Wekiva Parkway – Section 8
FPID: 240200-4-52-01
Line & Grade
Final Submittal

Design Documentation

Prepared for:

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Section 1 – Roadway Design Criteria

Wekiva Parkway – Section 8
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Line & Grade
Roadway Design Criteria

Design Element	Design Standard	Sources/Notes
Design Year	2040	PD&E (Draft PER Dated May 2015)
Design Vehicle	WB-62FL WB-67	-PPM Vol. 1, P 1-19 -AASHTO, Table 2-1B
Design Speed Wekiva Parkway (Urban Freeway) SR 400 (I-4) (70) (Mainline and Express) SR 400 (I-4) C-D Roads Directional Ramps International Parkway Loop Ramps Loop Ramp to Rinehart Road Metz Ave., Pacific Ave., and Atlantic Ave.	 70 mph 70 mph 55 mph 50 mph 45 mph 35 mph 30 mph 25 mph	-PPM Vol. 1, Tbl. 1.9.1 & 1.9.2 (SIS)
Horizontal Alignment		
Maximum Curvature (Degree of Curve) Wekiva Parkway (Urban) (70) SR 400 (I-4) (70) (Mainline and Express) SR 400 (I-4) C-D Roads (55) Directional Ramps (50) International Parkway (45) Loop Ramps (35) Loop Ramp to Rinehart Road (30) Metz Ave., Pacific Ave., and Atlantic Ave. (25)	 3° 00’ 00” 3° 00’ 00” 6° 30’ 00” 8° 15’ 00” 10° 15’ 00” 17° 45’ 00” 24° 45’ 00” 36° 15’ 00”	-PPM Vol. 1, Tbl 2.8.3 -Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways “Florida Greenbook” (May 2013), Tbl 3-4
Maximum Deflection without Horizontal Curve Wekiva Parkway (Urban) (70) SR 400 (I-4) (70) (Mainline and Express) SR 400 (I-4) C-D Roads (55) Directional Ramps (50) International Parkway (45) Loop Ramps (35) Loop Ramp to Rinehart Road (30) Metz Ave., Pacific Ave., and Atlantic Ave. (25)	 0° 45’ 00” 0° 45’ 00” 0° 45’ 00” 0° 45’ 00” 0° 45’ 00” 2° 00’ 00” 2° 00’ 00” 2° 00’ 00”	-PPM Vol 1, Tbl 2.8.1a

Design Element	Design Standard	Sources/Notes
Minimum Length of Horizontal Curve	**Desirable** **Minimum**	-PPM Vol 1, Tbl 2.8.2a
Wekiva Parkway (Urban) (70)	2100 ft (30V) 1050 ft (15V)	
SR 400 (I-4) (70) (Mainline and Express)	2100 ft (30V) 1050 ft (15V)	
SR 400 (I-4) C-D Roads (55)	825 ft (15V) 400 ft	
Directional Ramps (50)	750 ft (15V) 400 ft	
International Parkway (45)	675 ft (15V) 400 ft	
Loop Ramps (35)	525 ft (15V) 400 ft	
Loop Ramp to Rinehart Road (30)	450 ft (15V) 400 ft	
Metz Ave., Pacific Ave., and Atlantic Ave. (25)	400 ft	
Minimum Stopping Sight Distance (FDOT)		-PPM Vol 1, Tbl 2.7.1
Wekiva Parkway (Urban) (70)	820 ft	(adjustment for grades will be required)
SR 400 (I-4) (70) (Mainline and Express)	820 ft	
SR 400 (I-4) C-D Roads (55)	570 ft	
Directional Ramps (50)	425 ft	
International Parkway (45)	360 ft	
Loop Ramps (35)	250 ft	
Loop Ramp to Rinehart Road (30)	200 ft	
Metz Ave., Pacific Ave., and Atlantic Ave. (25)	155 ft	
Minimum Stopping Sight Distance (AASHTO)		-AASHTO, Table 3-1
Wekiva Parkway (Urban) (70)	730 ft	(adjustment for grades will be required)
SR 400 (I-4) (70) (Mainline and Express)	730 ft	
SR 400 (I-4) C-D Roads (55)	495 ft	
Directional Ramps (50)	425 ft	
International Parkway (45)	360 ft	
Loop Ramps (35)	250 ft	
Loop Ramp to Rinehart Road (30)	200 ft	
Metz Ave., Pacific Ave., and Atlantic Ave. (25)	155 ft	
Lane Drop Taper		
Interstate	70: 1 (50:1 Min)	-AASHTO, Ch. 8 P 75 of 122
All other		
30 mph - 45mph	1:30	-Design Standards Index No. 526
>45 mph	1:40	
Accel	300’ Min	-AASHTO, Figure 10-69
Decel Lanes	250’ Min	-AASHTO, Figure 10-72
Add Lane Taper		
Interstate		
Tangent	300 ft	-AASHTO, Figure 10-55
Curve	100 ft	-AASHTO, Ch. 10, P113 of 122

Design Element	Design Standard	Sources/Notes
All Other		
30 mph – 45 mph	50 ft	
>45 mph	50 ft	-Design Standards Index No. 526
Minimum Spacing Ramp Terminals		
Entrance to Exit		
System to Service	2000 ft	-AASHTO,
Service to Service	1600 ft	Figure 10-68
Exit to Entrance		
Freeway	500 ft	
CD/Frontage Rd.	400 ft	
Entrance to Entrance		
Freeway	1000 ft	
CD/Frontage Rd	800 ft	
Exit to Exit		
Freeway	1000 ft	
CD/Frontage Rd	800 ft	
Turning Roadways		
System Interchange	800 ft	
Service Interchange	600 ft	
Entrance and Exit Ramp Design		
Entrance Acceleration Lengths		
50 mph to 70 mph	580 ft +Taper (Single Lane)	-AASHTO,
35 mph to 70 mph	1230 ft +Taper (Single Lane)	Table 10-3
30 mph to 70 mph	1350 ft +Taper (Single Lane)	
Exit Deceleration Lengths		
70 mph to 50 mph	340 ft +Taper (Single Lane)	
70 mph to 35 mph	490 ft +Taper (Single Lane)	-AASHTO, Table 10-5
70 mph to 30 mph	520 ft +Taper (Single Lane)	
		-Design Standard Index No. 525
	Tapered Design, Single Lane: 2° to 5°	
	Parallel Design, Single Lane:	-AASHTO, Figure 10-70
Tapers	250 ft Min	
Limited Access Limits		-PPM Vol 1, Section 2.14.1
Rural	300 ft	
Urban	100 ft	
Crossroad Overpass/No Interchange	200 ft	
Maximum Profile Grade		-PPM Vol 1, Tbl 2.6.1
Wekiva Parkway (Urban) (70)	3%	
SR 400 (I-4) (70) (Mainline and Express)	3%	
SR 400 (I-4) C-D Roads (55)	5.5%	
Directional Ramps (50)	5%	
International Parkway (45)	6%	
Loop Ramps (35)	6%	

Design Element	Design Standard	Sources/Notes
Loop Ramp to Rinehart Road (30) Metz Ave., Pacific Ave., and Atlantic Ave. (25)	7% 7%	-Florida Greenbook, Tbl 3-6
Maximum Change in Grade w/o Curve Wekiva Parkway (Urban) (70) SR 400 (I-4) (70) (Mainline and Express) SR 400 (I-4) C-D Roads (55) Directional Ramps (50) International Parkway (45) Loop Ramps (35) Loop Ramp to Rinehart Road (30) Metz Ave., Pacific Ave., and Atlantic Ave. (25)	 0.2 0.2 0.5 0.6 0.7 0.9 1.0 1.1	-PPM Vol 1, Tbl 2.6.2
Minimum Grade (shoulder gutter, barrier wall, curb & gutter)	0.3%	-PPM Vol 1, Tbl 2.6.4
Crest Vertical Curve (FDOT) Wekiva Parkway (Urban) (70) SR 400 (I-4) (70) (Mainline and Express) SR 400 (I-4) C-D Roads (55) Directional Ramps (50) International Parkway (45) Loop Ramps (35) Loop Ramp to Rinehart Road (30) Metz Ave., Pacific Ave., and Atlantic Ave. (25) Crest Vertical Curve (AASHTO) Wekiva Parkway (Urban) (70) SR 400 (I-4) (70) (Mainline and Express) SR 400 (I-4) C-D Roads (55) Directional Ramps (50) International Parkway (45) Loop Ramps (35) Loop Ramp to Rinehart Road (30) Metz Ave., Pacific Ave., and Atlantic Ave. (25)	 K=506, Min Length=1000 ft (1800 ft within Interchange) K=506, Min Length=1000 ft (1800 ft within Interchange) K=245, Min Length=350 ft K=136, Min Length=300 ft K=98, Min. Length=135 ft K=47, Min Length=105 ft K=31, Min Length=90 ft K=19, Min. Length=75 ft K=247, Min Length=210 ft K=247, Min Length=210 ft K=114, Min Length=165 ft K=84, Min Length=150 ft K=61, Min Length=360 ft K=29, Min Length=105 ft K=19, Min Length=90 ft K=12, Min Length=155 ft	-PPM Vol 1, Tbl 2.8.5 -AASHTO, Table 3-35
Sag Vertical Curve (FDOT) Wekiva Parkway (Urban) (70) SR 400 (I-4) (70) (Mainline and Express) SR 400 (I-4) C-D Roads (55) Directional Ramps (50) International Parkway (45)	 K=206, Min Length=800 ft K=206, Min. Length=800 ft K=136, Min Length=250 ft K=96, Min Length=200 ft K=79, Min Length=135 ft	-PPM Vol 1, Tbl 2.8.6

Design Element	Design Standard	Sources/Notes
Loop Ramps (35) Loop Ramp to Rinehart Road (30) Metz Ave., Pacific Ave., and Atlantic Ave. (25)	K=49, Min Length=105 ft K=37, Min Length=90 ft K=26, Min Length=75ft	
Sag Vertical Curve (AASHTO) Wekiva Parkway (Urban) (70) SR 400 (I-4) (70) (Mainline and Express) SR 400 (I-4) C-D Roads (55) Directional Ramps (50) International Parkway (45) Loop Ramps (35) Loop Ramp to Rinehart Road (30) Metz Ave., Pacific Ave., and Atlantic Ave. (25)	 K=181, Min Length=210 ft K=181, Min Length=210 ft K=115, Min Length=165 ft K=96, Min Length=150 ft K=79, Min Length=360 ft K=49, Min Length=105 ft K=37, Min Length=90 ft K=26, Min Length=155 ft	 -AASHTO, Table 3-36
Minimum Vertical Clearance Over Roadway Over Railroad Overhead Signs Structures Overhead Dynamic Message Sign Structures	 16.5 ft 23.5 ft 17.5 ft 19.5 ft	-PPM Vol 1, Tbls 2.10.1, 2.10.2
Lane Widths Wekiva Parkway (Urban) (70) SR 400 (I-4) (70) (Mainline and Express) International Parkway (45) Ramp (One Lane) Ramp (Two Lanes)	 12 ft – Tangent 12 ft - Tangent 12 ft - Tangent 15 ft - Tangent 24 ft - Tangent	-PPM Vol 1, Tbls 2.1.1, 2.1.3
Shoulder Widths Wekiva Parkway (3 lanes) Wekiva Parkway (2 lanes) SR 400 (I-4) (70) (Mainline and Express) International Parkway (45) Ramp (One Lane) Ramp (Two lanes)	**Inside Total/Paved** / **Outside Total/Paved** 12/10 / 12/10 8/4 / 12/10 12/10 / 12/10 12/5 / 12/5 6/2 / 6/4 8/4 / 12/10	-PPM Vol 1, Tbls 2.3.1 & 2.3.4 **4' inside shoulder width design variation approved for express lanes**
Median Widths Interstate Arterial & Collectors >45 mph ≤45 mph	 64 ft 40 ft 22 ft	-PPM Vol 1, Tbl 2.2.1 26 ft with barrier

Design Element	Design Standard	Sources/Notes
Cross Slope Roadway(Two Lane) Roadway (Three Lane) Shoulder (Outside) Shoulder (Inside)	 0.02, 0.02 0.02, 0.02, 0.03 0.06 0.05	-PPM Vol 1, Figures 2.1.1, 2.3.1, 2.3.1A
Maximum Lane Roll-Over	4%	-PPM Vol 1, Figure 2.1.1 -PPM Vol 1, Section 2.1.5
Maximum Lane Roll-Over @ Terminal	≥ 35 mph: 5% < 35 mph: 6%	-PPM Vol 1, Tbl 2.1.4
Maximum Shoulder Roll- Over	7%	-Design Standard Index No. 510 -PPM Vol 1, Figure 2.3.1.A
Clear Zone Wekiva Parkway (Urban) (70) SR 400 (I-4) (70) (Mainline and Express) SR 400 (I-4) C-D Roads (55) Directional Ramps (50) International Parkway (45) Loop Ramps (30) Metz Ave., Pacific Ave., and Atlantic Ave. (25)	 36 ft 36 ft 30 ft 14-24 ft (1 to 2 Lanes) 14-24 ft (1 to 2 Lanes) 10-18 ft (1 to 2 Lanes) 10-18 ft (1 to 2 Lanes)	-PPM Vol 1 Tbl 4.2.1 -Design Standard Index No. 700
Border Width Freeway & Ramps	 94 ft	-PPM Vol 1, Tbl 2.5.3 **15ft border width design variation approved for freeway and ramps**
Roadside Slopes Rural & Urban Freeways, Rural Arterials & Collectors Urban Arterials and Collectors with C & G	**Fill Height** / **Front slope** 0–5 / 1:6 5– 10 / 1:6 to CZ & 1:4 10–20 / 1:6 to CZ & 1:3 >20 / 1:2 w/Guardrail **Back Slope** 1:4 or 1:3 w/Trapezoidal Ditch & 1:6 Front Slope **Front Slope** 1:2 or to suit property owner, not flatter than 1:6 **Back Slope** 1:2 or to suit property owner, not flatter than 1:6	-PPM Vol 1, Table 4.2.4
Superelevation Transition Distribution Tangent Curve	**Standard** / **Min/Max** 80% / 50% 20% / 50%	-PPM Vol 1, Section 2.9

Design Element	Design Standard		Sources/Notes
Superelevation Rates	**e Max**	**Transition/Min L**	-PPM Vol 1, Tbls 2.9.3 & 2.9.4, P 2-53
Wekiva Parkway (Urban) (70)	0.10	1:200/100 ft	
SR 400 (I-4) (70) (Mainline and Express)	0.10	1:200/100 ft	
SR 400 (I-4) C-D Roads (55)	0.10	1:225/100 ft	
Directional Ramps (50)	0.10	1:200/100 ft	
International Parkway (45)	0.10	1:150/100 ft	
Loop Ramps (35)	0.10	1:175/100 ft	
Loop Ramp to Rinehart Road (30)	0.10	1:100/50 ft	
Metz Ave., Pacific Ave., and Atlantic Ave. (25)	0.10	1:100/50 ft	

This Design Criteria has been developed utilizing the following sources:

- FDOT Plans Preparation Manual Volume I Dated January 2016
- FDOT Design Standards Dated July 2016
- AASHTO, A Policy on Geometric Design of Highways and Streets Dated 2011 6th Edition
- Florida's Turnpike General Tolling Requirements (GTR) Volume I Design Criteria and Process Dated October 2015
- Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways "Florida Greenbook" May 2013

This design criteria is in general agreement with the criteria established in the Wekiva Parkway/SR 46 Realignment PD&E Study, Preliminary Engineering Report dated May 2015.

Section 2 – Horizontal Geometry

Wekiva Section 8: Chains and Profiles

Alignment	Chain Name	Profile Name	Comments
C/L CONST. SR 429 (WEKIVA PKWY)	429_A1	429_A1	Serves as EB PGL at Begin Project
		429_A1_PGL_WB	WB PGL tying to Project 7A
B/L SURVEY SR 429	BLSV429	-	Also called C/L Const. & C/L Survey
C/L SURVEY SR 417	BLSV417	-	Also called C/L Const. & C/L Survey
C/L SURVEY SR 400 (I-4)	BLSV400	-	
B/L SR 400 EB	SR400EB	SR400EB	
B/L SR 400 EB (ULTIMATE) CR46A	ULT400EB1	-	
B/L SR 400 EB (ULTIMATE) SR46	ULT400EB2	-	
B/L SR 400 WB	SR400WB	SR400WB	
B/L SR 400 WB (ULTIMATE) CR46A	ULT400WB1	-	
B/L SR 400 WB (ULTIMATE) SR46	ULT400WB2	-	
C/L SR 400 EXPRESS LANES (ULTIMATE)	CLI4	CLI4	
C/L WILSON ROAD	WILSON	-	
C/L INTERNATIONAL PKWY	INPK_A1	-	
C/L TOWN CENTER BLVD	TOWNCTR	-	
C/L RINEHART RD	RINHT	-	
C/L METZ AVE	METZ	-	
B/L RAMP EE2 (ULTIMATE)	EE2	EE2	Express lane ramps
B/L RAMP EE3 (ULTIMATE)	EE3	EE3	Express lane ramps
B/L RAMP EE4 (ULTIMATE)	EE4	EE4	Express lane ramps
B/L RAMP EE5 (ULTIMATE)	EE5	EE5	Express lane ramps
B/L RAMP GG	GG	GG	
B/L RAMP HH1	HH1	HH1	
B/L RAMP HH2	HH2	HH2	
B/L RAMP LL1	LL1	LL1	
B/L RAMP LL1 (ULTIMATE)	ULT-LL1	-	
B/L RAMP LL2	LL2	LL2	
B/L RAMP LL3	LL3	LL3	
B/L RAMP MM1	MM1	MM1	
B/L RAMP MM2	MM2	MM2	
B/L RAMP MM3	MM3	MM3	
B/L RAMP NN1	NN1	NN1	
B/L RAMP NN2	NN2	NN2	
B/L RAMP 001	001	001	
B/L RAMP 001 (ULTIMATE)	ULT-001	-	
B/L RAMP 002	002	002	
B/L RAMP 003	003	003	
B/L RAMP 004	004	004	
B/L RAMP RR	RR	RR	
B/L RAMP CR46A EB	CR46AEB	CR46AEB	

Project: Wekiva Section 8
Job No. 429
Operator: RD
Date: Thursday January 5, 2017

Chain 429_A1 contains:
CUR 429_A1-1 1 CUR 429_A1-2 CUR 429_A1-3 CUR 429_A1-4 2 CUR 429_A1-5 42903 CUR - 429_A1-6

Beginning chain 429_A1 description
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		Curve Data				

Curve 429_A1-1						
P.I. Station		1085+23.6090	N	1,628,509.07	E	538,122.03
Delta	=	49° 37' 29.79" (RT)				
Degree	=	0° 52' 00.00"				
Tangent	=	3,056.48				
Length	=	5,725.95				
Radius	=	6,611.05				
External	=	672.36				
Long Chord	=	5,548.65				
Mid. Ord.	=	610.29				
P.C. Station		1054+67.1280	N	1,628,477.59	E	535,065.71
P.T. Station		1111+93.0828	N	1,626,201.09	E	540,125.86
C.C.			N	1,621,866.89	E	535,133.79
Back	= N	89° 24' 35.99" E				
Ahead	= S	40° 57' 54.22" E				
Chord Bear	= S	65° 46' 39.12" E				

Course from PT 429_A1-1 to 1 S 40° 57' 54.22" E Dist 263.09

Equation: Sta 1114+56.1750 (BK) = Sta 1114+87.2500 (AH)

End Region 1
Begin Region 2

Point 1 N 1,626,002.43 E 540,298.34 Sta 1114+87.2500

Course from 1 to PC 429_A1-2 S 40° 57' 54.22" E Dist 2,007.83

		Curve Data				

Curve 429_A1-2						
P.I. Station		1157+43.0569	N	1,622,788.83	E	543,088.44
Delta	=	41° 23' 16.70" (LT)				
Degree	=	0° 57' 46.05"				
Tangent	=	2,247.98				
Length	=	4,298.74				
Radius	=	5,951.00				
External	=	410.43				
Long Chord	=	4,205.89				
Mid. Ord.	=	383.95				
P.C. Station		1134+95.0751	N	1,624,486.30	E	541,614.67
P.T. Station		1177+93.8180	N	1,622,489.69	E	545,316.43
C.C.			N	1,628,387.77	E	546,108.32
Back	= S	40° 57' 54.22" E				
Ahead	= S	82° 21' 10.92" E				
Chord Bear	= S	61° 39' 32.57" E				

		Curve Data				

Curve 429_A1-3						
P.I. Station		1183+68.1964	N	1,622,413.26	E	545,885.70
Delta	=	7° 48' 00.95" (LT)				
Degree	=	0° 40' 48.25"				
Tangent	=	574.38				
Length	=	1,146.98				
Radius	=	8,425.00				
External	=	19.56				
Long Chord	=	1,146.10				

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Mid. Ord.   =              19.51
P.C.  Station        1177+93.8180  N        1,622,489.69  E          545,316.43
P.T.  Station        1189+40.8000  N        1,622,414.79  E          546,460.08
C.C.                               N        1,630,839.76  E          546,437.54
Back        = S  82° 21' 10.92" E
Ahead       = N  89° 50' 48.12" E
Chord Bear  = S  86° 15' 11.40" E

                                Curve Data
                               *----------*
Curve 429_A1-4
P.I.  Station        1203+68.7592  N        1,622,418.62  E          547,888.03
Delta       =      14° 51' 10.82" (LT)
Degree      =       0° 31' 22.84"
Tangent     =           1,427.96
Length      =           2,839.91
Radius      =          10,955.00
External    =              92.67
Long Chord  =           2,831.96
Mid. Ord.   =              91.90
P.C.  Station        1189+40.8000  N        1,622,414.79  E          546,460.08
P.T.  Station        1217+80.7067  N        1,622,788.35  E          549,267.29
C.C.                               N        1,633,369.76  E          546,430.77
Back        = N  89° 50' 48.12" E
Ahead       = N  74° 59' 37.31" E
Chord Bear  = N  82° 25' 12.72" E

                                                              End   Region 2
Equation: Sta 1217+80.7067 (BK) = Sta 2169+83.9579 (AH)       ----------------
                                                              Begin Region 3

Point 2              N     1,622,788.35 E       549,267.29 Sta  2169+83.9579

Course from 2 to PC 429_A1-5 N 74° 59' 37.31" E Dist 1,016.91

                                Curve Data
                               *----------*
Curve 429_A1-5
P.I.  Station        2185+87.6600  N        1,623,203.59  E          550,816.31
Delta       =      11° 41' 32.92" (RT)
Degree      =       0° 59' 59.19"
Tangent     =             586.79
Length      =           1,169.51
Radius      =           5,730.86
External    =              29.96
Long Chord  =           1,167.48
Mid. Ord.   =              29.81
P.C.  Station        2180+00.8671  N        1,623,051.65  E          550,249.52
P.T.  Station        2191+70.3773  N        1,623,237.51  E          551,402.12
C.C.                               N        1,617,516.23  E          551,733.39
Back        = N  74° 59' 37.31" E
Ahead       = N  86° 41' 10.23" E
Chord Bear  = N  80° 50' 23.77" E

Course from PT 429_A1-5 to 42903 N 86° 41' 10.23" E Dist 569.11

Point 42903          N     1,623,270.41 E       551,970.28 Sta  2197+39.4900

Course from 42903 to PC 429_A1-6 N 86° 41' 10.10" E Dist 525.79

                                Curve Data
                               *----------*
Curve 429_A1-6
P.I.  Station        2207+73.3078  N        1,623,330.17  E          553,002.37
Delta       =       5° 04' 37.00" (LT)
Degree      =       0° 30' 00.00"
Tangent     =             508.03
Length      =           1,015.39
Radius      =          11,459.16
External    =              11.26
Long Chord  =           1,015.06
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Mid. Ord.   =              11.24
P.C.  Station        2202+65.2807  N        1,623,300.80  E          552,495.19
P.T.  Station        2212+80.6700  N        1,623,404.30  E          553,504.96
C.C.                               N        1,634,740.80  E          551,832.79
Back        = N  86° 41' 10.10" E
Ahead       = N  81° 36' 33.10" E
Chord Bear  = N  84° 08' 51.60" E

================================================================================
Ending chain 429_A1 description


<*       2   Describe Chain BLSV429

Chain BLSV429 contains:
 BS1000 CUR BLSV429-1 CUR BLSV429-2

Beginning chain BLSV429 description
================================================================================

Point BS1000          N     1,624,486.30 E       541,614.67 Sta  1134+95.0751

Course from BS1000 to PC BLSV429-1 S 40° 57' 54.22" E Dist 68.68

                                Curve Data
                               *----------*
Curve BLSV429-1
P.I.  Station        1154+88.1694  N        1,622,981.29  E          542,921.34
Delta       =      37° 07' 53.76" (LT)
Degree      =       1° 00' 00.00"
Tangent     =            1,924.41
Length      =            3,713.16
Radius      =            5,729.58
External    =              314.54
Long Chord  =            3,648.52
Mid. Ord.   =              298.18
P.C.  Station        1135+63.7599  N        1,624,434.43  E          541,659.70
P.T.  Station        1172+76.9199  N        1,622,584.36  E          544,804.37
C.C.                               N        1,628,190.74  E          545,986.16
Back        = S  40° 57' 54.22" E
Ahead       = S  78° 05' 47.98" E
Chord Bear  = S  59° 31' 51.10" E

                                Curve Data
                               *----------*
Curve BLSV429-2
P.I.  Station        1183+81.9106  N        1,622,356.45  E          545,885.60
Delta       =      16° 27' 38.51" (LT)
Degree      =       0° 45' 00.00"
Tangent     =            1,104.99
Length      =            2,194.76
Radius      =            7,639.44
External    =               79.50
Long Chord  =            2,187.22
Mid. Ord.   =               78.68
P.C.  Station        1172+76.9199  N        1,622,584.36  E          544,804.37
P.T.  Station        1194+71.6797  N        1,622,444.25  E          546,987.09
C.C.                               N        1,630,059.53  E          546,380.09
Back        = S  78° 05' 47.98" E
Ahead       = N  85° 26' 33.50" E
Chord Bear  = S  86° 19' 37.24" E

================================================================================
Ending chain BLSV429 description


<*       3   Describe Chain BLSV417

Chain BLSV417 contains:
 BS2000 CUR BLSV417-1 BS2001
```

```
Beginning chain BLSV417 description
================================================================================

Point BS2000          N     1,622,334.32 E       545,487.30 Sta  2201+68.9647

Course from BS2000 to PC BLSV417-1 N 85° 40' 12.00" E Dist 2,202.07

                                Curve Data
                               *----------*
Curve BLSV417-1
P.I.  Station        2230+84.8230  N        1,622,554.47  E          548,394.83
Delta       =      10° 40' 34.69" (LT)
Degree      =       0° 45' 00.12"
Tangent     =             713.79
Length      =           1,423.44
Radius      =           7,639.09
External    =              33.28
Long Chord  =           1,421.38
Mid. Ord.   =              33.13
P.C.  Station        2223+71.0350  N        1,622,500.58  E          547,683.08
P.T.  Station        2237+94.4779  N        1,622,739.29  E          549,084.28
C.C.                               N        1,630,117.87  E          547,106.32
Back        = N  85° 40' 12.00" E
Ahead       = N  74° 59' 37.31" E
Chord Bear  = N  80° 19' 54.65" E

Course from PT BLSV417-1 to BS2001 N 74° 59' 37.31" E Dist 189.48

Point BS2001          N     1,622,788.35 E       549,267.29 Sta  2239+83.9579

================================================================================
Ending chain BLSV417 description


<*       4   Describe Chain BLSV400

Chain BLSV400 contains:
 BS3000 BS3001 BS3002

Beginning chain BLSV400 description
================================================================================

Point BS3000          N     1,617,318.74 E       543,247.86 Sta  2761+17.5730

Course from BS3000 to BS3001 N 24° 03' 38.00" E Dist 8,944.93

Point BS3001          N     1,625,486.49 E       546,894.73 Sta  2850+62.5058

Course from BS3001 to BS3002 N 24° 03' 08.40" E Dist 6,089.35

Point BS3002          N     1,631,047.12 E       549,376.57 Sta  2911+51.8531

================================================================================
Ending chain BLSV400 description


<*       5   Describe Chain SR400EB

Chain SR400EB contains:
 EB1000 CUR SR400EB-1 CUR SR400EB-2 EB1001 CUR SR400EB-3 CUR SR400EB-4 EB1002 E-
B1003 EB1004 CUR SR400EB-5 CUR SR400EB-6 CUR SR400EB-7 EB1005

Beginning chain SR400EB description
================================================================================

Point EB1000          N     1,616,663.60 E       542,988.55 Sta  1013+24.6279

Course from EB1000 to PC SR400EB-1 N 24° 03' 02.04" E Dist 1,066.05

                                Curve Data
                               *----------*
```

```
Curve SR400EB-1
Feature: DEFAULT
P.I.  Station        1026+42.0996  N        1,617,866.70  E          543,525.47
Delta       =       1° 57' 28.45" (LT)
Degree      =       0° 23' 21.83"
Tangent     =              251.43
Length      =              502.80
Radius      =           14,714.00
External    =                2.15
Long Chord  =              502.78
Mid. Ord.   =                2.15
P.C.  Station        1023+90.6729  N        1,617,637.10  E          543,423.01
P.T.  Station        1028+93.4773  N        1,618,099.66  E          543,620.04
C.C.                               N        1,623,633.68  E          529,986.39
Back        = N  24° 03' 02.04" E
Ahead       = N  22° 05' 33.59" E
Chord Bear  = N  23° 04' 17.82" E

                                Curve Data
                               *----------*
Curve SR400EB-2
Feature: DEFAULT
P.I.  Station        1031+46.7656  N        1,618,334.35  E          543,715.30
Delta       =       1° 57' 57.54" (RT)
Degree      =       0° 23' 17.27"
Tangent     =              253.29
Length      =              506.53
Radius      =           14,762.00
External    =                2.17
Long Chord  =              506.50
Mid. Ord.   =                2.17
P.C.  Station        1028+93.4773  N        1,618,099.66  E          543,620.04
P.T.  Station        1034+00.0043  N        1,618,565.64  E          543,818.56
C.C.                               N        1,612,547.59  E          557,298.16
Back        = N  22° 05' 33.59" E
Ahead       = N  24° 03' 31.14" E
Chord Bear  = N  23° 04' 32.37" E

