

BEDC NEXT GENERATION MANUFACTURING ACTION PLAN

Lean, Green & Connected:
Innovative Industrial Buildings
for Advanced Manufacturing

MANUFACTURERS' CHECKLIST



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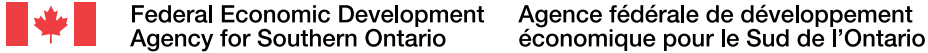
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Table of Contents

Introduction.....	2
Part 1: Property at A Glance.....	4
Part 2: Site Considerations.....	6
Part 3: Building Requirements	11
Part 4: Making It Green.....	17

Introduction

Are you thinking of locating your manufacturing plant in Burlington? Is your company already located here but considering a move to a new location or facility? BEDC can help.

Site Selection Zoning Controls

Every property has limitations which are unique to the specific activities allowed in that zone. Once allowable uses are determined, there are further limitations to the intensity of those uses and what the buffers or setbacks might be and the requirements for parking and delivery, as well as landscaping for the property.

Business Parks and Industrial Buildings

Employment districts serve an important economic function in the city and the quality of the built form and landscaping within those areas contributes to the image of the industry and the companies involved. Each municipality has guidelines which are intended to control development by setting minimum standards for the streetscape, site circulation and parking, building design and landscaping features in the area.

As A First Step...

BEDC can help you understand land use and zoning requirements. Call us.

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How to Use This Checklist

This pocket reference guide is designed to give manufacturers a simple tool to use in evaluating the suitability of buildings for existing and future operations.

Manufacturing trends indicate that today's manufacturers require space that:

- is flexible enough to accommodate rapid changes in production lines and processes;
- can be reconfigured quickly to respond to shifting needs for new office space or production space; and
- optimizes long-term operating costs through the use of well-designed, energy efficient technologies.

The following checklist organizes building and site information under a number of headings. Each section contains a list of preferred building attributes and a checklist which makes it easy to note to specific building features – for comparison purposes. By using the checklist, manufacturers will be able to create a record of the relative strengths and limitations of various properties.

Information in this checklist is based on industry research and has been informed by advice from manufacturers, architects, engineers and developers.

The checklist is intended as a guide for manufacturers who are thinking about a site or facility in Burlington. It is not intended to be prescriptive nor does it reflect any specific planning, site plan guidelines or regulations in Burlington. It should not be used for this purpose.

Part 1: Property at A Glance

A Windshield Survey

Each building and facility will have its own unique set of features and requirements. Manufacturers are encouraged to review this checklist and to consult with BEDC before making any site location decisions. BEDC can assist you in understanding Burlington's planning regulations as they affect specific properties. Preliminary consultation can save you time and money!

Property Address

1. Exterior cladding materials (solid wall): *(check all applicable)*

- Masonry Precast Siding
 Stucco Metal panel Other _____

2. Percentage of glass on front façade: *(approximate estimate)*

- a. 0 - 10% 11 - 25% 26 - 50% >50%

b. Are windows visible on other façades of the building?

- Yes No

Comments _____

3. Roof appears:

- Sloped Flat (can't be seen)

- Combination (sloped & flat)

- Any other visible features / building elements
(skylights, solar panels, etc.)? _____

4. Landscaping: *(check all applicable)*

- a. None Some A lot
b. Front yard Side yard(s) Rear
c. Appears maintained Appears unmaintained

5. Appearance: *(check all applicable)*

- a. Bad condition Good condition Attractive
b. Appears maintained Appears unmaintained
 Other _____

6. Size:

- One storey Two storey
 One storey at front and two storey at rear
 Other _____

Lot size _____ Floor space _____ Office space % _____

7. Parking availability on subject property: *(check all applicable)*

- In front yard In side yard(s) In rear yard

8. Loading/delivery access on subject property: *(check all applicable)*

- a. In side yard(s) In rear yard Not accessible
b. Drive-in doors Loading dock Unknown

9. Visibility – Building is visible from: *(check all applicable)*

- Highway Side street
 Major roadway Not highly visible

Notes

Part 2: Site Considerations

Before Committing to A Property

Guidelines for Good Site Development of Properties

1. Site layout – building placement of front façade should be close to the street edge where possible.
2. Office components should be located closer to the street than plant or warehouse.
3. Interesting architectural features complement the streetscape.
4. Site incorporates natural features as much as possible to soften the environment.
5. Buffers and setback should be well maintained and sensitive to natural and environmental features.
6. Impacts of site development should be controlled to limit the adverse effects on adjacent properties.
7. Outdoor amenity areas are desirable for employees and incorporated into the site design.
8. Display areas should be incorporated into the front yard landscaping.
9. Garbage storage area requirements for organic and dry waste and pickup should be well integrated.
10. Screening of mechanical equipment requirements is desirable.

