DESIGN GUIDE FOR POINT ACCESS BLOCKS

3.01/ MULTI-UNIT RESIDENTIAL BUILDING TYPES

Different typologies for apartment buildings are largely a function of circulation—how one moves through the building from the street to the apartment door. Fire safety concerns, expressed in the building codes, play a strong role in shaping the types of residential buildings we see in Canadian cities today. The various typologies can be generalized into several common types, which can be helpful for contrast with Point Access Blocks:

ROWHOUSE / TOWNHOME

Within the low-rise scale of multi-unit housing development, townhomes (or rowhousing) are one of the most common types in Canadian cities. They are typically three storeys in height, often share neighborhoods with single-family homes and represent a modest increase in density. They are often constructed under Part 9 of the Building Code, which allows for less stringent fire and life safety requirements than those required for larger buildings. Each unit has its own exterior entrance door, usually at ground level or close to ground level, so there is no common indoor circulation space. Interior flights of stairs within each unit connect the three storeys.

Stairs in townhomes can occupy 10% -18% of the saleable floor area within the unit so they take up a significant amount of living space. The multi-level nature of the space also poses challenges to accessibility, including the ability to age in place. Aside from these issues, townhomes offer some benefits in terms of livability – providing daylight and ventilation from two sides – and can support a fine-grain pedestrian experience at street level.

DOUBLE-LOADED CORRIDOR

Within the mid-rise scale (4–6 storeys), apartment buildings designed around an interior corridor represent the most common contemporary type in North America. They are characterized by long internal corridors with exit stairs located at each end to comply with prescriptive building code requirements for two exits for buildings of more than two storeys in height. Apartments are located on both sides of the corridor—hence the term 'double-loaded'.

This configuration is an efficient means of complying with current building codes and often leads to floor plan efficiencies in the 85% to 88% range, particularly for larger floor plans. However, providing two exit stairs becomes increasingly inefficient when looking at smaller lots, so double-loaded corridor type apartment buildings are often best suited to larger sites rather than infill sites in more dense urban areas.



A double-loaded corridor type building with a simple layout can achieve a compact overall form which reduces heat loss through the envelope and promotes energy efficiency in a heating-dominated building context like the Edmonton climate. However, this building type has a number of limitations from social and environmental perspectives.

Building depth is typically in the range of 18 to 24 metres which can limit the space available on the site for other valuable functions such as green space or common outdoor space for residents. When developed in proximity to high-traffic streets many units will not have openable windows or balconies that are protected from traffic noise, since most apartments are single-aspect (one exterior face).

Opportunities for natural ventilation are often very limited since the majority of apartments will have windows on only one side, although corner units may benefit from some degree of cross ventilation. Similarly, access to natural light is often compromised, both within the apartments themselves as well as the internal corridor which commonly has no windows and relies solely on artificial light. Summer overheating is also a risk for some units, particularly those that face only south or west and are exposed to significant solar gain without the ability to flush out hot air at night time through cross ventilation.

SINGLE-LOADED CORRIDOR

An alternative to the double-loaded corridor typology is the single-loaded corridor, where apartments are located on just one side of a linear corridor - usually in the form of an exterior walkway. This typology is compatible with current building codes in Canada as long as two exit stairs are provided from the walkway. Some buildings in this typology are arranged around a central courtyard where the walkways may form a continuous loop. Single-loaded or courtyard type projects are typically less efficient than double-loaded corridors-often less than 85% and may have a less compact form factor with a greater area of exterior wall surface. The benefits of this typology include the ability for cross ventilation and daylight from two sides since apartments can have windows facing the walkway and on the opposite side. Practical design challenges with single-loaded or courtyard type projects may include maintaining privacy for rooms facing the walkways from passing neighbours, or dealing with snow and ice accumulations in cold climates.



