



NB+C Engineering Services

Proposed Utility Pole Node

Prepared for Crown Castle Mid-Atlantic



SITE INFORMATION

Address

1006 Larch Avenue

Takoma Park, MD 20912

Latitude: 38.977576°, Longitude: -76.991567°

Site Name

MNG-423

POLE TAG ID

802417-3164

PEPCO FACILITY ID

802416-310640

NB+C Project Number

100505

Date

October 7, 2021 – REV 2

October 7, 2021

Terrence L. Myers
Project Manager – MDV Market
Crown Castle
10980 Grantchester Way, Suite 4000
Columbia, MD 21044

Re: Utility Pole Structural Analysis Report

Dear Mr. Myers,

Per your request, NB+C Engineering Services is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the existing utility pole listed on Table 1 below to withstand proposed loading listed in Table 2 of this report. Information we received for this analysis includes:

- Existing pole survey data prepared by NB+C ES personnel dated November 12, 2018
- Construction drawings prepared by NB+C ES dated October 7, 2021

Table 1 - Existing Utility Poles

Pole Length (Ft)	Pole Species	Pole Class (assumed)	Pole Height above Grade (ft)	Embedment Depth (ft)	% Capacity (worst case loading)	Pass / Fail
50	SP	3	44	6	67.9	Pass

LOADING DUE TO STRAND MOUNT

- 2000 lbs of Tension load was assumed on strand mounts supporting proposed Radio.
- Span-Head guys are assumed to be Tensioned with equal Tension force as the strand mount cables.

APPLICABLE CODES AND STANDARDS

The proposed structure was analyzed/designed per the provisions of following applicable codes and standards:

- *Maryland Uniform Statewide Building Code incorporating IBC2018*
- *Minimum Design Loads for Buildings and Other Structures ASCE/SEI 7-10*
- *2012 National Electric Safety Code.*

ANALYSIS

Design Loads:

- Occupancy Category: II
- Exposure: B
- Design Wind Pressure: 20.74 psf.

CONCLUSION

The existing pole has been analyzed for the governing loading conditions across the planned Distributed Antenna System. Based on the performed analysis on the utility pole for applicable gravity and lateral loads, we have determined that the existing utility wood pole is **adequate** to support the proposed Wireless loading. The results of our analysis are included in the attached documentation. Please refer to construction drawings prepared by **NB+C ES** for additional information and structural details.

We at NB+C Engineering Services appreciate the opportunity of providing our continuing professional services to Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

NB+C Engineering Services

Prepared by: Joshua Payne

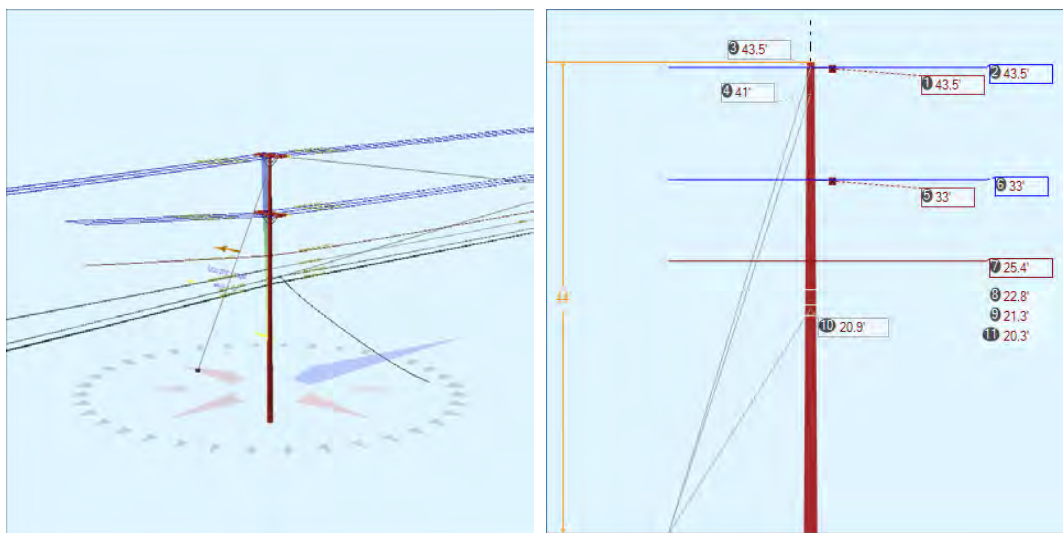
Respectfully submitted by:

Peter A. Ludas, P.E.
Senior Project Engineer
MD License # 50702



I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 50702 EXPIRATION DATE: 3/15/2023

Pole Num:	MNG-423	Pole Length / Class:	50 / 3	Code:	NESC	Structure Type:	Guyed Tangent
Aux Data 1	Unset	Species:	SOUTHERN PINE	NESC Rule:	Rule 250B	Status	Guy Wires Adequate
Aux Data 2	Unset	Setting Depth (ft):	6.00	Construction Grade:	C	Pole Strength Factor:	0.85
Aux Data 3	Unset	G/L Circumference (in):	39.00	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:	1.30
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	67.9	0.0	272.7
Groundline	67.9	0.0	272.7
Vertical	3.1	26.0	135.0

Pole Moments (ft-lb)		Load Angle (deg)	Wind Angle (deg)
Max Cap Util	71,373	283.5	272.7
Groundline	71,373	283.5	272.7
GL Allowable	106,432		

Guy System Component Summary				Load From Worst Wind Angle on Pole		Individual Maximum Load	
Description	Lead Length (ft)	Lead Angle (deg)	Height (ft)	Nominal Capacity (%)	Wind Angle (deg)	Max Load Capacity (%)	Wind Angle (deg)
? Anchor	136.0	0.0		0.0	272.7	0.0	0.0
? EHS 3/8 (CrossarmSpan)			43.5	0.0	272.7	0.0	0.0
? EHS 3/8 (CrossarmSpan)			20.9	0.0	272.7	0.0	0.0
? Expanding - 10" - Soil Class 6	20.0	270.0		0.0	272.7	7.5	90.0
? EHS 1/4 (Down)			41.0	0.0	272.7	20.5	90.0
System Capacity Summary:				Adequate		Adequate	

Groundline Load Summary - Reporting Angle Mode: Load - Reporting Angle: 283.5°

	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	2,090	88.7	64,667	90.6	60.8	4,137	1,140	9	4,146	61.0
Comms	-127	-5.4	-3,618	-5.1	-3.4	-232	2,373	20	-212	-3.1
GuyBraces	108	4.6	3,511	4.9	3.3	225	132	1	226	3.3
Pole	249	10.6	5,388	7.6	5.1	345	2,723	22	367	5.4
Crossarms	6	0.3	231	0.3	0.2	15	350	3	18	0.3
Insulators	32	1.3	1,195	1.7	1.1	76	281	2	79	1.2
Pole Load	2,357	100.0	71,373	100.0	67.1	4,566	6,999	58	4,623	68.0
Pole Reserve Capacity			35,059		32.9	2,235			2,177	32.0

Load Summary by Owner - Reporting Angle Mode: Load - Reporting Angle: 283.5°

	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>	2,108	89.4	65,985	92.5	62.0	4,221	4,276	35	4,256	62.6
-	249	10.6	5,388	7.6	5.1	345	2,723	22	367	5.4
Totals:	2,357	100.0	71,373	100.0	67.1	4,566	6,999	58	4,623	68.0

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)
Primary	ACSR 2/0 AWG 6/1 QUAIL	43.50	16.94	0.4470	0.70	0.183	136.0	0.0	136.0	1,500	19,845	7	2,425	22,277
Primary	ACSR 2/0 AWG 6/1 QUAIL	43.50	36.21	0.4470	0.70	0.183	136.0	0.0	136.0	1,500	19,845	30	2,425	22,300
Primary	ACSR 2/0 AWG 6/1 QUAIL	43.50	36.21	0.4470	0.70	0.183	136.0	0.0	136.0	1,500	19,845	-23	2,425	22,247
Primary	ACSR 2/0 AWG 6/1 QUAIL	43.50	36.21	0.4470	0.92	0.183	160.0	174.0	160.0	1,500	-28,357	-35	2,737	-25,655
Primary	ACSR 2/0 AWG 6/1 QUAIL	43.50	36.21	0.4470	0.92	0.183	160.0	174.0	160.0	1,500	-28,357	27	2,737	-25,593
Primary	ACSR 2/0 AWG 6/1 QUAIL	43.50	16.94	0.4470	0.92	0.183	160.0	174.0	160.0	1,500	-28,357	-8	2,737	-25,628
Primary	ACSR 2/0 AWG 6/1 QUAIL	33.00	17.55	0.4470	1.13	0.183	136.0	0.0	136.0	1,000	10,037	8	1,840	11,884

Primary	ACSR 2/0 AWG 6/1 QUAIL	33.00	36.50	0.4470	1.13	0.183	136.0	0.0	136.0	1,000	10,037	34	1,840	11,911
Primary	ACSR 2/0 AWG 6/1 QUAIL	33.00	36.50	0.4470	1.13	0.183	136.0	0.0	136.0	1,000	10,037	-26	1,840	11,850
Primary	ACSR 2/0 AWG 6/1 QUAIL	33.00	36.50	0.4470	0.18	0.183	34.0	208.0	34.0	1,000	10,720	-9	414	11,125
Primary	ACSR 2/0 AWG 6/1 QUAIL	33.00	36.50	0.4470	0.18	0.183	34.0	208.0	34.0	1,000	10,720	7	414	11,141
Primary	ACSR 2/0 AWG 6/1 QUAIL	33.00	17.55	0.4470	0.18	0.183	34.0	208.0	34.0	1,000	10,720	-2	414	11,132
Secondary	DUPLEX 6 AWG	25.43	6.72	0.5370	1.61	0.071	136.0	0.0	136.0	300	2,320	-50	1,506	3,776
Secondary	DUPLEX 6 AWG	25.43	7.25	0.5370	0.39	0.071	34.0	208.0	34.0	200	1,652	-14	339	1,978
										Totals:	40,706	-54	24,092	64,744

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)
Overlashed Bundle	10M	22.75	7.39	0.3060	1.04	0.165	120.0	180.0	120.0	2,000	-13,838	40	1,159	-12,640
Telco	144ct Fiber	22.72	7.40	0.6200		0.103	120.0	180.0	120.0			35	385	421
Telco	100 pr	22.68	7.40	1.0400		0.691	120.0	180.0	120.0			76	385	460
Overlashed Bundle	10M	22.75	7.39	0.3060	0.17	0.165	115.0	0.0	115.0	2,000	13,838	45	995	14,879
Overlashed Bundle	6M	21.33	7.47	0.2420	1.61	0.104	136.0	0.0	136.0	1,200	7,785	-41	1,172	8,916
CATV	CATV .50	21.31	7.74	0.5700		0.600	136.0	0.0	136.0			-82	350	267
CATV	CATV .50	21.26	25.61	0.5700	1.61	0.600	73.0	120.0	73.1	300	-7,835	-3	91	-7,746
Overlashed Bundle	6M	21.33	7.47	0.2420	2.17	0.104	159.0	174.0	159.0	1,200	-11,124	-48	1,314	-9,857
CATV	CATV .50	21.31	7.74	0.5700		0.600	159.0	174.0	159.0			-96	392	296
Overlashed Bundle	6M	20.33	7.53	0.2420	7.35	0.104	136.0	0.0	136.0	1,200	7,420	-31	1,084	8,472
CATV	CATV .75	20.32	6.95	1.0700		0.900	136.0	0.0	136.0			-87	300	213
CATV	CATV .50	20.32	7.87	0.5700		0.600	136.0	0.0	136.0			-73	300	227
CATV	CATV .50	20.27	7.70	0.5700		0.600	136.0	0.0	136.0			-72	300	228
CATV	CATV .75	20.23	6.96	1.0700		0.900	136.0	0.0	136.0			-87	299	212
CATV	CATV .50	20.23	7.72	0.5700		0.600	136.0	0.0	136.0			-72	299	227
Overlashed Bundle	6M	20.33	7.53	0.2420	10.00	0.104	159.0	174.0	159.0	1,200	-10,602	-36	1,216	-9,423
CATV	CATV .75	20.32	6.95	1.0700		0.900	159.0	174.0	159.0			-102	337	235
CATV	CATV .50	20.32	7.87	0.5700		0.600	159.0	174.0	159.0			-85	337	252
CATV	CATV .50	20.27	7.70	0.5700		0.600	159.0	174.0	159.0			-84	336	253
CATV	CATV .75	20.23	6.96	1.0700		0.900	159.0	174.0	159.0			-102	336	233
CATV	CATV .50	20.23	7.72	0.5700		0.600	159.0	174.0	159.0			-84	335	252
										Totals:	-14,356	-991	11,724	-3,623

Crossarm	Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Length (in)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
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Normal	CROSSARM 3-1/2 X 4-1/2 X 7	43.50	5.44	0.0	0.0	46.00	4.50	3.50	84.00	0	131	131
Normal	CROSSARM 3-1/2 X 4-1/2 X 7	33.00	6.05	0.0	0.0	46.00	4.50	3.50	84.00	0	100	100
Totals:										0	231	231

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)
Suspension	Suspension 11.50"		43.50	0.00	0.0	0.0	11.00	4.75	11.50	7	113	120
Suspension	Suspension 11.50"		43.50	-32.00	279.6	0.0	11.00	4.75	11.50	61	113	175
Suspension	Suspension 11.50"		43.50	32.00	80.4	0.0	11.00	4.75	11.50	-47	113	66
Suspension	Suspension 11.50"		43.50	32.00	99.6	180.0	11.00	4.75	11.50	-61	113	52
Suspension	Suspension 11.50"		43.50	-32.00	260.4	180.0	11.00	4.75	11.50	47	113	161
Suspension	Suspension 11.50"		43.50	0.00	180.0	180.0	11.00	4.75	11.50	-7	113	107
Suspension	Suspension 11.50"		33.00	0.00	0.0	0.0	11.00	4.75	11.50	7	86	93
Suspension	Suspension 11.50"		33.00	-32.00	280.7	0.0	11.00	4.75	11.50	61	86	147
Suspension	Suspension 11.50"		33.00	32.00	79.3	0.0	11.00	4.75	11.50	-47	86	39
Suspension	Suspension 11.50"		33.00	32.00	100.7	180.0	11.00	4.75	11.50	-61	86	25
Suspension	Suspension 11.50"		33.00	-32.00	259.3	180.0	11.00	4.75	11.50	47	86	133
Suspension	Suspension 11.50"		33.00	0.00	180.0	180.0	11.00	4.75	11.50	-7	86	79
Spool	Spool 2.5"		25.50	0.00	90.0	0.0	1.00	2.50	2.12	-1	6	5
Bolt	Overlashed Bundle		22.75	0.00	270.0	270.0	5.00	3.00	0.00	6	0	6
Bolt	Three Bolt		21.33	0.00	90.0	0.0	5.00	3.00	0.00	-6	0	-6
Bolt	Three Bolt		20.33	0.00	90.0	0.0	5.00	3.00	0.00	-6	0	-6
									Totals:	-7	1,203	1,196

Guy Wire and Brace	Owner	Attach Height (ft)	End Height (ft)	Lead/Span Length (ft)	Wire Diameter (in)	Percent Solid (%)	Lead Angle (deg)	Incline Angle (deg)	Wire Weight (lbs/ft)	Rest Length (ft)	Stretch Length (in)
EHS 3/8	CrossarmSpan	43.50	0.00	136.00	0.375	75.00	0.0	8.4	0.273	135.66	0.00
EHS 3/8	CrossarmSpan	20.92	0.00	136.00	0.375	75.00	0.0	-4.2	0.273	133.14	0.00
EHS 1/4	Down	41.00	0.00	20.00	0.25	75.00	270.0	63.8	0.121	50.95	0.00

Guy Wire and Brace (Loads and Reactions)		Elastic Modulus (psi)	Rated Tensile Strength (lbs)	Guy Strength Factor	Allowable Tension (lbs)	Initial Tension (lbs)	Loaded Tension*2 (lbs)	Maximum Tension² (lbs)	Applied Tension³ (lbs)	Vertical Load (lbs)	Shear Load In Guy Dir (lbs)	Shear Load At Report Angle (lbs)	Moment at GL³ (ft-lb)
EHS 3/8	CrossarmSpan	2.30e+7	15,400	0.90	13,860	700	0	0	0	0	0	0	2,352
EHS 3/8	CrossarmSpan	2.30e+7	15,400	0.90	13,860	700	0	0	0	0	0	0	1,111
EHS 1/4	Down	2.30e+7	6,650	0.90	5,985	700	1,230	1,118	0	0	0	0	52
									Totals:	0	0	0	3,515

Anchor/Rod Load Summary	Owner	Rod Length AGL (in)	Lead Length (ft)	Lead Angle (deg)	Strength of Assembly (lbs)	Anchor/Rod Strength Factor	Allowable Load (lbs)	Max Load ² (lbs)	Load at Pole MCU ³ (lbs)	Max Required Capacity ² (%)
Anchor		30.00	136.00	0.0	20,000	1.00	20,000	0	0	0.0
Expanding - 10" - Soil Class 6		0.00	20.00	270.0	16,500	1.00	16,500	1,230	0	7.5

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	
0.71	26.00	33.64	11.40	12.96	7.32	12.42	1.60e+6	60.00	57.00	44.00	228,783	2257.85	32.26	

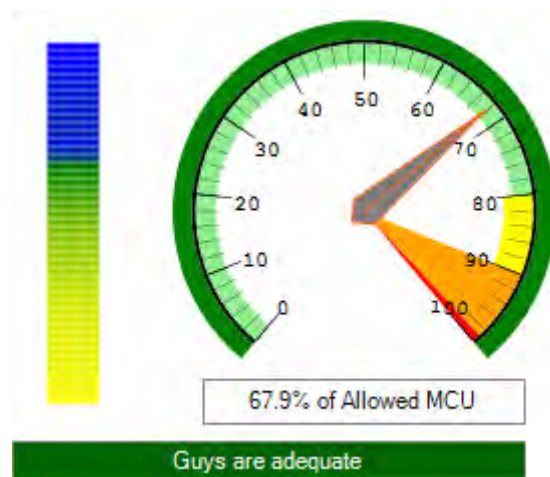
Notes		
Date	Author	Description
12/7/2015	bmesfin	Assumptions
<p>ASSUMPTIONS :</p> <p>The analysis contained within this report is based on the pole capacity as prescribed in the governing codes. The validity and accuracy of the analysis within is limited by the accuracy of the information it is based on. The structural analysis is based on the following assumptions.</p> <ol style="list-style-type: none"> 1. The pole was built and maintained in accordance with the manufacturer's specifications. The structure is assumed to be plumb, in good condition and essentially as erected. 2. The member size dimensions and sections are accurate as supplied. 3. The wood pole evaluated is Southern Pine with capacity of 8000psi. 4. The soil at this locations have normal (average) soil properties. 5. All wire types, sizes, heights and wind spans were determined from photos obtained during a site visit. 6. All wire Tension forces applied were assumed based on slack (sag) observed during the site visit. <p>If any of these assumptions is not valid or has been made in error, this analysis may be affected, and NB+C ES should be allowed to review any new information to determine its effect on the structural integrity of the tower.</p>		

