

Exemptions from the National Building Code in Montreal's by-law (11-018) concerning the construction and conversion of buildings

small
housing

CASE STUDY | JANUARY 2024



1. Background

The older neighbourhoods in central Montreal – developed in the first half of the 20th century – comprise some of the densest urban areas in Canada, something that is achieved without sacrificing liveability or frequent recourse to high-rise buildings. The key to this puzzling success is the iconic Montreal “plex”, i.e., the stacking of two (“duplex”) or three (“triplex”) apartments on narrow (20-25 feet) lots with each apartment having its own front and back door and civic address. What in turn makes this arrangement possible is the use of outdoor staircases for both front and back egress. In the front, a short staircase gives access to the ground-floor apartment, usually raised slightly above street level, another staircase rises steeply to the second storey while the third storey is served by an indoor staircase from an exterior landing on the second floor. In the back, egress is often afforded by a tightly spiraled metal staircase going up to the third floor with a small landing for the second and third floor apartments.

Policy/program

Exemptions from the National Building Code in Montreal's by-law concerning the construction and conversion of buildings (11-018).

Municipality

Montreal (2021 population: 1,762,949)

Gentle Density Types Involved

Multi-family stacked apartments with separate civic addresses, low-rise.

Having external staircases allows the space that would ordinarily be devoted to enclosed interior stairs to be redistributed to the living area on two of the three floors. The ground floor apartment gains the most living space as it no longer has any enclosed internal stairwells, the second floor also benefits as it now needs only one enclosed interior stairwell, i.e., the one leading up the third floor, while the third floor situation remains unchanged. That less façade space needs to be dedicated to enclosed internal staircases means the living spaces have more light exposure, which helps to compensate for the narrow lots. The small front setback needed to accommodate the external stairs provides space for a modest ground-level garden and porches/balconies on all three floors, all of which supports social interaction as people routinely encounter each other in these semi-private and semi-public spaces. The compact back spiral staircase allows space for a rear parking spot or yard.

Plexes like this are arranged along the whole length of a typical street in traditionally working class districts of Montreal, with shared walls and no penetrating walkways to rear yards. Access to rear parking (usually one parking space per plex) is gained through the lane system, which can also serve as a play space for kids and a gathering place for neighbourhood events. A rectangular city block of 250 x 50 metres can accommodate almost 200 units and a neighbourhood made up of blocks like this (like the Plateau Mont-Royal borough) can easily reach densities of 11,000 per square km – extremely dense by Canadian standards. This density provides the clientele to support regularly spaced commercial streets along which there is frequent bus service. As transit service is good and everyday needs can be met on foot or bike, car ownership is low. Because of the high densities and absence of driveways, parking for residents is permitted on both sides of the street, which slows traffic, reduces noise and danger, and makes walking and cycling pleasurable. The plex configuration also reduces energy use: the narrow facades and long shared walls between the plexes limits heat loss horizontally while stacking apartments lessens heat loss vertically.

The plex form has also brought benefits in terms of affordability. Unlike the older parts of Toronto, where a multi-floor rowhouse often accommodates only one household, the superimposed apartment form has helped make Montreal into one of the most affordable big cities in Canada. Historically, one family would own the plex building, often living on the ground floor with higher quality finishes and access to the back yard/parking space, while generating an income by renting out the upper floors. This arrangement not only created the physical conditions for social mixing, it produced tens of thousands of affordable living spaces of between 750 and 1200 sf throughout the historically working class areas of the city. In recent years, many of these districts have been gentrified, with the units having been converted to condominium ownership and prices having risen substantially, but they remain affordable compared to other big cities in Canada.

This convivial solution that nicely combines density, livability, affordability, and conservation, iconic to Montreal, flourished in the first half of the 20th century but then fell victim to changing building regulations in the post-war period. A demand for this traditional housing solution eventually led to a relaxation of building regulations and return of the plex as an acceptable housing solution.

2. Key Players

Province

- Quebec adopted the National Building Code (NBC) in 1976, which would have disallowed the stair format that makes the traditional plex possible.
- In Quebec municipalities are allowed to pass bylaws exempting them from provisions of the NBC in residential buildings of less than nine units.

Municipality

- The City of Montreal adopted the NBC in 1993 but has gradually exempted itself from NBC provisions that would prohibit the traditional plex format.

Stakeholders

- Local architects and their clientele of gentrifiers interested in reviving a convivial and inherently more affordable housing solution.
- Montreal's many small-scale builders who used to working with tight infill lots where the traditional plex may serve as a design solution.



3. Description of policy/program/project

The rules that gave rise to the plex form originated with local building regulations from the late 19th C that required a setback of about ten feet from the sidewalk. Until then, building facades in working class areas of the city typically came right up to the sidewalk in order to maximize the efficiency of the lot. In multi-family buildings, front stairs to upper floors were indoors while rear stairs were outdoors, usually in a compact spiral form.

The new regulations not only forced residential buildings back from the sidewalk, they also limited residential lots to a width of 25 feet. With the new setback requirement and limited width to work with, builders reasoned that the most efficient use of the space remaining to them would be realized by moving the hitherto internal staircases into the exterior setback area.¹ Because the mandated setback was not deep enough to accommodate the typical indoor staircase geometry, builders improvised external stairs with very steep and often curving designs to fit the available space. The tight designs often put the exterior stairs directly in front of façade windows, but regulators overlooked this potential fire hazard.

