

Development Standard 503 - Fire Department Emergency Access



VANCOUVER FIRE DEPARTMENT - Fire Code Formal Interpretation INTENT:

To clarify what minimum emergency access provisions are required or approved based on the capacity and operational methodology used within the City of Vancouver Fire Department's service area. To clarify what is "approved" where referenced by the International Fire Code.

1.0 DEFINITIONS

1.1 Unduly difficult access. Unduly difficult access is the potential for significant delay in effecting emergency rescue or in implementing fire suppression tactics from any potential location on the structure. Unduly difficult conditions may include the potential requirement to breach multiple obstructions such as more than 2 back yard fences and/or rows of dense vegetation such as arborvitae (townhome construction). Unduly difficult access includes steep terrain or inaccessible areas and vehicle access lanes that are frequently obstructed (train track crossings).

2.0 INTERPRETATION

2.1 Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility.

2.1.1 EXCEPTIONS: The fire code official is authorized to alter the dimension of 150 feet where:

2.1.1.1 The building is equipped throughout with an approved automatic sprinkler system installed in accordance with IFC Chapter 9.

2.1.1.2 Fire apparatus access roads cannot be installed because of location on the property, topography, waterways, nonnegotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.

2.1.1.3 Where there are not more than two (2) SFR, Group R-3 or Group U occupancies as defined by the IRC or the IBC, the requirements of this chapter may be modified provided that, in the opinion of the Fire Code Official, firefighting or rescue operations would not be impaired.

2.1.1.4 Where alternate materials and methods are requested and approved.

2.1.2 Private Fire lanes. Private fire apparatus access roads are permissible provided they are on the same property as the project or, if on adjacent property, permanent access easements are recorded on the plat.

2.2 MULTIPLE ACCESS ROADS.

2.2.1 Where two or more access roads are required, they shall be placed at approved locations.

2.2.2 Buildings three stories or exceeding 35 feet in height. Buildings or facilities three stories or exceeding 35 feet in height shall have at least two separate and approved emergency apparatus access roads from two directions.

2.2.3 Buildings or places of assembly. Buildings or places of assembly having an occupant load capacity or potential assembly of 500 or more persons may be required by the fire code official to have at least two separate and approved emergency apparatus access roads from two directions.

2.2.4 Buildings exceeding 62,000 square feet. Buildings exceeding 62,000 square feet in gross building area may be required by the fire code official to have at least two separate and approved emergency apparatus access roads from two directions.

2.2.5 Residential developments and subdivisions. Residential developments having one hundred or more dwelling units shall be provided with at least two separate and approved fire apparatus access routes or connections from adjacent public streets or private ways designated as fire lanes.

2.2.5.1 EXCEPTION: A single access lane may be approved where all of the structures within the development are equipped with approved automatic fire sprinkler systems provided;

1. All structures includes those not typically required to be sprinklered (offices, maintenance, clubhouses, etc.) and
2. The total number of dwelling units does not exceed 200.

2.2.6 Emergency access only. Where approved, the second access lane may be designed and constructed as an "EMERGENCY ACCESS ONLY" lane provided that it is equipped with approved fire lane signage and Knox lock hardware. When opened by the fire department for public use due to an emergency, it should be locked closed.

2.3 DEAD-END FIRE APPARATUS TURN-AROUND. Dead-end fire apparatus access roads in excess of 200 feet in length shall be provided with an approved area for turning around fire apparatus.

2.3.1 Dimensions. Fire apparatus turn-around provisions shall meet the minimum dimensions as illustrated in this section.

2.3.2 Cul-de-sacs. With the Transportation Department's approval, the paved surface of a cul-de-sac may be approved at a reduced radius provided that rolled curb and attached thickened sidewalks are used to meet the 35' minimum turning radius. Sidewalks shall be engineered to support Vancouver's heaviest fire apparatus and engineering plans shall state, "Rolled curb/thickened sidewalks". Required signage, mail boxes, posts and other obstructions shall be mounted behind the sidewalks.

