13-7356

URBAN DESIGN GUIDELINES

CITY OF WELLAND

AUGUST 2014

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View of Welland Main Street Bridge
from Behind City Hall

1.0 | INTRODUCTION

1.1. CONTEXT

"The art of shaping the interaction between people and place, environment and urban form, and nature and the built fabric, and influencing the processes which lead to successful villages, towns and cities"

Kevin Cambell and Robert Cowan (12 February 1999)

Through our analysis, as outlined in the Urban Design Brief (City of Welland Urban Design Brief, 2013) it has become clear that the City of Welland is a very complex and dynamic place, which is under a number of growing pressures. These pressures can have positive or negative implications to the urban environment. Urban design as an emerging science uses recommendations that impact our association with architecture, landscape architecture, engineering and natural heritage. Similar to other cities that have an evolving demographic, changing economic focus and infrastructure investments, the physical environment needs to better respond to contextual realities that can foster real change which benefits the community over time. These urban design guidelines can help define the future direction and investment opportunities to physical improvements to the City.

Clearly Welland has already engaged in the urban design discussion by ensuring that characteristic elements of the City are given prominence through planning and design. Efforts to improve the streetscape and pedestrian environment in the Downtown, along with investments in public spaces, public art, trails and infrastructure along the Recreational Waterway are recent examples of how the application of good urban design practices can improve overall health and vitality of an area. The recommendations provided as part of these guidelines are intended to work as a planning tool for the City while reviewing new development, urban infill, and infrastructural renewal projects. Moving ahead it is expected that a stronger sensibility of the physical environment will help make Welland a stronger and more vibrant community, attracting people to live, work and play as the City evolves into the future.

ABOVE: *New City Hall and Library, Welland, Ontario*

1.2. PURPOSE OF THE DOCUMENT

The purpose of the Design Guidelines are to provide a practical and flexible tool for assessing new development and redevelopment in the City. Specifically, this document is intended to provide a series of general, high-level urban design guidelines that apply to different forms of development - such as residential, commercial or industrial. When considering a specific application or proposal, the reader should also refer to appropriate Sections, as well as the Urban Design Principles in Section 2. In addition to this, the reader should also consider any other applicable documents which may also contain aspects of design, such as the Official Plan and Zoning By-law.

1.3. STRUCTURE OF THIS DOCUMENT

These Guidelines are organized into six main Sections. This first Section provided an introduction. The second Section presents the design principles which inform the more detailed guidelines. Section three provides site planning guidelines and Section four describes the general built form and landscape guidelines. Section 5 addresses the streetscape area and Section 6 concludes with an overview of various sustainable and healthy community design measures.

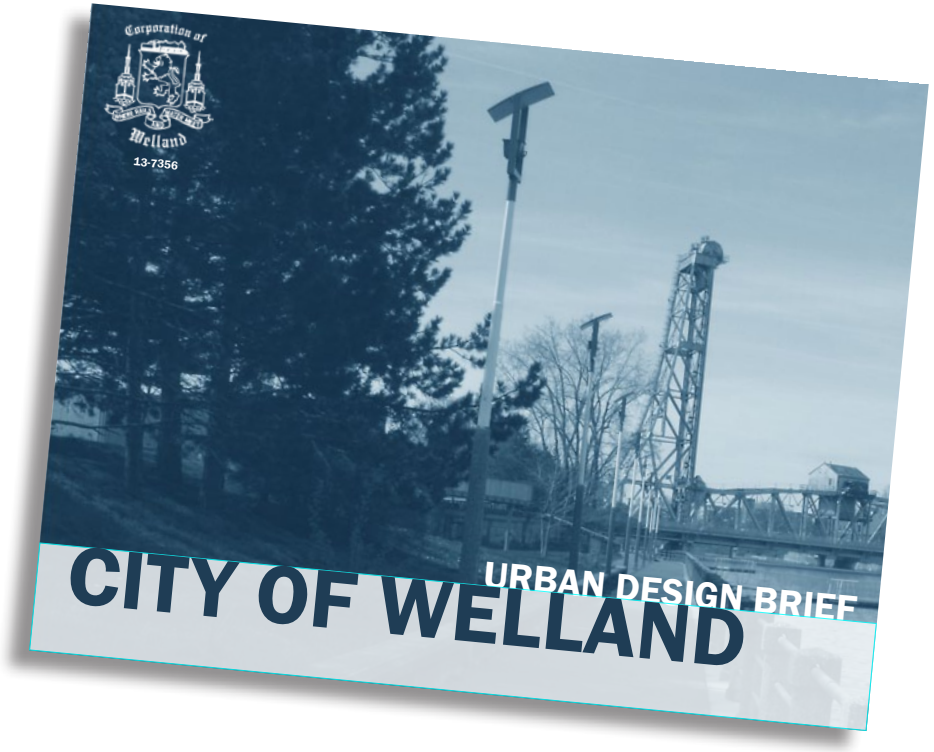
The guidelines have been organized to respond to the different aspects of a given site - overall site, building, landscaping, etc. Within each Section, the Guidelines include provision for the range of different land use types.

1.4. STUDY AREA

The following set of Design Guidelines are intended to apply to all spaces and places within the City. Due to the nature of the development, the Design Guidelines generally focus on lands within the City's urban area.

1.5. BACKGROUND REVIEW

As part of the Urban Design Brief, a thorough analysis of Welland's land uses and specialty areas was conducted, providing clear opportunities and constraints to inform the Guidelines. The urban design brief also provided best practices review for each of the land use areas, which contemplates the potential of urban design in Welland. It is vital to note that despite the extensive research on best practices from around North America, that the guidelines are focused on contextual realities which can have realistic and tangible impacts to the betterment of Welland and its citizens. The following Section gives a concise summary of land use and specialty areas as outlined in the Urban Design Brief Section 3.0 Key Findings & Observations. These Sections will help to define a reoccurring structure to the development of the Guidelines. The following is a summary of the finding within the Urban Design Brief.



1.5.1. Downtown

The Downtown is the City's preeminent mixed use node and is intended to serve a variety of complementary functions. The Downtown is intended to accommodate the broadest diversity of uses and the greatest concentration of activity.

– City of Welland Official Plan, 2010

In Southern Ontario, the role of the downtown takes on a variety of functions. They are distinctly tied to our cultural and natural heritage, while commonly exhibiting some of our most civic and celebrated places. Over time, cities and towns that have experienced growth typically have had new pressures imposed on the downtowns. Changes in commercial, residential and institutional uses, as well as automobile dependency, have impacted many Ontario downtowns in adverse ways. Much like many other Ontario municipalities, Downtown Welland has also been affected by these trends; however, steps have been taken to retain its importance and vibrancy. Although in need of further improvements, Downtown Welland does offer a unique and central role in providing an active and strong core area, tied to the rich natural and cultural heritage that still dominates its identity.

ABOVE: *Courthouse, Welland, Ontario*
BELOW: *City Hall, Welland, Ontario*

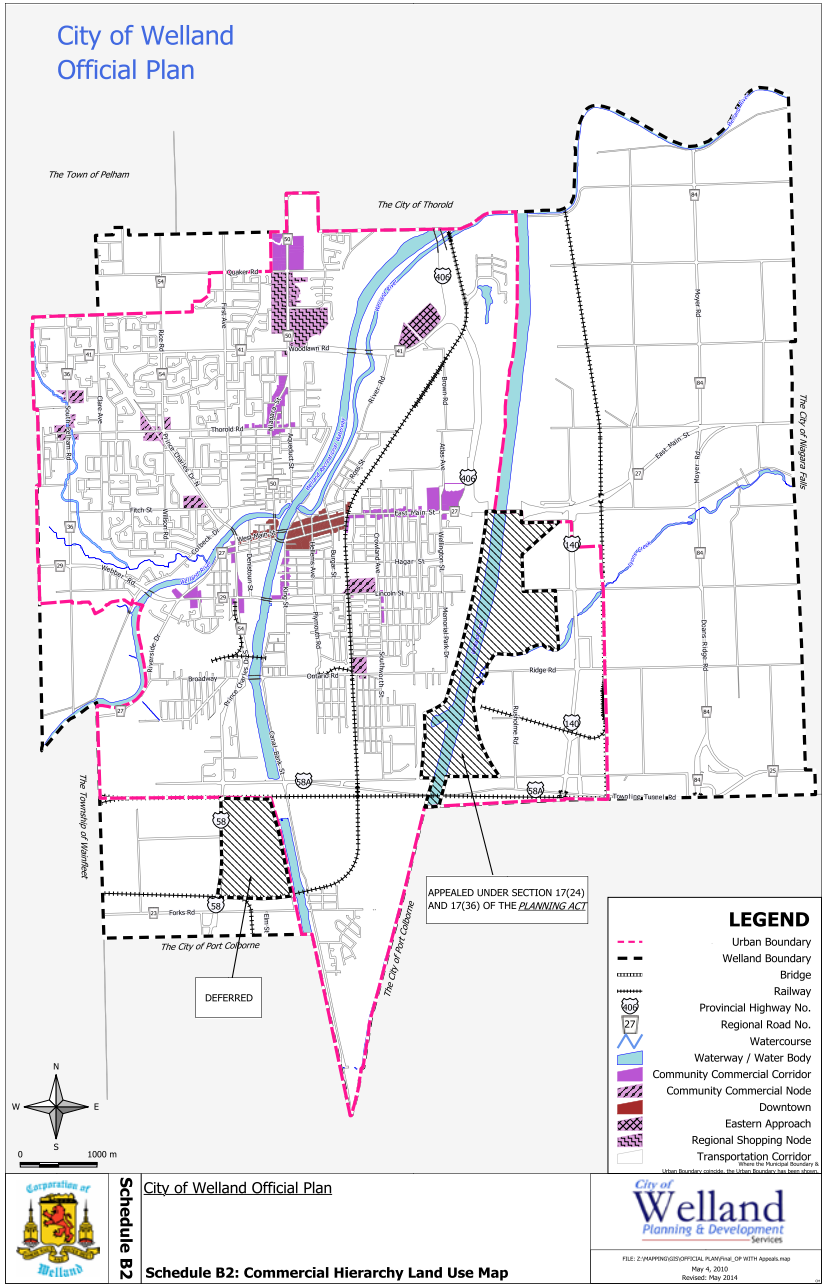
1.5.2. Residential Stock and Fabric

> *Welland's urban fabric includes a variety of residential neighbourhoods... Residential development will be planned to be safe and have convenient access to public transit, convenience shopping, public open space, recreation facilities and other urban amenities.*
>
> *- City of Welland Official Plan, 2010 (page 44 for ref)*

As an older industrial city, Welland has a diverse range of residential neighbourhoods, including older heritage areas, post war, modern, and contemporary housing models, with a variety of architectural styles.

Welland's residential stock consists of low, medium and high density development ranging from 15 to 125 dwelling units per net hectare. Both well-established and newer residential areas are exposed to the changes in the Welland economy.

ABOVE: *Residential streetscape in Welland, Ontario*
BELOW: *High Density Development in Welland, Ontario*



1.5.3. Commercial Areas

Welland's commercial structure is comprised of a series of commercial nodes and corridors, varying in size, form, location and use.

- City of Welland Official Plan, 2010 (page 62 for ref)

Commercial areas today are an important part of our community. They are places for us to shop, but are also places for us to meet, greet and eat. They are culturally tied to who we are and they adapt to our changing needs. Just as dynamic is how commercial/ retail practices have changed over time. The walkable "main street" was replaced with suburban malls and strip plazas. For the last 15-20 years, the suburban model has been challenged by the "big box" retailers. The post war era has seen a remarkable series of changes across North America's commercial landscape. First, with the emergence of suburban shopping malls, which triggered an initial wave of decline for traditional downtowns. Then, in the mid to late '90s, the arrival of power centres and big box areas began to challenge the supremacy of older established malls, and dealt a second blow to main streets. More recently, the landscape continues to evolve and includes some interesting design innovations, including:

- *Transition of older malls into mixed-use areas*
- *Embracement of place-making for some traditional forms of commercial development*
- *Re-emergence of downtowns/main streets*

Each has made its place into the commercial experience in Welland. The balance is to see how each of these models can best coexist in the commercial/retail environment of the city.

1.5.4. Institutional Areas & the Health and Wellness Cluster

> *General Institutional uses are intended to serve the immediate neighbourhood, a collection of neighbourhoods or the entire City, and provide social or cultural services such as education, health care, social housing, and religious worship for residents*
>
> *- City of Welland Official Plan, 2010 (page 74 for ref)*

There is a range of institutional uses in communities throughout Canada which commonly are tied directly to the core values and aspirations of the city. Welland's institutional areas include a variety of built form uses including, government offices, places of worship, community centres, schools and the Hospital. These facilities provide the physical spaces for people to gather and create a more identifiable city.

RIGHT: *Church Site Downtown Welland*

ABOVE: *Niagara Health Services, Welland, Ontario*
BELOW: *Industrial Site, Welland Ontario*

1.5.5. Employment Lands

High quality urban design will be a key tool for increasing the attractiveness of Employment Areas. Specific urban design requirements will be considered to enhance the attractiveness and unique identity of Employment Areas.

Important to any city is its ability to provide employment lands. Over time the need for more diverse types of employment functions is critical in sustaining a population and tax base. Therefore it is vital to note that employment areas constitute places which have clusters of differing users and needs, based upon a changing economy. Today employment lands are made up of light and heavy manufacturing, warehouses, offices, construction related, and associated retail service users. This is a sharp contrast to traditional employment areas that are focused upon a single employer or industrial/commercial sector.

1.5.6. Parks and Open Space

"The Parks, Open Space and Recreation designation includes lands used for active and passive leisure activities. In addition, open spaces are intended to contribute to the environment through the provision of green space and vegetation.

City of Welland Official Plan, 2010 (page 115 for ref)

Welland has maintained 500 acres of parks and open spaces throughout the city, which include Chippawa, Merritt, Maple, St. George, and Memorial Parks and Merritt Island and Canal lands. Known as Canada's Rose City, Chippawa Park contains some of the finest rose gardens in Canada.

Many of the city's recreational features are located in Memorial Park, some of these facilities include pools, pavilions, softball fields and a children's playground. Maple and St. George parks also contain Olympic-size pools and other recreational facilities.

Merritt Island and the Canal lands are a local treasure of the downtown core of Welland, offering walking trails and many amenities through the recent upgrades proposed from the recommendations of the 1997 Master Plan for the Welland Canals Parkway and Trails.

ABOVE: *Streetscape Landscape Feature, King Street and Niagara Street*
BELOW: *Rose Garden, Welland*

The canal tells you stories
The canal sings you songs
They hang in that space
Between memory and water

Once saw a narrowboat raised up,
Like it was cutting through the air,
Between two grass walls and the road below
Like it was sliding through history,
And a tiny vole swam across the water
So a tiny vole swam through history.

The canal tells you stories
The canal sings you songs...

Excerpt from Ian McMillan's poem "Canal Life",
Arts Council of England.

View of the Canal & Recreational Waterway

1.5.7. The Welland Canal and Recreational Waterway

Canals and waterways can have a dramatically important role in defining sense of place and well-being. Largely constructed for wider engineering purposes, they pose visual and physical amenities, sometimes in places that lack traditional waterfront access. In many places around the world, canals serve a multitude of services; however, what may be the most important service is providing citizens a distinct identity commonly tied to socio-economic history. Welland most definitely exhibits this relationship with the Waterway and Canal; however, from most vantage points this historically significant association has been lost as industrial production and shipping throughout the region has reduced sharply overtime.

It is important to note that opportunities along the Welland Canal are limited due to active shipping activity and enforced setbacks. Desipte this, the Canal and the large ships which use it provide a visual experience, unique to Welland. The City has also taken measures to further reinforce trails and connections along the Recreational Waterway, an important effort to rethink the role of this great amenity.

ABOVE: *Welland Canal Parkland*
BELOW: *Aerial View of Welland Canal*

View of the Canal & Recreational Waterway

2.0 | URBAN DESIGN PRINCIPLES

The urban design principles are a direct result of our key findings and observations. As summarized in the Urban Design Brief, these principles provide direction to the guidelines and encapsulate heritage conservation, contemporary design practices and emerging trends to urban design. As a reoccurring element, these principles will build the foundational understanding of how urban design can impact changes to the physical environment which relates directly to Welland and its dynamic needs.

2.1. PROVIDE A MULTI-FUNCTIONAL & MULTI-MODAL STREETSCAPE NETWORK

Walkability represents a vital measure of assessing how successful a community will function now and into the future. Redevelopment and intensification in the city will need to take into account how to spatially arrange and form buildings and guide land uses. In addition, the growing role of the public realm, including streetscapes, will direct this interface. With an aging demographic, these relationships have taken on new importance in creating a multi-modal network throughout the city.

Along with ease of access and advancing walkability there should also be considerations made for the encouragement of a variety of modes of transportation which are sustainable and will also reduce the impacts of the automobile. In particular, the Region of Niagara and local municipalities have historically been major

ABOVE: *Visualization of Complete Streets and Activated Public Space*

advocates of cycling, attracting thousands of local enthusiasts and tourists each year to its extensive network of bike facilities. Streetscapes also need to accommodate changing patterns of transit users and anticipated growth over time. Presently the Welland Transit Authority provides transit options to most parts of the community and to major destinations. The most active transit routes are also prime “commercial corridors” that present new opportunities to provide mixed-use development and added ridership. In light of the changing face of transportation in Welland it is important to note that the goal is not to eliminate the private automobile completely. Rather it is to balance the streetscape and shift the public realm to respond more closely to an area’s particular transportation demands.

2.2. PROMOTE A CONVENIENT & CONNECTED OPEN SPACE NETWORK

There are several environmental opportunities that can influence the character and development of the City of Welland, integrating a sustainable design approach as a key strategy. Providing a well-connected open space system, integrated into the existing community, and offering multiple outdoor recreational possibilities are integral for the development of the city. Currently Welland is comprised of numerous well maintained open spaces. An important urban design objective is to create a well-integrated pedestrian scaled community and easy access to daily amenities, by providing a pedestrian system that links parks and streets, further enhancing the existing conditions and promoting safe and convenient connectivity between these spaces.

BELOW: *Conceptual Visualization of Park Deck, ULI Design Competition Toronto, Ontario*

2.3. PROTECT AND ENHANCE NATURAL HERITAGE

The City of Welland has had a long history of settlement, accompanied by agricultural and industrial production. In addition, the development of the Welland Canal and Recreational Waterway have altered much of the natural watershed system in the city and surrounding region. In many ways much of the original natural environment has been repurposed by human settlement and natural systems which have been reengineered to allow for shipping connections. There are clear elements of the original natural heritage system in woodlots, forests, creeks and streams; however, today they are commonly undermined by the dominate change in the terrestrial landscape. Despite this reality it is important to realize that natural systems and habitat have adapted to more engineered processes. Therefore it is important to note that natural heritage has not been destroyed through human settlement, but has uniquely been evolved to Welland's agricultural, industrial and engineered landscapes.

ABOVE: *Natural Heritage Corridor*

2.4. PRESERVE AND EMBRACE CULTURAL HERITAGE

Settled as early as 1788 as an agricultural town, Welland soon took on an increasingly important role in the region. Playing a strategic role in the War of 1812, Welland also was the site of the Battle of Cooks Mills. Welland later expanded and became an important landmark for trade as continual development of the Welland Canal introduced shipping and industrial production to the city. This history persisted until recently when a number of large manufacturing firms reduced or closed operations, and Great Lakes shipping was sharply reduced. However, this industrial heritage continues to physically remain. Another unique aspect of Welland is its large francophone community, a notable difference to other parts of the region. Much of Welland's rich cultural history is still evident today, as evidenced by the array of heritage buildings, bridges, landmarks and public art.

