

Design Standard

Transportation

June 2023

City of Regina



REGINA
Infinite Horizons

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1. General

1.1. Introduction

- 1.1.1. The goal of the transportation program is to provide an efficient, safe and cost-effective transportation system. The transportation system shall minimize travel times while providing a safe environment for all modes of travel.
- 1.1.2. This design standard should be used in conjunction with the general design standard and the guiding documents listed below.
- 1.1.3. This design standard shall be used in the design of city transportation systems.
- 1.1.4. Where acts, bylaws, regulations and standards are referred to, they shall be current, amended and updated issues.
- 1.1.5. It shall be the designers' responsibility to be aware of the statutory requirements governing such works and for compliance with those requirements. The listing provided below is for guidance. Other statutory instruments not included here may be applicable.

1.2. Reference Documents

- 1.2.1. All related references are noted in Design Standard: General Information.

1.3. Definitions

- 1.3.1. All definitions are noted in Design Standard: General Information

2. Preliminary Design

2.1. Introduction

- 2.1.1. Road network shall be designed to service land use. Land use must be defined before the road network.
- 2.1.2. For greenfield development, all roadway, walkway and utility corridor requirements will be established through the Neighbourhood Plan process.
- 2.1.3. Roadway design shall generally conform to the *Geometric Design Guide for Canadian Roads*, Transportation Association of Canada (TAC), latest edition unless otherwise noted in these standards. Other references for roadway design are listed in section 1.2 refer to the latest editions.
- 2.1.4. New road networks shall be compatible with existing roads, transit routes, pedestrian networks, cycling networks, the Transportation Master Plan, and other related traffic studies.

2.2. Modelling - Software

- 2.2.1. The City of Regina uses the modelling software INRO Emme® (Emme) as a macro model to forecast trip generation and distribution on collectors and higher classifications.
- 2.2.2. The Emme model is jointly owned and operated by the Saskatchewan Ministry of Highways and Infrastructure and the City of Regina.
- 2.2.3. The City may provide Emme model outputs as requested to aid in transportation analysis.
- 2.2.4. Highway Capacity Manual (HCM) methodology shall be utilized for level of service analysis.

2.2.5. The modelling software Trafficware - Synchro ® and Trafficware - Sim Traffic ® shall be used to analyze at-grade intersections.

2.2.6. The modelling software Sidra Solutions - Sidra Intersection ® shall be used for the analysis of roundabout intersections.

2.2.7. McTrans - HCS™ shall be utilized for corridor and ramp analysis.

2.3. Modelling Traffic Analysis

2.3.1. Traffic analysis should include a pre-opening scenario, opening day scenario, short term (5 to 10 years after opening day), and long term (full buildout) or as specified by the City. Any road that will extend into future growth horizons must account for all future development that will reasonably be expected to use that roadway in the full buildout scenario.

2.3.2. The Institute of Transportation Engineers (ITE) Trip Generation Manual shall be used regarding the development's specific land use. Trips generated by existing developments in or adjacent to the study area.

2.3.3. When using the ITE Trip Generation Manual, the fitted curve equation shall be used, where it is available.

2.3.4. Notwithstanding section 2.3.2.1, where directed by the City, local traffic generation rates for similar types of development in Regina may be used.

2.3.5. Time of event analysis may be required for a special event.

2.3.6. Weekend Traffic Analysis shall be required for commercial use locations.

2.3.7. Unless exempted by the City, TAC Pedestrian and Traffic Signal Warrant Analysis methodology shall be used for pre-opening scenario, opening day scenario, short term (5 to 10 years after opening day), and long term (full buildout) or as specified by the City.

2.3.8. Traffic growth shall be based on population and employment growth, traffic forecast models, historical traffic data, and growth rates based on area transportation impact assessments. The Traffic growth should not be less than 1.5 per cent per year unless the City grants an exception for site developments in established neighbourhoods.

2.3.9. Future traffic volume shall be combined with background traffic growth and the development's traffic for the horizon year(s).

2.3.10. Count data must not be older than two years or as specified by the City.

2.4. Modelling - Parameters

2.4.1. All physical components shall be based on actual measurements where applicable and the proposed design is compliant with TAC guidelines unless otherwise specified within these standards.

2.4.2. Any traffic simulation duration should be a minimum of 60 minutes at 15-minute intervals.

2.4.3. Saturated (SAT) flow rate of 1800 vehicles per hour per lane.

2.4.4. Peak Hour Factor (PHF) based on actual counts.

2.4.5. Active Transportation counts shall be entered as actual counts if available. In the absence of actual counts, the City and applicant will agree on the parameters to use in the modeling.

2.4.6. A minimum green time of 10 seconds for minor streets should be used and 15 seconds for major streets for through movements. A minimum of seven seconds for left turns and 10 seconds for protected left turns.

2.4.7. Actuated coordinated signal timings shall be used with a cycle length of 60 – 140 seconds in five-second increments.

2.4.8. The amber time on level terrain is based on the approach speed and shall be as follows:

- ≤ 50 kilometres per hour = 3.5 seconds
- 60 kilometres per hour = 4.0 seconds
- 70 kilometres per hour = 4.5 seconds
- 80 kilometres per hour = 5.0 seconds

2.4.9. Red time shall provide the appropriate amount of time for a vehicle to clear the intersection. It is based on intersection width and posted speed.

2.4.10. Minimum all red time = 1.0 seconds.

2.4.11. Maximum all red time = 6.0 seconds.

2.4.12. Stop bar presence detection with a recall mode of none and a vehicle extension of 3 seconds shall be used for left turns, side street movements and fully actuated through movements.

2.4.13. Pedestrian Clearance times should be calculated based on the walk speeds in Table 1 that were adapted from the Manual of Uniform Traffic Control Devices. Actual crossing distance and Walk times should be no less than 7 seconds.

2.4.14. Pedestrian clearance times at critical locations for people with disabilities will require an accessibility accommodation requests to be submitted to the City for review. Walk time shall be 10 seconds in these cases unless under time-constrained situations where it may be reduced to no less than seven seconds.

2.4.15. **Table 1: Pedestrian Walk Speeds**

Pedestrian Walk Speeds	
Location	Speed (metres per second)
Seniors Complexes or Schools	0.9
Across Expressways	1.2
All other scenarios	1.1

2.5. Table 2: Road Classification

Road Classifications						
	Alleys	Locals	Collectors	Arterials	Expressways	Freeways
Typical Traffic Volumes (Average Annual Daily Traffic)	< 300	< 1,000	1,000 – <15,000	≥ 15,000	≥ 10,000	≥ 20,000
Design Speed (kilometre per hour)	30	50	50	60 – 70	80 – 100	80 – 130
Posted speed (kilometres per hour)	30	50	50	50 – 60	70 – 90	70 – 110
Minimum Intersection Spacing (metres)	As needed.	60	Unsignalized 100 Signalized 200	400	400	1,600

Note: Minimum intersection spacing is measured from centreline to centreline.

2.5.1. Roadways, alleys, pathways and walkways shall be identified and classified at the Concept Plan phase.

2.5.2. Posted speeds of greater than 50 kilometres per hour require an amendment to the *City of Regina Traffic Bylaw No.9900*.

2.6. Design Criteria

2.6.1. Table 3 provides the design criteria for at-grade intersections. Designs that do not meet these criteria would require capacity improvements to be made to achieve the service level.

2.6.2. **Table 3:** At-Grade Intersection Criteria

At-Grade Intersection Criteria						
Classification	Level of Service			Volume to Capacity Ratio		
	Individual Movement	Approach	Intersection	Individual Movement	Approach ⁽¹⁾	Intersection ⁽¹⁾
Freeway Ramps	D	D	D	0.85	0.85	0.85
Expressway	E	E	E	0.85	0.85	0.85
Arterial	F	E	E	0.90	0.90	0.90
Collector & Below	F	E	E	0.95	0.95	0.95

Note (1): Weighted V/C

2.6.3. **Table 4:** Roundabout Criteria

Roundabout Criteria						
Classification	Delay			Volume to Capacity Ratio		
	Individual Movement	Approach	Intersection	Individual Movement	Approach	Intersection
Freeway Ramps	35	35	35	0.85	0.85	0.85
Expressway	35	35	35	0.85	0.85	0.85
Arterial	50	50	50	0.90	0.90	0.90
Collector & Below	50	50	50	0.90	0.90	0.90

2.6.4. Queues of 95 percent must not exceed the turn bay's storage length or cause traffic to back into an adjacent intersection or potential conflict point. Avoid queuing into conflict points caused by railway crossings, curves with reduced sightlines, and roadways with super elevation or grades greater than 4 per cent.