Isometric and plan diagrams of a typical single-loaded corridor building. Image by Public Architecture





Isometric and plan diagrams of a typical point tower building. Image by Public Architecture



POINT TOWER

The point tower is a common high-rise residential building type which, in Canada, typically meets the exit requirements of the building code by providing a 'scissor stair' where two separate exit stairs are interlocked as they descend but still maintain smoke and fire separation. A relatively compact core, which includes the stairs, elevators, and corridor, is created at the centre of the floor plan with apartments occupying most or all of the available perimeter.

Point towers are often designed with a broader podium base containing commercial uses or ground-oriented residential units like townhomes, as a way to reconcile the tower form above with the street-level urban grain.

POINT ACCESS BLOCK

The point access block is a single-stair typology that can be found in one form or another in most cities around the world. The floor plan of a point access block is typically a small number of apartments (e.g. two to four units) arranged around a single stair, with or without an elevator. Rows of point access blocks can be joined together to form a continuous street wall or a single building can be developed as a standalone block, so they represent a scaleable form of development that is suited to incremental development.

The common space can be limited to just the stairway and elevator so point access blocks are capable of delivering floor area efficiency above 90% and can maximize the amount of apartment space in the floor plan. Long-standing building code restrictions on Single Exit Stair buildings mean that very few postwar examples can be found in Canada or much of the United States (with some notable exceptions).



Isometric and plan diagrams of a pair of Point Access Blocks. Image by Public Architecture



3.02/ INTERNATIONAL CONTEXT

Point access blocks with a single staircase are a prevalent way of designing multi-unit residential buildings around the world. The mid-rise urbanism of cities like Berlin, Paris and Barcelona is characterized by entire city blocks of several single stair buildings arranged in courtyard configurations.

Building code requirements and firefighting practices vary significantly around the world, and so does each jurisdiction's attitude to the use of a single-exit stair. With regard to the permitted building height of a single-exit-stair building, Canada is something of an outlier amongst developed nations, with a maximum limit of two storeys in all cases. In terms of apartment building design this height limitation is, in practical terms, a prescriptive prohibition on point access blocks which steers developers and design professionals towards other building typologies discussed earlier.

Each jurisdiction has rules and regulations in place that fit their own individual context. Switzerland and South Korea do not specify any maximum building height, instead placing limits on the floor area, travel distance, number of dwellings and number of occupants served by the single stair. Many jurisdictions also require additional fire suppression and smoke control measures to protect the integrity of the single exit in high-rise buildings. Germany allows for both office and multi-unit residential buildings of up to 22 metres (7 storeys) in height to be served by a single stair, with additional fire safety measures increasing the maximum height to 60 metres (20 storeys). Australia and New Zealand allow one exit for apartment buildings up to 25 metres in height (8 storeys) where fire sprinklers are provided and up to 10 metres in height without sprinklers.

Until 2023, the UK did not establish a maximum height for residential buildings with a single staircase and relied on a "stay-put" evacuation strategy. Following the Grenfell Tower high-rise fire, the UK government consulted on a maximum height of 30 metres for single stair buildings, superseded by the decision to set an 18 meter height limit in the most recent update to prescriptive guidance documents. This will make the United Kingdom significantly more restrictive than most of mainland Europe.

Across the United States, single-stair apartment buildings are permitted up to three storeys in height with a maximum of four dwellings per storey. The National Fire Protection Association's model code also allows up to four storeys and the State of Hawaii, New York City and City of Seattle allow up to six storeys. Despite the widely differing code requirements for single-exit-stair buildings between all these countries, it is generally not a case of a differing attitude to fire risk or a case of countries with lower height limits for single-stair apartment buildings being associated with the best fire safety outcomes. Many of the countries which permit single-stair apartment buildings over ten storeys have lower mortality rates from fire to those of Canada and the United States¹.

1. Our World In Data (2019). Death rate from fires and burns, 2019. https://ourworldindata.org/grapher/fire-death-rates

3.03/ DESIGN GUIDE GOALS

This Design Guide illustrates some of the opportunities that Point Access Blocks can offer design professionals and property developers in the Edmonton context. These designs were created for inspirational purposes, and only reflect a general design intention.

