COMMISSIONER MEETINGS
All meetings take place in the Commissioners Conference Room (3107)
located in the Stillwater Building @ 316 North 26th Street (3rd Floor)
and are open to the public unless otherwise noted

THURSDAY- MAY 16, 2024

PLEDGE

2:00 COMMISSIONERS DISCUSSION

DEPARTMENTS

1. **METRA** - Verizon Wireless/MT Fair COW Project - Fiber Route Confirmation
2. **Public Works -** Selling of Public Parkland - Charles Russell Park

COMMISSIONERS

PUBLIC COMMENTS ON COUNTY BUSINESS

B.O.C.C Thursday Discussion 1.

Meeting Date: 05/16/2024

Title: Verizon Wireless/MT Fair COW Project - Fiber Route Confirmation

Submitted By: Teri Reitz, Board Clerk

TOPIC:

METRA - Verizon Wireless/MT Fair COW Project - Fiber Route Confirmation

BACKGROUND:

See attached.

RECOMMENDED ACTION:

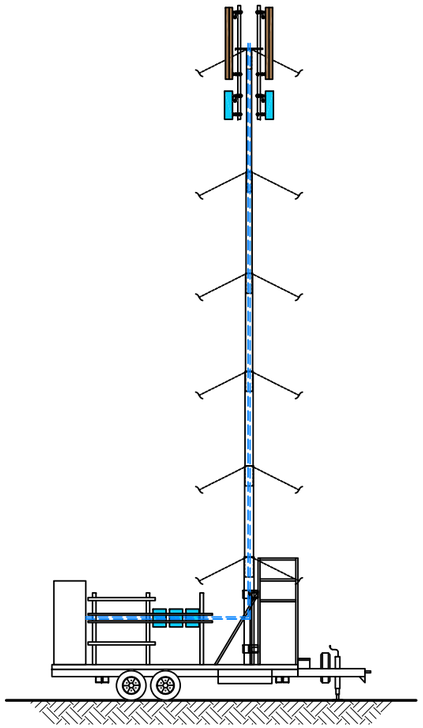
Discuss.

Attachments

Verizon Wireless MT Fair COW Project Map

Verizon Wireless MT Fair COW Project

ACCESS EASEMENT | UTILITY EASEMENT | LEASE AREA | PENETRATIONS | RRH/BBU | ANTENNAS | FIBER | POWER/GROUNDING | HYBRID/COAX



verizon

MT FAIR COW

PUBLIC RECORD PARCEL NO. 000D05612B

GEO CODE 03-1033-27-4-01-01-0000

308 6TH AVE. N
BILLINGS, MT 59101
YELLOWSTONE COUNTY

EXISTING COMMUNICATIONS SITE
COW INSTALLATION PROJECT

APPROVED FOR CONSTRUCTION

DESIGNED FOR:

verizon

2730 BOZEMAN AVE.
HELENA, MONTANA 59601

DESIGNED BY:

PM&A — A CENTERLINE COMMUNICATIONS COMPANY

REV	DESCRIPTION	DATE	BY	CHK
0	APPROVED FOR CONSTRUCTION	05/02/24	MDA	JVC

SHEET INDEX:

PROJECT INDEX:

APPLICANT:
VERIZON
2730 BOZEMAN AVENUE
HELENA, MT 59601

CONTACT: KENT MCDERMOTT
PHONE: 406-461-1359

ENGINEERS/DESIGNERS:
CENTERLINE COMMUNICATIONS
23 MAUCHLY #110
IRVINE, CA 92618

CONTACT: LUCAS SAUNDERS
PHONE: 208-515-6227

SITE ACQUISITION:
PM&A
5225 WILEY POST WAY, SUITE 410
SALT LAKE CITY, UT 84116

CONTACT: KELEIGH GLASS
PHONE: 801-336-4694 EXT. 166

ABBREVIATED LEGAL DESCRIPTION:

S27, T01 N, R26 E, FAIRGROUNDS & PORTIONS OF ABND RR ABOVE WASTEWATER TRTMNT PLANT IN SEC 27 & 34 METRA RIVERSIDE

FCC COMPLIANCE:

RADIATION FROM THIS FACILITY WILL NOT INTERFERE WITH OPERATION OF OTHER COMMUNICATION DEVICES.

ADA COMPLIANCE:

THIS FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. LANDINGS AND EXITS SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES.

GENERAL PROJECT NOTES:

1. PRIOR TO SUBMITTING A BID, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF/HERSELF WITH THE SCOPE OF WORK AND ALL CONDITIONS AFFECTING THE NEW PROJECT.
2. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS OF THE JOB SITE AND CONFIRM THAT WORK AS INDICATED ON THESE CONSTRUCTION DOCUMENTS CAN BE ACCOMPLISHED AS SHOWN PRIOR TO COMMENCEMENT OF ANY WORK.
3. ALL FIELD MODIFICATIONS BEFORE, DURING, OR AFTER CONSTRUCTION SHALL BE APPROVED IN WRITING BY A VERIZON REPRESENTATIVE.
4. INSTALL ALL EQUIPMENT AND MATERIALS PER THE MANUFACTURER'S RECOMMENDATIONS, U.N.O.
5. NOTIFY VERIZON, IN WRITING, OF ANY MAJOR DISCREPANCIES REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS, AND DESIGN INTENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLARIFICATIONS FROM A VERIZON REPRESENTATIVE AND ADJUSTING THE BID ACCORDINGLY.
6. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES OF THE WORK UNDER THE CONTRACT.
7. CONTRACTOR SHALL PROTECT ALL EXISTING IMPROVEMENTS AND FINISHES THAT ARE TO REMAIN. CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY OCCUR DURING THE CONSTRUCTION TO THE SATISFACTION OF A VERIZON REPRESENTATIVE.
8. THE CONTRACTOR IS RESPONSIBLE FOR RED-LINING THE CONSTRUCTION PLANS TO ILLUSTRATE THE AS BUILT CONDITION OF THE SITE. FOLLOWING THE FINAL INSPECTION BY VERIZON, THE CONTRACTOR SHALL PROVIDE VERIZON WITH ONE COPY OF ALL RED-LINED DRAWINGS.
9. VERIFY ALL FINAL EQUIPMENT WITH A VERIZON REPRESENTATIVE. ALL EQUIPMENT LAYOUT, SPECS, PERFORMANCE INSTALLATION AND THEIR FINAL LOCATION ARE TO BE APPROVED BY VERIZON. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS/HER WORK WITH THE WORK AND CLEARANCES REQUIRED BY OTHERS RELATED TO SAID INSTALLATIONS.

PROJECT INFORMATION:

PROPERTY OWNER:	YELLOWSTONE COUNTY
JURISDICTION:	YELLOWSTONE COUNTY
PUBLIC RECORD PARCEL NO:	000D05612B
GEO CODE:	03-1033-27-4-01-01-0000
PROJECT TYPE:	COW INSTALLATION PROJECT
SMART TOOL PROJECT #	????????
ELECTRIC PROVIDER:	NORTHWESTERN ENERGY
PROJECT ID:	17248731
MDG LOCATION ID:	5000949018

DRIVING DIRECTIONS:

LATITUDE:	45°47'53.09"N
LONGITUDE:	108°28'46.50"W

FROM THE VERIZON OFFICE LOCATED AT 2730 BOZEMAN AVE. HELENA MT HEAD EAST ON BOZEMAN AVE TOWARD CARTER DR (0.3 MILES). TURN RIGHT AT THE 1ST CROSS STREET ONTO CARTER DR (0.6 MILES). TURN LEFT ONTO US-12 E (62.0 MILES). TURN LEFT TO MERGE ONTO I-90 E TOWARD BILLINGS (0.2 MILES). MERGE ONTO I-90 E (177 MILES). TAKE EXIT 452 FOR US-87 N TOWARD LOCKWOOD (0.2 MILES). SHARP LEFT ONTO I-90BL W (1.3 MILES). TURN RIGHT ONTO US-87 N (0.3 MILES). TURN RIGHT ONTO EXPOSITION DR (151 FT). TURN RIGHT (210 FT) AND THE SITE WILL BE ON YOUR LEFT.

PROJECT DESCRIPTION:

THIS PROJECT CONSISTS OF THE FOLLOWING:

INSTALLATION

- **ONE (1) NEW COW**
- **NINE (9) NEW PANEL ANTENNAS**
- **SIX (6) NEW RRH UNITS**
- **ONE (1) NEW 6651 BBU UNIT**

VICINITY MAP
SCALE: N.T.S.

NORTH

MONTANA
JAMES V. CHUNG
No. 30648 PE
LICENSED PROFESSIONAL ENGINEER
5/2/24

PROJECT NAME:

MT FAIR COW
EXISTING 54'-7" COW
(OVERALL HEIGHT: 57'-0" A.G.L.)
COW INSTALLATION PROJECT

PROJECT ADDRESS:

308 6TH AVE. N
BILLINGS, MT 59101
YELLOWSTONE COUNTY

SHEET TITLE:

TITLE SHEET

SAVE DATE:

5/2/2024 2:38 PM

SHEET NUMBER:

T1

ACCESS EASEMENT | UTILITY EASEMENT | LEASE AREA | PENETRATIONS | RRH/BBU | ANTENNAS | FIBER | POWER/GROUNDING | HYBRID/COAX

GENERAL PROJECT NOTES:

1.	CONTRACTOR IS RESPONSIBLE FOR ERECTING TEMPORARY BARRICADES AND/OR FENCING TO PROTECT THE SAFETY OF THE PUBLIC DURING CONSTRUCTION. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY BARRIERS AND REPAIR ALL DAMAGE TO PROPERTY ON THE SITE CAUSED BY THIS CONSTRUCTION. THE COST OF REPAIR IS THE CONTRACTOR'S RESPONSIBILITY.
2.	ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS.
3.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE PRIOR TO ORDERING ANY MATERIALS OR CONDUCTING ANY WORK.
4.	EXCESS SOIL MATERIAL AND DEBRIS CAUSED BY THIS CONSTRUCTION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LEGAL MANNER.
5.	CONTRACTOR SHALL MAKE ADJUSTMENTS TO GRADING ELEVATIONS AS NECESSARY TO ENSURE A SITE FREE OF DRAINAGE PROBLEMS.
6.	CONTRACTOR SHALL COORDINATE A CONSTRUCTION LAYDOWN AREA WITH THE PROPERTY OWNER. CONSTRUCTION LAYDOWN AREA SHALL BE FENCED-IN WITH TEMPORARY (45 DAY) CONSTRUCTION FENCE. THE TEMPORARY FENCE SHALL BE CONSTRUCTED OF 6' HIGH CHAIN LINK FABRIC AND IS TO BE REMOVED AT THE END OF CONSTRUCTION. LAYDOWN AREA IS TO BE RESTORED TO ITS ORIGINAL CONDITION AFTER FENCE REMOVAL.
7.	SURVEY INFORMATION SHOWN WAS CREATED FROM RECORD INFORMATION AND DOES NOT CONSTITUTE A LEGAL BOUNDARY SURVEY.
8.	THESE PLANS DO NOT ADDRESS THE SAFETY AND STABILITY OF THE STRUCTURE DURING ASSEMBLY AND ERECTION, WHICH ARE THE RESPONSIBILITY OF THE ERECTOR, BASED ON THE MEANS AND METHODS CHOSEN BY THE ERECTOR.

GENERAL CONTRACTOR NOTES:

1.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE PROJECT SCOPE OF WORK DEFINED UNDER THE REQUEST FOR PROPOSAL (RFP) FOR THIS PROJECT AND ALL ASSOCIATED ATTACHMENTS AND DOCUMENTS PROVIDED. THE RFP AND ALL ASSOCIATED DOCUMENTS SHALL DEFINE THE COMPLETE PROJECT SCOPE OF WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL DOCUMENTS AND IS SOLELY RESPONSIBLE FOR ALL WORK. ALL DOCUMENTS INCLUDED WITHIN THE PROJECT REQUEST FOR PROPOSAL ARE REQUIRED FOR THE COMPLETE PROJECT SCOPE OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK (EQUIPMENT, MATERIAL, INSTALLATION, TESTING, ETC.) INDICATED IN ALL DOCUMENTS. THE RFP, VERIZON NETWORK STANDARDS AND PROJECT ADDENDUMS AND CLARIFICATIONS ARE COMPLEMENTARY TO EACH OTHER. THE FORMAT OF THE SPECIFICATIONS AND DRAWING NUMBERING PER DISCIPLINE IS NOT INTENDED TO IMPLY SEGREGATION OF SUB CONTRACTOR WORK. CONTRACTOR SHALL ASSIGN ALL SUB CONTRACTOR WORK AND VERIZON WILL NOT ACCEPT ANY CHANGE ORDERS FOR INTERNAL CONTRACTOR WORK ASSIGNMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR DISTRIBUTING ALL RFP DOCUMENTS TO THEIR SUB CONTRACTORS. ALL RFP DOCUMENTS ARE REQUIRED TO INDICATE THE PROJECT SCOPE OF WORK. PARTIAL SUB CONTRACTOR DOCUMENT PACKAGES ARE HIGHLY DISCOURAGED. IN THE EVENT OF A CONFLICT BETWEEN THE DRAWINGS, SPECIFICATIONS, REFERENCED STANDARDS, VERIZON STANDARDS, OR AGREEMENT TERMS AND CONDITIONS THE ARCHITECT/ ENGINEER SHALL BE CONTACTED FOR FORMAL INTERPRETATION OF THE REQUIREMENTS. THE CONTRACTOR SHALL BE DEEMED TO HAVE PROVIDED THE DETAILED AND EXTENSIVE INTERPRETATION. ANY WORK INSTALLED IN CONFLICT WITH THE ARCHITECT/ ENGINEER INTERPRETATIONS SHALL BE CORRECTED BY THE CONTRACTOR AT NO EXPENSE TO VERIZON.
2.	ALL ANTENNAS MUST BE PIM TESTED WITHIN 48 HOURS OF THEM BEING RECEIVED BY THE INSTALLATION CONTRACTOR. THOSE RESULTS MUST BE SENT BACK TO THE VERIZON CONSTRUCTION ENGINEER AND EQUIPMENT ENGINEER WITHIN THE SAME 48 HOURS. IF YOU MISS THE 48HR TIMELINE AND THE ANTENNAS DO NOT PASS UPON INSTALLATION, YOUR COMPANY WILL BE CHARGED FOR THE COST OF THE ANTENNAS FOR REPLACEMENT.
3.	ALL LOADS MUST BE SECURED PROPERLY TO THE VEHICLE OR TRAILER. VERIZON WILL PASS ALONG THE COST OF ANY REPLACEMENTS DUE TO DAMAGE OR LOSS WHETHER IT IS NEW OR USED.

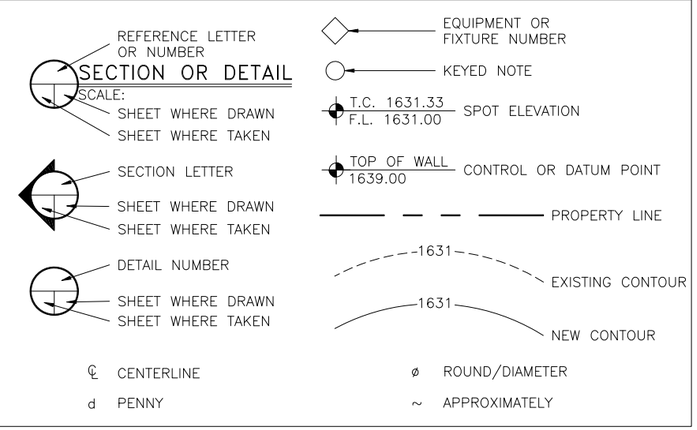
ANTENNA, MOUNTS & HARDWARE INSTALLATION NOTES:

1.	CONTRACTOR TO INSTALL ANTENNAS, MOUNTS AND TOWER HARDWARE PER MANUFACTURER'S RECOMMENDATIONS (OR AS REQUIRED BY THE OWNER/PROVIDER).
2.	ALL BOLTS SHALL BE TIGHTENED PER AISC REQUIREMENTS.
3.	ANY GALVANIZED SURFACES THAT ARE DAMAGED BY ABRASIONS, CUTS, DRILLING OR FIELD WELDING DURING SHIPPING OR ERECTION SHALL BE TOUCHED-UP WITH TWO COATS OF COLD GALVANIZING COMPOUND MEETING THE REQUIREMENTS OF ASTM A780.
4.	ANTENNA MOUNTS SHALL NOT BE USED AS A CLIMBING DEVICE. WORKERS SHALL ALWAYS TIE OFF TO AN APPROVED CLIMBING POINT.
5.	SEE ALSO GENERAL ANTENNA NOTES ON SHEET RF1 (IF APPLICABLE).

MAIN OVP, SECTOR BOX, RRH, TMA, & DIPLEXER INSTALLATION NOTES:

1.	CONTRACTOR TO INSTALL MAIN OVP, SECTOR BOXES, REMOTE RADIO HEADS, TOWER MOUNTED AMPLIFIERS, AND/OR DIPLEXERS PER MANUFACTURER'S RECOMMENDATIONS.
2.	ALL BOLTS SHALL BE TIGHTENED PER AISC REQUIREMENTS.
3.	ANY GALVANIZED SURFACES THAT ARE DAMAGED BY ABRASIONS, CUTS, DRILLING OR FIELD WELDING DURING SHIPPING OR ERECTION SHALL BE TOUCHED-UP WITH TWO COATS OF COLD GALVANIZING COMPOUND MEETING THE REQUIREMENTS OF ASTM A780.

LEGEND OF SYMBOLS:



APPROVED FOR CONSTRUCTION

DESIGNED FOR:

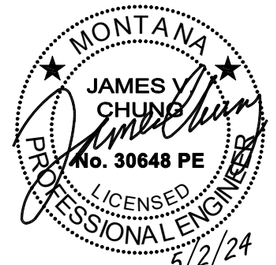
verizon

2730 BOZEMAN AVE.
HELENA, MONTANA 59601

DESIGNED BY:

PM&A A CENTERLINE COMMUNICATIONS COMPANY

REV	DESCRIPTION	DATE	BY	CHK
0	APPROVED FOR CONSTRUCTION	05/02/24	MDA	JVC



PROJECT NAME:

MT FAIR COW
EXISTING 54'-7" COW
(OVERALL HEIGHT: 57'-0" A.G.L.)
COW INSTALLATION PROJECT

PROJECT ADDRESS:

308 6TH AVE. N
BILLINGS, MT 59101
YELLOWSTONE COUNTY

SHEET TITLE:

SPECIFICATION SHEET

SAVE DATE:

5/2/2024 2:38 PM

SHEET NUMBER:

SP1

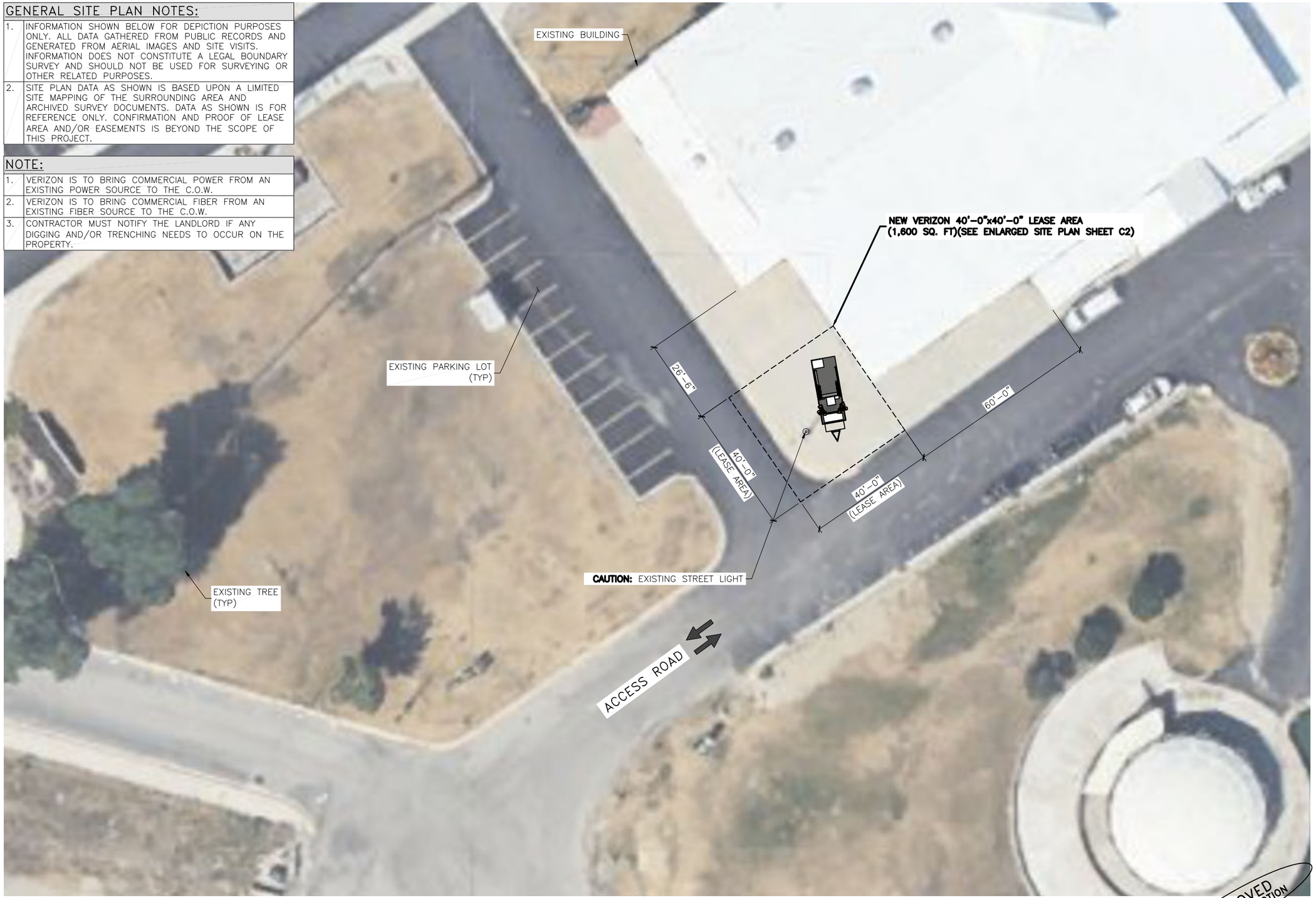
ACCESS EASEMENT | UTILITY EASEMENT | LEASE AREA | PENETRATIONS | RRH/BBU | ANTENNAS | FIBER | POWER/GROUNDING | HYBRID/COAX

GENERAL SITE PLAN NOTES:

1. INFORMATION SHOWN BELOW FOR DEPICTION PURPOSES ONLY. ALL DATA GATHERED FROM PUBLIC RECORDS AND GENERATED FROM AERIAL IMAGES AND SITE VISITS. INFORMATION DOES NOT CONSTITUTE A LEGAL BOUNDARY SURVEY AND SHOULD NOT BE USED FOR SURVEYING OR OTHER RELATED PURPOSES.
2. SITE PLAN DATA AS SHOWN IS BASED UPON A LIMITED SITE MAPPING OF THE SURROUNDING AREA AND ARCHIVED SURVEY DOCUMENTS. DATA AS SHOWN IS FOR REFERENCE ONLY. CONFIRMATION AND PROOF OF LEASE AREA AND/OR EASEMENTS IS BEYOND THE SCOPE OF THIS PROJECT.

NOTE:

1. VERIZON IS TO BRING COMMERCIAL POWER FROM AN EXISTING POWER SOURCE TO THE C.O.W.
2. VERIZON IS TO BRING COMMERCIAL FIBER FROM AN EXISTING FIBER SOURCE TO THE C.O.W.
3. CONTRACTOR MUST NOTIFY THE LANDLORD IF ANY DIGGING AND/OR TRENCHING NEEDS TO OCCUR ON THE PROPERTY.



