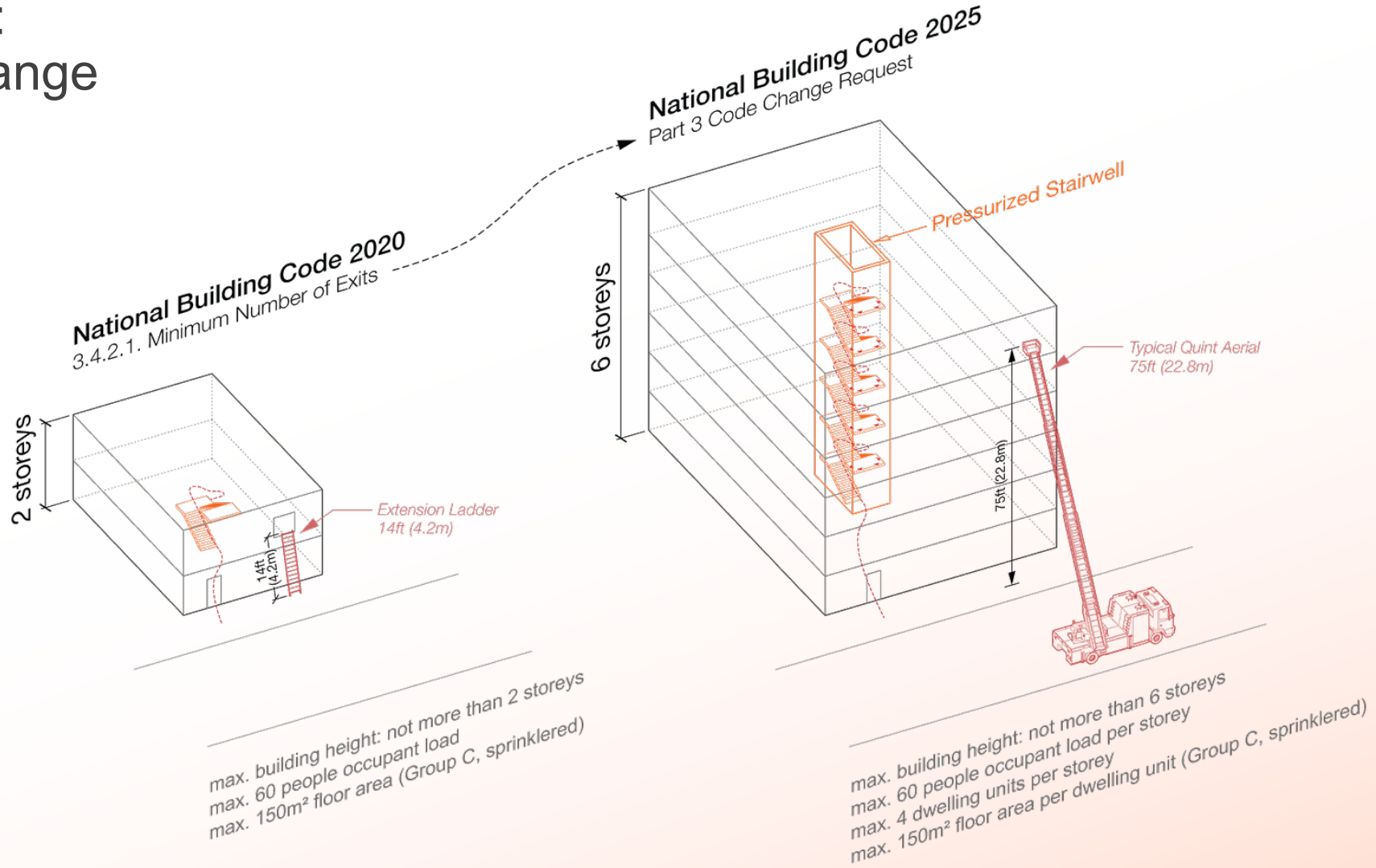
The Second Egress: Building a Code Change

Balanced Supply of Housing
McGill University

April 27, 2023



Conrad Speckert
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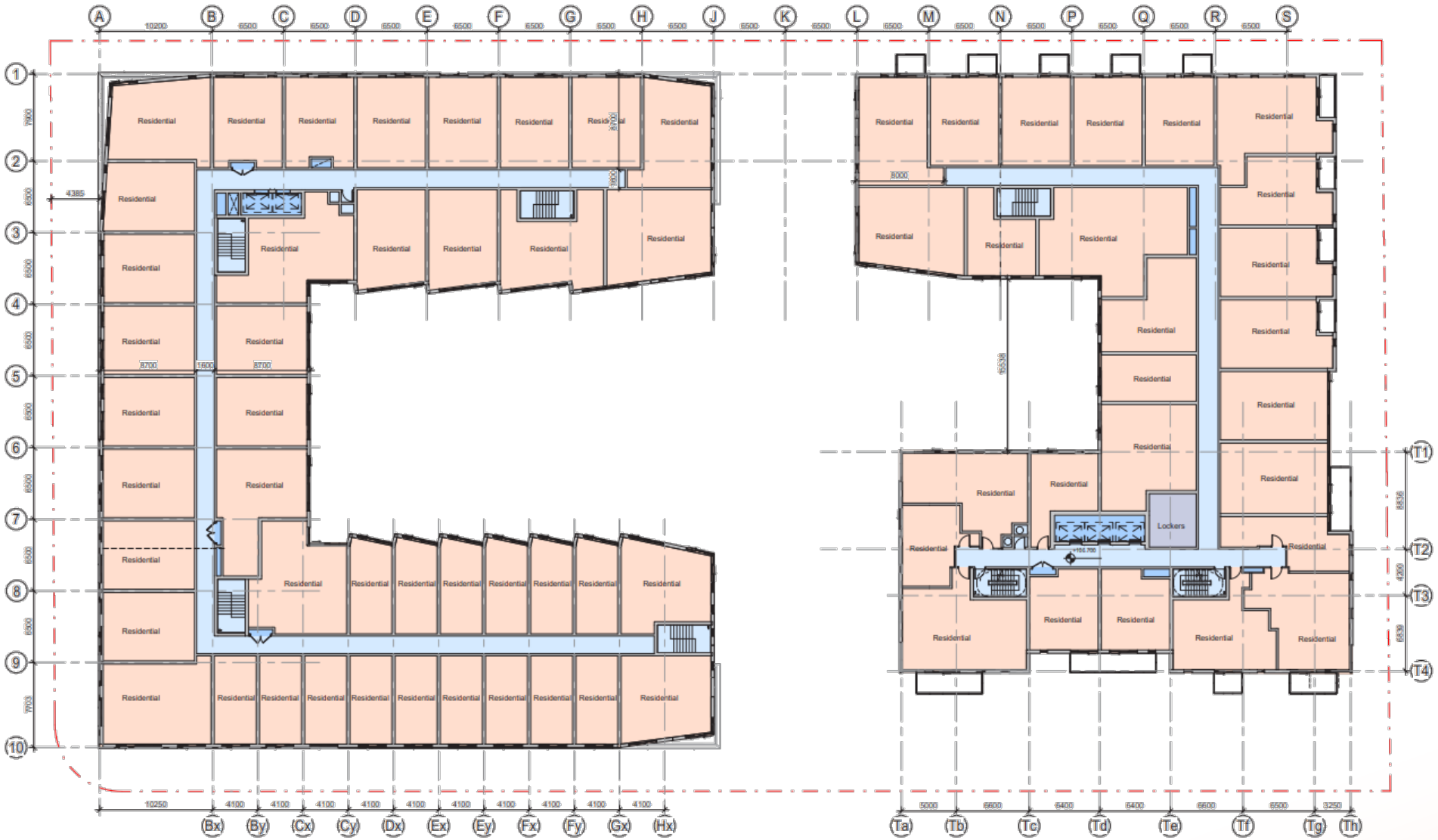
Double Loaded Toronto



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secondegress.ca

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Building a Code Change

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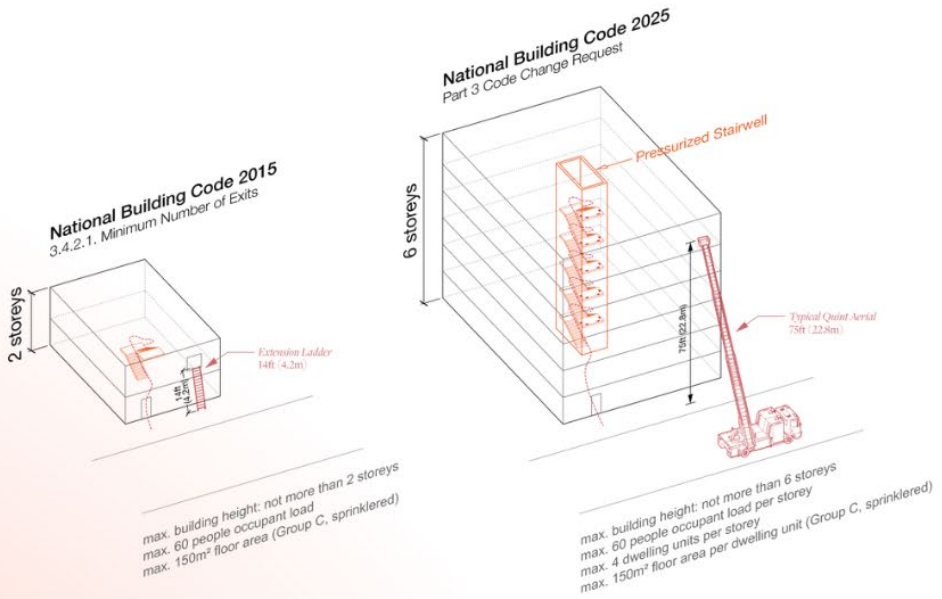


This website is a tool to make sense of the wicked problem of the second egress in Canada and prepare a building code change.

The first section documents the history of the building code and two means of egress in Canada, situates this issue within the imperative of missing middle densification and calls upon architects to challenge the legislative conditions of their work. The next section compares jurisdictions to better understand the Canadian code relative to its peers, followed by the proposed code change. The last section reimagines what could and should be built if it were legal, and illustrating these opportunities with several case studies in alternative circulation.

The Manual of Illegal Floor Plans is a collection of single stair residential projects that are not permitted to be built in Canada, serving as reference library to reconsider the requirement for a second egress.

Main Streets Initiative Handicapped by Building Codes

Eberhard Zeidler

Eberhard Zeidler is a Principal with Zeidler Roberts Partnership Architects.

It started as an idea whose time had come. Editorials were written about it. The Council embraced it. A competition was mounted to explore its architectural possibilities. The idea was to urbanize our underused main streets with five-storey *apartment buildings*, which would increase the number of people living in the city and create better use of the existing infrastructure. But today, some five years later, it has produced nothing more than several convoluted bylaws to be passed and woeful editorials about the future of the scheme.

It behooves us to explore the reasons for the fizzle of a great concept, as it may help us to learn for the future or even get this idea realized some day.

I do not think we can blame the failure to build according to the Main Streets concept on the current recession. This plan should have encouraged building in a time of recession, because it deals with small, affordable, and sustainable development, and would use the existing infrastructure economically. Why is it such a good idea to build additional density by going up to five-storey buildings along some main streets in Toronto?

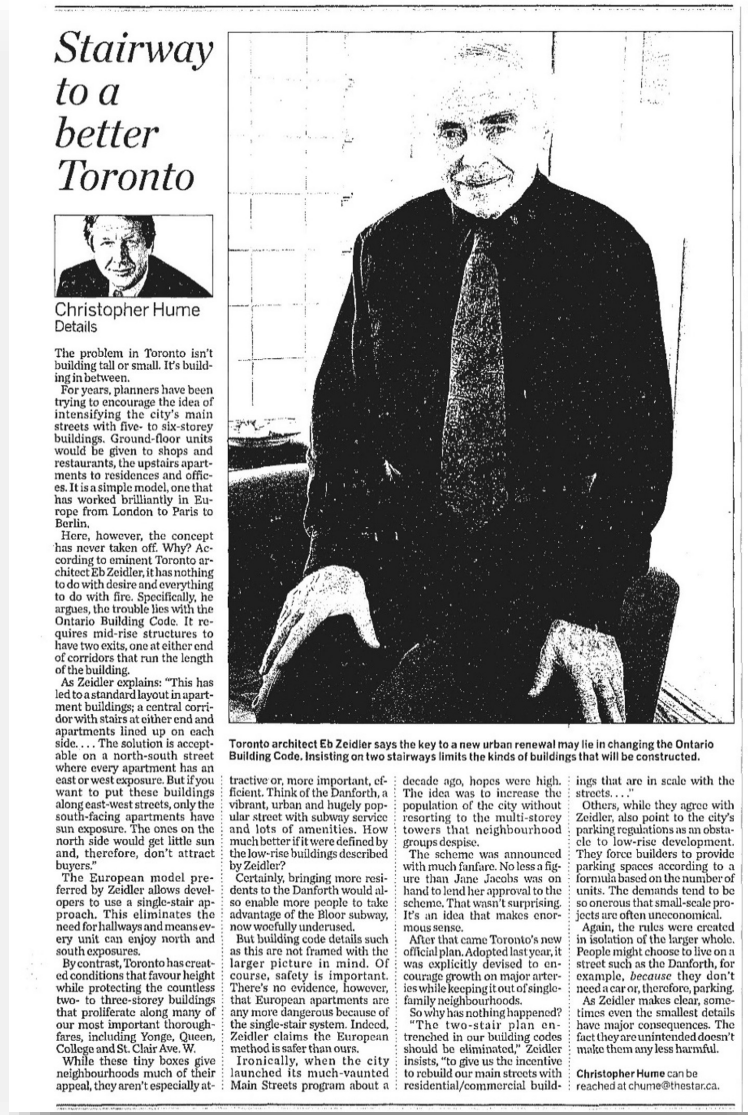
Historically, the main streets of Toronto grew rapidly before the First World War and seemed to be formed by a never-ending line of prototypical structures, mainly two or three storeys in height, with retail along the street enlivened by pedestrians, and one or two-storey apartments or offices above. Much of Queen Street West, Spadina, St. Clair, and Eglinton are still this way, although they were interrupted by some large developments after the Second World War. These new developments were based on modern planning theory, which regarded buildings as isolated sculptures unfolding their individual functions to the optimum, and regarded the street not as a related pedestrian realm but as a two-dimensional vehicular traffic connection.

The life of the street as the realm of the pedestrian was rediscovered through the eyes of Jane Jacobs and others. To prevent further erosion of the street through new development, bylaws were designed to maintain the building stock along the main streets and restrict their height to three storeys. Since there was little economic advantage for individuals to build a new building on these lots without any gain in density, the buildings just stayed. They are, in fact, still the backdrop of some of the most delightful and culturally rich urban life in Toronto. Most exist in a mildly ecaying atmosphere but still provide room for urban commercial experiments.

I have watched the death and life of Queen Street East and West over the last 20 years from my office windows. The life that has slowly come back into that street demands respect and careful scrutiny.

European architects and planners who have visited me over these 20 years have been amazed when they see this urban scene. They admire the lively urban drama on these streets - people crowding them at all times of day and night, even all times of the year (astonishing in our climate). However, they are astonished too by the tawdry visual scene they see. In addition to the intrusive hydro poles and broken sidewalks are the collapsing facades of vintage buildings, occasionally broken by crude, modern box interventions or an beautifully restored Victorian facade. In their minds, they compare it unfavourably to the typical European street that was created at the turn of the century - from Haussmann's Paris boulevards to the streets of Berlin or Madrid. They were given their life support not only through retail but also through other activities in these 60- to 70-foot-high buildings, which presented not only a beautiful visual enclosure of the street but also an intricate mix of functions above the street-level commercial activi-

Zeidler, Eb. (1993). "Main Streets Initiative Handicapped by Building Codes." A Practitioner's Guide to Urban Densification. Canadian Urban Institute.



Stairway to a better Toronto

Christopher Hume
Details

Toronto architect Eb Zeidler says the key to a new urban renewal may lie in changing the Ontario Building Code. Insisting on two stairways limits the kinds of buildings that will be constructed.

The problem in Toronto isn't building tall or small. It's building in between.

For years, planners have been trying to encourage the idea of intensifying the city's main streets with five- to six-storey buildings. Ground-floor units would be given to shops and restaurants, the upstairs apartments to residences and offices. It is a simple model, one that has worked brilliantly in Europe from London to Paris to Berlin.

