7.0 DEVELOPMENT GUIDELINES

7.1 Purpose and Intent of the Guidelines

The McMaster Innovation Park will be a vibrant new urban neighbourhood that is home to a variety of research and academic activities. It will be a mixed use neighbourhood with complimentary retail, service and other facilities integrated into the development. MIP will be a walkable neighbourhood with streets and built form designed to be supportive of pedestrian activity. Longwood Road will be the main street and heart of the neighbourhood. Research and academic buildings will be located along Longwood Road as well as the internal streets. A series of open spaces and parks provide places for a range of outdoor experiences for employees, students and the adjacent neighbourhoods.

McMaster University has prepared these development guidelines to achieve its goals of creating a research and academic neighbourhood with a strong sense of place and to encourage a high quality of building and site design throughout the park.

The guidelines contained in this document establish a framework for the public realm and indicate the MIP preferences and expectations for site development. These guidelines are the principal tool in implementing the physical form of the MIP Master Plan. A broad range of topics are addressed in these guidelines to ensure that all aspects of development are considered in the design process, from the larger scale public realm through to site and building specific design elements.

These guidelines will assist project designers and builders as well as public agencies involved in the site plan review process. These guidelines will provide clarity for the development review process and to ensure that all development is mutually supportive of McMaster University’s and the City of Hamilton’s desire to create an attractive and functional research and academic neighbourhood.

All new development is required to comply with these guidelines. In addition, development proponents should have regard to other applicable City of Hamilton regulations and guidelines such as the zoning by-law, site plan guidelines and engineering standards.

There is flexibility in the use of these guidelines and the Innovation Park recognizes the need to cooperatively achieve its development objectives with those of the private sector. This document, therefore, allows room for interpretation, consistent with the spirit and intent of the guidelines.

Each section of the guidelines contains numerous urban design and site planning topics. Each topic will include a rationale section which explains in general the development issues and design objectives. This is followed by the design guidelines and includes illustrations of the design principles. These graphics illustrate possible ways to achieve specific guidelines but are not intended to be the only design solution. Development approvals for projects within MIP will be required to demonstrate how their design fulfills both the general criteria and objectives of these guidelines, as well as the specific guidelines applicable to specific development sites.

These guidelines define a set of standards that together establish the minimum quality of development which is consistent with the desired image for the Research Park. In administering these guidelines, McMaster University is open to various alternatives to equal or better the quality of development as illustrated in the guidelines.
7.2 The Public Realm

The public facilities and infrastructure of the research park will be the most important components in establishing the character and quality of the research park neighbourhood. The public realm will provide visitors with their first impressions of MIP. It will establish how people move through and around the research park. Its parks and public spaces will be important aspects of placemaking and creating the vibrant new neighbourhood desired. It is important that the public facilities be well designed and generally follow the guidelines set out in this section on a consistent basis throughout the research park.

7.2.1 Street Network and Circulation

The street network is the basic organizing element of the neighbourhood and a key component of the public realm. It will provide circulation for all modes of travel and establish development parcels.

The MIP transportation strategy provides for the accommodation of automobile and truck travel to the site as well as promoting alternative modes of travel to create a sustainable transportation system. The streets will be designed to not only accommodate car and truck traffic, but also transit buses, pedestrians and cyclists. All streets should have a high quality image and functional standard through engineering and streetscape designs including attention to paving, lighting, adjacent built form, landscaping and street furniture. The design elements will vary depending on the type of street in the Park.

Streetscape treatment will be an important component of the public realm. The key objective of the streetscape treatment is to enhance conditions between the traveled portion of the street and buildings to create a comfortable environment for pedestrians, especially as they support the public transit system in the research park. Street design should also promote public safety for motorists, pedestrians and cyclists.

7.2.1.1 Guidelines for Street Development

1. Design and Construction of new streets should follow the approved street sections as contained in this guideline document and provide for the safe movement of cars, trucks, pedestrians and cyclists.
2. Opportunities to provide on-street parking should be promoted throughout the park.
3. Salt tolerant, urban street trees should be located within the boulevard and offset a minimum of two metres from the travel lanes to minimize salt damage.
4. Street trees should be spaced consistently along each street at approximately 7 to 8 metres intervals, where possible. Appropriate clearances from utility boxes, street lights and site triangles should be observed.
5. A continuous public sidewalk network should be established along the streets of the research park and should be provided along both sides of the street.
6. Street furnishings, including transit shelters, benches, lighting, waste receptacles should be placed in a coordinated manner that does not obstruct pedestrian circulation on the sidewalk or driveways. Street furnishings should be enhanced in the vicinity of transit stops and park areas.

