NB+C Engineering Services

Existing Wood Pole Antenna Installation

Prepared for Crown Castle Fiber, LLC

SITE INFORMATION

Address	14-16 Greenwood Ct Malden, MA 02148 Middlesex County Latitude: 42.418433º Longitude: -71.064880
Crown Castle Node Number	ODAS_2F-29
NB+C Project Number	100723
Date	November 14, 2023

TABLE OF CONTENTS

1.0 INTRODUCTION

The structure is an existing class 3-35 ft. wood pole located in Malden, MA. As per your request **NB+C ES** performed a structural analysis and design for the existing wood pole to verify that the structure can support the new loads and are in compliance with the applicable codes and standards. Information we have received and used for this analysis includes:

- Final Construction Drawings prepared by **NB+C ES**, dated November 7, 2023
- Field Notes and Photos by **NB+C ES** personnel dated October 02, 2023

2.0 APPURTENANCES LOADING

As per the information provided to us, the final antenna configuration is shown in Table 1 below.

Table 1 – Final Antenna and Cable Information

Center Line Elevation (ft)	Antenna Model	Carrier	Feed Lines
32.67	**(1) Amphenol 6U4MT360X12Fxys4 antenna**	T-Mobile	(4) 1/2" Coax Cable
13.92	**(1) Charles Industries Curved Shroud SH60-702322 w/ (1) Ericsson Radio 4455 B2/B25, (1) Radio 8863 B41**		
10.25	**(1) PTS90526 AC Load Center**		
8.71	(1) Existing Meter		

Note: Proposed Equipment marked in bold

3.0 ASSUMPTIONS

This report is based on the theoretical capacity of the existing/proposed structural elements and is not an assessment of the overall suitability of the existing structure or its components for any particular use other than specified here in this report:

- This report makes no warranties, expressed and/or implied, and disclaims any liability arising from material, fabrication and erection of the existing structure and any other existing or proposed components or appurtenances.
- All proposed and existing antennas, mounts, coaxial cables, and appurtenances are assumed to be properly installed and configured according to manufacturer requirements.
- All existing structural elements are assumed to be in place and in good condition and were previously designed and constructed in accordance with applicable codes and standards.
- All antennas and equipment are conservatively assumed to be normal to the wind for all load combinations considered.
- Contractor to verify existing site condition including the existing soil type. In the event the existing site conditions are different than the assumptions made in this report, this has to

be brought to the structural engineer's attention before proceeding any further with bidding, fabrication and/or erection.

- The existing pole is assumed to be a class 3-35' pole with an embedment of 5.08' into the ground.

4.0 ANALYSIS

Calculations for this analysis are provided in Appendix A of this report.

5.0 CONCLUSIONS & RECOMMENDATIONS

Based on the performed analysis of this structure for applied gravity and lateral loads, the existing wood pole structure was calculated to have ***adequate*** structural capacity to support the proposed T-Mobile telecommunication equipment and is in compliance with building codes and standards listed here in this report. **The pole will be stressed to a maximum 78.6% of its design capacity. NB+C ES recommends that the pole owner perform a condition assessment and evaluate the need for a pole replacement due to condition, maintenance, and serviceability.** Refer to the construction drawings prepared by **NB+C ES** for the proposed location of the appurtenances.

The results in Appendix A of the report show that the additional forces imparted to the proposed wood pole due to the proposed telecommunications antenna and mount are within acceptable limits considering the overall configuration of the support structure.

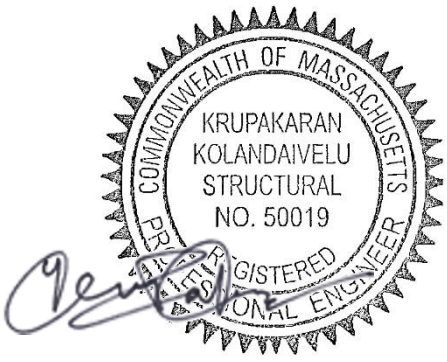
The conclusions reached by **NB+C ES** in this report are only applicable for the previously mentioned existing and proposed structural members supporting the T-Mobile telecommunication antennas. Further, no structural qualification is made or implied by this report for existing structural members not supporting the T-Mobile equipment.

NB+C ENGINEERING SERVICES, LLC

Prepared by: Kyle Smoyer

Respectfully Submitted by:

Krupakaran Kolandaivelu, P.E.
Vice President of Engineering
MA PE License # 50019

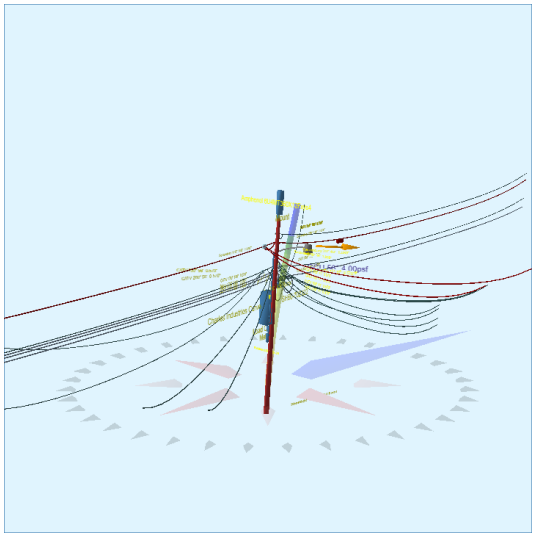


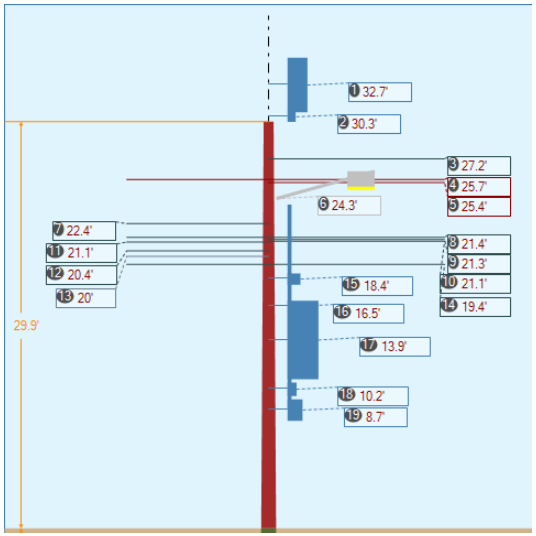
11/14/23

APPENDIX A

CALCULATIONS

Pole Num:	**ODAS_2F-29**	Pole Length / Class:	**35 / 3**	Code:	**NESC**	Structure Type:	**Unguyed Tangent**
Aux Data 1	**Unset**	Species:	**SOUTHERN PINE**	NESC Rule:	**Rule 250B**	Status	**Unguyed**
Aux Data 2	**Unset**	Setting Depth (ft):	**5.08**	Construction Grade:	**C**	Pole Strength Factor:	**0.85**
Aux Data 3	**Unset**	G/L Circumference (in):	**34.35**	Loading District:	**Heavy**	Transverse Wind LF:	**1.75**
Aux Data 4	**Unset**	G/L Fiber Stress (psi):	**8,000**	Ice Thickness (in):	**0.50**	Wire Tension LF:	**1.00**
Aux Data 5	**Unset**	Allowable Stress (psi):	**6,800**	Wind Speed (mph):	**39.53**	Vertical LF:	**1.90**
Aux Data 6	**Unset**	Fiber Stress Ht. Reduc:	**No**	Wind Pressure (psf):	**4.00**		
Latitude:	**0.000000 Deg**	Longitude:	**0.000000 Deg**			Elevation:	**0 Feet**





Pole Capacity Utilization (%)		Height (ft)	Wind Angle (deg)
Maximum	**78.6**	0.0	56.3
Groundline	**78.6**	0.0	56.3
Vertical	**16.1**	19.5	56.3

Pole Moments (ft-lb)		Load Angle (deg)	Wind Angle (deg)
Max Cap Util	**56,584**	39.2	56.3
Groundline	**56,584**	39.2	56.3
GL Allowable	**72,714**		

Groundline Load Summary - Reporting Angle Mode: Load - Reporting Angle: 39.2°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
Powers	394	16.8	**9,906**	17.5	**13.6**	**930**	373	4	**934**	**13.7**
Comms	1,419	60.6	**38,103**	67.3	**52.4**	**3,576**	2,098	22	**3,598**	**52.9**
GenericEquipments	251	10.7	**3,704**	6.6	**5.1**	**348**	912	10	**357**	**5.3**
Pole	239	10.2	**3,640**	6.4	**5.0**	**342**	1,564	17	**358**	**5.3**
Streetlights	30	1.3	**1,073**	1.9	**1.5**	**101**	114	1	**102**	**1.5**
SpanAdditions	3	0.1	**52**	0.1	**0.1**	**5**	13	0	**5**	**0.1**
Insulators	5	0.2	**106**	0.2	**0.2**	**10**	95	1	**11**	**0.2**
Pole Load	2,341	100.0	**56,584**	100.0	**77.8**	**5,310**	5,168	55	**5,365**	**78.9**
Pole Reserve Capacity			**16,130**		**22.2**	**1,490**			**1,435**	**21.1**

Load Summary by Owner - Reporting Angle Mode: Load - Reporting Angle: 39.2°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
<Undefined>	2,103	89.8	**52,944**	93.6	**72.8**	**4,969**	3,604	38	**5,007**	**73.6**
Pole	239	10.2	**3,640**	6.4	**5.0**	**342**	1,564	17	**358**	**5.3**
Totals:	2,341	100.0	**56,584**	100.0	**77.8**	**5,310**	5,168	55	**5,365**	**78.9**

Detailed Load Components:

Power		Owner	Height (ft)	Horiz. Offset (in)	Cable Diameter (in)	Sag at Max Temp (ft)	Cable Weight (lbs/ft)	Lead/Span Length (ft)	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment* (ft-lb)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Secondary	TRIPLEX 1/0		25.67	6.42	1.0300	1.72	0.399	100.0	170.0	100.1	400	-6,712	-52	1,089	-5,493
Secondary	TRIPLEX 1/0		25.44	36.57	1.0300	4.01	0.399	46.0	70.0	47.2	91	1,929	-15	81	2,078
Secondary	TRIPLEX 1/0		25.44	36.57	1.0300	4.01	0.399	46.0	90.0	47.2	91	1,419	-15	288	1,775
Secondary	TRIPLEX 1/0		25.67	6.42	1.0300	3.23	0.399	100.0	350.0	100.3	611	10,245	-52	1,207	11,581
											Totals:	**6,880**	**-132**	**2,665**	**9,941**

Comm		Owner	Height (ft)	Horiz. Offset (in)	Cable Diameter (in)	Sag at Max Temp (ft)	Cable Weight (lbs/ft)	Lead/Span Length (ft)	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment* (ft-lb)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
CATV	CATV .50		27.19	6.33	0.5700	3.25	0.600	100.0	350.0	100.3	498	8,858	-48	881	9,871
CATV	CATV .50		27.19	6.33	0.5700	3.25	0.600	100.0	350.0	100.3	498	8,858	-48	860	9,850

CATV	CATV .50	27.19	6.33	0.5700	3.25	0.600	100.0	350.0	100.3	498	8,858	-48	860	9,850
CATV	CATV .50	27.19	6.33	0.5700	3.25	0.600	100.0	350.0	100.3	498	8,858	-48	860	9,850
CATV	CATV .50	22.42	6.61	0.5700	4.04	0.600	41.0	100.0	42.4	59	645	20	265	991
CATV	CATV .50	21.42	6.67	0.5700	4.04	0.600	41.0	100.0	42.4	59	616	21	253	946
CATV	CATV .50	21.42	6.67	0.5700	4.14	0.600	85.0	140.0	85.7	258	-1,038	-43	829	-131
CATV	CATV .50	21.42	6.67	0.5700	4.14	0.600	85.0	145.0	85.7	258	-1,508	-43	817	-613
CATV	CATV .50	21.42	6.67	0.5700	2.25	0.600	100.0	170.0	100.1	400	-5,601	-50	691	-4,818
CATV	CATV .50	21.07	36.61	0.5700	8.62	0.600	56.0	200.0	60.4	55	-1,027	-17	102	-884
CATV	CATV .50	21.07	36.61	0.5700	8.29	0.600	56.0	230.0	60.1	55	-1,088	-17	-11	-1,052
CATV	CATV .50	21.42	6.67	0.5700	2.80	0.600	100.0	350.0	100.2	300	4,200	-50	691	4,983
CATV	CATV .50	21.25	13.73	0.5700	4.03	0.600	37.2	71.0	38.7	49	873	3	50	979
CATV	CATV .50	21.14	22.03	0.5700	4.03	0.600	37.2	70.0	38.7	49	871	6	45	974
CATV	CATV .50	21.14	22.03	0.5700	4.03	0.600	37.2	72.0	38.7	49	852	6	54	965
CATV	CATV .50	20.42	6.73	0.5700	3.99	0.600	41.0	100.0	42.4	59	591	21	241	910
Telco	TELE 1.0	20.42	6.73	1.0000	1.96	0.400	100.0	170.0	100.1	400	-5,339	-54	822	-4,428
Telco	TELE 1.0	20.02	6.76	1.0000	1.96	0.400	100.0	170.0	100.1	400	-5,235	-54	806	-4,342
CATV	CATV .50	19.42	6.79	0.5700	4.04	0.600	41.0	100.0	42.4	59	559	21	229	861
Telco	TELE 1.0	19.42	6.79	1.0000	1.96	0.400	100.0	170.0	100.1	400	-5,078	-54	782	-4,214
CATV	CATV .50	19.42	6.79	0.5700	6.10	0.600	85.0	320.0	86.5	170	618	-44	752	1,435
CATV	CATV .50	19.42	6.79	0.5700	6.10	0.600	85.0	320.0	86.5	170	618	-44	752	1,435
Telco	TELE 1.0	19.42	6.79	1.0000	2.26	0.400	100.0	350.0	100.1	300	3,808	-54	933	4,822
										Totals:	**23,768**	**-616**	**12,563**	**38,238**

GenericEquipment		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Cylinder	Amphenol 6U4MT360X12Fxys4		32.67	0.21	0.0	0.0	42.00	48.20	--	14.60	--	-1	1,068	1,210
Cylinder	Mount		30.29	1.36	270.0	0.0	30.00	8.88	--	6.00	--	4	75	174
Box	Splice Box		18.35	6.92	80.0	0.0	10.00	10.00	5.13	--	9.50	8	113	141
Cylinder	Conduit		16.52	5.97	210.0	0.0	100.00	180.00	--	3.00	--	-93	414	494
Box	Charles Industries Curved Shroud: SH60-702322		13.94	15.35	260.0	0.0	250.00	69.50	21.45	--	22.73	-458	1,611	1,517
Box	Load Center		10.25	7.51	260.0	0.0	40.00	12.00	5.33	--	6.70	-36	58	65
Box	Meter		8.73	7.37	260.0	0.0	10.00	19.00	4.86	--	11.00	-9	115	115
											Totals:	**-584**	**3,454**	**3,717**

Streetlight		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
General	Streetlight - 6 ft. Arm		24.27	4.00	90.0	90.0	60.00	24.00	20.00	3.00	72.00	343	582	1,077
											Totals:	**343**	**582**	**1,077**

SpanAddition		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Maintenance Loop	Span Addition		18.99	51.00	350.0	350.0	7.00	30.00	30.00	30.00	30.00	0	39	52
											Totals:	**0**	**39**	**52**

Insulator		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Diameter (in)	Unit Length (in)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Bolt	Single Bolt		27.19	0.00	260.0	260.0	5.00	3.00	0.00	-4	0	10
Bolt	Single Bolt		25.67	0.00	260.0	260.0	5.00	3.00	0.00	-4	0	10
Bolt	Single Bolt		22.42	0.00	80.0	80.0	5.00	3.00	0.00	4	0	16
Bolt	Single Bolt		21.42	0.00	80.0	80.0	5.00	3.00	0.00	4	0	15
Bolt	Single Bolt		21.42	0.00	260.0	260.0	5.00	3.00	0.00	-4	0	7
Bolt	Single Bolt		20.42	0.00	80.0	80.0	5.00	3.00	0.00	4	0	15
Bolt	Single Bolt		20.42	0.00	260.0	260.0	5.00	3.00	0.00	-4	0	7
Bolt	Single Bolt		20.02	0.00	260.0	260.0	5.00	3.00	0.00	-4	0	6
Bolt	Single Bolt		19.42	0.00	80.0	80.0	5.00	3.00	0.00	4	0	14
Bolt	Single Bolt		19.42	0.00	260.0	260.0	5.00	3.00	0.00	-4	0	6
									Totals:	**-8**	**0**	**106**

Pole Buckling

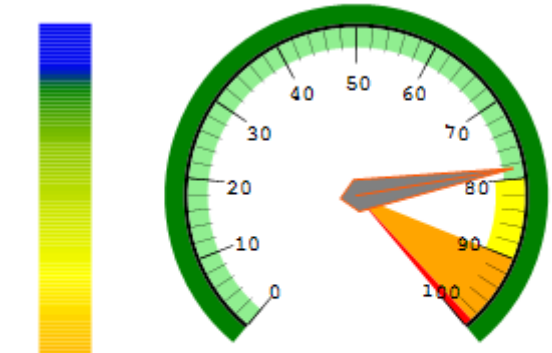
Buckling Constant	Buckling Column Height* (ft)	Buckling Section Height (% Buckling Col. Hgt.)	Buckling Section Diameter (in)	Minimum Buckling Diameter at GL (in)	Diameter at Tip (in)	Diameter at GL (in)	Modulus of Elasticity (psi)	Pole Density (pcf)	Ice Density (pcf)	Pole Tip Height (ft)	Buckling Load Capacity at Height (lbs)	Buckling Load Applied at Height (lbs)	Buckling Load Factor of Safety
2.00	19.48	33.23	10.15	16.11	7.32	10.94	1.60e+6	60.00	57.00	29.92	32,023	**321.01**	**6.21**

