



**VILLAGE OF JACKSON
BOARD OF PUBLIC WORKS MEETING
AMENDED AGENDA**

Tuesday, April 30, 2024 at 6:00 PM

Jackson Municipal Complex
Village Board Room
N168W19851 Main Street
Jackson, WI 53037

1. Call to Order and Roll Call
2. Approval of Minutes for the Board of Public Works Meeting of March 26, 2024
3. Review of Water Tower Site #2 for Verizon Monopole Installation
4. Review of 2024 Front End Loader Purchase for Village Street Department
5. Pay Request #1 - Water Wastewater Treatment Plant Tertiary Filters & Disinfection Project
- JH Hassinger, in the Amount of \$85,500.00
6. Pay Request #2 - Water Wastewater Treatment Plant Tertiary Filters & Disinfection Project
- JH Hassinger, in the Amount of \$9,975.00
7. Resolution #24-08 - Approving the Village of Jackson Adjusted Urban Area Boundary
8. Director of Public Works Report
9. Citizens/Village Staff to address the Board of Public Works
10. Adjourn

Persons with disabilities requiring special accommodations for attendance at the meeting should contact the Administration Department at the Jackson Municipal Complex at least one (1) business day prior to the meeting.

It is possible that members of the Village Board may attend the above meeting. No action will be taken by any governmental body at this meeting other than the governmental body specifically referred to in this meeting notice. This notice is given so that members of the Village Board may attend the meeting without violating the open meeting law.

MINUTES
BOARD OF PUBLIC WORKS MEETING
Tuesday, March 26, 2024 at 6:00 PM
Board of Public Works Meeting

1. Call to Order and Roll Call

The meeting was called to order at 6:00 PM by Pres. Heckendorf.

Members Present: Pres. Heckendorf, Tr. Engelhardt, Tr. Matter, Jeff Mitchell, and Chris Sberna.

Members Excused: Stephanie Egner

Members Absent: Ethan Hollenberger

Staff Present: Administrator Jen Keller, Public Works Director Brian Kober, and Clerk Anastasia Gonstead.

Trustees Present in Audience: None

2. Approval of Minutes for the Board of Public Works Meeting of February 27, 2024

The motion to approve the minutes for the Board of Public Works meeting of February 27, 2024 was made by Tr. Matter and seconded by Tr. Engelhardt.

Vote: 5 ayes, 0 nays. Motion carried.

3. Discussion - 2305 Brookside Drive Groundwater Issue - Jennifer Boettcher

Director Kober provided background on the work at 2320 Brookside Drive, for the repair of a broken sanitary sewer lateral. Jennifer Boettcher, of 2305 Brookside Drive, spoke as to what she and her neighbors have noticed on their lots since the work was provided in their area pertaining to water and their sump pumps running more frequently since said work was completed. Ms. Boettcher expressed concerns that these sump pumps were put in place over 20 years ago and are not equipped to deal with the water table change since the work. She is hoping the Village will help with the costs to have a plumber come in to help with the professional changes that need to take place now. Mr. Boettcher also spoke on additional changes that may have to be made, including drainage and landscaping.

Open discussion with the body ensued. Pres. Heckendorf indicated it is unfortunate that the leak was undetected for as long as it was, and explained why the Village needed to get it fixed. C. Sberna had questions on the televising that was done in this area. Director Kober provided information. Tr. Engelhardt inquired if anything had changed in the area that would additionally change the water table. Director Kober indicated it would be speculation, as there are not monitoring wells in that area. Pres. Heckendorf asked for clarification if this is groundwater, Director Kober confirmed that the water is groundwater. Pres. Heckendorf asked for clarification on the mechanics of changing the sump pump, Director Kober provided. Tr. Matter asked questions on what facilitated the work and the need to fix the matter, Director Kober provided. Director Kober also expanded upon the requirements of any homeowners in the Village of Jackson. Tr. Matter asked if there is any sort of analysis

or specialist we can get in for further information. Director Kober said we do not have any data right now, but the Village could pursue a study. C. Sberna expanded upon multiple endeavours the Village undertook due to these leaking issues and their stress on the wastewater treatment plant. Director Kober also provided an example of a subdivision in the Village that has created and maintains a well to keep the groundwater level down. Tr. Matter asked for what kind of specialists a homeowner or subdivision could bring in for options. Director Kober offered a suggestion of a hydrologist or an engineering firm that specializes in this information. Pres. Heckendorf expressed he agrees this is likely a groundwater issue, which is not the liability of the Village but a homeowner's responsibility to handle. The Boettchers expressed their frustration with that stance and their belief there is some culpability from the Village along the way.

This matter was for discussion, no formal action taken.

4. Review of Glen Brooke Drive Speed Study Results

Director Kober provided a summation of the information provided in the agenda packet pertaining to this matter. Further explaining the results show that there is nothing excessive in so far as speeding and will be part of the Jackson Police Department's continued enforcement of the area.

No formal action needed/taken.

5. 2024 Wastewater Treatment Plant Project - Clean Water Fund Loan Request #1, in the Amount of \$323,933.23

Director Kober provided a timeline of upcoming steps in this project.

The motion to recommend to the Budget and Finance Committee and to the Village Board to approve 2024 Wastewater Treatment Plant Project, Clean Water Fund Loan Request #1, in the amount of \$323,933.23, was made by Pres. Heckendorf and seconded by Tr. Engelhardt.

Vote: 5 ayes, 0 nays. Motion carried.

6. Pay Request #6 - Oaks of Jackson - D.F. Tomasini, in the Amount of \$32,341.03

Director Kober provided information pertaining to the status of this project as well as discussing top soil plans.

The motion to recommend to the Budget and Finance Committee and to the Village Board to approve pay request #6, for the Oaks of Jackson, to D.F. Tomasini, in the amount of \$32,341.03, was made by C. Sberna and seconded by J. Mitchell.

Vote: 5 ayes, 0 nays. Motion carried.

7. Pay Request #5 - 2023 Utility & Street Improvements - Vinton Construction, in the Amount of \$44,397.66

Director Kober provided a status update on this project and why they have decided to not yet close out the project, but reducing the retainage.

The motion to recommend to the Budget and Finance Committee and to the Village Board to approve pay request #5 for 2023 utility and street improvements, to Vinton Construction, in the amount of \$44,397.66, was made by Tr. Engelhardt and seconded by C. Sberna.

Vote: 5 ayes, 0 nays. Motion carried.

8. Pay Request #8, Final - STH 60 Utility Upgrades - Advanced Construction, in the Amount of \$10,000.00

Director Kober provided an overview of the status of the closing of the project.

The motion to recommend to the Budget and Finance Committee and to the Village Board to approve pay request #8, final, for the State Hwy 60 utilities upgrades, to Advanced Construction, in the amount of \$10,000.00, was made by Pres. Heckendorf and seconded by J. Mitchell.

Vote: 5 ayes, 0 nays. Motion carried.

9. Review of 2020 Census Urban Area Boundary Adjustments

Director Kober provided an overview of the Washington County memo in the agenda packet pertaining to this item, along with the changes that came with the 2020 census, and how it affects potential grant funding. Director Kober provided an explanation of the maps in the packet, that the Wisconsin DOT would like the Village to approve the proposed map for the Village of Jackson. Director Kober did suggest that a resolution be drafted for approval of the proposed boundary adjustments.

Direction was given for staff to draft a resolution.

10. Removal Cost for STH 60/Main Street Streetlights - We-Energies, in the Amount of \$51,904.44

Director Kober provided the background pertaining to this agenda item. 22 easements are needed and three have been received.

The motion to recommend to the Budget and Finance Committee and to the Village Board to approve the removal costs for the STH 60/Main Streetlights, to We-Energies, in the amount of \$51,904.44 was made by C. Sberna and seconded by J. Mitchell.

Discussion: Tr. Engelhardt asked for clarification pertaining to the monthly costs. Director Kober provided the information as well as information on the savings the Village will have as a result.

Vote: 5 ayes, 0 nays. Motion carried.

11. Request for Letter of Credit Reduction #2 - Maple Fields Phase 1

Director Kober provided an overview of this items, as well as an overview of next steps on the project. Further explaining the credit reduction of \$73,750.

The motion to recommend to the Budget and Finance Committee and to the Village Board to

approve letter of credit reduction #2 for Maple Fields Phase 1 was made by Pres. Heckendorf and seconded by Tr. Engelhardt.

Vote: 5 ayes, 0 nays. Motion carried.

12. Review of Jackson Parks' Adopt-A-Flowerbed Program

Director Kober provided the background that led to this program, to help keep up the flower beds and take that work off Public Works and Parks Dept. This agenda item is for awareness.

13. Director of Public Works Report

Director Kober provided an overview of the items contained in his monthly report found in the agenda packet.

The motion to place Director Kober's monthly report on file was made by Pres. Heckendorf and seconded by J. Mitchell.

Vote: 5 ayes, 0 nays. Motion carried.

14. Citizens/Village Staff to address the Board of Public Works

Pres. Heckendorf provided his appreciation to Chris Sberna for his time serving on the Board, as he has chosen not to be reappointed.

15. Adjourn

A motion to adjourn the meeting was made by J. Mitchell and seconded by C. Sberna.

Vote: 5 ayes, 0 nays. Motion carried. The meeting was adjourned at 7:11 PM.

Respectfully Submitted,
Anastasia Gonstead - Village Clerk

Memo

To: Jen Keller, Village Administrator
From: Brian W. Kober, P. E., Director of Public Works
Subject: White Water Tower for Verizon Monopole Installation
Date: April 26, 2024

The item is on the April 30, 2024, Board of Public Works meeting agenda to discuss the use of the Water Tower site #2 (White/Blue Tower) for the temporary installation of a monopole for Verizon Cellphone users when the antennas are replaced on the White-Water Tower.

The Village has approved the project of the expansion of antennas on the tower, but two years have passed since the approval so we should review the lease agreements for each cellphone company (US Cellular & Verizon) achieving satisfaction in both agreements. Next, is the lease agreement for the temporary monopole installation. Creating the time frame for the installation and lease fee associated with the location. Last, is again the overall approval of the antenna expansion project.

If you have any questions, please do not hesitate to ask.

Brian

CONSULTANT TEAM

PROJECT CONSULTANT:

TERRA CONSULTING GROUP, LTD.
600 BUSSE HIGHWAY
PARK RIDGE, IL 60068
(847) 698-6400

STRUCTURAL:
(TOWER ANALYSIS)

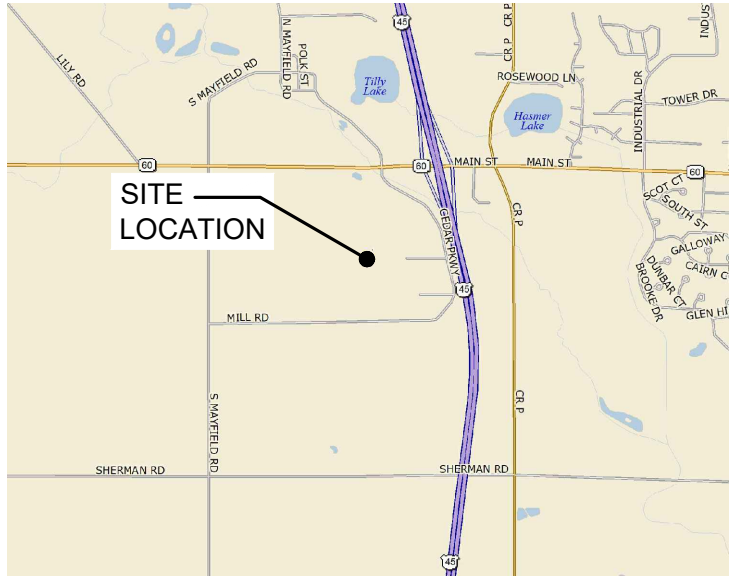
BY OTHERS

STRUCTURAL ANALYSIS DATE:

02/24/2024

VICINITY MAP

N.T.S.



REGIONAL MAP

N.T.S.



PROJECT TYPE

PROPOSED VERIZON ANTENNAS TO BE MOUNTED ON TEMPORARY 125'-0" MONOPOLE TOWER ON 19'-3 3/4" x 19'-3 3/4" BALLAST FRAME

PROJECT INFORMATION

SITE COORDINATES:

LATITUDE: 43° 19' 12.49" N
LONGITUDE: 88° 11' 27.99" W

ADDRESS:

W227 N16551 CEDAR PARKWAY
JACKSON, WI 53037

JURISDICTION:

TOWN OF JACKSON

OCCUPANCY:

UNINHABITED

CONSTRUCTION TYPE:

TEMP TOWER

PROPERTY OWNER:

VILLAGE OF FRANKFORT

TOWER OWNER:

VILLAGE OF FRANKFORT

APPLICANT:

VERIZON WIRELESS
1701 GOLF ROAD,
TOWER 2, SUITE 400
SCHAUMBURG, IL 60008

THESE PLANS HAVE BEEN DESIGNED TO CONFORM WITH THE FOLLOWING BUILDING CODES :

CURRENT BUILDING CODE
2015 INTERNATIONAL CODE COUNCIL
2014 NATIONAL ELECTRIC CODE
CURRENT ILLINOIS ENERGY EFFICIENCY BUILDING CODE

verizon

1701 GOLF ROAD, TOWER 2, SUITE 400
ROLLING MEADOWS, ILLINOIS 60008
PHONE: (847) 619-5397 FAX: (847) 706-7415

MDG NUMBER: 5000948763
LOCATION NUMBER: 113385
SITE NAME: JACKSON_WT_TEMP_RELO
W227 N16551 CEDAR PARKWAY
JACKSON, WI 53037

SHEET	DRAWING INDEX	REVISION
T-1	TITLE SHEET	A,B
LP	LOCATION PLAN	B
C-1	ENLARGED SITE PLAN	B
C-2	COAX SUPPORT DETAILS	-
ANT-1	SITE ELEVATION	B
ANT-2	ANTENNA PLAN VIEWS	A
ANT-3	VERIZON ANTENNA INFORMATION	A
E-1	GROUNDING DETAILS	-

22" x 34" IS FULL SCALE | 11" x 17" IS HALF SCALE

SHEET	ATTACHMENTS	REVISION
-	RFDS BY OTHERS	-

verizon

1701 GOLF ROAD,
TOWER 2, SUITE 400
ROLLING MEADOWS, IL 60008
PHONE: (847) 619-5397
FAX: (847) 706-7415

TERRA

CONSULTING GROUP, LTD.
600 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH: 847-698-6400
FAX: 847-698-6401

REVISIONS		BY	DATE	TJS	PP	PP			
NO.	DESCRIPTION								
-	ISSUED FOR REVIEW		01/04/24						
A	REVISED PER UPDATED RFDS		02/16/24						
B	REVISED PER ADDITION OF USCC ON TEMP TOWER		03/29/24						

MGD LOC#
5000948763
PSLC #113385
JACKSON_WT_TEMP_RELO

W227 N16551
CEDAR PARKWAY
JACKSON, WI 53037

DRAWN BY:	TJS
CHECKED BY:	PP
DATE:	12/05/23
PROJECT #:	194-113

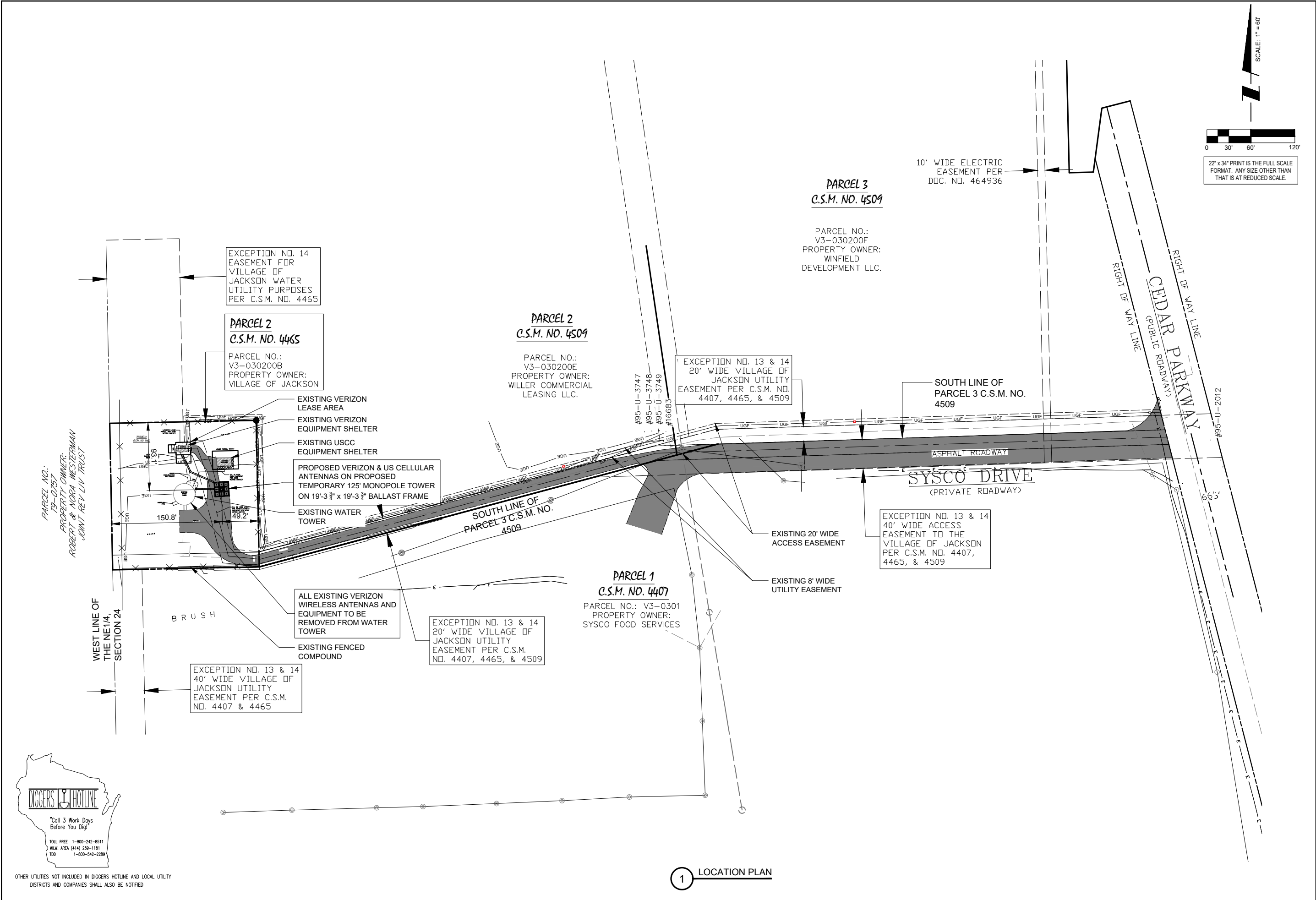
SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



"Call 3 Work Days Before You Dig!"
TOLL FREE 1-800-242-8511
MILW. AREA (414) 259-1181
TDD 1-800-542-2289

OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED



verizon
1701 GOLF ROAD,
TOWER 2, SUITE 400
ROLLING MEADOWS, IL 60008
PHONE: (847) 619-5397
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REVISIONS		NO.	DESCRIPTION	DATE	BY
	ISSUED FOR REVIEW			01/04/24	TJS
A	REVISED PER UPDATED RFDS			02/16/24	PP
B	REVISED PER ADDITION OF USCC ON TEMP TOWER			03/29/24	PP

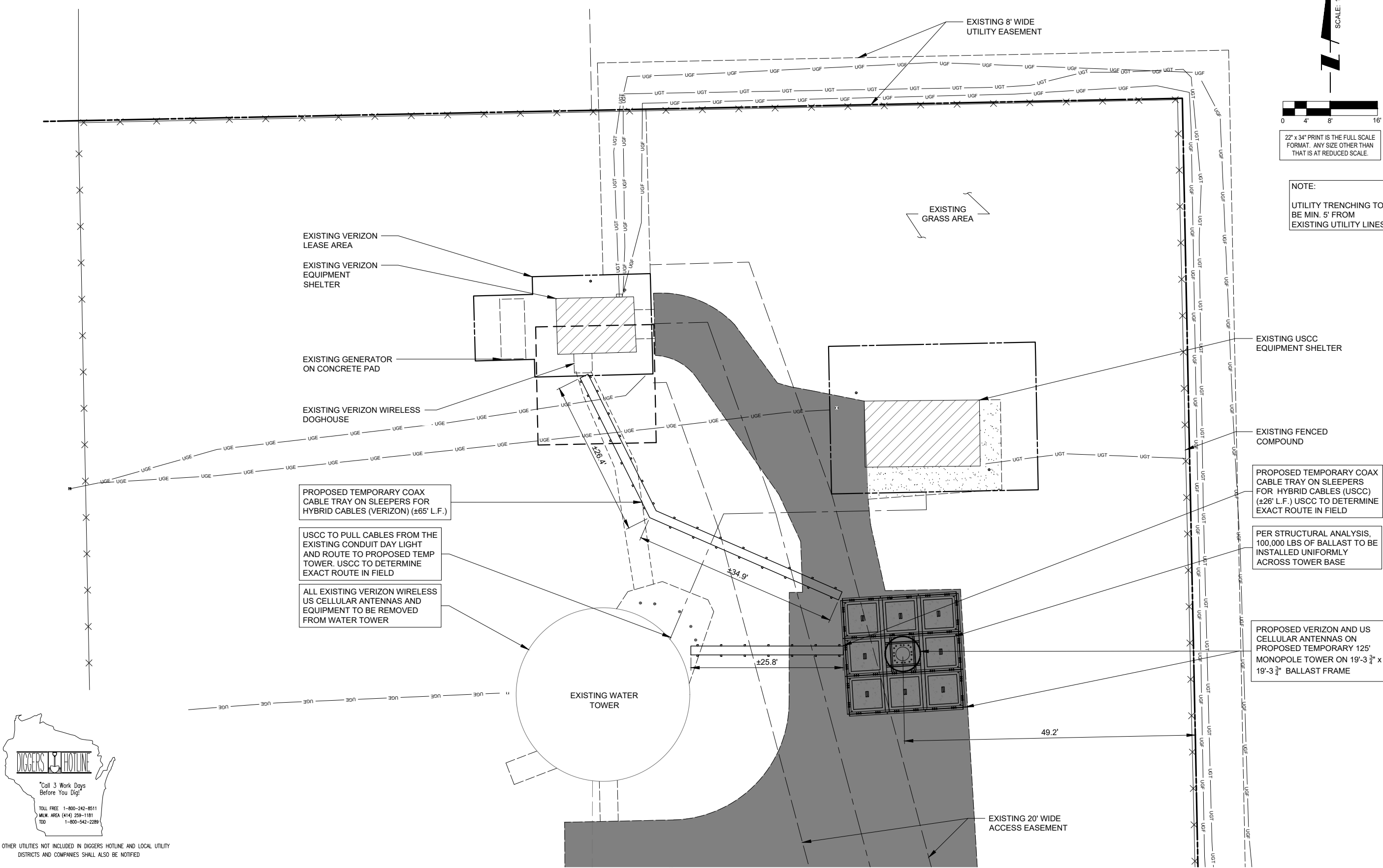
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JACKSON WT_
TEMP_RELO

W227 N16551
CEDAR PARKWAY
JACKSON, WI 53037

DRAWN BY:	TJS
CHECKED BY:	PP
DATE:	12/05/23
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SHEET TITLE
LOCATION PLAN

SHEET NUMBER
LP



SCALE: 1" = 8'

0 4' 8' 16'

22" x 34" PRINT IS THE FULL SCALE FORMAT. ANY SIZE OTHER THAN THAT IS AT REDUCED SCALE.

NOTE:
UTILITY TRENCHING TO BE MIN. 5' FROM EXISTING UTILITY LINES.

DIGGERS HOTLINE

"Call 3 Work Days Before You Dig!"

TOLL FREE 1-800-242-8511
MILW. AREA (414) 259-1181
TDD 1-800-542-2289

OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED

THIS SITE PLAN WAS CREATED OFF OF FIELD MEASUREMENTS BY THE DESIGNER, AS BOUNDARY SURVEY WAS NOT SUPPLIED FOR PURPOSES OF SITE LAYOUT.

1 SITE LAYOUT

verizon

1701 GOLF ROAD,
TOWER 2, SUITE 400
ROLLING MEADOWS, IL 60008
PHONE: (847) 619-5397
FAX: (847) 706-7415

TERRA
CONSTRUCTING GROUP, LTD.

600 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH: 847-698-6400
FAX: 847-698-6401

REVISIONS		NO.	DESCRIPTION	DATE	BY
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	REVISED PER ADDITION OF USCC ON TEMP TOWER		REVISED PER ADDITION OF USCC ON TEMP TOWER	03/29/24	PP

MGD LOC#
5000948763
PSLC #113385

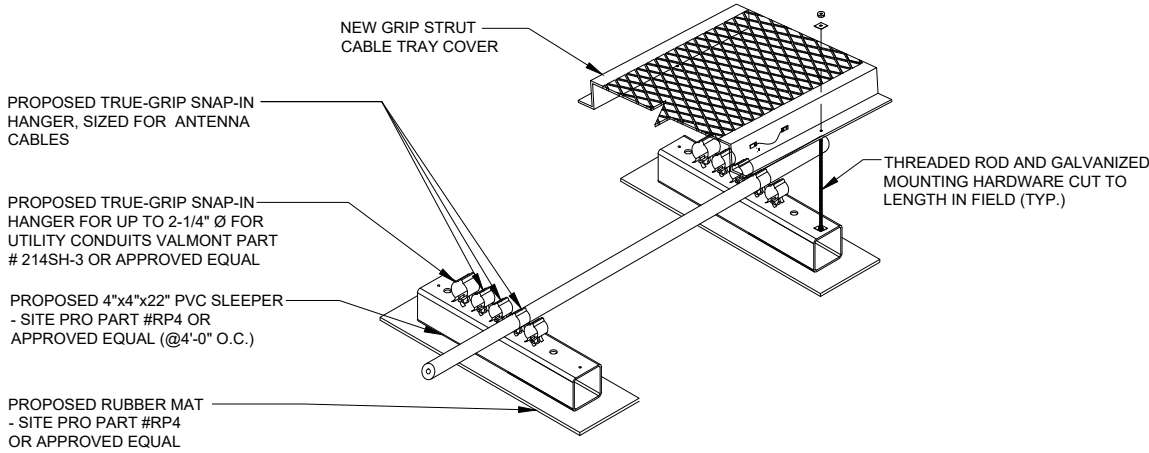
JACKSON WT_
TEMP_RELO

W227 N16551
CEDAR PARKWAY
JACKSON, WI 53037

DRAWN BY:	TJS
CHECKED BY:	PP
DATE:	12/05/23
PROJECT #:	194-113

SHEET TITLE
ENLARGED SITE PLAN

SHEET NUMBER
C-1



1 GROUND CONDUIT & CABLE SUPPORT
N.T.S.

verizon
1701 GOLF ROAD,
TOWER 2, SUITE 400
ROLLING MEADOWS, IL 60008
PHONE: (847) 619-5397
FAX: (847) 706-7415

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CONSTRUCTING GROUP, LTD.
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REVISIONS		NO.	DESCRIPTION	DATE	BY
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JACKSON WT_
TEMP_RELO

W227 N16551
CEDAR PARKWAY
JACKSON, WI 53037

DRAWN BY: TJS

CHECKED BY: PP

DATE: 12/05/23

PROJECT #: 194-113

SHEET TITLE
COAX SUPPORT
DETAILS

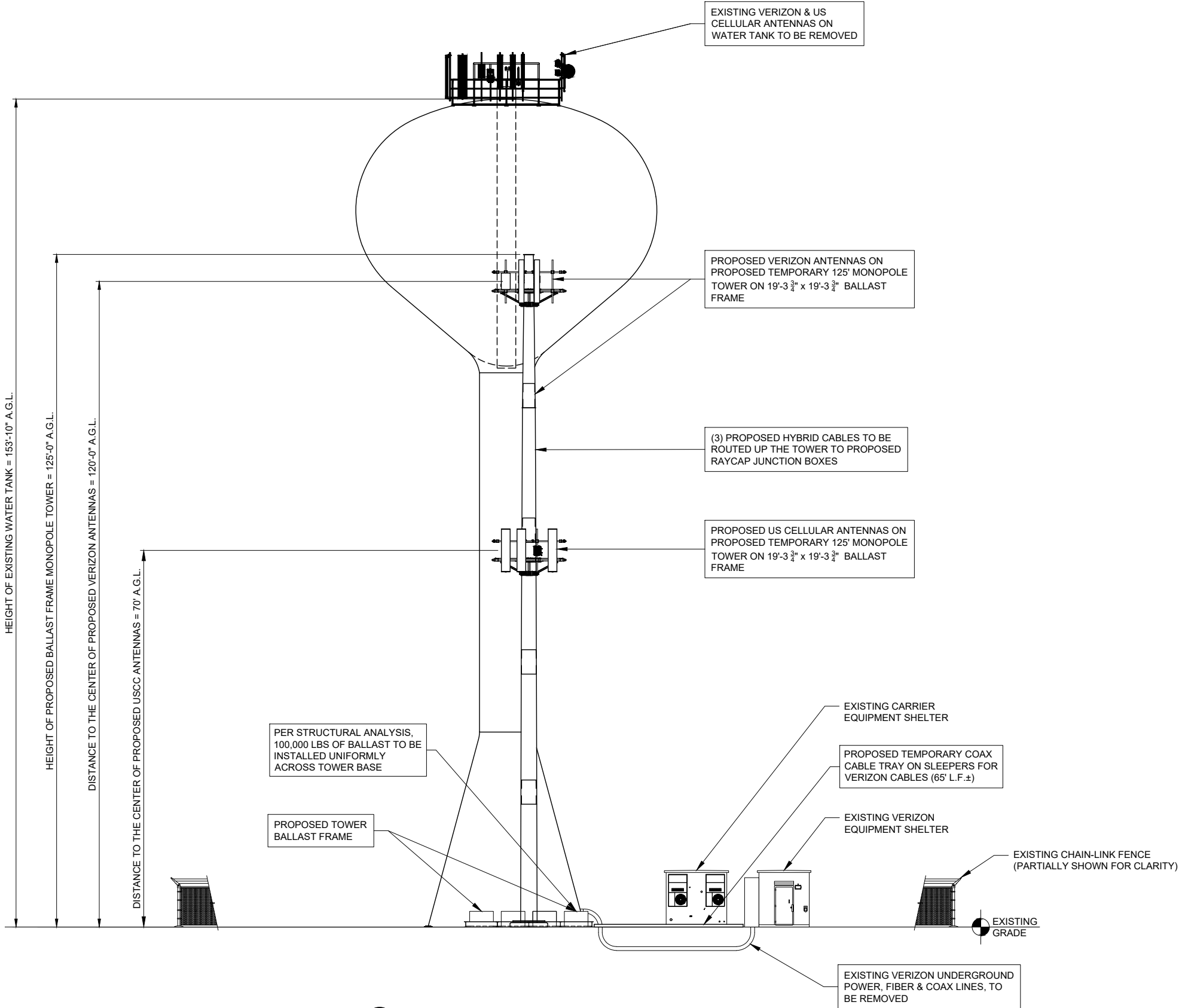
SHEET NUMBER

C-2

NOTES:
THIS DRAWING IS FOR EXHIBIT AND LAYOUT PURPOSES ONLY.

