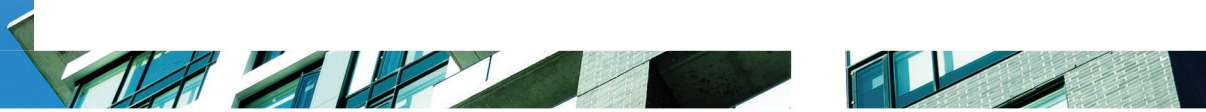
Urban Design Guidelines for Buildings

High-Rise



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Glossary: See the urban design guideline page on Ottawa.ca for definition of terminologies (search "urban design guidelines glossary").

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INTRODUCTION

This section outlines:

- The objectives of this guideline document
- The applicable Official Plan and By-law directions
- Key issues related to different context
- Responsibilities related to sustainable design
- When and how the guidelines are to be used

1 INTRODUCTION

Definitions

The Official Plan (OP) defines a high-rise building as a building that is ten storeys or more in height. It is anticipated that the majority of the high-rise buildings in the City will be in the range of 10 to 40 storeys.

Use and Application

These guidelines are to be used during the preparation and review of development proposals that include a high-rise building to achieve objectives of the Official Plan.

These are general guidelines. They are a tool kit and not intended to be used as a checklist for evaluating a proposal and not all of the guidelines are applicable to every site. The context of each development proposal will inform the application of, and the emphasis on, the particular guidelines that are relevant.

Where specific policies are provided in an area-specific policy document, such as a Secondary Plan or a Community Design Plan (CDP), the area-specific policies will take precedent. Guidelines in this document may augment such area-specific policies. The guidelines will also be a resource for the preparation of CDPs.

Objectives

The objectives of these guidelines is to highlight ways to:

- promote high-rise buildings that contribute to views and vistas and enhance the character and the image of the city;
- address sensitive integration and the relationship between high-rise buildings and their existing and planned context;
- create human-scaled, pedestrian-friendly streets, and attractive public spaces that contribute to liveable, safe and healthy communities;
- coordinate and integrate parking, services, utilities, and public transit into the design of the building and the site; and
- promote development that responds to the physical environ-ment and microclimate through design

Official Plan and By-Law Direction

High-rise buildings are one of the possible building types that contribute to intensification and efficient development patterns that support healthy, liveable, safe, and resilient communities. The Official Plan directs high-rise buildings to the many Hubs and Mainstreet Corridors, in Downtown, Inner Urban, Outer Urban, and Suburban Transects, where intensification is expected and encouraged. These are the locations where new high-rise developments are most likely to occur.

A large number of residential high-rise buildings exist outside of these Hubs and Mainstreet Corridors in locations designated Neighbourhoods in the Official Plan. These buildings, located in the mature communities within the Greenbelt, were generally built in the 1950s, 60s, and 70s and fashioned around the modernist notion of towers in the parks. While the Official Plan does not encourage high-rise development within the Neighbourhood designation, initiatives that aim at retrofitting existing high-rise housing will help improve the liveability of these neighbourhoods.

The Official Plan provides direction to evaluate the appropriateness of individual sites, small or large, and to inform many aspects of high-rise design.

The Zoning By-law is also a tool that establishes the development framework for high-rise developments. Through a detailed analysis of a site, amendments to the Zoning By-law may be required to address issues and opportunities relating to context, massing, shadow, and public space. A wide range of other applicable regulations and by-laws must also be met.

Context and Issues

New high-rise buildings will be proposed in different contexts, each with their own opportunities and challenges.

Infill development

High-rise buildings proposed in Downtown and some areas of the Inner Urban Transect such as Scott-Parkdale are typically infill projects on smaller sites within an established pattern of development. Issues of sensitive integration, transition, relationship between neighbouring properties, wind and shadow impacts, servicing, and heritage conservation, are often at the forefront. Infill development creates opportunities to renew neighbourhoods, upgrade services, meet intensification targets, and achieve more sustainable communities that are safe, healthy and liveable.

Master planned development

High-rise buildings proposed in Hubs and along some Mainstreet Corridors outside of Downtown, , as well as the existing high-rise sites in the Neigbourhood designations within the Greenbelt, are often on larger sites with incomplete or fragmented patterns of development. Issues related to place making, streets and pathway networks, parks and open spaces, phasing, accessibility to services, and sensitivity to the natural and social environment are prevalent. This type of large scale development will typically benefit from an urban design vision, such as a master plan, to guide the evolution of the environment into a mixed-use, compact, pedestrian-oriented and transit-supportive development.

1 INTRODUCTION

Sustainable Design

One of the objectives of the Official Plan is to build a city that is energy conscious, mitigates emissions and is more resilient to the impacts of climate change. All development should consider opportunities to reduce resource consumption during construction and provide buildings that conserve energy, reduce peak demand and provide resilience to power disruptions throughout their lifecycle. All buildings should consider using efficient mechanical and electrical systems as well as incorporating renewable energy generation features. The design of buildings should prevent thermal bridging and providing appropriate wall thickness and window to wall ratios to insulate the building.

Building resiliency to flooding and future climate risks is an objective of the Official Plan. Proponents are encouraged to design stormwater infrastructure to be durable, adaptive and resilient to future climate events. Low-impact development or nature-based solutions should be considered where possible.

The City of Ottawa encourages proponents of any development to explore and apply best sustainable practices for the full life cycle of the site and buildings. The City encourages the use of sustainable design standards, such as the Canadian Green Building Council (CaGBC) Zero Carbon Building Standards rating system and the International WELL Building Institute WELL Building Standard in the planning, design, construction and operation stages of a development.

The design of a high-rise building, like many other building types, carries the responsibility to achieve this objective. The design guidelines included in this document support sustainable design by promoting a more compact, inclusive, transit-supportive, pedestrian-friendly, and attractive urban environment, in addition to a building of higher energy efficiency and greater climate resilience.

