



Brook McIlroy Planning + Urban Design
in association with:
ECD Environment Canada
Hynde Paul & Associates
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The Regional Municipality of Niagara

MODEL URBAN DESIGN GUIDELINES

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1

Introduction

1.1 Purpose

Through the Smarter Niagara initiative, Niagara's Regional Council has adopted Smart Growth as a priority for the Region. With the adoption of ten Smart Growth principles, Council has expressed a commitment to a type of growth that balances economic, social and environmental needs.

To implement the Smart Growth agenda, the Region has launched a number of initiatives in a variety of areas including downtown redevelopment, brownfields and the protection of agricultural areas. The Region is also collaborating intensively with local governments to update official plans and zoning by-laws to facilitate the implementation of Smart Growth.

The Region has been working toward achieving Smart Growth for many years. The publication of documents such as *Smart Growth in Niagara* and *Ideas for Smart Growth*; the establishment of a citizens advisory committee (the Smarter Niagara Steering Committee); and the hosting of several summits to discuss the topic are just a few of the initiatives designed to support this endeavour. The Region decided to commission a set of Model Urban Design Guidelines in order to facilitate development and redevelopment that progressively results in the broad implementation of the ten Smart Growth principles (Section 1.4).

Four public workshops and one industry stakeholder's workshop took place in September 2004 to discuss the implementation of Smart Growth principles in the Region of Niagara. The goal of the workshops was to provide an opportunity for public comment and direction to the Consultant Team responsible for the preparation of Model Urban Design Guidelines for the Region.

These guidelines are being made available by the Region to local municipalities for local adaptation and possible adoption. It is hoped that over time, local municipalities will share success stories with the Region and one another to perpetually improve this set of Model Guidelines.

The application of each guideline or guideline component alone does not constitute Smart Growth. It is the application of the principles and related guidelines collectively which, over time, will result in the implementation of Smart Growth.



Figure: The public workshop in Grimsby was one of five public and industry workshops held to provide input into the Model Design Guidelines.

1 Introduction

1.2 Guideline Structure

The Model Urban Design Guidelines document incorporates six sections. In addition to introductory sections, which provide background and context to the Region's policy initiatives and development trends, the guidelines provide design principles and specific guidelines for a range of development types and conditions relevant to the Niagara Region. The distinction between the public realm and private realm is a key element of the document, and is made to provide structure and to improve accessibility of the guidelines to a variety of users, including municipalities, developers, and residents.

Further details regarding the document structure follows.

- **Public Realm**

For the purpose of these guidelines, the public realm is associated with large scale planning and design issues. An emphasis is placed on pedestrian-friendly neighbourhoods and communities creating pedestrian-friendly and self-sustaining communities with high quality interfaces with open space and the existing built fabric.

Specific guidelines for the public realm are contained within the following sections of the document:

- Section 3a: Neighbourhood Structure;
- Section 3b: Roads;
- Section 3c: Sidewalks and Streetscaping;
- Section 3d: Parks and Open Space;
- Section 3e: Natural Heritage;
- Section 3f: Multi-Use Trails;
- Section 3g: Storm Water Management Facilities; and
- Section 3h: Environmental Sustainability

- **Private Realm**

Conversely, the private realm is associated with areas situated within private property boundaries. Private realm guidelines focus on elements of private properties that interface with or are clearly visible from the public realm, (including façades, garages and parking lots, driveways, entrances) as well as height and massing in relation to neighbouring buildings.

Specific guidelines for the private realm are contained within the following sections of the document:

- Section 4a: Residential;
- Section 4b: Main Street & Street Commercial;
- Section 4c: Large Format Commercial;
- Section 4d: Industrial;
- Section 4e: Off-Street Surface Parking Facilities; and
- Section 4f: Environmental Sustainability.

- **Environmental Sustainability**

The Model Guidelines have been prepared in the context of the overall principles and intent of Smart Growth and Environmental Sustainability. Specific guidelines relevant to environmental sustainability are consolidated to reflect their applicability to either the 'public realm' (Section 3) or 'private realm' (Section 4).

- **Critical Success Factors**

Policies and development factors associated with the implementation of Smart Growth Principles and Urban Design Guidelines were developed subsequent to a series of interviews with local planners and comprehensive research. A policy "toolbox" provides suggestions to assist in the implementation of the Model Urban Design Guidelines (Section 5).

- **Test Site Analysis**

Three test sites were analyzed to better understand the required scope of the model guidelines and the key opportunities available throughout the Region. The test sites were used in the consultation workshops to raise interest and allow for a fertile discussion among residents (Section 6). The three sites include:

- Former Welland High School, Welland
- Port Colborne Mall, Port Colborne
- Hartzel Road - Merritton area, St. Catharines

1.3 Web Interface

A key feature of the Model Urban Design Guidelines is a web-based interface. The web interface enables a user to search and retrieve specific guideline and policy information based on an area of interest.

The product of each search is one or more of the specific Urban Design Guidelines as provided in this document.

1 Introduction

1.4 The Region's Smart Growth Principles

The Region's Smart Growth Principles were used as structuring elements for the development of the Model Urban Design Guidelines, but because each guideline is designed to implement more than one principle, the remainder of the document does not follow the structure of the Principles. However, each guideline clearly states which principle it aims to address. Below each of the principles is a brief overview of the urban design implications, opportunities and constraints of each principle.



Figure: Mixed-use and pedestrian-oriented neighbourhoods contribute to more vital and compact neighbourhoods.



Figure: Higher density residential house forms such as townhouses fit well in existing low rise neighbourhoods.

1 Create a mix of land uses

Rationale

Large areas dedicated to a single use – like large subdivisions or office parks – require residents to make many trips over the course of the day. While not everyone can work close to home even if jobs are provided, the proximity of homes and jobs will provide this opportunity to some residents. Similarly, while shoppers will continue to drive to specific stores, shops and services in or close to residential areas can respond to some daily needs and reduce the need to drive. For some households, a better mix of uses can make a difference between the need for a second or even third vehicle.

Urban Design Implications

- Interfaces between potentially incompatible densities and land uses are addressed.
- Low rise, single use neighbourhoods are balanced by a mix of single and multiple family housing forms.
- Mixed land uses provide greater live-work opportunities, minimizing commuting and promoting neighbourhoods as complete 'villages' in close proximity to local services, schools, parks and public transit.
- A mixture of building forms and types contributes to a more vital, attractive neighbourhood character.

2 Promote compact built form

Rationale

Compact built form results in less land being used for development, potentially protecting farmland and open space. Distances between uses are reduced, which minimizes driving and makes walking and cycling possible. Living closer together, walking and cycling can help foster a sense of community. More compact communities also help support transit systems, which are only feasible above certain densities. Simply, a certain number of people need to live within walking distance of each transit stop to ensure that each vehicle carries enough passengers.

1 Introduction

Urban Design Implications

- Compact built form is accommodated within a range of development types including low rise, mid and higher rise built form.
- Housing and commercial buildings can occupy smaller lots, reducing land and servicing requirements.
- Innovative design solutions make use of odd-shaped lots or less desirable sites such as greyfield and brownfield sites.
- Higher density buildings can be placed in close proximity to parks and institutional buildings, e.g. schools, recreational centres.
- Higher density building forms may require large amounts of parking that should be well designed and environmentally sustainable.



Figure: The same community can accommodate a variety of housing types (above and top photographs).

3 Offer a range of housing opportunities and choices

Rationale

A variety of housing types in the same community allows people of different generations to live closer together, which allows young families and seniors to stay in the neighbourhood they are familiar with and live close to their families if they wish to do so.

Urban Design Implications

- Different housing forms are designed with appropriate massing and height transitions to reduce shadow, microclimate and privacy impacts.
- Townhouses and apartments are designed as attractive, high quality buildings.
- Garages are designed to minimize their presence in the overall building form.
- Mixed-use buildings can include retail at grade with offices and/or apartments above.
- Accessory apartments, including apartments above garages, provide additional housing options.



Figure: Pedestrian-friendly streets promote walking throughout the community.

1 Introduction

4 Produce walkable neighbourhoods and communities

Rationale

There are numerous benefits to walking:

- Walking is healthy. There is a growing body of research linking community design to fitness and health.
- Walking can help reduce the need to own and use cars, leading to personal and public savings as the need for parking lots and wide roads is lessened. Less car use also means cleaner air.
- When people walk, they casually monitor their surroundings, helping to make their community safer.

Urban Design Implications

- All roads are designed to support transit and pedestrian activity through villages, towns and city neighbourhoods.
- All streetscape design including new and retrofit conditions accommodate sidewalks on at least one side of the street, as a minimum, and regularly spaced street trees.
- Buildings have minimum, regularly spaced setbacks to aid in the comfort and safety of the streetscape realm.
- Streetscape design includes access to dedicated off or on-road cycling lanes and trail connections where appropriate.
- Primary intersections in mixed use and commercial areas include pedestrian walkways and crosswalks marked with feature paving.



Figure: Preservation of heritage buildings can foster community pride.



Figure: Interface with the natural features promotes public access and visibility.



Figure: Sensitively designed open spaces can contribute positively to a community.



Figure: Interface with farmland recognizes the need to buffer sensitive edge conditions.

1 Introduction

5 Foster attractive communities and a sense of place

Rationale

People who are attached to their communities take better care of them and attract investment, which can help sustain higher property values and support a high quality of life. Well-maintained heritage buildings not only have financial benefits, but foster community pride.

Urban Design Implications

- Streetscape and building design are developed as the primary framework of the public realm.
- Heritage preservation and architectural guidelines address detailed recommendations for the preservation and extension of valuable existing building fabric.
- Opportunities for infill and conversion respect the original community fabric.
- Opportunities to provide visual and physical connections to parks and natural features are a priority in the design of the community framework.

6 Preserve farmland and natural resources

Rationale

Niagara’s agricultural lands and environmental areas, including the Niagara Escarpment, Good Tender Fruit and Grape Lands, as well as the Good General Agricultural and Rural lands, not only play a direct role in the Region’s economy but also contribute to it indirectly through tourism. These lands are also part of the local heritage and quality of life, in addition to providing habitats to a variety of plants and animals. More generally, using natural resources wisely, including fuel, water and construction materials, can help mitigate the impacts of global warming and localized air and water pollution.

Urban Design Implications

- New development is designed to maximize land use efficiently in order to reduce the need to develop farmland (see 1 – compact built form).
- Interfaces between developed areas and farmland or open space are designed to maintain views and access, but minimize infringement on sensitive areas.
- Opportunities to integrate sustainable design in order to minimize energy consumption and environmental impact are actively pursued.



Figure: Residential conversions preserve architectural heritage and contribute to the vitality of downtown areas.



Figure: Tender Fruit Lands form an integral part of Niagara’s economy and identity and should be protected.

1 Introduction

7 Direct development into existing communities

Rationale

The standard pattern of urbanization – or ‘growth’ – now tends to involve the constant development of new areas instead of reinvesting in local areas. The development of farmland and open space results in higher long-term infrastructure costs, for example roads and utilities, in addition to higher day-to-day costs as spread out communities require longer and more numerous automobile trips. Instead, it is desirable to reinvest in existing built areas to take advantage of roads, utilities, schools and other public amenities that taxpayers have already paid to establish. Investing in existing areas also ensures that they continue to be viable and attractive.

Urban Design Implications

- Concerns regarding infilling in existing built areas are addressed through guidelines and secondary plans.
- Guidelines assist in ensuring that new buildings fit in the existing fabric and contribute to the creation of walkable, visually attractive and vibrant neighbourhoods.
- The infilling and redevelopment of greyfields is specifically addressed.

8 Provide a variety of transportation choices

Rationale

More and more people live in areas that require the use of a car for each trip, be it to work, shops or recreational venues. This dependency makes mobility difficult for people who cannot afford a car (or a second car), the disabled, children and seniors. It is especially critical for the latter, since past a certain age, seniors can no longer drive and risk isolation if they cannot walk short distances to shops or a transit stop. And of course, walking, cycling and transit are all more environmentally friendly modes of transportation.

Urban Design Implications

- Road cross-sections and block patterns are designed to accommodate existing and future transit services.



Figure: The use of narrow street rights-of-way can help reduce the cost of development and long-term maintenance.



Figure: The “Acres” Building in Niagara Falls is an example of downtown reinvestment that can be expected to have catalytic effects in the long term.

1 Introduction

- All guidelines that assist in the creation of walkable neighbourhoods can also contribute to enhancing the viability of transit by making trips to and from stops more comfortable and convenient.
- Multi-use trails, paths and storage facilities are implemented to encourage cycling.

9 Make development predictable and cost effective

Rationale

When development is predictable and cost effective, more latitude exists for development that implements Smart Growth principles. Cost effective development, such as the use of narrower rights-of-way, can also fulfil other principles.

Urban Design Implications

- Design guidelines are clear and objective.
- Guidelines specifically address alternative designs that result in long-term cost savings for municipalities and private landowners.

10 Encourage community stakeholder collaboration

Rationale

Development and redevelopment plans can be of higher quality, fit better within its context and stand a better chance of being implemented if the surrounding community has been involved in their preparation.

Urban Design Implications

- Guideline documents evolve over time through experience and feedback from community stakeholders.
- Community workshops are held at the level of the neighbourhood or site, for example in the creation of secondary plans.



Figure: Good transit service offers many social, environmental and economic advantages.



Figure: Stakeholder contribution was a key process in developing the Model Urban Design Guidelines.

2

Background & Context

2.1 Development Trends in Niagara

Niagara's Housing market is largely comprised of low and medium density housing forms in a suburban setting, on green fields.

For the most part, the development industry responds to the perceived demands of the market and provides the kind of product that is either directed by experience or demanded by the market place. This is not surprising when viewed from the perspective of the Region's population composition. The fastest growing segment of the Regional population is the 55+ cohort which comprised 25.4% of the Region's 414,774 population in 1996 and is projected to climb to 37.2% of the projected 499,575 population by the year 2026. It is important to note that this trend is due to immigration of retirees and those soon to be retired looking for a safe, affordable, convenient and physically attractive and interesting community.

The need to satisfy the demands of this cohort of consumer is paramount to the success of any builder operating in the Region. The spending capability of this consumer is of sufficient significance as to influence the form and composition of the housing market.

Recently, however, some developers have been opting to meet the demands of this population in the upscale townhome housing form offering more home and less land in the luxury townhouse format.

The best example of this type of housing occurs on orphan sites in infill situations where the conventional or traditional housing form is either impractical or uneconomical. More recently the development industry is opting increasingly to construct more attached housing forms (townhouses), perhaps in response to the scarcity of available lands. Often, the designs are arranged to provide unit types that appeal to both seniors, (1-storey profile) and families as well, (2-storey profiles).

To date the industry has shunned the construction of apartment type housing except for a small number of social housing projects.

The recognition of the impact of seniors on the housing market has also given rise to several adult lifestyle communities in Niagara, some that have been developed and others that are on the drawing boards. Some of the best examples of urban design reflective of the Smart Growth principles are contained in the adult lifestyle communities. This is due perhaps to the fact that these developments are usually owned and managed by the residents. As such, the standards that form the basis of these developments differ from the normal municipal standards and are more reflective of the design characteristics that are embodied in the Smart Growth Urban Design Guidelines.



Figure: Townhouse development in Niagara-on-the-Lake

2

Background & Context

2.2 The Context: Regional Initiative

The Region, in its draft Amendment No. 183 to the Regional Policy Plan, *Places for People*, has established its commitment to the principles of Smart Growth. This amendment sets out a comprehensive package of policies supported by strategies that are intended to facilitate the implementation of development founded in the principles of Smart Growth throughout the Niagara Region. Those policies are intended to help in shaping the urban landscape of the member municipalities into more liveable and healthy communities, ensuring the high quality of life that the residents of Niagara have come to expect.

2.3 Provincial Leadership

The recently proposed provincial Growth Plan – *Places to Grow* – circumscribes the context within which the Regional initiatives under draft Regional Policy Plan Amendment 183, *Places for People*, is expected to function.

Set against the realities of the current provincial initiatives in the establishment of a “greenbelt” around the Golden Horseshoe and the strategies detailed in the draft proposed provincial growth plan – *Places to Grow* – several of Niagara’s 12 municipalities now find their greenfield growth potential severely curtailed. The northern tier municipalities of Grimsby, Lincoln, St. Catharines and Niagara on the Lake as well as the Town of Pelham are the most impacted. Each of these communities will be compelled to manage their remaining vacant urban land resource carefully, and should aim to implement the principles of Smart Growth in a real and meaningful way in order to accommodate new development into the future.

2.4 Municipal Reactions

The City of St. Catharines has already embarked on reclaiming areas of abandoned industrial sites for reuse and have prepared Community Improvement Plans for two such industrial areas. Together with the Community Improvement Plans, the municipality and the Region have put in place incentive programs to attract interest from the development industry to these areas. Whether attributable to the municipal/region incentives programs or through the recognition of a real opportunity, redevelopment of the former paper mill is underway. Similar projects are also underway in the City of Thorold where a former paper mill has been transformed into a large book warehouse.

The Town of Grimsby, anticipating the inevitable impacts on its “Commercial Core Area” from the recent planning application for a large format development, is about to embark on the preparations of a Community Improvement Plan and Urban Design Guidelines for its core area.

The Town of Lincoln, anticipating a similar impact on its urban core area in Beamsville due to the potential fallout from a Box Store, is also undertaking the preparation of a “Community Improvement Plan” and is working on “Design Guidelines” for the Jordan and Vineland Core areas.

Other municipalities also working on Design Guidelines or Community Improvement Plans include the cities of Welland and Niagara Falls and the Town of Fort Erie.

It is apparent, therefore, that most of the member municipalities that comprise the Region are in one way or another involved in projects that can be influenced by the Region’s Smart Growth Initiative and in particular the “Urban Design Principles and Model Guidelines” Project.



Figure: The Keg in St. Catharines is an example of adaptive reuse.

3

Public Realm

3a. Neighbourhood Structure

Smart Growth Principle Links:

- 1 2 4 5 6 8

Model Guidelines Section Links:

- 3b 3c 3d 3e 3f 3g 3h

3a.1 Design Principles

- Identifiable:** Neighbourhoods should play a significant role in the identity and character of the urban areas. To promote distinctive neighbourhoods with a strong sense of place, a defined structure should be established that includes a mixed-use neighbourhood *centre*, which transitions to an *edge* with positive interfaces and connections to adjacent areas.
- Interconnected:** Neighbourhoods should be characterized by a highly interconnected local street network with short block lengths to allow traffic to dissipate to local destinations. Interconnected streets reduce congestion, promote walkability, and improve emergency vehicle access.
- Compact & Walkable:** The neighbourhood scale should enable an easy walking distance from centre to edge. All neighbourhood uses are situated within walking distance, including a network of parks and recreation areas. Walkable neighbourhoods are transit supportive and promote community health.
- Diverse:** The neighbourhood should provide a variety of block sizes and a variety of street layouts that encourage development of a mix of housing forms and densities, and commercial and employment uses.
- Respect for Natural Heritage:** The design of neighbourhoods should have strong visual and physical links to natural environmental features, including, for example, valleys and watercourses.



Figure: Conceptual neighbourhood design, which demonstrates the urban design principles of a neighbourhood centre, consistent street grid layout and positive exposure to adjacent environmental features.

Neighbourhood Parkettes should be evenly distributed and located within walking distance ~ 400m of most dwellings.

Neighbourhood Centres should be the focus of a variety of mixed uses, and community facilities.

A positive interface should be provided at the edge of open spaces, natural features, or agricultural lands.

Streets and blocks should be consistently oriented to maximize movement options and to distribute traffic.

Community facilities, such as schools, should be located at the edge of the neighbourhood so that they are accessible to the adjoining area.

3a Neighbourhood Structure



Figure: Neighbourhoods should be pedestrian scaled and the distance from centre to edge should therefore be approximately 400m.

3a.2 Neighbourhood Structure

The following guidelines support the principles of compact, mixed-use neighbourhoods that foster a sense of place, prioritize pedestrian and transit movement, and respect natural environments.

- a) Neighbourhoods should generally be designed to include:
 - *Neighbourhood Centre*: The neighbourhood centre should contain a variety of uses, services and amenities such as community facilities, neighbourhood retail, small scale employment areas, residential, urban open spaces, and access to transit.
 - *Neighbourhood Edge*: Neighbourhoods should have an edge that defines their extent. The edge is generally located within walking distance of the centre (approx. 400m) and may be typically defined by:
 - i) Urban infrastructure, such as arterial roads or railway lines;
 - ii) Natural features, such as public parks and open spaces, agricultural lands, watercourses, etc.;
 - iii) Community facilities such as schools, large parks, large format retail, etc; and/or
 - iv) The edge of an adjacent neighbourhood.
- b) Areas in close proximity to the neighbourhood centre, a transit corridor, or an employment district should be of higher density to provide a 'critical mass' of population that can sustain commercial and community activities and transit systems. Density should generally decrease towards the edge. Higher density is encouraged at the edge where it is adjacent to large open spaces such as community parks.
- c) The neighbourhood movement network should be defined by a fine grain grid pattern of streets with a consistent block orientation that provides multiple connections and maximizes permeability to filter local traffic; assists in local orientation and way-finding; and reduces traffic speeds.
- d) A non-repetitive yet simple street and block layout should be provided for visual interest and to maximize views and vistas to parks, greenlands, the rural periphery and heritage and landmark buildings.
- e) Parks and recreation areas should be distributed evenly throughout the neighbourhood and located within walking distance of most homes. Open spaces should cater to a variety of recreation activities.

3a Neighbourhood Structure

3a.3 Block Design

Blocks define and structure neighbourhoods, and directly influence development opportunities, movement options, and neighbourhood character. Blocks should be designed to be flexible and accommodate both residential and commercial lot sizes.

- a) Block lengths should generally range between 200 and 250 metres.
- b) In special circumstances where blocks are longer than 250 metres, a through-block pedestrian walkway or a mid-block parkette should be provided. The walkway should be a minimum width of 3.5 metres, and parkettes a minimum width of 12 metres. Downcast pedestrian-scaled lighting should be provided.
- c) The width of blocks should vary to promote lot size variety and development options, without exceeding 250m.

- d) To maximize connections for vehicular and especially pedestrian traffic, streets should be based on a grid pattern that is modified in response to natural open space, built heritage or existing street conditions.
- e) The street grid should shift at key locations to create distinct neighbourhood enclaves, while allowing for significant view opportunities to natural features, parks, public buildings and landmarks.
- f) In existing neighbourhoods, opportunities should be pursued to connect ending streets to adjacent or new development. The number of connections should be maximized for permeability.
- g) Laneways are recommended where possible to eliminate the need for driveways and street facing garages.

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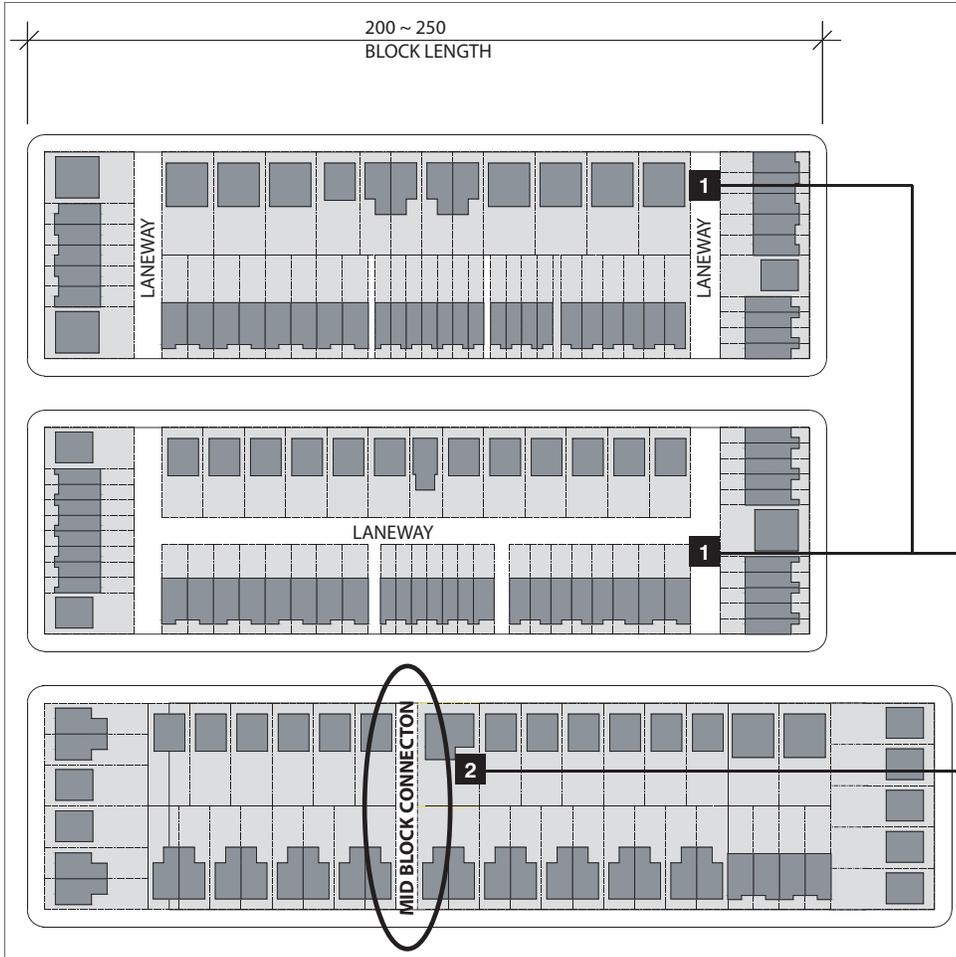


Figure: Design guidelines for preferred block length and requirement for mid-block pedestrian connection where block lengths exceed 250m.

Block length should range from approximately 200m and 250m. Laneways should be used where possible to eliminate the need for driveways and street facing garages.

Mid-block pedestrian connections should be provided for all blocks greater than 250m in length. Such connections support walkability objectives.

3a Neighbourhood Structure



Figure: Mid-block pedestrian connection is provided to enable access to adjacent public open space.



Figure: Mid-block pedestrian connection provides access to an adjacent residential street.

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Figure: Design guideline for residential mid-block connection. The walkway should be at least 3.5m wide and include pedestrian-scaled lighting.

3a Neighbourhood Structure

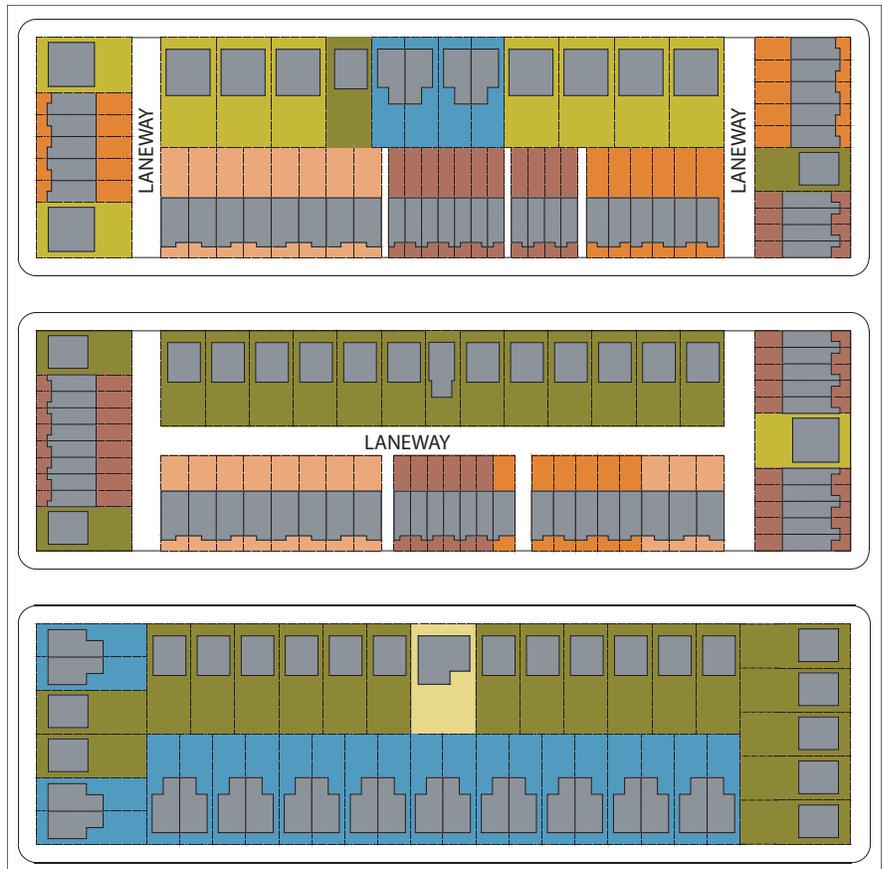
3a.4 Lot Size & Variety

Lot size and variety have a direct impact on development costs, density, and affordability. The following guidelines are established to achieve an appropriate balance of large and small lot sizes and to promote a variety of development types, sizes and designs.

- a) Generally, lot shapes should be simple and rectilinear so as not to limit design and siting options. However, variations to the traditional lot may be considered to manage slope, property boundary, or density issues. Potential alternatives include the 'Z Lot', 'Zipper Lot', 'Wide Shallow', etc. (see 'Further Reading' at the end of this section for more information).
- b) Corner lots should have adequate width to permit appropriate building setbacks from both streets.
- c) Irregular lots, corner lots, and some mid-block lots may be developed as small neighbourhood parks, providing comfortable areas for passive recreation, attractive landscaping, or public art.
- d) Lots adjacent to neighbourhood centres, public transport facilities, or adjacent to higher amenity areas such as parks and environmental features should be designed to support higher density development.

Figure: Standard size residential blocks (approx. 200m long and 55m deep) should achieve a variety of lot sizes and configurations.

It is possible to achieve a range of housing forms and densities, including detached, semi-detached, townhouses, and also apartment buildings (not shown) within the same block.



3a Neighbourhood Structure

3a.5 Neighbourhood Edge Interface

A high quality and 'positive' interface should be achieved at the edge of neighbourhoods, to provide opportunities for overview and public access from streets and adjacent developments. Therefore, single loaded roads and developments that 'face' open space are 'positive' and promoted.

- Wherever possible, the perimeter of parks and other public open spaces and natural should be faced with single-loaded streets. Generally, a minimum of 50% of the total open space/natural feature perimeter should be bounded by the public road right-of-way.
- Where the open space/natural feature perimeter is bounded by private properties, a balance between flanking lots on open crescents and rear lotting is encouraged. Lots flanking or backing onto park areas should be subject to architectural and landscaping controls to provide a high quality interface between these uses.
- Pedestrian connections from the public road right-of-way to adjacent public open spaces/natural features should be provided where possible.
- Where the edge of neighbourhoods is situated abutting a private utility easement or railway right-of-way, the minimum separation should be 30.0m. In addition to separation, the following design measures should be considered as an alternative to 'back lotting' (which is a typical design response):
 - Public open space buffer and/or linear park; and
 - Road right-of-way buffer.



Figure: 'Window Road' adjacent to natural feature provides views and connection with significant natural features.



Figure: Single loaded residential street provides overview of adjacent open spaces. This road type may also be used to buffer uses such as a rail right-of-way.

Figure: Guideline for block and open space interface options. A positive interface should be achieved with open space wherever possible. Rear lotting should be avoided wherever possible.

3a Neighbourhood Structure

3a.6 Transit Supportive Design

Neighbourhood design should promote transit and provide a development framework that supports an increase in public transit ridership. Development should support adequate densities and a range of complementary uses. Transit facilities should be convenient to use and situated at key destinations, where pedestrian activity is high. Neighbourhood design should promote transit as a viable alternative to the automobile and to help reduce road congestion and pollution.

- a) Neighbourhoods should provide a mix of land uses and higher residential densities at key locations to generate pedestrian traffic and activity throughout the day, making transit a viable option.
- b) Auto dependant uses should be discouraged at the neighbourhood centre, such as drive through retail and car wash facilities.
- c) Compact development forms support transit. Higher density development should be located in close proximity to major transit facilities (such as a train station or bus interchange).
- d) Transit facilities should be located within a short walking distance of most residential, commercial and employment uses (approximately 200m).
- e) Transit facilities should be located at public places such as neighbourhood centres, neighbourhood parks and public open spaces, schools, and community facilities (such as a library or gallery), etc.
- f) Transit facilities should be easy to use and comfortable. Transit stops should be designed to provide safe and comfortable waiting areas, and include adequate weather protection and route information (see Section 3c).
- g) Trails and bicycle routes should link to transit facilities. Secure bicycle parking/storage space should also be provided.

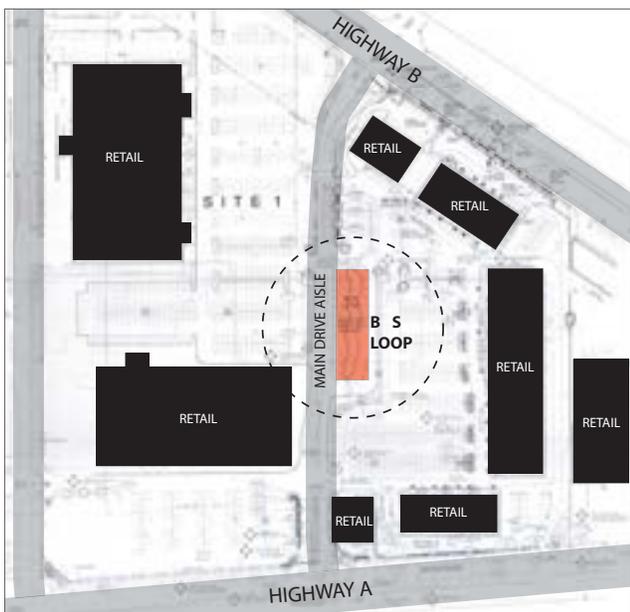


Figure (below): Transit stops should be integrated with areas of high activity, including commercial retail (as shown) and community facility development (below right).



Figure: Transit shelter located within a parking area of an education institution. Transit stops should provide safe and comfortable waiting areas.

3a Neighbourhood Structure

3a.7 Community Facilities

Community facilities should generally be located at the centre of neighbourhoods to maximize their focal nature. However, in some instances, it may be appropriate to locate facilities such as recreation centres at edge of the neighbourhood to maximize access from adjoining areas and minimize evening disruption to residential uses. Options to share facilities are strongly encouraged in all cases.

- Community facilities such as schools, libraries, day care, and churches should be located as a focal point of the community. These buildings should be integrated into the community, and should generally be situated at the centre of neighbourhoods.
- To promote visibility and maintain community focus, compatible community buildings should be sited in close proximity or in the same facility.
- Site design, architecture, landscaping, and parking facilities should be of the highest standard.
- Opportunities for shared use of facilities should be considered for the efficient use of land and building resources. The size of individual buildings may be reduced as a result of shared resources. A variety of shared use options should be explored, including:
 - Multi-purpose cafeteria and gymnasium
 - Art, science, and computer classrooms for junior and adult education.
 - Library combining functions of both a municipal branch and school facility
 - Hardscaped & grass playing field
 - Parking facilities
- Transit facilities should be located immediately adjacent to community facilities.
- Community facilities should incorporate the highest standards in environmental sustainability, through both site and building design.

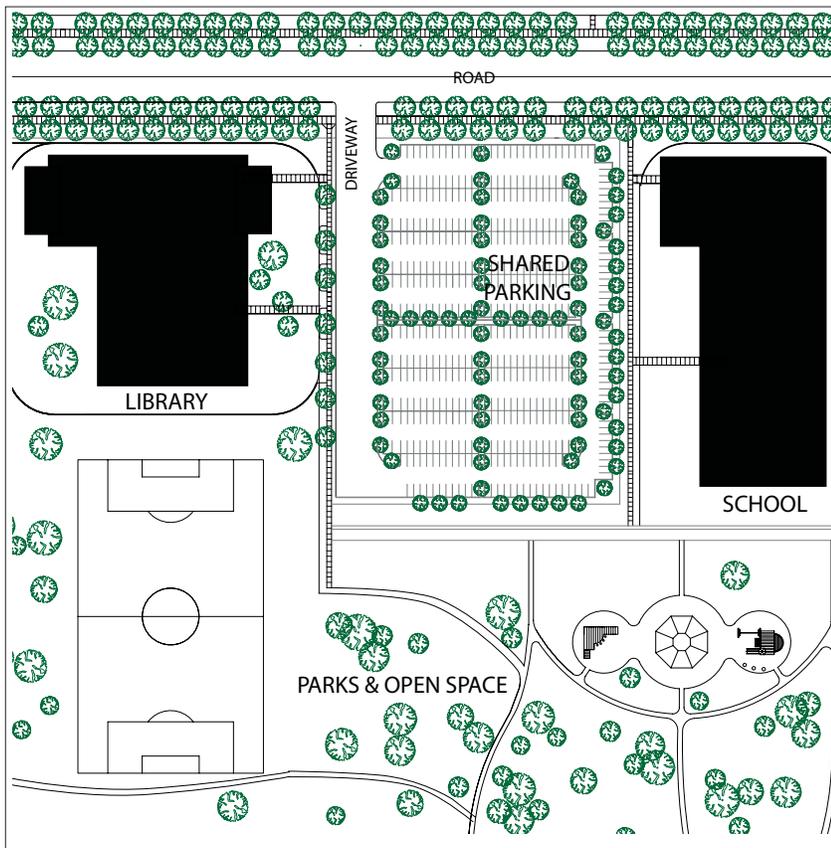


Figure: Conceptual site plan representing collocation of public school and library facilities. Parking facilities are shared between these compatible uses, The school shares playground equipment with public open space.

3a Neighbourhood Structure

3a.8 Utilities & Services

- a) Utilities should be buried below grade - typically in the boulevard section of the right-of-way - as part of new construction and reconstruction of a road right-of-way.
- b) The use of a joint utility trench is encouraged for access and maintenance benefits. Above-grade utilities should be sited with regard for their visual impact on the streetscape.
- c) Joint service trenches are recommended for efficiency, and should be located within the road right-of-way.
- d) Wherever possible, above-ground utilities should be located away from intersections, day-lighting triangles, and visual axes such as the end of T-intersections or other view corridors.
- e) Where possible, street grade public utilities such as transformer pads, telephone switching stations, and junction boxes should be screened through treatment similar to the landscape theme and treatment of the surrounding neighbourhood.
- f) Community mailboxes should be considered as important amenities where people socialize, and their siting and treatment should reflect the level of use and exposure they receive on a daily basis.
 - Community mailboxes should be located at neighbourhood centres as part of a building structure, as free standing structures at gateway features into neighbourhoods, or adjacent to parkettes.
 - The design and material treatment should showcase the architectural theme of the surrounding neighbourhood and include important features such as community boards and sheltering.
 - Community mailboxes should not be located at street corners or in front of an individual lot.



Figure: Above-ground utilities should be located and designed with regard to their visual impact on the streetscape.



Figure: Community mailboxes should be designed to reflect their importance as important amenities and should have a high quality appearance.

3a Neighbourhood Structure

3a.9 Further Reading

Smart Growth Network: Getting to Smart Growth II - 100 More Policies for Implementation.

Increasing Density Through Lot Size and Design
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<http://www.naco.org/programs/environ/sources/localtools.pdf>

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National Governors Association: Healthy Communities
http://www.nga.org/centre/topics/1,1188,D_6893,00.html

National Governors Association: Healthy Communities: New Community Design to the Rescue
http://www.nga.org/centre/divisions/1,1188,C_ISSUE_BRIEF%5ED_2344,00.html

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<http://www.planning.wa.gov.au>

Funders' Network for Smart Growth and Livable Communities, Translation Paper #8: Education and Smart Growth Reversing School Sprawl for Better Schools and Communities, 2002
http://www.fundersnetwork.org/info-url_nocat2778/info-url_nocat_show.htm?doc_id=107908

The Small School Workshop
<http://www.smallschoolsworkshop.org/info3.html#8>.

Small School Better Neighborhoods
<http://www.nsbns.org>

National Trust for Historic Preservation, Why Johnny Can't Walk To School, 2000.
http://www.nationaltrust.org/news/docs/20001116_johnny_cantwalk.html

3

Public Realm

3b. Roads

Smart Growth Principle Links:

- 2
- 4
- 5
- 8

Model Guidelines Section Links:

- 3c
- 3d
- 3e
- 3f
- 3g
- 3h

3b.1 General Principles

1. **Equitable:** In order to encourage alternative modes of transportation and provide options to driving, streets should be designed to accommodate multiple modes of movement, including pedestrians, transit services, bicycles, passenger cars, and trucks on an equal basis. Transit facilities should be incorporated in the design of all roads to encourage high levels of ridership and cost-efficient operation.
2. **Flexible:** Road design should reflect adjacent land use types and requirements. Road design standards should be flexible so that a variety of land use types can be adequately served by the same road. Road design should recognize and balance the needs of the travelling public and local residents.
3. **Positive Appearance:** All roads and streets should be designed to provide a strong visual quality that enhances the amenity of adjacent properties through the use of high quality landscaping, lighting, pavement materials, and on-street parking where appropriate.
4. **Living Streets:** Street trees should be a major component of the design of all streets. Tree-lined streets provide an evolving and lasting impression of the street, and provide physical buffering between the pavement, the sidewalk and private dwellings. The shading effects of mature street trees have a significant mediating effect on summer sunlight, reducing glare and the urban 'heat island' effect.
5. **Minimize Pavement Width:** The widths of streets should be developed in accordance with operational safety requirements and the provision of an enhanced pedestrian realm. However, the width of travel lane pavements in particular, should be kept as narrow as practically feasible, to encourage traffic to slow down, create more intimate streetscapes, and facilitate pedestrian crossings.
6. **Improve Parking Opportunities:** On-street parking should be provided wherever possible at existing established commercial locations and in downtowns - even on some arterial roads. On-street parking can reduce requirements for surface parking lots, generally reduces traffic speeds, and supports pedestrian activity by providing a physical barrier between the sidewalk and moving traffic.

3b.2 Road Hierarchy & Road Functions

The road network in Niagara is characterized by the road function and the following hierarchy which is generally guided by Transportation Master Plans that examine existing and projected land use and anticipated traffic trips and roadway volumes.

1. **Arterial Roads:** Arterial Roads provide long-range and efficient access between the Region's communities and serve a range of travel modes, including passenger vehicles, trucks, and transit.
2. **Urban Collector Streets:** Urban Collector Streets provide important connections for residential neighbourhoods with commercial, employment and tourism areas, and typically include an urban cross section with curbs and sidewalks.
3. **Local Streets:** Local Streets are situated in predominantly residential areas and are a defining element of residential neighbourhoods.
4. **Residential Laneways:** Laneways provide access to private garage facilities.



