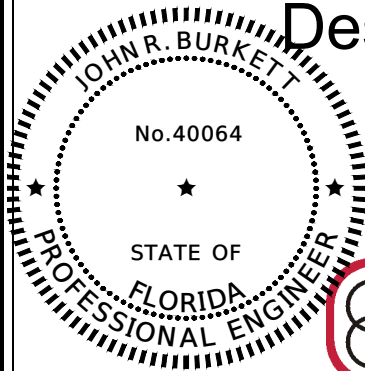


Citrus Grove Road Design Phase 5



Roadway Design Documentation



Prepared By:



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SIGNED AND SEALED BY

APRIL 2022

ON THE DATE ADJACENT TO THE SEAL
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**100% SUBMITTAL
CITRUS GROVE ROAD
APRIL 2021**

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CITRUS GROVE ROAD

Design Phase 5

Citrus Grove Road

DESIGN CRITERIA MATRIX

RSQ #: 19-0910

Design Criteria & Standards

2016 Florida Greenbook
 Lake County Transportation Planning, Design and Construction Standards
 2020 FDOT FDM
 FDOT 2020 STANDARD PLANS

DESIGN ELEMENT	Required	REFERENCE
DESIGN SPEED: HORIZONTAL	40 mph	Lake County Preference
DESIGN SPEED: VERTICAL	40 mph	Lake County Preference
POSTED SPEED	35 mph	Lake County Preference
LANE WIDTHS	11'	2016 Florida Greenbook Table 3-10
MINIMUM CROSS SLOPE	<0.04	2016 Florida Greenbook Section 3.C.7.b.2
SHOULDER WIDTH-OUTSIDE	8'	2016 Florida Greenbook Table 3-11
HORIZONTAL CLEARANCES		
CLEAR ZONE	4'	2016 Florida Greenbook Table 3-15
BORDER WIDTH	12'	2020 FDOT FDM Table 210.7.1
HORIZONTAL ALIGNMENT		
SUPERELEVATION	eMAX = 0.05	2020 FDOT FDM Table 210.9.2
SUPERELEVATION TRANSITION RATE	1:125	2020 FDOT FDM Table 210.9.3
MAX DEFLECTION WITHOUT CURVE	2° 00' 00"	2020 FDOT FDM Section 210.8.1
MINIMUM RADIUS	1500'	Lake County Design Standards 2.C.5.B
LENGTH OF HORIZONTAL CURVE	600'	2020 FDOT FDM Table 210.8.1
	400' Min.	
VERTICAL ALIGNMENT		
MINIMUM GRADE	0.3%	Lake County Design Standards 2.C.6.B
MAXIMUM GRADE	8.0%	Lake County Design Standards 2.C.6.B
STOPPING SIGHT DISTANCE-VERTICAL	305'	2016 Florida Greenbook Table 3-3
PASSING SIGHT DISTANCE	600'	2016 Florida Greenbook Table 3-4
MAX GRADE CHANGE WITHOUT VERTICAL CURVE	0.80%	2016 Florida Greenbook Table 3-8
MINIMUM K VALUE- CREST	44	2016 Florida Greenbook Table 3-9
MINIMUM K VALUE- SAG	64	2016 Florida Greenbook Table 3-9
MINIMUM BASE CLEARANCE	1'	2020 FDOT FDM Section 210.10.3

CITRUS GROVE ROAD

Design Phase 5

Blackstill Lake Road

DESIGN CRITERIA MATRIX

RSQ #: 19-0910

Design Criteria & Standards

2016 Florida Greenbook
 Lake County Transportation Planning, Design and Construction Standards
 2020 FDOT FDM
 FDOT 2020 STANDARD PLANS