1.0 CONTEXT

The Official Plan promotes developments that can be sensitively integrated with the surrounding built and natural environment. The objectives of the Official Plan require new developments to respect the character of the existing areas and create and maintain places with their own distinct identity. To implement these policies, a development proposal must be prepared based on a thorough understanding of the existing and planned context and provide an effective design response. While the design will vary on a case by case basis the approach to contextual analysis should be consistent and comprehensive as outlined in the Official Plan and other relevant Council-approved documents, including the Terms of Reference for preparing an Urban Design Brief. The guidelines in this section highlight some of the most important contextual considerations faced with creating sensitive high-rise developments, including:

- View, vista and landmark
- Transition in scale
- Lot configuration
- Heritage

1.1 View, vista, and Landmark Building

Views, vista and landmark are important attributes of the character of the public realm and the identity of the community. A high-rise building may enhance or impact the views or vistas. It may be a background building that blends into the urban fabric to frame or to form the backdrop of a view. It may also be a landmark building that stands out from the urban fabric or skyline, or situated at the terminus of an important vista. The design of a high-rise building should respond to the specific context of a place and a community by protecting and enhancing existing views, vistas, and landmarks, and potentially creating new ones to achieve the design objectives of the Official Plan.

1 Identify existing and future landmarks with the associated views and vistas. Existing and future landmarks with associated views and vistas are typically determined by the Official Plan (OP), a Secondary Plan and/or a CDP.

2 The Official Plan has established a series of views and angular planes to protect the visual integrity of the Parliament Buildings and other important national symbols. These views and angular planes must be respected in the development process. A comprehensive view analysis, including a three-dimensional computer model is required to evaluate the potential impact of the proposed development on these views and view planes.

3 A comprehensive view analysis will be required when a proposed high-rise building is located within the Downtown Core Transect, particularly in an area adjacent to the established views and view planes. Such an analysis should explore how the proposed development will be integrated into the background views of the Parliament Buildings and other national symbols or frame the foreground views of these elements by:

a. extending and extrapolating the existing views and views planes;

b. establishing new views and view planes; and

c. enhancing the characteristics of the skylines.

Figure 1: The Official Plan has established a series of views and angular planes to protect the visual integrity of the Parliament Buildings and national symbols. Developments within these areas are subject to the views and angular planes policies.

4 In the absence of Council policies, the proposal for a high-rise development should clarify whether or not the proposed building will be a landmark building or a background building through a thorough context analysis, documented in the Urban Design Brief.

5 If a proposed high-rise building is determined to be a landmark building, the context analysis should indicate:

   a. the scale at which the landmark building is related, for example, a landmark building of a neighbourhood, a community, a district, or the City, and the associated views and vistas;

   b. the views and vistas within which the proposed landmark building will be seen and the characteristics of these views and vistas; and

   c. how the proposed landmark building will respond to the characteristics of the neighbourhood, community, district, or the City.

6 If the proposed high-rise building is determined to be a background building that will frame important views and vistas, the context analysis should indicate:

   a. the characteristics of the views and vistas;

   b. the characteristics of the background that frames the views and vistas, such as the scale, skyline, fenestration patterns, texture, materials, and color; and

   c. how the proposed high-rise building will respect and enhance the characteristics of the background.

Figure 2: The high-rise building was positioned and designed as a landmark in the master planned development with views framed by surrounding background buildings.

Figure 3: The tree-lined boulevard is a view corridor framed by many high-rise buildings with the city hall at the terminus of the vista.

Landmark building

7 A landmark high-rise building is typically one or more of the following:

a. a significant civic, cultural, business or institutional use that requires public status and prestige;

b. located at a prominent location, such as a major destination, an important public open space, the termination of a vista or view, or a unique natural setting;

c. associated with important social and cultural activities of a place;

d. representing an achievement of significant architectural and engineering progresses; or

e. a symbolic representation of a place or a community, including past, present, or future.

8 A landmark high-rise building should be:

a. distinctive in form and detail compared with the surrounding buildings when viewed close-up or from a distance; and

b. of exceptional quality in architecture and public realm design and execution, including materiality.

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

Figures 4 to 9: Examples of well-known landmark high-rise buildings around the world. With a prominent location, distinctive form and exceptional architectural and public realm quality, these buildings enhance the identity of their communities.

Background building

9 A background building should:

a. respect and enhance the existing and planned views and vistas through the placement of the building, height transitions, setbacks and step backs, and landscaping; and

b. respect and enhance the overall character of the existing and planned urban fabric and the skyline by maintaining a harmonious relationship with the neighbouring buildings through means such as height transition, built form design, fenestration patterns, color, and materials without necessarily being the same.

Figure 10: High-rise buildings with a calm skyline, rich color and material palettes and varied fenestration pattern provide a layered backdrop for the Parliament Buildings and national symbols.

Figure 11: High-rise buildings with a consistent pattern of fenestration, and palette of colors and materials form a strong background building edge for the Central Park.

1.2 Transition in scale

To ensure sensitive integration, the Official Plan requires an effective transition in height and massing when proposed high-rise developments are taller and larger than the surrounding existing or planned buildings or adjacent to parks and open space. Built form transition typically means a gradual rather than abrupt change from one pattern to the other. Transition in height and massing, which can be accomplished in different ways, nevertheless means to achieve a gradual change in these two aspects, and such gradual change may occur at different scale levels depending on the context.

At the city, community, or neighbourhood level

1 When a high-rise building or group of high-rise buildings are proposed within an identified growth area, design the buildings nearer the edge of the growth area to be progressively lower in height than those in the "centre" (Diagram 1).

2 When a high-rise building or group of high-rise buildings are proposed on a site surrounded by other high-rise buildings of consistent height, relate the height and scale of the proposed buildings to the existing context and provide variations (Diagram 2)

Diagram 1: A conceptual illustration of a progressive transition in height and scale from the centre of a growth area down to a lower-scale area. Buildings in the growth area may be under different ownership and subject to a master plan, a CDP, or a Secondary Plan.

Diagram 2: A conceptual illustration of a new high-rise building fitting within an area of existing high-rise buildings. Buildings in the growth area may be under different ownership and subject to a master plan, a CDP, or a Secondary Plan.

At the site level

3 Include base buildings that relate directly to the height and typology of the existing or planned streetwall context.

4 An angular plane, typically 45°, measured from the relevant property lines, should be used to provide a frame of reference for transition in scale from proposed high-rise buildings down to lower scale areas.

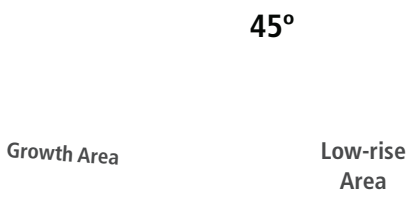


Diagram 3: A conceptual illustration of a possible application of an angular plane. The street is the boundary between the low-rise area and the growth area and a consistent building height is deemed to be desirable for enhancing the character of the street. The angular plane is measured from the edge of the right-of-way (ROW), at a height equal to the buildings (or the zoning provisions) across the street. Buildings in the growth area may be under different ownership and subject to a master plan, a CDP or a Secondary Plan.

