

Principle Arterial

Design Criteria

CLASSIFICATION			DESIGN SPEED				
Urban Expressway Divided (UAD60, UAD70, or UAD80)			60 to 80 km/h				
HORIZONTAL ALIGNMENT							
Stopping Sight Distance (metres)			Minimum Centerline Radius of Curvature (metres)				
Classification	Minimum	Desirable	Classification	Superelevated Section			
				0.04 m/m	0.06 m/m		
Arterial UAD60	85	90	Arterial UAD60	130	120		
Arterial UAD70	110	120	Arterial UAD70	200	190		
Arterial UAD80	140	150	Arterial UAD80	280	250		
Minimum Curve Length			Minimum Tangent Section Length				
3 x the design speed, minimum 150 m			As per Geometric Design Guide for Canadian Roads, Section 2.14 (TAC Standards)				
TURNING MOVEMENT ACCOMODATION							
<ul style="list-style-type: none"> Based upon Warrants 							
Corner Sight Clearances							
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 							
VERTICAL ALIGNMENT							
Maximum & Minimum Grades							
<ul style="list-style-type: none"> Maximum Grade: 6.0%, desirable less than 4.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> L = KA Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. not less than 30.0 m 				K			
				v (km/h)	Crest		Sag
					Minimum	Desirable	
				60	15	20	10
70	22	35	15				
80	35	55	20				
Crown & Superelevation							
<ul style="list-style-type: none"> Normal cross fall shall be 2% Superelevated crossfall, desirable 0.04 m/m, maximum 0.06 m/m. 							
ROAD STRUCTURE							
Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than that of a Major Collector Roadway.							

Minor Arterial Roadway				<i>Design Criteria</i>			
CLASSIFICATION			DESIGN SPEED				
Urban Arterial Divided (UAD50, UAD60 or UAD70)			50 to 70 km/h				
HORIZONTAL ALIGNMENT							
Stopping Sight Distance (metres)			Minimum Centerline Radius of Curvature (metres)				
Classification	Minimum	Desirable	Classification	Superelevated Section			
				0.04 m/m	0.06 m/m		
Arterial UAD50	65	65	Arterial UAD50	90	90		
Arterial UAD60	85	90	Arterial UAD60	130	120		
Arterial UAD70	110	120	Arterial UAD70	200	190		
Minimum Curve Length			Minimum Tangent Section Length				
3 x the design speed, minimum 150 m			As per Geometric Design Guide for Canadian Roads, Section 2.14 (TAC Standards)				
TURNING MOVEMENT ACCOMODATION							
<ul style="list-style-type: none"> Based upon Warrants 							
Corner Sight Clearances							
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 							
VERTICAL ALIGNMENT							
Maximum & Minimum Grades							
<ul style="list-style-type: none"> Maximum Grade: 6.0%, desirable less than 5.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> L = KA Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. not less than 30.0 m 				K			
				v (km/h)	Crest		Sag
					Minimum	Desirable	
				50	7	10	6
60	15	20	10				
70	22	35	15				
Crown & Superelevation							
<ul style="list-style-type: none"> Normal cross fall shall be 2% Superelevated crossfall, desirable 0.04 m/m, maximum 0.06 m/m. 							
ROAD STRUCTURE							
<ul style="list-style-type: none"> Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than that of a Major Collector Roadway. 							

**Minor Arterial Roadway
Industrial Section**

Design Criteria

CLASSIFICATION			DESIGN SPEED		
Urban Arterial Divided (UAD50, UAD60, or UAD70)			50 to 70 km/h		
HORIZONTAL ALIGNMENT					
Stopping Sight Distance (metres)			Minimum Centerline Radius of Curvature (metres)		
Classification	Minimum	Desirable	Classification	Superelevated Section	
				0.04 m/m	0.06 m/m
Arterial UAD50	65	65	Arterial UAD50	90	90
Arterial UAD60	85	90	Arterial UAD60	130	120
Arterial UAD70	110	120	Arterial UAD70	200	190
Minimum Curve Length			Minimum Tangent Section Length		
3 x the design speed, minimum 150 m			As per Geometric Design Guide for Canadian Roads, Section 2.14 (TAC Standards)		
TURNING MOVEMENT ACCOMODATION					
<ul style="list-style-type: none"> Based upon Warrants 					
Corner Sight Clearances					
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 					
VERTICAL ALIGNMENT					
Maximum & Minimum Grades					
<ul style="list-style-type: none"> Maximum Grade: 6.0%, desirable less than 5.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> L = KA Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. not less than 30.0 m 				K	
		v (km/h)	Crest		Sag
			Minimum	Desirable	
		50	7	10	6
		60	15	15	10
		70	22	35	15
Crown & Superelevation					
<ul style="list-style-type: none"> Normal cross fall shall be 2% Superelevated crossfall, desirable 0.04 m/m, maximum 0.06 m/m. 					
ROAD STRUCTURE					
<ul style="list-style-type: none"> Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than that of a Major Collector Roadway. 					