PLEASE REFER TO STRUCTURAL ANALYSIS PROVIDED BY OTHERS

ESTIMATED HYBRID CABLE LENGTH			
SECTOR	HOR (±)	VER (±)	TOTAL (±)
ALPHA	95'	125'	220'
BETA	95'	125'	220'
GAMMA	95'	125'	220'



1 EAST ELEVATION
SCALE: 3/32" = 1'-0" ±

FULL SCALE PRINT IS ON 22"x34" MEDIA
HALF SCALE PRINT IS ON 11"x17" MEDIA

verizon
1701 GOLF ROAD,
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TERRA
CONSULTING GROUP, LTD.
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JACKSON WT_
TEMP_RELO

W227 N16551
CEDAR PARKWAY
JACKSON, WI 53037

DRAWN BY:	TJS
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SHEET TITLE
SITE
ELEVATION

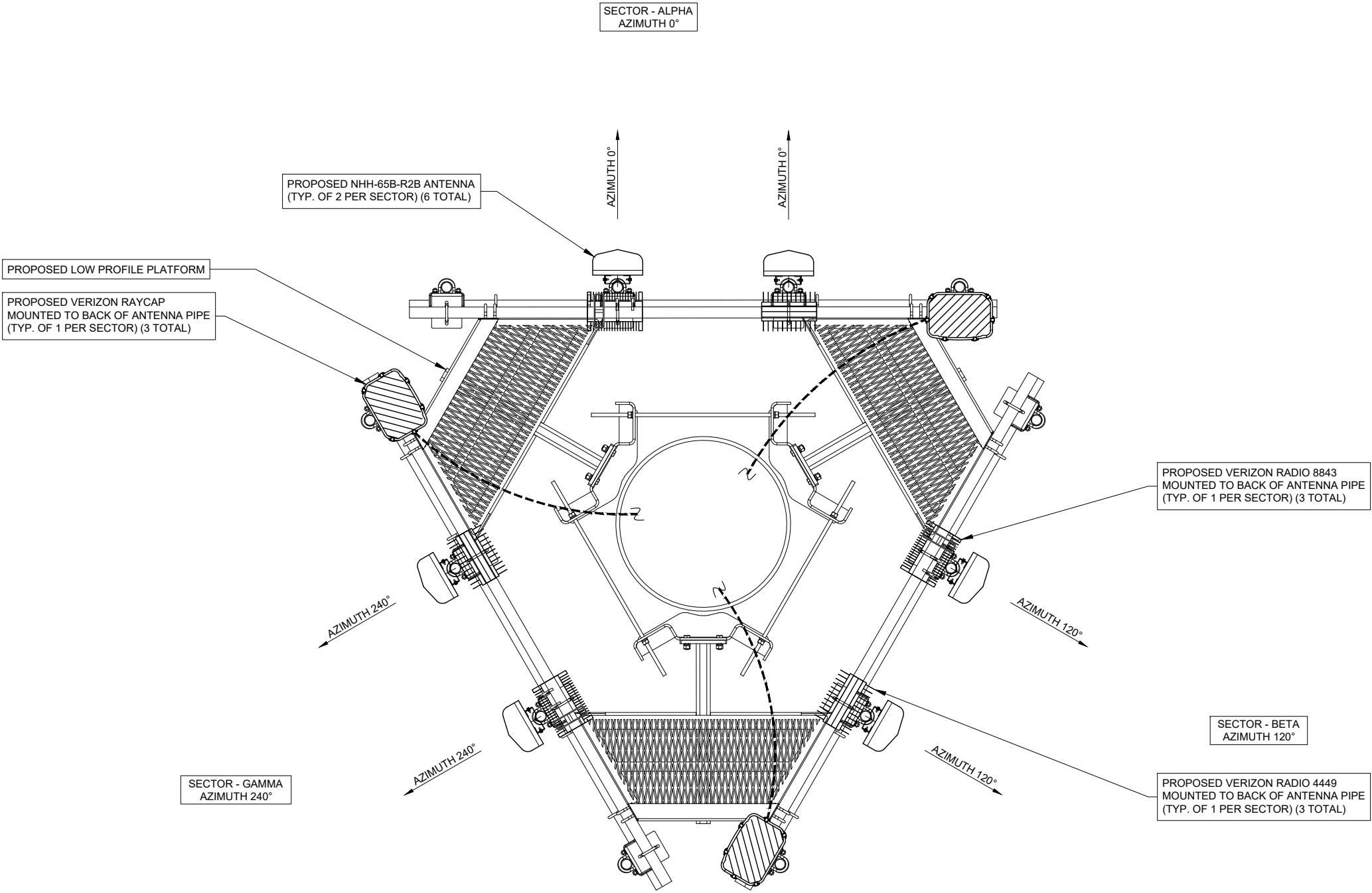
SHEET NUMBER

ANT-1

NOTES:
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PLEASE REFER TO STRUCTURAL ANALYSIS
PROVIDED BY OTHERS

MOUNT SPECIFICATIONS BY OTHERS.
TERRA CONSULTING GROUP WAS
NOT CONTRACTED TO ANALYZE THE
PROPOSED MOUNTS.



1 PROPOSED ANTENNA LAYOUT
N.T.S.

verizon
1701 GOLF ROAD,
TOWER 2, SUITE 400
ROLLING MEADOWS, IL 60008
PHONE: (847) 619-5397
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JACKSON WT_
TEMP_RELO

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CEDAR PARKWAY
JACKSON, WI 53037

DRAWN BY:	TJS
CHECKED BY:	PP
DATE:	12/05/23
PROJECT #:	194-113

SHEET TITLE
ANTENNA
PLAN VIEW

SHEET NUMBER
ANT-2



MIDWEST > Upper Midwest > Illinois/Wisconsin > Milwaukee > JACKSON_WT_TEMP_Relo
Mehta, Kunjan - kunjan.mehta@one.verizon.com - 20240213_062602

Project Details		Location Information	
Carrier Aggregation	N	Site Id	617444328
Ecip	N	Search Ring#	
Project Name	JACKSON_WT_TEMP_RELO	E-NodeB ID#	null
Project Alt Name	JACKSON_WT_TEMP_RELO	PSLC#	0
Project Id	17248040	Switch Name	Milwaukee
Designed Sector Carrier 4G	12	Tower Type	
Designed Sector Carrier 5G	3	Site Type	TEMPORARY
Additional Sector Carrier 4G	0	Street Address	W227 N16551 Cedar Parkway
Additional Sector Carrier 5G	0	City	Jackson
Suffix		State	WI
FP Solution Type & Tech Type	MCR;4G_700;4G_AWS;4G_AWS3;5G_L-Sub 6;5G_PCS;4G_PCS	Zip Code	53037
		County	Washington
		Latitude	43.320025/ 43° 19' 12.090"
		Longitude	-88.190906/ 88° 11' 27.262"

1 RFDS TITLE SHEET
N.T.S.

Antenna Summary										
Added Antenna										
700	1900	AWS	AWS3	Make	Model	Centerl ine	Tip Height	Azimuth	Install Type	Quantity
LTE	LTE,5G	LTE	LTE	COMMSCOPE	NHH-65B-R2B	120	123	0(1),120(2),240(3)	PHYSICAL	6

Removed Antenna										
700	1900	AWS	AWS3	Make	Model	Centerl ine	Tip Height	Azimuth	Install Type	Quantity

Retained Antenna										
700	1900	AWS	AWS3	Make	Model	Centerl ine	Tip Height	Azimuth	Install Type	Quantity

Added: 6 Removed: 0 Retained: 0

2 ANTENNA SUMMARY
N.T.S.

Non Antenna Summary								
Added Non Antenna								
Equipment Type	Location	700	1900	AWS	Make	Model	Install Type	Quantity
RRU	Tower	LTE			Ericsson	4449	PHYSICAL	3
RRU	Tower		LTE,5G	LTE	Ericsson	8843	PHYSICAL	3
Hybrid Cable	Tower				COMMSCOPET-001	HFT1206-24SV4-xxxG	PHYSICAL	3
OVP	Tower				RAYCAPINC-001	RVZDC-3315-PF-48	PHYSICAL	3

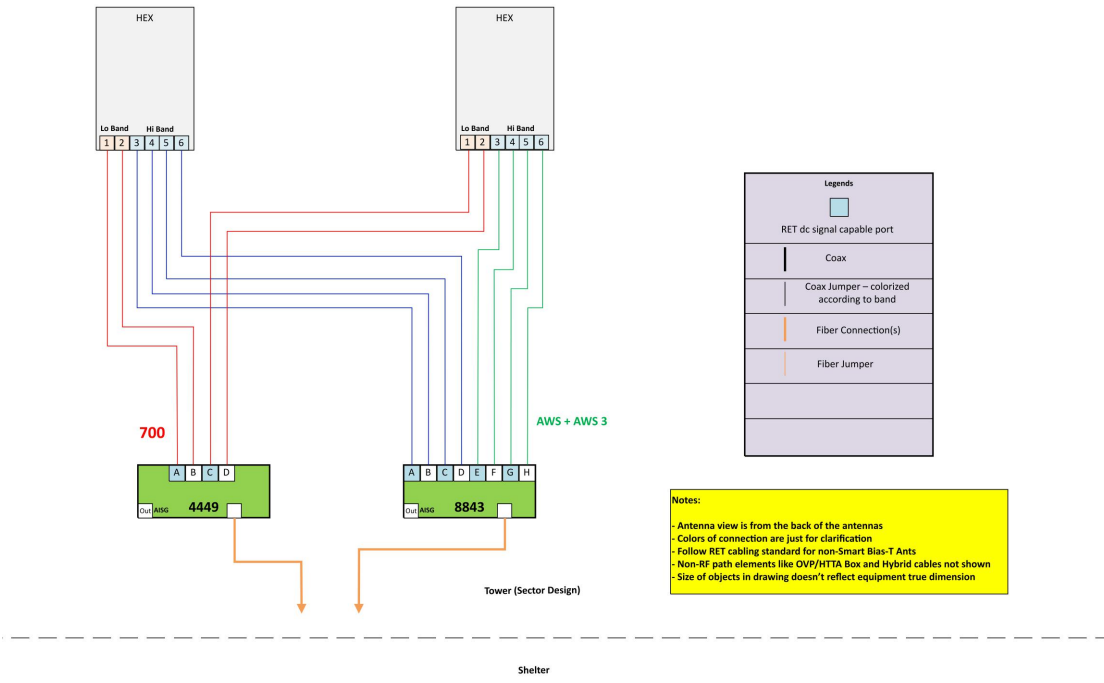
Removed Non Antenna								
Equipment Type	Location	700	1900	AWS	Make	Model	Install Type	Quantity

Retained Non Antenna								
Equipment Type	Location	700	1900	AWS	Make	Model	Install Type	Quantity

Added: 12 Removed: 0 Retained: 0

3 EQUIPMENT SUMMARY
N.T.S.

Alpha, Beta, Gamma



4 CABLE DIAGRAM
N.T.S.

verizon
1701 GOLF ROAD,
TOWER 2, SUITE 400
ROLLING MEADOWS, IL 60008
PHONE: (847) 619-5397
FAX: (847) 706-7415

TERRA
CONSULTING GROUP, LTD.
600 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH: 847-498-6400
FAX: 847-498-6401

REVISIONS		NO.	DESCRIPTION	DATE	BY
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	REVISED PER ADDITION OF USCC ON TEMP TOWER		03/29/24	PP	

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DRAWN BY:	TJS
CHECKED BY:	PP
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SHEET TITLE
ANTENNA
INFORMATION

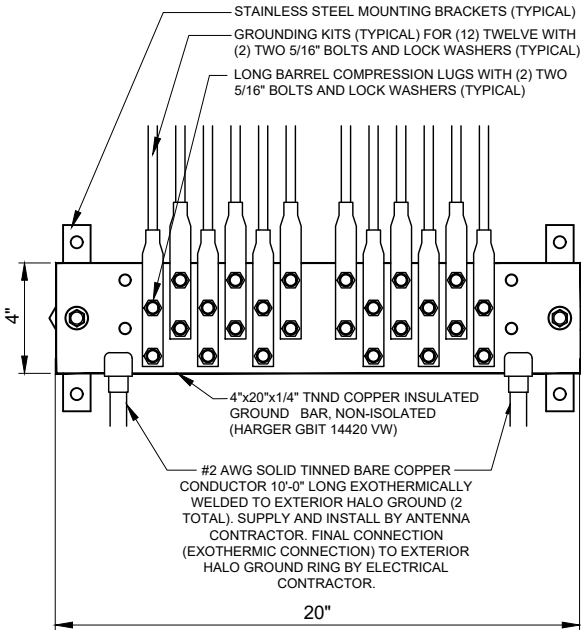
SHEET NUMBER
ANT-3

GROUNDING ELECTRODE SYSTEM NOTES:

1. ALL GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC PROCESS CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE, SPLICES, ETC. ALL CABLE TO GROUND RODS, GROUND RODS SPLICES AND LIGHTNING PROTECTION SYSTEM AS INDICATED. GROUND FOUNDATION ONLY AS INDICATED BY PM. ALL MATERIALS USED (MOLDS, WELDING, METAL, TOOLS, ETC.) SHALL BE BY EXOTHERMIC PROCESS AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND PROCEDURES.GROUND CONDUCTOR SHALL HAVE A MINIMUM 24" BENDING RADIUS.
2. ALL EXOTHERMIC CONNECTIONS ON GALVANIZED SURFACES SHALL BE CLEANED THOROUGHLY AND COLORED TO MATCH SURFACE WITH (2) TWO COATS OF SHERWIN-WILLIAMS GALVITE (WHITE) PAINT B50W3 (OR EQUAL) OR SHERWIN- WILLIAMS SILVERBRITE (ALUMINUM) B59S11 (OR EQUAL). ALL ELECTRICAL & MECHANICAL GROUND CONNECTIONS SHALL HAVE ANTI-OXIDANT COMPOUND APPLIED TO CONNECTION
3. FENCE/GATE: GROUND FENCE POSTS WITHIN 6 FEET OF ENCLOSURE AND 25 FEET OF TOWER AS INDICATED ON DRAWINGS. GROUND EACH GATE POST AND CORNER POST. GROUND CONNECTIONS TO FENCE POSTS SHALL BE MADE BY THE EXOTHERMIC PROCESS AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES. ALL OTHER CONNECTIONS FOR THE GROUND GRID SYSTEM SHALL BE MADE BY THE EXOTHERMIC PROCESS, AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES.
4. AFTER INSTALLATION OF THE CANOPY AT THE DOOR, GC/EC IS TO BOND THE CANOPY TO THE DOOR FRAME WITH A #2 CONDUCTOR. USE DOUBLE-LUG CONNECTION. PREP AND PAINT SURFACE TO MATCH AFTER INSTALLATION.
5. UTILITY COMPANY COORDINATION: ELECTRICAL CONTRACTOR SHALL CONFIRM THAT ALL WORK IS IN ACCORDANCE WITH THE RULES OF THE LOCAL UTILITY COMPANY BEFORE SUBMITTING THE BID, THE CONTRACTOR SHALL CHECK WITH THE UTILITY COMPANIES SUPPLYING SERVICE TO THIS PROJECT AND SHALL DETERMINE FROM THEM ALL EQUIPMENT AND CHARGES WHICH THEY WILL REQUIRE AND SHALL INCLUDE THE COST IN THE BID.
6. GROUND TEST: GROUND TESTS SHALL BE PERFORMED AS REQUIRED BY LESSEE STANDARD PROCEDURES. GROUND GRID RESISTANCE SHALL NOT EXCEED 5 OHMS.
7. CONTRACTOR SHALL SUBMIT THE GROUND RESISTANCE TEST REPORT AS FOLLOWS:
ONE (1) COPY TO OWNER REPRESENTATIVE
ONE (1) COPY TO ENGINEER
ONE (1) COPY TO KEEP INSIDE EQUIPMENT ENCLOSURE

NOTE:

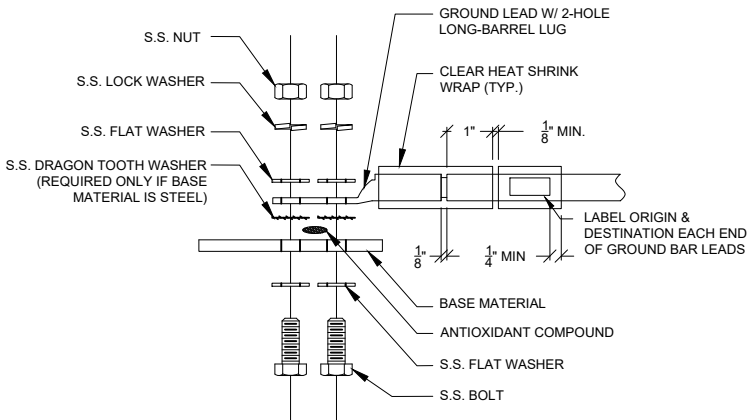
DO NOT ATTACH GROUND BARS ON ANY OF THE TANKS COATED SURFACES



1 EXTERIOR GROUND BAR DETAIL
N.T.S.

NOTES:

1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING BELLEVILLES. COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. GROUND BARS, INSTALL BOLT HEAD TOWARD WALL
4. ENCLOSURES, INSTALL BOLT HEAD ON OUTSIDE OF ENCLOSURE



2 GROUND LUG INSTALLATION DETAIL
N.T.S.



Type GT
THROUGH CABLE TO TOP OF GROUND ROD.



Type TA
TEE OF HORIZONTAL RUN AND TAP CABLES.



Type HS
HORIZONTAL CABLE TAP TO HORIZONTAL STEEL SURFACE OR PIPE. CABLE OFF SURFACE.



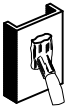
Type VV
THROUGH VERTICAL CABLE TO VERTICAL STEEL SURFACE OR TO THE SIDE OF EITHER HORIZONTAL OR VERTICAL PIPE



Type XB
CROSS OF HORIZONTAL CABLES. LAPPED AND NOT CUT



Type VN
HORIZONTAL CABLE TAP TO VERTICAL STEEL SURFACE OR THE SIDE OF HORIZONTAL PIPE



Type VS
CABLE TAP DOWN AT 45° TO VERTICAL STEEL SURFACE OR SIDE OF HORIZONTAL OR VERTICAL PIPE.



Type GY
THROUGH CABLE TO SIDE OF GROUND ROD



Type GR
CABLE TAP TO TOP OF GROUND ROD

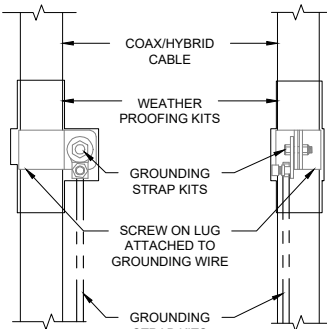
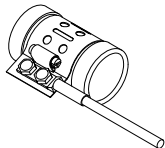


Type NC
THROUGH AND TAP CABLES TO GROUND ROD

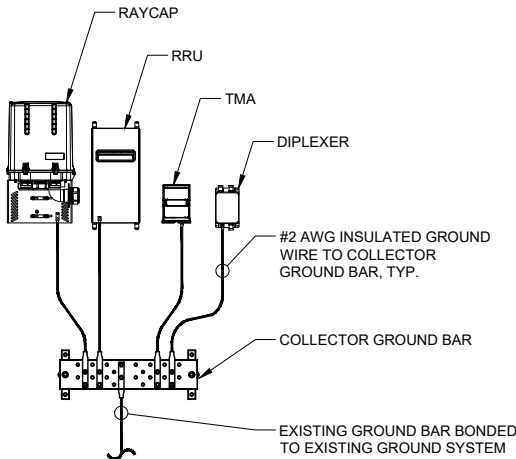
3 EXOTHERMIC WELD DETAILS
EXOTHERMIC AND HARGER ULTRAWELD OR APPROVED EQUAL

NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. THIS DETAIL IS TYPICAL FOR EACH COAX CABLE WHERE IT IS SPECIFIED TO BE GROUNDED
3. CABLE TO BE GROUNDED AT ANTENNA LEVEL AND PRIOR TO ENTERING SHELTER ENTRY PANEL.
4. CABLE ALSO TO BE GROUNDED TO GROUND BAR AT TOWER BASE IF APPLICABLE.
5. USE ONLY TIN PLATED GROUNDING KITS.



4 COAX / HYBRID CABLE GROUND KIT DETAIL
N.T.S.



NOTES:

1. DETAIL IS CONCEPTUAL ONLY. PLEASE SEE ECR AND LAYOUT SHEETS FOR ACTUAL EQUIPMENT CONFIGURATION.
2. GROUND CONNECTIONS MUST BE DOUBLE HOLE CONNECTION. SPECIAL EXCEPTION ONLY TO EQUIPMENT THAT WILL NOT ALLOW FOR A DOUBLE HOLE CONNECTION.

5 TYPICAL APPURTENANCE GROUNDING
SCALE: N.T.S.

verizon
1701 GOLF ROAD,
TOWER 2, SUITE 400
ROLLING MEADOWS, IL 60008
PHONE: (847) 619-5397
FAX: (847) 706-7415

TERRA
CONSULTING GROUP, LTD.
600 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH: 847-698-6400
FAX: 847-698-6401

REVISIONS		NO.	DESCRIPTION	DATE	BY	TJS	PP	PP				
		A	ISSUED FOR REVIEW	01/04/24								
		B	REVISED PER UPDATED RFDS	02/16/24								
			REVISED PER ADDITION OF USCC ON TEMP TOWER	03/28/24								

MGD LOC#
5000948763
PSLC #113385

JACKSON WT_
TEMP_RELO

W227 N16551
CEDAR PARKWAY
JACKSON, WI 53037

DRAWN BY:	TJS
CHECKED BY:	PP
DATE:	12/05/23
PROJECT #:	194-113

SHEET TITLE
GROUNDING
DETAILS

SHEET NUMBER

E-1

JACKSON WT TEMP

125' MONOPOLE W/ LS-20 (CENTERED)

THIS STRUCTURE IS NOT INTENDED TO BE
PERMANENT. SEE SHEET N1 NOTES REGARDING
REDUCED LOADING AND DESIGN SERVICE LIFE.

LOCATION:

W227 N16551 CEDAR PARKWAY
JACKSON, WI 53037
WASHINGTON COUNTY

DRAWING INDEX

T1	TITLE SHEET
N1	NOTES & SPECIFICATIONS
S1	PLAN VIEW
S2	SECTIONS
S3	MONOPOLE SIZE AND LOADING



DATE: 2/22/24		DESIGNED: JJB	DRAFTER: JJB
REVISIONS			
REV	DATE	DESCRIPTION	

TITLE SHEET

JACKSON WT TEMP
125' MONOPOLE W/ LS-20 (CENTERED)
W227 N16551 CEDAR PARKWAY
JACKSON, WI 53037
WASHINGTON COUNTY



02/22/2024

U1140.0270.242

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GENERAL STRUCTURAL NOTES
1. ANY ITEMS REFERENCED AS BEING ON "HOLD" ARE TO BE INCLUDED IN THE WORK AS SHOWN, HOWEVER, CONSTRUCTION OR FABRICATION IS NOT TO BEGIN UNTIL THE "HOLD" REFERENCE IS REMOVED. 2. THE INTEGRITY OF THIS STRUCTURE IS DESIGNED TO BE ATTAINED IN ITS COMPLETED STATE. WHILE UNDER CONSTRUCTION ANY TEMPORARY BRACING OR SHORING WHICH MAY BE REQUIRED TO MAINTAIN STABILITY PRIOR TO COMPLETION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. 3. THE DIMENSIONS, LOCATIONS, AND ELEVATIONS OF ANY EXISTING STRUCTURES WHICH RELATE TO OR INFLUENCES NEW CONSTRUCTION SHALL BE VERIFIED BY FIELD MEASUREMENT BY THE CONTRACTOR PRIOR THE PREPARATION AND SUBMISSION OF CHECKED SHOP DRAWINGS TO THE ENGINEER OF RECORD FOR REVIEW. 4. PROTECTION OF EXISTING STRUCTURES DURING THE COURSE OF CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. 5. FOUNDATION DESIGN IS BASED ON THE FOLLOWING PRESUMPTIVE SOIL VALUES: PRESUMPTIVE SOIL BEARING: 1500 PSF COEFFICIENT OF FRICTION: 0.25 6. ABOVE-GRADE FOUNDATION MAY NOT BE PLACED ON MUD, ORGANIC SILT, ORGANIC CLAYS, PEAT, OR UNPREPARED FILL. 7. VECTOR STRUCTURAL ENGINEERING STRONGLY RECOMMENDS INDEPENDENT SOILS TESTING BE PERFORMED BY A LICENSED GEOTECHNICAL ENGINEER TO VERIFY SOIL BEARING CAPACITY, SLOPE STABILITY, AND ANY OTHER RELATED SOIL PARAMETERS, AS REQUIRED. MATERIAL BELOW BALLASTED BASE FRAME SHALL BE FLAT, COMPACTED, AND SHALL CONSIST OF UNIFORM MATERIAL. WHERE FROST DEPTH >0", BEARING MATERIAL SHALL BE GRANULAR TO REDUCE FROST HEAVE SUSCEPTIBILITY.
DESIGN CRITERIA
STRUCTURAL DESIGN IS BASED ON THE WISCONSIN UNIFORM COMMERCIAL BUILDING CODE (2015 IBC) AND THE TIA-222-G STANDARD DESIGN LOADS: WIND: WIND SPEED = 92 MPH (3-SEC GUST) PER THE ASCE 7-10 STANDARD RISK CATEGORY / STRUCTURE CLASS: II EXPOSURE: C TOPOGRAPHIC CATEGORY: 1 CREST HEIGHT: 0 FT ELEVATION: 921 FT ABOVE SEA LEVEL THIS STRUCTURE HAS BEEN DESIGNED FOR A MAXIMUM SERVICE LIFE OF 1 YEAR. PER ASCE 37-14 SECTION 6.2.1, THE ASCE ASCE 7-10 DESIGN WIND SPEED OF 115 MPH IS PERMITTED TO BE REDUCED BY 20%. THUS, THE STRUCTURE HAS BEEN DESIGNED FOR THE REDUCED WIND SPEED PROVIDED ABOVE. IF SITE IS DEPLOYED LONGER THAN THE SERVICE LIFE NOTED ABOVE, CONTACT EOR FOR ADDITIONAL ANALYSIS. ICE: 0.75" RADIAL ICE THICKNESS @ 40 MPH (3-SEC GUST) PER THE TIA-222-G STANDARD

BASE DESIGN REACTIONS
MOMENT, M = 824 K-FT (1.0 WIND) SHEAR, V = 9.8 K (1.0 WIND) AXIAL, P = 36.8 K (1.2 DEAD + 1.0 ICE) BASE REACTIONS OCCUR AT THE BASE OF THE MONOPOLE.

STRUCTURAL STEEL NOTES
1. POLYGONAL MONOPOLE SHAFT STEEL SHALL CONFORM w/ ASTM A572 GR. 65, U.N.O. 2. STRUCTURAL STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS: BALLAST FRAME STEEL (ALL BENT PLATES, STIFFENERS, ETC) SHALL CONFORM TO ASTM A572 GR. 65 U.N.O. ALL BASEPLATES SHALL CONFORM TO A572 GR. 50 THREADED RODS AT BASE PLATE SHALL CONFORM TO ASTM F1554 GR. 105 OR A193 GR. B7 STRUCTURAL BOLTS ARE TO BE ASTM F3125 GR. A325X, U.N.O. 3. REINFORCED PORT STEEL SHALL CONFORM w/ ASTM A572 GR. 50 OR EQUIVALENT, U.N.O. 4. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS AND PROCEDURES OF THE AMERICAN WELDING SOCIETY (AWS) BY CERTIFIED WELDERS WHO ARE IN GOOD STANDING. WELDING FOR STRUCTURAL STEEL SHALL BE MADE WITH E80 LOW HYDROGEN ELECTRODES OR EQUIVALENT. 5. HOLES SHALL NOT BE CUT THROUGH MEMBERS UNLESS INDICATED OR PRE-APPROVED BY THE ENGINEER OF RECORD. 6. ALL STEEL SURFACES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM 123 STANDARD 3. ALL STEEL HARDWARE SHALL BE HOT DIP GALVANIZED PER ASTM F2329, U.N.O. A490 BOLTS ARE NOT PERMITTED TO BE HOT DIP GALVANIZED. THEY MAY BE COATED WITH DACROMET (ASTM F1136) OR MAGNI 565 (ASTM F2833), OR A490-3 BOLTS MAY BE USED. 4. ALL STRUCTURAL BOLTS & THREADED RODS SHALL BE TIGHTENED PER AN APPROVED PRETENSIONING METHOD AS DEFINED BY AISC. FOR EASE OF INSPECTION, THE "TURN-OF-NUT" METHOD AS DEFINED BY AISC WITH MATCH-MARKING TECHNIQUES IS RECOMMENDED. 5. ALL BOLT HOLES SHALL BE STANDARD SIZE PER TABLE J3.3 OF AISC U.N.O WASHERS ARE REQUIRED FOR ANY CONNECTION THAT HAS LARGER THAN STANDARD SIZED BOLT HOLES. 6. ALL HEAVY HEX NUTS SHALL BE ASTM A563 GR. C OR DH OR EQUIVALENT. 7. ALL HARDENED WASHERS SHALL BE ASTM F436 OR EQUIVALENT.

SPECIAL INSPECTIONS
1. STEEL FABRICATION SHALL BE DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED AS REQUIRED BY THE BUILDING OFFICIAL TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. ALTERNATIVELY, SPECIAL INSPECTION OF MATERIALS, WELDING, AND FABRICATION PROCEDURES SHALL BE REQUIRED FOR FABRICATION BY AN UNAPPROVED FABRICATOR. 2. NO FIELD WELDING SHALL BE PERMITTED 3. THE FOLLOWING SPECIAL INSPECTIONS SHALL BE REQUIRED PER CHAPTER 17 OF THE BUILDING CODE: SPECIAL INSPECTION OF HIGH-STRENGTH BOLTING (WHEN APPLICABLE): PERIODIC SPECIAL INSPECTION IF BOLTS ARE PRETENSIONED WITH MATCH-MARKING TECHNIQUES CONTINUOUS SPECIAL INSPECTION OF ALL OTHER HIGH-STRENGTH BOLTING 4. SPECIAL INSPECTION IS NOT REQUIRED FOR WORK OF A MINOR NATURE OR AS WARRANTED BY CONDITIONS IN THE JURISDICTION AS APPROVED BY THE BUILDING OFFICIAL. THUS, SPECIAL INSPECTION ITEMS ABOVE MAY BE WAIVED AS DEEMED APPROPRIATE BY THE BUILDING OFFICIAL.
STRUCTURAL OBSERVATION
NO STRUCTURAL OBSERVATION IS REQUIRED.



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Draper, UT 84020

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www.vectorse.com
WI FIRM LICENSE #: 3372-11



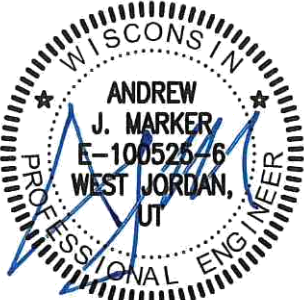
Creative Design and Machining, Inc.
969 Griffin Pond Road – Clarks Summit, PA 18411
Phone (570) 587-3077 Fax (570) 587-3075

DATE: 2/22/24DESIGNED: JJB
DRAFTER: JJB

REVSDATEDESCRIPTION

NOTES & SPECIFICATIONS

JACKSON WT TEMP
125' MONOPOLE W/ LS-20 (CENTERED)
W227 N16551 CEDAR PARKWAY
JACKSON, WI 53037
WASHINGTON COUNTY



02/22/2024

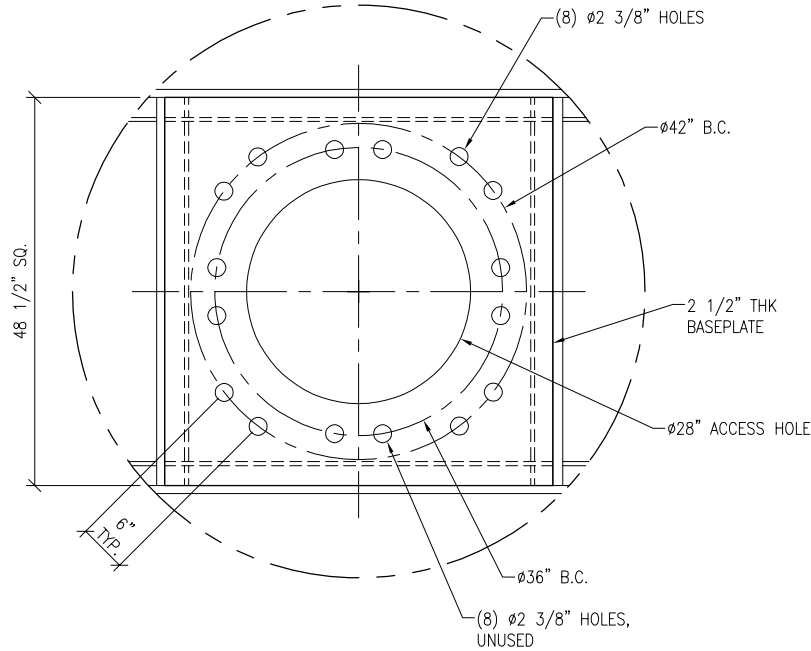
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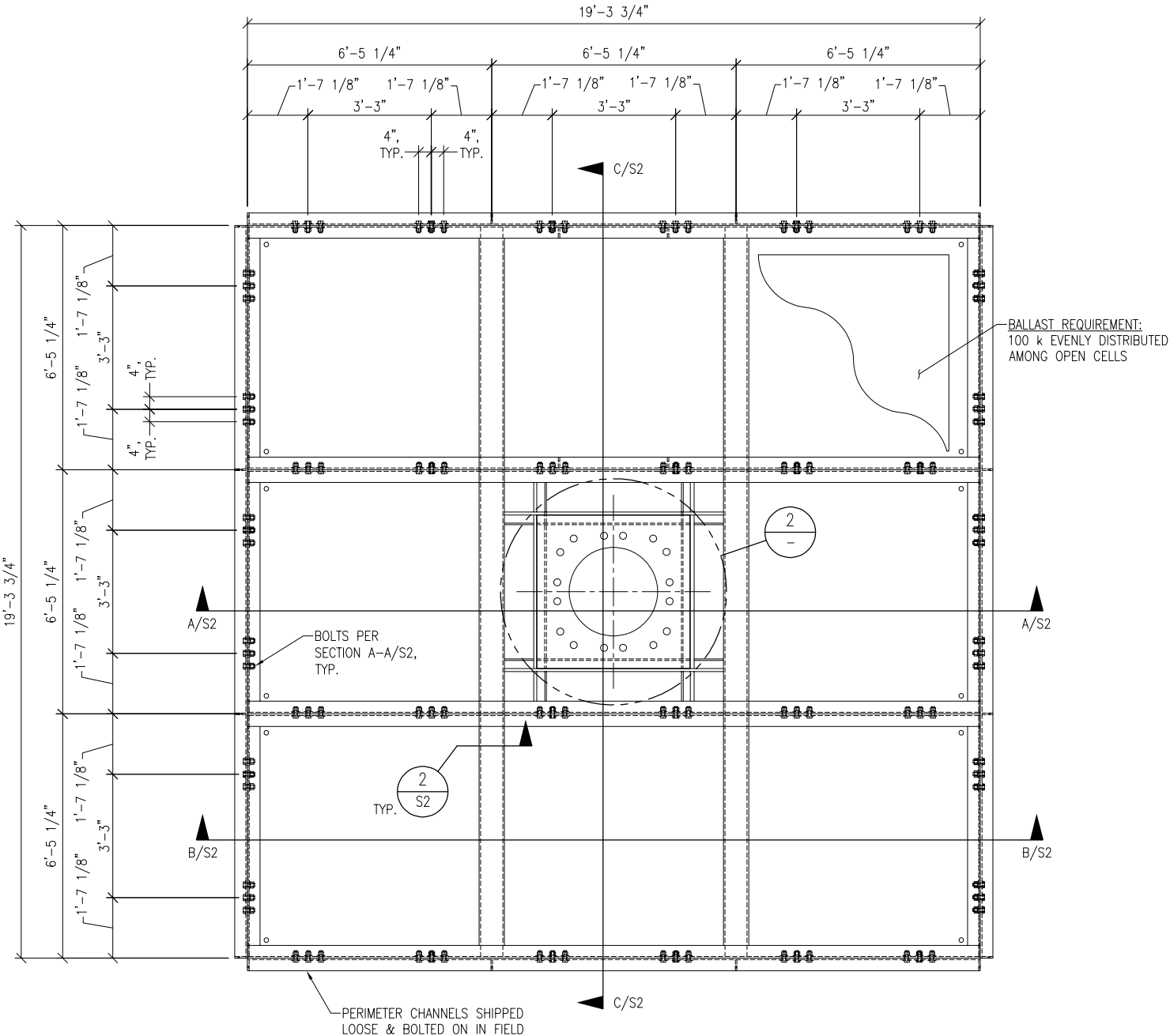


BASEPLATE

N.T.S.