O-Calc® Pro Capacity Summary Info

Pole Identification: MNG-423

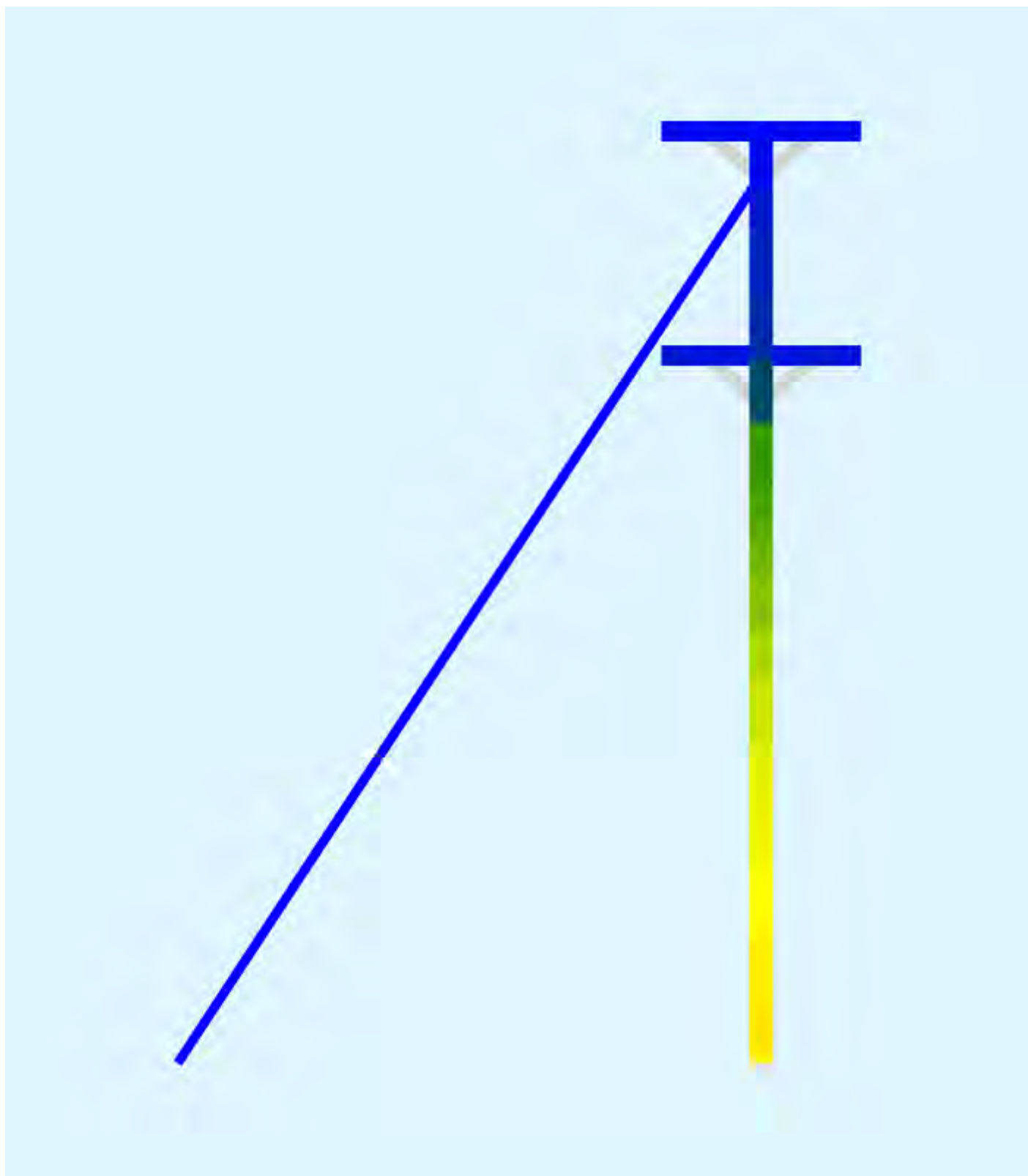
Report Created: 6/17/2021

File: MNG-423_Unguyed with Proposed Equipment.pplx



O-Calc® Pro Heat Map View

Report Created: 6/17/2021

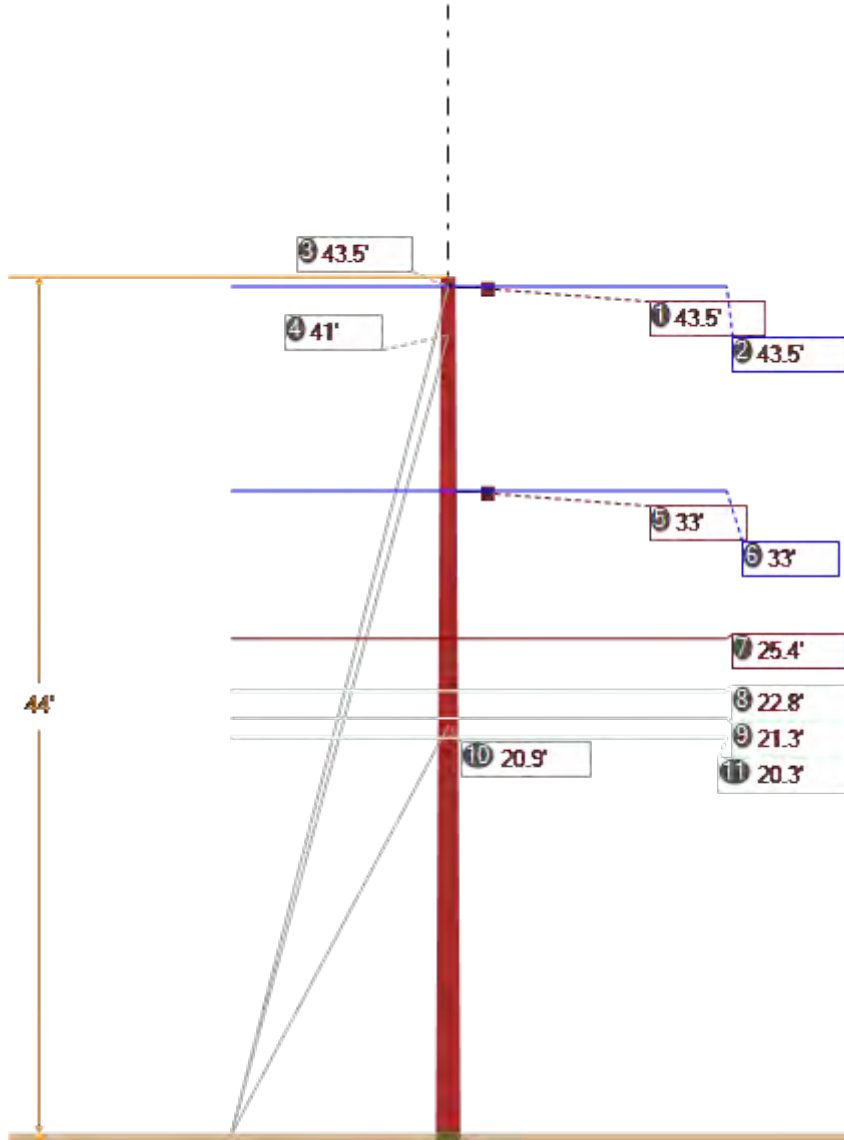


O-Calc® Pro Schematic View

Pole Identification: MNG-423

Report Created: 6/17/2021

File: MNG-423_Unguyed with Proposed Equipment.pplx

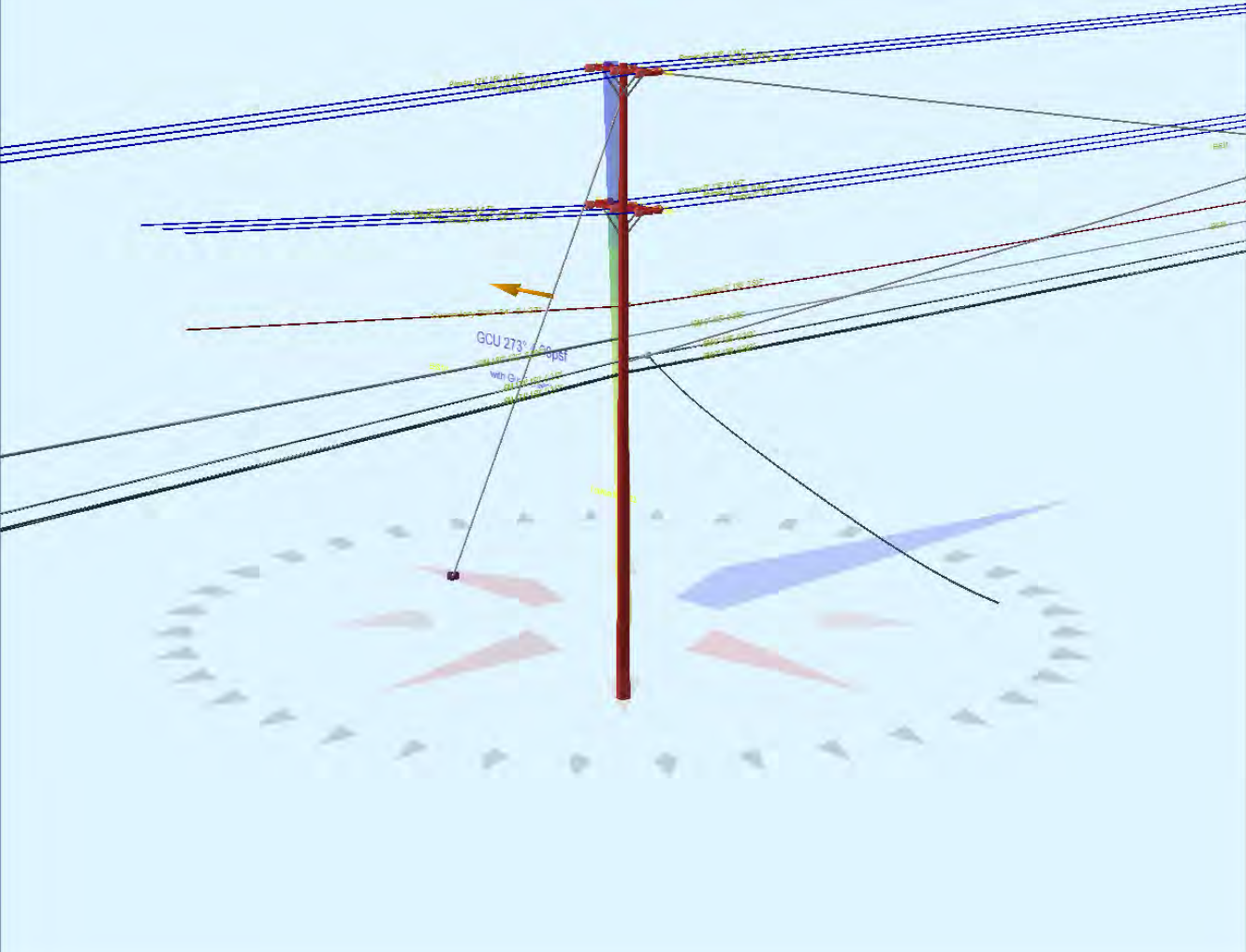


1 - 43.5' (522")	Normal 7ft 3.5in x 4.5in
2 - 43.5' (522")	Primary 0° 136' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 0° 136' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 0° 136' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 174° 160' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 174° 160' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 174° 160' 0.447" (ACSR 2/0 AWG 6/1 QUAIL)
3 - 43.5' (522")	EHS 3/8 Crossarmspan Guy 43.5 ft hgt
4 - 41' (492")	EHS 1/4 Down Guy 41.0 ft hgt, 64.0° angle
5 - 33' (396")	Normal 7ft 3.5in x 4.5in

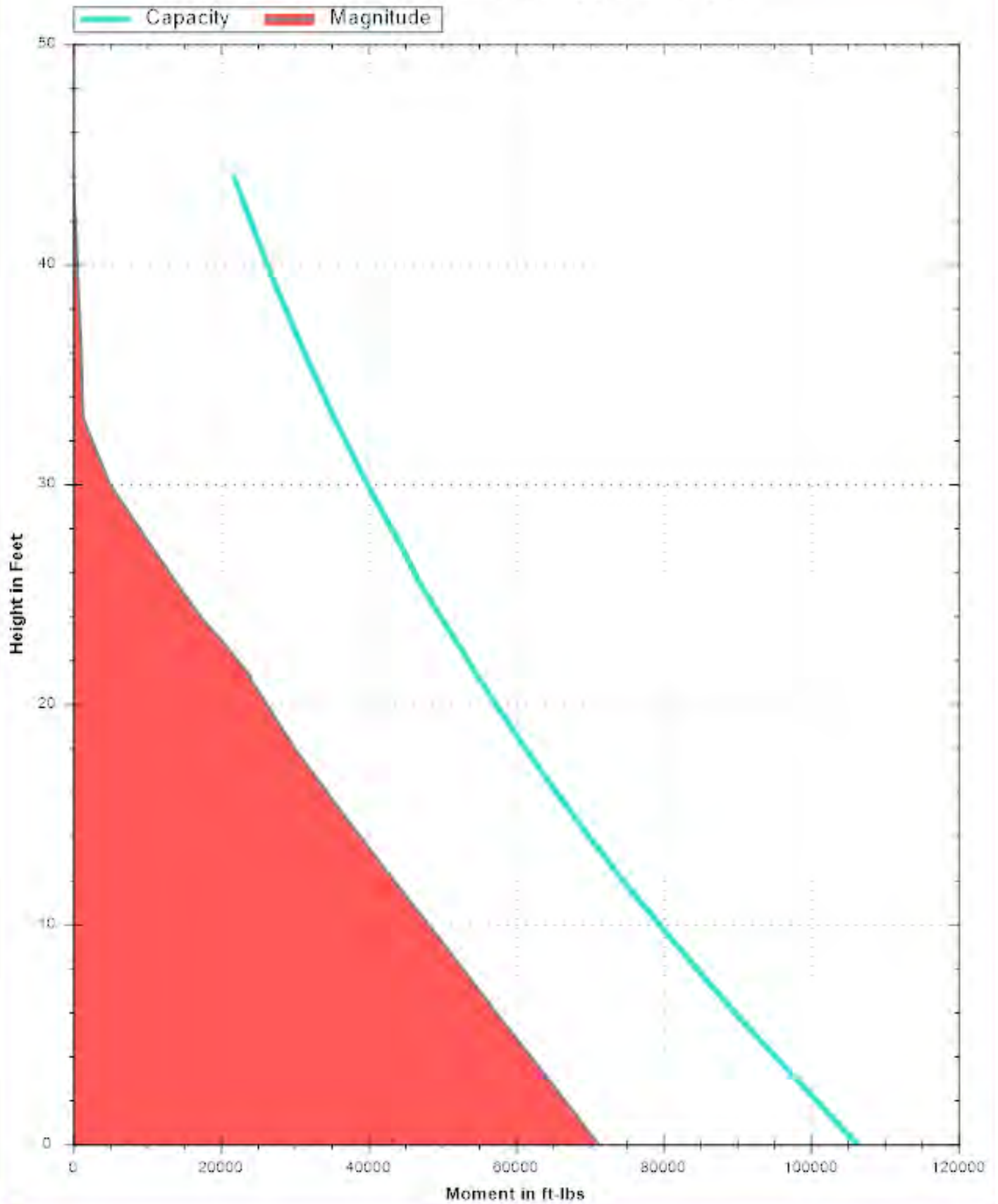
1 - 43.5' (522")	Normal 7ft 3.5in x 4.5in
2 - 43.5' (522")	Primary 0° 136' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 0° 136' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 0° 136' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 174° 160' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 174° 160' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 174° 160' 0.447" (ACSR 2/0 AWG 6/1 QUAIL)
3 - 43.5' (522")	EHS 3/8 Crossarmspan Guy 43.5 ft hgt
4 - 41' (492")	EHS 1/4 Down Guy 41.0 ft hgt, 64.0° angle
5 - 33' (396")	Normal 7ft 3.5in x 4.5in

6 - 33' (396")	Primary 0° 136' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 0° 136' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 0° 136' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 208° 34' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 208° 34' 0.447" (ACSR 2/0 AWG 6/1 QUAIL) Primary 208° 34' 0.447" (ACSR 2/0 AWG 6/1 QUAIL)
7 - 25.4' (305.2")	Secondary 0° 136' 0.537" Hoff=-0.3 Voff=-0.8 (DUPLEX 6 AWG) Secondary 208° 34' 0.537" Hoff=0.3 Voff=-0.8 (DUPLEX 6 AWG)
8 - 22.8' (273")	10M 180° 120' Msgr:0.306" 10M 0° 115' Msgr:0.306"
9 - 21.3' (256")	6M 0° 136' Msgr:0.242" 6M 174° 159' Msgr:0.242"
10 - 20.9' (251")	EHS 3/8 Crossarmspan Guy 20.9 ft hgt
11 - 20.3' (244")	6M 0° 136' Msgr:0.242" 6M 174° 159' Msgr:0.242"

MNG-423



Bending Moment vs Height
Wind 273° : Load 283.5°
Pole:MNG-423 - 6/17/2021
NESC 12 (250B) Grade C , Heavy (I:0.5in W:4psf)



CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

- 2015 INTERNATIONAL BUILDING CODE
- 2017 NATIONAL ELECTRICAL CODE
- 2015 NFPA 101, LIFE SAFETY CODE
- AMERICAN CONCRETE INSTITUTE
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION
- MANUAL OF STEEL CONSTRUCTION 13TH EDITION
- ANSI/TIA-222-G
- TIA 607
- INSTITUTE FOR ELECTRICAL & ELECTRONICS ENGINEER 81
- IEEE C2 NATIONAL ELECTRIC SAFETY CODE LATEST EDITION
- TELECORDIA GR-1275
- ANSI/T 311



DPS BATCH STAMP

CROWN CASTLE FIBER LLC
SITE NAME: MNG-423
1006 LARCH AVENUE
TAKOMA PARK, MD 20912

JURISDICTION: MONTGOMERY COUNTY - MDOT(SHA)
PROPOSED STRAND MOUNT

INDEX OF SHEETS

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TCP-1	TRAFFIC CONTROL PLANS

ENGINEER:



OWNER/DEVELOPER:



TITLE:

MNG-423
1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY - MDOT (SHA)