7.2.1.2 Longwood Road

1. Longwood Road should be constructed to accommodate four lanes of traffic (with turn lanes as necessary), on-street parking, bike lanes and a wide pedestrian sidewalk area with plantings as illustrated in Figure 7-1.
2. In recognition of its main street function, streetscape design should be enhanced to accommodate pedestrian use.
3. Pedestrian scale down-lighting should be provided along Longwood Road with particular emphasis at transit stops. Pedestrian scale lighting may be designed as a freestanding fixture or to be added to street lights.
4. Intersections on Longwood Road should have enhanced pedestrian crossings.
Figure 7-1. Section: Longwood Road

Figure 7-2. Section: Local streets.
7.2.1.3 Local Streets

1. Local streets should be designed to accommodate two lanes of traffic, on-street parking and pedestrian sidewalks as illustrated on Figure 7-2.
2. The street extending eastward to Frid Street should be designed with a wider right-of-way to accommodate a 1.5 metre on-street bike lane.

7.2.1.4 Trails, Cycling and Pedestrian Facilities

The public sidewalks along the streets of the research park are the principal elements of the pedestrian system. Sidewalks are important component in promoting transit accessibility and walkability throughout the research park. The width of the sidewalks, their surface material, lighting requirements and street furniture amenities should be designed as a consistent and seamless system throughout the research park.

The streets of MIP will also be the primary cycling routes through the development of on-street bike lanes and cycling and mixed traffic along local streets. Additional facilities should be provided to promote a pedestrian and cycling friendly environment.

Guidelines

1. The primary pedestrian and cycling routes are along the north-south axis of Longwood Road and through the east-west axis of the new Frid Street. Facilities to support pedestrian and cycling use should be provided throughout the research park.
2. Sidewalks should be provided between all building entrances and the public sidewalk system. These pedestrian connections should be barrier-free.
3. Pedestrian walkways should be separated from vehicular traffic wherever possible. Walkways crossing vehicular routes should be given priority through the continuation of the concrete sidewalk or other paving material.
4. Sidewalks should be of textured concrete with score lines and banded edges of other paving materials (urban braille) in prominent locations.
5. Pedestrian trails may be provided around stormwater management facilities and along the Highway 403 frontage west of Longwood Road to provide a recreational walking trail. These trails can be constructed of limestone screenings or similar materials with benches provided for resting.
6. Bicycle racks should be provided near the entrance each building. A bicycle rack system should be selected by the developer for consistent application across the research park.
7. Within each building lockable indoor and outdoor bicycle storage facilities should be provided with associated shower facilities to promote commuter cycling.
8. A contemporary transit shelter consistent with the streetscape character of the Park should be selected for use in the research park. Street furniture should be enhanced at transit stop locations and should include benches (in addition to those within the shelter), pedestrian-scale lighting, waste and recycling receptacles, planters, newspaper boxes and similar facilities.

7.2.2 Public Spaces

7.2.2.1 Gateways

Gateways represent opportunities to mark entry into the McMaster Innovation Park. A gateway can be created by a streetscape element and reinforced by landscaping, open space or building mass. There are two principal gateways to the McMaster Innovation Park.

Guidelines

1. The northern gateway on Longwood Road should be created immediately south of the bridge and primarily along the west side of Longwood Road at its bend. This gateway could feature a dramatic vertical element along with softer plant materials. The stormwater management area provides an opportunity for naturalized plantings in conjunction with the slopes of Highway 403.
The research park signage should be incorporated into the gateway design and visible from the 403.

2. The southern gateway on Longwood Road at Aberdeen Avenue should include a similar dramatic vertical element as the northern gateway, site signage and an integrated terrace planting area. The building massing and architectural design of the adjacent building should receive an appropriate attention to reinforce the “first impressions” and gateway function of the location.

