

## 1.0 Transportation

The objective of the Transportation Design Policy is to:

- The free flow of traffic and the safe access to property abutting the City roads cognizant of the intended function of the subject road
- To ensure connectivity among transportation systems and nodes
- Encourage and facilitate active modes of transportation including walking and cycling
- To ensure that the existing City road network will be maintained and upgraded to meet the current and future transportation needs of the City
- To identify the functional classification of roads and provide an appropriate standard for each classification

## 2.0 General

This document will be subject to revisions from time to time. The City of Quinte West reserves the right to make revisions having due regard for applications already in the review process. Individuals or groups affected accordingly will be notified by the City of Quinte West, and revisions will become effective on the date of notification.

**(Contents of this document are subject to change without further notice)**

## 3.0 References

In addition to the standards specified in this manual, transportation design shall follow current standards and in conformance with the following standards, specifications or publications:

### Key Publications

- Ontario Provincial Standard Specifications and Drawings
- Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads
- Municipal Engineers Association Design Manual
- Ontario Ministry of Transportation
- Manual of Uniform Traffic Control Devices
- Geometric Design Standards for Canadian Roads
- Geometric Design Standards for Ontario Highways
- City of Quinte West Official Plan
- City of Quinte West By-Law 98-50 Entrance Control By-Law
- Accessibility for Ontarians with Disabilities Act, 2005 as amended

### Standards

City of Quinte West Standard Drawings

- Series 400 – Transportation Standards

### Permits/Approvals

- City of Quinte West Planning Department Site Plan Approval
- City of Quinte West Public Works and Environmental Services Road Entrance Permit
- City of Quinte West ROW Work Permit

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**5.0 General**

All construction shall be in accordance with Ontario Provincial Standard Specifications and Drawings, unless specifically modified by the City of Quinte West.

Wear course asphalt shall not be placed in the same calendar year as the binder course or before the completion of a closed circuit T.V. inspection of both the storm and sanitary sewer systems.

All maintenance holes within the roadway are to be set to the base asphalt grade pending final adjustment just prior to the time the wearing course is applied.

Notwithstanding the requirements of the Ontario Standard Specifications with respect to asphalt paving, surface course asphalt shall not be applied after November 1<sup>st</sup> of any calendar year unless written approval is obtained from the City's Director of Public Works and Environmental Services.

**6.0 Road Classifications**

Criteria	Local Residential	Minor Collector	Major Collector	Arterial
Objective	Land Access	Land Access Local Traffic Movement	Land Access Traffic Movement	Traffic Movement
Interconnections	Minor Collector	Major Collector Public Transportation Routes	Minor Collector Local Residential Arterial	Minor Collector Major Collector Arterial Local Residential
Flow	Interrupted	Interrupted	Interrupted	Through
Length of Trip	Short	Medium	Medium	Long
Speed Limits	40 – 60 km/hr	40 – 60 km/hr	50 – 80 km/hr	60 – 80 km/hr
Sidewalks		One Side	Both Sides	Rural - Bicycle Lane Urban – Sidewalk Both Sides
On Street Parking	Allowed	Allowed	Prohibited	Prohibited
R.O.W. Width	20 – 26 meters 18 with written approval from the Director of Public Works	26 – 30 meters	26 – 30 meters	30 – 45 meters
Access	Allowed	Allowed	Restricted	Side Streets
Lanes	2	2	2 - 4 Centre Turning Lanes	2 or more Centre Turning Lanes
Estimated AADT	< 1000 per day	< 1000 per day	1000 - 5000	> 5000
Example:	King Street	Tripp Boulevard	Sidney Street	Highway 2

**7.0 Design Criteria**

7.1 Vertical Alignment

Vertical curves are required where longitudinal grades change by more than 1.5%. Road cross fall is to be adjusted at sag curves and detailed on the plans as necessary to maintain minimum 0.5% grade along gutter line to catchbasins. In the case of semi-urban sections, roadside ditch grades shall be designed at 1% minimum slope.

In keeping with the City of Quinte West's Stormwater Management Policy depth of flow on the roadway shall be limited to a maximum depth of 300mm. Major overland flow routes shall be directed to coincide with public lands (parks, walkways etc) to a legal and adequate outlet.