Here, however, the concept has never taken off. Why? According to eminent Toronto architect Eb Zeidler, it has nothing to do with desire and everything to do with fire. Specifically, he argues, the trouble lies with the Ontario Building Code. It requires mid-rise structures to have two exits, one at either end of corridors that run the length of the building.

As Zeidler explains: "This has led to a standard layout in apartment buildings; a central corridor with stairs at either end and apartments lined up on each side. . . . The solution is acceptable on a north-south street where every apartment has an east or west exposure. But if you want to put these buildings along east-west streets, only the south-facing apartments have sun exposure. The ones on the north side would get little sun and, therefore, don't attract buyers."

The European model preferred by Zeidler allows developers to use a single-stair approach. This eliminates the need for hallways and means every unit can enjoy north and south exposures.

By contrast, Toronto has created conditions that favour height while protecting the countless two- to three-storey buildings that proliferate along many of our most important thoroughfares, including Yonge, Queen, College and St. Clair Ave. W.

While these tiny boxes give neighbourhoods much of their appeal, they aren't especially attractive or, more important, efficient. Think of the Danforth, a vibrant, urban and hugely popular street with subway service and lots of amenities. How much better if it were defined by the low-rise buildings described by Zeidler?

Certainly, bringing more residents to the Danforth would also enable more people to take advantage of the Bloor subway, now woefully underused.

But building code details such as this are not framed with the larger picture in mind. Of course, safety is important. There's no evidence, however, that European apartments are any more dangerous because of the single-stair system. Indeed, Zeidler claims the European method is safer than ours.

Ironically, when the city launched its much-vaunted Main Streets program about a decade ago, hopes were high. The idea was to increase the population of the city without resorting to the multi-storey towers that neighbourhood groups despise.

The scheme was announced with much fanfare. No less a figure than Jane Jacobs was on hand to lend her approval to the scheme. That wasn't surprising. It's an idea that makes enormous sense.

After that came Toronto's new official plan. Adopted last year, it was explicitly devised to encourage growth on major arteries while keeping it out of single-family neighbourhoods.

So why has nothing happened?

"The two-stair plan entrenched in our building codes should be eliminated," Zeidler insists, "to give us the incentive to rebuild our main streets with residential/commercial buildings that are in scale with the streets. . . ."

Others, while they agree with Zeidler, also point to the city's parking regulations as an obstacle to low-rise development. They force builders to provide parking spaces according to a formula based on the number of units. The demands tend to be so onerous that small-scale projects are often uneconomical.

Again, the rules were created in isolation of the larger whole. People might choose to live on a street such as the Danforth, for example, *because* they don't need a car or, therefore, parking.

As Zeidler makes clear, sometimes even the smallest details have major consequences. The fact they are unintended doesn't make them any less harmful.

Christopher Hume can be reached at chume@thestar.ca.

Christopher Hume, Toronto Star. Toronto, Ont.: Jan 22, 2004. pg. B.02

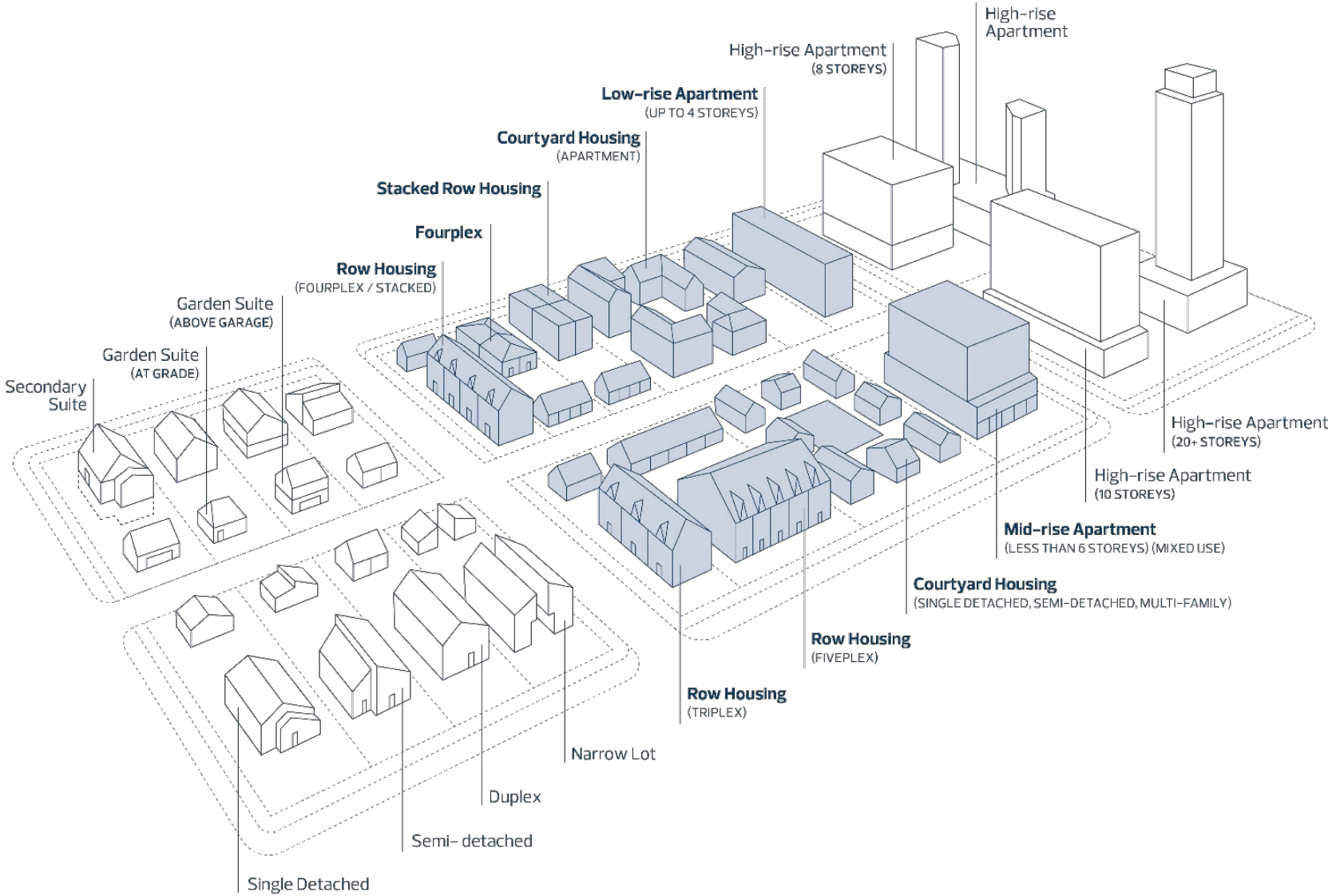
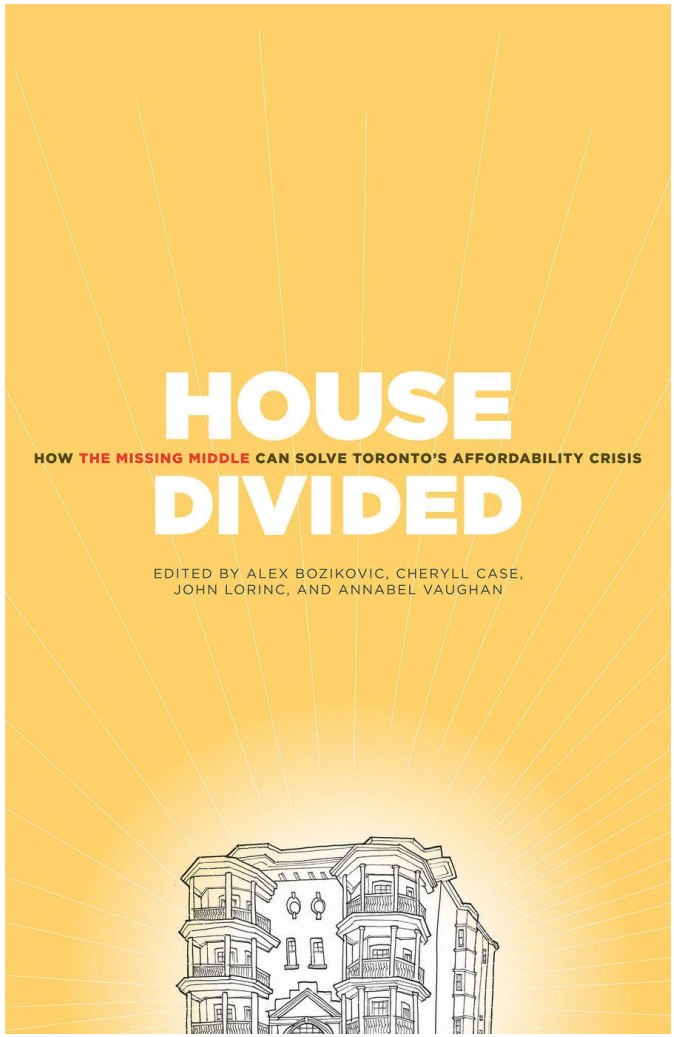


Image Courtesy of City of Edmonton.



"Like most North American cities, Toronto has a history of incremental development that reflects growth patterns and population shifts. Take a walk through any older neighbourhood and you will see a diversity of housing stock: detached houses, duplexes, triplexes, walk-up apartments, rooming houses, small apartment buildings (fewer than eight to ten storeys), apartments above shops, laneway housing, coach houses, loft apartments in converted warehouses, multi-generational family housing, and everything in between. It is a perfect mix of housing types that organically grew out of the demands of people moving into the city. Yet the majority of this stock was built before Toronto's zoning regulations came into effect in 1952. Paradoxically, much of what we love about the older parts of Toronto would not be allowed under current regulations."

- Vaughan, A. (2019). Radical Typologies. in Bozikovic, A. et al. (Ed.) House Divided. Toronto: Coach House Books. pg 165.

3.4.2. Number and Location of Exits from Floor Areas

3.4.2.1. Minimum Number of Exits

1) Except as permitted by Sentences (2) to (4), every *floor area* intended for *occupancy* shall be served by at least 2 *exits*.

2) A *floor area* in a *building* not more than 2 *storeys* in *building height*, is permitted to be served by one *exit* provided the total *occupant load* served by the *exit* is not more than 60, and

a) in a *floor area* that is not *sprinklered* throughout, the *floor area* and the travel distance are not more than the values in Table 3.4.2.1.-A, or

b) in a *floor area* that is *sprinklered* throughout

i) the travel distance is not more than 25 m, and

ii) the *floor area* is not more than the value in Table 3.4.2.1.-B.

9.9.8. Exits from Floor Areas

9.9.8.2. Number of Required Exits

1) Except as provided in Sentence (2) and Subsection 9.9.9., at least 2 *exits* shall be provided from every *floor area*, spaced so that the travel distance to the nearest *exit* is not more than

a) 40 m in the case of *business and personal services occupancies*,

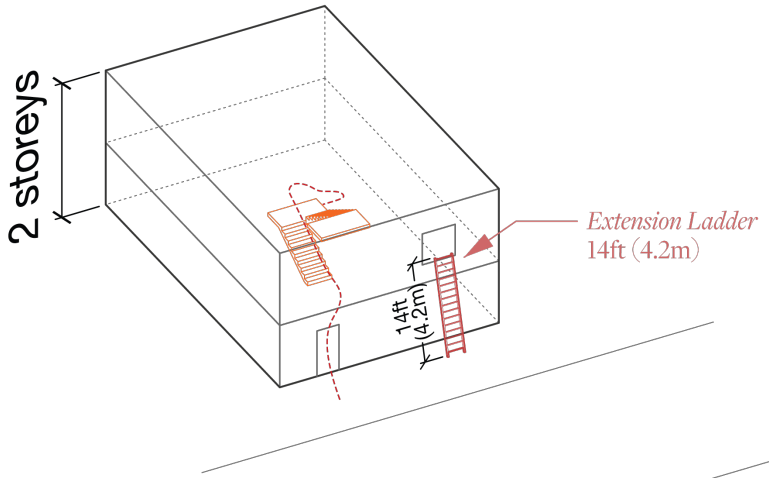
b) 45 m for all *occupancies* where the *floor area* is *sprinklered*, and

c) 30 m for all other *occupancies*.

2) Except as provided in Subsection 9.9.9., a single *exit* is permitted from each *storey* in *buildings* of 1 and 2 *storeys* in *building height* provided the *floor area* and travel distance requirements conform to those required in Article 9.9.7.4. and the total *occupant load* served by an *exit* facility does not exceed 60 persons.

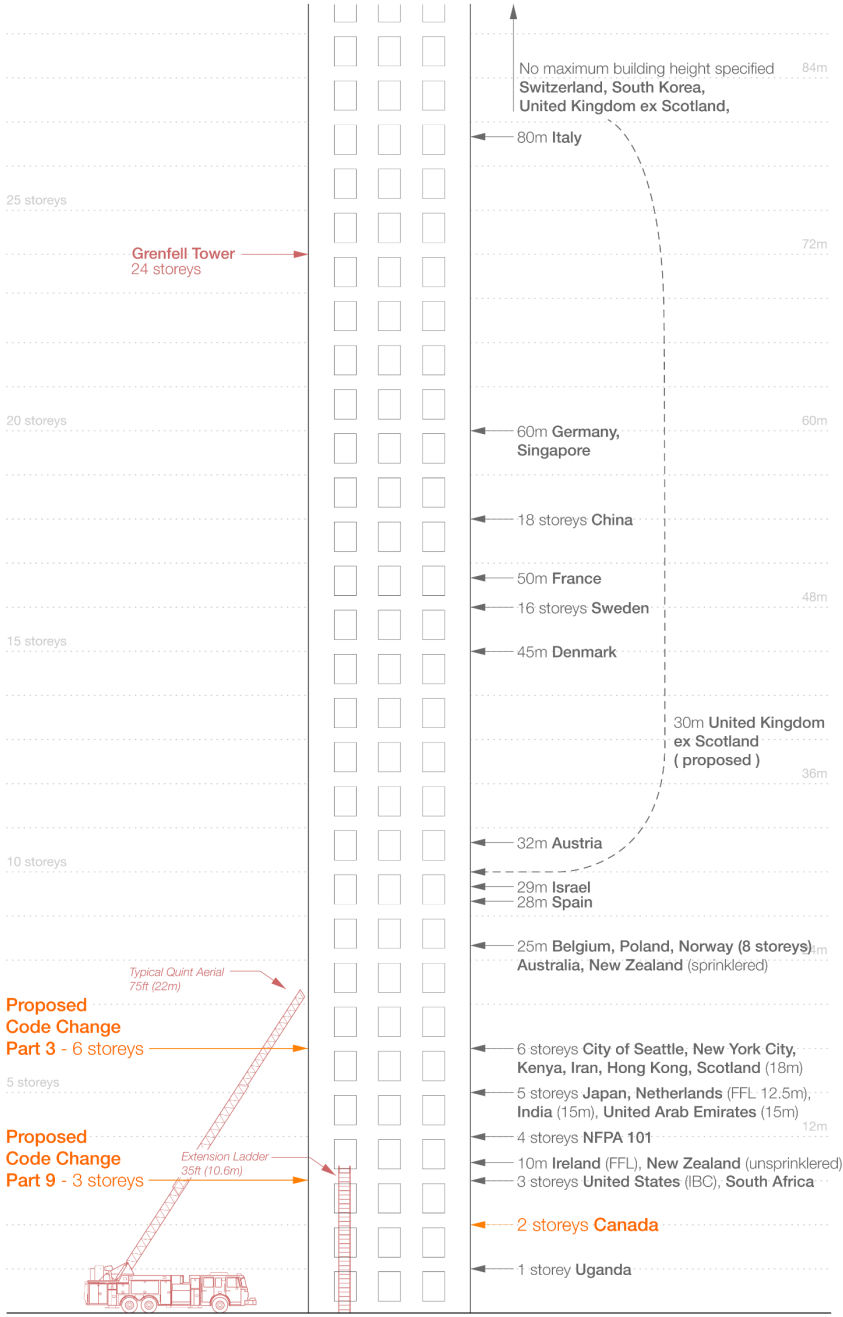
National Building Code 2015

3.4.2.1. Minimum Number of Exits



max. building height: not more than 2 storeys
max. 60 people occupant load
max. 150m2 floor area (Group C, sprinklered)