7.2.2.2 Park Space

The McMaster Innovation Park will feature a series of parks developed in conjunction with the street system as an integral part of the public realm. These parks will help to support and focus the various activities of the research park and the buildings surrounding them. These parks will be designed and programmed in detail prior to development by a landscape architect. The following general direction of character and elements have been identified in this Master Plan and illustrated on Figure 7-3.

Guidelines

1. The Commons will be the largest park in MIP at approximately .5 hectares and located as shown on Figure 7-3. The space is intended to be the centre piece for the research park and act as a focus for passive activities. In the long term, it can be extended eastward as a central organizing element as properties redevelop. The park will be terraced in response to site grades and may contain a terraced water feature and open lawn area. The park should have clean lines and a contemporary approach in providing open and unprogrammed space.

2. Longwood Square on the east side of Longwood Road will serve as a centralized reception and formal meeting place for occupants of the research park. It should be designed to accommodate a variety of events for public gatherings, outdoor entertainment, café space and activities associated with adjacent hotel, convention or auditorium facilities. A design vocabulary similar to Commons, should be considered to visually integrate the separate but compatible parks (see Figure 7-4).

Figure 7-3. Commons Park.
The park will be located south of the existing Camco office building and framed by the new CANMET building on its southern flank. This space will provide a focus for research and student activity in the early phases of development. It will be less active than the commons and intended primarily as a convenient amenity for the immediately surrounding buildings. It should provide ample seating opportunities for meeting and lunch purposes.

3. A small passive outdoor space should be developed adjacent to the Power Plant. This space should be used primarily for seating areas with appropriate landscape treatments.

7.2.2.3 Stormwater Management Ponds

A variety of stormwater management techniques will be employed on site to minimize run-off and minimize the size of the stormwater management ponds. These ponds can be designed as integral components of the open space system.

Guidelines

1. Stormwater management ponds should be designed with shallow slopes to avoid fencing. Ponds should have some formal edge treatment with overlooks (with railing) and sitting areas to promote an interactive landscape connected to the local pedestrian or trail system.

2. Landscape design should include appropriate native plant materials to create wetland and/or upland habitats, as appropriate for the pond design.

3. Pond maintenance access should be integrated with pedestrian access to the pond.

7.3 Built Form and Street Walls

Built form in addition to open space defines the public realm and establishes the character of a neighbourhood and a hierarchy of places within the urban fabric. Built form provides edges to the streets of the city and transforms them to the three-dimensional spacial form of the city. The spacial enclosure of the street creates the corridors and rooms of the City. The sense of enclosure contributes to how we use the space and how we feel in that streetspace.

Figure 7-5. Power Plant.
The street wall is that portion of the building that fronts the street and makes the greatest impact on the image of the street. It is important that the street wall is located appropriately to frame the street and has the highest quality of architectural design and materials, particularly on the lower floors that are most visible and accessible to pedestrians and motorists.

**Guidelines**

1. The street edge should be designed to ensure pedestrian comfort and adequate light penetration. Street wall heights in the MIP should generally not exceed a 1:1 relationship of building height to street width. This relationship fosters a mid-rise building form.
2. Buildings should be located at the built-to line illustrated on Figure 7.1 in order to provide a consistent edge to the streets and parks. Minor deviation from the build-to line will be considered. Then build-to line should not preclude indentations, projections or breaks in the façade of buildings for architectural treatments and floor plan flexibility.
3. In general, 80% of the length of the façade should follow the build-to line.

**7.4 Site Design Guidelines**

The McMaster Innovation Park will contain a variety of buildings and activities. The purpose of these development guidelines is to ensure that building and site organization and service components will be consistently designed to provide attractive and functional development.

**7.4.1 Site Circulation**

The design of the site circulation system should support streetscape objectives for the research park and provide for the needs of both pedestrians and motorists. Safe and direct routes should be provided with priority given to pedestrian movements. Consideration must also be given to service and loading needs and emergency vehicles. Site design will affect how easily trucks can deliver goods and emergency vehicles can address emergency situations.