2.6.5. Cyclists and pedestrians must be included in the analysis. They shall have a maximum delay of 80 seconds per movement for signalized intersections unless constrained by adjacent signal cycle lengths. They shall have 50 seconds per movement for unsignalized intersections, including roundabouts.

2.7. Road Layout

2.7.1. The general requirement for the layout of roads shall follow the City of Regina *Subdivision Bylaw No. 7748*.

2.7.2. Block faces along local roads shall be between 60 metres and 230 metres in length unless backing onto an expressway or freeway, where they can be increased in length.

2.7.3. Residential Block faces shall be not exceed 365 metres in length. Provision of a walkway emergency access as described in section 2.15 may allow for this block face length to be exceeded.

2.7.4. Collector roads shall be spaced at every 300 to 500 metres.

2.7.5. Collector roads from adjacent neighbourhoods shall extend into new neighbourhoods.

2.7.6. Arterial roads shall be spaced at every 800 to 2000 meters.

2.7.7. Arterial roads from adjacent neighbourhoods shall extend into new neighbourhoods.

2.7.8. Roads shall be laid out in a grid or modified grid where the arterial and collector roads maintain a grid layout. Local roads can be modified utilizing traffic calming, as per Section 2.10.

2.7.9. Roads are not permitted to double back except for D-shaped crescents.

2.7.10. The centerline of two intersecting streets of different widths must be aligned. Tolerance for any offset shall be per TAC standards.

2.7.11. All roads shall have two-way traffic. One-way roads are not permitted.

The City will consider one-way roads under the following conditions:

- If trip serving capacity is analysed in comparison to two-way roads at time of Neighbourhood design and is proven to be more efficient
- For the purpose of a service road
- For the purpose of a "D" Shaped crescent

- For the purpose of a long cul-de-sac with a median with a minimum width of 5.0 metres.

2.8. Spatial Organization

- 2.8.1. Roads shall always be planned for development on both sides of the road to ensure the road's maximum use.
- 2.8.2. Notwithstanding 2.8.1, roads with open space planned adjacent to the roadway, a single frontage road shall be allowed.
- 2.8.3. The transportation network shall allow the municipal reserve to be sized, oriented and located as per the Open Space Design Standard.

2.9. Buffer Strips

- 2.9.1. Buffer strips shall be designed per the City of Regina Subdivision Bylaw No. 7748.
- 2.9.2. Buffer strips are intended to separate incompatible land use.
- 2.9.3. The use of buffer strips shall be minimized where it is possible. The City prefers the use of restrictive access covenants on property title as a means for access control.

2.10. Road Traffic Calming

- 2.10.1. All forms of road traffic calming except for vertical measures from TAC Guidelines are allowed within the City.
- 2.10.2. Traffic calming may be provided by introducing access restrictions to the grid pattern along roads at 400 metres and 800 metre intervals including:
 - Breaking the road at a Municipal Reserve, Environmental Reserve or Municipal Utility parcel.
 - Breaking the road at a commercial or industrial property
 - Introducing a "D" shaped Crescent or Cul-De-Sac
 - Providing a right in/out at a collector road utilizing a raised median or turn island
 - Introducing a diverter
- 2.10.3. Where a shared space or bike boulevard are warranted, traffic calming may also be provided along a road.
- 2.10.4. Traffic calming may be provided at certain intersections by introducing a curb extension as per section 3.6, the Roads – Curb Extensions section found in this document.

2.11. Road Widths

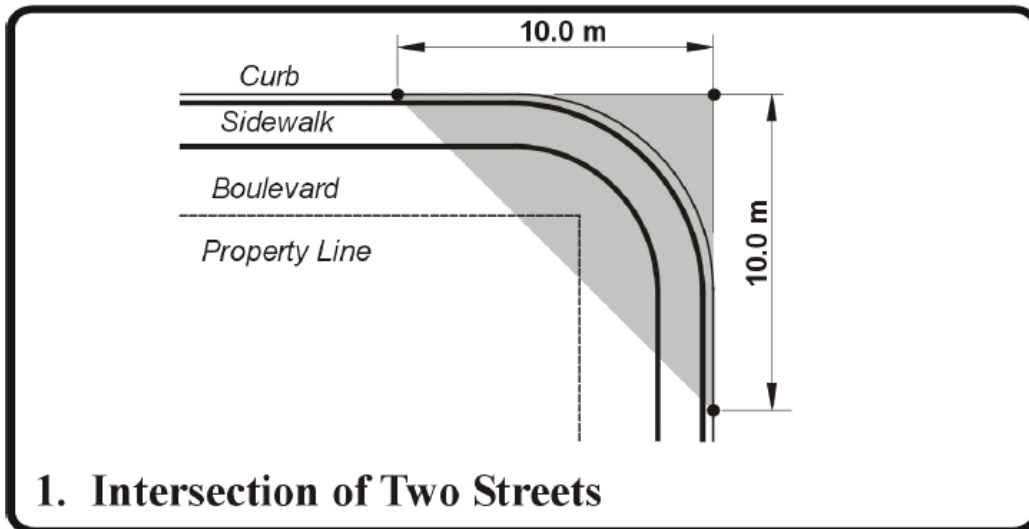
- 2.11.1. Typical road widths are determined as per Section 3.2 of this document.
- 2.11.2. **Table 5: Alley Widths**

Alley Widths		
	ROW Width	Pavement Width
Residential < 50 housing units	6.0 metres	6.0 metres
Residential ≥ 100 housing units	9.0 metres	7.5 metres
Industrial or Commercial	9.0 metres	7.5 metres

2.12. **Land Access Control**

2.12.1. All measurements in this section are measured from the point of intersection from a line drawn from the face of the curb of each road to the edge of the driveway.

2.12.2. **Figure 1: Intersection of Two Streets**



2.12.3. Driveways are permitted on local roads.

- Driveways are not permitted within 10 metres of an intersection of local roads as outlined in *The Regina Traffic Bylaw*.
- This section applies to T-Intersections roadways.

2.12.4. Driveways are permitted on collector roads.

- Driveways are not permitted within 10 metres of an intersection on collector roads.
- For collector roadways with a traffic volume of $\geq 15,000$ vehicles per day and driveway accesses within 25 metres of an intersection, a raised centre median shall be constructed to limit turn manoeuvres to and from the site. Use of channelization islands are not acceptable.

2.12.5. Residential driveways are not permitted on arterial roads.

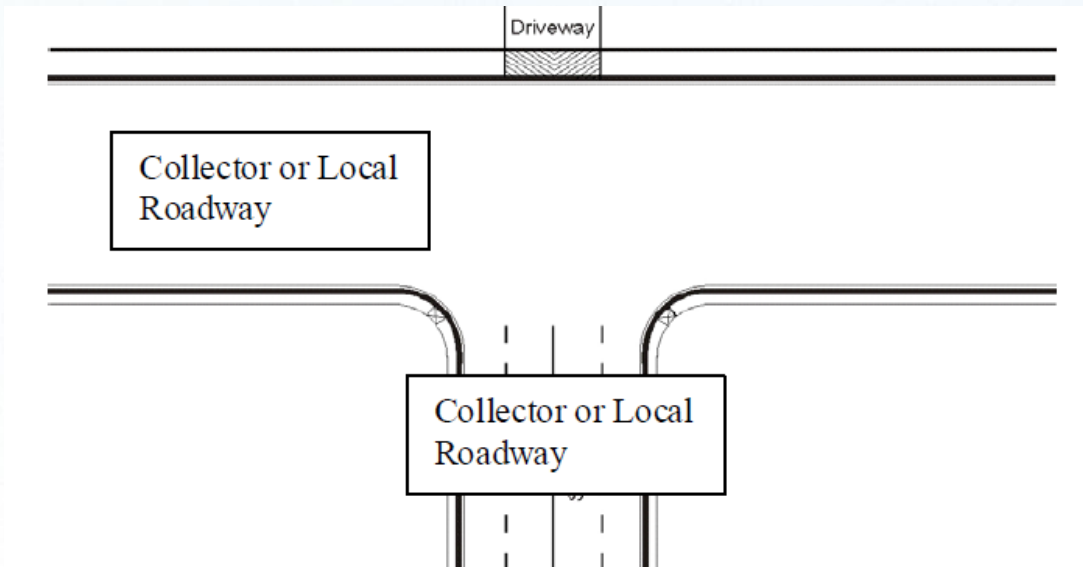
- Commercial and industrial driveways and private road access may be permitted on arterials if the primary frontage is commercial and meets the City's requirements for intersection design and spacing.

