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

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? **o Yes o No o N/A**

Name of Property Owner	**Name of Agent/ Contact for application**
Matanuska-Susitna Borough	Lynx Consulting - Jeff Colantino
Address: 350 E Dahlia Ave	Address: 17311 135th Ave NE, #A-100
Palmer, AK 99645	Woodinville, WA 98072
Phne: Hm _____ Fax_____	Phne: Hm_____ Fax 425-354-3277
Wk_____ Cell_____	Wk_____ Cell 360-450-8697
E-mail _____	E-mail jcolantino@lynxconsulting.org

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

Pre-Application Requirements for New Tall Structures that Require a Conditional Use Permit	
Prior to applying for a conditional use permit for a new tall structure, the applicant shall hold at least one community meeting.	
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: • Legal description and map of the general parcel, or parcels, within the coverage area under consideration for the telecommunication facility. • Description of the proposed development including height, design, lighting, potential access to the site and proposed service. • Date, time, and location of the informational meeting. • Contact name, telephone number, and address of applicant. • Comment form created by the borough that has a comment submittal deadline and provides options for submitting comments.	
5. At a minimum, the notification area for the meeting shall include the following: • Property owners within one-half mile of the parcels under consideration for the proposed tall structure. • The nearest community council and any community council whose boundary is within 1200 feet of the parcels under consideration for the tall structure.	
A written report summarizing the results of the community meeting shall be prepared that includes the following information:	**Attached**
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: • The substance of the public's written concerns, issues, and problems. • How the applicant has addressed, or intends to address, concerns, issues and problems expressed during the process. • Concerns issues, and problems the applicant has not addressed or does not intend to address and why.	N/A

General application requirements for <u>Administrative</u> and <u>Conditional Use Permits</u>	**Attached**
1. Design drawings for the proposed tall structure, drawn to scale, and certified by a registered engineer or architect.	X
2. Citizen participation report *(if applying for a Conditional Use Permit)*	N/A
3. Certified site plan *(As defined in MSB 17.125.010)*	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

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:	**Attached**
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

Application requirements for a <u>Network Improvement Permit</u>	**Attached**
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 *(as defined in MSB 17.125.010)* 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

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.	**Attached** N/A
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

Operation Standards for New Tall Structures – Conditional Use Permit, Administrative Permit, and Network Improvement Permit	Attached
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

Additional Standards for Wind Energy Conversion Systems (WECS) – In addition to the operations standards for new tall structures, the following standards shall apply to WECS	Attached
1. WECS shall be equipped with an automatic overspeed control device designed to protect the system form 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.

Signature: Property Owner	Printed Name	Date
Jeff Colantino	Digitally signed by Jeff Colantino Date: 2023.04.12 08:39:25 -07'00'	
Signature: Agent	Printed Name	Date

MSB USE ONLY

Date application submitted:

Date application determined complete: _____

MAT -SU BOROUGH

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

Year	Land Appraised	Bldg. Appraised	Total Appraised
2024	$45,000.00	$584,500.00	$629,500.00
2023	$45,000.00	$372,200.00	$417,200.00
2022	$45,000.00	$358,300.00	$403,300.00

Assessment

Year	Land Assessed	Bldg. Assessed	Total Assessed[1]
2024	$0.00	$0.00	$0.00
2023	$0.00	$0.00	$0.00
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
2024	Yes	0041	12.778	$0.00
2023	Yes	0041	12.383	$0.00
2022	Yes	0041	13.227	$0.00

Recorded Documents

Date	Type	Recording Info (offsite link to DNR)
8/8/2002	QUITCLAIM DEED (ALL TYPE)	Palmer 2002-016963-0

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	27-410	136 WEST LAKES FSA	028 Gold Trail RSA

[1] Total Assessed is net of exemptions and deferments.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.

LYNX
Authorized Verizon Wireless Representative

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.

17311 135th Avenue NE, Suite A-100, Woodinville, WA 98072

- 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).

LYNX
Authorized Verizon Wireless Representative

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

Sincerely,

Jeff Colantino
Lynx Consulting

17311 135th Avenue NE, Suite A-100, Woodinville, WA 98072

SITE PHOTOS - SHAMPINE

VIEW FROM STREET

VIEW FROM STREET

SITE PHOTOS - SHAMPINE

LOOKING NORTH

LOOKING SOUTH

SITE PHOTOS - SHAMPINE

LOOKING WEST

LOOKING EAST

Federal Aviation Administration

« OE/AAA

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

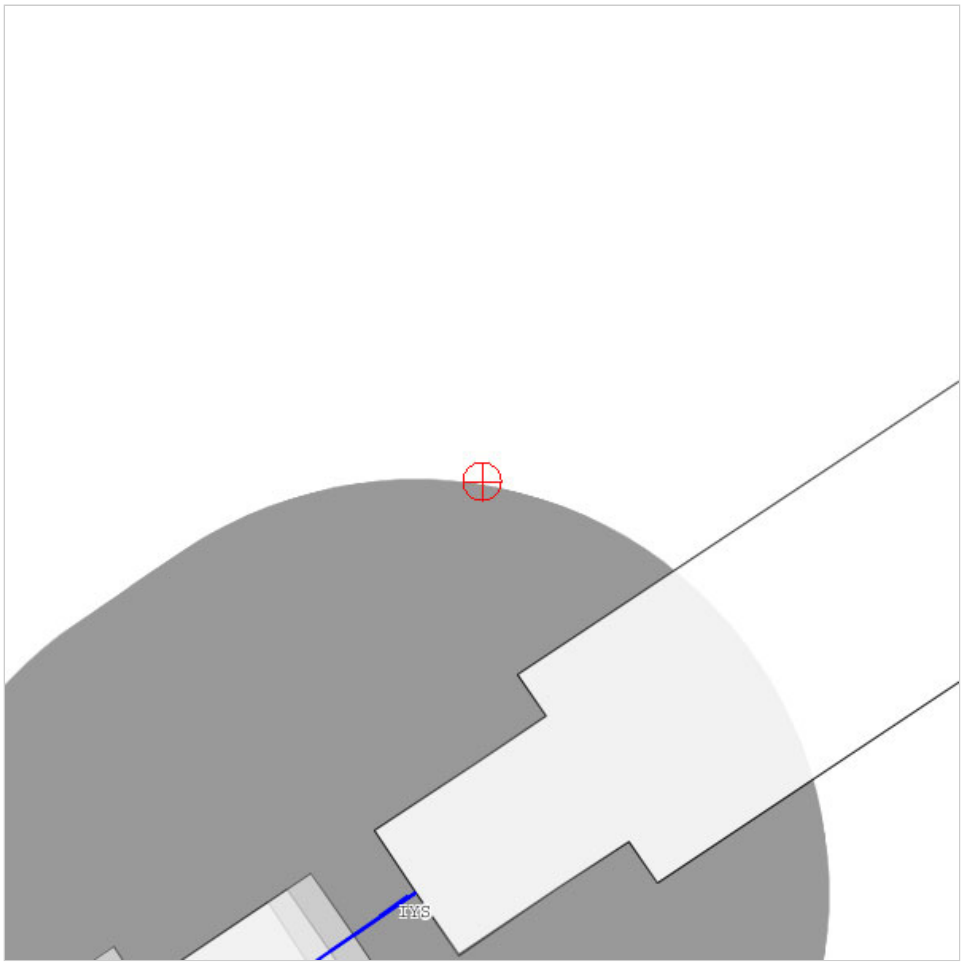
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport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

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

* **Structure Type:**	TOWER | Antenna Tower Please select structure type and complete location point information.
Latitude:	61 Deg 37 M 44.2 S N
Longitude:	149 Deg 30 M 47.8 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	444 (nearest foot)
Structure Height :	125 (nearest foot)
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.


IYS

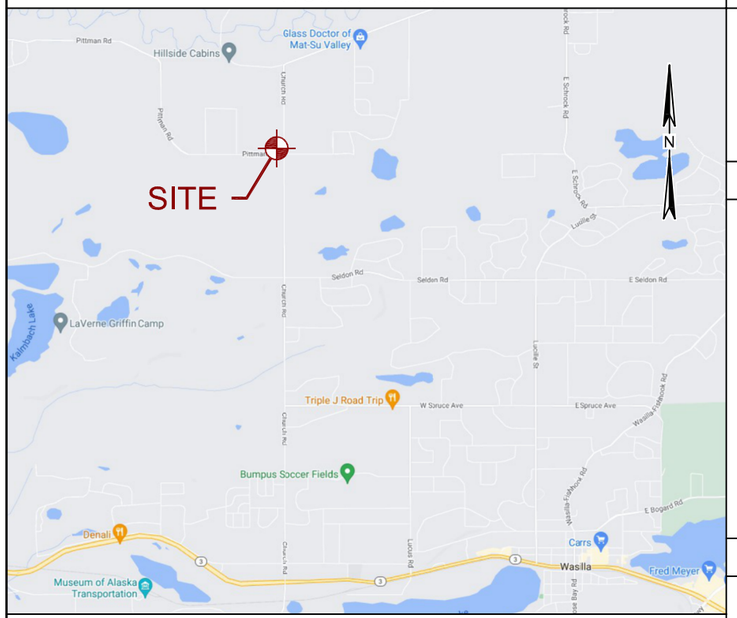
verizon

VZW PROJECT NAME: **AK2 SHAMPINE**

FUZE PROJECT ID: **2570630**

PROJECT LOCATION: **5182 N PITTMAN RD**
WASILLA, AK 99654

VICINITY MAP



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.

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

LEGAL DESCRIPTION

SAFETY SUBD TRACT A

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
LYNX CONSULTING, INC
17311 135TH AVE NE, SUITE A-100
WOODINVILLE, WA 98072
PHONE: (540) 784-8927
shinty@lynxconsulting.org

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

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)

APPROVALS

TITLE	SIGNATURE	DATE
VZW REAL-ESTATE		
VZW CONSTRUCTION		
PROPERTY OWNER		

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

STATE OF ALASKA
49 TH
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:

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 NO 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 ONSITE 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	(#6 BARS OR LARGER)	2"
	(#5 BARS OR SMALLER)	1-1/2"
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.

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

- ☐ STRUCTURAL STEEL (1705.2; AISC 360)
- ☐ STEEL – OTHER THAN STRUCTURAL STEEL (1705.2.2)
- ☐ STRUCTURAL CONCRETE (1705.3)
- ☐ REINF. STEEL/PRESTRESSING TENDONS (1705.3)
- ☐ SHOTCRETE (1705.3; 1910)
- ☐ STRUCTURAL MASONRY (1075.4)
- TMS 402/ACI 530/ASCE 5;
- TMS 602/ACI 530.1/ASCE 6
- ☐ HIGH LOAD DIAPHRAGMS (WOOD 1705.5.1)
- ☐ GRADING, EXCAVATION, AND FILLING (SOILS 1705.6)
- ☐ DRIVEN DEEP FOUNDATIONS (1705.7)
- ☐ CAST-IN-PLACE DEEP FOUNDATIONS (1705.8)
- ☐ INSTALLATION OF PRECAST ELEMENTS (1705.3)
- ☐ OTHER _____
- ☐ SPRAYED FIRE-REST MATERIALS (1705.3)
- ☐ INTUMESCENT FIRE-RESIST CTGS (1705.14)
- ☐ EIFS (1705.15)
- ☐ POST-INSTALLED ANCHORS (1705.3; AISC 315: D.9.2)
- ☐ SMOKE CONTROL (1705.17)
- ☐ STRUCTURAL STEEL (SFRS 1705.11.1; AISC 314)
- ☐ STRUCTURAL WOOD (SFRS 1705.11.2)
- ☐ COLD FORMED STEEL FRAMING (SFRS 1705.11.2)
- ☐ ACCESS FLOORS (SFRS 1705.11.5.1)
- ☐ STORAGE RACKS (SFRS 1705.11.7)
- ☐ ARCHITECTURAL COMPONENTS (SFRS 1705.11.5)
- ☐ MECH. AND ELEC. COMPONENTS (SFRS 1705.11.6)
- ☐ SEISMIC ISOLATION SYSTEMS (SFRS 1705.11.8)

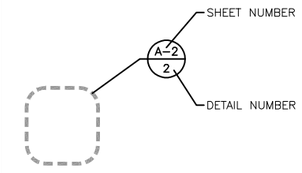
STRUCTURAL STEEL NOTES

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:

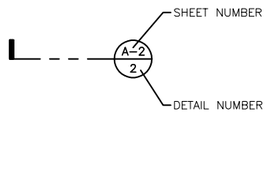
TYPE OF MEMBER	
WIDE FLANGE SHAPE S	ASTM A992, f_y 50 KSI
OTHER SHAPES, PLATES AND RODS	ASTM A36, f_y 36 KSI
PIPE COLUMNS	ASTM A53, f_y 35 KSI
STRUCTURAL TUBING	ASTM A500, f_y 46 KSI
ANCHOR BOLTS	ASTM A307
CONNECTION BOLTS	ASTM A325

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



LARGE SCALE DETAIL



SECTION DETAIL

811 Call Before You Dig

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

STATE OF ALASKA
49 TH
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:

GENERAL NOTES

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

UNSUBDIVIDED REMAINDER OF E 1/2 SE 1/4

N89°39'20"E 350.41'

N00°37'12"W 250.00'

UNSUBDIVIDED REMAINDER OF E 1/2 SE 1/4

20' 10' 0' 20'
1" = 20'

435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450

SEPTIC MOUND

ELECTRIC GENERATOR

TOP BLDG. NW CORNER 17' A.G.L.

EXISTING BUILDING

TOP BLDG. SW CORNER 27' A.G.L.

CONEX

TRACT A
SAFETY SUBDIVISION
PLAT 2002-85

51' A.G.L.
61' A.G.L.
59' A.G.L.
50' A.G.L.
50' A.G.L.
56' A.G.L.
56' A.G.L.
58' A.G.L.
51' A.G.L.
56' A.G.L.
55' A.G.L.
54' A.G.L.
56' A.G.L.
51' A.G.L.
56' A.G.L.

OHU

50.00' SECTION LINE EASEMENT

PUBLIC UTILITY EASEMENT

S00°37'36"E 199.67'

INV. 446.7'

INV. 446.8'

INV. 441.7"

INV. 442.3'

WATER PIPE

METAL VENT PIPES

TOP LIGHT 35' A.G.L.

TOP LIGHT 35' A.G.L.

R=50.00'
L=78.77'
Δ=90°15'58"

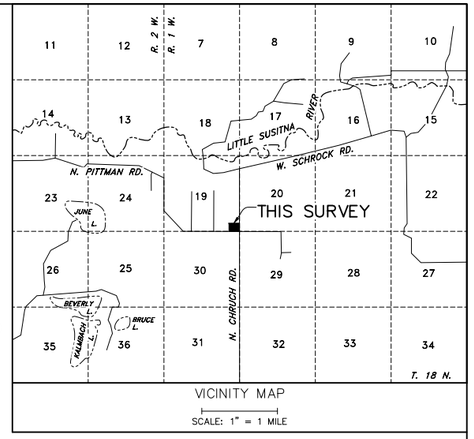
PUBLIC UTILITY EASEMENT

50.00' SECTION LINE EASEMENT

S89°19'10"W 329.03'

N. CHURCH ROAD

N. PITTMAN ROAD



VICINITY MAP
SCALE: 1" = 1 MILE

NOTES

1. THIS DRAWING IS BASED ON A FIELD SURVEY PERFORMED BY EDGE SURVEY AND DESIGN, LLC ON 10/21/2022.
2. ELEVATIONS SHOWN HEREON ARE NAVD88 ORTHOMETRIC HEIGHTS, GEOID 12B AS DETERMINED BY A NGS OPUS SOLUTION.
3. COORDINATES SHOWN HEREON ARE ALASKA STATE PLANE ZONE 4, NAD83 (2011), EPOCH 2010.0000 US. SURVEY FEET.
4. THE BASIS OF BEARINGS FOR THIS DRAWING IS ALASKA STATE PLANE COORDINATE SYSTEM, ZONE 4.
5. SITE NAME: AK2 SHAMPINE
6. 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.

STATE OF ALASKA
49TH
PRELIMINARY
Mark A. Aimonetti
No. 13022 - S
REGISTERED PROFESSIONAL LAND SURVEYOR

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 XX°XX'XX.XXX"

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

EXISTING GROUND ELEVATION: XXX.XX'

LEGEND

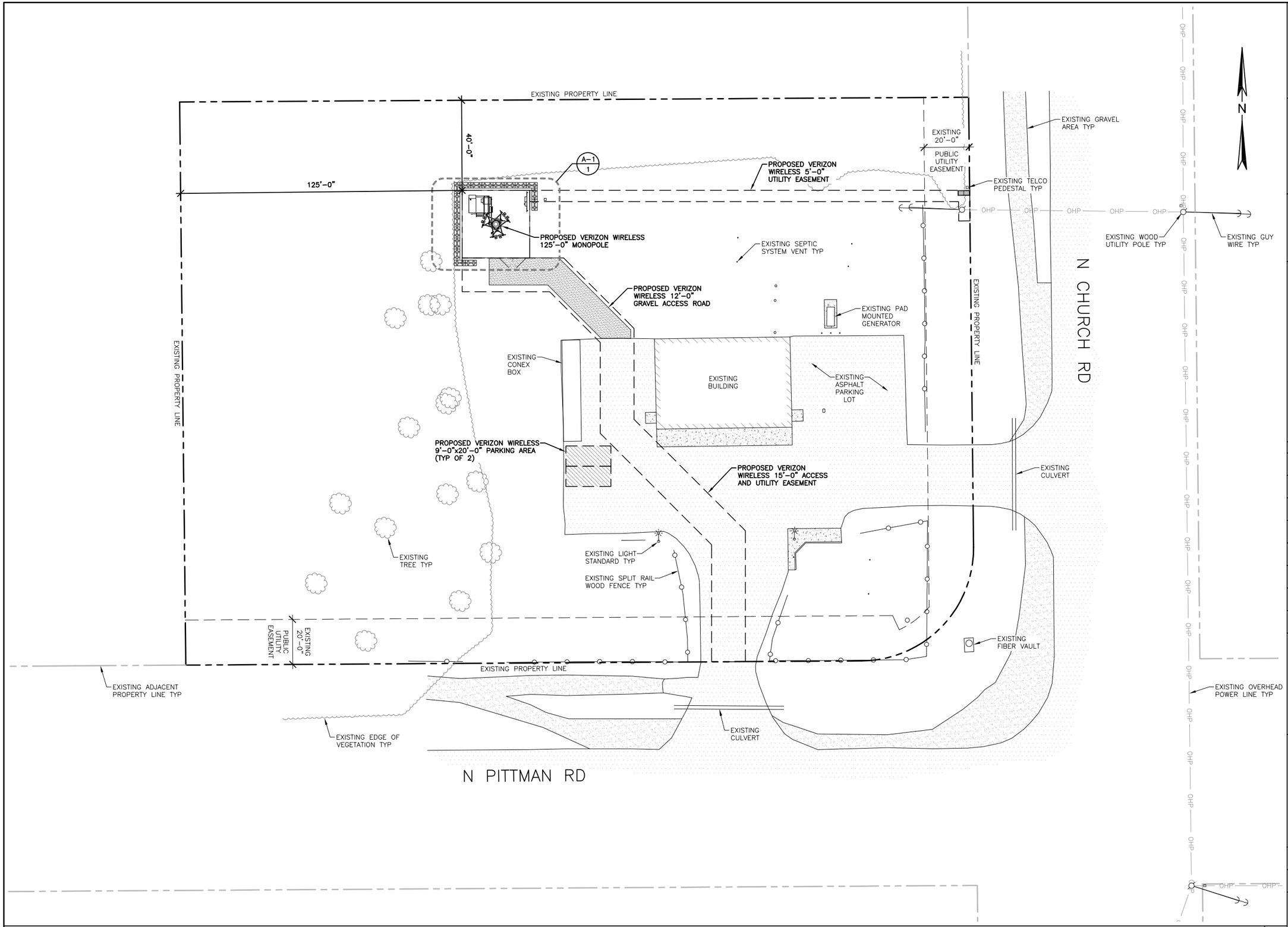
- PROPERTY LINE
- ADJACENT PROPERTY LINE
- 18" CORRUGATED METAL PIPE
- -OHU- OVERHEAD UTILITY
- 4' WOOD POST FENCE
- 121' CONTOUR LINE
- EASEMENT
- VEGETATION LINE
- AGL ABOVE GROUND LEVEL
- SURVEY CONTROL POINT
- FOUND MONUMENT
- BM BENCHMARK
- GUY WIRE
- UTILITY POLE
- LIGHT
- SP SEWER STAND PIPE
- FO FIBER OPTIC VAULT
- T TELECOMMUNICATION PEDESTAL
- W WELL
- JBOX TYPE 1
- DECIDUOUS TREE

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

P:_Projects\2022\Wasilla - Shampine Cell Survey (22-235)\DWG\SurvBase - Shampine 2.dwg PLOTTED: 10/28/2022 10:11:22 AM



22"x34" SCALE: 1"= 20'-0"
11"x17" SCALE: 1"= 40'-0"
20' 10' 0' 20'

PROPOSED SITE PLAN | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

Jun 06, 2024

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

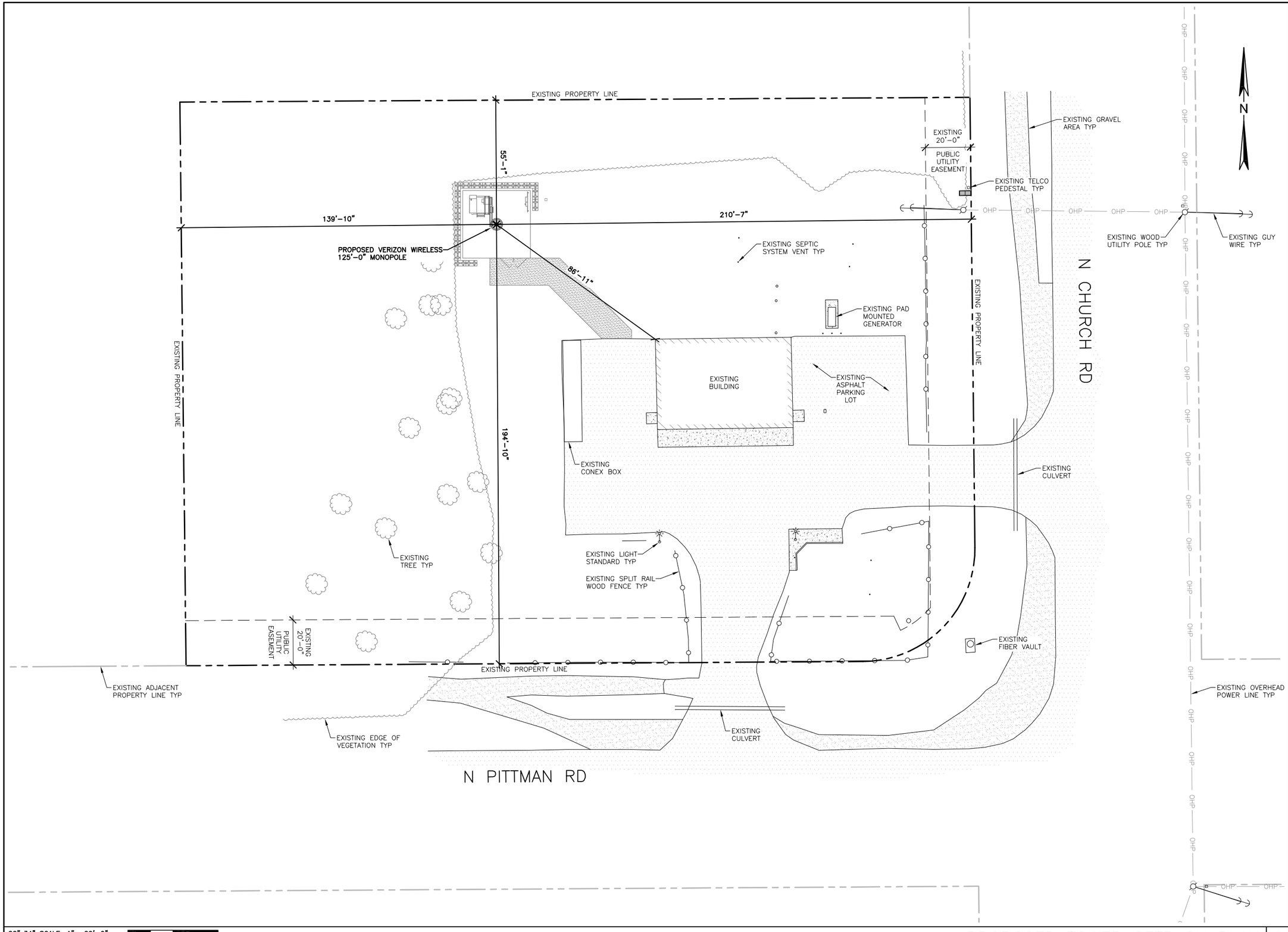
PROJECT:

AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

PROPOSED SITE PLAN

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



22"x34" SCALE: 1"= 20'-0"
11"x17" SCALE: 1"= 40'-0"
20' 10' 0' 20'

PROPOSED TOWER SETBACK PLAN | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

Jun 06, 2024

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PROJECT:

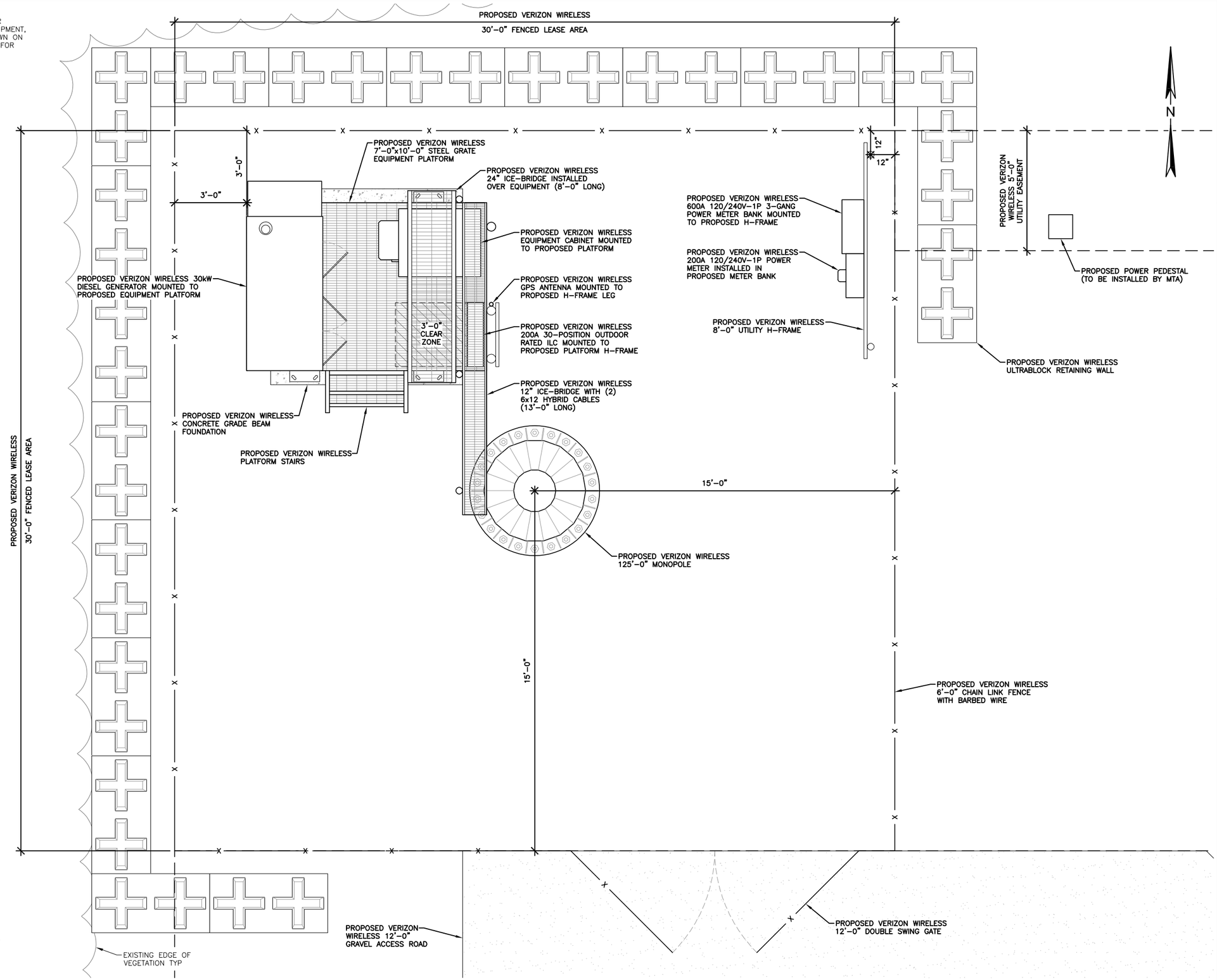
AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

PROPOSED TOWER SETBACK PLAN

FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO: 5	SHEET NO: C–2

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.



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

PROPOSED COMPOUND PLAN | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

Jun 06, 2024

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PROJECT:

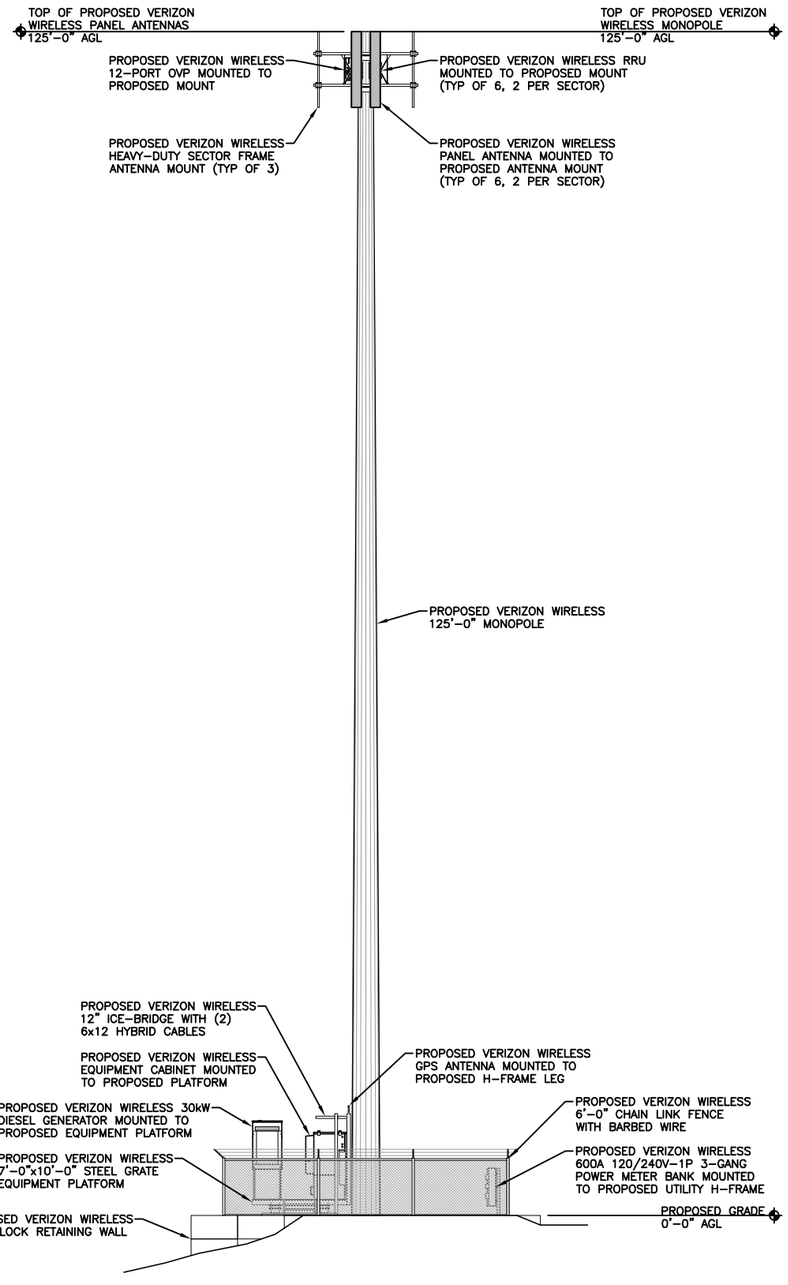
AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

PROPOSED COMPOUND PLAN

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

NOTES:
1. 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.
2. 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.
3. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT PER THE MANUFACTURER'S SPECIFICATIONS.