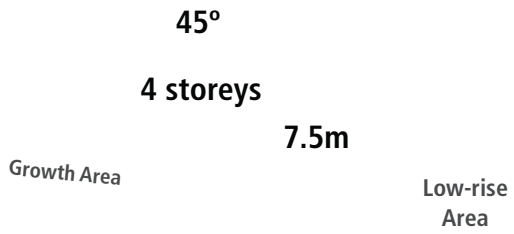


Diagram 4: A conceptual illustration of a possible application of an angular plane. The rear lot line is the boundary between the low-rise area and the growth area. The angular plane is measured from the top of the 4th floor of the building, which is set back 7.5m from the rear lot line. Buildings in the growth area may be under different ownership and subject to a master plan, a CDP or a Secondary Plan.

1.3 Lot Conditions for Infill Development

To achieve effective transition and incorporate positive attributes of design such as separation between towers and built form articulation (see Section 2) a development lot must meet certain conditions such as size, shape, and the relationship with the surrounding public realm. In an area where high-rise buildings are generally allowed, there may be lots that are not suitable to accommodate a high-rise building due to their small size and configuration. In some cases, lot consolidation may be necessary.

1 The lot should be in regular shape to allow for a design that incorporates effective transition measures.

2 The lot should abut the public realm, including streets, parks, plazas, and privately owned public spaces (POPS) on at least two sides.

3 When a proposed high-rise building abuts properties where a high-rise building is permitted, the lot should be of sufficient size to achieve tower separation, setback, and step back:

   a. 1,350m² for a corner lot;

   b. 1,800m² for an interior lot or a through lot;

   c. in areas where land assembly is difficult, the minimum lot area may be reduced without compromising the setback, step back and separation requirements and proponents of a high-rise building may enter into a Limiting Distance Agreement with neighbouring property owners, registered on title.

4 When a proposed high-rise building abuts lots where only low-rise residential buildings are permitted, the lot should be of sufficient width or depth to establish the desirable transition:

   a. a. in the Downtown Core Transect and some areas of the Inner Urban Transect, the lot should be of sufficient size to establish a minimum 20m tower setback from the abutting low-rise residential properties (Diagram 5); and

   b. in other areas, the lot should be of sufficient size to establish a gradual height transition on site by generally following an angular plane, typically 45° (Diagram 6).

5 A proposal to accommodate a high-rise building over 30-storeys in height will require a larger lot to meet the required greater separation distances.

Diagram 5: A conceptual illustration of the approach to determine the appropriate minimum lot area for a high-rise building, likely applicable in the Downtown Core Transect and some areas of the Inner Urban Transect. A minimum tower setback is applied to establish a transition zone between the high-rise tower and the abutting low-rise area.

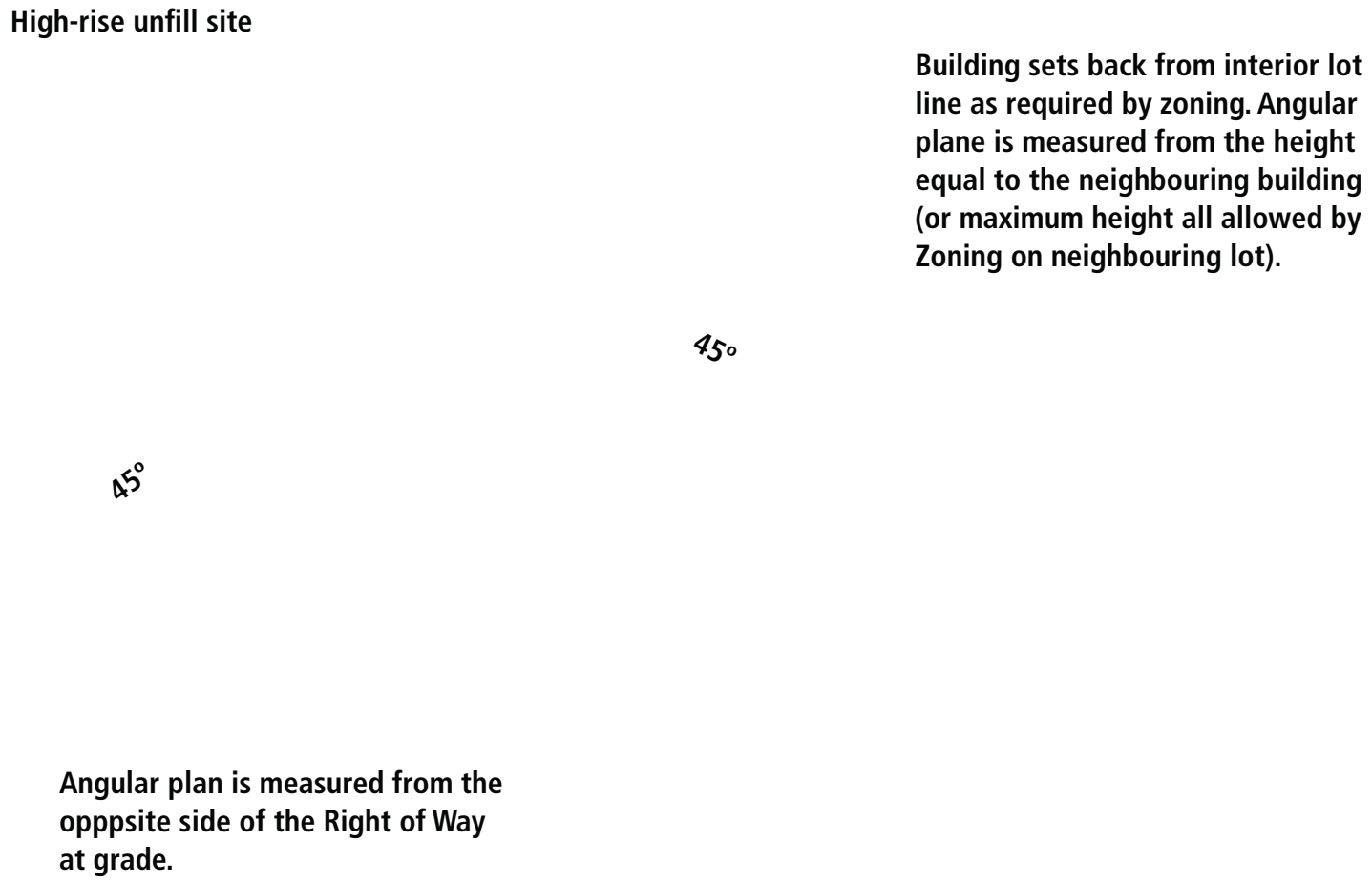


Diagram 6: A conceptual illustration of the approach to determine the appropriate minimum lot area for a high-rise building, likely applicable in the areas outside of Downtown Core Transect. Two angular planes are applied to define the relationship between the location and maximum height of a high-rise building and the lot dimensions to provide the desirable transition between the high-rise and the adjacent low-rise area.