Jurisdictions



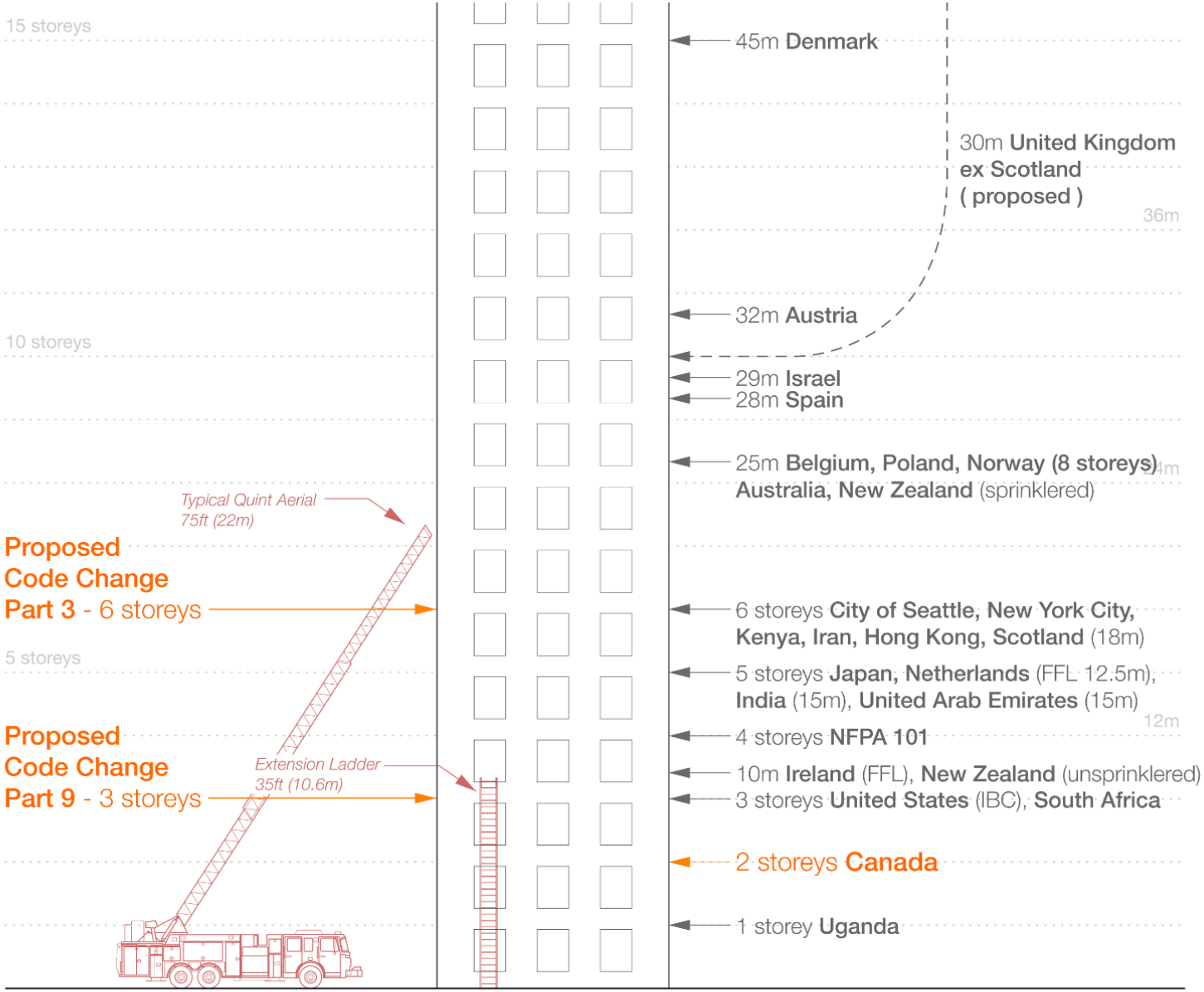
Maximum Permitted Height for Single Stair Buildings
(multi-unit residential occupancy only)

Note: the drawing assumes a floor to floor height of 3m

FFL = uppermost finish floor level

https://secondegress.ca/Jurisdictions-1


No maximum building height specified
Switzerland, South Korea,
United Kingdom ex Scotland,
84m
80m Italy
25 storeys
Grenfell Tower
24 storeys
72m
20 storeys
60m
60m Germany,
Singapore
18 storeys China
50m France
48m
16 storeys Sweden
15 storeys
45m Denmark
30m United Kingdom
ex Scotland
(proposed)
36m



Maximum Permitted Height for Single Stair Buildings
(multi-unit residential occupancy only)

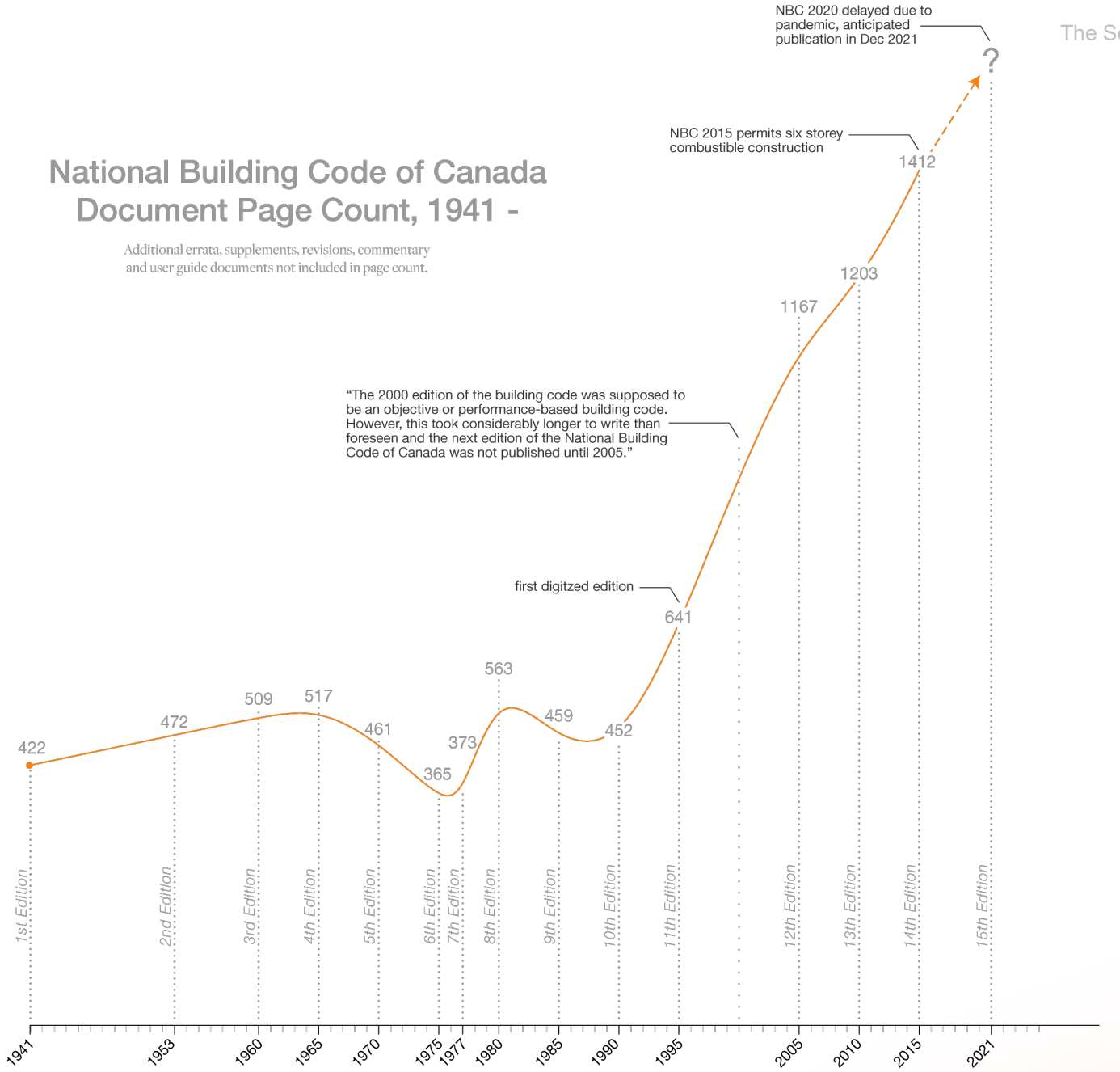
Note: the drawing assumes a floor to floor height of 3m

FFL = uppermost finish floor level

“In the broadest sense, building regulations develop from contingency to contingency. Each one represents an emergency measure taken with very little or no study. As the emergency recedes, the regulation tends to form part of traditional practice. It is added to the pile, which grows and grows.

Progress towards better regulations in this country will be speeded when we have an understanding of the history of the regulations which are now enforced.”

- R.S. Ferguson, Head of Building Standards Section (1960’s)
National Research Council Canada


National Building Code of Canada
Document Page Count, 1941 -
Additional errata, supplements, revisions, commentary and user guide documents not included in page count.
NBC 2020 delayed due to pandemic, anticipated publication in Dec 2021
NBC 2015 permits six storey combustible construction
"The 2000 edition of the building code was supposed to be an objective or performance-based building code. However, this took considerably longer to write than foreseen and the next edition of the National Building Code of Canada was not published until 2005."
first digitzed edition
422
472
509
517
461
365
373
563
459
452
641
1167
1203
1412
?
1st Edition
2nd Edition
3rd Edition
4th Edition
5th Edition
6th Edition
7th Edition
8th Edition
9th Edition
10th Edition
11th Edition
12th Edition
13th Edition
14th Edition
15th Edition
1941
1953
1960
1965
1970
1975
1977
1980
1985
1990
1995
2005
2010
2015
2021

1. **Construction:** “The methods of construction were vastly different and methods of determining fire resistance of structures were in their infancy.

2. **Compartmentation:** The degree of building compartmentation that was factored into the reviews is not representative of residential construction in today’s code.

3. **Interior Finishes:** Interior finishes were less controlled and flame-spread concepts were in their infancy. Wood was a more predominant ceiling finish, whereas gypsum board is a more common material for walls and ceilings in residences today.

4. **Evacuation:** Exiting, fire alarm systems, and evacuation plans were less regulated and less effective. Concepts on evacuation relative to building height were based on buildings with open or unprotected stairs and not fire separated stair shafts as required by today's codes.

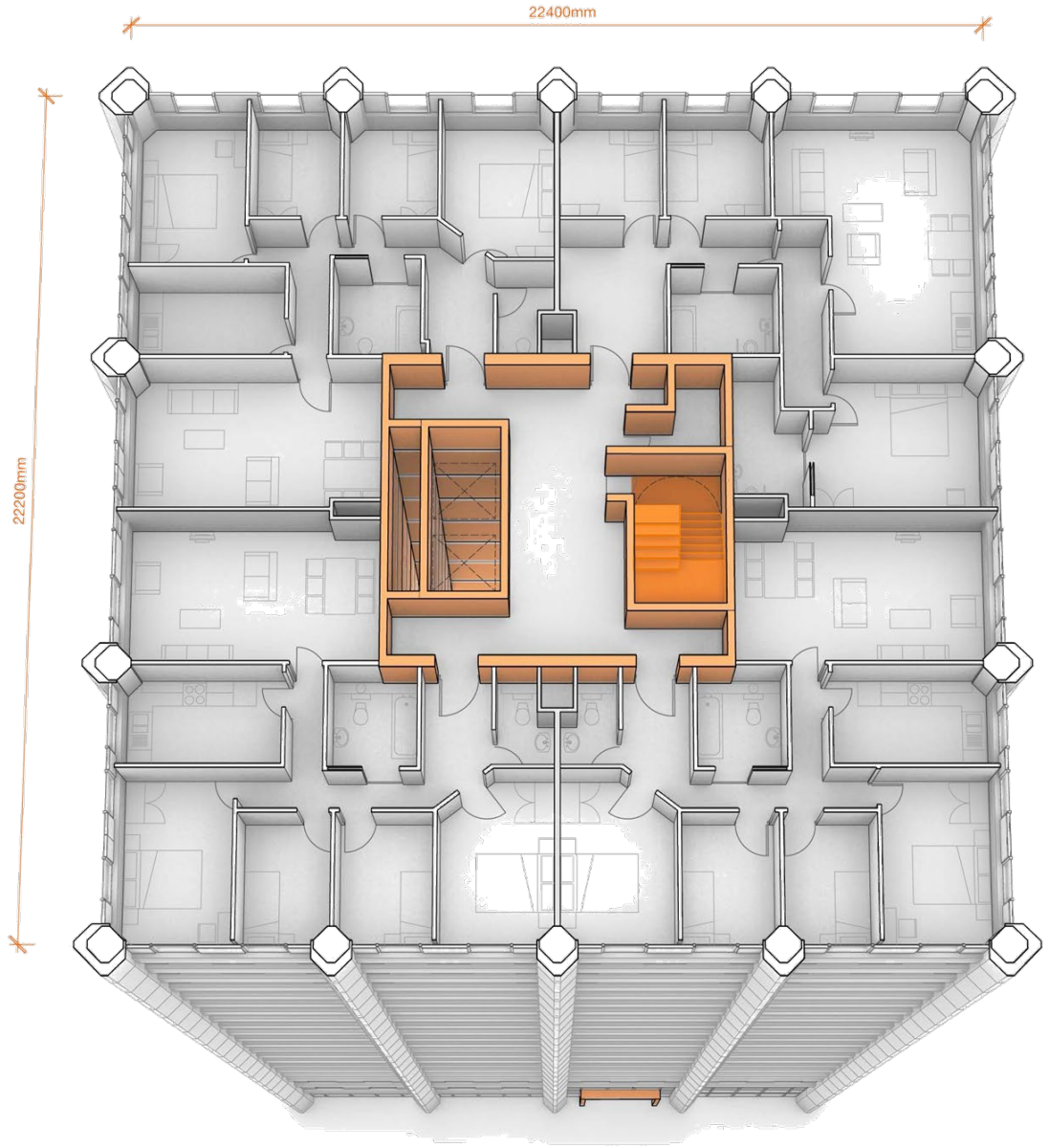
5. **Behaviour:** The behaviour of people during a fire had not been studied and was therefore not understood.

6. **Firefighting:** To the extent that it exists today, fire services did not have breathing apparatus, fire fighter’s stairs, aerial ladder trucks, addressable fire alarm systems, and floor plans.”

Senez Reed Calder Fire Engineering Inc. (2008). “A Historical Perspective on Building Heights and Areas in the British Columbia Building Code.” Building and Safety Policy Branch, Office of Housing and Construction Standards, Victoria, BC. pg 23-24. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/reports/2008_senez_reed_calder_2008_10_17.pdf

Grenfell

The building code does not establish a vertical restriction for single stair conditions, rather limiting single stair conditions with maximum horizontal travel distances and an occupancy load limit of 60 people per storey.



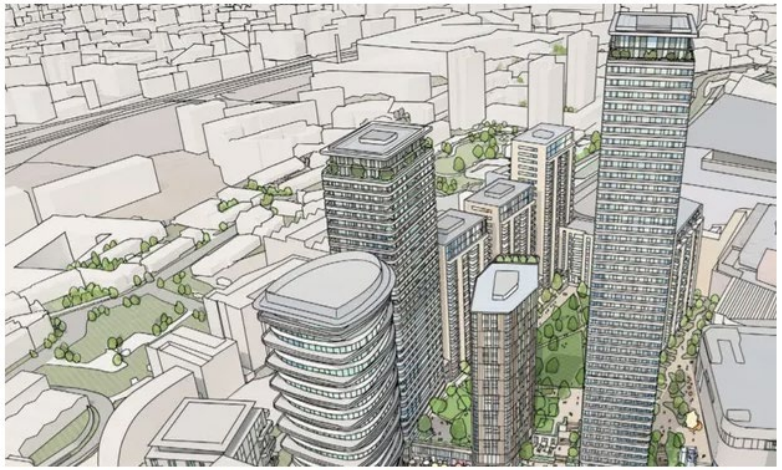
Grenfell Tower

Typical Floor Plan

https://www.theguardian.com/uk-news/2019/jul/17/delays-to-safety-reforms-risk-a-repeat-of-grenfell-disaster

Rethink for skyscraper near Grenfell site with single fire escape staircase

The planned 35-storey block is the second tower this month to be adapted after criticism



Artist's impression of the planning application sketch by Unibail-Rodamco-Westfield (URW), which includes the depiction of a tower block which has drawn criticism from Grenfell survivors. Photograph: Unibail-Rodamco-Westfield (URW)/PA

The developer of a residential skyscraper designed with only one fire escape staircase has said it is changing its plans as the London fire brigade (LFB) said it was unhappy with the proposal.