2.4 PARKING OF VEHICLES. Parking in a fire lane shall be prohibited by approved markings meeting the standard of the Vancouver Fire Department and the City of Vancouver Transportation Department to the following public or private streets or lanes

2.4.1 Access roads less than 28'in width, no parking is allowed on street

2.4.2 Access roads 28' wide but less than 36' in width, parking is allowed only on one (1) side;

2.4.3 Access roads 36' and greater in width, parking is allowed on both sides.

2.4.4 Cul-de-sacs with a radius of less than 43' or other approved turn around provision that are specifically required by the fire department. No parking is allowed on street or within the required turn around provision.

2.4.5 Additional access width may be required where ladder truck access or other access issues are identified. In those cases access roads in excess of 20' in width may require no parking fire lane signage.

2.5 FIRE LANE MARKINGS. The fire code official may require NO PARKING signage, NO PARKING FIRE LANE signage or red curb paint with white stenciled lettering stating: NO PARKING FIRE LANE or a combination thereof. For new construction plan submittals, fire lane marking locations and details shall be clearly identified within the civil plans and site plans.

2.5.1 FIRE LANE MARKING SIGNS. Where required by the Fire Department, No Parking Fire Lane signage shall be consistent with the following graphic which is red on a white background:

2.5.1.1 FIRE LANE SIGN DETAILS.

2.5.1.1.1 The fire lane sign is .080 inch aluminum with red letters, symbols and frame on a highly reflective white background consistent with the standard of the MUTCD code R7-107 of Section 2B.34 for conventional roads per the DOT Standard Highway Signs.

2.5.1.1.2 To make the parking regulations more effective and to improve public relations by giving a definite warning, a sign reading TOW-AWAY ZONE (R7-201) may be appended to any parking prohibition sign. Mount directly below the NO PARKING FIRE LANE sign. The fire code official may require this additional sign where illegal parking which obstructs fire lane access becomes a continuing problem.

2.5.1.2 INSTALLATION. Commercial and multi-family placement shall be at intervals not less than 75' between signs along a fire access route. Placement along public or private streets shall be at intervals not less than 150' between signs and at approximate 20' intervals around cul-de-sacs less than 43' in radius or as approved (The City of Vancouver Transportation Department may require more frequent intervals). For cul-de-sacs with rolled curb and thickened sidewalks approved as part of the minimum fire apparatus turning radius, signage placement shall not interfere with the approved minimum turning radius.

2.5.1.2.1 Height, angle and method of sign mounting shall be as typically approved by the City of Vancouver Transportation Department. Where possible, fire lane signs should be mounted on light utility poles.

2.5.1.2.2 Where the Transportation Department requires "No Parking" signs, the Transportation Department's placement standards and sign details shall apply. Where the Transportation Department does not require "No Parking" signs, but the Fire Department does, the "No Parking Fire Lane" placement standards and details shall apply. The City of Vancouver's Transportation standard detail T29-09 is approved for use as an alternative to the graphic detail shown in in this policy.

2.5.1.2.3 Residential subdivisions and neighborhoods. Where required, permanent signage shall be installed by the developer when the construction of the new road way allows passage by of vehicles. Construction of structures shall not commence and no certificates of occupancy shall be granted prior to the installation and inspection approval of required fire lane signage.

2.5.2 FIRE LANE CURB PAINT DETAILS.

2.5.2.1 Red fire lane curb paint is an alternative to installing fire lane signs.

2.5.2.2 Red fire lane curb paint is only allowed (or required) in commercial developments where there is a designated owner responsible for the maintenance of the curb paint.

2.5.2.3 Red painted curbing with white stenciled lettering is required where vehicle parking could obstruct the minimum fire apparatus access or turn-around dimensions. When required, the entire length of fire lane curbing shall be painted red with white stenciled 3.5" or larger block lettering on

the vertical plane of the curb. NO PARKING FIRE LANE shall be stenciled at approximate 20' intervals and at changes in direction on the vertical face.

