



Fire Services Department
Development Design Guidelines

Table of Contents

1.0	Purpose	2
2.0	Application	2
3.0	Definitions	2
4.0	Water Supply	4
4.1	Fire Hydrants	4
5.0	Fire Access Routes.....	5
5.1	Location of Fire Access Routes	6
5.2	Fire Access Route Design	6
6.0	Street and Emergency Access Route (Secondary Entrance) Design	7
6.1	Cul-de-sac or Other Similar Turnaround Design Pattern Requirements	7
6.2	P-Loop or Other Similar Street Design.....	8
7.0	Design and Construction of Emergency Access (Secondary Entrance) Routes	8
8.0	Fire Route Signage.....	10
9.0	Maintenance	11
10.0	Exemptions.....	11

1.0 Purpose

- The Fire Services Guideline was developed to provide developers, designers and constructors with clear direction on how to achieve the design principles that meet a minimum safe level of emergency service infrastructure provision in the City of Pickering. These levels of infrastructure provision are based on the available emergency service equipment and historical data reflecting where our community risks lie. This document is not intended to replace or supersede documents such as the Ontario Building Code, but to provide specific details to ensure community infrastructure is sufficient to protect our citizens.
- Where this guideline intersects with existing legislation and regulation, this guideline shall supplement or clarify only in those areas where the acts and regulations are silent or reflect a need for consultation. Nothing in this document shall limit a developer, designer or constructor from providing a higher level of service, or from making alternative solution proposals in accordance with the Ontario Building Code or the Ontario Fire Code.
- The developer shall be responsible for including the applicable infrastructure into their plans submitted through existing City processes, such as Site Plan Pre-Applications, Site Plan Applications, Subdivision Plans or Agreements and Building Permits.

2.0 Application

This guideline applies to all buildings, building features, and building infrastructure except where those buildings and building features have been constructed to the prescriptive acceptable solutions of the Ontario Building Code or Ontario Fire Code or constructed to an approved alternative solution. This policy shall not be used to support an alternative solution proposal, where a prescriptive acceptable solution already exists in either the Ontario Building Code or Ontario Fire Code.

This guideline is meant to compliment and support all planning and development reference documents produced by the City of Pickering.

Questions related to this policy may be directed to the City of Pickering Fire Services Department, Fire Prevention Section at 905.420.4660 ext. 8512 or via email at fire@pickering.ca.

3.0 Definitions

- 3.1 **Approved** – means approved by the Chief Fire Official or appointed designate.
- 3.2 **Building** – shall have the same meaning as that provided in the Building Code Act.

- 3.3 **Chief Fire Official** – means the City of Pickering Fire Chief or a member or members of the fire department appointed by the City of Pickering Fire Chief to have authority to approve conditions or alternatives that may be permitted under the *Fire Protection and Prevention Act*, Ontario Fire Code and applicable By-laws.
- 3.4 **Detached House** – means a residential structure, which is free standing, separate and detached from any other building or structure.
- 3.5 **Development** – means a building or buildings that are proposed to be constructed under an agreement with the City of Pickering, City Development Department.
- 3.6 **Dwelling Unit** – means a suite operated as a housekeeping unit, used or intended to be used as a domicile by one or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.
- 3.7 **Emergency Access (Secondary Entrance) Route** – means a drivable access right of way intended for use by emergency vehicles in to cul-de-sacs and other cut off areas. They are typically gated or barred by bollards.
- 3.8 **Fire Access Route** – means a private street, public street, access route or a right of way provided to a building for the use of emergency service personnel and vehicles, to protect the building and its occupants.
- 3.9 **House** – means a detached house, semi-detached house containing not more than two dwelling units or a row house (townhouse) containing not more than one dwelling unit.
- 3.10 **Multiple Unit Development** – means a development abutting a public street or private street that contains the following, including the combination of such building description types:
- 3.10.1 four or more residential dwelling units (i.e., detached houses, semi-detached houses, row houses (townhouses) and/or quadraplexes, etc.)
- 3.10.2 four or more non-residential units (i.e., industrial malls and/or mercantile strip plazas, etc.)
- 3.11 **Private Street** – means a private right-of-way over private property, that affords access to lots abutting a private road and is not maintained by a public body
- 3.12 **Public Street** – means a right-of-way or roadway that is used by vehicles and is maintained by a governmental authority.