RIBA demands fire regs clarity amid single-stair towers controversy

26 JANUARY 2022 ·BY KATE YOUDE

The RIBA has joined fire safety experts in calling for new regulation on staircases in high-rise residential blocks following recent concerns over two proposed single-stair skyscrapers in London

Gavin Tomlinson is chief fire officer at Derbyshire FRS, and chair of the protection and business safety committee at the NFCC

The case for multiple staircases in new high-rise buildings

COMMENT 14.12.22 BY GAVIN TOMLINSON

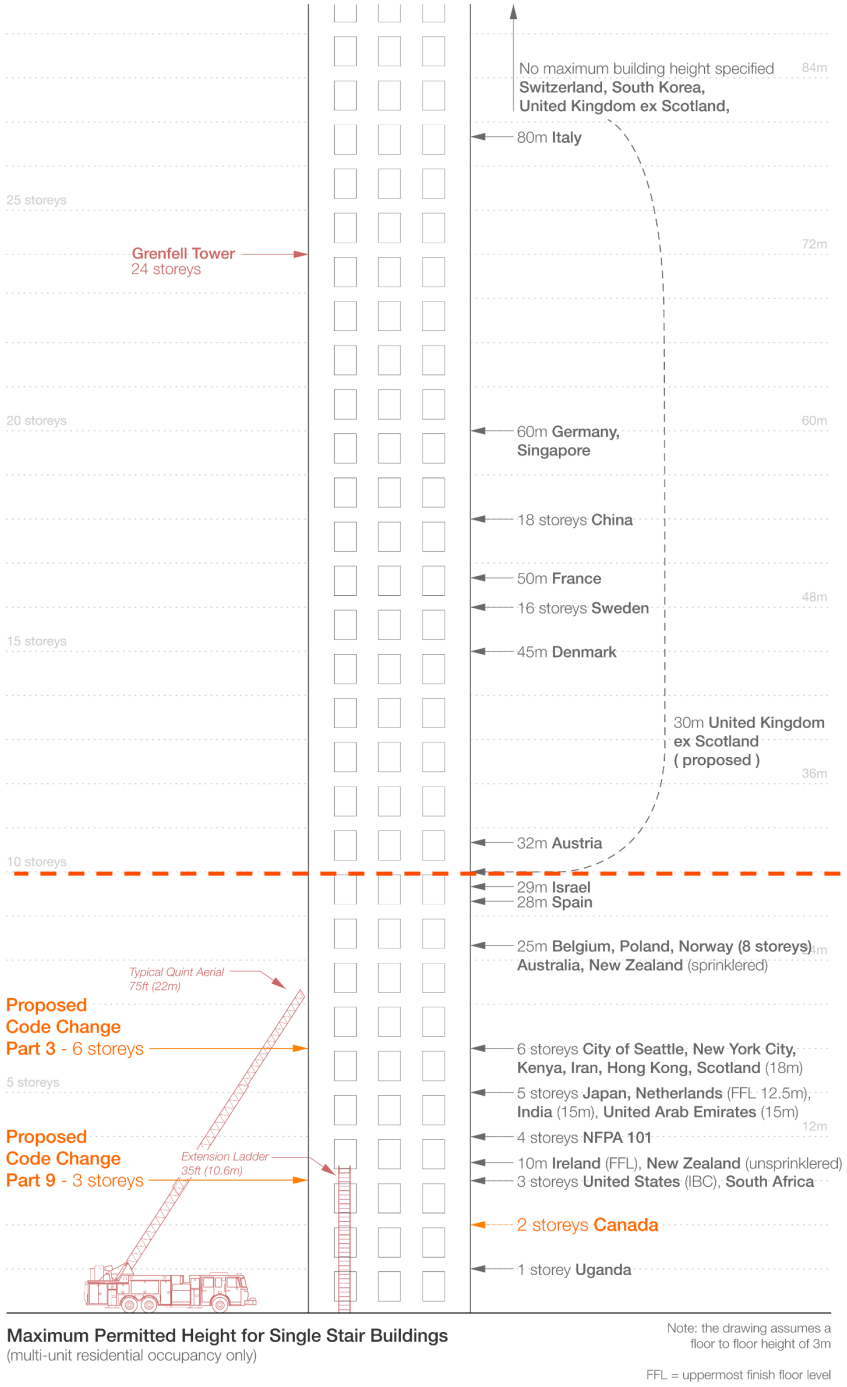
In the past three years, there have been 154 fires in London where more than 10 people evacuated a high-rise block of flats. It is time to start mandating second staircases, writes *Gavin Tomlinson*

Government warns over single staircase use in high-rise buildings

NEWS 31.08.22 7.00 AM BY JACK SIMPSON

UK Government Open Consultation

“Implementing a threshold within Approved Document B recommending a second staircase be provided in residential buildings over 30 metres in height, which would introduce a defined threshold for a second stair for the first time in England.”

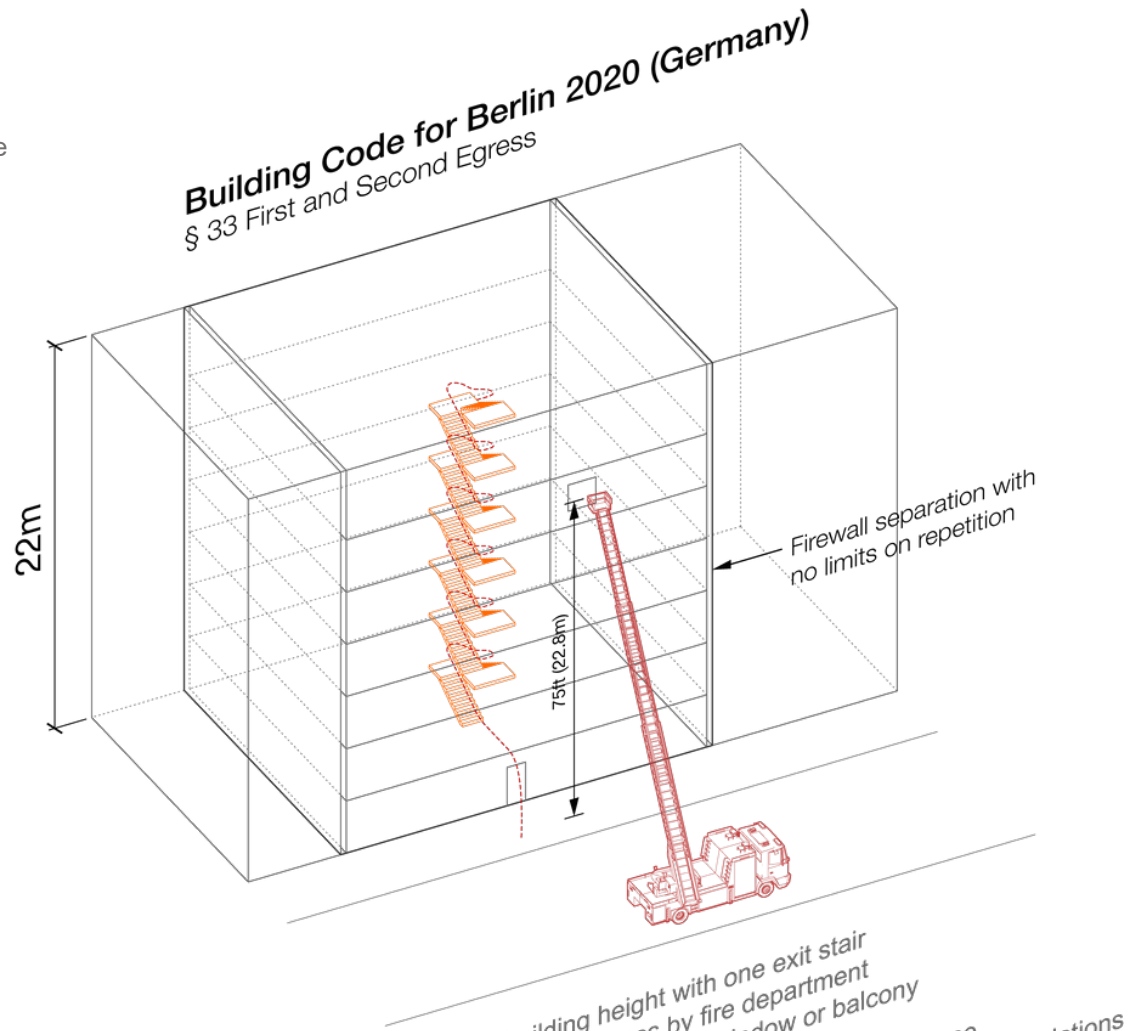


30m **England** (Proposed)

https://www.gov.uk/government/consultations/sprinklers-in-care-homes-removal-of-national-classes-and-staircases-in-residential-buildings/sprinklers-in-care-homes-removal-of-national-classes-and-staircases-in-residential-buildings

Berlin

Germany allows for both office and residential buildings of up to 22m in height to be served by a single exit stair, with additional fire safety measures increasing the maximum height to 60m.



Building Code for Berlin (BauO Bln)

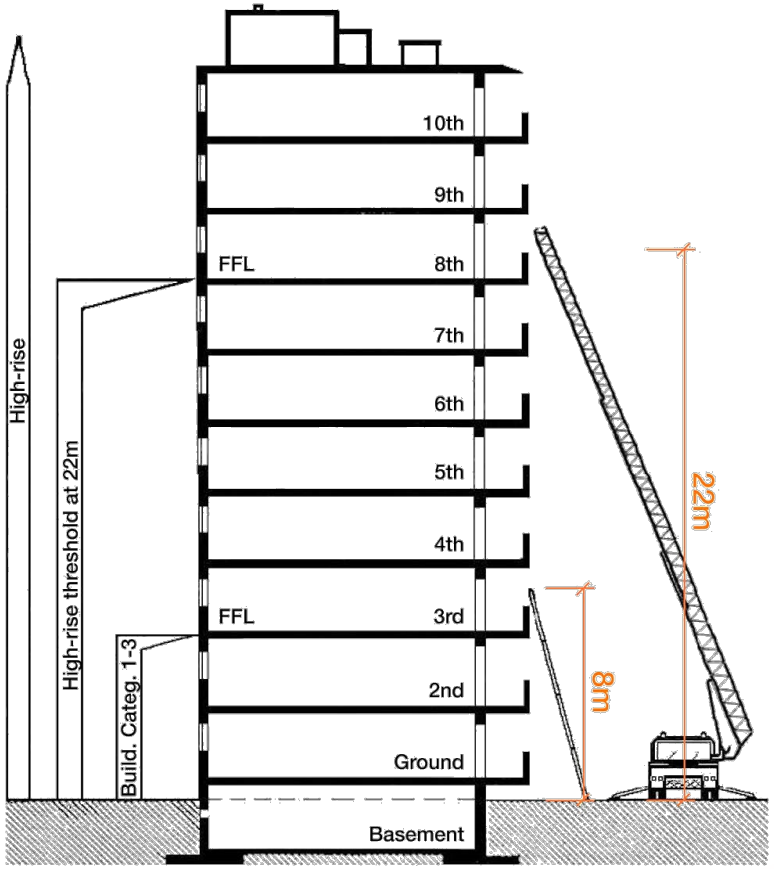
Fifth Section
Egress, Openings, Guardrails

§ 33 First and Second Egress

(1) For floor areas with at least one occupancy such as dwelling units, offices or independent commercial spaces, there must be at least two independent means of egress per floor; both escape routes can however pass through the same corridor within the floor area.

(2) For occupied floor areas per Sentence 1, that are not on the ground floor, the first means of egress must be a stair. The second means of egress can be another stair or a designated area within the occupied floor area that can be reached by the firefighting apparatus of the fire department. A second means of egress is not required if the first means of egress is a fire separated, fire safety stairwell.

(3) Buildings, for which the second egress requires the fire apparatus of the fire department and in which the sill height of designated windows or landings is more than 8 meters above grade, may only be erected if the local fire department has aerial firefighting apparatus. In the case of special constructions the second egress via fire apparatus is only permitted if there are no concerns regarding occupant rescue.



Rettungswege

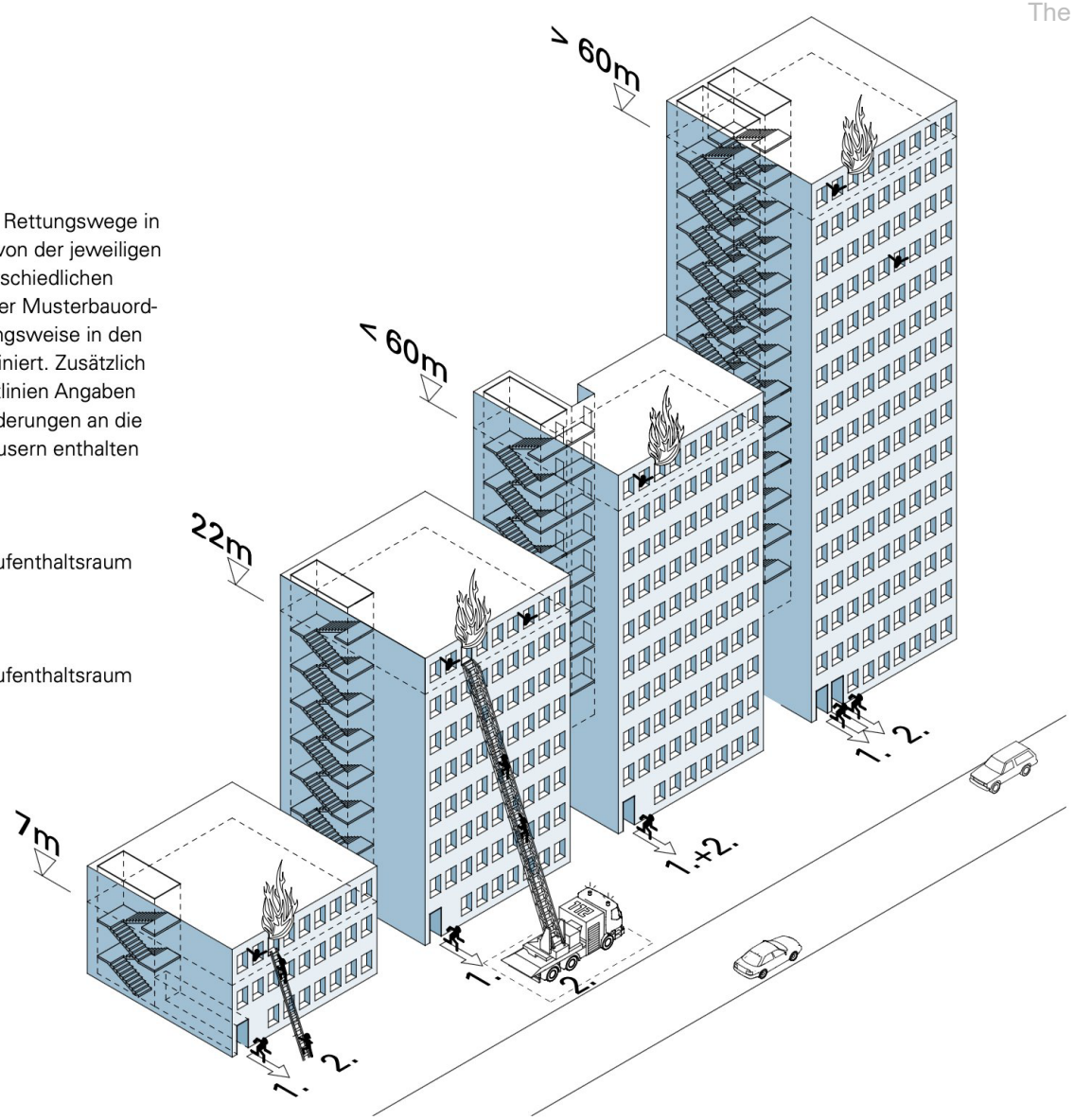
Die Anforderungen an die Rettungswege in Gebäuden sind abhängig von der jeweiligen Gebäudeklasse. Die unterschiedlichen Gebäudeklassen sind in der Musterbauordnung (MBO, § 2) beziehungsweise in den Landesbauordnungen definiert. Zusätzlich sind in den Hochhausrichtlinien Angaben zu den besonderen Anforderungen an die Rettungswege in Hochhäusern enthalten (MHHR und andere).