2.12.6. Driveways are not permitted on freeways or expressways.

2.12.7. The centerline of driveways shall align with median openings and the centerlines of other driveways on the opposite side of the street, except as specified in 2.12.4.

2.12.8. The centreline of driveways at T-intersections shall be aligned with the opposing street's centreline, as shown in Figure 2.

2.12.9. **Figure 2: Driveway at T-Intersection**



2.13. **Alleys**

- 2.13.1. Alleys shall not be longer than 250 metres.
- 2.13.2. Alleys are required where driveway access is not permitted on the fronting road.
- 2.13.3. T intersection of alleys will only be permitted along collector and arterial roads or along local roads where alleys back onto expressways.
- 2.13.4. Corner cut-offs shall be a minimum of 3.0 metres.

2.14. **Transit**

- 2.14.1. Transit corridors shall be located adjacent to higher density residential and commercial land use areas.
- 2.14.2. 90% of residents shall live within 400 metres walking distance along the active transportation network of a transit stop.
- 2.14.3. 100% of residents living in High Density or Medium Density defined by the Zoning Bylaw shall live within 400 metres along the active transportation network of a transit stop.

2.14.4. **Table 6:** Transit Stop Length

Transit Stop Length	
Type of Stop	Minimum Length of Stop
Mid-Block	49 metres
Upstream of an Intersection	37 metres
Downstream of an Intersection	25 metres
Note: For upstream and downstream transit stops, the length is measured from the end of the curve of the corner radius.	

- 2.14.5. Where more than one bus could be expected to stop at one time, bus stops must be 14 metres longer per bus. An additional 6 metres shall be provided for every three buses to allow for different departure times.
- 2.14.6. Neighbourhood Bus Stops shall be located every 200 to 400 meters.
- 2.14.7. Primary bus stops shall be located every 400 meters.
- 2.14.8. Express bus stops shall be located every 800 meters.
- 2.14.9. A bus stop shall not be located within 45 meters from the main door of a school.
- 2.14.10. Where routes cross, bus stops shall be located to facilitate transfers while minimizing street crossings.
- 2.14.11. Bus stops shall be located adjacent to transit generators.

2.15. **Walkways**

- 2.15.1. Walkway parcels shall comply with the City of Regina Subdivision Bylaw No. 7748.
- 2.15.2. Walkways may only be provided in the following scenarios:
 - To provide emergency vehicle access.
 - To provide access to neighbourhood facilities.
 - To meet block length requirements.
 - To meet walking distance requirements for the transit service area.
 - To meet walking distance requirements for Municipal Reserve.
- 2.15.3. Walkway parcels shall be 6.0 metres wide when providing a connection with an alley, municipal reserve space, school, or emergency access provision.
- 2.15.4. Walkways shall have a minimum pathway width of 2.7 metres and a maximum width of 3.6 metres.
- 2.15.5. Walkways required to serve as additional emergency access shall have a minimum paved width of 6.0 metres.
- 2.15.6. The pathway shall be asphalt if it connects to an asphalt pathway or connects two streets.
- 2.15.7. The pathway shall be crusher dust or equivalent if it connects to a crusher dust pathway.
- 2.15.8. The Walkway shall meet minimum illumination standards as defined by Crime Prevention practices through Environmental Design (CPTED).
- 2.15.9. Walkways provided for emergency access shall be clear of obstruction for 6.0 metres in width.

2.16. **Pathways**

2.16.1. **Table 7: Pathway Classifications**

Pathway Classifications				
Name	Width (metres)	Material	Use	Winter Maintenance
PW3.6A	3.6	Asphalt	Multi-Use – Where part of the City's pre-defined cycling network	Yes
PW3.0A	3.0	Asphalt	Multi-Use – Where not part of the City's pre-defined cycling network	Yes
PW2.4A	2.7	Asphalt	Multi-Use – Where provides short connections between cycling network and other amenities	Yes
PW2.4C	2.7	Crusher Dust	Pathways parallel to and within 100 metres of asphalt pathways.	No

2.16.2. PW3.6A shall be installed for all multi-use pathways identified in the TMP

2.16.3. Additional PW3.6A pathways may be considered if spaced at 1600 metres or greater.

2.16.4. Pathways shall not be disjointed or isolated.

2.16.5. Pathways shall not be in front of residential lots where front street access is provided to the street. Where a pathway is required on a residential street for network connectivity or access to amenities, access to the residential property shall be via back alley.

2.16.6. Pathways shall connect to civic, recreational, commercial, employment and institutional destinations.

2.16.7. Pathways shall circumnavigate parking lots.

2.16.8. Pathways internal to municipal reserves are for primarily recreational rather than transportation use.

2.16.9. Pathways should be curvilinear.

2.16.10. Pathway intersections with roads or sidewalks shall have a removable bollard(s) in the center to allow for service/emergency vehicles and additional non removable bollards as required to restrict access by other vehicles.

2.16.11. Pathways shall not be located over maintenance holes or other service accesses.

2.17. **Bikeways**

2.17.1. Bikeways shall be installed where identified in the TMP or Neighbourhood Plans.

2.17.2. Additional bikeways may be considered if spaced at 800 metres or greater.

3. Detailed Design

3.1. Road - Geometrics

3.1.1. **Table 8:** Road Geometrics

Road Geometrics						
	Alleys	Locals	Collectors	Arterials	Expressways	Freeways
Cross Section Type	Urban	Urban	Urban	Urban/Rural	Urban/Rural	Rural
Cross-slope (%)	2.0	2.5	2.5	2.5	2.5	2.5
Maximum Super-Elevation (%)	None	4	4	4 with accesses, parking, or queuing	6	6
				6 with no accesses, parking, or queuing		
Minimum Gradient (%)	0.6	0.6	0.6	0.6 Urban 0.0 Rural	0.6 Urban 0.0 Rural	0.0
Maximum Gradient (%)	4	4	4	3	4	3
Minimum Tangent Length (metres)	30	60	60	TAC	TAC	TAC
Design Vehicle	Heavy Single Unit (HSU)	Heavy Single Unit (HSU)	Standard City Bus-Unit (B12)	WB-23	Turnpike Double WB-36	Turnpike Double WB-36
<p>Note: Design vehicle for areas leading to/from or in an industrial area shall be WB-36. Note: Design vehicle for commercial areas shall be WB-23. Note: Design vehicle for local roads with transit routes or bus routes shall be a Standard City Bus (B12).</p>						

3.1.2. The required crossing angle shall be 90°.

3.1.3. Spiral curves shall be used for all arterial and above roads with super-elevation.

3.1.4. Minimum stopping sight distance shall be provided for all roads.

3.1.5. K values shall be determined to provide stopping sight distance on crest and sag curves. A vertical curve is not required if the calculated L value is less than 20.