LATITUDE: 38.977576°
LONGITUDE: -76.991567°



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER OF RECORD

TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

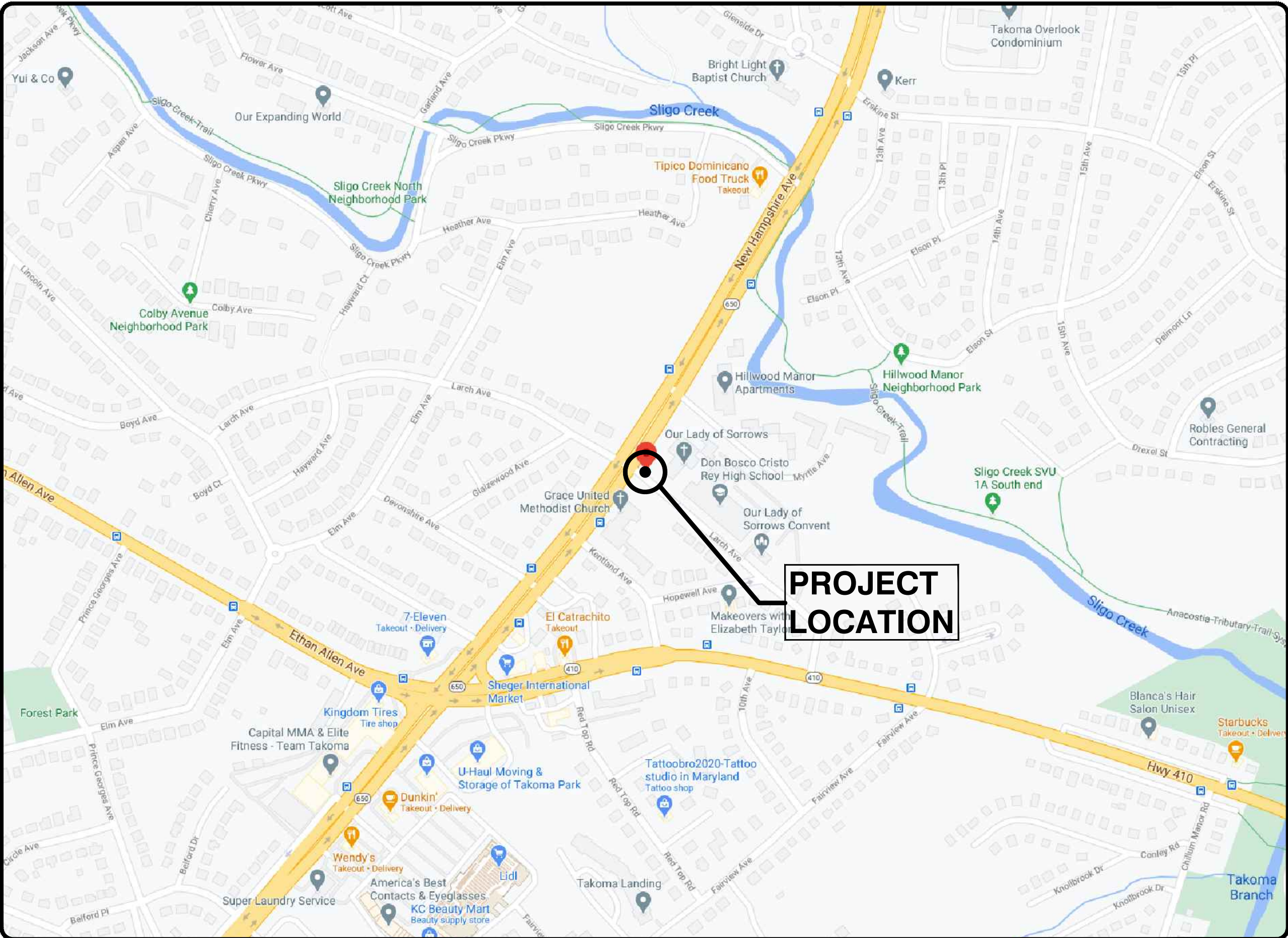
REVISIONS

REV	DATE	DESCRIPTION	BY
4	10-07-21	ADDRESS REVISION	JED
3	03-25-21	CLIENT COMMENTS	SDR
2	02-01-21	EQUIPMENT REVISION	JED
1	02-28-19	CLIENT COMMENTS	MB
0	01-10-19	FINAL	MB

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMM	SDR	SDR

PROJECT NUMBER:	100505
FILE NAME:	STRAND MOUNT ENG. DWG
DATE DRAWN:	11-20-18
SCALE:	AS SHOWN

SHEET:
T-1

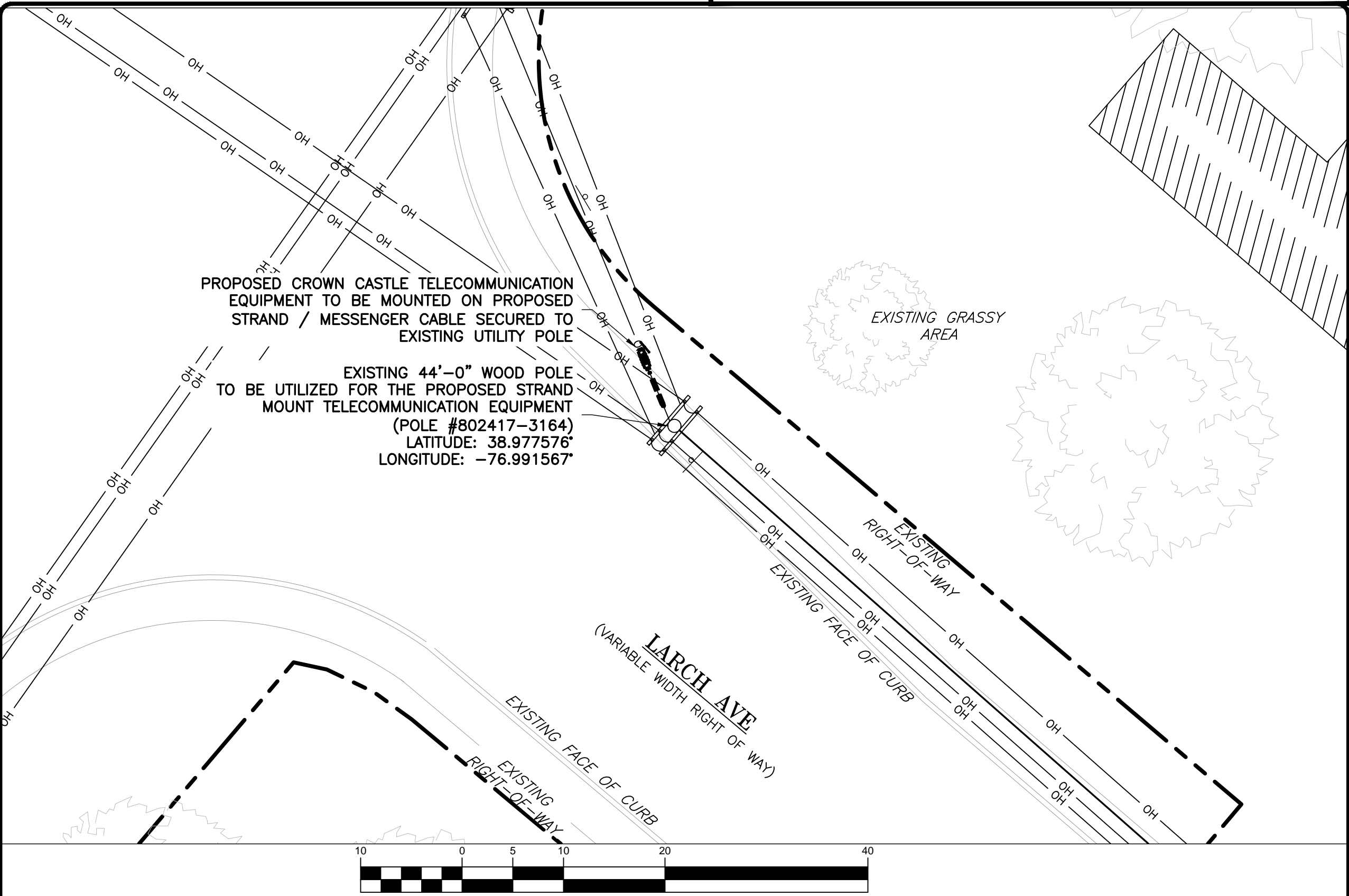


LOCATION MAP

NODE LOCATION:
LATITUDE: 38.977576°N (N 38° 58' 39.273")
LONGITUDE: -76.991567W (W -76° 59' 29.6412")



Know what's below.
Call before you dig.



THESE DRAWINGS ARE SCALED TO FULL SIZE AT 22"X34" AND HALF SIZE AT 11"X17". CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE DESIGNER / ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR MATERIAL ORDERS OR BE RESPONSIBLE FOR THE SAME. CONTRACTOR SHALL USE BEST MANAGEMENT PRACTICE TO PREVENT STORM WATER POLLUTION DURING CONSTRUCTION.

NODE PLACEMENT

1006 LARCH AVE
POLE TAG ID: 802417-3164
PEPCO FACILITY ID: 802416-310640
ZONING CLASSIFICATION = R60

CROWN CASTLE FIBER LLC
GENERAL NOTES

GENERAL NOTES:

1. THE CONTRACTOR SHALL GIVE ALL NOTICE AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY, SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE CROWN CASTLE CONSTRUCTION MANAGER OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN, EXCEPT FOR FIBER OPTIC CABLE AND OTHER MATERIALS IDENTIFIED BY CROWN CASTLE.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWING/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURE'S/VENDOR'S SPECIFICATION UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTIONS MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING, AND KEEPING A COPY ON SITE, ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION OR ABOUT THE PROPERTY TO ORIGINAL OR BETTER CONDITION.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION. THE CONTRACTOR SHALL DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
14. THE CONTRACTOR SHALL NOTIFY THE CROWN CASTLE CONSTRUCTION MANAGER WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL IS RESOLVED BY THE CROWN CASTLE CONSTRUCTION MANAGER.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE PROJECT.
16. OWNER/CONTRACTOR SHALL CONTACT ONE CALL MINIMUM 72 HOURS PRIOR TO THE START OF CONSTRUCTION FOR LOCATION OF EXISTING UNDERGROUND UTILITIES.
17. SUBMITTAL OF BID INDICATES THAT THE CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
18. THESE PLANS ARE DIAGRAMMATIC ONLY, FOLLOW AS CLOSELY AS POSSIBLE.
19. CONTRACTOR SHALL COORDINATE ALL WORK BETWEEN TRADES AND ALL OTHER SCHEDULING AND PROVISIONARY CIRCUMSTANCES SURROUNDING THE PROJECT.
20. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR COMPLETE AND FUNCTIONALLY OPERATING SYSTEMS ENERGIZED AND READY FOR USE THROUGHOUT AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
21. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION. LEGALLY DISPOSE OF ALL REMOVED, UNUSED AND EXCESS MATERIAL GENERATED BY THE WORK OF THIS CONTRACT. DELIVER ITEMS INDICATED ON THE DRAWINGS TO THE OWNER IN GOOD CONDITION. OBTAIN SIGNED RECEIPT UPON DELIVERY.
22. AFTER COMPLETION OF CONSTRUCTION, RED LINED AS-BUILT PLANS SHALL BE PROVIDED TO CROWN CASTLE CONSTRUCTION MANAGER.

GROUNDING NOTES:

1. GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
2. ALL GROUNDING DEVICES SHALL BE U.L. APPROVED OR LISTED FOR THEIR INTENDED USE.
3. ALL WIRES SHALL BE AWG THHN/THWN COPPER UNLESS NOTED OTHERWISE.
4. GROUNDING CONNECTIONS TO GROUND RODS, GROUND RING WIRE AND POLE BASE, SHALL BE EXOTHERMIC ("CADWELDS") UNLESS NOTED OTHERWISE. CLEAN SHINY SURFACES TO SHINY METAL WHERE GROUND WIRES ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZING PAINT.
5. GROUNDING CONNECTIONS TO GROUND BARS ARE TO BE TWO-HOLE BRASS MECHANICAL CONNECTORS WITH STAINLESS STEEL HARDWARE (INCLUDING SCREW SET) CLEAN GROUND BAR TO SHINY METAL. AFTER MECHANICAL CONNECTION, TREAT WITH PROTECTIVE ANTIOXIDANT COATING.
6. ROUTE GROUNDING CONDUCTORS THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 12" RADIUS.
7. INSTALL #2 AWG GREEN-INSULATED STRANDED WIRE FOR ABOVE GRADE GROUNDING AND #2 TINNED SOLID COPPER WIRE FOR BELOW GRADE GROUNDING UNLESS OTHERWISE NOTED.
8. REFER TO GROUNDING PLAN FOR GROUND BAR LOCATIONS. GROUNDING CONNECTIONS SHALL BE EXOTHERMIC TYPE ("CADWELDS") TO ANTENNA MOUNTS AND GROUND RING. REMAINING GROUNDING CONNECTIONS SHALL BE COMPRESSION FITTINGS. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO-HOLE LUGS.
9. THE GROUND ELECTRODE SYSTEM SHALL CONSIST OF DRIVEN GROUND RODS POSITION ACCORDING TO GROUNDING PLAN. THE GROUND RODS SHALL BE 5/8"x10'-0" COPPER CLAD STEEL INTERCONNECTED WITH #2AWG BARE, TINNED SOLID COPPER WIRE BURIED 36" BELOW GRADE. BURY GROUND RODS A MAXIMUM OF 15' APART, AND A MINIMUM OF 6' APART.
10. IF ROCK IS ENCOUNTERED GROUND RODS SHALL BE PLACED AT AN OBLIQUE ANGLE NOT TO EXCEED 45'.
11. EXOTHERMIC WELDS SHALL BE MADE IN ACCORDANCE WITH ERICO PRODUCTS BULLETIN A-AT OR EQUAL.
12. CONSTRUCTION OF GROUND RING AND CONNECTIONS TO EXISTING GROUND RING SYSTEM SHALL BE DOCUMENTED WITH PHOTOGRAPHS PRIOR TO BACKFILLING SITE. PROVIDE PHOTOS TO THE CROWN CASTLE CONSTRUCTION MANAGER.
13. ALL GROUND LEADS EXCEPT THOSE TO THE EQUIPMENT ARE TO BE #2 TINNED SOLID COPPER WIRE. ALL EXTERIOR GROUND BARS TINNED COPPER.
14. PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETTS KOPR-SHIELD (TM OF JET LUBE INC.). PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR EQUAL.
15. ENGAGE AN INDEPENDENT ELECTRICAL TESTING FIRM TO TEST AND VERIFY THAT IMPEDANCE DOES NOT EXCEED FIVE OHMS TO GROUND BY MEANS OF "FALL OF POTENTIAL TEST". TEST SHALL BE WITNESSED BY A CROWN CASTLE REPRESENTATIVE, AND RECORDED ON THE "GROUND RESISTANCE TEST" FORM.
16. WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN 3/4" PVC SLEEVE, FROM 1' BELOW GRADE AND SEAL TOP WITH SILICONE MATERIAL.
17. PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-OXIDIZATION PAINT.

GROUNDING GUIDELINES:

ALL EQUIPMENT THAT IS INSTALLED AND MAY CAUSE ANY KIND OF ELECTRICAL CHARGE OR BUILD UP MUST HAVE PROPER AND ADEQUATE GROUNDING IN PLACE TO PREVENT FROM EQUIPMENT DAMAGE AND SHOCK HAZARDS.

RRH'S

MUST BE GROUND TO A MAIN BUSS BAR OR HOME RUN GROUND FROM THE GROUND PIN OR STUD THAT IS ON THE CHASSIS. IF ANY EQUIPMENT HAS A GROUND POINT ON IT, IT SHOULD BE GROUND. THE GROUNDING CABLE SIZE SHOULD FOLLOW LOCAL GUIDELINES ON EQUIPMENT GROUNDING. NORMALLY THE STANDARD IS 6 UV RATED STRANDED GROUND CABLE TO BE USED ON RRH'S. THE LUG NEEDS TO FIT THE PROPER CABLE SIZE AS WELL AS THE HOLE SIZE FOR THE STUD. IF IT'S A SINGLE STUD IT SHOULD BE A ONE HOLE LUG, IF IT HAS A PLACE FOR TWO HOLE LUG THEN THAT SHOULD BE USED. (I.E. COMMSCOPE ION M HAS A SINGLE STUD GROUND, TE PRISM HAS A GROUND FOR A 2 HOLE LUG.) DO NOT CUT THE LUGS TO FIT, THEY MAKE LUGS IN ALL SHAPES AND SIZES. ORDER THE CORRECT ONE AND ATTACH IT PROPERLY.

SURGE ARRESTORS

IF IT HAS A PLACE FOR A GROUND -- GROUND IT.

MAST PIPES

ALL MAST PIPES SHOULD BE GROUND WITH BEAR METAL ON THE PLACE THE GROUND IS ATTACHED AND THEN COLD GALVANIZATION OVER THE BARE METAL TO PREVENT RUST. THE GROUND CAN BE ATTACHED MECHANICALLY OR AN EXOTHERMIC WELD (CAD WELD) MAY BE USED. IF THE MAST PIPE IS THE TALLEST POINT ON A BUILDING IT SHOULD ALSO HAVE A LIGHTNING ROD ATTACHED TO IT AS WELL.

DIPLEXERS/DUPLEXERS/SPLITTERS/PASSIVE COMPONENTS

IF IT HAS A PLACE FOR A GROUND TO BE INSTALLED -- INSTALL IT.

ANY STRUCTURE OR FRAME SHOULD HAVE #2 GROUND WIRE, I.E. MAST PIPES, OUTDOOR ENCLOSURES, SHROUDS, BUSS BAR HOME RUN TO EARTH GROUND. ALL EQUIPMENT HAS #6 TO BUSS BARS.

DPS BATCH STAMP

ALL BUSS BARS NEED TO HAVE A LINK TO AN EARTH GROUND SYSTEM AND MUST BE ISOLATED IF MOUNTED ON ANYTHING THAT MAY RETAIN AN ELECTRIC CHARGE. NO EXCEPTIONS. ALL EQUIPMENT SHOULD RUN TO BUSS BARS. LUGS ON BUSS BARS SHOULD HAVE FRONT AND BACK FLAT WASHERS SANDWICHING THE LUG(S) TO THE BAR AND NOT OVERLAPPING CAUSING IT TO HOLD OR PIN DOWN OTHER LUGS ON THE BAR. THERE SHOULD ALWAYS BE A LOCK WASHER CLOSEST TO THE NUT ON THE BOLT FOR A LUG. NEVER IS IT OK TO STACK LUGS ON TOP OF EACH OTHER. IF THERE IS NOT ENOUGH SPACE, GET A BIGGER BUSS BAR. THEY SHOULD ALL HAVE A DIRECT CONTACT TO A BUSS BAR WITH NO-OX COATED BETWEEN THE LUG AND THE BUSS BAR. ALL GROUNDS SHOULD HAVE HEAT SHRINK OVER THE LUG (UNLESS IT'S NON-JACKETED WIRE). ALL LUGS NEED TO BE CRIMPED ON SECURELY WITH THE PROPER DYE AND TOOL (NOT CHANNEL LOCK CRIMPED). THERE SHOULD BE NO MORE THAN 1/16 INCH BARE CABLE SHOWING (SHINER) BETWEEN THE JACKET AND THE LUG. INSIDE LUGS SHOULD HAVE CLEAR HEAT SHRINK TO INSPECT THE CRIMPS AND SHINERS. INSIDE LUGS SHOULD HAVE INSPECTION WINDOWS TO SHOW THE GROUND WIRE IS INSERTED INTO THE LUG ALL THE WAY AND IS PROPERLY INSTALLED. OUTDOOR LUGS MAY HAVE BLACK OR GREEN HEAT SHRINK.