Urban / Rural - Vertical Alignment Classification / Design Speed / Alignment Criteria

Classification (AADT Range)	Design Speed Km/hr	Posted Speed Km/hr	Grades (%)		Alignment		
			Minimum	Maximum	Min. Hor. Radius	Min. "K" Value	
						Crest	Sag
Local (under 1,000)	50	50	0.5	8.0	15.0 Normal Crown	8	12
Minor collector ( < 1,000 )	50	50-60	0.5	6.0	90 Normal/Reverse Crown	8	12
Major Collector (1,000 to 5,000)	60	50-80	0.5	6.0	120 6% max Super – elev.	15	20
Arterial (>5,000)	70	60-80	0.5	6.0	190-250 6% max Super – elev.	22-25	25-30

7.2 Horizontal Alignment

All roads must be aligned to produce safe traffic flow at the design speed. Designs should be based on a normal cross fall however super elevation will be permitted depending upon road classification.

7.3 Cross Section, Right-of-Way Width, Base Composition

Road Classification	No. of Lanes	Right of Way Width (m)	Pavement/ Shoulder/ Rounding	Pavement Structure (mm)	Granular Base	
					In Earth (mm)	In Rock (mm)
Rural Sections including Semi-Urban Sections						
Local (under 1,000)	2	20.0m	7.0m Pavement 1.0m Shoulder 0.5m Rounding	40 – HL3 or 4 50 – HL8	150mm Granular "A" over 300mm Granular "B"	150mm Granular "A" over 150mm Granular "B" over 300mm Shatter
Collector - (Minor) (1,000 to 5,000)	2	20.0m	8.0m Pavement 1.5m Shoulder 0.5m Rounding	40 – HL3 or 4 50 – HL8	150mm Granular "A" over 300mm Granular "B"	150mm Granular "A" over 150mm Granular "B" over 300mm Shatter
Urban Section						
Local (under 1000)	2	20.0m or 18.0m with written approval by Public Works	8.5m Pavement	40 – HL3 or 4 50 – HL8	150mm Granular "A" over 300mm Granular "B"	150mm Granular "A" over 150mm Granular "B" Over 300mm Shatter
Collector (Minor) (1000 to 5000)	2	20.0m	9.0m Pavement	40 – HL3 or 4 50 – HL8	150mm Granular "A" over 300mm Granular "B"	150mm Granular "A" over 150mm Granular "B" over 300mm Shatter

8.0 Curb and Gutter Types

8.1 Design Criteria

Road Classification	Adjacent Land Use	Curb and Gutter Type
Local and Minor Collector	Low Density Residential	Mountable Type – O.P.S.D. 600.100 – Continuous Height Throughout
	Medium Density Residential	Mountable Type – O.P.S.D. 600.100 – Continuous Height Throughout
	High Density Residential	Barrier Type – O.P.S.D. 600.040
	All Other Land Uses	Barrier Type – O.P.S.D. 600.040
All Other Road Classifications	All	Barrier Type – O.P.S.D. 600.040

Barrier Curb and Gutter is required at all community mail box locations.

**9.0 Intersections**

Intersection spacing shall be established on the basis of providing safe stopping, turning and crossing sight distances in accordance with the stipulated design speed.

- An intersection angle of 90 degrees is preferred, 70 degrees is the minimum.
- Gradients on through streets are to have a continuous profile. Maximum and minimum grades at an intersection are 8.0% and 0.5% respectively.

All intersections will contain a 15.24 meter setback from the point of intersection of the property lines to facilitate a day lighting triangle.

9.1 Intersection Radii (From Street Class to Street Class)

Edge of Pavement Radius (From)	To	Minimum Radii (m)
Local	Local or Minor Collector	7.5 meters
Minor Collector	Any Higher Class Road	11.0 meters
Major Collector / Arterial	Any Higher Class Road	13.0 to 15.0 meters*

\* Turning templates are to be used where conditions warrant.

**10.0 Signs and Traffic Control Devices**

All traffic control devices are to conform to the Ontario Manual of Uniform Traffic Control Devices and shall meet the requirements of the Highway Traffic Act.

A street name sign indicating the name of each intersecting street will be required at each intersection. At each intersection there shall be erected an approved double unit street name sign mounted on a galvanized metal post 3.657 meters long embedded 1.219 meters in the ground and shall be painted according to a color scheme approved by the municipality.

Local intersections (2 lane)

Signs are to be high intensity grade reflectorized sheeting (3M or equivalent) mounted on 15 cm. extruded aluminum blanks (green - anodized). Lettering be 100mm (125mm) series "B" Helvetica (white – upper case).

Major intersections (4 lane)

Specialty "fingerboard" type signs are required in addition to advance warning signs at all major intersections. Type and location to be specified based on actual conditions.

In new subdivision developments, the Developer will be required to provide all traffic and street signs as required. Signs shall be located in accordance with the Manual of Uniform Traffic Control Devices.

All traffic and street name signs are to be erected prior to completion of the base course asphalt.