Figure: Existing Region of Niagara Arterial Road demonstrating high quality character achieved with median landscaping treatments, and sidewalks/bicycle paths.

3b Roads

3b.3 Arterial Road Guidelines

- a) A key design objective for Arterial Roads is to balance safety, visual amenity and pedestrianism, with a wide variety of functions including:
- Large volume transport corridor.
 - Transit.
 - Gateways and entrances to town centres and neighbourhoods.
 - Connections to Collector Roads.

b) The Arterial Roads right-of-way may range from 21.0 to 36.0m and design standards should be flexible to reflect changes in adjacent land uses and traffic conditions.

c) The design of Arterial Roads should consider the following variables:

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- *Lanes:* The total number of lanes will range from 2 to 5, depending on traffic conditions.
- *Centre Median:* A central median may be provided for traffic calming, aesthetics, geometric design considerations, and access control in gateway locations.
- *Sidewalks:* Sidewalks should always be provided on both sides of the street and be at least 1.5m wide. This width should be increased to accommodate snow storage and landscaping where required.

Note: The location of sidewalks and plantings may vary depending on the level of traffic and adjacent land use. Sidewalks on high volume/speed Arterial Roads should be buffered by a landscaped boulevard. However, sidewalks on low volume/speed Arterial Roads or in village centres or downtowns may, for example, be situated adjacent to the curb.

- *Curbs:* Curb design will vary depending on the nature of adjoining land uses. Typically, barrier curbs are required.

- *On-Street Parking:* In the context of anticipated traffic volume/speed, adjacent land uses, and ability to maintain four travel lanes, on-street parking should be permitted on Arterial Roads in commercial centres. Time-based restrictions may be applied to reflect traffic volume and snow clearing requirements.
 - *Boulevard:* Boulevards are required for Arterial Roads in urban areas and should be at least 2.0m wide but preferably 3.75m and planted with street trees situated every 6.0 to 9.0m where adequate safety standards are met.
 - *Bicycle infrastructure:* Due to the anticipated level of traffic, bicycle infrastructure should preferably be located adjacent to the sidewalk or the boulevard. Bicycle lanes should be clearly identified with signage and or pavements and be 0.75m ~ 1.5m wide.
- d) Travel lanes should not exceed 3.5m* in width. Wide travel lanes are required to ensure the safe movement of larger vehicles such as trucks, buses, and transit. However, 'reduced standards' should be used wherever possible.



Figure: Sidewalk size and design should respond to the nature of adjacent land uses, type of road, and level of pedestrian activity.

*Note: Travel lane width may be reduced where feasible to minimize overall pavement width. Reduced standards should be used wherever possible.

3b Roads

- e) North-south and east-west connections should be provided at approximately 400m intervals.
- f) Road scale lighting no greater than 9.0m high should be provided to contribute to the safety and comfort of the streetscape. Lighting should be downcast to reduce light pollution.
- g) Private driveway access should be avoided on arterial roads. Where private driveways currently exist, vehicular movements should be limited to 'right-in, right-out'. A centre median can be used to eliminate illegal turns.
- h) To encourage walkability and pedestrian safety, Arterial Road curb radii should be 5.0m ~ 8.0m. Decisions for curb radii design should consider traffic volumes, traffic speeds, emergency vehicle requirements, transit, pedestrian crossing times, and intersection angles.
- i) Utilities should be buried below grade - typically in the boulevard section of the right-of-way. The use of a joint utility trench is encouraged for access and maintenance benefits.

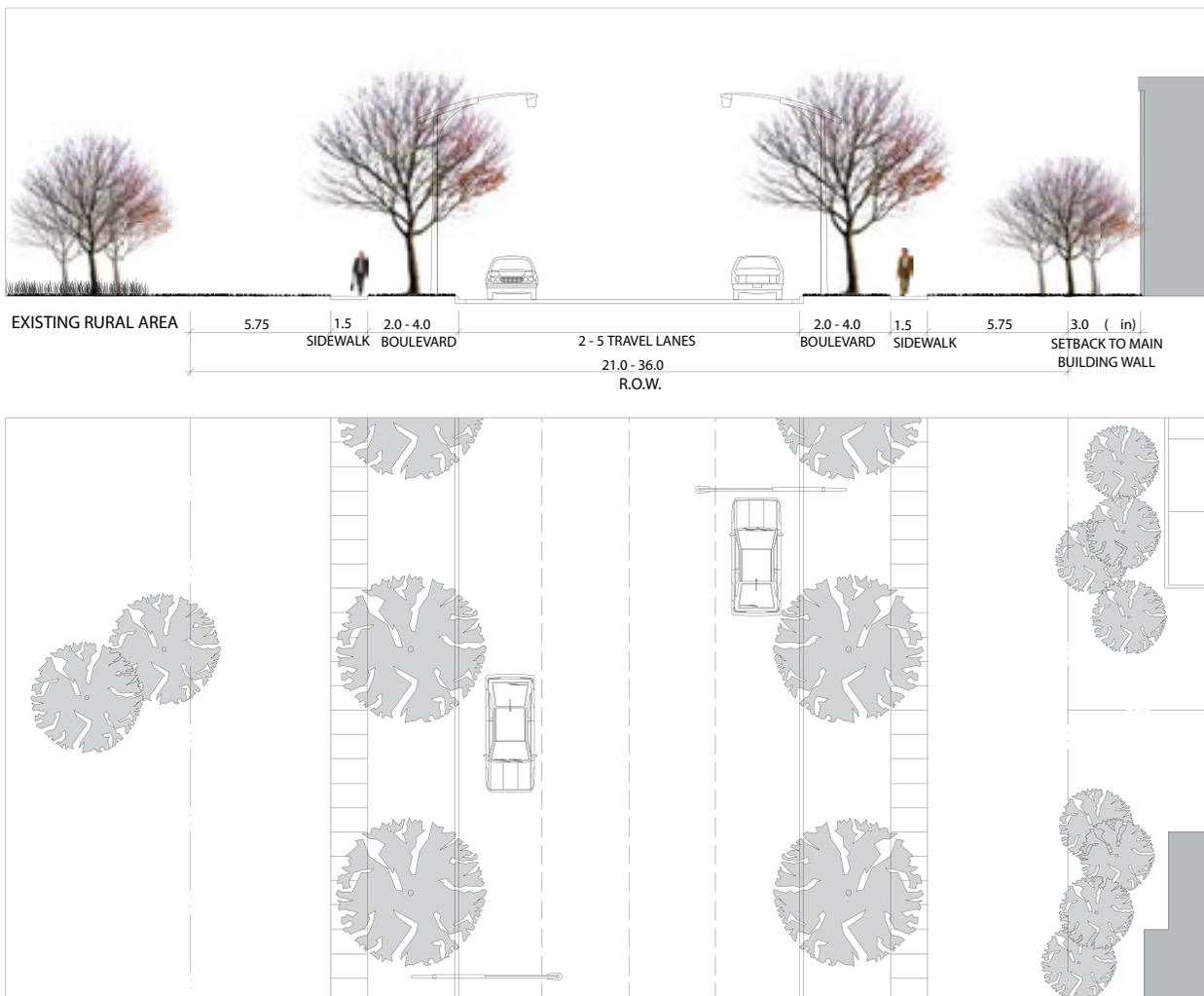


Figure: Design standards for 4-lane Arterial Road.

3b Roads

3b.4 Collector Street Guidelines

- a) Collector Streets should be designed to serve a variety of functions including:
- Transit.
 - Connections between neighbourhoods.
 - Connections to Local Streets.

- b) The Collector Street right-of-way may range from 19.5m to 27m and design standards should be flexible to reflect changes in adjacent land uses and traffic conditions.

- c) The design of Collector Streets should consider the following variables:

- *Lanes:* The total number of lanes will range from 2 to 4, depending on traffic conditions.
- *Centre Median:* A centre median may be provided in gateway locations.
- *Sidewalks:* Sidewalks should always be provided on both sides of the street and be at least 1.5m wide. This width should be increased to accommodate snow storage where required.

Note: The location of sidewalks and plantings may vary depending on the adjacent land use. Sidewalks should be buffered by a landscaped boulevard.

- *Curbs:* Curb design will vary depending on the nature of adjoining land uses. In some areas, 'soft shoulder' and swale drains may be provided. However, most urban conditions typically require barrier curbs.

- *On-Street Parking:* On-street parking should be permitted on Collector Streets. Time-based restrictions may be applied to reflect traffic volume and snow clearing requirements.

- *Boulevard:* Boulevards are required for Collector Streets in urban areas and should be at least 2.5m wide and planted with street trees situated every 6.0 to 9.0m where adequate safety standards are met.

- *Bicycle infrastructure:* Bicycle infrastructure of 0.75m ~ 1.5m wide may be located on the roadway.

- *Property Buffer:* A 1.0m wide property buffer should be provided on both sides of the street.

- d) Travel lane widths should not exceed 3.25m* and may be reduced to 3.0m where off-peak on-street parking is provided.

- e) Pedestrian-scale lighting no greater than 4.5m high should be provided to contribute to the safety and comfort of the streetscape. Lighting should be downcast.

- f) Transit stops should be placed at the far side of intersections.

- g) Alternatives to single access driveways to individual properties should be explored, (i.e., through joint access driveways). 'Right-in right-out' movements are preferred on Collector Streets.

- h) To encourage walkability and pedestrian safety, Collector Road curb radii should be 5.0m ~ 8.0m.



Figure: A centre median may be provided in gateway locations. The median may incorporate landscaping and lighting - as shown.

**Note: Travel lane width may be reduced where feasible to minimize overall pavement width. Reduced standards should be used wherever possible.*

3b Roads

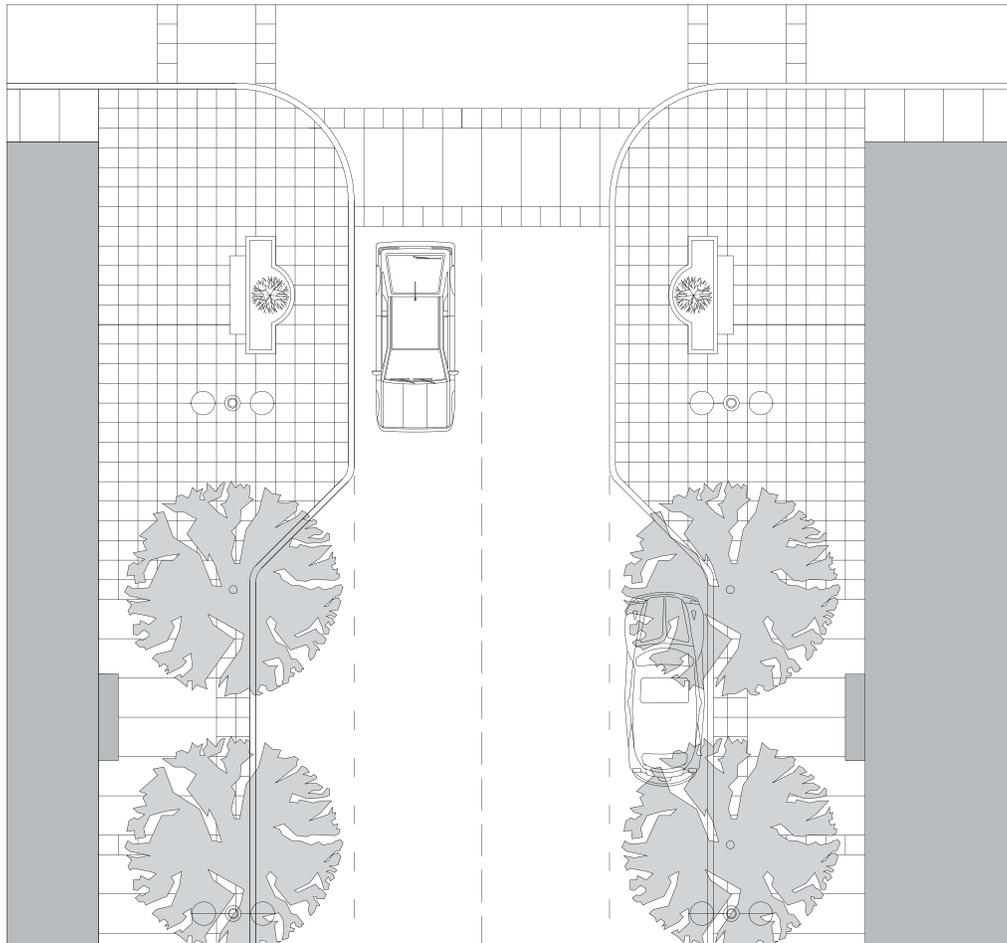
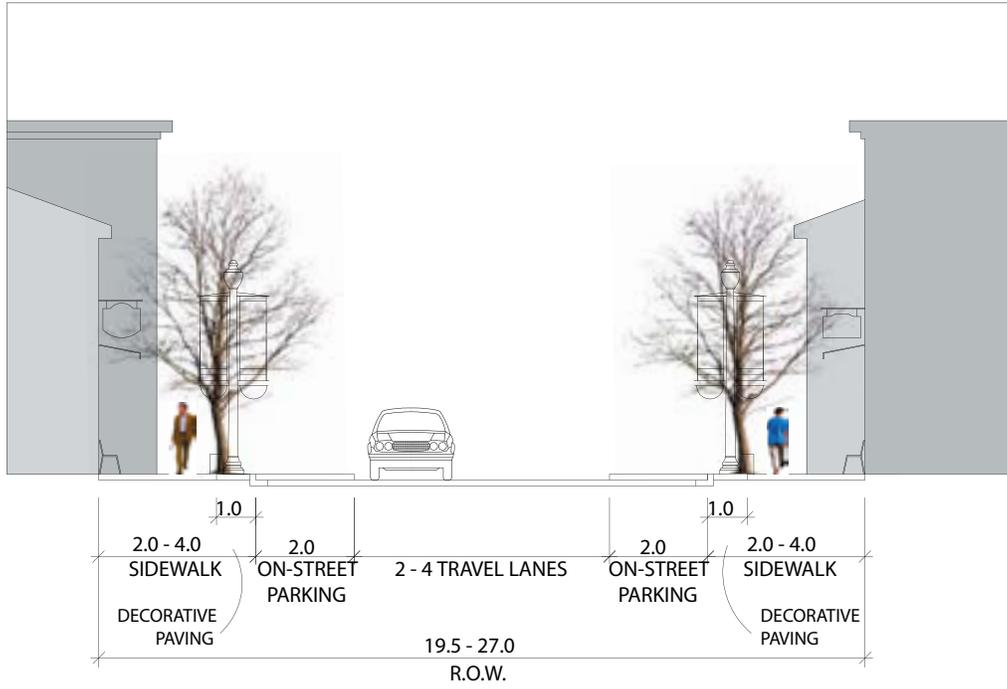
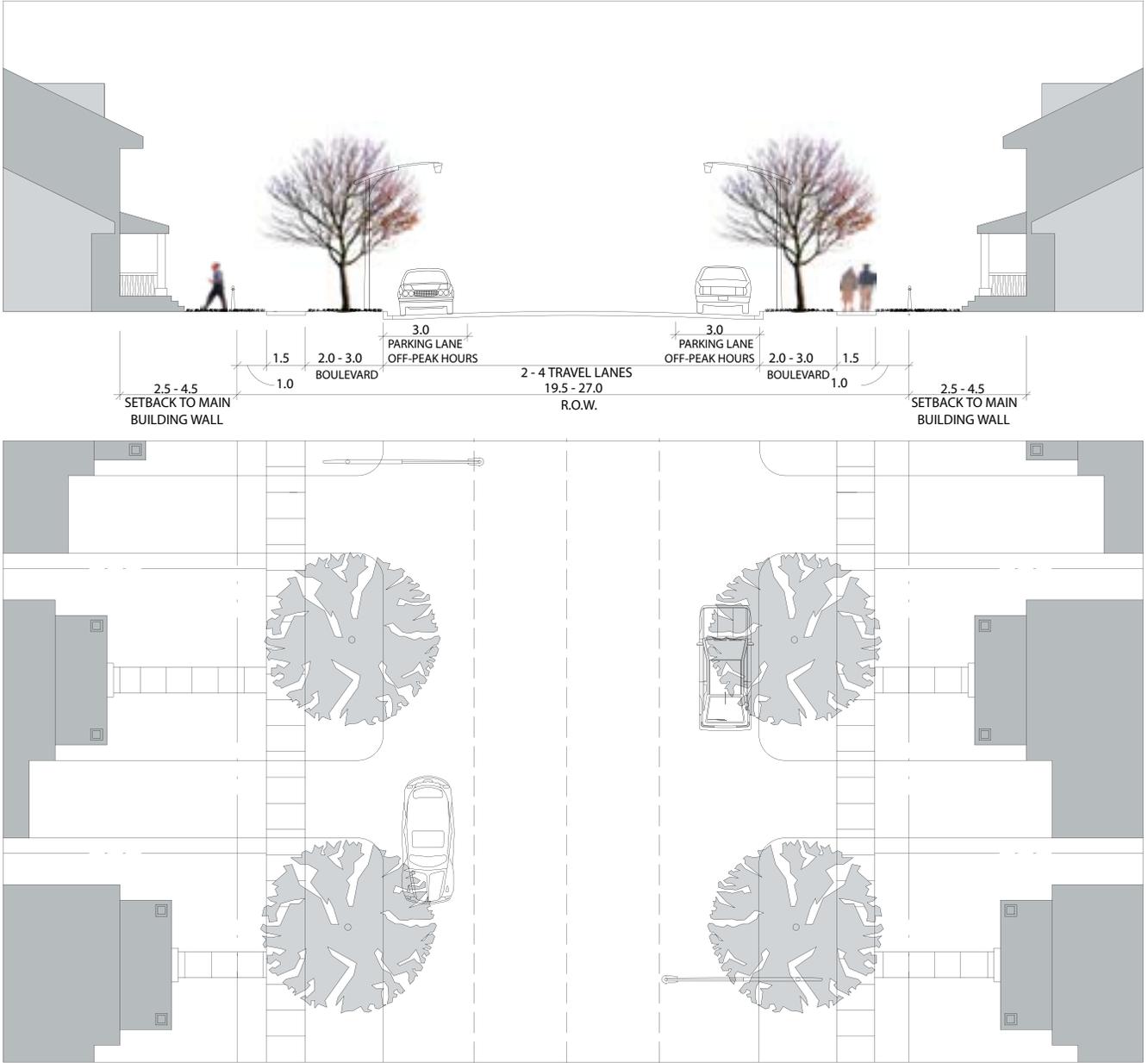


Figure: Design standards for Collector Street in a Mainstreet configuration with 'bump-out' - see Section 3b.8 for 'bump-out' design guidelines.

3b Roads



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Figure: Design standards for Collector Street in a Residential configuration.

3b Roads

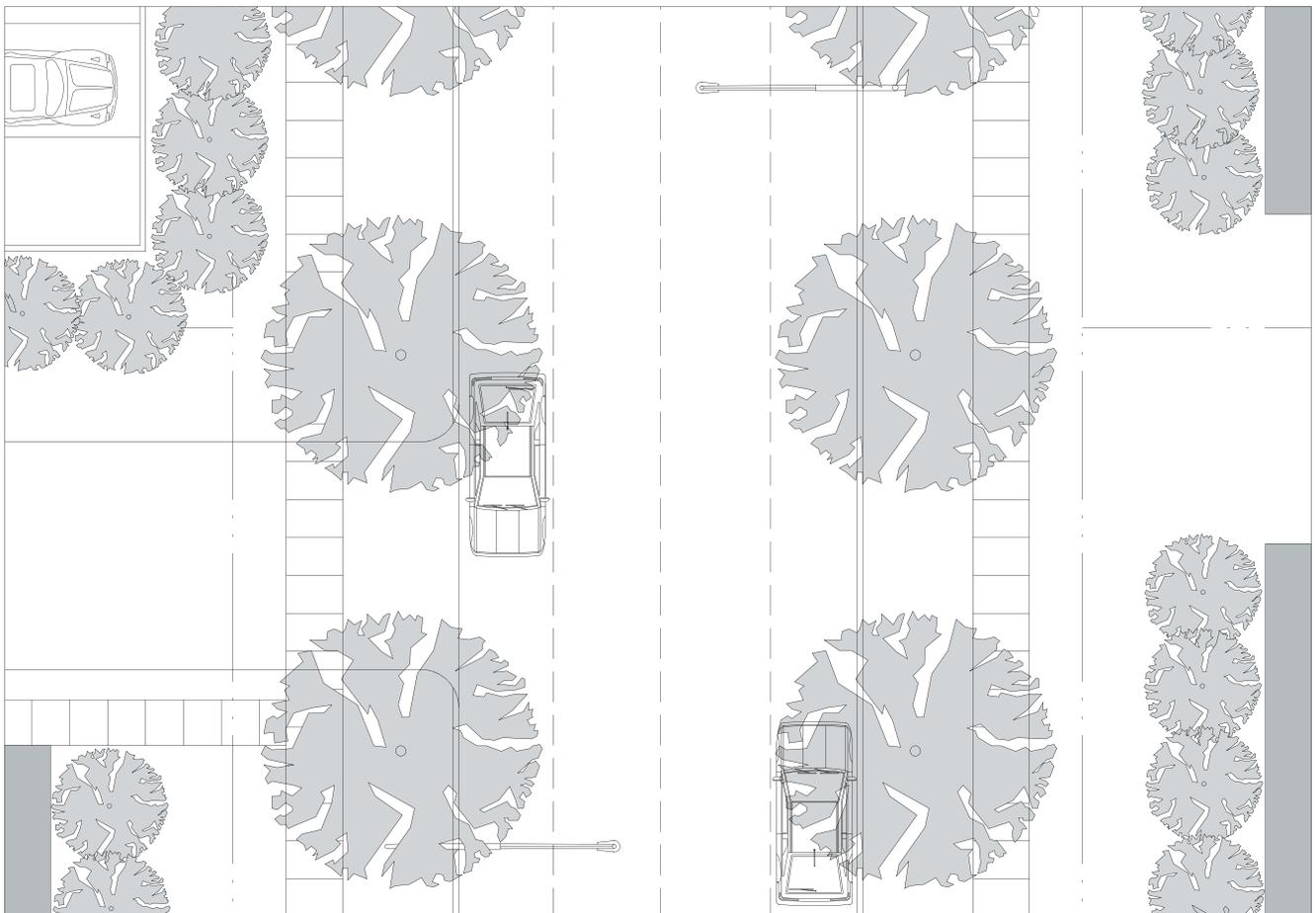
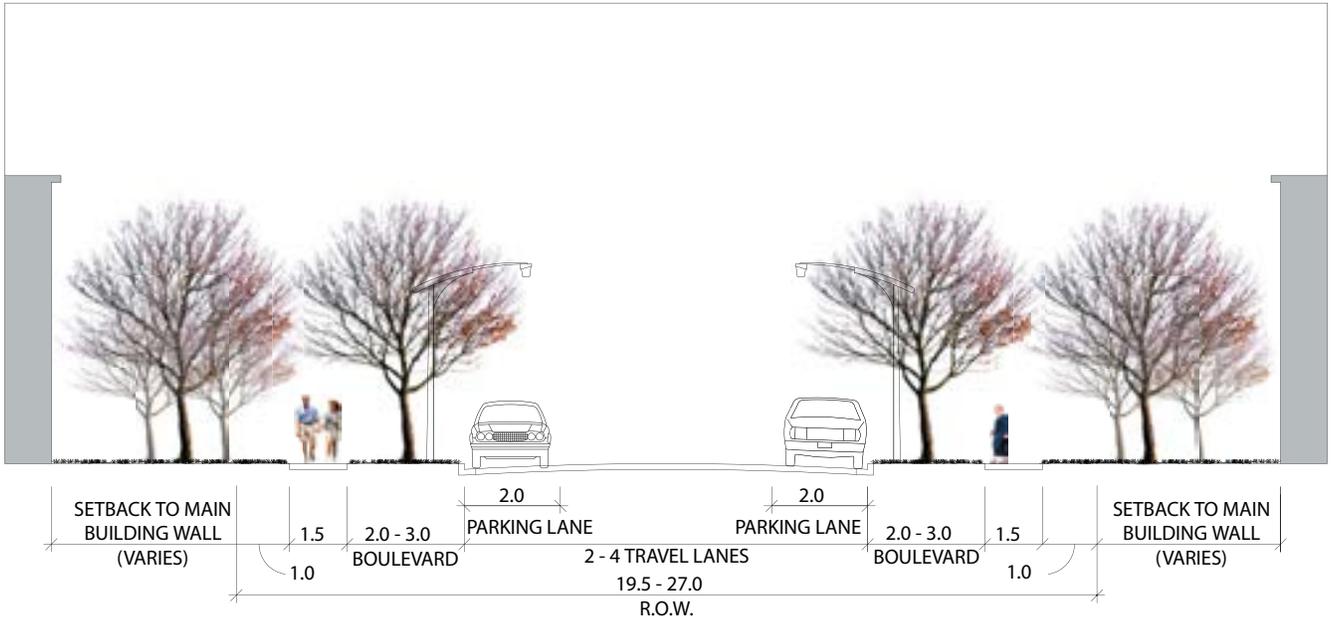


Figure: Design standards for Collector Street in an Employment configuration.

3b Roads

3b.5 Local Street Guidelines

- a) Local Streets should be designed to create 'intimate' pedestrian-scaled streetscapes that promote walkability and residential activities but discourage speeding and through traffic. The right-of-way standards should be reduced to minimum requirements wherever possible.
- b) Local Streets should be designed with a narrow or reduced right-of-way standard of no greater than 18.5m (see diagram on page 29).
- c) A maximum total of two traffic lanes - each 2.75m wide and 1 shared traffic/on-street parking lane of 2.0m wide is required. 1 (or 1.5) traffic lanes (yield configuration) with 1 shared traffic/on-street parking lane may be provided as an 'alternative standard' to reduce total pavement width.
- d) A landscaped boulevard of 2.0m wide should be located on both sides of the road, planted with lawn and street trees located every 6.0 to 9.0m on centre.
- e) A sidewalk of 1.5m wide should be provided on both sides of the street and situated between the boulevard and the property buffer strip.
- f) A 1.0m wide 'property buffer' should be situated between the sidewalk and the private property boundary to provide options for locating underground services within the street right-of-way.
- g) Pedestrian-scale lighting no greater than 4.5m high should be provided to contribute to the safety and comfort of the streetscape. Lighting should be downcast.
- h) Barrier curbs are required for all Local Streets.
- i) Bicycle movement is considered to be a normal part of Local Street traffic movement - so no dedicated bicycle infrastructure is required.
- j) To encourage walkability and pedestrian safety, Local Street curb radii should be 5.0m ~ 6.0m.
- k) Utilities should be buried below grade - typically in the boulevard section of the right-of-way. The use of a joint utility trench is encouraged for access and maintenance benefits.

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Figure: Reduced standards for Local Streets achieves an intimate streetscape and potentially slows vehicle speeds, resulting in attractive and safe environments.

3b Roads

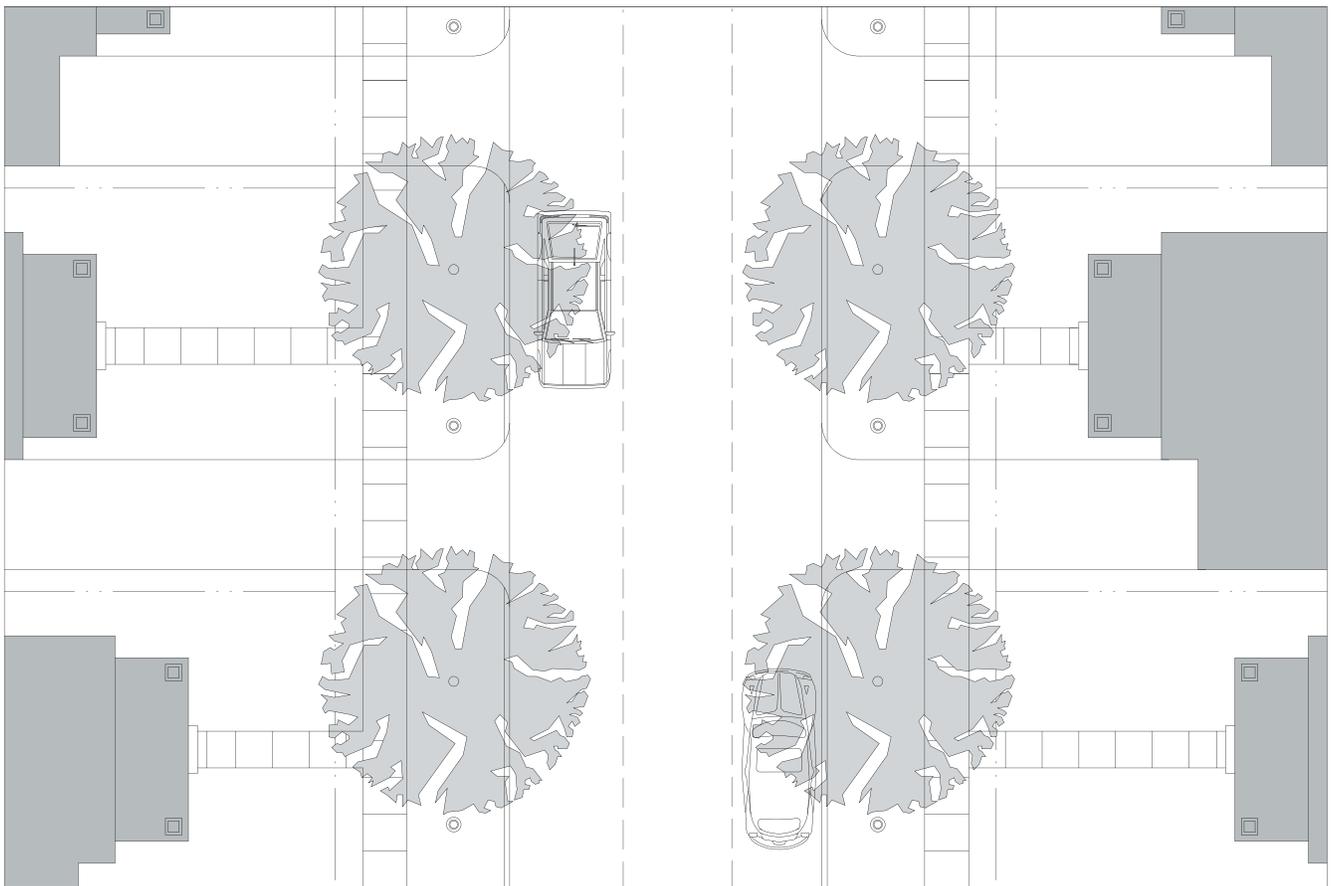
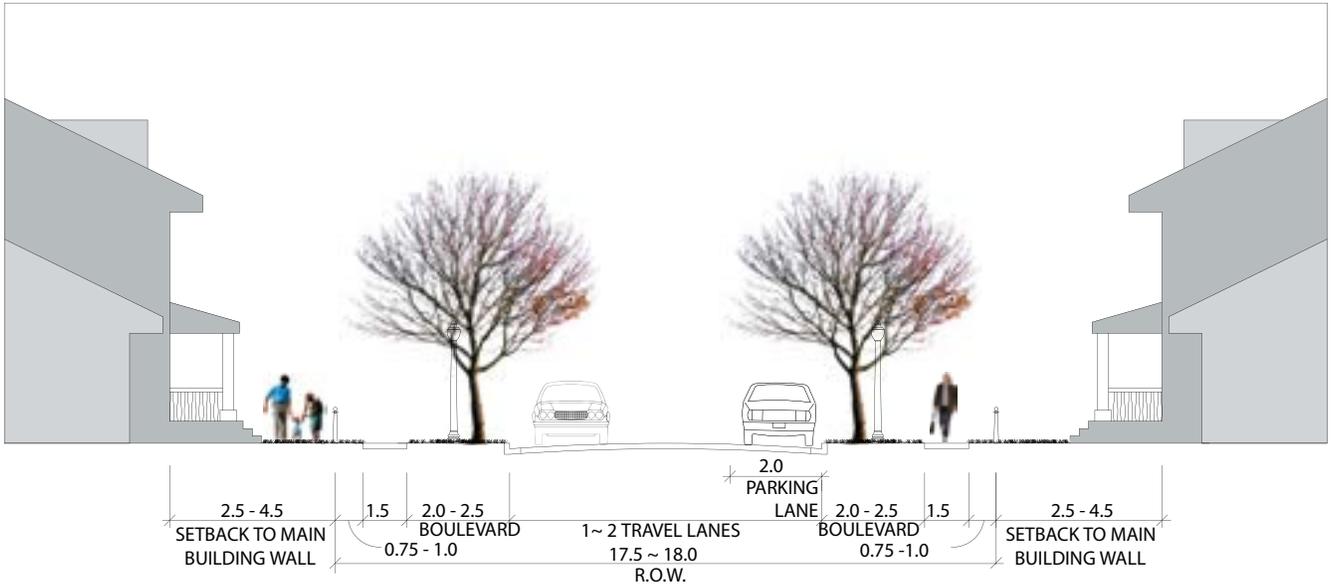
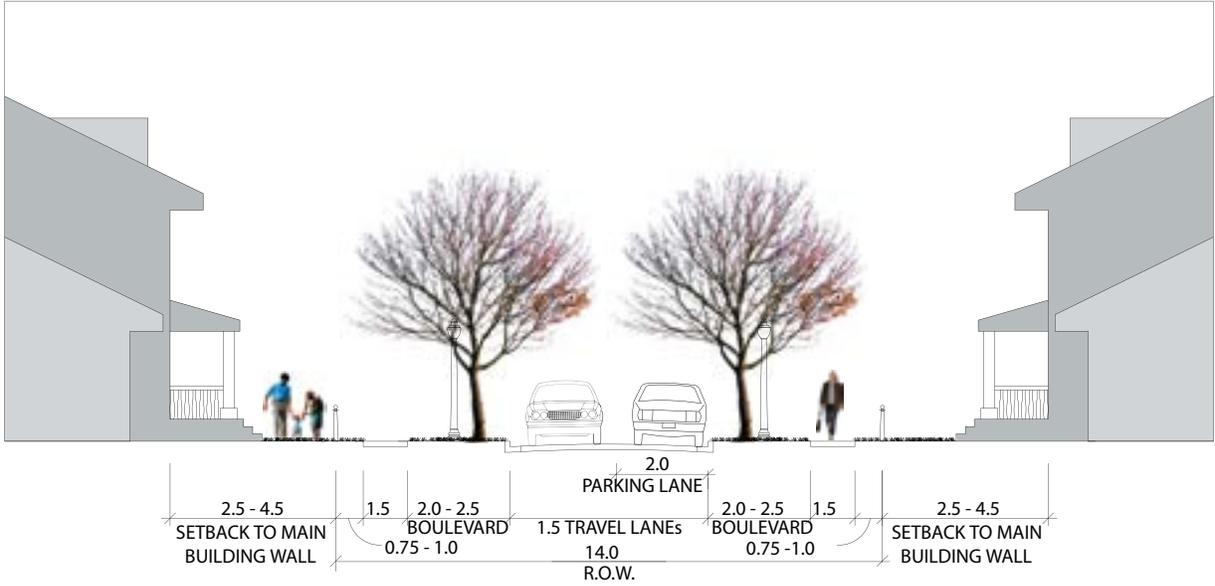


Figure: Design standards for a Local Street.

3b Roads



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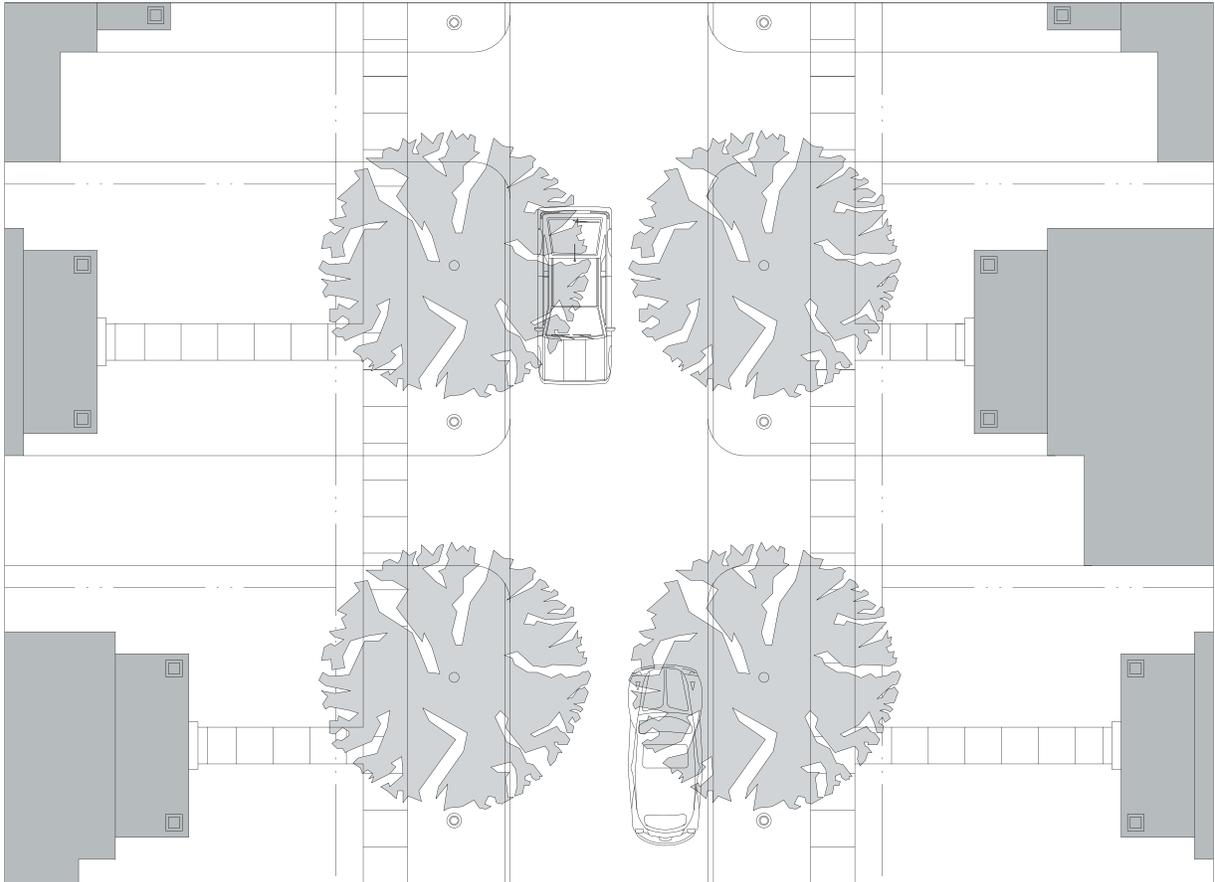


Figure: Design standards for a 'reduced standard' Local Street.

3b Roads

3b.6 Laneways

- a) Where conditions in residential areas make it undesirable to allow direct driveway access from a roadway, other provisions for access to parking areas and garages are proposed through the use of a Rear Lane Access.
- b) Laneways should be prioritized where development fronts onto an Arterial or Collector Road network. Also, laneways should be considered to provide access to parking on small lots - particularly narrow lots, and in retail/commercial areas.
- c) Single-loaded laneways should provide a minimum right-of-way of 8.5m with a minimum 0.5m setback to the garage wall.
- d) Double-loaded laneways are discouraged for aesthetic, safety, and functional reasons. Where necessary, double-loaded laneways should be no greater than 10.0m wide with a minimum 0.5m setback to the garage wall.
- e) Areas at the end of laneways should be set aside for snow piling.
- f) The use of permeable materials is encouraged where sufficient drainage exists, as low traffic levels permit the use of less durable surfaces.

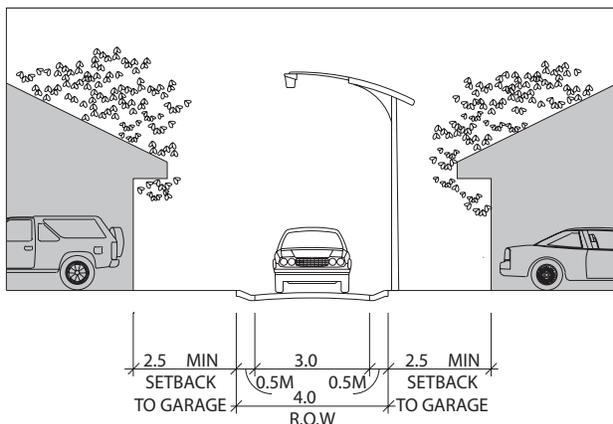
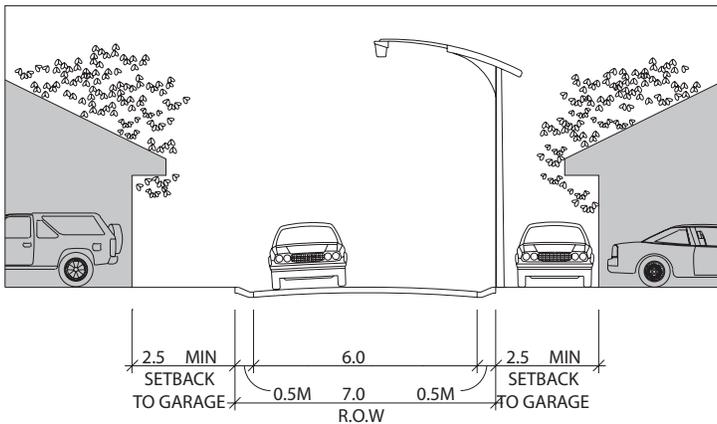
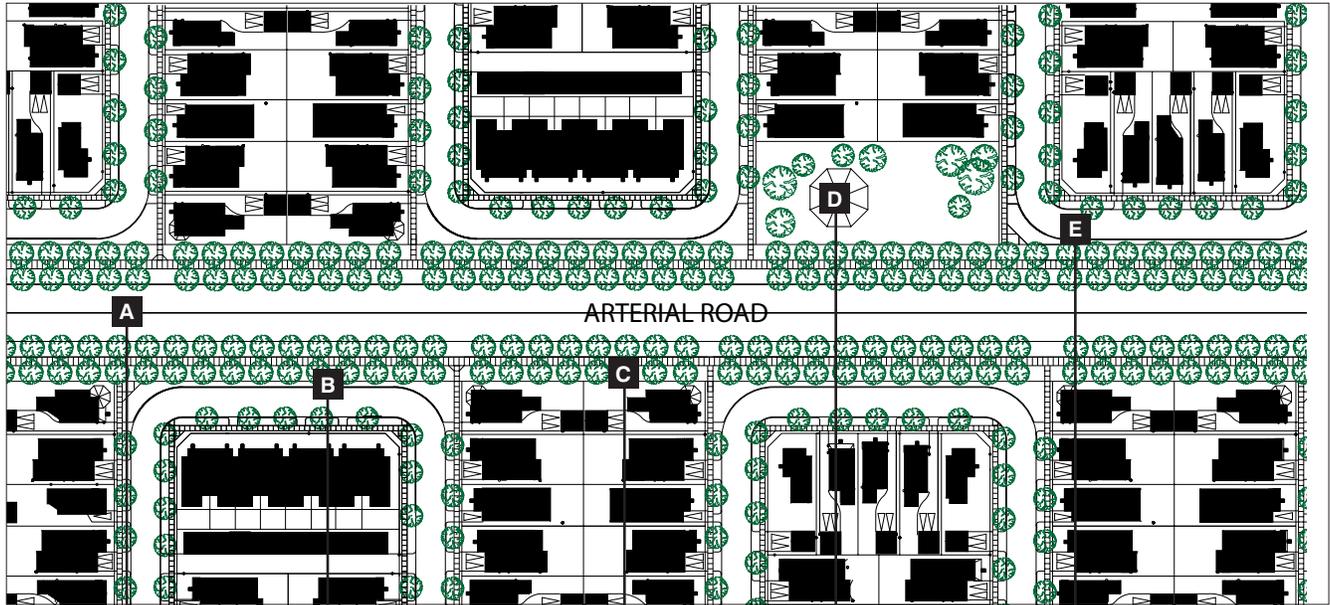


Figure: Option to design standard for a residential laneway.