3.2. Road Cross Sections

3.2.1. Standard cross section drawings T-1 to T-7 support this section.

3.2.2. **Table 9:** Variations in Local Road Cross Sections

Variations in Local Road Cross Sections		
Design Element	Dimension (metres)	Permitted Occurrence
Buffer	2.25+	<ul style="list-style-type: none"> • If a design element is not provided, the buffer width is increased to maintain the right of way width. • If a pathway is provided, the buffer is increased to provide 21.0 metres Right of Way.
Sidewalk	0.0	<ul style="list-style-type: none"> • Sidewalk not provided along roads < 160 metres in length and fronted by low-density housing, excluding block faces with super-mailboxes, block faces providing connectivity to parks or pathways or immediately adjacent and providing connectivity to commercial areas or schools.
	2.25	<ul style="list-style-type: none"> • Required when adjacent to transit nodes, schools or other high pedestrian generators.
	2.7 or 3.0	<ul style="list-style-type: none"> • A pathway may be substituted in place of a sidewalk where warranted. The right of way is to be increased by 3 metres.
Parking Lane	N/A	<ul style="list-style-type: none"> • Parking not permitted adjacent to curb extensions. • It does not apply to block faces adjacent to super mailboxes. • It necessitates a wider travel lane (see below).
	2.4	<ul style="list-style-type: none"> • Single parking lane permitted along roads with Low-Density Housing on one side of the street provided the other side of the street has one of the following: <ul style="list-style-type: none"> ○ Rear alley parking and is a low density ○ Flanked by low-density housing ○ Municipal Reserve less than 3.5 hectares ○ An environmental reserve
Travelled Lane	4.0	<ul style="list-style-type: none"> • When there are no parking lanes.
<p>Note: Local Industrial/Commercial to be designed to the collector (≥ 5000 vehicles per day) standards and variations.</p>		

3.2.3. Collector Roads

3.2.4. **Table 10:** Variations in Collector Road Cross Sections

Variations in Collector Road Cross Sections		
Design Element	Dimension (metres)	Permitted Occurrence
Buffer	2.25+	<ul style="list-style-type: none"> When a design element is not provided (e.g. no boulevard), the buffer width is increased to maintain the right of way width.
Sidewalk	2.25	<ul style="list-style-type: none"> Adjacent to transit nodes, schools or other high pedestrian generators.
	2.7 or 3.0	<ul style="list-style-type: none"> Pathways may be substituted in place of a sidewalk where warranted. The right of way is to be increased by 3 metres.
Boulevard	0	<ul style="list-style-type: none"> Required when adjacent to a transit stop. Requires a larger buffer.
Left Turn Lane	3.5	<ul style="list-style-type: none"> Warranted at a signalized intersection with an opposing left turn lane Warranted along < 10,000 vehicles per day collectors when the left-turn volume \geq 100 vehicles per day. Warranted along all \geq 10,000 vehicles per day collectors where left turns are permitted.
Median	3.5	<ul style="list-style-type: none"> A painted median is to be provided along < 5,000 vehicles per day collectors where left-turn lanes are warranted.
	5	<ul style="list-style-type: none"> Along \geq 5,000 vehicles per day collectors where left turns are warranted a 5.0-metre concrete median is to be provided. Median shall be continuous when back-to-back left-turn lanes are within 100 metres of each other, measured from the taper.
ROW	22+	<ul style="list-style-type: none"> When a pathway or median is provided, the right of way is increased by the design element's width.

3.2.5. Arterial Roads

Table 11: Variations in Arterial Road Cross Sections

Variations in Arterial Road Cross Sections		
Design Element	Dimension (metres)	Permitted Occurrence
Buffer	1.45+	<ul style="list-style-type: none"> If a design element is not provided (e.g. no sidewalk), the buffer width is increased to maintain the right of way width.
	5.0 +	<ul style="list-style-type: none"> When along a gateway with no pathway or sidewalk, the buffer must be increased to maintain the minimum right of way width (see below).
Sidewalk	0	<ul style="list-style-type: none"> No sidewalk along gateways coming from an expressway or higher-level road with no pedestrian accommodations.
	2.25 or 3.0	<ul style="list-style-type: none"> When adjacent to transit nodes, schools or other high pedestrian generators. Wider sidewalks are required where furnishings and pedestrian amenities are provided on sidewalk.
	2.7 or 3.0	<ul style="list-style-type: none"> Pathways may be substituted in place of a sidewalk where warranted.
Boulevard	0	<ul style="list-style-type: none"> Required when adjacent to a transit stop Requires a larger buffer.
Parking Lane	3.5	<ul style="list-style-type: none"> Can be provided on arterials with < 20,000 vehicles per day and fronted by low or medium-density housing. Must be designed as a layby
Travelled Lane	3.5 x 4+	<ul style="list-style-type: none"> Additional lanes may be required to maintain a minimum acceptable level of service or volume to capacity ratio.
	3.7	<ul style="list-style-type: none"> Along commercial or industrial areas.
	4.0	<ul style="list-style-type: none"> Adjacent to curb extensions.
Left Turn Lane	3.5 x 2	<ul style="list-style-type: none"> Double left-turn lanes warranted if ≥ 300 vehicles per day Double left-turn lanes must be channelized.
Right Turn Lane	3.5	<ul style="list-style-type: none"> At intersections with ≥ 100 vehicles per day, turning right.
Median	5.0 +	<ul style="list-style-type: none"> Medians larger than 5.0 metres are required to accommodate double left-turn lanes.
ROW	33 +	<ul style="list-style-type: none"> When a pathway, parking lane, wider travel lanes, additional travel lanes, double left-turn lanes, right turn lanes are provided, the right of way is increased by the width of the additional design elements.

3.3. Roads - Temporary

- 3.3.1. A temporary road is required in a new subdivision to provide an alternate access route when there are more than 50 planned residential units utilizing single access.
- 3.3.2. When the Developer's proposed subdivision residents use the temporary road for more than 12 months, it shall be constructed to a road's completed paving stage.
- 3.3.3. A temporary road constructed through or flanking residential lots shall have a dust-free surface.
- 3.3.4. The removal of temporary roads shall be considered in a Servicing Agreement. The Developer and the City shall agree on the timing of

removal and reasonable dust attenuation measures to avoid unnecessary costs.

- 3.3.5. The temporary road will be used by construction traffic only and will be taken out of service before residential occupancy of the subdivision.
- 3.3.6. The road shall be constructed to the interim gravel stage with a 3% cross-slope and no curbs and gutters. When the temporary road crosses the curbs, gutters and sidewalks of the adjoining roads, the provision shall be made to permit regular vehicle movement across the curbs.
- 3.3.7. A road terminates mid-block and has no provision for egress, and a temporary paved turnaround shall be constructed to a cul-de-sac standard with no sidewalk. The temporary paved turnaround shall be designed to permit expected traffic (minimum of a WB15) to perform a 180° turn manoeuvre in one operation. A temporary paved turnaround is not required where the termination is less than 15 metres from the intersection.

3.4. Roads - Traffic Islands

- 3.4.1. Traffic islands are not permitted in residential cul-de-sacs.

3.5. Roads - Laybys

- 3.5.1. Laybys may be constructed to provide a loading, parking or transit boarding area in front of a building where on-street unloading or parking is not available.
- 3.5.2. Laybys can only be constructed on collector and above roads.

3.6. Roads – Curb Extensions

- 3.6.1. Curb extensions may be considered along collector or arterial roads with parking lanes where traffic calming is desired, or high pedestrian crossing movements occur.
- 3.6.2. Curb extensions are only permitted along the departing parking lane.
- 3.6.3. It must be demonstrated through a Transportation Impact Assessment that the proposed curb extension will not adversely affect the level of service, turning pathways, transit stops or bike lanes.
- 3.6.4. Curb extensions are illustrated in Appendix T6 and include the following aspects:
 - The curb extension shall maintain a separation of at least 0.6 metres from the lip of the gutter from the adjacent drive lane.
 - Curb extensions shall extend 10 metres past the intersection corner radius.
 - Curb extensions shall terminate at a 45° angle with 5 metres back-to-back radiuses.
 - Driveways are not permitted in any part of the curb extension.
 - Parking is not permitted in any part of the curb extension.

3.7. Roads – Medians

- 3.7.1. Turn bays shall provide storage sufficient to accommodate the 95th percentile queue.
- 3.7.2. Medians along collector streets should extend for minimum length of 15 metres from the intersection.
- 3.7.3. Medians along arterial streets should extend for a minimum length of 30 metres from the intersection.

3.8. Roads – Curbs

3.8.1. **Table 12:** Urban Cross-Section Curb Types

Urban Cross-Section Curb Types	
Type of Road	Type of Curb
Lane	None
Local (Front Driveway Access)	Rolled
Local (Rear Access) ⁽²⁾	Barrier
Local (Industrial or Commercial)	Barrier
Collector	Barrier
Collector (Industrial or Commercial)	Barrier
Arterial	Barrier
Expressway (\leq 70 kilometres per hour posted)	Barrier or None ⁽¹⁾
Expressway (\geq 80 kilometres per hour posted)	None ⁽¹⁾
School and Playground Zones	Barrier

Note: All curb radii shall be barrier curb except for pedestrian ramps.
 (1) **None is required for rural cross-sections, except at signalized intersections, intersections with pedestrian movements, or where requested by the City.**
 (2) **Where front access overlay zone is applied, rolled curb would be allowed.**

3.9. Roads - Curb Radii

3.9.1. **Table 13:** Curb Radii

Curb Radii	
Intersection Type	Radius
Collector/Collector Collector/Local Local/Local	9 metres
Arterial/Arterial Arterial/Collector	12 metres
On Bus Routes where buses will turn.	12 metres
All Industrial Zoned	20 metres
All Heavy Long Combination Routes	Radius shall be designed for Turnpike Double WB-36.

