Impossible Toronto: On the Courtyard Learning from European Blocks

Studio VAARO &
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The Neptis
Foundation

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In Toronto, a paradox persists: amidst a widely acknowledged housing crisis, construction has ground to a halt. As of mid-2025, home starts have plummeted, and predictably, families are departing the province for more affordable regions. We badly need to change our approach to building—but building, by its nature, isn't something that can change course quickly or easily. This needn't mean that all creativity is stifled. Architects can still draw and urbanists can still write. Imagination persists. Challenges notwithstanding, we retain, for better and for worse, the power to shape our future.

On the Courtyard has been created in this spirit. The culmination of a year-long architectural study collaboratively conducted by Studio VAARO and Gabriel Fain Architects, it marks the first of a series of research projects exploring building designs that could be suitable for, but are currently unbuildable in, Toronto. Funded by The Neptis Foundation, *On the Courtyard* examines European courtyard blocks and identifies opportunities for and challenges to their integration into Toronto's urban landscape.

What drives this creative and investigative endeavour?

Imagining constructive alternatives to the current reality remains a cultural challenge. *Impossible Toronto*, through its inaugural project, *On the Courtyard*, counters this creative hurdle by exploring a design vision. The goal is not to offer definitive solutions: no one typology can be a silver bullet that "fixes" the city. But we can take steps toward reimagining Toronto's future. *On the Courtyard* is one such step; further explorations will be needed as Toronto continues to learn about what built forms suit this city and the particularities of its future.

Should any of this vision strike a chord, this project includes a practical guide to regulatory barriers that make the European courtyard block impossible to build in Toronto today—a punch list of obstacles, if you will.

Every design choice sketched here is possible and exists somewhere. *Impossible Toronto* is, then, a pragmatic invitation to think bigger, an attempt to articulate what it might look like to have a city that functions well, supports its people, and aims for beauty. Imagining might just be the chaotic first step toward making the impossible possible and the possible real.

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ALEX BOZIKOVIC
ARCHITECTURE CRITIC FOR THE
GLOBE AND MAIL

You can walk the side streets of central Toronto and see a picturesque place: corbels, gables, stained-glass windows with birds in their roundels. The Victorian houses of the "old city" undoubtedly have flair. And yet, behind their façades, these houses were shaped by tougher forces. The Victorian rowhouse and its Toronto variant, the semi-detached, were inventions of industrial modernity. Built cheaply and quickly from pattern books, they housed a growing labour force that served the distilleries, railroads, and meat-packing plants of the metropolis.

That city, in 1890, was a parochial, colonial, industrial city of 180,000 people. Today, Toronto is a city-region of 7 million, likely to reach 10 million within a generation. It has already undergone three generations of profound changes to its built forms, expanding into suburbs and apartment towers that house more than a million households.

These days, almost no one seems to ask a basic question: What does the future of the city look like? What should it look like? *Impossible Toronto*, and the designs of Studio VAARO and Gabriel Fain Architects, provide an answer that is beautiful and even, surprisingly, plausible.

The buildings on the sites they have chosen to study date back to the end of the 19th century. These structures, mostly houses, were in some cases the first things to be built on their sites. Toronto's planning department wants them to last forever. The result is an increasingly rigid city. In large swathes of the city, new buildings are permitted only within a narrow range of possibility: four storeys maximum, set back from the street, wrapped in "green space" that serves little purpose. And even the four-storey buildings that do exist are typically anomalies. Today, it is difficult to consolidate adjacent properties and build larger, denser forms like those proposed in *On the Courtyard*.

The logic of a dynamic industrial city has been replaced by a kind of pastoralism that imagines the future as a gentle echo of the past. But to freeze these neighbourhoods now is to misunderstand their original purpose: to house a growing population in a pragmatic, space-efficient form. Do we really believe that the built form of the Victorian town will suffice for the 21st and 22nd centuries? Do we really believe that a scattering of narrow houses is the final iteration of the city?

It might be, under two scenarios, both of them dark. One is profound economic decline and disinvestment. The other is a continuation of current trends, in which wealthy people increasingly choose to live in the central city and slowly, steadily convert the scruffy housing stock into mansions. Either of these—apocalypse or radical economic segregation—would be disastrous. We must imagine another future. In that future, these buildings are allowed to change and the city is allowed to find a new form. Courtyard blocks would welcome a larger number of people, allowing them to share the amenities and conveniences of living here. They also promise a much higher quality of life for the inhabitants. These enclosed blocks, with buildings surrounding a central green space that is semi-private and semi-public, provide a foundation for a certain kind of urban social life that is currently absent in Toronto. Neighbours can chat and share a bottle of wine, children can play unsupervised but within sight of home, there is relative quiet, and cars are nowhere to be found. The public streets, meanwhile—those on the outside perimeter of the block—remain fully public, and many buildings retain their relationship with that clearly legibly public zone.

In some ways, this future is closer than it may seem. *On the Courtyard* borrows from a European city—Basel, Switzerland—with a similar bone structure to Toronto's: both cities are defined by blocks of compatible scale. However, the recent multi-family architecture here has differed greatly. In Toronto, stepbacks at upper levels generate inelegant and expensive forms. Requirements, such as those for front-, rear-, and side-yard setbacks, generate a discontinuous cityscape. Apartments in Basel, however, sit next to each other, creating a continuous street wall. Inside, they exemplify the European courtyard block's strengths: highly livable units with dual exposures to light and air. Typically four to six storeys tall, these buildings prioritize efficient layouts, passive ventilation, and radiant heating. They rely on minimal setbacks, single-stair access, and reduced core sizes to maximize usable space.

An example project, Lofthaus, by Buchner Bründler Architekten, demonstrates the spatial impact of these strategies. A small floorplate with one central stair means that a large one- or two-bedroom apartment fills an entire level. The result is a floorplan with the kitchen to one side, bedroom(s) to the other, and large windows on two walls. Light and air flow through the home. Very little space is wasted.

All this really needs to be seen to be understood. North Americans are accustomed to apartments that feel like hallways: long, narrow, and dark at one end. To occupy a typical Western European city flat is an utterly different experience. There is light everywhere. Rooms feel larger. You are not in a cell; you are in a home.

Why couldn't Toronto homes have these qualities? *On the Courtyard* explains the many cultural and regulatory obstacles that right now make this impossible. But the project's design work illustrates why the city—and people across North America—must push to make it possible.

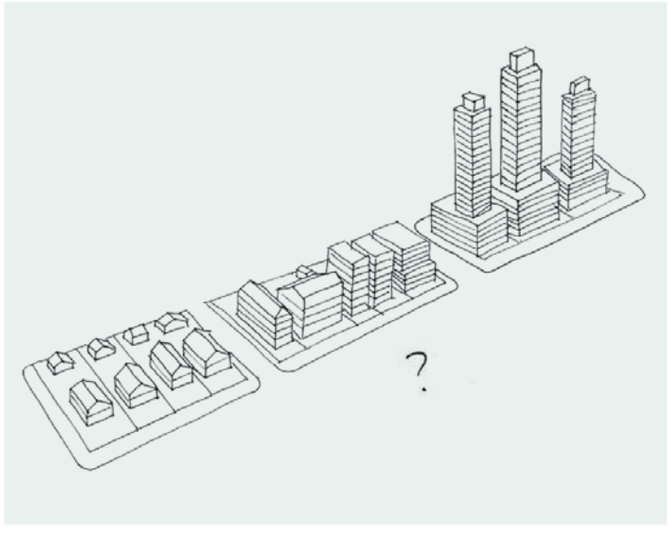
The payoffs would be, I think, enormous.

Toronto has a particular love for its leafy side streets. In literature and planning policy, these places are appreciated for their aesthetic qualities, for the presence of street trees that thrive in what was once a great forest, and most of all for their social quality. In the first generations of the industrial city, front porches and front lawns provided the only real public realm the city had. A lack of parks and a rigid and conservatively Protestant social code made sure of that. So the streetscape—the collage of private and public zones—formed the space of appearance, to borrow Arendt's term, in which the social life of the city unfolded.

It is time to construct a new space of appearance. It is here the design proposal is most powerful. It gives the city courtyards without taking anything away from the laneway; in fact, the back lanes become more densely occupied. Crucially, it remakes the street. In a city where buildings often appear to shrink away from the sidewalk, flanked by moats of setbacks and hedges, the courtyard block steps forward with quiet confidence. It gives a consistent rhythm to the street: façades that touch, doors that meet the eye, and windows that register the life within. These aren't architectural fireworks but acts of urban respect. The buildings reclaim the sidewalk as a stage for public life and for people. Architecture, in this way, creates a city that is more of a city and more humane—a place to walk, to look, and also to belong.



BIGyard - Zanderroth, Berlin, Germany



The Missing Middle

By now, residents of Toronto with even a passing interest in urbanism or architecture are bound to have heard or read about the “missing middle”: buildings of four to six storeys that can provide homes at a higher density than houses and at a friendlier scale than towers. This mid-rise construction could help alleviate the housing crisis in a way that is appealing to most of the city’s stakeholders; unfortunately, our political climate—in which city-building goals, constituent groups, and business interests are often at odds—has made it incredibly difficult to build.

Among urbanists and housing advocates, the discourse thus far has focused on chipping away at the regulatory hurdles that make missing-middle construction difficult here in Toronto, and this effort is indeed critical. Academic papers that examine specific aspects of planning and policy are fundamental to winning over designers, developers, and policy-makers to the cause and can help bring about incremental change. But fewer efforts seem to be made to engage with the general public—and even fewer to engage with the public’s imagination: to not just make the case on pragmatic grounds but show what these mid-rises could look like and how they might feel to live in. The assumption seems to be that the future missing-middle mid-rises will be much like those that exist already, there will just (should the powers-that-be facilitate it) be more of them.

It’s not just mid-rise buildings that are missing but a vision for their design.

Some of Toronto’s existing and planned mid-rises are good buildings with good units. But many are not—for reasons often out of the hands of designers and developers. We feel compelled to imagine a better future and to help other Torontonians imagine it too.

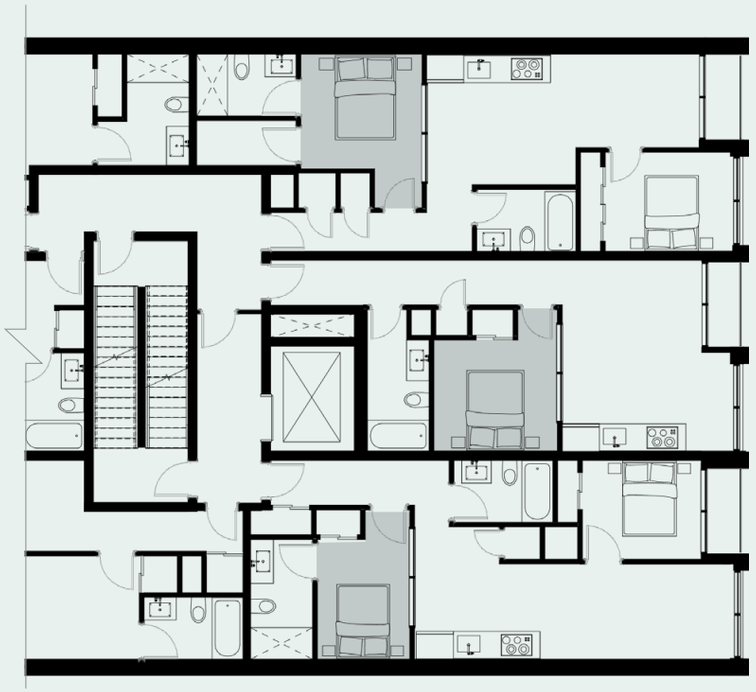
In this project, we propose to introduce a new built form to Toronto. It is one that has proven successful for centuries in Europe. One that is terrifically livable and engaging for both residents and passersby. One that Canadian tourists marvel over, wondering, *Why can’t we have this back home?* It’s a typology known as the courtyard block—and, for now, it’s impossible to build in Toronto for a variety of reasons, many of which are laid out in this document.

On the Courtyard is, first and foremost, a design proposal and a starting point for further conversation. In it, we try to explain as many different facets of the planning policies that currently constrain mid-rise development as possible, offering a small window into each—and then show what it could look like if they were lifted. Our goal is to work in an imaginative rather than incremental register—to highlight the broad scale of changes that are needed if this type of construction is to become possible in Toronto. We do this in the hope that, one day in the near future, the crusade to champion missing-middle construction will prevail. When it does, the courtyard block will be waiting.

Mid-rise buildings have been a defining feature of Toronto for the past century. Over time, their design and construction have evolved significantly. Early examples, often four- to eight-storey buildings originally built for manufacturing and later converted to residential use, were typically made of wood and clad with brick, with minimal stepbacks (where upper stories are set back from lower ones) or setbacks (where the main walls are set back from lot lines). These buildings are widely appreciated for their appeal at both the pedestrian and urban scales. However, in recent decades, stringent zoning and code requirements have made it increasingly challenging and costly to build them. These rules include:

- Large setbacks
- Height limitations
- Angular planes and the resulting stepbacks
- Two means of egress, which often results in a large “scissor stair” (two intertwined but physically separate stairs) or two entirely separate staircases
- An elevator large enough to fit a horizontal stretcher
- Requirements for large garbage rooms and amenities

These regulations are designed with public welfare in mind—for instance, having multiple ways to evacuate a building during a fire. However, the European jurisdictions we studied have determined that many, if not all, such requirements are not necessarily appropriate for mid-rises; the same could hypothetically be the case for Toronto. This is important because the restrictions come with significant disadvantages in terms of how we construct these buildings and the quality of life in them.



Example of a Contemporary Six-Storey Toronto Mid-rise
■ Gabriel Fain Architects

■ Inboard bedroom — no direct access to daylight



2 Sultan Street, Toronto
An early example of a purpose-built six-storey multi-unit residential building.

CONSTRUCTION METHODS

Mass-timber and wood-frame construction, which are considered more sustainable than concrete, are becoming more popular. Current regulations make it difficult to use these approaches, however. For example, under the existing zoning bylaw, buildings in the majority of the city often require stepbacks based on certain lot configurations and height restrictions. These requirements end up adding significant complexity to a building design and require additional structural support, materials, roofing, and drainage (which are not conducive to building in wood). Mass-timber and wood-frame buildings also require deeper floor assemblies, which can make it difficult to comply with zoning height limits that were devised with concrete buildings in mind.

QUALITY OF LIFE

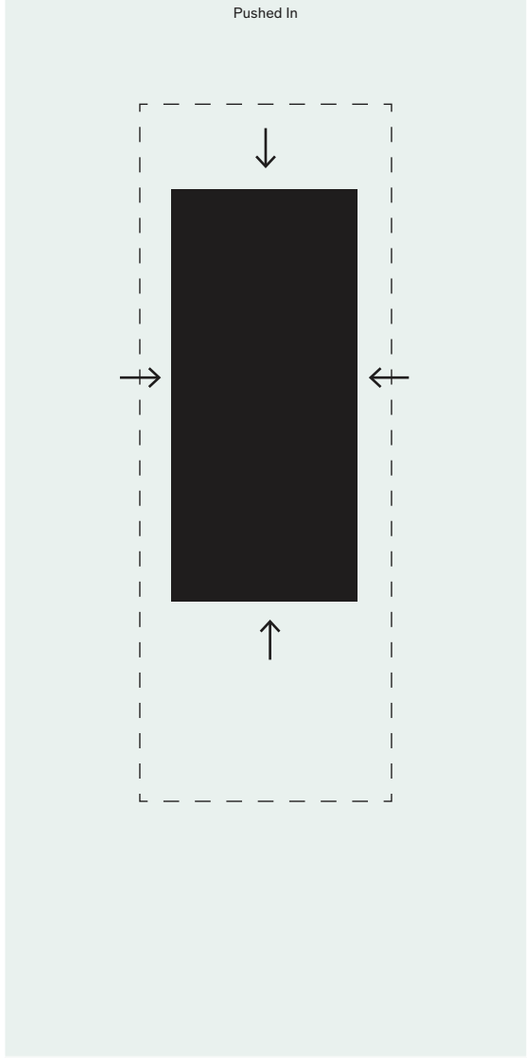
Depending on a lot's configuration and context, current zoning requirements can result in awkward building massing. Constrained by the resulting form, architects may be forced to design unit layouts that prioritize policy compliance over core architectural principles, namely high-quality spaces and access to light and air. As a result, units are frequently long and narrow, often with inset bedrooms that have limited access to daylight and natural ventilation. Kitchens can resemble corridors, and the small dens that are added at the back of units to maximize efficiency also lack daylight. The garbage room that is required in buildings with 9+ units and the amenity space required in buildings with 20+ units (which includes two square metres of indoor amenities per unit) should, in principle, improve quality of life for residents; in practice, they pose challenges for smaller mid-rise developments, where every square metre is critical to the project's financial viability. These mandated allocations of space could otherwise be used to accommodate additional or larger units and, in many lively neighbourhoods, are simply not needed.

Combined with cumbersome approval processes, city policies have made mid-rise buildings challenging to develop in terms of construction feasibility, scheduling, and financing.

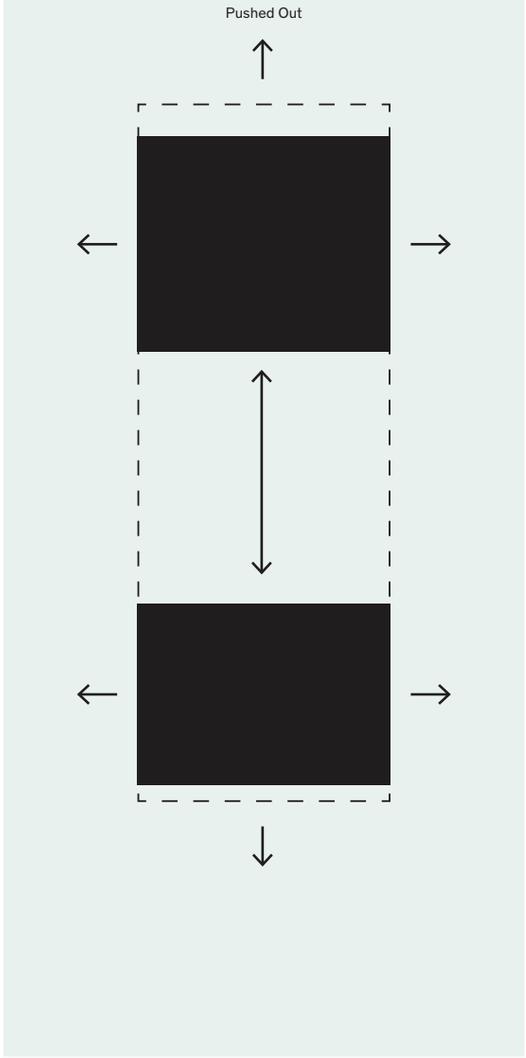
The current housing crisis has spurred efforts to revise planning policies and urban design guidelines, resulting in new policies such as Expanding Housing Options in Neighbourhoods (EHON), a set of planning initiatives recently developed by the City of Toronto. EHON is an umbrella term that applies to a package of several different municipally led studies that aim to facilitate the construction of more low- to mid-rise housing in residential neighbourhoods. Of particular interest to us is the Major Streets Study, which has recently introduced new land-use permissions (under appeal as of writing) that allow for six-storey "missing middle" buildings in areas where intensification had previously been prohibited. The new zoning bylaws revise standards for the built form of these buildings, relaxing regulations on parameters such as height, stepbacks, setbacks, and landscaping.

These revisions are a step in the right direction—which is why it is unfortunate that EHON's Major Streets Study only covers a limited number of sites; its benefits are unavailable to much of the city. Even if the area it covers were to be expanded, however, its changes do not go far enough. While stepbacks are eliminated for six-storey buildings, side, front, and rear setbacks are still in place and still considerable enough to hinder the development of new housing typologies. Further, a maximum height of 19 metres may constrain wood construction and the ability to deliver six-storey buildings with reasonable ceiling heights. EHON also maintains the requirements for garbage rooms in buildings with 9+ units, and amenity spaces for buildings with 30+ units. Understanding these key obstacles to building mid-rise was an important starting point for our research.

MAXIMIZING LAND USE & CREATING THE COURTYARD



EHON Block



Courtyard Block

Courtyard blocks are found throughout Europe. You would be hard pressed to find two identical ones: it is an inherently flexible typology, adaptable to each block's specific dimensions, local lifestyle and preferences, and zoning bylaws. Courtyard blocks can be designed to accommodate different unit types (studio, one-, two-, three-bedrooms, etc.), allow for residential or commercial units on the ground floor, and may include a variety of amenities (bike parking, trash room, laundry room, and so forth). They can be built up in phases by individual property owners or in one go by a single developer. But all courtyard blocks have a few basic elements in common:

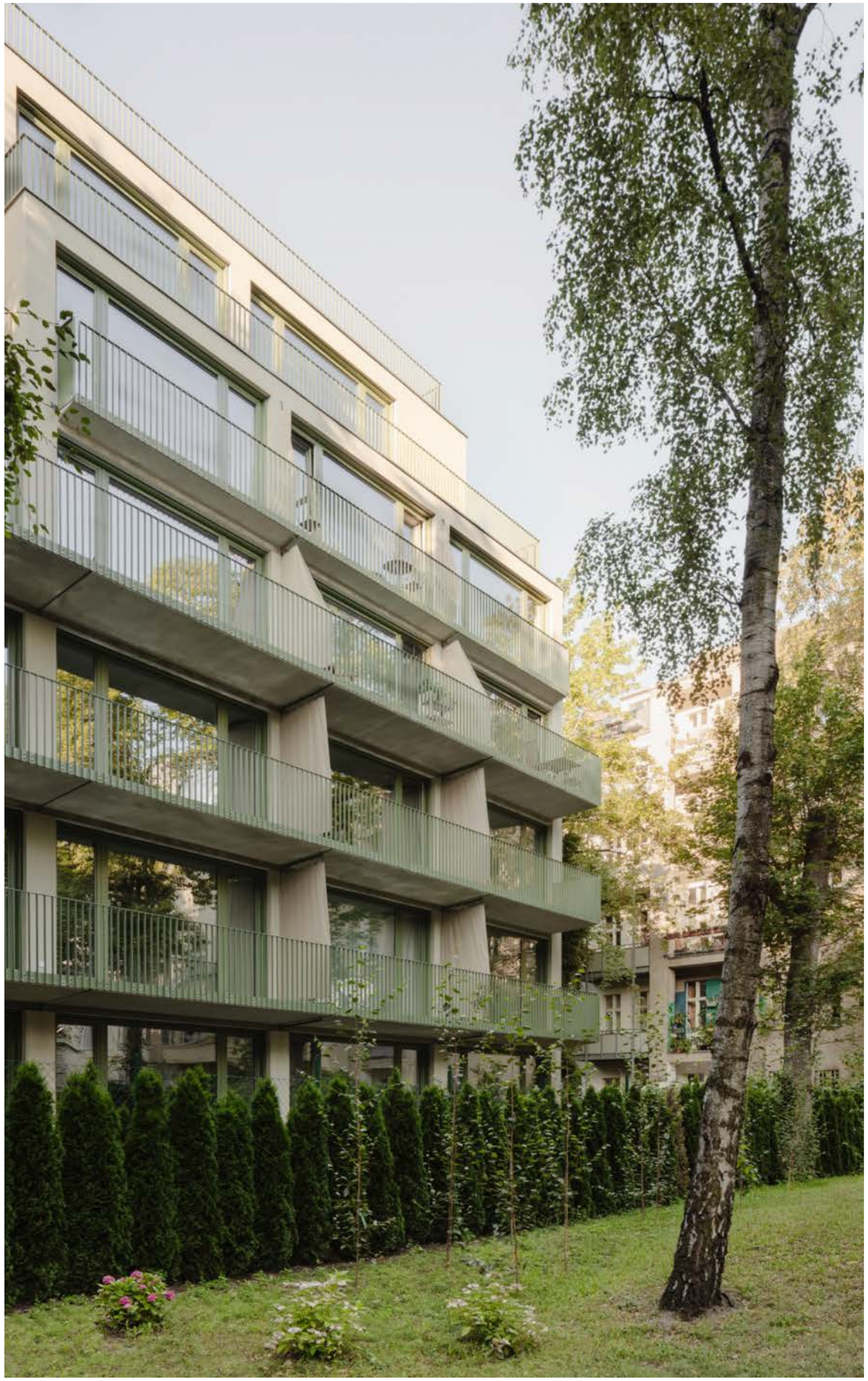
- A height of four to six storeys (most commonly five to six)
- A fairly continuous street wall with little to no front setback from the sidewalk
- Shallow floorplates that allow for apartments to have windows overlooking both street and courtyard
- An open space (whether planted, hard paved, or filled with low-lying construction) in the centre of the block.

Besides its inherent flexibility, the courtyard block offers a happy medium of density relative to height. Per our rough calculations (see page 70), the courtyard block should offer four or five times the density of a block consisting of single-family, duplex, and triplex dwellings—roughly equivalent to the density of a single 37-storey tower.

Then there's what matters most to the people who spend their days and nights in and around courtyard blocks: they are typically excellent to live in. Units have well-proportioned layouts and commonly have balconies that, because they are no higher than the sixth floor, are not windswept like those in taller buildings. Buildings in courtyard blocks have relatively few (typically 10 to 12) units; this gives them more of a community feel than towers or even larger mid-rises. Last but not least, the courtyard is a benefit in and of itself, flexibly meeting community needs through various combinations of seating, vegetation, play space, and amenities.



Basel, Switzerland



Fasanen 36 - CAMA A, Berlin, Germany



5-6 Storeys — Rue Quincampoix, Paris — 5-6 Storeys



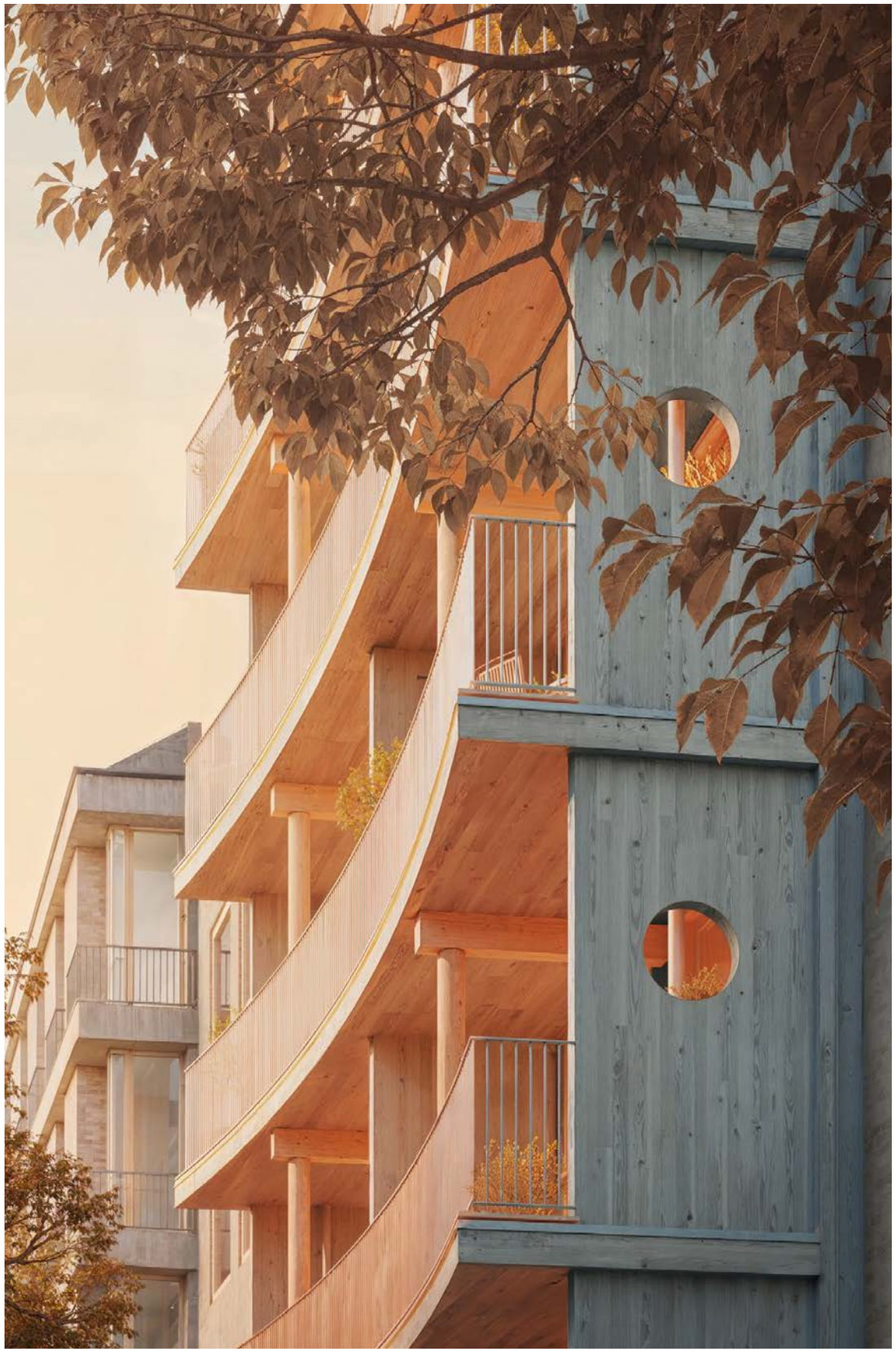
4-5 Storeys — Bartenheimerstrasse, Basel — 4-5 Storeys

We looked to streets in Basel, Paris, Berlin, Vienna, and Copenhagen for references to density, scale of buildings to streets and sidewalks, vegetation, street life, and other such urban qualities. There are countless examples of narrow, dense streets throughout Europe. Above, in Paris, we see a particularly extreme case: the combined width of the street and sidewalk is just 9.2 metres at its widest point. Devoid of vegetation, this street exemplifies the quintessential urban metropolitan condition. Yet, despite its tight proportions, it remains highly functional and vibrant—lined with building entrances, shops, cafes, bakeries, and even garage access, all directly engaging the street and contributing to a surprisingly livable environment.

In contrast, the image above, from Basel, presents a more balanced—though still narrow—urban condition. Spanning 15 metres from building face to building face, it feels more open and even somewhat suburban by comparison. The extra six metres are efficiently put to use, accommodating vegetation, bike and car parking, and mailboxes.

As we considered the scale of our own design proposal—particularly along the laneway—we looked to these examples to inspire a Toronto-appropriate interpretation of this narrow, dense, and highly engaged urban fabric.

01 The Design Proposal



We are not the first to visualize a future for Toronto populated with mid-rise buildings. But many existing proposals illustrate how a single building would look and work, while our interest is in illustrating a complete block—in showing how a large number of buildings can create a desirable and urbanized streetscape over time. In this vision, courtyard-block buildings—that is, the individual buildings that make up a larger courtyard block—begin to organically replace existing two-storey and three-storey buildings along major Toronto streets before spreading into certain residential neighbourhoods, finally creating, over the next centuries, the urban fabric of low mid-rise buildings that is so common in European cities.

Many critical aspects of this vision violate current provincial building codes and municipal zoning bylaws: each is, for a variety of reasons, "impossible" today. Some features of the proposed designs that are currently prohibited—such as single-egress stairs—are already under consideration by Canadian authorities, with approval anticipated in the near future. Others, however, would require a more in-depth review and, in some cases, a fundamental rethinking of established practices in Toronto, in Ontario, or throughout Canada more generally. But these same "impossible" features are legal in all or several of the European cities we surveyed. If you can build this way in Basel, or Paris, or Vienna, why not here?

In this conceptual design exercise, we propose a master plan for a typical downtown Toronto block—one bordered by a "major street" on one side and a smaller-scale, more residential street on the other, bisected by a central laneway—as a testing ground for our courtyard-block design. Within that block, which measures 82 metres wide (from property line to property line) we combined two side-by-side, standard, mid-block, medium-sized lots (7 metres x 39 metres each) into a single 14-metre-wide by 39-metre-deep lot on which to design a slice of a courtyard block: two buildings—one facing the street and one facing the laneway—with a courtyard in between.