WEATHER SEAL GUIDELINES:

BUTYL

1. PRE WRAP ALL CONNECTIONS WITH BLACK ELECTRICAL TAPE TO COVER ALL METAL SHOWING TO PREVENT DAMAGE TO CONNECTOR WHEN WEATHER SEAL IS TO BE REMOVED. 3/4 INCH OR 2 INCH TAPE CAN BE USED FOR THIS PROCESS.
2. WRAP CONNECTIONS WITH BUTYL WEATHER SEALANT WITH TWO LAYERS TO FORM A CONE LIKE SHAPE. OVER LAPPING THE LAYERS BY AT LEAST 50%. MOLD SEALANT TO PROPER SHAPE. THIS STEP IS CRUCIAL OR THE BUTYL WILL LEAK OVER TIME.
3. WRAP SEALANT WITH 2 LAYERS OF 2 INCH TAPE. (YOU CAN CUT INTO STRIPS IN LARGE AREAS). FIRST WRAP SHOULD BE PULLED SMOOTH TO MAKE FINAL WRAPS CLEAN AND CRISP. 2ND WRAP SHOULD BE PULLED TIGHTER THAN FIRST TO HOLD SEALANT INTO PROPER (CONE LIKE) SHAPE. OVER LAPPING TAPE SHOULD COVER AT LEAST 50% OF EACH LAYER OF TAPE PRIOR.
4. UPON COMPLETION OF 2 LAYERS OF 2 INCH TAPE FINALIZE WITH AT LEAST 3 LAYERS OF 3/4 INCH TAPE. EACH WRAP OF TAPE SHOULD BE PULLED TIGHTER THAN WRAP BEFORE TO SQUEEZE SEALANT INTO A MOLD AND WILL PREVENT ANY SEALANT FROM LEAKING OUT THE SIDE OVER TIME. EACH LAYER SHOULD COVER PRIOR LAYERS AT LEAST 50%.
5. OVERLAP THE TAPE 50% OF THE PREVIOUS LAYER.
6. ALWAYS FINISH THE LAST WRAP OF TAPE GOING UP TO CREATE A SHINGLING OF THE TAPE SO IN THE WEATHER ANYTHING THAT RUNS DOWN THE CABLE WILL NOT LEAK INTO THE SEALANT. CUT THE END OF THE TAPE AND LAY IT ONTO THE FINISH. DO NOT STRETCH THE END OF THE TAPE. THIS WILL CAUSE THE TAPE TO PULL OFF OVER TIME AND CREATE A FLAGGING AFFECT.

FUSION TAPE

1. CHECK TO MAKE SURE ALL CONNECTORS ARE TORQUED TO PROPER SPECIFICATIONS BEFORE YOU BEGIN.
2. NOTE: THIS STEP DOES NOT NEED A CURTSY WRAP BECAUSE THE TAPE DOES NOT ACTUALLY ADHERE TO THE CONNECTOR ITSELF BUT BINDS TO ITSELF. ALSO KNOWN AS SELF-AMALGAMATING TAPE.
3. WRAP CONNECTIONS FUSION TAPE SEALANT WITH TWO LAYERS TO FORM A CONE LIKE SHAPE. FUSION TAPE MUST LAP AT LEAST 50% TO FORM A PROPER SEAL. COVER ALL OF THE BARE METAL SHOWING (AT LEAST 1-1/2 INCH PAST END OF CONNECTOR.)
4. IF THIS TAPE IS NOT PULLED TIGHT WHILE WRAPPING YOU WILL NOT CREATE A PROPER SEAL, IT MUST BE STRETCHED TO CREATE BOND TO ITSELF.
5. WRAP AT LEAST 2 LAYERS OF 3/4 INCH TAPE. EACH LAYER SHOULD COVER AT LEAST 50% OF PREVIOUS TAPE WRAP.
6. ALWAYS FINISH THE LAST WRAP OF TAPE GOING UP TO CREATE A SHINGLING OF THE TAPE SO IN THE WEATHER ANYTHING THAT RUNS DOWN THE CABLE WILL NOT LEAK INTO THE SEALANT. CUT THE END OF THE TAPE AND LAY IT ONTO THE FINISH. DO NOT STRETCH THE END OF THE TAPE. THIS WILL CAUSE THE TAPE TO PULL OFF OVER TIME AND CREATE A FLAGGING AFFECT.

HEAT SHRINK

1. PRE WRAP ALL CONNECTIONS WITH BLACK ELECTRICAL TAPE TO COVER ALL METAL SHOWING TO PREVENT DAMAGE TO CONNECTOR WHEN WEATHER SEAL IS TO BE REMOVED. 3/4 INCH OR 2 INCH TAPE CAN BE USED FOR THIS PROCESS.
2. USE ONLY OUTDOOR RATED HEAT SHRINK THAT HAS THE SELF-ADHESIVE WHEN HEATED PROPERLY. THIS IS WHAT WILL CREATE THE SEAL TO THE CONNECTOR.
3. MAKE SURE HEAT SHRINK COVERS ALL OF THE COUPLERS AND CONNECTIONS. HEAT THE HEAT SHRINK TO SHRINK TIGHTLY TO THE CONNECTIONS AND CABLE. MAKE SURE THE HEAT SHRINK IS SEALED TOP AND BOTTOM OF THE CONNECTIONS. ALSO CHECK TO MAKE SURE HEAT SHRINK WAS NOT OVER HEATED AND THERE ARE NO BREAKS IN SEAL THROUGH-OUT THE SHRINK TUBING.

ANDREWS CLAM SHELL

1. PROPERLY TORQUE CONNECTOR TO SPECIFICATION.
2. APPLY ONE LAYER OF 3/4 INCH BLACK TAPE AROUND ENTIRE CONNECTOR ENDING AT LEAST 1-1/2 INCHES PAST TOP AND BOTTOM OF CONNECTOR TO PREVENT ANY MOISTURE FROM STICKING TO THE CONNECTOR.
3. INSPECT THE DEVICE TO MAKE SURE IT IS NOT CHIPPED, CRACKED OR ANY SIGNS OF NEGLIGENCE THAT WILY TAKE AWAY FROM MAKING A FULL SEAL AROUND THE CONNECTOR.
4. USE ONLY CORRECT SIZE PER CABLE AND CONNECTOR TYPE -- I.E. 1/2 INCH FOR 1/2 INCH NOT 7/8TH FOR 1/2 INCH.
5. FOLLOW DIRECTIONS THAT COME WITH PRODUCT -- MOST CLAM SHELL TYPE SEALANT DEVICES WRAP AROUND OR CLAMP AROUND A CONNECTION POINT.

GROUNDING AND BONDING NOTE:
GENERAL CONTRACTOR SHALL FOLLOW ALL CONSTRUCTION GUIDELINES PER CROWN CASTLE'S GROUNDING AND BONDING REQUIREMENTS FOR STRAND MOUNT NODES (oDAS) -- DOCUMENT 337910.

NODE:
MNG-423 (802417-3164)

ENGINEER:



OWNER/DEVELOPER:



TITLE: **MNG-423**

**1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
MDOT (SHA)**

**LATITUDE: 38.977576°
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ENGINEER OF RECORD

**TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491**

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DRAWN BY:	CHECKED BY:	APPROVED BY:
AMM	SDR	SDR

PROJECT NUMBER:	100505
FILE NAME:	STRAND MOUNT ENG. DWG
DATE DRAWN:	11-20-18
SCALE:	AS SHOWN

SHEET:

GN-1

CROWN CASTLE FIBER LLC
GENERAL NOTES

6. BE CAREFUL WHEN SETTING LOCKING DEVICE INTO PLACE ON CLAM SHELLS UNLESS SEALANTS ARE PLASTIC AND TEND TO BREAK OR CRACK IN EXTREME WEATHER CONDITIONS WHEN LOCKING DEVICE CLOSED TO CREATE THE SEAL.) IF THE LOCKING MECHANISM CRACKS OR BREAKS, REPLACE IT. DO NOT TAPE THE CLAMP CLOSED OR TRY TO RE-ENGINEER IT.
7. ONCE THE CLAMP IS ON AND LOCKED AROUND THE CONNECTOR THE PROCESS IS COMPLETE.

PPC BOOT

1. PLACE BOOT OVER CABLE BEFORE CONNECTOR IS ATTACHED TO CABLE. THIS IS ONLY RATED FOR PPC TYPE CONNECTORS. (NOTE: IF THIS STEP IS SKIPPED OR NOT COMPLETED BEFORE MAKING A CONNECTOR THE SUBCONTRACTOR WILL NOT BE ABLE TO USE THE BOOT STYLE DEVICE TO SEAL THE CONNECTOR. IT IS NOT RECOMMENDED TO WASTE A CONNECTOR AND CUT IT OFF AND START AT STEP NO. 1 AGAIN. SINCE PPC CONNECTORS ARE NOT REUSABLE AND CAN GET QUITE EXPENSIVE, DO NOT TRY TO STRETCH THE BOOT TO SLIDE IT OVER THE CONNECTION.)
2. PLACE THE BOOT OVER THE CABLE, AND THEN MAKE THE CONNECTOR.
3. TORQUE THE CONNECTION TO PROPER SPECIFICATIONS.
4. SLIDE BOOT UP TO COVER THE ENTIRE CONNECTOR, FOLLOWING THE PPC GUIDELINES.
5. THIS PROCESS IS COMPLETE AT THIS TIME.

ELECTRICAL NOTES

1. SUBMITTAL OF BID INDICATES THAT THE CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
2. CONTRACTOR SHALL PERFORM ALL VERIFICATIONS, OBSERVATION TESTS, AND EXAMINATION WORK PRIOR TO ORDERING OF ANY EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE PROJECT MANAGER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
3. VERIFY HEIGHTS WITH PROJECT MANAGER PRIOR TO INSTALLATION.
4. THESE PLANS ARE DIAGRAMMATIC ONLY, FOLLOW AS CLOSELY AS POSSIBLE.
5. CONTRACTOR SHALL COORDINATE ALL WORK BETWEEN TRADES AND ALL OTHER SCHEDULING AND PROVISIONARY CIRCUMSTANCES SURROUNDING THE PROJECT.
6. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR COMPLETE AND FUNCTIONALLY OPERATING SYSTEMS ENERGIZED AND READY FOR USE THROUGHOUT AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
7. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. ELECTRICAL MATERIALS SHALL BE LISTED AND APPROVED BY UNDERWRITER'S LABORATORIES AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF ALL COVERING BODIES HAVING JURISDICTION OVER THE CONSTRUCTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH ALL CURRENT APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NBFU. ALL MATERIALS AND EQUIPMENT SHALL BE APPROVED FOR THEIR INTENDED USE AND LOCATION.
8. ALL WORK SHALL COMPLY WITH ALL APPLICABLE GOVERNING STATE, COUNTY AND CITY CODES AND OSHA, NFPA, NEC & ASHRAE REQUIREMENTS.
9. ENTIRE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE. ALL WORK, MATERIAL AND EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
10. PROPERLY SEAL ALL PENETRATIONS. PROVIDE UL LISTED FIRE-STOPS WHERE PENETRATIONS ARE MADE THROUGH FIRE-RATED ASSEMBLIES. WATER-TIGHT USING SILICONE SEALANT.
11. LOCATE ALL PENETRATIONS SUCH THAT ALL REINFORCEMENT CONTAINED WITHIN THE EXISTING BUILDING CONSTRUCTION REMAINS INTACT AND UNDISTURBED. SUBMIT LOCATING METHOD TO THE PROJECT MANAGER FOR APPROVAL PRIOR TO EXECUTION.
12. DELIVER ALL BROCHURES, OPERATING MANUALS, CATALOGS AND SHOP DRAWINGS TO THE PROJECT MANAGER AT JOB COMPLETION. PROVIDE MAINTENANCE MANUALS FOR MECHANICAL EQUIPMENT. AFFIX MAINTENANCE LABELS TO MECHANICAL EQUIPMENT.
13. ALL CONDUCTORS SHALL BE COPPER. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG., UNLESS OTHERWISE NOTED. CONDUCTORS SHALL BE TYPE THHW, RATED IN ACCORDANCE WITH NEC 110-14(C).
14. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THE MAXIMUM INTERRUPTING CURRENT TO WHICH THEY MAY BE SUBJECTED.
15. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE; ARTICLES 250 & 810 AND THE UTILITY COMPANY STANDARDS.
16. CONDUIT: ALL ABOVE GRADE CONDUITS SHALL BE RIGID & LFMC TO 6' AS STATED BELOW:

- A. RIGID CONDUIT SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS, IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAPPED WRAPPED WITH HUNTS WRAP PROCESS NO. 3.
- B. ELECTRICAL METALLIC TUBING SHALL HAVE U.L. LABEL. FITTINGS SHALL BE GLAND RING COMPRESSION TYPE. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
- C. LIQUID-TIGHT FLEXIBLE METAL CONDUIT SHALL BE U.L. LISTED AND SHALL BE USED AT FINAL CONNECTIONS TO MECHANICAL EQUIPMENT & RECTIFIERS AND WHERE PERMITTED BY CODE. ALL CONDUIT IN EXCESS OF SIX FEET IN LENGTH SHALL CONTAIN A FULL-SIZE GROUND CONDUCTOR.

- D. CONDUIT RUNS SHALL BE SURFACE MOUNTED ON CEILINGS OR WALLS UNLESS NOTED OTHERWISE. ALL CONDUIT SHALL RUN PARALLEL OR PERPENDICULAR TO WALLS, FLOOR, CEILING, OR BEAMS. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH THE PROJECT MANAGER PRIOR TO INSTALLING.

- E. PVC CONDUIT MAY BE PROVIDED ONLY WHERE SHOWN, OR IN UNDERGROUND INSTALLATIONS. PROVIDE UV-RESISTANT CONDUIT WHERE EXPOSED TO THE ATMOSPHERE. PROVIDE GROUND CONDUCTOR IN ALL PVC RUNS; EXCEPT WHERE PERMITTED BY CODE TO OMIT.

17. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PHENOLIC PLASTIC NAMEPLATES. METER, DISCONNECT, ETC. BACKGROUND SHALL BE BLACK WITH WHITE LETTERS; EXCEPT AS REQUIRED BY CODE TO FOLLOW A DIFFERENT SCHEME.

18. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO PROJECT MANAGER. GROUNDING SYSTEM RESISTANCE SHALL NOT EXCEED 5 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY THE PROJECT MANAGER FOR FURTHER INSTRUCTION ON METHODS FOR REDUCING THE RESISTANCE VALUE.

19. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION. LEGALLY DISPOSE OF ALL REMOVED, UNUSED AND EXCESS MATERIAL GENERATED BY THE WORK OF THIS CONTRACT. DELIVER ITEMS INDICATED ON THE DRAWINGS TO THE OWNER IN GOOD CONDITION. OBTAIN SIGNED RECEIPT UPON DELIVERY.

20. COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE GIVEN AND JOB SITE CONDITIONS AND ALL HOOKUP COSTS SHALL BE PAID BY THE CONTRACTOR.

21. VERIFY ALL EXISTING CIRCUITRY PRIOR TO REMOVAL AND NEW WORK. MAINTAIN POWER TO ALL OTHER AREAS & CIRCUITS NOT SCHEDULED FOR REMOVAL.

22. RED LINED AS-BUILT PLANS SHALL BE PROVIDED TO THE CONSTRUCTION MANAGER UPON REQUEST.

PEPCO GUIDELINES:

STRUCTURAL

1. ANTENNA SUPPORT POLES SHALL BE DESIGNED TO WITHSTAND THE HEAVY LOAD CASE AS DEFINED IN NATIONAL ELECTRIC SAFETY CODE (NESC) RULE 250B. IF ANY PART OF THE ANTENNA SUPPORTPOLE PROJECTS OVER SIXTY FEET ABOVE THE GROUND, THEN THE POLE SHALL BE DESIGNED TO WITHSTAND THE NESC EXTREME WIND LOAD CASE AS DEFINED IN RULE 250C AND NESC FIGURE 250-2(B) (120 MPH WIND SPEED). THE SPECIFIED OVERLOAD CAPACITY FACTOR FOR THE NESC LOAD CASES, ARE SPECIFIED IN SECTION 26 OF THE NESC.

2. POLES REPLACED (TO SUPPORT ANTENNAS) SHALL BE DESIGNED FOR AT LEAST GRADE B CONSTRUCTION. POLES THAT ARE NOT REPLACED AND WILL SERVE AS SUPPORTS FOR ANTENNAS CAN BE DESIGNED FOR GRADE C CONSTRUCTION PROVIDED THAT APPROPRIATE RELATED STRENGTH REDUCTION FACTORS ARE APPLIED.

3. ALL POLES REPLACED TO SUPPORT ANTENNAS SHALL BE CLASS 1 OR LARGER. INSTALLATIONS THAT REQUIRE POLES LARGER THAN A CLASS 1 SHALL USE AN APPROPRIATE POLE CLASS HEIGHT AND TYPE APPROVED BY STANDARDS. THE DESIGN OF THE STEEL POLE AT A MINIMUM SHALL MEET THE STRENGTH REQUIREMENTS OF THE NEXT HIGHER ANSI WOOD POLE CLASS.

- d. TO MAINTAIN RELIABILITY AND ACCOMMODATE GEOMETRIC ALTERATIONS, ALL 69KV CANDIDATE POLES WILL BE CHANGED TO A TALLER CLASS 1 OR LARGER POLE.

- b. EXCEPTIONS WILL BE CONSIDERED ON A CASE-BY-CASE BASIS, WHEN THE EXISTING 69KV POLE MEETS OR EXCEEDS THE SPECIFICATIONS TO BE OBTAINED IN THIS SPECIFICATION WITHOUT REPLACING THE POLE. ALL EXCEPTIONS TO THE REQUIREMENT TO REPLACE POLES THAT CARRY 69KV FEEDERS ARE SOLELY AT THE DISCRETION OF PEPCO.

4. ALL HARDWARE USED TO SUPPORT THE ANTENNA SHALL BE GALVANIZED, IN NEW CONDITION AND CAPABLE OF WITHSTANDING ALL DESIGNED LOADS.

5. LOCK WASHERS SHALL BE USED ON ALL THRU BOLTS USED TO CONNECT ANTENNA SUPPORT BRACKETS AND OTHER CARRIER EQUIPMENT TO THE POLE.