DESIGN ELEMENT	Required	REFERENCE
DESIGN SPEED: HORIZONTAL	40 mph	2020 FDOT FDM Table 201.5.1
DESIGN SPEED: VERTICAL	40 mph	Lake County Preference
POSTED SPEED	40 mph	
LANE WIDTHS	11'	2016 Florida Greenbook Table 3-10
MINIMUM CROSS SLOPE	<0.04	2016 Florida Greenbook Section 3.C.7.b.2
SHOULDER WIDTH-OUTSIDE	8'	2016 Florida Greenbook Table 3-11
HORIZONTAL CLEARANCES		
CLEAR ZONE	10'	2016 Florida Greenbook Table 3-15
BORDER WIDTH	12'	2020 FDOT FDM Table 210.7.1
HORIZONTAL ALIGNMENT		
SUPERELEVATION	eMAX = 0.10	2020 FDOT FDM Table 210.9.2
SUPERELEVATION TRANSITION RATE	1:175	2020 FDOT FDM Table 210.9.3
MAX DEFLECTION WITHOUT CURVE	2° 00' 00"	2020 FDOT FDM Section 210.8.1
MINIMUM RADIUS	1500'	Lake County Design Standards 2.C.5.B
LENGTH OF HORIZONTAL CURVE	600' min 400'	2020 FDOT FDM Table 210.8.1
VERTICAL ALIGNMENT		
MINIMUM GRADE	0.3%	Lake County Design Standards 2.C.6.B
MAXIMUM GRADE	8.0%	Lake County Design Standards 2.C.6.B
STOPPING SIGHT DISTANCE- VERTICAL	305'	2016 Florida Greenbook Table 3-3
PASSING SIGHT DISTANCE	600'	2016 Florida Greenbook Table 3-4
MAX GRADE CHANGE WITHOUT VERTICAL CURVE	0.80%	2016 Florida Greenbook Table 3-8
MINIMUM VERTICAL CURVE LENGTH- CREST	120'	2016 Florida Greenbook Table 3-9
MINIMUM K VALUE- CREST	44	2016 Florida Greenbook Table 3-9
MINIMUM VERTICAL CURVE LENGTH- SAG	120'	2016 Florida Greenbook Table 3-9
MINIMUM K VALUE- SAG	64	2016 Florida Greenbook Table 3-9
MINIMUM BASE CLEARANCE	1'	2020 FDOT FDM Section 210.10.3

II. HORIZONTAL ALIGNMENT

Citrus Grove Road

Design Phase 5

Horizontal Alignments

Report Date: 7/6/2020 11:09:15 AM

Prepared by: Jeremy Farwick

Alignment: FOSGATE BASELINE OF SURVEY

Description: Baseline of Survey for Citrus Grove Road

Tangent Data

Description	PT Station	Northing	Easting
Start:	10+00.0000	1546637.122	428213.003
End:	21+33.1338	1546631.178	429346.121

Tangent Data

Parameter	Value	Parameter	Value
Length:	1133.134	Course:	S 89° 41' 58.00" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	21+33.1338	1546631.178	429346.121
End:	57+19.8710	1546595.479	432932.681

Tangent Data

Parameter	Value	Parameter	Value
Length:	3586.737	Course:	S 89° 25' 46.98" E

Citrus Grove Road

Design Phase 5

Horizontal Alignments

Report Date: 7/6/2020 11:09:15 AM

Prepared by: Jeremy Farwick

Alignment: BLACKSTILL BASELINE OF SURVEY

Description: Baseline of Survey for Blackstill Lake Road

Tangent Data

Description	PT Station	Northing	Easting
Start:	100+00.0000	1544984.239	431976.739
End:	116+20.6779	1546604.8	431996.185

Tangent Data

Parameter	Value	Parameter	Value
Length:	1620.678	Course:	N 00° 41' 14.99" E

Citrus Grove Road

Design Phase 5

Horizontal Alignments

Report Date: 7/6/2020 11:09:15 AM

Prepared by: Jeremy Farwick

Alignment: CL Construction Citrus Grove Road

Description: Centerline of Construction for Citrus Grove Road

Curve Point Data

Description	Station	Northing	Easting
PC:	239+12.6407	1546742.751	427693.505
RP:		1544638.806	427547.571
PCC:	242+54.7075	1546691.572	428031.342