Undivided Arterial Roadway				<i>Design Criteria</i>			
CLASSIFICATION			DESIGN SPEED				
Urban Arterial Undivided (UAU50, UAU60, or UAU70)			50 to 70 km/h				
HORIZONTAL ALIGNMENT							
Stopping Sight Distance (metres)			Minimum Centerline Radius of Curvature (metres)				
Classification	Minimum	Desirable	Classification	Superelevated Section			
				0.04 m/m	0.06 m/m		
Arterial UAU50	65	65	Arterial UAU50	90	90		
Arterial UAU60	85	90	Arterial UAU60	130	120		
Arterial UAU70	110	120	Arterial UAU70	200	190		
Minimum Curve Length			Minimum Tangent Section Length				
3 x the design speed, minimum 150 m			As per Geometric Design Guide for Canadian Roads, Section 2.14 (TAC Standards)				
TURNING MOVEMENT ACCOMODATION							
<ul style="list-style-type: none"> Medians, left-turn bays and intersection channelization may be required. 							
Corner Sight Clearances							
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 							
VERTICAL ALIGNMENT							
Maximum & Minimum Grades							
<ul style="list-style-type: none"> Maximum Grade: 6.0%, desirable less than 5.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. not less than 30.0 m 				K			
				v (km/h)	Crest		Sag
					Minimum	Desirable	
				50	7	10	6
60	15	15	10				
70	22	35	15				
Crown & Superelevation							
<ul style="list-style-type: none"> Crown shall be parabolic as shown in Table 3.9.2 Roadway Crown Superelevated crossfall, desirable 0.04 m/m, maximum 0.06 m/m. 							
ROAD STRUCTURE							
<ul style="list-style-type: none"> Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than that of a Major Collector Roadway. 							

Major Collector Roadway				<i>Design Criteria</i>			
CLASSIFICATION			DESIGN SPEED				
Urban Collector Undivided (UCU50 and UCU60)			50 to 60 km/h				
HORIZONTAL ALIGNMENT							
Stopping Sight Distance (metres)			Minimum Centerline Radius of Curvature (metres)				
Classification	Minimum	Desirable	Classification	Superelevated Section			
				0.04 m/m	0.06 m/m		
Collector UCU50	65	65	Collector UCU50	90	90		
Collector UCU60	85	90	Collector UCU60	120	130		
Minimum Curve Length			Minimum Tangent Section Length				
60.0 m			60.0 m				
TURNING MOVEMENT ACCOMODATION							
<ul style="list-style-type: none"> Based upon Warrants 							
Note							
<ul style="list-style-type: none"> Minimum of a 15.0 m radius curb returns. 							
Corner Sight Clearances							
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 							
VERTICAL ALIGNMENT							
Maximum & Minimum Grades							
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. not less than 30.0 m 				K			
				v (km/h)	Crest		Sag
					Minimum	Desirable	
				50	6		
				60	10		
Crown & Superelevation							
<ul style="list-style-type: none"> Crown shall be parabolic as shown in Table 3.9.2 Roadway Crown Superelevated crossfall, desirable 0.04 m/m, maximum 0.06 m/m. 							

ROAD STRUCTURE

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Road Structure:

- 50 mm Type 2 Asphaltic Concrete Wearing Course
- 75 mm Type 3 Asphaltic Concrete Base Course
- 75 mm Crushed Gravel Base Course (20 mm minus gradation)
- 150 Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

All residential roads shall be constructed in two stages, with the final lift of asphalt placed two construction seasons after the initial construction and prior to the issuance of the Final Acceptance Certificate. Specific requirements are addressed in the Developer's Service Agreement.