This guide shows a range of planning approaches that can be considered when designing a Point Access Block for a given site. This range of options has been organized into a table format, to assist with an understanding of how lot sizes and zoning can impact building footprint and unit mixes. This table cross-references the various applicable Residential Zones with the common site sizes. Multiple design examples (Examples A through M) are catalogued and included for guidance on potential unit configurations.

Of these examples, three Design Studies are featured in more detail. Each study includes unique opportunities for what the Point Access Block can offer. These Design Studies demonstrate a range of options, including different zoning, different site widths, and different approaches to parking.

ZONE	^{33'} 1x 33' LOT	^{66′} 	99' 3x 33' LOT	50' 1x 50' LOT	2x 50' LOT
SMALL SCALE RESIDENTIAL ZONES	EXAMPLE A	B SEE EXAMPLE B	EXAMPLE C	EXAMPLE D	EXAMPLE EXAMPLE
SMALL SCALE FLEX RESIDENTIAL ZONES	EXAMPLE F	SEE EXAMPLE G	EXAMPLE C	EXAMPLE H	E E E
SMALL-MEDIUM TRANSITION RESIDENTIAL ZONES	EXAMPLE F	EXAMPLE	EXAMPLE C	EXAMPLE H	EXAMPLE E
MEDIUM SCALE (h=16.0 m) RESIDENTIAL ZONES		EXAMPLE J	EXAMPLE K	EXAMPLE L	EXAMPLE M
MEDIUM SCALE (h=23.0 m) RESIDENTIAL ZONES		EXAMPLE J	EXAMPLE K	EXAMPLE L	EXAMPLE M
Catalogue matrix of Residential Zor and common site sizes.	nes	EXAMPLE IS FEATURED IN DESIGN STUDY 1	EXAMPLE IS FEATURED IN DESIGN STUDY 2	EXAMPLE IS FEATURED IN DESIGN STUDY 3	

3.04/ DESIGN STUDIES

The Design Studies also illustrate alternative examples of the risk mitigation measures described in the Technical Report that could support an Alternative Solution application, including exterior corridors that enables smoke disbursement direct to the exterior and away from the exit stair, and intervening vestibule within the corridor adjacent to the stair door. Although not illustrated, smoke management systems can also assist in preventing smoke contamination of the Single Exit Stair.

The Design Studies are limited to not more than 6-storeys and not more than 4 dwelling units per storey served by a Single Egress Stair, although an Alternative Solution process can consider the merits of a development that exceeds these limitations.

Design Disclaimer:

Design examples shown are not intended to be complete designs. The example designs should not be used for development or building permitting approval, other construction implementation.

While various City of Edmonton Residential Zones are considered, information specific to any location or site are not accounted for. Some requirements or considerations of the Zoning Bylaw and the Alberta Building Code may not be captured as part of this guide. Applicants should undertake their own design process and review all bylaw and code requirements, including exposed openings to adjacent sites.









Eye-level rendering illustrating possible scale and appearance of Design Study 1



BASEMENT PLAN





TYPICAL FLOOR PLAN



SMALL SCALE RESIDENTIAL ZONES 3 FLOORS + BASEMENT 8 UNITS / 22 BEDROOMS 10 CARS

This design scenario proposes a Point Access Block on two consolidated 33' lots in the RS Zone, located in a mid-block location.

CHARACTERISTICS:

- A low-rise solution with a compact floor plate of three units per typical floor, and eight units total.

- Includes a mix of two-bedroom and four-bedroom units, with flexibility to reconfigure into alternate unit mixes.

- All units are "corner" units, with at least two exterior walls for window/balcony openings. The side setbacks have the benefit of allowing significant daylight access to bedrooms located along the sides of the plan, whether the site is located mid-block or at a corner condition.

- A basement unit (shown) is an option, but not required.

- Ground level parking +1 car/unit is provided.