2

- NOTES:
- EQUIPMENT AND FENCE ON TOP OF BALLAST SHALL BE LIMITED TO 8,000 LBS. DISTRIBUTE OVER BALLAST FOOTPRINT AS MUCH AS POSSIBLE.
 - WHERE OCCURS, FENCE ATTACHED TO BALLAST FRAME SHALL BE LIMITED IN HEIGHT TO 10' A.G.L. ONLY CHAIN LINK OR SIMILAR OPEN FENCING w/o SLATS OR OTHER COVERING IS ALLOWED.
 - WHERE ADDITIONAL EQUIPMENT OR FENCE LOADS ARE DESIRED, CONTACT EOR FOR ADDITIONAL ANALYSIS AND RECOMMENDATIONS.



STRUCTURAL PLAN VIEW

N.T.S.

1

DATE: 2/22/24 DESIGNED: JJB DRAFTER: JJB

REVISIONS		
REV	DATE	DESCRIPTION

PLAN VIEW

JACKSON WT TEMP

125' MONOPOLE W/ LS-20 (CENTERED)

W227 N16551 CEDAR PARKWAY
JACKSON, WI 53037
WASHINGTON COUNTY

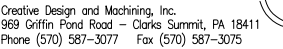
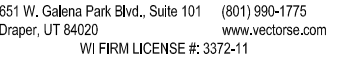


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REVISIONS		
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JACKSON, WI 53037
WASHINGTON COUNTY

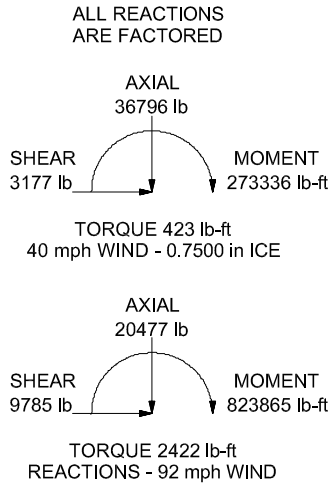
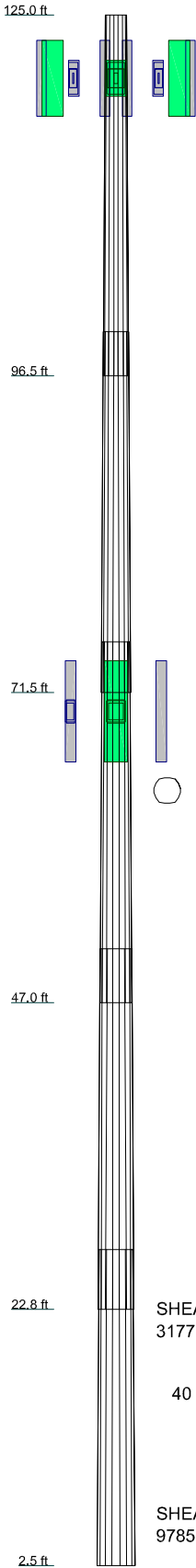
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NOTE:
THE LOADING ON THE MONOPOLE
SHALL BE VERIFIED TO BE CORRECT
PRIOR TO ERECTION. CONTACT EOR
IF DISCREPANCIES OCCUR.

NOTE:
PLEASE REFER TO THE TRANSAMERICAN POWER
PRODUCTS, INC. TOWER FABRICATION DRAWINGS
SITE #LP-STP36HD-125', DATED 05/08/21

Section	1	2	3	4	5
Length (ft)	28.50	28.50	28.50	28.50	25.00
Number of Sides	18	18	18	18	18
Thickness (in)	0.1875	0.1875	0.2500	0.2500	0.2500
Socket Length (ft)	3.50	4.00	4.25	4.75	
Top Dia (in)	20.8300	23.9081	26.9171	29.7666	32.5470
Bot Dia (in)	24.7665	27.8446	30.8536	33.7031	36.0000
Grade			A572-65		
Weight (lb)	1305.0	1482.6	2203.6	2422.9	2296.7



DESIGNED APPURTENANCE LOADING			
TYPE	ELEVATION	TYPE	ELEVATION
(2) Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	120	Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	120
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	120	Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	120
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	120	Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	120
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	120	RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	120
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	120	Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	70
Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	120	Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	70
(2) Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	120	Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	70
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	120	Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP	70
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	120	Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	70
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Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	120		

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

- TOWER DESIGN NOTES**
- Tower is located in Washington County, Wisconsin.
 - Tower designed for Exposure C to the TIA-222-G Standard.
 - Tower designed for a 92 mph basic wind in accordance with the TIA-222-G Standard.
 - Tower is also designed for a 40 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
 - Deflections are based upon a 60 mph wind.
 - Tower Risk Category II.
 - Topographic Category 1 with Crest Height of 0.00 ft
 - TOWER RATING: 60.6%

Vector Structural Engineering 651 W Galena Park Blvd, Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776			Job: Jackson WT Temp Project: U1140.0270.242		
Client: CDMI		Drawn by: joshua.blom		App'd:	
Code: TIA-222-G		Date: 02/21/24		Scale: NTS	
Path:				Dwg No. E-1	

ELEVATION
N.T.S.



651 W. Galena Park Blvd., Suite 101 (801) 990-1775
Draper, UT 84020 www.vectorse.com
WI FIRM LICENSE #: 3372-11



Creative Design and Machining, Inc.
969 Griffin Pond Road - Clarks Summit, PA 18411
Phone (570) 587-3077 Fax (570) 587-3075

DATE: 2/22/24			DESIGNED: JJB	DRAFTER: JJB
REVISIONS				
REV	DATE	DESCRIPTION		

MONOPOLE SIZE AND LOADING

JACKSON WT TEMP

125' MONOPOLE W/ LS-20 (CENTERED)

W227 N16551 CEDAR PARKWAY
JACKSON, WI 53037
WASHINGTON COUNTY



02/22/2024

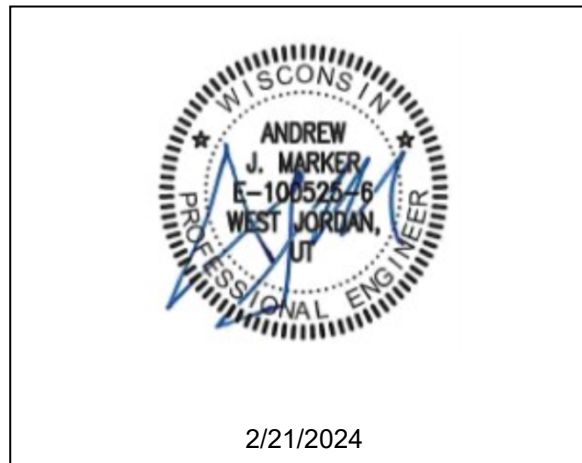
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STRUCTURAL CALCULATIONS
for
JACKSON WT TEMP
125' MONOPOLE W/ LS-20 (CENTERED)
at
W227 N16551 CEDAR PARKWAY
JACKSON, WI 53037
for
CDMI



BY: ANDREW MARKER, P.E.
PROJECT ENGINEER

WI Firm License #: 3372-11

PROJECT #: U1140.0270.242

DATE: February 21, 2024

DESIGNED BY JJB; CHECKED BY YCA

Note:

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

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PROJECT: JACKSON WT TEMP

Design Criteria:

Code: Structural design is based on the Wisconsin Uniform Commercial Building Code (2015 IBC) and the TIA-222-G standard.

Wind: Basic wind speed = 92 mph (3-second gust) per the ASCE 7-10 standard
Risk Category / Structure Class: II
Wind exposure: C
Topographic category: 1
Crest height: 0 ft

Ice: 0.75" radial ice @ 40 mph basic wind speed (3-second gust) per the TIA-222-G standard

General Notes:

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

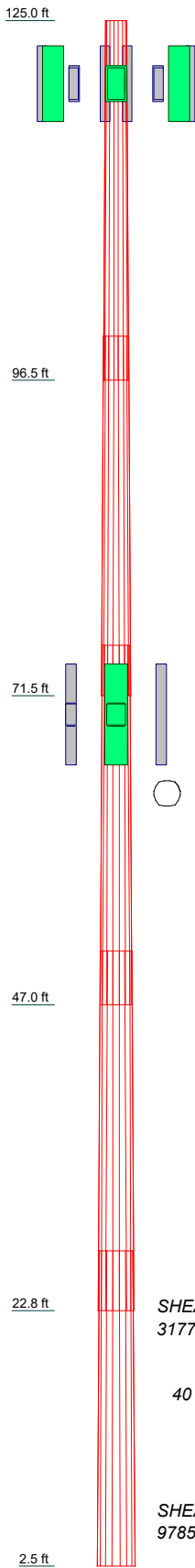
Structural Steel:

- 1 All structural steel code checks based on the AISC-LRFD, 3rd Edition per the TIA-222-G standard
- 2 All 18-sided, tapered shaft steel to be per ASTM A572 GR. 65, U.N.O.
- 3 The design length of slip splices is equal to 1.67 times the inside width of the base of the upper section. Slip splice length tolerance is equal to $\pm 10\%$ of the design slip splice length.
- 4 All other structural steel shapes & plates shall be per ASTM A572 GR. 50, U.N.O.
- 5 All bolts for steel-to-steel connections shall be per ASTM F3125 GR. A325 U.N.O.
- 6 All bolted connections shall be tightened per the "turn-of-nut" method as defined by AISC.
- 7 All welding shall be performed by certified welders in accordance with the latest edition of the American Welding Society (AWS) D1.1. Utilize minimum E70XX low-hydrogen electrode U.N.O. or where higher strength electrode is required by AWS D1.1
- 8 All steel surfaces shall be galvanized in accordance with ASTM A123 and ASTM F2329 standards, thoroughly coated with a zinc-rich primer, or otherwise protected as noted on the structural drawings.

Foundation:

- 1 Foundation design is based on presumptive soil parameters. Vector Structural Engineering, LLC strongly recommends independent soils testing be performed by a licensed geotechnical engineer to verify soil bearing capacities, slope stability, and any other related soil parameters, as required.

Section	1	2	3	4	5	
Length (ft)	28.50	28.50	28.50	28.50	25.00	9710.7
Number of Sides	18	18	18	18	18	
Thickness (in)	0.1875	0.1875	0.2500	0.2500	0.2500	
Socket Length (ft)	3.50	4.00	4.25	4.75	32.5470	
Top Dia (in)	20.8300	23.9081	26.9171	29.7666	36.0000	
Bot Dia (in)	24.7665	27.8446	30.8536	33.7031		
Grade			A572-65			
Weight (lb)	1305.0	1482.6	2203.6	2422.9	2296.7	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	120	Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	120
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	120	Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	120
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	120	Raycap RXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	120
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	120	RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	120
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	120	Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	70
Raycap RXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	120	Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	70
(2) Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	120	Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	70
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	120	Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP	70
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	120	Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	70
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	120	Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	70
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	120	Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	70
Raycap RXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	120	Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	70
(2) Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	120	Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP	70
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	120	RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	70
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	120		

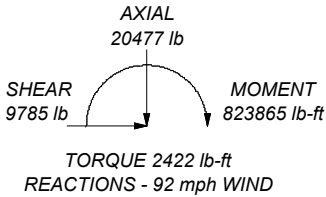
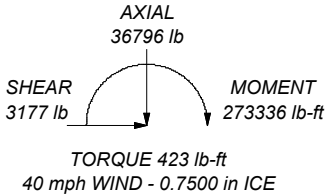
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Washington County, Wisconsin.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 92 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 60.6%

ALL REACTIONS
ARE FACTORED



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

Job: **Jackson WT Temp**
Project: **U1140.0270.242**
Client: CDMI
Code: TIA-222-G
Path: [https://www.vectorstructuralengineering.com/clients/jackson-wt-temp](#)
Drawn by: joshua.blom
Date: 02/21/24
App'd:
Scale: NTS
Dwg No. E-1

tnxTower Vector Structural Engineering 651 W Galena Park Blvd, Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Job	Jackson WT Temp	Page	1 of 28
	Project	U1140.0270.242	Date	10:19:05 02/21/24
	Client	CDMI	Designed by	joshua.blom

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower is located in Washington County, Wisconsin.

ASCE 7-10 Wind Data is used.

Basic wind speed of 92 mph.

Risk Category II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 40 mph is used in combination with ice.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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

Options

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

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	125.00-96.50	28.50	3.50	18	20.8300	24.7665	0.1875	0.7500	A572-65 (65 ksi)
L2	96.50-71.50	28.50	4.00	18	23.9081	27.8446	0.1875	0.7500	A572-65 (65 ksi)
L3	71.50-47.00	28.50	4.25	18	26.9171	30.8536	0.2500	1.0000	A572-65 (65 ksi)

tnxTower Vector Structural Engineering 651 W Galena Park Blvd, Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Job	Jackson WT Temp	Page	2 of 28
	Project	U1140.0270.242	Date	10:19:05 02/21/24
	Client	CDMI	Designed by	joshua.blom

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L4	47.00-22.75	28.50	4.75	18	29.7666	33.7031	0.2500	1.0000	A572-65 (65 ksi)
L5	22.75-2.50	25.00		18	32.5470	36.0000	0.2500	1.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	21.1224	12.2849	661.3518	7.3281	10.5816	62.4999	1323.5738	6.1436	3.3361	17.792
	25.1196	14.6276	1116.4474	8.7255	12.5814	88.7381	2234.3639	7.3152	4.0289	21.487
L2	24.7389	14.1167	1003.5084	8.4208	12.1453	82.6252	2008.3372	7.0597	3.8778	20.682
	28.2452	16.4594	1590.6168	9.8183	14.1451	112.4504	3183.3266	8.2313	4.5706	24.377
L3	27.8548	21.1603	1901.1308	9.4668	13.6739	139.0337	3804.7631	10.5822	4.2974	17.19
	31.2910	24.2840	2873.4387	10.8643	15.6736	183.3295	5750.6583	12.1443	4.9902	19.961
L4	30.7833	23.4214	2577.9972	10.4784	15.1214	170.4864	5159.3866	11.7129	4.7989	19.196
	34.1845	26.5450	3753.1290	11.8759	17.1212	219.2098	7511.1964	13.2750	5.4917	21.967
L5	33.6767	25.6277	3377.3141	11.4654	16.5339	204.2662	6759.0722	12.8163	5.2883	21.153
	36.5168	28.3676	4580.4961	12.6913	18.2880	250.4646	9167.0194	14.1865	5.8960	23.584

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 125.00-96.50				1	1	1			
L2 96.50-71.50				1	1	1			
L3 71.50-47.00				1	1	1			
L4 47.00-22.75				1	1	1			
L5 22.75-2.50				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf
1 5/8 Coax	C	No	Yes	Inside Pole	120.00 - 2.50	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
1 5/8 Coax	C	No	Yes	Inside Pole	71.00 - 2.50	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00

Feed Line/Linear Appurtenances Section Areas

tnxTower Vector Structural Engineering 651 W Galena Park Blvd, Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Job	Jackson WT Temp	Page	3 of 28
	Project	U1140.0270.242	Date	10:19:05 02/21/24
	Client	CDMI	Designed by	joshua.blom

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R ft²</i>	<i>A_F ft²</i>	<i>C_AA_A In Face ft²</i>	<i>C_AA_A Out Face ft²</i>	<i>Weight lb</i>
L1	125.00-96.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	203.04
L2	96.50-71.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	216.00
L3	71.50-47.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	315.36
L4	47.00-22.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	314.28
L5	22.75-2.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	262.44

Feed Line/Linear Appurtenances Section Areas - With Ice

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R ft²</i>	<i>A_F ft²</i>	<i>C_AA_A In Face ft²</i>	<i>C_AA_A Out Face ft²</i>	<i>Weight lb</i>
L1	125.00-96.50	A	1.692	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	203.04
L2	96.50-71.50	A	1.646	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	216.00
L3	71.50-47.00	A	1.590	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	315.36
L4	47.00-22.75	A	1.507	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	314.28
L5	22.75-2.50	A	1.361	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	262.44

Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_AA_A Front ft²</i>	<i>C_AA_A Side ft²</i>	<i>Weight lb</i>
(2) Commscope NHH-65B-R2B	A	From Face	3.00	0.0000	120.00	No Ice	12.27	103.90
(72"x19.6"x7.8", 82lb) w/ MP Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	A	From Face	0.00	0.0000	120.00	1/2" Ice	12.77	191.93
			0.00			1" Ice	13.27	288.27
			0.00			No Ice	5.99	83.10
Ericsson RRU 4490	A	From Face	3.00	0.0000	120.00	1/2" Ice	6.37	132.32
			0.00			1" Ice	6.75	187.07
			0.00			No Ice	1.98	70.00

tnxTower Vector Structural Engineering 651 W Galena Park Blvd, Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Job	Jackson WT Temp	Page	4 of 28
	Project	U1140.0270.242	Date	10:19:05 02/21/24
	Client	CDMI	Designed by	joshua.blom

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
(18"x13.2"x9.4", 70lb)			0.00			1/2" Ice	2.16	1.57	88.55
			0.00			1" Ice	2.34	1.73	109.93
Ericsson RRU 4890	A	From Face	3.00	0.0000	120.00	No Ice	2.22	1.02	69.50
(17.5"x15.2"x7", 69.5 lbs)			0.00			1/2" Ice	2.40	1.16	86.86
			0.00			1" Ice	2.59	1.31	106.98
Raycap 3315-ALM-RS485	A	From Face	3.00	0.0000	120.00	No Ice	0.29	0.08	5.00
(9.51"x3.6"x0.83", 5 lbs)			0.00			1/2" Ice	0.36	0.15	6.95
			0.00			1" Ice	0.45	0.21	9.99
Raycap RXXDC-3315-PF-48	A	From Face	3.00	0.0000	120.00	No Ice	4.06	3.10	32.00
(29.5"x16.5"x12.6", 32lbs)			0.00			1/2" Ice	4.32	3.34	68.49
			0.00			1" Ice	4.58	3.58	108.97

(2) Commscope	B	From Face	3.00	0.0000	120.00	No Ice	12.27	7.17	103.90
NHH-65B-R2B			0.00			1/2" Ice	12.77	8.13	191.93
(72"x19.6"x7.8", 82lb) w/ MP			0.00			1" Ice	13.27	8.97	288.27
Ericsson Air 6419	B	From Face	3.00	0.0000	120.00	No Ice	5.99	3.32	83.10
(34.5"x20"x8", 68.5lb) w/ MP			0.00			1/2" Ice	6.37	3.80	132.32
			0.00			1" Ice	6.75	4.29	187.07
Ericsson RRU 4490	B	From Face	3.00	0.0000	120.00	No Ice	1.98	1.41	70.00
(18"x13.2"x9.4", 70lb)			0.00			1/2" Ice	2.16	1.57	88.55
			0.00			1" Ice	2.34	1.73	109.93
Ericsson RRU 4890	B	From Face	3.00	0.0000	120.00	No Ice	2.22	1.02	69.50
(17.5"x15.2"x7", 69.5 lbs)			0.00			1/2" Ice	2.40	1.16	86.86
			0.00			1" Ice	2.59	1.31	106.98
Raycap 3315-ALM-RS485	B	From Face	3.00	0.0000	120.00	No Ice	0.29	0.08	5.00
(9.51"x3.6"x0.83", 5 lbs)			0.00			1/2" Ice	0.36	0.15	6.95
			0.00			1" Ice	0.45	0.21	9.99
Raycap RXXDC-3315-PF-48	B	From Face	3.00	0.0000	120.00	No Ice	4.06	3.10	32.00
(29.5"x16.5"x12.6", 32lbs)			0.00			1/2" Ice	4.32	3.34	68.49
			0.00			1" Ice	4.58	3.58	108.97

(2) Commscope	C	From Face	3.00	0.0000	120.00	No Ice	12.27	7.17	103.90
NHH-65B-R2B			0.00			1/2" Ice	12.77	8.13	191.93
(72"x19.6"x7.8", 82lb) w/ MP			0.00			1" Ice	13.27	8.97	288.27
Ericsson Air 6419	C	From Face	3.00	0.0000	120.00	No Ice	5.99	3.32	83.10
(34.5"x20"x8", 68.5lb) w/ MP			0.00			1/2" Ice	6.37	3.80	132.32
			0.00			1" Ice	6.75	4.29	187.07
Ericsson RRU 4490	C	From Face	3.00	0.0000	120.00	No Ice	1.98	1.41	70.00
(18"x13.2"x9.4", 70lb)			0.00			1/2" Ice	2.16	1.57	88.55
			0.00			1" Ice	2.34	1.73	109.93
Ericsson RRU 4890	C	From Face	3.00	0.0000	120.00	No Ice	2.22	1.02	69.50
(17.5"x15.2"x7", 69.5 lbs)			0.00			1/2" Ice	2.40	1.16	86.86
			0.00			1" Ice	2.59	1.31	106.98
Raycap 3315-ALM-RS485	C	From Face	3.00	0.0000	120.00	No Ice	0.29	0.08	5.00
(9.51"x3.6"x0.83", 5 lbs)			0.00			1/2" Ice	0.36	0.15	6.95
			0.00			1" Ice	0.45	0.21	9.99
Raycap RXXDC-3315-PF-48	C	From Face	3.00	0.0000	120.00	No Ice	4.06	3.10	32.00
(29.5"x16.5"x12.6", 32lbs)			0.00			1/2" Ice	4.32	3.34	68.49
			0.00			1" Ice	4.58	3.58	108.97

RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	C	None		0.0000	120.00	No Ice	34.54	31.94	1945.00
						1/2" Ice	42.04	39.46	2335.00
						1" Ice	49.60	47.16	2845.00
*** **									
Dengyo	A	From Face	3.00	0.0000	70.00	No Ice	18.07	8.92	130.60
OCT8-2LX2HX-BW65			0.00			1/2" Ice	18.70	10.34	244.86
(95.9"x21.0"x6.3", 101.4 lbs)			0.00			1" Ice	19.34	11.60	369.37

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
w/ MP									
Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	2.85 3.06 3.28	1.38 1.54 1.71	93.00 114.70 139.51
Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	60.00 75.88 94.39
Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP ***	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	3.24 3.47 3.70	1.32 1.58 1.85	26.27 52.53 82.75
Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP ***	B	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	18.07 18.70 19.34	8.92 10.34 11.60	130.60 244.86 369.37
Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	C	From Face	3.00 0.00 0.00	-20.0000	70.00	No Ice 1/2" Ice 1" Ice	18.07 18.70 19.34	8.92 10.34 11.60	130.60 244.86 369.37
Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	C	From Face	3.00 0.00 0.00	-20.0000	70.00	No Ice 1/2" Ice 1" Ice	2.85 3.06 3.28	1.38 1.54 1.71	93.00 114.70 139.51
Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	C	From Face	3.00 0.00 0.00	-20.0000	70.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	60.00 75.88 94.39
Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP ***	C	From Face	3.00 0.00 0.00	-20.0000	70.00	No Ice 1/2" Ice 1" Ice	3.24 3.47 3.70	1.32 1.58 1.85	26.27 52.53 82.75
RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs) ***	C	None		0.0000	70.00	No Ice 1/2" Ice 1" Ice	34.54 42.04 49.60	31.94 39.46 47.16	1945.00 2335.00 2845.00

Tower Pressures - No Ice

$$G_H = 1.100$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 125.00-96.50	110.34	1.292	27	54.912	A	0.000	54.912	54.912	100.00	0.000	0.000
					B	0.000	54.912		100.00	0.000	0.000
					C	0.000	54.912		100.00	0.000	0.000
L2 96.50-71.50	83.72	1.219	25	55.192	A	0.000	55.192	55.192	100.00	0.000	0.000
					B	0.000	55.192		100.00	0.000	0.000

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Section Elevation	<i>z</i>	<i>K_Z</i>	<i>q_z</i>	<i>A_G</i>	<i>F_{a c e}</i>	<i>A_F</i>	<i>A_R</i>	<i>A_{leg}</i>	<i>Leg %</i>	<i>C_{A A_A} In Face ft²</i>	<i>C_{A A_A} Out Face ft²</i>
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			ft ²
L3 71.50-47.00	59.01	1.133	23	60.378	C	0.000	55.192		100.00	0.000	0.000
					A	0.000	60.378	60.378	100.00	0.000	0.000
					B	0.000	60.378		100.00	0.000	0.000
					C	0.000	60.378		100.00	0.000	0.000
L4 47.00-22.75	34.66	1.013	21	65.644	A	0.000	65.644	65.644	100.00	0.000	0.000
					B	0.000	65.644		100.00	0.000	0.000
					C	0.000	65.644		100.00	0.000	0.000
L5 22.75-2.50	12.49	0.85	17	59.226	A	0.000	59.226	59.226	100.00	0.000	0.000
					B	0.000	59.226		100.00	0.000	0.000
					C	0.000	59.226		100.00	0.000	0.000

Tower Pressure - With Ice

$$G_H = 1.100$$

Section Elevation	<i>z</i>	<i>K_Z</i>	<i>q_z</i>	<i>t_z</i>	<i>A_G</i>	<i>F_{a c e}</i>	<i>A_F</i>	<i>A_R</i>	<i>A_{leg}</i>	<i>Leg %</i>	<i>C_{A A_A} In Face ft²</i>	<i>C_{A A_A} Out Face ft²</i>
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 125.00-96.50	110.34	1.292	5	1.6924	62.952	A	0.000	62.952	62.952	100.00	0.000	0.000
						B	0.000	62.952		100.00	0.000	0.000
						C	0.000	62.952		100.00	0.000	0.000
L2 96.50-71.50	83.72	1.219	5	1.6464	62.244	A	0.000	62.244	62.244	100.00	0.000	0.000
						B	0.000	62.244		100.00	0.000	0.000
						C	0.000	62.244		100.00	0.000	0.000
L3 71.50-47.00	59.01	1.133	4	1.5898	67.101	A	0.000	67.101	67.101	100.00	0.000	0.000
						B	0.000	67.101		100.00	0.000	0.000
						C	0.000	67.101		100.00	0.000	0.000
L4 47.00-22.75	34.66	1.013	4	1.5074	72.070	A	0.000	72.070	72.070	100.00	0.000	0.000
						B	0.000	72.070		100.00	0.000	0.000
						C	0.000	72.070		100.00	0.000	0.000
L5 22.75-2.50	12.49	0.85	3	1.3611	64.313	A	0.000	64.313	64.313	100.00	0.000	0.000
						B	0.000	64.313		100.00	0.000	0.000
						C	0.000	64.313		100.00	0.000	0.000

Tower Pressure - Service

$$G_H = 1.100$$

Section Elevation	<i>z</i>	<i>K_Z</i>	<i>q_z</i>	<i>A_G</i>	<i>F_{a c e}</i>	<i>A_F</i>	<i>A_R</i>	<i>A_{leg}</i>	<i>Leg %</i>	<i>C_{A A_A} In Face ft²</i>	<i>C_{A A_A} Out Face ft²</i>
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			ft ²
L1 125.00-96.50	110.34	1.292	10	54.912	A	0.000	54.912	54.912	100.00	0.000	0.000
					B	0.000	54.912		100.00	0.000	0.000
					C	0.000	54.912		100.00	0.000	0.000
L2 96.50-71.50	83.72	1.219	10	55.192	A	0.000	55.192	55.192	100.00	0.000	0.000
					B	0.000	55.192		100.00	0.000	0.000
					C	0.000	55.192		100.00	0.000	0.000
L3 71.50-47.00	59.01	1.133	9	60.378	A	0.000	60.378	60.378	100.00	0.000	0.000
					B	0.000	60.378		100.00	0.000	0.000
					C	0.000	60.378		100.00	0.000	0.000

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Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
L4 47.00-22.75	34.66	1.013	8	65.644	A	0.000	65.644	65.644	100.00	0.000	0.000
					B	0.000	65.644		100.00	0.000	0.000
					C	0.000	65.644		100.00	0.000	0.000
L5 22.75-2.50	12.49	0.85	7	59.226	A	0.000	59.226	59.226	100.00	0.000	0.000
					B	0.000	59.226		100.00	0.000	0.000
					C	0.000	59.226		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 125.00-96.50	203.04	1304.98	A	1	0.65	27	1	1	54.912	1044.28	36.64	C
			B	1	0.65		1	1	54.912			
			C	1	0.65		1	1	54.912			
L2 96.50-71.50	216.00	1482.63	A	1	0.65	25	1	1	55.192	990.33	39.61	C
			B	1	0.65		1	1	55.192			
			C	1	0.65		1	1	55.192			
L3 71.50-47.00	315.36	2203.58	A	1	0.65	23	1	1	60.378	1006.48	41.08	C
			B	1	0.65		1	1	60.378			
			C	1	0.65		1	1	60.378			
L4 47.00-22.75	314.28	2422.86	A	1	0.65	21	1	1	65.644	978.31	40.34	C
			B	1	0.65		1	1	65.644			
			C	1	0.65		1	1	65.644			
L5 22.75-2.50	262.44	2296.68	A	1	0.65	17	1	1	59.226	740.93	36.59	C
			B	1	0.65		1	1	59.226			
			C	1	0.65		1	1	59.226			
Sum Weight:	1311.12	9710.74						OTM	288800.17 lb-ft	4760.33		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 125.00-96.50	203.04	1304.98	A	1	0.65	27	1	1	54.912	1044.28	36.64	C
			B	1	0.65		1	1	54.912			
			C	1	0.65		1	1	54.912			
L2 96.50-71.50	216.00	1482.63	A	1	0.65	25	1	1	55.192	990.33	39.61	C
			B	1	0.65		1	1	55.192			
			C	1	0.65		1	1	55.192			
L3 71.50-47.00	315.36	2203.58	A	1	0.65	23	1	1	60.378	1006.48	41.08	C
			B	1	0.65		1	1	60.378			
			C	1	0.65		1	1	60.378			
L4 47.00-22.75	314.28	2422.86	A	1	0.65	21	1	1	65.644	978.31	40.34	C
			B	1	0.65		1	1	65.644			
			C	1	0.65		1	1	65.644			
L5 22.75-2.50	262.44	2296.68	A	1	0.65	17	1	1	59.226	740.93	36.59	C
			B	1	0.65		1	1	59.226			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
Sum Weight:	1311.12	9710.74	C	1	0.65		1	1 OTM	59.226 288800.17 lb-ft	4760.33		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 125.00-96.50	203.04	1304.98	A B C	1 1 1	0.65 0.65 0.65	27	1 1 1	1 1 1	54.912 54.912 54.912	1044.28	36.64	C
L2 96.50-71.50	216.00	1482.63	A B C	1 1 1	0.65 0.65 0.65	25	1 1 1	1 1 1	55.192 55.192 55.192	990.33	39.61	C
L3 71.50-47.00	315.36	2203.58	A B C	1 1 1	0.65 0.65 0.65	23	1 1 1	1 1 1	60.378 60.378 60.378	1006.48	41.08	C
L4 47.00-22.75	314.28	2422.86	A B C	1 1 1	0.65 0.65 0.65	21	1 1 1	1 1 1	65.644 65.644 65.644	978.31	40.34	C
L5 22.75-2.50	262.44	2296.68	A B C	1 1 1	0.65 0.65 0.65	17	1 1 1	1 1 1	59.226 59.226 59.226	740.93	36.59	C
Sum Weight:	1311.12	9710.74						1 OTM	288800.17 lb-ft	4760.33		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 125.00-96.50	203.04	1304.98	A B C	1 1 1	0.65 0.65 0.65	27	1 1 1	1 1 1	54.912 54.912 54.912	1044.28	36.64	C
L2 96.50-71.50	216.00	1482.63	A B C	1 1 1	0.65 0.65 0.65	25	1 1 1	1 1 1	55.192 55.192 55.192	990.33	39.61	C
L3 71.50-47.00	315.36	2203.58	A B C	1 1 1	0.65 0.65 0.65	23	1 1 1	1 1 1	60.378 60.378 60.378	1006.48	41.08	C
L4 47.00-22.75	314.28	2422.86	A B C	1 1 1	0.65 0.65 0.65	21	1 1 1	1 1 1	65.644 65.644 65.644	978.31	40.34	C
L5 22.75-2.50	262.44	2296.68	A B C	1 1 1	0.65 0.65 0.65	17	1 1 1	1 1 1	59.226 59.226 59.226	740.93	36.59	C

