

Engineering Design Guidelines Manual

City of 
Yorkton

Introduction to
Design Guidelines

Watermains &
Appurtenances

Wastewater Mains
& Appurtenances

Storm Sewer Mains,
Appurtenances &
Facilities

Roads &
Lanes

Appendix

Table of Contents

1	Introduction to Design Guidelines	1
2	Watermains & Appurtenances	31
3	Wastewater Mains & Appurtenances	41
4	Storm Sewer Mains, Appurtenances, & Facilities	47
5	Roads & Lanes	53
6	Appendix	

Introduction to Design Guidelines

Watermains & Appurtenances

Wastewater Mains & Appurtenances

Storm Sewer Mains, Appurtenances & Facilities

Roads & Lanes

Appendix

1 Introduction to Design Guidelines

1.0 FOREWORD

The Design Guidelines are intended to provide information to developers, engineering consultants, and contractors about the standards governing the design of infrastructure in the City of Yorkton. All work undertaken in the City shall be carried out in accordance with the latest issue of this document.

The purpose of these Design Guidelines is to encourage good engineering design of new and upgraded infrastructure using industry accepted practices. Any deviation from these Guidelines shall require the Design Consultant to submit a written request to the City's Planning and Engineering Department followed by subsequent approval prior to implementation of the design and/or installation of assets.

This document provides the minimum acceptable standards. Where conditions dictate or good engineering practice requires higher standards than those indicated in this document, the Design Consultant shall incorporate the higher standards into the design. It shall be the Design Consultant's responsibility to design the Subdivision or property in accordance with standards that conform to good engineering practices.

The City of Yorkton reserves the right to vary these guidelines to meet any specific site issue that may arise in order to sustain the City's infrastructure and protect public interest. As a result, specific site requirements may be applied where the Director of Planning and Engineering deems it necessary. All other deviations from these guidelines and accepted construction drawings shall have the written approval of the Director of Planning and Engineering.

This document will be updated on an as-required basis at the discretion of the Director of Planning and Engineering for the City of Yorkton. It shall be the responsibility of the Design Consultant, Developer or Contractor to ensure they are in possession of the latest and most recent version of this document. The most current version of the document is available on the City's website www.yorkton.ca under Engineering Services.

Notwithstanding anything contained in this document, all designs shall, as a minimum, meet the statutory requirements of the Saskatchewan Ministry of Environment, all applicable legislation and regulations, as well as all policies adopted by the Municipal Council of the City of Yorkton.

2.0 SCOPE

2.1 Municipal Design Guidelines

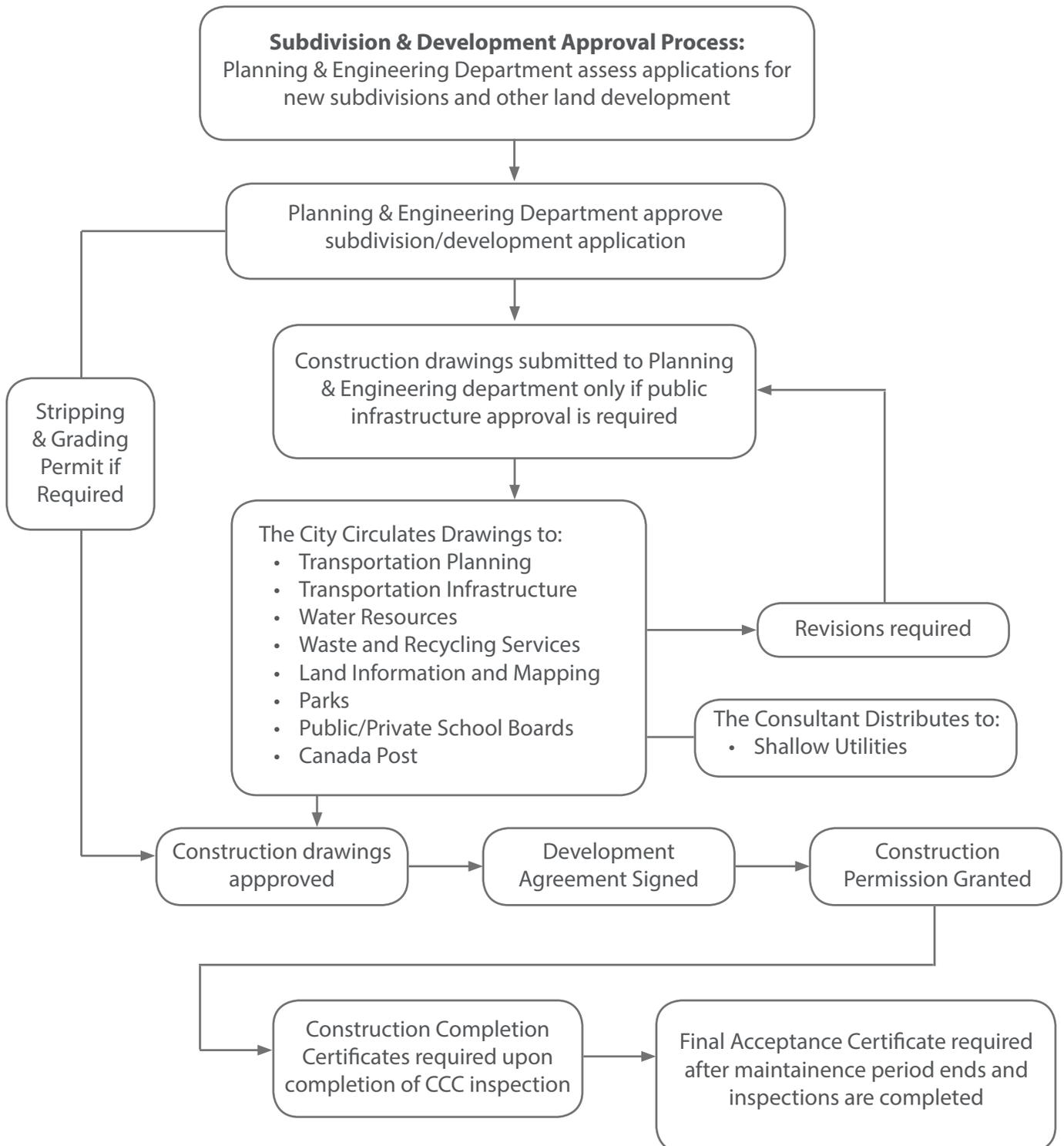
The Design Guidelines shall apply to the design of municipal improvements and submission of engineering design drawings for municipal services in residential, commercial and industrial developments for the following improvements:

- Water mains and appurtenances.
- Wastewater mains and appurtenances.
- Storm sewer mains, appurtenances, and facilities.
- Roads and lanes

The following is a flow chart that outlines the process for subdivision and development approvals related to planning and engineering in the City of Yorkton.

For construction of the municipal improvements, the current adopted *City of Regina Standard Construction Specification Manual* and *The City of Regina Developers/Consultants Field Services Manual* must be followed unless otherwise accepted or required by the Director of Planning and Engineering. Exceptions to the City of Regina specifications are outlined in this document. The Director of Planning and Engineering reserves the right not to accept any requested revisions at his or her sole discretion.

Subdivision & Development Approvals



2.2 Definitions and References

1. The purpose of this Section is to define specific terminology related to words, terms and phrases which are necessary for the understanding, administration and enforcement of the *Engineering Design Guidelines Manual*
2. In some cases specific terminology, words and phrases used in this *Engineering Guidelines Manual* may refer to the in The Planning & Engineering Act, 2007 and other bylaws of the City of Yorkton. In these cases this terminology will have the meaning expressed in the Act and the appropriate bylaws. Please refer to these documents for further clarity related to planning related issues.
3. Words, phrases and terms neither defined in this Section nor in the Act, bylaws of the City of Yorkton, shall be given their usual and customary meaning except where, in the opinion of the Council, the context clearly indicates a different meaning.

2.3 Statutory Reference

All Acts referred to in this *Engineering Design Guidelines Manual* relate to Acts of the Province of Saskatchewan, except where the reference is followed by “(Canada)”, in which case the reference is to an Act of the Parliament of Canada.

2.4 Other Words and Phrases

- The words “shall”, “must” and “will” are mandatory.
- The words “may” “can” and “might” are permissive.
- The word “person” includes individuals, firms, corporations, partnerships, associations, trusts, and any other similar entities.
- The word “City” shall mean the City of Yorkton.
- The word “province” shall mean the Province of Saskatchewan.
- The word “Commission” shall mean the Yorkton Planning & Infrastructure Commission.
- The words “Council” and “City Council” shall refer to the City of Yorkton Council.
- The word “Board” shall mean the City of Yorkton Development Appeals Board.
- The phrase “used for” includes “arranged for”, “designed for”, “maintained for”, or “occupied for”
- Unless the context clearly indicates the contrary, where a regulation involves two or more items, conditions, provisions or events connected by the conjunction “and”, “or” or “either-or”, the conjunction shall be interpreted as follows:
 - “and” indicates that all the connected items, conditions, provisions or events shall apply in any combination;
 - “or” indicates that the connected items, conditions, provisions or events may apply single or in combination;
 - “either-or” indicates that the connected items, conditions, provisions, or events shall apply single but not in combination.
- The word “includes” shall not limit a term to the specified example, but is intended to extend the meaning to all instances or circumstances of similar kind or character.

2.5 Text and Caption Ambiguity

If there is any ambiguity between the text of this *Engineering Design Guidelines Manual* and any caption, illustration, or table, the text shall prevail.

2.6 Abbreviations

The following abbreviations are used in this *Engineering Design Guidelines* and are intended to have the following meanings:

ac	acre
ASL	above sea level
CCC	construction completion certificate
CCTV	close circuit television
cm	centimetre
cm ³	cubic centimetre
dB	decibel
FAC	final acceptance certificate
ft ³ /s	cubic feet per second
ha	hectare
HGL	hydraulic grade line
hgt	height
Hr	hour
in	inch
Imp	imperial
km	kilometer
kPa	kilopascal
L	litre
Lpcd	litres per capita day
L/ha/day	liters per hectare per day
L/s	litres per second
L/s/ha	liters per second per hectare
lt	lot
m	metre
m/s	metres per second
m ²	square metre
m ³	cubic metre
m ³ /s	cubic meters per second
max	maximum
mc	megacycle
mm	millimetre
min	minimum
nfa	net floor area
n/a	not applicable
pl	plan
rd	road
St	Street
%	percent

2.7 Definitions

The following words, terms and phrases, wherever they occur in this *Engineering Design Guidelines Manual*, shall have the meanings assigned to them by this Part.

“Agreement” shall mean the written contract agreement, subdivision servicing agreement, development agreement, or any other agreement or permit duly executed between the Developer and the City which details the terms and conditions under which the Developer is to construct or install the Local Improvements.

“**Act**” shall mean The Planning and Development Act, 2007 and all amendments thereto.

“**Applicant**” shall mean a developer, landowner, or person with an enforceable proprietary interest, submitting an application for development.

“**Application for Development**” shall mean any application filed with any approving authority for any approval, authorization or permit which is a prerequisite to initiating

development in the City.

“Appeals Board / Approving Authority” shall mean The Council of the City of Yorkton

“Block” shall mean the portion of a street which lies between two other streets neither of which is a lane and which both intersect the first named street.

“Boulevard” shall mean the strip of land between the curb and the sidewalk and between the sidewalk and the property line or, where there is no sidewalk, the strip of land between the curb and the property line whether developed or not, or the strip of land between the designated street and property line.

“Board” shall mean the Development Appeals Board as established under this Zoning Bylaw and pursuant to Section 91 - 104 of the Planning and Development Act, 2007.

“Buffer” shall mean a strip of land containing natural woodlands, earth mounds and/or planted screening material and separating one kind of land use or one property from another and which is more specifically identified in Section 6 of the Zoning Bylaw.

“Building” shall mean any structure constructed or placed on, in or over land, but does not include a public highway, and includes any structure covered by a roof and supported by walls or columns.

“Building Bylaw” shall mean any current bylaw of the City which regulates the erection, alteration, repair, occupancy or maintenance of buildings and structures.

“Building Permit” shall mean a permit issued by the Building Inspection Official under the Building Bylaw of the City, authorizing the construction of all or part of any building.

“Construction Completion Certificate” shall mean a document:

- Signed and sealed by the Consulting Engineer and stamped with an Association of Professional Engineers and Geoscientists of Saskatchewan permit to practice stamp, certifying that construction of the Local Improvement has been constructed, installed, and inspected in conformance with the City of Yorkton’s Standards, or in the case of Landscaping signed by the Landscape Architect certifying that construction of the Local Improvement has been constructed, installed, and inspected in conformance with the City of Yorkton’s Standards.
- That is acknowledged and dated by the Director of Planning and Engineering and the City’s Chief Administrative Officer
- That contains the projected earliest warranty period expiry date for the Local Improvement as set by the Director of Planning and Engineering.

“Centre Median” shall mean the strip of land or the painted centre line dividing any public highway into two or more lanes for traffic going in opposite directions.

“City” shall mean The City of Yorkton.

“Consulting Engineer” shall mean a professional engineer (P.Eng.) registered in the Province of Saskatchewan who is a member in good standing of the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) and is employed or retained by the Developer at the Developer’s expense for the design and inspection of the construction and installation of the Local Improvements pursuant to the Agreement. For the purposes of landscaping, the word “Consulting Engineer” may be replaced with “Landscape Architect.”

“Contractor” shall mean the individual or corporation hired by the Developer or the City to undertake the obligations contained in the Agreement on behalf of the Developer or the City

for the installation, construction, and maintenance of the Local Improvements or any part thereof.

“**Council**” shall mean The Council of the City of Yorkton.

“**Developer**” shall mean the individual and/or corporation who propose to install and construct the Local Improvements as defined in the Development Agreement, as associated with permits, or as required by City’s Bylaws.

“**Development Area**” shall mean any portion of the lands that are the subject of a Subdivision Development Agreement or Development Permit approval, which the developer intends to immediately develop, and for which the Developer will be obligated to design, construct, and install the Local Improvements, which will be more particularly described in the Subdivision Development Agreement or Development Permit.

“**Development**” shall mean the carrying out of any construction, engineering, mining or other operations in, on or over land, or the making of any material change in the use or the intensity of the use of any building or land.

“**Development Plan (The Plan)**” shall mean the Development Plan for the City of Yorkton.

“**Development Officer**” shall mean the Officer appointed by Part A, Section 3.1 of the Zoning Bylaw and pursuant to Section 72(1)(b) of The Planning and Development Act, 2007.

“**Development Permit**” shall mean a permit, issued by the **Development Officer**, that authorizes development or the use of a building or site for the purpose stated in the permit, but does not include a Building Permit.

“**Director**” shall mean the Director of Planning & Engineering for the City of Yorkton and anyone acting or authorized by them to act on their behalf.

“**Discretionary Use**” shall mean the use of land, a building or other structure that may be permitted in a district only at the discretion of and only at the location or locations and under the conditions specified by Council.

“**District (Zoning District)**” shall mean a defined area or district of the City as set out in the Zoning Bylaw and shown on the City of Yorkton Zoning Districts Map, Schedule Z-1.

“**Frontage**” shall mean the width of a lot or a site where it abuts a street excluding a lane; in the case of a corner lot, the frontage shall be considered to be the narrowest portion abutting a street.

“**Final Acceptance Certificate**” shall mean a document:

- Signed and sealed by the Consulting Engineer and stamped with an Association of Professional Engineers and Geoscientists of Saskatchewan permit to practice stamp, certifying that the Municipal Improvement has been constructed, installed, inspected, and maintained in accordance with the City of Yorkton’s Standards, or in the case of Landscaping, signed by the Landscape Architect certifying that construction of the Local Improvement has been constructed, installed, inspected, and maintained in conformance with the City of Yorkton’s Standards; and
- Signed and dated by the Director of Planning and Engineering and the City’s Chief Administrative Officer.

“**Grade Level**” shall mean the average level of the finished surface of the ground adjacent to the exterior walls of the building or structure. In the case of single detached, semi-detached and duplex dwellings with a walk out basement, grade level shall be the average elevation of the finished surface of the ground adjacent to the sidewalls of the building.

“**Guidelines**” shall mean the City of Yorkton’s Engineering Design set by the City for the design, construction, and installation of the Local Improvements including any alterations to or amendments of such guidelines and standards which may be agreed upon in writing by the City and the Developer, and as well shall include all the conditions imposed by the City .

“**Hard Surfacing**” shall mean asphalt, concrete, paving stone or similar material satisfactory to the Development Officer. Crushed, or compacted rock or gravel shall not be considered to meet the requirements of hard surfacing.

