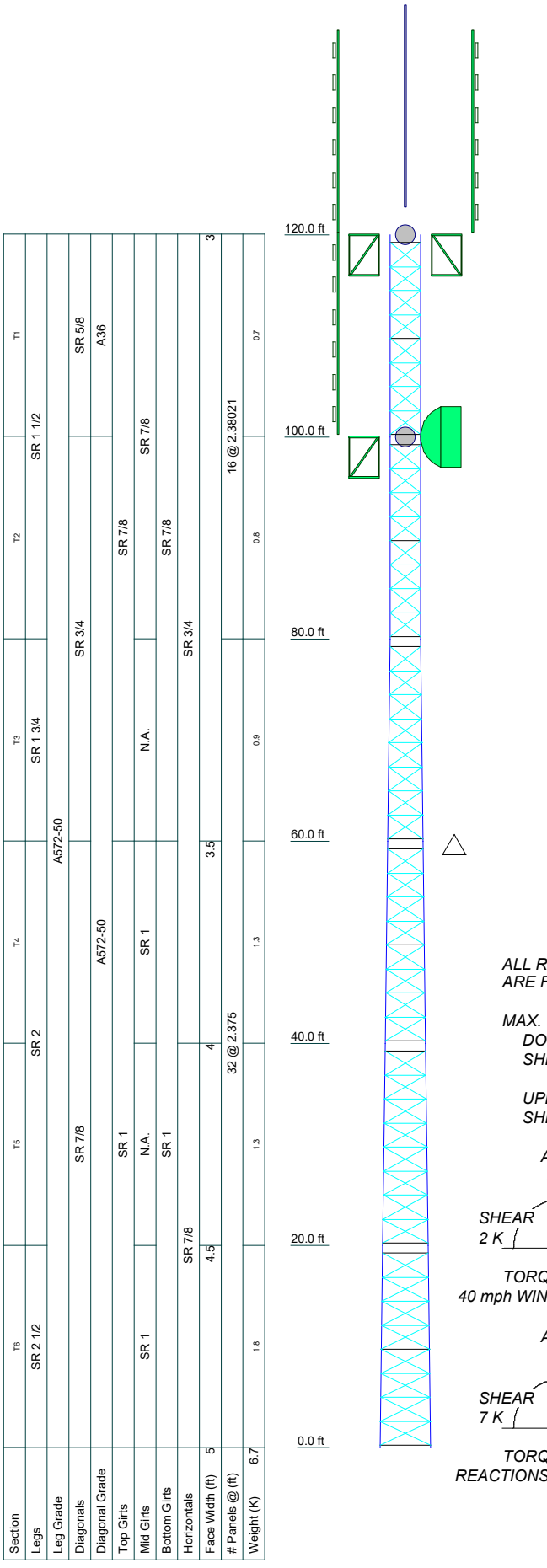


DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
21' LRE with 10' lightning rod (arm=12.75')	120	Ubiquiti AirFiber AF24	100
		Camera (12" x 8" x 5")	100
470-70	120	2.5' Decibel Omni	100
470-70	120	470-70	100
SP1 R5 (Includes 4.5"x72" Pipe)	120	SP1 R5 (Includes 4.5"x72" Pipe)	100
2' HP	120	2' HP	100
SP1 BOG6 - SD	118	SP1 PSA3	98
SP1 BOG6 - SD	118	SP1 BOG6 - SD	98

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Cook County, Illinois.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 114 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 40 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Includes one (1) 6-Line wave-guide ladder to the top of the tower.
9. No Climbing Ladder considered since the tower has climbing facility.
10. Ubiquiti AirFiber AF24 will be mounted on legs.
11. TOWER RATING: 96%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 127 K
SHEAR: 4 K

UPLIFT: -120 K
SHEAR: 4 K

AXIAL 31 K
SHEAR 2 K *MOMENT 192 kip-ft*

TORQUE 2 kip-ft
40 mph WIND - 1.5000 in ICE

AXIAL 11 K
SHEAR 7 K *MOMENT 542 kip-ft*

TORQUE 8 kip-ft
REACTIONS - 114 mph WIND

valmont STRUCTURES
Valmont Industries, Inc. - Specialty Structures Group
1545 Pidco Dr.
Plymouth, IN
Phone: (574) 936-4221
FAX: (574) 936-6458

