

3.0 SITE DESIGN

3.1 Introduction

The previous section provides direction with respect to broad design principles with an emphasis on streetscapes, natural environment, heritage conservation, accessibility and public safety.

This section builds on the foundation of public space design and provides direction on specific site design components. The guidelines of this section will assist in achieving development which supports the City's streetscape objectives, provides for safe and efficient site operations and fosters compatibility between land uses.

Infill Development

These site planning guidelines are being applied across Hamilton, in older neighbourhoods as well as new neighbourhoods. Older neighbourhoods typically have a unique character, conditions and an urban form which is different than new greenfield neighbourhoods and corridors. These older neighbourhoods often have elements which do not meet current site design or engineering standards. It would be inappropriate to have new infill development attempt to meet current standards as it may disrupt the order and pattern of the neighbourhood. In this type of situation, development should try to meet the intent of the site plan guidelines to the extent possible.

Rural Development

The rural areas of Hamilton also have a different character and needs from that of urban areas. Many of the urban guidelines will not apply to the rural area but there are design considerations for the rural areas. Development in rural areas should maintain the rural character of open space, large setbacks from streets, preservation of natural features and other defining elements of the area. Municipal services are also limited in the rural areas, and drainage ditches are likely used. For low intensity activities, driveways and parking areas could be surfaced with gravel. The appropriate guidelines and standards for a rural development will relate to the type, scale and location of a project and will be determined in consultation with staff.

3.2 Site Circulation

Rationale

Site circulation is a key organizing and design element for most development projects and must be considered early in the design process.

The design of the site circulation system should support the City's streetscape objectives and provide for the needs of both pedestrians and motorists. Safe and direct routes should be provided with priority given to the pedestrian.

In large projects, consideration must be given to service and loading needs and emergency vehicles. Site design will affect how easily trades can deliver goods and fire trucks can address emergency situations. The Ontario Building Code specifies emergency route criteria.

The Zoning By-law prescribes the amount of parking required in developments. These guidelines address some of the functional and visual aspects of parking lots to ensure that parking areas do not detract from the appearance of the street and project.

Vehicular Circulation

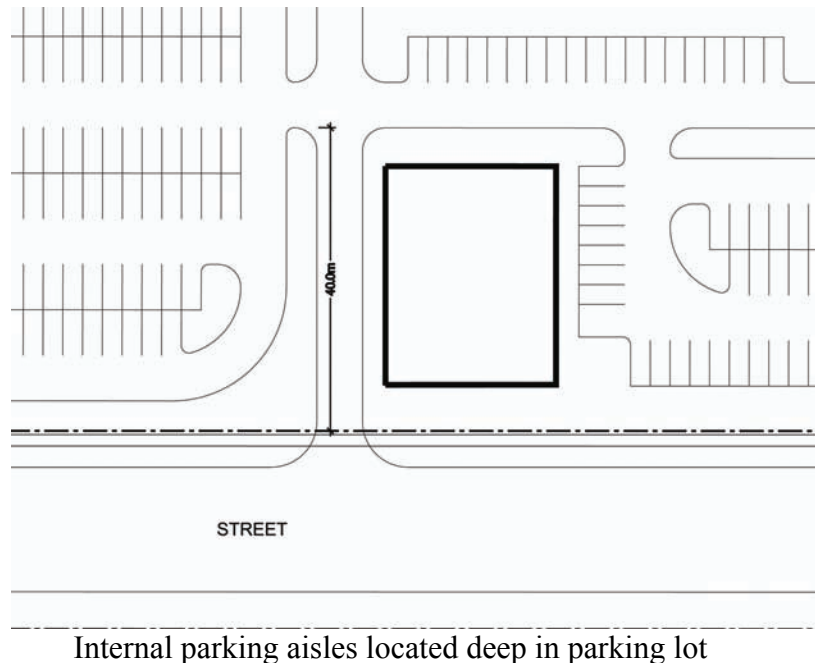
1. The number of driveway connections to the public street should be minimized to strengthen streetscapes. Mutual or shared driveways are encouraged, especially along collector and arterial roads, to minimize the number of driveways.



Office buildings with shared driveway

2. Parking areas on abutting commercial properties should be connected to provide movement between lots without having to use the adjacent public street.
3. The distance between site driveways and intersections should be maximized to create safe turning movements.
4. Where there is more than one entrance on the same site, the distance between each entrance point should be maximized.
5. Driveways should be located to provide ease of access and egress for staff, visitors, delivery vehicles and emergency services.

6. Main driveways should be designed (width, curb radii, surfaces) to accommodate delivery and emergency vehicles as per City standards.
7. For large commercial development and shopping centres, there should be no internal access to internal parking aisles from the main driveway for a distance of 40 metres from the municipal road allowance.



8. The driveway system should provide for ease of access to buildings for fire trucks in accordance with the Ontario Building Code.
9. Parking, loading and delivery drop off areas should be clearly identified through site signage.
10. Driveways should be located opposite existing or proposed driveways and streets to avoid offset intersections and traffic difficulties.

Pedestrian Circulation & Cycling Facilities

1. A well defined and continuous pedestrian system should be developed on each site with connections to the public street, parking areas, surrounding buildings and pedestrian amenity areas. Primary pedestrian connections should be distinguished from secondary pedestrian connections through such measures as differing sidewalk widths and paving materials.



The pedestrian circulation system is clearly defined by pavers and sidewalk width

2. Primary pedestrian connections should be barrier free, and should be provided directly from the public street sidewalk to the principal building entrances and parking areas.



A wide sidewalk connects the shops with the street

3. There should be at least one primary pedestrian connection from the site to an abutting street frontage.
4. Sidewalks should be provided between transit stops and building entrances. Building entrances should be coordinated with transit stops to minimize walking distance and provide weather protection.



Transit stop integrated with institutional development

5. Secondary pedestrian connections (on-site sidewalks) should be barrier-free, link major activity areas, provide a pathway through large parking areas, and a pathway between parking areas and building side yards.



A walkway provides a safe pedestrian connection through a commercial parking lot

6. Pedestrian walkways should be separated from vehicular traffic wherever possible. Where walkways cross vehicular circulation routes, the use of alternative hard surface materials is encouraged. Other features, such as landscaping treatments, signage and bollards, may be used to delineate pedestrian crossings. Large commercial projects should incorporate wider walkways, particularly at the main building entrance.



Pavers are used to mark the walkway

7. Sidewalk surface treatments should provide for safe movement under all weather conditions and be of low maintenance materials. Textured concrete with score lines and banded edges of other paving materials is encouraged given concrete's durability and neutrality.
8. Major pedestrian routes should be easily identifiable through the use bollards, trees, continuous paving materials, signage and lighting.
9. Bicycle racks or indoor bicycle storage should be provided near the entrances to major buildings and service commercial uses, and along major commercial streets.



Bicycle rack located near building entrance

10. Bicycle parking areas should not impede pedestrian circulation.
11. The rack element should support the bike upright by its frame. Comb, toast and other wheel bending racks that provide no support for the bicycle are not recommended.



Ample bicycle racks are provided for major public building

12. The number of bicycle parking spaces should be evaluated on a site by site basis based on the use and location. A recommended list of bicycle parking spaces is provided in the Standards section.