Guidelines for Good Circulation and Parking

1. Entrances and driveways should be functional for large and service vehicles.
2. Separate automobile zones and convenient visitor parking should be incorporated where possible.
3. Entrances should be located as far as possible away from intersections.

4. Sufficient areas should be provided for truck maneuvering, loading and parking.
5. Shipping and Receiving areas should not be exposed to the street.
6. All driveways, loading areas, patios and sidewalks should be curbed and hard surfaced.
7. Ramps at suitable slope should be installed to aid in pedestrian and loading requirements.
8. Bicycle parking areas are available with optional storage rooms and change rooms for cyclists.
9. Barrier free parking is located by main entrances and plug-in's for electric cars are encouraged.

Guidelines for Loading & Servicing Areas

1. Waste storage should be located inside buildings wherever possible.
2. Outdoor material storage should be well ordered and screened, if possible. Rules regarding outdoor storage should be checked with the City of Burlington.
3. Loading and unloading activity should be screened from the street.
4. Outbuildings are limited in size and location.
5. Screening of equipment, garbage and recycling materials/buildings is desirable and may be limited by the specific zoning bylaw.

Guidelines for Good Landscaping in Multi-Tenant Buildings

1. Individual entry points and signage regulation is identified both on buildings and at the street front.
2. Interesting, identifiable and consistent architectural details should be employed throughout the multiple unit development to enhance the image of businesses and the development.

3. Well located foundation planting, hard surface features and peripheral planting is important to the image and well-being of the tenants, employees and visitors to the development.
4. Landscape strips should be provided to screen vehicles or for snow storage and site articulation.

Checklist for Site Considerations

(Primarily for the new buildings and development)

Prevailing Winds

1. Direction _____
2. Max., min., and average velocities _____
3. Special forces (e.g. tornadoes, hurricanes) _____

Solar Orientation

4. Sun angles _____
5. Days/hours of sunlight _____
6. Cloud cover _____
7. Shading of (or from) adjacent structures, natural features and vegetation _____

Temperature

8. Temperature variation range _____
9. Maximums and minimums _____

Humidity

10. Ranges of variation _____
11. Maximums and minimums _____

Precipitation

12. Peak period totals _____
13. Annual and seasonal totals _____

Topography

14. Contours and spot elevations _____
15. Slopes: percentage, aspect, orientation _____

16. Escarpment _____
17. Erosion channels _____
18. Extent, location, and general configuration of rocks, ledges, outcrops, ridges, drainage lines, and other unique features _____
19. Visual characteristics _____

Existing Access and Circulation

20. Vehicular _____
21. Pedestrian _____

Existing Water Bodies

22. Location, size, depth, direction of flow _____
23. Water quality: clean, polluted, anaerobic conditions, etc. _____
24. Use: seasonal, year round _____
25. Wetlands: ecological features _____
26. Variations: expected water levels, tides, wave action _____
27. Coastal features _____

Drainage Canals: Rivers, Streams, Marshes, Lakes, Ponds, etc.

28. Natural and built _____
29. Alignments and gradients _____
30. Pattern and direction _____

Existing Water Way Easements

31. Surface _____
32. Sub-surface _____

Surface Drainage

33. Patterns on and off the site (location of streams and washes) _____
34. Proximity to floodplains _____
35. Maximum flood level _____
36. Frequently flooded areas _____

Part 3: Building Requirements Meeting Your Business Needs

37. Local watershed areas, amount of runoff collected, and location of outfalls _____

38. Swampy and concave areas of land without positive drainage and other obstacles that may interrupt or obstruct natural surface drainage _____