For private roadways not assumed by the City, warning signs indicating "**ROAD NOT ASSUMED – USE AT YOUR OWN RISK**" are to be placed at each entrance to the development at such time as

the base course asphalt is applied. The sign shall be sized such that it is legible from the roadway however it shall not exceed 3.0 square meters in size. Specific requirements can be found within the Subdivision Agreement.

## 11.0 Cul-de-Sacs (turnarounds)

The maximum length of all cul-de-sacs without a secondary access is 150m.

### 11.1 Permanent Cul-de-sacs

Permanent turning basins are to conform to the turn around detail as per OPSS.

Criteria	Standard	
Minimum Radius	Curb	13.0m
	R.O.W.	18.0m
Minimum Grade	Gutter Line	0.5%

### 11.2 Temporary Cul-de-sacs

Turning circles are to conform to temporary turn around detail as per OPSS.

Required at the limits of each phase of development where a “temporary” dead-end section of roadway would otherwise result.

Easements are required for the purpose of constructing temporary turnarounds, outside of the public road system, shall be provided to the City of Quinte West to be disposed of when no longer required. The easement shall be deeded in the form of lots or blocks with the intent that the City will relinquish its interest in the lands at such time the lands are no longer required.

## 12.0 Access

Access to the public street must comply with the appropriate City of Quinte West's regulations governing entrances By-Law 98-50 Entrance Control By-Law.

For a new entrance requests including modifications to existing driveways require a Road Entrance Permit available from the Public Works and Environmental Services Department. Prescribed permit fees and installation costs may be required.

***Private Installation of Driveway Culverts is not permitted. Any culverts or accesses installed privately may be rejected and removed at the City's discretion. Requirements, sizing and installation of culverts is the responsibility of the Public Works and Environmental Services Department.***

### 12.1 Design Criteria

Driveways shall be sloped away from structures. The use of reverse fall driveways will not be permitted.



#### 12.1.1 Residential Entrances

Entrances to land designated in the City of Quinte West Zoning By-law as approved for residential development. Residential entrances shall have a minimum top platform width of five (5) meters.

Most Rural Residential driveways are approximately 7.0m wide.

#### 12.1.2 Commercial Entrances

Entrances to land designated in the City of Quinte West Zoning By-Law as approved for commercial development. Commercial entrances shall have a minimum top platform width of nine (9) meters and be paved.

#### 12.1.3 Alternative Access

Where access is available off two or more roads, access will be taken from the road possessing the lowest classification.

#### 12.1.4 Visibility Triangles

Entrances onto visibility triangles are not permitted.

#### 12.1.5 Interchanges / Channelization

Direct access is not permitted onto any ramp or speed change lane associated with interchanges and channelized intersections except for commuter parking lots.

#### 12.1.6 Commuter Parking Lots

Direct access will not be permitted.

#### 12.1.7 Truck Climbing / Passing Lanes

Access onto truck climbing lanes/passing lanes is not permitted.

#### 12.1.8 Guiderails

Entrances which require crossing through existing guiderails are generally not permitted.

Such entrances should only be considered for existing lots if no other alternative is available and if the entrance will not endanger the travelling public. The owner is responsible for all costs related to the entrance and the modifications to the guiderail.

Note that the structural ability and proper functioning of guiderails depend upon pre-engineered parameters which require a certain length to effect the desired

performance. Therefore, the minimum length required by the OPS standards must be maintained at all times.

12.2 Grades

Road Classification	Driveway Volume	Maximum Allowable		
		From Roadway Edge to R.O.W. (public property)	From R.O.W. to House (private property)	Change in Grade
Arterial	High	1.0% - 1.0%	+4.0% / -2.0%	+/- 3.0%
	Low-moderate	1.0% - 3.0%	+8.0% / -4.0%	+/- 5.0%
Collector	Low-moderate	1.0% - 3.0%	+8.0% / -4.0%	+/- 6.0%
Local	Minimum use	1.0% - 4.0%	+8.0% / -4.0%	Controlled by vehicle clearance

*Adapted from Transportation Association of Canada Geometric Design Guide for Canadian Roads Figure 3.2.9.5 Driveway Grades.*

Maximum grades are not recommended and should only be employed in exceptional cases where the use of lesser grades is prohibitive.

12.3 Sightline Requirements

Typical distances for residential access. Longer distances may be required due to site specific conditions. Commercial / Industrial / New Streets accesses use TAC Geometric Design Guide for Canadian Roads.

Based on:

- Driver and object eye height of 1.05m.
- An object height of 1.30m above the public road and represents the roof of a vehicles.
- Height of eye is to be measured from a point 3.0 meters from the outside edge of outer traffic lane (this represents the point of location of the driver's eye when awaiting an opportunity to enter the public road)
- On public roads having two-way traffic lanes, visibility must be measured from both approaches. For a divided public road, visibility need only be measured for one direction, as vehicles only encounter other vehicles moving the same direction.