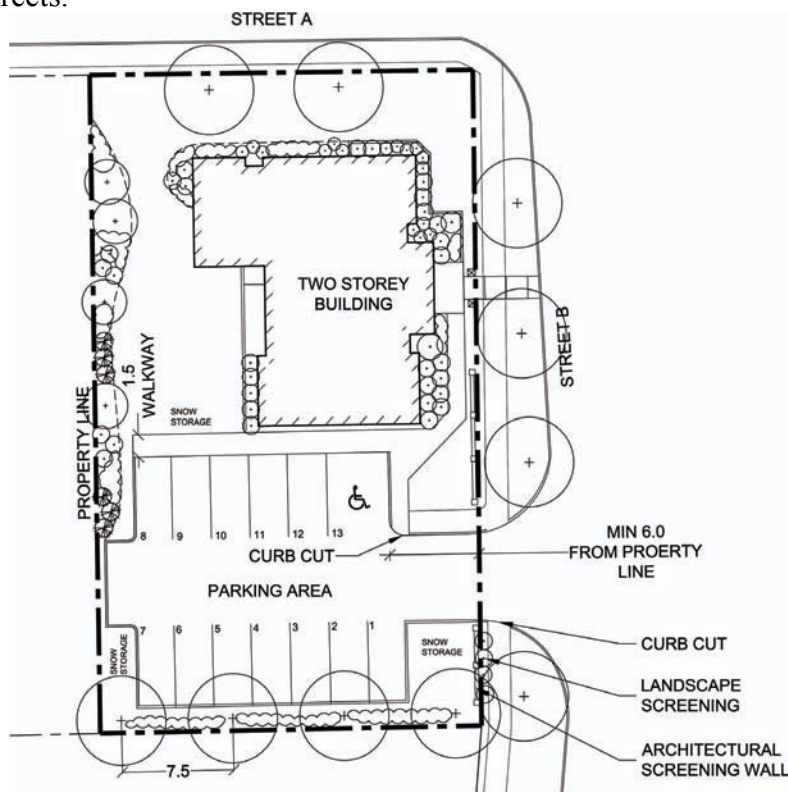
Parking

1. Parking areas should be located in close proximity to building entrances and provide an easily identifiable pathway to the building entrance. Barrier-free and visitor parking spaces should be close to the main entrance.



Short term and barrier free parking near entrance

2. Parking areas should generally be located behind the building mass at the side and rear of buildings. This will allow buildings to be located closer to the street and reinforce the City's objective of creating attractive, pedestrian-oriented streets.



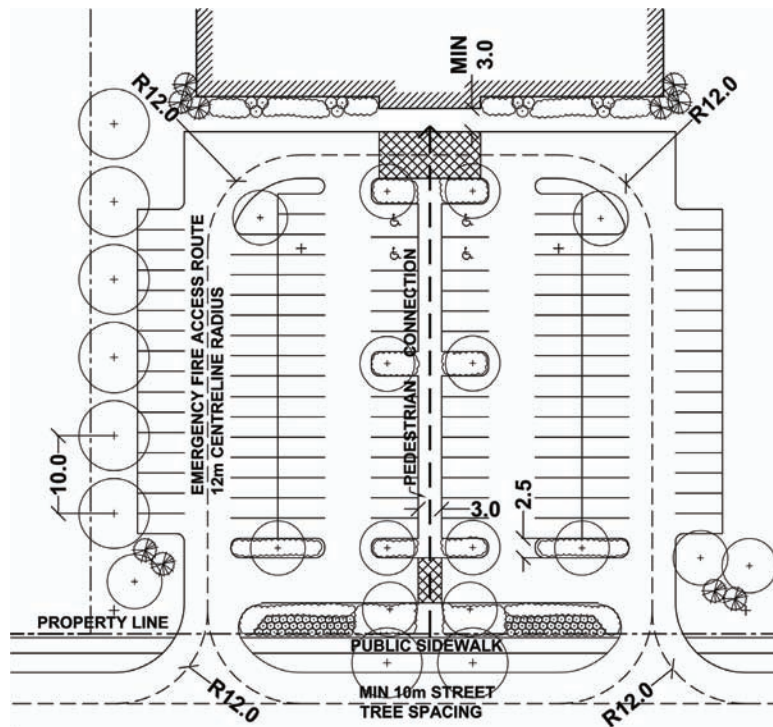
Building sited prominently at corner with parking at rear

3. When parking cannot be located behind the building mass, or is required in the front yard for small commercial developments, front yard parking should be limited to single or double loaded aisle of parking.



Front yard double loading aisle parking is provided for commercial development

4. For large parking areas, rows of parking spaces should be aligned perpendicular to the facility to minimize the number of pedestrian aisle crossings.



Site plan showing proper parking orientation, defined pedestrian path pathway and crossings, and emergency access standards

5. Buffer strips and landscaping should be provided around the perimeter of parking areas and laneways. Buffer strips will vary in width and extent and should generally be a minimum of 3 metres in width, depending on site characteristics, streetscape, grades and adjacent uses.



Parking lot edges softened with landscaping

6. Parking areas should be adequately screened from view through the use of landscaping, berms, fences and screening. Low level screening of shrubs, hedges or screen walls along with street trees should edge parking lots next to public streets. Tall and dense screening such as wood fences, brick walls and coniferous trees should be used in rear and site yards adjacent to residential properties.



Walls with landscaping are provided along the street to screen parking

7. Curbed landscaped islands should be utilized at the end of parking lot aisles along major vehicular routes. Islands should also be used to visually divide large parking lots. The provision of islands and internal landscaping should be of a scale relative to the size of the parking lot and be 2.5 to 3 metres in width to sustain tree planting. Additional guidelines are provided in Section 3.3, Landscaping Design.



Office parking lot broken up with landscaped island

8. Parking lot plant material should be salt and drought tolerant, provide ease of maintenance and be hardy and strongly branched. Hardy ground covers, stone mulch or similar materials, should be used in parking lot landscaped islands.
9. Parking lot lighting levels should be uniform across the lot.
10. Well-drained snow storage areas should be located adjacent to parking areas and away from catch basins, if possible, if snow will not be trucked off-site.
11. Generally, permanent parking lots should be curbed and paved with an appropriate strength of asphalt or equivalent hard surface material.

Parking Structures: Above and Below Grade

1. Structured parking should be designed to support the streetscape. Uses such as retail, service or office should be considered for integration into the parking structure along the street.

2. Facade design should complement the adjacent buildings in terms of openings, vertical articulation, materials and colour.



Parking structure is designed with materials and bays similar to surrounding buildings and has storefronts at grade

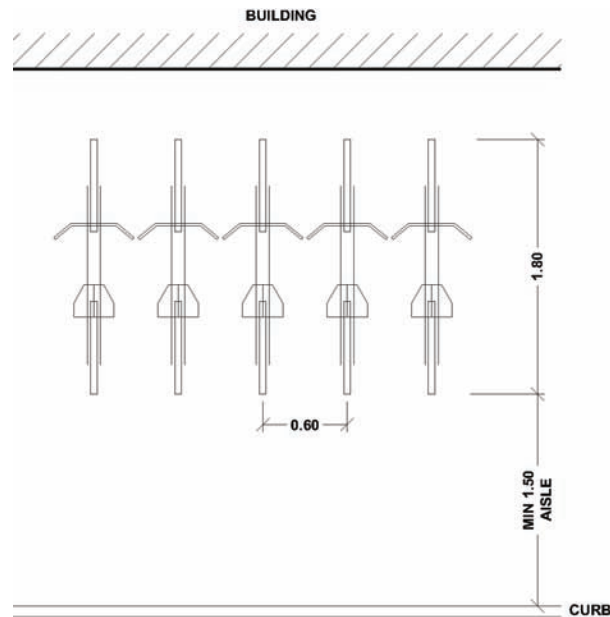
3. Vehicular entrances and exits should be sited to minimize conflicts with pedestrians and provide safe intersections with public streets.
4. Safety features should be considered in the design of structured parking and should include:
 - adequate and uniform lighting
 - white paint to improve light levels
 - clearly identified exits
 - transparent materials in stairwells and other isolated areas
 - mirrors and circular support columns to avoid potential entrapment areas