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
Sum Weight:	1311.12	9710.74						OTM	288800.17 lb-ft	4760.33		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 125.00-96.50	203.04	2763.09	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	62.952 62.952 62.952	417.79	14.66	C
L2 96.50-71.50	216.00	2893.17	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	62.052 62.052 62.052	388.57	15.54	C
L3 71.50-47.00	315.36	3682.00	A B C	1 1 1	1.2 1.2 1.2	4	1 1 1	1 1 1	66.870 66.870 66.870	389.02	15.88	C
L4 47.00-22.75	314.28	3936.00	A B C	1 1 1	1.2 1.2 1.2	4	1 1 1	1 1 1	71.737 71.737 71.737	373.11	15.39	C
L5 22.75-2.50	262.44	3520.17	A B C	1 1 1	1.2 1.2 1.2	3	1 1 1	1 1 1	63.820 63.820 63.820	278.63	13.76	C
Sum Weight:	1311.12	16794.45						OTM	113384.70 lb-ft	1847.12		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 125.00-96.50	203.04	2763.09	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	62.952 62.952 62.952	417.79	14.66	C
L2 96.50-71.50	216.00	2893.17	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	62.052 62.052 62.052	388.57	15.54	C
L3 71.50-47.00	315.36	3682.00	A B C	1 1 1	1.2 1.2 1.2	4	1 1 1	1 1 1	66.870 66.870 66.870	389.02	15.88	C
L4 47.00-22.75	314.28	3936.00	A B C	1 1 1	1.2 1.2 1.2	4	1 1 1	1 1 1	71.737 71.737 71.737	373.11	15.39	C
L5 22.75-2.50	262.44	3520.17	A B C	1 1 1	1.2 1.2 1.2	3	1 1 1	1 1 1	63.820 63.820 63.820	278.63	13.76	C
Sum Weight:	1311.12	16794.45						OTM	113384.70	1847.12		

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

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 125.00-96.50	203.04	2763.09	A	1	1.2	5	1	1	62.952	417.79	14.66	C
			B	1	1.2		1	1	62.952			
			C	1	1.2		1	1	62.952			
L2 96.50-71.50	216.00	2893.17	A	1	1.2	5	1	1	62.052	388.57	15.54	C
			B	1	1.2		1	1	62.052			
			C	1	1.2		1	1	62.052			
L3 71.50-47.00	315.36	3682.00	A	1	1.2	4	1	1	66.870	389.02	15.88	C
			B	1	1.2		1	1	66.870			
			C	1	1.2		1	1	66.870			
L4 47.00-22.75	314.28	3936.00	A	1	1.2	4	1	1	71.737	373.11	15.39	C
			B	1	1.2		1	1	71.737			
			C	1	1.2		1	1	71.737			
L5 22.75-2.50	262.44	3520.17	A	1	1.2	3	1	1	63.820	278.63	13.76	C
			B	1	1.2		1	1	63.820			
			C	1	1.2		1	1	63.820			
Sum Weight:	1311.12	16794.45						OTM	113384.70 lb-ft	1847.12		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 125.00-96.50	203.04	2763.09	A	1	1.2	5	1	1	62.952	417.79	14.66	C
			B	1	1.2		1	1	62.952			
			C	1	1.2		1	1	62.952			
L2 96.50-71.50	216.00	2893.17	A	1	1.2	5	1	1	62.052	388.57	15.54	C
			B	1	1.2		1	1	62.052			
			C	1	1.2		1	1	62.052			
L3 71.50-47.00	315.36	3682.00	A	1	1.2	4	1	1	66.870	389.02	15.88	C
			B	1	1.2		1	1	66.870			
			C	1	1.2		1	1	66.870			
L4 47.00-22.75	314.28	3936.00	A	1	1.2	4	1	1	71.737	373.11	15.39	C
			B	1	1.2		1	1	71.737			
			C	1	1.2		1	1	71.737			
L5 22.75-2.50	262.44	3520.17	A	1	1.2	3	1	1	63.820	278.63	13.76	C
			B	1	1.2		1	1	63.820			
			C	1	1.2		1	1	63.820			
Sum Weight:	1311.12	16794.45						OTM	113384.70 lb-ft	1847.12		

tnxTower Vector Structural Engineering 651 W Galena Park Blvd, Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Job	Jackson WT Temp	Page	11 of 28
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	Client	CDMI	Designed by	joshua.blom

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-96.50	203.04	1304.98	A	1	0.65	10	1	1	54.912	397.41	13.94	C
			B	1	0.65		1	1	54.912			
			C	1	0.65		1	1	54.912			
L2 96.50-71.50	216.00	1482.63	A	1	0.65	10	1	1	55.192	376.88	15.08	C
			B	1	0.65		1	1	55.192			
			C	1	0.65		1	1	55.192			
L3 71.50-47.00	315.36	2203.58	A	1	0.65	9	1	1	60.378	383.03	15.63	C
			B	1	0.65		1	1	60.378			
			C	1	0.65		1	1	60.378			
L4 47.00-22.75	314.28	2422.86	A	1	0.65	8	1	1	65.644	372.31	15.35	C
			B	1	0.65		1	1	65.644			
			C	1	0.65		1	1	65.644			
L5 22.75-2.50	262.44	2296.68	A	1	0.65	7	1	1	59.226	281.97	13.92	C
			B	1	0.65		1	1	59.226			
			C	1	0.65		1	1	59.226			
Sum Weight:	1311.12	9710.74						OTM	109905.55 lb-ft	1811.59		

Tower Forces - Service - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 125.00-96.50	203.04	1304.98	A	1	0.65	10	1	1	54.912	397.41	13.94	C
			B	1	0.65		1	1	54.912			
			C	1	0.65		1	1	54.912			
L2 96.50-71.50	216.00	1482.63	A	1	0.65	10	1	1	55.192	376.88	15.08	C
			B	1	0.65		1	1	55.192			
			C	1	0.65		1	1	55.192			
L3 71.50-47.00	315.36	2203.58	A	1	0.65	9	1	1	60.378	383.03	15.63	C
			B	1	0.65		1	1	60.378			
			C	1	0.65		1	1	60.378			
L4 47.00-22.75	314.28	2422.86	A	1	0.65	8	1	1	65.644	372.31	15.35	C
			B	1	0.65		1	1	65.644			
			C	1	0.65		1	1	65.644			
L5 22.75-2.50	262.44	2296.68	A	1	0.65	7	1	1	59.226	281.97	13.92	C
			B	1	0.65		1	1	59.226			
			C	1	0.65		1	1	59.226			
Sum Weight:	1311.12	9710.74						OTM	109905.55 lb-ft	1811.59		

tnxTower Vector Structural Engineering 651 W Galena Park Blvd, Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Job	Jackson WT Temp	Page	12 of 28
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Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 125.00-96.50	203.04	1304.98	A	1	0.65	10	1	1	54.912	397.41	13.94	C
			B	1	0.65		1	1	54.912			
			C	1	0.65		1	1	54.912			
L2 96.50-71.50	216.00	1482.63	A	1	0.65	10	1	1	55.192	376.88	15.08	C
			B	1	0.65		1	1	55.192			
			C	1	0.65		1	1	55.192			
L3 71.50-47.00	315.36	2203.58	A	1	0.65	9	1	1	60.378	383.03	15.63	C
			B	1	0.65		1	1	60.378			
			C	1	0.65		1	1	60.378			
L4 47.00-22.75	314.28	2422.86	A	1	0.65	8	1	1	65.644	372.31	15.35	C
			B	1	0.65		1	1	65.644			
			C	1	0.65		1	1	65.644			
L5 22.75-2.50	262.44	2296.68	A	1	0.65	7	1	1	59.226	281.97	13.92	C
			B	1	0.65		1	1	59.226			
			C	1	0.65		1	1	59.226			
Sum Weight:	1311.12	9710.74						OTM	109905.55 lb-ft	1811.59		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 125.00-96.50	203.04	1304.98	A	1	0.65	10	1	1	54.912	397.41	13.94	C
			B	1	0.65		1	1	54.912			
			C	1	0.65		1	1	54.912			
L2 96.50-71.50	216.00	1482.63	A	1	0.65	10	1	1	55.192	376.88	15.08	C
			B	1	0.65		1	1	55.192			
			C	1	0.65		1	1	55.192			
L3 71.50-47.00	315.36	2203.58	A	1	0.65	9	1	1	60.378	383.03	15.63	C
			B	1	0.65		1	1	60.378			
			C	1	0.65		1	1	60.378			
L4 47.00-22.75	314.28	2422.86	A	1	0.65	8	1	1	65.644	372.31	15.35	C
			B	1	0.65		1	1	65.644			
			C	1	0.65		1	1	65.644			
L5 22.75-2.50	262.44	2296.68	A	1	0.65	7	1	1	59.226	281.97	13.92	C
			B	1	0.65		1	1	59.226			
			C	1	0.65		1	1	59.226			
Sum Weight:	1311.12	9710.74						OTM	109905.55 lb-ft	1811.59		

Discrete Appurtenance Pressures - No Ice G_H = 1.100

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	300.0000	207.80	-3.37	-1.95	120.00	1.315	27	24.54	14.35
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	300.0000	83.10	-3.37	-1.95	120.00	1.315	27	5.99	3.32
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	300.0000	70.00	-3.37	-1.95	120.00	1.315	27	1.98	1.41
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	300.0000	69.50	-3.37	-1.95	120.00	1.315	27	2.22	1.02
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	300.0000	5.00	-3.37	-1.95	120.00	1.315	27	0.29	0.08
Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	300.0000	32.00	-3.37	-1.95	120.00	1.315	27	4.06	3.10
Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	60.0000	207.80	3.37	-1.95	120.00	1.315	27	24.54	14.35
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	60.0000	83.10	3.37	-1.95	120.00	1.315	27	5.99	3.32
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	60.0000	70.00	3.37	-1.95	120.00	1.315	27	1.98	1.41
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	60.0000	69.50	3.37	-1.95	120.00	1.315	27	2.22	1.02
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	60.0000	5.00	3.37	-1.95	120.00	1.315	27	0.29	0.08
Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	60.0000	32.00	3.37	-1.95	120.00	1.315	27	4.06	3.10
Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	180.0000	207.80	0.00	3.90	120.00	1.315	27	24.54	14.35
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	180.0000	83.10	0.00	3.90	120.00	1.315	27	5.99	3.32
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	180.0000	70.00	0.00	3.90	120.00	1.315	27	1.98	1.41
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	180.0000	69.50	0.00	3.90	120.00	1.315	27	2.22	1.02
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	180.0000	5.00	0.00	3.90	120.00	1.315	27	0.29	0.08
Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	180.0000	32.00	0.00	3.90	120.00	1.315	27	4.06	3.10
RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	0.0000	1945.00	0.00	0.00	120.00	1.315	27	34.54	31.94
Dengyo	300.0000	130.60	-3.60	-2.08	70.00	1.174	24	18.07	8.92

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP									
Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	300.0000	93.00	-3.60	-2.08	70.00	1.174	24	2.85	1.38
Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	300.0000	60.00	-3.60	-2.08	70.00	1.174	24	1.84	1.06
Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP	300.0000	26.27	-3.60	-2.08	70.00	1.174	24	3.24	1.32
Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	60.0000	130.60	3.60	-2.08	70.00	1.174	24	18.07	8.92
Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	160.0000	130.60	0.00	4.15	70.00	1.174	24	18.07	8.92
Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	160.0000	93.00	0.00	4.15	70.00	1.174	24	2.85	1.38
Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	160.0000	60.00	0.00	4.15	70.00	1.174	24	1.84	1.06
Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP	160.0000	26.27	0.00	4.15	70.00	1.174	24	3.24	1.32
RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	0.0000	1945.00	0.00	0.00	70.00	1.174	24	34.54	31.94
Sum Weight:		6042.54							

Discrete Appurtenance Pressures - With Ice G_H = 1.100

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²	t _z in
Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	300.0000	888.77	-3.37	-1.95	120.00	1.315	5	27.98	20.36	1.7067
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	300.0000	277.95	-3.37	-1.95	120.00	1.315	5	7.32	5.02	1.7067
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	300.0000	146.69	-3.37	-1.95	120.00	1.315	5	2.62	1.98	1.7067
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	300.0000	141.84	-3.37	-1.95	120.00	1.315	5	2.88	1.53	1.7067
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	300.0000	17.17	-3.37	-1.95	120.00	1.315	5	0.58	0.32	1.7067
Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6",	300.0000	175.20	-3.37	-1.95	120.00	1.315	5	4.97	3.94	1.7067

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²	t _z in
32lbs) Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	60.0000	888.77	3.37	-1.95	120.00	1.315	5	27.98	20.36	1.7067
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	60.0000	277.95	3.37	-1.95	120.00	1.315	5	7.32	5.02	1.7067
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	60.0000	146.69	3.37	-1.95	120.00	1.315	5	2.62	1.98	1.7067
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	60.0000	141.84	3.37	-1.95	120.00	1.315	5	2.88	1.53	1.7067
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	60.0000	17.17	3.37	-1.95	120.00	1.315	5	0.58	0.32	1.7067
Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	60.0000	175.20	3.37	-1.95	120.00	1.315	5	4.97	3.94	1.7067
Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	180.0000	888.77	0.00	3.90	120.00	1.315	5	27.98	20.36	1.7067
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	180.0000	277.95	0.00	3.90	120.00	1.315	5	7.32	5.02	1.7067
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	180.0000	146.69	0.00	3.90	120.00	1.315	5	2.62	1.98	1.7067
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	180.0000	141.84	0.00	3.90	120.00	1.315	5	2.88	1.53	1.7067
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	180.0000	17.17	0.00	3.90	120.00	1.315	5	0.58	0.32	1.7067
Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	180.0000	175.20	0.00	3.90	120.00	1.315	5	4.97	3.94	1.7067
RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	0.0000	3466.90	0.00	0.00	120.00	1.315	5	60.24	57.89	1.7067
Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	300.0000	544.53	-3.60	-2.08	70.00	1.174	5	20.14	12.96	1.6171
Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	300.0000	176.37	-3.60	-2.08	70.00	1.174	5	3.57	1.93	1.6171
Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	300.0000	122.58	-3.60	-2.08	70.00	1.174	5	2.42	1.54	1.6171
Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP	300.0000	128.40	-3.60	-2.08	70.00	1.174	5	4.00	2.22	1.6171
Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	60.0000	544.53	3.60	-2.08	70.00	1.174	5	20.14	12.96	1.6171
Dengyo OCT8-2LX2HX-BW65	160.0000	544.53	0.00	4.15	70.00	1.174	5	20.14	12.96	1.6171

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²	t _z in
(95.9"x21.0"x6.3", 101.4 lbs) w/ MP										
Ericsson RRU 4480 B71/B85	160.0000	176.37	0.00	4.15	70.00	1.174	5	3.57	1.93	1.6171
(21.8"x15.7"x7.5", 93lb)										
Ericsson RRU 4478 B5	160.0000	122.58	0.00	4.15	70.00	1.174	5	2.42	1.54	1.6171
(16.5"x13.4"x7.7", 60lb)										
Raycap RUSDC - 6267-PF-48	160.0000	128.40	0.00	4.15	70.00	1.174	5	4.00	2.22	1.6171
(20.6"x18.9"x5.8", 20 lbs) w/ MP										
RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	0.0000	3388.09	0.00	0.00	70.00	1.174	5	58.89	56.53	1.6171
Sum Weight:		14286.13								

Discrete Appurtenance Pressures - Service G_H = 1.100

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	300.0000	207.80	-3.37	-1.95	120.00	1.315	10	24.54	14.35
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	300.0000	83.10	-3.37	-1.95	120.00	1.315	10	5.99	3.32
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	300.0000	70.00	-3.37	-1.95	120.00	1.315	10	1.98	1.41
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	300.0000	69.50	-3.37	-1.95	120.00	1.315	10	2.22	1.02
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	300.0000	5.00	-3.37	-1.95	120.00	1.315	10	0.29	0.08
Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	300.0000	32.00	-3.37	-1.95	120.00	1.315	10	4.06	3.10
Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	60.0000	207.80	3.37	-1.95	120.00	1.315	10	24.54	14.35
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	60.0000	83.10	3.37	-1.95	120.00	1.315	10	5.99	3.32
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	60.0000	70.00	3.37	-1.95	120.00	1.315	10	1.98	1.41
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	60.0000	69.50	3.37	-1.95	120.00	1.315	10	2.22	1.02
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	60.0000	5.00	3.37	-1.95	120.00	1.315	10	0.29	0.08
Raycap RXXDC-3315-PF-48	60.0000	32.00	3.37	-1.95	120.00	1.315	10	4.06	3.10

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	CDMI	joshua.blom

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
(29.5"x16.5"x12.6", 32lbs) Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	180.0000	207.80	0.00	3.90	120.00	1.315	10	24.54	14.35
Ericsson Air 6419 (34.5"x20"x8", 68.5lb) w/ MP	180.0000	83.10	0.00	3.90	120.00	1.315	10	5.99	3.32
Ericsson RRU 4490 (18"x13.2"x9.4", 70lb)	180.0000	70.00	0.00	3.90	120.00	1.315	10	1.98	1.41
Ericsson RRU 4890 (17.5"x15.2"x7", 69.5 lbs)	180.0000	69.50	0.00	3.90	120.00	1.315	10	2.22	1.02
Raycap 3315-ALM-RS485 (9.51"x3.6"x0.83", 5 lbs)	180.0000	5.00	0.00	3.90	120.00	1.315	10	0.29	0.08
Raycap RXXDC-3315-PF-48 (29.5"x16.5"x12.6", 32lbs)	180.0000	32.00	0.00	3.90	120.00	1.315	10	4.06	3.10
RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	0.0000	1945.00	0.00	0.00	120.00	1.315	10	34.54	31.94
Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	300.0000	130.60	-3.60	-2.08	70.00	1.174	9	18.07	8.92
Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	300.0000	93.00	-3.60	-2.08	70.00	1.174	9	2.85	1.38
Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	300.0000	60.00	-3.60	-2.08	70.00	1.174	9	1.84	1.06
Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP	300.0000	26.27	-3.60	-2.08	70.00	1.174	9	3.24	1.32
Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	60.0000	130.60	3.60	-2.08	70.00	1.174	9	18.07	8.92
Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	160.0000	130.60	0.00	4.15	70.00	1.174	9	18.07	8.92
Ericsson RRU 4480 B71/B85 (21.8"x15.7"x7.5", 93lb)	160.0000	93.00	0.00	4.15	70.00	1.174	9	2.85	1.38
Ericsson RRU 4478 B5 (16.5"x13.4"x7.7", 60lb)	160.0000	60.00	0.00	4.15	70.00	1.174	9	1.84	1.06
Raycap RUSDC - 6267-PF-48 (20.6"x18.9"x5.8", 20 lbs) w/ MP	160.0000	26.27	0.00	4.15	70.00	1.174	9	3.24	1.32
RMQP-xxx-HK (34.54 sq-ft, 31.94 sqft, 1945 lbs)	0.0000	1945.00	0.00	0.00	70.00	1.174	9	34.54	31.94
Sum Weight:		6042.54							

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Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	9710.74					
Bracing Weight	0.00					
Total Member Self-Weight	9710.74			372.27	644.79	
Total Weight	17064.40			372.27	644.79	
Wind 0 deg - No Ice		0.00	-9645.09	-770709.02	644.79	-367.58
Wind 30 deg - No Ice		4769.18	-8260.46	-661164.69	-381293.75	1479.45
Wind 45 deg - No Ice		6736.23	-6736.23	-539202.83	-538930.31	959.03
Wind 60 deg - No Ice		8269.93	-4774.65	-381935.18	-661531.14	-224.06
Wind 90 deg - No Ice		9666.95	0.00	372.27	-771912.13	-1539.98
Wind 120 deg - No Ice		8464.26	4886.84	390252.84	-674648.15	710.86
Wind 135 deg - No Ice		6919.44	6919.44	552314.22	-551297.15	2013.77
Wind 150 deg - No Ice		4881.38	8454.79	675026.25	-388866.86	2443.67
Wind 180 deg - No Ice		0.00	9645.09	771453.57	644.79	367.58
Wind 210 deg - No Ice		-4769.18	8260.46	661909.24	382583.34	-1479.45
Wind 225 deg - No Ice		-6736.23	6736.23	539947.38	540219.90	-959.03
Wind 240 deg - No Ice		-8269.93	4774.65	382679.72	662820.73	224.06
Wind 270 deg - No Ice		-9666.95	0.00	372.27	773201.72	1539.98
Wind 300 deg - No Ice		-8464.26	-4886.84	-389508.29	675937.74	-710.86
Wind 315 deg - No Ice		-6919.44	-6919.44	-551569.67	552586.74	-2013.77
Wind 330 deg - No Ice		-4881.38	-8454.79	-674281.71	390156.45	-2443.67
Member Ice	7083.71					
Total Weight Ice	32391.70			887.44	1537.09	
Wind 0 deg - Ice		0.00	-3153.84	-241118.81	1537.09	-97.84
Wind 30 deg - Ice		1567.53	-2715.04	-207598.55	-118832.35	210.89
Wind 45 deg - Ice		2215.09	-2215.09	-169223.84	-168574.19	139.10
Wind 60 deg - Ice		2715.98	-1568.07	-119518.50	-207012.11	-36.48
Wind 90 deg - Ice		3156.00	0.00	887.44	-240615.14	-220.75
Wind 120 deg - Ice		2749.44	1587.39	122597.24	-209270.46	153.74
Wind 135 deg - Ice		2246.64	2246.64	173127.91	-170703.38	364.56
Wind 150 deg - Ice		1586.85	2748.50	211631.78	-120136.21	433.69
Wind 180 deg - Ice		0.00	3153.84	242893.69	1537.09	97.84
Wind 210 deg - Ice		-1567.53	2715.04	209373.43	121906.53	-210.89
Wind 225 deg - Ice		-2215.09	2215.09	170998.72	171648.37	-139.10
Wind 240 deg - Ice		-2715.98	1568.07	121293.38	210086.29	36.48
Wind 270 deg - Ice		-3156.00	0.00	887.44	243689.32	220.75
Wind 300 deg - Ice		-2749.44	-1587.39	-120822.36	212344.64	-153.74
Wind 315 deg - Ice		-2246.64	-2246.64	-171353.03	173777.56	-364.56
Wind 330 deg - Ice		-1586.85	-2748.50	-209856.90	123210.39	-433.69
Total Weight	17064.40			372.27	644.79	
Wind 0 deg - Service		0.00	-3670.53	-293069.77	644.79	-139.88
Wind 30 deg - Service		1814.96	-3143.59	-251381.67	-144705.41	563.02
Wind 45 deg - Service		2563.53	-2563.53	-204967.97	-204695.45	364.97
Wind 60 deg - Service		3147.20	-1817.04	-145118.33	-251352.31	-85.27
Wind 90 deg - Service		3678.85	0.00	372.27	-293358.81	-586.05
Wind 120 deg - Service		3221.15	1859.73	148744.89	-256344.11	270.53
Wind 135 deg - Service		2633.26	2633.26	210418.83	-209401.76	766.36
Wind 150 deg - Service		1857.65	3217.55	257118.02	-147587.43	929.96
Wind 180 deg - Service		0.00	3670.53	293814.31	644.79	139.88
Wind 210 deg - Service		-1814.96	3143.59	252126.22	145995.00	-563.02
Wind 225 deg - Service		-2563.53	2563.53	205712.51	205985.04	-364.97
Wind 240 deg - Service		-3147.20	1817.04	145862.87	252641.90	85.27
Wind 270 deg - Service		-3678.85	0.00	372.27	294648.40	586.05
Wind 300 deg - Service		-3221.15	-1859.73	-148000.34	257633.70	-270.53
Wind 315 deg - Service		-2633.26	-2633.26	-209674.28	210691.35	-766.36
Wind 330 deg - Service		-1857.65	-3217.55	-256373.47	148877.02	-929.96

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Load Combinations

<i>Comb. No.</i>	<i>Description</i>
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 45 deg - No Ice
7	0.9 Dead+1.0 Wind 45 deg - No Ice
8	1.2 Dead+1.0 Wind 60 deg - No Ice
9	0.9 Dead+1.0 Wind 60 deg - No Ice
10	1.2 Dead+1.0 Wind 90 deg - No Ice
11	0.9 Dead+1.0 Wind 90 deg - No Ice
12	1.2 Dead+1.0 Wind 120 deg - No Ice
13	0.9 Dead+1.0 Wind 120 deg - No Ice
14	1.2 Dead+1.0 Wind 135 deg - No Ice
15	0.9 Dead+1.0 Wind 135 deg - No Ice
16	1.2 Dead+1.0 Wind 150 deg - No Ice
17	0.9 Dead+1.0 Wind 150 deg - No Ice
18	1.2 Dead+1.0 Wind 180 deg - No Ice
19	0.9 Dead+1.0 Wind 180 deg - No Ice
20	1.2 Dead+1.0 Wind 210 deg - No Ice
21	0.9 Dead+1.0 Wind 210 deg - No Ice
22	1.2 Dead+1.0 Wind 225 deg - No Ice
23	0.9 Dead+1.0 Wind 225 deg - No Ice
24	1.2 Dead+1.0 Wind 240 deg - No Ice
25	0.9 Dead+1.0 Wind 240 deg - No Ice
26	1.2 Dead+1.0 Wind 270 deg - No Ice
27	0.9 Dead+1.0 Wind 270 deg - No Ice
28	1.2 Dead+1.0 Wind 300 deg - No Ice
29	0.9 Dead+1.0 Wind 300 deg - No Ice
30	1.2 Dead+1.0 Wind 315 deg - No Ice
31	0.9 Dead+1.0 Wind 315 deg - No Ice
32	1.2 Dead+1.0 Wind 330 deg - No Ice
33	0.9 Dead+1.0 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service

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Comb. No.	Description
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service
66	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	125 - 96.5	Pole	Max Tension	19	0.02	-0.36	0.00
			Max. Compression	34	-11930.95	38.00	-21.94
			Max. Mx	26	-5330.04	78381.49	-48.14
			Max. My	18	-5330.54	12.08	-78365.67
			Max. Vy	26	-4300.02	78381.49	-48.14
			Max. Vx	18	4299.11	12.08	-78365.67
			Max. Torque	5			-1097.21
L2	96.5 - 71.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	34	-15460.00	93.10	-53.75
			Max. Mx	26	-7298.57	196026.04	-30.80
			Max. My	18	-7299.16	30.57	-195981.03
			Max. Vy	26	-5293.87	196026.04	-30.80
			Max. Vx	18	5292.59	30.57	-195981.03
			Max. Torque	5			-1096.85
L3	71.5 - 47	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	34	-26411.79	1832.45	-1057.97
			Max. Mx	26	-13342.43	374813.96	-488.61
			Max. My	18	-13343.97	811.15	-373989.68
			Max. Vy	26	-8262.89	374813.96	-488.61
			Max. Vx	18	8239.39	811.15	-373989.68
			Max. Torque	33			2427.19
L4	47 - 22.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	34	-31334.07	1849.64	-1067.89
			Max. Mx	26	-16642.91	581052.20	-487.47
			Max. My	18	-16643.79	826.79	-579667.07
			Max. Vy	26	-9063.66	581052.20	-487.47
			Max. Vx	18	9040.46	826.79	-579667.07
			Max. Torque	33			2424.87
L5	22.75 - 2.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	34	-36795.61	1834.62	-1059.22
			Max. Mx	26	-20472.67	816019.38	-493.42
			Max. My	18	-20472.66	831.60	-814057.53
			Max. Vy	26	-9675.61	816019.38	-493.42
			Max. Vx	18	9653.01	831.60	-814057.53
			Max. Torque	33			2422.60

Maximum Reactions

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Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	34	36795.61	-0.59	0.34
	Max. H _x	27	15357.93	9666.28	0.00
	Max. H _z	2	20477.21	-0.00	9643.36
	Max. M _x	2	813097.09	-0.00	9643.36
	Max. M _z	10	814355.66	-9665.94	0.01
	Max. Torsion	33	2421.73	4881.31	8454.68
	Min. Vert	19	15357.88	-0.00	-9643.10
	Min. H _x	11	15357.93	-9666.28	0.00
	Min. H _z	18	20477.21	-0.00	-9643.36
	Min. M _x	18	-814057.53	-0.00	-9643.36
	Min. M _z	26	-816019.38	9665.94	0.01
	Min. Torsion	17	-2421.73	-4881.27	-8454.60

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	17064.40	-0.00	0.00	372.28	644.80	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	20477.21	0.00	-9643.36	-813097.09	831.56	-353.87
0.9 Dead+1.0 Wind 0 deg - No Ice	15357.88	0.00	-9643.10	-801848.53	611.70	-357.15
1.2 Dead+1.0 Wind 30 deg - No Ice	20477.27	4769.09	-8260.30	-697735.12	-402267.79	1478.67
0.9 Dead+1.0 Wind 30 deg - No Ice	15357.96	4769.12	-8260.36	-688104.95	-396858.70	1477.11
1.2 Dead+1.0 Wind 45 deg - No Ice	20477.27	6736.10	-6736.10	-569019.36	-568655.58	957.49
0.9 Dead+1.0 Wind 45 deg - No Ice	15357.96	6736.15	-6736.15	-561185.94	-560918.54	956.72
1.2 Dead+1.0 Wind 60 deg - No Ice	20477.27	8269.76	-4774.55	-403014.22	-698043.61	-223.20
0.9 Dead+1.0 Wind 60 deg - No Ice	15357.95	8269.74	-4774.54	-397500.57	-688492.87	-223.23
1.2 Dead+1.0 Wind 90 deg - No Ice	20477.24	9665.94	-0.01	493.61	-814355.66	-1538.93
0.9 Dead+1.0 Wind 90 deg - No Ice	15357.93	9666.28	-0.00	362.87	-803240.60	-1537.36
1.2 Dead+1.0 Wind 120 deg - No Ice	20477.27	8464.09	4886.74	411867.75	-711716.64	695.66
0.9 Dead+1.0 Wind 120 deg - No Ice	15357.96	8464.15	4886.78	406018.12	-702023.54	699.02
1.2 Dead+1.0 Wind 135 deg - No Ice	20477.27	6919.31	6919.31	582855.65	-581561.08	1990.41
0.9 Dead+1.0 Wind 135 deg - No Ice	15357.96	6919.36	6919.36	574630.81	-573678.36	1994.40
1.2 Dead+1.0 Wind 150 deg - No Ice	20477.27	4881.28	8454.62	712353.68	-410186.95	2417.53
0.9 Dead+1.0 Wind 150 deg - No Ice	15357.95	4881.27	8454.60	702315.47	-404679.54	2421.73
1.2 Dead+1.0 Wind 180 deg - No Ice	20477.21	0.00	9643.36	814057.53	831.55	353.86
0.9 Dead+1.0 Wind 180 deg - No Ice	15357.88	0.00	9643.10	802554.99	611.69	357.15
1.2 Dead+1.0 Wind 210 deg - No Ice	20477.27	-4769.08	8260.30	698682.64	403954.71	-1478.62

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
0.9 Dead+1.0 Wind 210 deg - No Ice	15357.95	-4769.07	8260.28	688794.29	398094.67	-1477.06
1.2 Dead+1.0 Wind 225 deg - No Ice	20477.27	-6736.10	6736.10	569967.95	570331.77	-957.45
0.9 Dead+1.0 Wind 225 deg - No Ice	15357.96	-6736.15	6736.15	561883.92	562151.34	-956.69
1.2 Dead+1.0 Wind 240 deg - No Ice	20477.27	-8269.76	4774.55	403977.34	699706.26	223.19
0.9 Dead+1.0 Wind 240 deg - No Ice	15357.95	-8269.74	4774.54	398208.98	689715.92	223.22
1.2 Dead+1.0 Wind 270 deg - No Ice	20477.24	-9665.94	-0.01	493.64	816019.38	1538.88
0.9 Dead+1.0 Wind 270 deg - No Ice	15357.93	-9666.28	-0.00	362.89	804464.48	1537.32
1.2 Dead+1.0 Wind 300 deg - No Ice	20477.27	-8464.09	-4886.74	-410911.37	713378.05	-695.64
0.9 Dead+1.0 Wind 300 deg - No Ice	15357.95	-8464.07	-4886.73	-405310.07	703237.65	-699.00
1.2 Dead+1.0 Wind 315 deg - No Ice	20477.27	-6919.31	-6919.31	-581912.71	583207.25	-1990.40
0.9 Dead+1.0 Wind 315 deg - No Ice	15357.96	-6919.36	-6919.36	-573937.01	574889.45	-1994.39
1.2 Dead+1.0 Wind 330 deg - No Ice	20477.27	-4881.28	-8454.62	-711409.03	411823.14	-2417.53
0.9 Dead+1.0 Wind 330 deg - No Ice	15357.96	-4881.31	-8454.68	-701628.38	405888.02	-2421.73
1.2 Dead+1.0 Ice	36795.61	0.59	-0.34	1059.22	1834.62	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	36795.60	0.01	-3153.18	-269531.76	1950.56	-88.96
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	36795.60	1567.21	-2714.48	-232071.63	-132684.48	215.85
1.2 Dead+1.0 Wind 45 deg+1.0 Ice	36795.60	2214.64	-2214.63	-189151.46	-188325.63	141.64
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	36795.60	2715.42	-1567.75	-133549.99	-231315.63	-36.47
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	36795.60	3155.35	-0.00	1127.77	-268866.94	-225.72
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	36795.60	2748.87	1587.05	137227.37	-233784.09	144.80
1.2 Dead+1.0 Wind 135 deg+1.0 Ice	36795.60	2246.17	2246.16	193729.29	-190654.59	354.48
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	36795.60	1586.52	2747.92	236790.63	-134112.55	423.22
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	36795.60	0.01	3153.17	271783.95	1950.55	88.96
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	36795.60	-1567.20	2714.47	234322.20	136588.22	-215.84
1.2 Dead+1.0 Wind 225 deg+1.0 Ice	36795.60	-2214.62	2214.63	191402.18	192228.04	-141.64
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	36795.60	-2715.40	1567.74	135802.48	235216.39	36.47
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	36795.60	-3155.33	-0.00	1127.79	272767.85	225.72
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	36795.60	-2748.86	-1587.06	-134975.44	237684.84	-144.80
1.2 Dead+1.0 Wind 315 deg+1.0 Ice	36795.60	-2246.16	-2246.17	-191478.96	194553.63	-354.47
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	36795.60	-1586.51	-2747.93	-234540.16	138010.49	-423.22
Dead+Wind 0 deg - Service	17064.39	0.00	-3669.64	-306501.96	686.29	-135.95
Dead+Wind 30 deg - Service	17064.39	1814.52	-3142.83	-262926.73	-151341.71	564.81