O-Calc® Pro Capacity Summary Info

Pole Identification: ODAS_2F-29

Report Created: 11/14/2023

File: ODAS_2F-29.pplx

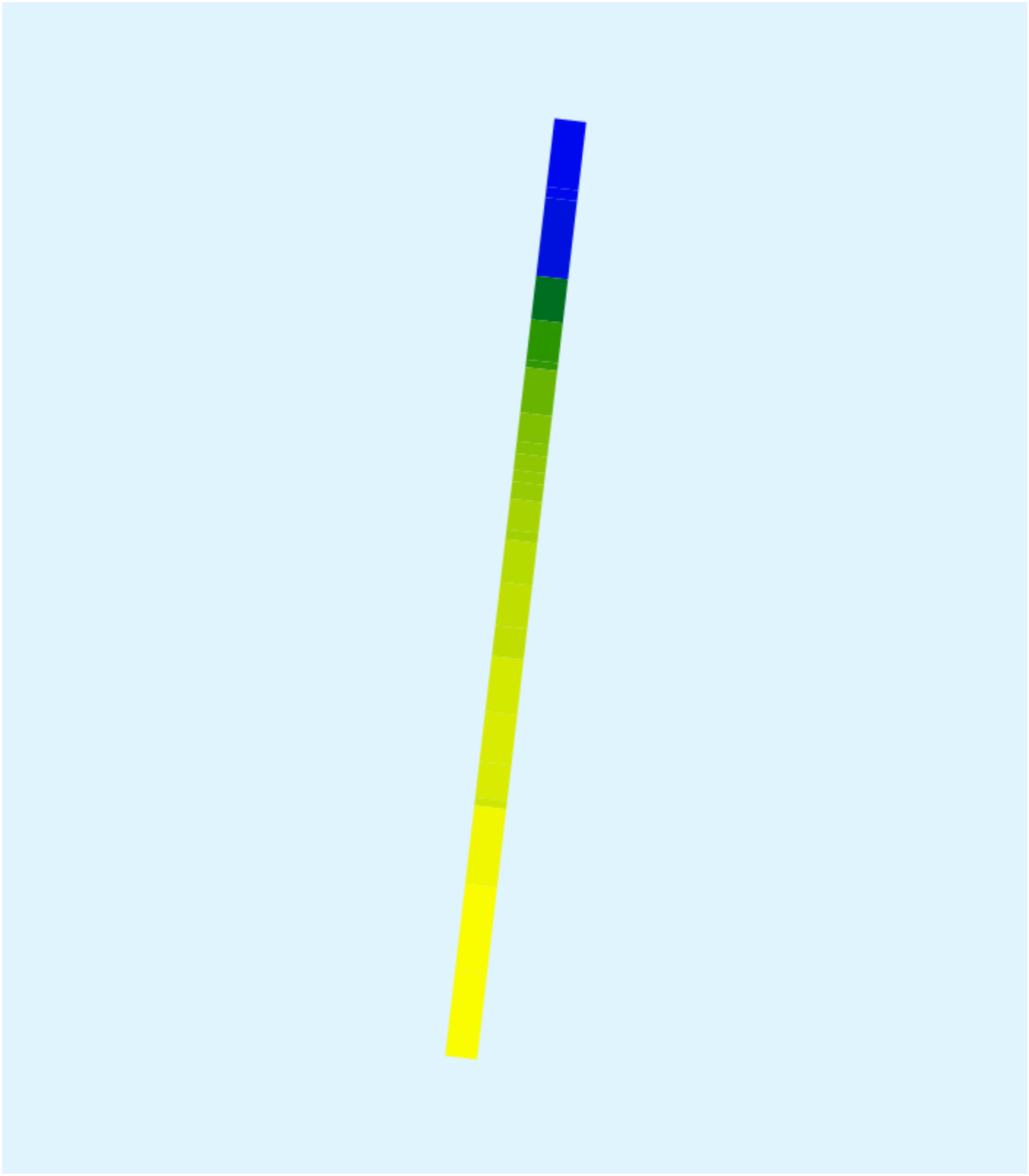


78.6% of Allowed MCU

Unguyed

O-Calc® Pro Heat Map View

Report Created: 11/14/2023



O-Calc® Pro Schematic View

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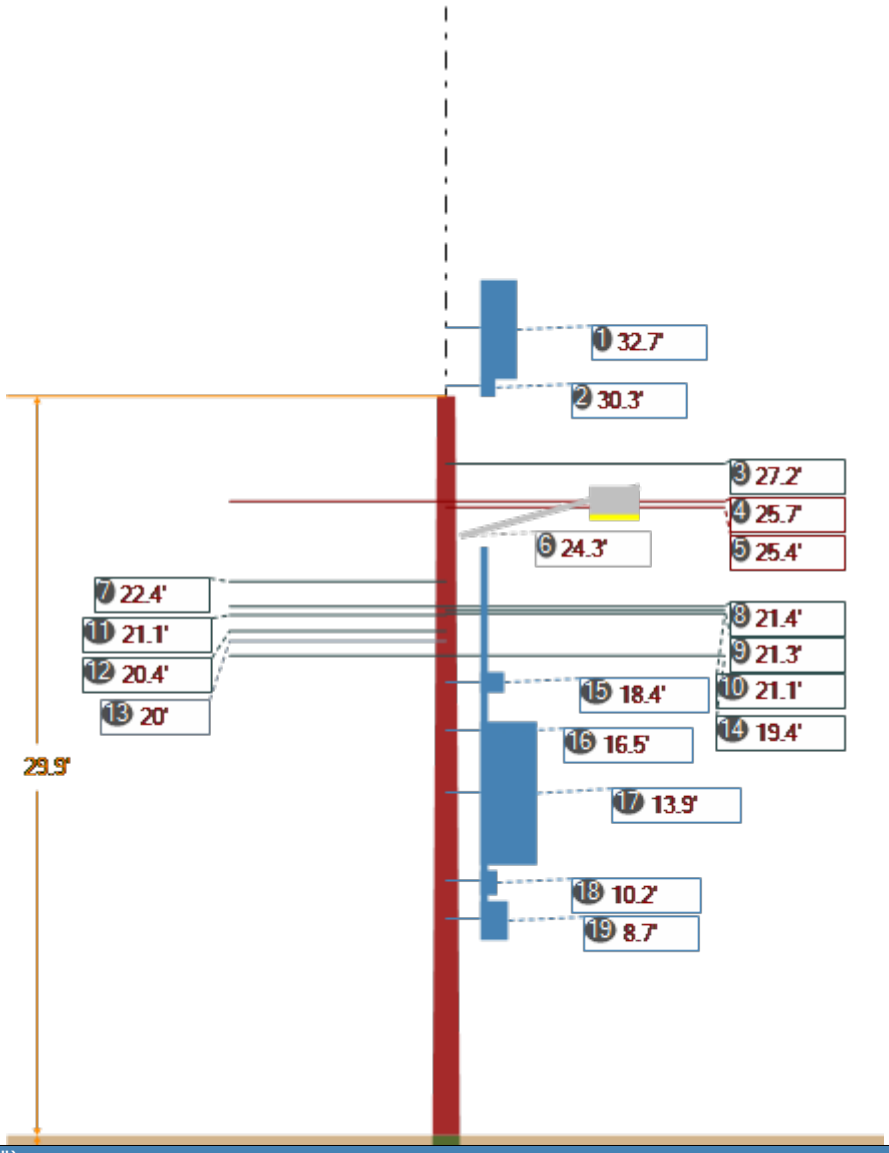
Report Created: 11/14/2023

File: ODAS_2F-29.pplx



1 - 32.7' (392")
Amphenol 6U4MT360X12Fxys4

2 - 30.3' (363.5")
Mount

3 - 27.2' (326.2")
CATV 350° 100' 0.570" (CATV .50)
CATV 350° 100' 0.570" (CATV .50)
CATV 350° 100' 0.570" (CATV .50)
CATV 350° 100' 0.570" (CATV .50)

4 - 25.7' (308")
Secondary 170° 100' 1.030" (TRIPLEX 1/0)
Secondary 350° 100' 1.030" (TRIPLEX 1/0)

5 - 25.4' (305.2")
Secondary 70° 46' 1.030" (TRIPLEX 1/0)
Secondary 90° 46' 1.030" (TRIPLEX 1/0)

6 - 24.3' (291.2")
Streetlight - 6 ft. Arm 6.0 ft arm

7 - 22.4' (269")
CATV 100° 41' 0.570" (CATV .50)

8 - 21.4' (257")
CATV 100° 41' 0.570" (CATV .50)
CATV 140° 85' 0.570" (CATV .50)
CATV 145° 85' 0.570" (CATV .50)
CATV 170° 100' 0.570" (CATV .50)
CATV 350° 100' 0.570" (CATV .50)

9 - 21.3' (255")
CATV 71° 37' 0.570" (CATV .50)

10 - 21.1' (253.6")
CATV 70° 37' 0.570" (CATV .50)
CATV 72° 37' 0.570" (CATV .50)

11 - 21.1' (252.8")
CATV 200° 56' 0.570" (CATV .50)
CATV 230° 56' 0.570" (CATV .50)

12 - 20.4' (245")
CATV 100° 41' 0.570" (CATV .50)
Telco 170° 100' 1.000" (TELE 1.0)

13 - 20' (240.2")
Telco 170° 100' 1.000" (TELE 1.0)

14 - 19.4' (233")
CATV 100° 41' 0.570" (CATV .50)
Telco 170° 100' 1.000" (TELE 1.0)
CATV 320° 85' 0.570" (CATV .50)
CATV 320° 85' 0.570" (CATV .50)
Telco 350° 100' 1.000" (TELE 1.0)

