



1 Fairholm Avenue  
Peoria, IL 61603 USA  
Phone: (309)-566-3000  
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**DATE:** JULY 30, 2024

**PURCHASER:** HORVATH TOWERS V, LLC

**PROJECT:** 115FT TSP  
HUNTWICK REAGAN, IN

**FILE NUMBER:** 246725

I CERTIFY THAT THE ATTACHED DRAWINGS WERE PREPARED UNDER MY SUPERVISION IN ACCORDANCE WITH THE DESIGN AND LOADING CRITERIA SPECIFIED BY THE PURCHASER AND THAT I AM A REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF INDIANA.

*Allen Schneider*

07/30/2024





1 Fairholm Avenue  
Peoria, IL 61603 USA  
Phone: (309)-566-3000  
Fax: (309)-566-3079

July 30, 2024

Horvath Towers V, LLC  
2307 Edison Road  
Suite 2  
South Bend, IN 46615

Attn: Jeff Delauder

Reference: 115 FT TSP  
Huntwick Reagan, IN  
246725

To Whom It May Concern,

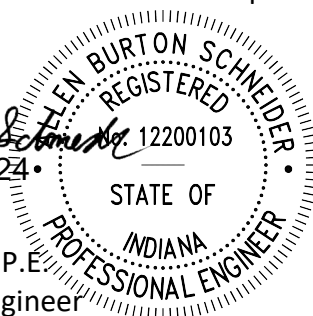
The referenced Pole is designed to meet the specified loading requirements in accordance with ANSI/TIA-222-H for a 106 mph 7-16 Ultimate Wind Speed with no ice and a 40 mph 3-second gust wind speed with 1.50 inches radial ice, Risk Category II, Exposure Category C, and Topographic Category 1.

It is our understanding that the design of the referenced Pole requires consideration of a contained fall radius in the event that a catastrophic wind speed would result in collapse. Although the Pole will not be designed to fail, stronger sections where required by analysis are provided in the lower sections of the Pole. This will result in an increased safety factor in the lower sections of the Pole. This design will enable the Pole to fail through a combination of bending and buckling in the upper portion of the Pole under a catastrophic wind loading. Failure in this manner would result in the upper portion of the Pole folding over the lower portion, resulting in a fall radius no greater than 0 feet.

Please contact us at your convenience should you have further questions concerning the safety of Pole structures or other aspects of Pole design.

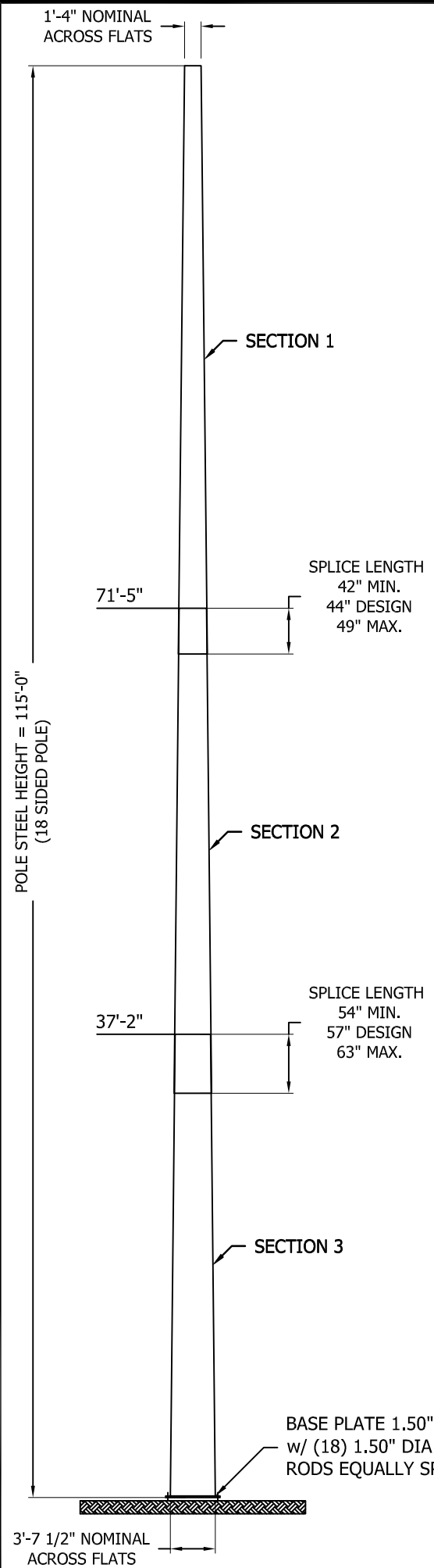
Sincerely,

*Allen Schneider*  
07/30/2024



Allen Schneider, P.E.  
Senior Design Engineer

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**GENERAL NOTES**

- ROHN PRODUCTS POLE DESIGNS CONFORM TO ANSI/TIA-222-H UNLESS OTHERWISE SPECIFIED UNDER POLE DESIGN LOADING.
- THE DESIGN LOADING CRITERIA INDICATED HAS BEEN PROVIDED TO ROHN. THE DESIGN LOADING CRITERIA HAS BEEN ASSUMED TO BE BASED ON SITE-SPECIFIC DATA IN ACCORDANCE WITH ANSI/TIA-222-H AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
- ANTENNAS AND LINES LISTED IN POLE DESIGN LOADING TABLE ARE PROVIDED BY OTHERS UNLESS OTHERWISE SPECIFIED.
- STEP BOLTS WITH SAFETY CLIMB SYSTEM ARE PROVIDED AS A CLIMBING FACILITY FOR THE INSTALLATION OF THE STRUCTURE.
- POLE MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE POLE.
- WORK SHALL BE IN ACCORDANCE WITH ANSI/TIA-222-H, "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
- FIELD CONNECTIONS SHALL BE BOLTED. NO FIELD WELDS SHALL BE ALLOWED.
- STRUCTURAL BOLTS SHALL CONFORM TO GRADE A325 PER ASTM F3125, EXCEPT WHERE NOTED.
- STRUCTURAL STEEL AND CONNECTION BOLTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION, IN ACCORDANCE WITH ANSI/TIA-222-H.
- ALL HIGH STRENGTH BOLTS, UNLESS OTHERWISE NOTED FOR DOUBLE ANGLE MEMBERS, ARE TO BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED IN THE RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS". NO OTHER MINIMUM BOLT TENSION OR TORQUE VALUES ARE REQUIRED.
- PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR OBSTRUCTION MARKING AND LIGHTING.
- TOLERANCE ON POLE STEEL HEIGHT IS EQUAL TO PLUS 1% OR MINUS 1/2%.
- DESIGN ASSUMES THAT, AS A MINIMUM, MAINTENANCE AND INSPECTION WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE IN ACCORDANCE WITH ANSI/TIA-222-H.
- DESIGN ASSUMES LEVEL GRADE AT POLE SITE.
- FOUNDATIONS SHALL BE DESIGNED TO SUPPORT THE REACTIONS SHOWN FOR THE CONDITIONS EXISTING AT THE SITE.
- DESIGN ASSUMES ALL ANTENNAS ARE MOUNTED SYMMETRICALLY TO MINIMIZE TORQUE, IF APPLICABLE.
- DESIGN ASSUMES ALL PANEL ANTENNAS WITH MOUNTING FRAMES ARE MOUNTED SYMMETRICALLY.
- DESIGN ASSUMES ALL TRANSMISSION LINES ARE ROUTED INTERNALLY.
- POLE SHAFT CONFORMS TO ASTM A572 GR 65. POLE BASE PLATE STEEL CONFORMS TO ASTM A572 GR 50 WITH CHARPY IMPACT REQUIREMENTS. POLE ANCHOR BOLTS CONFORM TO ASTM F1554 GR 105.
- JACKING LUGS ARE PROVIDED ABOVE AND BELOW EACH SLIP JOINT TO FACILITATE THE USE OF JACKING DEVICES. NON-STAINING LUBRICANTS SHALL BE APPLIED TO THE SLIP JOINTS. JACKING FORCES SHOULD BE APPLIED UNTIL THE JOINT IS TIGHT WITH NO GAPS GREATER THAN 1/4"
- POLE DESIGN INCLUDES CONSIDERATION OF A CONTAINED FALL RADIUS EQUAL TO 0 FT BY PROVIDING STRONGER SECTIONS WHERE REQUIRED BY ANALYSIS IN THE LOWER PORTION OF THE TOWER.