- Common corridors are very efficiently sized, allocating more area of the floor plate to private units.
- The exit stair can alternately be an exterior stair.





Overlay of area required for a second egress stair and circulation.



DESIGN Study 2

FI

Eye-level rendering illustrating possible scale and appearance of Design Study 2



BASEMENT PLAN



MAIN FLOOR PLAN



SMALL SCALE RESIDENTIAL ZONES 2 FLOORS + BASEMENT 8 UNITS / 25 BEDROOMS 24 CARS



SMALL SCALE FLEX RESIDENTIAL ZONES 4 FLOORS + BASEMENT 16 UNITS / 51 BEDROOMS 24 CARS



SMALL-MEDIUM TRANSITION RESIDENTIAL ZONES 4 FLOORS + BASEMENT 16 UNITS / 51 BEDROOMS 24 CARS This design scenario proposes a Point Access Block on three consolidated 33' lots, located in a mid-block location, but can also be easily adapted to suit two consolidated 50' lots. This design scenario illustrates a four-storey building in either the RSF or RSM Zones, but can also be adapted in height to work in the RS Zone.

CHARACTERISTICS:

- A four-storey solution with four units per typical floor, and up to 16 units total.

- Allows for large units to house families, and includes a mix of four-bedroom, three-bedroom and twobedroom units.

- All units are "corner" units, with at least two exterior walls for window/balcony openings. The side setbacks have the benefit of allowing significant daylight access to bedrooms located along the sides of the plan, whether the site is located mid-block or at a corner condition.

- Underground parking is provided, with space for 16 cars, providing 1 underground car/unit and 0.5 surface level cars/unit. (Note: Underground parking level includes two exit stairs.)

- Common corridors are very efficiently sized, allocating more area of the floor plate to private units.





Overlay of area required for a second egress stair and circulation.



Eye-level rendering illustrating possible scale and appearance of Design Study 3



TYPICAL FLOOR PLAN



MEDIUM SCALE (h=16.0 m) RESIDENTIAL ZONES 5 FLOORS + BASEMENT 18 UNITS / 42 BEDROOMS NO PARKING



MEDIUM SCALE (h=23.0 m) RESIDENTIAL ZONES 6 FLOORS 18 UNITS / 42 BEDROOMS NO PARKING

This design scenario proposes a Point Access Block on a single 50' lot in the RM Zone, located on a corner location. It can be adapted to suit mid-block locations with consideration for neighboring conditions. This design scenario illustrates a six-storey building in the RM Zone using the 23.0M height modifier, but can also be adapted to five-storeys to work using the 16.0M height modifier.

CHARACTERISTICS:

- A six-storey solution with four units per typical floor, and up to 16 units total.

- Includes a mix of three-bedroom and two-bedroom units, with generous access to natural light, natural ventilation, and exterior amenity space with distinct views.

- No parking is provided. Basement bicycle parking or a basement residential level are options.

- Common corridors are shown as exterior space, but can alternately be enclosed.



Overlay of area required for a second egress stair and circulation.



3.05/ ZONING REVIEW

Edmonton's Zoning Bylaw is the primary regulatory tool required to implement The City Plan and determines what can be built where. It sets the rules for where new buildings should go, what types of buildings they can be and what types of businesses and activities can happen on a property.

The Zoning Bylaw includes multiple Residential Zones that allow for small to large scale residential development and provide flexibility for different housing types. This guide assesses how the zoning requirements for the following Residential Zones can impact Point Access Block planning:

- + (RS) Small Scale Residential
- + (RSF) Small Scale Flex Residential
- + (RSM) Small-Medium Scale Transition Residential
- + (RM) Medium Scale Residential

The Zoning Bylaw also includes multiple Mixed Use Zones (MUN, MU Zones), intended to support a diverse mix of businesses, services and residential development. While a Point Access Block development is possible within Mixed Use Zones, examples are not included in this guide. If you are considering a Point Access Block development with a mix of uses, design proposals should be discussed with the Safety Codes office.