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	09° 17' 34.88"	Type:	RIGHT
Radius:		2109	
Length:		342.067 Tangent:	171.409
Mid-Ord:		6.931 External:	6.954
Chord:		341.692 Course:	S 81° 23' 08.49" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	242+54.7075	1546691.572	428031.342
RP:		1548735.577	428513.05
PT:	247+29.7270	1546635.606	428502.034

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	12° 57' 37.04"	Type:	LEFT
Radius:		2100	
Length:		475.019 Tangent:	238.528
Mid-Ord:		13.417 External:	13.503
Chord:		474.007 Course:	S 83° 13' 09.48" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	247+29.7270	1546635.606	428502.034
End:	255+73.8254	1546631.178	429346.121

Tangent Data

Parameter	Value	Parameter	Value
Length:	844.098	Course:	S 89° 41' 58.00" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	255+73.8254	1546631.178	429346.121
End:	291+60.5626	1546595.479	432932.681

Tangent Data

Parameter	Value	Parameter	Value
Length:	3586.737	Course:	S 89° 25' 46.98" E

Citrus Grove Road

Design Phase 5

Horizontal Alignments

Report Date: 7/6/2020 11:09:15 AM

Prepared by: Jeremy Farwick

Alignment: CL Const. Blackstill Lake Road

Description: Centerline of Construction for Blackstill Lake Road

Tangent Data

Description	PT Station	Northing	Easting
Start:	300+00.0000	1546264.247	431948.476
End:	303+41.0115	1546605.248	431951.182

Tangent Data

Parameter	Value	Parameter	Value
Length:	341.012	Course:	N 00° 27' 16.45" E

Citrus Grove Road

Design Phase 5

Horizontal Alignments

Report Date: 7/6/2020 11:09:15 AM

Prepared by: Jeremy Farwick

Alignment: Driveway N1

Description: Centerline of Construction for Driveway N1

Tangent Data

Description	PT Station	Northing	Easting
Start:	10+82.00	1546633.405	428921.555
End:	11+00	1546661.405	428921.702

Tangent Data

Parameter	Value	Parameter	Value
Length:		28 Course:	N 00° 18' 02.00" E

Curve Point Data

Description	Station	Northing	Easting
PC:	11+00	1546661.405	428921.702
RP:		1546661.51	428901.702
PCC:	11+66.82	1546681.288	428904.671

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	76° 34' 05"	Type:	LEFT
Radius:			50
Length:			66.82
Mid-Ord:			
Chord:			61.96

Curve Point Data

Description	Station	Northing	Easting
PCC:	11+66.82	1546681.288	428904.671
RP:		1546780.181	428919.513
PT:	12+38.02	1546722.153	428838.07

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	40° 47' 52"	Type:	RIGHT
Radius:			100
Length:			71.21
Mid-Ord:			
Chord:			69.71

Tangent Data

Description	PT Station	Northing	Easting
Start:	12+38.02	1546722.153	428838.07
End:	14+45.76	1546915.866	428700.05

Tangent Data

Parameter	Value	Parameter	Value
Length:	216.74	Course:	N 35° 28' 11.14" W

Citrus Grove Road

Design Phase 5

Horizontal Alignments

Report Date: 7/6/2020 11:09:15 AM

Prepared by: Jeremy Farwick

Alignment: Driveway N2

Description: Centerline of Construction for Driveway N2

Tangent Data

Description	PT Station	Northing	Easting
Start:	20+54.22	1546632.511	429092.097
End:	22+07.62	1546734.277	429093.698

Tangent Data

Parameter	Value	Parameter	Value
Length:	166.41	Course:	N 00° 42' 38" E

Citrus Grove Road

Design Phase 5

Horizontal Alignments

Report Date: 7/6/2020 11:09:15 AM

Prepared by: Jeremy Farwick

Alignment: CL Const.Vista Grande

Description: Centerline of Construction for Vista Grande

Tangent Data

Description	PT Station	Northing	Easting
Start:	31+08.0245	1546511.232	429543.471
End:	32+26.0000	1546629.201	429544.714