2.5.3 CURB PAINT INSTALLATIONS (OR SIGNS)

2.5.3.1.1 Commercial and multi-family residential. Where required, permanent fire lane signage or red curb paint with white stenciled lettering stating NO PARKING FIRE LANE shall be installed and approved prior to issuance of certificates of occupancy.

2.5.3.1.2 Installation timing. Where required, permanent fire lane markings shall be installed as soon as practical and certificates of occupancy shall not be issued prior to the installation and inspection approval of required fire lane signage.

2.5.4 FIRE LANE MARKING MAINTENANCE

2.5.4.1 In accordance with VMC Chapter 11, the City will not maintain streets, signs, or drainage improvements on private streets.

2.5.4.2 In accordance with VMC Chapter 11, a statement is required on the face of any plat or short plat containing a private street with the following language: "City of Vancouver has no responsibility to improve or maintain the private street(s) contained within or private street(s) providing access to the property described in this plat. It is the responsibility of the property owners whose properties are accessed from the private street to maintain, repair or replace "No Parking Fire Lane" signage, as required by the Fire Marshal."

2.5.4.3 For multiple dwellings accessed by a shared private fire lane, a maintenance agreement shall be filed with the Auditor's office that includes reference to requirement for "No Parking Fire Lane" signage.

2.5.4.4 It is the responsibility of a private property owner(s) to maintain fire lane markings.

2.5.5 VOLUNTARY FIRE LANE MARKINGS. Where "No Parking Fire Lane" signs or red painted curbs are installed but are not required, the fire lane shall be maintained and enforced as if it were a required fire lane. The responsibility non-required fire lane enforcement shall belong to the property owner.

2.5.5.1 If an applicant wants discontinue the voluntary installation of non-required fire lane signage or curbing that person may do so without review or approval of the Fire Department. However, the applicant shall remove or permanently cover the fire lane indications and the words "Fire Lane" shall not be used in parking restriction signage used in a non-fire lane area.

2.5.5.2 Removal authority. Where non-required fire lane markings are determined to be a public nuisance, the Fire Marshal may order the fire lane markings to be removed.

2.6 AERIAL FIRE APPARATUS ACCESS ROADS.

2.6.1 Buildings or portions of buildings or facilities four or more stories height above the lowest level of fire department vehicle access shall be provided with approved fire apparatus access roads capable of accommodating fire department aerial apparatus. Overhead utility and power lines shall not be located within the aerial fire apparatus access roadway. Fire aerial apparatus access roads shall have a minimum unobstructed width of 26 feet in the immediate vicinity of the building. At least one of the required access routes meeting this condition shall be located within a minimum of 15 feet and a maximum of 25 feet from the building, and shall be positioned parallel to one entire side of the building. The location of a fire aerial apparatus access lane shall be approved and shall be placed so that the use of this lane by the Fire Department will not completely obstruct access to the building or site.

2.6.1.1 Exception: Where aerial ladder access is required but is not possible due to topography or other restrictions, alternate safety features may be required.

2.6.2 Aerial operational gradient limitations. The following are the limitations of the aerial apparatus used by the Vancouver Fire Department:

2.6.3 The gradient can be zero to less than 6% (3.5 degrees) without impeding aerial ladder operations. At these grades the aerial ladder can reach 100 feet at a 75 degree angle.

2.6.4 With a gradient of 6% to 14% (3.5 degrees to 8 degrees) ladder truck operations are impeded by 50%. At these grades the aerial ladder can reach a height of 50 feet.