15 - 18.4' (220.2")
Splice Box

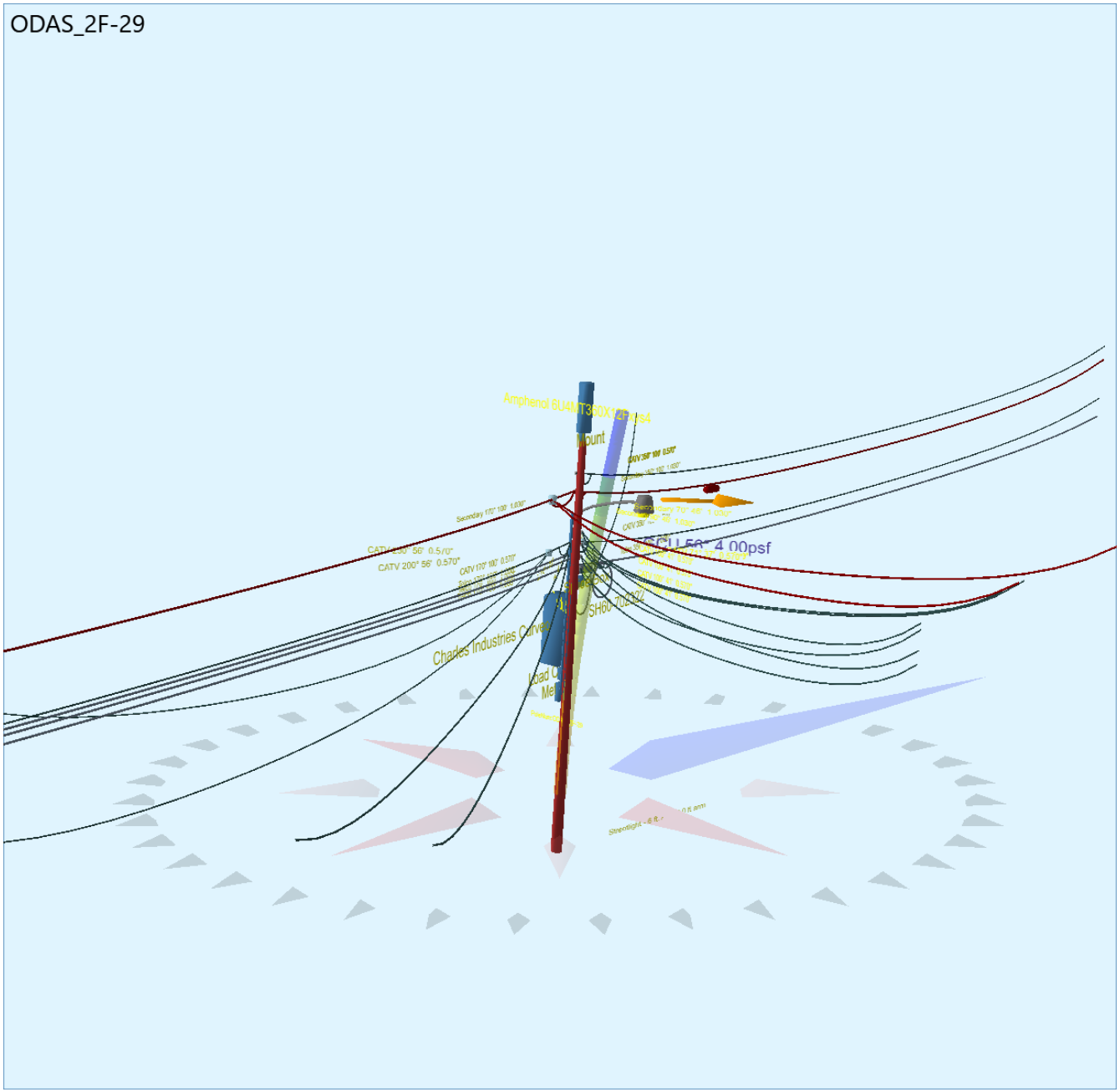
16 - 16.5' (198.2")
Conduit

17 - 13.9' (167.2")
Charles Industries Curved Shroud: SH60-702322

18 - 10.2' (123")
Load Center

19 - 8.7' (104.7")
Meter

ODAS_2F-29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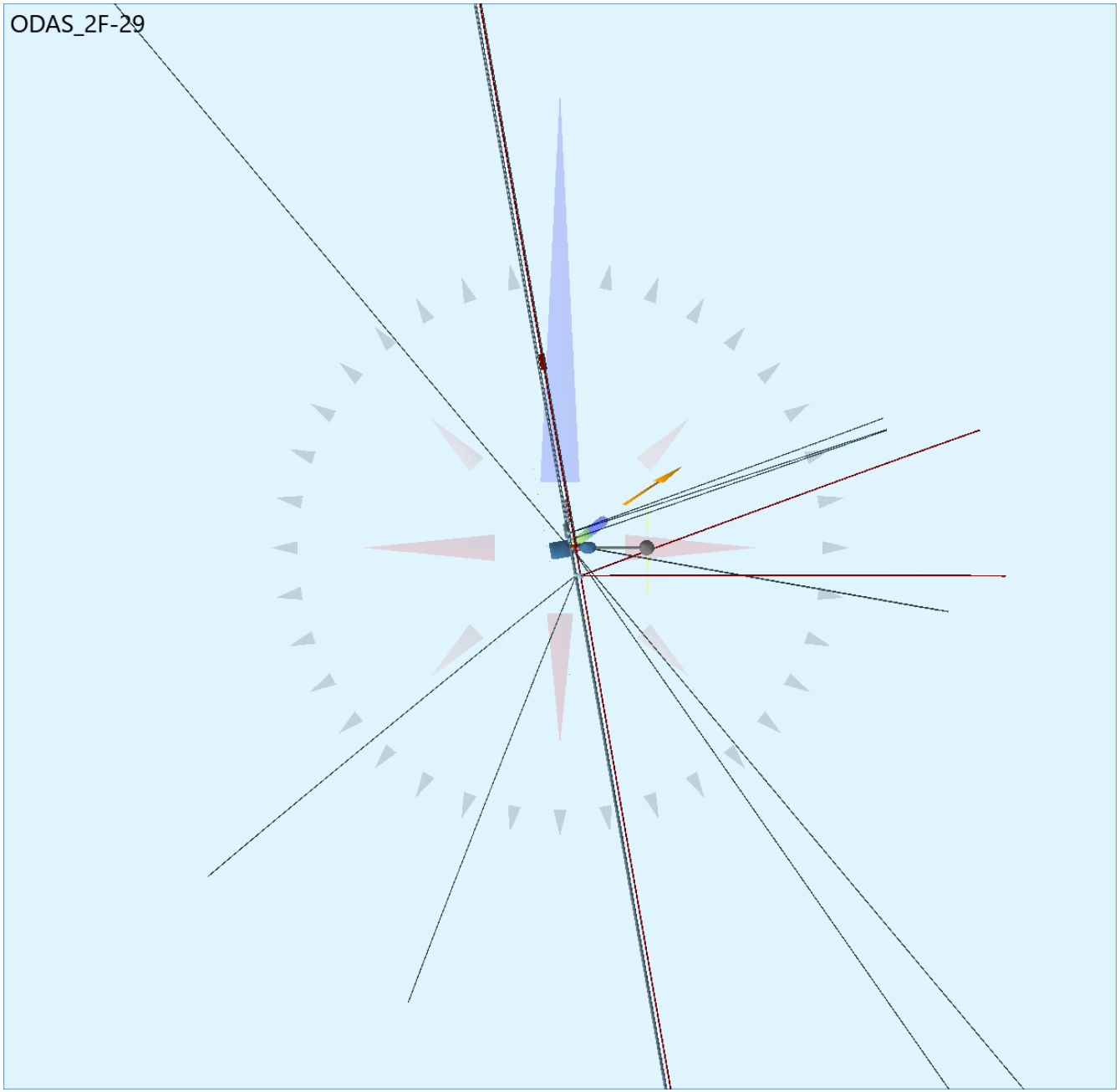
Mount
Chades Industries Curve
SH60-70
4.00psf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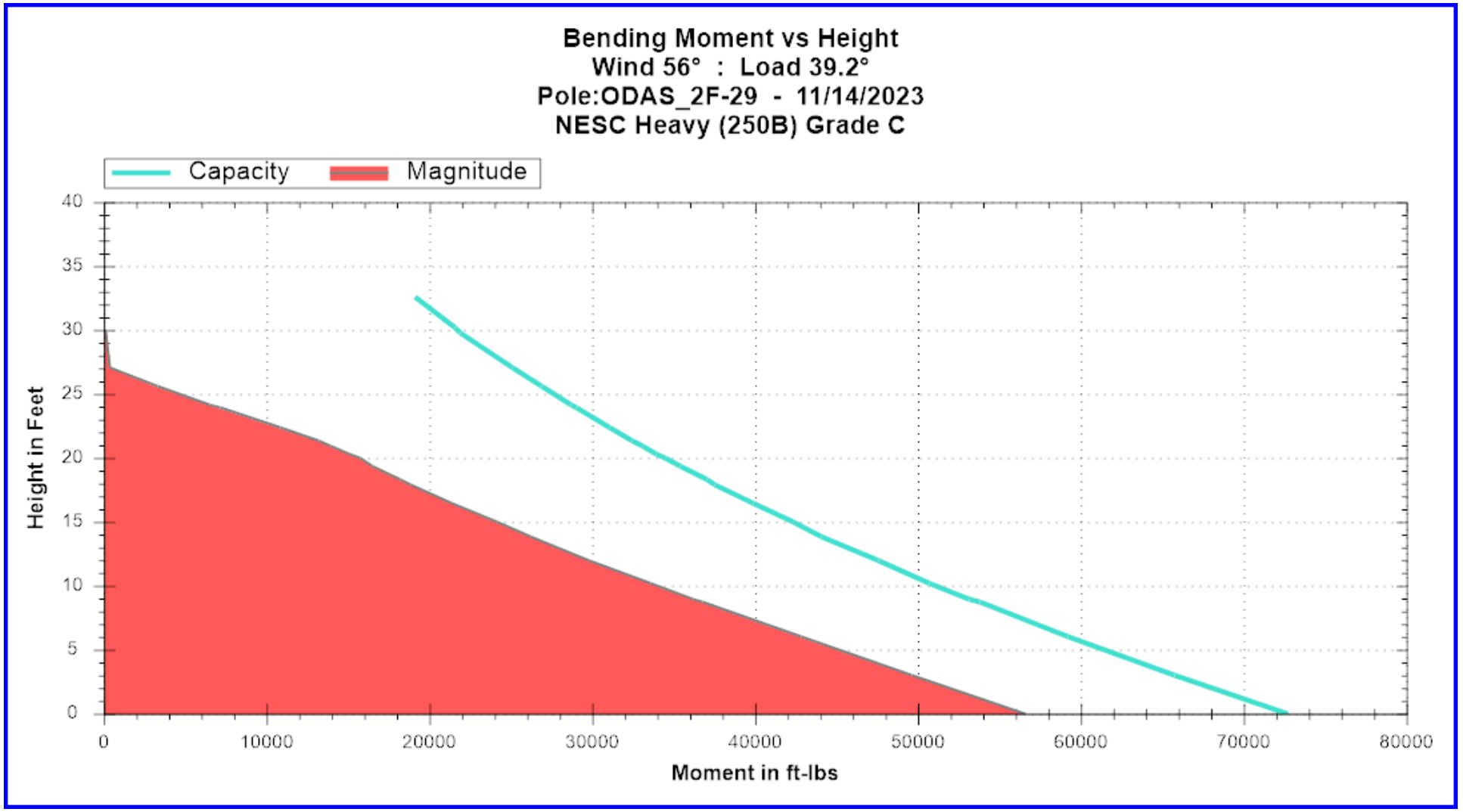
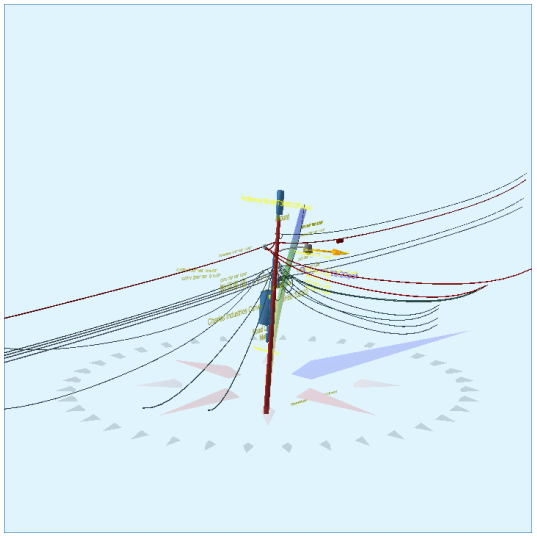
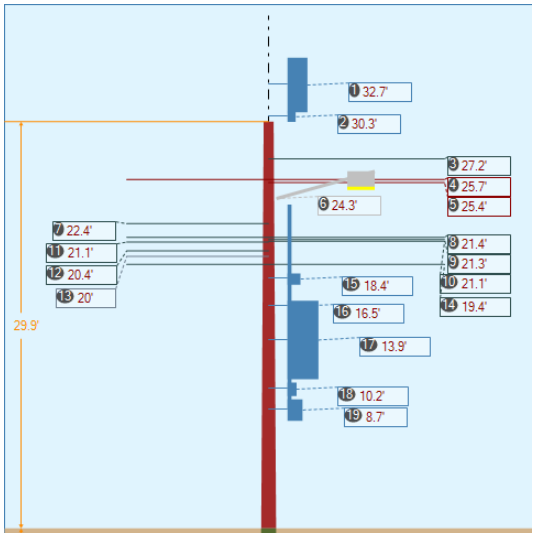