Tangent Data

Parameter	Value	Parameter	Value
Length:	117.975	Course:	N 00° 36' 14.28" E

III. VERTICAL ALIGNMENT

Citrus Grove Road

Design Phase 5

Vertical Alignments

Date: 7/6/2020 11:46:12 AM

Vertical Alignment: PG_CG5

Station Range: Start: 241+35.86, End: 283+04.80

PVI	Station	Grade Out	Curve Length	Elevation (ft)
1	241+35.86	-0.50%	n/a	175.264
2	243+21.97	4.20%	300.80'	174.333
Vertical Curve Information:(sag curve)				

PVC Station: 241+71.57		Elevation: 175.09'		
PVI Station: 243+21.97		Elevation: 174.33'		
PVT Station: 244+72.37		Elevation: 180.65'		
Low Point: 242+03.57		Elevation: 175.01'		
Grade in: -0.50%		Grade out: 4.20%		
Change: 4.70%		K: 64		
Curve Length: 300.80'				
3	247+33.83	0.50%	244.05'	191.632
Vertical Curve Information:(crest curve)				

PVC Station: 246+11.80		Elevation: 186.51'		
PVI Station: 247+33.83		Elevation: 191.63'		
PVT Station: 248+55.85		Elevation: 192.24'		
High Point: 248+55.85		Elevation: 192.24'		
Grade in: 4.20%		Grade out: 0.50%		
Change: 3.70%		K: 65.95945946		
Curve Length: 244.05'				
4	252+10.867	-2.10%	158.332	194.017
Vertical Curve Information:(crest curve)				

PVC Station: 251+31.70		Elevation: 193.62'		
PVI Station: 252+10.87		Elevation: 194.02'		
22+07.62 252+90.03		Elevation: 192.36'		
High Point: 251+62.20		Elevation: 193.7		
Grade in: 0.50%		Grade out: -2.10%		
Change: 2.60%		K: 61		
Curve Length: 158.33				

Citrus Grove Road

Design Phase 5

Vertical Alignments

Date: 7/6/2020 11:46:12 AM

Vertical Alignment: PG_CG5

Station Range: Start: 241+35.86, End: 283+04.80

PVI	Station	Grade Out	Curve Length	Elevation (ft)
5	254+54.76	2.51%	294.567	188.906
Vertical Curve Information:(sag curve)				

	PVC Station: 253+07.48		Elevation:	191.99'
	PVI Station: 254+54.76		Elevation:	188.91'
	PVT Station: 256+02.05		Elevation:	192.60'
	Low Point: 254+40.60		Elevation:	190.59'
	Grade in: -2.10%		Grade out:	2.51%
	Change: 4.60%		K:	64
	Curve Length: 294.57'			
6	258+57.41	-4.02%	358.84'	199.000
Vertical Curve Information:(crest curve)				

	PVC Station: 256+77.99		Elevation:	194.50'
	PVI Station: 258+57.41		Elevation:	199.00'
	PVT Station: 260+36.83		Elevation:	191.79'
	High Point: 258+15.87		Elevation:	196.23'
	Grade in: 2.51%		Grade out:	-4.02%
	Change: 6.52%		K:	55
	Curve Length: 358.84'			
7	266+50.00	-3.74%	120.00'	167.158
Vertical Curve Information:(sag curve)				

	PVC Station: 265+90.00		Elevation:	169.57'
	PVI Station: 266+50.00		Elevation:	167.16'
	PVT Station: 267+10.00		Elevation:	164.91'
	Low Point: 267+10.00		Elevation:	164.91'
	Grade in: -4.02%		Grade out:	-3.74%
	Change: 0.28%		K:	432.1383265
	Curve Length: 120.00'			