1.4 Heritage

Heritage assets record and reflect the history of a community and define what is unique and distinct about a place. Most heritage buildings in Ottawa are low-rise or mid-rise structures. The development of a high-rise building, including its placement and design must respect and complement the scale, character, form and setting of on-site and adjacent heritage properties.

Heritage buildings on site

1 Conserve the cultural heritage value, attributes, and character of the heritage building.

2 Design the base of the high-rise building to respect and be compatible with the architectural scale, proportion, rhythm, and character of the heritage building.

3 Ensure the heritage building will continue to be the character- defining element on site through the design of the tower, including additional step backs, architectural details and materials.

Figure 12: With significant step backs of the upper portion the James Michael Flaherty Building respects the scale and heritage assets of Elgin Street.

Heritage buildings on adjacent properties

4 Respect the overall historic setting, including protecting and enhancing views of the adjacent heritage buildings through placement, scale, and design of the high-rise building.

5 Respect the character of the adjacent heritage buildings by integrating high-quality, complementary design cues, particularly at the base of the building.

Figure 13: An example of integrating the preserved heritage elements into a high-rise building. The massing and architecture of the high-rise building respect and are compatible with the heritage building.

2.0 BUILT FORM

The design of high-rise buildings has evolved extensively since their inception in the late 19th century. Different forms, styles, and structural systems have been developed and used since then. High-rise design will continue to evolve in response to the new cultural, technological, and market opportunities. Built form is key to achieving Official Plan objectives. The Official Plan encourages a slender design consisting of a base, a middle and a top. This section offers a discussion on the design approach, and provides guidance on the design of each part of a high-rise building, including:

- Approach
- Bar building
- Base
- Middle
- Top
- Exterior Illumination

2.1 Approach

Maintaining and enhancing a distinct identity and image of a place is one of the Official Plan's objectives. A high-rise building should address two important questions related to this objective: how the building is experienced by pedestrians, and how the building expresses the image of the location, the owner, and/or the occupants. The first question is typically addressed through the design of the lower portion of a high-rise building. The second has to do with the design of the upper levels. When a high-rise building is viewed from a distance, the two aspects start to blur. A high-rise building that consists of three integrated parts – a base, a middle, and a top can successfully address both questions and is a preferred approach to design. However, the base-middle-top is not the only approach that will allow a high-rise building to successfully achieve the objectives.

Experience

1 1 Enhance and create the overall pedestrian experience in the immediate surrounding public spaces (including POPS) through the design of the lower portion, typically the base, of the building, which:

a. fits into the existing urban fabric, animates existing public spaces, and frames existing views; and

b. creates a new urban fabric, defines and animates newpublic spaces and establishes new views.

Expression

2 2 Enhance and create the image of a community and a city through the design of the upper portion of the building, which is often comprised of a middle and a top that:

a. protects and/or creates views and landmarks; and

b. respects and/or enriches urban fabric and skylines.

Expression

Experience

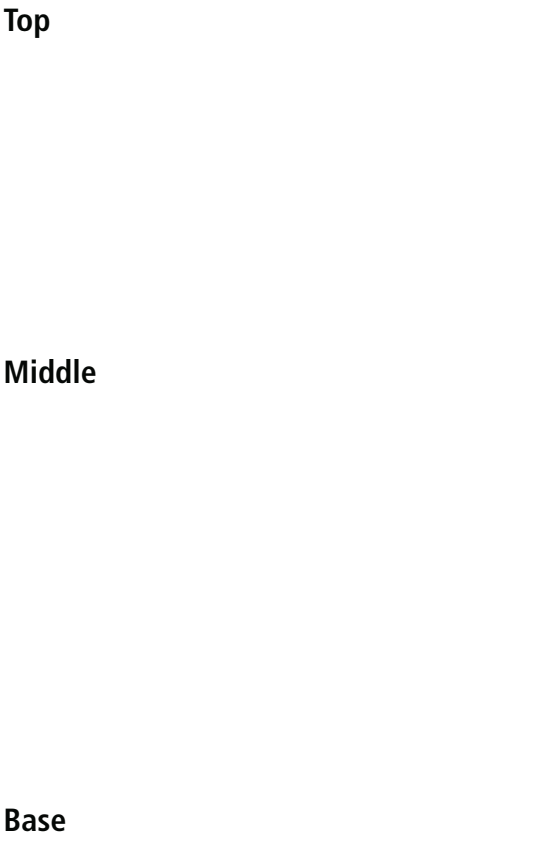
Diagram 7: High-rise buildings should address both the experience and expression functions in design. The experience functions are served by the design of the lower portion. The expression functions are achieved through the design of the upper levels.

Base-middle-top

3 Depending on the function and context, high-rise Buildings can take many different forms to serve both the experience and expression functions:

a. a high-rise building that includes three distinctive and integrated parts – base, middle, and top is generally accepted as a good approach to built form design in order to effectively achieve many urban design objectives (Diagram 8).

b. a high-rise building that has a tower (middle + top) with a small floor plate can effectively achieve many design objectives in the urban environment



Figures 14 to 16: (left to right): Some successful contemporary high-rise buildings are sculpted in unique forms without featuring a base, a middle, and a top.

Diagram 8: Base-middle-top is the preferred approach to high-rise built form design.

2.2 Bar Building

A high-rise building may be narrow and tall, described as a point tower. It may also be wide and short, typically with a slenderness ratio of 2:1 or more, often labelled a bar building or a "slab". A point tower with a small floor plate is the preferred built form. However, bar buildings will likely continue to be built in the Outer Urban and Suburban Transect. A high-rise bar building may be effective for creating a continuous street wall and serve as a horizontal element in the composition of a group of high-rise buildings. Compared to a point tower, a bar building typically presents more shadow, wind, visual, and the loss of skyview challenges. They should be carefully designed with the quality of a mid-rise building and should consist of three distinctive and integrated parts: a base, a middle and a top. A bar building must not be too high.