Speed Limit	Sightline distance
50 km/hr	70 meters
60 km/hr	90 meters
80 km/hr	110 meters

12.4 Driveway Spacing

Applicable for Local Residential and Minor Collector only. Higher classifications of roads will be reviewed on a case-by-case basis.

Frontage	Maximum Number of Driveways
15	1
16 – 50	2
51 – 150	3
>150	4 or more

Source: TAC Geometric Design Guide for Canadian Roads Table 3.2.9.2 Maximum Number of Driveways Based on Property Frontage

Single family residential properties are restricted to one driveway, irrespective of frontage.

**13.0 Emergency Accesses Route**

The purpose of an emergency access lane is to provide a secondary access for emergency services. Requirements for an emergency access route will be determined on a case-by-case basis and is subject to review by Quinte West Fire Services.

Adequate measures are to be incorporated in the design to prevent (adequately discourage) use by private residents or delivery vehicles.

It is the responsibility of the developer to remove all emergency accesses within their development that are no longer required.

**14.0 Sidewalks**

Location within the right of way will be determined in consultation with the City of Quinte West giving due regard to the pedestrian traffic being generated and access for the physically disabled.

The location of pedestrian crossings at intersections will be governed by pedestrian movements and the need to avoid conflicts with turning vehicles.

In new subdivisions sidewalks are not to be installed until after driveway location has been established.

14.1 Location Criteria

Road Classification	Adjacent Land Use	Sidewalk Required
Local and Minor Collector	Low and Medium Density Residential	One side of street only (1)
	High Density Residential	One side of street only
	All other Land Uses (2)	Both sides of street (2)
All Other Road Classifications	All Land Uses (2)	Both sides of Street (2)

Sidewalks are not required on cul-de-sacs, which would require a pedestrian to walk less than 150 meters from the street line of the intersecting street to the furthest point of the cul-de-sac. However, if a walkway or other public lands connects to the cul-de-sac, a sidewalk will be required to connect to the walkway, regardless of the length of the cul-de-sac.

Not required on dead end streets less than 150 meters in length unless through pedestrian access is required from street to park, street to street etc.). The 150 meters is measured from the intersecting street line to the nearest point of the cul-de-sac right of way.

In areas where no existing sidewalks exists adjacent to the development, the municipality may not require the developer to construct a sidewalk.

14.2 Sidewalk Design Criteria

Criteria	Standard
Design Standard	O.P.S.D. 310.010
Width	Minimum 1.5 meters (60 in) Reduced to 0.920m (36 in) at curb ramps
Cross Slope	Maximum: 5%; or 2% for parking spaces, access aisles, and high pedestrian traffic areas Minimum: as required to maintain proper drainage
Running Slope	Maximum: (5%); or Minimum: As permitted by the terrain
Total Slope	Total slope of the running slope plus the cross slope shall not exceed 15%
Rate of Change	The rate of change of the running slope across a 2 m (6.5 ft.) distance shall not exceed 10%
Base Granular	100 mm Granular "A" compacted to 100% SPD
Slab Thickness	Pedestrian Only      125 mm
	Entrances              175 mm or utilize epoxy coated rebar within the width of the Entrance
Location	All sidewalks and walkways are to be continuous through driveway entrances

Sidewalk ramps and stubs shall be constructed to link existing sidewalks to the curb where it has been determined by the City that there is a need for same. Any connecting link sidewalks and ramps needed on the opposite side of the street shall also be included.

14.3 Accessibility Criteria

At street intersections the curb and the sidewalk shall be depressed to meet the roadway elevations.

Criteria	Standard
Design Standard	OPSD 310.03 Accessibility for Ontarians with Disabilities Act 2005 as amended
Street Intersections	Must be depressed to meet roadway elevations
Cross Slope	Maximum: 2% Minimum: as required to maintain proper drainage.
Running Slope	Maximum: 10%
Counter Slope	Maximum: 5% for the counter slope of gutters and road surfaces immediately adjacent to the bottom of the curb ramp
Rate of Change	Maximum: 5.88% from the ramp to adjacent road or gutter

**15.0 Pedestrian Pathways**

Pedestrian walkways shall be located as required to facilitate pedestrian traffic in conjunction with the roadway sidewalk system. The walkway shall link the street system with adjacent, parks, schools and/or commercial areas.