Citrus Grove Road

Design Phase 5

Vertical Alignments

Date: 7/6/2020 11:46:12 AM

Vertical Alignment: PG_CG5

Station Range: Start: 241+35.86, End: 283+04.80

PVI	Station	Grade Out	Curve Length	Elevation (ft)
8	271+36.01	-4.43%	120.00'	148.983
	Vertical Curve Information:(crest curve)			
	PVC Station:	270+76.01	Elevation:	151.23'
	PVI Station:	271+36.01	Elevation:	148.98'
	PVT Station:	271+96.01	Elevation:	146.33'
	High Point:	270+76.01	Elevation:	151.23'
	Grade in:	-3.74%	Grade out:	-4.43%
	Change:	0.69%	K:	173.8400097
	Curve Length:	120.00'		
9	275+36.01	-5.22%	n/a	131.263
10	278+36.78	3.38%	550.11'	115.577
	Vertical Curve Information:(sag curve)			
	PVC Station:	275+61.72	Elevation:	129.92'
	PVI Station:	278+36.78	Elevation:	115.58'
	PVT Station:	281+11.83	Elevation:	124.87'
	Low Point:	278+95.51	Elevation:	121.22'
	Grade in:	-5.22%	Grade out:	3.38%
	Change:	8.60%	K:	64
	Curve Length:	550.11'		
11	282+91.47	4.18%	n/a	130.946
12	283+04.80	n/a	n/a	131.503

Citrus Grove Road

Design Phase 5

Vertical Alignments

Date: 7/6/2020 11:46:12 AM

Vertical Alignment: PG_Blackstill

Station Range: Start: 302+65.00, End: 303+41.01

PVI	Station	Grade Out	Curve Length	Elevation (ft)																																
1	302+65.00	-5.46%	n/a	129.42																																
2	302+67.00	-5.46%	n/a	129.31																																
3	302+82.00	-3.10%	30.00'	128.491																																
Vertical Curve Information:(sag curve)																																				
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">PVC Station:</td> <td style="width: 30%;">302+67.00</td> <td style="width: 20%;">Elevation:</td> <td style="width: 20%;">129.31'</td> </tr> <tr> <td>PVI Station:</td> <td>302+82.00</td> <td>Elevation:</td> <td>128.49'</td> </tr> <tr> <td>PVT Station:</td> <td>302+97.00</td> <td>Elevation:</td> <td>128.03'</td> </tr> <tr> <td>Low Point:</td> <td>302+97.00</td> <td>Elevation:</td> <td>128.03'</td> </tr> <tr> <td>Grade in:</td> <td>-5.46%</td> <td>Grade out:</td> <td>-3.10%</td> </tr> <tr> <td>Change:</td> <td>2.36%</td> <td>K:</td> <td>12.69324901</td> </tr> <tr> <td>Curve Length:</td> <td>30.00'</td> <td></td> <td></td> </tr> <tr> <td>Headlight Distance:</td> <td>381.02'</td> <td></td> <td></td> </tr> </table>					PVC Station:	302+67.00	Elevation:	129.31'	PVI Station:	302+82.00	Elevation:	128.49'	PVT Station:	302+97.00	Elevation:	128.03'	Low Point:	302+97.00	Elevation:	128.03'	Grade in:	-5.46%	Grade out:	-3.10%	Change:	2.36%	K:	12.69324901	Curve Length:	30.00'			Headlight Distance:	381.02'		
PVC Station:	302+67.00	Elevation:	129.31'																																	
PVI Station:	302+82.00	Elevation:	128.49'																																	
PVT Station:	302+97.00	Elevation:	128.03'																																	
Low Point:	302+97.00	Elevation:	128.03'																																	
Grade in:	-5.46%	Grade out:	-3.10%																																	
Change:	2.36%	K:	12.69324901																																	
Curve Length:	30.00'																																			
Headlight Distance:	381.02'																																			
4	302+97.00	-2.00%	n/a	128.026																																
5	303+26.01	-2.01%	n/a	127.446																																
5	303+41.01	n/a	n/a	127.145																																

Citrus Grove Road

Design Phase 5

Vertical Alignments

Date: 7/6/2020 11:46:12 AM

Vertical Alignment: PG_Vista

Station Range: Start: 31+72.00, End: 32+26.00

PVI	Station	Grade Out	Curve Length	Elevation (ft)
1	31+72.00	2.00%	n/a	194.979
2	32+26.00	n/a	n/a	196.059