Appropriateness of bar building

1 A high-rise bar building may be appropriate when:

   a. it is oriented along the north-south direction to provide greater opportunities to minimize shadow impacts and allow for better access to natural light;

   b. it is placed to effectively frame streets and public open spaces; and

   c. it is coordinated with point towers to create a balanced grouping of different high-rise types.

2 A high-rise bar building is not appropriate if:

   a. the proposed building is stand alone in the landscape; or

   b. the proposed building is part of a group of the same buildings that are randomly positioned or equally spaced without a focal point.

Figure 17: An example of inappropriate grouping of bar buildings that creates a scenario of "loss of space".

Figure 18: Bar buildings are placed and designed to effectively frame the streets and public open spaces.

Figure 19: A stand-alone pavilion bar building with massing articulation offers views and serves as a focal point in the public realm.

Height of bar building

3 The maximum height of a bar building should be 12 storeys or 1.5 times of the width of the street it faces (building face to building face distance), whichever is less. A taller building should be designed as a point tower rather than a slab. (Diagram 9).

4 The maximum height of the middle portion of a bar building should be 9 storeys, or equal to the width of the street it faces (building face to building face distance) (Diagram 9).

5 When abutting a low-rise residential area at the rear, an angular plane, typically 45°, measured from appropriate lot lines should apply to determine the heights of various portions of a bar building (Diagrams 10, and 11).

Diagram 9: A conceptual illustration of the appropriateness of the height of a bar building.

Diagram 10: A conceptual illustration of a possible application of an angular plane when a bar building abuts a low-rise residential area.

Diagram 11: A conceptual illustration of a possible application of an angular plane when a bar building is located across the street from a low-rise residential area.

Massing of bar building

6 A bar building should follow the base-middle-top approach in design and general guidelines for each portion of the building described below.

7 The base and middle portions of a bar building should contribute to enhancing the existing or planned street wall condition.

8 Where appropriate, articulate the facades of the base and/or middle to vertically to break up the overall mass.

9 The top portion of a bar building should open up the skyview and avoid a canyon effect by:

a. stepping back from the middle portion of the building; and.

b. breaking up into sections with varied heights and articulation.

Figure 20: The base of the bar building is sculpted to create a scale, architectural rhythm, and details that fit into the surrounding context.

Figure 21: The wide and short bar building is divided up horizontally and vertically with articulations to break up the over mass.

Figure 22: The top portion of the bar building features significant step backs and is broken up into sections with architectural details.

2.3 Base

The base is the most critical component of a high-rise building for achieving objectives of the Official Plan, including defining public and private spaces, respecting the character of existing areas, establishing a human scale pedestrian environment as well as achieving built form integration and transition. The base should be designed to fit harmoniously within the existing and planned context. It should respect the scale, proportion, and character of adjacent streets, parks, and public or private open spaces and animate such spaces.

Placement

1 Place the base of a high-rise building to form continuous building edges along streets, parks, and public spaces or Privately Owned Public Space (POPS):

   a. where there is an existing context of street wall buildings, align the facades of the base with adjacent building facades;

   b. in the absence of an existing context of street wall buildings, create a new street wall condition to allow for phased development and evolution.

2 Additional setbacks beyond the zoning requirements and existing prevalent patterns may be necessary and appropriate at street corners, transit stops, building entrances, and other locations to accommodate heavy pedestrian traffic public and private amenities, soft landscaping and trees.

Figure 23: The base of the building is designed to enhance the existing street wall condition.

Figure 24: The townhouse units that form the base of the building are designed to create a new street wall condition.

Figure 25: Additional setbacks at the street corner to provide space for pedestrians, bus passengers and landscaping.

Height and transition

3 The maximum height of the base of a proposed high-rise building should be equal to the width of the ROW (Diagram 12) to provide sufficient enclosure for the street without overwhelming the street.

4 Additional height may be appropriate through the provision of step backs and architectural articulation, particularly on wider streets and deeper lots.

5 The minimum height of the base should be 2 storeys.

6 Where there is an existing context of streetwall buildings with consistent height, the base of the proposed high-rise building should respect this condition through setbacks and architectural articulation.

7 For sites where the adjacent context is lower-scale and not anticipated to change:

a. a. the height of the base or the portion of the base immediately adjacent to the neighbouring lower-scale buildings should match the height of the neighbouring buildings (Diagram 12 and 13); and

b. provide a transition in height on the base through setbacks and architectural articulation (Diagram 12 and 13).

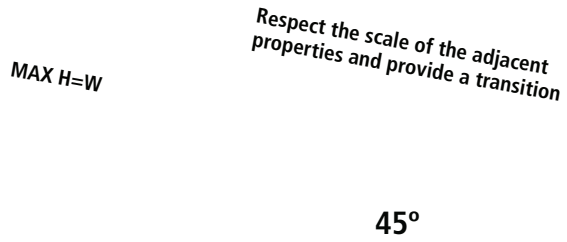


Diagram 12: A conceptual illustration of the articulation of the base to provide transition in height.

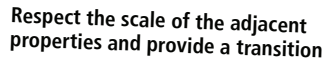


Diagram 13: A conceptual illustration of the articulation of the base to respect the height and pattern of the abutting existing residential buildings.

Articulation and materials

8 Respect the character and vertical rhythm of the adjacent properties and create a comfortable pedestrian scale by:

   a. breaking up a long façade vertically through massing and architectural articulation to fit into the existing finer grain built form context (Figure 26);

   b. determining appropriateness of larger-scale façades in certain areas, such as along the ceremonial routes (Figure 27); and

   c. introducing multiple entrances, where possible, through creative store layout and organization where a large format retail use is located on the ground floor.

9 Use high-quality, durable, and environmentally sustainable materials, an appropriate variety in texture, and carefully crafted details to achieve visual interest and longevity for the facade.

10 Apply best practices in accordance with the City's Bird-Safe Design Guidelines. In particular, apply visual markers or use low reflectance materials on all exterior glazing within the first 20m of the building above grade.

