

PUBLIC HEARING

ADMINISTRATIVE PERMIT #10029

LYXN CONSULTING

125' TELECOMMUNICATIONS TOWER

PLANNING DIRECTOR PACKET

PUBLIC HEARING

STAFF REPORT



MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department

Development Services Division

350 East Dahlia Avenue • Palmer, AK 99645

Phone (907) 861-7822

www.matsugov.us

DEVELOPMENT SERVICES DIVISION STAFF REPORT

Date: August 19, 2024

File Number: 10029

Applicant: Jeff Colantino, on behalf of Lynx Consulting


Property Owner: Matanuska-Susitna Borough


Request: Administrative Permit in accordance with MSB 17.67 – Tall Structures Including Telecommunication Facilities, Wind Energy Conversion Systems, and Other Tall Structures

Location: 5182 N. Pittman Road, Tax ID# 5256000T00A

Size of Property: Approximately 2.01 acres

Proposed Lease Area: Approximately 30' x 30' within Tax ID# 5256000T00A

Reviewed By: Jason Ortiz, Development Services Manager 

Staff: Rick Benedict, Current Planner 

Staff Recommendation: Approval with conditions

EXECUTIVE SUMMARY

An Administrative Permit application under MSB 17.67 – Tall Structures Including Telecommunication Facilities, Wind Energy Conversion Systems, and Other Tall Structures, has been submitted to construct a 125-foot-tall, galvanized steel monopole tower on the above-referenced Borough-owned property within a 30' x 30' leased area.

A tall structure exceeding 85 feet in height is only permitted upon the issuance of an Administrative or Conditional Use Permit. Unless this type of use is maintained under and in accordance with a lawfully issued permit, a tall structure is declared to be a public nuisance. The operation of such a land use without a permit is prohibited.

LAND USE

Existing Land Use:

The subject parcel is Borough-owned, approximately 2.01 acres in size, and located within a safety subdivision and the Meadow Lakes Community Council area. West Lakes Public Safety Building, Fire Station 7-2, is on the property, and stores Borough-owned equipment for fire and emergency operations. The fire station was constructed around 2002 and is not manned full-time and does not house fire personnel overnight.

Surrounding Land Use:

Adjacent parcels to the north, east, south, and west range in size from 38.22 to 76.46 acres and are undeveloped. The owners of these parcels vary from the State of Alaska, the University of Alaska, and the Matanuska Electric Association. North Church Road abuts the subject property to the east, and North Pittman Road abuts the subject property to the south. Further west, north, and east are residential properties ranging from .95 to 6.15 acres. Most have residential structures; however, some are undeveloped. Larger undeveloped parcels exist further to the south of the subject parcel and range from 38.48 to 123.82 acres in size.

REVIEW OF APPLICABLE CRITERIA AND FINDINGS

MSB 17.03 – Public Notification

Staff mailed 84 notices to all property owners within a one-half-mile radius of the subject property and to the Meadow Lakes Community Council on July 18, 2024. The Frontiersman published the public hearing announcement in the July 24, 2024, edition. Staff posted the application material on the Borough website for public review on August 1, 2024. A request for comment was emailed to the Meadow Lakes Community Council and other governmental agencies on August 5, 2024. Staff received a response in support of the proposed tower from the Meadow Lakes Community Council on August 15, 2024. On August 7, 2024, one comment in opposition to the proposed tower was received from the public. On August 8, 2024, the MSB Land & Resource Management Division responded concerning the applicant's land lease status.

Section 17.67.040 Types of Permits Available

(A) *There are three types of permits available for tall structures:*

(1) *Administrative permit: new tall structures that are greater than 85 feet but less than or equal to 125 feet. The applicant may request that the decision on an administrative permit be made by the planning commission. The request shall be in writing at the time of application and all requirements for a conditional use permit shall be followed.*

(2) *Conditional use permit: new tall structures greater than 125 feet; or tall structures that exceed the height threshold at which a conditional use permit within a special land use district is required.*

(3) *Network improvement permit: allows legally constructed telecommunication towers to be increased in height in accordance with MSB 17.67.110.*

Findings of Fact:

1. According to the application material, the proposed tall structure will be a 125-foot-tall, galvanized steel monopole telecommunications tower.

2. The applicant has not requested that the Planning Commission decide on this Administrative Permit application.

Conclusion of Law: Based on the above findings, the proposed use meets the criteria to qualify for an Administrative Permit for the construction of a 125-foot-tall structure (MSB 17.67.040(A)(1)).

Section 17.60.080 Standards for Approval of New Tall Structures

(A) A permit for a new tall structure may only be approved if it meets the requirements of this section in addition to any other applicable standards required by this chapter.

(B) In granting or denying a permit, the commission or director shall make findings on whether the applicant has demonstrated that:

(1) To the extent that is technically feasible and potentially available, the location of the tall structure is such that its negative effects on the visual and scenic resources of all surrounding properties have been minimized;

Findings of Fact:

1. According to the application material, the proposed tall structure equipment compound will be located approximately 40 feet from the northern property line, 196 feet from the eastern property line, 180 feet from the southern property line, and 125 feet from the western property line.
2. According to the application material, the proposed telecommunications tower will be approximately 55 feet from the northern property line, 211 feet from the eastern property line, 195 feet from the southern property line, and 140 feet from the western property line.
3. The closest residential structure to the west is approximately 1,184 feet from the proposed tower.
4. The closest residential structure to the north is approximately 1,346 feet from the proposed tower.
5. The closest residential structure to the east is approximately 1,754 feet from the proposed tower.
6. The closest residential structure to the south is approximately 3,398 feet from the proposed tower.
7. Adjacent parcels to the north, east, south, and west range in size from 38.22 to 76.46 acres and are undeveloped.
8. The University of Alaska owns the adjacent parcel to the west and north.
9. The State of Alaska owns the adjacent parcels to the south.
10. The Matanuska Electric Association owns the adjacent parcel to the east.
11. North Church Road abuts the subject property to the east, and North Pittman Road abuts the subject property to the south.
12. Further west, north and east are residential properties ranging from .95 to 6.15 acres. Most have residential structures; however, some are undeveloped.

13. Larger undeveloped parcels exist further south of the subject parcel and range from 38.48 to 123.82 acres.
14. Existing vegetation, the proposed location of the tower, the minimal development in the area, and the existing site provide natural barriers that help to minimize the visual impacts on the surrounding parcels.
15. On August 15, 2024, the Meadow Lakes Community Council responded to public notice indicating its support of the proposed tower because it would benefit the community.
16. On August 8, 2024, the MSB Land & Resource Management Division responded to an internal agency review request with a “no objection” to issuing a permit for the proposed tower. However, Land & Resource Management commented that a land lease must be finalized with the Borough prior to the commencement of construction on the subject property for the area indicated in the application material.

Discussion: Based on comments from the Land & Resource Management Division, staff recommends a condition that the applicant must secure a lease from the Borough to occupy the area as indicated in the application material prior to the construction of the proposed equipment compound and telecommunications tower and provide proof to the Planning Director.

In addition, staff recommends a condition that the lease with the Borough be maintained during the life of the proposed tower and compound on the subject property.

Conclusion of Law: Based on the above findings, and with conditions, the location of the tall structure is such that its negative effects on the visual and scenic resources of all surrounding properties have been minimized (MSB 17.67.080(B)(1)).

(2) Visibility of the tall structure from public parks, trails recognized within adopted borough plans, and water bodies has been minimized to the extent that is technically feasible and potentially available;

Findings of Fact:

1. The closest recognized trail is the Baldy Mountain Trailhead, approximately 1.6 miles northeast of the proposed tower.
2. The closest waterbody is Chignaki Pond, approximately 3,975 feet east of the proposed tower.
3. The closest public park is Wonderland Park, approximately 3.5 miles southeast of the proposed tower.
4. Existing vegetation, the proposed location of the tower, the minimal development in the area, and the existing site provide natural barriers that help to minimize the visual impacts on the surrounding parcels.

Conclusion of Law: Based on the above findings, the proposed tall structures' visibility from public parks and trails has been minimized (MSB 17.67.080(B)(2)).

(3) The tall structure will not interfere with the approaches to any existing airport or airfield that are identified in the borough's regional aviation system plan or by the Alaska State Aviation System Plan; and

Findings of Fact:

1. According to the Matanuska-Susitna Borough’s database of registered airports and landing strips, one existing airport (Wasilla Airport) is approximately 3.7 miles south of the proposed tower.
2. According to the application material, the proposed tower will not interfere with the approaches to any existing airport or airfield.

Conclusion of Law: Based on the above findings, the proposed tall structure will not interfere with the approaches to any existing airport or airfield that are identified in the Borough’s regional aviation system plan or by the Alaska State Aviation System Plan (MSB 17.67.080(B)(3)).

(4) Granting the permit will not be harmful to the public health, safety, convenience, and welfare.

Findings of Fact:

1. The subject parcel is Borough-owned, approximately 2.01 acres in size, and located within a safety subdivision and the Meadow Lakes Community Council area.
2. On August 15, 2024, the Meadow Lakes Community Council responded to public notice indicating its support of the proposed tower because it would benefit the community.
3. On August 7, 2024, one comment opposing the proposed tower was received from the public.
4. West Lakes Public Safety Building, Fire Station 7-2, is on the property, which stores Borough-owned equipment for fire and emergency operations.
5. West Lakes Fire Station 7-2 is not manned full-time and does not house fire personnel overnight.
6. According to the application material, the proposed tall structure equipment compound will be located approximately 40 feet from the northern property line, 196 feet from the eastern property line, 180 feet from the southern property line, and 125 feet from the western property line.
7. According to the application material, the proposed telecommunications tower will be approximately 55 feet from the northern property line, 211 feet from the eastern property line, 195 feet from the southern property line, and 140 feet from the western property line.
8. Access to the tower facility is made via existing state-permitted driveways onto North Church Road and North Pittman Road.
9. According to the application material, the proposed tower is located within a seven-foot-tall secured and fenced area.
10. According to the application material, the gate providing access to the facility will be secured by a stainless-steel chain with a lock.
11. The applicant submitted site plans for the proposed tower and compound, which contains certified drawings from Bertrand White, an Alaska Registered Professional Engineer.
12. The applicant submitted structural design criteria for the proposed tower by Wells Holmes, an Alaska Registered Structural Engineer with Vector Engineers, indicating the tower can

sustain basic wind speeds of 119 mph (3-second gust), or 60 mph basic wind speed (3-second gust) with a ½ inch radial ice build-up.

13. According to the application material, breakpoint technology is not engineered into the proposed tower's design.
14. The closest residential structure is located to the west and is approximately 1,184 feet from the proposed tower.
15. According to the application material, the proposed tower will expand coverage and improve cellular and data performance in the area.
16. The applicant provided information obtained from the Federal Aviation Administration's (FAA) online Notice Criteria Tool indicating that the proposed tower does not require a determination of no hazard to air navigation because it does not exceed thresholds requiring notice to the FAA.
17. According to the application material, the FAA does not require lighting on the proposed tower.
18. According to the application material, the proposed tower will not be lighted.
19. The applicant did not submit documentation demonstrating that the Federal Communications Commission (FCC) has approved the proposed telecommunications tower at the location identified in the application material.

Discussion: Staff received one comment opposing the proposed tower from a resident approximately 1.6 miles southwest. The resident noted their objection to the proposed tower due to its potential to negatively affect property values and expose the public to Radiofrequency (RF) Electromagnetic Radiation (EMR).

The United States Congress adopted the Telecommunications Act of 1996 (TA96), which requires cellular towers to comply with the Federal Communication Commission (FCC) health and safety standards for RF-EMR emissions. TA96 also preempts local governments from making zoning and land use decisions based on the environmental effects of RF-EMF emissions. As such, this review does not contemplate the potential environmental effects of electromagnetic radiation. In addition, there is no evidence to support that the proposed tower will negatively affect surrounding property values.

Staff recommends a condition that the applicant provide proof that the proposed tower has been approved by the FCC prior to construction on the subject property.

Conclusion of Law: Based on the above findings, and with conditions, the proposed tower will not be harmful to public health, safety, convenience, and welfare (MSB 17.60.080(B)(4)).

Section 17.67.090 Operation Standards for New Tall Structures

(A) The following setback requirements shall apply to all new telecommunications towers regulated under this chapter:

- (1) The equipment compound shall meet minimum setback distances from all property lines in accordance with MSB 17.55.*

Findings of Fact:

1. According to the application material, the proposed tall structure equipment compound will be located approximately 40 feet from the northern property line, 196 feet from the eastern property line, 180 feet from the southern property line, and 125 feet from the western property line.
2. The subject parcel is Borough-owned, approximately 2.01 acres in size, and located within a safety subdivision and the Meadow Lakes Community Council area.
3. According to the application material, the proposed tower and compound will be within a 30' x 30' leased area on the subject property.
4. On August 8, 2024, the MSB Land & Resource Management Division responded to an internal agency review request with a “no objection” to issuing a permit for the proposed tower. However, Land & Resource Management commented that a land lease must be finalized with the Borough prior to the commencement of construction on the subject property for the area indicated in the application material.

Conclusion of Law: Based on the above findings, and with conditions, the proposed equipment compound meets the minimum setback distances from all property lines in accordance with MSB 17.55 (MSB 17.67.090(A)(1)).

(2) Minimum setback for the tower base shall be a distance equal to the height of the tower.

(a) The commission, or director if it is an administrative permit, may reduce the setback to a distance less than the height of the tower, if the applicant demonstrates there is no risk to public health, safety, or welfare of adjacent property owners.

Findings of Fact:

1. According to the application material, the proposed tall structure will be a 125-foot-tall, galvanized steel monopole telecommunications tower.
2. According to the application material, the proposed tower will be approximately 55 feet from the northern property line, 211 feet from the eastern property line, 195 feet from the southern property line, and 140 feet from the western property line.
3. Adjacent parcels to the north, east, south, and west range in size from 38.22 to 76.46 acres and are undeveloped.
4. The University of Alaska owns the adjacent parcel to the west and north.
5. The closest residential structure is located to the west and is approximately 1,184 feet from the proposed tower.
6. West Lakes Public Safety Building, Fire Station 7-2, is on the property, which stores Borough-owned equipment for fire and emergency operations.
7. West Lakes Fire Station 7-2 is not manned full-time and does not house fire personnel overnight.
8. According to the application material, the tower's proposed location is approximately 87 feet northwest of the West Lakes Fire Station 7-2.

9. According to the application material, the proposed tower is located within a seven-foot-tall secured and fenced area.
10. According to the application material, the gate providing access to the proposed equipment compound will be secured by a stainless-steel chain with a lock.
11. The applicant submitted site plans for the proposed tower and compound, which contains certified drawings from Bertrand White, an Alaska Registered Professional Engineer.
12. The applicant submitted structural design criteria for the proposed tower by Wells Holmes, an Alaska Registered Structural Engineer with Vector Engineers, indicating the tower can sustain basic wind speeds of 119 mph (3-second gust), or 60 mph basic wind speed (3-second gust) with a ½ inch radial ice build-up.
13. According to WindAlert.com, which contains historical wind data for the Wasilla area between 2008 and 2024, January has the highest winds, with prevailing winds from the northeast and gusts up to 40 mph.
14. According to the application material, West Lakes Fire Station 7-2 is within the tower's fall radius.
15. According to the application material, breakpoint technology is not engineered into the proposed tower's design.
16. According to the application material, the tower's proposed location was chosen by the West Lakes Fire Department District 2 Fire Chief to facilitate Station 7-2's future development.
17. There are no residential homes within the 125-foot fall radius of the proposed tower.

Discussion: On July 8, 2024, MSB PD&E responded with “no comment” after staff requested a review of the proposed compound and tower engineering plans concerning the requirements of MSB 17.67.060(C)(2) and (3), MSB 17.67.070(A)(2) and (5), MSB 17.67.080(B)(4), and MSB 17.67.090(A)(2)(a). Given the findings noted above, staff recommends reducing the setback distance to the fire station and northern lot line as proposed in the application material.

Conclusion of Law: Based on the above findings, the applicant has demonstrated there is no risk to the public health, safety, or welfare of adjacent property owners (MSB 17.67.090(A)(2)(a)).

(B) For all tall structures regulated under this chapter, adequate vehicle parking shall be provided on the subject property, outside of public use easements and rights-of-way, to enable emergency vehicle access.

(1) No more than two spaces per provider shall be required.

Findings of Fact:

1. According to the application material, two parking spaces are provided at the proposed tower location.

Conclusion of Law: Based on the above finding, adequate vehicle parking has been provided (MSB 17.67.090(B)(1)).

(C) The following requirements apply to all new and existing telecommunication towers and wind energy conversion systems regulated under this chapter:

- (1) The following signage shall be visibly posted at the equipment compound:*
- (a) informational signs for the purpose of identifying the tower such as the antenna structure registration number required by the Federal Communications Commission (FCC), as well as the party responsible for the operation and maintenance of the facility;*

Findings of Fact:

1. According to the application material, signage will be posted identifying the tower's FCC registration number and the party responsible for the operation and maintenance.

Conclusion of Law: Based on the above finding, adequate signage has been provided (MSB 17.67.090(C)(1)(a)).

(b) if more than 220 volts are necessary for the operation of the facility, warning signs shall be located at the base of the facility and shall display in large, bold, high contrast letters the following: "HIGH VOLTAGE – DANGER"; and

Findings of Fact:

1. According to the application material, less than 220 volts are necessary for the facility's operation.

Conclusion of Law: Based on the above findings, a "HIGH VOLTAGE - DANGER" sign is not required to be displayed on the equipment compound (MSB 17.67.090(C)(1)(b)).

(c) a 24-hour emergency contact number.

Findings of Fact:

1. According to the application material, signage identifying the tower and the party responsible for the operation and maintenance will be posted.
2. According to the application material, a 24-hour contact number will be posted at the proposed tower location.

Conclusion of Law: Based on the above findings, a 24-hour emergency contact number has been provided (MSB 17.67.090(C)(1)(c)).

(2) A fence or wall not less than six feet in height with a secured gate shall be maintained around the base of the tower.

Findings of Fact:

1. According to the application material, the proposed tower is located within a seven-foot-tall secured and fenced area.
2. According to the application material, the gate providing access to the facility will be secured by a stainless-steel chain with a lock.

Conclusion of Law: Based on the findings above, a fence not less than six feet in height with a secured gate, is being provided (MSB 17.67.090(C)(2)).

STAFF RECOMMENDATIONS

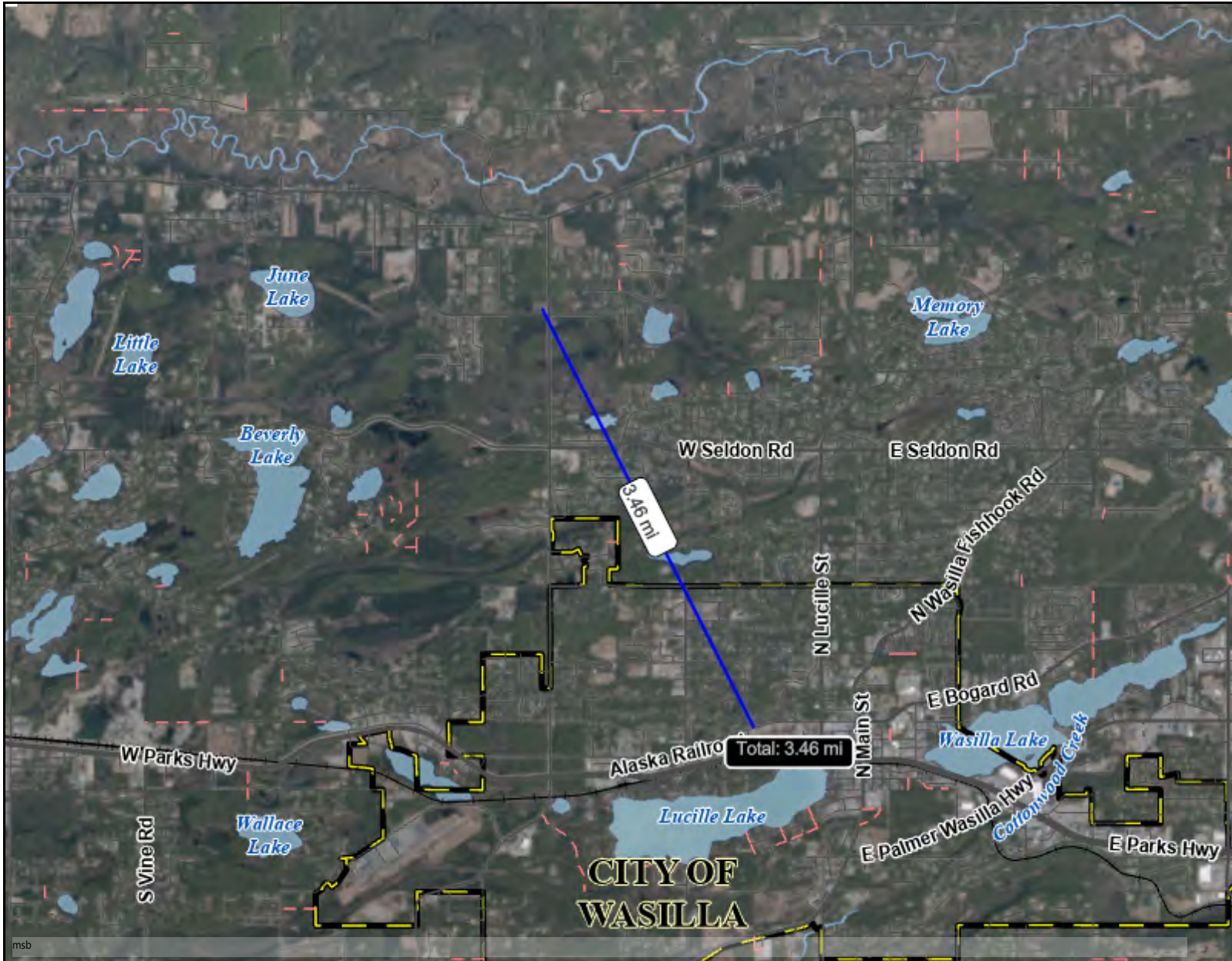
Staff recommends approval of the Administrative Permit to construct a 125-foot-tall, galvanized steel monopole telecommunications tower on the subject parcel. This application meets all the applicable standards of MSB 17.67, and staff recommends approval of this request with the following conditions:

1. Prior to the construction of the proposed equipment compound and telecommunications tower, the applicant must secure a lease from the Borough to occupy the area as indicated in the application material. Proof shall be provided to the Planning Director.
2. Prior to the construction of the proposed equipment compound and telecommunications tower, the applicant shall provide proof to the Planning Director that the FCC has approved the proposed tower.
3. A lease with the Borough shall be maintained to occupy the area identified in the application material during the life of the proposed tower and equipment compound.
4. All aspects of the operation shall comply with the description detailed in the application material and with the conditions of this permit. Before any change of the conditional use, an amendment to the Administrative Permit shall be required.
5. The operation shall comply with all federal, state, and local regulations.
6. Borough-authorized representatives shall be allowed to inspect the site and related records at reasonable times to monitor compliance with all permit conditions. Upon reasonable notice from the Borough, the permittee shall provide necessary assistance to facilitate authorized inspections (MSB 17.67.300(D)).
7. The operation shall obtain a Network Improvement Permit from the Borough to increase the overall height or location of the telecommunications tower on the site in accordance with MSB 17.67.110.
8. The equipment compound and telecommunications tower shall be removed, at the owner's expense within 90 days after abandonment or termination of the permit in accordance with MSB 17.67.130(A)(1).

MAPS



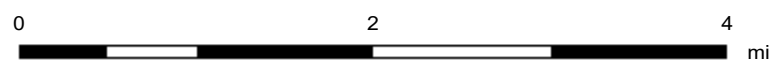
Matanuska-Susitna Borough



- Legend**
- ParcelViewer
- Roads**
- Highway
 - Major Road
 - Medium Road
 - Minor Road
 - Ramp
 - Primitive Road
 - Private Road
 - Not Constructed
- Alaska Railroad**
- Alaska Railroad
- Mat-Su Borough Boundary**
- Mat-Su Borough Boundary
- Incorporated Cities**
- Incorporated Cities

1 : 144448

THIS MAP IS NOT TO BE USED FOR NAVIGATION

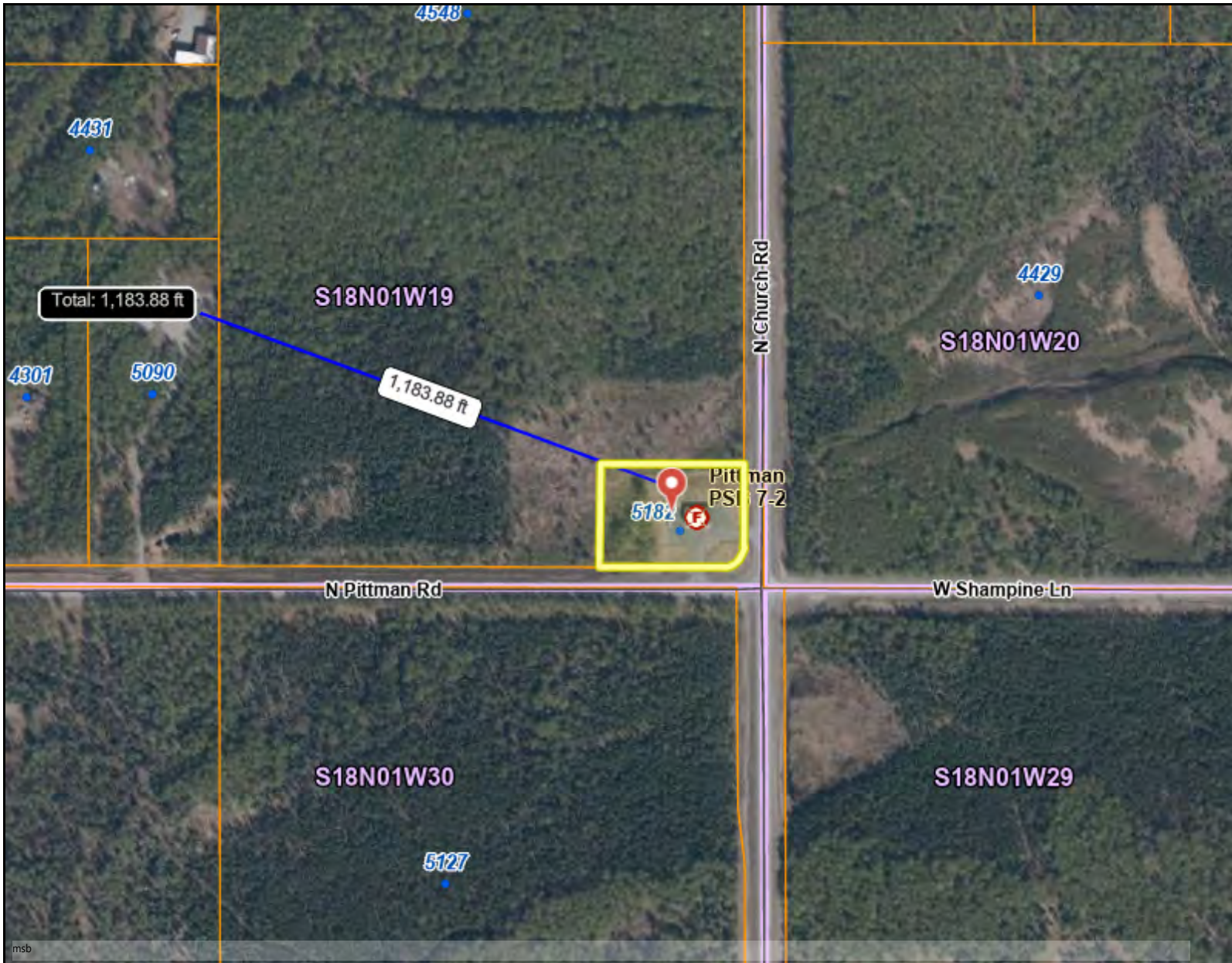


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Notes
Closest public park.



Matanuska-Susitna Borough



Legend

ParcelViewer

Public Facilities

- Fire and Volunteer Fire

Roads

- Medium Road
- Minor Road

Mat-Su Borough Boundary

-

Address Numbers

-

Parcels

-

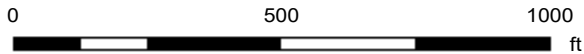
Section Lines

-

1 : 9028



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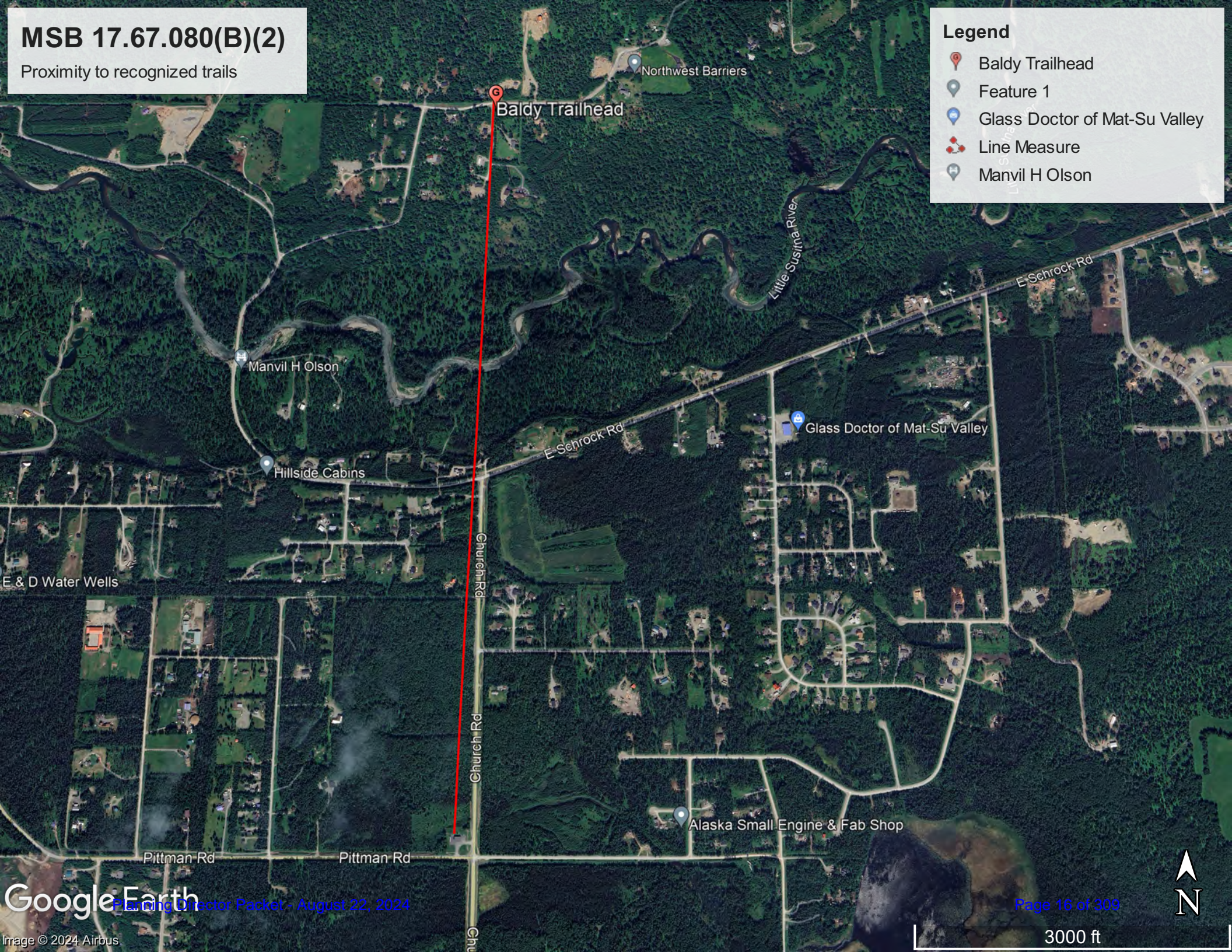
Notes
Closest residential structure.

MSB 17.67.080(B)(2)

Proximity to recognized trails

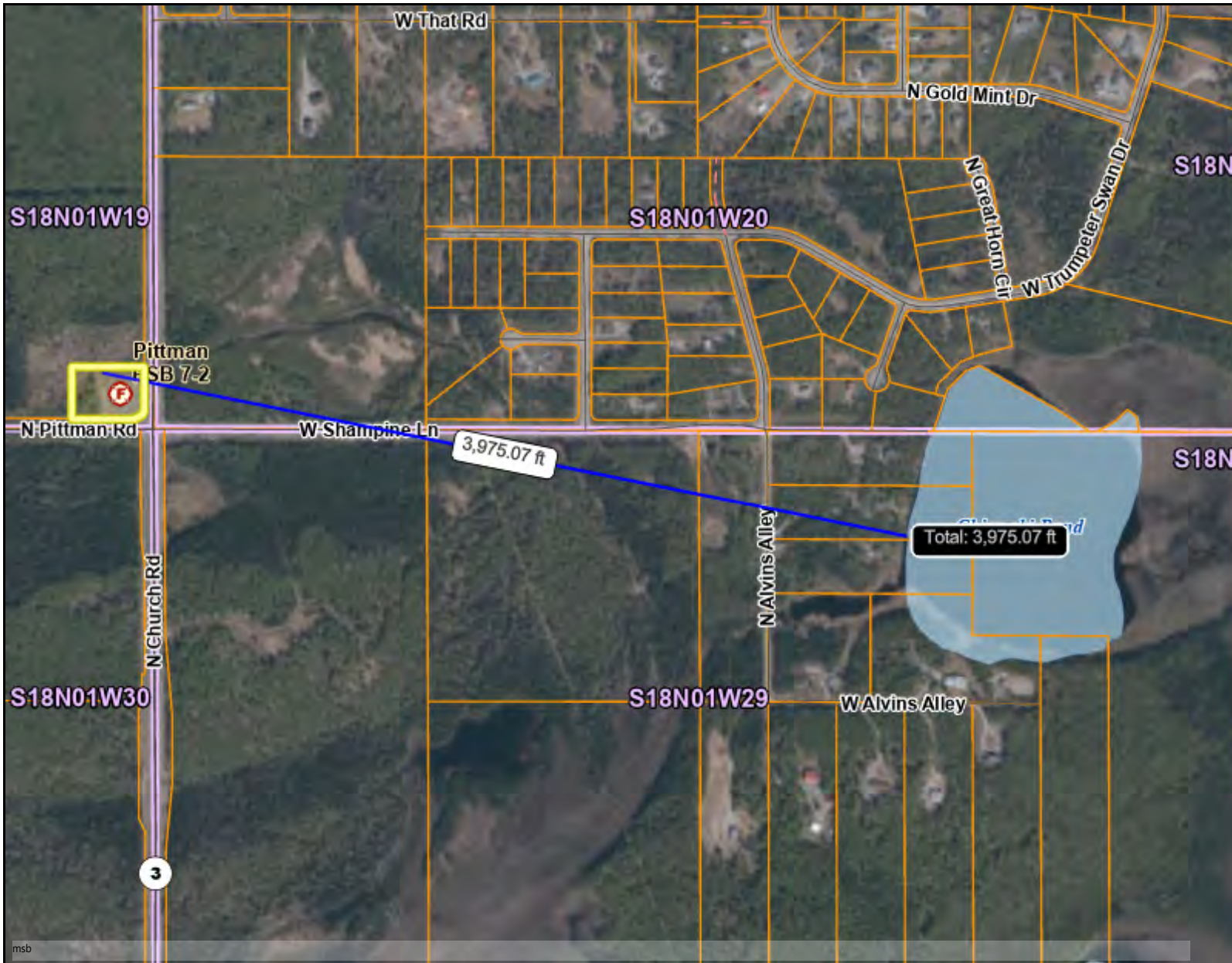
Legend

-  Baldy Trailhead
-  Feature 1
-  Glass Doctor of Mat-Su Valley
-  Line Measure
-  Manvil H Olson





Matanuska-Susitna Borough



Legend

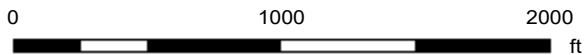
ParcelViewer

- Public Facilities
 - Fire and Volunteer Fire
- Road Mileposts
 -
- Roads
 - Medium Road
 - Minor Road
 - Not Constructed
- Mat-Su Borough Boundary
 -
- Parcels
 -
- Section Lines
 -

1 : 18056



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Notes
Distance to nearest water body.

PUBLIC NOTICING



Matanuska-Susitna Borough

www.matsugov.us

MATANUSKA-SUSITNA BOROUGH NOTICE OF PUBLIC MEETINGS

All meetings of recognized boards, committees, and commissions of the Borough are open to the public and are held at Borough offices, 350 E. Dahlia Ave., Palmer, AK, unless specified otherwise. Three or more Assembly Members may be present at advertised public meetings of federal, state, and local governments or other entities. Meetings are scheduled as follows:

BOARD	DATE	TIME	LOCATION
Abbreviated Plat	07/24/24	8:30 am	Assembly Chambers
Greater Willow RSA No. 20 Board of Supervisors	07/25/24	7:00 pm	Willow Community Center & Teams ID: 262 219 411 05 Passcode: dHbYe8
Greater Palmer Consolidated FSA No. 132 Board of Supervisors	07/30/24	9:00 am	Palmer Fire Training Center
Abbreviated Plat	07/31/24	8:30 am	Assembly Chambers
Platting Board (To Participate Telephonically Call 855-290-3803)	08/01/24	1:00 pm	Assembly Chambers
Joint Borough Assembly/School Board Committee on School Issues	08/05/24	12:00 pm	MSBSD Central Office
Planning Commission (To Participate Telephonically Call 855-290-3803)	08/05/24	6:00 pm	Assembly Chambers, Front
Assembly Regular Meeting (To Provide Public Comment Telephonically Call 855-225-2326)	08/06/24	6:00 pm	Assembly Chambers, Front
Abbreviated Plat	08/07/24	8:30 am	Assembly Chambers, Front
Talkeetna Sewer & Water SSA No. 36 Board of Supervisors	08/07/24	1:00 pm	Talkeetna Library Conference Room

If you would like further information on any of these meetings or are interested in serving on any of the advisory boards, please call the Borough Clerk's Office at 907-861-8683, Monday through Friday, 8 a.m. to 5 p.m. The Borough's website address is: <https://www.matsugov.us/publicmeetings>

Disabled persons needing reasonable accommodation in order to participate at a Borough Board/Commission meeting should contact the Borough ADA Coordinator at 907-861-8432 at least one week in advance of the meeting.

The Community Council meetings scheduled are: (Community Councils are not agencies or subgroups of the Borough. There may be a quorum of Mat-Su Borough advisory boards in attendance at community council meetings.)

North Lakes Community Council Annual Free BBQ	07/27/24	11:00 am	Boys & Girls Club
Sutton Community Council	07/31/24	7:00 pm	Sutton Public Library & Zoom Meeting ID: 938 1463 4307 Passcode: 614331
Susitna Community Council	08/01/24	7:00 pm	Upper Susitna Senior Center
Fishhook Community Council Board Meeting	08/05/24	6:00 pm	St Herman's Church
Talkeetna Community Council	08/05/24	7:00 pm	Talkeetna Library & Zoom Meeting ID: 450 310 5937 Passcode: 610720
Knik-Fairview Community Council	08/07/24	7:00 pm	Settlers Bay Lodge
Willow Area Community Organization	08/07/24	7:00 pm	Willow Community Center

Publish Date: July 24, 2024

0724-31

MATANUSKA-SUSITNA BOROUGH NOTICE OF VACANCIES IN OFFICE AND CANDIDATE FILING

The Matanuska-Susitna Borough will hold a **regular election on Tuesday, November 5, 2024**. The following offices are to be filled at the election:

- Mayor - four-year term ending November 2028
- Assembly District 3 - four-year term ending November 2028
- Assembly District 6 - four-year term ending November 2028
- Assembly District 7 - four-year term ending November 2028
- School Board District 1 - three-year term ending November 2027
- School Board District 4 - three-year term ending November 2027
- School Board District 5 - one-year term ending November 2025

The candidate filing period opens at 8 a.m. on **Monday, August 19, 2024**, and closes at 5 p.m. on **Friday, August 30, 2024**.

Candidate Qualifications: Any person is eligible for Borough office if the person is a qualified voter of the Borough and meets State and Borough requirements for the office. Candidates shall provide proof that they are eligible or shall be eligible by the date of the election, to be recognized as a candidate for any election.

- **Candidates for Mayor** shall be a borough resident for one year immediately prior to the election and meet the requirements of MSB 2.08.030;
- **Candidates for Assembly** seats shall reside in the Assembly District for which they file for one year immediately prior to the election and meet the requirements of MSB 2.12.030; and
- **Candidates for School Board** seats shall reside in the district for which they file for and meet the requirements of MSB 19.04.

Candidate Declarations: Declarations of candidacy and other candidate filing forms shall be filed during the candidate filing period, beginning at **8 a.m. on Monday, August 19, 2024, through 5 p.m. on Friday, August 30, 2024**, at the Borough Clerk's Office, located at 350 E. Dahlia Avenue, Palmer, Alaska. Candidate filing packets will be available for pick-up starting Wednesday, August 14 at 8 a.m., but cannot be filed until the filing period opens on August 19. Candidate filing forms can be obtained through the Borough Clerk's Office or downloaded at www.matsugov.us/elections.

If you are interested in running for office and would like more information, please call the Borough Clerk's Office at 907-861-8683.

Publish Date: July 24, 2024

0724-06

MATANUSKA-SUSITNA BOROUGH VOTE EARLY/ABSENTEE OR BY-MAIL

REGULAR ELECTION: TUESDAY, NOVEMBER 5, 2024

Interested Borough registered voters may apply for an absentee by-mail ballot by submitting a completed Absentee By-Mail Ballot Application to the Borough Clerk's Office, by the deadline: **Tuesday, October 29, 2024.**

Absentee By-Mail Ballot Applications are available online at www.matsugov.us/elections, from the Borough Clerk's Office located at 350 E. Dahlia Avenue in Palmer, or by calling 907-861-8683 to request an application. Applications must be submitted annually.

Early/Absentee In-Person voting will begin on **Monday, October 21, 2024**, and continue through **Monday, November 4, 2024** at the following locations and times:

- **Mat-Su Borough Building: 350 E. Dahlia Avenue, Palmer**
 - o Monday-Friday 8 a.m. - 5 p.m.
- **Division of Elections, Mat-Su Regional Office: 1700 E. Bogard Road, Building B, Suite 102, Wasilla**
 - o Monday-Friday 8 a.m. - 5 p.m., Saturdays 10 a.m. - 4 p.m., and Sundays 12 p.m. - 4 p.m.
- **Houston City Hall and Talkeetna and Trapper Creek Libraries**
 - o October 21 through November 4 - During Normal Business Hours

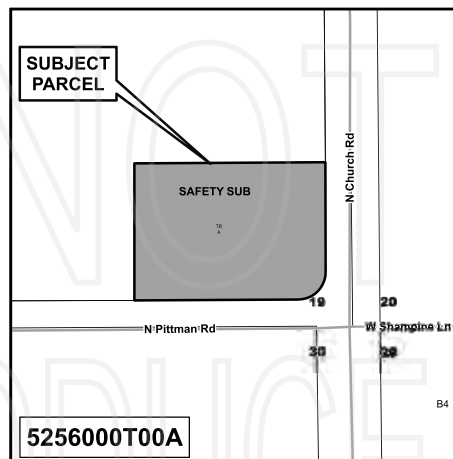
Voting Assistance

A Touch Screen Voting unit will be available at the Mat-Su Borough Building and at the Division of Elections, Mat-Su Regional Office 15 days prior to the election at the dates and times specified above. Touch screen voting is intended for the blind, disabled and voters with reading difficulties. The touch screen units allow disabled voters to vote unassisted with a magnified, high contrast and audio ballot.

For more information, please call the Borough Clerk's Office at 907-861-8683.

Publish Date: July 24, 2024

0724-05



PUBLIC HEARING

Jeff Colantino, on behalf of Lynx Consulting, applied for an Administrative Permit under MSB 17.67 - Tall Structures. The Permit is for a 125-foot telecommunications tower located at 5182 N. Pittman Road, Tax ID #5256000T00A.

The Matanuska-Susitna Borough Planning Director will conduct a public hearing concerning the application on **Thursday, August 22, 2024**, at 9:00 a.m. in the Borough Assembly Chambers located at 350 E. Dahlia Avenue in Palmer. This may be the only presentation of this item before the Planning Director, and you are invited to attend.

Application materials may be viewed online at www.matsugov.us by clicking on "All Public Notices & Announcements." For additional information, you may contact Rick Benedict, Current Planner, by phone: 907-861-8527. Provide written comments

by e-mail to rick.benedict@matsugov.us, or by mail to MSB Development Services Division, 350 E. Dahlia Avenue, Palmer, AK 99645.

The public may provide verbal testimony at the meeting or telephonically by calling 1-855-290-3803. To be eligible to file an appeal from a decision of the Planning Director, a person must be designated an interested party. See MSB 15.39.010 for the definition of an interested party. The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough home page: www.matsugov.us, in the Borough Clerk's office, and at various libraries within the borough.

Comments are due on or before **August 9, 2024**, and will be included in the Planning Director packet. Please be advised that comments received from the public after that date will not be included in the staff report but will be provided to the Director at the meeting.

Publish Date: July 24, 2024

0724-25

ABBREVIATED PLAT AGENDA ASSEMBLY CHAMBERS 350 EAST DAHLIA AVENUE, PALMER

REGULAR MEETING 8:30 A.M. July 31, 2024

A. **LOON ISLAND:** The request is to create one lot from Lots 20 & 21, U.S. Survey No. 4591 to be known as **LOON ISLAND**, containing 9.87 acres +/- . The property is located north Lake Louise, lying within Susitna Lake (Tax ID # 4U04591000L020 / L021); within the NE 1/4 Section 23, Township 08 North, Range 08W East, Copper River Meridian, Alaska. In the Louise, Susitna, & Tyone Lakes Community Council and in Assembly District #7. (Petitioner/Owner: Rayburn E. Newsome Revocable Trust, Staff: Matthew Goddard, Case #2024-082)

B. **RICHISON:** The request is to create two lots from Parcel 4, Waiver #84-47-PWm, recorded as 84-114W to be known as **Richison Subdivision**, containing 10.00 acres +/- . The property is located east of Caswell Lake, north and west of Caswell Creek, and directly west of S Shaman Road (Tax ID # 22N04W02D009); within the SE 1/4 Section 02, Township 22 North, Range 04 West, Seward Meridian, Alaska. In the Susitna Community Council and in Assembly District #7. (Petitioner/Owner: Allen Richison, Staff: Matthew Goddard, Case #2024-083)

Publish Date: July 24, 2024

0724-29



Edna DeVries, Mayor
(907) 861-8683
Edna.DeVries@matsugov.us

Tim Hale, #1
(907) 590-8248
TimHaleDistrict1@gmail.com

Stephanie Nowers, #2
(907) 861-6299
StephanieNowersDistrict2@gmail.com

Dee McKee, #3
(907) 373-3630
Dee.McKee@matsugov.us

Robert Yundt, #4
(907) 232-8340
robbyundtmsb@gmail.com

Bill Gamble, #5
(907) 232-0103
Bill.Gamble@matsugov.us

Dmitri Fonov, #6
(907) 861-8545
fonov@matsugov.us

Ron Bernier, #7
(907) 354-7877
Ron.Bernier@matsugov.us

From: [Permit Center](#)
To: [Rick Benedict](#)
Subject: FW: MatanuskaSusitna Borough Payment Confirmation
Date: Tuesday, August 6, 2024 2:47:27 PM
Attachments: [image001.png](#)

Hi Rick,

Is this one you are waiting on?

Thank you,

Jennifer Monnin, CFM
Permit Technician
350 E Dahlia Ave
Palmer, AK 99645
Jennifer.monnin@matsugov.us
907-861-7822



From: Online Payments <noreply@tylerportico.com>
Sent: Tuesday, August 6, 2024 7:31 AM
To: Permit Center <Permit.Center@matsugov.us>
Subject: MatanuskaSusitna Borough Payment Confirmation

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

MatanuskaSusitna Borough payment confirmation

A payment has been made for Other Permits

Confirmation #: 4D3QJ7XQRF

08/06/2024

Transaction processing fee \$3.41

Description	Amount
Other Permits	\$113.75

Email jcolantino@lynxconsulting.org

Permit ID Verizon Wireless - Shampine site

Customer Name Jeff Colantino

Customer Phone Number (360) 450-8697

Facility Name Shampine

Quantity 1

From: [Ben Borg](#)
To: [Rick Benedict](#)
Cc: [Petra Albecker](#)
Subject: Re: MSB Page Ad: Lynx Consulting
Date: Monday, August 5, 2024 9:08:49 AM

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

WIDTH	3	C
HEIGHT	4.5	INCHES
AREA	13.500	C*INCHES
RATE	\$7.50	/(C*INCH)
COST/INSERTION	\$101.25	
#INSERTIONS	1	
TOTAL	\$101.25	

On Mon, Aug 5, 2024 at 8:51 AM Rick Benedict <Rick.Benedict@matsugov.us> wrote:

Good morning,

Can I please get the cost for the publication of this ad?

Thank you,

Rick Benedict – Current Planner

Development Services Division

Matanuska-Susitna Borough

(907)861-8527 direct

From: Ben Borg <ben.borg@frontiersman.com>
Sent: Monday, July 15, 2024 11:54 AM
To: Rick Benedict <Rick.Benedict@matsugov.us>
Cc: Petra Albecker <petra.albecker@frontiersman.com>; Corinne Lindfors <Corinne.Lindfors@matsugov.us>
Subject: Re: MSB Page Ad: Lynx Consulting

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Thanks, Rick. I have this added to the submission folder for 7.24.

On Mon, Jul 15, 2024 at 11:48 AM Rick Benedict <Rick.Benedict@matsugov.us> wrote:

Hello,

Please see the attached ad, map, and ad request for publication on Wednesday, July 24, 2024.

Thank you!

Rick Benedict – Current Planner
Development Services Division
Matanuska-Susitna Borough
(907)861-8527 direct

--

Sincerely,

Ben Borg

Sales Representative, The Mat-Su Valley Frontiersman & The Anchorage Press



<https://www.frontiersman.com/> and <https://www.anchoragepress.com/>

5751 E Mayflower Ct, Wasilla, AK 99654

(907) 600-1696 OFFICE

(907) 987-2059 CELLULAR

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Support local journalism by subscribing to [The Frontiersman!](#)

--

Sincerely,

Ben Borg

Sales Representative, The Mat-Su Valley Frontiersman & The Anchorage Press



<https://www.frontiersman.com/> and <https://www.anchoragepress.com/>

5751 E Mayflower Ct, Wasilla, AK 99654

(907) 600-1696 OFFICE

(907) 987-2059 CELLULAR

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Fee for Certificate

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For each additional 1,000 pieces, or fraction thereof

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(Notice 123)

Postage: Mailers must affix meter, PC Postage[®], or (uncanceled) postage stamps here in payment of total fee due.

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Total Number of Pounds 16.13.102	Total Postage Paid for Mailpieces 57.96	Fee Paid 12.50
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Mailed For Permit Center	Mailed By I Fodae
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Postmaster's Certification

It is hereby certified that the number of mailpieces presented and the associated postage and fee were verified. This certificate does not provide evidence that a piece was mailed to a particular address.

[Signature]

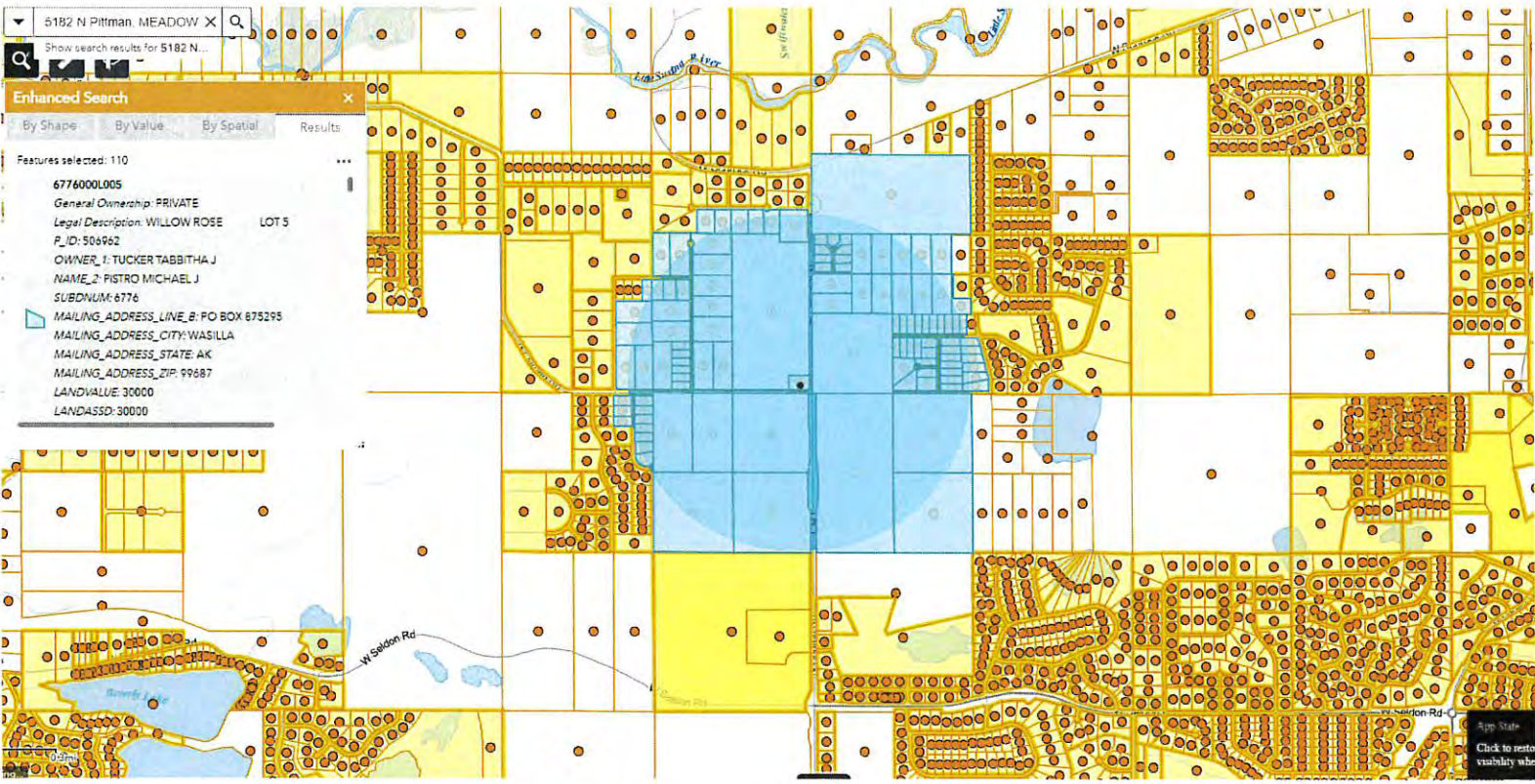
(Postmaster or Designee)



See Reverse for Instructions

NUMBER	Tax Account	OWNER_1	MAILING_ADDRESS_LINE_B	MAILING_A	MAILING_A	MAILING_ADDRESS_ZIP
1	6776000L005	TUCKER TABBITHA & PISTRO MICHAEL	PO BOX 875295	WASILLA	AK	99687
2	6632B02L001	MACKAY AARON & ANNIKA	4235 N SANDHILL CRANE ST	WASILLA	AK	99654
3	18N01W20C018	ALASKA STATE OF DEPT OF NATURAL RESOURCES DIV OF LANDS	550 W 7TH AVE	ANCHORAGE	AK	99501-3579
4	6632B01L011	LIEBSACK JAMES ROBERT	1358 W 11TH AVE #1	ANCHORAGE	AK	99501
5	1601B02L008A	RICHEY TED JR & BETH A	4305 W ARTIST VIEW CIR	WASILLA	AK	99623
6	1349B02L009	SAIKI KEVIN H & BECKY S	4500 N AUTUMN LN	WASILLA	AK	99623-8903
7	6632B03L003	OLIVO-JAIMES ELIAS	3811 S ENGLISH BAY DR	WASILLA	AK	99654-8766
8	6632B01L006	SUBZERO INVESTMENTS LLC	425 W LAKE VIEW AVE	WASILLA	AK	99654
9	6632B02L007	RANCOURT KENNETH D JR & SUSAN M	549 LOGGIN RD	FRANKFORD	ME	04438-3113
10	5526B01L001	BUFF VERNON E JR & LORI FAM TR	3001 W DISCOVERY LOOP	WASILLA	AK	99654-1257
11	1349B01L015	NARDINI COREY	4860 N EDENFIELD RD	WASILLA	AK	99654
12	1349B02L006	ROLLINR MIKE & CHARS TR	4491 N BLUEGRASS LN	WASILLA	AK	99623
13	5526B01L003	BOWEN SETH	PO BOX 875422	WASILLA	AK	99687-5422
14	6776000L007	KAUFMAN REX & MARCIA FAMILY TR	PO BOX 1306	HOMER	AK	99603
15	1349B01L013	ROOT JOHN & NOLTE BEVERLY	2730 E 50TH AVE	ANCHORAGE	AK	99507-1409
16	6776000L001	CUNNINGHAM CODY D	PO BOX 870678	WASILLA	AK	99687-0678
17	18N01W20C038	ANDERSON GREGORY	PO BOX 871945	WASILLA	AK	99687-1945
18	1349B01L014	ERDMAN MICHAEL R & DAWN	5200 E DUNBAR DR	WASILLA	AK	99654
19	2856B02L001A	CARTER RYAN	PO BOX 873184	WASILLA	AK	99687-3189
20	1349B02L005	PATNODE TODD N & CARRIE A	4421 N BLUEGRASS LN	WASILLA	AK	99654-8901
21	18N01W29B004	ALASKA STATE OF AK MENTAL HEALTH TR AUTH	2600 CORDOVA ST, STE 201	ANCHORAGE	AK	99503-2745
22	18N01W20C035	DORTLAND RICHARD A& CAROL	189 E NELSON AVE, BOX 145	WASILLA	AK	99654
23	4835000L011	WINFREE ROBERT T & SHERRI	2694 W STABLE CIR	WASILLA	AK	99654
24	6800B02L013	ESPARZA GERARDO M & EVELIA	1503 7TH ST	LINCOLN	CA	95648
25	18N01W20C007	MATANUSKA ELECTRIC ASSOC INC	PO BOX 2929	PALMER	AK	99645
26	1349B01L019	ESTRADA MATTHEW	6601 W FULLER LAKE CIR	WASILLA	AK	99623
27	6632B03L006	LUCAS CLAY JUNIOR	1901 W THAT RD	WASILLA	AK	99654
28	1349B01L011	FRIDLEY DAVID LYLE & PAAL-FRIDLEY JOAN RENEE	PO BOX 520042	BIG LAKE	AK	99652-0042
29	2856B02L001B	PALANIUK-SHAW KAIRA G	4250 N AUTUMN LN	WASILLA	AK	99623-8909
30	18N01W19D003	ALASKA UNIVERSITY OF BOARD OF REGENTS TRE	1815 BRAGAW ST, STE 101	ANCHORAGE	AK	99508
31	1601B02L008C	RUTH JOHN B	212 ROUND TOP RD	CHESTER	MD	21620-2878
32	18N01W20C029	BUELLER JESSE & YANA	2198 W THAT RD	WASILLA	AK	99654-0448
33	6913B01L005	BOSKOFKY EILEEN	PO BOX 871326	WASILLA	AK	99687-1326
34	4835000L008	SIMIEN LANCE C & SYMATHA & DELLAFOSSE SAVANNAH	2524 W STABLE CIR	WASILLA	AK	99623
35	2856B02L001C	DIAS JESSICA M	4280 N AUTUMN LN	WASILLA	AK	99623
36	6632B03L001	LEVESQUE DONNA L	PO BOX 873971	WASILLA	AK	99687
37	6632B01L004	COWLES RICHARD M	3300 HILAND DR	ANCHORAGE	AK	99504-4078
38	6632B03L009	LINDSLEY RYAN	1891 W TRUMPETER SWAN DR	WASILLA	AK	99654
39	2856B02L001E	WOODS CHRISTOPHER A & HOFSTEDLER KRISTIN	4340 N AUTUMN LN	WASILLA	AK	99623
40	1349B01L016	WAALKES DARRIN M & JESSICA D	2646 SECLUSION DR	ANCHORAGE	AK	99504
41	2856B02L001D	BURNS TAYLOR	2521 E MTN VILLAGE DR STE B #689	WASILLA	AK	99654
42	18N01W20C030	KRUEGER RAY A	PO BOX 871325	WASILLA	AK	99687-1325

43	18N01W20C021	LUCAS CLAY & NEDRA	1901 W THAT RD	WASILLA AK	99654-0438
44	2856B02L001F	ADAIR BRIAN R & ABIGAIL	4380 N AUTUMN LN	WASILLA AK	99623-8903
45	5526B01L004	RAKHMANOV ALEKSANDR Y & RAKHAMANOVA RAYISA	4131 N FARM FIELD PL	WASILLA AK	99654-8910
46	6632B01L001	SULLIVAN COLE WILLIAM	PO BOX 671927	CHUGIAK AK	99567-1927
47	6776000L003	DAVIS VON R & PATRICIA L	4720 N TRACE ANDERSON CIR	WASILLA AK	99654-0497
48	5256000T00A	MATANUSKA-SUSITNA BOROUGH PSB/MEADOW LKS #72	350 E DALHIA AVE	PALMER AK	99645-6488
49	18N01W20C015	ROACH CHRISTOPHER H	3121 E 112TH AVE	ANCHORAGE AK	99516
50	18N01W20C019	C E F PROPERTIES LLC	PO BOX 871572	WASILLA AK	99687
51	1601B02L007D	PALANIUK LANE M & PALANIUK MELISSA	3010 W GREENFIELDS DR #A	WASILLA AK	99623-8902
52	6800B02L010	SAWYER RICKY J & BRANDY D	PO BOX 1140	WILLOW AK	99688
53	18N01W20C036	SPIEGEL FAMILY TRUST & SPIEGEL JONATHAN & REBECCA TRES	7210 DAWN DR	ANCHORAGE AK	99502
54	4835000L010	KNOWLTON KATRINA	3001 E MIKEY CIR	WASILLA AK	99654
55	5640B01L002A	BOYKIN KENNITH & HAYLEY	7362 W PARKS HWY PMB 673	WASILLA AK	99654
56	6632B01L002	COWLES RICHARD	3300 HILAND DR	ANCHORAGE AK	99504-4078
57	1349B02L004	DACUS DAN V	23668 INDIAN MERIDIAN	PAULS VAL OK	73075
58	6632B03L007	JONES CORDELL SCOTT	11801 MARY AVE	ANCHORAGE AK	99515-3379
59	6800B02L009	HANSON ESTHER	11501 138TH STREET CT E	PUYALLUP WA	98374-2463
60	1349B01L017	LEASE LON M	322 LEXINGTON LN	EULESS TX	76039-4122
61	1601B02L008B	SNOW PAUL	2920 W GREENFIELDS DR	WASILLA AK	99623
62	5526B02L001	KIBLER WALTER D	PO BOX 870972	WASILLA AK	99687-0972
63	5526B02L002	O'BRIEN WILLIAM C	5301 E WINDRIDGE AVE	WASILLA AK	99654-6783
64	1349B02L002	BAILEY NOBLE R & BRENDA J	4940 N PITTMAN RD	WASILLA AK	99654
65	6632B03L010	JONES JEFF F	11801 MARY AVE	ANCHORAGE AK	99515
66	18N01W20C039	STEVENS MELISSA A	PO BOX 870778	WASILLA AK	99687
67	5526B02L003	MEYER JOHN C	2521 E MTN VILLAGE DR STE B BOX 233	WASILLA AK	99654
68	4761000L001	AREND JAS E	PO BOX 873341	WASILLA AK	99687-3341
69	18N01W20C034	NELSON KENNETH R & ROSE	PO BOX 521378	BIG LAKE AK	99652-1378
70	7724000L002	HENSHILWOOD MATTHEW J & EMILY	PO BOX 872411	WASILLA AK	99687
71	4835000L012	LAKE MARC A & LISSA L	2760 W STABLE CIR	WASILLA AK	99654
72	5640B01L002B	MCCLAIN RICK D & CRISTINA G	PO BOX 871285	WASILLA AK	99687-1285
73	6632B03L005	RIVERA BRYAN LOPEZ	701 E PARKS HWY #103	WASILLA AK	99654
74	6776000L004	DAVIS RANDY L	PO BOX 874411	WASILLA AK	99687-4411
75	6913B01L006	NUTTLE MARK & KATHLEEN S	PO BOX 872422	WASILLA AK	99687-2422
76	6776000L009	WARD SUE E	4677 N TRACE ANDERSON CIR	WASILLA AK	99654-0493
77	6776000L008	DAVEY GLENN E	6700 E ZEPHYR DR	WASILLA AK	99654-4700
78	6632B01L007	HUTCHINS BLAKE E & LYNNETTE K	13041 RIDD CIR	EAGLE RIVER AK	99577
79	18N01W20C033	ROUSHAR STEVEN F & CARRIE E	PO BOX 873469	WASILLA AK	99687-3469
80	1349B01L018	CAMP LARRY L JR & ALLEN KATHERINE	5090 N PITTMAN RD	WASILLA AK	99623-0895
81	4835000L009	SMEDLY KENNY & KATRINA	2574 E STABLE CIR	WASILLA AK	99623
82	6632B01L003	LUDWIG JANET DEBORAH	3300 HILAND DR	ANCHORAGE AK	99504-4078
83	1349B02L003	BAILEY KEVIN R & KATHERINA	4910 N PITTMAN RD	WASILLA AK	99623-0895
84		MEADOW LAKES COMMUNITY COUNCIL	1210 N KIM DRIVE, STE B	WASILLA AK	99623



Matanuska-Susitna Borough
Development Services Division
350 E. Dahlia Avenue
Palmer, Alaska 99645

«NAME»
«ADDRESS_1»
«ADDRESS_2»
«ADDRESS_3»

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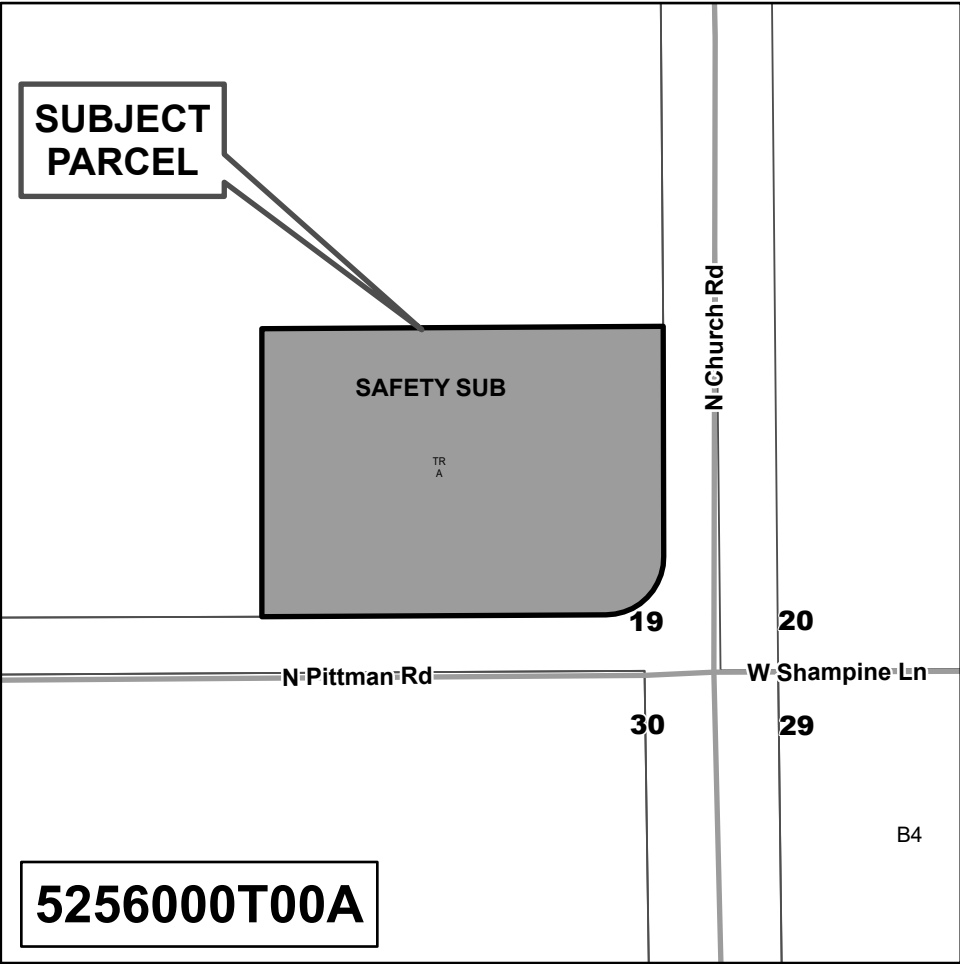
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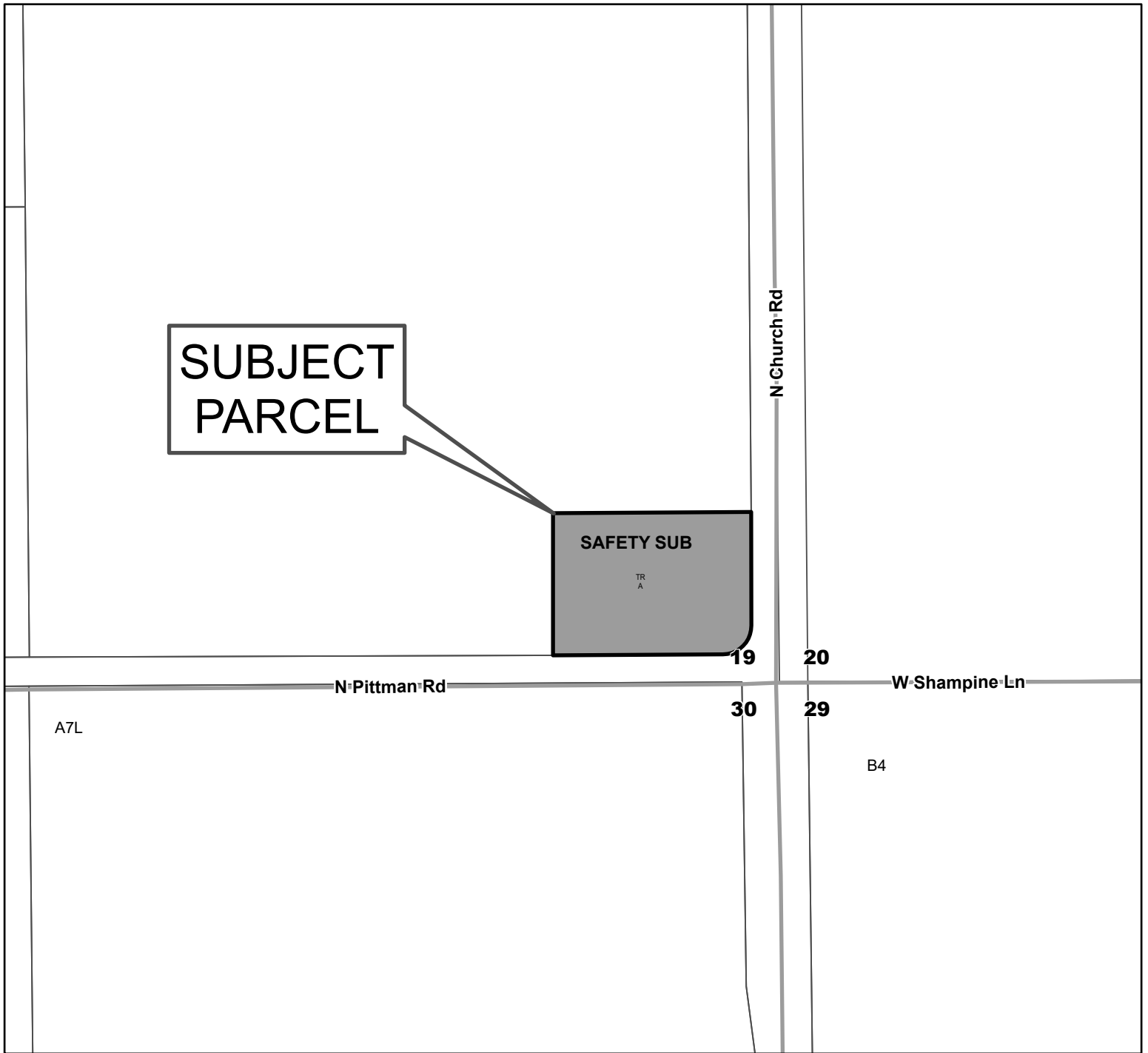
Name: _____ *Mailing Address:* _____

Location/Legal Description of your property: _____

Comments: _____

Note: Vicinity Map Located on Reverse Side

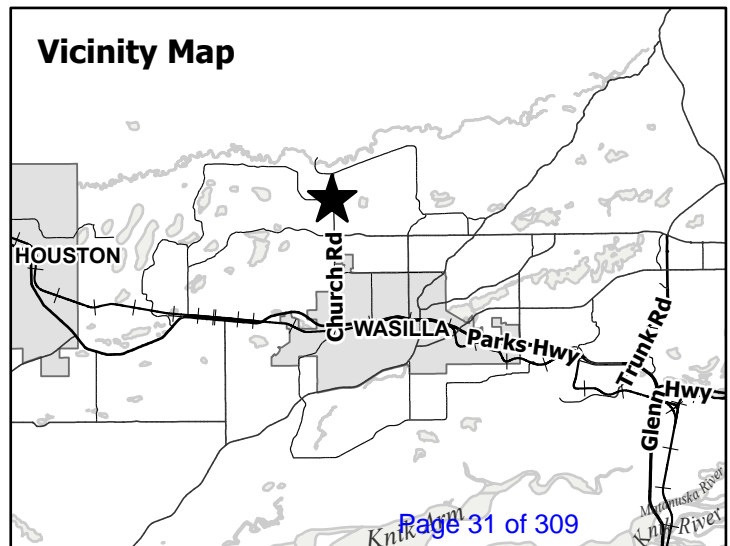




5256000T00A



This map is solely for informational purposes only. The Borough makes no express or implied warranties with respect to the character, function, or capabilities of the map or the suitability of the map for any particular purpose beyond those originally intended by the Borough. For information regarding the full disclaimer and policies related to acceptable uses of this map, please contact the Matanuska-Susitna Borough GIS Division at 907-861-7858.



Site Visit Photos

View looking northwest from southeast portion of the subject property.

Approximate
location of
proposed
tower.



View without proposed tower looking northwest from southeast portion of the subject property.



Proposed
tower
location
about 85'
northwest
of station
7-2 in this
general
area.



Aerial photo looking northwest, southeast of subject property from the approximate tower-top location at 125' elevation. Church and Pittman Road intersection center-bottom of photo. Station 7-2 center of photo. Proposed tower would be located northwest of station 7-2 at approximately 85'. University of Alaska property abuts the subject property to the north and west.



Aerial photo to the north from the approximate tower-top location, 125' elevation.



Aerial photo to west from the approximate tower-top location, 125' elevation. Pittman Road left-center photo.



Aerial photo to the south from the approximate tower-top location, 125' elevation. Church and Pittman intersection left-center photo. Fire station 7-2 bottom left.



Aerial photo to northeast from the approximate tower-top location, 125' elevation, Church Road center photo.





Aerial photo to northeast from the approximate tower-top location, 125' elevation, Church Road center photo



Aerial photo to north from the approximate tower-top location, 125' elevation, UAA property top of photo.



Aerial photo to west from the approximate tower-top location, 125' elevation. Pittman Road top-left photo. UAA property top-center and top right of photo.



Aerial photo to southeast from the approximate tower-top location, 125' elevation, Church Road / Pittman intersection top center photo. Fire station 7-2 center photo.

Aerial photo to southeast from the approximate tower-top location, 125' elevation, Church Road /Pittman intersection center photo. Station 7-2 center bottom.



Aerial photo to east from the approximate tower-top location, 125' elevation, Church Road /Pittman intersection right-center photo. Fire station 7-2 right bottom.



Aerial photo to northeast from the approximate tower-top location, 125' elevation, Church Road center photo.



Aerial photo to northeast from the approximate tower-top location, 125' elevation, Church Road right-center photo.



Aerial photo to north from the approximate tower-top location, 125' elevation



Aerial photo to west from the approximate tower-top location, 125' elevation. Pittman Road left of photo.



Aerial photo to southwest from the approximate tower-top location, 125' elevation. Pittman Road top-center photo. University of Alaska property top-right and State of Alaska property top left of photo.



Aerial photo to south from the approximate tower-top location, 125' elevation. Pittman Road center, Church Road left of photo. State of Alaska property top-left, top-center, and top-right across Pittman Road. Station 7-2 bottom left of photo.



Aerial photo looking north, south of subject property from the approximate tower-top location at 125' elevation. Pittman Road bottom of photo. Station 7-2 center-right of photo. Proposed tower would be located northwest of station 7-2 at approximately 85', in the proximity of the shorter tree line center-left of photo.



Aerial photo looking south, north of subject property from the approximate tower-top location at 125' elevation. Church Road left of photo. Station 7-2 center of photo. Proposed tower would be located northwest of station 7-2 at approximately 85', in the proximity of the shorter tree line center-right of photo.



Aerial photo looking west, east of subject property from the approximate tower-top location at 125' elevation. Church and Pittman Road intersection bottom-left of photo. Station 7-2 center of photo. Proposed tower would be located northwest of station 7-2 at approximately 85', in the proximity of the shorter tree line center-right of photo.



Aerial photo looking east, west of subject property from the approximate tower-top location at 125' elevation. Church and Pittman Road intersection middle-right of photo. Station 7-2 center-right of photo. Proposed tower would be located northwest of station 7-2 at approximately 85', in the proximity of the shorter tree line bottom-center of photo.





Aerial photo looking southeast, from the approximate tower-top location at 125' elevation. Church and Pittman Road intersection top-center of photo. Station 7-2 center of photo. Proposed tower would be located northwest of station 7-2 at approximately 85'. State of Alaska property center and top-right, MEA property top-left of photo.

SITE PLAN



APPLICANT:



IMPLEMENTATION TEAM/CLIENT:



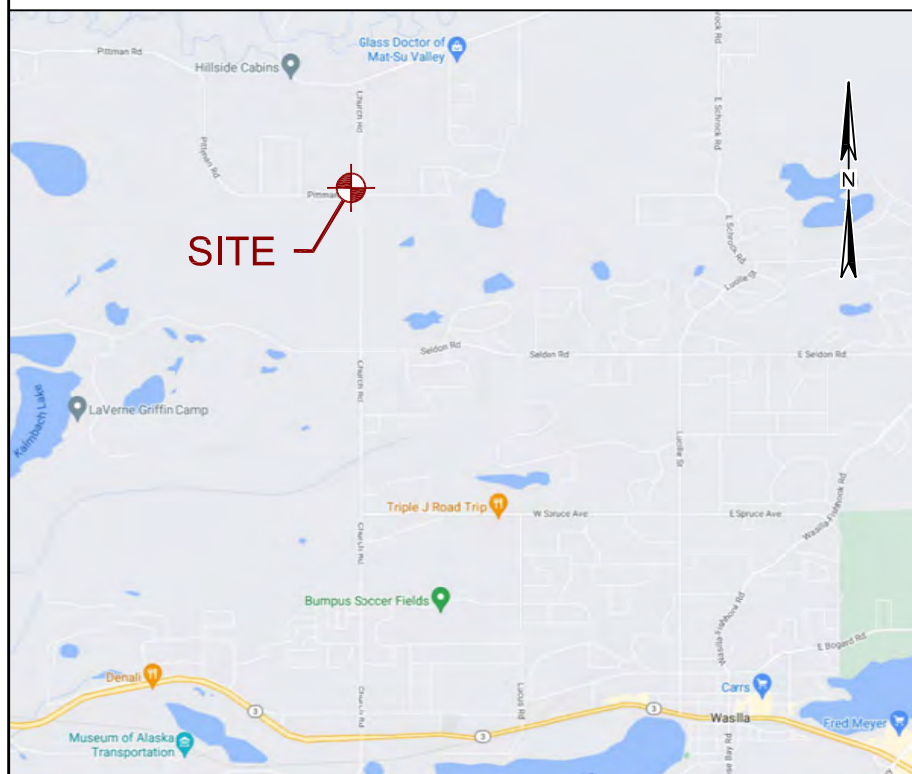
DO NOT SCALE DRAWINGS. CONTRACTOR MUST VERIFY ALL DRAWINGS AND ADVISE CONSULTANTS OF ANY ERRORS OR OMISSIONS. NO VARIATIONS OR MODIFICATIONS TO WORK SHOWN SHALL BE IMPLEMENTED WITHOUT PRIOR WRITTEN APPROVAL. ALL PREVIOUS ISSUES OF THIS DRAWINGS ARE SUPERSEDED BY THE LATEST REVISION. ALL DRAWINGS AND SPECIFICATIONS REMAIN THE PROPERTY OF LYNX CONSULTING, INC. NEITHER LYNX CONSULTING, INC. NOR THE ARCHITECT WILL BE PROVIDING CONSTRUCTION REVIEW OF THIS PROJECT.



Jun 06, 2024

VZW PROJECT NAME: AK2 SHAMPINE
FUZE PROJECT ID: 2570630
PROJECT LOCATION: 5182 N PITTMAN RD WASILLA, AK 99654

VICINITY MAP



PROJECT INFORMATION

JURISDICTION: MATANUSKA-SUSITNA BOROUGH LATITUDE : 61°37'44.17"N
 PARCEL ID: 45248 (APPROXIMATE GPS) 61.628936°
 ACCOUNT NUMBER: 55256000T00A LONGITUDE : 149°30'47.84"W
 ZONING CLASS: NON-EUCLIDEAN (APPROXIMATE GPS) -149.513289°
 TRS: SEC 19, TWN 18N, RNG 1W GROUND ELEVATION: 442.5' AMSL
 PARCEL SIZE: 2.01 ACRES STRUCTURE HEIGHT: 125'-0" (TOP OF TOWER)
 HIGHEST APPURTENANCE: 125'-0" (TOP OF ANTENNAS)

SCOPE OF WORK

VERIZON WIRELESS PROPOSES TO INSTALL AN UNMANNED WIRELESS FACILITY WITH THE FOLLOWING SCOPE OF WORK:

- ADD (1) ULTRABLOCK RETAINING WALL
- ADD (1) 6'-0" CHAIN LINK FENCE WITH BARBED WIRE (AROUND 30'-0"x30'-0" LEASE AREA)
- ADD (1) 125'-0" MONOPOLE
- ADD (1) 8'-0" UTILITY H-FRAME
- ADD (1) 600A 120/240V-1P 3-GANG METER BANK
- ADD (1) GRADE BEAM FOUNDATION
- ADD (1) 7'-0"x10'-0" STEEL EQUIPMENT PLATFORM
- ADD (1) EQUIPMENT CABINET TO PROPOSED EQUIPMENT PLATFORM
- ADD (1) RACK MOUNTED 12-PORT OVP TO PROPOSED CABINET
- ADD (1) 30kW DIESEL GENERATOR TO PROPOSED EQUIPMENT PLATFORM
- ADD (1) 200A 30-POSITION OUTDOOR RATED ILC TO PROPOSED EQUIPMENT PLATFORM H-FRAME
- ADD (1) 12" ICE-BRIDGE
- ADD (1) 24" ICE-BRIDGE OVER PROPOSED EQUIPMENT CABINET
- ADD (1) GPS ANTENNA TO PROPOSED H-FRAME LEG
- ADD (2) 6x12 HYBRID CABLES TO PROPOSED ICE-BRIDGE
- ADD (1) 200A 120/240V-1P POWER METER TO PROPOSED METER BANK
- ADD (1) TRI-SECTOR FLUSH MOUNT TO PROPOSED MONOPOLE
- ADD (3) HEAVY-DUTY SECTOR FRAMES TO PROPOSED FLUSH MOUNT
- ADD (6) PANEL ANTENNAS TO PROPOSED ANTENNA MOUNT
- ADD (3) 700 RRU'S (RRUS4490 B13) TO PROPOSED ANTENNA MOUNT
- ADD (3) AWS RRU'S (RRUS4890 B66) TO PROPOSED ANTENNA MOUNT
- ADD (1) 12-PORT OVP TO PROPOSED ANTENNA MOUNT

LIST OF DRAWINGS

SHEET	DESCRIPTION
T-1	COVER SHEET
N-1	GENERAL NOTES
SV-1	EXISTING CONDITIONS SURVEY
C-1	PROPOSED SITE PLAN
C-2	PROPOSED TOWER SETBACK PLAN
A-1	PROPOSED COMPOUND PLAN
A-2	PROPOSED ELEVATION
RF-1	PROPOSED ANTENNA CONFIGURATION
RF-2	PROPOSED IT DIAGRAM
G-1	PROPOSED GRADING PLAN
D-1	CONSTRUCTION DETAILS
D-2	CONSTRUCTION DETAILS
D-3	CONSTRUCTION DETAILS
D-4	CONSTRUCTION DETAILS
D-5	CONSTRUCTION DETAILS
D-6	CONSTRUCTION DETAILS
GEN-1	30kW DIESEL GENERATOR DETAILS
PLAT-1	EQUIPMENT PLATFORM DETAILS
E-1	PROPOSED UTILITY PLAN
E-2	PROPOSED COMPOUND UTILITY PLAN
E-3	POWER NOTES
E-4	POWER DETAILS
E-5	PROPOSED GROUNDING PLAN
E-6	GROUNDING NOTES AND DETAILS
E-7	GROUNDING DETAILS

REV	DATE	DESCRIPTION
-	-	-
-	-	-
-	-	-
5	6/06/24	NEW RFDS AND FCD'S ISSUED FOR SUBMITTAL
4	5/31/24	PCD'S ISSUED FOR REVIEW
3	4/18/23	REVISED PER COMMENTS
2	11/28/22	REVISED PER CLIENT COMMENTS
1	11/15/22	PZD'S ISSUED FOR REVIEW

LEGAL DESCRIPTION

SAFETY SUBD TRACT A

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT CONDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

ALASKA STATE AND LOCAL BUILDING CODES WITH THE FOLLOWING REFERENCE CODE:

- 2012 INTERNATIONAL BUILDING CODE (IBC)
- 2012 INTERNATIONAL MECHANICAL CODE (IMC)
- 2012 INTERNATIONAL FIRE CODE (IFC)
- 2011 NATIONAL ELECTRIC CODE (NFPA 70)
- ANSI/TIA-222-H (REVISION H)

DRIVING DIRECTIONS

(FROM ANCHORAGE INTERNATIONAL AIRPORT)

- HEAD EAST ON W INTERNATIONAL AIRPORT RD TOWARD NORTHWOOD DR.
- KEEP LEFT TO STAY ON W INTERNATIONAL AIRPORT RD.
- TURN LEFT ONTO C ST.
- CONTINUE ONTO A ST.
- TURN RIGHT ONTO E 6TH AVE.
- CONTINUE ONTO AK-1 N/E 5TH AVE.
- CONTINUE TO FOLLOW AK-1 N.
- KEEP LEFT TO CONTINUE ONTO AK-3 N.
- TURN RIGHT ONTO CHURCH RD.
- TURN LEFT ONTO PITTMAN RD.
- TAKE THE FIRST RIGHT INTO THE FIRE DEPARTMENT DRIVEWAY.
- SITE WILL BE LOCATED TO THE NORTHWEST OF THE FIRE DEPARTMENT BUILDING.

CONTACTS

PROPERTY OWNER:
 MATANUSKA-SUSITNA BOROUGH
 PSB/MEADOW LKS # 72
 350 E DALHIA AVE
 PALMER, AK 99645-6488

APPLICANT:
 AMY KARN
 VERIZON WIRELESS
 635 EAST 40TH AVE
 ANCHORAGE, AK 99503
 PHONE: (907) 786-9943

TOWER OWNER:
 VERIZON WIRELESS
 635 EAST 40TH AVE
 ANCHORAGE, AK 99503
 PHONE: (907) 786-9943

PROFESSIONAL OF RECORD:
 BERT WHITE
 LYNX CONSULTING, INC
 17311 135TH AVE NE, SUITE A-100
 WOODINVILLE, WA 98072
 PHONE: (253) 230-2335
 bwhite@lynxconsulting.org

APPLICANT AGENT:
 MELISSA BROWNING
 LYNX CONSULTING, INC
 17311 135TH AVE NE, SUITE A-100
 WOODINVILLE, WA 98072
 PHONE: (360) 485-7196
 mbrowning@lynxconsulting.org

PERMITTING CONTACT:
 SMITH HINTY
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 WOODINVILLE, WA 98072
 PHONE: (540) 784-8927
 shinty@lynxconsulting.org

APPROVALS

TITLE	SIGNATURE	DATE
VZW REAL-ESTATE		
VZW CONSTRUCTION		
PROPERTY OWNER		

PROJECT:
AK2 SHAMPINE
 5182 N PITTMAN RD
 WASILLA, AK 99654

SHEET TITLE:
COVER SHEET

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO: 5	SHEET NO: T-1

GENERAL NOTES

1. THESE DOCUMENTS ARE FOR THE DESIGN OF AN UNMANNED TELECOMMUNICATIONS FACILITY. THE FACILITY SHALL BE USED FOR THE TRANSMISSION OF RADIO SIGNALS FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE. THE FACILITY WILL NOT BE OPEN TO THE PUBLIC AND SHALL HAVE RESTRICTED ACCESS TO THE WIRELESS CARRIER'S PERSONNEL AND SERVICE EQUIPMENT.
2. THE WIRELESS CARRIER CERTIFIES THAT THIS TELECOMMUNICATIONS FACILITY WILL BE SERVICED ONLY BY THE CARRIER'S EMPLOYEES AND THEIR SUB-CONTRACTORS, FOR INSPECTION AND REPAIR PURPOSES ONLY.
3. ON AVERAGE THE WIRELESS CARRIER'S EMPLOYEES OR SUB-CONTRACTORS (TYPICALLY ONE PERSON) WILL VISIT THE WIRELESS FACILITY TWO TIMES PER MONTH FOR A DURATION OF APPROXIMATELY ONE HOUR.
4. THIS FACILITY IS UNMANNED AND IS NOT FOR HUMAN HABITATION (NO ADA ACCESS IS REQUIRED).
5. THIS FACILITY WILL CONSUME NO UNRECOVERABLE ENERGY.
6. NO POTABLE WATER SUPPLY IS TO BE PROVIDED TO THIS FACILITY.
7. NO WASTE WATER WILL BE GENERATED FROM THIS FACILITY.
8. NO SOLID WASTE WILL BE GENERATED FROM THIS FACILITY.
9. WORK SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL CODES, ORDINANCES AND REGULATIONS. ALL NECESSARY LICENSES, CERTIFICATES, ETC., REQUIRED BY AUTHORITY HAVING JURISDICTION SHALL BE PROCURED AND PAID FOR BY THE CONTRACTOR.
10. WORK SHALL COMPLY WITH ALL MANUFACTURER'S RECOMMENDED SPECIFICATIONS. THE CONTRACTOR SHALL FOLLOW SPECIFICATIONS SHOWN IN THESE DOCUMENTS, ONLY WHEN THOSE SPECIFICATIONS ARE MORE STRINGENT THAN THE MANUFACTURER'S.
11. WHERE ONE DETAIL IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS, EVEN THOUGH NOT SPECIFICALLY MARKED ON THE DRAWINGS OR REFERRED TO IN THE SPECIFICATIONS, UNLESS OTHERWISE NOTED.
12. IN EVERY EVENT, THESE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS SHALL BE INTERPRETED AS A MINIMUM ACCEPTABLE MEANS OF CONSTRUCTION. HOWEVER, THIS SHALL NOT RELIEVE THE CONTRACTOR, SUB-CONTRACTOR, AND/OR SUPPLIER/MANUFACTURER FROM PROVIDING A COMPLETE AND CORRECT JOB WHEN ADDITIONAL ITEMS ARE REQUIRED TO THE MINIMUM SPECIFICATION. IF ANY ITEMS NEED TO EXCEED THESE MINIMUM SPECIFICATIONS TO PROVIDE A COMPLETE, ADEQUATE AND SAFE WORKING CONDITION, THEN IT SHALL BE DEEMED AND UNDERSTOOD TO BE INCLUDED IN THE DRAWINGS. FOR EXAMPLE, IF AN ITEM AND/OR PIECE OF EQUIPMENT REQUIRES A LARGER WIRE SIZE (I.E. ELECTRICAL WIRE), STRONGER OR LARGER PIPING, INCREASED QUANTITY (I.E. STRUCTURAL ELEMENTS), REDUCED SPACING, AND/OR INCREASED LENGTH (I.E. BOLT/ BAR LENGTHS), THEN IT SHALL BE DEEMED AND UNDERSTOOD TO BE INCLUDED IN THE BID/PROPOSAL. THESE DOCUMENTS ARE MEANT TO SERVE AS A GUIDE AND ALL ITEMS REASONABLY INFERRED SHALL BE DEEMED TO BE INCLUDED.
13. SEE THE STRUCTURAL ANALYSIS BY OTHERS UNDER SEPARATE COVER FOR APPLICABLE CODE REFERENCES AND PROPOSED DESIGN LOADS.
14. NO WORK SHALL COMMENCE WITHOUT THE APPROVED STRUCTURAL ANALYSIS REPORT (STAMPED AND SIGNED) PROVIDED BY OTHERS UNDER SEPARATE COVER.
15. THE CONTRACTOR, PRIOR TO INSTALLATION OF ANTENNAS, EQUIPMENT, AND/OR COAX CABLES, SHALL REVIEW THE APPROVED STRUCTURAL ANALYSIS AND MODIFY, IF REQUIRED, ALL APPLICABLE MEMBERS AS INDICATED IN THE CERTIFIED STRUCTURAL ANALYSIS.
16. THESE DESIGN DOCUMENTS AND SPECIFICATIONS SHALL NOT BE CONSTRUED TO CREATE A CONTRACTUAL RELATIONSHIP OF ANY KIND BETWEEN THE ENGINEER AND THE CONTRACTOR.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY CLEANUP OF ALL TRADES AND REMOVE ALL DEBRIS FROM THE CONSTRUCTION SITE. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL THOROUGHLY CLEAN THE BUILDING, SITE AND ANY SURROUNDING AREA TO BETTER THAN EXISTING CONDITION.
18. THE CONTRACTOR SHALL ADEQUATELY BRACE AND PROTECT ALL WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, ETC., ACCORDING TO APPLICABLE CODES, STANDARDS AND BEST CONSTRUCTION PRACTICES.
19. THE CONTRACTOR SHALL MEET ALL OSHA REQUIREMENTS FOR ALL SITE CONDITIONS AND INSTALLATIONS.
20. WHERE NEW PAVING, CONCRETE SIDEWALKS, OR PATHS MEET EXISTING CONSTRUCTION, THE CONTRACTOR SHALL MATCH THE EXISTING SLOPE AND ELEVATION AS TO MAINTAIN A SMOOTH TRANSITION.

21. ALL ITEMS NOT LISTED AS "EXISTING" OR "PROVIDED BY OTHERS" ARE TO BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.
22. ALL MATERIALS FURNISHED UNDER THIS CONTRACT SHALL BE NEW, UNLESS OTHERWISE NOTED.
23. WHERE EXISTING MATERIALS ARE RE-USED, THE CONTRACTOR SHALL ENSURE THAT ALL OF THE EXISTING MATERIALS ARE FREE FROM DEFECTS OR HAVE BEEN REPAIRED TO LIKE NEW CONDITION.
24. ALL WORK SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP. THE CONTRACTOR SHALL REPAIR OR REPLACE AT THEIR EXPENSE ALL WORK THAT MAY DEVELOP DEFECTS IN MATERIALS OR WORKMANSHIP WITHIN ONE YEAR AFTER FINAL ACCEPTANCE OF THE ENTIRE PROJECT OR A PREDETERMINED PERIOD OF TIME (AS NEGOTIATED WITH THE PROPERTY OWNER AND WIRELESS CARRIER), WHICHEVER IS GREATER.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO THE EXISTING CONSTRUCTION AND REPAIR ALL DAMAGES TO BETTER THAN NEW CONDITION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DAMAGE TO THE BUILDING SITE OR ANY ADJACENT STRUCTURES. THE PROPERTY OWNER SHALL BE SOLE AND FINAL JUDGE AS TO THE QUALITY OF THE REPAIRED CONSTRUCTION. ANY REPAIRS OR MODIFICATIONS WHICH MUST BE MADE SHALL BE MADE AT THE EXPENSE OF THE CONTRACTOR.
26. THE EXISTING CONDITIONS REPRESENTED HEREIN ARE BASED ON VISUAL OBSERVATIONS AND INFORMATION PROVIDED BY OTHERS. LYNX CONSULTING INC. CANNOT GUARANTEE THE CORRECTNESS NOR COMPLETENESS OF THE EXISTING CONDITIONS AS SHOWN AND ASSUMES NO RESPONSIBILITY THEREOF. THE CONTRACTOR AND SUB-CONTRACTORS SHALL VISIT THE SITE AND VERIFY ALL EXISTING CONDITIONS AS REQUIRED FOR PROPER EXECUTION OF THE PROJECT. THE CONTRACTOR AND SUB-CONTRACTORS SHALL REPORT ANY CONFLICTS OR DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
27. THE CONTRACTOR SHALL CALL FOR UTILITY LOCATES, VERIFY LOCATIONS AND MARK ALL BURIED UTILITIES PRIOR TO PERFORMING ANY EXCAVATIONS OR GRADING ACTIVITIES.
28. DO NOT SCALE THESE DRAWINGS. DIMENSIONS ARE EITHER TO THE FACE OF FINISHED ELEMENTS OR TO THE CENTERLINE OF ELEMENTS, UNLESS OTHERWISE NOTED. CRITICAL DIMENSIONS SHALL BE VERIFIED AND THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
29. LYNX CONSULTING INC. HAS NOT CONDUCTED, NOR DOES IT INTEND TO CONDUCT ANY INVESTIGATION AS TO THE PRESENCE OF HAZARDOUS MATERIALS, INCLUDING, BUT NOT LIMITED TO, ASBESTOS WITHIN THE CONFINES OF THIS PROJECT. LYNX CONSULTING INC. DOES NOT ACCEPT RESPONSIBILITY FOR THE INDEMNIFICATION, REMOVAL, OR ANY EFFECTS FROM THE PRESENCE OF THESE MATERIALS. IF EVIDENCE OF HAZARDOUS MATERIALS IS FOUND, WORK IS TO BE SUSPENDED AND THE PROPERTY OWNER NOTIFIED. THE CONTRACTOR IS NOT TO PROCEED WITH FURTHER WORK UNTIL INSTRUCTED BY THE PROPERTY OWNER IN WRITING.
30. THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS, DIMENSIONS, AND UTILITIES ON SITE PRIOR TO THE COMMENCEMENT OF WORK. ALL DISCREPANCIES BETWEEN THESE DOCUMENTS AND THE EXISTING ON-SITE CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ENGINEER'S ATTENTION. NO CLAIM FOR ADDITIONAL COMPENSATION FOR WORK WHICH COULD HAVE BEEN FORESEEN BY AN INSPECTION, WHETHER SHOWN ON THE CONTRACT DOCUMENTS OR NOT, WILL BE ACCEPTED OR PAID.
31. THE CONTRACTOR SHALL VERIFY AND COORDINATE SIZE AND LOCATION OF ALL OPENINGS FOR STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, CIVIL, OR ARCHITECTURAL WORK.
32. THE CONTRACTOR SHALL VERIFY THAT NO CONFLICTS EXIST BETWEEN THE LOCATIONS OF ANY AND ALL MECHANICAL, ELECTRICAL, PLUMBING, OR STRUCTURAL ELEMENTS AND THAT ALL REQUIRED CLEARANCES FOR THE INSTALLATION AND MAINTENANCE ARE MET. IN THE CASE OF ANY CONFLICTS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY. THE ENGINEER HAS THE RIGHT TO MAKE MINOR MODIFICATIONS IN THE DESIGN OF THE FACILITY WITHOUT THE CONTRACTOR GETTING ADDITIONAL COMPENSATION.
33. IF THE CONTRACTOR OR SUB-CONTRACTORS FIND IT NECESSARY TO DEVIATE FROM THE ORIGINAL APPROVED PLANS, THEN IT IS THE CONTRACTOR'S AND THE SUB-CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE ENGINEER WITH COPIES OF THE PROPOSED CHANGES FOR THEIR APPROVAL BEFORE PROCEEDING WITH THE WORK. IN ADDITION, THE CONTRACTOR AND SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR PROCURING ALL NECESSARY APPROVALS FROM THE BUILDING AUTHORITIES FOR THE PROPOSED CHANGES BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR AND SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR PROCURING ALL NECESSARY INSPECTIONS AND APPROVALS FROM BUILDING AUTHORITIES DURING EXECUTION OF THE WORK.

CONCRETE NOTES

1. ALL CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI-318.
2. CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED AND PLACED IN ACCORDANCE WITH CHAPTER 19 OF THE IBC 2012. STRENGTHS AT 28 DAYS AND MIX CRITERIA SHALL BE AS FOLLOWS.

TYPE OF CONSTRUCTION	28 DAY STRENGTH (f _c)	W/C RATIO	MINIMUM CEMENT CONTENT PER CUBIC YARD
SLAB ON GRADE TOPPING SLABS CONCRETE PIERS	3,000 PSI	≤ 0.45	5 1/2 SACKS
ALL STRUCTURAL CONCRETE	4,000 PSI	≤ 0.45	6 1/2 SACKS
CONCRETE WALLS	4,000 PSI	≤ 0.45	6 1/2 SACKS

CEMENT SHALL BE ASTM C150, PORTLAND CEMENT TYPE II U.N.O.
3. THE GENERAL CONTRACTOR SHALL SUPERVISE AND BE RESPONSIBLE FOR THE METHODS AND PROCEDURES OF CONCRETE PLACEMENT.
4. ALL CONCRETE WITH SURFACES EXPOSED TO STANDING WATER SHALL BE AIR-ENTRAINED WITH AN AIR-ENTRAINMENT AGENT CONFORMING TO ASTM C260, C494, C989, AND C1017. TOTAL AIR CONTENT SHALL BE IN ACCORDANCE WITH TABLE 1904.2.1 OF THE IBC 2012.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (INCLUDING SUPPLEMENTS S1), GRADE 60, f_y=60,000 PSI. EXCEPTIONS: ANY BARS SPECIFICALLY SO NOTED ON THE DRAWINGS SHALL BE GRADE 40, f_y=40,000 PSI. GRADE 60 REINFORCING BARS INDICATED ON DRAWINGS TO BE WELDED SHALL CONFORM TO ASTM A706. REINFORCING COMPLYING WITH ASTM A615(S1) MAY BE WELDED ONLY IF MATERIAL PROPERTY REPORTS INDICATING CONFORMANCE WITH WELDING PROCEDURES SPECIFIED IN A.W.S. D14 ARE SUBMITTED.
6. REINFORCING STEEL SHALL BE DETAILED (INCLUDING HOOKS AND BENDS) IN ACCORDANCE WITH ACI 315 AND 318. LAP ALL CONTINUOUS REINFORCEMENT AT LEAST 30 BAR DIAMETERS OR A MINIMUM OF 2'-0". PROVIDE CORNER BARS AT ALL WALL AND FOOTING INTERSECTIONS. LAP CORNER BARS AT LEAST 30 BAR DIAMETERS OR A MINIMUM OF 2'-0". LAP ADJACENT MATS OF WELDED WIRE FABRIC A MINIMUM OF 8" AT SIDES AND ENDS.
7. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-165.
8. SPIRAL REINFORCEMENT SHALL BE PLAIN WIRE CONFORMING TO ASTM A615, GRADE 60, f_y=60,000 PSI.
9. NO BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL BE FIELD BENT UNLESS SPECIFICALLY DO DETAILED OR APPROVED BY THE ENGINEER.
10. CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

FOOTINGS AND OTHER UNFORMED SURFACES, EARTH FACE	3"
FORMED SURFACES EXPOSED TO EARTH OR WEATHER	2" (#6 BARS OR LARGER) 1-1/2" (#5 BARS OR SMALLER)
SLABS AND WALLS (INTERIOR FACE)	3/4"
11. BARS SHALL BE SUPPORTED ON CHAIRS OR DOBIE BRICKS.
12. ANCHOR BOLTS TO CONFORM TO ASTM A307.
13. NON-SHRINKING GROUT SHALL BE FURNISHED BY AN APPROVED MANUFACTURER AND SHALL BE MIXED AND PLACED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED RECOMMENDATIONS. GROUT STRENGTH SHALL BE AT LEAST EQUAL TO THE MATERIAL ON WHICH IT IS PLACED (3,000 PSI MINIMUM).
14. ALL EXPANSION ANCHORS TO BE HILTI BRAND. ADHESIVE ANCHORS REQUIRE TESTING TO CONFIRM CAPACITY UNLESS WAIVED BY ENGINEER.

APPLICANT:

IMPLEMENTATION TEAM/CLIENT:

DO NOT SCALE DRAWINGS. CONTRACTOR MUST VERIFY ALL DRAWINGS AND ADVISE CONSULTANTS OF ANY ERRORS OR OMISSIONS. NO VARIATIONS OR MODIFICATIONS TO WORK SHOWN SHALL BE IMPLEMENTED WITHOUT PRIOR WRITTEN APPROVAL. ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED BY THE LATEST REVISION. ALL DRAWINGS AND SPECIFICATIONS REMAIN THE PROPERTY OF LYNX CONSULTING, INC. NEITHER LYNX CONSULTING, INC. NOR THE ARCHITECT WILL BE PROVIDING CONSTRUCTION REVIEW OF THIS PROJECT.