Course from PT SR400EB-2 to EB1001 N 24° 03' 31.14" E Dist 1,755.07

Point EB1001          N     1,620,168.25 E       544,534.05 Sta  1051+55.0777

Course from EB1001 to PC SR400EB-3 N 24° 00' 37.86" E Dist 987.20

                                Curve Data
                               *----------*
Curve SR400EB-3
P.I.  Station        1063+93.4051  N        1,621,299.42  E          545,037.93
Delta       =       1° 15' 13.13" (RT)
Degree      =       0° 14' 58.60"
Tangent     =              251.13
Length      =              502.24
Radius      =           22,954.00
External    =                1.37
Long Chord  =              502.23
Mid. Ord.   =                1.37
P.C.  Station        1061+42.2754  N        1,621,070.02  E          544,935.75
P.T.  Station        1066+44.5148  N        1,621,526.53  E          545,145.11
C.C.                               N        1,611,729.94  E          565,903.55
Back        = N  24° 00' 37.86" E
Ahead       = N  25° 15' 50.99" E
Chord Bear  = N  24° 38' 14.42" E

                                Curve Data
                               *----------*
Curve SR400EB-4
P.I.  Station        1069+00.7533  N        1,621,758.26  E          545,254.47
Delta       =       1° 16' 34.92" (LT)
Degree      =       0° 14' 56.65"
Tangent     =              256.24
Length      =              512.46
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Radius      =           23,004.00
External    =                1.43
Long Chord  =              512.45
Mid. Ord.   =                1.43
P.C.  Station        1066+44.5148  N        1,621,526.53  E          545,145.11
P.T.  Station        1071+56.9706  N        1,621,992.37  E          545,358.64
C.C.                               N        1,631,344.46  E          524,341.45
Back        = N  25° 15' 50.99" E
Ahead       = N  23° 59' 16.07" E
Chord Bear  = N  24° 37' 33.53" E

Course from PT SR400EB-4 to EB1004 N 23° 59' 16.07" E Dist 1,318.55

Point EB1004          N     1,623,197.04 E       545,894.69 Sta  1084+75.5211

Course from EB1004 to PC SR400EB-5 N 24° 06' 10.31" E Dist 918.27

                                Curve Data
                               *-----------*
Curve SR400EB-5
P.I.  Station        1098+16.3310  N        1,624,420.95  E          546,442.25
Delta       =       1° 56' 11.80" (RT)
Degree      =       0° 13' 45.06"
Tangent     =              422.54
Length      =              845.01
Radius      =           25,000.00
External    =                3.57
Long Chord  =              844.97
Mid. Ord.   =                3.57
P.C.  Station        1093+93.7878  N        1,624,035.25  E          546,269.69
P.T.  Station        1102+38.7937  N        1,624,800.60  E          546,627.74
C.C.                               N        1,613,825.85  E          569,090.03
Back        = N  24° 06' 10.29" E
Ahead       = N  26° 02' 22.09" E
Chord Bear  = N  25° 04' 16.19" E

                                Curve Data
                               *-----------*
Curve SR400EB-6
P.I.  Station        1108+89.4339  N        1,625,385.20  E          546,913.36
Delta       =       1° 29' 27.86" (LT)
Degree      =       0° 06' 52.53"
Tangent     =              650.64
Length      =            1,301.21
Radius      =           50,000.00
External    =                4.23
Long Chord  =            1,301.17
Mid. Ord.   =                4.23
P.C.  Station        1102+38.7937  N        1,624,800.60  E          546,627.74
P.T.  Station        1115+40.0006  N        1,625,977.02  E          547,183.68
C.C.                               N        1,646,750.11  E          501,703.15
Back        = N  26° 02' 22.09" E
Ahead       = N  24° 32' 54.23" E
Chord Bear  = N  25° 17' 38.16" E

Course from PT SR400EB-6 to PC SR400EB-7 N 24° 32' 54.23" E Dist 876.37

                                Curve Data
                               *-----------*
Curve SR400EB-7
P.I.  Station        1126+07.5783  N        1,626,948.10  E          547,627.22
Delta       =       0° 42' 29.02" (LT)
Degree      =       0° 11' 06.55"
Tangent     =              191.21
Length      =              382.42
Radius      =           30,945.00
External    =                0.59
Long Chord  =              382.42
Mid. Ord.   =                0.59
P.C.  Station        1124+16.3665  N        1,626,774.18  E          547,547.78
P.T.  Station        1127+98.7852  N        1,627,123.00  E          547,704.50
```

```
C.C.                                N        1,639,630.64  E          519,399.87
Back        = N  24° 32' 54.23" E
Ahead       = N  23° 50' 25.20" E
Chord Bear  = N  24° 11' 39.72" E

Course from PT SR400EB-7 to EB1005 N 23° 29' 01.80" E Dist 783.07

Point EB1005          N     1,627,841.21 E       548,016.55 Sta  1135+81.8535

================================================================================
Ending chain SR400EB description



<*       6   Describe Chain ULT400EB1

Chain ULT400EB1 contains:
 UE400 CUR ULT400EB1-1 CUR ULT400EB1-2 UE401

Beginning chain ULT400EB1 description
================================================================================

Point UE400           N     1,615,437.99 E       542,485.38 Sta   999+99.8200

Course from UE400 to PC ULT400EB1-1 N 23° 47' 50.42" E Dist 747.95

                                 Curve Data
                                *----------*
Curve ULT400EB1-1
P.I.  Station        1012+42.3526  N        1,616,574.88  E          542,986.75
Delta       =       1° 44' 34.64" (LT)
Degree      =       0° 10' 34.39"
Tangent     =              494.58
Length      =              989.09
Radius      =           32,514.00
External    =                3.76
Long Chord  =              989.05
Mid. Ord.   =                3.76
P.C.  Station        1007+47.7717  N        1,616,122.35  E          542,787.18
P.T.  Station        1017+36.8571  N        1,617,033.27  E          543,172.46
C.C.                                N        1,629,241.84  E          513,037.57
Back        = N  23° 47' 50.42" E
Ahead       = N  22° 03' 15.78" E
Chord Bear  = N  22° 55' 33.10" E

Course from PT ULT400EB1-1 to PC ULT400EB1-2 N 22° 03' 15.78" E Dist 467.92

                                 Curve Data
                                *----------*
Curve ULT400EB1-2
P.I.  Station        1027+29.8929  N        1,617,953.64  E          543,545.33
Delta       =       2° 00' 15.36" (RT)
Degree      =       0° 11' 27.09"
Tangent     =              525.12
Length      =            1,050.13
Radius      =           30,020.00
External    =                4.59
Long Chord  =            1,050.08
Mid. Ord.   =                4.59
P.C.  Station        1022+04.7739  N        1,617,466.95  E          543,348.15
P.T.  Station        1032+54.9048  N        1,618,433.14  E          543,759.40
C.C.                                N        1,606,194.84  E          571,171.53
Back        = N  22° 03' 15.78" E
Ahead       = N  24° 03' 31.14" E
Chord Bear  = N  23° 03' 23.46" E

Course from PT ULT400EB1-2 to UE401 N 24° 03' 31.14" E Dist 323.39

Point UE401           N     1,618,728.44 E       543,891.24 Sta  1035+78.2990

================================================================================
```

Ending chain ULT400EB1 description

<*   7   Describe Chain ULT400EB2

Chain ULT400EB2 contains:
 CUR ULT400EB2-1 UE4201 UE4202

Beginning chain ULT400EB2 description
==========

			Curve Data			

Curve ULT400EB2-1						
P.I. Station		1130+50.4293	N	1,627,353.17	E	547,806.21
Delta	=	0° 55' 54.54"	(LT)			
Degree	=	0° 11' 06.55"				
Tangent	=	251.64				
Length	=	503.27				
Radius	=	30,945.00				
External	=	1.02				
Long Chord	=	503.26				
Mid. Ord.	=	1.02				
P.C. Station		1127+98.7900	N	1,627,123.00	E	547,704.50
P.T. Station		1133+02.0574	N	1,627,584.96	E	547,904.17
C.C.			N	1,639,630.64	E	519,399.87
Back	= N	23° 50' 25.20" E				
Ahead	= N	22° 54' 30.66" E				
Chord Bear	= N	23° 22' 27.93" E				

Course from PT ULT400EB2-1 to UE4201 N 22° 54' 30.66" E Dist 1,588.62

Point UE4201 N 1,629,048.28 E 548,522.55 Sta 1148+90.6778

Course from UE4201 to UE4202 N 23° 35' 21.76" E Dist 1,981.00

Point UE4202 N 1,630,863.75 E 549,315.31 Sta 1168+71.6788

==========
Ending chain ULT400EB2 description

<*   8   Describe Chain SR400WB

Chain SR400WB contains:
 WB1000 CUR SR400WB-1 CUR SR400WB-2 CUR SR400WB-3 WB1001 CUR SR400WB-4 CUR SR40-
0WB-5 CUR SR400WB-6 WB1002

Beginning chain SR400WB description
==========

Point WB1000 N 1,618,787.15 E 543,868.19 Sta 2036+20.2563

Course from WB1000 to PC SR400WB-1 N 24° 03' 24.84" E Dist 100.00

			Curve Data			

Curve SR400WB-1						
P.I. Station		2042+06.8828	N	1,619,322.82	E	544,107.32
Delta	=	5° 03' 52.95"	(LT)			
Degree	=	0° 31' 14.62"				
Tangent	=	486.63				
Length	=	972.62				
Radius	=	11,003.00				
External	=	10.76				
Long Chord	=	972.30				
Mid. Ord.	=	10.75				
P.C. Station		2037+20.2563	N	1,618,878.47	E	543,908.95
P.T. Station		2046+92.8755	N	1,619,782.96	E	544,265.69
C.C.			N	1,623,363.77	E	533,861.66
Back	= N	24° 03' 24.84" E				

Ahead   = N 18° 59' 31.89" E
Chord Bear = N 21° 31' 28.36" E

Curve Data

Curve SR400WB-2
P.I. Station   2055+66.2858 N   1,620,608.83 E   544,549.93
Delta   =   6° 47' 38.70" (RT)
Degree   =   0° 23' 21.83"
Tangent   =   873.41
Length   =   1,744.77
Radius   =   14,714.00
External   =   25.90
Long Chord =   1,743.75
Mid. Ord.   =   25.85
P.C. Station   2046+92.8755 N   1,619,782.96 E   544,265.69
P.T. Station   2064+37.6487 N   1,621,395.26 E   544,929.88
C.C.   N   1,614,994.45 E   558,178.70
Back   = N 18° 59' 31.89" E
Ahead   = N 25° 47' 10.59" E
Chord Bear = N 22° 23' 21.24" E

Curve Data

Curve SR400WB-3
P.I. Station   2067+74.3517 N   1,621,698.44 E   545,076.35
Delta   =   1° 41' 00.30" (LT)
Degree   =   0° 15' 00.01"
Tangent   =   336.70
Length   =   673.36
Radius   =   22,918.00
External   =   2.47
Long Chord =   673.33
Mid. Ord.   =   2.47
P.C. Station   2064+37.6487 N   1,621,395.26 E   544,929.88
P.T. Station   2071+11.0062 N   1,622,005.79 E   545,213.85
C.C.   N   1,631,364.95 E   524,293.99
Back   = N 25° 47' 10.59" E
Ahead   = N 24° 06' 10.29" E
Chord Bear = N 24° 56' 40.44" E

Course from PT SR400WB-3 to WB1001 N 24° 06' 10.29" E Dist 1,365.33

Point WB1001   N   1,623,252.08 E   545,771.42 Sta 2084+76.3363

Course from WB1001 to PC SR400WB-4 N 24° 06' 10.29" E Dist 1,317.22

Curve Data

Curve SR400WB-4
P.I. Station   2100+09.5258 N   1,624,651.59 E   546,397.54
Delta   =   1° 04' 47.35" (RT)
Degree   =   0° 15' 00.01"
Tangent   =   215.97
Length   =   431.92
Radius   =   22,918.00
External   =   1.02
Long Chord =   431.92
Mid. Ord.   =   1.02
P.C. Station   2097+93.5586 N   1,624,454.46 E   546,309.34
P.T. Station   2102+25.4801 N   1,624,847.04 E   546,489.43
C.C.   N   1,615,095.30 E   567,229.21
Back   = N 24° 06' 10.29" E
Ahead   = N 25° 10' 57.64" E
Chord Bear = N 24° 38' 33.96" E

Course from PT SR400WB-4 to PC SR400WB-5 N 25° 10' 57.64" E Dist 1,913.39

Curve Data

Curve SR400WB-5

```
P.I.  Station        2124+09.0848  N        1,626,823.10  E          547,418.57
Delta       =       2° 06' 14.96" (RT)
Degree      =       0° 23' 21.83"
Tangent     =              270.21
Length      =              540.36
Radius      =           14,714.00
External    =                2.48
Long Chord  =              540.33
Mid. Ord.   =                2.48
P.C.  Station        2121+38.8727  N        1,626,578.57  E          547,303.59
P.T.  Station        2126+79.2362  N        1,627,063.24  E          547,542.45
C.C.                               N        1,620,317.68  E          560,619.11
Back        = N  25° 10' 57.64" E
Ahead       = N  27° 17' 12.60" E
Chord Bear  = N  26° 14' 05.12" E

                                Curve Data
                               *----------*
Curve SR400WB-6
P.I.  Station        2130+25.2275  N        1,627,370.74  E          547,701.06
Delta       =       3° 36' 07.80" (LT)
Degree      =       0° 31' 14.62"
Tangent     =              345.99
Length      =              691.75
Radius      =           11,003.00
External    =                5.44
Long Chord  =              691.64
Mid. Ord.   =                5.44
P.C.  Station        2126+79.2362  N        1,627,063.24  E          547,542.45
P.T.  Station        2133+70.9909  N        1,627,687.58  E          547,840.05
C.C.                               N        1,632,107.52  E          537,763.83
Back        = N  27° 17' 12.60" E
Ahead       = N  23° 41' 04.80" E
Chord Bear  = N  25° 29' 08.70" E

Course from PT SR400WB-6 to WB1002 N 23° 41' 04.80" E Dist 167.72

Point WB1002          N     1,627,841.18 E       547,907.43 Sta  2135+38.7149

================================================================================
Ending chain SR400WB description


<*       9   Describe Chain ULT400WB1

Chain ULT400WB1 contains:
 UW400 CUR ULT400WB1-1 UW401 CUR ULT400WB1-2 CUR ULT400WB1-3 CUR ULT400WB1-4 CU-
R ULT400WB1-5

Beginning chain ULT400WB1 description
================================================================================

Point UW400           N     1,615,486.17 E       542,377.37 Sta  1999+99.6400

Course from UW400 to PC ULT400WB1-1 N 24° 47' 17.57" E Dist 633.92

                                Curve Data
                               *----------*
Curve ULT400WB1-1
P.I.  Station        2011+59.8619  N        1,616,539.49  E          542,863.81
Delta       =       3° 19' 51.99" (LT)
Degree      =       0° 18' 59.58"
Tangent     =              526.30
Length      =            1,052.31
Radius      =           18,100.00
External    =                7.65
Long Chord  =            1,052.16
Mid. Ord.   =                7.65
P.C.  Station        2006+33.5575  N        1,616,061.68  E          542,643.15
P.T.  Station        2016+85.8698  N        1,617,029.32  E          543,056.34
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C.C.                                N        1,623,650.38  E          526,210.82
Back        = N  24° 47' 17.57" E
Ahead       = N  21° 27' 25.58" E
Chord Bear  = N  23° 07' 21.57" E

Course from PT ULT400WB1-1 to UW401 N 21° 27' 25.58" E Dist 826.09

Point UW401           N     1,617,798.16 E       543,358.52 Sta  2025+11.9590

Course from UW401 to PC ULT400WB1-2 N 22° 12' 25.58" E Dist 1,909.82

                                  Curve Data
                                 *----------*
Curve ULT400WB1-2
P.I.  Station        2047+19.6582  N        1,619,842.10  E          544,192.93
Delta       =       2° 11' 44.15" (RT)
Degree      =       0° 22' 06.89"
Tangent     =              297.88
Length      =              595.69
Radius      =           15,545.00
External    =                2.85
Long Chord  =              595.65
Mid. Ord.   =                2.85
P.C.  Station        2044+21.7762  N        1,619,566.31  E          544,080.35
P.T.  Station        2050+17.4672  N        1,620,113.37  E          544,316.00
C.C.                                N        1,613,690.99  E          558,472.28
Back        = N  22° 12' 25.58" E
Ahead       = N  24° 24' 09.73" E
Chord Bear  = N  23° 18' 17.65" E

                                  Curve Data
                                 *----------*
Curve ULT400WB1-3
P.I.  Station        2055+85.8975  N        1,620,631.02  E          544,550.85
Delta       =       2° 05' 42.76" (RT)
Degree      =       0° 11' 03.55"
Tangent     =              568.43
Length      =            1,136.73
Radius      =           31,085.22
External    =                5.20
Long Chord  =            1,136.67
Mid. Ord.   =                5.20
P.C.  Station        2050+17.4672  N        1,620,113.37  E          544,316.00
P.T.  Station        2061+54.2011  N        1,621,139.73  E          544,804.46
C.C.                                N        1,607,270.59  E          572,624.20
Back        = N  24° 24' 09.73" E
Ahead       = N  26° 29' 52.49" E
Chord Bear  = N  25° 27' 01.11" E

                                  Curve Data
                                 *----------*
Curve ULT400WB1-4
P.I.  Station        2066+33.2752  N        1,621,568.48  E          545,018.21
Delta       =       2° 23' 42.19" (LT)
Degree      =       0° 15' 00.01"
Tangent     =              479.07
Length      =              958.01
Radius      =           22,918.00
External    =                5.01
Long Chord  =              957.94
Mid. Ord.   =                5.01
P.C.  Station        2061+54.2011  N        1,621,139.73  E          544,804.46
P.T.  Station        2071+12.2098  N        1,622,005.79  E          545,213.85
C.C.                                N        1,631,364.95  E          524,293.98
Back        = N  26° 29' 52.49" E
Ahead       = N  24° 06' 10.29" E
Chord Bear  = N  25° 18' 01.39" E

                                  Curve Data
                                 *----------*
Curve ULT400WB1-5
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```
P.I.  Station        2075+91.2839  N        1,621,568.48  E          545,018.21
Delta       =       2° 23' 42.19" (RT)
Degree      =       0° 15' 00.01"
Tangent     =              479.07
Length      =              958.01
Radius      =           22,918.00
External    =                5.01
Long Chord  =              957.94
Mid. Ord.   =                5.01
P.C.  Station        2071+12.2098  N        1,622,005.79  E          545,213.85
P.T.  Station        2080+70.2185  N        1,621,139.73  E          544,804.46
C.C.                               N        1,631,364.95  E          524,293.98
Back        = S  24° 06' 10.29" W
Ahead       = S  26° 29' 52.49" W
Chord Bear  = S  25° 18' 01.39" W

================================================================================
Ending chain ULT400WB1 description


<*      10   Describe Chain ULT400WB2

Chain ULT400WB2 contains:
 UW4200 CUR ULT400WB2-1 CUR ULT400WB2-2 UW4201 UW4202 UW4203

Beginning chain ULT400WB2 description
================================================================================

Point UW4200          N     1,626,578.57 E       547,303.59 Sta  2121+40.0745

Course from UW4200 to PC ULT400WB2-1 N 25° 10' 57.64" E Dist 234.33

                                Curve Data
                               *----------*
Curve ULT400WB2-1
P.I.  Station        2125+88.0386  N        1,626,983.96  E          547,494.20
Delta       =       0° 28' 44.69" (LT)
Degree      =       0° 06' 43.65"
Tangent     =              213.64
Length      =              427.27
Radius      =           51,100.00
External    =                0.45
Long Chord  =              427.27
Mid. Ord.   =                0.45
P.C.  Station        2123+74.4000  N        1,626,790.63  E          547,403.30
P.T.  Station        2128+01.6747  N        1,627,178.05  E          547,583.49
C.C.                               N        1,648,533.97  E          501,160.06
Back        = N  25° 10' 57.64" E
Ahead       = N  24° 42' 12.95" E
Chord Bear  = N  24° 56' 35.29" E

                                Curve Data
                               *----------*
Curve ULT400WB2-2
P.I.  Station        2132+67.8928  N        1,627,601.60  E          547,778.33
Delta       =       1° 02' 43.67" (LT)
Degree      =       0° 06' 43.65"
Tangent     =              466.22
Length      =              932.41
Radius      =           51,100.00
External    =                2.13
Long Chord  =              932.40
Mid. Ord.   =                2.13
P.C.  Station        2128+01.6747  N        1,627,178.05  E          547,583.49
P.T.  Station        2137+34.0850  N        1,628,028.63  E          547,965.42
C.C.                               N        1,648,533.97  E          501,160.06
Back        = N  24° 42' 12.95" E
Ahead       = N  23° 39' 29.28" E
Chord Bear  = N  24° 10' 51.11" E

Course from PT ULT400WB2-2 to UW4201 N 23° 39' 29.28" E Dist 448.14
```

Point UW4201   N   1,628,439.11 E   548,145.24 Sta 2141+82.2254

Course from UW4201 to UW4202 N 23° 35' 21.76" E Dist 1,790.26

Point UW4202   N   1,630,079.77 E   548,861.67 Sta 2159+72.4878

Course from UW4202 to UW4203 N 23° 32' 04.47" E Dist 914.33

Point UW4203   N   1,630,918.04 E   549,226.76 Sta 2168+86.8145

==========
Ending chain ULT400WB2 description

<*   11   Describe Chain CLI4

Chain CLI4 contains:
 186 187 CUR CLI4-1 188 189 190 CUR CLI4-2 CUR CLI4-3 CUR CLI4-4 CUR CLI4-5 191-
 192 CUR CLI4-6 CUR CLI4-7 CUR CLI4-8 CUR CLI4-9 CUR CLI4-10 193 CUR CLI4-11 CU-
R CLI4-12 CUR CLI4-13 194 195

Beginning chain CLI4 description
==========

Point 186   N   1,585,952.75 E   531,964.53 Sta   186+00.0000

Course from 186 to 187 N 31° 40' 39.60" E Dist 1,983.60

Point 187   N   1,587,640.83 E   533,006.20 Sta   205+83.6050

Course from 187 to PC CLI4-1 N 31° 30' 31.24" E Dist 771.31

                                Curve Data

Curve CLI4-1
P.I. Station   220+57.6990 N   1,588,897.58 E   533,776.60
Delta   =   13° 59' 24.94" (LT)
Degree   =   1° 00' 01.15"
Tangent   =   702.79
Length   =   1,398.58
Radius   =   5,727.75
External   =   42.95
Long Chord =   1,395.11
Mid. Ord.   =   42.63
P.C. Station   213+54.9139 N   1,588,298.42 E   533,409.31
P.T. Station   227+53.4936 N   1,589,567.77 E   533,988.15
C.C.   N   1,591,291.90 E   528,526.05
Back   = N 31° 30' 31.24" E
Ahead   = N 17° 31' 06.30" E
Chord Bear = N 24° 30' 48.77" E

Course from PT CLI4-1 to 188 N 17° 31' 06.30" E Dist 843.18

Point 188   N   1,590,371.84 E   534,241.96 Sta   235+96.6689

Course from 188 to 189 N 17° 35' 18.60" E Dist 1,839.47

Point 189   N   1,592,125.32 E   534,797.81 Sta   254+36.1400

Course from 189 to 190 N 17° 30' 57.06" E Dist 496.07

Point 190   N   1,592,598.39 E   534,947.11 Sta   259+32.2094

Course from 190 to PC CLI4-2 N 17° 29' 36.82" E Dist 3,464.27

                                Curve Data

Curve CLI4-2
P.I. Station   298+46.5885 N   1,596,331.73 E   536,123.76
Delta   =   1° 09' 13.85" (LT)

```
Degree      =       0° 07' 41.44"
Tangent     =              450.11
Length      =              900.19
Radius      =          44,700.00
External    =                2.27
Long Chord  =              900.17
Mid. Ord.   =                2.27
P.C.  Station         293+96.4796  N        1,595,902.44  E          535,988.46
P.T.  Station         302+96.6669  N        1,596,763.66  E          536,250.39
C.C.                               N        1,609,339.20  E          493,355.80
Back        = N  17° 29' 36.82" E
Ahead       = N  16° 20' 22.97" E
Chord Bear  = N  16° 54' 59.90" E

                                  Curve Data
                                 *----------*
Curve CLI4-3
P.I.  Station         307+46.7465  N        1,597,195.56  E          536,377.02
Delta       =       1° 10' 34.09" (RT)
Degree      =       0° 07' 50.39"
Tangent     =              450.08
Length      =              900.13
Radius      =          43,850.00
External    =                2.31
Long Chord  =              900.11
Mid. Ord.   =                2.31
P.C.  Station         302+96.6669  N        1,596,763.66  E          536,250.39
P.T.  Station         311+96.7946  N        1,597,624.77  E          536,512.48
C.C.                               N        1,584,427.26  E          578,329.31
Back        = N  16° 20' 22.97" E
Ahead       = N  17° 30' 57.06" E
Chord Bear  = N  16° 55' 40.02" E

Course from PT CLI4-3 to PC CLI4-4 N 17° 30' 57.06" E Dist 2,331.95

                                  Curve Data
                                 *----------*
Curve CLI4-4
P.I.  Station         339+78.9316  N        1,600,277.91  E          537,349.82
Delta       =       1° 02' 36.27" (RT)
Degree      =       0° 06' 57.20"
Tangent     =              450.19
Length      =              900.35
Radius      =          49,440.00
External    =                2.05
Long Chord  =              900.33
Mid. Ord.   =                2.05
P.C.  Station         335+28.7460  N        1,599,848.60  E          537,214.32
P.T.  Station         344+29.0923  N        1,600,704.69  E          537,493.10
C.C.                               N        1,584,968.66  E          584,361.97
Back        = N  17° 30' 57.06" E
Ahead       = N  18° 33' 33.32" E
Chord Bear  = N  18° 02' 15.19" E

Course from PT CLI4-4 to PC CLI4-5 N 18° 33' 33.32" E Dist 1,175.71

                                  Curve Data
                                 *----------*
Curve CLI4-5
P.I.  Station         360+54.8376  N        1,602,245.88  E          538,010.55
Delta       =       1° 31' 22.65" (LT)
Degree      =       0° 10' 09.17"
Tangent     =              450.04
Length      =              900.02
Radius      =          33,860.00
External    =                2.99
Long Chord  =              899.99
Mid. Ord.   =                2.99
P.C.  Station         356+04.8013  N        1,601,819.25  E          537,867.31
P.T.  Station         365+04.8209  N        1,602,676.17  E          538,142.40
C.C.                               N        1,612,596.39  E          505,768.20
```

Back = N 18° 33' 33.32" E
Ahead = N 17° 02' 10.68" E
Chord Bear = N 17° 47' 52.00" E

Course from PT CLI4-5 to 191 N 17° 02' 10.68" E Dist 1,603.47

Point 191 N 1,604,209.29 E 538,612.19 Sta 381+08.2954

Course from 191 to 192 N 17° 34' 46.85" E Dist 2,509.88

Point 192 N 1,606,601.95 E 539,370.25 Sta 406+18.1732

Course from 192 to PC CLI4-6 N 17° 30' 02.38" E Dist 4,738.11

Curve Data

Curve CLI4-6
P.I. Station = 457+36.8236 N 1,611,483.67 E 540,909.51
Delta = 0° 52' 19.64" (RT)
Degree = 0° 06' 52.53"
Tangent = 380.54
Length = 761.07
Radius = 50,000.00
External = 1.45
Long Chord = 761.06
Mid. Ord. = 1.45
P.C. Station = 453+56.2816 N 1,611,120.74 E 540,795.08
P.T. Station = 461+17.3509 N 1,611,844.82 E 541,029.46
C.C. N 1,596,084.91 E 588,480.75
Back = N 17° 30' 02.38" E
Ahead = N 18° 22' 22.01" E
Chord Bear = N 17° 56' 12.19" E

Course from PT CLI4-6 to PC CLI4-7 N 18° 22' 22.01" E Dist 1,115.64

Curve Data

Curve CLI4-7
P.I. Station = 479+41.1850 N 1,613,575.68 E 541,604.33
Delta = 5° 30' 02.38" (RT)
Degree = 0° 23' 19.16"
Tangent = 708.19
Length = 1,415.30
Radius = 14,742.00
External = 17.00
Long Chord = 1,414.76
Mid. Ord. = 16.98
P.C. Station = 472+32.9906 N 1,612,903.59 E 541,381.11
P.T. Station = 486+48.2913 N 1,614,223.29 E 541,890.95
C.C. N 1,608,256.94 E 555,371.65
Back = N 18° 22' 22.01" E
Ahead = N 23° 52' 24.39" E
Chord Bear = N 21° 07' 23.20" E

Course from PT CLI4-7 to PC CLI4-8 N 23° 52' 24.39" E Dist 2,056.12

Curve Data

Curve CLI4-8
P.I. Station = 512+19.7772 N 1,616,574.76 E 542,931.67
Delta = 1° 49' 08.61" (LT)
Degree = 0° 10' 35.38"
Tangent = 515.37
Length = 1,030.65
Radius = 32,463.00
External = 4.09
Long Chord = 1,030.61
Mid. Ord. = 4.09
P.C. Station = 507+04.4068 N 1,616,103.48 E 542,723.09
P.T. Station = 517+35.0610 N 1,617,052.42 E 543,125.19
C.C. N 1,629,241.84 E 513,037.57

```
Back        = N  23° 52' 24.39" E
Ahead       = N  22° 03' 15.78" E
Chord Bear  = N  22° 57' 50.09" E

Course from PT CLI4-8 to PC CLI4-9 N 22° 03' 15.78" E Dist 2,041.51

                                Curve Data
                               *-----------*
Curve CLI4-9
P.I.  Station         545+70.1878  N        1,619,680.09  E          544,189.74
Delta       =       3° 57' 27.92" (RT)
Degree      =       0° 14' 58.01"
Tangent     =              793.62
Length      =           1,586.60
Radius      =          22,969.00
External    =              13.71
Long Chord  =           1,586.29
Mid. Ord.   =              13.70
P.C.  Station         537+76.5703  N        1,618,944.55  E          543,891.75
P.T.  Station         553+63.1741  N        1,620,393.32  E          544,537.79
C.C.                               N        1,610,320.00  E          565,180.06
Back        = N  22° 03' 15.78" E
Ahead       = N  26° 00' 43.70" E
Chord Bear  = N  24° 01' 59.74" E