– Höhe: maximal 7 m
  Oberkante Fußboden Aufenthaltsraum
  Gebäudeklasse 3

– Höhe: maximal 22 m
  Oberkante Fußboden Aufenthaltsraum
  Gebäudeklasse 5

– Höhe: maximal 60 m
  Hochhaus mit einem
  Sicherheitstreppenhaus

– Höhe: über 60 m
  Hochhaus mit
  zwei Treppenhäusern,
  davon ein Sicherheits-
  treppenhaus



Rettungswege bei unterschiedlichen Gebäudehöhen (unterschiedliche Gebäudeklassen)

https://www.wuestenrot-stiftung.de/wp-content/uploads/2016/05/Raumpilot-Grundlagen.pdf

Baugemeinschaft Walden 48

Scharabi Architekten + Anne Raupach (2020)
Landsberger Allee 48, 10249 Friedrichshain

Height: 6 storeys incl. mezzanine (18m)
Use: 43 dwelling units
Floor Area: 7,000m^2
Construction: Partially Encapsulated Mass Timber
Stair: Reinforced Concrete Walls, CLT Stair and Elevator Shaft
*Sprinklered:*No

https://www.baunetzwissen.de/schiefer/objekte/wohnen-mfh/wohngebaeude-walden-48-in-berlin-7519043

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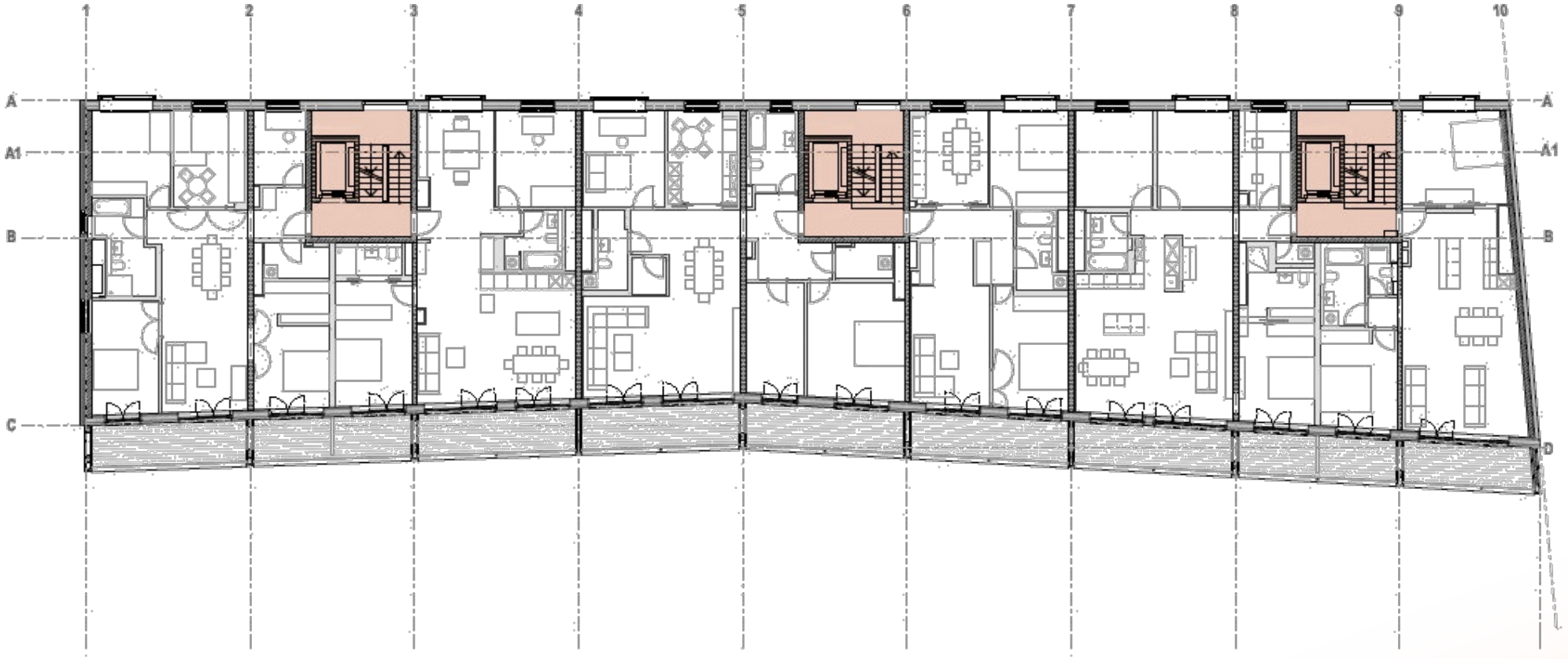

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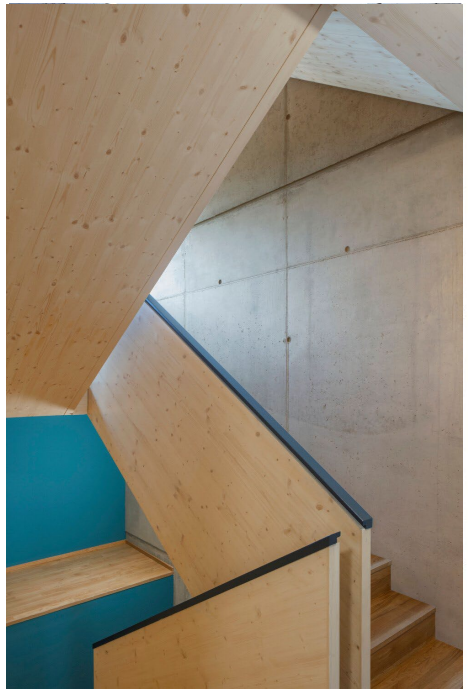
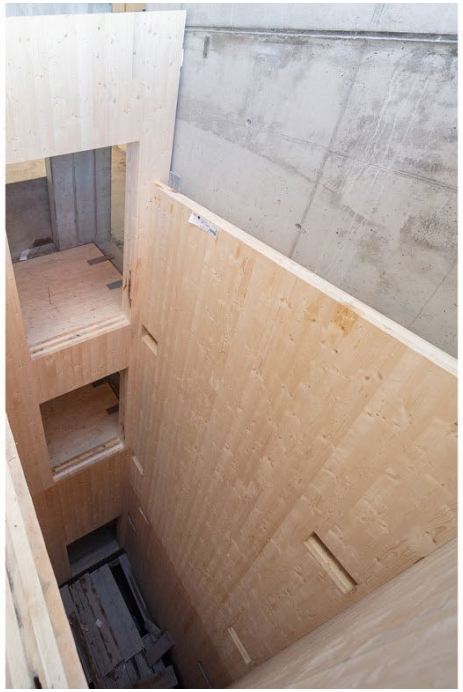
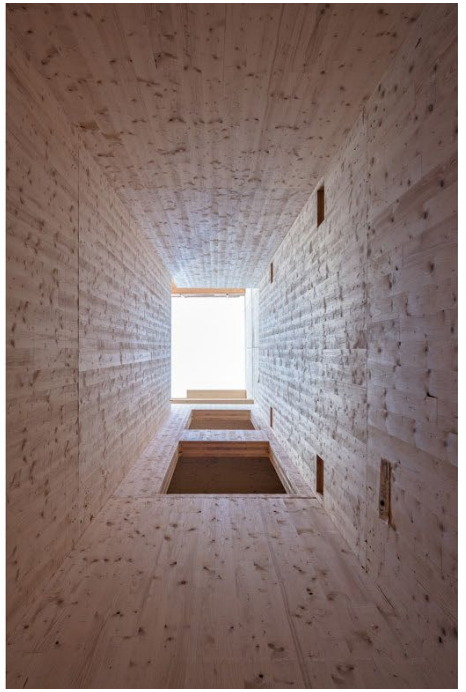

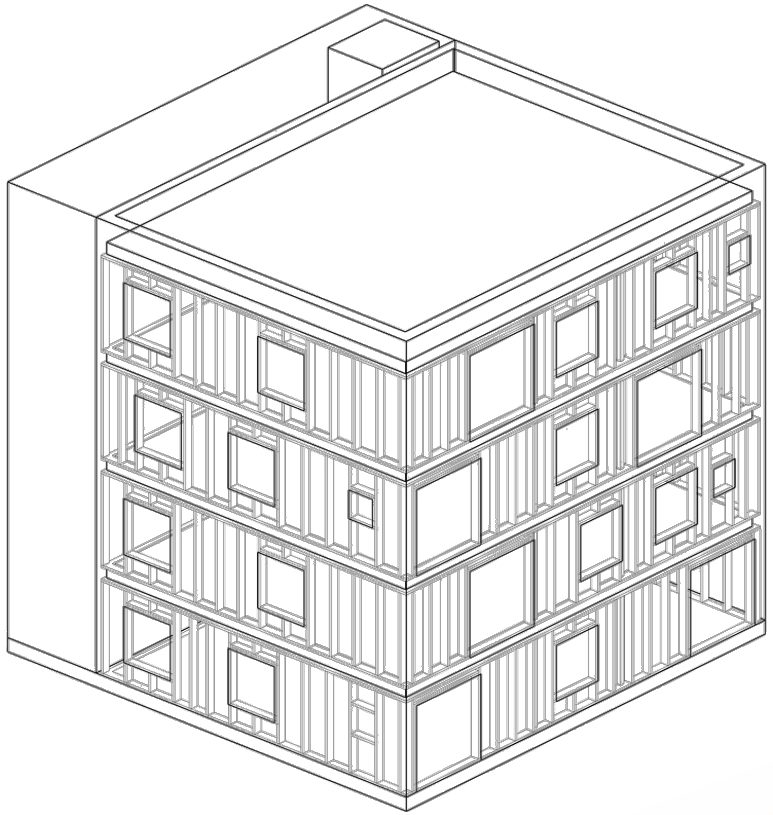

https://oaa.on.ca/whats-on/bloaag/bloaag-detail/Housing-Affordability-Case-Study-02-Bremer-Punkt

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Neuauflage

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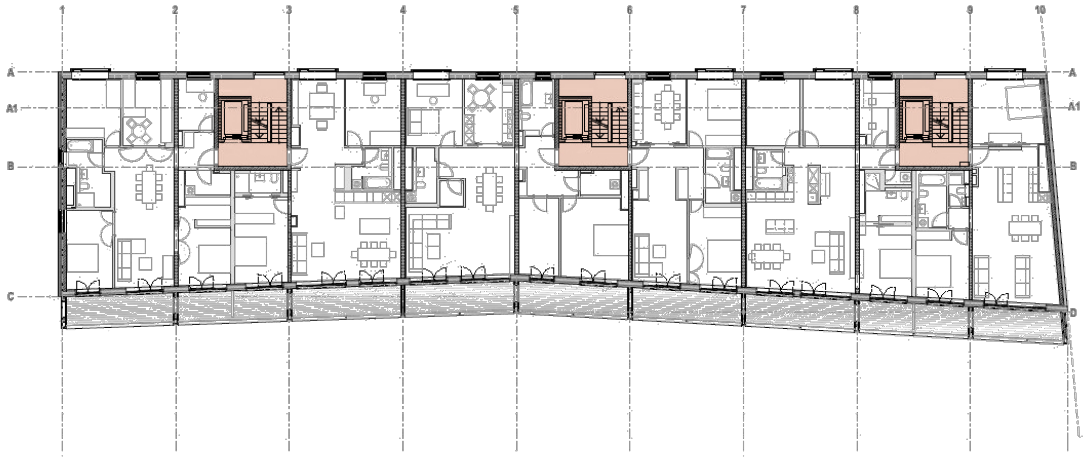
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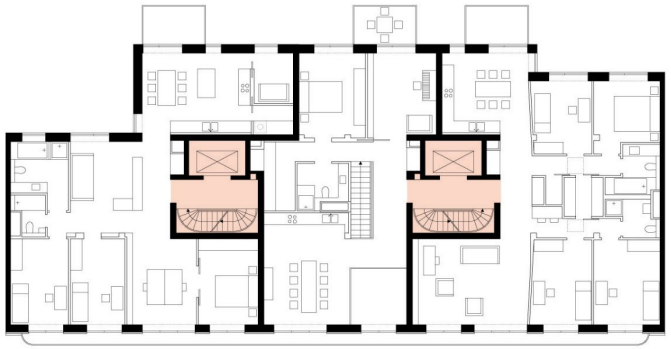
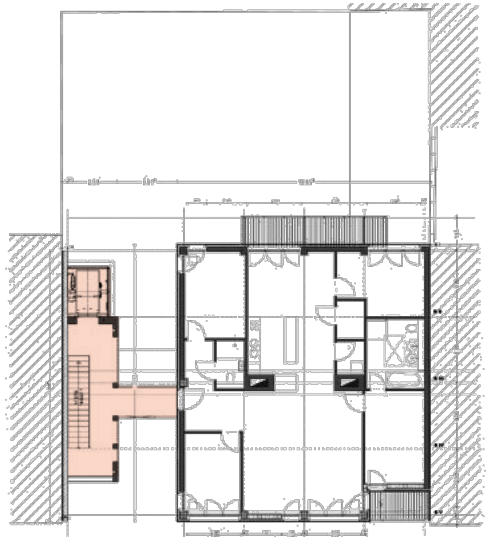
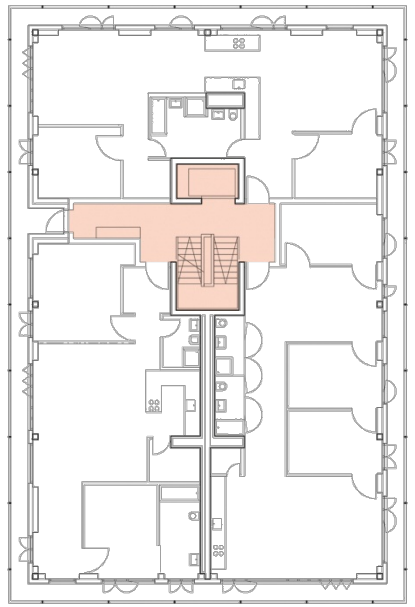
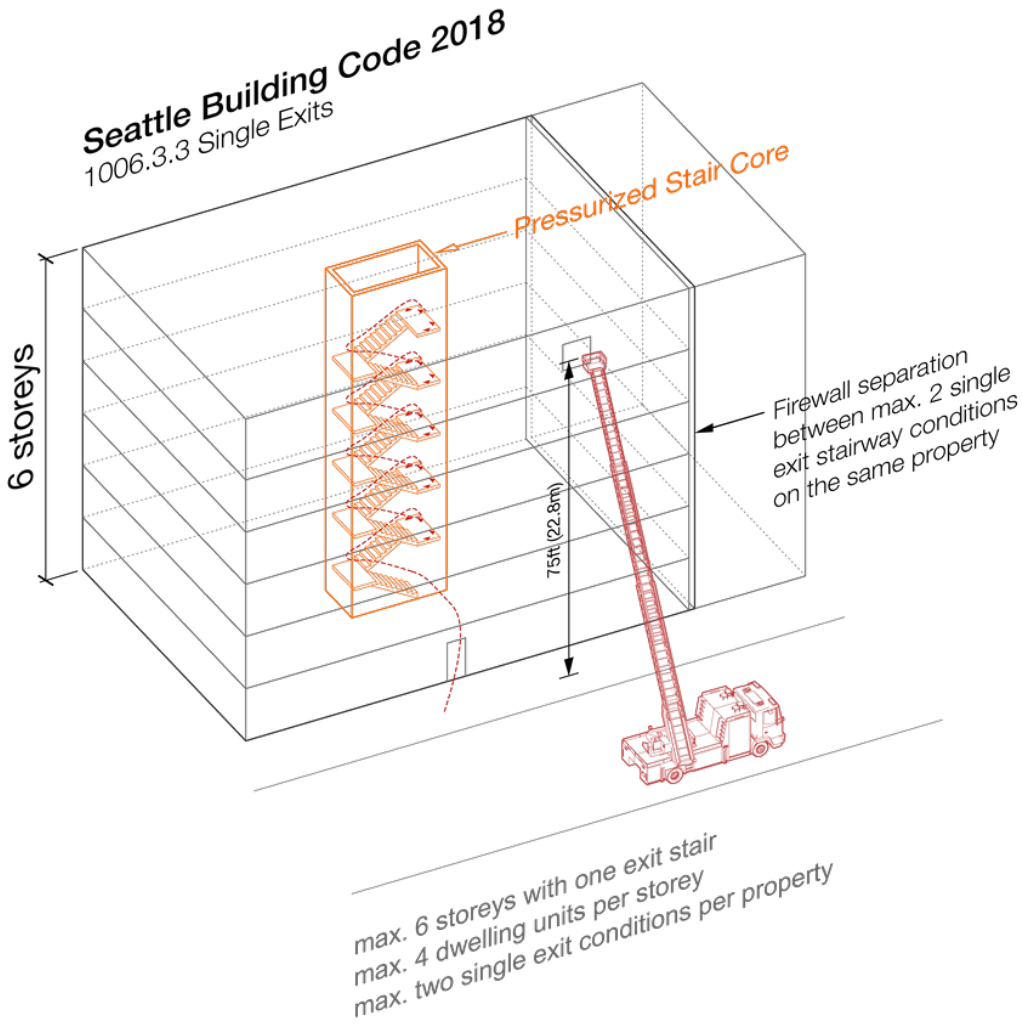






Seattle

The Seattle Building Code permits apartment buildings of up to six storeys to be served by a single exit stair.