Events such as the Niagara Food Festival, Niagara Regional Exhibition, Welland Rose Festival, IlluminAqua and the Dragon Boat Festival, showcase Welland's evolving cultural heritage, attracting thousands of people each year. Coupled with the year round activities of Market Square, the Downtown boasts a tremendously successful display of Welland's cultural heritage. However, there are a number of other opportunities which can help bolster the history of Welland, in and out of the Downtown. Through contextually sensitive approaches, urban design measures will ensure that this unique character is incorporated into everyday life for residents and visitors.

ABOVE: *Welland Rose Festival*

2.5. ESTABLISH APPROPRIATE BUILT FORM & ARCHITECTURE

It becomes important for a city like Welland, with a rich history and culture, to ensure that any development, redevelopment and intensification is responsive to the existing conditions. New built form should be context sensitive to ensure that the City of Welland retains its unique sense of place.

Establishing appropriate built form and architecture can be achieved in many ways. Building heights, for example, should have a smooth transition to adjacent existing built form, in turn protecting the existing stable neighbourhood. Development, redevelopment and intensification through the provision of a mix of densities, and encouraging higher density close to major street intersections, can be achieved through moderately scaled buildings varying in height. This built form scale responds well to the existing built fabric as well as local market demands. It also promotes liveability through pedestrian scaled development.

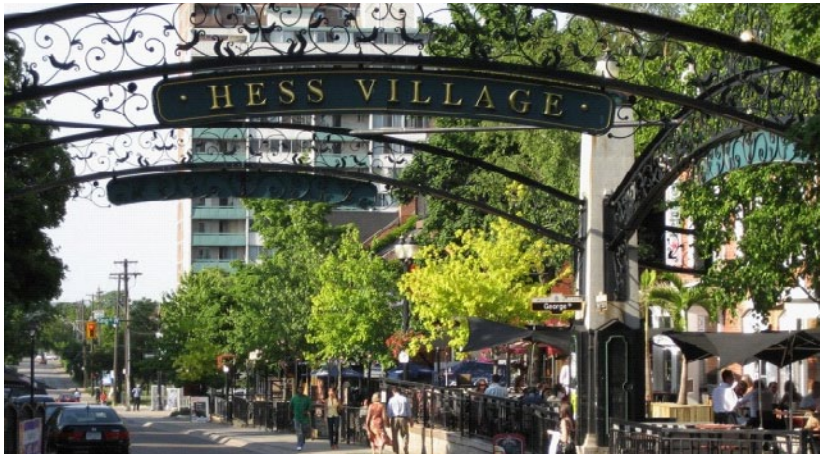
Ensuring that any new development, redevelopment or intensification projects adjacent to heritage buildings consider the heritage context, respect the unique character of existing buildings and retain a sense of place by responding to the existing context, can also be deemed as appropriate built form.

ABOVE: *High Profile Office and Industrial Facilty*

Compact built form, sustainable development and moderately scaled buildings are all means of establishing a built form appropriate for the City of Welland. It can be achieved through various tools such as building articulation, massing and streetscaping - tools which the urban design guidelines will look at more closely.

2.6. CULTIVATE IDENTITY & SENSE OF PLACE

A clearly unique opportunity urban design presents is a formal strategy to promote an identity and a distinctive sense of place for a community. However, in the case of Welland, identifiable markers are readily found. In fact, the city has a number of successful icons that build upon its history and cultural heritage. To build upon this already effective strategy the urban design guidelines will provide parameters to expand physical measures that give rise to a heightened sense of place in the city. The guidelines will continually identify opportunities for gateway signage and new approaches to their application. The promotion of new public art commissions, particularly the successful mural collection in the Downtown, should be continually considered and expanded to other parts of the city. Unique landscape treatments and street trees can be identifiable markers to specific neighbourhoods in the city. In addition, the promotion of visibly recognizable structures in strategic locations, such as the Main Street Bridge (Bridge 13), can become key city icons and, therefore, new opportunities should be explored over time. The urban design guidelines will look to support and expand these measures beyond just the downtown and isolated locations, and provide clear direction on how they can best be applied.



ABOVE: *Gateway Feature, Hamilton, Ontario*
BELOW: *Pedestrian Bridge Concept, London, UK*

2.7. INCORPORATE MEASURES OF HEALTHY COMMUNITIES AND SUSTAINABILITY THROUGH URBAN DESIGN

Today the idea of building and designing cities is intrinsically tied to the idea of creating healthy and sustainable communities. Beyond public health measures, engineering standards, air and water quality and brownfield mitigation, the concept of healthy communities is now directly tied to the way we envision, design and construct urban spaces and how we relate to these spaces. Therefore it is important for urban design measures to constantly take into account ways to change how we experience the city, to reduce adverse impacts and promote a healthier way of life. As a result the urban design guidelines will be sure to build upon the extensive cycling network in the Niagara Region, while looking for new and exciting opportunities to advance active transportation through other connections and facilities in Welland. A more robust use of the Recreational Waterway needs to be explored. This would include better ways to utilize this amenity, access both physically and visually, and to introduce (where possible) new uses along the Waterway. These uses and supporting infrastructure need to be designed to sustain or introduce adaptable winter uses to reinforce healthy community development and active transportation year-round.

ABOVE: *Streetscape Bioswale, Portland, OR*
BELOW: *Bryant Park, NYC, NY*

Sustainable thinking must be a core part of city building, and urban design presents a real and tangible way of implementing more sustainable practices. Throughout the urban context we can find sustainable ways of design and construction of our environment. Ranging from larger scale planning initiatives to detailed design treatments, urban design can work to reduce the carbon footprint, increase oxygen production, reduce the urban heat island effect, increase urban tree canopy, reduce stormwater runoff, restore animal habitat, mitigate brownfields and reduce energy demands.

To reinforce this, the urban design guidelines will continually address the need to support the following, where possible:

- *Promote mixed-use and compact development*
- *LEED design considerations for all new and renovated buildings*
- *Connect open space and habitat corridors*
- *Encourage ways of onsite stormwater infiltration*
- *Reduce the amount of non-permeable surfaces*
- *Promote roof top gardens and green roofs*
- *Naturalize shoreline conditions*
- *Encourage bio-remediation of brownfield sites*

Technology will also play an important role in promoting and evolving sustainable design practices. All efforts should be made to study and update measures for sustainable urban design practices beyond the completion of the guidelines.

View of Canal Terrace

3.0 |SITE PLANNING GUIDELINES

3.1. SITE PLANNING & SITE ACCESS

Site organization and built form of individual developments within the City will be key to achieving the urban design objectives. Their design can contribute to activating the public realm, enhancing pedestrian comfort and safety, reducing adverse impacts of development, creating a compact urban form with a high quality of architecture, and promoting sustainable of design.

3.1.1. General Guidelines

BUILDING SITING AND LOCATION

- *Buildings shall be sited to address adjacent public streets and are to be oriented to be directly accessible from public sidewalks or public plazas.*
- *Buildings shall be sited, wherever possible so that either the building itself for low-rise built forms or the base of buildings for mid-rise to high rise built form, frame adjacent streetscapes and public open spaces.*
- *Where buildings are located in proximity to street corners, their design shall address both streets through massing, building articulation and landscape design and give prominence to the street corner.*
- *Site planning shall allow for direct pedestrian access to public destinations such as transit stops, and public and semi-public open space (ie. patios, parking lots, etc.)*
- *A sense of entry or arrival must be created at primary entryways into the development. Building placement, landscaping, gates, entry monuments, specialty lighting and other design elements can be used to create this design effect.*
- *These entrances should have pronounced, attractive and safe pedestrian access from neighbouring communities and shall not be flanked by parking stalls.*
- *Buildings should be positioned to frame abutting streets, internal drive aisles, sidewalks, parking areas and amenity areas. On corner sites, buildings should be designed to frame both the primary and the secondary street.*
- *Appropriate site planning principles in the siting of buildings shall be applied to minimize developmental impact on existing natural areas.*
- *Buildings should be sited to locate the main entrances on the street. If this is not possible then they should be directly visible, easily accessible and as close to the street as practically possible. They should also provide a sense of enclosure and be designed to give maximum protection from wind and rain for comfortable and safe pedestrian access.*

- *Where mid-rise or high rise buildings are proposed, the tallest buildings should be located furthest from any adjacent pre-existing low rise built form to mitigate shadow impacts. These buildings should be located towards other similar height buildings or adjacent to major roads and intersections.*

SETBACKS

- *Front yard setbacks are determined by applicable zoning by-laws and are usually minimum values. Buildings should generally be proposed to be close to the street.*
- *Locate infill buildings at a consistent front yard setback.*
- *Where setbacks vary on both sides of a proposed development, the average of the two setbacks should be used.*
- *Setbacks should be established to promote a character of development that reflects buildings set within a green environment.*
- *Setbacks should be established to ensure the maintenance of a minimum quantity of green space within development lots.*
- *Setbacks shall be established which will not negatively impact neighbouring buildings and open spaces with respect to sun/shadow and sight lines. Consistent setbacks shall be established to define the street edge and create a visually ordered streetscape.*
- *Building setbacks should be reduced to minimize the distance between public streets and building entrances. This will allow for the development of a significant streetscape contributing to the identity and amenity of the area.*
- *If existing buildings front the streets, ensure that new buildings have a similar orientation.*

VEHICULAR ACCESS AND GARAGES/PARKING AREAS

- *The number and widths of vehicular driveways and accesses shall be minimized, where possible.*
- *Where possible, entrances and exits for vehicles should be located as far from corner intersections as possible to minimize disruption of street traffic flow.*
- *Vehicular access should be appropriately integrated into the design of the building massing and public realm, in such a way that it complements the design and does not detract from the design of the building elevation and the overall character of the street.*
- *A high quality of landscaping and pedestrian paving materials is to be achieved in order to minimize the impact of parking areas on development.*
- *Major pedestrian routes through parking areas shall be defined through differentiated paving materials.*

- *The impact of parking areas should be minimized. One strategy involves the division of a large expanse of parking into smaller parking zones. These zones can be distributed across the site at convenient locations.*
- *Where larger parking areas are used and their use cannot be avoided, landscaped islands at regular intervals, and pedestrian pathways and crosswalks should be used to mitigate their impact. The size and number of islands will vary with the size and design of the parking lot and will be reviewed at the time of Site Plan Review. Internal landscaping elements should define smaller parking courts and reduce the overall impact of surface parking areas.*

ABOVE: *Green islands should be used to break down the expanse of large parking areas*

3.1.2. Residential Areas

The development of a visually appealing city is dependent upon variety and diversity within the residential fabric. The diversity is important not only from a visual perspective but also to provide a range of housing types to sustain a vibrant city. The following site planning guidelines discuss housing type variety, building siting and setbacks and garage or parking placement, under three different residential densities.

3.1.2.1. Low Density

Low density residential development includes single-detached, semi-detached, duplex, triplex, townhouse and accessory apartment housing. It is also important to note that low density residential uses are not subject to the Site Plan process, however these measures can be incorporated during review of plans of subdivision within growth areas of the City. Also infill projects can also be subject to similar design expectations, at which point Site Plan approval may be required, based upon where the project may be located.

BUILDING SITING AND LOCATION

- *Within low density residential areas, diversity in lot widths and depths, and dwelling types is encouraged.*

- *To promote diversity of residential development, varied lot configurations should be introduced.*
- *Buildings should address the streetscape or adjacent public spaces.*
- *To preserve consistency in the appearance of the streetscape, dwellings should be sited with due regard for the front yard setbacks of adjacent dwellings.*
- *Main entrances shall face the street and be connected to the street or driveway by a walkway.*

SETBACKS

- *Variations in setback greater than 1.5m between adjoining lots are to be avoided, unless street or topographic conditions are exceptional.*
- *Development in existing neighbourhoods and/or existing streets should have regard for setbacks and built form of adjacent existing development.*
- *The side yard setback on at least one side of a dwelling should allow for ease of access, drainage, servicing requirements and variations in grading requirements.*

- *Where non-residential uses abut residential uses, a sizeable rear yard setback is required, along with ample visual and noise screening.*

VEHICULAR ACCESS AND GARAGES

- *The garage minimum front lot setback of 6.0m shall be maintained.*
- *At adjoining dwellings, driveways and garages should be a mix of paired and unpaired groupings wherever possible to create a more interesting streetscape.*
- *Driveways for dwellings adjacent open space, public walkways, intersections, transit stops and non-residential land uses should be located as far from the adjacent use as possible.*
- *Driveway slopes between garage and street are not to exceed municipal standards.*
- *Landscape and site servicing plans are to show driveway locations and must be approved by the City.*
- *In general, driveway widths shall be no wider than the garages they serve, with an allowance on both sides as per the Zoning By-Laws.*
- *The grouping of driveways in pairs with landscaping strips as dividers is encouraged where possible, to reduce the frequency of driveway cuts at the curb.*

TOP: *Driveway widths shall be no wider than the garages they serve*
BOTTOM: *Landscaped buffers between paired driveways can help enhance the streetscape*

- *Notwithstanding the above point, a variety of paired driveways and unpaired driveways is encouraged.*
- *For very narrow lots, paired driveways without landscape dividing strips may be considered.*
- *Garages should not become the dominant feature of the main façade. The various garage types to be considered include:*
    - *Front facing garage*
    - *2, 3 & 4 car tandem garage*
    - *Recessed garage located toward the rear of the house*
    - *Rear attached garage*
    - *Rear detached garage*
    - *Perpendicular attached garage, located in front of the main wall of the house (must be sited in pairs with garage doors facing each other)*
    - *Side entry garage incorporated into the main house volume.*
    - *Split garages*
    - *Porte-cochere garage*
    - *Other innovative configurations which diminish the garage's visual impact upon the streetscape*
- *The garage wall facing the street shall, in all cases, be consistent with the front façade of the habitable part of the dwelling unit.*
- *Attached front facing garages shall not project beyond the front face of the main wall or in the case of a porch, the front face of the porch.*
- *Garages that are located at the front of dwellings should be recessed from the main building face.*
- *Attached garages should be well integrated into the massing of the main building with good proportional detailing.*
- *Garages that are attached but not contained within the mass of the dwelling, shall have roof design that integrates visually with the design of the dwelling.*
- *Where garages are attached to the dwelling, a minimum width shall be maintained for the remaining portion of the dwelling that ensures livable room dimensions.*
- *The pairing of adjacent rear yard garages for neighbouring properties at their common lot line is encouraged.*

- *For detached garages located at rear yards, the materials and architectural detailing of the garage shall be compatible with those of the dwelling to ensure integration of building design on the lot.*
- *Under specific conditions and for particular locations such as corner lots, the design of detached rear yard garages with habitable space above them for supplementary units or work spaces is encouraged. Setbacks for such garages will be reviewed on a case-by-case basis.*

ABOVE: *Garage door widths should not exceed 50% of the width of the house frontage*

- *On wider lots, houses with attached garages that accommodate more than two cars shall have a maximum driveway width of 6.5 metres from the street edge until the driveway nears the garage door.*
- *Design of garage doors and openings shall coordinate with the quality and style of the principal elevation in which they are located. A high quality of detailing and construction is encouraged.*
- *The garage and garage door widths shall be in proportion to the house and the width of the garage should not exceed 50% of the width of the house frontage.*

3.1.2.2. Medium Density

Medium density residential development includes triplexes, four-plexes, townhouses, stacked townhouses, and low-rise apartment housing. They address the economic challenges of single-detached living and support the environmental imperatives of higher urban densities and transit-oriented development. The various types of townhomes include, but are not limited to:

- *Front-Loaded Townhomes – where residential units face the street and their garage access is from the street as well.*

- *Lane-Based Townhomes –where residential units face the street and their garage access is from the rear of the block.*
- *Stacked Townhomes – where units are placed such that there are two units stacked vertically in every unit module, with parking at the rear.*
- *Back-to-Back with Front Loaded Garages Townhomes – where units have a common rear wall, and units face either the street or the rear of the block.*
- *Back-to-Back Stacked Townhomes – a combination of back-to-back and stacked townhomes, with parking either below grade or with garages incorporated into the built form.*
- *Live-Work Townhomes – where units contain a mix of uses including retail/office and residential. The non-residential use occupies the at-grade level with residential uses above.*
- *Linear Townhomes – where residential units are located as the face of another use such as parking structure or the base of a building.*
- *Podium Townhomes – where residential units are at the base of a condominium building to provide a residential edge to the street.*
- *Maisonettes– where the residential units are designed to resemble a single large mansion-like structure, and serve as good transition buffers in areas with a high density of single family homes.*

BUILDING SITING AND LOCATION

- *Locate townhouse blocks in between higher and lower density residential uses to act as a massing transition. These townhouses should have a minimum height of either 3 or 4 storeys.*

3.1.2.3. High Density

High density residential development includes mid-rise and high-rise apartment buildings.