Course from PT CLI4-9 to PC CLI4-10 N 26° 00' 43.70" E Dist 745.37

                                Curve Data
                               *-----------*
Curve CLI4-10
P.I.  Station         566+33.6232  N        1,621,535.07  E          545,094.96
Delta       =       2° 01' 27.64" (LT)
Degree      =       0° 11' 34.03"
Tangent     =              525.08
Length      =           1,050.05
Radius      =          29,720.00
External    =               4.64
Long Chord  =           1,050.00
Mid. Ord.   =               4.64
P.C.  Station         561+08.5432  N        1,621,063.18  E          544,864.68
P.T.  Station         571+58.5940  N        1,622,014.80  E          545,308.43
C.C.                               N        1,634,097.23  E          518,155.28
Back        = N  26° 00' 43.70" E
Ahead       = N  23° 59' 16.07" E
Chord Bear  = N  24° 59' 59.88" E

Course from PT CLI4-10 to 193 N 23° 59' 16.07" E Dist 1,318.48

Point 193             N     1,623,219.40 E       545,844.44 Sta   584+77.0696

Course from 193 to PC CLI4-11 N 24° 06' 10.29" E Dist 2,409.35

                                Curve Data
                               *-----------*
Curve CLI4-11
P.I.  Station         614+11.4683  N        1,625,897.96  E          547,042.78
Delta       =       1° 23' 43.50" (RT)
Degree      =       0° 07' 58.41"
Tangent     =              525.05
Length      =           1,050.05
Radius      =          43,115.00
External    =               3.20
Long Chord  =           1,050.02
Mid. Ord.   =               3.20
P.C.  Station         608+86.4177  N        1,625,418.69  E          546,828.36
P.T.  Station         619+36.4670  N        1,626,371.87  E          547,268.81
C.C.                               N        1,607,811.56  E          586,184.33
Back        = N  24° 06' 10.29" E
Ahead       = N  25° 29' 53.79" E
Chord Bear  = N  24° 48' 02.04" E
```

Course from PT CLI4-11 to PC CLI4-12 N 25° 29' 53.79" E Dist 283.50

		Curve Data				
Curve CLI4-12						
P.I. Station		627+45.0878	N	1,627,101.73	E	547,616.91
Delta	=	1° 54' 32.03"	(LT)			
Degree	=	0° 10' 54.39"				
Tangent	=	525.12				
Length	=	1,050.14				
Radius	=	31,520.00				
External	=	4.37				
Long Chord	=	1,050.09				
Mid. Ord.	=	4.37				
P.C. Station		622+19.9704	N	1,626,627.76	E	547,390.85
P.T. Station		632+70.1080	N	1,627,582.97	E	547,827.05
C.C.			N	1,640,196.62	E	518,940.95
Back	= N	25° 29' 53.79" E				
Ahead	= N	23° 35' 21.76" E				
Chord Bear	= N	24° 32' 37.78" E				

Course from PT CLI4-12 to PC CLI4-13 N 23° 35' 21.76" E Dist 3,602.20

		Curve Data				
Curve CLI4-13						
P.I. Station		678+20.4674	N	1,631,753.09	E	549,648.01
Delta	=	17° 57' 36.24"	(RT)			
Degree	=	0° 57' 17.75"				
Tangent	=	948.16				
Length	=	1,880.77				
Radius	=	6,000.00				
External	=	74.46				
Long Chord	=	1,873.08				
Mid. Ord.	=	73.54				
P.C. Station		668+72.3040	N	1,630,884.16	E	549,268.57
P.T. Station		687+53.0778	N	1,632,462.68	E	550,276.89
C.C.			N	1,628,483.08	E	554,767.19
Back	= N	23° 35' 21.76" E				
Ahead	= N	41° 32' 58.00" E				
Chord Bear	= N	32° 34' 09.88" E				

Course from PT CLI4-13 to 194 N 41° 32' 58.00" E Dist 2,725.27

Point 194 N 1,634,502.23 E 552,084.47 Sta 714+78.3527

Course from 194 to 195 N 41° 32' 28.67" E Dist 2,878.45

Point 195 N 1,636,656.69 E 553,993.35 Sta 743+56.8067

==========

Ending chain CLI4 description

<* 12 Describe Chain WILSON

Chain WILSON contains:
WILSON10 WILSON11 WILSON12 WILSON13 WILSON14

Beginning chain WILSON description

==========

Point WILSON10 N 1,624,070.01 E 541,391.60 Sta 10+00.0000

Course from WILSON10 to WILSON11 N 89° 50' 55.18" E Dist 487.19

Point WILSON11 N 1,624,071.30 E 541,878.78 Sta 14+87.1868

Course from WILSON11 to WILSON12 N 89° 22' 26.51" E Dist 113.81

Point WILSON12 N 1,624,072.54 E 541,992.58 Sta 16+00.9961

Course from WILSON12 to WILSON13 N 89° 07' 29.60" E Dist 115.03

Point WILSON13   N   1,624,074.30 E   542,107.60 Sta   17+16.0266

Course from WILSON13 to WILSON14 S 89° 53' 32.94" E Dist 334.82

Point WILSON14   N   1,624,073.67 E   542,442.42 Sta   20+50.8452

==========
Ending chain WILSON description

<*   13   Describe Chain INPK_A1

Chain INPK_A1 contains:
 INPK63 CUR INPK_A1-1 CUR INPK_A1-2 CUR INPK_A1-3 CUR INPK_A1-4 INPK64

Beginning chain INPK_A1 description
==========

Point INPK63   N   1,618,724.16 E   541,484.77 Sta   63+00.0000

Course from INPK63 to PC INPK_A1-1 N 0° 02' 00.79" E Dist 1,271.14

                                Curve Data

Curve INPK_A1-1
P.I. Station   81+37.3043 N   1,620,561.47 E   541,485.85
Delta   =   43° 08' 01.23" (RT)
Degree   =   4° 00' 00.05"
Tangent   =   566.16
Length   =   1,078.34
Radius   =   1,432.39
External   =   107.83
Long Chord =   1,053.05
Mid. Ord.   =   100.28
P.C. Station   75+71.1398 N   1,619,995.30 E   541,485.51
P.T. Station   86+49.4783 N   1,620,974.40 E   541,873.18
C.C.   N   1,619,994.46 E   542,917.90
Back   = N   0° 02' 00.79" E
Ahead   = N 43° 10' 02.02" E
Chord Bear = N 21° 36' 01.41" E

Course from PT INPK_A1-1 to PC INPK_A1-2 N 43° 10' 02.02" E Dist 601.19

                                Curve Data

Curve INPK_A1-2
P.I. Station   95+73.1218 N   1,621,648.07 E   542,505.07
Delta   =   25° 22' 24.99" (LT)
Degree   =   4° 00' 00.05"
Tangent   =   322.46
Length   =   634.34
Radius   =   1,432.39
External   =   35.85
Long Chord =   629.17
Mid. Ord.   =   34.97
P.C. Station   92+50.6654 N   1,621,412.89 E   542,284.47
P.T. Station   98+85.0037 N   1,621,955.10 E   542,603.61
C.C.   N   1,622,392.83 E   541,239.74
Back   = N 43° 10' 02.02" E
Ahead   = N 17° 47' 37.03" E
Chord Bear = N 30° 28' 49.53" E

Course from PT INPK_A1-2 to PC INPK_A1-3 N 17° 47' 37.03" E Dist 568.99

                                Curve Data

Curve INPK_A1-3
P.I. Station   110+52.9500 N   1,623,067.18 E   542,960.52

```
Delta       =      55° 11' 28.37" (RT)
Degree      =       4° 59' 59.93"
Tangent     =              598.96
Length      =           1,103.83
Radius      =           1,145.92
External    =             147.09
Long Chord  =           1,061.64
Mid. Ord.   =             130.36
P.C.  Station         104+53.9893  N        1,622,496.87  E          542,777.48
P.T.  Station         115+57.8179  N        1,623,242.45  E          543,533.26
C.C.                               N        1,622,146.69  E          543,868.59
Back        = N  17° 47' 37.03" E
Ahead       = N  72° 59' 05.41" E
Chord Bear  = N  45° 23' 21.22" E

Course from PT INPK_A1-3 to PC INPK_A1-4 N 72° 59' 05.41" E Dist 399.33

                                Curve Data
                               *----------*
Curve INPK_A1-4
P.I.  Station         128+00.9577  N        1,623,606.22  E          544,721.99
Delta       =      72° 43' 57.84" (LT)
Degree      =       4° 59' 59.93"
Tangent     =              843.81
Length      =           1,454.66
Radius      =           1,145.92
External    =             277.16
Long Chord  =           1,358.94
Mid. Ord.   =             223.18
P.C.  Station         119+57.1504  N        1,623,359.31  E          543,915.12
P.T.  Station         134+11.8107  N        1,624,450.02  E          544,725.70
C.C.                               N        1,624,455.07  E          543,579.79
Back        = N  72° 59' 05.41" E
Ahead       = N   0° 15' 07.56" E
Chord Bear  = N  36° 37' 06.48" E

Course from PT INPK_A1-4 to INPK64 N 0° 15' 07.56" E Dist 2,283.29

Point INPK64          N     1,626,733.29 E       544,735.75 Sta   156+95.1039

================================================================================
Ending chain INPK_A1 description


<*      14   Describe Chain TOWNCTR

Chain TOWNCTR contains:
 TC10 CUR TOWNCTR-1

Beginning chain TOWNCTR description
================================================================================

Point TC10            N     1,622,046.44 E       547,526.35 Sta    10+00.0000

Course from TC10 to PC TOWNCTR-1 N 17° 44' 02.30" E Dist 482.71

                                Curve Data
                               *----------*
Curve TOWNCTR-1
P.I.  Station          17+17.9137  N        1,622,730.24  E          547,745.02
Delta       =      37° 38' 43.08" (LT)
Degree      =       8° 18' 13.45"
Tangent     =              235.20
Length      =              453.35
Radius      =              690.00
External    =               38.98
Long Chord  =              445.24
Mid. Ord.   =               36.90
P.C.  Station          14+82.7141  N        1,622,506.21  E          547,673.38
P.T.  Station          19+36.0679  N        1,622,951.38  E          547,664.92
C.C.                               N        1,622,716.39  E          547,016.17
```

```
Back        = N  17° 44' 02.30" E
Ahead       = N  19° 54' 40.77" W
Chord Bear  = N   1° 05' 19.24" W

================================================================================
Ending chain TOWNCTR description


<*      15   Describe Chain RINHT

Chain RINHT contains:
 CUR RINHT-1

Beginning chain RINHT description
================================================================================

                                 Curve Data
                                *----------*
Curve RINHT-1
P.I.  Station          15+67.2060  N        1,622,872.98  E          549,880.16
Delta       =      25° 22' 41.25" (LT)
Degree      =       2° 16' 27.93"
Tangent     =              567.21
Length      =            1,115.80
Radius      =            2,519.13
External    =               63.07
Long Chord  =            1,106.71
Mid. Ord.   =               61.53
P.C.  Station          10+00.0000  N        1,622,442.93  E          549,510.33
P.T.  Station          21+15.8045  N        1,623,420.04  E          550,030.00
C.C.                               N        1,624,085.49  E          547,600.34
Back        = N  40° 41' 42.19" E
Ahead       = N  15° 19' 00.94" E
Chord Bear  = N  28° 00' 21.57" E

================================================================================
Ending chain RINHT description


<*      16   Describe Chain METZ

Chain METZ contains:
 MZ001 CUR METZ1 CUR METZ2 MZ002

Beginning chain METZ description
================================================================================

Point MZ001           N     1,624,070.73 E       541,663.84 Sta     5+00.0000

Course from MZ001 to PC METZ1 S 0° 09' 04.82" E Dist 34.98

                                 Curve Data
                                *----------*
Curve METZ1
P.I.  Station           6+49.5245  N        1,623,921.20  E          541,664.24
Delta       =      71° 11' 49.24" (LT)
Degree      =      35° 48' 35.50"
Tangent     =              114.54
Length      =              198.82
Radius      =              160.00
External    =               36.77
Long Chord  =              186.27
Mid. Ord.   =               29.90
P.C.  Station           5+34.9820  N        1,624,035.75  E          541,663.94
P.T.  Station           7+33.8016  N        1,623,884.57  E          541,772.76
C.C.                               N        1,624,036.17  E          541,823.93
Back        = S   0° 09' 04.82" E
Ahead       = S  71° 20' 54.06" E
Chord Bear  = S  35° 44' 59.44" E

Course from PT METZ1 to PC METZ2 S 71° 20' 54.06" E Dist 14.31
```

```
                                Curve Data
                               *----------*
Curve METZ2
P.I.  Station           8+01.3857  N        1,623,862.96  E          541,836.80
Delta       =      28° 12' 39.53" (RT)
Degree      =      27° 01' 34.72"
Tangent     =               53.27
Length      =              104.38
Radius      =              212.00
External    =                6.59
Long Chord  =              103.33
Mid. Ord.   =                6.39
P.C.  Station           7+48.1134  N        1,623,879.99  E          541,786.32
P.T.  Station           8+52.4968  N        1,623,824.08  E          541,873.22
C.C.                               N        1,623,679.13  E          541,718.52
Back        = S  71° 20' 54.06" E
Ahead       = S  43° 08' 14.52" E
Chord Bear  = S  57° 14' 34.29" E

Course from PT METZ2 to MZ002 S 43° 08' 14.52" E Dist 294.14

Point MZ002           N     1,623,609.44 E       542,074.34 Sta    11+46.6369

================================================================================
Ending chain METZ description


<*      17   Describe Chain EE2

Chain EE2 contains:
 CUR EE2-1 CUR EE2-2 SHIFT  CUR EE2-3 CUR EE2-4 CUR EE2-5

Beginning chain EE2 description
Description: CUR EE2-1 CUR EE2-2 CUR EE2-3 CUR EE2-4 CUR EE2-5
================================================================================

                                Curve Data
                               *----------*
Curve EE2-1
P.I.  Station          10+36.2885  N        1,622,856.17  E          544,533.55
Delta       =       0° 54' 08.65" (LT)
Degree      =       1° 14' 36.23"
Tangent     =               36.29
Length      =               72.58
Radius      =           4,608.00
External    =                0.14
Long Chord  =               72.57
Mid. Ord.   =                0.14
P.C.  Station          10+00.0000  N        1,622,862.12  E          544,497.75
P.T.  Station          10+72.5754  N        1,622,850.79  E          544,569.44
C.C.                               N        1,627,407.74  E          545,253.43
Back        = S  80° 33' 40.59" E
Ahead       = S  81° 27' 49.24" E
Chord Bear  = S  81° 00' 44.92" E

                                Curve Data
                               *----------*
Curve EE2-2
P.I.  Station          13+70.1268  N        1,622,806.62  E          544,863.69
Delta       =      34° 06' 25.93" (LT)
Degree      =       5° 54' 24.41"
Tangent     =              297.55
Length      =              577.42
Radius      =              970.00
External    =               44.61
Long Chord  =              568.94
Mid. Ord.   =               42.65
P.C.  Station          10+72.5754  N        1,622,850.79  E          544,569.44
P.T.  Station          16+50.0000  N        1,622,935.05  E          545,132.10
```

```
C.C.                                N       1,623,810.04  E         544,713.42
Back        = S  81° 27' 49.24" E
Ahead       = N  64° 25' 44.83" E
Chord Bear  = N  81° 28' 57.79" E

----- Shift: 15.00 (LT) at station 16+50.0000

                                  Curve Data
                                *-----------*
Curve EE2-3
P.I.  Station          19+19.9526  N       1,623,065.10  E         545,369.14
Delta       =      31° 34' 05.95" (LT)
Degree      =       5° 59' 58.41"
Tangent     =              269.95
Length      =              526.18
Radius      =              955.00
External    =               37.42
Long Chord  =              519.55
Mid. Ord.   =               36.01
P.C.  Station          16+50.0000  N       1,622,948.58  E         545,125.63
P.T.  Station          21+76.1774  N       1,623,291.86  E         545,515.61
C.C.                                N       1,623,810.04  E         544,713.42
Back        = N  64° 25' 44.08" E
Ahead       = N  32° 51' 38.14" E
Chord Bear  = N  48° 38' 41.11" E

Course from PT EE2-3 to PC EE2-4 N 32° 51' 38.14" E Dist 743.89

                                  Curve Data
                                *-----------*
Curve EE2-4
P.I.  Station          30+25.4036  N       1,624,005.20  E         545,976.40
Delta       =       8° 14' 32.16" (RT)
Degree      =       3° 55' 08.40"
Tangent     =              105.34
Length      =              210.32
Radius      =            1,462.00
External    =                3.79
Long Chord  =              210.13
Mid. Ord.   =                3.78
P.C.  Station          29+20.0641  N       1,623,916.72  E         545,919.24
P.T.  Station          31+30.3796  N       1,624,084.58  E         546,045.65
C.C.                                N       1,623,123.44  E         547,147.31
Back        = N  32° 51' 38.14" E
Ahead       = N  41° 06' 10.29" E
Chord Bear  = N  36° 58' 54.21" E

Course from PT EE2-4 to PC EE2-5 N 41° 06' 10.29" E Dist 223.77

                                  Curve Data
                                *-----------*
Curve EE2-5
P.I.  Station          35+70.4073  N       1,624,416.15  E         546,334.93
Delta       =      17° 00' 00.00" (LT)
Degree      =       3° 57' 34.65"
Tangent     =              216.26
Length      =              429.33
Radius      =            1,447.00
External    =               16.07
Long Chord  =              427.76
Mid. Ord.   =               15.89
P.C.  Station          33+54.1517  N       1,624,253.20  E         546,192.76
P.T.  Station          37+83.4852  N       1,624,613.56  E         546,423.24
C.C.                                N       1,625,204.48  E         545,102.40
Back        = N  41° 06' 10.29" E
Ahead       = N  24° 06' 10.29" E
Chord Bear  = N  32° 36' 10.29" E

================================================================================
Ending chain EE2 description
```

```
<*      18   Describe Chain EE3

Chain EE3 contains:
 CUR EE3-1 EE311 SHIFT  EE312 CUR EE3-2

Beginning chain EE3 description
================================================================================

                                Curve Data
                               *----------*
Curve EE3-1
P.I.  Station          12+00.2688  N        1,623,035.99  E          545,546.57
Delta       =       5° 00' 11.41" (LT)
Degree      =       1° 14' 59.67"
Tangent     =              200.27
Length      =              400.28
Radius      =           4,584.00
External    =                4.37
Long Chord  =              400.16
Mid. Ord.   =                4.37
P.C.  Station          10+00.0000  N        1,622,853.18  E          545,464.79
P.T.  Station          14+00.2830  N        1,623,225.23  E          545,612.10
C.C.                               N        1,624,725.18  E          541,280.45
Back        = N  24° 06' 10.29" E
Ahead       = N  19° 05' 58.88" E
Chord Bear  = N  21° 36' 04.59" E

Course from PT EE3-1 to EE311 N 19° 05' 58.88" E Dist 28.41

Point EE311           N     1,623,252.07 E       545,621.40 Sta    14+28.6882

----- Shift: 15.00 (RT) at station 14+28.6882

Point EE312           N     1,623,247.17 E       545,635.57 Sta    14+28.6882

Course from EE312 to PC EE3-2 N 19° 05' 58.88" E Dist 126.35

                                Curve Data
                               *----------*
Curve EE3-2
P.I.  Station          18+36.3872  N        1,623,632.42  E          545,768.97
Delta       =      11° 06' 20.17" (RT)
Degree      =       1° 58' 47.33"
Tangent     =              281.35
Length      =              560.94
Radius      =           2,894.00
External    =              13.64
Long Chord  =              560.06
Mid. Ord.   =              13.58
P.C.  Station          15+55.0347  N        1,623,366.56  E          545,676.91
P.T.  Station          21+15.9769  N        1,623,875.57  E          545,910.52
C.C.                               N        1,622,419.60  E          548,411.60
Back        = N  19° 05' 58.88" E
Ahead       = N  30° 12' 19.06" E
Chord Bear  = N  24° 39' 08.97" E

================================================================================
Ending chain EE3 description


<*      19   Describe Chain EE4

Chain EE4 contains:
 EE410 CUR EE4-1 EE411 SHIFT  EE412 CUR EE4-2

Beginning chain EE4 description
================================================================================

Point EE410           N     1,619,082.66 E       543,992.59 Sta    10+00.0000
```

Course from EE410 to PC EE4-1 N 25° 40' 56.81" E Dist 343.90

	Curve Data				
Curve EE4-1					
P.I. Station	15+59.1679	N	1,619,586.59	E	544,234.92
Delta =	21° 12' 19.48" (RT)				
Degree =	4° 58' 56.07"				
Tangent =	215.27				
Length =	425.62				
Radius =	1,150.00				
External =	19.98				
Long Chord =	423.19				
Mid. Ord. =	19.63				
P.C. Station	13+43.8950	N	1,619,392.58	E	544,141.62
P.T. Station	17+69.5149	N	1,619,733.71	E	544,392.07
C.C.		N	1,618,894.19	E	545,178.02

Back = N 25° 40' 56.81" E
Ahead = N 46° 53' 16.29" E
Chord Bear = N 36° 17' 06.55" E

Course from PT EE4-1 to EE411 N 46° 53' 16.29" E Dist 230.49

Point EE411 N 1,619,891.23 E 544,560.33 Sta 20+00.0000

----- Shift: 15.00 (LT) at station 20+00.0000

Point EE412 N 1,619,902.18 E 544,550.08 Sta 20+00.0000

Course from EE412 to PC EE4-2 N 46° 53' 16.29" E Dist 77.88

	Curve Data				
Curve EE4-2					
P.I. Station	23+43.1187	N	1,620,136.68	E	544,800.56
Delta =	25° 58' 30.64" (LT)				
Degree =	4° 58' 56.07"				
Tangent =	265.24				
Length =	521.36				
Radius =	1,150.00				
External =	30.19				
Long Chord =	516.90				
Mid. Ord. =	29.42				
P.C. Station	20+77.8827	N	1,619,955.41	E	544,606.93
P.T. Station	25+99.2379	N	1,620,384.44	E	544,895.24
C.C.		N	1,620,794.93	E	543,820.99

Back = N 46° 53' 16.29" E
Ahead = N 20° 54' 45.65" E
Chord Bear = N 33° 54' 00.97" E

==========
Ending chain EE4 description

<* 20 Describe Chain EE5

Chain EE5 contains:
 EE510 CUR EE5-1 CUR EE5-2 SHIFT CUR EE5-3 CUR EE5-4 CUR EE5-5

Beginning chain EE5 description
==========

Point EE510 N 1,624,450.27 E 546,616.41 Sta 10+00.0000

Course from EE510 to PC EE5-1 N 14° 43' 47.89" E Dist 688.33

	Curve Data				
Curve EE5-1					
P.I. Station	19+24.1744	N	1,625,344.07	E	546,851.40

```
Delta       =       9° 22' 22.40" (RT)
Degree      =       1° 59' 29.44"
Tangent     =              235.85
Length      =              470.64
Radius      =           2,877.00
External    =                9.65
Long Chord  =              470.12
Mid. Ord.   =                9.62
P.C.  Station          16+88.3272  N        1,625,115.97  E          546,791.43
P.T.  Station          21+58.9692  N        1,625,559.35  E          546,947.71
C.C.                               N        1,624,384.45  E          549,573.88
Back        = N  14° 43' 47.89" E
Ahead       = N  24° 06' 10.29" E
Chord Bear  = N  19° 24' 59.09" E

Course from PT EE5-1 to PC EE5-2 N 24° 06' 10.29" E Dist 147.57

                                Curve Data
                               *----------*
Curve EE5-2
P.I.  Station          23+53.2721  N        1,625,736.71  E          547,027.06
Delta       =       0° 16' 13.35" (RT)
Degree      =       0° 17' 21.50"
Tangent     =               46.73
Length      =               93.46
Radius      =          19,804.50
External    =                0.06
Long Chord  =               93.46
Mid. Ord.   =                0.06
P.C.  Station          23+06.5441  N        1,625,694.06  E          547,007.98
P.T.  Station          24+00.0000  N        1,625,779.28  E          547,046.34
C.C.                               N        1,617,606.38  E          565,085.80
Back        = N  24° 06' 10.29" E
Ahead       = N  24° 22' 23.64" E
Chord Bear  = N  24° 14' 16.97" E

----- Shift: 15.00 (RT) at station 24+00.0000

                                Curve Data
                               *----------*
Curve EE5-3
P.I.  Station          25+52.9709  N        1,625,912.43  E          547,123.14
Delta       =       0° 53' 08.75" (RT)
Degree      =       0° 17' 22.29"
Tangent     =              152.97
Length      =              305.94
Radius      =          19,789.50
External    =                0.59
Long Chord  =              305.93
Mid. Ord.   =                0.59
P.C.  Station          24+00.0000  N        1,625,773.09  E          547,060.01
P.T.  Station          27+05.9358  N        1,626,050.77  E          547,188.41
C.C.                               N        1,617,606.38  E          565,085.80
Back        = N  24° 22' 23.64" E
Ahead       = N  25° 15' 32.39" E
Chord Bear  = N  24° 48' 58.01" E

Course from PT EE5-3 to PC EE5-4 N 25° 15' 32.39" E Dist 202.30

                                Curve Data
                               *----------*
Curve EE5-4
P.I.  Station          31+12.4337  N        1,626,418.40  E          547,361.87
Delta       =       2° 48' 22.29" (LT)
Degree      =       0° 41' 14.09"
Tangent     =              204.20
Length      =              408.32
Radius      =           8,337.00
External    =                2.50
Long Chord  =              408.28
Mid. Ord.   =                2.50
```

```
P.C.  Station          29+08.2311  N        1,626,233.72  E          547,274.73
P.T.  Station          33+16.5546  N        1,626,607.13  E          547,439.86
C.C.                               N        1,629,791.21  E          539,734.85
Back        = N  25° 15' 32.39" E
Ahead       = N  22° 27' 10.10" E
Chord Bear  = N  23° 51' 21.25" E

                                  Curve Data
                                 *----------*
Curve EE5-5
P.I.  Station          35+70.7104  N        1,626,842.01  E          547,536.92
Delta       =       2° 29' 12.97" (RT)
Degree      =       0° 29' 21.59"
Tangent     =              254.16
Length      =              508.23
Radius      =           11,709.00
External    =                2.76
Long Chord  =              508.19
Mid. Ord.   =                2.76
P.C.  Station          33+16.5546  N        1,626,607.13  E          547,439.86
P.T.  Station          38+24.7865  N        1,627,072.47  E          547,644.09
C.C.                               N        1,622,135.20  E          558,261.25
Back        = N  22° 27' 10.10" E
Ahead       = N  24° 56' 23.07" E
Chord Bear  = N  23° 41' 46.59" E

================================================================================
Ending chain EE5 description


<*      21   Describe Chain GG

Chain GG contains:
 CUR GG-1 SHIFT  CUR GG-2 CUR GG-3 GG11

Beginning chain GG description
================================================================================

                                  Curve Data
                                 *----------*
Curve GG-1
P.I.  Station          13+00.1543  N        1,624,810.52  E          541,419.83
Delta       =       4° 30' 00.93" (LT)
Degree      =       0° 45' 00.15"
Tangent     =              300.15
Length      =              600.00
Radius      =            7,639.00
External    =                5.89
Long Chord  =              599.85
Mid. Ord.   =                5.89
P.C.  Station          10+00.0000  N        1,625,035.44  E          541,221.08
P.T.  Station          16+00.0000  N        1,624,601.88  E          541,635.61
C.C.                               N        1,630,093.71  E          546,945.43
Back        = S  41° 27' 54.22" E
Ahead       = S  45° 57' 55.15" E
Chord Bear  = S  43° 42' 54.69" E

----- Shift: 15.00 (RT) at station 16+00.0000

                                  Curve Data
                                 *----------*
Curve GG-2
P.I.  Station          19+06.1449  N        1,624,378.30  E          541,845.28
Delta       =       4° 34' 51.58" (LT)
Degree      =       0° 44' 54.86"
Tangent     =              306.14
Length      =              611.96
Radius      =            7,654.00
External    =                6.12
Long Chord  =              611.80
Mid. Ord.   =                6.12
```

```
P.C.  Station          16+00.0000  N        1,624,591.10  E          541,625.19
P.T.  Station          22+11.9636  N        1,624,183.76  E          542,081.67
C.C.                               N        1,630,093.71  E          546,945.43
Back        = S  45° 57' 55.15" E
Ahead       = S  50° 32' 46.73" E
Chord Bear  = S  48° 15' 20.94" E

                                  Curve Data
                                 *-----------*
Curve GG-3
P.I.  Station          26+85.1673  N        1,623,883.06  E          542,447.05
Delta       =      11° 44' 57.45" (LT)
Degree      =       1° 14' 44.99"
Tangent     =              473.20
Length      =              943.09
Radius      =            4,599.00
External    =               24.28
Long Chord  =              941.44
Mid. Ord.   =               24.15
P.C.  Station          22+11.9636  N        1,624,183.76  E          542,081.67
P.T.  Station          31+55.0523  N        1,623,663.06  E          542,866.00
C.C.                               N        1,627,734.82  E          545,004.12
Back        = S  50° 32' 46.73" E
Ahead       = S  62° 17' 44.18" E
Chord Bear  = S  56° 25' 15.46" E

Course from PT GG-3 to GG11 S 62° 17' 44.18" E Dist 849.10

Point GG11            N     1,623,268.31 E       543,617.76 Sta    40+04.1500

================================================================================
Ending chain GG description


<*      22   Describe Chain HH1

Chain HH1 contains:
 10 11 SHIFT  12 CUR HH1-1 13 SHIFT  14 CUR HH1-2 CUR HH1-3

Beginning chain HH1 description
Description: 10 11 12 CUR HH1-1 13 14 CUR HH1-2 CUR HH1-3
================================================================================