22+07.62

Citrus Grove Road

Design Phase 5

Vertical Alignments

Date: 7/6/2020 11:46:12 AM

Vertical Alignment: PG_N1

Station Range: Start: 10+82.00 to 13+36.00

PVI	Station	Grade Out	Curve Length	
0	10+82.00	-2.00%	n/a	
1	11+08.00			
2	11+36.00	-10%	50.00'	
Vertical Curve Information:(crest curve)				

	PVC Station:	11+08.00	Elevation:	193.08'
	PVI Station:	11+33.00	Elevation:	192.58'
	PVT Station:	11+58.00	Elevation:	190.08'
	High Point:	11+08.00	Elevation:	193.08'
	Grade in:	-2.00%	Grade out:	-10.00%
	Change:	8.00%	K:	6.25'
	Curve Length:	50.00'		
	Passing Distance:	218.3'	Stopping Distance:	108.07'
3	11+58.00	-9.96%		
4	11+71.96			
5	12+21.96	-3.96%	100.00'	
Vertical Curve Information:(sag curve)				

	PVC Station:	11+71.96	Elevation:	188.69'
	PVI Station:	12+21.96	Elevation:	183.69'
	PVT Station:	12+71.96	Elevation:	181.71'
	Low Point:	12+71.96	Elevation:	181.71'
	Grade in:	-10.00%	Grade out:	-3.96%
	Change:	6.05%	K:	16.53'
	Curve Length:	100'		
	Headlight Distance:	116.74'		
6	12+71.96			
7	22+07.62	-0.60%	41.40'	
Vertical Curve Information:(sag curve)				

	PVC Station:	12+71.96	Elevation:	181.71'
	PVI Station:	12+92.66	Elevation:	180.96'
	PVT Station:	13+13.36	Elevation:	180.83'
	Low Point:	13+13.36	Elevation:	180.83'
	Grade in:	-3.63%	Grade out:	-0.60%
	Change:	3.04%	K:	13.63'
	Curve Length:	41.4'		
	Headlight Distance:	203.53'		
8	13+13.36			
9	13.36			