BUILDING SITING AND LOCATION

- *Where mid-rise or high rise buildings are proposed, the tallest buildings should be located furthest from any adjacent pre-existing low density neighbourhoods to mitigate shadow impacts. These buildings should be located towards other similar height buildings or adjacent to major roads and intersections.*

SETBACKS

- *Where mid-rise and high-rise buildings abut low-rise building sites, ensure a setback that mitigates shadow impact.*
- *In locations where mid-rise and high-rise building sites are bound by similar sites, ensure a minimum separation distance of 15 metres between buildings with an existing blank wall, and a 20 metre separation where an there is an existing window wall.*

VEHICULAR ACCESS AND PARKING/GARAGES

- *Consolidate vehicular entrances to serve multiple buildings in order to minimize the number of interruptions on the street, and to reduce the number of potential conflicts with pedestrians and cyclists.*
- *Access parking and service areas from lanes or side streets where possible.*
- *Limit the prominence of vehicular entrances and integrate them into the scale of the façade.*
- *Underground parking should be considered.*
- *Surface parking should be provided as well, but should be kept to a minimum.*
- *Rear yard parking is preferred. Front yard parking should be avoided.*
- *Where surface parking is provided, appropriate screening from public view should be achieved.*

ABOVE: *Parking lots should be located internally. Rear yard parking is highly encouraged*

3.1.3. Commercial Areas

Design objectives for Commercial Areas are primarily aimed at minimizing their negative impact on adjacent sensitive land uses and the public realm. The various components of these areas should be designed and configured to provide an attractive edge to the street and a positive visual presence within the community. Commercial areas shall comply with the above mentioned general guidelines (Section 3.1.1)

BUILDING SITING AND LOCATION

- *The site layout shall provide clear and distinct separation of vehicular and pedestrian traffic.*
- *Where internal common open spaces or plazas are provided, buildings should define the edges of these spaces.*
- *Attractively delineated outdoor eating areas at the front or side of the building adjacent to the public sidewalk are encouraged.*
- *As a safety and comfort measure, patios should be located away from stacking lanes and any place where vehicular idling is expected, and also from service, loading and garbage areas.*

ABOVE: *Site layout should allow for distinct seperated vehicular and pedestrian spaces*

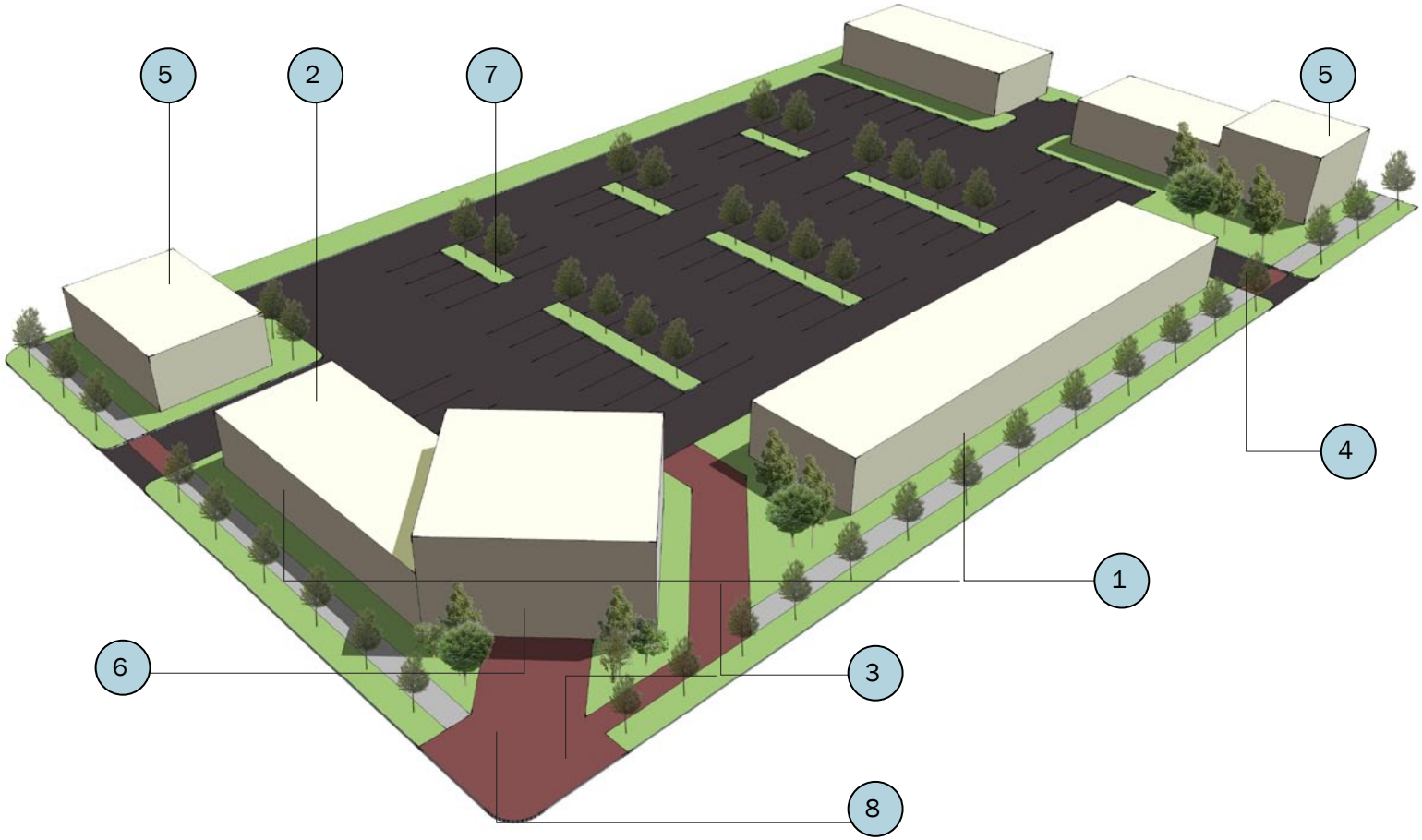
SETBACKS

- *Buildings should generally apply a consistent front yard setback. Variations in setbacks may be used to incorporate opportunities for public open space, mid-block pedestrian walkways and/or main entranceways.*
- *Where exterior amenity spaces, such as outdoor seating areas, are located between the building and the street, building setbacks can be increased to accommodate these areas.*

VEHICULAR ACCESS AND PARKING/GARAGES

- *Consideration should be made for parking structures, or parking above grade, as an alternative means of parking that allows for compact development.*
- *Where possible, the integration of podium built form with active uses, to line parking structures and create an active public façade at the streetscape, is encouraged.*
- *Parking should be provided adjacent to the secondary entrance door to the facility so that customers arriving by car do not have to cross driveways or stacking lanes to enter the facility.*

RIGHT ABOVE: *Where possible line parking structures with retail uses at grade to create an active public facade.*
RIGHT BELOW: *Vehicular access to parking structures should be located at the rear or side of buildings away from main building frontages.*



LEGEND

1. Buildings should be positioned to frame abutting streets

2. Loading areas should be set back from streetscape and should be screened using vegetation

3. A high quality of landscaping and pedestrian paving materials to minimize the impact of parking areas.

4. Entrances and exits for vehicles should be located as far from corner intersections.

5. Locate infill buildings at a consistent front yard setback.

6. Entrances should have pronounced, attractive and safe pedestrian access from neighbouring communities.

7. Increase tree canopy in parking areas and plant materials to help reduce runoff

8. Increased setbacks can accommodate outdoor seating where appropriate

1


7

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3.1.3.1. Mixed-Use Commercial

Mixed use areas permit and encourage the development of medium-density neighbourhoods alongside a wide array of compatible business uses. It includes live-work uses as well. The following guidelines support the development of functional, liveable and safe live-work environments.

BUILDING SITING AND LOCATION

- *A minimum of 70% of the main street frontage of a given site should be defined by building edge.*
- *It is anticipated that residential units will only be provided above the main floor; however, if properly designed to mitigate conflicts concerning liveability and privacy, ground-floor or partial ground-floor units should be considered.*

SETBACKS

- *A "zero setback" from the front property line should be considered to help create compact pedestrian scaled environments.*

VEHICULAR ACCESS AND PARKING/GARAGES

- *Parking access to units is to be provided in individual garages at the rears of units, underground, or on the street. Access to garages and underground parking is to be via lanes or side streets.*
- *On-street parking is a convenience and can improve the pedestrian realm at the street edge by providing a buffer to moving traffic. The amount of adjacent on-street parking should be considered to be maximized.*

ABOVE: *Parking in the rear of the site and with ample landscaped screening and comfortable pedestrian paths are key to urban development*

3.1.3.2. Big Box Commercial

BUILDING SITING AND LOCATION

- *A minimum of 65% of the main street frontage of a given site should be defined by building edge.*
- *Where large commercial stores or anchor stores are clubbed with smaller retail units on a single site, locate the smaller commercial units at the street edge, while maintaining visibility of the anchor store.*

3.1.3.3. Highway Commercial

BUILDING SITING AND LOCATION

1 *A minimum of 40% of the main street frontage of a given site should be defined by building edge.*

- *In general, mid-block sites are a preferred location for gas stations and drive-through facilities. Corner site locations should generally be avoided and should be reserved for mixed-land use sites.*
- *Lot sizes for gas stations and drive-through facilities should be appropriately sized to efficiently and safely serve all vehicular functions, such as, circulation, stacking, parking and driving access.*

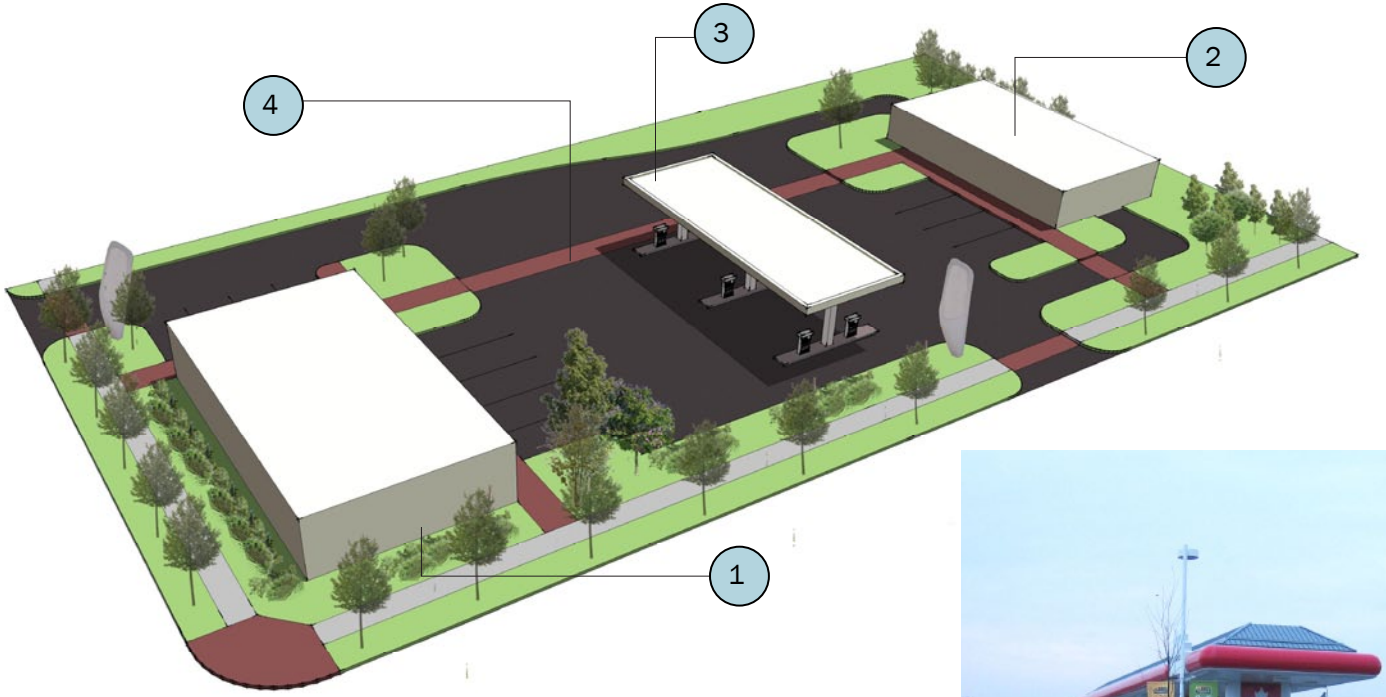
2 *Car wash elements shall be located to the rear or to the back portion of sideyards of service centres to mitigate the impact of traffic. Where they are adjacent to residential zones or other sensitive uses, their siting and design shall also minimize noise and lighting impacts.*

3 *Gas bar should be located away from corners*

- *Car wash exits must face away from abutting residential properties or be fully screened from neighbouring residential views.*
- *Locate the stacking and drive through lanes of drive-through facilities at the rear or side yards and not between the building and the street to minimize the impact on the streetscape and the adjacent properties, and to ensure a positive contribution to the pedestrian environment.*
- *The stacking lanes of drive-through facilities should be located away from residential properties.*

4 *Create comfortable pedestrian circulation within site*

- *Where a drive-through facility abuts a residential use, the intercom order station should be located as far away as possible from the residential property line. Order station speakers shall be shielded and directed away from residential areas.*



LEGEND

1. Buildings should be positioned to frame abutting streets

2. Carwash located towards the rear of the site

3. Gas bar located away from street corners

4. Internal pedestrian circulation should be clear and be constructed wth enhanced paving materials.

ABOVE: *Typical layout of a gas station in conjunction with a commercial site*
LEFT: *Commercial elements of principal buildings should be planned so that they can be directly accessed from the adjacent pedestrian sidewalk*
RIGHT: *Entrances and exits for vehicles clearly marked and located away from parking*

- *Order stations for drive-through facilities should be situated well into the stacking lanes where possible, which will allow more vehicular stacking prior to the order station and prevent traffic overflow and disruption to vehicular and pedestrian movement.*
- *Intercom order stations should be located away from the main site entrance and initial turning movements.*
- *Drive-through menu boards and other information displays shall preferably be located near the intercom order stations for user convenience.*
- *Siting of payment kiosks and convenience commercial store functions of gas stations is encouraged to allow their main glass facades or entrances to be visible from the street.*
- *Where possible, commercial elements of principal buildings should be planned so that they can be directly accessed from the adjacent pedestrian sidewalk or retail areas.*
- *Where possible, separate windows for payment and pick-up should be considered within the same stacking lane to improve traffic movement and reduce idling at gas stations and drive-through facilities.*

SETBACKS

- *Where gas station and drive-through facilities are a part of a larger commercial development, the setback of the primary facade shall align with the setbacks of other buildings/ structures of the development.*

VEHICULAR ACCESS AND PARKING/GARAGES

- *For mid-block gas stations and drive through facility locations, it is preferable to have one access to the service station rather than two access points.*
- *Stacking and drive-through lanes should be located at rear or sideyards and not between the building and the street.*
- *Stacking and drive-through lanes, where permitted, shall be screened by buildings, walls, vertical screens or fencing, landscaping, berms, or combinations of the above in order to minimize views from adjacent streetscapes.*
- *Stacking lanes and their circulation could include escape lanes at logical and functional locations for the drive-through uses.*
- *The entrance and exit of the drive-through shall be kept clear from parking areas, in order to avoid conflict between these two vehicular uses.*

3.1.4. Institutional Areas

The institutional area guidelines will include a series of general site planning guidelines. Where appropriate, some specific site planning guidance are provided for the different types of institutional developments, such as schools, places of worship and medical/health related facilities. The location and site planning of institutional facilities should reinforce the continuity of the open space network.

BUILDING SITING AND LOCATION

1 *Locate institutional buildings toward key intersections to emphasise their civic importance and shape the pedestrian realm at corners.*

- *Locate institutional buildings on prominent sites to reinforce community identity and terminate important views where possible.*

5 *Institutional buildings should frame streets and public open spaces. Orient buildings with elongated floor plates with the longest side towards the primary street frontage. Organize institutional buildings to frame the pedestrian realm and create an easily navigable walking environment.*

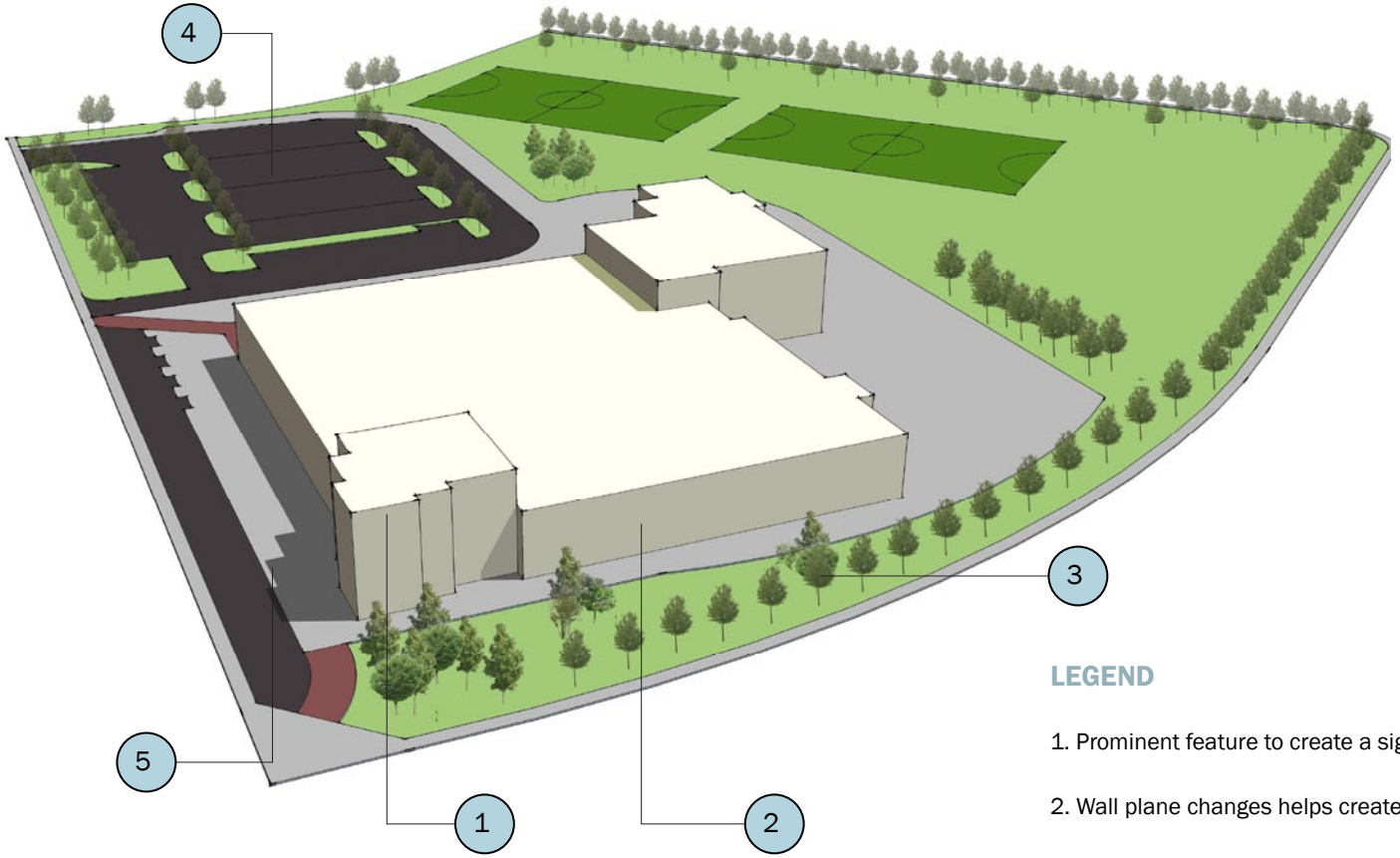
- *Where internal common open spaces or plazas are provided, buildings should define the edges of these spaces.*

SETBACKS

Refer to Section 3.1.1 General Guidelines

VEHICULAR ACCESS AND PARKING/GARAGES

- *Vehicular circulation at front yards should be limited to drop-off zones.*



ABOVE: *Diagram illustrating site planning guidelines for institutional sites*

LEGEND

1. Prominent feature to create a significant identity.

2. Wall plane changes helps create visual interest.

3. The location of the building should reinforce the streetscapes of the adjoining streets.

4. Parking at the rear or to the side of the principal building

5. Circulation in front yards should be limited to drop-off zones, and clear sight lines should be preserved to the street.

3.1.5. Employment Lands

The employment area guidelines include a series of general site planning guidelines. Where appropriate, some specific site planning guidance is provided for the different types of employment areas, such as stand-alone office buildings and light/heavy industrial operations.

The City of Welland's hierarchy of Employment Areas is comprised of three distinct land use designations. The following guidelines pertain to all three.