“**Hazardous Substance or Dangerous Goods**” shall mean any product, substance or organism which, because of its quantity, concentration or its physical, chemical or infectious characteristics, either individually or in combination with other substances is an existing or potential threat to the physical environment, to human health or to other living organisms, including:

- a. Explosives;
- b. Gases (either compressed, deeply refrigerated, liquefied, or dissolved under pressure);
- c. Flammable and combustible liquids;
- d. Flammable solids (including substances liable to spontaneous combustion and substances, which on contact with water, emit flammable gases);
- e. Oxidizing substances and organic peroxides;
- f. Poisonous and infectious substances;
- g. Radioactive material;
- h. Corrosives; or
- i. Other miscellaneous substances of similar nature.

“**Landscaping**” shall mean the provision of horticultural and other related compatible features or materials designed to enhance the visual amenity of a site or to provide a visual screen consisting of any combination of the following elements:

- a. Soft landscaping consisting of vegetation such as trees, shrubs, vines, hedges, flowers, grass and ground cover; and
- b. Hard landscaping consisting of non-vegetative materials such as decorative stonework and paving, screening, berming and other materials used in landscape architecture.

“**Landscape Architect**” shall mean an individual with membership in good standing with the Saskatchewan Association of Landscape Architects.

“**Local Improvements**” shall mean all of the installations and improvements to be constructed and installed in the Development Area in accordance with the Plans and including, but not limited to, the following:

- Water mains, including all fittings, valves, and hydrants
- Wastewater mains, including all manholes, lift stations, and required appurtenances
- Storm sewer mains, including all manholes, catch basins, catch basin leads, pump stations, and required appurtenances
- Overland drainage control facilities, stormwater ponds, and related structures
- Service connections from the storm sewer, wastewater, and water mains to the required location at the property line
- Streets with a stabilized base course and asphalt concrete surface course
- Concrete curbs and gutters throughout the completed Subdivision
- Concrete sidewalks and asphalt walkways
- Gravelled and/or paved lanes
- Street lighting, underground and overhead power, telephone, gas, fibre optic cable, and cable TV services
- Landscaping
- Tree planting
- Park, pathway, and walkway development on dedicated lands in accordance with Plans reviewed by the City
- Traffic signs and street signs

- Traffic control signals and controlled pedestrian crossings where required
- Fencing
- Other improvements that are described in the Servicing and Construction or Development Agreement.

“**Lane**” shall mean the kind or type of a public roadway intended primarily to give access to the rear or side of real property and intended primarily for the use of vehicles.

“**Lane – Public (Alley)**” shall mean a public highway vested in the Crown as a secondary level of access to a lot or parcel of land.

“**Loading Space**” shall mean that part of a site or structure on which a single vehicle may be loaded or unloaded.

“**Loading Zone**” shall mean the portion of a public highway adjacent to the curb designated by signs and/or markings for the exclusive use of vehicles loading or unloading passengers or goods.

“**Lot**” shall mean a parcel of land of a subdivision, the plan of which has been filed or registered in the Land Titles Office for the Saskatoon Land Registration District or the Information Services Corporation (ISC).

“**Lot, Corner**” shall mean a lot with at least two adjacent sides abutting upon intersecting streets or other public spaces.

“**Lot, Interior**” shall mean a lot which either fronts on one street, or opposite sides of two streets, and any other lot which is not a corner lot.

“**Lot line (or Property Line)**” shall mean a line of record bounding a lot that divides one lot from another or from a public street or any other public space.

“**Minister**” shall mean the Minister of the Executive Council to whom is assigned the administration of the Act.

“**Municipal Engineer**” shall mean the City of Yorkton Director of Planning and Engineering or the Engineering Manager, their authorized representative, or such other engineer as may from time to time be duly authorized and appointed to act as the City’s agent or representative in writing by the City of Yorkton.

“**Open Space**” shall mean any parcel or area of land or water essentially unimproved and set aside, dedicated, designated or reserved for public or private use or enjoyment or for the use and enjoyment of owners and occupants of land adjoining or neighboring such open space, provided that such areas may be improved with only those buildings, structures and other improvements that are designed to be incidental to the natural openness of the land, but not including street, off-street parking areas, storm water facilities or any other areas required to be set aside for buffers or recreation areas by any other sections of the Zoning Bylaw.

“**Owner**” shall mean any individual, firm, association, organization, co-partnership, corporation or trust having sufficient proprietary interest in the land to be developed in order to commence and maintain proceedings to subdivide the same under Zoning Bylaw.

“**Overlay**” shall mean additional development regulations superimposed on specific areas of the Zoning Map, which supersede or add to the development regulations of the underlying zone. Proposed Overlays under the Zoning Bylaw include AC-Architectural Control Overlay, ES- Environmentally Sensitive Overlay, and FD-Future Development Overlay.

“**Public Highway**” shall mean a street, lane or other street designed and intended for or used by the general public for the passage of vehicles, but does not include any privately or publicly owned area primarily intended to be used for the parking of vehicles and the necessary passageways on that area.

"Parcel" shall mean any quantity of land, consisting of one or more lots, that is capable of being described with such definiteness that its location and boundaries may be established.

"Parking" shall mean the standing of a vehicle, whether occupied or not, on a public highway or an area indicated by signs, markings, meters, parking poles or physical barriers as a parking space for a single vehicle, other than momentarily, for the purpose of and while actually engaged in loading or unloading of passengers or goods or in obedience to traffic regulations signs or signals.

"Parking – Off-Street" shall mean accommodation for vehicle parking off the street consisting of lots, structures, parking stalls and access thereto.

"Parking Lot, Commercial" shall mean any lot or area other than a street which is devoted to the parking of automobiles, available for public use, whether in return for a fee or as an accommodation for clients or customers, and which is not directly operated by and on behalf of the use permitted in the zone in which located.

"Parking Space (Stall)" shall mean a space exclusive of driveway, ramps or columns, but including convenient access to a public lane or street, for the parking of one (1) motor vehicle.

"Parking Stall" shall mean a portion of a public highway or an area indicated by signs, markings, meters, parking poles or physical barriers as a parking space for a single vehicle.

"Pedestrian Crosswalk" shall mean:

- a. that portion of a public highway designated by signs or markings for the use of pedestrians to cross a public highway;
- b. where there are no signs or markings, that portion of a public highway within the prolongation of the lateral boundary lines of the adjacent or intersecting sidewalks at the end of a block; or
- c. where there are no signs or markings or sidewalks, that portion of the public highway measured five metres back from the street intersection and parallel across the street.

"Performance Guaranty" shall mean any security, in accordance with the requirements of the Zoning Bylaw, which may be accepted in lieu of a requirement that certain improvements be made before the City approves a plat, including performance bonds, escrow agreements, letters of credit and other similar collateral or surety agreements.

"Permit" shall mean an official document or certificate issued by the authority having jurisdiction and authorizing performance of a specified activity.

"Permitted Use" shall mean the use of land, a building or other structure that is permitted in a district by the Zoning Bylaw and which conforms to the regulations applicable to the district in which the land, building or other structure is located.

Person – Includes a corporation or a partnership as well as a man, woman, or child.

"Re-Development" shall mean the improvement of land for the purposes of residential, commercial or industrial development.

"Right of Way" shall mean the total width and length of the course of a street, watercourse, utility alignment or other way and within which all improvements and right of access are confined. Setback – The distance between the street line and the building line.

"Setback Line" shall mean the line that is established a minimum horizontal distance from the lot line and beyond which the building or part of a building is not permitted to extend toward the lot lines. All setbacks from public streets shall be measured from the proposed right-of-way width as shown on the adopted survey.

"Sidewalk" shall mean the actual sidewalk where constructed on or adjacent to a part of a public highway or that portion of a public highway intended primarily for use by

pedestrians or any structure in a park or other public place designed and intended for use by pedestrians.

“Sidewalk Crossing” shall mean the portion of a sidewalk or curb permanently improved or designed for the passage of vehicular traffic across the sidewalk or curb.

“Site” shall mean an area of land as registered in the Land Titles Office or the Information Services Corporation (ISC) by Certificate of Title, having its principal frontage on a street and considered as a unit devoted to a certain use or occupied by a building or group of buildings that are united by a common interest or use, and the customary accessories and open space belonging to it.

“Site Area” shall mean the area of the land contained within the boundaries of the site as shown on a plan.

“Site, Corner” shall mean the site at the intersection or junction of two (2) or more streets and where a side site line may be separated from the street by a buffer strip.

“Site, Interior” shall mean a site other than a corner site within the linear block of a neighborhood.

“Site Plan, Major” shall mean any development plan of which one or more lots does not meet the definition of a “minor site plan”.

“Site Plan, Minor” shall mean any development of one or more lots which:

- a. Does not propose the new construction of or any addition to a structure or building which will result in the building coverage of a property involved to be in excess of 465m² (5,000 square feet).
- b. Does not require disturbance of more than 930m² (10,000 square feet) of land area.
- c. Does not include off-street parking for more than 15 vehicles.
- d. Contains the information reasonably required in order to make an informed determination whether the requirements established by the Zoning Bylaw for the approval of a minor site plan have been met.
- e. Does not include commercial or industrial development on more than three acres.

“Site, Through” shall mean a site not more than one (1) lot in depth, having a frontage on two (2) streets more or less parallel.

“Site Width” shall mean the average distance between the side site lines and, in the case of a triangular site, the perpendicular distance from the one side site line to the apex of the angle formed by the intersection of the front and rear site lines.

“Speed Zone” shall mean any portion of a public highway within the City of Yorkton, as designated herein, and identified by a sign erected and maintained at each end thereof, indicating the maximum speed applicable thereto.

“Street” shall mean the portion of a public highway lying between curbs where constructed and intended primarily for use by vehicles or, where no curb exists, that portion of a public highway intended for use by vehicles.

“Street (Road)” shall mean a public thoroughfare, which affords the principal means of access to abutting properties. By type means:

- a. “arterial street”, a street that serves major traffic flows between the principal areas of traffic generation with direct access to adjacent development being limited;
- b. “collector street”, a street that serves traffic between local and arterial streets with access to adjacent development generally allowed;
- c. “local street”, a street providing direct access to abutting properties along its length and not intended to carry through traffic, other than to adjoining streets;
- d. “minor street”, a local street not exceeding 500m in length (includes a cul-de- sac.)

“Subdivision” shall mean the division of a lot, tract or parcel of land into two or more lots, tracts, parcels, or other divisions of land for sale or development.

“Subdivision, Major” shall mean any subdivision not classified as a minor subdivision.

“Subdivision, Minor” shall mean a subdivision of land for the creation of an aggregate of not more than four lots (three new lots plus the remaining lot), provided that such subdivision does not involve a planned development, any new streets or the extension of any off-tract improvements, and not being a further division of an original tract of land for which previous minor subdivisions have been approved by any board within the five years past and where the combination of the proposed and approved minor subdivisions constitute a major subdivision. Any readjustment of lot lines resulting in no new lots shall be classified as a minor subdivision.

“Traffic” shall mean the movement of pedestrians, vehicles, goods or livestock upon any public highways in the City of Yorkton.

“Traffic Control Device” shall mean a parking meter, a sign, a traffic island, marking or a device placed, marked or erected under the authority of Traffic Bylaw for the purpose of regulating, warning or guiding traffic.

“Use” shall mean the purpose for which land, a building or other structure is arranged, designed or intended, or for which either land, a building or other structure may be occupied or maintained.

“Utility” shall mean a system, works, plant, equipment, or service for the production, transmission, delivery, or furnishing of water, sewerage, heat, light, power, or waste management system supplied directly or indirectly to or for the public.

“Warranty Period” for each Local Improvement shall mean the period from the date of execution of the Construction Completion Certificate by the Director of Planning and Engineering and the Chief Administrative Officer pursuant to the provisions of the Development Agreement, to the date of execution of the Final Acceptance Certificate for the Local Improvement or Utility as described in this document. This is referred to as the “Guarantee Period”.

“Watercourse” shall mean any natural depression with visible banks, or wetland with or without visible banks, which contain water at some time; and include any lake, river, stream, creek, spring, swamp, gulch or surface source of water whether containing fish or not; and include intermittent streams; and includes surface drainage works.

“Zoning Districts Map” shall mean the map delineating the boundaries of the districts set out in the Zoning Bylaw

3.0 GENERAL INFORMATION

3.1 Circulation process

In addition to the Design Guidelines contained within this manual, the Developer may require approval from other regulatory agencies in advance of Development. The City of Yorkton is not responsible for circulation to the following regulating agencies including, but not limited to:

- a. Department of Fisheries and Oceans
- b. Department of Highways and Transportation
- c. Canadian National Railroad
- d. Canadian Pacific Railroad
- e. Canadian Transportation Agency
- f. Environment Canada
- g. Industry Canada
- h. National Energy Board

- i. Saskatchewan Environment
- j. Saskatchewan Water Securities Agency
- k. SaskEnergy Incorporated
- l. Saskwater
- m. Sasktel
- n. Saskatchewan Watershed Association
- o. Transport Canada

As outlined in the Subdivision & Development Approvals chart (Page 3), the city of Yorkton will circulate submitted drawings to the following agencies/departments:

- Transportation Planning
- Transportation Infrastructure
- Water Resources
- Waste and Recycling Services
- Land Information and Mapping
- Parks
- Public/Private School Boards
- Canada Post

3.2 Service Interruptions

If existing services must be shut off for a period of time to accommodate construction activities, a written request must be submitted to the Director of Planning and Engineering for review at least **one week** before the proposed interruption. The Developer may be required to notify all residents, businesses, schools, and emergency services affected by the interruption, unless otherwise directed by the City.

3.3 Road Crossings

When it is necessary to excavate an existing road or lane for the purpose of providing a crossing for water, sewer, gas, telephone, cable, or any other public utility or service, a Traffic Accommodation Strategy (TAS) as described in Section 3.6 below must be provided to the City for review prior to construction.

Upon completion of the installation, all associated infrastructure shall be returned to as good or better condition. Excavations must be backfilled and compacted with suitable material to accommodate the pre-existing road structure. All concrete, asphalt, landscaping, and any other public or private assets that may have been disturbed shall be replaced to the satisfaction of the Director of Planning and Engineering. Full-time inspections, geotechnical testing, monitoring, and reporting are required for any such work.

3.4 Erosion and Sediment Control

The City requires an Erosion and Sediment Control (ESC) Plan for all construction activities. This plan and accompanying report must be prepared by a Professional Engineer or a Certified Professional in Erosion and Sediment Control (CPESC), and must be submitted to the Director of Planning and Engineering for review and acceptance along with the Preliminary Engineering Drawings.

All ESC measures must be in place prior to commencing any stripping, grading, or construction, and must be maintained until contributing areas are permanently stabilized and a vegetative cover established. Should any erosion and sediment control measures fail, the Developer is responsible to ensure that any impacted areas are cleaned up within 24 hours.

If ESC measures are not adequately monitored and maintained, the City or the Director of Planning and Engineering will provide to the Developer written notice to remedy the issue. If, after 72 hours, the Developer or the contractor has not responded to make the necessary

repairs, the City may place a stop-work order on the development until the repairs have been completed.

3.5 Dewatering

In addition to the requirements outlined in the *City of Regina's Standard Construction Specifications Manual*, any discharge of impounded water to the wastewater system or any off-site areas requires the approval of Development and Engineering Services, and any discharge of impounded water to any existing storm infrastructure requires approval from the City of Yorkton's engineering department. All approvals include strict conditions on water quality and quantity that can be discharged.

3.6 Traffic Accommodation

Traffic control for construction must be in accordance with the current *Saskatchewan Ministry of Transportation Traffic Accommodation in Work Zones* manual or the current City of Regina Temporary Traffic Control Devices Manual and must meet the requirements of applicable City of Yorkton traffic bylaws. **In no case shall construction traffic be allowed to use residential roads.**

The Developer may be required to provide video or photographic documentation of the construction access route(s) prior to commencement of construction to determine the pre-existing state of roads, sidewalks, and related infrastructure. The Developer is responsible to repair any damages caused by construction traffic.

When construction on a proposed subdivision will have a direct impact on existing traffic and/or pedestrians, the applicant must submit a Traffic Accommodation Strategy (TAS) to the Director of Planning and Engineering in advance. If any construction work occurs on or near any Provincial Highway, the Developer should contact the *Saskatchewan Ministry of Transportation* as well to obtain any necessary approvals.

The amount of time required to review the plan varies from **one week to three weeks** depending on the type of road affected (i.e., three weeks for a major collector, one week for a local road).

The Director of Planning and Engineering will circulate copies of the TAS to the City's Public Works Department and other departments as necessary for review. If, in the opinion of the City of Yorkton, the interruption will cause excessive traffic delays, the Developer may be required to advertise the interruption as necessary or schedule the work for off-peak times.