11 The ground floor of the base should be animated and mostly Transparent when abutting public realm. Avoid blank walls, but if necessary, articulate them with the same materials, rhythm, and high-quality design as more active and animated frontages. (refer to guidelines under 3.2)

Figure 26: An example of ground-oriented units that break up the long façade of the base.

Figure 27: A large scale base may be appropriate in certain context.

2.4 Middle

The tower portion of a high-rise building, including the location, orientation, shape, massing, relationship with the public realm and the neighbouring properties, has significant impacts on the pedestrian experience and the quality of life of the residents and other occupants. It also contributes to achieving energy efficiency of the building and surrounding buildings. The Official Plan promotes high-rise buildings with smaller floor plates that provide adequate separations and step backs. The tower portion of a high-rise building should be designed to fit in and enhance the character of the place, reduce and mitigate the impacts on both the public and private realms, promote energy efficiency, respect the development rights of neighbouring properties.

Tower floor plates

1 Encourage small tower floor plates to minimize shadow and wind impacts, loss of skyviews, and allow for the passage of natural light into interior spaces (Figure 28).

2 The maximum tower floor plate for a high-rise residential building should be 750m² (Diagram 14);

3 The maximum tower floor plate for a high-rise office building should 2,000m²; and

4 Larger tower floor plates may be considered in suburban locations with design features to mitigate shadow and wind impacts, maintain skyviews, and allow for access to natural lights.

Figure 28: Towers with small floor plates are positioned with generous separation to allow for access to natural light, privacy, open up skyviews, and mitigate shadow impacts.

Diagram 14: A conceptual illustration showing maximum floor plate of 750 m² that includes all built areas, including the balconies.

Separation between towers

5 Provide proper separation distances between towers to minimize shadow and wind impacts, and loss of skyviews, and allow for natural light into interior spaces.

6 The minimum separation between towers should be 23m (Diagram 15);

7 A tower must provide a minimum 11.5m setback from the side and/or rear property lines when abut-ting another high-rise building (Diagram 15);

8 The minimum separation between a tower over 30-storeys and a neighbouring tower should be 25m; and

9 A tower over 30 storeys must setback a minimum of 12.5m from the side and/or rear property line when abutting another tower over 30 storeys, and 13.5m when abutting a tower up to 30 storeys.

10 In Downtown and some areas of the Inner Urban Tran-sect where lot fabric is tight, a reduced separation to a minimum of 15 to 20m may be considered provided the towers are staggered and do not overlap by more than 15 to 20% of the length of the facing facades (Diagram 16).

11 In Surburban Transect, cluster towers to avoid random placement of buildings.

12 A tower with a blank wall façade is not allowed other than when two towers are staggered and separation distances are reduced. In such cases a small portion of the façade could be blank where the overlap occurs. The blank portion of the façade should be integrated into the design of the façade in a manner that is consistent with the overall character of the tower.

Diagram 15: A conceptual illustration of the separation distances of towers and the mechanisms to achieve them

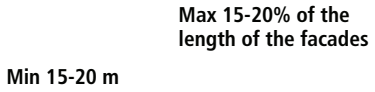


Diagram 16: A conceptual illustration of staggering towers in Downtown Core Transect and some areas of the Inner City Transect where a reduction of tower separation may be considered.

Step backs from base

13 Step back the tower, including the balconies, from the base to allow the base to be the primary defining element for the site and the adjacent public realm, reducing the wind impacts, and opening skyviews:

a. a step back of 3m or greater is encouraged.

b. the minimum step back, including the balconies, should be 1.5m;

c. where development lots are very narrow (less than 30m), such as in Downtown and some areas of the Inner Urban Transect, and a step back is difficult to achieve, use various design techniques to visually delineate the tower from the base (Figure 29). Use other measures to mitigate shadow and wind impacts.

14 Up to one third of a tower frontage along a street or a public space may extend straight down to the ground to address the street corner or create a forecourt for the entrance. At these locations, features such as canopies and overhangs are required to mitigate pedestrian level wind impacts (Diagram 17).

Figure 29: An example of using architectural articulation to clearly define the base and the middle.

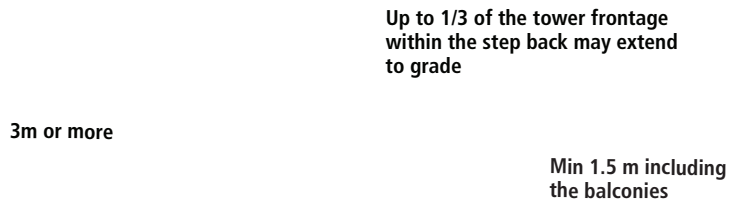


Diagram 17: A conceptual illustration of tower step backs from the base and the allowance of a portion of the tower to extend to the grade.

Articulation and materials

15 Orient and shape the tower to minimize shadow and wind impacts on the public and private spaces.

16 Articulate the tower with high-quality, sustainable materials and finishes to promote design excellence, innovation, and building longevity, including:

a. orienting and shaping the tower to improve building energy performance, natural ventilation, and daylighting;

b. articulating the facades to respond to changes in solar orientation, wind effects, and context; and

c. where possible, include operable windows to provide natural ventilation and help reduce mechanical heating and cooling requirements.

17 For a background building, create a fenestration pattern, and apply colour and texture on the facades that are consistent with and complement the surrounding context.

18 For a landmark building, create a unique fenestration pattern, and apply colour and texture on the facades that offer appropriate contrast to the surrounding context.

Figure 30: Horizontal slabs help reduce solar gain in the summer and create a strong rhythm on the facade.

Figure 31: In addition to being an environmentally friendly building, the colours used contribute an additional rich layer to the facades.

Figure 32: The planting of trees in this project is intended to miti-gate smog and moderate temperatures in the building in addition to many environmental benefits.

2.5 Top

An appropriate design of the top of a high-rise building is influenced by many factors, including location, height, built form composition, architectural expression, and overall context of the skylines. Most high-rise buildings form part of the urban backdrop. In these instances, the top should reinforce the supporting role of the building and subtly integrate within the overall tower design. A small number of high-rise buildings may benefit from a signature top to strengthen the identity of the building as a landmark. The top of a high-rise building should be integral to the overall design of the building, and maintain and enhance the character of the place as required by the Official Plan by contributing to the skylines. The roofing design should aim to reduce urban heat island effect.

1 The top should be integral to the overall architecture of a high-rise building, either as a distinct or lighter feature of the building or a termination of the continuous middle portion of the tower.