BUILDING SITING AND LOCATION

1 *Buildings shall be sited, designed and organized in such a manner that over a large span, all new development appears and functions as an integrated extension of all other adjacent employment development.*

2 *Locate office uses to face the most important streets, while the industrial uses of the same building can be located at the rear.*

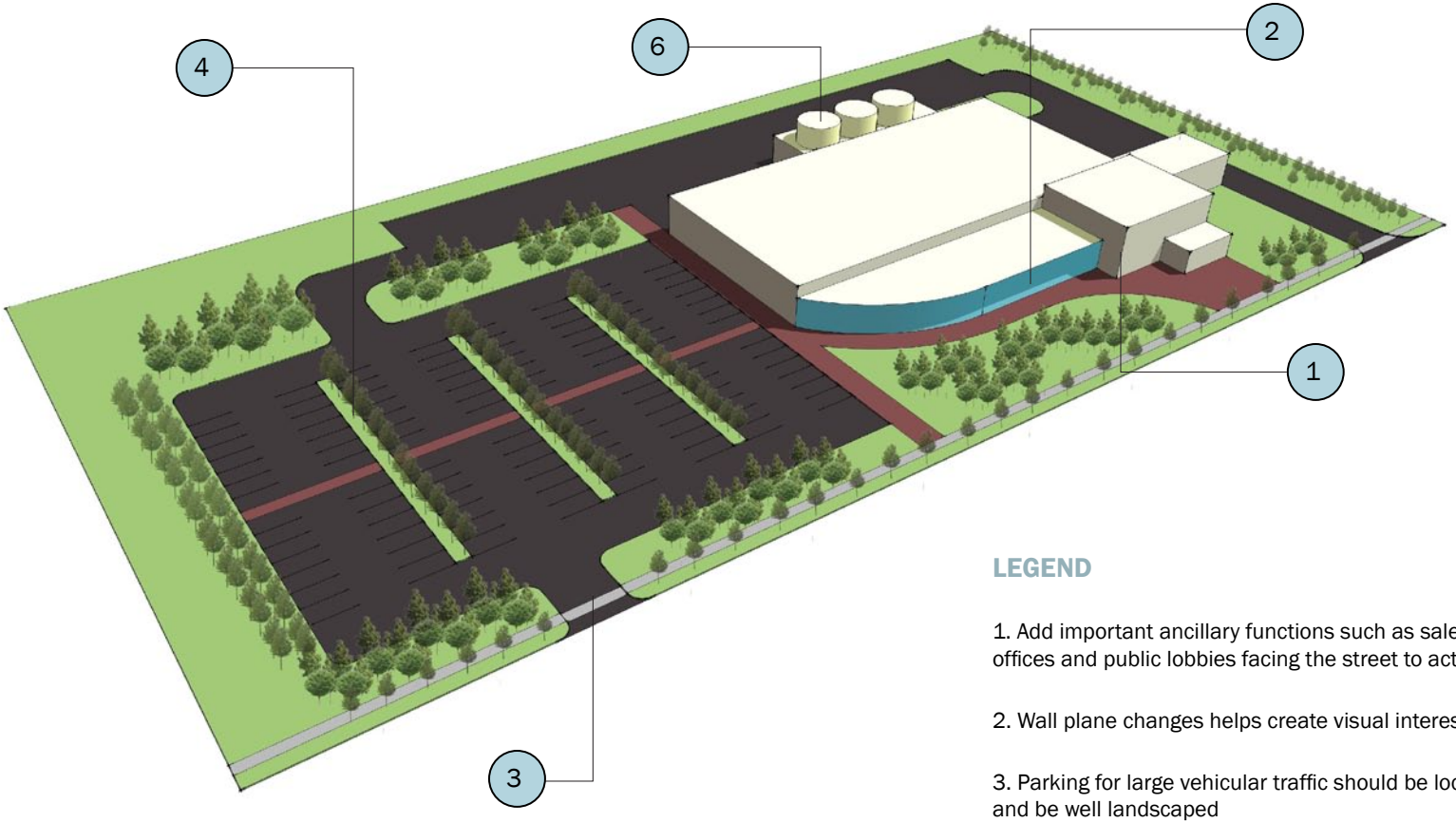
- *Locate any associated show rooms, presentation and sales pavilions, and retail components to face streets, to add interest and vitality to the streetscape.*
- *Locate amenity or commercial uses, such as kitchens, cafeterias, or sandwich shops, at grade, facing public space, preferably public streets or natural features.*

6 *Outdoor storage and tanks should be located to rear of site*

- *Areas such as gateways, landmark locations, highways, cross roads, and nodes of land use intensity, are opportunities for special treatments including enhanced and contextually unique urban design, architecture and landscape.*
- *Special opportunities exist at gateways to create a sense of arrival or entry and reinforce the image of the employment lands. Because of their prominent locations, these sites are recognizable landmarks and community-orienting focal points.*

1 *Provide identifiable architectural features for buildings at gateways or landmarks, such as towers, enhanced elevation treatment, unique massing of roof lines, a multi-storey presence, or other prominent architectural forms.*

- *Design buildings to support the overall image of the employment areas at gateway or landmark sites. For example, taller office built form addressing highway interchanges helps identify an area as employment lands.*
- *Design sites to create year-round interest and an attractive night time appearance.*



LEGEND

1. Add important ancillary functions such as sales centres or display areas or offices and public lobbies facing the street to activate the streetscape.

2. Wall plane changes helps create visual interest.

3. Parking for large vehicular traffic should be located to the rear or side of lot and be well landscaped

4. Consider incorporating sustainable design features such as storm water management ponds.

5. Provide identifiable architectural features, potentially through building massing and location, to help create landmakrs out of employment site buildings.

6. Loading and outdoor storage to be located in the rear, and screened from street views

- *Relate development on all adjacent corners or sites, as appropriate, through coordinating setbacks, massing, heights and landscaping.*
- *Encourage buildings with compatible architectural styles, elements and details.*
- *Provide public identity elements at key locations, such as in close proximity to entry and exit ramps of highways, as they help create a gateway into employment lands.*
- *Consider incorporating sustainable features such as storm water management ponds, and locate them at the front setback along the public street to activate the streetscape in a unique manner.*

SETBACKS

- *Setbacks of industrial employment lands from adjacent residential properties should be considerable and shall be appropriately screened through the use of landscaping.*

VEHICULAR ACCESS AND PARKING/GARAGES

- *Ensure that service areas have adequate space for maneuvering and allow for efficient operation. Vehicle movements in and around service areas should not conflict with adjacent parking areas.*
- *As heavy duty vehicular movement is expected for industrial employment lands, appropriate landscape buffers between parking areas and adjacent uses is important.*
- *Encourage visitor parking that is easily accessible to the main entrance.*

3.1.6. Downtown

The downtown area guidelines will build upon the existing Official Plan downtown guidelines, and the on-going CIP work. This Section of the guidelines will focus on site planning/access guidelines for mixed use development within the downtown.

3.1.7. The Canal and Recreational Waterway

The Canal and Recreational Waterway site planning guidelines will focus on some of unique site planning and access elements that should be considered when contemplating development in and around the Recreational Waterway.

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View of courthouse from east Main Street

4.0 | BUILT FORM AND LANDSCAPING GUIDELINES

ABOVE: *Buildings that are taller than 2 storeys should consist of a base of 2-3 storeys, and the additional floors should be set back from the front face*
BELOW: *Smooth transitions to neighbouring built form through use of varying height.*

4.1. MASSING AND BUILT FORM

Similar to the site planning guidelines, the built form and massing guidelines will include a set of general guidelines, with some additional details for each of the different land use types.

4.1.1. General Guidelines

- *The overall streetscape composition along any given street within a neighbourhood should display massing continuity while achieving adequate variety.*
- *Buildings greater than 3 storeys shall address the pedestrian scale through the use of a 2 to 3 storey base built form or podium. This can be achieved through various techniques such as stepping back the upper storeys, change in materials, the use of projections such as awnings, or the use of cornices to articulate or architecturally enrich the base built form.*
- *Building massing should be scaled to create appropriate and graduated transitions to neighbouring built form and open spaces. Abrupt changes in scale are to be avoided. This can be achieved through the configuration of new development that creates stepped built form to achieve smooth transitions, or through the use of varying building heights of different built form within a single development parcel.*

- *Development at major intersections should be developed to reinforce the prominence of these locations through appropriate massing. This can include increased height, recessed planes, greater building articulation and other methods.*
- *Buildings above 3 storeys should be stepped back to express a base, middle and top, and also to control the overall massing of the building and minimize shadow impacts on adjacent properties. The step back could vary from site to site based on the existing adjacent conditions.*
- *Buildings taller than 3 storeys are subject to an angular plane setback of 45 degrees.*

ABOVE: *Use of stepped down built form to transition from high density to low density*

4.1.2. Residential Areas

- *Compatibility in height and massing of adjacent dwelling units is required. Abrupt variations in height should be avoided.*
- *Townhome blocks may vary in size from 3 to 8 units depending on the site. Where possible, block size variations should be provided along any given streetscape.*
- *Variation in height within a townhome block is encouraged. For example, if 2-storey high end units are proposed, the interior dwelling units could be 3 storeys high to create an attractive built form.*
- *Where mid-rise and high-rise residential built form is proposed, a 2 storey podium built form is encouraged which can accommodate townhome residential uses or commercial uses, where mixed-use sites are envisioned. Built form massing above 2 floors should be stepped back from the primary façade by a minimum of 3 metres. Considerations should be made to accommodate residential or amenity use terraces, in which case a deeper step back is recommended.*
- *The massing of townhome blocks should be compatible with adjacent neighbourhood buildings.*

4.1.3. Commercial Areas

- *A minimum of 75% of a building's frontage should be built to the applicable set-back line. The remaining 25% of the building frontage should consider a setback of a maximum of 5 metres to accommodate entrances, bicycle parking, or outdoor marketing areas such as cafe seating, display areas, etc.*
- *Building massing and detailing at retail unit entrances should be designed to emphasize the entry. This can include but is not limited to increased height, use of architectural projections, change in the roofline, or material changes to increase transparency*
- *Building massing at corner units shall be highlighted through height and scale, and the use of glazing as a material to activate the public realm.*
- *Commercial ground floors should be scaled for appropriate retail transparency and configured for flexibility. Heights should be a minimum of 4.5m floor-to-floor.*
- *Where mixed-use commercial is proposed, and the built form is taller than 3 storeys, a base built form of 1 to 2 storeys should be designed. All upper floors should be setback by a minimum of 2 metres from the principal façade.*

ABOVE: *Building massing and detailing at retail unit entrances should be designed to emphasize the entry*

ABOVE: *Commercial ground floors should be scaled for appropriate retail transparency and configured for flexibility*

4.1.4. Institutional Areas

- *Institutional sites serve as landmarks for a community and have a larger scale than low density residential or commercial uses. Maintaining massing continuity with neighbouring uses includes trying to visually break down large built form massing into a more human scale.*

4.1.5. Employment Lands

- *On all lands adjacent to arterial and collector roads, the minimum built frontage shall be 50% of the frontage of the property.*
- *On all lands adjacent to local roads, the minimum built frontage shall be 40% of the frontage of the property.*
- *Employment lands tend to inhabit large sites. Maintaining a human scale to potential large built form massing becomes crucial and can be achieved through landscaping and architectural articulation.*

4.1.6. Downtown

- *Built form in downtown Welland should promote compact urban forms. This entails the design of smaller scaled built form massing, fewer mid-block connections, and creating visually appealing urban walls along major streetscapes.*
- *Massing taller than 2 storeys must mitigate shadow impact on neighbouring built form, and should conduct sun-shadow studies.*
- *Alterations and additions to existing buildings should be consistent with the form of the existing built form and with the massing and height of adjacent buildings.*
- *Where infill buildings are being introduced, care must be taken not to create abrupt height changes between properties.*

ABOVE: *Compact built form with fewer mid-block connections and visually appealing urban walls should be the focus for the City's downtown development*

4.1.7. The Canal and Recreational Waterway

- *Buildings that front the canal and recreational waterway should be no taller than 6 to 8 storeys in height. However special conditions, such as gateway locations, can be considered for higher limits on a site by site basis. Also pre-existing approvals for higher buildings will be respected.*
- *If taller buildings are proposed, a transition in height using the step-back built form should be incorporated to ensure a human scale built environment is retained along the edge closest to the waterway.*
- *A greater number of mid-block paths should be considered to increase the permeability from the public street to the canal.*
- *Built form massing should front such mid-block access paths to help delineate pedestrian access.*

4.2. BUILDING DESIGN

Similar to the previous Sections, the building design guidelines will include a set of general guidelines, with some additional details for each of the different land use types, and will include a discussion on building articulation, appropriate building materials, rooftop screening, signage and lighting.

4.2.1. General Guidelines

BUILDING PROJECTIONS AND ENTRANCES

- *Locate the main entrance to face or address the street.*
- *Main entrances shall be enhanced through a high quality of materials and detailing to emphasize their importance in the development of the principal facade.*
- *Entrances are special building design features. They should be prominent, highly visible, and of an appropriate scale to their function and frequency of use. Both drivers and pedestrians should easily recognize an entrance from the street. Entrances are an ideal location to incorporate and integrate public/private uses with the building.*
- *The use of projecting elements to provide diversity and visual interest in the development of building facades should be promoted. This includes, but is not limited to canopies, cornices, awnings and balconies where residential uses on upper floors are proposed, etc.*

ABOVE: *Projecting elements provide visual diversity for both commercial uses (above) and residential uses (below)*

ABOVE: *Covered walkways for pedestrian convenience are encouraged*
BELOW: *Large canopies help delineate building entrances*

- *Rear and side wall articulation is required for the majority of lots that are exposed to public view. Where this is not feasible, additional roof form articulation is required.*
- *Canopies or awnings at entrances with generous dimensions that are appropriately proportioned to the size of the building mass are encouraged.*
- *Colonnades, covered walkways and porticoes act as weather protection devices for pedestrian convenience. Lighting and landscaping elements should be incorporated into their design to promote their use.*

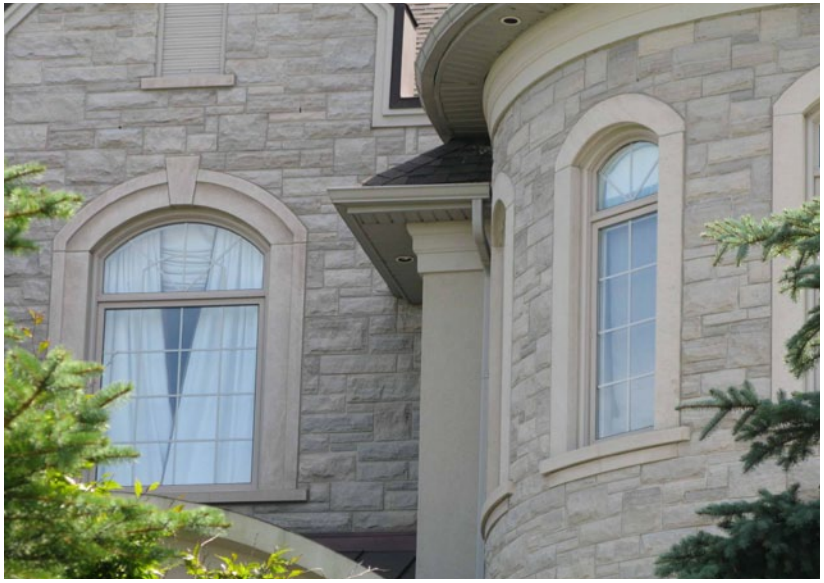
ARCHITECTURAL DETAILING AND ARTICULATION

- *Architectural detailing can visually enhance the character of a building. Hence, exposed elevations of all buildings shall have a high quality of architectural detailing and materials irrespective of their location within the City.*
- *The detailing of lintels, sills, window surrounds and mullions is key for developing an architectural language for dwellings that promotes an image of quality development for the community.*
- *Vertical building elements are highly encouraged and are to be used appropriately as per use and location of the built form.*

- *Façade development shall be designed to provide appropriate proportions and design detailing at the corners of main facades.*
- *The quality of architectural trim materials and detailing should be integrated with the quality of materials chosen for dwelling facades.*
- *Façade development should be designed to provide appropriate proportions and design detailing at the corners of main facades. A variety of methods are acceptable, including quoins, return of front façade or plinth material for a portion of the side façade, change in plane in conjunction with plan configuration, continuous brick soldier course or precast masonry band details, and frieze detailing.*
- *Facades of buildings should incorporate human-scale detailing and proportions through the use of reveals, cornices, expression of structural or architectural bays, recessed windows or doors, material or material module changes, colour and/or texture differences, or strongly expressed mullions.*

WINDOWS

- *Window type, material, shape and proportions should complement the architectural style of the built form.*
- *Windows should be located to maximize daylighting.*
- *The use of blackened or false windows should be avoided.*
- *Unique window shapes are encouraged as accents. They shall be proportional in relation to the overall design of the elevation, and appropriate to the architectural style of the dwelling.*
- *Generously proportioned windows appropriate to the larger scale of dwellings are important and should be considered.*
- *Double height windows are encouraged in conjunction with design of high interior spaces.*
- *Window surround detailing, such as brick detailing or stone surrounds, are encouraged.*



ABOVE: *Unique window shapes are encouraged as are diverse window surround details.*

ROOFS

- *Roof forms shall be compatible with the architectural style and language used, and shall contribute to consistency of built form on all sides.*
- *The use of well articulated roof forms is encouraged and may include steeper slopes or changes in roof plane for architectural features including but not limited to prominent corner features, and towers or turrets.*

ABOVE: *Interesting articulation through varied roof form should be considered*

EXTERIOR WALL CLADDING MATERIALS AND COLOURS

- *Exterior wall cladding materials should be selected based on compatibility with the architectural style of the built form.*
- *Appropriate wall cladding materials include, but are not limited to, brick, stone, stucco and glazing.*
- *Where stucco is used, it should be combined with other materials such as brick and stone. The use of stucco should be limited as an accent material.*
- *The appearance of materials should be true to their nature and should not mimic other materials.*
- *High quality, low maintenance materials shall be provided on all elevations visible to public views.*

ABOVE: *High quality, low maintenance materials should be selected*

- *Materials and colour palettes shall be developed to create streetscapes of the highest quality. The colour and material schedules developed shall use durable materials with a high level of finish.*
- *Diversity in exterior building materials and colour helps create a vibrant streetscape for long continuous facades.*
- *The range of diverse materials employed should be limited in order to promote a sense of visual continuity for an area. This helps provide both a human scale and visual interest.*
- *All new buildings and developments should utilize building materials chosen for their functional and aesthetic qualities, as well as their energy and maintenance efficiency.*
- *Changes in materials should occur according to good design practice, i.e., at changes in plane, in line with lintels and sills, etc.*
- *For high density residential uses, material changes that articulate the transition between the base, middle and top of the building are appropriate.*
- *Colour schemes and materials should be carefully coordinated for visual harmony and for consistency with the architectural style of the building as well as the community or neighbourhood at large.*

ABOVE: *Careful coordination of varied materials and colours is essential for visual harmony*

ABOVE: *Material changes should occur as per good design practice such as plane changes*

4.2.2. Residential Areas

BUILDING PROJECTIONS AND ENTRANCES

- *Large covered porches and/or verandahs with generous dimensions that are appropriately proportioned to the size of the dwelling are encouraged. This also helps identify the building entrance.*
- *Porch depths should be a minimum of 1.5 m.*
- *Where porches or porticoes exist, their design and quality should be integrated with the entrance and facade design.*
- *Wrap around porches are encouraged for corner lot residential units.*

ABOVE: *Large wrap around porches are encouraged*

ARCHITECTURAL DETAILING AND ARTICULATION

- *For low and medium density residential built form, vertical building elements are highly encouraged and include, but are not limited to, chimneys, double height bay windows, plane changes and quoining.*

WINDOWS

- *The style of windows employed shall be consistent on all facades of the dwelling. They can include, but are not limited to, bay windows, boxed-out windows, dormer windows, casement windows, and single hung windows with shutters.*
- *Unique window shapes are encouraged as accents. They shall be proportional in relation to the overall design of the elevation, and appropriate to the architectural style of the dwelling.*
- *Upper and lower floor windows should be aligned to enhance the façade.*
- *Larger ground floor windows are encouraged.*
- *Basement windows should be avoided on the principal façade of dwellings. Where it cannot be avoided, they should match the main floor windows in terms of style and detailing.*

- *The use of bay windows or boxed out windows on wall faces helps create a unique executive quality for the dwelling unit, and its use on primary streetscape facing facades is encouraged.*
- *Where ground floor bay windows or boxed out windows are used, material and detail quality of their foundations shall coordinate with the dwelling's main facade.*
- *Generously proportioned windows appropriate to the larger scale of dwellings are important and should be considered.*
- *Double height windows are encouraged in conjunction with design of high interior spaces.*
- *Window surround detailing such as brick detailing or stone surrounds, are highly encouraged for large residential units.*
- *On interior side yards, windows should be located to avoid being directly opposite windows on the adjacent dwelling to ensure privacy.*

ROOFS

- *A variety of traditional sloped roof forms are encouraged and include, but not limited to, hipped roofs, front gabled, side gable, cross gabled, and mansard roofs.*
- *Roof forms shall be compatible with the architectural style and language used, and shall contribute to consistency of built form on all sides.*

ABOVE: *Upper and lower floor windows should be aligned to enhance the façade. Window surround details are highly encouraged in larger residential units*