Jun 06, 2024

REV	DATE	DESCRIPTION
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-	-	-
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5	6/06/24	NEW RFDS AND FCD'S ISSUED FOR SUBMITTAL
4	5/31/24	PCD'S ISSUED FOR REVIEW
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SPECIAL INSPECTIONS

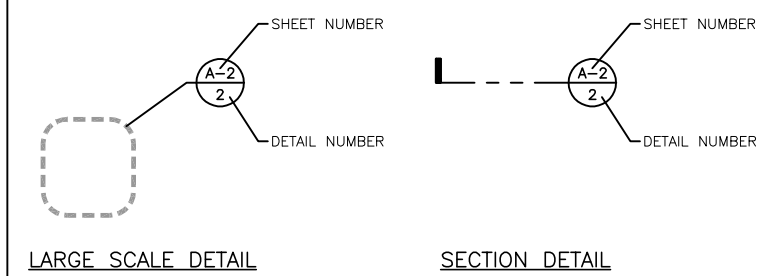
- RECOMMENDED TESTING AGENCY: _____ PHONE: (____) ____-____
- THE OWNER, OR THE OWNER'S AGENT, IS REQUIRED TO HIRE AN INDEPENDENT TESTING/INSPECTION AGENCY TO PERFORM REQUIRED SPECIAL INSPECTIONS.
- SPECIAL INSPECTOR MUST BE CONTACTED IN ADVANCE OF ANY WORK NOTED BELOW. IT IS THE RESPONSIBILITY OF THE OWNER OR OWNER'S DESIGNEE TO NOTIFY THE SPECIAL INSPECTION AGENCY AND SCHEDULE A BUILDING INSPECTION IN A TIMELY MANNER. COPIES OF ALL INSPECTION REPORTS MUST BE POSTED ON SITE AND SUMMARY LETTERS SUBMITTED TO THE BUILDING INSPECTION SUPERVISOR. UNRESOLVED NON-CONFORMANCIES MUST BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE MUNICIPALITY'S INSPECTOR.
- REQUIRED SPECIAL INSPECTIONS
2012 INTERNATIONAL BUILDING CODE; SECTIONS 1701, 1704, & 1705
- | | |
|---|---|
| <input type="checkbox"/> STRUCTURAL STEEL (1705.2; AISC 360)
<input type="checkbox"/> STEEL - OTHER THAN STRUCTURAL STEEL (1705.2.2)
<input type="checkbox"/> STRUCTURAL CONCRETE (1705.3)
<input type="checkbox"/> REINF. STEEL/PRESTRESSING TENDONS (1705.3)
<input type="checkbox"/> SHOTCRETE (1705.3; 1910)
<input type="checkbox"/> STRUCTURAL MASONRY (1075.4)
TMS 402/ACI 530/ASCE 5;
TMS 602/ACI 530.1/ASCE 6
<input type="checkbox"/> HIGH LOAD DIAPHRAGMS (WOOD 1705.5.1)
<input type="checkbox"/> GRADING, EXCAVATION, AND FILLING (SOILS 1705.6)
<input type="checkbox"/> DRIVEN DEEP FOUNDATIONS (1705.7)
<input type="checkbox"/> CAST-IN-PLACE DEEP FOUNDATIONS (1705.8)
<input type="checkbox"/> INSTALLATION OF PRECAST ELEMENTS (1705.3)
<input type="checkbox"/> OTHER _____ | <input type="checkbox"/> SPRAYED FIRE-REST MATERIALS (1705.3)
<input type="checkbox"/> INTUMESCENT FIRE-RESIST CTGS (1705.14)
<input type="checkbox"/> EIFS (1705.15)
<input type="checkbox"/> POST-INSTALLED ANCHORS (1705.3; AISC 315: D.9.2)
<input type="checkbox"/> SMOKE CONTROL (1705.17)
<input type="checkbox"/> STRUCTURAL STEEL (SFRS 1705.11.1; AISC 314)
<input type="checkbox"/> STRUCTURAL WOOD (SFRS 1705.11.2)
<input type="checkbox"/> COLD FORMED STEEL FRAMING (SFRS 1705.11.2)
<input type="checkbox"/> ACCESS FLOORS (SFRS 1705.11.5.1)
<input type="checkbox"/> STORAGE RACKS (SFRS 1705.11.7)
<input type="checkbox"/> ARCHITECTURAL COMPONENTS (SFRS 1705.11.5)
<input type="checkbox"/> MECH. AND ELEC. COMPONENTS (SFRS 1705.11.6)
<input type="checkbox"/> SEISMIC ISOLATION SYSTEMS (SFRS 1705.11.8) |
|---|---|

STRUCTURAL STEEL NOTES

1. SHOP DRAWINGS FOR STRUCTURAL STEEL SHALL BE SUBMITTED TO THE CONSULTANT FOR REVIEW PRIOR TO FABRICATION.
2. STRUCTURAL STEEL DESIGN, FABRICATION AND ERECTION (INCLUDING FIELD WELDING, HIGH STRENGTH FIELD BOLTING, EXPANSION BOLTS, AND THREADED EXPANSION ANCHORS) SHALL BE BASED ON A.I.S.I. "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" LATEST EDITION. SUPERVISION SHALL BE IN ACCORDANCE WITH IBC 2012 CHAPTER 22, BY A QUALIFIED TESTING AGENCY DESIGNATED BY THE ENGINEER. THE ENGINEER SHALL BE FURNISHED WITH A COPY OF ALL INSPECTION REPORTS AND TEST RESULTS.
3. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

TYPE OF MEMBER	
WIDE FLANGE SHAPE S	ASTM A992, f _y 50 KSI
OTHER SHAPES, PLATES AND RODS	ASTM A36, f _y 36 KSI
PIPE COLUMNS	ASTM A53, f _y 35 KSI
STRUCTURAL TUBING	ASTM A500, f _y 46 KSI
ANCHOR BOLTS	ASTM A307
CONNECTION BOLTS	ASTM A325
4. ALL MATERIAL TO BE HOT DIPPED GALVANIZED AFTER FABRICATION PER A123/A123M-00.
5. ALL WELDING SHALL BE IN CONFORMANCE WITH A.I.S.I. AND AWS STANDARDS AND SHALL BE PERFORMED BY CERTIFIED WELDERS USING E70 XX ELECTRODES. ONLY PREQUALIFIED WELDS (AS DEFINED BY AWS) SHALL BE USED. WELDING OF GRADE 60 REINFORCING BARS (IF REQUIRED) SHALL BE PERFORMED USING LOW HYDROGEN ELECTRODES. WELDING OF GRADE 40 REINFORCING BARS (IF REQUIRED) SHALL BE PERFORMED USING E70 XX ELECTRODES. WELDING WITHIN 4" OF COLD BENDS IN REINFORCING STEEL IS NOT PERMITTED. SEE REINFORCING NOTE FOR MATERIAL REQUIREMENTS OF WELDED BARS.
6. COLD-FORMED STEEL FRAMING MEMBERS SHALL BE OF THE SHAPE, SIZE AND GAGE SHOWN ON THE PLANS. PROVIDE MINIMUM SECTION PROPERTIES INDICATED. ALL COLD-FORMED STEEL FRAMING SHALL CONFORM TO THE A.I.S.I. "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS".
7. BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (3/4" DIAMETER) AND SHALL HAVE A MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
8. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIAMETER ASTM A307 BOLTS UNLESS NOTED OTHERWISE.
9. ALL STEEL WORK SHALL BE PAINTED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION SPECIFICATION AND IN ACCORDANCE WITH ASTM A36 UNLESS NOTED OTHERWISE.
10. ALL WELDS TO BE 1/4" FILLET UNLESS NOTED OTHERWISE.
11. TOUCH UP ALL FIELD DRILLING AND WELDING WITH 2 COATS OF GALVACON (ZINC RICH PAINT) OR APPROVED EQUAL.

LEGEND



PROJECT:

AK2
SHAMPINE

5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

GENERAL NOTES

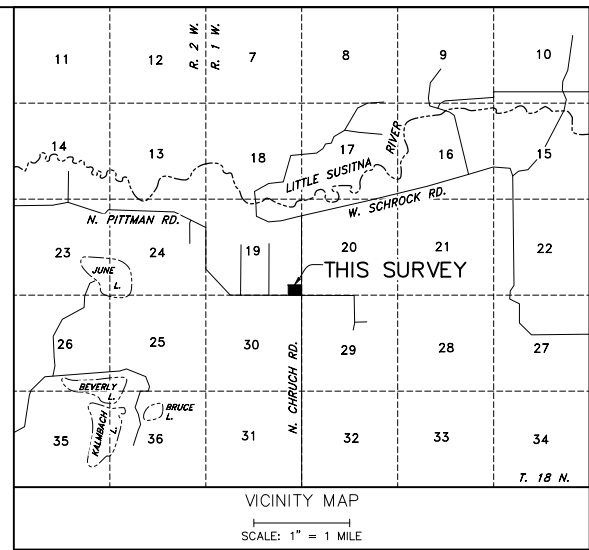
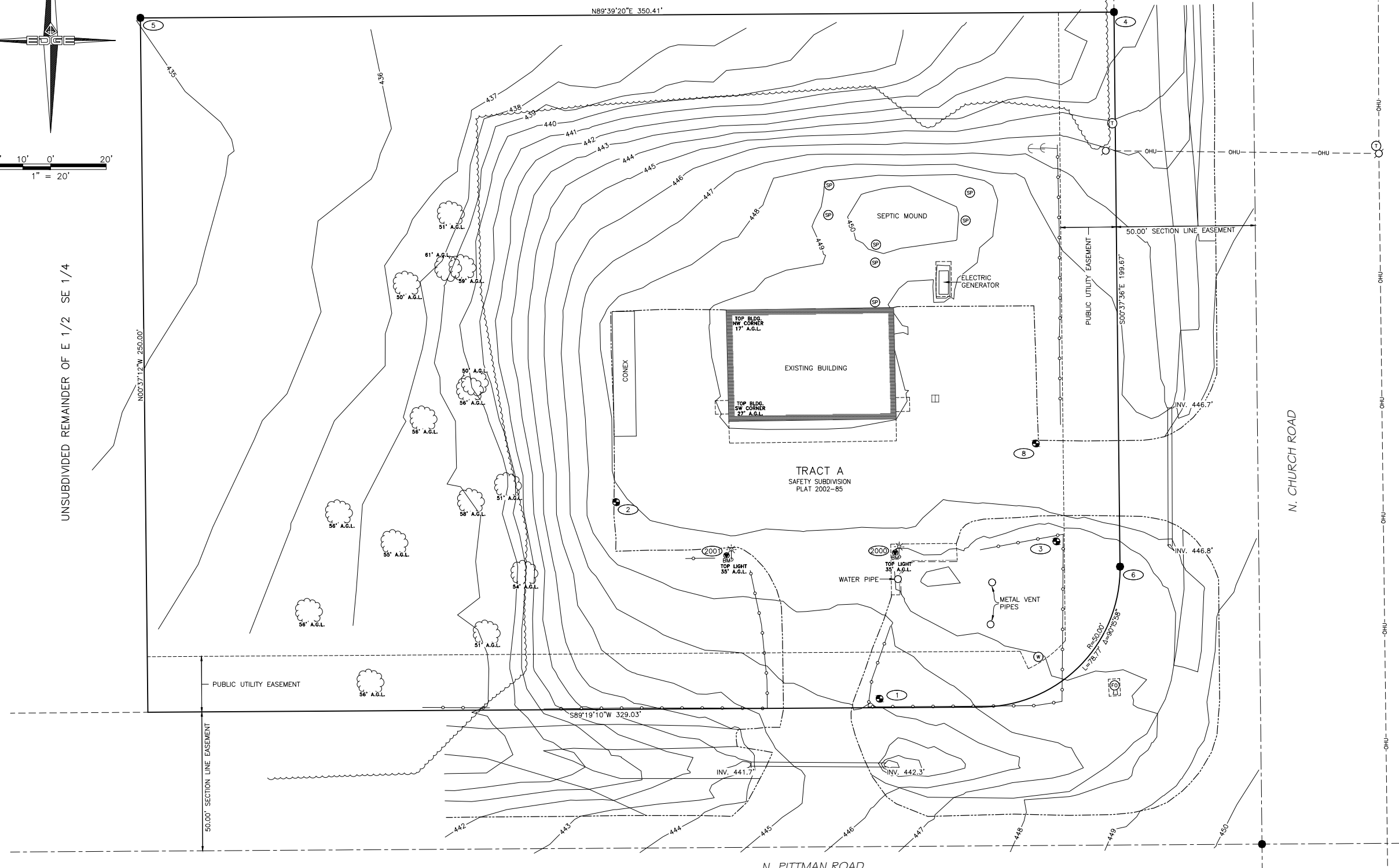
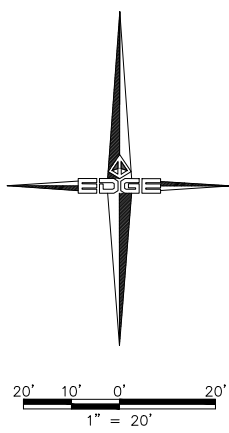
FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO:	SHEET NO:

5 N-1

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UNSUBDIVIDED REMAINDER OF E 1/2 SE 1/4



- NOTES**
- THIS DRAWING IS BASED ON A FIELD SURVEY PERFORMED BY EDGE SURVEY AND DESIGN, LLC ON 10/21/2022.
 - ELEVATIONS SHOWN HEREON ARE NAVD88 ORTHOMETRIC HEIGHTS, GEOID 12B AS DETERMINED BY A NGS OPUS SOLUTION.
 - COORDINATES SHOWN HEREON ARE ALASKA STATE PLANE ZONE 4, NAD83 (2011), EPOCH 2010.0000 US. SURVEY FEET.
 - THE BASIS OF BEARINGS FOR THIS DRAWING IS ALASKA STATE PLANE COORDINATE SYSTEM, ZONE 4.
 - SITE NAME: AK2 SHAMPINE
 - IN AREAS OF DENSE TIMBER, ONLY DOMINANT TREE ELEVATIONS SHOWN.

CONTROL POINTS

POINT	NORTH	EAST	ELEVATION	DESCRIPTION
1	2787446.44	1725242.38	446.09	SET REBAR PPC
2	2787517.21	1725147.57	447.86	SET MAG NAIL
3	2787503.07	1725306.01	448.32	SET REBAR PPC
4	2787693.65	1725326.75	443.45	FOUND REBAR PPC
5	2787691.55	1724976.34	435.10	FOUND REBAR ALUM. CAP
6	2787493.96	1725328.89	448.08	FOUND REBAR ALUM. CAP
8	2787538.34	1725298.62	448.71	FOUND MAG NAIL
2000	2787497.83	1725249.45	449.02	TOP NW BOLT TBM
2001	2787496.82	1725189.08	449.13	TOP NW BOLT TBM

SURVEYOR CERTIFICATE

I, MARK AIMONETTI, 13022-2, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF ALASKA, HEREBY CERTIFY THAT THIS SITE PLAN SURVEY WAS COMPLETED UNDER MY DIRECT SUPERVISION ON THE PROPERTY SHOWN HEREON AND THE IMPROVEMENTS EXIST AS SHOWN AT DATE OF SURVEY.



FAA 1A CERTIFICATE INFORMATION

THE COORDINATES BELOW ARE ACCURATE TO WITHIN 20± FEET HORIZONTALLY AND THAT THE GROUND ELEVATION IS ACCURATE TO WITHIN 3± FEET VERTICALLY.

PROPOSED TOWER LATITUDE: NORTH XXX'XX'.XXX"

PROPOSED TOWER LONGITUDE: WEST XXX'XX'.XXX"

EXISTING GROUND ELEVATION: XXX.XX'