Figures: Laneways should be constructed of porous surfaces wherever possible to reduce surface water runoff.

3b Roads



Arterial Road without direct access by residential areas.

Crescent configuration provides for positive interface with Arterial Road

Flanking lots may have privacy fencing of 1.2m high.

Small Park provides attractive interface with Arterial Road.

Pedestrian connections should link crescent to Arterial Road sidewalks.

Figures: Design guidelines for neighbourhood interface with Arterial Road (above). Landscape boulevard and landscape screen provides a suitable buffer between Arterial Road and adjacent to service road/crescent (right).

3b.7 Local Streets - Arterial Interface

- The design of arterial and collector streets should enhance the character of the community and the abutting properties. Noise sensitive properties shall be buffered through mechanisms such as building design and landscaping. Rear lotting should be avoided.
- Residential development adjacent to arterial roads should not have driveway access. Housing adjacent to major collector roads should generally discourage driveway access except where the road design incorporates a central landscaped median accommodating right-in, right-out only driveway access.
- All housing adjacent to arterial and major collector roads should provide positive frontage to these streets either providing a front façade or corner treatment façade on a flanking lot visible from the street.



- Positive frontage on arterial and major collector roads could be achieved in the following ways: open-ended crescents; rear lane access; rear access from local roads; single-loaded service roads.
- A variety of treatments should be utilized along a given road corridor to avoid an overly repetitive pattern. In particular, the large setbacks provided by service roads should be mitigated where possible by avoiding the mirroring of the same treatment on either side of the arterial or collector road.

3b Roads

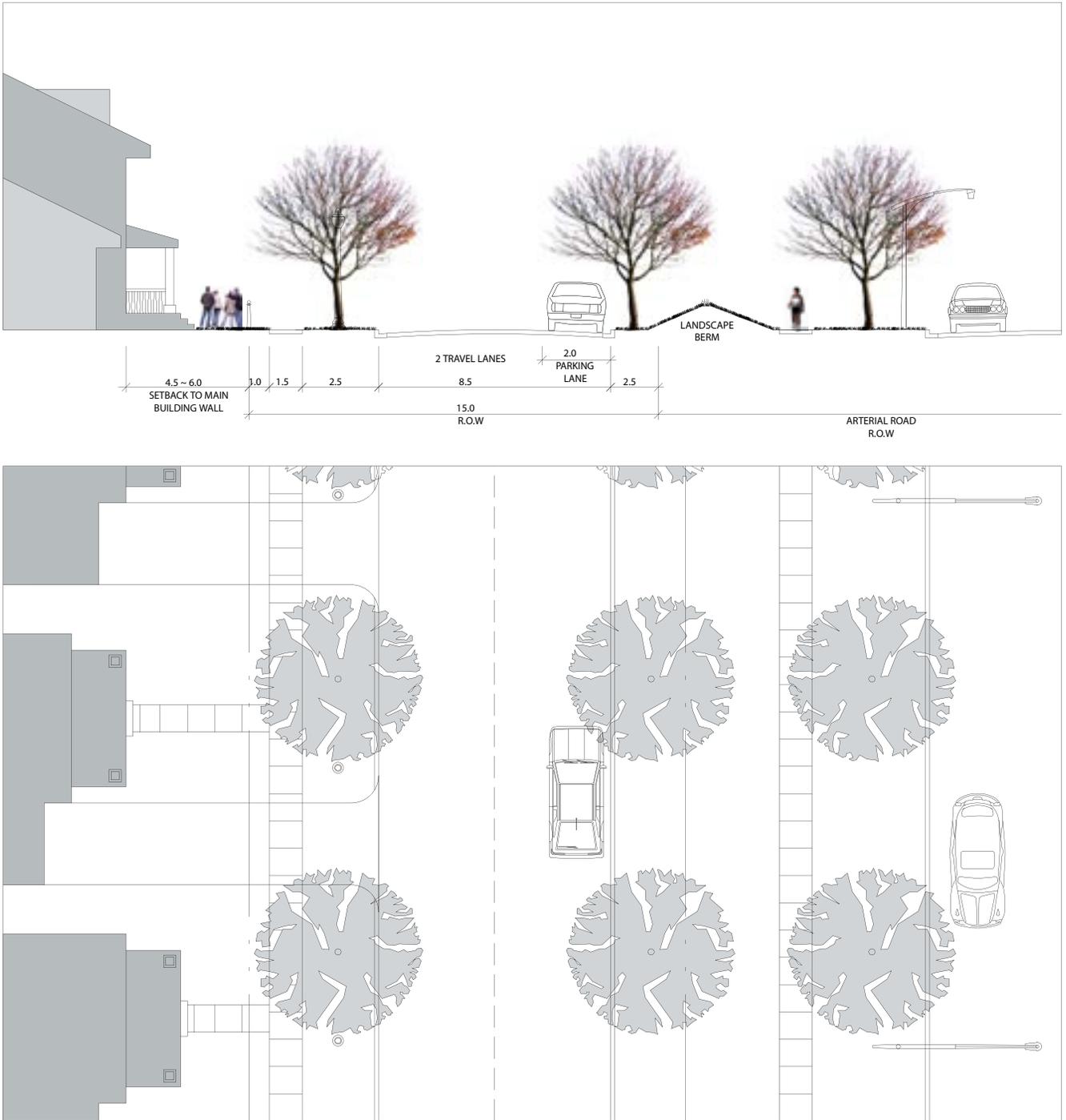


Figure: Demonstration Section: Local Street - Arterial Interface

3b Roads

3b.8 Intersection Design: Curb Radius

- Street corners should be designed to adequately serve multiple functions, including pedestrian crossings, transit stops, pedestrian waiting areas, utility and traffic signal poles, etc. Curb radius design should consider these competing needs and priorities.
- Where additional pedestrian area at the corner is desirable, for example because existing conditions are constrained or because a large corner radius is required, the intersection design should include a smaller radius.
- A smaller curb radius may be used for the design of a curb “Bump-out” - to provide a projection or “bump-out” of sidewalk pavement into the roadway. This ‘bump-out’ may include landscape elements, feature paving, seating, etc. at the intersection and decreasing pedestrian crossing distance.
- Small curb radii improve pedestrian conditions as they provide more pedestrian area at intersections, result in shorter crosswalks, and require vehicles to reduce speed as they turn the corner.
- The choice of curb radius should consider requirements for pedestrian areas, traffic turning movements, the turning radius of vehicles, the geometry of the intersection, the street classifications, and whether there is parking or a bike lane (or both) between the travel lane and the curb.
- Generally, curb radius should range from 5.0m to 8.0m.

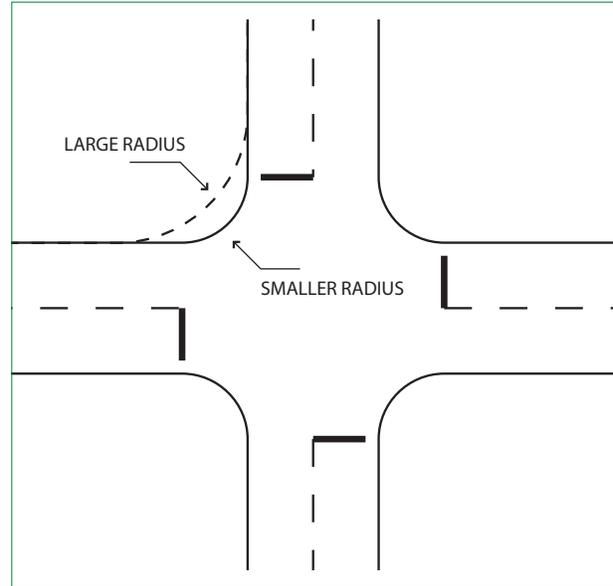


Figure: Demonstration of curb radius configuration at intersection.

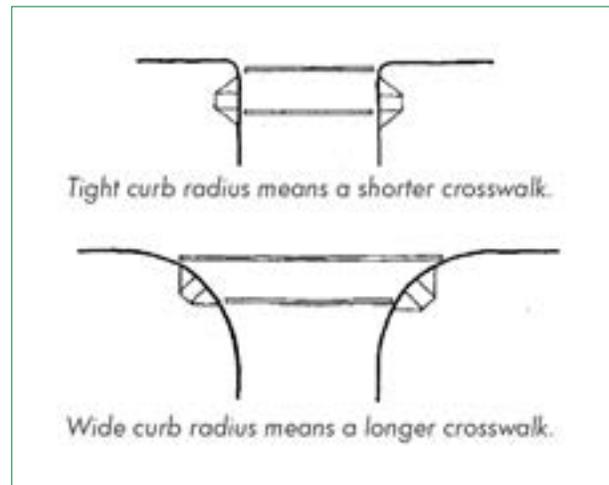


Figure: Curb radius and pedestrian safety.



Figure: Curb ‘bump-out’ design provides separation of on-street parking from intersection and opportunity for landscaping and increased pavement area.

3b Roads

3b.9 Right-of-Way Design Standards Matrix

Road Type:		Arterial Road	Collector Street	Local Street
Design Standards:				
Right-of-Way		21.0 ~ 36.0m	19.5 ~ 27m	17.5 ~ 18.0m
Travel Lanes	Total Number:	2 ~ 5 lanes	2~4 travel lanes	1 ~ 2 travel lanes
	Transit Lanes:	1 shared each direction	1 shared each direction	None.
	Travel Lane Width	3.5m/travel lane*	3.0~3.25/travel lane	2.75m/travel lane
	Transit/Parking Lane Width	3.5m/transit lane*	3.0~3.25/transit lane 2.0m/parking lane	2.0m/parking lane
Landscape Median		Optional (min 3.0m)	None	None
On-Street Parking Lane		At Commercial Centre Locations and subject to conditions.	Yes. On-street parking is typically provided during off-peak periods.	Yes, 2 parking lanes shared with travel
Total Pavement Width		7.0m ~ 17.5m	6.0m ~ 13.0m	6.5m ~ 7.6m
Landscaped Boulevards		Both Sides	Optional	Both Sides
		Min 2.0m	Min 2.0m	Min 2.0m
Bicycle Facilities		Optional.	Optional	None
		0.75 ~ 1.5m	0.75 ~ 1.5m	
Sidewalks		Both Sides	Both Sides	Both Sides
		Min 1.5m	Min 1.5m (Residential) Min 2.5m (Commercial)	Min 1.5m
Property Buffer		Not required.	Both Sides	Both Sides
		-	Max 1.0m	Max 1.0m
Transit Infrastructure		Yes, with Transit Stop Infrastructure	Yes, with Transit Stop Infrastructure	No
Street Trees		Boulevard planting every 6 ~ 9.0m subject to Clearway Safety Standards	Boulevard planting every 6 ~ 9.0m subject to Clearway Safety Standards	Boulevard planting every 6 ~ 9.0m
Street Lighting		Pedestrian scale (4.5m) on both sides of street	Pedestrian scale (4.5m) on both sides of street	Pedestrian scale (4.5m) on one side of street

*Note: Travel lane width may be reduced where feasible to minimize overall pavement width. Reduced standards should be used wherever possible.

3b Roads

3b.10 Further Reading

Burden Dan and Lagerwey Peter: Road Diets - Fixing the Big Roads.
Walkable Communities Inc.
<http://www.walkable.org/download/rdiets.pdf>

Current + Recent Projects: Design and Development Principles
for Suburban Arterials Minneapolis: Metropolitan Design Centre,
University of Minnesota, 2004.
<http://www.designcentre.umn.edu/projects/pre2002/arterials.html>

National Government Association: In the Fast Lane: Delivering More
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Government of Ontario: Alternative Development Standards - Making
Choices. Toronto, 1995.

Government of Ontario: Breaking Ground - An Illustration of
Alternative Development Standards in Ontario's New Communities.
Toronto, 1997.

Environment Canada & Road Salt
http://www.ec.gc.ca/Press/2001/011130-2_b_e.htm

Maintaining and Repairing Roadways
<http://www.oracwa.org/Pages/Chap4.pdf>

Region of Niagara 'Regional Bikeways Master Plan'.

3

Public Realm

3c. Sidewalks & Streetscaping

Smart Growth Principle Links:

[4](#) [5](#) [8](#)

Model Guidelines Section Links:

[3b](#) [3d](#) [3e](#) [3f](#) [3h](#)

3c.1 Design Principles

1. **Public spaces:** Sidewalks should be designed as high quality public spaces, promoting active use by residents and visitors and enhancing pedestrian experiences. Amenities such as street furniture, banners, art, street trees and special paving, wayfinding signage, along with historical elements and cultural references, should promote a ‘sense of place’.
2. **Scale:** Sidewalks should be designed according to the function and nature of adjoining land uses. For example, wide sidewalks are required for many commercial areas with high pedestrian volumes.
3. **Safety:** Sidewalks should provide safe environments, and provide unobstructed pedestrian movements along and across the street. Sidewalks should be designed and built free of hazards and to minimize conflicts with external factors such as vehicular movements and protruding architectural elements. Key elements of safe design include lighting and buffers from fast-moving traffic - e.g. boulevards, plantings and on-street parking.
4. **Connections:** Sidewalks should be located so that the majority of residents are conveniently connected between destinations such as institutional, recreational and retail/employment areas and transit facilities. Marked and lighted crosswalks are a key issue for pedestrian safety and should be provided wherever required.



Figure: Sidewalks are important community places, and should therefore accommodate a range of pedestrian activities.

3c.2 Sidewalk Design: General Guidelines

Sidewalks are important community places that should accommodate a wide range of potential uses, including the safe movement of pedestrians throughout residential, commercial, and employment areas.

- a) As a general rule, sidewalks should be provided on both sides of the street.
- b) Sidewalk width dimensions should be consistent block-to-block and designed to minimum requirements.
- c) Sidewalks should be constructed of a solid, stable, and textured material such as concrete or interlocking brick or paving. The pavement base should be significant to minimize heaving and damage by tree roots.
- d) Sidewalks should be coordinated with the design of feature paving across boulevards, intersections, crosswalks and driveways to ensure visibility and accessibility of the pedestrian network.
- e) Where pedestrian activity is concentrated, such as schools and street retail shops, the sidewalk should be expanded or augmented with decorative paving to create a larger surface area.
- f) Sidewalks should connect with adjoining recreational trail networks wherever possible.
- g) For sidewalks on busy streets, textured edges and sound assisted crosswalks should be used to assist the visually impaired.

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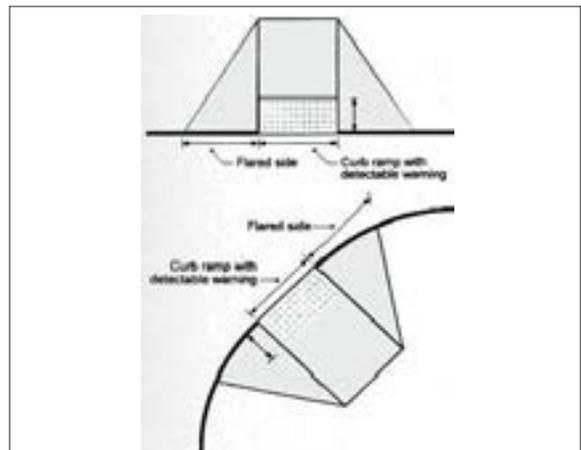


Figure: Textured curb and crosswalk edges should be used to assist the visually impaired (Image Source: US Department of Transportation).

3c Sidewalks & Streetscaping

3c.3 Commercial Area Sidewalks

Commercial area sidewalks are typically wide and often accommodate the highest number of pedestrians and a variety of commercial activities.

- Commercial area sidewalks should be a minimum width of 3.5m, and be comprised of a 1.5m wide walkway and 2.0m wide boulevard that is constructed of a hard paved surface such as interlocking brick.
- Generally, the sidewalk surface should be constructed of poured concrete. Higher quality treatments, such as granite edges, should be considered for improved maintenance in key areas such as downtowns or historic districts.
- Feature paving bands (constructed of materials other than asphalt, including pavers, impressed concrete, or concrete) should be used to define the sidewalk, and should continue across driveways and signalized intersections to indicate pedestrian priority.
- Street trees should be located within the paved boulevard and planted in an adequate pit under a metal grille.
- Sidewalk clutter, such as newspaper boxes and 'sandwich board' advertising, should be minimized to enable safe and efficient movement of pedestrians.

- At corners, consideration should be given to the widening of boulevards to provide enhanced sidewalk conditions that include decorative planting areas, seating areas and other amenities (i.e. fountain, public art).
- Curb ramps should be used to provide assistance to persons with mobility disabilities, as well as providing a proper transition between the road surface and top of curb at pedestrian sidewalk corners.

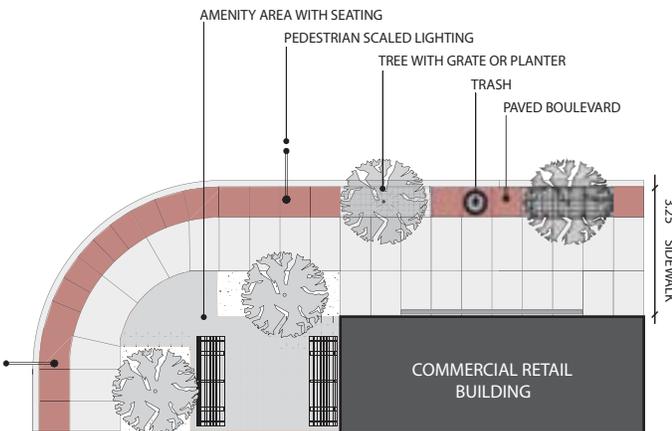


Figure: Commercial area sidewalks should include a paved boulevard, accommodating street trees, pedestrian-scaled amenities and lighting.

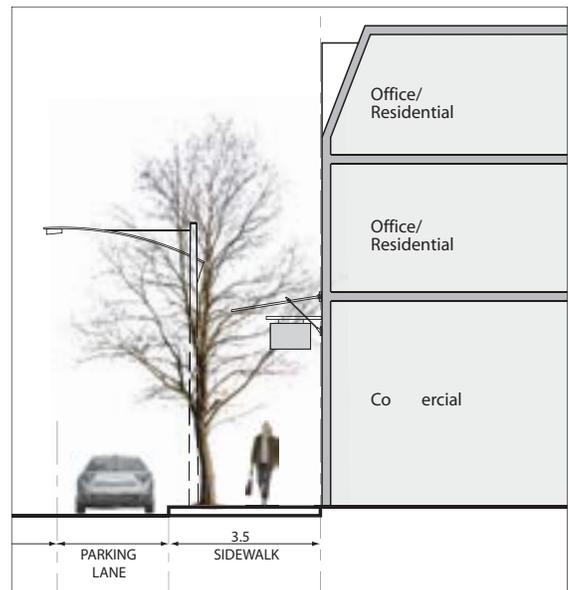


Figure: Commercial area sidewalks should be at least 3.5m wide and may be integrated with the boulevard (above). Tree grates should be used for commercial sidewalks.

3c Sidewalks & Streetscaping

3c.4 Residential Area Sidewalks

Even though residential area sidewalks carry fewer pedestrians, they are important public spaces for social activity such as meeting neighbours, children's games, and exercising.

- Sidewalks should be a minimum of 1.5m wide.
- Sidewalks should generally be located on both sides of all arterial roads, at least one side of collector streets and local streets, and should be on at least one side of single-loaded roads.
- The design of sidewalks should be co-ordinated with intersecting driveways and pedestrian walkways.
- Generally, the sidewalk surface should be constructed of poured concrete, however unit paving may be used to provide opportunities for variation and visual interest.
- Sidewalks situated on steep slopes should be scoured to create a 'non slip' surface for pedestrian safety.

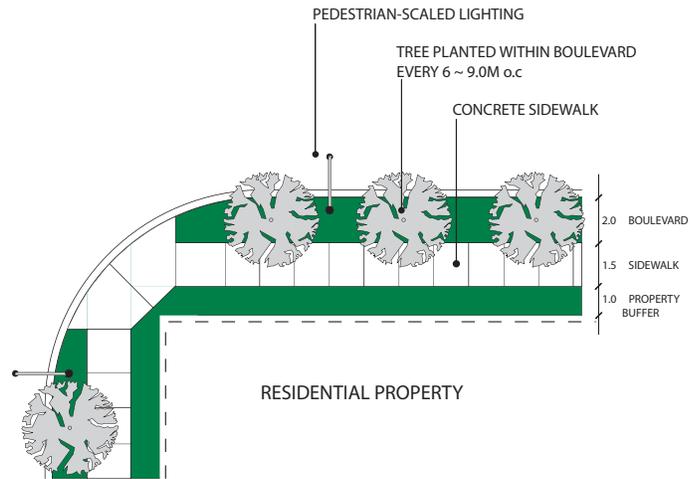


Figure: Street trees in residential areas should be planted within a 2.0m wide boulevard. Street trees enhance street character and improve local environmental conditions.

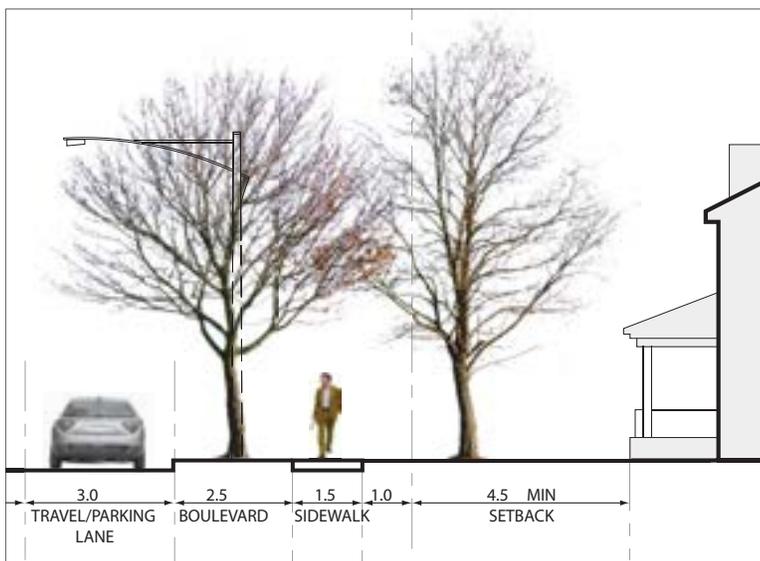


Figure: Residential area sidewalks should be at least 1.5m wide.



Figure: Sidewalks should be barrier free, and constructed of high quality and stable materials.

3c Sidewalks & Streetscaping

3c.5 Crosswalks

Crosswalks ensure continuity of the sidewalk network. High quality crosswalks must be provided for safety and to generally promote walking.

- Crosswalks should be continuous and connected to adjacent sidewalks. Crosswalks should be clearly designated for safety, with appropriate surface markings or variation in construction material, and signage.
- Gateway and major commercial area intersections should use feature paving to signify the priority of pedestrian crossings at these locations.
- The curb edge at crosswalks should be constructed of a different material, such as brick, to identify the limits of the sidewalk and beginning of the road crossing.
- Additional mid-block crosswalks with 'on-demand' signals should be provided on long blocks.
- Signalization should be prioritized for the pedestrian over traffic, especially within commercial or 'node' areas with high levels of pedestrian activity.

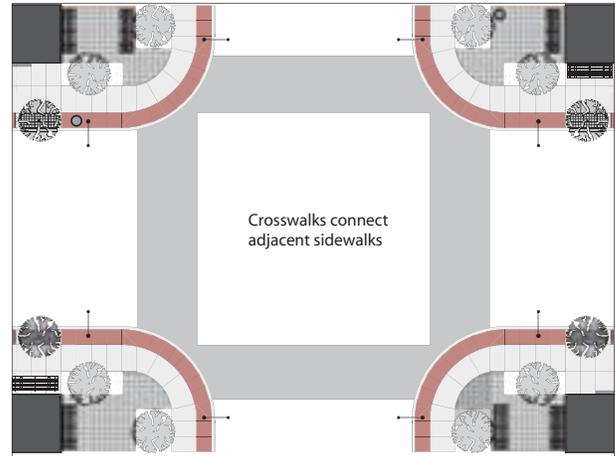


Figure: Crosswalks should be continuous, connecting sidewalks and supportive of safe pedestrian movement.



Figure: Crosswalks should be designated for safety, with appropriate surface markings or variation in construction material.

3c.6 Sidewalk - Parking Interface

Surface parking areas adjacent to the sidewalk are detrimental to sidewalk quality, pedestrian comfort and safety. The surface parking interface should be well designed with adequate buffers.

- Where parking areas are situated against the sidewalk (e.g. existing retail forecourt parking, or car sales yard), a significant physical barrier, such as landscaping or bollards, should be located between parked vehicles and the sidewalk.
- Barriers must be located on private property and therefore not reduce the total sidewalk width.



Figure: Landscaped islands provide appropriate physical separation between sidewalks and surface parking areas.

3c.7 Street Trees

Trees provide shade and comfort to pedestrians, and enhance the visual and environmental qualities of the street. Trees should be incorporated into street design wherever possible. Native species for street trees should be used wherever possible, to promote long-term survival and to prevent disease.

- a) Street trees should generally be located within the boulevard and should be offset a minimum of 1.5m from the curb to accommodate snow storage, large vehicle movements and minimize salt damage.
- b) Trees should be spaced consistently at 6.0 to 9.0m intervals. Appropriate clearances from utility boxes, street lights, and sight triangles should be considered.
- c) Careful consideration should be given to the type and location of trees to ensure that higher branching trees are positioned to ensure there is no interference with truck traffic. Sight lines should also be considered in the location of trees planted at intersections.
- d) Existing street trees should be preserved wherever possible, as mature street trees create a greater sense of enclosure along roads.
- e) The planting of trees as infill along existing streets where the rhythm of existing trees is interrupted should be implemented and such trees should be of a similar or compatible species.



Figure: Street trees in residential areas provide shade to the sidewalk and high amenity value to the streetscape.



Figure: Street trees in commercial areas should be planted under protective grilles. 'Sleeves' are also recommended to protect the tree from damage.

3c Sidewalks & Streetscaping

3c.8 Transit Infrastructure

The intent of the following guidelines is to encourage the design of high quality transit infrastructure that will promote active transit use.

- Sidewalks should connect directly to transit shelters to encourage active transit use and ensure safety and convenience.
- Transit stops should be located in close proximity to activity nodes, such as regional commercial areas, downtown streets and employment districts.
- Bus stops should be located on the far side of intersections to improve road efficiency and commuter safety.
- Transit stops should be located near building entrances.
- Transit stops should include a shelter for weather protection, with sufficient shelter for 10 to 15 people.
- Transit stops should include basic amenities, including seating, trash receptacles, lighting, and route information.
- Transit shelters located on the sidewalk or boulevard should be located between 1.0m and 3.0m from the street curb.

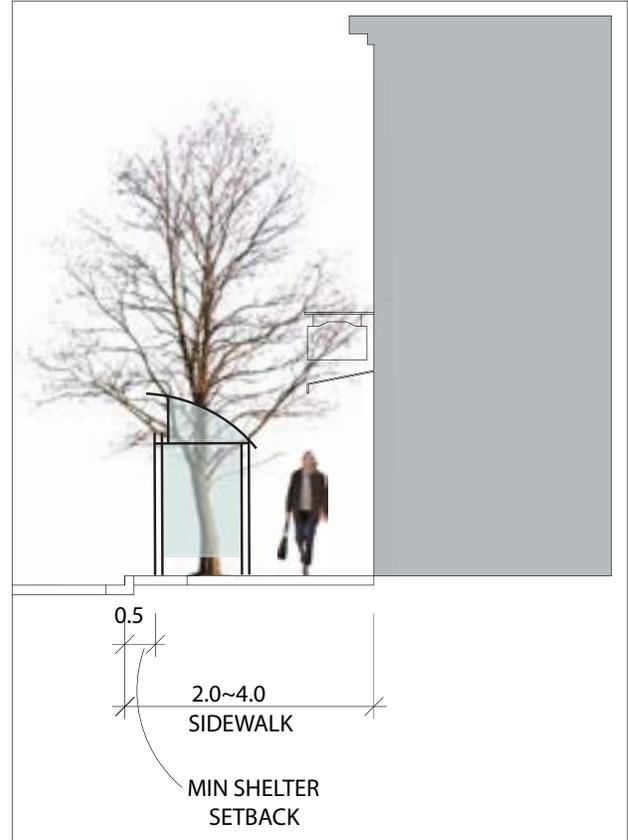


Figure: Transit shelters should accommodate 10–15 people. Public art may be integrated into transit shelters.



Figure: Transit stops should incorporate adequate seating for comfort.



Figure: Transit stops should provide safe and comfortable waiting areas with adequate weather protection. The above shelter is fully enclosed while being highly transparent.

3c.9 Street Furniture

- a) Street furnishings should be developed within an overall thematic concept and should provide a consistent and unified streetscape appearance. Preference should be given to durable materials.
- b) Street furnishings should be placed in a coordinated manner that does not obstruct pedestrian circulation on sidewalks, and vehicular circulation to driveways, parking, loading and service areas.
- c) Consideration should be given to providing additional pedestrian-scale lighting in areas along arterial roads where there is a high volume of pedestrian activity, such as at key intersections, transit stops, trail crossings, etc. Pedestrian lighting may be designed as a freestanding fixture or be added to existing vehicular light poles.
- d) Benches and waste receptacles should be provided at all transit shelters and at 'gateway' and arterial and collector street intersections, where there is significant pedestrian activity.

3c.10 Lighting

- a) Downcast road-scale lighting of 8.5m high should be provided on all Arterial Roads.
- b) Downcast pedestrian-scale lighting of 4.5m high should be provided on all Collector Roads and Local Streets.
- c) All lighting should be located within the road boulevard, at least 1.0m from the curb.
- d) The design and location of lighting should consider the impacts of light pollution, energy efficiency, and any potential negative impacts on adjacent Natural Environment areas, wildlife habitats.
- e) Character lighting fixtures should be located on all roads considered for gateway treatments.
- f) Energy efficient LED light technology should be considered for all municipal lighting.



Figure: Street furnishings should be placed in locations that do not obstruct pedestrian or vehicular circulation.

3c.11 Further Reading

Planting Native Species

<http://www.evergreen.ca/nativeplants/learn-more/native-species.html>

Designing Community Spaces

<http://www.evergreen.ca/en/cg/toolshed/facts/cg-fact7.pdf>

Community Energy Association Energy Ideas Toolkit

http://www.energyaware.bc.ca/tk_e_options.htm

3

Public Realm

3d. Parks & Open Space

Smart Growth Principle Links:

5 6

Model Guidelines Section Links:

3e 3f 3g 3h

3d.1 Design Principles

1. **Networked:** Parks and other open spaces should form part of a linked network, providing a major structure in shaping existing and new communities, and providing a variety of access and movement options.
2. **Functional:** Public parks and open spaces should be designed to serve the diverse open space needs of the community, including a range of active and passive recreational activities.
3. **Safe:** The design of public open spaces should provide safe recreational and movement opportunities. Open spaces should be framed or flanked by public roads wherever possible to improve the presence and safety of these amenities through casual surveillance.
- 44 4. **Integrated with Natural Heritage:** Conservation objectives should be balanced with recreational needs. Natural features, such as woodlots and watercourses should be preserved and integrated into Parks and Open Spaces as a means of maintaining a sense of connection with the original landscape. Naturalized, and indigenous plantings should be used wherever possible.

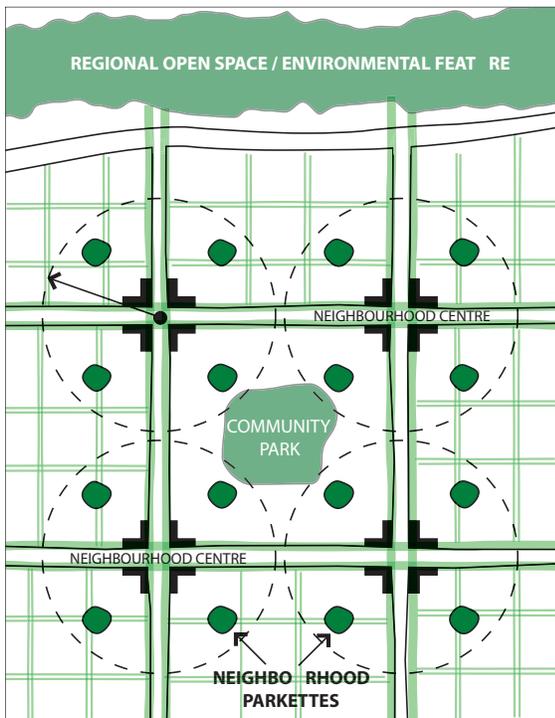


Figure: Conceptual framework of public open space network, including Regional Open Space, Community Park, and a network of Neighbourhood Parks.

3d.2 General

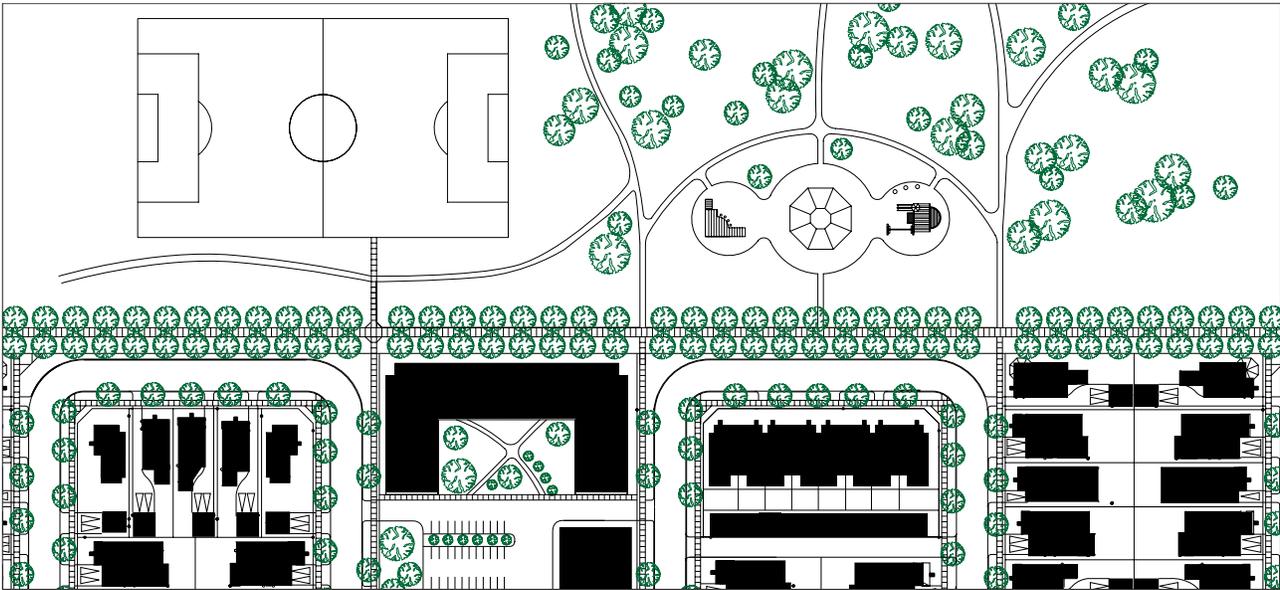
Community Parks should support the larger community identity, and provide a variety of spaces for passive park use, as well as include a variety of active/recreational sports facilities (e.g. baseball diamonds, soccer pitches, swimming pools etc.). Community parks should, where feasible, be located beside schools with access to recreational trails where connections from the wider area and adjacent residences are possible. Smaller neighbourhood parks or parkettes should be located and designed to provide a focus within a five minute walking distance of the surrounding neighbourhood.

3d.3 Community Parks

- a) Community Parks should generally be 1 to 3 hectares in size.
- b) Community Parks should be located along major roads such as Arterials and Collectors, and where possible at the terminus of streets and open crescents to reinforce a strong public profile.
- c) Park entrance design should provide amenities including visitor drop-off, pedestrian scale lighting, and signage to assist in orientation and use of park amenities.
- d) Community Parks should include facilities for passive activity including walkways, formal gardens, seating areas, park pavilions and interpretive displays relating to local history or the natural context.
- e) Highly visible connections should link the major park amenities and facilities through walkways and bicycle paths.
- f) Vehicular connections through parkland should be limited to emergency vehicle routes and access to major park facilities (e.g. arenas, pools) and parking areas.
- g) Provisions to buffer residential areas from lighting, noise, traffic and parking areas should be provided through landscaping and appropriate setback treatments.
- h) Community Parks may be directly connected to school sites to encourage mutual use of outdoor facilities. At such locations, the park size, design and programming should conform to individual school board requirements. Sharing agreements can include parking facilities.

3d Parks & Open Space

Figure: Development should directly face parks and open space, resulting in highly visible links and a positive interface. Parks should include passive and active recreation options to encourage frequent use.



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3d.4 Neighbourhood Parkettes

- a) Neighbourhood parkettes can be as small as one or two residential lots and generally located within 400m of most dwellings.
- b) A network of smaller neighbourhood parkettes should contribute to the structure and identity of the neighbourhood.
- c) Structures within neighbourhood parkettes may, where their size permits, include a variety of minor outdoor playing fields, ice pads and children's play equipment.
- d) Where possible, parkettes should be open to a minimum of two sides of the public street, 50% of the park perimeter, or whichever is greater. It is accepted that this cannot be achieved where the parkette is located at a mid-block condition.



Figure: Example of single loaded street interface with a neighbourhood parks. Small parks can include outdoor play equipment to encourage outdoor activity and social interaction.

3

Public Realm

3e. Natural Heritage

Smart Growth Principle Links:

[5](#) [6](#)

Model Guidelines Section Links:

[3d](#) [3f](#) [3h](#)

3e.1 Design Principles

1. **Preserved & Enhanced:** Natural heritage should be preserved to protect natural vegetation, ecological functions and the cultural landscape. Adjoining development should be compatible with the natural environment and appropriately set back or buffered.
2. **Integrated:** Development should reinforce historic connections to the landscape by providing physical and visual connections to natural features, parks and the surrounding landscapes. Natural heritage features can define the edges or centres of neighbourhoods and should be easily visible to create a strong sense of local identity. Where appropriate, public access should be permitted while natural features and sensitive habitats are preserved.
3. **Make Nature Visible:** The alignment of streets and blocks should be configured to create a high degree of visibility and accessibility to natural elements and their ecosystems, thereby encouraging ecological awareness. Direct visibility and access to woodlots, stream corridors, and other natural features should provide opportunities for outdoor education for area residents and local schools. Conversely, access should be restricted where necessary.

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Figure: The alignment of streets and blocks should create opportunities to view natural features.



Figure: The alignment of streets and blocks should create opportunities to view natural features. Backlotting onto the Niagara Escarpment should be discouraged unless it enables the protection of particularly sensitive areas.

3e.2 Niagara Escarpment Setbacks

Note: The following guidelines have been developed in accordance with the policies arising from the Niagara Escarpment Plan review process (see Further Reading).

- a) Development at the escarpment brow should be set back a minimum of 30m to preserve the integrity of the natural environment, the open landscape character and cultural landscape of the Niagara Escarpment and land in its vicinity.
- b) Development should be located and designed to protect the views of the natural scenery, the open landscape character and cultural landscape of the Niagara Escarpment and land in its vicinity. The perimeter of the Niagara Escarpment should be faced with a combination of single-loaded streets and open crescents to the greatest extent possible.
- c) The height, mass and architectural design of buildings and structures should be designed to be compatible with the protection of the natural environment and cultural landscape including slope, terrain, tree cover, and natural and cultural heritage features. Buildings and structures should not exceed the tree canopy or the sky line associated with the Escarpment nor should their mass be out of character with the surrounding cultural landscape.
- d) Development proposed adjacent to the Escarpment Natural Area should be set back a minimum of 30 m in order to protect the ecological integrity and open landscape character.
- e) Exterior lighting should be designed to be compatible with the Escarpment landscape. Indirect lighting is encouraged in order to minimize the impact of lights on the Escarpment landscape, nocturnal wildlife, and adjacent land uses.

3e.3 Agricultural & Rural Land Setbacks

- a) To the greatest extent possible, the perimeter of Agricultural Lands should be faced with a combination of single-loaded streets and open crescents, providing significant views and connection with these areas from streets and the fronts of adjacent houses.
- b) Residential development should be set back and buffered by either a road or public open space to ensure the adequate separation of potentially incompatible uses.
- c) In some instances, it is appropriate for residential development to back onto agricultural and rural lands, to limit access and reduce public exposure to farming equipment and machinery.