Point 10              N     1,624,938.10 E       541,154.77 Sta    10+00.0000

Course from 10 to 11 S 36° 57' 54.22" E Dist 775.10

Point 11              N     1,624,318.79 E       541,620.86 Sta    17+75.1021

----- Shift: 15.00 (LT) at station 17+75.1021

Point 12              N     1,624,327.80 E       541,632.85 Sta    17+75.1021

Course from 12 to PC HH1-1 S 36° 57' 54.22" E Dist 30.15

                                  Curve Data
                                 *-----------*
Curve HH1-1
P.I.  Station          24+31.9230  N        1,623,803.00  E          542,027.82
Delta       =      18° 37' 58.34" (LT)
Degree      =       1° 29' 59.60"
Tangent     =              626.67
Length      =            1,242.28
Radius      =            3,820.00
External    =               51.06
Long Chord  =            1,236.82
Mid. Ord.   =               50.39
P.C.  Station          18+05.2487  N        1,624,303.71  E          541,650.98
P.T.  Station          30+47.5317  N        1,623,448.93  E          542,544.88
C.C.                               N        1,626,600.78  E          544,703.17
Back        = S  36° 57' 54.22" E
```

```
Ahead       = S  55° 35' 52.56" E
Chord Bear  = S  46° 16' 53.39" E

Course from PT HH1-1 to 13 S 55° 35' 52.56" E Dist 352.57

Point 13              N     1,623,249.73 E       542,835.79 Sta    34+00.1028

----- Shift: 15.00 (RT) at station 34+00.1028

Point 14              N     1,623,237.35 E       542,827.31 Sta    34+00.1028

Course from 14 to PC HH1-2 S 55° 35' 52.56" E Dist 726.08

                                Curve Data
                               *----------*
Curve HH1-2
P.I.  Station          49+14.1483  N        1,622,381.92  E          544,076.54
Delta       =     134° 10' 52.31" (RT)
Degree      =      17° 12' 21.38"
Tangent     =              787.96
Length      =              779.85
Radius      =              333.00
External    =              522.44
Long Chord  =              613.47
Mid. Ord.   =              203.37
P.C.  Station          41+26.1876  N        1,622,827.11  E          543,426.40
P.T.  Station          49+06.0415  N        1,622,225.95  E          543,304.17
C.C.                               N        1,622,552.36  E          543,238.26
Back        = S  55° 35' 52.56" E
Ahead       = S  78° 34' 59.74" W
Chord Bear  = S  11° 29' 33.59" W

                                Curve Data
                               *----------*
Curve HH1-3
P.I.  Station          56+94.0022  N        1,622,069.98  E          542,531.80
Delta       =     134° 10' 52.30" (RT)
Degree      =      17° 12' 21.38"
Tangent     =              787.96
Length      =              779.85
Radius      =              333.00
External    =              522.44
Long Chord  =              613.47
Mid. Ord.   =              203.37
P.C.  Station          49+06.0415  N        1,622,225.95  E          543,304.17
P.T.  Station          56+85.8954  N        1,622,732.57  E          542,958.24
C.C.                               N        1,622,552.36  E          543,238.26
Back        = S  78° 34' 59.74" W
Ahead       = N  32° 45' 52.05" E
Chord Bear  = N  34° 19' 34.11" W

================================================================================
Ending chain HH1 description


<*      23   Describe Chain HH2

Chain HH2 contains:
 HH210 CUR HH2-1 HH211

Beginning chain HH2 description
================================================================================

Point HH210           N     1,623,866.43 E       542,014.21 Sta     6+69.8934

Course from HH210 to PC HH2-1 S 44° 36' 37.94" E Dist 330.11

                                Curve Data
                               *----------*
Curve HH2-1
P.I.  Station          12+78.9444  N        1,623,432.85  E          542,441.93
```

```
Delta       =       8° 19' 13.20" (LT)
Degree      =       1° 29' 38.48"
Tangent     =              278.94
Length      =              556.91
Radius      =           3,835.00
External    =               10.13
Long Chord  =              556.42
Mid. Ord.   =               10.10
P.C.  Station          10+00.0000  N        1,623,631.43  E          542,246.04
P.T.  Station          15+56.9080  N        1,623,264.71  E          542,664.51
C.C.                               N        1,626,324.69  E          544,976.16
Back        = S  44° 36' 37.94" E
Ahead       = S  52° 55' 51.14" E
Chord Bear  = S  48° 46' 14.54" E

Course from PT HH2-1 to HH211 S 52° 55' 51.14" E Dist 500.87

Point HH211           N     1,622,962.79 E       543,064.15 Sta    20+57.7777

================================================================================
Ending chain HH2 description


<*      24   Describe Chain LL1

Chain LL1 contains:
 LL110 CUR LL1-1 CUR LL1-2 CUR LL1-3 CUR LL1-4 CUR LL1-5

Beginning chain LL1 description
================================================================================

Point LL110           N     1,623,963.17 E       542,047.66 Sta    10+00.0000

Course from LL110 to PC LL1-1 S 47° 27' 21.37" E Dist 630.58

                                Curve Data
                               *----------*
Curve LL1-1
P.I.  Station          17+95.4537  N        1,623,425.32  E          542,633.72
Delta       =       8° 10' 31.20" (LT)
Degree      =       2° 29' 00.82"
Tangent     =              164.87
Length      =              329.18
Radius      =           2,307.00
External    =                5.88
Long Chord  =              328.90
Mid. Ord.   =                5.87
P.C.  Station          16+30.5850  N        1,623,536.79  E          542,512.25
P.T.  Station          19+59.7627  N        1,623,332.25  E          542,769.81
C.C.                               N        1,625,236.49  E          544,072.15
Back        = S  47° 27' 21.37" E
Ahead       = S  55° 37' 52.57" E
Chord Bear  = S  51° 32' 36.97" E

Course from PT LL1-1 to PC LL1-2 S 55° 37' 52.57" E Dist 744.47

                                Curve Data
                               *----------*
Curve LL1-2
P.I.  Station          31+13.6484  N        1,622,680.86  E          543,722.25
Delta       =      44° 31' 48.87" (RT)
Degree      =       5° 43' 46.48"
Tangent     =              409.42
Length      =              777.20
Radius      =           1,000.00
External    =               80.57
Long Chord  =              757.79
Mid. Ord.   =               74.56
P.C.  Station          27+04.2295  N        1,622,911.98  E          543,384.31
P.T.  Station          34+81.4288  N        1,622,279.10  E          543,801.08
C.C.                               N        1,622,086.56  E          542,819.79
```

```
Back        = S  55° 37' 52.57" E
Ahead       = S  11° 06' 03.70" E
Chord Bear  = S  33° 21' 58.13" E

Course from PT LL1-2 to PC LL1-3 S 11° 06' 03.70" E Dist 423.20

                                Curve Data
                               *----------*
Curve LL1-3
P.I.  Station          41+07.5902  N        1,621,664.65  E          543,921.64
Delta       =      19° 36' 01.37" (LT)
Degree      =       4° 52' 34.45"
Tangent     =              202.96
Length      =              401.96
Radius      =           1,175.00
External    =               17.40
Long Chord  =              400.00
Mid. Ord.   =               17.15
P.C.  Station          39+04.6284  N        1,621,863.82  E          543,882.56
P.T.  Station          43+06.5855  N        1,621,490.14  E          544,025.26
C.C.                               N        1,622,090.05  E          545,035.58
Back        = S  11° 06' 03.70" E
Ahead       = S  30° 42' 05.07" E
Chord Bear  = S  20° 54' 04.38" E

Course from PT LL1-3 to PC LL1-4 S 30° 42' 05.07" E Dist 349.86

                                Curve Data
                               *----------*
Curve LL1-4
P.I.  Station          49+87.4386  N        1,620,904.72  E          544,372.88
Delta       =      31° 43' 17.49" (RT)
Degree      =       4° 55' 05.13"
Tangent     =              331.00
Length      =              645.00
Radius      =           1,165.00
External    =               46.11
Long Chord  =              636.79
Mid. Ord.   =               44.35
P.C.  Station          46+56.4420  N        1,621,189.32  E          544,203.89
P.T.  Station          53+01.4385  N        1,620,573.77  E          544,366.99
C.C.                               N        1,620,594.51  E          543,202.17
Back        = S  30° 42' 05.07" E
Ahead       = S   1° 01' 12.42" W
Chord Bear  = S  14° 50' 26.32" E

                                Curve Data
                               *----------*
Curve LL1-5
P.I.  Station          56+74.2110  N        1,620,201.06  E          544,360.35
Delta       =      18° 10' 45.25" (RT)
Degree      =       2° 27' 32.57"
Tangent     =              372.77
Length      =              739.28
Radius      =           2,330.00
External    =               29.63
Long Chord  =              736.18
Mid. Ord.   =               29.26
P.C.  Station          53+01.4385  N        1,620,573.77  E          544,366.99
P.T.  Station          60+40.7184  N        1,619,849.02  E          544,237.76
C.C.                               N        1,620,615.25  E          542,037.36
Back        = S   1° 01' 12.42" W
Ahead       = S  19° 11' 57.67" W
Chord Bear  = S  10° 06' 35.05" W

================================================================================
Ending chain LL1 description


<*      25   Describe Chain ULT-LL1
```

```
Chain ULT-LL1 contains:
 CUR ULT-LL1-1 ULL002

Beginning chain ULT-LL1 description
================================================================================

                                Curve Data
                               *----------*
Curve ULT-LL1-1
P.I.  Station          55+33.7132  N        1,620,341.53  E          544,362.85
Delta       =      22° 33' 04.53" (RT)
Degree      =       4° 55' 05.13"
Tangent     =              232.27
Length      =              458.54
Radius      =            1,165.00
External    =               22.93
Long Chord  =              455.58
Mid. Ord.   =               22.49
P.C.  Station          53+01.4385  N        1,620,573.77  E          544,366.99
P.T.  Station          57+59.9752  N        1,620,128.64  E          544,269.97
C.C.                               N        1,620,594.51  E          543,202.17
Back        = S   1° 01' 12.42" W
Ahead       = S  23° 34' 16.95" W
Chord Bear  = S  12° 17' 44.69" W

Course from PT ULT-LL1-1 to ULL002 S 23° 34' 16.95" W Dist 17.02

Point ULL002          N     1,620,113.04 E       544,263.16 Sta    57+76.9995

================================================================================
Ending chain ULT-LL1 description


<*      26   Describe Chain LL2

Chain LL2 contains:
 LL210 CUR LL2-1 CUR LL2-2 CUR LL2-3 LL211

Beginning chain LL2 description
================================================================================

Point LL210           N     1,623,321.82 E       542,811.63 Sta    10+00.0000

Course from LL210 to PC LL2-1 S 59° 37' 41.79" E Dist 745.27

                                Curve Data
                               *----------*
Curve LL2-1
P.I.  Station          21+64.4687  N        1,622,733.05  E          543,816.29
Delta       =      31° 43' 49.84" (LT)
Degree      =       3° 53' 04.05"
Tangent     =              419.20
Length      =              816.86
Radius      =            1,475.00
External    =               58.41
Long Chord  =              806.46
Mid. Ord.   =               56.19
P.C.  Station          17+45.2707  N        1,622,945.00  E          543,454.62
P.T.  Station          25+62.1285  N        1,622,742.99  E          544,235.37
C.C.                               N        1,624,217.58  E          544,200.39
Back        = S  59° 37' 41.79" E
Ahead       = N  88° 38' 28.37" E
Chord Bear  = S  75° 29' 36.71" E

Course from PT LL2-1 to PC LL2-2 N 88° 38' 28.37" E Dist 224.35

                                Curve Data
                               *----------*
Curve LL2-2
P.I.  Station          29+96.7924  N        1,622,753.30  E          544,669.91
Delta       =      14° 50' 21.47" (RT)
```

```
Degree      =       3° 32' 51.81"
Tangent     =              210.32
Length      =              418.28
Radius      =           1,615.00
External    =               13.64
Long Chord  =              417.11
Mid. Ord.   =               13.52
P.C.  Station          27+86.4774  N        1,622,748.31  E          544,459.66
P.T.  Station          32+04.7536  N        1,622,704.27  E          544,874.43
C.C.                               N        1,621,133.77  E          544,497.95
Back        = N  88° 38' 28.37" E
Ahead       = S  76° 31' 10.16" E
Chord Bear  = S  83° 56' 20.89" E

Course from PT LL2-2 to PC LL2-3 S 76° 31' 10.16" E Dist 431.66

                                Curve Data
                               *----------*
Curve LL2-3
P.I.  Station          42+81.2925  N        1,622,453.31  E          545,921.31
Delta       =      84° 01' 00.51" (LT)
Degree      =       8° 00' 07.93"
Tangent     =              644.88
Length      =           1,049.92
Radius      =              716.00
External    =              247.60
Long Chord  =              958.35
Mid. Ord.   =              183.98
P.C.  Station          36+36.4130  N        1,622,603.65  E          545,294.20
P.T.  Station          46+86.3339  N        1,623,061.34  E          546,136.19
C.C.                               N        1,623,299.92  E          545,461.11
Back        = S  76° 31' 10.16" E
Ahead       = N  19° 27' 49.33" E
Chord Bear  = N  61° 28' 19.59" E

Course from PT LL2-3 to LL211 N 19° 27' 49.33" E Dist 767.88

Point LL211           N     1,623,785.34 E       546,392.06 Sta    54+54.2187

================================================================================
Ending chain LL2 description


<*      27   Describe Chain LL3

Chain LL3 contains:
 LL310 CUR LL3-1 CUR LL3-2 CUR LL3-3 CUR LL3-4

Beginning chain LL3 description
================================================================================

Point LL310           N     1,622,108.28 E       542,652.77 Sta     8+68.8199

Course from LL310 to PC LL3-1 N 85° 39' 14.15" E Dist 218.41

                                Curve Data
                               *----------*
Curve LL3-1
P.I.  Station          12+87.6254  N        1,622,140.02  E          543,070.37
Delta       =       7° 09' 59.92" (RT)
Degree      =       1° 47' 25.78"
Tangent     =              200.39
Length      =              400.26
Radius      =           3,200.00
External    =                6.27
Long Chord  =              400.00
Mid. Ord.   =                6.26
P.C.  Station          10+87.2336  N        1,622,124.84  E          542,870.56
P.T.  Station          14+87.4945  N        1,622,130.16  E          543,270.52
C.C.                               N        1,618,934.04  E          543,113.05
Back        = N  85° 39' 14.15" E
```

```
Ahead       = S  87° 10' 45.93" E
Chord Bear  = N  89° 14' 14.11" E

Course from PT LL3-1 to PC LL3-2 S 87° 10' 45.93" E Dist 268.28

                                Curve Data
                               *----------*
Curve LL3-2
P.I.  Station          20+28.9330  N        1,622,103.52  E          543,811.30
Delta       =      13° 35' 34.07" (LT)
Degree      =       2° 29' 59.34"
Tangent     =              273.16
Length      =              543.75
Radius      =            2,292.00
External    =               16.22
Long Chord  =              542.48
Mid. Ord.   =               16.11
P.C.  Station          17+55.7746  N        1,622,116.96  E          543,538.48
P.T.  Station          22+99.5266  N        1,622,154.57  E          544,079.65
C.C.                               N        1,624,406.18  E          543,651.26
Back        = S  87° 10' 45.93" E
Ahead       = N  79° 13' 39.99" E
Chord Bear  = N  86° 01' 27.03" E

Course from PT LL3-2 to PC LL3-3 N 79° 13' 39.99" E Dist 287.48

                                Curve Data
                               *----------*
Curve LL3-3
P.I.  Station          31+56.8977  N        1,622,314.82  E          544,921.91
Delta       =      11° 18' 45.37" (RT)
Degree      =       0° 59' 44.72"
Tangent     =              569.89
Length      =            1,136.08
Radius      =            5,754.00
External    =               28.15
Long Chord  =            1,134.24
Mid. Ord.   =               28.02
P.C.  Station          25+87.0040  N        1,622,208.30  E          544,362.06
P.T.  Station          37+23.0862  N        1,622,309.44  E          545,491.78
C.C.                               N        1,616,555.70  E          545,437.51
Back        = N  79° 13' 39.99" E
Ahead       = S  89° 27' 34.64" E
Chord Bear  = N  84° 53' 02.68" E

Course from PT LL3-3 to PC LL3-4 S 89° 27' 34.64" E Dist 509.18

                                Curve Data
                               *----------*
Curve LL3-4
P.I.  Station          46+65.7706  N        1,622,300.55  E          546,434.42
Delta       =       6° 29' 45.65" (LT)
Degree      =       0° 45' 00.15"
Tangent     =              433.51
Length      =              866.09
Radius      =            7,639.00
External    =               12.29
Long Chord  =              865.62
Mid. Ord.   =               12.27
P.C.  Station          42+32.2633  N        1,622,304.64  E          546,000.93
P.T.  Station          50+98.3490  N        1,622,345.53  E          546,865.59
C.C.                               N        1,629,943.30  E          546,072.98
Back        = S  89° 27' 34.64" E
Ahead       = N  84° 02' 39.71" E
Chord Bear  = N  87° 17' 32.54" E

================================================================================
Ending chain LL3 description


<*      28   Describe Chain MM1
```

Chain MM1 contains:
 MM110 CUR MM1-1 CUR MM1-2 MM111 SHIFT CUR MM1-3 CUR MM1-4 MM112 SHIFT MM113 -
CUR MM1-5 CUR MM1-6 CUR MM1-7 CUR MM1-8

Beginning chain MM1 description
==========

Point MM110   N   1,618,551.75 E   543,864.92 Sta   8+00.3462

Course from MM110 to PC MM1-1 N 27° 18' 47.52" E Dist 1,019.57

Curve Data

Curve MM1-1
Feature: DEFAULT
P.I. Station   20+32.0008 N   1,619,646.09 E   544,430.07
Delta   =   11° 12' 56.64" (RT)
Degree   =   2° 39' 09.30"
Tangent   =   212.09
Length   =   422.82
Radius   =   2,160.00
External   =   10.39
Long Chord =   422.15
Mid. Ord.   =   10.34
P.C. Station   18+19.9116 N   1,619,457.65 E   544,332.76
P.T. Station   22+42.7347 N   1,619,812.01 E   544,562.19
C.C.   N   1,618,466.52 E   546,251.94
Back   = N 27° 18' 47.52" E
Ahead   = N 38° 31' 44.16" E
Chord Bear = N 32° 55' 15.84" E

Course from PT MM1-1 to PC MM1-2 N 38° 31' 44.16" E Dist 199.71

Curve Data

Curve MM1-2
Feature: DEFAULT
P.I. Station   26+74.8740 N   1,620,150.07 E   544,831.37
Delta   =   17° 36' 58.51" (LT)
Degree   =   3° 49' 10.99"
Tangent   =   232.43
Length   =   461.19
Radius   =   1,500.00
External   =   17.90
Long Chord =   459.38
Mid. Ord.   =   17.69
P.C. Station   24+42.4439 N   1,619,968.24 E   544,686.59
P.T. Station   29+03.6363 N   1,620,367.19 E   544,914.34
C.C.   N   1,620,902.60 E   543,513.15
Back   = N 38° 31' 44.16" E
Ahead   = N 20° 54' 45.65" E
Chord Bear = N 29° 43' 14.91" E

Course from PT MM1-2 to MM111 N 20° 54' 45.65" E Dist 259.58

Point MM111   N   1,620,609.67 E   545,006.99 Sta   31+63.2180

----- Shift: 24.00 (LT) at station 31+63.2180

Curve Data

Curve MM1-3
P.I. Station   34+36.1644 N   1,620,873.20 E   545,082.00
Delta   =   3° 08' 34.73" (LT)
Degree   =   0° 34' 33.22"
Tangent   =   272.95
Length   =   545.76
Radius   =   9,949.00
External   =   3.74
Long Chord =   545.69

```
Mid. Ord.   =               3.74
P.C.  Station          31+63.2180  N        1,620,618.23  E          544,984.57
P.T.  Station          37+08.9740  N        1,621,133.13  E          545,165.30
C.C.                               N        1,624,169.48  E          535,690.96
Back        = N  20° 54' 45.65" E
Ahead       = N  17° 46' 10.92" E
Chord Bear  = N  19° 20' 28.29" E

                                Curve Data
                               *----------*
Curve MM1-4
P.I.  Station          42+50.6718  N        1,621,648.98  E          545,330.62
Delta       =       6° 13' 05.14" (RT)
Degree      =       0° 34' 28.23"
Tangent     =              541.70
Length      =            1,082.33
Radius      =            9,973.00
External    =              14.70
Long Chord  =            1,081.80
Mid. Ord.   =              14.68
P.C.  Station          37+08.9740  N        1,621,133.13  E          545,165.30
P.T.  Station          47+91.3061  N        1,622,143.89  E          545,550.84
C.C.                               N        1,618,089.45  E          554,662.50
Back        = N  17° 46' 10.92" E
Ahead       = N  23° 59' 16.07" E
Chord Bear  = N  20° 52' 43.49" E

Course from PT MM1-4 to MM112 N 23° 59' 16.07" E Dist 648.99

Point MM112           N     1,622,736.83 E       545,814.69 Sta    54+40.2985

----- Shift: 15.00 (RT) at station 54+40.2985

Point MM113           N     1,622,730.73 E       545,828.39 Sta    54+40.2985

Course from MM113 to PC MM1-5 N 23° 59' 16.07" E Dist 272.45

                                Curve Data
                               *----------*
Curve MM1-5
P.I.  Station          62+99.5006  N        1,623,515.73  E          546,177.69
Delta       =     122° 20' 08.06" (RT)
Degree      =      17° 44' 19.07"
Tangent     =              586.75
Length      =              689.66
Radius      =              323.00
External    =              346.78
Long Chord  =              565.92
Mid. Ord.   =              167.23
P.C.  Station          57+12.7475  N        1,622,979.65  E          545,939.15
P.T.  Station          64+02.4037  N        1,623,027.44  E          546,503.05
C.C.                               N        1,622,848.34  E          546,234.26
Back        = N  23° 59' 16.07" E
Ahead       = S  33° 40' 35.88" E
Chord Bear  = N  85° 09' 20.09" E

                                Curve Data
                               *----------*
Curve MM1-6
P.I.  Station          69+89.1568  N        1,622,539.16  E          546,828.41
Delta       =     122° 20' 08.06" (RT)
Degree      =      17° 44' 19.07"
Tangent     =              586.75
Length      =              689.66
Radius      =              323.00
External    =              346.78
Long Chord  =              565.92
Mid. Ord.   =              167.23
P.C.  Station          64+02.4037  N        1,623,027.44  E          546,503.05
P.T.  Station          70+92.0599  N        1,622,525.43  E          546,241.82
C.C.                               N        1,622,848.34  E          546,234.26
```

```
Back        = S  33° 40' 35.88" E
Ahead       = S  88° 39' 32.18" W
Chord Bear  = S  27° 29' 28.15" W

Course from PT MM1-6 to PC MM1-7 S 88° 39' 32.18" W Dist 227.05

                                Curve Data
                               *----------*
Curve MM1-7
P.I.  Station          74+01.4818  N        1,622,518.19  E          545,932.48
Delta       =       2° 03' 32.39" (RT)
Degree      =       1° 14' 59.67"
Tangent     =              82.37
Length      =             164.73
Radius      =          4,584.00
External    =              0.74
Long Chord  =             164.72
Mid. Ord.   =              0.74
P.C.  Station          73+19.1070  N        1,622,520.11  E          546,014.83
P.T.  Station          74+83.8389  N        1,622,519.22  E          545,850.11
C.C.                               N        1,627,102.86  E          545,907.55
Back        = S  88° 39' 32.18" W
Ahead       = N  89° 16' 55.43" W
Chord Bear  = S  89° 41' 18.37" W

                                Curve Data
                               *----------*
Curve MM1-8
P.I.  Station          78+10.9416  N        1,622,523.32  E          545,523.03
Delta       =       8° 09' 47.26" (RT)
Degree      =       1° 14' 59.67"
Tangent     =             327.10
Length      =             653.10
Radius      =          4,584.00
External    =              11.66
Long Chord  =             652.55
Mid. Ord.   =              11.63
P.C.  Station          74+83.8389  N        1,622,519.22  E          545,850.11
P.T.  Station          81+36.9373  N        1,622,573.82  E          545,199.85
C.C.                               N        1,627,102.86  E          545,907.55
Back        = N  89° 16' 55.43" W
Ahead       = N  81° 07' 08.17" W
Chord Bear  = N  85° 12' 01.80" W

================================================================================
Ending chain MM1 description



<*      29   Describe Chain MM2

Chain MM2 contains:
 MM210 CUR MM2-1 MM211 MM212

Beginning chain MM2 description
================================================================================

Point MM210           N     1,621,596.28 E       545,352.03 Sta    11+23.1436

Course from MM210 to PC MM2-1 N 24° 38' 20.85" E Dist 188.21

                                Curve Data
                               *----------*
Curve MM2-1
P.I.  Station          17+78.5504  N        1,622,192.01  E          545,625.27
Delta       =      59° 24' 18.86" (RT)
Degree      =       6° 59' 44.96"
Tangent     =             467.20
Length      =             849.15
Radius      =             819.00
```

```
External    =              123.89
Long Chord  =              811.63
Mid. Ord.   =              107.61
P.C.  Station          13+11.3514  N        1,621,767.35  E          545,430.50
P.T.  Station          21+60.5045  N        1,622,240.49  E          546,089.95
C.C.                               N        1,621,425.91  E          546,174.93
Back        = N  24° 38' 20.85" E
Ahead       = N  84° 02' 39.71" E
Chord Bear  = N  54° 20' 30.28" E

Course from PT MM2-1 to MM211 N 84° 02' 39.71" E Dist 939.50

Point MM211           N     1,622,337.97 E       547,024.38 Sta    31+00.0000

Course from MM211 to MM212 N 83° 57' 32.21" E Dist 465.28

Point MM212           N     1,622,386.94 E       547,487.08 Sta    35+65.2840

================================================================================
Ending chain MM2 description



<*      30   Describe Chain MM3

Chain MM3 contains:
 MM310 CUR MM3-1 CUR MM3-2 CUR MM3-3 CUR MM3-4 CUR MM3-5 CUR MM3-6 CUR MM3-7 CU-
R MM3-8 CUR MM3-9

Beginning chain MM3 description
================================================================================

Point MM310           N     1,619,854.81 E       544,446.68 Sta    10+00.0000

Course from MM310 to PC MM3-1 N 28° 03' 31.14" E Dist 321.19

                                Curve Data
                               *----------*
Curve MM3-1
P.I.  Station          15+21.2702  N        1,620,314.82  E          544,691.88
Delta       =       3° 59' 58.94" (RT)
Degree      =       0° 59' 59.73"
Tangent     =              200.08
Length      =              400.00
Radius      =            5,730.00
External    =                3.49
Long Chord  =              399.92
Mid. Ord.   =                3.49
P.C.  Station          13+21.1889  N        1,620,138.25  E          544,597.76
P.T.  Station          17+21.1889  N        1,620,484.39  E          544,798.08
C.C.                               N        1,617,443.00  E          549,654.30
Back        = N  28° 03' 31.14" E
Ahead       = N  32° 03' 30.08" E
Chord Bear  = N  30° 03' 30.61" E

Course from PT MM3-1 to PC MM3-2 N 32° 03' 30.08" E Dist 199.80

                                Curve Data
                               *----------*
Curve MM3-2
P.I.  Station          22+43.8490  N        1,620,927.35  E          545,075.50
Delta       =      13° 43' 05.88" (LT)
Degree      =       2° 08' 04.98"
Tangent     =              322.86
Length      =              642.63
Radius      =            2,684.00
External    =               19.35
Long Chord  =              641.09
Mid. Ord.   =               19.21
P.C.  Station          19+20.9908  N        1,620,653.72  E          544,904.13
P.T.  Station          25+63.6196  N        1,621,233.81  E          545,177.08
```

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C.C.                                N        1,622,078.34  E          542,629.42
Back        = N  32° 03' 30.08" E
Ahead       = N  18° 20' 24.20" E
Chord Bear  = N  25° 11' 57.14" E

                                  Curve Data
                                 *----------*
Curve MM3-3
P.I.  Station          30+56.5322  N        1,621,701.68  E          545,332.18
Delta       =       5° 38' 51.87" (RT)
Degree      =       0° 34' 24.09"
Tangent     =              492.91
Length      =              985.03
Radius      =            9,993.00
External    =               12.15
Long Chord  =              984.63
Mid. Ord.   =               12.13
P.C.  Station          25+63.6196  N        1,621,233.81  E          545,177.08
P.T.  Station          35+48.6465  N        1,622,152.02  E          545,532.57
C.C.                                N        1,618,089.45  E          554,662.50
Back        = N  18° 20' 24.20" E
Ahead       = N  23° 59' 16.07" E
Chord Bear  = N  21° 09' 50.13" E

Course from PT MM3-3 to PC MM3-4 N 23° 59' 16.07" E Dist 1,013.20

                                  Curve Data
                                 *----------*
Curve MM3-4
P.I.  Station          48+91.3685  N        1,623,378.78  E          546,078.45
Delta       =       8° 13' 24.29" (RT)
Degree      =       1° 14' 59.67"
Tangent     =              329.53
Length      =              657.92
Radius      =            4,584.00
External    =               11.83
Long Chord  =              657.36
Mid. Ord.   =               11.80
P.C.  Station          45+61.8419  N        1,623,077.71  E          545,944.48
P.T.  Station          52+19.7634  N        1,623,657.59  E          546,254.10
C.C.                                N        1,621,214.12  E          550,132.57
Back        = N  23° 59' 16.07" E
Ahead       = N  32° 12' 40.35" E
Chord Bear  = N  28° 05' 58.21" E

Course from PT MM3-4 to PC MM3-5 N 32° 12' 40.35" E Dist 443.95

                                  Curve Data
                                 *----------*
Curve MM3-5
P.I.  Station          59+82.6869  N        1,624,303.09  E          546,660.77
Delta       =      13° 33' 57.76" (LT)
Degree      =       2° 08' 11.36"
Tangent     =              318.98
Length      =              634.97
Radius      =            2,681.77
External    =               18.90
Long Chord  =              633.49
Mid. Ord.   =               18.77
P.C.  Station          56+63.7107  N        1,624,033.20  E          546,490.74
P.T.  Station          62+98.6798  N        1,624,605.32  E          546,762.75
C.C.                                N        1,625,462.70  E          544,221.72
Back        = N  32° 12' 40.35" E
Ahead       = N  18° 38' 42.59" E
Chord Bear  = N  25° 25' 41.47" E

Course from PT MM3-5 to PC MM3-6 N 18° 38' 42.59" E Dist 170.00

                                  Curve Data
                                 *----------*
Curve MM3-6
```