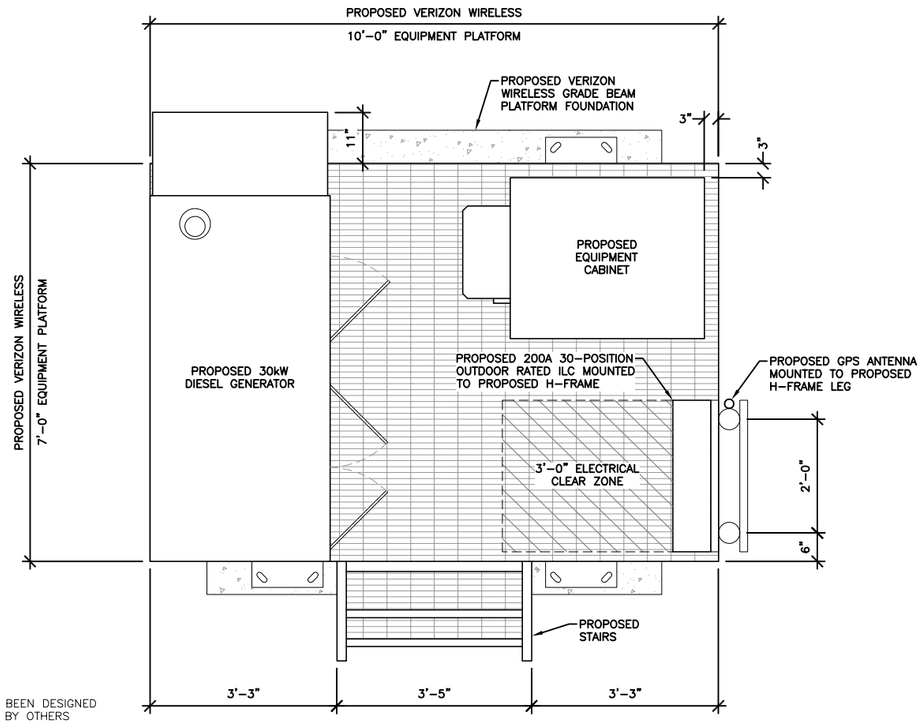


22"x34" SCALE: 1/8"= 1'-0"
11"x17" SCALE: 1/16"= 1'-0"
8' 4' 0' 8'

PROPOSED ELEVATION | 1

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: 3/4"= 1'-0"
11"x17" SCALE: 3/8"= 1'-0"
2' 1' 0' 2'

EQUIPMENT PLATFORM LAYOUT | 2

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

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PROJECT:

AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

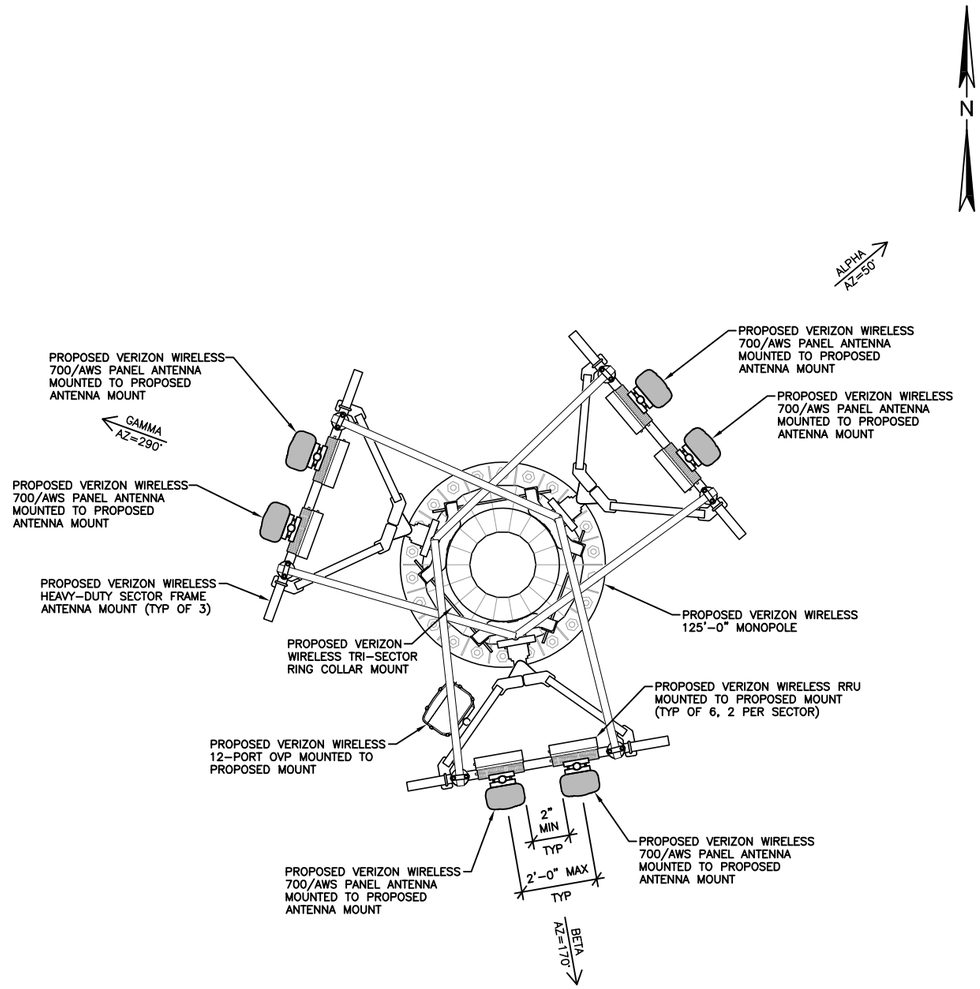
PROPOSED ELEVATION

FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO: 5	SHEET NO: A-2

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				ADDITIONAL EQUIPMENT
700	170°	125'–0"	2	JMA	MX06FHG865–HG	95.9"	12.2"	7.5"	0°	0°				RRUS4490 B13
AWS										0°				RRUS4890 B66
GAMMA SECTOR	AZIMUTH	TIP HEIGHT	QTY	VENDOR	MODEL	LENGTH	WIDTH	DEPTH	MECH TILT	ELEC TILT				ADDITIONAL EQUIPMENT
700	290°	125'–0"	2	JMA	MX06FHG865–HG	95.9"	12.2"	7.5"	0°	2°				RRUS4490 B13
AWS										0°				RRUS4890 B66



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

PROPOSED ANTENNA CONFIGURATION | 1

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

NOT USED | 2

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

NOT USED | 3

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

Jun 06, 2024

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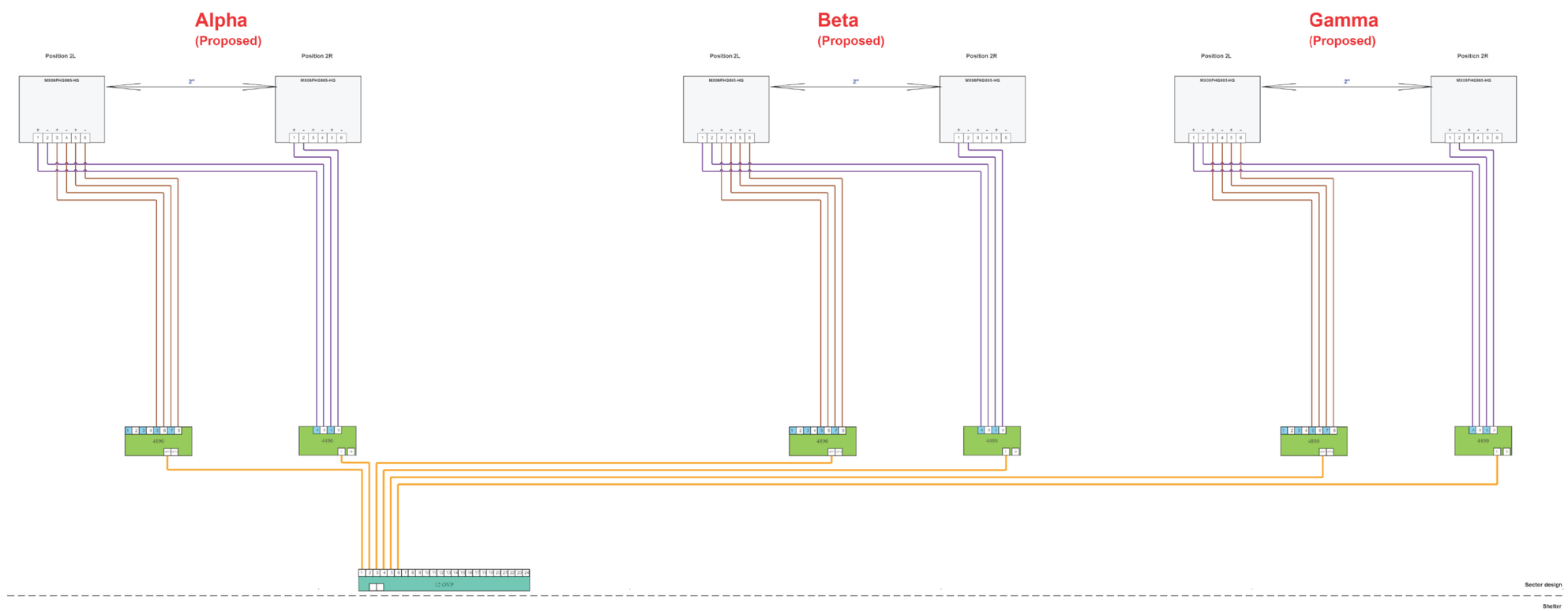
PROJECT:

AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

PROPOSED ANTENNA CONFIGURATION

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



APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

STATE OF ALASKA
49 TH
BERTRAND WHITE
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PROJECT:

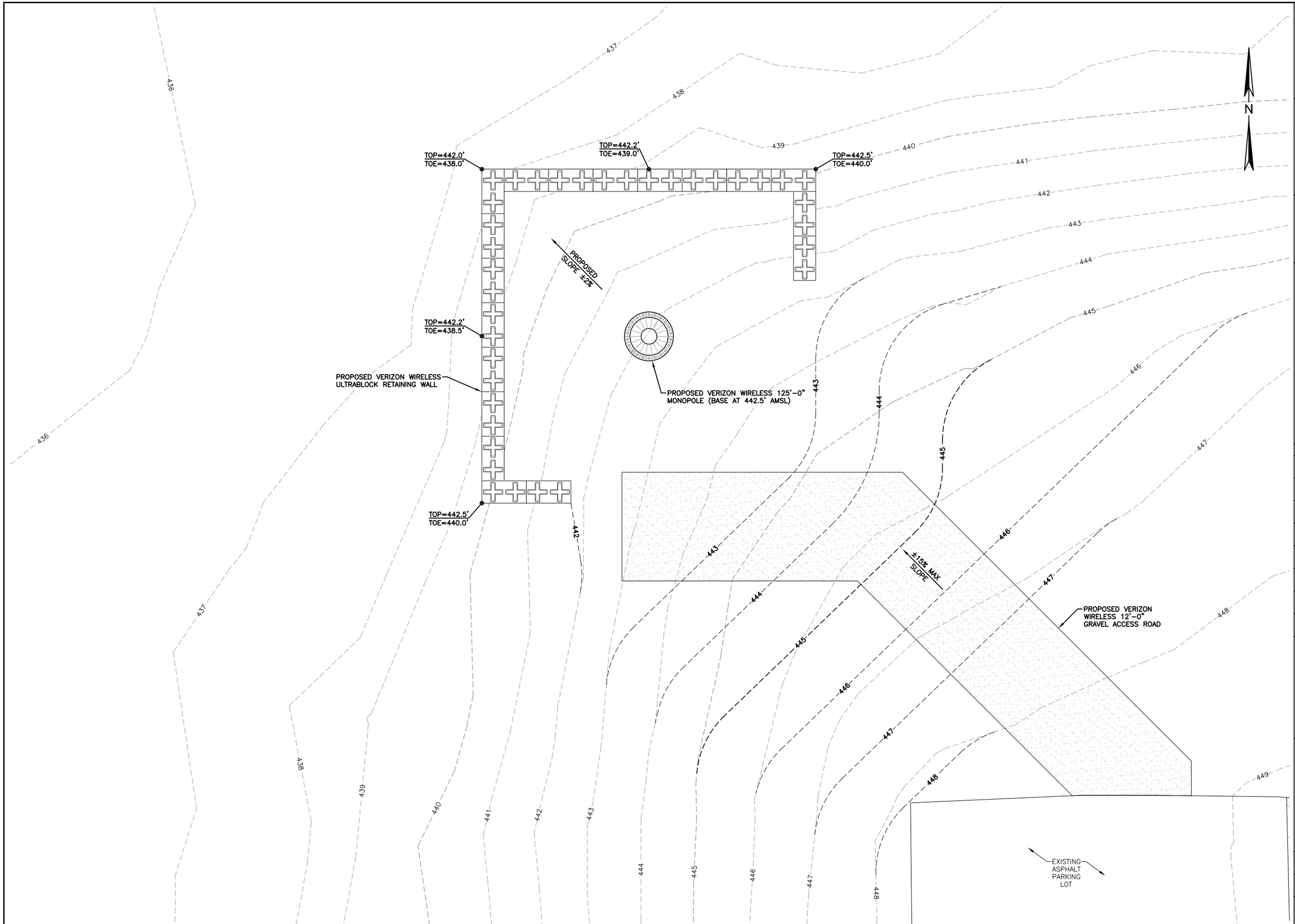
AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

PROPOSED IT DIAGRAM

FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO: 5	SHEET NO: RF–2

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



22"x34" SCALE: 1"= 5'-0"
11"x17" SCALE: 1"= 10'-0"
5' 2.5' 0' 5'

PROPOSED GRADING PLAN | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

Jun 06, 2024

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PROJECT:

AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

PROPOSED GRADING PLAN

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

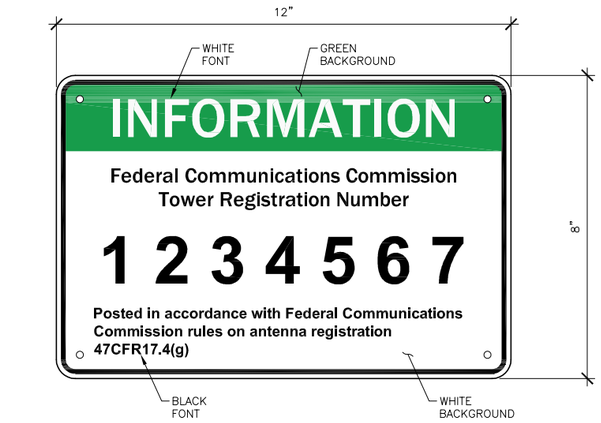
NOTES:
1. CONTRACTOR SHALL USE GALVANIZED OR STAINLESS STEEL "HOG RINGS" TO INSTALL FENCE/GATE MOUNTED SIGNS.
2. "NO TRESPASSING" SIGNAGE SHALL BE PLACED ON THE RIGHT SIDE OF THE DOUBLE-SWING GATE AND AT THE CENTER OF THE FENCING ON ALL SIDES OF THE WIRELESS COMPOUND.

22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
NO TRESPASSING SIGNAGE | 6

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

22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
AUTHORIZED PERSONEL SIGNAGE | 5

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



22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
FCC SIGNAGE | 4

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

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PROJECT:

AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

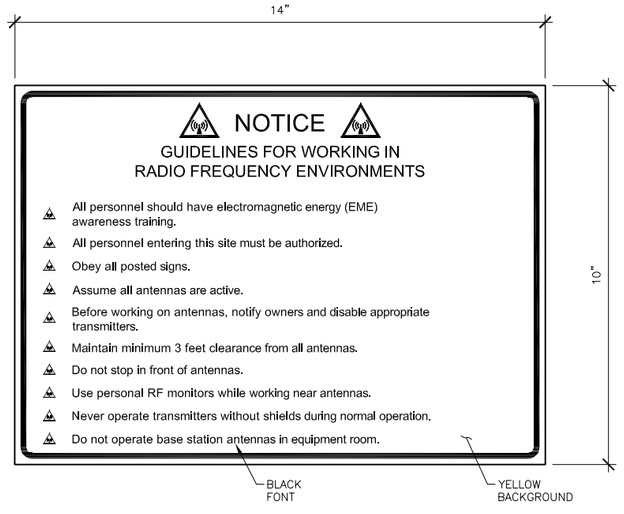
SHEET TITLE:

CONSTRUCTION DETAILS

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

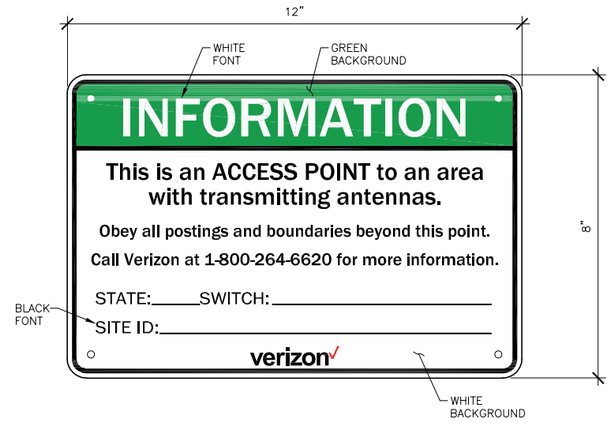
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
NOT USED | 3

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



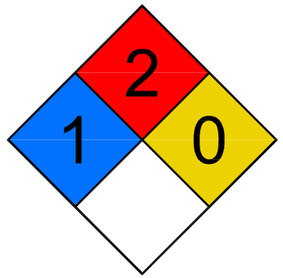
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
RF GUIDELINES SIGNAGE | 2

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



22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
VERIZON SITE SIGNAGE | 1

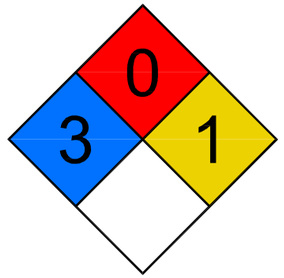
NOTES:
1. SIGNS SHALL BE MOUNTED ON DIESEL FUEL TANK.
2. ALL SIGNS SHALL BE UV-RESISTANT FOR OUTDOOR USE.
3. ALL SIGNS SHALL HAVE A MINIMUM 5 YEAR GUARANTEE WITHOUT SHOWING ANY SIGNS OF FADING OR DEGRADATION.
4. ALL SIGNS SHALL HAVE ROUNDED CORNERS WITH PRE-DRILLED HOLES AND WEATHERPROOF PRESSURE SENSITIVE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



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

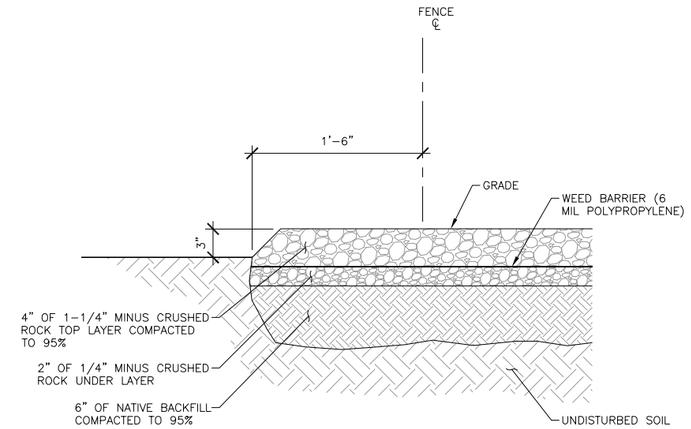
DIESEL FUEL SIGNAGE | 5

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.



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

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:

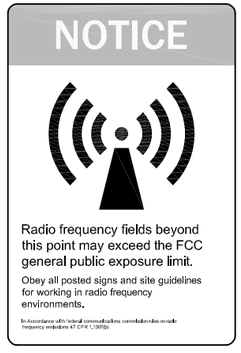
ALL SIGNS WILL BE SECURED WITH EITHER STAINLESS STEEL ZIP TIES OR STAINLESS TECH SCREWS.

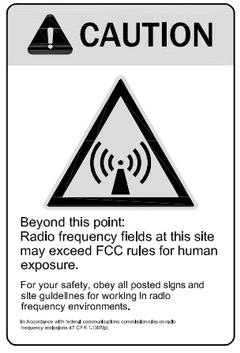
2. GC PARTICIPATION IN SIGN LOCATION.

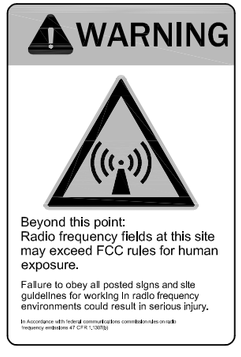
CM WILL MEET WITH ALL GC'S TO OUTLINE CRITERIA FOR SIGN PLACEMENT; EMPHASIS WILL BE ON 'GRAY AREA' SITES, WHERE SIGN PLACEMENT IS PARTICULARLY CHALLENGING – WE WILL GIVE GC'S AS MUCH GUIDANCE ON SPECIFIC SITUATIONS AS WE CAN FORESEE, BUT GC'S WILL BE ENCOURAGED TO PARTNER CM OR QC IN DECIDING PLACEMENT 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.



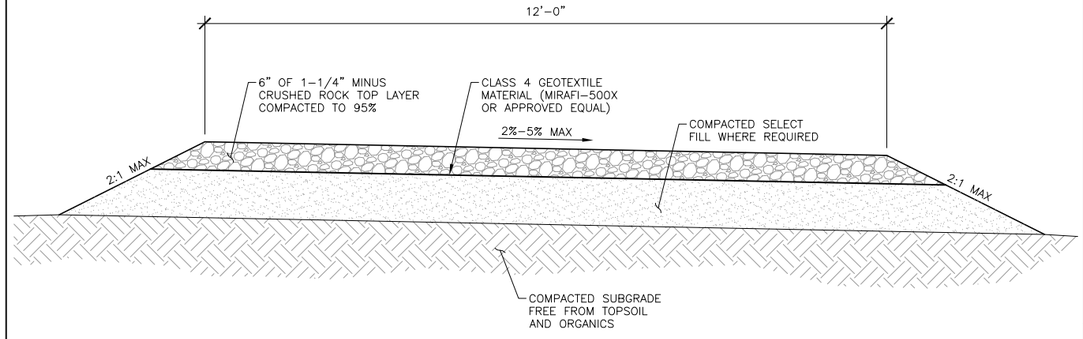




22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

RF WARNING SIGNAGE | 2

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.



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

12'-0" GRAVEL ACCESS ROAD | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

Jun 06, 2024

REV	DATE	DESCRIPTION
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3	4/18/23	REVISED PER COMMENTS
2	11/28/22	REVISED PER CLIENT COMMENTS
1	11/15/22	PZD'S ISSUED FOR REVIEW

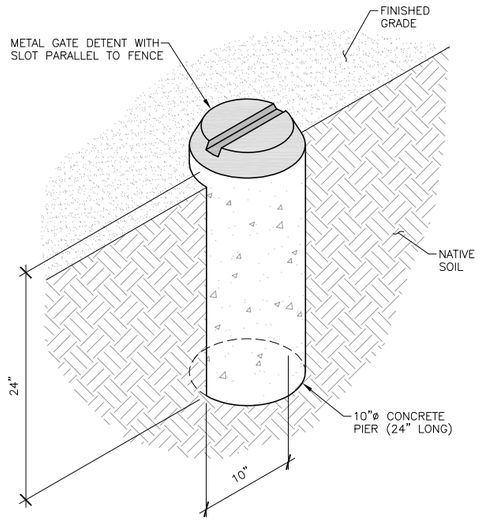
PROJECT:

AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

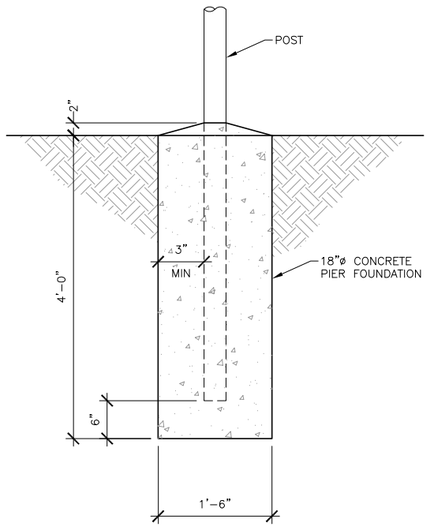
CONSTRUCTION DETAILS

FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO: 5	SHEET NO: D-2



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

GATE DETENT | 4



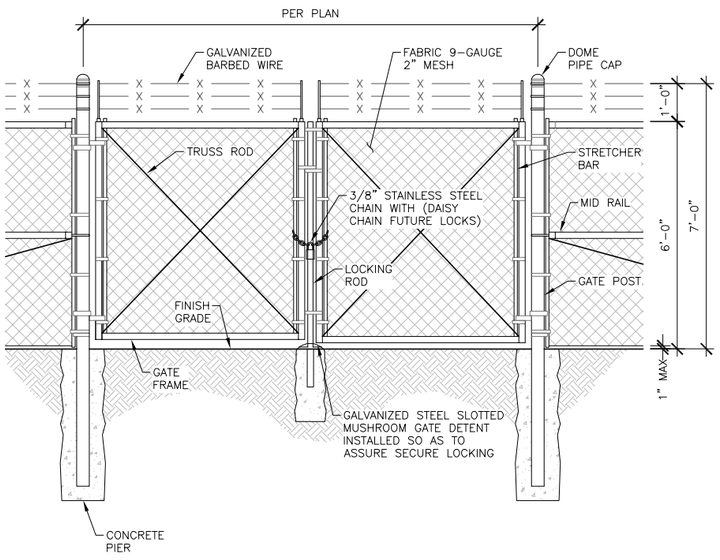
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

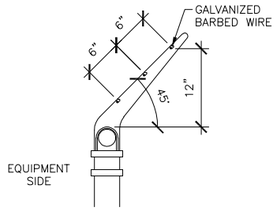
CONCRETE PIER | 3

1. ALL STEEL MATERIALS (POSTS, RAILS, FABRIC MESH, HARDWARE, AND BARBED WIRE) SHALL BE HOT-DIPPED GALVANIZED AND CONFORM TO ALL ASTM REGULATIONS FOR GALVANIZING.
2. 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.
3. BARBED WIRE SHALL BE DOUBLE-STRAND, 12 GAUGE TWISTED WIRE, WITH 14 GAUGE 4 POINT ROUND BARBS SPACED AT 5" ON CENTER.
4. LINE POSTS SHALL BE 2-3/8"ø SCHEDULE 40 GALVANIZED PIPE.
5. CORNER AND GATE POSTS SHALL BE 3"ø SCHEDULE 40 GALVANIZED PIPE.
6. EXTEND GATE AND CORNER POSTS 12" INCLUDING THE METAL DOME CAP TO PROVIDE FOR ATTACHMENT OF THE BARBED WIRE.
7. ALL HORIZONTAL RAILS SHALL BE 1-5/8"ø SCHEDULE 40 PIPE AND SECURED IN PLACE BY USE OF GATE BRACE CLAMPS.
8. GATE FRAMES SHALL BE CONSTRUCTED OF 1-5/8"ø, 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.
9. GATE HINGES SHALL HAVE A MINIMUM OF 200 DEGREE RANGE OF MOTION.
10. TENSION WIRE SHALL BE NUMBER 7-GAUGE ZINC COATED WIRE, LACED THROUGH THE BOTTOM OF THE MESH FABRIC, AND TERMINATED WITH BAND CLIPS AT CORNERS AND GATE POSTS.
11. STRETCH BARS SHALL BE 3/16"x3/4" OR HAVE EQUIVALENT CROSS SECTIONAL AREA.
12. ALL GATES, CORNER PANELS AND END PANELS SHALL HAVE A 3/8" TRUSS ROD WITH TURNBUCKLES AND BE BRACED WITH A 1-5/8"ø MID-RAIL, SECURELY ATTACHED WITH IRON FITTINGS.
13. BARBED WIRE SUPPORT ARMS SHALL BE GALVANIZED STEEL.
14. ALL POSTS, GATE GUARDS, AND OTHER OPEN ENDED PIPES SHALL BE CAPPED WITH A HOT DIPPED GALVANIZED CAST STEEL DOME CAP.
15. FABRIC MESH SHALL BE ATTACHED AT LINE POSTS AND HORIZONTAL RAILS WITH TIE CLIPS AT 2'-0" INTERVALS.
16. FABRIC MESH SHALL BE ATTACHED TO CORNER POSTS AND GATE POSTS WITH STRETCHER BARS AND TENSION BAND CLIPS AT 1'-3" INTERVALS.
17. CONTRACTOR SHALL MAINTAIN A MAXIMUM ALLOWABLE GAP OF 1" BETWEEN THE BOTTOM OF THE FABRIC MESH AND THE FINISHED GRADE.
18. GATE HINGE BOLTS SHALL HAVE THEIR THREADS PEENED OR WELDED TO PREVENT UNAUTHORIZED REMOVAL.
19. ALL SCRAPES, SCRATCHES, MARKS AND BARE METAL AREAS SHALL BE TOUCHED UP WITH ZINC RICH PAINT.
20. 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.

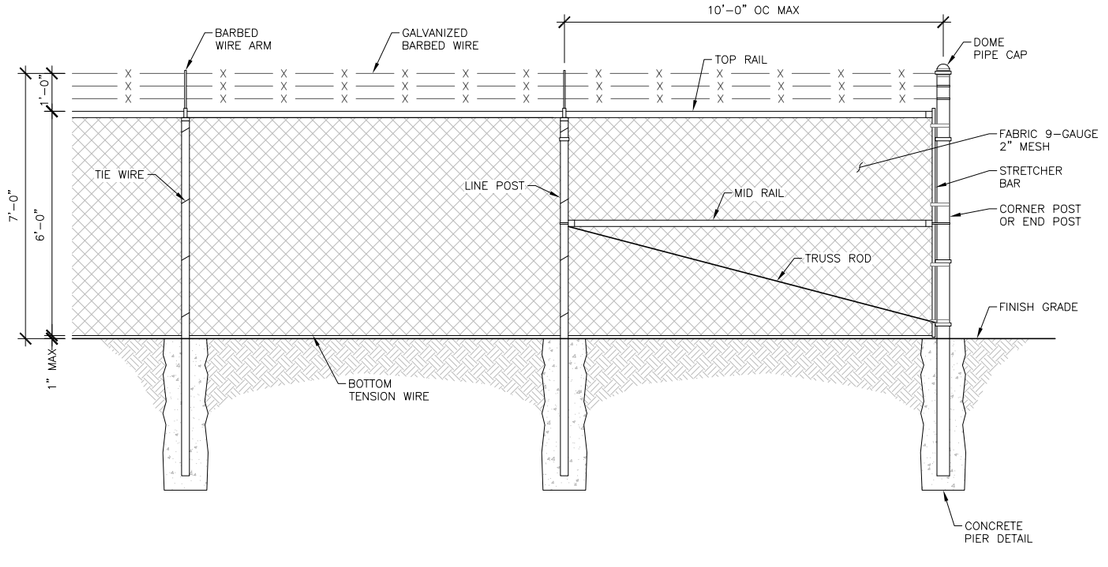
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

CHAIN LINK GATE AND FENCE NOTES | 2





BARBED WIRE ARM



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

CHAIN LINK FENCE AND GATE | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

Jun 06, 2024

REV	DATE	DESCRIPTION
-	-	-
-	-	-
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5	6/06/24	NEW RFDS AND FCD'S ISSUED FOR SUBMITTAL
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PROJECT:

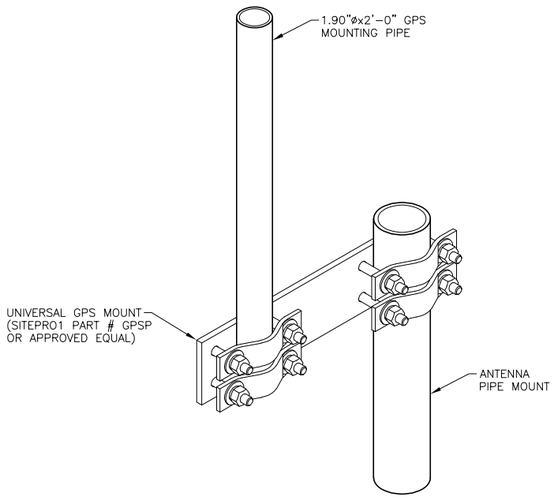
AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

CONSTRUCTION DETAILS

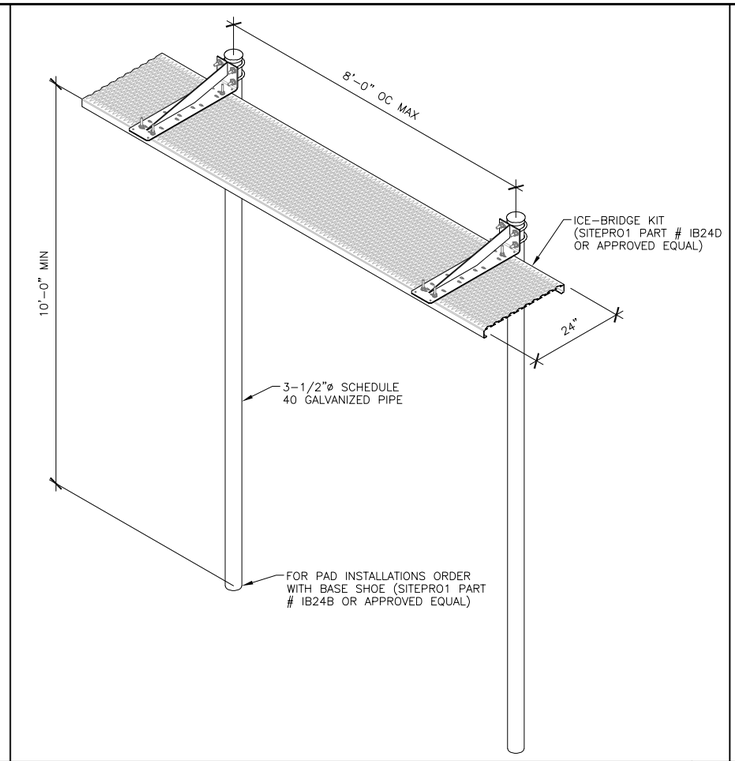
FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO: 5	SHEET NO: D-3

NOTE:
FITS PIPE DIAMETERS FROM
1-1/2" TO 3-1/2".