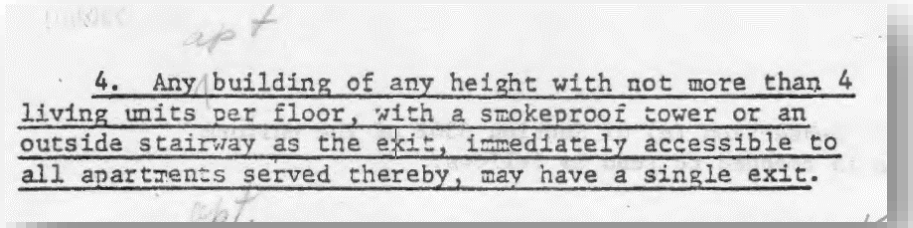


2018 Seattle Building Code
Chapter 10
1006.3.3. Single Exits

6. Occupied roofs with an occupant load of ten or less are permitted to have a single exit or access to a single exit.
7. Not more than 5 *stories* of Group R-2 occupancy are permitted to be served by a single exit under the following conditions:
    - 7.1. The building has not more than six *stories above grade plane.*
    - 7.2. The building does not contain a *boarding house.*
    - 7.3. There shall be no more than four *dwelling units* on any floor.
    - 7.4. The building shall be of not less than one hour fire-resistive construction and shall also be equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1. Residential-type sprinklers shall be used in all habitable spaces in each *dwelling unit.*
    - 7.5. There shall be no more than two single exit stairway conditions on the same property.
    - 7.6. An exterior stairway or interior exit stairway shall be provided. The interior exit stairway, including any related *exit passageway,* shall be pressurized in accordance with Section 909.20. Doors in the stairway shall swing into the interior exit stairway regardless of the occupant load served, provided that doors from the interior exit stairway to the building exterior are permitted to swing in the direction of exit travel.
    - 7.7. A *corridor* shall separate each *dwelling unit* entry/exit door from the door to an interior exit stairway, including any related *exit passageway,* on each floor. *Dwelling unit* doors shall not open directly into an interior exit stairway. *Dwelling unit* doors are permitted to open directly into an exterior stairway.
    - 7.8. There shall be no more than 20 feet (6096 mm) of travel to the exit stairway from the entry/exit door of any dwelling unit.
    - 7.9. Travel distance measured in accordance with Section 1017 shall not exceed 125 feet.
    - 7.10. The exit shall not terminate in an egress *court* where the *court* depth exceeds the *court* width unless it is possible to exit in either direction to the public way.
    - 7.11. Elevators shall be pressurized in accordance with Section 909.21 or shall open into elevator lobbies that comply with Section 713.14. Where *approved* by the *building official,* natural ventilation is permitted to be substituted for pressurization where the ventilation would prevent the accumulation of smoke or toxic gases.
    - 7.12. Other occupancies are permitted in the same building provided they comply with all the requirements of this code. Other occupancies shall not communicate with the Group R occupancy portion of the building or with the single-exit stairway.

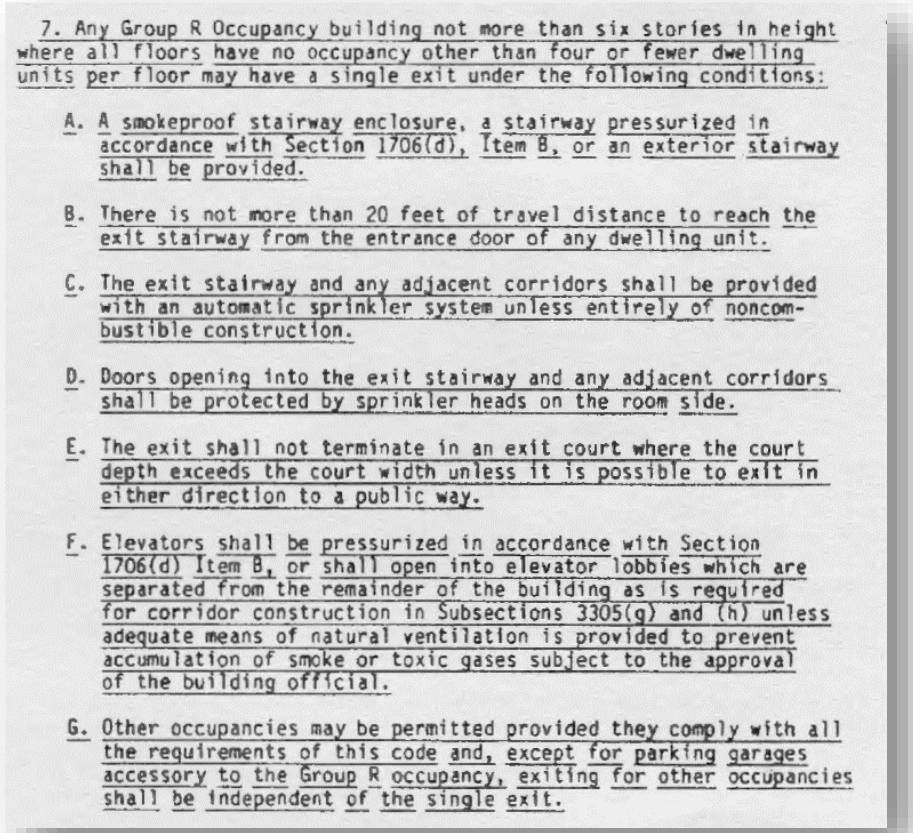
        Exception: Parking garages and occupied roofs accessory to the Group R occupancy are permitted to communicate with the exit stairway.
    - 7.13. The exit serving the Group R occupancy shall not discharge through any other occupancy, including an accessory parking garage.
    - 7.14. There shall be no openings within 10 feet (3048 mm) of unprotected openings into the stairway other than required exit doors having a one-hour fire-resistance rating.

1977 Seattle Building Code
Chapter 33: Stairs, Exits and Occupant Loads



4. Any building of any height with not more than 4 living units per floor, with a smokeproof tower or an outside stairway as the exit, immediately accessible to all apartments served thereby, may have a single exit.

1985 Seattle Building Code
Chapter 33: Exits



7. Any Group R Occupancy building not more than six stories in height where all floors have no occupancy other than four or fewer dwelling units per floor may have a single exit under the following conditions:

A. A smokeproof stairway enclosure, a stairway pressurized in accordance with Section 1706(d), Item B, or an exterior stairway shall be provided.

B. There is not more than 20 feet of travel distance to reach the exit stairway from the entrance door of any dwelling unit.

C. The exit stairway and any adjacent corridors shall be provided with an automatic sprinkler system unless entirely of noncombustible construction.

D. Doors opening into the exit stairway and any adjacent corridors shall be protected by sprinkler heads on the room side.

E. The exit shall not terminate in an exit court where the court depth exceeds the court width unless it is possible to exit in either direction to a public way.

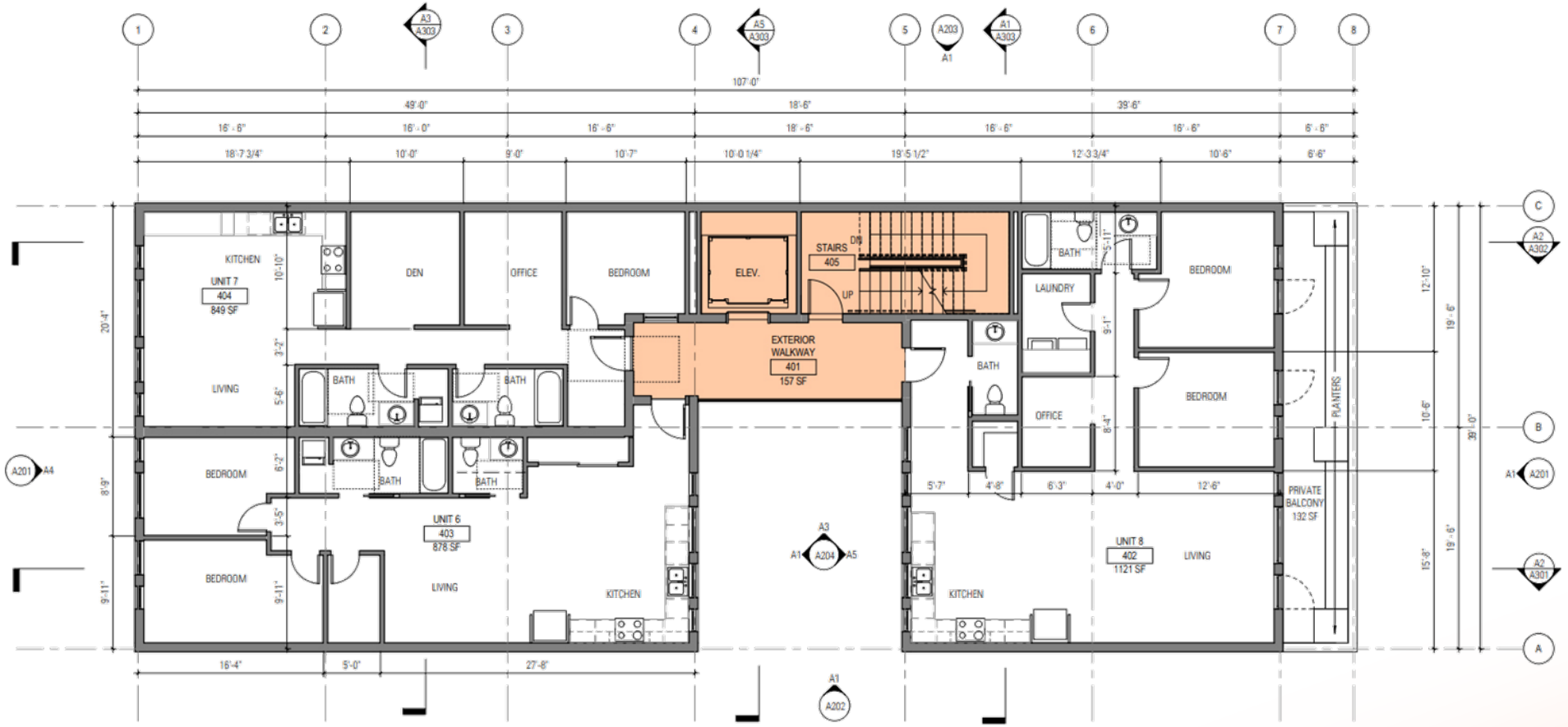
F. Elevators shall be pressurized in accordance with Section 1706(d) Item B, or shall open into elevator lobbies which are separated from the remainder of the building as is required for corridor construction in Subsections 3305(g) and (h) unless adequate means of natural ventilation is provided to prevent accumulation of smoke or toxic gases subject to the approval of the building official.

G. Other occupancies may be permitted provided they comply with all the requirements of this code and, except for parking garages accessory to the Group R occupancy, exiting for other occupancies shall be independent of the single exit.

Capitol Hill Urban Co-Housing

Schemata Workshop (2016)
1720 12th Ave, Seattle, WA 98122, USA

Height: 5 storeys (58 ft / 17m)
Use: 9 dwelling units, 1 commercial at grade
Floor Area: 17,600 ft^2 / 1,635 m^2
Construction: Type V-A (upper floors) and Type I-A (ground)
Stair: Galvanized Steel
Sprinklered: Yes (required throughout)



https://www.schemataworkshop.com/chuc

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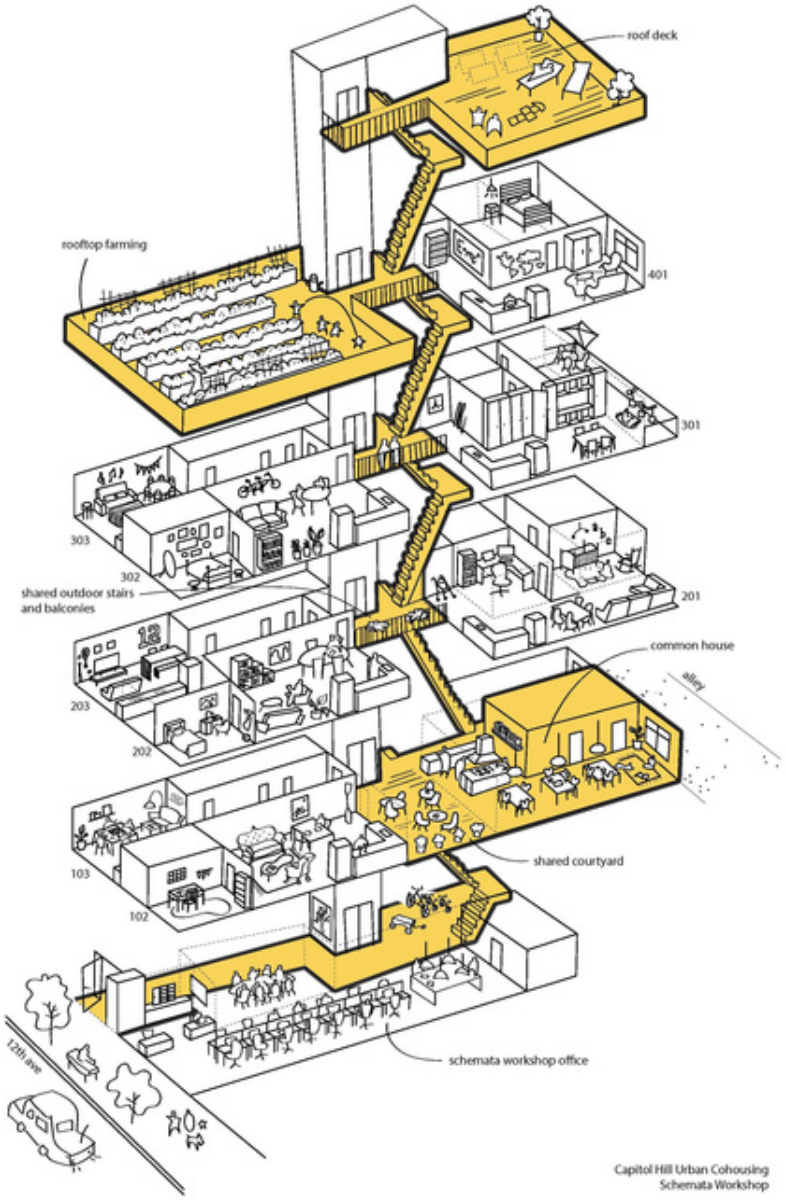
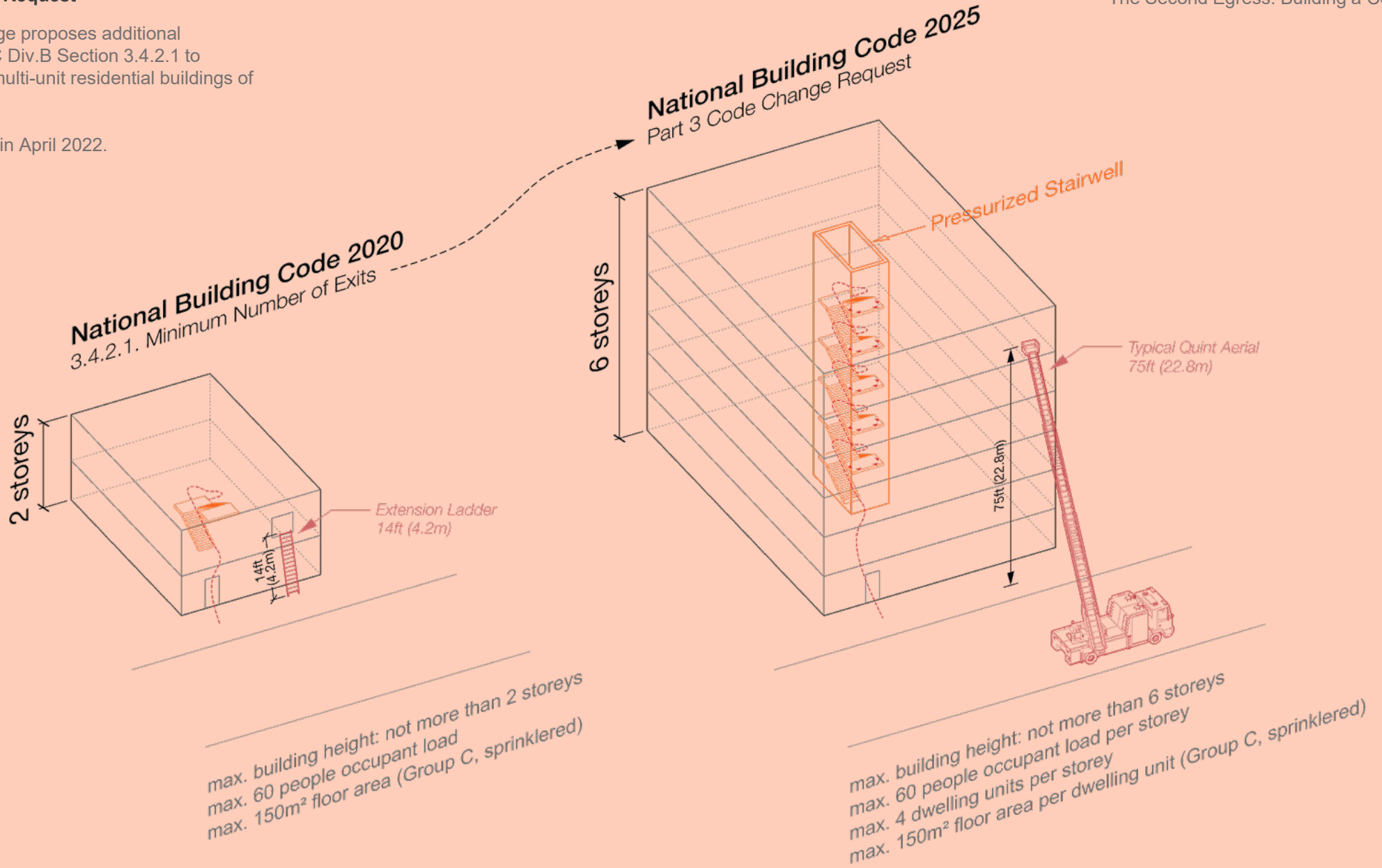