LEGEND

—	PROPERTY LINE	AGL	ABOVE GROUND LEVEL	⊙	SEWER STAND PIPE
- - -	ADJACENT PROPERTY LINE	⊙	SURVEY CONTROL POINT	⊙	FIBER OPTIC VAULT
—	18" CORRUGATED METAL PIPE	⊙	FOUND MONUMENT	⊙	TELECOMMUNICATION PEDESTAL
-OHU-	OVERHEAD UTILITY	⊙	BENCHMARK	⊙	WELL
—	4' WOOD POST FENCE	⊙	GUY WIRE	⊙	JBOX TYPE 1
—	121' CONTOUR LINE	⊙	UTILITY POLE	⊙	DECIDUOUS TREE
- - -	EASEMENT	⊙	LIGHT		
~~~~~	VEGETATION LINE				

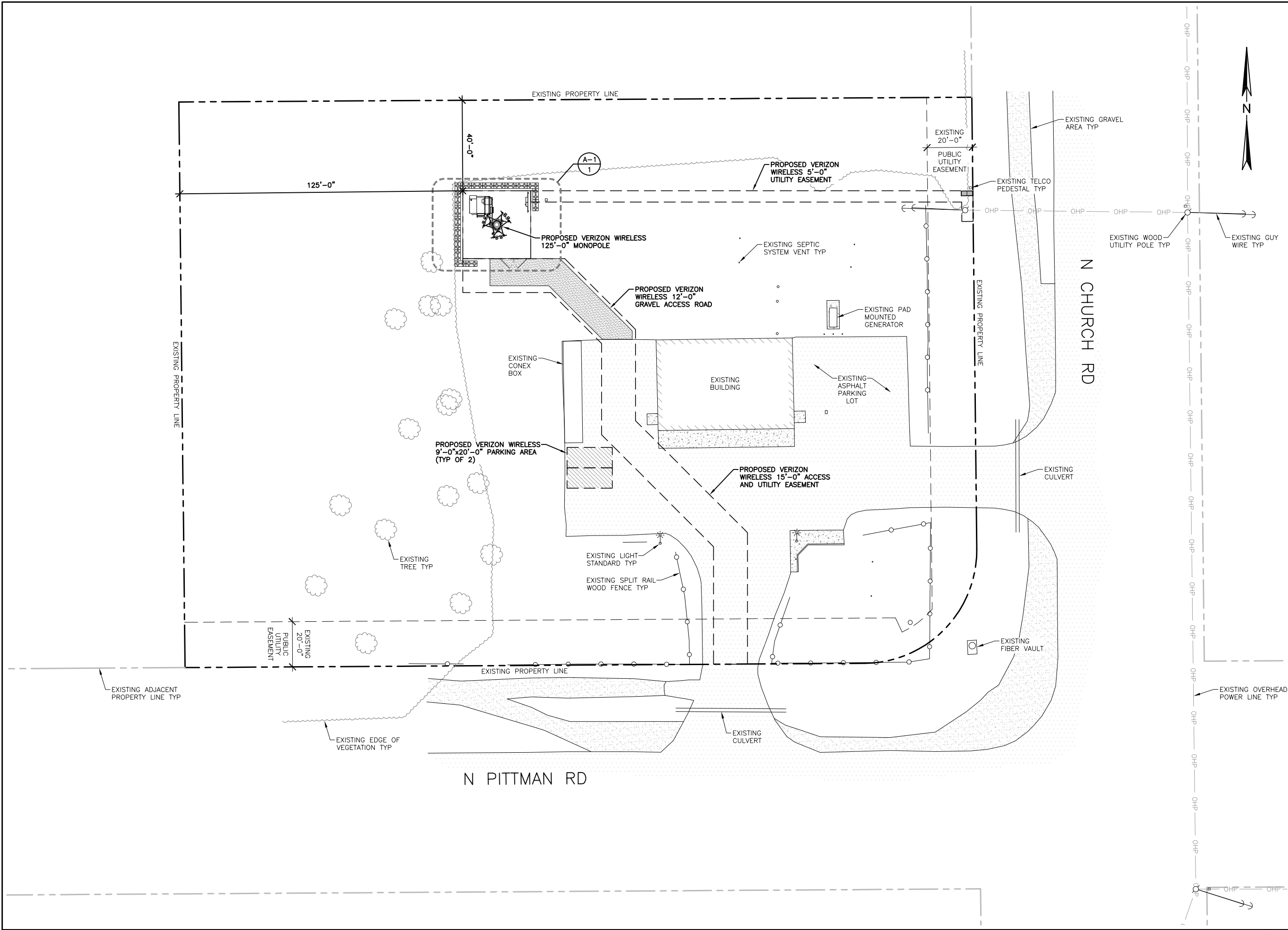
**EDGE SURVEY AND DESIGN, LLC**

8000 KING STREET ANCHORAGE, AK 99518  
Phone (907) 344-5990 Fax (800) 761-8502

**SHAMPINE EXISTING CONDITIONS SURVEY**

DRAWN BY: MA	DATE: 10/27/2022	PROJECT NO.: 22-235
CHECKED BY: MA	SCALE: 1" = 20'	SHEET: 1 OF 1

P:\Projects\2022\Wastila - Shampine Cell Survey (22-235)\DWG\SurveyBase - Shampine 2.dwg PLOTTED: 10/28/2022 10:11:22 AM



APPLICANT:  
**verizon**

IMPLEMENTATION TEAM/CLIENT:  
**LYNX**

DO NOT SCALE DRAWINGS. CONTRACTOR MUST VERIFY ALL DRAWINGS AND ADVISE CONSULTANTS OF ANY ERRORS OR OMISSIONS. NO VARIATIONS OR MODIFICATIONS TO WORK SHOWN SHALL BE IMPLEMENTED WITHOUT PRIOR WRITTEN APPROVAL. ALL PREVIOUS ISSUES OF THIS DRAWINGS ARE SUPERSEDED BY THE LATEST REVISION. ALL DRAWINGS AND SPECIFICATIONS REMAIN THE PROPERTY OF LYNX CONSULTING, INC. NEITHER LYNX CONSULTING, INC. NOR THE ARCHITECT WILL BE PROVIDING CONSTRUCTION REVIEW OF THIS PROJECT.



Jun 06, 2024

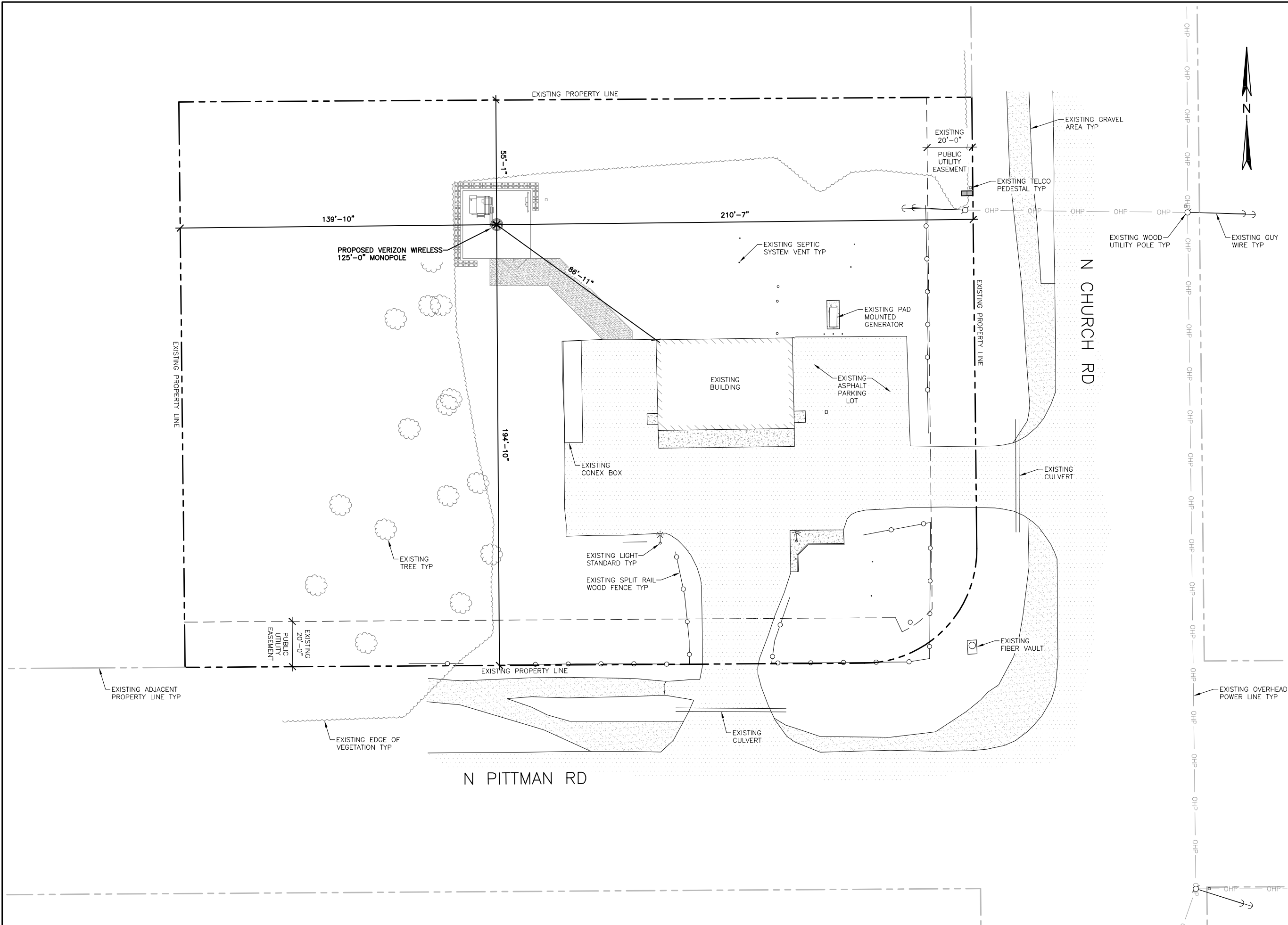
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-	-	-
-	-	-
5	6/06/24	NEW RFDS AND FCD'S ISSUED FOR SUBMITTAL
4	5/31/24	PCD'S ISSUED FOR REVIEW
3	4/18/23	REVISED PER COMMENTS
2	11/28/22	REVISED PER CLIENT COMMENTS
1	11/15/22	PZD'S ISSUED FOR REVIEW

PROJECT:  
**AK2 SHAMPINE**  
 5182 N PITTMAN RD  
 WASILLA, AK 99654

SHEET TITLE:  
**PROPOSED SITE PLAN**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO:	SHEET NO:

5 C-1  
 Page 62 of 309



APPLICANT:  
**verizon**

IMPLEMENTATION TEAM/CLIENT:  
**LYNX**

DO NOT SCALE DRAWINGS. CONTRACTOR MUST VERIFY ALL DRAWINGS AND ADVISE CONSULTANTS OF ANY ERRORS OR OMISSIONS. NO VARIATIONS OR MODIFICATIONS TO WORK SHOWN SHALL BE IMPLEMENTED WITHOUT PRIOR WRITTEN APPROVAL. ALL PREVIOUS ISSUES OF THIS DRAWINGS ARE SUPERSEDED BY THE LATEST REVISION. ALL DRAWINGS AND SPECIFICATIONS REMAIN THE PROPERTY OF LYNX CONSULTING, INC. NEITHER LYNX CONSULTING, INC. NOR THE ARCHITECT WILL BE PROVIDING CONSTRUCTION REVIEW OF THIS PROJECT.



Jun 06, 2024

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1	11/15/22	PZD'S ISSUED FOR REVIEW

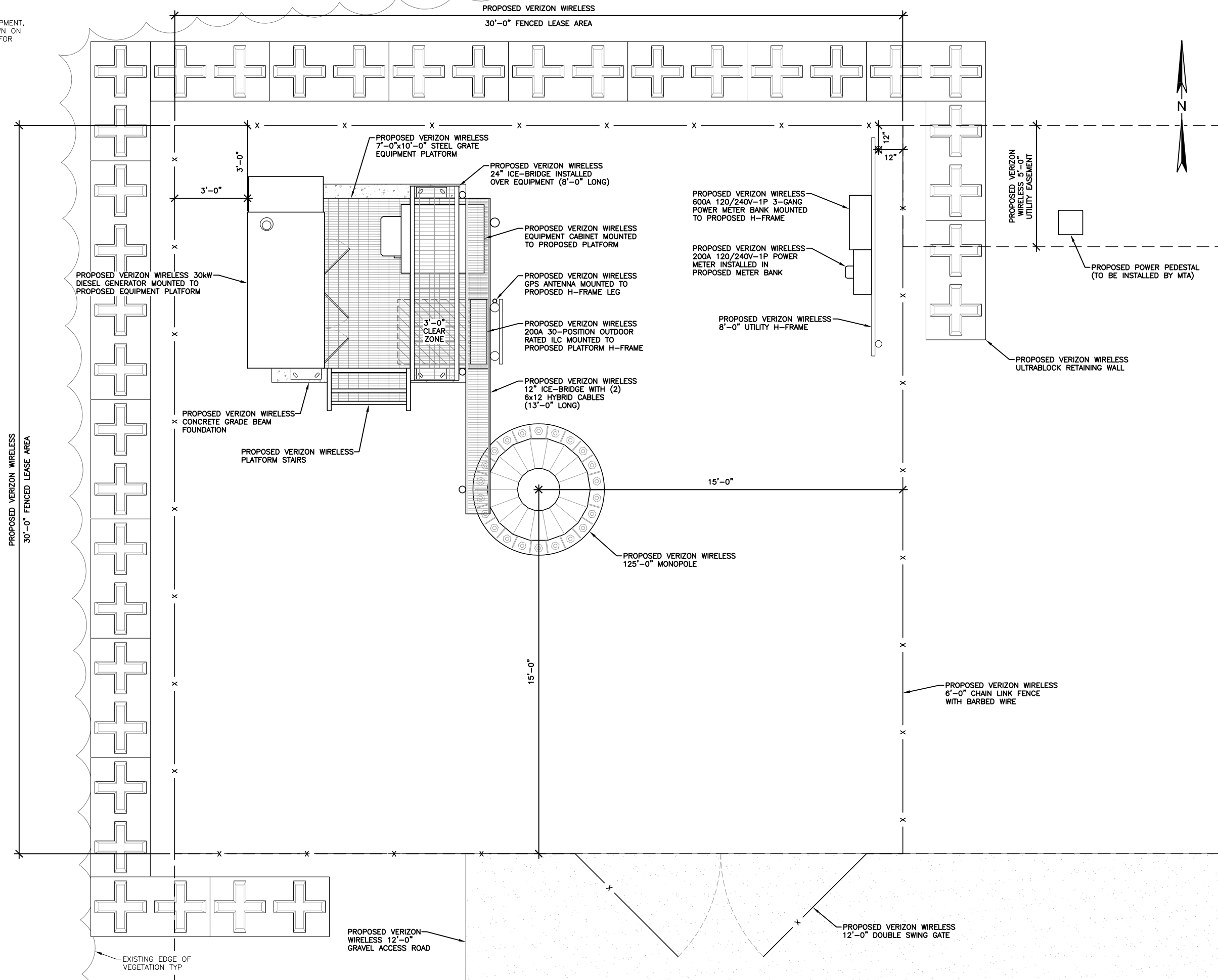
PROJECT:  
**AK2 SHAMPINE**  
 5182 N PITTMAN RD  
 WASILLA, AK 99654

SHEET TITLE:  
**PROPOSED TOWER SETBACK PLAN**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO:	SHEET NO:

5 C-2  
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NOTE:  
 PROPOSED VERIZON WIRELESS TOWER MOUNTED ANTENNAS, ANCILLARY EQUIPMENT, AND MOUNTING HARDWARE NOT SHOWN ON THIS PLAN FOR CLARITY. SEE RF-1 FOR PROPOSED ANTENNA DESIGN.



APPLICANT:  
**verizon**

IMPLEMENTATION TEAM/CLIENT:  
**LYNX**

DO NOT SCALE DRAWINGS. CONTRACTOR MUST VERIFY ALL DRAWINGS AND ADVISE CONSULTANTS OF ANY ERRORS OR OMISSIONS. NO VARIATIONS OR MODIFICATIONS TO WORK SHOWN SHALL BE IMPLEMENTED WITHOUT PRIOR WRITTEN APPROVAL. ALL PREVIOUS ISSUES OF THIS DRAWINGS ARE SUPERSEDED BY THE LATEST REVISION. ALL DRAWINGS AND SPECIFICATIONS REMAIN THE PROPERTY OF LYNX CONSULTING, INC. NEITHER LYNX CONSULTING, INC. NOR THE ARCHITECT WILL BE PROVIDING CONSTRUCTION REVIEW OF THIS PROJECT.

STATE OF ALASKA  
 49 TH  
 BERTRAND WHITE  
 No. CE106129  
 REGISTERED PROFESSIONAL ENGINEER

Jun 06, 2024

REV	DATE	DESCRIPTION
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-	-	-
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1	11/15/22	PZD'S ISSUED FOR REVIEW

PROJECT:  
**AK2 SHAMPINE**  
 5182 N PITTMAN RD  
 WASILLA, AK 99654

SHEET TITLE:  
**PROPOSED COMPOUND PLAN**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO:	SHEET NO:



APPLICANT:



IMPLEMENTATION TEAM/CLIENT:



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1	11/15/22	PZD'S ISSUED FOR REVIEW

PROJECT:

### AK2 SHAMPINE

5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:

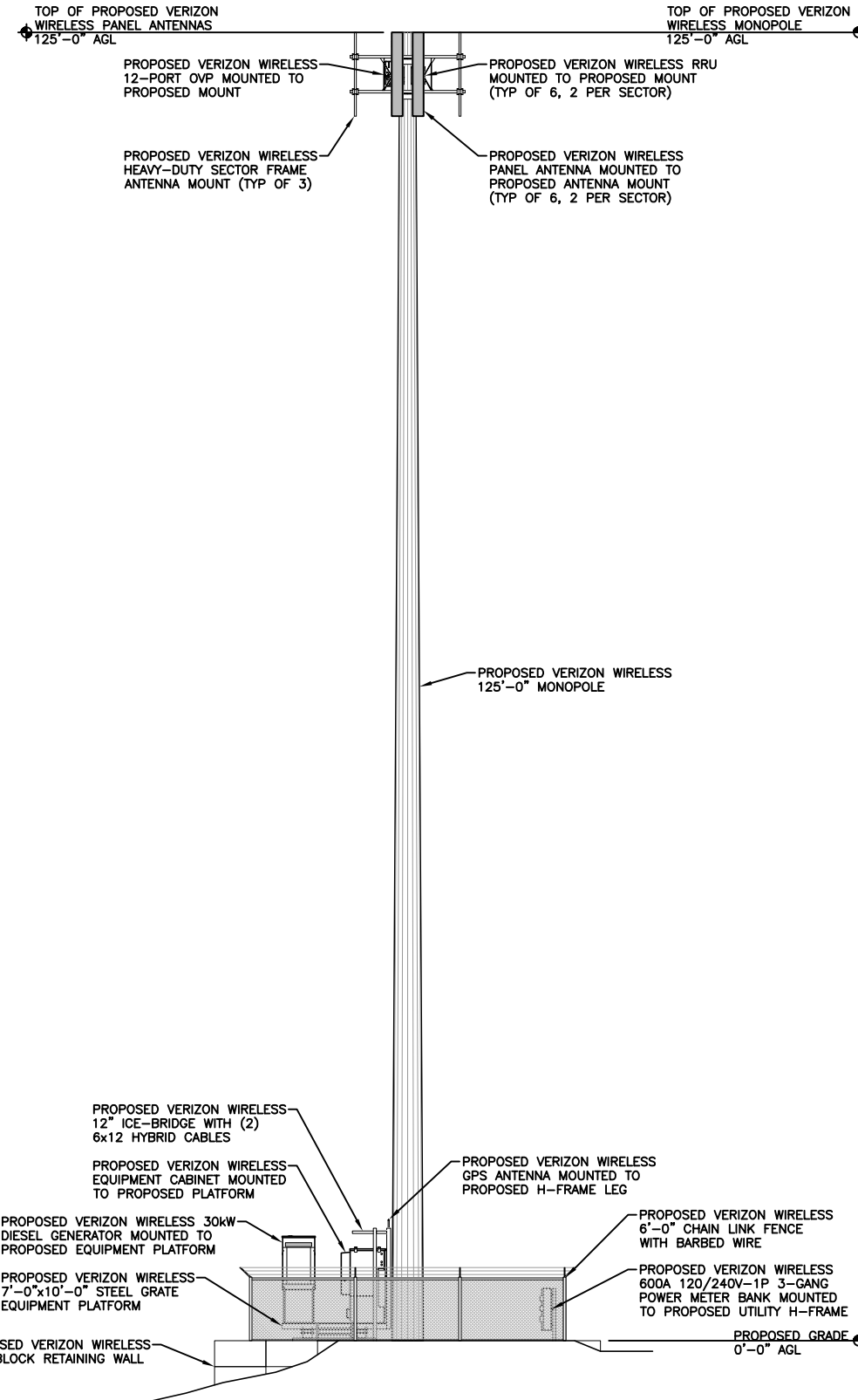
## PROPOSED ELEVATION

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO:	SHEET NO:

5 A-2  
Page 65 of 309

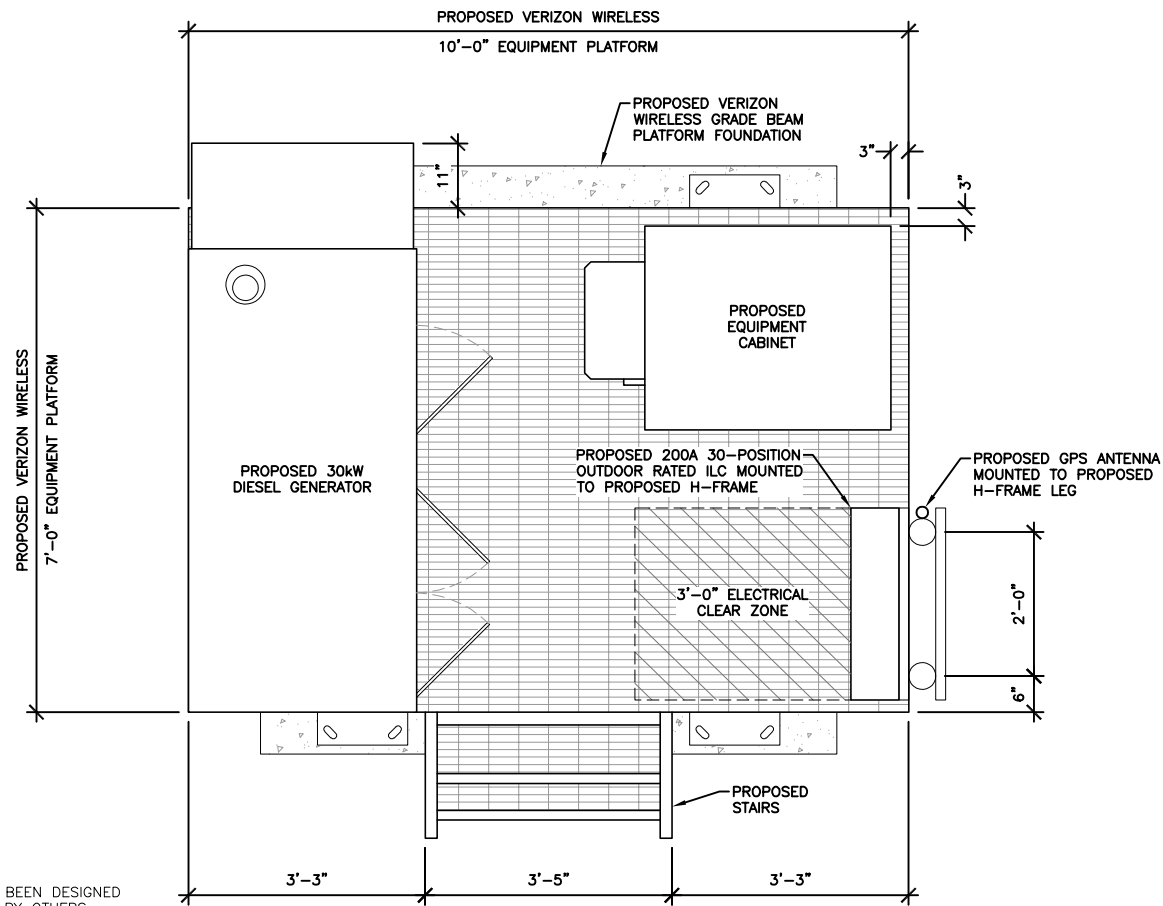
#### NOTES:

- NO WORK SHALL COMMENCE WITHOUT THE APPROVED STRUCTURAL ANALYSIS REPORT (SIGNED AND SEALED), PROVIDED BY OTHERS UNDER SEPARATE COVER. PRIOR TO THE INSTALLATION OF ALL TOWER MOUNTED EQUIPMENT AND CABLES, THE CONTRACTOR SHALL REVIEW THE APPROVED STRUCTURAL ANALYSIS SUPPLIED BY VERIZON WIRELESS AND MODIFY, IF REQUIRED, ALL APPLICABLE MEMBERS AS REQUIRED BY THE CERTIFIED STRUCTURAL REPORT.
- THE CONTRACTOR SHALL INSPECT THE TOWER AND MOUNTING HARDWARE AND MAKE THE ENGINEER OF RECORD AWARE OF ANY DEFECTS OR DISCREPANCIES FROM THE APPROVED PLANS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT PER THE MANUFACTURER'S SPECIFICATIONS.



22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

NOT USED 3



NOTE:  
PLATFORM HAS BEEN DESIGNED AND CERTIFIED BY OTHERS

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: 3/8" = 1'-0"

EQUIPMENT PLATFORM LAYOUT 2

22"x34" SCALE: 1/8" = 1'-0"  
11"x17" SCALE: 1/16" = 1'-0"

PROPOSED ELEVATION 1

PROPOSED ANTENNA SCHEDULE

RFDS DATE: 6/03/24

ALPHA SECTOR	AZIMUTH	TIP HEIGHT	QTY	VENDOR	MODEL	LENGTH	WIDTH	DEPTH	MECH TILT	ELEC TILT	CABLE QTY	FEEDER TYPE	FEEDER LENGTH	ADDITIONAL EQUIPMENT
700	50°	125'-0"	2	JMA	MX06FHG865-HG	95.9"	12.2"	7.5"	0°	0°	2	6x12 HYBRIDS WITH (1) 12-PORT OVP	180'-0"	RRUS4490 B13
AWS										0°				RRUS4890 B66
BETA SECTOR	AZIMUTH	TIP HEIGHT	QTY	VENDOR	MODEL	LENGTH	WIDTH	DEPTH	MECH TILT	ELEC TILT	CABLE QTY	FEEDER TYPE	FEEDER LENGTH	ADDITIONAL EQUIPMENT
700	170°	125'-0"	2	JMA	MX06FHG865-HG	95.9"	12.2"	7.5"	0°	0°	2	6x12 HYBRIDS WITH (1) 12-PORT OVP	180'-0"	RRUS4490 B13
AWS										0°				RRUS4890 B66
GAMMA SECTOR	AZIMUTH	TIP HEIGHT	QTY	VENDOR	MODEL	LENGTH	WIDTH	DEPTH	MECH TILT	ELEC TILT	CABLE QTY	FEEDER TYPE	FEEDER LENGTH	ADDITIONAL EQUIPMENT
700	290°	125'-0"	2	JMA	MX06FHG865-HG	95.9"	12.2"	7.5"	0°	2°	2	6x12 HYBRIDS WITH (1) 12-PORT OVP	180'-0"	RRUS4490 B13
AWS										0°				RRUS4890 B66

APPLICANT:



IMPLEMENTATION TEAM/CLIENT:



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Jun 06, 2024

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1	11/15/22	PZD'S ISSUED FOR REVIEW

PROJECT:

**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:

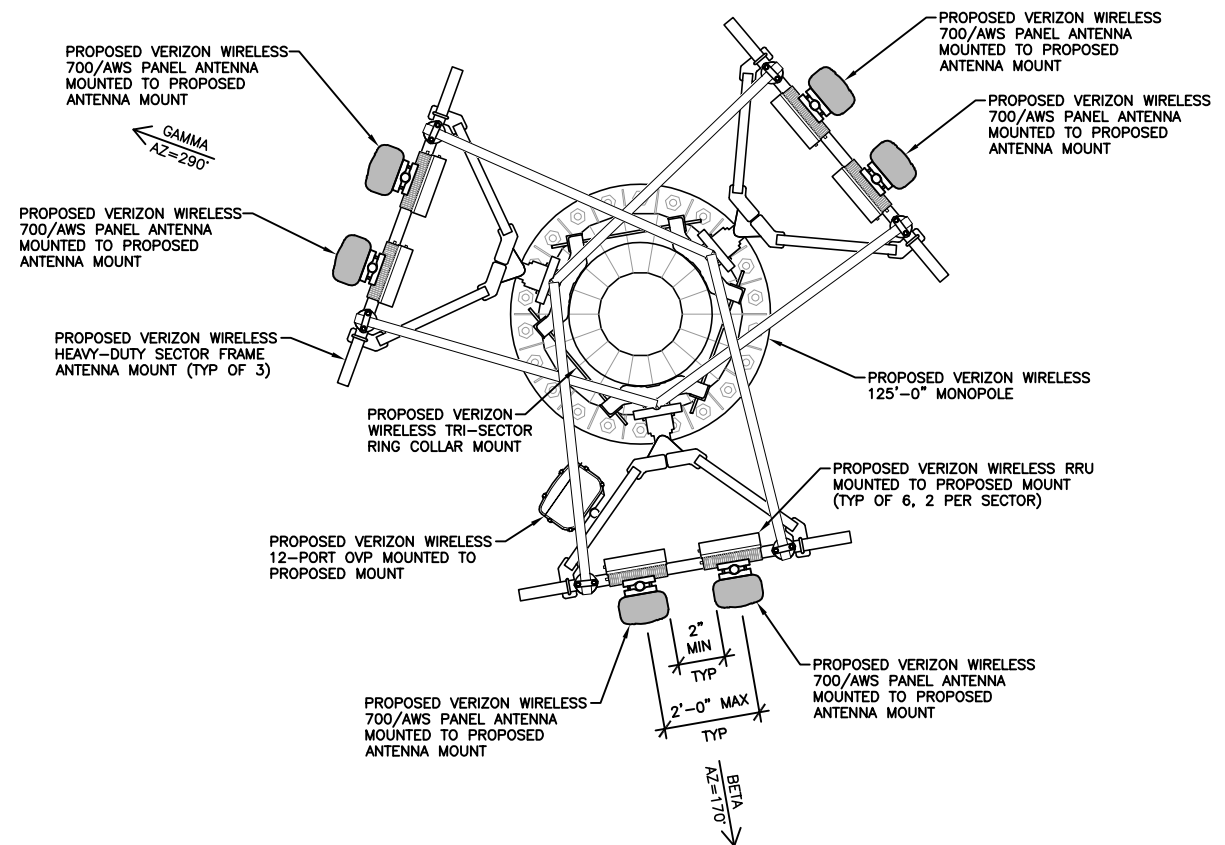
PROPOSED ANTENNA CONFIGURATION

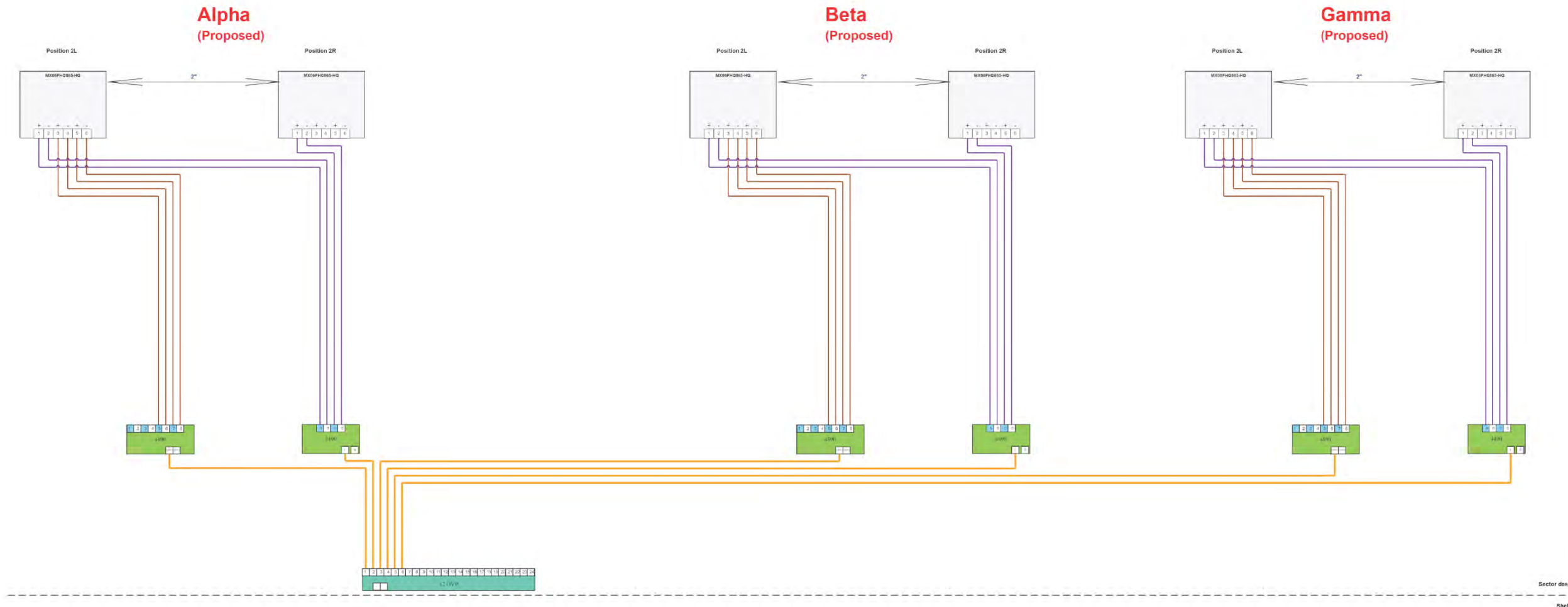
FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO:	SHEET NO:

5 RF-1  
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22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

NOT USED 3





APPLICANT:



IMPLEMENTATION TEAM/CLIENT:



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PROJECT:

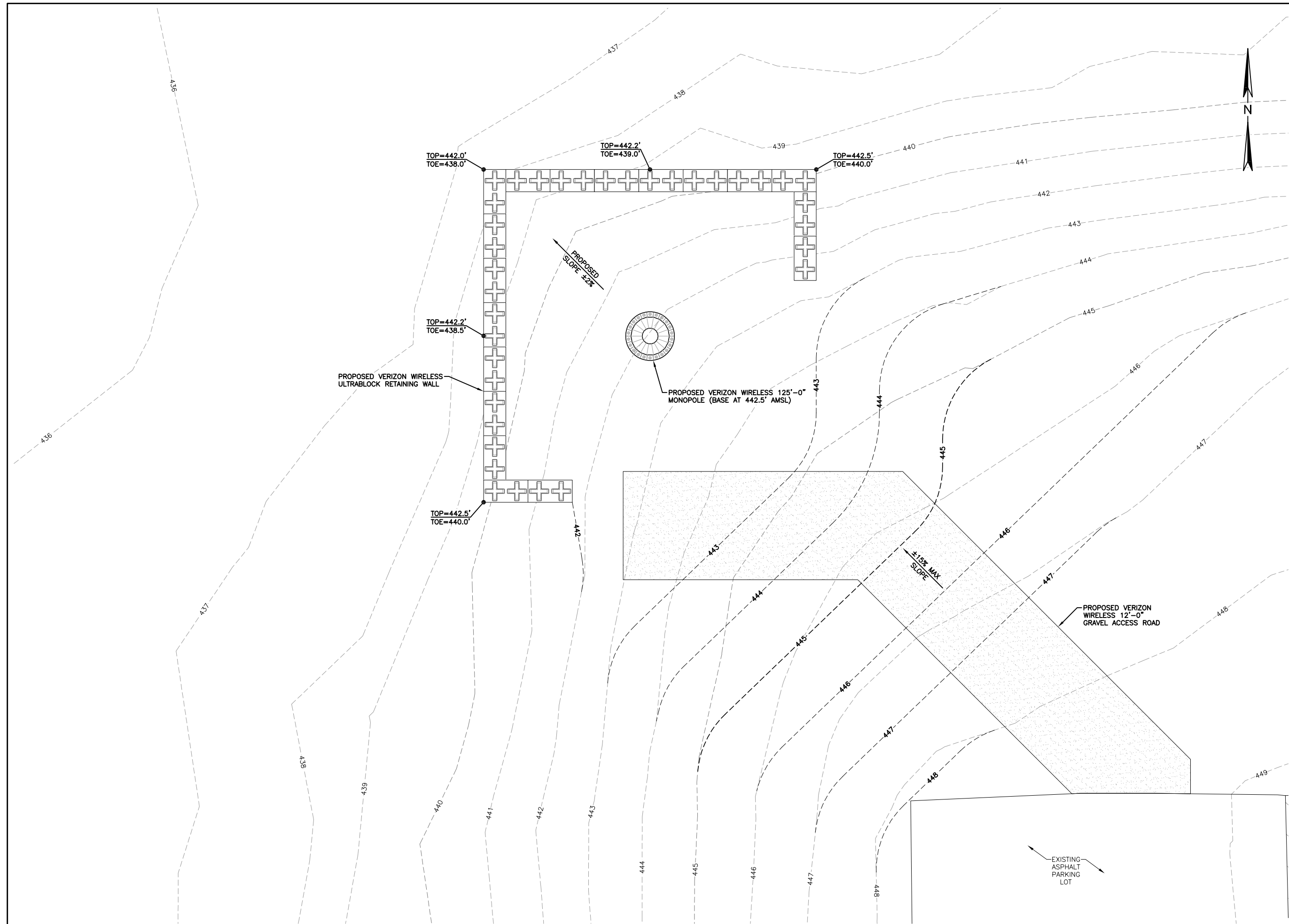
**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:

PROPOSED IT DIAGRAM

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO:	SHEET NO:

5 RF-2  
Page 67 of 309



APPLICANT:

IMPLEMENTATION TEAM/CLIENT:

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STATE OF ALASKA  
 49 TH  
  
 BERTRAND WHITE  
 No. CE106129  
 REGISTERED PROFESSIONAL ENGINEER  
 Jun 06, 2024

REV	DATE	DESCRIPTION
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PROJECT:  
**AK2 SHAMPINE**  
 5182 N PITTMAN RD  
 WASILLA, AK 99654

SHEET TITLE:  
**PROPOSED GRADING PLAN**

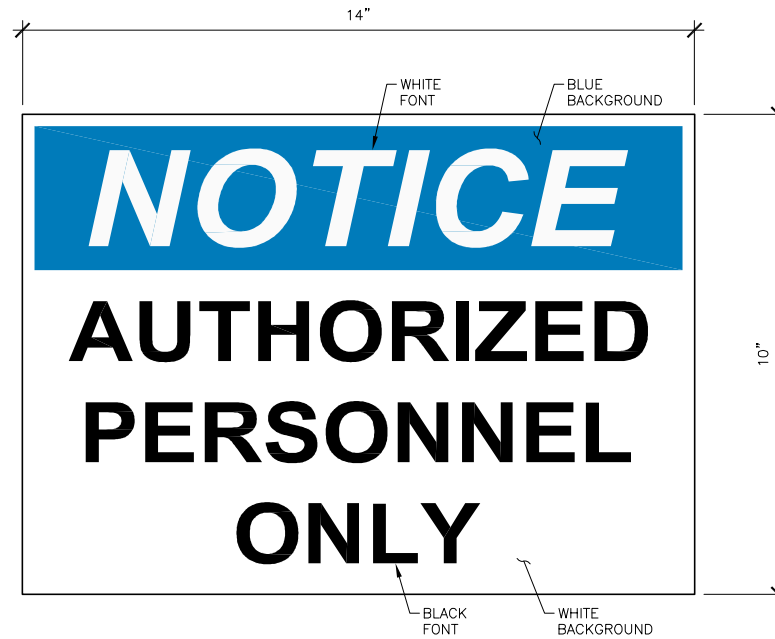
FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW

REVISION NO:	SHEET NO:
5	G-1

- NOTES:**
- CONTRACTOR SHALL USE GALVANIZED OR STAINLESS STEEL "HOG RINGS" TO INSTALL FENCE/GATE MOUNTED SIGNS.
  - "NO TRESPASSING" SIGNAGE SHALL BE PLACED ON THE RIGHT SIDE OF THE DOUBLE-SWING GATE AND AT THE CENTER OF THE FENCING ON ALL SIDES OF THE WIRELESS COMPOUND.



- NOTES:**
- CONTRACTOR SHALL USE GALVANIZED OR STAINLESS STEEL "HOG RINGS" TO INSTALL FENCE/GATE MOUNTED SIGNS.
  - "AUTHORIZED PERSONNEL" SIGNAGE SHALL BE PLACED ON THE RIGHT SIDE OF THE DOUBLE-SWING GATE.



- NOTES:**
- CONTRACTOR SHALL USE GALVANIZED OR STAINLESS STEEL "HOG RINGS" TO INSTALL FENCE/GATE MOUNTED SIGNS.
  - FCC SIGNAGE SHALL BE PLACED ON THE RIGHT SIDE OF THE DOUBLE-SWING GATE AND AT THE BASE OF THE TOWER.
  - CONTRACTOR SHALL CONFIRM THE SITE SPECIFIC FCC REGISTRATION NUMBER AND ORDER/MODIFY THE SIGN ACCORDINGLY.



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22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

NO TRESPASSING SIGNAGE 6

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

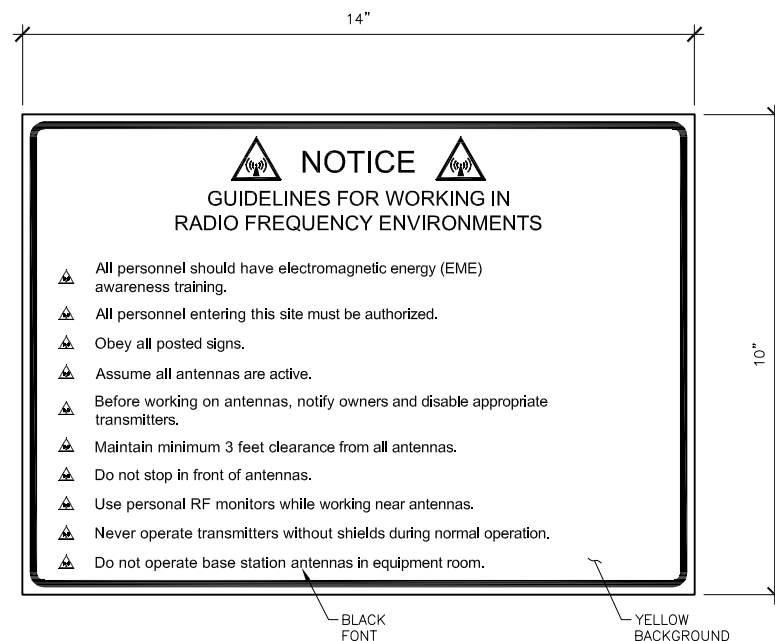
AUTHORIZED PERSONEL SIGNAGE 5

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11"x17" SCALE: NOT TO SCALE

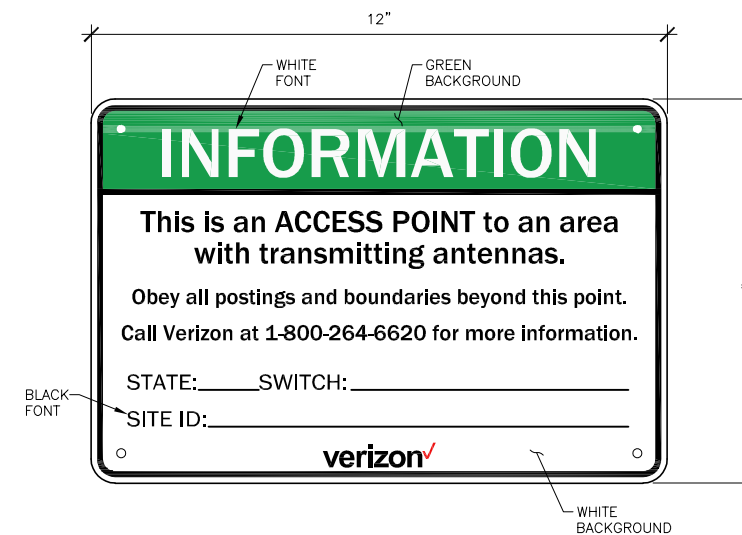
FCC SIGNAGE 4

REV	DATE	DESCRIPTION
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-	-	-
-	-	-
5	6/06/24	NEW RFDS AND FCD'S ISSUED FOR SUBMITTAL
4	5/31/24	PCD'S ISSUED FOR REVIEW
3	4/18/23	REVISED PER COMMENTS
2	11/28/22	REVISED PER CLIENT COMMENTS
1	11/15/22	PZD'S ISSUED FOR REVIEW

- NOTES:**
- CONTRACTOR SHALL USE STAINLESS STEEL ZIP TIES TO INSTALL FENCE/GATE MOUNTED SIGNS.
  - RF "CAUTION AND "NOTICE" SIGNS SHALL BE PLACED ON THE RIGHT SIDE OF THE DOUBLE-SWING GATE.



- NOTES:**
- CONTRACTOR SHALL USE OUTDOOR RATED DOUBLE SIDED TAPE TO MOUNT SIGNS TO PROPOSED EQUIPMENT CABINETS.
  - SIGNAGE SHALL BE PLACED AT VERIZON WIRELESS EQUIPMENT.
  - CONTRACTOR SHALL CONFIRM THE SITE SPECIFIC INFORMATION AND ORDER/MODIFY THE SIGN ACCORDINGLY.



PROJECT:

**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:

**CONSTRUCTION DETAILS**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO:	SHEET NO:

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11"x17" SCALE: NOT TO SCALE

NOT USED 3

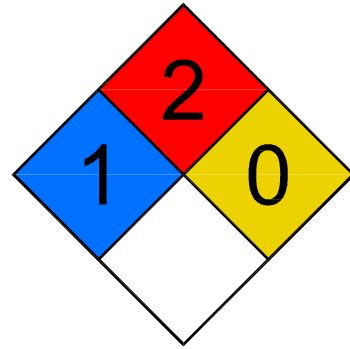
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RF GUIDELINES SIGNAGE 2

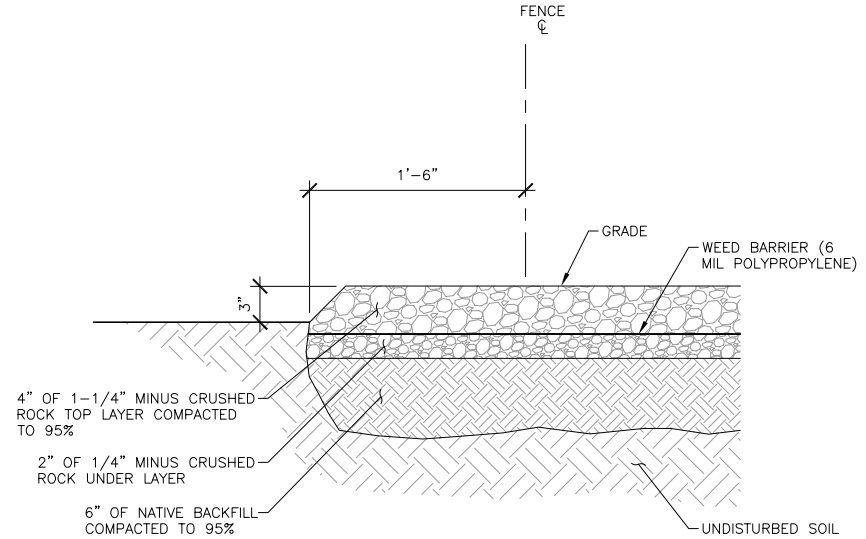
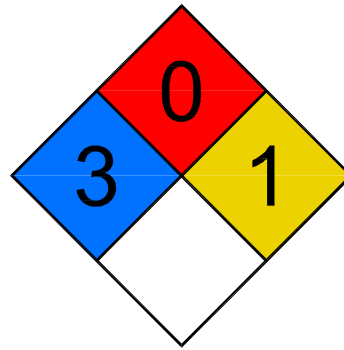
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11"x17" SCALE: NOT TO SCALE

VERIZON SITE SIGNAGE 1

- NOTES:**
1. SIGNS SHALL BE MOUNTED ON DIESEL FUEL TANK.
  2. ALL SIGNS SHALL BE UV-RESISTANT FOR OUTDOOR USE.
  3. ALL SIGNS SHALL HAVE A MINIMUM 5 YEAR GUARANTEE WITHOUT SHOWING ANY SIGNS OF FADING OR DEGRADATION.
  4. ALL SIGNS SHALL HAVE ROUNDED CORNERS WITH PRE-DRILLED HOLES AND WEATHERPROOF PRESSURE SENSITIVE ADHESIVE BACKING FOR MOUNTING.
  5. ALL SIGNS SHALL BE PROVIDED PER THEIR SPECIFIC REQUIREMENTS, UNLESS OTHERWISE SPECIFIED DUE TO SIZE RESTRAINTS OR LOCAL DEMANDS.



- NOTES:**
1. SIGNS SHALL BE MOUNTED ON ALL CABINETS CONTAINING BATTERIES.
  2. ALL SIGNS SHALL BE UV-RESISTANT FOR OUTDOOR USE.
  3. ALL SIGNS SHALL HAVE A MINIMUM 5 YEAR GUARANTEE WITHOUT SHOWING ANY SIGNS OF FADING OR DEGRADATION.
  4. ALL SIGNS SHALL HAVE ROUNDED CORNERS WITH PRE-DRILLED HOLES AND WEATHERPROOF PRESSURE SENSITIVE ADHESIVE BACKING FOR MOUNTING.
  5. ALL SIGNS SHALL BE PROVIDED PER THEIR SPECIFIC REQUIREMENTS, UNLESS OTHERWISE SPECIFIED DUE TO SIZE RESTRAINTS OR LOCAL DEMANDS.



APPLICANT:

IMPLEMENTATION TEAM/CLIENT:

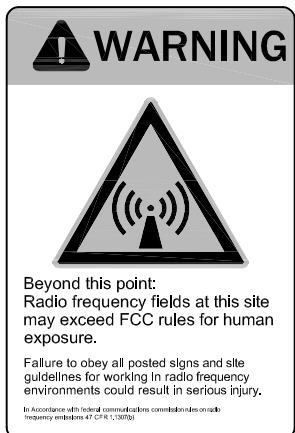
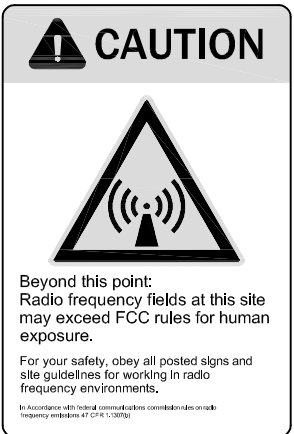
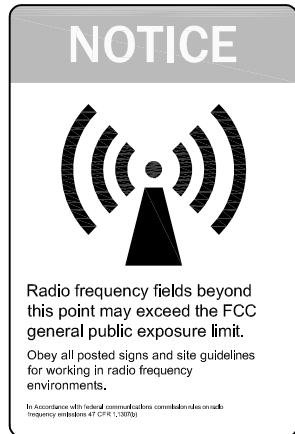
DO NOT SCALE DRAWINGS. CONTRACTOR MUST VERIFY ALL DRAWINGS AND ADVISE CONSULTANTS OF ANY ERRORS OR OMISSIONS. NO VARIATIONS OR MODIFICATIONS TO WORK SHOWN SHALL BE IMPLEMENTED WITHOUT PRIOR WRITTEN APPROVAL. ALL PREVIOUS ISSUES OF THIS DRAWINGS ARE SUPERSEDED BY THE LATEST REVISION. ALL DRAWINGS AND SPECIFICATIONS REMAIN THE PROPERTY OF LYNX CONSULTING, INC. NEITHER LYNX CONSULTING, INC. NOR THE ARCHITECT WILL BE PROVIDING CONSTRUCTION REVIEW OF THIS PROJECT.

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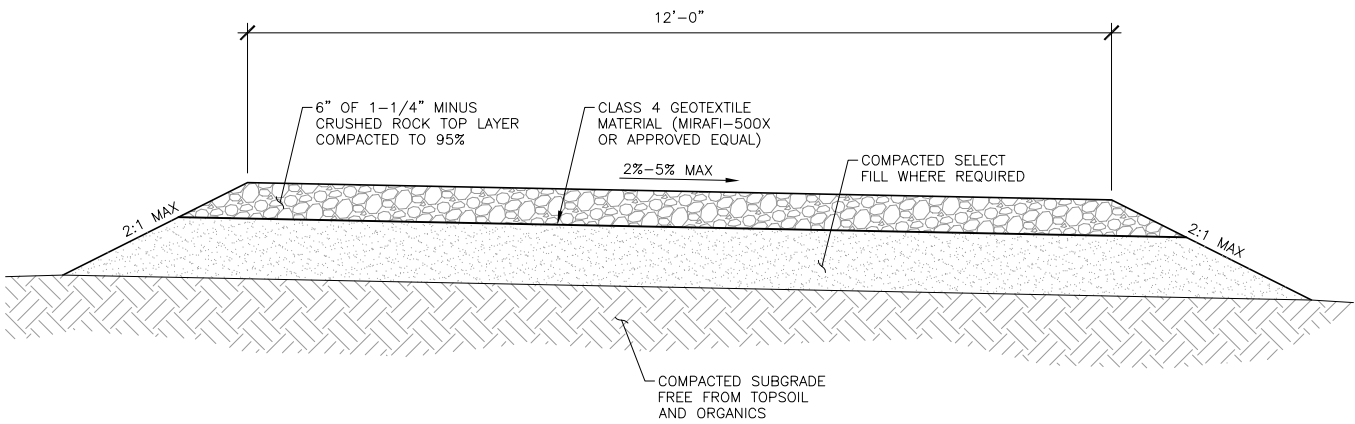
22"x34" SCALE: NOT TO SCALE 11"x17" SCALE: NOT TO SCALE	DIESEL FUEL SIGNAGE 5	22"x34" SCALE: NOT TO SCALE 11"x17" SCALE: NOT TO SCALE	Ni-CAD BATTERY SIGNAGE 4	22"x34" SCALE: NOT TO SCALE 11"x17" SCALE: NOT TO SCALE	COMPOUND SURFACING 3
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- 1. SIGNS AND PLACEMENT**
- 1.1. LOW LEVEL (BLUE) WARNING SIGNS – PLACE AT SITE ENTRY/ACCESS POINTS ONLY.
  - 1.2. HIGH LEVEL (RED) WARNING SIGNS – PLACE AT ALL ANTENNA SECTORS WHERE ACCESS BY THE GENERAL PUBLIC TO THE ANTENNAS IS POSSIBLE.
- ALL SIGNS WILL BE SECURED WITH EITHER STAINLESS STEEL TIES OR STAINLESS TECH SCREWS.
- 2. GC PARTICIPATION IN SIGN LOCATION.**
- CM WILL MEET WITH ALL GC'S TO OUTLINE CRITERIA FOR SIGN PLACEMENT; EMPHASIS WILL BE ON 'GRAY AREA' SITES, WHERE SIGN PLACEMENT IS PARTICULARLY CHALLENGING – WE WILL GIVE GC'S AS MUCH GUIDANCE ON SPECIFIC SITUATIONS AS WE CAN FORESEE, BUT GC'S WILL BE ENCOURAGED TO PARTNER CM OR QC IN DECIDING PLACEMENT OF DIFFICULT SITES. A JOINT SITE VISIT MAY BE REQUIRED TO FULFILL REQUIREMENTS.
- GC WILL CALL OUT SIGN LOCATION(S) AT THE BID WALK FOR EACH SITE AS THOSE OCCUR.
- ON SITES WITH EXISTING ENGINEERING BUT NOT YET CONSTRUCTED, GC WILL BE ASKED TO PROVIDE (WITHIN A REASONABLE TIME FRAME) A DETAIL FOR SIGN PLACEMENT THAT WILL BE SLIP-SHEETED INTO EXISTING SETS.



- NOTES:**
1. CONTRACTOR SHALL USE SWALES AND/OR DRAINAGE DITCHES FOR PROPER WATER RUNOFF AS NEEDED.
  2. AGGREGATE IS BASED ON STANDARD AASHTO.
  3. CULVERTS SHALL BE A MINIMUM OF 4'-0" LONGER THAN ACCESS ROAD WIDTH ON EACH SIDE FOR PROPER SHOULDERING.
  4. ALL CROSS-DRAINS SHALL BE INSTALLED ON A 45° ANGLE WITH THE FALL OF GRADE.
  5. RIPRAP OUTFALL SHALL MAINTAIN A 2:1 SLOPE TO THE BOTTOM OF THE DITCH LINE/FLOW LINE.
  6. DITCHES SHALL HAVE A 1'-0" FLAT BOTTOM WITH RIPRAP INSTALLED IN HEAVY EROSION AREAS.



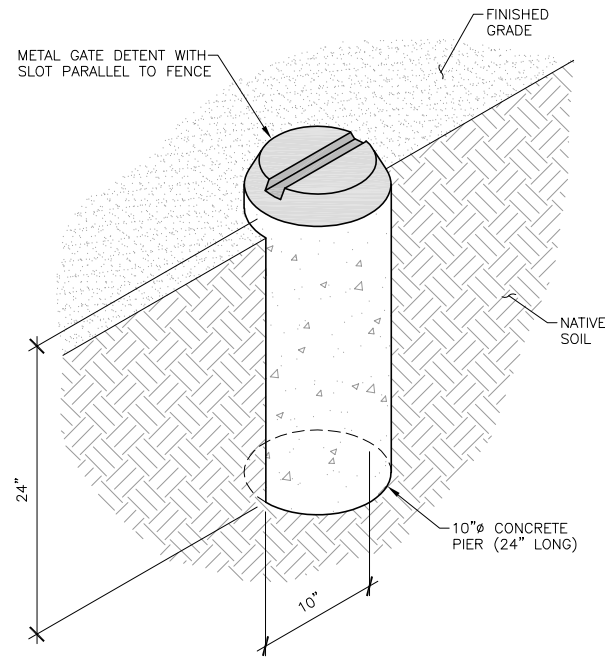
PROJECT:

**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

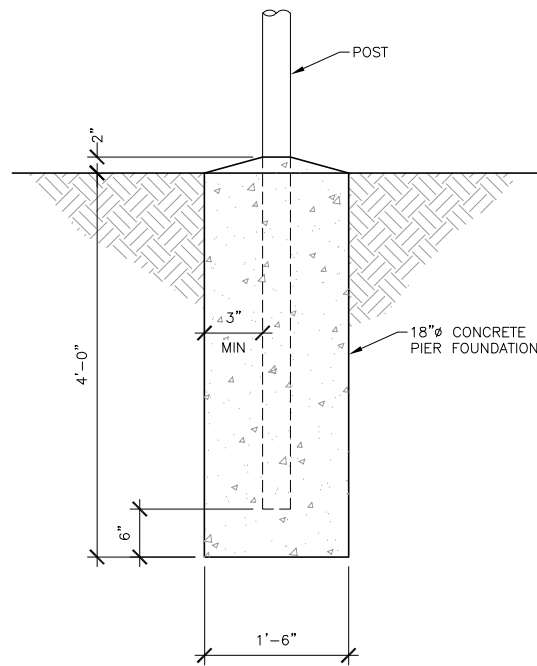
SHEET TITLE:

**CONSTRUCTION DETAILS**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
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REVISION NO:	SHEET NO:



GATE DETENT 4



CONCRETE PIER 3

- ALL STEEL MATERIALS (POSTS, RAILS, FABRIC MESH, HARDWARE, AND BARBED WIRE) SHALL BE HOT-DIPPED GALVANIZED AND CONFORM TO ALL ASTM REGULATIONS FOR GALVANIZING.
- FABRIC MESH SHALL BE 6'-0" HIGH AND HAVE 2" CHAIN LINK MESH OF NUMBER 9-GAUGE (0.148) WIRE. THE FABRIC SHALL HAVE A TWISTED AND BARBED FINISH FOR THE TOP EDGES AND A KNUCKLED FINISH FOR THE BOTTOM EDGES. FABRIC SHALL CONFORM TO THE SPECIFICATIONS OF ASTM A-392 CLASS-1.
- BARBED WIRE SHALL BE DOUBLE-STRAND, 12 GAUGE TWISTED WIRE, WITH 14 GAUGE 4 POINT ROUND BARBS SPACED AT 5" ON CENTER.
- LINE POSTS SHALL BE 2-3/8" SCHEDULE 40 GALVANIZED PIPE.
- CORNER AND GATE POSTS SHALL BE 3" SCHEDULE 40 GALVANIZED PIPE.
- EXTEND GATE AND CORNER POSTS 12" INCLUDING THE METAL DOME CAP TO PROVIDE FOR ATTACHMENT OF THE BARBED WIRE.
- ALL HORIZONTAL RAILS SHALL BE 1-5/8" SCHEDULE 40 PIPE AND SECURED IN PLACE BY USE OF GATE BRACE CLAMPS.
- GATE FRAMES SHALL BE CONSTRUCTED OF 1-5/8", HAVE A FULL HEIGHT VERTICAL BRACE AND A FULL WIDTH HORIZONTAL BRACE, SECURED IN PLACE BY USE OF GATE BRACE CLAMPS. HINGE ADAPTERS, LATCHES, STOPS AND KEEPERS SHALL BE PROVIDED FOR ALL GATES.
- GATE HINGES SHALL HAVE A MINIMUM OF 200 DEGREE RANGE OF MOTION.
- TENSION WIRE SHALL BE NUMBER 12-GAUGE ZINC COATED WIRE, LACED THROUGH THE BOTTOM OF THE MESH FABRIC, AND TERMINATED WITH BAND CLIPS AT CORNERS AND GATE POSTS.
- STRETCH BARS SHALL BE 3/16"x3/4" OR HAVE EQUIVALENT CROSS SECTIONAL AREA.
- ALL GATES, CORNER PANELS AND END PANELS SHALL HAVE A 3/8" TRUSS ROD WITH TURNBUCKLES AND BE BRACED WITH A 1-5/8" MID-RAIL, SECURELY ATTACHED WITH IRON FITTINGS.
- BARBED WIRE SUPPORT ARMS SHALL BE GALVANIZED STEEL.
- ALL POSTS, GATE GUARDS, AND OTHER OPEN ENDED PIPES SHALL BE CAPPED WITH A HOT DIPPED GALVANIZED CAST STEEL DOME CAP.
- FABRIC MESH SHALL BE ATTACHED AT LINE POSTS AND HORIZONTAL RAILS WITH TIE CLIPS AT 2'-0" INTERVALS.
- FABRIC MESH SHALL BE ATTACHED TO CORNER POSTS AND GATE POSTS WITH STRETCHER BARS AND TENSION BAND CLIPS AT 1'-3" INTERVALS.
- CONTRACTOR SHALL MAINTAIN A MAXIMUM ALLOWABLE GAP OF 1" BETWEEN THE BOTTOM OF THE FABRIC MESH AND THE FINISHED GRADE.
- GATE HINGE BOLTS SHALL HAVE THEIR THREADS PEENED OR WELDED TO PREVENT UNAUTHORIZED REMOVAL.
- ALL SCRAPES, SCRATCHES, MARKS AND BARE METAL AREAS SHALL BE TOUCHED UP WITH ZINC RICH PAINT.
- WHEN EXTENDING EXISTING FENCE LINES OR ABUTTING EXISTING FENCES, THE CONTRACTOR SHALL MATCH THE FENCING HEIGHT, STYLE, BANDING, BARBED WIRES, SUPPORTS AND MEASUREMENTS OF THE EXISTING FENCE WHEN POSSIBLE.

CHAIN LINK GATE AND FENCE NOTES 2

APPLICANT:

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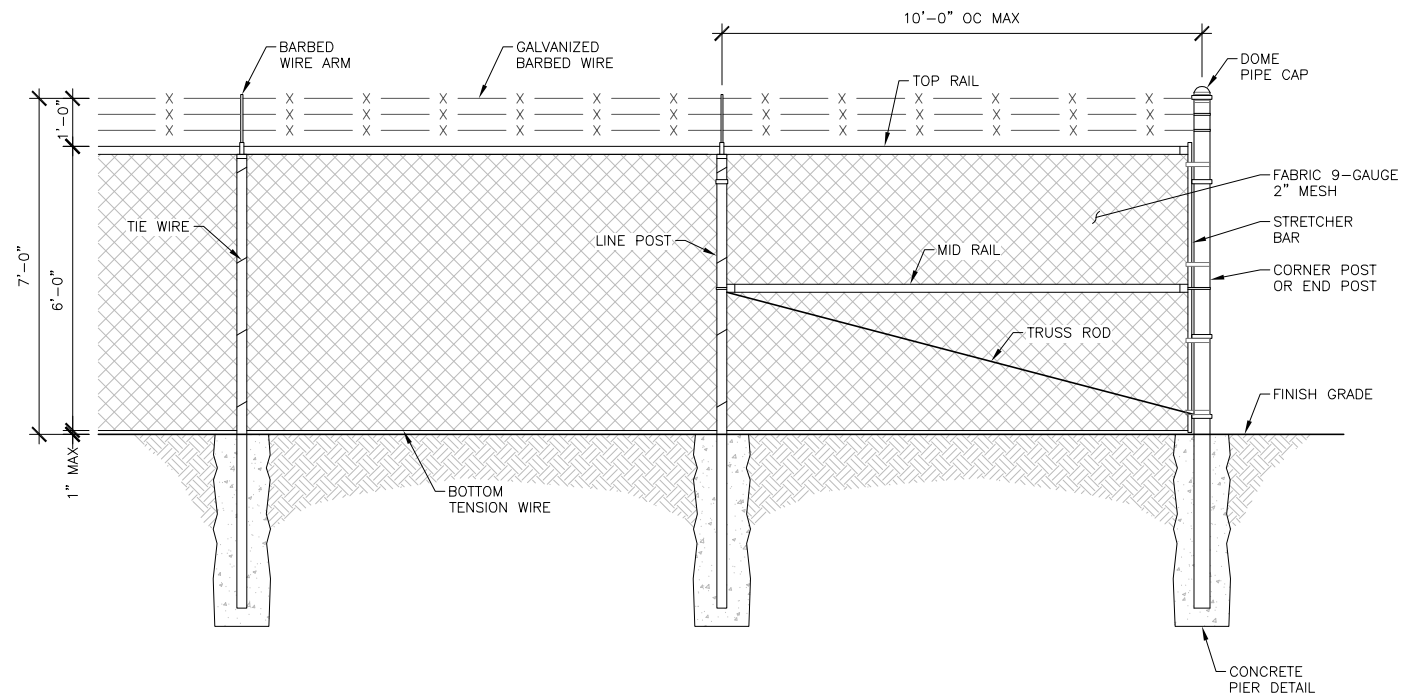
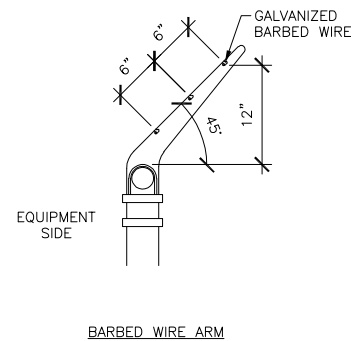
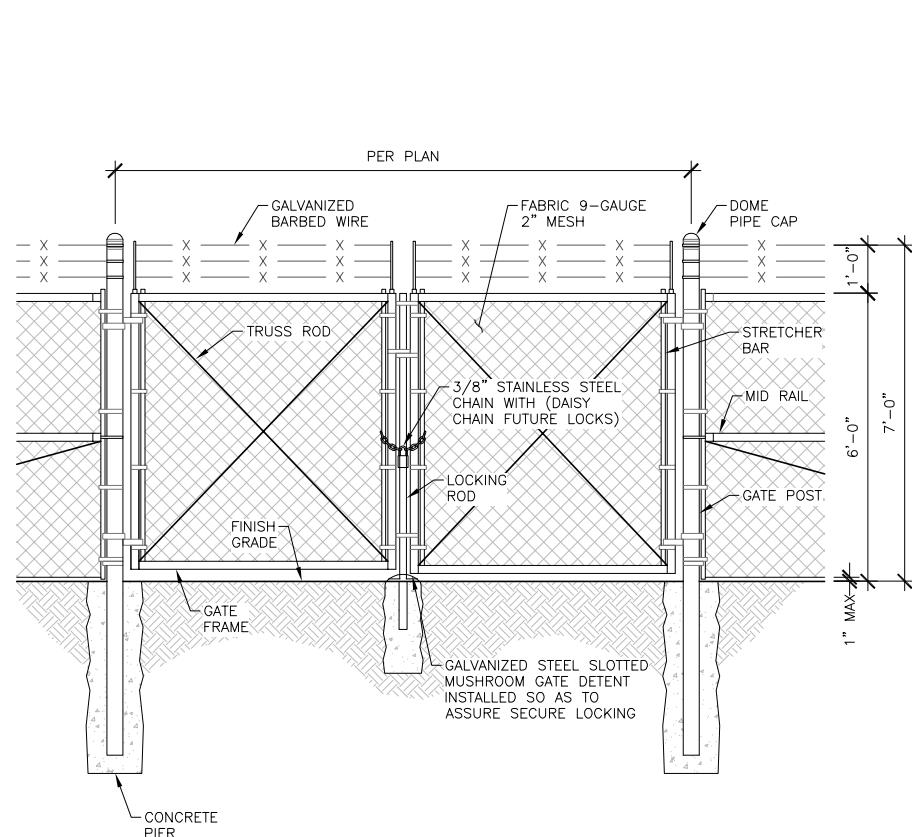
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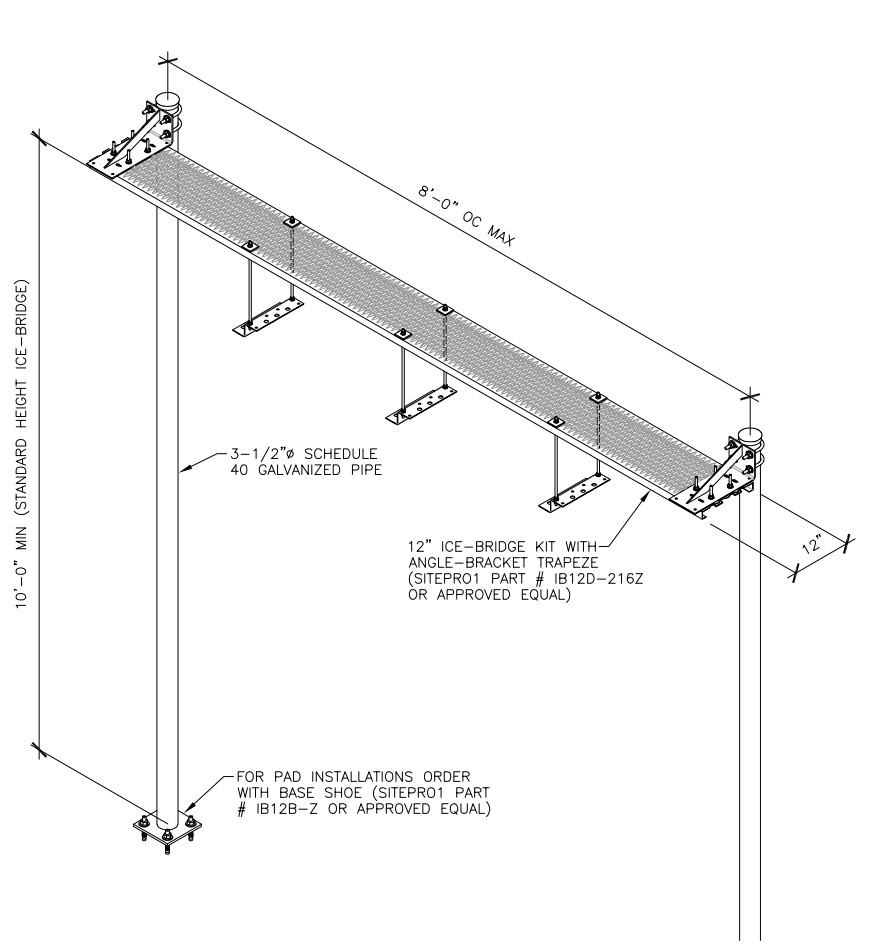
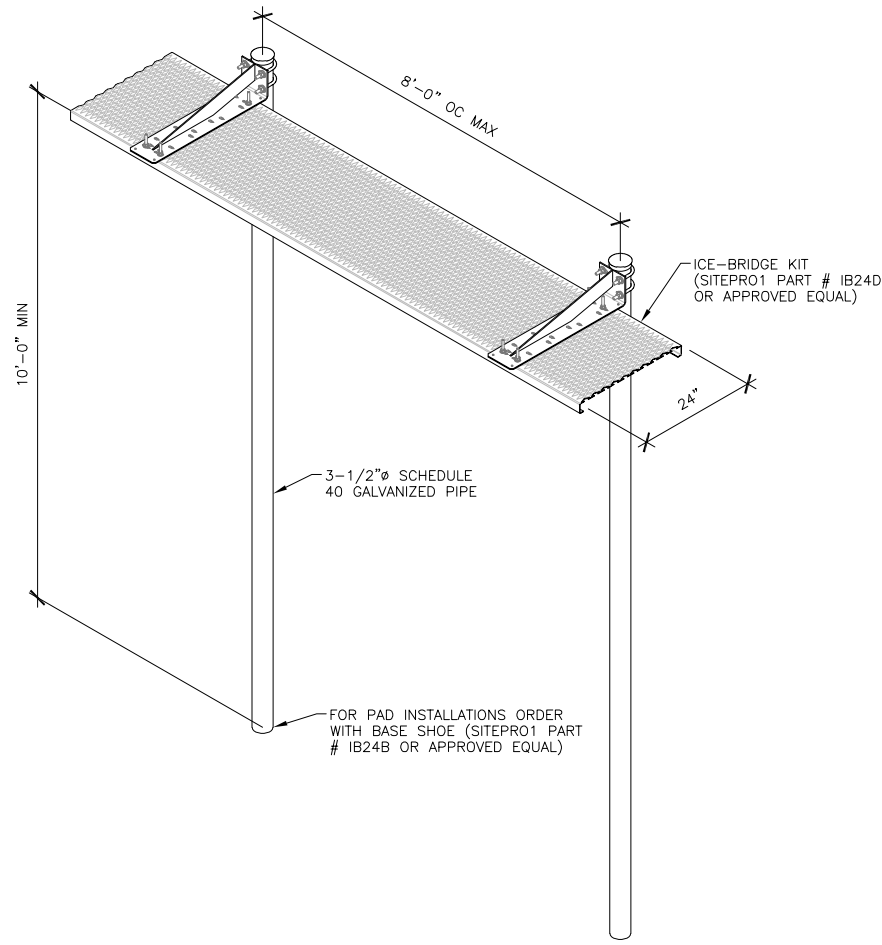
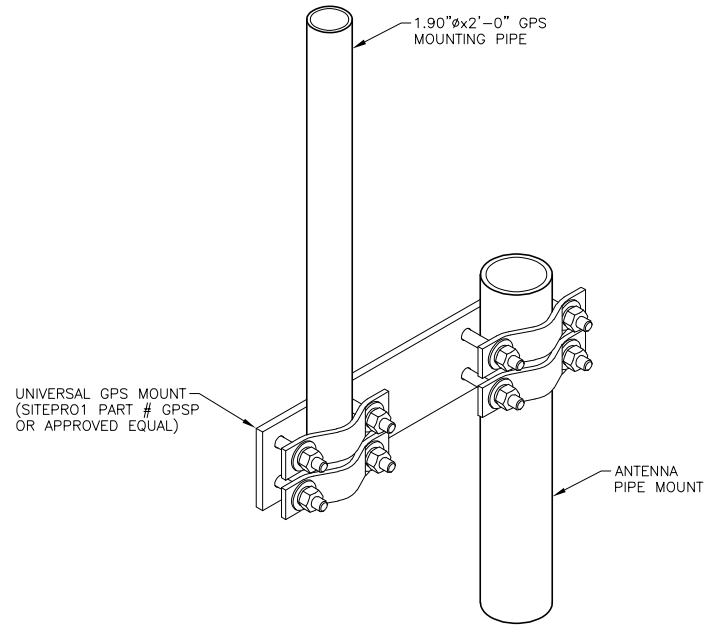
**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:

**CONSTRUCTION DETAILS**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
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NOTE:  
FITS PIPE DIAMETERS FROM  
1-1/2" TO 3-1/2".



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GPS MOUNT 5

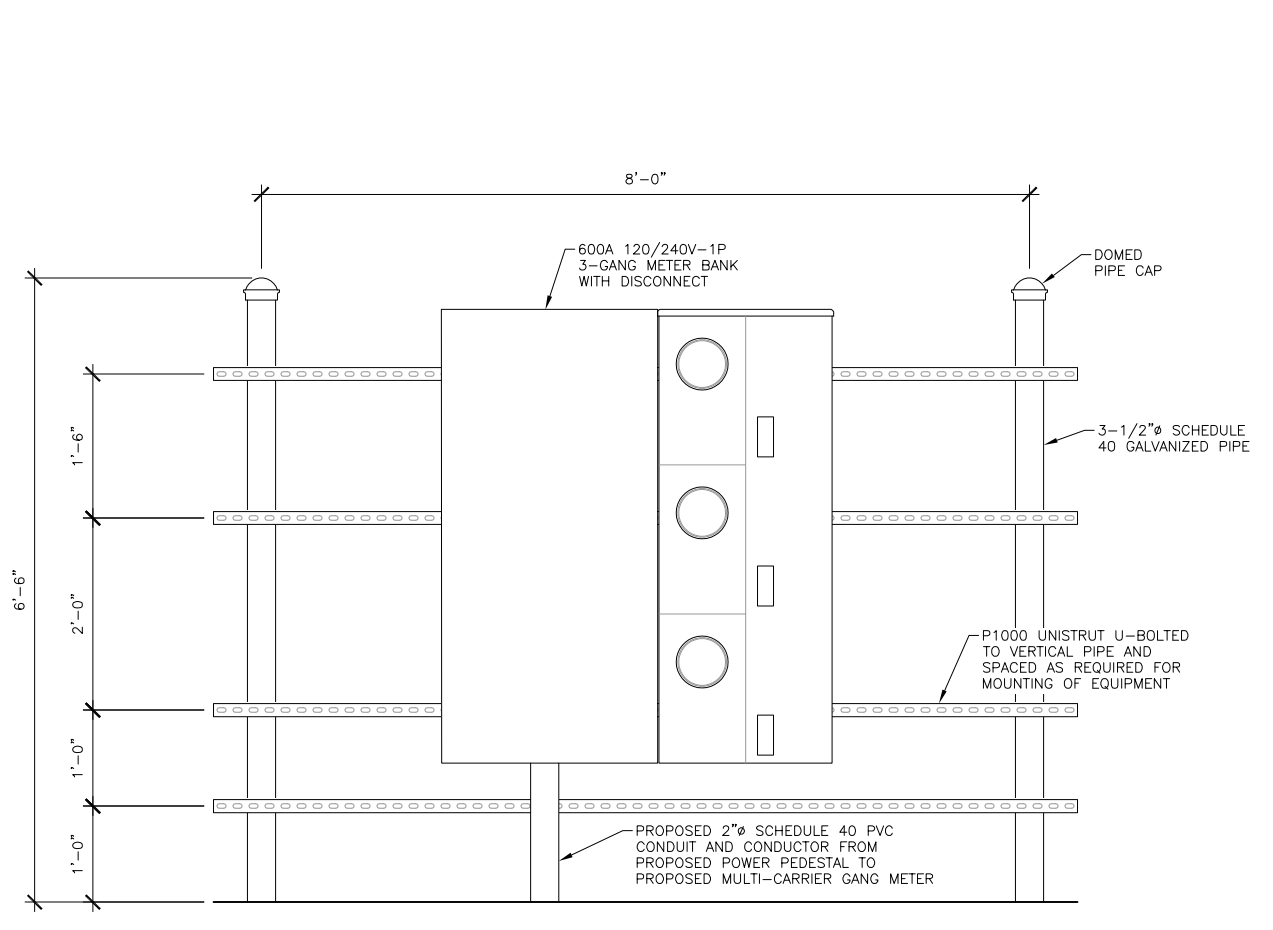
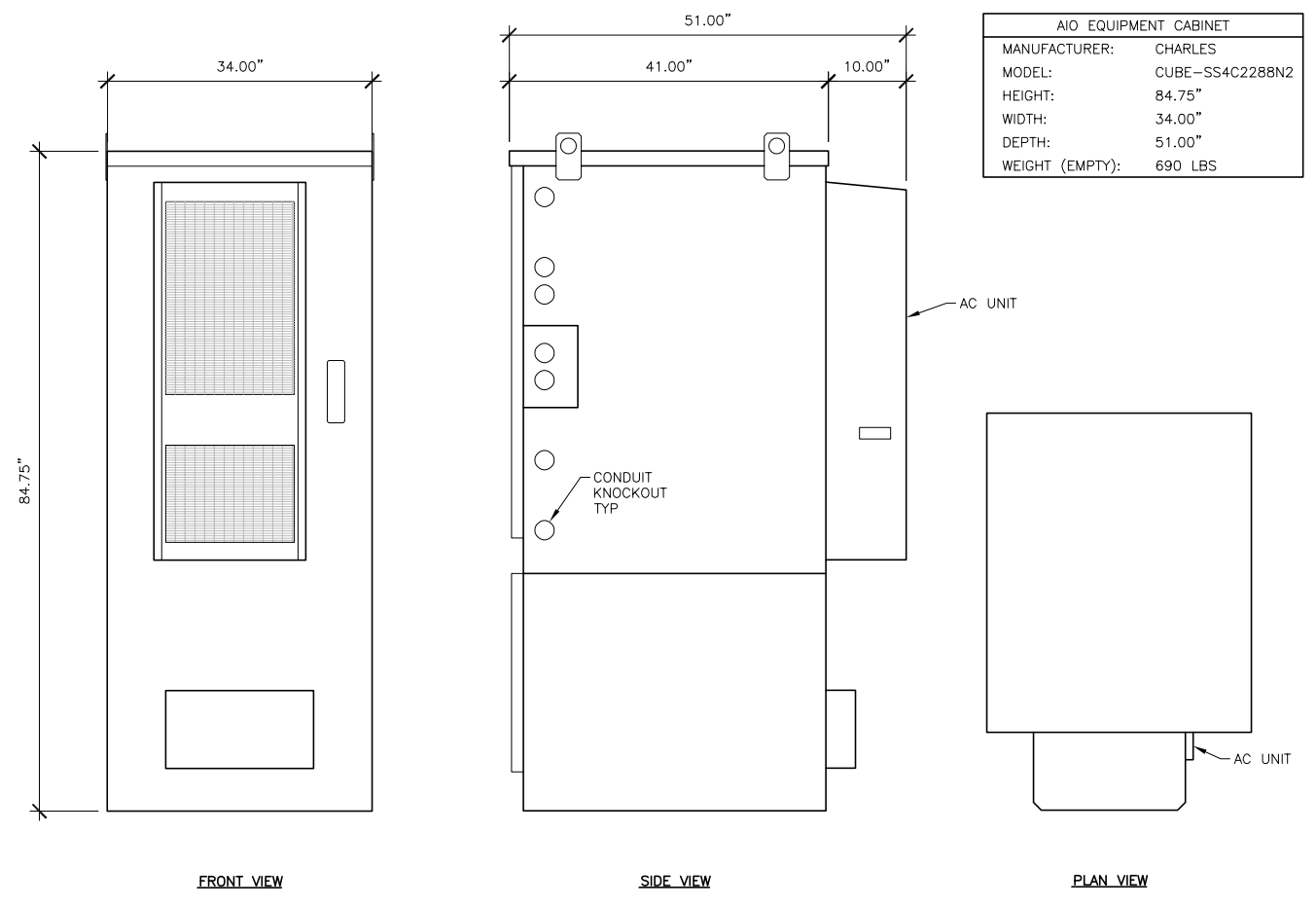
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24" ICE-BRIDGE 4

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

12" ICE-BRIDGE 3

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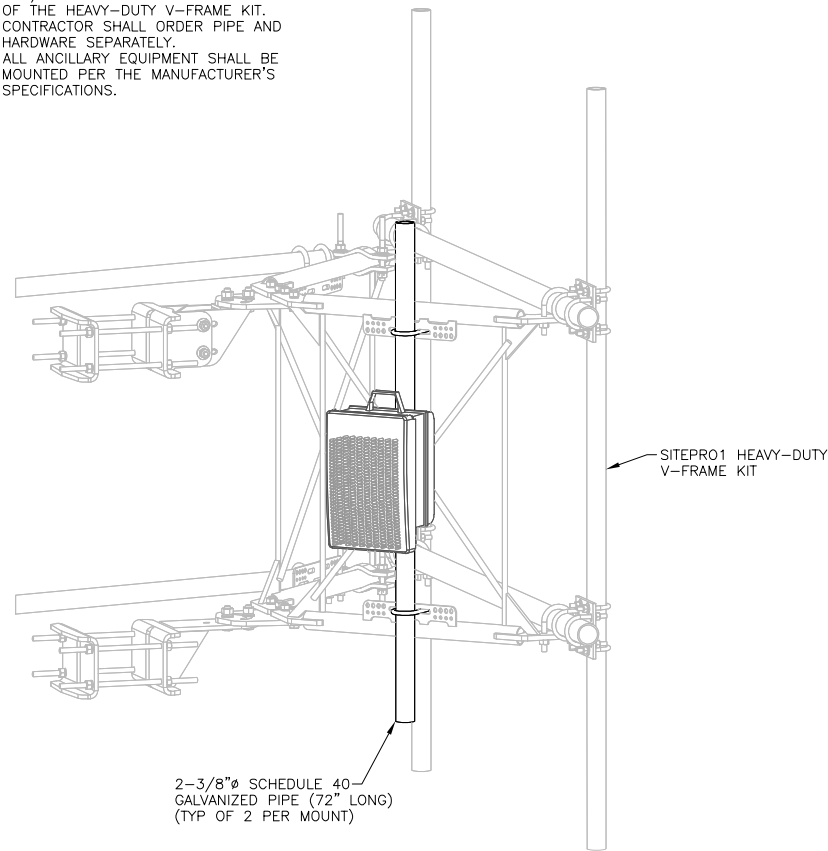
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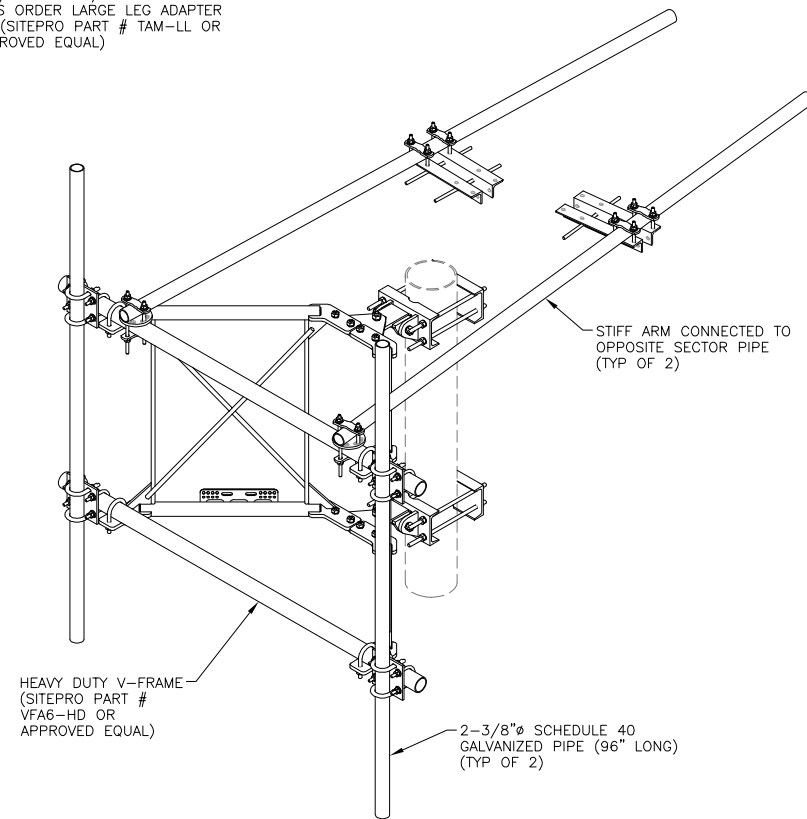
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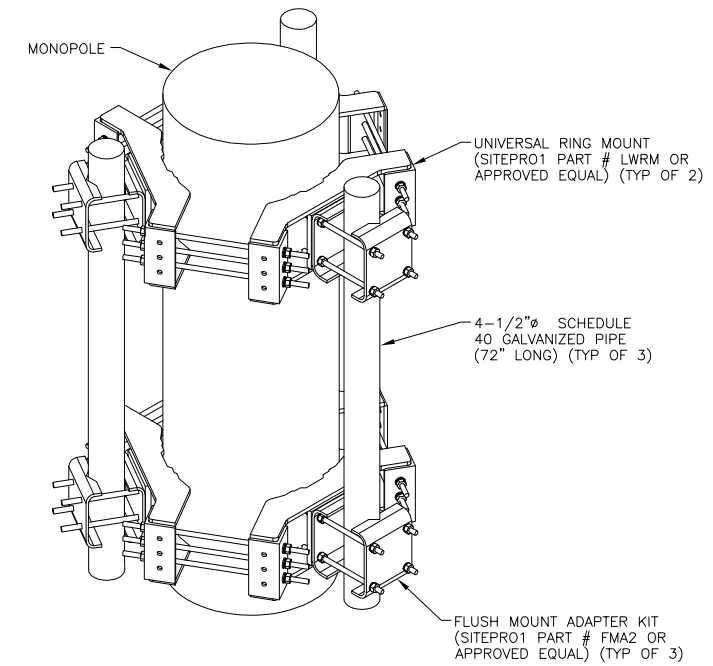
- NOTES:**
- RRU/OVP MOUNTING PIPE IS NOT PART OF THE HEAVY-DUTY V-FRAME KIT. CONTRACTOR SHALL ORDER PIPE AND HARDWARE SEPARATELY.
  - ALL ANCILLARY EQUIPMENT SHALL BE MOUNTED PER THE MANUFACTURER'S SPECIFICATIONS.



- NOTE:**
- FITS ROUND TOWER LEGS FROM 1-1/2" TO 8-5/8". FOR LARGER LEGS ORDER LARGE LEG ADAPTER KIT (SITEPRO PART # TAM-LL OR APPROVED EQUAL)



- NOTES:**
- FITS POLE DIAMETERS FROM 12" TO 45". FOR LARGER DIAMETER (45" TO 60") ORDER LARGE POLE ADAPTER KIT (SITEPRO1 PART # RM-ADK OR APPROVED EQUAL)
  - COMPLETE ASSEMBLY CAN BE ORDERED WITH SITEPRO1 PART # MSFAA



APPLICANT:



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ANCILLARY EQUIPMENT MOUNT 5

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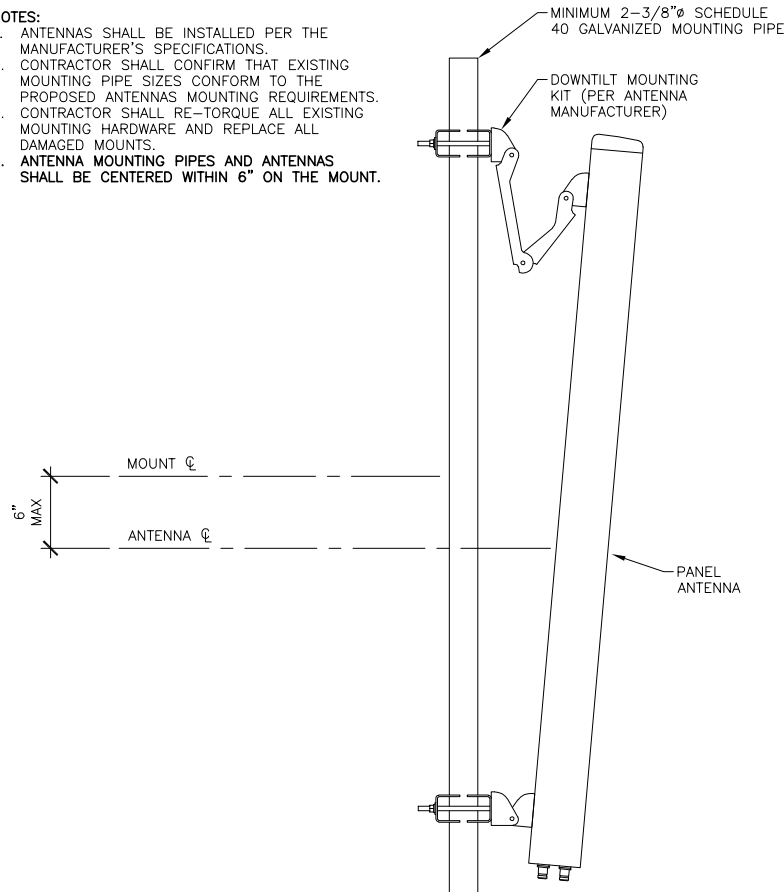
HEAVY-DUTY SECTOR FRAME 4

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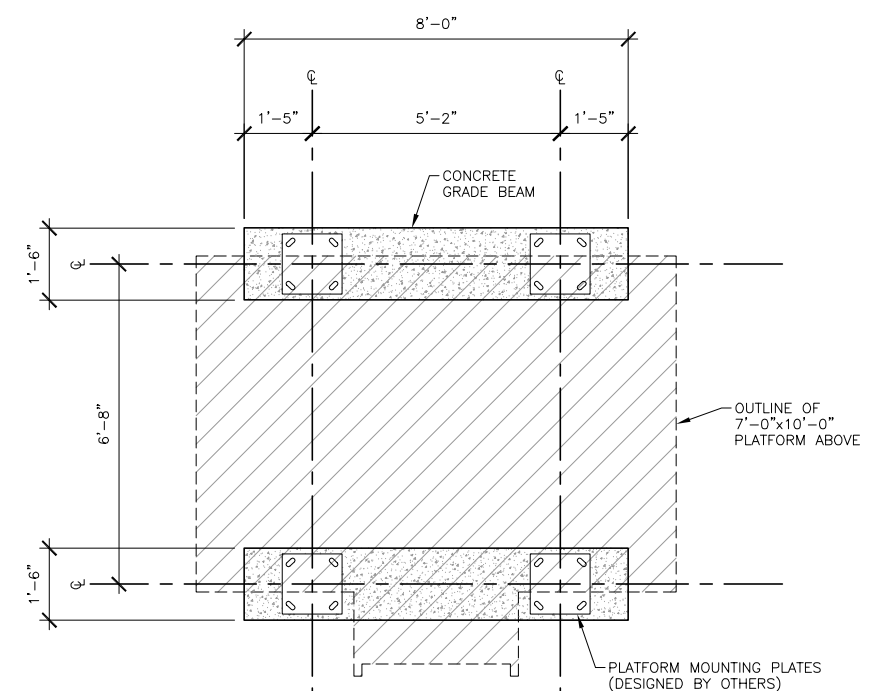
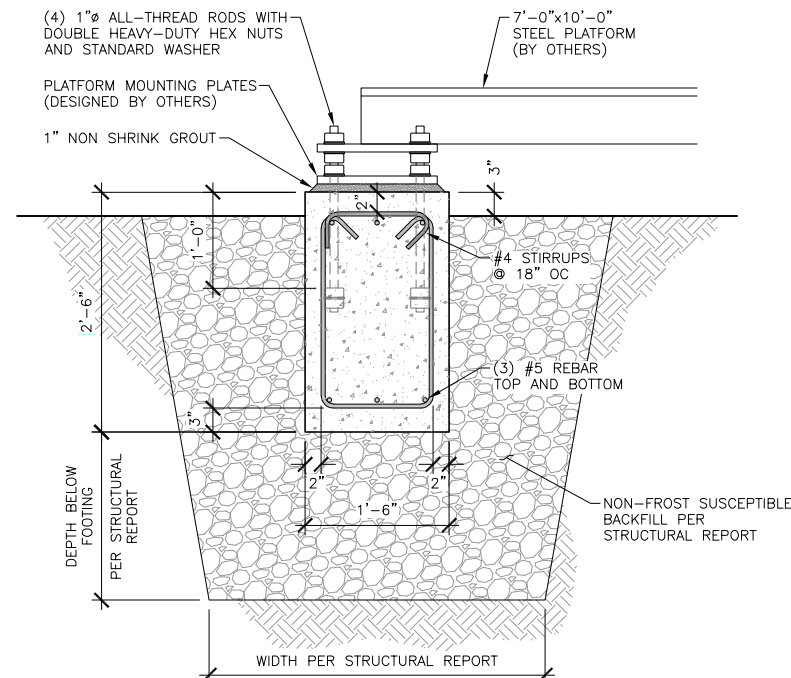
FLUSH MOUNT 3

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- NOTES:**
- ANTENNAS SHALL BE INSTALLED PER THE MANUFACTURER'S SPECIFICATIONS.
  - CONTRACTOR SHALL CONFIRM THAT EXISTING MOUNTING PIPE SIZES CONFORM TO THE PROPOSED ANTENNAS MOUNTING REQUIREMENTS.
  - CONTRACTOR SHALL RE-TORQUE ALL EXISTING MOUNTING HARDWARE AND REPLACE ALL DAMAGED MOUNTS.
  - ANTENNA MOUNTING PIPES AND ANTENNAS SHALL BE CENTERED WITHIN 6" ON THE MOUNT.



- NOTES:**
- SITE PLAN FOR LOCATION OF PLATFORM ON THE PROJECT SITE AND FOR THE EQUIPMENT PLATFORM DESIGN (BY OTHERS). CONTRACTOR IS TO VERIFY FOUNDATION DIMENSIONS SHOWN PRIOR TO CONSTRUCTION TO DETERMINE IF THEY MATCH THE EQUIPMENT PLATFORM SHOWN IN THE ARCHITECTURAL DRAWINGS.
  - CONCRETE SHALL HAVE A (28) DAY COMPRESSIVE STRENGTH ( $f_c$ ) OF 4,000 PSI, AND IS TO BE AIR ENTRAINED PER ACE 318-14 TABLE 19.3.3.1. THE PLATFORM IS AN UNMANNED TELECOMMUNICATIONS FACILITY, SO SPECIAL INSPECTION OF THE CONCRETE IS NOT REQUIRED.
  - ALL REINFORCING STEEL IS TO BE ASTM A615, GRADE 60,  $f_y=60,000$  PSI.
  - ALL STEEL SHALL BE HOT DIPPED GALVANIZED.
  - THE PLATFORM FOUNDATION HAS BEEN DESIGNED TO SUPPORT AN EMERGENCY GENERATOR WITH A MAXIMUM OPERATING WEIGHT OF 4,800 LBS, ONE RADIO CABINET WITH A MAXIMUM WEIGHT OF 1,500 LBS, AND ONE FUTURE CABINET WITH A WEIGHT OF 1,500 LBS.
  - GRADE BEAMS ARE DESIGNED TO BE CAST ON SITE OR PRECAST OFF SITE.



PROJECT:

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5182 N PITTMAN RD  
WASILLA, AK 99654

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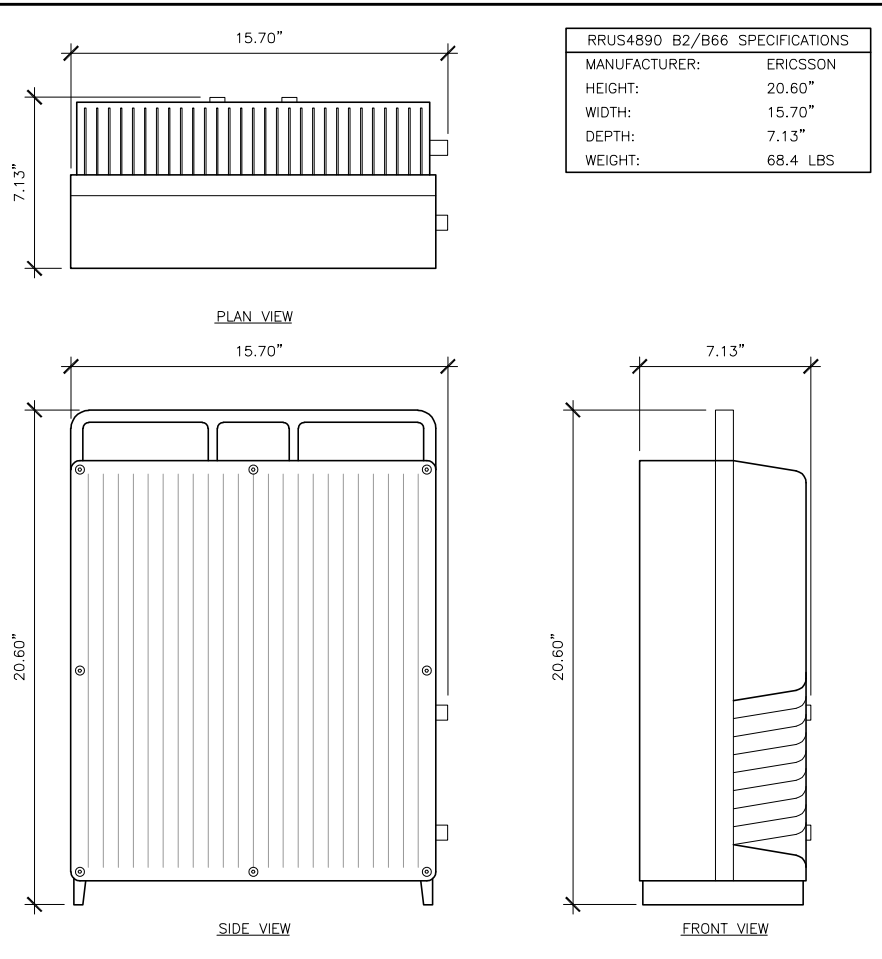
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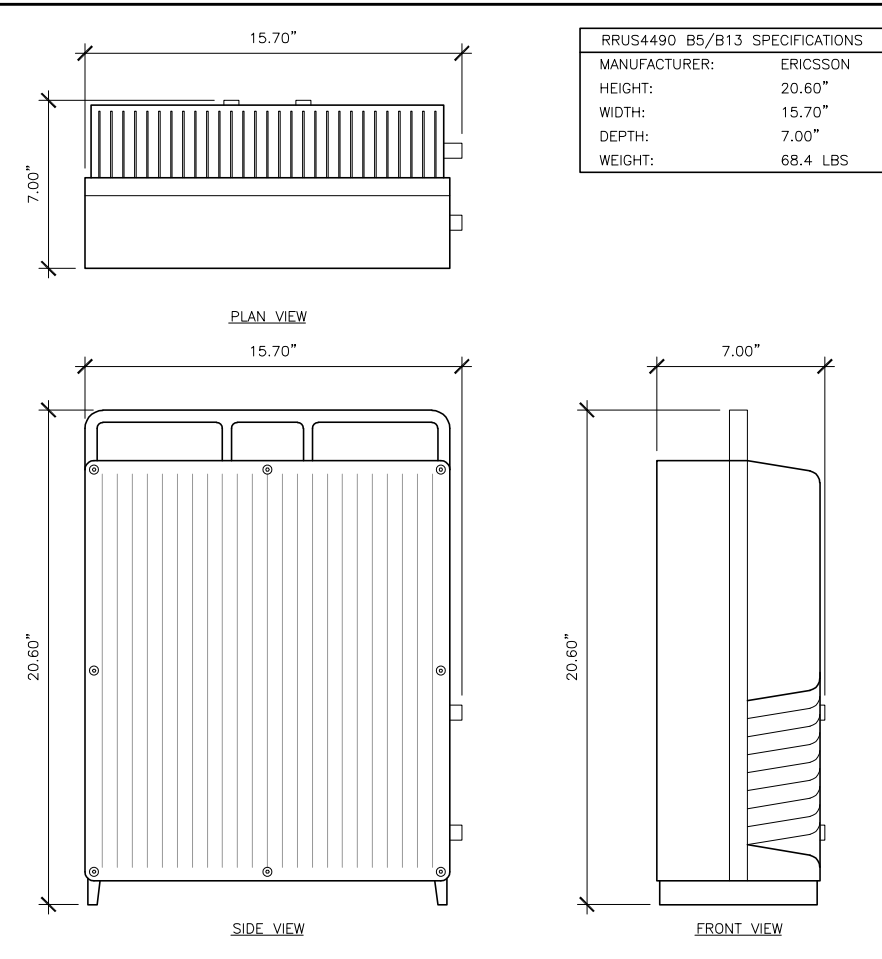
ANTENNA MOUNTING PIPE 2

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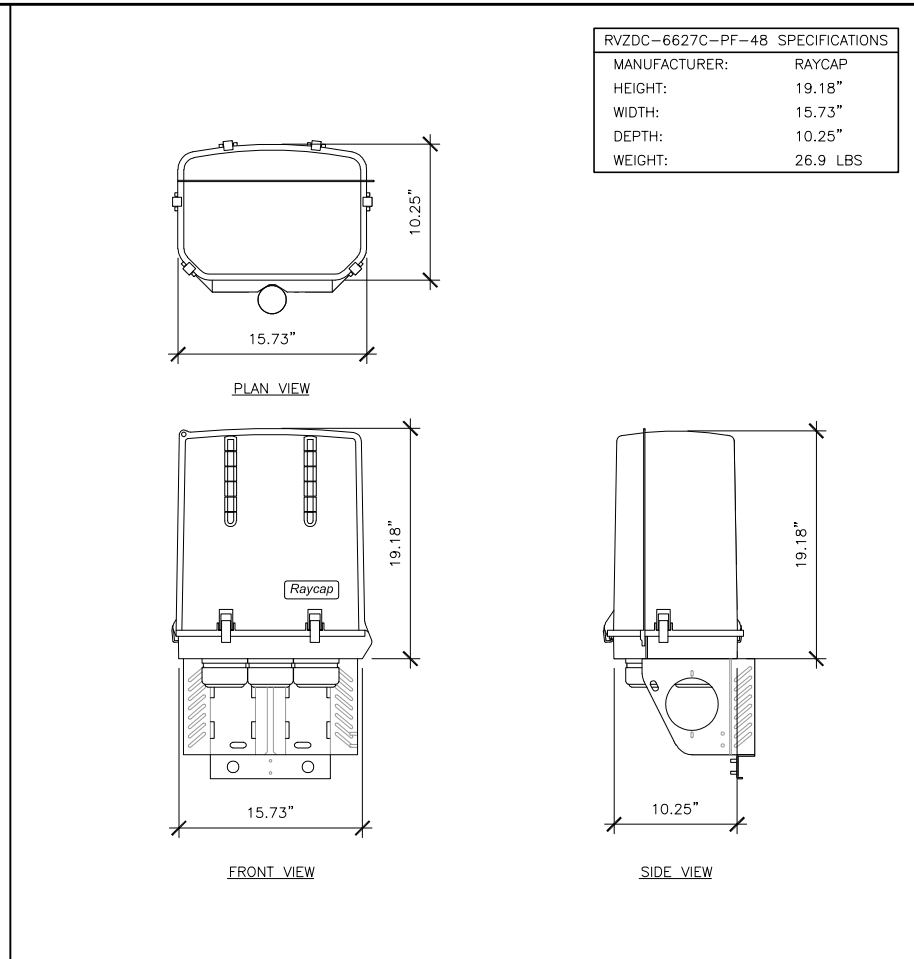
CONCRETE GRADE BEAM PLATFORM FOUNDATION 1



RRUS4890 B2/B66 SPECIFICATIONS	
MANUFACTURER:	ERICSSON
HEIGHT:	20.60"
WIDTH:	15.70"
DEPTH:	7.13"
WEIGHT:	68.4 LBS



RRUS4490 B5/B13 SPECIFICATIONS	
MANUFACTURER:	ERICSSON
HEIGHT:	20.60"
WIDTH:	15.70"
DEPTH:	7.00"
WEIGHT:	68.4 LBS



RVZDC-6627C-PF-48 SPECIFICATIONS	
MANUFACTURER:	RAYCAP
HEIGHT:	19.18"
WIDTH:	15.73"
DEPTH:	10.25"
WEIGHT:	26.9 LBS



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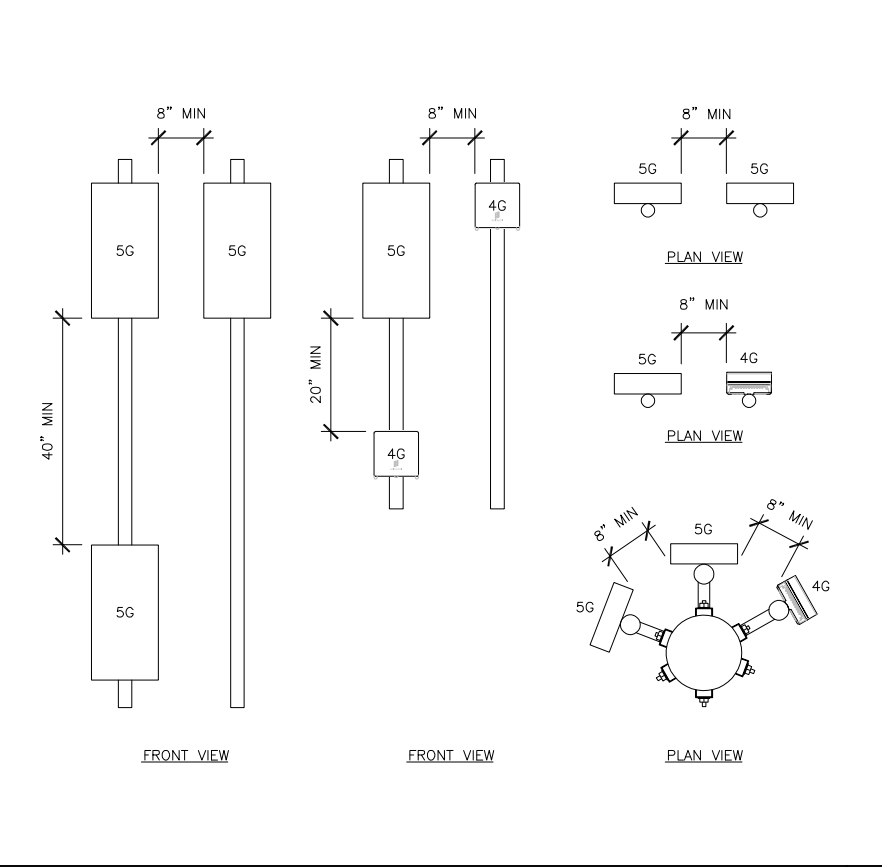
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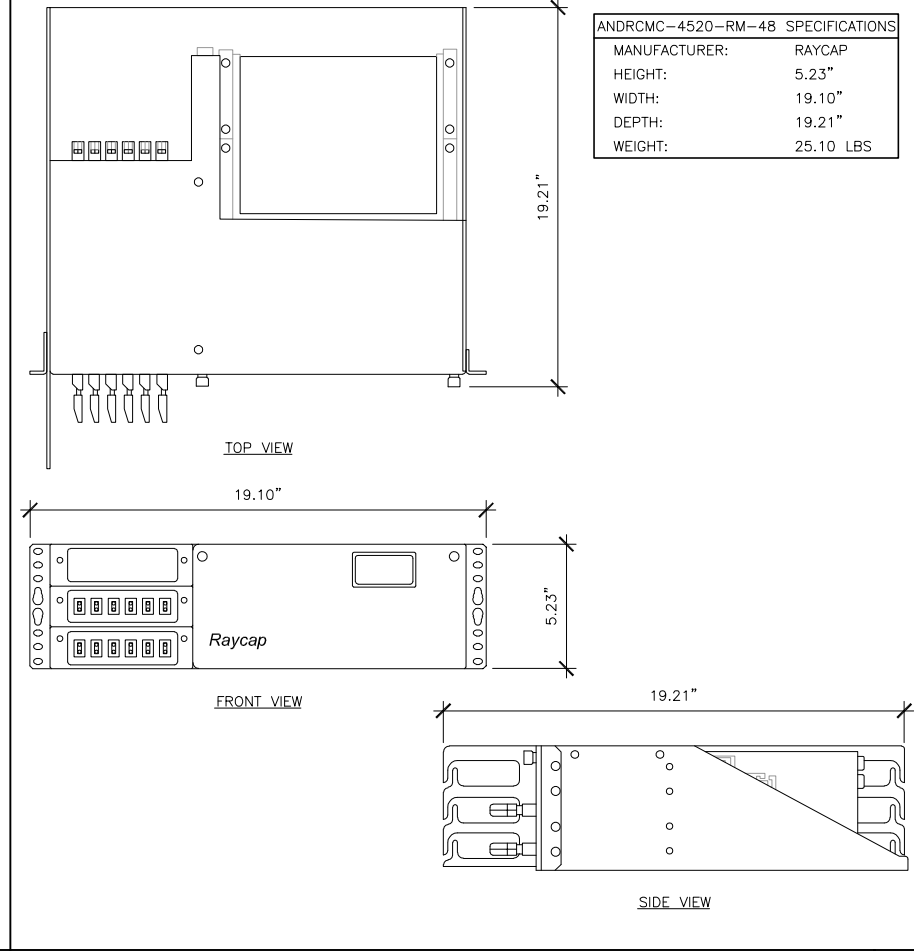
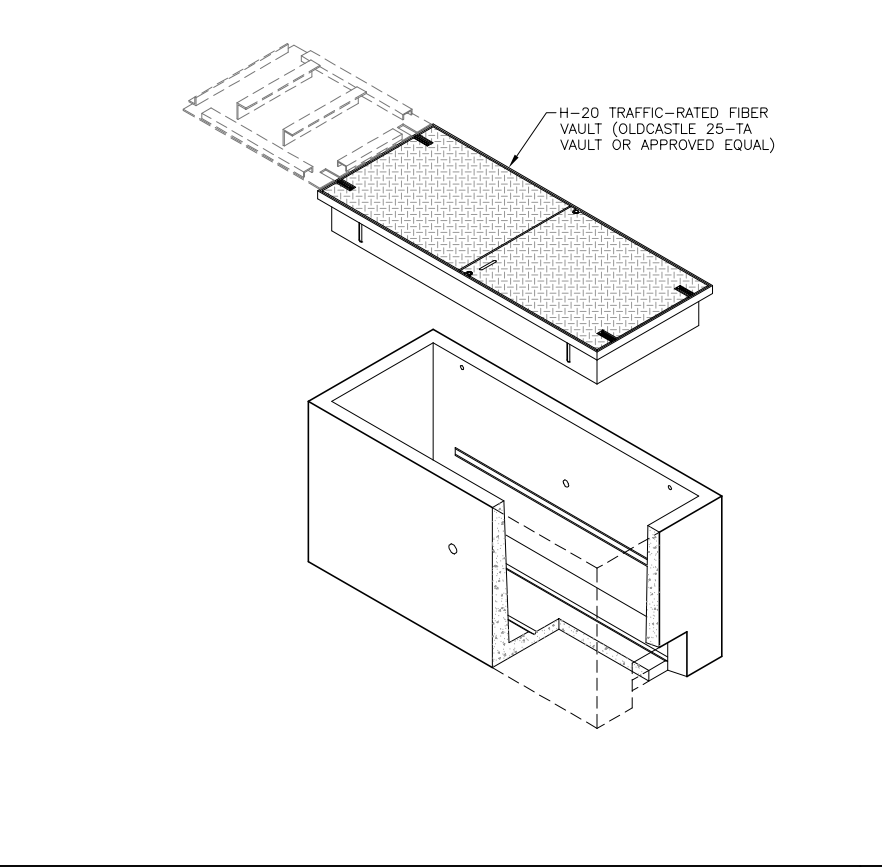
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12-PORT OVP 4

REV	DATE	DESCRIPTION
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-	-	-
5	6/06/24	NEW RFDS AND FCD'S ISSUED FOR SUBMITTAL
4	5/31/24	PCD'S ISSUED FOR REVIEW
3	4/18/23	REVISED PER COMMENTS
2	11/28/22	REVISED PER CLIENT COMMENTS
1	11/15/22	PZD'S ISSUED FOR REVIEW

NOTE:  
CONTRACTOR SHALL MAINTAIN ANTENNA SPACING AS PRESCRIBED IN THIS DETAIL, UNLESS ALTERNATIVE SPACING IS APPROVED BY VERIZON WIRELESS RF



TRAFFIC RATING NOTE:  
OLDCASTLE 25-TA VAULT IS SUITABLE FOR H-20 WHEEL LOADS IN OFF-STREET LOCATIONS WHERE NOT SUBJECTED TO HIGH-DENSITY TRAFFIC.



ANDRCMC-4520-RM-48 SPECIFICATIONS	
MANUFACTURER:	RAYCAP
HEIGHT:	5.23"
WIDTH:	19.10"
DEPTH:	19.21"
WEIGHT:	25.10 LBS

PROJECT:  
**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:  
**CONSTRUCTION DETAILS**

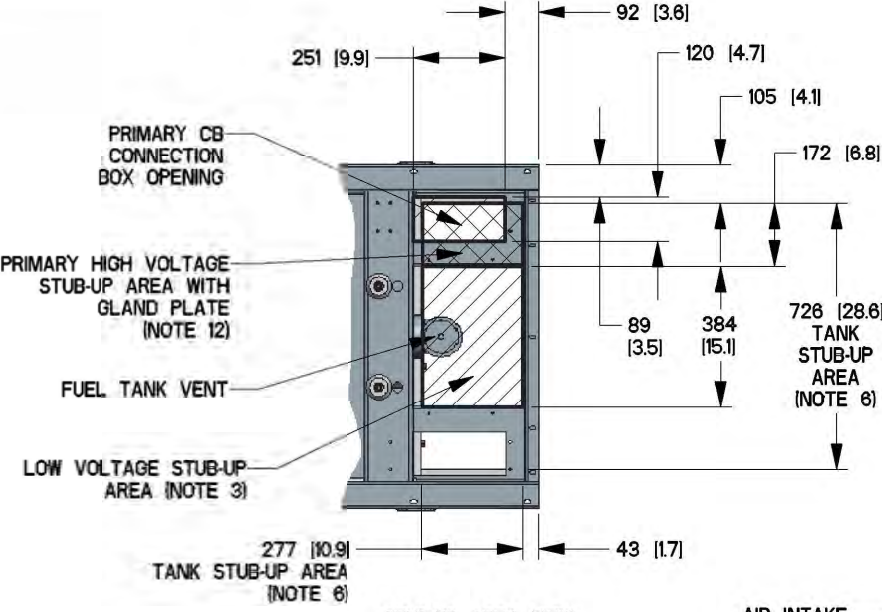
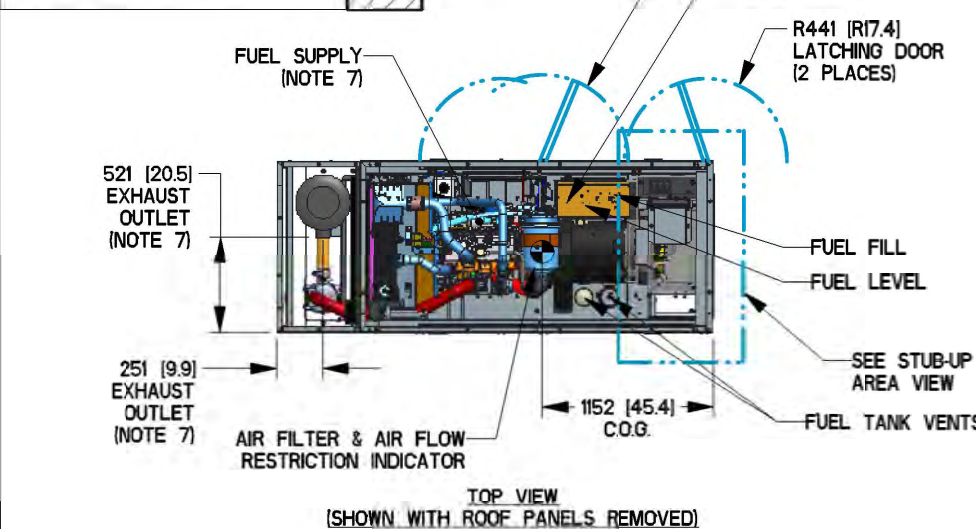
FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO:	SHEET NO:

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Antenna Spacing 3

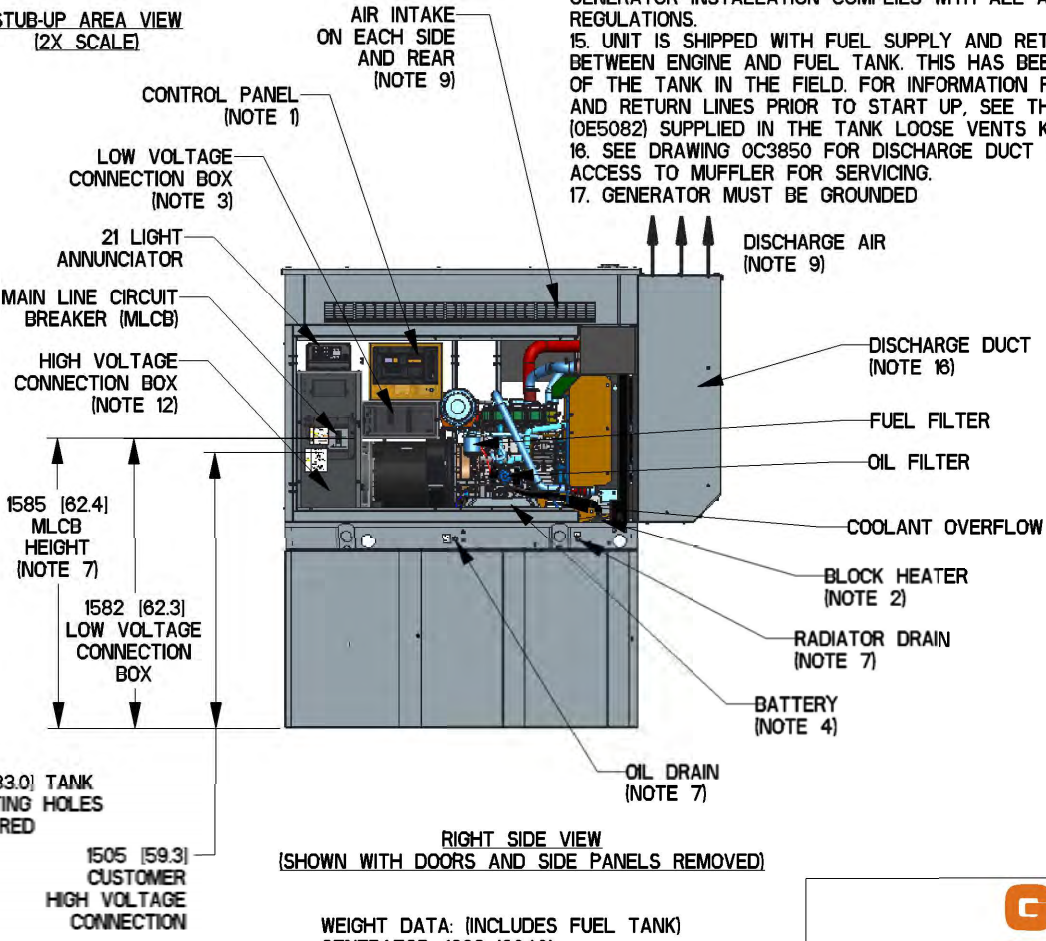
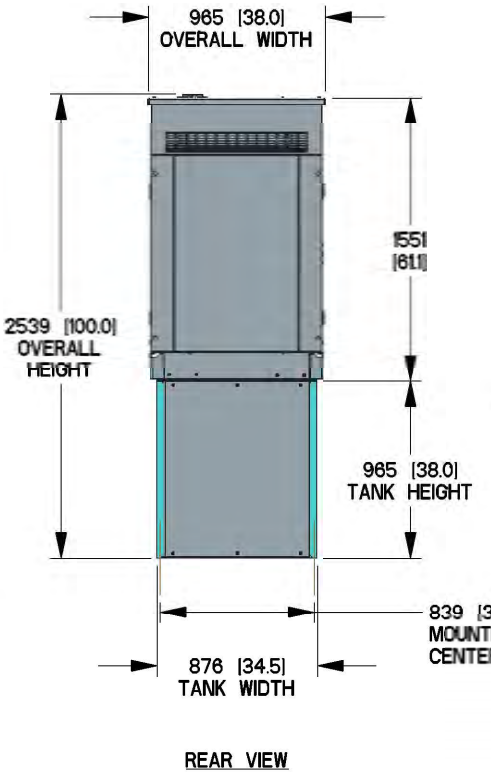
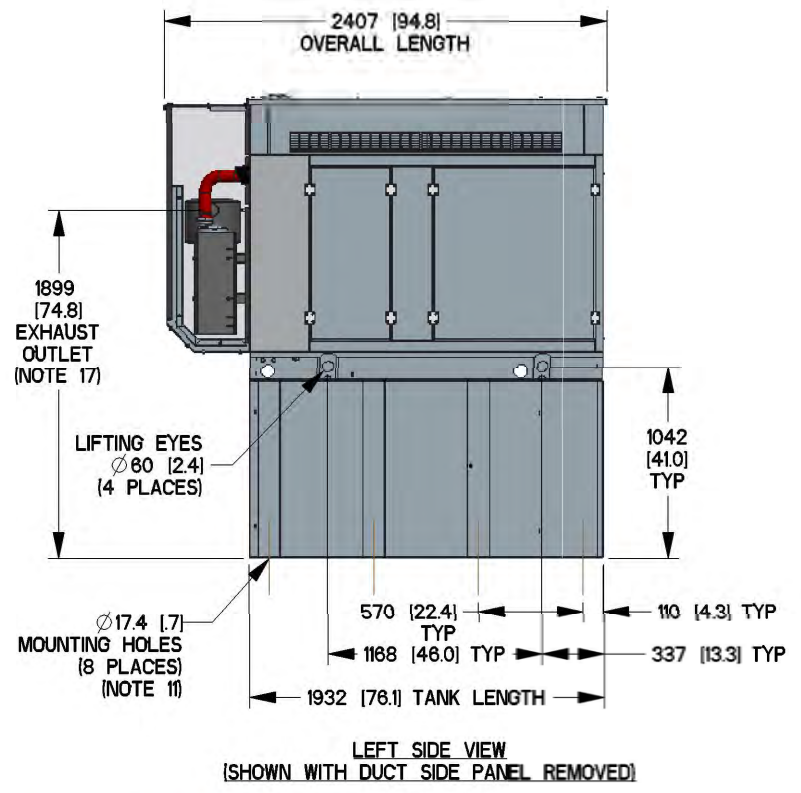
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25-TA FIBER VAULT 2

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE  
RACK MOUNTED 12-PORT OVP 1

RECOMMENDED ELECTRICAL STUB-UP	
(HIGH VOLTAGE STUB-UP) AC LOAD LEAD CONDUIT	
(LOW VOLTAGE STUB-UP)	



- NOTES:
- CONTROL PANEL INCLUDES BATTERY CHARGER WITH THREE PRONG CORD
  - 1500W 120 VAC ENGINE BLOCK HEATER WITH THREE PRONG CORD.
  - CONNECTION POINTS FOR CONTROL WIRES PROVIDED IN THE LOW VOLTAGE CONNECTION BOX. BOTTOM HAS KNOCKOUTS FOR 1/2" AND 3/4" CONDUIT FITTINGS. (USE LOW VOLTAGE STUB-UP AREA)
  - BATTERY (12 VOLT NEGATIVE GROUND SYSTEM).
  - MAIN LINE CIRCUIT BREAKER (MLCB) (MLCB HEIGHT MAY VARY WITH CB SELECTION) AC LOAD LEADS CONNECT DIRECTLY TO BOTTOM OF BREAKER.
  - CENTER OF GRAVITY & WEIGHT MAY SHIFT SLIGHTLY DUE TO UNIT OPTIONS.
  - ENGINE SERVICE CONNECTIONS:  
INLET DIESEL : 3/8" NPT  
RETURN DIESEL : 3/8" NPT  
OIL DRAIN : 1/2" NPT  
RADIATOR DRAIN : 1/2" NPT  
EXHAUST OUTLET : 2.5" I.D.
  - STUB-UPS: BASE TANK REQUIRES ALL STUB-UPS TO BE IN THE REAR TANK STUB-UP AREA.
  - GENERATOR SET MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND DISCHARGE AIR IS NOT RECIRCULATED. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
  - BOTTOM OF GENERATOR SET MUST BE CLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
  - BOLTS OR STUDS USED TO MOUNT UNIT TO PAD SHALL BE 5/8-11 GRADE 5. USE STANDARD SAE TORQUE SPECS.
  - HIGH VOLTAGE STUB-UP AREA INCLUDES THE AC LOAD LEAD CONNECTIONS TO MLCB, NEUTRAL CONNECTION AND AUXILIARY 120/240V CONNECTION.
  - 210 GALLON USEABLE CAPACITY BASE TANK STANDARD WITH GENERATOR.
  - IT IS THE RESPONSIBILITY OF THE INSTALLATION TECHNICIAN TO ENSURE THAT THE GENERATOR INSTALLATION COMPLIES WITH ALL APPLICABLE CODES, STANDARDS, AND REGULATIONS.
  - UNIT IS SHIPPED WITH FUEL SUPPLY AND RETURN LINES DISCONNECTED AND PLUGGED BETWEEN ENGINE AND FUEL TANK. THIS HAS BEEN DONE TO FACILITATE PRESSURE TESTING OF THE TANK IN THE FIELD. FOR INFORMATION REGARDING CONNECTING THE FUEL SUPPLY AND RETURN LINES PRIOR TO START UP, SEE THE FUEL TANK FIELD TESTING PROCEDURE (0E5082) SUPPLIED IN THE TANK LOOSE VENTS KIT, WHICH IS SHIPPED WITH THIS GENERATOR.
  - SEE DRAWING 0C3850 FOR DISCHARGE DUCT REMOVAL. REMOVAL OF DUCT WILL PROVIDE ACCESS TO MUFFLER FOR SERVICING.
  - GENERATOR MUST BE GROUNDED



DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECO MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

WEIGHT DATA: (INCLUDES FUEL TANK)  
GENERATOR: 1382 (3048)  
GENERATOR WITH SHIPPING SKID: 1441 (3176)  
WEIGHT: KG (LBS)  
DIMENSIONS: MM (INCHES)



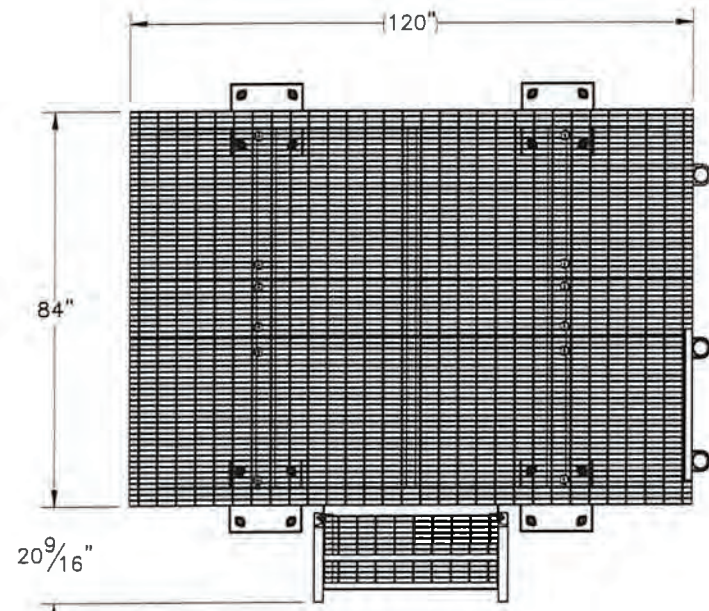
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INSTALL D2.2L G22 30KW SSS L2A Y02			
ISSUE DATE:		12/18/17	
SIZE	CAGE NO	DWG NO	REV
B	N/A	1000019121	A
SCALE	WT-KG	SEE ABOVE	SHEET 1 of 1
0.025			

# INSTALLATION DRAWING

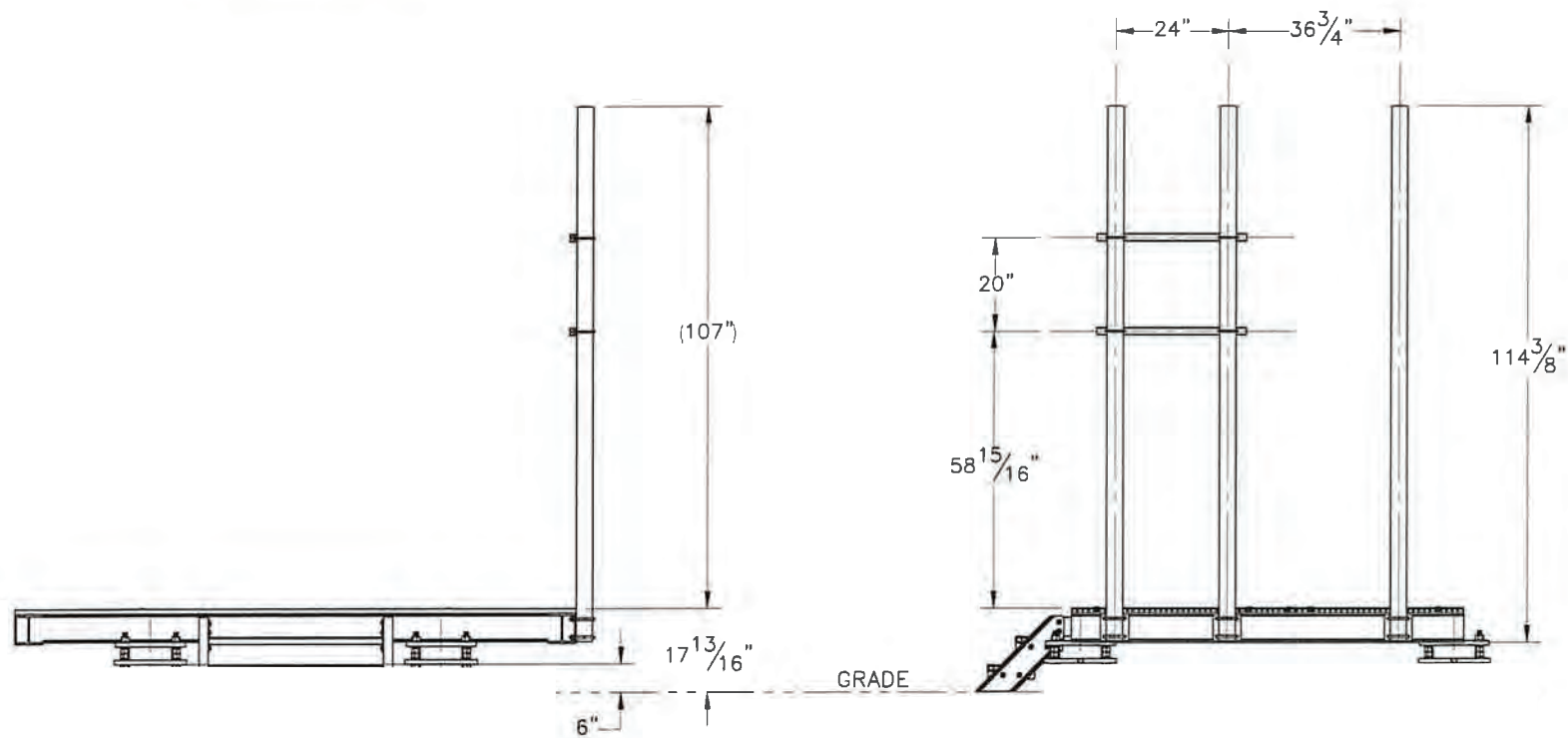
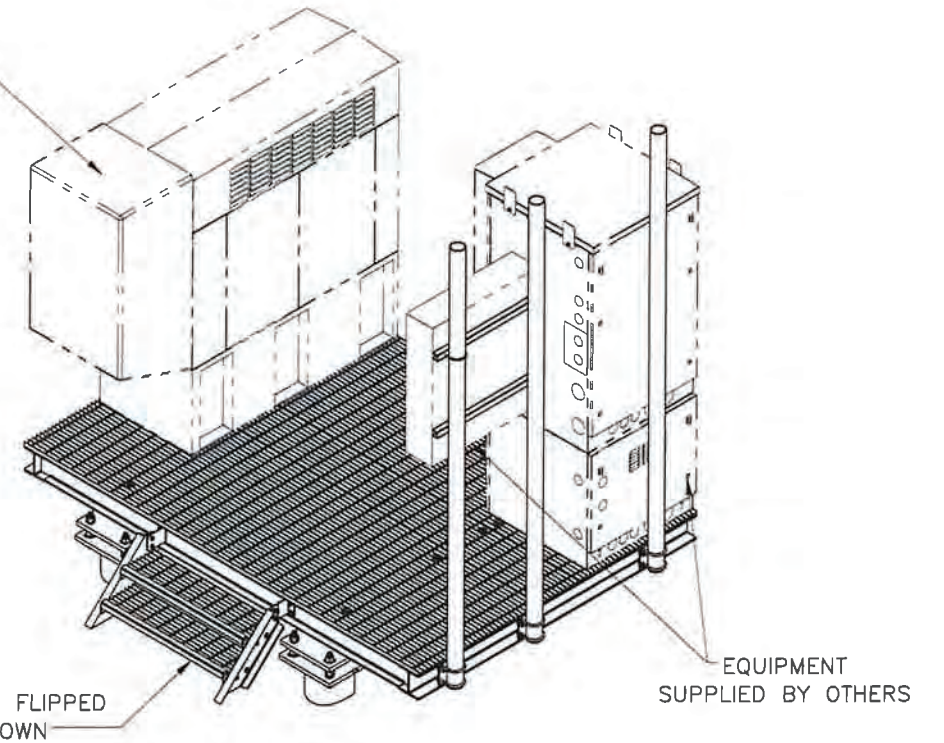
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ELECTRONICALLY APPROVED  
INSIDE WINDCHILL

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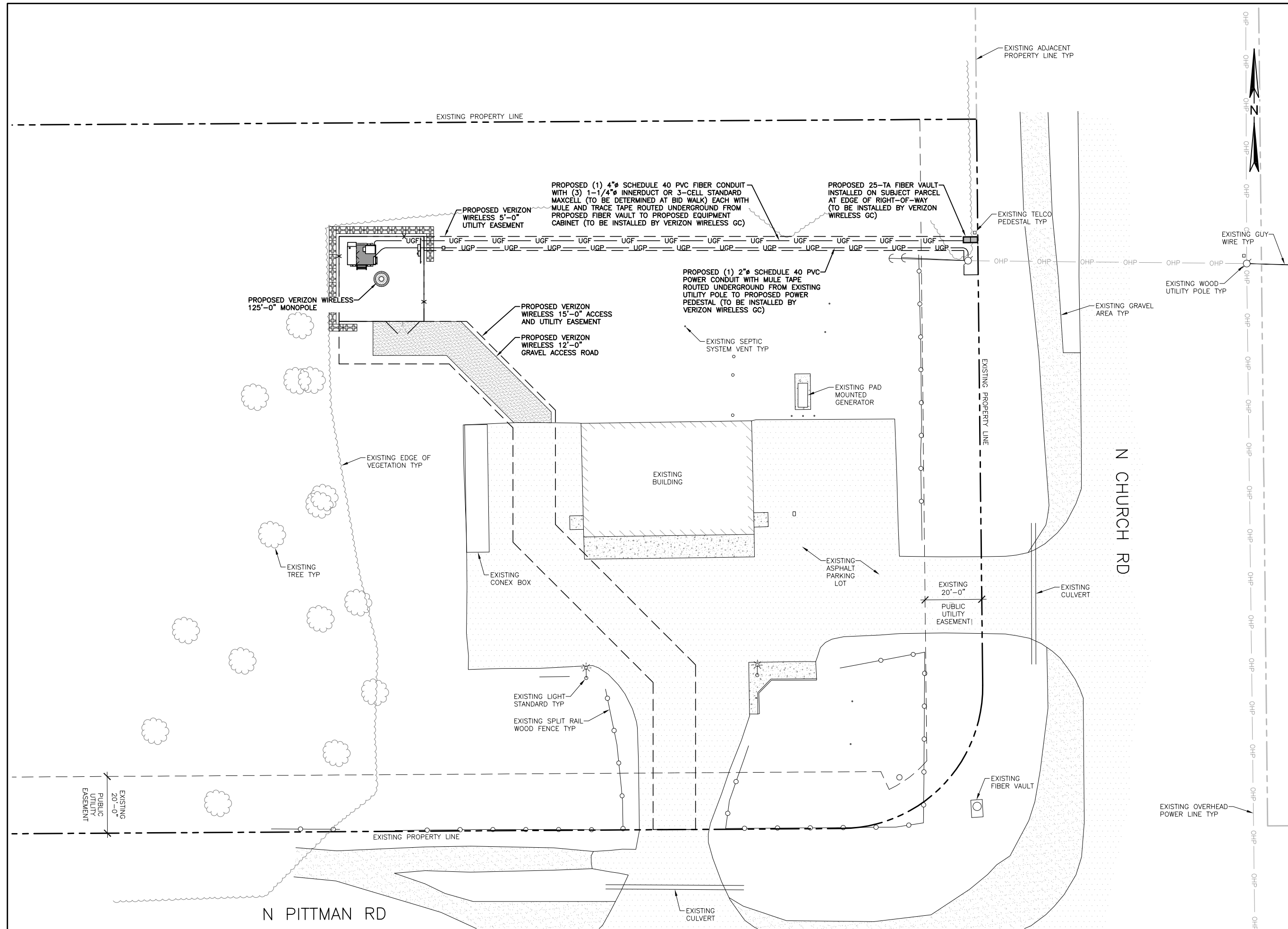


EQUIPMENT SUPPLIED BY OTHERS



ITEM NO.	QTY REQD	PART NUMBER	DESCRIPTION	LENGTH	WEIGHT
1	1	1001-0020-0092	84" X 120" EQUIP. PLATFORM		1536
2	6	002-00U-G021	U BOLT, .5-13 X 5" LG., 3.50 ID, GALV.		0.087
3	4	<del>100-000-1001</del>	<del>16"X16" HELICAL PIER</del> <b>CONTRACTOR SHALL NOT USE HELICAL PIERS</b>		
4	1	1003-0000-0049	2 STEP, 36" WIDE		87.8
5	16	002-0AT-H000	ROD, THREADED, 1.00"-8 X 9.00" LG, ASTM A193 B7, GALV		1.60
6	32	002-0NG-0000	NUT, HX, ANCO LOCK, 1.00-BUNC, GR 2H, GALV		0.43
7	32	002-0NG-0008	NUT, HX, 1.00"-BUNC, GR 2H, GALV		0.42
8	32	002-0LW-G008	WASHER, SPLIT LOCK, 1.00", GALV		0.09
9	64	002-0FW-G009	WASHER, FLAT, 1.00", F436, GALV		0.08
10	16	002-0FW-G002	WASHER, FLAT, .500", F436, GALV		0.02
11	16	002-0LW-G002	WASHER, SPLIT LOCK, .500", GALV		0.01
12	16	002-0NG-0010	NUT, HEX, .500-13UNC, GR 2H, GALV		0.06
13	4	002-0BG-0050	BOLT, HX HD, .500-13UNC, 1.50 LG, GR 5, GALV		0.13
14	4	002-00U-G032	U-BOLT, .375"-16 X 5.00 X 3.50 I.D., GALV.		0.379
15	8	002-0FW-G005	WASHER, FLAT, .375, GALV		0.01
16	8	002-0LW-G005	WASHER, SPLIT LOCK, .375 INCH, GALV		0.01
17	8	002-0NG-0003	NUT, HEX, .375-16UNC, GR 2H, GALV		0.03
18	2	1000-0010-0212_1	1-5/8" SLOTTED HEAVY STRUT CHANNEL, GALV., (P1100T)	32"	5.06
19	3	1000-0010-0212_2	PIPE, 3.0 INCH, SCH 40, ASTM A500 GR B STL	114"	71.6

MATERIAL SEE PARTS LIST		TOLERANCES .000 ± .06 .000 ± .015 .000 ± .005		APPROVALS DRAWN: J. CRITELLI CHECKED: [Signature] ENGINEER/DRAWN: [Signature] PRODUCTION: [Signature]		DATE: 3.2.20		ELECTRO MECHANICAL INDUSTRIES, INC. 11230 WEECHAN DRIVE HOUSTON, TEXAS 77065 1-800-453-0050	
THIRD ANGLE PROJECTION		FRACTIONS ± 1/16 ANGLES ± 25'		TITLE: 84" X 120" EQUIPMENT PLATFORM KIT		SIZE: B		DRAWING NO.: 1000-0010-0212	
NEXT ASSY		DRILLED OR PUNCHED ± 1/32 BURNED ± 1/32		SCALE: 1:4		WEIGHT: 328.6		SHEET 1 OF 2	



APPLICANT:

IMPLEMENTATION TEAM/CLIENT:

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Jun 06, 2024

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2	11/28/22	REVISED PER CLIENT COMMENTS
1	11/15/22	PZD'S ISSUED FOR REVIEW

PROJECT:  
**AK2 SHAMPINE**  
 5182 N PITTMAN RD  
 WASILLA, AK 99654

SHEET TITLE:  
**PROPOSED UTILITY PLAN**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW

REVISION NO: 5	SHEET NO: E-1
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APPLICANT:



IMPLEMENTATION TEAM/CLIENT:



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Jun 06, 2024

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PROJECT:

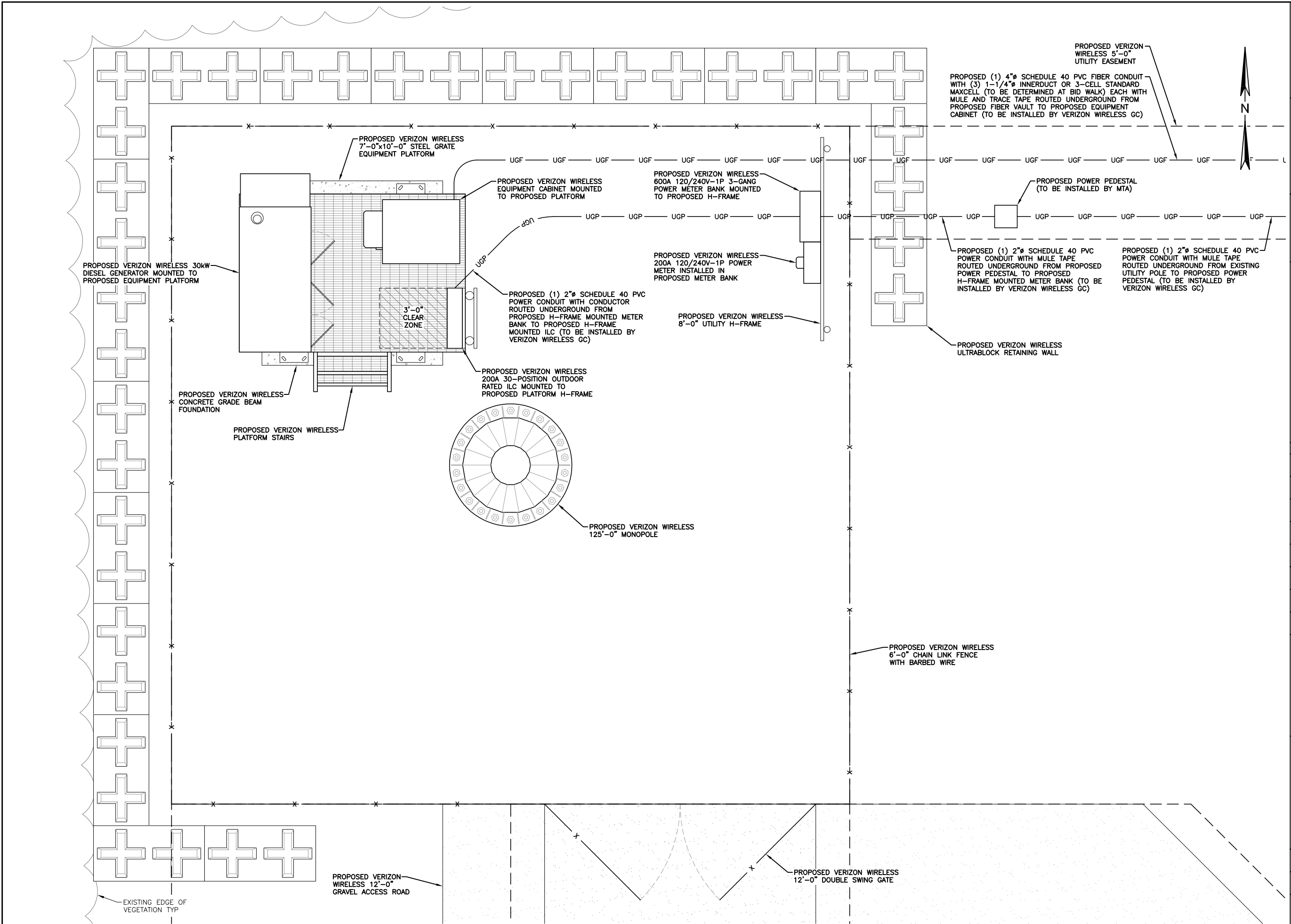
**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:

PROPOSED  
COMPOUND  
UTILITY PLAN

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO:	SHEET NO:

5 E-2  
Page 78 of 309



**1. GENERAL**

1.1. ALL ELECTRICAL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT NFPA STANDARDS, NEC STANDARDS, LOCAL UTILITY REQUIREMENTS, AND WIRELESS CARRIER'S STANDARDS.

1.2. INSTALLATION OF SECONDARY POWER AND CONNECTION TO METER SHALL BE COMPLETED IN COMPLIANCE WITH NATIONAL ELECTRIC CODE, NFPA 70 AND THE STATE LAWS, RULES AND REGULATIONS FOR INSTALLING ELECTRIC WIRES AND EQUIPMENT, ALL LATEST ISSUE AND WITH SPECIFICATIONS PER ASTM B 231, B 400, ICEA S651-401. ICEA P81-570 AND LOCAL PUD.

1.3. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR FINAL AND EXACT WORK/MATERIALS, REQUIREMENTS AND CONSTRUCT TO UTILITY COMPANY ENGINEERING PLANS AND SPECIFICATIONS ONLY. CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT, PULL ROPES, CABLES, PULL BOXES, CONCRETE ENCASEMENT OF CONDUIT (IF REQUIRED), TRANSFORMER PAD, BARRIERS, POLE RISERS, TRENCHING, BACKFILL, PAY ALL UTILITY COMPANY FEES AND INCLUDE ALL REQUIREMENTS IN SCOPE OF WORK.

1.4. FABRICATION AND INSTALLATION OF THE COMPLETE ELECTRICAL SYSTEM SHALL BE DONE IN A FIRST CLASS WORKMANSHIP PER NECA STANDARD 1-2000 BY QUALIFIED PERSONNEL EXPERIENCED IN SUCH WORK AND SHALL SCHEDULE THE WORK IN AN ORDERLY MANNER SO AS NOT TO IMPEDE PROGRESS OF THE PROJECT.

1.5. THE CONSTRUCTION DOCUMENTS ARE GENERALLY DIAGRAMMATIC AND ALL OFFSETS, BEND, FITTINGS AND ACCESSORIES ARE NOT NECESSARILY SHOWN. PROVIDE ALL SUCH ITEMS AS MAY BE REQUIRED TO FIT THE WORK TO THE SITE CONDITIONS.

1.6. ARRANGE CONDUIT, WIRING, EQUIPMENT AND OTHER WORK GENERALLY AS SHOWN, PROVIDING PROPER CLEARANCES AND ACCESS AS REQUIRED BY NEC. CAREFULLY EXAMINE ALL CONSTRUCTION DOCUMENTS AND FIT THE WORK IN EACH LOCATION WITHOUT SUBSTANTIAL ALTERATION. WHERE DEPARTURES ARE PROPOSED BECAUSE OF FIELD CONDITIONS OR OTHER CAUSES, PREPARE AND SUBMIT DETAILED AS-BUILT DRAWINGS FOR ACCEPTANCE.

1.7. DURING PROGRESS OF THE ELECTRICAL INSTALLATION, MAINTAIN AN ACCURATE RECORD OF THE INSTALLATION OF THE ELECTRICAL SYSTEMS, LOCATING EACH CIRCUIT PRECISELY AND DIMENSIONING EQUIPMENT, CONDUIT, AND CABLE LOCATIONS. UPON COMPLETION OF THE INSTALLATION, TRANSFER ALL RECORD DATA TO BLACK LINE PRINTS OF THE ORIGINAL DRAWINGS AND SUBMIT THESE DRAWINGS AS RECORD DRAWINGS TO THE CONSULTANT.

1.8. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL, OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.

1.9. GENERAL CONTRACTOR IS RESPONSIBLE FOR REQUESTING CONNECTION OF COMMERCIAL POWER FROM THE POWER COMPANY. ELECTRICAL CONTRACTOR SHALL COORDINATE THIS WORK WITH THE GENERAL CONTRACTOR.

1.10. COORDINATE EXACT TELEPHONE REQUIREMENTS AND SERVICE ROUTING WITH LOCAL TELEPHONE COMPANY. APPLY FOR TELEPHONE SERVICE IMMEDIATELY UPON AWARD OF CONTRACT.

1.11. ALL EQUIPMENT SHALL BE LIGHTNING PROTECTED IN ACCORDANCE WITH TIA-22-G AND VERIZON WIRELESS STANDARDS.

**2. RACEWAYS AND BOXES**

2.1. ALL CONDUIT SHALL BE UL LABELED.

2.2. ALL EMPTY CONDUITS INSTALLED FOR FUTURE USE SHALL HAVE A PULL STRING.

2.3. SEAL AROUND CONDUITS AND AROUND CONDUCTORS WITHIN CONDUITS ENTERING THE BUILDING WHERE PENETRATION OCCURS WITH A SILICONE SEALANT TO PREVENT MOISTURE PENETRATION INTO THE BUILDING/SHELTER.

2.4. SILICONE SEAL AROUND ALL BOLTS AND SCREWS USED TO SECURE EQUIPMENT TO THE EXTERIOR OF THE BUILDING.

2.5. SHEET METAL BOXES SHALL CONFORM TO NEMA OS1 AND CAST-METAL BOXES SHALL CONFORM TO NEMA 81 AND SHALL BE SIZED IN ACCORDANCE WITH NEC UNLESS NOTED OTHERWISE.

**3. MATERIALS AND METHODS**

3.1. ALL MATERIALS AND EQUIPMENT SHALL BE NEW. MATERIALS AND EQUIPMENT SHALL BE THE STANDARD PRODUCTS OF MANUFACTURER'S CURRENT DESIGN. ANY FIRST CLASS PRODUCT MADE BY A REPUTABLE MANUFACTURER MAY BE USED, PROVIDING IT CONFORMS TO THE CONTRACT REQUIREMENTS AND MEETS THE APPROVAL OF THE CONSULTANT AND THE OWNER.

3.2. ALL EQUIPMENT SHALL BE NEMA 3R RATED.

3.3. UNDERGROUND CONDUIT SHALL BE RIGID POLYVINYL CHLORIDE CONDUIT, SCHEDULE 40, TYPE 1, CONFORMING TO UL ARTICLE 651.

3.4. BELOW GRADE PVC CONDUIT SHALL TRANSITION TO GRC PRIOR TO RISING ABOVE GRADE.

3.5. WESTERN PLASTICS OR CARLON MANUFACTURER COUPLINGS SHALL BE SLIP-ON, SOLVENT SEALED T PIPE. SOLVENT WESTERN TYPE COMPATIBLE WITH PVC DUCT.

3.6. ALL CONDUIT BENDS SHALL BE "WIDE SWEEP" TYPE WITH A 24" MINIMUM RADIUS.

3.7. ALL CONDUIT UNDER ROADS SHALL BE RMC OR PVC ENCASED IN 8"x18" RED CONCRETE DUCT BANK.

3.8. CONDUIT USED INDOORS SHALL BE EMT. COUPLINGS SHALL BE RIGID STEEL AND COMPRESSION TYPE. SET SCREW FITTINGS ARE NOT PERMITTED.

3.9. CONDUIT USED ABOVE GROUND OUTDOORS SHALL BE RIGID GALVANIZED STEEL, UNLESS OTHERWISE NOTED.

3.10. ALL STUB-UPS SHALL USE RIGID GALVANIZED STEEL CONDUIT.

3.11. WIRE AND CABLE SHALL BE OF THE TYPE AND SIZE AS REQUIRED BY NEC. THERE WILL BE NO SPLICES ALLOWED. PROVIDE HDPE PULLING HAND HOLES AS NEEDED.

3.12. CONTRACTOR SHALL ENSURE ILC IS PROVIDED WITH (2) INTERNAL TVSS.

3.13. CONTRACTOR SHALL COORDINATE WITH SITE SURVEY TO LOCATE EXISTING UNDERGROUND UTILITIES. WHEREVER POTENTIAL CONFLICTS/INTERFERENCES EXIST, HAND EXCAVATE TO AVOID DAMAGE. CONTACT ALL UTILITIES TO LOCATED UNDERGROUND PIPING IN PUBLIC ROW.

3.14. VERIFY THAT AIC OF THE UTILITY DOES NOT EXCEED THE AIC RATING OF THE PROVIDED EQUIPMENT. IF OVER 10K AIC, PROVIDE FUSIBLE SERVICE ENTRANCE SWITCH AND CONFIRM LOWERING OF AIC TO ACCEPTABLE LEVELS.

**4. CONDUCTORS AND CONNECTORS**

4.1. UNLESS NOTED OTHERWISE, ALL CONDUCTORS SHALL BE COPPER, MINIMUM SIZE #12 AWG, WITH THERMOPLASTIC INSULATION CONFORMING TO NEMA WC5 OR CROSS-LINKED POLYETHYLENE INSULATION CONFORMING TO NEMA WC7 (TYPES THHN OR THWN-2). INSULATION SHALL BE RATED FOR 90°C. CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC.

4.2. FOR COPPER CONDUCTORS #6 AWG AND SMALLER USE 3M SCOTCH-LOK OR T&B STA-KON COMPRESSION TYPE CONNECTORS WITH INTEGRAL OR SEPARATE INSULATION CAPS. FOR COPPER CONDUCTORS LARGER THAN #6 AWG USE SOLDERLESS, IDENT HEX SCREW OR BOLT TYPE PRESSURE CONNECTORS OR DOUBLE COMPRESSION C-CLAM CONNECTORS, UNLESS SPECIFIED OTHERWISE ON DRAWINGS.

4.3. CONDUCTOR LENGTHS SHALL BE CONTINUOUS FROM TERMINATION TO TERMINATION WITHOUT SPLICES. SPLICES ARE NOT ACCEPTABLE. IF SPLICES ARE UNAVOIDABLE, PRIOR TO APPROVAL FROM THE ENGINEER MUST BE OBTAINED.

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

NOT USED 5

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

APPLICANT:



IMPLEMENTATION TEAM/CLIENT:



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Jun 06, 2024

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NOT USED 4

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PROJECT:

**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:

**POWER NOTES**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO: 5	SHEET NO: E-3

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

22"x34" SCALE: NOT TO SCALE  
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NOT USED 2

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11"x17" SCALE: NOT TO SCALE

NOT USED 1

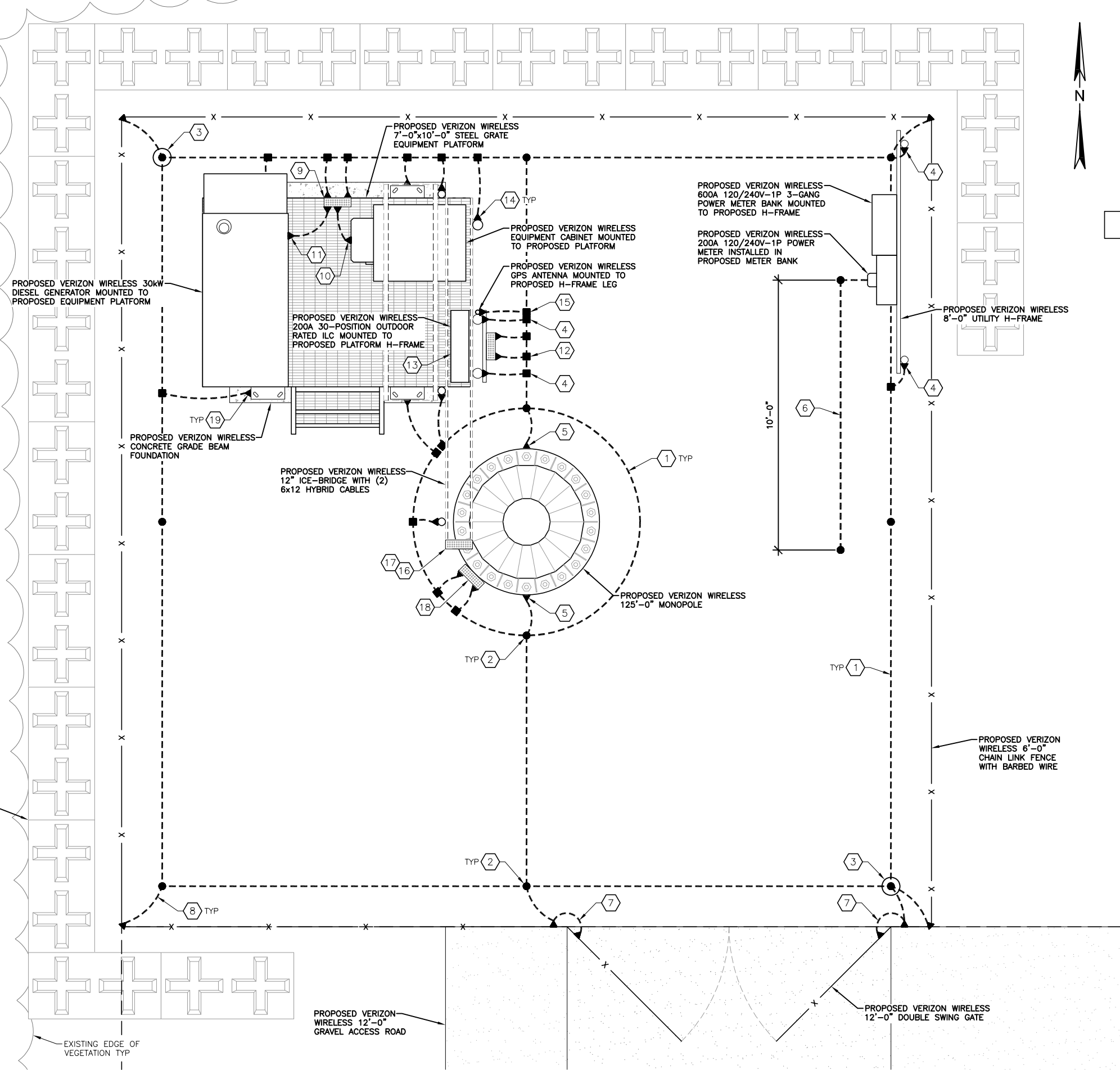
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KEYED NOTES

- ① PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR EXTERNAL GROUND RING, MINIMUM 36" BELOW GRADE AND 18" FROM THE EQUIPMENT PAD AND ALL FOOTINGS WITH 24" MINIMUM BEND RADIUS. BOND TO GROUND RODS.
- ② PROVIDE 5/8"Øx10'-0" LONG COPPER CLAD, STEEL GROUND ROD DRIVEN TO 2'-6" BELOW GRADE. MAXIMUM SPACING 15'-0", MINIMUM SPACING 8'-0" ON CENTER.
- ③ PROVIDE (2) GROUND INSPECTION WELLS. WELL SHALL BE CONCRETE WITH A CAST IRON LID, LABELED "GROUND".
- ④ PROVIDE (1) #2 SOLID BARE TINNED COPPER FROM EACH H-FRAME LEG TO PROPOSED GROUND RING.
- ⑤ PROVIDE (2) #2 SOLID BARE TINNED COPPER CONDUCTORS FROM EACH TOWER BASE PLATE TO GROUND RING.
- ⑥ PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR FROM DISCONNECT/METER TO GROUND ROD AND INSTALL SECOND GROUND ROD 10'-0" AWAY. (PER MANUFACTURER'S SPECIFICATIONS)
- ⑦ PROVIDE (1) #4 BRAIDED STRAP FROM FENCE POST TO GATE FRAME.
- ⑧ PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR FROM EXTERNAL GROUND RING TO EACH FENCE POST.
- ⑨ PROVIDE (1) MAIN GROUND BAR AT EQUIPMENT WITH (2) #2 SOLID BARE TINNED COPPER CONDUCTORS FROM GROUND BAR TO GROUND RING.
- ⑩ PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR FROM MAIN GROUND BAR TO EQUIPMENT CABINET. (TYP OF 2 PER CABINET)
- ⑪ PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR FROM MAIN GROUND BAR TO GENERATOR. (PER MANUFACTURER'S SPECIFICATION)
- ⑫ PROVIDE (1) MAIN GROUND BAR AT H-FRAME WITH (2) #2 SOLID BARE TINNED COPPER CONDUCTORS FROM GROUND BAR TO GROUND RING.
- ⑬ PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR FROM ILC TO H-FRAME GROUND BAR.
- ⑭ PROVIDE (1) #2 SOLID BARE TINNED COPPER FROM EACH ICE-BRIDGE LEG TO EXTERNAL GROUND RING.
- ⑮ PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR FROM GPS ANTENNA TO GROUND RING.
- ⑯ PROVIDE (1) GROUND BAR AT EACH END OF ICE-BRIDGE WITH (2) #2 SOLID BARE TINNED COPPER CONDUCTORS FROM GROUND BAR GROUND RING.
- ⑰ PROVIDE (1) GROUND KIT WITH EACH HYBRID CABLE AT EQUIPMENT AND AT THE END OF ICE-BRIDGE (GROUND KITS ARE SPECIFIC TO CABLE MANUFACTURER)
- ⑱ PROVIDE (1) MAIN GROUND BAR AT BASE OF TOWER WITH (2) #2 SOLID BARE TINNED COPPER CONDUCTORS FROM GROUND BAR TO GROUND RING.
- ⑲ PROVIDE (1) #2 SOLID BARE TINNED COPPER FROM EACH PLATFORM LEG TO EXTERNAL GROUND RING.



APPLICANT:  
  
 IMPLEMENTATION TEAM/CLIENT:  


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BERTRAND WHITE  
 No. CE106129  
 REGISTERED PROFESSIONAL ENGINEER  
 Jun 06, 2024

REV	DATE	DESCRIPTION
-	-	-
-	-	-
-	-	-
5	6/06/24	NEW RFDS AND FCD'S ISSUED FOR SUBMITTAL
4	5/31/24	PCD'S ISSUED FOR REVIEW
3	4/18/23	REVISED PER COMMENTS
2	11/28/22	REVISED PER CLIENT COMMENTS
1	11/15/22	PZD'S ISSUED FOR REVIEW

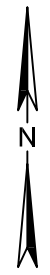
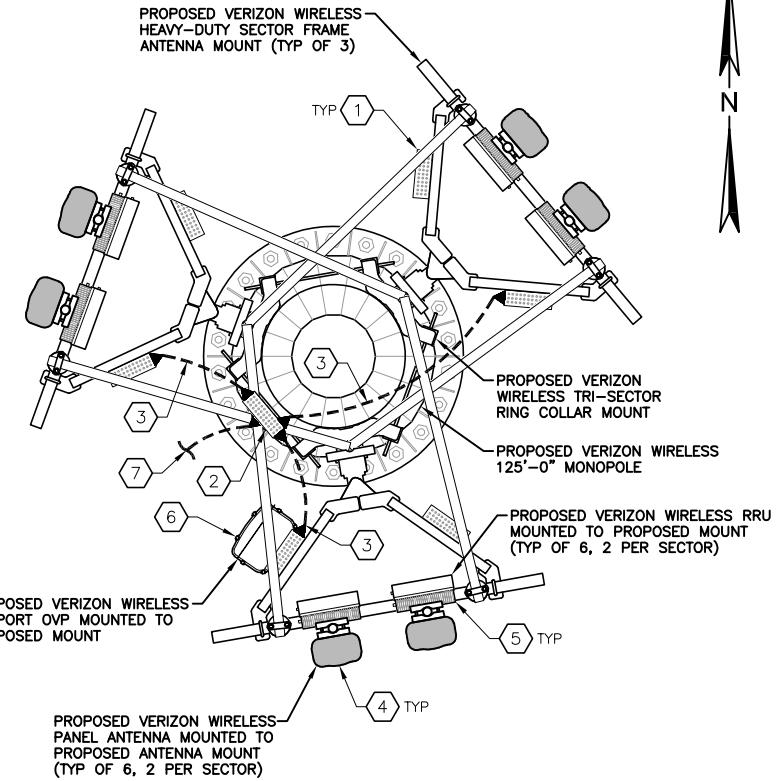
PROJECT:  
**AK2 SHAMPINE**  
 5182 N PITTMAN RD  
 WASILLA, AK 99654

SHEET TITLE:  
**PROPOSED GROUNDING PLAN**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO:	SHEET NO:

KEYED NOTES

- ① PROVIDE (2) GROUND BARS AT SECTOR FRAME ANTENNA MOUNT (GROUND BAR IS PART OF MOUNT FROM MANUFACTURER [TYP OF 2 PER MOUNT])
- ② PROVIDE (1) MAIN GROUND BAR AT VERIZON WIRELESS CARRIER'S RAD CENTER (NO ISOLATORS)
- ③ PROVIDE (2) #2 SOLID BARE TINNED COPPER CONDUCTORS FROM EACH SECTOR FRAME GROUND BAR TO MAIN GROUND BAR AT WIRELESS CARRIER'S RAD CENTER.
- ④ PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR FROM ANTENNA TO SECTOR FRAME GROUND BAR.
- ⑤ PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR FROM RRU TO SECTOR FRAME GROUND BAR.
- ⑥ PROVIDE (1) #2 SOLID BARE TINNED COPPER CONDUCTOR FROM OVP TO SECTOR FRAME GROUND BAR.
- ⑦ PROVIDE (2) #2 SOLID BARE TINNED COPPER CONDUCTORS FROM GROUND BAR AT WIRELESS CARRIER'S RAD CENTER TO GROUND BAR AT BASE OF TOWER.



APPLICANT:  
**verizon**

IMPLEMENTATION TEAM/CLIENT:  
**LYNX**

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BERTRAND WHITE  
No. CE106129  
REGISTERED PROFESSIONAL ENGINEER

Jun 06, 2024

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

NOT USED 4

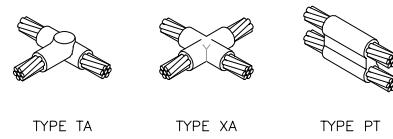
22"x34" SCALE: 1/2"= 1'-0"  
11"x17" SCALE: 1/4"= 1'-0"

ANTENNA GROUNDING PLAN 3

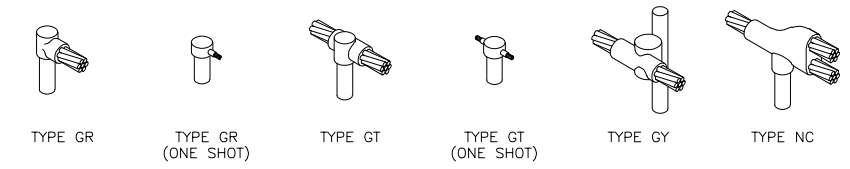
- NOTES:**
- CONTRACTOR SHALL FOLLOW ALL MANUFACTURER SPECIFICATIONS FOR THE PREPARATION OF WELDING SURFACES AND THE INSTALLATION CADWELDS.
  - ALL GROUNDING CONNECTIONS OF COPPER TO COPPER AND COPPER TO STEEL CONDUCTORS OF #8 AND LARGER SIZED CONDUCTORS SHALL BE CADWELD EXOTHERMIC WELDED CONNECTIONS. CONDUCTOR SPLICED WITH A CADWELD EXOTHERMIC WELDED CONNECTION SHALL BE CONSIDERED AS A CONTINUOUS CONDUCTOR.
  - ALL GROUNDING CONNECTIONS TO EQUIPMENT SHALL USE 2-HOLE BOLTED LUGS. WHEN THE CONDUCTOR IS #8 OR LARGER, THE LUG SHALL BE JOINED TO THE CONDUCTOR BY THE CADWELD PROCESS, OTHERWISE USE COMPRESSION LUGS.

- ALL GROUNDING SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT NFPA STANDARDS, NEC STANDARDS, LOCAL UTILITY REQUIREMENTS, AND WIRELESS CARRIER'S STANDARDS.
- THE CONTRACTOR IS RESPONSIBLE FOR SEQUENCING GROUNDING AND UNDERGROUND INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
- ALL METALLIC OBJECTS SHALL BE GROUNDED. ALL GROUND CONNECTIONS SHALL BE APPROVED FOR THE METALS BEING CONNECTED.
- ALL OUTDOOR CONNECTIONS TO BE EXOTHERMIC CADWELD, INTERIOR CONNECTIONS CAN BE A PROPERLY APPLIED CRIMP TYPE UNLESS OTHERWISE SPECIFIED.
- DO NOT INSTALL ANY GROUNDING ELEMENTS OUTSIDE OF THE CARRIER'S LEASE AREA.
- ALL GROUNDING CONNECTIONS TO BE CLEAN AND FREE OF PAINT AT THEIR MATING SURFACES AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- MAXIMUM RESISTANCE OF THE COMPLETED GROUND SYSTEM SHALL NOT EXCEED 5 OHMS TO EARTH.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT AGENT SUCH AS NO-OX, NOALOX, PENTROX OR KOPR-SHIELD.
- ALL EXTERIOR GROUND CONDUCTORS SHALL BE #2 AWG SOLID BARE TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALL GROUND CONNECTIONS SHALL BE AS SHORT, STRAIGHT AND DIRECT AS POSSIBLE. MINIMUM BENDING RADIUS FOR GROUNDING CONDUCTORS SHALL BE 8" WHEN BENDING IS NECESSARY. USE OF 90° BENDS IN THE PROTECTION OF GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. BENDS SHALL NOT EXCEED 90° IN ANY CIRCUMSTANCE.
- NO SPLICES PERMITTED IN GROUND CONDUCTORS.
- GROUND WIRES SHALL NOT BE INSTALLED THROUGH HOLES IN ANY METAL OBJECTS OR SUPPORTS TO PRECLUDE ESTABLISHING A "CHOKE POINT".
- ALL GROUND CONNECTIONS BELOW GRADE SHALL BE EXOTHERMIC WELDED (CADWELD).
- GROUND RING SHALL BE LOCATED A MINIMUM OF 2'-6" BELOW GRADE OR 6" BELOW THE FROST LINE, WHICHEVER IS GREATER.
- INSTALL GROUND CONDUCTORS AND GROUND ROD A MINIMUM OF 1'-6" FROM EQUIPMENT PAD, SHELTER FOUNDATION, SPREAD FOOTING, OR FENCE.
- ALL CONNECTIONS TO THE EXTERIOR GROUND RING SHALL BE THE PARALLEL TYPE, UNLESS CONNECTING DIRECTLY TO A GROUND ROD.
- GROUND RODS SHALL BE STAINLESS STEEL OR COPPER CLAD STEEL, 5/8"Ø AND 10'-0" LONG AND SHALL BE DRIVEN VERTICALLY WITH THEIR TOPS 2'-6" BELOW FINAL GRADE OR 6" BELOW THE FROST LINE, WHICHEVER IS GREATER. SPACING SHALL BE A MAXIMUM OF 15'-0" AND A MINIMUM OF 8'-0" ON CENTER.
- ALL EXTERIOR METALLIC CONNECTIONS TO THE GROUND RODS SHALL START AT THE TOP AND HAVE A VERTICAL SEPARATION OF 6" FOR EVERY ADDITIONAL CONNECTION.
- GROUND BUS BARS SHALL NOT BE FIELD MODIFIED.
- ALL GROUND BAR CONNECTIONS SHALL BE 2-HOLE LUG COMPRESSION TYPE.
- ENSURE ALL MECHANICAL CONDUCTORS ARE TORQUED TO THE MANUFACTURER'S SPECIFIED VALUES.
- PROVIDE LOCK WASHERS ON ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS. HARDWARE SHALL BE STAINLESS STEEL THROUGHOUT.
- CONNECTIONS TO THE GROUND BUS BAR SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS BAR ARE PERMITTED.
- TOWER SHALL BE GROUNDED PER MANUFACTURER'S RECOMMENDATIONS. AT A MINIMUM, THE TOWER SHALL BE GROUNDED IN TWO LOCATIONS.
- ALL EXTERIOR METALLIC CONDUITS, PIPES, AND CYLINDRICAL OBJECTS SHALL BE BONDED TO THE GROUND CONDUCTOR WITH A PENN-UNION GT SERIES CLAMP, BLACKBURN GUV SERIES CLAMP, OR A BURNDY GAR 3900BU SERIES CLAMP ONLY. SUBSTITUTIONS WILL NOT BE ACCEPTED.
- ALL GALVANIZED SURFACES DAMAGED BY THE EXOTHERMIC WELDING PROCESS SHALL BE REPAIRED USING A ZINC RICH PAINT.

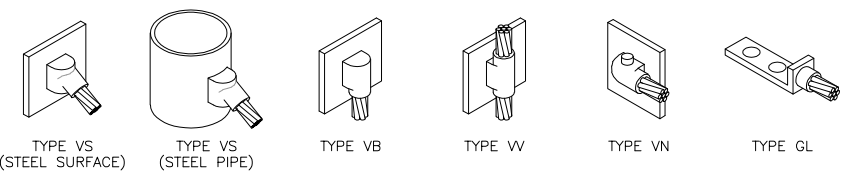
CABLE TO CABLE CONNECTIONS:



CABLE TO GROUND ROD CONNECTIONS:



CABLE TO STEEL OR CAST IRON CONNECTIONS:



22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

CADWELD (EXOTHERMIC WELD) 2

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

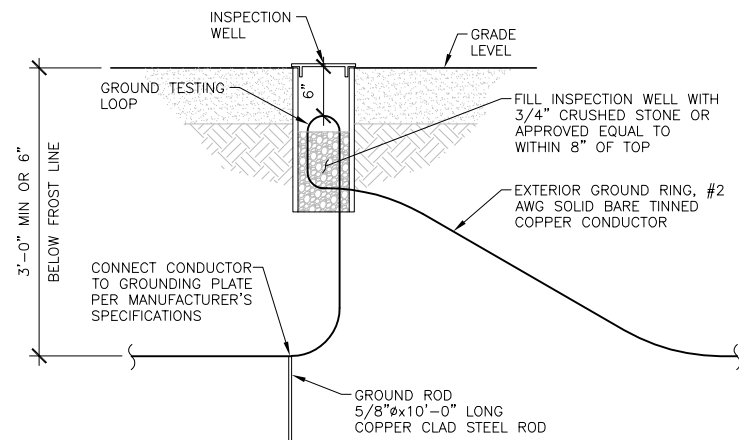
GROUNDING NOTES 1

REV	DATE	DESCRIPTION
-	-	-
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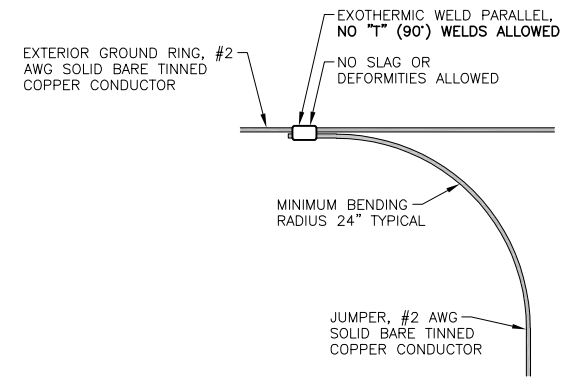
PROJECT:  
**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:  
**GROUNDING NOTES AND DETAILS**

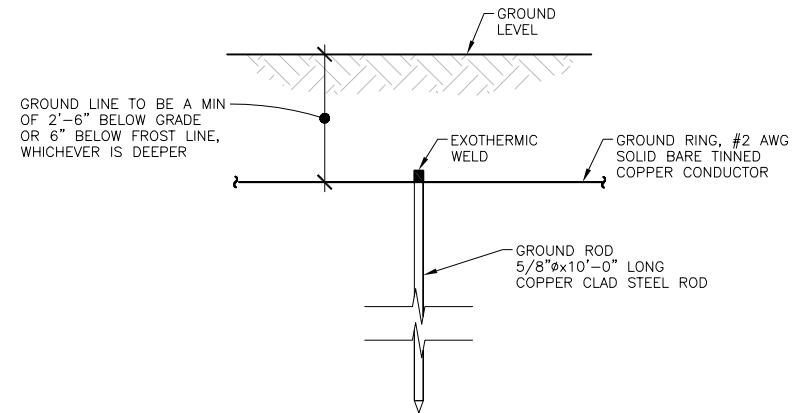
FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO:	SHEET NO:



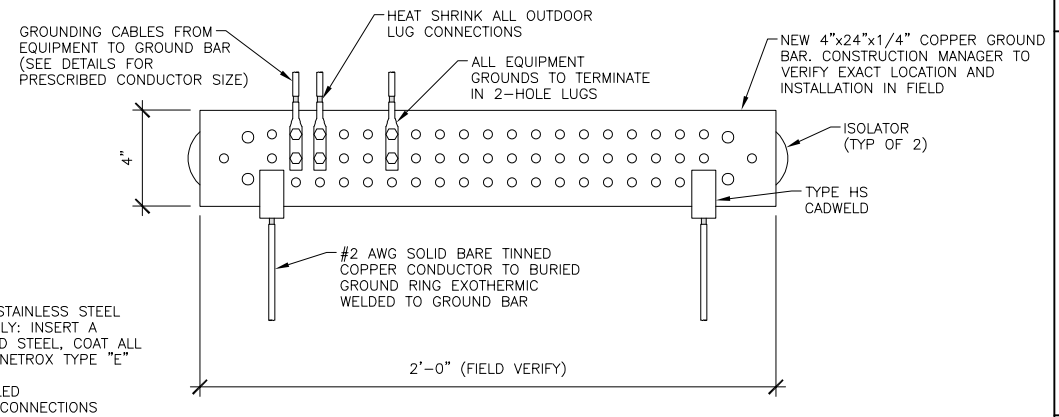
GROUND ROD INSPECTION WELL 8



TYPICAL GROUNDING CONNECTION 7



GROUND ROD 6

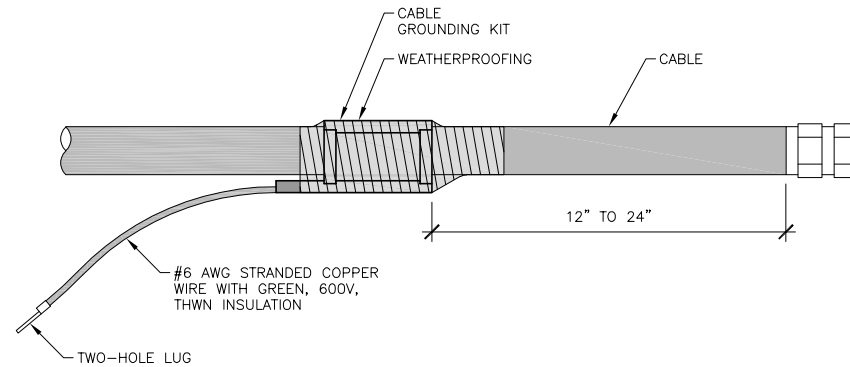


GROUND BAR 5

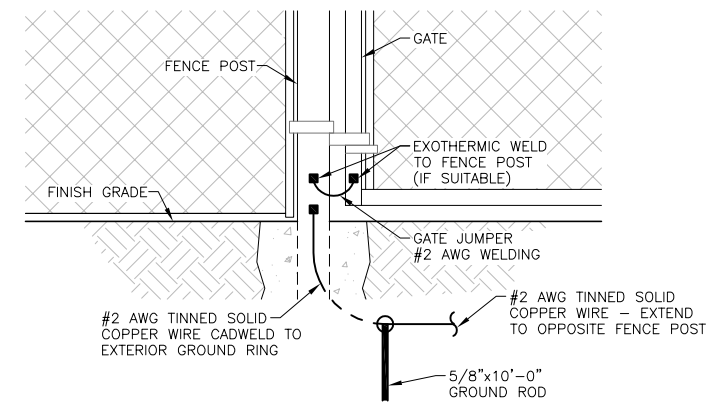
22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

- NOTES:
- GROUND KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
  - DO NOT INSTALL CABLE GROUND KIT AT A BEND.
  - GROUND WIRE SHALL ALWAYS BE DIRECTED DOWNWARDS TO A NEARBY GROUND BUS BAR AND TERMINATE WITH A TWO-HOLE LUG.
  - WEATHER PROOFING SHALL BE INSTALLED PER GROUND KIT MANUFACTURER SPECIFICATIONS. DO NOT USE COLD SHRINK.
  - AT A MINIMUM, GROUND KITS SHALL BE INSTALLED NEAR THE EQUIPMENT/SHELTER, AT THE BASE OF THE TOWER, AT THE MIDDLE OF THE TOWER AND NEAR THE ANTENNA ON EACH CABLE.



CABLE GROUNDING 4

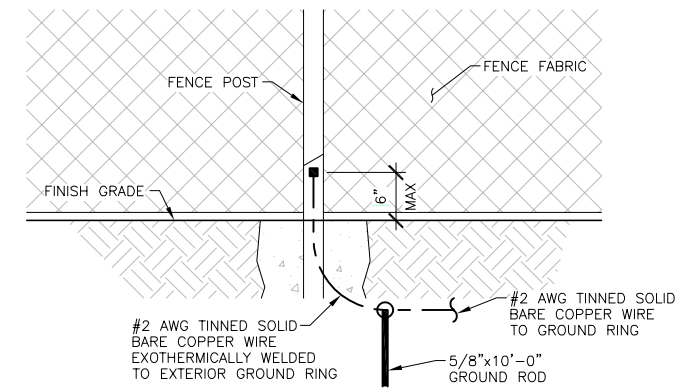


GATE GROUNDING 3

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

- NOTE:
- ALL FENCE POSTS WITHIN 6'-0" OF EQUIPMENT SHALL BE GROUNDED



FENCE GROUNDING 1

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

22"x34" SCALE: NOT TO SCALE  
11"x17" SCALE: NOT TO SCALE

NOT USED 2

APPLICANT:

IMPLEMENTATION TEAM/CLIENT:

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Jun 06, 2024

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PROJECT:

**AK2 SHAMPINE**  
5182 N PITTMAN RD  
WASILLA, AK 99654

SHEET TITLE:

**GROUNDING DETAILS**

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO:	SHEET NO:

# **APPLICATION MATERIAL**



# MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department

Development Services Division

350 East Dahlia Avenue • Palmer, AK 99645

Phone (907) 861-7822 • Fax (907) 861-8158

Email: [permitcenter@matsugov.us](mailto:permitcenter@matsugov.us)

## APPLICATION FOR A TALL STRUCTURE – MSB 17.67

Carefully read instructions and applicable borough code. Fill out forms completely. Attach information as needed. Incomplete applications will not be processed.

Application fee must be attached:

___ \$1,500 for Conditional Use Permit - > 125 feet in height

X \$ 500 for Administrative Permit – 85' to 125' in height

___ \$ 100 for Network Improvement Permit – In accordance with MSB 17.67.110.

Prior to the public hearing, the applicant must also pay the mailing and advertising fees associated with the application. Applicants will be provided with a statement of advertising and mailing charges. Payment must be made prior to the application presentation before the Borough Planning Commission or Planning Director decision.

**Subject Property** Township: S18, Range: N01, Section: W19, Meridian _____

MSB Tax Account # 55256000T00A

SUBDIVISION: SAFETY SUBD BLOCK(S): _____, LOT(S): _____

STREET ADDRESS: 5182 Pittman Rd, Wasilla, AK 99623

(US Survey, Aliquot Part, Lat. /Long, etc) _____

**Ownership** A written authorization by the owner must be attached for an agent or contact person, if the owner is using one for the application. Is authorization attached?  Yes  No  N/A

**Name of Property Owner**

Matanuska-Susitna Borough

Address: 350 E Dahlia Ave

Palmer, AK 99645

Phne: Hm _____ Fax _____

Wk _____ Cell _____

E-mail _____

**Name of Agent/ Contact for application**

Lynx Consulting - Jeff Colantino

Address: 17311 135th Ave NE, #A-100

Woodinville, WA 98072

Phne: Hm _____ Fax 425-354-3277

Wk _____ Cell 360-450-8697

E-mail jcolantino@lynxconsulting.org

**Special Land Use District (if applicable):** N/A

<b>Pre-Application Requirements for New Tall Structures that Require a Conditional Use Permit</b>	
<i>Prior to applying for a conditional use permit for a new tall structure, the applicant shall hold at least one community meeting.</i>	
1. The meeting shall be held at the nearest facility where community council meetings are regularly scheduled. If the facility is not available, the nearest available public facility that is capable of seating a minimum of 20 people shall be utilized.	
2. The meeting shall be held at least 15 calendar days after mailing of the notification.	
3. The meeting shall not start prior to 5:00 p.m. and no later than 7:00 p.m.	
4. Notification of the meeting shall, at a minimum, include the following: <ul style="list-style-type: none"> <li>• Legal description and map of the general parcel, or parcels, within the coverage area under consideration for the telecommunication facility.</li> <li>• Description of the proposed development including height, design, lighting, potential access to the site and proposed service.</li> <li>• Date, time, and location of the informational meeting.</li> <li>• Contact name, telephone number, and address of applicant.</li> <li>• Comment form created by the borough that has a comment submittal deadline and provides options for submitting comments.</li> </ul>	
5. At a minimum, the notification area for the meeting shall include the following: <ul style="list-style-type: none"> <li>• Property owners within one-half mile of the parcels under consideration for the proposed tall structure.</li> <li>• The nearest community council and any community council whose boundary is within 1200 feet of the parcels under consideration for the tall structure.</li> </ul>	
<i>A written report summarizing the results of the community meeting shall be prepared that includes the following information:</i>	<b>Attached</b>
1. Dates and locations of all meetings where citizens were invited to discuss the potential applicant's proposal.	N/A
2. Content, dates mailed, and numbers of mailings, including letters, meeting notices, newsletters and other publications.	N/A
3. Sign-in sheet(s) used at the meeting, that includes places for names, address, phone numbers and other contact information such as e-mail addresses.	N/A
4. A list of residents, property owners, and interested parties who have requested in writing that they keep informed of the proposed development through notices, newsletters, or other written materials.	N/A
5. The number of people who attended meetings.	N/A
6. Copies of written comments received at the meeting.	N/A
7. A certificate of mailing identifying all who were notified of the meeting.	N/A
8. A written summary that addresses the following: <ul style="list-style-type: none"> <li>• The substance of the public's written concerns, issues, and problems.</li> <li>• How the applicant has addressed, or intends to address, concerns, issues and problems expressed during the process.</li> <li>• Concerns issues, and problems the applicant has not addressed or does not intend to address and why.</li> </ul>	N/A

<b>General application requirements for <u>Administrative</u> and <u>Conditional Use Permits</u></b>	<b>Attached</b>
1. Design drawings for the proposed tall structure, drawn to scale, and certified by a registered engineer or architect.	X
2. Citizen participation report ( <i>if applying for a Conditional Use Permit</i> )	N/A
3. Certified site plan ( <i>As defined in MSB 17.125.010</i> )	X
4. Copy of a determination of no hazard to air navigation from the Federal Aviation Administration.	X
5. If breakpoint technology is intended to be utilized, a written statement specifying the height at which the engineered structural weakness will be located.	N/A

<b>In order to grant a <u>Conditional Use Permit</u> or <u>Administrative Permit</u> the Planning Commission or Planning Director must find that each of the following criteria has been met. Explain the following in detail:</b>	<b>Attached</b>
1. To the extent that is technically feasible and potentially available, the location of the tall structure is such that its negative effects on the visual and scenic resources of all surrounding properties have been minimized.	X
2. Visibility of the tall structure from public parks, trails recognized within adopted MSB plans, and waterbodies has been minimized to the extent that is technically feasible and potentially available.	X
3. The tall structure will not interfere with the approaches to any existing airport or airfield that are identified in the MSB Regional Aviation System Plan or by the Alaska State Aviation System Plan.	X
4. That granting the permit will not be harmful to the public health, safety, convenience, and welfare.	X

<b>Application requirements for a <u>Network Improvement Permit</u></b>	<b>Attached</b>
1. A description of the proposed modifications to the telecommunication tower, including a description of the height, type, and lighting of the new or modified structure and the existing structure.	N/A
2. A certified site ( <i>as defined in MSB 17.125.010</i> ) for purposes of setback verification.	N/A
3. Design drawings for the proposed modified or new structure, drawn to scale, and certified by a registered engineer or architect.	N/A

<b>In order to grant a <u>Network Improvement Permit</u> the Planning Director must find that each of the following criteria has been met. Explain the following in detail.</b>	<b>Attached</b>
1. The proposed development conforms to setback requirements of MSB 17.55.	N/A
2. The telecommunication tower being extended was lawfully constructed at the time of application for a Network Improvement Permit.	N/A
3. The proposed modification does not violate permit conditions of any valid permits that have been issued to the existing facility, provided that the condition being violated does not limit height of the structure.	N/A

<b>Operation Standards for New Tall Structures – Conditional Use Permit, Administrative Permit, and Network Improvement Permit</b>	<b>Attached</b>
1. The equipment compound shall meet minimum setback distances from all property lines in accordance with MSB 17.55	
2. Setbacks shall be determined from the dimensions of the entire lot, even though the tower may be located on lease areas within the lot.	X
3. Adequate vehicle parking shall be provided on the subject property, outside of public use easements and rights-of-way to enable emergency vehicle access. No more than two spaces per provider shall be required.	X
4. Information signs for the purpose of identifying the tower such as the antenna structure registration number required by the Federal Communications Commission, as well as the party responsible for the operation and maintenance of the facility shall be visibly posted at the equipment compound.	X
5. If more than 220 volts are necessary for the operation of the facility, warning signs shall be located at the base of the facility and shall display in large, bold, high contrast letters the following: "HIGH VOLTAGE – DANGER".	N/A
6. A 24-hour emergency contact number shall be visibly posted at the equipment compound.	X
7. A fence or wall not less than six (6) feet in height with a secured gate shall be maintained around the base of the tower.	X

<b>Additional Standards for <u>Wind Energy Conversion Systems (WECS)</u> – In addition to the operations standards for new tall structures, the following standards shall apply to WECS</b>	<b>Attached</b>
1. WECS shall be equipped with an automatic overspeed control device designed to protect the system from sustaining structural failure such as splintered or thrown blades and the overturning or breaking of towers due to an uncontrolled condition brought on by high winds.	N/A
2. WECS shall have a manually operable method that assures the WECS can be brought to a safe condition in high winds. Acceptable methods include mechanical or hydraulic brakes or tailvane deflection systems which turn the rotor out of the wind.	N/A

**OWNER'S STATEMENT:** I am owner of the following property:

MSB Tax parcel ID #(s) 55256000T00A and, I hereby apply for approval conditional use permit on that property as described in this application.

I understand all activity must be conducted in compliance with all applicable standards of MSB _____ and with all other applicable borough, state or federal laws.

I understand that other rules such as local, state and federal regulations, covenants, plat notes, and deed restrictions may be applicable and other permits or authorization may be required. I understand that the borough may also impose conditions and safeguards designed to protect the public's health, safety and welfare and ensure the compatibility of the use with other adjacent uses.





I understand that it is my responsibility to identify and comply with all applicable rules and conditions, covenants, plat notes, and deed restrictions, including changes that may occur in such requirements.

I understand that this permit and zoning status may transfer to subsequent owners of this land and that it is my responsibility to disclose the requirements of this status to the buyer when I sell the land.

I understand that changes from the approved conditional use permit may require further authorization by the Borough Planning Commission. I understand that failure to provide applicable documentation of compliance with approved requirements, or violation of such requirements will nullify legal status, and may result in penalties.

I grant permission for borough staff members to enter onto the property as needed to process this application and monitor compliance. Such access will at a minimum, be allowed when the activity is occurring and, with prior notice, at other times necessary to monitor compliance.

The information submitted in this application is accurate and complete to the best of my knowledge.

	<i>Eric Phillips</i>	<i>3/28/23</i>
Signature: Property Owner	Printed Name	Date
<b>Jeff Colantino</b>	 Digitally signed by Jeff Colantino	Date: 2023.04.12 08:39:25 -07'00'
Signature: Agent	Printed Name	Date

<b>MSB USE ONLY</b>
Date application submitted: _____
Date application determined complete: _____

# MAT -SU BOROUGH

[Back to Intranet \(https://intranet.matsugov.us/\)](https://intranet.matsugov.us/) [Home \(/kmm\)](#)

## Other Permits Master (/kmm/Lists/OtherPermitsMaster)

Permit ID	Tall Structure Fee
Date Created	3/28/2023 12:31 PM
Customer Name	Lynx Consulting - Jeff Colantino on behalf of Verizon Wireless
Customer Id	
Order Number	
Order Placed On	
Order Total	\$500.00
ConfirmationNumber	
PermitCreatedDate	
Payment Status	Paid
PermitStatus	
PermitAmount	\$500.00
Order Item Id	
PermitObjectID	
Ordered Product Details	
Customer Phone	360-450-8697
Facility Name (Optional)	Shampine

Content Type: Other Permits  
Version: 3.0

Created at 3/28/2023 12:31 PM by Jeff Colantino (/kmm/_layouts/15/listform.aspx?PageType=4&ListId={47131ed3-ca79-485a-807e-26d5f921a524}&ID=32089)

Last modified at 3/28/2023 12:35 PM by System Account (/kmm/_layouts/15/listform.aspx?PageType=4&ListId={47131ed3-ca79-485a-807e-26d5f921a524}&ID=1073741823)

Close



# MATANUSKA-SUSITNA BOROUGH

## Real Property Detail for Account: 55256000T00A

### Site Information

Account Number	55256000T00A	Subdivision	SAFETY SUBD
Parcel ID	45248	City	None
TRS	S18N01W19	Map WA05	Tax Map
Abbreviated Description (Not for Conveyance)	SAFETY SUBD TRACT A		

### Site Address

5182 N Pittman Rd

### Ownership

Owners	MATANUSKA-SUSITNA BOROUGH PSB/MEADOW LKS # 72	Buyers	
Primary Owner's Address	350 E DALHIA AVE PALMER AK 99645-6488	Primary Buyer's Address	

### Appraisal Information

Appraisal Information				Assessment			
Year	Land Appraised	Bldg. Appraised	Total Appraised	Year	Land Assessed	Bldg. Assessed	Total Assessed ¹
2024	\$45,000.00	\$584,500.00	\$629,500.00	2024	\$0.00	\$0.00	\$0.00
2023	\$45,000.00	\$372,200.00	\$417,200.00	2023	\$0.00	\$0.00	\$0.00
2022	\$45,000.00	\$358,300.00	\$403,300.00	2022	\$0.00	\$0.00	\$0.00

### Building Information

#### Structure 1 of 1

Residential Units	0	Use	Pub Protective Functions
Condition	Standard	Design	Commercial
Basement	None	Construction Type	Frame
Year Built		2003 Grade	None
Foundation	Slab on Grade	Building Appraisal	\$582500
Well	Well 1 - Drilled Well	Septic	Septic - 1 - Septic Tank

### Building Item Details

Building Number	Description	Area	Percent Complete
-----------------	-------------	------	------------------

### Tax/Billing Information

Year	Certified	Zone	Mill	Tax Billed	Recorded Documents	Recording Info (offsite link to DNR)
2024	Yes	0041	12.778	\$0.00	8/8/2002 QUITCLAIM DEED (ALL TYPE)	<a href="#">Palmer 2002-016963-0</a>
2023	Yes	0041	12.383	\$0.00		
2022	Yes	0041	13.227	\$0.00		

### Tax Account Status ²

Status	Tax Balance	Farm	Disabled Veteran	Senior	Total ³	LID Exists
Current		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00 No

### Land and Miscellaneous

Gross Acreage	Taxable Acreage	Assembly District	Precinct	Fire Service Area	Road Service Area
2.01	2.00	Assembly District 007	<a href="#">27-410</a>	136 WEST LAKES FSA	028 Gold Trail RSA

¹ Total Assessed is net of exemptions and deferrals, rest, penalties, and other charges posted after Last Update Date are not reflected in balances.

Last Updated: 7/3/2024 11:00:00 AM

² If account is in foreclosure, payment must be in certified funds.

³ If you reside within the city limits of Palmer or Houston, your exemption amount may be different.

Apr. 12, 2023

ATTN: Matanuska-Susitna Borough  
350 E Dahlia Ave.  
Palmer, AK 99645

RE: Verizon Wireless new wireless communications site

To Whom It May Concern:

Lynx Consulting represents Verizon Wireless for the zoning and permitting processes for this site. We have received feedback on the application submitted for an Administrative Permit for a Tall Structure; this narrative letter has been requested to confirm the design, conditions, etc. for this application review.

The items listed below include responses to the checklist on the Tall Structure application, as well as to comments and requests on the Matsu Borough letter received on April 3, 2023.

From Matsu Borough letter:

- Section 1
  - a. Page 5 of application signed by applicant/agent
  - b. All requirements of pages 3 and 4 of application:
    - Design Drawings – included in original app package
    - Citizen Participation Report – not applicable for this type of permit
    - Certified Site Plan – included in original app package
    - “No Hazard” to aviation per FAA – determination included in original app package
    - Breakpoint technology – not applicable for this type of permit
    - The location of the proposed tall structure was chosen to minimize visual impacts while still providing access to vehicles and utilities. The proposed location at the fire station is surrounded by large undeveloped parcels.
    - By placing this site at this location, we are attempting to minimize visibility from public parks, recognized trails, and waterbodies.
    - The proposed structure will not interfere with approaches to any existing airport or airfield; FAA determined that no notice was necessary for this proposal.
    - Granting this permit would not be harmful to public health, safety, convenience, and welfare. In fact, this installation would have the opposite effect, and would be a benefit due to greatly increased cell & data coverage in this area.

- The proposed site location does not meet the standard requirements for setbacks from the north property line; however, this location was chosen by the Fire Chief so that the tower would not impede future development of the firehouse.
- Parking spaces are called out on the updated plans, page C-1.
- Signage will be installed on the security fence, equipment, tower, etc. as needed, for tower ID, responsible parties and contact numbers, etc.
- This project will not require over 220 volts.
- 24 hour contact number will be included in site signage.
- The site will be secured by a 6' fence topped with barbed wire.

Section 1(c), (d): This site is proposed as a 125' monopole in a galvanized steel finish, with the initial carrier being Verizon Wireless. The structure is designed to accommodate at least two additional carriers (three total). There are no other viable structures within the search area for collocation. All proposed ground equipment will be installed within the Verizon lease area, and will be secured by a locked 6' high chain link fence topped with barbed wire. After construction, vehicular traffic will be minimal with a couple of trips per month for maintenance.

Section 1(e): The proposed frequencies for this site are listed below. Per review on FAA website, no filing/notice is required.

Call Sign	Band	TX	RX
WQJU651	700 Upper C	746-756 MHz	776-786 MHz
WQGD637	AWS1-A	1710-1720 MHz	2110-2120 MHz
WQGD638	AWS1-F	1745-1755 MHz	2145-2155 MHz
WQVP238	AWS3-H	1760-1765 MHz	2160-2165 MHz
WQVP239	AWS3-I	1765-1770 MHz	2165-2170 MHz

Section 2: This site is planned to use 120v single-phase 200A power for Verizon's service. This will not exceed 220v for operation.

Section 3: The setbacks for this proposed location were determined by the requirements of the local Fire Chief, who attended the design walk for this site and noted that a central location for the tower would adversely affect future development and expansion of the firehouse. Per direction from the Fire Chief, the site was moved north, closer to the property line. There are no developments or improvements in this area of the adjacent parcel to the north, and no breakpoint technology is currently proposed.

Section 4: Updated drawings show distances from the tower base to all property lines, as well as to all existing or proposed structures (see page C-2). Vehicle parking has also been added (see page C-1).

Please call me at (360) 450-8697 or email me at [jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) if you have any further questions. Thank you for your consideration.

Sincerely,

Jeff Colantino  
Lynx Consulting

VIEW FROM STREET



VIEW FROM STREET



LOOKING NORTH



LOOKING SOUTH





LOOKING WEST



LOOKING EAST





### Notice Criteria Tool

[Notice Criteria Tool - Desk Reference Guide V_2018.2.0](#)

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference [CFR Title 14 Part 77.9](#).

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the [FAA Co-location Policy](#)
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the [Air Traffic Areas of Responsibility map](#) for Off Airport construction, or contact the [FAA Airports Region / District Office](#) for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**  ▼  
 Please select structure type and complete location point information.

**Latitude:**  Deg  M  S  ▼

**Longitude:**  Deg  M  S  ▼

**Horizontal Datum:**  ▼

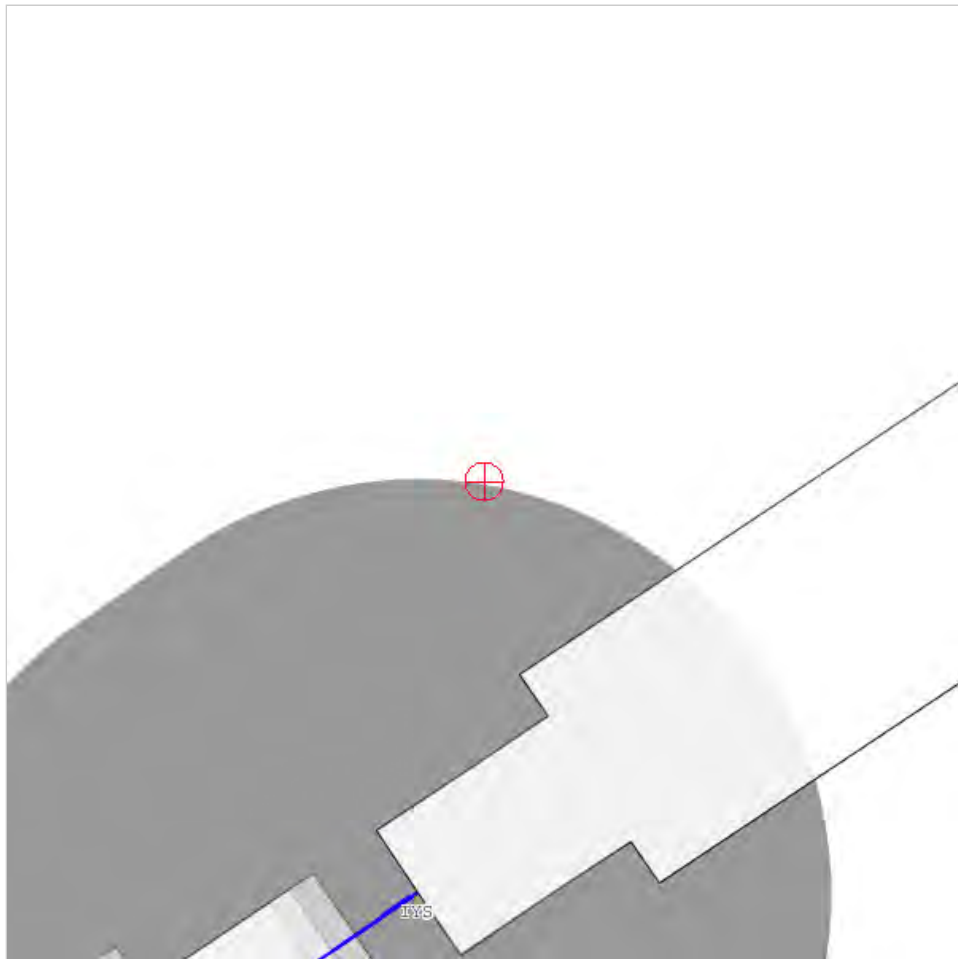
**Site Elevation (SE):**  (nearest foot)

**Structure Height :**  (nearest foot)

**Is structure on airport:**  No  Yes

### Results

You do not exceed Notice Criteria.



November 21, 2023

KV Lew  
**Adapt Consulting, Inc.**  
617 8TH Avenue South  
Seattle, WA 98104

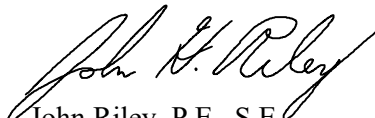
**Subject: Verizon AK2 Shampine Equipment Foundation**  
**5182 N Pittman RD**  
**Wasilla, AK 99654**  
**Quantum Job Number: 23459.01**  
**Adapt Consulting Job Number: AK23-22581-STR**

Dear Mr. Lew:

At your request, we have designed conventional shallow footings shown in sketches SSK-A, SSK-B and SSK-C to support an equipment platform designed by others. The footings have been designed to carry the equipment platform, a 4800 pound emergency generator, a 1500 pound radio cabinet and a 1500 pound future cabinet.

The contents of this letter and our structural analysis are based on information obtained from your e-mail sent on November 3, 2023 and architectural drawings prepared by Lynx Consulting, Inc. dated April 18, 2023. Please feel free to call our office if you have questions or comments regarding any item in this letter.

Sincerely,  
**Quantum Consulting Engineers, LLC**

  
John Riley, P.E., S.E.  
Principal



File: 459-sska.dwg Plotted: Tue, 11/21/2023 1:21 pm

**EQUIPMENT PLATFORM FOUNDATION PLAN NOTES:**

1. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF PLATFORM ON THE PROJECT SITE AND FOR THE EQUIPMENT PLATFORM DESIGNED BY OTHERS. CONTRACTOR IS TO VERIFY FOUNDATION DIMENSIONS SHOWN PRIOR TO CONSTRUCTION TO DETERMINE IF THEY MATCH THE EQUIPMENT PLATFORM SHOWN IN THE ARCHITECTURAL DRAWINGS.
2. CONCRETE SHALL HAVE A (28) DAY COMPRESSIVE STRENGTH (F'c) OF 4,000 PSI, AND IS TO BE AIR ENTRAINED PER ACE 318-14 TABLE 19.3.3.1. THE PLATFORM IS AN UNMANNED TELECOMMUNICATIONS FACILITY SO SPECIAL INSPECTION OF THE CONCRETE IS NOT REQUIRED.
3. ALL REINFORCING STEEL IS TO BE ASTM A615, GRADE 60, Fy = 60,000 PSI.
4. THE PLATFORM FOUNDATION HAS BEEN DESIGNED TO SUPPORT AN EMERGENCY GENERATOR WITH A MAXIMUM OPERATING WEIGHT OF 4,800 POUNDS, ONE RADIO CABINET WITH A MAXIMUM WEIGHT OF 1,500 POUNDS, AND ONE FUTURE CABINET WITH A WEIGHT OF 1,500 POUNDS.

**EQUIPMENT PLATFORM FOUNDATION PLAN NOTES**

SCALE: NONE



**QUANTUM | CONSULTING ENGINEERS**

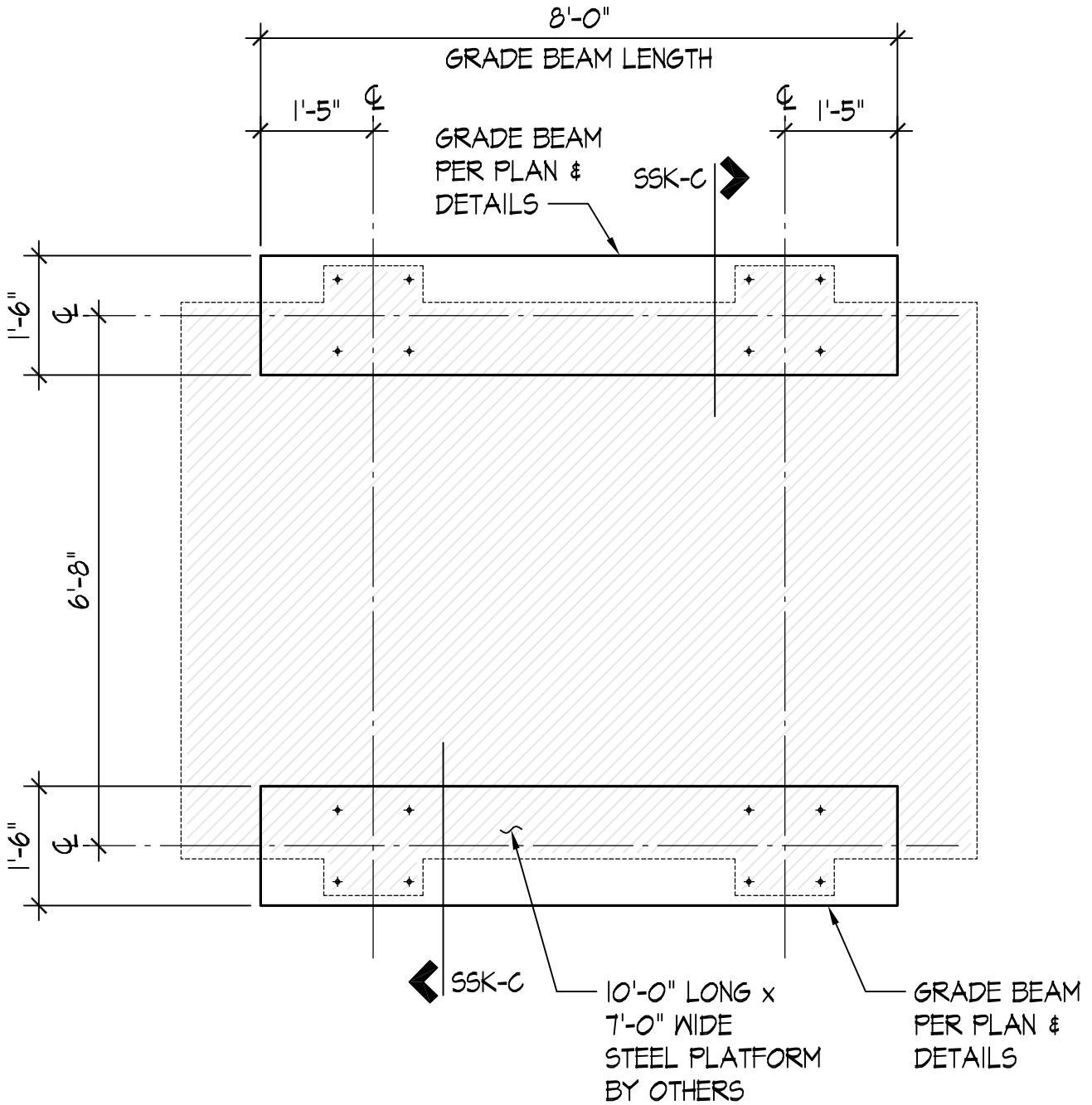
1511 THIRD AVENUE  
SUITE 323  
SEATTLE, WA 98101  
TEL 206.967.3900  
FAX 206.967.3901  
www.quantumce.com

VERIZON AK2 SHAMPINE EQUIPMENT FOUNDATION  
**project**

ADAPT CONSULTING  
**client**

11/21/23	23459.01
<b>date</b>	<b>project no.</b>
FRU	SSK-A
<b>designed by</b>	<b>sheet</b>
SSN	
<b>drawn by</b>	

File: 459-sskb.dwg Plotted: Tue, 11/21/2023 1:21 pm



### EQUIPMENT PLATFORM FOUNDATION PLAN

SCALE: NONE



**QUANTUM** | CONSULTING ENGINEERS

1511 THIRD AVENUE  
SUITE 323  
SEATTLE, WA 98101  
TEL 206.957.3900  
FAX 206.957.3901  
www.quantumce.com

VERIZON AK2 SHAMPINE EQUIPMENT FOUNDATION

project

11/21/23

date

23459.01

project no.

FRU

designed by

SSK-B

sheet

SSN

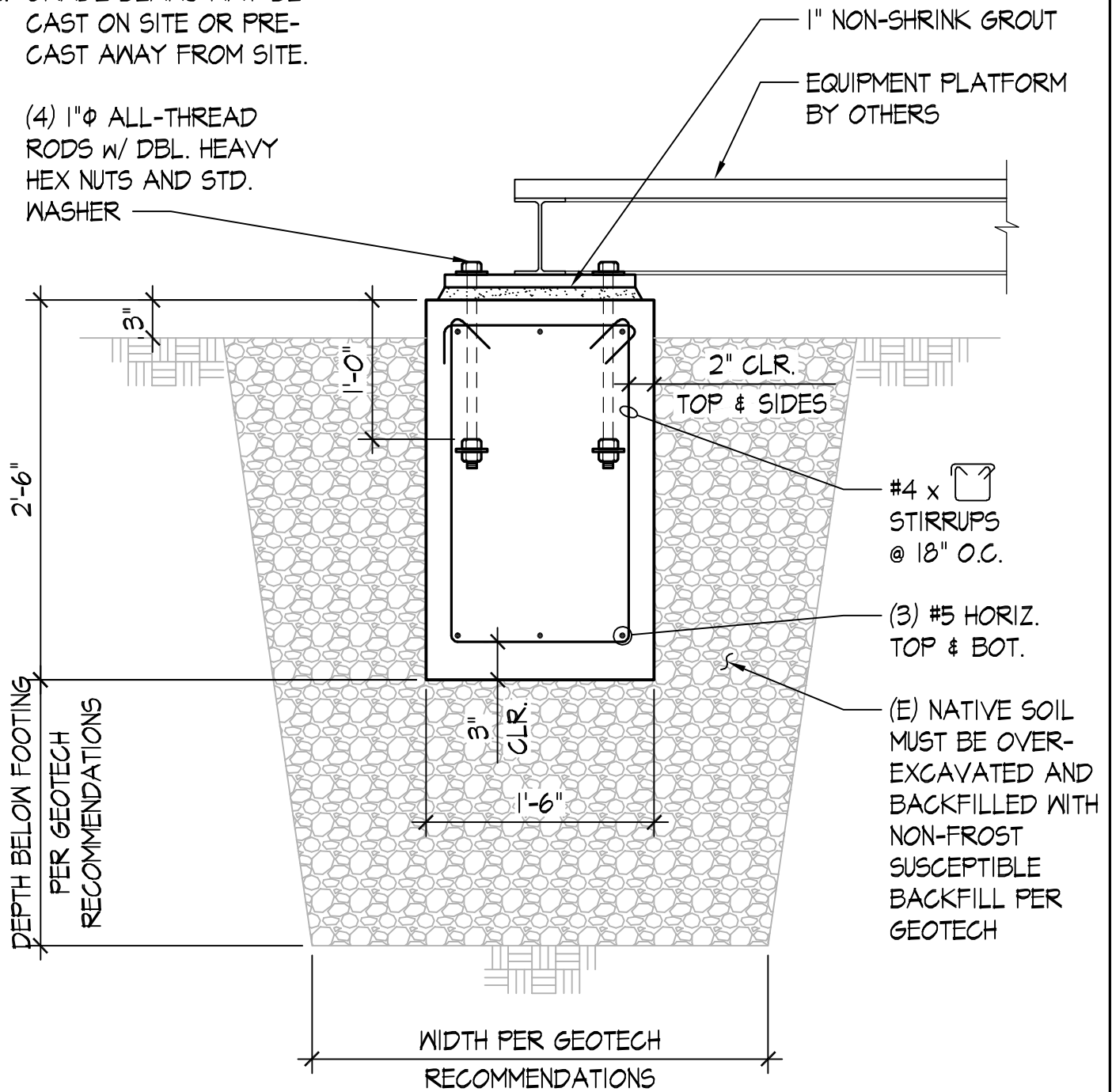
drawn by

ADAPT CONSULTING  
client

**NOTES:**

1. ALL STEEL SHALL BE HOT DIP GALVANIZED.
2. GRADE BEAMS MAY BE CAST ON SITE OR PRE-CAST AWAY FROM SITE.

(4) 1"  $\phi$  ALL-THREAD RODS w/ DBL. HEAVY HEX NUTS AND STD. WASHER



**GRADE BEAM DETAIL**

SCALE: NONE

File: 459-sskc.dwg Plotted: Tue, 11/21/2023 1:22 pm



**QUANTUM | CONSULTING ENGINEERS**

1511 THIRD AVENUE  
SUITE 323  
SEATTLE, WA 98101  
TEL 206.967.3900  
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www.quantumce.com

VERIZON AK2 SHAMPINE EQUIPMENT FOUNDATION

project

11/21/23

date

23459.01

project no.

FRU

designed by

SSK-C

sheet

SSN

drawn by

ADAPT CONSULTING  
client



November 21, 2023

**STRUCTURAL CALCULATIONS**  
(Permit Submittal)

**VERIZON AK2 SHAMPINE EQUIPMENT FOUNDATION**  
5182 N PITTMAN RD  
WASILLA, AK 99654

Quantum Job Number: 23459.01  
Adapt Consulting Job Number: AK23-22581-STR

*Prepared for:*  
ADAPT CONSULTING, INC.  
617 8TH Avenue South  
Seattle, WA 98104

*Prepared by:*  
QUANTUM CONSULTING ENGINEERS  
1511 Third Avenue, Suite 323  
Seattle, WA 98101  
TEL 206.957.3900  
FAX 206.957.3901





**QUANTUM** | CONSULTING ENGINEERS

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FAX 206.957.3901

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**VERIZON AK2 –SHAMPINE EQUIPMENT FOUNDATION**

5182 N PITTMAN RD  
WASILLA, AK 99654

QUANTUM JOB NUMBER: 23459.01

ADAPT CONSULTING JOB NUMBER: AK23-22581-STR

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FOUNDATION CALCULATIONS.....C-1

**QUANTUM** | CONSULTING ENGINEERS

1511 Third Avenue, Suite 323  
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**VERIZON AK2 –SHAMPINE EQUIPMENT FOUNDATION**

5182 N PITTMAN RD  
WASILLA, AK 99654

QUANTUM JOB NUMBER: 23459.01

ADAPT CONSULTING JOB NUMBER: AK23-22581-STR

# DESIGN CRITERIA



QUANTUM | CONSULTING ENGINEERS

### STRUCTURAL DESIGN CRITERIA

VERIZON AK2 –SHAMPINE EQUIPMENT FOUNDATION  
5182 N PITTMAN RD  
WASILLA, AK 99654

QUANTUM JOB NUMBER: 23459.01

ADAPT CONSULTING JOB NUMBER: AK23-22581-STR

CODE MINIMUM:

BUILDING CODE ..... 2015 INTERNATIONAL BUILDING CODE  
 BUILDING DEPARTMENT..... CITY OF SEWARD  
 WIND CRITERIA ..... 127 MPH; EXPOSURE "D"  
 ..... RISK CATEGORY = II  
 .....  $K_{ZT} = 1.00$   
 SEISMIC ZONE ..... SDC = E  
 ..... SITE CLASS = D  
 .....  $a_p = 1.0, r_p = 2.5$  (NON-STRUCTURAL COMPONENTS)  
 .....  $I_p = 1.0$   
 .....  $S_s = 2.25, S_1 = 0.99$   
 .....  $S_{DS} = 1.50, S_{D1} = 0.99$   
 SNOW ..... 50 PSF  
 LIVE LOAD ..... 40 PSF

USED DESIGN CRITERIA EXCEEDING CODE MINIMUM:

SNOW ..... 150 PSF  
 WIND CRITERIA ..... 150 MPH; EXPOSURE "D"

SOILS CRITERIA:

ALLOWABLE BEARING PRESSURE ..... 1,500 PSF  
 PASSIVE SOIL PRESSURE ..... 350 PCF  
 COEFFICIENT OF FRICTION ..... 0.35

MATERIALS CRITERIA:

CONCRETE (28 DAY STRENGTH):

FOUNDATION/S.O.G .....  $f'_c = 4,000$  PSI

REINFORCING STEEL:

GRADE 60 .....  $F_y = 60,000$  PSI

**⚠** This is a beta release of the new ATC Hazards by Location website. Please [contact us](#) with feedback.

**i** The ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)

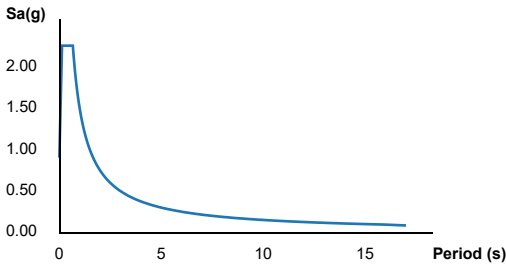
# ATC Hazards by Location

## Search Information

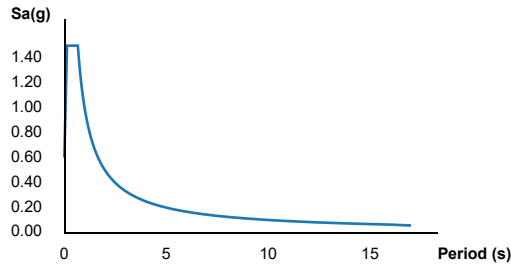
**Address:** 5182 Pittman Rd, Wasilla, AK 99623, USA  
**Coordinates:** 61.628739, -149.512963  
**Elevation:** 433 ft  
**Timestamp:** 2023-11-10T21:44:53.062Z  
**Hazard Type:** Seismic  
**Reference Document:** ASCE7-10  
**Risk Category:** II  
**Site Class:** D



### MCER Horizontal Response Spectrum



### Design Horizontal Response Spectrum



## Basic Parameters

Name	Value	Description
$S_S$	2.25	MCE _R ground motion (period=0.2s)
$S_1$	0.994	MCE _R ground motion (period=1.0s)
$S_{MS}$	2.25	Site-modified spectral acceleration value
$S_{M1}$	1.491	Site-modified spectral acceleration value
$S_{DS}$	1.5	Numeric seismic design value at 0.2s SA
$S_{D1}$	0.994	Numeric seismic design value at 1.0s SA

## Additional Information

Name	Value	Description
SDC	E	Seismic design category
$F_a$	1	Site amplification factor at 0.2s
$F_v$	1.5	Site amplification factor at 1.0s
$CR_S$	1.083	Coefficient of risk (0.2s)
$CR_1$	0.993	Coefficient of risk (1.0s)
PGA	0.811	MCE _G peak ground acceleration
$F_{PGA}$	1	Site amplification factor at PGA
$PGA_M$	0.811	Site modified peak ground acceleration
$T_L$	16	Long-period transition period (s)
$SsRT$	2.25	Probabilistic risk-targeted ground motion (0.2s)
$SsUH$	2.079	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
$SsD$	2.377	Factored deterministic acceleration value (0.2s)
$S1RT$	0.994	Probabilistic risk-targeted ground motion (1.0s)
$S1UH$	1.001	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
$S1D$	1.342	Factored deterministic acceleration value (1.0s)

**⚠** This is a beta release of the new ATC Hazards by Location website. Please [contact us](#) with feedback.

**i** The ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)

**ATC** Hazards by Location

**Search Information**

**Address:** 5182 Pittman Rd, Wasilla, AK 99623, USA  
**Coordinates:** 61.628739, -149.512963  
**Elevation:** 433 ft  
**Timestamp:** 2023-11-10T21:43:12.802Z  
**Hazard Type:** Wind



**ASCE 7-16**

MRI 10-Year ..... 85 mph  
 MRI 25-Year ..... 92 mph  
 MRI 50-Year ..... 98 mph  
 MRI 100-Year ..... 103 mph  
 Risk Category I ..... 113 mph  
 Risk Category II ..... 119 mph  
 Risk Category III ..... 125 mph  
 Risk Category IV ..... 132 mph

**ASCE 7-10**

MRI 10-Year ..... 86 mph  
 MRI 25-Year ..... 94 mph  
 MRI 50-Year ..... 98 mph  
 MRI 100-Year ..... 98 mph  
 Risk Category I ..... 115 mph  
 Risk Category II ..... 127 mph  
 Risk Category III-IV ..... 125 mph

**ASCE 7-05**

ASCE 7-05 Wind Speed ..... 98 mph

*The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.*

*Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)*

**Disclaimer**

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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**QUANTUM** | CONSULTING ENGINEERS

1511 Third Avenue, Suite 323  
Seattle, WA 98101  
TEL 206.957.3900  
FAX 206.957.3901

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**VERIZON AK2 –SHAMPINE EQUIPMENT FOUNDATION**

5182 N PITTMAN RD  
WASILLA, AK 99654

QUANTUM JOB NUMBER: 23459.01

ADAPT CONSULTING JOB NUMBER: AK23-22581-STR

# PLATFORM REACTIONS

1511 Third Avenue, Suite 323 T. 206.957.3900  
 Seattle, WA 98101 F. 206.957.3901

Project	Verizon AK2 - Shampine Equipment Foundation	Job #	23459.01	Page	
Client	Adapt Consulting	By	FRU	Date	11/10/23
Subject	Wind Loading	Checked		Date	

**WIND LOAD ON OTHER STRUCTURES AND BUILDING APPURTENANCES**

(ASCE 7-10, CHAPTER 29)

**STEP 1: DETERMINE RISK CATEGORY**

RISK CATEGORY: II (SEE TABLE 1.5-1)

**STEP 2: DETERMINE BASIC WIND SPEED, V FOR APPLICABLE RISK CATEGORY**

BASIC WIND SPEED, V 151 MPH, (3) SECOND GUST FROM ATC WEB SITE

**STEP 3: DETERMINE WIND LOAD PARAMETERS**

WIND DIRECTIONALITY FACTOR, Kd	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">0.85</span>	(SEE SECTION 26.6 AND TABLE 26.6-1)
EXPOSURE CATEGORY B, C OR D	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">D</span>	(SEE SECTION 26.7)
TOPOGRAPHIC FACTOR, Kzt	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">1.00</span>	(SEE SECTION 26.8 AND FIGURE 26.8-1)
GUST EFFECT FACTOR, G	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">0.85</span>	(SEE SECTION 26.9)

**STEP 4: DETERMINE VELOCITY WIND PRESSURE COEFFICIENT**

HEIGHT, z	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">10.0</span>	FT
MEAN ROOF HEIGHT, h	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">10.0</span>	FT
TERRAIN EXPOSURE CONSTANT, α	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">11.5</span>	(SEE TABLE 26.9-1)
TERRAIN EXPOSURE CONSTANT, zg	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">700.0</span>	FT (SEE TABLE 26.9-1)
VELOCITY PRESSURE COEFFICIENT, Kz	1.03	(SEE TABLE 29.3-1)
VELOCITY PRESSURE COEFFICIENT, Kh	1.03	(SEE TABLE 29.3-1)

**NOTES:**

- α = 7.0 FOR EXPOSURE 'B', 9.5 FOR EXPOSURE 'C', OR 11.5 FOR EXPOSURE 'D'
- zg = 1200 FOR EXPOSURE 'B', 900 FOR EXPOSURE 'C', OR 700 FOR EXPOSURE 'D'

**STEP 5: DETERMINE VELOCITY PRESSURE qz OR qh**

$qz = 0.00256 * Kz * Kzt * Kd * V^2$	51.11	PSF (EQUATION 29.3-1)
$qh = 0.00256 * Kh * Kzt * Kd * V^2$	51.11	PSF (EQUATION 29.3-1)

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## STEP 6: DETERMINE FORCE COEFFICIENT

FORCE COEFFICIENT, Cf	1.4	SEE FIGURE 29.5-1
-----------------------	-----	-------------------

### NOTES:

1. SEE FIGURE 29.4-1 FOR SOLID FREESTANDING SIGNS OR SOLID FREESTANDING WALLS
2. SEE FIGURE 29.5-1 FOR CHIMNEYS, TANKS, ROOFTOP EQUIPMENT
3. SEE FIGURE 29.5-2 FOR OPEN SIGNS, LATTICE FRAMEWORKS
4. SEE FIGURE 29.5-3 FOR TRUSSED TOWERS.

## STEP 7: DETERMINE WIND FORCE F

### SOLID FREE STANDING WALLS AND SOLID FREESTANDING SIGNS

GROSS AREA OF SIGN OR WALL, As	66.0	FT ²
WIND PRESSURE, $p = qh * G * Cf$	60.8	PSF
WIND FORCE, $F = qh * G * Cf * As$	4014.6	LB (EQUATION 29.4-1)

### ROOFTOP STRUCTURES AND EQUIPMENT FOR BUILDINGS WITH $h \leq 60$ FT

VERTICAL PROJECTED AREA, Af	25.0	FT ²
HORIZONTAL PROJECTED AREA, Ar	66.0	FT ²
(G*Cr) FOR HORIZONTAL PRESSURES	1.9	(SEE SECTION 29.5.1)
(G*Cr) FOR VERTICAL PRESSURES	1.5	(SEE SECTION 29.5.1)
HORIZONTAL PRESSURE, $ph = qh * (G * Cr)$	97.1	PSF
VERTICAL PRESSURE, $pv = qh * (G * Cr)$	76.7	PSF
HORIZONTAL FORCE, $Fh = qh * (GCr) * Af$	2428.0	LB (EQUATION 29.5-2)
VERTICAL FORCE, $Fv = qh * (GCr) * Ar$	5060.4	LB (EQUATION 29.5-3)

### OTHER STRUCTURES

PROJECTED AREA NORMAL TO WIND, Af	66.0	FT ² GENERATOR
WIND PRESSURE, $p = qz * G * Cf$	60.8	PSF
WIND FORCE, $F = qz * G * Cf * Af$	4014.6	LB (EQUATION 29.5-1)

PROJECTED AREA NORMAL TO WIND, Af	22.0	FT ² EQUIPMENT CABINET
WIND PRESSURE, $p = qz * G * Cf$	60.8	PSF
WIND FORCE, $F = qz * G * Cf * Af$	1338.2	LB (EQUATION 29.5-1)



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**SEISMIC LOADS FOR NONSTRUCTURAL COMPONENTS**  
 (ASCE 7-10, CHAPTER 13)

**DESIGN CRITERIA**

$S_{DS}$	1.50	SHORT PERIOD SPECTRAL ACCELERATION FROM USGS WEB SITE
$a_p$	1.00	COMPONENT AMPLIFICATION FACTOR (TABLE 13.6-1)
$R_p$	2.50	COMPONENT RESPONSE FACTOR (TABLE 13.6-1)
$I_p$	1.50	COMPONENT IMPORTANCE FACTOR (SECTION 13.1.3)
$z$	10.00	HT. IN STRUCTURE OF POINT OF ATTACHMENT WITH RESPECT TO BASE
$h$	10.00	AVERAGE ROOF HEIGHT OF STRUCTURE WITH RESPECT TO BASE

**SEISMIC DESIGN FORCE**

$$F_p = \frac{0.4a_p S_{DS} W_p}{R_p / I_p} (1 + 2z/h) \quad \text{(EQUATION 13.3-1)}$$

$$F_{p,max} = 1.6 S_{DS} I_p W_p \quad \text{(EQUATION 13.3-2)}$$

$$F_{p,min} = 0.3 S_{DS} I_p W_p \quad \text{(EQUATION 13.3-3)}$$

$$F_p = 1.08 W_p$$

$$F_{p,max} = 3.60 W_p$$

$$F_{p,min} = 0.68 W_p$$

**GOVERNING SEISMIC LOAD**

EQUATION 13.3-1 GOVERNS DESIGN

$$F_{p,design} = 1.08 W_p \quad \text{(LRFD)}$$

$$0.76 W_p \quad \text{(ASD)}$$

**VERTICAL SEISMIC LOAD**

$$F_{p,vert} = 0.30 W_p \quad \text{(LRFD)}$$

$$0.21 W_p \quad \text{(ASD)}$$

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**WIND LOADS TO EMPTY GENERATOR**

W	3157	LB EMPTY TANK WEIGHT
d	8.33	FT TANK HEIGHT
h	0	FT STAND OFF FROM TOP OF SLAB
x	2.75	FT DISTANCE BETWEEN ANCHORS (APPROXIMATE)
n	8	ANCHORS AT SKID
Fw	4014.6	LB (LRFD)
D	394.6	LB DL TO EACH ANCHOR
