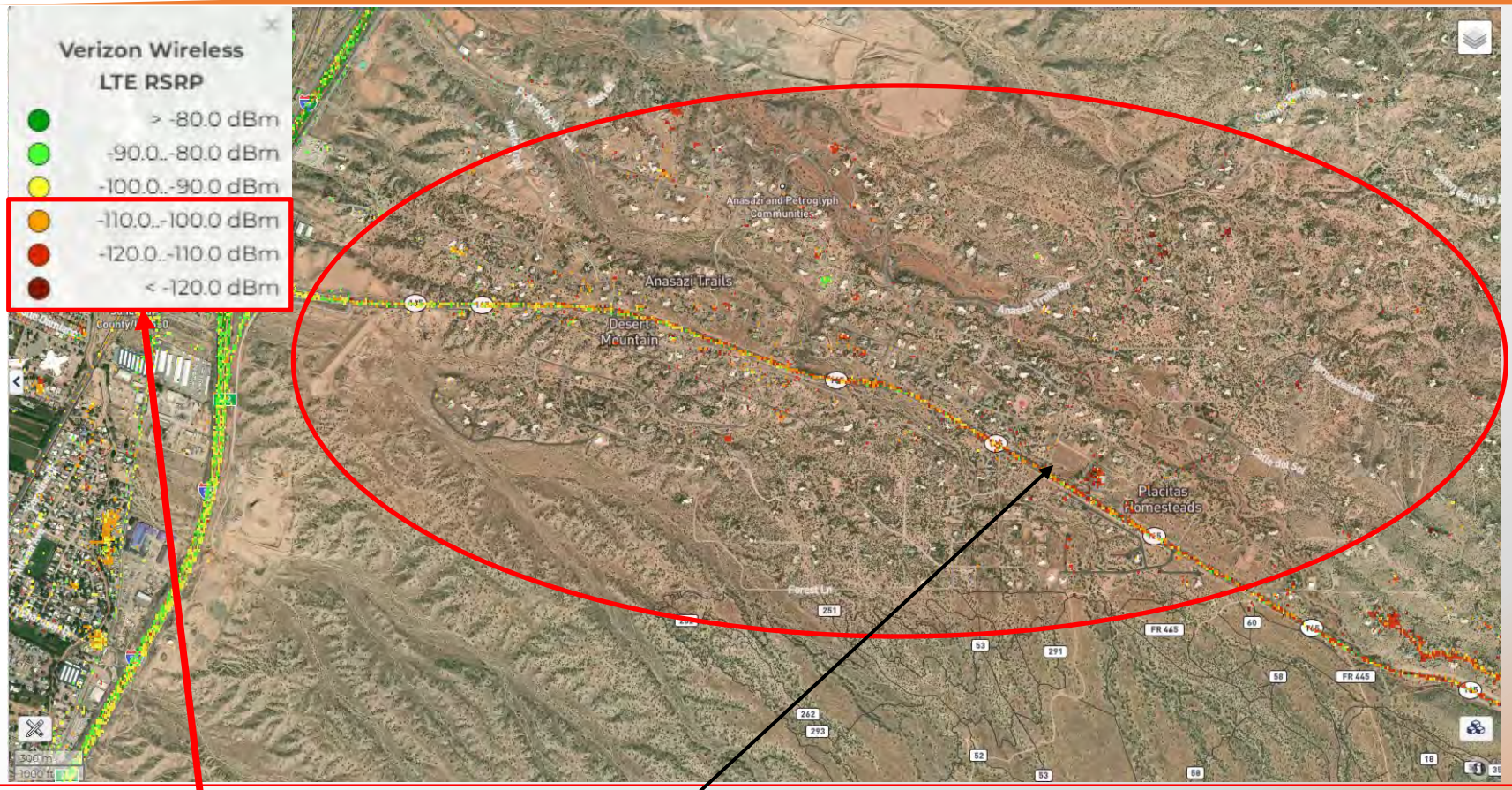
- Poor coverage area has been escalated to the New Mexico Public Regulatory Commission (NMPRC)
- Public Service of NM (PNM) has requested additional coverage in area due to electric meters having high failure rate for connecting to network
- Site is designed for coverage in the area
- Site is located near intersection of Hwy 165 and Tierra Madre Road
- Lack of Highway coverage along Hwy 165
- Lack of indoor service in business and homes surrounding the proposed site
- Lack of outdoor service West along Hwy 165 towards Bernalillo

Zoom – proposed site

Verizon Sites



Ookla Verizon 4G



Less than outdoor Coverage

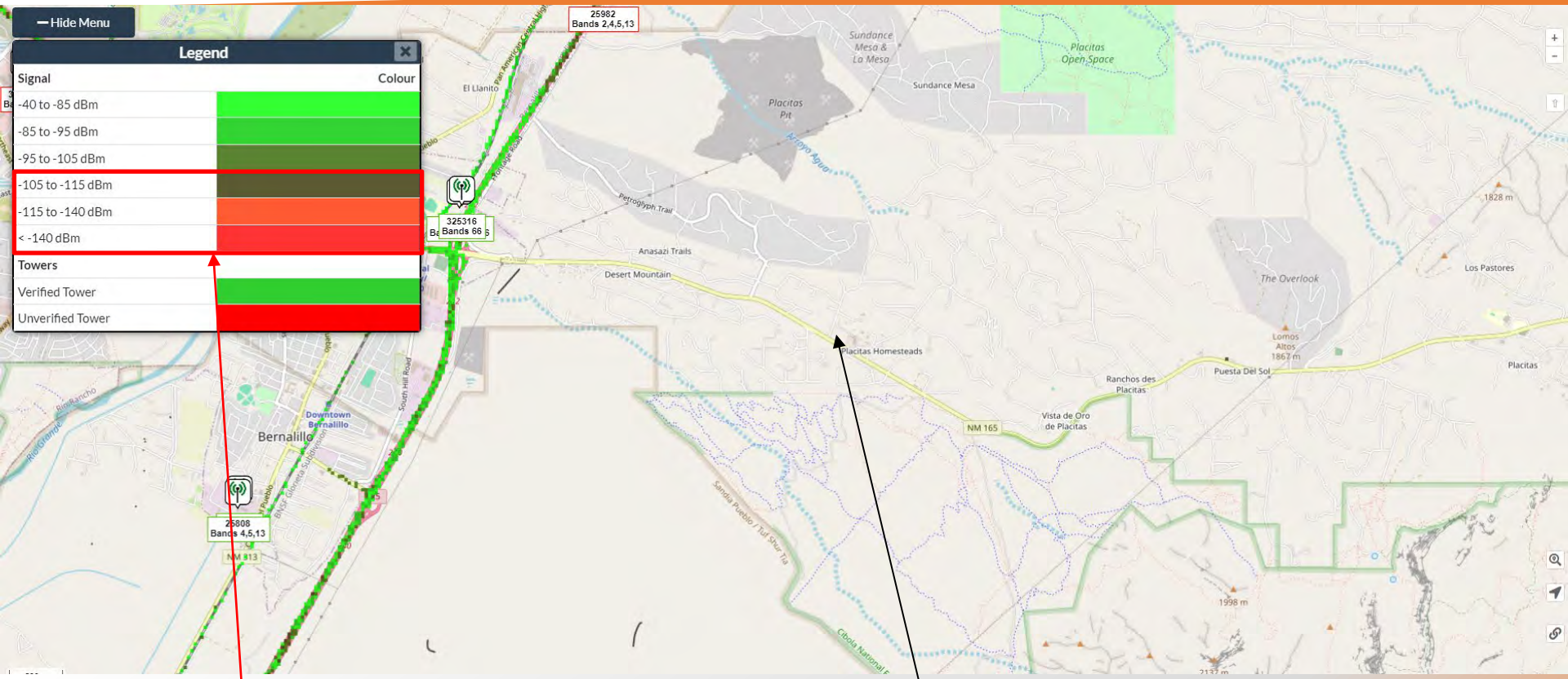
Proposed Site

The area in the red circle is what the proposed site would impact

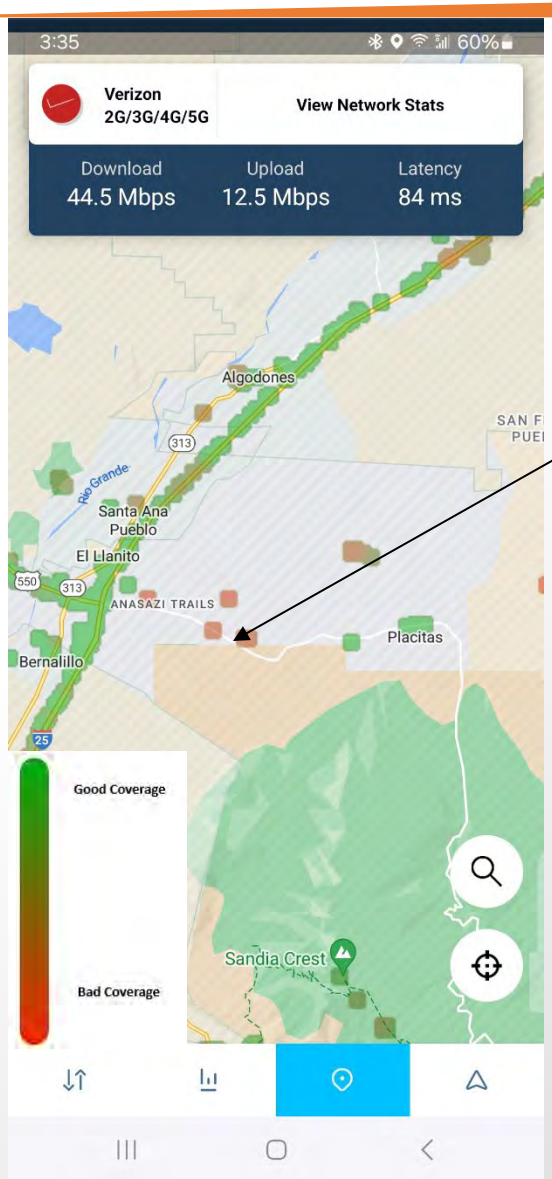
The area is showing a significant number of mobiles reporting less than outdoor service