MAXIMUM FACTORED REACTIONS	
DOWNLOAD	= 50.6 KIPS
SHEAR	= 24.3 KIPS
O.T.M	= 2,256.9 FT-KIPS

BASE PLATE 1.50" X 52.50" ROUND  
w/ (18) 1.50" DIA. X 74.00" LONG ANCHOR  
RODS EQUALLY SPACED ON A 48.50" B.C.

**POLE DESIGN LOADING**

DESIGN WIND LOAD PER ANSI/TIA-222-H USING THE FOLLOWING DESIGN CRITERIA:  
 RISK CATEGORY: II  
 BASIC WIND SPEED (NO ICE): 106 MPH PER ASCE 7-16  
 BASIC WIND SPEED (W/ICE): 40 MPH PER ASCE 7-16  
 DESIGN ICE THICKNESS: 1.50 INCHES PER ASCE 7-16  
 GROUND ELEVATION, Z<sub>s</sub>: 794 FT  
 EXPOSURE CATEGORY: C  
 TOPOGRAPHIC METHOD: 1, CATEGORY: 1  
 SEISMIC DESIGN PARAMETERS, S<sub>s</sub>: 0.193, S<sub>1</sub>: 0.088, T<sub>L</sub>: 12, SITE CLASS: D

THIS STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE FOLLOWING LOADS:

ELEVATION (FT)	ANTENNA LOADING	LINE SIZE (NOM)
TOP	LIGHTNING ROD	-
110	42,000 SQ-IN [292 SQFT] MAX EPA	(12) 1-5/8"
95	15,000 SQ-IN [105 SQFT] MAX EPA	(12) 1-5/8"
80	15,000 SQ-IN [105 SQFT] MAX EPA	(12) 1-5/8"

SECTION	LENGTH (FT)	DIAMETER		WALL THICK (IN)	F <sub>y</sub> (KSI)	WEIGHT (KIPS)
		BOT	TOP			
1	47.29	27.97	16.00	0.2500	65.0	2.9
2	39.00	36.25	26.38	0.3750	65.0	5.2
3	37.00	43.50	34.14	0.3750	65.0	6.1

**NOTE:**  
 FOR POLYGONAL POLES, DIAMETER IS MEASURED ACROSS FLATS.  
 TABULATED WEIGHTS ARE APPROXIMATE. REFER TO ASSEMBLY DRAWING FOR FINAL WEIGHTS. ALL WEIGHTS SHALL BE VERIFIED PRIOR TO LIFTING.

FILE NO. 246725

REVISIONS				
REV.	DESCRIPTION	DWN	CHK	APP



PO BOX 5999  
 PEORIA, IL 61601-5999  
 TOLL FREE 800-727-ROHN

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HORVATH TOWERS V, LLC  
 DESIGN PROFILE  
 115 FT TSP  
 HUNTWICK REAGAN, IN

DWN: SFM    CHK'D: AS    DATE: 07/30/2024

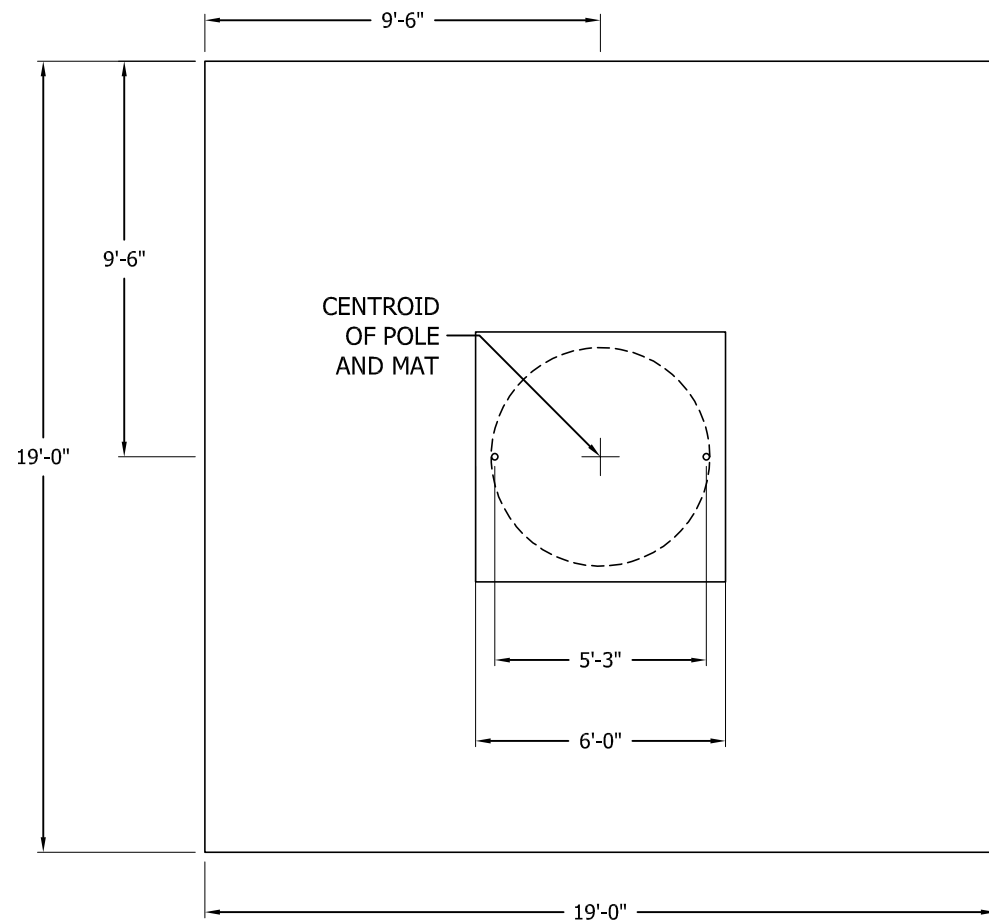
ENG'R: AS    SHEET #: 1 OF 1

PRJ. ENG'R: SFM    PRJ. MANG'R:

DRAWING NO: 246725-01-D1    REV: 0

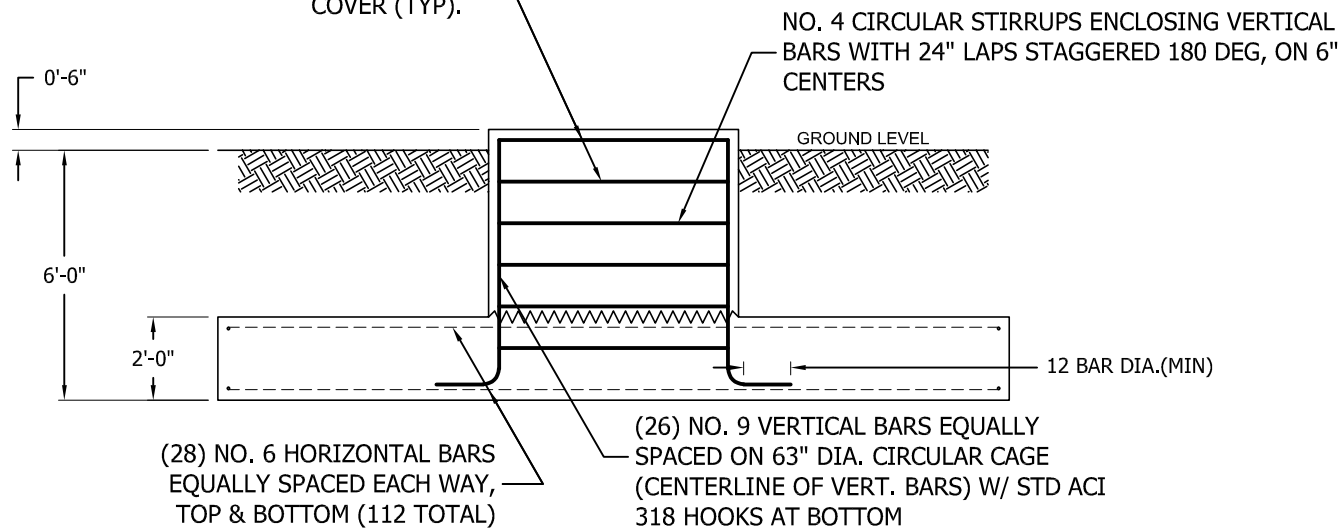
**GENERAL NOTES**

- 1 FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF THE SUBSURFACE DATA PROVIDED. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE FOLLOWING DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED.
  - A) ULTIMATE SOIL BEARING PRESSURE AT 6 FT DEPTH = 12,690 PSF.
  - B) GROUND WATER TABLE IS AT OR BELOW FOUNDATION DEPTH.
  - C) MAXIMUM FROST PENETRATION DEPTH LESS THAN FOUNDATION DEPTH.
- 2 WORK SHALL BE IN ACCORDANCE WITH THE PROJECT CONSTRUCTION DOCUMENTS, LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.
- 3 CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.
- 4 PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI IN 28 DAYS.
- 5 MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 3/4 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING SHALL BE UTILIZED TO PREVENT HONEYCOMBS OR VOIDS.
- 6 REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED. SPLICES IN REINFORCEMENT SHALL NOT BE ALLOWED UNLESS OTHERWISE INDICATED.
- 7 WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.
- 8 MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH MINIMUM COVER ON REINFORCEMENT.
- 9 CONCRETE COVER FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED 3 INCHES NOR BE LESS THAN 2 INCHES.
- 10 FOUNDATION DESIGN ASSUMES STRUCTURAL BACKFILL TO BE COMPACTED IN 8 INCH MAXIMUM LAYERS TO 95% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D1557. ADDITIONALLY, STRUCTURAL BACKFILL MUST HAVE A MINIMUM COMPACTED UNIT WEIGHT OF 110 POUNDS PER CUBIC FOOT.
- 11 FOUNDATION DESIGN HAS BEEN BASED ON GEOTECHNICAL REPORT NO. **GEO24-21984-08** DATED **06/26/2024** BY **DELTA OAKS GROUP**.
- 12 FOUNDATION DEPTH INDICATED IS BASED ON THE GRADE LINE DESCRIBED IN THE REFERENCED GEOTECHNICAL REPORT. FOUNDATION MODIFICATION MAY BE REQUIRED IN THE EVENT CUT OR FILL OPERATIONS HAVE TAKEN PLACE SUBSEQUENT TO THE GEOTECHNICAL INVESTIGATION.
- 13 FOUNDATION DESIGN ASSUMES THE RECOMMENDATIONS IN THE REFERENCED GEOTECHNICAL REPORT CONCERNING VERIFICATION OF SUBSURFACE CONDITIONS ARE IMPLEMENTED PRIOR TO PLACEMENT OF CONCRETE.
- 14 FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.
- 15 ALL CONSTRUCTION AND SAFETY EQUIPMENT AND TEMPORARY SUPPORTS REQUIRED FOR CONSTRUCTION SHALL BE DETERMINED, FURNISHED AND INSTALLED BY THE CONTRACTOR BASED ON THE MEANS AND METHODS CHOSEN BY THE CONTRACTOR. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED BY COMPETENT, QUALIFIED AND TRAINED PERSONNEL.
- 16 FOUNDATION DESIGN ASSUMES INSTALLATION PROCEDURES WILL INCORPORATE THE PROCEDURES RECOMMENDED IN THE REFERENCED GEOTECHNICAL REPORT.
- 17 FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON CONDITIONS EXISTING AT THE SITE.
- 18 FOR FOUNDATION AND ANCHOR TOLERANCES SEE ANCHOR ROD LAYOUT DRAWING.
- 19 LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. SIDES OF EXCAVATION SHALL BE ROUGH AND FREE OF LOOSE CUTTINGS.
- 20 CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.
- 21 CONCRETE PREFERABLY SHALL BE PLACED AGAINST UNDISTURBED SOIL. WHEN FORMS ARE NECESSARY, THEY SHALL BE REMOVED PRIOR TO PLACING STRUCTURAL BACKFILL.
- 22 CONSTRUCTION JOINTS, IF REQUIRED AT THE BASE OF THE PIERS, SHALL BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF 1/4 INCH. FOUNDATION DESIGN ASSUMES NO OTHER CONSTRUCTION JOINTS.
- 23 TOP OF FOUNDATION SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISH.
- 24 EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" MINIMUM.



**PLAN VIEW**

(2) NO. 4 CIRCULAR STIRRUPS ENCLOSING VERTICAL BARS @ 2-1/2" C-C W/ 180 DEG. STAGGERED 6" MIN LAPS TERMINATED AT EACH END WITH A STD. ACI 318 HOOK ENGAGING A VERTICAL BAR WITH 2" COVER (TYP).



**ELEVATION VIEW**

**FACTORED REACTIONS**

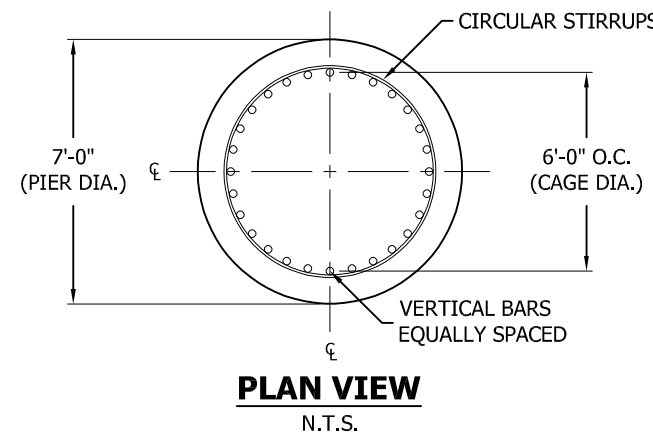
O.T.M. = 2,256.9 FT-K  
 DOWNLOAD = 50.6 KIPS  
 SHEAR = 24.3 KIPS

**CONCRETE VOLUME**

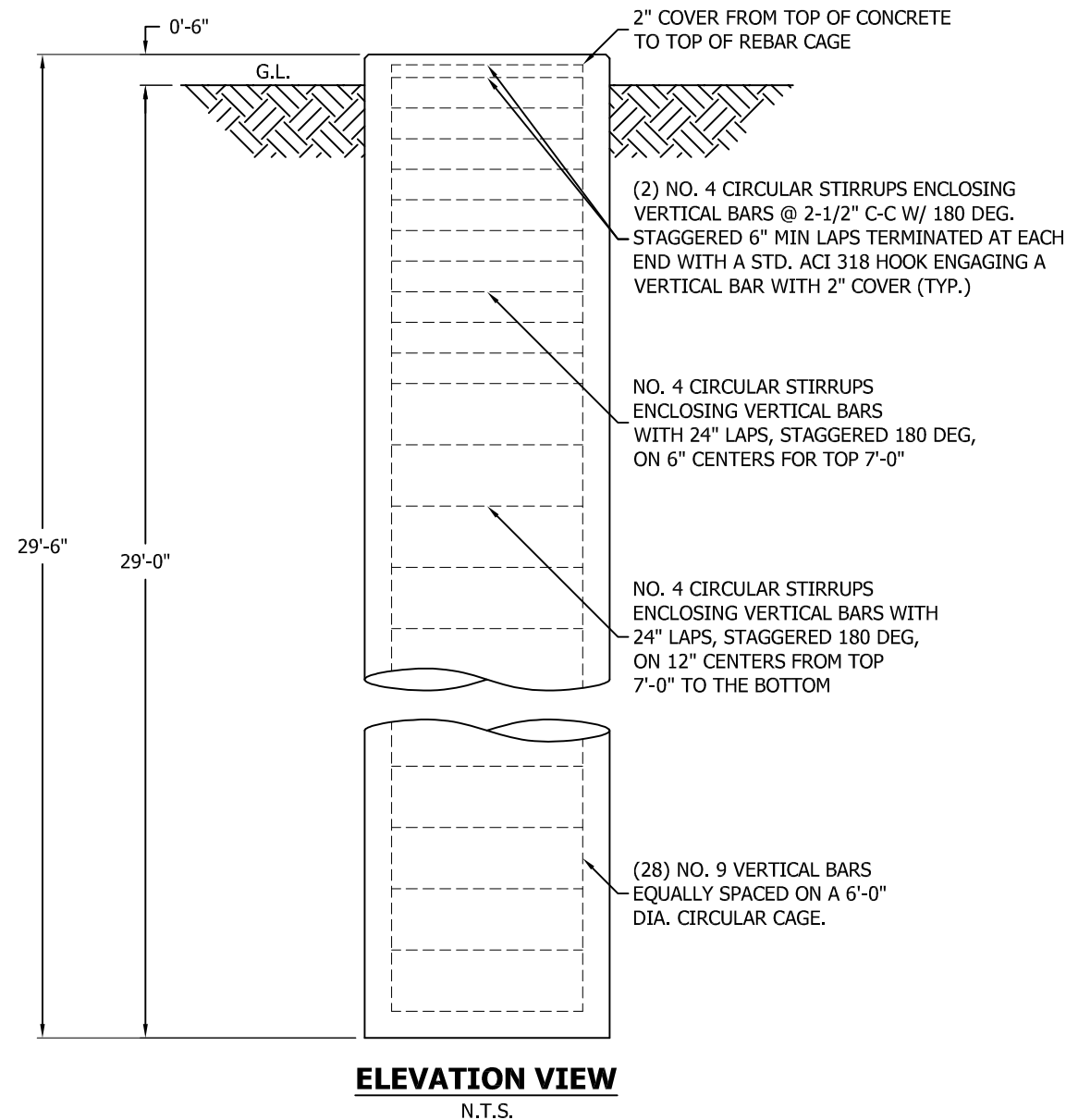
SQUARE PIERS 6.0 CU.YDS  
 PAD 26.7 CU.YDS  
 TOTAL 32.7 CU.YDS

FILE NO.		246725		
REVISIONS				
REV.	DESCRIPTION	DWN	CHK	APP
<p>PO BOX 5999                  PEORIA, IL 61601-5999                  TOLL FREE 800-727-ROHN</p>				
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HORVATH TOWERS V, LLC MAT W/RAISED PIER FOUNDATION DESIGN HUNTWICK REAGAN, IN				
DWN:	SFM	CHK'D:	AS	DATE: 07/30/2024
ENG'R:	AS	SHEET #: 1 OF 1		
PRJ. ENG'R:	SFM	PRJ. MANG'R:		
DRAWING NO: 246725-01-F1				REV: 0