V	501.8	LB SHEAR TO EACH ANCHOR (LRFD)
T	1520.1	LB TENSION TO EACH ANCHOR (LRFD) W/ (4) ANCHORS RESISTING TENSION

NOTES:

1. OVERTURNING ABOUT SHORT DIMENSION CONTROLS ANCHOR DESIGN
2. TENSION LOAD DOES NOT INCLUDE RESISTING DEAD LOAD.

**WIND LOADS TO FULL GENERATOR**

W	4,800	LB FULL TANK WEIGHT
d	8.33	FT TANK HEIGHT
h	0	FT STAND OFF FROM TOP OF SLAB
x	2.75	FT DISTANCE BETWEEN ANCHORS (APPROXIMATE)
n	8	ANCHORS AT SKID
Fw	4014.6	LB (LRFD)
D	600.0	LB DL TO EACH ANCHOR
V	501.8	LB SHEAR TO EACH ANCHOR (LRFD)
T	1520.1	LB TENSION TO EACH ANCHOR (LRFD) W/ (4) ANCHORS RESISTING TENSION

NOTES:

1. OVERTURNING ABOUT SHORT DIMENSION CONTROLS ANCHOR DESIGN
2. TENSION LOAD DOES NOT INCLUDE RESISTING DEAD LOAD.

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**SEISMIC LOADS TO EMPTY GENERATOR**

W	3157	LB EMPTY TANK WEIGHT
d	8.33	FT TANK HEIGHT
h	0	FT STAND OFF FROM TOP OF SLAB
x	2.75	FT DISTANCE BETWEEN ANCHORS (APPROXIMATE)
n	8	ANCHORS AT SKID
Fp	3409.6	LB (LRFD)
D	394.6	LB DL TO EACH ANCHOR
V	426.2	LB SHEAR TO EACH ANCHOR (LRFD)
T	1409.4	LB TENSION TO EACH ANCHOR (LRFD) - LATERAL + VERTICAL SEISMIC

NOTES:

1. OVERTURNING ABOUT SHORT DIMENSION CONTROLS ANCHOR DESIGN
2. TENSION LOAD DOES NOT INCLUDE RESISTING DEAD LOAD.

**SEISMIC LOADS TO FULL GENERATOR**

W	4,800	LB FULL TANK WEIGHT
d	8.33	FT TANK HEIGHT
h	0	FT STAND OFF FROM TOP OF SLAB
x	2.75	FT DISTANCE BETWEEN ANCHORS (APPROXIMATE)
n	8	ANCHORS AT SKID
Fp	5184.0	LB (LRFD)
D	600.0	LB DL TO EACH ANCHOR
V	648.0	LB SHEAR TO EACH ANCHOR (LRFD)
T	2142.9	LB TENSION TO EACH ANCHOR (LRFD) - LATERAL + VERTICAL SEISMIC

NOTES:

1. OVERTURNING ABOUT SHORT DIMENSION CONTROLS ANCHOR DESIGN
2. TENSION LOAD DOES NOT INCLUDE RESISTING DEAD LOAD.

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**WIND LOADS TO CABINET**

W	1500	LB CABINET
d	7.5	FT CABINET HEIGHT
h	0	FT STAND OFF FROM TOP OF SLAB
x	2.67	FT DISTANCE BETWEEN ANCHORS (APPROXIMATE)
n	4	ANCHORS AT CABINET

Fw	1338.2	LB (LRFD)
D	375.0	LB DL TO EACH ANCHOR
V	334.5	LB SHEAR TO EACH ANCHOR (LRFD)
T	939.7	LB TENSION TO EACH ANCHOR (LRFD) W/ (2) ANCHORS RESISTING TENSION

NOTES:

1. OVERTURNING ABOUT SHORT DIMENSION CONTROLS ANCHOR DESIGN
2. TENSION LOAD DOES NOT INCLUDE RESISTING DEAD LOAD.

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**SEISMIC LOADS TO CABINET**

W	1500	LB CABINET
d	7.5	FT CABINET HEIGHT
h	0	FT STAND OFF FROM TOP OF SLAB
x	2.67	FT DISTANCE BETWEEN ANCHORS (APPROXIMATE)
n	4	ANCHORS AT CABINET
Fp	1620.0	LB (LRFD)
D	375.0	LB DL TO EACH ANCHOR
V	405.0	LB SHEAR TO EACH ANCHOR (LRFD)
T	1250.1	LB TENSION TO EACH ANCHOR (LRFD) - LATERAL + VERTICAL SEISMIC

NOTES:

1. OVERTURNING ABOUT SHORT DIMENSION CONTROLS ANCHOR DESIGN
2. TENSION LOAD DOES NOT INCLUDE RESISTING DEAD LOAD.

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**CONTROLLING LATERAL LOADS**

ITEM	LOAD	F (LRFD) LB	V _{ANCHOR} (LRFD) LB	T _{ANCHOR} (LRFD) LB	DL (LB)	REMARKS
GENERATOR	WIND	4014.6	501.8	1520.1	4800.0	Controls
	SEISMIC	5184.0	648.0	2142.9	4800.0	
CABINET	WIND	1338.2	334.5	939.7	1500.0	Controls
	SEISMIC	1620.0	405.0	1250.1	1500.0	

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**SEISMIC LOADS TO PLATFORM**

MARK	ITEM	W (LB)	WEIGHT CALCULATIONS	F _p (LB)*
1	PLATFORM WEIGHT	1000.00	FROM RISA 3D FILE	1080.00
2	STEEL GRATING	504.00	W2 = 7.2 PSF x 10' x 7'	544.32
3	MISC DEAD LOAD	500.00	ADD 500 LB FOR MISC EQUIPMENT	540.00
4	SNOW AS SEISMIC DL	700.00	W4 = 50PSF x 0.2 x 10' x 7'	756.00

*Note: F_p value is LRFD.

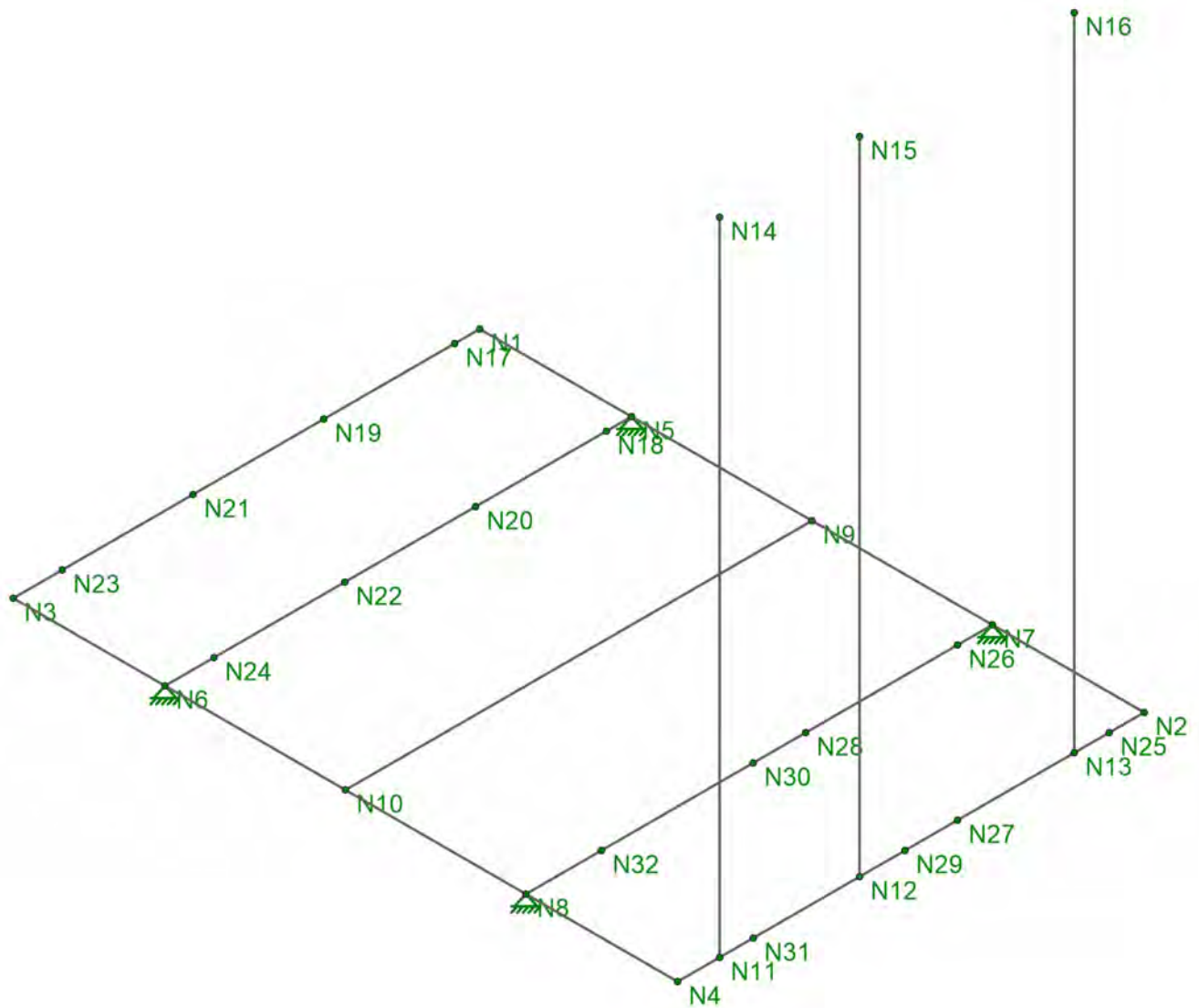
TOTAL SEISMIC LOAD, F_p                      2164.32    LB (LRFD)

**SEISMIC LOAD IN THE X-DIRECTION**

LOAD	F _p	L (FT)	w (PLF)	
w1	1080.00	7.00	154.29	Total, w    417.19    PLF
w2	544.32	7.00	77.76	
w3	540.00	7.00	77.14	
w4	756.00	7.00	108.00	

**SEISMIC LOAD IN THE Z-DIRECTION**

LOAD	F _p	L (FT)	w (PLF)	
w1	1080.00	10.00	108.00	Total, w    292.03    PLF
w2	544.32	10.00	54.43	
w3	540.00	10.00	54.00	
w4	756.00	10.00	75.60	



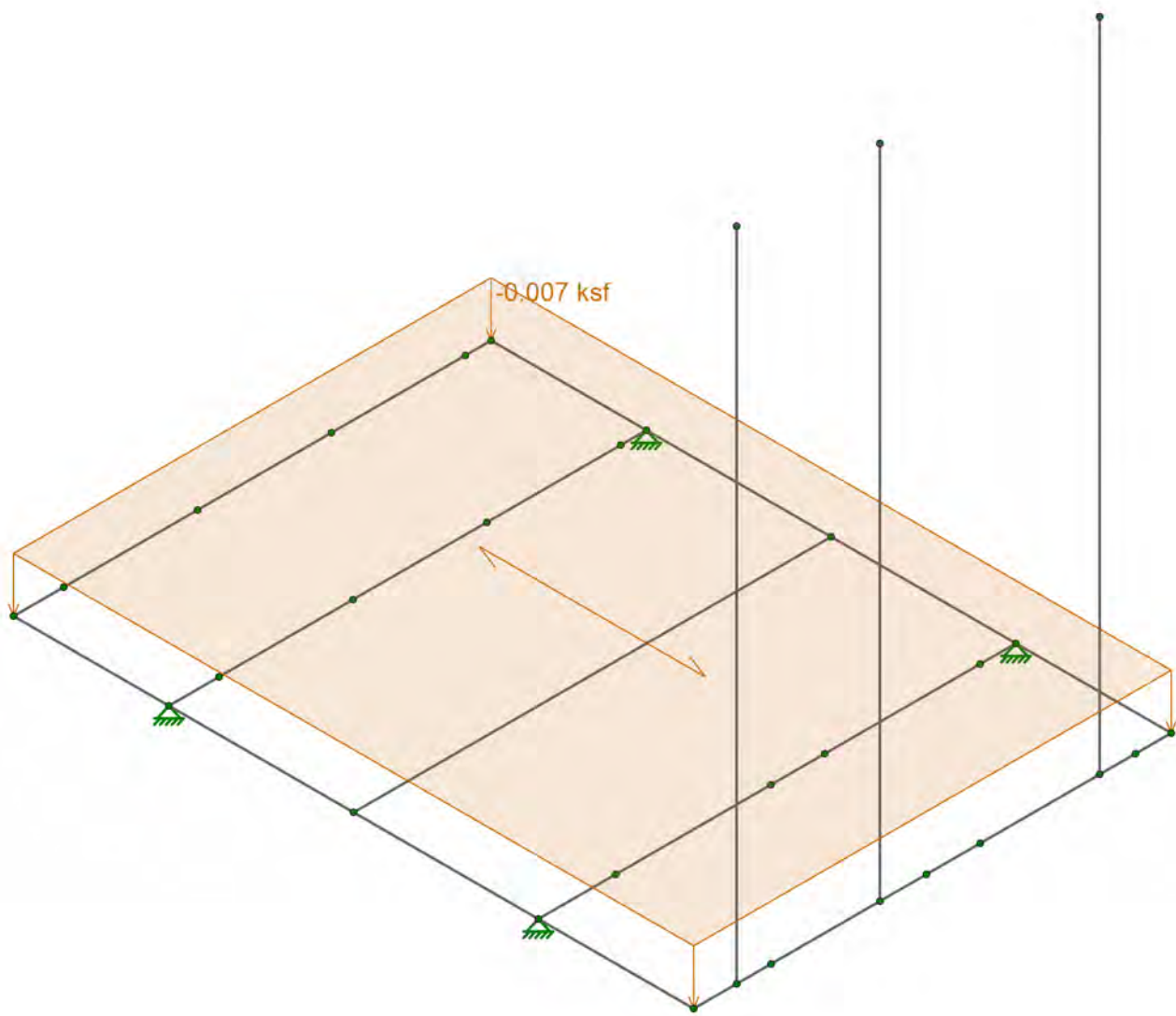
Quantum
FRU
23459.01

Verizon AK Shampine Platform

Nodes

SK-1
Nov 10, 2023 at 03:55 PM
Platform.r3d





Loads: BLC 2, Grating DL



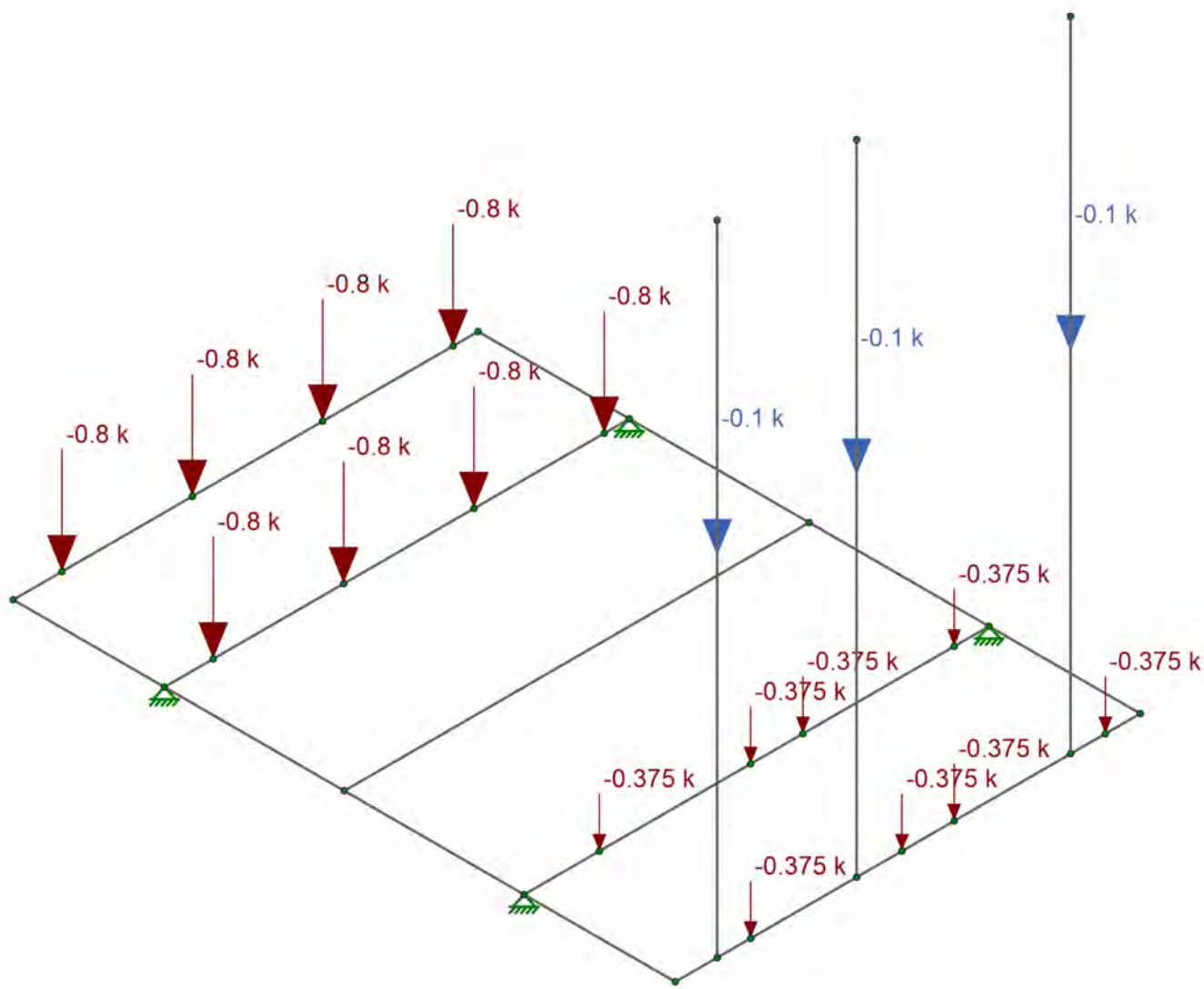
Quantum  
FRU  
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Verizon AK Shampine Platform

Grating Dead Load

SK-2

Nov 10, 2023 at 03:56 PM  
Platform.r3d



Loads: BLC 3, Equipment DL



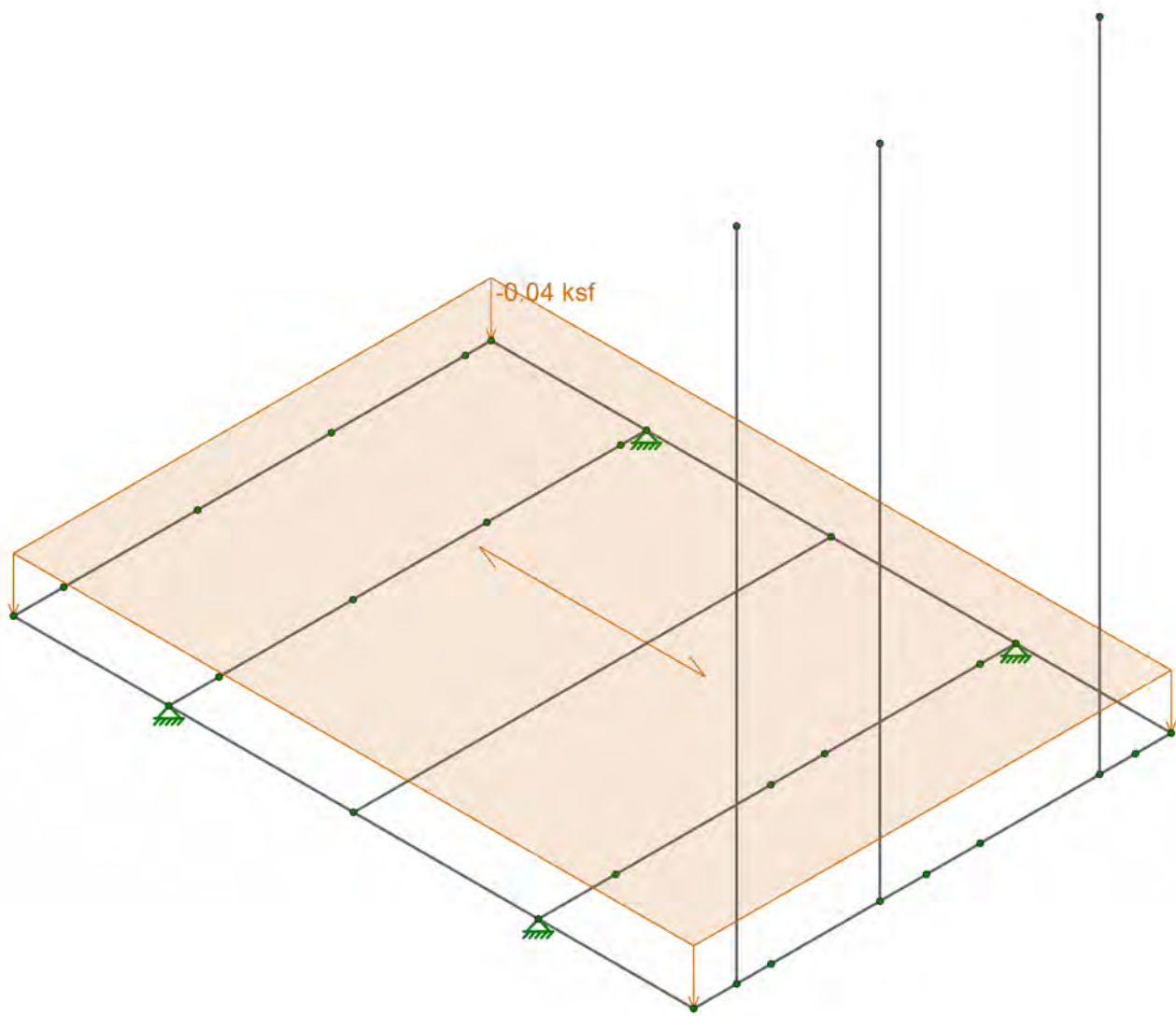
Quantum  
FRU  
23459.01

Verizon AK Shampine Platform

Equipment Dead Load

SK-3

Nov 10, 2023 at 03:57 PM  
Platform.r3d



Loads: BLC 4, Platform LL



Quantum  
FRU  
23459.01

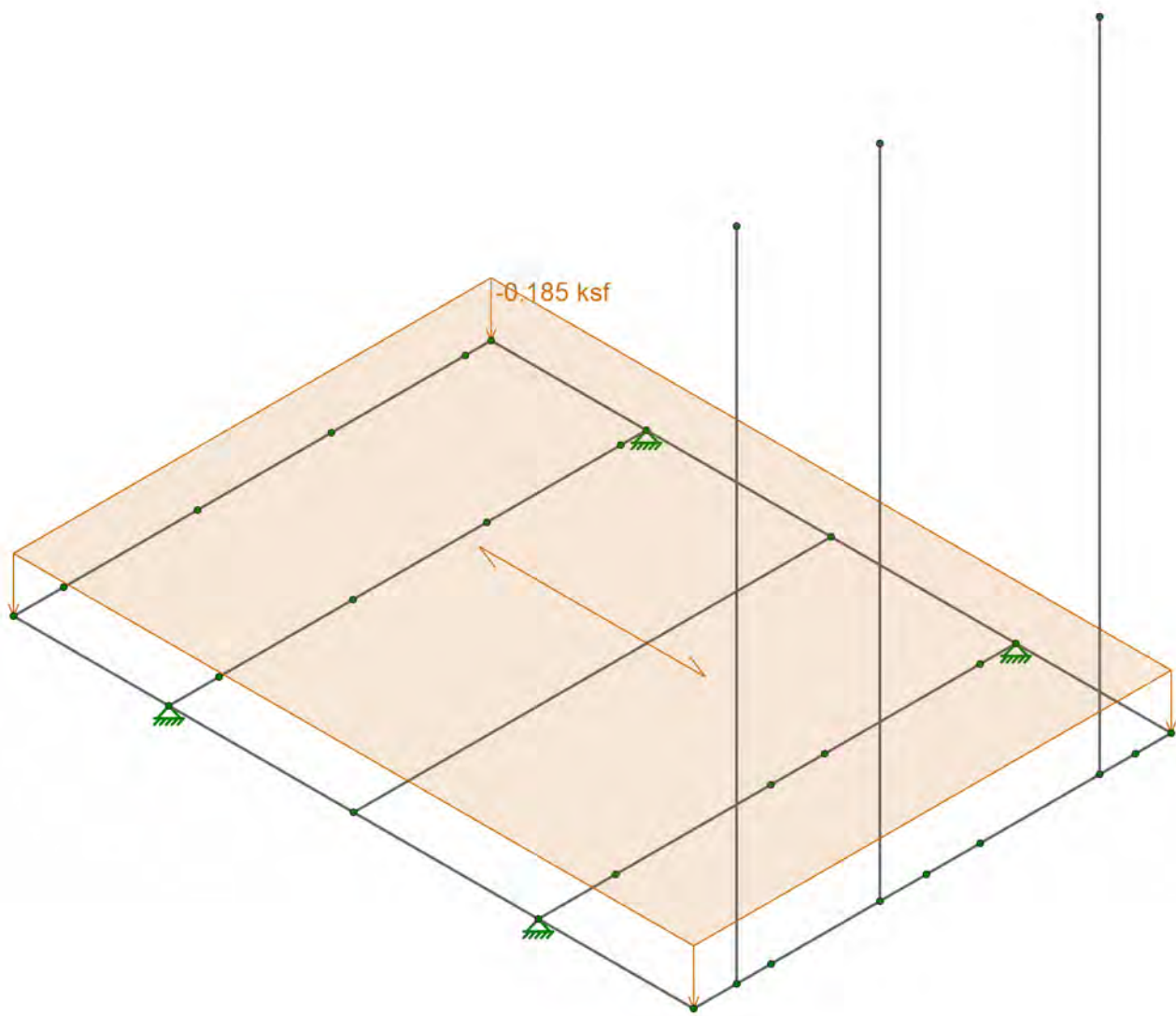
Verizon AK Shampine Platform

Platform Live Load

SK-4

Nov 10, 2023 at 03:59 PM

Platform.r3d



Loads: BLC 5, Snow Load



Quantum  
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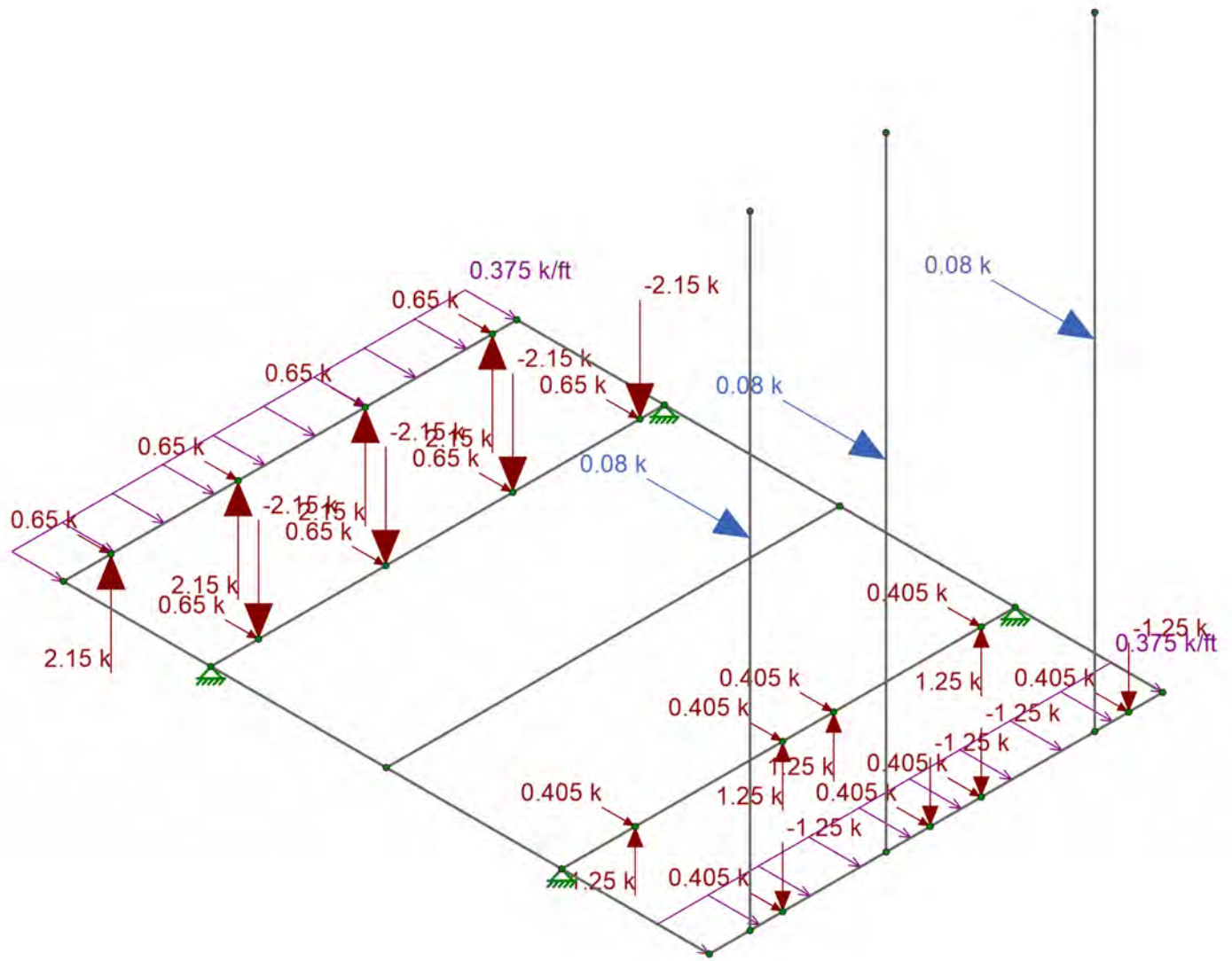
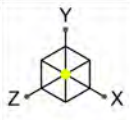
Verizon AK Shampine Platform

Platform Live Load

SK-5

Nov 10, 2023 at 04:02 PM

Platform.r3d



Loads: BLC 6, Seismic X



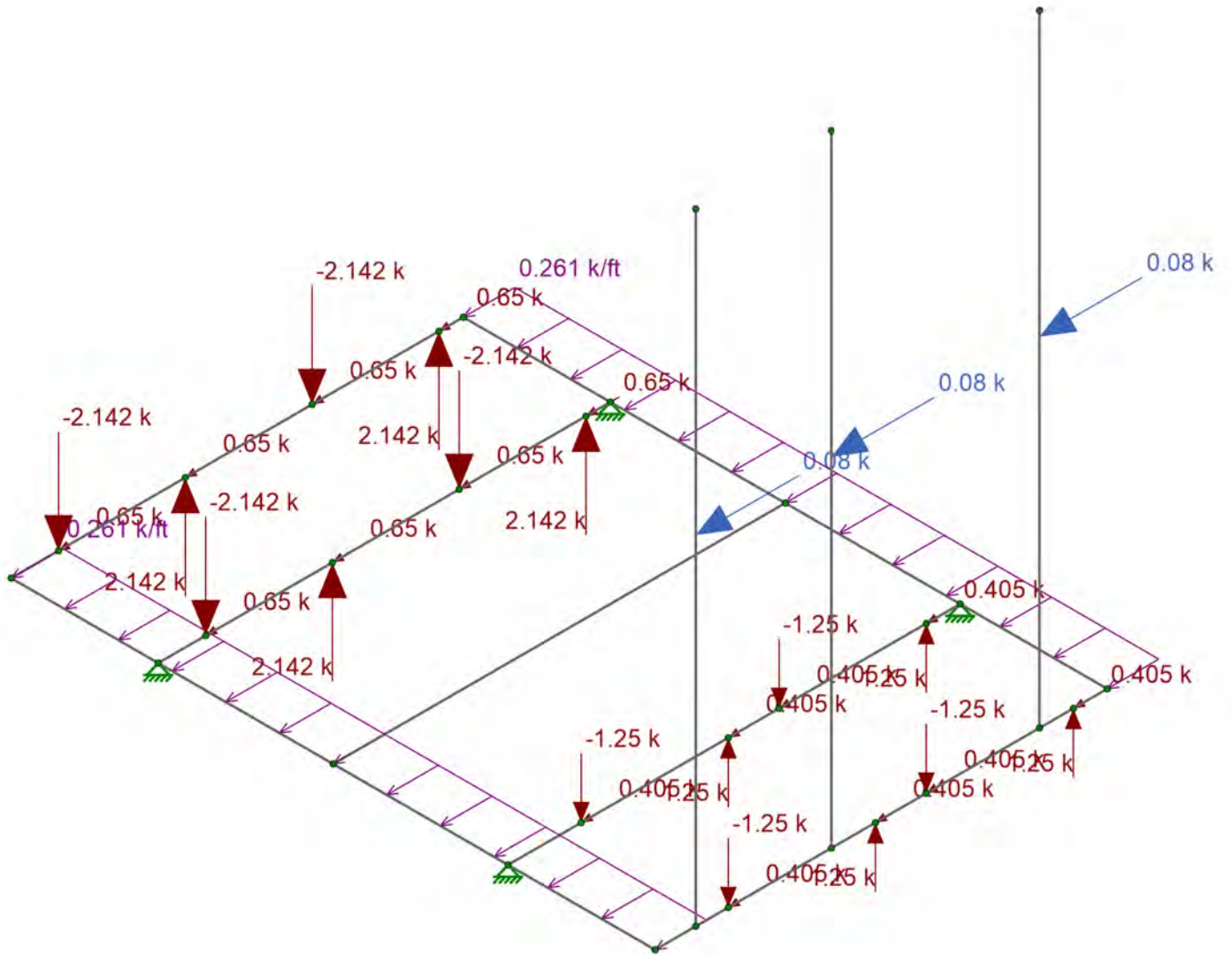
Quantum  
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Verizon AK Shampine Platform

Seismic Load X

SK-6

Nov 10, 2023 at 04:04 PM  
Platform.r3d



Loads: BLC 7, Seismic Z



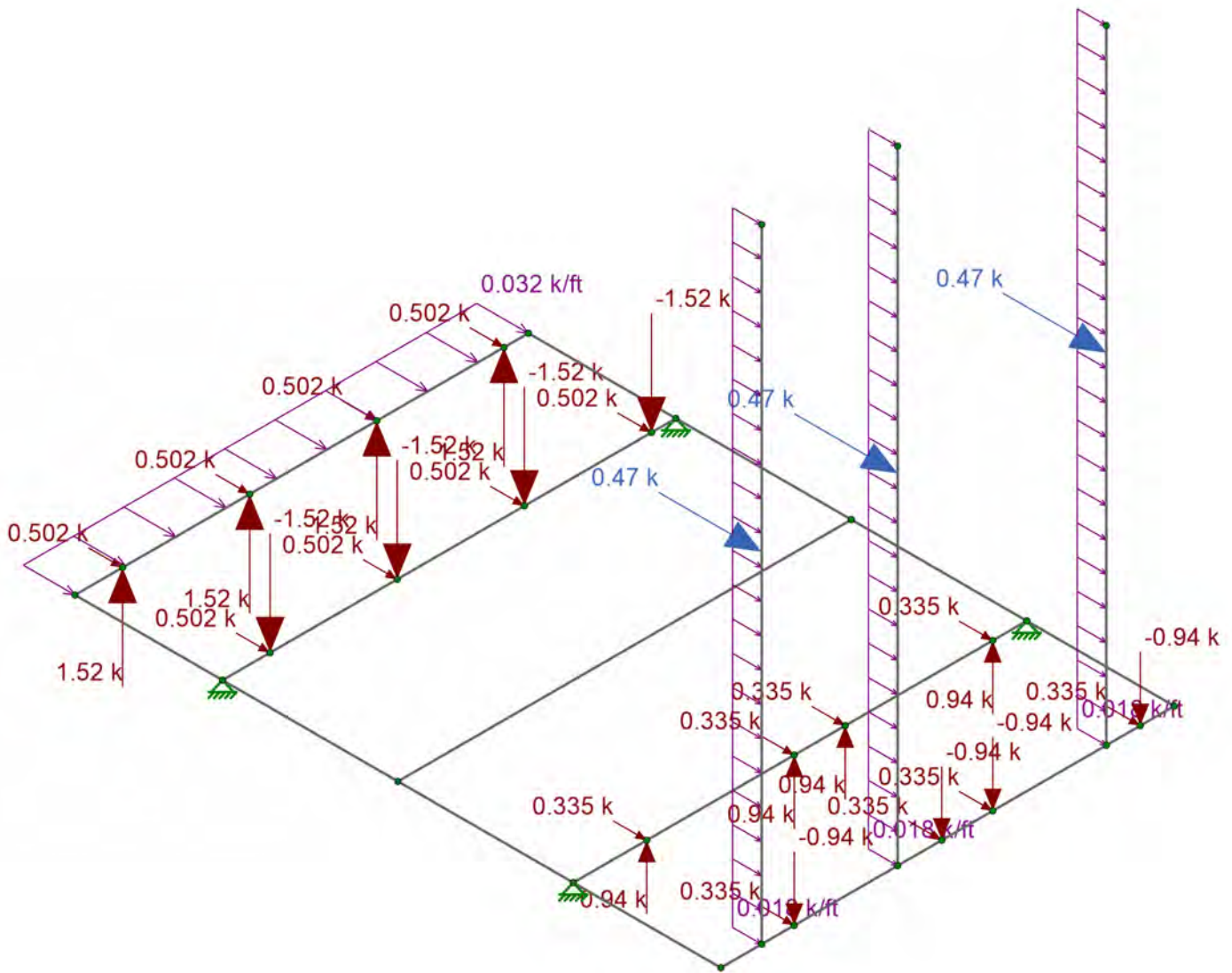
Quantum  
FRU  
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Verizon AK Shampine Platform

Seismic Load Z

SK-7

Nov 10, 2023 at 04:04 PM  
Platform.r3d



Loads: BLC 8, Wind X



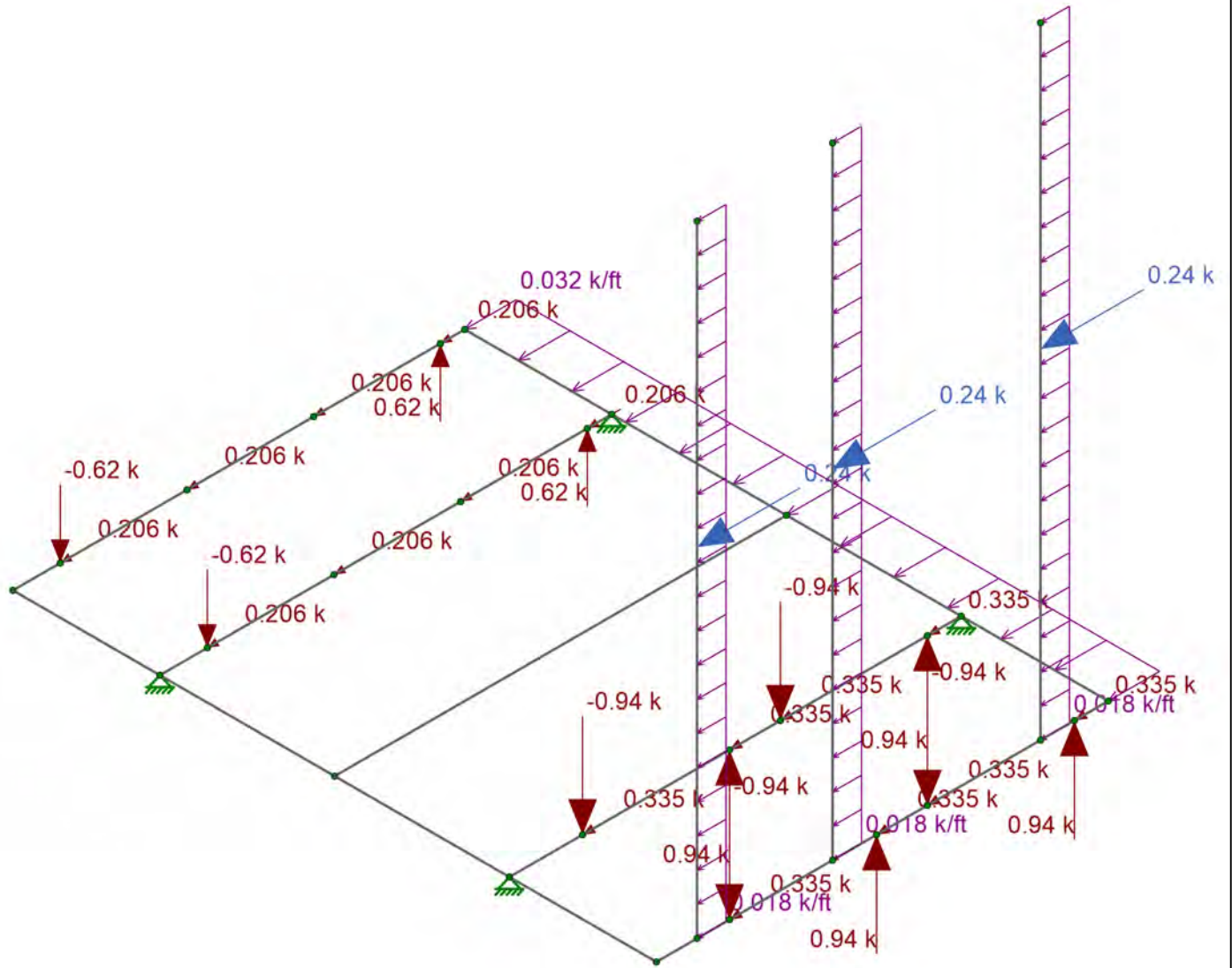
Quantum  
FRU  
23459.01

Verizon AK Shampine Platform

Wind Load X

SK-8

Nov 10, 2023 at 04:05 PM  
Platform.r3d



Loads: BLC 9, Wind Z



Quantum  
FRU  
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Verizon AK Shampine Platform

Wind Load Z

SK-9

Nov 10, 2023 at 04:06 PM  
Platform.r3d



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**FOUNDATION LOADS (FROM RISA-3D MODEL - ALL ASD)**

LC	NODE	Rx (K)	Ry (K)	Rz (K)
DL	N5	0.00	3.94	0.00
	N6	0.00	3.58	0.00
	N7	0.00	1.89	0.00
	N8	0.00	1.72	0.00
LL	N5	0.00	0.63	0.00
	N6	0.00	0.63	0.00
	N7	0.00	0.63	0.00
	N8	0.00	0.63	0.00
SL	N5	0.00	2.93	0.00
	N6	0.00	2.93	0.00
	N7	0.00	2.93	0.00
	N8	0.00	2.93	0.00
ELX	N5	-2.79	-2.20	0.71
	N6	-2.60	-1.97	-0.71
	N7	-2.18	2.20	-0.64
	N8	-2.00	1.97	0.64
ELZ	N5	0.52	-1.74	-2.77
	N6	-0.52	1.74	-2.67
	N7	-0.40	-1.21	-2.11
	N8	0.40	1.20	-2.01
WLX	N5	-1.55	-2.10	0.34
	N6	-1.41	-2.06	-0.33
	N7	-1.61	2.10	-0.47
	N8	-1.60	2.06	0.47
WLZ	N5	-0.19	-0.45	-0.61
	N6	0.19	0.45	-0.52
	N7	-0.48	-1.75	-1.56
	N8	0.48	1.75	-1.41

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**VERIZON AK2 –SHAMPINE EQUIPMENT FOUNDATION**

5182 N PITTMAN RD  
WASILLA, AK 99654

QUANTUM JOB NUMBER: 23459.01

ADAPT CONSULTING JOB NUMBER: AK23-22581-STR

# FOUNDATION CALCULATIONS

**Combined Footing**

LIC# : KW-06016450, Build:20.23.10.02

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**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Seismic)**

**Code References**

Calculations per ACI 318-14, IBC 2015, CBC 2016, ASCE 7-10  
 Load Combinations Used : ASCE 7-10

**General Information**

**Material Properties**

f _c : Concrete 28 day strength	4.0 ksi
f _y : Rebar Yield	60.0 ksi
E _c : Concrete Elastic Modulus	3,605.0 ksi
Concrete Density	150.0 pcf
φ : Phi Values	Flexure : 0.90
	Shear : 0.750

**Analysis/Design Settings**

Calculate footing weight as dead load ?	Yes
Calculate Pedestal weight as dead load ?	No
Min Steel % Bending Reinf (based on 'd')	
Min Allow % Temp Reinf (based on thick)	0.00180
Min. Overturning Safety Factor	1.50: 1
Min. Sliding Safety Factor	1.0: 1

**Soil Information**

Allowable Soil Bearing	1.50 ksf
Increase Bearing By Footing Weight	Yes
Soil Passive Sliding Resistance	350.0 pcf
<i>(Uses entry for "Footing base depth below soil surface" for force)</i>	
Coefficient of Soil/Concrete Friction	0.350

**Soil Bearing Increase**

Footing base depth below soil surface	2.750 ft
Increases based on footing Depth . . . .	
Allowable pressure increase per foot when base of footing is below	ksf ft
Increases based on footing Width . . .	
Allowable pressure increase per foot when maximum length or width is greater tha	ksf ft
Maximum Allowed Bearing Pressure	10.0 ksf
<i>(A value of zero implies no limit)</i>	
Adjusted Allowable Soil Bearing	1.875 ksf
<i>(Allowable Soil Bearing adjusted for footing weight and depth &amp; width increases as specified by user.)</i>	

**Dimensions & Reinforcing**

Distance Left of Column #1 = 1.50 ft	Pedestal dimensions...	Col #1	Col #2	<b>Bars left of Col #1</b>	Count	Size #	As Provided	As Req'd
Between Columns = 5.0 ft								
Distance Right of Column #2 = 1.50 ft	Sq. Dim. = 15.0	15.0 in		Bottom Bars	3.0	5	0.930	0.4860 in^2
Total Footing Length = 8.0 ft	Height =			Top Bars	3.0	5	0.930	0.4860 in^2
Footing Width = 1.50 ft				<b>Bars Btwn Cols</b>				
Footing Thickness = 30.0 in				Bottom Bars	3.0	5	0.930	0.4860 in^2
				Top Bars	3.0	5	0.930	0.4860 in^2
Rebar Center to Concrete Edge @ Top = 3.0 in				<b>Bars Right of Col #2</b>				
Rebar Center to Concrete Edge @ Bottom = 3.0 in				Bottom Bars	3.0	5	0.930	0.4860 in^2
				Top Bars	3.0	5	0.930	0.4860 in^2

**Applied Loads**

Applied @ Left Column	D	Lr	L	S	W	E	H
Axial Load Downward =	3.40		0.6340	2.931	1.80	2.20	k
Moment (+CW) =							k-ft
Shear (+X) =					1.40	2.30	k
<b>Applied @ Right Column</b>							
Axial Load Downward =	3.40		0.6340	2.931	-1.50	-2.20	k
Moment (+CW) =							k-ft
Shear (+X) =					1.40	2.90	k
<b>Overburden</b> =							

**Combined Footing**

**DESCRIPTION:** Lateral Loads along the longitudinal of the strip footings (Seismic)

**DESIGN SUMMARY**

**Design OK**

Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS 4.497	Overturning	12.225 k-ft	54.980 k-ft	+0.90D+E
PASS 1.063	Sliding	5.20 k	5.528 k	+0.90D+E
PASS 5.623	Uplift	2.20 k	12.370 k	+0.90D+E

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS 0.7748	Soil Bearing	1.453 ksf	1.875 ksf	+D+0.750L+0.750S-0.5250E
PASS 0.05585	1-way Shear - Col #1	5.298 psi	94.868 psi	+1.20D+0.50L+0.20S-E
PASS 0.05585	1-way Shear - Col #2	5.298 psi	94.868 psi	+1.20D+0.50L+0.20S+E
PASS 0.007896	2-way Punching - Col #1	1.498 psi	189.737 psi	+1.20D+0.50L+0.20S+E
PASS 0.007321	2-way Punching - Col #2	1.389 psi	189.737 psi	+1.20D+0.50L+0.50S+W
PASS No Bending	Flexure - Left of Col #1 - Top	0.0 k-ft	0.0 k-ft	N/A
PASS 0.007562	Flexure - Left of Col #1 - Bottom	0.8401 k-ft	111.087 k-ft	+1.20D+0.50L+1.60S
PASS 0.05244	Flexure - Between Cols - Top	-5.826 k-ft	111.087 k-ft	+1.20D+0.50L+0.20S+E
PASS 0.04755	Flexure - Between Cols - Bottom	5.283 k-ft	111.087 k-ft	+0.90D-E
PASS No Bending	Flexure - Right of Col #2 - Top	0.0 k-ft	0.0 k-ft	N/A
PASS 0.007562	Flexure - Right of Col #2 - Bottom	0.8401 k-ft	111.087 k-ft	+1.20D+0.50L+1.60S

**Soil Bearing**

Load Combination...	Total Bearing	Eccentricity from Ftg CL	Actual Soil Bearing Stress		Allowable	Actual / Allow Ratio
			@ Left Edge	@ Right Edge		
D Only	11.30 k	0.000 ft	0.94 ksf	0.94 ksf	1.88 ksf	0.502
+D+L	12.57 k	0.000 ft	1.05 ksf	1.05 ksf	1.88 ksf	0.559
+D+S	17.16 k	0.000 ft	1.43 ksf	1.43 ksf	1.88 ksf	0.763
+D+0.750L	12.25 k	0.000 ft	1.02 ksf	1.02 ksf	1.88 ksf	0.544
+D+0.750L+0.750S	16.65 k	0.000 ft	1.39 ksf	1.39 ksf	1.88 ksf	0.740
+D+0.60W	11.48 k	-0.065 ft	1.00 ksf	0.91 ksf	1.88 ksf	0.535
+D-0.60W	11.12 k	0.067 ft	0.88 ksf	0.97 ksf	1.88 ksf	0.519
+D+E	11.30 k	0.177 ft	0.82 ksf	1.07 ksf	1.88 ksf	0.569
+D-E	11.30 k	-0.177 ft	1.07 ksf	0.82 ksf	1.88 ksf	0.569
+D+0.750L+0.450W	12.39 k	-0.045 ft	1.07 ksf	1.00 ksf	1.88 ksf	0.569
+D+0.750L-0.450W	12.12 k	0.046 ft	0.97 ksf	1.04 ksf	1.88 ksf	0.557
+D+0.750L+0.750S+0.450W	16.78 k	-0.034 ft	1.43 ksf	1.36 ksf	1.88 ksf	0.765
+D+0.750L+0.750S-0.450W	16.51 k	0.034 ft	1.34 ksf	1.41 ksf	1.88 ksf	0.753
+D+0.750L+0.750S+0.5250E	16.65 k	0.063 ft	1.32 ksf	1.45 ksf	1.88 ksf	0.775
+D+0.750L+0.750S-0.5250E	16.65 k	-0.063 ft	1.45 ksf	1.32 ksf	1.88 ksf	0.775
+0.90D+W	10.47 k	-0.119 ft	0.95 ksf	0.79 ksf	1.88 ksf	0.507
+0.90D-W	9.87 k	0.127 ft	0.74 ksf	0.90 ksf	1.88 ksf	0.480
+0.90D+E	10.17 k	0.197 ft	0.72 ksf	0.97 ksf	1.88 ksf	0.518
+0.90D-E	10.17 k	-0.197 ft	0.97 ksf	0.72 ksf	1.88 ksf	0.519

**Overturning Stability**

Load Combination...	Moments about Left Edge k-ft			Moments about Right Edge k-ft		
	Overturning	Resisting	Ratio	Overturning	Resisting	Ratio
D Only	0.00	0.00	999.000	0.00	0.00	999.000
+D+L	0.00	0.00	999.000	0.00	0.00	999.000
+D+S	0.00	0.00	999.000	0.00	0.00	999.000
+D+0.750L	0.00	0.00	999.000	0.00	0.00	999.000
+D+0.750L+0.750S	0.00	0.00	999.000	0.00	0.00	999.000
+D+0.750L+0.450W	4.39	53.37	12.164	4.16	54.27	13.038
+D+0.750L-0.450W	4.37	53.39	12.232	5.27	53.17	10.098
+D+0.750L+0.750S+0.450W	4.39	70.96	16.172	4.16	71.86	17.262
+D+0.750L+0.750S-0.450W	4.37	70.98	16.261	5.27	70.75	13.438
+D+0.750L+0.750S+0.5250E	5.63	75.15	13.346	6.42	74.10	11.545
+D+0.750L+0.750S-0.5250E	6.42	74.10	11.545	5.63	75.15	13.346
+0.90D+E	10.73	56.98	5.313	12.23	54.98	4.497
+0.90D-E	12.23	54.98	4.497	10.73	56.98	5.313

**Combined Footing**

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Seismic)**

**Sliding Stability**

Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio
D Only	0.00 k	5.92 k	999
+D+L	0.00 k	6.37 k	999
+D+S	0.00 k	7.98 k	999
+D+0.750L	0.00 k	6.26 k	999
+D+0.750L+0.750S	0.00 k	7.80 k	999
+D+0.750L+0.450W	1.26 k	6.30 k	5.003
+D+0.750L-0.450W	-1.26 k	6.21 k	4.928
+D+0.750L+0.750S+0.450W	1.26 k	7.84 k	6.224
+D+0.750L+0.750S-0.450W	-1.26 k	7.75 k	6.149
+D+0.750L+0.750S+0.5250E	2.73 k	7.80 k	2.855
+D+0.750L+0.750S-0.5250E	-2.73 k	7.80 k	2.855
+0.90D+E	5.20 k	5.53 k	1.063
+0.90D-E	-5.20 k	5.53 k	1.063

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D-E	0.000	0.000	0	0.000	0	0.000	0.000	0.000
+0.90D-E	0.000	0.020	0	0.000	0	0.000	0.000	0.000
+0.90D-E	0.000	0.040	0	0.000	0	0.000	0.000	0.000
+0.90D-E	0.000	0.060	0	0.000	0	0.000	0.000	0.000
+0.90D-E	0.000	0.080	0	0.000	0	0.000	0.000	0.000
+1.20D+0.50L+1.60S	0.011	0.100	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.016	0.120	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.022	0.140	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.029	0.160	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.037	0.180	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.045	0.200	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.055	0.220	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.065	0.240	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.077	0.260	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.089	0.280	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.102	0.300	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.116	0.320	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.131	0.340	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.147	0.360	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.164	0.380	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.182	0.400	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.200	0.420	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.220	0.440	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.240	0.460	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.262	0.480	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.284	0.500	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.307	0.520	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.331	0.540	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.356	0.560	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.382	0.580	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.409	0.600	Bottom	0.486	Min Temp %	0.930	111.087	0.004
+1.20D+0.50L+1.60S	0.437	0.620	Bottom	0.486	Min Temp %	0.930	111.087	0.004
+1.20D+0.50L+1.60S	0.465	0.640	Bottom	0.486	Min Temp %	0.930	111.087	0.004
+1.20D+0.50L+1.60S	0.495	0.660	Bottom	0.486	Min Temp %	0.930	111.087	0.004
+1.20D+0.50L+1.60S	0.525	0.680	Bottom	0.486	Min Temp %	0.930	111.087	0.005
+1.20D+0.50L+1.60S	0.557	0.700	Bottom	0.486	Min Temp %	0.930	111.087	0.005
+1.20D+0.50L+1.60S	0.589	0.720	Bottom	0.486	Min Temp %	0.930	111.087	0.005
+1.20D+0.50L+1.60S	0.622	0.740	Bottom	0.486	Min Temp %	0.930	111.087	0.006
+1.20D+0.50L+1.60S	0.656	0.760	Bottom	0.486	Min Temp %	0.930	111.087	0.006
+1.20D+0.50L+1.60S	0.691	0.780	Bottom	0.486	Min Temp %	0.930	111.087	0.006
+1.20D+0.50L+1.60S	0.727	0.800	Bottom	0.486	Min Temp %	0.930	111.087	0.007
+1.20D+0.50L+1.60S	0.764	0.820	Bottom	0.486	Min Temp %	0.930	111.087	0.007
+1.20D+0.50L+1.60S	0.801	0.840	Bottom	0.486	Min Temp %	0.930	111.087	0.007
+1.20D+0.50L+1.60S	0.840	0.860	Bottom	0.486	Min Temp %	0.930	111.087	0.008
+1.20D+0.50L+1.60S	0.879	0.880	Bottom	0.486	Min Temp %	0.930	111.087	0.008
+1.20D+0.50L+1.60S	0.918	0.900	Bottom	0.486	Min Temp %	0.930	111.087	0.008
+1.20D+0.50L+1.60S	0.954	0.920	Bottom	0.486	Min Temp %	0.930	111.087	0.009

**Combined Footing**

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Seismic)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+0.50L+1.60S	0.988	0.940	Bottom	0.486	Min Temp %	0.930	111.087	0.009
+1.20D+0.50L+1.60S	1.021	0.960	Bottom	0.486	Min Temp %	0.930	111.087	0.009
+1.20D+0.50L+1.60S	1.051	0.980	Bottom	0.486	Min Temp %	0.930	111.087	0.009
+1.20D+0.50L+1.60S	1.079	1.000	Bottom	0.486	Min Temp %	0.930	111.087	0.010
+1.20D+0.50L+1.60S	1.105	1.020	Bottom	0.486	Min Temp %	0.930	111.087	0.010
+1.20D+0.50L+1.60S	1.130	1.040	Bottom	0.486	Min Temp %	0.930	111.087	0.010
+1.20D+0.50L+1.60S	1.152	1.060	Bottom	0.486	Min Temp %	0.930	111.087	0.010
+1.20D+0.50L+1.60S	1.172	1.080	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.190	1.100	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.207	1.120	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.221	1.140	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.233	1.160	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.243	1.180	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.252	1.200	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.258	1.220	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.262	1.240	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.264	1.260	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.265	1.280	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.263	1.300	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.259	1.320	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.254	1.340	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.246	1.360	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.236	1.380	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.224	1.400	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.211	1.420	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+1.60S-0.50W	1.195	1.440	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+1.60S-0.50W	1.185	1.460	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+1.60S-0.50W	1.172	1.480	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+1.60S-0.50W	1.158	1.500	Bottom	0.486	Min Temp %	0.930	111.087	0.010
+1.20D+0.50L+0.20S+E	5.805	1.520	Bottom	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	5.763	1.540	Bottom	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	5.719	1.560	Bottom	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	5.674	1.580	Bottom	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	5.626	1.600	Bottom	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	5.577	1.620	Bottom	0.486	Min Temp %	0.930	111.087	0.050
+1.20D+0.50L+0.20S+E	5.526	1.640	Bottom	0.486	Min Temp %	0.930	111.087	0.050
+1.20D+0.50L+0.20S+E	5.473	1.660	Bottom	0.486	Min Temp %	0.930	111.087	0.049
+1.20D+0.50L+0.20S+E	5.419	1.680	Bottom	0.486	Min Temp %	0.930	111.087	0.049
+1.20D+0.50L+0.20S+E	5.362	1.700	Bottom	0.486	Min Temp %	0.930	111.087	0.048
+1.20D+0.50L+0.20S+E	5.304	1.720	Bottom	0.486	Min Temp %	0.930	111.087	0.048
+1.20D+0.50L+0.20S+E	5.243	1.740	Bottom	0.486	Min Temp %	0.930	111.087	0.047
+1.20D+0.50L+0.20S+E	5.181	1.760	Bottom	0.486	Min Temp %	0.930	111.087	0.047
+1.20D+0.50L+0.20S+E	5.117	1.780	Bottom	0.486	Min Temp %	0.930	111.087	0.046
+1.20D+0.50L+0.20S+E	5.052	1.800	Bottom	0.486	Min Temp %	0.930	111.087	0.045
+1.20D+0.50L+0.20S+E	4.984	1.820	Bottom	0.486	Min Temp %	0.930	111.087	0.045
+1.20D+0.50L+0.20S+E	4.914	1.840	Bottom	0.486	Min Temp %	0.930	111.087	0.044
+1.20D+0.50L+0.20S+E	4.843	1.860	Bottom	0.486	Min Temp %	0.930	111.087	0.044
+1.20D+0.50L+0.20S+E	4.770	1.880	Bottom	0.486	Min Temp %	0.930	111.087	0.043
+1.20D+0.50L+0.20S+E	4.695	1.900	Bottom	0.486	Min Temp %	0.930	111.087	0.042
+1.20D+0.50L+0.20S+E	4.618	1.920	Bottom	0.486	Min Temp %	0.930	111.087	0.042
+1.20D+0.50L+0.20S+E	4.540	1.940	Bottom	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+0.20S+E	4.459	1.960	Bottom	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+0.50L+0.20S+E	4.377	1.980	Bottom	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.355	2.000	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.350	2.020	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.345	2.040	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.340	2.060	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.336	2.080	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.333	2.100	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.329	2.120	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.326	2.140	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.322	2.160	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.318	2.180	Top	0.486	Min Temp %	0.930	111.087	0.039

**Combined Footing**

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Seismic)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+0.50L+0.20S-E	-4.313	2.200	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.307	2.220	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.302	2.240	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.295	2.260	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.288	2.280	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.281	2.300	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+0.50L+0.20S-E	-4.272	2.320	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.264	2.340	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.255	2.360	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.245	2.380	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.235	2.400	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.224	2.420	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.213	2.440	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.201	2.460	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.189	2.480	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.176	2.500	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+0.50L+0.20S-E	-4.163	2.520	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+0.50L+0.20S-E	-4.149	2.540	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+0.50L+0.20S-E	-4.135	2.560	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+0.50L+0.20S-E	-4.120	2.580	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+0.50L+0.20S-E	-4.104	2.600	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+0.50L+0.20S-E	-4.088	2.620	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+0.50L+0.20S-E	-4.072	2.640	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+0.50L+0.20S-E	-4.055	2.660	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+0.50L+0.20S-E	-4.037	2.680	Top	0.486	Min Temp %	0.930	111.087	0.036
+1.20D+0.50L+0.20S-E	-4.019	2.700	Top	0.486	Min Temp %	0.930	111.087	0.036
+1.20D+0.50L+0.20S-E	-4.001	2.720	Top	0.486	Min Temp %	0.930	111.087	0.036
+1.20D+0.50L+0.20S-E	-3.982	2.740	Top	0.486	Min Temp %	0.930	111.087	0.036
+1.20D+0.50L+0.20S-E	-3.962	2.760	Top	0.486	Min Temp %	0.930	111.087	0.036
+1.20D+0.50L+0.20S-E	-3.942	2.780	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+0.50L+0.20S-E	-3.921	2.800	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+0.50L+0.20S-E	-3.900	2.820	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+0.50L+0.20S-E	-3.878	2.840	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+0.50L+0.20S-E	-3.856	2.860	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+0.50L+0.20S-E	-3.833	2.880	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+1.60S-0.50W	-3.814	2.900	Top	0.486	Min Temp %	0.930	111.087	0.034
+1.20D+1.60S-0.50W	-3.847	2.920	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+1.60S-0.50W	-3.879	2.940	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+1.60S-0.50W	-3.911	2.960	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+1.60S-0.50W	-3.941	2.980	Top	0.486	Min Temp %	0.930	111.087	0.035
+1.20D+1.60S-0.50W	-3.971	3.000	Top	0.486	Min Temp %	0.930	111.087	0.036
+1.20D+1.60S-0.50W	-3.999	3.020	Top	0.486	Min Temp %	0.930	111.087	0.036
+1.20D+1.60S-0.50W	-4.027	3.040	Top	0.486	Min Temp %	0.930	111.087	0.036
+1.20D+1.60S-0.50W	-4.054	3.060	Top	0.486	Min Temp %	0.930	111.087	0.036
+1.20D+1.60S-0.50W	-4.080	3.080	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+1.60S-0.50W	-4.106	3.100	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+1.60S-0.50W	-4.130	3.120	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+1.60S-0.50W	-4.154	3.140	Top	0.486	Min Temp %	0.930	111.087	0.037
+1.20D+1.60S-0.50W	-4.176	3.160	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+1.60S-0.50W	-4.198	3.180	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+1.60S-0.50W	-4.219	3.200	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+1.60S-0.50W	-4.239	3.220	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+1.60S-0.50W	-4.259	3.240	Top	0.486	Min Temp %	0.930	111.087	0.038
+1.20D+1.60S-0.50W	-4.277	3.260	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+1.60S-0.50W	-4.294	3.280	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+1.60S-0.50W	-4.311	3.300	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+1.60S-0.50W	-4.327	3.320	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+1.60S-0.50W	-4.342	3.340	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+1.60S-0.50W	-4.356	3.360	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+1.60S-0.50W	-4.369	3.380	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+1.60S-0.50W	-4.381	3.400	Top	0.486	Min Temp %	0.930	111.087	0.039
+1.20D+1.60S-0.50W	-4.393	3.420	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.403	3.440	Top	0.486	Min Temp %	0.930	111.087	0.040

**Combined Footing**

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Seismic)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S-0.50W	-4.413	3.460	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.422	3.480	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.430	3.500	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.437	3.520	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.443	3.540	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.449	3.560	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.453	3.580	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.457	3.600	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.459	3.620	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.461	3.640	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.462	3.660	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.463	3.680	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.462	3.700	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S-0.50W	-4.460	3.720	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+0.50L+1.60S	-4.467	3.740	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+0.50L+1.60S	-4.478	3.760	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+0.50L+1.60S	-4.488	3.780	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+0.50L+1.60S	-4.498	3.800	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+0.50L+1.60S	-4.506	3.820	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.514	3.840	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.521	3.860	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.527	3.880	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.532	3.900	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.536	3.920	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.539	3.940	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.541	3.960	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.543	3.980	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.543	4.000	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.543	4.020	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.541	4.040	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.539	4.060	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.536	4.080	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.532	4.100	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.527	4.120	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.521	4.140	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+1.60S	-4.514	4.160	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.514	4.180	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.520	4.200	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.525	4.220	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.529	4.240	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.532	4.260	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.534	4.280	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.535	4.300	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.536	4.320	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.535	4.340	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.534	4.360	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.532	4.380	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.529	4.400	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.525	4.420	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.520	4.440	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.514	4.460	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.508	4.480	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.500	4.500	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+1.60S+0.50W	-4.492	4.520	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+1.60S+0.50W	-4.483	4.540	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+0.50L+0.20S+E	-4.487	4.560	Top	0.486	Min Temp %	0.930	111.087	0.040
+1.20D+0.50L+0.20S+E	-4.524	4.580	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+0.20S+E	-4.561	4.600	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+0.20S+E	-4.597	4.620	Top	0.486	Min Temp %	0.930	111.087	0.041
+1.20D+0.50L+0.20S+E	-4.632	4.640	Top	0.486	Min Temp %	0.930	111.087	0.042
+1.20D+0.50L+0.20S+E	-4.668	4.660	Top	0.486	Min Temp %	0.930	111.087	0.042
+1.20D+0.50L+0.20S+E	-4.702	4.680	Top	0.486	Min Temp %	0.930	111.087	0.042
+1.20D+0.50L+0.20S+E	-4.736	4.700	Top	0.486	Min Temp %	0.930	111.087	0.043



**Combined Footing**

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Seismic)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+0.50L+0.20S+E	-4.770	4.720	Top	0.486	Min Temp %	0.930	111.087	0.043
+1.20D+0.50L+0.20S+E	-4.803	4.740	Top	0.486	Min Temp %	0.930	111.087	0.043
+1.20D+0.50L+0.20S+E	-4.835	4.760	Top	0.486	Min Temp %	0.930	111.087	0.044
+1.20D+0.50L+0.20S+E	-4.867	4.780	Top	0.486	Min Temp %	0.930	111.087	0.044
+1.20D+0.50L+0.20S+E	-4.899	4.800	Top	0.486	Min Temp %	0.930	111.087	0.044
+1.20D+0.50L+0.20S+E	-4.930	4.820	Top	0.486	Min Temp %	0.930	111.087	0.044
+1.20D+0.50L+0.20S+E	-4.960	4.840	Top	0.486	Min Temp %	0.930	111.087	0.045
+1.20D+0.50L+0.20S+E	-4.990	4.860	Top	0.486	Min Temp %	0.930	111.087	0.045
+1.20D+0.50L+0.20S+E	-5.020	4.880	Top	0.486	Min Temp %	0.930	111.087	0.045
+1.20D+0.50L+0.20S+E	-5.049	4.900	Top	0.486	Min Temp %	0.930	111.087	0.045
+1.20D+0.50L+0.20S+E	-5.077	4.920	Top	0.486	Min Temp %	0.930	111.087	0.046
+1.20D+0.50L+0.20S+E	-5.105	4.940	Top	0.486	Min Temp %	0.930	111.087	0.046
+1.20D+0.50L+0.20S+E	-5.133	4.960	Top	0.486	Min Temp %	0.930	111.087	0.046
+1.20D+0.50L+0.20S+E	-5.160	4.980	Top	0.486	Min Temp %	0.930	111.087	0.046
+1.20D+0.50L+0.20S+E	-5.186	5.000	Top	0.486	Min Temp %	0.930	111.087	0.047
+1.20D+0.50L+0.20S+E	-5.212	5.020	Top	0.486	Min Temp %	0.930	111.087	0.047
+1.20D+0.50L+0.20S+E	-5.237	5.040	Top	0.486	Min Temp %	0.930	111.087	0.047
+1.20D+0.50L+0.20S+E	-5.262	5.060	Top	0.486	Min Temp %	0.930	111.087	0.047
+1.20D+0.50L+0.20S+E	-5.286	5.080	Top	0.486	Min Temp %	0.930	111.087	0.048
+1.20D+0.50L+0.20S+E	-5.310	5.100	Top	0.486	Min Temp %	0.930	111.087	0.048
+1.20D+0.50L+0.20S+E	-5.333	5.120	Top	0.486	Min Temp %	0.930	111.087	0.048
+1.20D+0.50L+0.20S+E	-5.356	5.140	Top	0.486	Min Temp %	0.930	111.087	0.048
+1.20D+0.50L+0.20S+E	-5.378	5.160	Top	0.486	Min Temp %	0.930	111.087	0.048
+1.20D+0.50L+0.20S+E	-5.400	5.180	Top	0.486	Min Temp %	0.930	111.087	0.049
+1.20D+0.50L+0.20S+E	-5.421	5.200	Top	0.486	Min Temp %	0.930	111.087	0.049
+1.20D+0.50L+0.20S+E	-5.442	5.220	Top	0.486	Min Temp %	0.930	111.087	0.049
+1.20D+0.50L+0.20S+E	-5.462	5.240	Top	0.486	Min Temp %	0.930	111.087	0.049
+1.20D+0.50L+0.20S+E	-5.482	5.260	Top	0.486	Min Temp %	0.930	111.087	0.049
+1.20D+0.50L+0.20S+E	-5.501	5.280	Top	0.486	Min Temp %	0.930	111.087	0.050
+1.20D+0.50L+0.20S+E	-5.519	5.300	Top	0.486	Min Temp %	0.930	111.087	0.050
+1.20D+0.50L+0.20S+E	-5.537	5.320	Top	0.486	Min Temp %	0.930	111.087	0.050
+1.20D+0.50L+0.20S+E	-5.555	5.340	Top	0.486	Min Temp %	0.930	111.087	0.050
+1.20D+0.50L+0.20S+E	-5.572	5.360	Top	0.486	Min Temp %	0.930	111.087	0.050
+1.20D+0.50L+0.20S+E	-5.588	5.380	Top	0.486	Min Temp %	0.930	111.087	0.050
+1.20D+0.50L+0.20S+E	-5.604	5.400	Top	0.486	Min Temp %	0.930	111.087	0.050
+1.20D+0.50L+0.20S+E	-5.620	5.420	Top	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	-5.635	5.440	Top	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	-5.649	5.460	Top	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	-5.663	5.480	Top	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	-5.676	5.500	Top	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	-5.689	5.520	Top	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	-5.701	5.540	Top	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	-5.713	5.560	Top	0.486	Min Temp %	0.930	111.087	0.051
+1.20D+0.50L+0.20S+E	-5.724	5.580	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.735	5.600	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.745	5.620	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.755	5.640	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.764	5.660	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.772	5.680	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.781	5.700	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.788	5.720	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.795	5.740	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.802	5.760	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.807	5.780	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.813	5.800	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.818	5.820	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.822	5.840	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.826	5.860	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.829	5.880	Top	0.486	Min Temp %	0.930	111.087	0.052
+1.20D+0.50L+0.20S+E	-5.833	5.900	Top	0.486	Min Temp %	0.930	111.087	0.053
+1.20D+0.50L+0.20S+E	-5.836	5.920	Top	0.486	Min Temp %	0.930	111.087	0.053
+1.20D+0.50L+0.20S+E	-5.840	5.940	Top	0.486	Min Temp %	0.930	111.087	0.053
+1.20D+0.50L+0.20S+E	-5.845	5.960	Top	0.486	Min Temp %	0.930	111.087	0.053

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Combined Footing**

Project File: Strip footing.ec6

LIC# : KW-06016450, Build:20.23.10.02

QUANTUM CONSULTING ENGINEERS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Seismic)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+0.50L+0.20S+E	-5.850	5.980	Top	0.486	Min Temp %	0.930	111.087	0.053
+1.20D+0.50L+0.20S+E	-5.855	6.000	Top	0.486	Min Temp %	0.930	111.087	0.053
+1.20D+0.50L+0.20S-E	5.877	6.020	Bottom	0.486	Min Temp %	0.930	111.087	0.053
+1.20D+0.50L+0.20S-E	5.959	6.040	Bottom	0.486	Min Temp %	0.930	111.087	0.054
+1.20D+0.50L+0.20S-E	6.040	6.060	Bottom	0.486	Min Temp %	0.930	111.087	0.054
+1.20D+0.50L+0.20S-E	6.118	6.080	Bottom	0.486	Min Temp %	0.930	111.087	0.055
+1.20D+0.50L+0.20S-E	6.195	6.100	Bottom	0.486	Min Temp %	0.930	111.087	0.056
+1.20D+0.50L+0.20S-E	6.270	6.120	Bottom	0.486	Min Temp %	0.930	111.087	0.056
+1.20D+0.50L+0.20S-E	6.343	6.140	Bottom	0.486	Min Temp %	0.930	111.087	0.057
+1.20D+0.50L+0.20S-E	6.414	6.160	Bottom	0.486	Min Temp %	0.930	111.087	0.058
+1.20D+0.50L+0.20S-E	6.484	6.180	Bottom	0.486	Min Temp %	0.930	111.087	0.058
+1.20D+0.50L+0.20S-E	6.552	6.200	Bottom	0.486	Min Temp %	0.930	111.087	0.059
+1.20D+0.50L+0.20S-E	6.617	6.220	Bottom	0.486	Min Temp %	0.930	111.087	0.060
+1.20D+0.50L+0.20S-E	6.681	6.240	Bottom	0.486	Min Temp %	0.930	111.087	0.060
+1.20D+0.50L+0.20S-E	6.743	6.260	Bottom	0.486	Min Temp %	0.930	111.087	0.061
+1.20D+0.50L+0.20S-E	6.804	6.280	Bottom	0.486	Min Temp %	0.930	111.087	0.061
+1.20D+0.50L+0.20S-E	6.862	6.300	Bottom	0.486	Min Temp %	0.930	111.087	0.062
+1.20D+0.50L+0.20S-E	6.919	6.320	Bottom	0.486	Min Temp %	0.930	111.087	0.062
+1.20D+0.50L+0.20S-E	6.973	6.340	Bottom	0.486	Min Temp %	0.930	111.087	0.063
+1.20D+0.50L+0.20S-E	7.026	6.360	Bottom	0.486	Min Temp %	0.930	111.087	0.063
+1.20D+0.50L+0.20S-E	7.077	6.380	Bottom	0.486	Min Temp %	0.930	111.087	0.064
+1.20D+0.50L+0.20S-E	7.126	6.400	Bottom	0.486	Min Temp %	0.930	111.087	0.064
+1.20D+0.50L+0.20S-E	7.174	6.420	Bottom	0.486	Min Temp %	0.930	111.087	0.065
+1.20D+0.50L+0.20S-E	7.219	6.440	Bottom	0.486	Min Temp %	0.930	111.087	0.065
+1.20D+0.50L+0.20S-E	7.263	6.460	Bottom	0.486	Min Temp %	0.930	111.087	0.065
+1.20D+0.50L+0.20S-E	7.305	6.480	Bottom	0.486	Min Temp %	0.930	111.087	0.066
+1.20D+0.50L+0.20S-E	7.345	6.500	Bottom	0.486	Min Temp %	0.930	111.087	0.066
+1.20D+1.60S+0.50W	1.191	6.520	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+1.60S+0.50W	1.204	6.540	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+1.60S+0.50W	1.215	6.560	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+1.60S+0.50W	1.224	6.580	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+1.60S+0.50W	1.232	6.600	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+1.60S+0.50W	1.238	6.620	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.246	6.640	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.254	6.660	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.259	6.680	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.263	6.700	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.265	6.720	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.264	6.740	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.262	6.760	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.258	6.780	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.252	6.800	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.243	6.820	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.233	6.840	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.221	6.860	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.207	6.880	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.190	6.900	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.172	6.920	Bottom	0.486	Min Temp %	0.930	111.087	0.011
+1.20D+0.50L+1.60S	1.152	6.940	Bottom	0.486	Min Temp %	0.930	111.087	0.010
+1.20D+0.50L+1.60S	1.130	6.960	Bottom	0.486	Min Temp %	0.930	111.087	0.010
+1.20D+0.50L+1.60S	1.105	6.980	Bottom	0.486	Min Temp %	0.930	111.087	0.010
+1.20D+0.50L+1.60S	1.079	7.000	Bottom	0.486	Min Temp %	0.930	111.087	0.010
+1.20D+0.50L+1.60S	1.051	7.020	Bottom	0.486	Min Temp %	0.930	111.087	0.009
+1.20D+0.50L+1.60S	1.021	7.040	Bottom	0.486	Min Temp %	0.930	111.087	0.009
+1.20D+0.50L+1.60S	0.988	7.060	Bottom	0.486	Min Temp %	0.930	111.087	0.009
+1.20D+0.50L+1.60S	0.954	7.080	Bottom	0.486	Min Temp %	0.930	111.087	0.009
+1.20D+0.50L+1.60S	0.918	7.100	Bottom	0.486	Min Temp %	0.930	111.087	0.008
+1.20D+0.50L+1.60S	0.879	7.120	Bottom	0.486	Min Temp %	0.930	111.087	0.008
+1.20D+0.50L+1.60S	0.840	7.140	Bottom	0.486	Min Temp %	0.930	111.087	0.008
+1.20D+0.50L+1.60S	0.801	7.160	Bottom	0.486	Min Temp %	0.930	111.087	0.007
+1.20D+0.50L+1.60S	0.764	7.180	Bottom	0.486	Min Temp %	0.930	111.087	0.007
+1.20D+0.50L+1.60S	0.727	7.200	Bottom	0.486	Min Temp %	0.930	111.087	0.007
+1.20D+0.50L+1.60S	0.691	7.220	Bottom	0.486	Min Temp %	0.930	111.087	0.006

**Combined Footing**

Project File: Strip footing.ec6

LIC# : KW-06016450, Build:20.23.10.02

QUANTUM CONSULTING ENGINEERS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Seismic)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+0.50L+1.60S	0.656	7.240	Bottom	0.486	Min Temp %	0.930	111.087	0.006
+1.20D+0.50L+1.60S	0.622	7.260	Bottom	0.486	Min Temp %	0.930	111.087	0.006
+1.20D+0.50L+1.60S	0.589	7.280	Bottom	0.486	Min Temp %	0.930	111.087	0.005
+1.20D+0.50L+1.60S	0.557	7.300	Bottom	0.486	Min Temp %	0.930	111.087	0.005
+1.20D+0.50L+1.60S	0.525	7.320	Bottom	0.486	Min Temp %	0.930	111.087	0.005
+1.20D+0.50L+1.60S	0.495	7.340	Bottom	0.486	Min Temp %	0.930	111.087	0.004
+1.20D+0.50L+1.60S	0.465	7.360	Bottom	0.486	Min Temp %	0.930	111.087	0.004
+1.20D+0.50L+1.60S	0.437	7.380	Bottom	0.486	Min Temp %	0.930	111.087	0.004
+1.20D+0.50L+1.60S	0.409	7.400	Bottom	0.486	Min Temp %	0.930	111.087	0.004
+1.20D+0.50L+1.60S	0.382	7.420	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.356	7.440	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.331	7.460	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.307	7.480	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.284	7.500	Bottom	0.486	Min Temp %	0.930	111.087	0.003
+1.20D+0.50L+1.60S	0.262	7.520	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.240	7.540	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.220	7.560	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.200	7.580	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.182	7.600	Bottom	0.486	Min Temp %	0.930	111.087	0.002
+1.20D+0.50L+1.60S	0.164	7.620	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.147	7.640	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.131	7.660	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.116	7.680	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.102	7.700	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.089	7.720	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.077	7.740	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.065	7.760	Bottom	0.486	Min Temp %	0.930	111.087	0.001
+1.20D+0.50L+1.60S	0.055	7.780	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.045	7.800	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.037	7.820	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.029	7.840	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.022	7.860	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.016	7.880	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.011	7.900	Bottom	0.486	Min Temp %	0.930	111.087	0.000
+1.20D+0.50L+1.60S	0.000	7.920	0	0.000	0	0.000	0.000	0.000
+1.20D+0.50L+1.60S	0.000	7.940	0	0.000	0	0.000	0.000	0.000
+1.20D+0.50L+1.60S	0.000	7.960	0	0.000	0	0.000	0.000	0.000
+1.20D+0.50L+1.60S	0.000	7.980	0	0.000	0	0.000	0.000	0.000
+1.20D+0.50L+1.60S	0.000	8.000	0	0.000	0	0.000	0.000	0.000

**One Way Shear**

**Punching Shear**

Load Combination...	Phi Vn	vu @ Col #1	vu @ Col #2	Phi Vn	vu @ Col #1	vu @ Col #2
+1.40D	94.87 psi	0.00 psi	0.00 psi	189.74 psi	1.05psi	1.05 psi
+1.20D+1.60L	94.87 psi	0.00 psi	0.00 psi	189.74 psi	0.94 psi	0.94 psi
+1.20D+1.60L+0.50S	94.87 psi	0.00 psi	0.00 psi	189.74 psi	1.00psi	1.00 psi
+1.20D+0.50L	94.87 psi	0.00 psi	0.00 psi	189.74 psi	0.91 psi	0.91 psi
+1.20D+0.50W	94.87 psi	1.46 psi	1.46 psi	189.74 psi	1.06psi	1.11 psi
+1.20D-0.50W	94.87 psi	1.46 psi	1.46 psi	189.74 psi	0.74 psi	0.69 psi
+1.20D+0.50L+1.60S	94.87 psi	0.00 psi	0.00 psi	189.74 psi	1.10psi	1.10 psi
+1.20D+1.60S+0.50W	94.87 psi	1.46 psi	1.46 psi	189.74 psi	1.25psi	1.30 psi
+1.20D+1.60S-0.50W	94.87 psi	1.46 psi	1.46 psi	189.74 psi	0.93psi	0.88 psi
+1.20D+0.50L+W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	1.23psi	1.33 psi
+1.20D+0.50L-W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	0.59psi	0.49 psi
+1.20D+0.50L+0.50S+W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	1.29psi	1.39 psi
+1.20D+0.50L+0.50S-W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	0.65psi	0.55 psi
+1.20D+0.50L+0.20S+E	94.87 psi	5.30 psi	5.30 psi	189.74 psi	1.50psi	1.34 psi
+1.20D+0.50L+0.20S-E	94.87 psi	5.30 psi	5.30 psi	189.74 psi	0.37psi	0.53 psi
+0.90D+W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	0.99psi	1.09 psi
+0.90D-W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	0.35psi	0.25 psi
+0.90D+E	94.87 psi	5.30 psi	5.30 psi	189.74 psi	1.24 psi	1.08 psi

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Combined Footing

Project File: Strip footing.ec6

LIC# : KW-06016450, Build:20.23.10.02

QUANTUM CONSULTING ENGINEERS

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**DESCRIPTION:** Lateral Loads along the longitudinal of the strip footings (Seismic)

### One Way Shear

### Punching Shear

Load Combination...	Phi Vn	vu @ Col #1	vu @ Col #2	Phi Vn	vu @ Col #1	vu @ Col #2
+0.90D-E	94.87 psi	5.30 psi	5.30 psi	189.74 psi	0.11 psi	0.27 psi

## Combined Footing

Project File: Strip footing.ec6

LIC# : KW-06016450, Build:20.23.10.02

QUANTUM CONSULTING ENGINEERS

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**DESCRIPTION:** Lateral Loads along the longitudinal of the strip footings (Wind)

### Code References

Calculations per ACI 318-14, IBC 2015, CBC 2016, ASCE 7-10  
 Load Combinations Used : ASCE 7-10

### General Information

#### Material Properties

f _c : Concrete 28 day strength	4.0 ksi
f _y : Rebar Yield	60.0 ksi
E _c : Concrete Elastic Modulus	3,605.0 ksi
Concrete Density	150.0 pcf
φ : Phi Values	
Flexure :	0.90
Shear :	0.750

#### Analysis/Design Settings

Calculate footing weight as dead load ?	Yes
Calculate Pedestal weight as dead load ?	No
Min Steel % Bending Reinf (based on 'd')	
Min Allow % Temp Reinf (based on thick)	0.00180
Min. Overturning Safety Factor	1.50: 1
Min. Sliding Safety Factor	1.0: 1

### Soil Information

Allowable Soil Bearing	1.50 ksf
Increase Bearing By Footing Weight	No
Soil Passive Sliding Resistance	350.0 pcf
<i>(Uses entry for "Footing base depth below soil surface" for force)</i>	
Coefficient of Soil/Concrete Friction	0.350

#### Soil Bearing Increase

Footing base depth below soil surface	2.0 ft
Increases based on footing Depth . . . .	
Allowable pressure increase per foot	ksf
when base of footing is below	ft
Increases based on footing Width . . .	
Allowable pressure increase per foot	ksf
when maximum length or width is greater tha	ft
Maximum Allowed Bearing Pressure	10.0 ksf
<i>(A value of zero implies no limit)</i>	
Adjusted Allowable Soil Bearing	1.50 ksf
<i>(Allowable Soil Bearing adjusted for footing weight and depth &amp; width increases as specified by user.)</i>	

### Dimensions & Reinforcing

Distance Left of Column #1	=	1.250 ft	Pedestal dimensions...	Col #1	Col #2	<b>Bars left of Col #1</b>	Count	Size #	As Provided	As Req'd
Between Columns	=	5.0 ft								
Distance Right of Column #2	=	1.250 ft	Sq. Dim. =	15.0	15.0 in	Bottom Bars	3.0	5	0.930	0.2430 in^2
Total Footing Length	=	7.50 ft	Height =			Top Bars	3.0	5	0.930	0.2430 in^2
Footing Width	=	1.50 ft				<b>Bars Btwn Cols</b>				
Footing Thickness	=	15.0 in				Bottom Bars	3.0	5	0.930	0.2430 in^2
						Top Bars	3.0	5	0.930	0.2430 in^2
Rebar Center to Concrete Edge @ Top	=	3.0 in				<b>Bars Right of Col #2</b>				
Rebar Center to Concrete Edge @ Bottom	=	3.0 in				Bottom Bars	3.0	5	0.930	0.2430 in^2
						Top Bars	3.0	5	0.930	0.2430 in^2

### Applied Loads

Applied @ Left Column	D	Lr	L	S	W	E	H
Axial Load Downward	=	2.930	0.6340	2.931	1.750		k
Moment (+CW)	=						k-ft
Shear (+X)	=				1.560		k
<b>Applied @ Right Column</b>							
Axial Load Downward	=	2.660	0.6340	2.931	1.750		k
Moment (+CW)	=						k-ft
Shear (+X)	=				1.410		k
<b>Overburden</b>	=						

**Combined Footing**

Project File: Strip footing.ec6

LIC# : KW-06016450, Build:20.23.10.02

QUANTUM CONSULTING ENGINEERS

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**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Wind)**

**DESIGN SUMMARY**

**Design OK**

Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS 1.675	Overtuning	10.103 k-ft	16.919 k-ft	+0.60D-0.60W
PASS 1.001	Sliding	-1.782 k	1.784 k	+0.60D-0.60W
PASS 2.20	Uplift	2.10 k	4.620 k	+0.60D-0.60W

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS 0.9136	Soil Bearing	1.370 ksf	1.50 ksf	+D+0.750L+0.750S+0.450W
PASS 0.1199	1-way Shear - Col #1	11.378 psi	94.868 psi	+1.20D+1.60S+0.50W
PASS 0.09899	1-way Shear - Col #2	9.391 psi	94.868 psi	+1.20D+1.60S-0.50W
PASS 0.01739	2-way Punching - Col #1	3.299 psi	189.737 psi	+1.20D+1.60S+0.50W
PASS 0.01633	2-way Punching - Col #2	3.098 psi	189.737 psi	+1.20D+0.50L+1.60S
PASS No Bending	Flexure - Left of Col #1 - Top	0.0 k-ft	0.0 k-ft	N/A
PASS 0.009157	Flexure - Left of Col #1 - Bottom	0.4424 k-ft	48.312 k-ft	+1.20D+0.50L+1.60S
PASS 0.1150	Flexure - Between Cols - Top	-5.556 k-ft	48.312 k-ft	+1.20D+1.60S+0.50W
PASS 0.02125	Flexure - Between Cols - Bottom	1.027 k-ft	48.312 k-ft	+0.90D-W
PASS 0.000916	Flexure - Right of Col #2 - Top	-0.04426 k-ft	48.312 k-ft	+0.90D-W
PASS 0.009841	Flexure - Right of Col #2 - Bottom	0.4755 k-ft	48.312 k-ft	+1.20D+1.60S+0.50W

**Soil Bearing**

Load Combination...	Total Bearing	Eccentricity from Ftg CL	Actual Soil Bearing Stress		Allowable	Actual / Allow Ratio
			@ Left Edge	@ Right Edge		
D Only	7.70 k	-0.088 ft	0.73 ksf	0.64 ksf	1.50 ksf	0.488
+D+L	8.97 k	-0.075 ft	0.84 ksf	0.75 ksf	1.50 ksf	0.563
+D+S	13.56 k	-0.050 ft	1.25 ksf	1.16 ksf	1.50 ksf	0.836
+D+0.750L	8.65 k	-0.078 ft	0.82 ksf	0.72 ksf	1.50 ksf	0.545
+D+0.750L+0.750S	13.05 k	-0.052 ft	1.21 ksf	1.11 ksf	1.50 ksf	0.805
+D+0.60W	9.80 k	0.158 ft	0.76 ksf	0.98 ksf	1.50 ksf	0.654
+D-0.60W	5.60 k	-0.518 ft	0.70 ksf	0.29 ksf	1.50 ksf	0.469
+D+0.750L+0.450W	10.23 k	0.097 ft	0.84 ksf	0.98 ksf	1.50 ksf	0.653
+D+0.750L-0.450W	7.08 k	-0.332 ft	0.80 ksf	0.46 ksf	1.50 ksf	0.530
+D+0.750L+0.750S+0.450W	14.62 k	0.068 ft	1.23 ksf	1.37 ksf	1.50 ksf	0.914
+D+0.750L+0.750S-0.450W	11.47 k	-0.204 ft	1.19 ksf	0.85 ksf	1.50 ksf	0.791
+0.60D+0.60W	6.72 k	0.271 ft	0.47 ksf	0.73 ksf	1.50 ksf	0.484
+0.60D-0.60W	2.52 k	-1.045 ft	0.41 ksf	0.04 ksf	1.50 ksf	0.274
+0.60D	4.62 k	-0.088 ft	0.44 ksf	0.38 ksf	1.50 ksf	0.293

**Overtuning Stability**

Load Combination...	Moments about Left Edge k-ft			Moments about Right Edge k-ft		
	Overtuning	Resisting	Ratio	Overtuning	Resisting	Ratio
D Only	0.00	0.00	999.000	0.00	0.00	999.000
+D+L	0.00	0.00	999.000	0.00	0.00	999.000
+D+S	0.00	0.00	999.000	0.00	0.00	999.000
+D+0.750L	0.00	0.00	999.000	0.00	0.00	999.000
+D+0.750L+0.750S	0.00	0.00	999.000	0.00	0.00	999.000
+D+0.60W	0.00	0.00	999.000	2.23	37.42	16.800
+D-0.60W	10.10	28.20	2.791	7.88	31.78	4.035
+D+0.750L+0.450W	0.00	0.00	999.000	1.67	39.02	23.357
+D+0.750L-0.450W	7.58	31.76	4.192	5.91	34.78	5.889
+D+0.750L+0.750S+0.450W	0.00	0.00	999.000	1.67	55.51	33.225
+D+0.750L+0.750S-0.450W	7.58	48.25	6.368	5.91	51.27	8.681
+0.60D+0.60W	0.00	0.00	999.000	2.23	25.60	11.494
+0.60D-0.60W	10.10	16.92	1.675	7.88	19.96	2.534
+0.60D	0.00	0.00	999.000	0.00	0.00	999.000

**Sliding Stability**

Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio
D Only	0.00 k	3.60 k	999
+D+L	0.00 k	4.04 k	999
+D+S	0.00 k	5.65 k	999
+D+0.750L	0.00 k	3.93 k	999

**Combined Footing**

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Wind)**

**Sliding Stability**

Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio
+D+0.750L+0.750S	0.00 k	5.47 k	999
+D+0.60W	1.78 k	4.33 k	2.431
+D-0.60W	-1.78 k	2.86 k	1.606
+D+0.750L+0.450W	1.34 k	4.48 k	3.353
+D+0.750L-0.450W	-1.34 k	3.38 k	2.528
+D+0.750L+0.750S+0.450W	1.34 k	6.02 k	4.504
+D+0.750L+0.750S-0.450W	-1.34 k	4.92 k	3.679
+0.60D+0.60W	1.78 k	3.25 k	1.826
+0.60D-0.60W	-1.78 k	1.78 k	1.001
+0.60D	0.00 k	2.52 k	999

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.60D	0.000	0.000	0	0.000	0	0.000	0.000	0.000
+0.60D	0.000	0.019	0	0.000	0	0.000	0.000	0.000
+0.60D	0.000	0.038	0	0.000	0	0.000	0.000	0.000
+0.60D	0.000	0.056	0	0.000	0	0.000	0.000	0.000
+0.60D	0.000	0.075	0	0.000	0	0.000	0.000	0.000
+1.20D+0.50L+1.60S	0.010	0.094	Bottom	0.243	Min Temp %	0.930	48.312	0.000
+1.20D+0.50L+1.60S	0.015	0.113	Bottom	0.243	Min Temp %	0.930	48.312	0.000
+1.20D+0.50L+1.60S	0.020	0.131	Bottom	0.243	Min Temp %	0.930	48.312	0.000
+1.20D+0.50L+1.60S	0.026	0.150	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+0.50L+1.60S	0.033	0.169	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+0.50L+1.60S	0.041	0.188	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+0.50L+1.60S	0.049	0.206	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+0.50L+1.60S	0.059	0.225	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+0.50L+1.60S	0.069	0.244	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+0.50L+1.60S	0.080	0.263	Bottom	0.243	Min Temp %	0.930	48.312	0.002
+1.20D+0.50L+1.60S	0.092	0.281	Bottom	0.243	Min Temp %	0.930	48.312	0.002
+1.20D+0.50L+1.60S	0.104	0.300	Bottom	0.243	Min Temp %	0.930	48.312	0.002
+1.20D+0.50L+1.60S	0.118	0.319	Bottom	0.243	Min Temp %	0.930	48.312	0.002
+1.20D+0.50L+1.60S	0.132	0.338	Bottom	0.243	Min Temp %	0.930	48.312	0.003
+1.20D+0.50L+1.60S	0.147	0.356	Bottom	0.243	Min Temp %	0.930	48.312	0.003
+1.20D+0.50L+1.60S	0.163	0.375	Bottom	0.243	Min Temp %	0.930	48.312	0.003
+1.20D+0.50L+1.60S	0.179	0.394	Bottom	0.243	Min Temp %	0.930	48.312	0.004
+1.20D+0.50L+1.60S	0.197	0.413	Bottom	0.243	Min Temp %	0.930	48.312	0.004
+1.20D+0.50L+1.60S	0.215	0.431	Bottom	0.243	Min Temp %	0.930	48.312	0.004
+1.20D+0.50L+1.60S	0.234	0.450	Bottom	0.243	Min Temp %	0.930	48.312	0.005
+1.20D+0.50L+1.60S	0.254	0.469	Bottom	0.243	Min Temp %	0.930	48.312	0.005
+1.20D+0.50L+1.60S	0.275	0.488	Bottom	0.243	Min Temp %	0.930	48.312	0.006
+1.20D+0.50L+1.60S	0.296	0.506	Bottom	0.243	Min Temp %	0.930	48.312	0.006
+1.20D+0.50L+1.60S	0.319	0.525	Bottom	0.243	Min Temp %	0.930	48.312	0.007
+1.20D+0.50L+1.60S	0.342	0.544	Bottom	0.243	Min Temp %	0.930	48.312	0.007
+1.20D+0.50L+1.60S	0.366	0.563	Bottom	0.243	Min Temp %	0.930	48.312	0.008
+1.20D+0.50L+1.60S	0.390	0.581	Bottom	0.243	Min Temp %	0.930	48.312	0.008
+1.20D+0.50L+1.60S	0.416	0.600	Bottom	0.243	Min Temp %	0.930	48.312	0.009
+1.20D+0.50L+1.60S	0.442	0.619	Bottom	0.243	Min Temp %	0.930	48.312	0.009
+1.20D+0.50L+1.60S	0.469	0.638	Bottom	0.243	Min Temp %	0.930	48.312	0.010
+1.20D+0.50L+1.60S	0.494	0.656	Bottom	0.243	Min Temp %	0.930	48.312	0.010
+1.20D+0.50L+1.60S	0.518	0.675	Bottom	0.243	Min Temp %	0.930	48.312	0.011
+1.20D+0.50L+1.60S	0.540	0.694	Bottom	0.243	Min Temp %	0.930	48.312	0.011
+1.20D+0.50L+1.60S	0.560	0.713	Bottom	0.243	Min Temp %	0.930	48.312	0.012
+1.20D+0.50L+1.60S	0.579	0.731	Bottom	0.243	Min Temp %	0.930	48.312	0.012
+1.20D+0.50L+1.60S	0.596	0.750	Bottom	0.243	Min Temp %	0.930	48.312	0.012
+1.20D+0.50L+1.60S	0.612	0.769	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+0.50L+1.60S	0.626	0.787	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+0.50L+1.60S	0.639	0.806	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+0.50L+1.60S	0.650	0.825	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+0.50L+1.60S	0.659	0.844	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+0.50L+1.60S	0.667	0.862	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+0.50L+1.60S	0.673	0.881	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+0.50L+1.60S	0.677	0.900	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+0.50L+1.60S	0.680	0.919	Bottom	0.243	Min Temp %	0.930	48.312	0.014

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Combined Footing**

Project File: Strip footing.ec6

LIC# : KW-06016450, Build:20.23.10.02

QUANTUM CONSULTING ENGINEERS

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**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Wind)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+0.50L+1.60S	0.682	0.937	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+0.50L+1.60S	0.681	0.956	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+0.50L+1.60S	0.680	0.975	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+0.50L+1.60S	0.676	0.994	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S-0.50W	0.672	1.013	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S-0.50W	0.670	1.031	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S-0.50W	0.666	1.050	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S-0.50W	0.661	1.069	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S-0.50W	0.655	1.088	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S-0.50W	0.648	1.106	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+1.60S-0.50W	0.639	1.125	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+1.60S-0.50W	0.628	1.144	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+1.60S-0.50W	0.617	1.163	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+1.60S-0.50W	0.604	1.181	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+1.60S-0.50W	0.590	1.200	Bottom	0.243	Min Temp %	0.930	48.312	0.012
+1.20D+1.60S-0.50W	0.574	1.219	Bottom	0.243	Min Temp %	0.930	48.312	0.012
+1.20D+1.60S-0.50W	0.558	1.238	Bottom	0.243	Min Temp %	0.930	48.312	0.012
+1.20D+0.50L+0.50S+W	2.059	1.256	Bottom	0.243	Min Temp %	0.930	48.312	0.043
+1.20D+0.50L+0.50S+W	2.028	1.275	Bottom	0.243	Min Temp %	0.930	48.312	0.042
+1.20D+0.50L+0.50S+W	1.997	1.294	Bottom	0.243	Min Temp %	0.930	48.312	0.041
+1.20D+0.50L+0.50S+W	1.964	1.313	Bottom	0.243	Min Temp %	0.930	48.312	0.041
+1.20D+0.50L+0.50S+W	1.929	1.331	Bottom	0.243	Min Temp %	0.930	48.312	0.040
+1.20D+0.50L+0.50S+W	1.893	1.350	Bottom	0.243	Min Temp %	0.930	48.312	0.039
+1.20D+0.50L+0.50S+W	1.856	1.369	Bottom	0.243	Min Temp %	0.930	48.312	0.038
+1.20D+0.50L+0.50S+W	1.817	1.388	Bottom	0.243	Min Temp %	0.930	48.312	0.038
+1.20D+0.50L+0.50S+W	1.777	1.406	Bottom	0.243	Min Temp %	0.930	48.312	0.037
+1.20D+0.50L+0.50S+W	1.736	1.425	Bottom	0.243	Min Temp %	0.930	48.312	0.036
+1.20D+0.50L+0.50S+W	1.693	1.444	Bottom	0.243	Min Temp %	0.930	48.312	0.035
+1.20D+0.50L+0.50S+W	1.648	1.463	Bottom	0.243	Min Temp %	0.930	48.312	0.034
+1.20D+0.50L+W	1.604	1.481	Bottom	0.243	Min Temp %	0.930	48.312	0.033
+1.20D+0.50L+W	1.565	1.500	Bottom	0.243	Min Temp %	0.930	48.312	0.032
+1.20D+0.50L+0.50S-W	-1.561	1.519	Top	0.243	Min Temp %	0.930	48.312	0.032
+1.20D+0.50L+0.50S-W	-1.572	1.538	Top	0.243	Min Temp %	0.930	48.312	0.033
+1.20D+0.50L+0.50S-W	-1.584	1.556	Top	0.243	Min Temp %	0.930	48.312	0.033
+1.20D+0.50L+0.50S-W	-1.596	1.575	Top	0.243	Min Temp %	0.930	48.312	0.033
+1.20D+0.50L+0.50S-W	-1.609	1.594	Top	0.243	Min Temp %	0.930	48.312	0.033
+1.20D+0.50L+0.50S-W	-1.623	1.613	Top	0.243	Min Temp %	0.930	48.312	0.034
+1.20D+0.50L+0.50S-W	-1.637	1.631	Top	0.243	Min Temp %	0.930	48.312	0.034
+1.20D+0.50L+0.50S-W	-1.652	1.650	Top	0.243	Min Temp %	0.930	48.312	0.034
+1.20D+0.50L+0.50S-W	-1.667	1.669	Top	0.243	Min Temp %	0.930	48.312	0.035
+1.20D+0.50L+0.50S-W	-1.683	1.688	Top	0.243	Min Temp %	0.930	48.312	0.035
+1.20D+0.50L+0.50S-W	-1.699	1.706	Top	0.243	Min Temp %	0.930	48.312	0.035
+1.20D+0.50L+0.50S-W	-1.716	1.725	Top	0.243	Min Temp %	0.930	48.312	0.036
+1.20D+0.50L+0.50S-W	-1.734	1.744	Top	0.243	Min Temp %	0.930	48.312	0.036
+1.20D+0.50L+0.50S-W	-1.752	1.763	Top	0.243	Min Temp %	0.930	48.312	0.036
+1.20D+0.50L+0.50S-W	-1.771	1.781	Top	0.243	Min Temp %	0.930	48.312	0.037
+1.20D+0.50L+0.50S-W	-1.790	1.800	Top	0.243	Min Temp %	0.930	48.312	0.037
+1.20D+0.50L+0.50S-W	-1.810	1.819	Top	0.243	Min Temp %	0.930	48.312	0.037
+1.20D+0.50L+0.50S-W	-1.831	1.838	Top	0.243	Min Temp %	0.930	48.312	0.038
+1.20D+0.50L+0.50S-W	-1.852	1.856	Top	0.243	Min Temp %	0.930	48.312	0.038
+1.20D+0.50L+0.50S-W	-1.874	1.875	Top	0.243	Min Temp %	0.930	48.312	0.039
+1.20D+0.50L+0.50S-W	-1.896	1.894	Top	0.243	Min Temp %	0.930	48.312	0.039
+1.20D+0.50L+0.50S-W	-1.917	1.913	Top	0.243	Min Temp %	0.930	48.312	0.040
+1.20D+1.60S-0.50W	-1.965	1.931	Top	0.243	Min Temp %	0.930	48.312	0.041
+1.20D+1.60S-0.50W	-2.025	1.950	Top	0.243	Min Temp %	0.930	48.312	0.042
+1.20D+1.60S-0.50W	-2.084	1.969	Top	0.243	Min Temp %	0.930	48.312	0.043
+1.20D+1.60S-0.50W	-2.143	1.988	Top	0.243	Min Temp %	0.930	48.312	0.044
+1.20D+1.60S-0.50W	-2.201	2.006	Top	0.243	Min Temp %	0.930	48.312	0.046
+1.20D+1.60S-0.50W	-2.259	2.025	Top	0.243	Min Temp %	0.930	48.312	0.047
+1.20D+1.60S-0.50W	-2.315	2.044	Top	0.243	Min Temp %	0.930	48.312	0.048
+1.20D+1.60S-0.50W	-2.371	2.063	Top	0.243	Min Temp %	0.930	48.312	0.049
+1.20D+1.60S-0.50W	-2.426	2.081	Top	0.243	Min Temp %	0.930	48.312	0.050
+1.20D+1.60S-0.50W	-2.481	2.100	Top	0.243	Min Temp %	0.930	48.312	0.051



**Combined Footing**

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Wind)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S-0.50W	-2.535	2.119	Top	0.243	Min Temp %	0.930	48.312	0.052
+1.20D+1.60S-0.50W	-2.588	2.138	Top	0.243	Min Temp %	0.930	48.312	0.054
+1.20D+1.60S-0.50W	-2.640	2.156	Top	0.243	Min Temp %	0.930	48.312	0.055
+1.20D+1.60S-0.50W	-2.692	2.175	Top	0.243	Min Temp %	0.930	48.312	0.056
+1.20D+1.60S-0.50W	-2.742	2.194	Top	0.243	Min Temp %	0.930	48.312	0.057
+1.20D+1.60S-0.50W	-2.793	2.213	Top	0.243	Min Temp %	0.930	48.312	0.058
+1.20D+1.60S-0.50W	-2.842	2.231	Top	0.243	Min Temp %	0.930	48.312	0.059
+1.20D+1.60S-0.50W	-2.891	2.250	Top	0.243	Min Temp %	0.930	48.312	0.060
+1.20D+1.60S-0.50W	-2.939	2.269	Top	0.243	Min Temp %	0.930	48.312	0.061
+1.20D+1.60S-0.50W	-2.986	2.288	Top	0.243	Min Temp %	0.930	48.312	0.062
+1.20D+1.60S-0.50W	-3.033	2.306	Top	0.243	Min Temp %	0.930	48.312	0.063
+1.20D+1.60S-0.50W	-3.079	2.325	Top	0.243	Min Temp %	0.930	48.312	0.064
+1.20D+1.60S-0.50W	-3.124	2.344	Top	0.243	Min Temp %	0.930	48.312	0.065
+1.20D+1.60S-0.50W	-3.169	2.363	Top	0.243	Min Temp %	0.930	48.312	0.066
+1.20D+1.60S-0.50W	-3.212	2.381	Top	0.243	Min Temp %	0.930	48.312	0.066
+1.20D+1.60S-0.50W	-3.255	2.400	Top	0.243	Min Temp %	0.930	48.312	0.067
+1.20D+1.60S-0.50W	-3.298	2.419	Top	0.243	Min Temp %	0.930	48.312	0.068
+1.20D+1.60S-0.50W	-3.339	2.438	Top	0.243	Min Temp %	0.930	48.312	0.069
+1.20D+1.60S-0.50W	-3.380	2.456	Top	0.243	Min Temp %	0.930	48.312	0.070
+1.20D+1.60S-0.50W	-3.421	2.475	Top	0.243	Min Temp %	0.930	48.312	0.071
+1.20D+1.60S-0.50W	-3.460	2.494	Top	0.243	Min Temp %	0.930	48.312	0.072
+1.20D+0.50L+1.60S	-3.511	2.513	Top	0.243	Min Temp %	0.930	48.312	0.073
+1.20D+0.50L+1.60S	-3.563	2.531	Top	0.243	Min Temp %	0.930	48.312	0.074
+1.20D+0.50L+1.60S	-3.614	2.550	Top	0.243	Min Temp %	0.930	48.312	0.075
+1.20D+0.50L+1.60S	-3.664	2.569	Top	0.243	Min Temp %	0.930	48.312	0.076
+1.20D+0.50L+1.60S	-3.713	2.588	Top	0.243	Min Temp %	0.930	48.312	0.077
+1.20D+0.50L+1.60S	-3.761	2.606	Top	0.243	Min Temp %	0.930	48.312	0.078
+1.20D+0.50L+1.60S	-3.809	2.625	Top	0.243	Min Temp %	0.930	48.312	0.079
+1.20D+0.50L+1.60S	-3.856	2.644	Top	0.243	Min Temp %	0.930	48.312	0.080
+1.20D+0.50L+1.60S	-3.902	2.663	Top	0.243	Min Temp %	0.930	48.312	0.081
+1.20D+0.50L+1.60S	-3.947	2.681	Top	0.243	Min Temp %	0.930	48.312	0.082
+1.20D+0.50L+1.60S	-3.992	2.700	Top	0.243	Min Temp %	0.930	48.312	0.083
+1.20D+0.50L+1.60S	-4.036	2.719	Top	0.243	Min Temp %	0.930	48.312	0.084
+1.20D+0.50L+1.60S	-4.079	2.738	Top	0.243	Min Temp %	0.930	48.312	0.084
+1.20D+0.50L+1.60S	-4.121	2.756	Top	0.243	Min Temp %	0.930	48.312	0.085
+1.20D+0.50L+1.60S	-4.162	2.775	Top	0.243	Min Temp %	0.930	48.312	0.086
+1.20D+0.50L+1.60S	-4.203	2.794	Top	0.243	Min Temp %	0.930	48.312	0.087
+1.20D+0.50L+1.60S	-4.242	2.813	Top	0.243	Min Temp %	0.930	48.312	0.088
+1.20D+0.50L+1.60S	-4.281	2.831	Top	0.243	Min Temp %	0.930	48.312	0.089
+1.20D+0.50L+1.60S	-4.320	2.850	Top	0.243	Min Temp %	0.930	48.312	0.089
+1.20D+0.50L+1.60S	-4.357	2.869	Top	0.243	Min Temp %	0.930	48.312	0.090
+1.20D+0.50L+1.60S	-4.394	2.888	Top	0.243	Min Temp %	0.930	48.312	0.091
+1.20D+0.50L+1.60S	-4.429	2.906	Top	0.243	Min Temp %	0.930	48.312	0.092
+1.20D+0.50L+1.60S	-4.464	2.925	Top	0.243	Min Temp %	0.930	48.312	0.092
+1.20D+0.50L+1.60S	-4.499	2.944	Top	0.243	Min Temp %	0.930	48.312	0.093
+1.20D+0.50L+1.60S	-4.532	2.963	Top	0.243	Min Temp %	0.930	48.312	0.094
+1.20D+0.50L+1.60S	-4.565	2.981	Top	0.243	Min Temp %	0.930	48.312	0.094
+1.20D+0.50L+1.60S	-4.597	3.000	Top	0.243	Min Temp %	0.930	48.312	0.095
+1.20D+0.50L+1.60S	-4.628	3.019	Top	0.243	Min Temp %	0.930	48.312	0.096
+1.20D+1.60S+0.50W	-4.661	3.038	Top	0.243	Min Temp %	0.930	48.312	0.096
+1.20D+1.60S+0.50W	-4.699	3.056	Top	0.243	Min Temp %	0.930	48.312	0.097
+1.20D+1.60S+0.50W	-4.736	3.075	Top	0.243	Min Temp %	0.930	48.312	0.098
+1.20D+1.60S+0.50W	-4.773	3.094	Top	0.243	Min Temp %	0.930	48.312	0.099
+1.20D+1.60S+0.50W	-4.809	3.113	Top	0.243	Min Temp %	0.930	48.312	0.100
+1.20D+1.60S+0.50W	-4.843	3.131	Top	0.243	Min Temp %	0.930	48.312	0.100
+1.20D+1.60S+0.50W	-4.877	3.150	Top	0.243	Min Temp %	0.930	48.312	0.101
+1.20D+1.60S+0.50W	-4.911	3.169	Top	0.243	Min Temp %	0.930	48.312	0.102
+1.20D+1.60S+0.50W	-4.943	3.188	Top	0.243	Min Temp %	0.930	48.312	0.102
+1.20D+1.60S+0.50W	-4.975	3.206	Top	0.243	Min Temp %	0.930	48.312	0.103
+1.20D+1.60S+0.50W	-5.005	3.225	Top	0.243	Min Temp %	0.930	48.312	0.104
+1.20D+1.60S+0.50W	-5.035	3.244	Top	0.243	Min Temp %	0.930	48.312	0.104
+1.20D+1.60S+0.50W	-5.064	3.263	Top	0.243	Min Temp %	0.930	48.312	0.105
+1.20D+1.60S+0.50W	-5.092	3.281	Top	0.243	Min Temp %	0.930	48.312	0.105

**Combined Footing**

**DESCRIPTION:** Lateral Loads along the longitudinal of the strip footings (Wind)

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S+0.50W	-5.120	3.300	Top	0.243	Min Temp %	0.930	48.312	0.106
+1.20D+1.60S+0.50W	-5.146	3.319	Top	0.243	Min Temp %	0.930	48.312	0.107
+1.20D+1.60S+0.50W	-5.172	3.338	Top	0.243	Min Temp %	0.930	48.312	0.107
+1.20D+1.60S+0.50W	-5.197	3.356	Top	0.243	Min Temp %	0.930	48.312	0.108
+1.20D+1.60S+0.50W	-5.221	3.375	Top	0.243	Min Temp %	0.930	48.312	0.108
+1.20D+1.60S+0.50W	-5.244	3.394	Top	0.243	Min Temp %	0.930	48.312	0.109
+1.20D+1.60S+0.50W	-5.267	3.413	Top	0.243	Min Temp %	0.930	48.312	0.109
+1.20D+1.60S+0.50W	-5.288	3.431	Top	0.243	Min Temp %	0.930	48.312	0.109
+1.20D+1.60S+0.50W	-5.309	3.450	Top	0.243	Min Temp %	0.930	48.312	0.110
+1.20D+1.60S+0.50W	-5.329	3.469	Top	0.243	Min Temp %	0.930	48.312	0.110
+1.20D+1.60S+0.50W	-5.348	3.488	Top	0.243	Min Temp %	0.930	48.312	0.111
+1.20D+1.60S+0.50W	-5.366	3.506	Top	0.243	Min Temp %	0.930	48.312	0.111
+1.20D+1.60S+0.50W	-5.384	3.525	Top	0.243	Min Temp %	0.930	48.312	0.111
+1.20D+1.60S+0.50W	-5.400	3.544	Top	0.243	Min Temp %	0.930	48.312	0.112
+1.20D+1.60S+0.50W	-5.416	3.563	Top	0.243	Min Temp %	0.930	48.312	0.112
+1.20D+1.60S+0.50W	-5.431	3.581	Top	0.243	Min Temp %	0.930	48.312	0.112
+1.20D+1.60S+0.50W	-5.445	3.600	Top	0.243	Min Temp %	0.930	48.312	0.113
+1.20D+1.60S+0.50W	-5.458	3.619	Top	0.243	Min Temp %	0.930	48.312	0.113
+1.20D+1.60S+0.50W	-5.470	3.638	Top	0.243	Min Temp %	0.930	48.312	0.113
+1.20D+1.60S+0.50W	-5.482	3.656	Top	0.243	Min Temp %	0.930	48.312	0.113
+1.20D+1.60S+0.50W	-5.493	3.675	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.503	3.694	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.512	3.713	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.520	3.731	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.527	3.750	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.534	3.769	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.539	3.788	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.544	3.806	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.548	3.825	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.552	3.844	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.554	3.863	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.555	3.881	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.556	3.900	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.556	3.919	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.555	3.938	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.553	3.956	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.551	3.975	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.547	3.994	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.543	4.013	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.537	4.031	Top	0.243	Min Temp %	0.930	48.312	0.115
+1.20D+1.60S+0.50W	-5.531	4.050	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.525	4.069	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.517	4.088	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.508	4.106	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.499	4.125	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.489	4.144	Top	0.243	Min Temp %	0.930	48.312	0.114
+1.20D+1.60S+0.50W	-5.478	4.163	Top	0.243	Min Temp %	0.930	48.312	0.113
+1.20D+1.60S+0.50W	-5.466	4.181	Top	0.243	Min Temp %	0.930	48.312	0.113
+1.20D+1.60S+0.50W	-5.453	4.200	Top	0.243	Min Temp %	0.930	48.312	0.113
+1.20D+1.60S+0.50W	-5.439	4.219	Top	0.243	Min Temp %	0.930	48.312	0.113
+1.20D+1.60S+0.50W	-5.425	4.238	Top	0.243	Min Temp %	0.930	48.312	0.112
+1.20D+1.60S+0.50W	-5.410	4.256	Top	0.243	Min Temp %	0.930	48.312	0.112
+1.20D+1.60S+0.50W	-5.394	4.275	Top	0.243	Min Temp %	0.930	48.312	0.112
+1.20D+1.60S+0.50W	-5.377	4.294	Top	0.243	Min Temp %	0.930	48.312	0.111
+1.20D+1.60S+0.50W	-5.359	4.313	Top	0.243	Min Temp %	0.930	48.312	0.111
+1.20D+1.60S+0.50W	-5.340	4.331	Top	0.243	Min Temp %	0.930	48.312	0.111
+1.20D+1.60S+0.50W	-5.321	4.350	Top	0.243	Min Temp %	0.930	48.312	0.110
+1.20D+1.60S+0.50W	-5.301	4.369	Top	0.243	Min Temp %	0.930	48.312	0.110
+1.20D+1.60S+0.50W	-5.279	4.388	Top	0.243	Min Temp %	0.930	48.312	0.109
+1.20D+1.60S+0.50W	-5.257	4.406	Top	0.243	Min Temp %	0.930	48.312	0.109
+1.20D+1.60S+0.50W	-5.235	4.425	Top	0.243	Min Temp %	0.930	48.312	0.108
+1.20D+1.60S+0.50W	-5.211	4.444	Top	0.243	Min Temp %	0.930	48.312	0.108
+1.20D+1.60S+0.50W	-5.186	4.463	Top	0.243	Min Temp %	0.930	48.312	0.107

**Combined Footing**

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Wind)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S+0.50W	-5.161	4.481	Top	0.243	Min Temp %	0.930	48.312	0.107
+1.20D+1.60S+0.50W	-5.135	4.500	Top	0.243	Min Temp %	0.930	48.312	0.106
+1.20D+1.60S+0.50W	-5.108	4.519	Top	0.243	Min Temp %	0.930	48.312	0.106
+1.20D+1.60S+0.50W	-5.080	4.538	Top	0.243	Min Temp %	0.930	48.312	0.105
+1.20D+1.60S+0.50W	-5.051	4.556	Top	0.243	Min Temp %	0.930	48.312	0.105
+1.20D+1.60S+0.50W	-5.021	4.575	Top	0.243	Min Temp %	0.930	48.312	0.104
+1.20D+1.60S+0.50W	-4.991	4.594	Top	0.243	Min Temp %	0.930	48.312	0.103
+1.20D+1.60S+0.50W	-4.960	4.613	Top	0.243	Min Temp %	0.930	48.312	0.103
+1.20D+1.60S+0.50W	-4.928	4.631	Top	0.243	Min Temp %	0.930	48.312	0.102
+1.20D+1.60S+0.50W	-4.895	4.650	Top	0.243	Min Temp %	0.930	48.312	0.101
+1.20D+1.60S+0.50W	-4.861	4.669	Top	0.243	Min Temp %	0.930	48.312	0.101
+1.20D+1.60S+0.50W	-4.826	4.688	Top	0.243	Min Temp %	0.930	48.312	0.100
+1.20D+1.60S+0.50W	-4.791	4.706	Top	0.243	Min Temp %	0.930	48.312	0.099
+1.20D+1.60S+0.50W	-4.754	4.725	Top	0.243	Min Temp %	0.930	48.312	0.098
+1.20D+1.60S+0.50W	-4.717	4.744	Top	0.243	Min Temp %	0.930	48.312	0.098
+1.20D+1.60S+0.50W	-4.679	4.763	Top	0.243	Min Temp %	0.930	48.312	0.097
+1.20D+1.60S+0.50W	-4.640	4.781	Top	0.243	Min Temp %	0.930	48.312	0.096
+1.20D+1.60S+0.50W	-4.600	4.800	Top	0.243	Min Temp %	0.930	48.312	0.095
+1.20D+1.60S+0.50W	-4.560	4.819	Top	0.243	Min Temp %	0.930	48.312	0.094
+1.20D+1.60S+0.50W	-4.518	4.838	Top	0.243	Min Temp %	0.930	48.312	0.094
+1.20D+1.60S+0.50W	-4.476	4.856	Top	0.243	Min Temp %	0.930	48.312	0.093
+1.20D+1.60S+0.50W	-4.433	4.875	Top	0.243	Min Temp %	0.930	48.312	0.092
+1.20D+1.60S+0.50W	-4.389	4.894	Top	0.243	Min Temp %	0.930	48.312	0.091
+1.20D+1.60S+0.50W	-4.344	4.913	Top	0.243	Min Temp %	0.930	48.312	0.090
+1.20D+1.60S+0.50W	-4.298	4.931	Top	0.243	Min Temp %	0.930	48.312	0.089
+1.20D+1.60S+0.50W	-4.252	4.950	Top	0.243	Min Temp %	0.930	48.312	0.088
+1.20D+1.60S+0.50W	-4.204	4.969	Top	0.243	Min Temp %	0.930	48.312	0.087
+1.20D+1.60S+0.50W	-4.156	4.988	Top	0.243	Min Temp %	0.930	48.312	0.086
+1.20D+1.60S+0.50W	-4.107	5.006	Top	0.243	Min Temp %	0.930	48.312	0.085
+1.20D+1.60S+0.50W	-4.057	5.025	Top	0.243	Min Temp %	0.930	48.312	0.084
+1.20D+1.60S+0.50W	-4.006	5.044	Top	0.243	Min Temp %	0.930	48.312	0.083
+1.20D+1.60S+0.50W	-3.955	5.063	Top	0.243	Min Temp %	0.930	48.312	0.082
+1.20D+1.60S+0.50W	-3.902	5.081	Top	0.243	Min Temp %	0.930	48.312	0.081
+1.20D+1.60S+0.50W	-3.849	5.100	Top	0.243	Min Temp %	0.930	48.312	0.080
+1.20D+1.60S+0.50W	-3.795	5.119	Top	0.243	Min Temp %	0.930	48.312	0.079
+1.20D+1.60S+0.50W	-3.740	5.138	Top	0.243	Min Temp %	0.930	48.312	0.077
+1.20D+1.60S+0.50W	-3.684	5.156	Top	0.243	Min Temp %	0.930	48.312	0.076
+1.20D+1.60S+0.50W	-3.627	5.175	Top	0.243	Min Temp %	0.930	48.312	0.075
+1.20D+1.60S+0.50W	-3.570	5.194	Top	0.243	Min Temp %	0.930	48.312	0.074
+1.20D+1.60S+0.50W	-3.511	5.213	Top	0.243	Min Temp %	0.930	48.312	0.073
+1.20D+1.60S+0.50W	-3.452	5.231	Top	0.243	Min Temp %	0.930	48.312	0.071
+1.20D+1.60S+0.50W	-3.392	5.250	Top	0.243	Min Temp %	0.930	48.312	0.070
+1.20D+1.60S+0.50W	-3.331	5.269	Top	0.243	Min Temp %	0.930	48.312	0.069
+1.20D+1.60S+0.50W	-3.269	5.288	Top	0.243	Min Temp %	0.930	48.312	0.068
+1.20D+1.60S+0.50W	-3.206	5.306	Top	0.243	Min Temp %	0.930	48.312	0.066
+1.20D+1.60S+0.50W	-3.143	5.325	Top	0.243	Min Temp %	0.930	48.312	0.065
+1.20D+1.60S+0.50W	-3.078	5.344	Top	0.243	Min Temp %	0.930	48.312	0.064
+1.20D+1.60S+0.50W	-3.013	5.363	Top	0.243	Min Temp %	0.930	48.312	0.062
+1.20D+1.60S+0.50W	-2.947	5.381	Top	0.243	Min Temp %	0.930	48.312	0.061
+1.20D+1.60S+0.50W	-2.880	5.400	Top	0.243	Min Temp %	0.930	48.312	0.060
+1.20D+0.50L+0.50S+W	-2.828	5.419	Top	0.243	Min Temp %	0.930	48.312	0.059
+1.20D+0.50L+0.50S+W	-2.782	5.438	Top	0.243	Min Temp %	0.930	48.312	0.058
+1.20D+0.50L+0.50S+W	-2.736	5.456	Top	0.243	Min Temp %	0.930	48.312	0.057
+1.20D+0.50L+0.50S+W	-2.688	5.475	Top	0.243	Min Temp %	0.930	48.312	0.056
+1.20D+0.50L+0.50S+W	-2.640	5.494	Top	0.243	Min Temp %	0.930	48.312	0.055
+1.20D+0.50L+0.50S+W	-2.591	5.513	Top	0.243	Min Temp %	0.930	48.312	0.054
+1.20D+0.50L+0.50S+W	-2.542	5.531	Top	0.243	Min Temp %	0.930	48.312	0.053
+1.20D+0.50L+0.50S+W	-2.492	5.550	Top	0.243	Min Temp %	0.930	48.312	0.052
+1.20D+0.50L+0.50S+W	-2.441	5.569	Top	0.243	Min Temp %	0.930	48.312	0.051
+1.20D+0.50L+0.50S+W	-2.389	5.588	Top	0.243	Min Temp %	0.930	48.312	0.049
+1.20D+0.50L+0.50S+W	-2.337	5.606	Top	0.243	Min Temp %	0.930	48.312	0.048
+1.20D+0.50L+0.50S+W	-2.284	5.625	Top	0.243	Min Temp %	0.930	48.312	0.047
+1.20D+0.50L+0.50S+W	-2.231	5.644	Top	0.243	Min Temp %	0.930	48.312	0.046

**Combined Footing**

**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Wind)**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+0.50L+0.50S+W	-2.179	5.663	Top	0.243	Min Temp %	0.930	48.312	0.045
+1.20D+0.50L+0.50S+W	-2.129	5.681	Top	0.243	Min Temp %	0.930	48.312	0.044
+1.20D+0.50L+0.50S+W	-2.080	5.700	Top	0.243	Min Temp %	0.930	48.312	0.043
+1.20D+0.50L+0.50S+W	-2.032	5.719	Top	0.243	Min Temp %	0.930	48.312	0.042
+1.20D+0.50L+0.50S+W	-1.985	5.738	Top	0.243	Min Temp %	0.930	48.312	0.041
+1.20D+0.50L+0.50S+W	-1.939	5.756	Top	0.243	Min Temp %	0.930	48.312	0.040
+1.20D+0.50L+0.50S+W	-1.895	5.775	Top	0.243	Min Temp %	0.930	48.312	0.039
+1.20D+0.50L+0.50S+W	-1.852	5.794	Top	0.243	Min Temp %	0.930	48.312	0.038
+1.20D+0.50L+0.50S+W	-1.810	5.813	Top	0.243	Min Temp %	0.930	48.312	0.037
+1.20D+0.50L+0.50S+W	-1.769	5.831	Top	0.243	Min Temp %	0.930	48.312	0.037
+1.20D+0.50L+0.50S+W	-1.729	5.850	Top	0.243	Min Temp %	0.930	48.312	0.036
+1.20D+0.50L+0.50S+W	-1.691	5.869	Top	0.243	Min Temp %	0.930	48.312	0.035
+1.20D+0.50L+0.50S+W	-1.653	5.888	Top	0.243	Min Temp %	0.930	48.312	0.034
+1.20D+0.50L+0.50S+W	-1.617	5.906	Top	0.243	Min Temp %	0.930	48.312	0.033
+1.20D+0.50L+0.50S+W	-1.582	5.925	Top	0.243	Min Temp %	0.930	48.312	0.033
+1.20D+0.50L+0.50S+W	-1.548	5.944	Top	0.243	Min Temp %	0.930	48.312	0.032
+1.20D+0.50L+0.50S+W	-1.516	5.963	Top	0.243	Min Temp %	0.930	48.312	0.031
+1.20D+0.50L+0.50S+W	-1.484	5.981	Top	0.243	Min Temp %	0.930	48.312	0.031
+1.20D+0.50L+0.50S+W	-1.454	6.000	Top	0.243	Min Temp %	0.930	48.312	0.030
+1.20D+0.50L+0.50S+W	-1.425	6.019	Top	0.243	Min Temp %	0.930	48.312	0.029
+1.20D+0.50L+W	-1.404	6.038	Top	0.243	Min Temp %	0.930	48.312	0.029
+1.20D+0.50L+0.50S-W	1.401	6.056	Bottom	0.243	Min Temp %	0.930	48.312	0.029
+1.20D+0.50L+0.50S-W	1.426	6.075	Bottom	0.243	Min Temp %	0.930	48.312	0.030
+1.20D+0.50L+0.50S-W	1.451	6.094	Bottom	0.243	Min Temp %	0.930	48.312	0.030
+1.20D+0.50L+0.50S-W	1.475	6.113	Bottom	0.243	Min Temp %	0.930	48.312	0.031
+1.20D+0.50L+0.50S-W	1.498	6.131	Bottom	0.243	Min Temp %	0.930	48.312	0.031
+1.20D+0.50L+0.50S-W	1.521	6.150	Bottom	0.243	Min Temp %	0.930	48.312	0.031
+1.20D+0.50L+0.50S-W	1.543	6.169	Bottom	0.243	Min Temp %	0.930	48.312	0.032
+1.20D+0.50L+0.50S-W	1.564	6.188	Bottom	0.243	Min Temp %	0.930	48.312	0.032
+1.20D+0.50L+0.50S-W	1.584	6.206	Bottom	0.243	Min Temp %	0.930	48.312	0.033
+1.20D+0.50L+0.50S-W	1.604	6.225	Bottom	0.243	Min Temp %	0.930	48.312	0.033
+1.20D+0.50L+0.50S-W	1.623	6.244	Bottom	0.243	Min Temp %	0.930	48.312	0.034
+1.20D+0.50L+0.50S+W	0.608	6.263	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+0.50L+0.50S+W	0.621	6.281	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+0.50L+0.50S+W	0.632	6.300	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+1.60S+0.50W	0.645	6.319	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+1.60S+0.50W	0.663	6.338	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S+0.50W	0.679	6.356	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S+0.50W	0.693	6.375	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S+0.50W	0.706	6.394	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.717	6.413	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.726	6.431	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.734	6.450	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.740	6.469	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.745	6.487	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.748	6.506	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.750	6.525	Bottom	0.243	Min Temp %	0.930	48.312	0.016
+1.20D+1.60S+0.50W	0.750	6.544	Bottom	0.243	Min Temp %	0.930	48.312	0.016
+1.20D+1.60S+0.50W	0.748	6.562	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.745	6.581	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.740	6.600	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.733	6.619	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.725	6.637	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.716	6.656	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.704	6.675	Bottom	0.243	Min Temp %	0.930	48.312	0.015
+1.20D+1.60S+0.50W	0.692	6.694	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S+0.50W	0.677	6.712	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S+0.50W	0.661	6.731	Bottom	0.243	Min Temp %	0.930	48.312	0.014
+1.20D+1.60S+0.50W	0.643	6.750	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+1.60S+0.50W	0.624	6.769	Bottom	0.243	Min Temp %	0.930	48.312	0.013
+1.20D+1.60S+0.50W	0.603	6.787	Bottom	0.243	Min Temp %	0.930	48.312	0.012
+1.20D+1.60S+0.50W	0.581	6.806	Bottom	0.243	Min Temp %	0.930	48.312	0.012
+1.20D+1.60S+0.50W	0.557	6.825	Bottom	0.243	Min Temp %	0.930	48.312	0.012

**Combined Footing**

Project File: Strip footing.ec6

LIC# : KW-06016450, Build:20.23.10.02

QUANTUM CONSULTING ENGINEERS

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**DESCRIPTION: Lateral Loads along the longitudinal of the strip footings (Wind)**

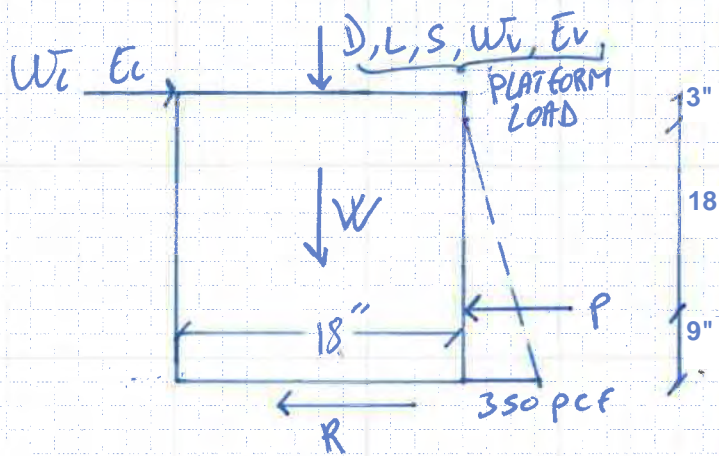
**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S+0.50W	0.531	6.844	Bottom	0.243	Min Temp %	0.930	48.312	0.011
+1.20D+1.60S+0.50W	0.504	6.862	Bottom	0.243	Min Temp %	0.930	48.312	0.010
+1.20D+1.60S+0.50W	0.475	6.881	Bottom	0.243	Min Temp %	0.930	48.312	0.010
+1.20D+1.60S+0.50W	0.447	6.900	Bottom	0.243	Min Temp %	0.930	48.312	0.009
+1.20D+1.60S+0.50W	0.420	6.919	Bottom	0.243	Min Temp %	0.930	48.312	0.009
+1.20D+1.60S+0.50W	0.393	6.937	Bottom	0.243	Min Temp %	0.930	48.312	0.008
+1.20D+1.60S+0.50W	0.367	6.956	Bottom	0.243	Min Temp %	0.930	48.312	0.008
+1.20D+1.60S+0.50W	0.342	6.975	Bottom	0.243	Min Temp %	0.930	48.312	0.007
+1.20D+1.60S+0.50W	0.318	6.994	Bottom	0.243	Min Temp %	0.930	48.312	0.007
+1.20D+1.60S+0.50W	0.295	7.012	Bottom	0.243	Min Temp %	0.930	48.312	0.006
+1.20D+1.60S+0.50W	0.273	7.031	Bottom	0.243	Min Temp %	0.930	48.312	0.006
+1.20D+1.60S+0.50W	0.252	7.050	Bottom	0.243	Min Temp %	0.930	48.312	0.005
+1.20D+1.60S+0.50W	0.231	7.069	Bottom	0.243	Min Temp %	0.930	48.312	0.005
+1.20D+1.60S+0.50W	0.211	7.087	Bottom	0.243	Min Temp %	0.930	48.312	0.004
+1.20D+1.60S+0.50W	0.193	7.106	Bottom	0.243	Min Temp %	0.930	48.312	0.004
+1.20D+1.60S+0.50W	0.175	7.125	Bottom	0.243	Min Temp %	0.930	48.312	0.004
+1.20D+1.60S+0.50W	0.158	7.144	Bottom	0.243	Min Temp %	0.930	48.312	0.003
+1.20D+1.60S+0.50W	0.142	7.162	Bottom	0.243	Min Temp %	0.930	48.312	0.003
+1.20D+1.60S+0.50W	0.126	7.181	Bottom	0.243	Min Temp %	0.930	48.312	0.003
+1.20D+1.60S+0.50W	0.112	7.200	Bottom	0.243	Min Temp %	0.930	48.312	0.002