2024

Verizon CellMapper



Open Signal
Verizon Quality Map



This map show mobiles reporting quality of their connections to the network. This is crowdsource data from Verizon users made available by the OpenSignal App: https://www.opensignal.com/apps#section-os-app

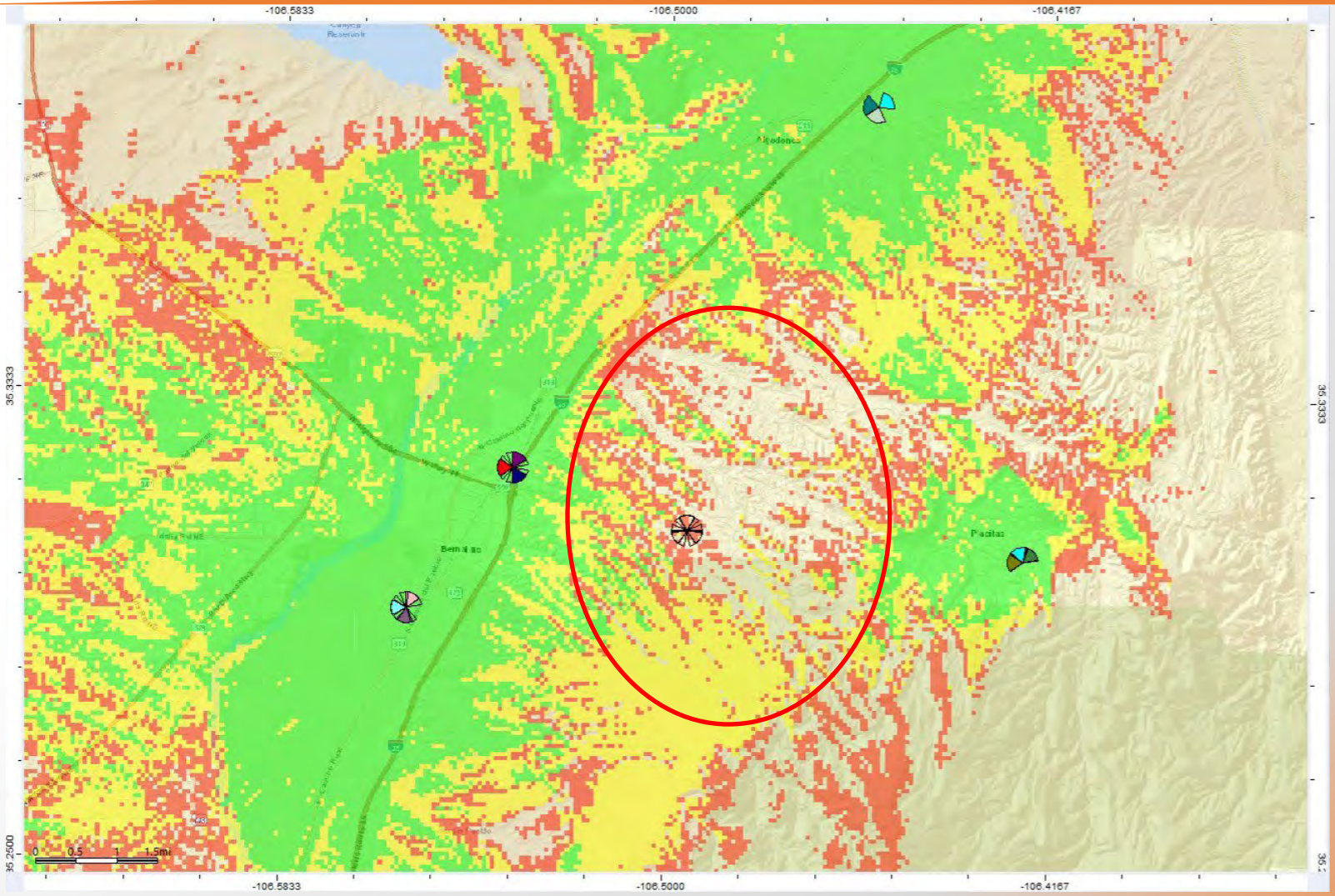
Green data points show good coverage and red data points show bad coverage and lack of data points show no coverage

Notice the amount of bad coverage reports in the area and to the Northeast of the proposed.