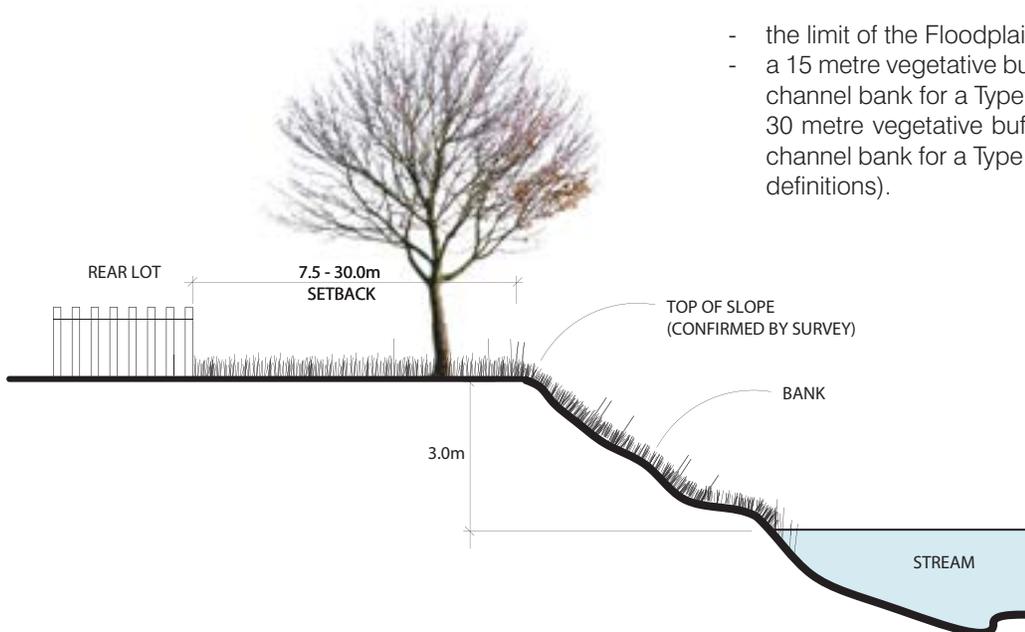
3e.4 Valleylands & Stream Corridors

Note: The following guidelines have been developed in accordance with the policies contained within the Niagara Peninsula Conservation Authority (NPCA) 'Land Use Policies for Valleylands, Stream Corridors, and Floodplains'. These guidelines are superseded by NPCA policies in all cases and are intended to demonstrate setback principles only. Refer to NPCA policies for definitions (see Appendix).

Setbacks

- a) Setback requirements should be relative to bank height, angle and stability of slope conditions.
- b) Existing vegetation should be maintained in all the setback areas. Enhancements by natural landscaping and additional native planting is recommended to create a vegetative buffer area to protect sensitive environments.
- c) For stability and land conservation purposes, the setback from valley slopes where bank height is less than 3 metres should be a minimum of 7.5 metres from the Authority-approved top of slope (surveyed by the applicant in accordance with NPCA policies). The valley should be maintained in a natural state and there shall be no disturbance of grades or vegetation below the top of bank.
- d) Where top of slope height is less than 3 metres, the setback should be represented by the greater of the following:
 - the limit of the Floodplain; or
 - a 15 metre vegetative buffer area measured from the channel bank for a Type 2 or Type 3 fish habitat, or a 30 metre vegetative buffer area measured from the channel bank for a Type 1 fish habitat (refer to NPCA definitions).

Figure: Components of the Valleylands and Stream Corridor setback guidelines.



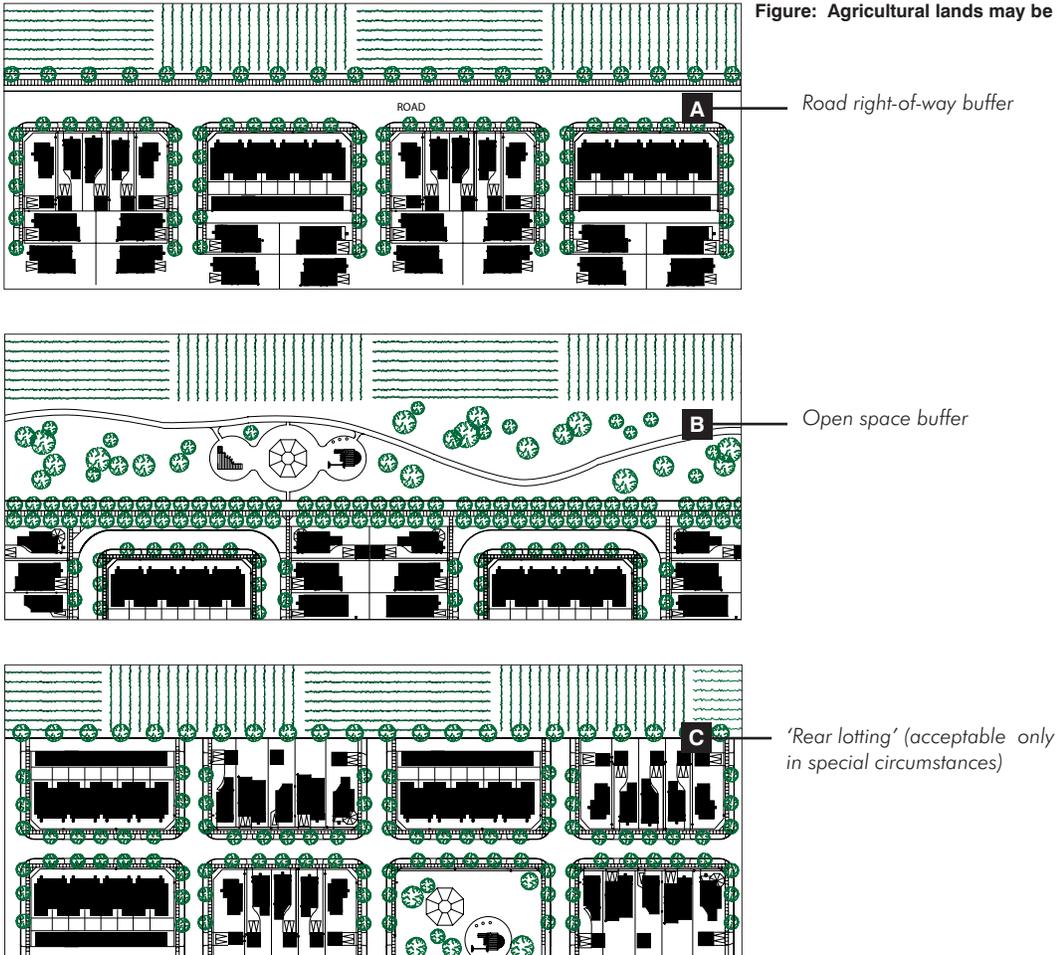
3e Natural Heritage



Figure: The perimeter of Agricultural Lands should be faced by residential properties. Adequate setback and buffer distances should be provided for the safety of adjacent residential properties.

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Figure: Agricultural lands may be buffered in a variety of ways.



3e Natural Heritage

3e.5 Heritage Greenways

- a) The heritage and rural image of the Niagara Region can be enhanced in new development areas through a new planting approach that replicates the pattern of hedgerows and tree-lined lanes associated with heritage farmsteads. This system of linear tree-lined paths is called Heritage Greenways.
- b) New neighbourhoods should incorporate a network of off-road Heritage Greenways and linear recreation trails planted with double rows of columnar trees to connect with the open space system and between new neighbourhoods and existing areas. Heritage Greenways should be encouraged to be a minimum of 12 metres wide to allow for a 3.0m path centred between double rows of trees.
- c) Heritage Greenways may form the framework of a connected open space network, linking neighbourhood parks and open spaces.
- d) As new residential areas are built further away from Central Areas, the ability to walk to typical destinations, such as schools, shops and community facilities, becomes less practical. Heritage Greenways should be established as a strong physical link to promote pedestrian and bicycle access to Central Areas from new neighbourhoods.



Figure: Heritage Greenways can provide connection and access to new and existing neighbourhoods.



Figure: A Heritage Greenway can add character to residential neighbourhoods, and support environmental sustainability objectives.

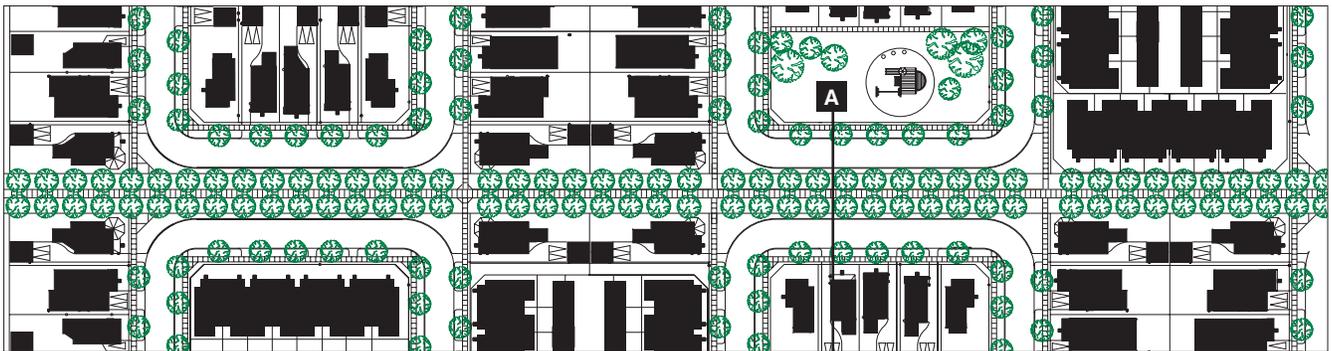


Figure: Heritage Greenway - Plan view.

Where possible, neighbourhoods should connect to Heritage Greenways to support a network of open spaces.

3e Natural Heritage

3e.6 Significant Tree Preservation

- 50
- a) Existing trees and significant vegetation should be preserved whenever possible and incorporated into site landscaping to preserve the context of surrounding land uses and the Natural Heritage System. Existing trees and vegetation will act as buffers between adjoining developments and act as site amenities.
 - b) For purposes of this section, “significant” trees include the following:
 - Trees with 30cm minimum diameter or trees of 3.5m or more in height; and
 - Groups or stands of ten (10) or more trees with a minimum diameter of 15cm measured 1.4m from the diameter breast height.
 - c) Any existing vegetation or significant trees that are in appropriate locations, in sufficient quantities, and of acceptable quality to be used to fulfil transition, landscaping, or buffering requirements should be preserved to the maximum extent practicable.
 - d) All preserved trees and vegetation should be healthy and free of mechanical injury.
 - e) Significant trees (as per above definition) should be protected during construction with the erection of hoarding, which is maintained throughout construction at the dripline of the trees. Grading should be avoided within the root area or drip line of any existing preserved trees.

- f) Maintenance of tree cover, plantings, or other stabilizing vegetation should be used to minimize erosion of sloped areas.
- g) If any significant trees designated for preservation are removed or substantially damaged during clearing, grading, or construction, they should be replaced. Replacement trees should be the same diameter, and of similar species to the trees removed or damaged, or alternately a species native to the Region.

3e.7 Further Reading

Niagara Peninsula Conservation Authority (NPCA) ‘Land Use Policies for Valleylands, Stream Corridors, and Floodplains’.

Impending - Region of Niagara Tree Conservation & Forest Conservation By-Laws.

Niagara Escarpment Centre Plan Review
http://www.escarpment.org/plan_review.htm

Ontario Conserves
<http://www.ontarioconserves.gov.on.ca/english/index.asp>

Ministry of the Environment
<http://www.ene.gov.on.ca/>

Conservation Ontario
<http://www.conservation-ontario.on.ca/>

Niagara Restoration Council
<http://www.niagararestoration.org/>

City of Vancouver
<http://www.city.vancouver.bc.ca/commsvcs/planning/treebylaw/treedev.htm>



Figure: Preserving environmental features within residential areas provides a direct connection with the existing landscape and contributes to neighbourhood character.

3

Public Realm

3f. Multi-Use Trails

Smart Growth Principle Links:

[4](#) [5](#) [6](#) [8](#)

Model Guidelines Section Links:

[3b](#) [3c](#) [3d](#) [3e](#) [3g](#)

3f.1 Design Principles

1. **Integrated:** A multi-use trail system should be established as an integral component of the public open space system. By utilizing the open space network of natural features, public parks, and Stormwater Management facilities, as well as primary street corridors and the CN rail corridors, a trail system can provide pedestrians and cyclists with connections and recreation opportunities throughout the Region.
2. **Heritage Preservation:** Trails should be established as a means of linking the natural and built heritage of the Region. Existing hedgerows, farm roads, and street networks provide the primary linear framework for establishing trail connections between neighbourhoods, parks, schools, stormwater management facilities, commercial and employment areas.
3. **Connected:** Trails should link to core activity areas such as employment and commercial land uses, and create strong links between residential neighbourhoods, open space, and the unique natural amenities available in the Niagara Region. Connected trail networks also provide recreation and tourism opportunities.
4. **Alternative Movement Options:** Recreational trails may result in a significant decrease of short automobile trips as walking becomes an attractive and viable alternative to driving. They will also serve as a means of linking new residential areas with natural environments without requiring vehicular traffic to these sensitive areas.

3f.2 Design Guidelines

- a) New recreational trails should be designed in accordance with other existing and proposed recreational networks of Niagara as identified in the *Regional Bikeways Master Plan* and *Regional Policy Plan*.
- b) The design of the recreational trail should reflect the function and nature of the type of open space it occupies. However, trail widths should range from 3.0 ~ 4.0m wide to allow for two way cyclist or pedestrian passage.
- c) Nature trails should include multiple access points. The design of access points should consider that people arrive by a variety of means, including by car, foot or bicycle. Entrances should also be designed to accommodate the physically disabled and therefore include stable yet permeable surfaces such as crushed rock.
- d) Trails should include adequate amenities, such as seating, trash receptacles, lighting, signage, route information, and educational/historic information.
- e) Trails located within sensitive natural environments, such as the Niagara Escarpment, should be constructed of low impact materials that are porous and stable, such as crushed rock, wood chip paths, or board walks. All trails should be designed according to site-specific conditions. Where topography and environmental conditions allow, trails should provide a surface that enables use by pedestrians, bicycles, and wheelchairs.

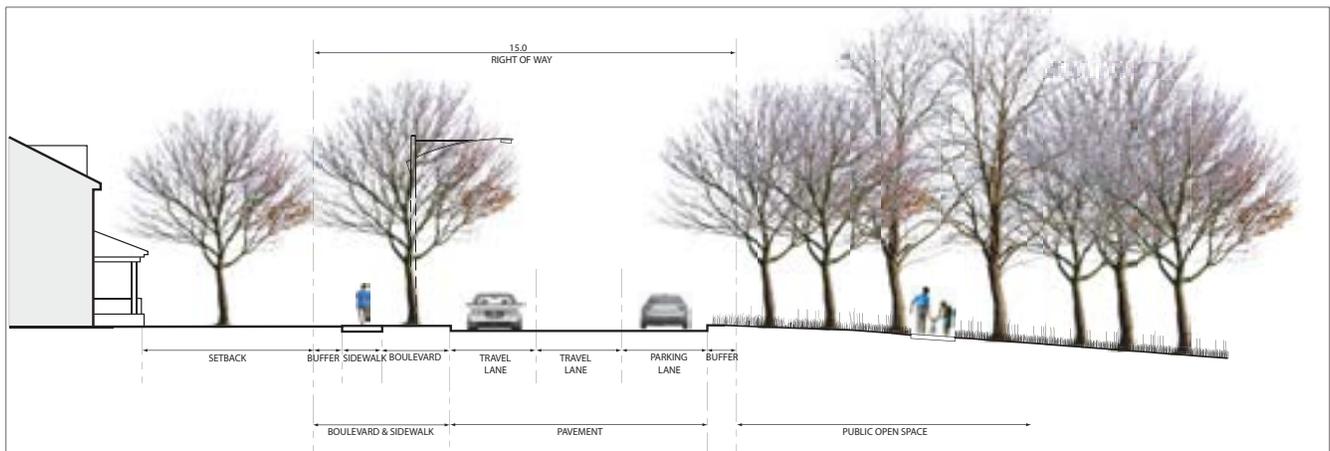


Figure: Section of single-loaded street fronting onto natural heritage area with nature trail.

3f Multi-Use Trails

- f) Allowance in the design of trails for emergency vehicle access and cross-county skiing should be considered.
- g) Lighting levels on trails should be individually determined, particularly where lighting may disturb adjacent residences, natural habitats or have high maintenance costs. The use of solar-powered lighting should be considered.
- h) Nature trails should incorporate viewing stations, orientation displays and other information to enhance nature appreciation and education.
- i) Trails that align hedgerows, woodlots or other sensitive natural areas should employ separation distances from such features. Such separation distances should be individually determined.
- j) Bicycle facilities along streets should provide direct connections to other trails within the open space system.
- k) Trails at the rear of properties should have adequate sight lines from neighbouring properties to increase opportunities for casual surveillance and safety.
- l) Trail entrances should be accessible and visible from the public street or other public areas. Adequate mapping and route information should be provided, along with public telephones at regular intervals.



Figure: Trails should incorporate viewing stations to enhance nature appreciation and education.

- m) Trails adjacent to rail corridors should be set back a minimum distance of 10.0m. This may be reduced if a safety fence is provided for physical separation. However, it is recommended that setback distances and physical separation requirements are assessed on a case-by-case basis to ensure safety of trail users from potential hazards such as wind, debris, and collisions. The setback distance should reflect to the type, speed, and frequency of train operations, as well as the topographic conditions.



Figure: Minimum trail setback to Rail Corridor is 10.0m. This may be reduced if a safety fence is provided.

3f Multi-Use Trails

3f.3 Further Reading

Region of Niagara 'Regional Bikeways Master Plan'.

Niagara Greenmap
<http://www.greenmap.org>

Niagara Peninsula Conservation Authority
<http://www.conservation-niagara.on.ca/>

Bicycle and Pedestrian Plans
<http://www.walkinginfo.org/pp/types/local/>

Economic Benefits of Bicycle and Pedestrian-based Tourism
http://www.bikewalk.org/assets/Reports/economic_impact.htm

Walkable Communities
<http://www.walkable.org/>

National Centre for Cycling & Walking - Trails & High Speed Rail
http://www.bikewalk.org/ncbw_forum/highspeed.pdf

Planning and Designing Rail-Trails on Abandoned Rail Lines
<http://www.usroads.com/journals/rej/9707/re970702.htm>



Figure: Trails in sensitive environments should be constructed with low impact methods and porous materials, such as crushed rock paths.



Figure: View from trail, situated at the edge of the Niagara Escarpment, down to adjoining residential neighbourhood.

3

Public Realm

3g. Stormwater Management Facilities

Smart Growth Principle Links:

[5](#) [6](#)

Model Guidelines Section Links:

[3d](#) [3f](#) [3h](#)

3g.1 Design Principles

1. **Water Quality:** Stormwater must be appropriately managed to minimize water degradation as a result of urban development.
2. **Flooding & Erosion Management:** Appropriate stormwater management facilities are required to mitigate the detrimental impacts of flooding and erosion.
3. **Public Access:** Stormwater management (SWM) facilities should be integrated as community amenities to optimize their use as a valued component of the general publicly accessible open space network. Where possible, SWM facilities should be connected to public open spaces.
4. **High Quality Design:** The objective of creating well-designed community facilities will assist balancing functional requirements with ecological and aesthetic objectives.
5. **Safety:** Stormwater management facilities should be designed to meet public safety objectives in the context a high degree of community focus and use.
6. **Viability:** Consideration should be given to consolidating SWM facilities or limiting the number of facilities required in order to reduce the ongoing costs of maintenance by the Municipality.

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3g.2 Water Quality & Runoff Management

According to the Ontario Ministry of Environment *Stormwater Management Planning and Design Manual 2003*, controlling post-development peak flow rates through storage to values less than pre-development conditions (over control) may be required to maintain existing downstream watershed peak flow rates.

- a) Techniques to reduce stormwater runoff and thus the need for large SWM facilities, or improve water quality, should be integrated within new residential, commercial and industrial developments. Possible techniques are listed below and should be selected with a high regard to landscape conditions and soil type:
 - *Rainwater Harvesting Systems:* Rain barrels or cisterns should be used to capture and store rainwater for reuse for non-potable water applications. Rainwater harvesting uses can include water for landscape irrigation and for flushing toilets.
 - *Landscape Systems:* Swales, planters or other vegetated areas can be used to filter, detain or infiltrate stormwater. Vegetated swales are integrated into site landscaping to slow stormwater flow and to allow sedimentation and infiltration. Trees, shrubs, grasses and ground covers are also used in landscape systems. In poorly drained soils, it is necessary to consider the cost benefits and the maintenance aspects of the installation.



Figure: Natural edge design adjacent to residential neighbourhood. A natural edge should be provided wherever possible to provide habitat for local fauna and flora.



Figure: Formal edge design provides high quality public amenity at Commercial Centre SWM facility.

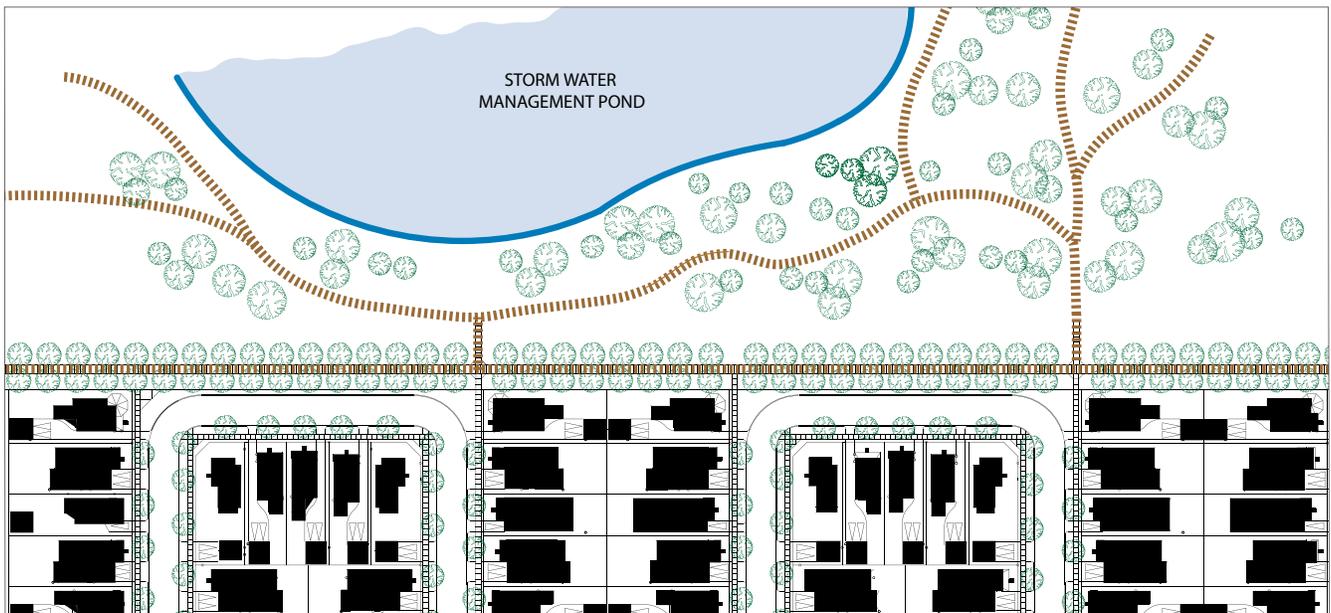
- *Downspout disconnection:* Downspout disconnection prevents roof runoff from flowing into sewer pipes and directs it to a landscaped area or other disposal system. Roof runoff from disconnected downspouts can be directed to gardens, swales, lawns, sand filters, infiltration or flow-through planter boxes.
- *Porous Pavement:* A porous surface should be used where possible to enable stormwater to soak into the ground. Porous materials may be used for walkways, patios, plazas, driveways, parking lots, and some portions of streets. Pervious concrete in parking lots can be particularly useful because of its capacity to store large volume of runoff for a period of time as well as catching oil and chemical pollutants. Permeable paving can be connected through attenuation/infiltration basins to the wetland. In all instances, attention has to be paid that the quality of the ground water is not compromised and the material can withstand Canadian winters.

3g.3 Facility Design Guidelines

- a) SWM facilities should be located at the edge of neighbourhoods; at the interface with natural open spaces; and within large public open spaces such as community parks or schools.
- b) SWM facilities should be limited in number and serve as significant community amenity areas to optimize their use.
- c) SWM facilities should have a high degree of public exposure. Of the total linear perimeter distance of a SWM facility that is adjacent to a new development area, a substantial portion of the perimeter should be bounded by a public road right-of-way, public park, or combination of publicly owned and accessible lands. A minimum of 50% of publicly accessible exposure is generally recommended.
- d) The design of facilities should avoid fencing requirements to promote public access and surveillance opportunities. Trails should therefore link to SWM facilities.

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Figure: Plan of preferred interface condition between residential neighbourhood and SWM facility. A public trail network may be connected with the SWM facility, linking to sidewalks, existing trail networks and other urban areas.



3g Stormwater Management Facilities

- e) Safe access to the perimeter of facilities should be examined on a site-by-site basis through a combination of pond edge treatments. Shallow slopes should be considered for direct access areas and overlooks with railings or densely planted areas should be applied to discourage direct access.
- f) A corporate safety policy should be established for the review of all existing and proposed SWM facilities.

3g.4 Further Reading

Stormwater Management Planning and Design Manual 2003
Ontario MoE 4329e
<http://www.ene.gov.on.ca/envision/gp/4329eindex.htm>

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Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments
http://www.pwgsc.gc.ca/rps/inac/content/docs_technical_wastewater_part3-e.html#ww3.8

The Sustainable Drainage System - SUDS
<http://www.ciria.org/suds/index.html>

Urban Drainage
http://www.ec.gc.ca/water/en/manage/floodgen/e_mngt.htm#stormwater

Permeable Pavement
<http://www.toolbase.org/tertiaryT.asp?TrackID=&DocumentID=2160&CategoryID=38>

Waterloo Biofilter
<http://www.waterloo-biofilter.com/>

Communal Wastewater Treatment Systems
http://www.cmhc-schl.gc.ca/en/imquaf/himu/wacon/wacon_036.cfm

EPA, Urban Stormwater BMP
<http://www.epa.gov/ost/stormwater/>

Pervious Concrete Pavements
http://www.glacienw.com/reference_article.asp?ra_id=67

Center for Watershed Protection - Stormwater practices for cold climates.
<http://www.cwp.org/cold-climates.htm>

3

Public Realm

3h. Environmental Sustainability

Smart Growth Principle Links:

- 1
- 4
- 6
- 7
- 8

Model Guidelines Section Links:

All Sections

3h.1 Design Principles

1. **Conserve Land:** Development of the public realm should be compact. Development and intensification should occur within existing urban areas to reduce pressure on natural features, open spaces, rural and agricultural lands.
2. **Conserve Energy:** The design of blocks, streets, transit facilities, collocation of uses, and recycling, can help to reduce energy consumption at the neighbourhood level. The collocation of complementary uses reduces the need to travel long distances, thereby conserving energy and reducing dependence on the automobile.
3. **Reduce Water Runoff:** Through the preservation of natural vegetated environments, extensive landscaping, and the appropriate use of porous surfaces, urban design strategies can reduce water runoff and improve water quality. Reducing water runoff helps control erosion, river and stream pollution, and can recharge depleted groundwater resources.
4. **Promote Alternative Modes of Travel:** Alternative modes of travel, such as walking, bicycling and public transit can be promoted through the design of high quality streets with adequate sidewalks, bicycle lanes, and transit facilities (bus stops, seating, etc). Alternative modes of travel can help reduce automobile congestion, pollution and improve public health.

3h.2 Neighbourhood Design

- a) Street, block, and lot orientation should maximize opportunities for winter solar exposure to minimize winter heating requirements. Orientation should be predominantly north-south.
- b) Existing environmental features should be incorporated into neighbourhoods - either within parklands, 'heritage greenways' and road right-of-ways, within the site of large institutional uses, or as common areas linked to large open spaces.
- c) Sensitive environmental features should be adequately buffered to ensure that ecological systems such as habitat corridors are not negatively affected by urban development.
- d) Natural drainage networks should be maintained wherever possible to support stormwater management infrastructure such as stormwater management ponds.
- e) Local street pavement widths should be minimized wherever possible to reduce impervious surfaces and stormwater runoff.
- f) Residential, commercial, and employment developments should occur within existing neighbourhoods to the greatest extent possible to reduce need for urban area expansion and the associated loss of open space and agricultural lands.



Figure: Street, block and lot orientation should be predominantly north-south to maximize opportunities for solar orientation.

3h Environmental Sustainability

3h.3 Right-of-Way & Street Infrastructure

- a) Swale drains are a viable approach for maximizing water infiltration and cleansing runoff. Swale drains should be incorporated into the road design for non-urban road cross sections wherever possible.
- b) A central landscaped median should be included within the Arterial and Collector road ROWs wherever possible to enable 'greening' of the road and to assist in reducing water runoff. Medians should be planted and street trees located every 6.0 ~ 9.0m on centre.
- c) Heavy use of road salt and other snow melting chemicals can damage roadside vegetation and the abutting property. Snow removal management options should be developed to focus on reducing losses at salt storage sites, better engineering of snow dumps to control runoff, improved salt application technology and the use of alternate products in environmentally sensitive areas.
- d) On laneways and sidewalks, permeable surfaces such as crushed rock can be used to reduce water runoff.
- e) Street trees and street landscaping should be locally adapted native species. Plants that grow naturally in the Region of Niagara are adapted to the local climate and soil conditions and have a better than average chance of surviving with minimum upkeep, use of fertilizer, pesticide or irrigation.
- f) Solar power should be incorporated into the design of street lighting and transit facilities to supplement the power requirements of street infrastructure.
- g) The selection of streetscaping elements should be determined by suitability, durability, ease of maintenance and cost effectiveness, considering whole of lifecycle costing, and achieving energy savings and reduction in greenhouse gas emissions over the life-cycle.
- h) Porous surfaces should be considered for sidewalks especially when adjacent to parks and open spaces.

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Figure: Example of swale drain in residential area. Swale drains can be used to improve rain water infiltration.



Figure: Example of central median which contributes both aesthetic and environmental benefits to the road network.

3h Environmental Sustainability

3h.4 Parks & Open Space

- a) Park and open space design should encourage interconnection with adjacent natural areas and wildlife corridors. Setbacks and edge interfaces should be planted with a diverse selection of indigenous plant species, and designed to provide habitat for local flora and fauna.
- b) Landscaping materials within parks and open spaces should, where possible, be salvaged from other sites where clearing of existing vegetation has occurred.
- c) Lighting levels should be reduced to minimum requirements to reduce impact on sensitive fauna.
- d) Playground surfaces may be developed with recovered rubber and PVC materials as an alternative to typical materials such as wood chips, sand, or asphalt.
- e) The use of park benches and picnic tables constructed from recycled materials should be considered as an alternative to timber or steel frame furniture.
- f) Bicycle storage facilities should be provided at all public parks and open spaces to encourage alternative modes of transport.
- g) Composting facilities may be located within park and open space for the purpose of composting organic waste obtained either on or offsite.
- h) Community gardens may be located within parks and public open spaces as a valuable recreational activity that can contribute to community development, environmental awareness, positive social interaction and community education.



Figure: Community gardens and composting facilities may be located within public parks and open spaces to encourage environmental awareness.

3h.5 Further Reading

Landscaping for Energy Efficiency
<http://www.eere.energy.gov/erec/factsheets/landscape.html>

Composting
<http://www.rco.on.ca/factsheet/compost.html>

US Environmental Protection Agency Procurement Guidelines
<http://www.epa.gov/cpg/products>

Build.Recycle.Net
<http://build.recycle.net/trade/rs196726.html>

4

Private Realm

4a. Residential

Smart Growth Principle Links:

[2](#) [4](#) [5](#) [8](#)

Model Guidelines Section Links:

[3a](#) [3b](#) [3c](#) [3d](#)

4a.1 Design Principles

1. **Positive Image:** A positive residential image is a key design consideration for enhancing the quality and character of the overall streetscape and neighbourhood. Housing should incorporate architectural design elements to create a positive street image. Elements such as front-attached garages or blank walls must be avoided.
2. **Context Sensitive:** The mass, scale, and architectural elements of residential buildings should be sensitive to adjoining areas. Design elements such as the height, building mass, and architectural features should complement the overall neighbourhood character. Context sensitive design will support the creation of a unique sense of place that respects local cultural and natural environmental features.
3. **Housing Variety & Choice:** A full range of housing types (i.e., detached, semi-detached, townhouse, apartments) and tenures (for sale, rent, affordable, and aged-care) should be provided so as to provide options for a wide range of residents/family types (i.e. single parents, couples, families with children, seniors, people with special needs, and others). A range of housing types will address changes in market conditions and provide flexibility for people at a variety of income levels..
4. **Flexible & Adaptable:** Multiple unit and apartment housing should create opportunities for a wider range of uses, other than residential, such as home-office and apartments situated above street commercial. Mixing land uses gives a social and economic focus for new and existing residential neighbourhoods.
5. **Environmentally Sustainable:** Residential development should be designed to achieve a high degree of environmental sustainability and address opportunities for solar orientation and water runoff minimization.

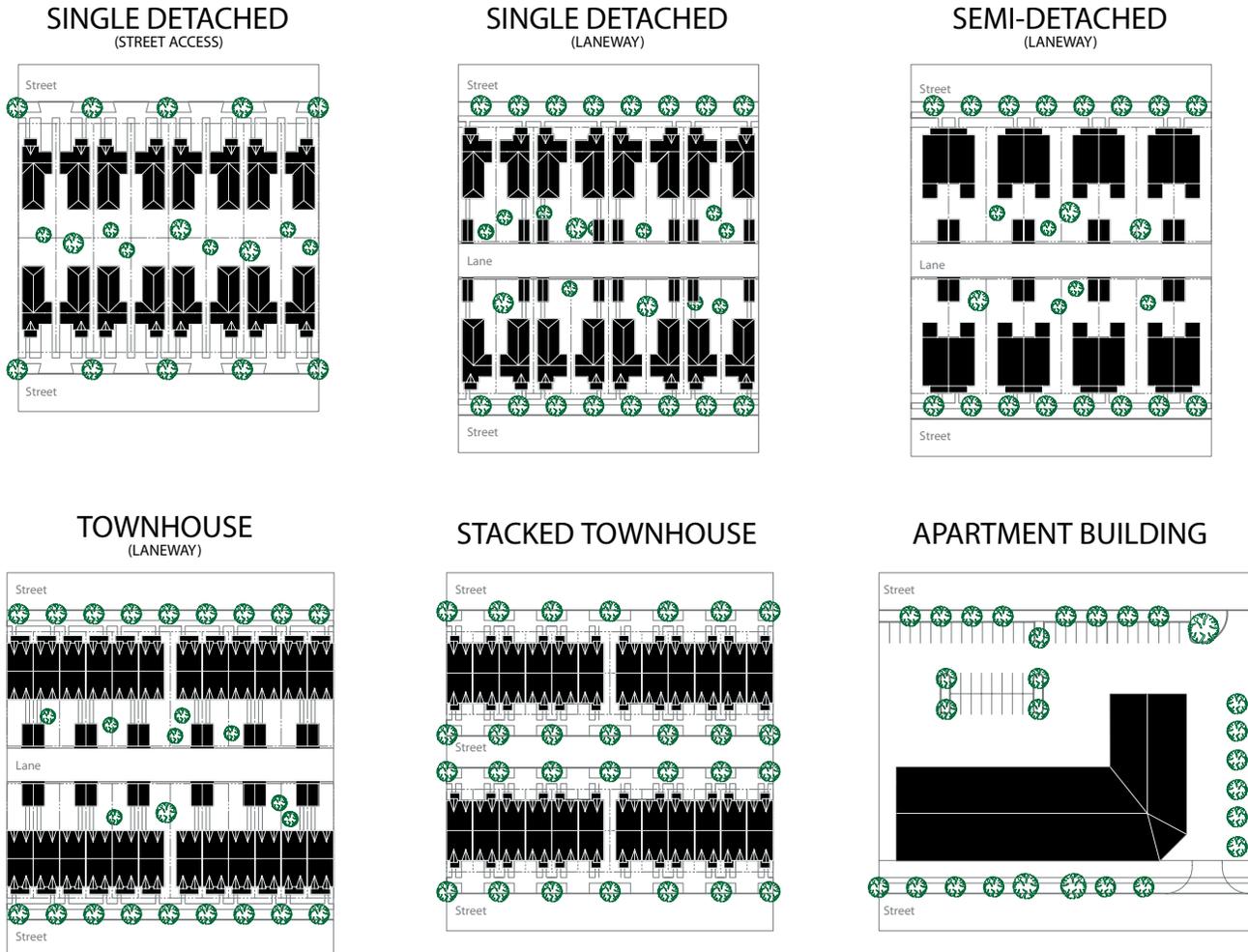
4a.2 Building Variation & Density

- a) Housing variety should be achieved on each street and block as a means of strengthening neighbourhood character and identity. Repetition of house type, size and design (style, elevation, materials, etc) should therefore be avoided.
- b) A full range of housing types (i.e., detached, semi-detached, townhouse, apartments) should be provided to promote variety and diversity, and to address changes in market conditions.
- c) Identical house elevations should not be located on adjacent or opposite lots, including flanking lots. Identical elevations, either in design or color, should not comprise more than 25% of the same street.
- d) Residential density should be increased at appropriate locations to promote transit use. Density is the ratio of residential units on a given area of land, and is typically measured in dwelling units per acre. The following table outlines the target net densities (area exclusive of roads) for common housing types.

Type	Density
Single Detached	up to 10 units/acre
Semi-Detached	up to 20 units/acre
Townhouse	up to 40 units/acre
Apartment	over 25 units/acre

- e) The highest density development should occur at appropriate locations. Appropriate locations include areas that benefit from increased population and have a variety of movement and travel options, including:
 - the centre of a neighbourhood;
 - larger public open spaces (e.g. neighbourhood parks);
 - transit facilities or major transit corridors; and
 - larger institutional uses (eg. universities).
- f) High density development should transition to adjacent areas through appropriate setbacks and building form.

Figure: The following figures represent typical housing typologies. A variety of housing types should be achieved on each block.



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4a.3 Orientation

- All housing should face adjacent streets and open spaces. Rear lotting should not be permitted unless it is required to achieve a reasonable design objective (such as to limit access to environmentally sensitive open space).
- Dwellings on corner and flanking lots should be designed so both exposed façades are oriented towards the street. At these locations, building elements and design should emphasize their visibility and potential role as landmark or orienting structures within the community.



Figure: Flanking lots should include high quality façades on both street frontages.

4a Residential

4a.4 Setbacks

The intention of the following residential setback guidelines is to promote appropriate front, side and rear yard setbacks to control lot coverage, provide adequate private open space, situate buildings in close proximity to the right-of-way, and to ensure adequate separation between adjoining buildings. Refer to Section 4a.5 for a summary of recommended setback guidelines.

Front Yard

- a) All residential front yards should have a minimum 1.5 metre “no encroachment” area. The balance of the setback may be encroached with non-interior building elements including porches, steps, roof elements, etc.
- b) A range of front yard setbacks along any street is recommended in order to achieve a diversity of setbacks on the streetscape. However, front yard setbacks should generally be a minimum of 2.5 metres and a maximum of 4.5m.

Side Yard

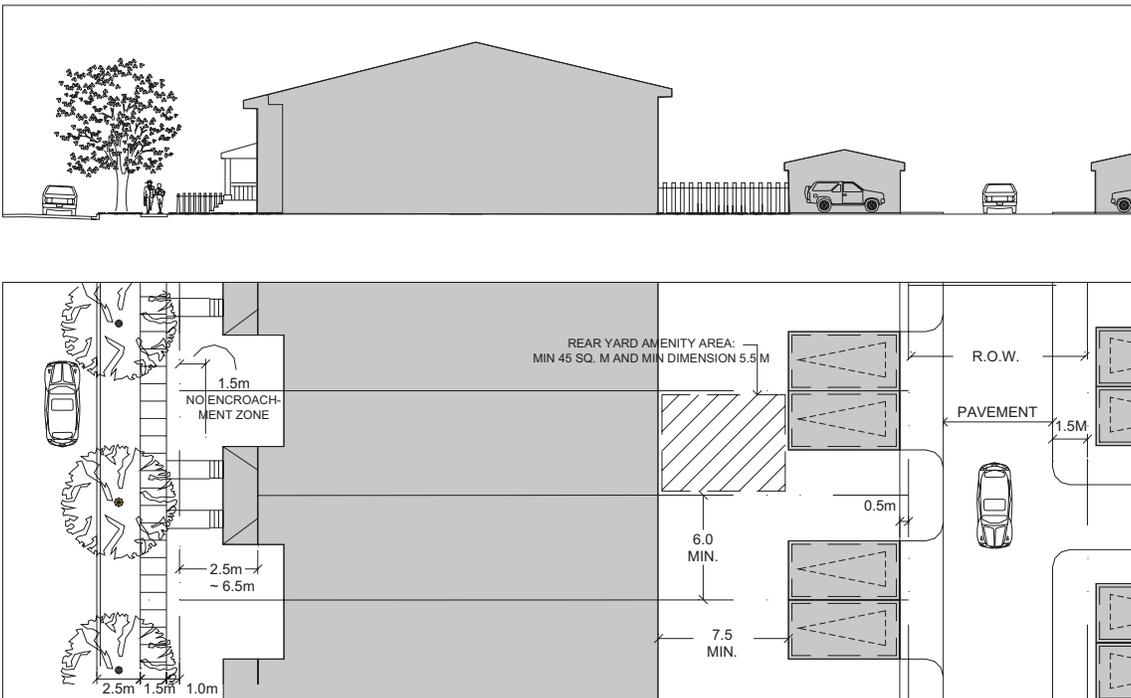
- c) Side yard setbacks should be a minimum of 1.2m, but 3.5m for lots with a garage located in the rear yard accessed by a driveway.

- d) On a lot abutting a non-residential use (including a walkway) the minimum interior side yard setback should be 3.5m.