Bending Moment vs Height
Wind 56° : Load 39.2°
Pole:ODAS_2F-29 - 11/14/2023
NESC Heavy (250B) Grade C
Capacity
Magnitude
Height in Feet
Moment in ft-lbs
0
5
10
15
20
25
30
35
40
0
10000
20000
30000
40000
50000
60000
70000
80000

Pole Num:	**ODAS_2F-29**	Pole Length / Class:	**35 / 3**	Code:	**NESC**	Structure Type:	**Unguyed Tangent**
Aux Data 1	**Unset**	Species:	**SOUTHERN PINE**	NESC Rule:	**Rule 250C**	Status	**Unguyed**
Aux Data 2	**Unset**	Setting Depth (ft):	**5.08**	Construction Grade:	**C**	Pole Strength Factor:	**0.75**
Aux Data 3	**Unset**	G/L Circumference (in):	**34.35**	Loading District:	**Special**	Transverse Wind LF:	**0.75**
Aux Data 4	**Unset**	G/L Fiber Stress (psi):	**8,000**	Ice Thickness (in):	**0.00**	Wire Tension LF:	**1.00**
Aux Data 5	**Unset**	Allowable Stress (psi):	**6,000**	Wind Speed (mph):	**105.00**	Vertical LF:	**1.00**
Aux Data 6	**Unset**	Fiber Stress Ht. Reduc:	**No**	Wind Pressure (psf):	**28.22**	Max 250C Wind (mph)	**131.04**
Latitude:		**0.000000 Deg**	Longitude:		**0.000000 Deg**	Elevation:	**0 Feet**





Pole Capacity Utilization (%)		Height (ft)	Wind Angle (deg)
Maximum	**74.3**	0.0	77.9
Groundline	**74.3**	0.0	77.9
Vertical	**5.8**	18.1	77.9

Pole Moments (ft-lb)		Load Angle (deg)	Wind Angle (deg)
Max Cap Util	**47,423**	80.4	77.9
Groundline	**47,423**	80.4	77.9
GL Allowable	**64,160**		

Groundline Load Summary - Reporting Angle Mode: Load - Reporting Angle: 80.4°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
Powers	238	10.1	**6,287**	13.3	**9.8**	**568**	58	1	**569**	**9.5**
Comms	949	40.2	**21,351**	45.0	**33.3**	**1,930**	490	5	**1,935**	**32.2**
GenericEquipments	595	25.2	**10,355**	21.8	**16.1**	**936**	480	5	**941**	**15.7**
Pole	491	20.8	**7,032**	14.8	**11.0**	**636**	823	9	**644**	**10.7**
Streetlights	75	3.2	**2,180**	4.6	**3.4**	**197**	60	1	**198**	**3.3**
SpanAdditions	6	0.3	**126**	0.3	**0.2**	**11**	7	0	**11**	**0.2**
Insulators	4	0.2	**91**	0.2	**0.1**	**8**	50	1	**9**	**0.1**
Pole Load	2,359	100.0	**47,423**	100.0	**73.9**	**4,286**	1,968	21	**4,307**	**71.8**
Pole Reserve Capacity			**16,737**		**26.1**	**1,714**			**1,693**	**28.2**

Load Summary by Owner - Reporting Angle Mode: Load - Reporting Angle: 80.4°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
<Undefined>	1,868	79.2	**40,391**	85.2	**63.0**	**3,651**	1,144	12	**3,663**	**61.0**
Pole	491	20.8	**7,032**	14.8	**11.0**	**636**	823	9	**644**	**10.7**
Totals:	2,359	100.0	**47,423**	100.0	**73.9**	**4,286**	1,968	21	**4,307**	**71.8**

Detailed Load Components:

Power		Owner	Height (ft)	Horiz. Offset (in)	Cable Diameter (in)	Sag at Max Temp (ft)	Cable Weight (lbs/ft)	Lead/Span Length (ft)	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment* (ft-lb)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Secondary	TRIPLEX 1/0		25.67	6.42	1.0300	1.72	0.399	100.0	170.0	100.1	400	66	-11	2,049	2,149
Secondary	TRIPLEX 1/0		25.44	36.57	1.0300	4.01	0.399	46.0	70.0	47.2	27	654	0	22	696
Secondary	TRIPLEX 1/0		25.44	36.57	1.0300	4.01	0.399	46.0	90.0	47.2	27	656	0	32	707
Secondary	TRIPLEX 1/0		25.67	6.42	1.0300	3.23	0.399	100.0	350.0	100.3	187	-31	-11	2,522	2,524
											Totals:	**1,345**	**-22**	**4,625**	**6,077**

Comm		Owner	Height (ft)	Horiz. Offset (in)	Cable Diameter (in)	Sag at Max Temp (ft)	Cable Weight (lbs/ft)	Lead/Span Length (ft)	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment* (ft-lb)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
CATV	CATV .50		27.19	6.33	0.5700	3.25	0.600	100.0	350.0	100.3	255	-45	-16	1,196	1,205
CATV	CATV .50		27.19	6.33	0.5700	3.25	0.600	100.0	350.0	100.3	255	-45	-16	1,167	1,176

CATV	CATV .50	27.19	6.33	0.5700	3.25	0.600	100.0	350.0	100.3	255	-45	-16	1,167	1,176
CATV	CATV .50	27.19	6.33	0.5700	3.25	0.600	100.0	350.0	100.3	255	-45	-16	1,167	1,176
CATV	CATV .50	22.42	6.61	0.5700	4.04	0.600	41.0	100.0	42.4	32	676	7	53	760
CATV	CATV .50	21.42	6.67	0.5700	3.99	0.600	41.0	100.0	42.4	32	646	7	50	725
CATV	CATV .50	21.42	6.67	0.5700	4.14	0.600	85.0	140.0	85.7	138	1,489	-14	594	2,116
CATV	CATV .50	21.42	6.67	0.5700	4.14	0.600	85.0	145.0	85.7	138	1,266	-14	649	1,947
CATV	CATV .50	21.42	6.67	0.5700	2.25	0.600	100.0	170.0	100.1	400	55	-17	906	1,000
CATV	CATV .50	21.07	36.61	0.5700	8.58	0.600	56.0	200.0	60.4	30	-297	-1	360	84
CATV	CATV .50	21.07	36.61	0.5700	8.30	0.600	56.0	230.0	60.1	30	-522	-1	116	-383
CATV	CATV .50	21.42	6.67	0.5700	2.80	0.600	100.0	350.0	100.2	300	-42	-17	906	903
CATV	CATV .50	21.25	13.73	0.5700	4.03	0.600	37.2	71.0	38.7	27	551	-2	7	577
CATV	CATV .50	21.14	22.03	0.5700	4.03	0.600	37.2	70.0	38.7	27	543	-1	9	570
CATV	CATV .50	21.14	22.03	0.5700	4.03	0.600	37.2	72.0	38.7	27	546	-1	5	570
CATV	CATV .50	20.42	6.73	0.5700	3.99	0.600	41.0	100.0	42.4	32	616	6	48	692
Telco	TELE 1.0	20.42	6.73	1.0000	1.97	0.400	100.0	170.0	100.1	400	53	-11	1,475	1,551
Telco	TELE 1.0	20.02	6.76	1.0000	1.97	0.400	100.0	170.0	100.1	400	52	-11	1,442	1,517
CATV	CATV .50	19.42	6.79	0.5700	4.04	0.600	41.0	100.0	42.4	32	586	7	45	658
Telco	TELE 1.0	19.42	6.79	1.0000	1.97	0.400	100.0	170.0	100.1	400	50	-11	1,392	1,465
CATV	CATV .50	19.42	6.79	0.5700	6.08	0.600	85.0	320.0	86.5	92	-901	-14	531	-342
CATV	CATV .50	19.42	6.79	0.5700	6.08	0.600	85.0	320.0	86.5	92	-901	-14	531	-342
Telco	TELE 1.0	19.42	6.79	1.0000	2.26	0.400	100.0	350.0	100.1	300	-38	-11	1,846	1,831
										Totals:	**4,248**	**-178**	**15,661**	**20,635**