3.10. **Roads – Trees**

3.10.1. Trees shall be provided in all portions of medians ≥ 5.0 metres in width provided the 5.0 metres section of the median is at least 20 metres in length.

- Where possible, trees shall be planted in the middle of the median.
- Any electrical in the median shall be offset by at least 1 metre from the trees' centerline.
- Trees shall not be planted within 20 metres of an intersection, measured from the top bar.

3.10.2. Trees shall be planted in all boulevards or buffers ≥ 2.25 metres.

- Trees shall not be planted within 15 metres of an intersection, measured from the top bar.
- Any electrical in the boulevard shall be offset by at least 1.0 metres from the trees' centerline.

3.10.3. Trees shall not be located between driveways that are less than 4.0 metres apart.

3.10.4. For additional tree placement requirements, see the Open Space Design Standard.

3.11. **Roads - Lighting**

3.11.1. If a road light is close to an intersection, it shall be positioned so that the pole placement is acceptable for erecting or mounting a stop, yield, or pedestrian crossing sign on it.

3.11.2. Road lights shall not be located between driveway pads that are less than 2.5 metres apart.

3.11.3. Road lights shall not be located in or closer than one meter to a driveway pad.

3.11.4. Roads with temporary ends shall have a street light temporarily installed at the end.

3.11.5. Road lighting is required on all paved roads except alleys.

3.11.6. Lighting shall provide for Dark Sky compatibility.

3.11.7. Lighting adequacy shall adhere to the standards in the Saskpower Roadway Lighting Design Guide.

3.12. **Pavement Designs**

3.12.1. Minimum pavement structures for roadways less than 15,000 vehicles per day and less than 400 trucks per day are shown in City of Regina Standard Construction Specifications and Drawings.

3.12.2. A new pavement design shall be completed for roadways with traffic volumes \geq of 15,000 vehicles per day or \geq 400 trucks per day.

3.12.3. Roadways with urban cross sections shall have longitudinal edge drains with perforated drainage pipe.

3.12.4. Roadways with rural cross-sections do not require longitudinal edge drains with perforated drainage pipe provided that the granular material is free draining.

3.13. **Pavement Life Cycle Cost Criteria**

3.13.1. A life cycle cost analysis (LCCA) shall be prepared for new pavement designs. The LCCA shall be based on the present worth analysis method and include as a minimum:

- Initial Capital Cost
- Rehabilitation Costs
- Annual maintenance costs
- Residual value
- Analysis period of 50 years
- Discount rate (I) = 2% (i.e. difference between interest rate and inflation rate)
- Road User Costs for rehabilitation and maintenance activities calculated with the following formula:
- Road User Cost = Average Daily Traffic x Occupancy x Average Delay (hours) x Average Hourly Rate
- where: Occupancy = 1.5 person/vehicle
- Average hourly rate = \$25/hour

3.14. **Pavements Design Criteria**

- 3.14.1. Pavements for new roads shall be designed for a 20-year traffic loading and a 50-year life cycle.
- 3.14.2. Pavement for rehabilitated roads shall be designed for a 15-year traffic loading and a 50-year life cycle (measured from the original build).
- 3.14.3. Equivalent single-axle loads (ESALs) shall be estimated using the following equation:
- 3.14.4. $ESAL = (ADT) (T\%) (TF) (G) (D) (L) (365) (n)$
- 3.14.5. where:
- 3.14.6. ADT = average daily traffic at the start of the design period
- 3.14.7. T% = percentage of trucks included in the ADT, minimum of 5%
- 3.14.8. LEF = load equivalency factor
- 3.14.9. G = traffic growth factor
- 3.14.10. D = directional distribution factor
- 3.14.11. L = lane distribution factor
- 3.14.12. n = design period in years
- 3.14.13. In the absences of other reliable information, the following shall be assumed:
- 3.14.14. D = 50/50 directional split.
- 3.14.15. L = 60 % lane 1, 40 % lane 2, design shall be for the greater of the two.
- 3.14.16. $G = \frac{(1+g)^n - 1}{g}$, where g is the annual growth rate in traffic volume.
- 3.14.17. LEF = use the following values unless otherwise supported by actual traffic classification counts.
- 3.14.18. **Table 14:** Load Equivalency Factors

Load Equivalency Factors	
Percentage of Trucks (%)	Load Equivalency Factor
5	0.6
10	1.2
20	2.4

- 3.14.19. Pavements shall be designed for a minimum Design Reliability, R , 90% or a standard normal deviate, $Z_R = -1.282$.
- 3.14.20. For flexible pavements, the overall standard deviation, SO , shall range between 0.35 and 0.50, with 0.45 being typical.
- 3.14.21. An initial serviceability index, p_o , of 4.0, is required for new construction and shall not be less than 3.5 for rehabilitation.
- 3.14.22. The terminal serviceability index, p_t , shall be 2.5.
- 3.14.23. The untreated subgrade strength shall use a minimum M_R of 30 MPa or CBR of 2.5 unless supported by a geotechnical investigation.
- 3.14.24. **Table 15:** Flexible Pavements Drainage and Layer Coefficients

Flexible Pavements Drainage and Layer Coefficients				
Material	Minimum Layer Thickness (millimetres)	CBR	Layer Coefficient (ai)	Drainage Coefficient (mi)
Asphalt	130	N/A	0.40	N/A
Base Course	150	80	0.14	1.00
Subbase Course	150	20	0.10	1.00
Drain Sand	150 ¹	N/A	0.02	1.00

(1) Drain sand is not required where perforated drainage pipe is not installed

- 3.14.25. If the granular base or subbase stabilization or reinforcement is proposed, it shall be supported by an evaluation completed by a geotechnical engineer.
- 3.14.26. For rigid pavements, the minimum thickness of concrete shall be 200 millimetres.

3.15. Pathways General

- 3.15.1. Pathways shall provide a 2 metres horizontal clearance from physical obstructions.
- 3.15.2. Pathways shall provide a 3 metres vertical clearance from physical obstructions.
- 3.15.3. Pathways shall not be located over maintenance holes, catch basins, water valves, and similar infrastructure.
- 3.15.4. No obstructions to visibility shall be within 10 metres of junctions with other pathways and streets.
- 3.15.5. Safety railings shall be installed when a pathway is within two metres of the top of a 3:1 slope or steeper, and the slope is greater than or equal to 1 metre in depth.

3.16. Pathway Entrances

- 3.16.1. A pedestrian ramp and a standard removable bollard shall be placed at an entrance to a street pathway.
- 3.16.2. Swing gates are required in place of removable bollards where a pathway intersects with an arterial road or expressway.
- 3.16.3. No maintenance holes, catch basins, water valves, and similar infrastructure shall be located at pathway entrances.