Rear Yard

- e) On lots accessed by a driveway, the minimum rear yard setback should remain as 7.5 metres measured from the rear face of the garage, or rear property line to the rear face of the dwelling.
- f) On lots with a rear yard garage, the minimum rear yard setback should be 9.0 metres.
- g) Rear yard decks/porches and garden sheds should be permitted as rear yard encroachments, provided the rear yard is a minimum 7.5 metres in length excluding rear yard garages that are attached to the dwelling or at the rear of the property (lane or driveway access). It is recommended that, where feasible, a 50 square metre landscaped amenity space (excluding driveways) be maintained for single detached and semi-detached dwellings and 45 square metres for duplex, triplexes and townhouses.

Figure: Demonstration of residential setback guidelines (Townhouse building typology shown).



4a Residential

4a.5 Model Residential Setback Guidelines

Setback Provisions: Single, Semi-detached, Duplex and Townhouse Dwellings	Proposed Standard(metres)
<p>Minimum Front Yard Setback</p> <ul style="list-style-type: none"> - from property line to front face of attached garage where driveway crosses sidewalk; - from property line to front face of attached garage where driveway doesn't cross sidewalk; - on a lot accessed by a driveway; - on a lot with a front porch permits porch, steps and rails max. encroachment of 3.0m); - on a lot where the garage is in the rear yard accessed by a lane or driveway. 	<p>4.5</p> <p>4.5</p> <p>2.5</p> <p>4.5</p> <p>3.0</p>
<p>Minimum Interior Side Yard Setback</p> <ul style="list-style-type: none"> - attached garage/Less than 12.0 m lot and greater than 9.0 m; - attached garage/ 9.0 m lot and less; - garage located in the rear yard accessed by a driveway; - abutting a non-residential use (including a walkway, trailway and SWM ponds). 	<p>1.2 each side</p> <p>1.2 each side</p> <p>1.2 and 0.6</p> <p>3.5 and 1.2</p>
<p>Minimum Exterior Side Yard Setback</p> <ul style="list-style-type: none"> - with a side yard porch; - adjacent to a rear lane; - adjacent to a site triangle; - site triangle abutting an entrance feature (including a max. 1.5 metre encroachment). 	<p>4.5</p> <p>3.0</p> <p>1.2</p> <p>3.0</p>
<p>Minimum Rear Yard Setback</p> <ul style="list-style-type: none"> - on a lot accessed by a driveway; - on a lot with a rear yard garage accessed by a lane or driveway; - on a wide shallow lot. 	<p>7.5</p> <p>9.0</p> <p>7.5</p>
<p>Interior Garage Dimensions</p> <ul style="list-style-type: none"> - less than 11.0m lots; - 11.0 to 11.5 m lots; - 11.6 to 11.9 m lots; - 12.0 m lots and greater; 	<p>Min. 3.0 wide by 6.0</p> <p>Min. 3.0 wide by 6.0</p> <p>Max. 4.5 wide</p> <p>Min. 3.0 wide by 6.0</p> <p>Max. 5.0 wide</p> <p>Min. 5.5 wide by 6.0</p>
<p>Maximum Garage Projection</p> <ul style="list-style-type: none"> - from front wall of dwelling where there is no front porch; - from front wall of dwelling where there is a front porch. 	<p>Max. 0.0</p> <p>Max. 1.0</p>
Minimum Lot Depth.	24.0
Maximum Building Height.	up to 18.0m
Maximum Garage Width (interior width).	Max. 50% of house frontage

4a Residential

4a.6 Building Height

a) The following table summarizes the range of appropriate heights for typical housing types.

Type	Height
Single Detached	2 ~ 3 storeys
Semi-Detached	2~ 3 storeys
Townhouse (Row)	3 ~ 5 storeys
Apartment	5 ~ 8+ storeys

b) The design of tall buildings should respond to potential negative impacts on adjacent properties, including overshadowing, overlooking, wind-tunnel effects. Therefore, building height and mass should be appropriate to the type and nature of adjoining development.

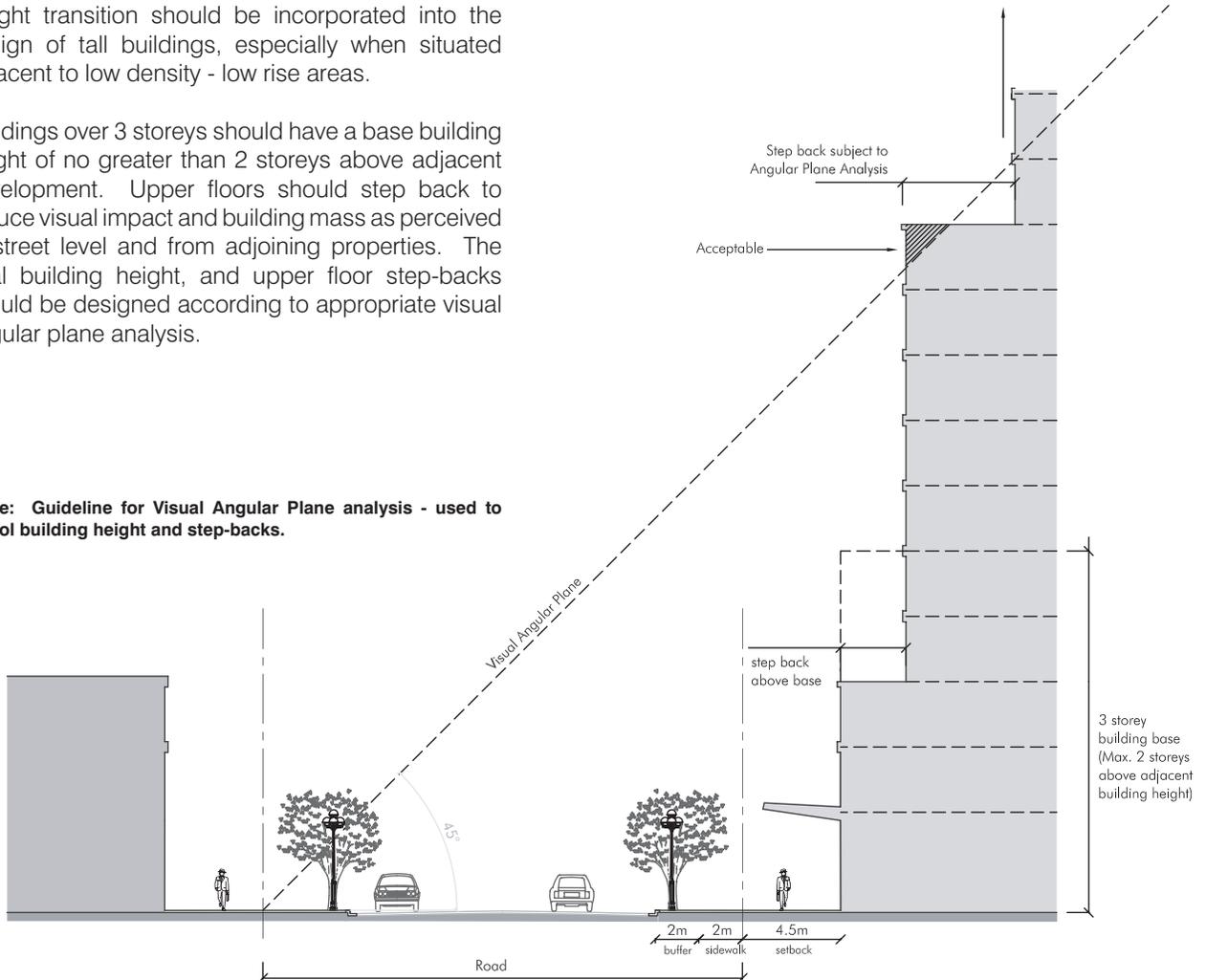
64 c) Height transition should be incorporated into the design of tall buildings, especially when situated adjacent to low density - low rise areas.

d) Buildings over 3 storeys should have a base building height of no greater than 2 storeys above adjacent development. Upper floors should step back to reduce visual impact and building mass as perceived at street level and from adjoining properties. The total building height, and upper floor step-backs should be designed according to appropriate visual angular plane analysis.



Figure: Step-backs should be used to provide transitional elements to tall buildings.

Figure: Guideline for Visual Angular Plane analysis - used to control building height and step-backs.



4a Residential

4a.7 Architectural Features

The intent of the Architectural Feature guidelines is to achieve a visually rich residential building fabric that promotes a distinct neighbourhood image through the use of materials, building form, and architectural styles.

General

- a) Architecture expressed throughout residential buildings should be varied and recognize its local context.
- b) Despite the use of various architectural styles, quality should be consistent and building materials and finishes should be complementary.
- c) Consistent rhythms of similar but not identical details and architectural elements should be used to reinforce the streetscape and a strong neighbourhood image.

Walls

- d) The front façade of dwellings and garage treatments should maximize the presence of the habitable building façade. A high standard of design, detail and variety of materials should be combined to create front building façades with a distinct street presence.
- e) Flanking walls should include at least 20% surface window area.
- f) Flanking façades should have a design and materials standard equal to the front façade treatment.

- g) Facing materials including brick, stone, stucco and wood/metal siding are all acceptable. Lintels, cornices, quoins, dentils and other details are recommended to be incorporated within brick and stone walls to reduce the heavy effect of these materials.
- h) Changes in the use of wall facing materials should occur at wall setbacks or projections, or to articulate the transition between the building base, middle and top.
- i) Wall materials should be selected based on energy and maintenance efficiency.

Windows

- j) Buildings facing or flanking a street, lane or open space should provide a generous amount of window openings to encourage strong visual connections between the private dwelling and public realm.
- k) Front dwelling façades should include between 30 to 40% surface window areas.
- l) Bay windows are encouraged as they increase visibility from private dwellings to the public realm and add to the building character.
- m) Window design should be primarily an expression of the interior dwelling use. Creative arrangements of windows should have a functional role in providing natural ventilation and light, views, and privacy to the individual and adjacent dwellings.



Figure: The front façade should maximize the habitable presence of the building and high quality design should be used to create a distinct street presence.

4a Residential

- n) Centre lines of similar windows should be aligned vertically, and should be set within a sufficient area of wall to avoid an overcrowded composition of wall openings.
- o) Skylights and clerestory windows are encouraged. Skylights should be treated as distinct roof elements and be coordinated with other roof and building elements. Skylights are encouraged and should be located behind the roof ridge, away from the street view. Clerestory windows should be detailed to provide a structural and coordinated junction between the building wall and roof.

Porches and Building Projections

- p) Building projections including porches, decks, canopies and stairs are encouraged as transitional building elements that provide weather protection, dwelling access and active amenity spaces.
- q) Porch and deck dimensions should be large enough to accommodate furnishings and ensure their active use. The minimum depth for porches and decks should be 2.0m (6.5 feet).
- r) Steps to porches should have generous proportions and a gentle rise and run to encourage safety and active use (e.g. step sitting).
- s) The design of porch railings and columns should be integrated and use complementary materials.
- t) Finish materials should extend to all sides of the porch and stairs. The underside of the porch should not be exposed to the street.
- u) Duplex and multiplex dwellings should provide porches and decks as outdoor amenity spaces for upper units.
- v) Continuity of front porch design is recommended between detached and semi-detached dwellings. Material and detail variations may occur between porches provided there is an accordance of scale and proportion. Townhouse and multiplex dwelling porches should be the same, or establish a clear rhythm of variation between every second or third unit.

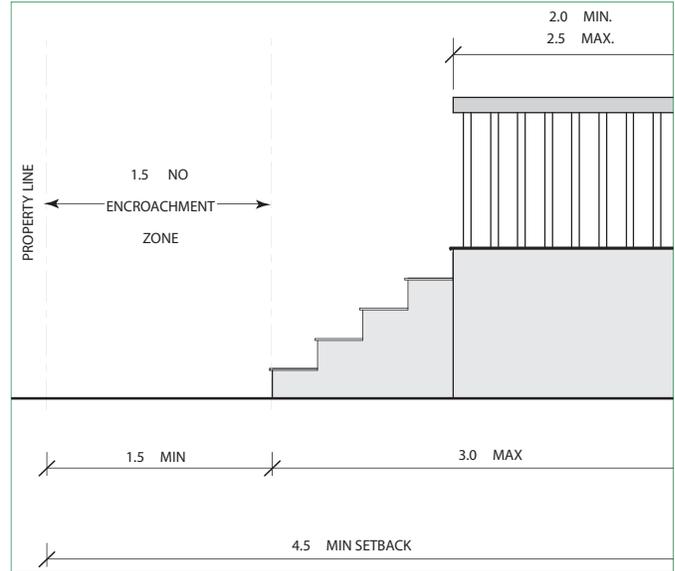


Figure: Design guideline for front porches.



Figure: Building projections, such as a porch, should be provided as a transitional building element, and can be used to enhance the architectural quality of the building.

4a Residential

Roofs

- w) A variety of roof shapes should occur in each residential block. However, roof forms should apply a consistent roofline in mass and height to adjacent buildings.
- x) Roof materials/colours should complement the building materials and the proposed building design.
- y) Where sloped roofs are required, a minimum 30-degree slope is recommended.
- z) Townhouse and multiplex dwellings should express individuality of address through defined roof forms that express individual dwellings and contribute to a residential character for the overall development.
- aa) Roof elements including chimneys, dormers, pitches, cupolas and vents should be incorporated as distinct elements providing the potential for additional variety in the image of one dwelling to the next.
- ab) The use of dormers on sloped roofs is encouraged to ensure liveability of top storeys, or to allow future conversion of attic spaces. Dormer windows should be of the same type and proportion as those used for windows in the lower storeys.



Figure: A variety of roof shapes should occur in each residential block. Where sloped roofs are required, a minimum 30 degree slope is recommended.

4a.8 Driveways & Garages

The primary issue regarding residential parking is the dominant proportion of the garage over the house façade. This limits opportunities for 'positive' design features such as front porches and windows, front facing rooms, and public safety through casual surveillance of the street from the house.

Garages

- a) To reduce the garage dominance on the streetscape, and to achieve the principle of a balanced house façade to garage, attached garages located at the front or side of the house should be no wider than one half the width of the house.
- b) There should be no projection of the garage from the front face of the house (measured from the primary building façade not the porch) where there is no front porch and 1.0m where there is a front porch.
- c) For lots less than 12.0 metres wide, interior one-car garage dimensions should be a minimum 3.0 metres wide by 6.0 metres deep. A maximum width of 5.0 metres may be applied to permit a one-car garage with storage.
- d) On lots greater than 12.0 metres wide, interior two-car garage dimensions should be a minimum 5.5 metres wide by 6.0 metres deep.



Figure: Wherever possible, garages should be located at the rear of the house to reduce visual dominance and negative impact on the streetscape.

4a Residential

- e) Tandem garages are strongly encouraged for row housing as a method of reducing the garage frontage and number of curb cuts, and increasing the living area frontage and landscaping opportunities in the front yard.
- f) Within townhouse or multiplex dwelling lots, no more than six double car garages or the equivalent in single car garage length should generally occur in a row.

- g) In neighbourhoods with an established pattern of detached garages located in the rear yard, new garages should also be located at the rear of the house.
- h) Garage design should be complementary in character and quality of detail to the principal dwelling, and include high quality construction materials, adequate windows and appropriate architectural details.

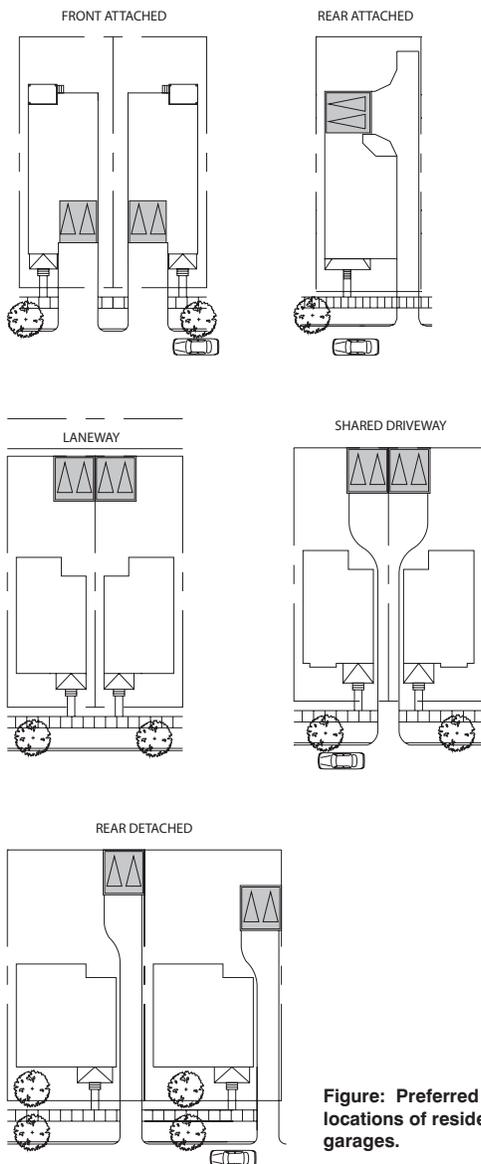


Figure: Preferred alternative locations of residential garages.

Driveways

- i) The width of paved driveways on private property as well as driveway cuts at the curb should be as narrow as possible, and in no case wider than the predominant pattern.
- j) Driveway space located between the house and adjacent road should be limited to the width required for access to a garage or other required parking spaces. Permeable surfaces are encouraged for driveway paving.
- k) Curb cuts should be spaced to preserve the maximum number of on-street parking spaces.
- l) Corner lots located at the intersection of major and minor roadways should normally have driveway access from the minor roadway.



Figure: Laneway development supports safe and attractive streetscapes, with a low number of curb-cuts, and the maximum exposure of habitable frontage.

4a Residential

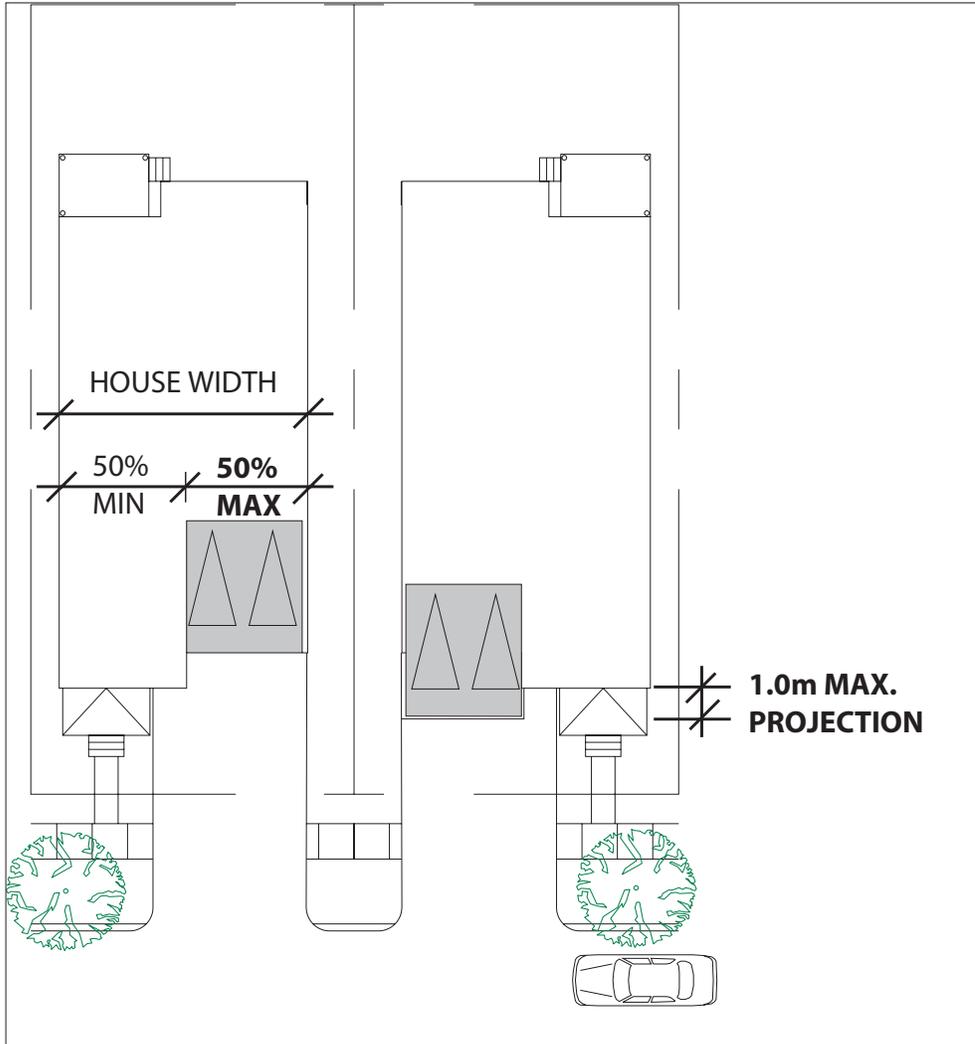


Figure: Design guideline for residential garage width and setback.

The total garage width should not exceed 50% of the total house width.
The garage should not project more than 1.0m beyond the house facade.

4a Residential

4a.9 Apartment & Mixed Use Buildings

The following guidelines are intended to provide apartment buildings that respect the human scale of residential and mixed-use areas. Human scale should be reinforced through appropriate building height, mass and architectural design.

- a) The impact of tall buildings on open spaces and adjacent properties should be minimized through adequate height and mass transition, separation, and landscaping.
- b) Buildings should have a strong relationship to the street, both by use or form.
- c) Mixed use buildings with retail located at grade are encouraged within the neighbourhood centre or other appropriate locations. Mixed use building should be at least 3 storeys in height.
- d) Higher density development at major intersections should be developed to reinforce the prominence of these locations through appropriate massing, building projections, and recesses at grade, pedestrian-scale buildings, and open space treatments.

- e) High quality pedestrian infrastructure should be provided on all public streets and public spaces adjacent to apartment development to support vibrant street environments, pedestrian access and comfort.
- f) Ground floor units should have individual at grade access where possible. Upper floor units should be emphasized through articulations of the exterior wall plane and roof, and the use of pronounced building elements including bay windows, balconies and dormers.
- g) Primary building entrances should clearly address the street with large entry awnings and provide visibility to interior lobbies to allow for safe and convenient arrival and departure from the building.
- h) Pedestrian entrances to parking and service areas within the principal building should be combined with exposed communal areas such as exercise areas or meeting rooms to provide casual surveillance opportunities.

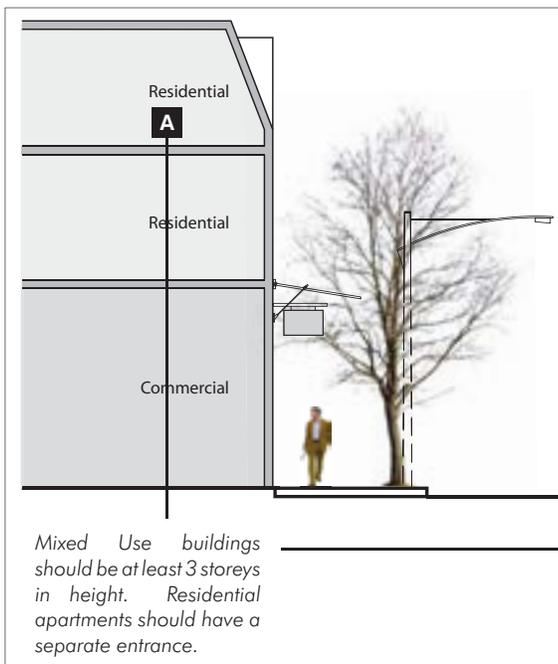


Figure: Design guidelines for incorporating commercial uses into residential apartment buildings.

4a Residential

- i) Outdoor amenity areas should be provided wherever possible, either at the front, side, or rear of the building. Outdoor amenity space is preferably located adjacent to indoor recreation space, in view of residential units, and at a location that receives direct sunlight.
- j) Outdoor amenity areas may be provided as an external garden area, rooftop terrace. Roof terraces require planting, screening, and wind shelter to promote comfort and safety.
- k) Rooftop mechanical equipment and vents should be incorporated as an integral part of the building design wherever possible. Roof top units and vents should be set back from the roof edge and screened using materials complementary to the building.



Figure: Shared private amenity/open space should be provided wherever possible as part of apartment building developments.

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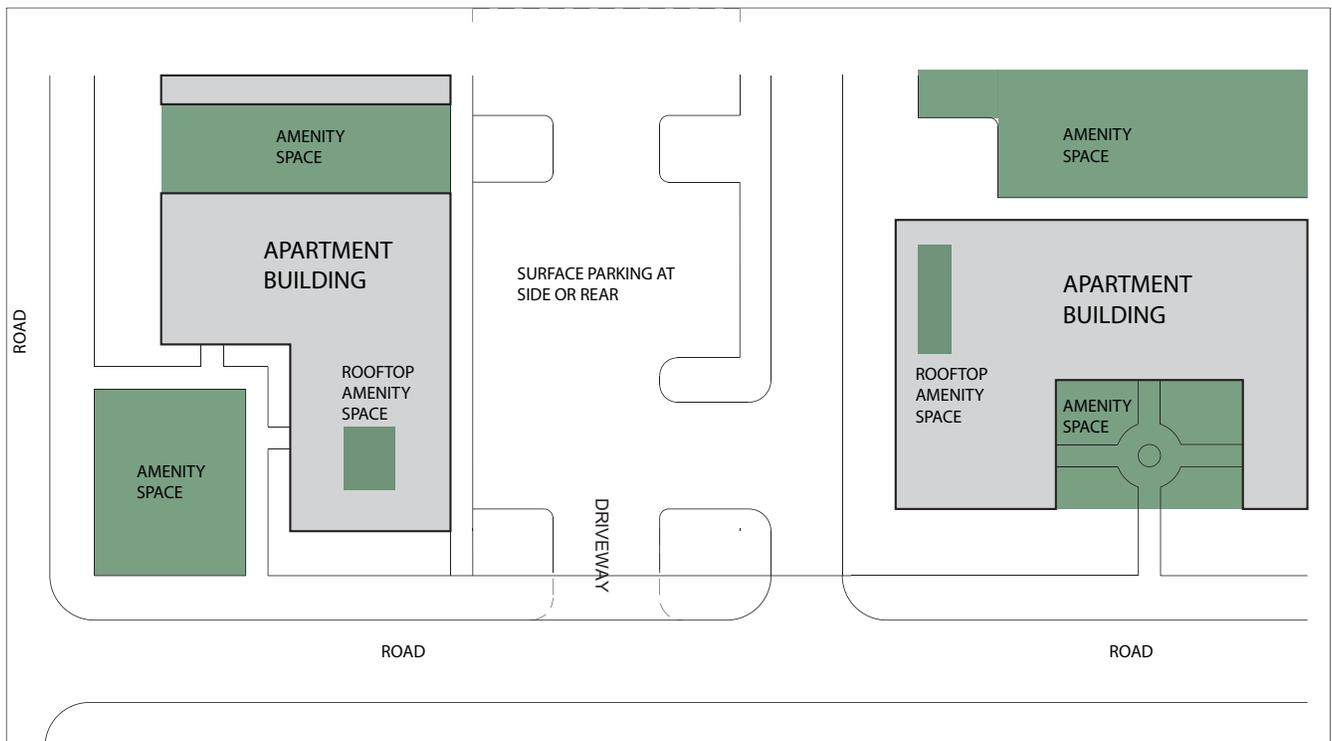


Figure: Outdoor amenity space may be located at the front side or rear of apartment developments. Outdoor amenity space should receive direct sunlight and be in view of residential units.

4a Residential

4a.10 Apartment Building Parking Areas

- Parking areas as part of apartment building development should be located underground, integrated within the building or structured parking.
- Access to underground or structured parking should be provided at the interior of the lot - not at the corner.
- Where structured parking fronts onto a public street or space, commercial retail units should be provided at-grade.
- Surface parking must not be located between the public ROW and the front of the adjacent primary building.
- Where surface parking areas are required, design guidelines outlined in Section 4e should apply.
- Vehicular ramps for underground or structured parking should not exceed 40% of the street frontage.
- Parking within a structure should be screened from view at sidewalk level, and the street-level wall should be enhanced by architectural detailing, artwork, landscaping, or similar treatment that will add visual interest.
- The calculation of parking space requirements allocated for a development should take account the following considerations:
 - public parking stock with spare capacity within walking distance of the development site.
 - availability of transit within walking distance of the development site.
 - availability of sharing parking between different uses that require parking at different times of the day.

4a.11 Further Reading

MacBurnie, Ian, *Reconsidering the Dream: Towards a Morphology for a Mixed Density Block Structure in Suburbia, Parts 1 & 3*. Ottawa: Canadian Mortgage and Housing Corporation, 1992.

Quadrangle Architects Limited, *Multiple Housing for Community Sustainability*. Ottawa: Canada Mortgage and Housing Corporation, 2000.

Creating Great Neighborhoods: Density in Your Community
www.epa.gov/smartgrowth/density.htm



Figure: Structured parking fronting onto a public street should include commercial uses located at grade.

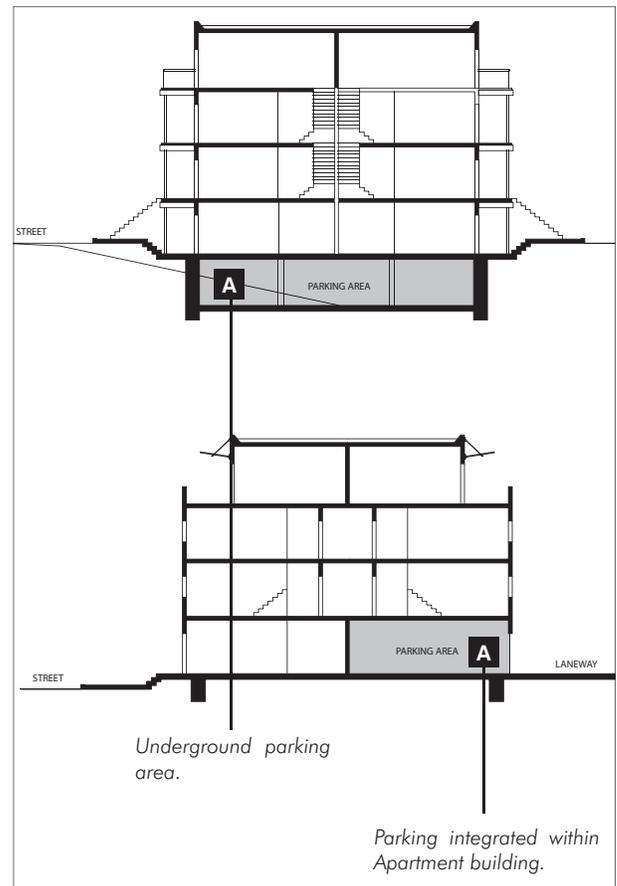


Figure: Preferred location of apartment building parking areas.

4

Private Realm

4b. 'Main Street' & Street Commercial

Smart Growth Principle Links:

[1](#) [2](#) [3](#) [5](#) [7](#)

Model Guidelines Section Links:

[4e](#) [4f](#)

4b.1 Design Principles

1. **Balance Heritage Preservation & New Development:** The preservation of heritage assets within existing communities is a Smart Growth priority and supports the objectives for compact built form and enhancing community distinctiveness. Development sites situated adjacent to existing historic areas have general market appeal and should be developed as a catalyst for broad based urban renewal.
2. **Character Sensitive:** Respect the 'original' historic character and preserve original fabric where appropriate. Contemporary additions should also be considered.
3. **Conservation:** The alteration of any historical architectural feature or building should be resisted. The process and mechanisms for the conservation and restoration of heritage buildings should be prioritized.
4. **Maximize Mixed Use & Reuse:** Mixed-use development provides live/work opportunities, and contributes to vital, attractive neighbourhood character. Adaptive reuse should be considered as part of the conservation and restoration of heritage buildings.

4b.2 Renovation & Preservation Guidelines

- a) Where feasible, the original building fabric should be preserved. Repair rather than replace deteriorated architectural features. When replacement is necessary, match the original. Replacement of missing features should be based on historical accuracy.
- b) Original elements that lie beneath contemporary alterations should be preserved and replicated where necessary if damaged.
- c) Renovate shop fronts in keeping with the original building design, using those elements that are intact, and replacing missing features.
- d) The base panel of heritage storefronts provides a visual and functional building base. Original base panels should be maintained when they exist with materials of the same colour and texture as the display window frame, or the pilaster materials.
- e) As the largest element of the shop front, the display window establishes the character of the façade. The continuity of large display windows should be maintained.
- f) The display front is often divided near the top into transom windows. The transom should be maintained and any obstructions such as air conditioning units that have been inserted into this space should be removed.
- g) Doors are a very important functional design feature of heritage buildings. The location, size, shape, and style of doors establish our most immediate impression of a building. Traditionally constructed of wood and glass and fitted with metal hardware, each style of door was designed to fit a particular style of building. The style of heritage doors should be preserved where possible, respecting the shape of the opening, the divisions within it, and the surrounding trim.



Figure: Adaptive reuse of historic warehouse building. The contemporary canopy is a complementary design feature of the heritage façade.

4b 'Main Street' & Street Commercial

- h) In addition to providing light, views, and ventilation, windows are an important design element of a heritage building façade. The location, size, shape and style of windows help to establish our impression of the building. Replacement windows should duplicate the originals in style, type and material. Custom wood sashes should be used to provide a near-perfect match for the original. If an exact duplicate is not possible, windows with similar operation and internal divisions should be installed.
- i) The size, location or number of openings on the main façades should not be changed, unless the property is being restored to its original appearance. In cases where the interior has been renovated and the ceiling lowered, a bulkhead or valance can finish the ceiling edge against the window. In some cases, an opaque upper pane may also be appropriate.
- j) Heritage buildings should be painted in colours matching the original selection. Historic photographs (supplied by the local heritage society), and paint samples/fragments (retrieved from the structure if possible) will provide useful information.
- k) Non-traditional colours should be discouraged, e.g. primary colours, pastels and excessively bright tones and hues. Traditional colours should be used for heritage buildings.

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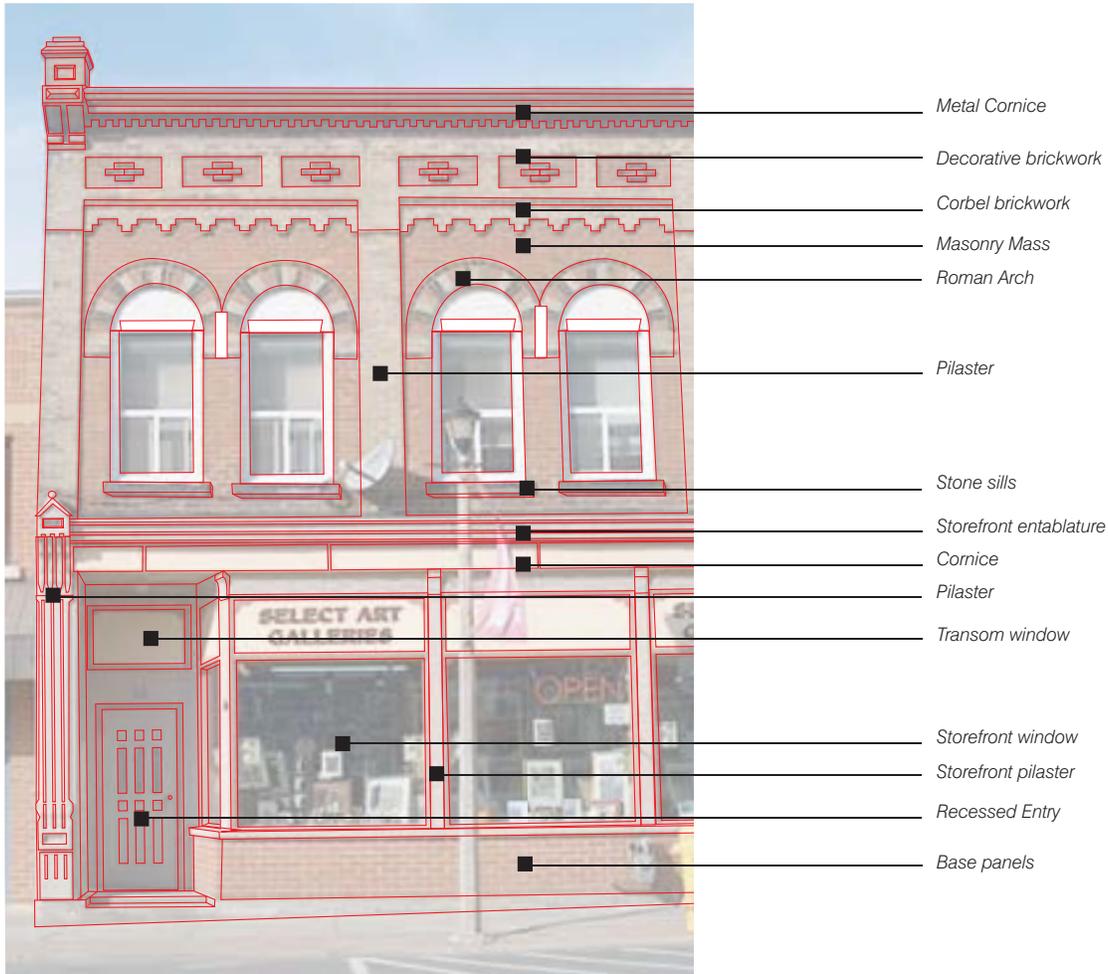


Figure: Typical Historic Storefront Elements.

4b 'Main Street' & Street Commercial

4b.3 Infill Development Guidelines

The following guidelines address infill street commercial development. To achieve an appropriate relationship to existing developments, design considerations of massing and scale, and to a lesser degree, architectural elements and details, are required. Comprehensive analysis of infill development opportunities should be undertaken for existing street commercial areas.

Setbacks

- Infill development should match the pre-established 'street wall' setback of adjacent buildings in order to maintain a continuous street wall and maintain appropriate spatial definition.
- Where no 'street wall' exists, infill development should be located with a minimum setback from the street so that a relationship between the building and the sidewalk is established.

Height

- Infill building heights should match or complement pre-existing building heights of adjacent developments. The height of a development should generally be less than 80% and not more than 120% of the average height of adjacent buildings. The predominant block condition should be respected.

Corner Sites

- Architecturally undervalued corner sites should be designated for future redevelopment to be occupied by buildings designed to take full advantage of these locations.

Additions

- Building additions should reference the building to which they are being added both volumetrically and materially. Additions should reference adjacent buildings but only if they complement the primary building.
- When adding structure to an existing building, particularly a heritage structure, new structure should either be identical to the existing building or should provide a contemporary design response. Poor quality imitations of heritage styles are not appropriate building additions.

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Figure: Example of potential infill building envelope. Infill development should be identified to reinforce the street wall and create a strong sense of place.

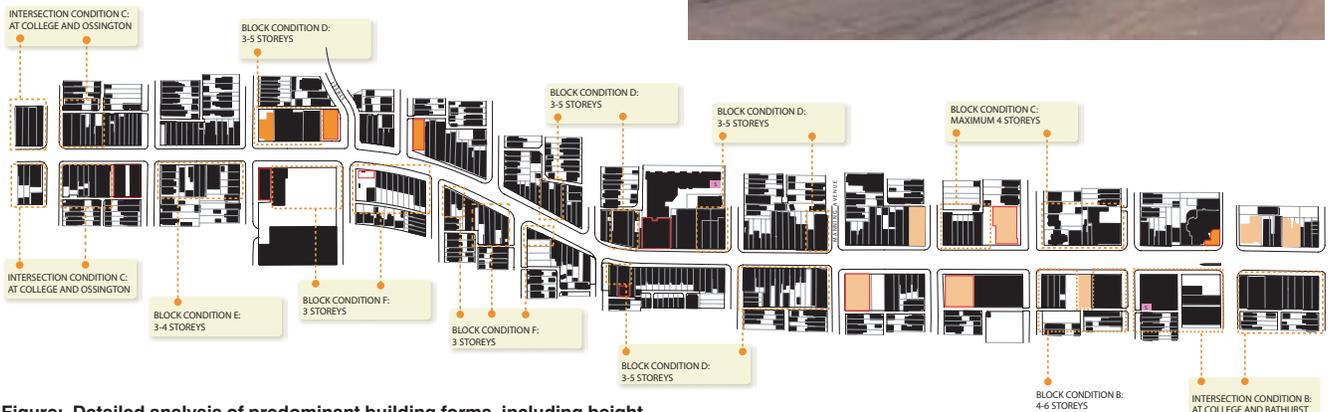


Figure: Detailed analysis of predominant building forms, including height, setback and mass should be undertaken as part of a street commercial infill strategy.

4b 'Main Street' & Street Commercial

Mixed-Use Infill

- g) Mixed-use development should be promoted for infill sites at 'main street' and street commercial areas. Residential apartments above street level shops should be encouraged at locations adjacent to main street areas. Mixed-use development contributes to increased street animation, safety, supports transit, and economic vitality.
- h) Rear façades should also be upgraded and maintained in much the same way as storefronts, particularly when an opportunity exists to create active retail space, e.g. back-of-lot café, or as part of a larger community improvement plan.

Parking

- i) Parking areas of new development should be situated at the rear of the building and designed in accordance with Section 4e.

4b.4 Further Reading

Ontario Heritage Act

<http://www.culture.gov.on.ca/english/culdiv/heritage/act.htm>

Parks Canada - Standards and Guidelines for the Conservation of Historic Places in Canada

http://www.pc.gc.ca/docs/pc/guide/nldclpc-sgchpc/index_e.asp

Cultural Heritage Conservation in Municipal Planning

<http://www.culture.gov.on.ca/english/culdiv/heritage/planning.htm>

Ontario Historical Society

<http://www.ontariohistoricalsociety.ca/welcome.asp>

Department of Canadian Heritage

http://www.pch.gc.ca/index_e.cfm

Maryland Department of Planning, "Infill." Baltimore, 2001.

http://www.op.state.md.us/planning/M&gs/infillfinal_1.pdf



Figure: Example of a modern design within a historic context. Mass and scale of development is compatible with adjoining buildings.



Figure: Example of contemporary design, representing good urban design, at a location near the historic downtown location.



Figure: Mixed use infill development provides residential uses above at-grade commercial. Residential units may also 'back onto' the building.