3.13 **Row House** – means a residential structure which:

- 3.13.1 is one of a group of three or more horizontally attached residential structures, and
- 3.13.2 is separated vertically from one or two of the other structures by common walls which do not provide for internal access from the living space in one structure to another (i.e., townhouses and/or quads, etc.)

3.14 **Semi-Detached House** – means a residential structure which:

- 3.14.1 is one of two horizontally attached residential structures, and
- 3.14.2 is separated vertically from the other residential structure by a common wall which does not provide for internal access from the living space in one structure to another

4.0 **Water Supply**

Developments are required to be provided with an adequate water supply acceptable to the Chief Fire Official or appointed designate.

The following requirements in this Section applies to all developments in which proposed individual buildings are to be constructed in accordance with Ontario Building Code, Division B, Part 9 or where prescriptive requirements are not provided for proposed individual buildings that are to be constructed in accordance with Ontario Building Code, Division B, Part 3

4.1 **Fire Hydrants**

- 4.1.1 The following requirement in this Section apply to all developments where the adequate water supply is provided by public or private fire hydrants.
- 4.1.2 A fire hydrant shall be located within 90 metres of the principal entrance to each building of a multiple unit development. Where the portion of a building is completely cut off from the remainder of a non-sprinklered building, a fire hydrant shall be located within 90 metres of the principal entrance of each unit that has direct access to the exterior. The distance from the hydrant to the principal entrance(s) shall be measured using the unobstructed path that the fire hose would have to be actually laid along, not in a straight line.
- 4.1.3 If private fire hydrants, or if additional private fire hydrants are required to meet the requirements of this section, the developer shall provide them at their own expense.
- 4.1.4 Private fire hydrants shall be constructed and installed in conformance with The Regional Municipality of Durham, Design and Construction

Specifications for Regional Services Standard Specifications for Watermains and Service Connections, available from The Regional Municipality of Durham Works Department.

- 4.1.5 Private fire hydrants shall be distinguished from public fire hydrants by being painted red in colour, except the pumper nozzle (Storz type connection) cap is to be painted black in colour and facing the fire access route.
- 4.1.6 Water supply from private fire hydrants shall have a minimum sufficient pressure and flow for firefighting activities in accordance with Pickering Fire Services requirements or upon approval from the Chief Fire Official or appointed designate.
- 4.1.7 Private fire hydrants shall be located within 5 metres of the fire access route. Where possible, they should be positioned not closer than 12 metres to any building; however, if difficulties arise restricting location or location is detrimental to fire safety, Chief Fire Official or appointed designate may accept lesser distances but in all cases shall never be closer than 3 metres to any building, and kept visible and accessible at all times.
- 4.1.8 Private hydrants shall have no obstructions within a minimum 1 metre radius of hydrant. (i.e., trees, shrubs, fences or retaining walls, etc.).
- 4.1.9 Private fire hydrants shall be tested and maintained annually in conformance with the Ontario Fire Code, and at the property owner's expense.
- 4.1.10 Rear private laneways serving accessory dwelling units or accessory structures, such as detached garages or garden suites, etc. are to be designed as fire access routes with hydrants located at or near the end of the laneway where it meets the adjoining street or provide alternative measures approved by the Chief Fire Official or appointed designate.

5.0 Fire Access Routes

Unless otherwise approved, these requirements apply to all developments served by private or public streets designated as fire access routes in which proposed individual buildings are to be constructed in accordance with Ontario Building Code, Division B, Part 9 or where prescriptive requirements are not provided for proposed individual buildings that are to be constructed in accordance with Ontario Building Code, Division B, Part 3.

All developments containing fire access routes required by the Ontario Building Code, Ontario Fire Code or this policy shall be provided with fire route signage in conformance with Section 8 of this document.