2024

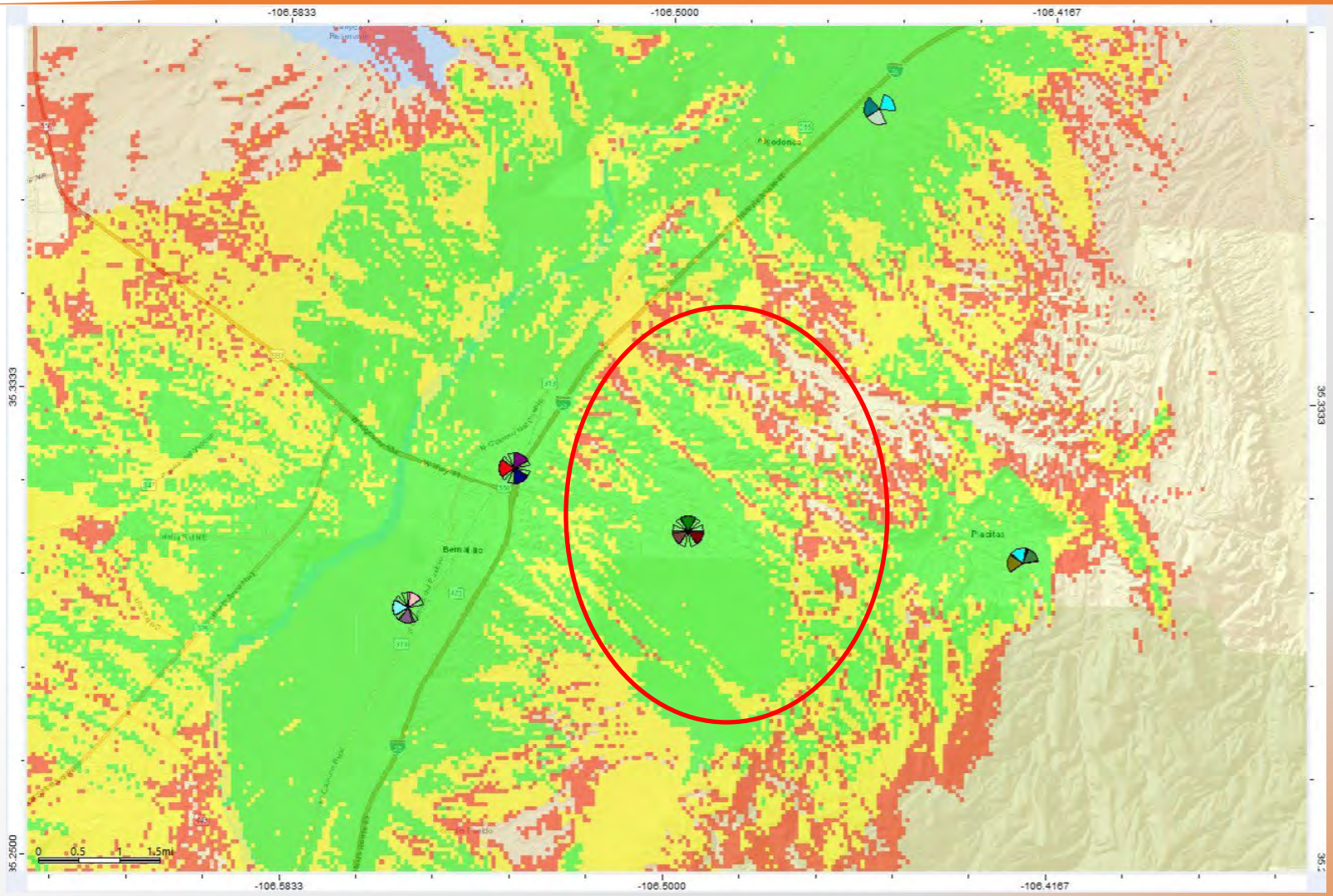
RSRP - Current Coverage

LEGEND	
	Indoor >= -85 dbm
	In-Vehicle >= -95 dbm
	Outdoor >= -101 dbm



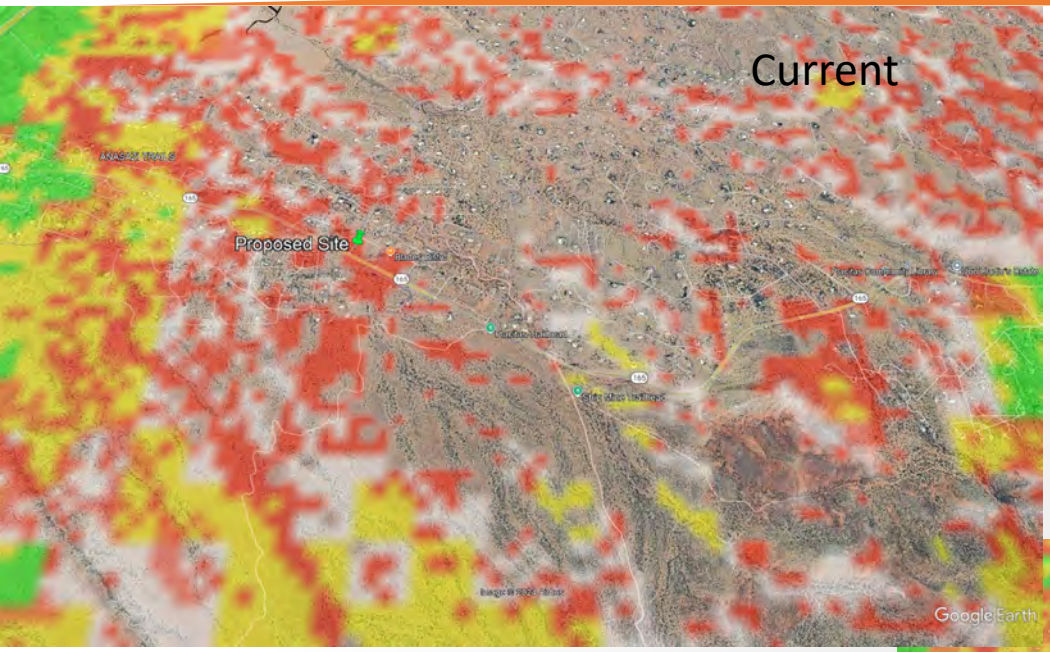
RSRP – Proposed Coverage

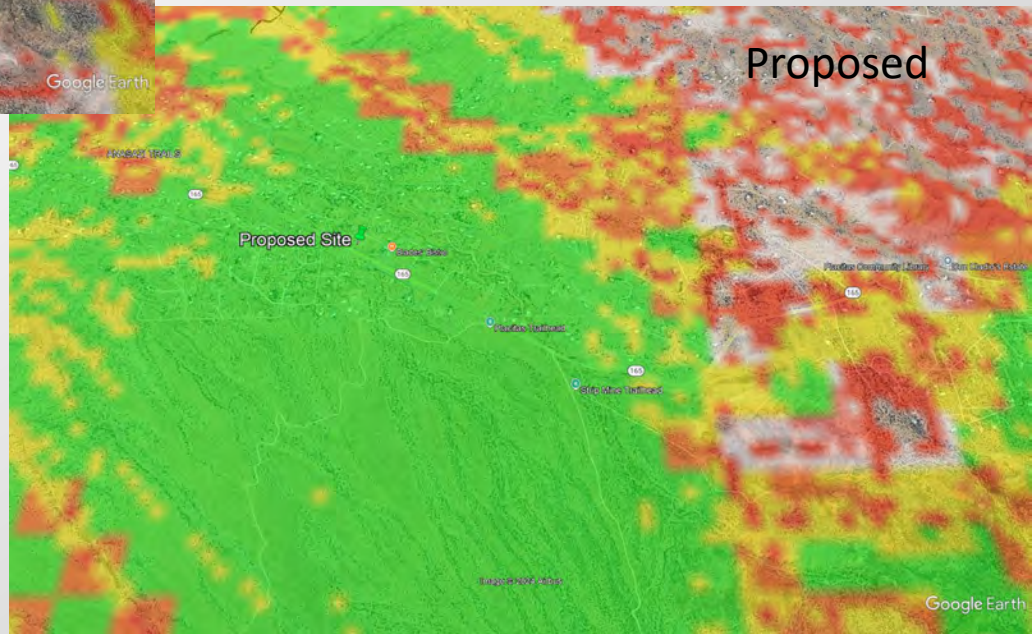
LEGEND
Indoor >= -85 dbm
In-Vehicle >= -95 dbm
Outdoor >= -101 dbm



RSRP – Comparison

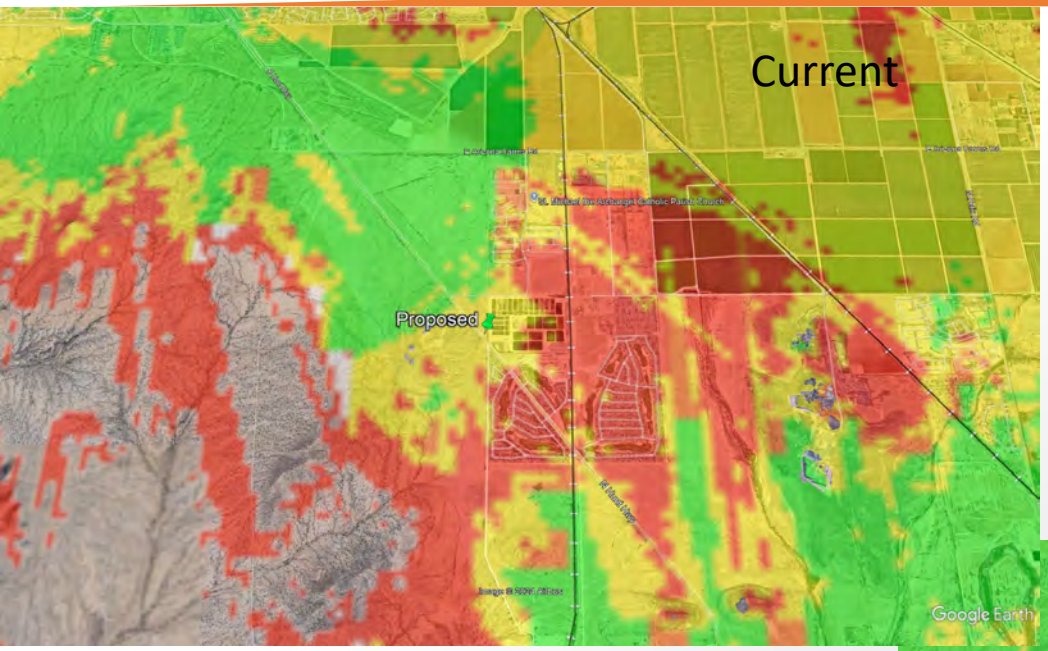
LEGEND	
	Indoor >= -85 dbm
	In-Vehicle >= -95 dbm
	Outdoor >= -101 dbm