6. SPLIT BOLTS WITH WASHERS SHALL BE INSTALLED PERPENDICULAR TO THE ANTENNA SUPPORT BRACKET BOLTS.

7. THE ANTENNA SUPPORT BRACKET SHALL BE ABLE TO WITHSTAND THE NESC HIGH WIND DESIGN LOADS SPECIFIED ABOVE.

8. ALL STRUCTURAL AND DESIGN ANALYSIS SHALL BE PERFORMED BY THE CARRIER AND BE REVIEWED BY PEPCO'S DISTRIBUTION ENGINEERING DEPARTMENT. PEPCO SHALL PROVIDE REQUESTED DATA FOR SUCH ANALYSIS AND RESERVES THE RIGHT TO VALIDATE THE ANALYSIS. DESIGNS MUST PASS THE STRUCTURAL ANALYSIS REQUIREMENTS BEFORE PROCEEDING TO THE FINAL DESIGN PHASE OR CONSTRUCTION.

9. CARRIER SHALL PROVIDE AND OWN ALL POLE TOP EXTENSIONS USED TO SUPPORT ANTENNAS ABOVE THE PEPCO OVERHEAD COVERED CONDUCTORS (SECONDARY OR PRIMARY VOLTAGES). THE CONDITION OF THE MOUNTING SURFACE AT THE TOP OF THE POLE SHALL BE INSPECTED BY APPROVED PEPCO PERSONNEL. IF ANY DETERIORATION IS FOUND, THE POLE SHALL BE REPLACED BEFORE MOUNTING. POLE TOP EXTENSIONS SHALL BE AT LEAST 5' BUT NOT EXCEED 8'; AND NOT BE USED IN THE FOLLOWING INSTANCES:

- a. TO SUPPORT ELECTRICAL CONDUCTORS.
- b. TO SUPPORT ANTENNAS ON 69KV POLES.

10. THE LOWEST GROUNDED POINT OF A CARRIER'S EQUIPMENT SHALL MAINTAIN THE FOLLOWING MINIMUM SEPARATIONS:
- AT LEAST 4FT FOR OVERHEAD SECONDARY FACILITIES.
 - AT LEAST 8FT FOR OVERHEAD PRIMARY FACILITIES.
- CLEARANCES SHALL BE INCREASED AS REQUIRED, FOR BUCKET ACCESS.

11. POLE ANALYSIS SHALL BE BASED ON FIELD MEASUREMENTS.

DPS BATCH STAMP

SAFETY:

1. AUTHORIZED PEPCO PERSONNEL SHALL INSTALL ALL THE EQUIPMENT SUCH AS ANTENNA SUPPORT BRACKETS, ANTENNAS, JUMPERS AND COAXIAL CABLE AND APPROPRIATE CHANNEL RISER, WHICH ARE DESIGNED TO BE ABOVE THE COMMUNICATION AND SAFETY ZONES ON EACH POLE.
2. BOTH RF AND POWER SUPPLY DISCONNECT SWITCHES SHALL BE PROVIDED. THE RF DISCONNECT SWITCH SHALL BE A "LOCK-OUT" TYPE TO MAKE THE EQUIPMENT FREQUENCY (RF) TRANSMITTER EQUIPMENT INOPERABLE, SUCH THAT ELECTRIC UTILITY CREWS WILL HAVE TOTAL CONTROL OVER OPERATION OF THE EQUIPMENT. THE "LOCK-OUT" DEVICE SHALL BE DESIGNED INTO ANY SYSTEM DEPLOYED IN PEPCO'S SERVICE TERRITORY. THE DISCONNECT MECHANISM SHALL BE OF A CLEARLY VISIBLE MECHANICAL TYPE. PEPCO PERSONNEL MUST BE ABLE TO CLEARLY DETERMINE BY VISIBLE MEANS THAT THE RF OUTPUT OF THE SUBJECT SYSTEM IS DISABLED. THE SWITCHING MECHANISM REQUIRED TO DISABLE THE RF TRANSMITTER SHALL BE CLEARLY MARKED WITH SIGNAGE AND IT SHALL BE LOCATED OUTSIDE THE MAXIMUM PERMISSIBLE RF EXPOSURE (SAFE APPROACH) DISTANCE/RADIUS FROM THE ANTENNA. A "KEEP-OUT" TAG SHALL BE PLACED ON THE DISCONNECTING DEVICES DURING SERVICE ON THE POLE.
3. AN RF SIGN SHALL BE PLACED ON THE POLE AND SHALL INDICATE THE SAFE/MINIMUM APPROACH DISTANCE FROM THE ANTENNA BASED ON THE MAXIMUM PERMISSIBLE EXPOSURE LIMITS AS INDICATED IN TABLE 1 OF FCC'S RULE 47C.F.R.1.1310, IEEE C95.1 AND IEEE C95.5 (AS APPLICABLE) IN CONJUNCTION WITH ITS EFFECTIVE SOTROPIC RADIATED POWER (ERP) VALUE AND THE OPERATIONAL FREQUENCY. THE SIGN SHALL INDICATE THE CARRIER'S NAME, AND 24-HOUR SYSTEM OPERATOR CONTACT INFORMATION, SO THAT NOTIFICATION CAN BE GIVEN TO THE APPROPRIATE PERSONNEL. IT SHALL BE AT LEAST 9" X 11" SIZE AND SHALL COMPLY WITH IEEE C95.2 STANDARDS. IN ADDITION, AN RF MAXIMUM PERMISSIBLE EXPOSURE (MPE) REPORT MUST BE SUBMITTED TO PEPCO.

4. ANY TREE TRIMMING REQUIRED FOR ANTENNA FACILITIES ABOVE THE COMMUNICATION ZONE WILL BE PERFORMED BY PEPCO AT THE CARRIER'S EXPENSE.

5. CARRIER PERSONNEL ARE NOT PERMITTED TO ACCESS THE POLE ABOVE THE COMMUNICATIONS ZONE. ONLY APPROVED PEPCO PERSONNEL OR CONTRACTORS UNDER THE DIRECTION OF AN AUTHORIZED PEPCO EMPLOYEE ARE PERMITTED TO ACCESS THIS SECTION OF THE POLE.

6. WHEN REQUIRED, ALL PERMITS SHALL BE COORDINATED BETWEEN THE CARRIER AND PEPCO'S APPROPRIATE SYSTEM DESIGN DEPARTMENT.

7. EQUIPMENT INSTALLED BELOW THE SAFETY ZONE SHALL BE MAINTAINED BY THE CARRIER.

8. IF AN ANTENNA POLE IS DAMAGED DUE TO HEAVY STORMS, PEPCO WILL NOTIFY THE CARRIER, USING THE PHONE NUMBER PROVIDED ON THE CAUTION SIGN BUT SHALL NOT BE RESPONSIBLE FOR ANY EQUIPMENT.

9. TO ACCOMMODATE FUTURE PEPCO POLE REPLACEMENTS, THE CARRIER SHALL AGREE TO TRANSFER THEIR EQUIPMENT WITHIN 30 DAYS OF NOTIFICATION OF SUCH WORK.

CLEARANCES:

1. RF CAUTION SIGNAGE SHALL BE PLACED OUTSIDE THE SAFE APPROACH DISTANCE RADIUS OF THE ANTENNA.

2. THE SEPARATION OF ANTENNA MOUNTING BRACKET PARTS FROM UNPROTECTED ENERGIZED RIGID CONDUCTOR MOUNTED ON THE SAME POLE SHALL BE AT LEAST 40" FOR DP (48" FOR PEPCO).

3. CLEARANCES AT THE SUPPORT AND MID-SPAN SHALL NOT BE REDUCED, BUT SHALL BE INCREASED AS REQUIRED FOR BUCKET ACCESS.

4. FIBER OPTIC WIRE SHALL BE INSTALLED IN THE COMMUNICATION ZONE WITH 12 INCHES OF SEPARATION FROM OTHER THIRD PARTY COMMUNICATION CONDUCTORS AND SHALL MAINTAIN AT LEAST 40" FOR DP (48" FOR PEPCO) OF SEPARATION FROM THE LOWEST SECONDARY CONDUCTOR FOR NEW POLE INSTALLATIONS AND 40 INCHES FOR EXISTING INSTALLATIONS.

5. AN ANTENNA MOUNTED BELOW PEPCO'S SECONDARY CONDUCTORS WILL MAINTAIN CLEARANCES OF NO LESS THAN 40" FOR DP (48" FOR PEPCO) BETWEEN THE LOWEST SUPPLY CONDUCTOR AND THE HIGHEST POINT OF THE ANTENNA.

6. WIRELESS CARRIER'S EQUIPMENT BOX MAY BE MOUNTED AS LOW TO GROUND LEVEL AS PRACTICAL (PER RECOMMENDATION BY PEPCO FIELD PERSONNEL) IF POLE IS AT LEAST 4.5' AWAY FROM THE CURB OR ROAD.

WIFI DEVICES:

1. WIFI REFERS TO DEVICES THAT MEET IEEE 802.11 STANDARDS.

2. IF MOUNTED ON A STREETLIGHT BRACKET, THE POWER VOLTAGE REQUIREMENTS OF THE RF DEVICE MUST MATCH THE EXISTING STREETLIGHT VOLTAGE. THE PHOTOCELL POWER TAP CONNECTOR SHALL BE PROVIDED BY THE CARRIER AND MUST MEET ANSI C136 REQUIREMENTS.

3. A MAXIMUM OF 1 WIFI DEVICE IS ALLOWED PER CANDIDATE POLE.

4. GROUNDING OF MOUNTING BRACKETS (INCLUDING STREETLIGHT BRACKET) SHALL BE AS SHOWN ON DRAWINGS. THE WIRELESS CARRIER SHALL SUPPLY THE WEIGHT OF THE PROPOSED EQUIPMENT. THE EXISTING BRACKET MUST BE STRUCTURALLY SUFFICIENT TO SUPPORT THE PROPOSED DEVICE. STREETLIGHT BRACKETS WILL NOT BE CHANGED TO ACCOMMODATE THE DEVICE.

5. NESC AND MAXIMUM RF EXPOSURE LIMIT CLEARANCES IN ALL DIRECTIONS SHALL BE MET.

GROUNDING AND BONDING NOTE:
GENERAL CONTRACTOR SHALL FOLLOW ALL CONSTRUCTION GUIDELINES PER CROWN CASTLE'S GROUNDING AND BONDING REQUIREMENTS FOR STRAND MOUNT NODES (oDAS) – DOCUMENT 337910.

NODE:
MNG-423 (802417-3164)

ENGINEER:



OWNER/DEVELOPER:



TITLE: **MNG-423**

**1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
MDOT (SHA)**

**LATITUDE: 38.977576°
LONGITUDE: -76.991567°**



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER OF RECORD

**TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491**

REVISIONS

REV	DATE	DESCRIPTION	BY
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2	02-01-21	EQUIPMENT REVISION	JED
1	02-28-19	CLIENT COMMENTS	MB
0	01-10-19	FINAL	MB

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMM	SDR	SDR

PROJECT NUMBER:	100505
FILE NAME:	STRAND MOUNT ENG. DWG
DATE DRAWN:	11-20-18
SCALE:	AS SHOWN

SHEET:

GN-2

CROWN CASTLE FIBER LLC
SITE PLAN

NODE:
MNG-423 (802417-3164)

ENGINEER:



NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELK RIDGE, MD 21075
(410) 712-7032

OWNER/DEVELOPER:



CROWN CASTLE FIBER LLC
10980 GRANTCHESTER WAY, 4TH FLOOR
COLUMBIA, MD 21044

TITLE:

MNG-423

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DRAWN BY:

AMM

CHECKED BY:

SDR

APPROVED BY:

SDR

PROJECT NUMBER:

100505

FILE NAME:

STRAND MOUNT ENG. DWG

DATE DRAWN:

11-20-18

SCALE:

AS SHOWN

SHEET:

C-1

LEGEND

	IRON BAR/PIPE		GAS LINE
	WATER VALVE		EXISTING TELCO
	UTILITY POLE		OVERHEAD WIRE
	FIRE HYDRANT		UNDERGROUND WIRE
	TREES/LANDSCAPING		PROPOSED CONTOURS
	MANHOLES		EXISTING CONTOURS
	PROPERTY LINE		OVERHEAD ELECTRIC
	ADJACENT PROPERTY LINE		OVERHEAD FIBER
	PROPERTY SETBACK LINE		UNDERGROUND FIBER
	RIGHT OF WAY		UNDERGROUND ELECTRIC
	ZONING DISTRICT LINE		CHAIN LINK FENCE
	ELECTRIC		TREE LINE

DPS BATCH STAMP

PROPOSED CROWN CASTLE TELECOMMUNICATION
EQUIPMENT TO BE MOUNTED ON PROPOSED
STRAND / MESSENGER CABLE SECURED TO
EXISTING UTILITY POLE

EXISTING 44'-0" WOOD POLE
TO BE UTILIZED FOR THE PROPOSED STRAND
MOUNT TELECOMMUNICATION EQUIPMENT
(POLE #802417-3164)
LATITUDE: 38.977576°
LONGITUDE: -76.991567°

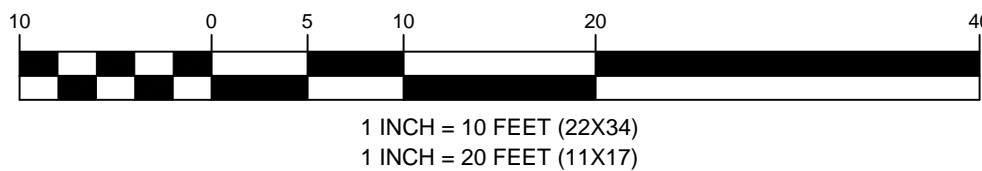
PROPOSED 3/8" EHS SPAN GUY
CONNECTED TO ADJACENT POLE

NOTE:

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FROM EXISTING DOCUMENTATION AND FIELD EVIDENCE. ALL LOCATIONS
SHOULD BE CONSIDERED APPROXIMATE, AND A FIELD INVESTIGATION MUST BE
PERFORMED IN THE VICINITY OF ANY CONSTRUCTION ACTIVITIES. NOTE THAT
THESE PLANS MAY NOT SHOW ALL UTILITIES THAT ARE PRESENT AT THE SITE.

THE CONSTRUCTION MANAGER SHALL
COORDINATE POWER AND TELCO UTILITY
ROUTING TO THE PROPOSED EQUIPMENT
CABINET PRIOR TO CONSTRUCTION.

GRAPHIC SCALE



1

SITE PLAN

SCALE: 1" = 10' (22X34)
SCALE: 1" = 20' (11X17)



EXISTING
RIGHT-OF-WAY

±136'-8" TO
NEAREST RESIDENTIAL
BUILDING

EXISTING UTILITY
POLE (TYP)
EXISTING STREET
SIGN (TYP)
EXISTING GRASSY
AREA

±50'-5" TO NEAREST
COMMERCIAL BUILDING

EXISTING
BUILDING
(TYP)

EXISTING TREE
(TYP)

±2'-2" TO CURB

LARCH AVE
(VARIABLE WIDTH RIGHT OF WAY)

NEW HAMPSHIRE AVE
(VARIABLE WIDTH RIGHT OF WAY)

EXISTING FACE OF CURB

EXISTING
RIGHT-OF-WAY

EXISTING GRASSY
AREA

EXISTING FACE OF CURB

±46'-2" R.O.W WIDTH
±26'-10"
PAVEMENT WIDTH

CROWN CASTLE FIBER LLC
ENLARGED SITE PLAN

NODE:
MNG-423 (802417-3164)

ENGINEER:

NB+C
TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELK RIDGE, MD 21075
(410) 712-7032

OWNER/DEVELOPER:

CROWN CASTLE

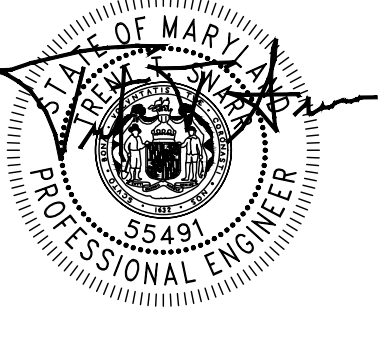
CROWN CASTLE FIBER LLC
10980 GRANTCHESTER WAY, 4TH FLOOR
COLUMBIA, MD 21044

TITLE:

MNG-423

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TAKOMA PARK, MD 20912
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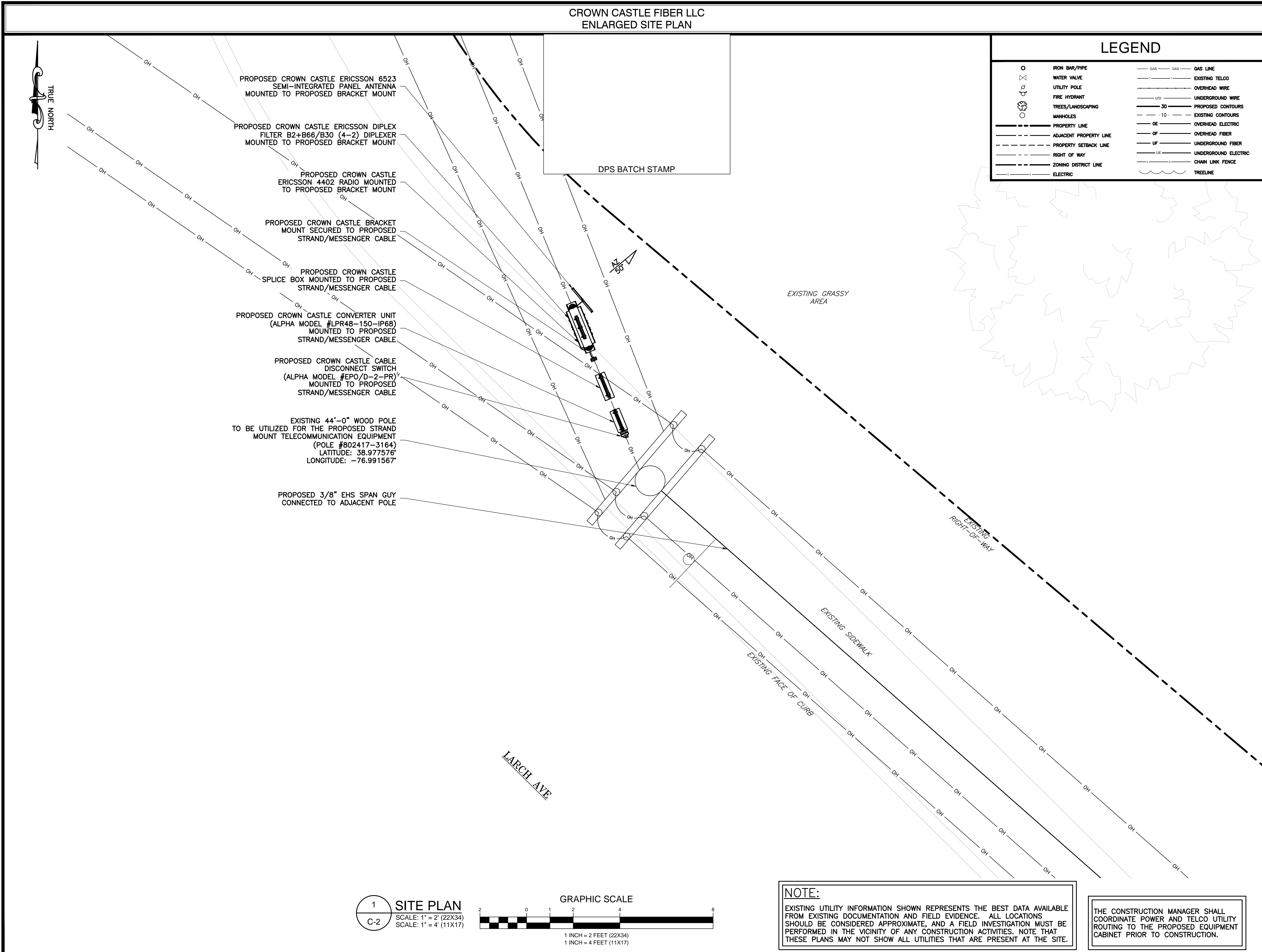
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PROJECT NUMBER:	100505
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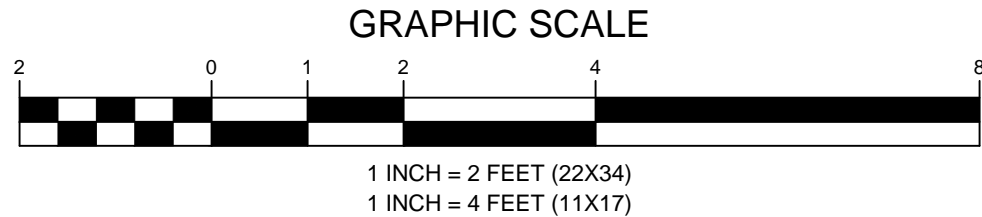
SHEET:

C-2

LEGEND			
	IRON BAR/PIPE		GAS LINE
	WATER VALVE		EXISTING TELCO
	UTILITY POLE		OVERHEAD WIRE
	FIRE HYDRANT		UNDERGROUND WIRE
	TREES/LANDSCAPING		PROPOSED CONTOURS
	MANHOLES		EXISTING CONTOURS
	PROPERTY LINE		OVERHEAD ELECTRIC
	ADJACENT PROPERTY LINE		OVERHEAD FIBER
	PROPERTY SETBACK LINE		UNDERGROUND FIBER
	RIGHT OF WAY		UNDERGROUND ELECTRIC
	ZONING DISTRICT LINE		CHAIN LINK FENCE
	ELECTRIC		TREE LINE



1 SITE PLAN
C-2
SCALE: 1" = 2' (22X34)
SCALE: 1" = 4' (11X17)



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THE CONSTRUCTION MANAGER SHALL COORDINATE POWER AND TELCO UTILITY ROUTING TO THE PROPOSED EQUIPMENT CABINET PRIOR TO CONSTRUCTION.