**Industrial / Commercial
Major Collector Roadway**

Design Criteria

CLASSIFICATION			DESIGN SPEED			
Urban Collector Undivided (UCU50 and UCU60)			50 to 60 km/h			
HORIZONTAL ALIGNMENT						
Stopping Sight Distance (metres)			Minimum Centerline Radius of Curvature (metres)			
Classification	Minimum	Desirable	Classification	Superelevated Section		
				0.04 m/m	0.06 m/m	
Collector UCU50	65	65	Collector UCU50	90	90	
Collector UCU60	85	90	Collector UCU60	120	130	
Minimum Curve Length			Minimum Tangent Section Length			
60.0 m			60.0 m			
TURNING MOVEMENT ACCOMODATION						
<ul style="list-style-type: none"> Medians, left-turn bays and intersection channelization are normally not required. 						
Note						
<ul style="list-style-type: none"> Minimum of a 15.0 m radius curb returns. 						
Corner Sight Clearances						
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 						
VERTICAL ALIGNMENT						
Maximum & Minimum Grades						
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. not less than 30.0 m 			K			
			v (km/h)	Crest		Sag
				Minimum	Desirable	
50			7	10	6	
60			15	15	10	
Crown & Superelevation						
<ul style="list-style-type: none"> Crown shall be parabolic as shown in Table 3.9.2 Roadway Crown Superelevated crossfall, desirable 0.04 m/m, maximum 0.06 m/m. 						

ROAD STRUCTURE

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Road Structure:

- 50 mm Type 2 Asphaltic Concrete Wearing Course
- 75 mm Type 3 Asphaltic Concrete Base Course
- 75 mm Crushed Gravel Base Course (20 mm minus gradation)
- 150 Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

**Industrial / Commercial
Minor Collector Roadway**

Design Criteria

CLASSIFICATION		DESIGN SPEED		
Urban Collector Undivided (UCU50 and UCU60)		50 to 60 km/h		
HORIZONTAL ALIGNMENT				
Stopping Sight Distance		Minimum Centerline Radius of Curvature		
Collector UCU50 = 65m		Collector UCU50 = desirable 140m, minimum 90m		
Collector UCU60 = 85m		Collector UCU60 = desirable 140m, minimum 120m		
Minimum Curve Length		Minimum Tangent Section Length		
60.0 m		60.0 m		
TURNING MOVEMENT ACCOMODATION				
<ul style="list-style-type: none"> Medians, left-turn bays and intersection channelization are normally not required. 				
Note				
<ul style="list-style-type: none"> Intersections with roadways of an equal or lower functional classification shall be provided with a 15.0 m curb return radii or equivalent 3 centered compound curves. Intersections with roadways of a higher functional classification shall be provided with curb return radii as required by the higher functional classification roadway. 				
Corner Sight Clearances				
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 				
VERTICAL ALIGNMENT				
Maximum & Minimum Grades				
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. not less than 30.0 m 	K			
	v (km/h)	Crest		Sag
		Minimum	Desirable	
	50	7	10	6
60	15	15	10	
Crown & Superelevation				
<ul style="list-style-type: none"> Crown shall be parabolic as shown in Table 3.9.2 Roadway Crown Superelevation is not required for Industrial/ Commercial Collector roadways, if the centerline curve radii < 140 m. 				

ROAD STRUCTURE

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Road Structure:

- 50 mm Type 2 Asphaltic Concrete Wearing Course
- 75 mm Type 3 Asphaltic Concrete Base Course
- 75 mm Crushed Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