"This sketch really tells the story of the building, a lot of cohousing is quite suburban, and stretched out across a lot of acreage, but here we have a tiny site, and trying to make the most of it, so what is arranged horizontally we're stretching vertically to socially connect the building."

Part 3 Code Change Request

This request for change proposes additional sentences under NBC Div.B Section 3.4.2.1 to introduce single exit multi-unit residential buildings of up to six storeys.

Submitted to CCBFC in April 2022.



Proposed Wording in Part 3 - New Sentence in Section 3.4.2.1.

2025 National Building Code of Canada, Volume 1, Division B, Part 3
3.4.2. Number and Location of Exits from Floor Areas
3.4.2.1 Minimum Number of Exits

5) A *floor area* classified as Group C *occupancy* in a *building* not more than 6 *storeys* in *building height* is permitted to be served by a single *exit* provided the total *occupant load* on any *storey* served by the *exit* is not more than 60, and

a) there shall be no more than four *dwelling units* on any *storey* served by the *exit* and the *floor area* of each *dwelling unit* does not exceed 150m2,

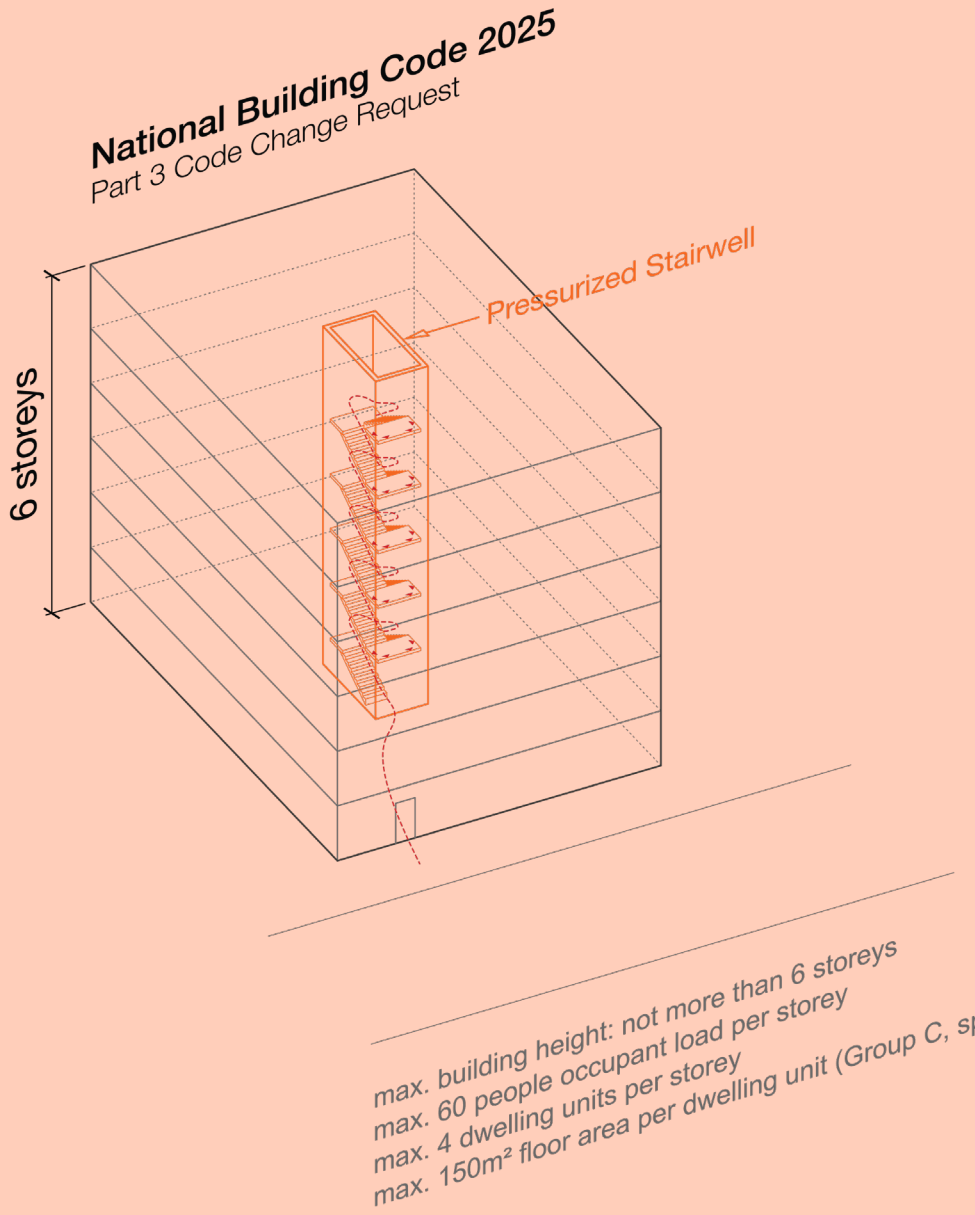
b) the building is *sprinklered* throughout,

c) unless an exterior stairway is provided, an interior stairway including any related *exit* passageway or *public corridor* shall be pressurized and designed in accordance with Article 3.2.6.2 to limit the danger to occupants and firefighters from exposure to smoke in a building fire,

d) openings in required *fire separations* shall be protected with a *closure* with a *fire-protection rating* of not less than 45 min and shall be installed in conformance with Chapters 2 to 14 of NFPA 80 “Standard for Fire Doors and Other Opening Protectives”,

e) a fire alarm system is provided without exception (See 3.2.4.1. Determination of Requirement for a Fire Alarm System), and the fire alarm system is designed to notify the fire department that an alarm signal has been initiated (See 3.2.4.7. Signals to Fire Department),

f) the *floor area* classified as Group C *occupancy* served by a single *exit* is not intended for use a retirement home.



Proposed Wording in Part 3 - New Sentence in Section 3.4.2.1.

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a) there shall be no more than four *dwelling units* on any *storey* served by the *exit* and the *floor area* of each *dwelling unit* does not exceed 150m2,

b) the building is *sprinklered* throughout,

c) unless an exterior stairway is provided, an interior stairway including any related *exit* passageway or *public corridor* shall be pressurized and designed in accordance with Article 3.2.6.2 to limit the danger to occupants and firefighters from exposure to smoke in a building fire,

d) openings in required *fire separations* shall be protected with a *closure* with a *fire-protection rating* of not less than 45 min and shall be installed in conformance with Chapters 2 to 14 of NFPA 80 “Standard for Fire Doors and Other Opening Protectives”,

e) a fire alarm system is provided without exception (See 3.2.4.1. Determination of Requirement for a Fire Alarm System), and the fire alarm system is designed to notify the fire department that an alarm signal has been initiated (See 3.2.4.7. Signals to Fire Department),

f) the *floor area* classified as Group C *occupancy* served by a single *exit* is not intended for use a retirement home.

3.1.8.12. Twenty-Minute Closures

1) A door assembly having a *fire-protection rating* not less than 20 min is permitted to be used as a *closure* in

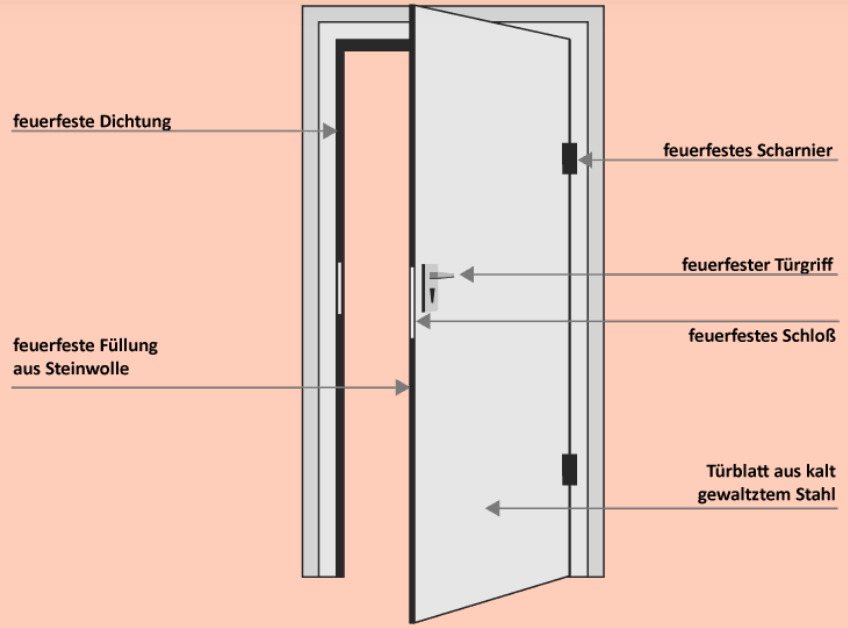
a) a *fire separation* not required to have a *fire-resistance rating* more than 1 h, located between

i) a *public corridor* and a *suite*,
ii) a corridor and adjacent sleeping rooms, or
iii) a corridor and adjacent classrooms, offices and libraries in Group A, Division 2 *major occupancies*, or

b) a *fire separation* not required to have a *fire-resistance rating* more than 45 min, located in a *building* not more than 3 *storeys* in *building height*.

2) The requirements for *noncombustible* sills and *combustible* floor coverings in NFPA 80, “Fire Doors and Other Opening Protectives,” do not apply to a door described in Sentence (1).

3) A door described in Sentence (1) shall have clearances of not more than 6 mm at the bottom and not more than 3 mm at the sides and top.

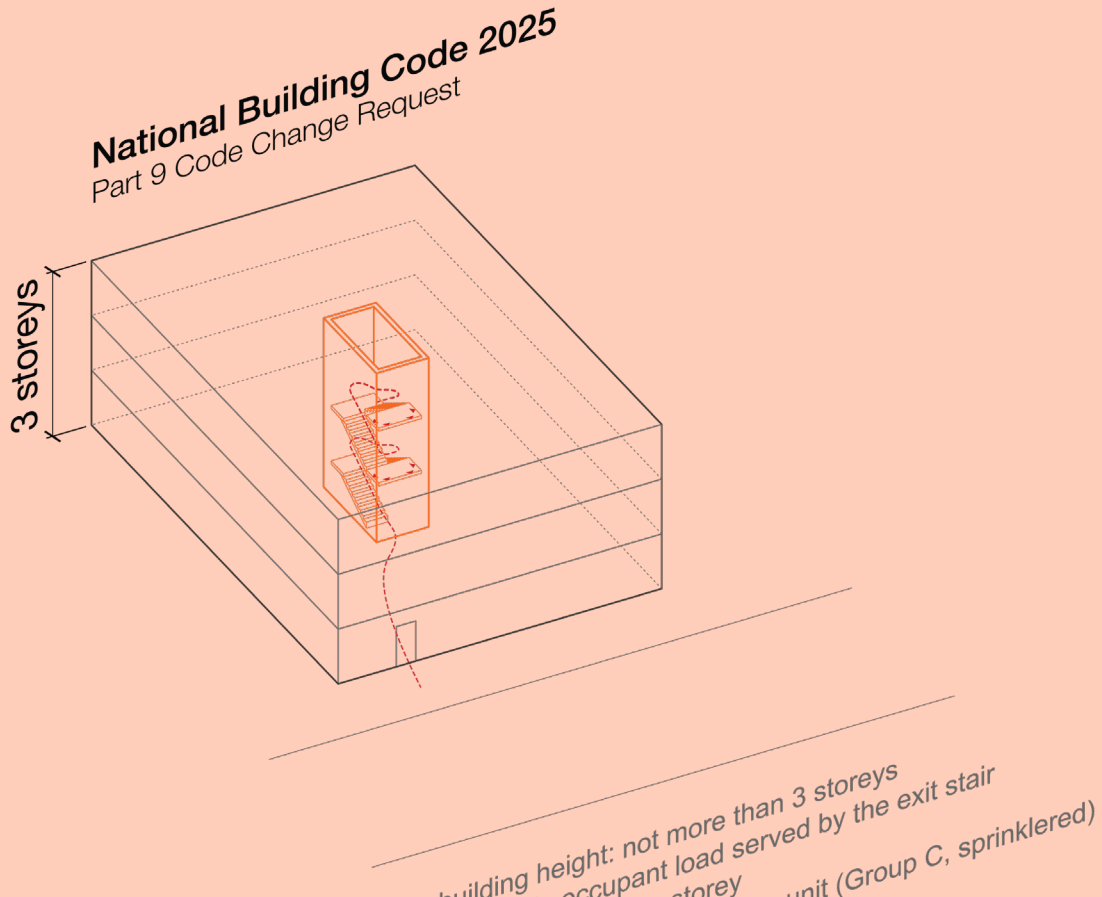


https://www.aroundhome.de/haustuer/brandschutztueren/

Part 9 Code Change Request

This request for change proposes additional sentences under NBC Div.B Section 9.9.8.2 to introduce single exit multi-unit residential buildings of up to three storeys.

Submitted to CCBFC in April 2022.



Proposed Wording in Part 9 - New Sentence in Section 9.9.8.2.

2025 National Building Code of Canada, Volume II, Division B, Part 9
9.9.8 Exits from Floor Areas
9.9.8.2 Number of Required Exits

3) A *floor area* classified as Group C *occupancy* in a *building* not more than 3 *storeys* in *building height* is permitted to be served by a single *exit* provided the total *occupant load* served by the *exit* is not more than 60, and

a) there shall be no more than four *dwelling units* on any *storey* served by the single *exit* and the *floor area* of each *dwelling unit* does not exceed 150m2,

b) the *building* is sprinklered throughout (NFPA 13-R, See 9.10.1.3. Items under Part 3 Jurisdiction),

c) *openings* in required *fire separations* shall be protected with a *closure* with a *fire-protection rating* of not less than 45 min and shall be installed in conformance with Chapters 2 to 14 of NFPA 80 “Standard for Fire Doors and Other Opening Protectives”,

d) a fire alarm system is provided without exception (See 9.10.18.2. Fire Alarm System Required),

e) the *floor area* classified as Group C *occupancy* served by a single *exit* is not intended for use a retirement home.