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead+Wind 45 deg - Service	17064.39	2562.91	-2562.91	-214382.45	-214091.08	365.83
Dead+Wind 60 deg - Service	17064.39	3146.43	-1816.60	-151778.31	-262887.91	-85.22
Dead+Wind 90 deg - Service	17064.39	3677.96	-0.00	397.71	-306793.59	-587.85
Dead+Wind 120 deg - Service	17064.39	3220.38	1859.28	155556.04	-268058.72	266.48
Dead+Wind 135 deg - Service	17064.39	2632.63	2632.62	220048.38	-218967.71	761.50
Dead+Wind 150 deg - Service	17064.39	1857.21	3216.77	268888.41	-154329.76	924.83
Dead+Wind 180 deg - Service	17064.39	0.00	3669.64	307294.44	686.29	135.95
Dead+Wind 210 deg - Service	17064.39	-1814.51	3142.83	263717.79	152716.79	-564.80
Dead+Wind 225 deg - Service	17064.39	-2562.91	2562.91	215173.63	215465.01	-365.83
Dead+Wind 240 deg - Service	17064.39	-3146.43	1816.59	152571.05	264260.38	85.22
Dead+Wind 270 deg - Service	17064.39	-3677.95	-0.00	397.71	308166.19	587.84
Dead+Wind 300 deg - Service	17064.39	-3220.37	-1859.29	-154764.00	269431.07	-266.48
Dead+Wind 315 deg - Service	17064.39	-2632.62	-2632.62	-219257.78	220338.44	-761.50
Dead+Wind 330 deg - Service	17064.39	-1857.20	-3216.77	-268097.63	155699.43	-924.83

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-17064.40	0.00	0.00	17064.40	-0.00	0.000%
2	0.00	-20477.28	-9645.09	-0.00	20477.21	9643.36	0.008%
3	0.00	-15357.96	-9645.09	-0.00	15357.88	9643.10	0.011%
4	4769.18	-20477.28	-8260.46	-4769.09	20477.27	8260.30	0.001%
5	4769.18	-15357.96	-8260.46	-4769.12	15357.96	8260.36	0.001%
6	6736.23	-20477.28	-6736.23	-6736.10	20477.27	6736.10	0.001%
7	6736.23	-15357.96	-6736.23	-6736.15	15357.96	6736.15	0.001%
8	8269.93	-20477.28	-4774.65	-8269.76	20477.27	4774.55	0.001%
9	8269.93	-15357.96	-4774.65	-8269.74	15357.95	4774.54	0.001%
10	9666.95	-20477.28	0.00	-9665.94	20477.24	0.01	0.004%
11	9666.95	-15357.96	0.00	-9666.28	15357.93	0.00	0.004%
12	8464.26	-20477.28	4886.84	-8464.09	20477.27	-4886.74	0.001%
13	8464.26	-15357.96	4886.84	-8464.15	15357.96	-4886.78	0.001%
14	6919.44	-20477.28	6919.44	-6919.31	20477.27	-6919.31	0.001%
15	6919.44	-15357.96	6919.44	-6919.36	15357.96	-6919.36	0.001%
16	4881.38	-20477.28	8454.79	-4881.28	20477.27	-8454.62	0.001%
17	4881.38	-15357.96	8454.79	-4881.27	15357.95	-8454.60	0.001%
18	0.00	-20477.28	9645.09	-0.00	20477.21	-9643.36	0.008%
19	0.00	-15357.96	9645.09	-0.00	15357.88	-9643.10	0.011%
20	-4769.18	-20477.28	8260.46	4769.08	20477.27	-8260.30	0.001%
21	-4769.18	-15357.96	8260.46	4769.07	15357.95	-8260.28	0.001%
22	-6736.23	-20477.28	6736.23	6736.10	20477.27	-6736.10	0.001%
23	-6736.23	-15357.96	6736.23	6736.15	15357.96	-6736.15	0.001%
24	-8269.93	-20477.28	4774.65	8269.76	20477.27	-4774.55	0.001%
25	-8269.93	-15357.96	4774.65	8269.74	15357.95	-4774.54	0.001%
26	-9666.95	-20477.28	0.00	9665.94	20477.24	0.01	0.004%
27	-9666.95	-15357.96	0.00	9666.28	15357.93	0.00	0.004%
28	-8464.26	-20477.28	-4886.84	8464.09	20477.27	4886.74	0.001%
29	-8464.26	-15357.96	-4886.84	8464.07	15357.95	4886.73	0.001%
30	-6919.44	-20477.28	-6919.44	6919.31	20477.27	6919.31	0.001%
31	-6919.44	-15357.96	-6919.44	6919.36	15357.96	6919.36	0.001%
32	-4881.38	-20477.28	-8454.79	4881.28	20477.27	8454.62	0.001%
33	-4881.38	-15357.96	-8454.79	4881.31	15357.96	8454.68	0.001%
34	0.00	-36795.61	0.00	-0.59	36795.61	0.34	0.002%
35	0.00	-36795.61	-3153.84	-0.01	36795.60	3153.18	0.002%
36	1567.53	-36795.61	-2715.04	-1567.21	36795.60	2714.48	0.002%
37	2215.09	-36795.61	-2215.09	-2214.64	36795.60	2214.63	0.002%
38	2715.98	-36795.61	-1568.07	-2715.42	36795.60	1567.75	0.002%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
39	3156.00	-36795.61	0.00	-3155.35	36795.60	0.00	0.002%
40	2749.44	-36795.61	1587.39	-2748.87	36795.60	-1587.05	0.002%
41	2246.64	-36795.61	2246.64	-2246.17	36795.60	-2246.16	0.002%
42	1586.85	-36795.61	2748.50	-1586.52	36795.60	-2747.92	0.002%
43	0.00	-36795.61	3153.84	-0.01	36795.60	-3153.17	0.002%
44	-1567.53	-36795.61	2715.04	1567.20	36795.60	-2714.47	0.002%
45	-2215.09	-36795.61	2215.09	2214.62	36795.60	-2214.63	0.002%
46	-2715.98	-36795.61	1568.07	2715.40	36795.60	-1567.74	0.002%
47	-3156.00	-36795.61	0.00	3155.33	36795.60	0.00	0.002%
48	-2749.44	-36795.61	-1587.39	2748.86	36795.60	1587.06	0.002%
49	-2246.64	-36795.61	-2246.64	2246.16	36795.60	2246.17	0.002%
50	-1586.85	-36795.61	-2748.50	1586.51	36795.60	2747.93	0.002%
51	0.00	-17064.40	-3670.53	-0.00	17064.39	3669.64	0.005%
52	1814.96	-17064.40	-3143.59	-1814.52	17064.39	3142.83	0.005%
53	2563.53	-17064.40	-2563.53	-2562.91	17064.39	2562.91	0.005%
54	3147.20	-17064.40	-1817.04	-3146.43	17064.39	1816.60	0.005%
55	3678.85	-17064.40	0.00	-3677.96	17064.39	0.00	0.005%
56	3221.15	-17064.40	1859.73	-3220.38	17064.39	-1859.28	0.005%
57	2633.26	-17064.40	2633.26	-2632.63	17064.39	-2632.62	0.005%
58	1857.65	-17064.40	3217.55	-1857.21	17064.39	-3216.77	0.005%
59	0.00	-17064.40	3670.53	-0.00	17064.39	-3669.64	0.005%
60	-1814.96	-17064.40	3143.59	1814.51	17064.39	-3142.83	0.005%
61	-2563.53	-17064.40	2563.53	2562.91	17064.39	-2562.91	0.005%
62	-3147.20	-17064.40	1817.04	3146.43	17064.39	-1816.59	0.005%
63	-3678.85	-17064.40	0.00	3677.95	17064.39	0.00	0.005%
64	-3221.15	-17064.40	-1859.73	3220.37	17064.39	1859.29	0.005%
65	-2633.26	-17064.40	-2633.26	2632.62	17064.39	2632.62	0.005%
66	-1857.65	-17064.40	-3217.55	1857.20	17064.39	3216.77	0.005%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	19	0.00009155	0.00006706
3	Yes	18	0.00010490	0.00009868
4	Yes	23	0.00000001	0.00011812
5	Yes	23	0.00000001	0.00009197
6	Yes	23	0.00000001	0.00012088
7	Yes	23	0.00000001	0.00009361
8	Yes	23	0.00000001	0.00010596
9	Yes	22	0.00000001	0.00014111
10	Yes	20	0.00005387	0.00011736
11	Yes	20	0.00000001	0.00009862
12	Yes	23	0.00000001	0.00011343
13	Yes	23	0.00000001	0.00008768
14	Yes	23	0.00000001	0.00012859
15	Yes	23	0.00000001	0.00009938
16	Yes	23	0.00000001	0.00009565
17	Yes	22	0.00000001	0.00012646
18	Yes	19	0.00009154	0.00006718
19	Yes	18	0.00010489	0.00009880
20	Yes	23	0.00000001	0.00009575
21	Yes	22	0.00000001	0.00012664
22	Yes	23	0.00000001	0.00012206
23	Yes	23	0.00000001	0.00009429

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24	Yes	23	0.00000001	0.00010431
25	Yes	22	0.00000001	0.00013839
26	Yes	20	0.00005387	0.00011768
27	Yes	20	0.00000001	0.00009881
28	Yes	23	0.00000001	0.00010510
29	Yes	22	0.00000001	0.00013906
30	Yes	23	0.00000001	0.00012891
31	Yes	23	0.00000001	0.00009957
32	Yes	23	0.00000001	0.00013039
33	Yes	23	0.00000001	0.00010144
34	Yes	11	0.00000001	0.00000919
35	Yes	21	0.00011319	0.00000982
36	Yes	21	0.00011313	0.00002079
37	Yes	21	0.00011310	0.00001895
38	Yes	21	0.00011313	0.00001718
39	Yes	21	0.00011319	0.00001112
40	Yes	21	0.00011307	0.00001943
41	Yes	21	0.00011304	0.00002105
42	Yes	21	0.00011308	0.00001391
43	Yes	21	0.00011320	0.00000994
44	Yes	21	0.00011313	0.00001535
45	Yes	21	0.00011310	0.00002041
46	Yes	21	0.00011313	0.00001761
47	Yes	21	0.00011320	0.00001134
48	Yes	21	0.00011308	0.00001638
49	Yes	21	0.00011304	0.00002144
50	Yes	21	0.00011308	0.00002511
51	Yes	18	0.00012291	0.00004041
52	Yes	18	0.00012279	0.00009979
53	Yes	18	0.00012275	0.00007773
54	Yes	18	0.00012279	0.00006851
55	Yes	18	0.00012290	0.00006123
56	Yes	18	0.00012269	0.00007964
57	Yes	18	0.00012263	0.00009359
58	Yes	18	0.00012270	0.00006031
59	Yes	18	0.00012291	0.00004056
60	Yes	18	0.00012279	0.00005345
61	Yes	18	0.00012274	0.00007943
62	Yes	18	0.00012278	0.00006373
63	Yes	18	0.00012290	0.00006161
64	Yes	18	0.00012269	0.00006045
65	Yes	18	0.00012263	0.00009404
66	Yes	18	0.00012269	0.00012300

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 96.5	23.050	64	1.4437	0.0137
L2	100 - 71.5	15.621	64	1.3562	0.0101
L3	75.5 - 47	9.249	65	1.0909	0.0073
L4	51.25 - 22.75	4.374	65	0.7961	0.0043
L5	27.5 - 2.5	1.232	65	0.4307	0.0019

Critical Deflections and Radius of Curvature - Service Wind

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<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection</i>	<i>Tilt</i>	<i>Twist</i>	<i>Radius of Curvature</i>
<i>ft</i>			<i>in</i>	<i>°</i>	<i>°</i>	<i>ft</i>
120.00	(2) Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	64	21.532	1.4355	0.0129	37354
70.00	Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	65	8.011	1.0258	0.0066	4650

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation</i>	<i>Horz. Deflection</i>	<i>Gov. Load Comb.</i>	<i>Tilt</i>	<i>Twist</i>
	<i>ft</i>	<i>in</i>		<i>°</i>	<i>°</i>
L1	125 - 96.5	61.158	30	3.8357	0.0358
L2	100 - 71.5	41.446	30	3.6027	0.0266
L3	75.5 - 47	24.541	30	2.8963	0.0191
L4	51.25 - 22.75	11.605	30	2.1133	0.0113
L5	27.5 - 2.5	3.267	30	1.1426	0.0050

Critical Deflections and Radius of Curvature - Design Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection</i>	<i>Tilt</i>	<i>Twist</i>	<i>Radius of Curvature</i>
<i>ft</i>			<i>in</i>	<i>°</i>	<i>°</i>	<i>ft</i>
120.00	(2) Commscope NHH-65B-R2B (72"x19.6"x7.8", 82lb) w/ MP	30	57.130	3.8139	0.0339	14138
70.00	Dengyo OCT8-2LX2HX-BW65 (95.9"x21.0"x6.3", 101.4 lbs) w/ MP	30	21.256	2.7232	0.0174	1757

Compression Checks

Pole Design Data

<i>Section No.</i>	<i>Elevation</i>	<i>Size</i>	<i>L</i>	<i>L_u</i>	<i>Kl/r</i>	<i>A</i>	<i>P_u</i>	<i>φP_n</i>	<i>Ratio P_u / φP_n</i>
	<i>ft</i>		<i>ft</i>	<i>ft</i>		<i>in²</i>	<i>lb</i>	<i>lb</i>	
L1	125 - 96.5 (1)	TP24.7665x20.83x0.1875	28.50	0.00	0.0	14.3399	-5328.61	989382.00	0.005
L2	96.5 - 71.5 (2)	TP27.8446x23.9081x0.1875	28.50	0.00	0.0	16.1306	-7296.82	1064710.00	0.007
L3	71.5 - 47 (3)	TP30.8536x26.9171x0.25	28.50	0.00	0.0	23.8182	-13335.50	1680800.00	0.008
L4	47 - 22.75 (4)	TP33.7031x29.7666x0.25	28.50	0.00	0.0	26.0244	-16638.80	1782570.00	0.009
L5	22.75 - 2.5 (5)	TP36x32.547x0.25	25.00	0.00	0.0	28.3676	-20472.60	1880650.00	0.011

Pole Bending Design Data

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Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{rx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} lb-ft	ϕM_{ry} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L1	125 - 96.5 (1)	TP24.7665x20.83x0.1875	78421.33	490260.83	0.160	0.00	490260.83	0.000
L2	96.5 - 71.5 (2)	TP27.8446x23.9081x0.1875	196130.83	593980.00	0.330	0.00	593980.00	0.000
L3	71.5 - 47 (3)	TP30.8536x26.9171x0.25	376705.00	1036975.00	0.363	0.00	1036975.00	0.000
L4	47 - 22.75 (4)	TP33.7031x29.7666x0.25	585865.83	1202475.00	0.487	0.00	1202475.00	0.000
L5	22.75 - 2.5 (5)	TP36x32.547x0.25	823865.00	1383725.00	0.595	0.00	1383725.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	125 - 96.5 (1)	TP24.7665x20.83x0.1875	4305.40	494691.00	0.009	775.46	982875.00	0.001
L2	96.5 - 71.5 (2)	TP27.8446x23.9081x0.1875	5299.94	532354.00	0.010	774.31	1190658.33	0.001
L3	71.5 - 47 (3)	TP30.8536x26.9171x0.25	8388.38	840402.00	0.010	1993.40	2079100.00	0.001
L4	47 - 22.75 (4)	TP33.7031x29.7666x0.25	9186.47	891287.00	0.010	1991.38	2410666.67	0.001
L5	22.75 - 2.5 (5)	TP36x32.547x0.25	9795.14	940324.00	0.010	1990.39	2773758.33	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	125 - 96.5 (1)	0.005	0.160	0.000	0.009	0.001	0.165	1.000	✓
L2	96.5 - 71.5 (2)	0.007	0.330	0.000	0.010	0.001	0.337	1.000	✓
L3	71.5 - 47 (3)	0.008	0.363	0.000	0.010	0.001	0.371	1.000	✓
L4	47 - 22.75 (4)	0.009	0.487	0.000	0.010	0.001	0.497	1.000	✓
L5	22.75 - 2.5 (5)	0.011	0.595	0.000	0.010	0.001	0.606	1.000	✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	125 - 96.5	Pole	TP24.7665x20.83x0.1875	1	-5328.61	989382.00	16.5	Pass
L2	96.5 - 71.5	Pole	TP27.8446x23.9081x0.1875	2	-7296.82	1064710.00	33.7	Pass
L3	71.5 - 47	Pole	TP30.8536x26.9171x0.25	3	-13335.50	1680800.00	37.1	Pass
L4	47 - 22.75	Pole	TP33.7031x29.7666x0.25	4	-16638.80	1782570.00	49.7	Pass
L5	22.75 - 2.5	Pole	TP36x32.547x0.25	5	-20472.60	1880650.00	60.6	Pass

<i>tnxTower</i> <i>Vector Structural Engineering</i> 651 W Galena Park Blvd, Suite 101 Draper, UT 84020 Phone: (801) 990-1775 FAX: (801) 990-1776	Job	Jackson WT Temp	Page	28 of 28
	Project	U1140.0270.242	Date	10:19:05 02/21/24
	Client	CDMI	Designed by	joshua.blom

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Size</i>	<i>Critical Element</i>	<i>P lb</i>	<i>ϕP_{allow} lb</i>	<i>% Capacity</i>	<i>Pass Fail</i>
						Summary		
						Pole (L5)	60.6	Pass
						RATING =	60.6	Pass

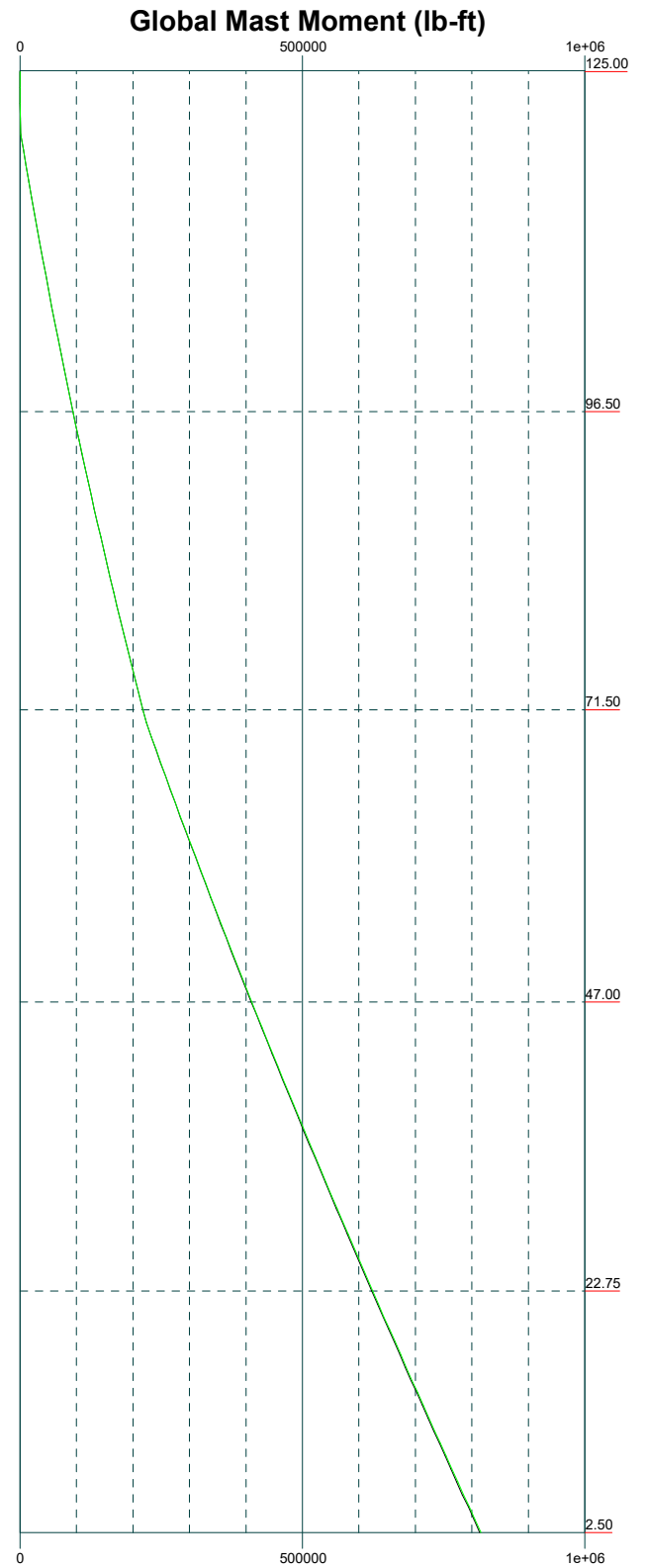
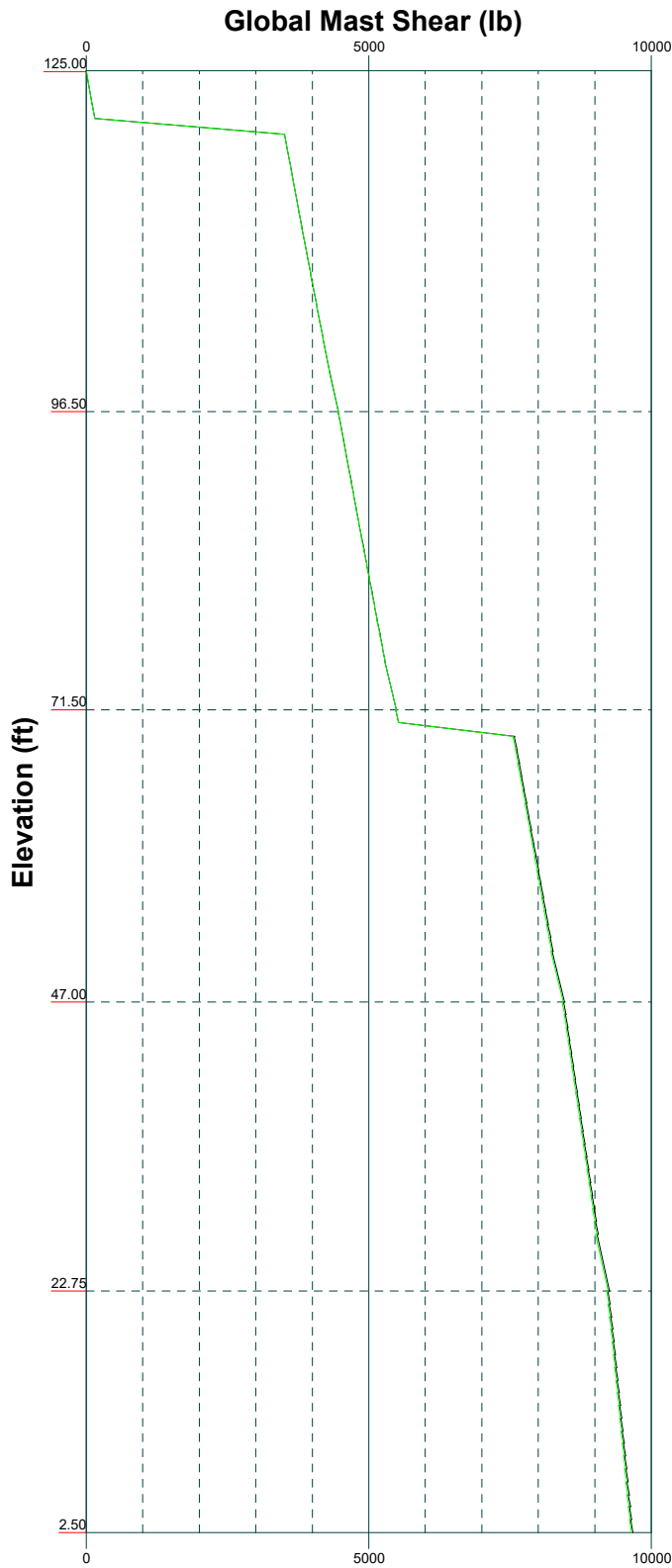
Program Version 8.2.4.3 - 1/24/2024 File://VSEFILES.vector.local/Projects/2023 Projects/U1140 CDMI/U1140-0270-231 Jackson WT Temp (WI, 125' HD, 36" TAPP, LS20)/ENG/TNX/Jackson WT Temp II.eri

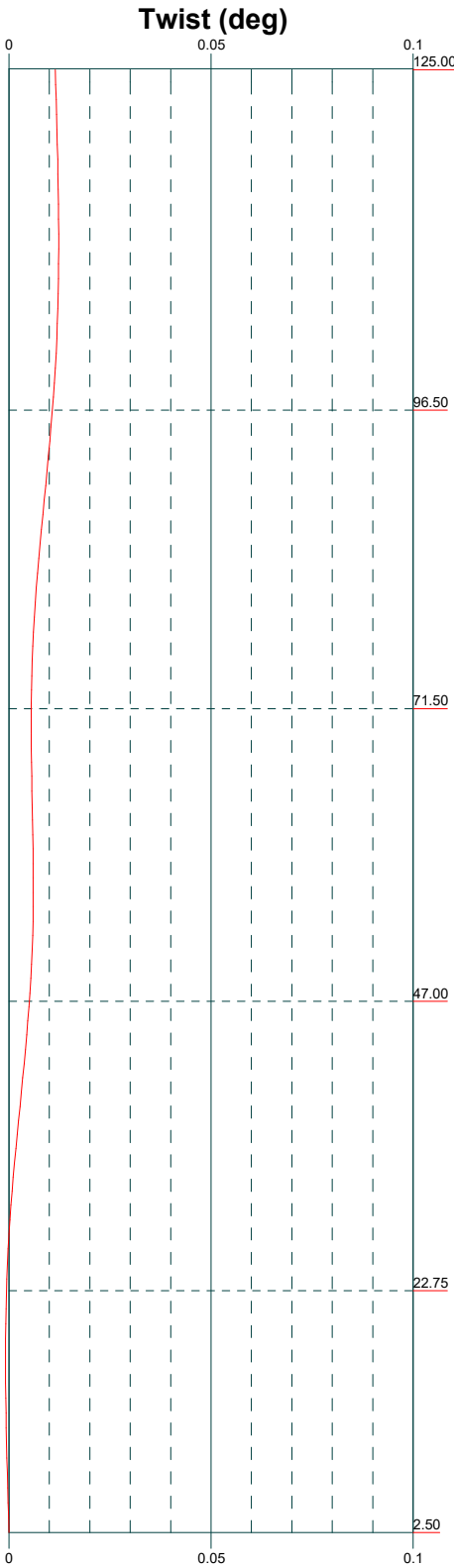
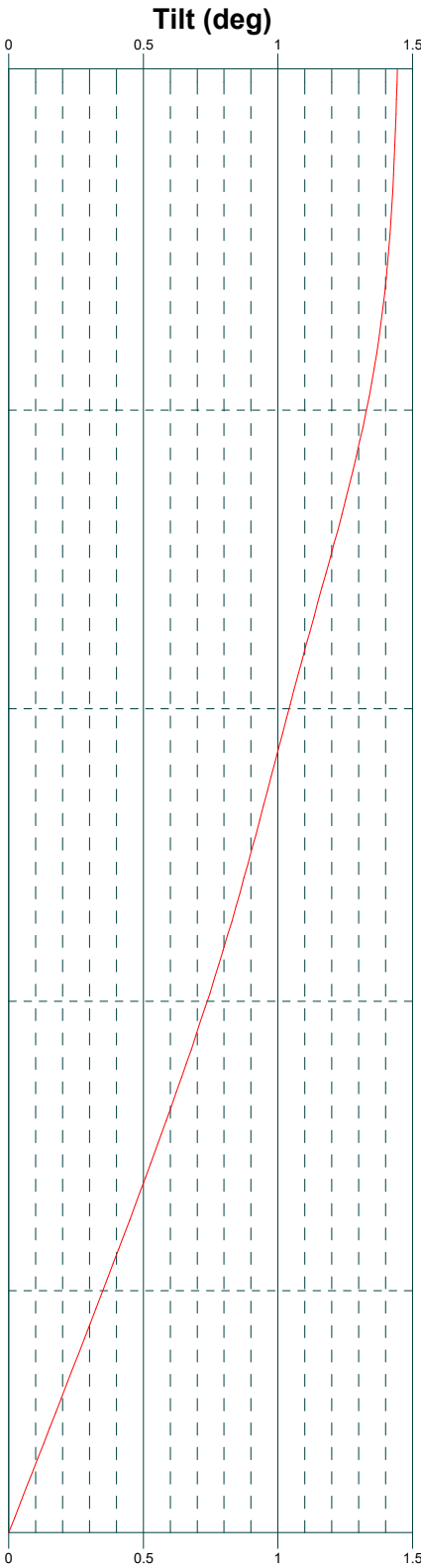
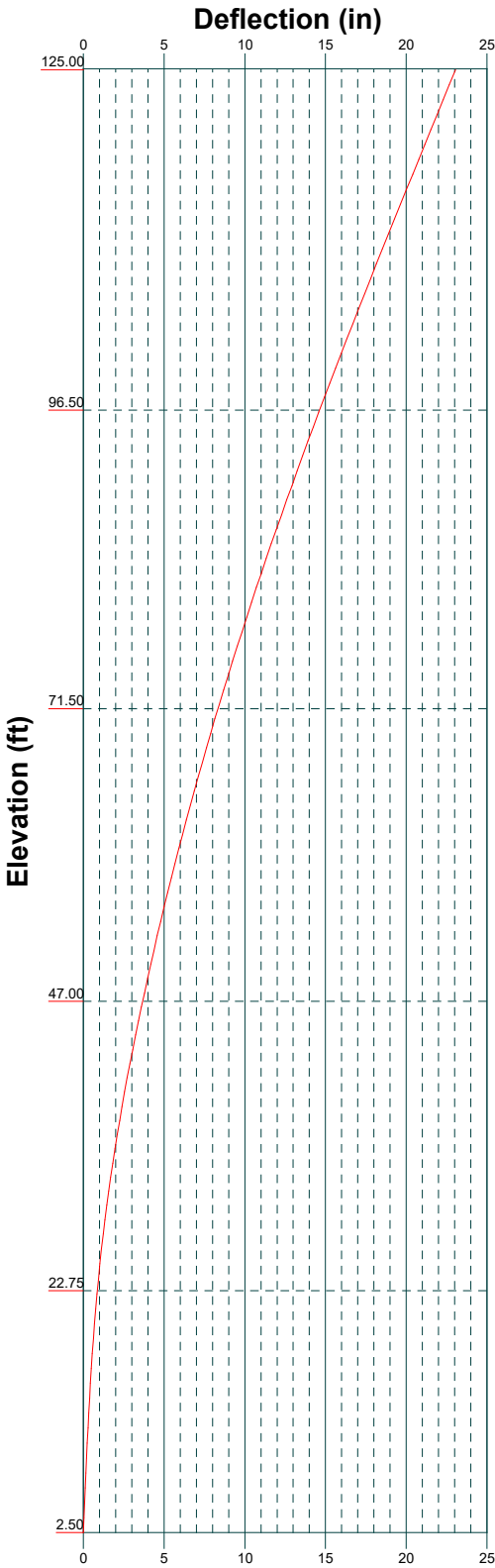
Vx

Vz

Mx

Mz





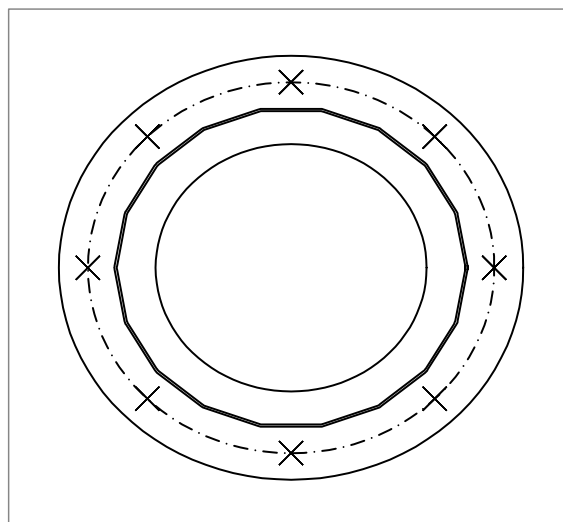
PROJECT: JACKSON WT TEMP

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

Quantity	Symbol	Value	Units
Number of sides		18	
Flat O.D.	D_T	36.00	in
Pole wall thickness	t_T	0.25	in
Pole yield strength	F_{yp}	65	ksi
Bend Radius		1	in
Base plate fillet weld size		0.25	in
Anchor diameter	d	2.25	in
Number of anchors	n	8	
Anchor grade		F1554-105	
Base plate thickness	t_{TP}	2.5	in
Base plate yield strength	F_{yf}	50	ksi
Anchor hole diameter		2.375	in
Slotted to outside edge?		No	
Flat washer diameter		4	
Zinc drain hole diameter		2.375	
Zinc drain circle		36	in
Bolt circle diameter	D_{BC}	42	in
Plate O.D.	D_{OD}	48	in
Plate I.D.		28	in