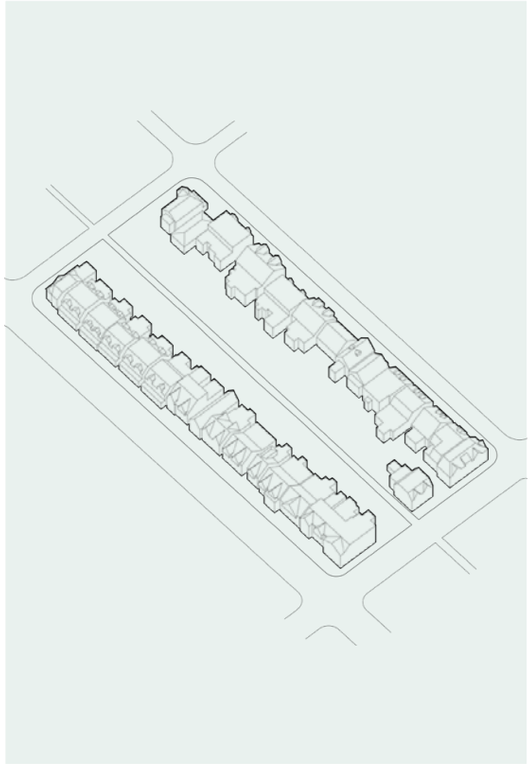
Our research pointed to the courtyard blocks in Basel, Switzerland, as having a "Goldilocks" density (not too much, not too little) and proportions most suited to Toronto; our design proposal therefore emulates the Basel ratio of building height to width of the right-of-way and width of the courtyard.

The built form we envision is a courtyard block that takes the following shape:

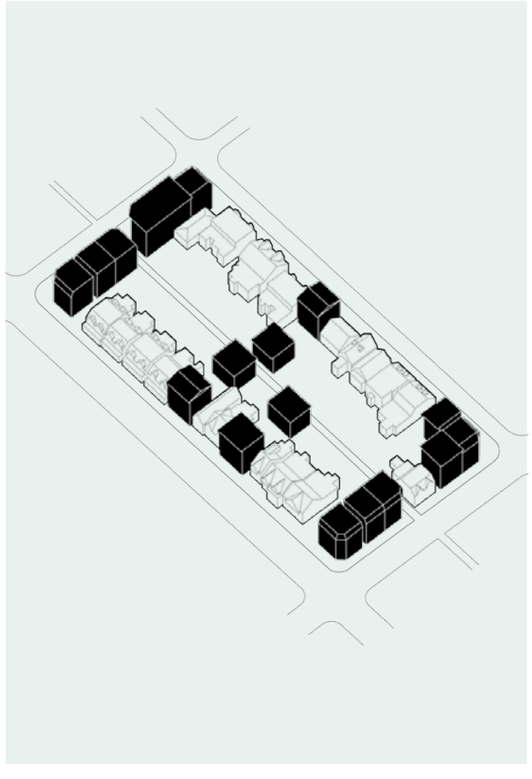
- Within the block, two courtyards would be created, each running the length of the block, one on each side of the laneway. These courtyards, excluding balconies, would range from 10 metres to 14 metres wide, depending on the exact depths of the surrounding buildings.
- The buildings fronting the streets would be six storeys, approximately 19 to 22 metres high, and 10 to 14 metres deep.
- Laneway buildings would be four storeys, approximately 13 to 15 metres high, and 10 to 12 metres deep.
- To match the Basel ratio of building heights to right-of-way and courtyard width, we've proposed a two-metre front-yard setback (it is commonly zero metres or three metres wide in Basel) and a one-metre rear-yard setback, in this particular case to widen the laneway. As in Basel, we assumed zero side-yard setbacks to achieve a continuous street wall.

Within that overall block, the two buildings we have envisioned in our conceptual design exercise have the following features:

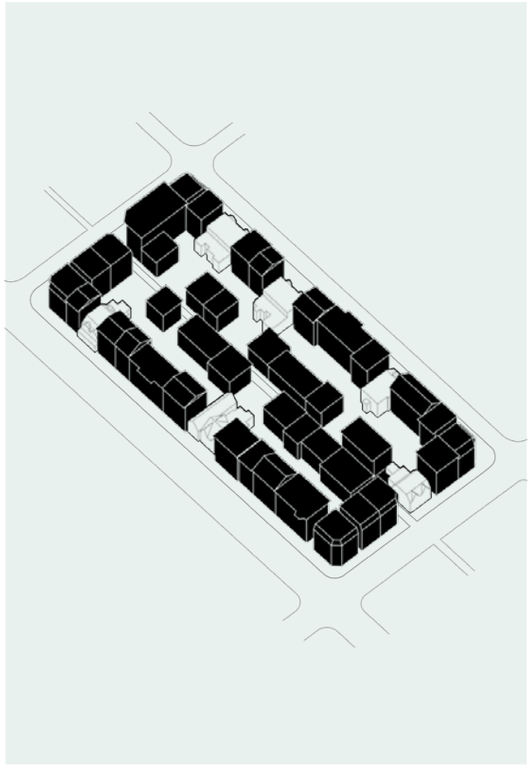
- The street-side building is 14 metres wide (extending from one side lot line to the other), 12.5 metres deep, and has balconies that are 2 metres deep. The laneway-side building would also be 14 metres wide but shallower, at 10 metres deep, with 1.5 metre-deep balconies. The courtyard between them would be approximately 13.5 metres wide.
- Both buildings have single stairs. The stair of the street-side building is indoors but open to the corridors. The stair of the laneway-side building is an outdoor spiral. Each building has an elevator sized to European standards (1.1 metres x 1.4 metres).
- A modest garbage room (smaller than currently required by the Toronto bylaw) is located in the basement, to eventually be eliminated altogether (see section on garbage collection, page 82). Bicycle parking would be available on the street (one out of every few parking spots could be designed as covered bicycle parking), elsewhere on the property (such as in the front-yard setback or in the courtyard), or in individual residents' basement storage units.
- The building façades are clad in wood. The primary structure consists of mass timber (cross-laminated timber, or CLT, and glulam beams), with party walls along property boundaries made of concrete block. The CLT floors are covered in a concrete topping.
- Neither building has sprinklers, reducing building complexity and visual clutter within units.
- Residents would have communal access to both building lobbies in order to provide a semi-private through connection from the street to the laneway.
- While several reference projects in our research incorporate underground car parking as part of their design, our proposal does not. The topic of parking in such a scheme merits further research.



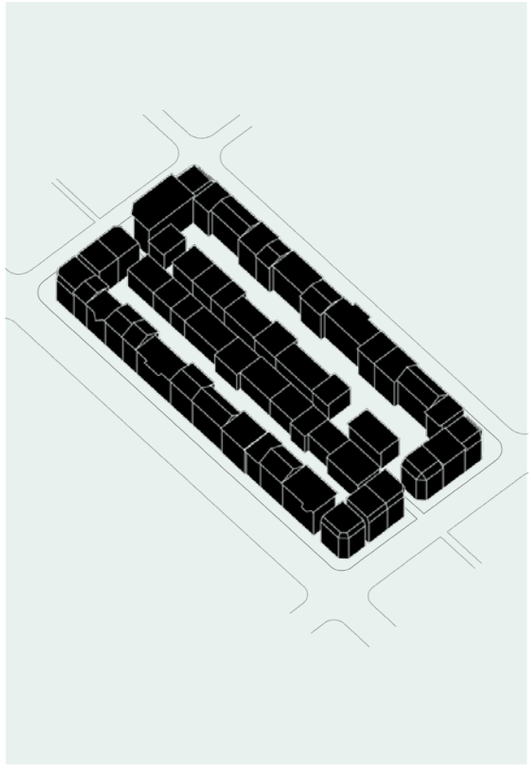
Present Day Existing Conditions



5 Years Early Interventions



20 Years The Emerging Courtyard Block



50 Years Completed Courtyard



64 Colmarerstrasse, Basel 3 Storeys next to 6 Storeys



45 Colmarerstrasse, Basel 6 Storeys next to 6 Storeys

On the Courtyard could transform the fabric of our city. One of the fundamental strengths of this project is in how it thoughtfully delivers density alongside a radically improved experience of community life.

If this proposal were merely an architectural design for a single plot of housing, it would likely anticipate a definitive landscape design—and, consequently, have little effect. But this is an idea aiming for larger urban impact, moving from the scale of the individual plot to the block—and, consequently, the neighbourhood and the city. The vision is both specific and open ended, especially in its expression of landscape. Ultimately, it creates specific possibilities for new forms of urban nature and community.

We can begin to imagine how this robust architectural typology could be proliferated and produce a beautiful array of eclectic, biodiverse forms of urban nature. The biological life of this new block would be fascinating—slowly evolving from a patchwork of city gardens that ever so slowly cohere as a collective "courtyard." Opportunities would spring up at every moment along this trajectory, the ever-evolving landscape of the courtyard impossible to script. Along with its physical landscape, we can contemplate an expansive web of social connections within a typical neighbourhood block, today composed of individual plots with limited physical grounds for engagement beyond the street and shared laneway, flourishing in new ways within the shared courtyards and laneway spine. It also starts to shift the vocation of the landscape toward its role as a resilient urban ecology and collective space for a community of multiple households.

As a framework for how the courtyards themselves could be designed, a landscape strategy with distinct "zones" would help articulate the relationship between individual and collective space within the courtyard block. An approximately four-metre-wide "domestic" threshold adjacent to the façades of both the street-side and laneway buildings would mediate between public and private, indoors and out. At the centre, an approximately six-metre-wide zone would serve as a communal gathering space as well as supporting water management and providing ecological benefits. Between these two areas, a nuanced transition zone would bridge the more protected, domestic spaces of retreat and the central area. Lines can be blurred, gradients can be extended or reduced, and rules will be broken. After all, within this frame it will be the soil, plants, water, and use of salvaged materials that materialize the courtyard, support life, and bind these spaces together.

Between the order of architecture and the dynamics of nature: this is where the contrast of the architectural frame supports the looseness and diversity of the inner courtyard and finds balance. The subtlety lies in the way an emerging clarity and interconnectedness of the whole emerges. In Toronto, the legacy of Jane Jacobs reminds us of how the "unrehearsed choreography" of urban dwellers doing their thing here, within this courtyard framework, will inevitably create the real sense of place and magic for the neighbourhood.

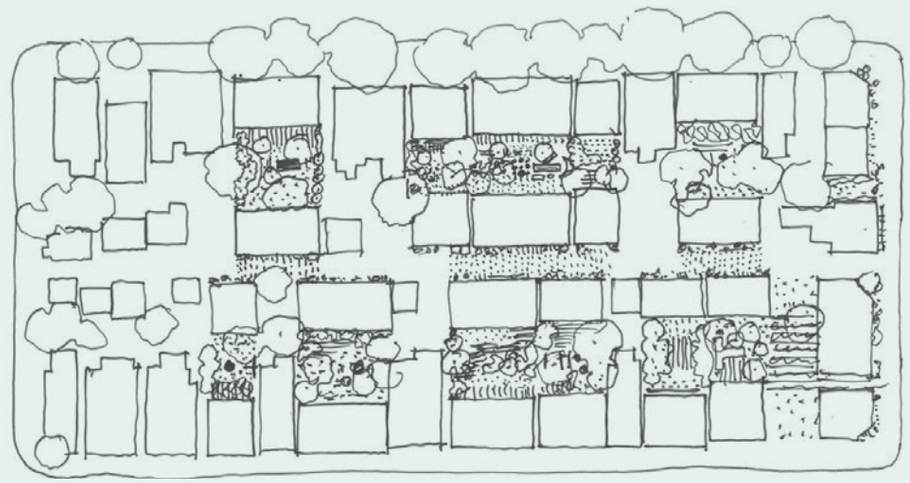
Since the project interacts with and extends across diverse existing frontages (streetscape, laneway, adjacent backyards), its landscape impact is wide ranging.

A number of aspects stand out in terms of how the vision would shape a new landscape and, therefore, create new possibilities for living in the city:

- It articulates the relationship between individual and collective space within a block, demonstrating how an increase in density can produce an increase in quality.
- This housing typology and its associated landscape regeneration is phased incrementally, allowing a contiguous community landscape to emerge over time.
- The proposal creates adaptive landscapes that expand biodiversity and habitat to enhance ecological value and support native flora and fauna, expand the tree canopy cover to improve microclimate, mitigate the urban heat island effect, and enhance quality of life. This includes the planting of tree canopy species of the Carolinian forest as a model for climate adaptation.
- This plan takes a low-carbon approach to building landscape through the recycling and recomposition of salvaged building materials (brick), which can be integrated into the landscape and public realm (including paving, garden mulches, low walls, and slope-retaining structures) to retain our connection to the past and Toronto's Victorian-era housing.
- Preserving soil volume in the courtyard and, over time, applying a holistic, block-wide approach to stormwater management can support integrated green infrastructure systems for water conveyance, retention/detention, and absorption, all integrated within the landscape design.
- The flexibility of courtyard blocks allows for the hybridization of their infrastructure for both climate resilience and community culture.
- Food, as a driver of community, can be another amenity of this typology, with urban agriculture integrated as part of the social realm.
- This vision supports multi-generational living with infrastructure that is suitable for families and that includes integrated elements for play.
- There are opportunities to develop models of stewardship and community governance to support new collective amenities and ongoing sustainability features.



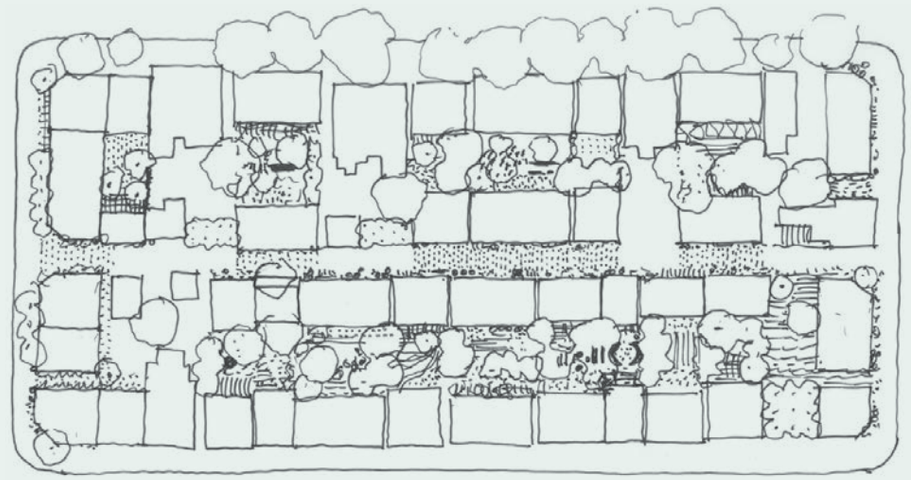
5 Years



35 Years



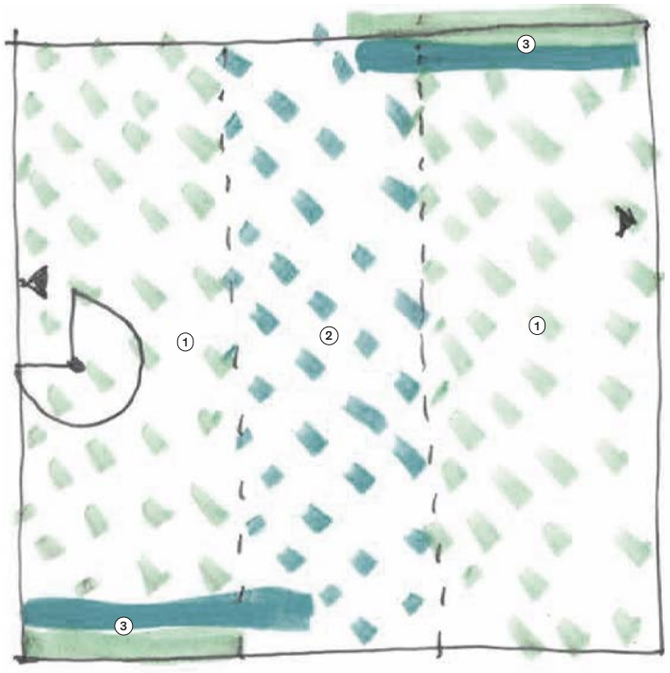
20 Years



50 Years

The question of courtyard ownership is central to understanding the long-term development of a block and its landscape. In our research on European precedents, we found that courtyards are often shared spaces, providing access to common amenities. We believe that multiple ownership strategies can generate diverse lot configurations, which in turn should foster a more dynamic sense of neighbourhood and collective identity.

Our landscape design suggests a softening of property boundaries within the courtyard. Some properties might have clearly defined edges, with fences on both sides, while others may feature landscape elements that extend across the courtyard, blurring the lines between individual lots. In some cases, lots could be severed along the courtyard, supporting diverse ownership models within a single block.



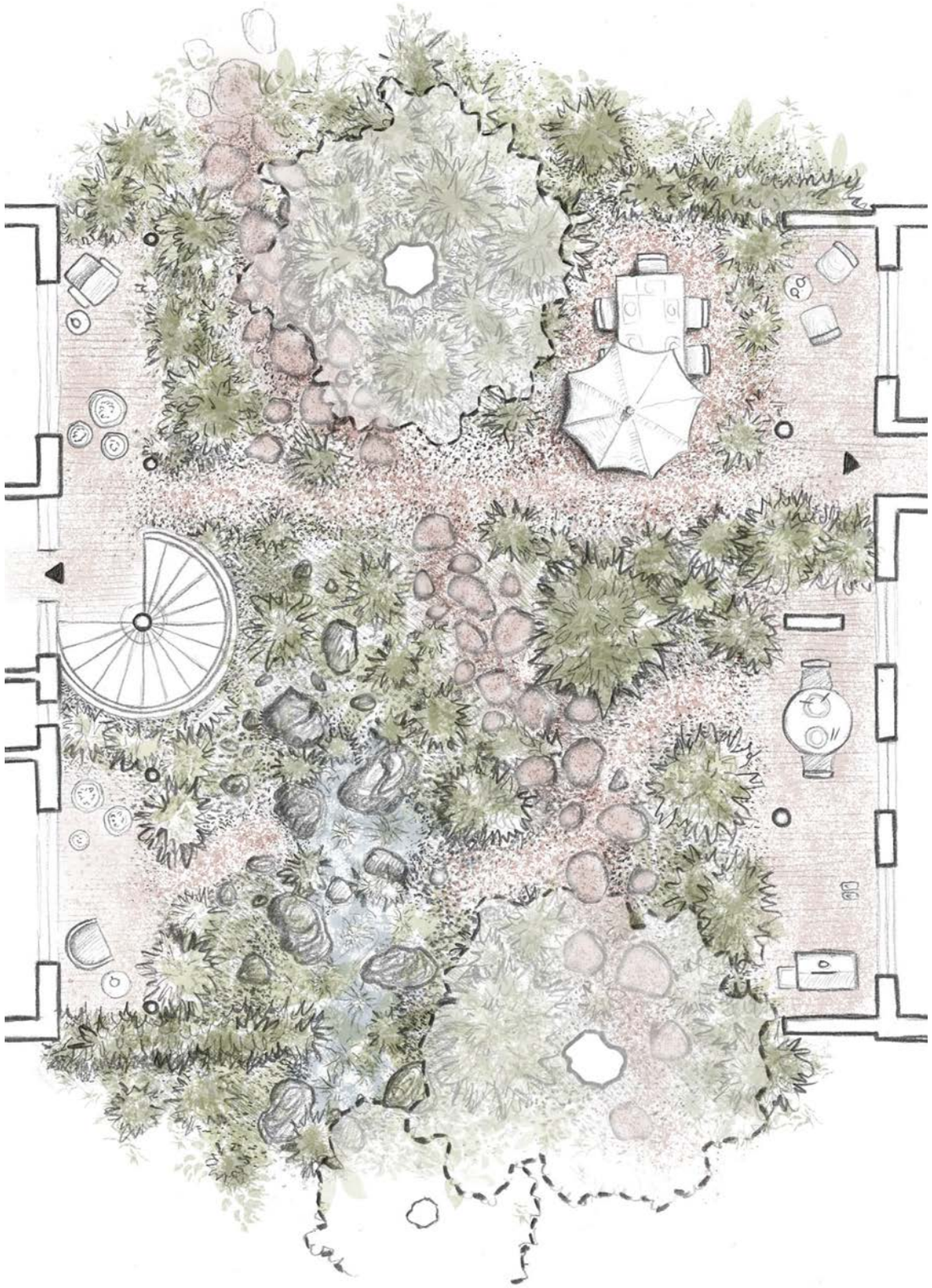
Landscape Concept

Legend

1 Domestic threshold
2 Communal gathering space & water management
3 Partial planted dividers

For each typical micro-court, the landscape strategy divides the ground terrain roughly into thirds —a starting point for articulating the relationship between individual and collective spaces within the courtyard block.

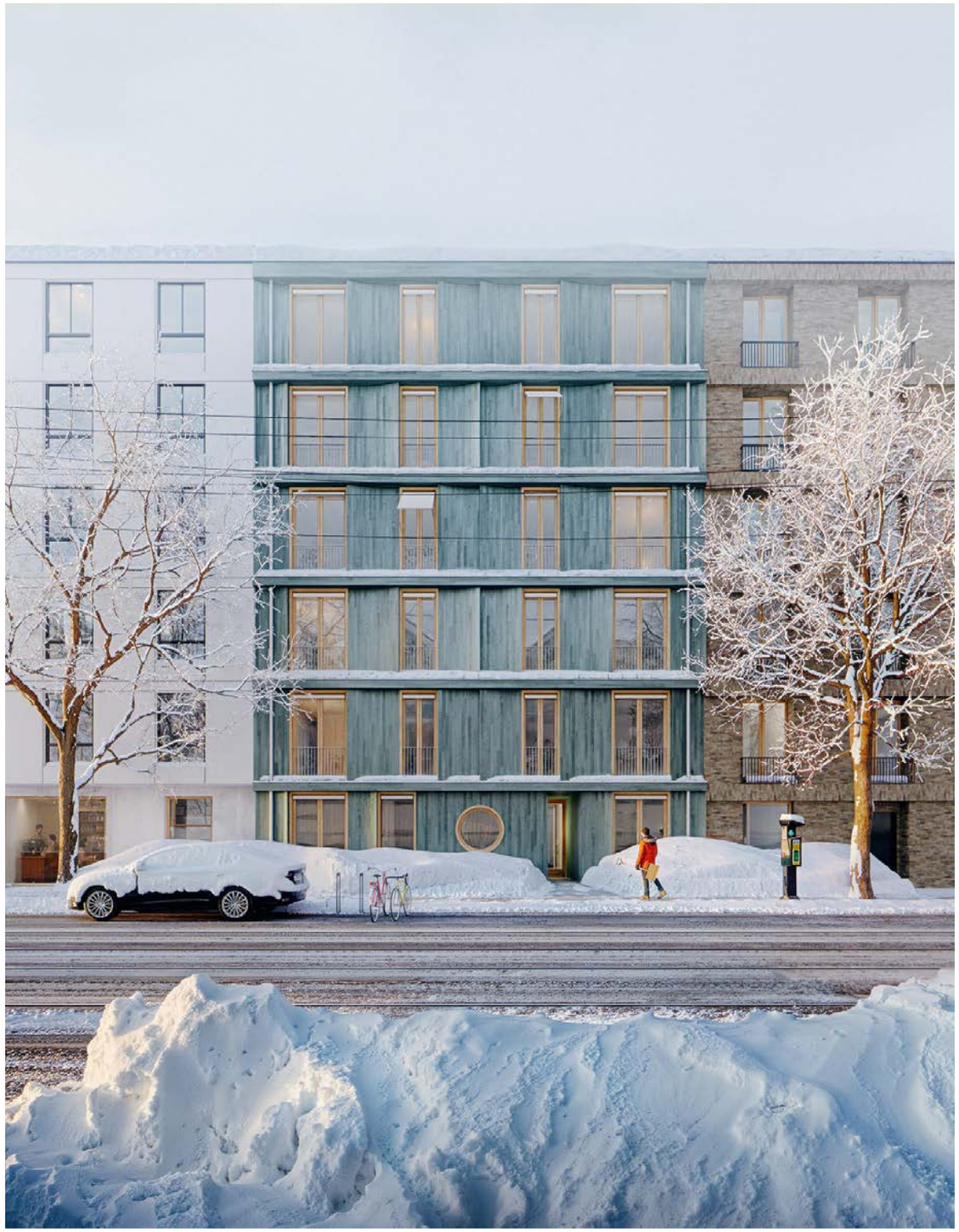
- Marc Ryan / Principal and Co-Founder - PUBLIC WORK



A Possible Interpretation of the Landscape Concept



Each city block would see the creation of one to two courtyards—new semi-public third spaces, each with its own character. Whether or not building management or condo boards choose a model in which individual yards open directly to the rest of the courtyard, the courtyards provide visual relief even in the most urban environments. Where soft landscaping and permeable hard paving are used, the courtyards can also double as sponges for rainwater retention and mitigate the heat-island effect.



Many communal infrastructural needs (such as trash collection and bicycle parking) are centralized and pushed into the public realm, rather than decentralized and duplicated within each individual building. Durable, well-designed communal infrastructure—like the robust, stainless steel above-ground waste receptacles with large primary bins underground that are common in Europe—could mean that the individual plastic garbage bins we're used to seeing in front of every household could become an eyesore of the past.



By bringing façades closer to the sidewalk and creating potential commercial spaces at street level, courtyard blocks create a more engaging pedestrian experience along primary streets.

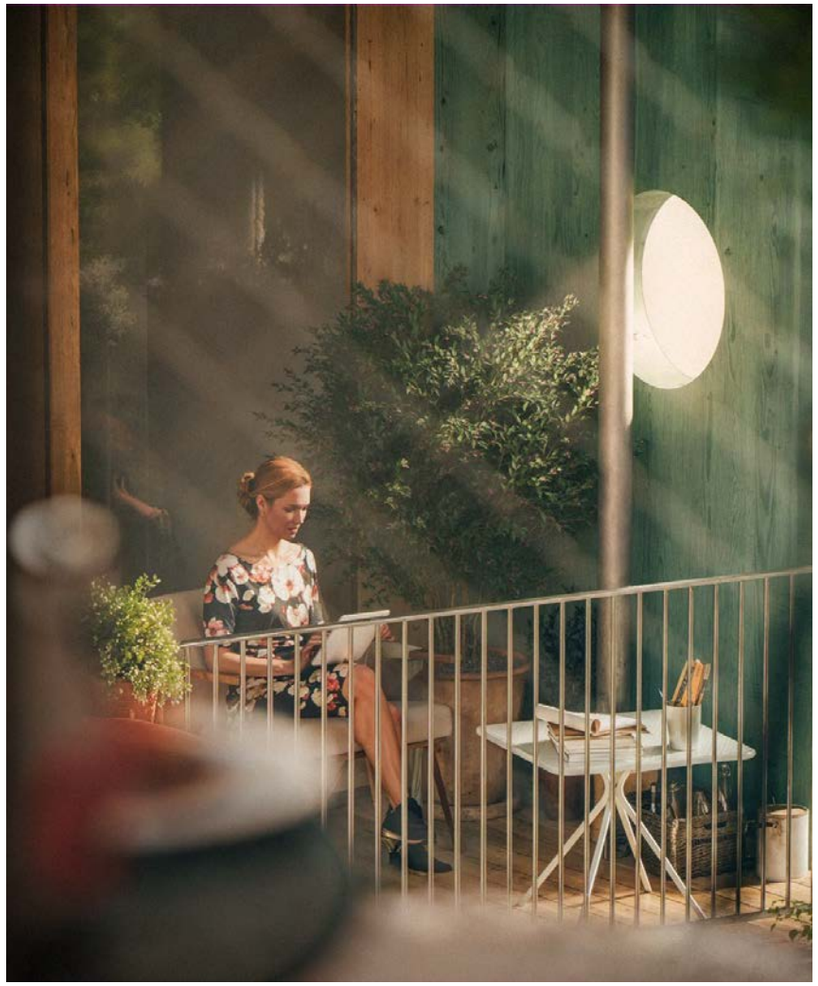
The buildings themselves might have few, if any, amenities. The courtyard and—especially in the vibrant downtown core—the city are the amenities. The community also becomes an amenity: you are more likely to meet neighbours when you share the same stairwell and outdoor space.

In our Toronto courtyard design, we seek to blur the boundary between front and back, inner and outer courtyard buildings. Are the lower laneway residences separating two courtyards from each other or instead sitting within one much larger courtyard? Depending on the density and porosity of construction along the laneway, either reading of the courtyard is possible.

Balconies extend the living spaces outdoors, create an immersive connection to the courtyard, and provide shading to units (especially critical on the south, west, and east elevations).



Laneways would become more vibrant. With a greater number of residents living on the laneways and reduced car traffic, they would become safer and more animated. The lower scale of housing along the relatively narrow laneways creates a more intimate experience than along primary streets, maintaining the variety of street types and characters that shapes Toronto today.



Utility areas that would typically take up much of the ground floor (such as garbage and bike storage rooms) have been relocated underground. This opens up a variety of possibilities for ground-floor layouts—allowing, for example, a passage directly through to the courtyard from the street.

The single open stair, directly visible from both the building entry and from each unit's front door, encourages those residents who can to use the stair as much as possible and increases the likelihood that neighbours will have the opportunity to see and get to know each other, fostering a greater sense of community.



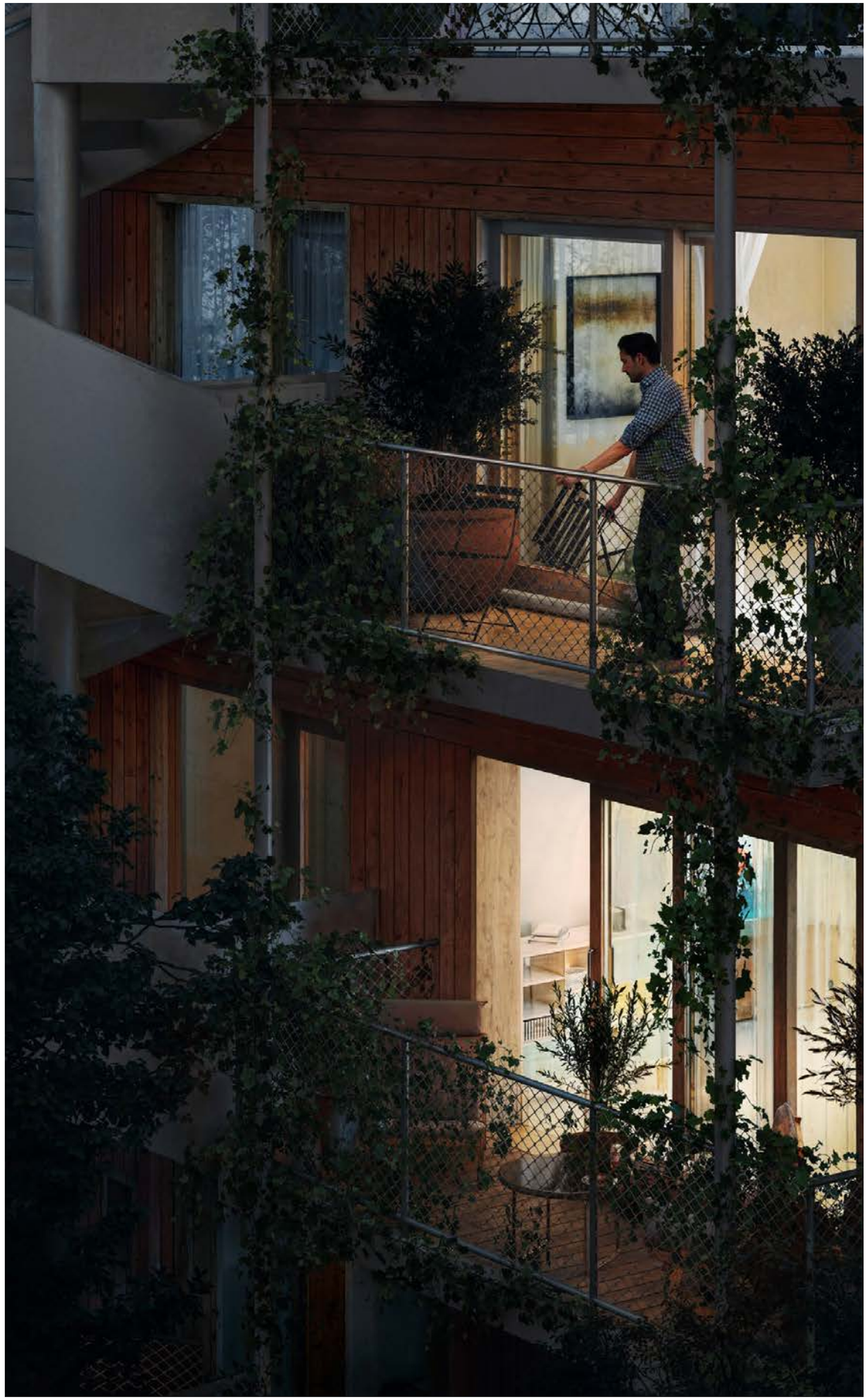


With deep balconies and operable exterior blinds to provide shade, through-units that allow for direct cross-ventilation, and concrete floors that can absorb and radiate solar heat in the winter, the building is designed to provide a measure of passive heating, cooling, and ventilation. Unlike in the European precedents we surveyed, mechanical cooling will be provided as well (we will forgo the conventional North American forced-air system, however—for details see page 88 and 89).