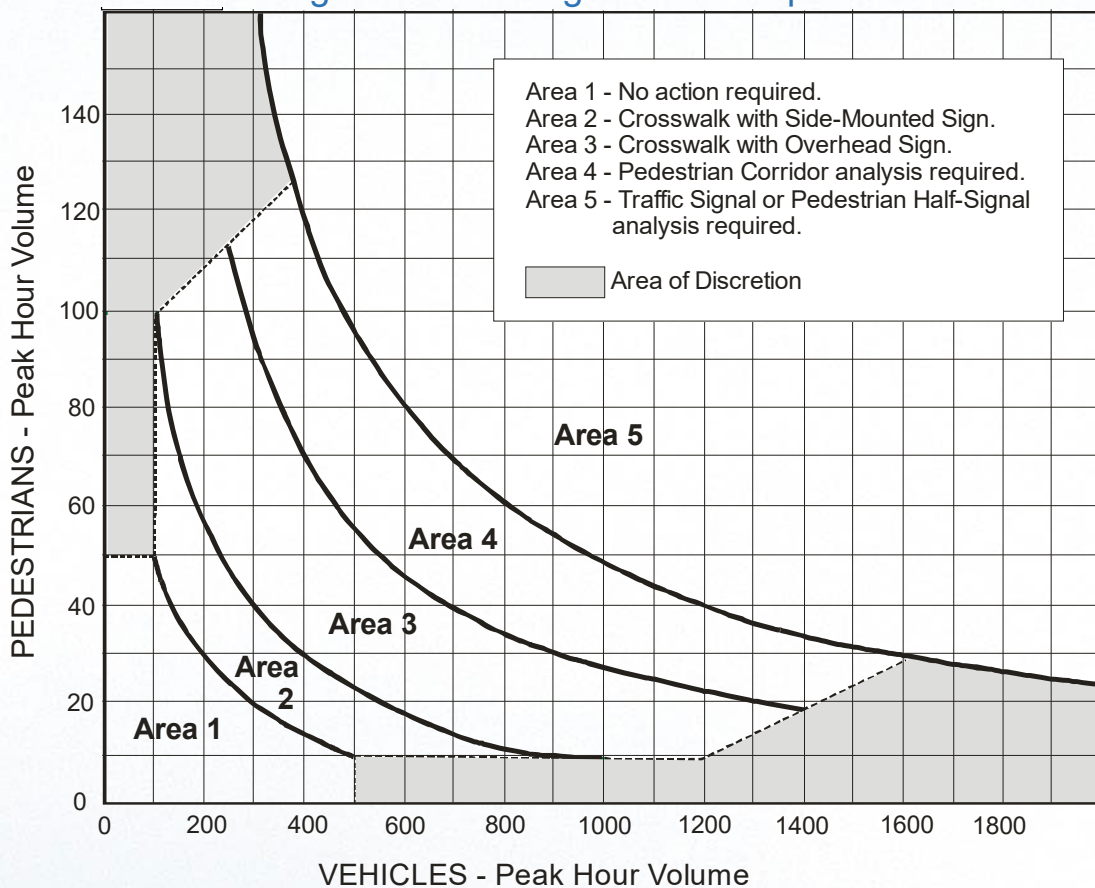
3.17. Pathway Signage

- 3.17.1. Standard tower signs shall be provided at pathway entrances.
- 3.17.2. Centreline pavement marking shall be provided on all PW3.6A.

3.18. **Pathway Crossings**

- 3.18.1. At-grade mid-block crossings on expressways are not permitted.
- 3.18.2. Mid-block crossings on collectors or arterial streets may be permitted if they are considered through application of the Crossing Control Graph in Figure 3.
- 3.18.3. Figure 3 shall be used to determine the type of crossing control device for sidewalks and pathways.
- 3.18.4. For this graph, cyclists on pathways shall be counted as pedestrians.

Figure 3: Crossing Control Graph



3.19. **Pedestrian Crosswalk Signs**

- 3.19.1. Mid-block crosswalks on collector and above streets shall have a minimum of overhead crosswalk signs and painted crosswalks; and
- 3.19.2. Mid-block crosswalks on local streets shall have side-mount crosswalk signs and painted crosswalks.

3.20. **Pedestrian Ramps**

- 3.20.1. Pedestrian ramps shall be installed at all intersection corners where a sidewalk or pathway is constructed.
- 3.20.2. For intersections with 12 metres or greater radii curbs, two pedestrian ramps shall be installed at all corners such that pedestrians are directed perpendicularly to the street.
- 3.20.3. On the continuous side of T-intersections, pedestrian ramps shall be installed on both sides of the intersection perpendicular to one of the

corners unless there is no sidewalk present on the non-continuous side of the intersection.

3.20.4. Pedestrian ramps shall be installed at all midblock crossings.

3.21. **Pedestrian Bridges and Overpasses**

3.21.1. Bridges shall be designed to accommodate the type of use for the pathway, site, maintenance, and snow removal.

3.21.2. The minimum deck width shall be 3 metres between railings.

3.22. **Pedestrian Underpasses**

3.22.1. The minimum height shall be 3 metres.

3.22.2. The minimum width shall be 4 metres.

3.22.3. Pedestrian underpasses shall not exceed 50 metres in length.

3.23. **Mail Boxes**

3.23.1. Mailboxes must be on a collector or below streets.

3.23.2. Mailboxes must be adjacent to a parking lane or layby.

3.23.3. Mailboxes must be adjacent to or connected to a sidewalk.

3.23.4. Rolled curb or accessibility ramp is required when necessary to provide proper access to the mailbox location.

3.24. **Street Names – General**

3.24.1. Street names must adhere to the requirements of the Civic Naming Committee Guidelines Policy 2018-OCC-G0005.

3.24.2. Street names must remain continuous and must not change when they pass from one subdivision to the next.

3.24.3. Collector and arterial streets that pass between neighbourhoods must be named from the City's preapproved street name list.

3.24.4. Discontinuous streets should not have the same street name.

3.24.5. Street names that sound similar to other existing or proposed streets shall be avoided.

3.24.6. Street name signs are required at all intersections.

3.25. **Street Names - Suffixes**

3.25.1. Table 16 lists all valid street types available in Regina according to the typical configuration for which they are appropriate. The name in full or the abbreviated version is to be applied to signage and computer database applications.

3.25.2. Table 16: Street Suffixes

Street Suffixes		
Street Type(s)	Abbreviation(s)	Description
Highway	Hwy	Refers to federal or provincial designated roads
Expressway, Freeway, Bypass	Exp, Fwy, Byp	Limited-access road
Alley, Lane	Aly, Ln	Narrow roads.
Avenue	Ave	It is used to describe streets that run east-west.
Bay	Bay	A cul-de-sac of relatively short length.
Boulevard, Parkway	Blvd, Pkwy	A major street that is wide and often tree-lined.
Circle		A local road that completes a loop upon itself.
Court, Cove, Mews	Crt, Cove, Mews	A cul-de-sac.
Crescent	Cres, Cr	A curved local street that usually opens onto the same street at each end
Drive	Dr	A major street or collector road that may be scenic.
Estate	Est	A private road
Gate	Ga	A short local street giving access to a subdivision from a major street
Grove	Grv	A local road adjacent to an open space area.
Heights, Highlands, Ridge	Hts, N/A, N/A	A private road, or local road located on hills or escarpments.
Laneway	Lwy	Narrow road with laneway housing.
Loop	Loop	A local road with a half-circle shape
Meadows	News	A minor road.
Place, Point	Pl, Pt	A local road with no other intersecting streets, or cul-de-sac near water or on a hill or escarpment.
Road, Way	Rd, Wy	A road that may change direction.
Service Road	Service Rd.	A local road that runs alongside the main road, usually a highway, to provide local access.
Square	Sqr	A road embracing an open space area or park.
Street	St	Used to describe streets that run north-south
Walk	Walk	They are applied to pedestrian walkways only.

3.26. **Traffic - Traffic Control Requirements**

3.26.1. **Table 17:** Traffic Control Requirements

Minimum Traffic Control Requirements		
Minor Street	Major Street	Intersection Control
Local	Local	Yield
	Collector (< 3000 vehicles per day)	Yield
	Collector (≥3000 vehicles per day)	Stop
	Arterial	Stop
Collector (< 3000 vehicles per day)	Collector (<3000 vehicles per day)	Yield
	Collector (≥ 3000 vehicles per day)	Stop
	Arterial	Stop
Collector (≥ 3000 vehicles per day)	Collector (≥ 3000 vehicles per day)	4-Way Stop
	Arterial	Stop
Arterial	Arterial	Traffic Signal

3.26.2. Traffic signals are warranted if there are three or more approach lanes from the minor street at an intersection.

3.26.3. Traffic signal warrants must be reviewed by the City before implementing traffic control.

3.27. **Bollards**

3.27.1. Bollards shall be provided across the end of a walkway which terminates in an alley;

3.27.2. Bollards shall be provided across the end of an alley cul-de-sac which abuts a road;

- 3.27.3. Bollards shall be provided along the length of an alley which parallels an adjacent road or park area;
- 3.27.4. Bollards shall be provided at the end of a temporary road;
- 3.27.5. Bollards shall be provided where a short-cutting problem exists or potentially exists whereby vehicles access/egress a road by driving through ditches or side boulevards to their destination.
- 3.27.6. Bollards shall be provided at railway or utility right-of-way as required by the City or the railway/utility company.