REV.	DESCRIPTION	DWN	CHK	APP



**NOTE:**  
CAGE DIA. FROM CENTERLINE OF VERTICAL BARS.



**FACTORED REACTIONS**

DOWNLOAD = 50.55 KIPS  
SHEAR = 24.27 KIPS  
O.T.M. = 2256.9 FT-KIPS

**VOLUME OF CONCRETE**

42 CU. YDS

**GENERAL NOTES:**

- FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF THE SUBSURFACE DATA PROVIDED. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE FOLLOWING DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED.

DEPTH (FT)	SOIL TYPE	K (PCI)	γ (PCF)	Φ (DEG)	C (KSF)	ε <sub>50</sub> (IN/IN)
0-6	CLAY	5.0	80.0	0.0	0.100	0.035
6-8	SAND	16.0	105.0	29.0	0.000	0.000
8-11	SAND	62.0	115.0	32.0	0.000	0.000
11-16	CLAY	692.0	120.0	0.0	1.800	0.006
16-26	CLAY	1,857.0	125.0	0.0	3.800	0.004
26-31	CLAY	769.0	120.0	0.0	2.100	0.006
31-36	CLAY	692.0	120.0	0.0	1.900	0.006
36-41	CLAY	615.0	120.0	0.0	1.700	0.007
41-46	CLAY	769.0	120.0	0.0	2.000	0.006

- WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.
- CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.
- PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 CHAPTER 4 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI (31.0 MPA) IN 28 DAYS.
- MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 1/3 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. MAXIMUM SIZE MAY BE INCREASED TO 2/3 CLEAR DISTANCE PROVIDED WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING WILL PREVENT HONEYCOMBS OR VOIDS.
- REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED. SPLICES IN REINFORCEMENT SHALL NOT BE ALLOWED UNLESS OTHERWISE INDICATED.
- REINFORCING CAGES SHALL BE BRACED TO RETAIN PROPER DIMENSIONS DURING HANDLING AND THROUGHOUT PLACEMENT OF CONCRETE. WHEN TEMPORARY CASING IS UTILIZED, BRACING SHALL BE ADEQUATE TO RESIST FORCES OCCURRING FROM FLOWING CONCRETE DURING CASING EXTRACTION.
- WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.
- MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES (76 MM) UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH (76 MM) MINIMUM COVER ON REINFORCEMENT.
- SPACERS SHALL BE ATTACHED INTERMITTENTLY THROUGHOUT THE ENTIRE LENGTH OF VERTICAL REINFORCING CAGES TO INSURE CONCENTRIC PLACEMENT OF CAGES IN EXCAVATIONS.
- FOUNDATION DESIGN HAS BEEN BASED ON GEOTECHNICAL REPORT NO. **GEO24-21984-08** DATED **6/26/2024** BY **DELTA OAKS GROUP**.
- FOUNDATION DEPTH INDICATED IS BASED ON THE GRADE LINE DESCRIBED IN THE REFERENCED GEOTECHNICAL REPORT. FOUNDATION MODIFICATION MAY BE REQUIRED IN THE EVENT CUT OR FILL OPERATIONS HAVE TAKEN PLACE SUBSEQUENT TO THE GEOTECHNICAL INVESTIGATION.
- VERIFICATION OF SUBSURFACE CONDITIONS IS REQUIRED BY OTHERS PRIOR TO PLACEMENT OF CONCRETE.
- FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.
- FOUNDATION DESIGN ASSUMES INSTALLATION PROCEDURES WILL INCORPORATE THE PROCEDURES RECOMMENDED IN THE REFERENCED GEOTECHNICAL REPORT.
- FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON CONDITIONS EXISTING AT THE SITE.
- FOR FOUNDATION INSTALLATION TOLERANCES SEE STRUCTURE ASSEMBLY DRAWING.
- LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. SIDES OF EXCAVATION SHALL BE ROUGH AND FREE OF LOOSE CUTTINGS.
- CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.
- FREE FALL CONCRETE MAY BE USED PROVIDED FALL IS VERTICAL DOWN WITHOUT HITTING SIDES OF EXCAVATION, FORMWORK, REINFORCING BARS, FORM TIES, CAGE BRACING OR OTHER OBSTRUCTIONS. UNDER NO CIRCUMSTANCES SHALL CONCRETE FALL THROUGH WATER.
- TOP OF FOUNDATION OUTSIDE LIMITS OF ANCHOR BOLTS SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISH. AREA INSIDE LIMITS OF ANCHOR BOLTS SHALL BE LEVEL WITH A SCRATCHED FINISH.
- EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" (19MM X 19MM) MINIMUM.
- FOUNDATION DESIGN ASSUMES CASING, IF USED, WILL NOT BE LEFT IN PLACE. EQUIPMENT, PROCEDURES, AND PROPORTIONS OF CONCRETE MATERIALS SHALL INSURE CONCRETE WILL NOT BE ADVERSELY DISTURBED UPON CASING REMOVAL.
- DRILLING FLUID, IF USED, SHALL BE FULLY DISPLACED BY CONCRETE AND SHALL NOT BE DETRIMENTAL TO CONCRETE OR SURROUNDING SOIL. CONTAMINATED CONCRETE SHALL BE REMOVED FROM TOP OF FOUNDATION AND REPLACED WITH FRESH CONCRETE.



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**HORVATH TOWERS V, LLC**  
**DRILLED PIER**  
**FOUNDATION DETAILS**  
**HUNTWICK REAGAN, IN**

DWN: SFM    CHK'D: AS    DATE: 7/30/2024

ENG'R: AS    SHEET #: 1 OF 1

PRJ. ENG'R: SFM    PRJ. MANG'R:

DRAWING NO: 246725-01-F2    REV: 0



TSTower - v 6.1.0.0 Tower Analysis Program  
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 Peoria, IL

File: J:\2024\246725\ENGINEERING\246725.out  
 Contract: 246725  
 Project: 115 FT TSP  
 Date and Time: 7/30/2024 7:52:31 AM

Revision: 0  
 Site: HUNTWICK REAGAN - IN  
 Engineer: SFM

ENGINEERING  
 CHECKED BY: AS  
 07/30/2024

**Section A: PROJECT DATA**

Project Title: 115 FT TSP  
 Customer Name: HORVATH TOWERS V- LLC  
 Site: HUNTWICK REAGAN - IN  
 Contract No.: 246725  
 Revision: 0  
 Engineer: SFM  
 Date: Jul 30 2024  
 Time: 07:51:05 AM

Design Standard: ANSI/TIA-222-H-2017

GENERAL DESIGN CONDITIONS

Start wind direction: 0.00 (Deg)  
 End wind direction: 315.00 (Deg)  
 Increment wind direction: 45.00 (Deg)  
 Elevation above ground: 0.00 (ft)  
 Mean elevation of base of structure above sea level Zs: 794.00 (ft)  
 Rooftop wind speed-up factor Ks: 1.00  
 Gust Response Factor Gh: 1.10  
 Risk category: II  
 Exposure category: C  
 Topographic category: 1  
 Material Density: 490.1 (lbs/ft^3)  
 Young's Modulus: 29000.0 (ksi)  
 Poisson Ratio: 0.30  
 Weight Multiplier: 1.06

WIND ONLY CONDITIONS:

Basic Wind Speed (No Ice): 106.00 (mph)  
 Directionality Factor Kd: 0.95  
 Importance Factor I: 1.00  
 Wind Load Factor: 1.00  
 Dead Load Factor: 1.20

WIND AND ICE CONDITIONS:

Basic Wind Speed (With Ice): 40.00 (mph)  
 Directionality Factor Kd: 0.95  
 Wind Load Importance Factor Iw: 1.00  
 Ice Thickness Importance Factor Ii: 1.00  
 Ice Thickness: 1.50 (in)  
 Ice Density: 56.19 (lbs/ft^3)  
 Wind Load Factor: 1.00  
 Dead Load Factor: 1.20  
 Ice Load Factor: 1.00

WIND ONLY SERVICEABILITY CONDITIONS:

Serviceability Wind Speed: 60.00 (mph)  
 Directionality Factor Kd: 0.85  
 Importance Factor I: 1.00  
 Wind Load Factor: 1.00  
 Dead Load Factor: 1.00

EARTHQUAKE CONDITIONS:

Site class definition: D  
 Spectral response acceleration Ss: 0.193  
 Spectral response acceleration Sl: 0.088  
 Long-period transition period TL: 12.000  
 Acceleration-based site coefficient Fa: 1.600  
 Velocity-based site coefficient Fv: 2.400



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Contract: 246725

Project: 115 FT TSP

Date and Time: 7/30/2024 7:52:31 AM

Revision: 0

Site: HUNTWICK REAGAN - IN

Engineer: SFM

Design spectral response acceleration Sds: 0.206

Design spectral response acceleration Sd1: 0.141

Seismic analysis method: 1

Fundamental frequency of structure f1: 0.505

Total seismic shear Vs (Kips) : 1.31

Analysis performed using: TowerSoft Finite Element Analysis Program

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Site: HUNTWICK REAGAN - IN

Engineer: SFM

**Section B: STRUCTURE GEOMETRY**

Total Height (ft)	Bottom Diameter (in)	Top Diameter (in)
115.00	43.50	16.00

Sect. No	Length (ft)	Overlap (ft)	Bot Dia. (in)	Top Dia. (in)	Thick. (in)	Sides	Joint Type	Yield Stress (ksi)	Mass (lbs)	Calculated Taper (in/ft)	Corner Radius (in)
3	47.29	0.00	27.82	16.00	0.2500	18-sided	Telescopic	65.0	2931.8	0.25000	2.38
2	39.00	3.67	36.16	26.41	0.3750	18-sided	Telescopic	65.0	5174.9	0.25000	2.38
1	37.13	4.75	43.50	34.22	0.3750	18-sided	Flange	65.0	6134.9	0.25000	2.50

Total Mass:									14241.6		
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Site: HUNTWICK REAGAN - IN  
Engineer: SFM

**Section D: TRANSMISSION LINE DATA**

Transmission Lines Position

No.	Bot El (ft)	Top El (ft)	Desc.	Radius (ft)	Az.	Orient.	No.	Shielded	Shielded Lines	Antenna
1	0.00	115.00	3/8" CABLE	2.50	0.00	0.00	1	No	0	
2	0.00	110.00	LDF7P-50A	0.00	0.00	0.00	12	Yes	12	
3	0.00	95.00	LDF7P-50A	0.00	0.00	0.00	12	Yes	12	
4	0.00	80.00	LDF7P-50A	0.00	0.00	0.00	12	Yes	12	

Transmission Lines Details

No.	Desc.	Width (in)	Depth (in)	Unit Mass (lb/ft)
1	3/8" CABLE	0.38	0.38	1.00
2	LDF7P-50A	2.01	2.01	0.92
3	LDF7P-50A	2.01	2.01	0.92
4	LDF7P-50A	2.01	2.01	0.92

Utilization of the cross-section for TX Lines: 22.05%



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 Site: HUNTWICK REAGAN - IN  
 Engineer: SFM

**Section F: POINT LOAD DATA**

Structure Azimuth from North:0.00

POINT LOADS

No.	Description	Elev. (ft)	Radius (ft)	Azim. (Deg)	Orient. (Deg)	Vertical Offset (ft)	Tx Line	Comments
1	LIGHTNING ROD	115.00	0.00	0.0	0.0	0.00		
2	42,000 SQ-IN MAX EPA	110.00	0.00	0.0	0.0	0.00		
3	15,000 SQ-IN MAX EPA	95.00	0.00	0.0	0.0	0.00		
4	15,000 SQ-IN MAX EPA	80.00	0.00	0.0	0.0	0.00		

POINT LOADS WIND AREAS AND WEIGHTS

No.	Description	Frontal Bare Area (ft^2)	Lateral Bare Area (ft^2)	Frontal Iced Area (ft^2)	Lateral Iced Area (ft^2)	Weight Bare (Kips)	Weight Iced (Kips)	Gh
1	LIGHTNING ROD	1.00	1.00	2.00	2.00	0.10	0.20	1.10
2	42,000 SQ-IN MAX EPA	292.00	292.00	584.00	584.00	4.00	8.00	1.10
3	15,000 SQ-IN MAX EPA	105.00	105.00	209.00	209.00	3.00	6.00	1.10
4	15,000 SQ-IN MAX EPA	105.00	105.00	209.00	209.00	3.00	6.00	1.10



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Revision: 0

Site: HUNTWICK REAGAN - IN

Engineer: SFM

**Section H: STRUCTURE DISPLACEMENT DATA**

Load Combination Wind Only - Serviceability

Wind Direction		Maximum displacements				
Elev. (ft)	N-S Disp (in)	W-E Disp (in)	Vert.Disp (in)	N-S Rot (deg)	W-E Rot (deg)	Twist Rot (deg)
115.00	25.4	-25.3	-0.3	-2.01	-2.02	0.00
106.33	21.7	-21.7	-0.3	-1.98	-1.99	0.00
97.66	18.2	-18.2	-0.2	-1.88	-1.89	0.00
88.98	14.9	-14.9	-0.1	-1.72	-1.73	0.00
80.31	11.9	-11.9	-0.1	-1.53	-1.54	0.00
71.64	9.3	-9.3	-0.1	-1.31	-1.32	0.00
67.97	8.4	-8.3	-0.1	-1.22	-1.22	0.00
61.80	6.9	-6.8	-0.1	-1.10	-1.10	0.00
55.64	5.5	-5.5	0.0	-0.98	-0.98	0.00
49.47	4.3	-4.3	0.0	-0.86	-0.86	0.00
43.30	3.3	-3.3	0.0	-0.74	-0.75	0.00
37.13	2.4	-2.4	0.0	-0.63	-0.63	0.00
32.38	1.8	-1.8	0.0	-0.55	-0.55	0.00
26.98	1.2	-1.2	0.0	-0.45	-0.45	0.00
21.59	0.8	-0.8	0.0	-0.35	-0.35	0.00
16.19	0.4	-0.4	0.0	-0.26	-0.26	0.00
10.79	0.2	-0.2	0.0	-0.17	-0.17	0.00
5.40	0.0	0.0	0.0	-0.08	-0.08	0.00
0.00	0.0	0.0	0.0	0.00	0.00	0.00



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 Engineer: SFM

**Section K: POLE OUTPUT LOAD DATA**

Load Combination	Max Envelope			
Wind Direction	Maximum			
Elev. (ft)	Axial Ld. (kips)	Shear Ld. (kips)	Torque (kipsft)	Bend Mom. (kipsft)
115.00	4.36	5.10	0.00	0.02
106.33	4.36	5.10	0.00	43.96
106.33	10.39	12.09	0.01	44.03
97.66	10.39	12.09	0.00	148.26
97.66	16.15	15.40	0.02	148.40
88.98	16.15	15.40	0.01	281.52
88.98	19.53	17.05	0.03	281.69
80.31	19.53	17.05	0.02	428.57
80.31	27.40	21.28	0.04	428.77
71.64	27.40	21.28	0.03	612.00
71.64	28.83	21.64	0.04	612.16
67.97	28.83	21.64	0.04	691.26
67.97	30.23	21.86	0.05	691.37
61.80	30.23	21.86	0.04	825.52
61.80	32.05	22.15	0.05	825.66
55.64	32.05	22.15	0.05	961.59
55.64	33.68	22.41	0.05	961.71
49.47	33.68	22.41	0.05	1099.30
49.47	35.37	22.67	0.05	1099.40
43.30	35.37	22.67	0.05	1238.62
43.30	37.13	22.92	0.05	1238.71
37.13	37.13	22.92	0.05	1379.54
37.13	38.72	23.14	0.05	1379.60
32.38	38.72	23.14	0.05	1489.27
32.38	40.68	23.34	0.05	1489.32
26.98	40.68	23.34	0.05	1615.23
26.98	42.75	23.52	0.05	1615.28
21.59	42.75	23.52	0.05	1741.50
21.59	44.44	23.68	0.05	1741.53
16.19	44.44	23.68	0.05	1869.46
16.19	46.15	23.83	0.05	1869.48
10.79	46.15	23.83	0.05	1997.50
10.79	47.90	23.98	0.05	1997.51
5.40	47.90	23.98	0.05	2127.17
5.40	49.67	24.12	0.05	2127.17
0.00	49.67	24.12	0.05	2256.89
Base	50.55	24.27	0.05	2256.90