39. Potential areas for impoundments, detention/retention ponds _____

40. Unique site features _____

Geotechnical/Soils

41. Basic surface soil type: sand, clay, silt, rock, shale, gravel, loam, limestone, etc. _____

Rock and Soil Type: Character/Formation and Origin

42. Geologic formation process and parent material _____

43. Inclination _____

44. Bearing capacity _____

Bedrock

45. Depth to Bedrock _____

46. Bedrock Classification _____

Conflicting Land Uses

47. Proximity to conflicting land uses, for example, residential or institutional uses _____

Seismic Conditions

Potential Environmental Hazards

Advanced Design Features and Considerations

The following design features are found in state-of-the-art industrial and commercial facilities:

- Advanced acoustic design & noise abatement
- Anti-static dissipative conductive flooring
- Venting & exhaust systems to meet Ministry of Environment (MOE) standards
- Specialty finishes
- Upgraded electrical capacity
- Interior mezzanine space
- High speed, hard line or satellite communication
- Structural upgrades for specialty equipment (overhead cranes)
- Electric vehicle plug-in's
- Shared business services
- Common amenity space (interior/exterior)
- Supports social connectivity & values
- Sustained/maintained LEED* values
- Sustained/maintained barrier-free values
- Flexibility to reconfigure office/production space

*Leadership in Energy & Environmental Design (LEED) is an internationally recognized green building certification system. LEED provides third-party verification that a building (or community) was designed and built using strategies to improve performance in metrics such as energy savings, water efficiency, CO2 emissions reduction, and indoor environmental quality. LEED encourages stewardship of resources and sensitivity to their impacts. Developed by the U.S. Green Building Council (www.usgbc.org), LEED provides building owners and operators with a framework for identifying and implementing practical, measurable green building design, construction, operations and maintenance solutions.

Building Feature Checklist

1. Existing building/space is
 Some suitable as-is Requires modifications
2. Form of ownership is
 Ownership Lease
3. Total building area required is a) _____
Area provided is b) _____
4. Office area required is a) _____
Area provided is b) _____
5. Warehouse required is a) _____
Area provided is b) _____
6. Production area required is a) _____
Area provided is b) _____
7. Type of construction is _____
8. Accessibility of site to major intersection is
 Good Fair Poor
9. Shipping doors
 Drive in Loading desk
10. Parking available for
 Employees Visitors
11. Clear indoor ceiling height
a) Office _____ b) Production/warehouse _____
12. Overhead crane
a) Yes/No _____ b) Capacity _____
13. HVAC availability
 Heating Cooling

14. Power availability
 Primary Secondary
15. Waste storage available
 Internal External
16. Recycling storage available
 Internal External
17. Waste & recycling pickup
 By landlord By tenant
18. Barrier free parking available
 Yes No
19. Barrier free ramp and threshold
 Yes No
20. Power door operated main entrance
 Yes No
21. Security system available
 Yes No
22. High speed fibre optics communication service available
 Yes No
23. Roof condition
a) Age _____ b) Type _____
24. Insulation level of roof area _____
25. Windows and Doors
a) Age _____ b) Type _____
26. Exterior wall system quality
a) Well sealed _____ b) Insulation value _____

- 27. Interior wall systems
 - a) Quality _____ b) Aesthetics _____
- 28. Interior floor finishes
 - a) Office _____ b) Production/Warehouse _____
- 29. Office area washroom
 - Regular _____ Barrier free _____
- 30. Production area washroom
 - Regular _____ Barrier free _____
- 31. Change room with shower available
 - Yes No
- 32. Locker room available
 - Yes No

Checklist for Utility Requirements

- 1. Electricity
 - a) KW demand _____
 - b) KWH/month _____
 - c) Load factor _____
- 2. Natural Gas
 - a) Availability _____ b) Usage requirement _____
- 3. Water Usage
 - a) Size of service _____ b) Load factor _____
- 4. Sewer Usage
 - a) Size of service _____ b) Load factor _____

Environmental Approvals

- 1. Uses intended will be allowed in the facility _____
- 2. Facility will not need environmental permits _____
- 3. Facility will need to file for permits for
 - Air Water Sewer
 - Other _____
- 4. Soil condition
 - Reports available _____ Required _____

Networking/Telecom

- 1. Communication Service
 - Fibre wire Telephone line/satellite
 - Cable Wireless
- 2. Common network infrastructure _____
- 3. Structured – maintainable cabling _____
- 4. WiFi _____
- 5. VOIP _____
- 6. Digital signage _____

Security/Life Safety

- 1. Digital video monitoring _____
- 2. Access control and monitoring _____
- 3. Automatic fire suppression _____
- 4. Fire detection and alarm _____