3.28. Security Fence

- 3.28.1. All roads constructed adjacent to residential land use with a posted speed limit greater than 50 kilometres per hour shall be fenced.
- 3.28.2. Security fencing shall be installed along roads with a posted speed limit greater than 70 kilometres per hour
- 3.28.3. Gaps in security fencing may be introduced where a formal active transportation connection is provided or where users can be safely directed to an intersection crossing.
- 3.28.4. Security fencing shall be installed adjacent to all railways.
- 3.28.5. Security Fence shall be either a 1.83 metres high chain-link fence, a noise wall as per the City Noise Attenuation Policy, a concrete subdivision wall, or any other material as approved by the City.
- 3.28.6. Chain link security fences may be installed on public property.

4. Site Design

4.1. Driveways - General

- 4.1.1. Driveway crossings shall only be permitted where:
- 4.1.2. Movement in and out of the driveway crossing will cause as little traffic interference as possible; and
- 4.1.3. A parking pad exists, or there is a valid permit or physical evidence of intention to construct one on private property.
- 4.1.4. Installation of driveway crossings is not required where rolled curb exists except where reinforced bars are required as per the City of Regina Construction Standards.
- 4.1.5. Driveway crossings are not permitted within the sightline triangles identified in Figures 4, 5 and 6.
- 4.1.6. Sites are permitted a maximum of two one-way driveways or one two-way driveway per frontage.

4.2. Driveways – Design

- 4.2.1. A two-way driveway crossing shall be positioned at a 90° angle to the street.
- 4.2.2. A one-way commercial driveway crossing shall be angled in the direction of entry or exit. The minimum angle allowable for a one-way driveway crossing is 70°.
- 4.2.3. A driveway crossing's width shall be constructed to align with the driveway or parking pad on private property.
- 4.2.4. A driveway shall generally not exceed the width specified in Figures 4, 5 and 6
- 4.2.5. The City must approve the location and dimensions of all multiple driveways before installation.
- 4.2.6. Wider access design will be considered with supporting rationale and drawings indicating the design vehicle's turning path to support the proposed size.

4.2.7. The City must approve the location and dimensions of all multiple driveways before installation.

Figure 4: Residential Driveway Crossing Design

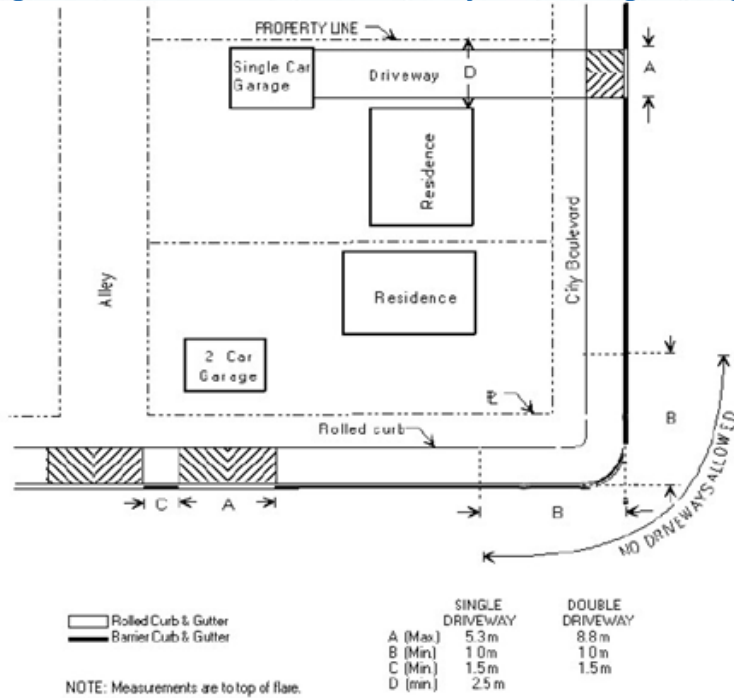


Figure 5: Commercial Driveway Crossing Design

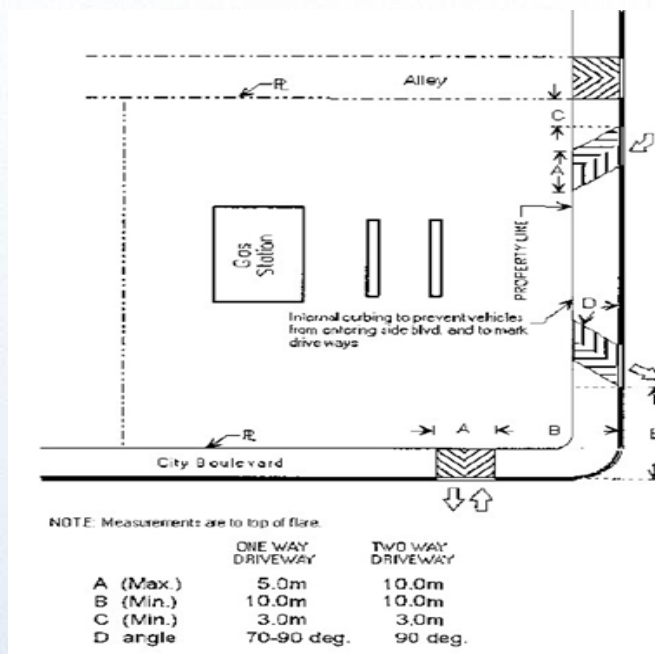
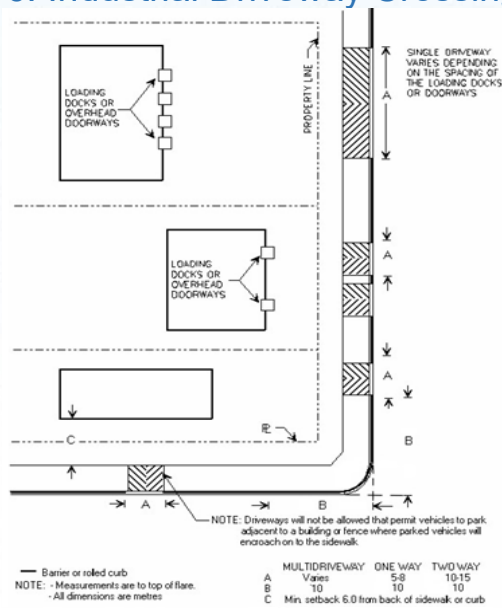


Figure 6: Industrial Driveway Crossing Design



4.3. Queuing Spaces

- 4.3.1. A drive-in business shall provide sufficient on-site queuing space for vehicles awaiting drive-in service determined at peak hours of the week.
- 4.3.2. **Table 18:** Minimum Queuing Spaces for Drive-In Business

Minimum Queuing Spaces for Drive-In Business		
Type of Business	# of Queuing Spaces Per Lane	Unobstructed Bypass Aisle
Bank	3	4.0 metres minimum
Car / Truck Wash	5	4.0 metres minimum
Eating Place	5	4.0 metres minimum
Off-Sale Beer and Wine Pick-Up	5	4.0 metres minimum

4.3.3. Notwithstanding the minimum spaces provided in Table 18, the City may require a Traffic Impact Assessment (TIA) to determine the minimum number of vehicle queuing spaces, taking into consideration:

- the design of the total site development;
- the nature of the proposed use; and
- traffic generation characteristics of similar uses.

4.4. Loading Spaces

4.4.1. Every off-street loading space shall be hard-surfaced if the access is from a road or land which is hard-surfaced.

- All accesses from a road to the loading space must be hard-surfaced.
- Hard surfaced loading spaces and accesses shall be constructed of concrete, asphalt or an equivalent dust-free material suitable for the vehicle loading.

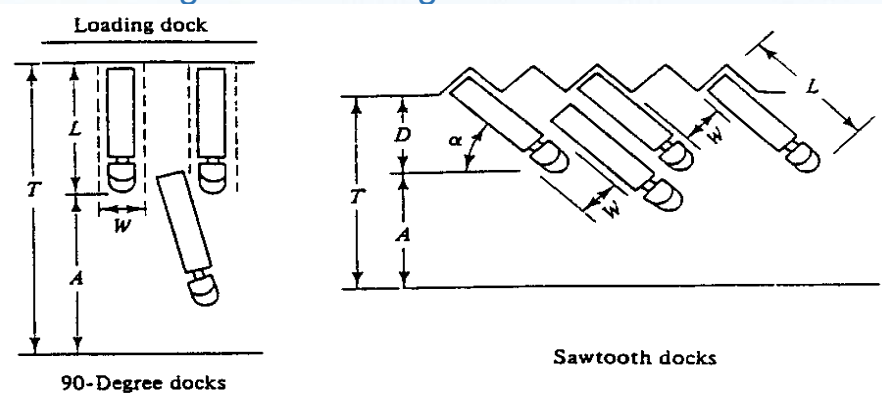
4.4.2. Delivery spaces shall conform to the minimum requirements in Table 19.