5.1 Location of Fire Access Routes

- 5.1.1 Unless otherwise approved, where the principal entrance to each building in a Multi-Unit Development has direct access to the exterior, every principal entrance shall be provided with a fire access route that is located so that the principal entrance and required access openings are located not more than 45 metres from the closest portion of the fire access route, measured along the path of travel, horizontally from the face of the building.
- 5.1.2 Access to row house buildings in multiple-unit developments shall not exceed a distance of 45 metres without an access to the rear of the row house block.
- 5.1.3 Access to the rear of row house buildings in a multiple-unit development shall be provided with a 2.4 metre unobstructed break.
- 5.1.4 Parking (Visitor or Resident) shall not block the 2.4 metre unobstructed break giving access to rear of building for firefighting purposes.

5.2 Fire Access Route Design

- 5.2.1 Unless otherwise approved, a portion of a private street, public street, laneway or yard provided as a fire access route shall:
 - a. have a clear width not less than 6 metres
 - b. have a centerline radius not less than 12 metres
 - c. have an overhead clearance not less than 5 metres
 - d. have a change of gradient not more than 1 in 12.5 (8%) over a minimum distance of 15 metres
 - e. be designed to support the expected loads of fire department vehicles and be surfaced with concrete, asphalt or other material designed to permit accessibility under all climatic conditions
 - f. have turnaround facilities for any dead-end portion of the access route more than 90 metres long, and
 - g. be connected with a public thoroughfare, and will be considered accessible when the following has been provided; base coat layer, appropriate signage, and hydrants

6.0 Street and Emergency Access Route (Secondary Entrance) Design

Emergency access (secondary entrance) routes are intended to be provided into areas that would be otherwise cut off, such as cul-de-sacs, P – Loops or other similar design patterns that are provided with a single fire access route. These emergency access routes are not intended for normal driving, and are typically only accessible to emergency services by the opening of gates or removal of bollards.

6.1 Cul-de-sac or Other Similar Turnaround Design Pattern Requirements

- 6.1.1 Private or public streets containing a cul-de-sac or other similar **turnaround** design pattern (approved by the Chief Fire Official or appointed designate) with only one fire access route shall be permitted in site plans or plans of subdivision subject to the following criteria:
- a. a dead-end street design shall not exceed 90 metres in length
 - b. a cul-de-sac or other similar turnaround design pattern shall not exceed 150 metres in length
 - c. the length of the cul-de-sac or other similar turnaround design pattern is defined as the distance measured from the curb line projection of the intersecting streets, along the centre line of the cul-de-sac or other similar turnaround design pattern to the furthest curb at end of the cul-de-sac (bulb) or to furthest curb of the other similar turnaround design pattern, if curbs are not installed, the distance is to be measured from the edge of pavement
- 6.1.2 Private or public streets containing a cul-de-sac or other similar turnaround design pattern with only one fire access route exceeding the required distances indicated in Subsection 6.1.1, an additional emergency access (secondary entrance) route is required to be installed and subject to the following criteria:
- a. a cul-de-sac or other similar turnaround design pattern shall not exceed 300 metres in length
 - b. a cul-de-sac or other similar turnaround design pattern exceeding 150 metres in length requires an emergency access (secondary entrance) route leading to a public thoroughfare within 150 metres from the furthest curb at end of the cul-de-sac (bulb) or to the furthest curb or other similar turnaround design pattern, if curbs are not installed, the distance is to be measured from the edge of pavement
 - c. there shall only be one emergency access (secondary entrance) route per cul-de-sac or other similar turnaround design pattern

6.2 P-Loop or Other Similar Street Design

6.2.1 **Private or public streets** containing a P-Loop or other similar design pattern (approved by the Chief Fire Official or appointed designate) with only one fire access route shall be permitted in site plans or plans of subdivision subject to the following criteria:

- a. The entrance portion to the P-Loop or other similar design pattern shall not exceed 120 metres measured from the curb line projection of the intersecting streets, along the centre line of the street to nearest curb line projection of the intersecting streets located at end of the entrance portion of the P-Loop or other similar design pattern. If curbs are not installed the distance is to be measured from the edge of pavement.