+1.20D+1.60S+0.50W	0.098	7.219	Bottom	0.243	Min Temp %	0.930	48.312	0.002
+1.20D+1.60S+0.50W	0.086	7.237	Bottom	0.243	Min Temp %	0.930	48.312	0.002
+1.20D+1.60S+0.50W	0.074	7.256	Bottom	0.243	Min Temp %	0.930	48.312	0.002
+1.20D+1.60S+0.50W	0.063	7.275	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+1.60S+0.50W	0.053	7.294	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+1.60S+0.50W	0.044	7.312	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+1.60S+0.50W	0.035	7.331	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+1.60S+0.50W	0.028	7.350	Bottom	0.243	Min Temp %	0.930	48.312	0.001
+1.20D+1.60S+0.50W	0.021	7.369	Bottom	0.243	Min Temp %	0.930	48.312	0.000
+1.20D+1.60S+0.50W	0.016	7.387	Bottom	0.243	Min Temp %	0.930	48.312	0.000
+1.20D+1.60S+0.50W	0.011	7.406	Bottom	0.243	Min Temp %	0.930	48.312	0.000
+1.20D+1.60S+0.50W	0.000	7.425	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S+0.50W	0.000	7.444	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S+0.50W	0.000	7.462	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S+0.50W	0.000	7.481	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S+0.50W	0.000	7.500	0	0.000	0	0.000	0.000	0.000

**One Way Shear**

**Punching Shear**

Load Combination...	Phi Vn	vu @ Col #1	vu @ Col #2	Phi Vn	vu @ Col #1	vu @ Col #2
+1.40D	94.87 psi	4.32 psi	4.22 psi	189.74 psi	1.58psi	1.81 psi
+1.20D+1.60L	94.87 psi	4.80 psi	4.72 psi	189.74 psi	1.67psi	1.87 psi
+1.20D+1.60L+0.50S	94.87 psi	6.40 psi	6.32 psi	189.74 psi	2.12psi	2.32 psi
+1.20D+0.50L	94.87 psi	4.05 psi	3.96 psi	189.74 psi	1.45psi	1.65 psi
+1.20D+0.50W	94.87 psi	6.28 psi	2.95 psi	189.74 psi	1.85psi	1.59 psi
+1.20D-0.50W	94.87 psi	1.12 psi	4.29 psi	189.74 psi	0.85psi	1.51 psi
+1.20D+0.50L+1.60S	94.87 psi	9.15 psi	9.06 psi	189.74 psi	2.90psi	3.10 psi
+1.20D+1.60S+0.50W	94.87 psi	11.38 psi	8.05 psi	189.74 psi	3.30psi	3.04 psi
+1.20D+1.60S-0.50W	94.87 psi	6.23 psi	9.39 psi	189.74 psi	2.30psi	2.96 psi
+1.20D+0.50L+W	94.87 psi	9.20 psi	2.62 psi	189.74 psi	2.45psi	1.73 psi
+1.20D+0.50L-W	94.87 psi	1.11 psi	5.31 psi	189.74 psi	0.45psi	1.57 psi
+1.20D+0.50L+0.50S+W	94.87 psi	10.79 psi	4.21 psi	189.74 psi	2.90psi	2.19 psi
+1.20D+0.50L+0.50S-W	94.87 psi	0.49 psi	6.90 psi	189.74 psi	0.91psi	2.02 psi
+1.20D+0.50L+0.20S	94.87 psi	4.68 psi	4.60 psi	189.74 psi	1.63psi	1.83 psi
+0.90D+W	94.87 psi	7.93 psi	1.37 psi	189.74 psi	2.01psi	1.25 psi
+0.90D-W	94.87 psi	2.38 psi	4.06 psi	189.74 psi	0.02psi	1.08 psi
+0.90D	94.87 psi	2.78 psi	2.71 psi	189.74 psi	1.02psi	1.16 psi



footing length = 8'

Vert. Loads	Horiz.
D = 5.0 kip	W _L = 3.21 kip
L = 1.27 kip	E _L = 4.9 kip
S = 5.86 kip	
W _v = 4.2 kip	
E _v = 5.42 kip	
W = $\frac{150 \text{ pcf}}{1000} \times 8' \times 2.5' \times 1.5' = 4.50 \text{ kip}$	
P = $\frac{1}{2} \left[ 350 \text{ pcf} \times \frac{27''}{12} \right] \frac{27''}{12} \times \frac{8'}{1000} = 7.1 \text{ kip}$	
R = 0.35(D+W) = 0.35(5.0+4.5) = 3.33 kip	

Soil vertical pressure

Controlling case:  $D + 0.75L + 0.75(0.6W) + 0.75S$   
 $= (5.0 + 4.5)k + 0.75 \times 1.25^k + 0.75(0.6)4.2^k + 0.75 \times 5.86^k$   
 $= 17.32 \text{ kip}$

pressure =  $\frac{17.32 \text{ kip} \times 1000}{1.5' \times 7.5'} = 1443 \text{ psf}$

SF =  $\frac{1500 \text{ psf}}{1443 \text{ psf}} = 1.03$  (OK) Factor of Safety.

final design  
18" x 30" x 8'

Soil Horizontal pressure.

EL Controls:  $E_L = 3.7 \text{ kip} < P + R = 7.1 \text{ kip} + 3.3 \text{ kip} = 6.5 \text{ kip}$

SF =  $\frac{10.4 \text{ kip}}{4.9 \text{ k}} = 2.12$  (OK)

Overturning. M_o = overturning moment      M_r = resisting moment

Seismic:  $M_o = 0.7 E_L \times 2.5' = 9.47^k$  || Wind:  $M_o = 0.6 W_L \times 2.5' = 4.8^k$

Seismic:  $M_r = 1.33 P \times \frac{9''}{12} + 0.9 (D + W) \times \frac{1.5'}{2} = 13.50 \text{ kft}$

Wind:  $M_r = P \times \frac{9''}{12} + 0.9 (D + W) \times \frac{1.5'}{2} = 11.74 \text{ kft}$

Seismic controls SF =  $\frac{13.50 \text{ kft}}{9.47 \text{ kft}} = 1.42$  (OK)      0.9 D + 0.7 E_L governs.



QUANTUM | CONSULTING ENGINEERS

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SEATTLE, WA 98101  
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www.quantumce.com

VERIZON AK2 SHAMPINE EQUIPMENT FOUNDATION

project

11/21/2023

date

23459.01

project no.

AMK

designer

sheet



**SEISMIC CALCULATIONS**

for  
**AK2 SHAMPINE, AK**

at  
**5182 PITTMAN ROAD  
WASILLA, AK 99654**

for  
**EHRESMANN ENGINEERING INC.  
&**

**E EI ENTERPRISES, LLC (DBA EHRESMANN ENGINEERING)**



**BY: WELLS HOLMES, S.E.  
PROJECT ENGINEER**

**AK Firm License #: AECL1355**

**PROJECT #: U1408.0572.241**

**DATE: April 11, 2024**

**DESIGNED BY CNM; CHECKED BY TPH**

**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 EEI Enterprises, LLC (DBA Ehresmann Engineering).*

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**PROJECT:** AK2 SHAMPINE, AK

---

**Design Criteria:**

**Code:** Structural design is based on the International Building Code, 2021 Edition and the TIA-222-H standard.

**Wind:** Basic wind speed = 119 mph (3-second gust) per the TIA-222-H standard  
Risk Category: II  
Wind exposure: C  
Topographic category: 1  
Crest height: 0 ft

**Ice:** 0.5" radial ice @ 60 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:  $S_S = 2.251g$        $S_1 = 0.994g$   
Site class: D  
Spectral response coefficients:  $S_{DS} = 1.501g$        $S_{D1} = 1.127g$   
Seismic design category: E  
Basic seismic-force-resisting-system: Telecommunication Tower: Steel Pole  
Seismic base shear, V = 40.9 k  
Seismic response coefficient, Cs = 1  
Response modification factor, R = 1.5  
Analysis procedure: Equivalent Lateral Force

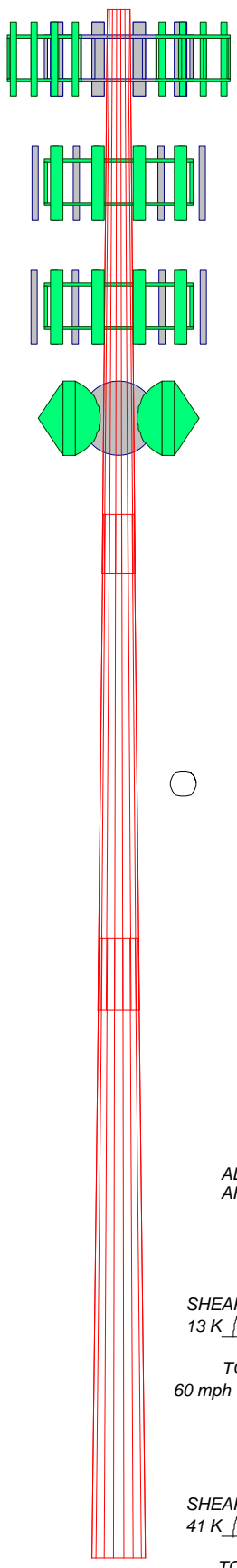
**General Notes:**

- 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. The connection of the members shown in these calculations to the existing structure shall be by others, with the exception of those explicitly shown on the drawings.
- 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.



Section	1	2	3
Length (ft)	45.50	40.00	50.00
Number of Sides	18	18	18
Thickness (in)	0.2500	0.3125	0.3750
Socket Length (ft)	4.75	5.75	38.5508
Top Dia (in)	21.0000	30.6472	51.0014
Bot Dia (in)	32.3300	40.6076	9.1
Grade		A572-65	
Weight (K)	3.3	4.8	9.1

125.0 ft



**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
(3) 12' EE T-FRAMES	121	Commscope RCMD-3315-PF-48	111
(4) 8' X 2' X 6" PANEL	121	Commscope RCMD-3315-PF-48	111
(4) 8' X 2' X 6" PANEL	121	Commscope RCMD-3315-PF-48	111
(4) 8' X 2' X 6" PANEL	121	12' EE Platform w/ Rail	101
(3) RRU RADIO 19.7" x 17" x 7.2"	121	(4) 8' X 2' X 6" PANEL	101
(3) RRU RADIO 19.7" x 17" x 7.2"	121	(4) 8' X 2' X 6" PANEL	101
(3) RRU RADIO 19.7" x 17" x 7.2"	121	(4) 8' X 2' X 6" PANEL	101
Commscope RCMD-3315-PF-48	121	(3) RRU RADIO 19.7" x 17" x 7.2"	101
Commscope RCMD-3315-PF-48	121	(3) RRU RADIO 19.7" x 17" x 7.2"	101
Commscope RCMD-3315-PF-48	121	(3) RRU RADIO 19.7" x 17" x 7.2"	101
12' EE Platform w/ Rail	111	Commscope RCMD-3315-PF-48	101
(4) 8' X 2' X 6" PANEL	111	Commscope RCMD-3315-PF-48	101
(4) 8' X 2' X 6" PANEL	111	Commscope RCMD-3315-PF-48	101
(4) 8' X 2' X 6" PANEL	111	Andrew 6' w/Radome	92
(3) RRU RADIO 19.7" x 17" x 7.2"	111	Andrew 6' w/Radome	92
(3) RRU RADIO 19.7" x 17" x 7.2"	111	Andrew 6' w/Radome	92
(3) RRU RADIO 19.7" x 17" x 7.2"	111		

**MATERIAL STRENGTH**

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

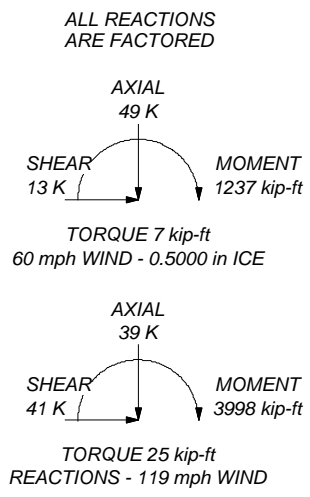
**TOWER DESIGN NOTES**

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 60 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Weld together tower sections have slip joint connections.
8. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER80S-xxx electrodes.
11. TOWER RATING: 98.2%

79.5 ft

44.2 ft

0.0 ft



**NOTE: EXCERPT FROM WIND ANALYSIS SHOWN FOR REFERENCE ONLY**

<b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780	<b>Job: AK2 SHAMPINE, AK 115070</b>	
	<b>Project: 125 FT MONOPOLE</b>	
	Client: VERIZON WIRELESS Code: TIA-222	Drawn by: EH Date: 03/25/24
	Path:	App'd: Scale: NTS Dwg No. E-1

<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780</p>	<p><b>Job</b></p> <p style="text-align: center;">AK2 SHAMPINE, AK                      115070</p>	<p><b>Page</b></p> <p style="text-align: center;">12 of 19</p>
	<p><b>Project</b></p> <p style="text-align: center;">125 FT MONOPOLE</p>	<p><b>Date</b></p> <p style="text-align: center;">10:55:02 04/11/24</p>
	<p><b>Client</b></p> <p style="text-align: center;">VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p style="text-align: center;">EH</p>

Comb. No.	Description
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

NOTE: EXCERPT FROM WIND ANALYSIS SHOWN FOR REFERENCE ONLY

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	125 - 79.5	Pole	Max Tension	2	0.00	0.00	-0.00
			Max. Compression	26	-28.36	0.00	0.00
			Max. Mx	8	-17.72	-830.51	-1.30
			Max. My	14	-17.72	0.00	-830.50
			Max. Vy	8	34.15	-830.51	-1.30
			Max. Vx	14	34.15	0.00	-830.50
			Max. Torque	25			
L2	79.5 - 44.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.99	0.00	0.00
			Max. Mx	8	-24.69	-2049.66	-0.42
			Max. My	14	-24.69	0.00	-2049.65
			Max. Vy	8	36.99	-2049.66	-0.42
			Max. Vx	14	36.99	0.00	-2049.65
			Max. Torque	25			
L3	44.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.88	0.00	0.00
			Max. Mx	8	-38.99	-3997.50	-0.32
			Max. My	14	-38.99	0.00	-3997.49
			Max. Vy	8	40.69	-3997.50	-0.32
			Max. Vx	14	40.69	0.00	-3997.49
			Max. Torque	25			

<p><b>tnxTower</b></p> <p><b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780</p>	<p><b>Job</b></p> <p>AK2 SHAMPINE, AK 115070</p>	<p><b>Page</b></p> <p>13 of 19</p>
	<p><b>Project</b></p> <p>125 FT MONOPOLE</p>	<p><b>Date</b></p> <p>10:55:02 04/11/24</p>
	<p><b>Client</b></p> <p>VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p>EH</p>

**Maximum Reactions**

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	48.88	0.00	13.07
	Max. H _x	20	39.04	40.64	0.00
	Max. H _z	2	39.04	0.00	40.64
	Max. M _x	2	3997.49	0.00	40.64
	Max. M _z	8	3997.50	-40.64	0.00
	Max. Torsion	25	25.06	20.32	35.20
	Min. Vert	17	29.28	20.32	-35.20
	Min. H _x	8	39.04	-40.64	0.00
	Min. H _z	14	39.04	0.00	-40.64
	Min. M _x	14	-3997.49	0.00	-40.64
	Min. M _z	20	-3997.50	40.64	0.00
	Min. Torsion	5	-25.06	-20.32	35.20

**NOTE: EXCERPT FROM WIND ANALYSIS SHOWN FOR REFERENCE ONLY**

**Tower Mast Reaction Summary**

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	32.53	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	39.04	0.00	-40.64	-3997.49	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	29.28	0.00	-40.64	-3956.17	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	39.04	20.32	-35.20	-3462.10	-1998.47	25.04
0.9 Dead+1.0 Wind 30 deg - No Ice	29.28	20.32	-35.20	-3426.26	-1977.88	25.06
1.2 Dead+1.0 Wind 60 deg - No Ice	39.04	35.20	-20.32	-1998.75	-3461.94	-0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	29.28	35.20	-20.32	-1978.09	-3426.15	-0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	39.04	40.64	-0.00	0.33	-3997.50	-25.04
0.9 Dead+1.0 Wind 90 deg - No Ice	29.28	40.64	-0.00	0.24	-3956.17	-25.06
1.2 Dead+1.0 Wind 120 deg - No Ice	39.04	35.20	20.32	1998.75	-3461.94	0.00
0.9 Dead+1.0 Wind 120 deg - No Ice	29.28	35.20	20.32	1978.09	-3426.15	0.00
1.2 Dead+1.0 Wind 150 deg - No Ice	39.04	20.32	35.20	3461.78	-1999.03	25.04
0.9 Dead+1.0 Wind 150 deg - No Ice	29.28	20.32	35.20	3426.03	-1978.29	25.06
1.2 Dead+1.0 Wind 180 deg - No Ice	39.04	0.00	40.64	3997.49	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	29.28	0.00	40.64	3956.17	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	39.04	-20.32	35.20	3461.78	1999.03	-25.04
0.9 Dead+1.0 Wind 210 deg - No Ice	29.28	-20.32	35.20	3426.03	1978.29	-25.06
1.2 Dead+1.0 Wind 240 deg - No Ice	39.04	-35.20	20.32	1998.75	3461.94	-0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	29.28	-35.20	20.32	1978.09	3426.15	-0.00



**Seismic Base Shear Calculations:**

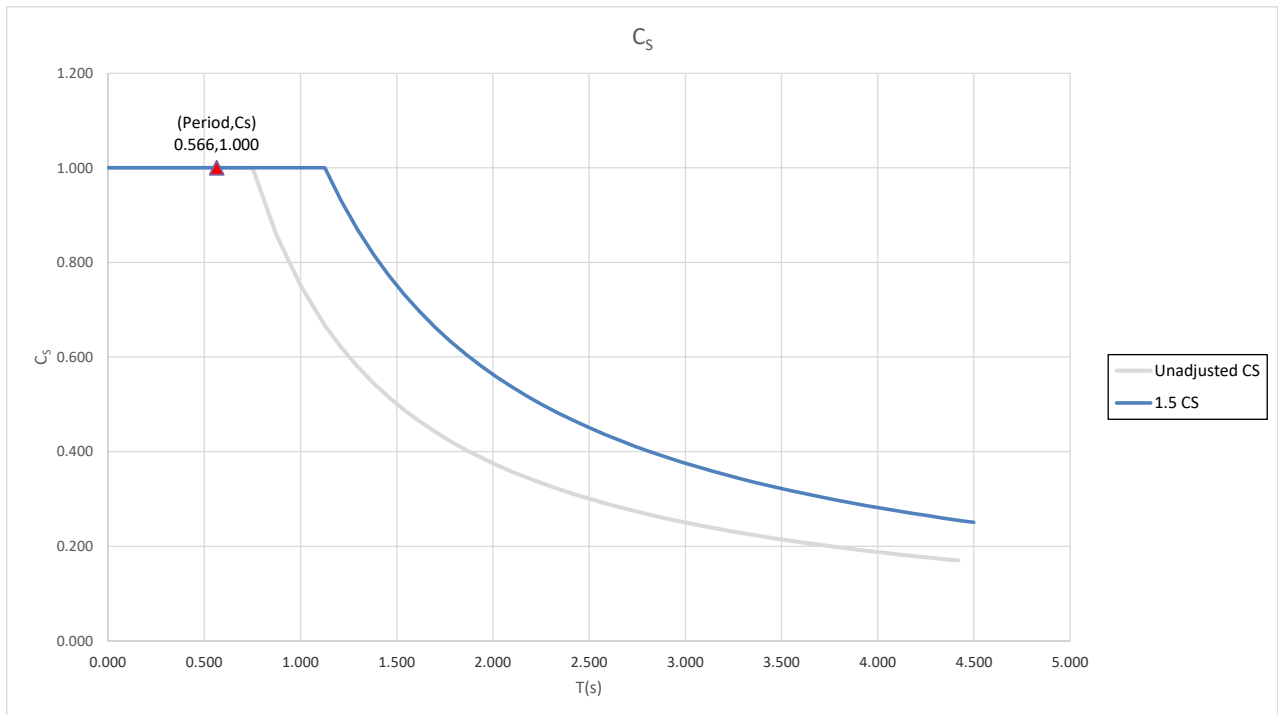
Seismic Parameters:

Risk Category=	II	$S_s =$	2.251	g	$S_{DS} =$	1.501	g
Seismic Design Category=	E	$S_1 =$	0.994	g	$S_{D1} =$	1.127	g
Importance, I =	1.00	$S_{MS} =$	2.251	g	$F_a =$	1.00	
Site Class=	D	$S_{M1} =$	1.690	g	$F_v =$	1.70	
R =	1.5						
$T_L =$	16						

Seismic Base Shear:

Structure Type =	Telecom: Steel Pole	$W_t =$	32.50	k	$f_1 =$	1.77	Hz
Period Type =	RISA Period Override	$W_L =$	32.5	k	$T =$	0.57	sec.
h =	125.0	ft			$k_e =$	1.03	
E =	29000	ksi					
$C_s =$	1.000				<b>ratio =</b>	0.79	
Seismic Shear, $V_s$ (final) =	32.5	k					
Wind Shear =	41.00	k					

**Wind Controls, Seismic Analysis Still Required**





PROJECT: AK2 SHAMPINE, AK

**Equivalent Lateral Force:**

**Discrete Appurtenances:**

Label	Height AGL, $h_z$ [ft]	Weight, $w_z$ [lb]	$w_z h_z^{ke}$	$F_{sz}$ [lb]
(3) 12' EE T-FRAMES	121.00	2750.0	389807	4617.7
(12) Panel antennas	121.00	1200.0	170098	2015.0
(9) RRU	121.00	270.0	38272	453.4
(3) Surge suppressors	121.00	90.0	12757	151.1
(3) 12' EE T-Frames w/ Ra	111.00	2900.0	376025	4454.4
(12) Panel antennas	111.00	1200.0	155597	1843.2
(9) RRU	111.00	270.0	35009	414.7
(3) Surge suppressors	111.00	90.0	11670	138.2
(3) 12' EE T-Frames w/ Ra	101.00	2900.0	341084	4040.5
(12) Panel antennas	101.00	1200.0	141138	1671.9
(9) RRU	101.00	270.0	31756	376.2
(3) Surge suppressors	101.00	90.0	10585	125.4

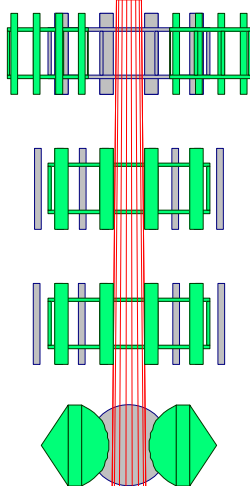
**Linear Appurtenances:**

Label	$z$ [ft]	$w_z$ [lb]	$w_z h_z^{ke}$	$F_{sz}$ [lb]
Coax	116.1	47.5	6451	76.4
Coax	98.2	124.8	14255	168.9
Coax	80.4	163.0	15142	179.4
Coax	62.5	163.0	11680	138.4
Coax	44.6	163.0	8250	97.7
Coax	26.8	163.0	4868	57.7
Coax	8.9	163.0	1565	18.5

**Tapered Pole:**

Label	$z$ [ft]	$w_z$ [lb]	$w_z h_z^{ke}$	$F_{sz}$ [lb]
Tapered 1	117.4	1071.8	147283	1744.7
Tapered 1	102.3	1071.8	127674	1512.4
Tapered 1	87.1	1071.8	108162	1281.3
Tapered 2	72.8	1581.9	132733	1572.4
Tapered 2	63.9	1581.9	115982	1373.9
Tapered 2	50.6	1581.9	91082	1079.0
Tapered 3	41.3	2947.2	137451	1628.3
Tapered 3	24.8	2947.2	81092	960.6
Tapered 3	8.2	2947.2	26068	308.8

125.0 ft



**MATERIAL STRENGTH**

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

**TOWER DESIGN NOTES**

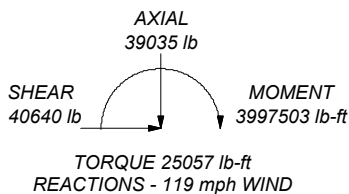
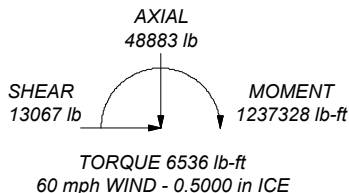
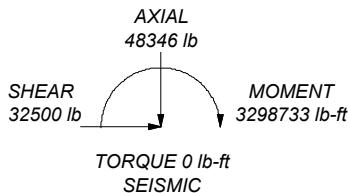
1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 60 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Weld together tower sections have slip joint connections.
8. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER80S-xxx electrodes.
11. TOWER RATING: 98.2%

79.5 ft

44.2 ft

0.0 ft

ALL REACTIONS ARE FACTORED



Section	1	2	3	
Length (ft)	45.50	40.00	50.00	
Number of Sides	18	18	18	
Thickness (in)	0.2500	0.3125	0.3750	
Socket Length (ft)	4.75	5.75		
Top Dia (in)	21.0000	30.6472	38.5508	
Bot Dia (in)	32.3300	40.6076	51.0014	
Grade		A572-65		
Weight (lb)	3277.7	4815.4	9081.5	17174.6

**Vector Structural Engineering**  
 651 W Galena Park Blvd Suite 101  
 Draper, UT 84020  
 Phone: (801) 990-1775  
 FAX: (801) 990-1776

Job: <b>AK2 SHAMPINE, AK</b>	<b>115070</b>
Project: <b>125 FT MONOPOLE</b>	
Client: VERIZON WIRELESS	Drawn by: cmillard
Code: TIA-222-H	Date: 04/12/2019
Path:	Scale: NTS
	Dwg No. E-1

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	1 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

## Tower Input Data

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

- Tower base elevation above sea level: 444.00 ft.
- Basic wind speed of 119 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 0.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 60 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Weld together tower sections have slip joint connections..
- Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
- Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
- Welds are fabricated with ER80S-xxx electrodes..
- A 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

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

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 2 of 33
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:43:12 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

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	125.00-79.50	45.50	4.75	18	21.0000	32.3300	0.2500	1.0000	A572-65 (65 ksi)
L2	79.50-44.25	40.00	5.75	18	30.6472	40.6076	0.3125	1.2500	A572-65 (65 ksi)
L3	44.25-0.00	50.00		18	38.5508	51.0014	0.3750	1.5000	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	21.2854	16.4651	895.6507	7.3662	10.6680	83.9568	1792.4800	8.2341	3.2560	13.024
	32.7902	25.4555	3309.6911	11.3884	16.4236	201.5199	6623.7371	12.7302	5.2501	21
L2	32.2728	30.0882	3497.9486	10.7688	15.5688	224.6772	7000.4999	15.0470	4.8439	15.501
	41.1859	39.9677	8198.8380	14.3048	20.6287	397.4485	16408.4642	19.9877	6.5969	21.11
L3	40.5416	45.4388	8366.4438	13.5524	19.5838	427.2121	16743.8964	22.7237	6.1249	16.333
	51.7303	60.2580	19512.1942	17.9724	25.9087	753.1137	39050.0630	30.1347	8.3162	22.177

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 125.00-79.50				1	1.03	1.01			
L2 79.50-44.25				1	1.03	1.01			
L3 44.25-0.00				1	1.03	1.01			

### Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	F1554-105
Anchor bolt size	1.7500 in
Number of bolts	22
Embedment length	60.0000 in
f _c	4.5000 ksi
Grout space	3.5000 in
Base plate grade	A572-50
Base plate thickness	1.7500 in
Bolt circle diameter	58.0000 in
Outer diameter	65.0000 in
Inner diameter	44.0000 in
Base plate type	Stiffened Plate
Bolts per stiffener	1
Stiffener thickness	0.3750 in
Stiffener height	12.0000 in



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	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:43:12 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

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

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
Safety Line 3/8	C	No	Yes	CaAa (Out Of Face)	125.00 - 12.00	1	No Ice	0.04	0.22
							1/2" Ice	0.14	0.75
Hybrid cable	C	No	Yes	Inside Pole	121.00 - 0.00	3	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
Hybrid cable	C	No	Yes	Inside Pole	111.00 - 0.00	3	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
Hybrid cable	C	No	Yes	Inside Pole	101.00 - 0.00	3	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
EW63	C	No	Yes	Inside Pole	92.00 - 0.00	3	No Ice	0.00	0.51
							1/2" Ice	0.00	0.51

**Feed Line/Linear Appurtenances Section Areas**

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	125.00-79.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.706	261.61
L2	79.50-44.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.322	321.83
L3	44.25-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.209	401.36

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	125.00-79.50	A	0.559	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.794	288.57
L2	79.50-44.25	A	0.532	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.264	342.72
L3	44.25-0.00	A	0.480	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.641	419.55

**User Defined Loads - Seismic**

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	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:43:12 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Description	Elevation	Offset From Centroid	Azimuth Angle	E _v	E _{hx}	E _{hz}	E _h
	ft	ft	°	lb	lb	lb	lb
(3) 12' EE T-FRAMES seismic	121.00	0.00	0.0000	825.40	0.00	0.00	4617.70
(12) Panel antennas seismic	121.00	0.00	0.0000	360.20	0.00	0.00	2015.00
(9) RRU seismic	121.00	0.00	0.0000	81.00	0.00	0.00	453.40
(3) Surge suppressors seismic	121.00	0.00	0.0000	27.00	0.00	0.00	151.10
(3) 12' EE T-Frames w/ Rail seismic	111.00	0.00	0.0000	870.40	0.00	0.00	4454.40
(12) Panel antennas seismic	111.00	0.00	0.0000	360.20	0.00	0.00	1843.20
(9) RRU seismic	111.00	0.00	0.0000	81.00	0.00	0.00	414.70
(3) Surge suppressors seismic	111.00	0.00	0.0000	27.00	0.00	0.00	138.20
(3) 12' EE T-Frames w/ Rail seismic	101.00	0.00	0.0000	870.40	0.00	0.00	4040.50
(12) Panel antennas seismic	101.00	0.00	0.0000	360.20	0.00	0.00	1671.90
(9) RRU seismic	101.00	0.00	0.0000	81.00	0.00	0.00	376.20
(3) Surge suppressors seismic	101.00	0.00	0.0000	27.00	0.00	0.00	125.40
Coax seismic	116.10	0.00	0.0000	14.30	0.00	0.00	76.40
Coax seismic	98.20	0.00	0.0000	37.40	0.00	0.00	168.90
Coax seismic	80.40	0.00	0.0000	48.90	0.00	0.00	179.40
Coax seismic	62.50	0.00	0.0000	48.90	0.00	0.00	138.40
Coax seismic	44.60	0.00	0.0000	48.90	0.00	0.00	97.70
Coax seismic	26.80	0.00	0.0000	48.90	0.00	0.00	57.70
Coax seismic	8.90	0.00	0.0000	48.90	0.00	0.00	18.50
Tapered 1 seismic	117.40	0.00	0.0000	321.70	0.00	0.00	1744.70
Tapered 1 seismic	102.30	0.00	0.0000	321.70	0.00	0.00	1512.40
Tapered 1 seismic	87.10	0.00	0.0000	321.70	0.00	0.00	1281.30
Tapered 2 seismic	72.80	0.00	0.0000	474.80	0.00	0.00	1572.40
Tapered 2 seismic	63.90	0.00	0.0000	474.80	0.00	0.00	1373.90
Tapered 2 seismic	50.60	0.00	0.0000	474.80	0.00	0.00	1079.00
Tapered 3 seismic	41.30	0.00	0.0000	884.60	0.00	0.00	1628.30
Tapered 3 seismic	24.80	0.00	0.0000	884.60	0.00	0.00	960.60
Tapered 3 seismic	8.20	0.00	0.0000	884.60	0.00	0.00	308.80

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	lb	
(3) 12' EE T-FRAMES	A	None		0.0000	121.00	No Ice 1/2" Ice	28.73 28.73	2750.00 2975.00	
(4) 8' X 2' X 6" PANEL	A	From Face	3.87 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	20.27 20.91	6.80 7.38	100.00 202.12
(4) 8' X 2' X 6" PANEL	B	From Face	3.87 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	20.27 20.91	6.80 7.38	100.00 202.12
(4) 8' X 2' X 6" PANEL	C	From Face	3.87 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	20.27 20.91	6.80 7.38	100.00 202.12
(3) RRU RADIO 19.7" x 17" x 7.2"	A	From Face	3.87 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	30.00 45.87
(3) RRU RADIO 19.7" x 17"	B	From Face	3.87	0.0000	121.00	No Ice	2.79	1.19	30.00

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	<b>Project</b>		125 FT MONOPOLE		<b>Date</b>		15:43:12 04/11/24	
	<b>Client</b>		VERIZON WIRELESS		<b>Designed by</b>		cmillard	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
x 7.2"			0.00		1/2" Ice	3.00	1.34	45.87
(3) RRU RADIO 19.7" x 17" x 7.2"	C	From Face	3.87	0.0000	121.00	No Ice	2.79	30.00
			0.00			1/2" Ice	3.00	45.87
			0.00					
Commscope RCMDC-3315-PF-48	A	From Face	3.87	0.0000	121.00	No Ice	3.71	30.00
			0.00			1/2" Ice	3.95	57.36
			0.00					
Commscope RCMDC-3315-PF-48	B	From Face	3.87	0.0000	121.00	No Ice	3.71	30.00
			0.00			1/2" Ice	3.95	57.36
			0.00					
Commscope RCMDC-3315-PF-48	C	From Face	3.87	0.0000	121.00	No Ice	3.71	30.00
			0.00			1/2" Ice	3.95	57.36
			0.00					
12' EE Platform w/ Rail	A	None		0.0000	111.00	No Ice	24.00	2900.00
						1/2" Ice	28.00	3400.00
(4) 8' X 2' X 6" PANEL	A	From Face	3.87	0.0000	111.00	No Ice	20.27	100.00
			0.00			1/2" Ice	20.91	202.12
			0.00					
(4) 8' X 2' X 6" PANEL	B	From Face	3.87	0.0000	111.00	No Ice	20.27	100.00
			0.00			1/2" Ice	20.91	202.12
			0.00					
(4) 8' X 2' X 6" PANEL	C	From Face	3.87	0.0000	111.00	No Ice	20.27	100.00
			0.00			1/2" Ice	20.91	202.12
			0.00					
(3) RRU RADIO 19.7" x 17" x 7.2"	A	From Face	3.87	0.0000	111.00	No Ice	2.79	30.00
			0.00			1/2" Ice	3.00	45.87
			0.00					
(3) RRU RADIO 19.7" x 17" x 7.2"	B	From Face	3.87	0.0000	111.00	No Ice	2.79	30.00
			0.00			1/2" Ice	3.00	45.87
			0.00					
(3) RRU RADIO 19.7" x 17" x 7.2"	C	From Face	3.87	0.0000	111.00	No Ice	2.79	30.00
			0.00			1/2" Ice	3.00	45.87
			0.00					
Commscope RCMDC-3315-PF-48	A	From Face	3.87	0.0000	111.00	No Ice	3.71	30.00
			0.00			1/2" Ice	3.95	57.36
			0.00					
Commscope RCMDC-3315-PF-48	B	From Face	3.87	0.0000	111.00	No Ice	3.71	30.00
			0.00			1/2" Ice	3.95	57.36
			0.00					
Commscope RCMDC-3315-PF-48	C	From Face	3.87	0.0000	111.00	No Ice	3.71	30.00
			0.00			1/2" Ice	3.95	57.36
			0.00					
12' EE Platform w/ Rail	A	None		0.0000	101.00	No Ice	24.00	2900.00
						1/2" Ice	28.00	3400.00
(4) 8' X 2' X 6" PANEL	A	From Face	3.87	0.0000	101.00	No Ice	20.27	100.00
			0.00			1/2" Ice	20.91	202.12
			0.00					
(4) 8' X 2' X 6" PANEL	B	From Face	3.87	0.0000	101.00	No Ice	20.27	100.00
			0.00			1/2" Ice	20.91	202.12
			0.00					
(4) 8' X 2' X 6" PANEL	C	From Face	3.87	0.0000	101.00	No Ice	20.27	100.00
			0.00			1/2" Ice	20.91	202.12
			0.00					
(3) RRU RADIO 19.7" x 17" x 7.2"	A	From Face	3.87	0.0000	101.00	No Ice	2.79	30.00
			0.00			1/2" Ice	3.00	45.87
			0.00					

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	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	Ice	C _{AA} Front	C _{AA} Side	Weight
			ft	°	ft		ft ²	ft ²	lb
(3) RRU RADIO 19.7" x 17" x 7.2"	B	From Face	3.87 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	30.00 45.87
(3) RRU RADIO 19.7" x 17" x 7.2"	C	From Face	3.87 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	30.00 45.87
Commscope RCMDC-3315-PF-48	A	From Face	3.87 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	30.00 57.36
Commscope RCMDC-3315-PF-48	B	From Face	3.87 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	30.00 57.36
Commscope RCMDC-3315-PF-48	C	From Face	3.87 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	30.00 57.36

### Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft	°	°	ft	ft	ft ²	lb	
Andrew 6' w/Radome	A	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	Worst		92.00	6.00	No Ice 1/2" Ice	28.27 29.07	380.00 450.00
Andrew 6' w/Radome	B	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	Worst		92.00	6.00	No Ice 1/2" Ice	28.27 29.07	380.00 450.00
Andrew 6' w/Radome	C	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	Worst		92.00	6.00	No Ice 1/2" Ice	28.27 29.07	380.00 450.00

### Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
L1 125.00-79.50	100.90	1.268	43	102.518	A	0.000	105.594	105.594	100.00	0.000	0.000
					B	0.000	105.594		100.00	0.000	0.000
					C	0.000	105.594		100.00	0.000	1.706
L2 79.50-44.25	61.43	1.142	39	107.892	A	0.000	111.129	111.129	100.00	0.000	0.000
					B	0.000	111.129		100.00	0.000	0.000
					C	0.000	111.129		100.00	0.000	1.322

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Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{A A A} In Face	C _{A A A} Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L3 44.25-0.00	22.14	0.921	31	170.126	A	0.000	175.230	175.230	100.00	0.000	0.000
					B	0.000	175.230	100.00	0.000	0.000	
					C	0.000	175.230	100.00	0.000	1.209	

**Tower Pressure - With Ice**

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{A A A} In Face	C _{A A A} Out Face
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 125.00-79.50	100.90	1.268	11	0.5591	106.758	A	0.000	109.961	109.961	100.00	0.000	0.000
						B	0.000	109.961	100.00	0.000	0.000	
						C	0.000	109.961	100.00	0.000	6.794	
L2 79.50-44.25	61.43	1.142	10	0.5321	111.177	A	0.000	114.513	114.513	100.00	0.000	0.000
						B	0.000	114.513	100.00	0.000	0.000	
						C	0.000	114.513	100.00	0.000	5.264	
L3 44.25-0.00	22.14	0.921	8	0.4804	174.050	A	0.000	179.272	179.272	100.00	0.000	0.000
						B	0.000	179.272	100.00	0.000	0.000	
						C	0.000	179.272	100.00	0.000	4.641	

**Tower Pressure - Service**

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{A A A} In Face	C _{A A A} Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 125.00-79.50	100.90	1.268	10	102.518	A	0.000	105.594	105.594	100.00	0.000	0.000
					B	0.000	105.594	100.00	0.000	0.000	
					C	0.000	105.594	100.00	0.000	1.706	
L2 79.50-44.25	61.43	1.142	9	107.892	A	0.000	111.129	111.129	100.00	0.000	0.000
					B	0.000	111.129	100.00	0.000	0.000	
					C	0.000	111.129	100.00	0.000	1.322	
L3 44.25-0.00	22.14	0.921	7	170.126	A	0.000	175.230	175.230	100.00	0.000	0.000
					B	0.000	175.230	100.00	0.000	0.000	
					C	0.000	175.230	100.00	0.000	1.209	

**Tower Forces - No Ice - Wind Normal To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 125.00-79.50	261.61	3277.67	A	1	0.73	43	1	1	105.594	3718.55	81.73	C
			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 8 of 33
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:43:12 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L2 79.50-44.25	321.83	4815.39	A	1	0.73	39	1	1	111.129	3501.45	99.33	C
			B	1	0.73		1	1	111.129			
			C	1	0.73		1	1	111.129			
L3 44.25-0.00	401.36	9081.52	A	1	0.73	31	1	1	175.230	4435.03	100.23	C
			B	1	0.73		1	1	175.230			
			C	1	0.73		1	1	175.230			
Sum Weight:	984.80	17174.59						OTM	688473.30 lb-ft	11655.04		

**Tower Forces - No Ice - Wind 45 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	261.61	3277.67	A	1	0.73	43	1	1	105.594	3718.55	81.73	C
			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2 79.50-44.25	321.83	4815.39	A	1	0.73	39	1	1	111.129	3501.45	99.33	C
			B	1	0.73		1	1	111.129			
			C	1	0.73		1	1	111.129			
L3 44.25-0.00	401.36	9081.52	A	1	0.73	31	1	1	175.230	4435.03	100.23	C
			B	1	0.73		1	1	175.230			
			C	1	0.73		1	1	175.230			
Sum Weight:	984.80	17174.59						OTM	688473.30 lb-ft	11655.04		

**Tower Forces - No Ice - Wind 60 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	261.61	3277.67	A	1	0.73	43	1	1	105.594	3718.55	81.73	C
			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2 79.50-44.25	321.83	4815.39	A	1	0.73	39	1	1	111.129	3501.45	99.33	C
			B	1	0.73		1	1	111.129			
			C	1	0.73		1	1	111.129			
L3 44.25-0.00	401.36	9081.52	A	1	0.73	31	1	1	175.230	4435.03	100.23	C
			B	1	0.73		1	1	175.230			
			C	1	0.73		1	1	175.230			
Sum Weight:	984.80	17174.59						OTM	688473.30 lb-ft	11655.04		

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 9 of 33
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:43:12 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

**Tower Forces - No Ice - Wind 90 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	261.61	3277.67	A	1	0.73	43	1	1	105.594	3718.55	81.73	C
			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2 79.50-44.25	321.83	4815.39	A	1	0.73	39	1	1	111.129	3501.45	99.33	C
			B	1	0.73		1	1	111.129			
			C	1	0.73		1	1	111.129			
L3 44.25-0.00	401.36	9081.52	A	1	0.73	31	1	1	175.230	4435.03	100.23	C
			B	1	0.73		1	1	175.230			
			C	1	0.73		1	1	175.230			
Sum Weight:	984.80	17174.59						OTM	688473.30 lb-ft	11655.04		

**Tower Forces - With Ice - Wind Normal To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	288.57	4132.56	A	1	1.2	11	1	1	109.961	1664.71	36.59	C
			B	1	1.2		1	1	109.961			
			C	1	1.2		1	1	109.961			
L2 79.50-44.25	342.72	5666.17	A	1	1.2	10	1	1	114.349	1538.32	43.64	C
			B	1	1.2		1	1	114.349			
			C	1	1.2		1	1	114.349			
L3 44.25-0.00	419.55	10287.88	A	1	1.2	8	1	1	178.880	1914.78	43.27	C
			B	1	1.2		1	1	178.880			
			C	1	1.2		1	1	178.880			
Sum Weight:	1050.85	20086.60						OTM	304854.82 lb-ft	5117.81		

**Tower Forces - With Ice - Wind 45 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	288.57	4132.56	A	1	1.2	11	1	1	109.961	1664.71	36.59	C
			B	1	1.2		1	1	109.961			
			C	1	1.2		1	1	109.961			
L2 79.50-44.25	342.72	5666.17	A	1	1.2	10	1	1	114.349	1538.32	43.64	C
			B	1	1.2		1	1	114.349			
			C	1	1.2		1	1	114.349			
L3 44.25-0.00	419.55	10287.88	A	1	1.2	8	1	1	178.880	1914.78	43.27	C
			B	1	1.2		1	1	178.880			
			C	1	1.2		1	1	178.880			
Sum Weight:	1050.85	20086.60						OTM	304854.82	5117.81		

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	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:43:12 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
									lb-ft			

**Tower Forces - With Ice - Wind 60 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 125.00-79.50	288.57	4132.56	A	1	1.2	11	1	1	109.961	1664.71	36.59	C
			B	1	1.2		1	1	109.961			
			C	1	1.2		1	1	109.961			
L2 79.50-44.25	342.72	5666.17	A	1	1.2	10	1	1	114.349	1538.32	43.64	C
			B	1	1.2		1	1	114.349			
			C	1	1.2		1	1	114.349			
L3 44.25-0.00	419.55	10287.88	A	1	1.2	8	1	1	178.880	1914.78	43.27	C
			B	1	1.2		1	1	178.880			
			C	1	1.2		1	1	178.880			
Sum Weight:	1050.85	20086.60						OTM	304854.82 lb-ft	5117.81		

**Tower Forces - With Ice - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 125.00-79.50	288.57	4132.56	A	1	1.2	11	1	1	109.961	1664.71	36.59	C
			B	1	1.2		1	1	109.961			
			C	1	1.2		1	1	109.961			
L2 79.50-44.25	342.72	5666.17	A	1	1.2	10	1	1	114.349	1538.32	43.64	C
			B	1	1.2		1	1	114.349			
			C	1	1.2		1	1	114.349			
L3 44.25-0.00	419.55	10287.88	A	1	1.2	8	1	1	178.880	1914.78	43.27	C
			B	1	1.2		1	1	178.880			
			C	1	1.2		1	1	178.880			
Sum Weight:	1050.85	20086.60						OTM	304854.82 lb-ft	5117.81		

**Tower Forces - Service - Wind Normal To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	



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	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:43:12 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	261.61	3277.67	A	1	0.73	10	1	1	105.594	845.82	18.59	C
			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2 79.50-44.25	321.83	4815.39	A	1	0.73	9	1	1	111.129	796.44	22.59	C
			B	1	0.73		1	1	111.129			
			C	1	0.73		1	1	111.129			
L3 44.25-0.00	401.36	9081.52	A	1	0.73	7	1	1	175.230	1008.79	22.80	C
			B	1	0.73		1	1	175.230			
			C	1	0.73		1	1	175.230			
Sum Weight:	984.80	17174.59						OTM	156599.73 lb-ft	2651.05		

**Tower Forces - Service - Wind 45 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	261.61	3277.67	A	1	0.73	10	1	1	105.594	845.82	18.59	C
			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2 79.50-44.25	321.83	4815.39	A	1	0.73	9	1	1	111.129	796.44	22.59	C
			B	1	0.73		1	1	111.129			
			C	1	0.73		1	1	111.129			
L3 44.25-0.00	401.36	9081.52	A	1	0.73	7	1	1	175.230	1008.79	22.80	C
			B	1	0.73		1	1	175.230			
			C	1	0.73		1	1	175.230			
Sum Weight:	984.80	17174.59						OTM	156599.73 lb-ft	2651.05		

**Tower Forces - Service - Wind 60 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	261.61	3277.67	A	1	0.73	10	1	1	105.594	845.82	18.59	C
			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2 79.50-44.25	321.83	4815.39	A	1	0.73	9	1	1	111.129	796.44	22.59	C
			B	1	0.73		1	1	111.129			
			C	1	0.73		1	1	111.129			
L3 44.25-0.00	401.36	9081.52	A	1	0.73	7	1	1	175.230	1008.79	22.80	C
			B	1	0.73		1	1	175.230			
			C	1	0.73		1	1	175.230			
Sum Weight:	984.80	17174.59						OTM	156599.73 lb-ft	2651.05		

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	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

**Tower Forces - Service - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 125.00-79.50	261.61	3277.67	A	1	0.73	10	1	1	105.594	845.82	18.59	C
			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2 79.50-44.25	321.83	4815.39	A	1	0.73	9	1	1	111.129	796.44	22.59	C
			B	1	0.73		1	1	111.129			
			C	1	0.73		1	1	111.129			
L3 44.25-0.00	401.36	9081.52	A	1	0.73	7	1	1	175.230	1008.79	22.80	C
			B	1	0.73		1	1	175.230			
			C	1	0.73		1	1	175.230			
Sum Weight:	984.80	17174.59						OTM	156599.73 lb-ft	2651.05		

**Force Totals**

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M _x	Sum of Overturning Moments, M _z	Sum of Torques
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Leg Weight	17174.59					
Bracing Weight	0.00					
Total Member Self-Weight	17174.59			0.00	0.00	
Total Weight	32529.39			0.00	0.00	
Wind 0 deg - No Ice		0.00	-40639.87	-3846835.06	0.00	0.00
Wind 30 deg - No Ice		20319.93	-35195.16	-3331456.89	-1923417.53	25529.55
Wind 45 deg - No Ice		28736.73	-28736.73	-2720123.16	-2720123.16	18052.12
Wind 60 deg - No Ice		35195.16	-20319.93	-1923417.53	-3331456.89	0.00
Wind 90 deg - No Ice		40639.87	0.00	0.00	-3846835.06	-25529.55
Wind 120 deg - No Ice		35195.16	20319.93	1923417.53	-3331456.89	0.00
Wind 135 deg - No Ice		28736.73	28736.73	2720123.16	-2720123.16	18052.12
Wind 150 deg - No Ice		20319.93	35195.16	3331456.89	-1923417.53	25529.55
Wind 180 deg - No Ice		0.00	40639.87	3846835.06	0.00	0.00
Wind 210 deg - No Ice		-20319.93	35195.16	3331456.89	1923417.53	-25529.55
Wind 225 deg - No Ice		-28736.73	28736.73	2720123.16	2720123.16	-18052.12
Wind 240 deg - No Ice		-35195.16	20319.93	1923417.53	3331456.89	0.00
Wind 270 deg - No Ice		-40639.87	0.00	0.00	3846835.06	25529.55
Wind 300 deg - No Ice		-35195.16	-20319.93	-1923417.53	3331456.89	0.00
Wind 315 deg - No Ice		-28736.73	-28736.73	-2720123.16	2720123.16	-18052.12
Wind 330 deg - No Ice		-20319.93	-35195.16	-3331456.89	1923417.53	-25529.55
Member Ice	2912.01					
Total Weight Ice	42105.38			0.00	0.00	
Wind 0 deg - Ice		0.00	-13067.10	-1172480.97	0.00	0.00
Wind 30 deg - Ice		6533.55	-11316.44	-1015398.31	-586240.49	6547.90
Wind 45 deg - Ice		9239.83	-9239.83	-829069.25	-829069.25	4630.07
Wind 60 deg - Ice		11316.44	-6533.55	-586240.49	-1015398.31	0.00
Wind 90 deg - Ice		13067.10	0.00	0.00	-1172480.97	-6547.90
Wind 120 deg - Ice		11316.44	6533.55	586240.49	-1015398.31	0.00
Wind 135 deg - Ice		9239.83	9239.83	829069.25	-829069.25	4630.07
Wind 150 deg - Ice		6533.55	11316.44	1015398.31	-586240.49	6547.90

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	<p><b>Project</b></p> <p>125 FT MONOPOLE</p>	<p><b>Date</b></p> <p>15:43:12 04/11/24</p>
	<p><b>Client</b></p> <p>VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p>cmillard</p>

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 180 deg - Ice		0.00	13067.10	1172480.97	0.00	0.00
Wind 210 deg - Ice		-6533.55	11316.44	1015398.31	586240.49	-6547.90
Wind 225 deg - Ice		-9239.83	9239.83	829069.25	829069.25	-4630.07
Wind 240 deg - Ice		-11316.44	6533.55	586240.49	1015398.31	0.00
Wind 270 deg - Ice		-13067.10	0.00	0.00	1172480.97	6547.90
Wind 300 deg - Ice		-11316.44	-6533.55	-586240.49	1015398.31	0.00
Wind 315 deg - Ice		-9239.83	-9239.83	-829069.25	829069.25	-4630.07
Wind 330 deg - Ice		-6533.55	-11316.44	-1015398.31	586240.49	-6547.90
Total Weight	32529.39			0.00	0.00	
Wind 0 deg - Service		0.00	-9243.92	-874998.81	0.00	0.00
Wind 30 deg - Service		4621.96	-8005.47	-757771.20	-437499.41	5806.94
Wind 45 deg - Service		6536.44	-6536.44	-618717.59	-618717.59	4106.12
Wind 60 deg - Service		8005.47	-4621.96	-437499.41	-757771.20	0.00
Wind 90 deg - Service		9243.92	0.00	0.00	-874998.81	-5806.94
Wind 120 deg - Service		8005.47	4621.96	437499.41	-757771.20	0.00
Wind 135 deg - Service		6536.44	6536.44	618717.59	-618717.59	4106.12
Wind 150 deg - Service		4621.96	8005.47	757771.20	-437499.41	5806.94
Wind 180 deg - Service		0.00	9243.92	874998.81	0.00	0.00
Wind 210 deg - Service		-4621.96	8005.47	757771.20	437499.41	-5806.94
Wind 225 deg - Service		-6536.44	6536.44	618717.59	618717.59	-4106.12
Wind 240 deg - Service		-8005.47	4621.96	437499.41	757771.20	0.00
Wind 270 deg - Service		-9243.92	0.00	0.00	874998.81	5806.94
Wind 300 deg - Service		-8005.47	-4621.96	-437499.41	757771.20	0.00
Wind 315 deg - Service		-6536.44	-6536.44	-618717.59	618717.59	-4106.12
Wind 330 deg - Service		-4621.96	-8005.47	-757771.20	437499.41	-5806.94
Seismic Vertical	9310.30					
Seismic Horizontal 0 deg		0.00	-32500.10	-3139930.60	0.00	0.00
Seismic Horizontal 30 deg		16250.05	-28145.91	-2719259.67	-1569965.30	0.00
Seismic Horizontal 45 deg		22981.04	-22981.04	-2220266.22	-2220266.22	0.00
Seismic Horizontal 60 deg		28145.91	-16250.05	-1569965.30	-2719259.67	0.00
Seismic Horizontal 90 deg		32500.10	0.00	0.00	-3139930.60	0.00
Seismic Horizontal 120 deg		28145.91	16250.05	1569965.30	-2719259.67	0.00
Seismic Horizontal 135 deg		22981.04	22981.04	2220266.22	-2220266.22	0.00
Seismic Horizontal 150 deg		16250.05	28145.91	2719259.67	-1569965.30	0.00
Seismic Horizontal 180 deg		0.00	32500.10	3139930.60	0.00	0.00
Seismic Horizontal 210 deg		-16250.05	28145.91	2719259.67	1569965.30	0.00
Seismic Horizontal 225 deg		-22981.04	22981.04	2220266.22	2220266.22	0.00
Seismic Horizontal 240 deg		-28145.91	16250.05	1569965.30	2719259.67	0.00
Seismic Horizontal 270 deg		-32500.10	0.00	0.00	3139930.60	0.00
Seismic Horizontal 300 deg		-28145.91	-16250.05	-1569965.30	2719259.67	0.00
Seismic Horizontal 315 deg		-22981.04	-22981.04	-2220266.22	2220266.22	0.00
Seismic Horizontal 330 deg		-16250.05	-28145.91	-2719259.67	1569965.30	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
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

<p style="text-align: center;"><b><i>tnxTower</i></b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	14 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

<i>Comb. No.</i>	<i>Description</i>
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+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
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
67	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
68	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 45 deg

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Comb. No.	Description
72	0.9 Dead-1.0 Ev+1.0 Eh 45 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
75	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
76	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
77	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
78	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
79	1.2 Dead+1.0 Ev+1.0 Eh 135 deg
80	0.9 Dead-1.0 Ev+1.0 Eh 135 deg
81	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
82	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
83	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
84	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
85	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
86	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
87	1.2 Dead+1.0 Ev+1.0 Eh 225 deg
88	0.9 Dead-1.0 Ev+1.0 Eh 225 deg
89	1.2 Dead+1.0 Ev+1.0 Eh 240 deg
90	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
91	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
92	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
93	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
94	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
95	1.2 Dead+1.0 Ev+1.0 Eh 315 deg
96	0.9 Dead-1.0 Ev+1.0 Eh 315 deg
97	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
98	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

### 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	125 - 79.5	Pole	Max Tension	75	0.17	0.00	0.00
			Max. Compression	34	-28356.60	0.00	-0.00
			Max. Mx	10	-17719.61	-830505.55	-1298.93
			Max. My	2	-17719.91	0.00	830503.81
			Max. Vy	10	34146.67	-830505.55	-1298.93
			Max. Vx	2	-34146.78	0.00	830503.81
			Max. Torque	5			-25336.11
L2	79.5 - 44.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	34	-34985.75	0.00	-0.00
			Max. Mx	10	-24692.48	-2049655.9	-422.14
			Max. My	2	-24692.66	0.00	2049646.86
			Max. Vy	10	36990.71	-2049655.9	-422.14
			Max. Vx	2	-36991.22	0.00	2049646.86
			Max. Torque	5			-25259.60
L3	44.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	34	-48882.66	0.00	0.00
			Max. Mx	10	-38986.65	-3997501.8	-317.77
			Max. My	18	-38986.66	0.00	-3997487.8
			Max. Vy	10	40686.51	-3997501.8	-317.77
			Max. Vx	18	40686.52	0.00	-3997487.8
			Max. Torque	3			7

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Torque	5			-25121.51

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	35	48882.66	0.00	13067.12
	Max. H _x	26	39035.27	40639.87	0.00
	Max. H _z	2	39035.27	0.00	40639.88
	Max. M _x	2	3997487.87	0.00	40639.88
	Max. M _z	10	3997501.83	-40639.87	0.00
	Max. Torsion	33	25057.34	20319.93	35195.16
	Min. Vert	80	19966.15	-22981.04	-22981.04
	Min. H _x	10	39035.27	-40639.87	0.00
	Min. H _z	18	39035.27	0.00	-40639.88
	Min. M _x	18	-3997487.87	0.00	-40639.88
	Min. M _z	26	-3997501.83	40639.87	0.00
	Min. Torsion	5	-25057.34	-20319.93	35195.16

### Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturing Moment, M _x lb-ft	Overturing Moment, M _z lb-ft	Torque lb-ft
Dead Only	32529.39	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	39035.27	0.00	-40639.88	-3997487.87	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	29276.45	0.00	-40639.87	-3956169.12	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	39035.27	20319.93	-35195.16	-3462102.22	-1998468.10	25042.65
0.9 Dead+1.0 Wind 30 deg - No Ice	29276.45	20319.93	-35195.16	-3426264.78	-1977880.44	25057.34
1.2 Dead+1.0 Wind 45 deg - No Ice	39035.27	28736.73	-28736.73	-2826824.94	-2826497.97	17707.82
0.9 Dead+1.0 Wind 45 deg - No Ice	29276.45	28736.73	-28736.73	-2797555.52	-2797317.82	17718.18
1.2 Dead+1.0 Wind 60 deg - No Ice	39035.27	35195.16	-20319.93	-1998751.71	-3461939.50	-0.01
0.9 Dead+1.0 Wind 60 deg - No Ice	29276.45	35195.16	-20319.93	-1978086.61	-3426146.46	-0.05
1.2 Dead+1.0 Wind 90 deg - No Ice	39035.27	40639.87	-0.00	326.88	-3997501.83	-25042.77
0.9 Dead+1.0 Wind 90 deg - No Ice	29276.45	40639.87	-0.00	237.71	-3956172.53	-25057.29
1.2 Dead+1.0 Wind 120 deg - No Ice	39035.27	35195.16	20319.93	1998751.71	-3461939.50	0.01
0.9 Dead+1.0 Wind 120 deg - No Ice	29276.45	35195.16	20319.93	1978086.61	-3426146.46	0.05
1.2 Dead+1.0 Wind 135 deg - No Ice	39035.27	28736.73	28736.73	2826497.97	-2826824.94	17707.82
0.9 Dead+1.0 Wind 135 deg - No Ice	29276.45	28736.73	28736.73	2797317.82	-2797555.52	17718.18

<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	17 of 33	
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	<b>Client</b>	VERIZON WIRELESS		<b>Designed by</b>	cmillard

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
No Ice						
1.2 Dead+1.0 Wind 150 deg - No Ice	39035.27	20319.93	35195.16	3461775.25	-1999034.43	25042.63
0.9 Dead+1.0 Wind 150 deg - No Ice	29276.45	20319.93	35195.16	3426027.07	-1978292.16	25057.25
1.2 Dead+1.0 Wind 180 deg - No Ice	39035.27	0.00	40639.88	3997487.87	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	29276.45	0.00	40639.87	3956169.12	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	39035.27	-20319.93	35195.16	3461775.25	1999034.43	-25042.63
0.9 Dead+1.0 Wind 210 deg - No Ice	29276.45	-20319.93	35195.16	3426027.07	1978292.16	-25057.25
1.2 Dead+1.0 Wind 225 deg - No Ice	39035.27	-28736.73	28736.73	2826497.97	2826824.94	-17707.82
0.9 Dead+1.0 Wind 225 deg - No Ice	29276.45	-28736.73	28736.73	2797317.82	2797555.52	-17718.18
1.2 Dead+1.0 Wind 240 deg - No Ice	39035.27	-35195.16	20319.93	1998751.71	3461939.50	-0.01
0.9 Dead+1.0 Wind 240 deg - No Ice	29276.45	-35195.16	20319.93	1978086.61	3426146.46	-0.05
1.2 Dead+1.0 Wind 270 deg - No Ice	39035.27	-40639.87	-0.00	326.88	3997501.83	25042.77
0.9 Dead+1.0 Wind 270 deg - No Ice	29276.45	-40639.87	-0.00	237.71	3956172.53	25057.29
1.2 Dead+1.0 Wind 300 deg - No Ice	39035.27	-35195.16	-20319.93	-1998751.71	3461939.50	0.01
0.9 Dead+1.0 Wind 300 deg - No Ice	29276.45	-35195.16	-20319.93	-1978086.61	3426146.46	0.05
1.2 Dead+1.0 Wind 315 deg - No Ice	39035.27	-28736.73	-28736.73	-2826824.94	2826497.97	-17707.82
0.9 Dead+1.0 Wind 315 deg - No Ice	29276.45	-28736.73	-28736.73	-2797555.52	2797317.82	-17718.18
1.2 Dead+1.0 Wind 330 deg - No Ice	39035.27	-20319.93	-35195.16	-3462102.22	1998468.10	-25042.65
0.9 Dead+1.0 Wind 330 deg - No Ice	29276.45	-20319.93	-35195.16	-3426264.78	1977880.44	-25057.34
1.2 Dead+1.0 Ice+1.0 Temp	48882.66	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	48882.66	0.00	-13067.12	-1237328.29	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	48882.66	6533.56	-11316.46	-1071575.61	-618633.16	6536.34
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	48882.66	9239.85	-9239.85	-874941.13	-874905.34	4621.89
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	48882.66	11316.46	-6533.56	-618664.17	-1071557.74	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	48882.66	13067.12	0.00	35.79	-1237328.26	-6536.34
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	48882.66	11316.46	6533.56	618664.17	-1071557.74	0.00
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	48882.66	9239.85	9239.85	874905.34	-874941.13	4621.89
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	48882.66	6533.56	11316.46	1071539.82	-618695.15	6536.33
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	48882.66	0.00	13067.12	1237328.29	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	48882.66	-6533.56	11316.46	1071539.82	618695.15	-6536.33
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	48882.66	-9239.85	9239.85	874905.34	874941.13	-4621.89
1.2 Dead+1.0 Wind 240	48882.66	-11316.46	6533.56	618664.17	1071557.74	-0.00

<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	18 of 33	
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	<b>Client</b>	VERIZON WIRELESS		<b>Designed by</b>	cmillard

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
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	48882.66	-13067.12	0.00	35.79	1237328.26	6536.34
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	48882.66	-11316.46	-6533.56	-618664.17	1071557.74	0.00
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 315	48882.66	-9239.85	-9239.85	-874941.13	874905.34	-4621.89
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	48882.66	-6533.56	-11316.46	-1071575.61	618633.16	-6536.34
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	32529.39	0.00	-9243.92	-905057.74	0.00	0.00
Dead+Wind 30 deg - Service	32529.39	4621.96	-8005.47	-783812.19	-452517.95	5801.22
Dead+Wind 45 deg - Service	32529.39	6536.44	-6536.44	-639981.26	-639967.21	4102.08
Dead+Wind 60 deg - Service	32529.39	8005.47	-4621.96	-452528.89	-783803.01	-0.00
Dead+Wind 90 deg - Service	32529.39	9243.92	-0.00	14.05	-905060.24	-5801.22
Dead+Wind 120 deg - Service	32529.39	8005.47	4621.96	452528.89	-783803.01	0.00
Dead+Wind 135 deg - Service	32529.39	6536.44	6536.44	639967.21	-639981.26	4102.08
Dead+Wind 150 deg - Service	32529.39	4621.96	8005.47	783798.13	-452542.29	5801.22
Dead+Wind 180 deg - Service	32529.39	0.00	9243.92	905057.74	0.00	0.00
Dead+Wind 210 deg - Service	32529.39	-4621.96	8005.47	783798.13	452542.29	-5801.22
Dead+Wind 225 deg - Service	32529.39	-6536.44	6536.44	639967.21	639981.26	-4102.08
Dead+Wind 240 deg - Service	32529.39	-8005.47	4621.96	452528.89	783803.01	-0.00
Dead+Wind 270 deg - Service	32529.39	-9243.92	-0.00	14.05	905060.24	5801.22
Dead+Wind 300 deg - Service	32529.39	-8005.47	-4621.96	-452528.89	783803.01	0.00
Dead+Wind 315 deg - Service	32529.39	-6536.44	-6536.44	-639981.26	639967.21	-4102.08
Dead+Wind 330 deg - Service	32529.39	-4621.96	-8005.47	-783812.19	452517.95	-5801.22
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	48345.58	0.00	-32500.13	-3298695.75	0.00	0.00
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	19966.15	0.00	-32500.10	-3200177.16	0.00	0.00
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	48345.57	16250.05	-28145.91	-2856786.96	-1649366.73	0.01
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	19966.15	16250.05	-28145.91	-2771435.34	-1600088.94	0.01
1.2 Dead+1.0 Ev+1.0 Eh 45 deg	48345.57	22981.04	-22981.04	-2332556.79	-2332556.79	0.00
0.9 Dead-1.0 Ev+1.0 Eh 45 deg	19966.15	22981.04	-22981.04	-2262867.48	-2262867.48	0.00
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	48345.57	28145.91	-16250.05	-1649366.73	-2856786.96	-0.01
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	19966.15	28145.91	-16250.05	-1600088.94	-2771435.34	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	48345.58	32500.13	0.00	0.00	-3298695.75	0.00
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	19966.15	32500.10	0.00	0.00	-3200177.16	0.00
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	48345.57	28145.91	16250.05	1649366.73	-2856786.96	0.01
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	19966.15	28145.91	16250.05	1600088.94	-2771435.34	0.01
1.2 Dead+1.0 Ev+1.0 Eh 135 deg	48345.57	22981.04	22981.04	2332556.79	-2332556.79	0.00
0.9 Dead-1.0 Ev+1.0 Eh 135 deg	19966.15	22981.04	22981.04	2262867.48	-2262867.48	0.00
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	48345.57	16250.05	28145.91	2856786.96	-1649366.73	-0.01
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	19966.15	16250.05	28145.91	2771435.34	-1600088.94	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	48345.58	0.00	32500.13	3298695.75	0.00	0.00
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	19966.15	0.00	32500.10	3200177.16	0.00	0.00
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	48345.57	-16250.05	28145.91	2856786.96	1649366.73	0.01
0.9 Dead-1.0 Ev+1.0 Eh 210 deg	19966.15	-16250.05	28145.91	2771435.34	1600088.94	0.01
1.2 Dead+1.0 Ev+1.0 Eh 225 deg	48345.57	-22981.04	22981.04	2332556.79	2332556.79	0.00
0.9 Dead-1.0 Ev+1.0 Eh 225 deg	19966.15	-22981.04	22981.04	2262867.48	2262867.48	0.00
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	48345.57	-28145.91	16250.05	1649366.73	2856786.96	-0.01



<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p><b>Job</b></p> <p>AK2 SHAMPINE, AK 115070</p>	<p><b>Page</b></p> <p>19 of 33</p>
	<p><b>Project</b></p> <p>125 FT MONOPOLE</p>	<p><b>Date</b></p> <p>15:43:12 04/11/24</p>
	<p><b>Client</b></p> <p>VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p>cmillard</p>

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
0.9 Dead-1.0 Ev+1.0 Eh 240 deg	19966.15	-28145.91	16250.05	1600088.94	2771435.34	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 270 deg	48345.58	-32500.13	0.00	0.00	3298695.75	0.00
0.9 Dead-1.0 Ev+1.0 Eh 270 deg	19966.15	-32500.10	0.00	0.00	3200177.16	0.00
1.2 Dead+1.0 Ev+1.0 Eh 300 deg	48345.57	-28145.91	-16250.05	-1649366.73	2856786.96	0.01
0.9 Dead-1.0 Ev+1.0 Eh 300 deg	19966.15	-28145.91	-16250.05	-1600088.94	2771435.34	0.01
1.2 Dead+1.0 Ev+1.0 Eh 315 deg	48345.57	-22981.04	-22981.04	-2332556.79	2332556.79	0.00
0.9 Dead-1.0 Ev+1.0 Eh 315 deg	19966.15	-22981.04	-22981.04	-2262867.48	2262867.48	0.00
1.2 Dead+1.0 Ev+1.0 Eh 330 deg	48345.57	-16250.05	-28145.91	-2856786.96	1649366.73	-0.01
0.9 Dead-1.0 Ev+1.0 Eh 330 deg	19966.15	-16250.05	-28145.91	-2771435.34	1600088.94	-0.01

### Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-32529.39	0.00	0.00	32529.39	0.00	0.000%
2	0.00	-39035.27	-40639.87	0.00	39035.27	40639.88	0.000%
3	0.00	-29276.45	-40639.87	0.00	29276.45	40639.87	0.000%
4	20319.93	-39035.27	-35195.16	-20319.93	39035.27	35195.16	0.000%
5	20319.93	-29276.45	-35195.16	-20319.93	29276.45	35195.16	0.000%
6	28736.73	-39035.27	-28736.73	-28736.73	39035.27	28736.73	0.000%
7	28736.73	-29276.45	-28736.73	-28736.73	29276.45	28736.73	0.000%
8	35195.16	-39035.27	-20319.93	-35195.16	39035.27	20319.93	0.000%
9	35195.16	-29276.45	-20319.93	-35195.16	29276.45	20319.93	0.000%
10	40639.87	-39035.27	0.00	-40639.87	39035.27	0.00	0.000%
11	40639.87	-29276.45	0.00	-40639.87	29276.45	0.00	0.000%
12	35195.16	-39035.27	20319.93	-35195.16	39035.27	-20319.93	0.000%
13	35195.16	-29276.45	20319.93	-35195.16	29276.45	-20319.93	0.000%
14	28736.73	-39035.27	28736.73	-28736.73	39035.27	-28736.73	0.000%
15	28736.73	-29276.45	28736.73	-28736.73	29276.45	-28736.73	0.000%
16	20319.93	-39035.27	35195.16	-20319.93	39035.27	-35195.16	0.000%
17	20319.93	-29276.45	35195.16	-20319.93	29276.45	-35195.16	0.000%
18	0.00	-39035.27	40639.87	0.00	39035.27	-40639.88	0.000%
19	0.00	-29276.45	40639.87	0.00	29276.45	-40639.87	0.000%
20	-20319.93	-39035.27	35195.16	20319.93	39035.27	-35195.16	0.000%
21	-20319.93	-29276.45	35195.16	20319.93	29276.45	-35195.16	0.000%
22	-28736.73	-39035.27	28736.73	28736.73	39035.27	-28736.73	0.000%
23	-28736.73	-29276.45	28736.73	28736.73	29276.45	-28736.73	0.000%
24	-35195.16	-39035.27	20319.93	35195.16	39035.27	-20319.93	0.000%
25	-35195.16	-29276.45	20319.93	35195.16	29276.45	-20319.93	0.000%
26	-40639.87	-39035.27	0.00	40639.87	39035.27	0.00	0.000%
27	-40639.87	-29276.45	0.00	40639.87	29276.45	0.00	0.000%
28	-35195.16	-39035.27	-20319.93	35195.16	39035.27	20319.93	0.000%
29	-35195.16	-29276.45	-20319.93	35195.16	29276.45	20319.93	0.000%
30	-28736.73	-39035.27	-28736.73	28736.73	39035.27	28736.73	0.000%
31	-28736.73	-29276.45	-28736.73	28736.73	29276.45	28736.73	0.000%
32	-20319.93	-39035.27	-35195.16	20319.93	39035.27	35195.16	0.000%
33	-20319.93	-29276.45	-35195.16	20319.93	29276.45	35195.16	0.000%
34	0.00	-48882.66	0.00	0.00	48882.66	0.00	0.000%

<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	<b>Page</b>	
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	<b>Project</b>	125 FT MONOPOLE	<b>Date</b> 15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b> cmillard

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
35	0.00	-48882.66	-13067.10	0.00	48882.66	13067.12	0.000%
36	6533.55	-48882.66	-11316.44	-6533.56	48882.66	11316.46	0.000%
37	9239.83	-48882.66	-9239.83	-9239.85	48882.66	9239.85	0.000%
38	11316.44	-48882.66	-6533.55	-11316.46	48882.66	6533.56	0.000%
39	13067.10	-48882.66	0.00	-13067.12	48882.66	-0.00	0.000%
40	11316.44	-48882.66	6533.55	-11316.46	48882.66	-6533.56	0.000%
41	9239.83	-48882.66	9239.83	-9239.85	48882.66	-9239.85	0.000%
42	6533.55	-48882.66	11316.44	-6533.56	48882.66	-11316.46	0.000%
43	0.00	-48882.66	13067.10	0.00	48882.66	-13067.12	0.000%
44	-6533.55	-48882.66	11316.44	6533.56	48882.66	-11316.46	0.000%
45	-9239.83	-48882.66	9239.83	9239.85	48882.66	-9239.85	0.000%
46	-11316.44	-48882.66	6533.55	11316.46	48882.66	-6533.56	0.000%
47	-13067.10	-48882.66	0.00	13067.12	48882.66	-0.00	0.000%
48	-11316.44	-48882.66	-6533.55	11316.46	48882.66	6533.56	0.000%
49	-9239.83	-48882.66	-9239.83	9239.85	48882.66	9239.85	0.000%
50	-6533.55	-48882.66	-11316.44	6533.56	48882.66	11316.46	0.000%
51	0.00	-32529.39	-9243.92	0.00	32529.39	9243.92	0.000%
52	4621.96	-32529.39	-8005.47	-4621.96	32529.39	8005.47	0.000%
53	6536.44	-32529.39	-6536.44	-6536.44	32529.39	-6536.44	0.000%
54	8005.47	-32529.39	-4621.96	-8005.47	32529.39	4621.96	0.000%
55	9243.92	-32529.39	0.00	-9243.92	32529.39	0.00	0.000%
56	8005.47	-32529.39	4621.96	-8005.47	32529.39	-4621.96	0.000%
57	6536.44	-32529.39	6536.44	-6536.44	32529.39	-6536.44	0.000%
58	4621.96	-32529.39	8005.47	-4621.96	32529.39	-8005.47	0.000%
59	0.00	-32529.39	9243.92	0.00	32529.39	-9243.92	0.000%
60	-4621.96	-32529.39	8005.47	4621.96	32529.39	-8005.47	0.000%
61	-6536.44	-32529.39	6536.44	6536.44	32529.39	-6536.44	0.000%
62	-8005.47	-32529.39	4621.96	8005.47	32529.39	-4621.96	0.000%
63	-9243.92	-32529.39	0.00	9243.92	32529.39	0.00	0.000%
64	-8005.47	-32529.39	-4621.96	8005.47	32529.39	4621.96	0.000%
65	-6536.44	-32529.39	-6536.44	6536.44	32529.39	6536.44	0.000%
66	-4621.96	-32529.39	-8005.47	4621.96	32529.39	8005.47	0.000%
67	0.00	-48345.57	-32500.10	0.00	48345.58	32500.13	0.000%
68	0.00	-19966.15	-32500.10	0.00	19966.15	32500.10	0.000%
69	16250.05	-48345.57	-28145.91	-16250.05	48345.57	28145.91	0.000%
70	16250.05	-19966.15	-28145.91	-16250.05	19966.15	28145.91	0.000%
71	22981.04	-48345.57	-22981.04	-22981.04	48345.57	22981.04	0.000%
72	22981.04	-19966.15	-22981.04	-22981.04	19966.15	22981.04	0.000%
73	28145.91	-48345.57	-16250.05	-28145.91	48345.57	16250.05	0.000%
74	28145.91	-19966.15	-16250.05	-28145.91	19966.15	16250.05	0.000%
75	32500.10	-48345.57	0.00	-32500.13	48345.58	0.00	0.000%
76	32500.10	-19966.15	0.00	-32500.10	19966.15	0.00	0.000%
77	28145.91	-48345.57	16250.05	-28145.91	48345.57	-16250.05	0.000%
78	28145.91	-19966.15	16250.05	-28145.91	19966.15	-16250.05	0.000%
79	22981.04	-48345.57	22981.04	-22981.04	48345.57	-22981.04	0.000%
80	22981.04	-19966.15	22981.04	-22981.04	19966.15	-22981.04	0.000%
81	16250.05	-48345.57	28145.91	-16250.05	48345.57	-28145.91	0.000%
82	16250.05	-19966.15	28145.91	-16250.05	19966.15	-28145.91	0.000%
83	0.00	-48345.57	32500.10	0.00	48345.58	-32500.13	0.000%
84	0.00	-19966.15	32500.10	0.00	19966.15	-32500.10	0.000%
85	-16250.05	-48345.57	28145.91	16250.05	48345.57	-28145.91	0.000%
86	-16250.05	-19966.15	28145.91	16250.05	19966.15	-28145.91	0.000%
87	-22981.04	-48345.57	22981.04	22981.04	48345.57	-22981.04	0.000%
88	-22981.04	-19966.15	22981.04	22981.04	19966.15	-22981.04	0.000%
89	-28145.91	-48345.57	16250.05	28145.91	48345.57	-16250.05	0.000%
90	-28145.91	-19966.15	16250.05	28145.91	19966.15	-16250.05	0.000%
91	-32500.10	-48345.57	0.00	32500.13	48345.58	0.00	0.000%
92	-32500.10	-19966.15	0.00	32500.10	19966.15	0.00	0.000%
93	-28145.91	-48345.57	-16250.05	28145.91	48345.57	16250.05	0.000%
94	-28145.91	-19966.15	-16250.05	28145.91	19966.15	16250.05	0.000%
95	-22981.04	-48345.57	-22981.04	22981.04	48345.57	22981.04	0.000%

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	21 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
96	-22981.04	-19966.15	-22981.04	22981.04	19966.15	22981.04	0.000%
97	-16250.05	-48345.57	-28145.91	16250.05	48345.57	28145.91	0.000%
98	-16250.05	-19966.15	-28145.91	16250.05	19966.15	28145.91	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.00036029
3	Yes	4	0.0000001	0.00010710
4	Yes	6	0.0000001	0.00008435
5	Yes	5	0.0000001	0.00075248
6	Yes	6	0.0000001	0.00006747
7	Yes	5	0.0000001	0.00060311
8	Yes	6	0.0000001	0.00005848
9	Yes	5	0.0000001	0.00051667
10	Yes	5	0.0000001	0.00067070
11	Yes	5	0.0000001	0.00028099
12	Yes	6	0.0000001	0.00005848
13	Yes	5	0.0000001	0.00051667
14	Yes	6	0.0000001	0.00006747
15	Yes	5	0.0000001	0.00060311
16	Yes	6	0.0000001	0.00005034
17	Yes	5	0.0000001	0.00045085
18	Yes	4	0.0000001	0.00036029
19	Yes	4	0.0000001	0.00010710
20	Yes	6	0.0000001	0.00005034
21	Yes	5	0.0000001	0.00045085
22	Yes	6	0.0000001	0.00006747
23	Yes	5	0.0000001	0.00060311
24	Yes	6	0.0000001	0.00005848
25	Yes	5	0.0000001	0.00051667
26	Yes	5	0.0000001	0.00067070
27	Yes	5	0.0000001	0.00028099
28	Yes	6	0.0000001	0.00005848
29	Yes	5	0.0000001	0.00051667
30	Yes	6	0.0000001	0.00006747
31	Yes	5	0.0000001	0.00060311
32	Yes	6	0.0000001	0.00008435
33	Yes	5	0.0000001	0.00075248
34	Yes	4	0.0000001	0.00000001
35	Yes	5	0.0000001	0.00021344
36	Yes	5	0.0000001	0.00044239
37	Yes	5	0.0000001	0.00041185
38	Yes	5	0.0000001	0.00035087
39	Yes	5	0.0000001	0.00029253
40	Yes	5	0.0000001	0.00035087
41	Yes	5	0.0000001	0.00041185
42	Yes	5	0.0000001	0.00036482
43	Yes	5	0.0000001	0.00021344
44	Yes	5	0.0000001	0.00036482
45	Yes	5	0.0000001	0.00041185
46	Yes	5	0.0000001	0.00035087
47	Yes	5	0.0000001	0.00029253
48	Yes	5	0.0000001	0.00035087

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	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

49	Yes	5	0.0000001	0.00041185
50	Yes	5	0.0000001	0.00044239
51	Yes	4	0.0000001	0.00006118
52	Yes	5	0.0000001	0.00006928
53	Yes	5	0.0000001	0.00004880
54	Yes	4	0.0000001	0.00061627
55	Yes	5	0.0000001	0.00005145
56	Yes	4	0.0000001	0.00061627
57	Yes	5	0.0000001	0.00004880
58	Yes	5	0.0000001	0.00004640
59	Yes	4	0.0000001	0.00006118
60	Yes	5	0.0000001	0.00004640
61	Yes	5	0.0000001	0.00004880
62	Yes	4	0.0000001	0.00061627
63	Yes	5	0.0000001	0.00005145
64	Yes	4	0.0000001	0.00061627
65	Yes	5	0.0000001	0.00004880
66	Yes	5	0.0000001	0.00006928
67	Yes	4	0.0000001	0.00072491
68	Yes	4	0.0000001	0.00003013
69	Yes	6	0.0000001	0.00010595
70	Yes	5	0.0000001	0.00011301
71	Yes	6	0.0000001	0.00011730
72	Yes	5	0.0000001	0.00011976
73	Yes	6	0.0000001	0.00010595
74	Yes	5	0.0000001	0.00011301
75	Yes	4	0.0000001	0.00072491
76	Yes	4	0.0000001	0.00003013
77	Yes	6	0.0000001	0.00010595
78	Yes	5	0.0000001	0.00011301
79	Yes	6	0.0000001	0.00011730
80	Yes	5	0.0000001	0.00011976
81	Yes	6	0.0000001	0.00010595
82	Yes	5	0.0000001	0.00011301
83	Yes	4	0.0000001	0.00072491
84	Yes	4	0.0000001	0.00003013
85	Yes	6	0.0000001	0.00010595
86	Yes	5	0.0000001	0.00011301
87	Yes	6	0.0000001	0.00011730
88	Yes	5	0.0000001	0.00011976
89	Yes	6	0.0000001	0.00010595
90	Yes	5	0.0000001	0.00011301
91	Yes	4	0.0000001	0.00072491
92	Yes	4	0.0000001	0.00003013
93	Yes	6	0.0000001	0.00010595
94	Yes	5	0.0000001	0.00011301
95	Yes	6	0.0000001	0.00011730
96	Yes	5	0.0000001	0.00011976
97	Yes	6	0.0000001	0.00010595
98	Yes	5	0.0000001	0.00011301

**Maximum Tower Deflections - Service Wind**

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 79.5	23.501	51	1.5943	0.0506
L2	84.25 - 44.25	10.786	55	1.2479	0.0211
L3	50 - 0	3.685	55	0.6884	0.0078

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK                      115070	<b>Page</b> 23 of 33
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:43:12 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
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**Critical Deflections and Radius of Curvature - Service Wind**

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.00	(3) 12' EE T-FRAMES	51	22.165	1.5698	0.0474	30096
117.40	Tapered 1 seismic	51	20.967	1.5472	0.0445	19800
116.10	Coax seismic	51	20.536	1.5389	0.0435	16908
111.00	12' EE Platform w/ Rail	51	18.859	1.5047	0.0394	10748
102.30	Tapered 1 seismic	51	16.072	1.4387	0.0329	6628
101.00	12' EE Platform w/ Rail	55	15.666	1.4276	0.0319	6269
98.20	Coax seismic	55	14.802	1.4027	0.0299	5614
92.00	Andrew 6' w/Radome	55	12.953	1.3409	0.0257	4559
87.10	Tapered 1 seismic	55	11.562	1.2843	0.0227	3974
80.40	Coax seismic	55	9.779	1.1944	0.0190	3587
72.80	Tapered 2 seismic	55	7.938	1.0768	0.0154	3396
63.90	Tapered 2 seismic	55	6.044	0.9265	0.0119	3198
62.50	Coax seismic	55	5.772	0.9022	0.0114	3169
50.60	Tapered 2 seismic	55	3.771	0.6983	0.0079	2985
44.60	Coax seismic	55	2.976	0.6017	0.0065	3285
41.30	Tapered 3 seismic	55	2.596	0.5508	0.0058	3547
26.80	Coax seismic	65	1.323	0.3430	0.0033	5466
24.80	Tapered 3 seismic	65	1.190	0.3161	0.0030	5907
8.90	Coax seismic	53	0.362	0.1108	0.0010	16459
8.20	Tapered 3 seismic	53	0.332	0.1021	0.0009	17864

**Maximum Tower Deflections - Design Wind**

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 79.5	103.747	2	7.0498	0.2201
L2	84.25 - 44.25	47.644	2	5.5178	0.0912
L3	50 - 0	16.284	2	3.0429	0.0337


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

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.00	(3) 12' EE T-FRAMES	2	97.855	6.9411	0.2060	6987
117.40	Tapered 1 seismic	2	92.570	6.8413	0.1934	4596
116.10	Coax seismic	2	90.670	6.8045	0.1889	3924
111.00	12' EE Platform w/ Rail	2	83.272	6.6535	0.1713	2493
102.30	Tapered 1 seismic	2	70.973	6.3613	0.1426	1535
101.00	12' EE Platform w/ Rail	2	69.181	6.3126	0.1384	1452
98.20	Coax seismic	2	65.372	6.2025	0.1298	1299
92.00	Andrew 6' w/Radome	2	57.210	5.9288	0.1115	1053

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	<p><b>Project</b></p> <p>125 FT MONOPOLE</p>	<p><b>Date</b></p> <p>15:43:12 04/11/24</p>
	<p><b>Client</b></p> <p>VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p>cmillard</p>

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
87.10	Tapered 1 seismic	2	51.071	5.6788	0.0983	917
80.40	Coax seismic	2	43.200	5.2811	0.0822	825
72.80	Tapered 2 seismic	2	35.072	4.7610	0.0666	779
63.90	Tapered 2 seismic	10	26.703	4.0959	0.0516	730
62.50	Coax seismic	10	25.503	3.9886	0.0495	723
50.60	Tapered 2 seismic	2	16.664	3.0867	0.0343	678
44.60	Coax seismic	2	13.151	2.6595	0.0281	746
41.30	Tapered 3 seismic	2	11.472	2.4345	0.0251	805
26.80	Coax seismic	22	5.848	1.5162	0.0141	1238
24.80	Tapered 3 seismic	22	5.257	1.3969	0.0128	1338
8.90	Coax seismic	30	1.599	0.4898	0.0042	3726
8.20	Tapered 3 seismic	30	1.467	0.4511	0.0039	4045

**Base Plate Design Data**

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension lb	Actual Allowable Ratio Bolt Compression lb	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
1.7500	22	1.7500	147073.57	150617.81	33.824	27.234	Bolt T	0.83
			178073.85	295602.59	45.000	45.000		
			0.83	0.51	0.75	0.61		

**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 P _u /φP _n
L1	125 - 122.855	TP32.33x21x0.25	45.50	0.00	0.0	16.8889	-143.23	988001.00	0.000
	122.855 - 120.711					17.3127	-4337.34	1012790.00	0.004
	120.711 - 118.566					17.7365	-4487.86	1037580.00	0.004
	118.566 - 116.421					18.1602	-4643.49	1062370.00	0.004
	116.421 - 114.276					18.5840	-4804.36	1087170.00	0.004
	114.276 - 112.132					19.0078	-4970.34	1111960.00	0.004
	112.132 - 109.987					19.4316	-9432.70	1136750.00	0.008
	109.987 - 107.842					19.8554	-9617.30	1161540.00	0.008
	107.842 - 105.697					20.2791	-9810.17	1186330.00	0.008
	105.697 - 105.697					20.7029	-10010.90	1211120.00	0.008

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	<p><b>Project</b></p> <p>125 FT MONOPOLE</p>	<p><b>Date</b></p> <p>15:43:12 04/11/24</p>
	<p><b>Client</b></p> <p>VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p>cmillard</p>

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
	103.553								
	103.553 - 101.408					21.1267	-10219.20	1235910.00	0.008
	101.408 - 99.2632					21.5505	-14803.60	1260700.00	0.012
	99.2632 - 97.1184					21.9743	-15044.20	1285490.00	0.012
	97.1184 - 94.9737					22.3980	-15295.10	1310280.00	0.012
	94.9737 - 92.8289					22.8218	-15555.70	1335080.00	0.012
	92.8289 - 90.6842					23.2456	-16826.80	1359870.00	0.012
	90.6842 - 88.5395					23.6694	-17115.00	1384660.00	0.012
	88.5395 - 86.3947					24.0931	-17412.70	1409450.00	0.012
	86.3947 - 84.25					24.5169	-17719.60	1434240.00	0.012
	84.25 - 79.5					25.4555	-8480.45	1489150.00	0.006
L2	84.25 - 79.5	TP40.6076x30.6472x0.3125	40.00	0.00	0.0	31.2614	-10417.50	1828790.00	0.006
	79.5 - 77.8611					31.6662	-19205.40	1852470.00	0.010
	77.8611 - 76.2222					32.0710	-19497.00	1876150.00	0.010
	76.2222 - 74.5833					32.4758	-19792.90	1899830.00	0.010
	74.5833 - 72.9444					32.8806	-20093.10	1923510.00	0.010
	72.9444 - 71.3056					33.2853	-20397.40	1947190.00	0.010
	71.3056 - 69.6667					33.6901	-20705.70	1970870.00	0.011
	69.6667 - 68.0278					34.0949	-21018.00	1994550.00	0.011
	68.0278 - 66.3889					34.4997	-21334.10	2018230.00	0.011
	66.3889 - 64.75					34.9045	-21654.00	2041910.00	0.011
	64.75 - 63.1111					35.3093	-21977.60	2065590.00	0.011
	63.1111 - 61.4722					35.7141	-22304.90	2089270.00	0.011
	61.4722 - 59.8333					36.1188	-22635.70	2112950.00	0.011
	59.8333 - 58.1944					36.5236	-22970.00	2136630.00	0.011
	58.1944 - 56.5556					36.9284	-23307.70	2160310.00	0.011
	56.5556 - 54.9167					37.3332	-23648.90	2183990.00	0.011
	54.9167 - 53.2778					37.7380	-23993.50	2207670.00	0.011
	53.2778 - 51.6389					38.1428	-24341.30	2231350.00	0.011
	51.6389 - 50					38.5476	-24692.50	2255030.00	0.011
	50 - 44.25					39.9677	-12334.30	2338110.00	0.005
L3	50 - 44.25	TP51.0014x38.5508x0.375	50.00	0.00	0.0	47.1430	-14525.40	2757860.00	0.005
	44.25 - 41.9211					47.8333	-27452.30	2798250.00	0.010
	41.9211 -					48.5235	-28034.50	2838630.00	0.010

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	26 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
	39.5921								
	39.5921 - 37.2632					49.2138	-28624.00	2879010.00	0.010
	37.2632 - 34.9342					49.9041	-29220.50	2919390.00	0.010
	34.9342 - 32.6053					50.5943	-29824.10	2959770.00	0.010
	32.6053 - 30.2763					51.2846	-30434.60	3000150.00	0.010
	30.2763 - 27.9474					51.9748	-31052.10	3040530.00	0.010
	27.9474 - 25.6184					52.6651	-31676.40	3080910.00	0.010
	25.6184 - 23.2895					53.3554	-32307.60	3121290.00	0.010
	23.2895 - 20.9605					54.0457	-32945.60	3161670.00	0.010
	20.9605 - 18.6316					54.7359	-33590.30	3202050.00	0.010
	18.6316 - 16.3026					55.4262	-34241.70	3242430.00	0.011
	16.3026 - 13.9737					56.1164	-34899.70	3282810.00	0.011
	13.9737 - 11.6447					56.8067	-35564.50	3323190.00	0.011
	11.6447 - 9.31579					57.4970	-36235.80	3363570.00	0.011
	9.31579 - 6.98684					58.1872	-36913.70	3403950.00	0.011
	6.98684 - 4.65789					58.8775	-37598.10	3444330.00	0.011
	4.65789 - 2.32895					59.5678	-38289.10	3484720.00	0.011
	2.32895 - 0					60.2580	-38986.70	3525100.00	0.011

### Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} lb-ft	φM _{ux} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} lb-ft	φM _{uy} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	125 - 122.855	TP32.33x21x0.25	175.90	547062.50	0.000	0.00	547062.50	0.000
	122.855 - 120.711		3593.48	575024.17	0.006	0.00	575024.17	0.000
	120.711 - 118.566		24541.83	603682.50	0.041	0.00	603682.50	0.000
	118.566 - 116.421		45980.42	633038.33	0.073	0.00	633038.33	0.000
	116.421 - 114.276		67799.33	663090.83	0.102	0.00	663090.83	0.000
	114.276 - 112.132		89999.17	692525.83	0.130	0.00	692525.83	0.000
	112.132 - 109.987		121754.17	720028.33	0.169	0.00	720028.33	0.000
	109.987 - 107.842		164107.50	747880.83	0.219	0.00	747880.83	0.000
	107.842 - 0		206845.83	776074.17	0.267	0.00	776074.17	0.000



<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	27 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Size	$M_{ux}$ lb-ft	$\phi M_{rx}$ lb-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	$M_{uy}$ lb-ft	$\phi M_{ry}$ lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
	105.697							
	105.697 - 103.553		249969.17	804595.83	0.311	0.00	804595.83	0.000
	103.553 - 101.408		293480.83	833433.33	0.352	0.00	833433.33	0.000
	101.408 - 99.2632		352740.83	862583.33	0.409	0.00	862583.33	0.000
	99.2632 - 97.1184		415990.83	892025.00	0.466	0.00	892025.00	0.000
	97.1184 - 94.9737		479611.67	921750.00	0.520	0.00	921750.00	0.000
	94.9737 - 92.8289		543604.17	951750.00	0.571	0.00	951750.00	0.000
	92.8289 - 90.6842		612595.00	982008.33	0.624	0.00	982008.33	0.000
	90.6842 - 88.5395		684870.00	1012516.67	0.676	0.00	1012516.67	0.000
	88.5395 - 86.3947		757508.33	1043266.67	0.726	0.00	1043266.67	0.000
	86.3947 - 84.25		830506.67	1074241.67	0.773	0.00	1074241.67	0.000
	84.25 - 79.5		455062.50	1143608.33	0.398	0.00	1143608.33	0.000
L2	84.25 - 79.5	TP40.6076x30.6472x0.3125	538695.00	1480375.00	0.364	0.00	1480375.00	0.000
	79.5 - 77.8611		1050600.00	1514100.00	0.694	0.00	1514100.00	0.000
	77.8611 - 76.2222		1107658.33	1548066.67	0.716	0.00	1548066.67	0.000
	76.2222 - 74.5833		1164925.00	1582275.00	0.736	0.00	1582275.00	0.000
	74.5833 - 72.9444		1222416.67	1616708.33	0.756	0.00	1616708.33	0.000
	72.9444 - 71.3056		1280116.67	1651366.67	0.775	0.00	1651366.67	0.000
	71.3056 - 69.6667		1338033.33	1686241.67	0.794	0.00	1686241.67	0.000
	69.6667 - 68.0278		1396166.67	1721341.67	0.811	0.00	1721341.67	0.000
	68.0278 - 66.3889		1454508.33	1756641.67	0.828	0.00	1756641.67	0.000
	66.3889 - 64.75		1513066.67	1792150.00	0.844	0.00	1792150.00	0.000
	64.75 - 63.1111		1571833.33	1827866.67	0.860	0.00	1827866.67	0.000
	63.1111 - 61.4722		1630816.67	1863766.67	0.875	0.00	1863766.67	0.000
	61.4722 - 59.8333		1690016.67	1899866.67	0.890	0.00	1899866.67	0.000
	59.8333 - 58.1944		1749425.00	1936150.00	0.904	0.00	1936150.00	0.000
	58.1944 - 56.5556		1809041.67	1972608.33	0.917	0.00	1972608.33	0.000
	56.5556 - 54.9167		1868883.33	2009241.67	0.930	0.00	2009241.67	0.000
	54.9167 - 53.2778		1928925.00	2046050.00	0.943	0.00	2046050.00	0.000
	53.2778 - 51.6389		1989183.33	2083025.00	0.955	0.00	2083025.00	0.000
	51.6389 - 50		2049658.33	2120158.33	0.967	0.00	2120158.33	0.000
	50 - 44.25		1058783.33	2251633.33	0.470	0.00	2251633.33	0.000
L3	50 - 44.25	TP51.0014x38.5508x0.375	1205191.67	2772691.67	0.435	0.00	2772691.67	0.000
	44.25 -		2351708.33	2843500.00	0.827	0.00	2843500.00	0.000

<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	28 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Size	$M_{ux}$ lb-ft	$\phi M_{rx}$ lb-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	$M_{uy}$ lb-ft	$\phi M_{ry}$ lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
	41.9211							
	41.9211 - 39.5921		2439866.67	2914841.67	0.837	0.00	2914841.67	0.000
	39.5921 - 37.2632		2528433.33	2986700.00	0.847	0.00	2986700.00	0.000
	37.2632 - 34.9342		2617400.00	3059066.67	0.856	0.00	3059066.67	0.000
	34.9342 - 32.6053		2706783.33	3131933.33	0.864	0.00	3131933.33	0.000
	32.6053 - 30.2763		2796550.00	3205275.00	0.872	0.00	3205275.00	0.000
	30.2763 - 27.9474		2886716.67	3279075.00	0.880	0.00	3279075.00	0.000
	27.9474 - 25.6184		2977275.00	3353325.00	0.888	0.00	3353325.00	0.000
	25.6184 - 23.2895		3068208.33	3428016.67	0.895	0.00	3428016.67	0.000
	23.2895 - 20.9605		3159525.00	3503125.00	0.902	0.00	3503125.00	0.000
	20.9605 - 18.6316		3251208.33	3578650.00	0.909	0.00	3578650.00	0.000
	18.6316 - 16.3026		3343266.67	3654558.33	0.915	0.00	3654558.33	0.000
	16.3026 - 13.9737		3435683.33	3730841.67	0.921	0.00	3730841.67	0.000
	13.9737 - 11.6447		3528450.00	3807491.67	0.927	0.00	3807491.67	0.000
	11.6447 - 9.31579		3621575.00	3884500.00	0.932	0.00	3884500.00	0.000
	9.31579 - 6.98684		3715050.00	3961833.33	0.938	0.00	3961833.33	0.000
	6.98684 - 4.65789		3808866.67	4039491.67	0.943	0.00	4039491.67	0.000
	4.65789 - 2.32895		3903016.67	4117450.00	0.948	0.00	4117450.00	0.000
	2.32895 - 0		3997500.00	4195708.33	0.953	0.00	4195708.33	0.000

**Pole Shear Design Data**

Section No.	Elevation ft	Size	Actual $V_u$ lb	$\phi V_n$ lb	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ lb-ft	$\phi T_n$ lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	125 - 122.855	TP32.33x21x0.25	164.59	296400.00	0.001	0.00	552475.83	0.000
	122.855 - 120.711		9743.94	303838.00	0.032	8424.92	580549.17	0.015
	120.711 - 118.566		9914.98	311275.00	0.032	8425.00	609318.33	0.014
	118.566 - 116.421		10088.40	318712.00	0.032	8424.75	638783.33	0.013
	116.421 - 114.276		10264.30	326150.00	0.031	8424.42	668943.33	0.013
	114.276 - 112.132		10442.70	333587.00	0.031	8423.83	699800.00	0.012
	112.132 - 109.987		19664.70	341024.00	0.058	16876.50	731351.67	0.023
	109.987 -		19843.90	348462.00	0.057	16875.25	763599.17	0.022

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	29 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Size	Actual $V_u$ lb	$\phi V_n$ lb	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ lb-ft	$\phi T_n$ lb-ft	Ratio $\frac{T_u}{\phi T_n}$
	107.842							
	107.842 - 105.697		20024.00	355899.00	0.056	16872.92	796542.50	0.021
	105.697 - 103.553		20204.90	363336.00	0.056	16870.00	830181.67	0.020
	103.553 - 101.408		20386.90	370774.00	0.055	16866.42	864516.67	0.020
	101.408 - 99.2632		29417.90	378211.00	0.078	25330.08	899550.00	0.028
	99.2632 - 97.1184		29593.20	385648.00	0.077	25324.33	935275.00	0.027
	97.1184 - 94.9737		29767.80	393085.00	0.076	25317.33	971691.67	0.026
	94.9737 - 92.8289		29942.00	400523.00	0.075	25309.58	1008808.33	0.025
	92.8289 - 90.6842		33635.70	407960.00	0.082	25301.00	1046625.00	0.024
	90.6842 - 88.5395		33806.60	415397.00	0.081	25291.75	1085133.33	0.023
	88.5395 - 86.3947		33976.80	422835.00	0.080	25282.00	1124341.67	0.022
	86.3947 - 84.25		34146.60	430272.00	0.079	25271.67	1164241.67	0.022
	84.25 - 79.5		15985.00	446744.00	0.036	11565.17	1255083.33	0.009
L2	84.25 - 79.5	TP40.6076x30.6472x0.3125	18662.40	548638.00	0.034	13696.00	1514316.67	0.009
	79.5 - 77.8611		34768.90	555742.00	0.063	25250.92	1553791.67	0.016
	77.8611 - 76.2222		34901.00	562846.00	0.062	25243.08	1593766.67	0.016
	76.2222 - 74.5833		35032.90	569950.00	0.061	25235.25	1634250.00	0.015
	74.5833 - 72.9444		35164.50	577054.00	0.061	25227.33	1675250.00	0.015
	72.9444 - 71.3056		35295.80	584158.00	0.060	25219.42	1716750.00	0.015
	71.3056 - 69.6667		35426.90	591262.00	0.060	25211.50	1758758.33	0.014
	69.6667 - 68.0278		35557.90	598366.00	0.059	25203.58	1801275.00	0.014
	68.0278 - 66.3889		35688.60	605470.00	0.059	25195.75	1844300.00	0.014
	66.3889 - 64.75		35819.20	612574.00	0.058	25188.08	1887833.33	0.013
	64.75 - 63.1111		35949.70	619678.00	0.058	25180.42	1931866.67	0.013
	63.1111 - 61.4722		36080.10	626782.00	0.058	25172.92	1976416.67	0.013
	61.4722 - 59.8333		36210.40	633886.00	0.057	25165.50	2021475.00	0.012
	59.8333 - 58.1944		36340.50	640990.00	0.057	25158.25	2067033.33	0.012
	58.1944 - 56.5556		36470.70	648094.00	0.056	25151.25	2113108.33	0.012
	56.5556 - 54.9167		36600.70	655198.00	0.056	25144.33	2159683.33	0.012
	54.9167 - 53.2778		36730.70	662302.00	0.055	25137.67	2206775.00	0.011
	53.2778 - 51.6389		36860.70	669406.00	0.055	25131.17	2254366.67	0.011
	51.6389 - 50		36990.70	676510.00	0.055	25124.92	2302466.67	0.011
	50 - 44.25		17759.00	701434.00	0.025	11744.75	2475250.00	0.005

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p><b>Job</b></p> <p>AK2 SHAMPINE, AK 115070</p>	<p><b>Page</b></p> <p>30 of 33</p>
	<p><b>Project</b></p> <p>125 FT MONOPOLE</p>	<p><b>Date</b></p> <p>15:43:12 04/11/24</p>
	<p><b>Client</b></p> <p>VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p>cmillard</p>

Section No.	Elevation ft	Size	Actual $V_u$ lb	$\phi V_n$ lb	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ lb-ft	$\phi T_n$ lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L3	50 - 44.25	TP51.0014x38.5508x0.375	19872.30	827360.00	0.024	13372.42	2869808.33	0.005
	44.25 - 41.9211		37799.90	839474.00	0.045	25108.50	2954466.67	0.008
	41.9211 - 39.5921		37978.90	851588.00	0.045	25101.50	3040350.00	0.008
	39.5921 - 37.2632		38155.60	863702.00	0.044	25094.92	3127466.67	0.008
	37.2632 - 34.9342		38330.20	875816.00	0.044	25088.75	3215808.33	0.008
	34.9342 - 32.6053		38502.50	887930.00	0.043	25082.92	3305391.67	0.008
	32.6053 - 30.2763		38672.60	900044.00	0.043	25077.50	3396191.67	0.007
	30.2763 - 27.9474		38840.50	912159.00	0.043	25072.42	3488233.33	0.007
	27.9474 - 25.6184		39006.30	924273.00	0.042	25067.83	3581500.00	0.007
	25.6184 - 23.2895		39169.90	936387.00	0.042	25063.58	3676000.00	0.007
	23.2895 - 20.9605		39331.20	948501.00	0.041	25059.75	3771725.00	0.007
	20.9605 - 18.6316		39490.50	960615.00	0.041	25056.25	3868691.67	0.006
	18.6316 - 16.3026		39647.50	972730.00	0.041	25053.25	3966875.00	0.006
	16.3026 - 13.9737		39802.40	984844.00	0.040	25050.58	4066300.00	0.006
	13.9737 - 11.6447		39955.20	996958.00	0.040	25048.33	4166950.00	0.006
	11.6447 - 9.31579		40105.80	1009070.00	0.040	25046.42	4268833.33	0.006
	9.31579 - 6.98684		40254.20	1021190.00	0.039	25044.92	4371941.67	0.006
	6.98684 - 4.65789		40400.40	1033300.00	0.039	25043.83	4476283.33	0.006
	4.65789 - 2.32895		40544.60	1045410.00	0.039	25043.08	4581858.33	0.005
	2.32895 - 0		40686.50	1057530.00	0.038	25042.67	4688658.33	0.005

**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	125 - 122.855	0.000	0.000	0.000	0.001	0.000	0.000	1.000	✓
	122.855 - 120.711	0.004	0.006	0.000	0.032	0.015	0.013	1.000	✓