P.I. Station	67+18.2573	N	1,625,002.88	E	546,896.89
Delta =	5° 21' 48.41" (RT)				
Degree =	1° 04' 31.05"				
Tangent =	249.58				
Length =	498.79				
Radius =	5,328.40				
External =	5.84				
Long Chord =	498.61				
Mid. Ord. =	5.84				
P.C. Station	64+68.6798	N	1,624,766.40	E	546,817.10
P.T. Station	69+67.4703	N	1,625,230.86	E	546,998.43
C.C.		N	1,623,062.88	E	551,865.84
Back = N	18° 38' 42.59" E				
Ahead = N	24° 00' 31.00" E				
Chord Bear = N	21° 19' 36.79" E				

Curve Data

Curve MM3-7

P.I. Station	71+19.1106	N	1,625,369.38	E	547,060.13
Delta =	0° 45' 24.71" (LT)				
Degree =	0° 14' 58.42"				
Tangent =	151.64				
Length =	303.28				
Radius =	22,958.50				
External =	0.50				
Long Chord =	303.27				
Mid. Ord. =	0.50				
P.C. Station	69+67.4703	N	1,625,230.86	E	546,998.43
P.T. Station	72+70.7465	N	1,625,508.71	E	547,120.00
C.C.		N	1,634,572.08	E	526,026.20
Back = N	24° 00' 31.00" E				
Ahead = N	23° 15' 06.29" E				
Chord Bear = N	23° 37' 48.64" E				

Course from PT MM3-7 to PC MM3-8 N 23° 15' 06.29" E Dist 1,067.04

Curve Data

Curve MM3-8

P.I. Station	85+03.4513	N	1,626,641.29	E	547,606.63
Delta =	0° 40' 44.78" (RT)				
Degree =	0° 12' 17.89"				
Tangent =	165.66				
Length =	331.32				
Radius =	27,953.50				
External =	0.49				
Long Chord =	331.32				
Mid. Ord. =	0.49				
P.C. Station	83+37.7880	N	1,626,489.08	E	547,541.23
P.T. Station	86+69.1107	N	1,626,792.71	E	547,673.83
C.C.		N	1,615,453.83	E	573,224.33
Back = N	23° 15' 06.29" E				
Ahead = N	23° 55' 51.07" E				
Chord Bear = N	23° 35' 28.68" E				

Curve Data

Curve MM3-9

P.I. Station	88+58.5465	N	1,626,965.87	E	547,750.67
Delta =	7° 33' 57.09" (RT)				
Degree =	1° 59' 59.47"				
Tangent =	189.44				
Length =	378.32				
Radius =	2,865.00				
External =	6.26				
Long Chord =	378.05				
Mid. Ord. =	6.24				
P.C. Station	86+69.1107	N	1,626,792.71	E	547,673.83
P.T. Station	90+47.4315	N	1,627,127.39	E	547,849.64
C.C.		N	1,625,630.57	E	550,292.54

Back = N 23° 55' 51.07" E
Ahead = N 31° 29' 48.16" E
Chord Bear = N 27° 42' 49.62" E

==========

Ending chain MM3 description

<* 31 Describe Chain NN1

Chain NN1 contains:
CUR NN1-1 CUR NN1-2 CUR NN1-3 CUR NN1-4 CUR NN1-5

Beginning chain NN1 description
==========

Curve Data

Curve NN1-1

P.I. Station	12+28.9244	N	1,626,717.77	E	547,588.88
Delta =	0° 56' 12.71" (LT)				
Degree =	0° 12' 16.66"				
Tangent =	228.92				
Length =	457.84				
Radius =	28,000.00				
External =	0.94				
Long Chord =	457.83				
Mid. Ord. =	0.94				
P.C. Station	10+00.0000	N	1,626,926.60	E	547,682.68
P.T. Station	14+57.8385	N	1,626,507.44	E	547,498.51
C.C.		N	1,615,453.83	E	573,224.33

Back = S 24° 11' 19.00" W
Ahead = S 23° 15' 06.29" W
Chord Bear = S 23° 43' 12.65" W

Course from PT NN1-1 to PC NN1-2 S 23° 15' 06.29" W Dist 1,067.04

Curve Data

Curve NN1-2

P.I. Station	26+97.5068	N	1,625,368.46	E	547,009.12
Delta =	0° 51' 48.08" (RT)				
Degree =	0° 15' 00.25"				
Tangent =	172.63				
Length =	345.25				
Radius =	22,912.00				
External =	0.65				
Long Chord =	345.24				
Mid. Ord. =	0.65				
P.C. Station	25+24.8800	N	1,625,527.07	E	547,077.27
P.T. Station	28+70.1270	N	1,625,210.90	E	546,938.59
C.C.		N	1,634,572.08	E	526,026.20

Back = S 23° 15' 06.29" W
Ahead = S 24° 06' 54.37" W
Chord Bear = S 23° 41' 00.33" W

Curve Data

Curve NN1-3

P.I. Station	31+43.8521	N	1,624,961.06	E	546,826.76
Delta =	5° 28' 11.78" (LT)				
Degree =	0° 59' 59.73"				
Tangent =	273.73				
Length =	547.03				
Radius =	5,730.00				
External =	6.53				
Long Chord =	546.83				
Mid. Ord. =	6.53				
P.C. Station	28+70.1270	N	1,625,210.90	E	546,938.59
P.T. Station	34+17.1612	N	1,624,701.70	E	546,739.25

```
C.C.                                N        1,622,869.79  E          552,168.52
Back        = S  24° 06' 54.37" W
Ahead       = S  18° 38' 42.59" W
Chord Bear  = S  21° 22' 48.48" W

Course from PT NN1-3 to PC NN1-4 S 18° 38' 42.59" W Dist 1,189.24

                                    Curve Data
                                   *----------*
Curve NN1-4
P.I.  Station          55+85.4521  N        1,622,647.21  E          546,046.03
Delta       =     107° 38' 32.20" (LT)
Degree      =       8° 00' 07.93"
Tangent     =              979.05
Length      =            1,345.16
Radius      =              716.00
External    =              496.93
Long Chord  =            1,155.88
Mid. Ord.   =              293.34
P.C.  Station          46+06.4045  N        1,623,574.88  E          546,359.04
P.T.  Station          59+51.5624  N        1,622,630.08  E          547,024.93
C.C.                                N        1,623,345.97  E          547,037.46
Back        = S  18° 38' 42.59" W
Ahead       = S  88° 59' 49.61" E
Chord Bear  = S  35° 10' 33.51" E

Course from PT NN1-4 to PC NN1-5 S 88° 59' 49.61" E Dist 502.97

                                    Curve Data
                                   *----------*
Curve NN1-5
P.I.  Station          70+76.7610  N        1,622,610.38  E          548,149.95
Delta       =      12° 23' 42.40" (LT)
Degree      =       0° 59' 59.73"
Tangent     =              622.23
Length      =            1,239.60
Radius      =            5,730.00
External    =               33.69
Long Chord  =            1,237.19
Mid. Ord.   =               33.49
P.C.  Station          64+54.5311  N        1,622,621.27  E          547,527.82
P.T.  Station          76+94.1336  N        1,622,733.29  E          548,759.92
C.C.                                N        1,628,350.39  E          547,628.11
Back        = S  88° 59' 49.61" E
Ahead       = N  78° 36' 27.99" E
Chord Bear  = N  84° 48' 19.19" E

================================================================================
Ending chain NN1 description


<*      32   Describe Chain NN2

Chain NN2 contains:
 CUR NN2-1 CUR NN2-2 CUR NN2-3 CUR NN2-4 CUR NN2-5 NN211

Beginning chain NN2 description
================================================================================

                                    Curve Data
                                   *----------*
Curve NN2-1
P.I.  Station          10+84.1843  N        1,621,535.20  E          544,026.42
Delta       =      13° 24' 41.84" (RT)
Degree      =       8° 00' 07.93"
Tangent     =               84.18
Length      =              167.60
Radius      =              716.00
External    =                4.93
Long Chord  =              167.22
Mid. Ord.   =                4.90
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P.C.  Station          10+00.0000  N        1,621,462.82  E          544,069.40
P.T.  Station          11+67.5991  N        1,621,615.58  E          544,001.40
C.C.                               N        1,621,828.38  E          544,685.04
Back        = N  30° 42' 05.07" W
Ahead       = N  17° 17' 23.23" W
Chord Bear  = N  23° 59' 44.15" W

                                  Curve Data
                                 *----------*
Curve NN2-2
P.I.  Station          17+73.7406  N        1,622,194.34  E          543,821.25
Delta       =     100° 57' 43.34" (RT)
Degree      =      11° 27' 32.81"
Tangent     =              606.14
Length      =              881.06
Radius      =              500.00
External    =              285.75
Long Chord  =              771.42
Mid. Ord.   =              181.83
P.C.  Station          11+67.5991  N        1,621,615.58  E          544,001.40
P.T.  Station          20+48.6623  N        1,622,261.14  E          544,423.70
C.C.                               N        1,621,764.19  E          544,478.81
Back        = N  17° 17' 23.23" W
Ahead       = N  83° 40' 20.11" E
Chord Bear  = N  33° 11' 28.44" E

Course from PT NN2-2 to PC NN2-3 N 83° 40' 20.11" E Dist 294.81

                                  Curve Data
                                 *----------*
Curve NN2-3
P.I.  Station          26+87.3205  N        1,622,331.53  E          545,058.47
Delta       =       6° 52' 05.26" (RT)
Degree      =       0° 59' 59.73"
Tangent     =              343.84
Length      =              686.86
Radius      =            5,730.00
External    =               10.31
Long Chord  =              686.45
Mid. Ord.   =               10.29
P.C.  Station          23+43.4771  N        1,622,293.64  E          544,716.72
P.T.  Station          30+30.3404  N        1,622,328.29  E          545,402.29
C.C.                               N        1,616,598.54  E          545,348.25
Back        = N  83° 40' 20.11" E
Ahead       = S  89° 27' 34.64" E
Chord Bear  = N  87° 06' 22.74" E

Course from PT NN2-3 to PC NN2-4 S 89° 27' 34.64" E Dist 643.21

                                  Curve Data
                                 *----------*
Curve NN2-4
P.I.  Station          38+82.1520  N        1,622,320.26  E          546,254.07
Delta       =      16° 24' 25.09" (LT)
Degree      =       3° 57' 34.65"
Tangent     =              208.61
Length      =              414.36
Radius      =            1,447.00
External    =               14.96
Long Chord  =              412.94
Mid. Ord.   =               14.81
P.C.  Station          36+73.5463  N        1,622,322.22  E          546,045.47
P.T.  Station          40+87.9029  N        1,622,377.29  E          546,454.73
C.C.                               N        1,623,769.16  E          546,059.12
Back        = S  89° 27' 34.64" E
Ahead       = N  74° 08' 00.28" E
Chord Bear  = N  82° 20' 12.82" E

Course from PT NN2-4 to PC NN2-5 N 74° 08' 00.28" E Dist 393.47

                                  Curve Data
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```
                                *----------*
Curve NN2-5
P.I.  Station          47+31.6630  N        1,622,553.29  E          547,073.96
Delta       =      12° 27' 51.72" (RT)
Degree      =       2° 29' 59.34"
Tangent     =              250.29
Length      =              498.61
Radius      =           2,292.00
External    =              13.63
Long Chord  =              497.63
Mid. Ord.   =              13.55
P.C.  Station          44+81.3694  N        1,622,484.86  E          546,833.20
P.T.  Station          49+79.9807  N        1,622,568.14  E          547,323.81
C.C.                               N        1,620,280.18  E          547,459.83
Back        = N  74° 08' 00.28" E
Ahead       = N  86° 35' 51.99" E
Chord Bear  = N  80° 21' 56.14" E

Course from PT NN2-5 to NN211 N 86° 35' 51.99" E Dist 646.91

Point NN211           N     1,622,606.54 E       547,969.58 Sta    56+26.8913

================================================================================
Ending chain NN2 description


<*      33   Describe Chain OO1

Chain OO1 contains:
 OO1141 CUR OO1-1 CUR OO1-2 CUR OO1-3 CUR OO1-4 OO1142 CUR OO1-5 CUR OO1-6 SHIF-
T  OO1143 OO1144

Beginning chain OO1 description
Description: OO1141 CUR OO1-1 CUR OO1-2 CUR OO1-3 CUR OO1-4 OO1142 CUR OO1-5 CUR OO1-6 OO1143 OO1144
================================================================================

Point OO1141          N     1,618,747.30 E       543,721.46 Sta   133+14.5600

Course from OO1141 to PC OO1-1 N 24° 03' 25.00" E Dist 100.00

                                Curve Data
                               *----------*
Curve OO1-1
P.I.  Station         136+35.5460  N        1,619,040.41  E          543,852.30
Delta       =       8° 44' 53.97" (LT)
Degree      =       1° 58' 59.66"
Tangent     =              220.99
Length      =              441.11
Radius      =           2,889.00
External    =               8.44
Long Chord  =              440.68
Mid. Ord.   =               8.41
P.C.  Station         134+14.5600  N        1,618,838.62  E          543,762.22
P.T.  Station         138+55.6730  N        1,619,253.55  E          543,910.65
C.C.                               N        1,620,016.30  E          541,124.16
Back        = N  24° 03' 25.00" E
Ahead       = N  15° 18' 31.03" E
Chord Bear  = N  19° 40' 58.01" E

Course from PT OO1-1 to PC OO1-2 N 15° 18' 31.03" E Dist 224.44

                                Curve Data
                               *----------*
Curve OO1-2
P.I.  Station         142+81.0686  N        1,619,663.85  E          544,022.96
Delta       =       5° 30' 17.11" (RT)
Degree      =       1° 22' 14.56"
Tangent     =              200.95
Length      =              401.60
Radius      =           4,180.00
External    =               4.83
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Long Chord  =              401.44
Mid. Ord.   =                4.82
P.C.  Station         140+80.1151  N        1,619,470.03  E          543,969.90
P.T.  Station         144+81.7130  N        1,619,851.69  E          544,094.36
C.C.                               N        1,618,366.43  E          548,001.59
Back        = N  15° 18' 31.03" E
Ahead       = N  20° 48' 48.14" E
Chord Bear  = N  18° 03' 39.58" E

                                  Curve Data
                                 *----------*
Curve OO1-3
P.I.  Station         151+12.9106  N        1,620,441.70  E          544,318.64
Delta       =       8° 39' 22.14" (RT)
Degree      =       0° 41' 13.20"
Tangent     =              631.20
Length      =            1,259.99
Radius      =            8,340.00
External    =               23.85
Long Chord  =            1,258.80
Mid. Ord.   =               23.78
P.C.  Station         144+81.7130  N        1,619,851.69  E          544,094.36
P.T.  Station         157+41.7060  N        1,620,991.23  E          544,629.17
C.C.                               N        1,616,888.28  E          551,890.12
Back        = N  20° 48' 48.14" E
Ahead       = N  29° 28' 10.27" E
Chord Bear  = N  25° 08' 29.21" E

                                  Curve Data
                                 *----------*
Curve OO1-4
P.I.  Station         162+80.4448  N        1,621,460.27  E          544,894.21
Delta       =       5° 21' 59.98" (LT)
Degree      =       0° 29' 54.39"
Tangent     =              538.74
Length      =            1,076.69
Radius      =           11,495.00
External    =               12.62
Long Chord  =            1,076.30
Mid. Ord.   =               12.60
P.C.  Station         157+41.7060  N        1,620,991.23  E          544,629.17
P.T.  Station         168+18.3957  N        1,621,952.04  E          545,114.21
C.C.                               N        1,626,646.32  E          534,621.42
Back        = N  29° 28' 10.27" E
Ahead       = N  24° 06' 10.29" E
Chord Bear  = N  26° 47' 10.28" E

Course from PT OO1-4 to OO1142 N 24° 06' 10.29" E Dist 1,455.32

Point OO1142          N     1,623,280.47 E       545,708.53 Sta   182+73.7147

Course from OO1142 to PC OO1-5 N 24° 06' 10.29" E Dist 1,316.99

                                  Curve Data
                                 *----------*
Curve OO1-5
P.I.  Station         198+07.3189  N        1,624,680.37  E          546,334.82
Delta       =       1° 04' 47.35" (RT)
Degree      =       0° 14' 57.31"
Tangent     =              216.62
Length      =              433.22
Radius      =           22,987.00
External    =                1.02
Long Chord  =              433.22
Mid. Ord.   =                1.02
P.C.  Station         195+90.7015  N        1,624,482.64  E          546,246.36
P.T.  Station         200+23.9234  N        1,624,876.40  E          546,426.99
C.C.                               N        1,615,095.30  E          567,229.21
Back        = N  24° 06' 10.29" E
Ahead       = N  25° 10' 57.64" E
Chord Bear  = N  24° 38' 33.96" E
```

Course from PT OO1-5 to PC OO1-6 N 25° 10' 57.64" E Dist 426.54

	Curve Data				
Curve OO1-6					
P.I. Station	208+50.3975	N	1,625,624.32	E	546,778.66
Delta =	4° 02' 38.42" (RT)				
Degree =	0° 30' 20.84"				
Tangent =	399.94				
Length =	799.55				
Radius =	11,328.02				
External =	7.06				
Long Chord =	799.38				
Mid. Ord. =	7.05				
P.C. Station	204+50.4590	N	1,625,262.39	E	546,608.48
P.T. Station	212+50.0040	N	1,625,973.34	E	546,973.94
C.C.		N	1,620,442.26	E	556,859.84

Back = N 25° 10' 57.64" E
Ahead = N 29° 13' 36.06" E
Chord Bear = N 27° 12' 16.85" E

----- Shift: 24.00 (LT) at station 212+50.0040

Point OO1143 N 1,625,985.04 E 546,952.98 Sta 212+50.0040

Course from OO1143 to OO1144 N 29° 10' 57.64" E Dist 239.99

Point OO1144 N 1,626,194.57 E 547,069.99 Sta 214+89.9952

==========
Ending chain OO1 description

<* 34 Describe Chain ULT-LL1

Chain ULT-LL1 contains:
CUR ULT-LL1-1 ULL002

Beginning chain ULT-LL1 description
==========

	Curve Data				
Curve ULT-LL1-1					
P.I. Station	55+33.7132	N	1,620,341.53	E	544,362.85
Delta =	22° 33' 04.53" (RT)				
Degree =	4° 55' 05.13"				
Tangent =	232.27				
Length =	458.54				
Radius =	1,165.00				
External =	22.93				
Long Chord =	455.58				
Mid. Ord. =	22.49				
P.C. Station	53+01.4385	N	1,620,573.77	E	544,366.99
P.T. Station	57+59.9752	N	1,620,128.64	E	544,269.97
C.C.		N	1,620,594.51	E	543,202.17

Back = S 1° 01' 12.42" W
Ahead = S 23° 34' 16.95" W
Chord Bear = S 12° 17' 44.69" W

Course from PT ULT-LL1-1 to ULL002 S 23° 34' 16.95" W Dist 17.02

Point ULL002 N 1,620,113.04 E 544,263.16 Sta 57+76.9995

==========
Ending chain ULT-LL1 description

<* 35 Describe Chain OO2

Chain OO2 contains:
 CUR OO2-1 CUR OO2-2 CUR OO2-3 OO211 OO212 CUR OO2-4 OO213

Beginning chain OO2 description
==========

Curve Data

Curve OO2-1
P.I. Station   12+68.3019 N   1,626,005.84 E   546,933.50
Delta   =   3° 02' 16.21" (LT)
Degree   =   0° 33' 58.52"
Tangent   =   268.30
Length   =   536.48
Radius   =   10,118.36
External   =   3.56
Long Chord =   536.42
Mid. Ord.   =   3.56
P.C. Station   10+00.0000 N   1,625,768.77 E   546,807.87
P.T. Station   15+36.4780 N   1,626,249.24 E   547,046.38
C.C.   N   1,630,506.42 E   537,867.19
Back   = N 27° 55' 08.48" E
Ahead   = N 24° 52' 52.26" E
Chord Bear = N 26° 24' 00.37" E

Curve Data

Curve OO2-2
P.I. Station   18+19.2179 N   1,626,505.74 E   547,165.34
Delta   =   2° 49' 36.57" (LT)
Degree   =   0° 30' 00.00"
Tangent   =   282.74
Length   =   565.37
Radius   =   11,459.16
External   =   3.49
Long Chord =   565.31
Mid. Ord.   =   3.49
P.C. Station   15+36.4780 N   1,626,249.24 E   547,046.38
P.T. Station   21+01.8431 N   1,626,767.79 E   547,271.51
C.C.   N   1,631,070.54 E   536,650.84
Back   = N 24° 52' 52.26" E
Ahead   = N 22° 03' 15.69" E
Chord Bear = N 23° 28' 03.98" E

Curve Data

Curve OO2-3
P.I. Station   23+02.1186 N   1,626,953.41 E   547,346.71
Delta   =   2° 00' 09.18" (RT)
Degree   =   0° 30' 00.00"
Tangent   =   200.28
Length   =   400.51
Radius   =   11,459.16
External   =   1.75
Long Chord =   400.49
Mid. Ord.   =   1.75
P.C. Station   21+01.8431 N   1,626,767.79 E   547,271.51
P.T. Station   25+02.3532 N   1,627,136.29 E   547,428.35
C.C.   N   1,622,465.04 E   557,892.17
Back   = N 22° 03' 15.69" E
Ahead   = N 24° 03' 24.87" E
Chord Bear = N 23° 03' 20.28" E

Course from PT OO2-3 to OO211 N 24° 03' 24.87" E Dist 177.48

Point OO211   N   1,627,298.36 E   547,500.70 Sta   26+79.8361

==========

Ending chain OO2 description

<*   36   Describe Chain OO3

Chain OO3 contains:
 CUR OO3-1 CUR OO3-2 CUR OO3-3

Beginning chain OO3 description
==========

		Curve Data				
Curve OO3-1						
P.I. Station		22+99.7333	N	1,623,098.94	E	543,219.55
Delta	=	31° 39' 35.94"	(LT)			
Degree	=	1° 14' 59.67"				
Tangent	=	1,299.73				
Length	=	2,532.99				
Radius	=	4,584.00				
External	=	180.70				
Long Chord	=	2,500.88				
Mid. Ord.	=	173.85				
P.C. Station		10+00.0000	N	1,623,953.34	E	542,240.10
P.T. Station		35+32.9852	N	1,622,885.80	E	544,501.69
C.C.			N	1,627,407.74	E	545,253.43
Back	= S	48° 54' 04.66" E				
Ahead	= S	80° 33' 40.59" E				
Chord Bear	= S	64° 43' 52.63" E				

		Curve Data				
Curve OO3-2						
P.I. Station		41+60.0421	N	1,622,782.97	E	545,120.26
Delta	=	66° 34' 41.27"	(LT)			
Degree	=	5° 59' 58.41"				
Tangent	=	627.06				
Length	=	1,109.72				
Radius	=	955.00				
External	=	187.46				
Long Chord	=	1,048.33				
Mid. Ord.	=	156.70				
P.C. Station		35+32.9852	N	1,622,885.80	E	544,501.69
P.T. Station		46+42.7024	N	1,623,309.69	E	545,460.49
C.C.			N	1,623,827.87	E	544,658.30
Back	= S	80° 33' 40.59" E				
Ahead	= N	32° 51' 38.14" E				
Chord Bear	= N	66° 08' 58.77" E				

Course from PT OO3-2 to PC OO3-3 N 32° 51' 38.14" E Dist 952.08

		Curve Data				
Curve OO3-3						
P.I. Station		58+84.7082	N	1,624,352.97	E	546,134.40
Delta	=	8° 26' 41.07"	(LT)			
Degree	=	1° 27' 32.48"				
Tangent	=	289.92				
Length	=	578.79				
Radius	=	3,927.00				
External	=	10.69				
Long Chord	=	578.27				
Mid. Ord.	=	10.66				
P.C. Station		55+94.7858	N	1,624,109.43	E	545,977.09
P.T. Station		61+73.5806	N	1,624,616.96	E	546,254.24
C.C.			N	1,626,240.21	E	542,678.44
Back	= N	32° 51' 38.14" E				
Ahead	= N	24° 24' 57.07" E				
Chord Bear	= N	28° 38' 17.60" E				

==========

Ending chain OO3 description

<*   37   Describe Chain OO4

Chain OO4 contains:
 CUR OO4-1 CUR OO4-2 CUR OO4-3 CUR OO4-4

Beginning chain OO4 description
==========

			Curve Data			
Curve OO4-1						
P.I. Station		7+85.0284	N	1,621,775.36	E	544,982.59
Delta	=	2° 09' 08.11"	(RT)			
Degree	=	0° 30' 01.91"				
Tangent	=	215.02				
Length	=	429.99				
Radius	=	11,447.00				
External	=	2.02				
Long Chord	=	429.97				
Mid. Ord.	=	2.02				
P.C. Station		5+70.0062	N	1,621,971.64	E	545,070.40
P.T. Station		10+00.0000	N	1,621,582.52	E	544,887.47
C.C.			N	1,626,646.32	E	534,621.42
Back	= S	24° 06' 10.29" W				
Ahead	= S	26° 15' 18.40" W				
Chord Bear	= S	25° 10' 44.35" W				

Course from PT OO4-1 to PC OO4-2 S 30° 28' 00.75" W Dist 68.31

			Curve Data			
Curve OO4-2						
P.I. Station		16+82.0150	N	1,620,994.68	E	544,541.66
Delta	=	111° 13' 38.02"	(RT)			
Degree	=	13° 38' 30.67"				
Tangent	=	613.71				
Length	=	815.34				
Radius	=	420.00				
External	=	323.66				
Long Chord	=	693.21				
Mid. Ord.	=	182.80				
P.C. Station		10+68.3077	N	1,621,523.65	E	544,852.84
P.T. Station		18+83.6458	N	1,621,476.26	E	544,161.25
C.C.			N	1,621,736.60	E	544,490.83
Back	= S	30° 28' 00.75" W				
Ahead	= N	38° 18' 21.23" W				
Chord Bear	= S	86° 04' 49.76" W				

			Curve Data			
Curve OO4-3						
P.I. Station		24+97.3531	N	1,621,957.85	E	543,780.84
Delta	=	111° 13' 38.02"	(RT)			
Degree	=	13° 38' 30.67"				
Tangent	=	613.71				
Length	=	815.34				
Radius	=	420.00				
External	=	323.66				
Long Chord	=	693.21				
Mid. Ord.	=	182.80				
P.C. Station		18+83.6458	N	1,621,476.26	E	544,161.25
P.T. Station		26+98.9840	N	1,622,138.08	E	544,367.48
C.C.			N	1,621,736.60	E	544,490.83
Back	= N	38° 18' 21.23" W				
Ahead	= N	72° 55' 16.79" E				
Chord Bear	= N	17° 18' 27.78" E				

Curve Data

```
                                  *----------*
Curve OO4-4
P.I.  Station          31+24.6394  N        1,622,263.09  E          544,774.37
Delta       =      14° 41' 58.56" (RT)
Degree      =       1° 44' 10.45"
Tangent     =              425.66
Length      =              846.64
Radius      =           3,300.00
External    =              27.34
Long Chord  =             844.32
Mid. Ord.   =              27.11
P.C.  Station          26+98.9840  N        1,622,138.08  E          544,367.48
P.T.  Station          35+45.6202  N        1,622,280.76  E          545,199.65
C.C.                               N        1,618,983.61  E          545,336.64
Back        = N  72° 55' 16.79" E
Ahead       = N  87° 37' 15.35" E
Chord Bear  = N  80° 16' 16.07" E

================================================================================
Ending chain OO4 description


<*      38   Describe Chain RR

Chain RR contains:
 CUR RR-1 CUR RR-2

Beginning chain RR description
================================================================================

                                   Curve Data
                                  *----------*
Curve RR-1
P.I.  Station          12+58.5113  N        1,623,060.84  E          550,703.13
Delta       =       5° 13' 43.30" (RT)
Degree      =       1° 00' 43.24"
Tangent     =              258.51
Length      =              516.66
Radius      =           5,661.58
External    =                5.90
Long Chord  =             516.48
Mid. Ord.   =                5.89
P.C.  Station          10+00.0000  N        1,623,019.86  E          550,447.89
P.T.  Station          15+16.6638  N        1,623,078.38  E          550,961.05
C.C.                               N        1,617,429.85  E          551,345.24
Back        = N  80° 52' 48.78" E
Ahead       = N  86° 06' 32.08" E
Chord Bear  = N  83° 29' 40.43" E

                                   Curve Data
                                  *----------*
Curve RR-2
P.I.  Station          16+85.5992  N        1,623,089.84  E          551,129.59
Delta       =      70° 30' 30.94" (RT)
Degree      =      23° 58' 23.27"
Tangent     =              168.94
Length      =              294.12
Radius      =              239.00
External    =               53.68
Long Chord  =             275.90
Mid. Ord.   =               43.83
P.C.  Station          15+16.6638  N        1,623,078.38  E          550,961.05
P.T.  Station          18+10.7789  N        1,622,934.78  E          551,196.64
C.C.                               N        1,622,839.93  E          550,977.27
Back        = N  86° 06' 32.08" E
Ahead       = S  23° 22' 56.98" E
Chord Bear  = S  58° 38' 12.45" E

================================================================================
Ending chain RR description
```

```
<*      39   Describe Chain CR46AEB

Chain CR46AEB contains:
 8 CUR CR46AEB_3 CUR CR46AEB_6

Beginning chain CR46AEB description
Feature: Baseline(BL)
================================================================================

Point 8               N     1,618,810.20 E       544,153.95 Sta    10+00.0000

Course from 8 to PC CR46AEB_3 N 27° 37' 12.32" E Dist 570.00

                                 Curve Data
                                *----------*
Curve CR46AEB_3
P.I.  Station          17+88.7927  N        1,619,509.11  E          544,519.64
Delta       =       8° 44' 02.79" (LT)
Degree      =       1° 59' 59.47"
Tangent     =              218.79
Length      =              436.74
Radius      =            2,865.00
External    =                8.34
Long Chord  =              436.31
Mid. Ord.   =                8.32
P.C.  Station          15+70.0000  N        1,619,315.25  E          544,418.20
P.T.  Station          20+06.7376  N        1,619,716.12  E          544,590.46
C.C.                               N        1,620,643.48  E          541,879.70
Back        = N  27° 37' 12.32" E
Ahead       = N  18° 53' 09.53" E
Chord Bear  = N  23° 15' 10.92" E

Course from PT CR46AEB_3 to PC CR46AEB_6 N 18° 53' 09.53" E Dist 1,910.21

                                 Curve Data
                                *----------*
Curve CR46AEB_6
P.I.  Station          41+24.7280  N        1,621,720.09  E          545,276.02
Delta       =       5° 17' 14.19" (RT)
Degree      =       1° 16' 23.66"
Tangent     =              207.78
Length      =              415.26
Radius      =            4,500.00
External    =                4.79
Long Chord  =              415.11
Mid. Ord.   =                4.79
P.C.  Station          39+16.9498  N        1,621,523.50  E          545,208.77
P.T.  Station          43+32.2113  N        1,621,909.65  E          545,361.11
C.C.                               N        1,620,066.91  E          549,466.51
Back        = N  18° 53' 09.53" E
Ahead       = N  24° 10' 23.72" E
Chord Bear  = N  21° 31' 46.62" E

================================================================================
Ending chain CR46AEB description


<*         Output Section8-Chains

Output file SECTION8-CHAINS is stored
```