2.6.5 At grades exceeding 14%, aerial ladder truck operations are not possible.

2.7 SINGLE FAMILY DWELLING DRIVE WAYS.

2.7.1 Access intended to serve no more than two (2) residential lots, 150' or less in length, shall be considered driveways and subject to the requirements of VMC Section 11. Access to flag-stem lots and shared driveways shall be in accordance with the table in this document

2.7.2 Internal driveways and roadways: Infill developments shall, at a minimum be subject to the following internal private roadway standards:

PRIVATELY OWNED ACCESS LANES

Road length (feet)	150' or less	Over 150'	Any length
Total number of dwellings served	1 - 2	3+	4+
Road width (feet)	12'	20'	20'
Fire apparatus turn-around required	No	Yes	*
Fire lane signage required	No	Yes	Yes

* Refer to previous two columns

2.7.2.1 EXCEPTION: Access roadway standards may be reduced if the building is protected by a complete automatic sprinkler system designed and installed in compliance with NFPA Standards 13, 13R or 13D with approval of the fire code official, unless access roads are otherwise required by other adopted codes or standards.

2.7.2.2 EXCEPTION: It is the intent of this section that if the most remote exterior wall location on all structures served by a lane can be reached within 150' of an approved fire lane then standard driveway widths may be used regardless of the number of units served. Where structural placement has not yet been determined, measurement shall be taken from the most remote location on the lots.

2.8 BRIDGES. Private bridges constructed as part of required Fire Department access lanes shall be engineered to support the City of Vancouver's heaviest fire apparatus.

2.8.1 Minimum bridge widths shall meet the minimum road width standards in Table number 15.2 in this document.

2.8.1.1 EXCEPTION: Where lane turns adjacent to the bridge are in sufficient proximity to impact required fire apparatus access, the width shall be engineered and the plans shall demonstrate adequate width to accommodate all fire apparatus.

2.8.1.2 EXCEPTION: A bridge's width may be reduced to 12' as a brief interval to a required 20' wide fire lane subject to the approval of the Fire Marshal through the appeal process.

2.8.1.3 EXCEPTION: Where the most remote exterior first floor exterior wall locations of all structures are within 150' of the beginning of the bridge, the bridge shall not be considered part of the fire apparatus access lane.

2.8.2 Bridges shall be equipped with approved guard rails or substantial curbing a minimum of 12 inches in height to prevent vehicle wheels from rolling off the side of the bridge. A stamp of an engineer shall be required for approval.

2.8.3 Where the City of Vancouver Transportation Department or other State or Federal governmental jurisdiction requires a higher level of construction, increased dimensions or standards, the higher level governmental jurisdiction's standards shall apply.

2.8.4 Bridges that are not required for Fire Department access and are not capable of supporting the Fire Department's heaviest apparatus shall bear a reflective sign stating the weight limit of the bridge.

2.9 GRADIENTS. The following are the maximum grades allowed in a roadway used for fire department access where subject roadway is the primary or sole access.

2.9.1 Local Service Streets (Direct access to residential lots) 15%

2.9.2 Neighborhood Collector Streets (Used for through traffic) 12%

2.9.3 Access lanes serving multifamily or commercial properties 12%

2.9.3.1 EXCEPTION: A maximum grade of up to 18% may be allowed where topographical conditions will not allow a lesser grade to be developed provided the structure(s) under consideration is provided with an approved automatic fire sprinkler system. Exception shall not be applied at fire hydrant locations, required fire apparatus turn-around locations and locations within 50 feet of a structure.

2.9.4 The use of a continuous maximum grade is limited to 500 feet in length.

2.9.5 The longitudinal grade on stop controlled approaches to intersections shall not exceed 8% for an approach distance of not less than 50 feet.

2.9.6 Fire lane access roadways adjacent to and within 50 feet of a structure shall not exceed 6%.

2.9.7 Unpaved private streets shall not exceed 8%. Unpaved private access roadways serving more than four residential units shall be engineered by an engineer licensed in the State of Washington to support Vancouver Fire Department's heaviest apparatus and shall be approved by the City of Vancouver's Transportation Department.

2.9.8 The maximum allowable cross slope within 50' of a structure shall not exceed 6%.

2.9.9 The maximum allowable overall slope of cul-de-sacs and other turn-around provisions required by the Fire Department shall not exceed 6%.