SITE PLAN NORTH

30'-0" 0 30'-0"
18' 6'
SCALE: 1" = 30'-0"

APPROVED FOR CONSTRUCTION

DESIGNED FOR:

verizon

2730 BOZEMAN AVE.
HELENA, MONTANA 59601

DESIGNED BY:

PM&A
A CENTERLINE COMMUNICATIONS COMPANY

REV	DESCRIPTION	DATE	BY	CHK
0	APPROVED FOR CONSTRUCTION	05/02/24	MDA	JVC

MONTANA
JAMES V CHUNG
No. 30648 PE
LICENSED PROFESSIONAL ENGINEER
5/2/24

PROJECT NAME:

MT FAIR COW
EXISTING 54'-7" COW
(OVERALL HEIGHT: 57'-0" A.G.L.)
COW INSTALLATION PROJECT

PROJECT ADDRESS:

308 6TH AVE. N
BILLINGS, MT 59101
YELLOWSTONE COUNTY

SHEET TITLE:

OVERALL SITE PLAN

SAVE DATE:

5/2/2024 2:38 PM

SHEET NUMBER:

C1

ACCESS EASEMENT
UTILITY EASEMENT
LEASE AREA
PENETRATIONS
RRH/BBU
ANTENNAS
FIBER
POWER/GROUNDING
HYBRID/COAX

GENERAL SITE PLAN NOTES:

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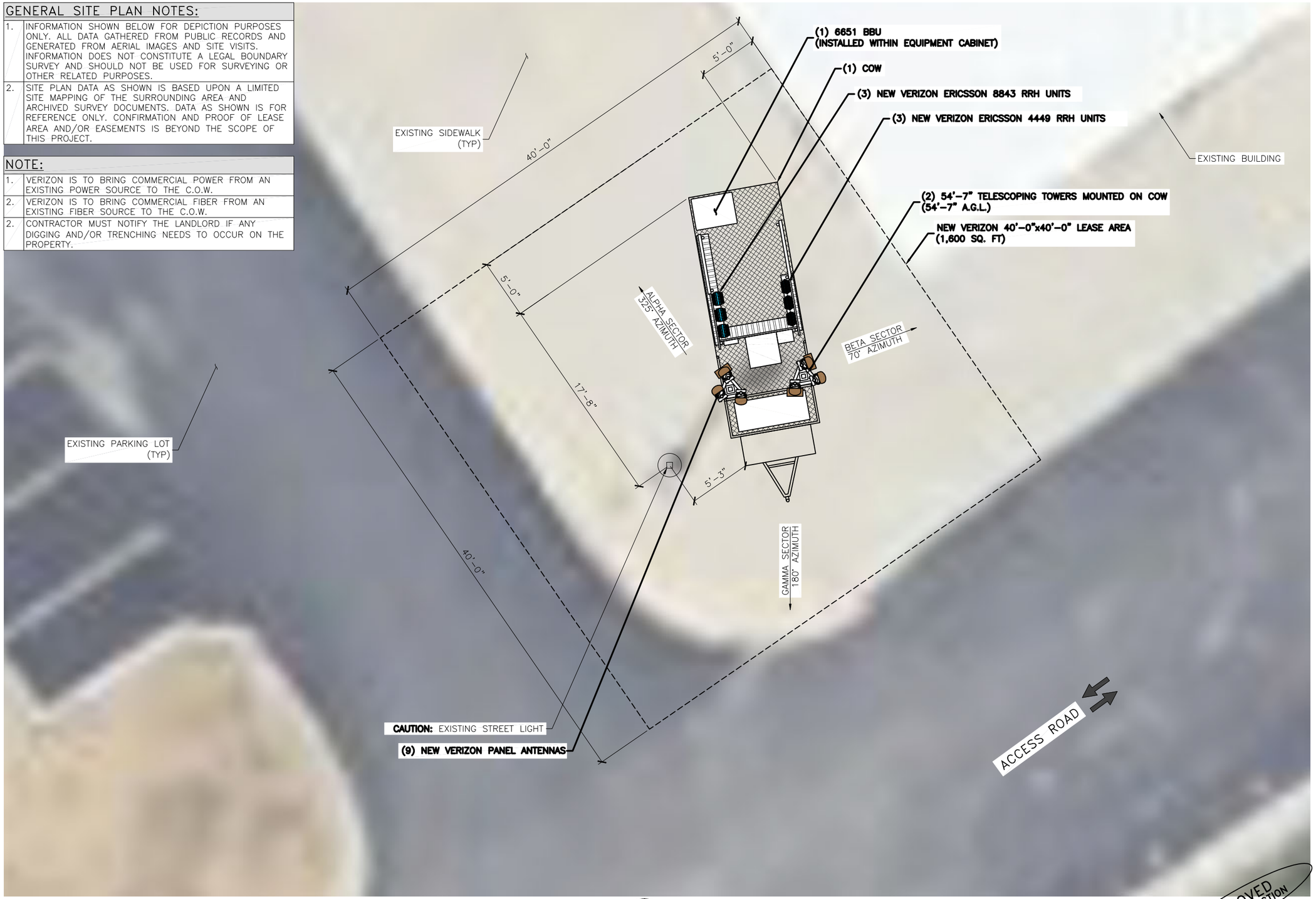


SITE PLAN
NORTH

8'-0" 0 8'-0"
6' 4' 2'
SCALE: ⅛" = 1'-0"

APPROVED FOR CONSTRUCTION

DESIGNED FOR:

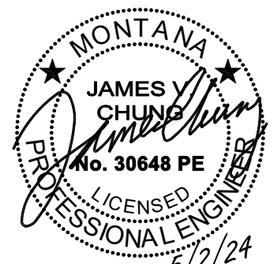
verizon

2730 BOZEMAN AVE.
HELENA, MONTANA 59601

PM&A
A CENTERLINE COMMUNICATIONS COMPANY

DESIGNED BY:

REV	DESCRIPTION	DATE	BY	CHK
0	APPROVED FOR CONSTRUCTION	05/02/24	MDA	JVC



PROJECT NAME:

MT FAIR COW
EXISTING 54'-7" COW
(OVERALL HEIGHT: 57'-0" A.G.L.)
COW INSTALLATION PROJECT

PROJECT ADDRESS:

308 6TH AVE. N
BILLINGS, MT 59101
YELLOWSTONE COUNTY

SHEET TITLE:

ENLARGED SITE PLAN

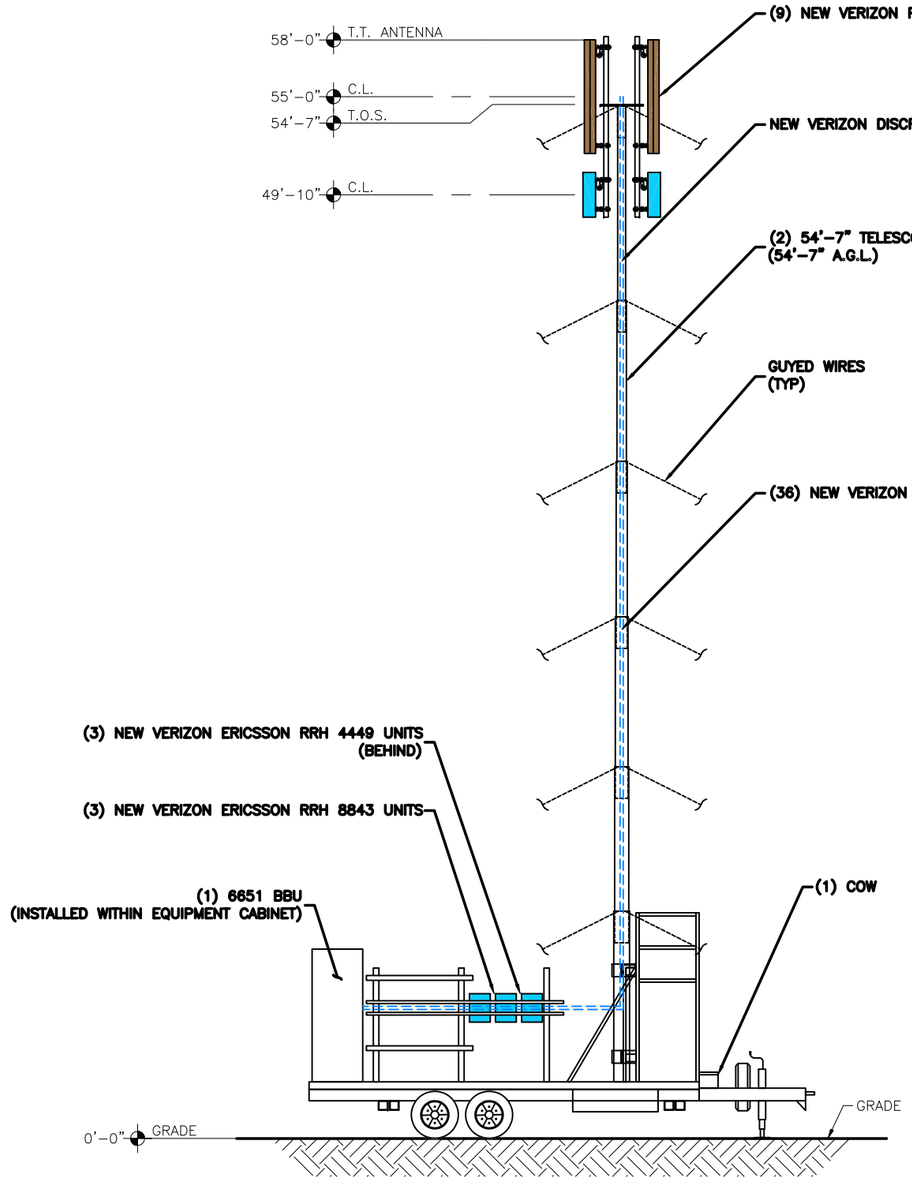
SAVE DATE:

5/2/2024 2:38 PM

SHEET NUMBER:

C2

ACCESS EASEMENT
UTILITY EASEMENT
LEASE AREA
PENETRATIONS
RRH/BBU
ANTENNAS
FIBER
POWER/GROUNDING
HYBRID/COAX



NEW SOUTHWEST ELEVATION
SCALE: N.T.S.

KEY:	
C.L. =	CENTERLINE OF RADIATION
A.L. =	ATTACHMENT LEVEL
B.T. =	BOTTOM TIP LEVEL
T.T. =	TOP TIP LEVEL
A.G.L. =	ABOVE GRADE LEVEL
B.O.B.P. =	BOTTOM OF BASE PLATE
T.O.S. =	TOP OF STRUCTURE

NOTE:

1. STRUCTURAL ANALYSIS MUST BE PERFORMED PRIOR TO THE INSTALLATION OF ANY NEW EQUIPMENT TO DETERMINE THE ADEQUACY OF THE EXISTING STRUCTURE. THIS SET OF CONSTRUCTION DRAWINGS DOES NOT CONSTITUTE A STRUCTURAL ANALYSIS.

APPROVED FOR CONSTRUCTION

DESIGNED FOR:

verizon

2730 BOZEMAN AVE.
HELENA, MONTANA 59601

DESIGNED BY:

PM&A
A CENTERLINE COMMUNICATIONS COMPANY

REV	DESCRIPTION	DATE	BY	CHK
0	APPROVED FOR CONSTRUCTION	05/02/24	MDA	JVC

MONTANA
JAMES V CHUNG
No. 30648 PE
LICENSED PROFESSIONAL ENGINEER
5/2/24

PROJECT NAME:

MT FAIR COW
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PROJECT ADDRESS:

308 6TH AVE. N
BILLINGS, MT 59101
YELLOWSTONE COUNTY

SHEET TITLE:

ELEVATIONS

SAVE DATE:

5/2/2024 2:38 PM

SHEET NUMBER:

C3

MT FAIR COW

STRUCTURAL ANALYSIS
REVISION *0*

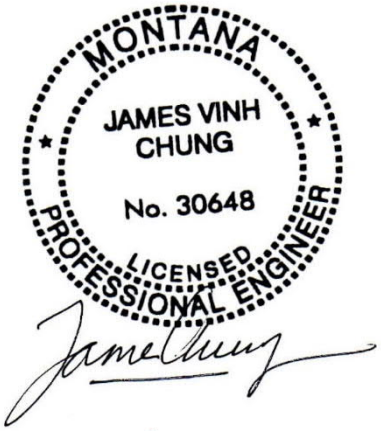
TIA-222-*H* / IBC 20*21*/ ASCE 7-*16*

55’-0” Pnuematic Mass COW

BILLINGS, MT
YELLOWSTONE COUNTY
45°47’53.09” -108°28’46.50”

PROJECT ENGINEER: DANH HO, E.I.T

EOR: JAMES CHUNG, P.E.



May 3, 2024

MAXIMUM ANTICIPATED STRESS LEVEL & RESULTS

STRUCTURAL COMPONENT	RESULTS
Pnuematic Mass COW	**Sufficient**

REVISION CHART

REVISION	DATE ISSUED	DESCRIPTION
0	05/03/2023	Initial Structural Analysis

PM&A
A CENTERLINE COMMUNICATIONS COMPANY
23 Mauchly, #110, Irvine, CA 92618

May 3, 2024

Verizon

Subject:	***Structural Analysis***
Project:	***COW Installation Project***
Revision:	***0***
Site Name:	***MT Fair COW***
Site Number:	
Site Location:	***308 6th Ave. N***
	Billings, MT 59101
Coordinate	***45°47'53.09" -108°28'46.50"***
Structure Information:	***55'-0" Pnuematic Mass COW***

To Whom It May Concern:

PM&As is pleased to present the following **Structural Analysis report** for the M**T Pair COW** Pnuematic Mass COW located in Billings, MT. It was a pleasure assisting you with the project referenced above and we look forward to providing you with our Structural Engineering Services in the future.

Based on our analysis, PM&As has determined the following conclusion:

Structural Adequacy:	**Sufficient**
Maximum CSR :	96**%**

This analysis has been performed based upon an ultimate 3-second gust wind speed of 110 mph in accordance with the 2021 International Building Code. Refer to the following pages for applicable Standard references and design criteria as required.

If you have any questions concerning the content of this report please do not hesitate to contact us at 949-247-7767.

Prepared By: Danh Ho, E.I.T
Signed and Submitted By:
James Chung, P.E.

TABLE OF CONTENTS Page

PURPOSE

At the request of Verizon, PM&A performed a Structural Analysis of the MT Fair COW Pnuematic Mass COW located in Billing, MT. The analysis was performed to determine the Pnuematic Mass COW 's capability of supporting Verizon's proposed appurtenance implementations.

EXECUTIVE SUMMARY

PM&A concludes the existing 55'-0" Pnuematic Mass COW structure is capable of supporting Verizon's proposed appurtenance implementations. Please refer to the "Conclusion & Recommendations" portion of this report for further information.

TOWER DESCRIPTIONS

The Pnuematic mast cow consists of a pre-manufactured heavy-duty pneumatic mast mounted on a communication on-site light trailer (COLT) in which it is intended for a temporarily Cell on Wheel (COW) deployment. structural elements and geometry.

DOCUMENTATIONS

- PM&A Construction Drawing 90% CD Rev-A, dated 04/17/2024.
- RFDS, dated 04/12/2024, provided by Verizon.
- BOI Peabody COW Mapping, dated 01/09/2020, provided by Geostructural.

SCOPE OF WORKS

Verizon proposed the following:

- Install new Cell on Wheel.
- Install (9) new Panel Antennas at the 55'-0" and 50'-0" levels.
- Install (6) new Remote Radio Heads on Communication on-Site Light Trailer (COLT).

Table 1.0 Final Antenna Configuration on the COW:

ATTACH LEVEL (COR)	AZIMUTH (deg., MN)	ANTENNA TYPE	ANTENNA QUANTITY	MOUNT TYPE	COAX (QTY.) SIZE (Nominal)
~55'-0"	70º 180º 325º	**Commscope NHH-65B-R2B**	**6**	**Pipe Mounts**	**(36) 7/8"**
~50'-0"		**Ericsson AIR6449**	**3**		
-	-	**Ericsson 4449**	**3**	COLT	
	-	**Ericsson 8843**	**3**		
	-	**Raycap OVP12**	**2**		

Notes:

1. New appurtenances are shown in "BOLD".

STRUCTURAL ANALYSIS

CODE AND STANDARDS:

Our Structural Analysis was performed in accordance with the requirements set forth in the following:

- Jurisdiction: Billings, MT
- TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas
- International Building Code (IBC) 2021, §1609, §1613, §3108.1, and Referenced Standards
- ASCE 7-16, Minimum Design Loads for Buildings and Other Structures, Chapter 29

DESIGN CRITERIA:

The tower design criteria limitation (load/codes) as set forth in the following:

- V_{ULT} = 110 mph (3-sec. gust)
- V_{ICE} = 50 mph
- Radial Ice = 1/2"
- Risk Category =II
- Topography Category = 1
- Exposure = C
- Soil Site Class = D(Default)
- Seismic Design Category = B
- S_{DS} = 0.137

The material properties of the tower are based on following:

Tower Steel Grades (assumed for the purpose of structural analysis):

- Pnuematic Mast: Aluminum 6061-T6.

STRUCTURAL ANALYSIS PROCEDURES

ANALYSIS ASSUMPTIONS:

- All tower components including tower members, bolts, connections and welds are in good and reliable structural condition with no structural defects.
- All tower components, including any modifications were properly designed, detailed, fabricated, erected and maintained throughout the lifetime of the tower.
- Structural members and materials used for construction in accordance with original design documents.
- The Trailer being used to support the Pnuematic mast is intended for the purposes of cell on wheel.
- All new antennas and coax to be installed according to recommendations (if any).

DISCLAIMERS:

1. Due to limited data and access to the existing tower, PM&As made certain assumptions regarding the structural analysis. All existing structural elements of the tower structure and antenna mount are presumed to be properly fastened and in good and reliable structural condition without structural damage at the time of the analysis. Should any existing structural elements be deemed to not be in good and reliable structural condition, PM&As shall not be held liable for any structural deficiencies. As such, PM&As shall be notified of the structural deficiencies in which any necessary upgrades or remedies can be determined as required at that time.
2. PM&As made certain assumptions pertaining to the material properties of the tower framing elements. It should be noted that if the members are of lower material grades than what was assumed for this analysis, additional capacity may not exist. As such, PM&As will be notified in which a revised structural analysis will be required.
3. The results of this analysis are representative of the Pnuematic Mast COW, as presented to PM&As, based on the tower mapping by GeoStructural. Confirmation of the aforementioned data is beyond the scope of this project. It should be noted that omissions of any structural elements of the tower and the associated trailer which can change the result of this analysis will void this analysis and require re-evaluation. In no event shall PM&As be liable for the accuracy of the information.

ANALYSIS PROCEDURES:

PM&As utilized TNX Tower (version 8.1.1.0), an industry standard program for tower structure analysis and RISA 3D (version 17.0.4 or 21.0.0), a three-dimensional analysis and design program, to perform the structural analysis of the tower and determine the tower adequacy within the codes allowable limits. The proposed loads being evaluated take into account the design load criteria set forth by the jurisdiction as required.

ANALYSIS RESULTS

TOWER ANALYSIS:

MAXIMUM STRESS USAGE:

The following chart outlines the maximum anticipated tower stresses (expressed as a percentage of overall capacity) as a result of the associated Load Combination.

Table 2.0: Tower Stress Usage:

LOAD COMBINATION	% USAGE		
	MAXIMUM MEMBER STRESS	TOWER MEMBER (SECTION)	MAXIMUM GUY CABLE STRESS
Existing Antennas + Verizon Antenna Implementations	96%	Pole	75% @ G1

In pursuant to the TIA-222-H section 15.5, the change in design loads less than 105% is acceptable and design loads greater than 105% is not acceptable without requiring structural modifications. Thus, the change in design loads due to Verizon's proposed appurtenances is less than 105%. Therefore, it is within code allowable limits.

COMMUNICATION ON LIGHT TRAILER (COLT):

***OVERTURNING ANALYSIS*:**

The following chart outlines the maximum anticipated overturning moment and GVWR capacity (expressed as a factor of safety exceeding the maximum requiring limit) as a result of the associated Load Combination.

Table 3.0: Safety of Factor Usage:

LOAD COMBINATION	FORCE ELEMENT	CALCULATED FACTOR OF SAFETY	PASS/FAIL
Proposed Verizon Antennas *(Worst Case)*	Overturning Moment	2.59 (1.5 S.F)	Pass
	GVWR Capacity (18,000 lbs)	1.16 (1.0 SF)	Pass

FOUNDATION ANALYSIS:

The use of the COW is intended for a temporary Cell On Wheel (COW) deployment in which it is assumed the trailer is on stable ground. Therefore, the foundation was not considered in the analysis.

CONCLUSION & RECOMMENDATIONS

PM&As concludes the existing MT Fair COW 55'-0" Pnuematic Mass COW located in Billings, MT is capable of supporting Verizon's proposed appurtenance implementations.

APPENDIX A
STRUCTURAL ANALYSIS

PM&A 1000 Holcomb Woods Pkwy, Suite 210, Roswell, GA 30076	Project Name: Verizon MT Fair COW , MT Project Description: C-Band 5G	Prepared by: Checked by: DVH JC Date: 5/2/2024

Antenna Mount Analysis

1.0 Jurisdiction and Code Compliance

Code :	TIA-222-H, IBC 2021
State :	Montana
County :	Yellowstone

* The design appurtenance loads being used to evaluate the antenna mount take into account the design load criteria set forth by the jurisdiction accordingly.

1.1 Antenna Mount Input Data

Mount Type:	
Condition :	Existing
Concealed:	No
Attachment Height AGL (ft) :	10

* The Existing mount shall be evaluated for the applied appurtenance loadings with a demand-capacity ratio less than 105% code allowable limit .

1.2 Structure Input Data

Main Structure Type:	Latticed Frame Work
Main Structure Top of Height (ft) :	55.0

* The structure is, for all intents and purposes, a supporting structure for telecommication related equipments.

1.4 Wind Design Criteria

Per IBC 2021 / ASCE 7-16 / TIA-222-H

Exposure Category :	C
Topographic Category :	1
Structure Class :	II
Terrain Crest Height (ft) :	By Default
Elevevation above Sea Level :	Specify Zs
Input Zs (ft):	3108
Wind Speed :	Specify Wind Speed
Input Vult (mph) :	110
Input Vult Ice (mph)	50
Design Radial Ice Thck (Design or Default):	Design
Specify Design Ice Thickness:	0.5

* Design Wind Loads consider the following default conditions unless otherwise specified:
  - · Exposure Category C - Open Terrain with no
  - · Topographic Category 1 - Flat Terrain where Crest Height level is at 0'.
  - · Structural class II - Assuming the structure does not pose a signigicant hazard to life or property damages.
* Site Specific Wind Speed can be obtained from ATC Hazard Tool or ASCE 7 Hazard Tool Below:

https://hazards.atcouncil.org/ https://asce7hazardtool.online/

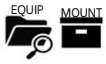
1.5 Seismic Design Criteria

Per IBC 2021 / ASCE 7-16 / TIA-222-H

		Site Class :	D(Default)
		Seismic Design Category (SDC) :	B
		S_s & S_1, F_a & F_v :	Specify Coeff
			ASCE 7 Hazardtool
0.137	: Input SDS	Input Ss :	0.128
0.09	: Input SD1	Input S1 :	0.056
Design Seismic Coeff for Components			
Communication equipment per ASCE 07-16 Table 13.6-1			
		a_p :	1

* Design Seismic Load consider default category D for Site Class and SDC unless otherwise specified:
* Site Specific Seismic coeficients Ss & S1, Site Class, and SDC can be obtained from ATC Hazard Tool or ASCE 7 Hazard Tool. Links Below:
https://hazards.atcouncil.org/ https://asce7hazardtool.online/

1.6 Appurtenances Input Data



Type	Appurtenance
CPNT	72x30 Hydraulic Box
CPNT	73x30 Generator
CPNT	32x32 Clean Up Kit
CPNT	AC Panel
CPNT	Tranfer Switch
CPNT	EQ Cabinet
RRH	Ericsson 4449
RRH	Ericsson 8843

1000 Holcomb Woods Pkwy, Suite 210, Roswell, GA 30076	Project Name: Verizon MT Fair COW , MT	Prepared by: DVH	Checked by: JC
	Project Description: C-Band 5G	Date: 5/2/2024	

Component Wind Analysis

2.0 Code Reference

TIA-222-H, IBC 2021

2.1. Existing & Proposed Nonstructural Component Spec

Nonstructural Component	Height (in)	Width (in)	Depth (in)	Weight (lbs)
72x30 Hydraulic Box	24	30	72	500
73x30 Generator	30	73	30	801
32x32 Clean Up Kit	32	32	32	100
AC Panel	48	24	12	200
Tranfer Switch	48	24	12	200
EQ Cabinet	74	42	32	1500
Ericsson 4449	20.9	11.8	7.5	55.6
Ericsson 8843	18	13.2	11.3	75

2.2 Determine Wind Velocity Pressure

Topographic Factor (Method 1)	$K_{zt} = \left[1 + \frac{K_c K_t}{K_h}\right]^2 =$		1.00	*(unitless)*
Velocity Pressure Coefficient		$K_h =$	0.85	*(unitless)*
Directionality Factor	ASCE07 ch26 sec 26.6	$K_d =$	0.85	*(unitless)*
Ground Elevation Factor		$K_e =$	0.90	*(unitless)*
Rooftop Wind Speed-Up Factor		$K_s =$	1.00	*(unitless)*

Basic Wind Speed $V_{ult} =$ 110 *MPH*

*Wind load calculations are based on wind speed obtained from ATC website. See Attached.
https://hazards.atcouncil.org/.

Velocity pressure w/no ice
Velocity pressure w/ ice $q_z = 0.00256 K_h K_{zt} K_s K_e K_d {V_{ult}}^2 =$ 20.0 lb/ft^2

Gust Affect Factor ASCE07 ch26 sec 26.9 $G_h =$ 1.00 *(Unitless)*

2.3 Wind Design Force for the Appurtenance

$F = q_z G_h (C_r or\ C_f)(EPA)_A =$ 20.0 $*(EPA)_A$

1000 Holcomb Woods Pkwy, Suite 210, Roswell, GA 30076	Project Name: Verizon MT Fair COW , MT	Prepared by: DVH	Checked by: JC
	Project Discription: C-Band 5G	Date: 5/2/2024	

Component Seismic Analysis

3.0 Code Reference

TIA-222-H, IBC 2021

3.1 Design Spectral Response Accelerations

Structure Class		II	
Site Class		D(Default)	
Seismic Design Category		B	
Spectral Response Acceleration at short period	$S_S =$	0.128	*g*
Max Considered Earthquake Spectral Response acceleration at 1 second	$S_1 =$	0.056	*g*
Acceleration-based site coefficient at short periods	$F_a =$	NA	
Velocity-based site coefficient at 1.0 seconds	$F_V =$	NA	
Design Spectral Response Acceleration at short periods	$S_{DS} = (2/3)F_a S_S =$	0.137	*(unitless)*
Design Spectral Response Acceleration at a 1.0 sec period	$S_{D1} = (2/3)F_V S_1 =$	0.090	*(unitless)*

3.2 Seismic Design Force for Appurtenance

Per ASCE 07-16

Input a_p : 1

	ap =	1	
	Ω =	1	
Importance Factor	I=	1.00	
Response Modification Coefficient	$R_P =$	1.5	
Component Amplification Factor	$a_P =$	1	
	$z =$	10.0	*ft*
	$h =$	55.0	*ft*
	$z/h =$	0.18	
ASCE 07-16 Control	$F_P = \frac{0.4 a_p S_{DS} W_P}{\left(\frac{R_p}{I_p}\right)}\left(1 + 2\frac{z}{h}\right) =$	0.05 *W_p	

3.3 Equivalent Lateral Force Procedure:

Per TIA-222-H Section 2.7.7.1

Seismic Response Coefficient	$C_s = \frac{S_{DS} I}{R} =$	
	Ω =	
Fundamental of Period	T =	
Long-period Transition Period	$T_L =$	
Figure B-19		
C_s Less Than the Following :	$C_s = \frac{S_{DS} I}{TR}$ when T < T_L =	
	$C_s = \frac{S_{D1} I}{T^2 R}$ when T > T_L =	
C_s Greater Than the Following :	$C_s = 0.044\, S_{DS} I$ OR 0.03 =	
	$Where\ S_1 > 0.6,\ C_s = \frac{0.8 S_1 I}{R}$ =	
	$V =$	NA

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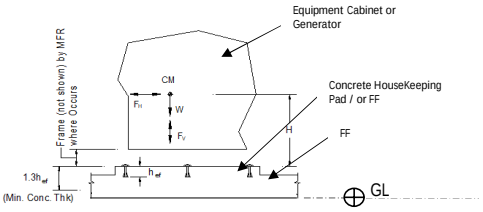
	Project Discription: C-Band 5G	Date: 5/2/2024	

Not Strutural Component Lateral and Vertical Forces with no Ice

4.0 Non-Structural Component Lateral Force w/ no ice Calculation

Design Wind Force with no ice: $20.0\ (EPA)_n$

Where the Effective Projected Area of the component $(EPA)_n$ Without Ice is as follow



Critical Equipment $(EPA)_n = \sum(C_r A_e)_n$ (psf)

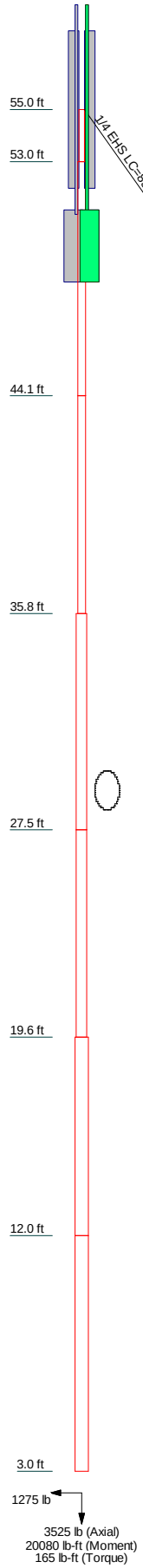
Design Seismic Force with no ice: $0.05\ W_p$

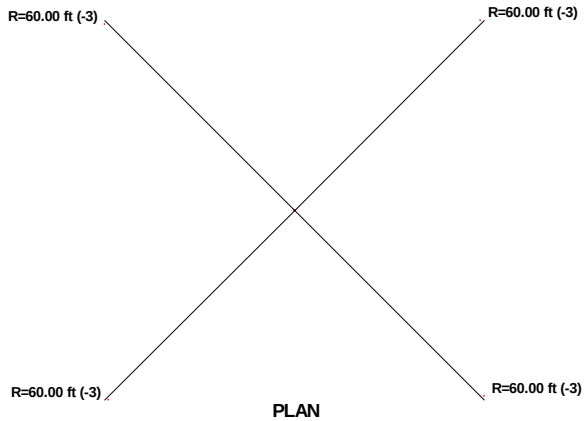
Where the Weight W_p of the component Without Ice is per Nonstructural component Spec Schedule

The following table outlines the maximum anticipated component Forces (Lateral and Vertical) due to Wind and Seismic loads associated with windard face normal to the component azimuth and side face of the component azimuth.