Citrus Grove Road

Design Phase 5

Vertical Alignments

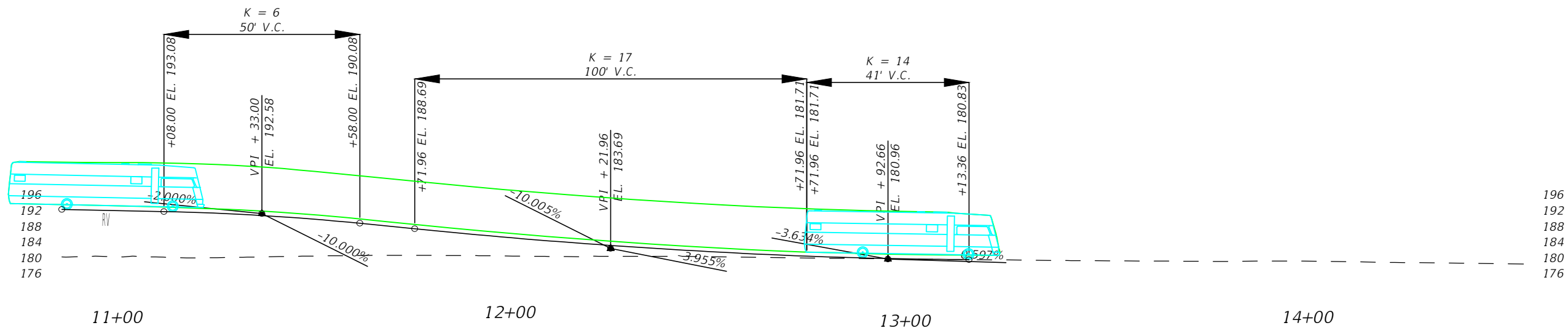
Date: 7/6/2020 11:46:12 AM

Vertical Alignment: PG_N2

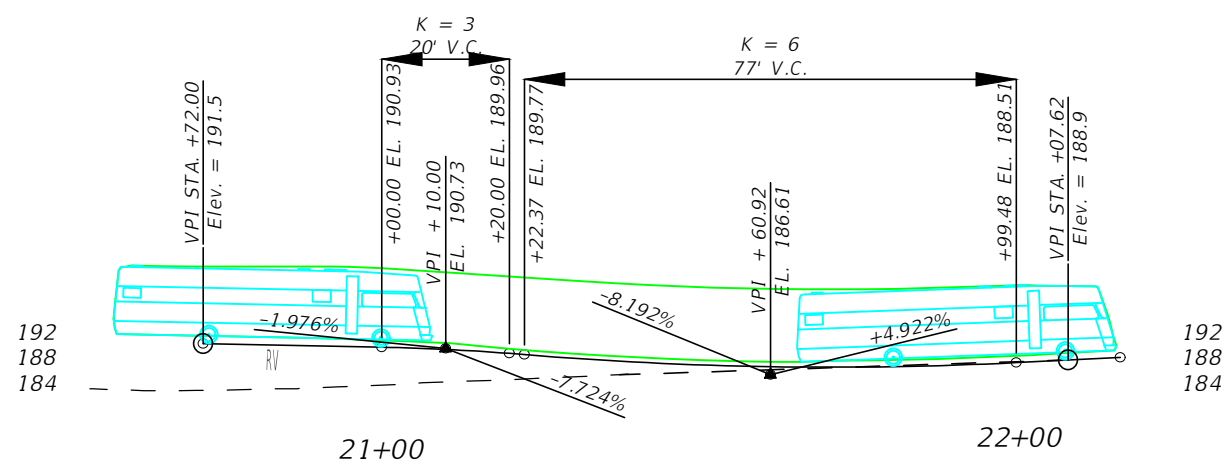
Station Range: Start: 20+72.00, End:22+07.62

PVI	Station	Grade Out	Curve Length
0	20+72.00	-2.00%	n/a
1	21+00.00		n/a
2	22+07.62	-7.72%	20.00'
Vertical Curve Information:(crest curve)			
	PVC Station:	21+00.00	Elevation: 190.93'
	PVI Station:	21+10.00	Elevation: 190.73''
	PVT Station:	21+20.00	Elevation: 189.96'
	High Point	21+00.00	Elevation: 190.93'
	Grade in:	-1.98%	Grade out: -7.72%
	Change:	5.75%	K: 3.48
	Curve Length:	20.00'	
	Passing Distance	279.07'	Stopping Distance 125.64'
3	21+20.00	-7.89%	
4	21+22.3		
5	21+60.92	4.92%	77.11
Vertical Curve Information:(sag curve)			
	PVC Station:	21+22.37	Elevation: 189.77'
	PVI Station:	21+60.92	Elevation: 186.61'
	PVT Station:	21+99.48	Elevation: 188.51'
	High Point	21+70.54	Elevation: 187.80'
	Grade in:	-8.19%	Grade out: 4.92%
	Change:	13.11%	K: 5.88'
	Curve Length:	77.11'	
	Headlight Distance:	59.84'	
6	21+99.48	4.91%	
	22+07.62		

Driveway N1 10+82.00-14+54.76



Driveway N2 20+54.22-22+20.63



REVISIONS	DATE	DRMP <small>ENGINEERS SURVEYORS PLANNERS SCIENTISTS</small> DRMP, INC. 941 LAKE BALDWIN LANE ORLANDO, FLORIDA 32814 P 407.896.0594 F 407.896.4836	LAKE COUNTY, FL <small>REAL FLORIDA · REAL CLOSE</small>	LAKE COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION			SHEET NO.	
				ROAD	RSQ NO.			
				CITRUS GROVE ROAD	19-0910			
				JOHN R. BURKETT, P.E. LICENSE NO. 40064				
				DATE:				

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