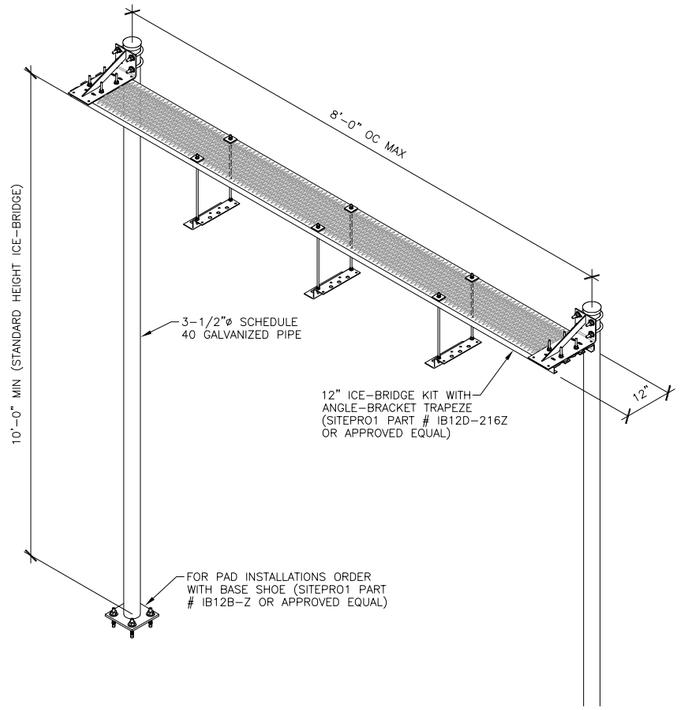
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

GPS MOUNT | 5



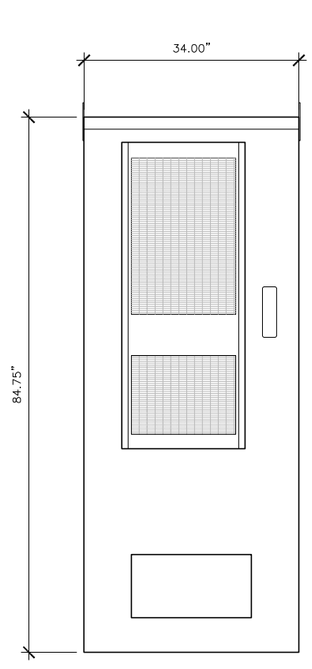
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

24" ICE-BRIDGE | 4

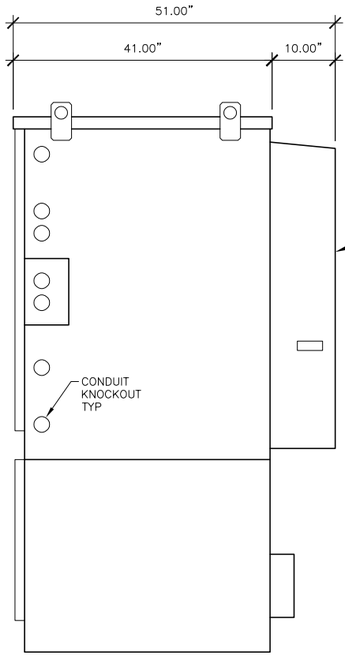


22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

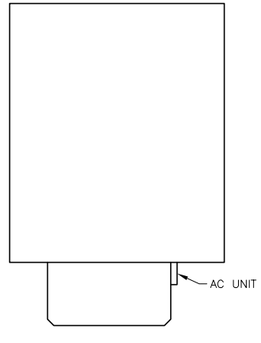
12" ICE-BRIDGE | 3



FRONT VIEW



SIDE VIEW

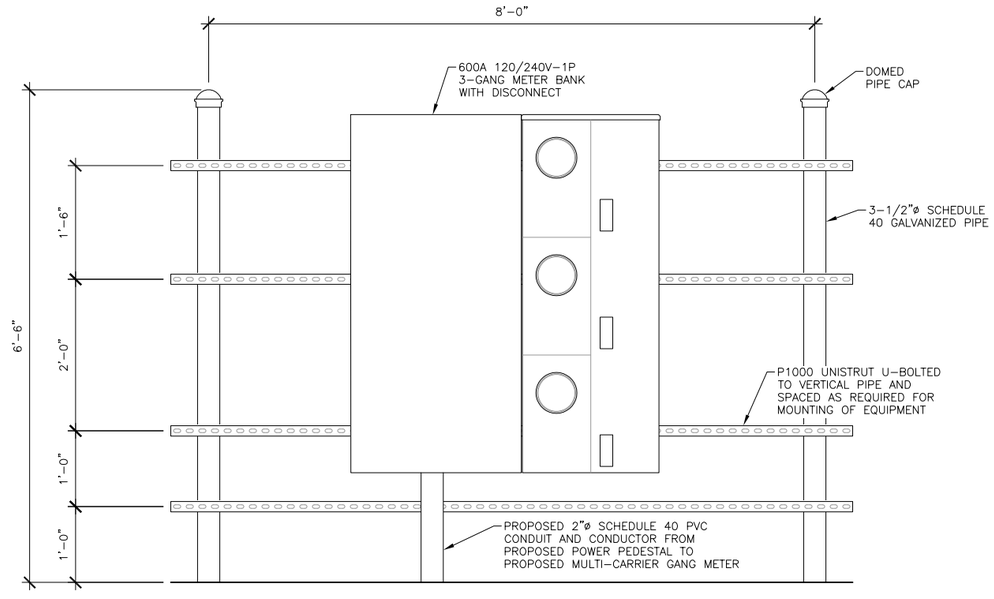


PLAN VIEW

AIO EQUIPMENT CABINET	
MANUFACTURER:	CHARLES
MODEL:	CUBE-SS4C2288N2
HEIGHT:	84.75"
WIDTH:	34.00"
DEPTH:	51.00"
WEIGHT (EMPTY):	690 LBS

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

AIO EQUIPMENT CABINET | 2



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

POWER METER BANK H-FRAME | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

Jun 06, 2024

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PROJECT:

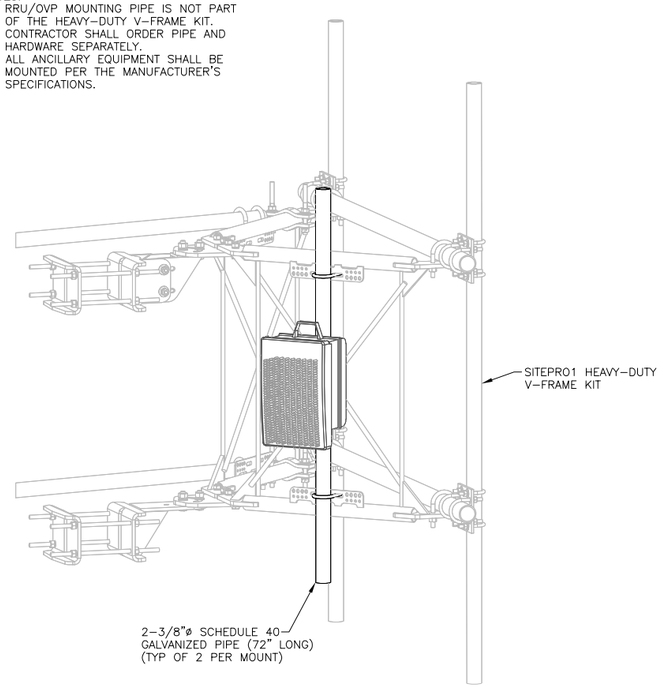
AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

CONSTRUCTION DETAILS

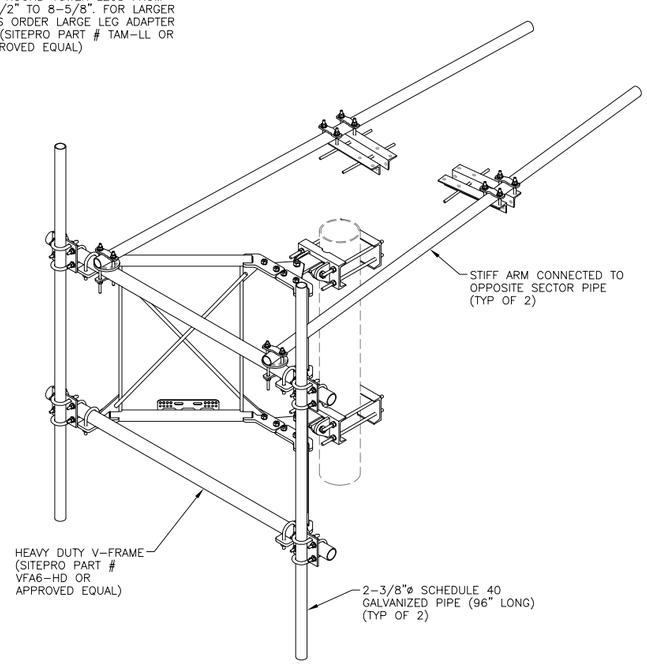
FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER:	PROFESSIONAL OF RECORD
BEW	BEW
REVISION NO:	SHEET NO:
5	D-4

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



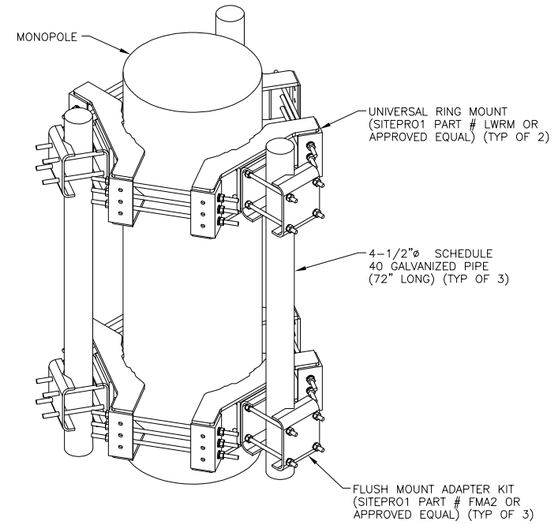
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
ANCILLARY EQUIPMENT MOUNT | 5

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)



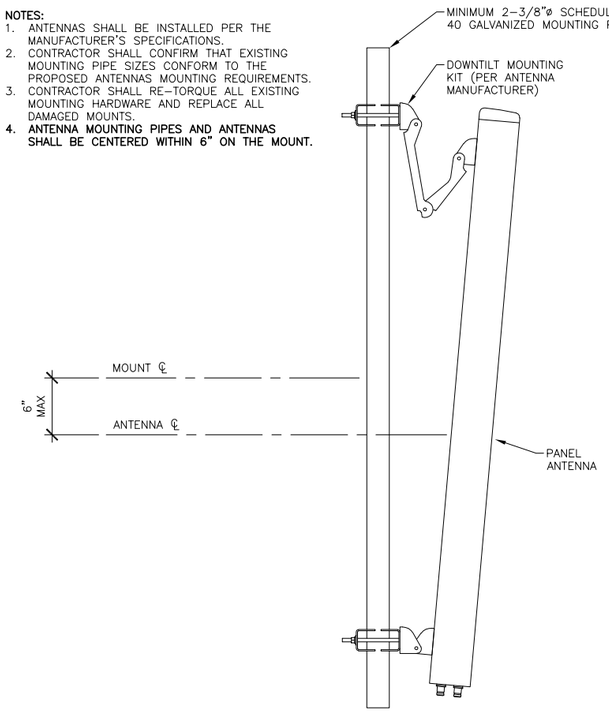
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
HEAVY–DUTY SECTOR FRAME | 4

NOTES:
1. 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)
2. COMPLETE ASSEMBLY CAN BE ORDERED WITH **SITEPRO1 PART # MSFAA**



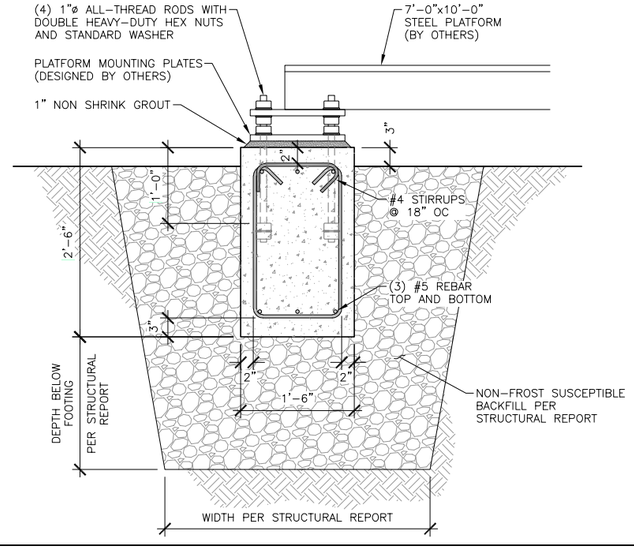
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
FLUSH MOUNT | 3

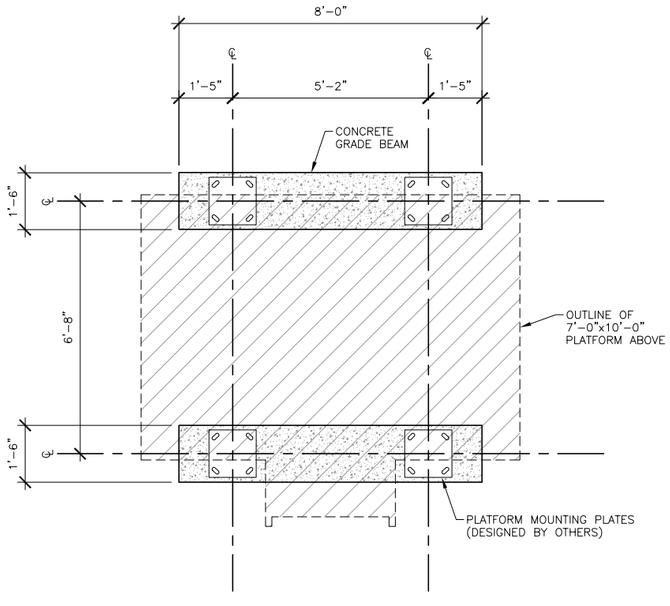
NOTES:
1. ANTENNAS SHALL BE INSTALLED PER THE MANUFACTURER'S SPECIFICATIONS.
2. CONTRACTOR SHALL CONFIRM THAT EXISTING MOUNTING PIPE SIZES CONFORM TO THE PROPOSED ANTENNAS MOUNTING REQUIREMENTS.
3. CONTRACTOR SHALL RE–TORQUE ALL EXISTING MOUNTING HARDWARE AND REPLACE ALL DAMAGED MOUNTS.
4. **ANTENNA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



22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
ANTENNA MOUNTING PIPE | 2

NOTES:
1. 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.
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, f_y=60,000 PSI.
4. ALL STEEL SHALL BE HOT DIPPED GALVANIZED.
5. 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.
6. GRADE BEAMS ARE DESIGNED TO BE CAST ON SITE OR PRECAST OFF SITE.





22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
CONCRETE GRADE BEAM PLATFORM FOUNDATION | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

STATE OF ALASKA
49 TH
BERTRAND WHITE
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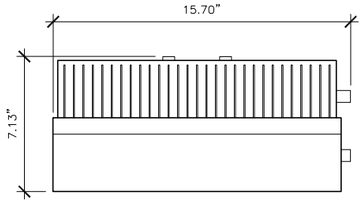
PROJECT:

AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

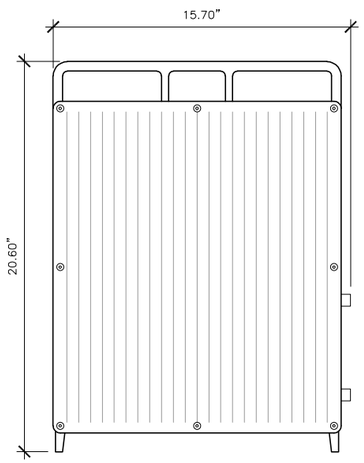
CONSTRUCTION DETAILS

FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO: 5	SHEET NO: D–5

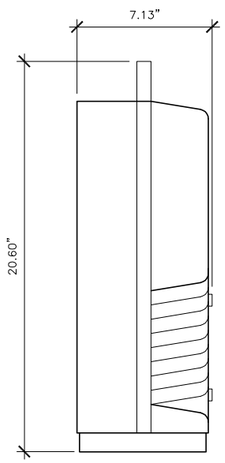


PLAN VIEW

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



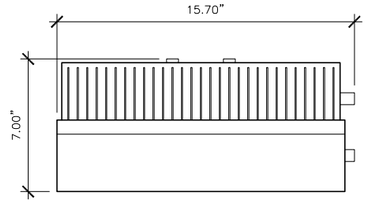
SIDE VIEW



FRONT VIEW

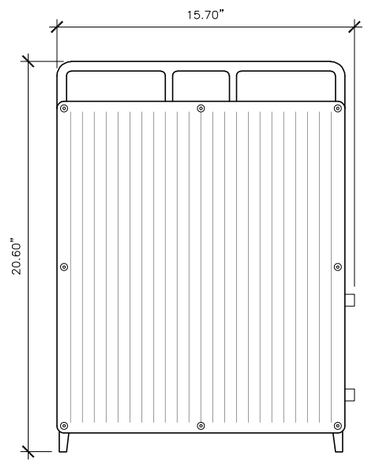
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

RRUS4890 B2/B66 | 6

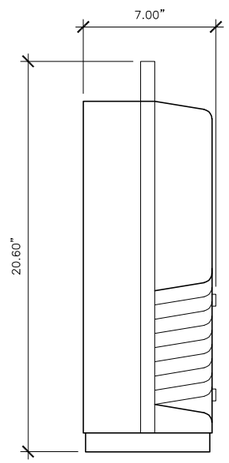


PLAN VIEW

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



SIDE VIEW



FRONT VIEW

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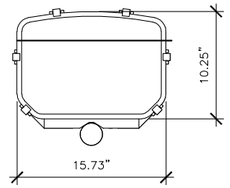
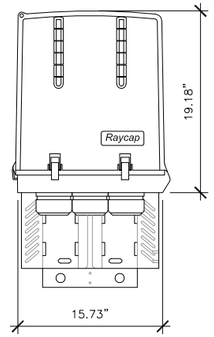
11"x17" SCALE: NOT TO SCALE

RRUS4490 B5/B13 | 5

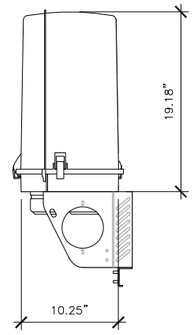


PLAN VIEW

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



FRONT VIEW

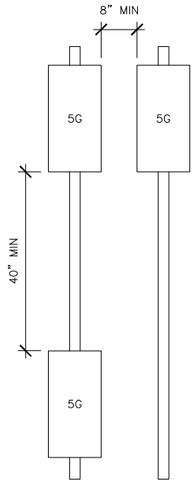


SIDE VIEW

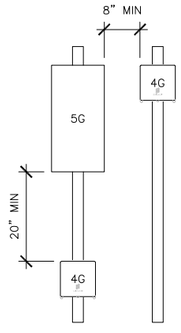
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

12-PORT OVP | 4

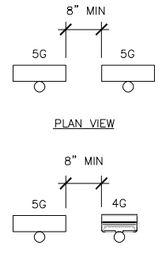
NOTE:
CONTRACTOR SHALL MAINTAIN ANTENNA SPACING AS PRESCRIBED IN THIS DETAIL, UNLESS ALTERNATIVE SPACING IS APPROVED BY VERIZON WIRELESS RF

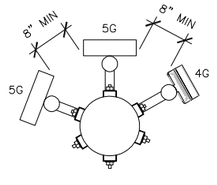


FRONT VIEW



FRONT VIEW



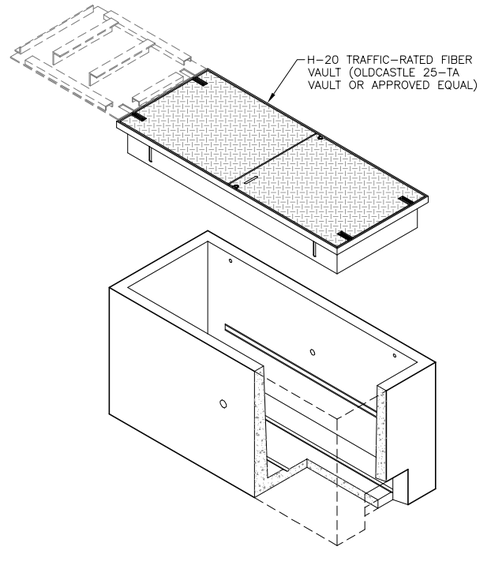


PLAN VIEW

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

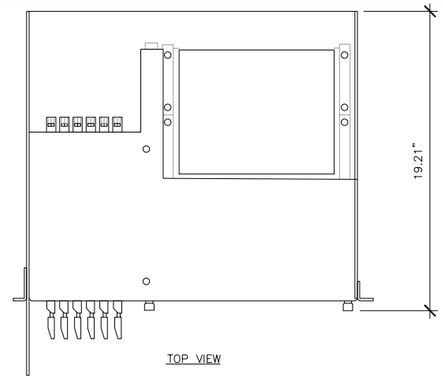
ANTENNA SPACING | 3

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.



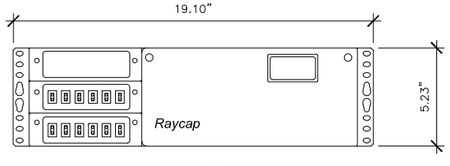
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

25-TA FIBER VAULT | 2

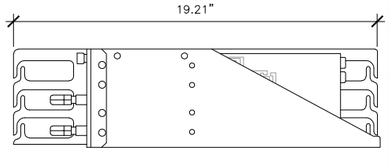


TOP VIEW

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



FRONT VIEW



SIDE VIEW

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

RACK MOUNTED 12-PORT OVP | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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
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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:

CONSTRUCTION DETAILS

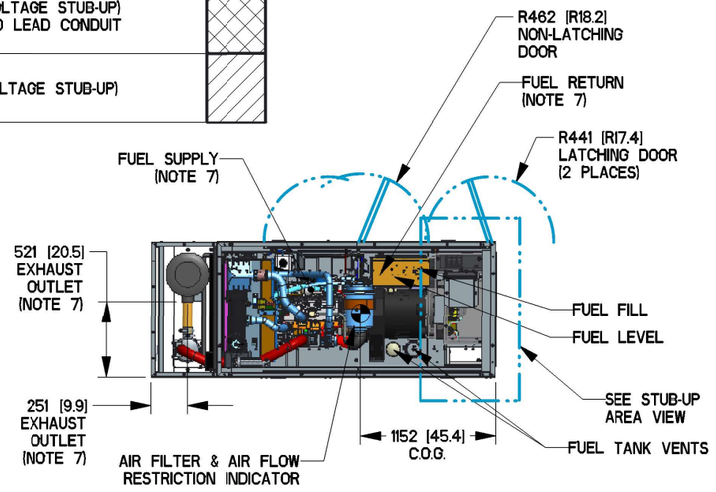
FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER:	PROFESSIONAL OF RECORD
BEW	BEW
REVISION NO:	SHEET NO:
5	D-6

SH	REV	WINDCHILL VERSION
1/1	A	A.6

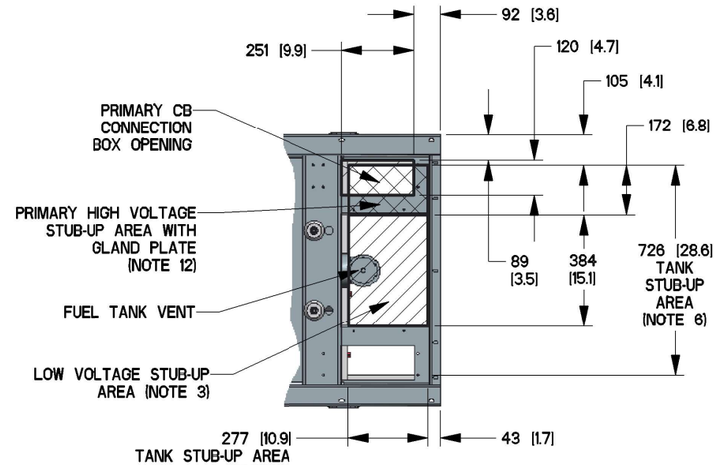
RECOMMENDED ELECTRICAL STUB-UP

(HIGH VOLTAGE STUB-UP)
AC LOAD LEAD CONDUIT

(LOW VOLTAGE STUB-UP)

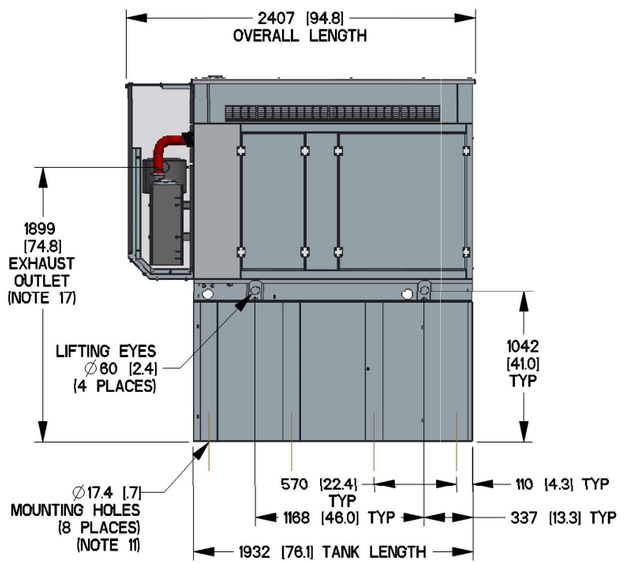


TOP VIEW
(SHOWN WITH ROOF PANELS REMOVED)

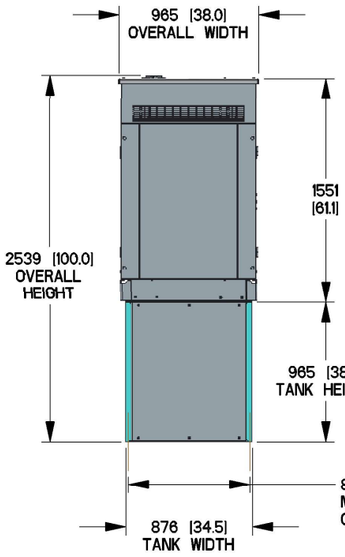


STUB-UP AREA VIEW
(2X SCALE)

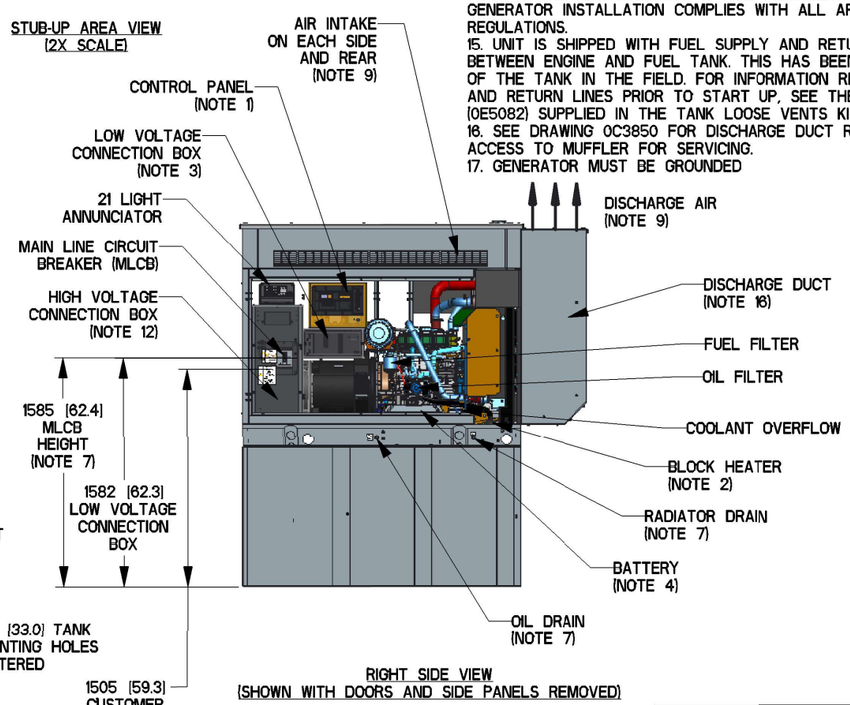
NOTES:
1. CONTROL PANEL INCLUDES BATTERY CHARGER WITH THREE PRONG CORD
2. 1500W 120 VAC ENGINE BLOCK HEATER WITH THREE PRONG CORD.
3. CONNECTION POINTS FOR CONTROL WIRES PROVIDED IN THE LOW VOLTAGE CONNECTION BOX. BOTTOM HAS KNOCKOUTS FOR 1/2" AND 3/4" CONDUIT FITTINGS. (USE LOW VOLTAGE STUB-UP AREA)
4. BATTERY (12 VOLT NEGATIVE GROUND SYSTEM).
5. MAIN LINE CIRCUIT BREAKER (MLCB) (MLCB HEIGHT MAY VARY WITH CB SELECTION) AC LOAD LEADS CONNECT DIRECTLY TO BOTTOM OF BREAKER.
6. CENTER OF GRAVITY & WEIGHT MAY SHIFT SLIGHTLY DUE TO UNIT OPTIONS.
7. 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.
8. STUB-UPS: BASE TANK REQUIRES ALL STUB-UPS TO BE IN THE REAR TANK STUB-UP AREA.
9. 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.
10. BOTTOM OF GENERATOR SET MUST BE CLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
11. BOLTS OR STUDS USED TO MOUNT UNIT TO PAD SHALL BE 5/8-11 GRADE 5. USE STANDARD SAE TORQUE SPECS.
12. HIGH VOLTAGE STUB-UP AREA INCLUDES THE AC LOAD LEAD CONNECTIONS TO MLCB, NEUTRAL CONNECTION AND AUXILIARY 120/240V CONNECTION.
13. 210 GALLON USEABLE CAPACITY BASETANK STANDARD WITH GENERATOR.
14. IT IS THE RESPONSIBILITY OF THE INSTALLATION TECHNICIAN TO ENSURE THAT THE GENERATOR INSTALLATION COMPLIES WITH ALL APPLICABLE CODES, STANDARDS, AND REGULATIONS.
15. 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.
16. SEE DRAWING 0C3850 FOR DISCHARGE DUCT REMOVAL. REMOVAL OF DUCT WILL PROVIDE ACCESS TO MUFFLER FOR SERVICING.
17. GENERATOR MUST BE GROUNDED