Local Industrial/ Commercial Roadway

Design Criteria

CLASSIFICATION	DESIGN SPEED			
Urban Local Undivided (ULU40 & ULU50)	40 to 50 km/h			
HORIZONTAL ALIGNMENT				
Stopping Sight Distance	Minimum Centerline Radius of Curvature			
Collector UCU40 = 45m	Collector UCU40 = desirable 140m, minimum 60m			
Collector UCU50 = 65m	Collector UCU50 = desirable 140m, minimum 90m			
Minimum Curve Length	Minimum Tangent Section Length			
60 m	60.0 m			
TURNING MOVEMENT ACCOMODATION				
<ul style="list-style-type: none"> Medians, left-turn bays and intersection channelization are normally not required. 				
Note				
<ul style="list-style-type: none"> Intersections with roadways of an equal or lower functional classification shall be provided with a 12.0 m curb return radii or equivalent 3 centered compound curves. Intersections with roadways of a higher functional classification shall be provided with curb return radii as required by the higher functional classification roadway. 				
Corner Sight Clearances				
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 				
VERTICAL ALIGNMENT				
Maximum & Minimum Grades				
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. not less than 30.0 m 	K			
	v (km/h)	Crest		Sag
		Minimum	Desirable	
	40	7	10	4
50	7	10	6	
Crown & Superelevation				
<ul style="list-style-type: none"> Crown shall be parabolic as shown in Table 3.9.2 Roadway Crown Superelevation is not required Local Industrial/ Commercial roadways. 				

ROAD STRUCTURE

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Road Structure:

- 50 mm Type 2 Asphaltic Concrete Wearing Course
- 75 mm Type 3 Asphaltic Concrete Base Course
- 75 mm Crushed Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

**Industrial
Local Rural Roadway**

Design Criteria

CLASSIFICATION		DESIGN SPEED													
Urban Local Undivided (ULU50)		50 km/h													
HORIZONTAL ALIGNMENT															
Stopping Sight Distance		Minimum Centerline Radius of Curvature													
Collector UCU50 = 65m		Collector UCU50 = desirable 140m, minimum 90m													
Minimum Curve Length		Minimum Tangent Section Length													
60 m		60.0 m													
TURNING MOVEMENT ACCOMODATION															
<ul style="list-style-type: none"> Medians, left-turn bays and intersection channelization are normally not required. 															
Note															
<ul style="list-style-type: none"> Intersections with roadways of an equal or lower functional classification shall be provided with a 12.0 m curb return radii or equivalent 3 centered compound curves. Intersections with roadways of a higher functional classification shall be provided with curb return radii as required by the higher functional classification roadway. 															
Corner Sight Clearances															
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 															
VERTICAL ALIGNMENT															
Maximum & Minimum Grades															
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. <ul style="list-style-type: none"> not less than 30.0 m 		<table border="1"> <thead> <tr> <th rowspan="3">v (km/h)</th> <th colspan="2">K</th> <th rowspan="3">Sag</th> </tr> <tr> <th colspan="2">Crest</th> </tr> <tr> <th>Minimum</th> <th>Desirable</th> </tr> </thead> <tbody> <tr> <td>50</td> <td>7</td> <td>10</td> <td>6</td> </tr> </tbody> </table>		v (km/h)	K		Sag	Crest		Minimum	Desirable	50	7	10	6
v (km/h)	K		Sag												
	Crest														
	Minimum	Desirable													
50	7	10	6												
Crown & Superelevation															
<ul style="list-style-type: none"> Crown shall be parabolic as shown in Table 3.9.2 Roadway Crown Superelevation is not required Local Industrial/ Commercial roadways. 															

ROAD STRUCTURE

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Road Structure:

- 50 mm Type 2 Asphaltic Concrete Wearing Course
- 75 mm Type 3 Asphaltic Concrete Base Course
- 75 mm Crushed Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

Minor Residential Collector Roadway

Design Criteria

CLASSIFICATION	DESIGN SPEED			
Urban Collector Undivided (UCU50)	50 km/h			
HORIZONTAL ALIGNMENT				
Stopping Sight Distance	Minimum Centerline Radius of Curvature			
Collector UCU50 = 65m	Collector UCU50 = desirable 140m, minimum 90m			
Minimum Curve Length	Minimum Tangent Section Length			
60.0 m	60.0 m			
TURNING MOVEMENT ACCOMODATION				
<ul style="list-style-type: none"> Medians, left-turn bays and intersection channelization are normally not required. 				
Note				
<ul style="list-style-type: none"> The cumulative length of Minor Collector roadways between intersections with Major Collectors or Arterials shall conform to the following guideline; the maximum number of equivalent dwelling units serviced shall not exceed 800. AADT is to be calculated based upon 10 trip ends/day per equivalent dwelling units. Intersections with roadways of an equal or lower functional classification shall be provided with a 12.0 m curb return radii. Intersections with roadways of a higher functional classification shall be provided with curb return radii as required by the higher functional classification roadway. 				
Corner Sight Clearances				
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 				
VERTICAL ALIGNMENT				
Maximum & Minimum Grades				
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. <ul style="list-style-type: none"> not less than 30.0 m 	K			
	v (km/h)	Crest		Sag
		Minimum	Desirable	
50	7	10	6	
Crown & Superelevation				
<ul style="list-style-type: none"> Crown shall be parabolic as shown in Table 3.9.2 Roadway Crown Superelevation is not required for Minor Collector roadways if centerline curve radii $< 140m$. 				