The Developer shall provide at least two business days' notice to the City as well as any and all affected parties prior to implementing the TAS and after the streets are back in operation (more notice may be required for major routes at the discretion of the City). Affected parties include, but are not limited to, school districts, emergency services, residents, and businesses affected by the interruption.

4 SUBDIVISIONS, SITE DEVELOPMENTS AND RE-DEVELOPMENTS

Subdivisions, Site Developments and / or Re-Developments within the City must be designed in accordance with the following:

- *City of Yorkton Design Guidelines*, current edition
- *City of Yorkton Greenfield Development Requirements*, current edition
- *City of Yorkton Landscape Design Standards*
- *City of Yorkton Zoning Bylaw No. 14/2003*, as amended an approved Area Structure Plan and/or Outline Plan for the Subdivision

All improvements shall be integrated with the City's water, wastewater, storm, and transportation systems and designed accommodate any possible future subdivision of adjacent lands. All drawings shall use and make reference to the North American Datum 3TM, NAD83 grid coordinates (the combined scale factor must be supplied on each drawing).

In the absence of design guidelines within this manual, the consultant/design engineer shall design in accordance with the City of Regina's current *Design Standards Manual*.

4.1 Shallow and deep utility line assignments

The layout and design of shallow utility infrastructure shall be provided in accordance with engineering requirements of the respective service providers and will be subject to review and acceptance by the City. Utility service providers shall submit their layout and designs through the Developer's Consulting Engineer.

All shallow utility drawing submissions must be signed and sealed by a Professional Engineer registered in the Province of Saskatchewan to ensure a detailed review has been undertaken by the responsible engineer of record prior to submission. Revisions to drawings that are currently in circulation will not be accepted.

The following is a guide for line assignments for deep and shallow utilities within the City of Yorkton:

- Minimum lateral spacing is 3.0 m between potable water and wastewater. The spacing requirement may be increased at the discretion of the Director of Planning and Engineering when the depth of bury is deemed to be excessive.
- Wastewater mains shall be aligned at the centre of the roadway where possible. In roadways with inverted crowns or full cross fall, the wastewater shall not be located near the lowest elevation in the cross section to minimize infiltration.
- Shallow utilities are normally located in a four-party trench within a 3.5 m utility right-of-way (URW), generally located on private property.
- Unless otherwise accepted by the City, right-of-way sizes for municipal utilities shall be a minimum of 9 m for a single, non-sleeved main. If the utility is to be sleeved, the minimum right of way is 6 m. For each additional utility in either a sleeved or non-sleeved right of way, an additional 3 m is required. Utilities that are excessively deep may require wider right of ways.

5 Stripping and Grading

5.1 General Information

Land is not allowed to be stripped or graded before either a Subdivision Development Agreement is signed or a Development Permit is released by the City. In addition, the following requirements must be met prior to stripping or grading of lands:

- An Outline Plan for the subject land must be approved by City Council
- A Stripping and Grading Application has been reviewed and approved by the City's Planning and Engineering Department
- A Subdivision Development Agreement or Development Permit has been signed by the City and the Developer
- The Developer has provided the appropriate securities in the form of an Irrevocable Letter of Credit for Stripping and Grading

Under no circumstances shall stripping and grading commence before a Development Agreement or Development Permit has been released by the City, securities are in place, and erosion and sediment control on site is in place and has been confirmed by an ESC professional, to the satisfaction of the City.

5.2 Stripping and Grading Application

The Developer may submit an application for stripping and grading to the Director of Planning and Engineering for review and acceptance.

The Stripping and Grading Application must include the following:

- A copy of the current **Certificate(s) of Title** as well as current copies of any restrictive covenants, utility rights-of-way, easements, or caveats registered on title.
- **A letter of authorization** from the registered owner of the land.
- **A letter from the Developer's Consulting Engineer** confirming that all affected utility companies have been contacted regarding the relocation or disposition of their utilities. At a minimum, Sask1stCall must be contacted to locate all relative shallow utilities prior to construction.
- **Engineering Drawings** (two full-sized hard copies, one Digital CAD copy, and one pdf copy)
 - **Site Plan** showing the location of all existing and proposed utilities, site drainage, any intended stripping and grading on adjacent lands (including details of edge conditions, back sloping requirements, and areas to be re-loamed or seeded), existing trees and major vegetation on the parcel. Please note that written permission from adjacent landowners is required if their lands will be affected by stripping and grading operations.
 - **Phasing Plan** showing areas expected to be developed during the current year and the type of soil stabilization proposed for the areas not to be developed until following years.
 - **Stripping and Grading Plan** clearly indicating the areas to be stripped and rough graded (outlined in red) as well as the proposed location of the stockpiles (outlined in green).
 - Details of topsoil and any other proposed stockpiles should be provided including the planned height, width, length, and estimated volume. Please note that no application will be considered for an area of more than 40 ha per year.
 - **Cut and Fill Plan** with initial and final contours; any areas with cuts or fills greater than 2.0 m should be identified and an accompanying Deep Fills Report (two hard copies and one pdf copy) provided. (Refer to Section 3.2.3 for more information)
 - **Erosion and Sediment Control Plan(s)** and Report as discussed in Section 14 of these Standards. The Erosion and Sediment Control report must show measures for control of erosion and sedimentation for the initial stripping and grading operation and after completion of grading and site rehabilitation.
- **Other information as required** – The City may require additional plans, information, or studies, depending on the existing site conditions and the proposed land use. Applicants should contact the Director of Planning and Engineering to discuss what information is required.

5.3 Stripping and Grading Operations

5.3.1 General requirements

Prior to construction, developers must provide appropriate signage and/or fencing to protect the site and identify it as a construction zone. It is the developer's responsibility to

maintain all fencing and signage for the duration of construction.

The Developer must contact the City and/or the City's Water and Wastewater Operator to make arrangements for water supply during stripping and grading activities.

Written authorization from the appropriate utility agencies must be obtained prior to grading, filling, or excavation within utility and road right-of-ways, under any overhead utility lines, or over any underground utilities.

5.3.2 Erosion and Sediment Control

As discussed in Section 3.5, the Developer must also provide a letter signed by the Developer's Erosion and Sediment Control professional certifying that all Erosion and Sediment Control Features are in place prior to construction.

The Developer shall submit a letter under corporate seal indemnifying and saving harmless the City and owners of adjacent properties or such other affected parties from any losses or damages which the City, owners of adjacent properties, or other affected parties may sustain as a result of stormwater runoff, soil erosion, soil instability, sedimentation, topsoil stockpiling, dust, and any other problem which may arise from the stripping and rough grading of the lands. In addition, the Developer, at its own expense, shall take any necessary corrective actions to rectify the problems and shall do so promptly and in a manner satisfactory to the Director of Planning and Engineering.

The Developer must identify a Professional Engineer or a CPESC Professional who will be responsible for ensuring that the site is monitored on a weekly basis to ensure that all ESC measures are maintained, repaired, and revised as necessary for the duration of construction (from the stripping and grading phase until the last FAC has been issued). Documentation of the weekly inspections must be submitted to the Director of Planning and Engineering upon request and/or after stripping and grading has been completed.

The Developer shall implement satisfactory drainage control guidelines on site for the duration of the stripping and grading operations. The guidelines must provide for control and drainage of stormwater in and from the land, and stormwater which may be cut off from its natural drainage route by the development (e.g., inlet protection to any adjacent stormwater sewer system). These drainage control guidelines must be approved by the Director of Planning and Engineering prior to being implemented in the development area.

5.3.3 Dust Control

The Developer shall employ appropriate measures to control any dust, particularly in the vicinity of any roadway or occupied dwelling. Dust control measures must also be employed to:

- Ensure traffic safety
- Minimize and manage dust nuisance complaints from the public
- Minimize drainage, soil erosion, and soil instability problems
- Address any other problems arising from stripping, rough grading, topsoil, stockpiling, and any related operations or development activities

Internal haul roads and working surface areas in and around the lands must be watered as necessary to ensure dust control.

5.3.4 Stockpiles

Stripped topsoil shall be stockpiled in the location outlined on the approved plan and the stockpile should be neat in appearance, free from any hazardous condition, and treated to prevent soil erosion arising from wind and/or precipitation. Appropriate signage should be posted adjacent to the topsoil pile to prevent illegal dumping and promote safety on site.

The topsoil stockpile shall be removed from the site by the date set in the Stripping and

Grading Agreement, unless the Director of Planning and Engineering grants an extension of time. Extension applications must be requested in writing at least one month before the pre-arranged date of removal or the request may be denied and removal procedures may be initiated by the City at the Developer's sole expense.

5.3.5 Soil Screening

Soil screening operations of any topsoil stockpile must have prior approval from the Director of Planning and Engineering and all of the screening operations will remain the responsibility of the Developer. Topsoil screening activities may only be conducted under the following conditions:

- Only topsoil removed from the Land and stockpiled in accordance with the approved plan may be screened. No offsite material is to be brought on to the stripping and grading area unless a valid Development Permit allowing for an enhanced soil screening operation is in place.
- No top soil screening operations may take place in adverse weather conditions (e.g., strong winds).
- No top soil may be removed from within the City limits unless authorized by the Director of Planning and Engineering.

5.3.6 Contaminated Lands

If during construction of the development the Developer, the owner of the development site, or any of their agents or contractors becomes aware of any type of contamination within the Lands, they must do the following:

- The contamination shall be immediately reported to both Saskatchewan Environment and the City of Yorkton
- The Developer shall, prior to the approval of a Development Completion Permit, submit a Phase II Environmental Site Assessment, prepared by a qualified professional, to Saskatchewan Environment and provide a copy of the report to the Director of Planning and Engineering
- If required to do so by Saskatchewan Environment, the Developer shall submit to Saskatchewan Environment a remediation plan or risk management plan (Phase III Environmental Site Assessment) prepared by a qualified professional, and acceptable to Saskatchewan Environment and provide a copy to the Director of Planning and Engineering
- If the submission of a Phase III Environmental Site Assessment has been required at any time, a Development Completion Permit shall not be approved until a qualified professional has submitted a letter to the Director of Planning and Engineering in a form satisfactory to the Director of Planning and Engineering, certifying that the physical components identified in the Phase III ESA have been implemented
- If no contamination is discovered during construction of the development, the Developer shall submit a letter to the Director of Planning and Engineering certifying that no contaminants were discovered at the time of request for letter of credit reduction.

In the event that contamination originated from the land, the Developer, at its own expense, shall rehabilitate adjacent lands to the satisfaction of the affected owners immediately after completion of the stripping and grading of the development lands.

5.3.7 Remedial Measures

The Director of Planning and Engineering may give the Developer notice at any point during stripping and grading operations to remedy deficiencies that emerge on site, including dust, sedimentation, or other nuisance and/or hazard conditions; soil instability problems; and drainage and/or soil erosion issues. It is the Developer's responsibility to ensure these deficiencies are remediated promptly.

In the event of an emergency, the City shall have the right, but not the obligation, to enter upon the lands and rectify any dust, stormwater runoff, soil instability, soil erosion, sedimentation, grading, nuisance, or hazard conditions at the Developer's own cost.

5.3.8 Seasonal Requirements

No stripping and/or grading of the land will be allowed between April 1 and July 31 if the parcel includes natural wetlands that provide a habitat for birds, or if a concern has been expressed in the Environmental Site Assessment or Biological Impact Assessment.

Stripping and grading operations are not permitted between November 15 of any given year and March 20 of the following year. **All stripped and graded areas must be rehabilitated or in development prior to November 15.**

5.3.9 Completion of Stripping and Grading Operations

The Developer shall either develop or rehabilitate all of the lands stripped and rough graded within 45 days of the end of the construction activity, unless an extension to this deadline is granted by the Director of Planning and Engineering. If there is a scheduled construction break of greater than 45 days, the site must be rehabilitated immediately after the last day of construction prior to the planned break.

A Stripping and Rough Grading Report shall be prepared by the Consulting Engineer upon completion of stripping and grading operations and submitted to the Director of Planning and Engineering as per the City of Regina's current *Developers / Consultants Field Services Manual*.

6 SUBDIVISION DRAWINGS AND REPORT SUBMISSIONS

6.1 Subdivision Application

At the time of Subdivision or Development Permit application, the applicant must submit preliminary design drawings that clearly outline the engineering concept for the site. This includes, at a minimum, the following three drawings:

Composite Site Servicing Plan

A composite site servicing plan should be included in the set, showing all proposed roads, lots and lot numbers; all wastewater and storm sewers including pipe diameter and direction of flow; all water mains, hydrants and valves; all manholes and catch basins; private and public servicing information, as well as any existing streets and services surrounding the development. Proposed and existing shallow utilities and easements should also be included.

Site Grading Plan

Site grading plan should show general grading information including the existing and proposed elevations along property lines, driveway locations, sidewalks, walkways, storm and surface water drainage directions, major overland and emergency overland flow routes, trap low extents and calculations, retaining walls, etc.

Overland Drainage Plan

Overland drainage cover sheet should indicate trap lows and calculations, overland drainage flow direction and slopes, overland flow characteristics (flow, depth, velocity), and emergency spill locations.

Note: additional drawings and reports may be required in support of certain applications. Applicants are encouraged to consult the Director of Planning and Engineering at early stages of the project to determine if additional information is required.

6.2 Engineering Review Process

The detailed engineering review takes place after the subdivision application or development permit has received tentative approval.

A complete set of drawings should be submitted for each stage of engineering review:

1. Preliminary Engineering Review
2. Final Engineering Review
3. As-built Drawing Review

A **submission checklist** as well as the required number of copies for each submission shall be required. All engineering drawings and reports shall be submitted as a complete package to the File Manager for the project. If the submission is deemed incomplete, the entire package will be returned without review.

Submissions will be circulated to the applicable City of Yorkton departments, as well as the City's own water and wastewater operators for their comments. The Director of Planning and Engineering will make every effort to provide comments within 30 days of receiving the complete submission; however, the length of time required for the review depends on the number of submissions the City is currently processing. All applications are reviewed in the order they are received.

All Engineering design drawings submitted for approval shall be marked "Issued for Approval" and signed and sealed by the Engineer of Record for the Design Consultant responsible for the design of the Assets. Any drawings not meeting these requirements upon submission will be rejected and returned to the Design Consultant without further review.

The reviews and comments provided by the City do not relieve the Consulting Engineer of responsibility for errors or omissions in the designs. The Consulting Engineer is professionally responsible for the proper design of the subdivision and/or site development.

6.3 Subdivision Submission Requirements

All subdivision engineering drawings shall be submitted as a complete package. If the submission is deemed incomplete, the entire package will be returned to the Applicant without review.

All engineering drawing submissions must include a cover letter outlining the type of submission. The cover letter for the preliminary drawing submission should outline the intent of the project and include an engineering design brief outlining the key design assumptions and make reference to all supporting studies for the project (e.g., Master and Staged Master Drainage Plans, Traffic Impact Assessment, etc.). Subsequent submissions should include a copy of the comments provided by the City and a written response to those comments.

All final engineering drawing submissions must include a preliminary schedule (Gantt chart).

6.4 Design Reports

Preliminary drawing submissions should include two bound hard copies and one electronic copy of all design reports. Reports that have been previously submitted to the City and accepted (e.g., under Master Area Structure Plan, Area Structure Plan, or Outline Plan) need not be resubmitted, but should be referenced in the cover letter.

The following are typical design reports that are required for subdivisions in the City of Yorkton. The Developer is encouraged to consult the Director of Planning and Engineering at the early stages of the project to determine specific design requirements for the development area, and to determine if revisions or updates to reports submitted at Area Structure Plan or Outline Plan stage are required.

6.4.1 Geotechnical Report

A geotechnical report and investigation is required for every subdivision phase of development within the City of Yorkton. The geotechnical report must be signed and sealed by a qualified Geotechnical engineer entitled to practice in the Province of Saskatchewan.

The report should set out the details and specifications for the development including, at a minimum:

- Purpose, site description and methodology
- Subsurface soil conditions, subsurface drainage and groundwater levels
- Geotechnical evaluations and recommendations for site preparation, grading, excavations, compaction, road structure, foundation design, soil bearing capacity, frost protection, sulphate testing, etc.
- Slope stability analysis (for undisturbed condition and re-graded condition) if applicable
- Field test results, lab test results, and borehole log information
- A hydrogeological study must be conducted in areas where the estimated water table seasonal high is less than 1 m below the original ground level

6.4.2 Deep Fills Report

A deep fills report must be submitted whenever more than 2.0 m of fill material will be placed on a site. The report must be prepared by a qualified geotechnical engineering consultant in accordance with industry standards and should identify all lots with fills in excess of 2.0 m above original elevations. The report should also state whether there are any restrictions on the deep fill areas. Deep Fills Reports are also required as part of a Stripping and Grading Application.