Component Load Table no ice			EPA (ft^2)		Horizontal Wind Force (Factored) (lbs)		Horizontal Seismic Force (Factored) (lbs)	Vertical Force (Factored) (lbs)	**Vertical Seismic Force (Factored) (lbs)**
Component	C_{rN}	C_{rT}	$(EPA)_N$	$(EPA)_T$	F_N	F_T	F_{sz}	F_z	E_v
72x30 Hydraulic Box	1.900	1.881	9.50	22.57	190	452	25	600	14
73x30 Generator	1.881	1.881	28.61	11.76	573	236	40	961	22
32x32 Clean Up Kit	1.881	1.881	13.38	13.38	268	268	5	120	3
AC Panel	1.881	1.881	15.05	7.52	302	151	10	240	5
Tranfer Switch	1.881	1.881	15.05	7.52	302	151	10	240	5
EQ Cabinet	1.313	1.881	28.33	30.93	568	620	75	1800	41
Ericsson 4449	1.313	1.330	2.25	1.45	45	29	3	67	2
Ericsson 8843	1.306	1.310	2.16	1.85	43	37	4	90	2

Section	Size	Length (ft)	Socket Length (ft)	Grade	Weight (lb)
1	RT4.5X4.5	2.00	4.00	Aluminum 6061-T6	9.0
2	RT5X5	8.90	2.00		44.9
3	RT6X6	8.35	2.00		51.4
4	RT7X7	8.25	2.00		59.7
5	RT8X8	7.90	2.00		65.8
6	RT9X9	7.60	2.00		71.4
7	RT10X10	9.00			94.6
					396.8





PLAN

DESIGNED APPURTENANCE LOADING

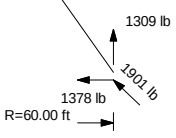
TYPE	ELEVATION	TYPE	ELEVATION
8'x2 1/2" Pipe Mount	55	COMMSCOPE NHH-65B-R2B	55
8'x2 1/2" Pipe Mount	55	AIR 6449	49.8
8'x2 1/2" Pipe Mount	55	AIR 6449	49.8
COMMSCOPE NHH-65B-R2B	55	AIR 6449	49.8

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
Aluminum 6061-T6	35 ksi	38 ksi			

TOWER DESIGN NOTES

1. Tower is located in Butte County, Idaho.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 110 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 0.25 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft



ALL REACTIONS ARE FACTORED

J5 Infrastructure Partner
23 Mauchly #110
Irvine, CA 92618
Phone: (949) 247-7767
FAX:

Job: ***Pnuematic mast***			
Project: ***Structural Analysis -- Rev-0***			
Client: Verizon Wireless	Drawn by: DanhHo	App'd:	
Code: TIA-222-H	Date: 05/02/24	Scale: NTS	
Path: C:\Users\DanhH\OneDrive - Centerline Communications\Desktop\VZW\MT8 MT Fair CDW SAI\MT8 MT Fair Pnuematic mast (jc review).eri		Dwg No. E-1	

Guy-Tensioning Information

Guy Elevation		H	V	Temperature At Time Of Tensioning: 0 F Initial Tension	0 F Intercept	20 F Initial Tension	20 F Intercept	40 F Initial Tension	40 F Intercept	60 F Initial Tension	60 F Intercept	80 F Initial Tension	80 F Intercept	100 F Initial Tension	100 F Intercept	120 F Initial Tension	120 F Intercept
ft		ft	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft
55	A	59.81	58.00	812.601	0.51	763.310	0.55	714.103	0.58	665.000	0.63	616.029	0.68	567.230	0.74	518.660	0.80
	B	59.81	58.00	812.601	0.51	763.310	0.55	714.103	0.58	665.000	0.63	616.029	0.68	567.230	0.74	518.660	0.80
	C	59.81	58.00	812.601	0.51	763.310	0.55	714.103	0.58	665.000	0.63	616.029	0.68	567.230	0.74	518.660	0.80
	D	59.81	58.00	812.601	0.51	763.310	0.55	714.103	0.58	665.000	0.63	616.029	0.68	567.230	0.74	518.660	0.80

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.0 Wind 45 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Wind 135 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
7	1.2 Dead+1.0 Wind 225 deg - No Ice+1.0 Guy
8	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
9	1.2 Dead+1.0 Wind 315 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Ice+1.0 Temp+Guy
11	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
12	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp+1.0 Guy
13	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
14	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp+1.0 Guy
15	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	Dead+Wind 0 deg - Service+Guy
20	Dead+Wind 45 deg - Service+Guy
21	Dead+Wind 90 deg - Service+Guy
22	Dead+Wind 135 deg - Service+Guy
23	Dead+Wind 180 deg - Service+Guy
24	Dead+Wind 225 deg - Service+Guy
25	Dead+Wind 270 deg - Service+Guy
26	Dead+Wind 315 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	2	3.53	0.01	1.26
	Max. H_x	8	3.52	1.27	0.00
	Max. H_z	2	3.53	0.01	1.26
	Max. M_x	2	19.59	0.01	1.26
	Max. M_z	4	19.64	-1.26	-0.02
	Max. Torsion	4	0.17	-1.26	-0.02

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Vert	1	2.75	0.00	-0.00
	Min. H_x	4	3.52	-1.26	-0.02
	Min. H_z	6	3.51	-0.01	-1.27
	Min. M_x	6	-19.85	-0.01	-1.27
	Min. M_z	8	-19.80	1.27	0.00
	Min. Torsion	8	-0.16	1.27	0.00
Guy D @ 60 ft Elev -3 ft Azimuth -45 deg	Max. Vert	9	-0.08	-0.05	-0.05
	Max. H_x	9	-0.08	-0.05	-0.05
	Max. H_z	9	-0.08	-0.05	-0.05
	Min. Vert	5	-1.31	-0.98	-0.97
	Min. H_x	5	-1.31	-0.98	-0.97
	Min. H_z	5	-1.31	-0.98	-0.97
Guy C @ 60 ft Elev -3 ft Azimuth 225 deg	Max. Vert	7	-0.08	-0.05	0.05
	Max. H_x	7	-0.08	-0.05	0.05
	Max. H_z	3	-1.25	-0.93	0.93
	Min. Vert	3	-1.25	-0.93	0.93
	Min. H_x	3	-1.25	-0.93	0.93
	Min. H_z	7	-0.08	-0.05	0.05
Guy B @ 60 ft Elev -3 ft Azimuth 135 deg	Max. Vert	5	-0.08	0.05	0.05
	Max. H_x	9	-1.31	0.98	0.97
	Max. H_z	9	-1.31	0.98	0.97
	Min. Vert	9	-1.31	0.98	0.97
	Min. H_x	5	-0.08	0.05	0.05
	Min. H_z	5	-0.08	0.05	0.05
Guy A @ 60 ft Elev -3 ft Azimuth 45 deg	Max. Vert	3	-0.08	0.05	-0.05
	Max. H_x	7	-1.24	0.92	-0.93
	Max. H_z	3	-0.08	0.05	-0.05
	Min. Vert	7	-1.24	0.92	-0.93
	Min. H_x	3	-0.08	0.05	-0.05
	Min. H_z	7	-1.24	0.92	-0.93

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	2.75	-0.00	0.00	0.10	0.06	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	3.53	-0.01	-1.26	-19.59	0.42	0.04
1.2 Dead+1.0 Wind 45 deg - No Ice+1.0 Guy	3.47	0.88	-0.88	-13.54	-13.69	-0.09
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	3.52	1.26	0.02	0.57	-19.64	-0.17
1.2 Dead+1.0 Wind 135 deg - No Ice+1.0 Guy	3.51	0.90	0.91	14.39	-14.01	-0.15
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	3.51	0.01	1.27	19.85	-0.19	-0.04
1.2 Dead+1.0 Wind 225 deg - No Ice+1.0 Guy	3.46	-0.89	0.89	13.89	13.74	0.09

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
1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	3.52	-1.27	-0.00	-0.04	19.80	0.16
1.2 Dead+1.0 Wind 315 deg - No Ice+1.0 Guy	3.51	-0.90	-0.89	-13.96	14.34	0.15
1.2 Dead+1.0 Ice+1.0 Temp+Guy	2.89	-0.00	0.01	0.16	0.08	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	2.98	-0.01	-0.26	-3.97	0.15	0.01
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp+1.0 Guy	2.98	0.19	-0.18	-2.71	-2.79	-0.02
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	2.98	0.27	0.01	0.24	-4.05	-0.04
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp+1.0 Guy	2.97	0.19	0.20	3.14	-2.87	-0.04
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	2.98	-0.00	0.28	4.32	0.03	-0.01
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp+1.0 Guy	2.98	-0.19	0.20	3.05	2.97	0.02
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	2.98	-0.27	0.00	0.12	4.24	0.04
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp+1.0 Guy	2.98	-0.20	-0.19	-2.79	3.06	0.04
Dead+Wind 0 deg - Service+Guy	2.75	-0.01	-0.33	-4.97	0.14	0.01
Dead+Wind 45 deg - Service+Guy	2.75	0.23	-0.23	-3.42	-3.47	-0.03
Dead+Wind 90 deg - Service+Guy	2.75	0.33	0.01	0.19	-5.01	-0.05
Dead+Wind 135 deg - Service+Guy	2.75	0.24	0.24	3.75	-3.57	-0.04
Dead+Wind 180 deg - Service+Guy	2.75	0.00	0.34	5.18	-0.01	-0.01
Dead+Wind 225 deg - Service+Guy	2.75	-0.24	0.24	3.64	3.59	0.03
Dead+Wind 270 deg - Service+Guy	2.75	-0.34	0.00	0.04	5.14	0.05
Dead+Wind 315 deg - Service+Guy	2.75	-0.24	-0.23	-3.53	3.71	0.04

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	-0.94	0.00	-0.00	0.94	0.00	0.083%
2	-0.04	-1.12	-2.59	0.04	1.12	2.59	0.003%
3	1.80	-1.12	-1.80	-1.80	1.12	1.80	0.001%
4	2.59	-1.12	0.04	-2.59	1.12	-0.04	0.001%
5	1.87	-1.12	1.86	-1.87	1.12	-1.86	0.001%
6	0.04	-1.12	2.59	-0.04	1.12	-2.59	0.003%
7	-1.80	-1.12	1.80	1.80	1.12	-1.80	0.001%
8	-2.59	-1.12	-0.04	2.59	1.12	0.04	0.001%
9	-1.87	-1.12	-1.86	1.87	1.12	1.86	0.001%
10	0.00	-1.35	0.00	-0.00	1.35	0.00	0.089%
11	-0.01	-1.35	-0.61	0.01	1.35	0.61	0.026%
12	0.43	-1.35	-0.43	-0.43	1.35	0.43	0.010%
13	0.61	-1.35	0.01	-0.61	1.35	-0.01	0.006%
14	0.44	-1.35	0.44	-0.44	1.35	-0.44	0.005%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
15	0.01	-1.35	0.61	-0.01	1.35	-0.61	0.014%
16	-0.43	-1.35	0.43	0.43	1.35	-0.43	0.012%
17	-0.61	-1.35	-0.01	0.61	1.35	0.01	0.006%
18	-0.44	-1.35	-0.44	0.44	1.35	0.44	0.005%
19	-0.01	-0.94	-0.69	0.01	0.94	0.69	0.017%
20	0.48	-0.94	-0.48	-0.48	0.94	0.48	0.007%
21	0.69	-0.94	0.01	-0.69	0.94	-0.01	0.003%
22	0.50	-0.94	0.50	-0.50	0.94	-0.50	0.004%
23	0.01	-0.94	0.69	-0.01	0.94	-0.69	0.018%
24	-0.48	-0.94	0.48	0.48	0.94	-0.48	0.008%
25	-0.69	-0.94	-0.01	0.69	0.94	0.01	0.004%
26	-0.50	-0.94	-0.50	0.50	0.94	0.50	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00004406
2	Yes	17	0.00000001	0.00007522
3	Yes	18	0.00000001	0.00007768
4	Yes	19	0.00000001	0.00006297
5	Yes	19	0.00000001	0.00006702
6	Yes	17	0.00000001	0.00007635
7	Yes	18	0.00000001	0.00007907
8	Yes	19	0.00000001	0.00006334
9	Yes	19	0.00000001	0.00006660
10	Yes	6	0.00000001	0.00007302
11	Yes	12	0.00000001	0.00008834
12	Yes	13	0.00000001	0.00007020
13	Yes	14	0.00000001	0.00008075
14	Yes	14	0.00000001	0.00007187
15	Yes	13	0.00000001	0.00005388
16	Yes	13	0.00000001	0.00008430
17	Yes	14	0.00000001	0.00008657
18	Yes	14	0.00000001	0.00006782
19	Yes	13	0.00000001	0.00007033
20	Yes	14	0.00000001	0.00005811
21	Yes	15	0.00000001	0.00005435
22	Yes	15	0.00000001	0.00005103
23	Yes	13	0.00000001	0.00007650
24	Yes	14	0.00000001	0.00006412
25	Yes	15	0.00000001	0.00005693
26	Yes	15	0.00000001	0.00004975

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
L1	55.00 (A) (11)	1/4 EHS	0.67	6.65	1.81	3.99	1.000	2.205 ✔
	55.00 (B) (10)	1/4 EHS	0.67	6.65	1.91	3.99	1.000	2.092 ✔

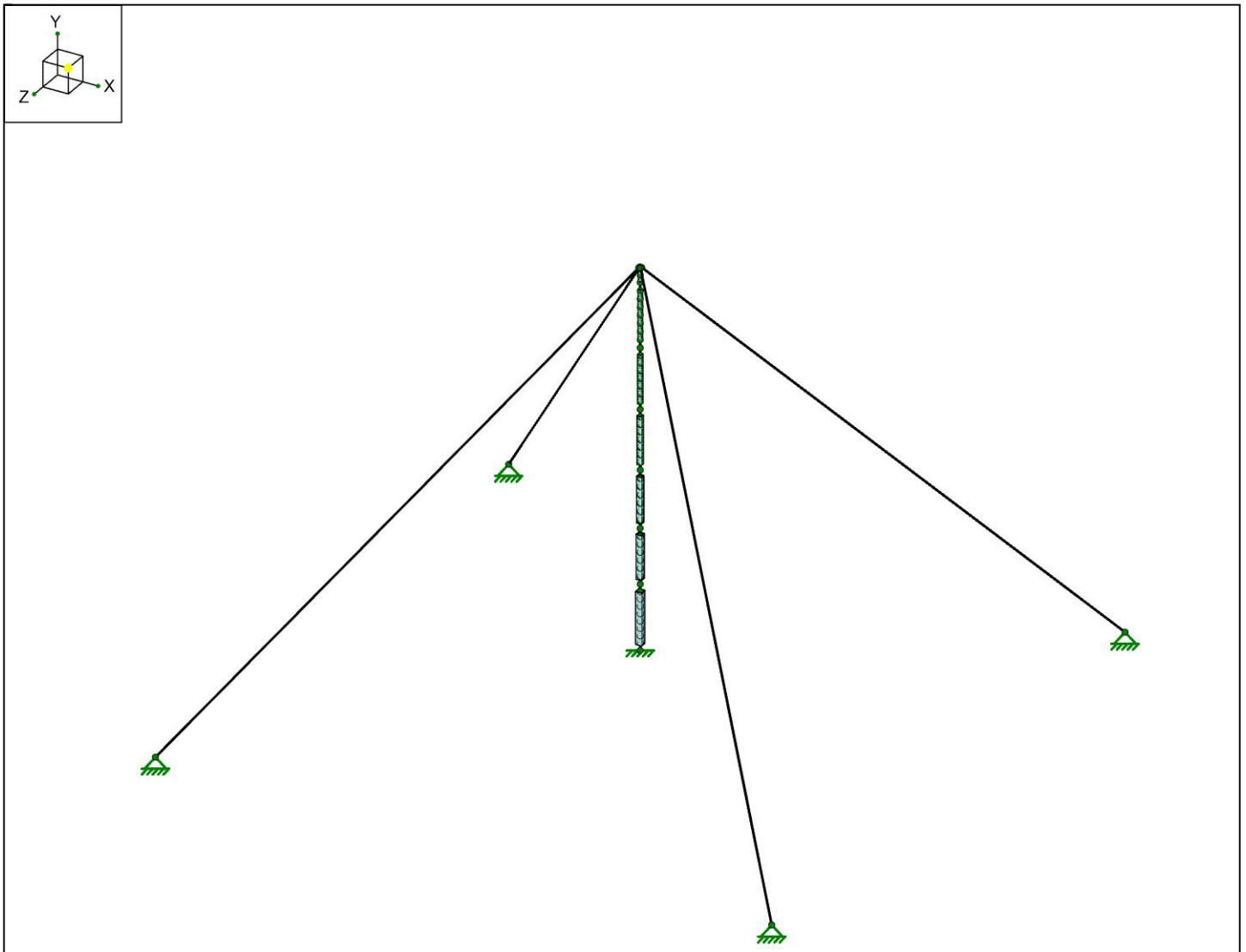
Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
	55.00 (C) (9)	1/4 EHS	0.67	6.65	1.82	3.99	1.000	2.188 ✔
	55.00 (D) (8)	1/4 EHS	0.67	6.65	1.90	3.99	1.000	2.096 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	55 - 53	Guy A@55 (90 deg)	1/4	11	1.81	3.99	45.3	Pass
L1	55 - 53	Guy B@55 (90 deg)	1/4	10	1.91	3.99	47.8	Pass
L1	55 - 53	Guy C@55 (90 deg)	1/4	9	1.82	3.99	45.7	Pass
L1	55 - 53	Guy D@55 (90 deg)	1/4	8	1.90	3.99	47.7	Pass
						Summary		
						Guy A (L1)	45.3	Pass
						Guy B (L1)	47.8	Pass
						Guy C (L1)	45.7	Pass
						Guy D (L1)	47.7	Pass
						RATING =	**47.8**	**Pass**

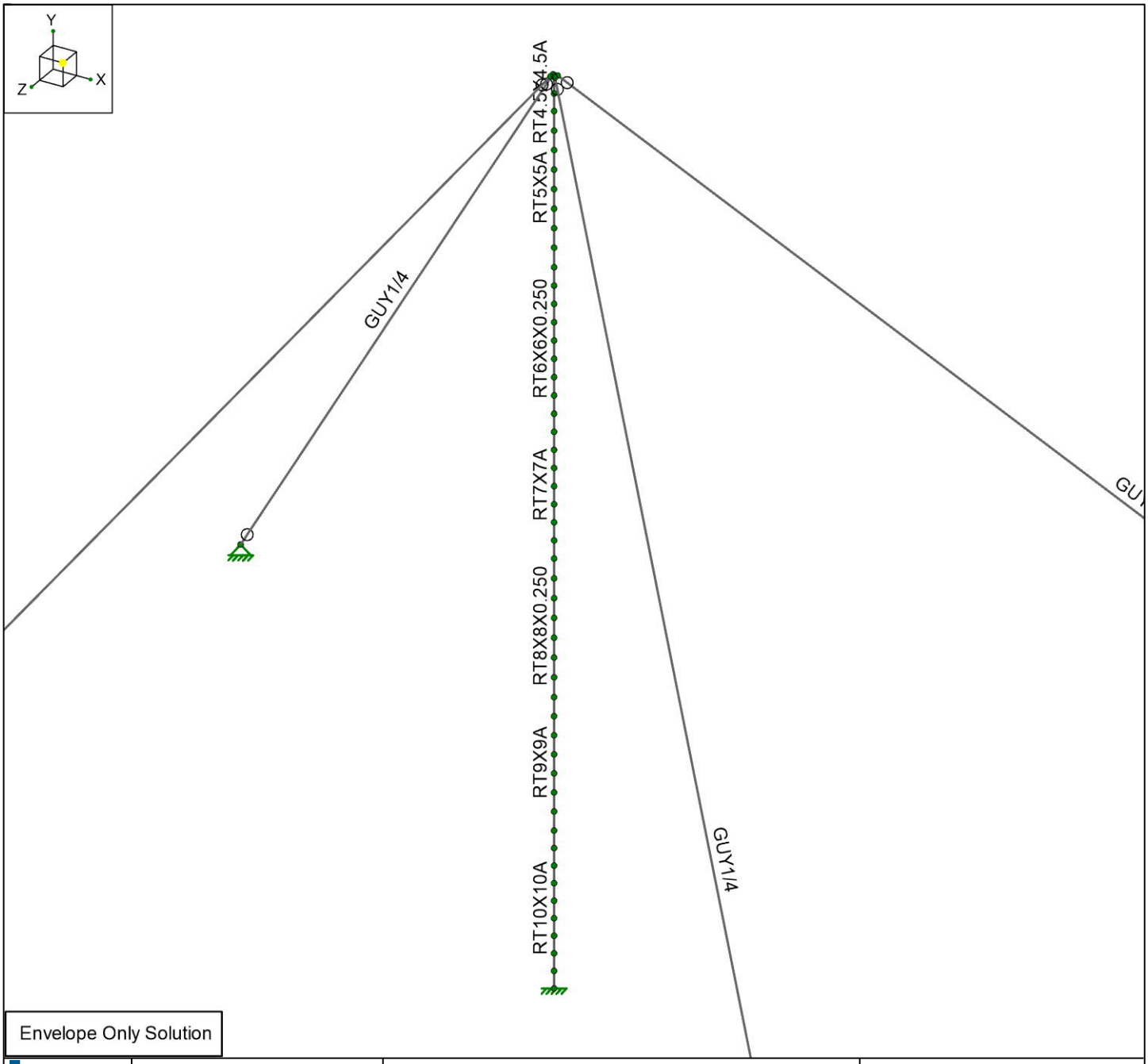
Note:

Defer to the following Risa solution output for the Pole stress capacity



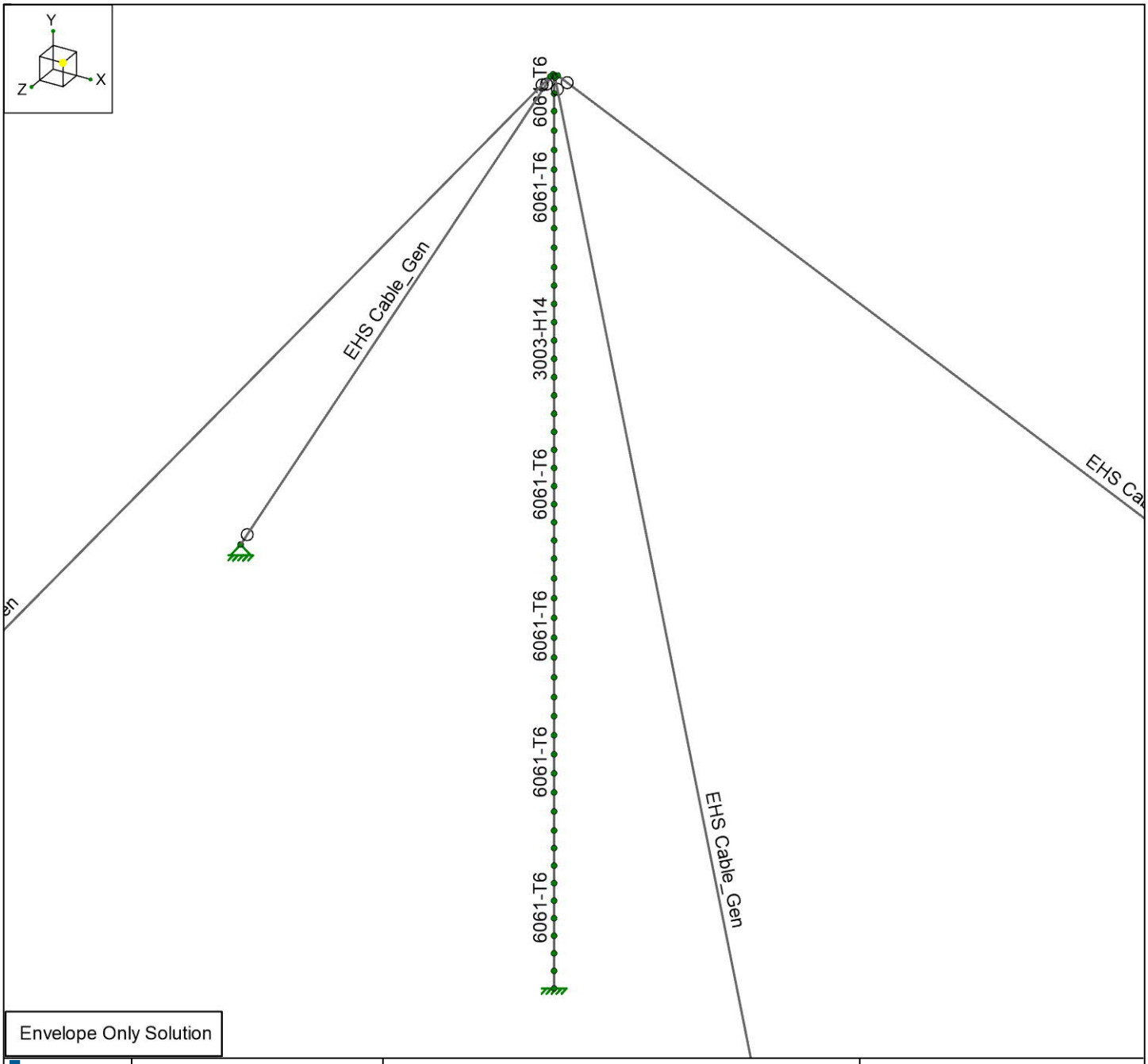
Envelope Only Solution

RISA A NEMETSCHEK COMPANY	J5 Infrastructure Partners	RT 52' Pnuematic mast	SK-1
	JamesChung		May 02, 2024 at 10:47 AM
	Structural Analysis -- Rev-0		MT8 MT Fair Pnuematic ma…



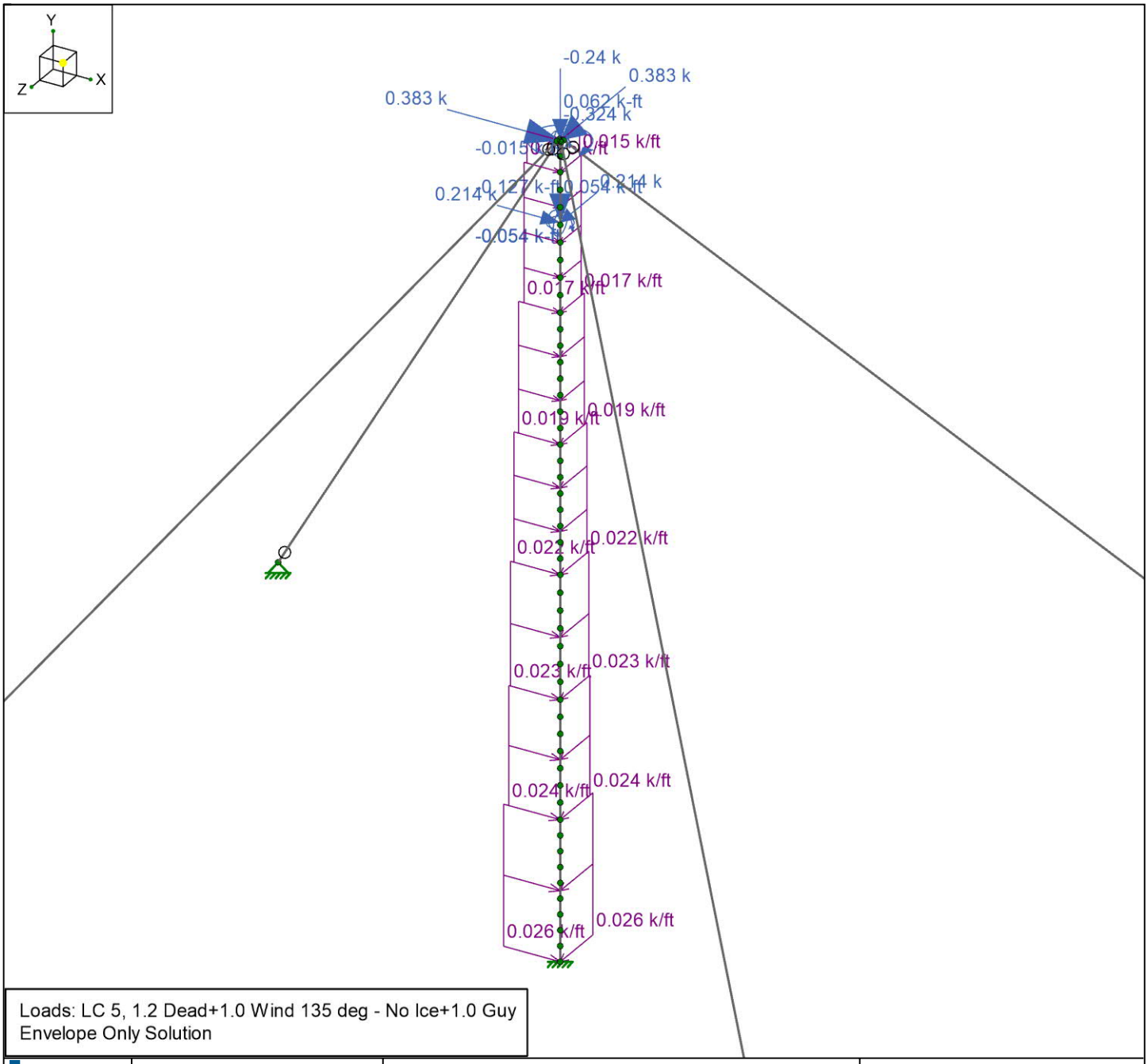
Envelope Only Solution

RISA A NEMETSCHEK COMPANY	J5 Infrastructure Partners	RT 52' Pnuematic mast	SK-2
	JamesChung		May 02, 2024 at 10:48 AM
	Structural Analysis -- Rev-0		MT8 MT Fair Pnuematic ma…