Job: **Quote 608959-02**			
Project: **U-5' x 120' - Orland Park, IL.**			
Client: Towerworks	Drawn by: CS	App'd:	
Code: TIA-222-H	Date: 02/16/24	Scale: NTS	
Path: Z:\608\608959 Towerworks Orland Park, IL 100' SST\00 Quote Information\Trials\608959-02.eri		Dwg No. E-1	

valmont
STRUCTURES

PRELIMINARY SELF SUPPORTING TOWER DESIGN- GENERAL NOTES

1. **The TIA standard used in the Preliminary design is per Valmont's investigation on the state code adoption per https://codeadoptions.iccsafe.org/, during the time of this design. If any changes are required per customer's preference, please contact Valmont for reevaluation.**
2. Please confirm the loading, and Risk category shown on the Preliminary Tower Design sheet.
3. Valmont manufactures the antenna mounts used in the design.
4. Unless otherwise noted, the wind speed used is the ASCE 7-16 ultimate wind speed, based on the ASCE 7 hazards report at the provided tower coordinates.
5. If not provided, all dishes are assumed to have zero azimuth, installed on legs, A, B and C, with leg A apex facing true north.
6. Wherever possible, all feedlines are assumed to be stacked on (2) rows on wave guide ladders (unless leg brackets are requested) to minimize wind effect.
7. Safety line considered in the loading.
8. **Should any changes be required on above items, please contact Valmont for reevaluation, prior to ordering the PE stamped Permit Drawings/ Construction Drawings/ Tower Materials.**
9. If not provided, a geotechnical investigation is required for all Risk category III and Risk category IV structures, for review prior to the installation of foundations. Design changes and/or recommendations may be required based on the site investigation.
10. **No Climbing Ladder considered since the tower has climbing facility.**
11. **Ubiquiti AirFiber AF24 will be mounted on legs.**
12. **ANTENNA LOADING ASSUMED – TO BE VERIFIED BY CUSTOMER.**
13. **TOWER DESIG TO MEET LOCAL JURISDICTION OF COOK COUNTY, IL. PLEASE NOTIFY VALMONT FOR A REDESIGN IF THE CRITERIA CHANGES."**

Valmont
1545 Pidco Dr, Plymouth, IN 46563
1-574-936-4221 www.valmont.com

cs720834

PRELIMINARY DESIGN. NOT FOR CONSTRUCTION.

CONCRETE BLOCK FOUNDATION SUMMARY

Towerworks **V- 5.0 120** V 4.9
U-5' x 120' - Orland Park, IL **Quote- 608959-02**

Foundation Dimensions

Pad width, **W**:	**14.00**	ft
Depth, **D**:	**4.50**	ft
Ext. above grade, **E**:	**0.50**	ft
Pad thickness, **T**:	**5.00**	ft
Depth neglected, **N**:	**4.50**	ft
Volume, V_o:	**36.30**	cy

Reinforcement Design

pad rebar qty., m_p:	**21**	bars *
size, s_p:	**6**	

* Rebar to be equally spaced, both ways, top & bottom, for a total of 84 bars
* Use standees to support top rebar above bottom rebar in mat

Soil Information Per:

Assumed as Clay Per TIA-222-H Annex F.

Soil Parameters

Soil unit weight, γ:	**110**	pcf
Ultimate Bearing, B_c:	**5.000**	ksf
Cohesion, C_o:	**1.000**	ksf
Friction angle, φ:	**0.0**	degrees
Ult. Passive P., P_p:	**0.554**	pcf
Base sliding, **μ**:	**0.20**	
Seismic Design Cat.:	**B**	
Water at:	**none**	ft

Anchor Steel Selection

Part Number, **P/N**:	**105766**	Dia = 2" Length = 60"

Material Properties

Steel tensile str., F_y:	**60000**	psi
Conc. Comp. str., F'_c:	**4500**	psi
Conc. Density, δ:	**150**	pcf
Clear cover, **cc**:	**3.00**	in

Backfill Compaction

Lift thickness:	**12**	in
Compaction:	**97**	%
Standard Proctor:	ASTM **D698**	

Tower design conforms to the following:

** International Building Code (IBC)*

** ANSI TIA-222-H*

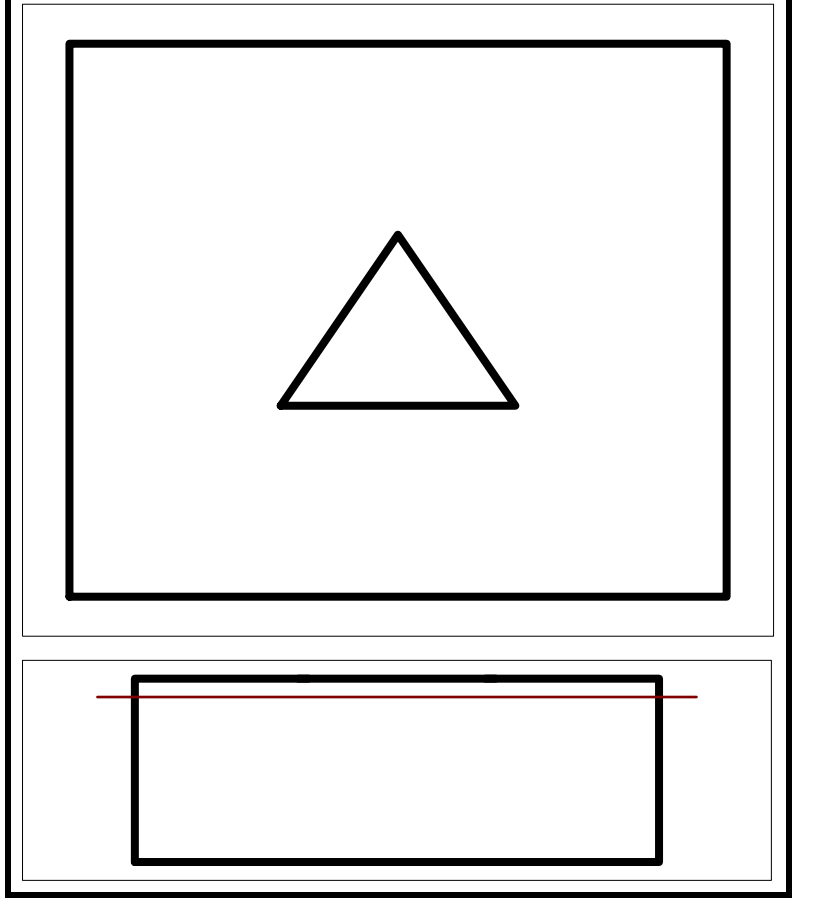
** Building Code Requirements for Reinforced Concrete (ACI 318-14)*

Note: **The centroid of the tower is offset from the centroid of the foundation**

Foundation Loading

			stress ratio: 99.0%		mark up: 1.0%
Shear (Per Leg), S_l:	4.00	kips	x 1.01 =	4.04	kips
Shear (total), **S**:	7.00	kips	x 1.01 =	7.07	kips
Moment, **M**:	542.00	ft-kips	x 1.01 =	547.42	ft-kips
Compression/Leg, **C**:	127.00	kips	x 1.01 =	128.27	kips
Uplift/Leg, **U**:	120.00	kips	x 1.01 =	121.20	kips
Tower Weight, W_t:	11.00	kips	=	11.00	kips

Views of Foundation (not to scale)



Additional Notes:

* No foundation modifications listed.
* See attached "Foundation Notes" for further information.

FOUNDATION NOTES

1 THIS DESIGN ASSUMES A MEDIUM STIFF CLAY SOIL EXHIBITING A COHESION OF 1000 PSF, A SOIL UNIT WEIGHT OF 110 PCF, AN ANGLE OF INTERNAL FRICTION OF 0 DEGREES AND NO GROUNDWATER ENCOUNTERED.

valmont STRUCTURES

Quote No. 608959-02
Date: 02/19/24
Customer: Towerworks
Site: Orland Park, IL.
Project: 120 ft Monopole

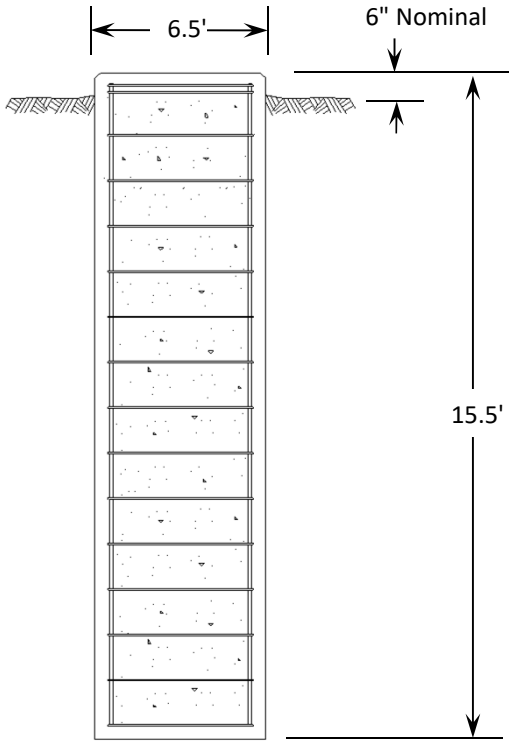
PRELIMINARY - DO NOT USE FOR CONSTRUCTION

1. All reinforcing shall be deformed bars conforming to ASTM A615 Grade 60 (60,000 psi min. yield)

2. All concrete shall have a minimum compressive strength of 4500 psi @ 28 days.

3. Design Based on TIA-H Annex F Presumptive Soil Parameters for Clay
4. 19.1 Cubic Yards Of Concrete Required

Rebar Schedule			
	Size	Quantity	Weight (lbs)
Vertical	#8	36	1,442
Ties	#4	18	241



VALMONT MICROFLECT
3575 25TH ST SE
SALEM, OR 97302
PHONE: 1-800-547-2151