2.9.10 For aerial ladder trucks, the gradient can be zero to less than 6% (3.5 degrees) without impeding aerial ladder operations. At these grades the aerial ladder can reach 100 feet at a 75 degree angle. With a gradient of 6% to 14% (3.5 degrees to 8 degrees) ladder truck operations are

impeded by 50%. At these grades the aerial ladder can reach a height of 50 feet. At grades exceeding 14%, aerial ladder truck operations are not possible.

2.10 VEHICLE GATES.

2.10.1 Temporary access restrictions during construction. Temporary lockable gates on required fire lane access roadways may be provided with a chain and lock. The chain link will be severed in the event of needed use by the Fire Department.

2.10.2 Permanent access restricting vehicle gates.

2.10.2.1 Clear unobstructed minimum access width of automatic gates shall be 20'0" on a single gated roadway when fully opened; or 15'0" on each side of a divided entry gated roadway when fully opened. Gates shall be designed to remain fully open once activated by the Fire Department until closed by the Fire Department (unless staffed 24 hours/day, 365 days/year).

2.10.2.2 Swinging gates shall swing in the direction of travel and shall not interfere with minimum emergency vehicle turning radius.

2.10.2.3 Permanent automatic unattended gates on required fire lane access roadways shall be provided with a Knox key switch unless provided with an Opticom compatible strobe activated opening device.

2.10.2.4 An Opticom compatible strobe activated gate switch may be required where there are one hundred (100) or more units and secondary access is required. The photo eye assembly shall be installed per the product listing for emergency vehicles and shall be aimed to be activated from the approach side to the gated community.

2.10.2.5 Prior to gate closure the gate switches shall be tested by the Fire Department. Any failures of required gate switches shall result in the requirement that the gate remain in the open position until repairs are completed.

2.10.2.6 Electrically operated gates shall be manually operable in the event of power failure unless supplied with backup emergency power.

2.10.2.7 Plans and specifications of gate assembly and location shall be submitted for review, approval, and inspection prior to construction. In the event that a conflict exists in access requirements from the City's Department of Transportation or from any department in the City, the more restrictive requirement shall prevail. Approval of a gate plan by the Fire Department does not guarantee approval by the City's Department of Transportation or by other City departments.

2.10.2.8 Final approval of gate is contingent on Fire Department testing and acceptance. Deputy Fire Marshal will arrange for emergency apparatus testing prior to approval.

2.11 "EMERGENCY VEHICLES ONLY" permanent fire lane obstructions.

2.11.1 Fire lanes that are designated for emergency vehicle access only shall be obstructed with removable bollards, a gate, chain or other approved method.

2.11.2 Gate or bollard locks shall be locked with a Knox padlock. Knox order forms are available through the Fire Marshal's Office and/or may be purchased online at www.knoxbox.com.

2.11.3 Fire lane gate widths may be reduced to 15' when fully opened where the fire lane is dedicated to emergency use only.

2.11.4 Approved "No Parking Fire Lane" signage shall be installed to prevent the obstruction of the fire lane gate by the parking of vehicles.

2.12 STREET IDENTIFICATION SIGNAGE. Approved permanent or temporary street identification signage shall be installed prior to the commencement of any combustible construction accessed by that street. Approved permanent street identification signage shall be installed prior to the issuance of any certificate of occupancy of any structure accessed by that street.

2.13 UNDULY DIFFICULT ACCESS. Unduly difficult access is the potential for significant delay in effecting emergency rescue or in implementing fire suppression tactics from any potential location on the structure. In cases of potential unduly difficult access automatic fire sprinkler protection is required. Unduly difficult conditions may include the potential requirement to breach multiple obstructions such as more than 2 back yard fences and/or rows of dense vegetation such as arborvitae (townhome construction). Unduly difficult access includes steep terrain or inaccessible areas and vehicle access lanes that are frequently obstructed (train track crossings).

2.14 TOWNHOME OR ZERO-LOT-LINE CONSTRUCTION. Where there is a potential for more than two obstructions to exist which would cause emergency responders to breach multiple obstructions to gain emergency access, additional fire protection features may be required including but not limited to automatic fire sprinkler protection. Since the codes and recorded agreements cannot permanently prohibit the installation of obstructions such as fences, outbuildings, landscaping and dense vegetation between back yards of townhome or zero-lot-line construction the potential exists in many cases for unduly difficult emergency access to the back of a structure.