GenericEquipment		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Cylinder	Amphenol 6U4MT360X12Fxys4		32.67	0.21	0.0	0.0	42.00	48.20	--	14.60	--	0	3,243	3,361
Cylinder	Mount		30.29	1.36	270.0	0.0	30.00	8.88	--	6.00	--	3	225	307
Box	Splice Box		18.35	6.92	80.0	0.0	10.00	10.00	5.13	--	9.50	6	351	373
Cylinder	Conduit		16.52	5.97	210.0	0.0	100.00	180.00	--	3.00	--	-32	1,098	1,208
Box	Charles Industries Curved Shroud: SH60-702322		13.94	15.35	260.0	0.0	250.00	69.50	21.45	--	22.73	-319	4,255	4,235
Box	Load Center		10.25	7.51	260.0	0.0	40.00	12.00	5.33	--	6.70	-25	159	170
Box	Meter		8.73	7.37	260.0	0.0	10.00	19.00	4.86	--	11.00	-6	353	354
											Totals:	**-372**	**9,684**	**10,008**

Streetlight		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
General	Streetlight - 6 ft. Arm		24.27	4.00	90.0	90.0	60.00	24.00	20.00	3.00	72.00	282	1,701	2,107
											Totals:	**282**	**1,701**	**2,107**

SpanAddition		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Maintenance Loop	Span Addition		18.99	51.00	350.0	350.0	7.00	30.00	30.00	30.00	30.00	0	110	122
											Totals:	**0**	**110**	**122**

Insulator		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Diameter (in)	Unit Length (in)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Bolt	Single Bolt		27.19	0.00	260.0	260.0	5.00	3.00	0.00	-3	0	9
Bolt	Single Bolt		25.67	0.00	260.0	260.0	5.00	3.00	0.00	-3	0	8
Bolt	Single Bolt		22.42	0.00	80.0	80.0	5.00	3.00	0.00	3	0	12
Bolt	Single Bolt		21.42	0.00	80.0	80.0	5.00	3.00	0.00	3	0	12
Bolt	Single Bolt		21.42	0.00	260.0	260.0	5.00	3.00	0.00	-3	0	6
Bolt	Single Bolt		20.42	0.00	80.0	80.0	5.00	3.00	0.00	3	0	12
Bolt	Single Bolt		20.42	0.00	260.0	260.0	5.00	3.00	0.00	-3	0	6
Bolt	Single Bolt		20.02	0.00	260.0	260.0	5.00	3.00	0.00	-3	0	6
Bolt	Single Bolt		19.42	0.00	80.0	80.0	5.00	3.00	0.00	3	0	11
Bolt	Single Bolt		19.42	0.00	260.0	260.0	5.00	3.00	0.00	-3	0	6
									Totals:	**-5**	**0**	**88**

Pole Buckling

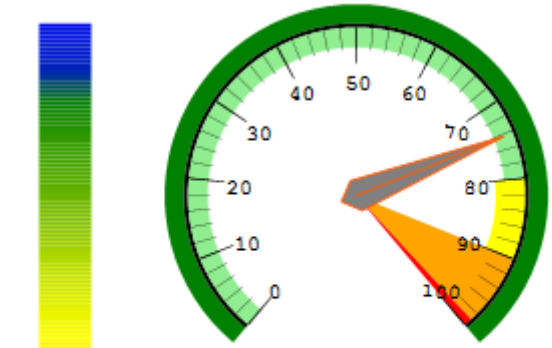
Buckling Constant	Buckling Column Height* (ft)	Buckling Section Height (% Buckling Col. Hgt.)	Buckling Section Diameter (in)	Minimum Buckling Diameter at GL (in)	Diameter at Tip (in)	Diameter at GL (in)	Modulus of Elasticity (psi)	Pole Density (pcf)	Ice Density (pcf)	Pole Tip Height (ft)	Buckling Load Capacity at Height (lbs)	Buckling Load Applied at Height (lbs)	Buckling Load Factor of Safety
2.00	18.05	32.99	10.21	9.87	7.32	10.94	1.60e+6	60.00	57.00	29.92	33,705	**339.25**	**17.24**