RIGHT: *While unique roof forms are encouraged, compatibility with the architectural style is important*

- *To create a variety on any given streetscape, variations to roof designs are highly encouraged through steeper pitches, lower roof slopes, deeper overhangs, and other such similar methods.*
- *The use of well articulated roof forms is encouraged and may include steeper slopes or changes in roof plane for architectural features including but not limited to prominent corner features, and towers or turrets.*
- *For low density residential units, flat main roofs are discouraged, unless it is a component of a mansard roof. Where a flat roof is used over bay windows or entrances, it is to be combined with high quality balcony, parapet and/ or cornice design. Flat roofs are permissible for medium and high density residential uses.*

RIGHT: *Architectural features such as towers and turrets may be incoporated to create visual diversity and interest*

EXTERIOR WALL CLADDING MATERIALS AND COLOURS

- *Exterior wall cladding materials should be selected based on compatibility with the architectural style of the residential unit.*
- *Appropriate wall cladding material include, but are not limited to, brick, stone, siding and stucco.*
- *Where siding and stucco is used, it should be combined with other materials such as brick and stone. The use of siding and stucco should be limited as an accent material.*
- *The appearance of materials should be true to their nature and should not mimic other materials.*

ABOVE: *Where stucco is used, it should be combined with other materials*

- *High quality, low maintenance materials shall be provided on all elevations visible to public views.*
- *Materials and colour palettes shall be developed to create streetscapes of the highest quality. The colour and material schedules developed shall use durable materials with a high level of finish.*
- *Diversity in exterior building materials and colour helps create a vibrant streetscape for long continuous facades.*
- *The range of diverse materials employed should be limited in order to promote a sense of visual continuity for an area. This helps provide both a human scale and visual interest.*
- *All new buildings and developments should utilize building materials chosen for their functional and aesthetic qualities, as well as their energy and maintenance efficiency.*
- *Changes in materials should occur according to good design practice, i.e., at changes in plane, in line with lintels and sills, etc.*
- *For high density residential uses, material changes that articulate the transition between the base, middle and top of the building are appropriate.*

SIGNAGE AND LIGHTING

- *Address signage should be placed on the front façade of the dwelling in a well-lit location.*
- *A coordinated approach to address signage within a neighbourhood is encouraged to foster community identity.*

4.2.3. Commercial Areas

BUILDING PROJECTIONS AND ENTRANCES

- *Main access for corner units should be located on the sides or at the corner of the building. This will assist in animating the street facing facades, and would allow for other uses at the corner, such as patios.*
- *Where medium and high density residential uses are integrated with commercial uses, entrances into these uses should be distinct and separate.*

ABOVE: *Adaptive re-use of buildings should be considered*

RIGHT: *Corner unit access should be located at the corner to animate the streetscape and delineate the entrance*

ARCHITECTURAL DETAILING AND ARTICULATION

- *Façade development shall be designed to provide appropriate proportions and design detailing at the corners of main facades. A variety of methods are acceptable, including changes in plane in conjunction with plan configuration, material changes, increased detailing and others.*
- *Where large continuous wall areas within facades are unavoidable, articulation of the facades through wall plane changes and material changes should be considered.*
- *Buildings with long frontages should be divided into visually smaller units through the use of façade articulation and landscaping.*
- *Buildings should avoid blank façades. Side façades should incorporate some level of articulation through detailed brick work or changes in material or plane.*
- *In cases where a mix of uses is proposed, the transition where the first floor commercial base meets the second floor uses above shall be defined through architectural detailing such as cornices, signage bands, changes in materials or colours, awnings, or canopies.*

- *Where existing buildings are being repurposed or renovated, their building fabric and materials should be respected and restored, and development should respond sensitively to such fabric.*
- *Adaptive re-use of buildings should be promoted.*
- *Contemporary additions to traditional building types are encouraged provided it is complementary in design to the original architecture.*
- *The design of automotive service centres and their prototype buildings are determined by specific retail and service requirements. However, designers are encouraged to review the functional layouts of principal buildings to improve visual and physical connectivity to adjacent streets, and where possible, entrances from both streets and gas bars should be incorporated.*

WINDOWS

- *The proportions of window display areas for retail units should be generously scaled.*
- *In the case of mixed-use commercial development, the scale of windows should reflect the building use. That is, large glazing proportions should be employed for ground floor retail, and a more residential scale of windows should be used for residential uses above.*

ROOFS

- *Where sloped roofs are employed a single material and colour is recommended for visual continuity.*
- *In many prototype buildings, flat roofs are the standard roof types. Consideration of alternative roof forms is encouraged to provide visual interest and/or innovative roof design, where it may be appropriate to respond to the local context, such as in Heritage areas or in major residential areas.*
- *Canopy heights, at gas stations, shall relate to adjoining buildings both within and outside the service centre site.*
- *Canopies over gas pump areas are often characterized by relatively long spans. The use of innovative structural support systems is encouraged to provide visual interest and architectural character while mitigating the canopy's large mass.*

EXTERIOR WALL CLADDING MATERIALS AND COLOURS

- *Where brick or stone are used, the use of lintels, sills, copings, cornices, and other such masonry elements are highly encouraged.*
- *Façades facing the street or public areas should have large, well-proportioned areas of glazing to enhance the streetscape and promote a sense of visual interaction between the building and the public realm. The ground floor should incorporate a minimum of 70% glazing.*
- *Large walls of glass should consider incorporating a variety of mullion patterns, bay dimensions, glass types or detailing to provide human scale. Glass is encouraged to be recessed behind the plane of the primary façade surface and prominent mullion systems.*
- *Where the demolition of existing buildings is required, the recycling of useful construction materials, such as bricks, stone and the use of crushed concrete or brick as secondary grade hard-core within the new development should be considered. Consideration should also be given to the use of recycled building materials from other sources.*

ABOVE: *Windows should reflect the building use, ie, for mixed-use development, large windows for commercial uses, and smaller windows for residential units.*

ABOVE: *Visual interest through large-spanned canopies*

SIGNAGE AND LIGHTING

- *Integrate retail commercial signage with the architecture to enhance the appearance of the ground floor and contribute to the overall character of the streetscape.*
- *A high level of clarity, visibility and visual interest should be attained with minimal visual clutter and impact on adjacent uses.*
- *A consistent design for building identification signage should be applied to the whole development to ensure a cohesive image.*
- *Pylon signage should be oriented to address the street frontage and primary access driveways, and shall be compatible in scale, material and colour to the associated site.*
- *Pylon signs shall be integrated into a landscaped setting.*
- *The integration of project identification signage within an architectural vertical building feature should be considered in lieu of pylon signage.*
- *Directional signage at entrance and exit locations of drive-throughs shall be clearly placed to facilitate safe site circulation.*
- *Pick-up windows for drive-through facilities shall be clearly marked through signage, architectural elements and/or lighting.*
- *Face lit signage should be encouraged and rear lit signage discouraged.*

ABOVE: *Pylon signage shall be located within a landscaped area.*

4.2.4. Institutional Areas

Institutional blocks, including schools and places of worship, are valuable community amenities and have the potential to act as landmarks if they are more than 2 storeys high.

BUILDING PROJECTIONS AND ENTRANCES

- *Main entrances should be clearly visible from the street and should act as a focal point.*
- *Generously dimensioned canopies or overhangs at entrances typically aid in locating entrances to institutional built forms.*

ARCHITECTURAL DETAILING AND ARTICULATION

- *Prominent features, such as church spires, help reinforce the place of worship as a landmark and are encouraged.*
- *Prominent features that help reinforce the landmark nature of the schools shall be employed. Elements such as vertical projections, bay windows, canopies and roof forms should be used to create a significant identity for these structures.*
- *Contemporary additions to traditional building types are encouraged provided it is complementary in design to the original architecture.*

ABOVE: *Prominent features to reinforce the building entrance is highly encouraged since institutional buildings can serve as landmarks in a community.*

- *The style adopted and materials used shall portray a character appropriate to its religious organization while maintaining an executive character compatible with the surrounding residential community.*
- *Any perimeter fencing adopted shall be consistent with the proposed adjacent built form and the applicable Citiy's by-laws*

SIGNAGE AND LIGHTING

- *Any lighting shall be directed away from surrounding residential lots.*
- *Signage adopted shall be integrated into the building architecture and accent lighting for any isolated signage structures is encouraged.*

4.2.5. Employment Lands

BUILDING PROJECTIONS AND ENTRANCES

- *Provide distinct and identifiable entrances to individual units within multi-unit buildings.*

ARCHITECTURAL DETAILING AND ARTICULATION

- *If there are multiple buildings on one site, they shall have a coordinated architectural treatment to develop overall site harmony. Provide differentiating characteristics, particularly at entrances and in the landscaping. Note that address signage can be part of this differentiation.*
- *Large blank wall expanses are seen as typical for employment land built forms. Wall articulation is of high importance for these built forms through wall plane changes and roof form articulation.*
- *Avoid homogeneity of building appearance between two different employment land sites.*
- *Portions of buildings abutting street corners should be a minimum of 6 metres in height.*
- *For accessory buildings, provide compatible and complimentary design, colour and materials to the main building.*

ABOVE: *For employment sites where multiple buildings will be proposed, identifiable entrances for the individual buildings becomes crucial*

ABOVE: *The use of varied, yet cohesive, materials and colours provides visual interest*

WINDOWS

- *Incorporate a high proportion of windows in the elevations of office components to afford clear, unobstructed sight lines from the office area to adjacent roads, outdoor pedestrian amenity areas and parking areas.*
- *Where public uses of industrial buildings are facing the street, ample glazing should be employed to articulate the façade and create visual interest.*

ROOFS

- *Roof form variations should be considered for large expansive industrial buildings. This will help create visual interest along the streetscapes and highways which they are adjacent to.*

EXTERIOR WALL CLADDING MATERIALS AND COLOURS

- *Creating visual interest is key to industrial buildings in employment lands. The use of varied yet cohesive materials is highly encouraged.*
- *Changes in materials at apt design locations should be considered to create visual interest.*

4.2.6. Downtown

BUILDING PROJECTIONS AND ENTRANCES

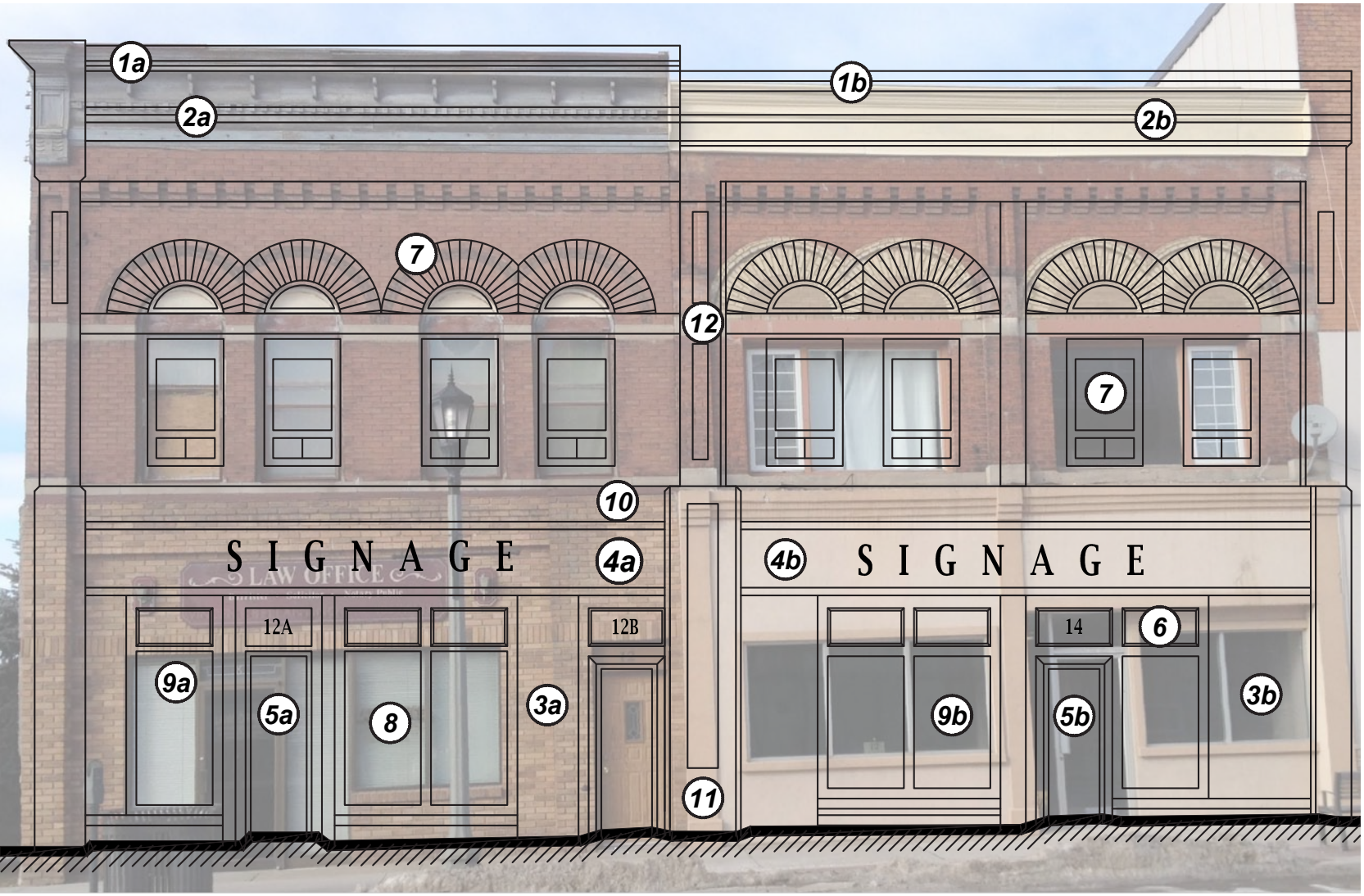
- *Where additions of projecting elements are introduced to existing downtown buildings, its design should be consistent with the architectural style of the built form and should complement the proportions of the building and be in harmony with the exterior elevation.*

ARCHITECTURAL DETAILING AND ARTICULATION

- *Where new construction is contemplated, façade design shall demonstrate architectural detailing and articulation that are consistent with the design characteristics of neighbouring existing downtown buildings.*
- *Where a contemporary architectural style is intended on new construction, replication of historic facades and details shall be avoided. It should, instead, complement existing adjacent traditional buildings in downtown Welland.*

WINDOWS

- *When an existing window is removed and replaced, the new windows should match the original proportions*
- *Where a more contemporary architectural language is being proposed, it must be ensured that a mix of styles are compatible and allow for flexibility.*



1a REPAIR/RESTORE ROOF COPING.

1b WHERE A CONTEMPORARY VOCABULARY OF ARCHITECTURE IS PROPOSED, REPEAT THE SCALE AND PROPORTIONS OF ADJACENT STRUCTURES IN DESIGN OF ROOF COPING.

2a REPAIR/RESTORE CORNICE.

2b WHERE A CONTEMPORARY VOCABULARY OF ARCHITECTURE IS PROPOSED, REPEAT THE SCALE AND PROPORTIONS OF ADJACENT STRUCTURES IN DESIGN OF CORNICES AND PEDIMENTS.

3a WHERE TRADITIONAL ARCHITECTURE IS PREFERRED, RESTORE USE OF ORIGINAL MATERIALS. FOR EXAMPLE, REPOINT BRICK FACADE OR REPAIR STONE WORK.

3b WHERE A CONTEMPORARY VOCABULARY OF ARCHITECTURE IS PROPOSED, A HIGH QUALITY OF MATERIALS SHALL BE USED WITH DETAILING THAT INTEGRATES MATERIALS AND THE OVERALL FACADE.

4a REGULATE SIGNAGE SCALE AND LOCATION. PREFERENCE FOR INDIVIDUAL LETTER SIGNAGE OVER BOX SIGNAGE.

4b COORDINATE SIGNAGE DESIGN WITH THE OVERALL DESIGN OF THE FACADE.

5a REPAIR ENTRANCES BY REFURBISHING DOORS AND CONSIDER RECESSED ENTRANCES.

5b CONTEMPORARY DESIGN OF ENTRANCES SHOULD REFLECT A HIGH QUALITY OF DETAILING AND MATERIALS.

6 REGULATE HOUSE NUMBER SIGNAGE ABOVE THE DOOR - ITS SCALE AND LOCATION.

7 CREATE INSET PANELS FOR DETAILING OF EXISTING WINDOWS TO BE BLANKED OUT. RETAIN THE RHYTHM OF OPENINGS.

8 CONSIDER HIGHER PERCENTAGE OF GLAZING ON GROUND FLOOR FACADE TO EMPHASIZE RETAIL USE. DESIGN CONSISTENCY AND COHERENCE REQUIRED FOR THESE NEW DISPLAY WINDOWS.

9a LARGE WINDOWS SHOULD BE SUBDIVIDED WITH HORIZONTAL BANDS AND MULLIONS TO MATCH SCALE OF OTHER ARCHITECTURAL FEATURES.

9b WHERE A CONTEMPORARY VOCABULARY OF ARCHITECTURE IS PROPOSED, RESPOND TO THE SCALE AND PROPORTION OF THE STREETSCAPE CONTEXT IN DETAILING GLAZING AND STOREFRONTS.

10 HIGHLIGHT/EMPHASIZE HORIZONTAL BAND BETWEEN COMMERCIAL USE AT GRADE AND RESIDENTIAL USE ABOVE THROUGH MATERIAL, COLOUR OR ARCHITECTURAL DETAILING.