**Guidelines**

1. Driveways to parking and service areas should be provided from the local street network with no driveways having access from Longwood Road.
2. The number of driveway connections to the public street should be minimized to strengthen streetscapes. Common driveways that access more than one site should be considered to minimize the number of driveways openings.
3. Driveways should be located opposite existing or proposed driveways and streets to avoid offset intersections and traffic difficulties.
4. Site design should provide for turning movements of delivery vehicles and fire trucks.

**7.4.2 Parking Facilities**

The McMaster Innovation Park will provide automobile parking through a variety of means including surface parking areas, underground parking facilities and structured parking. It is anticipated that in the short term, much of the parking will be provided in surface parking areas. As development proceeds, parking supply will shift to underground and structured parking solutions.

**Guidelines**

1. Each development should include efforts to minimize its required parking supply. The primary parking supply for each building should be provided underground or in a structured parking facility.
2. Surface parking areas should be developed in small clusters primarily for visitor parking purposes. On-street parking should be provided on all streets as appropriate in order to maximize short term parking opportunities.
3. Parking areas should be located in close proximity to building entrances and provide an easily identifiable pathway to the building entrance.
4. Barrier-free parking spaces should be located as close as possible to the main entrance.
building entrance and be clearly identified by signs and markings.

5. Parking areas should be located at the side and/or rear of each building.

6. Curbing should be used to separate all drive ways and parking from landscaped areas and curb cuts are to be provided at pedestrian crossings.

7. Landscaping should be provided around the perimeter of parking areas to screen parking lots. Perimeter hedge and shrub screening should not exceed 1 metre in height in order to provide opportunities for surveillance.

8. Parking lot plant material should be salt and drought tolerant, provide ease of maintenance and be hardy.

9. Parking lot lighting levels should be uniform across the lot with no glare on adjacent streets and assist both pedestrian and vehicular circulation.

10. Raised traffic islands and planting areas should be considered to break up larger parking areas. Salt tolerant plant materials could be considered in these islands with a minimum width of 2.5 metres.

11. Pervious surface paving materials should be considered where possible to enable stormwater to soak into the ground.

12. Stormwater run-off from parking areas should be directed to vegetated buffer areas or bio-retention swales incorporated into parking lots or adjacent to parking lots.

7.4.3 Loading and Utility Areas

Location of loading areas, storage areas and above-ground utilities should be considered at the site design stage to ensure that they do not detract from the appearance of the project and that the site operates efficiently. Generally, site services should be located away from public street views and screened as necessary.

Guidelines

1. Loading bays and other service areas should be oriented away from public street views and, as appropriate, screened from the street by building mass, fencing and screen walls compatible with the building architecture.

2. Waste storage areas should be located inside buildings, wherever possible.

Outdoor waste disposal areas should not be visible from the street.

3. Research facilities requiring outdoor storage of materials should be sensitively sited to ensure storage areas are located in yards which do not face public streets or parks. All storage areas should be screened from public view by landscape features and fencing compatible with the building design and materials.

4. Truck access to service and loading areas should be designed with sufficient space so that truck movements do not disrupt other vehicles and pedestrian access.

5. Utilities should be located underground, where possible, to improve the appearance of the development. Where above ground utilities are necessary, ensure their design is integrated and compatible with other site elements and screened from public view.

7.4.4 Landscape Design

Landscaping is an important aspect of site design 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. Micro-climatic and environmental benefits can also be gained through plant selection and location.

Guidelines

1. Scale and function of landscape materials should be appropriate for the site and its structures, and to maintain a pedestrian scale.

2. Trees and shrubs should be selected having regard to their characteristics and those of the proposed locations including to soils, sun, root spread, growth rate, canopy size and salt tolerance.

3. Plant materials should be grouped to frame building elevations, add visual interest to blank building facades, accentuate building entrances and screen service areas.

4. Planting should be located so that it does not interfere with sight lines at driveway intersections, lighting and emergency apparatus such as fire hydrants.

5. Trees should be located in and around
parking areas in order to reduce the heat island effect of the parking lot.

6. Patios and gardens should be considered for Park employees, researchers and others to enjoy outdoor space during lunches or breaks. Outdoor furniture should be provided in areas where people congregate.

7. Plants selected should be native/adapted to the climate requiring little or no care once established. This includes minimal watering requirements and no need for fertilizers.