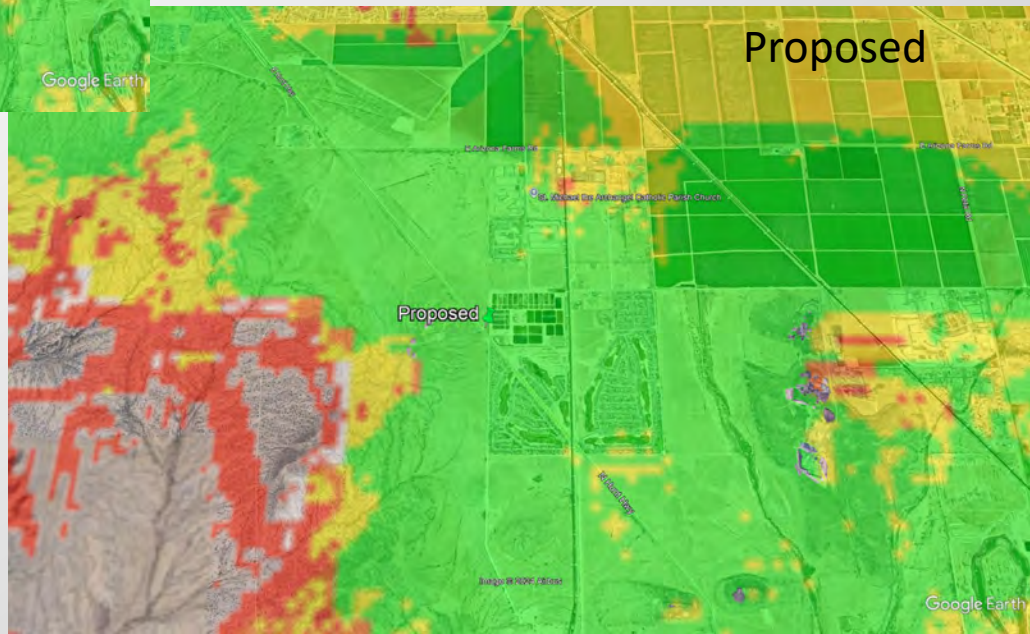




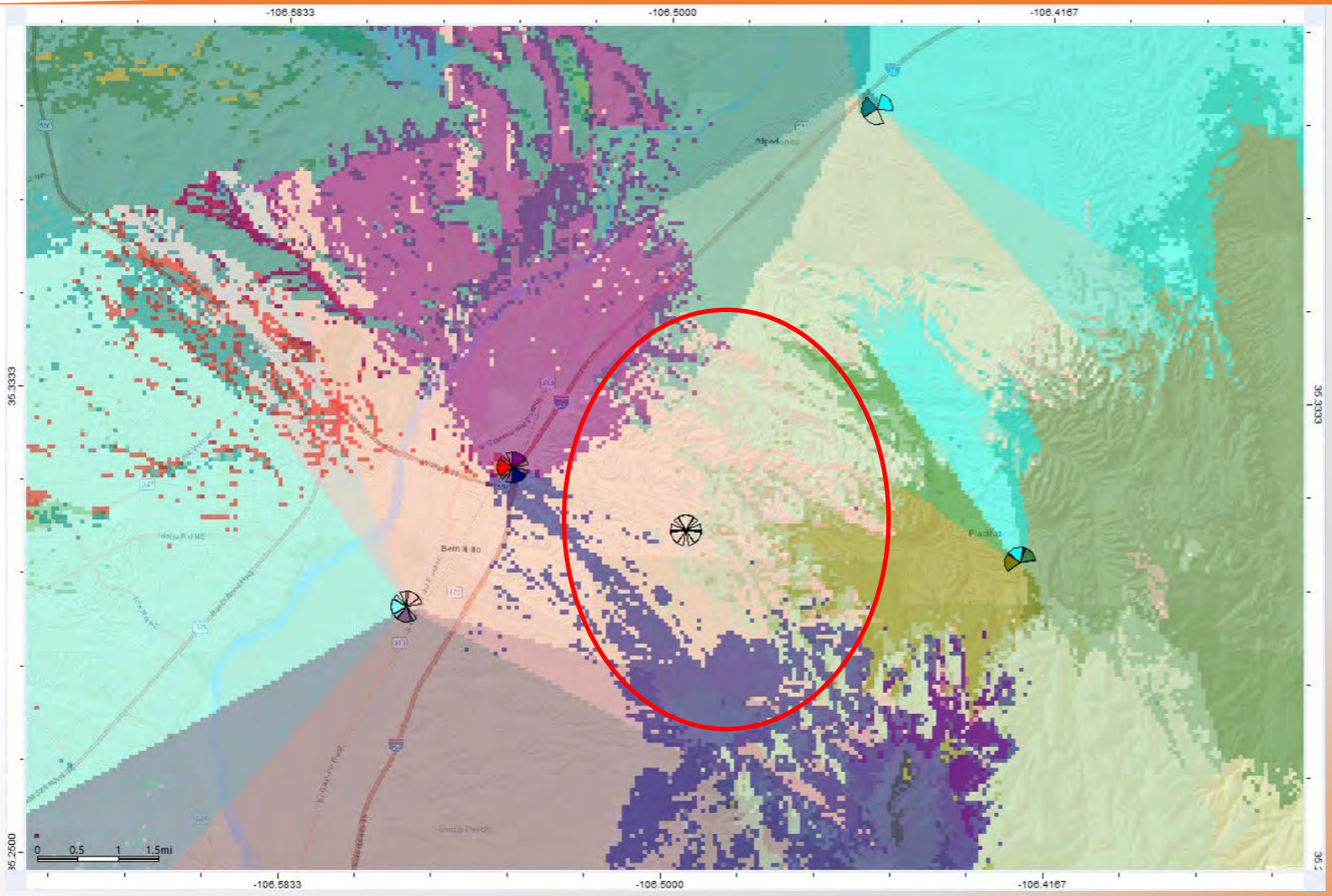
RSRP – Comparison (Zoom)

LEGEND	
	Indoor >= -85 dbm
	In-Vehicle >= -95 dbm
	Outdoor >= -101 dbm

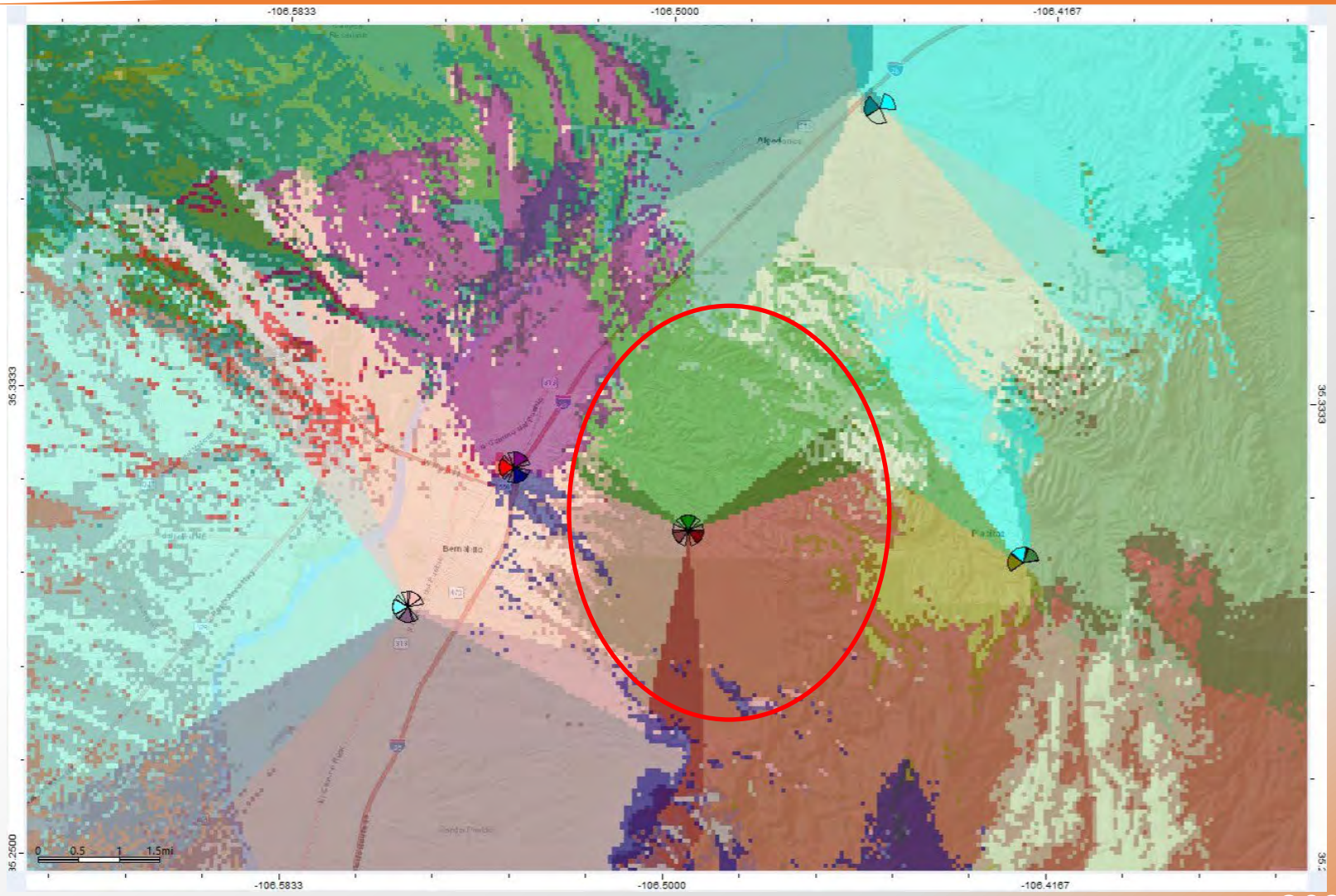




Best Server - Current (-120dbm)



Best Server – with new site (-120dbm)



