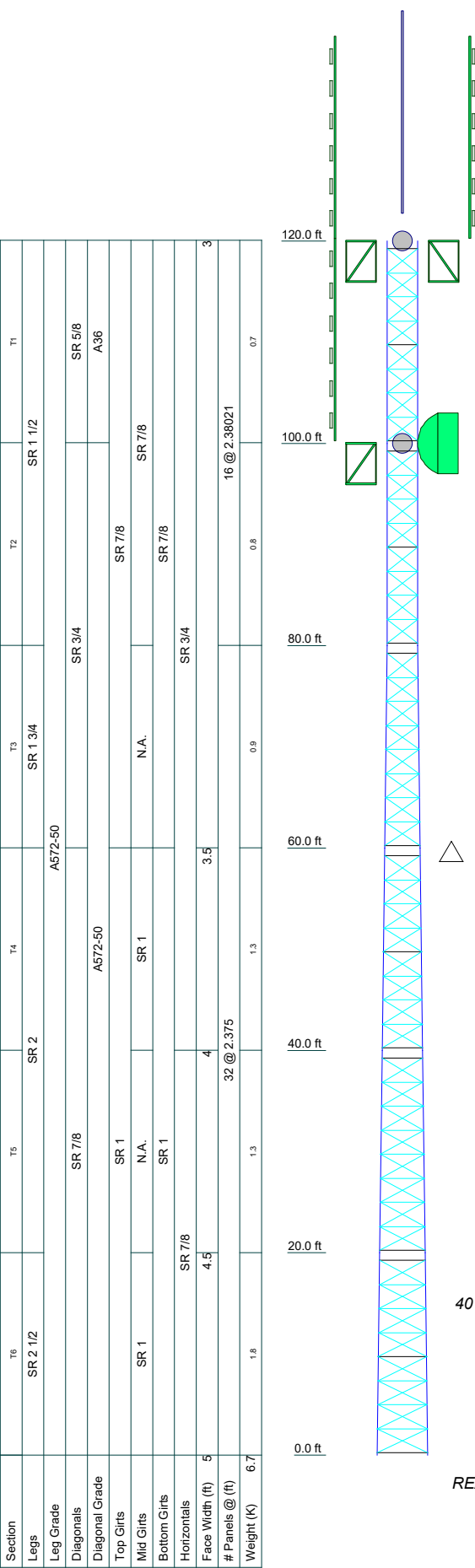




DESIGNED APPURTENANCE LOADING

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

1545 Pidco Dr.  
Plymouth, IN  
Phone: (574) 936-4221  
FAX: (574) 936-6458

Valmont Industries, Inc. - Specialty Structures Group

**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:\608959-Towerworks Orland Park, IL 100' SST\00 Quote Information\Trial\608959-02.dwg | Dwg No. E-1    |            |

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."**

CONCRETE BLOCK FOUNDATION SUMMARY

Towerworks  
U-5' x 120' - Orland Park, IL

V- 5.0 120  
Quote- 608959-02

V 4.9

| Foundation Dimensions          |       |    |
|--------------------------------|-------|----|
| Pad width, <b>W</b> :          | 14.00 | ft |
| Depth, <b>D</b> :              | 4.50  | ft |
| Ext. above grade, <b>E</b> :   | 0.50  | ft |
|                                |       |    |
| Pad thickness, <b>T</b> :      | 5.00  | ft |
| Depth neglected, <b>N</b> :    | 4.50  | ft |
| Volume, <b>V<sub>o</sub></b> : | 36.30 | cy |

| Reinforcement Design                   |    |        |
|----------------------------------------|----|--------|
| pad rebar qty., <b>m<sub>p</sub></b> : | 21 | bars * |
| size, <b>s<sub>p</sub></b> :           | 6  |        |

| Soil Information Per:                  |  |  |
|----------------------------------------|--|--|
| Assumed as Clay Per TIA-222-H Annex F. |  |  |

| Soil Parameters                          |       |         |
|------------------------------------------|-------|---------|
| Soil unit weight, <b>γ</b> :             | 110   | pcf     |
| Ultimate Bearing, <b>B<sub>c</sub></b> : | 5.000 | ksf     |
| Cohesion, <b>C<sub>o</sub></b> :         | 1.000 | ksf     |
| Friction angle, <b>φ</b> :               | 0.0   | degrees |
| Ult. Passive P., <b>P<sub>p</sub></b> :  | 0.554 | pcf     |
| Base sliding, <b>μ</b> :                 | 0.20  |         |
| Seismic Design Cat.:                     | B     |         |
| Water at:                                | none  | ft      |