O-Calc® Pro Capacity Summary Info

Pole Identification: ODAS_2F-29

Report Created: 11/14/2023

File: ODAS_2F-29.pplx

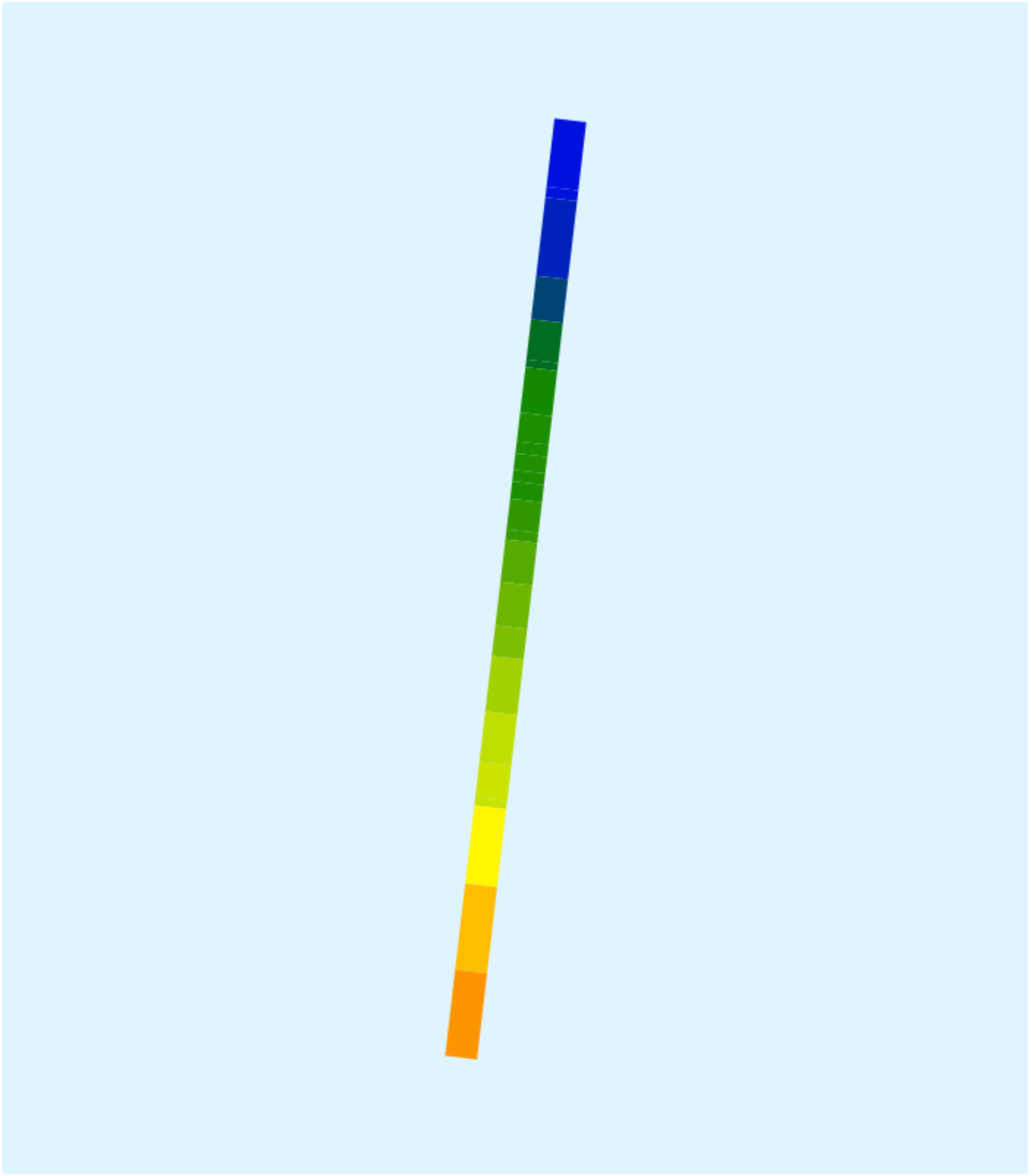


74.3% of Allowed MCU

Unguyed

O-Calc® Pro Heat Map View

Report Created: 11/14/2023

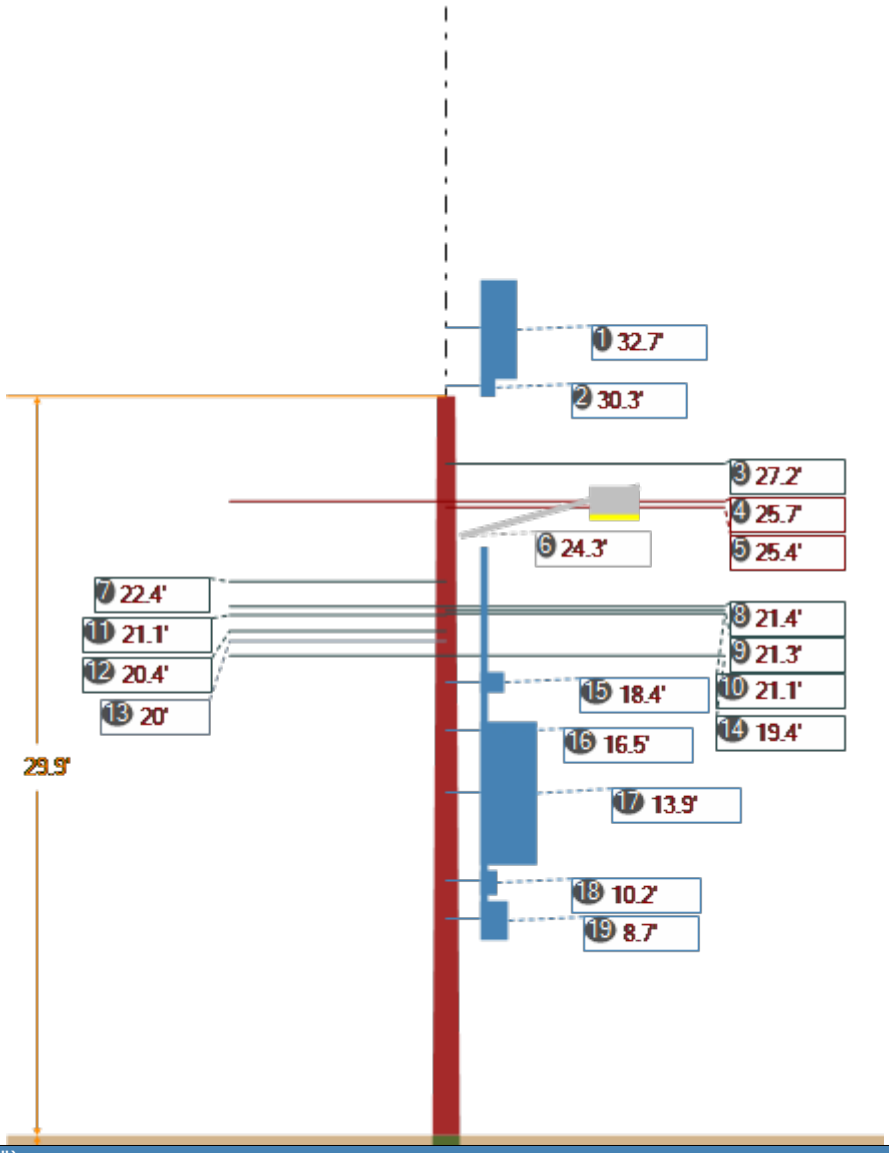


O-Calc® Pro Schematic View

Pole Identification: ODAS_2F-29

Report Created: 11/14/2023

File: ODAS_2F-29.pplx



1 - 32.7' (392")
Amphenol 6U4MT360X12Fxys4

2 - 30.3' (363.5")
Mount

3 - 27.2' (326.2")
CATV 350° 100' 0.570" (CATV .50)
CATV 350° 100' 0.570" (CATV .50)
CATV 350° 100' 0.570" (CATV .50)
CATV 350° 100' 0.570" (CATV .50)

4 - 25.7' (308")
Secondary 170° 100' 1.030" (TRIPLEX 1/0)
Secondary 350° 100' 1.030" (TRIPLEX 1/0)

5 - 25.4' (305.2")
Secondary 70° 46' 1.030" (TRIPLEX 1/0)
Secondary 90° 46' 1.030" (TRIPLEX 1/0)

6 - 24.3' (291.2")
Streetlight - 6 ft. Arm 6.0 ft arm

7 - 22.4' (269")
CATV 100° 41' 0.570" (CATV .50)

8 - 21.4' (257")
CATV 100° 41' 0.570" (CATV .50)
CATV 140° 85' 0.570" (CATV .50)
CATV 145° 85' 0.570" (CATV .50)
CATV 170° 100' 0.570" (CATV .50)
CATV 350° 100' 0.570" (CATV .50)

9 - 21.3' (255")
CATV 71° 37' 0.570" (CATV .50)

10 - 21.1' (253.6")
CATV 70° 37' 0.570" (CATV .50)
CATV 72° 37' 0.570" (CATV .50)

11 - 21.1' (252.8")
CATV 200° 56' 0.570" (CATV .50)
CATV 230° 56' 0.570" (CATV .50)

12 - 20.4' (245")
CATV 100° 41' 0.570" (CATV .50)
Telco 170° 100' 1.000" (TELE 1.0)

13 - 20' (240.2")
Telco 170° 100' 1.000" (TELE 1.0)

14 - 19.4' (233")
CATV 100° 41' 0.570" (CATV .50)
Telco 170° 100' 1.000" (TELE 1.0)
CATV 320° 85' 0.570" (CATV .50)
CATV 320° 85' 0.570" (CATV .50)
Telco 350° 100' 1.000" (TELE 1.0)