	120.711 - 118.566	0.004	0.041	0.000	0.032	0.014	0.047	1.000	✓
	118.566 - 116.421	0.004	0.073	0.000	0.032	0.013	0.079	1.000	✓
	116.421 - 114.276	0.004	0.102	0.000	0.031	0.013	0.109	1.000	✓

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	31 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Ratio $P_u$	Ratio $M_{ux}$	Ratio $M_{uy}$	Ratio $V_u$	Ratio $T_u$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\phi P_n$	$\phi M_{nx}$	$\phi M_{ny}$	$\phi V_n$	$\phi T_n$			
	114.276 - 112.132	0.004	0.130	0.000	0.031	0.012	0.136	1.000	✓
	112.132 - 109.987	0.008	0.169	0.000	0.058	0.023	0.184	1.000	✓
	109.987 - 107.842	0.008	0.219	0.000	0.057	0.022	0.234	1.000	✓
	107.842 - 105.697	0.008	0.267	0.000	0.056	0.021	0.281	1.000	✓
	105.697 - 103.553	0.008	0.311	0.000	0.056	0.020	0.325	1.000	✓
	103.553 - 101.408	0.008	0.352	0.000	0.055	0.020	0.366	1.000	✓
	101.408 - 99.2632	0.012	0.409	0.000	0.078	0.028	0.432	1.000	✓
	99.2632 - 97.1184	0.012	0.466	0.000	0.077	0.027	0.489	1.000	✓
	97.1184 - 94.9737	0.012	0.520	0.000	0.076	0.026	0.542	1.000	✓
	94.9737 - 92.8289	0.012	0.571	0.000	0.075	0.025	0.593	1.000	✓
	92.8289 - 90.6842	0.012	0.624	0.000	0.082	0.024	0.648	1.000	✓
	90.6842 - 88.5395	0.012	0.676	0.000	0.081	0.023	0.700	1.000	✓
	88.5395 - 86.3947	0.012	0.726	0.000	0.080	0.022	0.749	1.000	✓
	86.3947 - 84.25	0.012	0.773	0.000	0.079	0.022	0.796	1.000	✓
	84.25 - 79.5	0.006	0.398	0.000	0.036	0.009	0.406	1.000	✓
L2	84.25 - 79.5	0.006	0.364	0.000	0.034	0.009	0.371	1.000	✓
	79.5 - 77.8611	0.010	0.694	0.000	0.063	0.016	0.710	1.000	✓
	77.8611 - 76.2222	0.010	0.716	0.000	0.062	0.016	0.732	1.000	✓
	76.2222 - 74.5833	0.010	0.736	0.000	0.061	0.015	0.753	1.000	✓
	74.5833 - 72.9444	0.010	0.756	0.000	0.061	0.015	0.772	1.000	✓
	72.9444 - 71.3056	0.010	0.775	0.000	0.060	0.015	0.791	1.000	✓
	71.3056 - 69.6667	0.011	0.794	0.000	0.060	0.014	0.810	1.000	✓
	69.6667 - 68.0278	0.011	0.811	0.000	0.059	0.014	0.827	1.000	✓
	68.0278 - 66.3889	0.011	0.828	0.000	0.059	0.014	0.844	1.000	✓
	66.3889 - 64.75	0.011	0.844	0.000	0.058	0.013	0.860	1.000	✓
	64.75 -	0.011	0.860	0.000	0.058	0.013	0.876	1.000	✓

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	32 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$P_u$	$M_{ux}$	$M_{uy}$	$V_u$	$T_u$			
		$\phi P_n$	$\phi M_{ux}$	$\phi M_{uy}$	$\phi V_n$	$\phi T_n$			
	63.1111						✓		
	63.1111 - 61.4722	0.011	0.875	0.000	0.058	0.013	0.891	1.000	✓
	61.4722 - 59.8333	0.011	0.890	0.000	0.057	0.012	0.905	1.000	✓
	59.8333 - 58.1944	0.011	0.904	0.000	0.057	0.012	0.919	1.000	✓
	58.1944 - 56.5556	0.011	0.917	0.000	0.056	0.012	0.933	1.000	✓
	56.5556 - 54.9167	0.011	0.930	0.000	0.056	0.012	0.946	1.000	✓
	54.9167 - 53.2778	0.011	0.943	0.000	0.055	0.011	0.958	1.000	✓
	53.2778 - 51.6389	0.011	0.955	0.000	0.055	0.011	0.970	1.000	✓
	51.6389 - 50	0.011	0.967	0.000	0.055	0.011	0.982	1.000	✓
	50 - 44.25	0.005	0.470	0.000	0.025	0.005	0.476	1.000	✓
L3	50 - 44.25	0.005	0.435	0.000	0.024	0.005	0.441	1.000	✓
	44.25 - 41.9211	0.010	0.827	0.000	0.045	0.008	0.840	1.000	✓
	41.9211 - 39.5921	0.010	0.837	0.000	0.045	0.008	0.850	1.000	✓
	39.5921 - 37.2632	0.010	0.847	0.000	0.044	0.008	0.859	1.000	✓
	37.2632 - 34.9342	0.010	0.856	0.000	0.044	0.008	0.868	1.000	✓
	34.9342 - 32.6053	0.010	0.864	0.000	0.043	0.008	0.877	1.000	✓
	32.6053 - 30.2763	0.010	0.872	0.000	0.043	0.007	0.885	1.000	✓
	30.2763 - 27.9474	0.010	0.880	0.000	0.043	0.007	0.893	1.000	✓
	27.9474 - 25.6184	0.010	0.888	0.000	0.042	0.007	0.901	1.000	✓
	25.6184 - 23.2895	0.010	0.895	0.000	0.042	0.007	0.908	1.000	✓
	23.2895 - 20.9605	0.010	0.902	0.000	0.041	0.007	0.915	1.000	✓
	20.9605 - 18.6316	0.010	0.909	0.000	0.041	0.006	0.921	1.000	✓
	18.6316 - 16.3026	0.011	0.915	0.000	0.041	0.006	0.928	1.000	✓
	16.3026 - 13.9737	0.011	0.921	0.000	0.040	0.006	0.934	1.000	✓
	13.9737 - 11.6447	0.011	0.927	0.000	0.040	0.006	0.940	1.000	✓
	11.6447 - 9.31579	0.011	0.932	0.000	0.040	0.006	0.945	1.000	✓
	9.31579 -	0.011	0.938	0.000	0.039	0.006	0.951	1.000	✓

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	33 of 33
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:43:12 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Ratio $P_u$	Ratio $M_{ux}$	Ratio $M_{uy}$	Ratio $V_u$	Ratio $T_u$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	6.98684						✓		
	6.98684 - 4.65789	0.011	0.943	0.000	0.039	0.006	0.956	1.000	✓
	4.65789 - 2.32895	0.011	0.948	0.000	0.039	0.005	0.961	1.000	✓
	2.32895 - 0	0.011	0.953	0.000	0.038	0.005	0.966	1.000	✓

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
L1	125 - 79.5	Pole	TP32.33x21x0.25	1	-17719.60	1434240.00	79.6	Pass
L2	79.5 - 44.25	Pole	TP40.6076x30.6472x0.3125	2	-24692.50	2255030.00	98.2	Pass
L3	44.25 - 0	Pole	TP51.0014x38.5508x0.375	3	-38986.70	3525100.00	96.6	Pass
Summary								
Pole (L2)							98.2	Pass
Base Plate							82.6	Pass
<b>RATING =</b>							<b>98.2</b>	<b>Pass</b>

Program Version 8.2.4.3 - 1/24/2024 File://VSEFILES.vector.local/Projects/2024 Projects/U1408 EEI Enterprises, LLC (DBA Ehresmann Engineering)/U1408-0572-241 AK2 Shampine, AK (Monopole review, Driven Pile FND)/ENG/Pole Review/Tower/115070 - AK2 Shampine, AK - 125' MP - H.eri

125.0 ft

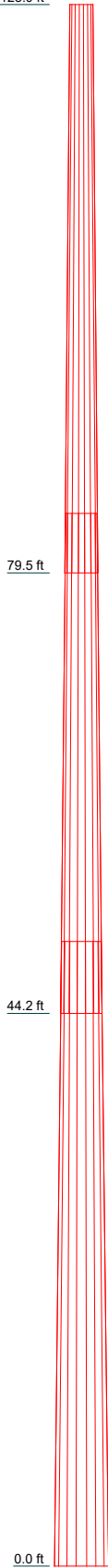
**MATERIAL STRENGTH**

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

**TOWER DESIGN NOTES**

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 60 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Weld together tower sections have slip joint connections.
8. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER80S-xxx electrodes.
11. TOWER RATING: 82.1%

Section	1	2	3
Length (ft)	45.50	40.00	50.00
Number of Sides	18	18	18
Thickness (in)	0.2500	0.3125	0.3750
Socket Length (ft)	4.75	5.75	
Top Dia (in)	21.0000	30.6472	38.5508
Bot Dia (in)	32.3300	40.6076	51.0014
Grade	A572-65	A572-65	A572-65
Weight (lb)	3277.7	4815.4	9081.5
			17174.6

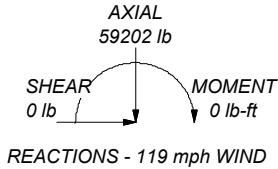
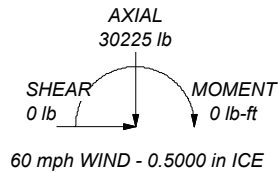
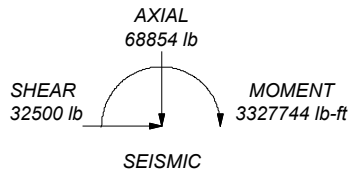



79.5 ft

44.2 ft

0.0 ft

ALL REACTIONS  
ARE FACTORED



**Vector Structural Engineering**  
 651 W Galena Park Blvd Suite 101  
 Draper, UT 84020  
 Phone: (801) 990-1775  
 FAX: (801) 990-1776

Job:	<b>AK2 SHAMPINE, AK</b>	<b>115070</b>
Project:	<b>125 FT MONOPOLE</b>	
Client:	VERIZON WIRELESS	Drawn by: cmillard
Code:	TIA-222-H	App'd:
Path:		Scale: NTS
		Dwg No. E-1



<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p><b>Job</b></p> <p>AK2 SHAMPINE, AK 115070</p>	<p><b>Page</b></p> <p>1 of 32</p>
	<p><b>Project</b></p> <p>125 FT MONOPOLE</p>	<p><b>Date</b></p> <p>15:59:58 04/11/24</p>
	<p><b>Client</b></p> <p>VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p>cmillard</p>

**Tower Input Data**

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

- Tower base elevation above sea level: 444.00 ft.
- Basic wind speed of 119 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 0.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 60 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Weld together tower sections have slip joint connections..
- Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
- Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
- Welds are fabricated with ER80S-xxx electrodes..
- A 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**

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

**Tapered Pole Section Geometry**

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 2 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

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	125.00-79.50	45.50	4.75	18	21.0000	32.3300	0.2500	1.0000	A572-65 (65 ksi)
L2	79.50-44.25	40.00	5.75	18	30.6472	40.6076	0.3125	1.2500	A572-65 (65 ksi)
L3	44.25-0.00	50.00		18	38.5508	51.0014	0.3750	1.5000	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	21.2854	16.4651	895.6507	7.3662	10.6680	83.9568	1792.4800	8.2341	3.2560	13.024
	32.7902	25.4555	3309.6911	11.3884	16.4236	201.5199	6623.7371	12.7302	5.2501	21
L2	32.2728	30.0882	3497.9485	10.7688	15.5688	224.6772	7000.4997	15.0470	4.8439	15.501
	41.1859	39.9677	8198.8382	14.3048	20.6287	397.4485	16408.4646	19.9877	6.5969	21.11
L3	40.5416	45.4388	8366.4439	13.5524	19.5838	427.2121	16743.8967	22.7237	6.1249	16.333
	51.7303	60.2580	19512.1938	17.9724	25.9087	753.1136	39050.0622	30.1347	8.3162	22.177

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 125.00-79.50				0	0	1.01			
L2 79.50-44.25				0	0	1.01			
L3 44.25-0.00				0	0	1.01			

### Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	F1554-105
Anchor bolt size	1.7500 in
Number of bolts	22
Embedment length	60.0000 in
f _c	4.5000 ksi
Grout space	3.5000 in
Base plate grade	A572-50
Base plate thickness	1.7500 in
Bolt circle diameter	58.0000 in
Outer diameter	65.0000 in
Inner diameter	44.0000 in
Base plate type	Stiffened Plate
Bolts per stiffener	1
Stiffener thickness	0.3750 in
Stiffener height	12.0000 in

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	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

**Feed Line/Linear Appurtenances Section Areas**

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	125.00-79.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	79.50-44.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	44.25-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	125.00-79.50	A	0.559	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	79.50-44.25	A	0.532	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	44.25-0.00	A	0.480	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

**User Defined Loads**

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °		Weight lb	F _x lb	F _z lb	Wind Force lb	C _{AC} ft ²
(3) 12' EE T-FRAMES seismic	121.00	0.00	0.0000	No Ice	2750.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
				Service	0.00	0.00	0.00	<b>0.00</b>	0.00
(12) Panel antennas seismic	121.00	0.00	0.0000	No Ice	1200.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
				Service	0.00	0.00	0.00	<b>0.00</b>	0.00
(9) RRU seismic	121.00	0.00	0.0000	No Ice	270.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
				Service	0.00	0.00	0.00	<b>0.00</b>	0.00
(3) Surge suppressors seismic	121.00	0.00	0.0000	No Ice	90.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
				Service	0.00	0.00	0.00	<b>0.00</b>	0.00
(3) 12' EE T-Frames w/ Rail seismic	111.00	0.00	0.0000	No Ice	2900.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
				Service	0.00	0.00	0.00	<b>0.00</b>	0.00
(12) Panel antennas seismic	111.00	0.00	0.0000	No Ice	1200.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
				Service	0.00	0.00	0.00	<b>0.00</b>	0.00
(9) RRU seismic	111.00	0.00	0.0000	No Ice	270.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b>	AK2 SHAMPINE, AK	115070	<b>Page</b>	4 of 32
	<b>Project</b>	125 FT MONOPOLE		<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS		<b>Designed by</b>	cmillard

Description	Elevation	Offset From Centroid	Azimuth Angle		Weight	F _x	F _z	Wind Force	C _{AAC}
	ft	ft	°		lb	lb	lb	lb	ft ²
(3) Surge suppressors seismic	111.00	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	90.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
(3) 12' EE T-Frames w/ Rail seismic	101.00	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	2900.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
(12) Panel antennas seismic	101.00	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	1200.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
(9) RRU seismic	101.00	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	270.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
(3) Surge suppressors seismic	101.00	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	90.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
(3) MW seismic	92.00	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	1140.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Coax seismic	116.10	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	47.50	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Coax seismic	98.20	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	124.80	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Coax seismic	80.40	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	163.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Coax seismic	62.50	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	163.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Coax seismic	44.60	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	163.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Coax seismic	26.80	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	163.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Coax seismic	8.90	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	163.00	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Tapered 1 seismic	117.40	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	1071.80	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Tapered 1 seismic	102.30	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	1071.80	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Tapered 1 seismic	87.10	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	1071.80	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Tapered 2 seismic	72.80	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	1581.90	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Tapered 2 seismic	63.90	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	1581.90	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Tapered 2 seismic	50.60	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	1581.90	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00
Tapered 3 seismic	41.30	0.00	0.0000	Service	0.00	0.00	0.00	<b>0.00</b>	0.00
				No Ice	2947.20	0.00	0.00	<b>0.00</b>	0.00
				Ice	0.00	0.00	0.00	<b>0.00</b>	0.00

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	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Description	Elevation	Offset From Centroid	Azimuth Angle	Weight	F _x	F _z	Wind Force	C _{AC}
	ft	ft	°	lb	lb	lb	lb	ft ²
Tapered 3 seismic	24.80	0.00	0.0000	Service 0.00 No Ice 2947.20 Ice 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00
Tapered 3 seismic	8.20	0.00	0.0000	Service 0.00 No Ice 2947.20 Ice 0.00 Service 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00

### User Defined Loads - Seismic

Description	Elevation	Offset From Centroid	Azimuth Angle	E _v	E _{hx}	E _{hz}	E _h
	ft	ft	°	lb	lb	lb	lb
(3) 12' EE T-FRAMES seismic	121.00	0.00	0.0000	825.40	0.00	0.00	4421.40
(12) Panel antennas seismic	121.00	0.00	0.0000	360.20	0.00	0.00	1929.40
(9) RRU seismic	121.00	0.00	0.0000	81.00	0.00	0.00	434.10
(3) Surge suppressors seismic	121.00	0.00	0.0000	27.00	0.00	0.00	144.70
(3) 12' EE T-Frames w/ Rail seismic	111.00	0.00	0.0000	870.40	0.00	0.00	4265.10
(12) Panel antennas seismic	111.00	0.00	0.0000	360.20	0.00	0.00	1764.90
(9) RRU seismic	111.00	0.00	0.0000	81.00	0.00	0.00	397.10
(3) Surge suppressors seismic	111.00	0.00	0.0000	27.00	0.00	0.00	132.40
(3) 12' EE T-Frames w/ Rail seismic	101.00	0.00	0.0000	870.40	0.00	0.00	3868.80
(12) Panel antennas seismic	101.00	0.00	0.0000	360.20	0.00	0.00	1600.90
(9) RRU seismic	101.00	0.00	0.0000	81.00	0.00	0.00	360.20
(3) Surge suppressors seismic	101.00	0.00	0.0000	27.00	0.00	0.00	120.10
(3) MW seismic	92.00	0.00	0.0000	342.20	0.00	0.00	1381.10
Coax seismic	116.10	0.00	0.0000	14.30	0.00	0.00	73.20
Coax seismic	98.20	0.00	0.0000	37.40	0.00	0.00	161.70
Coax seismic	80.40	0.00	0.0000	48.90	0.00	0.00	171.70
Coax seismic	62.50	0.00	0.0000	48.90	0.00	0.00	132.50
Coax seismic	44.60	0.00	0.0000	48.90	0.00	0.00	93.60
Coax seismic	26.80	0.00	0.0000	48.90	0.00	0.00	55.20
Coax seismic	8.90	0.00	0.0000	48.90	0.00	0.00	17.70
Tapered 1 seismic	117.40	0.00	0.0000	321.70	0.00	0.00	1670.60
Tapered 1 seismic	102.30	0.00	0.0000	321.70	0.00	0.00	1448.20
Tapered 1 seismic	87.10	0.00	0.0000	321.70	0.00	0.00	1226.80
Tapered 2 seismic	72.80	0.00	0.0000	474.80	0.00	0.00	1505.50
Tapered 2 seismic	63.90	0.00	0.0000	474.80	0.00	0.00	1315.50
Tapered 2 seismic	50.60	0.00	0.0000	474.80	0.00	0.00	1033.10
Tapered 3 seismic	41.30	0.00	0.0000	884.60	0.00	0.00	1559.10
Tapered 3 seismic	24.80	0.00	0.0000	884.60	0.00	0.00	919.80
Tapered 3 seismic	8.20	0.00	0.0000	884.60	0.00	0.00	295.70

### Tower Pressures - No Ice

$G_H = 1.100$

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Section Elevation ft	z ft	$K_z$	$q_z$ psf	$A_G$ ft ²	F a c e	$A_F$ ft ²	$A_R$ ft ²	$A_{leg}$ ft ²	Leg %	$C_{AA}$ In Face ft ²	$C_{AA}$ Out Face ft ²
L1 125.00-79.50	100.90	1.268	43	102.518	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
L2 79.50-44.25	61.43	1.142	39	107.892	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
L3 44.25-0.00	22.14	0.921	31	170.126	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	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	$A_G$ ft ²	F a c e	$A_F$ ft ²	$A_R$ ft ²	$A_{leg}$ ft ²	Leg %	$C_{AA}$ In Face ft ²	$C_{AA}$ Out Face ft ²
L1 125.00-79.50	100.90	1.268	11	0.5591	106.758	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000	0.00	0.000	0.000	
						C	0.000	0.000	0.00	0.000	0.000	
L2 79.50-44.25	61.43	1.142	10	0.5321	111.177	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000	0.00	0.000	0.000	
						C	0.000	0.000	0.00	0.000	0.000	
L3 44.25-0.00	22.14	0.921	8	0.4804	174.050	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000	0.00	0.000	0.000	
						C	0.000	0.000	0.00	0.000	0.000	

**Tower Pressure - Service**

$G_H = 1.100$

Section Elevation ft	z ft	$K_z$	$q_z$ psf	$A_G$ ft ²	F a c e	$A_F$ ft ²	$A_R$ ft ²	$A_{leg}$ ft ²	Leg %	$C_{AA}$ In Face ft ²	$C_{AA}$ Out Face ft ²
L1 125.00-79.50	100.90	1.268	10	102.518	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
L2 79.50-44.25	61.43	1.142	9	107.892	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
L3 44.25-0.00	22.14	0.921	7	170.126	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	

**Tower Forces - No Ice - Wind Normal To Face**

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 7 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	0.00	3277.67	A	0	0.73	43	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L2 79.50-44.25	0.00	4815.39	A	0	0.73	39	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L3 44.25-0.00	0.00	9081.52	A	0	0.73	31	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.00	17174.59						OTM	0.00 lb-ft	0.00		

**Tower Forces - No Ice - Wind 45 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	0.00	3277.67	A	0	0.73	43	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L2 79.50-44.25	0.00	4815.39	A	0	0.73	39	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L3 44.25-0.00	0.00	9081.52	A	0	0.73	31	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.00	17174.59						OTM	0.00 lb-ft	0.00		

**Tower Forces - No Ice - Wind 60 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	0.00	3277.67	A	0	0.73	43	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L2 79.50-44.25	0.00	4815.39	A	0	0.73	39	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L3 44.25-0.00	0.00	9081.52	A	0	0.73	31	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.00	17174.59						OTM	0.00 lb-ft	0.00		

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 8 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

**Tower Forces - No Ice - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 125.00-79.50	0.00	3277.67	A	0	0.73	43	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L2 79.50-44.25	0.00	4815.39	A	0	0.73	39	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L3 44.25-0.00	0.00	9081.52	A	0	0.73	31	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.00	17174.59						OTM	0.00 lb-ft	0.00		

**Tower Forces - With Ice - Wind Normal To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 125.00-79.50	0.00	4132.56	A	0	1.2	11	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L2 79.50-44.25	0.00	5666.17	A	0	1.2	10	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L3 44.25-0.00	0.00	10287.88	A	0	1.2	8	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
Sum Weight:	0.00	20086.60						OTM	0.00 lb-ft	0.00		

**Tower Forces - With Ice - Wind 45 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 125.00-79.50	0.00	4132.56	A	0	1.2	11	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L2 79.50-44.25	0.00	5666.17	A	0	1.2	10	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L3 44.25-0.00	0.00	10287.88	A	0	1.2	8	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
Sum Weight:	0.00	20086.60						OTM	0.00 lb-ft	0.00		



<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 9 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

**Tower Forces - With Ice - Wind 60 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	0.00	4132.56	A	0	1.2	11	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L2 79.50-44.25	0.00	5666.17	A	0	1.2	10	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L3 44.25-0.00	0.00	10287.88	A	0	1.2	8	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
Sum Weight:	0.00	20086.60						OTM	0.00 lb-ft	0.00		

**Tower Forces - With Ice - Wind 90 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	0.00	4132.56	A	0	1.2	11	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L2 79.50-44.25	0.00	5666.17	A	0	1.2	10	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L3 44.25-0.00	0.00	10287.88	A	0	1.2	8	1	1	0.000	0.00	0.00	C
			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
Sum Weight:	0.00	20086.60						OTM	0.00 lb-ft	0.00		

**Tower Forces - Service - Wind Normal To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-79.50	0.00	3277.67	A	0	0.73	10	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L2 79.50-44.25	0.00	4815.39	A	0	0.73	9	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L3 44.25-0.00	0.00	9081.52	A	0	0.73	7	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b>		AK2 SHAMPINE, AK		115070		<b>Page</b>		10 of 32	
	<b>Project</b>		125 FT MONOPOLE				<b>Date</b>		15:59:58 04/11/24	
	<b>Client</b>		VERIZON WIRELESS				<b>Designed by</b>		cmillard	

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
Sum Weight:	0.00	17174.59	C	0	0.73		1	1	0.000		0.00	
								OTM	0.00 lb-ft			

**Tower Forces - Service - Wind 45 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1	0.00	3277.67	A	0	0.73	10	1	1	0.000	0.00	0.00	C
125.00-79.50			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L2	0.00	4815.39	A	0	0.73	9	1	1	0.000	0.00	0.00	C
79.50-44.25			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L3	0.00	9081.52	A	0	0.73	7	1	1	0.000	0.00	0.00	C
44.25-0.00			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.00	17174.59						OTM	0.00 lb-ft	0.00		

**Tower Forces - Service - Wind 60 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1	0.00	3277.67	A	0	0.73	10	1	1	0.000	0.00	0.00	C
125.00-79.50			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L2	0.00	4815.39	A	0	0.73	9	1	1	0.000	0.00	0.00	C
79.50-44.25			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L3	0.00	9081.52	A	0	0.73	7	1	1	0.000	0.00	0.00	C
44.25-0.00			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.00	17174.59						OTM	0.00 lb-ft	0.00		

**Tower Forces - Service - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1	0.00	3277.67	A	0	0.73	10	1	1	0.000	0.00	0.00	C

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 11 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
125.00-79.50			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L2 79.50-44.25	0.00	4815.39	A	0	0.73	9	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
L3 44.25-0.00	0.00	9081.52	A	0	0.73	7	1	1	0.000	0.00	0.00	C
			B	0	0.73		1	1	0.000			
			C	0	0.73		1	1	0.000			
Sum Weight:	0.00	17174.59						OTM	0.00 lb-ft	0.00		

### 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	17174.59					
Bracing Weight	0.00					
Total Member Self-Weight	17174.59					
Total Weight	49334.59			0.00	0.00	
Wind 0 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 30 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 45 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 60 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 90 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 120 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 135 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 150 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 180 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 210 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 225 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 240 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 270 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 300 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 315 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Wind 330 deg - No Ice		0.00	0.00	0.00	0.00	0.00
Member Ice	2912.01					
Total Weight Ice	20086.60			0.00	0.00	
Wind 0 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 30 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 45 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 60 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 90 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 120 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 135 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 150 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 180 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 210 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 225 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 240 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 270 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 300 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 315 deg - Ice		0.00	0.00	0.00	0.00	0.00
Wind 330 deg - Ice		0.00	0.00	0.00	0.00	0.00

<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p><b>Job</b></p> <p style="text-align: center;">AK2 SHAMPINE, AK                      115070</p>	<p><b>Page</b></p> <p style="text-align: center;">12 of 32</p>
	<p><b>Project</b></p> <p style="text-align: center;">125 FT MONOPOLE</p>	<p><b>Date</b></p> <p style="text-align: center;">15:59:58 04/11/24</p>
	<p><b>Client</b></p> <p style="text-align: center;">VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p style="text-align: center;">cmillard</p>

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
Total Weight	17174.59			0.00	0.00	
Wind 0 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 30 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 45 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 60 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 90 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 120 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 135 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 150 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 180 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 210 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 225 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 240 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 270 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 300 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 315 deg - Service		0.00	0.00	0.00	0.00	0.00
Wind 330 deg - Service		0.00	0.00	0.00	0.00	0.00
Seismic Vertical	9652.50					
Seismic Horizontal 0 deg		0.00	-32500.10	-3133568.04	0.00	0.00
Seismic Horizontal 30 deg		16250.05	-28145.91	-2713749.53	-1566784.02	0.00
Seismic Horizontal 45 deg		22981.04	-22981.04	-2215767.21	-2215767.21	0.00
Seismic Horizontal 60 deg		28145.91	-16250.05	-1566784.02	-2713749.53	0.00
Seismic Horizontal 90 deg		32500.10	0.00	0.00	-3133568.04	0.00
Seismic Horizontal 120 deg		28145.91	16250.05	1566784.02	-2713749.53	0.00
Seismic Horizontal 135 deg		22981.04	22981.04	2215767.21	-2215767.21	0.00
Seismic Horizontal 150 deg		16250.05	28145.91	2713749.53	-1566784.02	0.00
Seismic Horizontal 180 deg		0.00	32500.10	3133568.04	0.00	0.00
Seismic Horizontal 210 deg		-16250.05	28145.91	2713749.53	1566784.02	0.00
Seismic Horizontal 225 deg		-22981.04	22981.04	2215767.21	2215767.21	0.00
Seismic Horizontal 240 deg		-28145.91	16250.05	1566784.02	2713749.53	0.00
Seismic Horizontal 270 deg		-32500.10	0.00	0.00	3133568.04	0.00
Seismic Horizontal 300 deg		-28145.91	-16250.05	-1566784.02	2713749.53	0.00
Seismic Horizontal 315 deg		-22981.04	-22981.04	-2215767.21	2215767.21	0.00
Seismic Horizontal 330 deg		-16250.05	-28145.91	-2713749.53	1566784.02	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
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

<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	13 of 32
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Comb. No.	Description
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+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
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
67	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
68	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 45 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 45 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
75	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
76	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
77	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
78	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
79	1.2 Dead+1.0 Ev+1.0 Eh 135 deg

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	14 of 32
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Comb. No.	Description
80	0.9 Dead-1.0 Ev+1.0 Eh 135 deg
81	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
82	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
83	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
84	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
85	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
86	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
87	1.2 Dead+1.0 Ev+1.0 Eh 225 deg
88	0.9 Dead-1.0 Ev+1.0 Eh 225 deg
89	1.2 Dead+1.0 Ev+1.0 Eh 240 deg
90	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
91	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
92	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
93	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
94	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
95	1.2 Dead+1.0 Ev+1.0 Eh 315 deg
96	0.9 Dead-1.0 Ev+1.0 Eh 315 deg
97	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
98	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

### 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	125 - 79.5	Pole	Max Tension	68	0.00	0.00	-0.00
			Max. Compression	75	-27924.27	-691872.43	0.00
			Max. Mx	75	-27924.27	-691872.43	0.00
			Max. My	67	-27924.27	0.00	691872.43
			Max. Vy	75	27805.25	-632361.53	0.00
			Max. Vx	67	-27805.25	0.00	632361.53
			Max. Torque	69			-0.01
			Max. Tension	1	0.00	0.00	0.00
L2	79.5 - 44.25	Pole	Max. Compression	75	-41648.69	-1696411.2	0.00
			Max. Mx	75	-41648.69	-1696411.2	0.00
			Max. My	67	-41648.69	0.00	1696411.28
			Max. Vy	75	31472.96	-1696411.2	0.00
			Max. Vx	67	-31472.96	0.00	1696411.28
			Max. Torque	69			-0.02
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	67	-68821.62	0.00	3327738.87
L3	44.25 - 0	Pole	Max. Mx	75	-68821.62	-3327738.8	0.00
			Max. My	67	-68821.62	0.00	3327738.87
			Max. Vy	75	33466.86	-2561035.4	0.00
			Max. Vx	67	-33466.86	0.00	2561035.47
			Max. Torque	69			-0.02

### Maximum Reactions

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	15 of 32
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	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	67	68854.01	0.00	32500.11
	Max. H _x	91	68854.01	32500.11	0.00
	Max. H _z	67	68854.01	0.00	32500.11
	Max. M _x	67	3327738.87	0.00	32500.11
	Max. M _z	75	3327738.87	-32500.11	0.00
	Max. Torsion	81	0.02	-16250.05	-28145.91
	Min. Vert	34	30224.92	0.00	0.00
	Min. H _x	75	68854.01	-32500.11	0.00
	Min. H _z	83	68854.01	0.00	-32500.11
	Min. M _x	83	-3327738.87	0.00	-32500.11
	Min. M _z	91	-3327738.87	32500.11	0.00
	Min. Torsion	69	-0.02	-16250.05	28145.91

### 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	49334.59	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 30 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 45 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 45 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 60 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 90 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 120 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 120 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 135 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 135 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 150 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 150 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 180 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00

<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	16 of 32	
	<b>Project</b>	125 FT MONOPOLE		<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS		<b>Designed by</b>	cmillard

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
0.9 Dead+1.0 Wind 210 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 225 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 225 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 240 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 270 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 300 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 300 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 315 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 315 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 330 deg - No Ice	59201.51	0.00	0.00	0.00	0.00	0.00
0.9 Dead+1.0 Wind 330 deg - No Ice	44401.13	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	30224.92	0.00	0.00	0.00	0.00	0.00
Dead+Wind 0 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 30 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00



<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	17 of 32	
	<b>Project</b>	125 FT MONOPOLE		<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS		<b>Designed by</b>	cmillard

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+Wind 45 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 60 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 90 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 120 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 135 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 150 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 180 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 210 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 225 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 240 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 270 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 300 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 315 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
Dead+Wind 330 deg - Service	49334.59	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	68854.01	0.00	-32500.11	-3327738.87	0.00	0.00
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	34748.63	0.00	-32500.10	-3216453.36	0.00	0.00
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	68854.01	16250.05	-28145.91	-2881910.81	-1663872.01	0.02
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	34748.63	16250.05	-28145.91	-2785532.29	-1608227.83	0.01
1.2 Dead+1.0 Ev+1.0 Eh 45 deg	68854.01	22981.04	-22981.04	-2353070.34	-2353070.34	0.00
0.9 Dead-1.0 Ev+1.0 Eh 45 deg	34748.63	22981.04	-22981.04	-2274377.60	-2274377.60	0.00
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	68854.01	28145.91	-16250.05	-1663872.01	-2881910.81	-0.02
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	34748.63	28145.91	-16250.05	-1608227.83	-2785532.29	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	68854.01	32500.11	0.00	0.00	-3327738.87	0.00
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	34748.63	32500.10	0.00	0.00	-3216453.36	0.00
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	68854.01	28145.91	16250.05	1663872.01	-2881910.81	0.02
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	34748.63	28145.91	16250.05	1608227.83	-2785532.29	0.01
1.2 Dead+1.0 Ev+1.0 Eh 135 deg	68854.01	22981.04	22981.04	2353070.34	-2353070.34	0.00
0.9 Dead-1.0 Ev+1.0 Eh 135 deg	34748.63	22981.04	22981.04	2274377.60	-2274377.60	0.00
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	68854.01	16250.05	28145.91	2881910.81	-1663872.01	-0.02
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	34748.63	16250.05	28145.91	2785532.29	-1608227.83	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	68854.01	0.00	32500.11	3327738.87	0.00	0.00
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	34748.63	0.00	32500.10	3216453.36	0.00	0.00
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	68854.01	-16250.05	28145.91	2881910.81	1663872.01	0.02
0.9 Dead-1.0 Ev+1.0 Eh 210 deg	34748.63	-16250.05	28145.91	2785532.29	1608227.83	0.01
1.2 Dead+1.0 Ev+1.0 Eh 225 deg	68854.01	-22981.04	22981.04	2353070.34	2353070.34	0.00
0.9 Dead-1.0 Ev+1.0 Eh 225 deg	34748.63	-22981.04	22981.04	2274377.60	2274377.60	0.00
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	68854.01	-28145.91	16250.05	1663872.01	2881910.81	-0.02
0.9 Dead-1.0 Ev+1.0 Eh 240 deg	34748.63	-28145.91	16250.05	1608227.83	2785532.29	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 270 deg	68854.01	-32500.11	0.00	0.00	3327738.87	0.00
0.9 Dead-1.0 Ev+1.0 Eh 270 deg	34748.63	-32500.10	0.00	0.00	3216453.36	0.00
1.2 Dead+1.0 Ev+1.0 Eh 300 deg	68854.01	-28145.91	-16250.05	-1663872.01	2881910.81	0.02
0.9 Dead-1.0 Ev+1.0 Eh 300 deg	34748.63	-28145.91	-16250.05	-1608227.83	2785532.29	0.01
1.2 Dead+1.0 Ev+1.0 Eh 315 deg	68854.01	-22981.04	-22981.04	-2353070.34	2353070.34	0.00

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 18 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

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
deg 0.9 Dead-1.0 Ev+1.0 Eh 315	34748.63	-22981.04	-22981.04	-2274377.60	2274377.60	0.00
deg 1.2 Dead+1.0 Ev+1.0 Eh 330	68854.01	-16250.05	-28145.91	-2881910.81	1663872.01	-0.02
deg 0.9 Dead-1.0 Ev+1.0 Eh 330	34748.63	-16250.05	-28145.91	-2785532.29	1608227.83	-0.01

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
2	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
3	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
4	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
5	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
6	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
7	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
8	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
9	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
10	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
11	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
12	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
13	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
14	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
15	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
16	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
17	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
18	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
19	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
20	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
21	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
22	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
23	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
24	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
25	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
26	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
27	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
28	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
29	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
30	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
31	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
32	0.00	-59201.51	0.00	0.00	59201.51	0.00	0.000%
33	0.00	-44401.13	0.00	0.00	44401.13	0.00	0.000%
34	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
35	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
36	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
37	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
38	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
39	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
40	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
41	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
42	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
43	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
44	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
45	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	19 of 32
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
46	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
47	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
48	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
49	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
50	0.00	-30224.92	0.00	0.00	30224.92	0.00	0.000%
51	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
52	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
53	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
54	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
55	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
56	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
57	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
58	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
59	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
60	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
61	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
62	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
63	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
64	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
65	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
66	0.00	-49334.59	0.00	0.00	49334.59	0.00	0.000%
67	0.00	-68854.01	-32500.10	0.00	68854.01	32500.11	0.000%
68	0.00	-34748.63	-32500.10	0.00	34748.63	32500.10	0.000%
69	16250.05	-68854.01	-28145.91	-16250.05	68854.01	28145.91	0.000%
70	16250.05	-34748.63	-28145.91	-16250.05	34748.63	28145.91	0.000%
71	22981.04	-68854.01	-22981.04	-22981.04	68854.01	22981.04	0.000%
72	22981.04	-34748.63	-22981.04	-22981.04	34748.63	22981.04	0.000%
73	28145.91	-68854.01	-16250.05	-28145.91	68854.01	16250.05	0.000%
74	28145.91	-34748.63	-16250.05	-28145.91	34748.63	16250.05	0.000%
75	32500.10	-68854.01	0.00	-32500.11	68854.01	0.00	0.000%
76	32500.10	-34748.63	0.00	-32500.10	34748.63	0.00	0.000%
77	28145.91	-68854.01	16250.05	-28145.91	68854.01	-16250.05	0.000%
78	28145.91	-34748.63	16250.05	-28145.91	34748.63	-16250.05	0.000%
79	22981.04	-68854.01	22981.04	-22981.04	68854.01	-22981.04	0.000%
80	22981.04	-34748.63	22981.04	-22981.04	34748.63	-22981.04	0.000%
81	16250.05	-68854.01	28145.91	-16250.05	68854.01	-28145.91	0.000%
82	16250.05	-34748.63	28145.91	-16250.05	34748.63	-28145.91	0.000%
83	0.00	-68854.01	32500.10	0.00	68854.01	-32500.11	0.000%
84	0.00	-34748.63	32500.10	0.00	34748.63	-32500.10	0.000%
85	-16250.05	-68854.01	28145.91	16250.05	68854.01	-28145.91	0.000%
86	-16250.05	-34748.63	28145.91	16250.05	34748.63	-28145.91	0.000%
87	-22981.04	-68854.01	22981.04	22981.04	68854.01	-22981.04	0.000%
88	-22981.04	-34748.63	22981.04	22981.04	34748.63	-22981.04	0.000%
89	-28145.91	-68854.01	16250.05	28145.91	68854.01	-16250.05	0.000%
90	-28145.91	-34748.63	16250.05	28145.91	34748.63	-16250.05	0.000%
91	-32500.10	-68854.01	0.00	32500.11	68854.01	0.00	0.000%
92	-32500.10	-34748.63	0.00	32500.10	34748.63	0.00	0.000%
93	-28145.91	-68854.01	-16250.05	28145.91	68854.01	16250.05	0.000%
94	-28145.91	-34748.63	-16250.05	28145.91	34748.63	16250.05	0.000%
95	-22981.04	-68854.01	-22981.04	22981.04	68854.01	22981.04	0.000%
96	-22981.04	-34748.63	-22981.04	22981.04	34748.63	22981.04	0.000%
97	-16250.05	-68854.01	-28145.91	16250.05	68854.01	28145.91	0.000%
98	-16250.05	-34748.63	-28145.91	16250.05	34748.63	28145.91	0.000%

**Non-Linear Convergence Results**

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p><b>Job</b></p> <p>AK2 SHAMPINE, AK 115070</p>	<p><b>Page</b></p> <p>20 of 32</p>
	<p><b>Project</b></p> <p>125 FT MONOPOLE</p>	<p><b>Date</b></p> <p>15:59:58 04/11/24</p>
	<p><b>Client</b></p> <p>VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p>cmillard</p>

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.0000001
3	Yes	4	0.0000001	0.0000001
4	Yes	4	0.0000001	0.0000001
5	Yes	4	0.0000001	0.0000001
6	Yes	4	0.0000001	0.0000001
7	Yes	4	0.0000001	0.0000001
8	Yes	4	0.0000001	0.0000001
9	Yes	4	0.0000001	0.0000001
10	Yes	4	0.0000001	0.0000001
11	Yes	4	0.0000001	0.0000001
12	Yes	4	0.0000001	0.0000001
13	Yes	4	0.0000001	0.0000001
14	Yes	4	0.0000001	0.0000001
15	Yes	4	0.0000001	0.0000001
16	Yes	4	0.0000001	0.0000001
17	Yes	4	0.0000001	0.0000001
18	Yes	4	0.0000001	0.0000001
19	Yes	4	0.0000001	0.0000001
20	Yes	4	0.0000001	0.0000001
21	Yes	4	0.0000001	0.0000001
22	Yes	4	0.0000001	0.0000001
23	Yes	4	0.0000001	0.0000001
24	Yes	4	0.0000001	0.0000001
25	Yes	4	0.0000001	0.0000001
26	Yes	4	0.0000001	0.0000001
27	Yes	4	0.0000001	0.0000001
28	Yes	4	0.0000001	0.0000001
29	Yes	4	0.0000001	0.0000001
30	Yes	4	0.0000001	0.0000001
31	Yes	4	0.0000001	0.0000001
32	Yes	4	0.0000001	0.0000001
33	Yes	4	0.0000001	0.0000001
34	Yes	4	0.0000001	0.0000001
35	Yes	4	0.0000001	0.0000001
36	Yes	4	0.0000001	0.0000001
37	Yes	4	0.0000001	0.0000001
38	Yes	4	0.0000001	0.0000001
39	Yes	4	0.0000001	0.0000001
40	Yes	4	0.0000001	0.0000001
41	Yes	4	0.0000001	0.0000001
42	Yes	4	0.0000001	0.0000001
43	Yes	4	0.0000001	0.0000001
44	Yes	4	0.0000001	0.0000001
45	Yes	4	0.0000001	0.0000001
46	Yes	4	0.0000001	0.0000001
47	Yes	4	0.0000001	0.0000001
48	Yes	4	0.0000001	0.0000001
49	Yes	4	0.0000001	0.0000001
50	Yes	4	0.0000001	0.0000001
51	Yes	4	0.0000001	0.0000001
52	Yes	4	0.0000001	0.0000001
53	Yes	4	0.0000001	0.0000001
54	Yes	4	0.0000001	0.0000001
55	Yes	4	0.0000001	0.0000001
56	Yes	4	0.0000001	0.0000001
57	Yes	4	0.0000001	0.0000001
58	Yes	4	0.0000001	0.0000001
59	Yes	4	0.0000001	0.0000001
60	Yes	4	0.0000001	0.0000001
61	Yes	4	0.0000001	0.0000001
62	Yes	4	0.0000001	0.0000001

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	21 of 32
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001
67	Yes	5	0.00000001	0.00003392
68	Yes	4	0.00000001	0.00006483
69	Yes	6	0.00000001	0.00017008
70	Yes	5	0.00000001	0.00023543
71	Yes	6	0.00000001	0.00018998
72	Yes	5	0.00000001	0.00025679
73	Yes	6	0.00000001	0.00017008
74	Yes	5	0.00000001	0.00023543
75	Yes	5	0.00000001	0.00003392
76	Yes	4	0.00000001	0.00006483
77	Yes	6	0.00000001	0.00017008
78	Yes	5	0.00000001	0.00023543
79	Yes	6	0.00000001	0.00018998
80	Yes	5	0.00000001	0.00025679
81	Yes	6	0.00000001	0.00017008
82	Yes	5	0.00000001	0.00023543
83	Yes	5	0.00000001	0.00003392
84	Yes	4	0.00000001	0.00006483
85	Yes	6	0.00000001	0.00017008
86	Yes	5	0.00000001	0.00023543
87	Yes	6	0.00000001	0.00018998
88	Yes	5	0.00000001	0.00025679
89	Yes	6	0.00000001	0.00017008
90	Yes	5	0.00000001	0.00023543
91	Yes	5	0.00000001	0.00003392
92	Yes	4	0.00000001	0.00006483
93	Yes	6	0.00000001	0.00017008
94	Yes	5	0.00000001	0.00023543
95	Yes	6	0.00000001	0.00018998
96	Yes	5	0.00000001	0.00025679
97	Yes	6	0.00000001	0.00017008
98	Yes	5	0.00000001	0.00023543

### Maximum Tower Deflections - Service Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt <i>°</i>	Twist <i>°</i>
L1	125 - 79.5	0.000	1	0.0000	0.0000
L2	84.25 - 44.25	0.000	1	0.0000	0.0000
L3	50 - 0	0.000	1	0.0000	0.0000

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

Elevation <i>ft</i>	Appurtenance	Gov. Load Comb.	Deflection <i>in</i>	Tilt <i>°</i>	Twist <i>°</i>	Radius of Curvature <i>ft</i>
121.00	(3) 12' EE T-FRAMES seismic	0	0.000	0.0000	0.0000	Inf
117.40	Tapered 1 seismic	0	0.000	0.0000	0.0000	Inf
116.10	Coax seismic	0	0.000	0.0000	0.0000	Inf
111.00	(3) 12' EE T-Frames w/ Rail seismic	0	0.000	0.0000	0.0000	Inf
102.30	Tapered 1 seismic	0	0.000	0.0000	0.0000	Inf

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	22 of 32
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
101.00	(3) 12' EE T-Frames w/ Rail seismic	0	0.000	0.0000	0.0000	Inf
98.20	Coax seismic	0	0.000	0.0000	0.0000	Inf
92.00	(3) MW seismic	0	0.000	0.0000	0.0000	Inf
87.10	Tapered 1 seismic	0	0.000	0.0000	0.0000	Inf
80.40	Coax seismic	0	0.000	0.0000	0.0000	Inf
72.80	Tapered 2 seismic	0	0.000	0.0000	0.0000	Inf
63.90	Tapered 2 seismic	0	0.000	0.0000	0.0000	Inf
62.50	Coax seismic	0	0.000	0.0000	0.0000	Inf
50.60	Tapered 2 seismic	0	0.000	0.0000	0.0000	Inf
44.60	Coax seismic	0	0.000	0.0000	0.0000	Inf
41.30	Tapered 3 seismic	0	0.000	0.0000	0.0000	Inf
26.80	Coax seismic	0	0.000	0.0000	0.0000	Inf
24.80	Tapered 3 seismic	0	0.000	0.0000	0.0000	Inf
8.90	Coax seismic	0	0.000	0.0000	0.0000	Inf
8.20	Tapered 3 seismic	0	0.000	0.0000	0.0000	Inf

### Maximum Tower Deflections - Design Wind


Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 79.5	0.000	1	0.0000	0.0000
L2	84.25 - 44.25	0.000	1	0.0000	0.0000
L3	50 - 0	0.000	1	0.0000	0.0000

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

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.00	(3) 12' EE T-FRAMES seismic	0	0.000	0.0000	0.0000	Inf
117.40	Tapered 1 seismic	0	0.000	0.0000	0.0000	Inf
116.10	Coax seismic	0	0.000	0.0000	0.0000	Inf
111.00	(3) 12' EE T-Frames w/ Rail seismic	0	0.000	0.0000	0.0000	Inf
102.30	Tapered 1 seismic	0	0.000	0.0000	0.0000	Inf
101.00	(3) 12' EE T-Frames w/ Rail seismic	0	0.000	0.0000	0.0000	Inf
98.20	Coax seismic	0	0.000	0.0000	0.0000	Inf
92.00	(3) MW seismic	0	0.000	0.0000	0.0000	Inf
87.10	Tapered 1 seismic	0	0.000	0.0000	0.0000	Inf
80.40	Coax seismic	0	0.000	0.0000	0.0000	Inf
72.80	Tapered 2 seismic	0	0.000	0.0000	0.0000	Inf
63.90	Tapered 2 seismic	0	0.000	0.0000	0.0000	Inf
62.50	Coax seismic	0	0.000	0.0000	0.0000	Inf
50.60	Tapered 2 seismic	0	0.000	0.0000	0.0000	Inf
44.60	Coax seismic	0	0.000	0.0000	0.0000	Inf
41.30	Tapered 3 seismic	0	0.000	0.0000	0.0000	Inf
26.80	Coax seismic	0	0.000	0.0000	0.0000	Inf
24.80	Tapered 3 seismic	0	0.000	0.0000	0.0000	Inf
8.90	Coax seismic	0	0.000	0.0000	0.0000	Inf
8.20	Tapered 3 seismic	0	0.000	0.0000	0.0000	Inf

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 23 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

**Base Plate Design Data**

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension lb	Actual Allowable Ratio Bolt Compression lb	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
in		in						
1.7500	22	1.7500	120779.17 178073.85 0.68	127035.68 295602.59 0.43	28.528 45.000 0.63	22.970 45.000 0.51	Bolt T	0.68 

**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	125 - 122.855	TP32.33x21x0.25	45.50	0.00	0.0	16.8889	-187.81	988001.00	0.000 *1
	122.855 - 120.711					17.3127	-6019.39	1012790.00	0.006
	120.711 - 118.566					17.7365	-6173.90	1037580.00	0.006
	118.566 - 116.421					18.1602	-7761.93	1062370.00	0.007
	116.421 - 114.276					18.5840	-7990.12	1087170.00	0.007
	114.276 - 112.132					19.0078	-8160.01	1111960.00	0.007
	112.132 - 109.987					19.4316	-14330.40	1136750.00	0.013
	109.987 - 107.842					19.8554	-14516.00	1161540.00	0.012
	107.842 - 105.697					20.2791	-14708.70	1186330.00	0.012
	105.697 - 103.553					20.7029	-14907.90	1211120.00	0.012
	103.553 - 101.408					21.1267	-16573.70	1235910.00	0.013
	101.408 - 99.2632					21.5505	-22880.90	1260700.00	0.018
	99.2632 - 97.1184					21.9743	-23283.50	1285490.00	0.018
	97.1184 - 94.9737					22.3980	-23523.30	1310280.00	0.018
	94.9737 - 92.8289					22.8218	-23770.80	1335080.00	0.018
	92.8289 - 90.6842					23.2456	-25607.50	1359870.00	0.019
	90.6842 - 88.5395					23.6694	-25872.10	1384660.00	0.019
	88.5395 - 86.3947					24.0931	-27643.30	1409450.00	0.020
	86.3947 -					24.5169	-27924.20	1434240.00	0.019

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 24 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
L2	84.25	TP40.6076x30.6472x0.3125	40.00	0.00	0.0	25.4555	-13259.80	1489150.00	0.009
	84.25 - 79.5					31.2614	-16051.20	1828790.00	0.009
	84.25 - 79.5					31.6662	-29584.50	1852470.00	0.016
	79.5 - 77.8611					32.0710	-29847.60	1876150.00	0.016
	77.8611 - 76.2222								
	76.2222 - 74.5833					32.4758	-30114.20	1899830.00	0.016
	74.5833 - 72.9444					32.8806	-30383.90	1923510.00	0.016
	72.9444 - 71.3056					33.2853	-32919.80	1947190.00	0.017
	71.3056 - 69.6667					33.6901	-33198.90	1970870.00	0.017
	69.6667 - 68.0278					34.0949	-33481.10	1994550.00	0.017
	68.0278 - 66.3889					34.4997	-33766.40	2018230.00	0.017
	66.3889 - 64.75					34.9045	-34054.60	2041910.00	0.017
	64.75 - 63.1111					35.3093	-36635.30	2065590.00	0.018
	63.1111 - 61.4722					35.7141	-37168.40	2089270.00	0.018
	61.4722 - 59.8333					36.1188	-37468.20	2112950.00	0.018
	59.8333 - 58.1944					36.5236	-37770.90	2136630.00	0.018
	58.1944 - 56.5556					36.9284	-38076.40	2160310.00	0.018
	L3					56.5556 - 54.9167	TP51.0014x38.5508x0.375	50.00	0.00
54.9167 - 53.2778		37.7380	-38695.30	2207670.00	0.018				
53.2778 - 51.6389		38.1428	-39008.70	2231350.00	0.017				
51.6389 - 50		38.5476	-41648.70	2255030.00	0.018				
50 - 44.25		39.9677	-20310.00	2338110.00	0.009				
50 - 44.25		47.1430	-23682.80	2757860.00	0.009				
44.25 - 41.9211		47.8333	-44534.00	2798250.00	0.016				
41.9211 - 39.5921		48.5235	-49428.30	2838630.00	0.017				
39.5921 - 37.2632		49.2138	-49973.30	2879010.00	0.017				
37.2632 - 34.9342		49.9041	-50524.50	2919390.00	0.017				
34.9342 - 32.6053		50.5943	-51081.60	2959770.00	0.017				
32.6053 - 30.2763		51.2846	-51644.60	3000150.00	0.017				
30.2763 - 27.9474		51.9748	-52213.50	3040530.00	0.017				
27.9474 - 25.6184		52.6651	-53031.40	3080910.00	0.017				
25.6184 - 23.2895		53.3554	-58012.10	3121290.00	0.019				
23.2895 - 20.9605		54.0457	-58600.80	3161670.00	0.019				
20.9605 -		54.7359	-59195.30	3202050.00	0.018				



<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 25 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
	18.6316								
	18.6316 - 16.3026					55.4262	-59795.50	3242430.00	0.018
	16.3026 - 13.9737					56.1164	-60401.50	3282810.00	0.018
	13.9737 - 11.6447					56.8067	-61013.10	3323190.00	0.018
	11.6447 - 9.31579					57.4970	-61630.40	3363570.00	0.018
	9.31579 - 6.98684					58.1872	-66916.80	3403950.00	0.020
	6.98684 - 4.65789					58.8775	-67546.10	3444330.00	0.020
	4.65789 - 2.32895					59.5678	-68181.00	3484710.00	0.020
	2.32895 - 0					60.2580	-68821.60	3525100.00	0.020

* DL controls

¹ P_u / φP_n controls

### Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} lb-ft	φM _{ux} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} lb-ft	φM _{uy} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	125 - 122.855	TP32.33x21x0.25	0.00	547062.50	0.000	0.00	547062.50	0.000
	122.855 - 120.711		2259.27	575024.17	0.004	0.00	575024.17	0.000
	120.711 - 118.566		18545.08	603682.50	0.031	0.00	603682.50	0.000
	118.566 - 116.421		36651.08	633038.33	0.058	0.00	633038.33	0.000
	116.421 - 114.276		57061.33	663090.83	0.086	0.00	663090.83	0.000
	114.276 - 112.132		77525.08	692525.83	0.112	0.00	692525.83	0.000
	112.132 - 109.987		105310.83	720028.33	0.146	0.00	720028.33	0.000
	109.987 - 107.842		141256.67	747880.83	0.189	0.00	747880.83	0.000
	107.842 - 105.697		177210.83	776074.17	0.228	0.00	776074.17	0.000
	105.697 - 103.553		213166.67	804595.83	0.265	0.00	804595.83	0.000
	103.553 - 101.408		250545.83	833433.33	0.301	0.00	833433.33	0.000
	101.408 - 99.2632		301300.83	862583.33	0.349	0.00	862583.33	0.000
	99.2632 - 97.1184		354891.67	892025.00	0.398	0.00	892025.00	0.000
	97.1184 - 94.9737		408621.67	921750.00	0.443	0.00	921750.00	0.000
	94.9737 - 92.8289		462292.50	951750.00	0.486	0.00	951750.00	0.000
	92.8289 - 90.6842		517904.17	982008.33	0.527	0.00	982008.33	0.000

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	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Size	$M_{ux}$ lb-ft	$\phi M_{rx}$ lb-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	$M_{uy}$ lb-ft	$\phi M_{ry}$ lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
	90.6842 - 88.5395		574700.00	1012516.67	0.568	0.00	1012516.67	0.000
	88.5395 - 86.3947		632364.17	1043266.67	0.606	0.00	1043266.67	0.000
	86.3947 - 84.25		691875.00	1074241.67	0.644	0.00	1074241.67	0.000
L2	84.25 - 79.5	TP40.6076x30.6472x0.3125	377190.83	1143608.33	0.330	0.00	1143608.33	0.000
	84.25 - 79.5		446566.67	1480375.00	0.302	0.00	1480375.00	0.000
	79.5 - 77.8611		869491.67	1514100.00	0.574	0.00	1514100.00	0.000
	77.8611 - 76.2222		915166.67	1548066.67	0.591	0.00	1548066.67	0.000
	76.2222 - 74.5833		960783.33	1582275.00	0.607	0.00	1582275.00	0.000
	74.5833 - 72.9444		1006341.67	1616708.33	0.622	0.00	1616708.33	0.000
	72.9444 - 71.3056		1054325.00	1651366.67	0.638	0.00	1651366.67	0.000
	71.3056 - 69.6667		1102475.00	1686241.67	0.654	0.00	1686241.67	0.000
	69.6667 - 68.0278		1150550.00	1721341.67	0.668	0.00	1721341.67	0.000
	68.0278 - 66.3889		1198541.67	1756641.67	0.682	0.00	1756641.67	0.000
	66.3889 - 64.75		1246466.67	1792150.00	0.696	0.00	1792150.00	0.000
	64.75 - 63.1111		1295450.00	1827866.67	0.709	0.00	1827866.67	0.000
	63.1111 - 61.4722		1345741.67	1863766.67	0.722	0.00	1863766.67	0.000
	61.4722 - 59.8333		1396025.00	1899866.67	0.735	0.00	1899866.67	0.000
	59.8333 - 58.1944		1446216.67	1936150.00	0.747	0.00	1936150.00	0.000
	58.1944 - 56.5556		1496316.67	1972608.33	0.759	0.00	1972608.33	0.000
	56.5556 - 54.9167		1546316.67	2009241.67	0.770	0.00	2009241.67	0.000
	54.9167 - 53.2778		1596225.00	2046050.00	0.780	0.00	2046050.00	0.000
	53.2778 - 51.6389		1646025.00	2083025.00	0.790	0.00	2083025.00	0.000
L3	51.6389 - 50	TP51.0014x38.5508x0.375	1696416.67	2120158.33	0.800	0.00	2120158.33	0.000
	50 - 44.25		877733.33	2251633.33	0.390	0.00	2251633.33	0.000
	50 - 44.25		999341.67	2772691.67	0.360	0.00	2772691.67	0.000
	44.25 - 41.9211		1950325.00	2843500.00	0.686	0.00	2843500.00	0.000
	41.9211 - 39.5921		2026325.00	2914841.67	0.695	0.00	2914841.67	0.000
	39.5921 - 37.2632		2103166.67	2986700.00	0.704	0.00	2986700.00	0.000
	37.2632 - 34.9342		2179775.00	3059066.67	0.713	0.00	3059066.67	0.000
	34.9342 - 32.6053		2256158.33	3131933.33	0.720	0.00	3131933.33	0.000
	32.6053 - 30.2763		2332300.00	3205275.00	0.728	0.00	3205275.00	0.000
	30.2763 - 27.9474		2408208.33	3279075.00	0.734	0.00	3279075.00	0.000
	27.9474 - 25.6184		2483941.67	3353325.00	0.741	0.00	3353325.00	0.000

<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	27 of 32
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Size	$M_{ux}$ lb-ft	$\phi M_{rx}$ lb-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	$M_{uy}$ lb-ft	$\phi M_{ry}$ lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
	25.6184 - 23.2895		2561041.67	3428016.67	0.747	0.00	3428016.67	0.000
	23.2895 - 20.9605		2638700.00	3503125.00	0.753	0.00	3503125.00	0.000
	20.9605 - 18.6316		2716083.33	3578650.00	0.759	0.00	3578650.00	0.000
	18.6316 - 16.3026		2793191.67	3654558.33	0.764	0.00	3654558.33	0.000
	16.3026 - 13.9737		2870025.00	3730841.67	0.769	0.00	3730841.67	0.000
	13.9737 - 11.6447		2946575.00	3807491.67	0.774	0.00	3807491.67	0.000
	11.6447 - 9.31579		3022841.67	3884500.00	0.778	0.00	3884500.00	0.000
	9.31579 - 6.98684		3099250.00	3961833.33	0.782	0.00	3961833.33	0.000
	6.98684 - 4.65789		3175733.33	4039491.67	0.786	0.00	4039491.67	0.000
	4.65789 - 2.32895		3251891.67	4117450.00	0.790	0.00	4117450.00	0.000
	2.32895 - 0		3327741.67	4195708.33	0.793	0.00	4195708.33	0.000

**Pole Shear Design Data**

Section No.	Elevation ft	Size	Actual $V_u$ lb	$\phi V_n$ lb	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ lb-ft	$\phi T_n$ lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	125 - 122.855	TP32.33x21x0.25	0.00	296400.00	0.000	0.00	552475.83	0.000
	122.855 - 120.711		7586.23	303838.00	0.025	0.00	580549.17	0.000
	120.711 - 118.566		7601.89	311275.00	0.024	0.00	609318.33	0.000
	118.566 - 116.421		9443.19	318712.00	0.030	0.00	638783.33	0.000
	116.421 - 114.276		9537.34	326150.00	0.029	0.00	668943.33	0.000
	114.276 - 112.132		9550.47	333587.00	0.029	0.00	699800.00	0.000
	112.132 - 109.987		16763.10	341024.00	0.049	0.00	731351.67	0.000
	109.987 - 107.842		16769.60	348462.00	0.048	0.00	763599.17	0.000
	107.842 - 105.697		16773.30	355899.00	0.047	0.00	796542.50	0.000
	105.697 - 103.553		16774.50	363336.00	0.046	0.00	830181.67	0.000
	103.553 - 101.408		18370.30	370774.00	0.050	0.00	864516.67	0.000
	101.408 - 99.2632		24925.10	378211.00	0.066	0.00	899550.00	0.000
	99.2632 - 97.1184		25085.20	385648.00	0.065	0.00	935275.00	0.000
	97.1184 - 94.9737		25061.90	393085.00	0.064	0.00	971691.67	0.000
	94.9737 - 92.8289		25034.50	400523.00	0.063	0.00	1008808.33	0.000

<p style="text-align: center;"><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	28 of 32
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

Section No.	Elevation ft	Size	Actual $V_u$ lb	$\phi V_n$ lb	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ lb-ft	$\phi T_n$ lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L2	92.8289 - 90.6842	TP40.6076x30.6472x0.3125	26529.40	407960.00	0.065	0.00	1046625.00	0.000
	90.6842 - 88.5395		26491.10	415397.00	0.064	0.00	1085133.33	0.000
	88.5395 - 86.3947		27805.90	422835.00	0.066	0.00	1124341.67	0.000
	86.3947 - 84.25		27756.90	430272.00	0.065	0.00	1164241.67	0.000
	84.25 - 79.5		12894.00	446744.00	0.029	0.00	1255083.33	0.000
	84.25 - 79.5		15068.40	548638.00	0.027	0.00	1514316.67	0.000
	79.5 - 77.8611		27915.30	555742.00	0.050	0.00	1553791.67	0.000
	77.8611 - 76.2222		27880.00	562846.00	0.050	0.00	1593766.67	0.000
	76.2222 - 74.5833		27843.30	569950.00	0.049	0.00	1634250.00	0.000
	74.5833 - 72.9444		27805.40	577054.00	0.048	0.00	1675250.00	0.000
	72.9444 - 71.3056		29432.80	584158.00	0.050	0.00	1716750.00	0.000
	71.3056 - 69.6667		29388.30	591262.00	0.050	0.00	1758758.33	0.000
	69.6667 - 68.0278		29342.60	598366.00	0.049	0.00	1801275.00	0.000
	68.0278 - 66.3889		29295.70	605470.00	0.048	0.00	1844300.00	0.000
	66.3889 - 64.75		29247.70	612574.00	0.048	0.00	1887833.33	0.000
	64.75 - 63.1111		30654.60	619678.00	0.049	0.00	1931866.67	0.000
	63.1111 - 61.4722		30746.70	626782.00	0.049	0.00	1976416.67	0.000
	61.4722 - 59.8333		30690.70	633886.00	0.048	0.00	2021475.00	0.000
	59.8333 - 58.1944		30633.60	640990.00	0.048	0.00	2067033.33	0.000
	58.1944 - 56.5556		30575.60	648094.00	0.047	0.00	2113108.33	0.000
56.5556 - 54.9167	30516.50	655198.00	0.047	0.00	2159683.33	0.000		
54.9167 - 53.2778	30456.60	662302.00	0.046	0.00	2206775.00	0.000		
53.2778 - 51.6389	30395.70	669406.00	0.045	0.00	2254366.67	0.000		
51.6389 - 50	31473.20	676510.00	0.047	0.00	2302466.67	0.000		
50 - 44.25	14812.10	701434.00	0.021	0.00	2475250.00	0.000		
50 - 44.25	16749.20	827360.00	0.020	0.00	2869808.33	0.000		
44.25 - 41.9211	31460.30	839474.00	0.037	0.00	2954466.67	0.000		
41.9211 - 39.5921	33099.50	851588.00	0.039	0.00	3040350.00	0.000		
39.5921 - 37.2632	33002.30	863702.00	0.038	0.00	3127466.67	0.000		
37.2632 - 34.9342	32903.60	875816.00	0.038	0.00	3215808.33	0.000		
34.9342 - 32.6053	32803.50	887930.00	0.037	0.00	3305391.67	0.000		
32.6053 - 30.2763	32702.00	900044.00	0.036	0.02	3396191.67	0.000		
30.2763 - 27.9474	32599.20	912159.00	0.036	0.02	3488233.33	0.000		
L3		TP51.0014x38.5508x0.375						

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 29 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

Section No.	Elevation ft	Size	Actual $V_u$ lb	$\phi V_n$ lb	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ lb-ft	$\phi T_n$ lb-ft	Ratio $\frac{T_u}{\phi T_n}$
	27.9474 - 25.6184		32556.20	924273.00	0.035	0.02	3581500.00	0.000
	25.6184 - 23.2895		33466.80	936387.00	0.036	0.02	3676000.00	0.000
	23.2895 - 20.9605		33350.10	948501.00	0.035	0.02	3771725.00	0.000
	20.9605 - 18.6316		33232.20	960615.00	0.035	0.02	3868691.67	0.000
	18.6316 - 16.3026		33113.10	972729.00	0.034	0.02	3966875.00	0.000
	16.3026 - 13.9737		32993.00	984844.00	0.034	0.00	4066300.00	0.000
	13.9737 - 11.6447		32871.80	996958.00	0.033	0.02	4166950.00	0.000
	11.6447 - 9.31579		32749.50	1009070.00	0.032	0.02	4268833.33	0.000
	9.31579 - 6.98684		32972.60	1021190.00	0.032	0.02	4371941.67	0.000
	6.98684 - 4.65789		32838.80	1033300.00	0.032	0.02	4476283.33	0.000
	4.65789 - 2.32895		32704.10	1045410.00	0.031	0.00	4581858.33	0.000
	2.32895 - 0		32568.60	1057530.00	0.031	0.02	4688658.33	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	125 - 122.855	0.000	0.000	0.000	0.000	0.000	0.000 *1	1.000	✓
	122.855 - 120.711	0.006	0.004	0.000	0.025	0.000	0.010	1.000	✓
	120.711 - 118.566	0.006	0.031	0.000	0.024	0.000	0.037	1.000	✓
	118.566 - 116.421	0.007	0.058	0.000	0.030	0.000	0.066	1.000	✓
	116.421 - 114.276	0.007	0.086	0.000	0.029	0.000	0.094	1.000	✓
	114.276 - 112.132	0.007	0.112	0.000	0.029	0.000	0.120	1.000	✓
	112.132 - 109.987	0.013	0.146	0.000	0.049	0.000	0.161	1.000	✓
	109.987 - 107.842	0.012	0.189	0.000	0.048	0.000	0.204	1.000	✓
	107.842 - 105.697	0.012	0.228	0.000	0.047	0.000	0.243	1.000	✓
	105.697 - 103.553	0.012	0.265	0.000	0.046	0.000	0.279	1.000	✓
	103.553 - 101.408	0.013	0.301	0.000	0.050	0.000	0.316	1.000	✓

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	30 of 32
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

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
	101.408 - 99.2632	0.018	0.349	0.000	0.066	0.000	0.372	1.000	✓
	99.2632 - 97.1184	0.018	0.398	0.000	0.065	0.000	0.420	1.000	✓
	97.1184 - 94.9737	0.018	0.443	0.000	0.064	0.000	0.465	1.000	✓
	94.9737 - 92.8289	0.018	0.486	0.000	0.063	0.000	0.507	1.000	✓
	92.8289 - 90.6842	0.019	0.527	0.000	0.065	0.000	0.550	1.000	✓
	90.6842 - 88.5395	0.019	0.568	0.000	0.064	0.000	0.590	1.000	✓
	88.5395 - 86.3947	0.020	0.606	0.000	0.066	0.000	0.630	1.000	✓
	86.3947 - 84.25	0.019	0.644	0.000	0.065	0.000	0.668	1.000	✓
	84.25 - 79.5	0.009	0.330	0.000	0.029	0.000	0.340	1.000	✓
L2	84.25 - 79.5	0.009	0.302	0.000	0.027	0.000	0.311	1.000	✓
	79.5 - 77.8611	0.016	0.574	0.000	0.050	0.000	0.593	1.000	✓
	77.8611 - 76.2222	0.016	0.591	0.000	0.050	0.000	0.610	1.000	✓
	76.2222 - 74.5833	0.016	0.607	0.000	0.049	0.000	0.625	1.000	✓
	74.5833 - 72.9444	0.016	0.622	0.000	0.048	0.000	0.641	1.000	✓
	72.9444 - 71.3056	0.017	0.638	0.000	0.050	0.000	0.658	1.000	✓
	71.3056 - 69.6667	0.017	0.654	0.000	0.050	0.000	0.673	1.000	✓
	69.6667 - 68.0278	0.017	0.668	0.000	0.049	0.000	0.688	1.000	✓
	68.0278 - 66.3889	0.017	0.682	0.000	0.048	0.000	0.701	1.000	✓
	66.3889 - 64.75	0.017	0.696	0.000	0.048	0.000	0.714	1.000	✓
	64.75 - 63.1111	0.018	0.709	0.000	0.049	0.000	0.729	1.000	✓
	63.1111 - 61.4722	0.018	0.722	0.000	0.049	0.000	0.742	1.000	✓
	61.4722 - 59.8333	0.018	0.735	0.000	0.048	0.000	0.755	1.000	✓
	59.8333 - 58.1944	0.018	0.747	0.000	0.048	0.000	0.767	1.000	✓
	58.1944 - 56.5556	0.018	0.759	0.000	0.047	0.000	0.778	1.000	✓
	56.5556 - 54.9167	0.018	0.770	0.000	0.047	0.000	0.789	1.000	✓
	54.9167 - 53.2778	0.018	0.780	0.000	0.046	0.000	0.800	1.000	✓

<p><b>tnxTower</b></p> <p><b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<b>Job</b>	AK2 SHAMPINE, AK 115070	<b>Page</b>	31 of 32
	<b>Project</b>	125 FT MONOPOLE	<b>Date</b>	15:59:58 04/11/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	cmillard

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
	53.2778 - 51.6389	0.017	0.790	0.000	0.045	0.000	0.810	1.000	✓
	51.6389 - 50	0.018	0.800	0.000	0.047	0.000	0.821	1.000	✓
	50 - 44.25	0.009	0.390	0.000	0.021	0.000	0.399	1.000	✓
L3	50 - 44.25	0.009	0.360	0.000	0.020	0.000	0.369	1.000	✓
	44.25 - 41.9211	0.016	0.686	0.000	0.037	0.000	0.703	1.000	✓
	41.9211 - 39.5921	0.017	0.695	0.000	0.039	0.000	0.714	1.000	✓
	39.5921 - 37.2632	0.017	0.704	0.000	0.038	0.000	0.723	1.000	✓
	37.2632 - 34.9342	0.017	0.713	0.000	0.038	0.000	0.731	1.000	✓
	34.9342 - 32.6053	0.017	0.720	0.000	0.037	0.000	0.739	1.000	✓
	32.6053 - 30.2763	0.017	0.728	0.000	0.036	0.000	0.746	1.000	✓
	30.2763 - 27.9474	0.017	0.734	0.000	0.036	0.000	0.753	1.000	✓
	27.9474 - 25.6184	0.017	0.741	0.000	0.035	0.000	0.759	1.000	✓
	25.6184 - 23.2895	0.019	0.747	0.000	0.036	0.000	0.767	1.000	✓
	23.2895 - 20.9605	0.019	0.753	0.000	0.035	0.000	0.773	1.000	✓
	20.9605 - 18.6316	0.018	0.759	0.000	0.035	0.000	0.779	1.000	✓
	18.6316 - 16.3026	0.018	0.764	0.000	0.034	0.000	0.784	1.000	✓
	16.3026 - 13.9737	0.018	0.769	0.000	0.034	0.000	0.789	1.000	✓
	13.9737 - 11.6447	0.018	0.774	0.000	0.033	0.000	0.793	1.000	✓
	11.6447 - 9.31579	0.018	0.778	0.000	0.032	0.000	0.798	1.000	✓
	9.31579 - 6.98684	0.020	0.782	0.000	0.032	0.000	0.803	1.000	✓
	6.98684 - 4.65789	0.020	0.786	0.000	0.032	0.000	0.807	1.000	✓
	4.65789 - 2.32895	0.020	0.790	0.000	0.031	0.000	0.810	1.000	✓
	2.32895 - 0	0.020	0.793	0.000	0.031	0.000	0.814	1.000	✓

* DL controls

<b>tnxTower</b>  <b>Vector Structural Engineering</b> 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	<b>Job</b> AK2 SHAMPINE, AK 115070	<b>Page</b> 32 of 32
	<b>Project</b> 125 FT MONOPOLE	<b>Date</b> 15:59:58 04/11/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> cmillard

¹  $P_u / \phi P_n$  controls

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
L1	125 - 79.5	Pole	TP32.33x21x0.25	1	-27924.20	1434240.00	66.8	Pass
L2	79.5 - 44.25	Pole	TP40.6076x30.6472x0.3125	2	-41648.70	2255030.00	82.1	Pass
L3	44.25 - 0	Pole	TP51.0014x38.5508x0.375	3	-68821.60	3525100.00	81.4	Pass
Summary								
Pole (L2)							82.1	Pass
Base Plate							67.8	Pass
<b>RATING =</b>							<b>82.1</b>	<b>Pass</b>

Program Version 8.2.4.3 - 1/24/2024 File://VSEFILES.vector.local/Projects/2024 Projects/U1408 EEI Enterprises, LLC (DBA Ehresmann Engineering)/U1408-0572-241 AK2 Shampine, AK (Monopole review, Driven Pile FND)/ENG/Pole Review/Tower/115070 - AK2 Shampine, AK - 125' MP - H Seismic.eri



**MONOPOLE DESIGN CRITERIA:**

**WIND DESIGN CRITERIA:**

DESIGN PER TIA-222-H  
 119 MPH WIND & NO ICE (3-SEC GUST)  
 60 MPH WIND & 1/2" ICE (3-SEC GUST)  
 60 MPH WIND & NO ICE (SERVICE)  
 RISK CATEGORY II  
 EXPOSURE CATEGORY C  
 TOPOGRAPHIC CATEGORY 1

**SEISMIC DESIGN CRITERIA:**

SEISMIC DESIGN CATEGORY: E  
 SITE CLASS: D  
 S_s= 2.251 g  
 S_i= 0.994 g  
 T_i= 16

**SITE INFORMATION:**

COORDINATES: LATITUDE: 61° 37' 44.17" N  
 LONGITUDE: 149° 30' 47.84" W  
 ADDRESS: 5182 N PITTMAN RD  
 WASILLA, AK 99654  
 BOROUGH: MATANUSKA-SUSITNA

MAXIMUM BASE MOMENT & FORCES		
MOMENT (FT-KIPS)	SHEAR (KIPS)	AXIAL (KIPS)
3,916	40	39

**DESIGN LOADING:**

ELEV	ITEM	FEED LINES
120.7'	(3) 12' EE T-FRAMES	(3) HYBRID CABLE (INSIDE POLE)
120.7'	(12) 8' X 2' X 6" PANEL	
120.7'	(9) RRU 19.7" X 17" X 7.2"	
120.7'	(3) COMMSCOPE RCMD-3315-PF-48	
111'	12' EE PLATFORM W/RAIL	(3) HYBRID CABLE (INSIDE POLE)
111'	(12) 8' X 2' X 6" PANEL	
111'	(9) RRU 19.7" X 17" X 7.2"	
111'	(3) COMMSCOPE RCMD-3315-PF-48	
101'	12' EE PLATFORM W/RAIL	(3) HYBRID CABLE (INSIDE POLE)
101'	(12) 8' X 2' X 6" PANEL	
101'	(9) RRU 19.7" X 17" X 7.2"	
101'	(3) COMMSCOPE RCMD-3315-PF-48	
92'	(3) ANDREW 6' W/RADOME	(3) EW63 (INSIDE POLE)

POLE DATA					
POLE 65 KSI 18 SIDED					
ELEV. **	WALL THICKNESS	TAPER	TUBE LENGTH	TOP DIA.	BASE DIA.
79'-6"-123'	1/4"	.253"/FT.	43'-6"	21"	32 1/16"
44'-3"-84'-3"	5/16"	.253"/FT.	40'	30 1/4"	40 7/16"
0'-50'	3/8"	.253"/FT.	50'	38 5/16"	51"

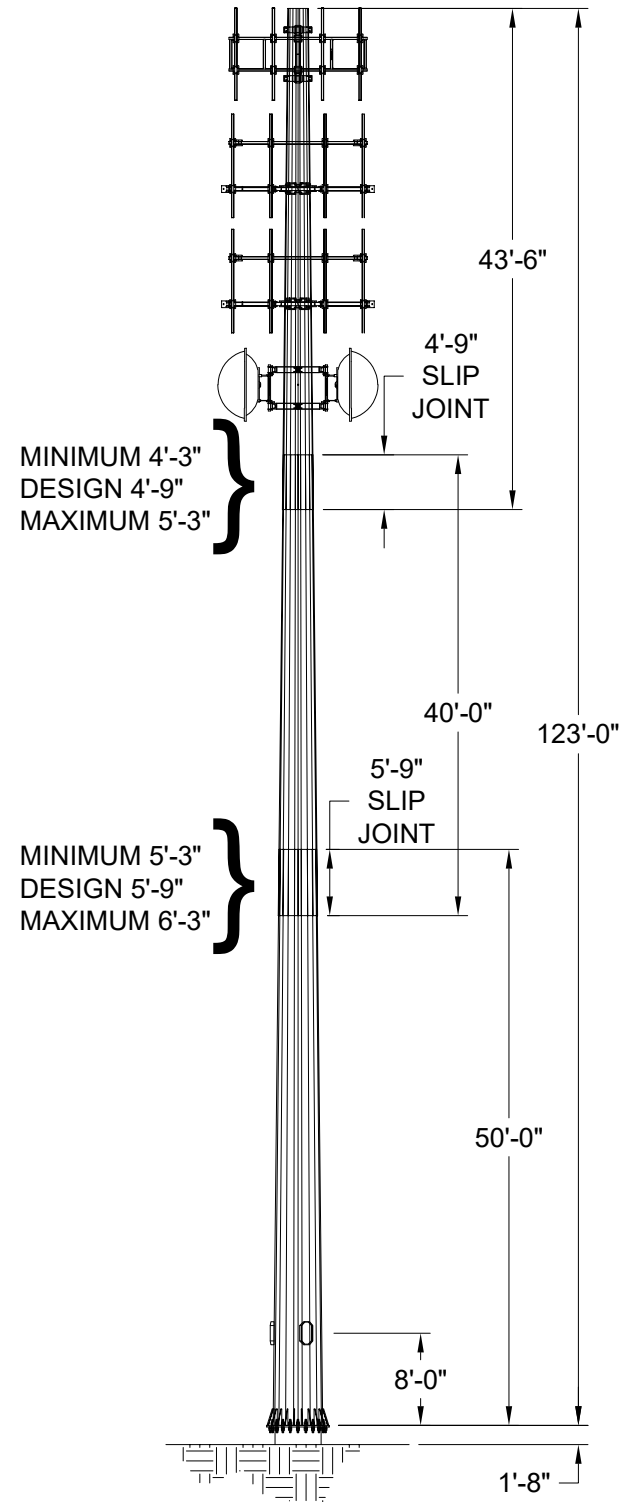
** ELEVATIONS SHOWN IN THIS CHART ARE FROM TOP OF BASE PLATE (NOT A.G.L.)

**THREADED RODS @ BASE PLATE CONNECTION:**

(22x) 1 3/4"Ø F1554 GRADE 105 KSI  
 ON A 58"Ø BOLT CIRCLE

**BASE PLATE DATA:**

65"Ø, 1 3/4" THICK, ROUND  
 ASTM A572 50 KSI  
 (22x) 3/8" THICK X 17" TALL GUSSETS  
 ASTM A572 65 KSI



**NOTES:**

- ORIENT V-NOTCH ON TOP OF TEMPLATE AND REFERENCE TAB ON BASE PLATE @ 0°.
- STAMP "EE 115070" ON TOP OF BASE PLATE (NEAR NORTH TAB) WITH 1/2" STEEL STAMPS.
- MICROWAVE DISHES ARE INCLUDED FOR AREA AND WEIGHT PURPOSES ONLY. IF AND/OR WHEN EACH DISH IS TO BE INSTALLED, TWIST AND SWAY SHOULD BE EVALUATED FOR ACTUAL DISH SIZE, FREQUENCY AND ELEVATION PRIOR TO INSTALLATION.

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF EHRESMANN ENGINEERING AND SHALL NOT BE REPRODUCED OR USED IN WHOLE OR IN PART AS THE BASIS OF THE MANUFACTURE OR SALE OF ITEM(S) WITHOUT WRITTEN PERMISSION.



05/17/2024

Firm License Number: AECL1355  
 VSE Project Number: U1408.0572.241

REV	DESCRIPTION	DATE	JOB# 115070
7			
6			
5			
4			
3			
2			
1	POLE HEIGHT	5/14/24	AK2 SHAMPINE, AK
0	DRAWING CREATED	3/22/24	

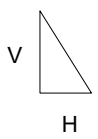
**Ehresmann Engineering**

4400 West 31st Street  
 Yankton, SD 57078  
 605-665-7532  
 605-665-9780

TITLE: 123' MONOPOLE

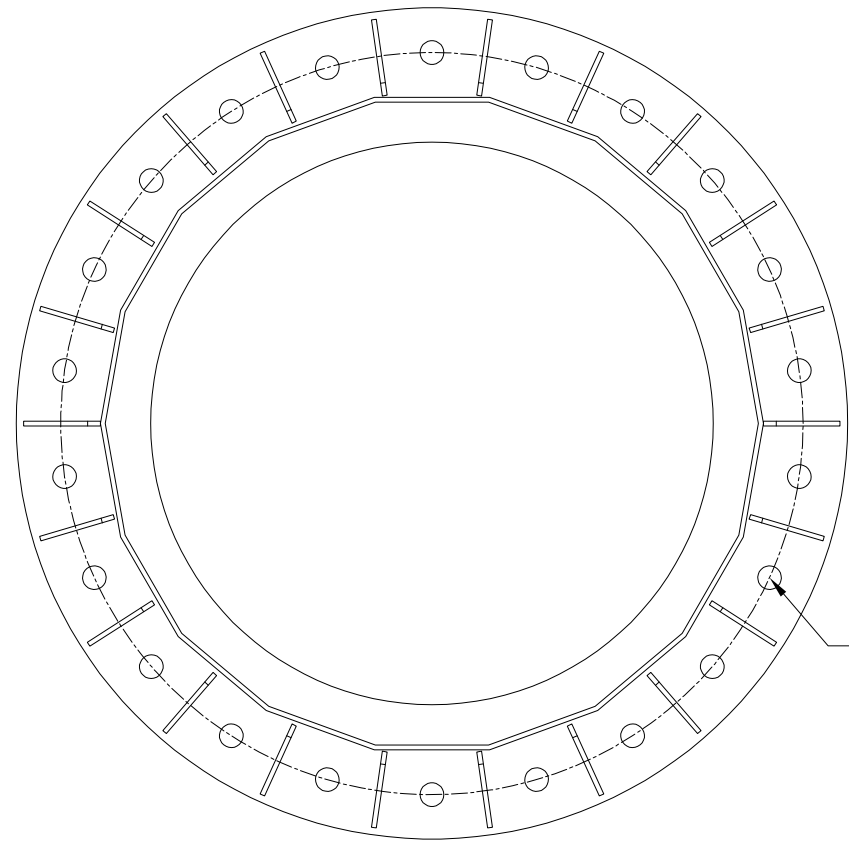
DWG. NO. 115070 E01

SHEET NO. E01 Page 225 of 309 Rev. 1

FILLET SIZE CHART (PER TIA Q9.0)	
3/16" to 1/2" PLATE V = 9/16" H = 5/16"	
5/8" PLATE V = 11/16" H = 3/8"	

PRE-HEAT	
THICKNESS OF THICKEST PART AT POINT OF WELDING	MIN. PREHEAT AND INTERPASS TEMPERATURE
1/8" TO 3/4" INCL.	32°
OVER 3/4" THRU 1 1/2" INCL.	50°
OVER 1 1/2" THRU 2 1/2" INCL.	150°
OVER 2 1/2" INCL.	225°

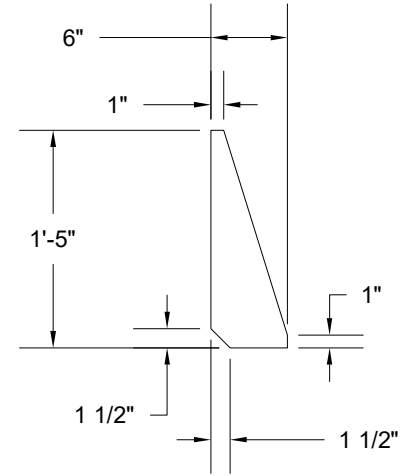
WELDMENT	PART	QTY	DESCRIPTION	WEIGHT
SEC1		1	MONOLPOLE 50'-0" SECTION	8947
		1	BASE PLATE 1 3/4" X 65"Ø A572 (Fy=50)	852
	PL02A	2	3/8" X 2 1/2" PLATE X 6'-6 13/16" LG	24
	PL10A	22	3/8" PLATE 6" W X 17" LG	120
BLACK IRON WT =				9943



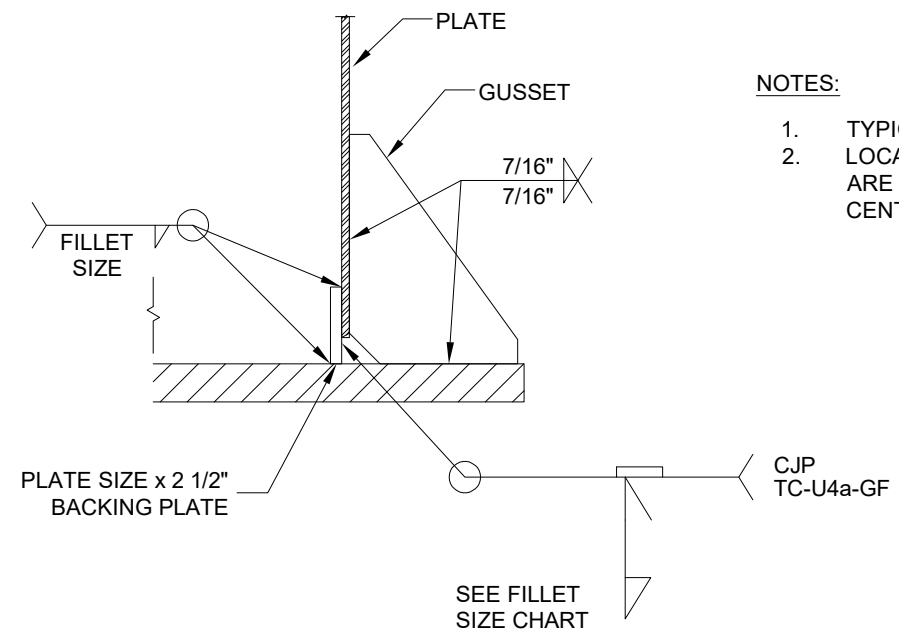
PLAN VIEW

(22) Ø1 7/8" HOLES EVENLY SPACED ON Ø58" B.C.

FILLET WELD TO EQUAL 1/16" < BACKER THICKNESS NOT TO EXCEED 5/8"



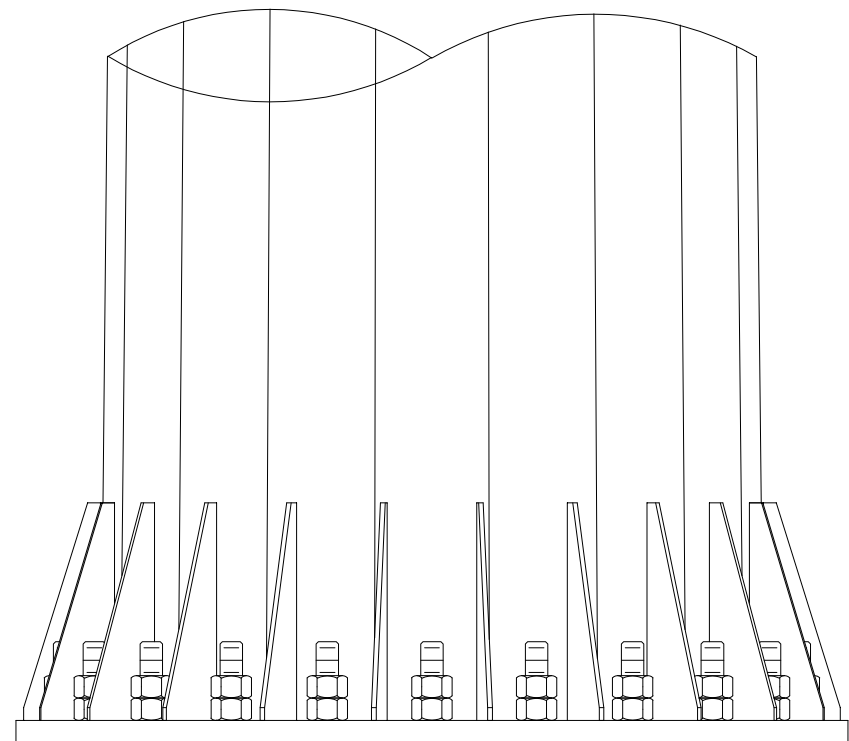
GUSSET PL14A  
3/8" PLATE A572-65 Ksi  
QTY (22)  
(11507018.DXF)  
WEIGHT EA = 5.45#  
AREA TOTAL = 502.219 SQFT



BASE CROSS SECTION

NOTES:

1. TYPICAL PER FLAT.
2. LOCATE GUSSETS AS SHOWN. GUSSETS ARE TO RADIATE OUTWARD FROM THE CENTER OF THE MONOPOLE.



ELEVATION PLAN

Planning Director Packet - August 22, 2024

**VECTOR ENGINEERS**  
651 W. GALENA PARK BLVD. STE. 101 DRAPER, UTAH 84020  
PHONE (801) 990-1775  
WWW.VECTORSE.COM



05/17/2024

Firm License Number: AECL1355  
VSE Project Number: U1408.0572.241

REV	DESCRIPTION	DATE	JOB# 115070
7			
6			
5			
4			
3			
2			
1	POLE HEIGHT	5/14/24	AK2 SHAMPINE, AK
0	DRAWING CREATED	3/22/24	

**Ehresmann Engineering**

4400 West 31st Street  
Yankton, SD 57078  
605-665-7532  
605-665-9780

TITLE:  
**BASE PLATE WELDMENT**

DWG. NO.  
**115070 B14**

SHEET NO. **11** of **309**

Rev. **0**

**GENERAL:**

Ehresmann Engineering (EE) designs and manufactures steel towers/poles and tower components to the most stringent industry standards, and uses the highest quality materials. However, certain hazards are inherent in tower work. For this reason, it is imperative that erection of towers and installation of tower components be accomplished in a safe and workmanlike manner, and only by experienced and professional contractors. Unless the customer specifies otherwise in writing, or unless otherwise noted in our design documents or on our installation drawings, design of and/or fabrication of items by Ehresmann Engineering shall meet the conditions outlined in these notes.

1. All tower designs and/or work shall be in accordance with TIA-222-H, "Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures" or as otherwise specified in writing by the customer.
2. Purchasers shall verify the installation is in conformance with all local, state, and federal requirements. This also includes requirements for obstruction marking and lighting.
3. If towers, tower components, mounts, foundations or modification materials are not installed in accordance with Ehresmann Engineering installation drawings and specifications, then all designs are considered invalid, and EE disclaims any responsibility for said design and/or certification.
4. The purchaser shall be responsible to inspect condition of underground anchors prior to work on towers, and to furnish any and all soils reports, where required.
5. All items must be inventoried at the time of delivery to the job site/storage facility. Any shortages reported after this delivery will be the responsibility of the Contractor/Owner.
6. Any problems that occur with scheduling, transportation, delivery, foundation installation, erection or any items furnished by EE must be reported immediately to allow EE time to take corrective measures. EE will make every effort to repair/replace necessary items in an expedited manner and/or will pursue corrective measures in the most economical way possible at our discretion. However, under no circumstances will EE pay for or be responsible for any down time or expenses incurred due to down time.
7. EE will make every effort to deliver materials at the requested time. However, we cannot and will not be responsible for delays caused by breakdowns, weather and/or other factors out of our control once the materials have left our facility. We strongly suggest that cranes, tower crews, etc... not be scheduled until delivery is verified to be on time. EE will not be responsible for any costs incurred due to these possible delays.
8. Any and all permits, licenses, or payment of taxes required for construction are the sole responsibility of the purchaser.
9. Manufacturer Assistance: Contractors / Erectors may contact Ehresmann Engineering at (605) 665-7532 for questions on design, materials, or installation regarding items furnished by Ehresmann Engineering.
10. Ehresmann Engineering is available, upon request, to supervise installation and/or completion of modifications, or to provide on-site inspection after project completion.
11. Although rare, excessive deflection can occasionally occur in canister poles and concealment/shrouded structures at low wind speeds. Since the phenomenon is influenced by many factors and variables, it is generally unpredictable. Therefore, it is the tower/pole owner's responsibility to periodically observe the structure for excessive deflection and any resulting damage or effects on the structure or its connections. In the event of excessive deflection or movement of the structure, Ehresmann Engineering is to be notified immediately. Modifications to the structure may be required at the owner's expense.

**Please also reference site specific design documents and drawings for additional notes.

**Anchor Rod Tightening:**

Prior to placing anchor rods in the concrete, it is recommended that an anchor rod rotation capacity test be run with at least one anchor rod. This test may be run in a Skidmore-Wilhelm device or in a mockup of the base plate using a small piece of plate with one hole of equivalent grade, thickness, and finish. The test consists of steps 2 through 12 as outlined below and adapted as necessary for the mock set-up. It is recommended that the nut be rotated at least to the required rotation as given in step 12. After the test, the nuts should be removed and all threads (rod and nut) inspected for damage. Once the anchor rod is removed from the test plate, the nuts shall again be turned onto the rod well past the location of the leveling nut and backed off by one worker using an ordinary wrench with no cheater bar. The threads are considered damaged if more than minimal effort is required to turn the nut. Please note that nuts should be turned onto ALL anchor rods and backed off with minimal effort as outlined above to verify threads of ALL anchor rods and nuts prior to placement in concrete.

**Recommended Steps for Anchor Rod Tightening:**

1. Verify proper position of anchor rods.
2. Verify that all nuts can be turned onto the rods well past the elevation of the bottom of the leveling nut and backed off by one worker using an ordinary wrench without a cheater bar.
3. If threads of anchor rods were lubricated more than 24 hours before placing the leveling nut or have been wet since they were lubricated, the exposed threads of the anchor rods should be relubricated (Beeswax and toilet-ring wax have been shown to provide good lubrication).
4. Place leveling nuts on anchor rods and level.
5. Place leveling nut washers.
6. Set pole or tower legs.
7. Plumb pole or legs and/or level base plates.
8. Place top nut washers.
9. Threads and bearing surfaces of the top nuts should be lubricated, placed and tightened to the snug-tight condition in a star pattern.
10. Tighten leveling nuts to the snug-tight condition in a star pattern.
11. Mark the reference position of the top nut in the snug-tight condition with a suitable marking on one flat with a corresponding reference mark on the base plate at each bolt.
12. Top nuts shall be rotated, with the leveling nut secured, an additional 1/3 turn for anchor rods 1.5 in. or less in diameter and an additional 1/6 turn for anchor rod diameters greater than 1.5" per TIA-222-H section 4.9.9.
13. Locking nuts are to be installed over all top nuts when tightening is completed.

**Erection / Installation:**

When installing items provided by Ehresmann Engineering, the contractor (person performing the erection or modification) shall comply with the following:

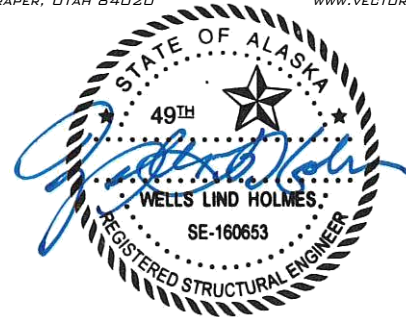
1. All structural work shall be performed in relatively calm weather, with wind velocities not exceeding 15 MPH at any height of the tower. Additionally it is recommended that work be completed in accordance with ANSI/TIA-322 and ANSI/ASSE A10.48.