- 5. Egress support (lighting, signage, smoke control, etc.) _____
- 6. Contaminant monitoring and containment _____
- 7. Proximate security/guard services _____
- 8. Fire and police protection _____
- 9. After hours operation _____

Other Amenities and Considerations

- 1. Concierge, Reception area _____
- 2. Access to local shopping and suppliers _____
- 3. Access to local restaurants and food services _____
- 4. Access to conference and meeting facilities _____
- 5. Access to local lodging/hotels for guests/clients _____
- 6. Easy access to airport(s)/heliport _____
- 7. Parks _____
- 8. Municipal services _____
- 9. Recreational facilities _____
- 10. Banking _____
- 11. Health services and hospitals _____
- 12. Snow removal _____

Sustainable Design Features and Considerations

The following suggestions are offered for manufactures who wish to green their facilities to optimize their contribution to the triple bottom-line: economy, ecology, society.

Sustainable Sites

- 1. Select a good site. Avoid development on sites that are agricultural, in the 100-year flood plain, subject to landslides, erosion from wildfires, that provide habitat to endangered species or wetlands.
- 2. Redevelop urban areas – Focus on sites where there is existing infrastructure, protecting greenfields and preserving habitat and natural resources.
- 3. Reduce site disturbance – Conserve existing natural areas and restore damaged natural areas for habitat and biodiversity.
- 4. Improved on-site stormwater management – Try to eliminate stormwater runoff, increase on-site infiltration and reduce contaminants. Try to minimize impervious surfaces so groundwater can recharge.
- 5. Alternative transportation – Locate close to public transportation routes, provide protected bicycle parking with change room facilities in each unit, encourage carpooling and provide preferred parking for fuel-efficient vehicles with accessible vehicle plug-in receptacles for electric cars; to protect land development and to reduce the impact from vehicle emissions.
- 6. Provide increased and thoughtful landscaping.
- 7. Reduce heat islands on site by reducing the amount of asphalt paved areas and increasing green space.

8. Reduce heat islands on roof tops by reducing dark roof surfaces with lighter, more reflective roofs or by installing a vegetative roof assembly – where structural loading capacity is acceptable.
9. Reduce light pollution by using energy efficient, full cut-off fixtures to improve night sky visibility.

Water Efficiency

1. Reduce water consumption by 20%+ by utilizing water efficient fixtures.
2. Minimize the use of potable water for irrigation by using water efficient landscape materials (i.e. drought tolerant and xeriscape plantings) rather than sod, by using high efficiency irrigation technology (i.e. drip irrigation or rain water collection).
3. Irrigate landscaping (only if necessary) using collected rain water.

Energy & Atmosphere

1. Optimize energy performance through siting, orientation, building form, insulation, glazing, daylighting, and controls.
2. Study and monitor the performance of the building using energy modelling programs.
3. Find ways to make a more energy efficient building.
4. Use alternate on-site renewable energy sources (i.e. Solar Panels, SolarWall systems, etc.).
5. Install HVAC equipment, refrigeration equipment and fire suppression systems that are HCFC-free to reduce ozone depletion.
6. Establish a measurement & verification system for the base building and tenant sub-metering.

7. Commission your building to verify that the building is designed, constructed and calibrated to operate as intended. A Commissioning Agent can act as a 3rd Party to review.

Materials & Resources

1. Reuse building materials wherever possible to conserve resources, extend the life cycle of existing building stock, reduce waste and reduce the environmental impacts of new buildings.
2. Manage construction waste by diverting construction, demolition and landfill clearing debris from landfills. Redirect recyclable materials to monitored recycling facilities.
3. Use materials with high recycled content.
4. Use materials that have been extracted, harvested, recovered and processed locally.
5. Provide tenants with an accessible recycling/waste diversion program.
6. Use rapidly renewable and/or FSC certified wood products.

Indoor Environmental Quality

1. Provide optimal indoor air quality and ventilation.
2. Maintain a “smoke free” environment.
3. Use low-emitting materials such as adhesives, sealants, paints, coatings, flooring, composite woods and agrifiber products.
4. Limit occupant exposure to potentially hazardous particulates and chemical pollutants by installing entry grates to capture dirt, separately ventilate areas of chemical use and storage, protect ventilation systems during construction and complete a building “flush-out” prior to occupancy.