Section 3 – Vertical Geometry

Wekiva Section 8: Chains and Profiles

Alignment	Chain Name	Profile Name	Comments
C/L CONST. SR 429 (WEKIVA PKWY)	429_A1	429_A1	Serves as EB PGL at Begin Project
		429_A1_PGL_WB	WB PGL tying to Project 7A
B/L SURVEY SR 429	BLSV429	-	Also called C/L Const. & C/L Survey
C/L SURVEY SR 417	BLSV417	-	Also called C/L Const. & C/L Survey
C/L SURVEY SR 400 (I-4)	BLSV400	-	
B/L SR 400 EB	SR400EB	SR400EB	
B/L SR 400 EB (ULTIMATE) CR46A	ULT400EB1	-	
B/L SR 400 EB (ULTIMATE) SR46	ULT400EB2	-	
B/L SR 400 WB	SR400WB	SR400WB	
B/L SR 400 WB (ULTIMATE) CR46A	ULT400WB1	-	
B/L SR 400 WB (ULTIMATE) SR46	ULT400WB2	-	
C/L SR 400 EXPRESS LANES (ULTIMATE)	CLI4	CLI4	
C/L WILSON ROAD	WILSON	-	
C/L INTERNATIONAL PKWY	INPK_A1	-	
C/L TOWN CENTER BLVD	TOWNCTR	-	
C/L RINEHART RD	RINHT	-	
C/L METZ AVE	METZ	-	
B/L RAMP EE2 (ULTIMATE)	EE2	EE2	Express lane ramps
B/L RAMP EE3 (ULTIMATE)	EE3	EE3	Express lane ramps
B/L RAMP EE4 (ULTIMATE)	EE4	EE4	Express lane ramps
B/L RAMP EE5 (ULTIMATE)	EE5	EE5	Express lane ramps
B/L RAMP GG	GG	GG	
B/L RAMP HH1	HH1	HH1	
B/L RAMP HH2	HH2	HH2	
B/L RAMP LL1	LL1	LL1	
B/L RAMP LL1 (ULTIMATE)	ULT-LL1	-	
B/L RAMP LL2	LL2	LL2	
B/L RAMP LL3	LL3	LL3	
B/L RAMP MM1	MM1	MM1	
B/L RAMP MM2	MM2	MM2	
B/L RAMP MM3	MM3	MM3	
B/L RAMP NN1	NN1	NN1	
B/L RAMP NN2	NN2	NN2	
B/L RAMP 001	001	001	
B/L RAMP 001 (ULTIMATE)	ULT-001	-	
B/L RAMP 002	002	002	
B/L RAMP 003	003	003	
B/L RAMP 004	004	004	
B/L RAMP RR	RR	RR	
B/L RAMP CR46A EB	CR46AEB	CR46AEB	

Project: Wekiva Section 8
Job No. 429
Operator: RD
Date: July, 2017

<*   1   Print Profile 429_A1

Beginning profile 429_A1 description:
==========

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
Beginning Region = 2						
VPI 1	1114+87.2533	98.720				
VPC	1127+00.0000	88.044	-0.880	K = 373.1		
Low Point	1130+28.4338	86.599				
VPI 2	1132+00.0000	83.643		1,000.000	500.000	500.000
VPT	1137+00.0000	92.643	1.800			
VPC	1137+10.0000	92.823	1.800	K = 617.8 SSD = 1154.6		
VPI 3	1146+10.0000	109.023		1,800.000	900.000	900.000
High Point	1148+22.0327	102.831				
VPT	1155+10.0000	99.000	-1.114			
VPC	1176+50.0000	75.170	-1.114	K = 455.6		
VPI 4	1180+50.0000	70.715		800.000	400.000	400.000
Low Point	1181+57.3006	72.345				
VPT	1184+50.0000	73.285	0.643			
VPC	1209+44.2400	89.311	0.643	K = 904.1 SSD = 1475.5		
VPI 5	1214+44.2400	92.524		1,000.000	500.000	500.000
High Point	1215+25.1126	91.177				
Equation: Sta 1217+80.7067 (BK) = Sta 2169+83.9579 (AH)					End Region 2 ---------- Begin Region 3	
VPT	2171+47.4912	90.206	-0.464			
VPI 6	2173+88.1500	89.090	-0.464			

==========
Ending profile 429_A1 description

<*   2   Print Profile 429_A1_PGL_WB

Beginning profile 429_A1_PGL_WB description:
==========

	STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI 1	1086+06.1700	96.203				
VPC	1102+38.1303	103.406	0.441	K = 860.8 SSD = 1364.1		
High Point	1106+18.0577	104.244				
VPI 2	1108+91.6300	106.290		1,306.999	653.500	653.500
Equation: Sta 1114+56.1750 (BK) = Sta 1114+87.2500 (AH)					End Region 1 ---------- Begin Region 2	
VPT	1115+76.2047	99.252	-1.077			
VPI 3	1122+46.1300	92.037	-1.077			

==========

Ending profile 429_A1_PGL_WB description

<*   3   Print Profile SR400EB

Beginning profile SR400EB description:

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	1033+68.5100	70.89				
VPC		1033+68.5101	70.89	-0.80	K = 231.9		
Low Point		1035+54.0172	70.15				
VPI	2	1037+68.5100	67.69		800.00	400.00	400.00
VPT		1041+68.5099	78.29	2.65			
VPC		1042+13.7500	79.49	2.65	K = 506.0	SSD = 1045.0	
VPI	3	1050+10.7500	100.61		1,594.00	797.00	797.00
High Point		1055+54.7341	97.26				
VPT		1058+07.7500	96.63	-0.50			
VPC		1059+52.0000	95.91	-0.50	K = 615.4		
Low Point		1062+59.6918	95.14				
VPI	4	1063+52.0000	93.91		800.00	400.00	400.00
VPT		1067+52.0000	97.11	0.80			
VPC		1071+17.9100	100.03	0.80	K = 566.0	SSD = 1105.2	
High Point		1075+70.7413	101.85				
VPI	5	1080+17.9100	107.23		1,800.00	900.00	900.00
VPT		1089+17.9100	85.81	-2.38			
VPC		1093+04.2700	76.62	-2.38	K = 384.6		
VPI	6	1097+04.2700	67.10		800.00	400.00	400.00
VPT		1101+04.2700	65.90	-0.30			
VPC		1101+58.3900	65.74	-0.30	K = 507.9	SSD = 1046.9	
VPI	7	1107+38.3900	64.00		1,160.00	580.00	580.00
VPT		1113+18.3900	49.01	-2.58			
VPC		1113+30.7500	48.69	-2.58	K = 208.1		
VPI	8	1117+55.7500	37.71		850.00	425.00	425.00
Low Point		1118+68.5650	41.74				
VPT		1121+80.7500	44.08	1.50			
VPI	9	1128+03.2700	53.42	1.50			

Ending profile SR400EB description

<*   4   Print Profile SR400WB

Beginning profile SR400WB description:

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	2037+10.2700	70.220				
VPC		2039+23.9102	70.861	0.300	K = 1666.7	SSD = 2298.3	
VPI	2	2044+23.9100	72.361		1,000.000	500.000	500.000
High Point		2044+23.9116	71.611				
VPT		2049+23.9098	70.861	-0.300			
VPC		2051+97.0600	70.041	-0.300	K = 296.3		

```
Low Point  2052+85.9484     69.908
VPI      3 2055+97.0600     68.841              800.000   400.000   400.000
VPT        2059+97.0600     78.441      2.400

VPC        2063+00.5815     85.726      2.400  K =  506.0  SSD = 1045.0
High Point 2075+14.9832    100.299
VPI      4 2075+40.2811    115.479           2,479.399 1,239.700 1,239.700
VPT        2087+79.9807     84.486     -2.500

VPC        2091+26.6998     75.818     -2.500  K =  363.6
VPI      5 2095+26.7000     65.818              800.000   400.000   400.000
VPT        2099+26.7002     64.619     -0.300

VPC        2104+74.0546     62.976     -0.300  K =  506.0  SSD = 1045.0
VPI      6 2109+92.7050     61.421           1,037.301   518.650   518.650
VPT        2115+11.3554     49.232     -2.350

VPC        2115+33.0810     48.722     -2.350  K =  206.0
VPI      7 2119+69.7200     38.461              873.278   436.639   436.639
Low Point  2120+17.1810     43.033
VPT        2124+06.3590     46.710      1.889

VPI      8 2128+01.7000     54.179      1.889

================================================================================
Ending profile SR400WB description


<*       5   Print Profile CLI4

SEE ULTIMATE GEOMETRY PLANS


<*       6   Print Profile EE2

SEE ULTIMATE GEOMETRY PLANS


<*       7   Print Profile EE3

SEE ULTIMATE GEOMETRY PLANS


<*       8   Print Profile EE4

SEE ULTIMATE GEOMETRY PLANS


<*       9   Print Profile EE5

SEE ULTIMATE GEOMETRY PLANS


<*      10   Print Profile GG

Beginning profile GG description:
================================================================================
              STATION       ELEV      GRADE    TOTAL L    BACK L    AHEAD L
```

```
VPI      1   15+38.1600     86.280

VPI      2   16+00.0000     87.022      1.200

VPI      3   16+00.0000     87.320

VPC          16+18.0400     87.536      1.200  K =  153.8
VPI      4   17+18.0400     88.736              200.000   100.000   100.000
VPT          18+18.0400     91.236      2.500

VPC          19+12.5011     93.598      2.500  K =  195.0  SSD = 648.7
High Point   23+99.9989     99.692
VPI      5   24+00.0000    105.785              974.998   487.499   487.499
VPT          28+87.4989     93.598     -2.500

VPC          34+54.7058     79.418     -2.500  K =  133.3
VPI      6   35+54.7058     76.918              200.000   100.000   100.000
VPT          36+54.7058     75.918     -1.000

VPI      7   39+32.0000     73.145     -1.000

================================================================================
Ending profile GG description


<*      11   Print Profile HH1


Beginning profile HH1 description:
================================================================================

               STATION       ELEV      GRADE    TOTAL L    BACK L    AHEAD L

VPI      1   15+36.0000     88.390

VPC          15+40.0000     88.464      1.860  K =  180.7
VPI      2   16+40.0000     90.324              200.000   100.000   100.000
VPT          17+40.0000     93.292      2.967

VPI      3   17+75.0000     94.330      2.967

VPI      4   17+75.0000     94.708

VPC          18+36.8217     96.409      2.750  K =  136.0  SSD = 541.7
VPI      5   22+00.6200    106.413              727.597   363.798   363.798
High Point   22+10.8217    101.551
VPT          25+64.4183     96.954     -2.600

VPC          27+25.0001     92.779     -2.600  K =  108.7
VPI      6   29+75.0000     86.279              500.000   250.000   250.000
Low Point    30+07.6075     89.105
VPT          32+24.9999     91.279      2.000

VPI      7   34+00.0000     94.779      2.000

VPI      8   34+00.0000     95.080

VPC          34+02.5000     95.130      2.000  K =  161.1  SSD = 589.6
High Point   37+24.7222     98.352
VPI      9   37+65.0000    102.380              725.000   362.500   362.500
VPT          41+27.5000     93.318     -2.500

VPC          45+67.4915     82.318     -2.500  K =  357.1
VPI     10   50+67.4911     69.818              999.999   500.000   500.000
Low Point    54+60.3485     71.157
VPT          55+67.4907     71.318      0.300

VPI     11   56+34.9200     71.520      0.300

================================================================================
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Ending profile HH1 description

<*   12   Print Profile HH2

Beginning profile HH2 description:
==========

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	11+46.8100	91.820				
VPC		12+08.6400	90.985	-1.350	K = 181.8	SSD = 803.9	
VPI	2	13+58.6400	88.960		300.000	150.000	150.000
VPT		15+08.6400	84.460	-3.000			
VPC		15+94.1700	81.894	-3.000	K = 160.0		
VPI	3	16+94.1700	78.894		200.000	100.000	100.000
VPT		17+94.1700	77.144	-1.750			
VPI	4	19+50.0000	74.417	-1.750			

==========
Ending profile HH2 description

<*   13   Print Profile LL1

Beginning profile LL1 description:
==========

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	16+39.3600	105.520				
VPC		17+22.1700	106.058	0.650	K = 181.8	SSD = 803.9	
High Point		18+40.3518	106.442				
VPI	2	18+72.1700	107.033		300.000	150.000	150.000
VPT		20+22.1700	105.533	-1.000			
VPC		21+16.9793	104.585	-1.000	K = 96.0		
Low Point		22+12.9792	104.105				
VPI	3	22+72.9800	103.025		312.001	156.001	156.001
VPT		24+28.9807	106.535	2.250			
VPC		30+68.3764	120.922	2.250	K = 136.0	SSD = 541.7	
High Point		33+74.3786	124.364				
VPI	4	34+93.3764	130.484		850.000	425.000	425.000
VPT		39+18.3764	113.484	-4.000			
VPC		49+10.1707	73.813	-4.000	K = 96.0		
VPI	5	51+21.3700	65.365		422.399	211.199	211.199
Low Point		52+94.1691	66.133				
VPT		53+32.5693	66.210	0.400			
VPI	6	57+57.7900	67.910	0.400			

==========
Ending profile LL1 description

<*   14   Print Profile LL2

Beginning profile LL2 description:
==========

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	15+93.4200	111.340				
VPC		19+21.1202	119.205	2.400	K = 136.0	SSD = 541.7	
High Point		22+47.5202	123.122				
VPI	2	24+18.8800	131.151		995.520	497.760	497.760
VPT		29+16.6398	106.661	-4.920			
VPC		34+83.2902	78.782	-4.920	K = 96.0		
VPI	3	37+43.4500	65.982		520.320	260.160	260.160
Low Point		39+55.6099	67.163				
VPT		40+03.6098	67.283	0.500			
VPC		47+16.4500	70.847	0.500	K = 157.9	SSD = 717.9	
High Point		47+95.3956	71.045				
VPI	4	48+66.4500	71.597		300.000	150.000	150.000
VPT		50+16.4500	69.497	-1.400			
VPI	5	50+96.9600	68.370	-1.400			

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Ending profile LL2 description

<* 15 Print Profile LL3

Beginning profile LL3 description:

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		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	10+00.0000	72.95				
VPC		10+25.0000	73.50	2.19	K = 161.8	SSD = 599.1	
VPI	2	12+75.0000	78.97		500.00	250.00	250.00
High Point		13+79.4018	77.38				
VPT		15+25.0000	76.72	-0.90			
VPC		15+50.0000	76.50	-0.90	K = 153.8		
VPI	3	16+50.0000	75.60		200.00	100.00	100.00
Low Point		16+88.4615	75.87				
VPT		17+50.0000	76.00	0.40			
VPC		17+50.0000	76.00	0.40	K = 187.5	SSD = 824.4	
High Point		18+25.0000	76.15				
VPI	4	19+00.0000	76.60		300.00	150.00	150.00
VPT		20+50.0000	74.80	-1.20			
VPC		23+35.0000	71.38	-1.20	K = 100.0		
VPI	5	24+35.0000	70.18		200.00	100.00	100.00
Low Point		24+54.9998	70.66				
VPT		25+35.0000	70.98	0.80			
VPC		26+56.0200	71.95	0.80	K = 230.8	SSD = 980.0	
VPI	6	28+06.0200	73.15		300.00	150.00	150.00
High Point		28+40.6357	72.68				
VPT		29+56.0200	72.40	-0.50			
VPI	7	33+78.1100	70.29	-0.50			
VPI	8	43+21.6400	77.36	0.75			
VPI	9	45+06.0000	78.29	0.50			

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Ending profile LL3 description

<* 16 Print Profile MM1

Beginning profile MM1 description:
Feature: DEFAULT

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	14+50.0000	73.64				
VPC		14+53.0212	73.70	2.00	K = 136.0	SSD = 541.7	
High Point		17+25.0212	76.42				
VPI	2	17+59.0200	79.82		612.00	306.00	306.00
VPT		20+65.0188	72.17	-2.50			
VPC		21+77.7800	69.35	-2.50	K = 96.3		
VPI	3	23+31.7800	65.50		308.00	154.00	154.00
Low Point		24+18.4044	66.34				
VPT		24+85.7800	66.58	0.70			
VPI	4	31+63.2200	71.32	0.70			
VPI	5	31+63.2200	71.80				
VPC		35+37.8500	74.42	0.70	K = 153.8		
VPI	6	36+37.8500	75.12		200.00	100.00	100.00
VPT		37+37.8500	77.12	2.00			
VPI	7	54+40.3000	111.17	2.00			
VPI	8	54+40.3000	110.87				
VPC		54+60.5994	111.28	2.00	K = 136.1	SSD = 575.9	
VPI	9	56+51.1001	115.09		381.00	190.50	190.50
High Point		57+32.7447	114.00				
VPT		58+41.6008	113.57	-0.80			
VPC		62+05.2400	110.66	-0.80	K = 136.2	SSD = 542.1	
VPI	10	65+25.2400	108.10		640.00	320.00	320.00
VPT		68+45.2400	90.50	-5.50			
VPC		70+06.3811	81.63	-5.50	K = 69.2		
VPI	11	71+86.3800	71.73		360.00	180.00	180.00
VPT		73+66.3789	71.19	-0.30			
VPI	12	74+37.5500	70.98	-0.30			

Ending profile MM1 description

<* 17 Print Profile MM2

Beginning profile MM2 description:
Feature: CLC

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	14+02.9800	89.76				
VPC		14+07.1400	89.82	1.50	K = 136.1	SSD = 541.9	
High Point		16+11.2705	91.35				
VPI	2	17+20.1400	94.52		626.00	313.00	313.00

VPT		20+33.1400	84.81	-3.10				
VPC		21+00.4800	82.73	-3.10	K = 96.2			
VPI	3	22+75.9800	77.29			351.00	175.50	175.50
Low Point		23+98.5894	78.11					
VPT		24+51.4800	78.25	0.55				
VPI	4	30+23.9100	81.40	0.55				

Ending profile MM2 description

<* 18 Print Profile MM3

Beginning profile MM3 description:
Feature: CLC

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	14+08.9200	94.55				
VPC		14+12.9200	94.58	0.80	K = 155.8	SSD = 579.8	
High Point		15+37.5516	95.08				
VPI	2	17+08.9200	96.95		592.00	296.00	296.00
VPT		20+04.9200	88.07	-3.00			
VPC		21+79.8108	82.82	-3.00	K = 96.0		
VPI	3	24+19.8106	75.62		480.00	240.00	240.00
Low Point		24+67.8108	78.50				
VPT		26+59.8104	80.42	2.00			
VPC		37+09.4000	101.42	2.00	K = 136.2	SSD = 542.1	
High Point		39+81.7804	104.14				
VPI	4	39+95.4000	107.14		572.00	286.00	286.00
VPT		42+81.4000	100.84	-2.20			
VPC		49+02.0895	87.19	-2.20	K = 96.0		
Low Point		51+13.3655	84.87				
VPI	5	51+80.5900	81.06		557.00	278.50	278.50
VPT		54+59.0905	91.09	3.60			
VPC		56+68.1100	98.61	3.60	K = 136.0	SSD = 541.8	
High Point		61+57.8783	107.43				
VPI	6	62+53.1100	119.67		1,170.00	585.00	585.00
VPT		68+38.1100	90.42	-5.00			
VPC		76+52.2905	49.71	-5.00	K = 96.1		
VPI	7	78+69.2900	38.86		434.00	217.00	217.00
VPT		80+86.2895	37.81	-0.49			
VPI	8	90+47.4300	33.15	-0.49			

Ending profile MM3 description

<* 19 Print Profile NN1

Beginning profile NN1 description:

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L

VPI	1	19+43.3800	40.47					
VPC		19+82.0000	41.05	1.50	K = 96.0			
VPI	2	21+50.0000	43.57			336.00	168.00	168.00
VPT		23+18.0000	51.97	5.00				
VPC		26+50.0000	68.57	5.00	K = 136.1	SSD = 541.9		
VPI	3	32+22.5000	97.19			1,145.00	572.50	572.50
High Point		33+30.4104	85.58					
VPT		37+95.0000	77.65	-3.41				
VPC		39+26.4000	73.16	-3.41	K = 96.1			
VPI	4	40+66.4000	68.38			280.00	140.00	140.00
VPT		42+06.4000	67.68	-0.50				
VPI	5	46+00.0000	65.72	-0.50				
VPI	6	52+95.5500	63.63	-0.30				
VPC		55+91.5311	76.95	4.50	K = 136.0	SSD = 541.7		
VPI	7	60+67.5300	98.37			952.00	476.00	476.00
High Point		62+03.5300	90.72					
VPT		65+43.5289	86.47	-2.50				
VPC		65+53.3300	86.22	-2.50	K = 96.3			
VPI	8	67+07.3300	82.37			308.00	154.00	154.00
Low Point		67+93.9569	83.21					
VPT		68+61.3300	83.45	0.70				
VPI	9	68+75.5300	83.55	0.70				

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Ending profile NN1 description

<* 20 Print Profile NN2

Beginning profile NN2 description:

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		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	21+80.9200	92.389				
VPI	2	21+98.1300	91.895	-2.870			
VPI	3	22+13.2700	91.323	-3.777			
VPI	4	22+33.2700	90.560	-3.813			
VPI	5	22+53.2700	89.812	-3.740			
VPI	6	22+73.2700	89.050	-3.814			
VPI	7	22+93.2700	88.288	-3.805			
VPI	8	23+13.2700	87.527	-3.809			
VPI	9	23+33.2700	86.777	-3.750			
VPI	10	23+53.2700	86.048	-3.644			
VPI	11	23+73.2700	85.307	-3.707			
VPI	12	23+93.2700	84.537	-3.848			
VPC		24+78.9377	80.767	-4.400	K = 96.0		

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Low Point    29+01.3394     71.475
VPI     13   29+30.1382     60.915              902.401   451.200   451.200
VPT          33+81.3386     83.475      5.000

VPC          35+40.2914     91.422      5.000  K =  136.0  SSD = 541.7
VPI     14   41+09.5052    119.883           1,138.427   569.214   569.214
High Point   42+20.2904    108.422
VPT          46+78.7189    100.696     -3.371

VPC          46+79.2017    100.680     -3.371  K =  96.0
VPI     15   48+41.0000     95.226              323.597   161.798   161.798
VPT          50+02.7983     95.226      0.000

VPI     16   50+02.8000     95.226      0.000

================================================================================
Ending profile NN2 description


<*      21   Print Profile OO1

Beginning profile OO1 description:
================================================================================

               STATION       ELEV      GRADE    TOTAL L    BACK L    AHEAD L

VPI      1  134+10.0600     68.368

VPC         141+75.0000     70.663      0.300  K =  127.8
VPI      2  144+00.0000     71.338              450.000   225.000   225.000
VPT         146+25.0000     79.932      3.820

VPC         146+42.6392     80.606      3.820  K =  185.0  SSD = 631.8
VPI      3  151+69.8900    100.747           1,054.502   527.251   527.251
High Point  153+49.3377     94.104
VPT         156+97.1408     90.835     -1.880

VPC         158+38.7400     88.173     -1.880  K =  128.9
Low Point   160+81.0098     85.895
VPI      4  160+88.7400     83.473              500.000   250.000   250.000
VPT         163+38.7400     88.473      2.000

VPC         166+51.6866     94.732      2.000  K =  313.6  SSD = 822.7
High Point  172+78.9117    101.004
VPI      5  174+20.0400    110.099           1,536.707   768.353   768.353
VPT         181+88.3934     87.816     -2.900

VPC         185+26.2800     78.018     -2.900  K =  246.0
VPI      6  188+33.7800     69.100              615.000   307.500   307.500
VPT         191+41.2800     67.870     -0.400

VPC         202+54.0000     63.419     -0.400  K =  443.4  SSD = 978.2
VPI      7  207+75.0000     61.335           1,042.000   521.000   521.000
VPT         212+96.0000     47.008     -2.750

================================================================================
Ending profile OO1 description


<*      22   Print Profile OO2

Beginning profile OO2 description:
================================================================================

               STATION       ELEV      GRADE    TOTAL L    BACK L    AHEAD L

VPI      1   13+02.8700     46.070
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VPC		15+59.9799	40.096	-2.324	K = 96.0			
VPI	2	17+38.4000	35.950		356.840	178.420	178.420	
Low Point		17+83.0442	37.504					
VPT		19+16.8201	38.436	1.393				
VPI	3	19+16.8300	38.437	1.393				

Ending profile OO2 description

<* 23 Print Profile OO3

Beginning profile OO3 description:

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	19+11.2600	99.53				
VPI	2	20+55.8400	99.09	-0.30			
VPI	3	21+30.3900	99.32	0.30			
VPI	4	21+45.2400	99.40	0.60			
VPC		21+45.2400	99.40	0.60	K = 139.2	SSD = 548.2	
High Point		22+28.7835	99.66				
VPI	5	24+20.2400	101.05		550.00	275.00	275.00
VPT		26+95.2400	91.84	-3.35			
VPC		30+26.7800	80.74	-3.35	K = 99.6		
VPI	6	31+76.7800	75.71		300.00	150.00	150.00
VPT		33+26.7800	75.20	-0.34			
VPI	7	50+79.5100	69.29	-0.34			
VPI	8	55+30.1100	66.14	-0.70			
VPI	9	57+80.1100	65.30	-0.34			

Ending profile OO3 description

<* 24 Print Profile OO4

Beginning profile OO4 description:

		STATION	ELEV	GRADE	TOTAL L	BACK L	AHEAD L
VPI	1	11+63.0600	83.620				
VPC		12+38.6800	81.602	-2.669	K = 103.7		
VPI	2	13+56.1800	78.466		235.000	117.500	117.500
VPT		14+73.6800	77.992	-0.403			
VPI	3	29+47.6900	72.050	-0.403			

Ending profile OO4 description

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<*      25   Print Profile RR


Beginning profile RR description:
================================================================================

               STATION       ELEV      GRADE    TOTAL L    BACK L    AHEAD L

VPI      1   13+11.8000     71.102

VPI      2   18+10.7789     60.537     -2.117

================================================================================
Ending profile RR description


<*      26   Print Profile CR46AEB


Beginning profile CR46AEB description:
Feature: DEFAULT
================================================================================

               STATION       ELEV      GRADE    TOTAL L    BACK L    AHEAD L

VPI      1   10+63.4700      89.63

VPC          10+65.9899      89.60      -1.30  K =  96.1
Low Point    11+90.9165      88.79
VPI      2   12+62.9900      87.04              394.00    197.00    197.00
VPT          14+59.9901      92.55       2.80

VPC          23+51.2512     117.51       2.80  K =  136.2  SSD = 542.2
High Point   27+32.6562     122.85
VPI      3   28+55.2500     131.62             1,008.00    504.00    504.00
VPT          33+59.2488     108.44      -4.60

VPC          34+26.7500     105.33      -4.60  K =  96.1
VPI      4   36+62.2500      94.50              471.00    235.50    235.50
Low Point    38+68.9133      95.16
VPT          38+97.7500      95.20       0.30

VPI      5   39+06.4000      95.23       0.30

================================================================================
Ending profile CR46AEB description



<*         Output Section8-Profs

Output file SECTION8-PROFS is stored
```

Section 4 – Superelevation Transition Calculations

Subject:	SUPERELEVATION CALCULATIONS SR 429		
Comp by:	Date:	Sheet Number:	1
Check by:	Job Number:		

ATKINS

429A1-2

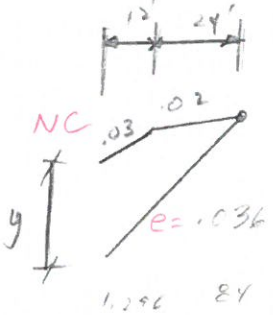
PC 1134+95.08

PCC 1177+93.82

R = 5951

DS: 70 mph

e = 0.036



429A1-2 LEFT

R = 200

L = 200(0.456) = 91.2 ⇒ 100' min

80%L = 80'

BEGIN TRANS (PC) 1134+95.08 − 80

= 1134 + 15.08 ⇒ 1134+15 (LT) e=NC = 0.456'

$y = -0.036(36) - \left(-.02(24) + .03(12)\right)$

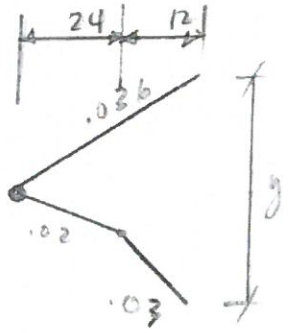
END TRANS : 1134+15 +100 = 1135+15 (LT) e = 0.036

429A1-2 RIGHT

R = 200

L = 200(2.136) = 427.2 ⇒ 428

80%L = 342.4



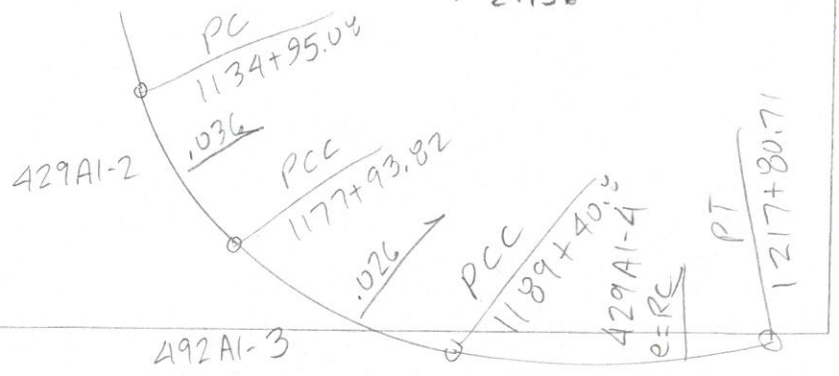
BEGIN TRANS : 1134+95.08 − 342.4

= 1131+52.68 ⇒ 1131+53 (RT) e=NC

END TRANS : 1131+53 + 428 = 1135+81 (RT) e=.036

$y = 0.036(36) - \left[-0.02(71) + .07(12)\right]$

= 2.136



e 1132+45.08 = .036

Subject: SR 429		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 2

ATKINS

429 A1 - 2, 3

PCC 1177+93.82

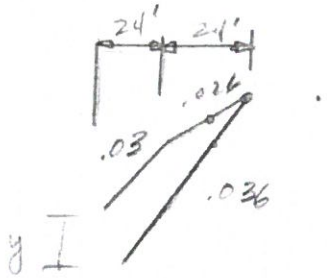
PT 1189+40.80

R = 8425

DS = 70

e = 0.026 ✓

429 A1 - 2, 3 LEFT



R = 200

$y = -.036(48) - [0.026(24) + -.03(24)]$

$y = 0.384$

$L = 200(.384)$ 76.8 ⇒ 100' MIN

20% L = 20

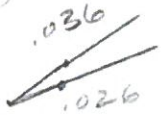
BEGIN TRANS = PCC STA 1177+93.82 − 20

= 1177+73.82 ⇒ 1177+73 (LT+RT) e = 0.036

END TRANS = ... =

1178+73 (LT+RT) e = 0.026

429 A1 - 2, 3 RIGHT



Δ = 0.01

R = 200

Δ = 0.01

W = 36

$L = 200(0.01)(36) = 72$ ⇒ 100' MIN.