The City of Edmonton encourages Pre-Application Meetings for Point Access Block proposals. To arrange a pre-application infill meeting for residential infill developments use the Pre-Application Meeting Request Form.



(RS) Small Scale Residential Zone



(RSF) Small Scale Flex Residential Zone



(RSM) Small-Medium Scale Transition Residential Zone



(RM) Medium Scale Residential Zone

3.06/ TYPICAL SITE DIMENSIONS

Lot sizes in Edmonton vary based on a number of factors including the site location and age of neighborhood subdivision. While lot dimensions and characteristics are not always consistent, this study identifies some common site sizes that can be found in mature neighborhoods of Edmonton where infill residential is being adopted. These sample sites were used to test the opportunities of the Point Access Block.

There are countless exceptions to these common sizes, including pie-shaped sites, sites without rear lanes, and sites facing multiple streets. Additionally, newer suburban areas tend to have a higher degree of variation in site width and depth. These sites may offer unique opportunities and constraints when considering a Point Access Block.

This exploration of common sites is not intended to be an exhaustive representation of options, but rather a limited, representative sampling that shows a range of planning approaches that can be considered when designing a Point Access Block. To maximize benefits, stakeholders should work with designers to find design solutions that are specific to the site and reflective of unique local constraints.



Especially in mature neighborhoods, lot sizes in Edmonton features more regularity than most Canadian cities.

3.07/ COMMON SITES CATALOGUE

This table cross-references the various applicable Residential Zones with the common site sizes. Design examples are included on the following catalogue pages for guidance on potential unit configurations.

ZONE	1x 33' LOT	66' 2x 33' LOT	99' 3x 33' LOT	50' 1x 50' LOT	2x 50' LOT
SMALL SCALE RESIDENTIAL ZONES	EXAMPLE A	EXAMPLE B	SEE EXAMPLE C	EXAMPLE D	Example E
SMALL SCALE FLEX RESIDENTIAL ZONES	EXAMPLE F	SEE EXAMPLE G	SEE EXAMPLE C	EXAMPLE H	E EXAMPLE
SMALL-MEDIUM TRANSITION RESIDENTIAL ZONES	EXAMPLE F	SEE EXAMPLE	EXAMPLE C	EXAMPLE H	EXAMPLE EXAMPLE
MEDIUM SCALE (h=16.0 m) RESIDENTIAL ZONES		SEE EXAMPLE J	EXAMPLE K	EXAMPLE L	example M
MEDIUM SCALE (h=23.0 m) RESIDENTIAL ZONES		EXAMPLE J	EXAMPLE K	EXAMPLE L	EXAMPLE M