4

Private Realm

4c. Large Format Commercial

Smart Growth Principle Links:

[2](#) [4](#) [5](#) [7](#)

Model Guidelines Section Links:

[4e](#) [4f](#)

4c.1 Design Principles

1. **Strong Street Edge:** All commercial retail development, including Large Format (or 'Big Box') uses, should provide physical definition to streets and public spaces. This physical definition is achieved by locating buildings close to the street edge, with off-street parking located behind or beside buildings. Definition of the street edge is a legitimate role for large format retail development and should be achieved wherever possible.
2. **Distinct 'Sense of Place':** Commercial retail development should incorporate high quality architectural treatments, building materials, and site planning that provides visual interest at the scale of the pedestrian, reduces building mass impacts, respects local character, and provides a distinct sense of place.
3. **High Quality Public Amenities:** Development should provide high quality public amenities that promote a positive site appearance and promote pedestrian activity and social interaction.
4. **Dual Frontages & Multiple Entrances:** Commercial retail development should provide multiple entries at multiple frontages to improve site design flexibility and options for building location.
5. **Capitalize Infill Opportunities:** Large surface parking areas at the street edge provide opportunities for infill development. Infill development should provide a strong street edge, and frame entries and main drive aisles.
6. **Think Ahead:** Block patterns for 'Big Box' development should be designed to ultimately accommodate denser, mixed-use development.



Figure: Large format retail development should address and define the street. Definition of the street edge is a legitimate role of large format development.

4c.2 Orientation & Site Layout

- a) Buildings should be and organized to define and frame abutting streets, internal drive aisles, sidewalks, parking and amenity spaces. Buildings thus require multiple active façades and entrances.
- b) Building setbacks should be reduced to minimize distances between building entrances and abutting public street sidewalks.
- c) The large format 'super block' should be broken into functionally and visually smaller units by internal drive aisles, a network of connected walkways, and landscaping.

4c Large Format Commercial

4c.3 Architectural Design

Façades

A strong articulation of building façades is required. In particular:

- The base, middle and top of the building façade should be expressed through the use of materials and detail design.
 - Blank or single material façades that extend the entire length of the building parallel to the public street should not be permitted.
 - Blank walls in other locations, which are visible to the public, should incorporate additional architectural detailing and/or signs, murals, sculptural or graphic design.
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- Façades of any significant size should be subdivided through a combination of windows and projections and recessions in the building wall to create a consistent rhythm across the façade and establish divisions that express a hierarchy of entrances and identify individual businesses, where applicable.
 - At least 60% glazing should be provided on the at-grade primary building façades and areas that have public activity. Glazing should be actively used to provide storefront windows or merchandise displays. 'Spandrel' or faux glazing should never be used at street level.



Figure: Façades should be subdivided through a combination of windows, projections, and recessions. Canopies should be used to express building entrances and identify individual businesses.



Figure: Design guidelines for large format retail building.

4c Large Format Commercial

Wall Facing Materials

- f) Changes in the wall facing materials should occur at wall setbacks or projections or to articulate the transition between the building base, middle and top.
- g) Wall detailing should integrate functional building elements such as vents or rainwater leaders within the wall plane as visible and integrated elements.

Prominent Focus Buildings

- h) Corner buildings at the intersections of primary roads or at gateway locations should include articulated building elements in the form of towers, bays or other details that emphasize the focal nature of these buildings.
- i) Corner buildings at the intersections of primary roads or gateway and primary roads should employ wall projections, recessions, materials and other details that enhance the visibility of these locations.

Surrounding Areas

- j) Wherever possible, the character and scale of materials used in the building should be carried through in those chosen for pathways, courtyards and areas directly surrounding the building to contribute to a cohesive and integrated image of the development.

Pedestrian Entrances and Access

- k) Main entrances to buildings should be emphasized through canopies, awnings or taller, non-habitable building structures. The volume and height of such structures emphasize the prominence of entrances particularly at a corner location.
- l) Windows should be coordinated with the location of pedestrian walkways to provide interest and improve security along these routes.
- m) Where possible, access to ground level offices should be barrier-free and avoid the use of steps or ramps.



Figure: Prominent focus buildings should feature articulated building elements.

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Figure: Display windows should be dominant over solid walls. At least 60% glazing should be provided at grade.

4c Large Format Commercial

- n) Where steps or ramps are required, they should be coordinated with the design of the building and should conform to barrier-free access requirements as set out by the Ontario Building Code.
- o) 'Big box' sites should be accessible to pedestrians from all adjacent neighbourhoods.

General Building Materials

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- p) Building materials recommended for new construction include brick, stone and wood frame. Materials such as aluminum, steel and metal panels may be used provided they are used within an appropriate context. Too varied a range of building materials is discouraged in favour of achieving a unified building image.
- q) In general, the appearance of building materials should be true to their nature and should not mimick other materials.
- r) Building materials should be chosen for their functional and aesthetic quality. Exterior finishes should exhibit quality of workmanship, sustainability and ease of maintenance. If materials that require regular refinishing such as wood or stucco are used, maintenance programs should be provided.
- s) Materials used for the front façade should be carried around the building or at a minimum to the side building façades.



Figure: Sample of preferred building materials



Figure: The primary entrance design should incorporate high quality architectural treatments such as clerestory windows and materials.

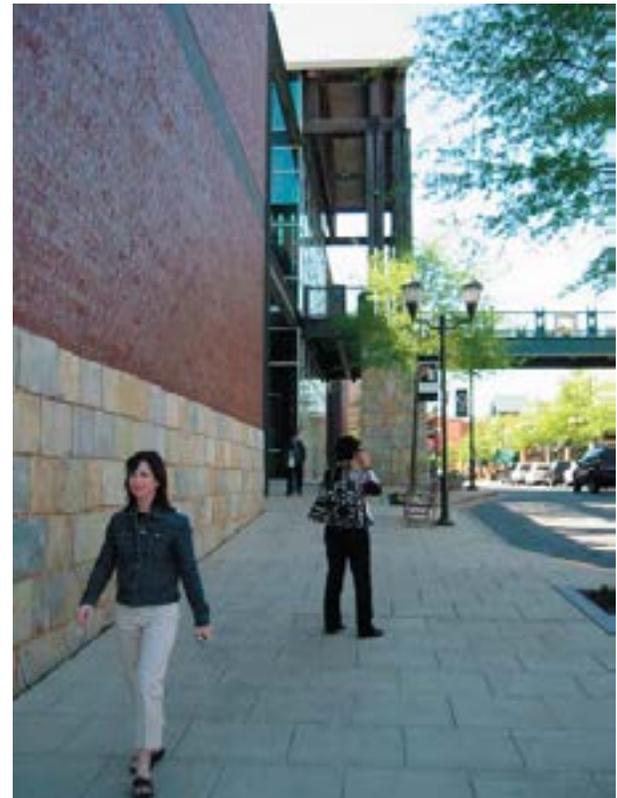


Figure: Changes in wall facing materials provide for vertical and horizontal transition.

Covered Walkways and Colonnades

- t) Colonnades, covered walkways and porticoes are recommended as a means of weather protection and adding articulation to the building elevation. These building projections should be allowed to project beyond the minimum front setback line, but should not extend beyond the front property line.
- u) Colonnades, covered walkways, porticoes and other substantial structures should be permanently roofed. Lighting and landscape elements should be incorporated into the design of these structures to promote their use.
- v) Porch-like colonnades are encouraged within commercial developments adjacent to residential neighbourhoods. This type of structure is complementary to residential buildings in character and scale and could be used to provide a weather-protected passage on commercial side streets adjacent to residential neighbourhoods.
- w) Pillars should be as thin as possible to promote visual contact with storefronts.

Roofs, Cornices and Parapets

- x) Pitched or sloped roofs should be considered as alternatives to flat roofs for commercial development, provided that sloped roofs respect the context and rooflines of adjacent buildings. Where sloped roofs are required, a minimum 30-degree slope is recommended.
- y) Roof forms should apply a generally consistent roofline in mass and height to adjacent buildings.
- x) Roof materials/colours should complement the building materials. On sloped roofs a single roofing colour and material is recommended for visual continuity.
- aa) Rooftop mechanical equipment should be integrated with the building design and rooftop units and vents should be screened using materials complementary to the building. Where appropriate, parapets should be used to screen rooftop mechanical units.



Figure: Colonnades provide weather protection.



Figure: Colonnades add articulation to the building elevation.



Figure: Pitched roofs should be considered as an alternative to flat roofs for commercial development.

4c Large Format Commercial

4c.4 Retail Commercial Units

- a) The location of small-format Commercial Retail Units (CRUs) such as Fast Food Restaurants and Auto Service Stations should define street edges, intersections, entries, and enclose smaller public spaces.
- b) Small format buildings should be oriented towards major internal drive aisles and frame the street edge. A maximum setback to the adjacent street curb of 3 to 4.0m is required.
- c) CRU's should frame the corner of adjacent intersecting streets. Entrances should be located at or close to the corner.
- d) Areas enclosed or between buildings should be heavily landscaped, at the street edge and through parking areas. Pedestrian amenities, including walkways that connect entries, seating and human scaled lighting should also be provided.
- e) Franchise or corporate style architecture and/or highly contrasting colour schemes are discouraged. Prefabricated buildings are strongly discouraged. All CRUs should be sited and designed to be compatible with the character of adjacent development.
- f) Separate structures (canopy, carwash, cashiers booth, etc.) on the site should have consistent architectural detail and design elements to provide a cohesive project site.
- g) 'Drive through' elements are discouraged unless required as a primary business functions - such as Auto Service Station. Where drive throughs are fundamentally required, they should be designed to achieve the following standards:
 - Drive through structures should be architecturally integrated into the building, rather than appearing independent to the primary building.
 - Drive through elements must not be located at the primary site corner or adjacent to the primary abutting street.
 - Circulation should allow for adequate length of queuing lines for drive through patrons, which do not interfere with on-site parking movements or result in traffic queuing onto the street.
- h) Fume extractor vents for Restaurant and Auto Service Station uses should be completely screened or incorporated into the building architecture.
- i) A car wash which is incorporated into the project should be well integrated into the design. The car wash opening should be sited so that it is not directly visible as the primary view from the street into the project site. The site design should also address the issues of off-site noise exposure, provision of adequate on-site underground drainage systems to keep water off public streets and improvements, and circulation/vehicle stacking.
- j) Excessive illumination of the signage, building or site should be avoided. Roof lighting, down-lighting washing the building walls, or illuminated awnings are all strongly discouraged.
- k) Cooking odours should be eliminated to the extent feasible by installation of best available ventilation technology. Project applications should include information on proposed ventilation systems and odour scrubbing technology to be used.
- l) All rooftop mechanical equipment, including antennas, should be screened visually and acoustically. Such screening should be integral to the architectural design of the building.



Figure: Example of small format retail development incorporating consistent high quality architectural details and wall facing materials that provide vertical and horizontal articulation.

4c.5 Amenity Areas

- a) Customer and visitor amenities should be located in close proximity to building entrances.
- b) Amenities may include terraces, parkettes or squares, water feature, public art, outdoor dining areas and transit shelters.
- c) Pedestrian-scaled amenity areas should be provided for customer and visitor benefit.
- d) Bicycle parking facilities should be provided to encourage alternative modes of transport, particularly for employees and consumers with small purchases.
- e) Amenity areas should be located within landscaped, pedestrian spaces, and provide seating.

4c.6 Service Areas

- a) Service areas should not be visible from major pedestrian or residential areas and should therefore be screened from view on all sides.
- b) Service areas should be an integral part of the building and/or site design and not separate stand-alone structures. Storage of goods or garbage should be internal to the main buildings, wherever feasible.
- c) Service areas for delivery, loading and garbage pick-up should be co-ordinated to reduce vehicular interruptions along the public street and within parking areas.
- d) Screening should use building materials and/or landscape treatments similar to those used for the main buildings.
- e) Where solid screens are provided, their materials should be similar to those of the building's exterior finishes.
- f) The location of service area entrances along the major exterior roads should be discouraged. It is preferable to locate service areas off side streets or service driveways.



Figure: High quality amenity areas such as outdoor seating should be provided and directly accessible from primary building entrances.

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Figure: Bicycle parking facilities should be provided in commercial areas to encourage alternative modes of transport.

4c Large Format Commercial

4c.7 Transit Facilities

- a) Building entrances should be oriented toward rail stations and bus stops for convenient access to the buildings by public transit passengers.
- b) On sites adjacent to or near a bus stop, the provision of a pleasant, conveniently located walkway which crosses and connects individual sites is encouraged in order to provide pedestrians the most efficient route to and from the station.
- c) Bus stops should be located on site at a central location, such as within the parking lot, to provide access to public transport use and alternative modes of transport.



Figure: Example of transit stop facilities within large surface parking area.

4c.8 Signage

- a) Pylon signs for private development should be oriented to address the street frontage, street intersections and primary access driveways. Pylon signs should be compatible with the associated building design in scale, material and colour, and should be set within a landscaped setting.
- b) Building identification signs should be incorporated prominently on the front façade or rooftop, and should be compatible with the building design in scale, material and colour.
- c) Externally lit signs are encouraged, particularly those that face the public street or parallel a pedestrian walkway.
- d) Building identification signs should be applied as large scale building elements including awnings, banners and rooftop signs to contribute to an artful and dynamic building presence that will be attractive and visible to passing pedestrians and motorists.
- e) A consistent design for building identification should be applied to the whole commercial development to establish a coordinated image and orientation to commercial areas.
- f) Directional signs should be provided for pedestrian walkways, parking and service areas. The graphic quality of directional signs should be clear and distinct and be coordinated with the image of the development.

4c Large Format Commercial

4c.9 Infill Development

- a) The objective of infill development is to provide a strong street edge and frame main entries and drive aisles.
- b) Where infill development is situated immediately adjacent to or between existing buildings, the new buildings should respond to the existing buildings through appropriate transitional treatments. Appropriate design treatments include matching cornice lines, continuing a colonnade, using similar materials, and similar building proportions.
- c) Drive through uses, such as a car wash or auto service station, should not be permitted for infill development.
- d) Infill development may be mixed use and should be at least 2 storeys to enable, for example, office space or residential units above street related commercial uses.
- e) Additional parking facilities required as part of infill development should be provided as structured garages. Structured facilities should have a high level of design which is consistent and complementary to the development and site as a whole.

4c.10 Further Reading

Beaumont, Constance: Better models for superstores. National Trust for Historic Preservation. Washington, 1997.

Maryland Department of Planning: "Big Box Retail Development". Baltimore, 2001.

Maryland Department of Planning, "Infill." Baltimore, 2001.
http://www.op.state.md.us/planning/M&gs/infillfinal_1.pdf

Association of Pedestrian and Bicycle Professionals - Bicycle Parking in Commercial Areas
<http://www.apbp.org/pdfs/bikepark.pdf>



Figure: Example of infill and site intensification opportunities at a Large Format Commercial development. New development is oriented towards the adjacent public streets and main drive aisles.

4

Private Realm

4d. High Rise Buildings

Smart Growth Principle Links:

[2](#) [4](#) [5](#) [8](#)

Model Guidelines Section Links:

[3a](#) [3b](#) [3c](#) [3d](#)

4d.1 Introduction

High rise buildings are an acceptable element in urban form when appropriately located and designed. This section provides guidelines to assist in the planning and design of high rise buildings.

4d.2 Design Principles

1. **Human Scale:** The human scale should be reinforced through appropriate building height, mass and architectural design.
2. **Minimum Impact:** The impact of high rise buildings on open spaces and adjacent properties should be minimized through adequate height and mass transition, separation, and landscaping.
3. **Relate to Street:** High rise buildings should have a strong relationship to the street, both by use and form.
4. **Mixed Use:** Retail Commercial uses are encouraged at-grade, especially for buildings with a total height of 5 storeys or greater. Office and/or Residential uses are encouraged above at-grade commercial.
5. **Environmentally Sustainable:** High rise buildings should be designed to achieve a high degree of environmental sustainability and address opportunities for solar orientation and water runoff minimization.



High rise buildings should face adjoining streets and provide active frontages.

4d.3 General Location & Orientation

- a) Generally, high rise buildings should be located at major road intersections or neighbourhood 'nodes' and preferably adjacent to public open space. High rise buildings should reinforce the prominence of these locations through appropriate massing, setbacks, building design, and open space treatments.
- b) High rise buildings should face adjoining streets and frame the adjoining public open spaces (ie. courtyards, gardens, etc).
- c) Active facades and ground level uses such as retail commercial or habitable living areas should be provided.
- d) Entrances should be oriented directly to the street and be accessible from public sidewalks.
- e) High rise buildings with multiple frontages and on corner sites should provide entrances on both adjoining streets.
- f) Parking areas should be located underground wherever possible. Surface parking should be limited and located to the rear of buildings.

4d.4 Facades & Pedestrian Interfaces

- a) Blank facades should be avoided and must not face a public street or public space.
- b) Facades facing a public street or public area should incorporate 60% glazing at-grade and the first two storeys to encourage pedestrian interaction and safety. Transparent areas should allow views into the structure or into display windows from the outside.
- c) Building facades should be articulated with architectural features such as awnings, pilasters, bay windows, a distinct base, recessed display windows, a cornice or varied roof line.
- d) Facades facing a public street or public area should incorporate weather protection for the comfort of the pedestrian and articulation of building facade. This may be achieved either by canopy, awning or colonnade.

4d High Rise Buildings

4d.4 Height, Mass and Transitions

- The design of high rise buildings should respect potential negative impacts on adjacent properties, including overshadowing, overlooking and wind-tunnel effects. Therefore, building height and mass should be appropriate to the type and nature of adjoining development.
- Nodes and major intersections are the appropriate locations for the tallest / highest buildings.
- Wherever possible, high rise buildings greater than 5 storeys should extend vertically with small footprints and include a base height of 3 to 5 storeys.
- The base height should generally be no greater than 2 storeys above adjacent property height.
- New developments should be designed to provide a height transition to lower scale developments and public spaces to minimize impacts of taller buildings, including shadowing and wind acceleration.
- Step backs of upper storeys should be provided so that building bulk is minimally perceived from the vantage of a pedestrian on the street. Step backs should be considered for buildings above 3 storeys.
- A step back of the building wall should occur above the building base. The step back distance should be a minimum of 2.0m.
- Visual Angular Plane Analysis should be used to determine appropriate building envelopes. A visual angle is typically measured from pedestrian areas located opposite the proposed development or from the boundary of an adjacent property (refer to Figure).

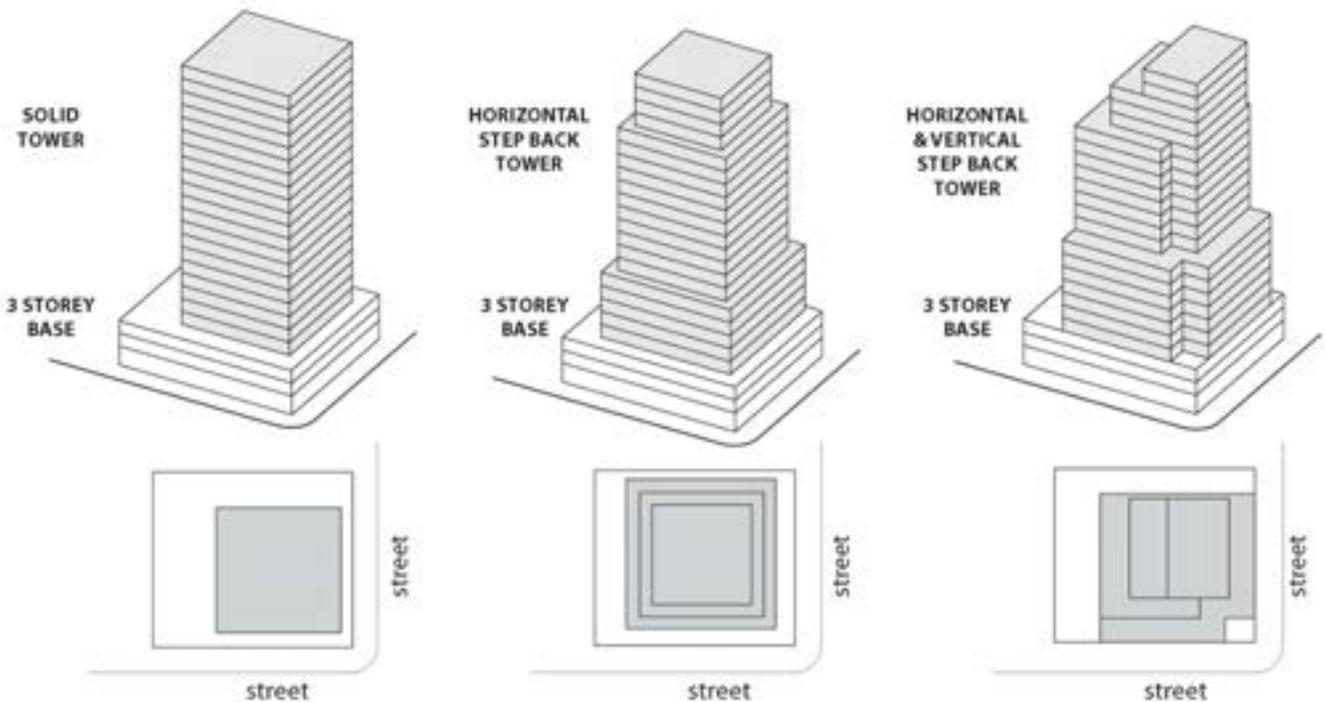
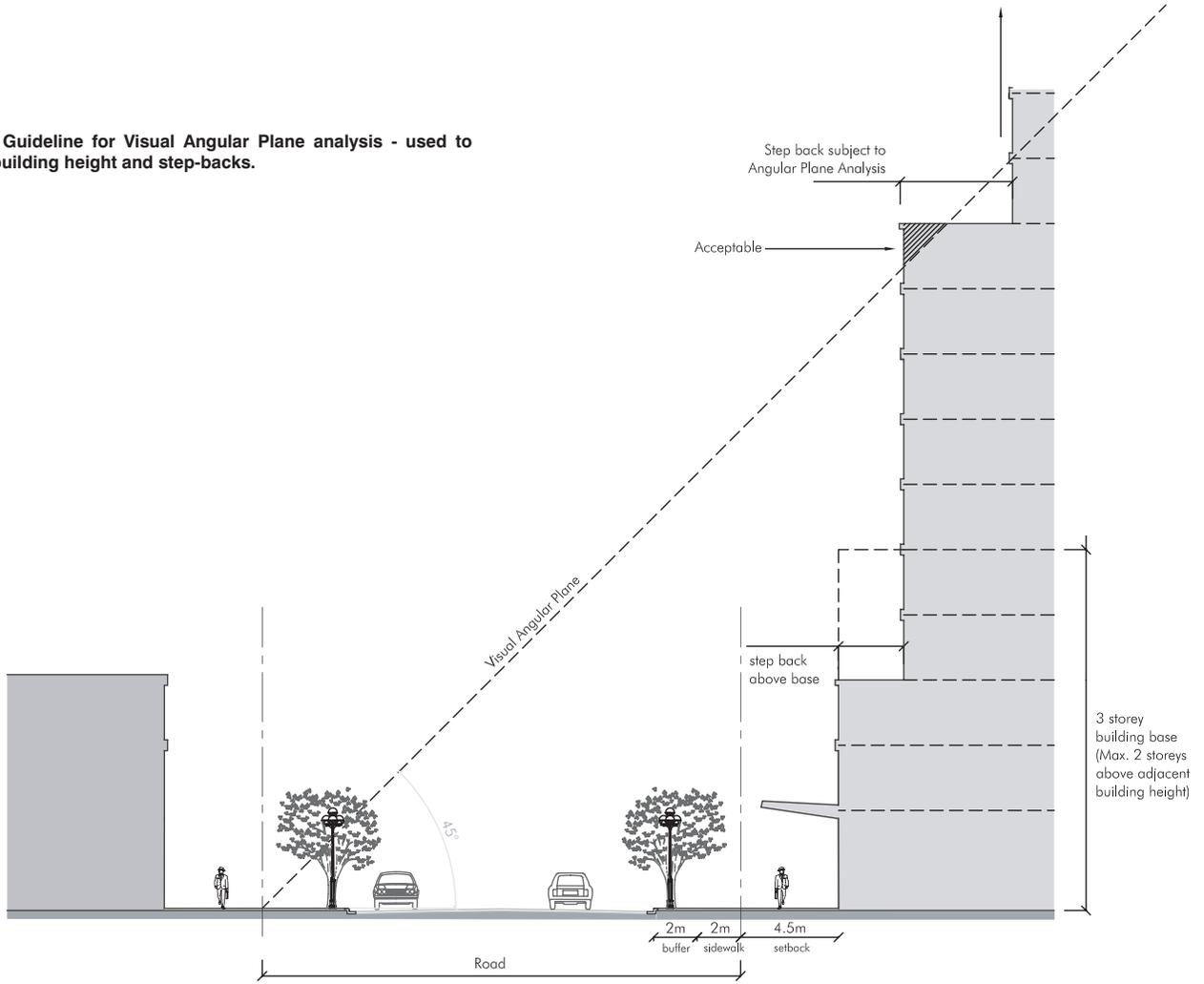


Figure: A 3 - 5 storey base should be provided for developments greater than 5 storeys. A variety of massing forms can be achieved through combining horizontal and vertical step backs.

4d High Rise Buildings

Figure: Guideline for Visual Angular Plane analysis - used to control building height and step-backs.



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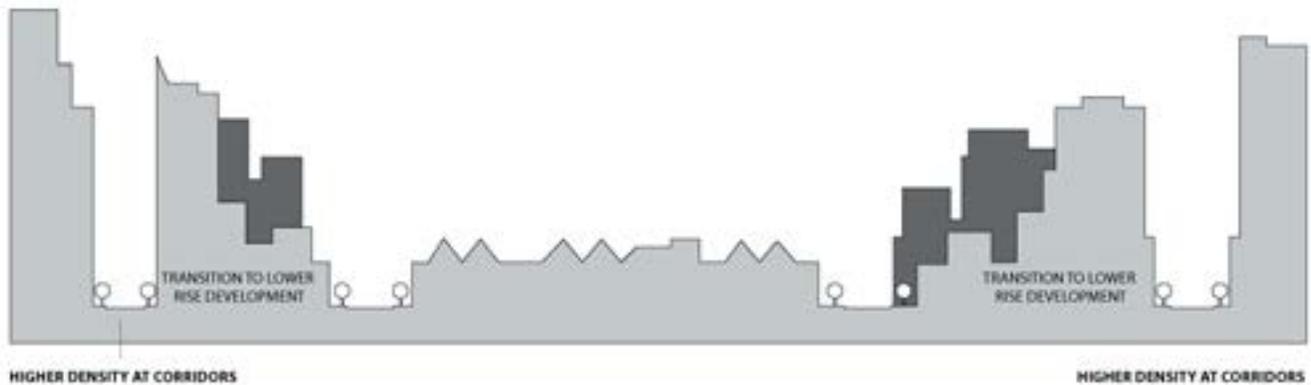


Figure: High rise corridors should step down to low rise areas.

4d High Rise Buildings

4d.5 Open Space & Landscaping

- a) Private communal open space should be designed to provide a range of recreational opportunities, which may include plazas, children’s play equipment, landscaped gardens, tennis courts, etc.
- b) Pedestrian-scaled lighting must be provided in all open space areas.
- c) Spaces between structures not occupied by permitted access drives or paved pedestrian routes should be landscaped as usable open space, and accessible to pedestrians.



Figure: Buildings should frame open spaces. Open spaces should provide a range of recreational opportunities.

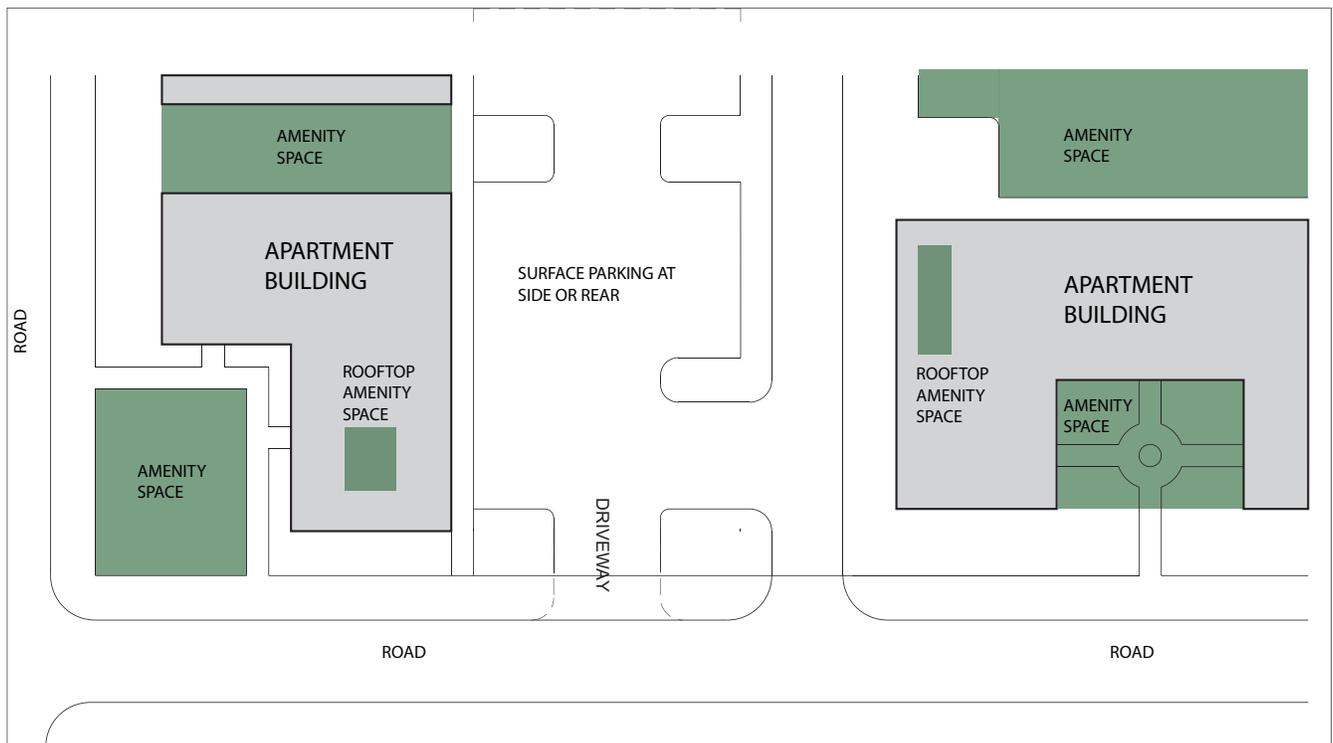


Figure: Outdoor amenity space may be located at the front side or rear of apartment developments. Outdoor amenity space should receive direct sunlight and be in view of residential units.

4d High Rise Buildings

4d.6 Parking Areas

- Parking areas as part of high rise buildings should be located underground, integrated within the building, or structured parking.
- Access to underground or structured parking should be provided at the interior of the lot - not at the corner.
- Where structured parking fronts onto a public street or space, commercial retail units should be provided at-grade.
- Surface parking must not be located between the public ROW and the front of the adjacent primary building.
- Where surface parking areas are required, design guidelines outlined in Section 4e should apply.
- Vehicular ramps for underground or structured parking should not exceed 40% of the street frontage.
- Parking within a structure should be screened from view at sidewalk level, and the street-level wall should be enhanced by architectural detailing, artwork, landscaping, or similar treatment that will add visual interest.

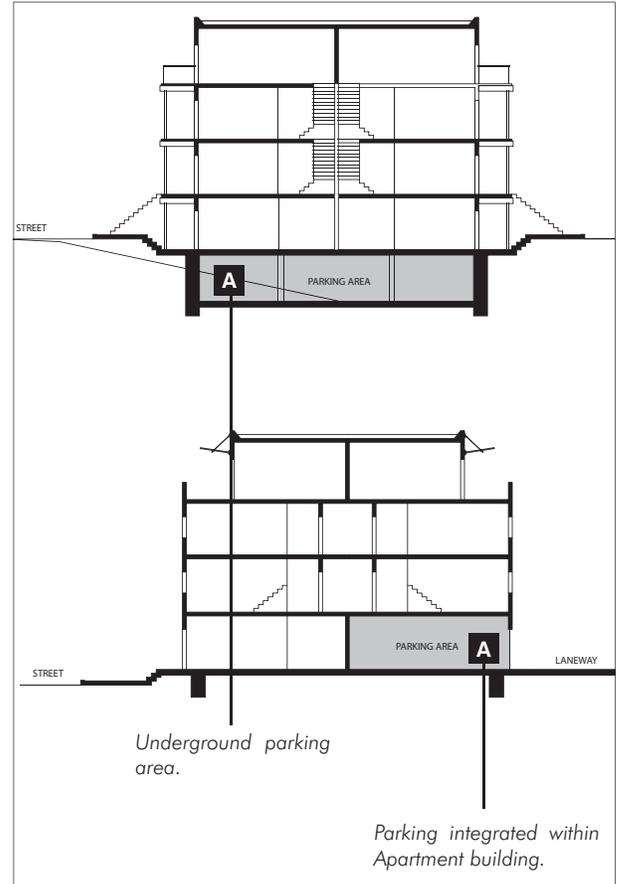


Figure: Preferred location of apartment building parking areas.



Figure: Structured parking fronting onto a public street should include commercial uses located at grade.



Figure: Parking should be screened from view at sidewalk level by landscaping or an appropriate architectural treatment.

4d

High Rise Buildings

4d.7 Architectural Quality

The design and architectural quality of a new development should be measured according to some of the following principles:

• Identity

New developments should seek to achieve a unique expressive identity respectful of context. The ground floor of buildings should be designed to express the individuality of the commercial or residential unit through architectural expression and the inclusion of entrance doors and windows addressing the street.

• Expressive Forms

New developments should be composed of a base at street level, the main body of the building, and a roof form. This may be achieved through various means including setbacks, extrusions, textures and materials. Lower portions of the facades should be strongly articulated to add variety, interest and a human scale dimension.

• Building Entrances

The sense of arrival to a building should be expressed through the design and detailing of its entrance. Canopies or colonnades extending towards the street providing weather protection should be provided at all principal entries to residential and commercial buildings where possible.

• Mechanical Penthouses

Vents, mechanical equipment rooms and elevator penthouses should be integrated with the architectural treatment of roofs and screened from view. To create greater interest in the skyline, higher buildings should introduce articulation in the upper floors. This can be achieved through the use of terracing and/or architectural appurtenances like projecting roof lines, trellises or vertical elements.

• Window Design

The detailing of window elements is important to avoid a “tacked-on” appearance. The use of window mullions or recessed windows, set into the facade, will create a more solid expression and increased shadow lines.

• Balconies

Balconies should be designed as integral parts of the building design. Balconies should be provided for residential apartments wherever possible.

• Rooftop Gardens

Roofs and terraces should be usable for private and communal outdoor patios, decks, and gardens. Green roofs are encouraged as a means of retaining stormwater, improving air quality and adding visual interest.

• Privacy

For residential units with direct access from the street, privacy should be enhanced through the creation of a buffer zone. This can be achieved through private outdoor amenity spaces, landscaping, and shifting grades.

• Safety & Security

Residential developments and unit designs should be safe and secure from on-street access. Public and semi-private outdoor spaces should have some degree of overlook from the residential units and good visibility from the street. Landscaping should be illuminated to enhance security. CPTED (Crime Prevention through Environmental Design) principles should be incorporated into building and site design.

• Exterior Materials

Cladding materials may include brick, stone, metal, wood, glass, insitu concrete, and pre-cast concrete. Stucco should not be used as a principal wall material at the lower levels of a building. Vinyl siding, plastic, plywood, concrete block, tinted and mirrored glass and metal siding utilizing exposed fasteners are discouraged.

• Signage

For residential buildings, signage should be closely related to the principal building entrance and generally placed in a low wall element. Commercial signage should add diversity and interest to retail streets, and be compatible with the building design in scale, material and colour. Signage guidelines should be developed tailored to specific precincts and their character. In general, the following signage types are discouraged:

- Backlit sign boxes
- Billboards
- Revolving signs
- Roof signs

4

Private Realm

4e. Industrial

Smart Growth Principle Links:

[2](#) [4](#) [5](#) [6](#)

Model Guidelines Section Links:

[4e](#) [4f](#)

4e.1 Design Principles

1. **Sensitive Interfaces:** Industrial uses should be separated and buffered from adjacent natural heritage areas, open spaces and residential areas. The location and quantity of parking areas and storage areas should be limited to minimum requirements and screened appropriately.
2. **Sustainable Design:** Site and building design should address sustainability principles. Development should respect the natural environment through appropriate design and location of infrastructure and buildings. Natural features should be preserved and incorporated into industrial area developments as key site features.
3. **Enhanced Gateways:** Building at high profile gateway locations, such as entrances to industrial areas, should be designed to give prominence to the location and a sense of prestige to the areas. The location of buildings should generally provide continuity and enclosure to the street and open space network.

4e.2 General

- a) Building placement, massing and landscape features should provide a high level of design to reinforce the focal point of industrial areas.
- b) In order to maintain a reasonable transition between buildings in industrial areas, a maximum building height of five storeys should be maintained. Buildings taller than five storeys should be examined on an individual merit basis.
- c) Buildings should be placed at recommended minimum building setbacks, especially those fronting on to a 'gateway' intersection.
- d) Industrial buildings along Collector Streets should provide pedestrian access to building entrances from the street, especially at transit stop locations. Access to buildings on Highways and Arterial Roads should be provided from a service access driveway or rear lane.
- e) Industrial uses should maximize building exposure (60% minimum) along facing streets.
- f) Industrial areas facing residential areas should be low rise (max. 3-4 storeys) and compatible in mass and form to the residential built form.
- g) Articulated building elements in the form of towers, bays or other structures should be used to emphasize the focal nature of industrial areas, including those located at 'gateways' and at main street intersections.
- h) Building façades that are visible from the street should apply some amount of architectural expression beyond blank, single material walls. Treatments could include colour and material variations, windows and articulations in the wall plane.
- i) At-grade retail uses including shops and restaurants are encouraged to support an active streetscape.
- j) Building entrances should face the road and have well defined pedestrian access to the sidewalk.
- k) Loading and service areas should be screened from public view through architectural screening, landscape buffering or a combination of such treatments.



Figure: Articulated building elements should be used to emphasize the focal nature of industrial areas.

4e Industrial

- l) Parking areas should occupy a maximum of 50% of the lot frontage, and not exceed two parking bays accessed by a single drive aisle in depth. Larger parking areas should be placed in the side or at the rear of buildings and include combinations of landscaping and pedestrian walkways to subdivide expansive areas of asphalt.

4e.3 Development Types

Campus Design, Street Edge Design, and Business Parks are typical industrial area design alternatives within the Niagara Region and predominately include Light Industrial uses.

Campus Design

Campus Design consists of a balanced design approach which integrates landscape, topography and special features with site access requirements including roads, driveways, parking, service and loading areas.

- a) Campus design should consist of a balanced site plan approach between built form, landscape, topography and open space requirements.
- b) Buildings should frame open spaces and provide



Figure: Campus design should provide a balanced site design approach, incorporating significant landscaping and site design features.

a scale and pattern of development that supports pedestrian activity between grade-level building uses and adjacent open space, courtyards, walkways and other site plan elements.

- c) Buildings should become part of the overall industrial area fabric and help to draw adjacent areas together including open space and walkways.
- d) Building heights should provide transitions of massing that optimize views at grade and inside to the open space network.
- e) Under regular siting conditions, a maximum building height of 3 to 4 storeys is recommended. In special circumstances such as gateway locations or topographic conditions, buildings taller than four storeys should be considered where a terraced built form setback is provided on an angular plane of 60 degrees or less.
- f) SWM ponds should be integrated with the design of adjacent open space and Prestige Industrial and Business Park land uses.

Street Edge Design

Street Edge Design consists of buildings that define the street edge through minimum setbacks and consistent landscape edge treatments.

- g) Minimum building setback lines should be no less than 3.0m and no greater than 12.0m to define a more urban street edge.
- h) Buildings should face the public street with well-considered elevations facing on to courtyards and walkways.
- i) Active at-grade building uses with at least 60% glazing should be located along public walkways to reinforce a sense of animation and safety.
- j) Transitional building zones including uses such as retail, cafés, etc. should be incorporated to help connect public activity with the building, street and open spaces.

4e Industrial

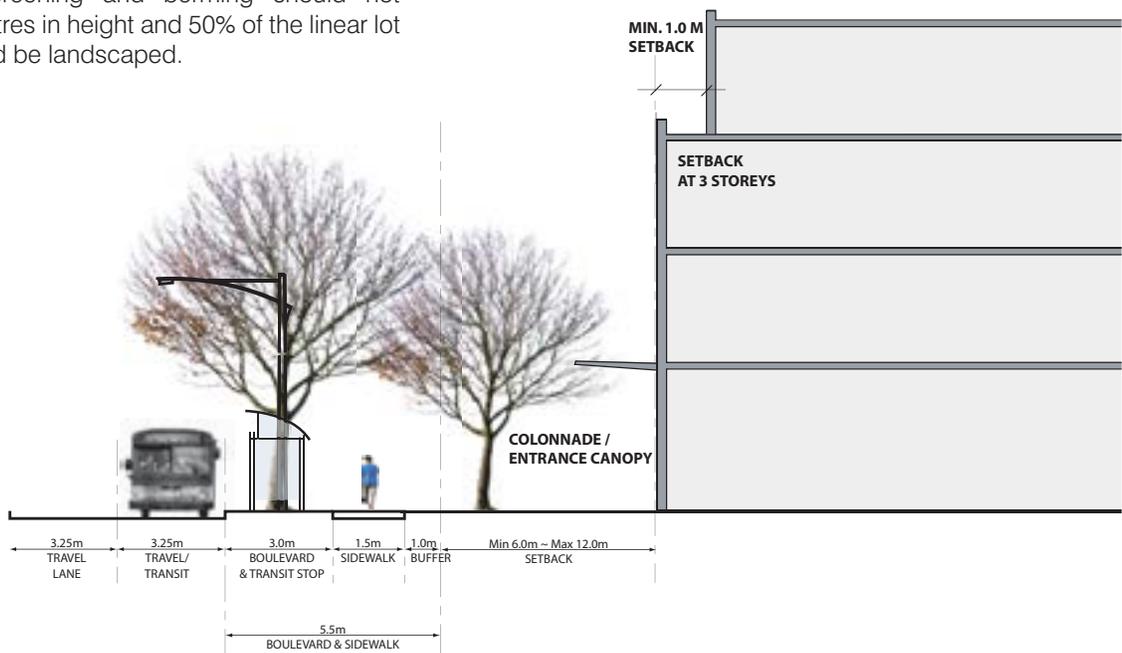
Business Parks

Business Park buildings require a higher design standard than typical Light and General Industrial uses that are situated on less visible sites. The standards and guidelines relating to built form, architectural detail, and site plan design, including aspects such as site access, parking, landscaping and pedestrian amenities, should help to achieve the superior standard of development envisioned for Niagara Region.