11 EMPHASIZE CENTRAL PIER TO CREATE VERTICAL DISTINCTION BETWEEN TWO UNITS.

12 RETAIN/REPAIR EXISTING INSET PANELS AND CONSIDER ITS USE ON DIFFERENT PORTIONS OF THE FACADE.

- *While large windows and doors may not be found in many downtown buildings, the use of larger openings at grade level for storefronts is encouraged to animate the streetscape.*
- *Large glazing can be subdivided with bands to create a human scale to the opening.*

EXTERIOR WALL CLADDING MATERIALS AND COLOURS

- *Renovations, alterations or additions to an existing building's exterior wall cladding should attempt to repair the façade to its original condition or its upgradation to a contemporary style.*
- *The design of such alterations should address the proportion and scale of façade elements.*
- *Where new facades are constructed, the wall area should be designed to reflect similar façade divisions of facades that are adjacent or near to the new construction.*

SIGNAGE AND LIGHTING

- *Enhance the night image by highlighting prominent architectural and/or landscape qualities, and corporate identity features where possible.*
- *Provide wayfinding identification that directs trucking, employees, visitors, cyclists, and pedestrians, as appropriate, to their destinations.*

ABOVE: *Large glazing at grade level should address the human scale through subdivision with bands*

4.3. SERVICE AREAS

4.3.1. General Guidelines

- *Utility and service facilities should be integrated into the overall design, either as features or as discreet components. Clearly identify utility locations and characteristics on site plan and elevation drawings.*
- *Consolidate utility metering into internal rooms, or incorporate them as screened elements into the building design or features of the façade, in a manner where they do not have negative visual impact on the public realm.*
- *Gas and utility pipes shall be built within wall assemblies and shall not be visible on any building face exposed to public views. Gas meters should not be visible from any public road and shall not be located adjacent to internal pedestrian walkways unless built into wall niches and screened from view.*
- *All rooftop mechanical units and equipment including but not limited to HVAC units, stacks, vents, etc., shall be screened from all public views. Building parapets should be designed to be of sufficient height to provide adequate screening wherever possible. In all cases, screening material shall be integrated and compatible with the architectural design, and materials of the building.*
- *Integrate waste storage and recycling areas into the design of the building, preferably preventing them from being visible from the public street.*
- *Rooftop mechanical units should be incorporated into the massing of the building and be screened appropriately through the use of parapets or other screening materials.*

4.3.2. Residential Areas

- *Utility and service elements should be located discreetly on wall faces on the interior side yard.*
- *Where utility meters must be located on the principal façade, they should be screened using architectural or landscape elements, or integrated architecturally. They can also be placed in an unobtrusive location such as a wall jog to reduce their negative visual impact on the streetscape.*
- *Placement of utility meters on townhome blocks is limited. Hence, care should be taken that they are not visually prominent within the streetscape.*
- *Care should also be taken that air conditioning units not be visually prominent within the streetscape.*

4.3.3. Employment Lands

- *Ensure that service areas have adequate space for maneuvering and allow for efficient operation. Vehicle movements in and around service areas should not conflict with adjacent parking areas.*
- *Locate service areas, truck maneuvering areas, and outdoor storage areas away from adjacent residential properties, using the building as a primary buffer or screen.*

4.4. GENERAL LANDSCAPE GUIDELINES

Landscape architecture and associated design treatments play a very important role in perception and understanding of the city. Therefore as built form and urban design measures go to provide a better architectural interface, so too should landscape architecture be able to respond to a growing need of creating an aesthetically pleasing, and functional exterior to the physical environment. Each landscaped environment relates to the wider perception of what makes up the City of Welland, and therefore it is important that landscape architectural treatments help reinforce built form and site planning guidelines to create a more inviting outdoor condition. Landscape architectural guidelines are intended to provide general attenuation to the hard and softscape components of the site planning exercise, as well as measures of sustainability. The general guidelines for landscape will have regard for:

- *Have regard for contextual limitations and be environmentally sensitive.*
- *Create landscaped setbacks that increase "softscape" treatments throughout the City and reduce the impacts of non-permeable materials.*
- *Encourage the use of permeable paving for low traffic exterior spaces.*
- *Encourage the use of high-branching deciduous trees particularly in driveways, parking areas and building entry points in order to provide added shade in summer months and reduce the impacts of hardscape zones/urban heat island effect.*
- *Accent building and site entry points with colourful, ornamental plants, and architectural signage/features.*
- *Building faces and structures that do not impede visibility should be considered for greenwalls or climbing vegetation.*
- *Screen planting should be encouraged to reduce visibility of loading zones, mechanical areas, restricted areas and outdoor storage within or adjacent to site.*
- *Planting plans will ensure complementary organization of ground cover and shrubs should cover at least 50% of all unpaved exterior spaces in new development.*
- *Planting plans will include primarily salt tolerant and native species.*

4.4.1. Residential Areas

Residential areas are commonly much more difficult to prescribe landscape guidelines for, especially in areas of single detached dwellings. However through the Plan of Subdivision process landscape treatments should be specified to address strong streetscape features, particularly street trees, as well as landscape architectural gateway features and edge treatments. Areas of higher density development including condominiums will be subject to more specific landscape guidelines. In addition to the general guidelines (Section 4.4) the landscape guidelines for residential areas will include:

1. *Fencing or walls should be discouraged in areas which directly face the public realm, including streetscapes, parks, and natural heritage areas. Where required, fencing and walls shall not exceed 1.0m in order to not obscure pedestrian views.*
2. *Exterior amenity areas should be planned in sheltered areas through built form. These amenity areas will provide a balance of hardscape and softscape areas and be designed to offer flexible space for exterior uses.*
3. *Exterior amenity spaces should be designed with higher quality materials and provide lighting.*
4. *Green roofs should be encouraged where possible*
5. *Larger developments will incorporate stormwater management facilities that can be tied back to site or community amenity areas.*

ABOVE: *Roof top garden, NYC, NY*

TOP: *Residential streetscape in Welland, Ontario*
BOTTOM: *Stormwater Pond, Milton, Ontario*

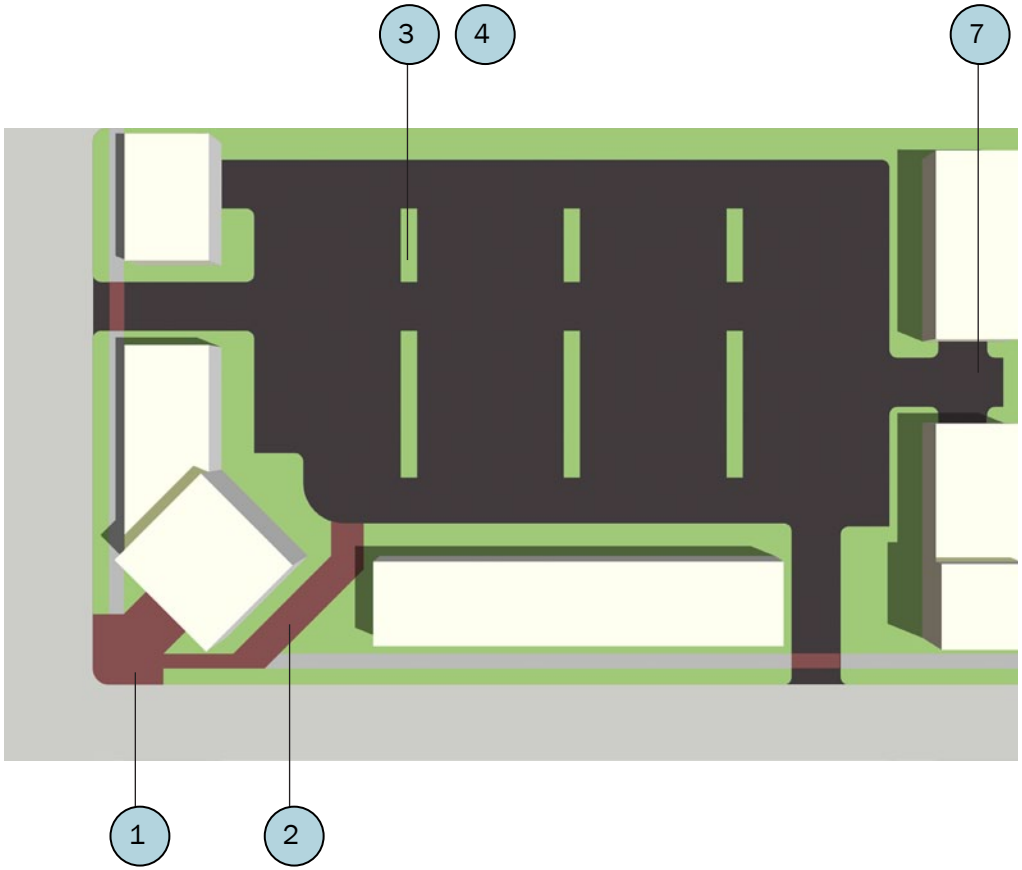
4.4.2. Commercial Areas and Employment Areas

Commercial and employment areas in the City often have varied site conditions depending upon the type of business the development is intended to serve. The following guidelines are intended to provide better exterior spaces to commercial and employment areas which can allow for better outdoor amenities. In order to better define the expectations of the guidelines it is important to note the types of exterior amenities provided by commercial and employment areas. These amenities can include:

- *Seating areas*
- *Outdoor dining areas*
- *Exterior kiosks*
- *Walking areas*
- *Water features*
- *Public art*
- *Transit hubs or shelters*
- *Bike parking and associated facilities*
- *Linkages to parks and open space*
- *Lighting*
- *Playgrounds*
- *Exterior gathering areas*

However it is important to note that not all commercial and employment areas will require commonly described amenities and these should be considered upon a site per site basis. Landscape guidelines, in addition to the general guidelines (Section 4.4) for commercial and employment areas are to include:

1. *Use of durable and high quality site furnishings to encourage use of exterior spaces.*
2. *Clear and distinct pedestrian linkages through the use of different colours or materials, particularly in parking areas.*
3. *Stormwater management features such as rain gardens and bioswales should be encouraged in larger surface parking facilities.*
4. *Extensive use of shade trees and structures in larger surface parking facilities to reduce urban heat island effect.*
5. *High quality lighting of all exterior spaces.*
6. *Introduction of traffic calming measures for internal vehicular circulation.*
7. *Loading and service areas to be located away from public realm and amenity areas.*
8. *Snow storage areas should be located in areas of low visibility.*
9. *Use of low maintenance plant materials.*



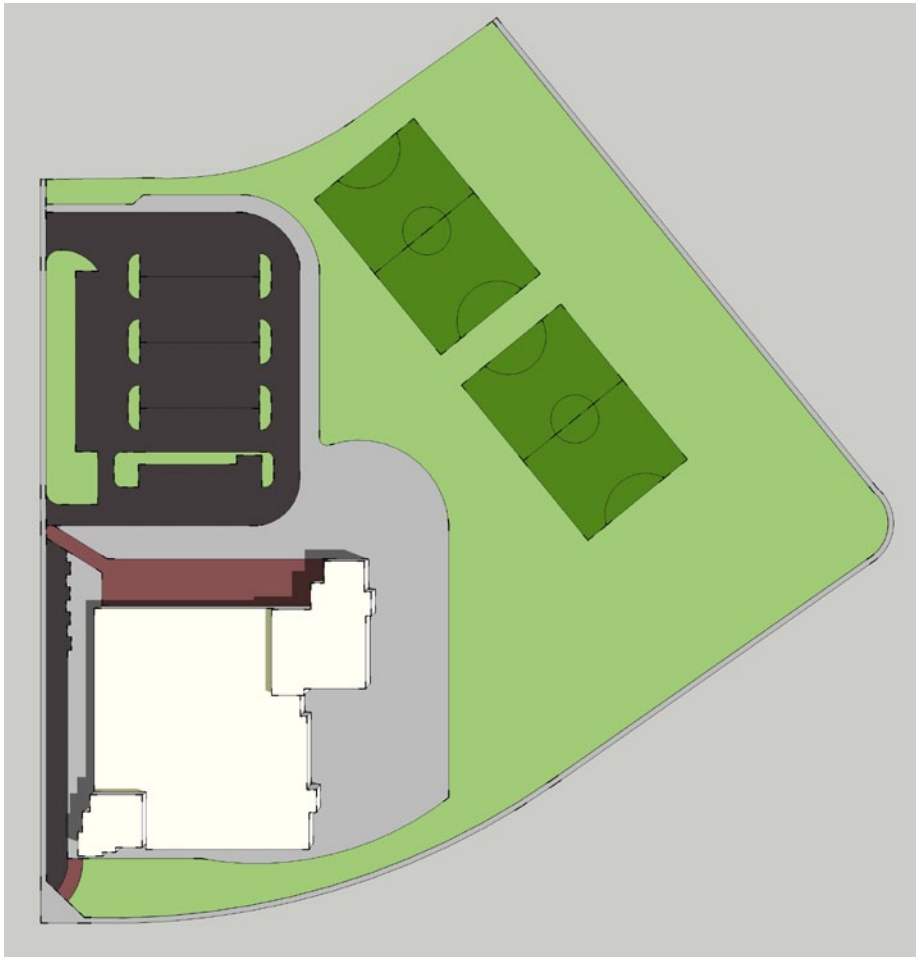
ABOVE: *Plan Diagram of Commercial Development*

ABOVE: *Shops at Don Mills Plaza, Toronto, Ontario*
LEFT: *The Dancers installed outside the Denver Performing Arts Complex, Denver, Colourado*
RIGHT: *Waterloo Willis Way Streetscape, Waterloo, Ontario*

4.4.3. Institutional Areas

Institutional areas in the City are important markers in the community and are commonly significant architectural pieces to the built environment. Beyond the general guidelines (Section 4.4), institutional areas should be designed to a higher standard of materials, furnishings, planting and lighting. Designs should include complementary signage and landscape architectural features such as retaining walls, hardscape plaza's, internal and exterior courtyards, and roof top gardens, where applicable. The variety of scales and purposes of institutional sites in the city provides different opportunities and constraints. Views and vistas should be maintained to architecturally significant institutions including hospitals, schools and churches.

ABOVE: *Green Roof, Phipps Conservatory, Pittsburgh, Pennsylvania*



ABOVE: *Conceptual School Plan*

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4.4.4. Downtown

The Downtown offers a unique mixed use commercial configuration that is designed to be dense and active. The primary way to engage the Downtown fabric is through the streetscape which in many conditions has been defined. As part of this document the structure of the “Arterial Main Street” (in Section 5.2.1) has already been outlined. However it is important to also recognize the importance of the streetscape as a multi-functional space that supports movement as well as static activity. Therefore the Downtown streetscape environment must include:

1. *Wide sidewalks to encourage pedestrian movement and static moments, for gathering, dining, talking and shopping.*
2. *Higher quality paving materials and site furnishings.*
3. *Higher quality lighting standards and lighting features.*
4. *Incorporation of public art.*
5. *Strategic locations for on-street parking.*
6. *Traffic calming measures.*
7. *Engineered solutions to ensure canopy street trees reach maturity.*
8. *Planter boxes and hanging baskets to help green the streetscape through flowering plants, grasses and ornamental treatments.*
9. *Higher quality treatments to associated structures, including bridges and tunnels.*

Downtown areas are also serviced by rear and side lots which commonly offer service, parking and loading functions. Landscape attenuation of these areas should consider their safety and accessibility. Visibility of the service areas should be screened from view if these areas are aligned to the active areas of the public realm. If publicly accessible, appropriate lighting and visibility should also be made to ensure that crime prevention measures are taken into account on a site per site basis.

ABOVE: *The Helix Pedestrian Bridge, Marina Bay, Singapore*

ABOVE: *Before and After Conceptual View of Niagara Street Improvements*

ABOVE: *Covent Garden Market, London, Ontario*
BELOW: *John Labatt Centre, London, Ontario*

4.4.5. The Welland Canal and Recreational Waterway

The Welland Canal and Recreational Waterway offers a powerful and unique part of the public realm and overall open space network of the City. As a centre piece of the community, the Canal and Waterway should be made accessible and inviting through landscape features. In order to help foster a more established waterfront the guidelines for the Welland Canal and Recreational Waterway will include:

- *Reinforcing of a waterfront promenade to provide consistent pedestrian and cycling access along the urbanized areas of the waterfront.*
- *Align and connect existing trails along the Canal and Recreational Waterway to provide a continuous multi-use trail system along non-urbanized edges.*
- *Provide consistent wayfinding and signage along the waterfront.*
- *Provide consistent and higher quality site furnishings at regular intervals along the waterfront. Site furnishings should also provide a distinct sense of place to the waterfront areas.*
- *Ensure that appropriate lighting features that balance safety and natural environment are selected.*

ABOVE: *Lachine Canal, Montreal, Quebec*
LEFT: *Wayfinding Signage*

- *Provide strong tree lined and landscaped edge to the waterfront promenade.*
- *Consistent landscaped entry features for the waterfront should be identified.*
- *Safe and clearly marked access points to shoreline need to be identified.*
- *Integration and improvements to adjacent parks, streets, trails, and linkages need to be incorporated into the design of the waterfront promenade and trail network.*

It is recommended that a formal waterfront master plan be initiated to provide clear spatial and design direction to improvements along the Recreational Waterway. It is through this study that a vision can be established to build upon some of the existing improvements surrounding the City Hall, Courthouse and North King Street Area and extend design resolution to other active parts of the Waterway.

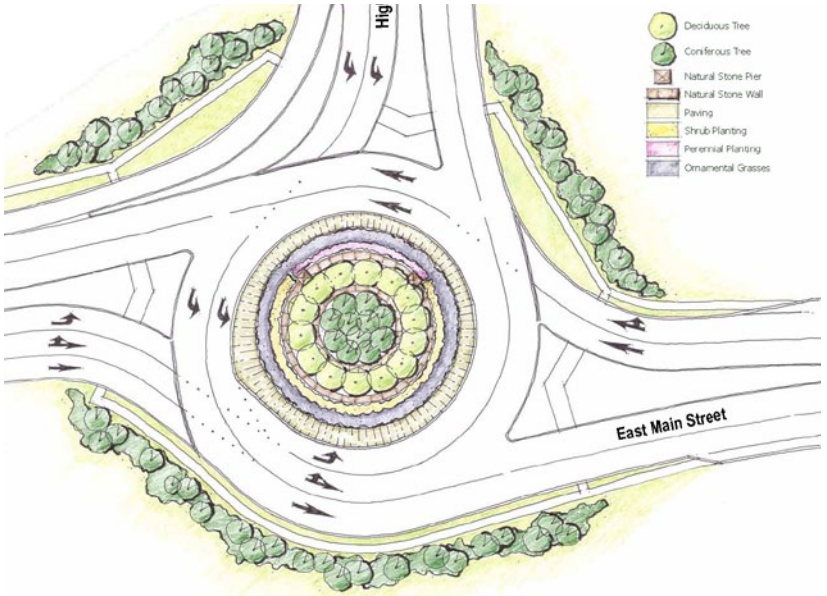
View of Welland Streetscape

5.0 | STREETSCAPING GUIDELINES

Streets are essential elements of the overall framework of Welland. Streets structure the distribution of land inherently defining the nature of the urban fabric. They are also the connective “tissue” of the community and give address and access to parcelized development blocks. However it is also important to recognize how streetscape environments also define the public realm and describe cultural identity to the City. Urban design plays a very important role in refining Welland’s road infrastructure as a method of movement, but also places of civic importance and community pride.

The streetscape guidelines offer design principles that address each major street typology, as characterized under the City’s 2001 Transportation Planning Study. Each road typology offers varying urban design opportunities to provide betterment in the public realm. As the general rights-of-ways (ROWs) vary depending upon location, context and time of construction, these guidelines offer suggestive solutions to urban design measures. It is also understood that existing streets may have limited opportunities to adapt these measures and that these guidelines would serve as a tool when road and infrastructure renewal is proposed for each street.

ABOVE: *Conceptual Gateway Rendering of 406 Round About (Dillon Consulting)*



ABOVE: *Conceptual Gateway Plan of 406 Round About (Dillon Consulting)*

5.1. EXPRESSWAY

The 400 series highway system poses a very important connective artery for most Ontario cities and towns. However they are commonly seen as more functional infrastructural elements. Welland is going to be better connected through the extension of Hwy 406, making the City a much more accessible place to local and regional visitors. The extension of the 406 also brings important economic development opportunities to Welland, making it easier to foster private sector investment. Urban design and streetscape attenuation has an important role to play on highlighting the significance of Hwy 406 as well as exposure of adjacent lands along the roadway. It is also important to note that Hwy 406 currently ends in Welland through a traffic circle, and that landscape measures should ensure that this feature is designed to reflect a “gateway” into the City.

ABOVE: *Conceptual Gateway Section of 406 Round About (Dillon Consulting)*

5.1.2. Highway Aesthetic Treatments

Contextually highways are situated in heavily naturalized or landscaped conditions. Due to their expanse many highway landscapes are left to more menial conditions. However the roadside landscapes and supporting structures can be opportunities to distinguish landmarks and provide a heighted sense of place. Considering the geographic area, highway landscape treatments do not need to encompass the entire corridor however can be strategically located at places of high visibility or periodic intervals. High quality planting plans incorporated in to topography will likely yield most impact for passersby, particularly at high speeds.

Structural elements to highways also offer a powerful opportunity to create identifiable markers to the City. Simple, yet effective concrete form liners can help to provide definition to commonly found highway structures, including patterning and motifs. These can be custom or stock finishes to concrete works. Recently a number of MTO projects have included aesthetic adaptations to its standards on structural elements such as walls, bridges, abutments and tunnels to give a unique visual experience.