Pedestrian Circulation & Cycling Facilities

Standards

1. Pedestrian connections:
 - Primary: minimum 2.0m in width
 - Secondary: minimum 1.5m in width
 - Walkway crossing: minimum 2.0m in width
 - Major commercial walkway crossing: 3-10m in width

2. Bicycle parking standards:
- Bicycle parking space dimension: 0.6m x 1.8m
 - Bicycle aisle: 1.5m



Recommended bicycle parking spaces:

Land use	Outdoor Spaces	Indoor Spaces
Institutional - schools	School board	Not required
Institutional – medical centres	Minimum 2, or 1 per 25,000 sf gfa	Optional (employee)
Commercial – free standing retail	Optional	Not required
Commercial – restaurant	Optional	Not required
Commercial – convenience store, fast food restaurant	Minimum 3	Not required
Commercial – small plaza	Minimum 5 spaces	Not required
Commercial – shopping centre	Minimum 20 spaces	Not required
Commercial – office	Minimum 2, or 1 per 25,000 sf gfa	Optional
Industrial	Optional	Optional
Residential – stacked townhouse	Optional	Not required
Residential – apartment	Minimum 0.75 per unit	Optional (recommended)

Parking

1. Buffering and Screening:
 - Minimum landscaped buffer: 3m strip, subject to zoning and neighbourhood plan policies.
 - Maximum screening height: 0.9m, subject to zoning
2. Parking lot design:
 - Minimum curb height: 6"-8"
3. Minimum regulated parking space dimensions (Zoning By-law requirements):

Municipality	90 (Perpendicular)	0 (Parallel)
Ancaster	2.6m x 5.5m	NA
Dundas	2.7m x 6m	2.5m x 6.7m
Flamborough	2.6m x 5.8m	2.5m x 6.5m
Glanbrook	3m x 6m	2.75m x 6.5m
Hamilton	2.7m x 6.0m	2.5m x 6.7m
Stoney Creek	2.75m x 5.8m	3.0m x 6.0m

4. Minimum regulated driveway aisle widths (Zoning By-law requirement):

Municipality	Minimum Drive-way Width
Ancaster	Not specified.
Dundas	<ul style="list-style-type: none"> • 2.8m (<5 parking spaces) • 5.5m (>5 parking spaces)
Flamborough	<ul style="list-style-type: none"> • 4.5m one-way circulation • 6.4m two-way circulation
Glanbrook	<ul style="list-style-type: none"> • 6.0m (direct access) • 4.5m indirect, one-way circulation • 6.0m indirect access, two- way circulation.
Hamilton	<ul style="list-style-type: none"> • refer to zoning by-law
Stoney Creek	<ul style="list-style-type: none"> • 6.0m (direct access) • 4.5m (indirect one-way access) or 6.0m for two-way circulation

Where not specified: 6.0m

Vehicular Circulation

1. Separation distances:
 - Minimum distance between entrance and intersection: 15m
 - Minimum 0.6m separation at the curb shall be provided between driveways.
 - Minimum clear distance between the edge of the driveway and a utility structure or hydrant: 1.2m
2. Ingress/Egress standards (minimum widths for two-way operation onto city roadways):

Use	Throat width at property line	Curb radius at street
Heavy Industrial, Commercial	9.0m	9.0m
Light Industrial, Commercial	7.5m	7.0m
Apartments and Block Townhouses	7.5m	6.0m
All other	6.0m	5.0m

3. Ingress/Egress standards (minimum widths for one-way operation onto city roadways):

Use	Throat width at property line	Curb radius at street
Heavy Industrial, Commercial	5.0m	9.0m
Light Industrial, Commercial	5.0m	7.0m
Apartments and Block Townhouses	4.5m	6.0m
All other	4.0m	5.0m

4. Fire route/access standards:
 - Minimum width: 6.0m
 - Minimum overhead clearance: 5.0m
 - Minimum centre line turning radius: 12.0m
 - Maximum dead end distance without an approved turnaround facility: 90m

- Minimum 3m, to a maximum 15m, distance separation between the fire access route and the principle building entrance on the site and every other access opening along the building face.

Requirements

1. Parking requirements, including the minimum number of parking spaces, parking stall dimensions, minimum driveway widths, are defined in the Zoning By-law.
2. A sight triangle is required for intersection streets, and driveway intersections.
3. Curb turning radii should be reviewed with City staff.
4. Buffer strips and landscaped buffers must meet the minimum zoning by-law requirements where applicable.
5. Fire truck access must meet Ontario Building Code requirements.

References

1. *Ontario Building Code*
2. Municipal Zoning By-laws
3. Visibility triangle requirements, **Appendix 13**

3.3 Landscape Design

Landscaping is an important aspect of site planning, and provides a wide range of functions in both the public realm and on private property. Landscape treatments can be used to frame and soften structures, define spaces and screen undesirable views. Microclimate and environmental benefits can also be gained through plant selection and location.

Rationale

Neighbourhood character and continuity can be created through front yard landscaping. The landscape design should be integrated with buildings and surrounding features to enhance the aesthetics and function of both the site and the neighbourhood. Hamilton places an emphasis on streetscapes and front yard landscaping treatments.

The use of landscaping to create a buffer or transition between different land uses is also an important design objective. Commercial and industrial developments adjacent to residential neighbourhoods require extensive landscape treatments to promote compatibility.

Guidelines*General*

1. Landscaping should consider and reflect established neighbourhood landscape character. Front yard landscaping should be compatible with adjacent properties along the street and result in a positive impact on the street.
2. Existing site features should be incorporated into the landscape design, where practical. The landscape design should take advantage of on-site conditions such as slopes, view corridors, or existing trees.
3. The scale and function of landscape materials should be appropriate for the site and its structures and to maintain a pedestrian scale. Trees should be selected and placed according to the height and spread they will achieve at maturity.
4. Trees and shrubs should be selected having regard to their characteristics and those of the proposed locations. Considerations include soil type, sun, root spread, growth rate, density of canopy, salt tolerance and others. Native and non-invasive plant species are encouraged. A list of possible plant materials appropriate for local conditions is provided in **Appendix 14**.
5. Both hard and soft landscaping solutions and materials should be considered in the design process.



Hard landscaping used to create sitting areas

6. Landscape treatments such as planting beds, hedges, fences and architectural screening walls should be incorporated to distinguish private and semi private spaces.



Fencing and planting define private yards from public realm

7. Plant materials should be located so that they will not interfere with sight lines at driveway intersections, lighting and emergency apparatus such as fire hydrants.
8. Street trees should be planted to enhance streetscapes and contribute to Hamilton's urban forest. Street trees should be spaced relative to their mature size, and the location of utilities in the right of way. A list of preferred street tree species is provided in **Appendix 15**. Tree spacing may vary depending on the type of tree, land use and adjacent properties.



Street trees are located on private property, and provide interest and shade along sidewalk

9. Irrigation is recommended for major commercial and multi-residential developments. For plantings adjacent to the street, raised planters, tree pits in paving, main entrance areas and interior landscaped planting areas in parking lots.