- k) Buildings should occupy a minimum 60% of the total lot frontage.
- l) Buildings should be placed at minimum setbacks of approximately 12.0m and maximum of 6.0m at corners.
- 94 m) Taller building heights (above 5-6 storeys) are recommended to be considered at prominent intersections to permit the development of higher order uses.
- n) No open storage should be located along major arterial or collector roads. Outdoor storage should not be visible from any street.
- o) No fences should be placed adjacent to arterial or collector roads.
- p) Landscape screening and berming should not exceed 2.0 metres in height and 50% of the linear lot frontage should be landscaped.

- q) The most substantial treatments to the building should be applied to the façade fronting the public street and corner buildings should address both street frontages.
- r) Where large parking fields are necessary, landscape elements should be introduced to break up large asphalt areas.
- s) Loading and service areas should be located at the rear or side façades, and should be screened from public view through architectural screening, landscape buffering, berming, or a combination of these treatments.
- t) In general, height provisions should be subject to site specific considerations including development phasing, location and land use adjacencies.
- u) Landscape screening and berming setbacks should not exceed 15 metres.
- v) A maximum of 75% of the interior side yard is permitted for service or loading and should be setback a minimum of 10 metres from the front building façade.

Figure: Guideline for street edge building - including setback and articulation of façade to mitigate height impacts on adjacent street & sidewalk.

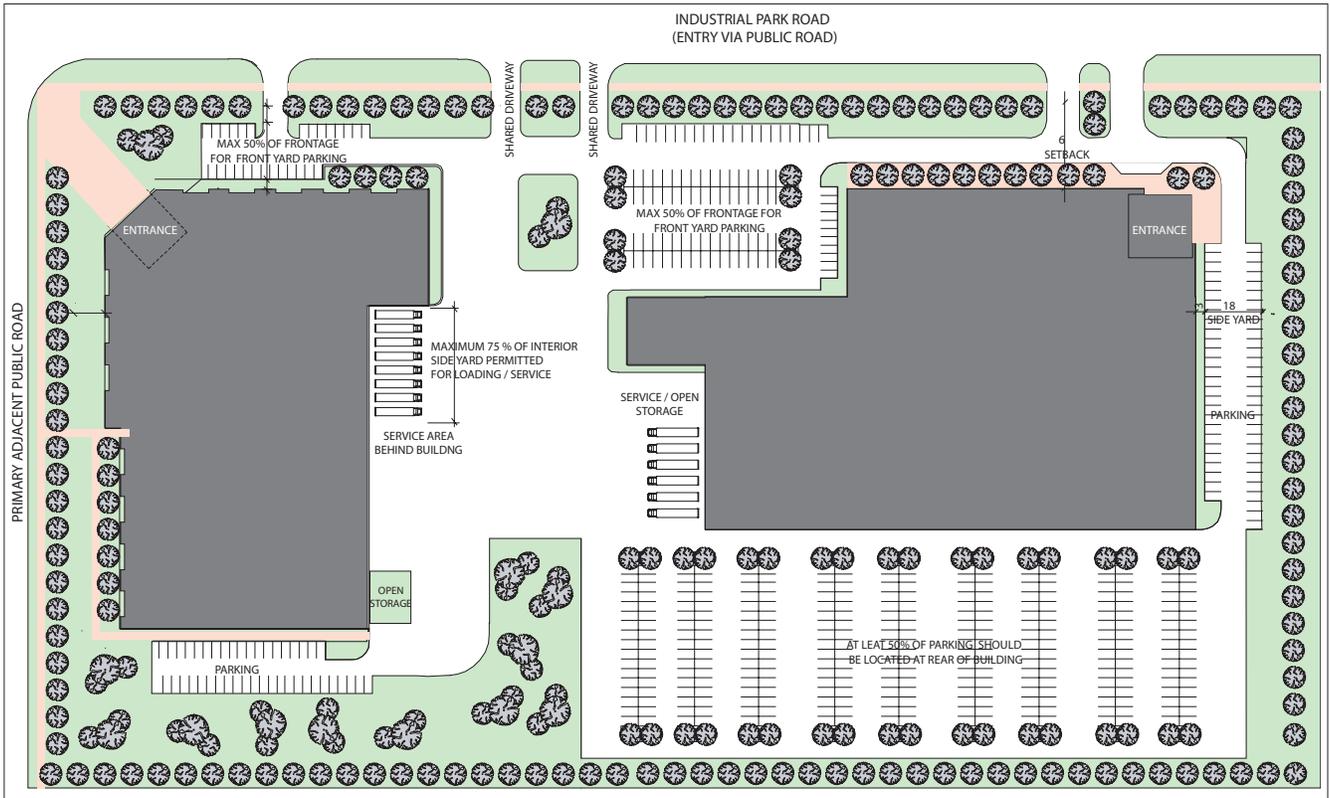


4e.4 Site Access and Circulation

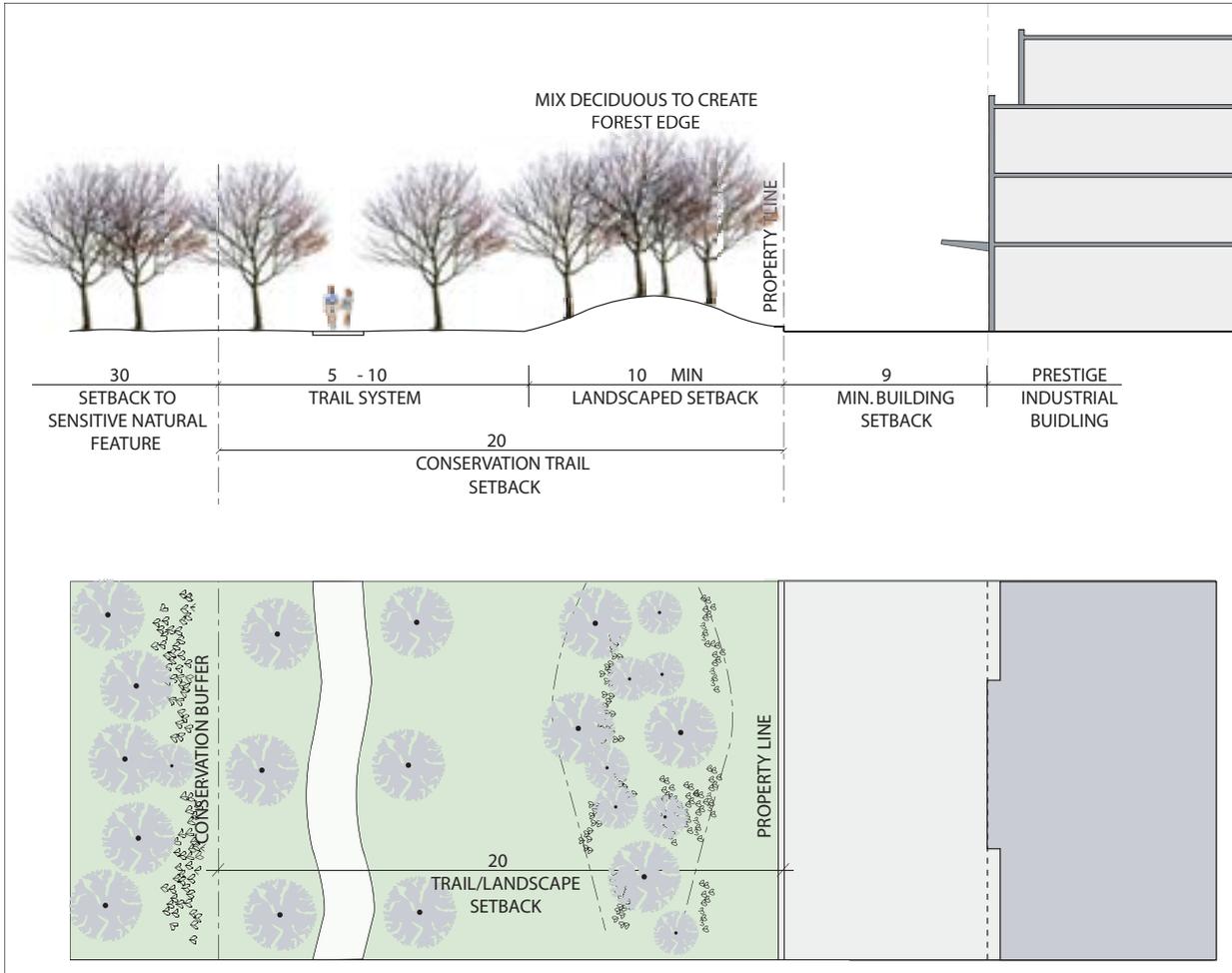
Access into, and circulation within individual properties should provide safe and well-defined routes for vehicles and pedestrians. The use of landscaping, paving materials, lighting, signs and other distinct treatments to define these areas will contribute to the overall safety, quality and sense of orientation within each site.

- a) Where feasible, shared driveways between two properties should be provided to parking and service areas to minimize disruption of the public sidewalk and to facilitate vehicular access to public roadways.
- b) Where parking, loading and service requirements are substantial, a separate entrance driveway and service access driveway should be provided.
- c) Sidewalks should be provided on at least one side of all internal roads.
- d) A pedestrian walkway should be provided between the public sidewalk and main building entrance, aligning the main drive aisle, where possible. Walkways should be a minimum width of 1.5 metres and 3.0 metres where trees or landscaping are provided.
- e) Walkways in front of principal building entrances should be a minimum of 3.0 metres and provide landscaping in the form of low planters or trees a minimum of 1.0 metre from the curb edge.

Figure: Site design guideline for light industrial industrial development. Key site design features include: shared driveway, service area screening, reduced parking areas at frontage and minimum building setbacks.



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Figure: Guideline for setback to adjacent open space or natural area.

- f) Pedestrian walkway paving material should differ in material and appearance from vehicular routes. A variety of materials may be used, including patterned concrete, unit brick pavers, gravel and asphalt.
- g) Pedestrian walkways should be lit with pedestrian-scale lighting using freestanding fixtures, bollards, wall mounted or recessed mounted lights. Consistency in the selection and combination of light fixtures will contribute to a high quality image for the site.

- h) Landscaped traffic islands should be used to delineate and enhance main driveways, subdivide parking areas into smaller “courts”, and improve edge conditions between the public road, buildings, open space areas and adjoining properties.

4e.5 Surface Parking

Refer to Section 4e. Off-Street Non-Residential Surface Parking.

4e Industrial

4e.6 Outdoor Storage & Service Areas

Outdoor storage areas should be screened from public view through architectural screening, landscape buffering, berms or a combination of such treatments.

In general, open storage should be located at the rear of lots, screened by building placement or by landscape screening. Outdoor storage should not be permitted on front yards within Light Industrial or Business Park areas.

Service, delivery and outdoor storage areas should not be visually obtrusive. The visual impact of service and delivery areas should be minimized, especially the views of such areas from public ways and along designated view corridors.

- a) Loading docks should be located outside storage and service areas in areas of low visibility such as at the side or at the rear (non-street side) of buildings.
- b) Outdoor storage areas should not be permitted in front of a primary building façade.
- c) Loading, service and outdoor storage areas should not exceed 75% of the linear building frontage or 60% of the linear lot frontage in the side yard.
- d) Loading, service and outdoor storage areas may occupy the full rear yard frontage if recommended landscape edge and buffer treatments are provided.
- e) With the exception of outside storage areas, when it is not possible to locate loading facilities and service areas on a non-street side of the building, loading docks and doors should not dominate the building frontage and should be screened from all adjoining public rights-of-way. Loading and service facilities should be offset from driveway openings. Loading docks and service areas should be combined between multiple sites and screened from public view with fencing, walls, other structures and/or landscaping.
- f) Service entrances should be identified with signs to discourage the use of main entrances for deliveries.
- g) Service and refuse areas should not encroach onto the parking setback. Such areas should be screened with a minimum 1.8 metre wall height enclosure. Service and refuse areas should be paved with an impervious surface of asphalt or concrete.

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Figure: Parking areas should not be a dominant feature of industrial uses. Refer to Section 4e. Off-Street Non-Residential Surface Parking.



4e Industrial

- h) Service and outside storage enclosures should be constructed of materials to match or complement the building material. No enclosure should be made of any form of chain link fencing. Gates and/or access doors may be constructed of materials different from the actual enclosure material to facilitate operation of the gates or access doors. Trash enclosures should enclose an area designed to accommodate the peak needs of varied potential industrial users of the building.
- i) Outside storage areas should not exceed 10% of the floor area of the principal structure and when authorized should be typically associated with the specific industrial operation proposed for the building.
- j) Outside storage areas should be fully screened by screen wall enclosures. Screen walls should have a minimum height of 1.8 metres, and a maximum height of 3.0 metres. Stored materials may not be stacked or be visible above the enclosure height.

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4e.7 Signage

Refer to Section 4c.8.



Figure: Landscape screening should be used for loading areas.

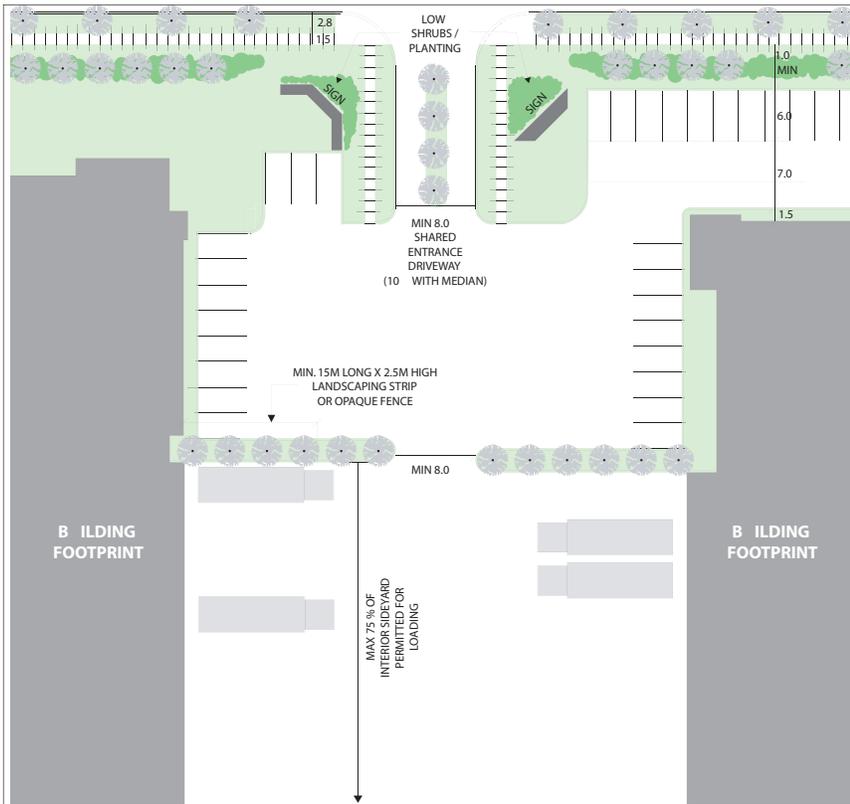


Figure: Guideline for screening of loading and service area. Landscaping should be used extensively for screening.

4

Private Realm

4f. Off-Street Surface Parking

Smart Growth Principle Links:

2 **4** **5** **7**

Model Guidelines Section Links:

3b **3c** **4b** **4c** **4d** **4f**

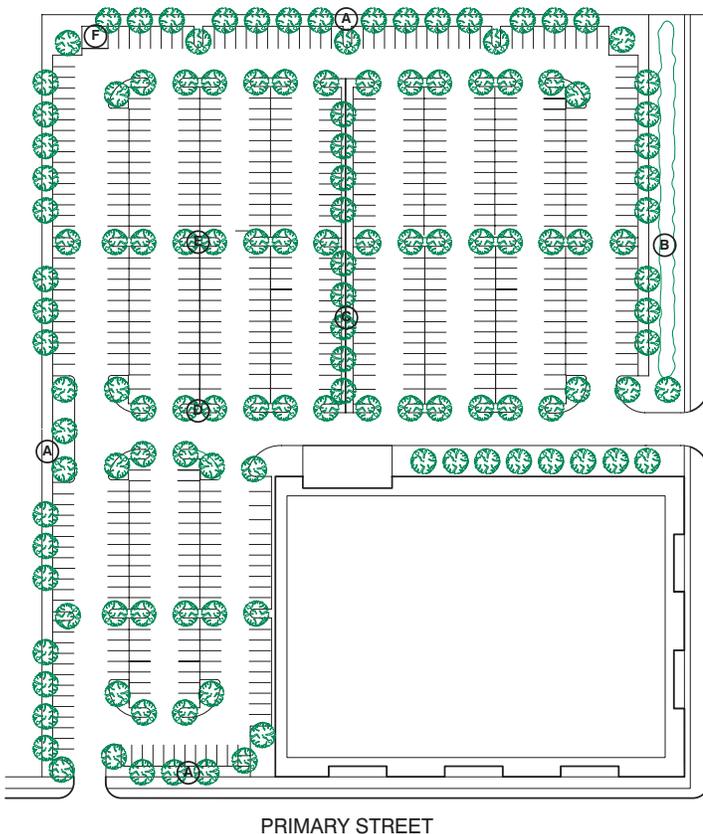
4f.1 Design Principles

- Scale:** Off-Street Surface Parking should be configured and designed to reduce the overall mass and visual dominance of paved areas.
- Pedestrian Friendly Access:** Off-Street Surface Parking should incorporate walkway infrastructure as an integral element of the design to safely separate pedestrian and vehicle movements.
- Positive Appearance:** Off-Street Surface Parking should be designed to provide a strong visual quality through the use of high quality landscaping, lighting, and pavement materials.
- Environmental Sustainability:** Off-Street Surface Parking should be designed according to environmental sustainability principles, including the minimization of surface water runoff and 'heat island' effects.

4f.2 Layout & Orientation

- No more than 50% of the total off-street parking area for 'large format' development (10% for all other non-residential), should be located between the front façade of the principal buildings and the adjacent public street. Parking should be located at the rear or behind buildings.
- The total amount of parking should be minimized through shared parking between adjacent properties, particularly in the evenings, weekends and other off-peak periods.
- Internal vehicular routes should be clearly defined by raised and curbed landscape islands planted with trees and low level vegetation. Internal drive aisles should be a minimum 6.0m wide. Parking bay dimensions should comply with municipal standards.
- Parking aisles should not exceed 30 contiguous spaces in length and should have a consistent design angle perpendicular to primary building entrances.
- Surface parking areas may be lowered by 0.5m from the adjacent street grade to reduce visual prominence.
- Appropriate lighting levels and consistency of coverage should be provided in parking areas to assist both pedestrian and vehicular circulation. The height and intensity of light standards should be sensitive to adjacent land uses.
- Designated handicapped and mobility impaired parking spaces should be located as close as possible to building entrances and be clearly identified by signs or markings.

Figure: Parking standards for non-residential parking areas.



PARKING STANDARDS

- A** Min 3 M landscape buffer
- B** Low hedge screening of parking
To be maintained to 1.0 M height
- C** Parking lot sidewalks minimum 3.5 M wide
with sidewalk trees at 8 M o.c.
1 for every 5 rows of parking
- D** Landscape island at the ends of all parking rows
Minimum 2.5 M wide
One tree for every parking row
- E** Minimum of 1 landscape parking island per row
for every 12-15 parking stalls
- F** Snow storage area to be provided
contiguous to parking lots

4f Off-Street Surface Parking



Figure: Landscaping should provide buffers between parking and adjacent areas. Surface parking may be lowered from adjacent street grade to reduce visual impact.

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4f.3 Landscape Buffers

- High quality landscaping treatments should be used to define site boundaries, provide buffers between adjoining developments, and screen storage and utility areas.
- The property setback of all parking areas should provide a landscaped area a minimum of 3.0m wide.
- Trees at the perimeter of parking areas should be planted every 6 to 9.0m on centre.
- To ensure opportunities for surveillance from adjacent areas, perimeter hedge and shrub screening should not exceed 1.0m in height.
- Selection of plant materials should consider the following:
 - year-round appearance;
 - seasonal variety;
 - hardiness & resistance to disease;
 - maintenance requirements; and
 - tolerance of plant materials to salt and urban conditions.

4f.4 Pedestrian Access

- Pedestrian walkways should be contiguous to main drive aisles opposite primary building entrances to enable safe and direct pedestrian movements.
- An internal pedestrian walkway network should define visually and functionally smaller parking 'courts'.
- Walkways should be a minimum of 3.5m wide, including a pedestrian zone of 1.5m wide and a landscaping zone of 2.0m wide.
- Walkways should include pedestrian-scaled amenities wherever possible, such as benches, trash receptacles and lighting.
- Drive aisle crosswalks should be signed and constructed of materials that are different to the drive aisle, such as interlocking brick paving.



Figure: Pedestrian walkways should be provided through parking areas to enable safe and direct pedestrian movements.

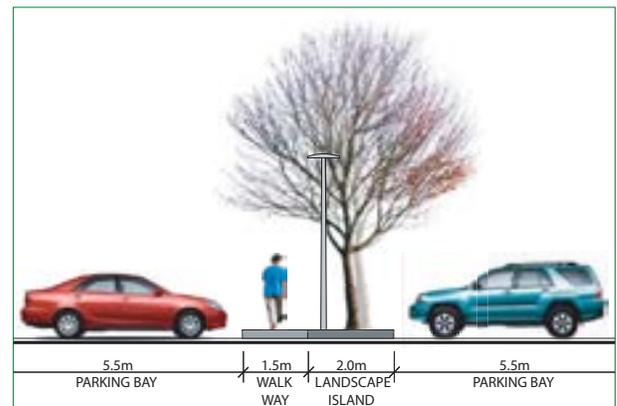


Figure: Section demonstrating preferred design of pedestrian walkways located within the parking aisle. The walkway should be a minimum width of 1.5m.

4f Off-Street Surface Parking

4f.5 Internal Landscaping

- Internal landscaping elements should define visually and functionally smaller parking 'courts' and reduce the overall impact of surface parking areas.
- A landscaped island should be located at each end of every parking aisle. Landscaped islands should be a minimum width of 2.5m wide and include one tree per parking row.
- A landscaping island should be provided at the mid point of the parking aisle, and/or every 13 ~ 15 parking bays (whichever provides a greater number of islands). The landscaping island should be a minimum width of 2.5m and include one tree per parking row.
- Planting beds and landscaped islands should include a 4 inch curb to prevent damage caused by vehicular movements and snow clearing.
- Permanently installed irrigation systems should be provided for all internal landscaping.
- Where possible, internal landscaping should incorporate existing vegetation and significant tree planting.



Figure: Landscaped islands should be located at the end and within the parking aisle. One tree per every parking row should be provided.

4f.6 Further Reading

Cash-in-lieu of parking (Ottawa).
http://www.ottawa.ca/city_services/bylaws/municipal_bylaws/building_en.shtml



Figure: Planting beds should include a 4 inch curb to prevent damage.



Figure: Internal landscaping should reduce the overall impact of surface parking areas. Significant tree planting should be incorporated into internal landscaping areas wherever possible.

4

Private Realm

4g. Environmental Sustainability

Smart Growth Principle Links:

[2](#) [6](#) [8](#)

Model Guidelines Section Links:

[All Sections](#)

4g.1 Design Principles

- Build 'Green':** Green buildings are resource efficient, use less energy, utilize construction materials efficiently (including recycled, renewable, and reused resources), are designed reduce internal and external impacts on the environment, and can reduce operating costs. Green building methods should be considered for both large and small projects.
- Recycle & Reuse:** Heritage structures were often built for long term value. As these buildings outlive their intended purpose, opportunities for adaptive reuse should be explored to find new uses while retaining their historic features. Similarly, old materials can be given new life through recycling.
- Sustainable Site Plan:** The site plan should also address environmental sustainability principles. Water quality, consumption, and runoff are key site sustainability issues. A range of appropriate design measures should be considered such as the preservation of natural features, reduction of hard surfaces and addition of extensive landscaping.



Figure: Example of bioswale incorporated within multi-unit residential development. Bioswales can be used to filter rainwater on-site.

4g.2 Site Landscaping

- Landscaping, as a percentage of the total site area, should be maximized to increase the total amount of water consumed by plants.
- Native plant materials should be used wherever possible. Naturalistic plantings should be provided at the interface of parking areas with adjacent watercourses and natural heritage areas.
- Existing significant trees, tree stands, and vegetation should be protected and incorporated into site design and landscaping.
- Landscape design should incorporate a wide range of strategies to minimize water consumption, e.g. native species, use of mulches and compost, alternatives to grass, rainwater collection systems.
- The width of all planting beds should be at least 2.5m wide to enable plant material to be massed to create a healthy and sustainable landscape.
- Impervious areas directly connected to the storm drain system are the greatest contributor to storm water pollution. Breaks in such areas, by means of landscaping or other permeable surfaces should be provided to allow absorption into the soil and avoidance or minimization of discharge into the storm drain system.
- The distribution of outdoor lighting should be controlled according to outdoor lighting design recommendations of the Royal Astronomical Society of Canada to minimize light pollution and maintain a dark, night sky.



Figure: The site plan should provide for the reconnection of natural areas and corridors. Native species should be planted in all natural environment interface areas (above & below).

4g.3 New Building Design

- a) New buildings should be designed to meet and preferably exceed environmental standards such as the Model National Energy Code of Canada for Buildings (MNECB), C-2000, ISO 14000, or ASHRAE/IESNA 90.1-1999.
- b) New development should seek LEED or Green Globes certification. LEED and Green Globes certification distinguishes building projects that have demonstrated a commitment to sustainability by meeting higher performance standards in environmental responsibility and energy efficiency.
- c) Building construction and operation methods should aim at reducing dependence on non-renewable resources by using appropriate recycled materials and by promoting adaptive reuse of existing structures. Marginal energy costs should be reduced by promoting selection of locally manufactured or fabricated products and materials.
- d) A high degree of indoor environmental quality should be achieved through design techniques including daylighting and the use of low-emission finishes formulated to low or zero volatile organic compounds (VOC) standards.
- e) Building flexibility should be maximized to satisfy the varied demands of current and future users and residents.
- f) Building energy consumption and site systems (HVAC, hot water, lighting) should be reduced through the use of appropriate mechanical and construction technology (natural cooling, light recovery, passive solar design, etc.).
- g) Renewable energy systems should be considered to power on-site light standards and to supplement building power requirements.
- h) Innovative wastewater treatment, water reduction and sustainable irrigation strategies are encouraged, including the use of water efficient plumbing fixtures.



Figure: Green roofs minimize water runoff and assist building insulation systems.



Figure: Example of rooftop garden. Rooftop gardens provide access to open space for multi-unit and apartment developments.

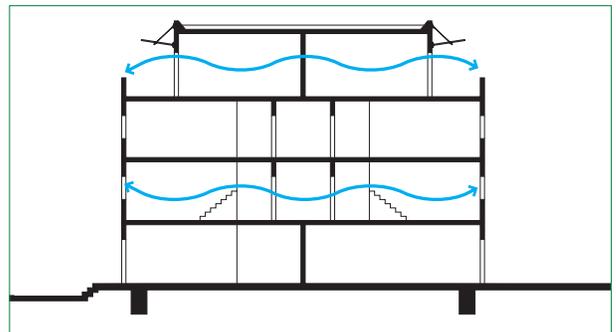


Figure: Natural ventilation systems should be considered as an alternative means to air conditioning.

4g Environmental Sustainability

- i) Natural ventilation systems should be considered as an alternative means to air conditioning through the promotion of passive convection cooling and ventilation. Passive systems can minimize or eliminate mechanical systems for heating, cooling and ventilating buildings.
- j) Efficient lighting equipment should be used and unnecessary lighting of occupied space should be eliminated by using room and task light switches, occupancy sensors and photocells as energy efficient occupant controls.
- k) Green roofs should be developed to minimize water runoff and improve building insulation. Roof design should also incorporate daylighting to reduce dependence on internal artificial lighting.

4g.4 Adaptive Re-use & Recycling

An effective means of achieving environmental sustainability objectives in the 'private realm' is to reduce dependence on new materials use through remodeling or adaptive reuse of all or parts of existing buildings. When feasible, this is often a better environmental option than demolition and recycling, and helps preserve the history of the neighbourhood. However, the energy consumption of existing buildings should be carefully considered when assessing the environmental merits of a project.

- a) Materials salvaged from demolition should be used in new building design, avoiding the waste and pollution of new production.
- b) If there are no salvageable materials available from an existing development site, they should be purchased directly from building demolition sales, from salvage contractors and used materials dealers.
- c) Many new and established construction products made with reprocessed waste materials are available for specification on new projects. Construction materials containing post-consumer waste or recovered materials have the greatest recycling merit and should be used where feasible.
- d) The annual energy consumption of existing buildings should be measured. Upgrading should be undertaken to existing buildings so that energy and thermal performance is comparable to new

buildings. Note that buildings with heritage value were often well designed for natural ventilation, cooling and solar control.

- e) Retaining high value historic architectural features should be considered – unique facades, fixtures, etc. – to preserve historic context and reduce environmental and resource impacts of new construction.



Figure: Adaptive reuse of all or parts of buildings is an effective means of achieving environmentally sustainable objectives.



Figure: Adaptive reuse may be achieved for non-heritage structures as shown in this example of a fitness club development in a former fire station.



Figure: Porous surfaces may be used for residential parking areas to reduce water runoff - subject to ground water and soil quality considerations.



Figure: Porous surfaces or landscaped areas should be used to capture roof drainage and minimize water runoff.

4g.5 Water Runoff

Buildings

- a) Multi-storey development is preferred over single-storey buildings with the same total floor area, to reduce the building footprint and maximize permeable surfaces.
- b) Roof drainage should flow, in part or fully, into landscaped areas on site where lot size and soil conditions are adequate to absorb such runoff. Several downspouts should be provided to better distribute rain run off into various areas of the adjacent landscape. Downspouts should be directed to the front or rear yards to avoid impacts on abutting properties.

Surface Areas

- c) Paved areas, such as surface parking, should be minimized wherever possible in order to maximize permeable surfaces that absorb and biodegrade certain toxins. This will also reduce the volume of runoff into the storm drainage system.
- d) Streets, driveways and parking areas should be as small as possible within allowable standards.
- e) Parking areas should drain into vegetative or grassy swales that are incorporated into large common landscaped areas within a project or perimeter landscaping.
- f) Driveways, where possible, should drain into adjacent on-site landscaped areas.
- g) Bioswales should be created next to parking lots and walkways to collect stormwater runoff to minimize the dependency on stormwater sewers. Bioswales should be planted with salt-tolerant shrubs and grasses to filter water before it percolates into the ground. They should be graded to direct water away from paved areas.
- h) Drainage basins should be located throughout parking lots to collect stormwater. These basins should be planted with native plant materials that thrive in wet conditions.
- i) A well-drained snow storage area should be provided in a location that enables melting snow to leach into drainage courses and storm drain inlets to prevent toxic materials from being washed into streams.

4g Environmental Sustainability

4g.6 Solar Orientation

- a) Solar access involves the planning of a site layout to maximize the unobstructed availability of direct sunlight into habitable rooms during the winter months and to minimize it during the summer months.
- b) Buildings should be designed to provide significant glazed surfaces that face south in order to maximize solar orientation.



Figure: Bio Swale facilities can be incorporated into large parking areas to absorb and filter rainwater runoff.



Figure: Sun louvers block high summer sun but allow low winter sunlight to enter windows.

- c) The long axis of a building (attached and detached residential) should be oriented east-west so that the broad face of the building façade faces south, thus maximizing the incidence of south facing windows.
- d) Wide, south facing walls with windows should preferably abut front yards, rear yards or common open spaces, to facilitate solar access and to avoid solar obstruction from other nearby buildings.
- e) To achieve optimal solar orientation, streets should be oriented within 30 degrees of true east-west axis.
- f) New buildings should not be located so as to result in substantial shading of existing adjacent private or public open spaces that presently have substantial sun exposure.
- g) Landscape plans should use deciduous street trees and on-site trees where these trees will grow to shade windows of residential structures. Such trees provide shade and help reduce temperatures inside adjacent units during the warmer months and shed their leaves to allow sunlight and better heat penetration during cooler months.

4g.7 Further Reading

Government of Canada "Guideline for the Use of Building Environmental Performance Assessment Tools, June 2003.

Canada Green Building Council. LEED Canada for New Construction and Major Renovations version 1.0

http://www.cagbc.ca/building_rating_systems/leed_rating_system.php

Cool Toronto Project: Toronto's Urban Heat Island Mitigation and Adaptation Project.

http://www.city.toronto.on.ca/taf/cool_toronto.htm

Cooling Our Cities.

http://www.eren.doe.gov/cities_counties/coolcit.html

Paving with Grass.

<http://www.buildinggreen.com/products/paving.html>

Royal Astronomical Society of Canada Light Pollution Abatement Program.

<http://www.rasc.ca/light/home.html>

BuildingGreen

<http://www.buildinggreen.com/>

GREEN GLOBE 21 - global Benchmarking, Certification and improvement system.

<http://www.greenglobe21.com/>

5

Critical Success Factors

5.1 Critical Success Factors

A policy underpinning is required to ensure that the Smart Growth Urban Design Guidelines function as intended and truly assist in the implementation of Smart Growth principles in the Region. Though not exhaustive, the following list of factors, developed subsequently to a series of interviews with local planners, provides this context. This discussion is followed by a policy “toolbox” aimed at implementing these Critical Success Factors.

While the focus of each factor is on supporting Smart Growth Urban Design Guidelines, these factors also encompass the areas of public finance, legislation and governance, and often require collaborative action by several jurisdictions.

Note: “regional” is usually intended in the broad sense, i.e. beyond municipal borders including relevant areas – e.g. watersheds, commutersheds, etc.

1. Do not oversupply land.

Basic economic theory dictates that in most cases, land prices are depressed when an overabundance of land exists. When land is abundant and inexpensive, compact development is difficult to achieve, and land is used less efficiently.

While it is often believed that higher land prices will be passed entirely to the consumer, resulting in dramatically higher housing prices, higher land prices are often only partially passed on to the consumer. In a competitive market, higher land prices are shared by property owners, builders and developers.

Higher land prices can result in more creative solutions, including smaller lots, alternative housing forms, and pressures on municipalities to permit lower parking standards, narrower roads and setbacks, as well as smaller schools and institutional buildings. In the absence of cost pressures, this creativity is less likely to be exhibited.

2. Coordinate transportation and land use based on a clear vision of urban form at the regional level with a regionally-defined hierarchy of nodes.

Nodes

Identifying the right number, size and location of nodes or centres for the overall Region is crucial to the success of Smart Growth. An overabundance of nodes can depress the viability of each one by spreading the limited pool of development and infrastructure dollars, and make the provision of effective and efficient transit difficult.

As a long-range planning activity, the Region and local municipalities may wish to collaboratively identify the location and size of future nodes and commit investment dollars to the most logical and promising locations – including hard and soft infrastructure (e.g. roads, transit lines and sewers vs. community centres). Nodes should preferably not be established in locations that are less likely to become pedestrian-friendly (e.g. interchanges or intersections of very busy roads) and should be focused on areas that already display nodal characteristics – concentrations of jobs and homes at a transportation hub.

Ideally, urban form throughout the region should be planned in conjunction with a transportation strategy, ensuring that new development supports transit and walking.

5

Critical Success Factors

In all nodes, it is important for municipalities to establish a vision for the area with clear and objective principles that can be adhered to in the long term, linking land use planning, public investment, transportation and taxation.

The catalytic effect of high-density concentrations of homes and employment uses should be recognized by focusing higher-density development strategically in existing or emerging nodes, in conjunction with a transportation strategy to ensure that adequate transit services are available to new and existing residents. Locating transit-supportive development in areas that cannot otherwise support transit because of location or missing critical mass can be viewed as a lost opportunity.

Conversely, uses that are not transit-supportive should be kept away from nodes and transit-supportive areas – including large-format retail stores, especially those providing home renovation products and furniture, and warehouses with few employees. Another concern of large-format stores in nodes is their reliance on the automobile as a mode of access, generating nuisances and undermining transit, resulting in all uses in the vicinity having to provide extensive parking facilities. Large-format retail stores, with their large footprints, also prevent the emergence of a finer grain that encourages walking by providing an interesting environment. Large-format stores also constitute physical barriers as they often only provide one access, facing the parking lot.

Parking

Another key aspect of the transportation – land use relationship is parking. Buildings that would otherwise qualify as Smart Growth are sometimes surrounded by large parking areas that reduce the density of the neighbourhood, making walking and transit less viable options. Also, generous provision of parking competes with transit, removing an incentive to use it.

It is a challenge for municipalities to reduce parking standards without planning for and providing alternatives. Commercial and office developers will likely not accept a reduction in the size of their parking lots based solely on the promise of future transit. One approach popular in Europe is for governments to pre-emptively plan for transit systems – alone or in public-private partnerships – to be installed in “lockstep” with or even in anticipation of development. The projected scale of development is matched to the capacity of the transit system. Under this system, plans for new communities or office parks do not take place without a definite plan for transit services.

Land prices in many towns and villages in the Region do not warrant the construction of structured parking by the private sector. Governments can foster nodal development by leading the construction of parking structures while reducing parking requirements. This strategy would typically be pursued in areas where land prices are marginally below the threshold required to justify structured parking.

Lower parking requirements can improve the financial and physical viability of a project and encourage walking by reducing the area dedicated to surface parking and thus allowing a higher intensity of uses. Parking standards can also be lowered by exploring and allowing sharing opportunities (e.g. offices and entertainment venues) and by encouraging walking, cycling, car-pooling and transit through other means.

5

Critical Success Factors**3. View roads as an important part of community appearance and functionality.**

Transportation should be viewed as moving people and goods from an origin to a destination, regardless of mode. Ideally, transportation should be seen as a positive contribution to quality of life and economic health.

Other jurisdictions have consolidated transportation services at the regional level. Typically, an umbrella agency is created and empowered to plan, design, fund, manage and maintain the entire transportation system including roads, sidewalks, trails and transit. Such agencies work closely with long-range and community planning to ensure that respective goals are met. In fact, a crucial part of the mission of these agencies include the fulfilment of Smart Growth principles. Because of their size and comprehensive mandate, umbrella agencies can address transportation demand management in collaboration with large generators, and influence land use. Canadian examples include the Agence Métropolitaine de Transport (AMT) in the Montréal area and Translink in BC's Lower Mainland.

The viability of transit routes is often negated by competing investment in roads. To address this shortcoming, umbrella agencies can prioritize projects among transit and roadwork and ensure that projects are complementary. They can also recommend and periodically update location-specific parking standards, ensuring that they support existing and proposed transit systems.

Some regional roads perform the function of highways, but this role must be balanced with local needs when they traverse nodes and villages. The design of regional roads should be sensitive to their context. To do so effectively, the Region may wish to consider retaining the services of urban designers on staff to ensure that the highest quality of design is embedded in road improvements and that streetscaping improvements are pursued at the time of road construction and upgrades.

4. Focus investment of public dollars to obtain Smart Growth.

The Region and local municipalities, in collaboration with health units and school boards, should explore opportunities for collaboration in leveraging their existing assets and investment power to create catalysts and demonstration projects. This includes locating public buildings of all types in downtown areas, infill areas, disadvantaged areas, at nodes and on transit routes, as well as ensuring that regional projects contribute positively to the fulfilment of Smart Growth principles.

4.1 Important Performance Criteria

Performance criteria would assist in screening sites. For example, the LEED and Green Globes green buildings evaluation systems both include site selection as important criteria. Below is an overview of some of the criteria governments should consider in their capital projects.

4.1.1 Location

- Is the site in a neighbourhood facing economic challenges?
- Where is the site? Is it reachable by transit? If no transit is available, could the location ultimately support transit? E.g. a node or major corridor.
- Is the site next to complementary uses that could share parking resources and that would allow visitors to group trips?
- Can employees run errands on foot?
- Are buildings linked to sidewalks and trails? This is especially important for schools.
- Can the necessary space be provided in a way that eliminates or minimizes the consumption of Greenfield space? Ideally, the following locations should be preferred when the need for new space is established:
 - (a) A heritage building
 - (b) A converted building
 - (c) A nodal or main street location
 - (d) An infill, greyfield or brownfield site
 - (e) A site on a transit line

5

Critical Success Factors

- Recent research has shown that schools should preferably be small and decentralized but located in the centre of neighbourhoods – this can result in higher educational achievement, safer schools, less congestion, an increased sense of community and more walking/cycling (Refer to Appendix for References)

4.1.2 Consumption of Land

- How large does the new facility really need to be? Has all the space owned or leased in the area been benchmarked for efficiency? Is it a long-term need?
- Is a less land-intensive design feasible?
- How much parking is really necessary? Often, pricing schemes and a concerted transportation demand management strategy can reduce the need for parking by encouraging telecommuting, car-pooling, transit, walking and cycling.
- Can parking be shared with an adjacent use? Institutional uses are often only used during the day. Parking can thus be shared with nightly uses (restaurants, cinemas, sports facilities, fitness centres, etc).
- Denser designs, based on precedents elsewhere in North America, should be investigated as alternatives to conventional designs.

4.1.3 Design

Many municipal governments have decided to lead by example and have adopted the comprehensive LEED or Green Globes design criteria whenever a new building is proposed – which cover many of the criteria identified above. To date, the US Federal General Services Administration, Maine, California, Pennsylvania, and the following municipalities have made a commitment to green buildings:

- City of Los Angeles; LEED Certified for all buildings over 7,500 sq. ft.
- Portland, Oregon; LEED Certified for all city-funded projects over 10,000 sq. ft.
- Portland, Oregon; Tax Credits for private development projects achieving LEED Silver.
- City of San Jose; LEED Certified for all city projects over 10,000 sq. ft.
- County of San Mateo; highest practicable LEED rating for all projects over 5000 sq. ft.
- City of Seattle, Washington; LEED Silver for all buildings over 5000 sq. ft.

In Canada, the City of Calgary is considering a Sustainable Buildings Policy.

4.1.4 Supportive Policies

Policies are needed to support the above changes, e.g.