6.2.2 **Private or public streets** containing a P-Loop or other similar design pattern (approved by the Chief Fire Official or appointed designate) with only one **fire access route** exceeding the required distances indicated in Subsection 6.2.1., an additional emergency access (secondary entrance) route is required to be installed and subject to the following criteria:

- a. The centreline circumference of the looped portion of the P-Loop or other similar street design containing an emergency access (secondary entrance) route shall not exceed 700 metres.
- b. There shall only be one **emergency access (secondary entrance) route** or an approved equivalent second means of access to any public thoroughfare in a P-Loop or other similar street design.

7.0 Design and Construction of Emergency Access (Secondary Entrance) Routes

7.1. Emergency access (secondary entrance) routes and temporary emergency access (secondary entrance) routes **shall be designed and constructed to the following criteria:**

- minimum width of 4.5 metres
- the maximum gradient change is to be 1:12.5 (8%) over 15 metres minimum
- the minimum centre line radius is 12 metres
- 5 metre minimum overhead clearance from grade
- asphalt or other permanent surface
- barrier consisting of removable bollards, chains or other acceptable measures

- accessible under all climatic conditions
 - adherence to the Ontario Building Code
 - if indicated otherwise in this Section
- 7.2. Emergency access (secondary entrance) routes shall not exceed 150 metres in length.
 - 7.3. Both ends of the emergency access (secondary entrance) routes shall be protected by either gates or an approved type of removable bollards that can be easily removed and replaced year round.
 - 7.4. Emergency access (secondary entrance) route signage shall be located at both ends of the emergency access (secondary entrance) route at the owner's expense and to the satisfaction of the Chief Fire Official or appointed designate.
 - 7.5. The construction of emergency access (secondary entrance) routes must be completed prior to the issuance of any building permit or otherwise provided for through the subdivision or site plan agreement.
 - 7.6. The construction of an emergency access (secondary entrance) routes must be completed prior to occupancy of any building in a multi-unit development.
 - 7.7. When multi-unit developments or adjoining multi-unit developments are to be completed in stages, temporary emergency access (secondary entrance) routes are to be provided at a location acceptable to the Chief Fire Official or appointed designate and are required to be constructed to support the expected loads of Fire Services Department (emergency) vehicles and to remain in place until such time that adjoining streets have been completed to the satisfaction of the City of Pickering Fire Services Department.
 - 7.8. Where an emergency access (secondary entrance) route intersects with a roadway bounded by a curb, the curb shall be cut the full width of the emergency access (secondary entrance) routes, plus required turning radii, so that no more than 5 centimetre difference in height exists at the intersection points. Alternatively a mountable curb and gutter is permitted if the above requirements have been met and upon approval of the Chief Fire Official or appointed designate.
 - 7.9. A minimum level of completion will include at least a base coat layer and signage.
 - 7.10. Upon approval from the Chief Fire Official or appointed designate, lesser minimum levels of completion or construction may be considered for temporary emergency access (secondary entrance) routes.

8.0 Fire Route Signage

- 8.1 Minimum of two fire route signs are to be provided on one side of **fire access route** and where practical, located alternating side to side of the **fire access route**.
- 8.2 Where parking is located adjacent to the fire access route and is not **delineated** from the fire access route by curbs, signs may be located on the side of the fire access route opposite the parking only.
- 8.3 Setback from the fire access route: fire route signs shall be at least 0.3 metres and no more than 4 metres from the edge of the fire route. Buildings, lamp standards, etc., can be utilized if they are within the setback distances.
- 8.4 Fire Route signs should not be placed more than 45 metres apart and be placed 90 degrees to the fire access route or as determined by the Chief Fire Official or appointed designate.
- 8.5 Bottom of sign to be a minimum of 2.4 metres above the fire access route and not exceed 3 metres to the top of the sign above the fire access route.
- 8.6 Signage graphics, lettering and colouring is to be provided in accordance with City of Pickering Fire Services Department guidelines and procedures.
- 8.7 A detailed fire access route and signage plan shall be submitted for approval prior to final site plan approval in a legible format. Plan detail must include width and centerline turning radius of the fire access route, all fire hydrants or other water supplies, sprinkler or standpipe system fire department connections relative to the buildings, and the location of all fire route signage. This information may be included on the site plan submission.
- 8.8 Fire route signs shall be installed before any occupancy is granted by the City of Pickering, City Development Department, Building Services. The Chief Fire Official or designate shall inspect the route for compliance when requested to do so by the developer and may order modifications if it does not comply with all requirements.
- 8.9 The property owner is responsible to ensure that the visibility and legibility of the signs are maintained at all times.