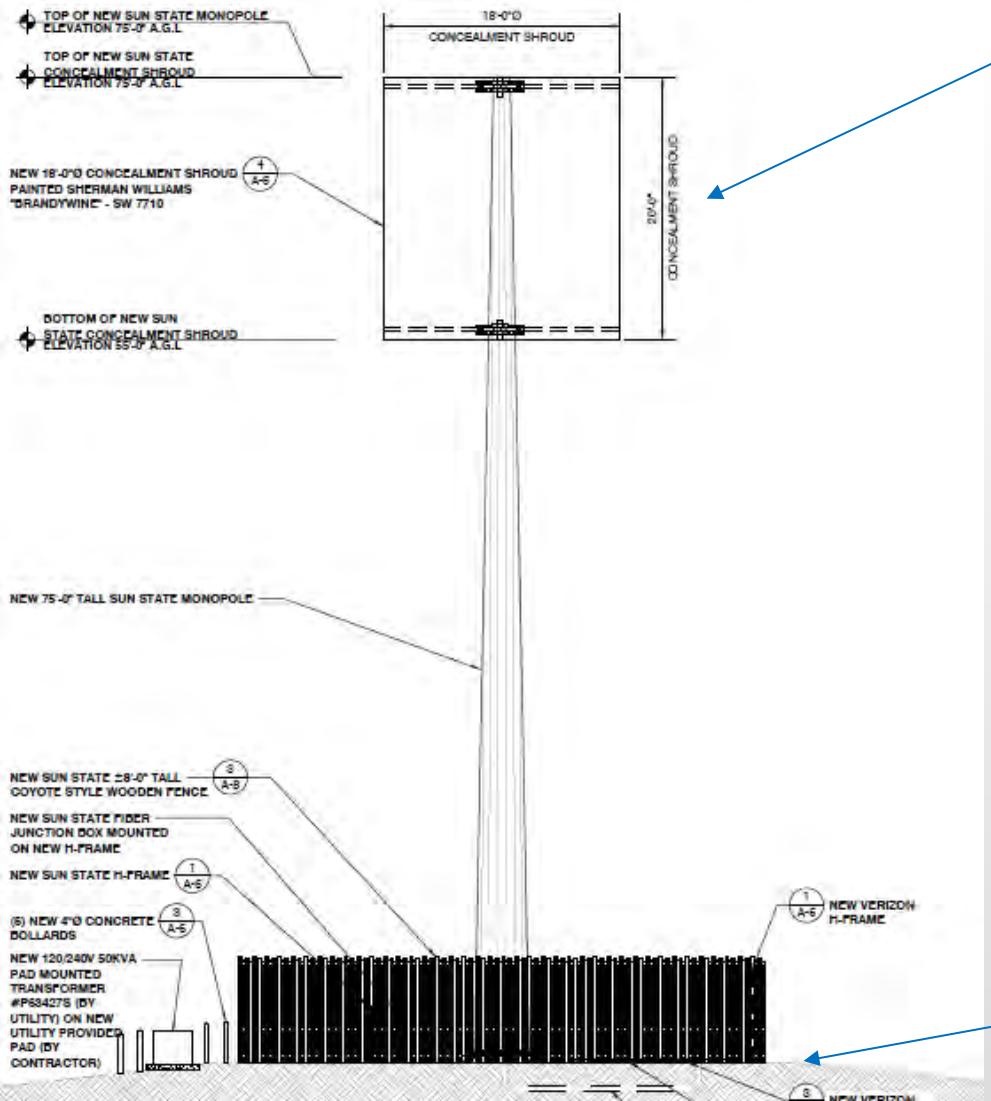
Ionizing vs Non-Ionizing

- There are two (2) types of Energy/Radio Waves
  - **Ionizing**
    - These are waves that can effect human DNA
    - Examples are:
      - Gamma rays
      - X-Rays
    - This is one of the reasons the nurse steps out of the room and you wear a lead overcoat when you get X-Rays at the dentist.
  - **Non- Ionizing**
    - These are waves do not effect human DNA
    - Examples are:
      - Car Radios
      - Television
      - Wi-Fi Access points and routers
      - Bluetooth headsets
      - Cellphones and Smartphones
      - Lightbulbs
      - Wireless Baby Monitors
      - TV remotes
  - Absorption of waves is proximity based, the closer you are to the antenna the more non-ionizing energy is absorbed. You will absorb 50% of the FCC's General Public limit with your smartphone next to your ear versus less than 10% of the FCC's General Public limit from the antennas when you are standing 20' away from the proposed tower.
  - The further you walk away from the tower it decreases even more.

General Public & Occupational limits

- The FCC isolated two (2) groups relative to access around wireless antennas
- The first group is called Occupational
  - This refers to areas where workers would be allowed (general public cannot access) but the workers would not have knowledge about antennas (An example would be an Air Conditioner Repair Technician). Barriers or signage may be needed to alert the worker when close to the antennas.
    - Examples are:
      - Rooftop access behind a locked door
      - Compound access behind a locked gate
  - The FCC determined the safe value and then lowered by a factor of 10 and that is the value the wireless carriers use in the studies
  - The exposure levels are averaged over 6 minutes
- The second group is called General Public
  - Uncontrolled access (General Public)
    - This group is for areas with general public access, the public would not have a knowledge of an antenna being close to them
    - Examples are:
      - Sidewalks
      - Parks
      - Public accessed buildings
  - The FCC determined the safe value and then lowered by a factor of 50 and that is the value the wireless carriers use in the studies
  - The exposure levels are averaged over 30 minutes
- Compare the value for a tower which is 10mW to the power of a smartphone which is 200mW of power.

Power Levels below a tower



Main beam of the antenna

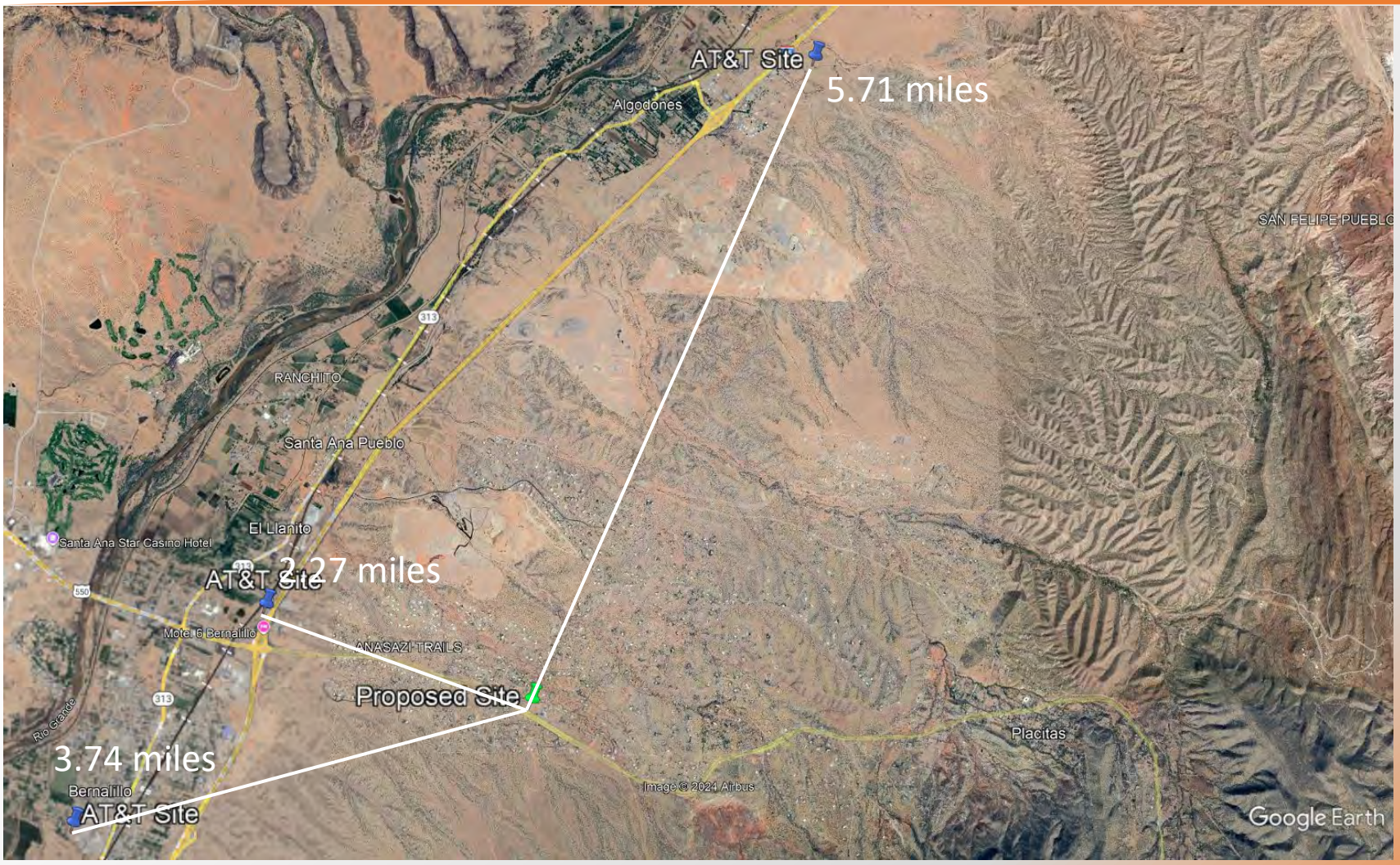
- Power levels on the ground around the tower are much less than what is at the antennas
- Power on the ground adjacent to the tower is 1/1000 of the power compared to what is at the antenna