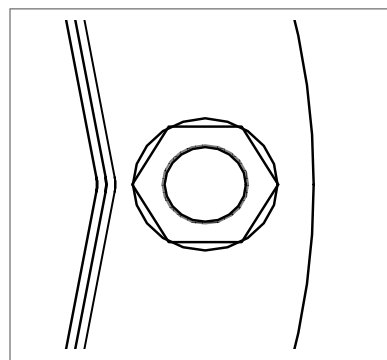
Basic Input & Geometry

Base Plate Illustration



			Wind		Seismic
LRFD Loads	Axial down	$R_{u,c}$	36.8	k	
	Axial up	$R_{u,t}$	0	k	
	Shear	V_u	9.8	k	
	Moment	M_u	823.9	k-ft	
	Member mom. capacity	ΦM_n	1384	k-ft	

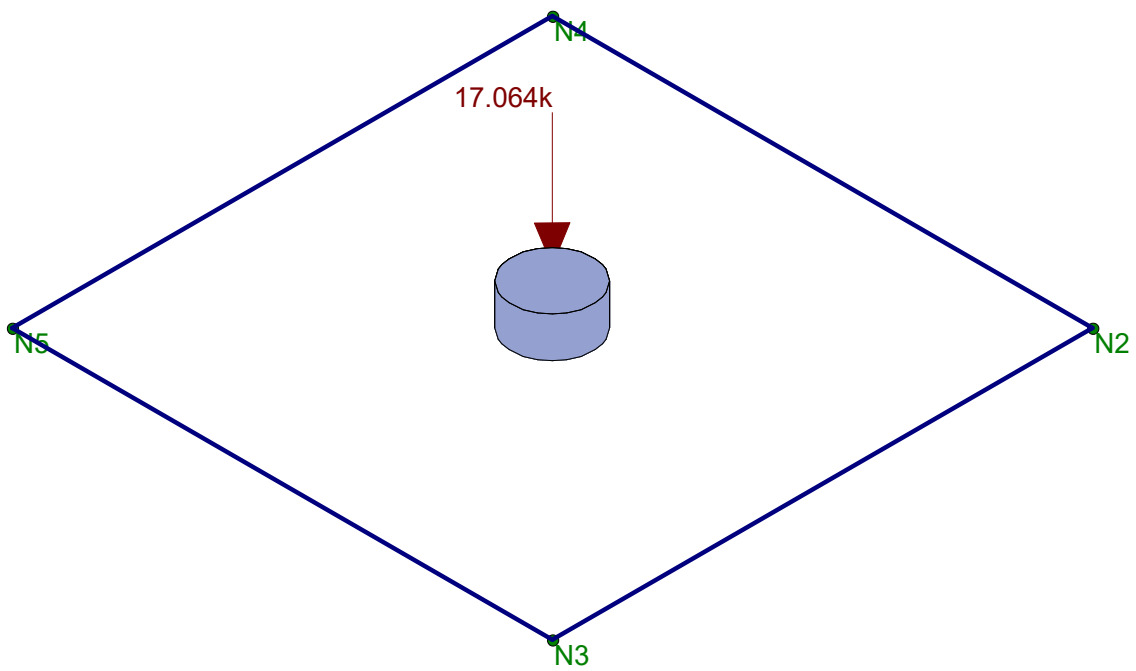
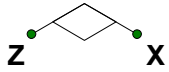
Fit Check



Checks	Plate stress ratio	27.9%	OK	
	Anchor unity check	34.1%	OK	
	Min. number of sides	18	OK	6 minimum
	Min. number of anchors	8	OK	8 minimum
	Max. anchor rod to pole distance	2.87"	OK	15" maximum
	Min. anchor diameter	2.25"	OK	0.75" minimum
	Max. anchor rod spacing	16.49"	NG	15" maximum
	Min. anchor rod spacing	16.07"	OK	6.75" minimum
	Min. base plate thickness	2.5"	OK	2.25" minimum
	Min. inside diameter	28"	OK	10.8" minimum
	Max. inside diameter	28"	OK	31.5" maximum

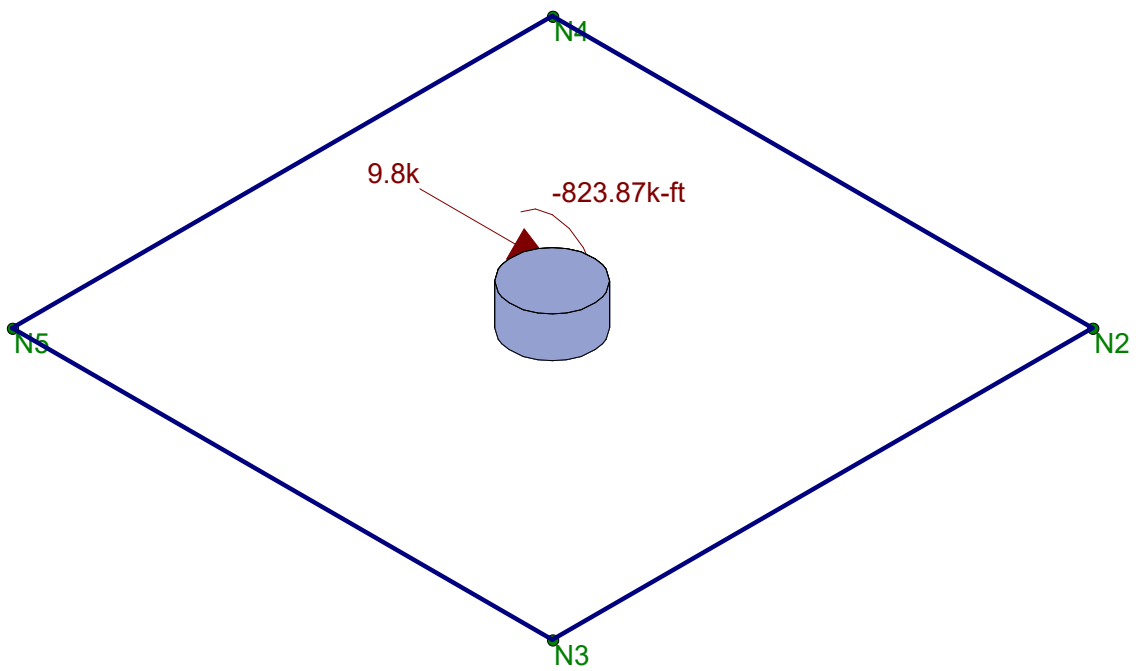
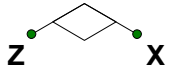
Note: when number of anchors is less than minimum and when maximum anchor rod spacing is exceeded, adjustments are made to the effective plate width calculations as if requirements of TIA-222-H Annex Q were met.

Check:	Dist.	Result
Washer vs weld	0.4291	OK
Washer vs OD	0.9375	OK
Washer covers hole	0.75	OK



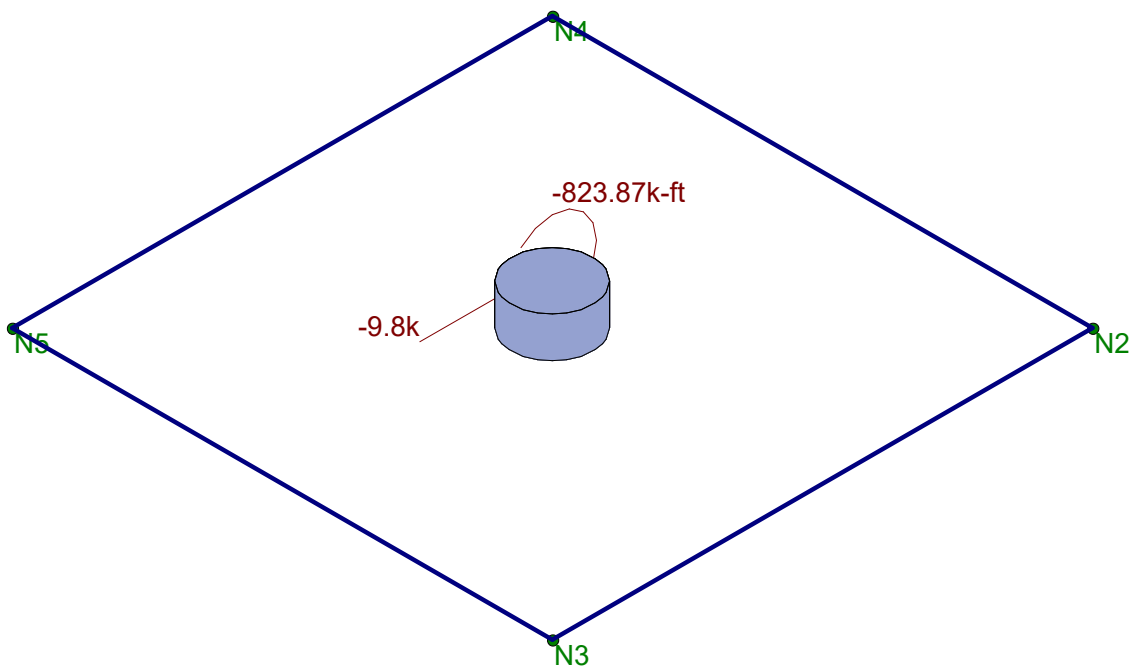
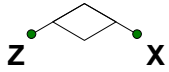
Loads: DL - Dead Load
Results for LC 2, DL

VSE	LS-20 Fnd	SK - 1
JJB		Feb 21, 2024 at 9:56 AM
U1140.0270.231		LS-20 Fnd centered.fnd



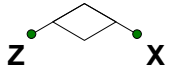
Loads: WLX - Wind Load X
Results for LC 2, DL

VSE	LS-20 Fnd	SK - 2
JJB		Feb 21, 2024 at 9:57 AM
U1140.0270.231		LS-20 Fnd centered.fnd

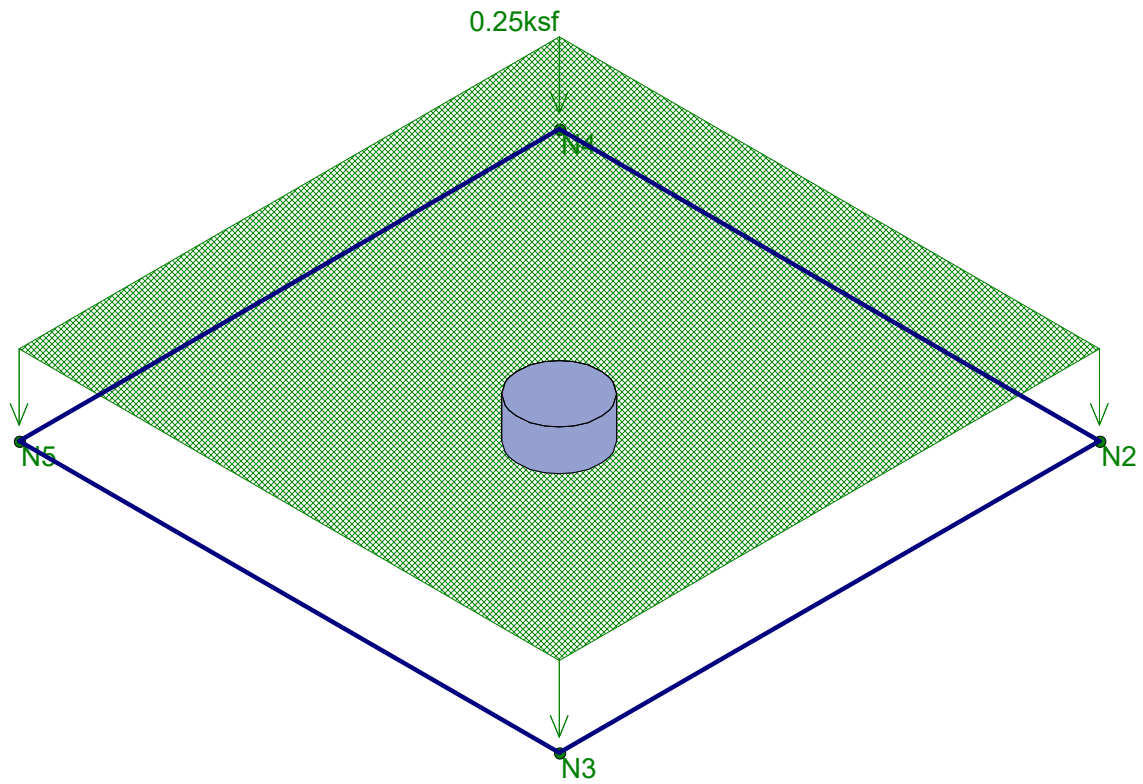


Loads: WLZ - Wind Load Z
Results for LC 2, DL

VSE	LS-20 Fnd	SK - 3
JJB		Feb 21, 2024 at 9:57 AM
U1140.0270.231		LS-20 Fnd centered.fnd

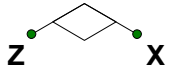


BALLAST WEIGHT: 100K

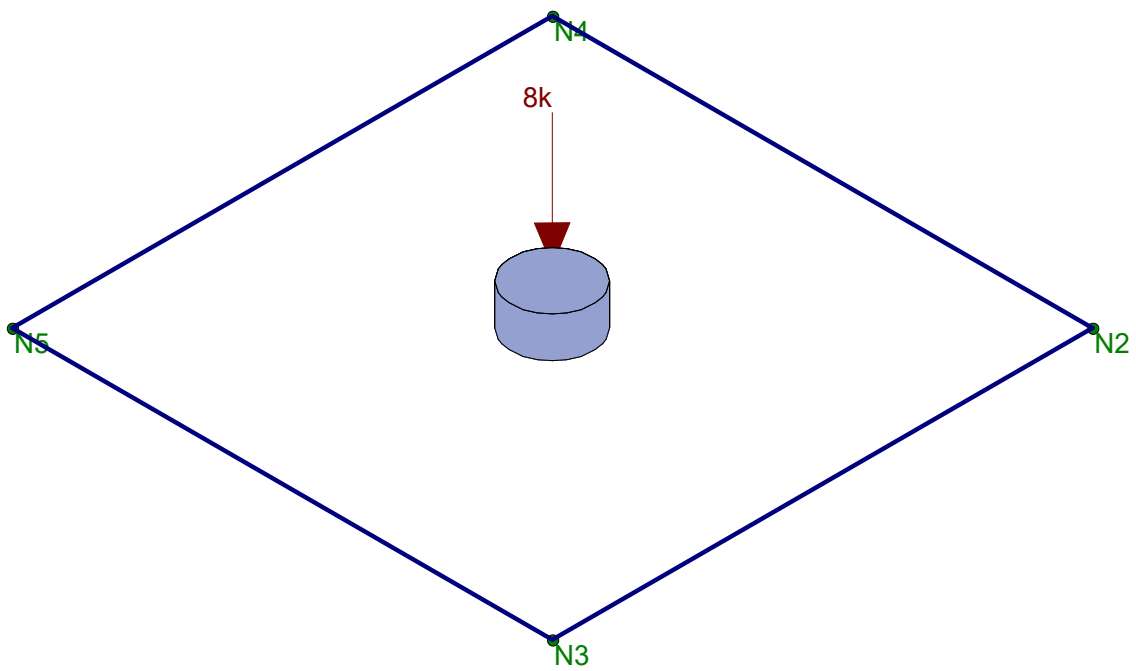


Loads: OL1 - Other Load 1
Results for LC 2, DL

VSE	LS-20 Fnd	SK - 4
JJB		Feb 21, 2024 at 9:57 AM
U1140.0270.231		LS-20 Fnd centered.fnd



EQUIPMENT WEIGHT: 8K



Loads: OL2 - Other Load 2
Results for LC 2, DL

VSE	LS-20 Fnd	SK - 5
JJB		Feb 21, 2024 at 9:58 AM
U1140.0270.231		LS-20 Fnd centered.fnd

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	100
Mesh Size (in)	12
Max Iterations	10
Merge Tolerance (in)	0.12
Solver	Sparse Accelerated
Coefficient of Friction	0.25
No. of Shear Regions	4
Shear Region Spacing Increment (in)	4
Min 1 Bar Dia Spacing for Beams?	No
Optimize footings for OTM / Sliding?	No
Parme Beta Factor	0.65
Pile Safety Factor	3
Min % Steel for Pedestal	Auto
Concrete Stress Block	Rectangular
Concrete Rebar Set	ASTM A615
Include WWR	No
Concrete Code	ACI 318-14
HR Steel Pile Code	AISC 14th (360-10): ASD
Wood Pile Code	AWC NDS-18 / SDPWS-15 ASD
Mat Slab Design Option	Construction (Design per Integer No. of Bars)

Point Loads and Moments (Cat 1 : DL)

	Label	Direction	Magnitude[k,k-ft]
1	N1	Y	17.064

Point Loads and Moments (Cat 19 : WLX)

	Label	Direction	Magnitude[k,k-ft]
1	N1	X	9.8
2	N1	MZ	-823.87

Point Loads and Moments (Cat 21 : WLZ)

	Label	Direction	Magnitude[k,k-ft]
1	N1	Z	-9.8
2	N1	MX	-823.87

Point Loads and Moments (Cat 65 : OL2)

	Label	Direction	Magnitude[k,k-ft]
1	N1	Y	8

Slabs

	Label	Thickness [in]	Material	Local Axis An...	Analysis Offset [in]	Passive Pressure [ksf]	Soil Overburd...	Icr Factor
1	S1	12	Conc4000NW...	0	6	0	0	1

Load Combinations

	Label	S...	S...	A...	SF	Categ...	Fact...	Cate...	Factor	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...
1	Service																				
2	DL	Y...	Y...		1.5	DL	1														
3	OL1 (LS & Ballast)	Y...	Y...			OL1	1														
4	OL2 (Equipment)	Y...	Y...			OL2	1														
5	(DL+OL1+ OL2)...	Y...	Y...		1.5	DL	1	OL1	1	OL2	1	W...	0.6								
6	(DL+OL1+OL2) +...	Y...	Y...		1.5	DL	1	OL1	1	OL2	1	WLZ	0.6								

Load Combinations (Continued)

Label	S...	S...	A...	SF	Categ	Fact	Cate	Factor	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...
7 (DL+OL1+OL2)+...	Y...	Y...		1.5	DL	1	OL1	1	OL2	1	W...	0.4	WLZ	0.4						
8 (DL+OL1+OL2)-...	Y...	Y...		1.5	DL	1	OL1	1	OL2	1	W...	-0...	WLZ	-0...						
9 0.6(DL+OL1)+0.6...	Y...	Y...		1.1	DL	0.6	OL1	1			W...	0.6								
10 0.6(DL+OL1)+0.6...	Y...	Y...		1.1	DL	0.6	OL1	1			WLZ	0.6								
11 0.6 (DL+OL1)+4...	Y...	Y...		1.1	DL	0.6	OL1	1			W...	0.4	WLZ	0.4						
12 0.6(DL+OL1)-.42...	Y...	Y...		1.1	DL	0.6	OL1	1			W...	-0...	WLZ	-0...						

Slab Overturning Safety Factors (By Combination)

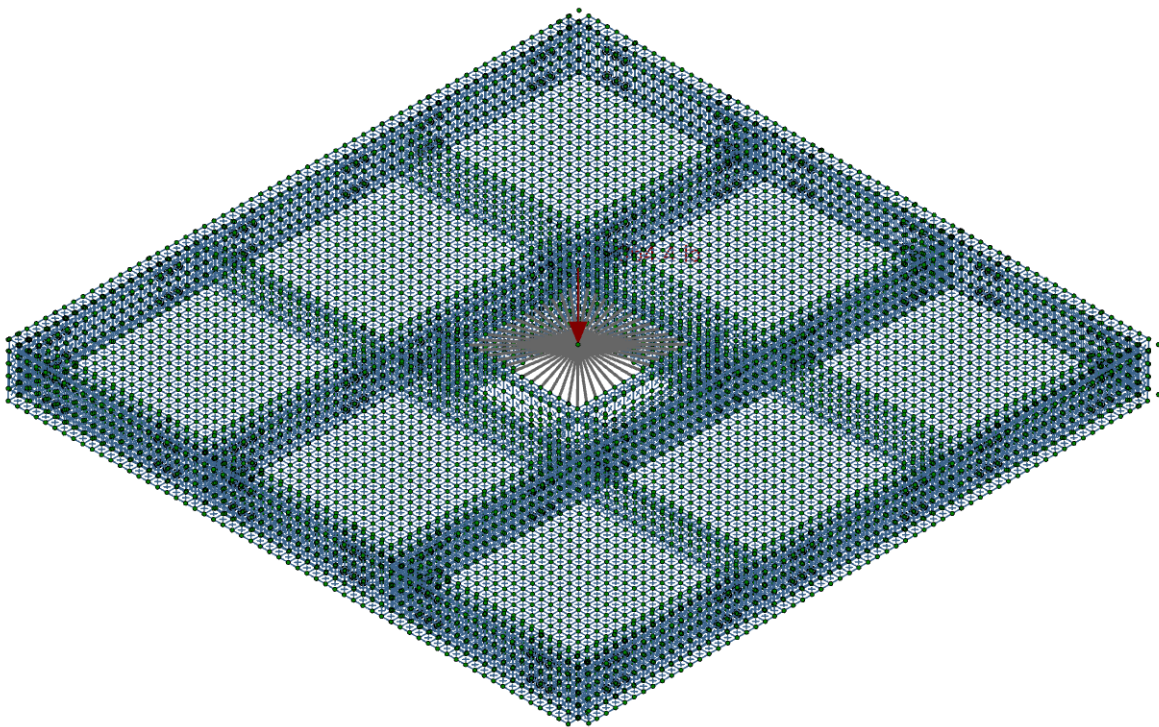
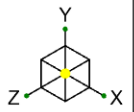
LC	Slab	Angle[deg]	Mo-xx[k-ft]	Ms-xx[k-ft]	Mo-zz[k-ft]	Ms-zz[k-ft]	Ms-xx/Mo-xx	Ms-zz/Mo-zz
1 2	S1	0	0	360.644	0	360.644	9.99+	9.99+
2 3	S1	0	0	1000	0	1000	9.99+	9.99+
3 4	S1	0	0	80	0	80	9.99+	9.99+
4 5	S1	0	0	1440.644	509.022	1440.644	9.99+	2.83
5 6	S1	0	509.022	1440.644	0	1440.644	2.83	9.99+
6 7	S1	0	359.709	1440.644	359.709	1440.644	4.005	4.005
7 8	S1	0	359.709	1440.644	359.709	1440.644	4.005	4.005
8 9	S1	0	0	1216.386	509.022	1216.386	9.99+	2.39
9 10	S1	0	509.022	1216.386	0	1216.386	2.39	9.99+
10 11	S1	0	359.709	1216.386	359.709	1216.386	3.382	3.382
11 12	S1	0	359.709	1216.386	359.709	1216.386	3.382	3.382

Slab Sliding Safety Factors (By Combination)

LC	Slab	Angle[deg]	Va-xx[k]	Vr-xx[k]	Va-zz[k]	Vr-zz[k]	SR-xx	SR-zz
1 2	S1	0	0	9.016	0	9.016	9.99+	9.99+
2 3	S1	0	0	25	0	25	9.99+	9.99+
3 4	S1	0	0	2	0	2	9.99+	9.99+
4 5	S1	0	5.88	36.016	0	36.016	6.125	9.99+
5 6	S1	0	0	36.016	5.88	36.016	9.99+	6.125
6 7	S1	0	4.155	36.016	4.155	36.016	8.668	8.668
7 8	S1	0	4.155	36.016	4.155	36.016	8.668	8.668
8 9	S1	0	5.88	30.41	0	30.41	5.172	9.99+
9 10	S1	0	0	30.41	5.88	30.41	9.99+	5.172
10 11	S1	0	4.155	30.41	4.155	30.41	7.318	7.318
11 12	S1	0	4.155	30.41	4.155	30.41	7.318	7.318

Envelope Slab Soil Pressures (By Combination)

Label	Max UC	Max LC	Soil Pressure[ksf]	Allowable Bearing[ksf]	Point
1 S1	0.631	7	0.947	1.5	N289



Loads: BLC 1, DL



VSE

JJB

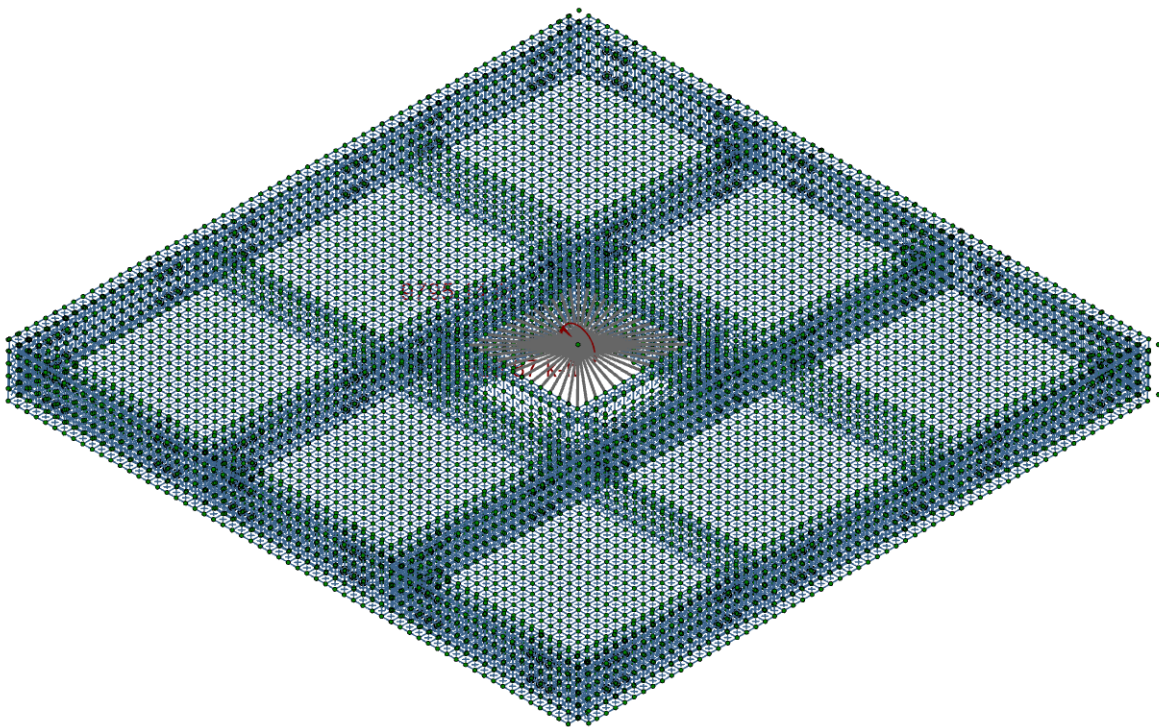
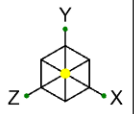
U1140.0270.231

LS-20

SK-1

Feb 21, 2024 at 10:05 AM

LS-20 centered, 1100 OTM - ...



Loads: BLC 3, wlx



VSE

JJB

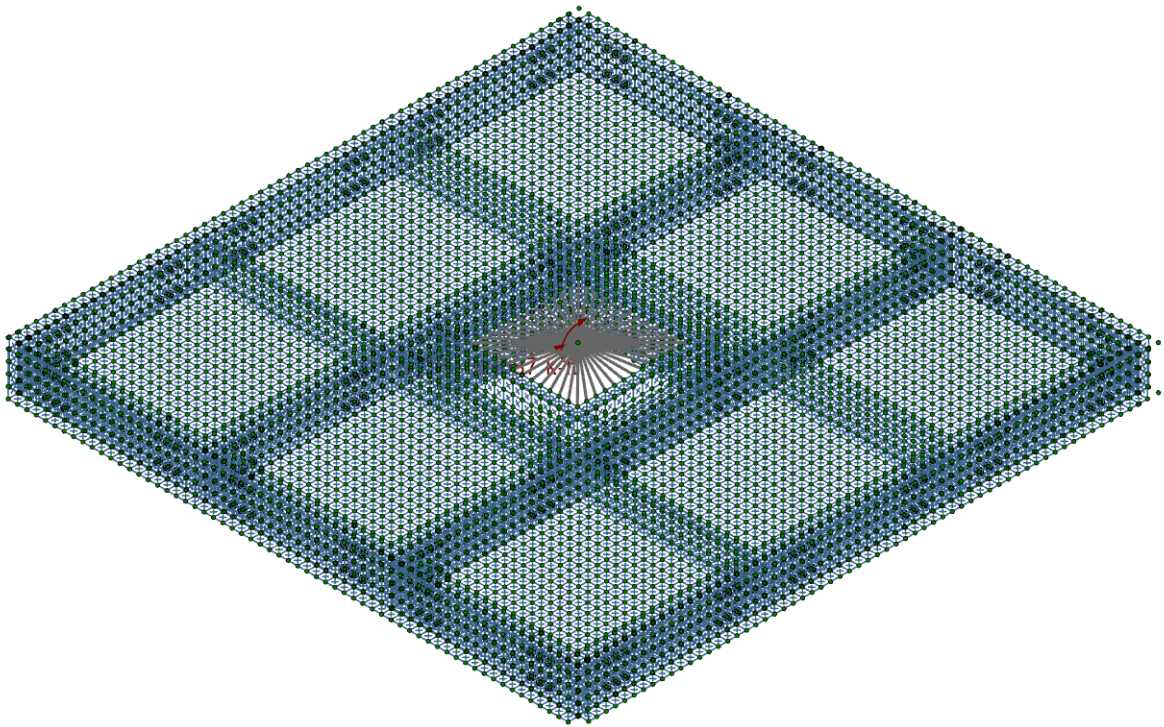
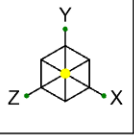
U1140.0270.231

LS-20

SK-2

Feb 21, 2024 at 10:05 AM

LS-20 centered, 1100 OTM - ...



Loads: BLC 4, w/z



VSE

JJB

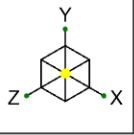
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LS-20

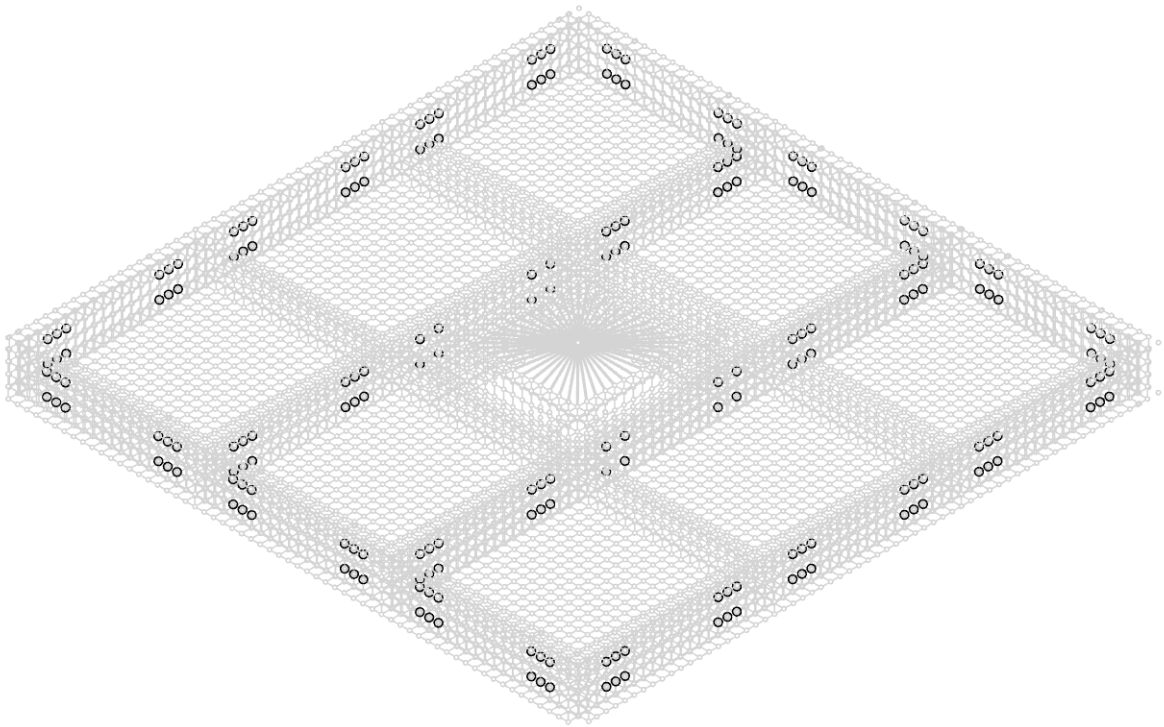
SK-3

Feb 21, 2024 at 10:05 AM

LS-20 centered, 1100 OTM - ...