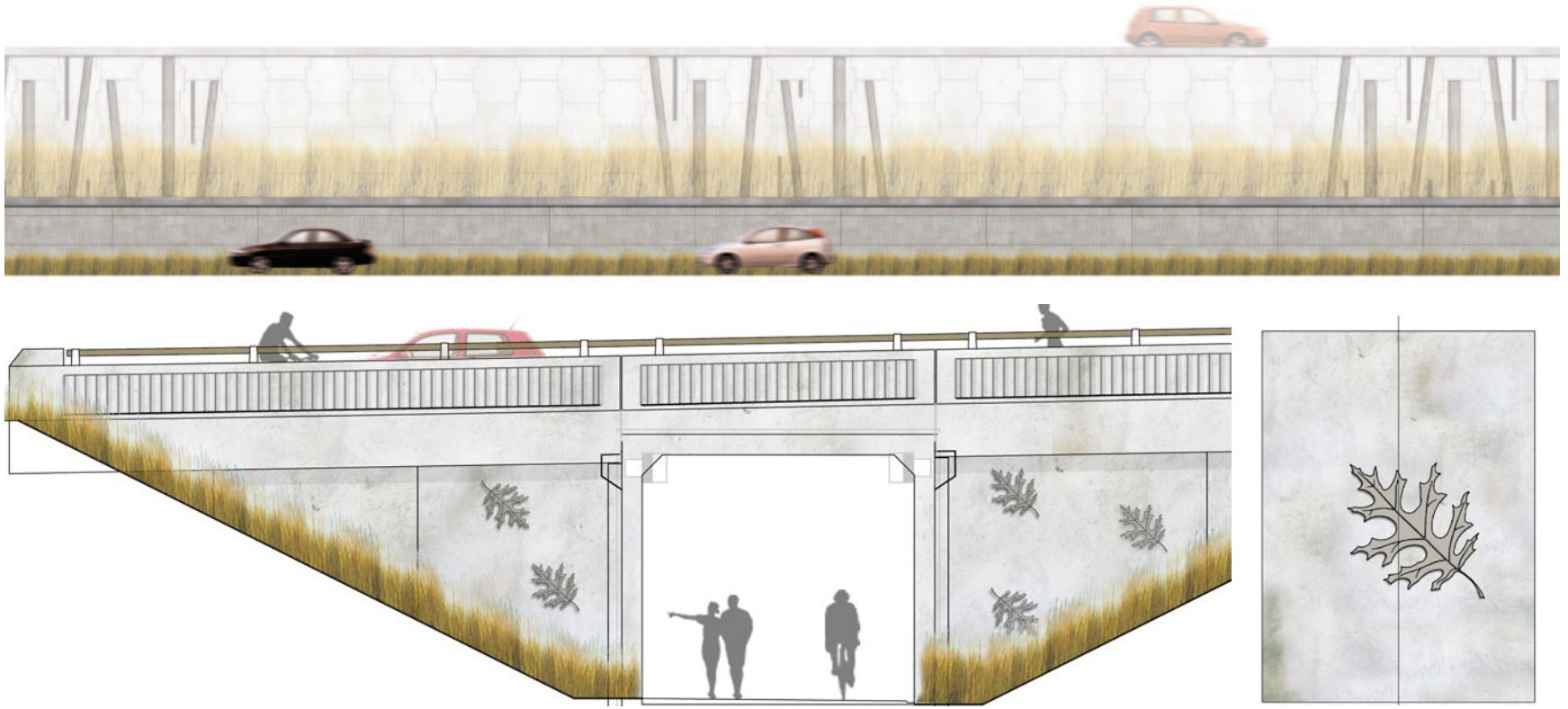
ABOVE: *Highway Landscaped Signage, Lakeshore, Ontario*
BOTTOM: *Conceptual Landscaped Gateway Feature, Ottawa, Ontario*

HIGHWAY LANDSCAPES

- *Expanse of roadside landscape should be designed as low maintenance conditions, in accordance with MTO standards.*
- *Interchanges and locations of high visibility should be designed with landscape planting and architectural treatments.*
- *Landscape planting will be of a high quality and showcase colour and vibrancy.*
- *Architectural features and public art (including specialized signage) must be designed in association with landscape planting plans.*
- *Architectural features must be visually noticeable and include lighting.*
- *Round-abouts must ensure that landscape and architectural treatments are of the highest quality and provide a strong gateway feature into the City.*

STRUCTURAL ELEMENTS

- *Bridge parapet walls and barrier walls at overpasses should be considered for concrete patterning if in areas of high visibility.*
- *Bridge abutment walls should be designed to offer aesthetic relief, including patterning or motifs in strategic locations*
- *Tunnel walls should be designed to offer aesthetic relief, including pattering or motifs in strategic locations. Lighting should also be considered if aesthetic treatments are applied on walls.*
- *Themed elements should also be represented in other concrete elements if possible to help create consistency in highway design elements.*



ABOVE: *Highway Retaining Wall Aesthetic Treatment, Windsor, Ontario*
BOTTOM: Tunnel Wall Oak Leaf Motif, Windsor, Ontario

5.2. ARTERIAL ROAD (REGIONAL AND CITY)

The arterial road network in Welland is made up of number of regional and municipal roads which provide connections in urban, suburban and rural conditions. Their current condition varies in terms of the number of travel lanes, pedestrian and cycling infrastructure, and adjacent land uses. Given the varying context in which the arterial roads operate as well as the differing right-of-way limits, urban design measures must be flexible and offer local sensitivity. It is important to note that arterial roads commonly act as the initial interface with the urban environment, commonly transitioning between the expressway and rural roads when entering the city. Therefore arterial roads do offer the most significant gateway opportunities to the City. Landscape and streetscape treatments should always be advanced in areas that offer gateway potential. Arterial roads are also designed to be primary transit and trucking routes within the City and therefore be subject to wider lanes as outlined by municipal standards. The following guidelines outline suggested streetscape treatments of arterial roads, and is subject to adaptation based upon contextual opportunities and limitations.

ABOVE: *Planted Median, Chicago, IL*

ABOVE: *Present View of King Street looking South*
RIGHT: *Conceptual Rendering of King Street, Welland, Ontario*

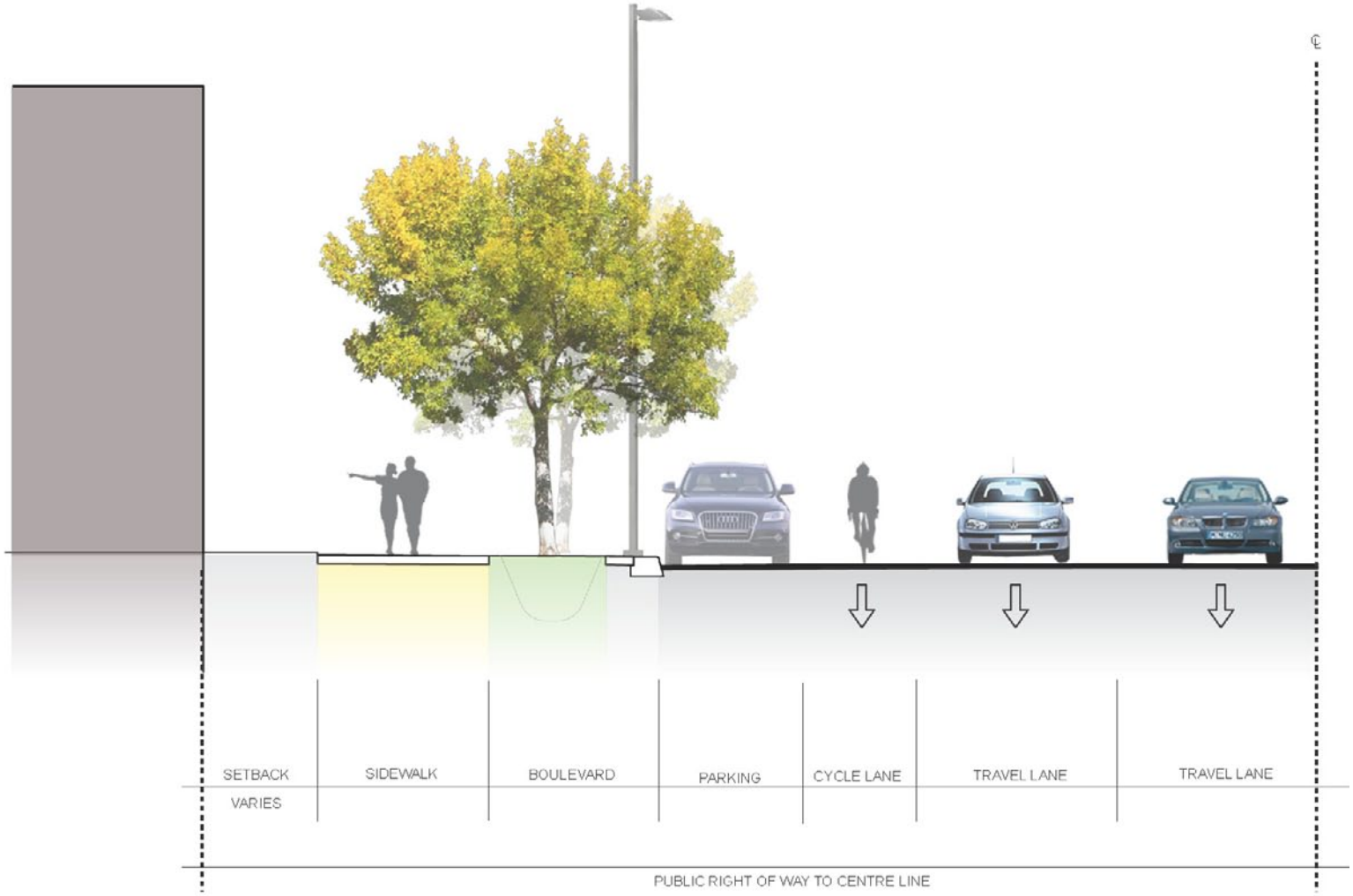
The conceptual rendering shows how streetscape features can improve the overall public realm and create a more hospitable environment. These improvements include:

- Wider Sidewalks
- Shade Trees and Boulevard Planting
- Cycling Lanes
- More Crosswalks
- Infill and Facade Improvements
- Improved Street Furnishings and Lighting

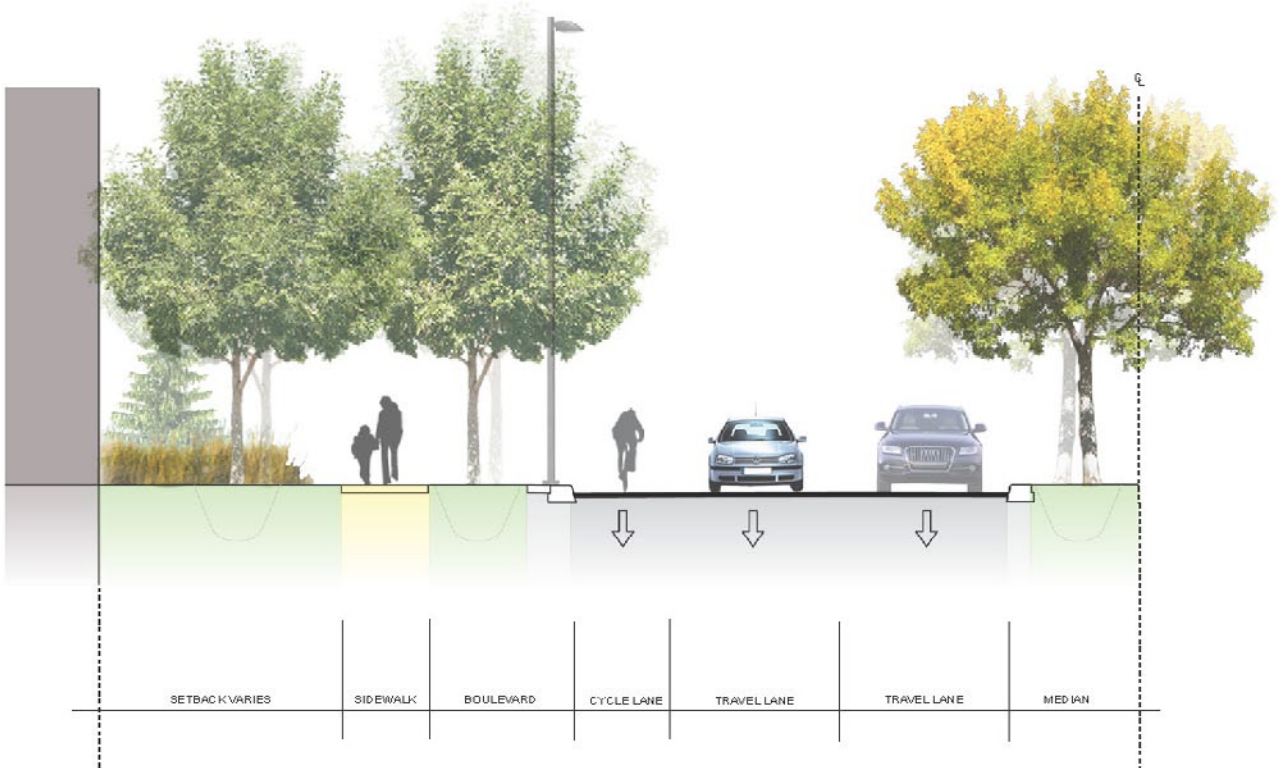
5.2.1. Urban Arterial | Main Streets or Avenues

Urban Arterials can be described more accurately as urban main streets or avenues. They are active parts of the public realm and transect through areas mixed use and commercial designations. At grade commercial and pedestrian oriented activity will be encouraged through the streetscape, which will help reinforce and develop parts of the City as intensification nodes. Supporting transit and cycling as well as prioritizing pedestrian movement will be the focus of the urban arterial and will include:

- *Varied Setbacks (0 to 5.0m) – in order to create variation in the street wall. Setbacks must be treated as an extension of the public sidewalk or as high quality landscaped zone. The setbacks will also allow for seasonal commercial uses which can transition into the public sidewalk. These would include restaurant patios, kiosks, and outdoor displays.*
- *Public Sidewalks (2.0m to 4.0m) – to allow for appropriate pedestrian flow and static activity. Sidewalks are places for people to walk and socialize comfortably.*
- *Boulevards (2.0m to 4.0m) – are to have a hardscaped strip along the curb and planting zone. The planting zone should be encouraged to utilize a structural soil trench where possible creating a continuous hardscape zone from curb to property line/setback. If a soil trench is not possible a contained planter box with flowering plants should be implemented. Street trees will be planted in boulevards (8.0m to 12.0m on centre)*
- *Parking Lanes (2.5m for parking lane only – 3.5m for travel/ off-peak parking) – where possible. Parking lanes will help provide added access to intensification areas in the City, while also provide a traffic calming measure to further reinforce the pedestrian oriented streetscape.*
- *Cycle Lanes (1.5m to 2.0m) – must be incorporated into the urban arterial streetscapes.*
- *Travel Lanes (3.25m to 3.75m) – to allow for a maximum of 2 lanes of traffic in each direction (4 lanes total). Reduced lane widths are encouraged in order to support more compact and intimate streetscape environments.*



ABOVE: *Main Street Cross-Section*

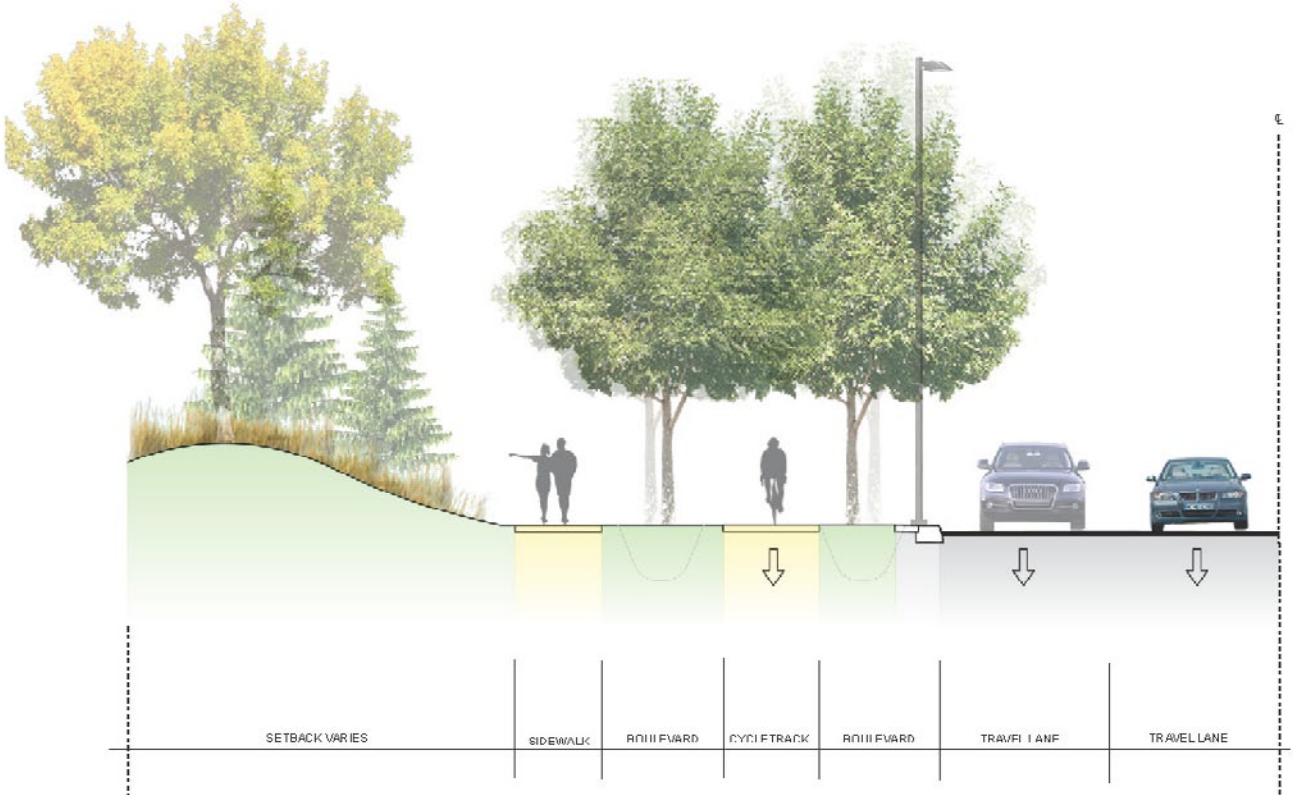


ABOVE: *Suburban Arterial Roadway Cross-Section*

5.2.2. Suburban Arterial

Suburban Arterials make up a prominent road typology in Welland. They are commonly wider ROW's and are surrounded by a number of different land uses, including commercial, residential, institutional and employment lands. They commonly have multiple access points. Residential land uses commonly rear lot along many arterial roads creating safety concerns and can discourage pedestrian activity. However suburban arterials are also transit supportive roads which need to provide comfortable multi-modal environments to encourage walkability, cycling, transit and vehicular users while reducing conflict. These design measures include:

- *Setbacks (3m to 5m) – to provide a landscaped buffer between the activities of the street and adjacent land use. Berming and walls should be discouraged as visibility should be encouraged between adjacent land uses and the streetscape.*
- *Public Sidewalks (1.5m to 1.8m) - to allow for appropriate pedestrian flow.*
- *Boulevards (2.0m to 6.0m) – are to be made up of low maintenance softscape including low growing grasses or lawn. Street trees will be planted in boulevards (8.0m to 12.0m on centre). In areas where ROW's allow and boulevards are not impeded by utilities a double row of street trees should be considered.*