The courtyard-block units are typically "through-units," with views to both the street and the courtyard. This ensures that all the most important rooms have natural daylight and increases the potential for cross-ventilation.



The courtyard-block typology accommodates a range of apartment types, from studios to three- or four-bedrooms, for flexibility over a life cycle. There are many reasons someone might wish for more or fewer rooms: moving in with a new partner or roommate, having children, starting or stopping work from home, moving in aging parents, or becoming an empty nester. A resident could move apartments several times over their lifetime as their circumstances change and never leave their street.







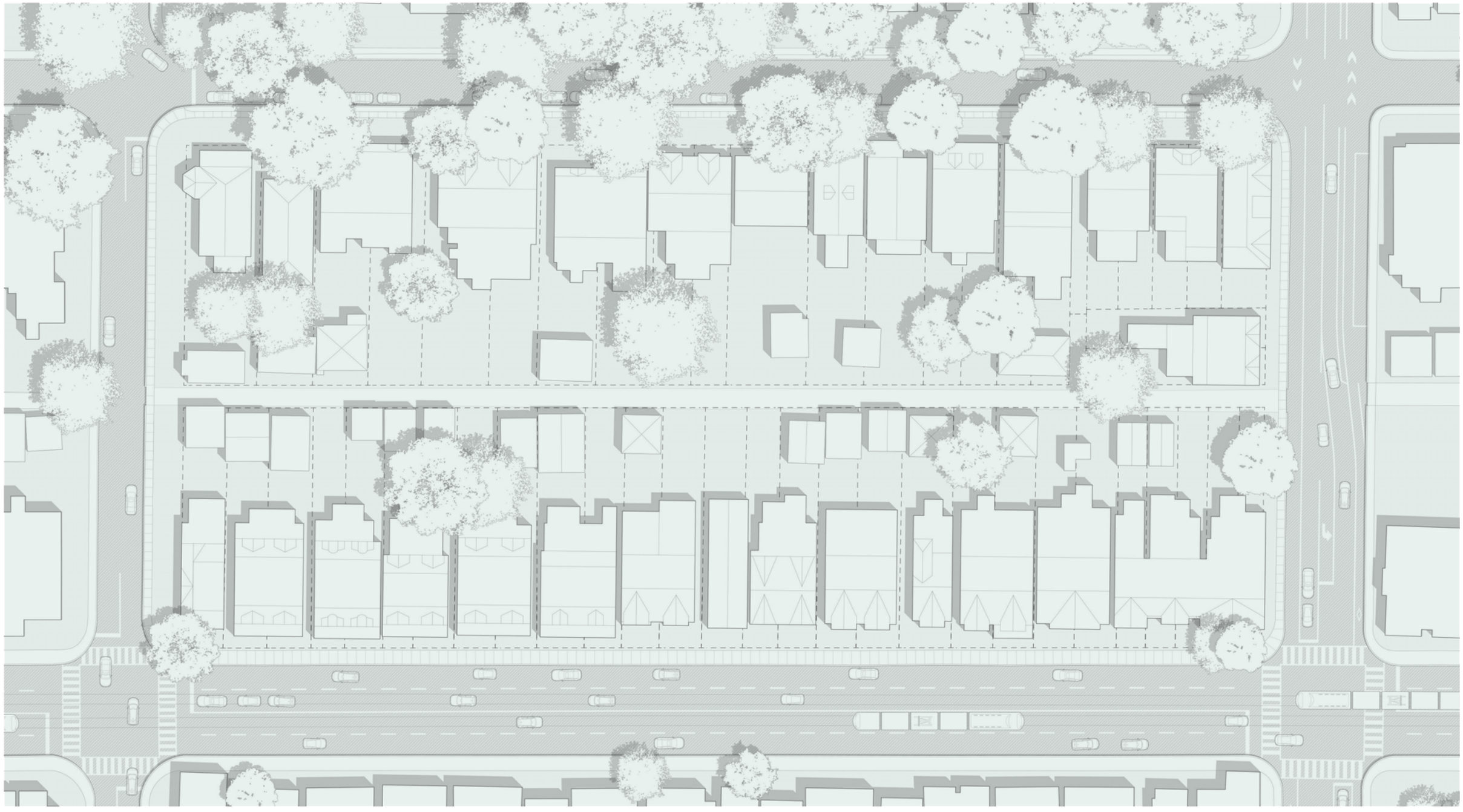
The primary goal of the interior architecture is to provide high-quality living spaces, with well-proportioned rooms, generous windows for natural light and ventilation in all main spaces, excellent thermal and acoustic insulation, and a strong connection to the outdoors through balconies or Juliet balconies.

One of the goals of introducing the courtyard block to Toronto would be to provide a viable alternative to living in houses. As such, units need to be well proportioned: they need not be immense to be comfortable (many European bedrooms are actually quite small by North American standards) but neither should they tend towards the "micro" apartments that have become more common in recent years.

CONTEXT PLAN



SITE PLAN EXISTING



0m 20m

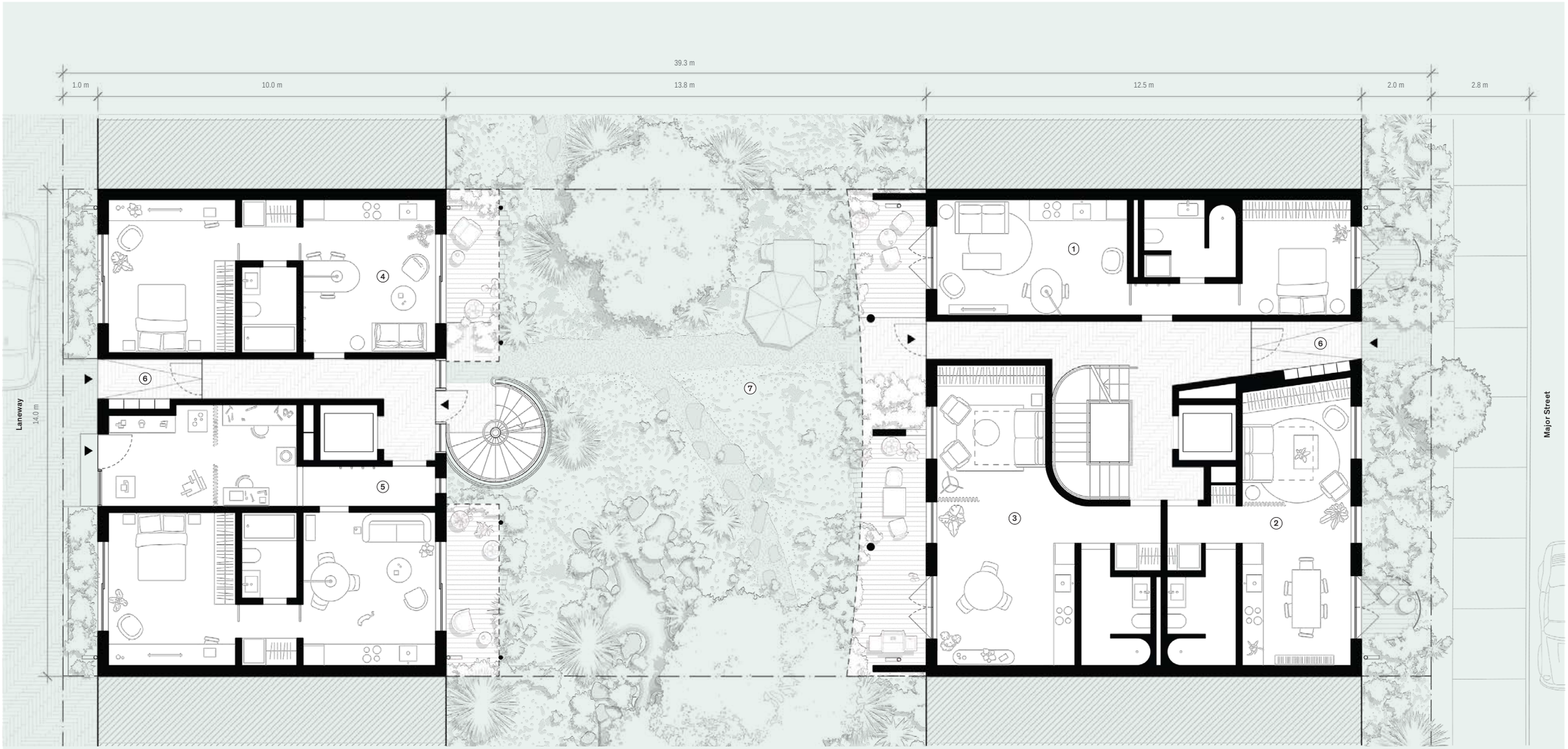


Legend:

1 Design proposal site
2 Courtyard
3 Laneway
4 Centralized waste collection
5 Centralized bike parking
6 Street narrowing
7 Commercial space at grade
8 Existing building

0m 20m

GROUND FLOOR PLAN

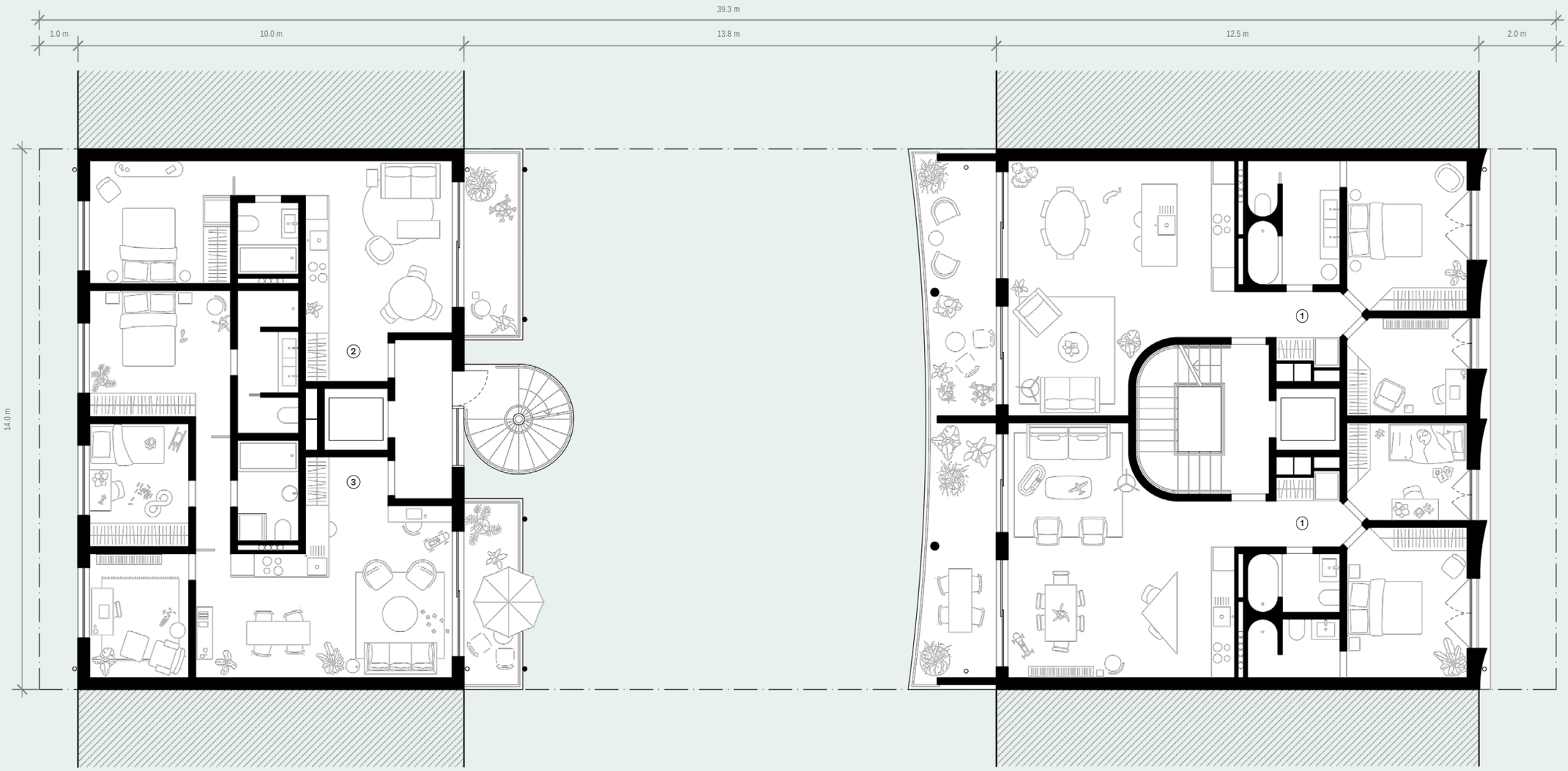


Legend:

1 One-Bedroom: 47 m²
2 Studio: 42 m²
3 Studio: 48 m²
4 One-Bedroom: 49 m²
5 Live-Work, One-Bedroom: 72 m²
6 Mailboxes
7 Courtyard

0m 5m

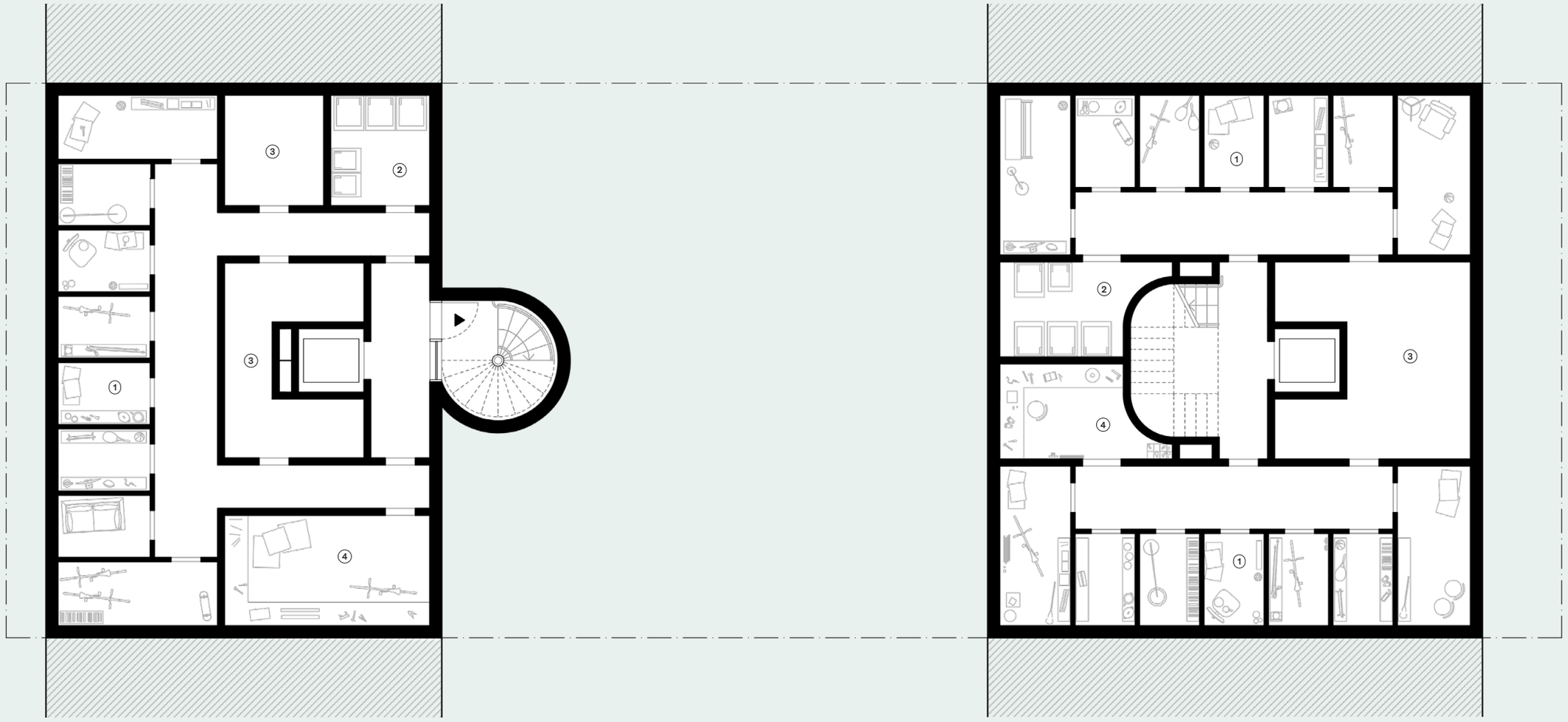
TYPICAL PLAN



Legend:

1 Two-Bedroom: 78 m²
2 One-Bedroom: 44 m²
3 Three-Bedroom: 84 m²

0m 5m

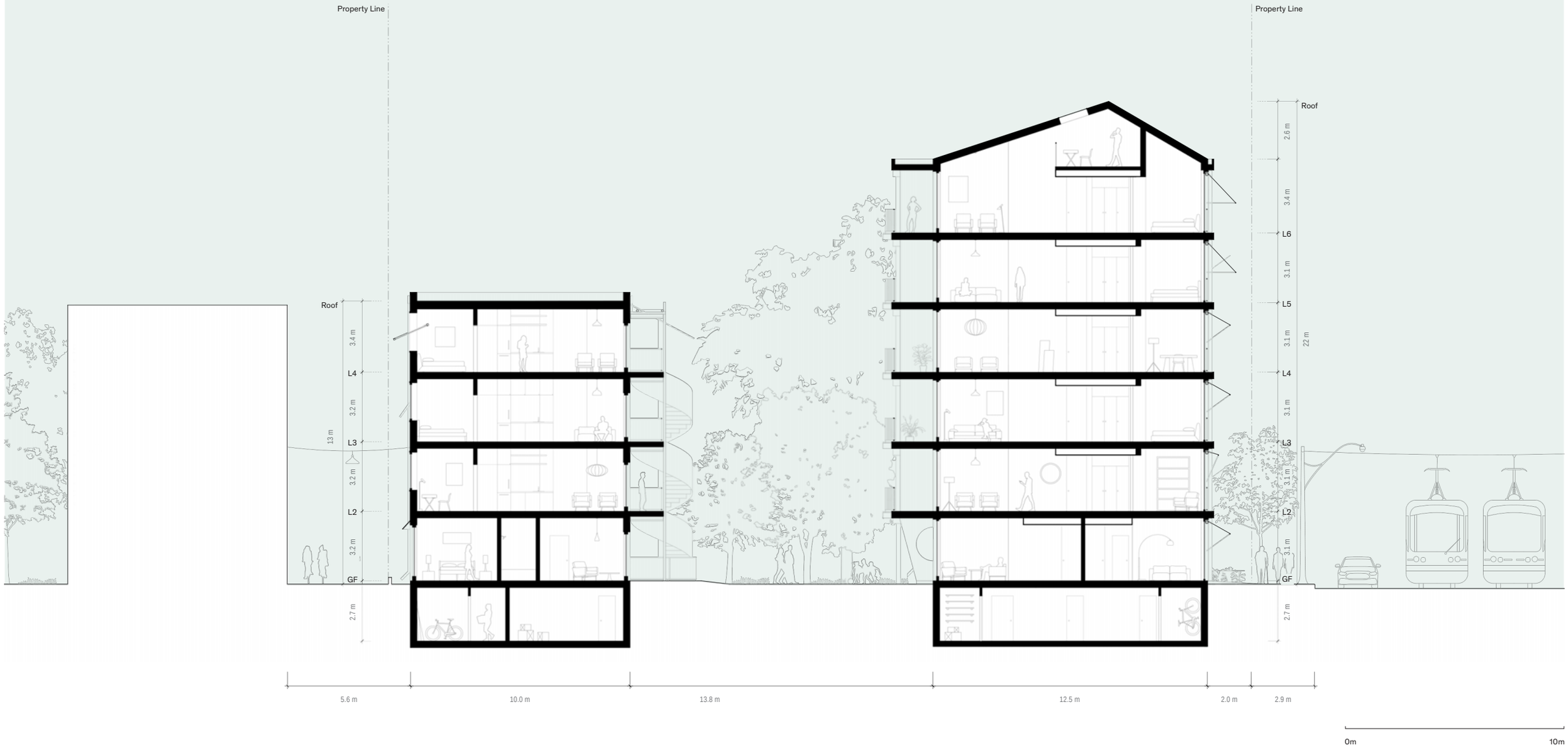


Legend:

1 Lockers
2 Garbage
3 Mechanical
4 Workshop

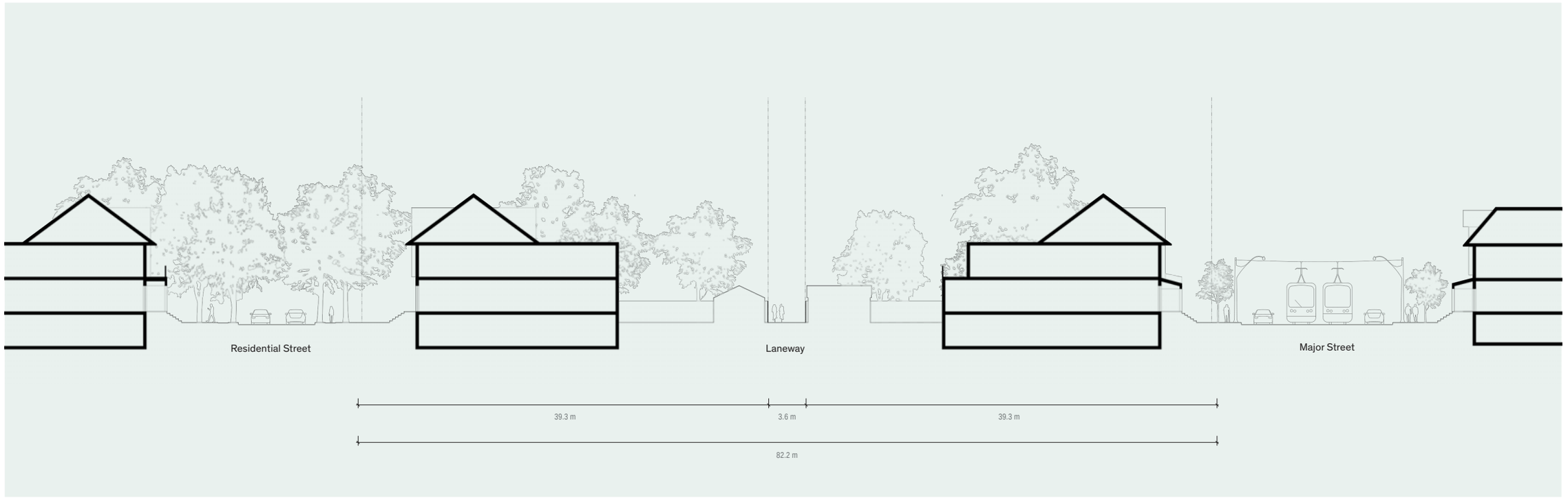
0m 5m

BUILDING SECTION



SITE SECTIONS

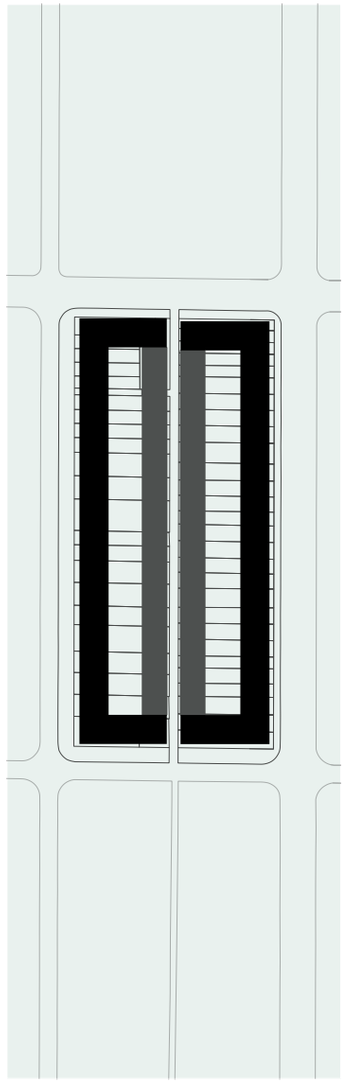
Existing Section



Proposed Section

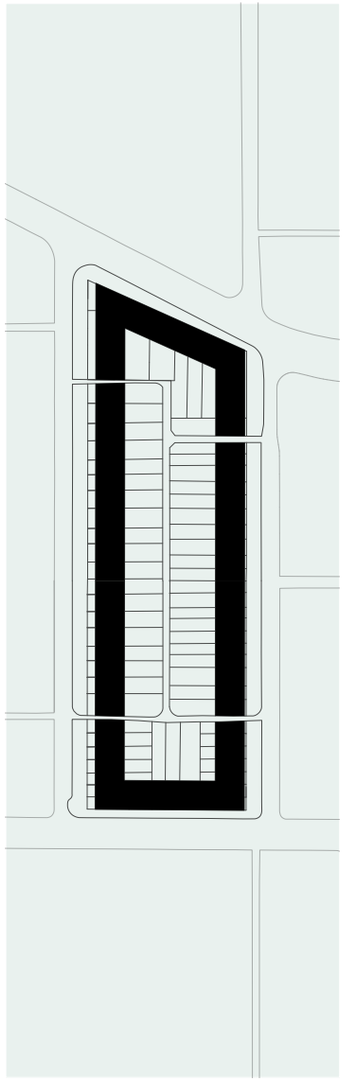


COURTYARD VARIATIONS
FOR OTHER TYPES OF TORONTO BLOCKS



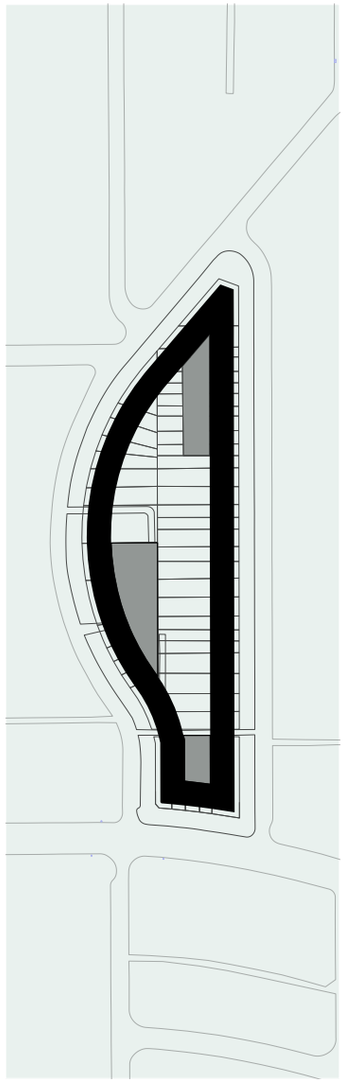
Typical Block
70+ m width

6-storey buildings along streets
4-storey buildings along laneway
10–13 m building depth
2 courtyards



Narrow Block
40–70m width

6-storey buildings along streets
15 m min. building depth
Lane integrated into landscape
1 courtyard

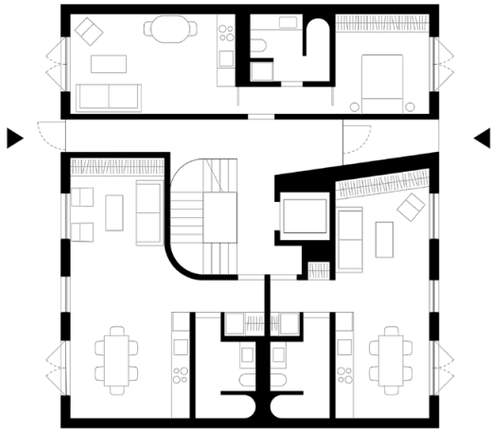


Odd-Shaped Block
Varying width

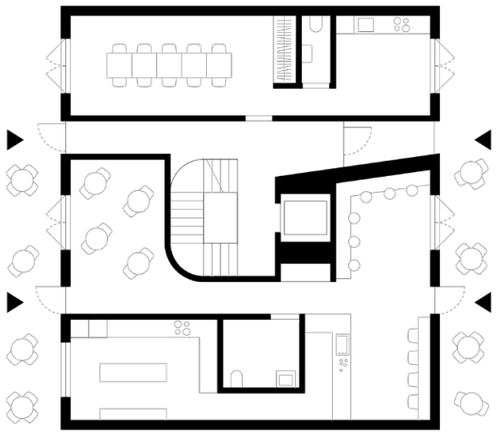
6-storey buildings along streets
1- to 2-storey buildings
in courtyard

- 6-storey buildings
- 4-storey buildings
- 1- to 2-storey buildings

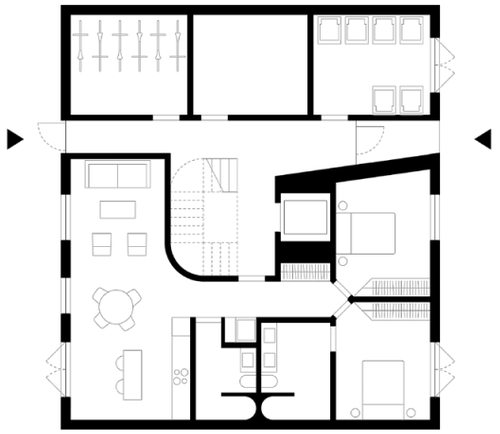
GROUND FLOOR PLAN VARIATIONS



Base Condition
2 Studios & 1 One-Bedroom



Variation 1
Commercial Space & Party Room



Variation 2
Two-Bedroom & Garbage/Bike Storage/Mechanical
(No Basement)

STATISTICS AND BUILDING AREAS
RESIDENTIAL ZONE (R)

		Building 1	Building 2	Total
1	Site Area	×	×	550 m²
2	Gross Floor Area (GFA)	966 m²	544 m²	1540 m²
3	Gross Construction Area (GCA)*	1225 m²	700 m²	1925 m²
4	Gross Leasable Area (GLA)	916.7 m²	504.5 m²	1421.2 m²
5	Floor Space Index (FSI)	1.76	0.98	2.75
6	Efficiency**	87.3%	90.0%	88.27%
7	Units	13	8	21
8	Height	22 m	13 m	×
9	Front Setbacks	2 m	N/A	×
10	Side Setbacks	0 m	0 m	0m
11	Rear Setbacks	N/A	1 m	×
12	Courtyard Length	×	×	13.8 m
13	Landscape Area	124.5 m²	110.5 m²	235 m²
14	Soft Landscape	93.4 m²	82.8 m²	176.2 m² (75%)
15	Vehicular Parking	0	0	0
16	Bike Parking	13+ (in basement)	8+ (in basement)	21+ (in basement)
17	Garbage Room	Yes (Initially)	Yes (Initially)	Yes (Initially)
18	Construction Method	Mass Timber	Mass Timber	Mass Timber
19	Façade System	Acetylated Wood	Acetylated Wood	Acetylated Wood
20	Core	20.5 m²	13.2 m²	33.7 m²

* Includes basement area
** Excludes basement area

DENSITY CALCULATIONS

Current Condition	Number of residents **~200 people**	Assumptions: 4 people per property Assuming that some lots have triplexes and fourplexes
Courtyard Block	Number of units **~500 units** Number of residents **~1000 people**	Assumptions: 2 people per unit average Every double lot has 21 units
Tower Alternative	Number of storeys (for ~1000 People) **~37 storeys**	Assumptions: Max. 750 sm floorplate, 13 units per floor in a typical floorplate, lot 30 m x 90 m approximately, F.S.I. of 13.7

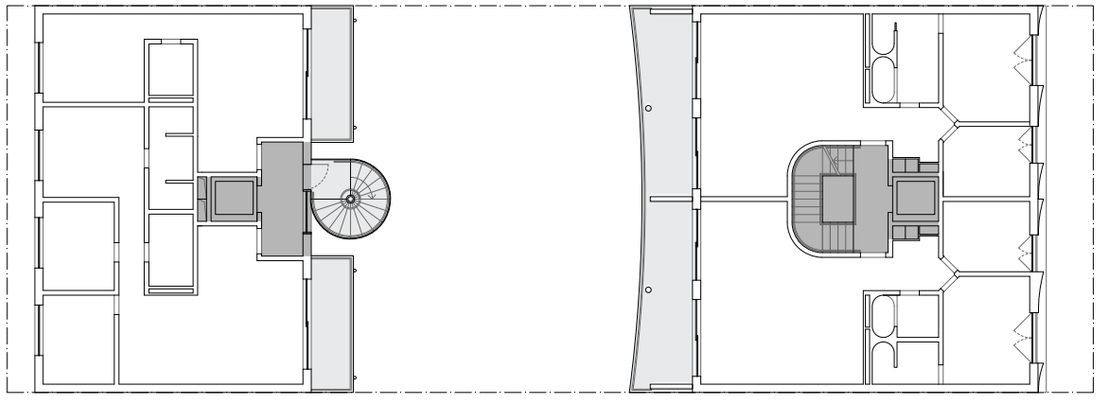
UNIT SIZES AND UNIT MIX

* Live-work

Building 1	GCA	GLA	Studio	1-Bedroom	2-Bedroom	3-Bedroom
Basement	175 m²	0 m²	×	×	×	×
Ground	175 m²	137.7 m²	U1 42.4 m² U2 48.2 m²	U3 47.3 m²	×	×
Level 2	175 m²	155.8 m²	×	×	U4 77.9 m² U5 77.9 m²	×
Level 3	175 m²	155.8 m²	×	×	U6 77.9 m² U7 77.9 m²	×
Level 4	175 m²	155.8 m²	×	×	U8 77.9 m² U9 77.9 m²	×
Level 5	175 m²	155.8 m²	×	×	U10 77.9 m² U11 77.9 m²	×
Level 6	175 m²	155.8 m²	×	×	U12 77.9 m² U13 77.9 m²	×
Total	**1225 m²**	**916.7 m²**	**2 units**	**1 unit**	**10 units**	**0 units**

Building 2	GCA	GLA	Studio	1-Bedroom	2-Bedroom	3-Bedroom
Basement	140 m²	0 m²				
Ground	140 m²	120.5 m²		U1 48.6 m² U2* 71.8 m²		
Level 2	140 m²	128 m²		U3 43.9 m²		U4 84.0 m²
Level 3	140 m²	128 m²		U5 43.9 m²		U6 84.0 m²
Level 4	140 m²	128 m²		U6 43.9 m²		U8 84.0 m²
Total	**700 m²**	**504.5 m²**	**0 units**	**5 units**	**0 units**	**3 units**

Building 2 **Building 1**



Area excluded from GCA
Area excluded from GLA

MATRIX OF IMPOSSIBILITIES

All topics are impossible as-of-right per current zoning bylaw or per 2024 Ontario Building Code (OBC).
All topics are possible in specific European jurisdictions.
This list is not exhaustive, rather, it represents the most relevant high-level topics that need to be addressed.