ROAD STRUCTURE

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Road Structure:

- 50 mm Type 2 Asphaltic Concrete Wearing Course
- 75 mm Type 3 Asphaltic Concrete Base Course
- 75 mm Crushed Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

All residential roads shall be constructed in two stages, with the final lift of asphalt placed two construction seasons after the initial construction and prior to the issuance of the Final Acceptance Certificate. Specific requirements are addressed in the Developer's Service Agreement.

Local Residential Roadway		<i>Design Criteria</i>			
CLASSIFICATION		DESIGN SPEED			
Urban Local Undivided (ULU40 or ULU50)		40 to 50 km/h			
HORIZONTAL ALIGNMENT					
Minimum Stopping Sight Distance		Minimum Centerline Radius of Curvature			
Local ULU 40 = 45 m		Local ULU 40 = desirable 140 m, minimum 60 m			
Local ULU 50 = 65 m		Local ULU 50 = desirable 140 m, minimum 90 m			
Minimum Curve Length		Minimum Tangent Section Length			
60.0 m		30.0 m			
TURNING MOVEMENT ACCOMODATION					
<ul style="list-style-type: none"> Medians, left turn bays and intersection channelization are normally not required. 					
Note					
<ul style="list-style-type: none"> The cumulative length of Minor Collector roadways between intersections with Major Collectors or Arterials shall conform to the following guideline; the maximum number of equivalent dwelling units serviced shall not exceed 250. AADT is to be calculated based upon 10 trip ends/day per equivalent dwelling units or as supported by an approved traffic study. Intersections with roadways of an equal or lower functional classification shall be provided with a 9.0 m curb return radii. Intersections with roadways of a higher functional classification shall be provided with curb return radii as required by the higher functional classification roadway. 					
Corner Sight Clearances					
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 					
VERTICAL ALIGNMENT					
Maximum & Minimum Grades					
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade: 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. not less than 30.0 m 		K			
		v (km/h)	Crest		Sag
			Minimum	Desirable	
		40	7	10	4
50	7	10	6		
Crown & Superelevation					
<ul style="list-style-type: none"> Crown shall be parabolic as shown in Table 3.9.2 Roadway Crown Superelevation is not required for Residential Roadways. 					

ROAD STRUCTURE

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Road Structure:

- 50 mm Type 2 Asphaltic Concrete Wearing Course
- 75 mm Type 3 Asphaltic Concrete Base Course
- 75 mm Crushed Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

All residential roads shall be constructed in two stages, with the final lift of asphalt placed two construction seasons after the initial construction and prior to the issuance of the Final Acceptance Certificate.