2.14.1 Where more than five (5) townhomes are attached and there is not a fire apparatus access lanes on both sides of the row of structures, fire sprinklers are required within those attached structures.

2.15 ALTERNATIVE ON-FOOT ACCESS. Where fire apparatus access cannot be provided to within 150 feet of the most remote exterior wall location approved emergency pedestrian access may be approved. Where there are practical difficulties in providing an approved fire apparatus access road, it is possible to approve a pedestrian access lane from a fire apparatus access road to the site. In these cases the following should apply:

2.15.1 The walk-way shall be recorded on the plat and site plan as a minimum of a "5-foot wide sidewalk easement for emergency access" from the street to subject tax lot.

2.15.2 The walk way surface material, grade and any proposed steps must be approved by the Fire Marshal.

2.15.3 The entry of the walkway shall have approved address signage for emergency response. If the primary emergency access is via the sidewalk then the address should prominently posted at the sidewalk.

2.15.4 The walkway shall be maintained clear and unobstructed.

2.15.5 Pathways. Emergency pedestrian access paths are a minimum of 5 feet in width to accommodate a fully equipped firefighter. While sidewalks are preferable, emergency pedestrian access paths may be unimproved surface and may include limited plantings provided that they can be easily negotiated by firefighters on foot. (Exception: where the pedestrian access path is the primary emergency medical access route, the surface must be improved smooth surface, with limited stairs and capable of rolling a patient on a gurney.) Generally emergency pedestrian access may be approved between structures but should not pass through structures.

2.15.6 Pedestrian Fence gates Where pathway gates are required in fences for emergency on-foot access, such gates should be installed as follows:

2.15.6.1 No overhead obstructions which could impede movement of equipment and personnel quickly through the gate.

2.15.6.2 The gate should not be less than 5 feet in clear width when fully open.

2.15.6.3 Plantings should not be placed in such a way that the gate could become obstructed in any way.

2.15.6.4 Signs should be required on both sides of the gate, legible from the fire lane, with letters on a contrasting background stating, "FIRE DEPARTMENT EMERGENCY ACCESS – DO NO BLOCK".

2.15.6.5 Where gates are to be locked, approved Knox hardware shall be installed.

2.15.7 Public facilities, parks and trails. Where parks or trails are to be installed, but the pathway cannot facilitate fire apparatus access, the Fire Marshal may require emergency periodic access pathways or gates as described in this document for the purposes of wild land firefighting or emergency medical response.

2.16 ADDRESSES AND SUITE NUMBERS. In accordance with IFC 501.1 address numbers, building numbers or building identification signage shall be approved.

2.16.1 Address numbers shall be established by the City of Vancouver and shall be installed and approved prior to occupancy and maintained thereafter.

2.16.2 Address sign locations shall be visible from the street on which the address lists and additionally from the primary emergency response route.

2.16.3 Size minimums. At a minimum character sizes shall be visible and legible from the fire lane approach. The following table is a guideline:
Distance from the Street Minimum Size

Distance	Minimum size
0 to 50'	4"
51' to 100'	6"
101' to 150'	8"
151' to 200'	10"
201' or more	12" or more or monument sign

2.16.4 Suite numbers shall be sequential and shall be consistent in format and appearance on the same building. Where suites are consolidated or added suite numbers may be eliminated or inserted provide that all suite numbers are consistently ordered from low to high as you circumnavigate the building. Where suites are consolidated, unused suite numbers shall be covered or removed.

2.16.5 Suite numbers that indicate the floor level shall be consistent throughout the building. For example, a suite number prefix suggesting a 3rd floor suite shall not exist on any other floor.

2.16.6 Suite numbers shall additionally be posted on the rear door of occupancies where the number or configuration of separate suite doors could create confusion for immediate access by emergency responders.