

Horizontal Curve Calculations

Delta:	21.1730
D:	2.1000
PI:	4710.82
R =	2644.42
T =	497.08
L =	982.69
LC =	977.05
M =	45.52
E =	46.31
PC-STA =	4213.74
PT-STA =	5196.43

Curve Stake-out Notes Using Deflection Angles

Station	Chord Between Points on Curve	Chord Between PC and Points on Curve	Deflection Angle
4213.74			
4300	86.26	86.26	1.5208
4400	99.99	186.22	4.0208
4500	99.99	286.12	6.1208
4600	99.99	385.92	8.2208
4700	99.99	485.57	10.3208
4800	99.99	585.06	12.4208
4900	99.99	684.34	14.5208
5000	99.99	783.37	17.0208
5100	99.99	882.12	19.1208
5196.43	96.43	977.05	21.1730

Curve Stake-out Notes Using Long Chord Offset

Station	Deflection	Chord from PC	Long Chord Distance	Long Chord Offset
4213.74				
4300	1.5208	86.26	85.02	14.55
4400	4.0208	186.22	184.11	27.94
4500	6.1208	286.12	283.64	37.57
4600	8.2208	385.92	383.47	43.43
4700	10.3208	485.57	483.44	45.51
4800	12.4208	585.06	583.42	43.81
4900	14.5208	684.34	683.26	38.34
5000	17.0208	783.37	782.83	29.09
5100	19.1208	882.12	881.97	16.08
5196.43	21.1730	977.05	977.05	0.00

Tangent Offsets from PC

Station	Tan. Distance	Tangent Offset
4213.7403		
4300	86.24	1.41
4400	186.11	6.56
4500	285.70	15.48
4600	384.89	28.16
4700	483.52	44.58

Tangent Offsets from PT

5196.43		
5100	96.41	1.76
5000	196.25	7.29
4900	295.81	16.60
4800	394.95	29.66

Delta:	21.173		Horizontal Curve
D:	2.1		Calculations
PI:	4710.82		
R =	$= (100/I3) * (360 / (2 * PI()))$		
T =	$= B5 * TAN(J2/2)$		
L =	$= (I2/I3) * 100$		
LC =	$= 2 * B5 * SIN(J2/2)$		
M =	$= B5 * (1 - COS(J2/2))$		
E =	$= B5 * ((1 / COS(J2/2)) - 1)$		
PC-STA =	$= B3 - B6$		
PT-STA =	$= B11 + B7$		
Curve Stake-out Notes U			
	Chord Between	Chord Between PC	
Station	Points on Curve	and Points on Curve	Deflection Angle
=B11			
4300	$= 2 * B5 * SIN(J18/2)$	$= 2 * B5 * SIN(J18/2)$	$= F18 + (G18 + (H18/100)) / 100$
4400	$= 2 * B5 * SIN((K19/2) * PI() / 180)$	$= 2 * B5 * SIN(J19/2)$	$= F19 + (G19 + (H19/100)) / 100$
4500	$= 2 * B5 * SIN((K20/2) * PI() / 180)$	$= 2 * B5 * SIN(J20/2)$	$= F20 + (G20 + (H20/100)) / 100$
4600	$= 2 * B5 * SIN((K21/2) * PI() / 180)$	$= 2 * B5 * SIN(J21/2)$	$= F21 + (G21 + (H21/100)) / 100$
4700	$= 2 * B5 * SIN((K22/2) * PI() / 180)$	$= 2 * B5 * SIN(J22/2)$	$= F22 + (G22 + (H22/100)) / 100$
4800	$= 2 * B5 * SIN((K23/2) * PI() / 180)$	$= 2 * B5 * SIN(J23/2)$	$= F23 + (G23 + (H23/100)) / 100$
4900	$= 2 * B5 * SIN((K24/2) * PI() / 180)$	$= 2 * B5 * SIN(J24/2)$	$= F24 + (G24 + (H24/100)) / 100$
5000	$= 2 * B5 * SIN((K25/2) * PI() / 180)$	$= 2 * B5 * SIN(J25/2)$	$= F25 + (G25 + (H25/100)) / 100$
5100	$= 2 * B5 * SIN((K26/2) * PI() / 180)$	$= 2 * B5 * SIN(J26/2)$	$= F26 + (G26 + (H26/100)) / 100$
=B12	$= 2 * B5 * SIN((K27/2) * PI() / 180)$	$= 2 * B5 * SIN(J27/2)$	$= F27 + (G27 + (H27/100)) / 100$
Curve Stake-out Notes U			
			Long Chord
Station	Deflection	Chord from PC	Distance
4213.74033715052			
4300	1.52082537022598	86.2558386090414	$= C33 * COS(\$J\$2/2 - J18/2)$
4400	4.02082537022598	186.22116316214	$= C34 * COS(\$J\$2/2 - J19/2)$
4500	6.12082537022598	286.119915187973	$= C35 * COS(\$J\$2/2 - J20/2)$
4600	8.22082537022598	385.91638170806	$= C36 * COS(\$J\$2/2 - J21/2)$
4700	10.320825370226	485.574886310142	$= C37 * COS(\$J\$2/2 - J22/2)$
4800	12.420825370226	585.059801902206	$= C38 * COS(\$J\$2/2 - J23/2)$
4900	14.520825370226	684.335563448875	$= C39 * COS(\$J\$2/2 - J24/2)$
5000	17.020825370226	783.366680685616	$= C40 * COS(\$J\$2/2 - J25/2)$
5100	19.120825370226	882.117750806216	$= C41 * COS(\$J\$2/2 - J26/2)$
5196.43264484282	21.173	977.047740215895	$= C42 * COS(\$J\$2/2 - J27/2)$
Tangent Offsets from PC			
Station	Tan. Distance	Tangent Offset	
4213.74033715052			
4300	$= B5 * SIN(J18)$	$= B5 * (1 - COS(J18))$	
4400	$= B5 * SIN(J19)$	$= B5 * (1 - COS(J19))$	
4500	$= B5 * SIN(J20)$	$= B5 * (1 - COS(J20))$	
4600	$= B5 * SIN(J21)$	$= B5 * (1 - COS(J21))$	
4700	$= B5 * SIN(J22)$	$= B5 * (1 - COS(J22))$	
Tangent Offsets from PT			
=A42			
=A41	$= B5 * SIN(J54)$	$= B5 * (1 - COS(J54))$	
=A40	$= B5 * SIN(J55)$	$= B5 * (1 - COS(J55))$	
4900	$= B5 * SIN(J56)$	$= B5 * (1 - COS(J56))$	
4800	$= B5 * SIN(J57)$	$= B5 * (1 - COS(J57))$	