	1	2	3	4	5	6	7
TOPIC	Single Stair	Unprotected Stair	Small Elevator	No Sprinklers	Reduced Setbacks	Density	Building Height
STATUS	Impossible	Impossible	Impossible	Impossible	Impossible	Impossible	Impossible
REASON	Building Code	Building Code	Building Code & Standards (CSA)	Building Code	Zoning/ Bylaw	Zoning/ Bylaw	Zoning/ Bylaw
SOLUTION	■ Permit single egress in Part 3 and Part 9 buildings up to six storeys	■ Align with European codes to allow single-egress stairs to be open to the corridors and unprotected (unsprinklered)	■ Align with European codes to permit smaller elevators for buildings up to six storeys	■ Review building codes to allow for combustible construction without the need for sprinklers	■ Remove side-yard setback requirements entirely and reduce front- and rear-yard setbacks for multiplexes and apartment buildings up to six storeys	■ Amend zoning bylaw to increase FSI so multiple buildings can be developed more easily on a single or double lot	■ Amend zoning bylaw to increase building height for six-storey buildings to facilitate mass-timber construction; increase height of laneway buildings to four storeys

	8	9	10	11	12	13	14
TOPIC	Angular Planes	Commercial Space in Laneway	Bike Storage	Amenity Space	Waste Rooms	Density Landscaping/ Soil Volumes	Utilities
STATUS	Impossible	Impossible	Impossible	Impossible	Impossible	Impossible	Impossible
REASON	Zoning/ Bylaw	Zoning/ Bylaw	Zoning/ Bylaw	Zoning/ Bylaw	Zoning/ Bylaw	Zoning/ Bylaw	Municipal Engineering & Construction Services
SOLUTION	■ Amend zoning bylaw to remove angular planes for laneway buildings	■ Amend zoning bylaw to permit retail uses in laneways	■ Amend zoning bylaw to permit alternative bicycle storage solutions	■ Amend zoning bylaw to facilitate performance-based/site-specific amenity space requirements	■ Amend zoning bylaw requirements for size of waste room and allow for alternative storage and waste collection solutions	■ Allow for a block-wide landscape approach to soil volumes, soft landscape and tree requirements	■ Establish a block-wide infrastructural approach to servicing. (i.e., to avoid pad mount transformer requirements on small sites)

02 Research

This research and design project envisions an alternative high-density housing model for Toronto and explores its feasibility. The European courtyard block is low, dense, livable, and economically viable. To gain a comprehensive understanding of what might be possible here in Toronto, we compared European courtyard blocks with Toronto city blocks, identifying similarities in scale, such as lot width and depth, to assess high-level feasibility. We also studied the individual buildings within these courtyard blocks. There is a vast array of possible urban and architectural configurations to choose from. The selection included here is not exhaustive but represents examples we found particularly relevant to, and which could have the greatest impact on, our local context. Studying the selected architectural precedents allowed us to derive empirical insights that then informed the design of our own Toronto courtyard block. Broadly speaking, these can be grouped into three categories.



Courtyard of the Future
BOGL, Copenhagen, Denmark

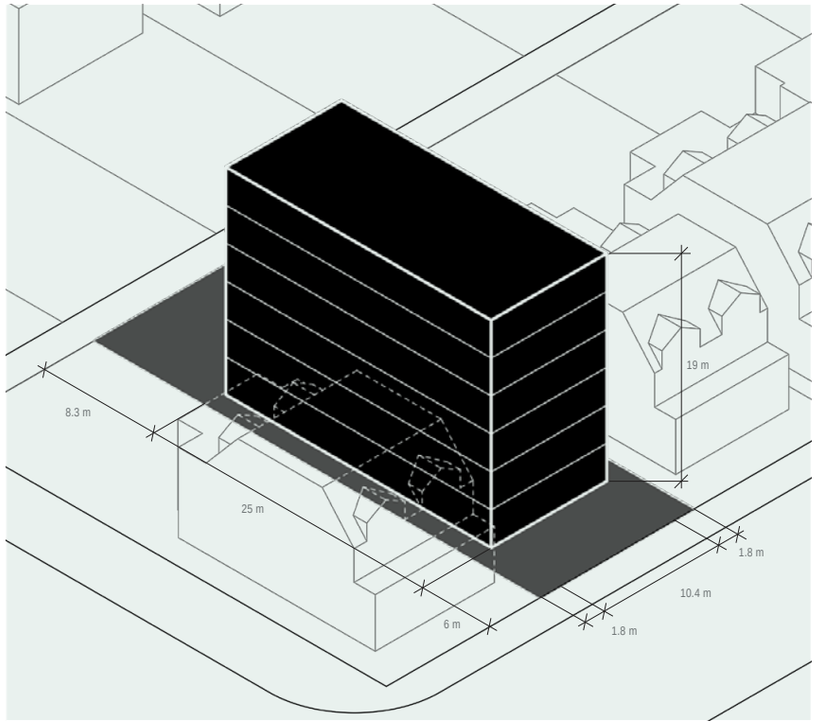
THE BIG THREE

When attempting to adapt the European courtyard block to the Toronto context, it quickly becomes clear that a direct, one-to-one implementation of this typology is not feasible without substantial changes to our building codes, planning policies, and cultural expectations. There are many adjustments necessary to bring our vision of the European courtyard block to life; we have identified three key areas that require careful consideration and significant change: reducing setbacks, maximizing building efficiency, and adopting a “low-tech” approach. These three factors collectively address what we believe are the primary obstacles preventing the realization of smaller-scale, multi-residential buildings in Toronto. Adopted wholesale, they would create buildings that are at once leaner and more generous: by freeing them of various encumbrances, we can find more space for individual and communal living.

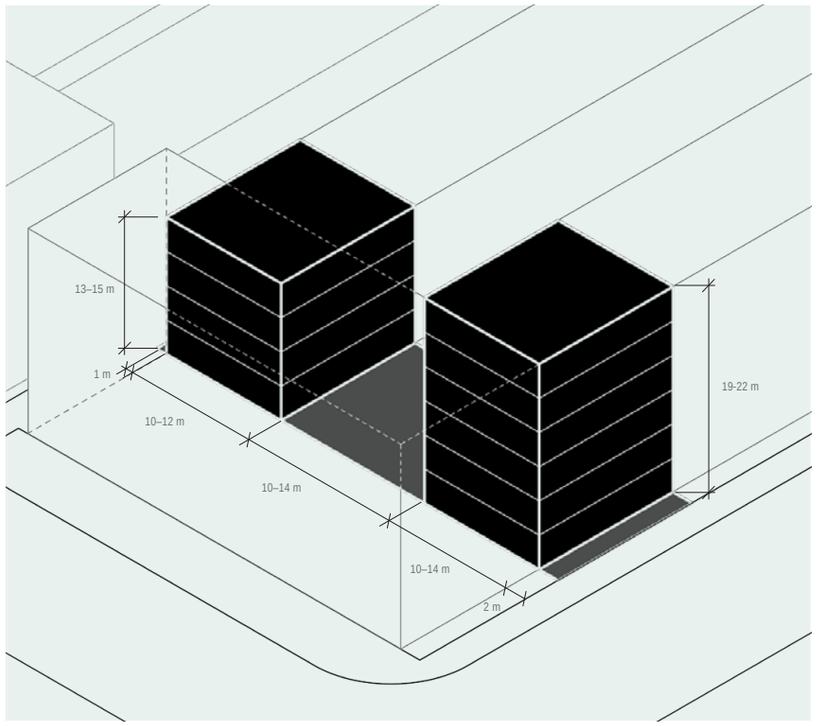
A setback refers to the minimum dimension between a building face and the property lot line. In 2024, Toronto approved changes to setback requirements for mid-rise buildings (up to six storeys) on what are called “major streets”—that is, streets that support transit and provide connectivity across the city. Part of the Expanding Housing Options in Neighbourhoods (EHON) policy framework, these requirements, the City argues, are intended to maintain a proper scale of buildings relative to the width of the streets they are on, ensure separation between buildings, and preserve patterns of open space.

While we agree with some of these goals, and while the Major Streets Study (which has been passed but, as of this publication, is under appeal) does relax the previous setback regulations, we argue that many of the requirements in the new bylaw are still overly restrictive and make it difficult to create vibrant and well-connected urban blocks. For example, for a property depth of 36 metres or greater (such as the courtyard block we envision), the front setback would be six metres. We understand the intent behind this regulation: creating consistent open spaces along front yards. However, these open spaces come at the cost of engaging retail or other street-related uses, which become more and more important as cities densify. Similarly, the proposed 7.5 metre rear setback forces buildings to disengage from the laneways they back on to, which undermines our goal of transforming laneways into vibrant spaces with potential for commercial and residential uses.

The EHON zoning bylaw amendment also introduces new side-yard setback regulations. The smallest standard minimum side-yard setback is 1.8 metres, which applies if the side wall contains only secondary windows. We believe this is a missed opportunity to rethink whether side yards are actually necessary for six-storey buildings and warrants further review. Our position is that to create a cohesive urban fabric, the guidelines should allow for zero side yards (a zero-lot-line condition). Most of the European blocks we studied feature zero-lot-line conditions, which is a key factor in their success.



EHON Setbacks Unit Count: 18–21 / Lot Coverage: 47%



Proposed Setbacks Unit Count: 21 / Lot Coverage: 57%

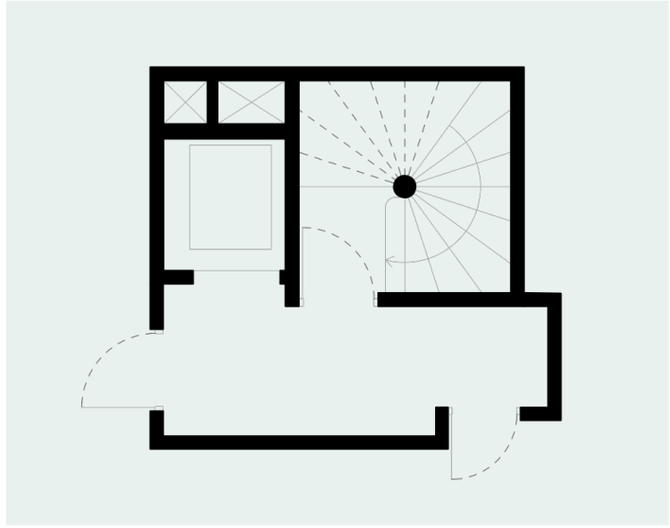
This section proposes means of increasing the efficiency of mid-rise buildings; decreasing the area allocated to the core (the elevator and stairs) as well as to waste storage allows us to increase the usable square footage available for units. Trimming down these important but oversized spaces (along with complementary changes like shifting bike storage and amenities to the basement, courtyard, or public realm) makes more room for what matters most: spaces for living.

THE BUILDING CORE

The design of a building's core, which includes elevators, stairs, and service shafts for mechanical systems, is essential to both its functionality and financial viability. In smaller buildings with smaller floorplates, the elevator, stairs, and associated corridors have a significant impact on the building's overall efficiency. Simply put, the more floor area that is allocated to the core, the less leasable or sellable space is available, affecting a project's financial feasibility.

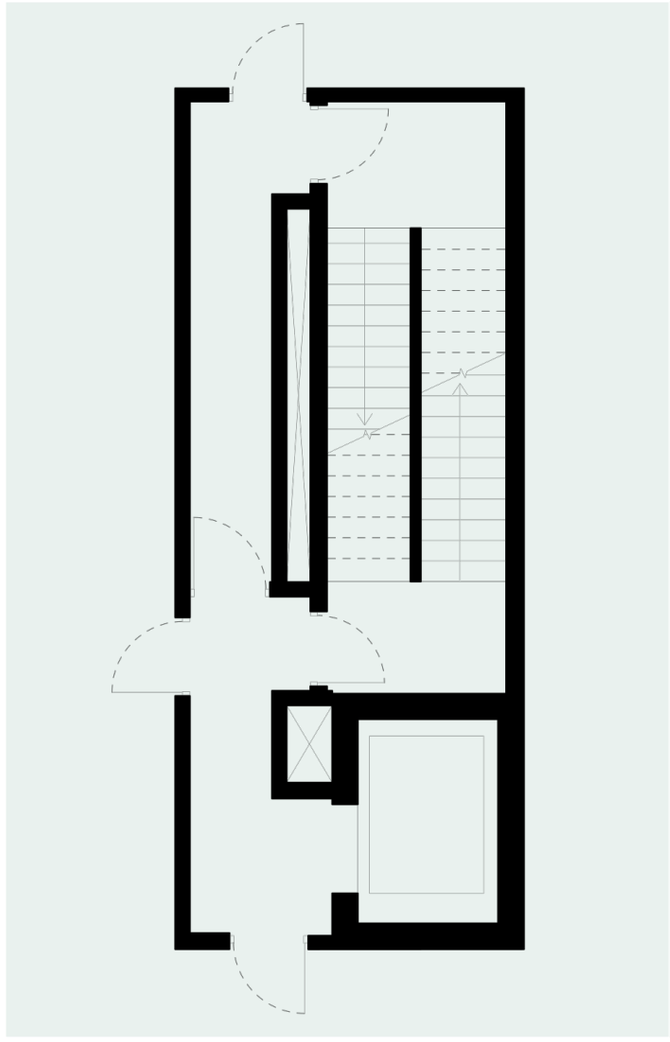
In Toronto, the size of the core for a six-storey building is almost the same as that for a 20+-storey building, with the exception of additional elevators for convenience. The sizing of cores is a complex issue; there are ongoing debates about the appropriate and "safe" solutions for elevators and stairs in multi-unit residential projects four storeys and taller.

During our research, we found that in European projects, the cores were significantly smaller—ranging from 17 to 26 m^2—compared to the smallest cores in Toronto's mid-rise buildings, which are typically 55 m^2 and up (see pages 158–161). This smaller core size, along with other factors like lower elevator costs, plays a crucial role in ensuring the long-term financial feasibility of smaller European multi-unit residential projects. For our design proposal, we have adopted a European-style core, which, although legal in the cities we studied across Europe, is currently not permitted in Toronto.



European Core Example
26.5 m^2

14 Logements Sociaux et un Commerce — 6 Storeys
rh+ architecture
Paris, France



Toronto Core Example
55 m^2

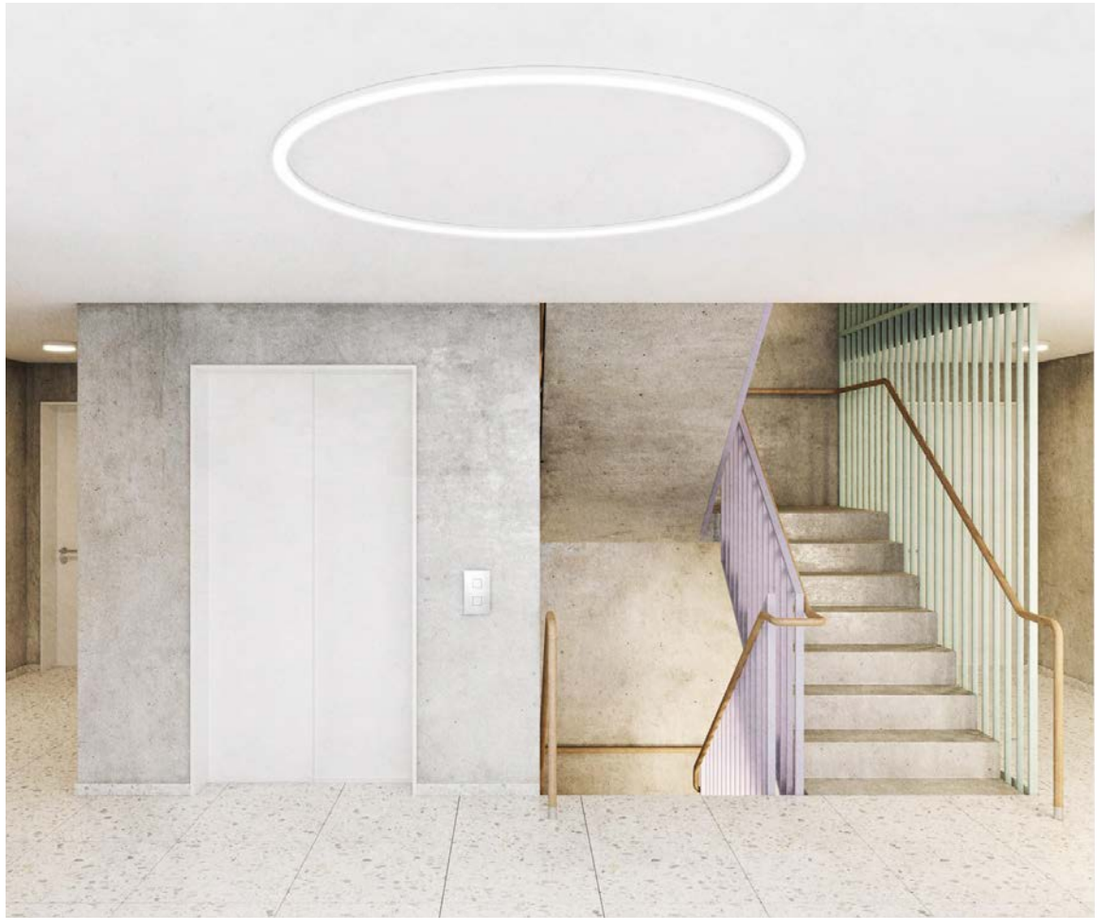
1505 Dupont Street — 6 Storeys
Studio VAARO & Gabriel Fain Architects
Toronto, Canada

SS *In societies wealthy enough to afford them, elevators overtook stairs in the 20th century as the primary way that residents access apartments on upper stories. Elevators are complex pieces of electromechanical equipment, but relentless optimization and global competition have driven down costs—at least outside of North America. In Canada and the United States, an elevator in a mid-rise apartment building costs at least $150,000 to buy and install—three times what Western Europeans pay. Our mid-rise elevators are also required to be roughly twice the size of those in Western Europe to accommodate fully flat stretchers and greater maneuverability within the cabin for wheelchair users. Europe instead prioritizes widespread basic accessibility, with the trade-off that wheelchair users must back into elevator cars, and in the rare cases where paramedics need fully flat stretchers, they must take the stairs or use the fire service for aerial evacuations. In Europe, cabin interiors themselves are generally sized to be 1.1 metres x 1.4 metres for a low- or mid-rise building (to accommodate a person in a large wheelchair and a person standing behind them, with no expectation of a turning radius), or 1.1 metres x 2.1 metres for taller buildings (to accommodate a stretcher).*

Beyond larger cabins, Canada and the US also force manufacturers to conform to a unique technical standard, walling us off from the global market for parts and whittling away at the sector's competitiveness. The North American elevator constructors' union also objects to prefabrication and preassembly, leading to elevators that cost more and take about twice as long to install as in Western Europe. The high spatial and dollar costs of Canadian elevators are a mostly affordable burden in high-rise buildings with no other options and many (often too many) units sharing each elevator. But for low- and mid-rise structures on small lots, with few apartments to spread costs over, it remains to be seen how elevators will be accommodated.

■ Stephen Smith
Executive director of the Center for Building in North America

Per European standards for a six-storey building, we have sized the elevators in our Toronto courtyard-block buildings to be 1.1 metres x 1.4 metres. This does not prohibit prospective developers and designers of other such buildings from sizing their elevators to a larger standard.



HSS, Ingolstadt - Zanderroth, Ingolstadt, Germany

Currently, in Toronto, as in most other Canadian cities, it is illegal to provide a single means of egress—meaning a single stair—for multi-residential buildings three storeys and higher. This requirement for a second stair adds significant cost and occupies valuable space, yet it is not a requirement in comparable European buildings.

There is already extensive research on this issue. Here in Toronto, Conrad Speckert, in his publication *The Second Egress: Building a Code Change*, advocates for amending the National Building Code to allow a single stair for buildings up to six storeys. Other engineers and architects in various other Canadian jurisdictions are pushing for the same. At the time of writing, local authorities in Toronto are reviewing a feasibility report on permitting a single-egress stair for four-storey buildings. The evidence presented in favour of the single stair is compelling, and we are confident that it's only a matter of time before restrictions on it are loosened. The stair proposed in our six-storey design, which is open to the landing and unsprinklered, and in our four-storey building, which is a spiral, would still remain illegal in our jurisdiction.

SS *Beyond simply requiring more stairways in buildings, Canada has stricter dimensional requirements for stairs, which can inhibit the design of buildings on smaller lots and compromise the economics of single-stair buildings where and when they are allowed. As Canada has tried to get comfortable with a single stair, a common request from the fire service has been for extra-wide stairways. While a typical stairway in Canada is 1.1 metres wide (roughly the same size or wider than what is required in the US and Europe), there is talk of requiring stairs in single-exit buildings in Canada to be 1.5 metres wide. Because of the geometry of stair switchbacks and landings, small increases in width lead to larger increases in area: one 1.5 metre stairway takes up almost as much space as two 1.1 metre stairs in an interlocking arrangement. In Europe, it is also common in low- and mid-rise buildings for dwelling units to open directly onto the stairway landing, saving the space of an intervening corridor and doorway. This was the traditional way of building in North America too, and it encourages residents to take the stairs rather than wait for elevators. Fire safety concerns have more commonly led to the enclosure of stairways in their own shafts in North America; in Europe, the lack of compartmentation that comes with an open stairway is made up for by greater reliance on firefighters to rescue people from buildings through windows and balconies. Finally, there is greater acceptance abroad of stairways that wind, further economizing on vertical circulation space.*

■ Stephen Smith
Executive director of the Center for Building in North America

In many North American cities, significant space both in and in the immediate vicinity of buildings is dedicated to waste storage. Many European cities take different approaches, including moving garbage collection entirely out of buildings and into the public realm. For instance, in Basel, residents—including those who live in multi-unit buildings such as mid-rises—are required to purchase special trash bags at the local supermarket (this constitutes a municipal garbage tax) and take their garbage to the street curb the night before collection twice a week. Paper recycling is collected in a similar manner. Glass, metal, and plastic need to be thrown out in designated bins located throughout the city. Basel buildings rarely have garbage rooms or their own bins.

The system works well. Basel is a clean city, with fairly little street litter despite the loose garbage bags regularly placed on the curb. While this particular approach may not be suitable for Toronto (due to our determined wildlife), it raises an interesting question about how we handle residential waste and its impact on building design. Were garbage infrastructure moved outside of residences and into the public realm, valuable real estate could be reclaimed on the ground floor (where waste rooms are typically placed) and in outdoor areas for additional living space, small commercial spaces, vegetation, or other uses.

JE *Waste disposal is one of the important challenges that come from residential intensification. There are two solutions to the problem: store more waste on-site or pick it up more frequently. In dense European cities, waste pickup can be as frequent as daily. This would add a lot of cost and traffic. It also wouldn't be appropriate when there are only one or two denser buildings on a block. The alternative has traditionally been to build a large waste room in a building. This takes up substantial square footage, reducing the space available for homes while increasing their cost. It can also lead to an area in front of the building being dedicated to large and unsightly bins.*



City of Toronto garbage bins

System Closed for Drop-off



System Open for Collection



Villiger - Liftomat
Underground garbage collection

JE *In Toronto, large residential buildings contract private waste collection services instead of using municipal pickup. In the short term, mid-size buildings could use private collection to supplement their weekly or biweekly municipal pickup. This would be financially viable if it enabled a regulatory exemption from the requirement for a large waste storage room and a large dedicated outside pickup area.*

In the longer term, the City could look to emulate the model of centralized waste collection in many European cities. For each block, an attractively designed waste collection area would allow people to deposit their garbage, recycling, and organics whenever they liked. The optimal design would involve underground compactors, which are frequently used in historic European city centres. On the surface, these look little different from a conventional street garbage can, but they allow enough waste to be stored to serve all the households on the block.

■ Jonathan English
Fellow, Marron Institute
of Urban Management,
New York University

KELLY ALVAREZ DORAN
OAA / HA/F CLIMATE DESIGN

In architecture, the “low tech” movement advocates for paring down and simplifying buildings by using fewer and more sustainable materials as well as traditional building techniques. Low tech does not mean no tech, and in fact, advanced technology may be used to design and analyze low-tech buildings. Rather, low tech implies an efficient, sufficient use of technology within buildings, privileging passive systems and reducing the role of active mechanical and technological systems.

While the low-tech approach covers a variety of topics, our focus is on three that have the most significant impact on multi-unit residential buildings in Toronto’s six-storey height category and on the city itself: sustainability, mechanical systems, and fire protection. We recognize that mechanical indoor cooling is likely necessary in our climate and practical solutions for fire protection are essential, but there are alternative methods in use elsewhere that could potentially work well in Toronto while also allowing for greater flexibility in housing design. Further investigation and innovative thinking are needed to explore these possibilities.



Installation of a rammed-earth façade, valued for its high thermal mass, acoustic insulation properties, minimal maintenance requirements, and sustainability as a locally sourced alternative to conventional cladding materials.

■ Quatre Cheminées - Déchelette Architecture, Boulogne-Billancourt, France

Across Canada, housing supply is constrained. It is constrained by zoning, by planning processes, by labour shortages, by material supply vulnerabilities, and by the structures of finance, taxation, and fees. But, more importantly, it is constrained culturally. Our collective imagination has yet to envision how we might live (and build) differently.

We also have the highest per capita carbon footprint in the G20. A Canadian’s emissions are driven largely by the design of our built environment: the heating and cooling of our buildings and the energy required if one is driving between them. Simply put, our buildings are too big and too far apart. To effectively decarbonize, we need to solve for both: How can we live in relatively smaller, more efficient homes? How can we live closer together?

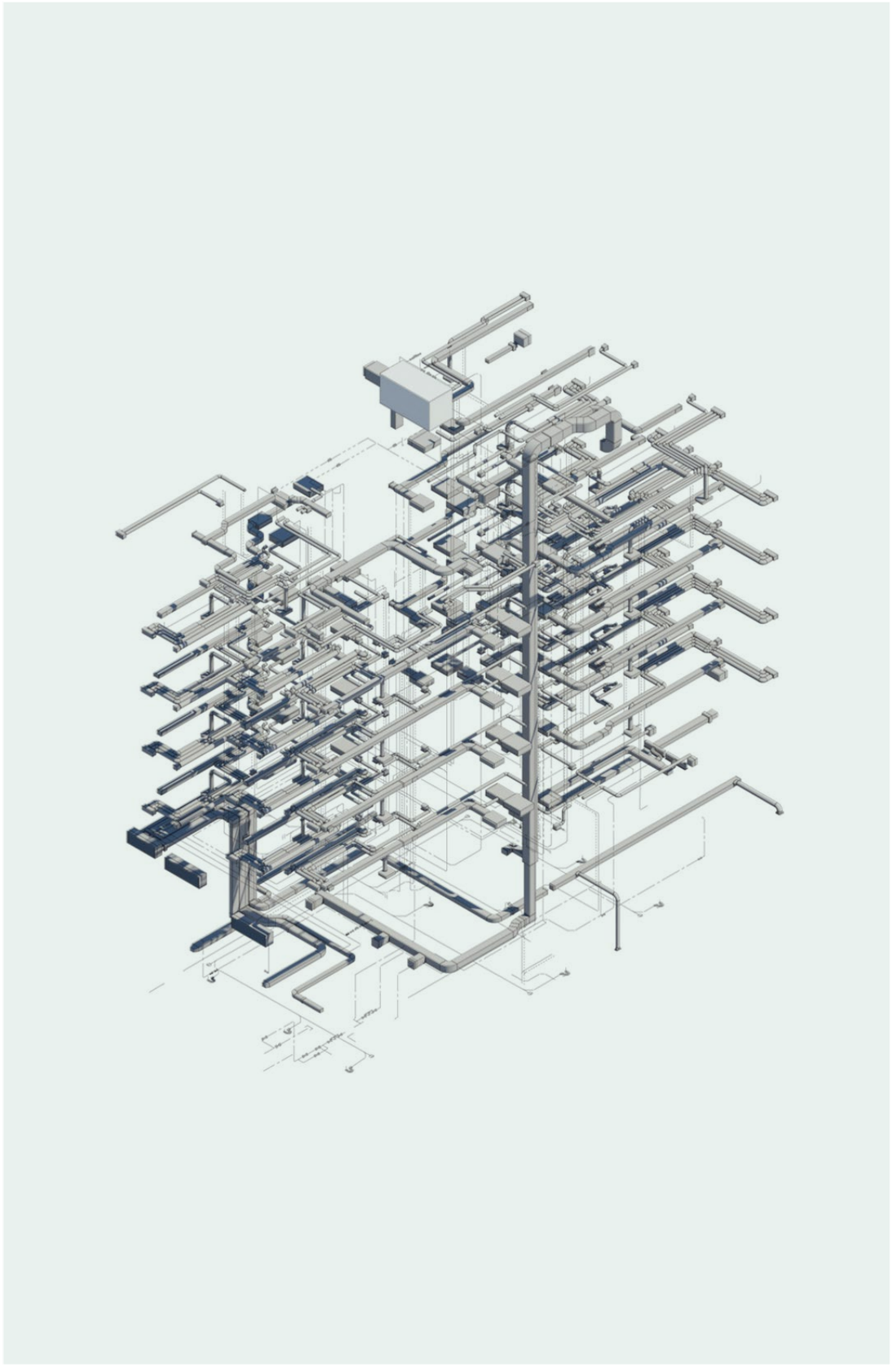


The Kung Holzbau headquarters under construction; it features a central concrete core, a wood grid structural floor system, and solid wood walls with no insulation required.