ENGINEER:



OWNER/DEVELOPER:



TITLE:

MNG-423
1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
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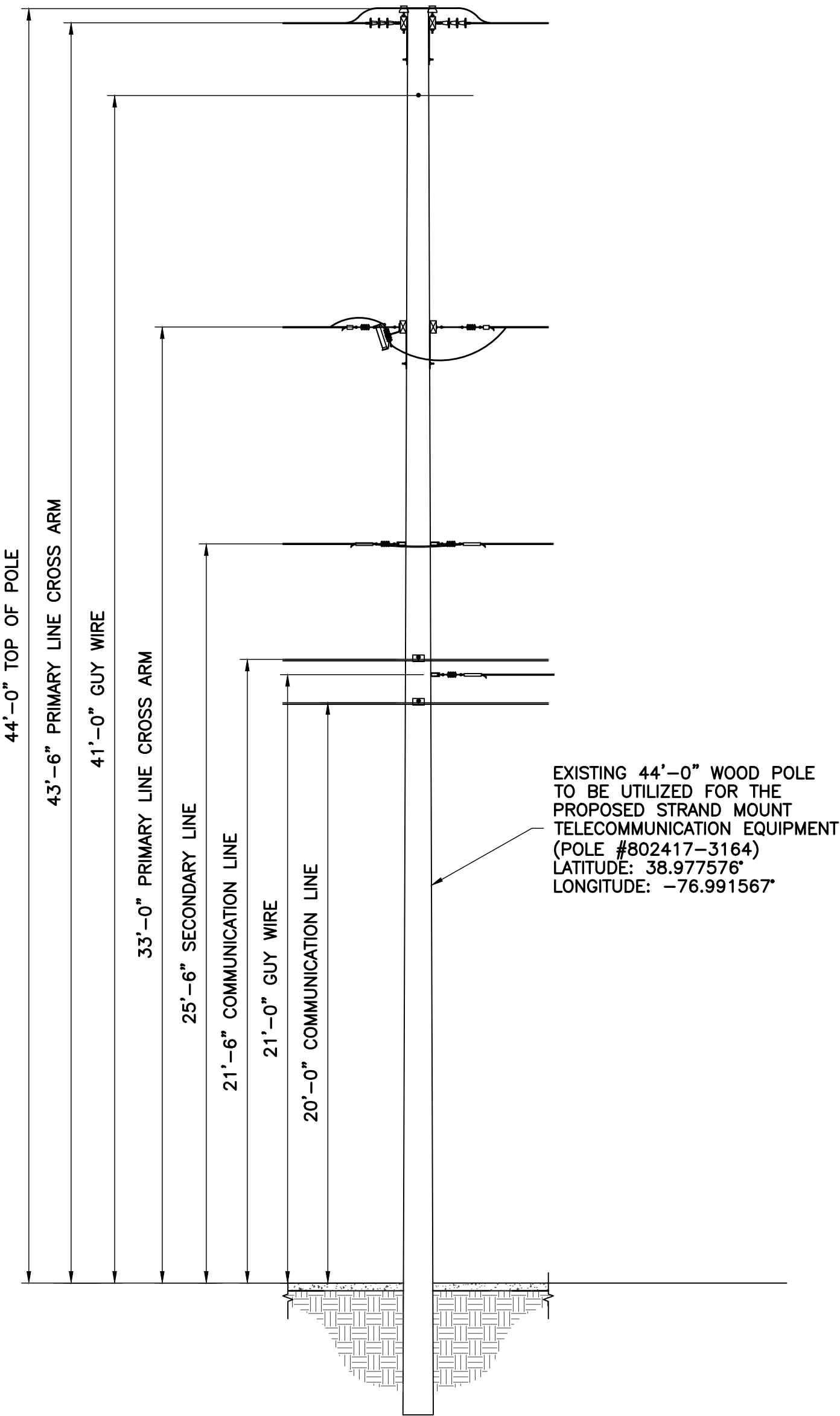
DATE DRAWN: 11-20-18

SCALE: AS SHOWN

SHEET:

C-3

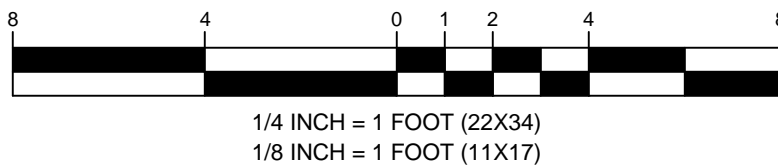
DPS BATCH STAMP



2 POLE ELEVATION (LOOKING NORTH)

SCALE: 1/4" = 1' (22X34)
SCALE: 1/8" = 1' (11X17)

GRAPHIC SCALE

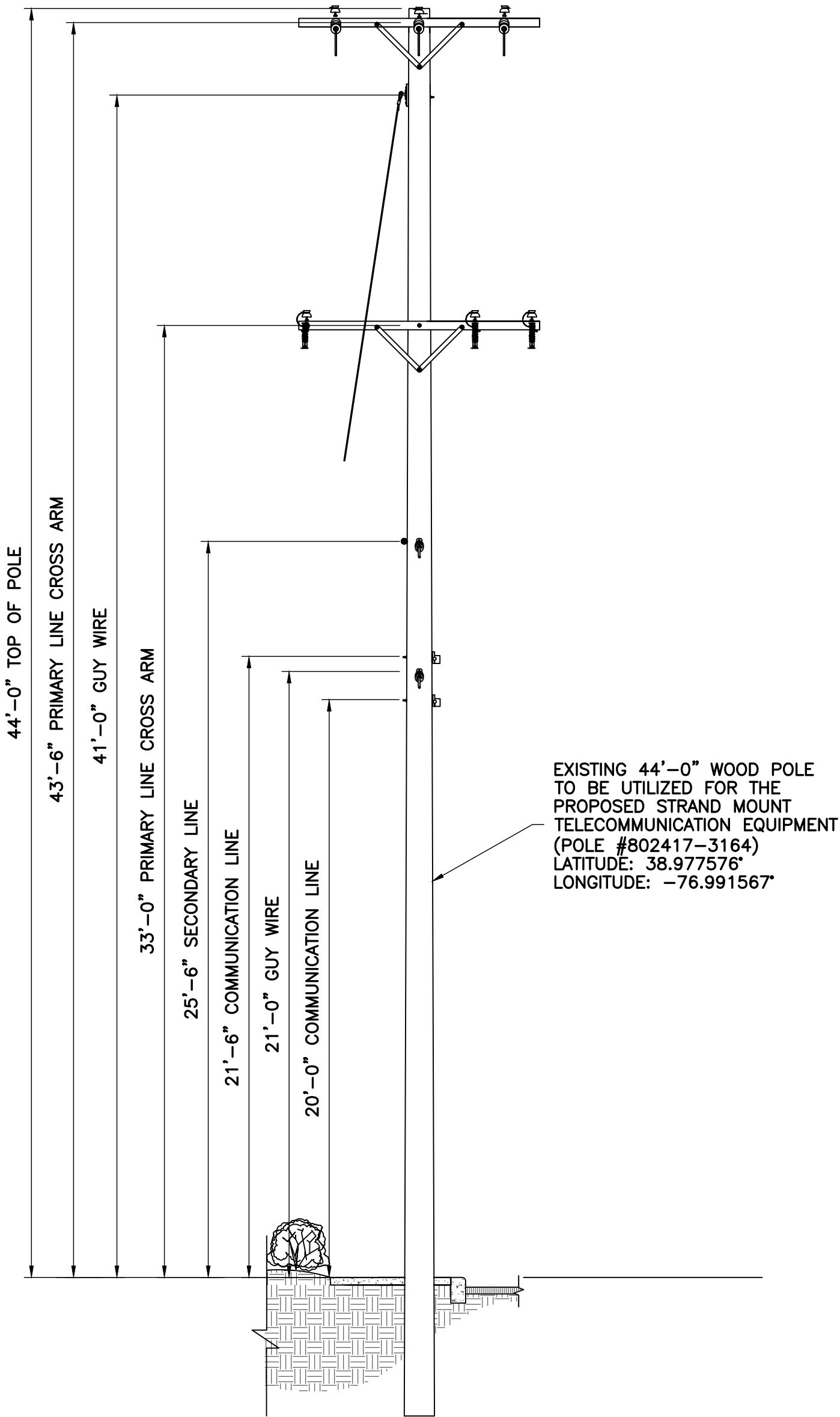


1 EXISTING CONDITIONS (LOOKING EAST)

NOT TO SCALE

MOUNTING NOTE:

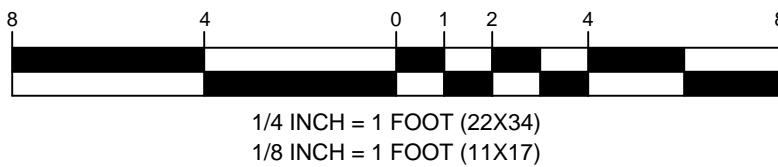
IF FIELD CONDITIONS DO NOT ALLOW FOR
INSTALLATION AS DIRECTED, CONTRACTOR IS TO
CONTACT ENGINEER FOR FURTHER INSTRUCTION.



3 POLE ELEVATION (LOOKING EAST)

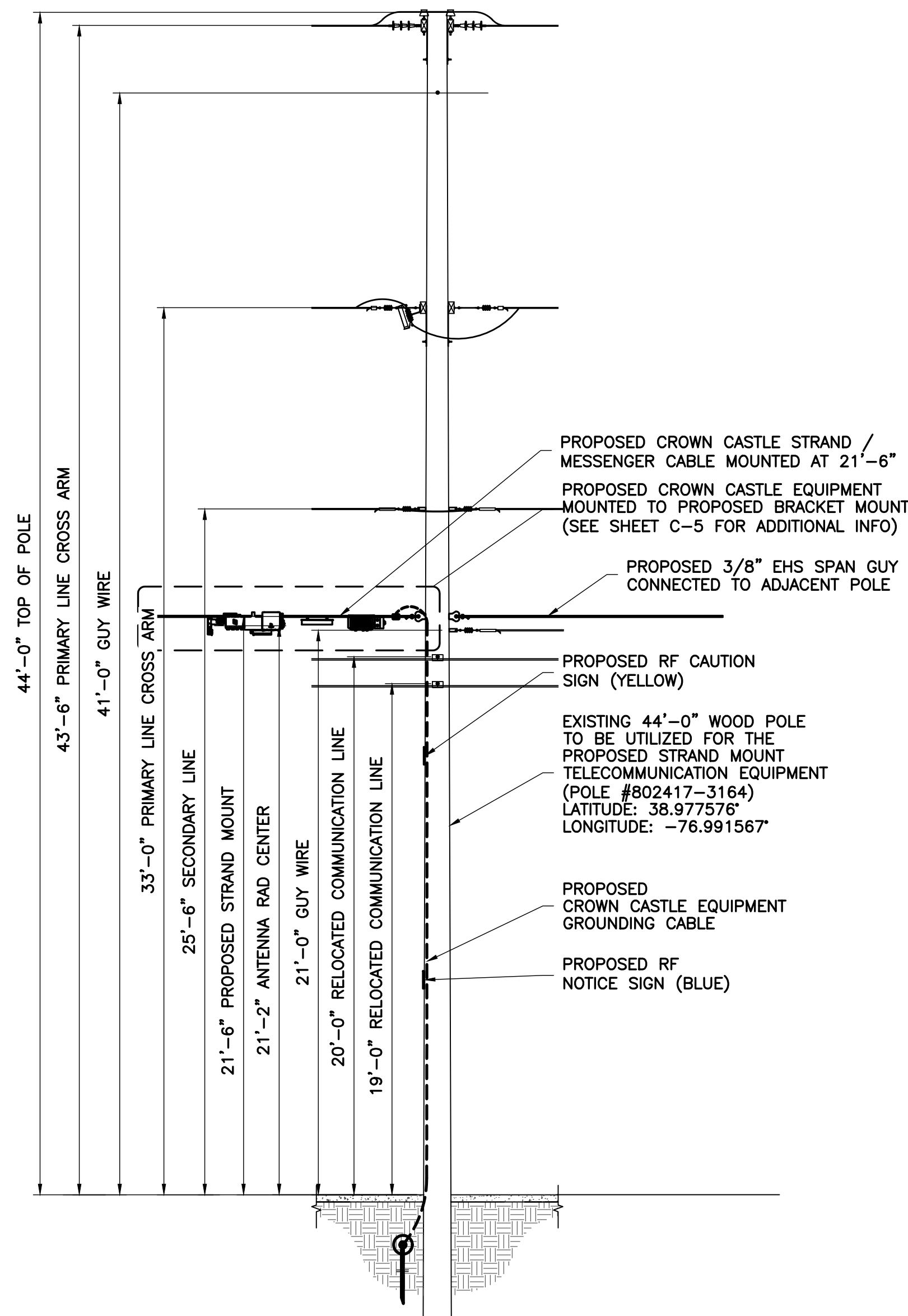
SCALE: 1/4" = 1' (22X34)
SCALE: 1/8" = 1' (11X17)

GRAPHIC SCALE

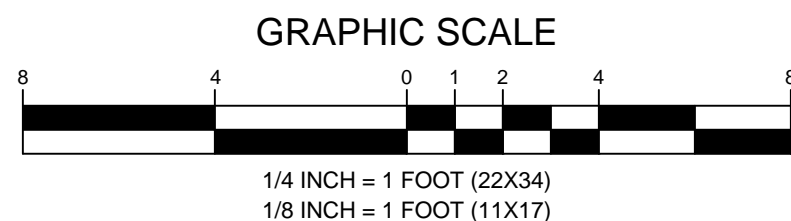


CROWN CASTLE FIBER LLC
PROPOSED ELEVATIONS

DPS BATCH STAMP

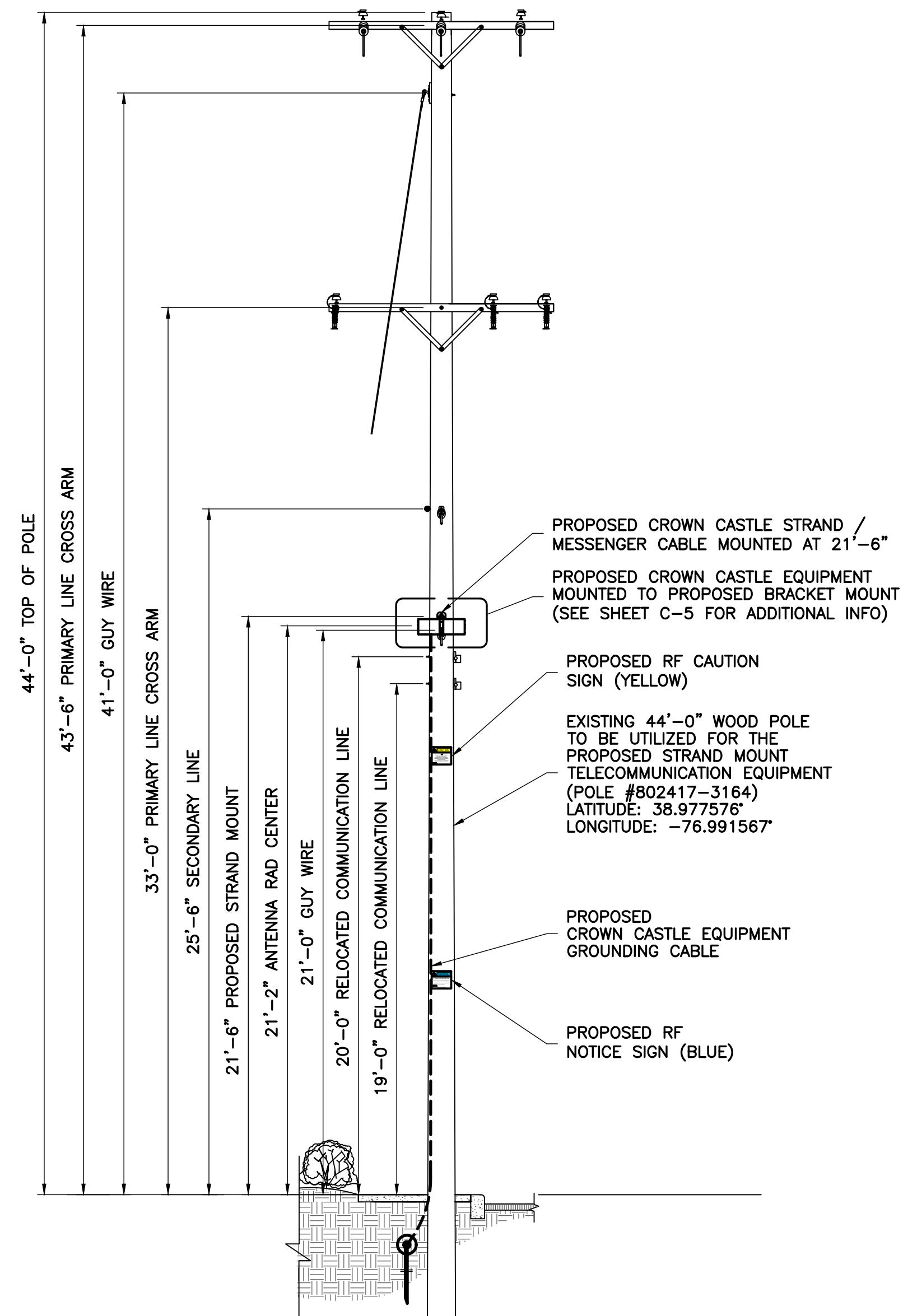


1 POLE ELEVATION (LOOKING NORTH)
SCALE: 1/4" = 1' (22X34)
SCALE: 1/8" = 1' (11X17)

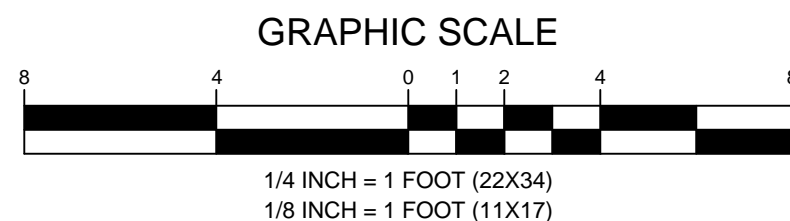


ANTENNA AZIMUTH SHALL BE SET TO 50°

MOUNTING NOTE:
IF FIELD CONDITIONS DO NOT ALLOW FOR
INSTALLATION AS DIRECTED, CONTRACTOR IS TO
CONTACT ENGINEER FOR FURTHER INSTRUCTION.