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Engineer: SFM

**Section L: STRENGTH ASSESSMENT DATA**

Load Combination	Max Envelope				
Wind Direction	Maximum				
Elev. (ft)	Axial Ld. (kips)	Axial Cap (kips)	Moment (kipsft)	Mom. Cap (kipsft)	Assess.
115.00	4.36	932.31	0.02	300.96	0.005
106.33	4.36	1060.12	43.96	389.84	0.038
106.33	10.39	1060.12	44.03	389.84	0.119
97.66	10.39	1187.92	148.26	490.21	0.308
97.66	16.15	1187.92	148.40	490.21	0.312
88.98	16.15	1315.73	281.52	602.07	0.476
88.98	19.53	1315.73	281.69	602.07	0.478
80.31	19.53	1443.54	428.57	725.41	0.600
80.31	27.40	1443.54	428.77	725.41	0.605
71.64	27.40	1550.09	612.00	848.61	0.733
71.64	28.83	1550.09	612.16	848.61	0.734
67.97	30.23	2377.07	691.37	1306.64	0.537
61.80	30.23	2513.43	825.52	1461.92	0.572
61.80	32.05	2513.43	825.66	1461.92	0.573
55.64	32.05	2649.80	961.59	1625.92	0.599
55.64	33.68	2649.80	961.71	1625.92	0.600
49.47	33.68	2786.17	1099.30	1798.63	0.619
49.47	35.37	2786.17	1099.40	1798.63	0.620
43.30	35.37	2922.53	1238.62	1980.07	0.634
43.30	37.13	2922.53	1238.71	1980.07	0.634
37.13	37.13	3058.90	1379.54	2170.22	0.644
37.13	38.72	3058.90	1379.60	2170.22	0.644
32.38	40.68	3097.59	1489.32	2225.75	0.678
26.98	40.68	3216.89	1615.23	2401.43	0.681
26.98	42.75	3216.89	1615.28	2401.43	0.682
21.59	42.75	3336.19	1741.50	2583.77	0.683
21.59	44.44	3336.19	1741.53	2583.77	0.683
16.19	44.44	3429.70	1869.46	2752.10	0.688
16.19	46.15	3429.70	1869.48	2752.10	0.689
10.79	46.15	3515.80	1997.50	2919.50	0.693
10.79	47.90	3515.80	1997.51	2919.50	0.694
5.40	47.90	3599.75	2127.17	3089.86	0.698
5.40	49.67	3599.75	2127.17	3089.86	0.698
0.00	49.67	3681.54	2256.89	3263.01	0.701

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Engineer: SFM

**Section M: SECTION PROPERTIES DATA**

Elev. (ft)	Diam. (in)	Width (in)	Thick. (in)	W/t	Area (in <sup>2</sup> )	S (in <sup>3</sup> )
115.0	16.1	2.3	0.250	9.3	12.5	48.61
106.3	18.2	2.7	0.250	10.9	14.3	62.97
106.3	18.2	2.7	0.250	10.9	14.3	62.97
97.7	20.4	3.1	0.250	12.4	16.0	79.18
97.7	20.4	3.1	0.250	12.4	16.0	79.18
89.0	22.6	3.5	0.250	13.9	17.7	97.24
89.0	22.6	3.5	0.250	13.9	17.7	97.24
80.3	24.7	3.9	0.250	15.4	19.4	117.17
80.3	24.7	3.9	0.250	15.4	19.4	117.17
71.6	26.9	4.2	0.250	17.0	21.1	138.94
71.6	26.9	4.2	0.250	17.0	21.1	138.94
68.0	27.8	4.4	0.250	17.6	21.9	148.71
68.0	27.3	4.1	0.375	10.8	32.0	211.05
61.8	28.8	4.3	0.375	11.5	33.8	236.13
61.8	28.8	4.3	0.375	11.5	33.8	236.13
55.6	30.3	4.6	0.375	12.3	35.7	262.61
55.6	30.3	4.6	0.375	12.3	35.7	262.61
49.5	31.9	4.9	0.375	13.0	37.5	290.51
49.5	31.9	4.9	0.375	13.0	37.5	290.51
43.3	33.4	5.1	0.375	13.7	39.3	319.82
43.3	33.4	5.1	0.375	13.7	39.3	319.82
37.1	35.0	5.4	0.375	14.4	41.2	350.53
37.1	35.0	5.4	0.375	14.4	41.2	350.53
32.4	36.2	5.6	0.375	15.0	42.6	375.14
32.4	35.4	5.5	0.375	14.6	41.7	359.50
27.0	36.8	5.7	0.375	15.3	43.3	387.87
27.0	36.8	5.7	0.375	15.3	43.3	387.87
21.6	38.1	6.0	0.375	15.9	44.9	417.33
21.6	38.1	6.0	0.375	15.9	44.9	417.33
16.2	39.5	6.2	0.375	16.6	46.5	447.86
16.2	39.5	6.2	0.375	16.6	46.5	447.86
10.8	40.8	6.4	0.375	17.2	48.1	479.46
10.8	40.8	6.4	0.375	17.2	48.1	479.46
5.4	42.2	6.7	0.375	17.8	49.7	512.15
5.4	42.2	6.7	0.375	17.8	49.7	512.15
0.0	43.5	6.9	0.375	18.5	51.3	545.91

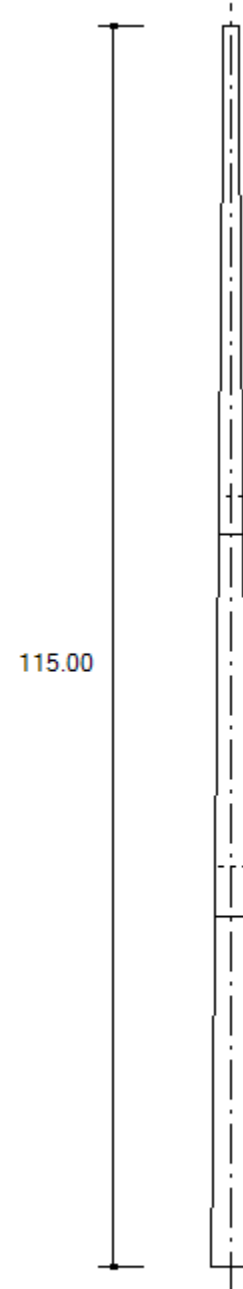
Note: w/t values marked with \* (asterisk) indicate width to thickness exceeding maximum allowable values by standards.

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Site: HUNTWICK REAGAN - IN  
Engineer: SFM

**DESIGN SPECIFICATION**

Sct.	Length (ft)	Overlap (ft)	Top Dia. (in)	Bot Dia. (in)	Thick. (in)
3	47.29	0.00	16.00	27.82	0.2500
2	39.00	3.67	26.41	36.16	0.3750
1	37.13	4.75	34.22	43.50	0.3750



**MAXIMUM BASE REACTIONS**

Download (Kips)	50.6
Shear (Kips)	24.3
Moment (Kipsft)	2256.9

Customer: HORVATH TOWERS V, LLC  
 Project: 115 FT TSP  
 Site: HUNTWICK REAGAN , IN  
 Engr. File: 246725  
 Build Code: ANSI/TIA-222-H-2016



# Mat Foundation

ver.3.0.9

## Design Parameters

Description	Load Case					Service
	1	2	3	4	5	
Total Moment, ft-kips	2,256.90	2,234.02	679.01	123.26	121.33	644.60
Total Shear, kips	24.27	24.25	7.10	1.31	1.31	6.95
Total Tower Wt, kips	33.15	24.85	50.55	34.35	23.77	27.67
Max. Uplift, kips	N/A	N/A	N/A	N/A	N/A	N/A
Shear, kips	N/A	N/A	N/A	N/A	N/A	N/A
Max Download, kips	N/A	N/A	N/A	N/A	N/A	N/A
Shear	N/A	N/A	N/A	N/A	N/A	N/A
Soil L.F.	1.20	0.90	1.20	1.20	0.90	1.00
Concrete L.F.	1.20	0.90	1.20	1.20	0.90	1.00