2. All structural work shall be performed by a competent and reputable contractor with experience in similar tower work.
3. Our drawings indicate the major operations to be performed, but do not show every field condition that may be encountered. Prior to beginning work, the contractor should survey the job thoroughly to eliminate future field problems.
4. It is the contractor's sole responsibility to determine the erection procedure and sequence to insure the stability and safety of the tower and adequacy of temporary or incomplete connections during construction.
5. All nuts for bearing type connections shall be tightened to a "snug tight" condition as defined by AISC. All nuts for direct tension/fully pre-tensioned or slip critical connections (except anchor rod nuts) shall be tightened per the 'turn-of-the-nut' method in accordance with AISC.
6. It shall be the contractor's responsibility to ensure that all practices and procedures used during assembly, installation and erection work required on the tower or foundations do not endanger the safety of any personnel nor the structural integrity of the tower.
7. The contractor shall use only safe and workmanlike procedures when modifying a tower.
8. The contractor shall not correct any errors in manufacturing or design without special permission and written instructions from Ehresmann Engineering. This means straightening, relocation or reaming of bolt holes, drifting or any other application of force to make the members fit. (This restriction does not apply to diagonal members designed for initial tension or specific 'draw'.) The contractor shall immediately notify Ehresmann Engineering through the appropriate channels to effect correction.
9. The contractor shall immediately notify Ehresmann Engineering of any material which is damaged during erection or installation. The contractor shall not correct or substitute any member damaged during installation without written consent and instructions from Ehresmann Engineering.
10. The contractor shall refrain from exerting excessive forces on the tower or on modification material during installation. Tower member design does not include stresses due to erection since erection equipment and conditions are unknown. Our design assumes that the services of competent and qualified personnel will be utilized to develop proper procedures and rigging plans. Our design also assumes that competent and qualified personnel will be hired to perform the work.
11. All field-punched holes shall be touched up with cold galvanizing. Under no circumstances shall the torching of holes be allowed.
12. All factory installed bracing placed within monopole tube sections is to remain in place until erection is complete. Do not remove bracing without prior consultation with EE.

**Concrete & Foundation Installation:**

1. All rebar shall have 3" minimum cover, unless specified otherwise, and shall conform to ASTM A615. Rebar grade to be as specified on site drawings.
2. Tie and secure all rebar and anchor bolts/shafts before placing concrete.
3. Hook length as specified for vertical bars is from back side of bend. Minimum straight length of hook after bend shall be 12x bar diameter.
4. Bending of rebar to be in accordance with ACI-318 latest edition.
5. Sides of excavation may need to be braced or sloped back as required for stability and in accordance with all applicable safety regulations.
6. Base of excavation shall be clean and free of all debris.
7. All excavation, backfill and soil compaction to be completed in accordance with Geotechnical Engineer's recommendations. However, compacted density of all backfill must meet minimum unit weight as specified on site drawings.
8. Attention shall be given to final site drainage and compaction of the fill placed around the foundation to minimize surface water infiltration around the foundation.
9. Concrete strength and mix values to be listed on site specific foundation drawings. Alternate values may be acceptable and could be dependent on placement methods. However, use of alternate values must be approved by EOR prior to installation. EE will not be responsible for any delays due to request for approval of alternate values. It is the Contractor's responsibility to allow adequate time for approval.
10. Use of water reducers may be required for some placement methods to achieve necessary slump and/or flow without exceeding maximum water/cement ratios. It is Contractor's responsibility to utilize proper mix to ensure proper placement of concrete for the method of placement chosen.
11. Exposed edges of all foundations to be chamfered 1" x 45°.
12. Use steel top and bottom anchor bolt templates provided by EE for proper anchor bolt spacing and placement.
13. All concrete work shall be in accordance with ACI 318 (Latest Edition). ACI specifications for "Cold Weather" or "Hot Weather" concreting shall be followed as applicable.

**Structural Steel & Hardware:**

1. All fabricated steel shall have a minimum yield strength of 36 ksi. Use of higher strength steel for some members/items will be noted in design documents or drawings as applicable.
2. All fabricated steel shall be hot dip galvanized per ASTM A123.
3. All structural fasteners shall be ASTM F3125 Gr. A325 unless specified otherwise.
4. U-Bolts to be ASTM A36, A572 Gr. 50, or A193 Gr. B7 depending on size and application. Reference site specific drawings for additional details.
5. Step Bolts to be ASTM A449
6. All hardware shall be hot dip galvanized per ASTM A153 or ASTM F2329.
7. Welded connections shall conform to the latest revision of the American Welding Society, A.W.S. D1.1.
8. All structural components shall be verified for proper assembly by the field crew prior to installation.



05/17/2024

Firm License Number: AECL1355  
VSE Project Number: U1408.0572.241

7			NAME
6			DRAWN BY: TER
5			CHECKED BY: GM
4			ENG APPR.
3			MFG APPR.
2	COMPANY NAME	6-27-22	Q.C.
1	TUBE BRACING NOTE	10-29-19	SITE: AK2 SHAMPINE, AK
0	DRAWING CREATED	11-1-18	
REV	DESCRIPTION	DATE	JOB# 115070

<b>Ehresmann Engineering</b>	
4400 West 31st Street Yankton, SD 57078 605-665-7532 605-665-9780	
TITLE:	STANDARD TOWER & TOWER FOUNDATION NOTES
DWG. NO.	115070N1H
SHEET NO.	Page 227 of 309
Rev.	2

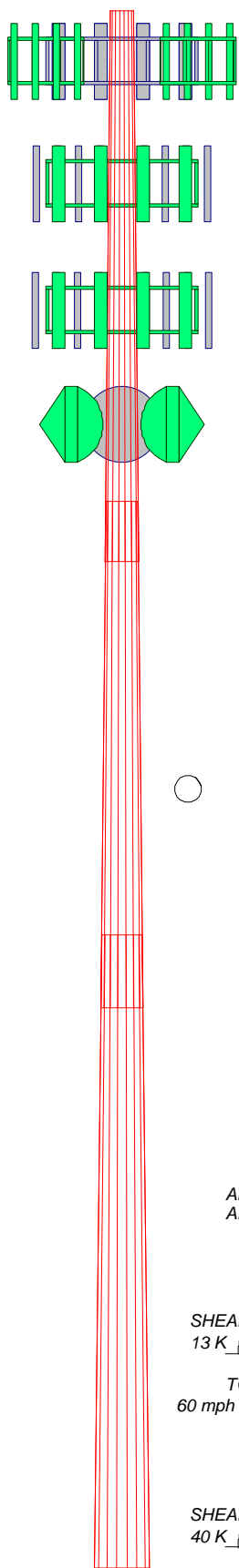
Section	1	2	3
Length (ft)	43.50	40.00	50.00
Number of Sides	18	18	18
Thickness (in)	0.2500	0.3125	0.3750
Socket Length (ft)	4.75	5.75	38.3477
Top Dia (in)	21.0000	30.3057	51.0002
Bot Dia (in)	32.0077	40.4277	A572-65
Grade		A572-65	
Weight (K)	3.1	4.8	9.1

124.7 ft

81.2 ft

46.0 ft

1.7 ft



**DESIGNED APPURTENANCE LOADING**

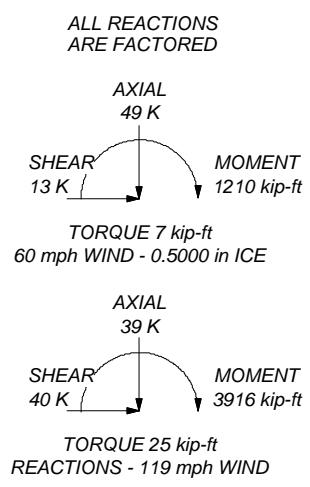
TYPE	ELEVATION	TYPE	ELEVATION
(3) 12' EE T-FRAMES	120.7	Commscope RCMD-3315-PF-48	111
(4) 8' X 2' X 6" PANEL	120.7	Commscope RCMD-3315-PF-48	111
(4) 8' X 2' X 6" PANEL	120.7	Commscope RCMD-3315-PF-48	111
(4) 8' X 2' X 6" PANEL	120.7	12' EE Platform w/ Rail	101
(3) RRU RADIO 19.7" x 17" x 7.2"	120.7	(4) 8' X 2' X 6" PANEL	101
(3) RRU RADIO 19.7" x 17" x 7.2"	120.7	(4) 8' X 2' X 6" PANEL	101
(3) RRU RADIO 19.7" x 17" x 7.2"	120.7	(4) 8' X 2' X 6" PANEL	101
Commscope RCMD-3315-PF-48	120.7	(3) RRU RADIO 19.7" x 17" x 7.2"	101
Commscope RCMD-3315-PF-48	120.7	(3) RRU RADIO 19.7" x 17" x 7.2"	101
Commscope RCMD-3315-PF-48	120.7	(3) RRU RADIO 19.7" x 17" x 7.2"	101
12' EE Platform w/ Rail	111	Commscope RCMD-3315-PF-48	101
(4) 8' X 2' X 6" PANEL	111	Commscope RCMD-3315-PF-48	101
(4) 8' X 2' X 6" PANEL	111	Commscope RCMD-3315-PF-48	101
(4) 8' X 2' X 6" PANEL	111	Andrew 6' w/Radome	92
(3) RRU RADIO 19.7" x 17" x 7.2"	111	Andrew 6' w/Radome	92
(3) RRU RADIO 19.7" x 17" x 7.2"	111	Andrew 6' w/Radome	92
(3) RRU RADIO 19.7" x 17" x 7.2"	111		

**MATERIAL STRENGTH**

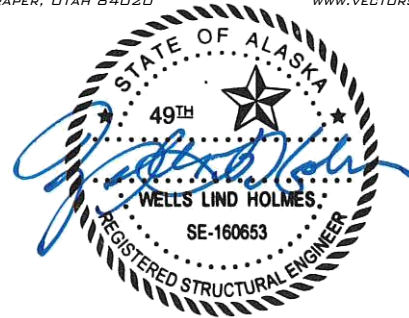
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

**TOWER DESIGN NOTES**

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 60 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Weld together tower sections have slip joint connections.
8. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER80S-xxx electrodes.
11. REVISION 1: Reduced pole height from 125' to 123' and showed base of pole at EL. 1.7'
12. TOWER RATING: 95.6%



651 W. GALENA PARK BLVD. STE. 101 DRAPER, UTAH 84020 PHONE (801) 990-1775 WWW.VECTORSE.COM



05/17/2024

Firm License Number: AECL1355  
VSE Project Number: U1408.0572.241

<b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780	Job: <b>AK2 SHAMPINE, AK 115070R1</b>
	Project: <b>123 FT MONOPOLE (Rev 1)</b>
Client: VERIZON WIRELESS	Drawn by: EH
Code: TIA-222	Date: 05/08/24
Path:	Scale: NTS
<small>Z:\E1\JOBS\11507 - AK2 Shampine_AK\115070-115070-Engineering\115070R1_AK2 Shampine_AK - 123 MP - 115070.dwg</small>	Dwg No. E-1

<p><b>tnxTower</b></p> <p><b>Ehresmann Engineering</b>  4400 W 31st St  Yankton, SD 57078  Phone: (605) 665-7532  FAX: (605) 665-9780</p>	<b>Job</b> AK2 SHAMPINE, AK 115070R1	<b>Page</b> 1 of 19
	<b>Project</b> 123 FT MONOPOLE (Rev 1)	<b>Date</b> 16:21:29 05/08/24
	<b>Client</b> VERIZON WIRELESS	<b>Designed by</b> EH

**Tower Input Data**

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

- Tower base elevation above sea level: 445.70 ft.
- Basic wind speed of 119 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 0.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 60 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Weld together tower sections have slip joint connections..
- Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
- Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
- Welds are fabricated with ER80S-xxx electrodes..
- REVISION 1: Reduced pole height from 125' to 123' and showed base of pole at EL. 1.7'.
- A 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**

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

**Tapered Pole Section Geometry**

<b>tnxTower</b>  <b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780	<b>Job</b>	AK2 SHAMPINE, AK 115070R1	<b>Page</b>	2 of 19
	<b>Project</b>	123 FT MONOPOLE (Rev 1)	<b>Date</b>	16:21:29 05/08/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	EH

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	124.70-81.20	43.50	4.75	18	21.0000	32.0077	0.2500	1.0000	A572-65 (65 ksi)
L2	81.20-45.95	40.00	5.75	18	30.3057	40.4277	0.3125	1.2500	A572-65 (65 ksi)
L3	45.95-1.70	50.00		18	38.3477	51.0002	0.3750	1.5000	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	21.2854	16.4651	895.6507	7.3662	10.6680	83.9568	1792.4800	8.2341	3.2560	13.024
	32.4629	25.1997	3210.9349	11.2740	16.2599	197.4755	6426.0949	12.6023	5.1934	20.773
L2	31.9455	29.7495	3381.1406	10.6476	15.3953	219.6216	6766.7302	14.8776	4.7838	15.308
	41.0032	39.7893	8089.5124	14.2409	20.5373	393.8939	16189.6691	19.8984	6.5653	21.009
L3	40.3589	45.1970	8233.6007	13.4803	19.4806	422.6558	16478.0353	22.6028	6.0892	16.238
	51.7291	60.2567	19510.8607	17.9720	25.9081	753.0792	39047.3943	30.1341	8.3160	22.176

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 124.70-81.20				1	1.03	1.01			
L2 81.20-45.95				1	1.03	1.01			
L3 45.95-1.70				1	1.03	1.01			

### Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	F1554-105
Anchor bolt size	1.7500 in
Number of bolts	22
Embedment length	0.0000 in
f _c	4.5000 ksi
Grout space	0.0000 in
Base plate grade	A572-50
Base plate thickness	1.7500 in
Bolt circle diameter	58.0000 in
Outer diameter	65.0000 in
Inner diameter	44.0000 in
Base plate type	Stiffened Plate
Bolts per stiffener	1
Stiffener thickness	0.3750 in
Stiffener height	17.0000 in

<b>tnxTower</b>  <b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780	<b>Job</b>	AK2 SHAMPINE, AK 115070R1	<b>Page</b>	3 of 19
	<b>Project</b>	123 FT MONOPOLE (Rev 1)	<b>Date</b>	16:21:29 05/08/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	EH

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

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
Safety Line 3/8	C	No	Yes	CaAa (Out Of Face)	124.70 - 13.70	1	No Ice	0.04	0.22
							1/2" Ice	0.14	0.75
Hybrid cable	C	No	Yes	Inside Pole	120.70 - 1.70	3	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
Hybrid cable	C	No	Yes	Inside Pole	111.00 - 1.70	3	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
Hybrid cable	C	No	Yes	Inside Pole	101.00 - 1.70	3	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
EW63	C	No	Yes	Inside Pole	92.00 - 1.70	3	No Ice	0.00	0.51
							1/2" Ice	0.00	0.51

**Feed Line/Linear Appurtenances Section Areas**

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	124.70-81.20	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.631	0.25
L2	81.20-45.95	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.322	0.32
L3	45.95-1.70	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.209	0.40

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	124.70-81.20	A	0.560	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.499	0.27
L2	81.20-45.95	A	0.533	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.267	0.34
L3	45.95-1.70	A	0.484	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.650	0.42

<b>tnxTower</b>  <b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780	<b>Job</b>		AK2 SHAMPINE, AK 115070R1		<b>Page</b>	4 of 19
	<b>Project</b>		123 FT MONOPOLE (Rev 1)		<b>Date</b>	16:21:29 05/08/24
	<b>Client</b>		VERIZON WIRELESS		<b>Designed by</b>	EH

**Discrete Tower Loads**

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Lateral Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
(3) 12' EE T-FRAMES	A	None			0.0000	120.70	No Ice 1/2" Ice	28.73 37.40	28.73 37.40	2.75 2.98
(4) 8' X 2' X 6" PANEL	A	From Face	3.87 0.00 0.00		0.0000	120.70	No Ice 1/2" Ice	20.27 20.91	6.80 7.38	0.10 0.20
(4) 8' X 2' X 6" PANEL	B	From Face	3.87 0.00 0.00		0.0000	120.70	No Ice 1/2" Ice	20.27 20.91	6.80 7.38	0.10 0.20
(4) 8' X 2' X 6" PANEL	C	From Face	3.87 0.00 0.00		0.0000	120.70	No Ice 1/2" Ice	20.27 20.91	6.80 7.38	0.10 0.20
(3) RRU RADIO 19.7" x 17" x 7.2"	A	From Face	3.87 0.00 0.00		0.0000	120.70	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	0.03 0.05
(3) RRU RADIO 19.7" x 17" x 7.2"	B	From Face	3.87 0.00 0.00		0.0000	120.70	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	0.03 0.05
(3) RRU RADIO 19.7" x 17" x 7.2"	C	From Face	3.87 0.00 0.00		0.0000	120.70	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	0.03 0.05
Commscope RCMDC-3315-PF-48	A	From Face	3.87 0.00 0.00		0.0000	120.70	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	0.03 0.06
Commscope RCMDC-3315-PF-48	B	From Face	3.87 0.00 0.00		0.0000	120.70	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	0.03 0.06
Commscope RCMDC-3315-PF-48	C	From Face	3.87 0.00 0.00		0.0000	120.70	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	0.03 0.06
12' EE Platform w/ Rail	A	None			0.0000	111.00	No Ice 1/2" Ice	24.00 28.00	24.00 28.00	2.90 3.40
(4) 8' X 2' X 6" PANEL	A	From Face	3.87 0.00 0.00		0.0000	111.00	No Ice 1/2" Ice	20.27 20.91	6.80 7.38	0.10 0.20
(4) 8' X 2' X 6" PANEL	B	From Face	3.87 0.00 0.00		0.0000	111.00	No Ice 1/2" Ice	20.27 20.91	6.80 7.38	0.10 0.20
(4) 8' X 2' X 6" PANEL	C	From Face	3.87 0.00 0.00		0.0000	111.00	No Ice 1/2" Ice	20.27 20.91	6.80 7.38	0.10 0.20
(3) RRU RADIO 19.7" x 17" x 7.2"	A	From Face	3.87 0.00 0.00		0.0000	111.00	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	0.03 0.05
(3) RRU RADIO 19.7" x 17" x 7.2"	B	From Face	3.87 0.00 0.00		0.0000	111.00	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	0.03 0.05
(3) RRU RADIO 19.7" x 17" x 7.2"	C	From Face	3.87 0.00 0.00		0.0000	111.00	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	0.03 0.05
Commscope RCMDC-3315-PF-48	A	From Face	3.87 0.00 0.00		0.0000	111.00	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	0.03 0.06
Commscope RCMDC-3315-PF-48	B	From Face	3.87 0.00 0.00		0.0000	111.00	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	0.03 0.06



<b>tnxTower</b>  <b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780	<b>Job</b>		AK2 SHAMPINE, AK 115070R1		<b>Page</b>		5 of 19	
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	<b>Client</b>		VERIZON WIRELESS		<b>Designed by</b>		EH	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	CAA Front	CAA Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	K
Commscope RCMDC-3315-PF-48	C	From Face	0.00	0.0000	111.00	No Ice	2.19	0.03
			3.87			1/2" Ice	2.39	0.06
			0.00					
12' EE Platform w/ Rail	A	None		0.0000	101.00	No Ice	24.00	2.90
						1/2" Ice	28.00	3.40
(4) 8' X 2' X 6" PANEL	A	From Face	3.87	0.0000	101.00	No Ice	6.80	0.10
			0.00			1/2" Ice	7.38	0.20
			0.00					
(4) 8' X 2' X 6" PANEL	B	From Face	3.87	0.0000	101.00	No Ice	6.80	0.10
			0.00			1/2" Ice	7.38	0.20
			0.00					
(4) 8' X 2' X 6" PANEL	C	From Face	3.87	0.0000	101.00	No Ice	6.80	0.10
			0.00			1/2" Ice	7.38	0.20
			0.00					
(3) RRU RADIO 19.7" x 17" x 7.2"	A	From Face	3.87	0.0000	101.00	No Ice	1.19	0.03
			0.00			1/2" Ice	1.34	0.05
			0.00					
(3) RRU RADIO 19.7" x 17" x 7.2"	B	From Face	3.87	0.0000	101.00	No Ice	1.19	0.03
			0.00			1/2" Ice	1.34	0.05
			0.00					
(3) RRU RADIO 19.7" x 17" x 7.2"	C	From Face	3.87	0.0000	101.00	No Ice	1.19	0.03
			0.00			1/2" Ice	1.34	0.05
			0.00					
Commscope RCMDC-3315-PF-48	A	From Face	3.87	0.0000	101.00	No Ice	2.19	0.03
			0.00			1/2" Ice	2.39	0.06
			0.00					
Commscope RCMDC-3315-PF-48	B	From Face	3.87	0.0000	101.00	No Ice	2.19	0.03
			0.00			1/2" Ice	2.39	0.06
			0.00					
Commscope RCMDC-3315-PF-48	C	From Face	3.87	0.0000	101.00	No Ice	2.19	0.03
			0.00			1/2" Ice	2.39	0.06
			0.00					

## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft ft ft	°	°	ft	ft	ft ²	K	
Andrew 6' w/Radome	A	Paraboloid w/Radome	From Leg	0.50	Worst		92.00	6.00	No Ice	28.27	0.38
				0.00					1/2" Ice	29.07	0.45
				0.00							
Andrew 6' w/Radome	B	Paraboloid w/Radome	From Leg	0.50	Worst		92.00	6.00	No Ice	28.27	0.38
				0.00					1/2" Ice	29.07	0.45
				0.00							
Andrew 6' w/Radome	C	Paraboloid w/Radome	From Leg	0.50	Worst		92.00	6.00	No Ice	28.27	0.38
				0.00					1/2" Ice	29.07	0.45
				0.00							

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**Tower Pressures - No Ice**

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
L1 124.70-81.20	101.68	1.27	43	97.419	A	0.000	100.341	100.341	100.00	0.000	0.000
					B	0.000	100.341		100.00	0.000	0.000
					C	0.000	100.341		100.00	0.000	1.631
L2 81.20-45.95	63.10	1.149	39	107.143	A	0.000	110.358	110.358	100.00	0.000	0.000
					B	0.000	110.358		100.00	0.000	0.000
					C	0.000	110.358		100.00	0.000	1.322
L3 45.95-1.70	23.88	0.936	31	169.787	A	0.000	174.881	174.881	100.00	0.000	0.000
					B	0.000	174.881		100.00	0.000	0.000
					C	0.000	174.881		100.00	0.000	1.209

**Tower Pressure - With Ice**

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	in	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
L1 124.70-81.20	101.68	1.27	11	0.5596	101.476	A	0.000	104.520	104.520	100.00	0.000	0.000
						B	0.000	104.520		100.00	0.000	0.000
						C	0.000	104.520		100.00	0.000	6.499
L2 81.20-45.95	63.10	1.149	10	0.5335	110.431	A	0.000	113.744	113.744	100.00	0.000	0.000
						B	0.000	113.744		100.00	0.000	0.000
						C	0.000	113.744		100.00	0.000	5.267
L3 45.95-1.70	23.88	0.936	8	0.4841	173.722	A	0.000	178.933	178.933	100.00	0.000	0.000
						B	0.000	178.933		100.00	0.000	0.000
						C	0.000	178.933		100.00	0.000	4.650

**Tower Pressure - Service**

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
L1 124.70-81.20	101.68	1.27	10	97.419	A	0.000	100.341	100.341	100.00	0.000	0.000
					B	0.000	100.341		100.00	0.000	0.000
					C	0.000	100.341		100.00	0.000	1.631
L2 81.20-45.95	63.10	1.149	9	107.143	A	0.000	110.358	110.358	100.00	0.000	0.000
					B	0.000	110.358		100.00	0.000	0.000
					C	0.000	110.358		100.00	0.000	1.322
L3 45.95-1.70	23.88	0.936	7	169.787	A	0.000	174.881	174.881	100.00	0.000	0.000

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Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} _{In} Face	C _{AA} _{Out} Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
					B	0.000	174.881		100.00	0.000	0.000
					C	0.000	174.881		100.00	0.000	1.209

**Tower Forces - No Ice - Wind Normal To Face**

Section Elevation	Add Weight	Self Weight	F _a	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K	c			psf			ft ²	K	plf	
L1 124.70-81.20	0.25	3.11	A	1	0.73	43	1	1	100.341	3.54	81.39	C
			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2 81.20-45.95	0.32	4.78	A	1	0.73	39	1	1	110.358	3.50	99.23	C
			B	1	0.73		1	1	110.358			
			C	1	0.73		1	1	110.358			
L3 45.95-1.70	0.40	9.06	A	1	0.73	31	1	1	174.881	4.45	100.56	C
			B	1	0.73		1	1	174.881			
			C	1	0.73		1	1	174.881			
Sum Weight:	0.97	16.95						OTM	667.45 kip-ft	11.49		

**Tower Forces - No Ice - Wind 60 To Face**

Section Elevation	Add Weight	Self Weight	F _a	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K	c			psf			ft ²	K	plf	
L1 124.70-81.20	0.25	3.11	A	1	0.73	43	1	1	100.341	3.54	81.39	C
			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2 81.20-45.95	0.32	4.78	A	1	0.73	39	1	1	110.358	3.50	99.23	C
			B	1	0.73		1	1	110.358			
			C	1	0.73		1	1	110.358			
L3 45.95-1.70	0.40	9.06	A	1	0.73	31	1	1	174.881	4.45	100.56	C
			B	1	0.73		1	1	174.881			
			C	1	0.73		1	1	174.881			
Sum Weight:	0.97	16.95						OTM	667.45 kip-ft	11.49		

**Tower Forces - No Ice - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F _a	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K	c			psf			ft ²	K	plf	
L1	0.25	3.11	A	1	0.73	43	1	1	100.341	3.54	81.39	C

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
124.70-81.20			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2 81.20-45.95	0.32	4.78	A	1	0.73	39	1	1	110.358	3.50	99.23	C
			B	1	0.73		1	1	110.358			
			C	1	0.73		1	1	110.358			
L3 45.95-1.70	0.40	9.06	A	1	0.73	31	1	1	174.881	4.45	100.56	C
			B	1	0.73		1	1	174.881			
			C	1	0.73		1	1	174.881			
Sum Weight:	0.97	16.95						OTM	667.45 kip-ft	11.49		

**Tower Forces - With Ice - Wind Normal To Face**

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 124.70-81.20	0.27	3.93	A	1	1.2	11	1	1	104.520	1.59	36.45	C
			B	1	1.2		1	1	104.520			
			C	1	1.2		1	1	104.520			
L2 81.20-45.95	0.34	5.63	A	1	1.2	10	1	1	113.586	1.54	43.61	C
			B	1	1.2		1	1	113.586			
			C	1	1.2		1	1	113.586			
L3 45.95-1.70	0.42	10.27	A	1	1.2	8	1	1	178.558	1.92	43.43	C
			B	1	1.2		1	1	178.558			
			C	1	1.2		1	1	178.558			
Sum Weight:	1.03	19.83						OTM	295.56 kip-ft	5.04		

**Tower Forces - With Ice - Wind 60 To Face**

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 124.70-81.20	0.27	3.93	A	1	1.2	11	1	1	104.520	1.59	36.45	C
			B	1	1.2		1	1	104.520			
			C	1	1.2		1	1	104.520			
L2 81.20-45.95	0.34	5.63	A	1	1.2	10	1	1	113.586	1.54	43.61	C
			B	1	1.2		1	1	113.586			
			C	1	1.2		1	1	113.586			
L3 45.95-1.70	0.42	10.27	A	1	1.2	8	1	1	178.558	1.92	43.43	C
			B	1	1.2		1	1	178.558			
			C	1	1.2		1	1	178.558			
Sum Weight:	1.03	19.83						OTM	295.56 kip-ft	5.04		

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**Tower Forces - With Ice - Wind 90 To Face**

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 124.70-81.20	0.27	3.93	A	1	1.2	11	1	1	104.520	1.59	36.45	C
			B	1	1.2		1	1	104.520			
			C	1	1.2		1	1	104.520			
L2 81.20-45.95	0.34	5.63	A	1	1.2	10	1	1	113.586	1.54	43.61	C
			B	1	1.2		1	1	113.586			
			C	1	1.2		1	1	113.586			
L3 45.95-1.70	0.42	10.27	A	1	1.2	8	1	1	178.558	1.92	43.43	C
			B	1	1.2		1	1	178.558			
			C	1	1.2		1	1	178.558			
Sum Weight:	1.03	19.83						OTM	295.56 kip-ft	5.04		

**Tower Forces - Service - Wind Normal To Face**

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 124.70-81.20	0.25	3.11	A	1	0.73	10	1	1	100.341	0.81	18.51	C
			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2 81.20-45.95	0.32	4.78	A	1	0.73	9	1	1	110.358	0.80	22.57	C
			B	1	0.73		1	1	110.358			
			C	1	0.73		1	1	110.358			
L3 45.95-1.70	0.40	9.06	A	1	0.73	7	1	1	174.881	1.01	22.87	C
			B	1	0.73		1	1	174.881			
			C	1	0.73		1	1	174.881			
Sum Weight:	0.97	16.95						OTM	151.82 kip-ft	2.61		

**Tower Forces - Service - Wind 60 To Face**

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 124.70-81.20	0.25	3.11	A	1	0.73	10	1	1	100.341	0.81	18.51	C
			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2 81.20-45.95	0.32	4.78	A	1	0.73	9	1	1	110.358	0.80	22.57	C
			B	1	0.73		1	1	110.358			
			C	1	0.73		1	1	110.358			
L3 45.95-1.70	0.40	9.06	A	1	0.73	7	1	1	174.881	1.01	22.87	C

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
Sum Weight:	0.97	16.95	B C	1 1	0.73 0.73		1 1	1 1 OTM	174.881 174.881 151.82 kip-ft	2.61		

**Tower Forces - Service - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
L1 124.70-81.20	0.25	3.11	A B C	1 1 1	0.73 0.73 0.73	10	1 1 1	1 1 1	100.341 100.341 100.341	0.81	18.51	C
L2 81.20-45.95	0.32	4.78	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	110.358 110.358 110.358	0.80	22.57	C
L3 45.95-1.70	0.40	9.06	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1 OTM	174.881 174.881 174.881 151.82 kip-ft	1.01	22.87	C
Sum Weight:	0.97	16.95								2.61		

**Force Totals**

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M _x	Sum of Overturning Moments, M _z	Sum of Torques
	K	K	K	kip-ft	kip-ft	kip-ft
Leg Weight	16.95					
Bracing Weight	0.00					
Total Member Self-Weight	16.95					
Total Weight	32.29			0.00	0.00	
Wind 0 deg - No Ice		0.00	-40.47	-3773.33	0.00	0.00
Wind 30 deg - No Ice		20.23	-35.05	-3267.80	-1886.67	25.53
Wind 60 deg - No Ice		35.05	-20.23	-1886.67	-3267.80	0.00
Wind 90 deg - No Ice		40.47	0.00	0.00	-3773.33	-25.53
Wind 120 deg - No Ice		35.05	20.23	1886.67	-3267.80	0.00
Wind 150 deg - No Ice		20.23	35.05	3267.80	-1886.67	25.53
Wind 180 deg - No Ice		0.00	40.47	3773.33	0.00	0.00
Wind 210 deg - No Ice		-20.23	35.05	3267.80	1886.67	-25.53
Wind 240 deg - No Ice		-35.05	20.23	1886.67	3267.80	0.00
Wind 270 deg - No Ice		-40.47	0.00	0.00	3773.33	25.53
Wind 300 deg - No Ice		-35.05	-20.23	-1886.67	3267.80	0.00
Wind 330 deg - No Ice		-20.23	-35.05	-3267.80	1886.67	-25.53
Member Ice	2.87					
Total Weight Ice	41.83			0.00	0.00	
Wind 0 deg - Ice		0.00	-12.99	-1148.77	0.00	0.00
Wind 30 deg - Ice		6.50	-11.25	-994.86	-574.38	6.55

<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780</p>	<p><b>Job</b></p> <p style="text-align: center;">AK2 SHAMPINE, AK                      115070R1</p>	<p><b>Page</b></p> <p style="text-align: center;">11 of 19</p>
	<p><b>Project</b></p> <p style="text-align: center;">123 FT MONOPOLE (Rev 1)</p>	<p><b>Date</b></p> <p style="text-align: center;">16:21:29 05/08/24</p>
	<p><b>Client</b></p> <p style="text-align: center;">VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p style="text-align: center;">EH</p>

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, $M_x$ kip-ft	Sum of Overturning Moments, $M_z$ kip-ft	Sum of Torques kip-ft
Wind 60 deg - Ice		11.25	-6.50	-574.38	-994.86	0.00
Wind 90 deg - Ice		12.99	0.00	0.00	-1148.77	-6.55
Wind 120 deg - Ice		11.25	6.50	574.38	-994.86	0.00
Wind 150 deg - Ice		6.50	11.25	994.86	-574.38	6.55
Wind 180 deg - Ice		0.00	12.99	1148.77	0.00	0.00
Wind 210 deg - Ice		-6.50	11.25	994.86	574.38	-6.55
Wind 240 deg - Ice		-11.25	6.50	574.38	994.86	0.00
Wind 270 deg - Ice		-12.99	0.00	0.00	1148.77	6.55
Wind 300 deg - Ice		-11.25	-6.50	-574.38	994.86	0.00
Wind 330 deg - Ice		-6.50	-11.25	-994.86	574.38	-6.55
Total Weight	32.29			0.00	0.00	
Wind 0 deg - Service		0.00	-9.20	-858.28	0.00	0.00
Wind 30 deg - Service		4.60	-7.97	-743.29	-429.14	5.81
Wind 60 deg - Service		7.97	-4.60	-429.14	-743.29	0.00
Wind 90 deg - Service		9.20	0.00	0.00	-858.28	-5.81
Wind 120 deg - Service		7.97	4.60	429.14	-743.29	0.00
Wind 150 deg - Service		4.60	7.97	743.29	-429.14	5.81
Wind 180 deg - Service		0.00	9.20	858.28	0.00	0.00
Wind 210 deg - Service		-4.60	7.97	743.29	429.14	-5.81
Wind 240 deg - Service		-7.97	4.60	429.14	743.29	0.00
Wind 270 deg - Service		-9.20	0.00	0.00	858.28	5.81
Wind 300 deg - Service		-7.97	-4.60	-429.14	743.29	0.00
Wind 330 deg - Service		-4.60	-7.97	-743.29	429.14	-5.81

## Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp

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	<p><b>Project</b></p> <p style="text-align: center;">123 FT MONOPOLE (Rev 1)</p>	<p><b>Date</b></p> <p style="text-align: center;">16:21:29 05/08/24</p>
	<p><b>Client</b></p> <p style="text-align: center;">VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p style="text-align: center;">EH</p>

Comb. No.	Description
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	124.7 - 81.2	Pole	Max Tension	14	0.00	0.00	0.00
			Max. Compression	26	-28.10	0.00	0.00
			Max. Mx	8	-17.61	-766.93	-1.30
			Max. My	14	-17.61	0.00	-766.93
			Max. Vy	8	33.91	-766.93	-1.30
			Max. Vx	14	33.91	0.00	-766.93
			Max. Torque	5			
L2	81.2 - 45.95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.69	0.00	0.00
			Max. Mx	8	-24.49	-1978.01	-0.41
			Max. My	2	-24.49	0.00	1978.01
			Max. Vy	8	36.76	-1978.01	-0.41
			Max. Vx	2	-36.76	0.00	1978.01
			Max. Torque	5			
L3	45.95 - 1.7	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.56	0.00	0.00
			Max. Mx	8	-38.70	-3915.91	-0.29
			Max. My	14	-38.70	0.00	-3915.90
			Max. Vy	8	40.51	-3915.91	-0.29
			Max. Vx	14	40.51	0.00	-3915.90
			Max. Torque	5			

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
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	<b>Project</b>	123 FT MONOPOLE (Rev 1)	<b>Date</b>	16:21:29 05/08/24
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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	48.56	0.00	12.99
	Max. H _x	20	38.75	40.47	0.00
	Max. H _z	2	38.75	0.00	40.47
	Max. M _x	2	3915.90	0.00	40.47
	Max. M _z	8	3915.91	-40.47	0.00
	Max. Torsion	25	25.09	20.23	35.05
	Min. Vert	13	29.06	-20.23	-35.05
	Min. H _x	8	38.75	-40.47	0.00
	Min. H _z	14	38.75	0.00	-40.47
	Min. M _x	14	-3915.90	0.00	-40.47
	Min. M _z	20	-3915.91	40.47	0.00
	Min. Torsion	5	-25.09	-20.23	35.05

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	32.29	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	38.75	0.00	-40.47	-3915.90	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	29.06	0.00	-40.47	-3876.93	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	38.75	20.23	-35.05	-3391.43	-1957.69	25.08
0.9 Dead+1.0 Wind 30 deg - No Ice	29.06	20.23	-35.05	-3357.63	-1938.28	25.09
1.2 Dead+1.0 Wind 60 deg - No Ice	38.75	35.05	-20.23	-1957.96	-3391.28	-0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	29.06	35.05	-20.23	-1938.47	-3357.52	-0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	38.75	40.47	-0.00	0.30	-3915.91	-25.08
0.9 Dead+1.0 Wind 90 deg - No Ice	29.06	40.47	-0.00	0.22	-3876.94	-25.09
1.2 Dead+1.0 Wind 120 deg - No Ice	38.75	35.05	20.23	1957.96	-3391.28	0.00
0.9 Dead+1.0 Wind 120 deg - No Ice	29.06	35.05	20.23	1938.47	-3357.52	0.00
1.2 Dead+1.0 Wind 150 deg - No Ice	38.75	20.23	35.05	3391.13	-1958.22	25.08
0.9 Dead+1.0 Wind 150 deg - No Ice	29.06	20.23	35.05	3357.41	-1938.66	25.09
1.2 Dead+1.0 Wind 180 deg - No Ice	38.75	0.00	40.47	3915.90	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	29.06	0.00	40.47	3876.93	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	38.75	-20.23	35.05	3391.13	1958.22	-25.08
0.9 Dead+1.0 Wind 210 deg - No Ice	29.06	-20.23	35.05	3357.41	1938.66	-25.09
1.2 Dead+1.0 Wind 240 deg - No Ice	38.75	-35.05	20.23	1957.96	3391.28	-0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	29.06	-35.05	20.23	1938.47	3357.52	-0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	38.75	-40.47	-0.00	0.30	3915.91	25.08

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	<p style="text-align: center;"><b>Project</b></p> <p style="text-align: center;">123 FT MONOPOLE (Rev 1)</p>	<p style="text-align: center;"><b>Date</b></p> <p style="text-align: center;">16:21:29 05/08/24</p>
	<p style="text-align: center;"><b>Client</b></p> <p style="text-align: center;">VERIZON WIRELESS</p>	<p style="text-align: center;"><b>Designed by</b></p> <p style="text-align: center;">EH</p>

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 270 deg - No Ice	29.06	-40.47	-0.00	0.22	3876.94	25.09
1.2 Dead+1.0 Wind 300 deg - No Ice	38.75	-35.05	-20.23	-1957.96	3391.28	0.00
0.9 Dead+1.0 Wind 300 deg - No Ice	29.06	-35.05	-20.23	-1938.47	3357.52	0.00
1.2 Dead+1.0 Wind 330 deg - No Ice	38.75	-20.23	-35.05	-3391.43	1957.69	-25.08
0.9 Dead+1.0 Wind 330 deg - No Ice	29.06	-20.23	-35.05	-3357.63	1938.28	-25.09
1.2 Dead+1.0 Ice+1.0 Temp	48.56	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	48.56	0.00	-12.99	-1209.87	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	48.56	6.50	-11.25	-1047.80	-604.91	6.54
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	48.56	11.25	-6.50	-604.94	-1047.78	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	48.56	12.99	0.00	0.03	-1209.87	-6.54
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	48.56	11.25	6.50	604.94	-1047.78	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	48.56	6.50	11.25	1047.77	-604.97	6.54
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	48.56	0.00	12.99	1209.87	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	48.56	-6.50	11.25	1047.77	604.97	-6.54
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	48.56	-11.25	6.50	604.94	1047.78	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	48.56	-12.99	0.00	0.03	1209.87	6.54
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	48.56	-11.25	-6.50	-604.94	1047.78	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	48.56	-6.50	-11.25	-1047.80	604.91	-6.54
Dead+Wind 0 deg - Service	32.29	0.00	-9.20	-886.66	0.00	0.00
Dead+Wind 30 deg - Service	32.29	4.60	-7.97	-767.88	-443.32	5.80
Dead+Wind 60 deg - Service	32.29	7.97	-4.60	-443.33	-767.87	-0.00
Dead+Wind 90 deg - Service	32.29	9.20	-0.00	0.01	-886.66	-5.80
Dead+Wind 120 deg - Service	32.29	7.97	4.60	443.33	-767.87	0.00
Dead+Wind 150 deg - Service	32.29	4.60	7.97	767.86	-443.34	5.80
Dead+Wind 180 deg - Service	32.29	0.00	9.20	886.66	0.00	0.00
Dead+Wind 210 deg - Service	32.29	-4.60	7.97	767.86	443.34	-5.80
Dead+Wind 240 deg - Service	32.29	-7.97	4.60	443.33	767.87	-0.00
Dead+Wind 270 deg - Service	32.29	-9.20	-0.00	0.01	886.66	5.80
Dead+Wind 300 deg - Service	32.29	-7.97	-4.60	-443.33	767.87	0.00
Dead+Wind 330 deg - Service	32.29	-4.60	-7.97	-767.88	443.32	-5.80

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-32.29	0.00	0.00	32.29	0.00	0.000%
2	0.00	-38.75	-40.47	0.00	38.75	40.47	0.000%
3	0.00	-29.06	-40.47	0.00	29.06	40.47	0.000%
4	20.23	-38.75	-35.05	-20.23	38.75	35.05	0.000%
5	20.23	-29.06	-35.05	-20.23	29.06	35.05	0.000%

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	<b>Project</b>	123 FT MONOPOLE (Rev 1)	<b>Date</b>	16:21:29 05/08/24
	<b>Client</b>	VERIZON WIRELESS	<b>Designed by</b>	EH

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
6	35.05	-38.75	-20.23	-35.05	38.75	20.23	0.000%
7	35.05	-29.06	-20.23	-35.05	29.06	20.23	0.000%
8	40.47	-38.75	0.00	-40.47	38.75	0.00	0.000%
9	40.47	-29.06	0.00	-40.47	29.06	0.00	0.000%
10	35.05	-38.75	20.23	-35.05	38.75	-20.23	0.000%
11	35.05	-29.06	20.23	-35.05	29.06	-20.23	0.000%
12	20.23	-38.75	35.05	-20.23	38.75	-35.05	0.000%
13	20.23	-29.06	35.05	-20.23	29.06	-35.05	0.000%
14	0.00	-38.75	40.47	0.00	38.75	-40.47	0.000%
15	0.00	-29.06	40.47	0.00	29.06	-40.47	0.000%
16	-20.23	-38.75	35.05	20.23	38.75	-35.05	0.000%
17	-20.23	-29.06	35.05	20.23	29.06	-35.05	0.000%
18	-35.05	-38.75	20.23	35.05	38.75	-20.23	0.000%
19	-35.05	-29.06	20.23	35.05	29.06	-20.23	0.000%
20	-40.47	-38.75	0.00	40.47	38.75	0.00	0.000%
21	-40.47	-29.06	0.00	40.47	29.06	0.00	0.000%
22	-35.05	-38.75	-20.23	35.05	38.75	20.23	0.000%
23	-35.05	-29.06	-20.23	35.05	29.06	20.23	0.000%
24	-20.23	-38.75	-35.05	20.23	38.75	35.05	0.000%
25	-20.23	-29.06	-35.05	20.23	29.06	35.05	0.000%
26	0.00	-48.56	0.00	0.00	48.56	0.00	0.000%
27	0.00	-48.56	-12.99	0.00	48.56	12.99	0.000%
28	6.50	-48.56	-11.25	-6.50	48.56	11.25	0.000%
29	11.25	-48.56	-6.50	-11.25	48.56	6.50	0.000%
30	12.99	-48.56	0.00	-12.99	48.56	-0.00	0.000%
31	11.25	-48.56	6.50	-11.25	48.56	-6.50	0.000%
32	6.50	-48.56	11.25	-6.50	48.56	-11.25	0.000%
33	0.00	-48.56	12.99	0.00	48.56	-12.99	0.000%
34	-6.50	-48.56	11.25	6.50	48.56	-11.25	0.000%
35	-11.25	-48.56	6.50	11.25	48.56	-6.50	0.000%
36	-12.99	-48.56	0.00	12.99	48.56	-0.00	0.000%
37	-11.25	-48.56	-6.50	11.25	48.56	6.50	0.000%
38	-6.50	-48.56	-11.25	6.50	48.56	11.25	0.000%
39	0.00	-32.29	-9.20	0.00	32.29	9.20	0.000%
40	4.60	-32.29	-7.97	-4.60	32.29	7.97	0.000%
41	7.97	-32.29	-4.60	-7.97	32.29	4.60	0.000%
42	9.20	-32.29	0.00	-9.20	32.29	0.00	0.000%
43	7.97	-32.29	4.60	-7.97	32.29	-4.60	0.000%
44	4.60	-32.29	7.97	-4.60	32.29	-7.97	0.000%
45	0.00	-32.29	9.20	0.00	32.29	-9.20	0.000%
46	-4.60	-32.29	7.97	4.60	32.29	-7.97	0.000%
47	-7.97	-32.29	4.60	7.97	32.29	-4.60	0.000%
48	-9.20	-32.29	0.00	9.20	32.29	0.00	0.000%
49	-7.97	-32.29	-4.60	7.97	32.29	4.60	0.000%
50	-4.60	-32.29	-7.97	4.60	32.29	7.97	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00030009
3	Yes	4	0.00000001	0.00009217
4	Yes	6	0.00000001	0.00007234
5	Yes	5	0.00000001	0.00066858
6	Yes	6	0.00000001	0.00004922

<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780</p>	<b>Job</b>	AK2 SHAMPINE, AK	115070R1	<b>Page</b>	16 of 19
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	<b>Client</b>	VERIZON WIRELESS		<b>Designed by</b>	EH

7	Yes	5	0.0000001	0.00045020
8	Yes	5	0.0000001	0.00061814
9	Yes	5	0.0000001	0.00026005
10	Yes	6	0.0000001	0.00004922
11	Yes	5	0.0000001	0.00045020
12	Yes	6	0.0000001	0.00004272
13	Yes	5	0.0000001	0.00039643
14	Yes	4	0.0000001	0.00030009
15	Yes	4	0.0000001	0.00009217
16	Yes	6	0.0000001	0.00004272
17	Yes	5	0.0000001	0.00039643
18	Yes	6	0.0000001	0.00004922
19	Yes	5	0.0000001	0.00045020
20	Yes	5	0.0000001	0.00061814
21	Yes	5	0.0000001	0.00026005
22	Yes	6	0.0000001	0.00004922
23	Yes	5	0.0000001	0.00045020
24	Yes	6	0.0000001	0.00007234
25	Yes	5	0.0000001	0.00066858
26	Yes	4	0.0000001	0.00000001
27	Yes	5	0.0000001	0.00018767
28	Yes	5	0.0000001	0.00038815
29	Yes	5	0.0000001	0.00030406
30	Yes	5	0.0000001	0.00026132
31	Yes	5	0.0000001	0.00030406
32	Yes	5	0.0000001	0.00031997
33	Yes	5	0.0000001	0.00018767
34	Yes	5	0.0000001	0.00031997
35	Yes	5	0.0000001	0.00030406
36	Yes	5	0.0000001	0.00026132
37	Yes	5	0.0000001	0.00030406
38	Yes	5	0.0000001	0.00038815
39	Yes	4	0.0000001	0.00005480
40	Yes	5	0.0000001	0.00006181
41	Yes	4	0.0000001	0.00054654
42	Yes	5	0.0000001	0.00004676
43	Yes	4	0.0000001	0.00054654
44	Yes	4	0.0000001	0.00096699
45	Yes	4	0.0000001	0.00005480
46	Yes	4	0.0000001	0.00096699
47	Yes	4	0.0000001	0.00054654
48	Yes	5	0.0000001	0.00004676
49	Yes	4	0.0000001	0.00054654
50	Yes	5	0.0000001	0.00006181

**Maximum Tower Deflections - Service Wind**

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	124.7 - 81.2	22.236	39	1.5302	0.0495
L2	85.95 - 45.95	10.570	42	1.2204	0.0215
L3	51.7 - 1.7	3.614	42	0.6752	0.0078

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

<p><b>tnxTower</b></p> <p><b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780</p>	<p><b>Job</b></p> <p>AK2 SHAMPINE, AK 115070R1</p>	<p><b>Page</b></p> <p>17 of 19</p>
	<p><b>Project</b></p> <p>123 FT MONOPOLE (Rev 1)</p>	<p><b>Date</b></p> <p>16:21:29 05/08/24</p>
	<p><b>Client</b></p> <p>VERIZON WIRELESS</p>	<p><b>Designed by</b></p> <p>EH</p>

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.70	(3) 12' EE T-FRAMES	39	20.953	1.5075	0.0463	30235
111.00	12' EE Platform w/ Rail	39	17.873	1.4488	0.0387	11034
101.00	12' EE Platform w/ Rail	39	14.806	1.3755	0.0312	6378
92.00	Andrew 6' w/Radome	42	12.205	1.2908	0.0251	4622

**Maximum Tower Deflections - Design Wind**

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	124.7 - 81.2	98.170	14	6.7660	0.2154
L2	85.95 - 45.95	46.692	2	5.3956	0.0930
L3	51.7 - 1.7	15.968	14	2.9845	0.0340

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

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.70	(3) 12' EE T-FRAMES	14	92.510	6.6655	0.2015	7006
111.00	12' EE Platform w/ Rail	14	78.921	6.4058	0.1681	2555
101.00	12' EE Platform w/ Rail	14	65.387	6.0817	0.1355	1474
92.00	Andrew 6' w/Radome	14	53.905	5.7072	0.1089	1066

**Base Plate Design Data**

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Concrete Stress ksi	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Critical Ratio
1.7500	22	1.7500	111.64	3.227	34.937	10.868	Plate	0.78
			178.07	4.590	45.000	45.000		✓
			0.63	0.70	0.78	0.24		

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**Compression Checks**

**Pole Design Data**

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	124.7 - 81.2 (1)	TP32.0077x21x0.25	43.50	0.00	0.0	24.2460	-17.61	1418.39	0.012
L2	81.2 - 45.95 (2)	TP40.4277x30.3057x0.3125	40.00	0.00	0.0	38.3461	-24.49	2243.25	0.011
L3	45.95 - 1.7 (3)	TP51.0002x38.3477x0.375	50.00	0.00	0.0	60.2567	-38.70	3525.02	0.011

**Pole Bending Design Data**

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	124.7 - 81.2 (1)	TP32.0077x21x0.25	766.93	1054.41	0.727	0.00	1054.41	0.000
L2	81.2 - 45.95 (2)	TP40.4277x30.3057x0.3125	1978.02	2101.66	0.941	0.00	2101.66	0.000
L3	45.95 - 1.7 (3)	TP51.0002x38.3477x0.375	3915.91	4195.55	0.933	0.00	4195.55	0.000

**Pole Shear Design Data**

Section No.	Elevation ft	Size	Actual V _u K	φV _n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T _u kip-ft	φT _n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	124.7 - 81.2 (1)	TP32.0077x21x0.25	33.91	425.52	0.080	25.30	1138.65	0.022
L2	81.2 - 45.95 (2)	TP40.4277x30.3057x0.3125	36.76	672.97	0.055	25.16	2278.47	0.011
L3	45.95 - 1.7 (3)	TP51.0002x38.3477x0.375	40.51	1057.50	0.038	25.08	4688.45	0.005

**Pole Interaction Design Data**

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	124.7 - 81.2 (1)	0.012	0.727	0.000	0.080	0.022	0.750	1.000	✓
L2	81.2 - 45.95 (2)	0.011	0.941	0.000	0.055	0.011	0.956	1.000	✓
L3	45.95 - 1.7 (3)	0.011	0.933	0.000	0.038	0.005	0.946	1.000	✓

<b>tnxTower</b>  <b>Ehresmann Engineering</b> 4400 W 31st St Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780	<b>Job</b>	AK2 SHAMPINE, AK                      115070R1	<b>Page</b>	19 of 19	
	<b>Project</b>	123 FT MONOPOLE (Rev 1)		<b>Date</b>	16:21:29 05/08/24
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**Section Capacity Table**

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail	
L1	124.7 - 81.2	Pole	TP32.0077x21x0.25	1	-17.61	1418.39	75.0	Pass	
L2	81.2 - 45.95	Pole	TP40.4277x30.3057x0.3125	2	-24.49	2243.25	95.6	Pass	
L3	45.95 - 1.7	Pole	TP51.0002x38.3477x0.375	3	-38.70	3525.02	94.6	Pass	
							Summary		
							Pole (L2)	95.6	Pass
							Base Plate	77.6	Pass
							<b>RATING =</b>	<b>95.6</b>	<b>Pass</b>

Program Version 8.2.4.3 - 1/24/2024 File:Z:/EEI JOBS/11507 - AK2 Shampine, AK/115070/115070-Engineering/115070R1 - AK2 Shampine, AK - 123' MP - H.eri



# AK2 SHAMPINE, AK

## DRIVEN PILE FOUNDATION

LOCATION:

5182 PITTMAN ROAD

WASILLA, AK 99654

MATANUSKA-SUSITNA COUNTY

### DRAWING INDEX

- T1 TITLE SHEET
- N1 NOTES & SPECIFICATIONS
- S1 DRIVEN PILE FOUNDATION



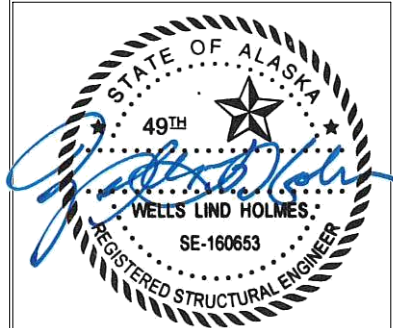
DATE: 4/11/24 DESIGNED: CNM DRAFTER: CNM

REVISIONS		
REV	DATE	DESCRIPTION

### VERIZON

TITLE SHEET

AK2 SHAMPINE, AK  
DRIVEN PILE FOUNDATION  
5182 PITTMAN ROAD  
WASILLA, AK 99654  
MATANUSKA-SUSITNA COUNTY



04/11/2024

U1408.0572.241

T1	REV
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**GENERAL DESIGN NOTES**

DESIGN NOTES AND MATERIAL REQUIREMENTS:  
 1. THE DESIGN CRITERIA FOR THIS STRUCTURE IS AS FOLLOWS:  
 A. **STANDARDS AND DESIGN CODES:**  
 BUILDING CODE: INTERNATIONAL BUILDING CODE, 2021 EDITION  
 INDUSTRY STANDARD: TIA-222-H  
 STEEL MANUAL: AISC-LRFD, 15th EDITION  
 CONCRETE CODE: ACI 318-19  
 WELDING CODE: AWS D1.1, LATEST EDITION  
 B. **DESIGN LOADS:**  
 WIND: WIND SPEED = 119 MPH (3-SEC GUST) PER THE ASCE 7-16 STANDARD  
 RISK CATEGORY: II  
 EXPOSURE: C  
 TOPOGRAPHIC CATEGORY: 1  
 CREST HEIGHT: 0 FT  
 ELEVATION: 444 FT  
 ICE: 0.5" RADIAL ICE THICKNESS @ 60 MPH (3-SEC GUST) PER THE TIA-222-H STANDARD  
 SEISMIC:  
 IMPORTANCE FACTOR: 1.00  
 RISK CATEGORY: II  
 MAPPED SPECTRAL RESPONSE ACCELERATIONS:  
 $S_s = 0.251g$ ,  $S_1 = 0.994g$   
 SITE CLASS: D  
 SPECTRAL RESPONSE COEFFICIENTS:  
 $S_{DS} = 0.268g$ ,  $S_{D1} = 1.127g$   
 SEISMIC DESIGN CATEGORY: E

**BASE DESIGN REACTIONS**

AXIAL - DOWN = 49 K (1.2 DEAD + 1.0 ICE)  
 SHEAR = 41 K (1.0 WIND)  
 MOMENT = 3998 k-ft (1.2 DEAD + 1.0 WIND)

**STRUCTURAL STEEL**

- ALL MATERIALS SHALL CONFORM TO THE FOLLOWING STANDARDS, U.N.O.:  
 THREADED RODS: ASTM F1554 GR 105  
 HEAVY HEX NUTS: ASTM A563 GR. C OR DH OR EQUIVALENT  
 HARDENED WASHERS: ASTM F436 OR EQUIVALENT
- ALL WELDING TO BE PERFORMED BY WELDERS CERTIFIED IN ACCORDANCE WITH AWS D1.1. FIELD WELDING IS PROHIBITED.
- ALL STRUCTURAL STEEL MEMBERS AND BOLT ASSEMBLIES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 OR F2329.
- ALL STRUCTURAL BOLTS SHALL BE TIGHTENED PER AN APPROVED PRETENSIONING METHOD AS DEFINED BY AISC. FOR EASE OF INSPECTION, THE "TURN-OF-NUT" METHOD AS DEFINED BY AISC WITH MATCH-MARKING TECHNIQUES IS RECOMMENDED.
- ALL BOLT HOLES SHALL BE STANDARD SIZE PER TABLE J3.3 OF AISC U.N.O. WASHERS ARE REQUIRED FOR ANY CONNECTION THAT HAS LARGER THAN STANDARD SIZED BOLT HOLES.

**SPECIAL INSPECTIONS**

- STEEL FABRICATION SHALL BE DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED AS REQUIRED BY THE BUILDING OFFICIAL TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. ALTERNATIVELY, SPECIAL INSPECTION OF MATERIALS, WELDING, AND FABRICATION PROCEDURES SHALL BE REQUIRED FOR FABRICATION BY AN UNAPPROVED FABRICATOR.
- NO FIELD WELDING SHALL BE PERMITTED
- THE FOLLOWING SPECIAL INSPECTIONS SHALL BE REQUIRED PER CHAPTER 17 OF THE BUILDING CODE:
  - SPECIAL INSPECTION OF HIGH-STRENGTH BOLTING (WHEN APPLICABLE):
    - PERIODIC SPECIAL INSPECTION IF BOLTS ARE PRETENSIONED WITH MATCH-MARKING TECHNIQUES
    - CONTINUOUS SPECIAL INSPECTION OF ALL OTHER HIGH-STRENGTH BOLTING
  - CONTINUOUS SPECIAL INSPECTION OF DRIVEN PILE FOUNDATIONS PER TABLE 1705.7 OF THE BUILDING CODE
- SPECIAL INSPECTION IS NOT REQUIRED FOR WORK OF A MINOR NATURE OR AS WARRANTED BY CONDITIONS IN THE JURISDICTION AS APPROVED BY THE BUILDING OFFICIAL. THUS, SPECIAL INSPECTION ITEMS ABOVE MAY BE WAIVED AS DEEMED APPROPRIATE BY THE BUILDING OFFICIAL.

**STRUCTURAL OBSERVATION**

NO STRUCTURAL OBSERVATION IS REQUIRED.

**FOUNDATION**

- CONTRACTOR IS RESPONSIBLE FOR CHECKING AREA FOR UNDERGROUND FACILITIES PRIOR TO EXCAVATING ANY MATERIALS.
- CONTRACTOR SHALL REFER TO SOILS REPORT FOR SITE CONDITIONS AND FURTHER CONSTRUCTION INFORMATION.
- CONTRACTOR SHALL INSPECT AND REMOVE ALL DEBRIS FROM BOTTOM OF EXCAVATION.
- FOUNDATION DESIGN IS BASED UPON THE FOLLOWING GEOTECHNICAL EVALUATION:  
  
 NORTHERN GEOTECHNICAL ENGINEERING, INC. D.B.A. TERRA FIRMA TESTING  
 REPORT NO. 6825-23(G)  
 DATED: NOVEMBER 30, 2023
- CONTRACTOR SHALL REFER TO GEOTECHNICAL REPORT FOR INFORMATION REGARDING EXCAVATION, REQUIRED INSTALLATION EQUIPMENT, STRUCTURAL FILL REQUIREMENTS AND ALL OTHER REQUIREMENTS RELATED TO THE INSTALLATION OF THE FOUNDATION.

**GENERAL NOTES**

- CONTRACTOR SHALL FIELD VERIFY SITE OR LAYOUT RESTRICTIONS, SITE CONDITIONS, DIMENSIONS, AND ELEVATIONS BEFORE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF VECTOR STRUCTURAL ENGINEERING, INC. PRIOR TO BEGINNING PROJECT. ALL WORK SHALL BE PERFORMED USING ACCEPTED CONSTRUCTION PRACTICES. CONTRACTOR TO VERIFY MATERIALS PROVIDED BY EHRESMANN ENGINEERING PRIOR TO INSTALLATION.
- ALL ENGINEERING PLANS, DRAWINGS, DESIGNS, CALCULATIONS AND SPECIFICATIONS (COLLECTIVELY, "PLANS") ARE DESIGNED TO THE PROPRIETARY MANUFACTURING SPECIFICATIONS OF EHRESMANN ENGINEERING INTENDED AND AUTHORIZED SOLELY FOR USE WITH PRODUCT PRODUCED BY EHRESMANN ENGINEERING. UNAUTHORIZED USE IS STRICTLY PROHIBITED. CUSTOMER AGREES TO DEFEND, INDEMNIFY AND HOLD VECTOR STRUCTURAL ENGINEERING HARMLESS FROM AND AGAINST ANY AND ALL DEMANDS, CLAIMS, SUITS, PROCEEDINGS, LOSSES, LIABILITIES, DAMAGES, FEES, COSTS AND EXPENSES (INCLUDING, WITHOUT LIMITATION, REASONABLE ATTORNEYS' FEES AND COSTS) ARISING FROM OR RELATING TO ANY UNAUTHORIZED USE OF EHEMAN ENGINEERING'S PLANS BY CUSTOMER. EHRESMANN ENGINEERING AND VECTOR STRUCTURAL ENGINEERING ASSUME NO RESPONSIBILITY FOR THE STRUCTURE IF ALTERATIONS AND/OR ADDITIONS ARE MADE TO THE DESIGN AS SHOWN IN THESE DRAWINGS.
- THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL COMPLY WITH ALL LOCAL CODES, REGULATIONS, AND ORDINANCES AS WELL AS STATE DEPARTMENT OF INDUSTRIAL REGULATIONS AND DIVISION OF INDUSTRIAL SAFETY (OSHA) REQUIREMENTS.
- THE CONTRACTOR SHALL SUPERVISE AND DIRECT ALL WORK TO THE BEST OF HIS/HER ABILITY AND SKILL. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, PROCEDURES, AND SEQUENCES, AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
- THE CONTRACTOR SHALL VERIFY, COORDINATE, AND PROVIDE ALL NECESSARY BLOCKING, BACKING, FRAMING, HANGERS, OR OTHER SUPPORTS FOR ALL ITEMS REQUIRING SAME, WHETHER SHOWN OR NOT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING, SHORING, FORMWORK, ETC., AND SHALL CONFORM TO ALL NATIONAL, STATE, AND LOCAL ORDINANCES AND CODES, IN ORDER TO SAFELY EXECUTE ALL STAGES OF WORK TO COMPLETE THIS PROJECT.
- IT IS THE INTENT OF THESE DRAWINGS TO SHOW THE COMPLETED INSTALLATION OF THE STRUCTURE SHOWN.
- CONTRACTOR ASSUMES RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES. THIS REQUIREMENT APPLIES CONTINUOUSLY, AND IS NOT LIMITED TO NORMAL WORKING HOURS.
- CONTRACTOR TO HOLD ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN. THE CONTRACTOR IS FINANCIALLY RESPONSIBLE FOR REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED IN CONJUNCTION WITH THE EXECUTION OF WORK ON THIS PROJECT.
- WEATHER PROOFING AND/OR FLASHING TO BE PROVIDED BY CONTRACTOR AS REQUIRED.

**DISCLAIMERS**

- ALL STRUCTURAL COMPONENTS TO BE CONNECTED TOGETHER SHALL BE COMPLETELY FIT UP ON THE GROUND OR OTHERWISE VERIFIED FOR COMPATIBILITY PRIOR TO LIFTING ANY COMPONENT INTO PLACE. REPAIRS REQUIRED DUE TO FIT-UP OR CONNECTION COMPATIBILITY PROBLEMS AFTER PARTIAL ERECTION ARE THE FINANCIAL RESPONSIBILITY OF THE CONTRACTOR.
- SOME TELECOMMUNICATION STRUCTURES ARE SUSCEPTIBLE TO WIND-INDUCED OSCILLATIONS. OSCILLATIONS MAY OCCUR AT LOW OR MODERATE WIND SPEEDS AND MAY CAUSE STRUCTURAL DAMAGE. TIA PROVIDES NO PRACTICAL ANALYTICAL METHOD TO PREDICT AND PREVENT WIND-INDUCED STRUCTURAL OSCILLATIONS. VECTOR STRUCTURAL ENGINEERING RECOMMENDS FREQUENT MONITORING TO IDENTIFY WIND-INDUCED OSCILLATION AND REGULAR CONDITION ASSESSMENTS TO IDENTIFY FATIGUE CRACKING, LOOSE OR MISSING BOLTS, AND ANY OTHER STRUCTURAL DEFECTS. ANY OSCILLATION OR DEFECTS OBSERVED SHALL BE IMMEDIATELY REPORTED TO VECTOR STRUCTURAL ENGINEERING FOR FURTHER EVALUATION AND POSSIBLE REPAIRS OR MODIFICATIONS WHICH MAY BE REQUIRED AT THE OWNER'S EXPENSE.



DATE: 4/11/24 | DESIGNED: CNM | DRAFTER: CNM

REVISIONS		
REV	DATE	DESCRIPTION

**VERIZON**

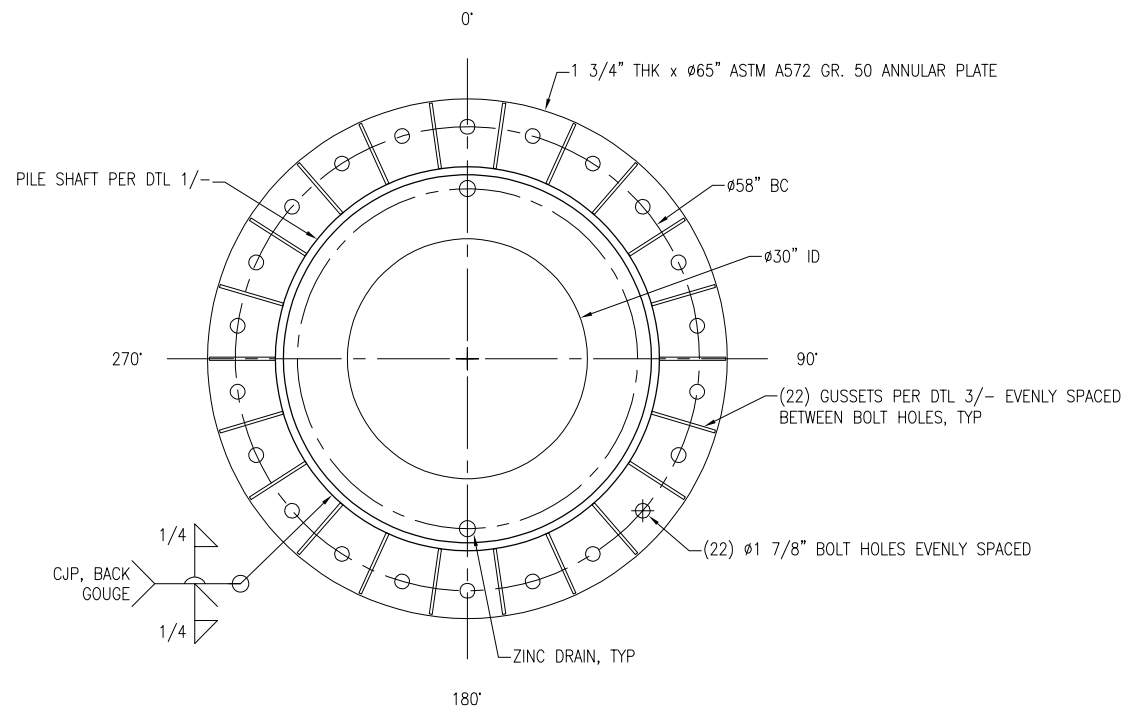
**NOTES & SPECIFICATIONS**

**AK2 SHAMPINE, AK  
DRIVEN PILE FOUNDATION**

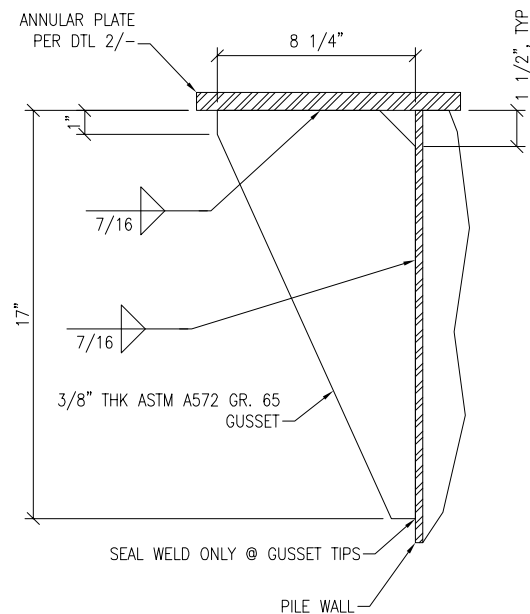
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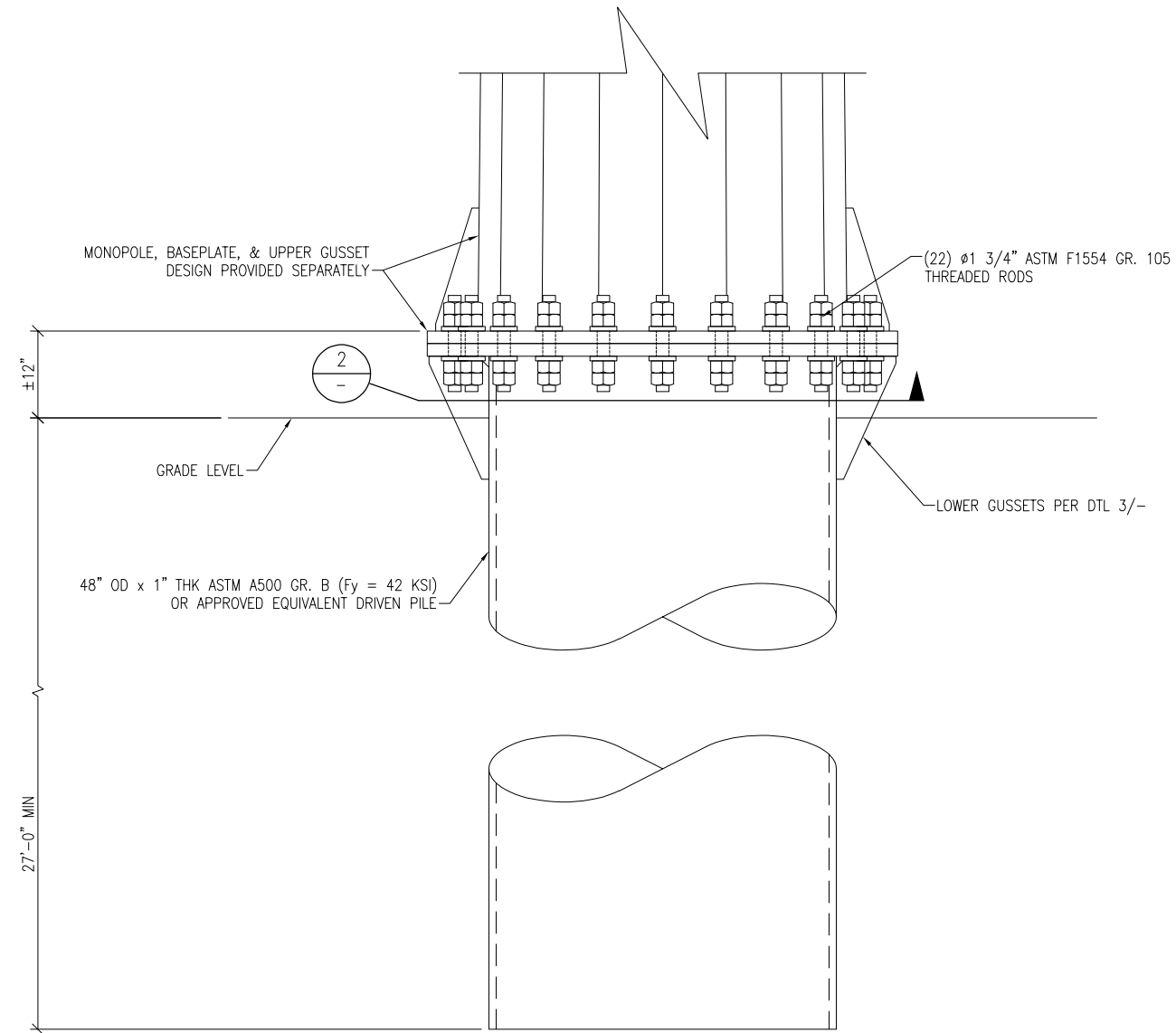


ANNULAR PLATE  
N.T.S. (2)



GUSSET  
N.T.S. (3)

- NOTES:
1. PILE TO BE DRIVEN PER GEOTECHNICAL REPORT & MINIMUM DEPTH SHOWN.
  2. PILE TO BE INSTALLED TO WITHIN 1.5' OF VERTICAL.
  3. PROVIDE CORROSION RESISTANCE PER SECTION 1810.3.2.5 OF BUILDING CODE.
  4. DRIVEN PILE SHALL MAINTAIN ITS SHAPE THROUGH THE INSTALLATION PROCESS. USE REINFORCEMENT OR DRIVE SHOE AT TIP OF PILE AS NEEDED TO PREVENT THE PIPE WALL FROM BUCKLING OR DEFORMING.



DRIVEN PILE FOUNDATION  
N.T.S. (1)

Ehresmann Engineering Inc.  
4400 West 31st Street | Yankton, SD 57078-8810  
Toll-Free: (800)291-6658 | Local: (605)665-7532

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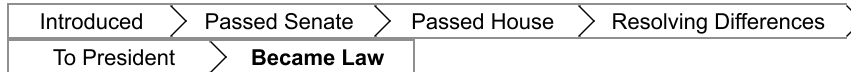
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## S.652 - Telecommunications Act of 1996

104th Congress (1995-1996)


**Sponsor:** [Sen. Pressler, Larry \[R-SD\]](#) (Introduced 03/30/1995)  
**Committees:** Senate - Commerce, Science, and Transportation  
**Committee Reports:** [S. Rept. 104-23](#); [S. Rept. 104-230 \(Conference Report\)](#); [H. Rept. 104-458 \(Conference Report\)](#)  
**Latest Action:** 02/08/1996 Became [Public Law No: 104-104](#). ([All Actions](#))  
**Roll Call Votes:** There have been [28 roll call votes](#)  
**Tracker:** 



**Summary(4)** Text(7) Actions(228) Titles(11) Amendments(170) Cosponsors(0) Committees(1) Related Bills(2)



There are 4 summaries for S.652.

Conference report filed in House (01/31/1996) 

[Bill summaries](#) are authored by [CRS](#).

### Shown Here:

#### Conference report filed in House (01/31/1996)

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### Telecommunications Act of 1996 - **Title I: Telecommunication Services - Subtitle A: Telecommunications Services** -

Amends the Communications Act of 1934 (the Act) to establish a general duty of telecommunications carriers (carriers): (1) to interconnect directly or indirectly with the facilities and equipment of other carriers; and (2) not to install network features, functions, or capabilities that do not comply with specified guidelines and standards.

Sets forth the obligations of local exchange carriers (LECs), including the duty: (1) not to prohibit resale of their services; (2) to provide number portability; (3) to provide dialing parity; (4) to afford access to poles, ducts, conduits, and rights-of-way consistent with pole attachment provisions of the Act; and (5) to reestablish reciprocal compensation arrangements for the transport and termination of telecommunications.

Imposes additional obligations on incumbent LECs (incumbent LEC requirements), including the duty to: (1) negotiate in good faith the terms and conditions of agreements; (2) provide interconnection at any technically feasible point of the same quality they provide to themselves, on just, reasonable, and nondiscriminatory terms and conditions; (3) provide access to network elements on an unbundled basis; (4) offer resale of their telecommunications services at wholesale rates; (5) provide reasonable public notice of changes to their networks; and (6) provide physical collocation, or virtual collocation if physical collocation is impractical.

Directs the Federal Communications Commission (FCC) to complete, within six months, all actions necessary to establish regulations to implement such requirements. States that nothing precludes the enforcement of State regulations that are consistent with those requirements.

Requires the FCC to create or designate one or more impartial entities to administer telecommunications numbering and to make such numbers available on an equitable basis. Directs that the cost of numbering administration and number portability be borne by all carriers on a competitively neutral basis.

Exempts a rural telephone company from incumbent LEC requirements until such company has received a bona fide request from interconnection, services, or network elements and the State commission determines that such request is not unduly economically burdensome, is technically feasible, and is consistent with universal service provisions, except the public interest determination. Sets forth provisions regarding: (1) State termination of the exemption and the establishment of an implementation schedule; and (2) limits on the exemption.

Authorizes an LEC with fewer than two percent of the subscriber lines installed in the aggregate nationwide to petition for a suspension or modification of specified requirements for the telephone exchange service facilities specified in the petition. Directs the State commission to grant such petition to the extent that it is necessary to avoid significant adverse economic impacts on users of telecommunications services or to avoid imposing an undue economic burden or a technically infeasible requirement, where such suspension or modification is in the public interest.

Provides for the continued enforcement of exchange access and interconnection requirements.

Authorizes an incumbent LEC to voluntarily negotiate and enter into a binding agreement with a requesting carrier without meeting incumbent LEC requirements. Directs that such agreement: (1) include a detailed schedule of itemized charges for interconnection and each service or network element included in the agreement; and (2) be submitted to the State commission. Permits any party negotiating such an agreement to ask a State commission to participate in the negotiation and to mediate any differences arising in the course of the negotiation.

Authorizes the carrier or any other party to the negotiation, from the 135th through the 160th day after the date on which an incumbent LEC receives a request for negotiation, to petition a State commission to arbitrate any open issues. Sets forth provisions regarding the duty of the petitioner, opportunity to respond, action by the State commission, refusal to negotiate, standards for arbitration, and pricing standards. Requires any interconnection agreement adopted by negotiation or arbitration to be submitted for approval to the State commission. Sets forth provisions regarding grounds for rejection, preservation of authority by the State commission, the schedule for decision, failure of the State commission to act, and review of State commission actions.

Authorizes a Bell operating company (BOC) to prepare and file with a State commission a statement of the terms and conditions that such company generally offers within that State to comply with incumbent LEC requirements and applicable regulations and standards. Sets forth provisions regarding State commission review, the schedule for review, and authority to continue review. Specifies that submission or approval of the statement shall not relieve a BOC of its duty to negotiate the terms and conditions of an agreement regarding interconnection.

Sets forth provisions regarding: (1) consolidation of State proceedings; (2) a required filing by the State commission; and (3) availability of any interconnection, service, or network element provided under an approved agreement to which the LEC is a party to any other requesting carrier on the same terms and conditions as those provided in the agreement.

Preempts any State and local statutes, regulations, or requirements that prohibit or have the effect of prohibiting any entity from providing interstate or intrastate telecommunications services. Preserves a State's authority to impose, on a competitively neutral basis and consistent with universal service provisions, requirements necessary to preserve and advance universal service, protect the public safety and welfare, ensure the continued quality of telecommunications services, and safeguard the rights of consumers.

Authorizes a State, without violating the prohibition on barriers to entry, to require a competitor seeking to provide service in a rural market to meet the requirements for designation as an eligible carrier. Makes this provision inapplicable to: (1) a service area served by a rural telephone company that has obtained an exemption, suspension, or modification that effectively prevents a competitor from meeting such requirements; and (2) a provider of commercial mobile services.

Requires: (1) the FCC to institute and refer to a Federal-State Joint Board a proceeding to recommend changes to any of its regulations to implement specified requirements, including the definition of the services that are supported by Federal universal service support mechanisms and a specific timetable for completion of such recommendations; (2) one member of the Board to be a State-appointed utility consumer advocate nominated by a national organization of State utility consumer advocates; and (3) the Board, after notice and opportunity for public comment, to make its recommendations to the FCC within nine months.

Directs the Board and the FCC to base policies for the preservation and advancement of universal service on: (1) availability of quality services at just, reasonable, and affordable rates; (2) access to advanced telecommunications and information services to all regions of the nation; (3) access and costs in rural and high cost areas that are reasonably comparable to that provided in urban areas; (4) equitable and nondiscriminatory contribution by all telecommunications services providers; (5) specific and predictable support mechanisms; (6) access to advanced telecommunications services for schools, health care, and libraries; and (7) such other principles as the Board and the FCC determine are in the public interest.

Defines "universal service" as an evolving level of telecommunications services that the FCC shall establish periodically, taking into account advances in telecommunications and information technologies and services.

Requires all carriers providing interstate telecommunications services to contribute to the preservation and advancement of universal service. Authorizes the FCC to exempt a carrier or class of carriers if their contribution would be "de minimis."

Provides that only designated eligible carriers shall be eligible to receive specific Federal universal service support.

Grants States authority to adopt regulations not inconsistent with the FCC's rules. Requires all providers of intrastate telecommunications to contribute to universal service within a State in an equitable and nondiscriminatory manner, as determined by the State. Permits a State to adopt additional requirements with respect to universal service in that State as long as such requirements do not rely upon or burden Federal universal service support mechanisms.

Directs: (1) the FCC, within six months, to adopt rules to require that the rates charged by providers of interexchange telecommunications services to subscribers in rural and high cost areas shall be no higher than those charged by each such provider to its subscribers in urban areas; and (2) such rules to require that a provider of interstate interexchange telecommunications services provide such services to its subscribers in each State at rates no higher than those charged to its subscribers in any other State.

Requires a carrier, upon receiving a bona fide request, to provide telecommunications services: (1) which are necessary for the provision of health care services in a State, including instruction relating to such services, to any public or nonprofit health care provider that serves persons who reside in rural areas in that State at rates that are reasonably comparable to those charged for similar services in urban areas in that State; and (2) for educational purposes included in the definition of universal service for elementary and secondary schools and libraries at rates that are less than the amounts charged for similar services to other

parties, as necessary to ensure affordable access to and use of such services. Permits a carrier providing such service to have an amount equal to the amount of the discount treated as an offset to its obligation to contribute to the mechanisms, or receive reimbursement utilizing the support mechanisms, to preserve and advance universal service.

Directs the FCC to establish competitively neutral rules to: (1) enhance access to advanced telecommunications and information services for all public and nonprofit elementary and secondary school classrooms, health care providers, and libraries; and (2) define the circumstances under which a carrier may be required to connect its network to such public institutional telecommunications users.

Specifies that: (1) telecommunications services and network capacity provided to health care providers, schools, and libraries may not be resold or transferred for monetary gain; and (2) for-profit businesses, elementary and secondary schools with endowments of more than \$50 million, and libraries that are not eligible to participate in State-based plans for funds under the Library Services and Construction Act are ineligible to receive discounted rates.

Requires the FCC and the States to ensure that universal service is available at rates that are just, reasonable, and affordable.

Prohibits a carrier from using services that are not competitive to subsidize those that are subject to competition. Requires the FCC, with respect to interstate services, and the States, for intrastate services, to establish any necessary cost allocation rules, accounting safeguards, and guidelines to ensure that services included in the definition of universal service bear no more than a reasonable share of the joint and common costs of facilities used to provide those services.

Requires that: (1) if readily achievable, manufacturers of telecommunications and customer premises equipment ensure that equipment is designed, developed, and fabricated to be, and providers of telecommunications services ensure that service is, accessible and usable by individuals with disabilities; and (2) whenever such requirements are not readily achievable, such a manufacturer or provider shall ensure that the equipment or service is compatible with existing peripheral devices or specialized customer premises equipment commonly used by such individuals to achieve access, if readily achievable.

Directs the Architectural and Transportation Barriers Compliance Board to develop guidelines for accessibility of telecommunications and customer premises equipment in conjunction with the FCC and to review and update the guidelines periodically.

Requires the FCC to establish procedures for its oversight of coordinated network planning by carriers and other providers of telecommunications service for the effective and efficient interconnection of public telecommunications networks used to provide such service. Authorizes the FCC to participate in the development by industry standards-setting organizations of public telecommunications network interconnectivity standards that promote access to public telecommunications networks used to provide service, network capabilities and services by individuals with disabilities, and information services by subscribers of rural telephone companies.

Directs the FCC to: (1) complete a proceeding for the purpose of identifying and eliminating market entry barriers for entrepreneurs and other small businesses in the provision and ownership of telecommunications and information services, or in the provision of parts or services to providers of such services; (2) seek to promote the policies and purposes of the Act favoring diversity of media voices, vigorous economic competition, technological advancement, and promotion of the public interest; and (3) periodically review and report to the Congress on any regulations prescribed to eliminate such barriers and the statutory barriers that it recommends be eliminated, consistent with the public interest.

Prohibits a carrier from submitting or executing a change in a subscriber's selection of a provider of telephone exchange service or telephone toll service except in accordance with such verification procedures as the FCC shall prescribe. Makes any carrier that violates such procedures and collects charges for such a service from a subscriber liable to the carrier previously selected by the subscriber in an amount equal to all charges paid by such subscriber after such violation.

Directs the FCC to prescribe regulations that require incumbent LECs to share network facilities, technology, and information with qualifying carriers where the qualifying carrier requests such sharing for the purpose of providing telecommunications services or access to information services in areas where the carrier is designated as an essential carrier. Establishes the terms and conditions of such regulations. Requires LECs sharing infrastructure to provide information to sharing parties about deployment of services and equipment, including software.

Prohibits any LEC subject to interconnection requirements under this Act from: (1) subsidizing its telemessaging service directly or indirectly from its telephone exchange service or its exchange access; and (2) preferring or discriminating in favor of its

telemessaging service operations in its provision of telecommunications services. Directs the FCC to establish procedures or regulations thereunder for the expedited receipt and review of complaints alleging violations that result in material financial harm to providers of telemessaging services.

(Sec. 102) Specifies that a common carrier designated as an "eligible telecommunications carrier" shall: (1) be eligible to receive universal service support; and (2) throughout the service area for which the designation is received, offer the services that are supported by Federal universal service support mechanisms either using its own facilities or a combination of its own facilities and resale of another carrier's services, and advertise the availability of such services and the charges therefor using media of general distribution.

Requires a State commission to designate such a carrier for the service area. Authorizes (in the case of an area served by a rural telephone company) or requires (in the case of all other areas) the State commission to designate more than one common carrier as an eligible carrier for a service area designated by the State commission, as long as each additional requesting carrier meets the requirements of this section and such designation is in the public interest.

Sets forth provisions regarding: (1) designation of eligible carriers for unserved areas; and (2) relinquishment of universal service (in areas served by more than one eligible carrier).

(Sec. 103) Amends the Public Utility Holding Company Act of 1935 (PUHCA) to allow registered holding companies to diversify into telecommunications, information, and related services and products where the Securities and Exchange Commission (SEC) determines that a registered holding company is providing telecommunications, information, and other related services through a single purpose subsidiary, designated an "exempt telecommunications company" (ETC). Requires prior State approval before any utility that is associated with a registered holding company may sell to an ETC any asset in the retail rates of that utility as of December 19, 1995.

Specifies that the ownership of ETCs by registered holding companies shall not be subject to prior approval or other restriction by the SEC, but the relationship between an ETC and a registered holding company shall remain subject to SEC jurisdiction, with exceptions.

Requires any registered holding company or subsidiary thereof that acquires or holds the securities, or an interest in the business, of an ETC to file with the SEC such information as the SEC may prescribe concerning: (1) investments and activities by the registered holding company, or any subsidiary thereof, with respect to ETCs; and (2) any activities of an ETC within the holding company system that are reasonably likely to have a material impact on the financial or operational condition of the holding company system.

Prohibits public utility companies from assuming the liabilities of an ETC and from pledging or mortgaging the assets of a utility for the benefit of an ETC.

Sets forth provisions regarding: (1) protection against abusive affiliate transactions; and (2) non-preemption of rate authority.

Prohibits reciprocal arrangements to avoid the provisions of this section among companies that are not affiliates or associate companies of each other.

Authorizes State commissions to: (1) examine the books and records of the ETC and any public utility company, associate company, or affiliate in the registered holding company system as they relate to the activities of the ETC; and (2) order an audit of a public utility company that is an associate of an ETC.

(Sec. 104) Amends the Act to specify that a purpose of the Act is to make available service to all the people of the United States without discrimination on the basis of race, color, religion, national origin, or sex.

**Subtitle B: Special Provisions Concerning Bell Operating Companies** - Requires a BOC to obtain FCC authorization prior to offering "interLATA" (i.e., long-distance; "LATA" means "local access and transport area") service within its region unless those services are previously authorized or incidental to the provision of another service, in which case interLATA service may be offered after the date of this Act's enactment. Permits a BOC to offer out-of-region services immediately after such date.

Sets forth requirements for a BOC's provision of interLATA services originating in an in-region State, including: (1) the presence of a facilities-based competitor or competitors (but the presence of a competitor offering exchange access, telephone exchange

service offered exclusively through the resale of the BOC's telephone exchange service, and cellular service does not meet such requirement); or (2) the failure of a facilities-based competitor to request access or interconnection.

Establishes specific interconnection requirements, including a competitive checklist that a BOC must satisfy as part of its entry test (e.g., interconnection in accordance with specified requirements, nondiscriminatory access to 911 services, and reciprocal compensation arrangements).

Sets forth administrative provisions regarding applications for BOC entry. Authorizes the Attorney General to provide to the FCC an evaluation of an application using any standard the Attorney General deems appropriate. Sets forth provisions regarding FCC determinations, limits on FCC actions, publication of determinations, and enforcement of conditions required for approval. Directs the FCC to establish procedures for the review of complaints concerning failures by BOCs to meet such conditions.

Prohibits joint marketing of local services obtained from the BOC and long distance service within a State by carriers with more than five percent of the nation's presubscribed access line for three years after the date of enactment, or until a BOC is authorized to offer interLATA services within that State, whichever is earlier.

Requires any BOC authorized to offer interLATA services to provide intraLATA toll dialing parity coincident with its exercise of that interLATA authority. Bars States from ordering a BOC to implement toll dialing parity prior to its entry into interLATA service. Provides that any single-LATA State or any State that has issued an order by December 19, 1995, requiring a BOC to implement intraLATA toll dialing parity is grandfathered under this Act, with the prohibition against "non-grandfathered" States expiring three years after this Act's enactment date.

Sets forth "incidental" interLATA activities that the BOCs are permitted to provide upon the date of enactment.

Prohibits a BOC (including any affiliate) which is an LEC from providing specified services (including manufacturing activities, origination of interLATA telecommunications services other than incidental interLATA services, out-of-region services, or previously authorized activities and interLATA information services other than electronic publishing and alarm monitoring services) unless it does so through an entity that is separate from any entities that provide telephone exchange service.

Delineates structural and transactional requirements that apply to the separate subsidiary, including operating independently from the BOC, maintaining separate books and records, having separate officers, not obtaining credit under any arrangement that would permit a creditor upon default to have recourse to the BOC's assets, and conducting transactions with the BOC on an arm's length basis.

Sets forth provisions regarding: (1) non-discrimination safeguards; (2) biennial audit requirements; (3) sunset of provisions of this section; and (4) joint marketing.

Permits a BOC to: (1) engage in manufacturing after the FCC authorizes the company to provide interLATA services in any in-region State; (2) collaborate with a manufacturer of customer premises or telecommunications equipment during the design and development of hardware or software; and (3) engage in research activities relating to manufacturing and enter into royalty agreements with manufacturers of telecommunications equipment.

Requires each BOC to maintain and file with the FCC information on protocols and technical requirements for connection with and use of its telephone exchange service facilities.

Sets forth provisions regarding: (1) manufacturing limitations for standard-setting organizations; (2) alternate dispute resolution; (3) BOC equipment procurement and sales; and (4) FCC enforcement authority.

Prohibits a BOC or any affiliate from engaging in the provision of electronic publishing that is disseminated by means of such BOC's or any of its affiliates' basic telephone service, but allows a separated affiliate or electronic publishing joint venture (EPJV) operated in accordance with this section to engage in electronic publishing.

Requires a separated affiliate or EPJV to be operated independently from the BOC and to maintain separate books and records. Prohibits the affiliate from incurring debt in a manner that would permit a creditor upon default to have recourse to the BOC's assets. Sets forth provisions governing the manner in which transactions by the affiliate must be carried out (to ensure that they are fully auditable) and governing the valuation of assets transferred to the affiliate (to prevent cross subsidies). Prohibits the affiliate and the BOC from having corporate officers or property in common.



Prohibits the separate affiliate or EPJV from marketing the name, trademarks, or service marks of an existing BOC except for those that are owned by the entity that owns or controls the BOC.

Prohibits a BOC from engaging in joint marketing of any promotion, marketing, sales, or advertising with its affiliate, except that a BOC may: (1) provide inbound telemarketing or referral services related to the provision of electronic publishing if the BOC provides the same service on the same terms, conditions, and prices to non-affiliates as to its affiliates; (2) engage in non-discriminatory teaming or business arrangements; and (3) participate in EPJVs, provided that the BOC or affiliate has not more than a 50 percent (or, for small publishers, 80 percent) direct or indirect equity interest in the publishing joint venture.

Requires a BOC that enters the electronic publishing business through a separated affiliate or EPJV to provide network access and interconnection to electronic publishers at just and reasonable rates that are not higher on a per-unit basis than those charged to any other electronic publisher or any separated affiliate engaged in electronic publishing.

Entitles a person claiming a violation of this section to file a complaint with the FCC or to bring suit as provided in the Act.

Prohibits a BOC or affiliate thereof from engaging in the provision of alarm monitoring services before five years after the date of this Act's enactment, except for such services by a BOC that was engaged in providing such services as of November 30, 1995, directly or through an affiliate (but such BOC may not acquire an equity interest in or obtain financial control of any unaffiliated alarm monitoring services entities from November 30, 1995, until five years after the enactment date).

Provides that an incumbent LEC engaged in the provision of alarm monitoring services shall: (1) provide nonaffiliated entities, upon reasonable request, with the network services it provides to its own alarm monitoring operations on non-discriminatory terms and conditions; and (2) not subsidize its alarm monitoring services directly or indirectly from telephone exchange service operations. Requires the FCC to establish procedures for the receipt and review of complaints concerning violations of such provision or the regulations thereunder that result in material financial harm to a provider of alarm monitoring service. Bars an LEC from recording or using in any fashion the occurrence or contents of calls received by providers of alarm monitoring services for purposes of marketing such services on behalf of such LEC or any other entity.

Directs the FCC to adopt rules that eliminate discrimination between BOC and independent payphones and subsidies or cost recovery for BOC payphones from regulated interstate or intrastate exchange or exchange access revenue. Authorizes the FCC, if it determines that it is in the public interest, to allow the BOC's to have the same rights as independent payphone providers in negotiating with the interLATA carriers for their payphones. Grants the location provider the ultimate decision-making authority in determining interLATA services in connection with the choice of payphone providers.