2 POLE ELEVATION (LOOKING EAST)
SCALE: 1/4" = 1' (22X34)
SCALE: 1/8" = 1' (11X17)



RF SIGNAGE GUIDELINES
RF SIGNAGE SHOULD FOLLOW THE GUIDELINES BELOW. THESE GUIDELINES INCLUDE COLORS TO ALERT PEOPLE OF THE DANGER AND INFORMATION ABOUT SAFE DISTANCES. SIGNS SHOULD BE PLACED IN READABLE PLACES, IN AREAS WHERE A PERSON CAN READ THEM IN A SAFE LOCATION.

GEN. POP. OK	OK	COLOR	SIGN
YES	YES	GREEN	INFORMATION
NO	YES	BLUE	NOTICE
NO	YES	YELLOW	CAUTION
NO	NO	RED	WARNING

1. INCLUDE GENERAL POPULATION STAND OFF DISTANCE.
2. INCLUDE BOTH GENERAL POPULATION AND OCCUPATIONAL POPULATION STAND OFF DISTANCE.
3. INCLUDE NEARBY STAND OFF DISTANCES. ALL WARNING SIGNS MUST BE REVIEWED WITH CROWN CASTLE NATIONAL RF FOR APPROVAL.

FOR MORE INFORMATION CALL THE NUMBER BELOW:
Site ID # 888-632-0831

THE "INFORMATION" SIGN MUST BE POSTED ON OR NEAR THE ANTENNA NEAR THE BOTTOM OF THE POLE OR ON THE ANTENNA ANY TIME THERE IS EXPOSED THE FCC PUBLIC EXPOSURE STANDARD AND NO SPECIAL PRECAUTIONS ARE REQUIRED FOR WORK NEAR ANTENNAS.

THE "NOTICE" SIGN MUST BE POSTED NEAR THE BOTTOM OF THE POLE OR ON THE ANTENNA ANY TIME THERE IS A ZONE NEAR THE ANTENNA THAT EXCEEDS THE GENERAL POPULATION (GP) LIMIT. IF THERE ARE NO ZONES THAT EXCEED THE GP LIMIT, THE "NOTICE" SIGN SHALL NOT BE USED.

THE "CAUTION" SIGN MUST BE POSTED ON THE ANTENNA ANY TIME THERE IS AN AREA THAT EXCEEDS THE GENERAL PUBLIC EXPOSURE LIMIT. THE KEEP-BACK DISTANCE FOR THE GP EME REPORT MUST CLEARLY STATE THAT THE GENERAL PUBLIC LIMIT KEEP BACK DISTANCE WHEN IT IDENTIFIES THIS SIGN FOR POSTING.

INFORMATION
RF EXPOSURE AT THIS SITE DOES NOT EXCEED THE FCC PUBLIC EXPOSURE STANDARD AND NO SPECIAL PRECAUTIONS ARE REQUIRED FOR WORK NEAR ANTENNAS.
Site ID # 888-632-0831

NOTICE
POLE WORKERS
There is an antenna operation high on this pole. Please follow guidance on signs near the antenna or call the number below.
Site ID # 888-632-0831

CAUTION
Keep Back & FF from The Antenna. FCC RF Public Exposure Limits May Be Exceeded Within The Distance. Call 888-632-0831 For Instructions. FCC Occupational Limits May Be Exceeded Within The Distance.
Site ID # 888-632-0831

NODE:
MNG-423 (802417-3164)

ENGINEER:
NB+C
TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELK RIDGE, MD 21075
(410) 712-7022

OWNER/DEVELOPER:
CROWN CASTLE
CROWN CASTLE FIBER LLC
10980 GRANTCHESTER WAY, 4TH FLOOR
COLUMBIA, MD 21044

TITLE:
MNG-423
1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
MDOT (SHA)
LATITUDE: 38.977576°
LONGITUDE: -76.991567°



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER OF RECORD

TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

REVISIONS

REV	DATE	DESCRIPTION	BY
4	10-07-21	ADDRESS REVISION	JED
3	03-25-21	CLIENT COMMENTS	SDR
2	02-01-21	EQUIPMENT REVISION	JED
1	02-28-19	CLIENT COMMENTS	MB
0	01-10-19	FINAL	MB

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMM	SDR	SDR

PROJECT NUMBER:	100505
FILE NAME:	STRAND MOUNT ENG. DWG
DATE DRAWN:	11-20-18
SCALE:	AS SHOWN

SHEET:
C-4

CROWN CASTLE FIBER LLC
ENLARGED ELEVATION

NOTE:
MNG-423 (802417-3164)

ENGINEER:

NB+C
TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELK RIDGE, MD 21075
(410) 712-7032

OWNER/DEVELOPER:

CROWN CASTLE

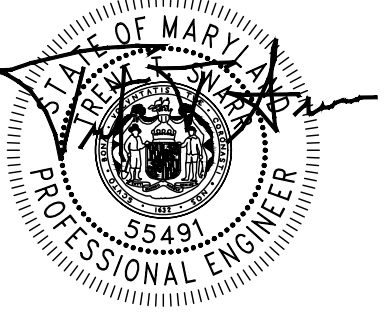
CROWN CASTLE FIBER LLC
10980 GRANTCHESTER WAY, 4TH FLOOR
COLUMBIA, MD 21044

TITLE:

MNG-423

1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
MDOT (SHA)

LATITUDE: 38.977576°
LONGITUDE: -76.991567°



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LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER OF RECORD

TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

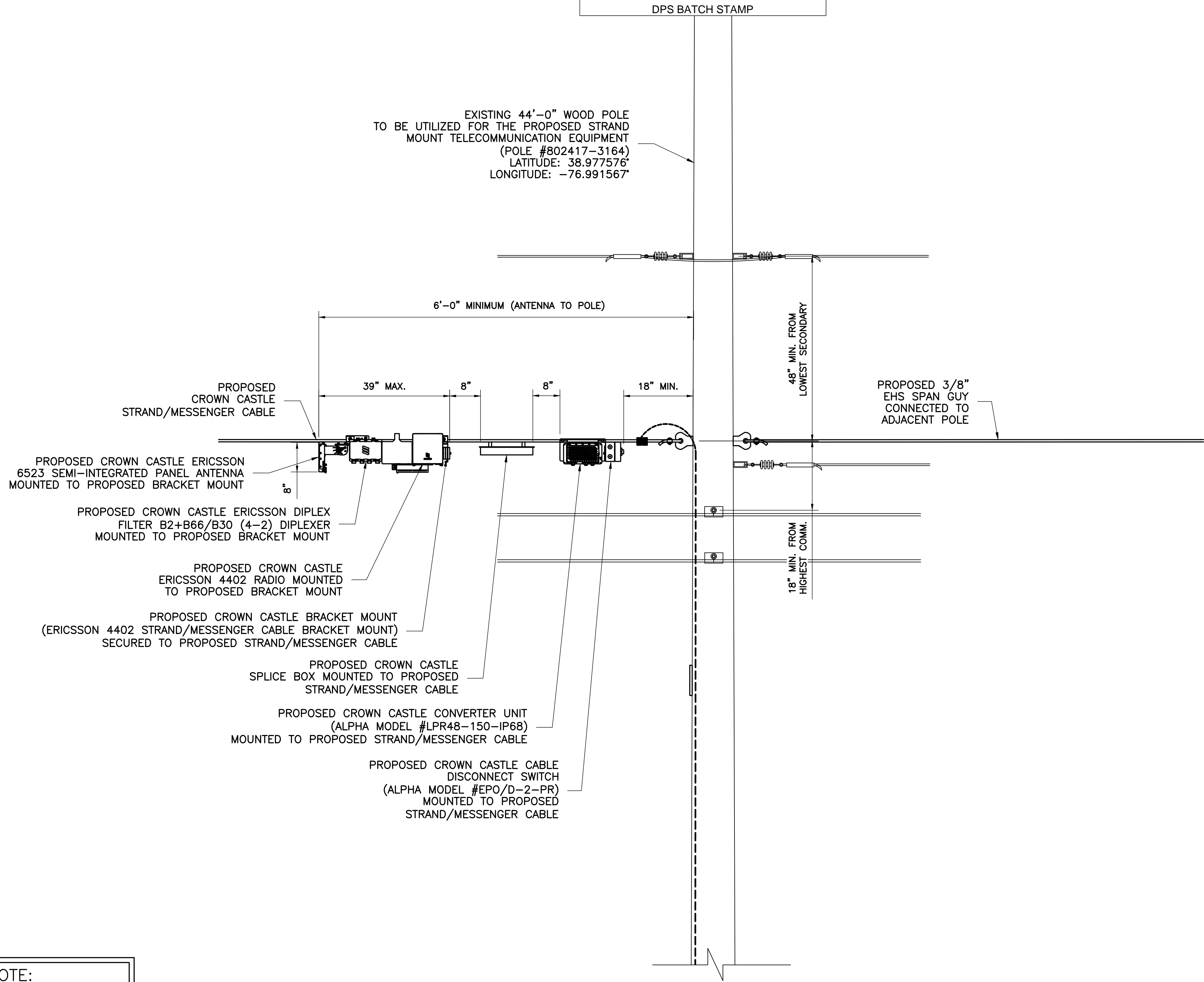
REVISIONS			
REV	DATE	DESCRIPTION	BY
4	10-07-21	ADDRESS REVISION	JED
3	03-25-21	CLIENT COMMENTS	SDR
2	02-01-21	EQUIPMENT REVISION	JED
1	02-28-19	CLIENT COMMENTS	MB
0	01-10-19	FINAL	MB

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMM	SDR	SDR

PROJECT NUMBER:	100505
FILE NAME:	STRAND MOUNT ENG. DWG
DATE DRAWN:	11-20-18
SCALE:	AS SHOWN

SHEET:

C-5



MOUNTING NOTE:

IF FIELD CONDITIONS DO NOT ALLOW FOR
INSTALLATION AS DIRECTED, CONTRACTOR IS TO
CONTACT ENGINEER FOR FURTHER INSTRUCTION.

1 CARRIER ELEVATION
C-5 NTS

ENGINEER:



TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELK RIDGE, MD 21075
(410) 712-7032

OWNER/DEVELOPER:



CROWN CASTLE

CROWN CASTLE FIBER LLC
10980 GRANTCHESTER WAY, 4TH FLOOR
COLUMBIA, MD 21044

TITLE: MNG-423

1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
MDOT (SHA)

LATITUDE: 38.977576°
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LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER OF RECORD

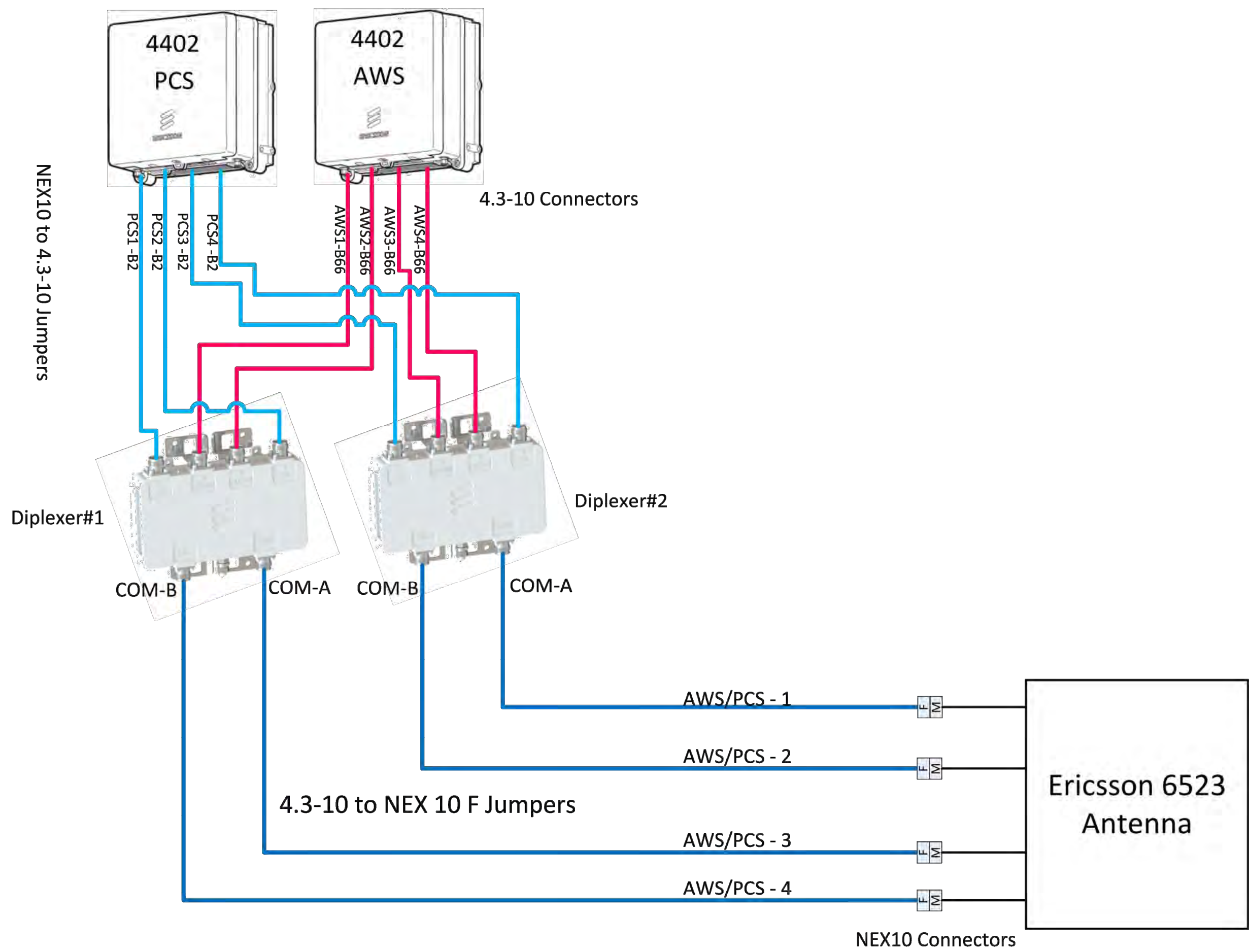
TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

REVISIONS			
REV	DATE	DESCRIPTION	BY
4	10-07-21	ADDRESS REVISION	JED
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2	02-01-21	EQUIPMENT REVISION	JED
1	02-28-19	CLIENT COMMENTS	MB
0	01-10-19	FINAL	MB

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMM	SDR	SDR

PROJECT NUMBER:	100505
FILE NAME:	STRAND MOUNT ENG. DWG
DATE DRAWN:	11-20-18
SCALE:	AS SHOWN

SHEET: **D-1**



ENGINEER:



OWNER/DEVELOPER:



TITLE: MNG-423

1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
MDOT (SHA)

LATITUDE: 38.977576°
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ENGINEER OF RECORD

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LICENSE #55491

REVISIONS

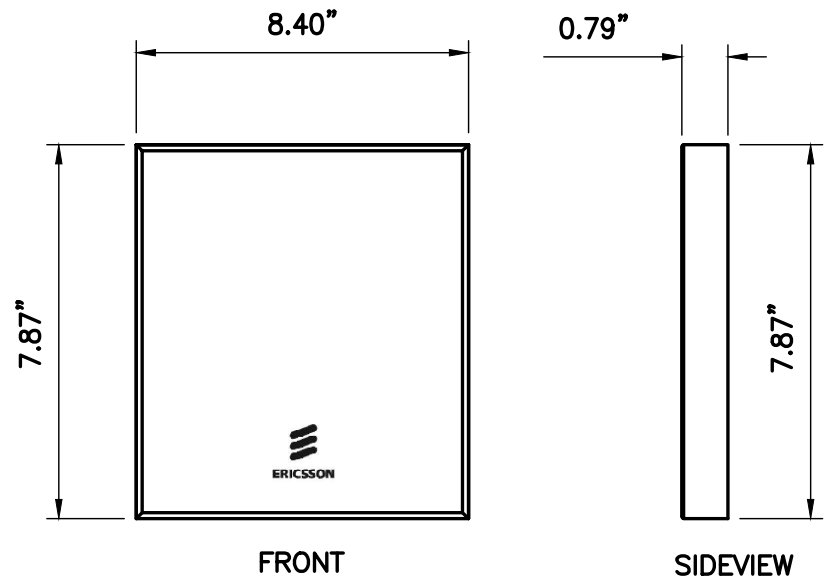
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1	02-28-19	CLIENT COMMENTS	MB
0	01-10-19	FINAL	MB