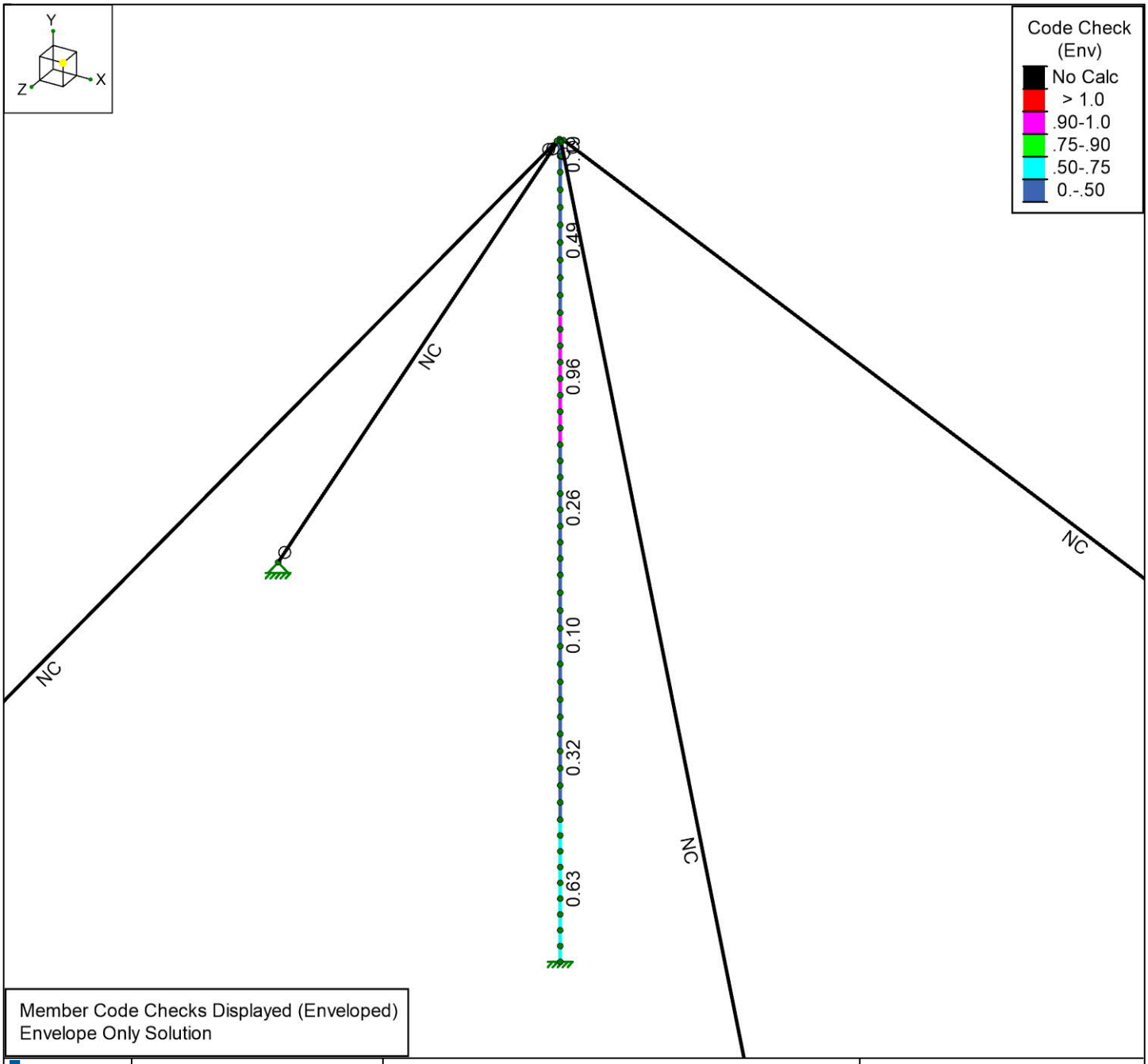
Envelope Only Solution

RISA A NEMETSCHEK COMPANY	J5 Infrastructure Partners	RT 52' Pnuematic mast	SK-3
	JamesChung		May 02, 2024 at 10:48 AM
	Structural Analysis -- Rev-0		MT8 MT Fair Pnuematic ma…



Loads: LC 5, 1.2 Dead+1.0 Wind 135 deg - No Ice+1.0 Guy
Envelope Only Solution

RISA A NEMETSCHEK COMPANY	J5 Infrastructure Partners	RT 52' Pnuematic mast	SK-4
	JamesChung		May 02, 2024 at 10:50 AM
	Structural Analysis -- Rev-0		MT8 MT Fair Pnuematic ma…



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

IRISA A NEMETSCHEK COMPANY	J5 Infrastructure Partners	RT 52' Pnuematic mast	SK-5
	JamesChung		May 02, 2024 at 10:50 AM
	Structural Analysis -- Rev-0		MT8 MT Fair Pnuematic ma…

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N43	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N52	Tether N4	Tether N4	Tether N4	Tether N4	Tether N4	Tether N4
3	N53	Reaction	Reaction	Reaction			
4	N54	Tether N4	Tether N4	Tether N4	Tether N4	Tether N4	Tether N4
5	N55	Reaction	Reaction	Reaction			
6	N56	Tether N4	Tether N4	Tether N4	Tether N4	Tether N4	Tether N4
7	N57	Reaction	Reaction	Reaction			
8	N58	Tether N4	Tether N4	Tether N4	Tether N4	Tether N4	Tether N4
9	N59	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N2	N4	RT4.5X4.5A	Column	Rectangular Tubes	6061-T6	Typical
2	M2	N5	N2	RT5X5A	Column	Rectangular Tubes	6061-T6	Typical
3	M3	N13	N5	RT6X6X0.250	Column	Rectangular Tubes	3003-H14	Typical
4	M4	N21	N13	RT7X7A	Column	Rectangular Tubes	6061-T6	Typical
5	M5	N29	N21	RT8X8X0.250	Column	Rectangular Tubes	6061-T6	Typical
6	M6	N36	N29	RT9X9A	Column	Rectangular Tubes	6061-T6	Typical
7	M7	N43	N36	RT10X10A	Column	Rectangular Tubes	6061-T6	Typical
8	M8	N53	N52	TWR_GUYD_L1	VBrace	None	EHS Cable_Gen	Typical
9	M9	N55	N54	TWR_GUYC_L1	VBrace	None	EHS Cable_Gen	Typical
10	M10	N57	N56	TWR_GUYB_L1	VBrace	None	EHS Cable_Gen	Typical
11	M11	N59	N58	TWR_GUYA_L1	VBrace	None	EHS Cable_Gen	Typical

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	Y	-0.04	2
2	M1	My	0.012	2
3	M1	Mz	0.012	2
4	M1	Y	-0.04	2
5	M1	My	0.012	2
6	M1	Mz	-0.012	2
7	M1	Y	-0.04	2
8	M1	My	-0.012	2
9	M1	Mz	-0.012	2
10	M1	Y	-0.04	2

Member Point Loads (BLC 1 : Dead) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
11	M1	My	0.019	2
12	M1	Mz	0.019	2
13	M1	Y	-0.04	2
14	M1	My	0.019	2
15	M1	Mz	-0.019	2
16	M2	Y	-0.09	5.7
17	M2	My	0.045	5.7
18	M2	Mz	0.045	5.7
19	M2	Y	-0.09	5.7
20	M2	My	0.045	5.7
21	M2	Mz	-0.045	5.7
22	M2	Y	-0.09	5.7
23	M2	My	-0.045	5.7
24	M2	Mz	-0.045	5.7

Member Point Loads (BLC 3 : No Ice Wind 0 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	Z	-0.056	2
2	M1	Mx	-0.017	2
3	M1	Z	-0.056	2
4	M1	Mx	0.017	2
5	M1	Z	-0.056	2
6	M1	Mx	0.017	2
7	M1	X	-0.038	2
8	M1	Z	-0.187	2
9	M1	Mx	-0.072	2
10	M1	X	0.038	2
11	M1	Z	-0.187	2
12	M1	Mx	0.072	2
13	M2	X	-0.018	5.7
14	M2	Z	-0.095	5.7
15	M2	Mx	-0.038	5.7
16	M2	X	0.018	5.7
17	M2	Z	-0.095	5.7
18	M2	Mx	0.038	5.7
19	M2	X	-0.018	5.7
20	M2	Z	-0.095	5.7
21	M2	Mx	0.038	5.7

Member Point Loads (BLC 4 : No Ice Wind 45 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	0.039	2
2	M1	Z	-0.039	2
3	M1	Mx	-0.024	2
4	M1	X	0.039	2
5	M1	Z	-0.039	2
6	M1	X	0.039	2
7	M1	Z	-0.039	2
8	M1	Mx	0.024	2
9	M1	X	0.105	2
10	M1	Z	-0.105	2
11	M1	Mx	-0.102	2
12	M1	X	0.159	2
13	M1	Z	-0.159	2
14	M2	X	0.054	5.7
15	M2	Z	-0.054	5.7
16	M2	Mx	-0.054	5.7
17	M2	X	0.08	5.7
18	M2	Z	-0.08	5.7
19	M2	X	0.054	5.7
20	M2	Z	-0.054	5.7
21	M2	Mx	0.054	5.7

Member Point Loads (BLC 5 : No Ice Wind 90 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	0.056	2
2	M1	Mx	-0.017	2
3	M1	X	0.056	2
4	M1	Mx	-0.017	2
5	M1	X	0.056	2
6	M1	Mx	0.017	2
7	M1	X	0.187	2
8	M1	Z	0.038	2
9	M1	Mx	-0.072	2
10	M1	X	0.187	2
11	M1	Z	-0.038	2
12	M1	Mx	-0.072	2
13	M2	X	0.095	5.7

Member Point Loads (BLC 5 : No Ice Wind 90 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
14	M2	Z	0.018	5.7
15	M2	Mx	-0.038	5.7
16	M2	X	0.095	5.7
17	M2	Z	-0.018	5.7
18	M2	Mx	-0.038	5.7
19	M2	X	0.095	5.7
20	M2	Z	0.018	5.7
21	M2	Mx	0.038	5.7

Member Point Loads (BLC 6 : No Ice Wind 135 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	0.039	2
2	M1	Z	0.039	2
3	M1	X	0.039	2
4	M1	Z	0.039	2
5	M1	Mx	-0.024	2
6	M1	X	0.039	2
7	M1	Z	0.039	2
8	M1	X	0.159	2
9	M1	Z	0.159	2
10	M1	X	0.105	2
11	M1	Z	0.105	2
12	M1	Mx	-0.102	2
13	M2	X	0.08	5.7
14	M2	Z	0.08	5.7
15	M2	X	0.054	5.7
16	M2	Z	0.054	5.7
17	M2	Mx	-0.054	5.7
18	M2	X	0.08	5.7
19	M2	Z	0.08	5.7

Member Point Loads (BLC 7 : No Ice Wind 180 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	Z	0.056	2
2	M1	Mx	0.017	2
3	M1	Z	0.056	2
4	M1	Mx	-0.017	2

Member Point Loads (BLC 7 : No Ice Wind 180 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
5	M1	Z	0.056	2
6	M1	Mx	-0.017	2
7	M1	X	0.038	2
8	M1	Z	0.187	2
9	M1	Mx	0.072	2
10	M1	X	-0.038	2
11	M1	Z	0.187	2
12	M1	Mx	-0.072	2
13	M2	X	0.018	5.7
14	M2	Z	0.095	5.7
15	M2	Mx	0.038	5.7
16	M2	X	-0.018	5.7
17	M2	Z	0.095	5.7
18	M2	Mx	-0.038	5.7
19	M2	X	0.018	5.7
20	M2	Z	0.095	5.7
21	M2	Mx	-0.038	5.7

Member Point Loads (BLC 8 : No Ice Wind 225 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	-0.039	2
2	M1	Z	0.039	2
3	M1	Mx	0.024	2
4	M1	X	-0.039	2
5	M1	Z	0.039	2
6	M1	X	-0.039	2
7	M1	Z	0.039	2
8	M1	Mx	-0.024	2
9	M1	X	-0.105	2
10	M1	Z	0.105	2
11	M1	Mx	0.102	2
12	M1	X	-0.159	2
13	M1	Z	0.159	2
14	M2	X	-0.054	5.7
15	M2	Z	0.054	5.7
16	M2	Mx	0.054	5.7
17	M2	X	-0.08	5.7
18	M2	Z	0.08	5.7

Member Point Loads (BLC 8 : No Ice Wind 225 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
19	M2	X	-0.054	5.7
20	M2	Z	0.054	5.7
21	M2	Mx	-0.054	5.7

Member Point Loads (BLC 9 : No Ice Wind 270 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	-0.056	2
2	M1	Mx	0.017	2
3	M1	X	-0.056	2
4	M1	Mx	0.017	2
5	M1	X	-0.056	2
6	M1	Mx	-0.017	2
7	M1	X	-0.187	2
8	M1	Z	-0.038	2
9	M1	Mx	0.072	2
10	M1	X	-0.187	2
11	M1	Z	0.038	2
12	M1	Mx	0.072	2
13	M2	X	-0.095	5.7
14	M2	Z	-0.018	5.7
15	M2	Mx	0.038	5.7
16	M2	X	-0.095	5.7
17	M2	Z	0.018	5.7
18	M2	Mx	0.038	5.7
19	M2	X	-0.095	5.7
20	M2	Z	-0.018	5.7
21	M2	Mx	-0.038	5.7

Member Point Loads (BLC 10 : No Ice Wind 315 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	-0.039	2
2	M1	Z	-0.039	2
3	M1	X	-0.039	2
4	M1	Z	-0.039	2
5	M1	Mx	0.024	2
6	M1	X	-0.039	2
7	M1	Z	-0.039	2

Member Point Loads (BLC 10 : No Ice Wind 315 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
8	M1	X	-0.159	2
9	M1	Z	-0.159	2
10	M1	X	-0.105	2
11	M1	Z	-0.105	2
12	M1	Mx	0.102	2
13	M2	X	-0.08	5.7
14	M2	Z	-0.08	5.7
15	M2	X	-0.054	5.7
16	M2	Z	-0.054	5.7
17	M2	Mx	0.054	5.7
18	M2	X	-0.08	5.7
19	M2	Z	-0.08	5.7

Member Point Loads (BLC 11 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	Y	-0.007	2
2	M1	My	0.002	2
3	M1	Mz	0.002	2
4	M1	Y	-0.007	2
5	M1	My	0.002	2
6	M1	Mz	-0.002	2
7	M1	Y	-0.007	2
8	M1	My	-0.002	2
9	M1	Mz	-0.002	2
10	M1	Y	-0.028	2
11	M1	My	0.014	2
12	M1	Mz	0.014	2
13	M1	Y	-0.028	2
14	M1	My	0.014	2
15	M1	Mz	-0.014	2
16	M2	Y	-0.017	5.7
17	M2	My	0.008	5.7
18	M2	Mz	0.008	5.7
19	M2	Y	-0.017	5.7
20	M2	My	0.008	5.7
21	M2	Mz	-0.008	5.7
22	M2	Y	-0.017	5.7
23	M2	My	-0.008	5.7

Member Point Loads (BLC 11 : Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
24	M2	Mz	-0.008	5.7

Member Point Loads (BLC 13 : Ice Wind 0 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	Z	-0.014	2
2	M1	Mx	-0.004	2
3	M1	Z	-0.014	2
4	M1	Mx	0.004	2
5	M1	Z	-0.014	2
6	M1	Mx	0.004	2
7	M1	X	-0.008	2
8	M1	Z	-0.04	2
9	M1	Mx	-0.016	2
10	M1	X	0.008	2
11	M1	Z	-0.04	2
12	M1	Mx	0.016	2
13	M2	X	-0.004	5.7
14	M2	Z	-0.02	5.7
15	M2	Mx	-0.008	5.7
16	M2	X	0.004	5.7
17	M2	Z	-0.02	5.7
18	M2	Mx	0.008	5.7
19	M2	X	-0.004	5.7
20	M2	Z	-0.02	5.7
21	M2	Mx	0.008	5.7

Member Point Loads (BLC 14 : Ice Wind 45 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	0.01	2
2	M1	Z	-0.01	2
3	M1	Mx	-0.006	2
4	M1	X	0.01	2
5	M1	Z	-0.01	2
6	M1	X	0.01	2
7	M1	Z	-0.01	2
8	M1	Mx	0.006	2
9	M1	X	0.023	2

Member Point Loads (BLC 14 : Ice Wind 45 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
10	M1	Z	-0.023	2
11	M1	Mx	-0.022	2
12	M1	X	0.034	2
13	M1	Z	-0.034	2
14	M2	X	0.012	5.7
15	M2	Z	-0.012	5.7
16	M2	Mx	-0.012	5.7
17	M2	X	0.017	5.7
18	M2	Z	-0.017	5.7
19	M2	X	0.012	5.7
20	M2	Z	-0.012	5.7
21	M2	Mx	0.012	5.7

Member Point Loads (BLC 15 : Ice Wind 90 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	0.014	2
2	M1	Mx	-0.004	2
3	M1	X	0.014	2
4	M1	Mx	-0.004	2
5	M1	X	0.014	2
6	M1	Mx	0.004	2
7	M1	X	0.04	2
8	M1	Z	0.008	2
9	M1	Mx	-0.016	2
10	M1	X	0.04	2
11	M1	Z	-0.008	2
12	M1	Mx	-0.016	2
13	M2	X	0.02	5.7
14	M2	Z	0.004	5.7
15	M2	Mx	-0.008	5.7
16	M2	X	0.02	5.7
17	M2	Z	-0.004	5.7
18	M2	Mx	-0.008	5.7
19	M2	X	0.02	5.7
20	M2	Z	0.004	5.7
21	M2	Mx	0.008	5.7

Member Point Loads (BLC 16 : Ice Wind 135 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	0.01	2
2	M1	Z	0.01	2
3	M1	X	0.01	2
4	M1	Z	0.01	2
5	M1	Mx	-0.006	2
6	M1	X	0.01	2
7	M1	Z	0.01	2
8	M1	X	0.034	2
9	M1	Z	0.034	2
10	M1	X	0.023	2
11	M1	Z	0.023	2
12	M1	Mx	-0.022	2
13	M2	X	0.017	5.7
14	M2	Z	0.017	5.7
15	M2	X	0.012	5.7
16	M2	Z	0.012	5.7
17	M2	Mx	-0.012	5.7
18	M2	X	0.017	5.7
19	M2	Z	0.017	5.7

Member Point Loads (BLC 17 : Ice Wind 180 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	Z	0.014	2
2	M1	Mx	0.004	2
3	M1	Z	0.014	2
4	M1	Mx	-0.004	2
5	M1	Z	0.014	2
6	M1	Mx	-0.004	2
7	M1	X	0.008	2
8	M1	Z	0.04	2
9	M1	Mx	0.016	2
10	M1	X	-0.008	2
11	M1	Z	0.04	2
12	M1	Mx	-0.016	2
13	M2	X	0.004	5.7
14	M2	Z	0.02	5.7
15	M2	Mx	0.008	5.7

Member Point Loads (BLC 17 : Ice Wind 180 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
16	M2	X	-0.004	5.7
17	M2	Z	0.02	5.7
18	M2	Mx	-0.008	5.7
19	M2	X	0.004	5.7
20	M2	Z	0.02	5.7
21	M2	Mx	-0.008	5.7

Member Point Loads (BLC 18 : Ice Wind 225 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	-0.01	2
2	M1	Z	0.01	2
3	M1	Mx	0.006	2
4	M1	X	-0.01	2
5	M1	Z	0.01	2
6	M1	X	-0.01	2
7	M1	Z	0.01	2
8	M1	Mx	-0.006	2
9	M1	X	-0.023	2
10	M1	Z	0.023	2
11	M1	Mx	0.022	2
12	M1	X	-0.034	2
13	M1	Z	0.034	2
14	M2	X	-0.012	5.7
15	M2	Z	0.012	5.7
16	M2	Mx	0.012	5.7
17	M2	X	-0.017	5.7
18	M2	Z	0.017	5.7
19	M2	X	-0.012	5.7
20	M2	Z	0.012	5.7
21	M2	Mx	-0.012	5.7

Member Point Loads (BLC 19 : Ice Wind 270 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	-0.014	2
2	M1	Mx	0.004	2
3	M1	X	-0.014	2
4	M1	Mx	0.004	2

Member Point Loads (BLC 19 : Ice Wind 270 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
5	M1	X	-0.014	2
6	M1	Mx	-0.004	2
7	M1	X	-0.04	2
8	M1	Z	-0.008	2
9	M1	Mx	0.016	2
10	M1	X	-0.04	2
11	M1	Z	0.008	2
12	M1	Mx	0.016	2
13	M2	X	-0.02	5.7
14	M2	Z	-0.004	5.7
15	M2	Mx	0.008	5.7
16	M2	X	-0.02	5.7
17	M2	Z	0.004	5.7
18	M2	Mx	0.008	5.7
19	M2	X	-0.02	5.7
20	M2	Z	-0.004	5.7
21	M2	Mx	-0.008	5.7

Member Point Loads (BLC 20 : Ice Wind 315 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	-0.01	2
2	M1	Z	-0.01	2
3	M1	X	-0.01	2
4	M1	Z	-0.01	2
5	M1	Mx	0.006	2
6	M1	X	-0.01	2
7	M1	Z	-0.01	2
8	M1	X	-0.034	2
9	M1	Z	-0.034	2
10	M1	X	-0.023	2
11	M1	Z	-0.023	2
12	M1	Mx	0.022	2
13	M2	X	-0.017	5.7
14	M2	Z	-0.017	5.7
15	M2	X	-0.012	5.7
16	M2	Z	-0.012	5.7
17	M2	Mx	0.012	5.7
18	M2	X	-0.017	5.7

Member Point Loads (BLC 20 : Ice Wind 315 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
19	M2	Z	-0.017	5.7

Member Point Loads (BLC 21 : Service Wind 0 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	Z	-0.015	2
2	M1	Mx	-0.005	2
3	M1	Z	-0.015	2
4	M1	Mx	0.005	2
5	M1	Z	-0.015	2
6	M1	Mx	0.005	2
7	M1	X	-0.01	2
8	M1	Z	-0.05	2
9	M1	Mx	-0.019	2
10	M1	X	0.01	2
11	M1	Z	-0.05	2
12	M1	Mx	0.019	2
13	M2	X	-0.005	5.7
14	M2	Z	-0.025	5.7
15	M2	Mx	-0.01	5.7
16	M2	X	0.005	5.7
17	M2	Z	-0.025	5.7
18	M2	Mx	0.01	5.7
19	M2	X	-0.005	5.7
20	M2	Z	-0.025	5.7
21	M2	Mx	0.01	5.7

Member Point Loads (BLC 22 : Service Wind 45 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	0.011	2
2	M1	Z	-0.011	2
3	M1	Mx	-0.007	2
4	M1	X	0.011	2
5	M1	Z	-0.011	2
6	M1	X	0.011	2
7	M1	Z	-0.011	2
8	M1	Mx	0.007	2
9	M1	X	0.028	2

Member Point Loads (BLC 22 : Service Wind 45 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
10	M1	Z	-0.028	2
11	M1	Mx	-0.027	2
12	M1	X	0.042	2
13	M1	Z	-0.042	2
14	M2	X	0.014	5.7
15	M2	Z	-0.014	5.7
16	M2	Mx	-0.014	5.7
17	M2	X	0.021	5.7
18	M2	Z	-0.021	5.7
19	M2	X	0.014	5.7
20	M2	Z	-0.014	5.7
21	M2	Mx	0.014	5.7

Member Point Loads (BLC 23 : Service Wind 90 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	0.015	2
2	M1	Mx	-0.005	2
3	M1	X	0.015	2
4	M1	Mx	-0.005	2
5	M1	X	0.015	2
6	M1	Mx	0.005	2
7	M1	X	0.05	2
8	M1	Z	0.01	2
9	M1	Mx	-0.019	2
10	M1	X	0.05	2
11	M1	Z	-0.01	2
12	M1	Mx	-0.019	2
13	M2	X	0.025	5.7
14	M2	Z	0.005	5.7
15	M2	Mx	-0.01	5.7
16	M2	X	0.025	5.7
17	M2	Z	-0.005	5.7
18	M2	Mx	-0.01	5.7
19	M2	X	0.025	5.7
20	M2	Z	0.005	5.7
21	M2	Mx	0.01	5.7

Member Point Loads (BLC 24 : Service Wind 135 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	0.011	2
2	M1	Z	0.011	2
3	M1	X	0.011	2
4	M1	Z	0.011	2
5	M1	Mx	-0.007	2
6	M1	X	0.011	2
7	M1	Z	0.011	2
8	M1	X	0.042	2
9	M1	Z	0.042	2
10	M1	X	0.028	2
11	M1	Z	0.028	2
12	M1	Mx	-0.027	2
13	M2	X	0.021	5.7
14	M2	Z	0.021	5.7
15	M2	X	0.014	5.7
16	M2	Z	0.014	5.7
17	M2	Mx	-0.014	5.7
18	M2	X	0.021	5.7
19	M2	Z	0.021	5.7

Member Point Loads (BLC 25 : Service Wind 180 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	Z	0.015	2
2	M1	Mx	0.005	2
3	M1	Z	0.015	2
4	M1	Mx	-0.005	2
5	M1	Z	0.015	2
6	M1	Mx	-0.005	2
7	M1	X	0.01	2
8	M1	Z	0.05	2
9	M1	Mx	0.019	2
10	M1	X	-0.01	2
11	M1	Z	0.05	2
12	M1	Mx	-0.019	2
13	M2	X	0.005	5.7
14	M2	Z	0.025	5.7
15	M2	Mx	0.01	5.7

Member Point Loads (BLC 25 : Service Wind 180 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
16	M2	X	-0.005	5.7
17	M2	Z	0.025	5.7
18	M2	Mx	-0.01	5.7
19	M2	X	0.005	5.7
20	M2	Z	0.025	5.7
21	M2	Mx	-0.01	5.7

Member Point Loads (BLC 26 : Service Wind 225 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	-0.011	2
2	M1	Z	0.011	2
3	M1	Mx	0.007	2
4	M1	X	-0.011	2
5	M1	Z	0.011	2
6	M1	X	-0.011	2
7	M1	Z	0.011	2
8	M1	Mx	-0.007	2
9	M1	X	-0.028	2
10	M1	Z	0.028	2
11	M1	Mx	0.027	2
12	M1	X	-0.042	2
13	M1	Z	0.042	2
14	M2	X	-0.014	5.7
15	M2	Z	0.014	5.7
16	M2	Mx	0.014	5.7
17	M2	X	-0.021	5.7
18	M2	Z	0.021	5.7
19	M2	X	-0.014	5.7
20	M2	Z	0.014	5.7
21	M2	Mx	-0.014	5.7

Member Point Loads (BLC 27 : Service Wind 270 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	-0.015	2
2	M1	Mx	0.005	2
3	M1	X	-0.015	2
4	M1	Mx	0.005	2