TABLE 1006.3.3(1) STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES

STORY	OCCUPANCY	MAXIMUM NUMBER OF DWELLING UNITS	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE
Basement, first, second or third story above grade plane	R-2[a, b]	4 dwelling units	125 feet
Fourth story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 3048 mm.

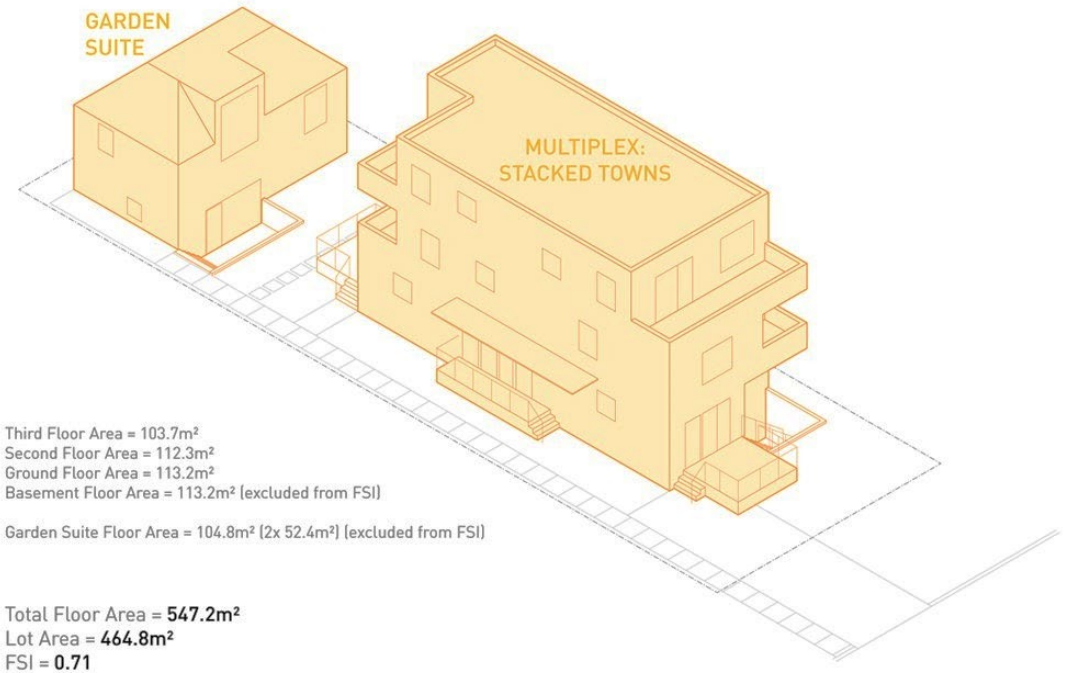
NP = Not Permitted.

NA = Not Applicable.

a. Buildings classified as Group R-2 equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with *emergency escape and rescue openings* in accordance with Section 1030.

b. This table is used for R-2 occupancies consisting of *dwelling units*. For R-2 occupancies consisting of *sleeping units*, use Table 1006.3.3(2).

New Multiplex:
Stacked Townhouse / Back-to-Back Townhouse



Third Floor Area = 103.7m²
Second Floor Area = 112.3m²
Ground Floor Area = 113.2m²
Basement Floor Area = 113.2m² (excluded from FSI)

Garden Suite Floor Area = 104.8m² (2x 52.4m²) (excluded from FSI)

Total Floor Area = **547.2m²**
Lot Area = **464.8m²**
FSI = **0.71**

New Multiplex:
Walk-Up Apartments / Fourplex

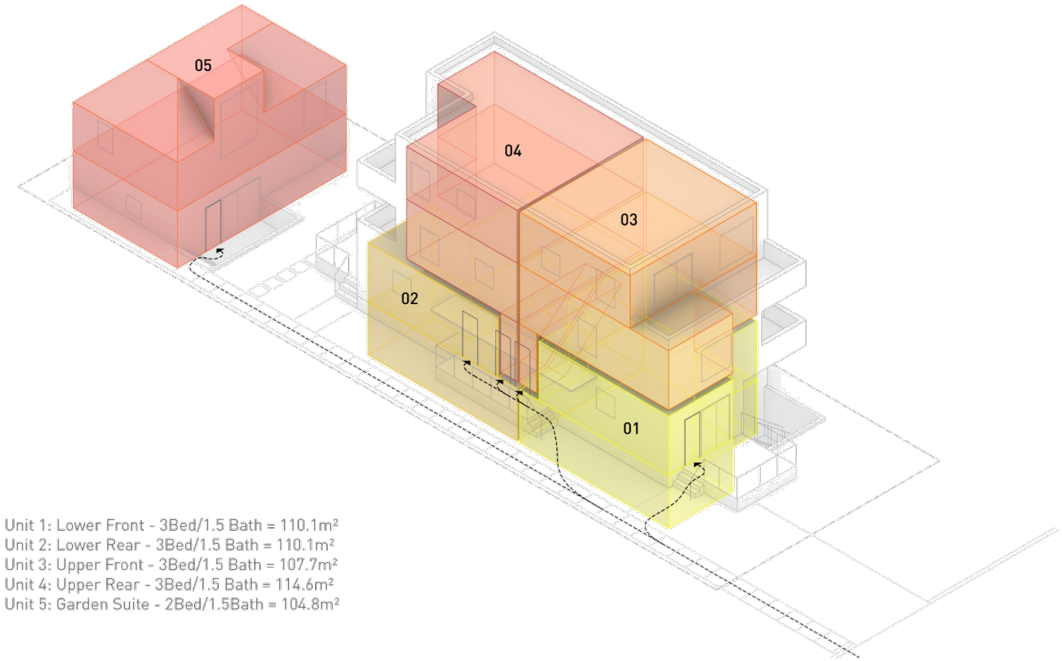
Third Floor Area = 98.3m²
Second Floor Area = 111.3m²
Ground Floor Area = 111.3m²
Basement Floor Area = 127.5m² (excluded from FSI)

Garden Suite Floor Area = 104.8m² (2x 52.4m²) (excluded from FSI)

Total Floor Area = **553.2m²**
Lot Area = **464.8m²**
FSI = **0.69**

New Multiplex:
Stacked Townhouse / Back-to-Back Townhouse

SEPARATE EXITING

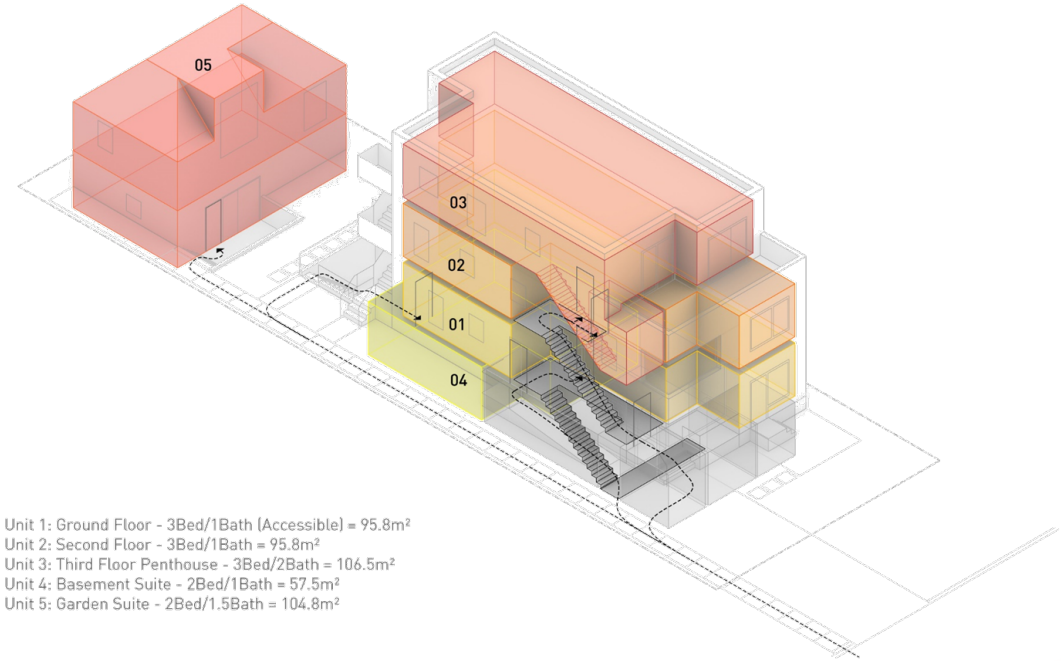


Unit 1: Lower Front - 3Bed/1.5 Bath = 110.1m²
Unit 2: Lower Rear - 3Bed/1.5 Bath = 110.1m²
Unit 3: Upper Front - 3Bed/1.5 Bath = 107.7m²
Unit 4: Upper Rear - 3Bed/1.5 Bath = 114.6m²
Unit 5: Garden Suite - 2Bed/1.5Bath = 104.8m²

Total Unit Count = **5 Units**
Total Occupancy Count = **14 Bedrooms**

New Multiplex:
Walk-Up Apartments / Fourplex

SHARED EXITING



Unit 1: Ground Floor - 3Bed/1Bath (Accessible) = 95.8m²
Unit 2: Second Floor - 3Bed/1Bath = 95.8m²
Unit 3: Third Floor Penthouse - 3Bed/2Bath = 106.5m²
Unit 4: Basement Suite - 2Bed/1Bath = 57.5m²
Unit 5: Garden Suite - 2Bed/1.5Bath = 104.8m²

Total Unit Count = **5 Units**
Total Occupancy Count = **13 Bedrooms**

Re: Building Code Change to Enable Single Stair Residential Buildings up to Six Storeys

Dear Chair and Members of the Ontario Housing Affordability Task Force,

Executive Summary

We urge you to recommend that the building code be changed to enable single stair buildings as a measure to address housing affordability by increasing the balanced supply of "missing middle" housing. Such code change would:

Permit residential buildings of up to six storeys with a single exit stair,

with the following safety measures:

- Limitations for a maximum of four dwelling units per storey;
- Sprinklering as active fire protection measure; and
- Stringent fire separation and positive pressurization of the exit stairwell.

This six-storey limit is determined by the 75 ft (23m) ladder reach of a typical aerial fire truck.

The remainder of this memo outlines the justification and reference material.

Over-Broad Application

While the requirement for two means of egress serves Canadians well in high-rise and larger apartment buildings, its over-broad application prohibits the construction of certain low- to mid-rise building typologies and is an impediment to creating a more balanced supply of housing. Modern life safety measures such as sprinklering, increasing fire ratings for doors and wall assemblies, as well as stairwell pressurization, are more effective life safety measures in low- to mid-rise buildings. Designs with a second means of egress are also more costly to build compared to other design solutions employed in the rest of the world.

Ministry of Municipal Affairs and Housing

777 Bay Street, 17th Floor
Toronto ON M7A 2J3
Telephone: 416 585-7000

Ministère des Affaires municipales et du Logement

777, rue Bay, 17e étage
Toronto ON M7A 2J3
Téléphone : 416 585-7000

Ontario

March 31, 2022

234-2022-1636

Kevin Griffiths, Chair
Canadian Commission on Building and Fire Codes
C/O Ms. Anne Gribbon
National Research Council of Canada
1200 Montreal Road, Building M-20
Ottawa, ON K1A 0R6

Dear Mr. Griffiths:

As you are likely aware, across Canada, housing supply and affordability is an increasing concern. As Minister of Municipal Affairs and Housing, I know that affordable housing is top of mind for many Ontarians.

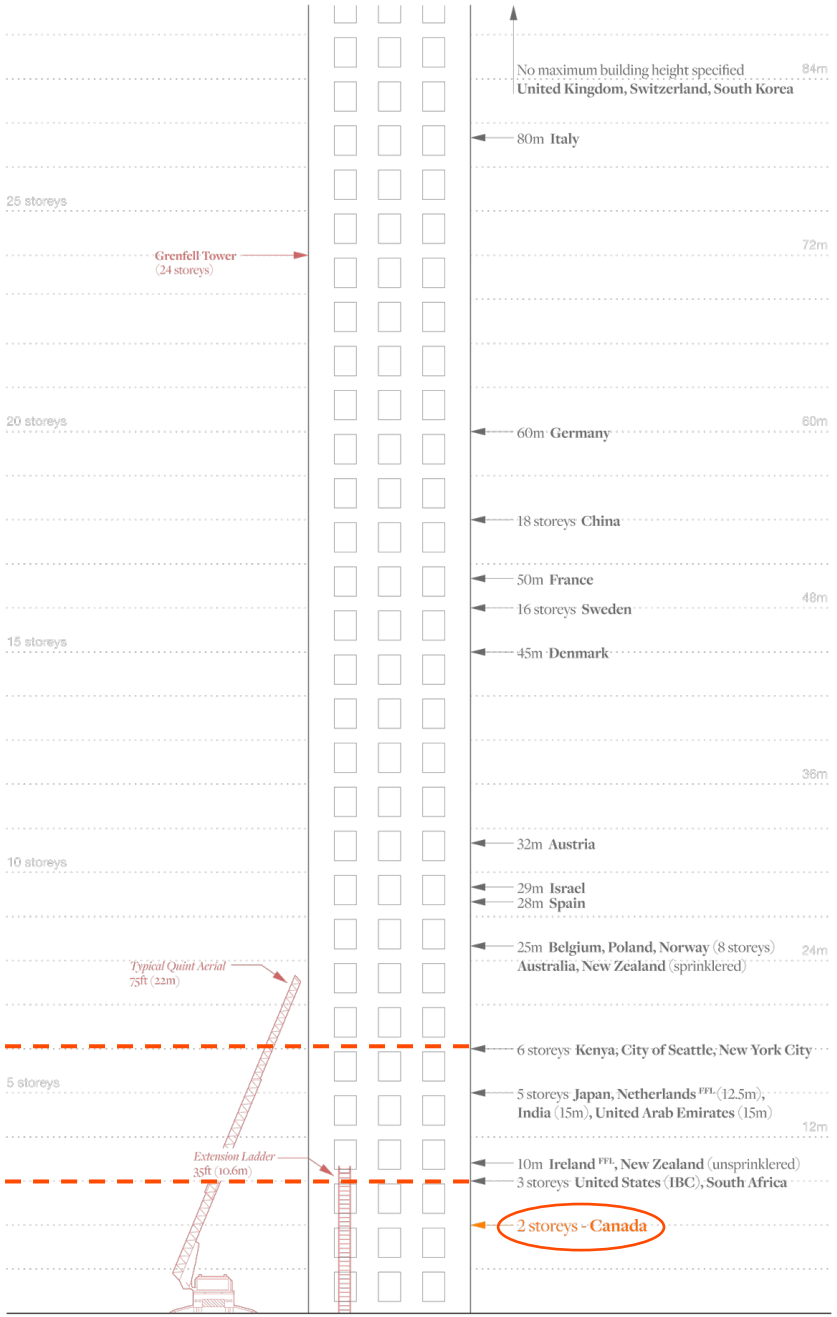
That's why in 2019, our government introduced More Homes, More Choice: Ontario's Housing Supply Action Plan to address Ontario's housing crisis, and as of March 30, 2022, I introduced the *More Homes for Everyone Act* as the next phase of our Housing Supply Action Plan to create more homes Our Action Plan puts Ontarians first. We are making it easier to build the right types of homes in the right places, to make it easier for all hardworking Ontarians to access the housing they need and deserve.

But we know there is still more to do. That is why we have taken a comprehensive approach to further identify and implement measures to get homes built faster. To complement our consultations with the public and municipal leaders, we appointed a Housing Affordability Task Force, comprised of industry, economic and financial experts, to provide recommendations on additional measures to address market housing supply and affordability. The Task Force's report can be found here.

In its report, the Task Force provided as an example the permitting of single-staircase construction and allowing a single means of egress in some residential buildings as a Building Code change that could enable the construction of more gentle density and multi-unit housing. While protecting public health and safety continues to be of utmost importance, we would like to work with the Canadian Commission on Building and Fire Codes to explore opportunities to respond to this recommendation.

In light of the current work to enhance the National Code Development System and the collaborative development of building regulations across Canada, Ontario remains committed to harmonization and to the implementation of the Construction Codes Reconciliation Agreement. In this regard, Ontario would be interested in working with your organization on the development of National Construction Codes changes that would support this proposal.

…/2



Maximum Allowable Building Height with Single Egress
for Multi-unit Residential Occupancies

Note: the drawing assumes a
floor to floor height of 3m