Country Residential Two Lane Rural Roadway

Design Criteria

CLASSIFICATION	DESIGN SPEED				
Urban Local Undivided (ULU50)	50 km/h				
HORIZONTAL ALIGNMENT					
Minimum Stopping Sight Distance	Minimum Centerline Radius of Curvature				
Local ULU 50 = 65 m	Local ULU 50 = desirable 140 m, minimum 90 m				
Minimum Curve Length	Minimum Tangent Section Length				
60.0 m	30.0 m				
TURNING MOVEMENT ACCOMODATION					
<ul style="list-style-type: none"> Medians, left turn bays and intersection channelization are normally not required. 					
Note					
<ul style="list-style-type: none"> The cumulative length of Minor Collector roadways between intersections with Major Collectors or Arterials shall conform to the following guideline; the maximum number of equivalent dwelling units serviced shall not exceed 250. AADT is to be calculated based upon 10-trip ends/day per equivalent dwelling units. Intersections with roadways of an equal or lower functional classification shall be provided with a 9.0 m curb return radii. Intersections with roadways of a higher functional classification shall be provided with curb return radii as required by the higher functional classification roadway. 					
Corner Sight Clearances					
<ul style="list-style-type: none"> Corner sight clearances shall be in accordance with Geometric Design Guide for Canadian Roads (TAC Standards) 					
VERTICAL ALIGNMENT					
Maximum & Minimum Grades					
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade: 0.4% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. <ul style="list-style-type: none"> not less than 30.0 m 	K				
	v (km/h)	Crest		Sag	
	50	Minimum	Desirable	6	
<table border="1"> <tr> <td style="text-align: center;">7</td> <td style="text-align: center;">10</td> </tr> </table>				7	10
7	10				
Crown & Superelevation					
<ul style="list-style-type: none"> Crown shall be parabolic as shown in Table 3.9.2 Roadway Crown Superelevated crossfall, desirable 0.04 m/m, maximum 0.06 m/m. 					

Intersections

- Approach gradients to an intersection shall not exceed of 4.0%
- At the intersection of Two-Lane Rural Residential roadways the approach roadway shall match the ¼ crown grade of the through roadway at the centerline of the approach roadway.
- Lanes intersecting with a Two-Lane Rural Residential roadway shall match the grade at the edge of pavement of the Two-Lane Rural Residential roadway at the centerline of the lane.
- A Local Residential roadway is a higher Functional Classification roadway than a two-lane Rural Residential roadway.
- Where a roadway of a higher Functional Classification than a Two-Lane Rural Residential roadway approaches a two-lane Rural Residential roadway, the two-lane Rural Residential roadway shall meet the grade line intersection requirements for the higher classification roadway and the intersection is to be constructed to a Local Residential roadway standard.
- Where a roadway of a higher Functional Classification than a Two-Lane Rural Residential roadway is built to a rural standard (no curbs) the Two-Lane Rural Residential roadway shall match the grade at the edge of pavement of the higher Functional Classification roadway at the centerline of the Two-Lane Rural Residential roadway.

DRAINAGE

- Drainage shall be into roadside ditches.
- Minimum culvert diameter for road and driveway crossings is 400mm.
- Drainage design is to be so that the road is not overtopped.
- Ditches are to be designed to accommodate the major design event without the water surface coming within 200mm vertical of the edge of asphalt.

ROAD STRUCTURE

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Road Structure:

- 50 mm Type 2 Asphaltic Concrete Wearing Course
- 75 mm Type 3 Asphaltic Concrete Base Course
- 75 mm Crushed Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

All residential roads shall be constructed in two stages, with the final lift of asphalt placed two construction seasons after the initial construction and prior to the issuance of the Final Acceptance Certificate.

9.0 m Lane		<i>Design Criteria</i>			
CLASSIFICATION		DESIGN SPEED			
Urban Local Undivided (UCU30)		30 km/h			
HORIZONTAL ALIGNMENT					
Minimum Stopping Sight Distance		Minimum Centerline Radius of Curvature			
9.0 metre Lane ULU30 = 30 m		9.0 metre Lane ULU30 = 60 m Deflections may be substituted if adequate curvature is not possible.			
Minimum Curve Length		Minimum Tangent Section Length			
N/A		N/A			
TURNING MOVEMENT ACCOMODATION					
<ul style="list-style-type: none"> Medians, left turn bays and intersection channelization are not required. 					
Note					
<ul style="list-style-type: none"> The maximum length of a 9.0 metre Lane between intersections with higher functional classification roadways shall be 300 m. Lane layout shall deter vehicle shortcutting through neighborhoods. Dead end lanes are discouraged. 					
Corner Sight Clearances					
<ul style="list-style-type: none"> At the intersection of a lane and a higher functional classification roadway a corner cut shall be provided. 					
VERTICAL ALIGNMENT					
Maximum & Minimum Grades					
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. Vertical curve not required where $L < 10.0m$ 		K			
		v (km/h)	Crest		Sag
			Minimum	Desirable	
		30	2 4	2	
Crown & Superelevation					
Crown shall be a 0.03 (3%) inverted crown. Superelevation shall not be used in lanes.					
Intersections					
<ul style="list-style-type: none"> Approach gradients to an intersection shall not exceed of 4.0% Centerline grades shall be continuous through of lane/ lane intersections. 					