Member Point Loads (BLC 27 : Service Wind 270 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
5	M1	X	-0.015	2
6	M1	Mx	-0.005	2
7	M1	X	-0.05	2
8	M1	Z	-0.01	2
9	M1	Mx	0.019	2
10	M1	X	-0.05	2
11	M1	Z	0.01	2
12	M1	Mx	0.019	2
13	M2	X	-0.025	5.7
14	M2	Z	-0.005	5.7
15	M2	Mx	0.01	5.7
16	M2	X	-0.025	5.7
17	M2	Z	0.005	5.7
18	M2	Mx	0.01	5.7
19	M2	X	-0.025	5.7
20	M2	Z	-0.005	5.7
21	M2	Mx	-0.01	5.7

Member Point Loads (BLC 28 : Service Wind 315 deg)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M1	X	-0.011	2
2	M1	Z	-0.011	2
3	M1	X	-0.011	2
4	M1	Z	-0.011	2
5	M1	Mx	0.007	2
6	M1	X	-0.011	2
7	M1	Z	-0.011	2
8	M1	X	-0.042	2
9	M1	Z	-0.042	2
10	M1	X	-0.028	2
11	M1	Z	-0.028	2
12	M1	Mx	0.027	2
13	M2	X	-0.021	5.7
14	M2	Z	-0.021	5.7
15	M2	X	-0.014	5.7
16	M2	Z	-0.014	5.7
17	M2	Mx	0.014	5.7
18	M2	X	-0.021	5.7

Member Point Loads (BLC 28 : Service Wind 315 deg) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
19	M2	Z	-0.021	5.7

Member Distributed Loads (BLC 3 : No Ice Wind 0 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Z	-0.022	-0.022	0	2
2	M2	Z	-0.024	-0.024	0	8.9
3	M3	Z	-0.027	-0.027	0	8.35
4	M4	Z	-0.03	-0.03	0	8.25
5	M5	Z	-0.033	-0.033	0	7.9
6	M6	Z	-0.034	-0.034	0	7.6
7	M7	Z	-0.037	-0.037	0	9

Member Distributed Loads (BLC 4 : No Ice Wind 45 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	0.015	0.015	0	2
2	M1	Z	-0.015	-0.015	0	2
3	M2	X	0.017	0.017	0	8.9
4	M2	Z	-0.017	-0.017	0	8.9
5	M3	X	0.019	0.019	0	8.35
6	M3	Z	-0.019	-0.019	0	8.35
7	M4	X	0.022	0.022	0	8.25
8	M4	Z	-0.022	-0.022	0	8.25
9	M5	X	0.023	0.023	0	7.9
10	M5	Z	-0.023	-0.023	0	7.9
11	M6	X	0.024	0.024	0	7.6
12	M6	Z	-0.024	-0.024	0	7.6
13	M7	X	0.026	0.026	0	9
14	M7	Z	-0.026	-0.026	0	9

Member Distributed Loads (BLC 5 : No Ice Wind 90 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	0.022	0.022	0	2
2	M2	X	0.024	0.024	0	8.9
3	M3	X	0.027	0.027	0	8.35
4	M4	X	0.03	0.03	0	8.25

Member Distributed Loads (BLC 5 : No Ice Wind 90 deg) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
5	M5	X	0.033	0.033	0	7.9
6	M6	X	0.034	0.034	0	7.6
7	M7	X	0.037	0.037	0	9

Member Distributed Loads (BLC 6 : No Ice Wind 135 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	0.015	0.015	0	2
2	M1	Z	0.015	0.015	0	2
3	M2	X	0.017	0.017	0	8.9
4	M2	Z	0.017	0.017	0	8.9
5	M3	X	0.019	0.019	0	8.35
6	M3	Z	0.019	0.019	0	8.35
7	M4	X	0.022	0.022	0	8.25
8	M4	Z	0.022	0.022	0	8.25
9	M5	X	0.023	0.023	0	7.9
10	M5	Z	0.023	0.023	0	7.9
11	M6	X	0.024	0.024	0	7.6
12	M6	Z	0.024	0.024	0	7.6
13	M7	X	0.026	0.026	0	9
14	M7	Z	0.026	0.026	0	9

Member Distributed Loads (BLC 7 : No Ice Wind 180 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Z	0.022	0.022	0	2
2	M2	Z	0.024	0.024	0	8.9
3	M3	Z	0.027	0.027	0	8.35
4	M4	Z	0.03	0.03	0	8.25
5	M5	Z	0.033	0.033	0	7.9
6	M6	Z	0.034	0.034	0	7.6
7	M7	Z	0.037	0.037	0	9

Member Distributed Loads (BLC 8 : No Ice Wind 225 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	-0.015	-0.015	0	2
2	M1	Z	0.015	0.015	0	2

Member Distributed Loads (BLC 8 : No Ice Wind 225 deg) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
3	M2	X	-0.017	-0.017	0	8.9
4	M2	Z	0.017	0.017	0	8.9
5	M3	X	-0.019	-0.019	0	8.35
6	M3	Z	0.019	0.019	0	8.35
7	M4	X	-0.022	-0.022	0	8.25
8	M4	Z	0.022	0.022	0	8.25
9	M5	X	-0.023	-0.023	0	7.9
10	M5	Z	0.023	0.023	0	7.9
11	M6	X	-0.024	-0.024	0	7.6
12	M6	Z	0.024	0.024	0	7.6
13	M7	X	-0.026	-0.026	0	9
14	M7	Z	0.026	0.026	0	9

Member Distributed Loads (BLC 9 : No Ice Wind 270 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	-0.022	-0.022	0	2
2	M2	X	-0.024	-0.024	0	8.9
3	M3	X	-0.027	-0.027	0	8.35
4	M4	X	-0.03	-0.03	0	8.25
5	M5	X	-0.033	-0.033	0	7.9
6	M6	X	-0.034	-0.034	0	7.6
7	M7	X	-0.037	-0.037	0	9

Member Distributed Loads (BLC 10 : No Ice Wind 315 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	-0.015	-0.015	0	2
2	M1	Z	-0.015	-0.015	0	2
3	M2	X	-0.017	-0.017	0	8.9
4	M2	Z	-0.017	-0.017	0	8.9
5	M3	X	-0.019	-0.019	0	8.35
6	M3	Z	-0.019	-0.019	0	8.35
7	M4	X	-0.022	-0.022	0	8.25
8	M4	Z	-0.022	-0.022	0	8.25
9	M5	X	-0.023	-0.023	0	7.9
10	M5	Z	-0.023	-0.023	0	7.9
11	M6	X	-0.024	-0.024	0	7.6
12	M6	Z	-0.024	-0.024	0	7.6

Member Distributed Loads (BLC 10 : No Ice Wind 315 deg) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
13	M7	X	-0.026	-0.026	0	9
14	M7	Z	-0.026	-0.026	0	9

Member Distributed Loads (BLC 11 : Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.00046	-0.00046	0	%100
2	M2	Y	-0.000505	-0.000505	0	%100
3	M3	Y	-0.000595	-0.000595	0	%100
4	M4	Y	-0.000678	-0.000678	0	%100
5	M5	Y	-0.000752	-0.000752	0	%100
6	M6	Y	-0.000813	-0.000813	0	%100
7	M7	Y	-0.000838	-0.000838	0	%100

Member Distributed Loads (BLC 12 : Temperature Drop)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	T	-50	-50	0	%100
2	M2	T	-50	-50	0	%100
3	M3	T	-50	-50	0	%100
4	M4	T	-50	-50	0	%100
5	M5	T	-50	-50	0	%100
6	M6	T	-50	-50	0	%100
7	M7	T	-50	-50	0	%100
8	M8	T	-50	-50	0	%100
9	M9	T	-50	-50	0	%100
10	M10	T	-50	-50	0	%100
11	M11	T	-50	-50	0	%100

Member Distributed Loads (BLC 13 : Ice Wind 0 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Z	-0.005	-0.005	0	2
2	M2	Z	-0.005	-0.005	0	8.9
3	M3	Z	-0.006	-0.006	0	8.35
4	M4	Z	-0.007	-0.007	0	8.25
5	M5	Z	-0.007	-0.007	0	7.9
6	M6	Z	-0.007	-0.007	0	7.6

Member Distributed Loads (BLC 13 : Ice Wind 0 deg) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
7	M7	Z	-0.008	-0.008	0	9

Member Distributed Loads (BLC 14 : Ice Wind 45 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	0.003	0.003	0	2
2	M1	Z	-0.003	-0.003	0	2
3	M2	X	0.004	0.004	0	8.9
4	M2	Z	-0.004	-0.004	0	8.9
5	M3	X	0.004	0.004	0	8.35
6	M3	Z	-0.004	-0.004	0	8.35
7	M4	X	0.005	0.005	0	8.25
8	M4	Z	-0.005	-0.005	0	8.25
9	M5	X	0.005	0.005	0	7.9
10	M5	Z	-0.005	-0.005	0	7.9
11	M6	X	0.005	0.005	0	7.6
12	M6	Z	-0.005	-0.005	0	7.6
13	M7	X	0.006	0.006	0	9
14	M7	Z	-0.006	-0.006	0	9

Member Distributed Loads (BLC 15 : Ice Wind 90 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	0.005	0.005	0	2
2	M2	X	0.005	0.005	0	8.9
3	M3	X	0.006	0.006	0	8.35
4	M4	X	0.007	0.007	0	8.25
5	M5	X	0.007	0.007	0	7.9
6	M6	X	0.007	0.007	0	7.6
7	M7	X	0.008	0.008	0	9

Member Distributed Loads (BLC 16 : Ice Wind 135 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	0.003	0.003	0	2
2	M1	Z	0.003	0.003	0	2
3	M2	X	0.004	0.004	0	8.9
4	M2	Z	0.004	0.004	0	8.9

Member Distributed Loads (BLC 16 : Ice Wind 135 deg) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
5	M3	X	0.004	0.004	0	8.35
6	M3	Z	0.004	0.004	0	8.35
7	M4	X	0.005	0.005	0	8.25
8	M4	Z	0.005	0.005	0	8.25
9	M5	X	0.005	0.005	0	7.9
10	M5	Z	0.005	0.005	0	7.9
11	M6	X	0.005	0.005	0	7.6
12	M6	Z	0.005	0.005	0	7.6
13	M7	X	0.006	0.006	0	9
14	M7	Z	0.006	0.006	0	9

Member Distributed Loads (BLC 17 : Ice Wind 180 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Z	0.005	0.005	0	2
2	M2	Z	0.005	0.005	0	8.9
3	M3	Z	0.006	0.006	0	8.35
4	M4	Z	0.007	0.007	0	8.25
5	M5	Z	0.007	0.007	0	7.9
6	M6	Z	0.007	0.007	0	7.6
7	M7	Z	0.008	0.008	0	9

Member Distributed Loads (BLC 18 : Ice Wind 225 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	-0.003	-0.003	0	2
2	M1	Z	0.003	0.003	0	2
3	M2	X	-0.004	-0.004	0	8.9
4	M2	Z	0.004	0.004	0	8.9
5	M3	X	-0.004	-0.004	0	8.35
6	M3	Z	0.004	0.004	0	8.35
7	M4	X	-0.005	-0.005	0	8.25
8	M4	Z	0.005	0.005	0	8.25
9	M5	X	-0.005	-0.005	0	7.9
10	M5	Z	0.005	0.005	0	7.9
11	M6	X	-0.005	-0.005	0	7.6
12	M6	Z	0.005	0.005	0	7.6
13	M7	X	-0.006	-0.006	0	9
14	M7	Z	0.006	0.006	0	9

Member Distributed Loads (BLC 19 : Ice Wind 270 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	-0.005	-0.005	0	2
2	M2	X	-0.005	-0.005	0	8.9
3	M3	X	-0.006	-0.006	0	8.35
4	M4	X	-0.007	-0.007	0	8.25
5	M5	X	-0.007	-0.007	0	7.9
6	M6	X	-0.007	-0.007	0	7.6
7	M7	X	-0.008	-0.008	0	9

Member Distributed Loads (BLC 20 : Ice Wind 315 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	-0.003	-0.003	0	2
2	M1	Z	-0.003	-0.003	0	2
3	M2	X	-0.004	-0.004	0	8.9
4	M2	Z	-0.004	-0.004	0	8.9
5	M3	X	-0.004	-0.004	0	8.35
6	M3	Z	-0.004	-0.004	0	8.35
7	M4	X	-0.005	-0.005	0	8.25
8	M4	Z	-0.005	-0.005	0	8.25
9	M5	X	-0.005	-0.005	0	7.9
10	M5	Z	-0.005	-0.005	0	7.9
11	M6	X	-0.005	-0.005	0	7.6
12	M6	Z	-0.005	-0.005	0	7.6
13	M7	X	-0.006	-0.006	0	9
14	M7	Z	-0.006	-0.006	0	9

Member Distributed Loads (BLC 21 : Service Wind 0 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Z	-0.006	-0.006	0	2
2	M2	Z	-0.006	-0.006	0	8.9
3	M3	Z	-0.007	-0.007	0	8.35
4	M4	Z	-0.008	-0.008	0	8.25
5	M5	Z	-0.009	-0.009	0	7.9
6	M6	Z	-0.009	-0.009	0	7.6
7	M7	Z	-0.01	-0.01	0	9

Member Distributed Loads (BLC 22 : Service Wind 45 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	0.004	0.004	0	2
2	M1	Z	-0.004	-0.004	0	2
3	M2	X	0.004	0.004	0	8.9
4	M2	Z	-0.004	-0.004	0	8.9
5	M3	X	0.005	0.005	0	8.35
6	M3	Z	-0.005	-0.005	0	8.35
7	M4	X	0.006	0.006	0	8.25
8	M4	Z	-0.006	-0.006	0	8.25
9	M5	X	0.006	0.006	0	7.9
10	M5	Z	-0.006	-0.006	0	7.9
11	M6	X	0.006	0.006	0	7.6
12	M6	Z	-0.006	-0.006	0	7.6
13	M7	X	0.007	0.007	0	9
14	M7	Z	-0.007	-0.007	0	9

Member Distributed Loads (BLC 23 : Service Wind 90 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	0.006	0.006	0	2
2	M2	X	0.006	0.006	0	8.9
3	M3	X	0.007	0.007	0	8.35
4	M4	X	0.008	0.008	0	8.25
5	M5	X	0.009	0.009	0	7.9
6	M6	X	0.009	0.009	0	7.6
7	M7	X	0.01	0.01	0	9

Member Distributed Loads (BLC 24 : Service Wind 135 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	0.004	0.004	0	2
2	M1	Z	0.004	0.004	0	2
3	M2	X	0.004	0.004	0	8.9
4	M2	Z	0.004	0.004	0	8.9
5	M3	X	0.005	0.005	0	8.35
6	M3	Z	0.005	0.005	0	8.35
7	M4	X	0.006	0.006	0	8.25
8	M4	Z	0.006	0.006	0	8.25
9	M5	X	0.006	0.006	0	7.9

Member Distributed Loads (BLC 24 : Service Wind 135 deg) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
10	M5	Z	0.006	0.006	0	7.9
11	M6	X	0.006	0.006	0	7.6
12	M6	Z	0.006	0.006	0	7.6
13	M7	X	0.007	0.007	0	9
14	M7	Z	0.007	0.007	0	9

Member Distributed Loads (BLC 25 : Service Wind 180 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Z	0.006	0.006	0	2
2	M2	Z	0.006	0.006	0	8.9
3	M3	Z	0.007	0.007	0	8.35
4	M4	Z	0.008	0.008	0	8.25
5	M5	Z	0.009	0.009	0	7.9
6	M6	Z	0.009	0.009	0	7.6
7	M7	Z	0.01	0.01	0	9

Member Distributed Loads (BLC 26 : Service Wind 225 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	-0.004	-0.004	0	2
2	M1	Z	0.004	0.004	0	2
3	M2	X	-0.004	-0.004	0	8.9
4	M2	Z	0.004	0.004	0	8.9
5	M3	X	-0.005	-0.005	0	8.35
6	M3	Z	0.005	0.005	0	8.35
7	M4	X	-0.006	-0.006	0	8.25
8	M4	Z	0.006	0.006	0	8.25
9	M5	X	-0.006	-0.006	0	7.9
10	M5	Z	0.006	0.006	0	7.9
11	M6	X	-0.006	-0.006	0	7.6
12	M6	Z	0.006	0.006	0	7.6
13	M7	X	-0.007	-0.007	0	9
14	M7	Z	0.007	0.007	0	9

Member Distributed Loads (BLC 27 : Service Wind 270 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	-0.006	-0.006	0	2
2	M2	X	-0.006	-0.006	0	8.9
3	M3	X	-0.007	-0.007	0	8.35
4	M4	X	-0.008	-0.008	0	8.25
5	M5	X	-0.009	-0.009	0	7.9
6	M6	X	-0.009	-0.009	0	7.6
7	M7	X	-0.01	-0.01	0	9

Member Distributed Loads (BLC 28 : Service Wind 315 deg)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	X	-0.004	-0.004	0	2
2	M1	Z	-0.004	-0.004	0	2
3	M2	X	-0.004	-0.004	0	8.9
4	M2	Z	-0.004	-0.004	0	8.9
5	M3	X	-0.005	-0.005	0	8.35
6	M3	Z	-0.005	-0.005	0	8.35
7	M4	X	-0.006	-0.006	0	8.25
8	M4	Z	-0.006	-0.006	0	8.25
9	M5	X	-0.006	-0.006	0	7.9
10	M5	Z	-0.006	-0.006	0	7.9
11	M6	X	-0.006	-0.006	0	7.6
12	M6	Z	-0.006	-0.006	0	7.6
13	M7	X	-0.007	-0.007	0	9
14	M7	Z	-0.007	-0.007	0	9

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Dead	None	-1	24	
2	Guy Weight	None			
3	No Ice Wind 0 deg	None		21	7
4	No Ice Wind 45 deg	None		21	14
5	No Ice Wind 90 deg	None		21	7
6	No Ice Wind 135 deg	None		19	14
7	No Ice Wind 180 deg	None		21	7
8	No Ice Wind 225 deg	None		21	14
9	No Ice Wind 270 deg	None		21	7

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Point	Distributed
10	No Ice Wind 315 deg	None		19	14
11	Ice	None		24	7
12	Temperature Drop	None			11
13	Ice Wind 0 deg	None		21	7
14	Ice Wind 45 deg	None		21	14
15	Ice Wind 90 deg	None		21	7
16	Ice Wind 135 deg	None		19	14
17	Ice Wind 180 deg	None		21	7
18	Ice Wind 225 deg	None		21	14
19	Ice Wind 270 deg	None		21	7
20	Ice Wind 315 deg	None		19	14
21	Service Wind 0 deg	None		21	7
22	Service Wind 45 deg	None		21	14
23	Service Wind 90 deg	None		21	7
24	Service Wind 135 deg	None		19	14
25	Service Wind 180 deg	None		21	7
26	Service Wind 225 deg	None		21	14
27	Service Wind 270 deg	None		21	7
28	Service Wind 315 deg	None		19	14

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Dead Only	Yes	Y	1	1	2	1	29	1	30	1						
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	Yes	Y	1	1.2	3	1	2	1	29	1.2	30	1				
3	1.2 Dead+1.0 Wind 45 deg - No Ice+1.0 Guy	Yes	Y	1	1.2	4	1	2	1	29	1.2	30	1				
4	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	Yes	Y	1	1.2	5	1	2	1	29	1.2	30	1				
5	1.2 Dead+1.0 Wind 135 deg - No Ice+1.0 Guy	Yes	Y	1	1.2	6	1	2	1	29	1.2	30	1				
6	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	Yes	Y	1	1.2	7	1	2	1	29	1.2	30	1				
7	1.2 Dead+1.0 Wind 225 deg - No Ice+1.0 Guy	Yes	Y	1	1.2	8	1	2	1	29	1.2	30	1				
8	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	Yes	Y	1	1.2	9	1	2	1	29	1.2	30	1				
9	1.2 Dead+1.0 Wind 315 deg - No Ice+1.0 Guy	Yes	Y	1	1.2	10	1	2	1	29	1.2	30	1				
10	1.2 Dead+1.0 Ice+1.0 Temp+Guy	Yes	Y	1	1.2	11	1	12	1	2	1	29	1.2	30	1		
11	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	Yes	Y	1	1.2	13	1	11	1	12	1	2	1	29	1.2	30	1
12	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp+1.0 Guy	Yes	Y	1	1.2	14	1	11	1	12	1	2	1	29	1.2	30	1
13	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	Yes	Y	1	1.2	15	1	11	1	12	1	2	1	29	1.2	30	1
14	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp+1.0 Guy	Yes	Y	1	1.2	16	1	11	1	12	1	2	1	29	1.2	30	1
15	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	Yes	Y	1	1.2	17	1	11	1	12	1	2	1	29	1.2	30	1
16	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp+1.0 Guy	Yes	Y	1	1.2	18	1	11	1	12	1	2	1	29	1.2	30	1

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
17	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	Yes	Y	1	1.2	19	1	11	1	12	1	2	1	29	1.2	30	1
18	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp+1.0 Guy	Yes	Y	1	1.2	20	1	11	1	12	1	2	1	29	1.2	30	1
19	Dead+Wind 0 deg - Service+Guy	Yes	Y	1	1	21	1	2	1	29	1	30	1				
20	Dead+Wind 45 deg - Service+Guy	Yes	Y	1	1	22	1	2	1	29	1	30	1				
21	Dead+Wind 90 deg - Service+Guy	Yes	Y	1	1	23	1	2	1	29	1	30	1				
22	Dead+Wind 135 deg - Service+Guy	Yes	Y	1	1	24	1	2	1	29	1	30	1				
23	Dead+Wind 180 deg - Service+Guy	Yes	Y	1	1	25	1	2	1	29	1	30	1				
24	Dead+Wind 225 deg - Service+Guy	Yes	Y	1	1	26	1	2	1	29	1	30	1				
25	Dead+Wind 270 deg - Service+Guy	Yes	Y	1	1	27	1	2	1	29	1	30	1				
26	Dead+Wind 315 deg - Service+Guy	Yes	Y	1	1	28	1	2	1	29	1	30	1				

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N43	max	1.222	8	1.383	10	1.215	2	17.37	2	0.2	4	17.418	4
2		min	-1.217	4	0.92	26	-1.224	6	-17.599	6	-0.2	8	-17.552	8
3	N53	max	0.431	9	0.596	9	0.428	9	LOCKED		0	26	LOCKED	
4		min	-0.425	5	-0.574	5	-0.422	5	LOCKED		0	1	LOCKED	
5	N55	max	0.416	7	0.579	7	0.417	3	LOCKED		LOCKED		0	26
6		min	-0.414	3	-0.563	3	-0.418	7	LOCKED		LOCKED		0	1
7	N57	max	0.426	9	0.595	5	0.423	9	LOCKED		0	26	LOCKED	
8		min	-0.43	5	-0.575	9	-0.427	5	LOCKED		0	1	LOCKED	
9	N59	max	0.411	7	0.584	3	0.422	3	0	26	LOCKED		LOCKED	
10		min	-0.419	3	-0.558	7	-0.413	7	0	1	LOCKED		LOCKED	
11	Totals:	max	2.411	8	1.308	10	2.411	2						
12		min	-2.411	4	0.954	19	-2.411	6						

Aluminum Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Table B.4	kt	Ftu [ksi]	Fty [ksi]	Fcy [ksi]	Fsu [ksi]	Ct
1	3003-H14	10100	3787.5	0.33	1.3	0.173	Table B.4-1	1	19	16	13	12	141
2	6061-T6	10100	3787.5	0.33	1.3	0.173	Table B.4-2	1	38	35	35	24	141
3	6063-T5	10100	3787.5	0.33	1.3	0.173	Table B.4-2	1	22	16	16	13	141
4	6063-T6	10100	3787.5	0.33	1.3	0.173	Table B.4-2	1	30	25	25	19	141
5	5052-H34	10200	3787.5	0.33	1.3	0.173	Table B.4-1	1	34	26	24	20	141
6	6061-T6 W	10100	3787.5	0.33	1.3	0.173	Table B.4-1	1	24	15	15	15	141

Aluminum Design Parameters

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	Lcomp bot [ft]	L-Torque [ft]	K y-y	K z-z	Function
1	M1	RT4.5X4.5A	2	1	1	1	1	1	0	0	Lateral
2	M2	RT5X5A	8.9	1.113	1.113	1.113	1.113	1.113	0	0	Lateral
3	M3	RT6X6X0.250	8.35	1.044	1.044	1.044	1.044	1.044	0	0	Lateral
4	M4	RT7X7A	8.25	1.031	1.031	1.031	1.031	1.031	0	0	Lateral
5	M5	RT8X8X0.250	7.9	1.129	1.129	1.129	1.129	1.129	0	0	Lateral
6	M6	RT9X9A	7.6	1.086	1.086	1.086	1.086	1.086	0	0	Lateral
7	M7	RT10X10A	9	1	1	1	1	1	0	0	Lateral

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
1	M1	1	max	0.453	10	0.622	8	0.62	6	0.162	4	1.239	2	1.302	8
2			min	0.216	26	-0.627	4	-0.628	2	-0.162	8	-1.345	6	-1.282	4
3		2	max	0.45	10	0.633	8	0.631	6	0.162	4	0.922	2	0.988	8
4			min	0.214	26	-0.638	4	-0.639	2	-0.162	8	-1.033	6	-0.966	4
5		3	max	0.446	10	0.644	8	0.642	6	0.162	4	0.599	2	0.669	8
6			min	0.211	26	-0.648	4	-0.65	2	-0.162	8	-0.714	6	-0.644	4
7		4	max	0.443	10	0.655	8	0.653	6	0.162	4	0.272	2	0.345	8
8			min	0.209	26	-0.659	4	-0.661	2	-0.162	8	-0.391	6	-0.318	4
9		5	max	0.44	10	0.665	8	0.664	6	0.162	4	-0.051	26	0.017	13
10			min	0.206	26	-0.67	4	-0.672	2	-0.162	8	-0.091	16	0.012	25
11	M2	1	max	0.893	10	0.123	8	0.122	6	0.2	4	4.254	2	4.369	8
12			min	0.537	26	-0.128	4	-0.13	2	-0.2	8	-4.397	6	-4.283	4
13		2	max	0.876	10	0.185	8	0.183	6	0.2	4	3.901	2	4.03	8
14			min	0.524	26	-0.19	4	-0.192	2	-0.2	8	-4.062	6	-3.933	4
15		3	max	0.86	10	0.245	8	0.244	6	0.2	4	3.412	2	3.555	8
16			min	0.512	26	-0.25	4	-0.251	2	-0.2	8	-3.591	6	-3.448	4
17		4	max	0.469	10	0.577	8	0.575	6	0.162	4	2.577	2	2.626	8
18			min	0.229	26	-0.581	4	-0.583	2	-0.162	8	-2.665	6	-2.616	4
19		5	max	0.453	10	0.622	8	0.62	6	0.162	4	1.239	2	1.302	8
20			min	0.216	26	-0.626	4	-0.628	2	-0.162	8	-1.345	6	-1.282	4
21	M3	1	max	0.967	10	0.124	4	0.122	2	0.2	4	4.276	2	4.332	8
22			min	0.595	26	-0.129	8	-0.131	6	-0.2	8	-4.345	6	-4.289	4
23		2	max	0.948	10	0.064	4	0.062	2	0.2	4	4.468	2	4.539	8
24			min	0.58	26	-0.069	8	-0.071	6	-0.2	8	-4.556	6	-4.485	4
25		3	max	0.93	10	0.002	5	0	9	0.2	4	4.527	2	4.613	8
26			min	0.566	26	-0.007	9	-0.009	5	-0.2	8	-4.634	6	-4.548	4
27		4	max	0.911	10	0.06	8	0.058	6	0.2	4	4.456	2	4.556	8