Foundation	
Ht. AGL, ft	0.50
Depth, ft.	6.00
Pole	
Butt OD, ft	3.63
Offset, in	.00
Soil	
Blow Count	N/A
Inplace Unit Wt, pcf	110.00
Submerged Unit Wt, pcf	60.00
Friction Angle, $\phi$ , deg.	30.00
Cohesion, ksf	N/A
Uplift Angle, deg.	30.00
Water Depth, ft	None
Ult Bearing Capacity, ksf	12.69

Mat	
Thickness, ft	2.00
Width, ft	19.00
EA, in	18.00
Batter, in/ft	0.00

Pier	
Height, ft	4.50
Diameter, ft	6.00
No. Piers	1
Shape	Square

Anchor Bolts	
Diameter, in	1.5000
No.	18
Length, in	74.00
Bolt Circle, in	20.00
Projection, in	9.00

Pocket	
Diameter, in	N/A
Thickness, ft	N/A

Concrete	
28 Day Strength, ksi	4.50
Dry Unit Wt, pcf	150.00
Wet Unit Wt, pcf	88.00

Rebar Fy	
Vertical, ksi	60.00
Circular, ksi	60.00
Horizontal, ksi	60.00

## Results

$\phi M_N$  – Parallel Axis                    2,564.21    ft-kips  
 $\phi M_N$  – Diagonal Axis                    2,820.44    ft-kips  
 Moment – Interaction Ratio                    0.933  
 $\phi V_N$  – Lateral Load                    72.44    kips  
 Lateral Load – Interaction Ratio                    0.335

Final Mat Dimension        : 19.00 x 19.00 x 2.00 ft. thick w/ (1) 6.00 ft. Square Pier

Final Pocket Dimension    : Pockets not required

Total Volume of Concrete : 32.7 yd<sup>3</sup>

Designed By: SFM  
 Date: 30 July, 2024 @ 08:09 AM

ENGINEERING  
 CHECKED BY: AS  
 07/30/2024

Customer: HORVATH TOWERS V, LLC  
 Project: 115 FT TSP  
 Site: HUNTWICK REAGAN , IN  
 Engr. File: 246725  
 Build Code: ANSI/TIA-222-H-2016



# Mat Foundation

ver.3.0.9

## OTM Capacity

Controlling Load Case: 2 [Wind w/Min. Dead Load]  
 Foundation Width = 19.00 ft  
 $M_U = 2,391.6$  ft-kips

	$\phi M_N$ , ft-kips	x, ft	N	$\sigma_{ur}$
Parallel	2,564.2	1.900	0.100	10.76
Diagonal	2,820.4	6.008	0.224	10.76

$\phi M_N = 2,564.21$  ft-kips      IRatio = 0.933  
 $\phi V_N = 72.44$  kips      IRatio = 0.335

## Mat Design

$\gamma_e = 123.33$  pcf

Exterior Slab	x, ft	N	$\sigma_R$ , ksf	$P_s$ , kips	$P_{su}$ , kips	Moment, ft-kips/ft		Shear, kips/ft	
						DownLoad Side	Uplift Side	Download Side	Uplift Side
Parallel	2.971	0.156	5.14	15.40	0.00	62.57	23.85	14.21	6.56
Diagonal	8.130	0.303	4.39	15.40	0.00	40.79	14.67	15.15	5.35

Punching Shear	Download			Uplift			Description
	Interior	Edge	Corner	Interior	Edge	Corner	
$b_o$ , ft	30.33	N/A	N/A	N/A	N/A	N/A	2-Way Shear
$V_{su}$ , psi	62.56	N/A	N/A	N/A	N/A	N/A	
$\phi V_c$ , psi	228.08	N/A	N/A	N/A	N/A	N/A	
IR	0.27	N/A	N/A	N/A	N/A	N/A	
$0.5 * M_{ut}$ , ft-kips	709.8			N/A			Moment transfer to slab
$B_e$ , ft	12.0			N/A			
$M_u$ , ft-kips/ft	59.2			N/A			
Edge Distances: a = 9.50 ft.    b = 9.50 ft.    c = 9.50 ft.							

Summary	Max. Value	Utilization
Slab Moment, ft-kips/ft	62.57	0.958
Slab Shear, kips/ft	15.15	0.583
Punching Shear, psi	62.56	0.274
Soil Bearing Required, $\sigma_{UR}$ , ksf	6.86	0.541

Mat Reinforcement	
Min. Steel Area (Strength)	.621 in <sup>2</sup> /ft.
Min. Steel Area (Temperature)	.259 in <sup>2</sup> /ft.
Steel Strain Actual	0.025
Minimum Steel Strain Required	0.005

28 - #6 Horizontal bars equally spaced @8.22 in., each way, top and bottom, total of 112,  $A_s = 0.651$  in<sup>2</sup>/ft

Designed By: SFM  
 Date: 30 July, 2024 @ 08:09 AM

ENGINEERING  
 CHECKED BY: AS  
 07/30/2024

Customer: HORVATH TOWERS V, LLC  
Project: 115 FT TSP  
Site: HUNTWICK REAGAN , IN  
Engr. File: 246725  
Build Code: ANSI/TIA-222-H-2016



# Mat Foundation

ver.3.0.9

## Pier Design

Controlling Load Case: 1 [Wind w/Max. Dead Load]

C = 33.15 kips	Vc = 24.27 kips	Mc = 2,366.12 ft-kips
T = .00 kips	Vt = .00 kips	Mt = .00 ft-kips
Fy = 60.00 ksi	Fyt = 60.00 ksi	L.F. = 1.00
H = 72.00 in.	Ds = 63.00 in.	F'c = 4.50 ksi
U = 1.00	Irs = Square	

\*\*\* NOTE: Pier cross section is Square \*\*\*

## SUMMARY OF ANALYSIS

Minimum area of steel required	= 25.920 in <sup>2</sup>	(Rhomin = 0.0050)
Area of steel provided.	= 25.983 in <sup>2</sup>	(Rhoactual = 0.0050)
Maximum steel area limit	= 325.721 in <sup>2</sup>	(Rhomax = 0.0628)

(26) #9 Vertical Bars equally spaced w/ #5 Circular Ties @ 6" on center.

## CIRCULAR TIE DATA

$V_u < 0.85 * V_c / 2$ , shear reinforcement is not required

Use maximum tie spacing specified in ACI 318,  
Section 7.10.5 for compression reinforcement.

## DEVELOPMENT LENGTH MODIFIERS FOR BAR DEVELOPMENT

Modifier for tension development = 0.863  
Modifier for compression development = 0.465  
REQUIRED Ld = MODIFIER \* BASIC Ld \* ACI 318 MODIFIERS, (12 in. min.)

Designed By: SFM  
Date: 30 July, 2024 @ 08:09 AM

ENGINEERING  
CHECKED BY: AS  
07/30/2024



# Rohn Products, LLC.

Designed By: SFM  
 Checked By: AS  
 Project File: 246725  
 Ensoft Lpile: 12  
 Customer: HORVATH TOWERS V- LLC  
 Site: HUNTWICK REAGAN - IN

Date: 7/30/2024 8:41 AM  
 Date: 07/30/2024  
 Building Code: ANSI/TIA-222-G  
 LpileFusion: 1.0.0.9

## FACTORED REACTIONS

DOWNLOAD	ULTIMATE	OPERATIONAL
Download, kips	50.6	27.7
OTM, ft-kips	2,256.9	644.6
Shear, kips	24.3	7.0

## LPILE INPUT PARAMETERS

Depth, ft	Soil Type	K, pci	$\gamma$ , pcf	$\phi$ , deg	C, ksf	$\epsilon_{50}$ , in/in	N	RQD
0.00' to 6.00'	Clay	5.00	80.00	0.0	0.100	0.035	1	0
6.00' to 8.00'	Sand	16.00	105.00	29.0	0.000	0.000	6	0
8.00' to 11.00'	Sand	62.00	115.00	32.0	0.000	0.000	16	0
11.00' to 16.00'	Clay	692.00	120.00	0.0	1.800	0.006	18	0
16.00' to 26.00'	Clay	1,857.00	125.00	0.0	3.800	0.004	38	0
26.00' to 31.00'	Clay	769.00	120.00	0.0	2.100	0.006	20	0
31.00' to 36.00'	Clay	692.00	120.00	0.0	1.900	0.006	18	0
36.00' to 41.00'	Clay	615.00	120.00	0.0	1.700	0.007	16	0
41.00' to 46.00'	Clay	769.00	120.00	0.0	2.000	0.006	20	0

Reaction Modification Factor = 1.33

Pier Diameter = 7' - 0", Shaft ID = 0' - 0", Pier Depth = 29' - 0" and Ground Slope = 0 deg.