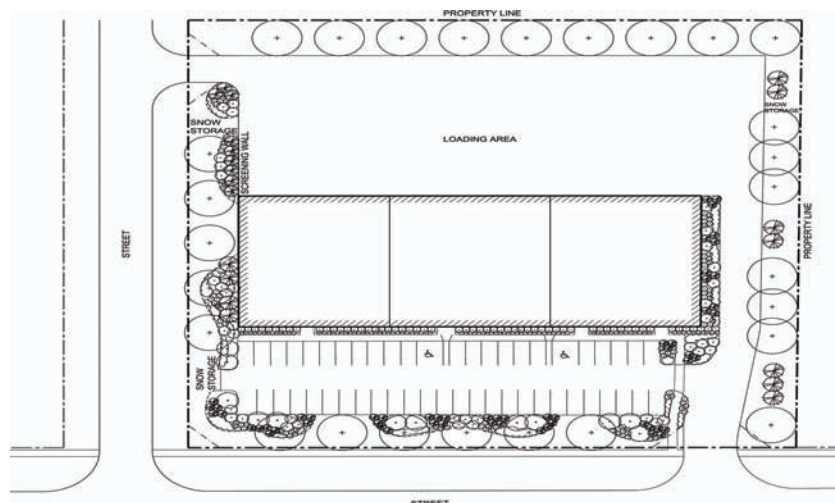
Planting

1. Street trees should be planted along the street line in a continuous linear row, generally spaced 6-10 meters apart depending on tree maturity size. Street trees may be planted in combination with other plant materials, particularly at site entries and to improve the streetscape. Recommended tree spacing guidelines are provided in the Standards Section.



Street trees planted in a continuous row along commercial property line

2. Deciduous trees should be planted along all property lines in a continuous linear row, or in groupings appropriate to the site size and configuration. Tree spacing may vary depending on the type of use, and adjacent properties. Specific tree spacing guidelines are provided in the Standards Section.



Landscape plan shows linear tree planting along street lines with additional landscape beds, buffer planting along rear property line, grouped tree plantings along interior property line and front façade foundation planting

3. Trees planted in walkways or plazas should be located in individual tree pits, or linear planting beds. Individual tree pits should be large enough to accommodate tree growth. Recommended tree pit details are provided in **Appendix 17**.



Pedestrian pathway includes attractive tree grate detail

1. Trees, shrubs and plant material should be grouped to frame building elevations, add visual interest to blank building facades, accentuate building entrances and screen service areas.



Desirable landscaping treatments which frame building entrance, accentuate building elevations and screen parking area



Undesired landscaping treatments

5. Plant materials should be used to provide colour and decoration having regard for seasonal changes and Hamilton's climate. A list of possible plant materials appropriate for local conditions is provided in **Appendix 14**.
6. Special landscape treatments can be used to mark street intersections, site entries and building entrances.



Planting frames walkway to main entrance

7. Native plant materials should be considered, especially for use in stormwater management areas and adjacent to natural areas. The use of invasive plant species must be avoided within 300m of natural areas. Examples of native plant species and invasive plant species are contained in **Appendix 14**.

Parking Areas

1. Traffic islands and planting areas should be used to break up large parking lots. Traffic islands should be raised and designed for low maintenance with salt tolerant plant material. Landscaped islands should be at least 2.5 metres in width. All hard surfaces within islands should be a material other than asphalt.



Landscaping parking island with deciduous trees and shrubs

2. Landscaped strips adjacent to parking areas should be planted to screen parked cars from the abutting street or adjacent properties. Landscaped strips are typically mulched shrub beds, and should be at least 3.0 metres in width to sustain tree planting and shrubs.



Landscape buffer provides separation between parking area and sidewalk, however, screening could be improved with mulched shrub beds or hedging as illustrated below



Screening

1. Landscaping should be used to screen and buffer service areas (i.e. waste disposal and loading areas) and open storage areas. Screening may consist of a wall or fence, a landscaped screen, dense landscape planting, landscaped berm or a combination of these features. The following guidelines are provided to evaluate screening priorities:

Location or feature	Public ROW	Adjacent Property in Non-Residential Zone	Adjacent property in residential zone
Off street parking areas	Medium	Low	Medium
Loading areas	High	Low	High
Waste Management Areas	High	Medium	High
Storage Areas	Medium	Low	High

- Low screening priority: provide definition between properties with medium to low level mass planting, (max. 1.2m ht.), low rail fencing, or berming in combination with planting, maintaining open site lines.
- Medium screening priority: provided by fencing, planting or a combination of both to delineate site functions, and provide visual interest.
- High screening priority: Use of wood screen fencing, masonry walls or a solid coniferous screen which may include chain link fencing to provide an impervious edge.



Decorative wall screens the loading area next to street
(high screening priority)



A variety of landscaping techniques are use to screen drive through and utility features in commercial parking lot (low screening priority)



Dense landscape strip with fencing are used to buffer residential properties from commercial development (high screening priority)

Fencing

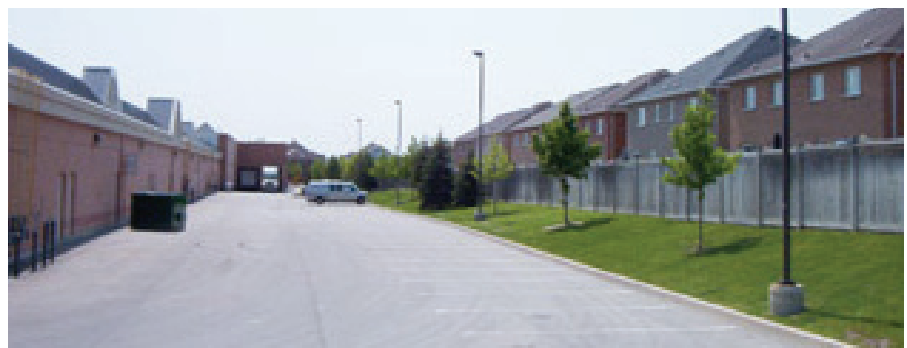
1. The design of fencing should consider its intended purpose and the height necessary to achieve its purpose. Fencing should be compatible with other building and site design elements and adjacent fences. For example, decorative fences in a front yard will differ from rear yard fences screening commercial properties from residential areas.

A selection of possible fencing styles (with details) is provided in **Appendix 18**. These fencing types are not a requirement and others may be used. However, the City is seeking a fencing treatment with the quality and performance of the examples shown in **Appendix 18**.

2. Sensitive uses, such as residential, should be buffered from commercial and industrial activities with fencing and landscaping. Buffer widths will vary with site conditions and local zoning requirements; however, 3 metre wide planting areas are considered a minimum to sustain tree and shrub planting. More intensive land uses will be subject to wider buffer widths and fencing requirements, and may also be addressed in local Neighbourhood Plans. Tree spacing will also vary depending on the type of use indicated in the Standards Section.



Solid fencing and landscaping buffers residential and commercial development



Solid fencing and 4.0 metre landscaping strip buffers residential and commercial development

Amenity Areas

1. Outdoor furniture and fixtures such as special lighting, trellises, arbours, raised planters, benches and fencing should be considered where people will congregate in outdoor spaces.

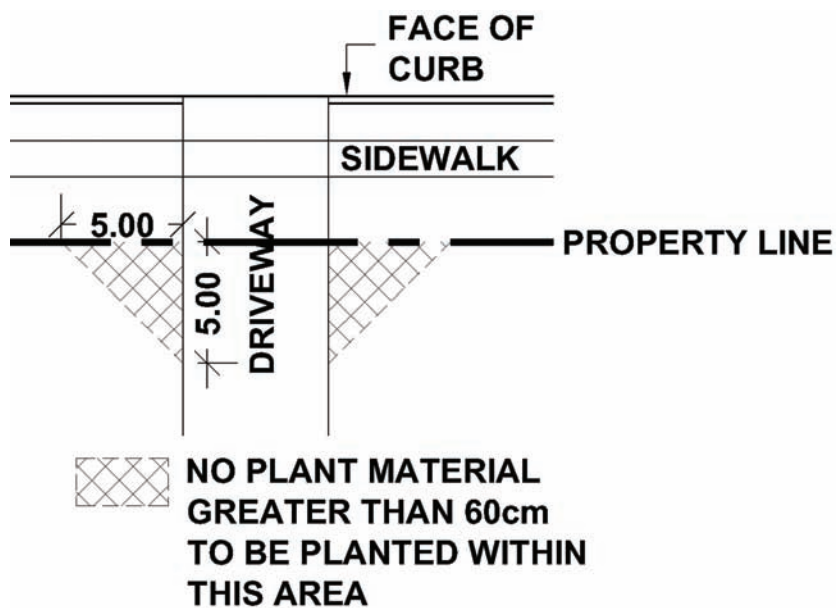


Sitting areas with weather protection in a residential development

General

Standards

1. Plant material is restricted to 0.60m in height, within a 5m driveway visibility triangle.



2. Recommended minimum on-centre spacing (in metres) along street lines, and all property lines for deciduous trees, depending on mature size of tree, conditions and context:

Land Use	Commercial	Industrial	Institutional	Residential	Street	Parks
Commercial	12	9	9	7.5	10	9
Industrial	9	NA	9	7.5	10	9
Institutional	9	9	9	7.5	10	9
Residential	7.5	7.5	7.5	7.5	10	9

3. Street tree standards for planting within municipal right-of-way (additional requirements provided in **Appendix 16**):

Tree Spacing & Location Requirements	Example
<ul style="list-style-type: none"> No tree planting is permitted in a boulevard where the distance between the curb and sidewalk is less than 1.75m. No street tree planting is to be closer to the street than 80cm back from the face of the curb. 	
<ul style="list-style-type: none"> Where the sidewalk is attached to the curb as a continuous element, the street tree must be at least 1 m back of the walk. No tree planting is to be made within 3.0 m of any building or structure. 	
<ul style="list-style-type: none"> Larger, maturing trees should be spaced 10 metres apart. Smaller maturing trees should be planted 6 metres apart. 	
<ul style="list-style-type: none"> No tree shall be planted closer than 1.2 m from any driveway or alley. 	
<ul style="list-style-type: none"> No trees shall be planted within a 1.2m radius of a fire hydrant, light standard, utility pedestal, transformer, or water valve. 	

*Fencing*1. Recommended fencing options (**Appendix 17**):

Type	Application	Height	Construction
Chain Link Fencing	Perimeter fencing	1.2 – 1.8m	Black vinyl coating.
Solid Wood fencing	Perimeter fencing. Screening.	1.8m	Pressure treated wood, western red cedar with galvanized hardware.
Heaving Construction Fencing	Screening. Separate residential uses from non-residential uses.	1.8m	Increase post size to 6x6 posts. Minimum section thickness of 50mm.

1. Deciduous trees are required along property lines.
2. Landscape screening requirements are in addition to deciduous tree requirements
3. Landscaping should not be located within the defined sight triangles identified in **Appendix 13**.
4. Street row dwellings require one tree per lot along the street. No planting is allowed on the property line, and the use of small ornamental trees is encouraged to compliment the streetscape.
5. All fencing should meet minimum zoning requirements and fencing by-laws where applicable.

Requirements

1. Municipal Zoning By-laws
2. Neighbourhood Plans (refer to Areas of Special Character)
3. Recommended Plan Applications, **Appendix 14**.
4. Preferred Street Tree Species, **Appendix 15**.
5. City of Hamilton tree policies, **Appendix 16**.
6. Planting and paving details, **Appendix 17**.
7. Fencing details, **Appendix 18**.

References**3.4 Waste Management Services**

Waste collection and storage facilities are essential for the safe, and efficient operation of any building, whether it be townhouse units, apartment buildings or commercial buildings. Site design should provide safe and adequate access, maneuverability and service collection areas without disruption to other vehicular and pedestrian traffic. Collection vehicle circulation should avoid reversing and maneuvering onto public streets, near play areas and designated parking areas.

Rationale

Efficient waste collection assists in the reduction of pollution and contributes to the fulfillment of the Solid Waste Management Master Plan.

Waste collection services are regulated by the Waste Management By-law. The City provides municipal waste collection services (garbage, recycling, leaf and yard waste, bulk goods and white goods) to eligible properties. Ineligible properties must make arrangements for waste collection services with private haulers. Standards for on-site waste collection facilities should be consistent and should be integral to the development process for waste collected both municipally and privately.

Guidelines

1. Waste handling and recycling areas should be located within the building or within an enclosed structure screened from public view.



Waste collection area is incorporated into building design



Enclosed waste storage building for commercial development next to residential area



Alternative waste storage facility (below grade storage) incorporated into site design

2. Adequate access to the storage area should be provided for the related collection vehicle. All waste storage areas shall be accessible for pickup.
3. Collection bin enclosure should be located adjacent to the service drive and/or loading dock of the building.
4. Collection truck access to handling and recycling areas should be designed so that truck movements will not disrupt other vehicular and pedestrian access, play areas and parking areas. On-site circulation for trucks should avoid reversing or maneuvering on public streets.
5. The enclosure exterior should match, or complement, the exterior architectural finish of the primary building.

Several possible waste enclosure types (with details) are provided in **Appendix 20**. These enclosure types are not a requirement and others may be used. However, the City is seeking an enclosure treatment with the quality and performance of the examples shown.



Waste storage enclosure of brick and wood similar to adjacent commercial building

	<ol style="list-style-type: none"> 6. The floor of the enclosure should be concrete. 7. Grease pits/traps should not be located inside the dumpster enclosure. If a grease pit/trap is necessary for the building, it must have an enclosure separate from the dumpster enclosure. The two may share a common wall, but they must have their own enclosure walls and separate entrance.
Standards	<ol style="list-style-type: none"> 1. Standards for waste collection are contained in Waste Collection Design Standards for New Developments and Redevelopments (Draft) in Appendix 21.
Requirements	<ol style="list-style-type: none"> 1. Waste collection services are regulated by the Waste Management By-law. New development is subject to the City's Waste Collection Design Standards for New Developments and Redevelopments (draft) document attached in Appendix 21.
References	<ol style="list-style-type: none"> 1. City of Hamilton, Waste Management By-law (draft), Appendix 19. 2. Waste enclosure details, Appendix 20. 3. City of Hamilton, Waste Collection Design Standards for New Developments and Redevelopments, Waste Management Division, Appendix 21.

3.5 Loading, Storage and Utility Areas

Most buildings and major activity areas have functional elements which are necessary for the operation of the building or activity. These services and utilities include loading areas, storage areas, mechanical equipment and utilities.

The location of these services must be considered at the site planning stage to ensure that they do not detract from the desired urban form and appearance of the project and to ensure that the site operates efficiently and safely.

Project design should ensure that site services are located away from public street views while at the same time not detracting from the use of adjacent properties. Compatibility between commercial and residential properties in particular can be promoted through proper site design and will minimize the nuisance of noise, odour and views.

Loading

1. Loading bays, and other service areas should be oriented away from public street views and preferably screened from the street by building mass.



Loading area sited at rear of building with
no views from the street

Rationale

Guidelines

2. Landscaping and walls can be used to screen loading areas from the street and adjacent residential areas where they cannot be screened by buildings.
3. Landscape and building materials utilized to screen service areas should be consistent with the overall building design and materials.



Screening wall complements the abutting building materials

4. Continuous sources of noise and odour should be oriented away from adjacent sensitive uses. Particular attention should be given to major commercial areas and industrial with 24 hour loading requirements.
5. Noise attenuation may be required for service areas to ensure compatibility for adjacent sensitive uses such as residential or healthcare facilities.
6. Commercial and industrial areas with significant shipping/loading requirements should have separate truck access on the site.
7. Signage should be placed to clearly identify loading and service areas.
8. Truck access to service and loading areas should be designed with sufficient space so that truck movements will not disrupt other vehicular and pedestrian access. On-site circulation for trucks should avoid reversing or maneuvering on public streets.

9. Provision of loading and service areas in the downtown area should be flexible having regard to the built form and streetscape of the area.