6.4.3 Phase 1 Environmental Site Assessment/Biophysical Impact Assessment

Environmental and Biophysical Impact Assessments are normally completed at the Area Structure Plan stage of development. If further investigation is warranted, updated information can be provided at later stages of the development process. The report should follow the current [Saskatchewan Environmental Site Assessment Guidelines](#).

6.4.4 Traffic Impact Assessment

Traffic Impact Assessments are normally submitted at the Area Structure Plan and Outline Plan stages of development and should be prepared according to [Saskatchewan Ministry of Transportation Traffic Impact Assessment Guideline](#) and the [City of Yorkton's Transportation Master Plan 2012](#). If further investigation is warranted, updated information can be provided at later stages of the development process.

6.4.5 Traffic Noise Analysis and/or Sound Attenuation Report

All traffic noise and/or sound attenuation analysis reports, when required, should be prepared by a qualified professional engineer and are to comply with the latest edition of

6.4.6 Stormwater Management Report

All stormwater management reports should be prepared by a qualified professional engineer and are to comply with the latest edition of *City of Regina Development Standards Manual*.

6.4.7 Erosion and Sediment Control Report

An ESC report should be prepared by a professional engineer according to the *City of Regina's Development Standards Manual*.

6.5 Engineering Drawings

All engineering drawing submissions must be signed and sealed by a Professional Engineer registered in the Province of Saskatchewan to ensure a detailed review has been undertaken by the responsible engineer of record prior to submission. Revisions to drawings that are currently in circulation will not be accepted.

The following are general requirements for engineering drawings to be submitted to the City:

- Electronic submissions must conform to the *City of Yorkton's AutoCAD Development Drawing Submission Requirements*
- Drawings should be drawn on standard A1 (841 x 594 mm) sheets
- Only metric dimensions will be accepted.
- The drawings should clearly distinguish between existing, proposed, and future features
- A limit of construction boundary should be shown on all drawings, and must not vary from drawing to drawing.

Each drawing set should include the following drawings and should be presented in the same order.

6.5.1 Cover Sheet

- The cover sheet should include all applicable information including the name of the development or project; name and address of the owner and consulting engineer; the City of Yorkton subdivision file number or development permit number; a legal description of the lands involved; the issue/revision number and date of issue; and a list of drawings in the set.
- A key plan showing the location of the site within the City of Yorkton should also be shown on the cover sheet.

6.5.2 Outline Plan, Tentative Plan, and Phasing Plan

- A copy of each of the above drawings should be included, as applicable. Subdivision and lot layout design must conform to the approved Tentative Plan.

6.5.3 Streets and Sidewalks Cover Sheet

- Streets and sidewalks layout should show all curb, gutter, and sidewalks including transition points and curb types; catch basins including ICD information; carriage way and right-of-way widths; radii; location of Canada Post Community Mail Boxes; and any other information as required.
- Proposed roadway cross-sections must be included on this sheet or a separate details sheet. All sections should include roadway, sidewalks, utility line assignment, and lighting, complete with dimensions.

6.5.4 Storm, Wastewater, and Water Cover Sheets

- Water main layout should show all hydrants, lines, valves, fittings, line sizes, pressure control facilities, pressure zone contours, Pressure Reducing Valve (PRV) requirements, and park services.
- Wastewater layout to show all proposed wastewater lines, manholes, and appurtenances. Grade, size, type of pipe, length of each section, invert and rim elevations, and direction of flow should be indicated on the drawings. Manhole plugs should be shown in trap lows.
- Storm sewer layout to show all proposed storm lines, manholes, and catch basins. Lengths, grades, invert and rim elevations, and direction of flow should be indicated on the drawing. Ditches, culverts, and ponds should be indicated as well. A storm sewer design table should be included on the cover sheet.

6.5.5 Building Grade Plan

- The Building grade plan should show all lot corner elevations and at least two side yard elevations (dimensioned from the front or rear property line), minimum top of footing grades, suggested front and rear grades, wastewater and storm invert elevations, size of water service, location of services, driveway locations, mailbox locations, hydrant locations, street light locations, water table contours (1.0 m interval), shallow utility furniture, bearing certificate requirements, PRV requirements, restrictions of housing type due to grades, and lot numbers.
- Where extremes in elevation of abutting lots require the construction of a retaining wall, it shall be indicated on the plan

6.5.6 Overland Drainage Plan

- Overland drainage cover sheet should indicate trap lows and calculations, overland drainage flow direction and slopes, overland flow characteristics (flow, depth, velocity), and emergency spill locations.

6.5.7 Stormwater Management Plan

- The Stormwater Management Plan should show all catchment areas, flow arrows, trap low locations, storm infrastructure and facilities, culverts, and emergency flow route(s).

6.5.8 Plan Profiles

- Plan profile drawings should be submitted at a horizontal scale of 1:500 and vertical scale of 1:50 for water mains, wastewater, storm sewers, services, and roads. The geometric layout and dimensions of all above noted utilities including lanes, walkways, and lots should be shown clearly on the plan portion of the drawing. The profile section should show the existing ground profile and the proposed design street grades, and the proposed design of all underground utilities.

6.5.9 Landscaping Drawings

- Please refer to the [City of Yorkton's Landscape Design Standards](#) for detailed information on landscaping drawing requirements.

6.5.10 Erosion and Sediment Control Plan(s)

- Erosion and Sediment Control drawings should meet the requirements herein as well requirements specified in the *City of Regina's Standard Construction Specifications*.

7 DEVELOPMENT PERMIT (DP) AND DEVELOPMENT SITE SERVICING PERMIT (DSSP) DRAWINGS AND REPORT SUBMISSIONS

All site developments (private, commercial, industrial, and multi-family residential) must submit site servicing drawings as part of the Development Permit application. Because the set of required drawings varies according to the complexity of the project, applicants are encouraged to request a pre-application meeting to discuss the required submissions for each individual project.

Please refer to Section 6.5 above for a list of general requirements for engineering drawings.

7.1 Cover Letter

All site servicing drawing submissions must include a cover letter outlining the type of submission (i.e., preliminary, final, or as-built). The cover letter for the preliminary drawing submission should include an engineering design brief outlining the key design assumptions and make reference to all supporting studies for the project (e.g., traffic impact assessment; traffic noise analysis, staged master drainage plan, geotechnical evaluation, etc.). Subsequent submissions should include a copy of the comments provided by the City and a written response to those comments.

7.2 Schedule

All final engineering drawing submissions must include a preliminary schedule (Gantt chart).

7.3 Design Reports

Preliminary drawing submissions should include two bound hard copies and one electronic copy of all design reports. Reports that have been previously submitted to the City and accepted (e.g., under Master Area Structure Plan, Area Structure Plan, or Outline Plan) need not be resubmitted, but should be referenced in the cover letter.

The design reports identified in Section 6.4 above are required for Development Permit in the City of Yorkton. The Developer is encouraged to consult the Director of Planning and Engineering at the early stages of the project to determine specific design requirements for the development area, and to determine if revisions or updates to reports submitted at Area Structure Plan or Outline Plan stage are required.

7.4 Engineering Drawings

All engineering drawing submissions for grading and site servicing must be signed and sealed by a Professional Engineer registered in the Province of Saskatchewan to ensure a detailed review has been undertaken by the responsible engineer of record prior to submission. Revisions to drawings that are currently under review will not be accepted without prior approval.

7.4.1 Composite Site Servicing Plan

A composite site servicing plan should be included in the set, showing all proposed roads, lots and lot numbers; all wastewater and storm sewers including pipe diameter and direction of flow; all water mains, hydrants and valves; all manholes and catch basins; private and public servicing information, as well as any existing streets and services surrounding the development. Proposed and existing shallow utilities and easements should also be included.

7.4.2 Site Grading Plan

Site grading plan should show general grading information including the existing and

proposed elevations along property lines, driveway locations, sidewalks, walkways, storm and surface water drainage directions, major overland and emergency overland flow routes, trap low extents and calculations, retaining walls, etc.

7.4.3 Overland Drainage Plan

Overland drainage cover sheet should indicate trap lows and calculations, overland drainage flow direction and slopes, overland flow characteristics (flow, depth, velocity), and emergency spill locations.

7.4.4 Stormwater Management Plan

The Stormwater Management Plan should show all catchment areas, flow arrow, trap low locations, storm infrastructure and facilities, and culverts.

7.4.5 Erosion and Sediment Control Plans

Erosion and Sediment Control drawings and report should meet the requirements specified in the *City of Regina's Standard Construction Specifications*.

7.4.6 Additional Drawings as Required

Depending on the complexity of the project, additional drawings may be required, including separate cover sheets for underground utilities, as well as plan/profile sheets for assets in the public right-of-way.

8 INSPECTIONS DURING CONSTRUCTION AND MAINTENANCE

8.1 Subdivisions

Full-time inspection of the Subdivision by the Developer's Consulting Engineer must be provided during the construction and maintenance of the project, whenever contractors are on site. All backfill operations must be monitored on a full-time basis by a geotechnical consultant.

The latest edition of the *City of Regina's Consulting Engineer's Field Services Guidelines* should be used as a guideline for field inspections.

8.2 Site Development

Full-time inspection of the development by the Developer's Consulting Engineer shall be provided during the construction and maintenance phases of the project within all Municipal road right-of-ways, utility easements and right-of-ways, and any municipal lands. All backfill operations in public right-of-ways must be monitored on a full-time basis by a geotechnical consultant.

The latest edition of the *City of Regina's Developers / Consultants Field Services Manual* should be used as a guideline for all field inspections.

8.3 Inspections by the City

The City of Yorkton inspection staff must have free and immediate access to the Subdivision area at all times during construction for the purpose of inspecting the site and sampling materials; however, the City has no duty or obligation to discover or advise the Developer of any item of non-compliance during construction.

9 Construction Completion Process

9.1 Construction Completion Certificates

Construction completion certificates consist of, but are not limited to, the following:

- Underground utilities:
 - Water mains and hydrants
 - Wastewater
 - Storm sewers
 - Service connections
- Surface improvements:
 - Paved roads
 - Paved or graveled lanes
 - Sidewalks, curbs, gutters and catch basins
 - Overland drainage
- Storm ponds
- Landscaping:
 - Municipal reserve improvements
 - Sound fencing
 - Screen fencing
 - Pathways

9.2 Submission Process

Following the completion of one entire phase of local improvements, the Developer's Consultant may submit Construction Completion Certificates to the City's Engineering Department for each of the relevant improvements as noted in Section 7.1 . The Consultant should provide the following documentation, as applicable, along with the CCCs. **Appendix A** includes a complete checklist for these items.

- **Four original Construction Completion Certificates** for each improvement, the CCCs must be signed and stamped by the Developer's Consulting Engineer and an 11"x17" cover sheet of the improvement must be attached with the construction boundary marked in red.
- **A flushing, disinfecting, and testing final report** must include complete hydrostatic test results, water quality lab test results. All operations related to testing and disinfection must be in accordance with the AWWA standards.
- **CCTV footage of wastewater and storm mains, and mandrel test reports (if required).**
- **Hydrant certification letter** signed and stamped by the consulting engineer, confirming that each hydrant has been put into service and has been tested for proper operation and flow. The consulting engineer must provide information on the date and time of the test(s) and pressure (kPa) and flow (LPS) results.
- A bound copy of **compaction reports** for underground utilities installation and surface improvements
- **Concrete and asphalt test results** for surface improvements from a certified geotechnical engineer
- **Weekly erosion and sediment control inspection reports** signed by an appropriate ESC professional.
- One CAD and one pdf set of the **Issued for Construction Drawings** signed and stamped by the Developer's Consulting Engineer.
- One electronic copy of the completed **Unit Cost Worksheet**

- One electronic copy of all **Property Service Connection Reports**

The applicable documents must be submitted as a complete package for each phase. Incomplete submissions will be returned without review.

Additional information may be required at the request of the Director of Planning and Engineering (e.g., grade sheets, daily inspection reports, etc.).

9.3 Inspections

The consulting engineer may request a formal CCC inspection by the City immediately upon construction completion of one complete phase of improvements (underground, surface, storm ponds, or landscaping). Prior to requesting a formal site inspection, the consulting engineer must inspect the site to verify that there are no outstanding deficiencies prior to requesting a formal site inspection.

All inspections are subject to cancellation due to weather conditions. The City requires 100% of all critical infrastructure (valves, manhole covers, catch basins, etc.) as well as 90% of all other installations to be completely visible, accessible, and clear of snow, ice, and debris at the time of CCC inspection.

The City will complete a certain number of free inspections for each subdivision, as outlined in the current City of Yorkton Development Services Department Fee Schedule. Should additional inspections be required, the cost of the inspection will be charged to the Developer at the discretion of the Director of Development and Engineering Services.

9.4 CCC Issuance

CCCs will be issued after all essential deficiencies noted in the inspection are resolved, the subdivision has been registered, all fees have been paid, and all required documentation has been submitted to the satisfaction of the Director of Planning and Engineering.

9.5 Warranty Period

All warranty periods for construction of Local Improvements begin at the date of execution of the Construction Completion Certificate(s) by the Director of Planning and Engineering and the Chief Administrative Officer to the date of execution of the Final Acceptance Certificate(s) unless otherwise specified.

Infrastructure	Warranty Period
<ul style="list-style-type: none"> • Water and sewer connections ** 	One year++
<ul style="list-style-type: none"> • Sidewalks, Curbs, Gutters and Catch Basins# • Paved Roads, Lanes and Walkways (excluding Top Lift)## • Overland Drainage Facilities • Graveled Lanes### 	One year++
<ul style="list-style-type: none"> • Top Lift for Paved Roads, Lanes and Walkways 	Three months
<ul style="list-style-type: none"> • Landscaping/Tree Planting • Sound Attenuation • Fencing 	Two growing seasons for trees and shrubs++
<ul style="list-style-type: none"> • Storm Ponds 	One year++

Table 1: Local Improvement Warranty Periods

NOTES:

*The term winter means the period from October 31 of any calendar year until May 1 of the following calendar year. A period of two winters shall include two successive winters.

**The Developer's obligations for maintenance in respect to water and sewer connections shall not terminate until 30 days after the completion of construction, pursuant to the Uniform Building and Accessibility Standards Act (UBAS), for buildings on 75% of the lots created by the Subdivision, and where the Developer has not been advised by the City that a deficiency exists. Where such advice that a deficiency exists has been given by the City, the Developer shall repair or correct the deficiency to the satisfaction of the City, and maintenance for that specific connection will cease 30 days after the City's acceptance of said repair or correction.

++ The warranty period of all constructed infrastructure is in alignment with the warranty period as set out in the Greenfield Development Requirements, located on the City of Yorkton Website.

#Provided the underground utilities have, in the opinion of the Director of Planning and Engineering, been installed and compacted in an environment other than winter conditions; or if installed in winter conditions, the backfilling must be properly compacted with granular material, free of ice and other frozen deleterious materials.

##Paved Roads includes portions of underground utilities which protrude to the surface including: sewer manholes, manhole frames and covers; water main and hydrant valves, valve operating mechanisms, cathodic protection test points, and catch basin leads installed in paved lanes, roads or walkways.

###Provided at least 75% of the lots in the development area that are lane serviced, have all underground house services installed by the electric, natural gas, telecommunication systems, and no single lane has less than 50% of the house services installed

10 FINAL ACCEPTANCE CERTIFICATES (FACs)

10.1 Submission Process

Prior to the expiry of the Warranty Period as defined in **Table 1: Local Improvement Warranty Periods**, the Developer must submit to the Director of Planning and Engineering the following documents for review:

- **Four original Final Acceptance Certificates** for each improvement, the FACs must be signed and stamped by the Developer's Consulting Engineer and an 11"x17" cover sheet of the improvement must be attached with the construction boundary marked in red.
- **Weekly erosion and sediment control inspection reports** signed by an appropriate ESC professional
- **Test results** are required for most repair work completed during the warranty period. Consulting engineers are encouraged to contact Development and Engineering Services directly to determine what test results are required.
- One hard copy of water and sewer **acceptance testing** documentation. For water and wastewater mains, acceptance testing shall be performed and shall include visual inspection, CCTV video inspection and deflection (mandrel) testing and must be successfully completed prior to submission of the FACs. Acceptance testing is also required for the top lift of asphalt.
- One CAD copy and one pdf copy of the **as-built drawings**, signed and stamped by the Developer's Consulting Engineer. After these final as-built drawings have been reviewed and revised as necessary, **two full-sized hard copies** of the final drawings must be submitted.

With the exception of the as-built drawings, which may be submitted in advance, all the applicable documents must be submitted as a complete package for each phase. Incomplete submissions will be returned without review.

10.2 Inspections

Once the City has verified that all the required FAC documentation has been submitted, and the consulting engineer has inspected the site to confirm that there are no outstanding deficiencies, the consulting engineer may request a formal FAC inspection.