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMM	SDR	SDR

PROJECT NUMBER:	100505
FILE NAME:	STRAND MOUNT ENG. DWG
DATE DRAWN:	11-20-18
SCALE:	AS SHOWN

SHEET:
D-2

DPS BATCH STAMP

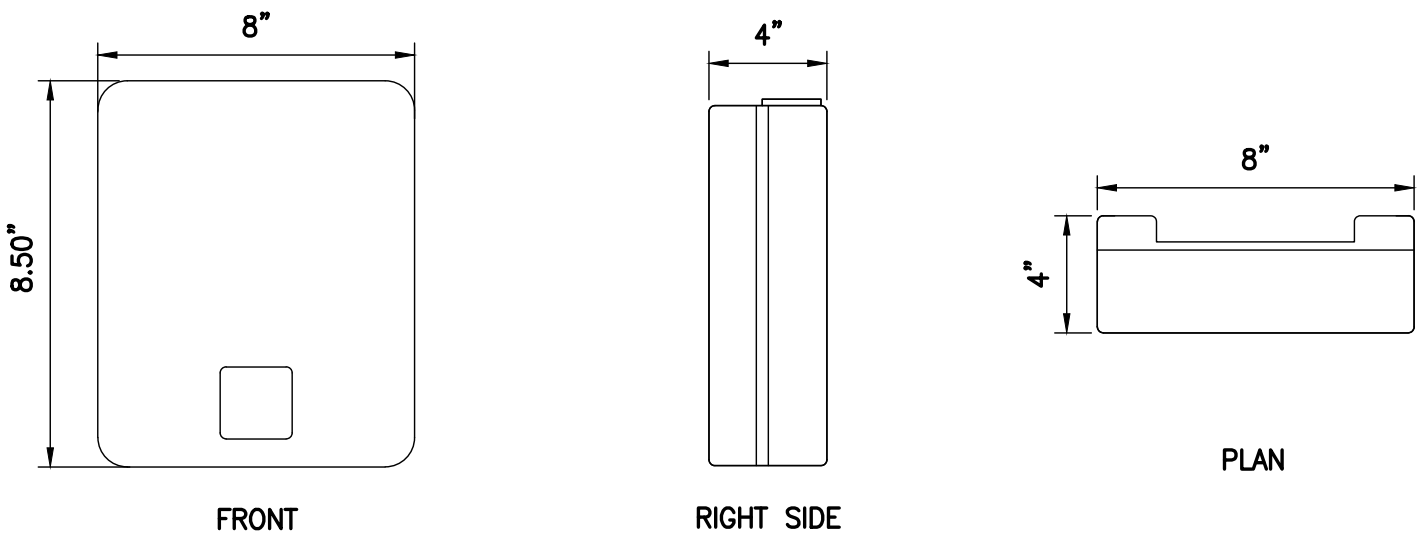


NUMBER OF REQUIRED ANTENNAS
1

ERICSSON 6523 ANTENNA	
WEIGHT	0.88 LBS.
DIMENSIONS (HxWxD)	8.40"x7.87"x0.79"

ANTENNA AZIMUTH SHALL BE SET TO 50°

1 ANTENNA DETAIL
D-2 NTS



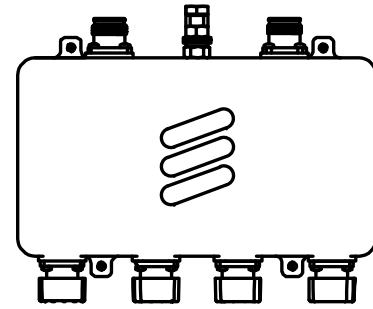
SIZE AND WEIGHT TABLE, INCLUDING MOUNTING BRACKET AND ESTHETIC FRONT COVER

RRU	LENGTH	WIDTH	DEPTH	WEIGHT W/O BRACKET
RADIO 4402	8.5"	8"	4"	~11.2 LBS.
NUMBER OF REQUIRED RADIOS				
2				

NOTES:

- DO NOT PAINT THE RRU. RRU SOLAR SHIELD CAN BE PAINTED PER MANUFACTURER'S METHOD OF PROCEDURE.

2 REMOTE EQUIPMENT HEAD DETAIL
D-2 NTS



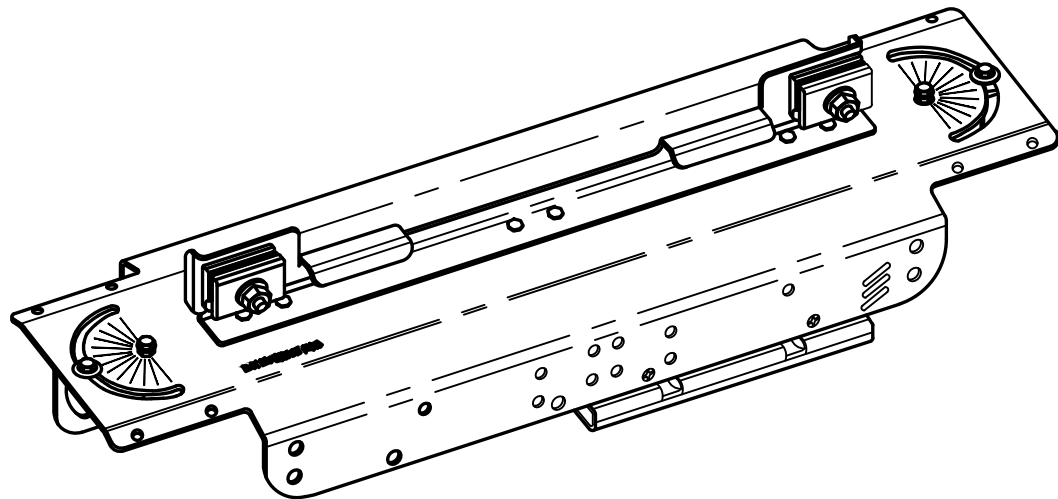
DIPLEXER	LENGTH	WIDTH	DEPTH	WEIGHT
DIPLEX B2+B66/B30 (4-2)	8.27"	4.57"	1.71"	5.07 LBS.
NUMBER OF REQUIRED DIPLEXERS				
2				

3 DIPLEXER DETAIL
D-2 NTS

BILL OF MATERIALS

ITEM	PART NUMBER	DESCRIPTION
1	NTB 101 0450	Material Kit
	SXK 125 3187/5	KIT/SMALL CELL STRAND MOUNT, 3x 2203
	TSR 899 277/31	4.3-10(M) PP-4.3-10(F), 24INCH
	TSR 899 277/32	R/A4.3-109(M)PP TO 4.3-10(M)PP, 30INCH
	KRF 102 409/3	DIPLEX B2+B66/B30, 4.3-10
	130C-1X15FT	LINERLESS RUBBER TAPE 3/4"x15'
	1400-3/4x60FT	VINYL TAPE 3/4"x60FT
2		Panel Antenna
3		Equipment Kit

MECHANICAL PARTS (SXK 125 3187/6)



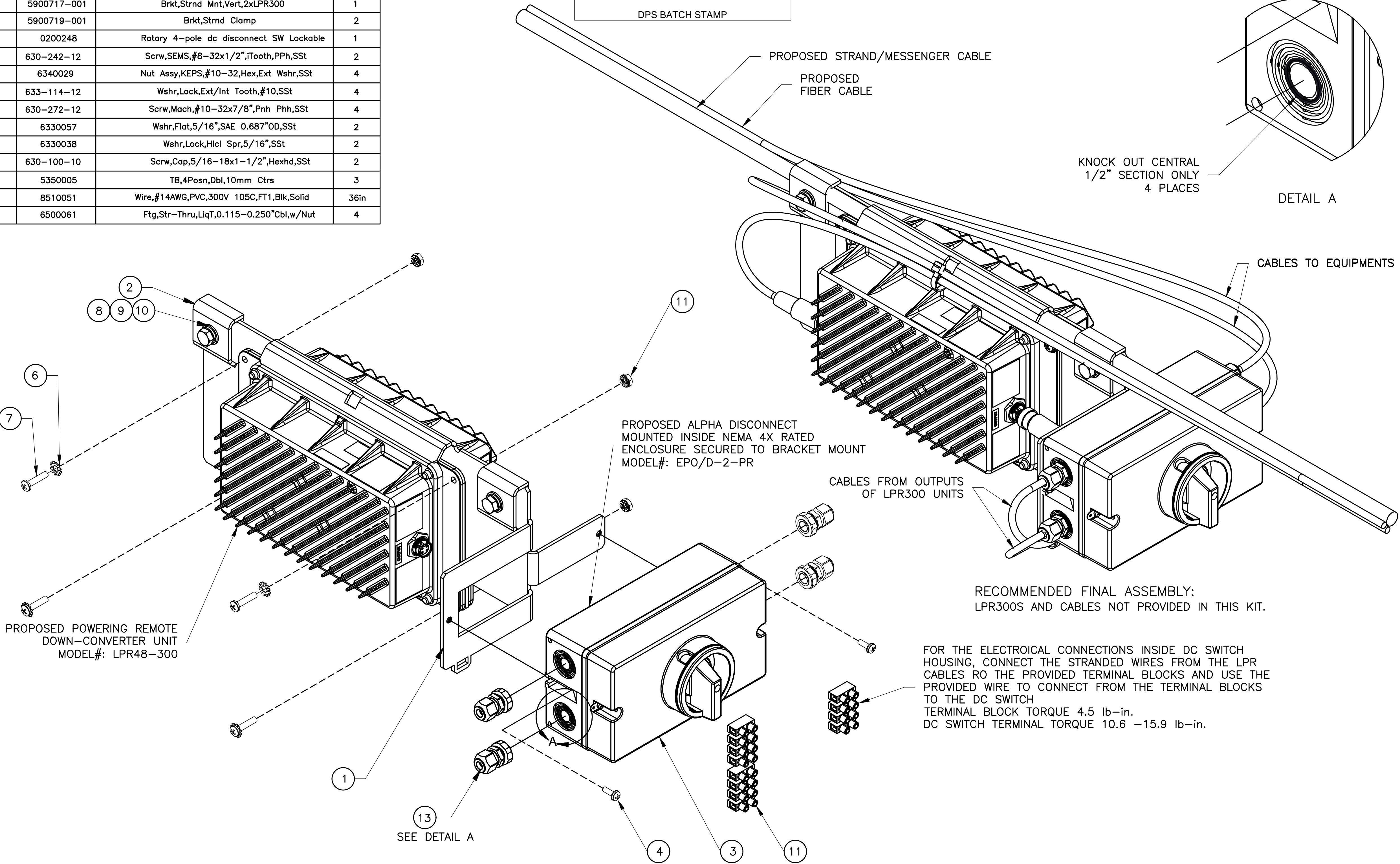
EQUIPMENT BRACKET ASSEMBLY (TOP VIEW)

4 DUAL ANTENNA STRAND BRACKET MOUNT DETAIL
D-2 NTS

CROWN CASTLE FIBER LLC
POWER CONVERTER & DISCONNECT ASSEMBLY DETAILS

KIT CONTENTS

ITEM	PART NUMBER	Description	QTY.
1	5900717-001	Brkt,Strnd Mnt,Vert,2xLPR300	1
2	5900719-001	Brkt,Strnd Clamp	2
3	0200248	Rotary 4-pole dc disconnect SW Lockable	1
4	630-242-12	Scrw,SEMS,#8-32x1/2",iTooth,PPh,SSt	2
5	6340029	Nut Assy,KEPS,#10-32,Hex,Ext Wshr,SSt	4
6	633-114-12	Wshr,Lock,Ext/Int Tooth,#10,SSt	4
7	630-272-12	Scrw,Mach,#10-32x7/8",Pnh Phh,SSt	4
8	6330057	Wshr,Flat,5/16",SAE 0.687"OD,SSt	2
9	6330038	Wshr,Lock,Hlcl Spr,5/16",SSt	2
10	630-100-10	Scrw,Cap,5/16-18x1-1/2",Hexhd,SSt	2
11	5350005	TB,4Posn,Dbl,10mm Ctrs	3
12	8510051	Wire,#14AWG,PVC,300V 105C,FT1,Blk,Solid	36in
13	6500061	Ftg,Str-Thru,Liqt,0.115-0.250"Cbl,w/Nut	4



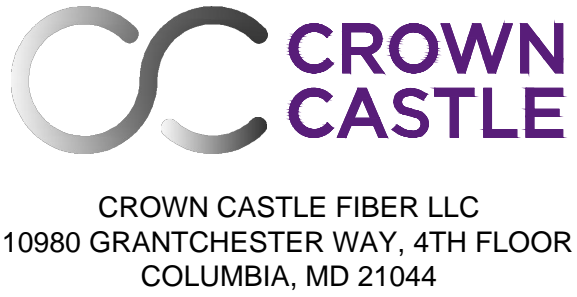
1 POWER CONVERTER & DISCONNECT ASSEMBLY DETAILS
D-3 NTS

NODE:
MNG-423 (802417-3164)

ENGINEER:



OWNER/DEVELOPER:



TITLE:

MNG-423

1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
MDOT (SHA)

LATITUDE: 38.977576°
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LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER OF RECORD

TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

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1	02-28-19	CLIENT COMMENTS	MB
0	01-10-19	FINAL	MB

DRAWN BY:

AMM

CHECKED BY:

SDR

APPROVED BY:

SDR

PROJECT NUMBER:

100505

FILE NAME:

STRAND MOUNT ENG. DWG

DATE DRAWN:

11-20-18

SCALE:

AS SHOWN

SHEET:

D-3

CROWN CASTLE FIBER LLC
GROUNDING DETAILS

NODE:
MNG-423 (802417-3164)

ENGINEER:



OWNER/DEVELOPER:



TITLE:

MNG-423
1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
MDOT (SHA)
LATITUDE: 38.977576°
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LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER OF RECORD

TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

REVISIONS

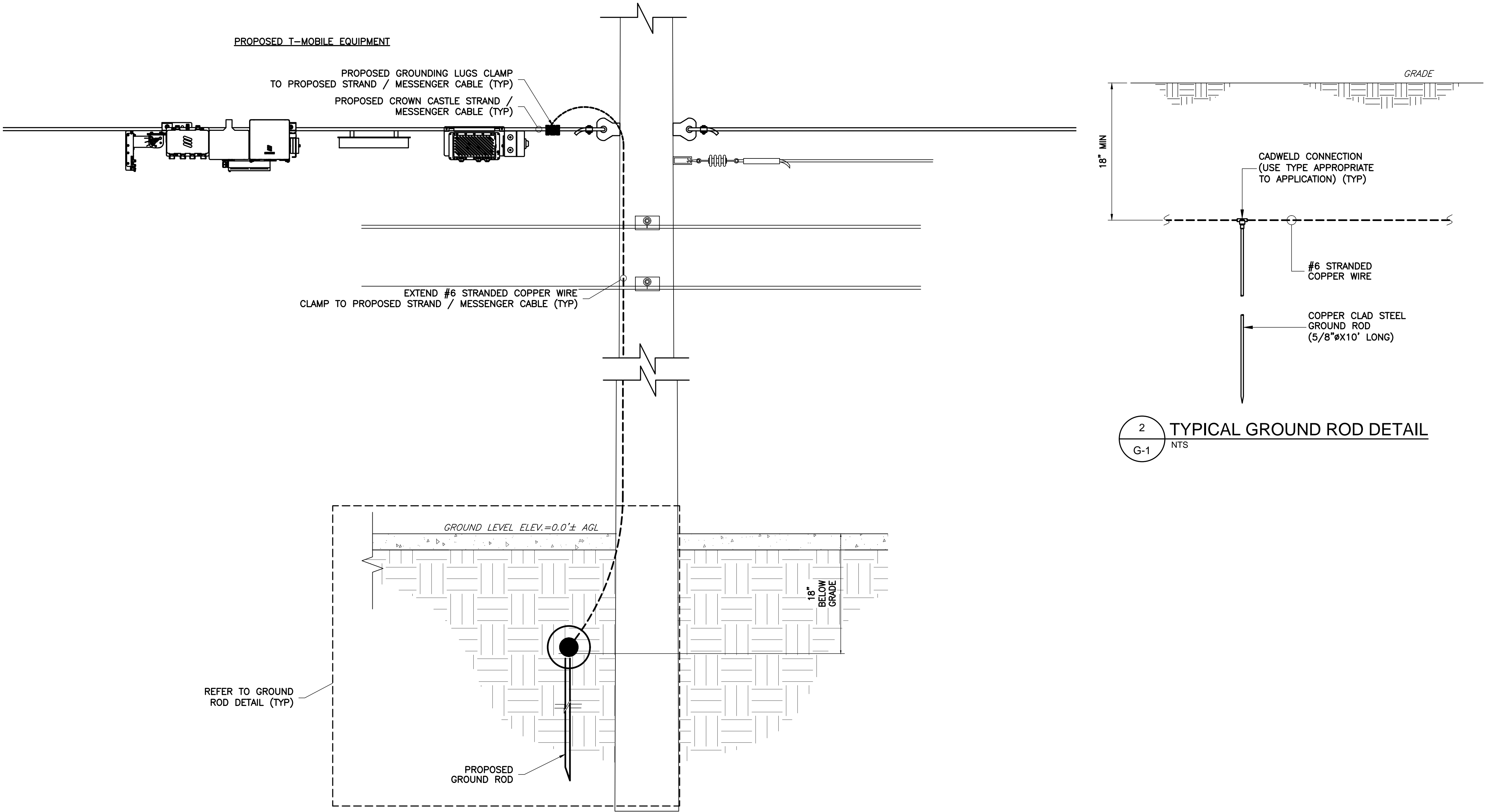
REV	DATE	DESCRIPTION	BY
4	10-07-21	ADDRESS REVISION	JED
3	03-25-21	CLIENT COMMENTS	SDR
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1	02-28-19	CLIENT COMMENTS	MB
0	01-10-19	FINAL	MB

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMM	SDR	SDR

PROJECT NUMBER:	100505
FILE NAME:	STRAND MOUNT ENG. DWG
DATE DRAWN:	11-20-18
SCALE:	AS SHOWN

SHEET:
G-1

DPS BATCH STAMP



1
G-1
GROUNDING RISER DIAGRAM
NOT TO SCALE

2
G-1
TYPICAL GROUND ROD DETAIL
NTS

ENGINEER:



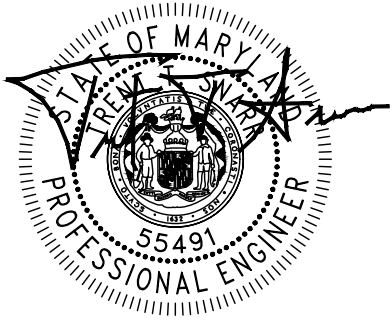
OWNER/DEVELOPER:



TITLE:

MNG-423
1006 LARCH AVENUE
TAKOMA PARK, MD 20912
JURISDICTION: MONTGOMERY COUNTY -
MDOT (SHA)

LATITUDE: 38.977576°
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LICENSE #55491

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AMM	SDR	SDR

PROJECT NUMBER:	100505
FILE NAME:	STRAND MOUNT ENG. DWG
DATE DRAWN:	11-20-18
SCALE:	AS SHOWN

SHEET:
TCP-1