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
28			min	0.552	26	-0.065	4	-0.067	2	-0.2	8	-4.581	6	-4.481	4
29		5	max	0.893	10	0.12	8	0.118	6	0.2	4	4.254	2	4.369	8
30			min	0.537	26	-0.125	4	-0.127	2	-0.2	8	-4.397	6	-4.283	4
31	M4	1	max	1.053	10	0.389	4	0.387	2	0.2	4	2.164	2	2.16	8
32			min	0.662	26	-0.395	8	-0.396	6	-0.2	8	-2.158	6	-2.162	4
33		2	max	1.031	10	0.325	4	0.323	2	0.2	4	2.897	2	2.908	8
34			min	0.645	26	-0.33	8	-0.332	6	-0.2	8	-2.909	6	-2.898	4
35		3	max	1.01	10	0.259	4	0.257	2	0.2	4	3.493	2	3.519	8
36			min	0.628	26	-0.264	8	-0.266	6	-0.2	8	-3.525	6	-3.499	4
37		4	max	0.988	10	0.193	4	0.191	2	0.2	4	3.953	2	3.994	8
38			min	0.611	26	-0.198	8	-0.2	6	-0.2	8	-4.004	6	-3.963	4
39		5	max	0.967	10	0.126	4	0.124	2	0.2	4	4.276	2	4.332	8
40			min	0.595	26	-0.131	8	-0.133	6	-0.2	8	-4.345	6	-4.289	4
41	M5	1	max	1.147	10	0.651	4	0.649	2	0.2	4	2.018	6	1.956	4
42			min	0.735	26	-0.657	8	-0.659	6	-0.2	8	-1.939	2	-2.001	8
43		2	max	1.123	10	0.587	4	0.585	2	0.2	4	0.781	6	0.733	4
44			min	0.717	26	-0.592	8	-0.594	6	-0.2	8	-0.72	2	-0.768	8
45		3	max	1.1	10	0.522	4	0.52	2	0.2	4	0.371	2	0.338	8
46			min	0.698	26	-0.527	8	-0.529	6	-0.2	8	-0.328	6	-0.361	4
47		4	max	1.076	10	0.456	4	0.454	2	0.2	4	1.333	2	1.314	8
48			min	0.68	26	-0.461	8	-0.463	6	-0.2	8	-1.308	6	-1.327	4
49		5	max	1.053	10	0.39	4	0.388	2	0.2	4	2.164	2	2.16	8
50			min	0.662	26	-0.396	8	-0.398	6	-0.2	8	-2.158	6	-2.162	4
51	M6	1	max	1.249	10	0.903	4	0.901	2	0.2	4	7.984	6	7.866	4
52			min	0.815	26	-0.908	8	-0.91	6	-0.2	8	-7.835	2	-7.953	8
53		2	max	1.223	10	0.84	4	0.838	2	0.2	4	6.314	6	6.211	4
54			min	0.795	26	-0.846	8	-0.847	6	-0.2	8	-6.183	2	-6.287	8
55		3	max	1.198	10	0.778	4	0.776	2	0.2	4	4.762	6	4.673	4
56			min	0.775	26	-0.784	8	-0.785	6	-0.2	8	-4.648	2	-4.738	8
57		4	max	1.172	10	0.715	4	0.713	2	0.2	4	3.33	6	3.254	4
58			min	0.755	26	-0.721	8	-0.722	6	-0.2	8	-3.233	2	-3.31	8
59		5	max	1.147	10	0.651	4	0.649	2	0.2	4	2.018	6	1.956	4
60			min	0.735	26	-0.657	8	-0.658	6	-0.2	8	-1.939	2	-2.001	8
61	M7	1	max	1.383	10	1.219	4	1.217	2	0.2	4	17.599	6	17.418	4
62			min	0.92	26	-1.224	8	-1.226	6	-0.2	8	-17.37	2	-17.552	8
63		2	max	1.349	10	1.141	4	1.139	2	0.2	4	14.931	6	14.766	4
64			min	0.894	26	-1.146	8	-1.148	6	-0.2	8	-14.722	2	-14.888	8
65		3	max	1.316	10	1.062	4	1.06	2	0.2	4	12.437	6	12.288	4
66			min	0.867	26	-1.067	8	-1.069	6	-0.2	8	-12.248	2	-12.398	8

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
67		4	max	1.282	10	0.982	4	0.98	2	0.2	4	10.12	6	9.987	4
68			min	0.841	26	-0.988	8	-0.989	6	-0.2	8	-9.951	2	-10.085	8
69		5	max	1.249	10	0.901	4	0.9	2	0.2	4	7.984	6	7.866	4
70			min	0.815	26	-0.907	8	-0.909	6	-0.2	8	-7.835	2	-7.953	8
71	M8	1	max	0.851	9	0.004	9	0	26	0	26	0	26	0	26
72			min	-0.829	5	0.004	20	0	1	0	1	0	1	0	1
73		2	max	0.849	9	0.002	9	0	26	0	26	0	26	-0.056	20
74			min	-0.832	5	0.002	20	0	1	0	1	0	1	-0.067	9
75		3	max	0.847	9	0	26	0	26	0	26	0	26	-0.075	20
76			min	-0.834	5	0	1	0	1	0	1	0	1	-0.09	9
77		4	max	0.845	9	-0.002	26	0	26	0	26	0	26	-0.056	20
78			min	-0.836	5	-0.002	2	0	1	0	1	0	1	-0.067	9
79		5	max	0.843	9	-0.004	26	0	26	0	26	0	26	0	26
80			min	-0.838	5	-0.004	2	0	1	0	1	0	1	0	1
81	M9	1	max	0.827	7	0.004	8	0	26	0	26	0	26	0	26
82			min	-0.814	3	0.004	19	0	1	0	1	0	1	0	1
83		2	max	0.825	7	0.002	8	0	26	0	26	0	26	-0.056	20
84			min	-0.816	3	0.002	19	0	1	0	1	0	1	-0.067	7
85		3	max	0.823	7	0	26	0	26	0	26	0	26	-0.075	20
86			min	-0.818	3	0	1	0	1	0	1	0	1	-0.09	7
87		4	max	0.821	7	-0.002	25	0	26	0	26	0	26	-0.056	20
88			min	-0.82	3	-0.002	2	0	1	0	1	0	1	-0.067	7
89		5	max	0.819	7	-0.004	25	0	26	0	26	0	26	0	26
90			min	-0.822	3	-0.004	2	0	1	0	1	0	1	0	1
91	M10	1	max	0.85	5	0.004	4	0	26	0	26	0	26	0	26
92			min	-0.831	9	0.004	25	0	1	0	1	0	1	0	1
93		2	max	0.847	5	0.002	4	0	26	0	26	0	26	-0.056	25
94			min	-0.833	9	0.002	25	0	1	0	1	0	1	-0.067	4
95		3	max	0.845	5	0	26	0	26	0	26	0	26	-0.075	25
96			min	-0.835	9	0	1	0	1	0	1	0	1	-0.09	4
97		4	max	0.843	5	-0.002	23	0	26	0	26	0	26	-0.056	25
98			min	-0.837	9	-0.002	8	0	1	0	1	0	1	-0.067	4
99		5	max	0.841	5	-0.004	23	0	26	0	26	0	26	0	26
100			min	-0.84	9	-0.004	8	0	1	0	1	0	1	0	1
101	M11	1	max	0.834	3	0.004	3	0	26	0	26	0	26	0	26
102			min	-0.807	7	0.004	24	0	1	0	1	0	1	0	1
103		2	max	0.832	3	0.002	3	0	26	0	26	0	26	-0.056	24
104			min	-0.809	7	0.002	24	0	1	0	1	0	1	-0.067	3
105		3	max	0.83	3	0	26	0	26	0	26	0	26	-0.075	24

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
106			min	-0.811	7	0	1	0	1	0	1	0	1	-0.09	3
107		4	max	0.827	3	-0.002	26	0	26	0	26	0	26	-0.056	24
108			min	-0.813	7	-0.002	6	0	1	0	1	0	1	-0.067	3
109		5	max	0.825	3	-0.004	26	0	26	0	26	0	26	0	26
110			min	-0.815	7	-0.004	6	0	1	0	1	0	1	0	1

Envelope Maximum Member Section Forces

	Member		Axial[k]	Loc[ft]	LC	y Shear[k]	Loc[ft]	LC	z Shear[k]	Loc[ft]	LC	Torque[k-ft]	Loc[ft]	LC	y-y Moment[k-ft]	Loc[ft]	LC	z-z Moment[k-ft]	Loc[ft]	LC
1	M1	max	0.453	0	10	0.665	2	8	0.664	2	6	0.162	2	4	1.239	0	2	1.302	0	8
2		min	0.206	2	26	-0.67	2	4	-0.672	2	2	-0.162	1	8	-1.345	0	6	-1.282	0	4
3	M2	max	0.893	0	10	0.622	8.9	8	0.62	8.9	6	0.2	3.337	4	4.254	0	2	4.369	0	8
4		min	0.216	8.9	26	-0.626	8.9	4	-0.628	8.9	2	-0.2	2.225	8	-4.397	0	6	-4.283	0	4
5	M3	max	0.967	0	10	0.124	0	4	0.122	0	2	0.2	8.35	4	4.527	4.088	2	4.614	4.262	8
6		min	0.537	8.35	26	-0.129	0	8	-0.131	0	6	-0.2	6.263	8	-4.634	4.349	6	-4.548	4.175	4
7	M4	max	1.053	0	10	0.389	0	4	0.387	0	2	0.2	5.156	4	4.276	8.25	2	4.332	8.25	8
8		min	0.595	8.25	26	-0.395	0	8	-0.396	0	6	-0.2	4.125	8	-4.345	8.25	6	-4.289	8.25	4
9	M5	max	1.147	0	10	0.651	0	4	0.649	0	2	0.2	5.596	4	2.164	7.9	2	2.16	7.9	8
10		min	0.662	7.9	26	-0.657	0	8	-0.659	0	6	-0.2	4.526	8	-2.158	7.9	6	-2.162	7.9	4
11	M6	max	1.249	0	10	0.903	0	4	0.901	0	2	0.2	6.492	4	7.984	0	6	7.866	0	4
12		min	0.735	7.6	26	-0.908	0	8	-0.91	0	6	-0.2	5.463	8	-7.835	0	2	-7.953	0	8
13	M7	max	1.383	0	10	1.219	0	4	1.217	0	2	0.2	6.938	4	17.599	0	6	17.418	0	4
14		min	0.815	9	26	-1.224	0	8	-1.226	0	6	-0.2	6	8	-17.37	0	2	-17.552	0	8
15	M8	max	0.851	0	9	0.004	0	9	0	83.316	26	0	83.316	26	0	83.316	26	0	83.316	26
16		min	-0.838	83.316	5	-0.004	83.316	2	0	0	1	0	0	1	0	0	1	-0.09	41.658	9
17	M9	max	0.827	0	7	0.004	0	8	0	83.316	26	0	83.316	26	0	83.316	26	0	83.316	26
18		min	-0.822	83.316	3	-0.004	83.316	2	0	0	1	0	0	1	0	0	1	-0.09	41.658	7
19	M10	max	0.85	0	5	0.004	0	4	0	83.316	26	0	83.316	26	0	83.316	26	0	83.316	26
20		min	-0.84	83.316	9	-0.004	83.316	8	0	0	1	0	0	1	0	0	1	-0.09	41.658	4
21	M11	max	0.834	0	3	0.004	0	3	0	83.316	26	0	83.316	26	0	83.316	26	0	83.316	26
22		min	-0.815	83.316	7	-0.004	83.316	6	0	0	1	0	0	1	0	0	1	-0.09	41.658	3

Envelope Member End Reactions

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
1	M1	I	max	0.453	10	0.622	8	0.62	6	0.162	4	1.239	2	1.302	8
2			min	0.216	26	-0.627	4	-0.628	2	-0.162	8	-1.345	6	-1.282	4
3		J	max	0.44	10	0.665	8	0.664	6	0.162	4	-0.051	26	0.017	13
4			min	0.206	26	-0.67	4	-0.672	2	-0.162	8	-0.091	16	0.012	25

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
5	M2	I	max	0.893	10	0.123	8	0.122	6	0.2	4	4.254	2	4.369	8
6			min	0.537	26	-0.128	4	-0.13	2	-0.2	8	-4.397	6	-4.283	4
7		J	max	0.453	10	0.622	8	0.62	6	0.162	4	1.239	2	1.302	8
8			min	0.216	26	-0.626	4	-0.628	2	-0.162	8	-1.345	6	-1.282	4
9	M3	I	max	0.967	10	0.124	4	0.122	2	0.2	4	4.276	2	4.332	8
10			min	0.595	26	-0.129	8	-0.131	6	-0.2	8	-4.345	6	-4.289	4
11		J	max	0.893	10	0.12	8	0.118	6	0.2	4	4.254	2	4.369	8
12			min	0.537	26	-0.125	4	-0.127	2	-0.2	8	-4.397	6	-4.283	4
13	M4	I	max	1.053	10	0.389	4	0.387	2	0.2	4	2.164	2	2.16	8
14			min	0.662	26	-0.395	8	-0.396	6	-0.2	8	-2.158	6	-2.162	4
15		J	max	0.967	10	0.126	4	0.124	2	0.2	4	4.276	2	4.332	8
16			min	0.595	26	-0.131	8	-0.133	6	-0.2	8	-4.345	6	-4.289	4
17	M5	I	max	1.147	10	0.651	4	0.649	2	0.2	4	2.018	6	1.956	4
18			min	0.735	26	-0.657	8	-0.659	6	-0.2	8	-1.939	2	-2.001	8
19		J	max	1.053	10	0.39	4	0.388	2	0.2	4	2.164	2	2.16	8
20			min	0.662	26	-0.396	8	-0.398	6	-0.2	8	-2.158	6	-2.162	4
21	M6	I	max	1.249	10	0.903	4	0.901	2	0.2	4	7.984	6	7.866	4
22			min	0.815	26	-0.908	8	-0.91	6	-0.2	8	-7.835	2	-7.953	8
23		J	max	1.147	10	0.651	4	0.649	2	0.2	4	2.018	6	1.956	4
24			min	0.735	26	-0.657	8	-0.658	6	-0.2	8	-1.939	2	-2.001	8
25	M7	I	max	1.383	10	1.219	4	1.217	2	0.2	4	17.599	6	17.418	4
26			min	0.92	26	-1.224	8	-1.226	6	-0.2	8	-17.37	2	-17.552	8
27		J	max	1.249	10	0.901	4	0.9	2	0.2	4	7.984	6	7.866	4
28			min	0.815	26	-0.907	8	-0.909	6	-0.2	8	-7.835	2	-7.953	8
29	M8	I	max	0.851	9	0.004	9	0	26	0	26	0	26	0	26
30			min	-0.829	5	0.004	20	0	1	0	1	0	1	0	1
31		J	max	0.843	9	-0.004	26	0	26	0	26	0	26	0	26
32			min	-0.838	5	-0.004	2	0	1	0	1	0	1	0	1
33	M9	I	max	0.827	7	0.004	8	0	26	0	26	0	26	0	26
34			min	-0.814	3	0.004	19	0	1	0	1	0	1	0	1
35		J	max	0.819	7	-0.004	25	0	26	0	26	0	26	0	26
36			min	-0.822	3	-0.004	2	0	1	0	1	0	1	0	1
37	M10	I	max	0.85	5	0.004	4	0	26	0	26	0	26	0	26
38			min	-0.831	9	0.004	25	0	1	0	1	0	1	0	1
39		J	max	0.841	5	-0.004	23	0	26	0	26	0	26	0	26
40			min	-0.84	9	-0.004	8	0	1	0	1	0	1	0	1
41	M11	I	max	0.834	3	0.004	3	0	26	0	26	0	26	0	26
42			min	-0.807	7	0.004	24	0	1	0	1	0	1	0	1
43		J	max	0.825	3	-0.004	26	0	26	0	26	0	26	0	26

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
44			min	-0.815	7	-0.004	6	0	1	0	1	0	1	0	1

Envelope Member 2nd/1st Moment Ratios

	Member		y-y Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC	z-z Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC
1	M1	max	0.117	1.062	0	12	0.209	1.044	0	16
2		min	-0.062	1	2	8	0.017	1	2	10
3	M2	max	0.574	1.079	0	12	-0.62	1.078	0	12
4		min	0.035	0.995	5.748	8	-0.073	1.008	5.748	6
5	M3	max	-1.092	1.08	5.219	15	1.056	1.08	4.784	17
6		min	-0.044	1.037	8.35	25	0.021	1.033	8.35	23
7	M4	max	-0.052	1.107	8.25	13	0.031	1.103	8.25	11
8		min	0.771	1.044	8.25	20	0.007	1.016	0	6
9	M5	max	0.504	1.111	0	15	-0.476	1.113	0	17
10		min	0.409	1.027	7.9	20	-0.407	1.027	7.9	20
11	M6	max	0.006	1.138	0	8	-0.036	1.084	0	15
12		min	-1.404	1.037	0	20	0.025	1.034	0	6
13	M7	max	0.013	1.109	0	8	-0.056	1.07	0	15
14		min	-3.163	1.022	0	20	0.035	1.022	0	6
15	M8	max	NC	NC			-0.09	1	41.658	9
16		min	NC	NC			-0.09	1	41.658	6
17	M9	max	NC	NC			-0.09	1	41.658	8
18		min	NC	NC			-0.09	1	41.658	5
19	M10	max	NC	NC			-0.09	1	41.658	4
20		min	NC	NC			-0.09	1	41.658	12
21	M11	max	NC	NC			-0.09	1	41.658	17
22		min	NC	NC			-0.09	1	41.658	13

Envelope Member Torsion Stresses

	Member	Sec		Torque[k-ft]	LC	Torsion Shear[ksi]	LC	y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]
1	M1	1	max	0.162	4	0.215	4	NC	NC	NC	NC
2			min	-0.162	8	-0.215	8	NC	NC	NC	NC
3		2	max	0.162	4	0.215	4	NC	NC	NC	NC
4			min	-0.162	8	-0.215	8	NC	NC	NC	NC
5		3	max	0.162	4	0.215	4	NC	NC	NC	NC
6			min	-0.162	8	-0.215	8	NC	NC	NC	NC
7		4	max	0.162	4	0.215	4	NC	NC	NC	NC
8			min	-0.162	8	-0.215	8	NC	NC	NC	NC

Envelope Member Torsion Stresses (Continued)

	Member	Sec		Torque[k-ft]	LC	Torsion Shear[ksi]	LC	y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]
9		5	max	0.162	4	0.215	4	NC	NC	NC	NC
10			min	-0.162	8	-0.215	8	NC	NC	NC	NC
11	M2	1	max	0.2	4	0.213	4	NC	NC	NC	NC
12			min	-0.2	8	-0.213	8	NC	NC	NC	NC
13		2	max	0.2	4	0.213	4	NC	NC	NC	NC
14			min	-0.2	8	-0.213	8	NC	NC	NC	NC
15		3	max	0.2	4	0.213	4	NC	NC	NC	NC
16			min	-0.2	8	-0.213	8	NC	NC	NC	NC
17		4	max	0.162	4	0.172	4	NC	NC	NC	NC
18			min	-0.162	8	-0.172	8	NC	NC	NC	NC
19		5	max	0.162	4	0.172	4	NC	NC	NC	NC
20			min	-0.162	8	-0.172	8	NC	NC	NC	NC
21	M3	1	max	0.2	4	0.145	4	NC	NC	NC	NC
22			min	-0.2	8	-0.145	8	NC	NC	NC	NC
23		2	max	0.2	4	0.145	4	NC	NC	NC	NC
24			min	-0.2	8	-0.145	8	NC	NC	NC	NC
25		3	max	0.2	4	0.145	4	NC	NC	NC	NC
26			min	-0.2	8	-0.145	8	NC	NC	NC	NC
27		4	max	0.2	4	0.145	4	NC	NC	NC	NC
28			min	-0.2	8	-0.145	8	NC	NC	NC	NC
29		5	max	0.2	4	0.145	4	NC	NC	NC	NC
30			min	-0.2	8	-0.145	8	NC	NC	NC	NC
31	M4	1	max	0.2	4	0.106	4	NC	NC	NC	NC
32			min	-0.2	8	-0.106	8	NC	NC	NC	NC
33		2	max	0.2	4	0.106	4	NC	NC	NC	NC
34			min	-0.2	8	-0.106	8	NC	NC	NC	NC
35		3	max	0.2	4	0.106	4	NC	NC	NC	NC
36			min	-0.2	8	-0.106	8	NC	NC	NC	NC
37		4	max	0.2	4	0.106	4	NC	NC	NC	NC
38			min	-0.2	8	-0.106	8	NC	NC	NC	NC
39		5	max	0.2	4	0.106	4	NC	NC	NC	NC
40			min	-0.2	8	-0.106	8	NC	NC	NC	NC
41	M5	1	max	0.2	4	0.08	4	NC	NC	NC	NC
42			min	-0.2	8	-0.08	8	NC	NC	NC	NC
43		2	max	0.2	4	0.08	4	NC	NC	NC	NC
44			min	-0.2	8	-0.08	8	NC	NC	NC	NC
45		3	max	0.2	4	0.08	4	NC	NC	NC	NC
46			min	-0.2	8	-0.08	8	NC	NC	NC	NC
47		4	max	0.2	4	0.08	4	NC	NC	NC	NC

Envelope Member Torsion Stresses (Continued)

	Member	Sec		Torque[k-ft]	LC	Torsion Shear[ksi]	LC	y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]
48			min	-0.2	8	-0.08	8	NC	NC	NC	NC
49		5	max	0.2	4	0.08	4	NC	NC	NC	NC
50			min	-0.2	8	-0.08	8	NC	NC	NC	NC
51	M6	1	max	0.2	4	0.063	4	NC	NC	NC	NC
52			min	-0.2	8	-0.063	8	NC	NC	NC	NC
53		2	max	0.2	4	0.063	4	NC	NC	NC	NC
54			min	-0.2	8	-0.063	8	NC	NC	NC	NC
55		3	max	0.2	4	0.063	4	NC	NC	NC	NC
56			min	-0.2	8	-0.063	8	NC	NC	NC	NC
57		4	max	0.2	4	0.063	4	NC	NC	NC	NC
58			min	-0.2	8	-0.063	8	NC	NC	NC	NC
59		5	max	0.2	4	0.063	4	NC	NC	NC	NC
60			min	-0.2	8	-0.063	8	NC	NC	NC	NC
61	M7	1	max	0.2	4	0.051	4	NC	NC	NC	NC
62			min	-0.2	8	-0.051	8	NC	NC	NC	NC
63		2	max	0.2	4	0.051	4	NC	NC	NC	NC
64			min	-0.2	8	-0.051	8	NC	NC	NC	NC
65		3	max	0.2	4	0.051	4	NC	NC	NC	NC
66			min	-0.2	8	-0.051	8	NC	NC	NC	NC
67		4	max	0.2	4	0.051	4	NC	NC	NC	NC
68			min	-0.2	8	-0.051	8	NC	NC	NC	NC
69		5	max	0.2	4	0.051	4	NC	NC	NC	NC
70			min	-0.2	8	-0.051	8	NC	NC	NC	NC
71	M8	1	max	0	26	0	26	NC	NC	NC	NC
72			min	0	1	0	1	NC	NC	NC	NC
73		2	max	0	26	0	26	NC	NC	NC	NC
74			min	0	1	0	1	NC	NC	NC	NC
75		3	max	0	26	0	26	NC	NC	NC	NC
76			min	0	1	0	1	NC	NC	NC	NC
77		4	max	0	26	0	26	NC	NC	NC	NC
78			min	0	1	0	1	NC	NC	NC	NC
79		5	max	0	26	0	26	NC	NC	NC	NC
80			min	0	1	0	1	NC	NC	NC	NC
81	M9	1	max	0	26	0	26	NC	NC	NC	NC
82			min	0	1	0	1	NC	NC	NC	NC
83		2	max	0	26	0	26	NC	NC	NC	NC
84			min	0	1	0	1	NC	NC	NC	NC
85		3	max	0	26	0	26	NC	NC	NC	NC
86			min	0	1	0	1	NC	NC	NC	NC

Envelope Member Torsion Stresses (Continued)

	Member	Sec		Torque[k-ft]	LC	Torsion Shear[ksi]	LC	y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]
87		4	max	0	26	0	26	NC	NC	NC	NC
88			min	0	1	0	1	NC	NC	NC	NC
89		5	max	0	26	0	26	NC	NC	NC	NC
90			min	0	1	0	1	NC	NC	NC	NC
91	M10	1	max	0	26	0	26	NC	NC	NC	NC
92			min	0	1	0	1	NC	NC	NC	NC
93		2	max	0	26	0	26	NC	NC	NC	NC
94			min	0	1	0	1	NC	NC	NC	NC
95		3	max	0	26	0	26	NC	NC	NC	NC
96			min	0	1	0	1	NC	NC	NC	NC
97		4	max	0	26	0	26	NC	NC	NC	NC
98			min	0	1	0	1	NC	NC	NC	NC
99		5	max	0	26	0	26	NC	NC	NC	NC
100			min	0	1	0	1	NC	NC	NC	NC
101	M11	1	max	0	26	0	26	NC	NC	NC	NC
102			min	0	1	0	1	NC	NC	NC	NC
103		2	max	0	26	0	26	NC	NC	NC	NC
104			min	0	1	0	1	NC	NC	NC	NC
105		3	max	0	26	0	26	NC	NC	NC	NC
106			min	0	1	0	1	NC	NC	NC	NC
107		4	max	0	26	0	26	NC	NC	NC	NC
108			min	0	1	0	1	NC	NC	NC	NC
109		5	max	0	26	0	26	NC	NC	NC	NC
110			min	0	1	0	1	NC	NC	NC	NC

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	0.107	10	0.276	8	0.276	6	2.696	4	2.738	8	2.605	2	2.83	6
2			min	0.051	26	-0.278	4	-0.279	2	-2.738	8	-2.696	4	-2.83	6	-2.605	2
3		2	max	0.106	10	0.281	8	0.28	6	2.032	4	2.079	8	1.938	2	2.172	6
4			min	0.05	26	-0.283	4	-0.284	2	-2.079	8	-2.032	4	-2.172	6	-1.938	2
5		3	max	0.105	10	0.286	8	0.285	6	1.355	4	1.408	8	1.261	2	1.502	6
6			min	0.05	26	-0.288	4	-0.289	2	-1.408	8	-1.355	4	-1.502	6	-1.261	2
7		4	max	0.104	10	0.291	8	0.29	6	0.668	4	0.725	8	0.571	2	0.822	6
8			min	0.049	26	-0.293	4	-0.294	2	-0.725	8	-0.668	4	-0.822	6	-0.571	2
9		5	max	0.103	10	0.296	8	0.295	6	-0.026	25	0.036	13	-0.108	26	0.191	16
10			min	0.049	26	-0.298	4	-0.299	2	-0.036	13	0.026	25	-0.191	16	0.108	26
11	M2	1	max	0.188	10	0.049	8	0.049	6	7.173	4	7.317	8	7.125	2	7.365	6