All inspections are subject to cancellation due to weather conditions. The City requires 100% of all infrastructure (valves, manhole covers, catch basins, etc.) to be completely visible, accessible, and clear of snow, ice, and debris at the time of FAC inspection.

The City will complete a certain number of free inspections for each subdivision, as outlined in the current City of Yorkton Development Services Department Fee Schedule. Should additional inspections be required, the cost of the inspection will be charged to the Developer.

10.3 FAC Issuance

FACs will be issued after all the required documentation has been submitted to the satisfaction of the Director of Planning and Engineering, the applicable performance deposits for undeveloped lots have been provided to the City, and all fees have been paid.

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2 Watermains & Appurtenances

1.0 FOREWORD

This section outlines the minimum requirements for water distribution systems required for development. It is the Developer's responsibility to develop the land to meet or exceed the standards in accordance with good engineering practices, specific site condition requirements, and/or as may be required by the City of Yorkton, the Saskatchewan Water Securities Agency, and Saskatchewan Environment.

1.1 Policy, Goals and Objectives

Design and provide water distribution facilities which meet the requirements and recommendations of the most recent version of the following:

- The *Environmental Management and Protection Act* - Saskatchewan Environment approval is required prior to constructing, extending, altering or operating any waterworks
- *Water Regulations, 2002* – A permit to operate a Waterworks contains requirements for the protection and health of the water user as well as water quality and testing standards
- City of Yorkton, *Waterworks Sewer and Water Services Bylaw (19/2006)*
- City of Yorkton, *Waterworks management bylaw (18/2006)*
- City of Yorkton, *Building Bylaw*
- City of Yorkton *Community Initiatives Water Conservation Program*
- Canadian Plumbing Code of Canada.
- Plumbing and Drainage Regulations - The Public Health Act
- City of Regina's Developer's / Consultants Field *Services Manual*

1.2 Definitions

“Trunk/Feeder Watermain” A trunk watermain (trunk main) is a pipe over 400 mm nominal diameter which delivers potable water within the distribution system network. Service connections to trunk mains are not permitted.

“Distribution Watermain” A distribution watermain is a pipe up to 300 mm which delivers potable water within the distribution system network. Service connections to distribution watermains are permitted.

“Oversized Watermain” An oversized watermain is one which is designed to serve adjacent or extended development areas and is larger than 300 mm. Oversized watermains, where approved, will be funded as set out in the Development Agreement or as separately agreed by the Developer and the City.

2 CONCEPT DESIGN STANDARDS

2.1 General Concept Servicing

Sizes and layout of water mains must be in accordance with the most current approved Outline Plan. Distribution mains shall be continuous looped systems.

Any water system must be designed to serve not only the area within the development boundary, but also any area that is a tributary to the system. The City may request distribution main sizes to be increased as considered necessary to accommodate future development

Overall water servicing concept plans must, at a minimum, show the design of the distribution water mains and the trunk/feeder mains for the development. The design shall include proposed pipe sizes, connection points to the existing City system as well as proposed extensions into future adjacent development areas.

It shall be the responsibility of the Developer to demonstrate the serviceability of the development. New development shall not degrade the service level of the existing distribution system below an acceptable level as defined in hydraulic network analysis Section 2.2 below.

2.2 HYDRAULIC NETWORK ANALYSIS

2.2.1 Hydraulic Analysis Design Standards

Carry out computerized modeling of all proposed watermains within each development using WaterCAD® by Bentley Systems Inc®. The City of Yorkton will provide hydraulic grade line (HGL), pressure and elevation data extracted from the City's WaterCAD® base model for each existing node to which connection is proposed.

Set node elevations in the model to design street elevation not design watermain elevation.

Distribute projected domestic demands as equally as possible throughout the system in accordance with land use and zoning adjacent to each node. In the event that a node represents a significantly greater number of services than average, the demand should be modified to reflect the larger requirement at the node.

2.2.2 Design Criteria

- Fire Flow: As per Section 2.2.3
- Average Day Demand: 415 Lpcd
- Design Peaking Factors:
 - Peak Day Demand = 2.1 x Avg. Day Demand
 - Peak Hour Demand = 3.2 x Avg. Day Demand.
- Utilize the following Hazen-Williams C-factors for all hydraulic modeling:
 - PVC pipe – Design C-factor = 130
 - HDPE pipe – Design C-factor = 130
 - Steel pipe – Design C-factor = 120
 - Other – To be determined by the City

Zoning	Population
Single Family Residential	3.3 Persons/unit
Multi-Family Residential	2.3 Persons/unit
High Rise Residential	235 Persons/ha
Commercial	65 Persons/ha
Institutional	50 Persons/ha
Industrial	25 Persons/ha

Table 1: Design Population

Note: Residential populations are based upon minimum lot sizes as defined in the Zoning Bylaw and are subject to adjustment on a case by case basis.

2.2.3 Fire Flow

Initial fire flow design requirements are as follows and are subject to adjustment on a case by case basis. Fire flow is to be assumed to occur concurrently with Peak Day Demand in the system.

Zoning Designation	Fire Flow Requirement Designation	Required Minimum Fire Flow
FW, NC, PS, PUD, R1, R1A, R2, R3, R4, R5, UH	Level 1	90 L/s @ 20psi
HC, LC1, LC2, MAC, MAC3, MS, MX, R6, R7, R8, TAR	Level 2	150 L/s @ 20 psi
D, DSC, I, IA, IA1, IB, IB1, IP, IT, RR, WH	Level 3	250 L/s @ 20 psi
IC, IC1	Level 4	300 L/s @ 20 psi
Airport, Airport Industrial	N/A	Requirements as per Yorkton Airport Authority

Table 2: Fire Flow

2.2.4 System Performance and Submissions

Simulate and verify the following maximum pressure drop requirements corrected for node elevation differences under Peak Day and Peak Hour flows. Pressure drops to be calculated between the City of Yorkton tie-in node(s) and the node with the lowest hydraulic grade line in the complete development (not in a partial system).

Pressure drop should be calculated in the form of hydraulic grade line.

- Peak Day Demand maximum allowable pressure drop 17 kPa.
- Peak Day Demand minimum allowable pressure corrected to proposed ground elevation 280.0 kPa.
- Peak Hour Demand maximum allowable pressure drop 27.6 kPa.
- Peak Hour Demand minimum allowable pressure corrected to proposed ground elevation 269.4 kPa.

Simulate and verify the following maximum pipe velocities:

- 1.5 m/s at Peak Hour Demand
- 3.2 m/s at Peak Day Demand + Fire Flow

A hydraulic network analysis shall be submitted which includes the following:

- An introduction with a general description of the proposed development.
- A section outlining any assumptions made for modeling (e.g. pipe material and size, Hazen-Williams C-factor, per capita consumption rates, any other relevant information).

- c. A section discussing the design population of the proposed development and how it was calculated. All calculations should be shown.
- d. Calculations showing the Average Day, Peak Day and Peak Hour
 - i. Demands for the proposed development.
- e. A description of calculations outlining how the demands are distributed among the nodes in the proposed system.
- f. A section that describes where the proposed pipe network will be tied in to the City of Yorkton's network. This should include all hydraulic information for the City of Yorkton tie-in junctions.
- g. A drawing showing the pipe network and lot layout along with proposed land zoning.
- h. A drawing showing the assigned pipe and node numbers. Pipe sizes and material types are also to be shown.
- i. An electronic copy of the hydraulic model completed in Bentley WaterCAD®. The model should be developed and tested, complete with the following run scenarios:
 - i. Average Day Demand
 - ii. Peak Day Demand
 - iii. Peak Hour Demand
 - iv. Fire Flow Analysis (Flows to meet zoning requirements)
 - v. A section describing the results of all simulations.

2.3 Distribution Service Pressure

Normal distribution service pressure leaving the pumping station(s) in the Primary Pressure Zone is approximately 414 kPa measured at a datum elevation of approximately 576.2 m ASL geodetic. System pressure losses are generally in the range of 14 to 28 kPa under Peak Day Demand conditions.

Pressures within a Second Pressure Zone, when implemented, will differ from the primary zone. Contact the City of Yorkton for hydraulic information within this area.

Refer to drawing with pressure zones

2.4 Water Supply Staging Requirements

For subdivisions of 2 ha and less than 10 ha in total final area, provide a minimum of two independent connections to the distribution system within 5 years of initiating development.

For subdivisions 10 ha and less than 20 in total final area, provide a minimum of two independent connections to the distribution system within 3 years of initiating development.

For subdivisions 20 ha in total final area, provide a minimum of two independent connections to the distribution system within 2 years of initiating development.

Each connection must be at least trunk/feeder main classification or as approved by the City of Yorkton.

3 DETAILED DESIGN STANDARDS

3.1 Watermain Design

Watermains shall be designed to ensure the following alignments are maintained during construction:

- Design watermains to avoid elevation high points which can act as air pockets wherever possible.
- Design watermains to cross above sewer mains wherever possible. Minimum clear vertical separation of watermain and any sewer main to be 0.3 m for watermains passing above sewer mains and 0.5 m for watermains passing below sewer mains.
- Locate watermains a minimum of 3.0 m horizontally from sewer mains.
- Locate watermains in street right-of-way at an offset of 3.0 m from centerline.
- For installation in walkway or easement - provide a minimum walkway or easement width of 6.0 m for mains 400 mm or less in diameter and 10.0 m for watermains larger than 400 mm. Locate mains in the centre of walkway or easement unless specifically approved otherwise.

3.2 Acceptance Testing

All new potable water distribution systems or portions thereof installed within the municipal boundaries of the City shall comply with all procedures and methodologies for flushing, testing and disinfection of water mains as outlined in the most recent version of the City of Regina's Standard Construction Specifications SECTION 02517 Watermain Tests. Acceptance testing shall be successfully completed prior to submission of the Construction Completion Certificate.

3.3 Depth of Cover

For water mains installed in clay or glacial till, the following installation depths shall apply:

- Minimum depth of cover on distribution watermains is 2.7 m to top of pipe.
- Minimum depth of cover on feeder/trunk watermains is 2.3 m to top of pipe

Watermains installed in granular material shall be installed to a depth to ensure at least equivalent thermal protection is provided as if they were installed in clay or glacial till.

Watermains proposed for installation at depths less than specified must be insulated in a manner satisfactory to the City and to a degree that will provide at least equivalent thermal protection at the design depth of cover as if they were installed in clay or glacial till.

3.4 Watermain Sizing

Sizing of watermains will be determined by hydraulic network analysis as set out in Section 2.2.

The minimum size of any distribution main shall be 150 mm.

3.5 Pipe Material

Refer to City of Regina's section 02511-Watermains in the Standard Construction Specifications for products which are approved for use in the construction of watermains.

3.6 Watermain Looping

Design of dead-end watermains is permissible only in cul-de-sacs and locations specifically approved by the City.

Developers must include a standard flush out, in accordance with the Standard Construction Specifications Drawing W-12, at the end of all dead-end watermains. Hydrants may not be

used as flush outs except in locations where the watermain has been stubbed to allow for future expansion.

The maximum allowable length of dead-end watermain is 150 m.

For a looped water network, fire flow levels will be interconnected as follows, according to the levels defined in Table 2:

- 150 mm mains in Level 1, areas at least every 300 m.
- 150 mm mains in Level 1 areas zoned R5 and NC at least every 200 m or provide minimum 200 mm mains interconnected at least every 300 m.
- 200 mm mains in Level 2 and higher areas at least every 200 m.

3.7 Fire Hydrants

Hydrants shall be compression type, break away design with square operating nuts. All new hydrants should be self-draining hydrants and shall be painted lime green with black caps and tops. Existing non-draining hydrants are to be painted red with black caps and tops. All hydrants shall have two hose connections 57 mm in size at 180 degrees with Mutual Thread and a 114 mm pumper connection to match the City of Yorkton standards.

A flushing hydrant or 50 mm Type B or C flushing assembly must be installed at the end of all water mains terminating in cul-de-sacs.

A temporary hydrant and valve must be installed at the end of all water mains that terminate in a roadway or easement where a future water main connection will be made by the Developer for future phases or by others. The temporary hydrant shall be removed, if required, when future phases are constructed or incorporated into the design of the future water main system.

Design public and private fire hydrant installations in accordance with the following standards and criteria, whichever is more stringent, and to the approval of the City of Yorkton Fire Department:

- a. National Fire Protection Association (NFPA) Standards
- b. National Building Code of Canada, 1995
- c. Location of new Hydrants:
 - i. On the watermain side of the street;
 - ii. At the entrances to streets;
 - iii. At the entrance to cul-de-sacs. Place hydrants on the right hand side (when entering the cul-de-sac) where possible;
 - iv. Within 3.0 m of the property line;
 - v. A minimum of 300 mm from back of walk;
 - vi. 1.5 m from back of curb on streets designated as residential; and,
 - vii. 1.8 m from back of curb on all other streets.
- d. Fire hydrants shall be spaced such that:
 - i. In Level 1 areas, there is a maximum of 150 m unobstructed distance between hydrants.
 - ii. In Level 2 and higher areas, there is a maximum of 90 m unobstructed distance between hydrants.
 - iii. A fire hydrant coverage map, which shows the coverage provided by each hydrant, shall be submitted with the engineering plans.
- e. Use minimum 150 mm pipe for hydrant leads or as required to limit pressure loss between the connection points to the main and the hydrant to less than 21 kPa at a flow rate of not less than 90 L/s at the hydrant.

Each hydrant shall be tested for proper operation and flow prior to CCC. Upon completion of the tests, the Consulting Engineer will provide written verification that the hydrant meets the City's minimum requirements and is operational.

3.8 Valves

Valve placement should conform, at a minimum, to City of Yorkton guidelines; however, the City of Yorkton may ask for additional valves where they may provide an increased reliability of service or a specific operational benefit.

Please note the following requirements:

- Water Valves must open in a clock wide direction (Same as City of Regina)
- All water stems shall have 38mm (1 1/2") keys

Design and provide valves in accordance with the following criteria. Valves shall be:

- a) Equal to the nominal size of the watermain.
- b) Located on or in line with property lines and within the paved portion of streets.
- c) Located at all street intersections and additional locations in residentially zoned areas so that the closure of adjacent valves will not result in an interruption of service to:
 - i. More than 26 individual residential addresses, including those within detached single family, duplex or townhouse units.
 - ii. Apartment block(s) containing a total of 52 or more individual apartment units.
 - iii. Any combination of the above.
- d) Located in Fire Flow Level 1 areas so that a maximum of two hydrants would be out of service by the closure of the nearest adjacent valve on either side of any point on the watermain.
- e) Located in Fire Flow Level 2 or higher areas so that a maximum of one hydrant would be out of service by the closure of the nearest adjacent valve on either side of any point on the watermain.
- f) Located on every hydrant lead.
- g) Located on all interconnections to feeder and trunk watermains.
- h) Spaced at a maximum of 1000 m along trunk/feeder mains.
- i) Located at either end of sections of watermain passing through an easement or walkway.
- j) Located such that the closure of a maximum of 4 valves will isolate any section of watermain.
- k) For valves located at intersections, the number of required valves equals one less than the number of interconnections (i.e. for a 4-way cross connection, three valves are required).

3.9 Service Connections

A service connection extends from the connection point to the watermain to the property line and is deemed to consist of: a main stop (valve for services larger than 50 mm), water service pipe and, a curb stop (valve for services larger than 50 mm) located on the property line. Construct service connections in accordance with the *City of Regina's Standard Construction Specifications* and the following criteria:

- a. Water service connections are to connect to the watermain at a perpendicular angle where possible. Exceptions may be approved at the discretion of the City.
- b. Service connections for commercial and industrial zoned applications are to be a minimum 50 mm diameter, or sized appropriately for the proposed use of the site.