BOLT LOCATIONS



Loads: BLC 4, wlz



VSE
JJB
U1140.0270.231

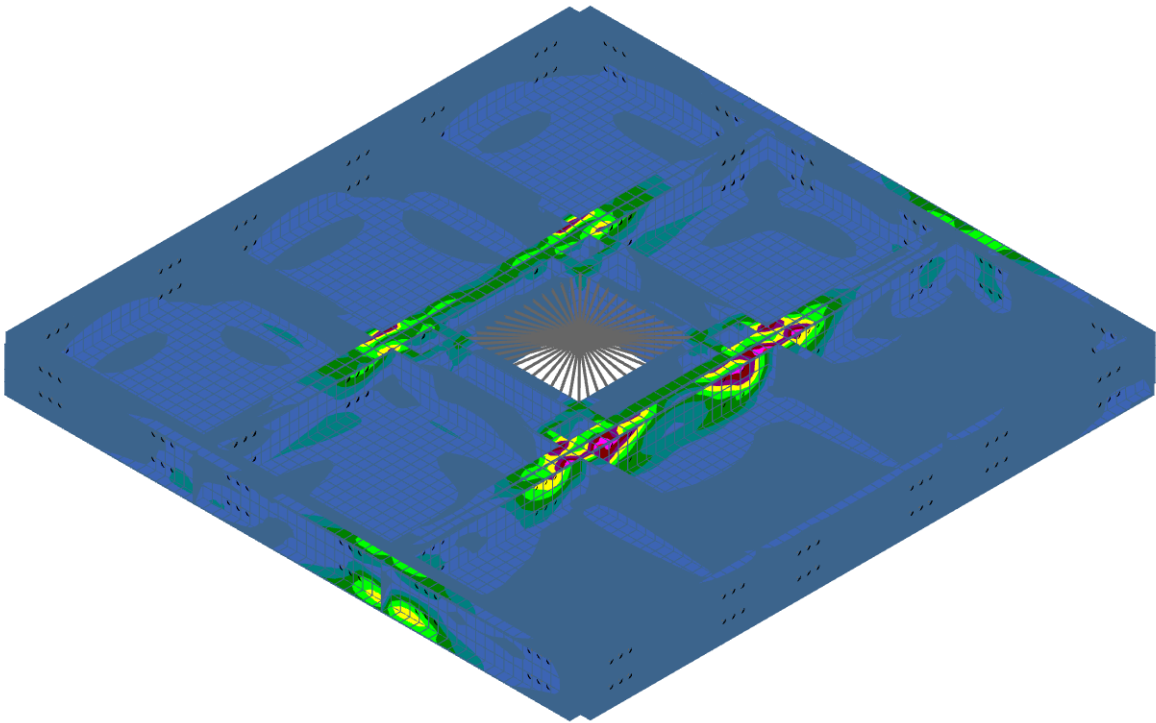
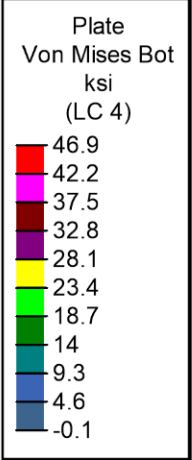
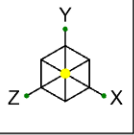
LS-20

SK-4
Feb 21, 2024 at 10:06 AM
LS-20 centered, 1100 OTM - ...

MAX BOLT SHEAR
= (y-shear² + z-shear²)^{1/2}

Envelope Member Section Forces

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
1	M152	1	max	1480.575	5	14228.982	4	7009.94	5	0.011	5	0	9	0	9
2			min	-4200.632	4	-4043.47	5	-32335.394	4	-0.039	4	0	2	0	2
3		2	max	1480.575	5	14228.957	4	7009.94	5	0.011	5	0.074	5	0.042	5
4			min	-4200.632	4	-4043.496	5	-32335.394	4	-0.039	4	-0.34	4	-0.15	4
5		3	max	1480.575	5	14228.932	4	7009.94	5	0.011	5	0.147	5	0.085	5
6			min	-4200.632	4	-4043.521	5	-32335.394	4	-0.039	4	-0.68	4	-0.299	4
7		4	max	1480.575	5	14228.906	4	7009.94	5	0.011	5	0.221	5	0.127	5
8			min	-4200.632	4	-4043.546	5	-32335.394	4	-0.039	4	-1.02	4	-0.449	4
9		5	max	1480.575	5	14228.881	4	7009.94	5	0.011	5	0.295	5	0.17	5
10			min	-4200.632	4	-4043.571	5	-32335.394	4	-0.039	4	-1.359	4	-0.598	4
11	M49	1	max	107.974	5	5409.031	4	6317.926	5	0.002	5	0	9	0	9
12			min	-669.546	4	-1627.675	5	-27820.512	4	-0.007	4	0	2	0	2
13		2	max	107.974	5	5409.006	4	6317.926	5	0.002	5	0.066	5	0.017	5
14			min	-669.546	4	-1627.7	5	-27820.512	4	-0.007	4	-0.29	4	-0.056	4
15		3	max	107.974	5	5408.981	4	6317.926	5	0.002	5	0.132	5	0.034	5
16			min	-669.546	4	-1627.725	5	-27820.512	4	-0.007	4	-0.581	4	-0.113	4
17		4	max	107.974	5	5408.955	4	6317.926	5	0.002	5	0.198	5	0.051	5
18			min	-669.546	4	-1627.751	5	-27820.512	4	-0.007	4	-0.871	4	-0.169	4
19		5	max	107.974	5	5408.93	4	6317.926	5	0.002	5	0.264	5	0.068	5
20			min	-669.546	4	-1627.776	5	-27820.512	4	-0.007	4	-1.162	4	-0.226	4
21	M125	1	max	772.324	5	-2926.499	3	26427.02	4	-0.008	3	0	9	0	9
22			min	-1155.384	4	-13365.916	4	3508.674	3	-0.037	4	0	2	0	2
23		2	max	772.324	5	-2926.532	3	26427.02	4	-0.008	3	0.278	4	0.14	4
24			min	-1155.384	4	-13365.941	4	3508.674	3	-0.037	4	0.037	3	0.031	3
25		3	max	772.324	5	-2926.566	3	26427.02	4	-0.008	3	0.555	4	0.281	4
26			min	-1155.384	4	-13365.966	4	3508.674	3	-0.037	4	0.074	3	0.062	3
27		4	max	772.324	5	-2926.6	3	26427.02	4	-0.008	3	0.833	4	0.421	4
28			min	-1155.384	4	-13365.991	4	3508.674	3	-0.037	4	0.111	3	0.092	3
29		5	max	772.324	5	-2926.634	3	26427.02	4	-0.008	3	1.111	4	0.562	4
30			min	-1155.384	4	-13366.017	4	3508.674	3	-0.037	4	0.148	3	0.123	3
31	M54	1	max	-479.662	3	-1361.52	3	24597.124	4	-0.002	3	0	9	0	9
32			min	-2378.627	4	-4130.43	9	3024.143	3	-0.006	9	0	2	0	2
33		2	max	-479.662	3	-1361.553	3	24597.124	4	-0.002	3	0.257	4	0.043	9
34			min	-2378.627	4	-4130.455	9	3024.143	3	-0.006	9	0.032	3	0.014	3
35		3	max	-479.662	3	-1361.587	3	24597.124	4	-0.002	3	0.514	4	0.086	9
36			min	-2378.627	4	-4130.48	9	3024.143	3	-0.006	9	0.063	3	0.028	3
37		4	max	-479.662	3	-1361.62	3	24597.124	4	-0.002	3	0.77	4	0.129	9
38			min	-2378.627	4	-4130.505	9	3024.143	3	-0.006	9	0.095	3	0.043	3
39		5	max	-479.662	3	-1361.654	3	24597.124	4	-0.002	3	1.027	4	0.172	9
40			min	-2378.627	4	-4130.53	9	3024.143	3	-0.006	9	0.126	3	0.057	3
41	M159	1	max	5785.338	5	2100.577	4	22839.443	4	0.041	4	0	9	0	9
42			min	-18263.155	4	-598.711	5	-5973.54	5	-0.013	5	0	2	0	2
43		2	max	5785.338	5	2100.545	4	22839.443	4	0.041	4	0.305	4	0.008	5
44			min	-18263.155	4	-598.743	5	-5973.54	5	-0.013	5	-0.08	5	-0.028	4
45		3	max	5785.338	5	2100.513	4	22839.443	4	0.041	4	0.609	4	0.016	5
46			min	-18263.155	4	-598.775	5	-5973.54	5	-0.013	5	-0.159	5	-0.056	4
47		4	max	5785.338	5	2100.481	4	22839.443	4	0.041	4	0.914	4	0.024	5
48			min	-18263.155	4	-598.807	5	-5973.54	5	-0.013	5	-0.239	5	-0.084	4
49		5	max	5785.338	5	2100.449	4	22839.443	4	0.041	4	1.219	4	0.032	5
50			min	-18263.155	4	-598.839	5	-5973.54	5	-0.013	5	-0.319	5	-0.112	4



Results for LC 4, .9dl+1.0wlx		
 IRISA A NEMETSCHEK COMPANY	VSE	LS-20
	JJB	
	U1140.0270.231	

SK-5
Feb 21, 2024 at 10:12 AM
LS-20 centered, 1100 OTM - ...

WORST CASE PLATE STRESS

Envelope Plate/Shell Principal Stresses

	Plate		Surface	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [ksi]	LC
1	P6465	max	T	6.431	5	3.606	3	10.454	4	1.768	9	51.74	4
2		min		-38.015	4	-58.922	4	1.4	3	-0.68	3	5.563	3
3		max	B	55.754	4	27.084	4	14.335	4	2.025	5	48.291	4
4		min		-1.082	5	-4.739	5	1.81	3	-0.206	9	4.218	3
5	P6413	max	T	-0.553	5	-5.086	3	10.246	4	1.676	9	51.566	4
6		min		-38.17	4	-58.661	4	2.264	3	-0.283	3	4.831	3
7		max	B	55.382	4	26.685	4	14.349	4	0.064	2	47.973	4
8		min		0.256	3	-4.123	5	1.887	3	-0.353	3	3.653	3
9	P6040A	max	T	6.837	3	0.146	3	12.655	4	1.585	5	25.894	4
10		min		-1.131	4	-26.44	4	3.189	5	-0.42	9	6.452	5
11		max	B	14.53	4	-0.785	3	24.442	4	1.872	5	43.479	4
12		min		6.457	8	-34.353	4	3.809	5	0.523	2	7.242	5
13	P6023A	max	T	0.186	5	-10.361	3	14.81	9	0.229	2	30.165	9
14		min		-1.147	4	-30.682	9	5.263	3	-0.04	3	10.445	3
15		max	B	14.401	4	-10.198	3	24.417	4	-0.063	5	43.462	4
16		min		0.002	3	-34.899	9	5.1	3	-0.523	4	10.199	3
17	P6469	max	T	4.76	3	4.552	3	5.298	4	1.638	2	44.953	4
18		min		-38.709	4	-49.304	4	0.104	3	-0.047	5	4.533	5
19		max	B	48.774	4	21.034	4	13.87	4	1.312	5	42.372	4
20		min		-0.851	5	-3.546	3	1.32	5	-0.297	2	3.152	5
21	P6461	max	T	5.396	5	1.588	3	11.638	4	1.7	9	43.14	4
22		min		-26.503	4	-49.779	4	1.869	3	-0.706	3	4.737	3
23		max	B	47.045	4	12.525	4	17.26	4	2.018	5	42.201	4
24		min		0.246	5	-3.486	5	1.866	5	-0.165	9	3.587	3
25	P6417	max	T	0.954	5	-3.399	3	11.425	4	1.84	8	43.013	4
26		min		-26.766	4	-49.616	4	2.136	3	-0.344	3	3.909	3
27		max	B	46.854	4	12.343	4	17.255	4	0.065	2	42.063	4
28		min		-0.599	3	-6.04	5	2.31	3	-0.326	3	4.946	3
29	P6409	max	T	-1.189	3	-5.028	3	5.187	4	1.627	4	44.775	4
30		min		-38.677	4	-49.052	4	1.834	8	0.081	5	4.551	3
31		max	B	48.32	4	20.774	4	13.773	4	0.291	2	41.983	4
32		min		0.042	3	-3.874	5	1.702	3	0.114	5	3.383	3
33	P3163	max	T	2.573	5	-1.464	3	10.712	4	1.697	8	36.206	4
34		min		-20.379	4	-41.803	4	1.897	3	-0.364	3	3.313	3
35		max	B	44.188	4	30.58	4	6.804	4	-0.059	2	39.197	4
36		min		-2.929	5	-7.026	5	1.787	3	-0.345	3	5.486	3
37	P3215	max	T	0.785	5	-2.457	5	10.607	4	2.032	5	35.906	4
38		min		-20.244	4	-41.457	4	1.621	5	1.501	2	2.929	5
39		max	B	44.066	4	30.601	4	6.732	4	2.305	5	39.112	4
40		min		4.854	5	1.757	5	1.436	3	-0.016	8	4.257	5
41	P6020A	max	T	0.902	9	-9.672	3	16.139	9	0.001	5	31.836	9
42		min		0.115	5	-31.375	9	4.895	3	-0.144	2	9.732	3
43		max	B	6.255	4	-9.356	3	20.841	4	0.532	2	38.932	4
44		min		-0.202	5	-35.426	4	4.628	3	0.125	5	9.307	3
45	P6043A	max	T	6.803	3	-0.103	3	15.28	4	1.616	5	30.458	4
46		min		-0.344	9	-30.356	4	3.336	5	0.135	4	6.606	5
47		max	B	6.742	3	-0.366	3	20.654	4	1.278	3	38.516	4
48		min		2.756	9	-34.926	4	3.434	5	-0.611	9	6.687	5



JOB NO.: U1140.0270.242

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PROJECT: JACKSON WT TEMP

FINITE ELEMENT MODEL STEEL PLATE STRESS CHECK

Design Methodology:	LRFD				
Increase allowable stress by 1.5?	Yes	No	No	No	No
Connection Under Consideration:					
Element Description:					
Material Yield Strength, F_y (ksi):	65				
Max. Von Mises Stress (ksi):	51.74				
Corresponding Element Label:	P6465				
Acceptable Stress (ksi):	87.75				
Element Unity Check:	0.59				
	OKAY	OKAY	OKAY	OKAY	OKAY

Acceptable stresses are based on the following derived from AISC 360:

ASD: Acceptable Stress = $F_y/1.67$

LRFD: Acceptable Stress = $0.9 \cdot F_y$

Acceptable stress values are further increased by 1.5 where indicated above.

Bolt Check

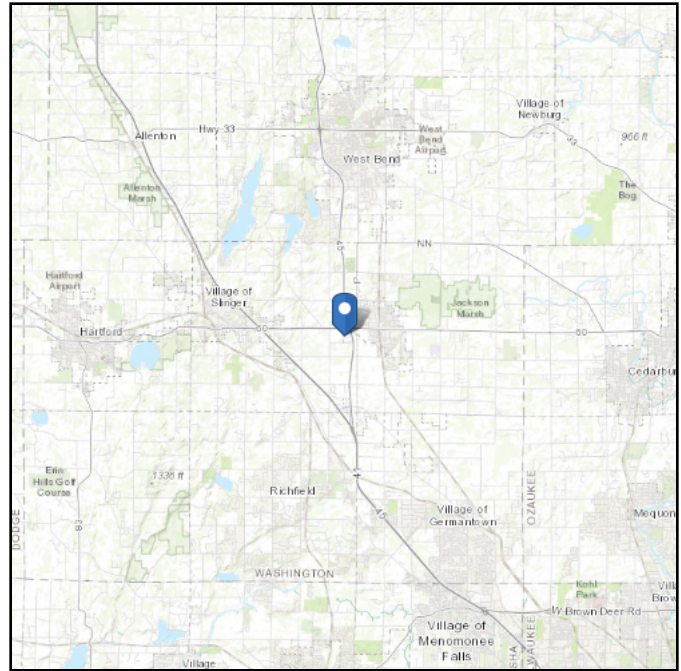
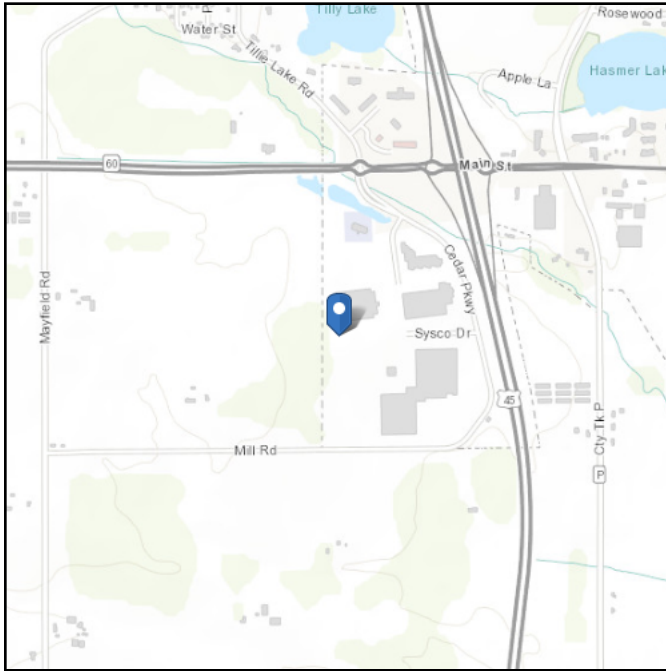
LRFD Tension (kips):	18.3	kips		
LRFD Shear (kips):	35.3	kips		
Bolt Designation:	A325X			
Bolt Diameter (in):	1 1/4			
ϕT_n (kips):	82.8	22%	AISC Eq. J3-2	
ϕV_n (kips):	62.6	56%	AISC Eq. J3-2	
Combined Tension and Shear:	N/A	N/A	AISC Eq. J3-3a	

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 43.320025
Longitude: -88.190906
Elevation: 0 ft (NAVD 88)



Wind

Results:

Wind Speed	115 Vmph
10-year MRI	76 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014
Date Accessed: Wed Dec 20 2023

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 7-10 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 7-10 Section 26.2.

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: -5 F
Gust Speed 40 mph

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

Date Accessed: Wed Dec 20 2023

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 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 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

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Memo

To: Brian W. Kober, P. E., Director of Public Works
From: Russ Krueger, Streets & Parks Supervisor
Subject: Purchase of 2024 Front End Loader
Date: April 25, 2024
CC: Village Board; Board of Public Works

The Department of Public Works staff reviewed four (4) loaders to see which one might be best suited for use. We test drove John Deere, Caterpillar, Komatsu, and Case. All machines are very similar in character with some standing out more than others. In the review, we created a check list of ten (10) items that we see as being very important to us. We looked at integrated controls, so we have all live functions on one joystick. We wanted Stucchi couplers for quick connects for hydraulics. Visibility was one of the most important things as we work in tight areas. Fluid checks and maintenance inspections. Minimum of 150 hp to push snow and load materials without being under powered. Full fenders to minimize debris from coming off all over the machine and or other vehicles. Ride control for maneuvering around obstacles and roading. Exiting and entering the machine safely with three (3) points of contact. Warranty was our concern as well.

With all these topics we looked at and tried and tested the Staff has agreed that the best machine to serve us will be the Case 621G2. The machine comes with the metal pless pro-1048-18LE snowplow, 1 4in1 bucket and a set of forks, three (3) year 3000 hrs. base warranty, there (3) year 2000 hrs. maintenance warranty that includes, fluids, filters, and travel for a total price of \$270,500.00.

The 2024 Budget has \$225,000.00 budgeted for the purchase using ARPA Fund. The new loader is a benefit to both the Sewer and Water Utilities. Recommendation to purchase the Case 621G2 for the amount of \$270,500.00 with the Sewer & Water Utilities paying the difference of \$45,500.00.

If you have any questions, please let me know.

Russ Krueger

	Loader Manufacture			
Control Factors	KOMATSU	CATERPILLAR	JOHN DEERE	CASE
INTEGRATED CONTROLS	YES	YES	YES	YES
STUCCHI COUPLERS	YES	YES	NO	YES
VISIBILTY	GOOD	GOOD	GOOD	BEST
FLUID CHECKS	GOOD	GREAT	GOOD	GREAT
WARRENTY	YES	YES	YES	YES
MIN. 150 HP	YES	YES	YES	YES
FULL FENDERS	NO	YES	YES	YES
RIDE CONTROL	YES	YES	YES	YES
EXIT\ENTER MACHINE	GOOD	GOOD	GOOD	GOOD
Powertrain Warranty	60 months	84 months	36 months	36 months
PURCHASE PRICE	\$256,703.00	\$271,500.00	\$279,900.00	\$270,500.00

Note: Case Loader also includes a 3 year 2000 hr Maintenance Warranty includes fluids, filters, & travel.



04/19/2024
Quote#: 10403202411001

VILLAGE OF JACKSON
W194 N 16660 Eagle Dr.
JACKSON, WI 53037



Dear Russ Krueger,

On behalf of Roland Machinery, thank you for the opportunity to assist with your equipment needs. We look forward to earning your business. Please contact me with any questions you may have regarding the following proposal:

FACTORY NEW KOMATSU WA200-8

CONFIGURATION

- Boom assembly, standard
- Bucket cylinder, standard
- Counterweight, standard
- Hydraulic kit for komatsu 416 series quick coupler, installed
- Engine intake, standard
- Full fenders kit, installed
- Komatsu 416 series hydraulic coupler, installed (requires hydraulic kit)
- 2-spool valve w/ mono-lever control, standard
- Rims only for 20.5-25 tubeless tires, qty. 4
- Michelin 20.5r25 x-snoplus l2 tires, qty. 4
- GEM 2.75 CuYd 4 in 1 bucket (delivered to customer yard)
- Limited slip differentials, front and rear

ATTACHMENTS:

- Engine block heater, 110v plug-in, installed
- Field installed 3rd spool auxiliary hydraulics
- METAL PLESS PRO1048-18LE SNOW PUSHER (INSTALLED ON MACHINE)

(machine) WARRANTY:

- 60 month / 2,000 hour powertrain plus

(maintenance) KOMCARE:

- 36 month / 2,000 hour komatsu care

Sincerely,

CAMERON OLSEN
920-366-1495
colsen@Rolandmachinery.com

Quote#:10403202411001

www.rolandmachinery.com

Page 1 of 3

NEW KOMATSU WA200-8

STANDARD EQUIPMENT

- 2-spool valve for boom and bucket control
- Alternator, 24 V/ 90 A
- Automatic hydraulic-driven fan with automatic reverse rotation
- Back-up alarm
- Batteries, 92 Ah/12V (2), 680 CCA
- Battery disconnect
- Boom kick-out, in-cab adjustable
- Bucket positioner
- Color, rear-view camera and monitor
- Counterweight, standard
- Electronically Controlled Suspension System
- Engine, Komatsu SAA4D107E-3 diesel
- Engine shut-off system, electric
- Equipment Management Monitoring System (EMMS)
 - Lights (central warning, brake oil pressure, engine oil pressure, parking brake, cooling fan reverse, DPF restriction, seat belt caution, Komtrax message)
 - Gauges (DEF level, engine coolant temperature, ecology, fuel level, HST oil temperature, speedometer/tachometer), variable speed display
- Front fenders
- Fuel pre-filter with water separator
- Horn, electric
- Hydrostatic transmission
- Komatsu Auto Idle Shutdown
- KOMTRAX® Level 5
- Lift cylinders and bucket cylinder
- Lights
 - Back-up light
 - Stop and taillight
 - Turn signal lamps, 2 front and 2 rear with hazard switch
 - Working lights, halogen, 2 front cab mount
 - Working lights, halogen, 2 front fender mount
 - Working lights, halogen, 2 rear grill mount
- Loader linkage with standard lift arm
- Multifunction mono-lever loader control with transmission F/R switch
- Parking brake, electric
- Radiator, wider core
- Radiator mask, swing up
- Rear view mirrors, outside (2) inside (2)
- Rims for 20.5-R25 tires
- ROPS/FOPS Cab Level 2
 - 2 x DC12V electrical outlets
 - Ashtray
 - Auto air conditioner
- Cigarette lighter, 24V
- Color LCD/TFT multi-monitor
- Cup holder
- Floor mat
- Operator seat, reclining, air suspension type, heated
- Radio, AM/FM with AUX input jack
- Rear defroster, electric
- Seatbelt, 2-point retractable, 76mm 3" width
- Space for lunch box
- Steering wheel, tilt and telescopic
- Sun visor, front window
- Windshield washer and wiper, front with intermittent
- Windshield washer and wiper, rear
- Service brakes, wet disc type
- Starting motor, 5.5 kW
- Transmission speed ranges, 4 forward and 4 reverse
- Vandalism protection kit, padlocks for battery box (2)

OPTIONAL EQUIPMENT

- Three-spool valve (will utilize integrated proportional control switch included in the multi-function mono-lever) and piping
- Auxiliary steering (SAE)
- Centrifugal engine air pre-cleaner
- Cutting edge (bolt-on type)
- Full rear fenders
- High lift boom
- Limited slip differential (F&R)
- Quick coupler
- Various tire options, radial and bias
- Various bucket and fork options



Total Selling Price

Sell Price:	\$256,703.00
Less Rentals Paid:	0.00
Trade In:	-0.00
Other Charges:	0.00
Total Amount Due:	\$256,703.00

Terms and Conditions

- All orders are subject to acceptance by the Seller upon receipt of order at the office of Seller. In the event applicable taxes are not indicated in the quotation, the material quoted will be subject to any applicable taxes at the date of shipment.
- All quotations are subject to change without notice.
- Prices quoted are subject to change to comply with any manufacturer's price change or any changes in taxes imposed by federal, state or local governments between the date of the quotation and date of delivery of items quoted.
- The property herein quoted is guaranteed by manufacturer's warranty only and no warranty, express or implied, is made by the Seller.
- Terms of sales are subject to credit approval.
- Delivery of the material quoted herein is contingent upon strikes, fires, prior sales, government action and other causes unavoidable or beyond control.
- Any USED or SECONDHAND equipment included in the Quote is sold "AS IS, WHERE IS" WITHOUT ANY WARRANTY Whatsoever, EXPRESS or IMPLIED, WARRANTY OF MERCHANTABILITY, and WARRANTY OF FITNESS FOR PARTICULAR PURPOSE (except that the seller warrants title). If seller has agreed in writing herein to provide any repair work to the equipment, then the seller warrants said repair work for 30 days after buyer receives delivery. Buyer waives any claim relating to any defect in the equipment which is not to be repaired by SELLER.

KomatsuCare

- Tier 4i & Tier 4 final Construction Equipment comes standard at no additional cost with complimentary factory scheduled maintenance for the first 3 years or 2,000 hours, whichever occurs first.
- Tier 4i & Tier 4 final construction equipment comes standard with two (2) complimentary KDPF exchange units for the first 5 years/9000 hours.



MyKomatsu/Komtrax

- My Komatsu Our inclusive comprehensive digital hub that allows 24/7 access to machine telematics data, parts manuals, service manuals, software, and parts ordering — all in a single place — we'll partner with you to make sure that My Komatsu delivers exactly what you need. KOMTRAX is both a wireless equipment monitoring system and a secure, web-based application used for reviewing the data KOMTRAX collects and sends. KOMTRAX not only gives you the power of knowledge, but also the convenience of managing your fleet on the Web, wherever you are. *That's a \$5,000 value, at no cost to you.*



MyKomatsu



Intelligent Machine Control

- "I" machines feature the next generation of machine control on the jobsite and boast the three I's and three C's. Innovative- automated operation from rough grade to finish grade, Intelligent- new dozing mode with load control performance features, Integrated- standard factory installed integrated 3D GNSS system, no Cables- no coiled cables between the machine and blade, no Climbing- GNSS antenna and mast removed from blade, no Connections- no daily connections to set up and take down which loosen and corrode.



April 16, 2024

Village of Jackson

We are pleased to quote the following for your consideration:

(1) New Caterpillar 926 Wheel Loader

The following factory and dealer options are included:

- * Operating Weight: 28,000 lbs.
- * Cat C7.1 168 Gross H.P. Engine
- * Standard Lift Loader Linkage
- * Electric Heated and Adjustable Mirrors
- * Auxiliary Toolbox
- * Limited Slip Rear Differential
- * Cab Deluxe with Heat and A/C
- * Seat, Deluxe, Air Ride
- * Standard Counterweight
- * Tires, 20.5R25 Michelin Sno Plus Tires
- * Fenders, Full Cover
- * Ride Control
- * Camera, Rear View
- * Radio Am/FM Bluetooth
- * Cold Start 120v, Ether Aid
- * Lights, LED Auxiliary
- * Lights, Halogen Roading
- * 4th Valve Hydraulics with 5th Function
- * Palm Style Joystick with Auxiliary Functions
- * Quick Coupler, JRB 416
- * B&D 4 in 1 Bucket
- * Metal-Pless 1048-18 Plow

* Warranty: Premier Warranty Service Coverage out to a total of 84 Months or 2500 Hours, whichever comes first.

Sale Price: \$271,500.00

Options: B&D Pallet Forks: \$4,000.00

We believe the equipment as quoted will exceed your expectations. On behalf of Fabick Cat, thank you for the opportunity to quote Caterpillar machinery.

Sincerely,
Alex Egelhoff
Territory Manager
Cell: 262-422-4586
alex.egelhoff@fabickcat.com

Milwaukee
11200 West Silver Spring Rd.
Milwaukee, WI 53225-3118
414/461-9100 Tel
414/461-8899 Fax

Power Systems
11200 West Silver Spring Rd.
Milwaukee, WI 53225-3118
414/461-9100 Tel
414/615-2101 Fax

Madison
1111 Applegate Rd.
PO Box 259040
Madison WI 53725-9040
608/271-6200 Tel
608/271-1410 Fax

Eau Claire
7860 Partridge Rd.
PO Box 1088
Eau Claire, WI 54702-1088
715/874-5100 Tel
715/874-5182 Fax

Power Systems
7877 Partridge Rd. (City EE)
PO Box 1088
Eau Claire, WI 54702-1088
715/874-5100 Tel
715/874-5151 Fax

LaCrosse
1620 Carol Court
La Crosse, WI 54601-3056
608/783-4891 Tel
608/781-3222 fax

Superior
111 Moccasin Mike Rd.
Superior, WI 54880-4358
715/398-9696 Tel
715/398-9695 Fax

Green Bay
600 Hansen Rd.
PO Box 19976
Green Bay, WI 54307-9176
920/498-8000 Tel
920/499-4844 Fax

Power Systems
2700 South Broadway
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920/498-8000 Tel
920/499-0890 Fax

Wausau
9601 Christie Ln.
PO Box 350
Schofield, WI 54476-0350
715/359-6220 Tel
715/359-5550 Fax

Marquette
US Highway 41 West
PO Box 638
Marquette, MI 49855-0638
906/475-4191 Tel
906/475-4054 Fax

Quote Id: 30237807

Prepared For:
VILLAGE OF JACKSON

Prepared By: **TAYLOR LUTZKE**

Brooks Tractor Incorporated
12101 West Silver Spring Drive
Milwaukee, WI 53225

Tel: 414-462-9790

Fax: 414-462-7242

Email: tlutzke@brookstractor.com

Date: 17 January 2024

Offer Expires: 19 February 2024

Confidential

Quote Id: 30237807

17 January 2024

VILLAGE OF JACKSON
PO BOX 147
JACKSON, WI 53037

TAYLOR LUTZKE
414-462-9790
Brooks Tractor Incorporated

Quote Summary**Prepared For:**

VILLAGE OF JACKSON
PO BOX 147
JACKSON, WI 53037
Business: 414-677-9589

Prepared By:

TAYLOR LUTZKE
Brooks Tractor Incorporated
12101 West Silver Spring Drive
Milwaukee, WI 53225
Phone: 414-462-9790
tlutzke@brookstractor.com

Loader is in stock. Plow price includes set up of hoses, fittings, labor to install on loader.
Plow would be 2-4 week ship time.

Quote Id: 30237807
Created On: 17 January 2024
Last Modified On: 29 January 2024
Expiration Date: 19 February 2024

Equipment Summary

	Selling Price		Qty		Extended
2023 JOHN DEERE 544 P-Tier Wheel Loader - 1DW544PAVPLA19767 John Deere Extended Warranty-36M 5000HR PT-HYD WARRANTY	\$ 232,900.00	X	1	=	\$ 232,900.00
METAL PLESS PRO1048-20LE	\$ 47,000.00	X	1	=	\$ 47,000.00

Equipment Total**\$ 279,900.00**

Quote Summary

Equipment Total	\$ 279,900.00
SubTotal	\$ 279,900.00
Total	\$ 279,900.00
Down Payment	(0.00)
Rental Applied	(0.00)
Balance Due	\$ 279,900.00

Salesperson : X _____**Accepted By : X** _____

Selling Equipment

Quote Id: 30237807

Customer: VILLAGE OF JACKSON

2023 JOHN DEERE 544 P-Tier Wheel Loader - 1DW544PAVPLA19767

Hours: 5

Stock Number: 084869A

Code	Description	Qty
6031DW	2023 JOHN DEERE 544 P-TIER LDR, FT4,3F,FLLFNR,QC,3.5CY	1
Standard Options - Per Unit		
183E	JDLINK	1
0202	UNITED STATES	1
0259	ENGLISH OPS MANUAL	1
0351	TRANSLATED LABELS	1
0451	STANDARD Z-BAR	1
0613	LEVEL 3 TRIM	1
0656	LEVEL 2 PERFORMANCE	1
0953	ADVANCED VISION SYSTEM	1
1102	ADVANCED OBJECT DETECTION	1
1301	LEFT SIDE STEPS	1
2205	SMEARTWEIGH READY + TRIAL	1
4095	JD POWERTECH PVS 6.8L FT4/EU	1
5121	NBP 20.5 L3 1* 3PC	1
5554	FULL COV. FRONT REAR FENDERS	1
6522	REAR COUNTERWEIGHT & R.HITCH	1
7026	JOYSTICK CONTROLS	1
7054	THREE FUNCTION HYDRAULICS	1
7403	HYDRAULIC COUPLER JRB 416	1
7458	BOLT-ON CUTTING EDGE	1
7500	LESS FORK FRAME	1
7700	LESS TINES	1
7827	3.50YD (2.70CM) ENH. PERFORM	1
8015	NBP 20.5R25 L3 1* W/3PC	1
8042	AXLE OIL COOLING AND FILTER	1
8213	ENGINE EXHAUST W/ CHROMESTACK	1
8295	HEATED AND POWERED MIRRORS	1
8500	COLD WEATHER PACKAGE	1
8501	DEBRIS PACKAGE	1
8502	MAINTENANCE&SERVICE PACKAGE	1
8505	GUARDS TRANSMISSION & BOTTOM	1
8508	AUXILARY EQUIPMENT PACKAGE	1

Selling Equipment

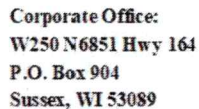
Quote Id: 30237807**Customer:** VILLAGE OF JACKSON

Dealer Attachments	
JRB 416 HYDRAULIC COUPLER	1
3.50 ENH PERFORMANCE BUCKET	1
4TH FUNCTION HYDRAULICS	1
5TH FUNCTION HYDRAULICS	1
Service Agreements	
John Deere Extended Warranty - 36M	
5000HR PT-HYD WARRANTY	

METAL PLESS PRO1048-20LE

Equipment Notes:**Hours:** 0**Stock Number:**

Code	Description	Qty
1		1



Sussex, WI	DeForest, WI	De Pere, WI	Negaunee, MI
1-800-242-3115	1-800-585-7219	1-800-638-7448	1-800-562-9770
Eau Claire, WI	Marathon, WI	Rockford, IL	
1-800-585-7232	1-888-886-4410	1-800-585-7231	

Distributors of Equipment and Supplies for ■ Construction ■ Forestry ■ Industry ■ Government

DATE: 04.15.24

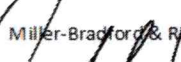
REFERENCE: WHEEL LOADER

[illegible]

F.O.B.: MBR SUSSEX
QUOTE GOOD FOR 30 DAYS

SIGNED

Miller-Bradford & Risberg, Inc.