LEFT SIDE VIEW
(SHOWN WITH DUCT SIDE PANEL REMOVED)



REAR VIEW



RIGHT SIDE VIEW
(SHOWN WITH DOORS AND SIDE PANELS REMOVED)

WEIGHT DATA: (INCLUDES FUEL TANK)
GENERATOR: 1382 [3046]
GENERATOR WITH SHIPPING SKID: 1441 [3176]

WEIGHT: KG [LBS]
DIMENSIONS: MM [INCHES]

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

INSTALLATION DRAWING

ELECTRONICALLY APPROVED
INSIDE WINDCHILL

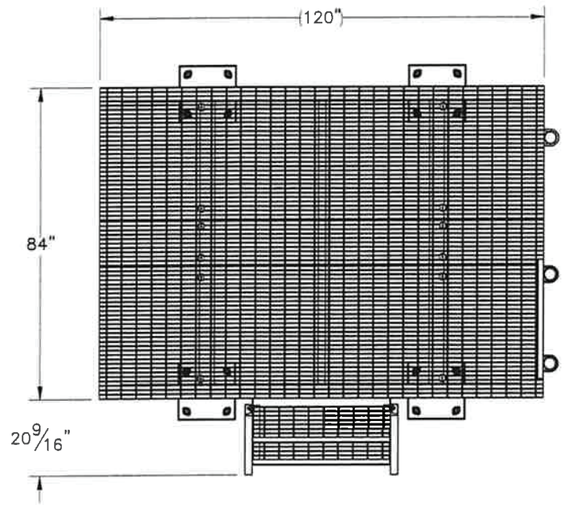
GENERAC

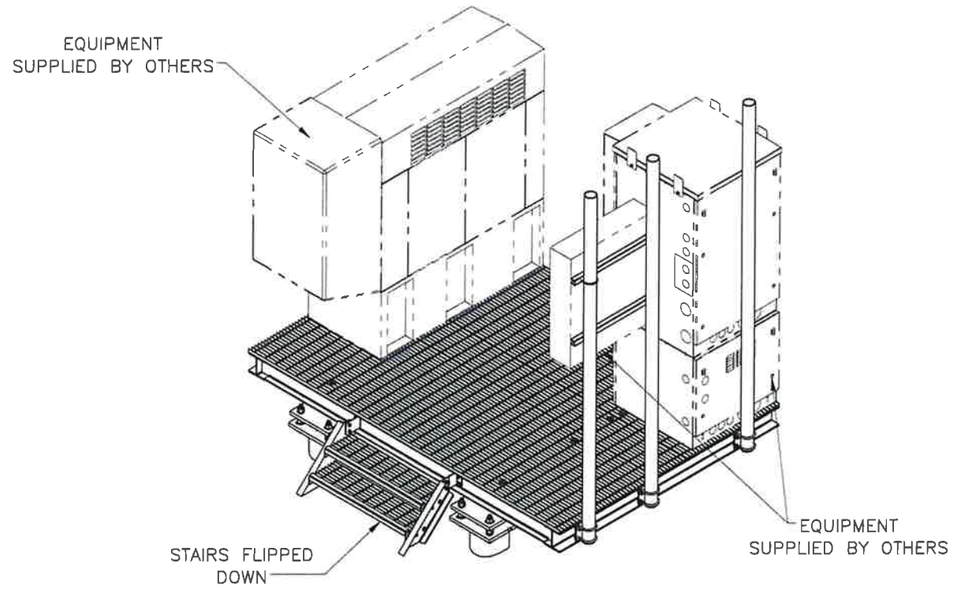
TITLE
INSTALL D2.2L G22
30KW SSS L2A Y02

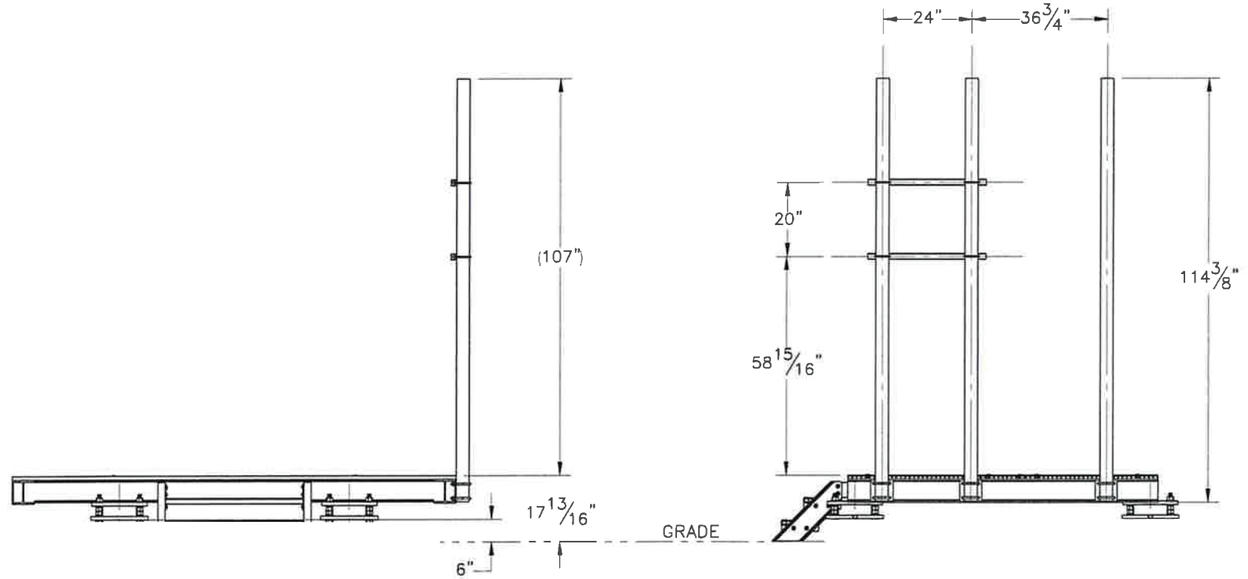
ISSUE DATE: 12/18/17

SIZE	CAGE NO	DWG NO	REV
B	N/A	10000019121	A

SCALE 0.025 | WT-KG SEE ABOVE | SHEET 1 of 1







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~~	~~100-000-1001~~	~~10"X10' HELICAL PIER~~ CONTRACTOR SHALL NOT USE HELICAL PIERS		
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, 1.00-8UNC, GR 2H, GALV		0.43
7	32	002-0NG-0008	NUT, HX, 1.00"-8UNC, 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

THIRD ANGLE PROJECTION

NEXT ASSY | USED ON

APPLICATIONS

TOLERANCES
.0 ± .06
.00 ± .015
.000 ± .005
FRACTIONS ± 1/16
ANGLES ± .25°
HOLES:
DRILLED OR PUNCHED + 1/32
BURNED ± 1/32

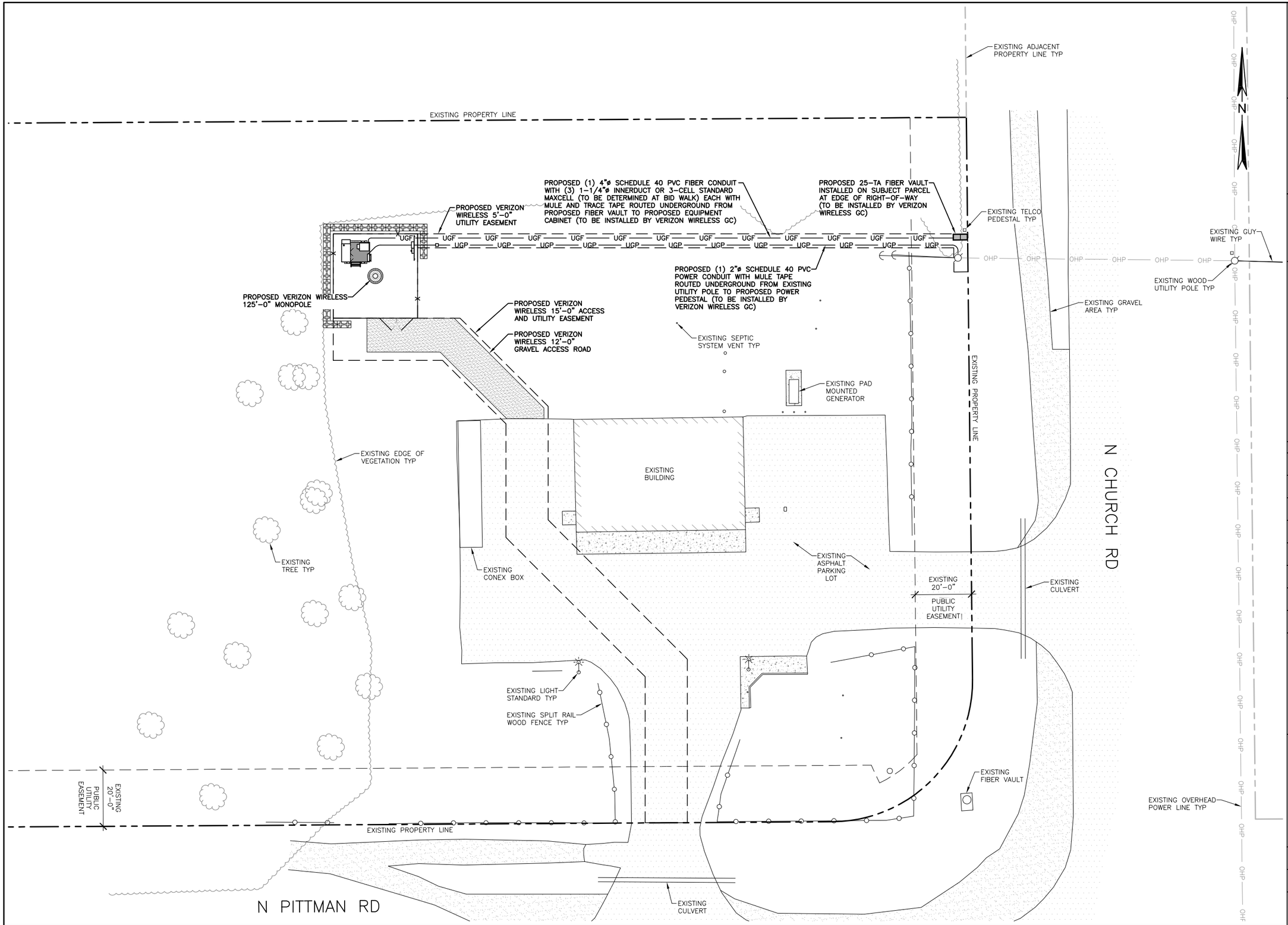
APPROVALS	DATE
DRAWN J. CRITELLI	3.2.20
CHECKED	2020.03.11
ENGINEER/DESIGNER	3/12/20
PRODUCTION JKS	3-12-20

ELECTRO MECHANICAL INDUSTRIES, INC
11235 NEEDHAM DRIVE
HOUSTON, TEXAS 77065
1-800-453-0050

TITLE:
84'' X 120'' EQUIPMENT PLATFORM KIT

SIZE	DRAWING NO.	REV
B	1000-0010-0212	---

SCALE: 1:4 | WEIGHT: 3326 lbs. | SHEET 1 OF 2



22"x34" SCALE: 1/16"= 1'–0"
11"x17" SCALE: 1/32"= 1'–0"
14' 7' 0' 14'

PROPOSED UTILITY PLAN | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

STATE OF ALASKA
49 TH
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

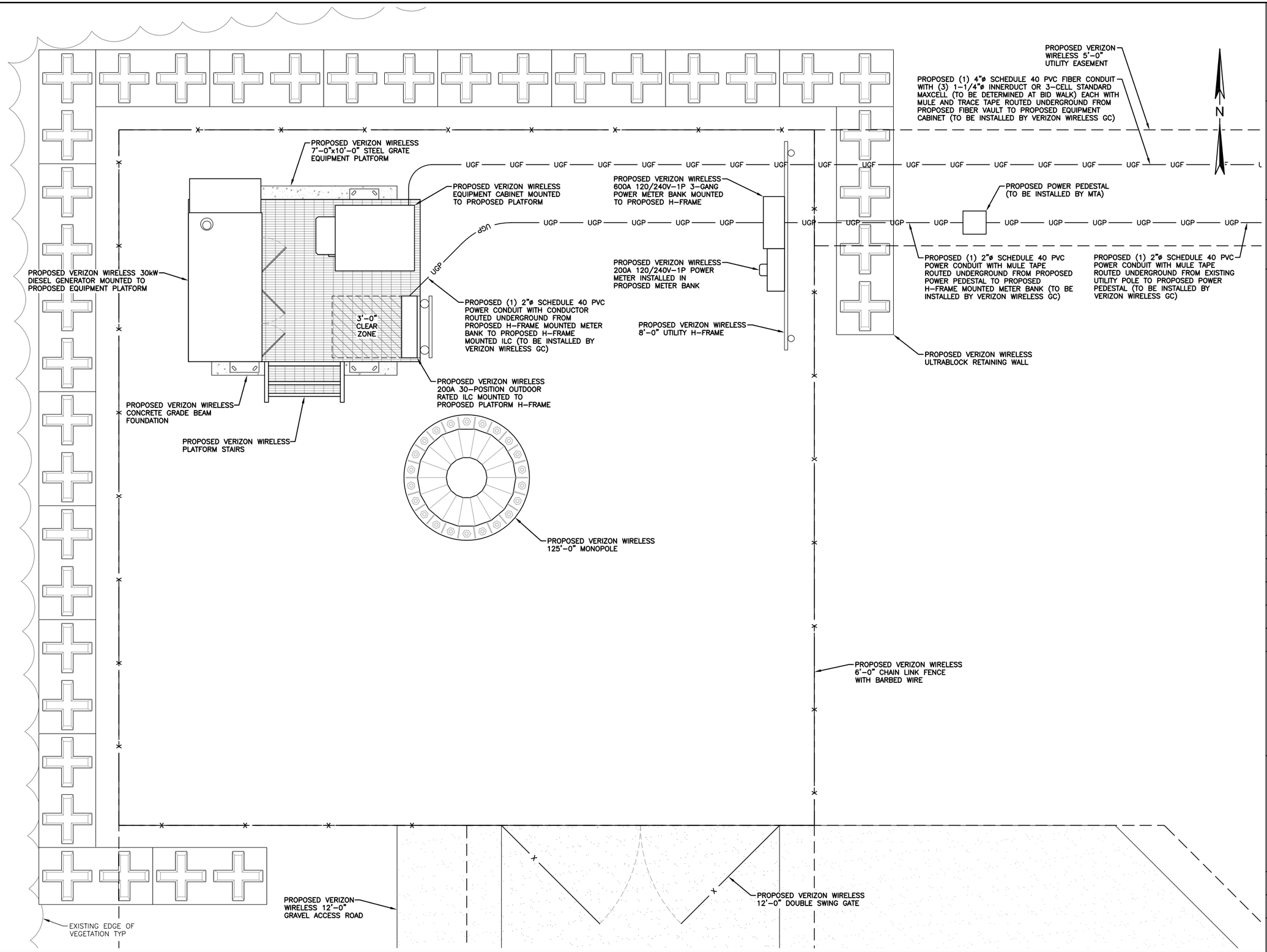
PROJECT:

AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

PROPOSED UTILITY PLAN

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



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

PROPOSED COMPOUND UTILITY PLAN | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

STATE OF ALASKA
49 TH
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
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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 UTILITY PLAN

FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD: BEW
REVISION NO: 5	SHEET NO: E-2

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
ELECTRICAL NOTES | 3

22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
NOT USED | 2

22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
NOT USED | 1

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
NOT USED | 4

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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:

POWER NOTES

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

PANEL NAME:	VZW ILC			MODEL NUMBER:	INTERSECT AA300G-1PH-3R:										
RATED VOLTAGE:	240	120	VOLTS	PHASE/WIRE:	1/3										
MAIN BREAKER:	240	AMPS		BUS RATING:	200		KEY DOOR LATCH:	YES							
MOUNT:	H-FRAME			NEUTRAL BAR:	YES		HINGED:	YES							
ENCLOSURE TYPE:	NEMA 3R			AIC:	65K										

POS	USAGE FACTOR	BUS AMPS L1	BUS AMPS L2	LOAD	POLES	AMPS	L1	L2	AMPS	POLES	LOAD	BUS AMPS L1	BUS AMPS L2	USAGE FACTOR	POS
1	1	18		RECTIFIER #1	2	30A			30A	2	FUTURE RECTIFIER	18		1	2
3	1		18										18	1	4
5	1	18		RECTIFIER #2	2	30A			30A	2	FUTURE RECTIFIER	18		1	6
7	1		18										18	1	8
9	1	18		RECTIFIER #3	2	30A									10
11	1		18												12
13	1	18		RECTIFIER #4	2	30A									14
15	1		18												16
17	1.25	12		GFI RECEPT/LIGHT	1	20A									18
19	1.25		12	BLOCK HEATER	1	20A									20
21	1.25	5		BATT CHARGER	1	20A									22
23															24
25															26
27															28
29															30
		93.25	87	:SUB TOTAL AMPS							SUB TOTAL AMPS:	36	36		
											FACTORED TOTAL AMPS:	129.25	123		

NOTES:
1. ALL CONDUCTORS ARE TYPE THWN (75°C) COPPER.
2. MAXIMUM LENGTH OF RUN FOR RECTIFIER CIRCUITS IS 50FT.
3. INTERSECT/GENERAC INTEGRATED LOAD CENTER INCLUDES 200 AMP MAIN DISCONNECT AND TRANSFER SWITCH FOR PORTABLE OR PERMANENT GENERATOR.
4. RECTIFIER LOADS ARE CONSIDERED TO BE NON-CONTINUOUS.
5. IF ADDITIONAL FUTURE LOADS ARE ADDED WHICH CAUSE TOTAL DEMAND TO EXCEED GENERATOR BREAKER SIZE, BACKUP POWER SYSTEM SHALL BE EVALUATED AND UPGRADED AS NECESSARY.

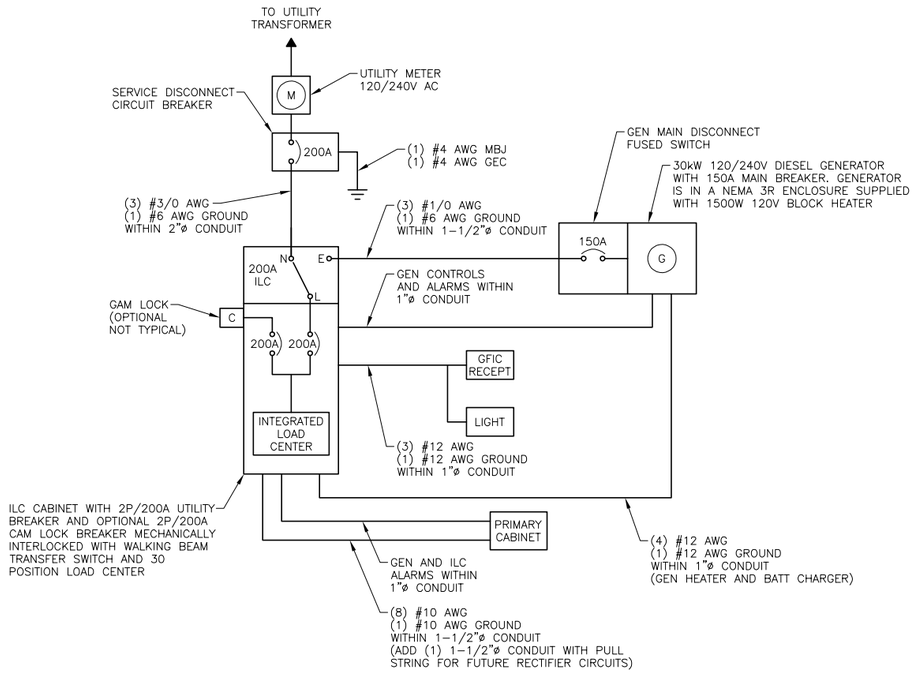
COMMON VERIZON WIRELESS DC PLAN RECTIFIER REQUIREMENTS			
RECTIFIER	INPUT FLA CURRENT AT 240 VAC (EACH RECTIFIER)	2 RECTIFIER/BRANCH CIRCUIT ALTERNATE APPROACH	1 RECTIFIER/BRANCH CIRCUIT ALTERNATE APPROACH
VERTIV 3500W (R48-2000e3 OR SIMILAR)	15.5 AMPS	40A/2P (OR 45A/2P) #8 THHN	30A/2P #10 THHN
GE 75A (NE075AC48xxxx OR SIMILAR)	22 AMPS (MAX)	60A/2P #6 THHN	30A/2P #10 THHN
OTHER – COORDINATE WITH VENDOR	REFER TO CUT SHEETS	REFER TO CUT SHEETS	REFER TO CUT SHEETS

LOAD CALCULATION	
LOAD	AMPS
PROPOSED LOAD:	123.0
TOTAL DEMAND:	129.0
VOLTAGE:	120/240V SINGLE PHASE 3W 200A

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

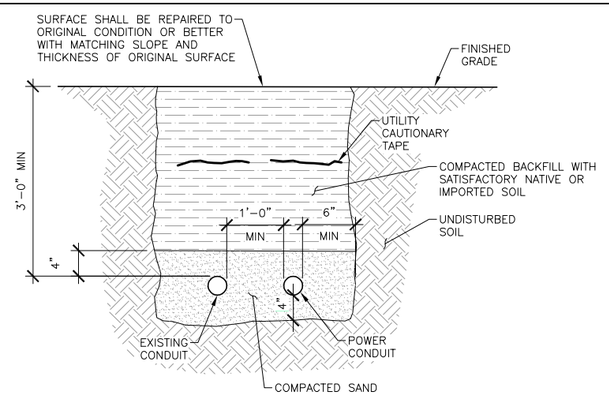
PANEL SCHEDULE | 5

NOTES:
1. THE GENERATOR USED IN CONJUNCTION WITH A 2-POLE ILC WITH A SOLID NEUTRAL **IS NOT** A SEPARATELY DERIVED SYSTEM. AS SUCH, **DO NOT** BOND THE NEUTRAL GROUND AT THE GENERATOR.
2. THE PANEL SCHEDULE AND ONE-LINE DIAGRAM REPRESENT A SITE WITH A NEW GE POWER PLANT, 30kW DIESEL GENERATOR AND TWO SOURCE ILC (THREE SOURCE ILC OPTIONAL AS NEEDED). ADJUST AS NECESSARY PER ACTUAL SITE CONDITIONS.
3. CONDUCTOR SIZES AND DISTANCES HAVE BEEN SIZED FOR 3% MAX VOLTAGE DROP (TOTAL SYSTEM VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST DEMAND SHALL NOT EXCEED 5%)
4. WIRE SIZING AND MAXIMUM DISTANCE FROM GENERATOR TO ILC ASSUMES POWER FACTOR OF 0.9.
5. EQUIPMENT SHALL BE INSTALLED, PLUMBED AND WIRED PER MANUFACTURER'S SPECIFICATIONS.
6. ALL CONDUCTORS SHALL BE COPPER 600V RATED THHN INSULATION
7. CONTRACTOR SHALL COORDINATE THE INSTALLATION AND ENERGIZING OF THE PROPOSED ELECTRICAL METER WITH THE POWER COMPANY.
8. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF CONDUIT ROUTING.
9. COORDINATE GENERATOR ALARMING OPTION TO ALARM BLOCK WITH VERIZON WIRELESS.
10. CONTRACTOR SHALL PROVIDE A PERMANENT SIGN, RED IN COLOR STATING LOCATION OF ALTERNATE POWER SOURCE. LETTERING SHALL BE CONTRASTING TO THE RED BACKGROUND AND BE A MINIMUM OF 1/2" TALL AND SHALL BE PERMANENTLY AFFIXED TO EACH ELECTRICAL PANEL SUBJECT TO BACK FEED FROM THE ALTERNATE POWER SOURCE.
11. CONTRACTOR SHALL PROVIDE A PERMANENT SIGN, RED IN COLOR STATING "200A 120/240V-1P VERIZON WIRELESS ATS". LETTERING SHALL BE CONTRASTING TO THE RED BACKGROUND AND BE A MINIMUM OF 1/2" TALL AND SHALL BE PERMANENTLY AFFIXED TO THE ATS.



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

ONE LINE DIAGRAM | 4



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

UTILITY TRENCH | 3

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

NOT USED | 2

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

NOT USED | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

STATE OF ALASKA
49 TH
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

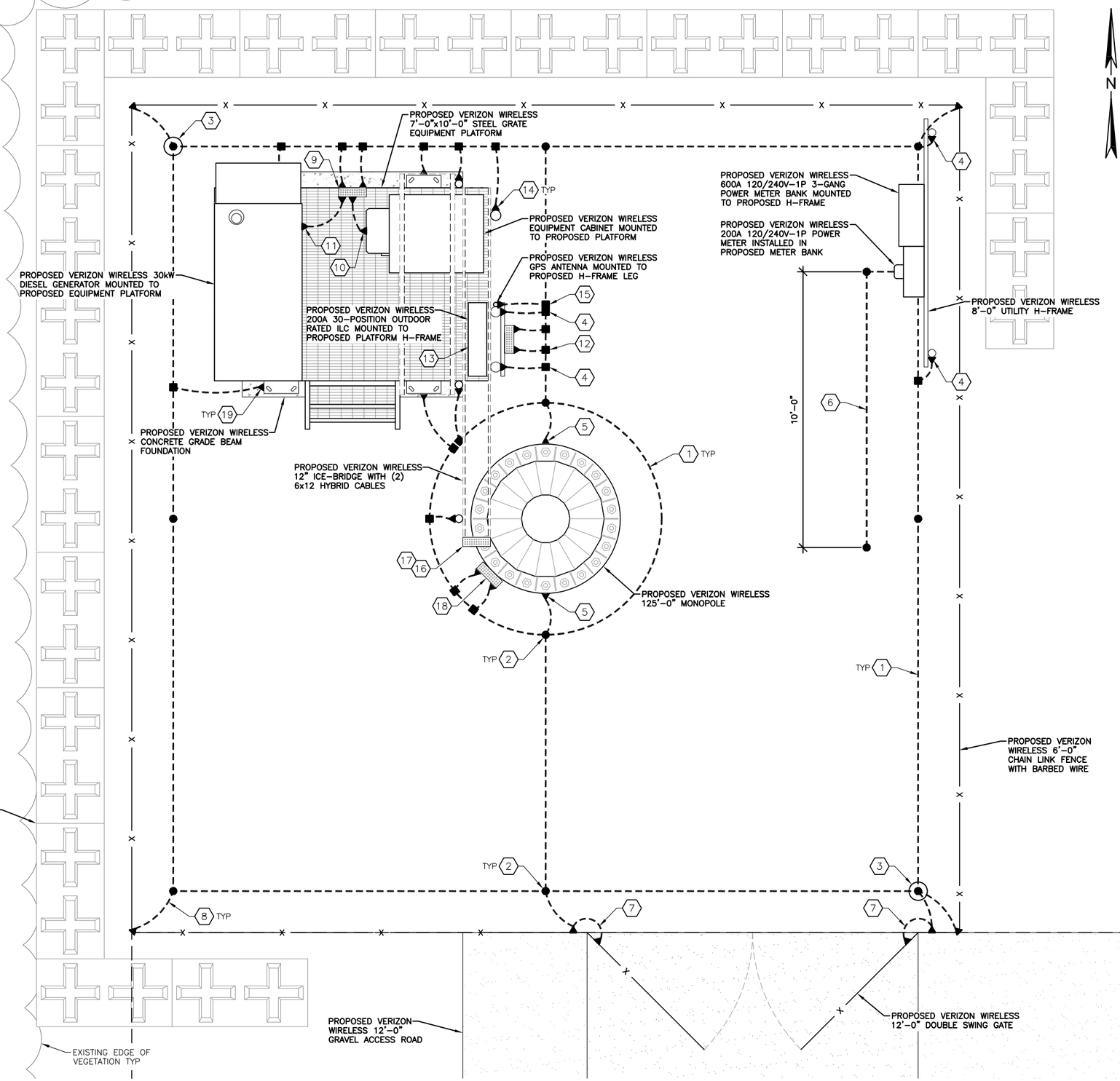
SHEET TITLE:

POWER DETAILS

FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO: 5	SHEET NO: E-4

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 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.



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

PROPOSED GROUNDING PLAN | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

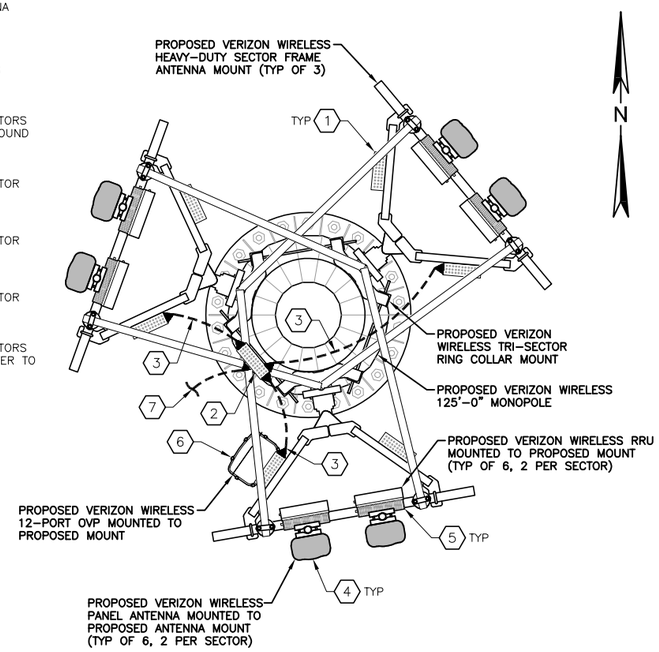
SHEET TITLE:

PROPOSED GROUNDING PLAN

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

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.