- c. Individual residential service size to be not less than 20 mm for services less than 20 m long.
- d. Individual residential service size to be not less than 25 mm for services more than 20 m long and for all lots having a centre of lot elevation between 585.0 and 590.0 m ASL.
- e. Service size to be not less than 25 mm for a fourplex unit.
- f. Provide individual services to side by side duplex units.
- g. Service superimposed duplexes from a single connection to the watermain. Minimum service sizes to be 25 mm. Split the main service into two individual services immediately inside the building and provide a lockable main shutoff valve on each branch.
- h. Service front to back duplexes from a single connection to the watermain. Minimum service size to be 25 mm for services less than 20 m long and 40 mm for services over 20 m long or where the center of the lot elevation is above 585.0 m ASL. Provide a minimum 20 mm service into the front unit and a minimum 25 mm service into the back unit. Provide a curb stop on the property line for each service. Space curb stops a minimum of 750 mm apart.
- i. Private developments containing more than 26 residences require either provision of an isolating valve on either side of the service connection on the watermain being connected to or, service connections from at least two separate distribution watermains (looped system). Maximum length of a single connection system is 150 m. Refer to Section 5.5.3.
- j. Private developments containing more than one multi-residence building require the provision of a shutoff valve on the water service branch into each building.
- k. Private developments containing more than one multi-residence building or more than 26 residences connected to an un-looped watermain require provision of a flushout or hydrant located to enable the private watermain to be flushed out over its entire length.
- l. Service connections having less than 2.7 m of cover to the top of pipe are not permitted.
- m. Service connections may not pass within a horizontal distance of 1.5 m from manholes or catch basins. Where circumstances prevent achieving the required clearance, consideration may be given to insulation of the service pipe as a means to reduce this clearance requirement.
- n. Service connections to the City's trunk main system known as the 'City Loop' must be at least 300 mm diameter.
- o. All redundant, unused or lead water service connections shall be disconnected and capped at the main.
- p. No building shall be erected over a service connection, nor shall a service connection be installed under a building.
- q. A separate service connection to the distribution system is required for each lot with distinct certificates of title. Water service pipes are not permitted to traverse any private property other than that on which the buildings that the piping serves are located, unless a legal easement and permission from the City of Yorkton has been obtained.

3.10 Service Connections to Properties Containing Hazardous Materials

For servicing property containing or which has contained underground storage tanks for the storage of petroleum or any other material classified as hazardous, use copper pipe for services 50 mm and smaller. Use ductile iron pipe or as approved for services 100 mm and larger. Install an impermeable barrier of bentonite or other approved material in the service trench at the property line in accordance with the City of Regina Standard Construction Specifications.

3.11 Services to Parks

Park irrigation systems are to be provided with either 50 mm or 100 mm service. Generally, parks having an irrigated area of 1.25 ha or less require a 50 mm service and parks with an irrigated area greater than 1.25 ha require a 100mm service. However, where parks are located in areas of lower distribution pressure, or are of a shape requiring very long sprinkler runs, these guidelines can vary. Additional requirements may include the use of a larger service or the provision of a looped system supplied from two points on the distribution system. Obtain pre-approval of system designs proposing the use of booster pumping. Systems employing booster pumping will be considered only for special circumstances.

3.12 Building Service and Fire Systems Booster Pumps

Generally, service lines are to be designed so that booster pumping is not required. Where the use of a booster pump is unavoidable, design the service and booster pump in accordance with the following:

- a. With backflow preventer assembly and water meter on the upstream (suction) side of the booster pump. Water meters are not required on fire booster pumps.
- b. Minimum pressure at pump suction connections shall be greater than 140 kPa at a flow rate of 110% of the booster pump design flow.
- c. Where operation of a domestic supply booster pump at the above criteria results in a pressure less than 245 kPa at the service connection point to the watermain, as determined by **WaterCAD®** modeling with the system operating at Peak Day Demand, provide a modulating suction pressure sustaining valve, or other device acceptable to the City of Yorkton, set to preserve a minimum 245 kPa pressure as measured at the watermain connection point. Provide modeling results for review/approval.
- d. Where operation of a fire system booster pump at the above criteria results in a pressure less than 140 kPa at the service connection point to the watermain, as determined by **WaterCAD®** modeling with the system operating at Peak Day Demand, provide a modulating suction pressure sustaining valve, or other device acceptable to the City of Yorkton, set to preserve a minimum 140 kPa pressure as measured at the watermain connection point. Provide modeling results for review/approval.

3.13 Water Meter Installation Standards and Backflow Prevention Requirements

Metering is required on each water service connected to the City of Yorkton supply or distribution systems. Water meters are sized, supplied and installed by the City of Yorkton and remain City of Yorkton property.

All new water services, except those for single, duplex and four-plex residential services, require the completion of a Meter Sizing Form so that the appropriate meter size can be determined by the Planning & Engineering Department. **Meter Sizing Forms** can be obtained from the Planning & Engineering Department.

Applicants are encouraged to contact the Cross Connection Control Coordinator in the Planning & Engineering Department for direction regarding the requirement for backflow

prevention within their proposed facility or development.

Details on the installation of water meters and backflow preventers can be found in the *City of Regina Standard Construction Specifications*.

4 SUBMITTALS

A cover letter shall be submitted with the preliminary engineering drawings and should confirm that that design is in accordance with the requirements of this section of the Engineering Guidelines, including confirmation that hydrant flows and pressures conform to Section 2.2.

The Developer's engineering consultant shall submit detailed, dimensioned design plans to the attention of the City of Yorkton Planning & Engineering Department, providing relevant design information and assumptions governing the water system design including pipe sizing. The plans must be prepared under the supervision of, and sealed by, a Professional Engineer registered to practice in the Province of Saskatchewan.

Any comments provided by the City of Yorkton shall be addressed and plans shall be resubmitted for final review and approval.

Once the plans have been approved by the City of Yorkton, the Developer's engineering consultant shall submit detailed design plans and specifications to Saskatchewan Ministry of Environment on behalf of The City of Yorkton in accordance with the requirements to obtain Approval to Construct, Extend, or Alter Existing Works.

Approvals from all affected private and public agencies shall be obtained prior to constructing any works across or adjacent to infrastructure within their jurisdiction.

Work may not commence until the City of Yorkton, Sask Environment and all other regulatory bodies have approved the submission

3 Wastewater Mains & Appurtenances

1.0 FOREWORD

This section outlines the minimum standards or requirements for sanitary sewer systems required to be provided in a development. It is the Developer's responsibility to develop the land to meet or exceed the standards in accordance with good engineering practices, specific site condition requirements, and/or as may be required by the City of Yorkton, The Saskatchewan Water Securities Agency and Saskatchewan Environment.

1.1 Policy, Goals and Objectives

The basic objective of a wastewater collection system is to safeguard public health and minimize impact on the environment by collecting wastewater generated within the City of Yorkton for treatment and disposal at the municipal wastewater treatment plant. The environmental objective is the prevention of escape or discharge of untreated wastewater to the environment, such as watercourses or onto public or private lands, either directly or through overflows to the drainage system.

All new systems or extensions from existing systems are to be designed such that drainage run-off from roofs, lots, streets and other outside areas including yards and parking areas is excluded from the wastewater collection system. In addition, where possible, weeping tile drainage should be excluded from the wastewater collection system.

Minimization of the life-cycle costs for providing wastewater service to new development areas is the prime consideration in the selection of servicing alternatives. Economic analysis must include evaluation and comparison on the basis of operation and maintenance costs as well as capital cost differences. Extension of wastewater servicing using gravity flow systems to the maximum extent possible is preferred. Utilization of pumping systems may be permitted only when insurmountable constraints cannot be resolved. Economics will not necessarily be the deciding factor in evaluation of the acceptability of servicing proposals.

The City promotes an orderly progression of development and extension of wastewater collection systems. The objective is to achieve permanent system extensions in the most cost-effective manner. Temporary servicing schemes are not recommended where a permanent solution is feasible. Construction of connecting sewers through undeveloped areas (“leapfrogging”) shall be avoided whenever possible.

1.2 Definitions

“Wastewater Collection System” A wastewater collection system is made up of the following components:

- Wastewater Mains,
- Wastewater Trunks,
- Wastewater Manholes,
- Wastewater Service connections (from private property line to the main).
- Wastewater Lift Stations, and
- Wastewater Collection Tanks and Wet Wells.

“Trunk Sewers” A sanitary trunk is defined as a large main generally serving an area of 65 ha or more and **larger than 300mm** in diameter and fed mostly by sanitary sewer mains. Direct connections from service connections are not permitted to sanitary trunk lines.

“Wastewater main” A wastewater main is defined as a wastewater main generally serving less than 65 ha. Direct connections from service connections are permitted to wastewater mains.

2 CONCEPT DESIGN STANDARDS

2.1 General Concept Servicing

Sizes and layout of wastewater mains must be in accordance with the most current approved Outline Plan.

Any wastewater system must be designed to serve not only the area within the development boundary, but also any area that is a tributary to the system. The City may request wastewater main sizes to be increased as considered necessary to accommodate future development

Overall wastewater servicing concept plans must, at a minimum, show the design of the wastewater mains and the trunk mains for the development. The design shall include proposed pipe sizes, connection points to the existing City system as well as proposed extensions into future adjacent development areas.

It shall be the responsibility of the Developer to demonstrate the serviceability of the development. New development shall not degrade the service level of the existing wastewater collection system.

2.2 Private Sewage Systems

New development is to be served by extension of the existing wastewater collection system for areas as indicated in the **Official Community Plan**. Other forms of servicing and/or separate treatment facilities are not allowed without the approval of the Director of Planning & Engineering

3 DETAILED DESIGN STANDARDS

3.1 Sizing of Mains

New sewers shall be designed to have hydraulic capacity such that the sewer is flowing at no more than full depth when conveying the total design peak flow rate. The design peak flow rate shall be determined for the total planned contributing area, and

be based on the ultimate anticipated zoning and density of development. No wastewater main shall be less than 200 mm inside diameter to allow for pipe cleaning and maintenance.

3.2 Estimated Wastewater Flows

The average daily wastewater flow used in the design of residential areas is 225 Lpcd (litres per capita per day). Where available, detailed area design population densities shall be used.

In the absence of detailed design population projections, densities are obtained from the anticipated future zoning floor space ratio (F.S.R.) using:

- a. one person per 55 square metres of floor space in detached dwelling residential areas,
- b. one person per 35 square metres in apartments, and
- c. one person per 23 square metres in commercial buildings.

In all other areas the average daily wastewater flows used in the design shall be 454 Lpcd (litres per capita per day).

3.3 Extraneous Flow Allowance

The designer shall include allowances of 21,000 L/ha/day (0.24 L/s/ha) shall be applied to account for infiltration in the wastewater collection system.

3.4 Spacing and Location of Manholes

Manholes are to be located at junctions, change of pipe size/slope/alignment and where monitoring may be required to allow for proper operation and maintenance of the wastewater collection system.

Maximum spacing between manholes shall be:

- 100 m for pipes sizes 300 mm or less, and
- 150 m for pipes sizes greater than 300 mm.

The design of the wastewater collection system should avoid placement of manholes in major system depressed areas or street ponding may occur. Manhole rim elevation shall be set to reduce inflow through manhole covers during major runoff events.

3.5 Wastewater Depths

Wastewater mains shall be installed with sufficient depth to meet the following requirements:

Lower than the water main on the street ;

- Sufficient depth to provide frost protection.
- Adequate depth to permit installation of wastewater services with a minimum of 2.6 m of cover and a minimum 2.74 m depth to the invert elevation of the service pipe at the property line; and
- Adequate depth to permit gravity drainage from all building services to the wastewater main. Special consideration should be given when property elevations may be low with respect to the surface elevation at the street right-of-way. Typically, the wastewater crown elevation should be at least 1.0 to 1.5 m lower than proposed basement elevations.

3.6 Slopes and Vertical Deviation

Please refer to the most current version of the *City of Regina Standard Construction Specifications* and *Development Standards Manual* for information related to vertical deviation of all wastewater installations. For all other installation information please refer the pipe manufacturer's specifications for slope and related specific installation requirements.

3.7 Wastewater Service Connections

Wastewater service connections shall be restricted to one service connection per detached residential property. All connections shall be constructed to the property line during development of underground construction. All connections to the mains shall be in conformance with the most recent version of the City of Regina's Standard Construction Specifications.

All wastewater service connections shall be installed using insert-a-tee. The use of cut-in/strap-on saddles for new in fill development for services from existing sewers will be approved on a case by case basis.

Service connections shall be installed at a minimum slope of 2%.

Services to detached residential properties shall not be permitted off wastewater mains located in easements. All connections must be located perpendicular to the mains located in the street.

Service connections to industrial and commercial/institutional properties may be permitted from wastewater mains located in easements, provided the proposed development will permit access to the easement and allow excavation as may be necessary for maintenance or repair or reconstruction of service connection.

All redundant or unused service connections shall be disconnected and capped at the main.

No building shall be erected over a service connection, nor shall a service connection be installed under a building.

A separate service connection to the collection system is required for each lot with distinct certificates of title. Wastewater service pipes are not permitted to traverse any private property other than that on which the buildings that the piping serves are located, unless a legal easement and permission from the City of Yorkton has been obtained.

3.8 Location of Main in Streets, Alleys and Easements

Wastewater mains shall be located in the centre of the street or road Right-of-Way (ROW) to provide a maximum construction alignment. In roadways with inverted crowns or full cross fall, the wastewater shall not be located near the lowest elevation in the cross section to minimize infiltration.

Design routing of wastewater mains through alleys and/or alternate easements will be rejected.

3.9 Trench Width Requirements

The trench width at the pipe level shall not exceed the maximum allowable width required for the design pipe material and pipe class as recommended by the pipe manufacturer.

3.10 Monitoring Manholes

Additional manholes shall be provided where the City has identified a need to monitor wastewater flows. The location, size and other relevant information shall be deemed site specific and is to be determined at the servicing design stage of the development project.

3.11 Lift Station Design Requirements

Extending wastewater collection system servicing by means other than gravity flow sewers shall be considered only where constraints dictate a requirement for a wastewater lift station.

The requirements for a wastewater lift station shall be defined by the City of Yorkton's Utilities Master Plan and designed by the developer's consultant in the Concept Plan stage of development. A design summary report shall be prepared under the supervision of, and sealed by, a Professional Engineer registered to practice in the Province of Saskatchewan, and shall be submitted to the Director of Planning & Engineering and may be reviewed by a third party Engineering firm retained by the City at the discretion of the Director.

The station design shall conform to the City's guidelines for wastewater lift station design including:

- a. The lift station building requirements design,
- b. The lift station standby power requirements design,
- c. The lift station landscaping design, and
- d. The lift station force main design.

The lift station controls, instrumentation and alarms design shall conform to the City's guidelines for wastewater lift station design.

3.12 Acceptance Testing

All new wastewater collection systems or portions thereof installed within the municipal boundaries of the City shall comply with all procedures and methodologies for flushing, CCTV video inspection and Deflection (mandrel) testing may be required at the discretion of the City of Yorkton as outlined in the most recent version of the City of Regina's Standard Construction Specifications 1320 Sewermain Testing. Acceptance testing shall be successfully completed prior to submission of the Construction Completion Certificate.

4 SUBMITTALS

The cover letter submitted with the preliminary engineering drawings should provide relevant design information and assumptions governing the wastewater design including contributing areas, inflow and infiltration allowances and all other relevant information.

Design flows for residential developments shall be calculated using a per capita average day flow of 225 litres per person per day (lpcd) with a peaking factor utilizing the Harmon's formula plus the extraneous flow allowances as specified herein

Minimum and maximum pipe slopes and velocities must meet the requirements outlined in the City of Regina's Standard Construction Specifications Manual and Development Standards Manual. The Municipal Engineer may ask for verification that the design velocities meet these requirements.

Information on projected population, flows and design, pipe sizing and grades shall be compiled on a standard flow sheet to allow for review and future reference. These shall be submitted together with the detailed servicing plans and specifications. Flow sheets shall be signed and sealed by a qualified Professional Engineer registered to practice in the Province of Saskatchewan.

Design Plans and Specifications are required to be submitted for review to the Saskatchewan Ministry of Environment as a condition of Permit to Construct, Extend, or Alter Existing Works. An approval of Saskatchewan Environment shall be obtained prior to commencement of construction, and submitted to the Director as part of the CCC documentation.

In addition, the design and construction of wastewater collection system must meet all the current requirements of all regulatory, governmental and public utility authorities having jurisdiction.

Work may not commence until the City of Yorkton, Sask Environment and all other regulatory bodies have approved the submission

4 Storm Sewer Mains, Appurtenances, & Facilities

1.0 FOREWORD

This section outlines the minimum standards or requirements for storm drainage systems required to be provided in a development. It is the Developer's responsibility to develop the land to meet or exceed the standards in accordance with good engineering practices, specific site condition requirements, and/or as may be required by the City of Yorkton and Saskatchewan Ministry of Environment.

1.1 Policy, Goals and Objectives

The long-term goal of the storm drainage program is to provide a reasonable, safe and cost effective, storm drainage level of service. This level of service shall provide a drainage system that shall minimize property flood damage by reducing frequency of and degree of flooding. The drainage system shall reduce and control surface flooding in such a manner as to provide safety for street traffic, pedestrians and children.

The drainage system is designed to handle runoff from rainstorms and snowmelt. Drainage shall not be contaminated by any component of domestic sewage, commercial or industrial effluent. A discharge of any drainage into the storm sewer system other than normal precipitation runoff shall not be allowed without approval.