- Where tractor-trailer deliveries are expected on a premise, the design vehicle shall be a WB-50.

4.4.3. **Table 19:** Required Loading Berth Dimensions

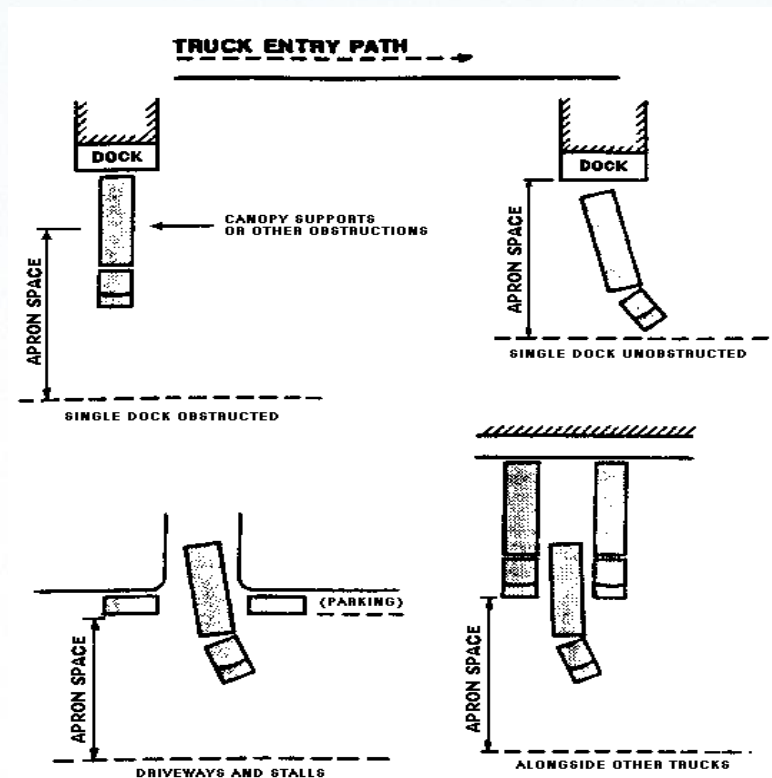
Required Loading Berth Dimensions						
Design Vehicle	Length in Metres (L)	Dock Angle (α)	Clearance in Metres (D)	Berth Width in Metres (W)	Apron Space in Metres (A)	Total Offset in Metres (T)
Delivery Truck Space - Two Axles	5.67	90°	5.67	3.00	7.14	12.81
				3.65	6.35	12.02
				4.26	5.89	11.56
		60°	4.98	3.00	5.20	10.18
				3.65	4.52	9.50
				4.26	3.96	8.94
		45°	4.08	3.00	4.19	8.27
				3.65	3.62	7.70
				4.26	3.28	7.36
Loading Space - (WB-50) 50 Foot Wheel Base	16.76	90°	16.76	3.00	23.46	40.23
				3.65	21.94	38.70
				4.26	20.42	37.18
		60°	14.63	3.00	16.76	31.39
				3.65	15.54	30.17
				4.26	14.02	28.65
		45°	11.88	3.00	13.71	25.60
				3.65	12.19	24.07
				4.26	11.27	23.16

Figure 7: Loading Berth Dimensions



- 4.4.4. Every loading facility shall be located on the same building site as the use it serves.
- 4.4.5. All loading areas shall be reserved and marked for loading purposes.
- 4.4.6. Either pavement marking or sign shall provide directional information to assist traffic flow.
- 4.4.7. All loading spaces shall be located so that vehicles using the spaces do not project into any public right-of-way or otherwise extend beyond the property boundaries.
- 4.4.8. All loading spaces shall be located so that vehicles using the spaces would not be required to back to, or from, an adjacent street, sidewalks or other public rights-of-way.
- 4.4.9. No loading spaces shall be provided within a minimum front yard.
- 4.4.10. No loading spaces shall be provided within the minimum side yard on a lot:
- within the IP Industrial Prestige Zone
 - within or abutting a Residential Zone
- 4.4.11. Loading spaces provided within the minimum side yard shall be open and uncovered.
- 4.4.12. All loading spaces shall be provided with a manoeuvring area sufficient to allow vehicles to move in and out of the loading space within private property.
- No manoeuvres shall be performed within the public right-of-way.
 - The circulation pattern and loading position shall be designed for counter-clockwise entry and left-side backing manoeuvre as per Figure 8.

Figure 8: Loading Berth Configurations and Approach



4.5. Maintenance Strip

- 4.5.1. Surface treatment adjacent to a registered road right-of-way and within 0.6 metres of the back of the curb shall be a surface suitable for road sand and salt.
- 4.5.2. Suitable surfacing includes but is not limited to the turf, unit paving, concrete or asphalt.
- 4.5.3. Permeable mulch is not permitted.

4.6. Non-Residential Parking

- 4.6.1. The parking area shall be paved with a minimum of 50 millimetres of asphaltic concrete.
- 4.6.2. Each parking space in the parking area shall be painted with traffic line paint.
- 4.6.3. The parking area shall have visible boundaries and special designated parking areas shall be marked with additional signs.
- 4.6.4. All required parking spaces shall be located outside of existing and proposed road rights-of-way.
- 4.6.5. Property lines should have either a fence or curb to prevent encroachment onto road rights-of-way or adjacent lots and delineate driveways in areas where the rolled curb is present.
- 4.6.6. All parking lots shall be designed to eliminate the need for backing and manoeuvring from or onto roads, pedestrian walkways to get out of spaces or leave the lot.

4.7. Bicycle Parking

- 4.7.1. The minimum dimensions for bicycle parking shall be 0.61 metres wide and 1.83 metres long. The parking spaces may be located in the rear 50% of any required front yard setback, but not in any vehicle parking space required.
- 4.7.2. The parking spaces shall be marked as reserved for bicycles.

4.8. Residential Parking

- 4.8.1. The minimum parking stall and driveway sizes shall comply with Table 20.
- 4.8.2. The parking area for a development containing more than four dwelling units, and supportive living homes, shall be suitably paved, and each parking space in the parking area shall be marked.
- 4.8.3. The parking area, including the driveway, shall have a durable, dust-free hard surface of asphalt, concrete, brick or other similar material, excluding gravel or slag in cases where a development contains less than four dwellings accessed from the street.
- 4.8.4. Parking areas accessed from the alley can be constructed from the same material as the alley.

4.9. Day Care Centres / Nursery Schools

- 4.9.1. All drop-off spaces shall be reserved and marked for passenger drop-off purposes.

Tables

Table 1: Pedestrian Walk Speeds

Table 2: Road Classification

Table 3: At-Grade Intersection Criteria

Table 4: Roundabout Criteria

Table 5: Alley Widths

Table 6: Transit Stop Length

Table 7: Pathway Classifications

Table 8: Road Geometrics

Table 9: Variations in Local Road Cross Sections

Table 10: Variations in Collector Road Cross Sections

Table 11: Variations in Arterial Road Cross Sections

Table 12: Urban Cross-Section Curb Types

Table 13: Curb Radii

Table 14: Load Equivalency Factors

Table 15: Flexible Pavement Design and Layer Coefficients

Table 16: Street Suffixes

Table 17: Traffic Control Requirements

Table 18: Minimum Queuing Spacing for Drive-in Businesses

Table 19: Required Loading Berth Dimensions

Charts

None

Figures

Figure 1: Intersection of Two Streets

Figure 2: Driveway at T-Intersections

Figure 3: Crossing Control Graph

Figure 4: Residential Driveway Cross Section Design

Figure 5: Commercial Driveway Cross Section Design

Figure 6: Industrial Driveway Cross Section Design

Figure 7: Loading Berth Dimensions

Figure 8: Loading Berth Configuration and Approach

Appendices

None

Revisions		
Description	Notes	Date
Conversion from Development Standards Manual and Update	See List of Specific Changes for 2021	January 2021
Changed Definitions & References	Migrated the content to the General Section.	May 2022
Section 4.10 deleted from TDS	Section 4.10 moved to Zoning Bylaw Chapter 2 Part 2D	June 2023