TYPICAL FLOOR PLAN





SMALL SCALE RESIDENTIAL ZONES 3 FLOORS 5 UNITS / 10 BEDROOMS 2 CARS



4 PARKING STALLS





BASEMENT PLAN





SMALL SCALE RESIDENTIAL ZONES 3 FLOORS + BASEMENT 8 UNITS / 22 BEDROOMS 10 CARS MAIN FLOOR PLAN

TYPICAL FLOOR PLAN



MAIN FLOOR PLAN

TYPICAL FLOOR PLAN



BASEMENT PLAN





SMALL SCALE RESIDENTIAL ZONES 2 FLOORS + BASEMENT 8 UNITS / 25 BEDROOMS 24 CARS



SMALL SCALE FLEX RESIDENTIAL ZONES 4 FLOORS + BASEMENT 16 UNITS / 51 BEDROOMS 24 CARS



SMALL-MEDIUM TRANSITION RESIDENTIAL ZONES 4 FLOORS + BASEMENT 16 UNITS / 51 BEDROOMS 24 CARS



SMALL SCALE RESIDENTIAL ZONES 3 FLOORS 8 UNITS / 17 BEDROOMS 9 CARS

MAIN FLOOR PLAN

EXAMPLE D

TYPICAL FLOOR PLAN







MAIN FLOOR PLAN

TYPICAL FLOOR PLAN



BASEMENT PLAN





SMALL SCALE RESIDENTIAL ZONES 2 FLOORS + BASEMENT 8 UNITS / 29 BEDROOMS 24 CARS



SMALL SCALE FLEX RESIDENTIAL ZONES 4 FLOORS + BASEMENT 16 UNITS / 59 BEDROOMS 24 CARS



SMALL-MEDIUM TRANSITION RESIDENTIAL ZONES 4 FLOORS + BASEMENT 16 UNITS / 59 BEDROOMS 24 CARS



TYPICAL FLOOR PLAN

EXAMPLE F



SMALL SCALE FLEX RESIDENTIAL ZONES 4 FLOORS + BASEMENT 10 UNITS / 20 BEDROOMS NO PARKING



SMALL-MEDIUM TRANSITION RESIDENTIAL ZONES 4 FLOORS + BASEMENT 10 UNITS / 20 BEDROOMS NO PARKING







MAIN FLOOR PLAN



TYPICAL FLOOR PLAN







SMALL SCALE FLEX RESIDENTIAL ZONES 4 FLOORS + BASEMENT 11 UNITS / 33 BEDROOMS 10 CARS





MAIN FLOOR PLAN

TYPICAL FLOOR PLAN

EXAMPLE H



SMALL SCALE FLEX RESIDENTIAL ZONES 4 FLOORS 13 UNITS / 29 BEDROOMS 10 CARS



SMALL-MEDIUM TRANSITION RESIDENTIAL ZONES 4 FLOORS 13 UNITS / 29 BEDROOMS 10 CARS







BASEMENT PLAN

MAIN FLOOR PLAN

EXAMPLE



SMALL-MEDIUM TRANSITION RESIDENTIAL ZONES 4 FLOORS + BASEMENT 14 UNITS / 37 BEDROOMS 11 CARS

TYPICAL FLOOR PLAN



MEDIUM SCALE (h=16.0 m) RESIDENTIAL ZONES 5 FLOORS + BASEMENT 14 UNITS / 37 BEDROOMS 9 CARS



MEDIUM SCALE (h=23.0 m) RESIDENTIAL ZONES 6 FLOORS 16 UNITS / 42 BEDROOMS 9 CARS





MAIN FLOOR PLAN





MAIN FLOOR PLAN

TYPICAL FLOOR PLAN



BASEMENT PLAN

EXAMPLE K



MEDIUM SCALE (h=16.0 m) RESIDENTIAL ZONES 5 FLOORS + BASEMENT 19 UNITS / 66 BEDROOMS 21 CARS



MEDIUM SCALE (h=23.0 m) RESIDENTIAL ZONES 6 FLOORS + BASEMENT 23 UNITS / 80 BEDROOMS 21 CARS



TYPICAL FLOOR PLAN





MEDIUM SCALE (h=16.0 m) RESIDENTIAL ZONES 5 FLOORS + BASEMENT 18 UNITS / 42 BEDROOMS NO PARKING



MEDIUM SCALE (h=23.0 m) RESIDENTIAL ZONES 6 FLOORS 18 UNITS / 42 BEDROOMS NO PARKING



MAIN FLOOR PLAN

TYPICAL FLOOR PLAN



BASEMENT PLAN

EXAMPLE M



MEDIUM SCALE (h=16.0 m) RESIDENTIAL ZONES 5 FLOORS + BASEMENT 20 UNITS / 69 BEDROOMS 21 CARS



MEDIUM SCALE (h=23.0 m) RESIDENTIAL ZONES 6 FLOORS + BASEMENT 24 UNITS / 83 BEDROOMS 21 CARS

CONTRIBUTORS

This guide was commissioned by the City of Edmonton, and was prepared by relevant stakeholders within the City of Edmonton, Dub Architects in association with PUBLIC Architecture, and LMDG Building Code Consultants.



public





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