9.0 Maintenance

- 9.1 All emergency **access (secondary entrance) routes**, including temporary **emergency access (secondary entrance) routes** and/or fire access routes located on private property shall remain clear from all parked vehicles, obstacles and obstructions and must be maintained in a passable state at all times in accordance with the following:
- a. Snow and ice accumulation shall be removed from all **emergency access (secondary entrance) routes, fire access routes** on private property, including areas or routes that are not subject to the City's winter control program.
 - b. **Fire access routes** to all **multiple-unit development** buildings are required to be designed so that there is an unobstructed path of travel from a fire department pumper to the sprinkler or standpipe system fire department connections for the building, or where there is no fire department connection, from a fire department pumper to the principal entrance of the building.
 - c. The unobstructed path of travel shall be 1.2 metres in width. If the path is located between parking stalls, then it must be clearly defined to strongly discourage parking with physical barriers and/or signage.

10.0 Exemptions

- 10.1 Where extenuating circumstances arise that will affect emergency service response, the City of Pickering Fire Services Department will support the following exemptions in lieu of or in addition to the installation of a secondary **fire access route** or **emergency access route** provisions as per the requirements contained in Section 6 or 7:
- a. Sprinklers conforming to the latest applicable version of the National Fire Protection Association "Standard for the Installation of Sprinkler Systems" (NFPA13/13D/13R), or other equivalent standards acceptable to the **Chief Fire Official** or appointed designate are installed in all **buildings** located beyond the maximum distance and location requirements contained in Section 6 or 7.
 - b. Other exemptions will be considered for support if alternative solutions are provided that, in the opinion of the **Chief Fire Official** or appointed designate in consultation with the City of Pickering, City Development Department, will provide equivalent or increased life safety and hazard protection to affected occupants and buildings.
 - c. Where an exemption has been granted and an alternative measure has been accepted that may require the future property owner to maintain a system or feature, the City may require the developer or constructor to take adequate measures to ensure that these requirements are disclosed, such as registering this information on title or some other reliable method acceptable to the City.

- d. Where construction or environmental difficulties arise prohibiting the installation of a secondary **fire access route** or installation of an **emergency access (secondary entrance) route**, the **Chief Fire Official** or appointed designate may approve a private or public street containing a single **fire access route** provided;
 - i. The private or public street entrance portion of a P-Loop or other similar design pattern has a minimum paved road width of 12 metres; measured from the nearest curb line projection of the intersecting streets, along the centre line of the private or public street to the furthest curb line projection of the nearest private or public street that is served by the entrance. If curbs are not installed, distance is to be measured from the edge of pavement.
 - ii. The 12 metre private or public street width is required to be unobstructed by medians, boulevards, jersey barriers, vehicular parking or similar construction that would be considered an obstruction by the Chief Fire Official,
 - iii. Internal private or public streets are required to be accessible to the City of Pickering Fire Service Department (Emergency) vehicles,
 - iv. For the purposes of this Section streets that return or connect to the same private or public street entrance are to be considered a separate private or public street, and
 - v. Location and number of buildings in multi-unit developments contained within and that are served by a private or public street with a single fire access route is approved by the Chief Fire Official or appointed designate.
- e. In the case of a conflict between the provisions of this document and the Ontario Building Code, the provisions of the Ontario Building Code shall govern.
- f. Where a multi-unit development contains both residential and non-residential buildings, the most restrictive requirements shall apply.