All storm drainage systems and facilities (including dry ponds, wet ponds, wetlands, or a combination of these) within the City of Yorkton shall be designed and constructed in accordance with these standards and the latest edition of:

- The City of Yorkton *Area Master Drainage Plan*
- The City of Yorkton *Utilities Master Plan*

- The Saskatchewan Ministry of Environment
 - *Ecological Reserves Act*
 - *Environmental Assessment Act*
- Current edition of the *Environmental Management and Protection Act*
- The current version of the *City of Regina Construction Specification Manual*

1.2 Definitions

“Trunk Storm Sewers” All storm sewers of a size 1350 mm or greater are classified as trunk storm sewers and where approved shall be paid for from Servicing Agreement Fees.

“Return Period” The return period of a rainfall event is the inverse of the statistical chance that a storm of a given size will occur in any given year based on historical data.

“Major Rainfall Event” A major rainfall event is defined as a storm having a 1 in 100 year return period.

“Minor Rainfall Event” A minor rainfall event is defined as a storm having 1 in 5 year return period.

“Major System” A major drainage system is comprised of overland flow routes, swales, streets, watercourses, and storage facilities, and outfalls into storage or watercourses, planned, designed, and incorporated as part of the urban infrastructure to convey runoff from major rainfall events.

“Minor System” A minor drainage system is comprised of underground storm pipes incorporated as part of the urban infrastructure to convey runoff from the minor rainfall events.

2 CONCEPTUAL DESIGN

2.1 General

Storm drainage systems shall be designed on the basis of minor and major systems. The minor system (storm sewer piped system) shall be designed to carry the peak flow from a 1:5 year storm event. The major system (overland drainage system) shall be designed to safely carry the peak flow from a 1:100 year storm event, which cannot be carried by the minor system.

The minor and major systems should be designed to discharge stormwater by gravity. The City strongly discourages the use of stormwater pumping stations. Stormwater pumping stations shall be subject to approval by the Director of Planning & Engineering.

All building foundation drain/weeping tiles and roof drains are to be discharged to grassed or other pervious areas. Discharge flows must pass over a minimum of 2.0 m of pervious area prior to release to adjacent and/or public properties.

2.2 Area Master Drainage Plan

The Area Master Drainage Plan is an adopted drainage plan that describes the main drainage elements for the respective areas of the city as developed from a master plan drainage engineering study. It addresses the main elements of the minor system and the major system including trunk sewers, detention/retention, overland flow routes, and drainage quality.

The Area Master Drainage Plan for existing built up areas is prepared and funded by the Utility. In new development areas the Area Master Drainage Plan is prepared and funded using Servicing Agreement Fee Funding.

3 Detailed Design

3.1 Minor System

Minimum and maximum pipe slopes and velocities must meet the requirements outlined in the [Utilities Master Plan](#) or the *City of Regina's Development Standards Manual*, whichever is the more conservative requirement. The Director of Planning & Engineering may ask for verification that the design velocities meet these requirements.

Catch basin inlet control devices shall be plate type and shall be installed in accordance with the *City of Regina's Development Standards Manual* (Section 9 - Storm Water Collection System). Interconnected catch basins are strongly discouraged.

3.2 Major System

An overland flow analysis must be provided for all Subdivisions. The City will require detailed computer modeling to be carried out to define the complete system, including depth of flow and velocity along the conveyance route.

The emergency escape route for overland drainage should be clearly indicated on all the relevant drawings. If emergency flow passes over private land an "emergency overland flow right-of-way" must be acquired.

Developers shall refer to the City of Yorkton's [Area Master Drainage Plan](#) and *Regina's Development Standards Manual* to determine the allowable stormwater discharge rates and the area to which storm water shall be directed.

Re-development of areas such as former school sites, shopping centers, institutional lands, equal to or greater than one (1) city block (1.3 hectares), shall be designed to prevent impact on neighboring development from major system blockage or re-routing of the 1:100 year return period.

In the existing built up urban areas the City of Yorkton will allow the major system to be designed based on the 1:25 year return period.

Surface drainage that may be contaminated from industrial, agricultural, or commercial operations shall not be discharged to the storm sewer system.

3.3 Subdivision Drainage Plan

The subdivision concept and detailed drainage plans must conform to the adopted Area Master Drainage Plan. Drainage for a subdivision must accommodate upstream runoff.

The developer shall submit detailed servicing plans composed of minor and major drainage components for the acceptance of the Director of Planning & Engineering. The Area Master Drainage Plan post- development runoff rates shall not exceed pre-development runoff rates.

The rear of lot grades provide for the conveyance of runoff from the contributing area of split drainage lots (approximately mid-lot to the rear of lot) to catch basins or to outlet to streets and land easements. It is a component of the major system but is not to be used as a major overland flow route for runoff from other contributing areas.

For new subdivisions:

- a. The grade of rear of lot drainage swales shall be a minimum 0.6% to a maximum of 6%;
- b. Spacing of catch basins or release points for storm water drainage shall be a maximum of 75 meters; and
- c. Drainage swales shall be designed with turns no greater than 135 degrees (Interior

angle of turn).

Lot grading will conform to the following criteria:

	Minimum	Maximum
Building grade above curb	0.3m	1.0m
Building grade above back lot	0.3m	1.0m
Building grade to side lot	0.06m	0.3m
Grade at back of lot	0.6%	6.0%

Table 1: Lot grading

Note: where side yard grades cannot be maintained, the building grade plan shall indicate terracing or a retaining wall is required.

3.4 Building Site and Parking Lot Development Drainage

Drainage from residential development (single and duplex) is allowed to be graded off and to drain onto the public right of way. All other developments are required to design an on-site drainage plan to manage drainage. The City of Yorkton Building Bylaw requires all projects to incorporate an approved lot grading plan.

3.5 Detention/Retention Facilities

All Detention / Retention Facilities shall be designed in accordance with the City of Regina's Development Standards Manual – Section 9 Storm Water Collection System

3.6 Storm Water Management Facilities

Stormwater facilities should be designed in such a way that the water flows by gravity from the inlet to the outlet. The City strongly discourages the use of stormwater pumping stations. Where there is no other alternative, stormwater pumping stations may be approved at the discretion of the Director of Planning & Engineering.

Evaporation stormwater facilities may not be used as the sole method for stormwater discharge. Evaporation may be approved in combination with other discharge methods at the discretion of the Director of Planning & Engineering.

All commercial/industrial/institutional development requires an on-site stormwater interceptor (such as a stormceptor) prior to release of flows to the adjacent stormwater system.

3.7 Acceptance Testing

All new stormwater collection systems or portions thereof installed within the City shall comply with all procedures and methodologies for flushing, CCTV video inspection and Deflection (mandrel) testing may be required at the discretion of the City of Yorkton as outlined in the most recent version of the City of Regina's Standard Construction Specifications SECTION 1320 Sewermain Tests. Acceptance testing shall be successfully completed prior to submission of the Construction Completion Certificate.

After the Construction Completion Certificate for a stormwater facility is acknowledged by the City, the Developer shall not be allowed to direct construction run-off into the stormwater facility.

4 SUBMITTALS

The following stormwater management reports (complete with modeling output) should be submitted along with the preliminary design drawings for approval, as applicable:

- Staged Master Drainage Plan
- Stormwater Management Report
- Storm Pond Design Report

A design table of the storm sewer must be included on the stormwater cover sheet outlining the pipe sizes and capacities, velocity, contributing areas, and all other relevant information.

Design flow sheets with an accompanying reproducible plan showing drainage areas, drainage criteria and sewers shall be utilized to design a storm sewer system. Flow sheets with the accompanying drainage area plan, showing contributing areas and sewers, are part of submission requirements for subdivision approval.

All design flow sheets must be developed in accordance with the *City of Regina's Development Standards Manual* – Section 9 Storm Water Collection System.

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5 Roads & Lanes

1.0 FOREWORD

6.1 General

This section outlines the minimum requirements for a transportation network required for a development. It is the Developer's responsibility to develop the transportation network to meet or exceed the standards in accordance with good engineering practices, specific site condition requirements, and/or as may be required by the City of Yorkton and Ministry of Highways and Infrastructure (MHI).

6.2 Policy, Goals and Objectives

The following policies, guidelines and bylaws apply to the design of the transportation system in the City of Yorkton.

6.2.1 City Bylaws

All design work shall comply with the following City bylaws:

- Traffic Bylaw;
- Zoning Bylaw; and
- Building Bylaw.

6.2.2 City Approved Policy, Guidelines and Specifications

All design work shall to comply with the most recent version of the following policies and specifications:

- *Yorkton Official Community Plan*;
- City of Yorkton Transportation Master Plan?; and
- *The Noise Bylaw*.

In addition, the City of Yorkton has adopted the following City of Regina policies and manuals:

- Standard Construction Specifications manual.
- Temporary Traffic Control Devices Manual
- Development Standards Manual – Transportation Design (Section 07)

6.2.3 Guidelines and Codes

The design of all transportation infrastructures shall meet all relevant national and provincial guidelines and standards, such from Transportation Association of Canada (TAC), Institute of Transportation Engineers or National Research Council.

6.3 Responsibility

In terms of transportation functions, the City is responsible for the following functions:

- a. Design/construction of all arterial, expressways and freeways including legal boundaries, curbs, walks, pavement, street lights, traffic control devices, pavement markings, culverts, drainage features, and pedestrian protection devices;
- b. Preparation of Sector Street Network, the Yorkton Street Network Plan, Street Classification Map, Bicycle Route Plan, and Bus Route Plan;
- c. Coordination of requests for all on-street construction requiring closures or restrictions of public streets, alleys, or sidewalk;
- d. Construction of survey monuments;
- e. Preparation and ongoing maintenance of current design/construction standard documents and bylaws; and
- f. Projections of traffic for arterial, expressway and freeway streets.

The developer is responsible for the following transportation functions:

- a. Preparation or amendment of a Concept Plan Transportation Study when proposing a new subdivision or changing the nature of an approved plan;
- b. Preparation or amendment of a Traffic Impact Assessment for specific development sites where required by the Director of Planning & Engineering;
- c. Traffic projections to quantify effect of development;
- d. Design/construct all collector and local streets including street layout and design of curbs, walks, pavement, street lights, traffic control devices, pavement markings and pedestrian protection;
- e. Design/construction of all necessary noise, vehicle or pedestrian control fence;
- f. Meet or exceed all City design/construction standards and comply with all bylaws; and
- g. Comply with the transportation plan and street network plan as outlined in the appropriate sector street network study.

6.4 Definitions

Definitions for the purpose of this Engineering Guidelines in the most recent version of the *City of Regina Development Standards Manual* (section 07 – transportation

design), and are not intended to supersede the official definitions in Section 2 of the Zoning Bylaw nor to be used for pavement design.

6.5 Conceptual Design

6.5.1 Scope

This section refers to the requirements for development proposals, including concept plans, subdivision, discretionary use and zoning amendment applications. Development proposals must show enough detail to ensure the developer is aware and working toward meeting all City of Yorkton standards before the detail design component is started.

6.5.2 Street Layout and Access Control

The general layout of collectors and arterials is a grid pattern. Local street layout is designed by developers and approved by the City if it is complementary to the Yorkton Street Network Plan and it meets the criteria discussed in this Engineering Standards Manual. Access control is necessary on arterial and higher classification streets and near intersections to ensure that safe and efficient traffic flow is maintained

Layout shall follow the guidelines established in the Regina Development Standard; Section 07; Chapter 3.5 and 3.10 for the following:

- Curves
- Walkability
- Access to Transit
- Driveways

6.5.3 Street Classifications

Street classifications for proposed and existing streets must be shown in development proposals in order for the City to determine street right-of-way requirements. Street classifications should be based on the TAC guidelines.

6.5.4 Intersection Spacing

The Geometric Design Guide for Canadian Roads by TAC presents the desired spacing between intersections. All proposed designs should comply with these standards in cases when City standards do not apply.

6.5.5 Street Widths and Street Lengths

Street classification and the corresponding right-of-way width must be shown on the Concept Plan. Traffic widths and cross sections are shown on drawing R-2 of the Regina Standard Construction Specifications and the National Fire Code, Section 2.5. The requirements, as stated in Section 07, Chapter 3.8 in the Regina Development Manual are summarized in Table 1. Alternative cross-sections will be considered on a case-by-case basis, at the discretion of the Director of Planning & Engineering.

Classification	Right-of-Way Width	Traffic Width
Local	15.0 m 18.0 m (transit route)	8.7 m(1) 11.0 m(2)
Collector	22.0 m 22.0 m	13.4 m(3) 14.8 m(4)
Industrial	24.0 m	13.4 m
Arterial		
Four Lane Undivided	22.0 m	13.4 m
Four Lane Divided	30.0 m	2 x 7.9 m
Six-Lane Divided	30.0 m	2 x 11.0 m
Add Greenway	+3.1 m to above right-of-way widths	

Add Bike Path	+3.1 m to above right-of-way widths	
Fire Access Clearance		Minimum 6.0 m

Table 6 1: Right-of-Way Requirements

1. Minimum allowable width for parking on one side of the street. A no parking sign shall be installed on one side of the street every 30 m at a minimum.
2. Minimum allowable traffic width for parking on both sides of the street.
3. Provides two 3.7 m lanes and two 3.0 m lanes. May be reduced to 8.0 m traffic width.
4. Provides four 3.7 m lanes.

Cul-de-sacs shall not exceed 120 m. Continuous residential street frontage shall not exceed 365 m.

6.5.6 Alleys

Where alleys are required and they abut multiple housing, commercial or industrial parcels, the alleys shall be 9 m in width. In all other cases alleys should be 6 m in width. The bylaw requires a 3 m corner cut-off where two alleys intersect.

6.5.7 Sidewalks

The Sidewalk Guidelines in Table 2 list the amount of sidewalk as a function of the type of street. Additional sidewalks should be considered in high or medium density neighbourhoods.

Type of Street	Minimum Sidewalk	Width of Sidewalk
Freeway & Expressway	No sidewalk	
Arterial	Both sides	1.5 m
Residential & collector	Both sides	1.5 m
Industrial collector	One side (1)	1.25 m
Bus Route	Both Sides	1.5 m
Local street (>240 m length)	One side	1.5 m
Local Street (< 240 m length)	No sidewalk	
Cul-de-sac	No sidewalk	

Table 6 2: Sidewalk Guidelines

1. Unless directed by the Manager of Engineering Services.

6.5.8 Driveways/Commercial Crossings

Driveway crossings and grades should be designed according to the *Regina Development Standards Manual*. Structural requirements and dimensions are specified in the *Regina Standard Construction Specifications*.

Clear throat distance or setback distance requirements are provided in Table 3.2.9.3 of the Geometric Design Guidelines for Canadian Roads, TAC.

A culvert is required where a driveway crosses a ditch or a drainage course. They are to be sized consistent with the function and capacity of the ditch or drainage course. Design must be approved by the Director of Planning & Engineering.

The developer is responsible for the cost of:

Closing any existing driveways not required for the new development;

- Any new driveways, walks, curbs, or paving required adjacent to site;
- Any legal surveying;

- Any utility upgrading, replacing, adjusting, modifying or relocating; and
- Restoring City facilities damaged during construction.

The dimensions of all existing and proposed driveways that cross barrier curbing must be shown on the sidewalk plan of the engineering drawings.

6.5.9 Traffic Impact Assessment

A Traffic Impact Assessment (TIA) for a new site or subdivision should be completed according to the following the guidelines in Section 6. of this document.

6.6 Detailed Design

6.6.1 Design Speed

Design speed of all streets will be in accordance with the practice outlined in the Geometric Design Guide for Canadian Roads, TAC. The posted speed limit is generally:

- 40 kilometres per hour near schools and playgrounds;
- 50 kilometres per hour for arterials and collectors;
- 70 kilometres per hour for Expressways; unless
- Otherwise specified by the Planning & Engineering Department.

6.6.2 Geometric and Alignment Standards

Refer to the Engineering Standards Manual or Geometric Design Guide for Canadian Roads, TAC for any design elements not specified in this Engineering Standards Manual.

Collector and higher classification streets shall be designed to meet or exceed the alignment standards of the Geometric Design Guide for Canadian Roads TAC such as radius, stopping sight distance, intersection angle and intersection sight distances. Horizontal and vertical alignments shall also follow the guidelines in the *Regina Development Standards Manual*, including, but not limited to street geometric design standards (table 5.3.1), and the required stopping distance for a given design speed (table 5.4.3)

6.6.3 Roadway Structures

The following structures shall be designed and built in accordance to plans approved by the Yorkton Director of Planning & Engineering, as laid out in the *Development Standards Manual*. The *Standard Construction Specifications* specifies the minimum structure:

- Pavements structures;
- Temporary roads and Turnarounds ;
- Alleys;
- Cul de sacs ;
- Centre medians;
- Curbs and gutters;
- Sidewalk width;
- Pedestrian ramps;
- Laybys;
- Bicycle routes; and
- Mail Boxes.