■ Kung Holzbau AG headquarters - Seiler Linhart Architekten Alpnach, Switzerland

To date, the solution to both has been: make the city “spiky.” Our current culture has fixated on ever-taller towers clustered around existing transportation nodes surrounded by seas of ever-larger single-family dwellings. The upshot: ever-smaller homes for those in the towers and ever-larger houses for those who can afford them, each placing strain on existing infrastructure and each driving up our life-cycle emissions.

On the Courtyard provides an alternative vision. Imagine if every single-family dwelling was instead a six- or 16-family dwelling. Imagine if each household occupied a single floor and many households shared a lot. Imagine a city where every house was deconstructed and remetabolized into new buildings instead of shipped to a landfill in Michigan. Imagine a city built of the wood and clay surrounding it instead of costly, high-carbon metals and minerals processed a continent away. Imagine if our outdoor spaces were designed to be shared while also serving as sponges to soak up and store stormwater. Imagine a Toronto characterized by six-storey blocks where housing was more affordable, more livable, more sustainable, and more resilient. Imagine if we all lived closer together, comfortably.



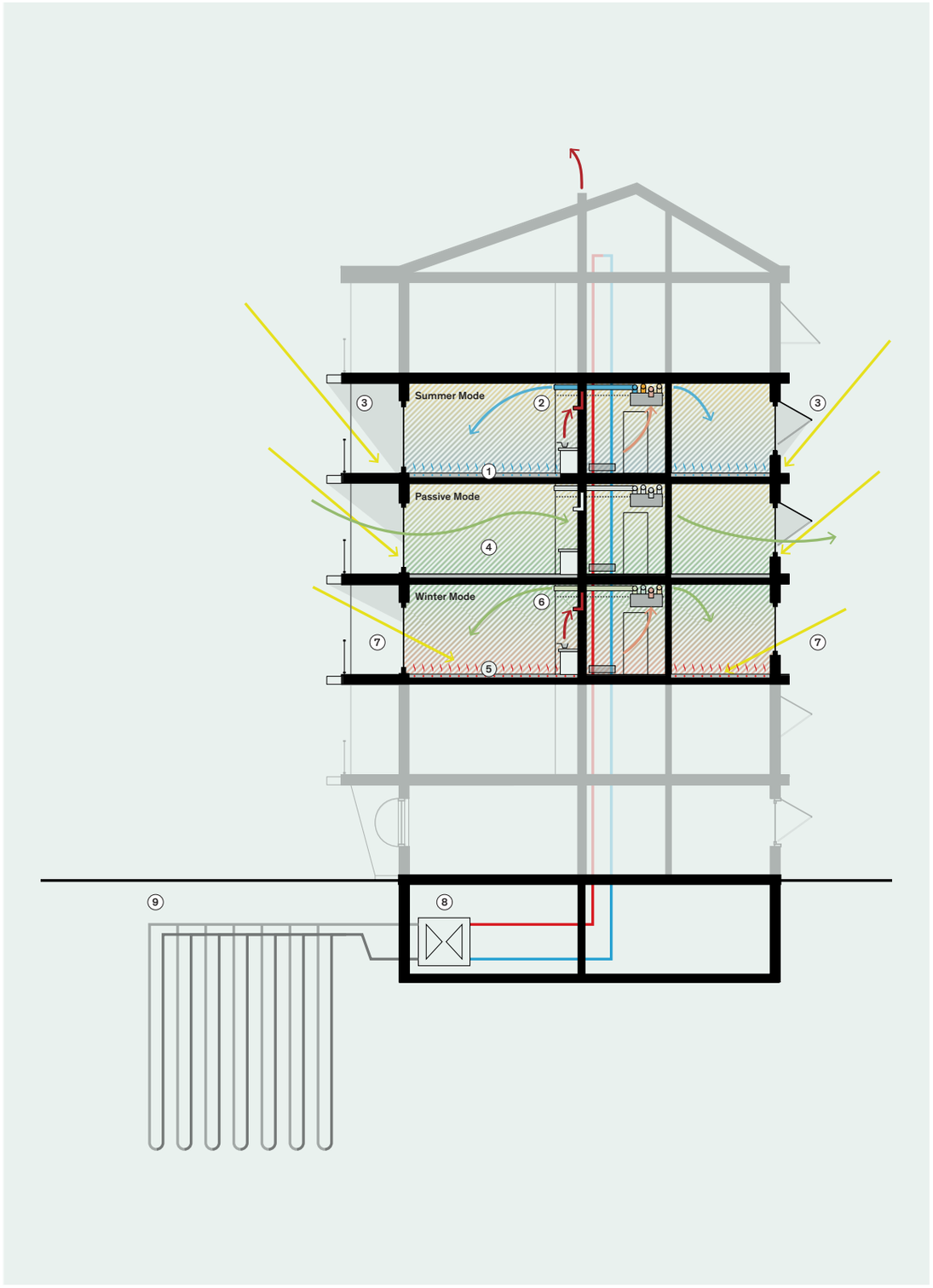
HVAC in a typical six-storey Toronto multi-unit residential project

In the European reference projects we studied, heating (and sometimes cooling) is provided through radiators or radiant floor systems. The buildings feature heavily insulated walls and roofs, which effectively retain heat and ensure consistent thermal comfort throughout the day, while minimizing energy consumption. Generous (and better-insulating) triple-glazed windows enhance natural light, reducing the need for artificial lighting. Operable windows allow for natural ventilation and air conditioning is rarely installed. External shading is provided by façade projections and, where necessary (especially on the south and west sides), by external blinds to further reduce heat gain and glare. This approach is common across Europe, observed consistently in different countries and cities.

In our design, we prioritized similar passive approaches, such as external shading, thermal mass in the floorplates, and direct cross-ventilation in the through-units. In temperate weather, these passive measures should be sufficient to maintain a comfortable indoor temperature. Like in many of the European precedents, heating would be provided by a hydronic radiant in-floor system, which could provide cooling as well.

However, working with climate engineering firm Transsolar, and in a break from our European references, we added some mechanical cooling (though not the traditional forced-air system that is so common in Toronto). There were several reasons for this, related to cultural expectations and to ventilation needs; in principle, the ventilation unit we have selected uses less energy on balance than what is required to reheat or re-cool a space (respectively) if windows are open in the winter or summer to provide natural ventilation. This particular unit can provide cooling as well as ventilation, which allows us to better suit North American cultural expectations about comfort in our warmer (and ever-warming) summers.

The Transsolar-designed system aligns with a low-tech ethos: it works to supplement, rather than replace, the passive heating and cooling measures, significantly reduces the amount of ductwork typically seen in mid-rise projects, and eliminates all perimeter bulkheads. (We have one centralized bulkhead at the entry to each unit and from there rely on vertical shafts to bring fresh air in and stale air out through the roof, rather than the façade.) As HVAC systems become more efficient, slimmer, and more versatile, we anticipate that future iterations of this design could achieve even greater conditioning results in an even smaller physical and environmental footprint.



Schematic Climate and Operation Mode — Section

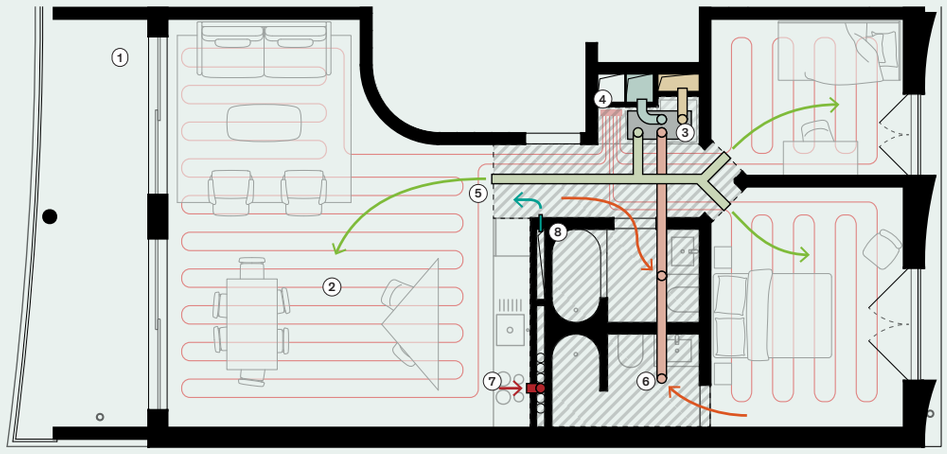
Legend

1 Radiant floors supplying tempered water during the summer to cool apartments
2 ERV provides dehumidified air in the summer
3 Balconies and retractable exterior blinds shade in the summer
4 Passive mode operates with no systems
5 Radiant floors supplying warm water in the winter to heat apartments
6 ERV provides tempered/filtered air to the space
7 Winter sun warms the thermally massive floors
8 Geothermal heat pump provides hot and cold water for radiant floor heating and cooling
9 Geo-exchange field is used as seasonal thermal storage

■ Krista Palen and Jonathon Brearley Partner and associate (respectively) at Transsolar

KP *The units will be fully electric and use hydronic radiant floors for both heating and cooling. A centralized geothermal heat pump, located in the basement of each building, will supply water to the radiant systems. Each unit will be equipped with a dedicated energy recovery ventilator (ERV) capable of variable outdoor airflow and additional cooling and dehumidification when operating in heat pump mode. This combination of geothermal and radiant systems ensures highly efficient thermal conditioning, while the heat pump ERV delivers fresh air with energy recovery and humidity control. Separate make-up air for kitchen exhaust prevents negative pressurization of the units.*

This system offers excellent sustainability benefits through its fully electric operation, elimination of combustion emissions, and highly efficient geothermal and radiant technologies. While this system is less common in North America, there are no anticipated 'impossible' aspects; it meets standard code requirements for ventilation, exhaust, and thermal comfort. The built-in air-source heat pump within each ERV enables active dehumidification and eliminates concerns about condensation when using the floors for cooling, while also providing additional cooling capacity when needed. Radiant floors use moderate water temperatures, allowing the geothermal heat pump to operate more efficiently than air-source systems and with less electricity, thanks to stable ground temperatures. By minimizing ductwork, using water for thermal transport, and integrating decentralized ventilation, this design represents a low-tech, space-saving, and scalable model for future residential mechanical systems. By including rooftop and/or balcony photovoltaic cells, the units can reach very close to net zero operational carbon.



Schematic Systems — Plan

Legend

1 Large Operable Windows and Doors
2 Radiant floors for heating and cooling
3 ERV with heat pump dehumidification and filtration
4 Storage closet adjacent to shaft with radiant floor manifold and ERV above
5 Fresh air supply through plenum
6 Stale air return for energy recovery
7 Kitchen exhaust
8 Kitchen exhaust make-up air

Lower Ceiling Zone

Recently, Toronto has re-engaged with mid-rise wood construction, particularly using cross-laminated timber (CLT); this creates an opportunity to critically examine existing fire protection regulations. Many European countries adopt performance-based approaches tailored to specific sites, and fire codes vary across jurisdictions. For instance, we studied a project by Hildebrand, which completed a six-storey CLT building in Basel in February 2025. The building was mandated to meet a high fire rating requirement for the non-combustible party walls but remarkably did not require a sprinkler system or encapsulating (cladding in gypsum board) the CLT. In contrast, the project by Déchelette Architecture in Paris that we studied—a six-storey CLT social-housing building—was required to encapsulate the CLT, yet still did not incorporate sprinklers. In Ontario, on the other hand, mass-timber projects are generally required to encapsulate CLT and use sprinklers.

Generally, the European jurisdictions balance design decisions with fire protection requirements: the taller or more populated the building, or the more "open" or curved the staircase, the more fire protection is required. There are valuable lessons in this that could be applied in Toronto.

■ Excerpts from a Q&A with Christoph Elsässer, Head of fire protection at PIRMIN JUNG, Sursee, Switzerland

Q1 In Switzerland, are there height limitations that determine whether a building is required to have a sprinkler system?

CE *No, in principle not in buildings up to 100 m. The obligation to install a sprinkler system depends on a building's use and not on its height or type of construction. However, with the voluntary installation of a sprinkler system, the required fire resistance duration can be reduced by 30 minutes within the framework of the standard regulations. This is often applied to high-rise buildings (>30 m) in order to economically optimize mass-timber construction.*

Q2 Is it permissible to construct a six-storey mass-timber residential building without a sprinkler system? Are there any restrictions related to total building area, unit size, or unit layout that would affect this? If it is allowed to be non-sprinklered, is there a code requirement to encapsulate (e.g., cover with gypsum board) exposed wood elements, such as structural framing? Are there other measures that must be used in order to meet code compliance, such as compartmentalization, smoke control, or additional means of egress?

CE *Residential buildings can be constructed with a visible timber structure and without sprinklers. The only restrictions are that flammable materials must be encapsulated in the stairwell, which serves as an escape route, and that REI 180 (a fire resistance rating of 180 minutes, or three hours) is necessary at property boundaries. Within the building, a 30- or 60-minute fire rating is usually sufficient, and fire compartments up to REI 90 (a fire resistance rating of 90 minutes, or 1.5 hours) can be built of exposed timber. An REI 180 fire wall is not possible in timber construction, even in Switzerland.*

Q3 Under what conditions would a six-storey, all-wood, multi-unit residential building be required to have a sprinkler system? What factors or design choices might trigger this requirement?

CE *Here in Switzerland, if a new-build apartment building complies with all fire protection regulations—e.g., it has sufficient escape routes and fulfills the required fire resistance duration—there is no reason to equip a six-storey apartment building with sprinkler protection. For projects that deviate from the standard regulations, a sprinkler system is often used as a compensatory measure with the primary goal of protecting property.*

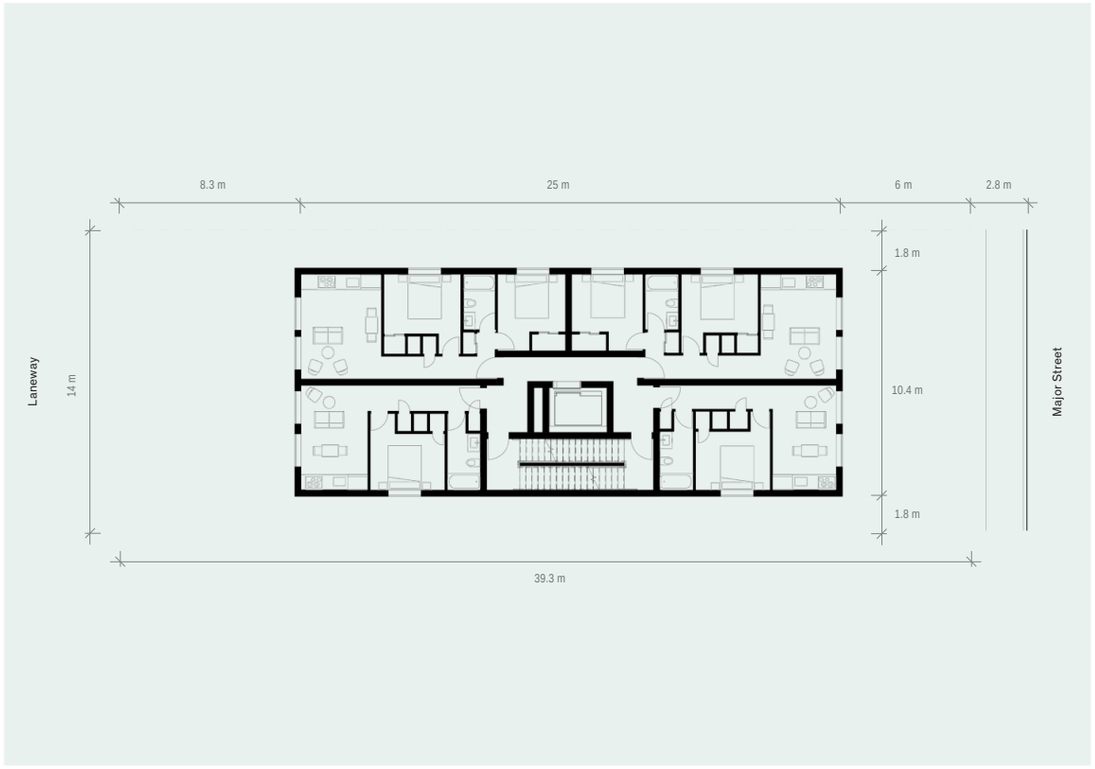
■ Christoph Elsässer
Head of fire protection
at PIRMIN JUNG, Sursee,
Switzerland

CE *Since the revision of the Swiss fire protection regulations in 2015, there is no longer a distinction between non-combustible and combustible construction in terms of fire resistance. Like solid (concrete or masonry) construction, timber construction has been a standard construction method from a fire protection perspective since 2015. The use of a building is much more important than the type of construction—for example, whether it is a parking garage, a shopping centre, or a residential building. Two main protection goals are pursued in fire protection: personal protection and property protection. A sprinkler system primarily serves the purpose of protecting property. The requirements for escape routes are identical for concepts with sprinklers and concepts without sprinklers.*

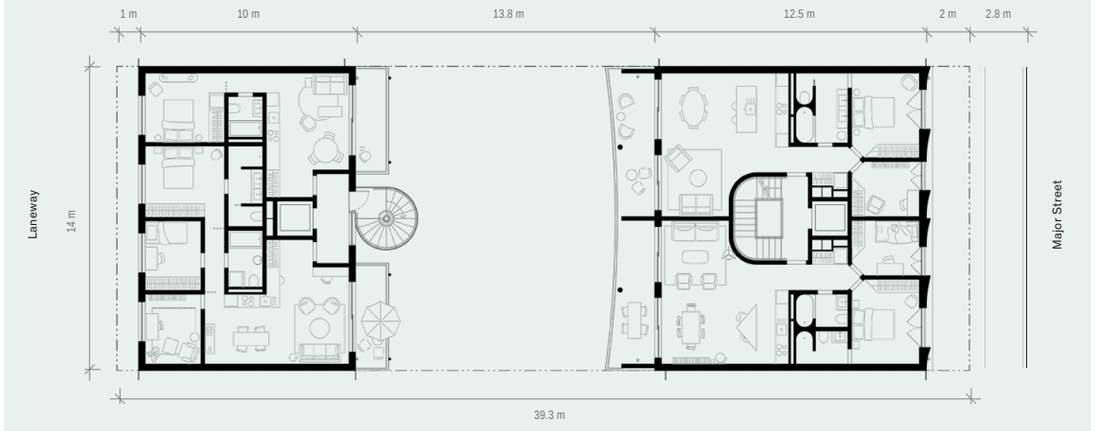


Townhouse - Hildebrand
Basel, Switzerland

The European case studies and feedback from a Swiss fire engineer illustrate that simpler, yet still safe, construction methods are possible under a different fire safety framework. Our goal is to explore how more flexible, performance-based approaches to fire safety could inform and influence the design of multi-unit residences here in Toronto. In the case of our courtyard-block design, we propose a timber (CLT and glulam) structure for both buildings, with concrete block party walls at the side-lot lines and drywall lining the CLT walls along the inner surface of the stair shaft (for the street-side building) and elevator cores. As in our European case studies, neither building would have sprinklers. Firefighter access to the laneway building could be provided through the street-side building (with the addition of supplementary fire hydrants along the street, as necessary) and/or via the laneway, which might mean installing fire hydrants along the laneway, providing a clear turning radius for fire trucks where laneways meet streets (to allow the current fleet of fire trucks to turn into laneways with relative ease), or investing in a fleet of smaller fire trucks that could nimbly navigate the city's narrower laneways. Further research would be required to determine the best solutions in terms of both safety as well as changes in and costs to public infrastructure.



EHON Block



Courtyard Block

In order to stress test the feasibility of adapting the courtyard-block typology to Toronto, we analyzed the possible massing and floor areas for a six-storey building on a typical downtown Toronto mid-block double lot (14 metres wide by 39 metres long) in two scenarios: 1) following the current EHON policy and 2) developing a European-style courtyard building.

EHON MAJOR STREETS STUDY

Assuming a developer's goal would be to maximize density, we used the minimum required setbacks: 6 metres for the front yard and 1.8 metres for the side yards (with only secondary windows on the sides). The rear setback (8 metres) was determined by maximizing the building length to 25 metres. Using a scissor stair and a standard elevator, the plans resulted in a gross construction area (GCA) of approximately 1,820 m^2 and a gross leasable area (GLA) of 1,170 m^2. Building efficiency on a typical floor is around 75%, excluding the basement area.

The result is a building that is too deep, with units that don't fully maximize the lot's potential. In this mid-block condition, each unit has only one primary window exposure, leading to inboard bedrooms with minimal and indirect daylighting. In terms of urban development, the rear of the building is too far from the laneway to create vibrant street life there. If the rear yard is used for landscaping, it unfortunately benefits only the residents in the rear half of the building's units.

COURTYARD-BLOCK BUILDING

The courtyard-block proposal involves constructing two buildings on the same site. Although there are additional costs associated with developing two buildings (such as additional servicing and elevators), this approach results in a GCA of 1,925 m^2 and a higher GLA of 1,421 m^2. Building efficiency on a typical floor (again, excluding basement area) is higher than in the EHON model, varying between 87% (fronting the street) and 90% (fronting the laneway), and the quality of the units is significantly improved. Each building features two through-units per floor, providing ample daylight and views on both the front and back. With each unit having a direct visual connection to the courtyard, this space could be highly programmed, adding value to the overall living experience.

The pro forma—a financial projection that estimates future income, expenses, and potential returns of a property—illustrates that, as it stands, on a downtown Toronto site, neither our courtyard-block scheme nor an EHON-compliant project are financially feasible: separate from the regulatory hurdles, this is another way in which building four- to six-storey mid-rises in downtown Toronto is currently “impossible.”

Our comparative analysis assumes significant land-acquisition costs, which must be considered even when the developer already owns the relevant parcel(s) of land. However, re-zoning to permit four-storey buildings in rear yards would unlock greater development potential for owner-developers—potentially leading to a surge in new rental housing, similar to the impact of Toronto’s laneway suite program. Owner-developers could build in phases, spreading out construction costs over time. They might live in the existing street-side building while constructing the new rear, laneway-side building, then move into the rear building while rebuilding the front. In the interim condition, some owner-developers may consider there to be no land cost associated with their phase-one build.

The owner-developer model would likely remain fairly uncommon, however. In a conventional scenario, it’s clear that financial assumptions need to change in order to make either the courtyard scheme or an EHON scheme work—whether that means lower land costs, lower construction costs, the elimination of various taxes and charges, or a willingness to accept lower profit margins.

BD *It’s called the ‘missing middle’ for a reason. Building small-scale infill housing is challenging. Here we compare the feasibility of two six-storey infill housing options. The first is what’s permissible as-of-right under the EHON policies for major streets, and the second is what might be possible if we dared to consider the impossible. In both cases, a 14 metre by 39 metre assembly is assumed, with a land value of $3.5 million. The EHON scenario is not feasible. For purpose-built rental units, the yield to cost below 4% (5% is the goal) means the project has a negative development margin. The courtyard-block scenario—despite its greater efficiency and highly livable design—is similarly infeasible assuming the status quo. But it starts to approach feasibility once we remove land transfer taxes, eliminate the need for site plan control, fully remove all development charges, compress the project timeline by six months, and streamline utility connections. Maybe none of this is possible. Or maybe it is.*

■ Brandon Donnelly
Founder of the Globizen Group

Costs Removed in V2
Land Transfer Tax
Development Charges
Parkland Dedication
Site Plan Control

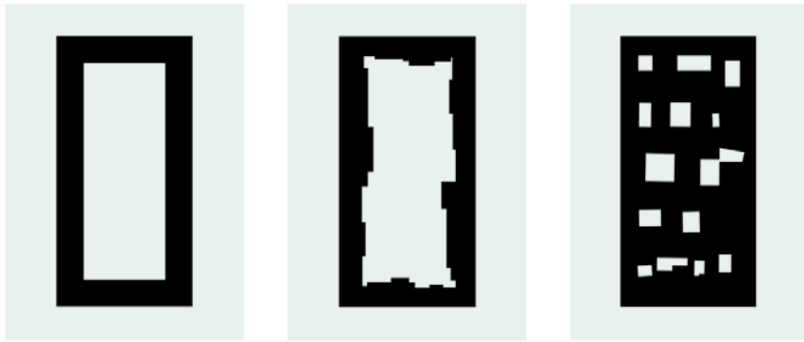
PRO FORMA OF EHON VS. IMPOSSIBLE TORONTO

COURTESY OF BRANDON DONNELLY

■	EHON	IMPOSSIBLE	IMPOSSIBLE V2
LAND (INCL. LAND TRANSFER TAX)	$3,660,000	$3,660,000	$3,500,000
MUNICIPAL COSTS	$1,499,699	$1,499,699	$155,000
CONSTRUCTION	$7,016,674	$7,304,370	$7,304,370
DESIGN / CONSULTANTS / OTHER SOFT COSTS	$605,000	$605,000	$605,000
MANAGEMENT & ADMINISTRATION	$708,236	$725,880	$680,739
MARKETING / SALES / LEASING	$109,820	$122,556	$122,556
FINANCING COSTS	$868,372	$882,034	$818,590
OPERATING COSTS & INCOME	$26,250	$26,250	$26,250
CONTINGENCY	$494,153	$511,178	$504,833
TOTAL PROJECT COSTS	$14,988,204	$15,336,967	$13,717,338
RENTAL RATE (PER SQUARE FOOT)	$4.75	$4.75	$4.75
AVERAGE SUITE SIZE	600 ft²	727 ft²	727 ft²
AVERAGE MONTHLY RENT	$2,850	$3,453	$3,453
YEILD TO COST	3.58%	4.24%	4.74%
PROFIT MARGIN	-10.57%	6%	18.52%
FEASIBILITY	No	No	Yes

03 Urban-Scale Analysis

The European courtyard block comes in many different scales and configurations. To focus our research effectively, we selected city blocks of a scale compatible with those found in Toronto—where block widths typically range from 80 to 90 metres, measured from property line to property line—with a particular interest in examples that could accommodate two distinct courtyard blocks within a typical Toronto block and help transform the laneway (if present) into a more defined street.



1 2 3

4 5 6

Courtyard-Block Typologies

1 Perimeter
2 Irregular
3 Punctured
4 Subdivided
5 Threshold
6 Fragmented

We examined courtyard blocks in five cities with a rich history of architecture and urbanism: Basel, Paris, Berlin, Vienna, and Copenhagen. Each of these five cities has numerous courtyard-block types; we selected ones that appeared to be the most typical and representative of each city as a whole.

When taking a bird's eye view of different courtyard blocks in these cities and reducing them to their simplest figure-ground plans, we observed considerable diversity within the blocks, despite their comparable scales. Some are clearly bound and feature a large central courtyard. Others are denser and less rigidly structured, resembling a perforated mass of small courtyards and lightwells that provide less light and air.

We find this variety exciting and by no means consider one courtyard-block expression superior to another. However, in considering which type of courtyard block would best adapt to the Toronto context, we found the Basel model most suitable (with some useful examples in Copenhagen, Denmark, as well): block sizes and right-of-way widths were most similar to those in Toronto. While there are specific reasons for the distinct appearances of the selected European blocks, they generally share an organic evolution—they all developed gradually over time—and all are notably denser than most city blocks in Toronto.

EUROPEAN BLOCKS



■ Selected Cities

Of all the cities we studied, Basel has courtyard blocks that best align with our design ambitions for Toronto. These long, often narrow, blocks feature well-defined courtyards and shallow buildings, typically just 10 metres deep. They maintain a rigorous street wall, with variations in height, roof expression, and subtle changes in building depth along the courtyard side. While the widths of Basel's courtyards range from 9 metres to over 30 metres, the narrow courtyards that interested us most typically fall within the 10 metre to 15 metre range. Along the courtyard blocks, building height is proportional to courtyard width, with narrower courtyards (in the 9 to 10 metre range) typically lined by lower, four- to five-storey buildings. Courtyards in Basel frequently serve multiple functions, ranging from residential gardens to communal play areas, parking, or even small commercial spaces.

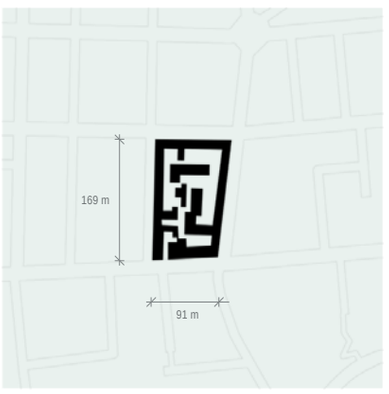
Unlike those in the uniform Haussmannian blocks of Paris, Basel's courtyards are surrounded by buildings of varied architectural styles, from medieval timber-framed structures to modernist infill projects. This diversity of expression is an important precedent for the Toronto study.



■ Selected Basel Blocks

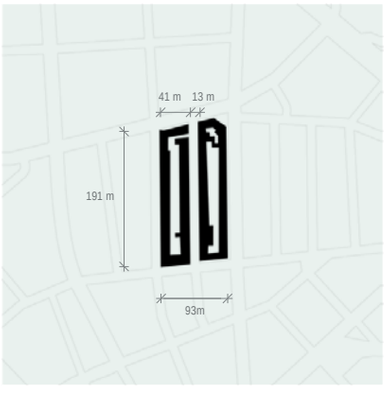
Gundeldingerstrasse & Bruderholzstrasse





Hegenheimerstrasse & Colmarerstrasse





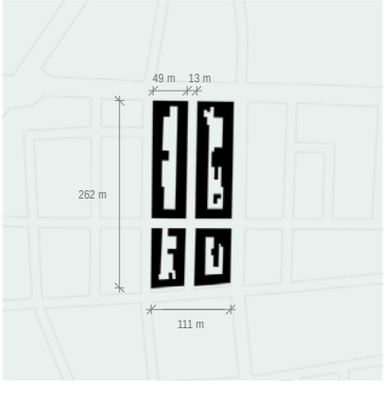
Davidsbodenstrasse & St. Johanns-Ring





Landskronstrasse & Elsässerstrasse





Scale 1:6000
*All dimensions are approximate

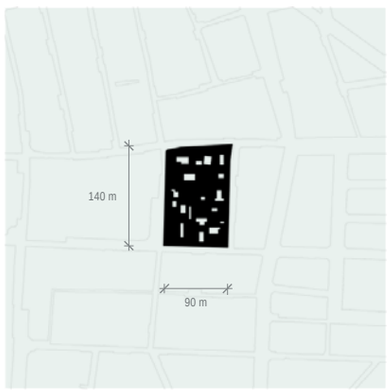
Paris has the densest and most urban courtyard blocks of all the cities we studied. These iconic blocks were developed during the massive urban-renewal program of the mid-19th century by Georges-Eugène Haussmann under Napoleon III. While the main boulevards are characterized by highly consistent buildings, ranging between five and seven storeys, its courtyards are characterized by small-scale, irregular forms in fragmented configurations. Unlike those in some other cities we explored, Parisian courtyards are typically not “green” amenity spaces: they are primarily hard paved, with limited greenery provided by potted plants or planters; typically, there are no benches or fountains. Instead, they primarily serve to provide daylight, ventilation, and, at times, access to other buildings (in fact, many Parisian buildings have no street presence at all and are accessible only through their courtyard). The blocks we studied range from 80 to 100 metres in width.