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
12			min	0.113	26	-0.051	4	-0.052	2	-7.317	8	-7.173	4	-7.365	6	-7.125	2
13		2	max	0.185	10	0.074	8	0.073	6	6.588	4	6.75	8	6.533	2	6.804	6
14			min	0.11	26	-0.076	4	-0.077	2	-6.75	8	-6.588	4	-6.804	6	-6.533	2
15		3	max	0.181	10	0.098	8	0.097	6	5.775	4	5.955	8	5.714	2	6.015	6
16			min	0.108	26	-0.1	4	-0.101	2	-5.955	8	-5.775	4	-6.015	6	-5.714	2
17		4	max	0.099	10	0.231	8	0.23	6	4.382	4	4.398	8	4.315	2	4.464	6
18			min	0.048	26	-0.233	4	-0.233	2	-4.398	8	-4.382	4	-4.464	6	-4.315	2
19		5	max	0.095	10	0.249	8	0.248	6	2.147	4	2.181	8	2.075	2	2.254	6
20			min	0.046	26	-0.251	4	-0.251	2	-2.181	8	-2.147	4	-2.254	6	-2.075	2
21	M3	1	max	0.168	10	0.041	4	0.041	2	4.871	4	4.92	8	4.856	2	4.935	6
22			min	0.103	26	-0.043	8	-0.044	6	-4.92	8	-4.871	4	-4.935	6	-4.856	2
23		2	max	0.165	10	0.021	4	0.021	2	5.093	4	5.155	8	5.074	2	5.174	6
24			min	0.101	26	-0.023	8	-0.024	6	-5.155	8	-5.093	4	-5.174	6	-5.074	2
25		3	max	0.162	10	0.001	5	0	9	5.165	4	5.239	8	5.141	2	5.263	6
26			min	0.098	26	-0.002	9	-0.003	5	-5.239	8	-5.165	4	-5.263	6	-5.141	2
27		4	max	0.158	10	0.02	8	0.019	6	5.089	4	5.175	8	5.06	2	5.202	6
28			min	0.096	26	-0.022	4	-0.022	2	-5.175	8	-5.089	4	-5.202	6	-5.06	2
29		5	max	0.155	10	0.04	8	0.039	6	4.863	4	4.961	8	4.831	2	4.993	6
30			min	0.093	26	-0.042	4	-0.042	2	-4.961	8	-4.863	4	-4.993	6	-4.831	2
31	M4	1	max	0.156	10	0.111	4	0.111	2	1.769	4	1.768	8	1.771	2	1.766	6
32			min	0.098	26	-0.113	8	-0.113	6	-1.768	8	-1.769	4	-1.766	6	-1.771	2
33		2	max	0.153	10	0.093	4	0.092	2	2.372	4	2.379	8	2.37	2	2.381	6
34			min	0.096	26	-0.094	8	-0.095	6	-2.379	8	-2.372	4	-2.381	6	-2.37	2
35		3	max	0.15	10	0.074	4	0.073	2	2.863	4	2.88	8	2.858	2	2.884	6
36			min	0.093	26	-0.076	8	-0.076	6	-2.88	8	-2.863	4	-2.884	6	-2.858	2
37		4	max	0.146	10	0.055	4	0.054	2	3.242	4	3.269	8	3.235	2	3.276	6
38			min	0.091	26	-0.057	8	-0.057	6	-3.269	8	-3.242	4	-3.276	6	-3.235	2
39		5	max	0.143	10	0.036	4	0.035	2	3.51	4	3.545	8	3.499	2	3.556	6
40			min	0.088	26	-0.038	8	-0.038	6	-3.545	8	-3.51	4	-3.556	6	-3.499	2
41	M5	1	max	0.148	10	0.163	4	0.162	2	1.236	8	1.208	4	1.247	6	1.198	2
42			min	0.095	26	-0.164	8	-0.165	6	-1.208	4	-1.236	8	-1.198	2	-1.247	6
43		2	max	0.145	10	0.147	4	0.146	2	0.474	8	0.453	4	0.482	6	0.445	2
44			min	0.092	26	-0.148	8	-0.149	6	-0.453	4	-0.474	8	-0.445	2	-0.482	6
45		3	max	0.142	10	0.13	4	0.13	2	0.223	4	0.209	8	0.229	2	0.203	6
46			min	0.09	26	-0.132	8	-0.132	6	-0.209	8	-0.223	4	-0.203	6	-0.229	2
47		4	max	0.139	10	0.114	4	0.113	2	0.82	4	0.812	8	0.823	2	0.808	6
48			min	0.088	26	-0.115	8	-0.116	6	-0.812	8	-0.82	4	-0.808	6	-0.823	2
49		5	max	0.136	10	0.098	4	0.097	2	1.336	4	1.335	8	1.337	2	1.333	6
50			min	0.085	26	-0.099	8	-0.099	6	-1.335	8	-1.336	4	-1.333	6	-1.337	2

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
51	M6	1	max	0.143	10	0.201	4	0.2	2	3.843	8	3.801	4	3.858	6	3.786	2
52			min	0.093	26	-0.202	8	-0.202	6	-3.801	4	-3.843	8	-3.786	2	-3.858	6
53		2	max	0.14	10	0.187	4	0.186	2	3.038	8	3.001	4	3.051	6	2.988	2
54			min	0.091	26	-0.188	8	-0.188	6	-3.001	4	-3.038	8	-2.988	2	-3.051	6
55		3	max	0.137	10	0.173	4	0.173	2	2.29	8	2.258	4	2.301	6	2.246	2
56			min	0.089	26	-0.174	8	-0.175	6	-2.258	4	-2.29	8	-2.246	2	-2.301	6
57		4	max	0.134	10	0.159	4	0.159	2	1.599	8	1.573	4	1.609	6	1.562	2
58			min	0.086	26	-0.16	8	-0.161	6	-1.573	4	-1.599	8	-1.562	2	-1.609	6
59		5	max	0.131	10	0.145	4	0.144	2	0.967	8	0.945	4	0.975	6	0.937	2
60			min	0.084	26	-0.146	8	-0.146	6	-0.945	4	-0.967	8	-0.937	2	-0.975	6
61	M7	1	max	0.142	10	0.244	4	0.243	2	6.813	8	6.761	4	6.831	6	6.742	2
62			min	0.094	26	-0.245	8	-0.245	6	-6.761	4	-6.813	8	-6.742	2	-6.831	6
63		2	max	0.138	10	0.228	4	0.228	2	5.779	8	5.731	4	5.795	6	5.714	2
64			min	0.092	26	-0.229	8	-0.23	6	-5.731	4	-5.779	8	-5.714	2	-5.795	6
65		3	max	0.135	10	0.212	4	0.212	2	4.812	8	4.769	4	4.827	6	4.754	2
66			min	0.089	26	-0.213	8	-0.214	6	-4.769	4	-4.812	8	-4.754	2	-4.827	6
67		4	max	0.132	10	0.196	4	0.196	2	3.915	8	3.876	4	3.928	6	3.863	2
68			min	0.086	26	-0.198	8	-0.198	6	-3.876	4	-3.915	8	-3.863	2	-3.928	6
69		5	max	0.128	10	0.18	4	0.18	2	3.087	8	3.053	4	3.099	6	3.041	2
70			min	0.084	26	-0.181	8	-0.182	6	-3.053	4	-3.087	8	-3.041	2	-3.099	6
71	M8	1	max	24.184	9	0.122	9	0	26	0	26	0	26	0	26	0	26
72			min	-23.563	5	0.102	20	0	1	0	1	0	1	0	1	0	1
73		2	max	24.125	9	0.061	9	0	26	0	26	0	26	0	26	0	26
74			min	-23.622	5	0.051	20	0	1	0	1	0	1	0	1	0	1
75		3	max	24.065	9	0	26	0	26	0	26	0	26	0	26	0	26
76			min	-23.682	5	0	1	0	1	0	1	0	1	0	1	0	1
77		4	max	24.006	9	-0.051	26	0	26	0	26	0	26	0	26	0	26
78			min	-23.741	5	-0.061	2	0	1	0	1	0	1	0	1	0	1
79		5	max	23.947	9	-0.102	26	0	26	0	26	0	26	0	26	0	26
80			min	-23.8	5	-0.122	2	0	1	0	1	0	1	0	1	0	1
81	M9	1	max	23.492	7	0.122	8	0	26	0	26	0	26	0	26	0	26
82			min	-23.115	3	0.102	19	0	1	0	1	0	1	0	1	0	1
83		2	max	23.432	7	0.061	8	0	26	0	26	0	26	0	26	0	26
84			min	-23.174	3	0.051	19	0	1	0	1	0	1	0	1	0	1
85		3	max	23.373	7	0	26	0	26	0	26	0	26	0	26	0	26
86			min	-23.233	3	0	1	0	1	0	1	0	1	0	1	0	1
87		4	max	23.314	7	-0.051	25	0	26	0	26	0	26	0	26	0	26
88			min	-23.292	3	-0.061	2	0	1	0	1	0	1	0	1	0	1
89		5	max	23.255	7	-0.102	25	0	26	0	26	0	26	0	26	0	26

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
90			min	-23.351	3	-0.122	2	0	1	0	1	0	1	0	1	0	1
91	M10	1	max	24.134	5	0.122	4	0	26	0	26	0	26	0	26	0	26
92			min	-23.613	9	0.102	25	0	1	0	1	0	1	0	1	0	1
93		2	max	24.075	5	0.061	4	0	26	0	26	0	26	0	26	0	26
94			min	-23.672	9	0.051	25	0	1	0	1	0	1	0	1	0	1
95		3	max	24.016	5	0	26	0	26	0	26	0	26	0	26	0	26
96			min	-23.731	9	0	1	0	1	0	1	0	1	0	1	0	1
97		4	max	23.957	5	-0.051	23	0	26	0	26	0	26	0	26	0	26
98			min	-23.79	9	-0.061	8	0	1	0	1	0	1	0	1	0	1
99		5	max	23.897	5	-0.102	23	0	26	0	26	0	26	0	26	0	26
100			min	-23.85	9	-0.122	8	0	1	0	1	0	1	0	1	0	1
101	M11	1	max	23.686	3	0.122	3	0	26	0	26	0	26	0	26	0	26
102			min	-22.921	7	0.102	24	0	1	0	1	0	1	0	1	0	1
103		2	max	23.626	3	0.061	3	0	26	0	26	0	26	0	26	0	26
104			min	-22.98	7	0.051	24	0	1	0	1	0	1	0	1	0	1
105		3	max	23.567	3	0	26	0	26	0	26	0	26	0	26	0	26
106			min	-23.039	7	0	1	0	1	0	1	0	1	0	1	0	1
107		4	max	23.508	3	-0.051	26	0	26	0	26	0	26	0	26	0	26
108			min	-23.098	7	-0.061	6	0	1	0	1	0	1	0	1	0	1
109		5	max	23.449	3	-0.102	26	0	26	0	26	0	26	0	26	0	26
110			min	-23.157	7	-0.122	6	0	1	0	1	0	1	0	1	0	1

Envelope Member Section Deflections - Service

No Data to Print...

Envelope Member Section Deflections - Strength

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
1	M1	1	max	-0.007	26	2.166	8	2.174	6	0.006	8	NC	26	NC	26
2			min	-0.401	10	-2.153	4	-2.144	2	-0.006	4	NC	1	NC	1
3		2	max	-0.007	26	1.912	8	1.918	6	0.006	8	NC	26	NC	26
4			min	-0.405	10	-1.903	4	-1.897	2	-0.006	4	4952.538	8	4682.424	6
5		3	max	-0.007	26	1.654	8	1.657	6	0.006	8	NC	26	NC	26
6			min	-0.409	10	-1.649	4	-1.646	2	-0.006	4	4303.036	8	4031.926	6
7		4	max	-0.007	26	1.393	8	1.394	6	0.006	8	NC	26	NC	26
8			min	-0.413	10	-1.393	4	-1.392	2	-0.006	4	4220.169	15	2778.256	25
9		5	max	-0.007	26	1.13	8	1.129	6	0.006	8	NC	26	NC	26
10			min	-0.417	10	-1.135	4	-1.137	2	-0.006	4	3123.447	15	2017.758	25
11	M2	1	max	-0.006	26	5.315	8	5.341	6	0.003	8	NC	26	NC	26

Envelope Member Section Deflections - Strength (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
12			min	-0.329	10	-5.247	4	-5.22	2	-0.003	4	NC	1	NC	1
13		2	max	-0.006	26	4.849	8	4.874	6	0.004	8	NC	23	NC	25
14			min	-0.347	10	-4.787	4	-4.762	2	-0.004	4	332.04	8	328.901	6
15		3	max	-0.006	26	4.146	8	4.167	6	0.005	8	NC	23	NC	25
16			min	-0.365	10	-4.096	4	-4.074	2	-0.005	4	263.332	8	260.607	6
17		4	max	-0.007	26	3.233	8	3.249	6	0.005	8	NC	23	NC	25
18			min	-0.383	10	-3.201	4	-3.185	2	-0.005	4	381.194	8	376.767	6
19		5	max	-0.007	26	2.166	8	2.174	6	0.006	8	NC	26	NC	26
20			min	-0.401	10	-2.153	4	-2.144	2	-0.006	4	NC	1	8204.895	8
21	M3	1	max	-0.004	26	5.521	8	5.544	6	0.002	8	NC	26	NC	26
22			min	-0.262	10	-5.457	4	-5.433	2	-0.002	4	NC	1	NC	1
23		2	max	-0.005	26	5.67	8	5.695	6	0.002	8	NC	23	NC	25
24			min	-0.279	10	-5.603	4	-5.578	2	-0.002	4	498.209	8	496.105	6
25		3	max	-0.005	26	5.687	8	5.713	6	0.003	8	NC	23	NC	25
26			min	-0.296	10	-5.617	4	-5.591	2	-0.003	4	372.521	8	370.85	6
27		4	max	-0.005	26	5.568	8	5.594	6	0.003	8	NC	23	NC	25
28			min	-0.313	10	-5.498	4	-5.471	2	-0.003	4	497.565	8	495.193	6
29		5	max	-0.006	26	5.315	8	5.341	6	0.003	8	NC	26	NC	26
30			min	-0.329	10	-5.247	4	-5.22	2	-0.003	4	NC	1	NC	1
31	M4	1	max	-0.003	26	4.135	8	4.15	6	0.001	8	NC	26	NC	26
32			min	-0.196	10	-4.093	4	-4.077	2	-0.001	4	NC	1	NC	1
33		2	max	-0.004	26	4.569	8	4.586	6	0.001	8	NC	23	NC	25
34			min	-0.213	10	-4.521	4	-4.503	2	-0.001	4	1132.111	8	1130.73	6
35		3	max	-0.004	26	4.951	8	4.971	6	0.002	8	NC	23	NC	25
36			min	-0.229	10	-4.898	4	-4.878	2	-0.002	4	802.141	8	800.923	6
37		4	max	-0.004	26	5.271	8	5.293	6	0.002	8	NC	23	NC	25
38			min	-0.246	10	-5.212	4	-5.19	2	-0.002	4	1019.811	8	1017.979	6
39		5	max	-0.004	26	5.521	8	5.544	6	0.002	8	NC	26	NC	26
40			min	-0.262	10	-5.457	4	-5.433	2	-0.002	4	NC	1	NC	1
41	M5	1	max	-0.002	26	2.308	8	2.316	6	0.001	8	NC	26	NC	26
42			min	-0.133	10	-2.287	4	-2.279	2	-0.001	4	NC	1	NC	1
43		2	max	-0.002	26	2.764	8	2.773	6	0.001	8	NC	26	NC	26
44			min	-0.149	10	-2.738	4	-2.729	2	-0.001	4	NC	1	NC	1
45		3	max	-0.003	26	3.228	8	3.239	6	0.001	8	NC	26	NC	26
46			min	-0.164	10	-3.197	4	-3.186	2	-0.001	4	7324.954	2	5702.418	4
47		4	max	-0.003	26	3.688	8	3.702	6	0.001	8	NC	26	NC	26
48			min	-0.18	10	-3.652	4	-3.638	2	-0.001	4	4729.89	2	3682.426	4
49		5	max	-0.003	26	4.135	8	4.15	6	0.001	8	NC	26	NC	26
50			min	-0.196	10	-4.093	4	-4.077	2	-0.001	4	3462.967	2	2696.265	4

Envelope Member Section Deflections - Strength (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
51	M6	1	max	-0.001	26	0.798	8	0.8	6	0	8	NC	26	NC	26
52			min	-0.072	10	-0.791	4	-0.789	2	0	4	NC	1	NC	1
53		2	max	-0.001	26	1.121	8	1.124	6	0	8	NC	23	NC	25
54			min	-0.087	10	-1.111	4	-1.108	2	0	4	282.393	8	281.496	6
55		3	max	-0.002	26	1.487	8	1.492	6	0	8	NC	23	NC	25
56			min	-0.102	10	-1.474	4	-1.47	2	0	4	132.305	8	131.875	6
57		4	max	-0.002	26	1.886	8	1.892	6	0.001	8	NC	23	NC	25
58			min	-0.118	10	-1.869	4	-1.863	2	-0.001	4	83.793	8	83.514	6
59		5	max	-0.002	26	2.308	8	2.316	6	0.001	8	NC	23	NC	25
60			min	-0.133	10	-2.287	4	-2.279	2	-0.001	4	60.385	8	60.179	6
61	M7	1	max	0	26	0	26	0	26	0	26	NC	26	NC	26
62			min	0	1	0	1	0	1	0	1	NC	1	NC	1
63		2	max	0	26	0.06	8	0.06	6	0	8	NC	23	NC	25
64			min	-0.018	10	-0.06	4	-0.06	2	0	4	1793.311	8	1788.461	6
65		3	max	-0.001	26	0.225	8	0.225	6	0	8	NC	23	NC	25
66			min	-0.036	10	-0.223	4	-0.222	2	0	4	480.643	8	479.302	6
67		4	max	-0.001	26	0.476	8	0.477	6	0	8	NC	23	NC	25
68			min	-0.054	10	-0.472	4	-0.471	2	0	4	226.897	8	226.247	6
69		5	max	-0.001	26	0.798	8	0.8	6	0	8	NC	23	NC	25
70			min	-0.072	10	-0.791	4	-0.789	2	0	4	135.357	8	134.959	6
71	M8	1	max	0	26	0	26	0	26	0.028	3	NC	26	NC	26
72			min	0	1	0	1	0	1	-0.029	7	NC	1	NC	1
73		2	max	0.204	5	-7388.498	26	0.279	7	0.028	3	1	26	NC	26
74			min	-0.207	9	-8866.46	5	-0.281	3	-0.029	7	1	1	NC	1
75		3	max	0.408	5	-10369.79	26	0.557	7	0.028	3	1	26	NC	26
76			min	-0.415	9	-12444.275	5	-0.562	3	-0.029	7	1	1	NC	1
77		4	max	0.612	5	-7388.393	26	0.836	7	0.028	3	1	26	NC	26
78			min	-0.622	9	-8866.862	5	-0.843	3	-0.029	7	1	1	NC	1
79		5	max	0.816	5	0.793	9	1.114	7	0.028	3	NC	26	NC	26
80			min	-0.83	9	-0.803	5	-1.124	3	-0.029	7	NC	1	NC	1
81	M9	1	max	0	26	0	26	0	26	0.035	9	NC	26	NC	26
82			min	0	1	0	1	0	1	-0.036	5	NC	1	NC	1
83		2	max	0.2	3	-7388.5	24	0.286	5	0.035	9	1	26	NC	26
84			min	-0.201	7	-8866.457	3	-0.287	9	-0.036	5	1	1	NC	1
85		3	max	0.4	3	-10369.794	24	0.573	5	0.035	9	1	26	NC	26
86			min	-0.403	7	-12444.267	3	-0.574	9	-0.036	5	1	1	NC	1
87		4	max	0.601	3	-7388.4	24	0.859	5	0.035	9	1	26	NC	26
88			min	-0.604	7	-8866.851	3	-0.861	9	-0.036	5	1	1	NC	1
89		5	max	0.801	3	0.77	7	1.145	5	0.035	9	NC	26	NC	26

Envelope Member Section Deflections - Strength (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
90			min	-0.806	7	-0.788	3	-1.148	9	-0.036	5	NC	1	NC	1
91	M10	1	max	0	26	0	26	0	26	0.034	7	NC	26	NC	26
92			min	0	1	0	1	0	1	-0.032	3	NC	1	NC	1
93		2	max	0.205	9	-7388.498	22	0.281	3	0.034	7	1	26	NC	26
94			min	-0.207	5	-8866.461	9	-0.279	7	-0.032	3	1	1	NC	1
95		3	max	0.409	9	-10369.791	22	0.562	3	0.034	7	1	26	NC	26
96			min	-0.414	5	-12444.275	9	-0.557	7	-0.032	3	1	1	NC	1
97		4	max	0.614	9	-7388.394	22	0.843	3	0.034	7	1	26	NC	26
98			min	-0.621	5	-8866.863	9	-0.836	7	-0.032	3	1	1	NC	1
99		5	max	0.818	9	0.791	5	1.124	3	0.034	7	NC	26	NC	26
100			min	-0.828	5	-0.805	9	-1.114	7	-0.032	3	NC	1	NC	1
101	M11	1	max	0	26	0	26	0	26	0.028	5	NC	26	NC	26
102			min	0	1	0	1	0	1	-0.027	9	NC	1	NC	1
103		2	max	0.199	7	-7388.498	20	0.287	9	0.028	5	1	26	NC	26
104			min	-0.203	3	-8866.455	7	-0.286	5	-0.027	9	1	1	NC	1
105		3	max	0.397	7	-10369.792	20	0.574	9	0.028	5	1	26	NC	26
106			min	-0.406	3	-12444.264	7	-0.573	5	-0.027	9	1	1	NC	1
107		4	max	0.596	7	-7388.396	20	0.861	9	0.028	5	1	26	NC	26
108			min	-0.609	3	-8866.846	7	-0.859	5	-0.027	9	1	1	NC	1
109		5	max	0.794	7	0.776	3	1.148	9	0.028	5	NC	26	NC	26
110			min	-0.812	3	-0.782	7	-1.145	5	-0.027	9	NC	1	NC	1

Envelope Beam Deflections

No Data to Print...

Envelope Beam Deflection Checks

No Data to Print...

Envelope AA ADM1-15: ASD - BUILDING Member Aluminum Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/Om[k]	Pnt/Om[k]	Mny/Om[k-ft]	Mnz/Om[k-ft]	Vny/Om[k]	Vnz/Om[k]	Cb	Eqn
1	M3	RT6X6X0.250	0.96	4.349	5	0.037	0	y	8	45.303	55.758	6.938	6.938	15.273	15.273	1	H.1-1
2	M7	RT10X10A	0.634	0	5	0.026	0	y	8	148.736	190	39.301	39.301	56.923	56.923	1	H.1-1
3	M2	RT5X5A	0.492	0	5	0.04	8.9	y	4	100.758	92.564	12.665	12.665	26.154	26.154	1	H.1-1
4	M6	RT9X9A	0.321	0	5	0.023	0	y	8	149.185	170.513	35.282	35.282	50.769	50.769	1	H.1-1
5	M4	RT7X7A	0.255	8.25	5	0.02	0	y	8	132.977	131.538	24.076	24.076	38.462	38.462	1	H.1-1
6	M1	RT4.5X4.5A	0.19	0	5	0.05	2	y	4	90.152	82.821	10.086	10.086	23.077	23.077	1	H.1-1
7	M5	RT8X8X0.250	0.102	7.9	3	0.022	0	y	8	143.647	151.026	30.004	30.004	44.615	44.615	1	H.1-1

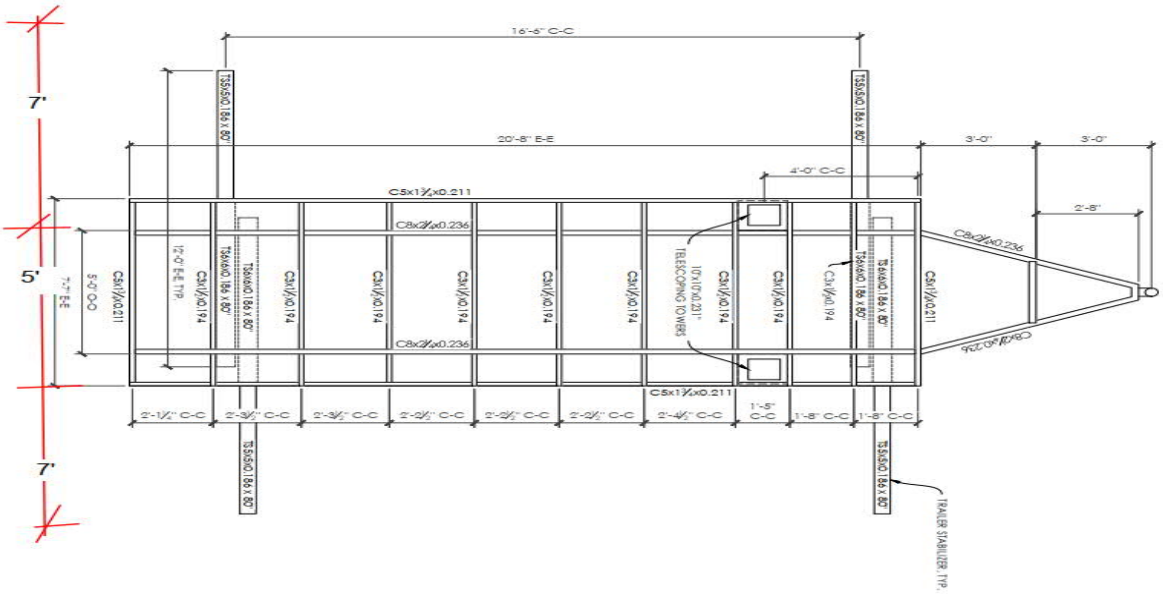
23 Mauchly, #110 Irvine, CA 92618	Project Name: MT Fair COW	Prepared by: DVH	Checked by: JVC
	Project Description: COW SA	Date: 5/2/2024	

Load Analysis

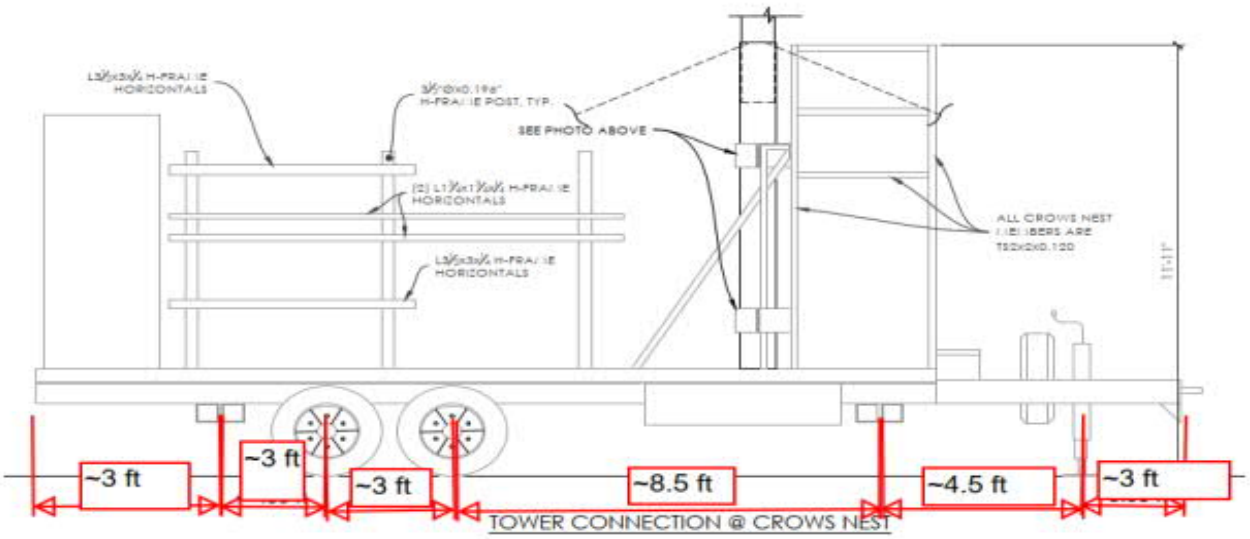
Code Reference

TIA-222H, IBC 2021

Trailer Approx. Dimemsion:



Plan View



Elevation View

23 Mauchly, #110 Irvine, CA 92618	Project Name: MT Fair COW	Prepared by: DVH	Checked by: JVC
	Project Description: Rooftop SA	Date: 5/2/2024	

Load Analysis

Vertical and Lateral Load on Trailer:

Snow Load 30 psf

Equipment	Wind Load (lbs)		Overturn Moment (#-ft)		Vertical Load (lbs)	EQ Center Load (ft)
	Normal	Trans	Normal	Trans.		
72x30 Hydraulic Box	190	452	1900	4520	500	10
73x30 Generator	236	573	1770	4297.5	800	7.5
Clean Up Kit	268	268	1608	1608	100	6
AC Panel	151	302	1132.5	2265	200	7.5
Transfer Switch	151	302	906	1812	200	6
EQ Cabinet	568	620	4260	4650	1500	7.5
(3) Ericsson 8843	129	111	1290	1110	225	10
(3) Ericsson 4449	135	87	1350	870	168	10
(2) Pneumatic	2550	2550	40160	40160	7050	3
Total	4378	5265	54376.5	61292.5	10743	

W_{SNOW} = 30psf x 20'-8" x 7'-7" = 4720 lbs

$W_{Trailer\ Frame}$ = 6000 lbs

Check Trailer Load:

Gross Vehicle Weight Rating (GVWR): 18000 lbs

Total Load: 10743 + 4720 = 15463 lbs

F.O.S = 18000 / 15463 = 1.16 > 1.0 OK

Check Overturning:

M_{RESIST} = (8893+6000)x(7+5/2) = 146898 lbs-ft

M_{OT} = 61293 lbs-ft

F.O.S = 134037 / 26803 = 2.39 > 1.5 OK

Note:

All load and rating being considered in the analysis is assumed for the purposes of this structural analysis only

Design Criteria

Type	Requirements
Multifamily and Commercial	Design per IBC 2021
One and Two Family Dwellings	Design per IRC 2021
Seismic Zone	Residential: "A" Multi-Family and Commercial: use Code Central Seismic Design Parameters version 3.10
Wind Load - Exposure "C" (3-second gust in miles per hour)	Risk Category I: 100 MPH Risk Category II: 110 MPH Risk Category III: 115 MPH Risk Category IV: 120 MPH Residential: 110 MPH
Foundation Depth	42 in. frost depth
Roof Snow Load	Minimum design roof snow load after allowed reductions shall be 30 psf (i.e. Pf = 30 psf) For drift / unbalanced loading: Pg = 33

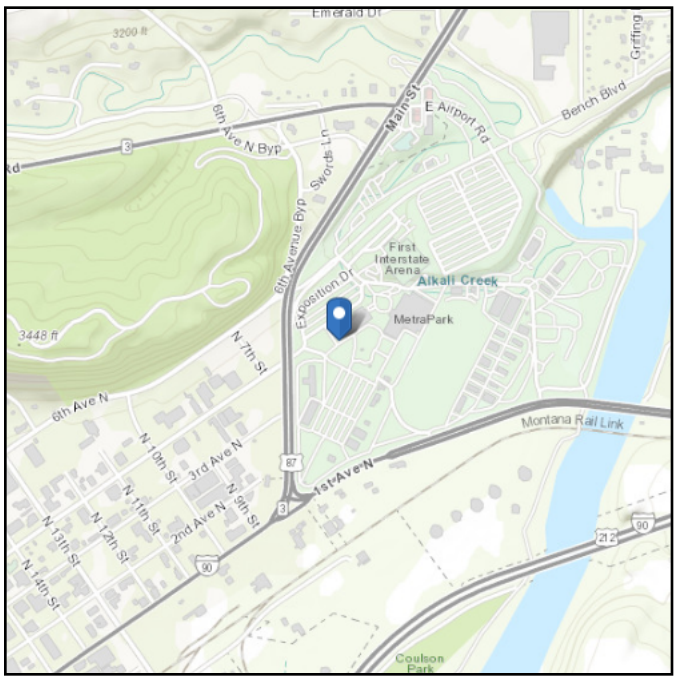
International Energy Conservation Code 2021 (IECC)

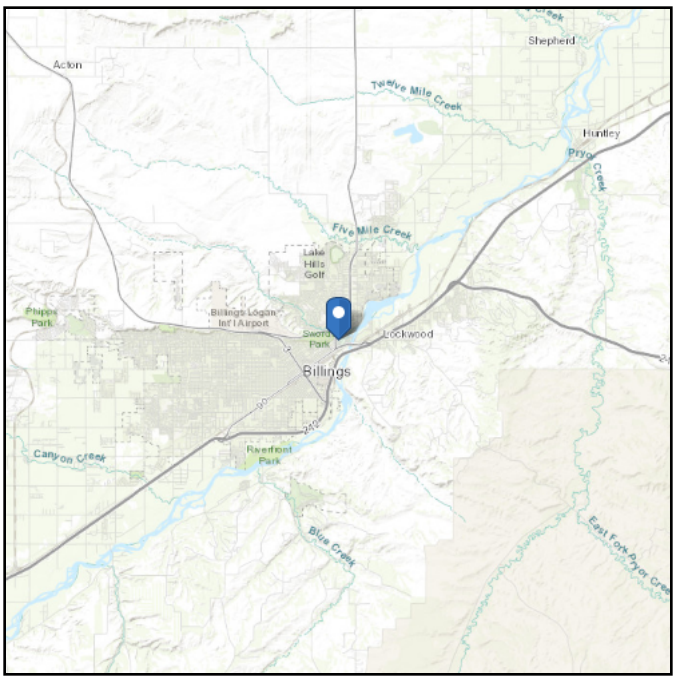
Structure	Default Values
Ceilings	R - 49
Walls	R-21 or R-20 + R-5ci or R-13 + R-10ci or R-15ci
Floor over unheated space	R - 30
Crawl Space walls	R - 15 - Continuous
	R - 19 - Framed
Basement walls	R - 15 - Continuous
	R - 19 - Framed
Windows	U - 0.30

ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	45.798081
Risk Category:	II	**Longitude:**	-108.479583
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	3108.3578068132474 ft (NAVD 88)





Wind

Results:

Wind Speed	109 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	88 Vmph
100-year MRI	94 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Tue Apr 09 2024

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

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

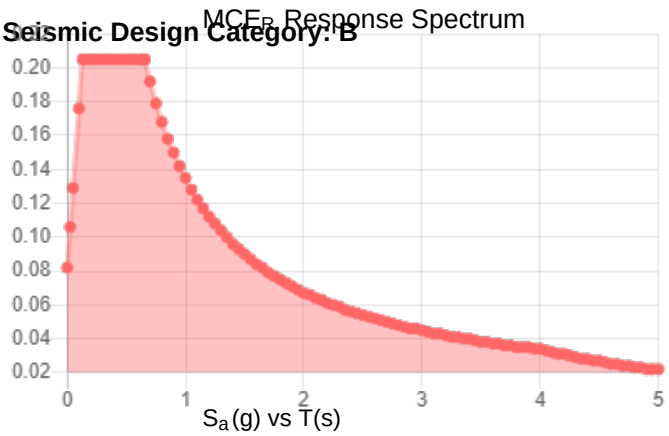
Seismic

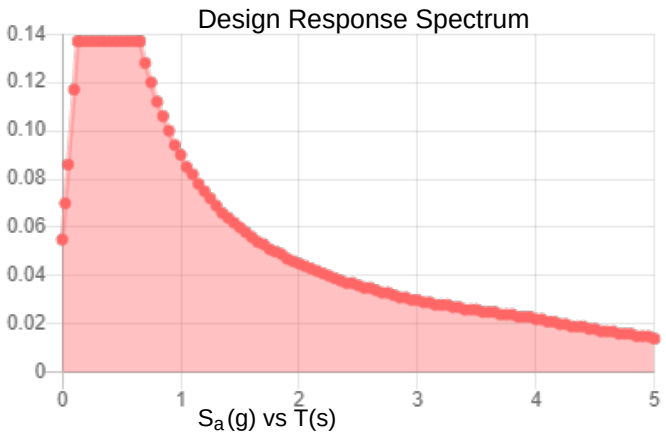
Site Soil Class: D - Default (see Section 11.4.3)

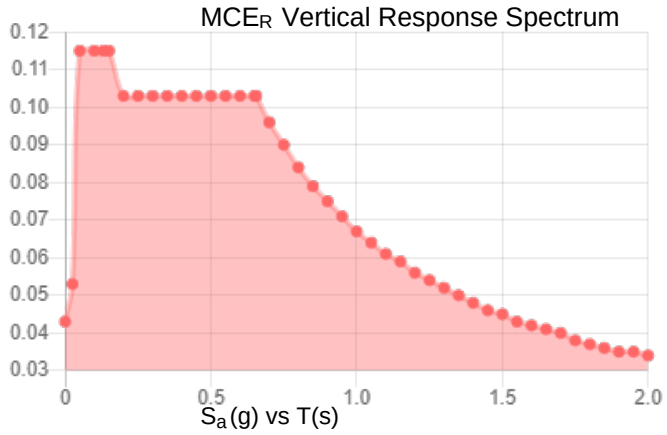
Results:

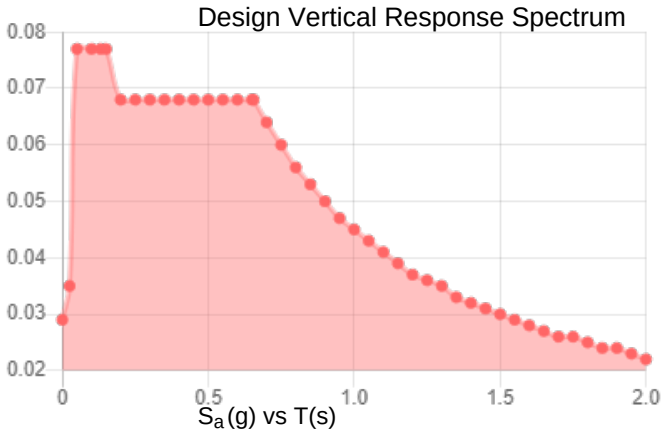
S_S :	0.128	S_{D1} :	0.09
S_1 :	0.056	T_L :	4
F_a :	1.6	PGA :	0.062
F_v :	2.4	PGA_M :	0.099
S_{MS} :	0.205	F_{PGA} :	1.6
S_{M1} :	0.135	I_e :	1
S_{DS} :	0.137	C_v :	0.7

Seismic Design Category: B









Data Accessed: **Tue Apr 09 2024**

Date Source:

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

Ice

Results:

Ice Thickness:	0.50 in.
Concurrent Temperature:	-5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Apr 09 2024

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

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

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

Snow

Results:

Mapped Elevation:

Data Source:

Date Accessed: Tue Apr 09 2024

In "Case Study" areas, site-specific case studies are required to establish ground snow loads. Extreme local variations in ground snow loads in these areas preclude mapping at this scale.

Ground snow load determination for such sites shall be based on an extreme value statistical analysis of data available in the vicinity of the site using a value with a 2 percent annual probability of being exceeded (50-year mean recurrence interval).

Statutory requirements of the Authority Having Jurisdiction are not included. Site is outside ASCE/SEI 7-16, Table 7.2-4 boundaries. For ground snow loads in this area, see Theisen, G. P., Keller, M. J., Stephens, J. E., Videon, F. F., and Schilke, J. P. (2004). Snow Loads for Structural Design in Montana, Dept. of Civil Engineering, Montana State Univ., Bozeman, MT.

Snow load values are mapped to a 0.5 mile resolution. This resolution can create a mismatch between the mapped elevation and the site-specific elevation in topographically complex areas. Engineers should consult the local authority having jurisdiction in locations where the reported ‘elevation’ and ‘mapped elevation’ differ significantly from each other.

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

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B.O.C.C Thursday Discussion 2.

Meeting Date: 05/16/2024

Title: Selling of Public Parkland

Submitted By: Monica Plecker

TOPIC:

Public Works - Selling of Public Parkland - Charles Russell Park

BACKGROUND:

Craig Debuff who owns property near Charles Russell Park and would like to purchase the property from the county. The park is part of the Frontier Subdivision which was platted in 1954. Charles Russell Park is shown on the plat and is 3.446 acres. Craig Debuff owns two parcels immediately to the west and two parcels immediately to the east. There is unconstructed right of way along 3 of Craig's parcels and Charles Russell Park. There is no driving access to the park at this time, but if people wished to access the park they could walk within the right of way to access it. The Parkland is undeveloped, and is rocky ground with several confierous trees.

Yellowstone County does not have a past practice of selling public parkland. MCA 7-16-2324 does provide enabling language for local governments to sell, lease or exchange dedicated park lands. In order to sell the property, the following would have to occur:

- Compile an inventory of all public parks and playgrounds within the county;
- Prepare a comprehensive plan for the provision of outdoor recreation and open space comprehensive plan;
- Determine the proposed sale is consistent with the comprehensive plan referenced above;
- Publish notice of the intention to sell and hold a public hearing

There are additional statutes which would apply to the sale process that address appraisal, hearings, resolutions of approval, etc. (MCA 7-8-2513, MCA 7-8-2521)

The Park Board met on May 8, 2024 to discuss this item. They have recommended the county move forward with the process to sell this land.

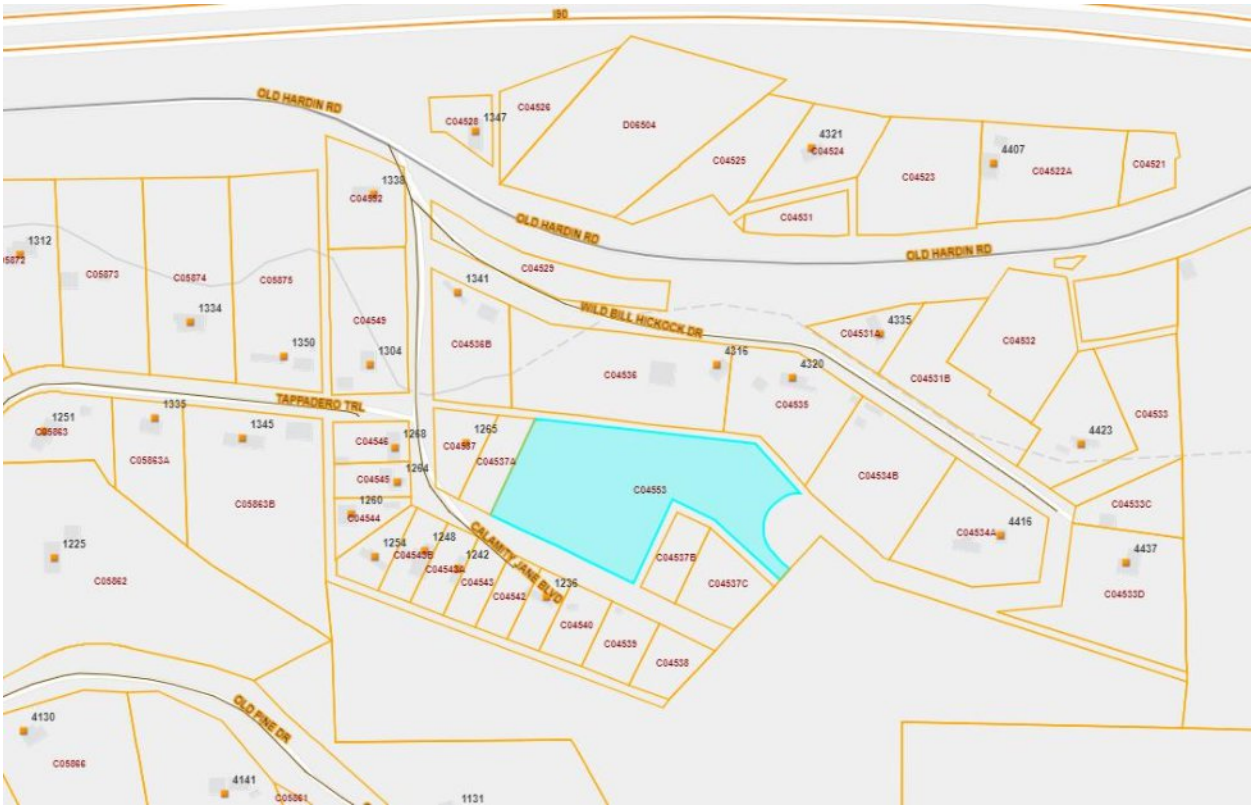
RECOMMENDED ACTION:

Provide guidance on whether staff should pursue selling public parkland, specifically Charles Russell Park. The Park Board met on May 8, 2024 and reviewed the request. They recommend the BOCC proceed.

Attachments

Parcel Map, Aerial, Plat

Craig DeBuff Email Chain


I90
OLD HARDIN RD
OLD HARDIN RD
OLD HARDIN RD
WILD BILL HICKOCK DR
TAPPADERO TRL
CALAMITY JANE BLVD
OLD PINE DR
C04526
1347
C04526
D06504
C04525
4321
C04524
4407
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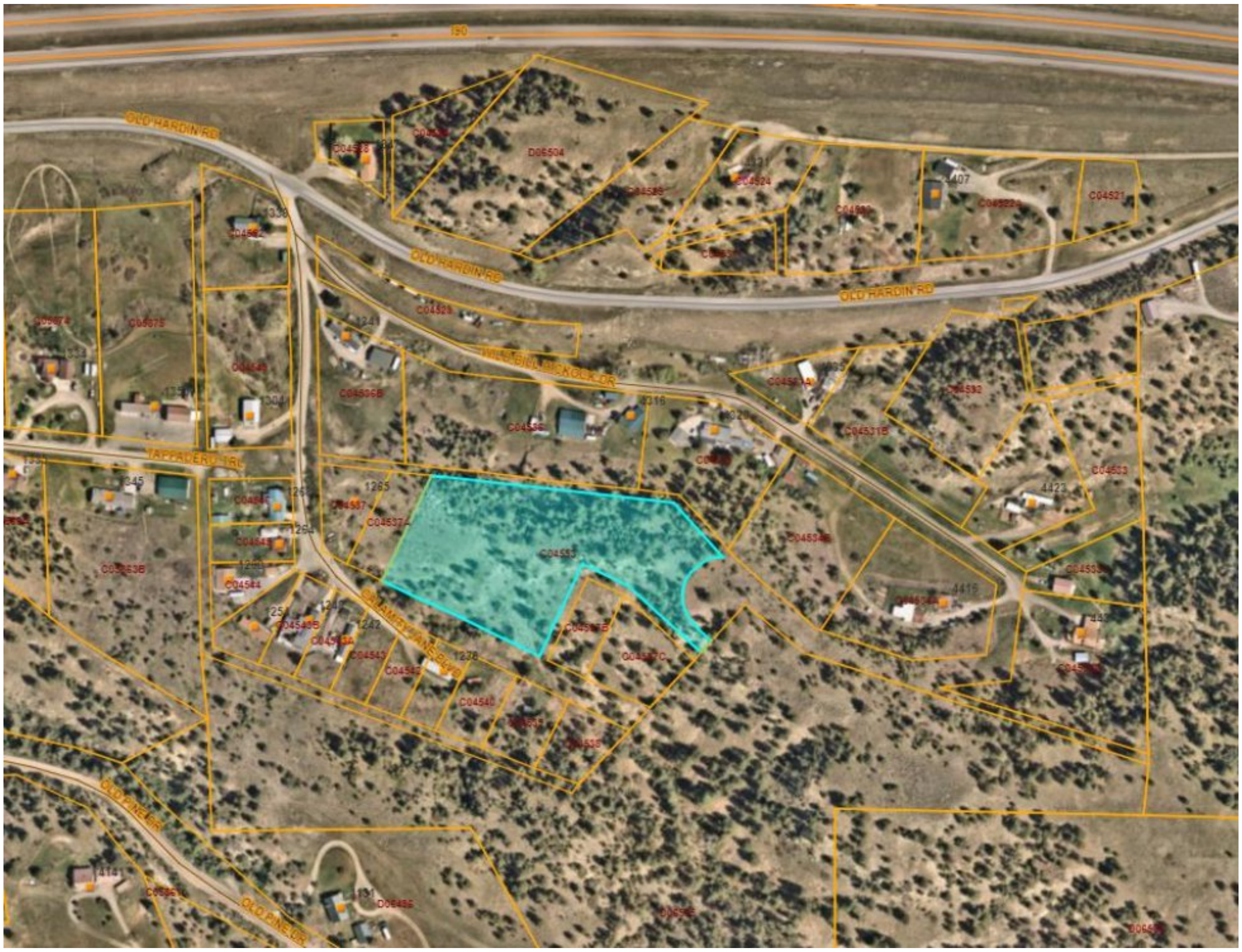

I90
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OLD HARDIN RD
OLD HARDIN RD
D06504
C04521
TAPPADERO TRL
C04544
C04540

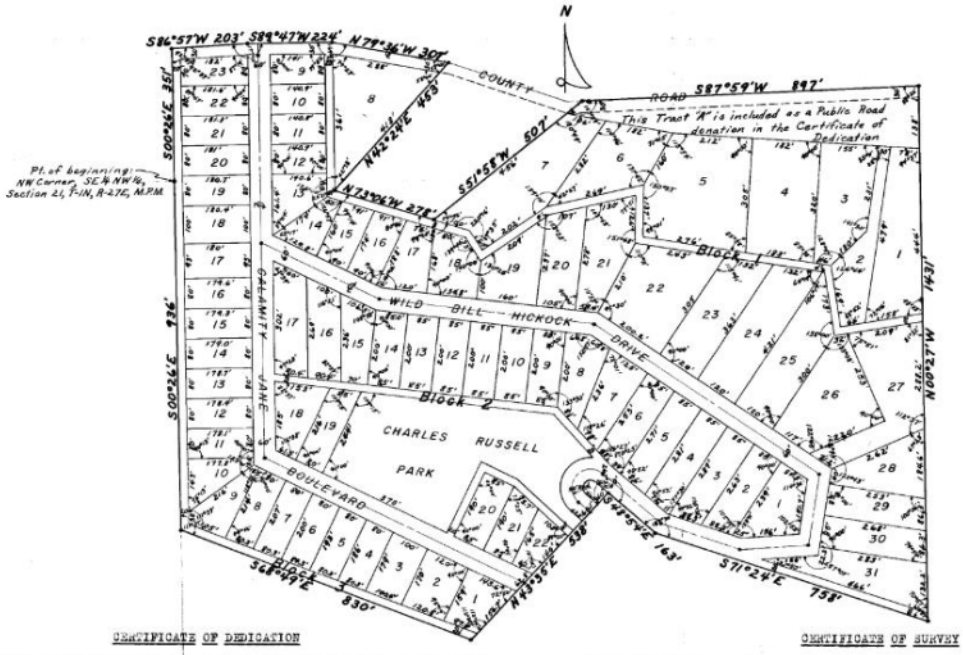
FIRST FILING OF

FRONTIER SUBDIVISION

LOCATED IN SECTION 21, T-IN, R-27E, M.P.M.

For: Wesley Gauger & Frances I. Gauger Scale: 1"=200'

By: James R. O'Brien, 613-S March, 1954



CERTIFICATE OF DEDICATION

CERTIFICATE OF SURVEY

Monica Plecker

From: James Matteson
Sent: Thursday, April 25, 2024 3:47 PM
To: Monica Plecker
Cc: Tim Miller
Subject: FW: Charles Russell Park
Attachments: Parks-Charles Russell Park - Craig DeBuff.pdf

Monica,
I received an email from Craig DeBuff pertaining to his desire to purchasing the land that is dedicated as Charles Russell Park in Lockwood. Attached, is the email stream beginning in October 2023 when the idea of selling unused parkland was being considered. There have been conversations with the Commissioners, Tim Miller, Jeff Martin and Steve Williams in the County Attorneys office.

I informed Mr. DeBuff that park authorities are now with Public Works and that you are the contact for park matters.

James

From: Craig DeBuff <crdebuff@yahoo.com>
Sent: Thursday, April 25, 2024 9:28 AM
To: James Matteson <jmatteson@yellowstonecountymt.gov>
Subject: Re: Charles Russell Park

Hi James,

I wanted to follow up on the purchase of Charles Russell Park [Tax Code: C04553] within Yellowstone County. I have read the MCA regarding this transfer, and I would like to offer the county $20,000.00 (twenty thousand dollars) for the parcel. The acceptance of this offer would circumnavigate any appraisals and/or board meetings

Again, this property is basically inaccessible to the public, very sloped within a drainage, and has not been utilized privately or publicly for many decades. By allowing me to purchase the parcel of land known as "Charles Russell Park", I could gain access to my 2 lots on the east side; I also own the 2 lots on the west side of the park. By accepting this offer, the county would increase their revenue through additional property taxation.

Please let me know at your earliest convenience.

Regards,

Craig

On Friday, October 27, 2023 at 01:17:15 PM MDT, James Matteson <jmatteson@yellowstonecountymt.gov> wrote:

Craig,

I spoke to the Yellowstone County Clerk & Recorder, Jeff Martin about the sale of County property. We first must have an appraisal and a public hearing. Jeff will work with me to follow MCA to progress this. I will advise as there is progress.

James

7-8-2513. Appraisal of land required -- exception -- challenge -- restrictions. (1) The county commissioners shall, before they sell, exchange, or lease lands with an estimated value of more than $20,000 under the provisions of this part, have the lands appraised by a disinterested certified general real estate appraiser to determine the value of the lands for the purpose of the sale, exchange, or lease.

(2) For the purposes of this section, a renewal of the lease is considered an initial lease if the renewal is for a term exceeding 5 years.

(3) The board of county commissioners may lease mineral interests in land, whether the interests are severed or not, without an appraisal as required by subsection (1).

(4) A taxpayer who believes that the appraised value under this section is less than the actual value of the property may challenge the appraised value. The procedure provided in **7-8-2215** must be followed when a challenge of the appraised value of real property under this part is filed.

(5) Except as otherwise provided by law, the board of county commissioners may not under the provisions of this part sell, exchange, or lease lands appraised pursuant to subsection (1) for less than the appraised value.

(6) This section does not apply to land acquired by tax deed that failed to sell for appraised value as provided in **7-8-2301**(5)(b).

7-8-2521. Authorization to sell real property -- resolution required -- contents of resolution -- hearing required. (1) The board shall, after holding a public hearing noticed as provided in **7-1-2121**, adopt a resolution providing for sale and disposition of county real property. The resolution must include:

(a) approved locations for sales, including whether sales may be conducted by use of an internet website or other online location;

(b) a requirement that all sale locations be accessible to the public;

(c) types of sales for which public auction is required;

(d) who may conduct a sale or auction;

(e) procedures for issuing permits, leases, or licenses, including:

(i) the terms, conditions, and processes for issuance of permits, leases, and licenses;

(ii) authorization to enter into agreements with entities to which permits, leases, or licenses may be issued;

(iii) a prohibition on a lease being made for an amount less than the amount that would have been collected if taxes on the real property had been levied; and

(iv) the process for authorizing a lessee to place improvements on the property;

(f) how sales will be noticed if the board intends to provide notice in addition to notice by publication as required in **7-1-2121**;

(g) how property retained by the county will be administered and maintained; and

(h) any other provision that the board considers to be necessary for the disposition of property in a manner that is in the best interests of the county and its citizens.

(2) In adopting the resolution, consideration must be given to multiple-use management.

(3) Provisions in the resolution regarding exchanges or donations of real property must be in compliance with **7-8-2522**.

From: Craig DeBuff <crdebuff@yahoo.com>
Sent: Wednesday, October 25, 2023 12:29 PM
To: James Matteson <jmatteson@yellowstonecountymt.gov>
Subject: Charles Russell Park

Hi James,

It was nice to meet you this past Monday, and I enjoyed our conversation regarding Charles Russell Park within Frontier Subdivision. As you know, the subdivision road (Calamity Jane Blvd) was not built as designed and I have no physical access to my lots on the east side of this park. In lieu of not having access to my lots at the end of Calamity Jane Blvd, I would like to purchase the land, known as Charles Russell Park, from Yellowstone County for the amount of **$25,000.00** dollars.

Legal Description:	FRONTIER SUBD 1ST FILING, S21, T01 N, R27 E, CHARLES RUSSELL PARK 21-1N-27E

This land is basically inaccessible by the public and has not been used for probably 70 years or more. Also, the land is very sloped and within a drainage. By allowing me to purchase the land known as "Charles Russell Park", I could gain access to my lots on the east side. By accepting this offer, the county would increase their revenue through additional property taxation.

Please let me know your decision on this offer at your earliest convenience.

Kind regards,

Craig