20% L = 20

TRANSITIONS SAME AS AIRQUE

Subject: SR 429		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 3

ATKINS

429 A1 - 3 & 4

CURVE 429 A1-4

R = 10,955

DS = 70

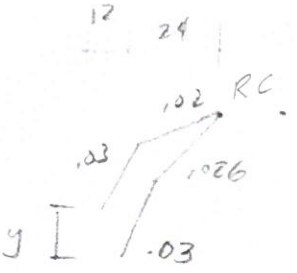
e = RC

CURVE 429 A1-4

PC 1189 + 40.80

PT 1217 + 80.71

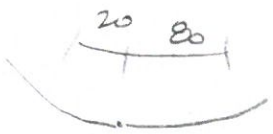
429 A1 - 2, 3 LEFT



R = 200

$y = \left[-(.026)(24) + .03(12)\right] - \left[-.02(24) + .03(12)\right]$

y = 0.144



L = 200(0.144) = 28.8 ⇒ 100' MIN

20% L = 20

BEGIN TRANS. = 1189 + 16.27 − 20

1188 + 96.27 ⇒ 1189 + 00 (e = 0.026) (ARBITRARILY ROUND UP TO EVEN STATION)

END TRANS = 1189 + 00 + 100 = 1190 + 00 e = RC

429 A1 - 3, 4 RIGHT

Δ = .006

R = 200

Δ = 0.06

W = 36

L = 200(.006)36 = 43.2 ⇒ 100' MIN

SAME TRANSITIONS AS ABOVE

Subject: SR 429		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 4 REVISED

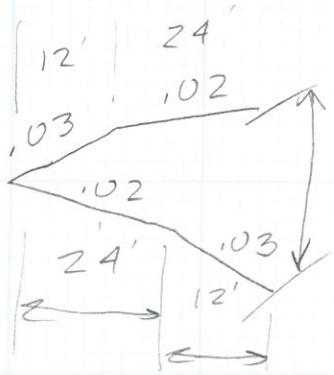
ATKINS

CURVE 429 A1-4

R = 10,955

DS = 70

e = N.C.



$Y = (.03)(12) + (.02)(24) + (.02)(24) + .03(12)$

$Y = 1.68$

$L = (200)(1.68) = 336'$

PT STA 1217+80.71

Beg Sc TRANS (RT) STA 1217+14 e = RC

STA EQ 1217+80.71 BK = 2169+83.96 AH

END Sc TRANS (RT) STA 2172+53 e = NC

Subject: CR 46A ON RAMP		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 5

ATKINS

CR 46A EB_3

R = 2865

DS = 50

e = 0.04

PC STA 15+70

PT STA 20+06.74

$\Delta = (.02 + .04) = 0.06$

$L = (200)(.06)(24) = 288'$

Begin Sc TRANS STA 13+40 e = NC

END Sc TRANS STA 16+28 e = .04

TRANSITION OUT OF CURVE

$\Delta = (0.04 + .02) = 0.06$

$L = 288'$

Begin Sc TRANS STA 19+49 e = 0.04

END Sc TRANS STA 22+37 e = 0.04

Subject: CR 46A ON RAMP		
Comp by:	Date:	Sheet Number: 6
Check by:	Job Number:	

ATKINS

CR 46A EB-4

Geometry to be revised

Subject: RAMP GG-		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 7.

ATKINS

GG-1

R = 7639

DS = 50

e_{req} = RC - Provide 0.03 to match ramp terminal

GG-2

R = 7654

DS = 50

e_{req} = 0.026 - Provide 0.03 to match GG1 and eliminate addtl transition

R = 4599

D = 50

e = 0.03 prov.

R = 200

Δ = 0.01

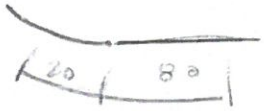
W = 15

L = 200(0.01)15 = 30' ⇒ 100' MIN.

.02 / .03

Δ = .01

30'/. L = 20



BEGIN TRANS = PT 31+55.05 - 20

∴ 31+35.05 ⇒ 31+35 e = NC

END TRANS = 31+35 + 100 = 32+35 e = RC

Subject:

ATKINS

Comp by: Date: Sheet Number: 8

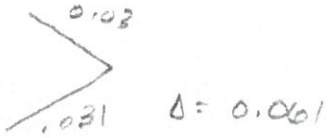
Check by: Job Number:

HH1-1

R = 3820 R = 200

DS = 50 Δ = 0.061

e = 0.031 W = 15



L = 200(0.061) 15 = 183

80% L = 146.4

BEGIN TRANS = 18+05.15 − 146.4

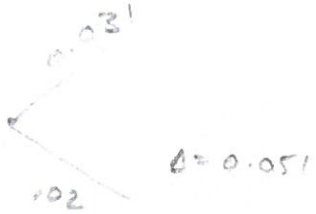
= 16+58.75 ⇒ 16+59

END TRANS = 16+59 + 183 = 18+42

R = 200

Δ = 0.051

W = 15



L = 200(0.051) 15 = 153

20% L = 30.6

BEGIN TRANS = 30+47.43 − 30.6

= 30+16.83 ⇒ 30+16

END TRANS = 30+16 + 153 = 31+69

Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 9 ,

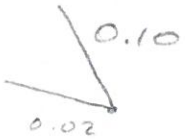
ATKINS

HH1-2

R = 330 R = 175

DS = 35 Δ = 0.08

e = 0.10 W = 15



Δ = 0.08

L = 175(0.08) 15 = 210

80% L = 168'

BEGIN TRANS = 41+26.08 − 168 =

= 39+58.08 ⇒ 39+60 (Arbitrary round up +60 vs. +59)

END TRANS = 39+60 + 210 = 41+70

Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 10

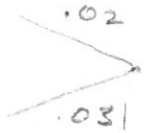
ATKINS

HH2-1

R = 3835 R = 200

DS = 50 Δ = 0.051

e = 0.031 W = 15



Δ = 0.051

$L = 200(0.051)\,15 = 153$

20% L = 30.6

BEGIN TRANS : (PT) 15 + 56.9 − 30.6

= 15 + 26.3 ⇒ 15 + 26

END TRANS = 15 + 26 + 153 = 16 + 79

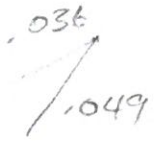
NOTE: CURVE IS IN FULL SUPER AS RAMP EXIT FROM RAMP HH1

Subject:		Sheet Number: 11
Comp by: / Check by:	Date: / Job Number:	

ATKINS

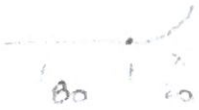
LL 1.1

R = 2307 R = 200
DS = 50 Δ = 0.013
e = 0.049 w = 15



Δ = 0.013

L = 200(0.013) 15
= 39 ⇒ 100' MIN

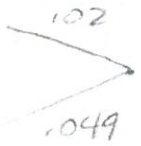


80% L = 80

BEGIN TRANS = (PC) 16 + 30.58 − 80
= 15 + 50.58 ⇒ 15+51

END TRANS = 15+51 + 100 = 16+51

R = 200
Δ = 0.069
w = 15



Δ = .069

L = 200(0.069) 15 = 207

20% L = 41.4

BEGIN TRANS = (PT) 19 + 59.76 − 41.4
= 19 + 18.36 ⇒ 19+18

END TRANS = 19+18 + 207 = 21+25

Subject:

Comp by: Date: Sheet Number: 12

Check by: Job Number:

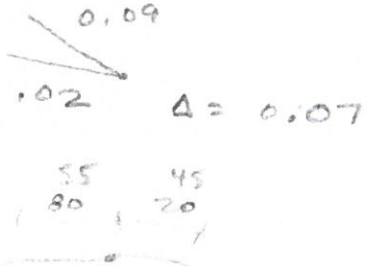
ATKINS

LL 1-2

R = 1000 R = 200

DS = 50 Δ = 0.07

e = 0.09 w = 15



L = 200(0.07) 15 = 210

60%.L = 168' ⇒ use 55%.L on tangent to keep transition off bridge

55%.L = 115.5

BEGIN TRANS = (PC) 27+04.23 − 115.5

= 25+88.73 ⇒ 25+88

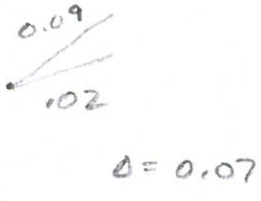
END TRANS = 25+88 + 210 = 27+98

LL 1-2, 3

R = 1175 R = 200

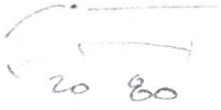
DS = 50 Δ = 0.07

e = 0.082 w = 15



L = 200(0.07) 15 = 210

20%.L = 42'



BEGIN TRANS = (PT) 34+81.43 − 42

= 34+39.43 ⇒ 34+39

END TRANS = 34+39 + 210 = 36+49

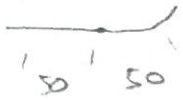
LL1 - 3

R = 1175 R = 200
DS = 50 Δ = 0.102
e = 0.082 w = 15

Δ = 0.102

L = 200(.102)15 = 306'

50%L = 153



BEGIN TRANS. (PC) 39+04.63 - 153
37+51.63 ⇒ 37+49 **

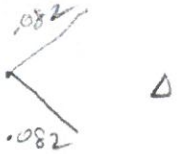
END TRANS: 37+49 + 306 = 40+55

* use 50/50 transition split to provide 0.0% cross slope as far from high point of curve as possible. Also, provide 100' @ 0.02 between SE transitions. Also, keeps transition off bridge

LL1 - 3,4

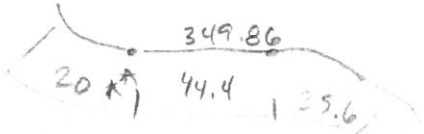
R = 1165 R = 200
DS = 50 Δ = 0.164
e = 0.082 w = 24

L = 200(0.164)(24) = 787.2 ⇒ 788'
20%L = 157.6



Δ = 0.164

BEGIN TRANS = (PT) 43+06.59 - 157.6
= 41+48.99 ⇒ 41+49



END TRANS: 41+49 + 788 = 49+37

** use 20% unbalanced split to maximize distance @ 0.02 at ramp terminal

Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 14

ATKINS

LL1 = 4,5

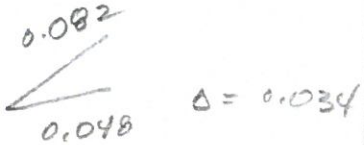
R_4 = 1165 R = 200

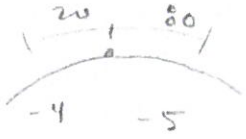
e_4 = 0.082 Δ = 0.034

R_5 = 2330 w = 15

e_5 = 0.048

DS = 50





L = 200(0.034) 15 = 102

20% L = 20.4

BEGIN TRANS = (PCC) 53+01.44 - 20.4

52+81.04 ⇒ 52+81

END TRANS = 52+81 + 102 = 53+83

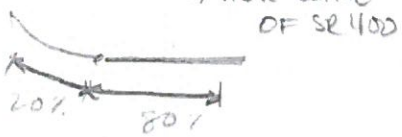
LL1 = 5

R = 2330 R = 200

DS = 50

e = 0.048 Δ = 0.008

w = 15



L = 200(0.008) 15 = 24 ⇒ 100'

20% L = 20

BEGIN TRANS = (PT) 60+40.72 - 20

60+20.72 ⇒ 60+20 ≈ 2047+66.41

END TRANS = 2047+66.41 - 100 = 2046+66.41

Subject:

Comp by: Date: Sheet Number: 15

Check by: Job Number:

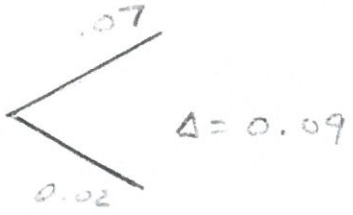
ATKINS

LL2-1

R= 1475 R= 200

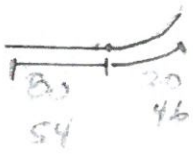
DS= 50 Δ= 0.09

e = 0.07 w = 15



L= 200(0.09) 15 = 270'

80%L = 216 => USE 54% to keep transition on bridge



54%L = 145.8

BEGIN TRANS = (PC) 17+45.27 - 145.8

= 15+99.47 => 16+00

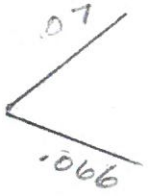
END TRANS = 16+00 + 270 = 18+70

LL2-1,2

R= 1615 R= 200

DS= 50 Δ= 0.136

e = 0.066 w= 15

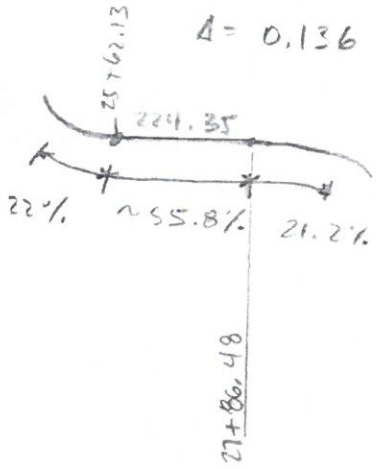


L= 200(0.136) 15 = 408

22%L = 89.76

BEGIN TRANS (PT) 25+62.13 - 89.76

24+72.37 => 24+73

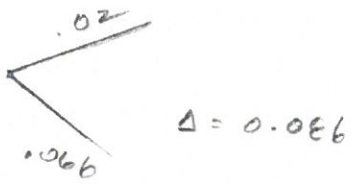


END TRANS = 24+73 + 408 = 28+81

ATKINS

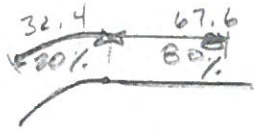
LL2 - 2

R = 1615 K = 200
D = 50 Δ = 0.086
e = 0.066 W = 15



L = 200 (0.086) 15 = 258

20% L = 51.6



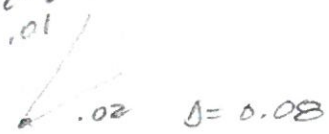
BEGIN TRANS = (PT) 32 + 04.75 - 51.6
= 31 + 53.59 => 31 + 53 ⇒ 31 + 17

END TRANS = 31 + 53 + 258 = 34 + 11 *⇒ 33 + 75

* Provide 100' @ 0.02 between LL2 and LL2-3

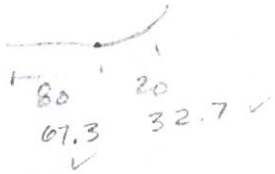
LL2 - 3

R = 716 K = 200
D = 50 Δ = 0.08
e = 0.10 W = 15



L = 200 (0.08) 15 = 240'

80% L = 192



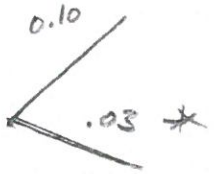
BEGIN TRANS = (PC) 36 + 36.41 - 192
= 34 + 44.41 => 34 + 45 *⇒ 34 + 75

END TRANS = 34 + 75 + 240 = 37 + 15

Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 17

ATKINS

U2-3



$E = 716'$ $R = 200$

$DS = 50$ $\Delta = 0.13$

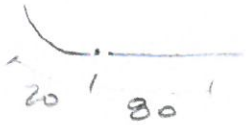
$e = 0.10$ $w = 15$

$\Delta = 0.13$

$L = 200(0.13)15 = \underline{390'}$

$20\%.L = 78$

* Provide 0.03 to match gore OD RAMP NNI



BEGIN TRANS: $46+86.33 - 78$

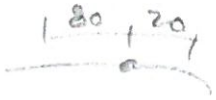
$= 46+08.33 \rightarrow \underline{46+08}$

END TRANS: $46+08 + 390 = \underline{49+98}$

LL 3-1

R = 3200' R = 200
DS = 50 Δ = 0.017
e = 0.037 w = 24

Δ = 0.017



L = 200(0.017)(24)
= 81.6 ⇒ 100' MIN.

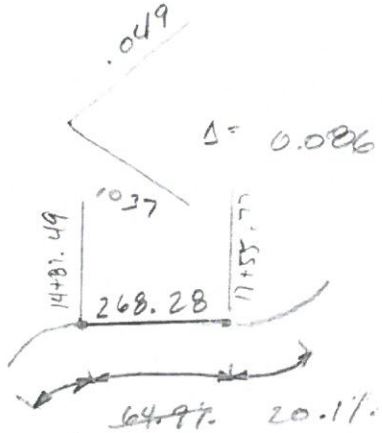
80%L = 80'

BEGIN TRANS: (PC) 10+87.23 - 80
= 10+07.23 ⇒ 10+08

END TRANS: 10+08 + 100 = 11+08

LL 3- 1, 2

R = 2292 R = 200
DS = 50 Δ = 0.086
e = 0.049 w = 24



L = 200(0.086)24 = 412.8 ⇒ 413'

L = 268.28 / 0.6 = 447.1 ⇒ 448' ← use *

20%L = 89.6

BEGIN TRANS = (PT) 14+87.49 - 89.6
= 13+97.89 ⇒ 13+98

END TRANS = 13198 + 448 = 18+46

* Increase trans. length to provide 60% of daisle transition on tangent between curves.

Subject:

Comp by: Date: Sheet Number: 19

Check by: Job Number:

LL 3- 2,3

R = 5754

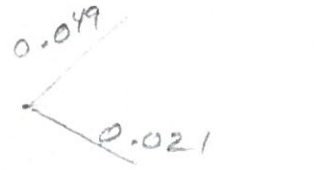
DS = 50

e = 0.0209 ⇒ 0.021

R = 200

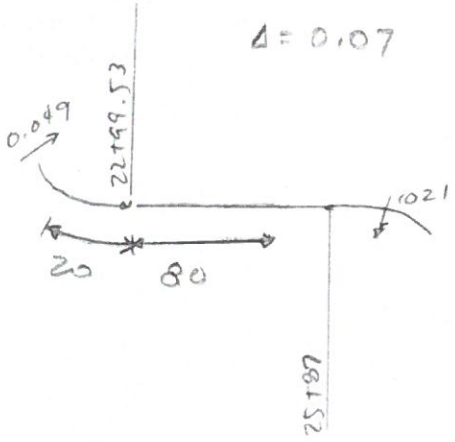
Δ = 0.07

W = 15



L = 200(0.07) 15 = 210'

20% L = 42



BEGIN TRANS = (PT) 22+99.53 - 42

= 22 +57.53 ⇒ 22+57

END TRANS = 22+57 + 210 = 24+67

LL 3- 3

R = 5754

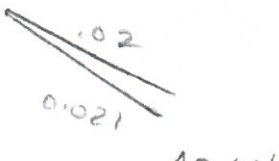
DS = 50

e = 0.021

R = 200

Δ = 0.001

W = 24



L = 200(0.001)24 = 4.8 ⇒ 100' MIN

20% L = 20'

BEGIN TRANS = (PT) 37+23.09 - 20 =

= 37+03.09 ⇒ 37+00

Arbitrary round down to even station.

END TRANS = 37+00 + 100 = 38+00

Subject: RAMP MM1

ATKINS

Comp by: Date: Sheet Number: 20

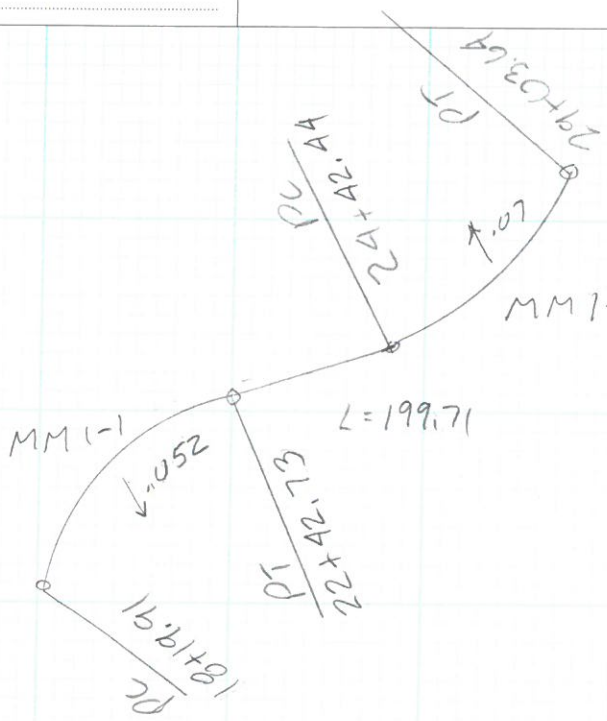
Check by: Job Number:

CURVE MM1-1

R = 2160

DS = 50mph

e = 0.052



Δ = 0.07 − 0.052

Δ = 0.032

L = (200)(.032)(15)

L = 96' use 100'

80% - 20% SPLIT

BEGIN Se TRANS STA 17+60. e = NC

END Se TRANS STA 18+60 e = 0.053%

CURVE MM1-2

R = 1500

DS = 50

e = 0.07

Δ = (0.052 + 0.07) = 0.122

L = (200)(.122)(15) = 366'

50% 50% SPLIT

L = (366)(.5) = 184.50

TRANS => e = .052 to e = NC

Δ = .032

L = (200)(.032)(15) = 96' use 100

50-50 split min 50' MM1-2

L = (200)(.109)(15) = 270'

50-50 split = 135'

Begin Se TRAN 21+92 e = 0.053%

End Se TRAN 25+58 e = 0.07%

Subject: RAMP MM1

ATKINS

Comp by: Date: Sheet Number: 21

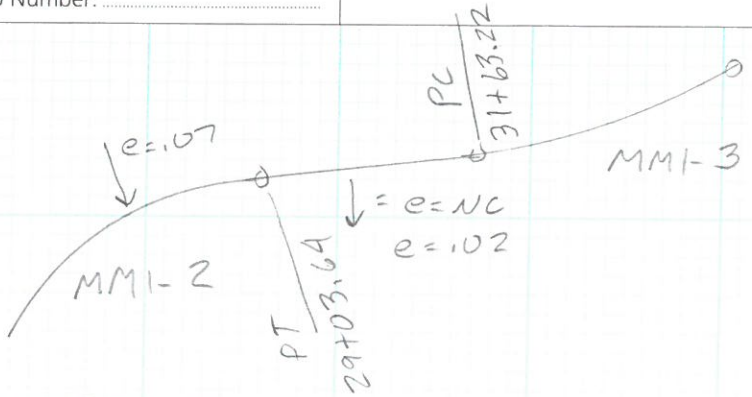
Check by: Job Number:

MM1-2

R = 1500

DS = 50mph

e = 0.07



$\Delta = 0.07 - .02 = 0.05$

$L = (200)(.05)(15) = 150$

80-20 80% => 120'

Begin Se TRANS STA 28+74 e = 0.07%

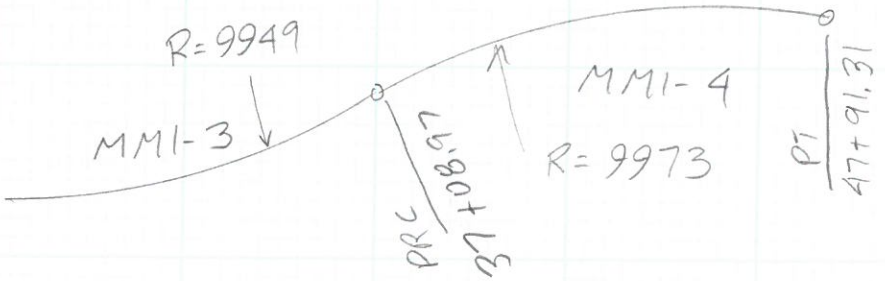
END Se TRAN STA 30+24 e = NC

MM1-3

R = 9949

DS = 50mph

e = NC



MM1-4

R = 9973

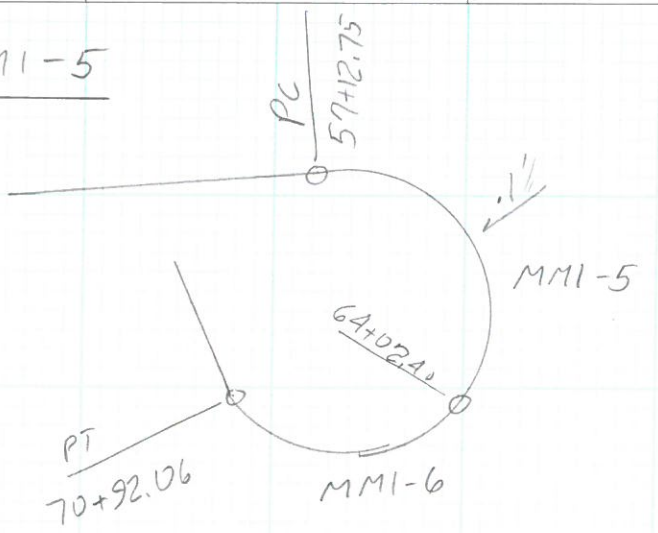
DS = 50mph

e = NC

Subject: RAMP MM1		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 22

ATKINS

CURVE MM1-5



R = 323'

DS = 35mph

e = 0.10

$\Delta = (0.02 - .10) = 0.08$

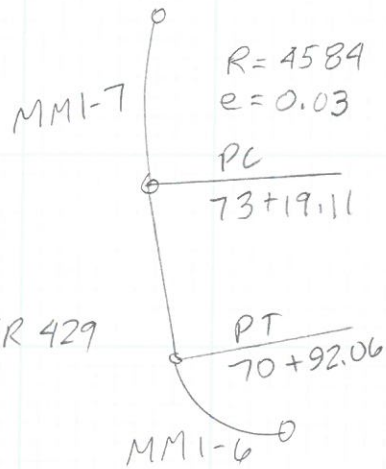
$L = (200)(.08)(15) = 240'$

Begin Se TRAN STA 55+21 e = NC

END Se TRANS STA 57+61 e = 0.10%

EXITING CURVE

CURVE MM1-7



R = 4584'

DS = 50

e = 0.026 Req. use 0.03 to match Mainline SR 429

$\Delta = (.1 - .03) = .07$

$L = (.07)(200)(15) = 210'$

Begin Se STA 70+50 e = 0.10%

END Se STA 72+60 e = 0.03%

Subject: RAMP MM2

ATKINS

Comp by: | Date: | Sheet Number: 23

Check by: | Job Number:

MM2 - 1 R = 819 DS = 50 mph e = 0.098

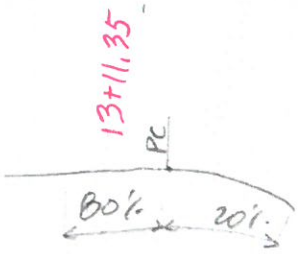
R = 200

Δ = 0.078

W = 15

PC STA 13+11.35

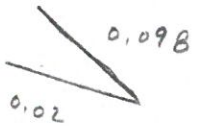
PT STA 21+60.50



$L_{req} = 200(0.078)15 = 234'$

80 - 20

80% of 234 = 187



Δ = 0.078

(PC 13+11.34) - 187 = 11+24.15

BEGIN SCTRANS = STA 11+24 e = NC

STA 11+24 + 234 = 13+58

END SCTRAN STA 13+58 e = 0.078%

R = 200

Δ = 0.078

W = 15

Δ = 0.078

L = 200(0.078)15 = 234

20% L = 46.8

BEGIN TRANS = (PT) 21 + 60.50 + 46.8 =

= 21+13.7 ⇒ 21+14 e = 0.098

END TRANS = 21+14 + 234 = 23+48 e = NC

Subject: RAMP MM3

ATKINS

Comp by: Date: Sheet Number: 24

Check by: Job Number:

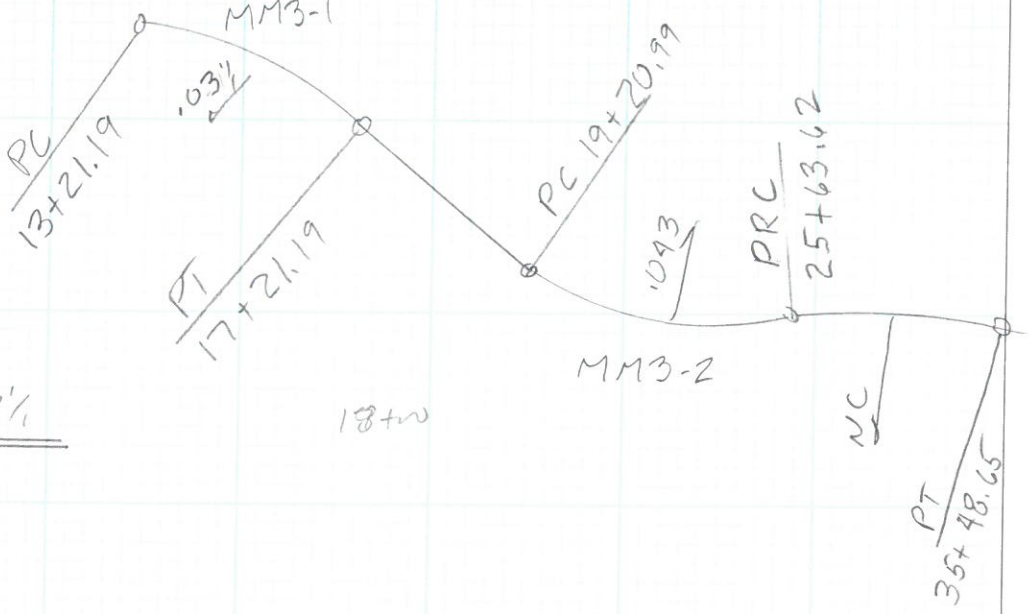
CURVE MM3-1

R = 5730

DS = 50

e = 0.021

MATCH CROSS SLOPE OF I-4 USE e = 0.03%



CURVE MM3-2

R = 2684

DS = 50

e = 0.043%

Δ = (.03 + .043) = 0.073

L = (200)(.073)(24) = 350'

BEGIN Se TRANS STA 16+41 e = 0.03%

END Se TRANS STA 19+91 e = 0.043%

CURVE MM3-3

R = 9993

DS = 50

e = NC

Δ = (.043 + .02) = 0.063% L = (200)(.063)(24) = 302'

Begin Se TRNS STA 25+03 e = 0.043%

END Se TRANS STA 28+05 e = NC

Subject: RAMP MM3

ATKINS

Comp by: | Date: | Sheet Number: 25

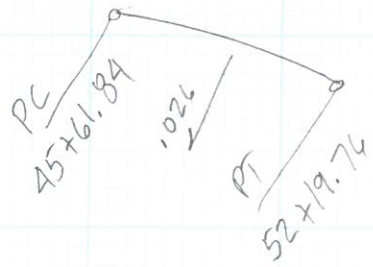
Check by: | Job Number:

CURVE MM3-4

R = 4,584

DS = 50

e = 0.026



$\Delta = (0.02 - 0.026) = (.006)$

$L = (200)(.006)(24) = 29$ USE 100' MIN.