2 Integrate roof-top mechanical or telecommunications equipment, signage, amenity spaces, green roofs and roof top gardens into the design and massing of the upper floors.

3 The top should make an appropriate contribution to the character of the city skyline:

   a. for a background building, the top should fit into the overall character and contribute to the harmony of the city skyline; and

   b. for a landmark building, the top should enrich the city skyline by creating a new focal point.

Figure 33: An example of integrating the mechanical penthouse into the overall architectural design expression.

Figure 34: The top of the building integrates the mechanical penthouse and provides amenity spaces.

Figure 35: The ring bean at the top is designed as a reminiscent of the Statue of Liberty and a reminder of the city's history.

2.6 Exterior Illumination

Appropriate exterior illumination of a high-rise building can contribute to improving and enhancing the safety, vitality and character of a place. Inappropriate exterior illumination will produce light pollution and waste energy. The implementation of exterior illumination should achieve the design objectives of the Official Plan with respect to sense and character of places, compatibility, and energy efficiency. The design should be based on the existing and planned context of built and natural environment.

4 The decision to light the exterior of a high-rise building should be based on a cohesive illumination and lighting vision of the City, community, neighbourhood, and a place. Such a vision is typically established by the OP, Secondary Plan, CDP, or a master plan for a larger site.

5 High-rise buildings in the Central Area of Downtown Core should be subject to, and implement the National Capital Commission's Capital Illumination Plan.

6 Exterior illumination may be appropriate:

   a. when a high-rise building is identified as a landmark building.

   b. when a background high-rise building is part of an important building edge that defines a significant place of the City, a community, and a neighbourhood.

7 Exterior illumination may not be appropriate for a high-rise building in a residential neighbourhood or in close proximity to an environmentally sensitive area.

Figure 36: The temporary exterior lighting set up for the 2017 Crushed Ice World Championship highlights the architectural characteristics of the historic building.

Figure 37: The external illumination is designed to support the overall architectural expression with key elements of the building highlighted to enhance the ambience of the Confederation Boulevard.

8 The exterior illumination of a high-rise building should enhance the views and vistas of the City, district, community, and neighbourhood.

9 The illumination design should:

a. highlight the character of the building in modest and subtle ways and should be cohesive for all parts of the building – base, middle and top;

b. prevent light pollution by avoid uplighting and over lighting;

c. choose light sources that are effective for the optical properties of the facade materials; and

d. select energy efficient fixtures.

10 The installation of the fixtures, should be integral to the design of the building.

Figure 38: The night scene is designed to express and enhance the unique form and character of the building.

Figure 39: The ground floor interior illumination and the lighting under the colonnade have created a bright, safe, and inviting pedestrian environment.

3.0 PEDESTRAIN REALM

Creating quality public and private spaces that are safe, accessible, and easy to get to and move through is the direction of the Official Plan. The provision and design of pedestrian realm around a building, including both public spaces and Privately Owned Public Space (POPS) and their inter-face with the building, are crucial to ensuring the overall quality of the development. The City has established standards, guidelines and best practices for the pedestrian realm regardless of the height of the surrounding buildings. However, high-rise developments present some unique opportunities and challenges. The guidelines in this section focus on the following key areas:

- pedestrian space and connection
- Animation and design
- pedestrian comfort

3.1 Pedestrian Space and Connection

The Official Plan promotes pedestrian-oriented development and requires adequate pedestrian infrastructure for all developments. An enhanced pedestrian environment is expected to support a high-rise development. A successful high-rise development must be easily accessible by transit, bicycle, and foot, and requires a sufficient pedestrian realm. This could include a network of dense street grid and pathways, generous pedestrian spaces, and well positioned public spaces of different forms, characteristics, and ownership. Together, these elements will make high-rise developments accessible and livable to support the City's intensification strategy.

Space between curb and building

1 Provide a minimum 6m space between the curb and the building face along the primary frontages of a high-rise building, including the city-owned portion within the right-of-way (ROW) and the building setback area.

2 The pedestrian clearway must be within the ROW;

3 On a street with commercial character, introduce hard surfaces between the curb and the building face to maximize the walkable area and provide flexible spaces to accommodate seasonal uses such as outdoor patios, where appropriate; and

4 On a street with residential character, introduce landscaping and/or residential patios between the sidewalk and the building face to allow for public-private transition.

Figure 40: A street of commercial character that provides hard landscaping to maximize walkable area.

Figure 41: A street of residential character that provides public-private transition.

5 At locations with high foot traffic volumes, such as the Downtown Core, a wider curb to building face space may be desirable to accommodate pedestrians, street furniture, signs, displays, and vendor space:

a. provide increased building setbacks at the street corner, where appropriate (Figure 42); and

b. in areas where the streets are narrow and building setback is difficult to achieve, provide additional pedestrian spaces through pedestrian easements, and use arcaded, colonnaded an cantilevered building bases to augment the width of the pedestrian space at grade.

c. The pedestrian space within the arcade and colonnade, or under the cantilever should be a minimum 2.5m wide and 2 storeys high. Refer to guidelines in the Downtown Moves for detailed reference (Figures 43, and 44).

6 At locations with lower pedestrian traffic volumes, extra wide pedestrian zones beyond the prevalent streetscape pattern may not be appropriate. The overall width of the street (building face to building face) should be related to the height of the high-rise base in order to maintain an appropriate sense of scale and proportion.

Figure 42: Increased building setback at grade provides additional pedestrian spaces at a busy street corner.

Figure 43: The pedestrian space below the cantile-vered building should be of sufficient height to provide a bright, open, and inviting pedestrian space.

Figure 44: The colonnaded pedestrian space should be of sufficient height and width to provide a bright, open, and inviting pedestrian space.

Public spaces

7 Provide at grade or grade- related public spaces such as plazas, forecourts, and public courtyards, which may be under public or private ownership, particularly in densely populated areas such as the Downtown Core.

8 The public spaces should:

a. complement and be integrated into the existing network of public streets, pathways, parks, and open space;

b. provide direct visual and physical connections to the surrounding public streets, pathways, parks, and open spaces;

c. support the proposed high-rise development particularly at grade functions;

d. allow for year-round public use and access; and

e. maximize safety, comfort and amenities for pedestrians.

9 A privately owned public space should:

a. be perceived as a public space not as a private space; and

b. be properly signed to welcome the public.

Figure 45: A public space that features amenities that attract public activities.