■ Selected Paris Blocks

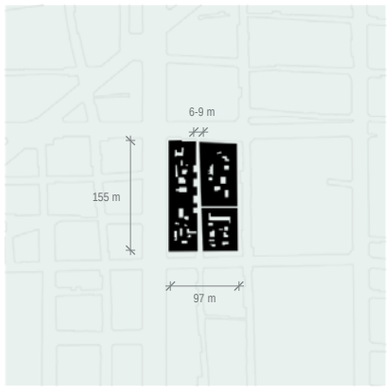
Rue Du Temple
& Rue Pastourelle





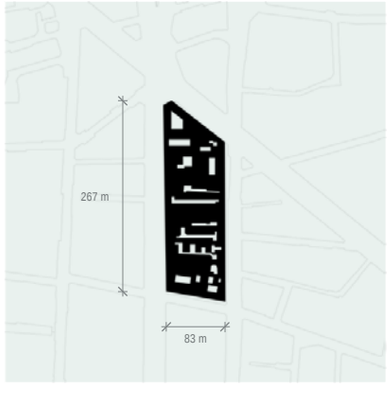
Boulevard de Sebastopol
& Rue Aux Ours





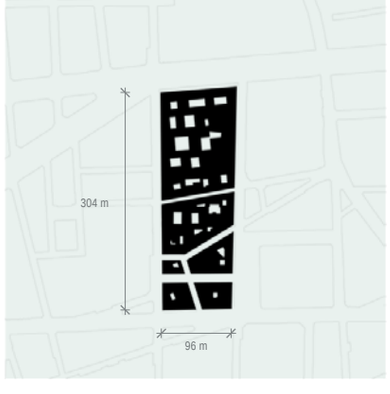
Boulevard de Strasbourg
& Boulevard de Magenta





Boulevard Haussmann
& Rue Drouot





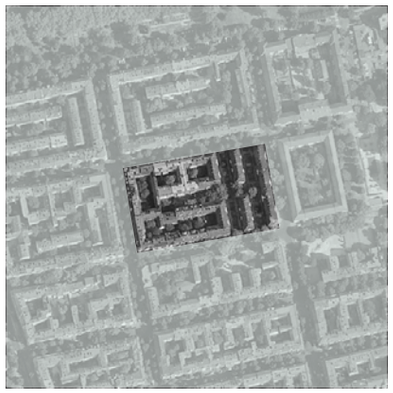
Scale 1:6000
*All dimensions are approximate

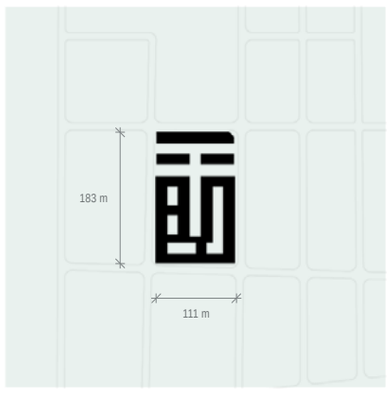
Berlin's urban courtyard blocks, rebuilt from the 19th century "Mietskaserne" (rental barracks) and punctuated by often small "Hinterhöfe" (rear courtyards), are a defining feature of the city. Similar in density to the ones in Paris, they are characterized by five-storey perimeter buildings surrounding multiple nested inner courtyards. These courtyards create an almost hidden world of micro-programmed communities beyond the main street wall. Originally designed to house workers, stables, or small factories, this complex block structure today fosters a unique urban ecosystem of housing, art galleries, cafes, and gardens. In terms of scale, the inner courtyard buildings can be extremely dense: some have as little as five metres of separation between buildings. The plans are typically organized as two dwelling units per storey, served by a single common stair leading to the narrow courtyard.



■ Selected Berlin Blocks

Altenbraker Strasse & Schierker Strasse





Zillestrasse & Kaiser-Friedrich-Strasse





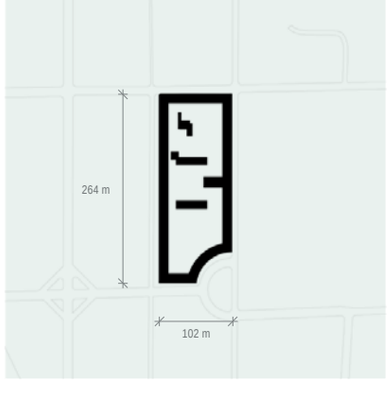
Adalbertstrasse & Oranienstrasse





Naunynstrasse & Adalbertstrasse





Scale 1:6000
*All dimensions are approximate

Vienna's urban courtyard blocks, much like Berlin's, are a relic of 19th century urban planning. The block configuration is typically 10 metres wider than the Toronto block study area, which allows for multiple and interlinked courtyards connected by hidden passageways. Many of the courtyards feature large cobblestone-paved areas complemented by small fountains or greenery. The Viennese courtyard blocks reflect the social stratification of the era during which they were developed, with wealthier residents occupying the lower floors alongside the street, while higher floors and inner courtyard spaces were for lower-income tenants.

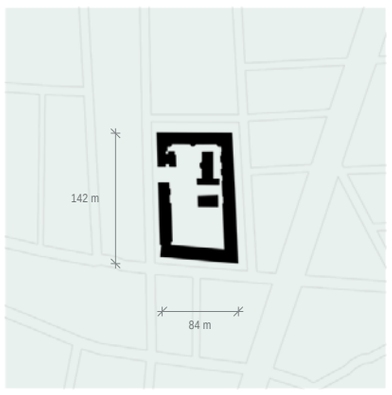
Today, Vienna's renowned social-housing system provides subsidized housing, as well as community amenities, to over half of its residents.



■ Selected Vienna Blocks

Novaragasse & Zirkusgasse





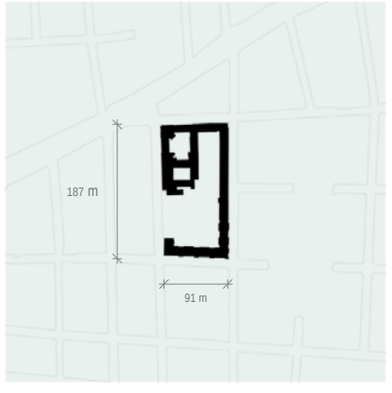
Vorgartenstrasse & Ennsgasse





Rainergasse & Blechturmgasse





Engerthstrasse & Traisengasse





Scale 1:6000
*All dimensions are approximate

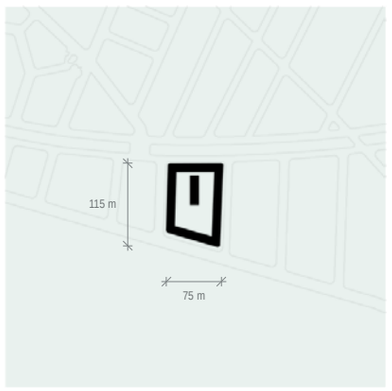
Unlike the showy façades of Vienna or the gritty Hinterhöfe of Berlin, Copenhagen's courtyard blocks prioritize understated functionality and communal charm. Many were built as a unified structure in a single construction phase. The blocks are formed by a continuous ring of restrained buildings from four to six storeys tall. The buildings are typically shallow, ranging from 10 to 13 metres in depth. The courtyards are much larger than other European examples and often contain playgrounds and shared gardens. Over time, the courtyards have become like hidden parks in the city, connected to the larger pedestrian and bike network via small archways or passages.



■ Selected Copenhagen Blocks

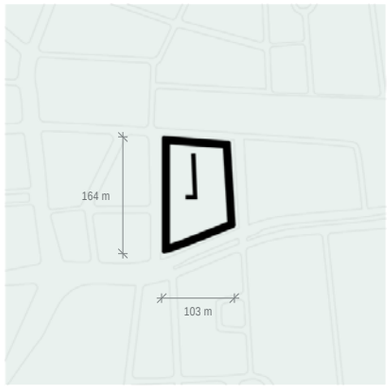
Sønder Boulevard & Sigerstedgade





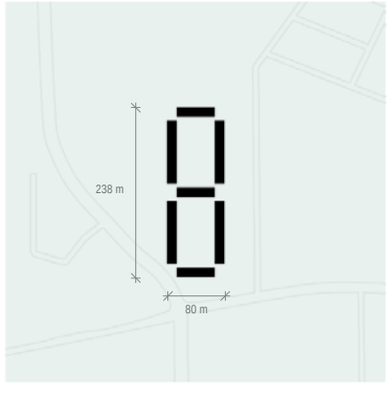
Molbechsvej & Vigerslev Allé





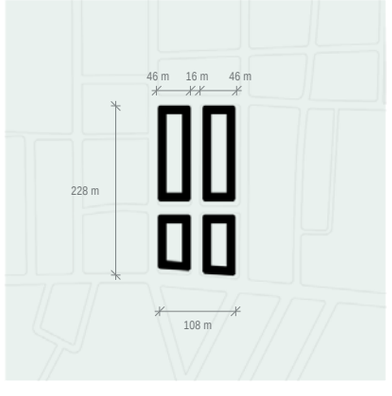
Amagerfaelledvej & Grønjordsvej





Amagerbrogade & Højdevej





Scale 1:6000
*All dimensions are approximate

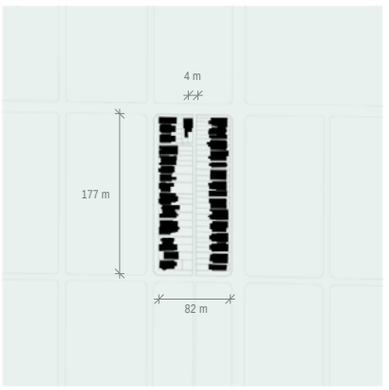
The four Toronto city blocks we use as a baseline against which to compare the European courtyard blocks are all located along “major streets” and are now, due to recent changes in policy brought about by EHON, zoned for housing up to six storeys high. The sites are located downtown and are excellent candidates for higher density. The widths of the selected blocks (the most critical dimension for the purposes of our study) were all in the 80- to 90-metre range from property line to property line, with most in the low 80s. As is typical in Toronto, laneways often divide these city blocks in two, with an approximately 38- to 40-metre-deep lot on either side of a three- to five-metre-wide lane.



■ Selected Toronto Blocks

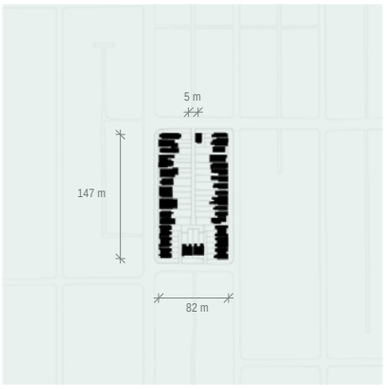
Bathurst Street & Harbord Street



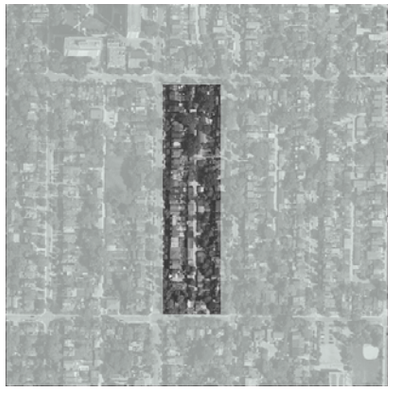


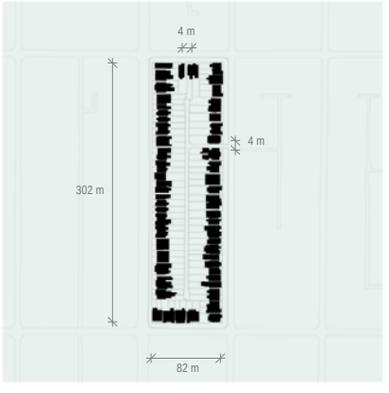
Ossington Avenue & Harbord Street



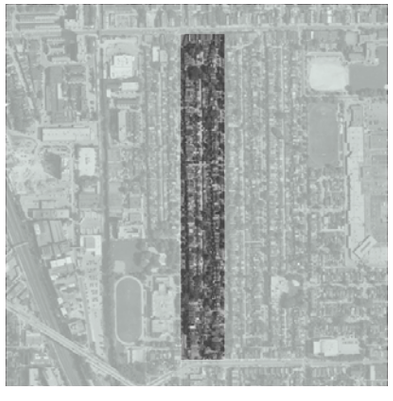


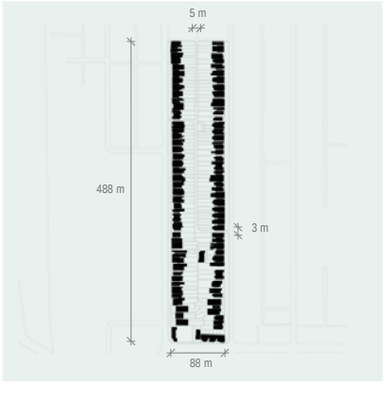
Dovercourt Road & Dewson Street





Lansdowne Avenue & College Street





Scale 1:6000
*All dimensions are approximate

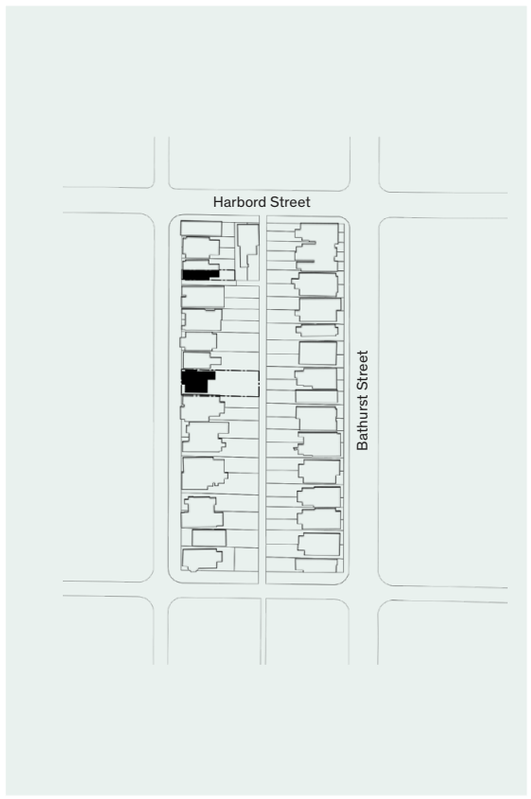
04 Building-Scale Analysis

Understanding the European courtyard block requires looking beyond its urban-scale form to the individual buildings that make up its cohesive whole. Before turning to specific European case studies, each exploring one facet of this architectural fabric, we first looked at a selection of typical downtown Toronto lots on these four blocks. For each block, we examined the smallest and largest lots, which ranged from 4 to 14 metres wide (most commonly falling in the 5 to 8 metre range) and 27 to 44 metres deep. This allowed us to better understand the range of dimensions and other characteristics of these lots and to confirm that the lot sizes are generally large enough to allow the construction of two suitably scaled buildings separated by a courtyard, either on individual lots or by combining two lots together. The site selection for our design proposal, a combined set of two mid-block 7 metre by 39 metre lots, was designed to represent the most typical lot configuration.

BATHURST STREET & HARBORD STREET



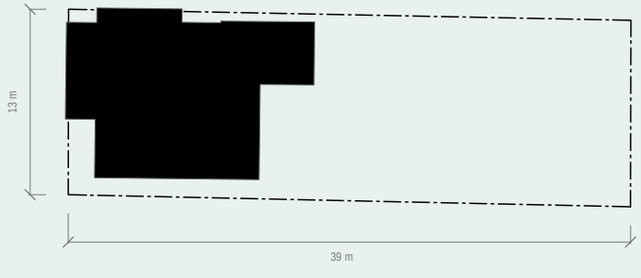
Aerial Photograph



Site Plan



Smallest Lot



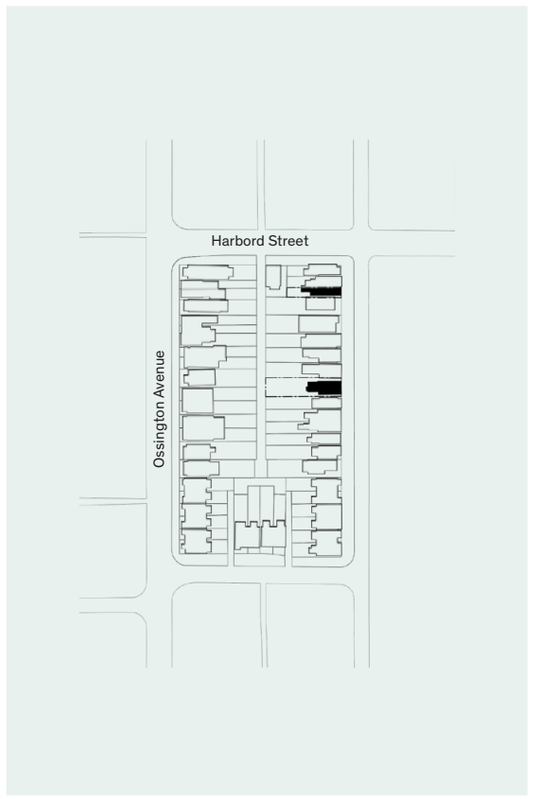
Largest Lot

Scale 1:500

OSSINGTON AVENUE & HARBORD STREET



Aerial Photograph



Site Plan



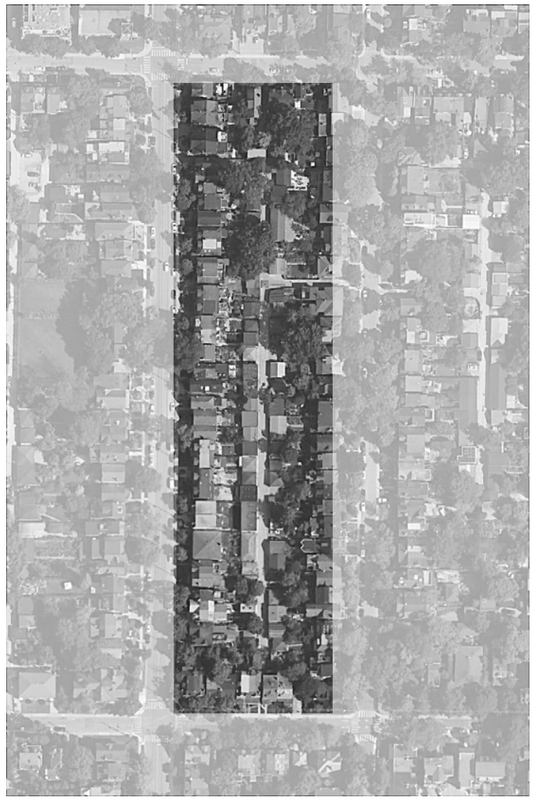
Smallest Lot



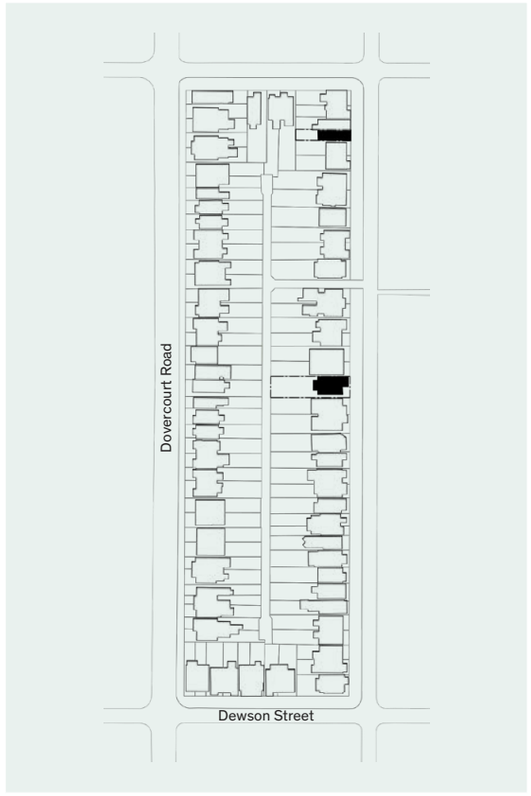
Largest Lot

Scale 1:500

DOVERCOURT ROAD & DEWSON STREET



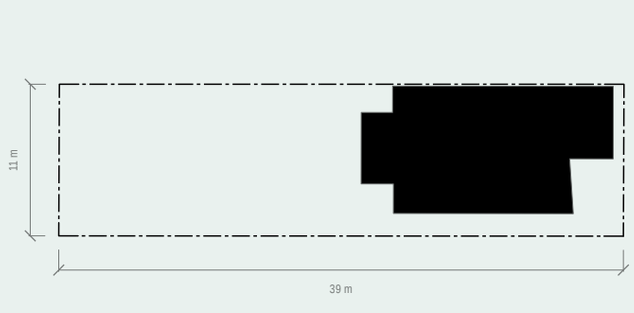
Aerial Photograph



Site Plan



Smallest Lot



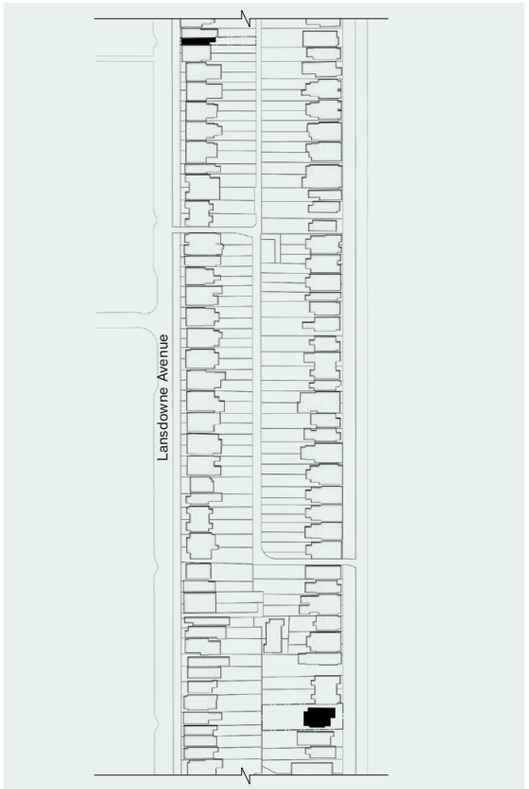
Largest Lot

Scale 1:500

LANSDOWNE AVENUE & COLLEGE STREET



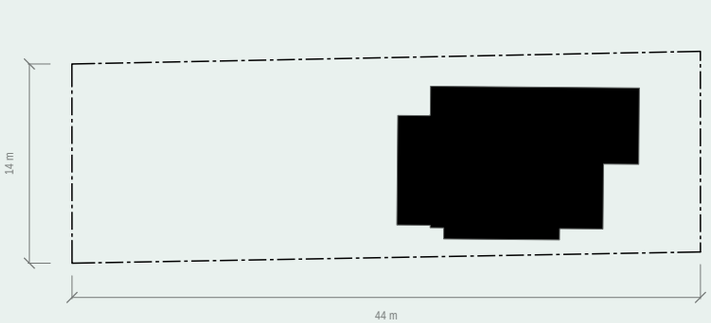
Aerial Photograph



Site Plan



Smallest Lot



Largest Lot

Scale 1:500

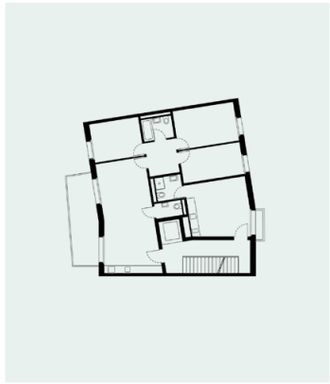
Our case study projects are all at least four storeys tall, include an elevator, connect to—or create—a courtyard, and ideally have been constructed within the last decade. We focused on buildings with lot widths between 8 and 19.5 metres, ensuring that each case study would be dimensionally feasible on one or, at most, two combined typical Toronto lots.

Our analysis revealed several recurring typologies: buildings that complete an existing courtyard, create a new one, or even sit within a courtyard. We chose a range of examples that captured diverse conditions: some with underground parking, others without; some with one unit per floor, others with three; some featuring interior stairs, others exterior ones; some that are co-ops, condominiums, or social housing, others that offer market rate rental; and constructions ranging from wood to concrete. All the selected projects are ones we find architecturally compelling and reflect living environments we would want to inhabit.

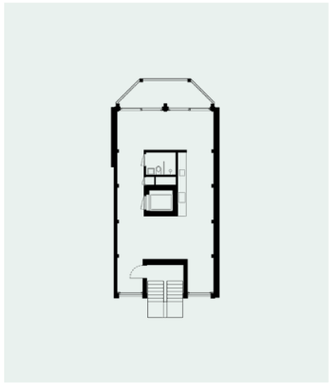
Once we selected our case studies, we posed a standard set of 16 questions to the architecture practices that designed them. These were the kinds of questions that naturally arose during our initial review of the projects. We found both the similarities and the differences in their responses revealing. Collectively, they illustrate that high-quality housing—with relatively small footprints, modest heights, and limited unit counts, whether condominium, social housing, or regular market rentals—is financially feasible in the European context.

SELECTED PROJECTS

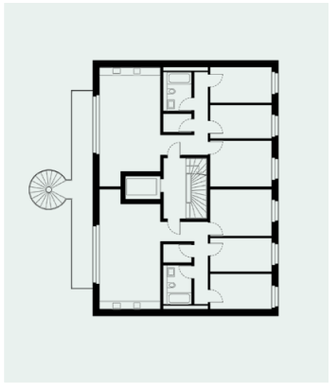
	Name	Location	Completion
1	**Feld4 Cooperative Housing** / MASStudio	Basel, Switzerland	2022
2	**Lofthaus** / Buchner Bründler Architekten	Basel, Switzerland	2002
3	**Townhouse** / Hildebrand	Basel, Switzerland	2025
4	**Fasanen 36** / CAMA A	Berlin, Germany	2023
5	**Libauer Strasse** / JWA	Berlin, Germany	2020
6	**Apartment House on Beckmanngasse** / Nerma Linsberger	Vienna, Austria	2014
7	**Frauenheimgasse** / AllesWirdGut	Vienna, Austria	2014
8	**14 Logements Sociaux et un Commerce** / rh+ architecture	Paris, France	2021
9	**Quatre Cheminées** / Déchelette Architecture	Paris, France	2024

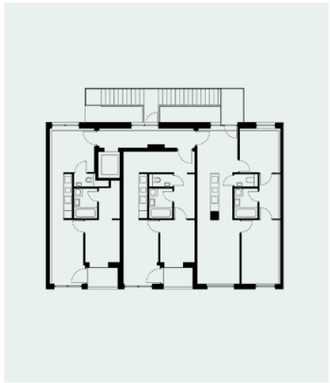

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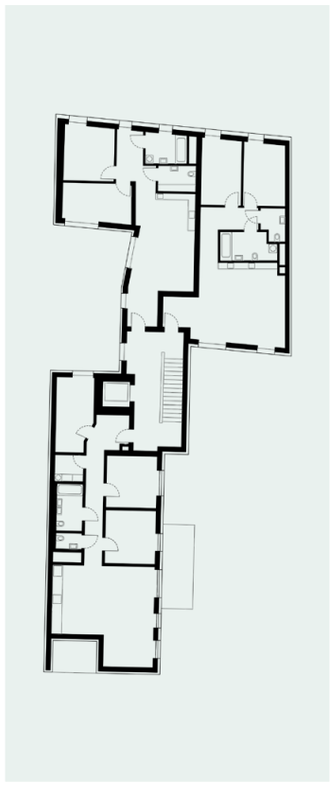

2

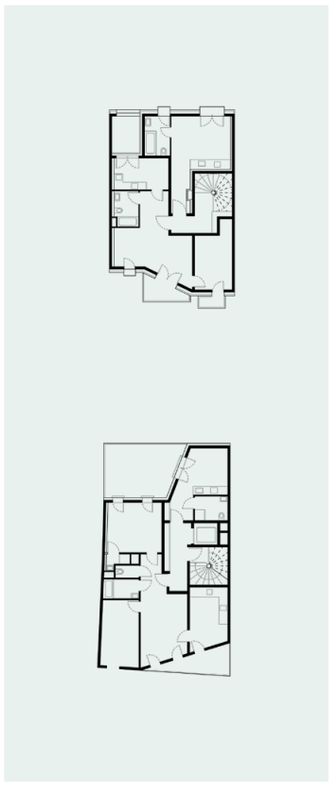

3

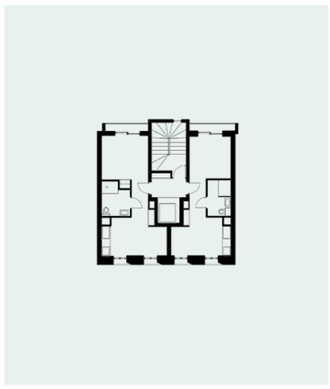

4


5


6


7


8

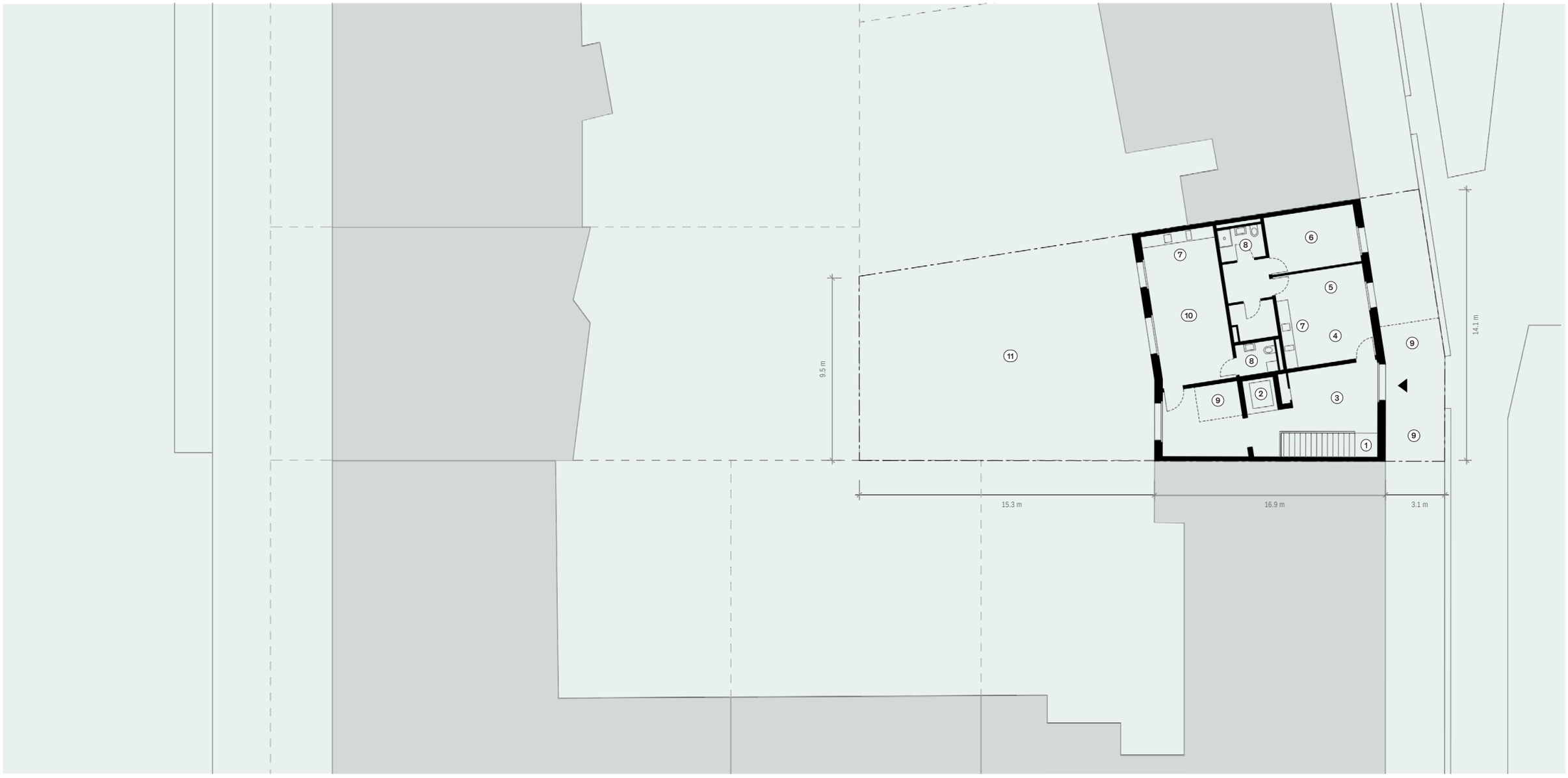

9

1

FELD4 COOPERATIVE HOUSING / MASSTUDIO
BASEL, SWITZERLAND / 2022

Site Area: ~358 m²
Building Dimensions: ~12.7 m Avg. (w) x 12 m (d)

Located within a classic Basel courtyard block, this cooperative housing project is rooted in flexibility: over time, the two units that make up one level can easily be combined to create a larger apartment and later reconverted into two smaller ones. The unit mix ranges from 6 to 11 apartments, from studios to 5.5-room apartments, designed to accommodate families and multi-generational households.