Storage Areas

1. Goods should be stored within the main building structures wherever possible.
2. Outdoor storage areas should be located in the side and rear yards and not adjacent to public streets.
3. Permitted outdoor storage should be screened from public views. Techniques may include berming, fencing and landscaping.

Utilities

1. Utilities should be located underground, where possible, to improve the appearance of the development. Where aboveground utilities are necessary, ensure their design is integrated and compatible with other site elements.
2. Screen utility areas and mechanical equipment from public view having regard for maintenance and access practices.



Transformer screened with hedging

Standards*Loading*

1. Loading space dimensions (Zoning By-law requirements):

Former Municipality	Dimension
Ancaster	NA
Dundas	Column 2 use: 3.7m x 9.0m with 4.3m height Column 3 use: 3.7m x 18.0m with 4.3m height
Flamborough	3.5m x 12m
Glanbrook	3.7m x 9m, minimum clearance of 4.3m 3.7m x 12m, minimum clearance of 4.3m
Hamilton	Column 2 use: 3.7m x 9.0m with 4.3m height Column 3 use: 3.7m x 18.0m with 4.3m height
Stoney Creek	10m x 3m with 4.3m height

2. Outdoor Storage (Zoning By-law requirements):

Former Municipality	Land Use	Permitted outside	Yard	Screen	Setback or ratio
Ancaster	Industrial	yes	Rear, internal side	yes	5%
	Non industrial	yes	Not in minimum front or yard abutting street	yes	10%
Dundas	industrial	yes	Not in front yard.	yes	6m from residential
Flamborough	general	yes	Not in front or exterior yard (except agriculture)	Yes	
Glanbrook	General commercial	yes	Not in front yard	yes	4.5m from sensitive zones
	Motor vehicle sale	no	na	na	Na
	Prestige industrial	no	na	na	na
	Other Industrial	yes	varies	yes	varies
Hamilton	Varies by zoning district.				
Stoney Creek					

Requirements

1. The minimum number of loading space requirements, and loading space dimensions, are specified in the Zoning By-law.
2. Outdoor storage requirements are specified in the Zoning By-law.

References

1. Municipal Zoning By-laws

3.6 Grading

Development typically requires some changes to existing site topography. Site grades may determine where certain activities can be located and how stormwater drains. Proposed site grading must consider relationships with adjacent properties. Changes to site grades must not adversely impact adjacent properties, especially with respect to drainage.

Rationale

1. Site grading should match the grades of adjacent properties. If grading on adjacent properties is required, consent of that owner is required.
2. Site grading and drainage should produce zero negative impacts on adjacent properties, roads and ditches. Site grading must prevent uncontrolled stormwater from draining onto adjacent properties.

Guidelines



Commercial property graded to drain away from adjacent development, shown during construction (above) and with landscaping installed (below)



3. Existing drainage patterns must be considered and respected in the design of infill development. Generally, drainage should be dealt with internally to the site however, existing drainage may be continued if the new development does not exacerbate current drainage conditions.
4. Existing drainage courses and storm sewers on site should be intercepted and incorporated into the new design.
5. Site grading and grade changes should be considered as site development features which could create a unique character.



Front yard grade change addressed through landscape treatments

6. The grade of driveways should provide for safe vehicular movements as per City standards.
7. Side and rear yard swales adjacent to property lines may be required on a lot, and should be constructed a minimum 0.9m in width entirely on the property being developed.

Standards

1. The following minimum and maximum grades should be applied in site plan applications except as may be determined by specific master drainage plans:

Minimum Grades	Maximum Grades
<ul style="list-style-type: none"> • asphalt: 1% • concrete: 1% • gravel: 1% • sodded swale: 2% • gravel swale: 2% • concrete swale: 2% • grassed area: 2% 	<ul style="list-style-type: none"> • grassed areas: 7% • berms/slopes: 33% (3:1) • main entrances/exits within road allowance – 3% • main entrances/exits within first 7.5 m of property – 5% • all asphalt surfaces on private property beyond 7.5m of the property line – 10% • private residential driveways – 7% • sidewalks and boulevards – 2% crossfall

1. All grading plans must be stamped by a certified engineer, architect or landscape architect.
2. All elevations on grading plan drawings must be related to geodetic datum. A description of the geodetic benchmark used to establish the elevations must be included on the plan.
3. Site development which requires new fill, or fill removal, is required to comply with the City of Hamilton Site Alteration By-law and may require a permit pursuant to Conservation Authority regulations.
4. Any retaining wall greater than 0.6 m in height should have a safety rail or fence.
5. Any retaining wall over 1.0 m in height shall be certified by a structural engineer.
6. Sedimentation and erosion control measures must be shown on the grading plan.

Requirements

1. City of Hamilton, Draft Grading Plan Requirements, April 2003, **Appendix 22**.
2. City of Hamilton By-law for Prohibiting and Regulating the Alteration of Property Grades, the Placing and Dumping of Fill and the Removal of Topsoil, **Appendix 23**
3. Keeping Soil On Construction Sites, Erosion and Sedimentation Control Guidelines for Hamilton Harbour Watershed and Region of Hamilton Wentworth, Halton Region Conservation Authority and the Hamilton Region Conservation Authority, April 1994.

References

3.7 Stormwater Management

Uncontrolled stormwater runoff may result in flooding, soil erosion and pollution of watercourses. Stormwater management is now practiced throughout most parts of Hamilton to control stormwater runoff by on-site techniques, off-site stormwater management facilities or a combination of practices. The type of stormwater management approach required will vary throughout the City depending upon the project location, size of the site and project type, as well as the need to control stormwater quantity, velocity or quality of runoff.

Rationale

Stormwater management implementation may involve the City and the local Conservation Authority. These bodies have a series of standards, guidelines and area-specific strategies which will need to be considered at the site design stage. Possible stormwater management techniques for on-site use may involve parking lot storage, rooftop storage, holding tanks, catchbasin traps, infiltration trenches, swales and ponds.

Stormwater management is typically guided by a subwatershed plan or a master drainage plan prepared for a large geographic area. Most parts of the older, central part of the City were developed prior to stormwater management becoming a planning and development consideration. The City recognizes that the provision of stormwater management techniques is difficult within these older areas and may not be possible to implement.

Site development proposals should be discussed with Planning and Development Department staff to review drainage and stormwater management requirements and possible approaches prior to site design.

Guidelines

1. Stormwater quantity, quality and velocity targets established by the City and local Conservation Authorities should be met through at source and on site facilities, where applicable.
2. Comprehensive stormwater management solutions which address multiple properties are encouraged to provide for the efficient use of land resources and to minimize longterm public and private maintenance costs.
3. Stormwater management areas such as swales and ponds should be integrated into the on-site and neighbourhood open space system.



Landscaped swale directs surface runoff to natural retention area

4. Stormwater management ponds and swales should be landscaped to create attractive features which absorb water, create habitat and shade ponded stormwater. A variety of native tree, shrub and wetland plant materials should be considered for stormwater pond landscaping.



Stormwater management pond incorporates native plant materials

5. Stormwater management ponds should have gently sloping sides to create a safe environment and avoid fencing. Ponds should have a maximum 7:1 side slope.
6. Stormwater management facility design should consider maintenance and access requirements, if applicable.