| Anchor Steel Selection    |        |                         |
|---------------------------|--------|-------------------------|
| Part Number, <b>P/N</b> : | 105766 | Dia = 2<br>Length = 60" |

| Material Properties                       |       |     |
|-------------------------------------------|-------|-----|
| Steel tensile str, <b>F<sub>y</sub></b> : | 60000 | psi |
| Conc. Comp. str, <b>F'<sub>c</sub></b> :  | 4500  | psi |
| Conc. Density, <b>δ</b> :                 | 150   | pcf |
| Clear cover, <b>cc</b> :                  | 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)

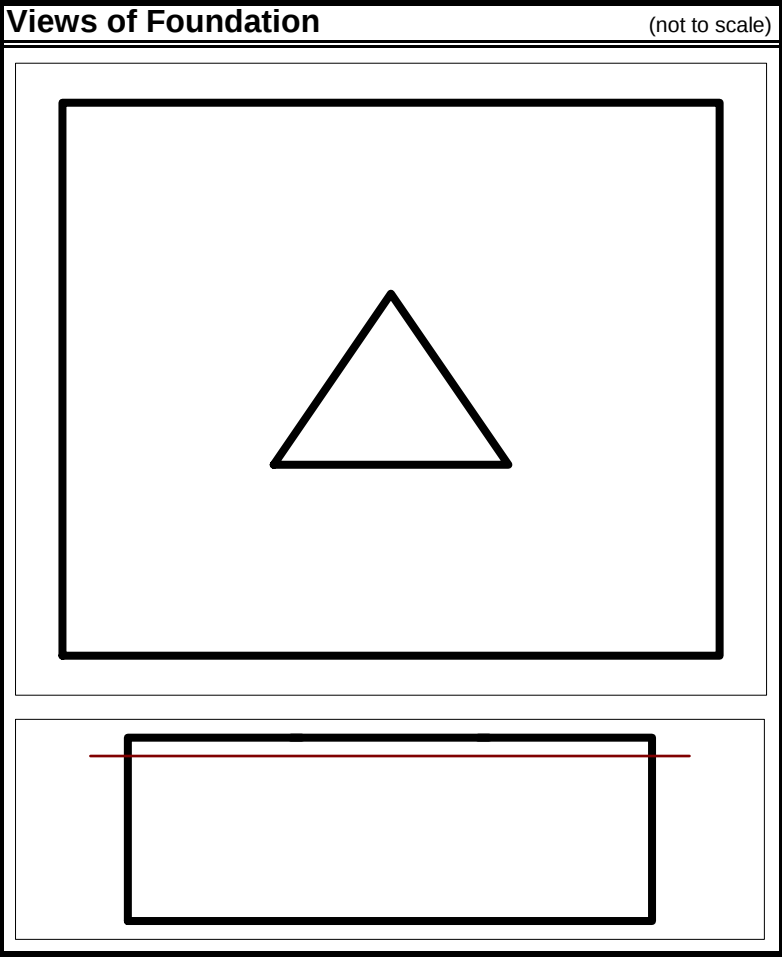
\* ANSI TIA-222-H

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

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

\* 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

| Foundation Loading                      |                |                     |                |  |
|-----------------------------------------|----------------|---------------------|----------------|--|
|                                         |                | stress ratio: 99.0% | mark up: 1.0%  |  |
| Shear (Per Leg), <b>S<sub>i</sub></b> : | 4.00 kips      | x 1.01 =            | 4.04 kips      |  |
| Shear (total), <b>S</b> :               | 7.00 kips      | x 1.01 =            | 7.07 kips      |  |
| Moment, <b>M</b> :                      | 542.00 ft-kips | x 1.01 =            | 547.42 ft-kips |  |
| Compression/Leg, <b>C</b> :             | 127.00 kips    | x 1.01 =            | 128.27 kips    |  |
| Uplift/Leg, <b>U</b> :                  | 120.00 kips    | x 1.01 =            | 121.20 kips    |  |
| Tower Weight, <b>W<sub>t</sub></b> :    | 11.00 kips     | =                   | 11.00 kips     |  |



Additional Notes:

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

## FOUNDATION NOTES

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- 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.



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          |