Site Plan

Legend:

1 Stair
2 Elevator
3 Entry
4 Dining room
5 Living room
6 Bedroom
7 Kitchen
8 Washroom
9 Bike parking
10 Multi-purpose room
11 Courtyard

0m 10m

1

FELD4 COOPERATIVE HOUSING / MASSTUDIO

BASEL, SWITZERLAND / 2022



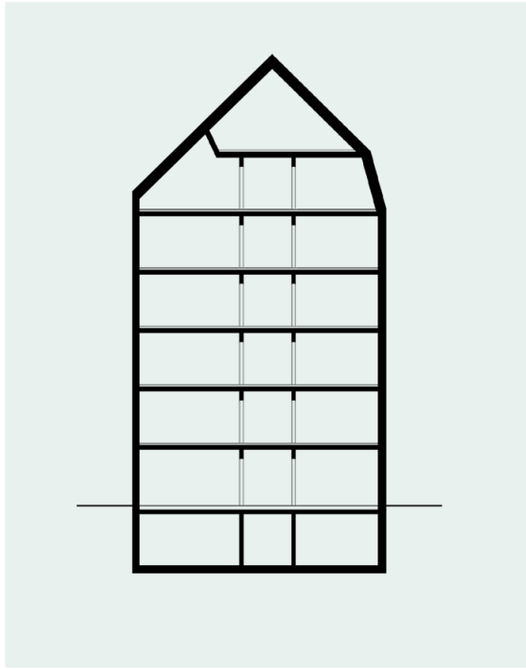
Street View

Question / Answer	
Air Conditioning / No	**Bike Storage /** 22 parking spots in front of building
Heating Type / Radiant floor	**Rental or Condominium /** Mix of cooperative housing and rental units
Ventilation Type(s) / Operable windows in façade and roof	**Building Structure Material /** Recycled concrete
Garbage Management / No garbage room	**Approx. Construction Cost /** CHF 3.5 million all in
Basement / Yes, storage, mechanical, and laundry	**Approx. Rental or Sale Price /** CHF 22/m²
Courtyard Access / Shared by ground floor units	**Outdoor Maintenance /** Housing cooperative
Laundry / Shared laundry room in basement	**Car Parking /** No
Windows / Triple glazed	**Sprinklers /** No

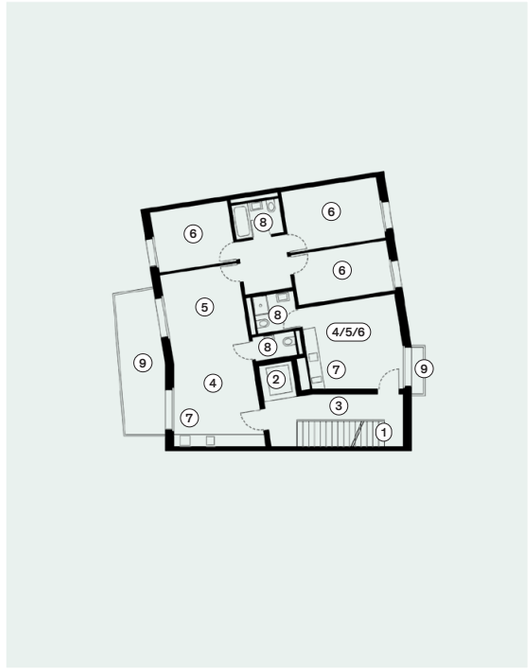
0m 10m

Legend:

1	Stair	4	Dining room	7	Kitchen
2	Elevator	5	Living room	8	Washroom
3	Corridor	6	Bedroom	9	Balcony



Section



Typical Floor Plan

Building Height: 21.7 m
Typ. Unit Size: 24.5–110 m²
Number of Units: min. 6 / max. 11
Typ. Floor Efficiency: ~84%
Commercial at Grade: No
Storeys: 7

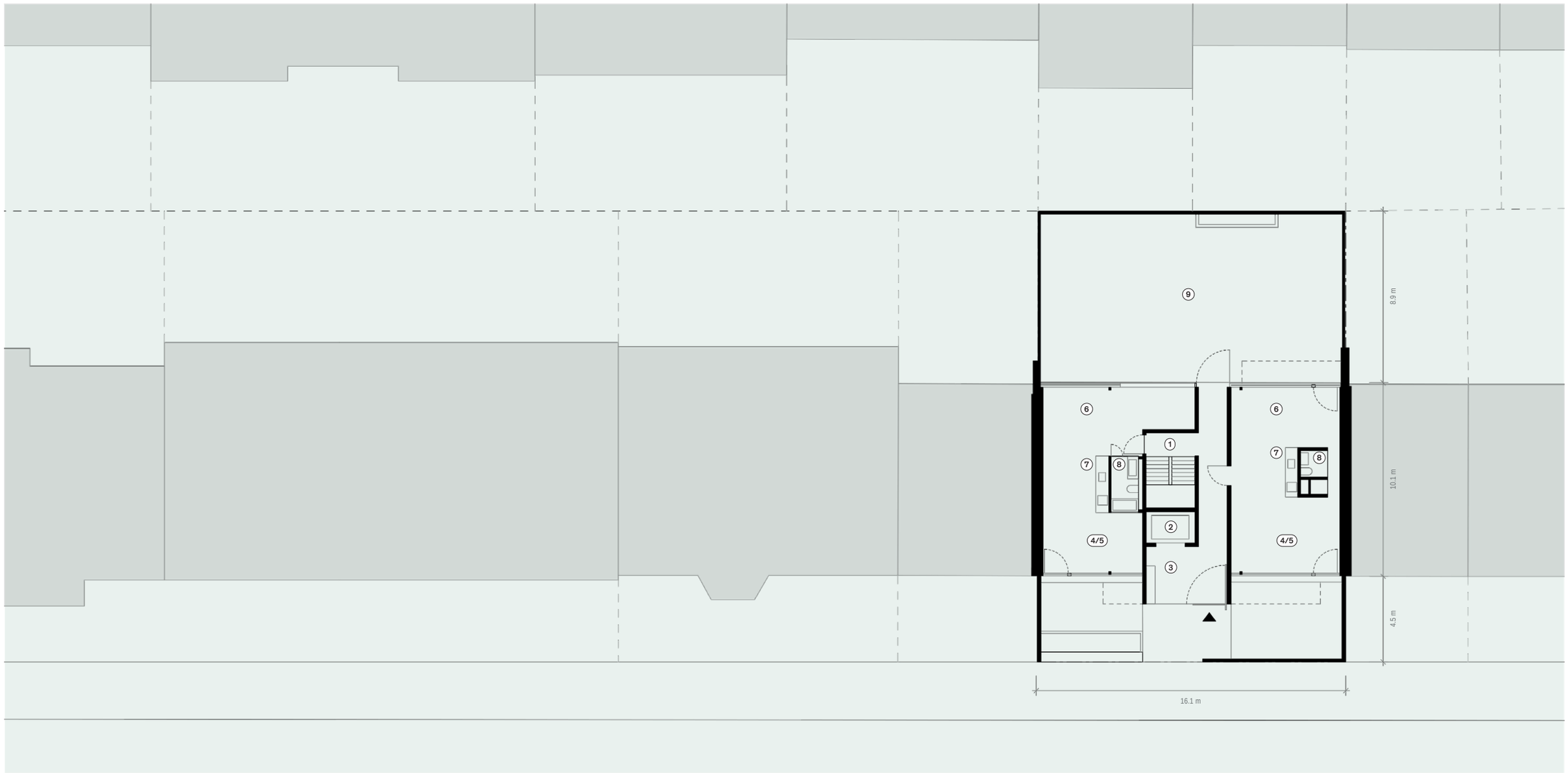


Courtyard View

LOFTHAUS / BUCHNER BRÜNDLER ARCHITEKTEN
BASEL, SWITZERLAND / 2002

Site Area: ~375 m²
Building Dimensions: 16.1 m (w) X 10.1 m (d)

Located within a narrow Basel courtyard block—whose proportions directly inspired our design proposal—this radical project is defined by floor-to-ceiling glazing, a rigorously minimal aesthetic, and a raw-material palette. Each upper floor contains a single unit, organized as an open and flexible plan wrapped around a compact core.



Site Plan

Legend:

1	Stair	4	Dining room	7	Kitchen
2	Elevator	5	Living room	8	Washroom
3	Entry	6	Bedroom	9	Courtyard

0m 10m

LOFTHAUS / BUCHNER BRÜNDLER ARCHITEKTEN
BASEL, SWITZERLAND / 2002



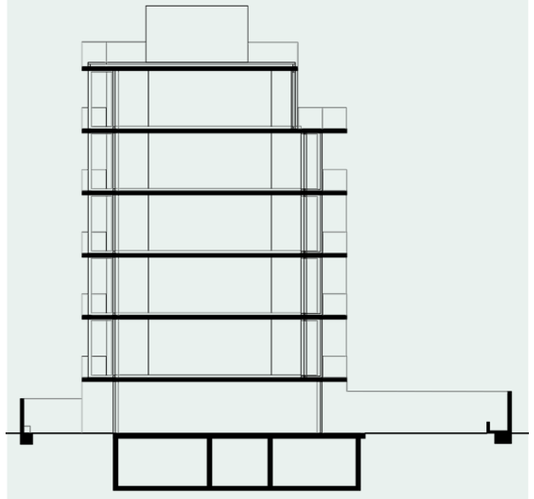
Street View

Question / Answer	
Air Conditioning / No	**Bike Storage /** In basement
Heating Type / Radiant floor	**Rental or Condominium /** Condominium
Ventilation Type(s) / Operable windows	**Building Structure Material /** Concrete
Garbage Management / No garbage room	**Approx. Construction Cost /** Unknown
Basement / Yes, storage, mechanical, laundry, and bike room	**Approx. Rental or Sale Price /** Unknown
Courtyard Access / Shared by all units	**Outdoor Maintenance /** Housekeeper
Laundry / Shared laundry room in basement	**Car Parking /** No
Windows / Double glazed	**Sprinklers /** No

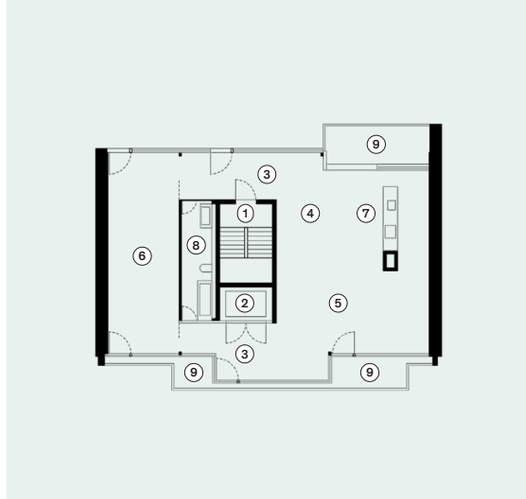
0m 10m

Legend:

1	Stair	4	Dining room	7	Kitchen
2	Elevator	5	Living room	8	Washroom
3	Foyer	6	Bedroom	9	Balcony



Section



Typical Floor Plan

Building Height: ~17.6 m
Typ. Unit Size: ~155 m²
Number of Units: 7
Typ. Floor Efficiency: ~91%
Commercial at Grade: No
Storeys: 6

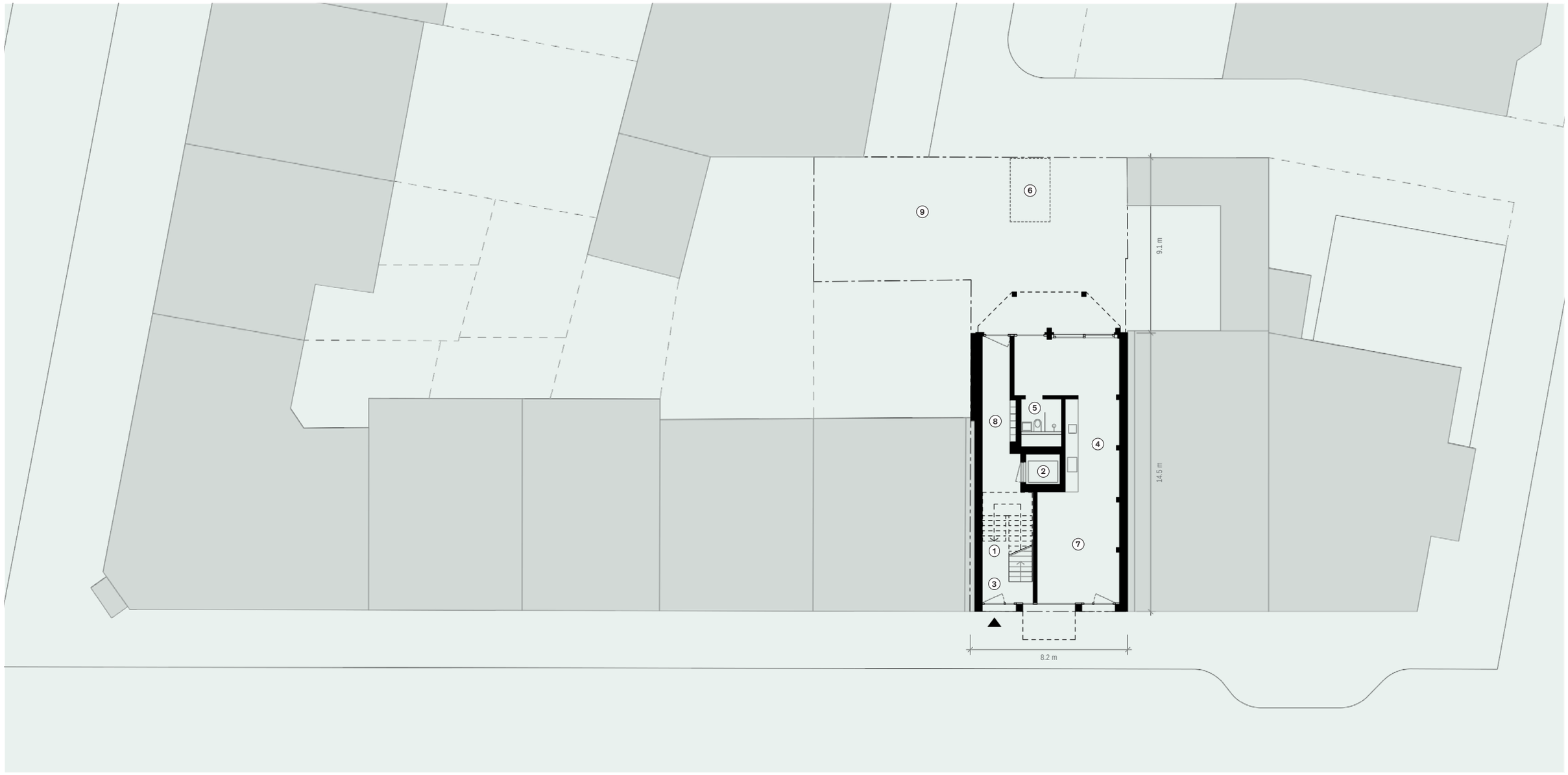


Courtyard View

TOWNHOUSE / HILDEBRAND
BASEL, SWITZERLAND / 2025

Site Area: ~246 m²
Building Dimensions: 8.2 m (w) X 14.5 m (d)

This elegant, all-wood market-rate rental building features a distinctive exterior stair along its main street-facing façade. With one unit per floor, the living spaces are organized around a central elevator core and defined by a warm, exposed-wood palette.



Site Plan

Legend:

1 Stair
2 Elevator
3 Entry
4 Kitchen
5 Washroom
6 Bike parking
7 Commercial space
8 Mailboxes
9 Courtyard

0m 10m

TOWNHOUSE / HILDEBRAND
BASEL, SWITZERLAND / 2025



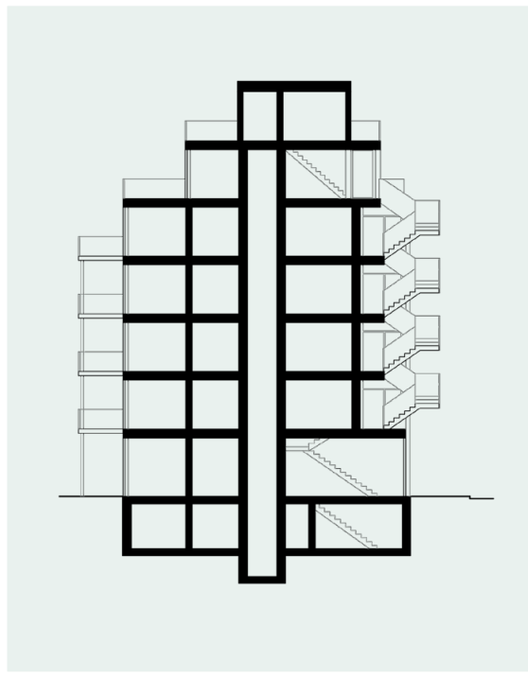
Street View

Question / Answer	
Air Conditioning / No	Bike Storage / Outdoor bike shelter in rear yard
Heating Type / Radiant floor	Rental or Condominium / Rental
Ventilation Type(s) / Operable windows	Building Structure Material / Mass timber
Garbage Management / Large container in rear yard	Approx. Construction Cost / CHF 3.8 million
Basement / Yes, storage and mechanical	Approx. Rental or Sale Price / CHF 36/m²
Courtyard Access / Shared by all units	Outdoor Maintenance / Housekeeper
Laundry / Within each unit	Car Parking / No
Windows / Triple glazed	Sprinklers / No

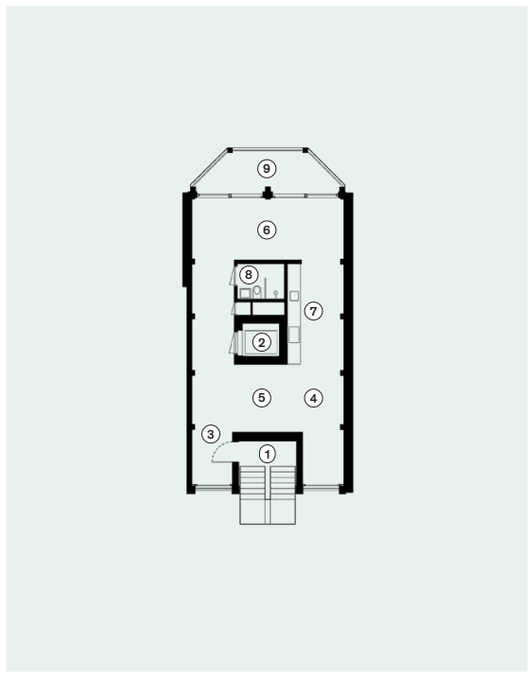
0m 10m

Legend:

1	Stair	4	Dining room	7	Kitchen
2	Elevator	5	Living room	8	Washroom
3	Foyer	6	Bedroom	9	Balcony



Section



Typical Floor Plan

Building Height: 20.8 m
Typ. Unit Size: ~105 m²
Number of Units: 5
Typ. Floor Efficiency: ~94%
Commercial at Grade: Yes
Storeys: 7

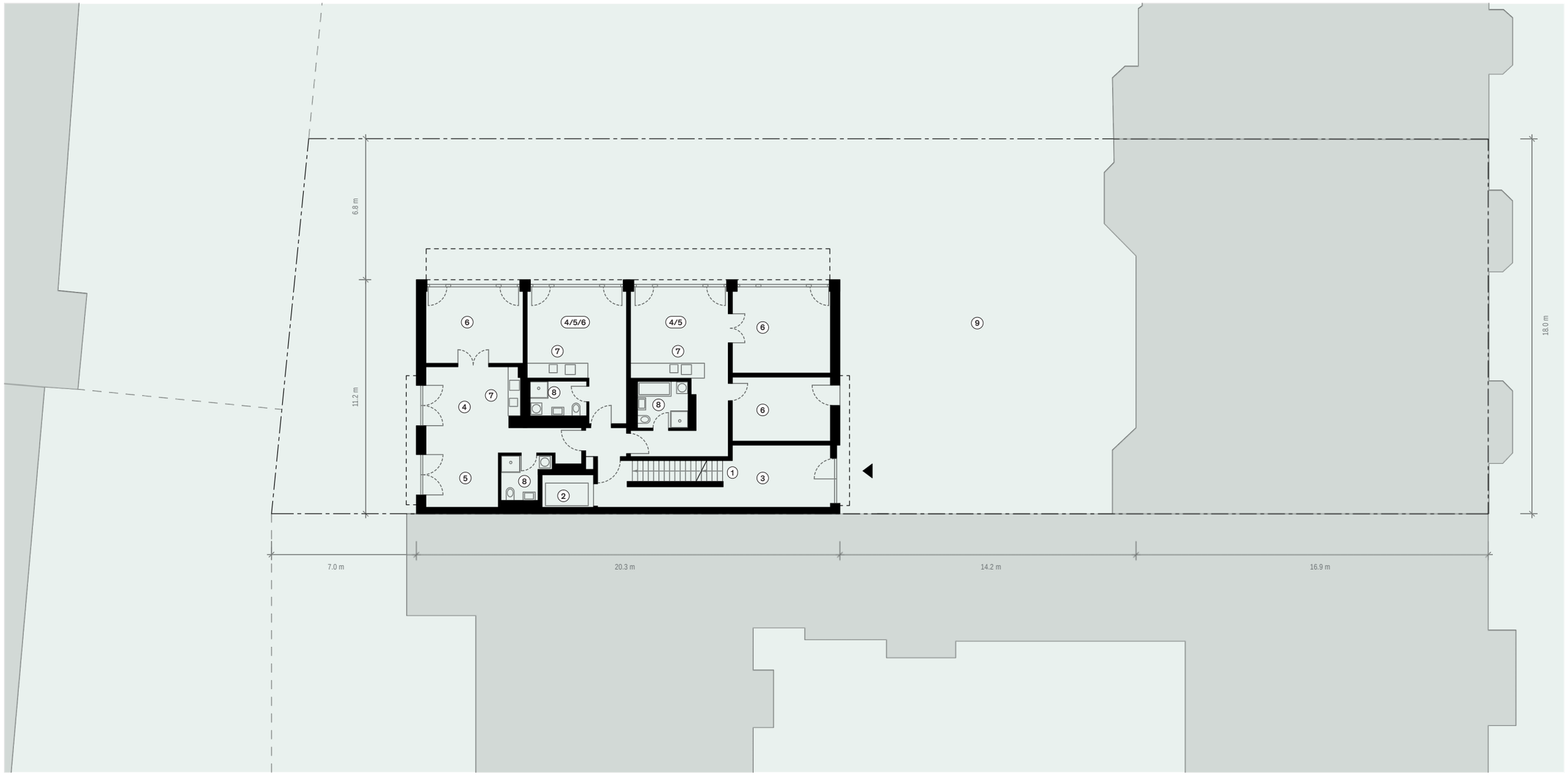


Courtyard View

FASANEN 36 / CAMA A
BERLIN, GERMANY / 2023

Site Area: ~1035 m²
Building Dimensions: 20.3 m (w) X 11.2 m (d)

This project is unusual in that it is located within a courtyard, nestled in the garden of an existing older building and directly attached to an adjoining party wall. It offers a clever solution for delivering high-quality housing on a tight and unconventional site.



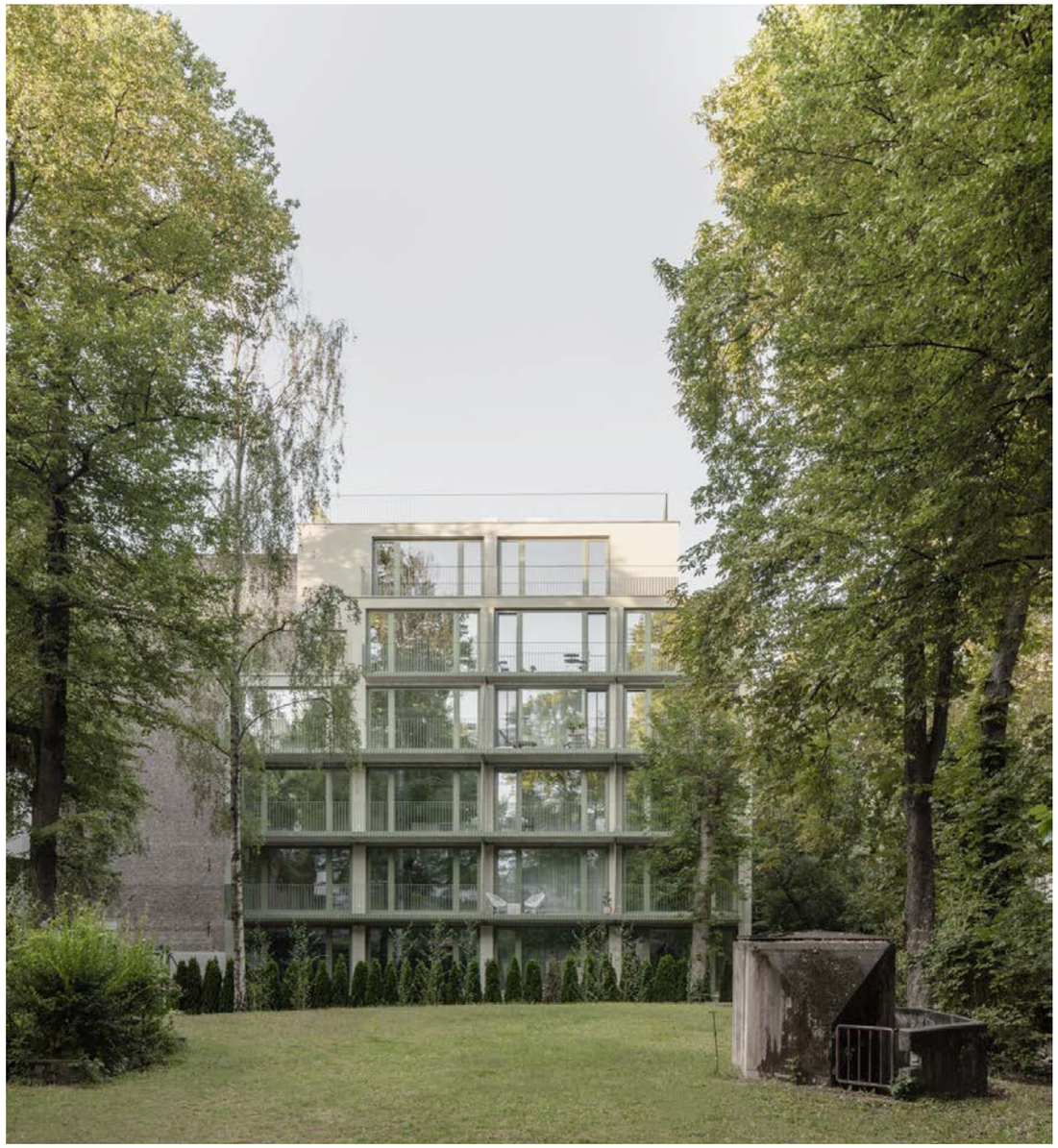
Site Plan

Legend:

1	Stair	4	Dining room	7	Kitchen
2	Elevator	5	Living room	8	Washroom
3	Entry	6	Bedroom	9	Courtyard

0m 10m

FASANEN 36 / CAMA A
BERLIN, GERMANY / 2023

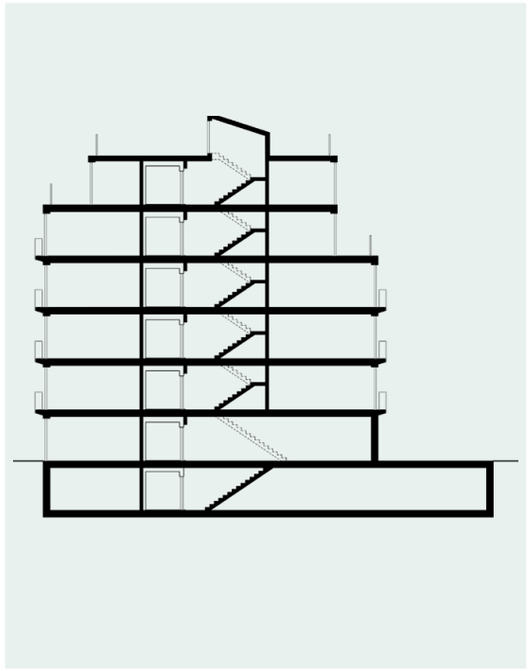


Courtyard View

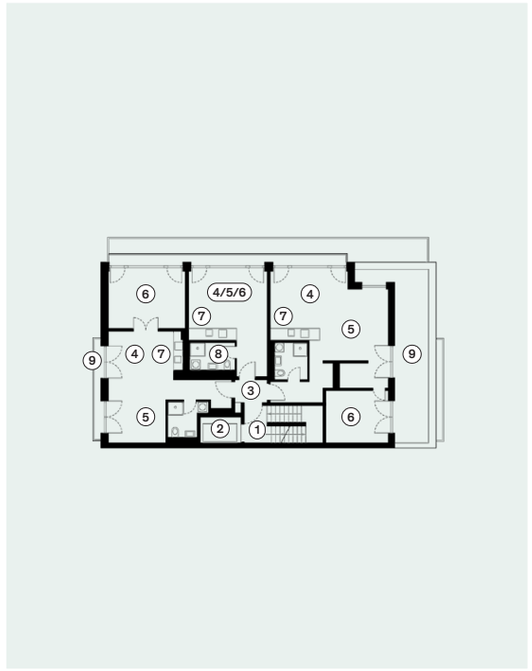
0m 10m

Legend:

1	Stair	4	Dining room	7	Kitchen
2	Elevator	5	Living room	8	Washroom
3	Corridor	6	Bedroom	9	Balcony



Section



Typical Floor Plan

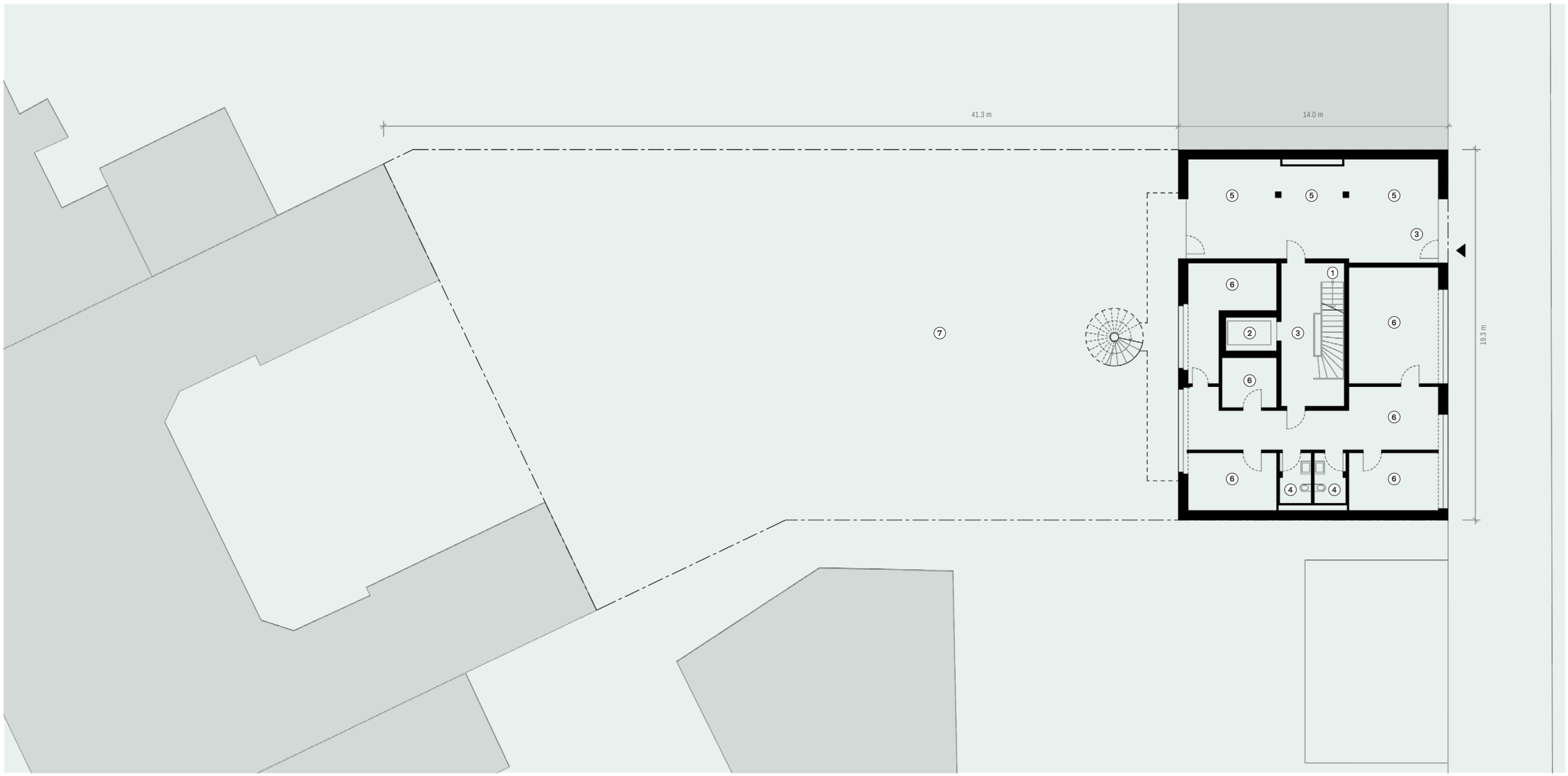
Question / Answer	
Air Conditioning / No	**Bike Storage /** In the parking garage
Heating Type / Radiant floor	**Rental or Condominium /** Rental
Ventilation Type(s) / Operable windows; mech. ventilation in WC	**Building Structure Material /** Concrete
Garbage Management / Garbage room	**Approx. Construction Cost /** EUR 5 million
Basement / Yes, storage, and car parking	**Approx. Rental or Sale Price /** EUR 30/m²
Courtyard Access / Shared by all units	**Outdoor Maintenance /** Housekeeper
Laundry / Within each unit	**Car Parking /** Yes, underground
Windows / Double glazed	**Sprinklers /** No, standpipe

Building Height: ~18.5 m
Typ. Unit Size: ~55 m²
Number of Units: 16
Typ. Floor Efficiency: ~91%
Commercial at Grade: No
Storeys: 6

LIBAUER STRASSE / JWA
BERLIN, GERMANY / 2020

Site Area: ~1013 m²
Building Dimensions: 19.3 m (w) X 14 m (d)

A well-proportioned and flexible floor plan allows for a variety of unit sizes and living arrangements. The ground floor includes a commercial space, and all apartments have direct access to the courtyard via an exterior stair.