- Integration of sustainability in procurement policies and internal processes,
- The choice between free parking or transit passes for employees,
- Collaboration with the provincial and federal governments and neighbouring municipalities.

Another area for intervention is the strategic acquisition and assembly of key properties to achieve results including the redevelopment of an important downtown area, the expansion of a recreational area, the creation of a trail system, or the improvement of public waterfront access.

4.1.5 Local Investment

Across North America, jurisdictions at various levels are offering incentives to encourage the emergence of local cultural entrepreneurs, including artists, designers and craftspeople. They have found that positive outcomes include reputational advantages, improvements in quality of life (activities for residents), tourism opportunities, and the preservation of the built heritage.

For example:

Abandoned buildings can be used to house inexpensive studios, shops, offices and community space, through collaboration between arts groups, the City, the Region and the Province.

5 Critical Success Factors

5. Screen local by-laws for provisions that undermine Smart Growth, for example:

Despite general policies at the regional and local level, zoning and other regulations may remain on the books that contradict the intent of broader Smart Growth policies. Their identification can help future intervention: Examples include:

- a. High parking standards that do not take transit provision and walkability into account, and do not allow cash-in-lieu.
- b. Restrictions on accessory apartments.
- c. Restrictions on mixing uses.
- d. Overly restrictive height and massing requirements that undermine feasibility of alternative building types, including attached housing.
- e. Restrictions on home offices.
- f. Road width and utility standards

6. Focus on long-term goals.

When asking for a mix of housing types and a mix of uses in a specific area, municipalities often face the response from builders and developers that a market is missing for these types of uses at the current time. Instead of agreeing to an OPA and rezoning, it may be preferable to take a longer view and wait for complementary development to occur, resulting in large single use areas or a long-term imbalance of uses in a community.

7. Adopt a fiscal system that supports Smart Growth.

Incentives can be very effective in encouraging desirable behaviour, for example lowering development charges in downtown areas and waiving building permit fees. However, their cost often means that their scope is limited.

A more sustainable alternative can be to charge the true cost of services instead of using averages. In the area of development charges, this means that charges are allowed to vary to accommodate differences in hard costs related to land consumption and location.

More accurately determined development charges may encourage more efficient use of land and result in overall lower costs as more efficient development behaviours become more commonplace. Although some changes do require provincial assent, some municipalities have already fine-tuned the structure of their development charges, for example by charging differential rates depending on proximity to centres.

Ideally, a portion of the property tax should reflect the actual cost of providing services. For example, a subdivision of 100 estate homes will cost more in services including snow removal, street lighting, street cleaning than a converted warehouse turned into 100 luxury condominium lofts – even if the assessment of each unit is identical. However, assessments are defined by the Province, and local governments are not free to set their own assessment rules and rates. However, local governments can study the issue and make submission to effect change.

Other fiscal obstacles to Smart Growth must be catalogued and addressed. For example:

- Development charges on accessory apartments can be dissuasive.

8. Secure broad support and leadership for Smart Growth

Public and industry acceptance of Smart Growth is critical to ensure its implementation. It is through thousands of individual decisions that each principle will be implemented: when investments are directed, where companies and government decide to locate their operations, where individuals decide to live and how they decide to travel. Leadership from governments and industry, as well as support from media organizations, will be instrumental in allowing progress.

5 Critical Success Factors

5.2 Smart Growth Urban Design Guidelines Policy Toolbox

The following policies are provided as suggestions to assist in the implementation of the Smart Growth Principles and ensure that the appropriate environment exists for the Smart Growth Urban Design Guidelines discussed in this document.

- Governance/Municipal Operations

What policies can be adopted to support Smart Growth Urban Design Guidelines in the area of municipal operations and governance, i.e. relations with other agencies and governments?

	Smart Growth Principles									
	1	2	3	4	5	6	7	8	9	10
Lead by Example <ul style="list-style-type: none"> Encourage public facilities such as schools and public buildings to locate on small, previously urbanized sites with little or no on-site parking in mixed use nodes and downtowns, particularly in heritage structures. Minimize the footprint of all public buildings. Mandate LEED/Green Globes rating for all new municipal buildings. Review public standards and work with public agencies as a basis for the establishment of policies which minimize public “takings”, i.e. school sites, stormwater ponds, road rights of way, parkland dedication – these frequently account for up to half of total area in new developments. Pay special attention to locating public buildings in areas well served by transit and walkability to and from public buildings, especially schools. Make walking to school a priority in the pedestrian master plan. Collaborate with the school boards to prevent the construction of new schools at the edge of the urbanized area, especially if schools are underutilized in nearby neighbourhoods. Work with other public entities – provincial, federal, healthcare providers, Crown Corporations, Universities – to encourage them to invest in the downtowns and regional mixed use nodes. 	X	X	X	X	X	X	X	X	X	X
Regional Coordination of Transportation Consider increased regional coordination of transportation, as well as collaboration with neighbouring regions and the Province – for all modes of transportation, including transit, walking and cycling.		X		X		X	X	X	X	X

5

Critical Success Factors

- Planning Framework

What changes to the planning framework could be considered to assist in the implementation of Smart Growth Urban Design Guidelines and the fulfilment of Smart Growth Principles?

	Smart Growth Principles									
	1	2	3	4	5	6	7	8	9	10
Urban Area Boundaries Maintain strong Urban Area Boundaries.		X				X		X		
Existing Infrastructure Encourage development where the infrastructure is in place: road, water, sewer, power, available seats in schools. Ensure that infrastructure can accommodate development and preemptively upgrade it to attract redevelopment, and prioritize these projects over expanding networks to Greenfield areas. The creation of 'priority funding areas' can be explored to officially direct investments to existing communities.		X		X		X	X		X	
Land Use, Development and Transportation Coordinate urban development and transportation plans to ensure that transit services are provided in "lockstep" with urban growth.	X	X		X		X		X	X	
Long-Term View Ensure a long-term balance of uses in new developments. Areas reserved for complementary uses or mixed uses should not be rezoned even if there is no immediate demand for the uses (e.g. commercial core in new community reverting to residential).	X			X	X					
Mixed-Use Policies Establish in identified areas such as mixed use nodes and downtowns a more flexible mixed-use policy regime and explore form-based zoning to remove the emphasis from uses to general performance, for example height, massing, relationship to the street and to other buildings.	X				X		X			
Contiguous Green Spaces and Green Belts Protect contiguous green spaces and green belts.					X	X				
Density Policies Provide incentives for redevelopment above a certain density where necessary, including the establishment in policy and zoning of minimum density standards, as well as maximums.		X				X		X		
Parking Standards Review parking standards with a view to reducing standards to reflect local circumstances, including permitting reduced parking standards in identified areas such as mixed use nodes and downtowns, allowing in-lieu fees to fund a parking authority, subsidizing structured parking, and allowing on-street parking.	X	X		X	X	X	X		X	
Range of Housing in Planning Framework Require and actively work with the development community to ensure the provision of a range of housing at multiple levels (OP, Secondary Plans, Site Plans, etc).		X	X	X		X			X	
Zoning Flexibility for Housing Widen the range of allowable residential uses in residential zones and shift the emphasis of zoning from use to form – "form-based zoning".			X	X	X	X				
Demolition Control Prevent the demolition of heritage structures and features.					X	X				
Second Suites Permit and actively encourage second suites, particularly low-density postwar suburbs.		X	X	X		X			X	

5 Critical Success Factors

- Supportive and Related Elements

What other policy items can be addressed to support the Smart Growth Urban Design Guidelines and Smart Growth Principles?

	Smart Growth Principles									
	1	2	3	4	5	6	7	8	9	10
Transit Target the improvement of transit services where warranted by density and potential demand. Explore the installation of bike racks on buses, especially on routes serving colleges and universities.		X		X		X		X	X	
Public Housing and Smart Growth Integrate Smart Growth and housing programs – ensure that Regional Housing Department projects also implement Smart Growth.		X	X	X	X	X	X		X	X
Farms and the Policy Framework Ensure that the policy framework is supportive of farm operations.						X				

- Incentives

Other than brownfield incentives, what type of incentives could be considered to support Smart Growth?

	Smart Growth Principles									
	1	2	3	4	5	6	7	8	9	10
Affordable Housing Incentives Fast-track applications with an affordable component			X						X	
Housing Incentives in Target Areas Provide property tax holidays for new and converted housing units on brownfields, greyfields and downtowns.				X	X		X		X	
Incentives for Heritage Preservation and Improvements to Private Properties Provide incentives for heritage preservation, like historic preservation tax credits. Provide incentives for beautification, such as façade improvement grants.					X	X	X		X	

5 Critical Success Factors

- Policy Initiatives and Programs

What specific initiatives could be launched to specifically address the fulfilment of Smart Growth Principles?

	Smart Growth Principles									
	1	2	3	4	5	6	7	8	9	10
Mixed-Use Nodes Identify and support the expansion and/or creation of a viable number of mixed-use nodes at the regional level to encourage walking and transit. Prepare secondary plans to articulate visions for mixed-use nodes.	X	X	X	X	X	X	X	X	X	X
Community Improvement Plans Establish the required policies to permit the creation of Community Improvement Plans for a range of key areas such as downtowns and brownfields and pursue the development of such Plans to provide incentives for redevelopment, infill and complementary uses.	X	X	X	X	X	X	X	X	X	X
Commercial Analysis Commission or assist in the commission of commercial analyses to assess the opportunities and required actions to improve a main street or shopping district.					X		X		X	X
Transportation Demand Management Work with large employers to establish transportation demand management plans to reduce overall trips and encourage alternatives. Provide support for participants (e.g. taxi backup for carpoolers, info line for recommended transit route). Explore the introduction of HOV lanes on highways and arterials in congested areas.				X		X		X		

5 Critical Success Factors

- Policy Initiatives and Programs (continued)

	Smart Growth Principles									
	1	2	3	4	5	6	7	8	9	10
Cycling Adopt and continually update a regional strategy to encourage cycling. Mandate the provision of bicycle storage facilities, change rooms and showers at large sites (see LEED rating system). Adopt a program to allow residents and businesses to request the installation of free bike racks on sidewalks.				X	X			X		
Car Sharing Encourage car sharing by providing free spaces and municipal contracts.								X		
Art Policies Adopt a 'percent for public art program' – new development pays into a fund to build public art or builds public art on site. Provide incentives for artists to settle in the Region – for example free or inexpensive studio space.					X					
Award Programs and Competitions Create an urban design and architecture award program. Subject major public commissions to a competition.					X					
Community Stewardship of Green Spaces Encourage local residents to adopt local streets and parkettes by offering logistical support and training.					X	X				
Recycling and Reuse of Materials and Buildings Encourage and facilitate the recycling of construction materials to reduce pressure on landfills. Encourage the relocation of buildings slated for demolition.						X				
Incentives for Green Buildings Provide incentives (e.g. property tax abatements) to "green" buildings, e.g. those that implement LEED/Green Globes guidelines.						X				
Land Trusts Collaborate with land trusts to identify areas that should be protected.						X				

6

Test Site Design Opportunities

6.1 The Test Sites

Three test sites were identified to assist in the identification of common issues and opportunities associated with urban development in the Region. The test sites were also instrumental in encouraging community participation in the workshops that were held as part of this process.

The three sites were selected by the Steering Committee to represent a diversity of areas, issues and opportunities that could be applied to other sites throughout the Region. The analysis panels developed for each site are shown on the following pages. They describe the site conditions and opportunities for development or redevelopment that would contribute to the fulfilment of Smart Growth principles.



Former Welland High School



Old Mill in Merriton Area, St. Catharines

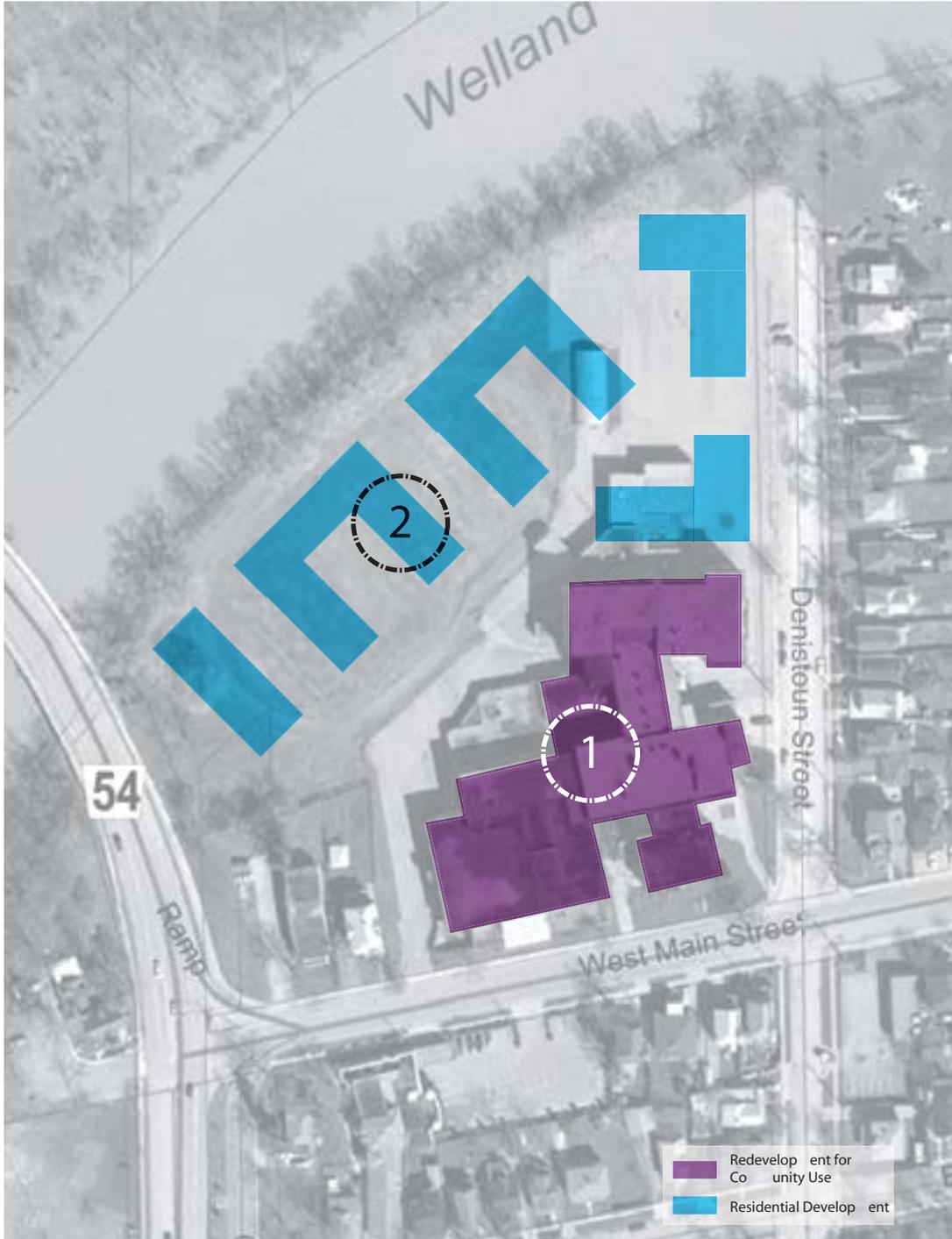


Port Colborne Mall

6

Test Site Design Opportunities

FORMER WELLAND HIGH SCHOOL
DEVELOPMENT & INTENSIFICATION



1 ADAPTIVE REUSE FOR COMMUNITY BENEFIT
Adaptive Reuse of former Welland High School as a community facility. i.e. offices, community hall, meeting rooms, studio, and complementary retail (book store, cafe, crafts, etc.)

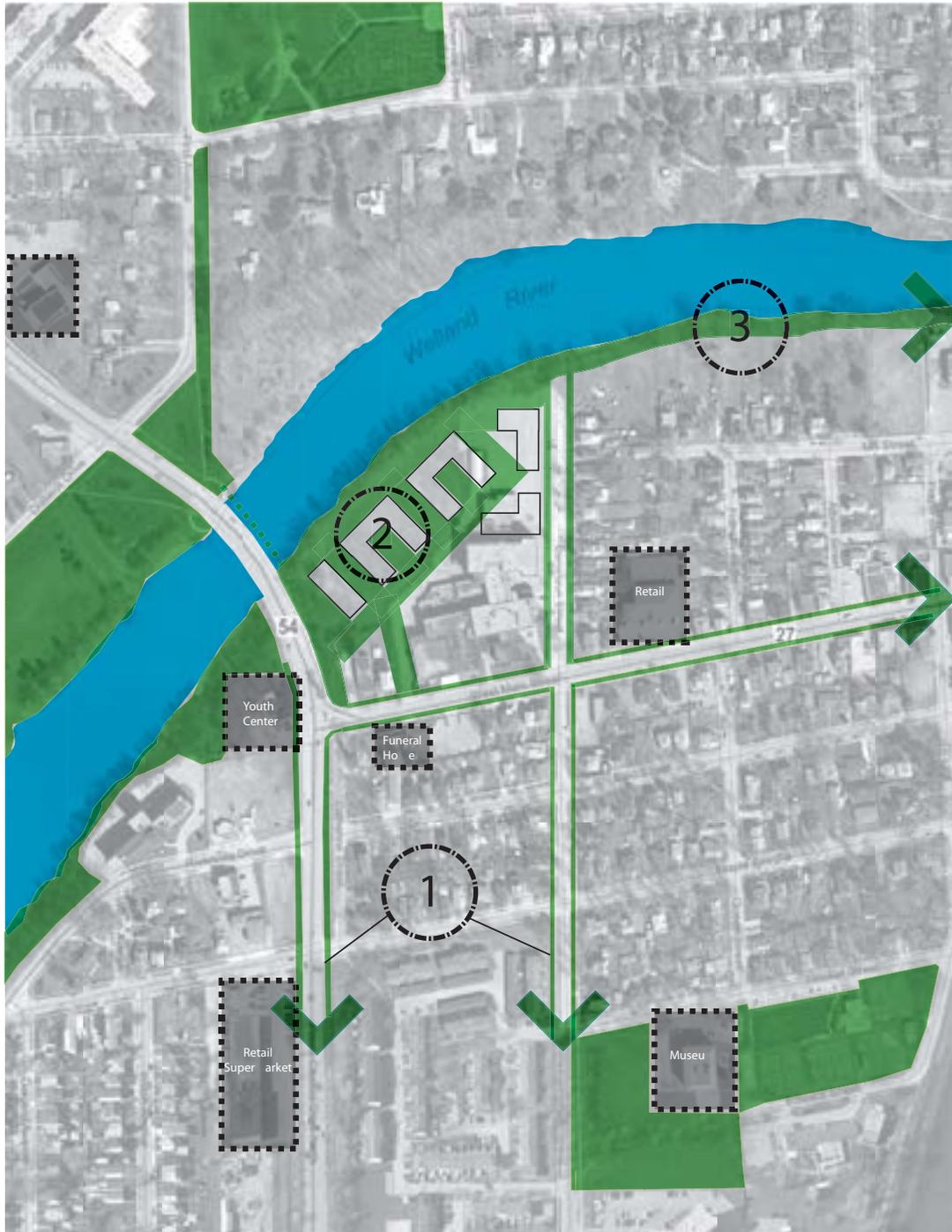
2 RESIDENTIAL DEVELOPMENT
Townhouse and other residential development of former sports fields.

6

Test Site Design Opportunities

FORMER WELLAND HIGH SCHOOL

OPEN SPACE & AMENITIES



① **LINKED OPEN SPACE NETWORK**
Create links to existing open spaces, parks, and trail systems.

② **PUBLIC ACCESS TO NEW OPEN SPACE**
Integrate publicly accessible open space into new developments.

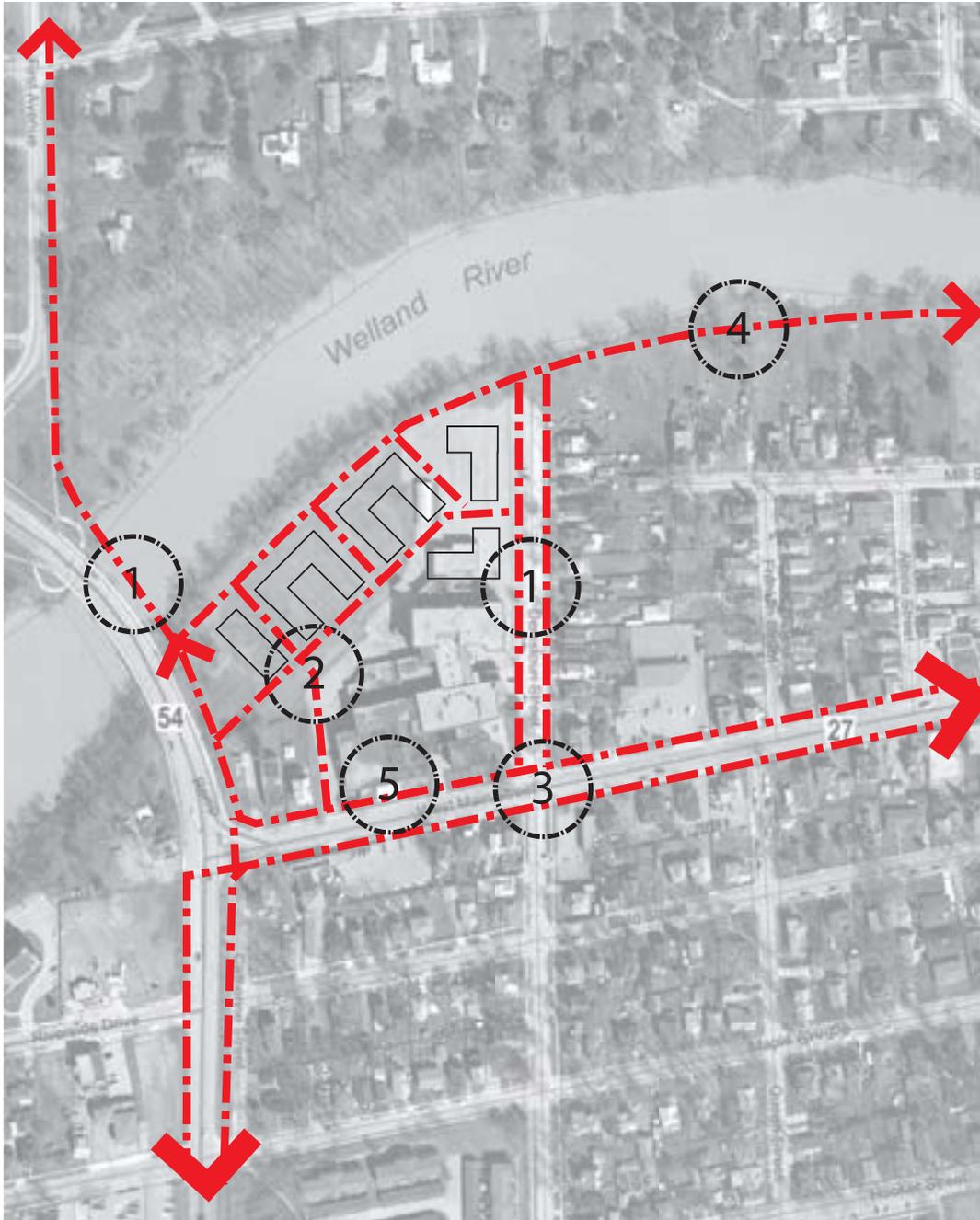
③ **PUBLIC ACCESS ALONG RIVERFRONT**
Open riverfront for public access and trail links to downtown Welland.

6

Test Site Design Opportunities

FORMER WELLAND HIGH SCHOOL

ACCESS & CIRCULATION



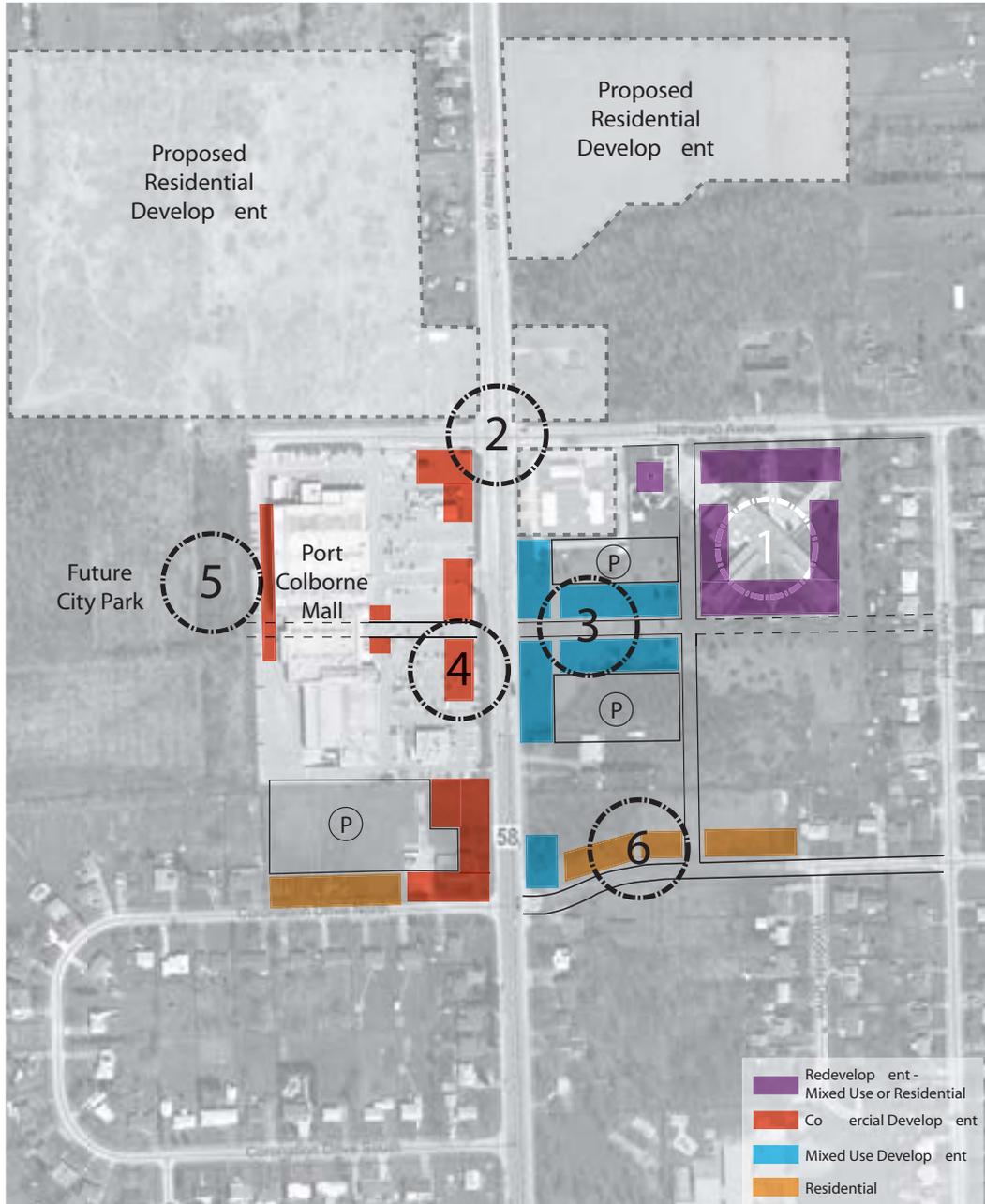
- ① **RIVER CONNECTIONS**
Develop pedestrian bridge across Welland River and improved pedestrian connection to river.
- ② **PUBLIC ACCESS TO DEVELOPMENT**
Integrate public walkway system through new development.

- ③ **ENHANCED SIDEWALKS**
Encourage pedestrian access to water.
- ④ **RIVERFRONT TRAIL**
Develop pedestrian trail along waterfront in downtown Welland.
- ⑤ **REDEVELOP MAIN STREET**
Strengthen street edge through renovation and infill of existing buildings and streetscape.

6

Test Site Design Opportunities

PORT COLBORNE MALL
DEVELOPMENT & INTENSIFICATION



- 1 INVEST IN EXISTING ASSETS**
Redevelopment of former Northland Manor Senior Home for Mixed and or Residential uses.
- 4 BIG BOX INFILL & INTENSIFICATION**
Expansion of Port Colborne Mall with street related and compact built forms.
- 2 DEVELOP DISTINCTIVE NODE**
Develop the intersection as a Node, with strong sense of place and identity.
- 5 POSITIVE EDGE CONDITIONS**
Development adjacent to open space creates a positive edge condition for access and safety.
- 3 MIXED USE DEVELOPMENT**
Integrate Mixed Use development with subordinate parking areas.
- 6 RESIDENTIAL INFILL DEVELOPMENT**
Provide a range of housing opportunities and choices within new residential developments.

6 Test Site Design Opportunities

PORT COLBORNE MALL

OPEN SPACE & AMENITIES

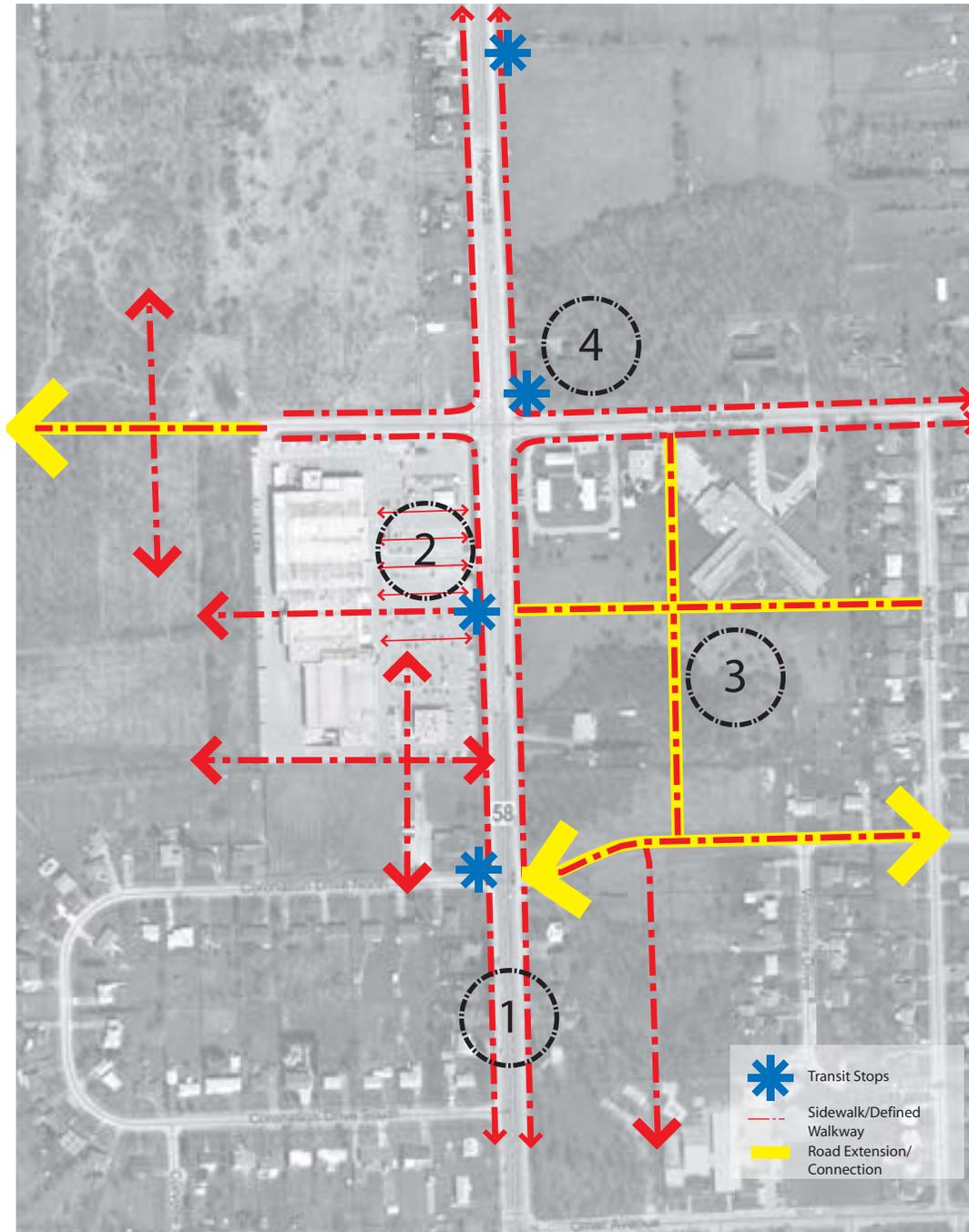


- 1 PRESERVE & ENHANCE OPEN SPACE**
Existing open space is preserved for community and environmental benefit.
- 2 LINK OPEN SPACE**
Local community open space is linked with well landscaped streets and walkways/trails.
- 3 DEFINE SPACES FOR LARGE OPEN SPACES**
Community scale parks are designed for a broad range of passive and active recreation uses.
- 4 'GREEN' PARKING AREAS**
Large format parking lots incorporate landscaping contiguous to pedestrian networks.

6 Test Site Design Opportunities

PORT COLBORNE MALL

ACCESS & CIRCULATION



1 **SIDEWALKS FOR WALKABILITY**
Sidewalks along all collector and regional roads for safety and circulation options.

2 **WALKWAYS FOR PERMEABILITY**
Landscaped pedestrian walkways through large format retail parking lots and mid-block connections.

3 **FINER GRAIN FOR ROAD NETWORKS**
Extension of Northland Avenue with bus transit and pedestrian infrastructure

4 **SUPPORT TRANSIT**
Locate transit facilities appropriately to encourage transit use.

6

Test Site Design Opportunities

HARTZEL ROAD

Development & Intensification



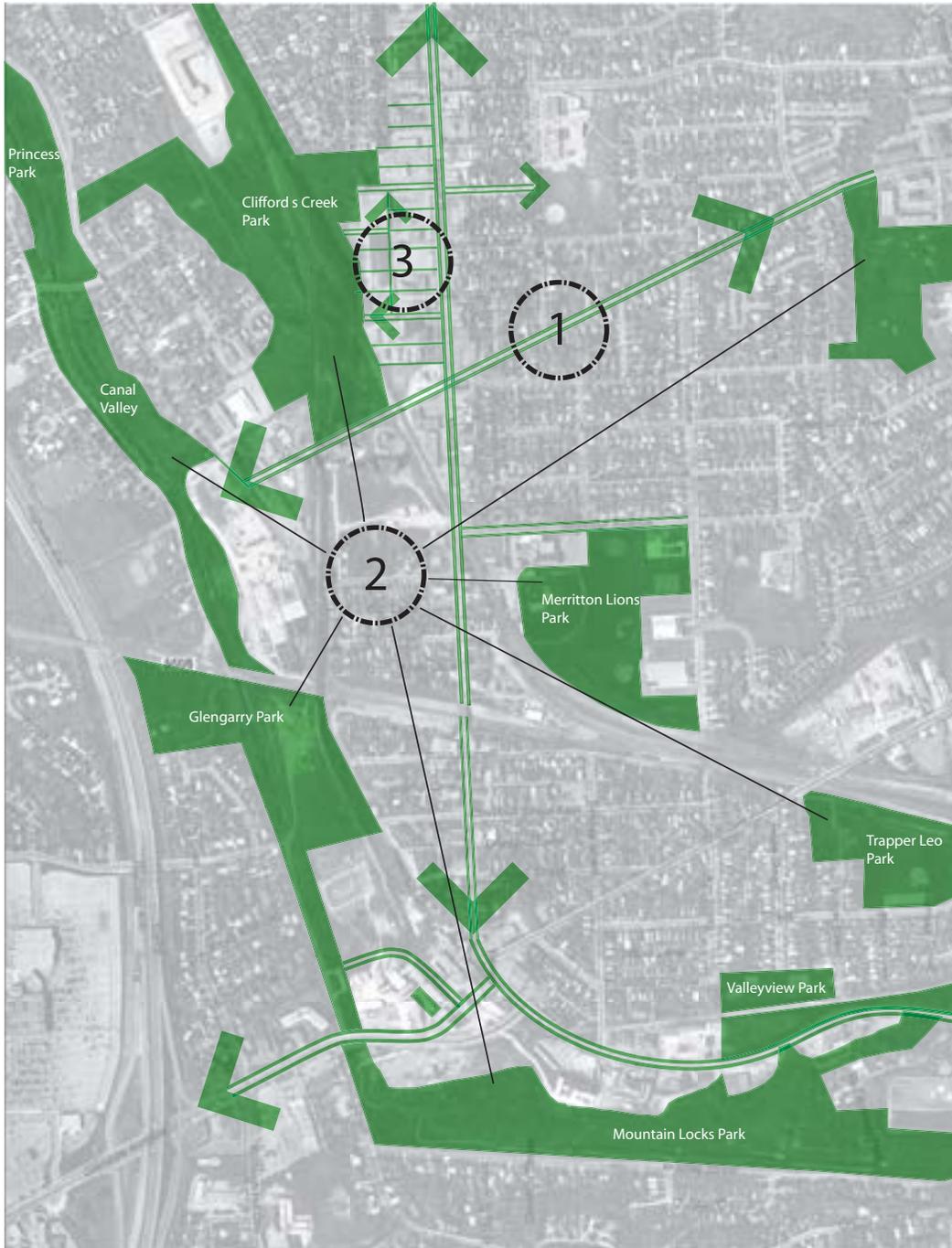
- 1 COMMERCIAL INFILL & REVITALIZATION**
Target infill development to revitalize aged commercial strip.
- 2 CAPITALIZE ON MIXED USE OPPORTUNITIES**
Intensify use and activity of existing mixed use corridor with commercial and or residential use of upper floors.
- 3 PRESERVE & ENHANCE HISTORIC IDENTITY**
Scale and form of new development respects existing historic character and identity.
- 4 RANGE OF HOUSING TYPES**
Higher density development provides greater range of housing choices.

6

Test Site Design Opportunities

HARTZEL ROAD

OPEN SPACE & AMENITIES



① **LINK OPEN SPACES**
Extensive streetscaping to link open space network and support commercial & heritage area revitalization.

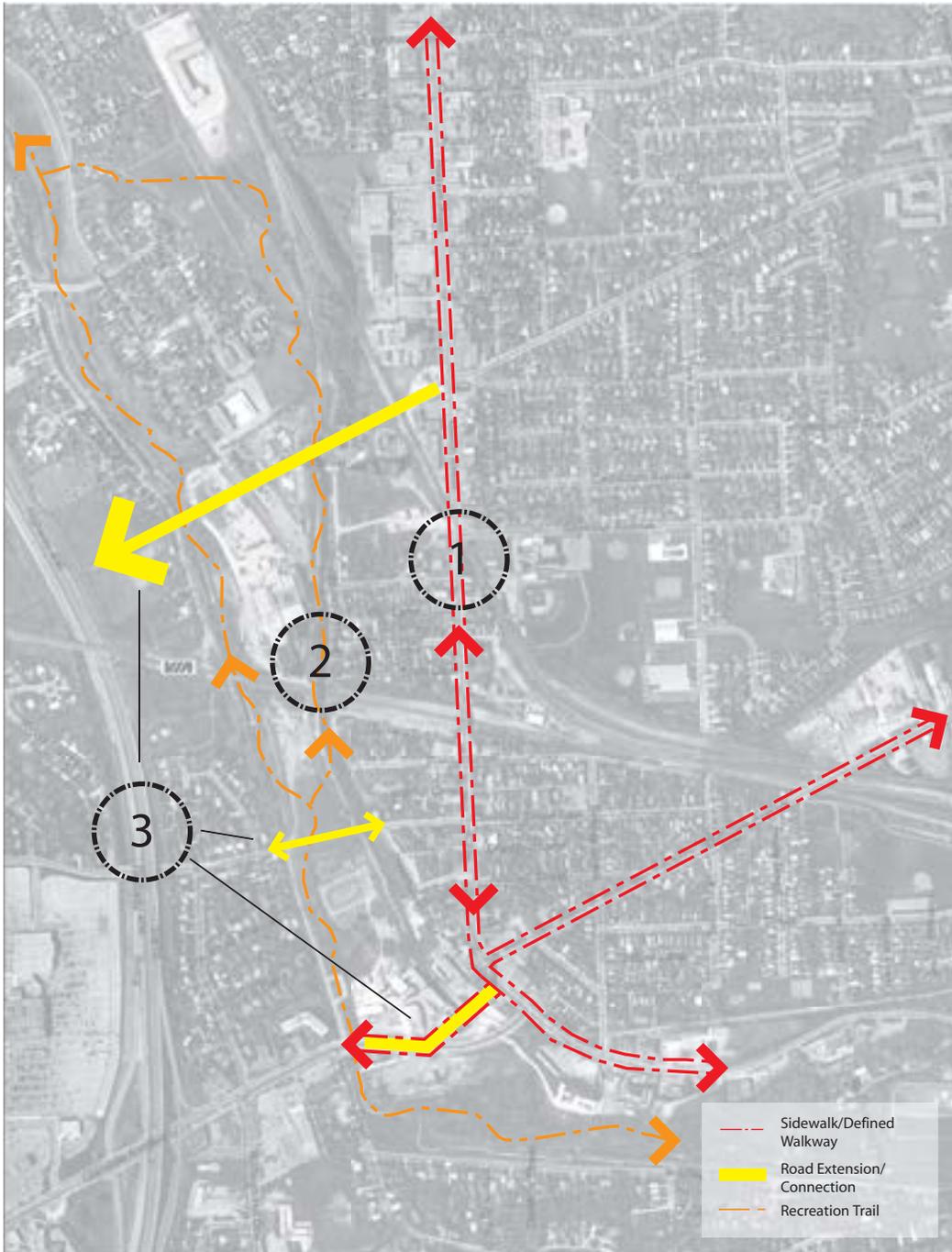
② **PRESERVE SIGNIFICANT NATURAL ASSETS**
Preserve public open space and enhance access for community benefit and health.

③ **FINE GRAIN OF 'GREEN' CONNECTIONS**
Incorporate landscaping within large surface parking and large scale developments.

6

Test Site Design Opportunities

HARTZEL ROAD
ACCESS & CIRCULATION



- ① **STREETS FOR PEDESTRIANS**
Sidewalks along all collector and regional roads for safety and to connect nodes.
- ② **TRAILS COMPLEMENT OPEN SPACE & STREET NETWORK**
Recreation trail within open space network.

- ③ **VARIETY OF MOVEMENT OPTIONS**
New road connections enhance connectivity and permeability of the community.



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