7.4.5 Safety and Security

How people use spaces and how people feel when using that space can be affected by site features, nearby buildings and landscape design. Site design is a contributing factor to creating safe communities and minimizing undesirable activity in public areas. It is important that development be properly designed at the outset to create safe conditions.

Guidelines

1. Public outdoor spaces should be designed to provide a clear definition of the purpose of this space and distinguish it from private areas. Landscaping, walls, fences and grade changes can be used to delineate private and public spaces.

2. Clear site lines should be created to allow people to see and be seen. Design should avoid blind corners, bends, and other elements which may obscure clear views.

3. Public spaces should be located to maximize natural surveillance from buildings, streets and walkways.

4. Buildings should be clustered around common parking lots to facilitate monitoring of the space.

5. Window locations should be considered to maximize informal surveillance opportunities by buildings users, especially with regard to public spaces, entrances and laneways.

6. Lighting levels which are appropriate for night time visibility should be provided. Only areas which need to be illuminated should be lit in order to avoid creating a false sense of security. Metal halide lighting is recommended, and low pressure sodium lighting should be avoided.

7. Landscape screening objectives should be balanced with views to spaces and buildings so as to not create potential hiding areas.

7.4.6 Lighting

Lighting is required to provide night visibility and safe conditions for both pedestrians and motorists. It can also create an attractive evening environment. It is important to remember that lighting requirements for motorists are different from the needs of pedestrians.

The objective with site lighting is to obtain lighting levels which provide ease of nighttime 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. Lighting plans should be prepared by a lighting specialist to ensure the safest conditions are created.

Guidelines

1. Site and streetscape lighting should be designed as an integrated system that considers all pedestrian, motorist and building needs.

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, unit areas.

3. A hierarchy of lighting levels should be developed to provide the necessary illumination required for particular components of the site. Lighting should focus on pedestrian areas, clearly identifying pedestrian walkways and building entrances.

4. 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 the streetscape elements.

5. Lighting should be used to accent and highlight building, signage and landscape features.

6. Lighting design should follow IESNA design requirements for site lighting.
7.5 Building Design

There will be a variety of research, academic and service uses throughout the McMaster Innovation Park. Despite these different uses, it is appropriate that each building be of the highest quality of design to ensure that the entire neighbourhood develops with a strong and distinctive character. The buildings of the park, along with its public spaces, will contribute significantly to the identity of MIP.

Guidelines

1. Each building should have a contemporary, rather than a traditional, architectural style reflecting the modern research and technology functions and activities that they accommodate.

2. Buildings should be mid-rise in height, generally in the order of 4-8 storeys to promote a pedestrian scale development. Additional building height is appropriate in landmark building locations adjacent to Highway 403 or at the gateways along Longwood.

3. Architectural features and materials should be used to emphasize entry areas and other special building areas, and to articulate large expanses of solid wall. Main building entrances should be oriented to public streets and emphasized through canopies, awnings and other architectural elements.

4. Each building should incorporate horizontal divisions to create a base, middle and top or cap. These divisions can be expressed through design and material elements. Each base should be composed of the first floor or first two floors of the building to give the appearance of a greater height than any single floor in the middle.

5. The architectural treatment of the top of the building will create a sense of distinctly finishing the dominate architectural theme of the middle and may be accomplished by changes in windows, floor heights, setback, material changes or a cornice.

6. Architectural detailing including articulation of building walls; use of windows, projections and recesses to create a rhythm; and, changes in building material or color should be used to add visual interest to long elevations.

7. High quality exterior building materials such as steel, glass, metal paneling, and masonry may be used.

8. Roof top mechanical equipment should be enclosed or screened from view from streets or located within a roof line or behind parapet walls.

9. Where a building has frontage on Highway 403, the building façade facing the highway should have significant architectural treatment similar to that provided for the elevation facing the internal public streets.

10. Buildings located at gateway locations and on corner lots should be designed to give prominence to the location through special design features.

7.6 Signage

Signage can provide building identification and way-finding through a site or neighbourhood. Effective signage is an integral part of the built environment. Signage should reinforce the sense of quality of the research park through the graphic design, colour, material and placement.