Jeff Vruble
Territory Manager
Miller-Bradford & Risberg
262-443-2260
jvruble@miller-bradford.com

AIA[®] Document G702[™] – 1992

Application and Certificate for Payment

TO OWNER: Village of Jackson N168 W19851 Main Street Jackson, WI 53037	PROJECT: Jackson Tertiary Filters W194N16658 Eagle Drive Jackson, WI 53037	APPLICATION NO: 1	Distribution to:
FROM CONTRACTOR: J.H. HASSINGER, INC. N60 W16289 Kohler Lane Menomonee Falls, WI 53051	VIA ARCHITECT:	PERIOD TO: 3/31/2024	OWNER ☐
		CONTRACT FOR: Jackson Tertiary Filters	ARCHITECT ☐
		CONTRACT DATE: 3/11/2024	CONTRACTOR ☐
		PROJECT NOS: / /	FIELD ☐
		INVOICE NO: 12335	OTHER ☐

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
AIA Document G703[™], Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM	\$ 4,715,248.00
2. NET CHANGE BY CHANGE ORDERS	\$ 0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)	\$ 4,715,248.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	\$ 90,000.00
5. RETAINAGE:	
a. <u>5</u> of Completed Work (Columns D + E on G703)	\$ 4,500.00
b. <u>0</u> of Stored Material (Column F on G703)	\$ 0.00
Total Retainage (Lines 5a + 5b, or Total in Column I of G703)	\$ 4,500.00
6. TOTAL EARNED LESS RETAINAGE	\$ 85,500.00
(Line 4 minus Line 5 Total)	
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$ 0.00
(Line 6, from prior Certificate)	
8. CURRENT PAYMENT DUE	\$ 85,500.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE	\$ 4,629,748.00
(Line 3 minus Line 6)	

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ 0.00	\$ 0.00
Total approved this month	\$ 0.00	\$ 0.00
TOTAL	\$ 0.00	\$ 0.00
NET CHANGES by Change Order	\$ 0.00	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: J.H. HASSINGER, INC.

By: _____

State of: WI

County of: Waukesha

Subscribed and sworn to before me this 3/31/2024 day of March 2024

Notary Public: Shelly Ritzow

My commission expires: 8/1/2027

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$ 85,500.00

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT: _____

By: _____

Date: 4/3/2024

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

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CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side)

PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification, is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.:

Page 2

APPLICATION DATE:

1

PERIOD TO:

3/31/2024

ARCHITECT'S PROJECT NO.:

3/31/2024

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)		BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE) RATE
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD			% (G ÷ C)		
1	General Conditions/Mobilization	155,178.00	0.00	0.00	0.00	0.00	0	155,178.00	0.00
2	Bonds and Insurance	90,000.00	0.00	90,000.00	0.00	90,000.00	100	0.00	4,500.00
3	Mobilization	20,000.00	0.00	0.00	0.00	0.00	0	20,000.00	0.00
4	Demolition	64,636.00	0.00	0.00	0.00	0.00	0	64,636.00	0.00
5	Excavation and Shoring	280,000.00	0.00	0.00	0.00	0.00	0	280,000.00	0.00
6	Paving	27,000.00	0.00	0.00	0.00	0.00	0	27,000.00	0.00
7	Landscaping	13,000.00	0.00	0.00	0.00	0.00	0	13,000.00	0.00
8	Concrete Labor	230,000.00	0.00	0.00	0.00	0.00	0	230,000.00	0.00
9	Concrete Materials	150,000.00	0.00	0.00	0.00	0.00	0	150,000.00	0.00
10	Precast Plank	29,500.00	0.00	0.00	0.00	0.00	0	29,500.00	0.00
11	Masonry	100,000.00	0.00	0.00	0.00	0.00	0	100,000.00	0.00
12	Steel	235,000.00	0.00	0.00	0.00	0.00	0	235,000.00	0.00
13	Carpentry	100,000.00	0.00	0.00	0.00	0.00	0	100,000.00	0.00
14	Air Barrier and Damp Proofing	9,000.00	0.00	0.00	0.00	0.00	0	9,000.00	0.00
15	Roofing	62,000.00	0.00	0.00	0.00	0.00	0	62,000.00	0.00
16	Caulking	14,000.00	0.00	0.00	0.00	0.00	0	14,000.00	0.00
17	OH and Doors	34,000.00	0.00	0.00	0.00	0.00	0	34,000.00	0.00
18	Painting	100,000.00	0.00	0.00	0.00	0.00	0	100,000.00	0.00
19	Plumbing	117,000.00	0.00	0.00	0.00	0.00	0	117,000.00	0.00
20	HVAC	300,000.00	0.00	0.00	0.00	0.00	0	300,000.00	0.00
21	Process	600,500.00	0.00	0.00	0.00	0.00	0	600,500.00	0.00



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CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side)

PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification, is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.:

APPLICATION DATE: 1

PERIOD TO: 3/31/2024

ARCHITECT'S PROJECT NO.: 3/31/2024

Page 3

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)		BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE) RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD			% (G ÷ C)		
22	Electrical Materials	107,561.00	0.00	0.00	0.00	0.00	0	107,561.00	0.00
23	Electrical Labor	175,000.00	0.00	0.00	0.00	0.00	0	175,000.00	0.00
24	Electrical Controls	175,340.00	0.00	0.00	0.00	0.00	0	175,340.00	0.00
25	Excavation Allowance	13,000.00	0.00	0.00	0.00	0.00	0	13,000.00	0.00
26	Trench Excavation Allowance	16,000.00	0.00	0.00	0.00	0.00	0	16,000.00	0.00
27	Structural Fill Allowance	52,000.00	0.00	0.00	0.00	0.00	0	52,000.00	0.00
28	Reinforced Concrete Allowance	60,000.00	0.00	0.00	0.00	0.00	0	60,000.00	0.00
29	Crushed Aggregate Base Allowance	2,200.00	0.00	0.00	0.00	0.00	0	2,200.00	0.00
30	Geo Textile Allowance	1,200.00	0.00	0.00	0.00	0.00	0	1,200.00	0.00
31	Sidewalk Allowance	4,500.00	0.00	0.00	0.00	0.00	0	4,500.00	0.00
32	Soil Testing	10,000.00	0.00	0.00	0.00	0.00	0	10,000.00	0.00
33	Electric Utility	4,000.00	0.00	0.00	0.00	0.00	0	4,000.00	0.00
34	Gas Utility	4,000.00	0.00	0.00	0.00	0.00	0	4,000.00	0.00
35	Polymer Tote	3,000.00	0.00	0.00	0.00	0.00	0	3,000.00	0.00
36	Shop Equipment	10,000.00	0.00	0.00	0.00	0.00	0	10,000.00	0.00
37	Filters	837,000.00	0.00	0.00	0.00	0.00	0	837,000.00	0.00
38	UV Treatment	209,633.00	0.00	0.00	0.00	0.00	0	209,633.00	0.00
39	Site Utilities	300,000.00	0.00	0.00	0.00	0.00	0	300,000.00	0.00
		4,715,248.00	0.00	90,000.00	0.00	90,000.00	2	4,625,248.00	4,500.00



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Application and Certificate for Payment

TO OWNER: Village of Jackson N168 W19851 Main Street Jackson, WI 53037	PROJECT: Jackson Tertiary Filters W194N16658 Eagle Drive Jackson, WI 53037	APPLICATION NO: 2	Distribution to:
FROM CONTRACTOR: J.H. HASSINGER, INC. N60 W16289 Kohler Lane Menomonee Falls, WI 53051	VIA ARCHITECT:	PERIOD TO: 4/20/2024	OWNER ☐
		CONTRACT FOR: Jackson Tertiary Filters	ARCHITECT ☐
		CONTRACT DATE: 3/11/2024	CONTRACTOR ☐
		PROJECT NOS: / /	FIELD ☐
		INVOICE NO: 12339	OTHER ☐

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. AIA Document G703™, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM	\$ 4,715,248.00
2. NET CHANGE BY CHANGE ORDERS	\$ 0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)	\$ 4,715,248.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	\$ 100,500.00
5. RETAINAGE:	
a. <u>5</u> of Completed Work (Columns D + E on G703)	\$ 5,025.00
b. <u>0</u> of Stored Material (Column F on G703)	\$ 0.00
Total Retainage (Lines 5a + 5b, or Total in Column I of G703)	\$ 5,025.00
6. TOTAL EARNED LESS RETAINAGE	\$ 95,475.00
(Line 4 minus Line 5 Total)	
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$ 85,500.00
(Line 6 from prior Certificate)	
8. CURRENT PAYMENT DUE	\$ 9,975.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE	\$ 4,619,773.00
(Line 3 minus Line 6)	

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ 0.00	\$ 0.00
Total approved this month	\$ 0.00	\$ 0.00
TOTAL	\$ 0.00	\$ 0.00
NET CHANGES by Change Order	\$ 0.00	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: J.H. HASSINGER, INC.

By: _____

Date: 4/11/2024

State of: WI

County of: Waukesha

Subscribed and sworn to before me this _____ day of April 2024

Notary Public: Shelly Ritzow

My commission expires: 8/1/2027

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$ 9,975.00
(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT: _____

By: _____

Date: 4/16/24

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

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CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side)

PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT,

containing Contractor's signed Certification, is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO.:

2

4/11/2024

4/20/2024

Page 2

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	%(G ÷ C)	BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
1	General Conditions	155,178.00	0.00	10,500.00	0.00	10,500.00	7	144,678.00	525.00
2	Bonds and Insurance	90,000.00	90,000.00	0.00	0.00	90,000.00	100	0.00	4,500.00
3	Mobilization	20,000.00	0.00	0.00	0.00	0.00	0	20,000.00	0.00
4	Demolition	64,636.00	0.00	0.00	0.00	0.00	0	64,636.00	0.00
5	Excavation and Shoring	280,000.00	0.00	0.00	0.00	0.00	0	280,000.00	0.00
6	Paving	27,000.00	0.00	0.00	0.00	0.00	0	27,000.00	0.00
7	Landscaping	13,000.00	0.00	0.00	0.00	0.00	0	13,000.00	0.00
8	Concrete Labor	230,000.00	0.00	0.00	0.00	0.00	0	230,000.00	0.00
9	Concrete Materials	150,000.00	0.00	0.00	0.00	0.00	0	150,000.00	0.00
10	Precast Plank	29,500.00	0.00	0.00	0.00	0.00	0	29,500.00	0.00
11	Masonry	100,000.00	0.00	0.00	0.00	0.00	0	100,000.00	0.00
12	Steel	235,000.00	0.00	0.00	0.00	0.00	0	235,000.00	0.00
13	Carpentry	100,000.00	0.00	0.00	0.00	0.00	0	100,000.00	0.00
14	Air Barrier and Damp Proofing	9,000.00	0.00	0.00	0.00	0.00	0	9,000.00	0.00
15	Roofing	62,000.00	0.00	0.00	0.00	0.00	0	62,000.00	0.00
16	Caulking	14,000.00	0.00	0.00	0.00	0.00	0	14,000.00	0.00
17	OH and Doors	34,000.00	0.00	0.00	0.00	0.00	0	34,000.00	0.00
18	Painting	100,000.00	0.00	0.00	0.00	0.00	0	100,000.00	0.00
19	Plumbing	117,000.00	0.00	0.00	0.00	0.00	0	117,000.00	0.00
20	HVAC	300,000.00	0.00	0.00	0.00	0.00	0	300,000.00	0.00
21	Process	600,500.00	0.00	0.00	0.00	0.00	0	600,500.00	0.00
22	Electrical Materials	107,561.00	0.00	0.00	0.00	0.00	0	107,561.00	0.00



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G703-1992

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CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side)

PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification, is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO.:

2

4/11/2024

4/20/2024

Page 3

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE) RATE
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)		
23	Electrical Labor	175,000.00	0.00	0.00	0.00	0.00	0	175,000.00	0.00
24	Electrical Controls	175,340.00	0.00	0.00	0.00	0.00	0	175,340.00	0.00
25	Excavation Allowance	13,000.00	0.00	0.00	0.00	0.00	0	13,000.00	0.00
26	Trench Excavation Allowance	16,000.00	0.00	0.00	0.00	0.00	0	16,000.00	0.00
27	Structural Fill Allowance	52,000.00	0.00	0.00	0.00	0.00	0	52,000.00	0.00
28	Reinforced Concrete Allowance	60,000.00	0.00	0.00	0.00	0.00	0	60,000.00	0.00
29	Crushed Aggregate Base Allowance	2,200.00	0.00	0.00	0.00	0.00	0	2,200.00	0.00
30	Geo Textile Allowance	1,200.00	0.00	0.00	0.00	0.00	0	1,200.00	0.00
31	Sidewalk Allowance	4,500.00	0.00	0.00	0.00	0.00	0	4,500.00	0.00
32	Soil Testing	10,000.00	0.00	0.00	0.00	0.00	0	10,000.00	0.00
33	Electric Utility	4,000.00	0.00	0.00	0.00	0.00	0	4,000.00	0.00
34	Gas Utility	4,000.00	0.00	0.00	0.00	0.00	0	4,000.00	0.00
35	Polymer Tote	3,000.00	0.00	0.00	0.00	0.00	0	3,000.00	0.00
36	Shop Equipment	10,000.00	0.00	0.00	0.00	0.00	0	10,000.00	0.00
37	Filters	837,000.00	0.00	0.00	0.00	0.00	0	837,000.00	0.00
38	UV Treatment	209,633.00	0.00	0.00	0.00	0.00	0	209,633.00	0.00
39	Site Utilities	300,000.00	0.00	0.00	0.00	0.00	0	300,000.00	0.00
		4,715,248.00	90,000.00	10,500.00	0.00	100,500.00	2	4,614,748.00	5,025.00



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G703-1992

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RESOLUTION #24-08

APPROVING THE VILLAGE OF JACKSON, WASHINGTON COUNTY, WISCONSIN ADJUSTED URBAN AREA BOUNDARY

The Village Board of the Village of Jackson, Washington County, Wisconsin, does resolve as follows:

WHEREAS, the Village of Jackson was designated by the Governor of the State of Wisconsin for the purpose of carrying out cooperative, comprehensive, and continuing urban transportation planning in the Jackson Urban Area; and

WHEREAS, metropolitan transportation planning, including the establishment of adjusted urban area boundaries and metropolitan planning area boundaries, is required of metropolitan planning organizations by U.S. Department of Transportation regulations implementing Title 23, United States Code (Federal Aid Highway Acts), and Title 49, United States Code (Federal Transit Act, as amended); and

WHEREAS, the Federal Highway Administration allows states to adjust the census-defined urban area boundaries for planning and funding purposes; and

WHEREAS, the Wisconsin Department of Transportation, every 10 years following the release of decennial census data, lead a process to adjust Census-defined Urban Areas within the state, in conjunction with the respective office of the Federal Highway Administration; and

WHEREAS, after review by MPO staff, the MPO Technical Advisory Committee, the Wisconsin Department of Transportation, and the Federal Highway Administration, the proposed adjusted Urban Area Boundary has been found to be justified; and

WHEREAS, the Wisconsin Department of Transportation will, after MPO approval of the boundary, submit the proposed adjusted urban area boundary to the respective FHWA division office; and

NOW, THEREFORE, BE IT RESOLVED, by the Village of Jackson Board of Trustees that the Village does hereby accept and informs the Wisconsin Department of Transportation that the Adjusted Urban Area Boundary, as reflected in the attached map, is hereby approved and adopted:

Introduced by: _____

Seconded by: _____

Vote: ____Ayes ____Nays

Passed and Approved: _____

Brian Heckendorf - Village President

Attest: _____
Anastasia Gonstead - Village Clerk

Proof of Posting:

I the undersigned, certify that I posted this Resolution on posting boards at the Jackson Municipal Complex, Post Office, and one other location in the Village.

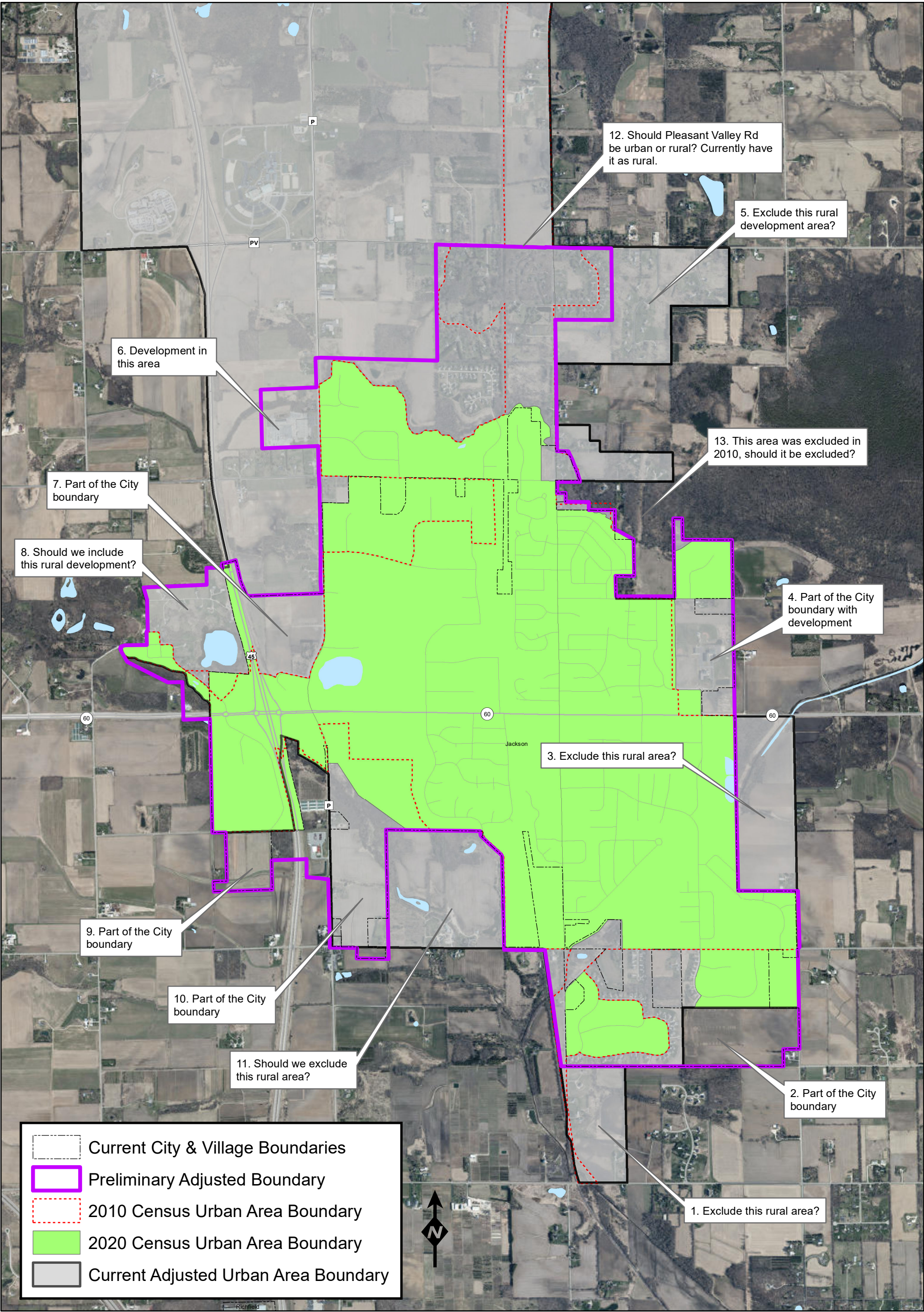
Village Official

Date

Jackson Urban Area

(Adjusted Urban Area Boundary)

DRAFT



Population (2020): 7,962
Housing Units: 3,551
Map Date: 10/17/2023

Public Works Report

April 30, 2024

Treatment Plant - Designed Capacity – 1.69 million gallons per day
 Peak Flow Capacity – 6.0 million gallons per day

Year 2022

January	Avg. Flow 839,968 g.p.d.	Min. Flow 720,000 g.p.d.	Max. 960,000 g.p.d.
February	Avg. Flow 848,571 g.p.d.	Min. Flow 710,000 g.p.d.	Max. 1.080 MGD
March	Avg. Flow 1.499 MGD	Min. Flow 890,000 g.p.d.	Max. 3.910 MGD
April	Avg. Flow 2.245 MGD	Min. Flow 1.200 MGD	Max. 4.100 MGD
May	Avg. Flow 1.237 MGD	Min. Flow 850,000 g.p.d.	Max. 2.070 MGD
June	Avg. Flow 1.438 MGD	Min. Flow 780,000 g.p.d.	Max. 3.680 MGD
July	Avg. Flow 1.141 MGD	Min. Flow 760,000 g.p.d.	Max. 2.370 MGD
August	Avg. Flow 1.139 MGD	Min. Flow 810,000 g.p.d.	Max. 1.920 MGD
September	Avg. Flow 1.395 MGD	Min. Flow 780,000 g.p.d.	Max. 4.160 MGD
October	Avg. Flow 920,322 g.p.d.	Min. Flow 760,000 g.p.d.	Max. 1.130 MGD
November	Avg. Flow 1.259 MGD	Min. Flow 810,000 g.p.d.	Max. 2.660 MGD
December	Avg. Flow 1.267 MGD	Min. Flow 930,000 g.p.d.	Max. 2.190 MGD

Year 2023

January	Avg. Flow 1.247 MGD	Min. Flow 1.010 MGD	Max. 1.560 MGD
February	Avg. Flow 1.351 MGD	Min. Flow 950,000 g.p.d.	Max. 3.130 MGD
March	Avg. Flow 1.762 MGD	Min. Flow 1.250 MGD	Max. 2.560 MGD
April	Avg. Flow 1.594 MGD	Min. Flow 980,000 g.p.d.	Max. 3.290 MGD
May	Avg. Flow 1.094 MGD	Min. Flow 780,000 g.p.d.	Max. 1.520 MGD
June	Avg. Flow 875,333 g.p.d.	Min. Flow 750,000 g.p.d.	Max. 1.050 MGD
July	Avg. Flow 841,935 g.p.d.	Min. Flow 680,000 g.p.d.	Max. 1.050 MGD
August	Avg. Flow 1.022 MGD	Min. Flow 710,000 g.p.d.	Max. 2.070 MGD
September	Avg. Flow 968,667 g.p.d.	Min. Flow 740,000 g.p.d.	Max. 1.270 MGD
October	Avg. Flow 1.154 MGD	Min. Flow 770,000 g.p.d.	Max. 1.900 MGD
November	Avg. Flow 1.080 MGD	Min. Flow 870,000 g.p.d.	Max. 1.720 MGD
December	Avg. Flow 1.146 MGD	Min. Flow 850,000 g.p.d.	Max. 1.440 MGD

Year 2024

January	Avg. Flow 1.337 MGD	Min. Flow 980,000 g.p.d.	Max. 2.260 MGD
February	Avg. Flow 1.440 MGD	Min. Flow 1.090 MGD	Max. 2.250 MGD
March	Avg. Flow 1.502 MGD	Min. Flow 950,000 g.p.d.	Max. 2.590 MGD

Years Summary of Water Consumption

2010 Total Pumpage 239,326,000 gallons	2011 Total Pumpage 240,268,000 gallons
2012 Total Pumpage 253,492,000 gallons	2013 Total Pumpage 228,371,000 gallons
2014 Total Pumpage 230,973,000 gallons	2015 Total Pumpage 222,621,000 gallons
2016 Total Pumpage 254,531,000 gallons	2017 Total Pumpage 251,387,000 gallons
2018 Total Pumpage 241,322,000 gallons	2019 Total Pumpage 253,427,000 gallons
2020 Total Pumpage 259,413,000 gallons	2021 Total Pumpage 242,216,000 gallons
2022 Total Pumpage 222,033,000 gallons	

Year 2022

Jan.	Avg.	553,580 g.p.d.	Highest Day 707,000 gals.	Total	17,161,000 gallons
Feb.	Avg.	575,360 g.p.d.	Highest Day 683,000 gals.	Total	16,110,000 gallons
March	Avg.	578,290 g.p.d.	Highest Day 861,000 gals.	Total	17,927,000 gallons
April	Avg.	606,400 g.p.d.	Highest Day 1.084 MGD	Total	18,192,000 gallons
May	Avg.	605,190 g.p.d.	Highest Day 808,000 gals.	Total	18,761,000 gallons
June	Avg.	660,500 g.p.d.	Highest Day 1.034 MGD	Total	19,815,000 gallons
July	Avg.	685,520 g.p.d.	Highest Day 853,000 gals.	Total	21,251,000 gallons
August	Avg.	654,160 g.p.d.	Highest Day 800,000 gals.	Total	20,279,000 gallons
Sept	Avg.	602,170 g.p.d.	Highest Day 727,000 gals.	Total	18,065,000 gallons
October	Avg.	661,390 g.p.d.	Highest Day 1.185 MGD	Total	20,503,000 gallons
Nov	Avg.	561,670 g.p.d.	Highest Day 714,000 gals.	Total	16,850,000 gallons
Dec	Avg.	552,160 g.p.d.	Highest Day 712,000 gals.	Total	17,117,000 gallons

Year 2023

Jan.	Avg.	544,810 g.p.d.	Highest Day 716,000 gals.	Total	16,889,000 gallons
Feb.	Avg.	576,070 g.p.d.	Highest Day 762,000 gals.	Total	16,130,000 gallons
March	Avg.	532,060 g.p.d.	Highest Day 713,000 gals.	Total	16,494,000 gallons
April	Avg.	597,230 g.p.d.	Highest Day 869,000 gals.	Total	17,917,000 gallons
May	Avg.	651,650 g.p.d.	Highest Day 1.243 MGD	Total	20,201,000 gallons
June	Avg.	850,070 g.p.d.	Highest Day 1.018 MGD	Total	24,152,000 gallons
July	Avg.	793,870 g.p.d.	Highest Day 944,000 gals.	Total	24,610,000 gallons
August	Avg.	737,060 g.p.d.	Highest Day 1.019 MGD	Total	22,849,000 gallons
Sept	Avg.	616,330 g.p.d.	Highest Day 790,000 gals.	Total	18,490,000 gallons
Oct	Avg.	611,900 g.p.d.	Highest Day 986,000 gals.	Total	18,969,000 gallons
Nov	Avg.	531,570 g.p.d.	Highest Day 728,000 gals.	Total	15,947,000 gallons
Dec	Avg.	549,970 g.p.d.	Highest Day 770,000 gals.	Total	17,049,000 gallons

Pump Capacity Well #1- 400 g.p.m. Well #3 -900 g.p.m. Well #4 - 1200 g.p.m. Well #5 – 1,100 g.p.m. Well #6 – 800 g.p.m.

Year 2024

Jan.	Avg.	564,060 g.p.d.	Highest Day 733,000 gals.	Total	17,486,000 gallons
Feb.	Avg.	554,550 g.p.d.	Highest Day 711,000 gals.	Total	16,082,000 gallons
March	Avg.	541,840 g.p.d.	Highest Day 731,000 gals.	Total	16,797,000 gallons

WWTP – Holding & Septage Receiving

2005	\$ 87,562.01	2006	\$101,115.11	2007	\$152,201.07	2008	\$210,441.47
2009	\$183,815.34	2010	\$197,653.66	2011	\$220,576.28	2012	\$236,224.70
2013	\$235,336.46	2014	\$203,938.32	2015	\$210,644.47	2016	\$220,473.17
2017	\$232,358.23	2018	\$245,767.74	2019	\$219,822.80	2020	\$204,656.11
2021	\$209,083.10	2022	\$251,109.46	2023	\$157,332.20		

2022	Holdings (gals)	Grease (gals)	G Decant (gals)	Septage (gals)	S Decant (gals)	Total Billings
January	1,311,750	2,700			40,650	\$11,780.25
February	1,321,050	8,000			48,350	\$12,577.15
March	2,076,350	2,000		40,750	303,750	\$26,238.30
April	1,791,650	5,400	1,500	101,700	326,050	\$27,660.95
May	1,703,450		5,200	164,850	288,100	\$28,456.35
June	1,759,050	3,000		100,400	373,050	\$28,348.65
July	1,437,400	2,700		92,100	186,800	\$20,583.70
August	1,670,350	1,200	3,500	63,700	242,850	\$22,560.55
September	1,479,850			73,350	168,950	\$19,363.30
October	1,204,370	3,000	5,500	47,650	253,200	\$18,629.21
November	1,264,850		1,000	48,300	228,250	\$18,038.55
December	1,454,750		4,000	24,100	159,600	\$16,872.50

2023	Holdings (gals)	Grease (gals)	G Decant (gals)	Septage (gals)	S Decant (gals)	Total Billings
January	1,232,950		1,000	2,800	72,460	\$11,841.10
February	1,299,600			1,000	27,000	\$11,121.30
March	849,250			18,800	62,550	\$ 9,203.75
April	Primary Clarifiers were receiving new diffusers.					
May	1,011,750			44,350	121,650	\$13,131.00
June	1,089,100			44,100	148,950	\$14,421.05
July	928,350		3,500	6,000	110,500	\$12,546.00
August	1,212,400			8,000	121,800	\$15,649.00
September	1,083,000			10,400	100,350	\$13,962.75
October	1,148,850			8,200	280,750	\$18,999.25
November	1,020,400			16,500	302,800	\$18,764.00
December	1,262,300			2,000	198,000	\$17,693.00

2023	Holdings (gals)	Grease (gals)	G Decant (gals)	Septage (gals)	S Decant (gals)	Total Billings
January	1,240,050			500	62,900	\$14,003.00
February	1,236,550			2,300	63,100	\$14,081.00
March	1,139,150			4,500	141,500	\$15,200.25

Morning Meadows Subdivision

Streetlights were installed by the Village in Phase 1 and 2. Now, waiting for We-Energies to energize the service for light. Phase 3 has housing units being constructed. Next, is streetlights in Phase 3. No Change.

Eagle Drive & STH 60 Intersection Improvement

Both projects STH 60 Resurfacing & Roundabout Project are underway. Both Projects are taking up more of my time than anticipated. We have marked all sidewalks that were trip hazards on the northside of the road. We will do the southside once the northside is completed. Trash & recycling pickup has run smooth, but mail delivery to mailboxes needs to get better. We are addressing safe passage for the students at Jackson Elementary to pass through the Jackson Drive & STH 60 intersection.

Midwest Fiber Installation

Street Opening Permits have been approved for the Fiber to the Home Project. Now the request will be made with Mid-West for fiber to Utility owned properties. No update.

WWTP 2024 Tertiary Filters and UV Disinfection

The Contractor has been working with staff to get ready to start the project. Digging of the footings are schedule for April 29th.

Stormwater Ponds Management Inspection Program

A new schedule has been created to have all reports completed by May 1, 2024. M-Square Engineering has completed all the measurements for each pond. CDM Smith Engineering is now completing the reports. Waiting for the reports.

CTH P (Sherman Road to STH 60) Utility Project

We have lowered the contract amount to \$10,000 in anticipation of valve and manhole adjustments with the Washington County CTH P Reconstruction Project. Sherman Road and CTH P intersection will be closed starting Monday April 29th for the installation of gas main by We-Energies.

Maple Fields Subdivision

Streetlights are installed in Phase 1 and waiting for We-Energies to create the cost letters and energize the services. Phase 2 construction has started on April 22, 2024, with blasting of bedrock being the first item.

Next Generation Housing

Two occupancies have been granted by the Village for two single family homes. One last item is to move the topsoil pile on lot 26, and once completed we can closeout the Project. We are planting street trees and twenty-four (24) pine trees on the berm located on Lots 21 to 26.

Hickory Lane Reconstruction Project

We have the final report. Discussion will start on the Reconstruction Project and the possible dog park in Cedar Run Park. Other projects are getting in the way to start the discussion.

Main Street Streetlight Replacement Project

We-Energies streetlights will be removed by May 11th by We-Energies. All landscaping has been completed. At next Board meeting we can closeout the project.

Respectfully submitted, Brian W. Kober, P.E.