Standards

1. Drainage must remain internal to the site unless otherwise approved by the Director, Development Division, Planning and Development Department (City of Hamilton, Submission Requirements for Site Plan Control).
2. Every parking area, where storm sewers are available, shall be drained by basins and stormwater yard sewers as follows:
 - a. parking areas with less than 500m² shall be drained as directed by the Director, Development Division, Planning and Development.
 - b. Parking areas with grass surfaces shall be drained as directed by the Director Development Division, Planning and Development.
 - c. Parking areas with all other surfaces and larger than 500m² shall have at least one catch basin for each 500 to 1000m² unless designated by a professional engineer and approved by the Director, Development Division, Planning and Development Department.
3. Townhouses, commercial and industrial buildings do not have their roof leaders connected to the storm sewers where the applicant provides a site design, including an appropriate stormwater management study prepared by a qualified engineer (City of Hamilton Site Plan Control, Draft Grading Plan Requirements)

Requirements

1. Stormwater management is required on all sites where the receiving sewer does not have the capacity to handle the resultant flows from the new development.
2. All stormwater management reports/design must be prepared by a qualified engineer.
3. A stormwater management strategy to address quality and quantity treatment may also be required by the local Conservation Authority.

References

1. Stormwater Management Practices – Planning and Design Manual, MOEE 2003.
2. Hamilton Harbour Remedial Action Plan.
3. City of Hamilton, Stormwater Policies and Criteria (in production).

3.8 Noise Attenuation

Noise is created throughout the city and may be generated by industrial operations, service vehicles and major transportation corridors such as roads and railways. It is desirable to ensure that noise sensitive uses and outdoor spaces, primarily residential areas and healthcare facilities, are not subjected to excessive noise levels which will detract from their use and enjoyment.

Rationale

Guidelines

1. Adequate separation between the noise source and the receptor area should be provided in the site design to minimize noise impact on sensitive uses.
2. Noise sensitive areas should be oriented away from noise sources. It may be possible to utilize buildings to intercept noise.
3. Building materials such as insulation, heavier glazing, cladding and air conditioning may be necessary to reduce interior noise levels.
4. Grade changes, berms and acoustical barrier walls should be considered to intercept noise. The appropriate techniques will vary with site conditions. These techniques may have negative impacts on the streetscape if used immediately adjacent to the street. The appropriate noise attenuation technique along streets should be determined with City staff having regard to the streetscape conditions.



Landscaped noise wall buffers industrial noise from surrounding properties

Requirements

1. A noise impact study prepared by a qualified noise consultant may be required by the City of Hamilton where new development may create or be subject to possible noise impacts. This study will identify noise sources, noise levels and methods of noise attenuation. A noise study may be required for noise sensitive uses such as housing in proximity to:
 - freeways and expressways, such as Highway 403 and the Queen Elizabeth Way;
 - railways;
 - roads with high traffic volumes, such as Rymal Road, Wilson Street and Centennial Parkway;
 - industrial areas; and,
 - airports.

References

1. Ministry of the Environment, Noise Assessment Criteria in Land Use Planning: Requirements, Procedures and Implementation, LU-131, October 1997, **Appendix 24.**
2. Ministry of the Environment, Sound Level Limits for Stationary Noise Sources in Class 1 and 2 Areas (Urban), NPC-205, October 1995.
3. Ministry of Transportation, Environmental Office Manual Technical Areas – Noise, Directive QST-A2, June 1992.

3.9 Lighting**Rationale**

Lighting is required to provide night visibility, create safe conditions for both pedestrians and vehicular operation, and create an attractive evening environment. It is important to remember that lighting requirements for people in vehicles are different from the needs of pedestrians. Both needs must be considered in the site design.

More light does not necessarily allow people to see better at night. The eye must adapt when moving from brightly lit areas to darker areas and vice versa. This brighter/darker transition in the night environment should be considered for lighting within single sites as well as between sites and between a site and the street.

Luminance or the relative brightness of surfaces and objects must also be carefully considered in a lighting design. Visible light sources or surfaces which are very bright, relative to their surroundings, can cause glare and a reduction in the ability to see into darker areas.

The objective with site lighting is to obtain lighting levels which provide ease of night time use and create a safe environment which reduces the fear of crime. Lighting should allow an individual to see the faces of other people sharing the space.

Light standards and fixtures are key components of the streetscape. The design and style of lighting should enhance the character of the site or surrounding area and can serve as a unifying element within neighbourhoods.

Lighting plans for large projects should be prepared by a lighting specialist.

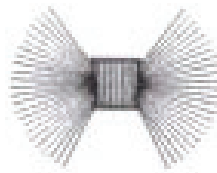
1. Site and streetscape lighting should be designed as an integrated system that considers all pedestrian, motorist and building needs. The lighting program should have regard to pedestrian areas, driveways, parking areas, transit stops, service areas, entrances and security.
2. Lighting design should carefully consider the areas to be lit. Only areas which need to be illuminated should be lit in order to avoid a false sense of security or lead people to isolated, unlit areas.
3. Overlighting a site should be avoided. It is preferable to provide more fixtures with low wattage than few fixtures with higher wattage.
4. A hierarchy of lighting levels should be developed to provide the necessary lighting levels required for particular components of the site and to reinforce design continuity. The size, design and intensity of lighting should be appropriate for the part of the site in which it is located and the function for which it is intended.

Guidelines



Transition in lighting is provided with pedestrian-scaled lighting along pathways, and taller light standards in parking areas

5. Lighting should focus on pedestrian areas, clearly identifying pedestrian walkways and building entrances. Walkways and outdoor lighting should be approximately 3.5 to 4 metres in height.
6. Lighting should be directed on to the site and should not spill over to adjacent development and natural areas. Cut-off type lighting is recommended to ensure minimum light spill over. Consider the following lighting design features:
 - Flat glass lens (true 90 degree cut off).
 - Fixture should also use a segmented optical assembly (directs the light).
 - Provide “house shields” where needed to completely eliminate glare to adjacent properties.

*Refraction**Reflection**Reflection & refraction*

7. Lighting fixtures and poles should be integrated with the overall architecture and landscape design of the project. As well, lighting fixtures should be compatible with streetscape elements, particularly in neighbourhoods or districts with distinct character.



Site lighting selected to have a contemporary high-tech image consistent with the building design and tenants

8. Lighting should be used to accent and highlight building, signage and landscape features such as fountains, flagpoles, prominent trees and architectural detailing. The floodlights or spotlights should be directed away from the viewer and, if possible, the fixture hidden from view.



Restaurant building with wall mounted and goose neck lamps to provide night interest

1. The City has standards for lighting levels of public accessible parking lots. The following criteria should be incorporated into lighting plans:

Standards

Minimum maintained foot-candle levels

- The primary measure of light intensity used in the field is the foot-candle (ft-c). One foot-candle equals one lumen per square foot.
- The following list of minimum maintained foot-candle average levels provides a general guideline for various outdoor lighting environments.

<i>Foot-candles</i>	<i>Use</i>
.25-.50	Adequate for security purposes or low night time use
1.0	Office complexes, elementary schools and rural environments
1.0	General parking area where crime is not a major factor
1.0	Typical retail parking lots, hospitals and colleges
1.5-2.0	Higher profile retail or high crime areas
2.5-5.0	24 hour grocery stores, and extreme high profile retail
5.0-7.5	Big Box Development
5.0	City owned parking lots

Maximum Maintained Foot-candle Levels

To protect adjacent properties from light “trespass” the following applies:

- 1 metre off the edge of site the allowed maximum light level is 0.2 (ft-c).