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

ANTENNA GROUNDING PLAN | 3

1. ALL GROUNDING SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT NFPA STANDARDS, NEC STANDARDS, LOCAL UTILITY REQUIREMENTS, AND WIRELESS CARRIER'S STANDARDS.
2. 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.
3. ALL METALLIC OBJECTS SHALL BE GROUNDED. ALL GROUND CONNECTIONS SHALL BE APPROVED FOR THE METALS BEING CONNECTED.
4. ALL OUTDOOR CONNECTIONS TO BE EXOTHERMIC CADWELD, INTERIOR CONNECTIONS CAN BE A PROPERLY APPLIED CRIMP TYPE UNLESS OTHERWISE SPECIFIED.
5. DO NOT INSTALL ANY GROUNDING ELEMENTS OUTSIDE OF THE CARRIER'S LEASE AREA.
6. ALL GROUNDING CONNECTIONS TO BE CLEAN AND FREE OF PAINT AT THEIR MATING SURFACES AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
7. MAXIMUM RESISTANCE OF THE COMPLETED GROUND SYSTEM SHALL NOT EXCEED 5 OHMS TO EARTH.
8. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT AGENT SUCH AS NO-OX, NOALOX, PENTROX OR KOPR-SHIELD.
9. ALL EXTERIOR GROUND CONDUCTORS SHALL BE #2 AWG SOLID BARE TINNED COPPER UNLESS OTHERWISE INDICATED.
10. 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.
11. NO SPLICES PERMITTED IN GROUND CONDUCTORS.
12. GROUND WIRES SHALL NOT BE INSTALLED THROUGH HOLES IN ANY METAL OBJECTS OR SUPPORTS TO PRECLUDE ESTABLISHING A "CHOKE POINT".
13. ALL GROUND CONNECTIONS BELOW GRADE SHALL BE EXOTHERMIC WELDED (CADWELD).
14. GROUND RING SHALL BE LOCATED A MINIMUM OF 2'-6" BELOW GRADE OR 6" BELOW THE FROST LINE, WHICHEVER IS GREATER.
15. INSTALL GROUND CONDUCTORS AND GROUND ROD A MINIMUM OF 1'-6" FROM EQUIPMENT PAD, SHELTER FOUNDATION, SPREAD FOOTING, OR FENCE.
16. ALL CONNECTIONS TO THE EXTERIOR GROUND RING SHALL BE THE PARALLEL TYPE, UNLESS CONNECTING DIRECTLY TO A GROUND ROD.
17. 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.
18. ALL EXOTHERMIC CONNECTIONS TO THE GROUND RODS SHALL START AT THE TOP AND HAVE A VERTICAL SEPARATION OF 6" FOR EVERY ADDITIONAL CONNECTION.
19. GROUND BUS BARS SHALL NOT BE FIELD MODIFIED.
20. ALL GROUND BAR CONNECTIONS SHALL BE 2-HOLE LUG COMPRESSION TYPE.
21. ENSURE ALL MECHANICAL CONDUCTORS ARE TORQUED TO THE MANUFACTURER'S SPECIFIED VALUES.
22. PROVIDE LOCK WASHERS ON ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS. HARDWARE SHALL BE STAINLESS STEEL THROUGHOUT.
23. 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.
24. TOWER SHALL BE GROUNDED PER MANUFACTURER'S RECOMMENDATIONS. AT A MINIMUM, THE TOWER SHALL BE GROUNDED IN TWO LOCATIONS.
25. 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.
26. ALL GALVANIZED SURFACES DAMAGED BY THE EXOTHERMIC WELDING PROCESS SHALL BE REPAIRED USING A ZINC RICH PAINT.

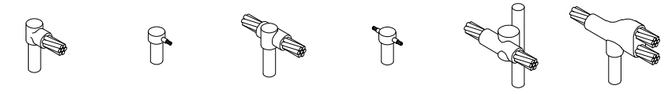
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

GROUNDING NOTES | 1

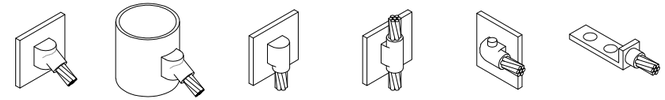
NOTES:
1. CONTRACTOR SHALL FOLLOW ALL MANUFACTURER SPECIFICATIONS FOR THE PREPARATION OF WELDING SURFACES AND THE INSTALLATION CADWELDS.
2. ALL GROUNDING CONNECTIONS OF COPPER TO COPPER AND COPPER TO STEEL CONDUCTORS OF #8 AND LARGER SIZED CONDUCTORS SHALL BE CADWELD EXOTHERMIC WELDED CONNECTIONS. CONDUCTOR SPLICED WITH A CADWELD EXOTHERMIC WELDED CONNECTION SHALL BE CONSIDERED AS A CONTINUOUS CONDUCTOR.
3. 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.

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

NOT USED | 4

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

LYNX

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

REV	DATE	DESCRIPTION
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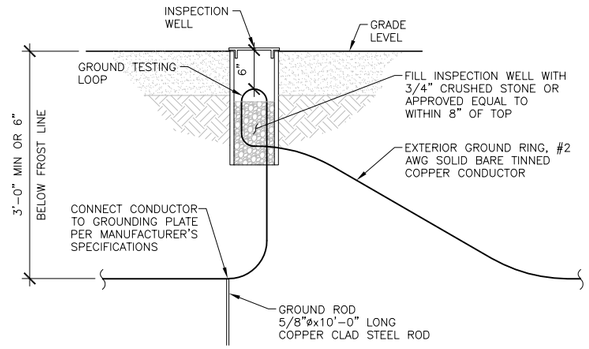
PROJECT:

AK2
SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

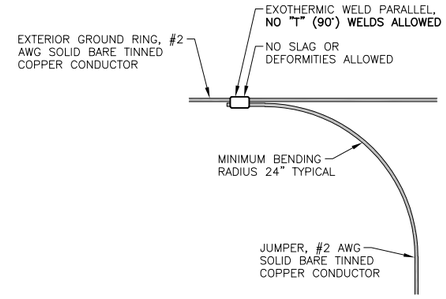
GROUNDING NOTES AND DETAILS

FUZE PROJECT ID: 2570630	DATE: 11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO: 5	SHEET NO: E-6



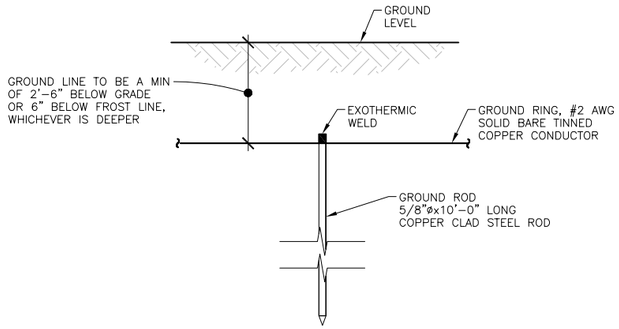
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

GROUND ROD INSPECTION WELL | 8



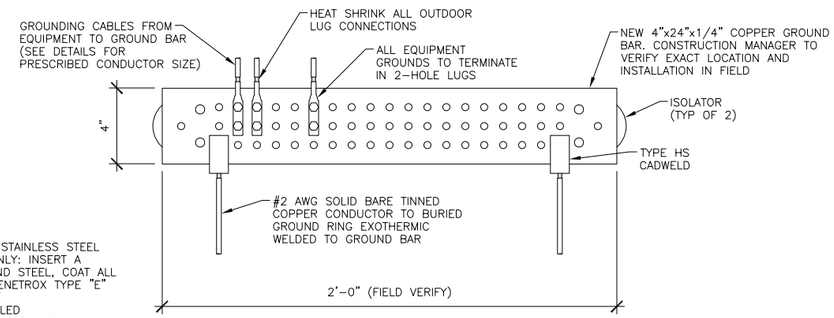
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

TYPICAL GROUNDING CONNECTION | 7



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

GROUND ROD | 6

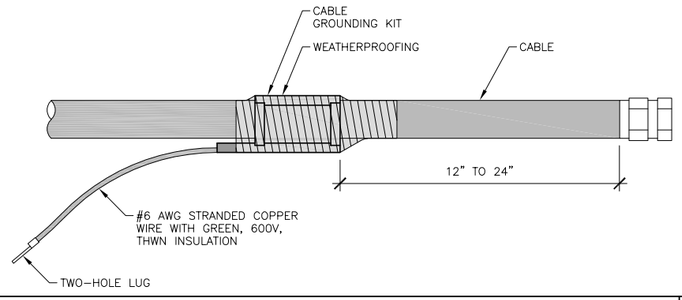


NOTES:
1. ALL HARDWARE SHALL BE 8-88 STAINLESS STEEL
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KORP-SHIELD PENETROX TYPE "E"
3. ALL HOLES COUNTERSUNK 1/16"
4. ALL LUGS SHALL BE DOUBLE HOLED
5. HEAT SHRINK ALL OUTDOOR LUG CONNECTIONS

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

GROUND BAR | 5

NOTES:
1. GROUND KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
2. DO NOT INSTALL CABLE GROUND KIT AT A BEND.
3. GROUND WIRE SHALL ALWAYS BE DIRECTED DOWNWARDS TO A NEARBY GROUND BUS BAR AND TERMINATE WITH A TWO-HOLE LUG.
4. WEATHER PROOFING SHALL BE INSTALLED PER GROUND KIT MANUFACTURER SPECIFICATIONS. DO NOT USE COLD SHRINK.
5. 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.



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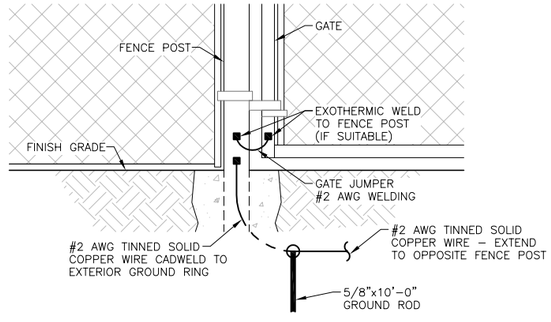
11"x17" SCALE: NOT TO SCALE

CABLE GROUNDING | 4



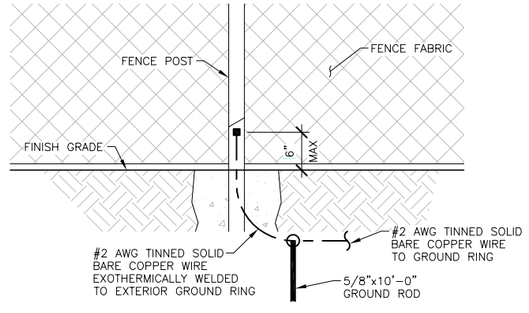
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

GATE GROUNDING | 3

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

NOT USED | 2

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



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FENCE GROUNDING | 1

APPLICANT:

verizon

IMPLEMENTATION TEAM/CLIENT:

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SHAMPINE
5182 N PITTMAN RD
WASILLA, AK 99654

SHEET TITLE:

GROUNDING DETAILS

FUZE PROJECT ID:	DATE:
2570630	11/14/22
DRAFTER: BEW	PROFESSIONAL OF RECORD BEW
REVISION NO: 5	SHEET NO: E-7

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

1511 THIRD AVENUE
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SEATTLE, WA 98101
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FAX 206.957.3901
www.quantumce.com

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

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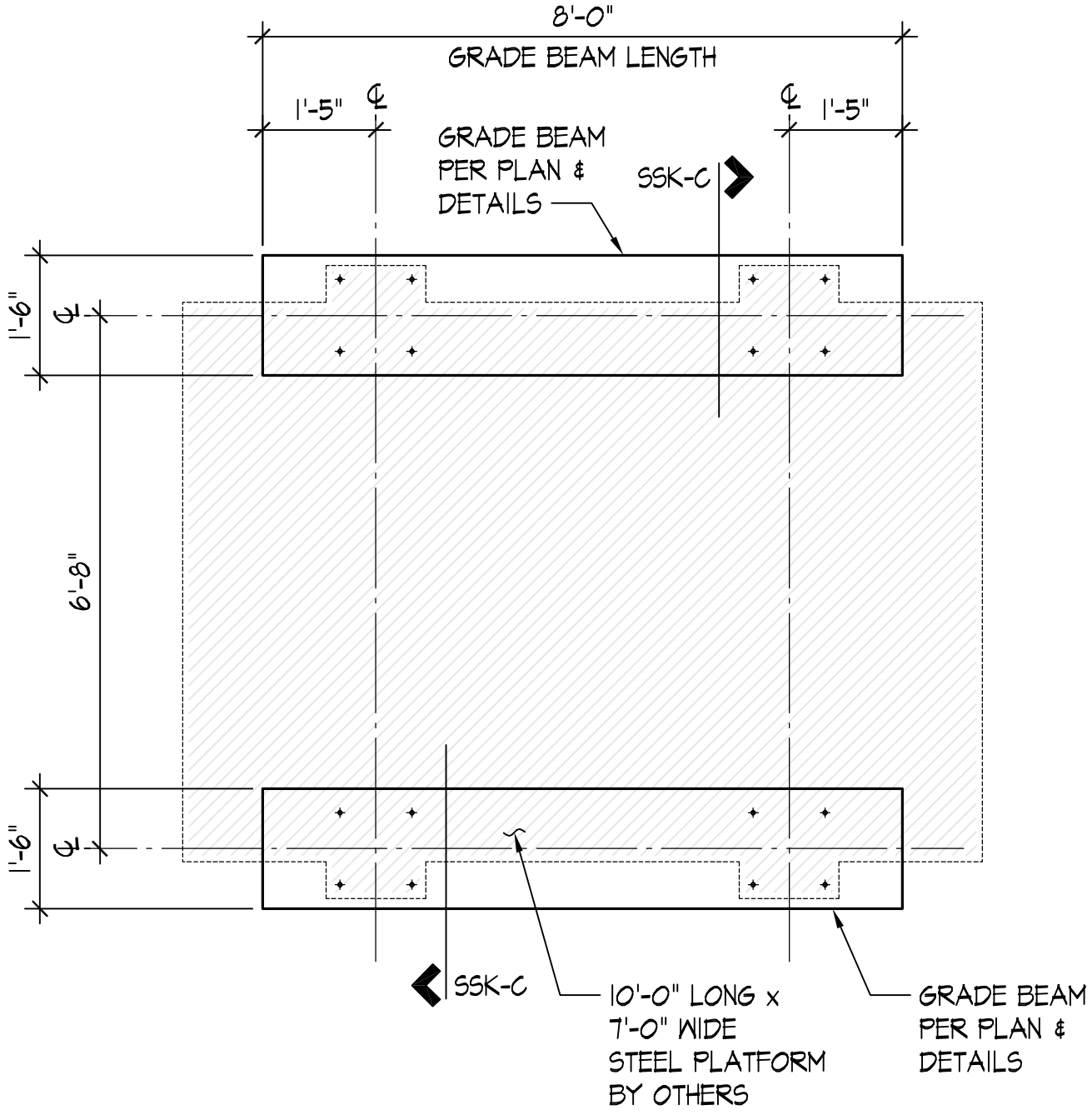
VERIZON AK2 SHAMPINE EQUIPMENT FOUNDATION	11/21/23	23459.01
project	date	project no.
	FRU	SSK-A
	designed by	sheet
ADAPT CONSULTING	SSN	
client	drawn by	



EQUIPMENT PLATFORM FOUNDATION PLAN

SCALE: NONE

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

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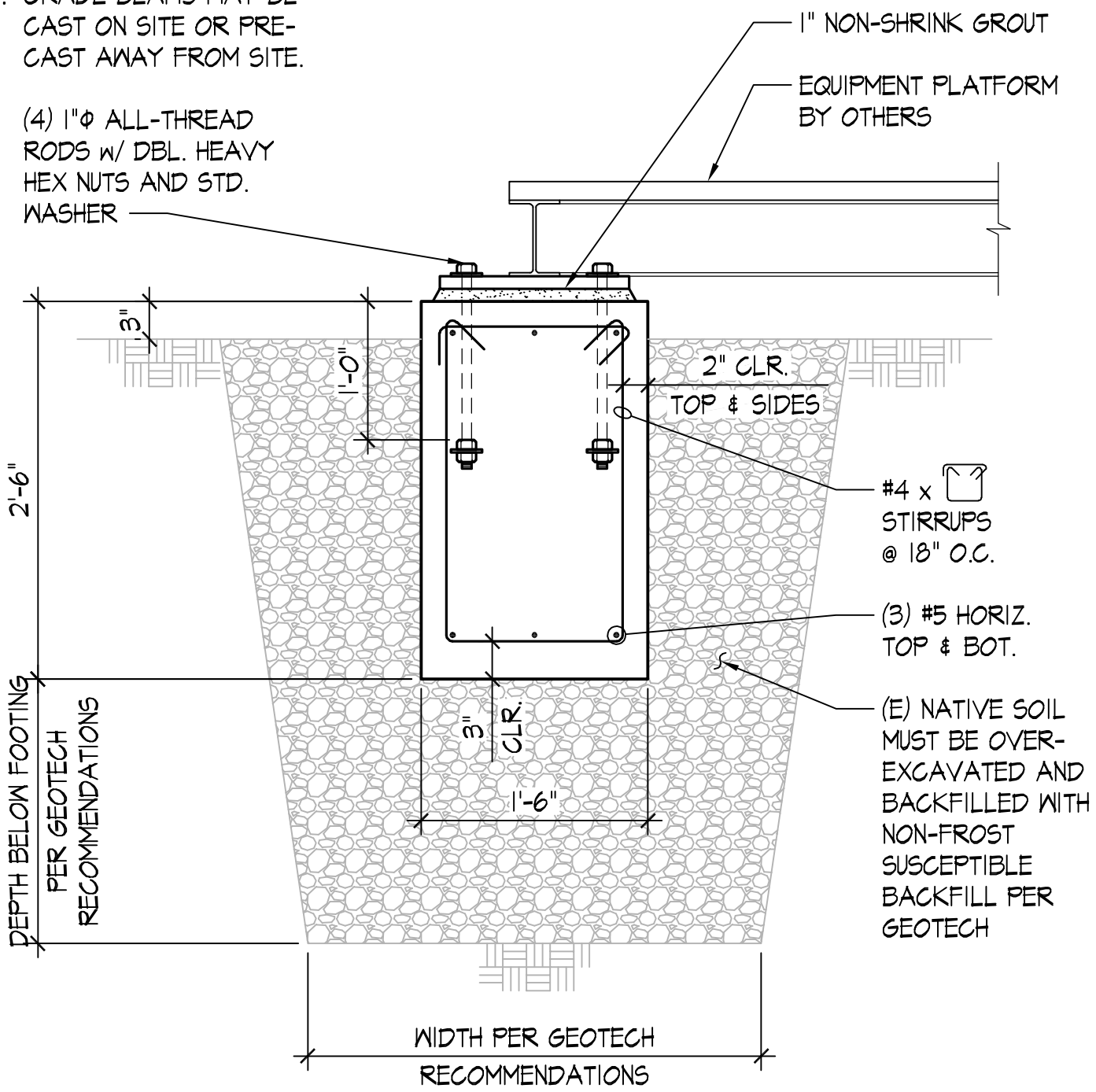
VERIZON AK2 SHAMPINE EQUIPMENT FOUNDATION	11/21/23	23459.01
project	date	project no.
	FRU	SSK-B
	designed by	sheet
ADAPT CONSULTING	SSN	
client	drawn by	

NOTES:

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



GRADE BEAM DETAIL

SCALE: NONE

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

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VERIZON AK2 SHAMPINE EQUIPMENT FOUNDATION	11/21/23	23459.01
project	date	project no.
	FRU	SSK-C
	designed by	sheet
ADAPT CONSULTING	SSN	
client	drawn by	

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
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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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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 ..... Fy=60,000 PSI

This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback.

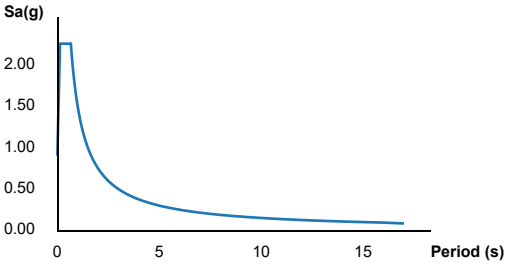
The ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Hazards by Location

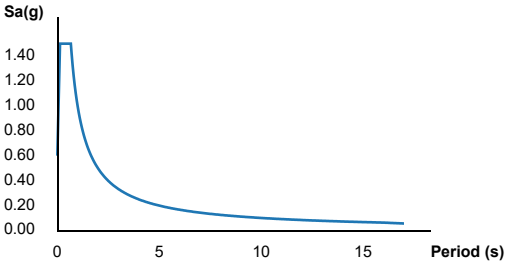
Search Information

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.

The ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

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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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

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Project	Verizon AK2 - Shampine Equipment Foundation	Job #	23459.01	Page	
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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	0.85	(SEE SECTION 26.6 AND TABLE 26.6-1)
EXPOSURE CATEGORY B, C OR D	D	(SEE SECTION 26.7)
TOPOGRAPHIC FACTOR, Kzt	1.00	(SEE SECTION 26.8 AND FIGURE 26.8-1)
GUST EFFECT FACTOR, G	0.85	(SEE SECTION 26.9)

STEP 4: DETERMINE VELOCITY WIND PRESSURE COEFFICIENT

HEIGHT, z	10.0	FT
MEAN ROOF HEIGHT, h	10.0	FT
TERRAIN EXPOSURE CONSTANT, α	11.5	(SEE TABLE 26.9-1)
TERRAIN EXPOSURE CONSTANT, zg	700.0	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:

1. α = 7.0 FOR EXPOSURE 'B', 9.5 FOR EXPOSURE 'C', OR 11.5 FOR EXPOSURE 'D'
1. 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 EQUPMENT FOR BUILDINGS WITH h ≤ 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 GENERAT0R
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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Subject	Seismic Loading	Checked		Date	

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

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

$F_{p,max} = 1.6S_{DS}I_pW_p$ (EQUATION 13.3-2)
$F_{p,\ min} = 0.3S_{DS}I_pW_p$ (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 (LRFD)
	0.76	W_p (ASD)

VERTICAL SEISMIC LOAD

$F_{p,vert}$	0.30	W_p (LRFD)
	0.21	W_p (ASD)

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Subject	Wind Loading	Checked		Date	

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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Subject	Seismic Loading	Checked		Date	

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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Subject	Wind Loading	Checked		Date	

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

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

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	
	SEISMIC	5184.0	648.0	2142.9	4800.0	Controls
CABINET	WIND	1338.2	334.5	939.7	1500.0	
	SEISMIC	1620.0	405.0	1250.1	1500.0	Controls

QUANTUM | CONSULTING ENGINEERS

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Seattle, WA 98101 F. 206.957.3901

Project	Verizon AK2 - Shampine Equipment Foundation	Job #	23459.01	Page	
Client	Adapt Consulting	By	FRU	Date	11/21/23
Subject	Seismic Loading for Equipment Platform	Checked		Date	

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, Fp 2164.32 LB (LRFD)

SEISMIC LOAD IN THE X-DIRECTION

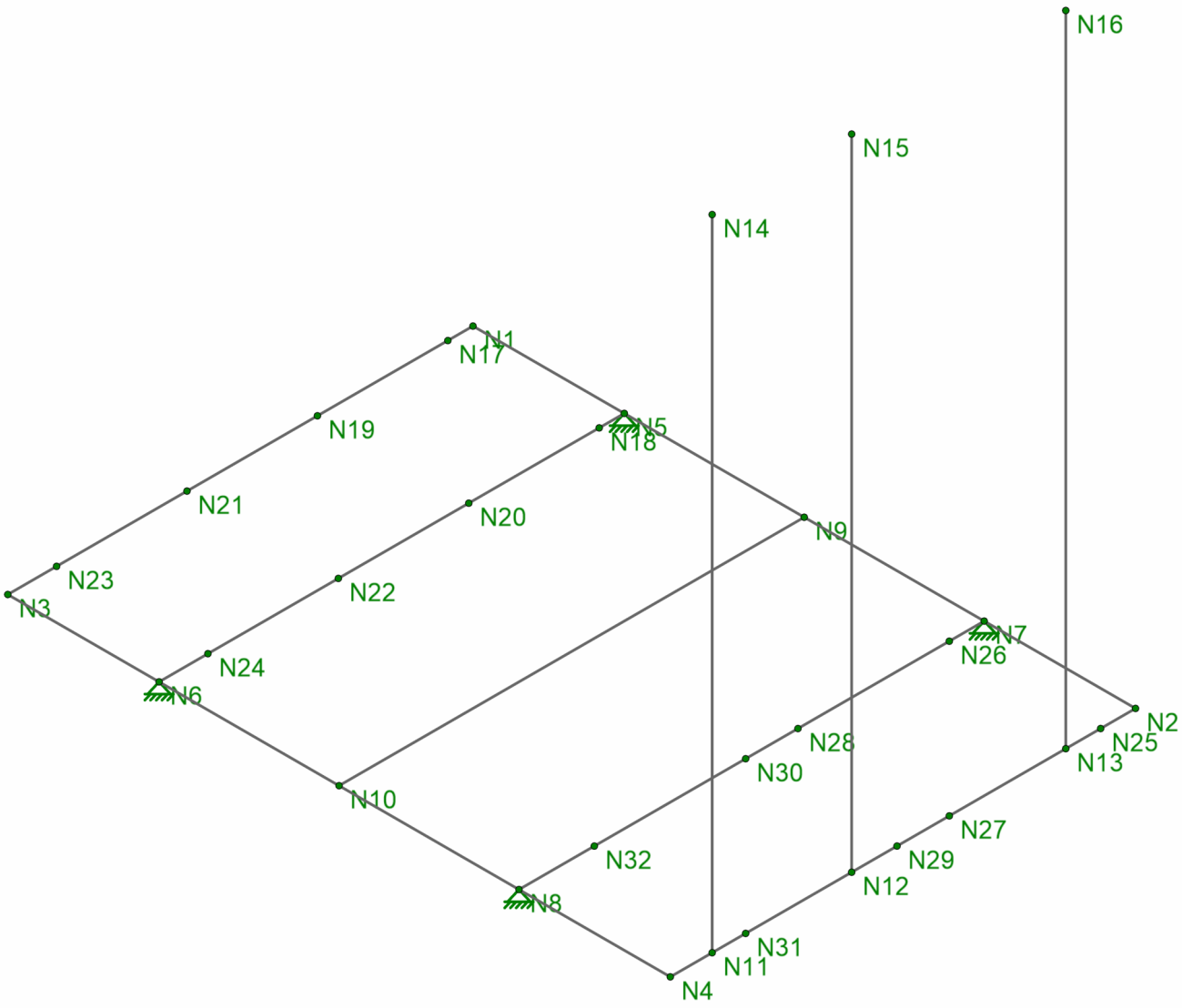
LOAD	Fp	L (FT)	w (PLF)
w1	1080.00	7.00	154.29
w2	544.32	7.00	77.76
w3	540.00	7.00	77.14
w4	756.00	7.00	108.00

Total, w 417.19 PLF

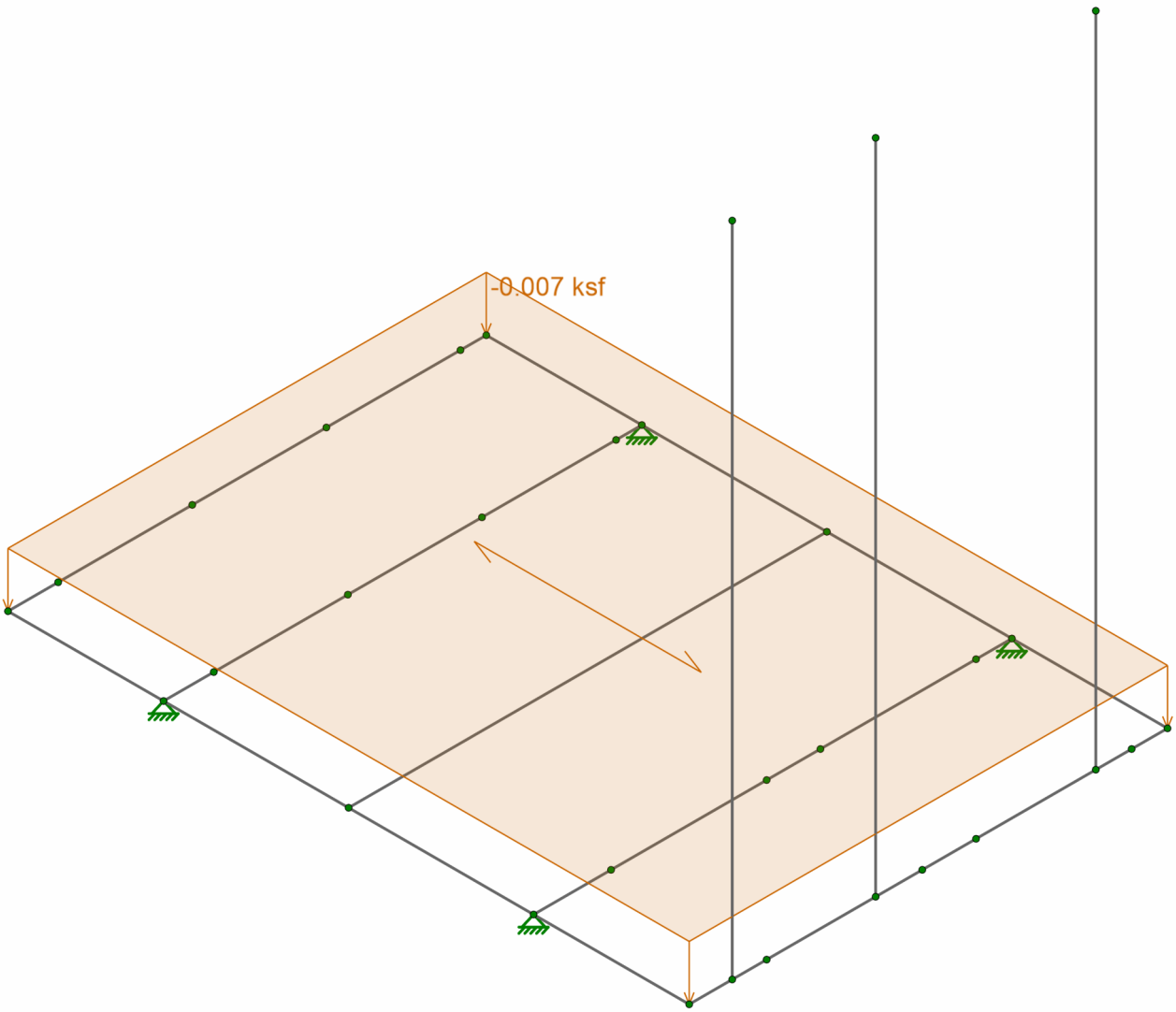
SEISMIC LOAD IN THE Z-DIRECTION

LOAD	Fp	L (FT)	w (PLF)
w1	1080.00	10.00	108.00
w2	544.32	10.00	54.43
w3	540.00	10.00	54.00
w4	756.00	10.00	75.60

Total, w 292.03 PLF

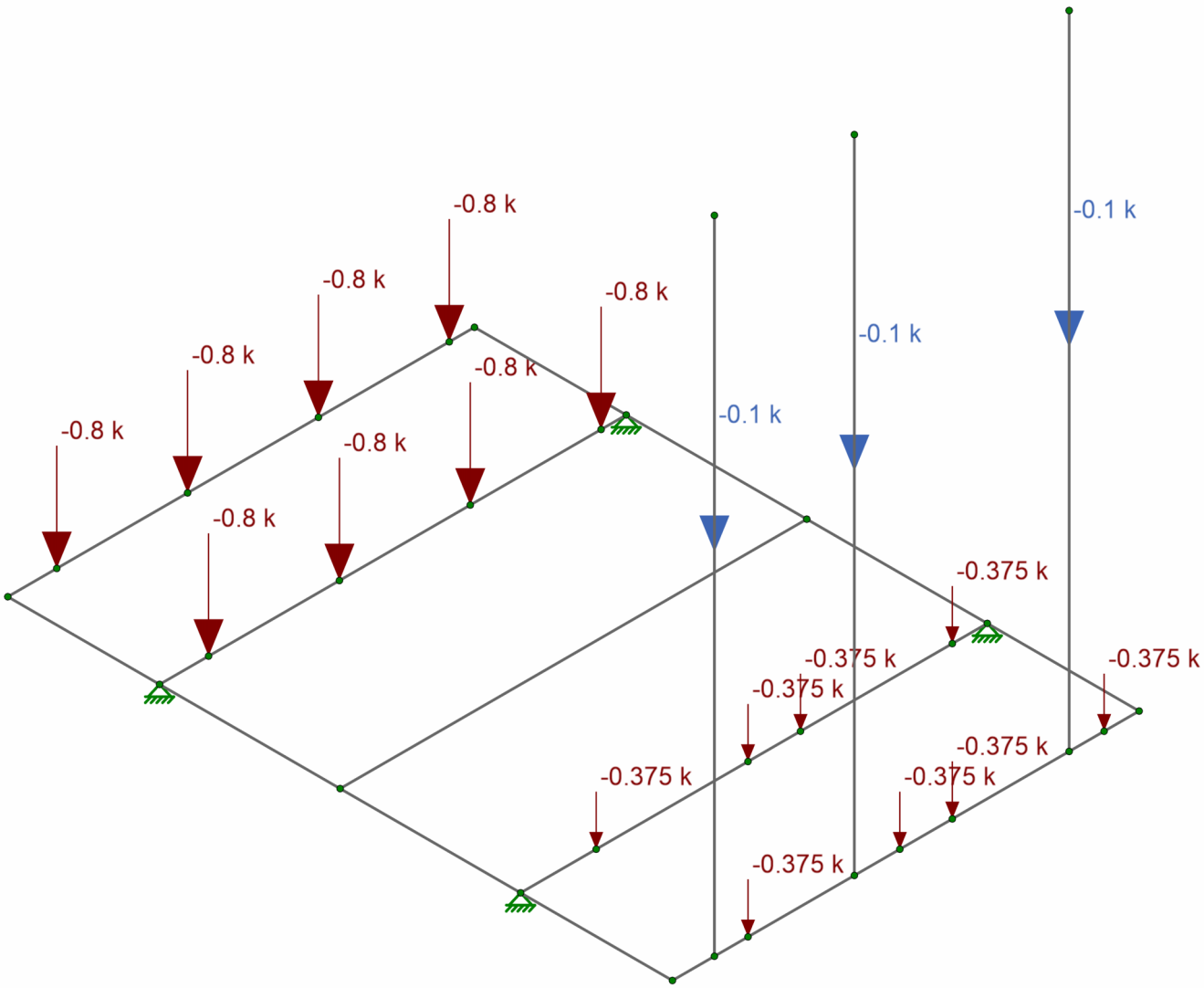


RISA A NEMETSCHEK COMPANY	Quantum	Verizon AK Shampine Platform	SK-1
	FRU		Nov 10, 2023 at 03:55 PM
	23459.01	Nodes	Platform.r3d