The City of Hamilton regulates the size and location of signs through its sign by-law. These guidelines should be used in conjunction with the University’s sign by-law to provide further direction for signage and wayfinding.

Guidelines

1. Signs should be compatible in scale with the urban character of the research park and the individual buildings.

2. Signage should compliment the architecture and not detract from or overpower building design.

3. Building identification should be incorporated as an integral and coordinated element of the building elevation, and should be compatible with the design, scale, colour and materials.

4. Directional signage should assist in the orientation of pedestrians and motorists. Directional signage should be coordinated with other signage in terms of colour and
5. Signs should be located where they will not obstruct sight lines, driveways and intersections and interfere with pedestrian or motorist safety.

7.7 Sustainable Design

Many sustainable design and green building principals have been incorporated into the master plan and should be incorporated into individual buildings. Green buildings are resource efficient, use less energy, utilize construction materials efficiently and are designed to reduce internal and external impacts on the environment. Green building design can also reduce operating costs. Site planning and infrastructure design are also important in achieving environmental sustainability. Water quality, reuse of stormwater and the transportation system support of travel modes other than the automobile are also important considerations in the Master Plan.

Green building standards have recently been established through such programs as the Leadership in Energy and Environmental Design (LEED) certification. The Master Plan has established that each building should achieve a LEED Silver certification at a minimum. It is anticipated that some development will achieve a higher standard and that comprehensively, the Mcmaster Innovation Park will become the most sustainable new neighbourhood in Canada.

Guidelines

1. New buildings should be designed to meet a LEED-NC Silver level certification at a minimum.
2. A high degree of indoor environmental quality should be achieved through design and techniques include day lighting and use of low emission finishes formulated to low or 0 volatile organic compounds (VOC) standards.
3. Building energy consumption and site systems such as HVAC, water, lighting should be reduced through the use of mechanical and construction technologies.
4. Renewable energy systems are encouraged to reduce or supplement building power requirements.
5. Innovative waste water treatment, water reduction and sustainable irrigation strategies are encouraged.
6. Green roofs are encouraged to minimize water run-off.
7. Stormwater run-off should be reduced in order to minimize end of pipe stormwater management solutions.
8. Rainwater harvesting through the use of cisterns is required to achieve stormwater objectives. Rainwater may be used for irrigation of landscaped areas and for grey water plumbing.
9. Pervious materials are encouraged for surface parking areas. Parking lot design should also consider creation of bioretention swales next to or within parking areas to collect and treat stormwater run-off. Bioretention swales should be plated with salt tolerant shrubs and grasses to filter water before it percolates into the ground.

7.8 Development Review Process

McMaster University and the City of Hamilton each have a development review process for projects within the Mcmaster Innovation Park. These guidelines have been prepared for use in this development review process.

Development proponents should meet with McMaster University staff prior to preparation of development plans and the submission of formal development applications. These guidelines can then be reviewed and additional direction provided with respect to university and City expectations in the development process.

This section provides an overview of the process and requirements.

7.8.1 Predesign Conference

Prior to initiating design for a project, the developer and its design consultants must meet with the McMaster Innovation Park Review Panel to review the characteristic of the site, design objectives as established in these guidelines and the development approval process.
7.8.2 Preparation and Submittal of Plans

A two stage process will be employed by MIP. Preliminary plans will be submitted and reviewed by MIP. These plans will consist of at a minimum, site plan, building elevations, floor plan and landscape plan.

Following review of these plans, the developer will receive written comments from MIP. Plans noted above should be revised and resubmitted for review and approval.

7.8.3 City of Hamilton Site Plan Approval

The developer will then submit required plans to the City of Hamilton along with all forms, fees and charges, the City of Hamilton site plan review process will address matters of City interest as contained in the City of Hamilton Site Plan Guidelines, and various technical standards as prepared by the City from time to time. A development proponent should be aware of these standards prior to beginning its design exercise.

Significant deviation from the preliminary plans approved by MIP will require further consultation with MIP and resolution.

7.8.4 Final Approval by McMaster Innovation Park

The plans utilized to obtain City of Hamilton site plan approval will be submitted to McMaster. The developer may then proceed to obtain building permit approval from the City of Hamilton.