6.6.4 Traffic and Parking Control Devices

All traffic and parking control devices, except traffic signals, required for a proposed development are funded by the Developer through the Servicing Agreement.

The City arranges installation of the signs when construction of the development is complete. All signs shall conform to the Manual of Uniform Traffic Control Devices for Canada, TAC.

6.6.5 Street Suffixes

Street suffixes shall follow the guidelines in *Regina's Development Standards Manual*.

6.6.6 Signs

The following signs shall be installed according to the requirements in the *City of Regina Development Standards Manual*:

- School zone (section 7.6.7)
- Playground (section 7.6.6)
- Pedestrian crossing (section 7.6.5)
- Subdivision signs (section 7.6.9)
- Street names (section 7.6.2)
 - Arterials will be named by the City
 - Collector and local streets may be named by the Developer pending approval by the Manager of Engineering Services or designate.

6.6.7 Traffic Control Requirements

The type of traffic control required at an intersection is dependent on the street classification of the intersecting streets and shall follow the guidelines in the *Regina Development Standards Manual*. Table 6.4.1 in Chapter 7 of the abovementioned manual lists the type of control initially required at an intersection.

6.6.8 Parking Restrictions

Parking restrictions may be required in front of schools, at intersections where there are insufficient sightlines, and at adjacent mid-block pedestrian crosswalks.

6.6.9 Signals

The need for new traffic signals will be based on a warrant point calculation completed according to the Canadian Traffic Signal Warrant Matrix Procedure as established by the TAC and according to the guidelines in the *Regina Development Standards Manual* section 6.10.

6.6.10 Pavement Markings

Pavement marking design shall conform to the Pavement Marking Standards, and meet minimum specifications within the *Manual for Uniform Traffic Control Devices for Canada (MUTCDC)*.

Unusual circumstances may result in the need for pavement markings on streets with a street classification of collector and/or lower, such as pedestrian crossings, non-standard intersections. The developer shall submit design plans for all pavement markings required within new subdivisions to the Planning & Engineering Department for approval.

6.6.11 Street Lighting

Street lights shall follow the guidelines in the *Regina Development Standards Manual* and must meet SaskPower standards and specifications. The developer is responsible for meeting the following criteria:

- Ensuring street light poles do not interfere with proposed driveways;
- If a street light is close to an intersection, the developer should try to position the pole in a place that is acceptable for erecting a stop, yield, or pedestrian crossing sign on it;

- Street lights shall not be located between two adjoining driveway pads; and
- Street light poles shall be located no closer than one meter to a driveway pad.

6.6.12 Traffic Accommodation During Construction

The Planning & Engineering Department coordinates all street closures. Private contractors, developers, utilities, other City departments and provincial government departments must inform Planning & Engineering Department of planned street closures.

A Street Use Permit is required when construction or maintenance activities by private contractors and developers encroach on any portion of an existing street in the City.

The *Temporary Traffic Control Devices Manual* prescribes standards for traffic accommodation based on street classification.

6.6.13 Security Fence

Security fencing is to be installed according to the *Development Standards Manual* to control and protect pedestrians, motorists and residents that live near or must cross major City streets or railways for the following:

- Along streets with a posted speed limit greater than 50km/hr;
- Railways that are dangerous for pedestrians to cross; and
- All subdivisions next to an existing street with a posted speed limit greater than 50km/h.

6.6.14 Traffic Control Fence

Traffic Control Fence shall be placed to prevent vehicle access at the following locations:

- Across the end of a walkway which terminates in an alley;
- Across the end of an alley cul-de-sac which abuts a street;
- Along the length of an alley which parallels an adjacent street or park area;
- At the end of a temporary street;
- Where a short cutting problem exists or potentially exists whereby vehicles access/ egress a street by driving through ditches or side boulevards to their destination; or,
- At a railway or pipeline right-of-way as required by the City or the railway/pipeline company.

Traffic Control Fence shall be installed according to the *Development Standards Manual* and shall meet or exceed the specification in the Standard Construction Specifications. When fencing is used to physically close a street or alley, signing must be installed and approved by the Planning & Engineering Department.

6.7 Other Design Requirements

6.7.1 Traffic Calming

The Manager of Engineering Services may require a Developer to install traffic calming measures in new neighbourhoods or in existing neighbourhoods that are impacted by the proposed development, as described in the *Regina Development Standards Manual* section 7.7.1

Additional resources may be found in the Canadian Guide to Traffic Calming.

6.7.2 Landscaping on Medians

Landscaping on centre medians must comply with sight line requirements such as:

- Trees should not be planted adjacent to left-lanes;
- No planting should occur within 10 m of an intersection or pedestrian crossing; and
- The use of coniferous trees at locations where they may interfere with sight lines as they

mature is not permitted.

6.7.3 Noise Attenuation

The *Yorkton Noise Bylaw* defines acceptable standards for community noise levels originating from construction. To determine the need for noise barriers for new residential development, the following criteria will be used in noise studies:

- The twenty year projection of future traffic volumes;
- Traffic volume projections will be provided by the developer's consultant with input from the Planning & Engineering Department;
- Vehicle speed shall be the proposed or posted speed; and
- Truck volumes shall comprise six percent (6%) of the total projected traffic flow, unless known by actual traffic count or by trip generation rates and land use.

The developer shall be responsible for provision of noise attenuation measures to meet the City's noise level standards for proposed development adjacent to streets where projected traffic noise levels exceed these standards.

6.7.4 Landscape Berms

If berms are determined to be required on divided major arterial streets or as designated in the concept plans, they shall meet the following criteria:

- Toe of slope set back not less than 3.0 m from back of walk, or back of curb where no walk is proposed;
- Height shall not exceed 2.0 m above top of curb; and
- Slopes shall be not less than 5:1.

6.8 Traffic Impact Assessment (TIA) Guidelines

6.8.1 Introduction

The purpose of the Guidelines is to standardize the scope and format of the Traffic Impact Assessment (TIA), and to reduce the time involved in the preparation and review of TIA reports.

The general process for completing a TIA is shown in Figure 6 1, and the completed product will provide the following information:

- Determine how a proposed development will impact the safety and capacity of the street network, as well as impacts on parking and transit;
- Identify what modifications may be required of the developer in order to minimize adverse impacts on safety, traffic flow, transit, or parking; or
- Determine how a proposed street impacts existing Neighbourhood.

If a development proposal will result in traffic safety or capacity problems, the City may require:

- The proposal be changed; or
- Any special requirements for street improvements or deficiencies be identified at this stage to identify financial responsibility; and
 - The developer to fund street improvements or deficiencies as identified.

All traffic studies must be conducted by a qualified Professional Engineer or Professional Transportation Planner as approved by the City of Yorkton.

6.8.2 When is a TIA Required?

A TIA will be required under any the following conditions:

- The development will generate over 100 vehicles per hour (vph) in the peak direction of travel; and/or
- The development may result in safety, operational or design issues that require mitigation through study; and/or
- The development is a result of a change in land use designation or is infill into an existing neighbourhood; and/or
- Major developments within existing, or adjacent to existing neighbourhoods may require a TIA to identify and develop mitigation measures to minimize the potential downstream impacts of additional traffic (i.e. “shortcutting”).

It is the Developer’s responsibility and cost to prepare a TIA unless there is an agreement with the City and the Developer to share in this.

In cases where the anticipated impact will be less than 100 vph in the peak direction of travel, a letter addressed to the Planning & Engineering Department stating the anticipated trip generation will typically be sufficient. This letter should describe the anticipated development, identify the appropriate ITE Trip Generation categories and the scale of the development (dwelling units, square feet, parking spaces and so on).

Each development is different due to location, size, use, etc. Specific requirements for the TIA should be discussed with the Planning & Engineering Department prior to commencing the study.

6.8.3 Before Getting Started

Developers (or their consultants) are advised to contact the Planning & Engineering Department to determine study requirements. The TIA should take into account the findings of previous studies and transportation system concerns pertaining to the study area. New or supplementary turning movement counts may be required to complete the TIA.

Adjacent sites with the potential for development within the same time horizon as the subject site will also have to be considered in the TIA.

The following study information may be available from the Planning & Engineering Department:

- Historical traffic volume counts; please see the Traffic Count Policies and Procedures;
- Limited information on future traffic volumes for the major arterial streets in the City. The City forecasts traffic conditions using SYNCHRO;
- Specific guidelines on access requirements and the installation of traffic signals and pedestrian protection;
- Facility plans showing existing and ultimate street alignments and proposed street improvements for most arterial streets in the City;
- Yorkton Street Network Plan - consistency with the Council approved plan is expected.

Depending on the size, scale and intensity of the proposed development, consideration of the most recent editions of the following Institute of Transportation Engineers (ITE) publications may be valuable for the proponent:

- i. *Promoting Sustainable Transportation Through Site Design;*
- ii. *Neighborhood Street Design Guidelines;*
- iii. *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach.*

6.8.4 Information to be contained in a TIA Report

The purpose of a TIA report is to provide the Planning & Engineering Department with **ALL** of the information necessary to understand transportation-related aspects and implications of the development proposal, as well as enable the Branch in formulating a recommendation

regarding the proposal. Consultants/applicants can aid the Branch in the review of an application by ensuring that the TIA report contains all of information required to evaluate the development proposal, and that all of the information is supplied at one time.

The methodology for undertaking a TIA is outlined below:

Project

- a. Describe the project and study area. The extent of the study area, including number of study intersections, should be developed in consultation with City staff;
- b. Describe the proposed land use type and intensity of development;
- c. Identify anticipated adjacent developments;
- d. Identify any development phasing as planned;
- e. Indicate the expected dates of completion of construction.

Transportation System

- a. Describe the transportation system in the study area;
- b. Identify study intersections to be reviewed;
- c. Identify any street improvements planned in the study area;
- d. Analysis should be consistent with the most recent edition of the Institute of Transportation Engineers (ITE) *Transportation Impact Analysis for Site Development* and the *City of Yorkton's Engineering Standards Manual*;
- e. If the development is to be carried out in phases, the analysis should be undertaken for the full site development. Any development that does not commence within a two-year period may require an updated TIA;
- f. Identify the design hours selected for analysis. The selection of the design hour(s) for study, including AM peak hour, PM peak hour and/or Saturday peak hour, should reflect the proposed land use;
- g. Assemble existing hourly traffic volumes for the study periods;
- h. Estimate site-generated traffic for the design hours. The most recent edition of ITE's - Trip Generation Handbook should be used. Where possible, the fitted curve should be used over average rates. Alternatively a site-specific survey at a surrogate development with characteristics similar to the proposed development is also satisfactory. If the developer provides the rates, then these rates are to be compared to standard ITE trip generation rates;
- i. Identify the site-generated trips for the proposed development;
- j. Identify in a table the directional split in site-generated traffic and percent pass-by trips;
- k. Establish trip distribution. Directional orientation of trips could be based on the surrounding area's population/employment distribution in relation to the site. Distributional proportions should be depicted as percentages for each of the four cardinal directions of travel;
- l. Conduct network assignment of the site-generated trips. Traffic assignment may be accomplished manually using judgment or using a micro-area travel forecasting

- model. In either case a sound knowledge of the street system characteristics within the area of influence of the site is required together with the ability to apply sound judgment in the trip assignment process;
- m. Pass-by trips are trips diverted from traffic already on the street system into the new development. Pass-by assignment should be performed separately and then added to the assignment of new trips;
 - n. Assemble development-related traffic volumes for any adjacent sites, either from previous studies or by iterating the above steps;
 - o. Identify the horizon year for the analysis. The analysis should reflect five years later the completion of the development;
 - p. Estimate horizon year background traffic volumes on the study area street system for the selected design hours. Background traffic volumes reflect growth in traffic over time that is not related to the study site (e.g. other development proposed near the study site, general growth of trips through the study area to surrounding locations);
 - q. Unless analysis suggests otherwise, assume the background traffic growth rate is 2% per year
 - r. Determine total traffic conditions in the study area by adding the site-generated traffic and the future background traffic volumes for the selected design hours;
 - s. Determine intersection and turning movement level of service (LOS) and/or volume/capacity ratios at signalized and unsignalized intersections under (a) existing traffic conditions; (b) future background traffic conditions; and (c) future total traffic conditions. Accepted level of service software packages, such as VISSIM, HCS or Synchro, should be used;
 - t. Determine if signalization is required at unsignalized intersections;
 - u. Identify operational and geometric mitigation as required to maintain the system at LOS D or better, under total traffic conditions for the horizon years. Some examples of possible remedial measures include:
 - i. Street widening;
 - ii. Geometric changes/channelization at intersections;
 - iii. Additional or alternative access locations/types;
 - iv. Signalization with a corresponding reduction in number of accesses; and
 - v. Reduction in land-use density.
 - v. Access locations should be checked for conflicts, other driveway locations, on-street weaving problems, need for acceleration / deceleration lanes;
 - w. Onsite parking / circulation systems should be evaluated to demonstrate a high safety factor with respect to the possibility of queues backing on to municipal streets, etc. The site should also be reviewed to ensure emergency vehicles routing and delivery truck routing is addressed;
 - x. Discuss accommodation of pedestrians, transit users and cyclists accessing the site:
 - i. Identify the anticipated desire lines for pedestrians using the site; how the sidewalks, accessibility ramps and so on align with those desire lines;
 - ii. Identify how the internal circulation system integrates with the adjacent pedestrian, bicycle and transit facilities; Identify the impact of the proposed development on existing transit stops and routes, the safety of transit users waiting, approaching and leaving transit facilities;
 - iii. Identify infrastructure gaps for both pedestrians and cyclists using the proposed development;

- iv. A site plan showing sidewalks, pathways, walkways, accessibility ramps, bicycle lanes, bicycle racks should be provided with this discussion;

6.8.5 Required Drawings

The following exhibits are required as part of the report:

- Study area street network with site location identified;
- Site plan;
- Existing traffic volumes, illustrated for each design hour;
- Site-generated traffic volumes, illustrated for each design hour;
- Forecast background traffic volumes, illustrated for each design hour;
- Total forecast traffic volumes, illustrated for each design hour; and
- Signal timing plans for each signalized intersection, for each design period; as well as the ICU analysis if Synchro was used for the LOS analysis.

6.8.6 Deliverables

Submit one (1) paper copy of the document along with a digital copy in WORD or other compatible format along with AutoCAD drawings (if included in the document) to the Planning & Engineering Department for circulation and review.

Drawings within the report need to be clear and contain large enough text so that reproductions sent to Committees of Council are legible. If drawings are in colour, proper colour selection should be considered so drawings remain understandable/ legible when reproduced in black-and- white on 8 1/2 x 11 inch paper.

The consultant may need to be available to speak to the issue of traffic impacts at Committees of Council and/or Council.

The following Table 6 3 may be used as a means to evaluate when a TIA will be required by the City. Developers are strongly encouraged to discuss the need and preparation of a TIA with the Planning & Engineering Department and not rely solely upon this table.

Land Use	ITE Category	Predictor	Vehicle Trips or Number of Units
Low Density Dwellings	ITE 210 Single-Family Detached Housing	Number of Dwelling Units	175 units
Medium Density Dwellings	ITE 231 Low-Rise Residential Condominium/Townhouse	Number of Dwelling Units	224 units
High Density Dwellings	ITE 232 High-Rise Residential Condominium/Townhouse	Number of dwelling Units	317 units
Service Station	ITE 945 Gasoline/service Station with Convenience Market	Number of fueling stations	15 stations
Fast-food Restaurant with Drive-through	ITE 934 Fast Food Restaurant with Drive-Through Window	1,000 square feet gross floor area	3,577 ft.2

Table 6 4: Triggers for a Traffic Impact Assessment

6.9 Submittals

A cover letter shall be submitted with the preliminary engineering drawings and should confirm that that design is in accordance with the requirements of this section of the Engineering Guidelines.

The Developer's engineering consultant shall submit detailed, dimensioned design plans to the attention of the City of Yorkton Planning & Engineering Department,

providing relevant design information and assumptions governing the transportation network. The plans must be prepared under the supervision of, and sealed by, a Professional Engineer registered to practice in the Province of Saskatchewan.

Any comments provided by the City of Yorkton shall be addressed and plans shall be resubmitted for final review and approval.

Once the plans have been approved by the City of Yorkton, the Developer's engineering consultant shall submit detailed design plans and specifications to Saskatchewan Ministry of Highways and Infrastructure if required.

Approvals from all affected private and public agencies shall be obtained prior to constructing any works across or adjacent to infrastructure within their jurisdiction.

In addition, the design and construction of transportation system must meet all the current requirements of all regulatory and governmental authorities having jurisdiction.

Work may not commence until the City of Yorkton, MHI and all other regulatory bodies have approved the submission.