Lamp type and wattage

- Lighting Levels depend on the lighting source:

<i>Source</i>	<i>Colour</i>	<i>Effect</i>	<i>Use</i>	<i>Lamp life/cost</i>
<i>Metal Halide ‘Pulse Start’</i>	<i>White light</i>	<i>Good colour rendering properties-up to 65-75%</i>	<i>Retail or other high profile application</i>	
<i>High Pressure Sodium</i>	<i>Golden light</i>	<i>Poor colour rendition</i>	<i>Commercial/Industrial</i>	<i>Cost of lamp, less than Metal Halide. Longer lamp life</i>
<i>Mercury Vapour</i>	<i>Greenish Blue light</i>		<i>Limited use. Effective with soft landscape areas.</i>	

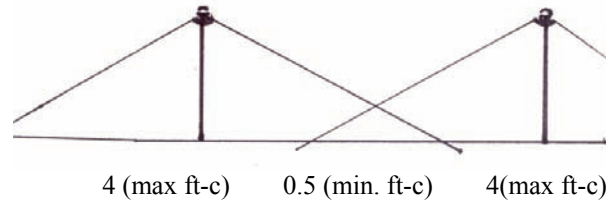
- Lamp wattage is most likely determined by the mounting height and the desired minimum foot-candle level:

150w HPS or 175w MH	10’-20’ mounting height
250w HPS or 250w MH	15’-25’ mounting height
400w HPS or 400w MH	25’-40’ mounting height
1000w HPS or 1000w MH	30’-60’ mounting height

Maximum to minimum uniformity ratio

- Maximum to minimum uniformities should not exceed a 15 to 1 ratio when using horizontal lamp optics. Because of the lamp orientation, vertical lamp optics produce lower maximums so their uniformity ratio should not exceed 10 to 1 maximum to minimum uniformity.

- The following example illustrates how uniformity is calculated:



- The footcandle (at the source) is 8 times more than 0.5 ft-c (at the mid point). Therefore the maximum/minimum ratio is 8:1.
- I.E.S. recommendations for uniformity ratios for open parking facilities:

<i>Use</i>	<i>Uniformity</i>	<i>Ratio</i>
Commercial, Institutional	Average to minimum horizontal	4:1
Industrial, Residential	Average to minimum horizontal	4:1

- A lighting plan prepared by a qualified professional is required for large publicly accessible parking lots and must be in accordance with the “Recommended Maintained Horizontal Illuminances for Vehicular Use Area in Open Parking Facilities” as set out under the IES Lighting Handbook 1987 or latest version (City of Hamilton, Site Plan Control Draft Grading Plan Requirements).
- The lighting plan should contain the following information: description of light source; manufacturer and model of light source; type of optical system; computer generated site plan showing maintained light levels throughout the entire site, complete with a table showing the average maintained foot candle level and uniformity levels.

Requirement

3.10 Signage

Rationale

Signs can provide project identification, wayfinding, and advertising. Effective signs achieve these functions by being integral parts of the built environment, not as separate entities. Such signs achieve their purpose while making a positive contribution to the site, building, street or neighbourhood and its visual character.

The objective in addressing signage as part of site planning is to promote quality in Hamilton's visual environment through site and building signs that are compatible with their surroundings and effectively communicate their meaning.

Context is important in signage and should be reflected in the type of signs used. Signage in urban areas should be fundamentally different than in a suburban context. Developments in urban areas tend to be denser, closer to the street and pedestrian-oriented. In urban areas, signs need not be as large as in suburban areas given the location of buildings closer to the street and less reliance on the automobile as a factor determining the pattern and density of development.

The City regulates the size and location of signs through Hamilton's various sign by-laws. These guidelines should be used in conjunction with the City's sign by-laws and provide further direction on signage design and location.

Guidelines

Identification

1. The size and style of a sign should be chosen to clearly and attractively identify a destination without being visually obtrusive.
2. Ground signs should display legible street numbers.

Visual appearance

1. Signs should be compatible and in scale with the surrounding physical and visual character of the area.
2. Signs should contribute rather than detract from their surroundings and the streetscape. Visual clutter results from too much signage and poorly placed signage.



A combination of ground signs, portable signs and wall signs clutter the streetscape

3. Signs should always complement the project's architecture and not detract from or overpower the building and site. Signs within a development should be visually coherent with each other and display a consistent graphic theme.



Wall signage complements commercial building façade

4. The design of signs should reflect the use they are associated with as well as the context of other activities and visuals in the area. Accordingly, signage should vary between such areas as downtown, heritage areas, commercial corridors, business parks and entertainment areas as a result of the differing characteristics and visual contexts of these areas.

5. Signage should be used to promote a particular image in those neighbourhoods with a distinctive character. Signage with an artistic flair or heritage orientation will enliven the streetscape and is encouraged.



Wood sign complements heritage building and streetscape

6. A sign uniformity plan should be prepared for multiple unit commercial and industrial development to establish the framework for visually coherent and compatible signage across the development.
7. The choice of landscaping should take into consideration the continued visibility of signage in the future as the landscaping grows and matures over time.



Low shrubs and flowers provide a base for the ground sign

Legibility

1. Sign lettering and graphics should be simple with a minimum number of elements.
2. Excessive amounts of colour or inappropriate colour combinations should be avoided as not to interfere with the legibility of the sign copy.
3. Sign legibility can be increased by limiting the number of descriptors and using no more than two types of fonts.
4. Symbols and logos on a sign are encouraged as the observer visually registers them more quickly than written messages.

Wall Signs

1. The number of signs on a building façade should be the minimum necessary to identify the business or destination.
2. Signs should be consistent with the proportions and scale of the elements in the building's façade.
3. Signs should establish a rhythm, scale and proportion where the façade of a building does not provide it.

Guidelines for Specific Sign Types



The scale of signage overwhelms building façade

4. The scale of the sign should not overwhelm the building's architecture or the area's character. The materials for a wall sign should complement the materials and design of the buildings façade.



Sign materials are consistent with building exterior and materials

5. Wall signs should respect and reinforce the architectural composition of the building. Signs should be placed where the architectural features of the façade suggest a location, size and shape.



Signage placed in a consistent location and scale for a multi-tenant building

6. Signs should be located in a consistent sign band that is incorporated into the design of the façade. Signs should generally not extend beyond the walls of the building.
7. Wall signs should be mounted in locations that respect the design of the building including bays and openings.
8. Wall signs should be placed between the first and second storey of multi-storey buildings with ground floor commercial tenants.
9. The design and alignment of signs in multiple occupant buildings should complement each other to achieve a unified appearance.
10. In heritage areas, wall signs should reinforce the distinctive and historic character of the building and area. Sign design should pay particular attention to historically appropriate colours, materials, shapes, sign types, fonts and lighting.



Store signage repeats the historic character

Ground Signs

1. The orientation of ground signs should be perpendicular to the street for the best visibility by motorists and pedestrians.
2. Ground signs should not be located where they obstruct sight lines at driveways and intersections or interfere with visibility related to pedestrian or motorist safety. The maximum height of directional signage along driveways is 0.60m above the adjacent centre line road elevation.

3. Ground signs with solid bases are preferred to pole or pylon signs.
4. The ground sign should be within a landscaped base of appropriate plant materials.
5. The material of a ground sign base should match the architectural elements and material as found in the associated building and site.



Ground sign base and building are both stone

6. Ground signs for shopping centres should limit the number of tenants identified to maintain legibility and avoid visual clutter.

Projecting Signs

1. The design of projecting signs should reflect the character of the building and business and be visually compatible with adjacent wall signage.



Co-ordinated wall and projecting signage in a pedestrian oriented shopping street

2. Projecting signs should provide a vertical clearance of 3 metres along pedestrian sidewalks and walkways.
3. Projecting signs should be oriented to pedestrians in their scale and size of copy.

Portable Signs

1. Portable signs should not be used as a substitute for permanent signs. They are temporary signs only and should be limited in number and the time they are displayed.
2. The number and spacing of portable signs along a property's street frontage should maintain rather than compromise or obstruct the visual primacy of the buildings and ground sign.

3. Visual clutter and obstructed views from too many portable signs along the street edge must be avoided.



Over use of portable signs detract from efforts to create an attractive streetscape and causes visual clutter

Requirements

1. A sign uniformity plan is required for multiple unit commercial and industrial developments.
2. All signage is required to comply with the existing municipal sign by-law requirements. These by-laws regulate such aspects as sign area, dimensions and location.