ABOVE: *Suburban Arterial Roadway Cross-Section*

- *Parking Lanes (2.5m) – where possible. On-street parking opportunities will be very limited and only encouraged in areas of commercial and institutional uses.*
- *Cycle Lanes (1.5m to 2.0m) – must be incorporated into the suburban arterial streetscapes.*
- *Cycle Track (2.0m) – can serve as alternative off-road cycling alternative to cycle lanes. These can be used in places where boulevard conditions are wide enough to support an off-road cycle track and cycling alongside motor vehicular traffic may pose safety concerns due to speeds or conflict.*
- *Travel Lanes (3.25m to 3.75m) – to allow for a maximum of 3 lanes of traffic in each direction (6 lanes total).*
- *Medians (3.0m to 5.0m) – can be considered in wide ROW's and if traffic studies permits. These medians will be landscape features and designed with flowering planting and ornamental/street trees and possibly architectural features, such as low walls, signage and public art.*

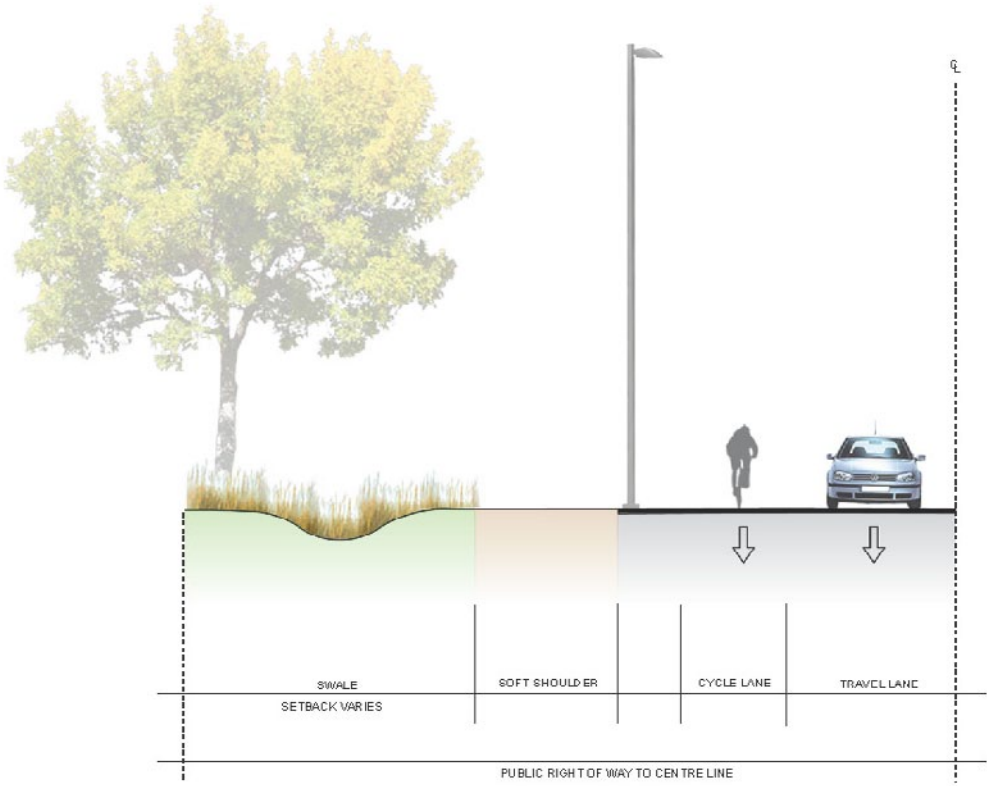
5.2.3. Rural Arterial

Rural arterials are commonly identified through designation from the City's 2001 Transportation Planning Study (Figure 20: Proposed Road Classification and Jurisdiction). The rural road cross sections are typical to the region and other parts of Ontario, commonly 1 lane of traffic in each direction (2 lanes total), and are commonly constructed with a soft shoulder, and stormwater swale adjacent to the road side. This functional road cross section will remain however cycling lanes should be applied to rural arterial road designations through reconstruction projects over time. These roads provide linkages to the wider cycling network in the Niagara Region and therefore provide essential linkages to Welland as a destination.

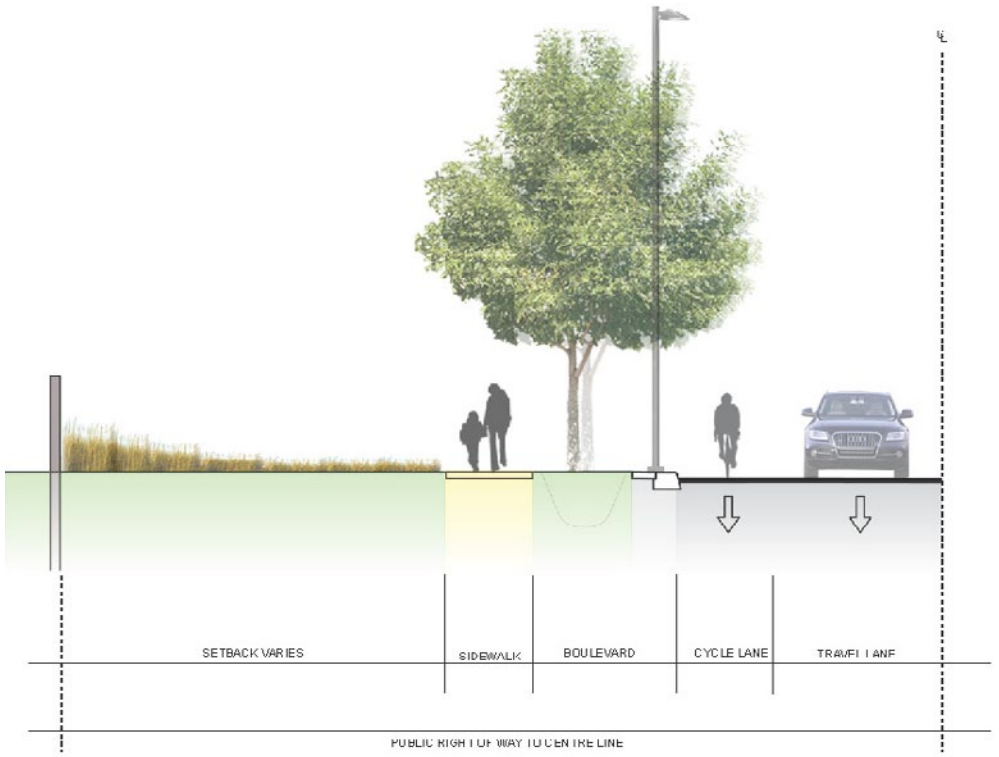
5.3. COLLECTOR ROAD

The collector road network is comprised of a series of lower order municipal streets that help to provide a more complete "grid" network to Welland. Similar to the arterial network, the collectors vary based upon local context and current needs. Collector roads serve an important role in the wider urban context and are commonly designed with transition to arterial status in mind and over time, based upon urban growth and intensification of land uses. In most cases the collector roads are servicing areas with less vehicular volumes and are primarily located in (or are bounding) residential neighborhoods. Collector roads should include:

- *Setbacks – to provide a landscaped buffer between the activities of the street and adjacent land use. Berming and walls should be discouraged as visibility should be encouraged between adjacent land uses and the streetscape.*
- *Public Sidewalks (1.5m to 1.8m) - to allow for appropriate pedestrian flow.*
- *Boulevards (1.0m to 3.0m) – are to be made up of low maintenance softscape including low growing grasses or lawn. Street trees will be planted in boulevards (8.0m to 12.0m on centre). In areas where ROW's allow and boulevards are not impeded by utilities a double row of street trees should be considered.*
- *Cycle Lanes (1.5m to 2.0m) – must be incorporated into the suburban arterial streetscapes.*
- *Travel Lanes (3.25m to 3.75m) – to allow for 1 lane of traffic in each direction (2 lanes total).*



ABOVE: *Rural Roadway Cross-Section*



ABOVE: *Collector Road Cross-Section*

5.4. LOCAL ROAD

The local road network really constitutes neighborhood oriented low order roads. Despite their simple design, these streetscape environments also constitute “the heart”, of communities and are places that reflect the neighborhood values throughout the City. Therefore it is important that they are designed to be more than just local streets but also places where social interaction is encouraged, unofficial sport can coexist with typical road functions, and where active transportation is embedded as part of the streetscape culture. Local roads will include:

- *Setbacks (refer to site planning guidelines) – to provide a landscaped buffer between the activities of the street and adjacent land use. Berming and walls should be discouraged as visibility should be encouraged between adjacent land uses and the streetscape.*
- *Public Sidewalks (1.5m to 1.8m) - to allow for appropriate pedestrian flow.*
- *Boulevards (1.0m to 3.0m) – are to be made up of low maintenance softscape including low growing grasses or lawn. Street trees will be planted in boulevards (8.0m to 12.0m on centre). In areas where ROW’s allow and boulevards are not impeded by utilities a double row of street trees should be considered.*
- *Roadway (7.0m to 9.0m) – to allow for a multifunctional space that can adapt based upon local needs. This asphalt area between curbs will function as a road that provides two-way traffic, on street parking, a shared cycling network, and informal community spaces.*


SETBACK VARIES
SIDEWALK
BOULEVARD
SHARED TRAVEL LANE
PUBLIC RIGHT OF WAY TO CENTRE LINE

View of

6.0 HEALTHY COMMUNITIES & SUSTAINABLE DESIGN MEASURES

6.1. DEVELOPMENT FORM

Apart from promoting energy efficiency and resource efficiency through sustainable building practices, sustainable design principles include promoting a healthy environment through ease of pedestrian walkability, creating mixed use focal zones, and promoting efficient infrastructure use through compact built form. Well-designed streets and the use of plant materials to address microclimate design concerns are other methods of sustainable design practice. The use of urban plazas, green roofs and green parking lots should also be implemented where feasible within compact built form.

Intensification through the provision of a mix of densities and encouraging higher density close to transit stops and major street intersections can be achieved through moderately scaled buildings varying in height from 4-10 storeys. This built form scale responds well to the existing built fabric as well as local market demands. It also promotes livability and sustainable development form through pedestrian scaled built form.

Mixed use development is encouraged. This principle ensures ongoing activity within the neighbourhood and promotes livability through land use compatibility. This designation includes a range of uses, including residential buildings with retail at grade level, commercial space and live/work units, in order to liven the streetscape.

All the above mentioned points are sustainable design measures to ensure that new development form in the City will encourage healthy communities.

6.2. ACTIVE TRANSPORTATION

Active Transportation is to encapsulate any form of human-powered movement and engages for a variety of purposes including recreational activity, commuting, and fitness. Active transportation can take on a multitude of modes, with most traditional being walking, jogging, running, cycling, in-line skating, skateboarding and wheelchairing. However in the Canadian context active transportation can also take on other types of movement including, skating, skiing, snowshoeing, kayaking, and canoeing. In order to strongly promote active transportation within the city, urban design should play an increasingly important role to ensure that a safe and accessible system will respond to changing expectations over time. A comprehensive active transportation system will also allow for a diverse network, allowing for different user needs, and helping to reduce conflict.

Transit oriented development urban design should emphasize compact development, enhance pedestrian safety, and encourage 'street-sharing' between pedestrians, cyclists and vehicles, balanced with increased density along major transit corridors. This will provide transportation alternatives including active transportation, public transit, and enhanced inter-regional transportation connections.

ABOVE: *Martin Goodman Trail, Toronto, Ontario*
BOTTOM: *Cycling Track, NYC, NC*

Pedestrian Network

Basic improvements should including a continuous pedestrian network within the urban fabric, including sidewalks, trails, pathways and midblock connections. Therefore the pedestrian network will be designed to provide:

- *Sidewalks and other pedestrian connections should be a minimum of 1.8m in width.*
- *Maximum widths should respond to contextual needs and pedestrian volumes in order to create comfortable walking conditions at peak times.*
- *Network interface with roads will include queuing pads and cross walks designed to accommodate pedestrian volumes at peak times.*
- *Pedestrian network should be well lit and be designed to have clear visibility, while encouraging Crime Prevention through Environmental Design principles.*
- *Should be constructed of hardscape materials including concrete and asphalt in order to provide accessibility to those in wheelchairs.*
- *Placemaking and accents to the pedestrian network should incorporate unit paving or coloured concrete.*

ABOVE: *Raised Crosswalk*
BELOW: *Concrete Pathway, St. Lawrence Park, Port Credit, Mississauga*

Cycling Network

The Niagara Region Bicycling Committee, alongside regional and municipal governments have worked to establish and reinforce one of the most celebrated cycling networks in Ontario. Welland plays a strong role in completing the cycling network throughout the region and also offers many unique aspects to the overall network. However some sections of the cycling network are incomplete or in states of disrepair. Considering the cultural and economic significance of the cycling community to the region and Welland all efforts should be made to maintain and advance cycling infrastructure through urban design. Diversity is also important to maintain a balanced approach and create more access to a wider group of users. Therefore cycling options should be made available to allow for more active versus passive purposes. The cycling network should include:

- *Cycling Lanes – dedicated cycling lanes within the asphalt roadway.*
- *Sharrow Lanes – demarcated shared cycling and motor vehicle lanes within the asphalt roadway.*
- *Cycle Tracks – off-road cycling facilities that can either be 1 way or 2 way. Within the streetscape cycle track will be in the boulevard above the curb and be constructed of asphalt.*
- *Trails Network – for pedestrian and cycling connections throughout the City, can vary in materials based upon City standards.*
- *Signage and Wayfinding – to allow for clear navigation of the overall active transportation network and reduce conflict between pedestrians, cyclist and motor vehicles.*

ABOVE: *Cycling Lane in Vancouver, BC*

Winter Facilities

Many Canadian communities have also introduced unique was to include winter sport and activity into a day to day life and movement in the city. Ice skating being a predominantly celebrated past time, can be introduced along the Waterway and in other locations, helping to link parts of the city. Similar to Ottawa's Rideau Canal, facilities can also be introduced to provide amenities and make the Waterway a primary destination year round. Cross country skiing and snowshoeing can also be introduced throughout the City's natural heritage system and parks which can help activate snow covered trails throughout the season. Further discussions would have to organize public and City support to properly facilitate these ideas over time; however they pose a distinct opportunity to include active transportation for citizens and visitors to the region.

ABOVE: *Ice Skating at Millenium Park, Chicago, Illinois*

Water Related

Again building upon the amenity of the Recreational Waterway, kayaking and canoeing can be made to have strong role in advancing active transportation in Welland. With the building of the rowing facilities for the Pan Am Games, the Waterway will be fitted with safe access and personal boating facilities in appropriate locations and compliment existing points of access. With similar stations being introduced at some culturally significant locations, a network of water related access points could help advance kayaking and canoeing along the Waterway and connected safe water courses.

ABOVE: *Kayaking along Lachine Canal, Montreal, Quebec*

6.3. ENERGY EFFICIENCY

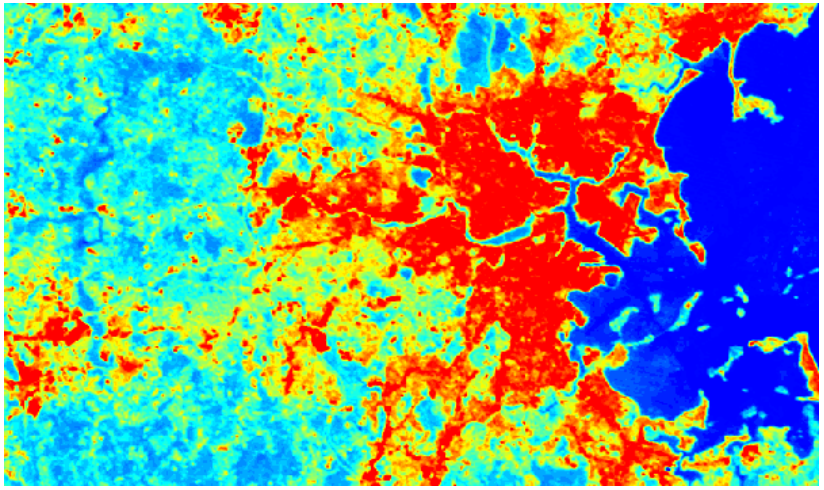
Today energy plays a critical role in development costs and viability. Our over strained network of energy is also in varying states upgrading itself, however it is important to note that each building and site plan has the potential to exhibit energy sensibility and offer efficient alternatives to traditional development patterns. The City is also impacted by emissions from within Welland and beyond which ties together energy efficiency and air quality as an important part of creating sustainable environments. Green building and design practices will reinforce the City of Welland as a leader that emphasizes sustainability and making it a great place to invest, live work and play. Methods to improving energy efficiency and air quality should include, but are not limited to:

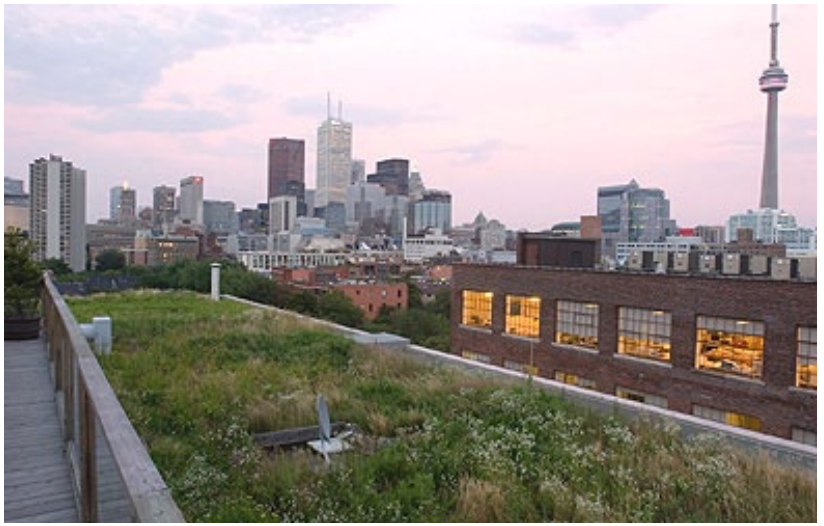
- *Passive Solar Design – through site and building orientation*
- *Natural Ventilation – through site and building orientation*
- *Solar Energy – through photovoltaic or solar thermal technologies*
- *Wind Power – through wind turbine generators*
- *Increasing Insulation – thereby reducing energy demands in winter months*
- *Earth Source Energy – including geothermal heating and deep water cooling*
- *Green Roof Technology – to reduce help cool and improve efficiency of buildings*
- *LED Lighting - to reduce energy use*

6.4. URBAN HEAT ISLAND AND MICROCLIMATE

One of the most prevalent impacts of the build environment is the creation of the urban heat island effect. Particularly in the summer months the effects of the heat island can increase temperatures by 5C to 10C. The development of microclimatic conditions can help mitigate the urban head island and create more comfortable outdoor conditions. Buildings can be designed to include shade structures and green roofs to help cool the building's exterior spaces. Landscaped areas and water features should also be part of any public exterior space planning to help ensure that microclimate can reduce immediate effects of the heat island on extreme days.

At the urban scale one of the most important measures to protecting against the heat island is advancing the urban forest. Therefore tree planting should be a priority through the site planning, streetscape design, and parks development process. However to achieve this goal proper growing conditions need to be established to ensure canopy trees can reach maturity. Adequate soil volumes should be specified depending upon the context and immediate urban stresses.





ABOVE: *Urban Heat Island Effect, Boston, MA*
BOTTOM: *Green Roof, Toronto, Ontario*

6.5. STORMWATER MANAGEMENT

Streetscapes, site development and subdivisions all can play an important part providing stormwater infiltration on site and reduce the need to direct runoff to nearby ponds and watersheds. The management of these sites can result by way of the development of bio-swales and rain gardens to help offer localized stormwater management. These facilities will provide localized plantbeds providing both stormwater relief and aesthetic features in the wider landscape. Stormwater ponds are also important in developing important relief to the watershed at times of peak flow, while also providing community amenity.

ABOVE: *Vegetated Bioswale*
BELOW: *Rain Garden, Phipps Conservatory, Pittsburgh*

PREPARED BY:

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