1/1000 of the power on the ground around the site

World Health Organization

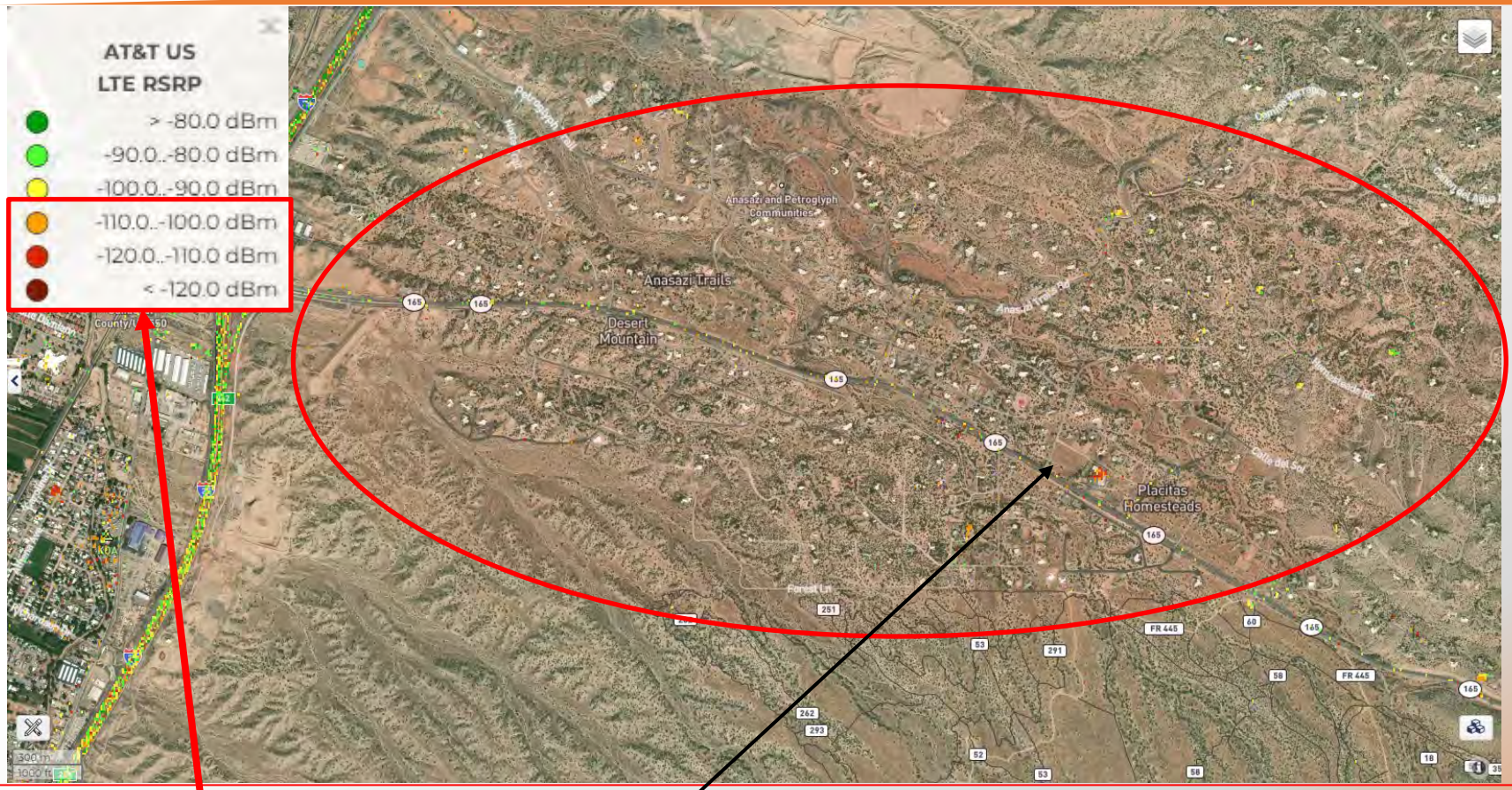
- Results from 28-year study completed by Environmental International
  - Posted online on August 30th, 2024
- https://www.sciencedirect.com/science/article/pii/S0160412024005695?via%3Dihub
- https://www.cnn.com/2024/09/03/health/mobile-phones-brain-cancer-review-the-conversation-partner/index.html
- Background: The objective of this review was to assess the quality and strength of the evidence provided by human observational studies for a causal association between exposure to radiofrequency electromagnetic fields (RF-EMF) and risk of most investigated neoplastic diseases.
- Results: We included 63 aetiological articles, published between 1994 and 2022, with participants from 22 countries, reporting on 119 different E-O pairs. **RF-EMF exposure from mobile phones (ever or regular use vs no or non-regular use) was not associated with an increased risk of glioma** [meta-estimate of the relative risk (mRR) = 1.01, 95 % CI = 0.89–1.13), **meningioma** (mRR = 0.92, 95 % CI = 0.82–1.02), **acoustic neuroma** (mRR = 1.03, 95 % CI = 0.85–1.24), **pituitary tumours** (mRR = 0.81, 95 % CI = 0.61–1.06), **salivary gland tumours** (mRR = 0.91, 95 % CI = 0.78–1.06), **or paediatric (children, adolescents and young adults) brain tumours** (mRR = 1.06, 95 % CI = 0.74–1.51), with variable degree of across-study heterogeneity (I2 = 0 %-62 %). **There was no observable increase in mRRs for the most investigated neoplasms (glioma, meningioma, and acoustic neuroma) with increasing time since start (TSS) use of mobile phones, cumulative call time (CCT), or cumulative number of calls (CNC). Cordless phone use was not significantly associated with risks of glioma** [mRR = 1.04, 95 % CI = 0.74–1.46; I2 = 74 %) **meningioma**, (mRR = 0.91, 95 % CI = 0.70–1.18; I2 = 59 %), **or acoustic neuroma** (mRR = 1.16; 95 % CI = 0.83–1.61; I2 = 63 %). **Exposure from fixed-site transmitters (broadcasting antennas or base stations) was not associated with childhood leukaemia or paediatric brain tumour risks, independently of the level of the modelled RF exposure. Glioma risk was not significantly increased following occupational RF exposure (ever vs never), and no differences were detected between increasing categories of modelled cumulative exposure levels.**

AT&T Sites



2024

Ookla AT&T 4G



Less than on Outdoor coverage

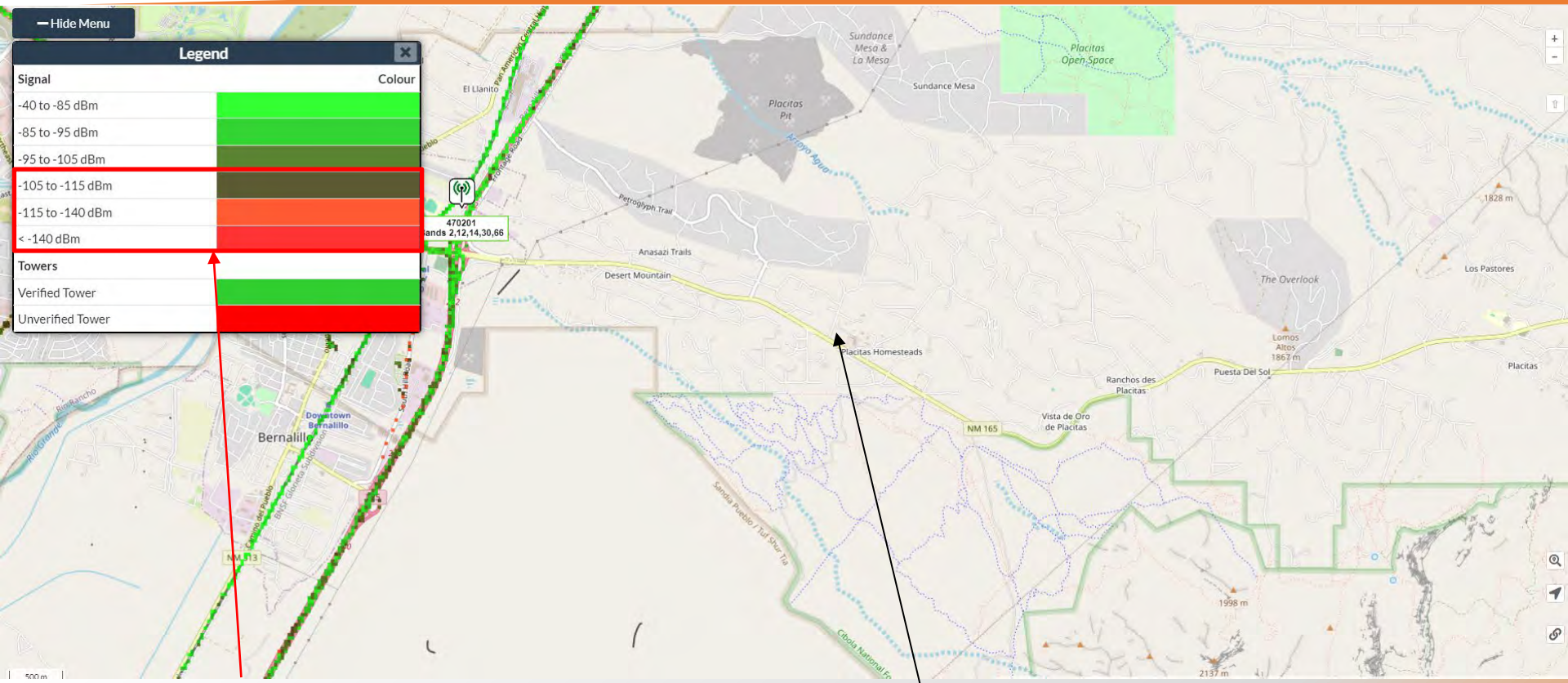
Proposed Site

The area in the red circle is what the proposed site would impact

Since AT&T has a site to the Northeast by about 1.17 miles from proposed it is providing some service in area, note lack of coverage to the East