This regulatory framework persisted into the 20th C, allowing the plex form to flourish as Montreal's population of industrial workers boomed. However, in 1948, the City adopted a new comprehensive building code that barred curving external staircases. This led to the near disappearance of the classic Montreal triplex and its variants in favour of the three and four storey “walk-up” featuring a common outside entrance with one single street address, leading to a common inside staircase giving access to a number of flats. In the context of a major push to create more affordable housing, the City of Montreal repealed the prohibition on curving external staircases in 1978, allowing them with certain restrictions.

¹ Some have argued that the Catholic church advocated for this change due to the suspicion that dark, unsupervised indoor stairwells were being used for immoral purposes. Outdoor staircases would remove any such temptations.



Triplices with internal stairs, built around 1885 in the Plateau Mont-Royal neighbourhood.



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By 1976, Quebec had adopted the NBC, but Montreal chose to continue with its own code (at that time, municipalities in Quebec were still permitted to use their own building codes) until 1993, when the City finally exchanged its own code for the NBC. This might have posed a problem for the return of the triplex as the national code prioritizes safety issues with uniform standards that don't take into account local variations such as the Montreal plex. For example, according to Section 3.4.6.9. of Division B of the NBC on Curved Flights in Exits, exit stair flights shall consist solely of straight flights, or curved flights with an inside radius that is not less than twice the stair width. The inside radius rule means that curved stairs must have a very large radius, which makes them inappropriate for residential uses other than grand entrances. The tightly curving geometries that made solutions like the Montreal plex possible would not be able to meet this requirement.

Other provisions in the NBC that militated against the plex include Section 9.9.4.4., which prohibited openings such as doors and windows within 3 metres horizontally and less than 10 metres below or less than 5 metres above an exit stair, unless the openings achieved a certain fire resistance rating. This could be attained by using fire-rated doors, windows made of thick glass blocks, or automatic alarm-activated fire rated shutters, all of which would be either block the light coming into the living space (and therefore defeat the purpose of the exterior stairwell) or be too expensive to install. Finally, the NBC disallowed the traditional spiral stairwells typically used as fire exits in the rear of plexes.

Fortunately, the Quebec *Loi sur le bâtiment* (Law on Buildings) allows municipalities to pass bylaws exempting them from provisions of the NBC for residential buildings of less than nine units. Accordingly, the 1993 Montreal bylaw that adopted the NBC included regulations that exempted the city from some of the NBC regulations that were incompatible with the city's unique built form, notably the prohibition of spiral exterior stairs that served as rear fire escapes for many Montreal plexes. However, some restrictions were left in place that made it difficult to achieve the traditional plex form, such as the wide stairwell curves and the separation requirements between windows and external stairs. As a result, most of the plexes built in this period used enclosed internal stairs, which used up precious indoor space.

Meanwhile, the gentrification of the historically working-class districts of Montreal proceeded and a new appreciation for the traditional plex form with its local authenticity and individual entrances emerged. In response, the City continued to evolve the regulatory framework. Consolidated in 2023 under bylaw 11-018, exemptions from the NBC restore the legality of tightly curving front stairs, as long as they serve no more than two units per floor and rise no higher than the second floor and eliminate the need for fire separation distances between windows and exit stairs. With the changing regulatory framework, architects are once again experimenting with external staircase designs in the historic quarters of Montreal.



Rental multiplex built 2010, with external front staircases in the Plateau Mont-Royal neighbourhood.



Triplexes with external front stairs, built in 2019, near a metro station in the Rosemont neighbourhood.

4. Outcomes

It's still too early to assess emerging trends, but Montreal's building code exemptions could lead to a revival of the traditional plex form in Montreal, especially in tight in-fill spaces.

5. Lessons learned

Facilitators

- Provincial policy allowing municipalities to adopt exemptions to the NBC.
- Municipal administration that responded to a rejuvenated interest in this unique housing form.
- Plenty of small-scale infill sites and small-scale builders accustomed to redeveloping such sites.
- Strong demand for traditional building forms that have contributed to a very high quality in older neighbourhoods of Montreal.

Challenges

- Steep and sharply curving stairs can be challenging to anyone with limited mobility.
- External stairs can be hazardous in a city where snow and ice accumulation is common.
- The economics of land development may favour mid-rise apartment with ground-floor commercial uses over rows of plexes on larger sites.
- The complexity of building code issues in Montreal may discourage property owners and architects from testing the regulatory framework with plex designs.



6. Next Steps

- Municipalities in other parts of Canada could use the exemptions expressed in Montreal bylaw 11-018-3 as a basis for an alternative solutions application.
- Ultimately, a number of successful applications could lead to changes in the NBC allowing external staircase configurations that would work on small infill lots.

7. Resources

- | David B. Hanna and François Dufaux, 2002. Montreal : a rich tradition in medium density housing: <https://publications.gc.ca/site/fra/391457/publication.html>
- | By-law concerning the construction and conversion of buildings (11-018) – Office Consolidation: <https://montreal.ca/en/reglements-municipaux/recherche/60d7cf9bfd6531f35359d073>
- | Laura Kiniry, 2022. The Twisty History of Montreal's Outdoor Staircases: <https://www.atlasobscura.com/articles/montreal-plexes-outdoor-staircases>