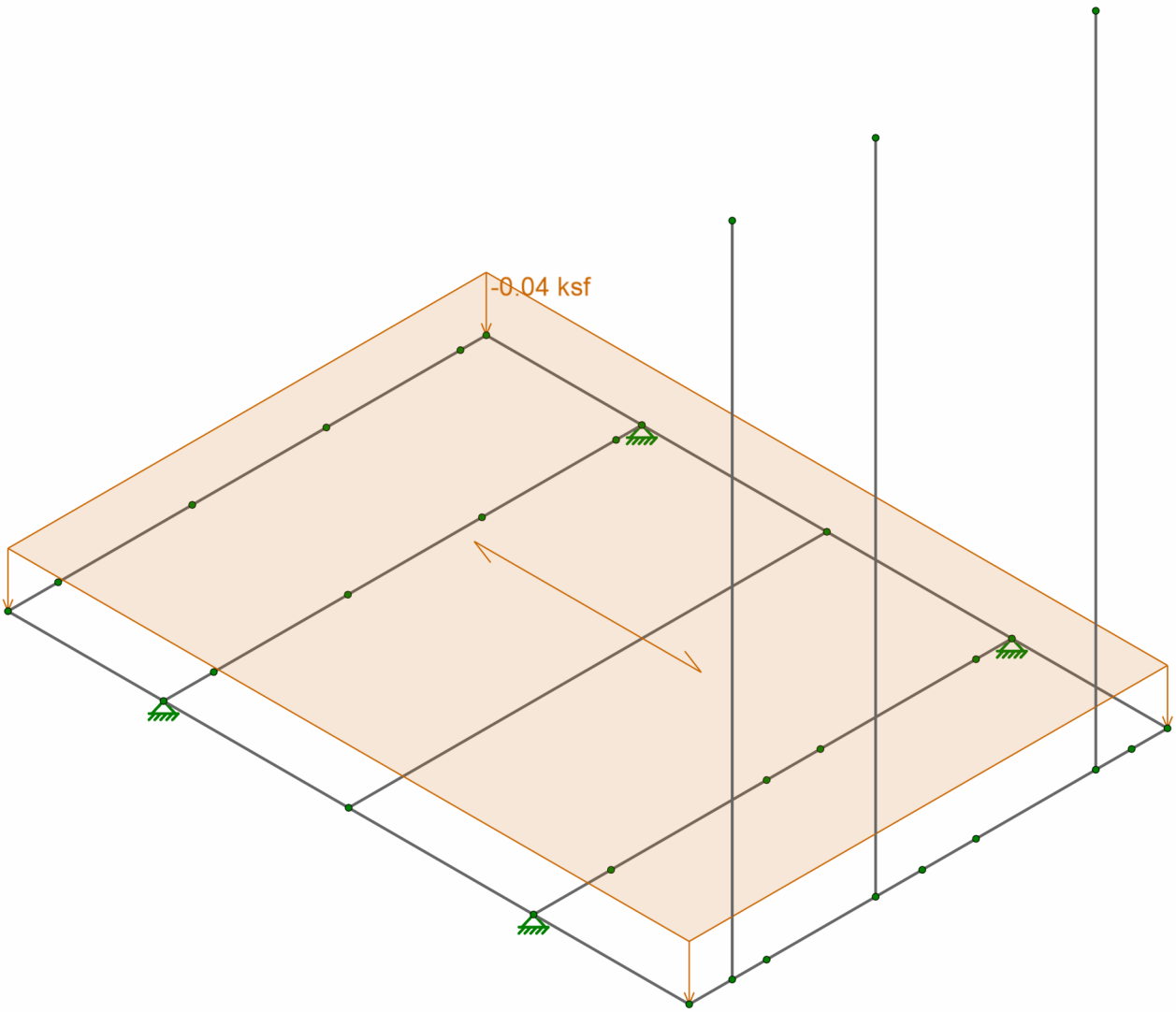
Loads: BLC 2, Grating DL

IRISA A NEMETSCHEK COMPANY	Quantum	Verizon AK Shampine Platform	SK-2
	FRU		Nov 10, 2023 at 03:56 PM
	23459.01	Grating Dead Load	Platform.r3d



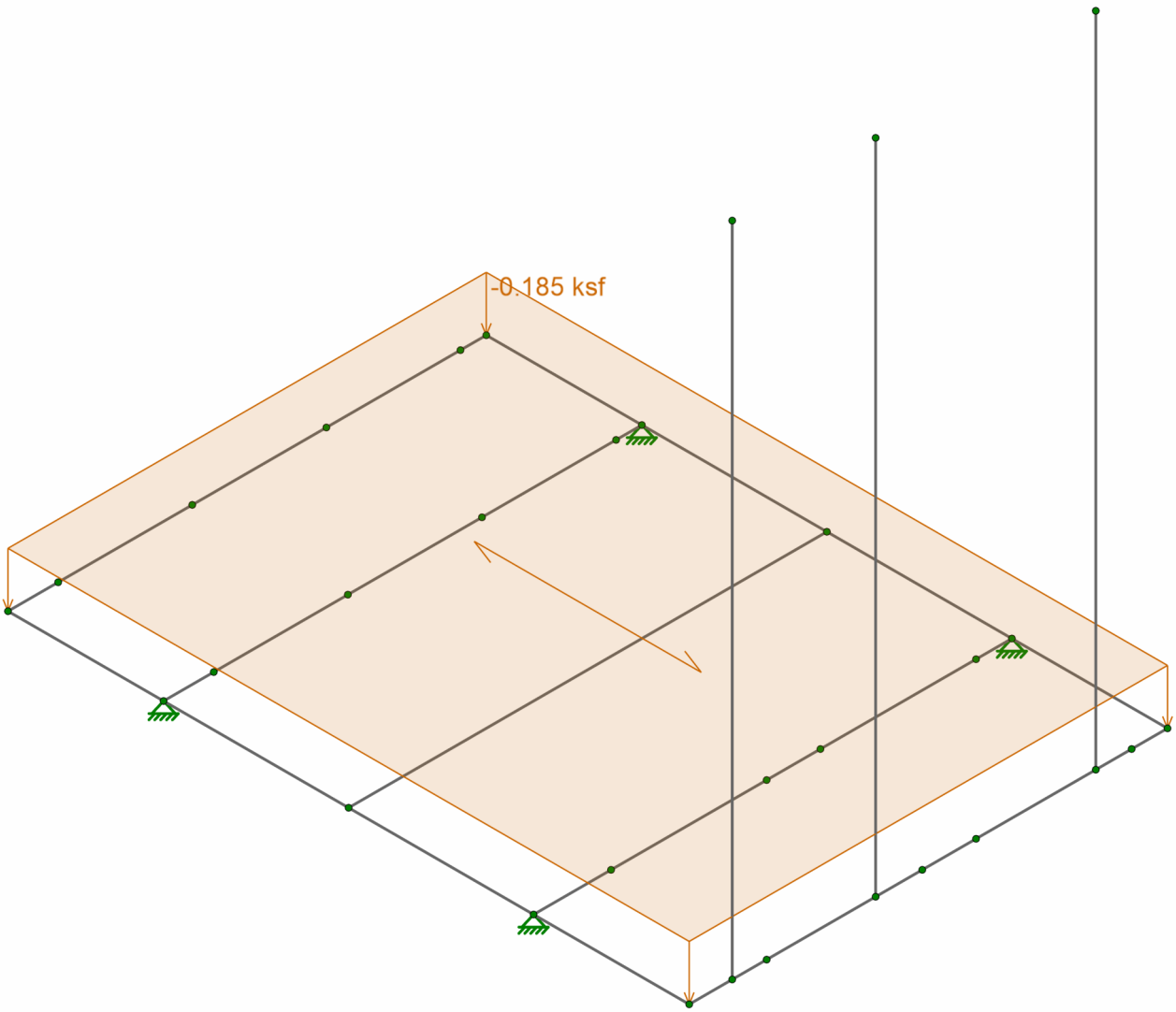
Loads: BLC 3, Equipment DL

IRISA A NEMETSCHEK COMPANY	Quantum	Verizon AK Shampine Platform	SK-3
	FRU		Nov 10, 2023 at 03:57 PM
	23459.01	Equipment Dead Load	Platform.r3d



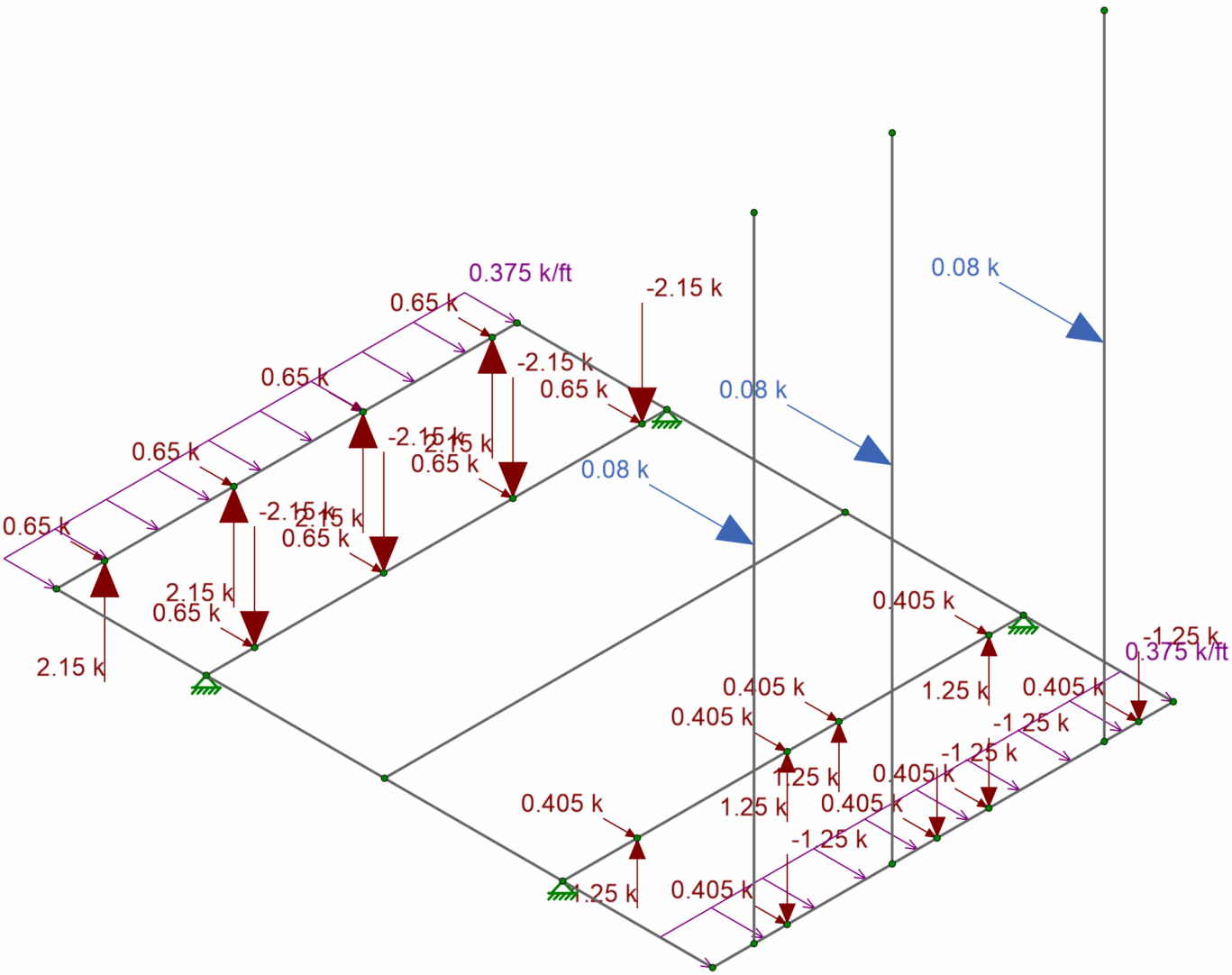
Loads: BLC 4, Platform LL

IRISA A NEMETSCHEK COMPANY	Quantum	Verizon AK Shampine Platform	SK-4
	FRU		Nov 10, 2023 at 03:59 PM
	23459.01	Platform Live Load	Platform.r3d



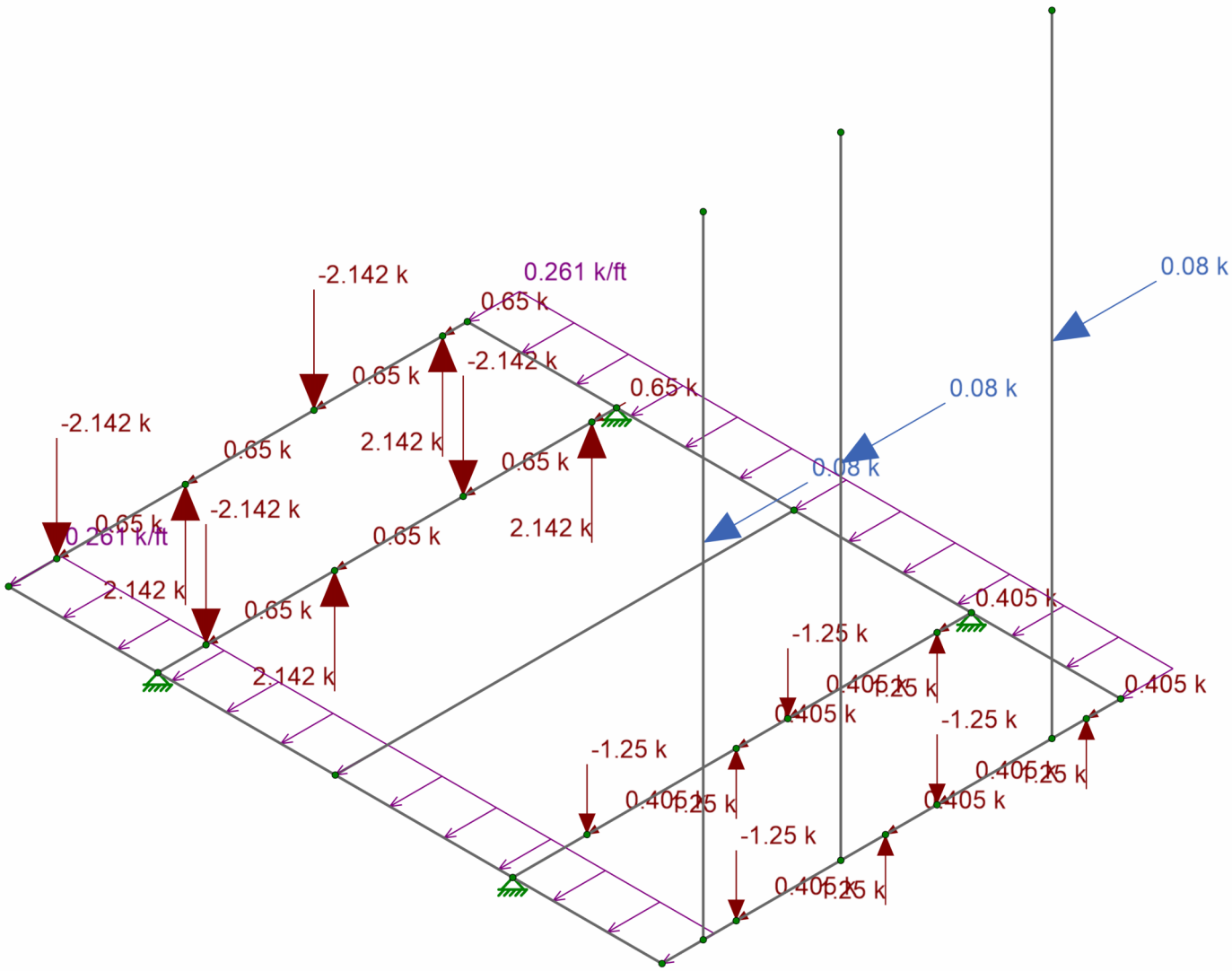
Loads: BLC 5, Snow Load

IRISA A NEMETSCHEK COMPANY	Quantum	Verizon AK Shampine Platform	SK-5
	FRU		Nov 10, 2023 at 04:02 PM
	23459.01	Platform Live Load	Platform.r3d



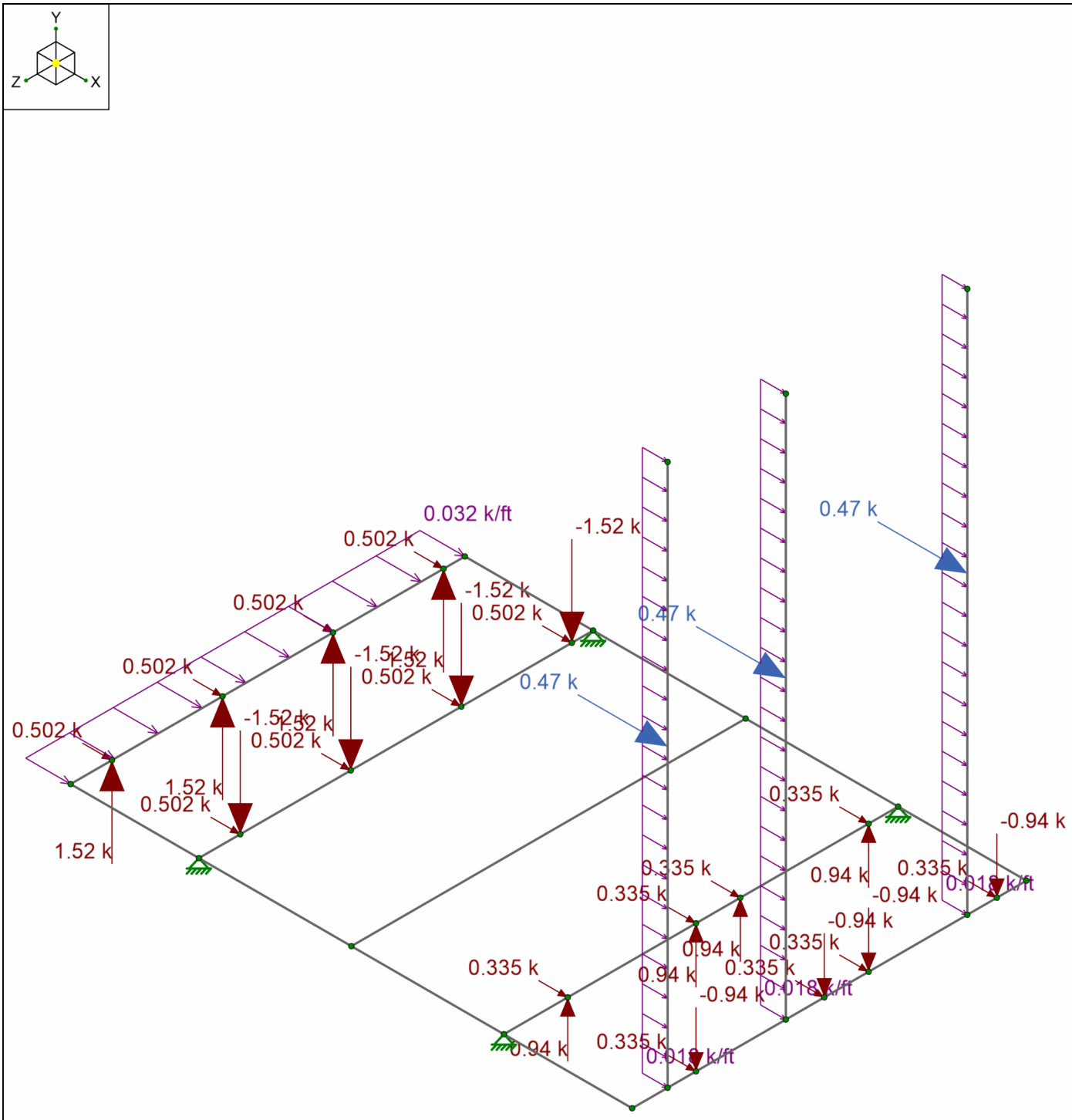
Loads: BLC 6, Seismic X

IRISA A NEMETSCHEK COMPANY	Quantum	Verizon AK Shampine Platform	SK-6
	FRU		Nov 10, 2023 at 04:04 PM
	23459.01	Seismic Load X	Platform.r3d



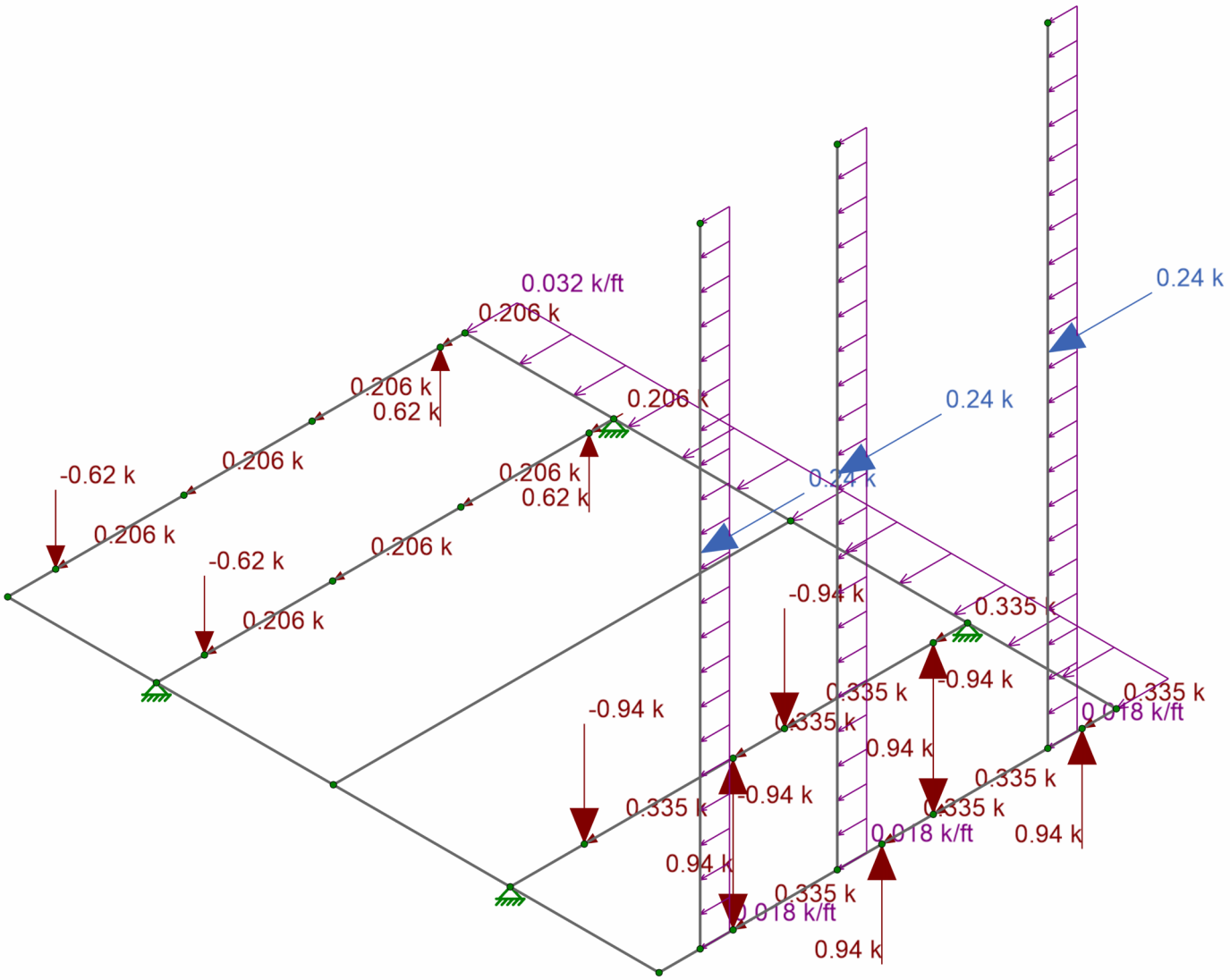
Loads: BLC 7, Seismic Z

IRISA A NEMETSCHEK COMPANY	Quantum	Verizon AK Shampine Platform	SK-7
	FRU		Nov 10, 2023 at 04:04 PM
	23459.01	Seismic Load Z	Platform.r3d



Loads: BLC 8, Wind X

IRISA A NEMETSCHEK COMPANY	Quantum	Verizon AK Shampine Platform	SK-8
	FRU		Nov 10, 2023 at 04:05 PM
	23459.01	Wind Load X	Platform.r3d



Loads: BLC 9, Wind Z

IRISA A NEMETSCHEK COMPANY	Quantum	Verizon AK Shampine Platform	SK-9
	FRU		Nov 10, 2023 at 04:06 PM
	23459.01	Wind Load Z	Platform.r3d

QUANTUM | CONSULTING ENGINEERS

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

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

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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
fy : Rebar Yield		60.0	ksi
Ec : 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
(Uses entry for "Footing base depth below soil surface" for force)		
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	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
(A value of zero implies no limit)	
Adjusted Allowable Soil Bearing	1.875 ksf
(Allowable Soil Bearing adjusted for footing weight and depth & width increases as specified by user.)	

Dimensions & Reinforcing

Distance Left of Column #1	=	1.50 ft
Between Columns	=	5.0 ft
Distance Right of Column #2	=	1.50 ft
Total Footing Length	=	8.0 ft
Footing Width	=	1.50 ft
Footing Thickness	=	30.0 in

Pedestal dimensions...

		Col #1	Col #2	
Sq. Dim.	=	15.0	15.0	in
Height	=			in

Rebar Center to Concrete Edge @ Top	=	3.0	in	
Rebar Center to Concrete Edge @ Bottom	=	3.0	in	

	Count	Size #	As Provided	As Req'd
Bars left of Col #1				
Bottom Bars	3.0	5	0.930	0.4860 in^2
Top Bars	3.0	5	0.930	0.4860 in^2
Bars Btwn Cols				
Bottom Bars	3.0	5	0.930	0.4860 in^2
Top Bars	3.0	5	0.930	0.4860 in^2
Bars Right of Col #2				
Bottom Bars	3.0	5	0.930	0.4860 in^2
Top Bars	3.0	5	0.930	0.4860 in^2

Applied Loads

		D	Lr	L	S	W	E	H	
Applied @ Left Column									
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
Applied @ Right Column									
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
Overburden	=								

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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 @ Left Edge	@ Right Edge	Allowable	Actual / Allow Ratio
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 Overturning	Resisting	Ratio	Moments about Right Edg k-ft 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

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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

LIC# : KW-06016450, Build:20.23.10.02 QUANTUM CONSULTING ENGINEERS

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

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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

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	-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

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

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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	1.05 psi	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	1.00 psi	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	1.06 psi	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	1.10 psi	1.10 psi
+1.20D+1.60S+0.50W	94.87 psi	1.46 psi	1.46 psi	189.74 psi	1.25 psi	1.30 psi
+1.20D+1.60S-0.50W	94.87 psi	1.46 psi	1.46 psi	189.74 psi	0.93 psi	0.88 psi
+1.20D+0.50L+W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	1.23 psi	1.33 psi
+1.20D+0.50L-W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	0.59 psi	0.49 psi
+1.20D+0.50L+0.50S+W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	1.29 psi	1.39 psi
+1.20D+0.50L+0.50S-W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	0.65 psi	0.55 psi
+1.20D+0.50L+0.20S+E	94.87 psi	5.30 psi	5.30 psi	189.74 psi	1.50 psi	1.34 psi
+1.20D+0.50L+0.20S-E	94.87 psi	5.30 psi	5.30 psi	189.74 psi	0.37 psi	0.53 psi
+0.90D+W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	0.99 psi	1.09 psi
+0.90D-W	94.87 psi	2.91 psi	2.91 psi	189.74 psi	0.35 psi	0.25 psi
+0.90D+E	94.87 psi	5.30 psi	5.30 psi	189.74 psi	1.24 psi	1.08 psi

Combined Footing

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

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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
fy : Rebar Yield	60.0	ksi
Ec : 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
(Uses entry for "Footing base depth below soil surface" for force)		
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
(A value of zero implies no limit)	
Adjusted Allowable Soil Bearing	1.50 ksf
(Allowable Soil Bearing adjusted for footing weight and depth & width increases as specified by user.)	

Dimensions & Reinforcing

Distance Left of Column #1	=	1.250 ft
Between Columns	=	5.0 ft
Distance Right of Column #2	=	1.250 ft
Total Footing Length	=	7.50 ft
Footing Width	=	1.50 ft
Footing Thickness	=	15.0 in

Pedestal dimensions...

		Col #1	Col #2	
Sq. Dim.	=	15.0	15.0	in
Height	=			in

Rebar Center to Concrete Edge @ Top	=	3.0 in
Rebar Center to Concrete Edge @ Bottom	=	3.0 in

	Count	Size #	As Provided	As Req'd
Bars left of Col #1				
Bottom Bars	3.0	5	0.930	0.2430 in^2
Top Bars	3.0	5	0.930	0.2430 in^2
Bars Btwn Cols				
Bottom Bars	3.0	5	0.930	0.2430 in^2
Top Bars	3.0	5	0.930	0.2430 in^2
Bars Right of Col #2				
Bottom Bars	3.0	5	0.930	0.2430 in^2
Top Bars	3.0	5	0.930	0.2430 in^2

Applied Loads

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

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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	Overturning	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 @ Left Edge	@ Right Edge	Allowable	Actual / Allow Ratio
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

Overturning Stability

Load Combination...	Moments about Left Edge k-ft Overturning	Resisting	Ratio	Moments about Right Edg k-ft 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+0.60W	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 Safety Ratio
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

LIC# : KW-06016450, Build:20.23.10.02 QUANTUM CONSULTING ENGINEERS

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

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

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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

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 (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

LIC# : KW-06016450, Build:20.23.10.02 QUANTUM CONSULTING ENGINEERS

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

Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Strip footing.ec6

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

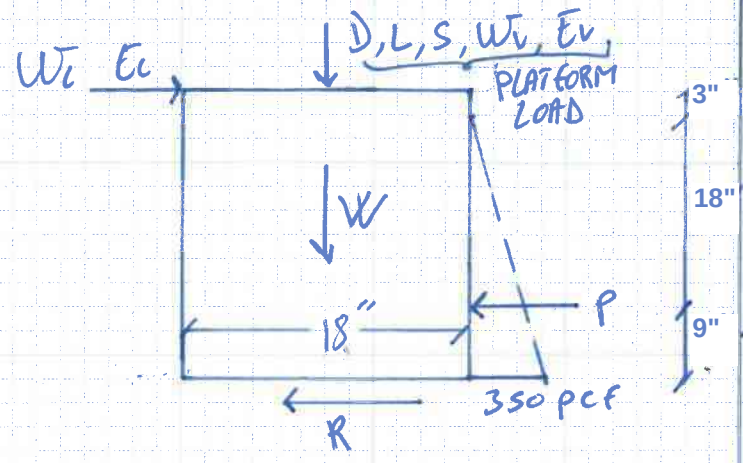
Z-Axis Footing Flexure - Maximum Values for Load Combination

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

$W = \frac{150pcf}{1000} \times 8' \times 2.5' \times 1.5' = 4.50$ kip

$P = \frac{1}{2}\left[350pcf \times \frac{27"}{12}\right]\frac{27"}{12} \times \frac{8'}{1000} = 7.1$ kip

$R = 0.35(D+W) = 0.35 \times (5.0 + 4.5) = 3.33$ kip

Soil vertical pressure

Controlling case: $D + 0.75L + 0.75(0.6W) + 0.75S$

$= (5.0+4.5)k + 0.75 \times 1.25^{K} + 0.75(0.6)4.2^{K} + 0.75 \times 5.86^{K}$

$= 17.32$ kip

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

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

final design
18" x 30" x 8'

Soil Horizontal pressure.