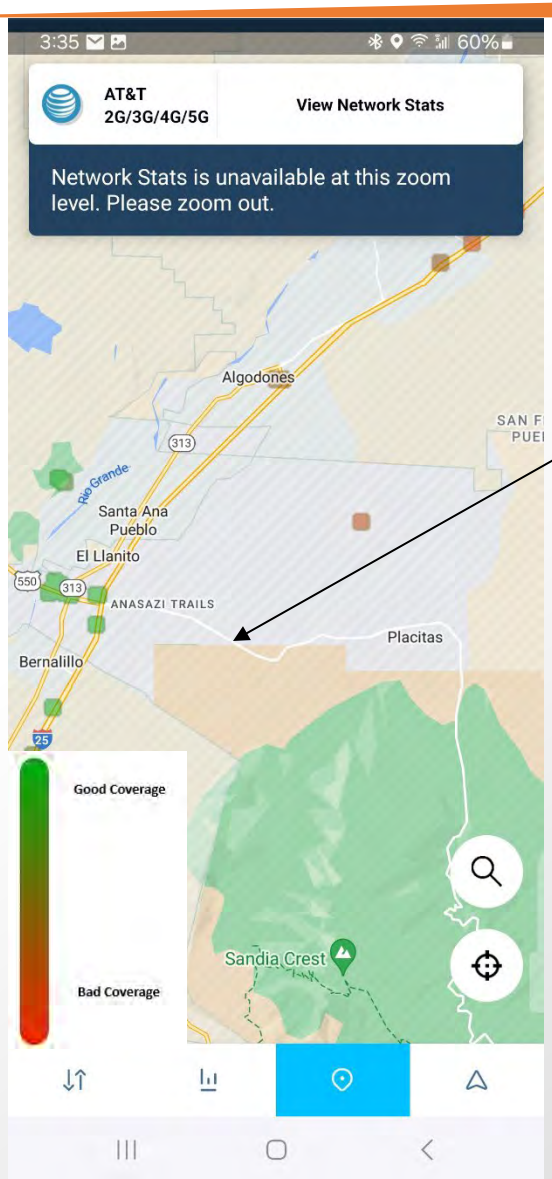
2024

AT&T CellMapper



2024

Open Signal
AT&T Quality Map



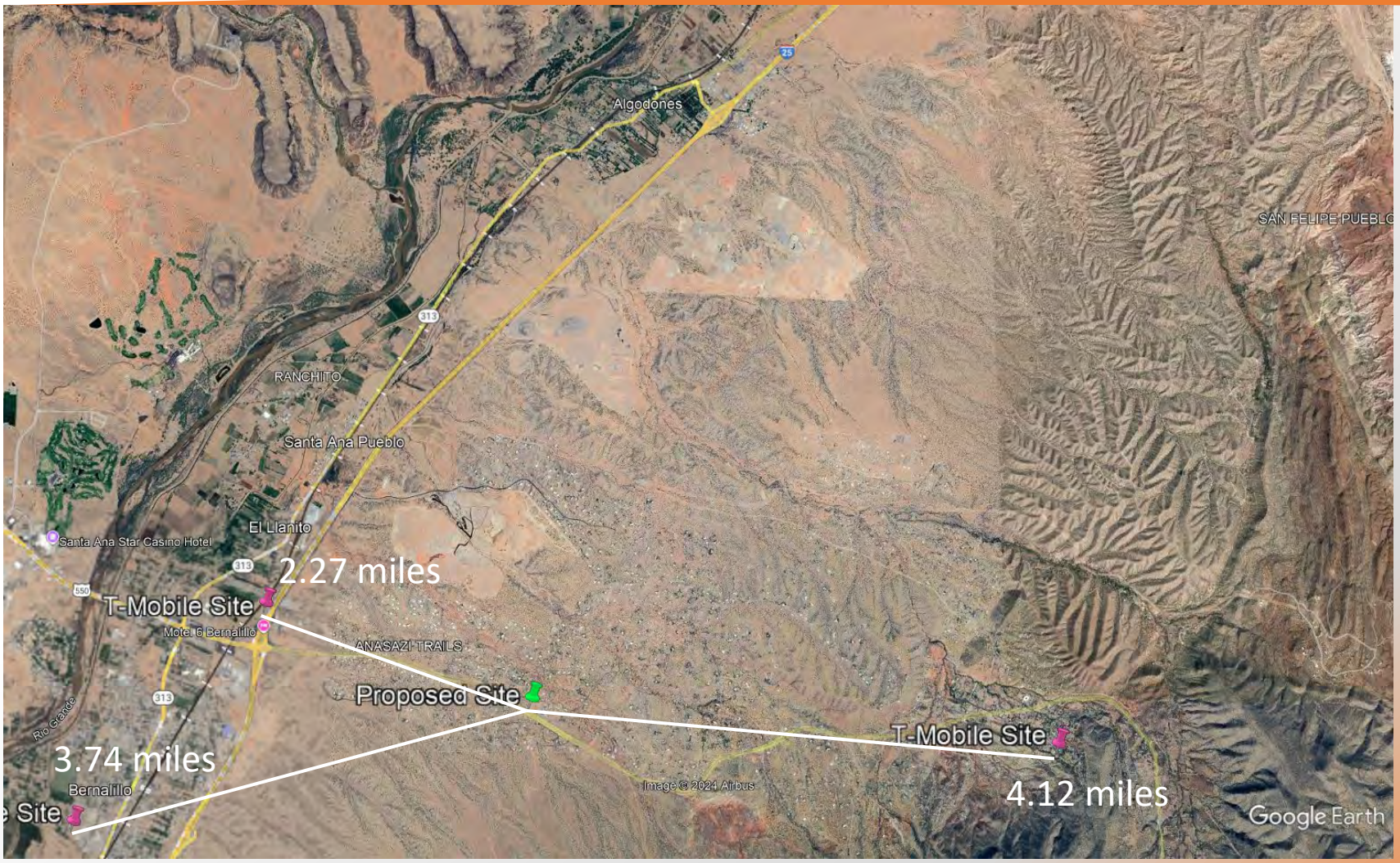
This map show mobiles reporting quality of their connections to the network. This is crowdsource data from AT&T users made available by the OpenSignal App: https://www.opensignal.com/apps#section-os-app

Green data points show good coverage and red data points show bad coverage and lack of data points show no coverage

Notice the lack of coverage points in the area which is indicative of poor service.