**Title II: Broadcast Services** - Requires the FCC, if it determines that it will issue additional licenses for advanced TV services, to: (1) limit the initial eligibility for such licenses to persons who are licensed to operate a TV broadcast station, who hold a permit to construct such a station, or both; and (2) adopt regulations that allow such licensees or permittees to offer such ancillary or supplementary services on designated frequencies as may be consistent with the public interest, convenience, and necessity. Provides for the: (1) recovery for FCC reallocation or reassignment of the original or additional license of a person licensed to operate a TV broadcast station; and (2) charging and collection of fees from licensees by the FCC for the authorized use of designated frequencies. Requires a report from the FCC to the Congress on the implementation of this provision. Requires the FCC, within ten years after the first issuance of additional licenses, to conduct an evaluation of the advanced TV services program.

(Sec. 202) Directs the FCC to modify its multiple ownership rules to eliminate its limitation on the number of radio stations which may be owned or controlled nationally. Limits the number of radio stations an entity may own, operate, or control in a local market, with an exception when the FCC determines that such ownership, operation, or control will increase the number of radio broadcast stations in operation. Directs the FCC to: (1) eliminate its limitation on the number of TV stations which may be owned or controlled nationally; (2) increase to 35 percent the national audience reach limitations for TV stations; and (3) conduct a rulemaking proceeding to determine whether its rules restricting ownership of more than one TV station in a local market should be retained, modified, or eliminated.

Directs the FCC to extend its waiver policy with respect to its one-to-a-market ownership rules to any of the top 50 markets. Directs the FCC to permit a TV station to affiliate with an entity that maintains two or more networks unless such networks are composed of: (1) two or more of the four existing networks (ABC, CBS, NBC, FOX); or (2) any of the four existing networks and one of the two emerging networks (WBTV, UPN). Directs the FCC to: (1) permit an entity to own or control a network of broadcast stations and a cable system; and (2) revise ownership regulations if necessary to ensure carriage, channel positioning, and nondiscriminatory treatment of nonaffiliated broadcast stations by a cable system. Requires the FCC to revise all such rules biennially. Repeals current restrictions on broadcast- cable crossownership under the Communications Act.

(Sec. 203) Provides an eight-year license term for both TV and radio broadcast licenses.

(Sec. 204) Revises provisions regarding renewal procedures for the operation of TV broadcast stations. Includes standards for both renewal and denial of an application. Requires each renewal applicant to attach to such application a summary of comments and suggestions from the public regarding violent programming. Makes such amendment effective with respect to applications filed after May 1, 1995.

(Sec. 205) Extends to direct broadcast services current protections against signal piracy. Empowers the FCC with exclusive jurisdiction to regulate direct-to-home satellite services.

(Sec. 206) Provides that any ship documented under U.S. laws operating under the Global Maritime Distress and Safety System provisions of the Safety of Life at Sea Convention shall not be required to be equipped with a radio telegraphy station operated by one or more radio officers or operators.

(Sec. 207) Directs the FCC to promulgate regulations to prohibit restrictions that impair a viewer's ability to receive video programming services through devices designed for over-the-air reception of TV broadcast signals, multichannel multipoint distribution service, or direct broadcast satellite services.

**Title III: Cable Services** - Revises the definitions of "cable service" and "cable system" for purposes of the Act. Directs the FCC to: (1) review any complaint submitted by a franchising authority after the date of enactment of this Act concerning an increase in rates for cable programming services; and (2) issue a final order within 90 days, unless the parties agree to extend the review period. Terminates such review authority for cable programming services provided after March 31, 1999. Makes such provision inapplicable with respect to: (1) operators providing video programming services in areas subject to effective competition (as defined); or (2) any video programming offered on a per channel or per program basis. Exempts from certain cable rate regulation provisions small cable operators (serving fewer than one percent of all cable subscribers in the United States, serving no more than 50,000 subscribers, and not affiliated with any entity whose gross annual revenues exceed \$250 million). Revises provisions with respect to cable TV market determinations, requiring an expedited decisionmaking process. Prohibits any State or franchising authority from restricting in any way a cable system's use of any type of subscriber equipment or transmission technology. Sets forth provisions with respect to: (1) cable equipment compatibility; and (2) subscriber notice (allowing any reasonable means at the cable operator's discretion). Repeals anti-trafficking restriction provisions of the Act. Directs the FCC to allow cable operators to aggregate equipment costs into broad categories, regardless of the function levels of such equipment within such categories. Provides for the treatment of prior-year losses of a cable system.

(Sec. 302) Subjects common carriers providing video programming to subscribers using radio communications to the requirements of title III and to the ownership and joint venture restrictions set forth in the following paragraph, but not to other requirements of title VI of the Act. States that such carriers providing such programming on a common carrier basis shall be subject to such requirements and restrictions, but not to other requirements of title VI. Allows such carrier to elect to provide such programming by means of an open video system, stating that such a provider need not make capacity available on a nondiscriminatory basis to any other person for the provision of cable service directly to subscribers.

Prohibits any LEC or affiliate from purchasing or otherwise acquiring more than a ten percent financial interest, or any management interest, in any LEC providing telephone exchange service within such cable operator's franchise area. Prohibits an LEC and a local cable operator from entering into a joint venture to provide video programming directly to subscribers or to provide telecommunications services within such market. Provides exceptions, including exceptions for joint ventures in rural areas, joint use of transmission facilities in limited circumstances, acquisitions made in competitive markets, exempt cable systems (cable systems serving less than 17,000 subscribers, with other restrictions), and small cable systems located in nonurban areas. Authorizes the FCC to waive such financial interest or joint venture restrictions in cases of undue economic distress, economic viability, anticompetitive effects of such restrictions, or when the local franchising authority approves such waiver.

Authorizes an LEC to provide cable service to its subscribers through an open video system that complies with this section. Outlines, with respect to the provision of such service through such system, provisions concerning: (1) certificates of compliance; (2) dispute resolution; (3) FCC regulations; (4) consumer access; (5) reduced regulatory burdens for such systems; and (6) FCC implementation of appropriate rules and regulations within six months after the enactment of this Act. States that an operator of an open video system may be subject to the payment of fees based on gross revenues in lieu of cable TV franchising fees.

(Sec. 303) Sets forth provisions regarding preemption of franchising authority regulation of telecommunications services. Prohibits a franchising authority from ordering a cable operator to discontinue the provision of a telecommunications service or a

cable system to the extent it is used to provide a telecommunications service by reason of the failure of the cable operator to obtain a franchise or franchise renewal for the provision of such service. Prohibits a franchising authority from requiring a cable operator to provide any telecommunications service or facilities, other than institutional networks, as a condition of the initial grant of a franchise, franchise renewal or franchise transfer.

(Sec. 304) Directs the FCC to adopt regulations to ensure the commercial availability of convertor boxes, interactive equipment, and related equipment used to access multichannel video programming (MVP) from manufacturers, retailers, or other vendors not affiliated with any MVP distributor. Ensures the continued system security of MVP services. Provides FCC waiver authority with respect to provisions adopted under this section.

(Sec. 305) Directs the FCC, within 180 days after the enactment of this Act, to complete an inquiry to ascertain the level at which video programming is closed captioned. Provides closed captioning accountability criteria and requires a schedule of deadlines for the provision of such service. Provides exemptions from such requirements in cases of economic burden, inconsistency with current contracts, or undue burden of a significant difficulty or expense (with specified factors). Directs the FCC to: (1) commence an inquiry to examine the use of video descriptions on video programming in order to ensure the accessibility of such programming to persons with visual impairments; and (2) report to the Congress on its findings.

**Title IV: Regulatory Reform** - Directs the FCC to forbear from applying any regulation or provision of the Act to a telecommunications carrier or service if it determines that: (1) enforcement is not necessary to ensure that charges, practices, and classifications are just and reasonable and not discriminatory; (2) enforcement is not necessary for the protection of consumers; and (3) forbearance is consistent with the public interest. Directs the FCC to consider whether such forbearance will promote competitive market conditions. Allows any carrier to petition for such forbearance, requiring an FCC ruling within one year of such petition. Prohibits State enforcement of a regulation or provision after FCC-granted forbearance.

(Sec. 402) Directs the FCC, in every even-numbered year beginning with 1998, to: (1) review all regulations issued under the Act that apply to the operations or activities of a provider of telecommunications services; and (2) determine whether such regulation is no longer necessary in the public interest. Requires the FCC to repeal or modify any regulation so determined. Provides procedures for streamlining such repeals or modifications.

(Sec. 403) Eliminates or reduces specified FCC regulations, functions, and authority with respect to: (1) amateur radio examination procedures; (2) the designation of inspection entities; (3) instructional TV fixed service processing; (4) the setting of depreciation rates; (5) the use of independent auditors; (6) the delegation to private laboratories of equipment testing and certification; (7) the uniformity of license modifications; (8) jurisdiction over Government-owned ship radio stations; (9) the operation of domestic ship and aircraft radios without licenses; (10) fixed microwave service licensing; (11) foreign directors; (12) limitations on silent station authorizations; (13) construction permit requirements; (14) inspections of broadcast station equipment and apparatus; and (15) inspections by entities other than the FCC.

**Title V: Obscenity and Violence - Subtitle A: Obscene, Harassing, and Wrongful Utilization of Telecommunication Facilities** - Communications Decency Act of 1996 - Revises provisions of the Communications Act prohibiting obscene or harassing telephone calls and conversation to apply to obscene or harassing use of a telecommunications facility and communication. Increases the penalties for violations. Prohibits using a telecommunications device to: (1) make or initiate any communication which is obscene, lewd, lascivious, filthy, or indecent with intent to annoy, abuse, threaten, or harass another person; (2) make or make available obscene communication; (3) make or make available an indecent communication to minors.

Provides that no person shall be held to have violated such prohibition solely for providing access or connection to a telecommunications facility, system, or network not under such person's control. Provides employers with a defense for actions by employees unless the employee's conduct is within the scope of employment and is known, authorized, or ratified by the employer. Establishes as a defense to prohibited communications that a person has taken, in good faith, reasonable, effective, and appropriate actions to prevent access by minors or has restricted access by requiring use of a verified credit card, debit account, or adult access code or personal identification number.

(Sec. 504) Requires cable operators, upon request, to fully scramble or block programming to which the subscriber does not subscribe.

(Sec. 505) Requires a multichannel videoprogramming distributor: (1) to fully scramble or block sexually explicit adult programming so that nonsubscribers do not receive it; and (2) until it complies with such requirement, to not provide such programming during the hours of the day when a significant number of children are likely to view it.

(Sec. 506) Allows cable operators to refuse to transmit any public access or leased access program which contains obscenity, indecency, or nudity.

(Sec. 507) Amends the Federal criminal code to specify that current obscenity statutes prohibit using a computer to import or transport in interstate or foreign commerce, for sale or distribution, obscene material, including material designed, adapted, or intended for producing abortion or for any indecent or immoral use.

(Sec. 508) Prohibits using any facility or means of interstate or foreign commerce to persuade, induce, entice, or coerce a minor to engage in prostitution or any sexual act for which any person may be criminally prosecuted.

(Sec. 509) Provides that no provider or user of an interactive computer service shall be held liable for any voluntary action taken to restrict access to, or to enable information content providers to restrict access to, material that the user or provider considers to be objectionable, whether or not such material is constitutionally protected.

**Subtitle B: Violence** - Directs the FCC, if it determines that video programming distributors have not, within one year, voluntarily established rules for rating programming that contains sexual, violent, or other indecent material about which parents should be informed before it is displayed to children and voluntarily agreed to broadcast signals that contain such ratings, to: (1) establish an advisory committee to recommend guidelines and procedures for rating such programming; (2) prescribe such guidelines and procedures; and (3) prescribe rules requiring programming distributors to transmit such rating to permit parents to block inappropriate programming. Directs the FCC, not less than two years after enactment of this Act, to require apparatus designed to receive TV signals that are shipped in interstate commerce or manufactured in the United States and that have a picture screen of 13 inches or greater (measured diagonally) to be equipped with a feature designed to enable viewers to block display of all programs with a common rating. Authorizes the FCC to allow apparatus manufacturers to comply with such requirement using alternative technology that meets certain standards of cost, effectiveness, and ease of use.

(Sec. 552) Encourages broadcast television, cable, satellite, syndication, and other video programming distributors to establish a technology fund to encourage electronics equipment manufacturers to facilitate the development of technology which would empower parents to block programming deemed inappropriate for children and to encourage availability of such technology to low income parents.

**Subtitle C: Judicial Review** - Provides for the expedited review of any civil action challenging the constitutionality of this title by a district court of three judges and by direct appeal to the Supreme Court.

**Title VI: Effect on Other Laws** - Provides that any conduct or activity that was, before the enactment of this Act, subject to any restriction or obligation imposed by the AT&T Consent Decree, the GTE Consent Decree, or the McCaw Consent Decree shall, after enactment of this Act, be subject to the restrictions and obligations imposed by the Communications Act as amended by this Act.

Provides that nothing in this Act shall be construed to modify, impair, or supersede: (1) the applicability of the antitrust laws; or (2) any State or local law pertaining to taxation, except with respect to fees for open video systems. Repeals a provision of the Communications Act permitting the FCC to render a proposed merger of competing local telephone companies exempt from any Act of Congress making the transaction unlawful.

(Sec. 602) Exempts any provider of direct-to-home satellite service from the collection or remittance of any local tax or fee on such service.

**Title VII: Miscellaneous Provisions** - Prohibits a party calling a toll-free telephone number from being assessed a charge by virtue of being asked to connect or otherwise transfer to a pay-per-call service. Prohibits the calling party from being charged for information conveyed during a call to a toll-free (800) number unless the calling party: (1) has a written agreement specifying the material terms and conditions under which the information is offered and which includes the rate at which charges are assessed and certain identifying information; or (2) is charged for the information only after the information provider includes an introductory disclosure message regarding the charge, rate, and means of billing for the call and the calling party is charged by means of a credit, prepaid, debit, charge, or calling card. Outlines provisions concerning: (1) billing arrangements; (2) required use of a personal identification number by the subscriber to obtain access to the information provided; (3) exceptions to the written agreement requirement; and (4) termination of service if a telecommunications carrier reasonably determines that a complaint against an information provider is valid.

Amends the Telephone Disclosure and Dispute Resolution Act to authorize the FCC to extend the definition of "pay-per-call services" under such Act to other services that the FCC determines are susceptible to the unfair and deceptive billing practices addressed by such Act.

(Sec. 702) Makes it the duty of every telecommunications carrier to protect the confidentiality of proprietary information of other carriers, equipment manufacturers, and customers. Permits a carrier that receives proprietary information from another carrier or a customer for purposes of providing any telecommunications service to use such information only for such purpose. Directs a carrier to disclose customer proprietary network information upon the customer's request. Permits a carrier to use, disclose, or permit access to aggregate customer information for other purposes. Requires a carrier that provides telephone exchange service to provide subscriber list information to any person upon request for the purpose of publishing directories in any format.

(Sec. 703) Directs the FCC to prescribe regulations to: (1) govern the charges for pole attachments used by telecommunications carriers to provide telecommunications services, when the parties fail to resolve a dispute over such charges; and (2) ensure that utilities charge just, reasonable, and nondiscriminatory rates for the pole attachments. Requires a utility to apportion the cost of providing space on a pole based on the number of attaching entities. Requires any increase in the rates for pole attachments to be phased in over a five-year period. Requires a utility to provide a cable television system or any telecommunications carrier with nondiscriminatory access to any pole or right-of-way owned by it. Allows a utility company providing electric service to deny a cable television system or telecommunications carrier access to such poles when there is insufficient capacity and for reasons of safety, reliability, and generally applicable engineering purposes. Requires utilities that engage in the provision of telecommunications services or cable services to impute to its costs of providing such service an equal amount to the pole attachment rate for which such company would be liable. Requires utilities to provide written notification to attaching entities of any plans to modify or alter its poles or other rights-of-way. Requires any attaching entity that modifies its own attachments to bear a proportionate share of the costs of such modifications. Prevents a utility from imposing the cost of rearrangements to other attaching entities if done solely for the benefit of the utility.

(Sec. 704) Preserves State or local authority over decisions regarding the placement, construction, and modification of personal wireless service facilities, but prohibits State or local regulation thereof from: (1) unreasonably discriminating among providers of functionally equivalent services; or (2) prohibiting the provision of personal wireless services. Requires State or local action on requests regarding such facilities to occur within a reasonable time, with denials of requests to be in writing and supported by substantial evidence in a written record. Prohibits State or local regulation of such facilities on the basis of environmental effects of radio frequency emissions to the extent such facilities comply with FCC regulations. Provides for expedited judicial review and petitions of the FCC for relief from adverse State or local actions.

Directs the President to prescribe procedures by which Federal agencies may make available property and rights-of-way for the placement of new telecommunications services that are dependent upon the utilization of Federal spectrum rights.

(Sec. 705) Prohibits a commercial mobile services provider from being required to provide equal access to common carriers for the provision of telephone toll services. Directs the FCC, if it determines that subscribers to such services are denied access to the provider of telephone toll services of the subscribers' choice, contrary to the public interest, to prescribe regulations to afford subscribers unblocked access to the provider of telephone toll services of the subscribers' choice through the use of a carrier identification code assigned to such provider or other mechanism. Provides that such regulations shall not apply to mobile satellite services unless the FCC finds it to be in the public interest.

(Sec. 706) Requires the FCC and each State telecommunications commission to encourage the deployment of advanced telecommunications capability to all Americans by utilizing price cap regulation, regulatory forbearance, measures that promote competition, or other regulating methods that remove barriers to infrastructure investment. Requires the FCC to regularly initiate a notice of inquiry concerning such availability and, if it determines it to be necessary, to take action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.

(Sec. 707) Establishes the Telecommunications Development Fund as a corporate body in the District of Columbia to promote access to capital for small businesses in order to enhance competition in the telecommunications industry, to stimulate new technology development, to promote employment and training, and to support universal service. Directs the Fund to: (1) make loans, investments, or other extensions of credit and provide financial advice to eligible small businesses; and (2) prepare research, studies, or financial analyses.

(Sec. 708) Recognizes the National Education Technology Funding Corporation as a nonprofit corporation independent of the Federal Government and operating under the laws of the District of Columbia. Authorizes the Corporation to receive discretionary grants, contracts, gifts, contributions, or technical assistance from any Federal department or agency.

Requires audits of the Corporation by independent certified public accountants. Provides reporting and recordkeeping requirements. Requires the accessibility of Corporation books for audit and examination. Directs the Corporation to report annually to the President and the Congress on operations and activities of the previous fiscal year. Requires Corporation members to be available to testify before the Congress concerning such operations and activities.

(Sec. 709) Directs the Assistant Secretary of Commerce for Communications and Information to report annually to specified congressional committees concerning the activities of the Joint Working Group on Telemedicine, together with any findings in the studies and demonstrations on telemedicine funded by the Public Health Service or other Federal agencies. Specifies that such reports shall examine questions related to patient safety, the efficacy and quality of the services provided, and other legal, medical, and economic issues related to the utilization of advanced telecommunications services for medical purposes.

(Sec. 710) Authorizes appropriations.

# **CORRESPONDENCE**

**From:** [Rick Benedict](#)  
**To:** [Jeff Colantino](#)  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)  
**Date:** Thursday, April 27, 2023 4:01:00 PM  
**Attachments:** [Verizon-Shampine RFAI 4-27-23.pdf](#)

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Good afternoon Jeff,

I've reviewed the updates to the application. Please see the attached letter addressing one final item. I could not locate this information in the submitted materials. We're almost there.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

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**From:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Sent:** Wednesday, April 19, 2023 9:28 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Good morning Rick, I hope your week is going well. Please see attached items to address the issues noted in your letter, let us know if you have any questions or need any additional information.

Thanks for your help, and have a great day!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Sent:** Monday, April 3, 2023 12:33 PM  
**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Good Morning Jeff,

Please find attached a request for additional information. If you have any questions concerning this request, please let me know and we can schedule a time to discuss them.



Here is a link to MSB code which will specifically address the items requested in the attached letter:  
[Chapter 17.67 TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES \(codepublishing.com\)](#)

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

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**From:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Sent:** Tuesday, March 28, 2023 9:09 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]  
Good morning Rick, I hope your week is going well!

I've received the signed Tall Structure application as of this morning, sending this along with the drawings and FAA "No notice required" determination. Please let me know if we need anything else in order to start the Admin Permit process.

Thanks for all your help, it's appreciated!

**Jeff Colantino | Lynx Consulting, Inc.**  
17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°  
Cell (360) 450-8697 | Fax (425) 354-3277  
[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Jeff Colantino  
**Sent:** Thursday, March 16, 2023 9:27 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

No worries Rick, thank you for the reply; I'll email the app & drawings to Mr. Phillips and cc you.

Have a great day!

**Jeff Colantino | Lynx Consulting, Inc.**  
17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°  
Cell (360) 450-8697 | Fax (425) 354-3277  
[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Sent:** Wednesday, March 15, 2023 5:17 PM  
**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Good afternoon Jeff,

Sorry for the delay in providing a response to your questions.

1. The property owner is required to sign the application. Please reach out to the Borough's Community Development Director, Eric Phillips, for further guidance. He can be reached at (907)861-8634, or by email at [eric.phillips@matsugov.us](mailto:eric.phillips@matsugov.us).
2. Setback requirements as defined in borough code MSB17.67.090 must be adhered to. Reductions of setbacks may be approved at the discretion of the planning commission or planning director depending on the type of permit being requested. Please refer to code in this section to determine whether requirements have been met, or if plans can be modified when requesting a reduction of setbacks in the application. Please also take into account MSB17.67.080 when considering this option.
3. It is difficult to answer your final question, as planning staff do not typically begin the comprehensive review process until a complete application has been made. Please refer to MSB17.67.070 when putting together your application. Staff typically advise applicants to follow the application, answer all the questions thoroughly, and try to provide all the required supporting documents asked of them in the application. An applicant has a higher chance of approval if they adhere to this advice, and it may reduce the period in which a permit gets issued.

I hope that answers your questions.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

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**From:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Sent:** Wednesday, March 15, 2023 9:23 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** FW: Verizon Wireless proposal for fire station cell tower (Shampine)

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Good morning Rick, I hope your week is going well. Just wanted to follow up on the questions below, let me know if you need anything else from me at this time.

Thank you!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Jeff Colantino

**Sent:** Friday, March 10, 2023 11:45 AM

**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>

**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Excellent, thank you Rick! Just a few questions/comments here...

- Since the Borough is the property owner, may I submit the application w/o the owner's signature?
- In previous discussions with the Borough (prior to my involvement), there was talk of allowing us to reduce the tower setback along the north property line since the adjacent parcel is empty.
- Do the attached plans provide enough detail for the Admin permit?

Thanks again!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>

**Sent:** Friday, March 10, 2023 11:14 AM

**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>

**Subject:** Verizon Wireless proposal for fire station cell tower (Shampine)

Mr. Colantino,

MSB 17.67 regulates tall structures in the Borough. Here's a link to that section of code: [Chapter 17.67 TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES \(codepublishing.com\)](#). Permits are required prior to construction of all new tall structures, with certain exceptions listed in code.

Tall structures more than 85 feet, but less than or equal to 125 feet are permitted through an administrative permit. When making the application, please review the code to ensure all requirements for the tall structure are factored into the location of the proposed tower. I've attached a blank application form to this email.

Please let me know if you have questions.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

**From:** [Jeff Colantino](#)  
**To:** [Rick Benedict](#)  
**Subject:** Automatic reply: Verizon Wireless proposal for fire station cell tower (Shampine)  
**Date:** Monday, April 3, 2023 11:33:37 AM

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**[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]**

Hello, and thank you for your email. I will be out of the office until 4/11/23, and will reply to your email after I return. If you need an immediate response, please email Jennifer Taylor at [jtaylor@lynxconsulting.org](mailto:jtaylor@lynxconsulting.org).

Thank you, and have a great day!

**From:** [Rick Benedict](#)  
**To:** [jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)  
**Subject:** Lynx Consulting Permit Application (Verizon Wireless-Shampine Site) - Public Hearing & Public Notice  
**Date:** Monday, August 5, 2024 9:48:00 AM

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Good morning,

The administrative permit application for Lynx Consulting (Verizon Wireless-Shampine Site) has been distributed for comments. In accordance with the requirements of MSB 17.03 – Public Notification, the applicant shall pay the cost of mailings or advertisements required by the ordinance specific to that action. The Matanuska-Susitna Borough must receive payment **before** the public hearing. Please be advised of the following charges:

Advertising:	\$101.25
Mailing:	<u>12.50</u>
TOTAL DUE:	<b>\$113.75</b>

The advertisement was published in the July 24, 2024, edition of the Frontiersman. Notifications were also mailed to all properties within ½ miles of the subject property and to the Meadow Lakes Community Council.

The public hearing with the Planning Director is scheduled for **August 22, 2024, at 9:00 a.m.**, and will be held in the public meeting hall on the first floor of the Mat-Su Borough building. Attending or being represented at that meeting would be in your best interest.

Please contact me should you have any questions or require additional information.

Respectfully,

Rick Benedict – Current Planner  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

**From:** [Jeff Colantino](#)  
**To:** [Rick Benedict](#)  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)  
**Date:** Wednesday, June 12, 2024 8:58:23 AM  
**Attachments:** [Tall Structure App - signed by Borough.pdf](#)  
[Shampine Narrative.doc](#)  
[Shampine site photos.docx](#)  
[Order Confirmation.msg](#)  
[FAA Notice Criteria Tool - no notice required - Shampine.pdf](#)  
[Verizon-Shampine RFAI 4-27-23.pdf](#)  
[AK2 Shampine NSB SS FCD 20240606.pdf](#)  
[AK0908-Tower Design.pdf](#)  
[AK0908-Structural Package.pdf](#)  
[AK0908-Pad Designs.pdf](#)  
[AK0908-Foundation Design.pdf](#)

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**[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]**

Good morning Rick; it's been quite a while, I hope this email finds you well!

We've received the engineering plans and other documents for the Verizon Wireless proposal here (Tall Structure app for Administrative Permit). I'm attaching the new docs here, as well as the previously-submitted items for your convenience. Let me know if you need anything else for your review, and thank you for all your help and patience.

Thanks!!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

**Cell (360) 450-8697 | Fax (425) 354-3277**

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Jeff Colantino

**Sent:** Tuesday, May 30, 2023 2:35 PM

**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>

**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Great, thanks Rick!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

**Cell (360) 450-8697 | Fax (425) 354-3277**

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>

**Sent:** Tuesday, May 30, 2023 12:49 PM

**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>

**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Good morning Jeff,

The type of application submitted for Verizon Wireless is a request for an administrative permit for a tall structure. Code requires a complete application prior to the director setting a public hearing date and/or considering approval. The only review of the application has been to determine whether the required documentation has been submitted.

At the current moment, the application is considered incomplete until receipt of detailed engineering plans for the construction of the base of the structure as previously discussed. The Planning Director will schedule a public hearing and notify the public once the application is determined complete.

Any fire marshal reviews or approvals will need to be taken up with the designated fire official for that district.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

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**From:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Sent:** Tuesday, May 30, 2023 9:35 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Good morning Rick, I hope you had a good holiday weekend.

We're still pending the tower and foundation structural calcs, but I wanted to ask a couple of questions. Is there anything showing that we've been reviewed/cleared by the Planning Department at this point? How about any sort of administrative reviews, or for our proposed batteries, fire department review, etc.?

Thanks!!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Sent:** Thursday, April 27, 2023 5:01 PM  
**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>



**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Good afternoon Jeff,

I've reviewed the updates to the application. Please see the attached letter addressing one final item. I could not locate this information in the submitted materials. We're almost there.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

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**From:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Sent:** Wednesday, April 19, 2023 9:28 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Good morning Rick, I hope your week is going well. Please see attached items to address the issues noted in your letter, let us know if you have any questions or need any additional information.

Thanks for your help, and have a great day!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**Sent:** Monday, April 3, 2023 12:33 PM  
**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

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[Chapter 17.67 TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES \(codepublishing.com\)](#)

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

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**From:** Jeff Colantino

**Sent:** Friday, March 10, 2023 11:45 AM

**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>

**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

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**Sent:** Friday, March 10, 2023 11:14 AM

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**Subject:** Verizon Wireless proposal for fire station cell tower (Shampine)

Mr. Colantino,

MSB 17.67 regulates tall structures in the Borough. Here's a link to that section of code: [Chapter 17.67 TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES \(codepublishing.com\)](https://www.codepublishing.com/wa/wa03011767.htm). Permits are required prior to construction of all new tall structures, with certain exceptions listed in code.

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Development Services Division  
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(907)861-8527 direct

**From:** [Rick Benedict](#)  
**To:** [Jeff Colantino](#)  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)  
**Date:** Monday, April 3, 2023 11:32:00 AM  
**Attachments:** [Verizon-Shampine RFAI 4-3-23.pdf](#)

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Development Services Division  
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(907)861-8527 direct

**From:** [Jeff Colantino](#)  
**To:** [Rick Benedict](#)  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)  
**Date:** Tuesday, May 30, 2023 1:34:48 PM

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Great, thanks Rick!

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**From:** Rick Benedict <Rick.Benedict@matsugov.us>  
**Sent:** Tuesday, May 30, 2023 12:49 PM  
**To:** Jeff Colantino <jcolantino@lynxconsulting.org>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Good morning Jeff,

The type of application submitted for Verizon Wireless is a request for an administrative permit for a tall structure. Code requires a complete application prior to the director setting a public hearing date and/or considering approval. The only review of the application has been to determine whether the required documentation has been submitted.

At the current moment, the application is considered incomplete until receipt of detailed engineering plans for the construction of the base of the structure as previously discussed. The Planning Director will schedule a public hearing and notify the public once the application is determined complete.

Any fire marshal reviews or approvals will need to be taken up with the designated fire official for that district.

Respectfully,

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Development Services Division  
Matanuska-Susitna Borough  
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**From:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Sent:** Tuesday, May 30, 2023 9:35 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

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Good morning Rick, I hope you had a good holiday weekend.

We're still pending the tower and foundation structural calcs, but I wanted to ask a couple of questions. Is there anything showing that we've been reviewed/cleared by the Planning Department at this point? How about any sort of administrative reviews, or for our proposed batteries, fire department review, etc.?

Thanks!!

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**Sent:** Thursday, April 27, 2023 5:01 PM  
**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Good afternoon Jeff,

I've reviewed the updates to the application. Please see the attached letter addressing one final item. I could not locate this information in the submitted materials. We're almost there.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
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[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Sent:** Friday, March 10, 2023 11:14 AM  
**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>

**Subject:** Verizon Wireless proposal for fire station cell tower (Shampine)

Mr. Colantino,

MSB 17.67 regulates tall structures in the Borough. Here's a link to that section of code: [Chapter 17.67 TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES \(codepublishing.com\)](#). Permits are required prior to construction of all new tall structures, with certain exceptions listed in code.

Tall structures more than 85 feet, but less than or equal to 125 feet are permitted through an administrative permit. When making the application, please review the code to ensure all requirements for the tall structure are factored into the location of the proposed tower. I've attached a blank application form to this email.

Please let me know if you have questions.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

**From:** [Jeff Colantino](#)  
**To:** [Rick Benedict](#)  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)  
**Date:** Friday, April 28, 2023 6:52:37 AM  
**Attachments:** [Shampine Narrative.doc](#)

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**[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]**

Egads; sorry about that! I've added a quick blub to page 2, describing the "galvanized steel finish" of the monopole. Let me know if you need anything else, and Happy Friday to you!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

**Cell (360) 450-8697 | Fax (425) 354-3277**

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Sent:** Thursday, April 27, 2023 5:01 PM  
**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Good afternoon Jeff,

I've reviewed the updates to the application. Please see the attached letter addressing one final item. I could not locate this information in the submitted materials. We're almost there.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

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**From:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Sent:** Wednesday, April 19, 2023 9:28 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

**[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]**

Good morning Rick, I hope your week is going well. Please see attached items to address the issues noted in your letter, let us know if you have any questions or need any additional information.

Thanks for your help, and have a great day!



**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>

**Sent:** Monday, April 3, 2023 12:33 PM

**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>

**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Good Morning Jeff,

Please find attached a request for additional information. If you have any questions concerning this request, please let me know and we can schedule a time to discuss them.

Here is a link to MSB code which will specifically address the items requested in the attached letter:

[Chapter 17.67 TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES \(codepublishing.com\)](#)

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

---

**From:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>

**Sent:** Tuesday, March 28, 2023 9:09 AM

**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>

**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Good morning Rick, I hope your week is going well!

I've received the signed Tall Structure application as of this morning, sending this along with the drawings and FAA "No notice required" determination. Please let me know if we need anything else in order to start the Admin Permit process.

Thanks for all your help, it's appreciated!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Jeff Colantino  
**Sent:** Thursday, March 16, 2023 9:27 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

No worries Rick, thank you for the reply; I'll email the app & drawings to Mr. Phillips and cc you.

Have a great day!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Sent:** Wednesday, March 15, 2023 5:17 PM  
**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Good afternoon Jeff,

Sorry for the delay in providing a response to your questions.

1. The property owner is required to sign the application. Please reach out to the Borough's Community Development Director, Eric Phillips, for further guidance. He can be reached at (907)861-8634, or by email at [eric.phillips@matsugov.us](mailto:eric.phillips@matsugov.us).
2. Setback requirements as defined in borough code MSB17.67.090 must be adhered to. Reductions of setbacks may be approved at the discretion of the planning commission or planning director depending on the type of permit being requested. Please refer to code in this section to determine whether requirements have been met, or if plans can be modified when requesting a reduction of setbacks in the application. Please also take into account MSB17.67.080 when considering this option.
3. It is difficult to answer your final question, as planning staff do not typically begin the comprehensive review process until a complete application has been made. Please refer to MSB17.67.070 when putting together your application. Staff typically advise applicants to follow the application, answer all the questions thoroughly, and try to provide all the required supporting documents asked of them in the application. An applicant has a higher chance of approval if they adhere to this advice, and it may reduce the period in which a permit gets issued.

I hope that answers your questions.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

---

**From:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>  
**Sent:** Wednesday, March 15, 2023 9:23 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** FW: Verizon Wireless proposal for fire station cell tower (Shampine)

[**EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.**]

Good morning Rick, I hope your week is going well. Just wanted to follow up on the questions below, let me know if you need anything else from me at this time.

Thank you!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Jeff Colantino  
**Sent:** Friday, March 10, 2023 11:45 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** RE: Verizon Wireless proposal for fire station cell tower (Shampine)

Excellent, thank you Rick! Just a few questions/comments here...

- Since the Borough is the property owner, may I submit the application w/o the owner's signature?
- In previous discussions with the Borough (prior to my involvement), there was talk of allowing us to reduce the tower setback along the north property line since the adjacent parcel is empty.
- Do the attached plans provide enough detail for the Admin permit?

Thanks again!

**Jeff Colantino | Lynx Consulting, Inc.**

17311 135th Ave NE, Suite A-100, Woodinville, WA 98072 | 47.753042°, -122.159972°

Cell (360) 450-8697 | Fax (425) 354-3277

[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org) | [www.lynxconsulting.org](http://www.lynxconsulting.org)

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**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Sent:** Friday, March 10, 2023 11:14 AM  
**To:** Jeff Colantino <[jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)>

**Subject:** Verizon Wireless proposal for fire station cell tower (Shampine)

Mr. Colantino,

MSB 17.67 regulates tall structures in the Borough. Here's a link to that section of code: [Chapter 17.67 TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES \(codepublishing.com\)](#). Permits are required prior to construction of all new tall structures, with certain exceptions listed in code.

Tall structures more than 85 feet, but less than or equal to 125 feet are permitted through an administrative permit. When making the application, please review the code to ensure all requirements for the tall structure are factored into the location of the proposed tower. I've attached a blank application form to this email.

Please let me know if you have questions.

Respectfully,

Rick Benedict – Planner II  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct



# MATANUSKA-SUSITNA BOROUGH

## Planning and Land Use Department

### Development Services Division

350 East Dahlia Avenue • Palmer, AK 99645

Phone (907) 861-7822

[www.matsugov.us](http://www.matsugov.us)

April 3, 2023

Lynx Consulting  
Attn: Jeff Colantino  
17311 135th Ave. NE, #A-100  
Woodinville, WA 98072

SUBJECT: Administrative Permit Application – Request for Required Information  
LOCATION: 5182 Pittman Road, Tax ID #55256000T00A

Dear Mr. Colantino,

Borough staff has reviewed the application material and site plan(s) submitted via email on March 28, 2023, requesting an Administrative Permit for a Tall Structure on the above referenced property. It has been determined that the following information needs to be provided and/or clarified in order to process this request:

1. The submitted application is not complete.
  - a. The applicant/agent must sign page 5 of the application.
  - b. Provide narrative containing detailed information to address all requirements and standards contained on pages 3 and 4 of the application, and how those requirements will be satisfied.
  - c. Provide narrative describing the proposed use of the tall structure.
  - d. Provide narrative to describe the color of the tower.
  - e. Provide detailed narrative to describe any proposed frequencies to be emitted by the tower, and whether a filing with the Federal Aviation Administration is required pertaining to CFR Title 14 Part 77.9.
2. It appears the project requires more than 220 volts for operation. Update the application to accommodate signage required by MSB 17.67.090(C)(1). Should the project require less than 220 volts for operation, provide detailed narrative to describe the operational voltage of the project.
3. 17.67.090(A)(2)(a) states *“The commission, or director if it is an administrative permit, may reduce the setback to a distance less than the height of the tower, if the applicant demonstrates there is no risk to public health, safety, or welfare of adjacent property owners.”* As identified

in the application material, it appears the property owner has sufficient land to meet the setback requirements.

- a. Provide narrative to describe why minimum setback requirements will not be met when measured from the tower base to the north lot line.
  - b. Provide rationale and justification that demonstrates there is no risk to public health, safety, or welfare of adjacent property owners by not meeting setback requirements on the north side of the proposed tower.
  - c. Provide narrative to describe whether breakpoint technology will be utilized. If not, explain why considering the proximity of the tower to existing buildings and also failure to meet setback requirements.
4. As per MSB 17.125.010 a “*certified site plan*”: *means a site plan that is prepared and sealed by an architect, professional engineer, or land surveyor, authorized to engage in that profession by the state of Alaska. The certified site plan shall be at a scale of one-inch equals 50 feet (or less) showing dimensions and locations of all existing and proposed development on the site in relationship to all property lines.*”
- a. Identify distances from the base of the tall structure to all property lines.
  - b. Identify distances from the base of the tall structure to all existing or proposed structures.
  - c. Adequate vehicle parking shall be provided on the subject property, outside of public use easements and rights-of-way to enable emergency vehicle access. Indicate on the site plan the location and dimensions of the proposed parking area (no more than two spaces are required).
5. Provide photos directed towards the location of the proposed tall structure building site taken from all public roads adjacent to the subject property. In addition, provide photos taken in all directions (north, south, east, and west) from the approximate location of the proposed tower site.

Once an application has been determined complete, staff will begin the public notice process. Should you have any questions or require additional information, please feel free to contact me by phone or email. Thank you for your time and consideration on this matter.

Respectfully,

*Rick Benedict*

Rick Benedict  
Planner II  
Matanuska-Susitna Borough



# MATANUSKA-SUSITNA BOROUGH

## Planning and Land Use Department

### Development Services Division

350 East Dahlia Avenue • Palmer, AK 99645

Phone (907) 861-7822

www.matsugov.us

April 27, 2023

Lynx Consulting  
Attn: Jeff Colantino  
17311 135th Ave. NE, #A-100  
Woodinville, WA 98072

SUBJECT: Administrative Permit Application – Request for Required Information  
LOCATION: 5182 Pittman Road, Tax ID #55256000T00A

Dear Mr. Colantino,

Borough staff has reviewed the updated application material and site plan(s) submitted via email on April 19, 2023, requesting an Administrative Permit for a Tall Structure. The following information must be provided in order to process this request:

1. The submitted application is not complete.
  - a. ~~The applicant/agent must sign page 5 of the application.~~
  - b. ~~Provide narrative containing detailed information to address all requirements and standards contained on pages 3 and 4 of the application, and how those requirements will be satisfied.~~
  - c. ~~Provide narrative describing the proposed use of the tall structure.~~
  - d. **Provide narrative to describe the color of the tower.**
  - e. ~~Provide detailed narrative to describe any proposed frequencies to be emitted by the tower, and whether a filing with the Federal Aviation Administration is required pertaining to CFR Title 14 Part 77.9.~~
2. ~~It appears the project requires more than 220 volts for operation. Update the application to accommodate signage required by MSB 17.67.090(C)(1). Should the project require less than 220 volts for operation, provide detailed narrative to describe the operational voltage of the project.~~
3. 17.67.090(A)(2)(a) states “*The commission, or director if it is an administrative permit, may reduce the setback to a distance less than the height of the tower, if the applicant demonstrates there is no risk to public health, safety, or welfare of adjacent property owners.*” As identified in the application material, it appears the property owner has sufficient land to meet the setback requirements.

- ~~a. Provide narrative to describe why minimum setback requirements will not be met when measured from the tower base to the north lot line.~~
  - ~~b. Provide rationale and justification that demonstrates there is no risk to public health, safety, or welfare of adjacent property owners by not meeting setback requirements on the north side of the proposed tower.~~
  - ~~c. Provide narrative to describe whether breakpoint technology will be utilized. If not, explain why considering the proximity of the tower to existing buildings and also failure to meet setback requirements.~~
4. As per MSB 17.125.010 a “certified site plan”: means a site plan that is prepared and sealed by an architect, professional engineer, or land surveyor, authorized to engage in that profession by the state of Alaska. The certified site plan shall be at a scale of one-inch equals 50 feet (or less) showing dimensions and locations of all existing and proposed development on the site in relationship to all property lines.”
- ~~a. Identify distances from the base of the tall structure to all property lines.~~
  - ~~b. Identify distances from the base of the tall structure to all existing or proposed structures.~~
  - ~~c. Adequate vehicle parking shall be provided on the subject property, outside of public use easements and rights of way to enable emergency vehicle access. Indicate on the site plan the location and dimensions of the proposed parking area (no more than two spaces are required).~~
5. ~~Provide photos directed towards the location of the proposed tall structure building site taken from all public roads adjacent to the subject property. In addition, provide photos taken in all directions (north, south, east, and west) from the approximate location of the proposed tower site.~~

Once an application has been determined complete, staff will begin the public notice process. Should you have any questions or require additional information, please feel free to contact me by phone or email. Thank you for your time and consideration on this matter.

Respectfully,

*Rick Benedict*

Rick Benedict  
Planner II  
Matanuska-Susitna Borough



# COMMENTS

**From:** [Camden Yehle](#)  
**To:** [Alex Strawn](#)  
**Cc:** [Rick Benedict](#); [Patricia Fisher](#); [Stephen Edwards](#); [Tim Swezey](#); [Sherri Rusher](#); [jcolantino@lynxconsulting.org](mailto:jcolantino@lynxconsulting.org)  
**Subject:** Re: Request for Review and Comments: MSB 17.67 – Tall Structures  
**Date:** Thursday, August 15, 2024 1:55:06 PM  
**Attachments:** [20240815 MLCC letter Planning Verizon Tower.pdf](#)

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**[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]**

Hi Alex - We had our Meadow Lakes Community Council meeting last night and would like to submit the attached letter of support for this CUP application.

Camden Yehle  
Meadow Lakes Community Council President  
907-346-0506  
[camdenyehle@gmail.com](mailto:camdenyehle@gmail.com)

On Mon, Aug 5, 2024 at 8:47 AM Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)> wrote:

APPLICANT: Jeff Colantino, for Lynx Consulting

LOCATION: 5182 N. Pittman Road, Tax ID #5256000T00A

An application for an administrative permit under MSB 17.67 – Tall Structures. The Planning Director will conduct a public hearing on this request on August 22, 2024.

Application materials may be viewed online at [www.matsugov.us](http://www.matsugov.us) by clicking on ‘All Public Notices & Announcements.’ A direct link to the application material is here:

[Matanuska-Susitna Borough - Administrative Permit in accordance with MSB 17.67 – Tall Structures \(matsugov.us\)](#)

Comments are due on or before **August 14, 2024**, and will be included in the Planning Director’s packet for review and information. Please be advised that comments received after that date will not be included in the staff report to the Planning Director. Thank you for your review.

Respectfully,

Rick Benedict – Current Planner

Development Services Division

Matanuska-Susitna Borough

(907)861-8527 direct



1210 N Kim Drive, Suite B, Meadow Lakes, Alaska 99623  
Phone: 907-232-2845 - Email: [info@mlccak.org](mailto:info@mlccak.org) - Website: [www.mlccak.org](http://www.mlccak.org)

Matanuska-Susitna Borough  
Alex Strawn Planning and Land Use Director  
To: [alex.strawn@matsugov.us](mailto:alex.strawn@matsugov.us)  
Cc: [rick.benedict@matsugov.us](mailto:rick.benedict@matsugov.us)

August 15, 2024

RE: Conditional Use Permit application for Verizon Wireless tall structure

The Meadow Lakes Community Council membership supports approval of this conditional use permit as a net benefit to the community.

The Council membership voted to submit these comments at their August 14, 2024, meeting.

Sincerely,

A handwritten signature in black ink that reads "Camden Yehle".

Camden Yehle  
President, Meadow Lakes Community Council

# **Agency Comments**

**From:** [Lisa Gray](#)  
**To:** [Rick Benedict](#)  
**Subject:** FW: Request for Review and Comments: MSB 17.67 – Tall Structures  
**Date:** Thursday, August 8, 2024 11:00:58 AM  
**Attachments:** [Tall Structure Permit Comments.pdf](#)

---

Hi Rick,

Land Management has comments for the Tall Structure Permit request, see attached.

If you have any questions let me know.

Thanks,

Lisa Gray  
Land Management Agent  
Matanuska-Susitna Borough  
Land and Resource Management Division  
907-861-7848

---

**From:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Sent:** Monday, August 5, 2024 8:47 AM  
**To:** Rick Benedict <[Rick.Benedict@matsugov.us](mailto:Rick.Benedict@matsugov.us)>  
**Subject:** Request for Review and Comments: MSB 17.67 – Tall Structures

APPLICANT: Jeff Colantino, for Lynx Consulting

LOCATION: 5182 N. Pittman Road, Tax ID #5256000T00A

An application for an administrative permit under MSB 17.67 – Tall Structures. The Planning Director will conduct a public hearing on this request on August 22, 2024.

Application materials may be viewed online at [www.matsugov.us](http://www.matsugov.us) by clicking on 'All Public Notices & Announcements.' A direct link to the application material is here:

[Matanuska-Susitna Borough - Administrative Permit in accordance with MSB 17.67 – Tall Structures \(matsugov.us\)](#)

Comments are due on or before **August 14, 2024**, and will be included in the Planning Director's packet for review and information. Please be advised that comments received after that date will not be included in the staff report to the Planning Director. Thank you for your review.

Respectfully,

Rick Benedict – Current Planner  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct



# MATANUSKA-SUSITNA BOROUGH

## Community Development

### Land & Resource Management

350 East Dahlia Avenue • Palmer, AK 99645

Phone (907) 861-7869 • Fax (907) 861-8635

#### MEMORANDUM

DATE: August 8, 2024  
TO: Alex Strawn, Planning Director  
THROUGH: Rick Benedict, Current Planner  
FROM: Land & Resource Management  
SUBJECT: Tall Structure Permit Request Comments

---

Applicant / Petitioner: Jeff Colantino, for Lynx Consulting  
TRS: 18N01W19  
Tax ID : 5256000T00A  
Subd: Safety Subdivision  
Tax Map : WA 05

#### Comments:

- This property is Borough-owned and is the location of Public Safety Building, Meadow Lakes #72.
- Land Management has no objection to the requested permit.
- Land lease must be finalized prior to the commencement of construction.



**From:** [Tawnya Hightower](#)  
**To:** [Rick Benedict](#)  
**Subject:** Station 72 Tower Agreement  
**Date:** Monday, May 1, 2023 5:19:45 PM  
**Attachments:** [image001.png](#)

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Good afternoon Rick,

Thank you for the call today regarding the tower lease agreement for West Lakes Fire Department Station 72. The tower location was chosen for the future expansion of Station 72. Although we do not have any concerns regarding the set back referenced in code, we do have concerns regarding the engineered technology and design of the tower because of its proximity to the fire station. For the safety of working fire personnel during training, drills, maintenance, and the course of response, we would like to be assured that the engineered design includes break away technology to reduce the possibility of the tower landing in the area of the station, tarmac and surrounding areas that personnel may be working in or around.

Please let me know if you have any questions or need anything further from me.

Respectfully,



**Tawnya Hightower**  
District 2 Fire Chief, West Lakes Fire Dept.

(907)861-8084 | (907)982-4948 | [tawnya.hightower@matsugov.us](mailto:tawnya.hightower@matsugov.us)  
10073 W. Parks Hwy Wasilla AK 99623



# Matanuska-Susitna Borough

## Development Services Division

### Request for Review

Contact:  Phone:

Due Date:

Project:

**Special Considerations**

Request for PD&E review of tower and compound design, mitigation of drainage, and site plan review according to the requirements of MSB 17.67.060(C)(2) and (3), MSB 17.67.070(A)(2) and (5), MSB 17.67.080(B)(4), and MSB 17.67.090(A)(2)(a).

---

Reviewed By:  Date:

**No Comment:**

**Comments:**

**From:** [Permit Center](#)  
**To:** [Rick Benedict](#)  
**Subject:** RE: Request for Review and Comments: MSB 17.67 – Tall Structures  
**Date:** Monday, August 5, 2024 9:10:01 AM

---

No comments from the Permit Center.

**Brandon Tucker**

Permit Technician

[Matanuska-Susitna Borough Permit Center](#)

350 E Dahlia Ave

Palmer AK 99645

P (907) 861-7871

F (907) 861-8158

---

**From:** Rick Benedict <Rick.Benedict@matsugov.us>  
**Sent:** Monday, August 5, 2024 8:47 AM  
**To:** Rick Benedict <Rick.Benedict@matsugov.us>  
**Subject:** Request for Review and Comments: MSB 17.67 – Tall Structures

APPLICANT: Jeff Colantino, for Lynx Consulting

LOCATION: 5182 N. Pittman Road, Tax ID #5256000T00A

An application for an administrative permit under MSB 17.67 – Tall Structures. The Planning Director will conduct a public hearing on this request on August 22, 2024.

Application materials may be viewed online at [www.matsugov.us](http://www.matsugov.us) by clicking on ‘All Public Notices & Announcements.’ A direct link to the application material is here:

[Matanuska-Susitna Borough - Administrative Permit in accordance with MSB 17.67 – Tall Structures \(matsugov.us\)](#)

Comments are due on or before **August 14, 2024**, and will be included in the Planning Director’s packet for review and information. Please be advised that comments received after that date will not be included in the staff report to the Planning Director. Thank you for your review.

Respectfully,

Rick Benedict – Current Planner  
Development Services Division  
Matanuska-Susitna Borough

(907)861-8527 direct

**From:** [Fred Wagner](#)  
**To:** [Rick Benedict](#)  
**Subject:** RE: Request for Review and Comments: MSB 17.67 – Tall Structures  
**Date:** Tuesday, August 6, 2024 1:35:51 PM

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Platting has no comment.

Sincerely,

Fred Wagner, PLS  
MSB Platting Officer  
(907)861-7870 Office  
(907)355-8507 Cell

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**From:** Rick Benedict <Rick.Benedict@matsugov.us>  
**Sent:** Monday, August 5, 2024 8:47 AM  
**To:** Rick Benedict <Rick.Benedict@matsugov.us>  
**Subject:** Request for Review and Comments: MSB 17.67 – Tall Structures

APPLICANT: Jeff Colantino, for Lynx Consulting

LOCATION: 5182 N. Pittman Road, Tax ID #5256000T00A

An application for an administrative permit under MSB 17.67 – Tall Structures. The Planning Director will conduct a public hearing on this request on August 22, 2024.

Application materials may be viewed online at [www.matsugov.us](http://www.matsugov.us) by clicking on ‘All Public Notices & Announcements.’ A direct link to the application material is here:

[Matanuska-Susitna Borough - Administrative Permit in accordance with MSB 17.67 – Tall Structures \(matsugov.us\)](#)

Comments are due on or before **August 14, 2024**, and will be included in the Planning Director’s packet for review and information. Please be advised that comments received after that date will not be included in the staff report to the Planning Director. Thank you for your review.

Respectfully,

Rick Benedict – Current Planner

Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

**From:** [James Christopher](#)  
**To:** [Rick Benedict](#)  
**Subject:** RE: Request for Review and Comments: MSB 17.67 – Tall Structures  
**Date:** Wednesday, August 7, 2024 11:20:15 AM  
**Attachments:** [MSB No Comments 17.67.pdf](#)

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**[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]**

Hello,

Please see ENSTARS attached letter with no comments.

Thank you,

Jimmy Christopher  
Right of Way Agent  
**ENSTAR Natural Gas Company, LLC**  
O: (907) 334-7944  
C: (614) 623-3466

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**From:** Rick Benedict <Rick.Benedict@matsugov.us>  
**Sent:** Monday, August 5, 2024 8:47 AM  
**To:** Rick Benedict <Rick.Benedict@matsugov.us>  
**Subject:** Request for Review and Comments: MSB 17.67 – Tall Structures

**CAUTION:** This email originated outside of ENSTAR/TSU. Do not click links or open attachments unless you recognize the sender and know the content is safe. If you are not sure, use the "Report Phish" button or contact [enstar.helpdesk@enstarnaturalgas.com](mailto:enstar.helpdesk@enstarnaturalgas.com)

APPLICANT: Jeff Colantino, for Lynx Consulting

LOCATION: 5182 N. Pittman Road, Tax ID #5256000T00A

An application for an administrative permit under MSB 17.67 – Tall Structures. The Planning Director will conduct a public hearing on this request on August 22, 2024.

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[Matanuska-Susitna Borough - Administrative Permit in accordance with MSB 17.67 – Tall Structures \(matsugov.us\)](#)

Comments are due on or before **August 14, 2024**, and will be included in the Planning

Director's packet for review and information. Please be advised that comments received after that date will not be included in the staff report to the Planning Director. Thank you for your review.

Respectfully,

Rick Benedict – Current Planner  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct





**ENSTAR Natural Gas Company, LLC**

Engineering Department, Right of Way Section  
401 E. International Airport Road  
P. O. Box 190288  
Anchorage, Alaska 99519-0288  
(907) 277-5551  
FAX (907) 334-7798

August 7, 2024

Matanuska-Susitna Borough, Platting Division  
350 East Dahlia Avenue  
Palmer, AK 99645-6488

To whom it may concern:

ENSTAR Natural Gas Company, LLC has reviewed the following Tall Structures permit application and has no comments or recommendations.

**(MSB Case # 17.67)**

If you have any questions, please feel free to contact me at 334-7944 or by email at [james.christopher@enstarnaturalgas.com](mailto:james.christopher@enstarnaturalgas.com).

Sincerely,

James Christopher  
Right of Way Agent  
ENSTAR Natural Gas Company, LLC

**From:** [Huling, Kristina N \(DOT\)](#)  
**To:** [Rick Benedict](#)  
**Cc:** [Baski, Sean M \(DOT\)](#); [Beckwith, Morris R \(DOT\)](#); [Bosin, Anna D \(DOT\)](#); [Brad Sworts](#); [Rearden, Devki \(DOT\)](#); [Walsh, Matthew H \(DOT\)](#)  
**Subject:** RE: Request for Review and Comments: MSB 17.67 – Tall Structures  
**Date:** Monday, August 12, 2024 2:13:40 PM  
**Attachments:** [8-12-24 DOT&PF Admin Permit 10029 Comment Letter - Lynx Consulting.pdf](#)

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**[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]**

Attached is the DOT&PF comment letter regarding this permit. We have no comments.

Thank you,

**Kristina Huling**

Mat-Su Area Planner | 907.269.0509  
Alaska DOT&PF, Anchorage; Planning

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**From:** Rick Benedict <Rick.Benedict@matsugov.us>  
**Sent:** Monday, August 5, 2024 8:47 AM  
**To:** Rick Benedict <Rick.Benedict@matsugov.us>  
**Subject:** Request for Review and Comments: MSB 17.67 – Tall Structures

Some people who received this message don't often get email from [rick.benedict@matsugov.us](mailto:rick.benedict@matsugov.us). [Learn why this is important](#)

**CAUTION:** This email originated from outside the State of Alaska mail system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

APPLICANT: Jeff Colantino, for Lynx Consulting

LOCATION: 5182 N. Pittman Road, Tax ID #5256000T00A

An application for an administrative permit under MSB 17.67 – Tall Structures. The Planning Director will conduct a public hearing on this request on August 22, 2024.

Application materials may be viewed online at [www.matsugov.us](http://www.matsugov.us) by clicking on 'All Public Notices & Announcements.' A direct link to the application material is here:

[Matanuska-Susitna Borough - Administrative Permit in accordance with MSB 17.67 – Tall Structures \(matsugov.us\)](#)

Comments are due on or before **August 14, 2024**, and will be included in the Planning Director's packet for review and information. Please be advised that comments received after that date will not be included in the staff report to the Planning Director. Thank you for your review.



August 12, 2024

Rick Benedict, Planner II  
Development Services Division  
Matanuska-Susitna Borough  
350 East Dahlia Avenue  
Palmer, AK 99645

[Sent Electronically]

Re: Administrative Permit Review

Dear Mr. Benedict:

The Alaska Department of Transportation and Public Facilities (DOT&PF) Central Region has reviewed the following conditional use permits and have no comments:

- **Administrative Permit 10029 – Permit for Tall Structures – MSB 17.67 – Lynx Consulting**

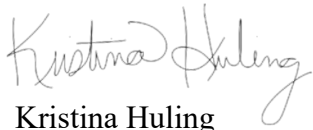
All properties accessing DOT&PF roads must apply to Right of Way for a driveway permit and/or approach road review, subject to provisions listed in 17 AAC 10.020. Any previously issued access permits become invalid once the property undergoes a platting action or change in use and must be reissued.

We recommend the petitioner verify all section line easements and DOT&PF road rights-of-way adjacent to their property. For assistance, the petitioner may contact the Engineering group within the Right of Way section in DOT&PF at (907) 269-0700. The petitioner is liable to remove any improvements within the easements and rights-of-way that impede the operation and maintenance of those facilities even if they are not shown on the plat, so it is in the petitioner's best interest to identify the exact locations and widths of any such easements or rights-of-way before they improve the property.

If any section line easements or road rights-of-way exist within the bounds of their plat, we recommend the petitioner dedicate them. If there is an existing right-of-way or easement, the petitioner is unable to develop that portion of the property yet continues to pay property taxes on it; dedicating will remove that cost to the petitioner.

If there are any questions regarding these comments please feel free to contact me at (907) 269-0509 or [kristina.huling@alaska.gov](mailto:kristina.huling@alaska.gov).

Sincerely,



Kristina Huling  
Mat-Su Area Planner, DOT&PF

cc: Sean Baski, Highway Design Chief, DOT&PF  
Matt Walsh, Property Management Supervisor, Right of Way, DOT&PF  
Devki Rearden, Engineering Associate, DOT&PF  
Morris Beckwith, Right of Way, DOT&PF  
Brad Sworts, Pre-Design & Engineering Div. Manager, MSB  
Anna Bosin, Traffic & Safety Engineer, DOT&PF

Respectfully,

Rick Benedict – Current Planner  
Development Services Division  
Matanuska-Susitna Borough  
(907)861-8527 direct

# Public Comments

Matanuska-Susitna Borough  
Development Services Division  
350 E. Dahlia Avenue  
Palmer, Alaska 99645

5 1601B02L008A  
RICHEY TED JR & BETH A  
4305 W ARTIST VIEW CIR  
WASILLA AK, 99623



Jeff Colantino, on behalf of Lynx Consulting, applied for an Administrative Permit under MSB 17.67—Tall Structures. The Permit is for a 125-foot telecommunications tower located at 5182 N. Pittman Road, Tax ID #5256000T00A.

The Matanuska-Susitna Borough Planning Director will conduct a public hearing concerning the application on Thursday, August 22, 2024, at 9:00 a.m. in the Borough Assembly Chambers located at 350 E. Dahlia Avenue in Palmer. This may be the only presentation of this item before the Planning Director, and you are invited to attend.

Application materials may be viewed online at [www.matsugov.us](http://www.matsugov.us) by clicking on “All Public Notices & Announcements.” For additional information, you may contact Rick Benedict, Current Planner, by phone: 907-861-8527. Provide written comments by e-mail to [rick.benedict@matsugov.us](mailto:rick.benedict@matsugov.us), or by mail to MSB Development Services Division, 350 E. Dahlia Avenue, Palmer, AK 99645.

The public may provide verbal testimony at the meeting or telephonically by calling 1-855-290-3803. To be eligible to file an appeal from a decision of the Planning Director, a person must be designated an interested party. See MSB 15.39.010 for the definition of an interested party. The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough home page: [www.matsugov.us](http://www.matsugov.us), in the Borough Clerk’s office, and at various libraries within the borough.

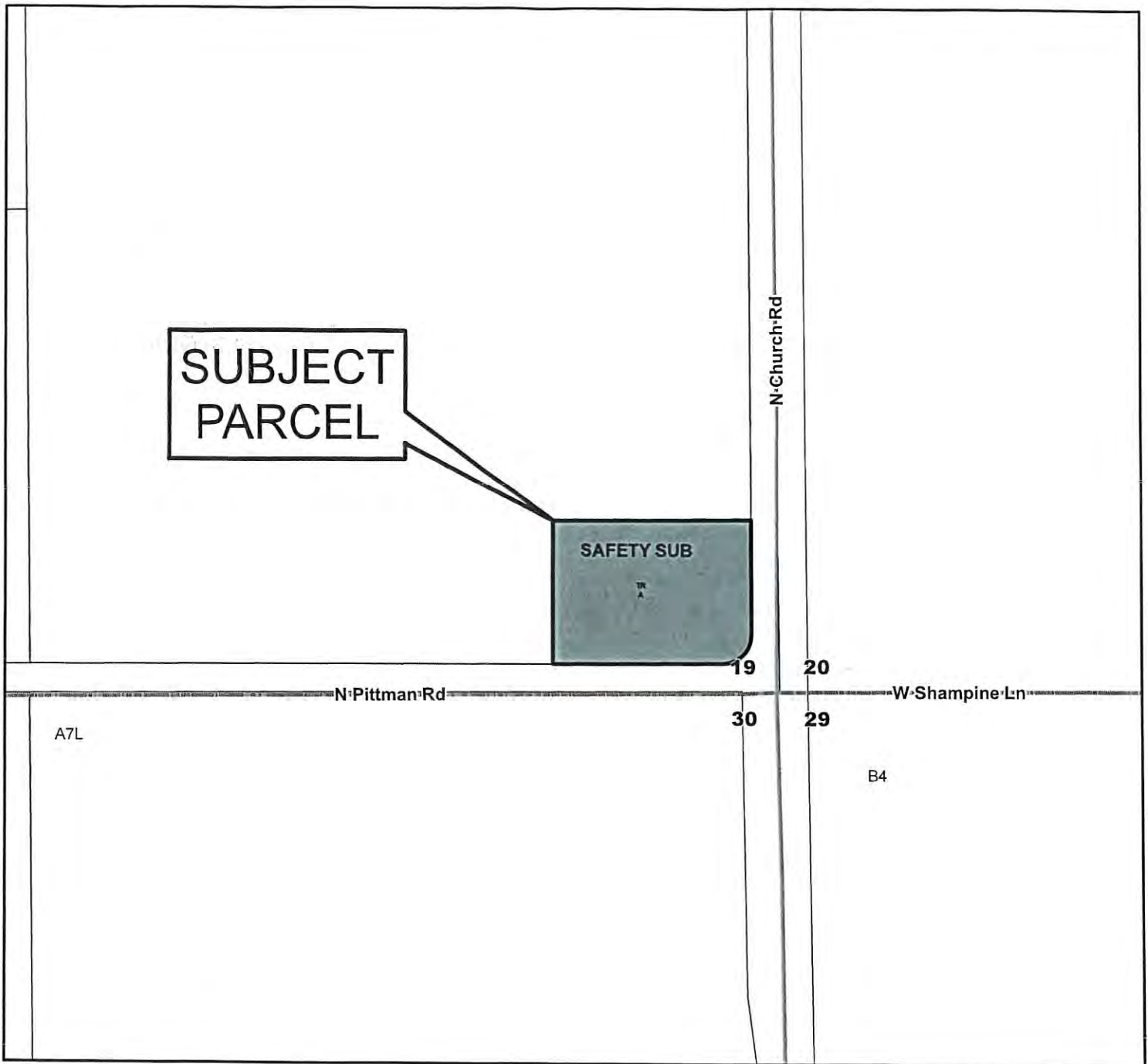
Comments are due on or before August 9, 2024, and will be included in the Planning Director packet. Please be advised that comments received from the public after that date will not be included in the staff report but will be provided to the Director at the meeting.

Name: Ted & Beth Richey Mailing Address: 4305 W. ARTIST VIEW CIR WASILLA, AK

Location/Legal Description of your property: ~~2570~~ 2970 W GREENFIELDS DR, WASILLA AK 99623 99623

Comments: We are opposed to this tower installation. We have concerns of the health impacts that the towers emissions can cause. Also, as residents of our property for the last 25 years, we have enjoyed AK's natural beauty & country feel. The building of the tower puts this at risk & calls into question property values in the area. We are strongly opposed to this installation!

Note: Vicinity Map Located on Reverse Side



**5256000T00A**

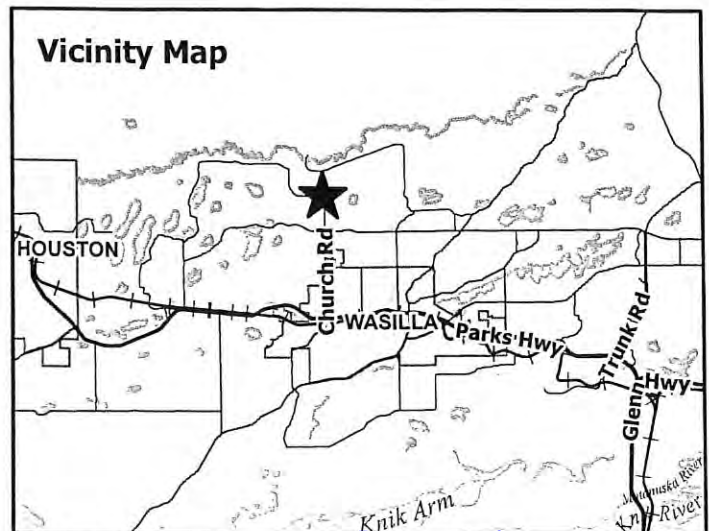


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MSB Information Technology/GIS  
March 31, 2023



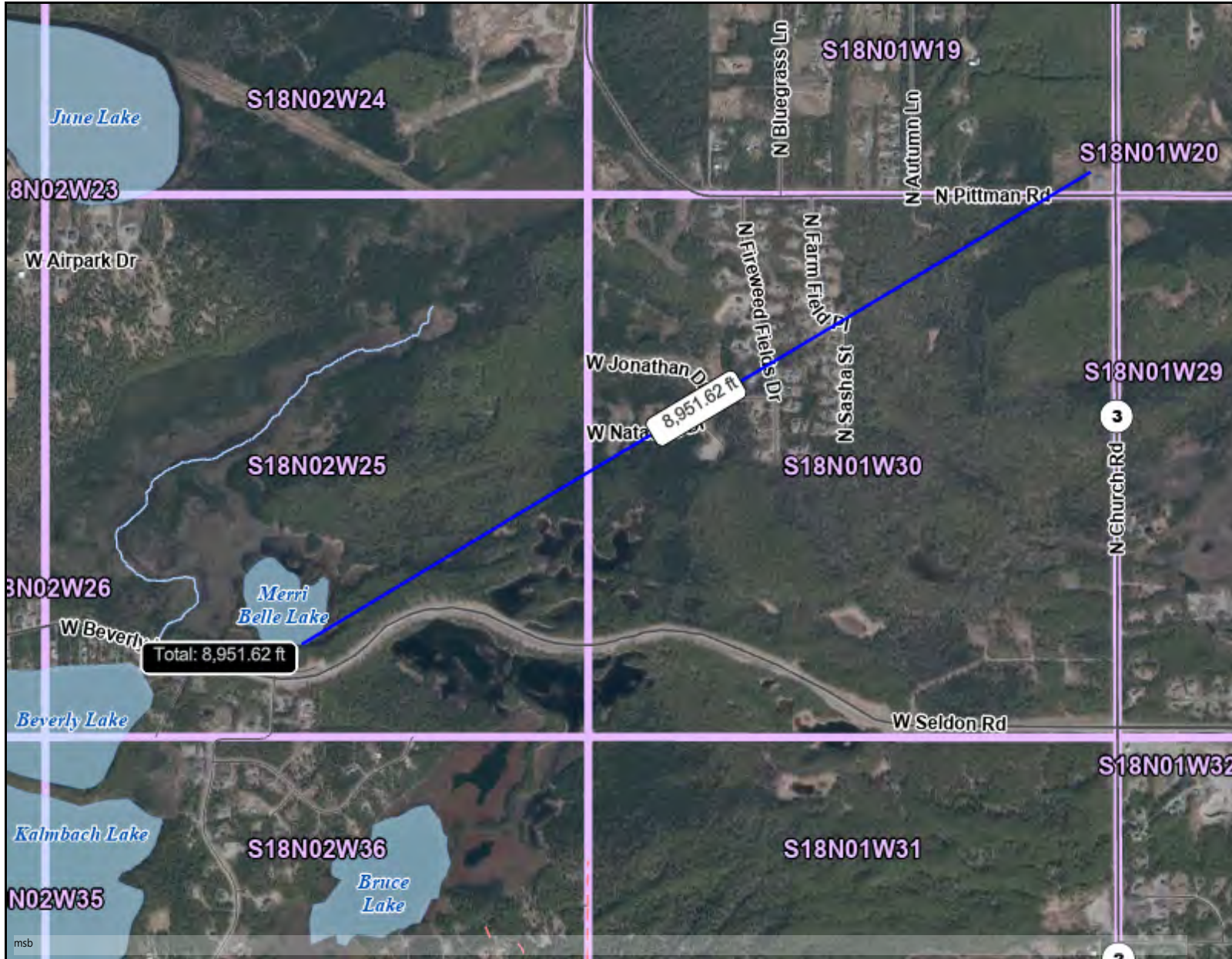
Planning Director Packet - August 22, 2024







# Matanuska-Susitna Borough



Legend

ParcelViewer

Road Mileposts

Roads

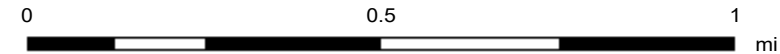
- Major Road
- Medium Road
- Minor Road
- Private Road
- Not Constructed

Mat-Su Borough Boundary

Section Lines

1 : 36112

THIS MAP IS NOT TO BE USED FOR NAVIGATION



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Notes

Distance from 4305 W Artist View, Wasilla 99623

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