15.1 Design Criteria

Criteria	Standard
Design Standard	Accessibility for Ontarians with Disabilities Act 2005 as amended
Width	3.0 meters minimum. Greater widths may be required to facilitate vehicular access and/or the placement of underground utilities.
Slope	2% cross slope in the direction of natural on-site drainage
Materials	Asphalt                      60mm HL3 over Sub-grade                      400mm 50mm Crusher Run Aggregate

Walkways shall be constructed with an asphalt surface and flanked on both sides with chain link fencing.

Bicycle movement shall generally be accommodated in the road right of ways. Consideration shall be given the inclusion of bicycle lanes, in addition to those which form part of the road system, in road right of ways for new arterial and collector roads, and the addition of facilities for bicycles on existing arterial and collector roads where it is financially feasible to do so.

## 16.0 Community Mail Boxes

Sidewalks are required to facilitate access to neighbourhood schools and at all Canada Post mailboxes.

At each permanent mailbox location a concrete pad shall be provided with a concrete walk connecting to both the existing road and sidewalk system. The pad and approaches shall be poured in conjunction with the sidewalk system and shall follow the sidewalk width and thickness dimensions. The City shall also require barrier curbing at each location to prevent damage to the boulevard area.

## 17.0 Boulevards

### 17.1 Landscaping / Restoration Criteria

Criteria	Standard
Surface	Urban            100mm of topsoil and nursery sod Rural            As determined by the City of Quinte West
Slope	Minimum: 2% Maximum: 8% within the public right-of-way

## 18.0 Utility Cuts

All work within the City's Right of Way including utility cuts requires a Road cut permit prior to commencement.

### 18.1 Insurance Requirements

1. Commercial General Liability (CGL) coverage of \$5 million including non-owned auto
2. Owned auto \$5 million
3. City of Quinte West added as additionally insured with respect to liability arising out of the operations performed by or on behalf of the named insured for the duration of operations on City property
4. Current WSIB certificate

### 18.2 Restoration Requirements

Trenches shall be saw cut with four sides all perpendicular or parallel in the direction of travel where possible.

Where cut trenches are within 1.0m of a curb or construction joint and the integrity of the adjacent pavement/base may be compromised, restoration shall extend to the curb or construction joint. Wherever a utility cut is parallel and coincides with a wheel path, the cut shall be extended to include the wheel path.

Overlap joints around all joints is required. The asphalt surface shall be milled 40mm and the total width of both joints and utility cut must be a minimum of 3.0m in order to

accommodate the placement of hot-mix asphalt using a mechanical spreader. Bedding and covering material shall be compacted to at least 98% of its Standard Proctor Maximum Dry Density, or in accordance with the Applicant's installation requirements, whichever is greater. If unshrinkable fill is used, backfill trench with unshrinkable fill to within 75 mm of the top of the existing surface.

**19.0 Material Specifications / Testing Requirements**

The requirements of the following Ontario Provincial Specifications shall apply:

OPSS 1010 Aggregates - Granular A and B.

OPSS 1150 Hot Mixed, Hot Laid Asphaltic Concrete.

Note: All asphalt mix designs for Hot Mix H.L.#1, #3, #3A #4 and #8 shall meet OPS specifications. The asphalt mix designs shall be submitted to the City of Quinte West for approval prior to the commencement of any paving operation.

OPSS 1350 Concrete - Materials and Production.

Materials O.P.S.S. 350, 351, 352 and 353, 1301, 1302

19.1 Concrete

Criteria	Standard	
Class of Concrete	Minimum strength -30 MPA at 28 days	
Coarse Aggregate	19mm nominal maximum size	
Air Content	6.0% to 8.0%	
Water	O.P.S.S. 1302	
Aggregate	Cement – Normal Portland Type	O.P.S.S. 1301
	Maximum Water / Cement Ratio	0.45
	Maximum Slump	75mm
	Curing Compound – White Pigmented	O.P.S.S. 1315

Quality Assurance

Concrete poured without the benefit of inspection by the designated site engineer or the engineer's inspector will be rejected automatically and unconditionally.

Unsatisfactory Concrete

Unsatisfactory concrete shall be any sampled concrete, which has a representative twenty-eight day test less than 90% of the required strength. If this result occurs the concrete structure will be removed and replaced. In addition, should the average of any five consecutive representative twenty-eight day tests fall below the required strength, then the number of tests that must be deleted to raise the average to the required strength shall be considered representing unsatisfactory concrete.

In case the tests fails the Contractor may submit core samples for testing under test method C.S.A. A23.2-14C. When the cores test out at 100% of the required strength at 50 days it will

be acceptable, if the cores fail to reach 100% of the required strength the concrete will be rejected or accepted according to the above noted "Unsatisfactory Concrete".