E_L controls: $E_L = 3.7$ kip $< P + R = 7.1$ kip $+ 3.3$ kip $= 6.5$ kip

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

Overturning

M_o = overturning moment M_r = resisting moment

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

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

Wind: $M_r = P \times 9"/12 + 0.9(D + W) \times 1.5'/2 = 11.74$ kft

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

QUANTUM | CONSULTING ENGINEERS

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project	date	project no.
VERIZON AK2 SHAMPINE EQUIPMENT FOUNDATION	11/21/2023	23459.01
	AMK	
	designer	sheet
ADAPT CONSULTING		C - 20
client	checked by	

SEISMIC CALCULATIONS
for
AK2 SHAMPINE, AK

at
5182 PITTMAN ROAD
WASILLA, AK 99654
for
EHRESMANN ENGINEERING INC.
&
EEI ENTERPRISES, LLC (DBA EHRESMANN ENGINEERING)

04/11/2024

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).

JOB NO.: U1408.0572.241

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

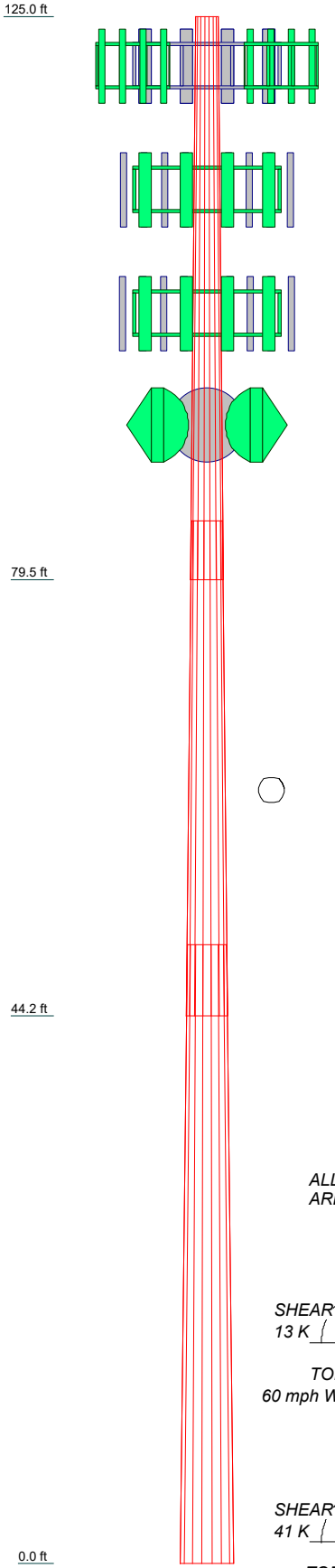
Ice: 0.5" radial ice @ 60 mph basic wind speed (3-second gust) per the TIA-222-H standard

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	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	45.50	18	0.2500	4.75	21.0000	32.3300		3.3
2	40.00	18	0.3125	5.75	30.6472	40.6076	A572-65	4.8
3	50.00	18	0.3750		38.5508	51.0014		9.1
								17.2



DESIGNED APPURTENANCE LOADING

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

ALL REACTIONS ARE FACTORED

AXIAL 49 K

SHEAR 13 K *MOMENT 1237 kip-ft*

TORQUE 7 kip-ft
60 mph WIND - 0.5000 in ICE

AXIAL 39 K

SHEAR 41 K *MOMENT 3998 kip-ft*

TORQUE 25 kip-ft
REACTIONS - 119 mph WIND

NOTE: EXCERPT FROM WIND ANALYSIS SHOWN FOR REFERENCE ONLY

Ehresmann Engineering
4400 W 31st St
Yankton, SD 57078
Phone: (605) 665-7532
FAX: (605) 665-9780

Job: ***AK2 SHAMPINE, AK***	***115070***		
Project: ***125 FT MONOPOLE***			
Client: VERIZON WIRELESS	Drawn by: EH	App'd:	
Code: TIA-222-H	Date: 03/25/24	Scale: NTS	
Path: Z:\EEI JOBS\11507 - AK2 Shampine, AK\115070\115070-Engineering\115070 - AK2 Shampine, AK - 125' MP - Heri		Dwg No. E-1	

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

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			25.34
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			25.26
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			25.12

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

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 -	29.28	-35.20	20.32	1978.09	3426.15	-0.00

JOB NO.: U1408.0572.241

PROJECT: AK2 SHAMPINE, AK

ASCE 7-16

Seismic Base Shear Calculations:

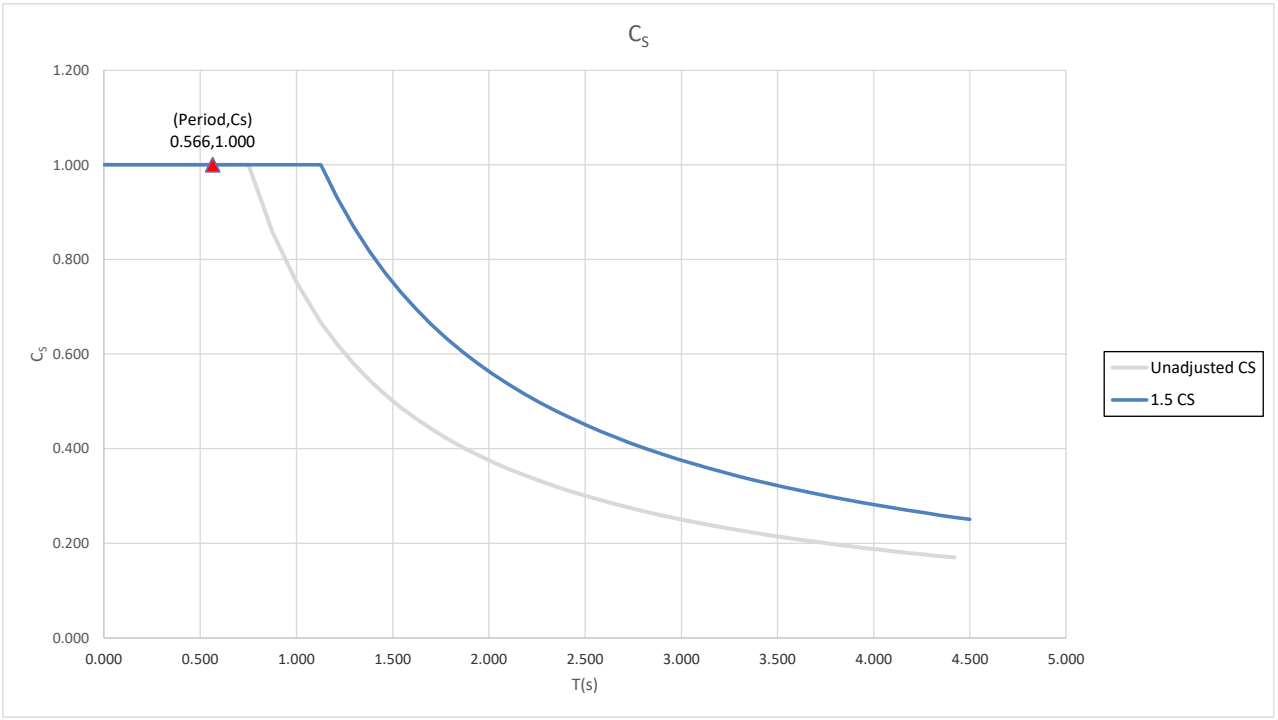
Seismic Parameters:

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						
Period Type =	RISA Period Override						
h =	125.0	ft			f_1 =	1.77	Hz
E =	29000	ksi	W_t =	32.50	k	T=	0.57	sec.
			W_L =	32.5	k	k_e=	1.03	
C_s=	1.000							
Seismic Shear, $V_{s(final)}$ =	32.5	k	**ratio =**	0.79				
Wind Shear =	41.00	k						

Wind Controls, Seismic Analysis Still Required



JOB NO.: U1408.0572.241

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

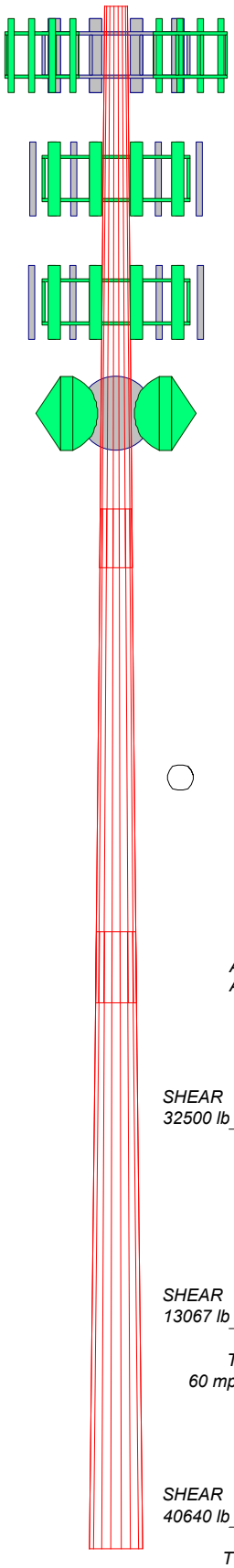
Linear Appurtenances:

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

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



ALL REACTIONS ARE FACTORED

AXIAL 48346 lb
SHEAR 32500 lb
MOMENT 3298733 lb-ft
TORQUE 0 lb-ft
SEISMIC

AXIAL 48883 lb
SHEAR 13067 lb
MOMENT 1237328 lb-ft
TORQUE 6536 lb-ft
60 mph WIND - 0.5000 in ICE

AXIAL 39035 lb
SHEAR 40640 lb
MOMENT 3997503 lb-ft
TORQUE 25057 lb-ft
REACTIONS - 119 mph WIND

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%

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

Job: ***AK2 SHAMPINE, AK***	***115070***		
Project: ***125 FT MONOPOLE***			
Client: VERIZON WIRELESS	Drawn by: cmillard	App'd:	
Code: TIA-222-H	Date: 04/11/24	Scale: NTS	
Path:		Dwg No. E-1	

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

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

Tapered Pole Section Geometry

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 2 of 33
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:43:12 04/11/24
	Client: VERIZON WIRELESS	Designed by: 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	4.500 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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 3 of 33
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:43:12 04/11/24
	Client: VERIZON WIRELESS	Designed by: 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_A 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_A In Face ft^2	C_AA_A 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_A In Face ft^2	C_AA_A 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

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

Job	Page
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Project	**Date**
125 FT MONOPOLE	15:43:12 04/11/24
Client	**Designed by**
VERIZON WIRELESS	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_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	lb
(3) 12' EE T-FRAMES	A	None		0.0000	121.00	No Ice	28.73	28.73	2750.00
						1/2" Ice	37.40	37.40	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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 5 of 33
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:43:12 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
x 7.2"			0.00 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 0.00 0.00	0.0000	121.00	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	121.00	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	121.00	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	121.00	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	30.00 57.36
12' EE Platform w/ Rail	A	None		0.0000	111.00	No Ice 1/2" Ice	24.00 28.00	24.00 28.00	2900.00 3400.00
(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	100.00 202.12
(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	100.00 202.12
(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	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	111.00	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"	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	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	111.00	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	111.00	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	111.00	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	111.00	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	30.00 57.36
12' EE Platform w/ Rail	A	None		0.0000	101.00	No Ice 1/2" Ice	24.00 28.00	24.00 28.00	2900.00 3400.00
(4) 8' X 2' X 6" PANEL	A	From Face	3.87 0.00 0.00	0.0000	101.00	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	101.00	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	101.00	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	101.00	No Ice 1/2" Ice	2.79 3.00	1.19 1.34	30.00 45.87

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 6 of 33
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:43:12 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight 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 ft Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight 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 ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 7 of 33
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:43:12 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
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 ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 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 ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	100.90	1.268	10	102.518	A	0.000	105.594	105.594	100.00	0.000	0.000
125.00-79.50					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 ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	261.61	3277.67	A	1	0.73	43	1	1	105.594	3718.55	81.73	C
125.00-79.50			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			

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

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L2	321.83	4815.39	A	1	0.73	39	1	1	111.129	3501.45	99.33	C
79.50-44.25			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	261.61	3277.67	A	1	0.73	43	1	1	105.594	3718.55	81.73	C
125.00-79.50			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2	321.83	4815.39	A	1	0.73	39	1	1	111.129	3501.45	99.33	C
79.50-44.25			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	261.61	3277.67	A	1	0.73	43	1	1	105.594	3718.55	81.73	C
125.00-79.50			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2	321.83	4815.39	A	1	0.73	39	1	1	111.129	3501.45	99.33	C
79.50-44.25			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		

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

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	261.61	3277.67	A	1	0.73	43	1	1	105.594	3718.55	81.73	C
125.00-79.50			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2	321.83	4815.39	A	1	0.73	39	1	1	111.129	3501.45	99.33	C
79.50-44.25			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	288.57	4132.56	A	1	1.2	11	1	1	109.961	1664.71	36.59	C
125.00-79.50			B	1	1.2		1	1	109.961			
			C	1	1.2		1	1	109.961			
L2	342.72	5666.17	A	1	1.2	10	1	1	114.349	1538.32	43.64	C
79.50-44.25			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	288.57	4132.56	A	1	1.2	11	1	1	109.961	1664.71	36.59	C
125.00-79.50			B	1	1.2		1	1	109.961			
			C	1	1.2		1	1	109.961			
L2	342.72	5666.17	A	1	1.2	10	1	1	114.349	1538.32	43.64	C
79.50-44.25			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		

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 10 of 33
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:43:12 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
									lb-ft			

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	288.57	4132.56	A	1	1.2	11	1	1	109.961	1664.71	36.59	C
125.00-79.50			B	1	1.2		1	1	109.961			
			C	1	1.2		1	1	109.961			
L2	342.72	5666.17	A	1	1.2	10	1	1	114.349	1538.32	43.64	C
79.50-44.25			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 ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	288.57	4132.56	A	1	1.2	11	1	1	109.961	1664.71	36.59	C
125.00-79.50			B	1	1.2		1	1	109.961			
			C	1	1.2		1	1	109.961			
L2	342.72	5666.17	A	1	1.2	10	1	1	114.349	1538.32	43.64	C
79.50-44.25			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 ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face

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	Client: VERIZON WIRELESS	Designed by: cmillard

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	261.61	3277.67	A	1	0.73	10	1	1	105.594	845.82	18.59	C
125.00-79.50			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2	321.83	4815.39	A	1	0.73	9	1	1	111.129	796.44	22.59	C
79.50-44.25			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	261.61	3277.67	A	1	0.73	10	1	1	105.594	845.82	18.59	C
125.00-79.50			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2	321.83	4815.39	A	1	0.73	9	1	1	111.129	796.44	22.59	C
79.50-44.25			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	261.61	3277.67	A	1	0.73	10	1	1	105.594	845.82	18.59	C
125.00-79.50			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2	321.83	4815.39	A	1	0.73	9	1	1	111.129	796.44	22.59	C
79.50-44.25			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		

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

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	261.61	3277.67	A	1	0.73	10	1	1	105.594	845.82	18.59	C
125.00-79.50			B	1	0.73		1	1	105.594			
			C	1	0.73		1	1	105.594			
L2	321.83	4815.39	A	1	0.73	9	1	1	111.129	796.44	22.59	C
79.50-44.25			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 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			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

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

Job	Page
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Project	**Date**
125 FT MONOPOLE	15:43:12 04/11/24
Client	**Designed by**
VERIZON WIRELESS	cmillard

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

tnxTower

Vector Structural Engineering
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Job	Page
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Project	**Date**
125 FT MONOPOLE	15:43:12 04/11/24
Client	**Designed by**
VERIZON WIRELESS	cmillard

Comb. No.	*Description*
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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	Client: VERIZON WIRELESS	Designed by: cmillard

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	-2049655.97	-422.14
			Max. My	2	-24692.66	0.00	2049646.86
			Max. Vy	10	36990.71	-2049655.97	-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	-3997501.83	-317.77
			Max. My	18	-38986.66	0.00	-3997487.87
			Max. Vy	10	40686.51	-3997501.83	-317.77
			Max. Vx	18	40686.52	0.00	-3997487.87

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 16 of 33
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	Client: VERIZON WIRELESS	Designed by: cmillard

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	Overturning Moment, M_x lb-ft	Overturning 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 -	29276.45	28736.73	28736.73	2797317.82	-2797555.52	17718.18

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	Client: VERIZON WIRELESS	Designed by: cmillard

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
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

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

Job	Page
AK2 SHAMPINE, AK 115070	18 of 33
Project	**Date**
125 FT MONOPOLE	15:43:12 04/11/24
Client	**Designed by**
VERIZON WIRELESS	cmillard

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270 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 300 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 315 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 330 deg+1.0 Ice+1.0 Temp	48882.66	-6533.56	-11316.46	-1071575.61	618633.16	-6536.34
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

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

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
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

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
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%

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 20 of 33
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:43:12 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
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%

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

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

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
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	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00036029
3	Yes	4	0.00000001	0.00010710
4	Yes	6	0.00000001	0.00008435
5	Yes	5	0.00000001	0.00075248
6	Yes	6	0.00000001	0.00006747
7	Yes	5	0.00000001	0.00060311
8	Yes	6	0.00000001	0.00005848
9	Yes	5	0.00000001	0.00051667
10	Yes	5	0.00000001	0.00067070
11	Yes	5	0.00000001	0.00028099
12	Yes	6	0.00000001	0.00005848
13	Yes	5	0.00000001	0.00051667
14	Yes	6	0.00000001	0.00006747
15	Yes	5	0.00000001	0.00060311
16	Yes	6	0.00000001	0.00005034
17	Yes	5	0.00000001	0.00045085
18	Yes	4	0.00000001	0.00036029
19	Yes	4	0.00000001	0.00010710
20	Yes	6	0.00000001	0.00005034
21	Yes	5	0.00000001	0.00045085
22	Yes	6	0.00000001	0.00006747
23	Yes	5	0.00000001	0.00060311
24	Yes	6	0.00000001	0.00005848
25	Yes	5	0.00000001	0.00051667
26	Yes	5	0.00000001	0.00067070
27	Yes	5	0.00000001	0.00028099
28	Yes	6	0.00000001	0.00005848
29	Yes	5	0.00000001	0.00051667
30	Yes	6	0.00000001	0.00006747
31	Yes	5	0.00000001	0.00060311
32	Yes	6	0.00000001	0.00008435
33	Yes	5	0.00000001	0.00075248
34	Yes	4	0.00000001	0.00000001
35	Yes	5	0.00000001	0.00021344
36	Yes	5	0.00000001	0.00044239
37	Yes	5	0.00000001	0.00041185
38	Yes	5	0.00000001	0.00035087
39	Yes	5	0.00000001	0.00029253
40	Yes	5	0.00000001	0.00035087
41	Yes	5	0.00000001	0.00041185
42	Yes	5	0.00000001	0.00036482
43	Yes	5	0.00000001	0.00021344
44	Yes	5	0.00000001	0.00036482
45	Yes	5	0.00000001	0.00041185
46	Yes	5	0.00000001	0.00035087
47	Yes	5	0.00000001	0.00029253
48	Yes	5	0.00000001	0.00035087

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Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:43:12 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

49	Yes	5	0.00000001	0.00041185
50	Yes	5	0.00000001	0.00044239
51	Yes	4	0.00000001	0.00006118
52	Yes	5	0.00000001	0.00006928
53	Yes	5	0.00000001	0.00004880
54	Yes	4	0.00000001	0.00061627
55	Yes	5	0.00000001	0.00005145
56	Yes	4	0.00000001	0.00061627
57	Yes	5	0.00000001	0.00004880
58	Yes	5	0.00000001	0.00004640
59	Yes	4	0.00000001	0.00006118
60	Yes	5	0.00000001	0.00004640
61	Yes	5	0.00000001	0.00004880
62	Yes	4	0.00000001	0.00061627
63	Yes	5	0.00000001	0.00005145
64	Yes	4	0.00000001	0.00061627
65	Yes	5	0.00000001	0.00004880
66	Yes	5	0.00000001	0.00006928
67	Yes	4	0.00000001	0.00072491
68	Yes	4	0.00000001	0.00003013
69	Yes	6	0.00000001	0.00010595
70	Yes	5	0.00000001	0.00011301
71	Yes	6	0.00000001	0.00011730
72	Yes	5	0.00000001	0.00011976
73	Yes	6	0.00000001	0.00010595
74	Yes	5	0.00000001	0.00011301
75	Yes	4	0.00000001	0.00072491
76	Yes	4	0.00000001	0.00003013
77	Yes	6	0.00000001	0.00010595
78	Yes	5	0.00000001	0.00011301
79	Yes	6	0.00000001	0.00011730
80	Yes	5	0.00000001	0.00011976
81	Yes	6	0.00000001	0.00010595
82	Yes	5	0.00000001	0.00011301
83	Yes	4	0.00000001	0.00072491
84	Yes	4	0.00000001	0.00003013
85	Yes	6	0.00000001	0.00010595
86	Yes	5	0.00000001	0.00011301
87	Yes	6	0.00000001	0.00011730
88	Yes	5	0.00000001	0.00011976
89	Yes	6	0.00000001	0.00010595
90	Yes	5	0.00000001	0.00011301
91	Yes	4	0.00000001	0.00072491
92	Yes	4	0.00000001	0.00003013
93	Yes	6	0.00000001	0.00010595
94	Yes	5	0.00000001	0.00011301
95	Yes	6	0.00000001	0.00011730
96	Yes	5	0.00000001	0.00011976
97	Yes	6	0.00000001	0.00010595
98	Yes	5	0.00000001	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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 23 of 33
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	Client: VERIZON WIRELESS	Designed by: cmillard

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

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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	Client: VERIZON WIRELESS	Designed by: cmillard

Elevation ft	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 in	Number of Anchor Bolts	Anchor Bolt Size in	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 178073.85 0.83	150617.81 295602.59 0.51	33.824 45.000 0.75	27.234 45.000 0.61	Bolt T	0.83 ✔

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	-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 -					20.7029	-10010.90	1211120.00	0.008

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	Client: VERIZON WIRELESS	Designed by: cmillard

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
	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

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	Client: VERIZON WIRELESS	Designed by: 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_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	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 -		206845.83	776074.17	0.267	0.00	776074.17	0.000

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	Client: VERIZON WIRELESS	Designed by: cmillard

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	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

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

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	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	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	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

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

Job	Page
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Project	**Date**
125 FT MONOPOLE	15:43:12 04/11/24
Client	**Designed by**
VERIZON WIRELESS	cmillard

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
	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

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

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
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	✔

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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 32 of 33
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	Client: VERIZON WIRELESS	Designed by: 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
	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	✔

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	Client: VERIZON WIRELESS	Designed by: cmillard

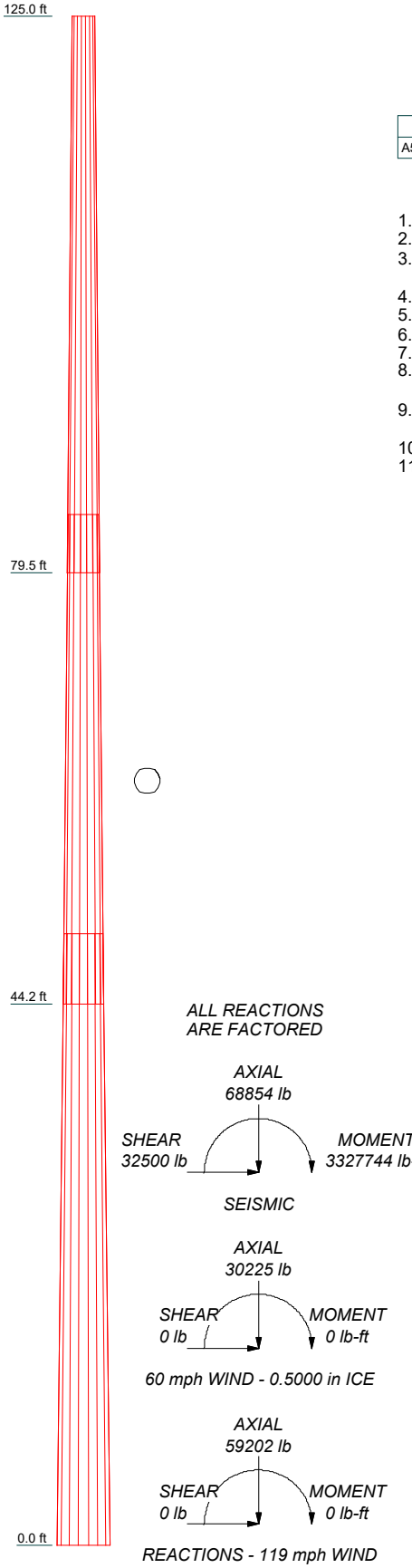
Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	6.98684						✔		
	6.98684 - 4.65789	0.011	0.943	0.000	0.039	0.006	0.956	1.000	✔
	4.65789 - 2.32895	0.011	0.948	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	ϕP_{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
						RATING =	**98.2**	**Pass**

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



ALL REACTIONS ARE FACTORED

AXIAL 68854 lb
SHEAR 32500 lb
MOMENT 3327744 lb-ft
SEISMIC

AXIAL 30225 lb
SHEAR 0 lb
MOMENT 0 lb-ft
60 mph WIND - 0.5000 in ICE

AXIAL 59202 lb
SHEAR 0 lb
MOMENT 0 lb-ft
REACTIONS - 119 mph WIND

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%

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

Job: ***AK2 SHAMPINE, AK***	***115070***		
Project: ***125 FT MONOPOLE***			
Client: VERIZON WIRELESS	Drawn by: cmillard		App'd:
Code: TIA-222-H	Date: 04/11/24		Scale: NTS
Path:			Dwg No. E-1

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

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

Tapered Pole Section Geometry

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 2 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: 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	4.500 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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 3 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight 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_A In Face ft^2	C_AA_A 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_AA_C ft^2
(3) 12' EE T-FRAMES seismic	121.00	0.00	0.0000	No Ice	2750.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(12) Panel antennas seismic	121.00	0.00	0.0000	No Ice	1200.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(9) RRU seismic	121.00	0.00	0.0000	No Ice	270.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(3) Surge suppressors seismic	121.00	0.00	0.0000	No Ice	90.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(3) 12' EE T-Frames w/ Rail seismic	111.00	0.00	0.0000	No Ice	2900.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(12) Panel antennas seismic	111.00	0.00	0.0000	No Ice	1200.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(9) RRU seismic	111.00	0.00	0.0000	No Ice	270.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00

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	Client: VERIZON WIRELESS	Designed by: cmillard

Description	Elevation	Offset From Centroid	Azimuth Angle		Weight	F_x	F_z	Wind Force	C_AA_C
	ft	ft	°		lb	lb	lb	lb	ft²
				Service	0.00	0.00	0.00	**0.00**	0.00
(3) Surge suppressors seismic	111.00	0.00	0.0000	No Ice	90.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(3) 12' EE T-Frames w/ Rail seismic	101.00	0.00	0.0000	No Ice	2900.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(12) Panel antennas seismic	101.00	0.00	0.0000	No Ice	1200.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(9) RRU seismic	101.00	0.00	0.0000	No Ice	270.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(3) Surge suppressors seismic	101.00	0.00	0.0000	No Ice	90.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
(3) MW seismic	92.00	0.00	0.0000	No Ice	1140.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Coax seismic	116.10	0.00	0.0000	No Ice	47.50	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Coax seismic	98.20	0.00	0.0000	No Ice	124.80	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Coax seismic	80.40	0.00	0.0000	No Ice	163.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Coax seismic	62.50	0.00	0.0000	No Ice	163.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Coax seismic	44.60	0.00	0.0000	No Ice	163.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Coax seismic	26.80	0.00	0.0000	No Ice	163.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Coax seismic	8.90	0.00	0.0000	No Ice	163.00	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Tapered 1 seismic	117.40	0.00	0.0000	No Ice	1071.80	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Tapered 1 seismic	102.30	0.00	0.0000	No Ice	1071.80	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Tapered 1 seismic	87.10	0.00	0.0000	No Ice	1071.80	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Tapered 2 seismic	72.80	0.00	0.0000	No Ice	1581.90	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Tapered 2 seismic	63.90	0.00	0.0000	No Ice	1581.90	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Tapered 2 seismic	50.60	0.00	0.0000	No Ice	1581.90	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Tapered 3 seismic	41.30	0.00	0.0000	No Ice	2947.20	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00

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	Client: VERIZON WIRELESS	Designed by: cmillard

Description	Elevation	Offset From Centroid	Azimuth Angle		Weight	F_x	F_z	Wind Force	C_AA_C
	ft	ft	°		lb	lb	lb	lb	ft^2
				Service	0.00	0.00	0.00	**0.00**	0.00
Tapered 3 seismic	24.80	0.00	0.0000	No Ice	2947.20	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	0.00	0.00	0.00	**0.00**	0.00
Tapered 3 seismic	8.20	0.00	0.0000	No Ice	2947.20	0.00	0.00	**0.00**	0.00
				Ice	0.00	0.00	0.00	**0.00**	0.00
				Service	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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	Client: VERIZON WIRELESS	Designed by: cmillard

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	100.90	1.268	43	102.518	A	0.000	0.000	0.000	0.00	0.000	0.000
125.00-79.50					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 ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 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 ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	100.90	1.268	10	102.518	A	0.000	0.000	0.000	0.00	0.000	0.000
125.00-79.50					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

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

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3277.67	A	0	0.73	43	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	39	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 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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3277.67	A	0	0.73	43	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	39	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 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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3277.67	A	0	0.73	43	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	39	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 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		

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

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3277.67	A	0	0.73	43	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	39	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 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 ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	4132.56	A	0	1.2	11	1	1	0.000	0.00	0.00	C
125.00-79.50			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L2	0.00	5666.17	A	0	1.2	10	1	1	0.000	0.00	0.00	C
79.50-44.25			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 ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	4132.56	A	0	1.2	11	1	1	0.000	0.00	0.00	C
125.00-79.50			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L2	0.00	5666.17	A	0	1.2	10	1	1	0.000	0.00	0.00	C
79.50-44.25			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		

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

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	4132.56	A	0	1.2	11	1	1	0.000	0.00	0.00	C
125.00-79.50			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L2	0.00	5666.17	A	0	1.2	10	1	1	0.000	0.00	0.00	C
79.50-44.25			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	4132.56	A	0	1.2	11	1	1	0.000	0.00	0.00	C
125.00-79.50			B	0	1.2		1	1	0.000			
			C	0	1.2		1	1	0.000			
L2	0.00	5666.17	A	0	1.2	10	1	1	0.000	0.00	0.00	C
79.50-44.25			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
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 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			

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

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	0.00	17174.59	C	0	0.73		1	1 OTM	0.000 0.00 lb-ft	0.00		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	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 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		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	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 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		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	0.00	3277.67	A	0	0.73	10	1	1	0.000	0.00	0.00	C

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

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
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 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			0.00	0.00	
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

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

Job	Page
AK2 SHAMPINE, AK 115070	12 of 32
Project	**Date**
125 FT MONOPOLE	15:59:58 04/11/24
Client	**Designed by**
VERIZON WIRELESS	cmillard