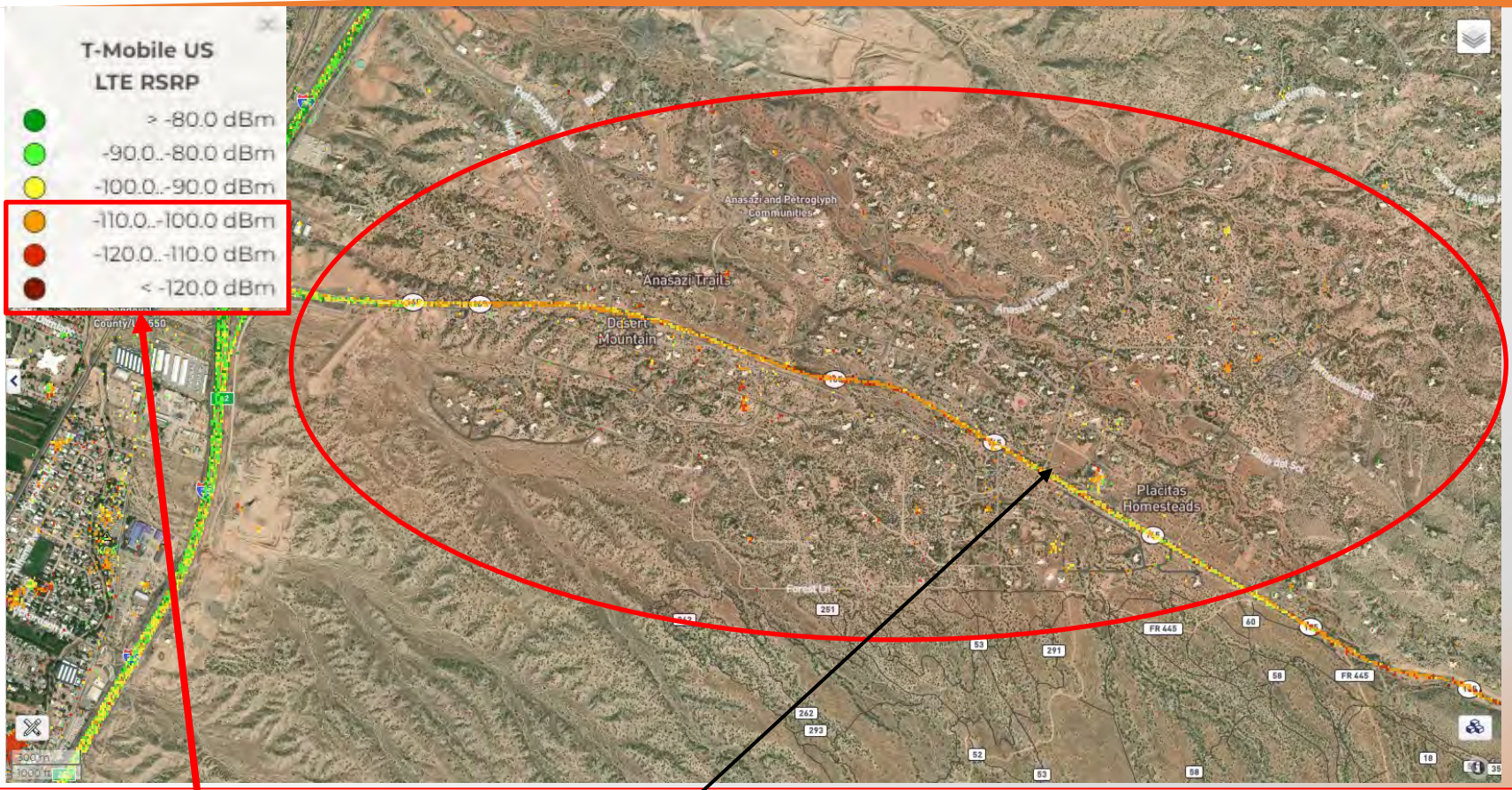
2024

T-Mobile Sites



2024

Ookla T-Mobile 4G



Less than outdoor Coverage

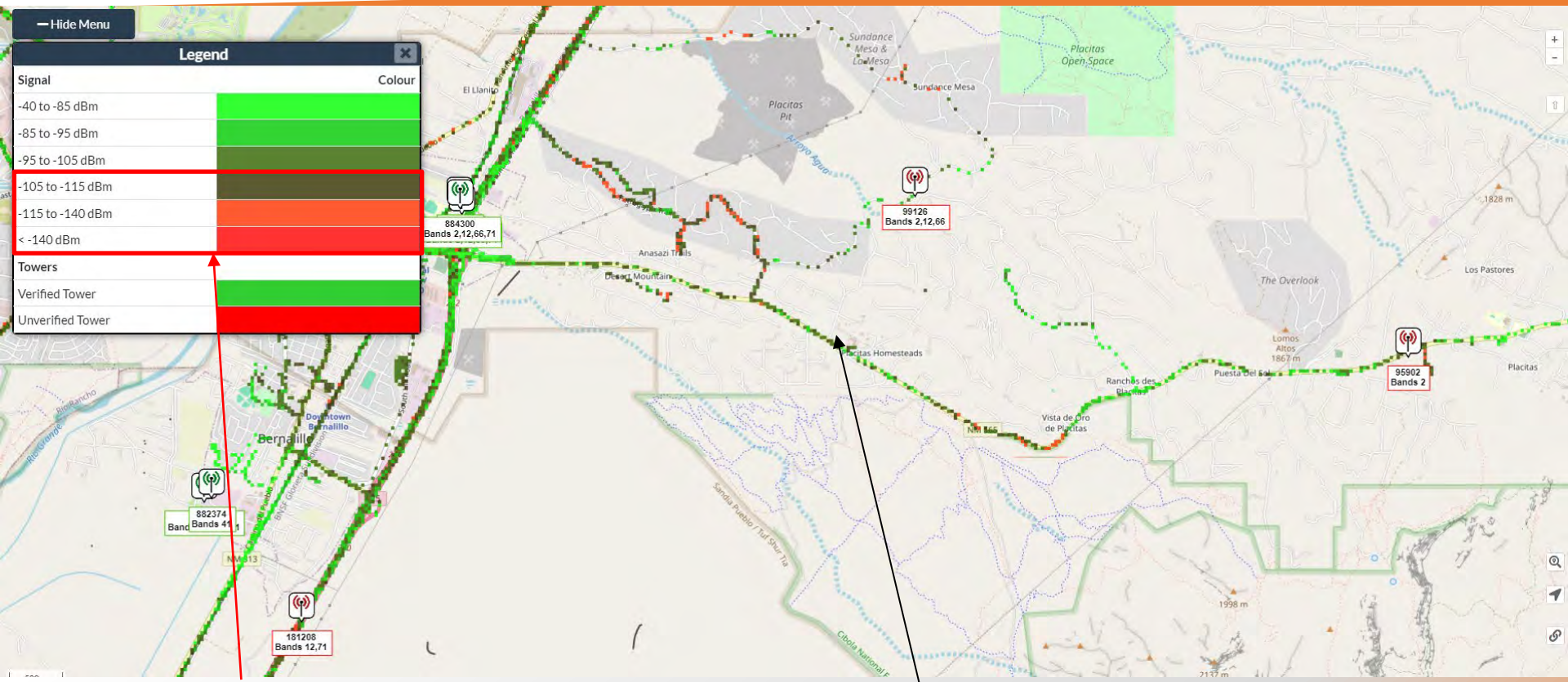
Proposed Site

The area in the red circle is what the proposed site would impact

The area is showing a significant number of mobiles reporting less than outdoor service

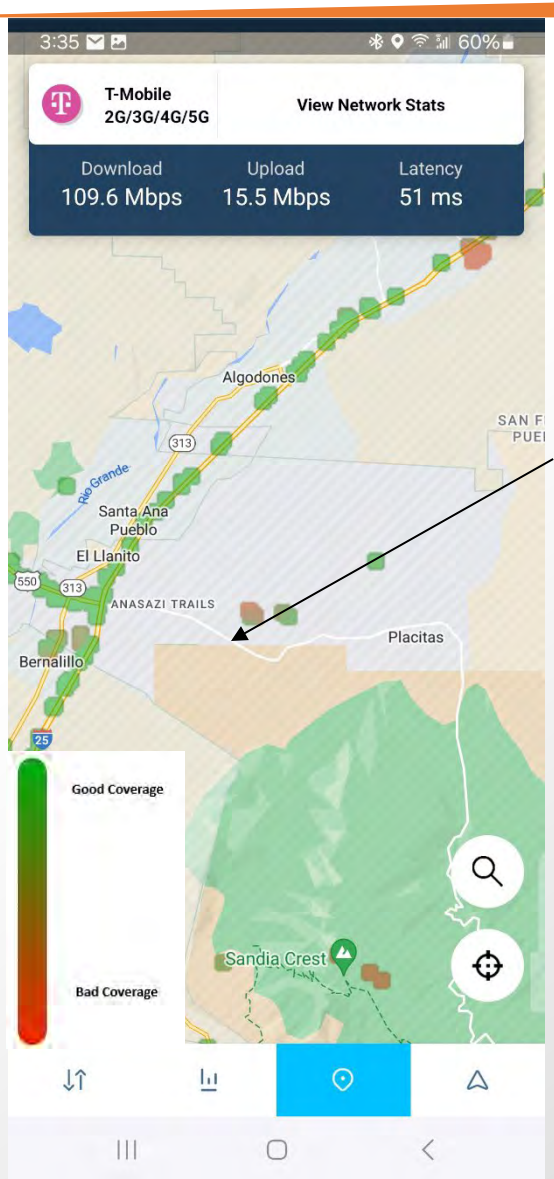
2024

T-Mobile CellMapper



2024

Open Signal
T-Mobile Quality Map



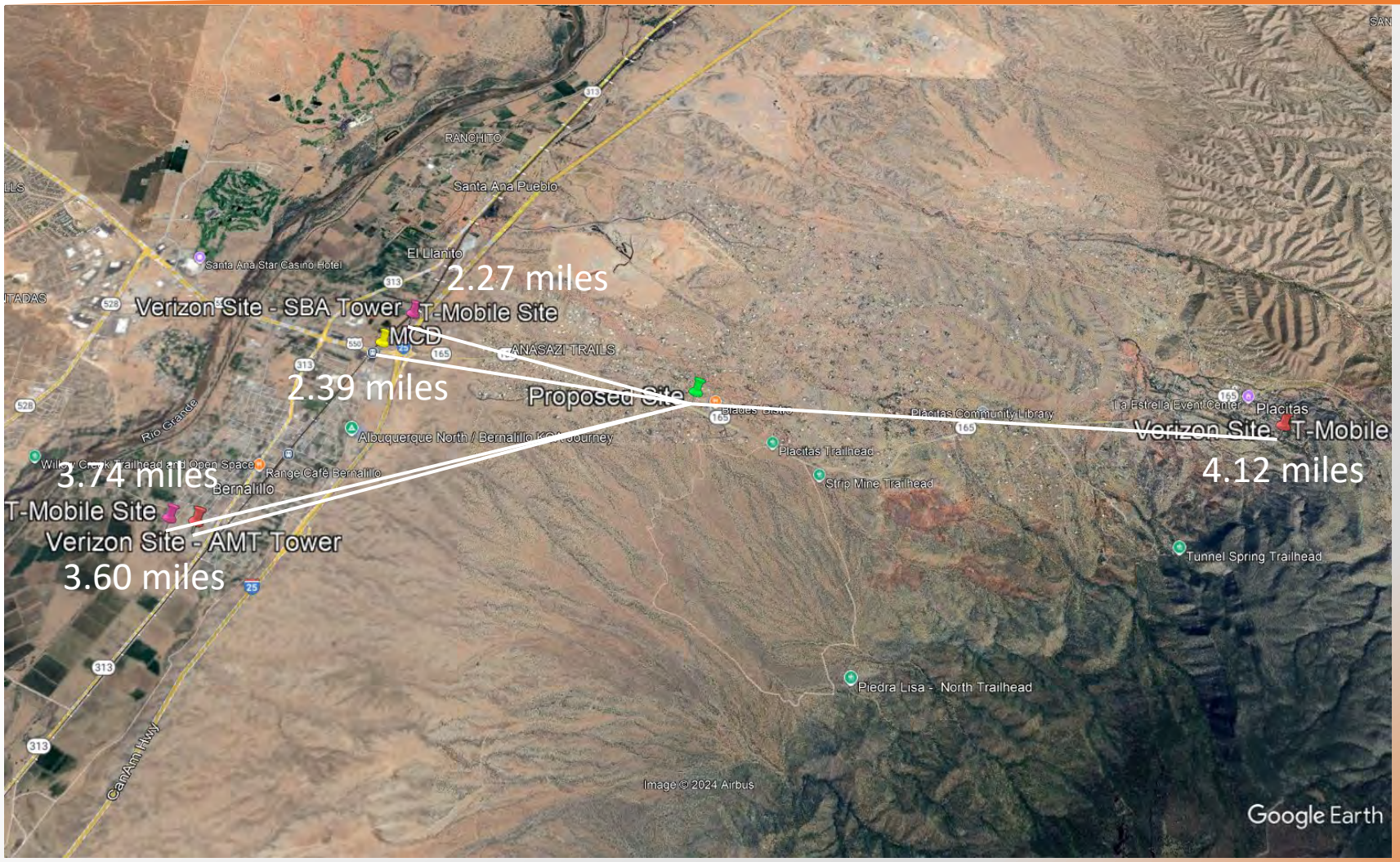
This map show mobiles reporting quality of their connections to the network. This is crowdsource data from T-Mobile users made available by the OpenSignal App: https://www.opensignal.com/apps#section-os-app

Green data points show good coverage and red data points show bad coverage and lack of data points show no coverage

There are bad coverage points in the area and a few good coverage points.

2024

Towers within 4 miles



2024

Zoning Document

Site Name: ABQ Tierra Madres_SPIKE

6409 Eligible Facility Request: N/A

Application Filing Date: 9/30/25

150 days to shotclock deadline: 2/27/26

NOI Issuance Due Date: 10/30/25

Due 30 days from application filing date. (Note: If we get an NOI (notice of incomplete) the shot clock stops until we submit the additional application materials listed in the NOI) If we don't get an NOI, the shot clock continues to run.

NOI Response Date:

This is the date the shot clock starts up again when we respond to an NOI.

Jurisdiction and Contact: Sandoval County, NM Daniel Beaman Director Plng&Develpment

Notes:

dbeaman@sandovalcountynm.gov and lory@telecomlawfirm.com (3rd Party reviewer)