## SUMMARY OF LPILE RESULTS

RESULTS	DOWNLOAD CONDITION	
	ULTIMATE	OPERATIONAL
Deflection at Top, in.	2.34	0.05
Moment, ft-kips	2,433.6	701.2
Shear, kips	252.6	79.7
Lateral Soil Pressure, ksf	6.18	2.08

## SHAFT SUMMARY

- 1) Use 7' - 0" diameter and 29' - 0" deep drilled pier with 0' - 6" projection.
- 2) Use (28) #9 bars in 6' - 0" Dia. Cage. Stirrups are not required for shear. Use #4 ties at 6" centers in top 7' and at 12" centers in rest of pier.
- 3) Concrete Volume = 42.0 cu. yds for drilled shaft with anchor rods, reinforcing cage, (or stub beam).

(See Shaft Reinforcing Program results for reinforcement calculations at the end of this report)

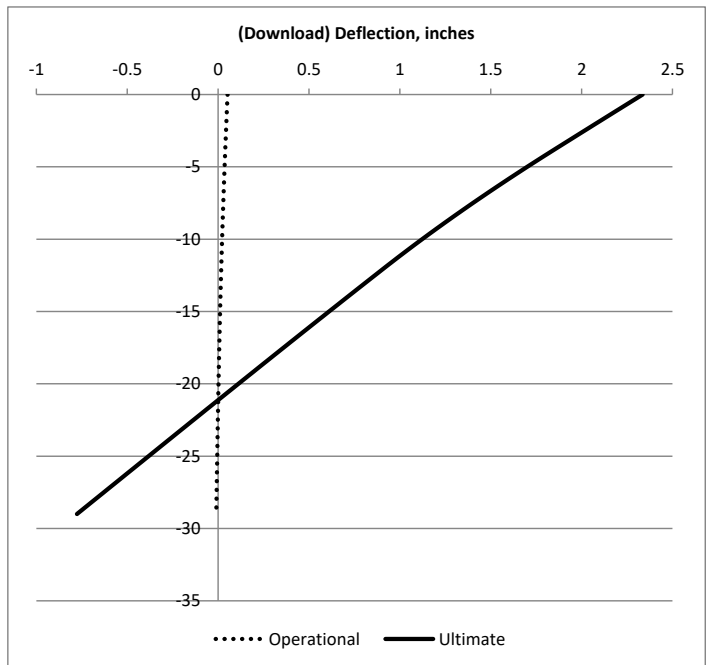
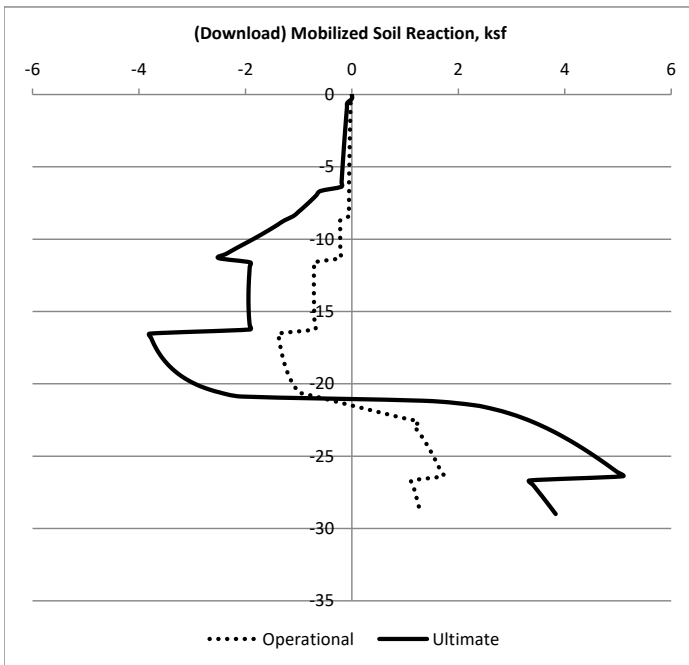
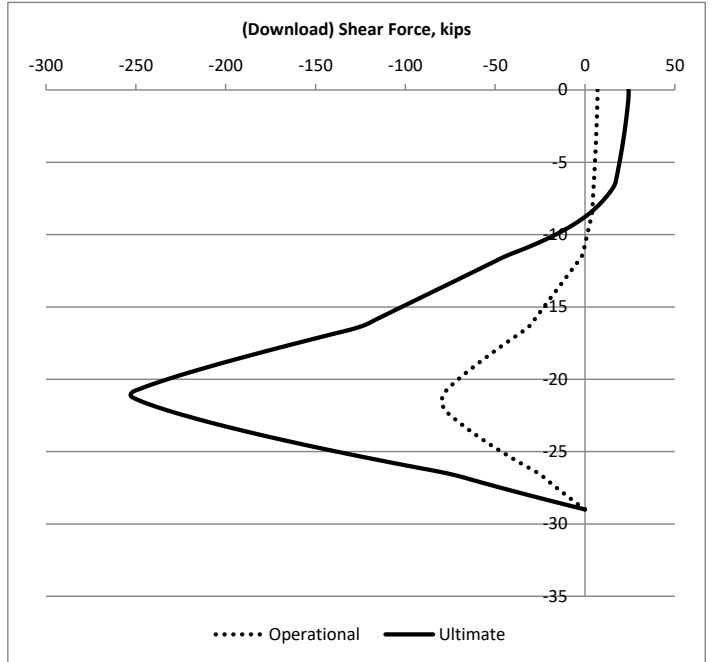
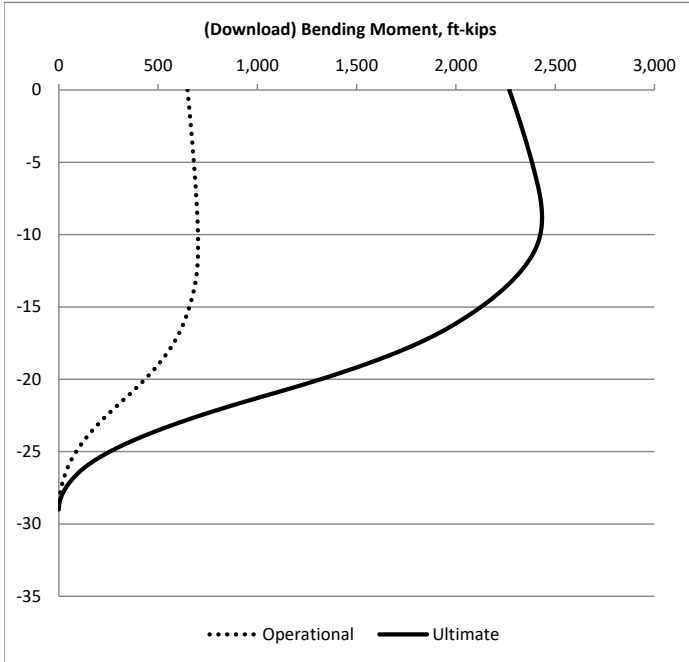


# Rohn Products, LLC.

Designed By: SFM  
Checked By: \_\_\_\_\_  
Project File: 246725  
Ensoft Lpile: 12  
Customer: HORVATH TOWERS V- LLC  
Site: HUNTWICK REAGAN - IN

Date: 7/30/2024 8:41 AM  
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## ENSOFT LPILE CHARTS





# Rohn Products, LLC.

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 LpileFusion: 1.0.0.9

## SHAFT REINFORCING PROGRAM RESULTS

### INPUT DATA

C =	50.55	Kips	Vc =	252.65	Kips	Mc =	2,433.63	Ft-K
T =	0.00	Kips	Vt =	0.00	Kips	Mt =	0.00	Ft-K
Fy =	60.00	Ksi	Fyt =	60.00	Ksi	L.F. =	1.00	
H =	84.00	In.	Ds =	72.00	In.	F'c =	4.50	Ksi
μ =	0.40							

SHAFT CROSS SECTION IS Round

### SUMMARY OF ANALYSIS

Minimum area of steel required =	27.71	sq.in.	(Rhomin = 0.005)
Maximum steel area limit =	443.34	sq. in.	(Rhymax = 0.080)

### CIRCULAR TIE DATA

$V_u < .85 * V_c / 2$ , shear reinforcement is not required

### DEVELOPMENT LENGTH MODIFIERS FOR TENSION AND COMPRESSION BAR DEVELOPMENT

DLMT =	MODIFIER FOR TENSION DEVELOPMENT	0.667
DLMC =	MODIFIER FOR COMPRESSION DEVELOPMENT	0.219
REQUIRED Ld =	MODIFIER * BASIC Ld * ACI 318 MODIFIERS, (12 in. min.)	