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

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

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	Client: VERIZON WIRELESS	Designed by: 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
L2	79.5 - 44.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	75	-41648.69	-1696411.28	0.00
			Max. Mx	75	-41648.69	-1696411.28	0.00
			Max. My	67	-41648.69	0.00	1696411.28
			Max. Vy	75	31472.96	-1696411.28	0.00
			Max. Vx	67	-31472.96	0.00	1696411.28
			Max. Torque	69			-0.02
L3	44.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	67	-68821.62	0.00	3327738.87
			Max. Mx	75	-68821.62	-3327738.87	0.00
			Max. My	67	-68821.62	0.00	3327738.87
			Max. Vy	75	33466.86	-2561035.47	0.00
			Max. Vx	67	-33466.86	0.00	2561035.47
			Max. Torque	69			-0.02

Maximum Reactions

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	Client: VERIZON WIRELESS	Designed by: 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

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	Client: VERIZON WIRELESS	Designed by: cmillard

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
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

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	Client: VERIZON WIRELESS	Designed by: cmillard

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
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	68854.01	-22981.04	-22981.04	-2353070.34	2353070.34	0.00

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	Client: VERIZON WIRELESS	Designed by: cmillard

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
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
deg						

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
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%

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 19 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
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

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

Job	Page
AK2 SHAMPINE, AK 115070	20 of 32
Project	**Date**
125 FT MONOPOLE	15:59:58 04/11/24
Client	**Designed by**
VERIZON WIRELESS	cmillard

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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 21 of 32
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	Client: VERIZON WIRELESS	Designed by: 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 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 - Service Wind

Elevation ft	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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 22 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Elevation ft	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 ft	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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 23 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	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	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

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

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
	84.25								
	84.25 - 79.5					25.4555	-13259.80	1489150.00	0.009
L2	84.25 - 79.5	TP40.6076x30.6472x0.3125	40.00	0.00	0.0	31.2614	-16051.20	1828790.00	0.009
	79.5 - 77.8611					31.6662	-29584.50	1852470.00	0.016
	77.8611 - 76.2222					32.0710	-29847.60	1876150.00	0.016
	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
	56.5556 - 54.9167					37.3332	-38384.50	2183990.00	0.018
	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
L3	50 - 44.25	TP51.0014x38.5508x0.375	50.00	0.00	0.0	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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 25 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: 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_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 26 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	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
	84.25 - 79.5		377190.83	1143608.33	0.330	0.00	1143608.33	0.000
L2	84.25 - 79.5	TP40.6076x30.6472x0.3125	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
	51.6389 - 50		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
L3	50 - 44.25	TP51.0014x38.5508x0.375	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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 27 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	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	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 28 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: cmillard

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
	92.8289 - 90.6842		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
L2	84.25 - 79.5	TP40.6076x30.6472x0.3125	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
L3	50 - 44.25	TP51.0014x38.5508x0.375	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

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 29 of 32
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	Client: VERIZON WIRELESS	Designed by: cmillard

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
	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	✔

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 30 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: 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	✔

tnxTower	Job: AK2 SHAMPINE, AK 115070	Page: 31 of 32
Vector Structural Engineering 651 W Galena Park Blvd Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Project: 125 FT MONOPOLE	Date: 15:59:58 04/11/24
	Client: VERIZON WIRELESS	Designed by: 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	✔

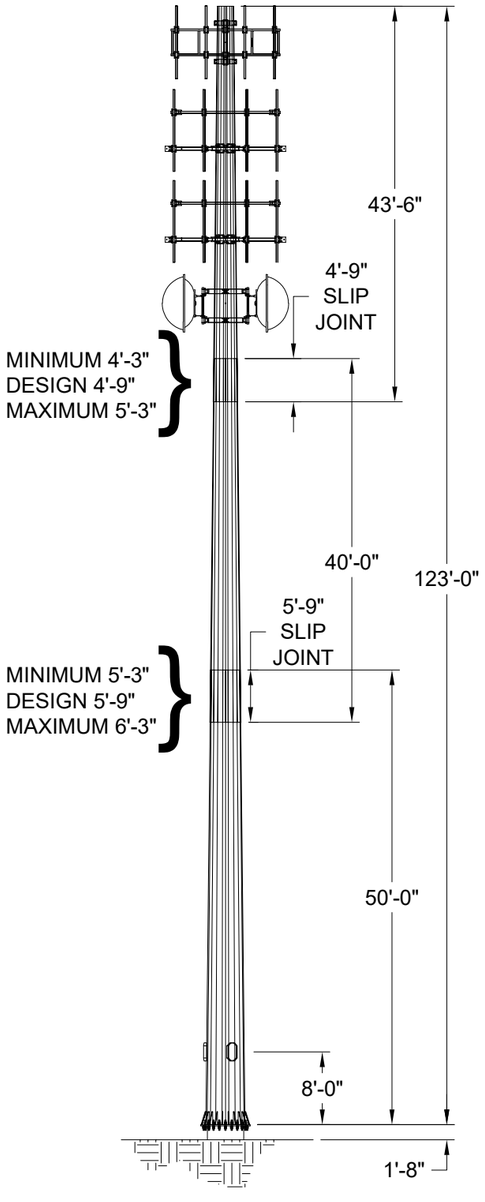
* DL controls

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

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{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
						RATING =	**82.1**	**Pass**



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
Ss= 2.251 g
S_1= 0.994 g
T_L= 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 RCMDC-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 RCMDC-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 RCMDC-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:

1. ORIENT V-NOTCH ON TOP OF TEMPLATE AND REFERENCE TAB ON BASE PLATE @ 0°.
2. STAMP "EE 115070" ON TOP OF BASE PLATE (NEAR NORTH TAB) WITH 1/2″ STEEL STAMPS.
3. 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.

VECTOR ENGINEERS®
651 W. GALENA PARK BLVD. STE. 101
DRAPER, UTAH 84020
PHONE (801) 990-1775
WWW.VECTORSE.COM

STATE OF ALASKA 49TH
WELLS LIND HOLMES
SE-160653
REGISTERED STRUCTURAL ENGINEER

05/17/2024
Firm License Number: AECL1355
VSE Project Number: U1408.0572.241

REV	DESCRIPTION	DATE
7		
6		
5		
4		
3		
2		
1	POLE HEIGHT	5/14/24
0	DRAWING CREATED	3/22/24

	NAME
DRAWN BY:	TER
CHECKED BY:	
ENG APPR.	
MFG APPR.	
Q.C.	

SITE: AK2 SHAMPINE, AK
JOB# 115070

Ehresmann Engineering
4400 West 31st Street
Yankton, SD 57078
605-665-7532
605-665-9780

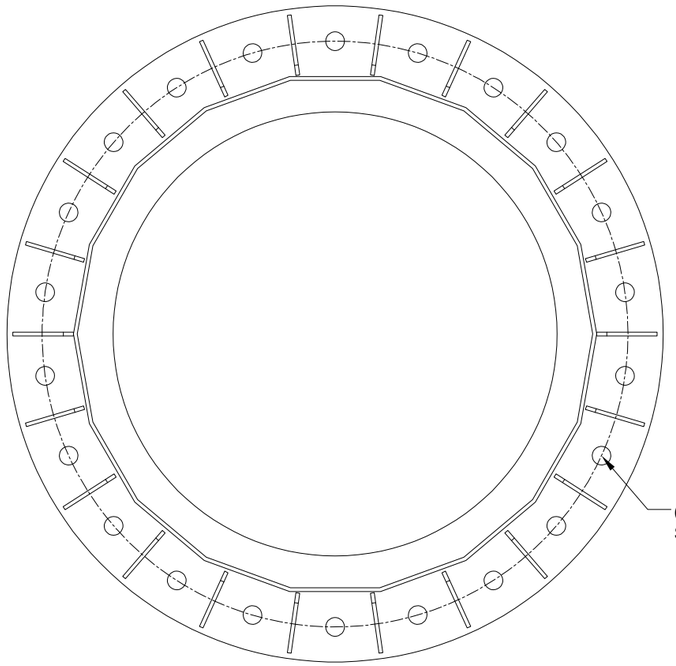
TITLE: 123' MONOPOLE
DWG. NO. 115070 E01
SHEET NO. E01
Rev. 1

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

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"

V
H

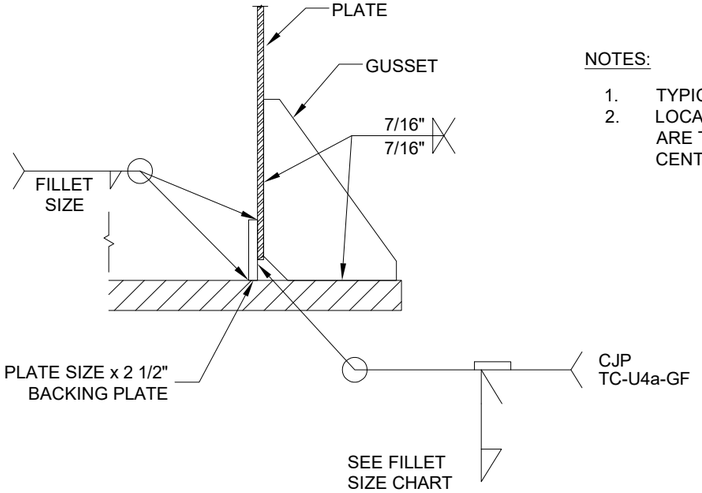
PRE-HEAT	
THICKNESS OF THICKEST PART AT POINT OF WELDING	MIN. PREHEAT AND INTERPASS TEMPERATURE
1/8" TO 3/4" INCL.	32°
OVER 3/4" THRU 1 1/2" INCL.	50°
OVER 1 1/2" THRU 2 1/2" INCL.	150°
OVER 2 1/2" INCL.	225°



(22) Ø1 7/8" HOLES EVENLY SPACED ON Ø58" B.C.

PLAN VIEW

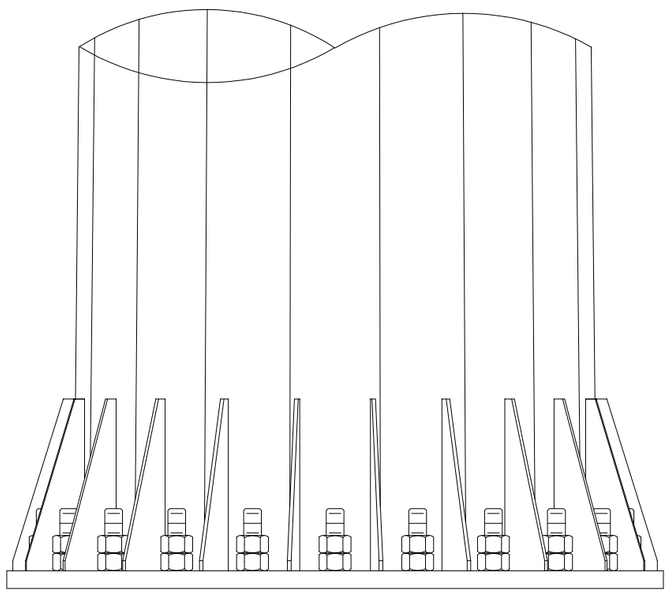
FILLET WELD TO EQUAL
1/16" < BACKER THICKNESS
NOT TO EXCEED 5/8"



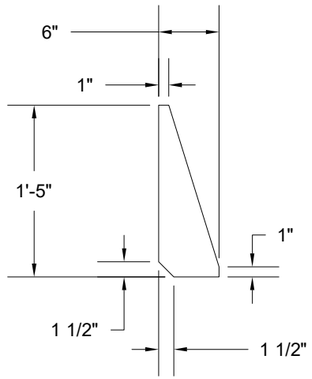
BASE CROSS SECTION

NOTES:

1. TYPICAL PER FLAT.
2. LOCATE GUSSETS AS SHOWN. GUSSETS ARE TO RADIATE OUTWARD FROM THE CENTER OF THE MONOPOLE.



ELEVATION PLAN



GUSSET PL14A
3/8" PLATE A572-65 Ksi
QTY (22)
(11507018.DXF)
WEIGHT EA = 5.45#
AREA TOTAL = 502.219 SQFT

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STATE OF ALASKA 49TH
WELLS LIND HOLMES
SE-160653
REGISTERED STRUCTURAL ENGINEER

05/17/2024

Firm License Number: AECL1355

VSE Project Number: U1408.0572.241

REV	DESCRIPTION	DATE
7		
6		
5		
4		
3		
2		
1	POLE HEIGHT	5/14/24
0	DRAWING CREATED	3/22/24

	NAME
DRAWN BY:	TER
CHECKED BY:	GM
ENG APPR.	
MFG APPR.	
Q.C.	

SITE: AK2 SHAMPINE, AK

JOB# 115070

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. B14 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 affects 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 of 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.

VECTOR ENGINEERS®
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DRAPER, UTAH 84020
PHONE (801) 990-1775
WWW.VECTORSE.COM

STATE OF ALASKA
49TH
WELLS LIND HOLMES
SE-160653
REGISTERED STRUCTURAL ENGINEER

05/17/2024
Firm License Number: AECL1355
VSE Project Number: U1408.0572.241

REV	DESCRIPTION	DATE
7		
6		
5		
4		
3		
2	COMPANY NAME	6-27-22
1	TUBE BRACING NOTE	10-29-19
0	DRAWING CREATED	11-1-18

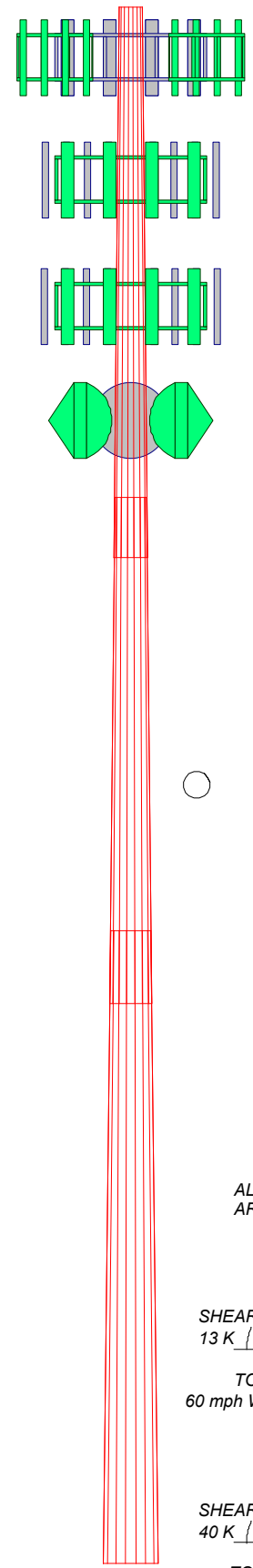
	NAME
DRAWN BY:	TER
CHECKED BY:	GM
ENG APPR.	
MFG APPR.	
Q.C.	

SITE: AK2 SHAMPINE, AK
JOB# 115070

Ehresmann Engineering
4400 West 31st Street
Yankton, SD 57078
605-665-7532
605-665-9780

TITLE: STANDARD TOWER & TOWER FOUNDATION NOTES
DWG. NO. 115070N1H
SHEET NO. N1H
Rev. 2

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	43.50	18	0.2500	4.75	21.0000	32.0077		3.1
2	40.00	18	0.3125	5.75	30.3057	40.4277	A572-65	4.8
3	50.00	18	0.3750		38.3477	51.0002		9.1
								17.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(3) 12' EE T-FRAMES	120.7	Commscope RCMDC-3315-PF-48	111
(4) 8' X 2' X 6" PANEL	120.7	Commscope RCMDC-3315-PF-48	111
(4) 8' X 2' X 6" PANEL	120.7	Commscope RCMDC-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 RCMDC-3315-PF-48	120.7	(3) RRU RADIO 19.7" x 17" x 7.2"	101
Commscope RCMDC-3315-PF-48	120.7	(3) RRU RADIO 19.7" x 17" x 7.2"	101
Commscope RCMDC-3315-PF-48	120.7	(3) RRU RADIO 19.7" x 17" x 7.2"	101
12' EE Platform w/ Rail	111	Commscope RCMDC-3315-PF-48	101
(4) 8' X 2' X 6" PANEL	111	Commscope RCMDC-3315-PF-48	101
(4) 8' X 2' X 6" PANEL	111	Commscope RCMDC-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%

ALL REACTIONS ARE FACTORED

AXIAL 49 K
SHEAR 13 K
MOMENT 1210 kip-ft
TORQUE 7 kip-ft
60 mph WIND - 0.5000 in ICE

AXIAL 39 K
SHEAR 40 K
MOMENT 3916 kip-ft
TORQUE 25 kip-ft
REACTIONS - 119 mph WIND

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STATE OF ALASKA 49TH
WELLS LIND HOLMES
SE-160653
REGISTERED STRUCTURAL ENGINEER

05/17/2024

Firm License Number: AECL1355
VSE Project Number: U1408.0572.241

Ehresmann Engineering
4400 W 31st St
Yankton, SD 57078
Phone: (605) 665-7532
FAX: (605) 665-9780

Job: *AK2 SHAMPINE, AK*			*115070R1*
Project: *123 FT MONOPOLE (Rev 1)*			
Client: VERIZON WIRELESS	Drawn by: EH		App'd:
Code: TIA-222-H	Date: 05/08/24		Scale: NTS
Path: Z:\EEI JOBS\11507 - AK2 Shampine, AK\115070\115070-Engineering\115070R1 - AK2 Shampine, AK - 123' MP - Heri			Dwg No. E-1

Tower Input Data

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

Tower 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

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	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	4.500 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

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_A 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_A In Face ft^2	C_AA_A 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_A In Face ft^2	C_AA_A 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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(3) 12' EE T-FRAMES	A	None		0.0000	120.70	No Ice	28.73	28.73	2.75
						1/2" Ice	37.40	37.40	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	24.00	24.00	2.90
						1/2" Ice	28.00	28.00	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	0.0000	111.00	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	0.03 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
Commscope RCMDC-3315-PF-48	C	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
12' EE Platform w/ Rail	A	None		0.0000	101.00	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	101.00	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	101.00	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	101.00	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	101.00	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	101.00	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	101.00	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	101.00	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	101.00	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	101.00	No Ice 1/2" Ice	3.71 3.95	2.19 2.39	0.03 0.06

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
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	0.38 0.45
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	0.38 0.45
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	0.38 0.45

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	101.68	1.27	43	97.419	A	0.000	100.341	100.341	100.00	0.000	0.000
124.70-81.20					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 ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 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 ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	101.68	1.27	10	97.419	A	0.000	100.341	100.341	100.00	0.000	0.000
124.70-81.20					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

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					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 ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.25	3.11	A	1	0.73	43	1	1	100.341	3.54	81.39	C
124.70-81.20			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2	0.32	4.78	A	1	0.73	39	1	1	110.358	3.50	99.23	C
81.20-45.95			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 ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.25	3.11	A	1	0.73	43	1	1	100.341	3.54	81.39	C
124.70-81.20			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2	0.32	4.78	A	1	0.73	39	1	1	110.358	3.50	99.23	C
81.20-45.95			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 ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.25	3.11	A	1	0.73	43	1	1	100.341	3.54	81.39	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	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	0.32	4.78	A	1	0.73	39	1	1	110.358	3.50	99.23	C
81.20-45.95			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.27	3.93	A	1	1.2	11	1	1	104.520	1.59	36.45	C
124.70-81.20			B	1	1.2		1	1	104.520			
			C	1	1.2		1	1	104.520			
L2	0.34	5.63	A	1	1.2	10	1	1	113.586	1.54	43.61	C
81.20-45.95			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.27	3.93	A	1	1.2	11	1	1	104.520	1.59	36.45	C
124.70-81.20			B	1	1.2		1	1	104.520			
			C	1	1.2		1	1	104.520			
L2	0.34	5.63	A	1	1.2	10	1	1	113.586	1.54	43.61	C
81.20-45.95			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 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.27	3.93	A	1	1.2	11	1	1	104.520	1.59	36.45	C
124.70-81.20			B	1	1.2		1	1	104.520			
			C	1	1.2		1	1	104.520			
L2	0.34	5.63	A	1	1.2	10	1	1	113.586	1.54	43.61	C
81.20-45.95			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.25	3.11	A	1	0.73	10	1	1	100.341	0.81	18.51	C
124.70-81.20			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2	0.32	4.78	A	1	0.73	9	1	1	110.358	0.80	22.57	C
81.20-45.95			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	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.25	3.11	A	1	0.73	10	1	1	100.341	0.81	18.51	C
124.70-81.20			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2	0.32	4.78	A	1	0.73	9	1	1	110.358	0.80	22.57	C
81.20-45.95			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

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			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 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.25	3.11	A	1	0.73	10	1	1	100.341	0.81	18.51	C
124.70-81.20			B	1	0.73		1	1	100.341			
			C	1	0.73		1	1	100.341			
L2	0.32	4.78	A	1	0.73	9	1	1	110.358	0.80	22.57	C
81.20-45.95			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		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	16.95					
Bracing Weight	0.00					
Total Member Self-Weight	16.95			0.00	0.00	
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

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

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			-25.35
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			-25.28
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			-25.15

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K

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

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

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
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%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
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

7	Yes	5	0.00000001	0.00045020
8	Yes	5	0.00000001	0.00061814
9	Yes	5	0.00000001	0.00026005
10	Yes	6	0.00000001	0.00004922
11	Yes	5	0.00000001	0.00045020
12	Yes	6	0.00000001	0.00004272
13	Yes	5	0.00000001	0.00039643
14	Yes	4	0.00000001	0.00030009
15	Yes	4	0.00000001	0.00009217
16	Yes	6	0.00000001	0.00004272
17	Yes	5	0.00000001	0.00039643
18	Yes	6	0.00000001	0.00004922
19	Yes	5	0.00000001	0.00045020
20	Yes	5	0.00000001	0.00061814
21	Yes	5	0.00000001	0.00026005
22	Yes	6	0.00000001	0.00004922
23	Yes	5	0.00000001	0.00045020
24	Yes	6	0.00000001	0.00007234
25	Yes	5	0.00000001	0.00066858
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00018767
28	Yes	5	0.00000001	0.00038815
29	Yes	5	0.00000001	0.00030406
30	Yes	5	0.00000001	0.00026132
31	Yes	5	0.00000001	0.00030406
32	Yes	5	0.00000001	0.00031997
33	Yes	5	0.00000001	0.00018767
34	Yes	5	0.00000001	0.00031997
35	Yes	5	0.00000001	0.00030406
36	Yes	5	0.00000001	0.00026132
37	Yes	5	0.00000001	0.00030406
38	Yes	5	0.00000001	0.00038815
39	Yes	4	0.00000001	0.00005480
40	Yes	5	0.00000001	0.00006181
41	Yes	4	0.00000001	0.00054654
42	Yes	5	0.00000001	0.00004676
43	Yes	4	0.00000001	0.00054654
44	Yes	4	0.00000001	0.00096699
45	Yes	4	0.00000001	0.00005480
46	Yes	4	0.00000001	0.00096699
47	Yes	4	0.00000001	0.00054654
48	Yes	5	0.00000001	0.00004676
49	Yes	4	0.00000001	0.00054654
50	Yes	5	0.00000001	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

Elevation ft	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 ft	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 in	Number of Anchor Bolts	Anchor Bolt Size in	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	111.64 178.07 0.63	3.227 4.590 0.70	34.937 45.000 0.78	10.868 45.000 0.24	Plate	0.78 ✔

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_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	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 $\frac{M_{ux}}{\phi M_{nx}}$	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	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	✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{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
						RATING =	**95.6**	**Pass**

verizon

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

Ehresmann Engineering Inc.
4400 West 31st Street | Yankton, SD 57078-6810
Toll-Free: (800)291-6658 | Local: (605)665-7532

VECTOR ENGINEERS
651 W. Galena Park Blvd., Suite 101 (801) 990-1775
Draper, UT 84020 www.vectorse.com
AK FIRM LICENSE #: AECL1355

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

STATE OF ALASKA
49TH
WELLS LIND HOLMES
SE-160653
REGISTERED STRUCTURAL ENGINEER

04/11/2024

U1408.0572.241

T1 REV 0

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

1. 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
2. ALL WELDING TO BE PERFORMED BY WELDERS CERTIFIED IN ACCORDANCE WITH AWS D1.1. FIELD WELDING IS PROHIBITED.
3. ALL STRUCTURAL STEEL MEMBERS AND BOLT ASSEMBLIES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 OR F2329.
4. 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.
5. 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

1. 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.
2. NO FIELD WELDING SHALL BE PERMITTED
3. 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

4. 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

1. CONTRACTOR IS RESPONSIBLE FOR CHECKING AREA FOR UNDERGROUND FACILITIES PRIOR TO EXCAVATING ANY MATERIALS.
2. CONTRACTOR SHALL REFER TO SOILS REPORT FOR SITE CONDITIONS AND FURTHER CONSTRUCTION INFORMATION.
3. CONTRACTOR SHALL INSPECT AND REMOVE ALL DEBRIS FROM BOTTOM OF EXCAVATION.
4. 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

5. 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

1. 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.
2. 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 EHREMAN ENGINERING'S PLANS BY CUSTOMER.
3. 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.
4. 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.
5. 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.
6. 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.
7. IT IS THE INTENT OF THESE DRAWINGS TO SHOW THE COMPLETED INSTALLATION OF THE STRUCTURE SHOWN.
8. 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.
9. CONTRACTOR TO HOLD ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.
10. 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.
11. WEATHER PROOFING AND/OR FLASHING TO BE PROVIDED BY CONTRACTOR AS REQUIRED.

DISCLAIMERS

1. 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.
2. 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.

Ehresmann Engineering Inc.
4400 West 31st Street | Yankton, SD 57078-6810
Toll-Free: (800)291-6658 | Local: (605)665-7532

VECTOR ENGINEERS
651 W. Galena Park Blvd., Suite 101 (801) 990-1775
Draper, UT 84020 www.vectorse.com
AK FIRM LICENSE #: AECL1355

DATE: 4/11/24	DESIGNED: CNM	DRAFTER: CNM

REVISIONS

REV	DATE	DESCRIPTION

VERIZON

NOTES & SPECIFICATIONS

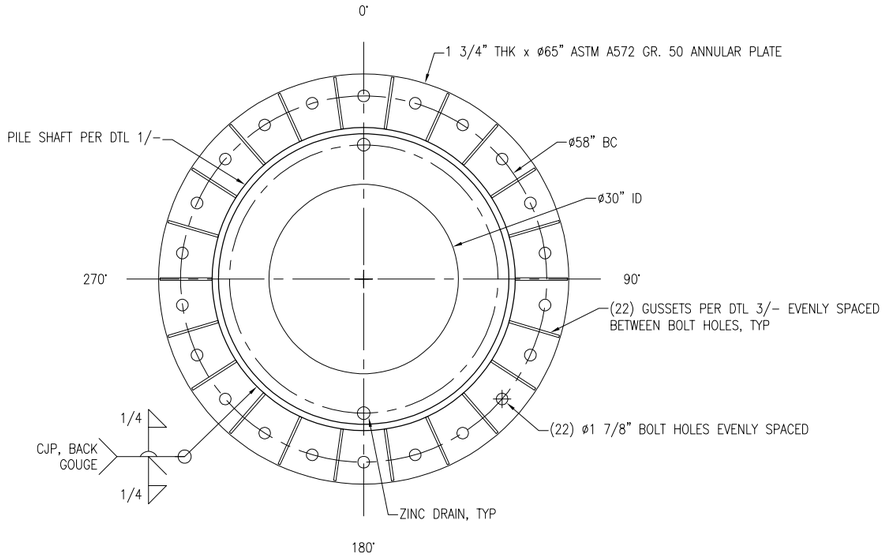
AK2 SHAMPINE, AK
DRIVEN PILE FOUNDATION
5182 PITTMAN ROAD
WASILLA, AK 99654
MATANUSKA-SUSITNA COUNTY

04/11/2024

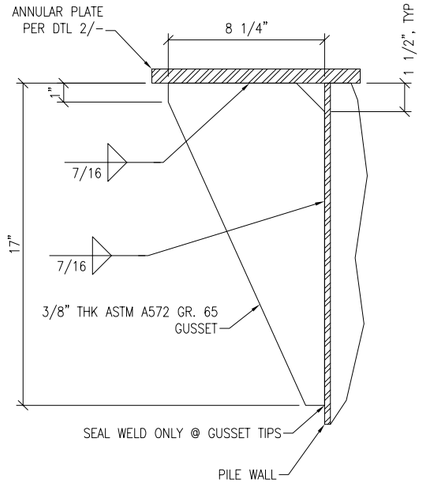
U1408.0572.241

N1

REV 0

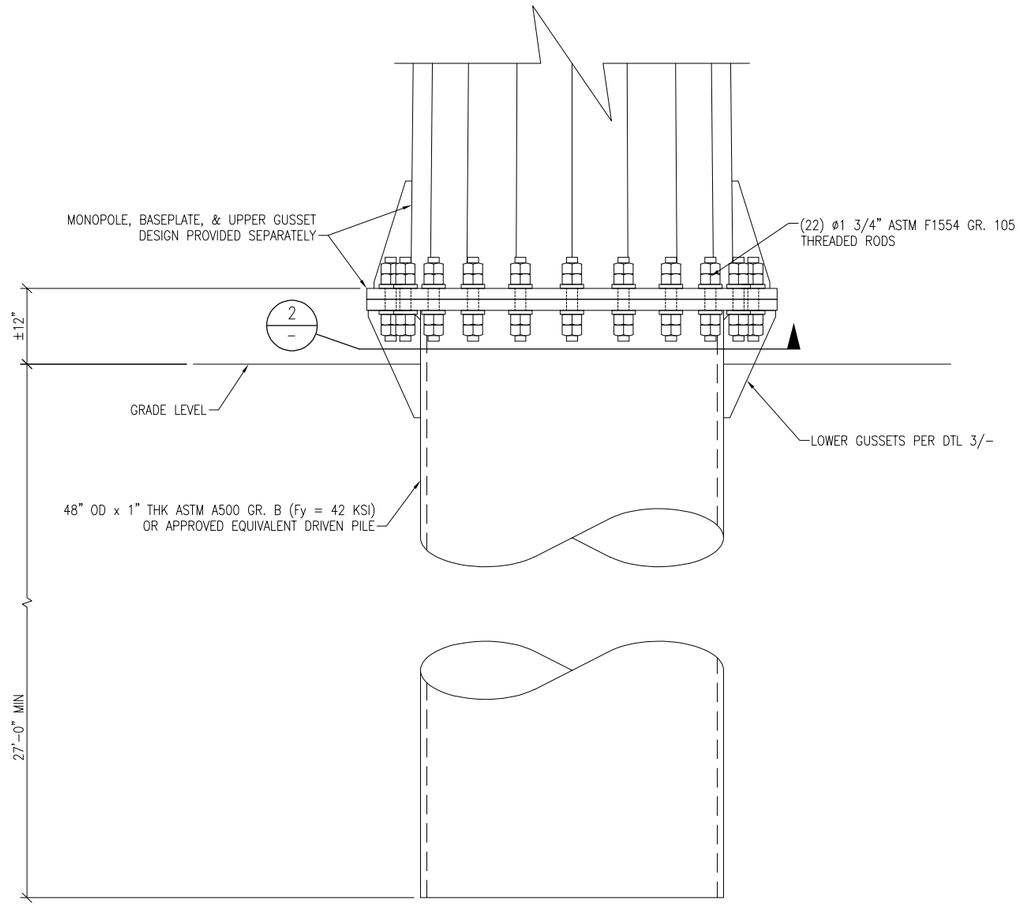


ANNULAR PLATE (2)
N.T.S.



GUSSET (3)
N.T.S.

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. USE REINFORCEMENT OR DRIVE SHOE AT TIP OF PILE AS NEEDED TO PREVENT THE PIPE WALL FROM BUCKLING OR DEFORMING.



DRIVEN PILE FOUNDATION (1)
N.T.S.

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VERIZON

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DRIVEN PILE FOUNDATION
5182 PITTMAN ROAD
WASILLA, AK 99654
MATANUSKA-SUSITNA COUNTY

STATE OF ALASKA
49TH
WELLS LIND HOLMES
SE-160653
REGISTERED STRUCTURAL ENGINEER

04/11/2024

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