Figure 46: A POPS designed for all season uses.

Figure 47: A residential courtyard offers a quasi-public amenity area.

Mid-block connections:

10 Break up larger street blocks or larger development parcels by introducing mid-block pedestrian or multi-use connections, public or private, outdoor or indoor to increase and enhance the overall pedestrian accessibility and walkability of the area.

11 When a mid-block connection is on private lands, it should be properly signed and designed to welcome pedestrians and may be integrated into the lobby or atrium of a high-rise building.

Building access

12 Locate the main pedestrian entrance at the street with a seamless connection to the sidewalk.

13 Where the main pedestrian entrance is located away from the sidewalk provide a direct, clearly defined pedestrian connection such as a walkway or a pedestrian plaza, between the main pedestrian entrance and the sidewalk.

Figure 48: An animated mid-block connection with landscaping and seating in a commercial area.

Figure 49: A mid-block connection in a residential area that provides convenient access for pedestrians and cyclists.

Figure 50: A seamless pedestrian connection between the sidewalk and the building main entrance located in a private forecourt.

3.2 Animation and Design

Providing a safe and appealing pedestrian realm is an Official Plan direction. The pedestrian realm around a high-rise building, including spaces on both public and private lands and the functions and façades of a building that abut the pedestrian realm must be well designed to ensure they are convenient for and attractive to pedestrians and supportive of businesses that are dependent on foot traffic.

Animation

1 Introduce commercial and retail uses at grade on streets with commercial character (Figure 51).

2 Incorporate ground-oriented units with useable front entrances, and front amenity spaces on streets with residential character (Figure 52).

3 Provide greater floor to ceiling height at the ground floor to allow for flexibility in use over time.

4 Provide a minimum of 50% of clear bird-friendly glazing on the portions of the ground floor that face the pedestrian realm.

5 Provide a range of amenities appropriate to the context to meet the needs of a diversity of potential uses, including seniors and children, residents and employers, local people and visitors.

6 Provide public arts that suits the scale and character of the high-rise building and the surrounding pedestrian realm.

7 Apply Crime Prevention Through Environmental Design principles.

Figure 51: An example of ground floor commercial uses of a high-rise development that animates the public street.

Figure 52: An example of ground-oriented units of a high-rise development that animates a public street of residential character.

Parking, loading, and servicing

8 Locate parking underground or at the rear of the building.

9 Locate drop-off and pick up areas on private lands and where possible, at the rear of the property.

10 Internalize and integrate servicing, loading, and other required utilities into the design of the base of the building, where possible.

11 When they are not internalized, screen servicing, loading, and required utilities from public view and ensure they are acoustically dampened.

12 Locate and co-locate access to servicing and parking appropriately, ideally from the rear of the building, a public lane, or a shared driveway, to minimize the visual impacts and interference with the pedestrian realm.

Diagram 18: A conceptual illustration of a master-planned development where parking is located underground and additional parking, loading and drop-off areas are located in the interior of the development site.

Figure 53: Integrate garage entrance into the carriage way, away from public views.

Diagram 19: A conceptual illustration of a master-planned development where parking is located underground and additional parking, loading and drop-off areas are located in the interior of the development site.

13 Recess, screen, and minimize the size of the garage doors and service openings visible from streets and other public spaces.

14 Design elements such as the screen, garage doors and serve openings as integral parts of the building and use high quality finishings.

15 Locate ventilation shaft, grades, and other above grade site servicing equipment away from public sidewalk and integrate these elements into the building and landscape design.

16 Coordinate, and where possible integrate, public transit stop elements such as benches and shelters within the site and building design.

Streetscape standards

17 Infill development should fit in and enhance the character of the street by:

a. implementing the applicable design standards; and

b. implementing streetscape design visions and policies of a CDP and Secondary Plan, where applicable.

18 Master planned developments may develop their own design standards in concert with City standards to create a unique character.

19 All development shall implement the City's Accessibility Design Standards

Figure 54: A carefully designed feature wall that is integral to the overall architectural expression serving as a screen for the loading and garage entrance.

Figure 55: Integrate gas metres and other utilities into architecture and landscaping design.

Figure 56: Integrate bus stops into architectural design

3.3 Pedestrian Comfort

Microclimate is one of the criteria set out by the Official Plan for assessing the compatibility of a development proposal. High-rise buildings often present particular challenges on microclimate conditions in the pedestrian realm and outdoor private amenity spaces. The design of a high-rise building must ensure pedestrian safety and basic thermal comfort. This will require a good understanding of the potential negative impacts of a proposed high-rise building such as undesirable shadowing, adverse wind pattern, and snow drifting. It will also require the development of strategies, such as building placement and orientation, massing articulation, architectural details, and landscape design to minimize and mitigate such impacts.

Wind and shadow

1 1 Conduct a wind analysis for all high-rise developments in accordance with the Wind Analysis Terms of Reference and indicate:

   a. how the building is placed and built form is designed to minimize the potential impacts; and

   b. how measures have been introduced to mitigate any potential wind impacts.

2 Conduct a shadow analysis for all high-rise developments in accordance with the Shadow Analysis Terms of Reference and indicate how the placement and the built form is designed and shaped to minimize shadow impacts on the surrounding public and private realms.

Figure 57: The "wedding cake" approach to built form design is effective to mitigate shadow and wind impacts on the public realm and the adjacent properties.

Figure 58: A high-rise building that features significant step backs can open up sky views and effectively mitigate shadow and wind impacts on the public realm.

Figure 59: Sufficient separation between towers opens up the skyview and allows the sunlight to reach the public and private spaces at grade.

Pedestrian weather protection

3 Protect pedestrians from wind, rain, snow and intense sun with features such as arcades, canopies, arbours or other elements to moderate the microclimate and facilitate year-round use.

4 Provide permanent pedestrian weather protection, such as overhanging or canopies, at the building entrances and along commercial and mixed-use street frontage.

5 Coordinate pedestrian weather protection with neighbouring building for continuous shelter and compatibility.

6 Integrate pedestrian-scale lighting, signage, street numbering, and other features where appropriate.

Figure 60: A continuous canopy is used to protect pedestrians from elementsproperties.

Figure 61: The cantilevered base building provides a continuous protected area along the building frontage for pedestrians and businesses.

Figure 62: A canopy highlights the entrance of the ground level shopping facility and provides protection for pedestrians.

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IMAGE CREDIT

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