BEGIN Se TRANS STA 44+82 e = NC

END Se TRANS STA 45+82 e = 0.026

TRANS OUT OF CURVE

BEGIN Se TRANS STA 52+00 e = 0.026

END Se TRANS STA 53+00 e = NC

Subject: RAMP MM3

ATKINS

Comp by: Date: Sheet Number: 26

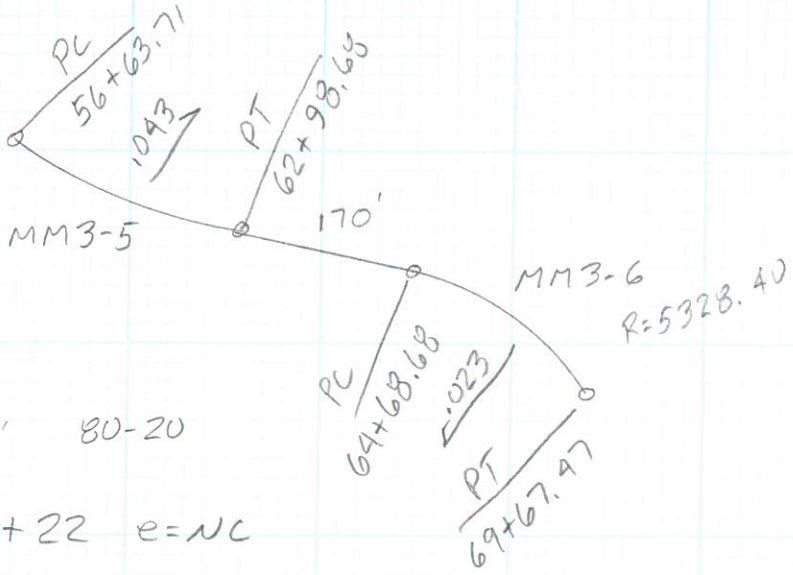
Check by: Job Number:

CURVE MM3-5

R = 2681.77

DS = 50

e = 0.043



$\Delta = (.02 + .043) = 0.063$

$L = (200)(.063)(24) = 302'$ 80-20

Begin Se TRANS STA 54+22 e=NC

END Se TRANS STA 57+24 e = 0.043

CURVE MM3-6

R = 5328.40

DS = 50

e = 0.023

$\Delta = (.043 + .023) = 0.066$

$L = (200)(.066)(24) = 317'$

Begin Se TRANS STA 62+15 e = 0.043 %

END Se TRANS STA 65+32 e = 0.023 %

TRANS OUT OF CURVE USE L=100' (MIN)

BEGIN Se TRAN STA 69+47 e = 0.023

END Se TRANS STA 70+47 e = NC

Subject: RAMP MM3

ATKINS

Comp by: | Date: | Sheet Number: 27

Check by: | Job Number:

CURVE MM3-7

R = 22,958

Ds = 50

e = NC

CURVE MM3-8

R = 27,953

Ds = 50

e = NC

CURVE MM3-9

R = 2865

Ds = 50

e = 0.04

PCC 86+69.11

PT 90+47.43

$\Delta = (.02 - .04) = 0.02$

$L = (200)(24)(.02) = 96'$ USE 100' MIN

Begin Sc TRANS STA 85+89 e = NC

END Sc TRAN STA 86+89 e = 0.04%

Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 28

ATKINS

NN1-3

RADIUS = 5730
DS = 50
e = 0.021 required

R

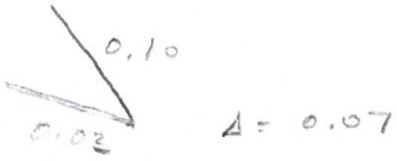
Provide 0.03 thru curve and tangent between NN1-4 and gore to avoid multiple short transitions and provide more shape along 3-lane ramp section

NN1-4 R = 716 DS = 50 mph e = 0.10

R = 200

Δ = 0.07

W = 24



L = 200(0.07)24 = 336

65% L = 218.4

BEGIN TRANS = 46 + 06.40 − 218.4
= 43+88

END TRANS = 43+88 + 336 = 47+24

* Use 35% to provide < 6% rollover between adjacent lanes on LL2 and NN1

Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 29

ATKINS

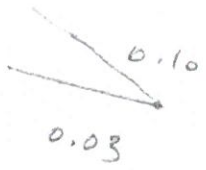
NN1-5

R = 5930

DS = 50

e_{req} = 0.021 e = 0.03 provided

Provide 0.03 thru curve and tangent between NN1-4 and tangent and across bridge to match gore and eliminate multiple slant transitions.



Δ = 0.07

R = 200

e = 0.07

w = 24

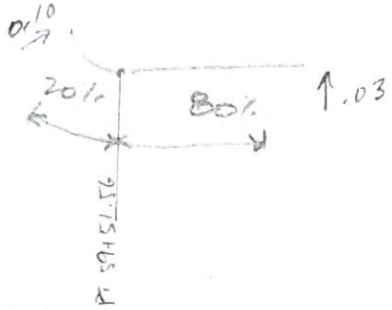
L = 200(0.07)24

L = 336

20%.L = 67.2

BEGIN TRANS = (PT) 59+51.56 − 67.2

= 58+84.36 ⇒ 58+84



END TRANS = 58+84 + 336 = 62+20

Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 30

ATKINS

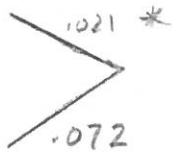
NN2-4

R = 1447 | I2 = 200 | L = 5730

DS = 50 | Δ = 0.093 | DS = 50

e = 0.072 | w = 15 | e = 0.021

NN2-3



Δ = 0.093

$L = 200(0.093)\,15 = 279'$

80% L = 223.2

BEGIN TRANS: 36+73.55 − 223.2

= 34+50.35 ⇒ 34+51

END TRANS = 34+51 + 279 = 37+30

* PROVIDE 0.021 ALONG tangent between NN2-3 and NN2-3 to avoid unnecessary transition

R = 200

Δ = 0.048

w = 15

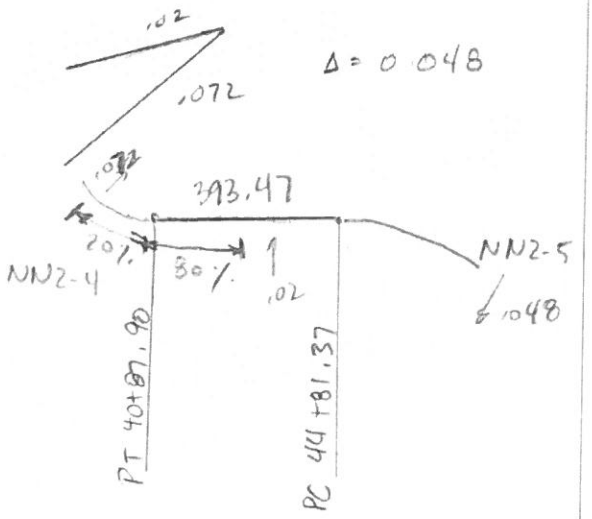
$L = 200(0.048)\,15 = 144$

20% L = 28.8

BEGIN TRANS = (PT) 40+87.90 − 28.8

= 40+59.1 ⇒ 40+59

END TRANS = 40+59 + 144 = 42+03



Δ = 0.048

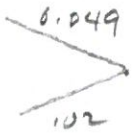
Subject:			ATKINS
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 31	

NN2 - 5

R = 2292 R = 200

DS = 50 Δ = 0.069

e = 0.049 w = 15



Δ = 0.069

L = 200(0.069) 15 = 207'

80%. L = 165.6

BEGIN TRANS = 44 + 81.37 - 165.6

= 43 + 15.77 ⇒ 43 + 16

END TRANS = 43+16 + 207 = 45+22

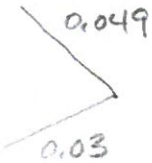
R = 200

Δ = 0.079

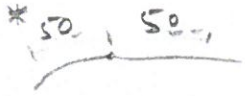
w = 15

L = 200(0.079)15 = 237'

50%. L = 118.5



Δ = 0.079



BEGIN TRANS (PT) = 49+79.98 - 118.5

= 48+61.48 ⇒ 48+62

END TRANS = 48+62 + 237 = 50+99

* USE 50/50 transition spiral to keep cleus and grades up to facilitate profile between bridges

Subject:

Comp by: Date: Sheet Number: 32

Check by: Job Number:

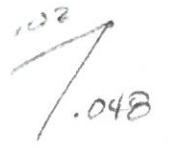
ATKINS

001-1

R = 2889 R = 200

DS = 55 Δ = 0.028

e = 0.048 W = 24'



Δ = 0.028

L = 200 (.028) 24 = 134.4 ⇒ 135

80% L = 108

BEGIN TRANS = (PC) 134 + 14.56 − 108

= 133 + 06.56 ⇒ 133+07

END TRANS = 133+07 + 135 = 134+42

001-1,2

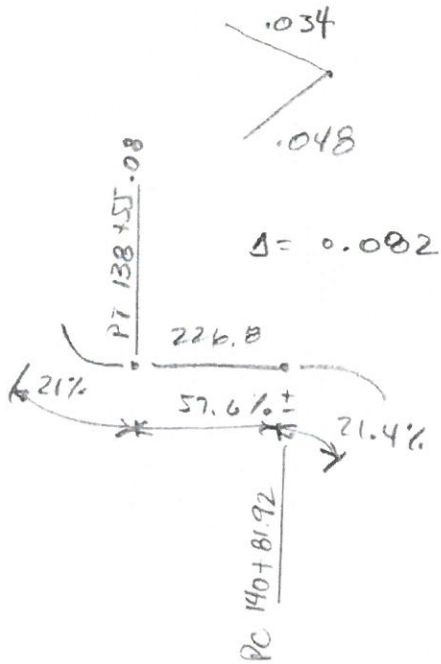
R = 4170 R = 200

DS = 55 Δ = 0.082

e = 0.034 W = 24

L = 200 (.082) 24 = 393.6 ⇒ 394'

21% L = 82.74'



BEGIN TRANS: (PI) 138 + 55.08 − 82.74

= 137+72.34 ⇒ 137+73

END TRANS: 137+73 + 394 = 141+66

Subject:

Comp by: Date: Sheet Number: 33

Check by: Job Number:

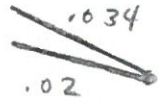
ATKINS

001 - 2,3

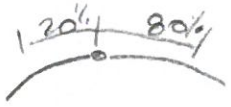
R = 8340 e = 200

DS = 55 Δ = 0.014

e = RC W = 24



Δ = 0.014



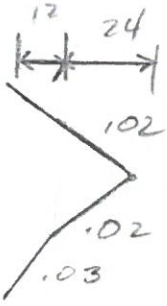
L = 200(0.014)24 = 67.2 => 100

20%. L = 20

BEGIN TRANS: (PCC) 144 + 81.71 - 20

= 144 + 61.71 => 144 + 60

END TRANS = 144 + 60 + 100 = 145 + 60



y = .02(36) + .02(24) + .03(12)

= 1.56

001 - 3,4

R = 11495 R = 200

DS = 55 y = 1.56

e = NC

L = 200 (1.56) = 312

20%. L = 62.4

BEGIN TRANS = (PRC) 157 + 41.70 - 62.4

156 + 79.3 => 156 + 79

END TRANS = 156 + 79 + 312 = 159 + 85

Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 34

ATKINS

001 - 6

R = 11328

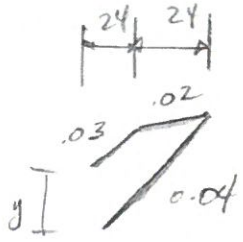
DS = 55

001 - 5

R = 200

y = 0.72'

e = NC



$y = (.04)48 - .02(24) - .03(24)$

$= 1.92 - 1.2 = 0.72$

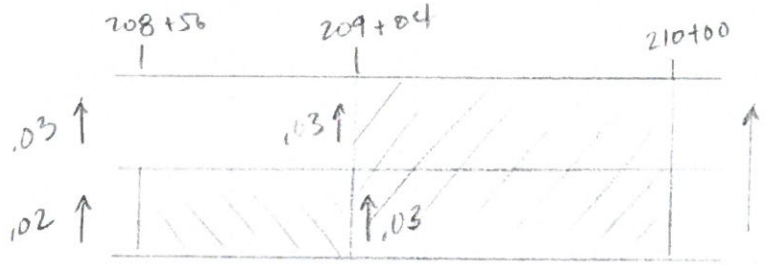
$L = 200(0.72) = 144'$

END TRANSITION @ 210+00 *

PT STA 210 + 06.89

BEGIN TRANS: 210+00 - 144 = 208+56

* END SET AT EVEN STATION NOMINAL DISTANCE FROM BORE



$L_1 = 200(.01)24$

$= 48$

$L_2 = 200(.01)48$

$= 96$

Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 35

ATKINS

003 - 1

R = 4584

DS = 50

e = 0.026 required

0.036 provided to match SR 429 and eliminate additional transition

003 - 2

R = 955 R = 200

DS = 50 Δ = 0.056

e = 0.092 W = 24 (valley)

Δ = 0.056

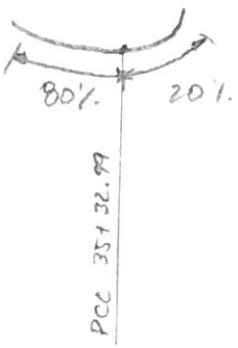
L = 200 (0.056) 24 = 268.8 ⇒ 270'

80% L = 216

BEGIN TRANS = (PCC) 35 + 32.99 − 216

= 33 + 16.99 ⇒ 33 + 17

END TRANS = 33+17 + 270 = 35 + 87



Subject:		
Comp by: / Check by:	Date: / Job Number:	Sheet Number: 36

ATKINS

003-2

R= 955 R= 200

DS= 50 Δ = 0.062

e= 0.092 w = 15

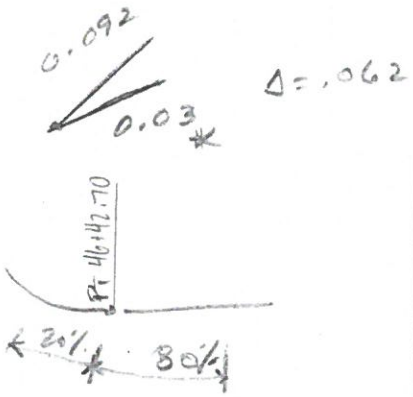
$L = 200(0.062)\,15 = 186'$

20'.L = 37.2

BEGIN TRANS = (PT) 46+42.70 − 37.2

= 46+05.5 ⇒ 46+05

END TRANS : 46+05 + 186 = 47+91



* Provide 0.03 to match 001 cross slope and avoid unnecessary transition

Subject:

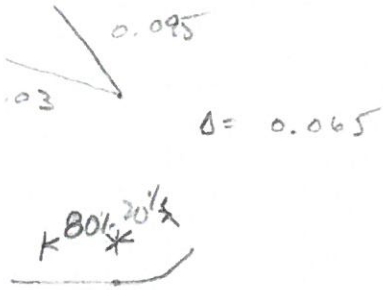
Comp by: Date: Sheet Number: 37

Check by: Job Number:

ATKINS

004 -2

$R = 420'$
$DS = 35$
$e = 0.095$



$R = 175$
$\Delta = 0.065$
$W = 15$

$L = 175(0.065)15 = 170.6 \Rightarrow \underline{171}$

$80\%.L = 136.8$

BEGIN TRANS $= (PC)\ 10+68.31 - 136.8 =$
$= 9+31.51 \Rightarrow \underline{9+32}$

END TRANS $= 9+32 + 171 = \underline{11+03}$

004-2,3,4

004-4 - $R = 3300'$ $R = 175$
$DS = 35$ $\Delta = 0.074$
$e = RC$ $W = 15$

$L = 175(0.074)15 = 194.25 \Rightarrow \underline{195'}$

$20\%.L = 39'$

BEGIN TRANS $= 26198.98 - 39$
$= 26+59.98 \Rightarrow \underline{26+60}$

END TRANS $= 26+60 + 195 = \underline{28+55}$

* USE 0.021 to match LL3

Section 5 – Horizontal Sight Offset (HSO) Calculations

Analysis of Horizontal Sight Offset (HSO)

Project: Wekiva Parkway Section 8
Project No. 431081-4-32-01
Road Name: SR 429 (WEKIVA PKWY)

Designed By: JRE
Checked By: WAT
Date: 10/26/2016

ROADWAY	DESIGN SPEED	CURVE NUMBER	CL/BL RADIUS	CALC. RADIUS*	1/2 INSIDE LANE WIDTH	PROFILE GRADE(S)	SSD**	HSO***	OFFSET FROM EOTL****	COMMENTS
SR 429	70	429_A1-2	5951	5884.5	6	+1.8 to -1.114	820	14.27	8.27	
SR 429	70	429_A1-3	8425	8370.5	6	-1.114 to +0.643	820	10.03	4.03	
SR 429	70	429_A1-4	10955	10900.5	6	+0.643 to -0.464	820	7.71	1.71	
SR 417	70	429_A1-5	5730.86	NA	NA	NA	NA	NA	NA	Match existing
SR 417	70	429_A1-6	11459.16	NA	NA	NA	NA	NA	NA	Beyond construction limits
Ramp CR46AEB	50	CR46AEB_3	2865	2865	6	+2.8	425	7.86	1.86	
Ramp CR46AEB	50	CR46AEB_6	4500	4500	7.5	-4.6 to +0.3	471	6.15	-1.35	Sight line does not go beyond EOTL
Ramp GG	50	GG-1	7639	7639	7.5	-0.88 to +1.8	425	2.95	-4.55	Sight line does not go beyond EOTL
Ramp GG	50	GG-2	7654	7639	7.5	+1.2 to +2.5	405	2.68	-4.82	Sight line does not go beyond EOTL
Ramp GG	50	GG-3	4599	4584	7.5	+2.5 to -2.5	446	5.42	-2.08	Sight line does not go beyond EOTL
Ramp HH1	50	HH1-1	3820	3820	7.5	+2.967 to -2.6	446	6.50	-1.00	Sight line does not go beyond EOTL
Ramp HH1	35	HH1-2	333	333	7.5	-2.5	257	23.96	16.46	
Ramp HH1	35	HH1-3	333	333	7.5	-2.5 to +0.3	257	23.96	16.46	
Ramp HH2	50	HH2-1	3835	3820	7.5	-1.350 to -3.0	446	6.50	-1.00	Sight line does not go beyond EOTL
Ramp LL1	50	LL1-1	2307	2292	7.5	+0.65 to +1.0	425	9.81	2.31	
Ramp LL1	50	LL1-2	1000	1000	6	+2.25	405	20.32	14.32	
Ramp LL1	50	LL1-3	1175	1160	7.5	-4.0	454	22.00	14.50	
Ramp LL1	50	LL1-4	1165	1165	7.5	-4.0 to +0.4	425	19.21	11.71	
Ramp LL1	50	LL1-5	2330	2330	7.5	+0.4	425	9.65	2.15	
Ramp LL2	50	LL2-1	1475	1475	7.5	+2.4 to -4.92	425	15.21	7.71	Bridge on crest curve
Ramp LL2	50	LL2-2	1615	1600	7.5	+2.4 to -4.92	425	14.03	6.53	Bridge on crest curve
Ramp LL2	50	LL2-3	716	716	7.5	+0.5	425	30.99	23.49	
Ramp LL3	50	LL3-1	3200	3176	6	+2.191 to -0.9	425	7.09	1.09	
Ramp LL3	50	LL3-2	2292	2292	7.5	+0.4 to -0.5	425	9.81	2.31	
Ramp LL3	50	LL3-3	5754	5737	6	-0.5 to +0.75	425	3.93	-2.07	Sight line does not go beyond EOTL
Ramp LL3	50	LL3-4	7639	7639	6	+0.75 to +0.643	425	2.95	-3.05	Sight line does not go beyond EOTL
Ramp MM1	50	MM1-1	2160	2160	7.5	0.0 to -2.5	446	11.46	3.96	
Ramp MM1	50	MM1-2	1500	1485	7.5	-2.5 to +0.7	446	16.63	9.13	
Ramp MM1	50	MM1-3	9949	9949	6	+0.7	425	2.27	-3.73	Sight line does not go beyond EOTL
Ramp MM1	50	MM1-4	9973	9949	6	+2.0	425	2.27	-3.73	Sight line does not go beyond EOTL
Ramp MM1	35	MM1-5	323	323	7.5	+2.0 to -0.8	250	23.36	15.86	
Ramp MM1	35	MM1-6	323	323	7.5	-0.8 to -5.5	250	23.36	15.86	
Ramp MM1	50	MM1-7	4584	4584	7.5	-5.5 to -0.3	446	5.42	-2.08	Sight line does not go beyond EOTL
Ramp MM1	50	MM1-8	4584	4584	7.5	-0.3	425	4.92	-2.58	Sight line does not go beyond EOTL
Ramp MM2	50	MM2-1	819	819	7.5	+1.5 to -3.1	446.8	30.01	22.51	
Ramp MM3	50	MM3-1	5730	5730	6	+0.8	425	3.94	-2.06	Sight line does not go beyond EOTL
Ramp MM3	50	MM3-2	2684	2660	6	-3.0 to +2.0	446	9.32	3.32	
Ramp MM3	50	MM3-3	9993	9993	6	+2.0	425	2.26	-3.74	Sight line does not go beyond EOTL
Ramp MM3	50	MM3-4	4584	4584	6	-2.2 to 0.0	446	5.42	-0.58	Sight line does not go beyond EOTL
Ramp MM3	50	MM3-5	2681.77	2657.77	6	+3.6 to 0.0	399	7.47	1.47	
Ramp MM3	50	MM3-6	5328.40	5328.40	6	-5.0	468	5.13	-0.87	Sight line does not go beyond EOTL
Ramp MM3	50	MM3-7	22958.5	22968.5	6	-5.0	464	1.17	-4.83	Sight line does not go beyond EOTL
Ramp MM3	50	MM3-8	27953.5	27953.5	6	-.485	425	0.81	-5.19	Sight line does not go beyond EOTL
Ramp MM3	50	MM3-9	2865	2856	6	-.485	425	7.89	1.89	
Ramp NN1	50	NN1-1	28000	28000	7.5	+0.3 to -0.88	425	0.81	-6.69	Sight line does not go beyond EOTL
Ramp NN1	50	NN1-2	22912	22912	6	+5.0	393	0.84	-5.16	Sight line does not go beyond EOTL
Ramp NN1	50	NN1-3	5730	5730	6	+5.0 to -3.95	454	4.49	-1.51	Sight line does not go beyond EOTL
Ramp NN1	50	NN1-4	716	716	6	0.0 to +4.721	393	26.58	20.58	
Ramp NN1	50	NN1-5	5730	5730	6	-2.576 to +0.7	446	4.33	-1.67	Sight line does not go beyond EOTL
Ramp NN2	40	NN2-1	716	716	7.5	-4.0	320	17.62	10.12	
Ramp NN2	40	NN2-2	500	500	7.5	-2.87	315	NA	NA	Existing shoulder to wall is 12' wide
Ramp NN2	50	NN2-3	5730	5730	7.5	-4.4 to +5.0	454	4.49	-3.01	Sight line does not go beyond EOTL
Ramp NN2	50	NN2-4	1447	1447	7.5	+5.0	393	13.26	5.76	
Ramp NN2	50	NN2-5	2292	2292	7.5	-3.371 to 0.0	446	10.81	3.31	
Ramp 001	55	001-1	2889	2865	6	+0.3	495	10.66	4.66	
Ramp 001	55	001-2	4180	4180	6	+0.3	495	7.32	1.32	
Ramp 001	55	001-3	8340	8340	6	+3.82 to -1.88	495	3.67	-2.33	Sight line does not go beyond EOTL
Ramp 001	55	001-4	11495	11447	6	-1.88 to +2.0	495	2.67	-3.33	Sight line does not go beyond EOTL
Ramp 001	55	001-5	22987	22987	6	-0.4	495	1.33	-4.67	Sight line does not go beyond EOTL
Ramp 001	55	001-6	11328.02	11328.02	6	-0.4 to -2.75	520	2.98	-3.02	Sight line does not go beyond EOTL
Ramp 001	55	001-7	11328.02	11328.02	6	-2.75	520	2.98	-3.02	Sight line does not go beyond EOTL
Ramp 002	50	002-1	10118.36	10118.36	6	-2.324	446	2.46	-3.54	Sight line does not go beyond EOTL
Ramp 002	50	002-2	11459.16	11459.16	6	-2.324 to +1.394	446	2.17	-3.83	Sight line does not go beyond EOTL
Ramp 002	50	002-3	11459.16	11459.16	7.5	+1.394	425	1.97	-5.53	Sight line does not go beyond EOTL
Ramp 002	50	002-4	150	NA	NA	NA	NA	NA	NA	Beyond construction limits
Ramp 003	50	003-1	4584	4584	7.5	+0.6 to -3.35	446	5.42	-2.08	Sight line does not go beyond EOTL
Ramp 003	50	003-2	955	955	7.5	-3.35	446	25.72	18.22	
Ramp 003	50	003-3	3927	3927	7.5	-0.337 to -0.4	425	5.74	-1.76	Sight line does not go beyond EOTL
Ramp 004	50	004-1	11447	11447	6	+2.0	425	1.97	-4.03	Sight line does not go beyond EOTL
Ramp 004	35	004-2	420	420	7.5	-2.669 to -0.403	257	19.17	11.67	
Ramp 004	35	004-3	420	420	7.5	-0.403	250	18.15	10.65	
Ramp 004	50	004-4	3300	3300	7.5	-0.403	425	6.82	-0.68	Sight line does not go beyond EOTL
Ramp RR	70	RR-1	5661.58	5661.58	7.5	-2.117	861	16.34	8.84	
Ramp RR	30	RR-2	239	239	7.5	-2.117	205	21.01	13.51	
SR 400 EB	70	SR400EB-1	14714	14714	6	-0.8	820	5.71	-0.29	Sight line does not go beyond EOTL
SR 400 EB	70	SR400EB-2	14762	14714	6	-0.8	820	5.71	-0.29	Sight line does not go beyond EOTL
SR 400 EB	70	SR400EB-3	22954	22918	6	-0.5 to +0.8	820	3.67	-2.33	Sight line does not go beyond EOTL
SR 400 EB	70	SR400EB-4	23004	23052	6	+0.8	820	3.65	-2.35	Sight line does not go beyond EOTL
SR 400 EB	70	SR400EB-5	25000	24964	6	-2.38 to -0.3	861	3.71	-2.29	Sight line does not go beyond EOTL
SR 400 EB	70	SR400EB-6	50000	50000	6	-0.3 to -2.584	861	1.85	-4.15	Sight line does not go beyond EOTL
SR 400 EB	70	SR400EB-7	30945	30945	6	+1.5	820	2.72	-3.28	Sight line does not go beyond EOTL
SR 400 WB	70	SR400WB-1	11003	10967	6	+0.3 to -0.3	820	7.66	1.66	
SR 400 WB	70	SR400WB-2	14714	14714	6	-0.3 to +2.4	820	5.71	-0.29	Sight line does not go beyond EOTL
SR 400 WB	70	SR400WB-3	22918	22918	6	+2.4	779	3.31	-2.69	Sight line does not go beyond EOTL
SR 400 WB	70	SR400WB-4	22918	22918	6	-0.3	820	3.67	-2.33	Sight line does not go beyond EOTL
SR 400 WB	70	SR400WB-5	14714	14714	6	+1.89	820	5.71	-0.29	Sight line does not go beyond EOTL
SE 400 WB	70	SR400WB-6	11003	10955	6	+1.89	820	7.67	1.67	

*Minimum radius of edge of travel lane (EOTL)
**Based on Table 2.7.1 from FDOT PPM Volume 1, Chapter 2 (Adjustments for grade(s) included)
***Measured from CL of inside lane
****Minimum offset required from EOTL to sight obstruction (i.e. barrier wall)