15 - 18.4' (220.2")
Splice Box

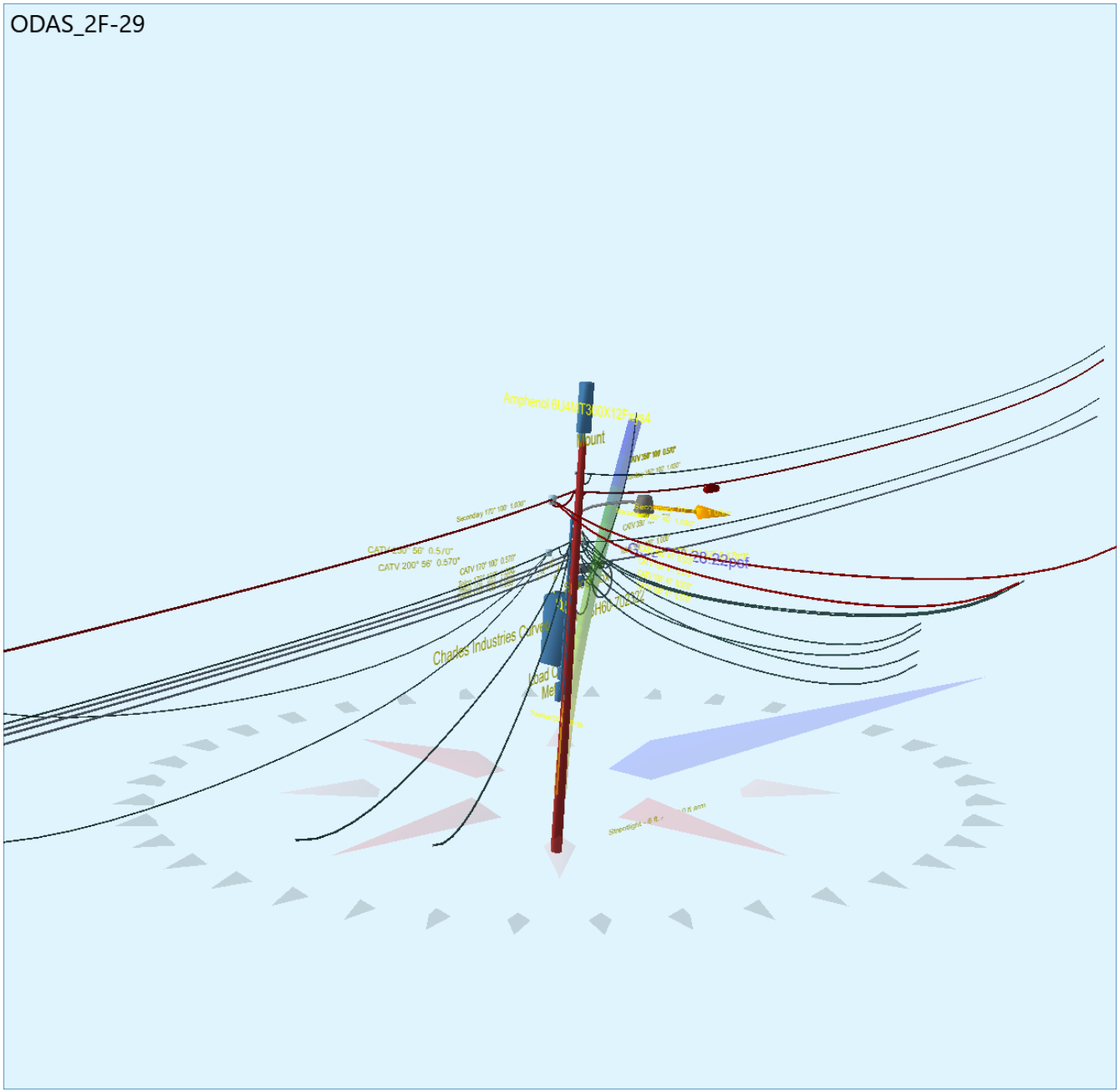
16 - 16.5' (198.2")
Conduit

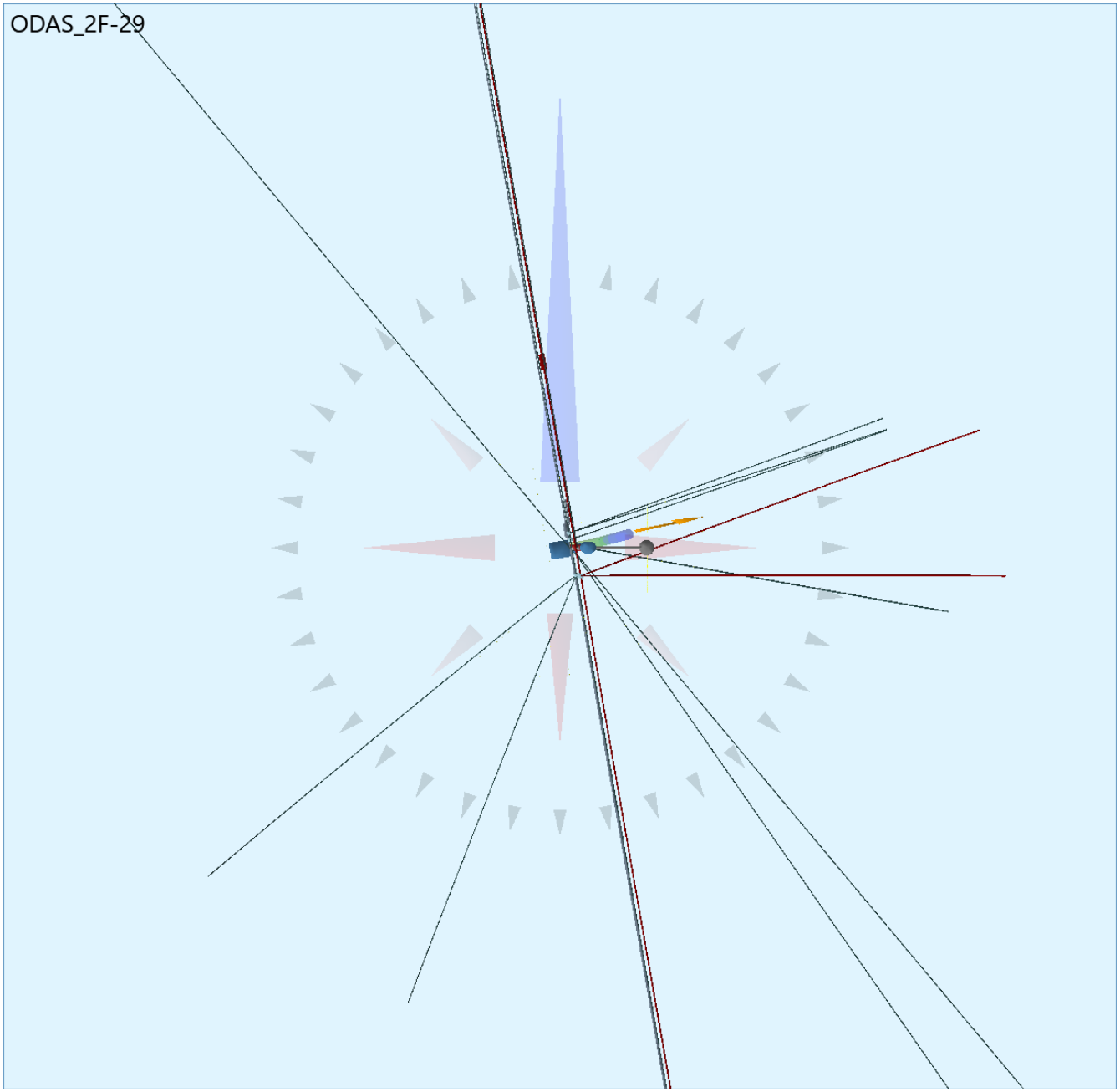
17 - 13.9' (167.2")
Charles Industries Curved Shroud: SH60-702322

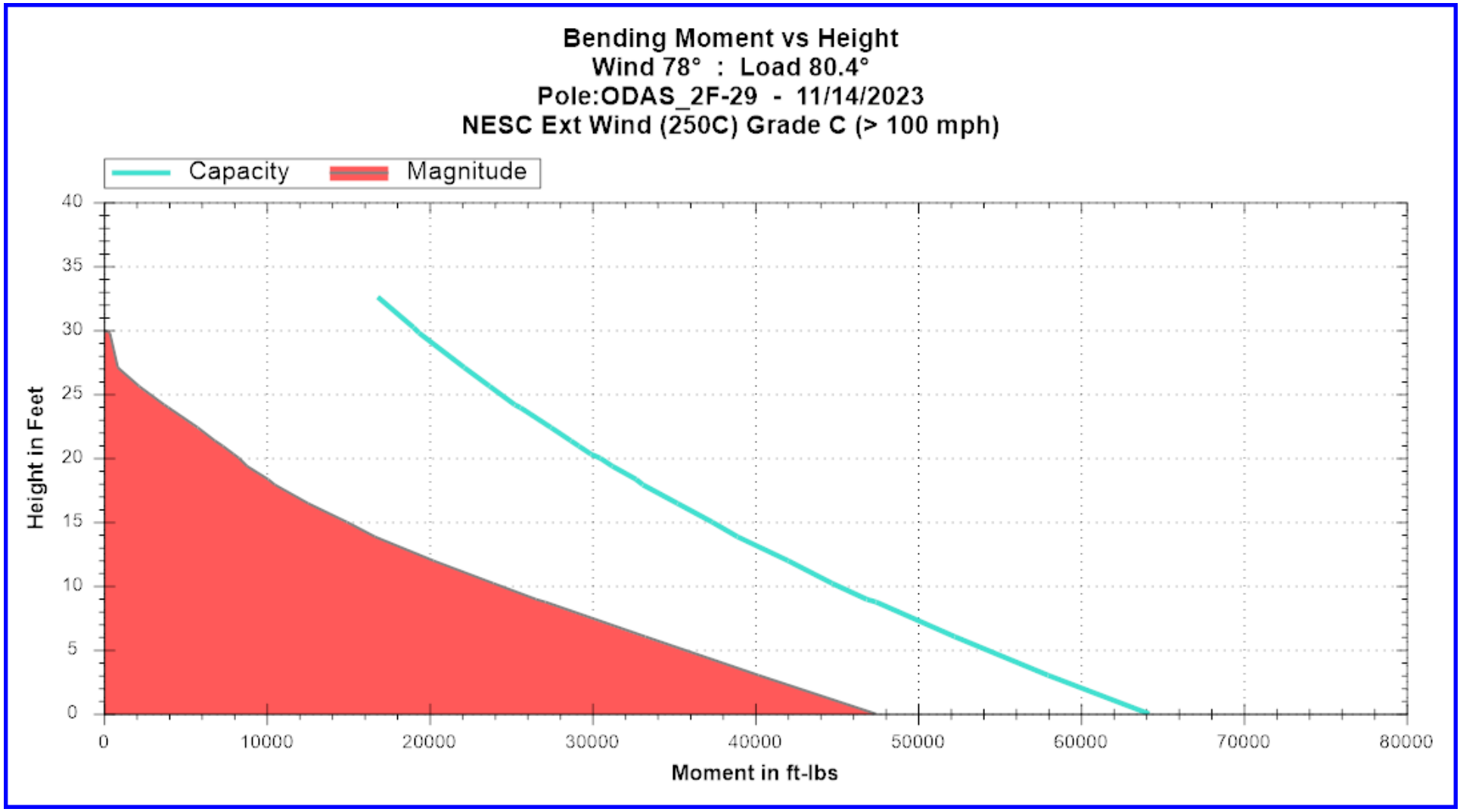
18 - 10.2' (123")
Load Center

19 - 8.7' (104.7")
Meter

ODAS_2F-29


Amphenol 6U4MT360X12F-4s4
Mount
CATV 200° 56° 0.57"
Chades Industries Curve


ODAS_2F-29


Bending Moment vs Height
Wind 78° : Load 80.4°
Pole:ODAS_2F-29 - 11/14/2023
NESC Ext Wind (250C) Grade C (> 100 mph)
Capacity
Magnitude
Height in Feet
Moment in ft-lbs
0
5
10
15
20
25
30
35
40
0
10000
20000
30000
40000
50000
60000
70000
80000

⚠ This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback.

ℹ The ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Hazards by Location

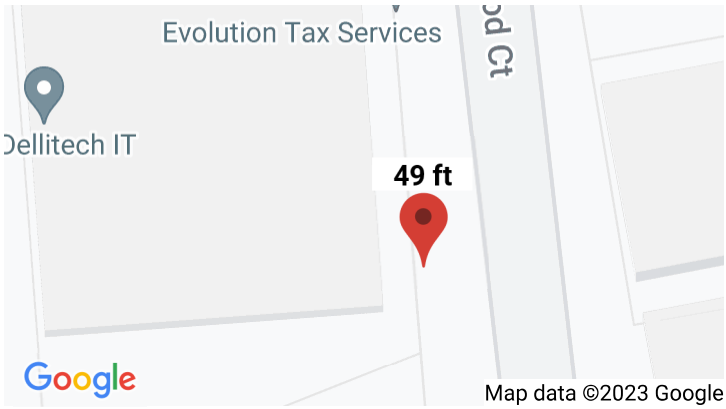
Search Information

Coordinates: 42.418433, -71.064880

Elevation: 49 ft

Timestamp: 2023-11-14T14:04:58.646Z

Hazard Type: Wind



ASCE 7-16

MRI 10-Year	75 mph
MRI 25-Year	84 mph
MRI 50-Year	91 mph
MRI 100-Year	98 mph
Risk Category I	109 mph
Risk Category II	119 mph
Risk Category III	128 mph
Risk Category IV	⚠ 132 mph

You are in a wind-borne debris region if you are also within 1 mile of the coastal mean high water line.

ASCE 7-10

MRI 10-Year	78 mph
MRI 25-Year	88 mph
MRI 50-Year	96 mph
MRI 100-Year	103 mph
Risk Category I	117 mph
Risk Category II	127 mph
Risk Category III-IV	⚠ 138 mph

If the structure under consideration is a healthcare facility and you are also within 1 mile of the coastal mean high water line, you are in a wind-borne debris region. If other occupancy, use the Risk Category II basic wind speed contours to determine if you are in a wind-borne debris region.

ASCE 7-05

ASCE 7-05 Wind Speed	105 mph

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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