DRAINAGE

- Lanes should drain towards roads.
- Trapped Lows in Lanes will not be accepted.
- Installation of Catch basins in lanes is discouraged but may be accepted if the lane surface is paved for 25 metres in all directions of travel away from the catchbasin.

ROAD STRUCTURE

Minimum Structure for Graveled Lanes:

- 50 mm (150 mm for Deep Based Lanes) Crusher Run Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Structure for Paved Lanes:

- 75 mm Type 4 Asphalt, Wearing Course
- 50 mm Crusher Run Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

9.0 metre lanes shall be constructed to the final grade within one year of completion of underground utilities. Prior to issuance of a Final Acceptance Certificate as outlined in the Service Agreement, the lane shall be rehabilitated by removing contaminated material and soft spots, scarifying and re-compacting the remaining base course gravel, and the final placement and compacting additional base course gravel, shaped to the final design cross section and grades.

6.0 metre Lane		<i>Design Criteria</i>		
CLASSIFICATION		DESIGN SPEED		
Urban Local Undivided (ULU30)		30 km/h		
HORIZONTAL ALIGNMENT				
Minimum Stopping Sight Distance		Minimum Centerline Radius of Curvature		
6.0 metre Lane ULU30 = 30 m		6.0 metre Lane ULU30 = 60 m Deflections may be substituted if adequate curvature is not possible.		
Minimum Curve Length		Minimum Tangent Section Length		
N/A		N/A		
TURNING MOVEMENT ACCOMODATION				
<ul style="list-style-type: none"> Medians, left turn bays and intersection channelization are not required. 				
Note				
<ul style="list-style-type: none"> The maximum length of a 6.0 metre Lane between intersections with higher functional classification roadways shall be 300 m. Lane layout shall deter vehicle shortcutting through neighborhoods. Dead end lanes are discouraged. 				
Corner Sight Clearances				
<ul style="list-style-type: none"> At the intersection of a lane and a road a corner cut shall be provided. 				
VERTICAL ALIGNMENT				
Maximum & Minimum Grades				
<ul style="list-style-type: none"> Maximum Grade: 8.0%, desirable less than 6.0% Minimum Grade 0.5% Minimum Length of Vertical Curve not less than: <ul style="list-style-type: none"> $L = KA$ Where: L = Length of vertical curb in metres K = Vertical curve coefficient for the design speed of the roadway A = The algebraic difference in the road grades in percent. Vertical curve not required where $L < 10.0m$ 	K			
	v (km/h)	Crest		Sag
		Minimum	Desirable	
	30	2	4	2
Crown & Superelevation				
<ul style="list-style-type: none"> Crown shall be a 0.03 (3%) inverted crown. Superelevation shall not be used in lanes. 				
Intersections				
<ul style="list-style-type: none"> Approach gradients to an intersection shall not exceed of 4.0% Centerline grades shall be continuous through of lane/ lane intersections. 				

DRAINAGE

- Lanes should drain towards roads.
- Trapped Lows in Lanes will not be accepted.
- Installation of Catch basins in lanes is discouraged but may be accepted if the lane surface is paved for 25 metres in all directions of travel away from the catchbasin.

ROAD STRUCTURE

Minimum Structure for Graveled Lanes:

- 50 mm (150 mm for Deep Based Lanes) Crusher Run Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

Pavement Road Structure shall be as determined by the geotechnical study for the specific roadway section but no less than the minimum Pavement Structure for Paved Lanes:

- 75 mm Type 4 Asphalt, Wearing Course
- 50 mm Crusher Run Gravel Base Course (20 mm minus gradation)
- 150 mm Pit Run or Crushed Granular Subbase Course (50 mm minus gradation)
- 150 mm deep scarified and compacted subgrade

6.0 metre lanes shall be constructed to the final grade within one year of completion of underground utilities. Prior to issuance of a Final Acceptance Certificate as outlined in the Service Agreement, the lane shall be rehabilitated by removing contaminated material and soft spots, scarifying and re-compacting the remaining base course gravel, and the final placement and compacting additional base course gravel, shaped to the final design cross section and grades.