Site Plan

Legend:

1 Stair
2 Elevator
3 Entry
4 Washroom
5 Bike parking
6 Commercial space
7 Courtyard

0m 10m

LIBAUER STRASSE / JWA
BERLIN, GERMANY / 2020



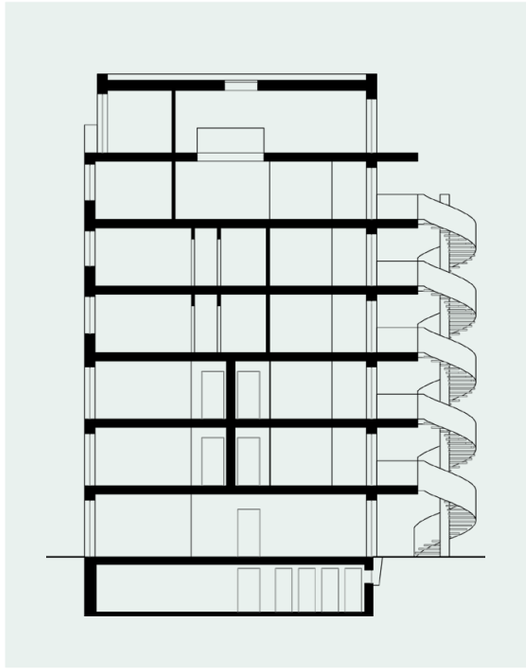
Street View

Question / Answer	
Air Conditioning / No	**Bike Storage /** On ground floor and underground
Heating Type / Radiant floor	**Rental or Condominium /** Rental and condominium
Ventilation Type(s) / Operable windows	**Building Structure Material /** Concrete and brick
Garbage Management / Trash bins in courtyard	**Approx. Construction Cost /** EUR 2.6 million net
Basement / Yes, storage, and mechanical	**Approx. Rental or Sale Price /** EUR 20/m² (Rental) / EUR 7500/m² (Sale)
Courtyard Access / Shared by all units	**Outdoor Maintenance /** Caretaker
Laundry / Within each unit	**Car Parking /** No
Windows / Triple glazed	**Sprinklers /** No

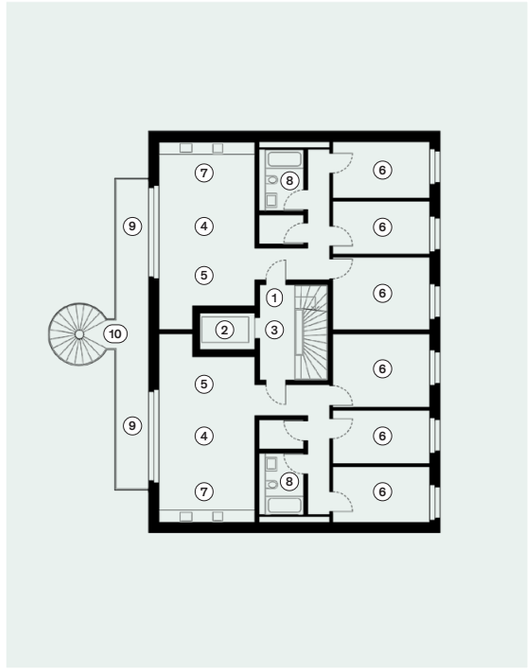
0m 10m

Legend:

1	Stair	5	Living room	9	Balcony
2	Elevator	6	Bedroom	10	Ext. Stair
3	Corridor	7	Kitchen		
4	Dining room	8	Washroom		



Section



Typical Floor Plan

Building Height: ~23.2 m
Typ. Unit Size: ~102 m²
Number of Units: 14
Typ. Floor Efficiency: ~91%
Commercial at Grade: Yes
Storeys: 7

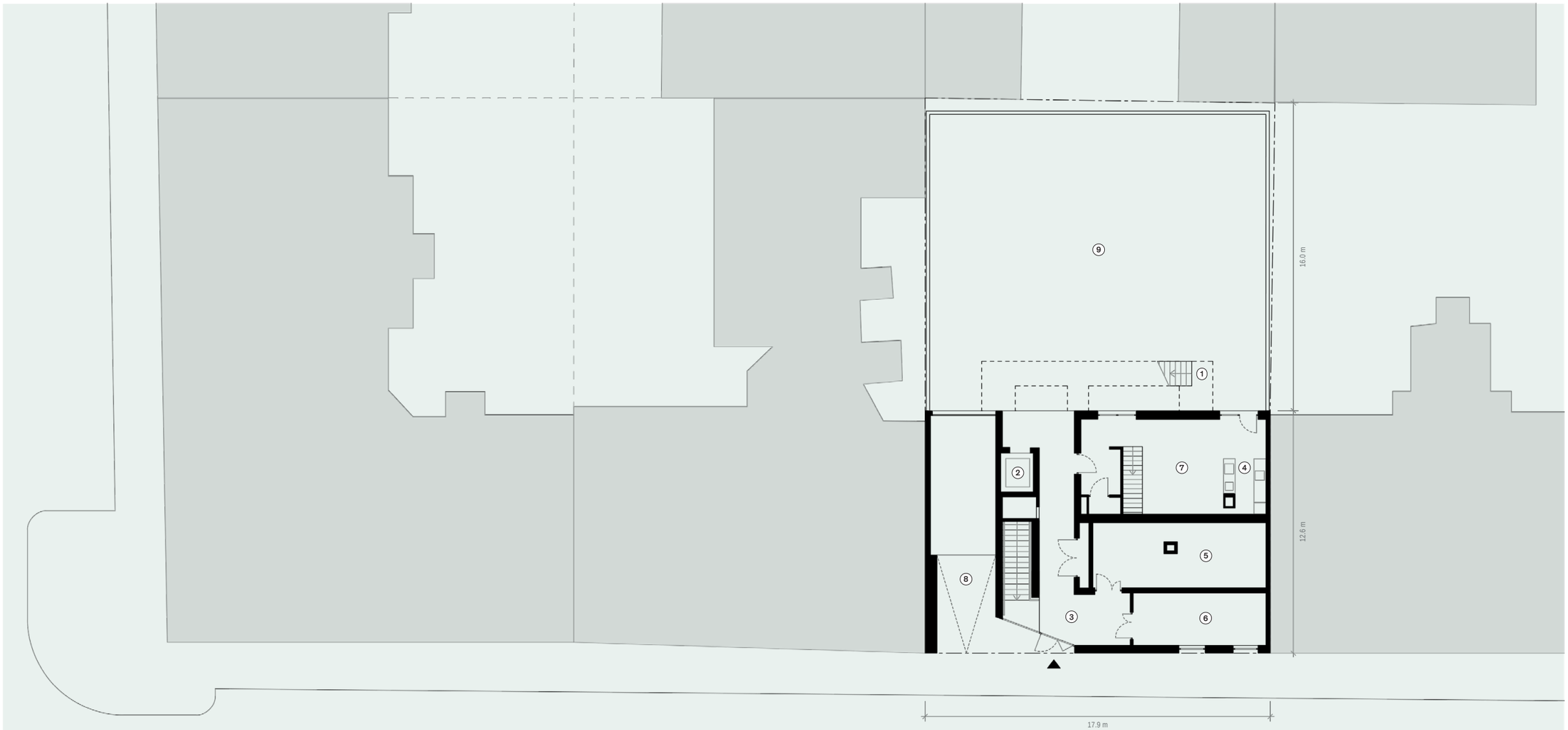


Courtyard View

APARTMENT HOUSE ON BECKMANNGASSE / NERMA LINSBERGER
VIENNA, AUSTRIA / 2014

Site Area: ~517 m²
Building Dimensions: 17.9 m (w) x 12.6 m (d)

Located within a typical Viennese courtyard block, this social-housing rental building features underground parking, flexible unit layouts, and a sculptural, fully exterior stair facing the courtyard, which also includes a terrace and a small playground.



Site Plan

Legend:

1 Stair
2 Elevator
3 Entry
4 Kitchen
5 Garbage room
6 Bike room
7 Multi-purpose room
8 Parking ramp
9 Courtyard

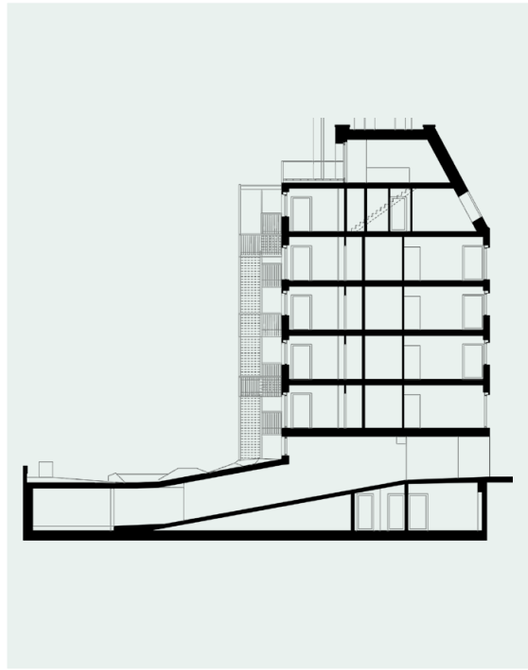
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APARTMENT HOUSE ON BECKMANNGASSE / NERMA LINSBERGER
VIENNA, AUSTRIA / 2014

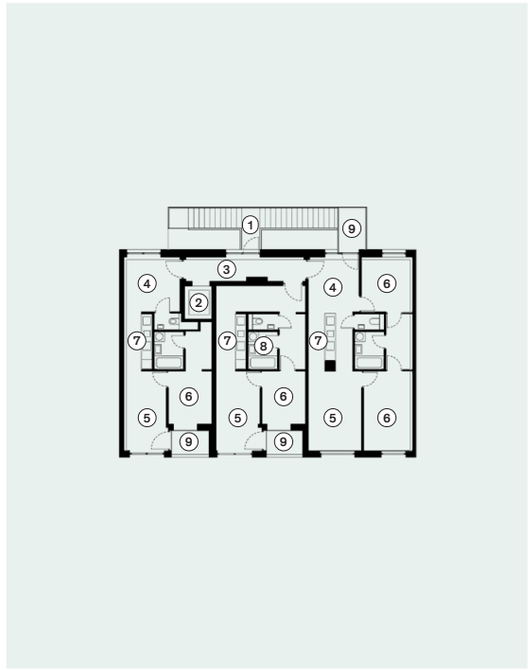


Street View

Question / Answer	
Air Conditioning / No	**Bike Storage /** Bike and stroller storage on ground floor
Heating Type / Radiant floor	**Rental or Condominium /** Rental (social housing)
Ventilation Type(s) / Operable windows	**Building Structure Material /** Concrete
Garbage Management / Garbage room on ground floor	**Approx. Construction Cost /** Unknown
Basement / Yes, storage, mechanical, and car parking	**Approx. Rental or Sale Price /** Unknown
Courtyard Access / Shared by all units	**Outdoor Maintenance /** Facility management
Laundry / Within each unit	**Car Parking /** Yes, undergound
Windows / Triple glazed	**Sprinklers /** No



Section



Typical Floor Plan

Building Height: ~21.1 m
Typ. Unit Size: ~66 m²
Number of Units: 15
Typ. Floor Efficiency: ~88%
Commercial at Grade: No
Storeys: 7

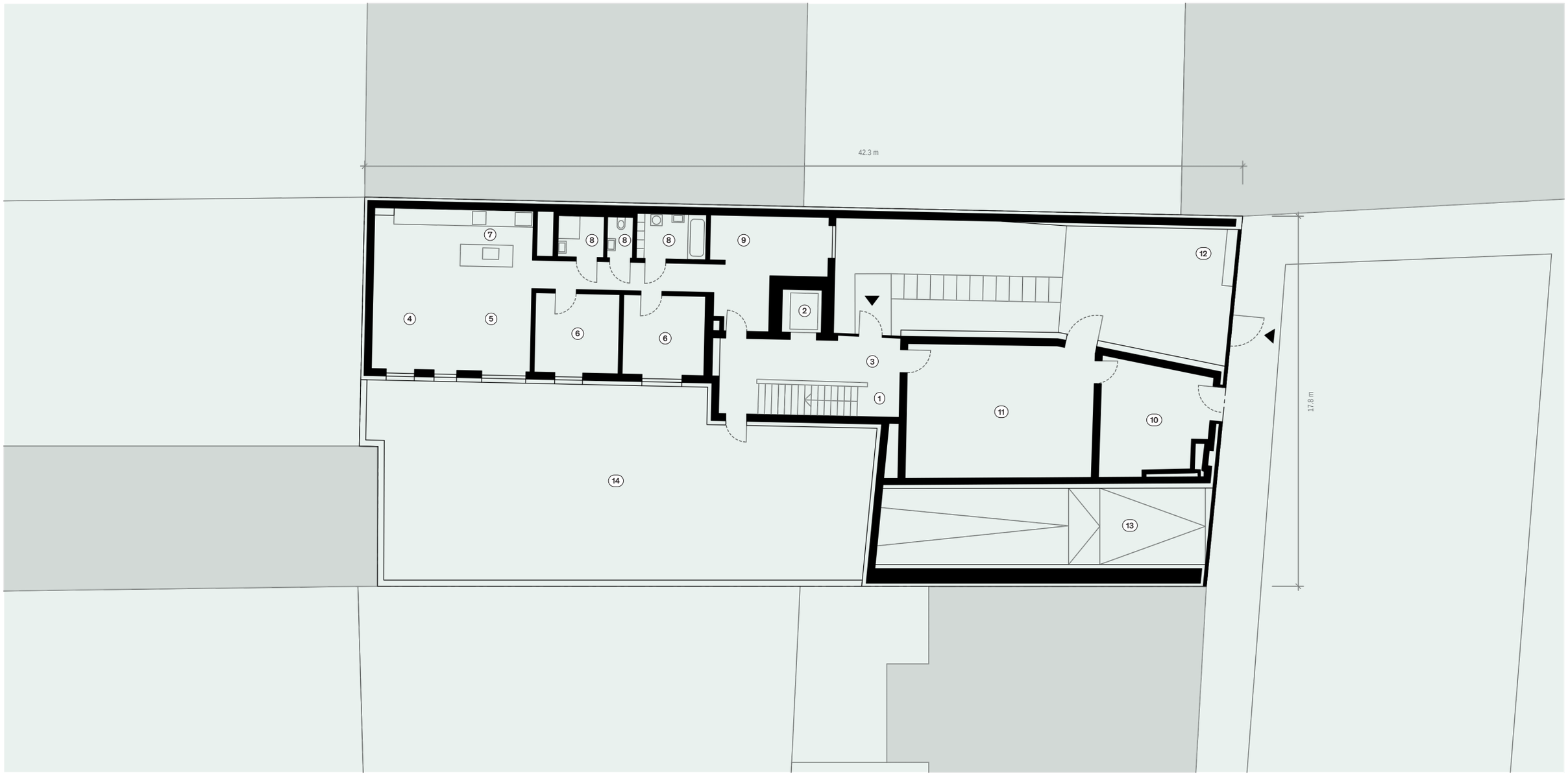


Courtyard View

FRAUENHEIMGASSE / ALLESWIRDGUT
VIENNA, AUSTRIA / 2014

Site Area: ~755 m²
Building Dimensions: 17.8 m (w) x 42.3 m (d)

A clever design that connects two existing party walls by occupying the full length of the site while articulating the built form to thoughtfully respond to the two existing courtyards it interfaces with.



Site Plan

Legend:

1	Stair	6	Bedroom	11	Bike room
2	Elevator	7	Kitchen	12	Mailboxes
3	Entry	8	Washroom	13	Parking ramp
4	Dining room	9	Study	14	Courtyard
5	Living room	10	Garbage room		

0m 10m

FRAUENHEIMGASSE / ALLESWIRDGUT
VIENNA, AUSTRIA / 2014

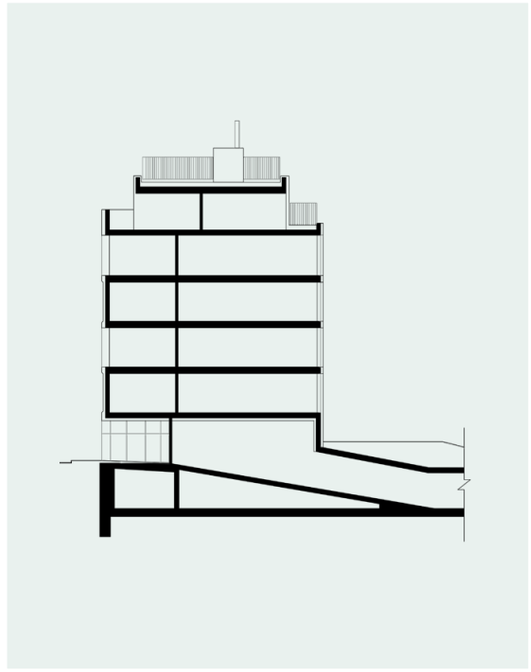


Street View

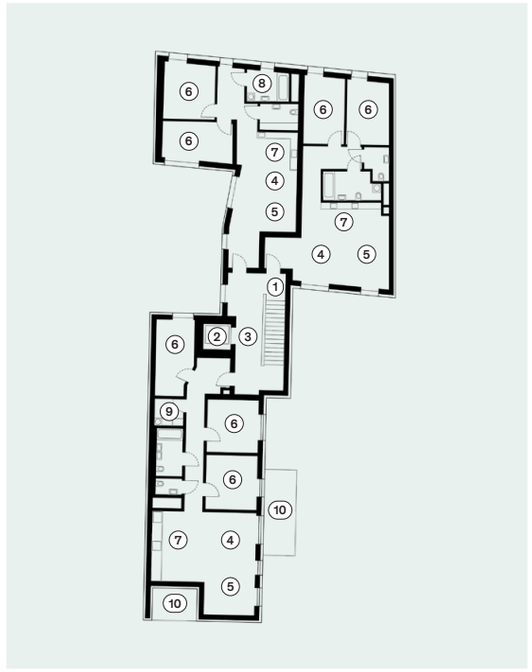
Question /	Answer
Air Conditioning /	No
Heating Type /	Radiant floor
Ventilation Type(s) /	Operable windows; mech. ventilation in WC
Garbage Management /	Garbage room on ground floor
Basement /	Yes, storage, mechanical, and car parking
Courtyard Access /	Shared by ground floor units
Laundry /	Within each unit
Windows /	Triple glazed
Bike Storage /	On ground floor
Rental or Condominium /	Condominium
Building Structure Material /	Concrete
Approx. Construction Cost /	EUR 2 million, excl. tax (2015)
Approx. Rental or Sale Price /	EUR 3500/m² (2015)
Outdoor Maintenance /	Facility management
Car Parking /	Yes, underground
Sprinklers /	No

0m 10m

Legend:
1 Stair
2 Elevator
3 Corridor
4 Dining room
5 Living room
6 Bedroom
7 Kitchen
8 Washroom
9 Laundry room
10 Balcony



Section



Typical Floor Plan

Building Height: ~20.7 m
Typ. Unit Size: ~140 m²
Number of Units: 15
Typ. Floor Efficiency: ~89%
Commercial at Grade: No
Storeys: 6



Courtyard View

14 LOGEMENTS SOCIAUX ET UN COMMERCE / RH+ ARCHITECTURE
PARIS, FRANCE / 2021

Site Area: ~494 m²
Building Dimensions: 9.8 m (w) x 17.7 m (d)
9.3 m (w) x 14 m (d)

Located in a dense Paris courtyard block, this social-housing project is tightly nestled between two party walls and makes full use of the site's length by inserting both a four- and six-storey building while creating its own courtyard in between.



Site Plan

Legend:

1	Stair	6	Bedroom	11	Bike room
2	Elevator	7	Kitchen	12	Commercial space
3	Entry	8	Washroom	13	Courtyard
4	Dining room	9	Mailboxes		
5	Living room	10	Garbage room		

0m 10m

14 LOGEMENTS SOCIAUX ET UN COMMERCE / RH+ ARCHITECTURE
PARIS, FRANCE / 2021



Street View

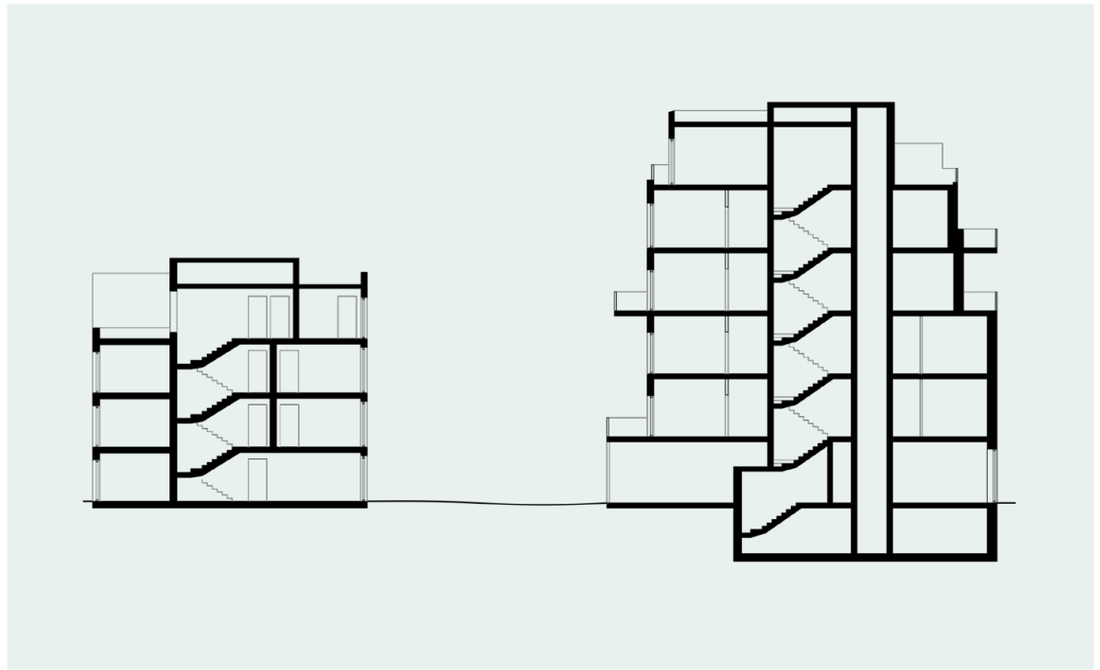


Courtyard View

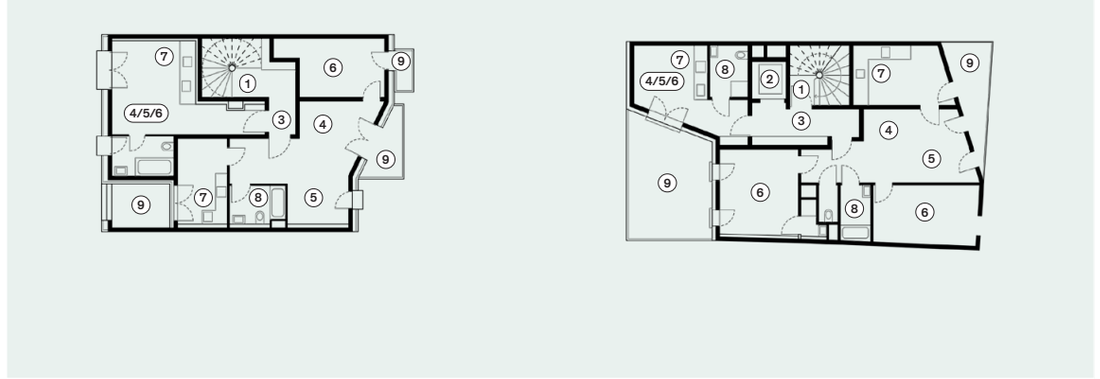
0m 10m

Legend:

1 Stair
2 Elevator
3 Corridor
4 Dining room
5 Living room
6 Bedroom
7 Kitchen
8 Washroom
9 Balcony



Section



Typical Floor Plan

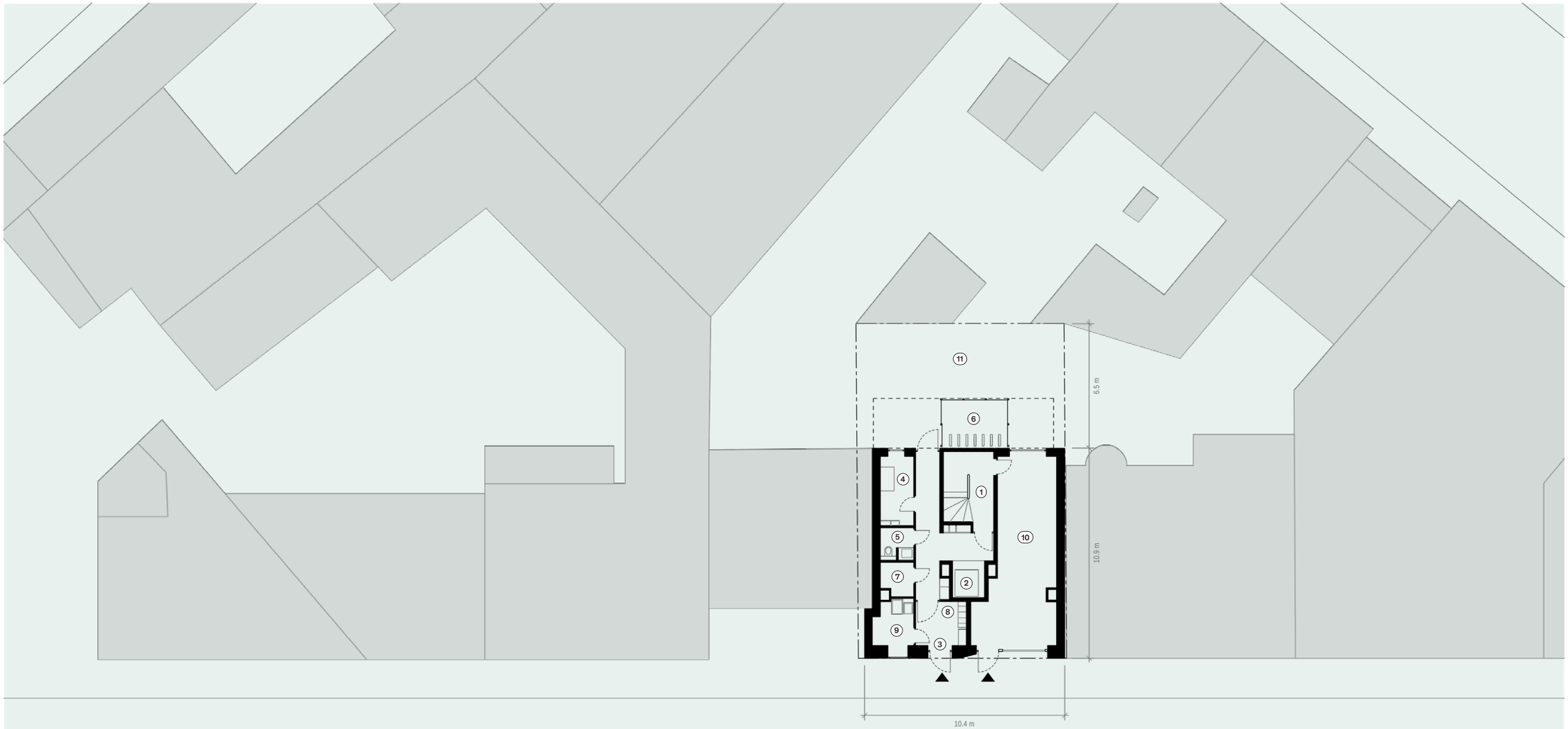
Question / Answer	
Air Conditioning / No	**Bike Storage /** On ground floor
Heating Type / Radiators	**Rental or Condominium /** Rental (social housing)
Ventilation Type(s) / Operable windows; mech. ventilation	**Building Structure Material /** Concrete
Garbage Management / Garbage room on ground floor	**Approx. Construction Cost /** EUR 2.6 million
Basement / Yes, storage	**Approx. Rental or Sale Price /** Unknown
Courtyard Access / Shared by all units	**Outdoor Maintenance /** Building management
Laundry / Within each unit	**Car Parking /** No
Windows / Double glazed	**Sprinklers /** No, standpipe

Building Height: ~18.3 m & ~10.4 m
Typ. Unit Size: ~56 m²
Number of Units: 14
Typ. Floor Efficiency: ~82% & ~88%
Commercial at Grade: Yes
Storeys: 6 & 4

QUATRE CHEMINÉES / DÉCHELETTE ARCHITECTURE
PARIS, FRANCE / 2024

Site Area: 189 m²
Building Dimensions: 10.4 m (w) x 10.9 m (d)

Located in a more suburban courtyard block on the outskirts of Paris, this innovative social-housing rental building features CLT construction and a disciplined use of natural materials. The street-facing façade is built with rammed earth, the garden façade with wood, and the base with stone—demonstrating a thoughtful and expressive material strategy.



Site Plan

Legend:

1 Stair
2 Elevator
3 Entry
4 Storage
5 Washroom
6 Bike parking
7 Mech. room
8 Mailboxes
9 Garbage room
10 Commercial space
11 Courtyard

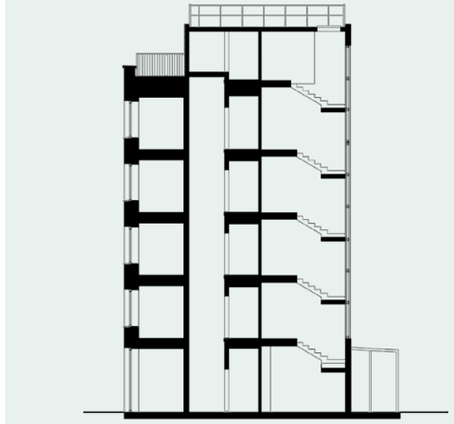
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QUATRE CHEMINÉES / DÉCHELETTE ARCHITECTURE
PARIS, FRANCE / 2024

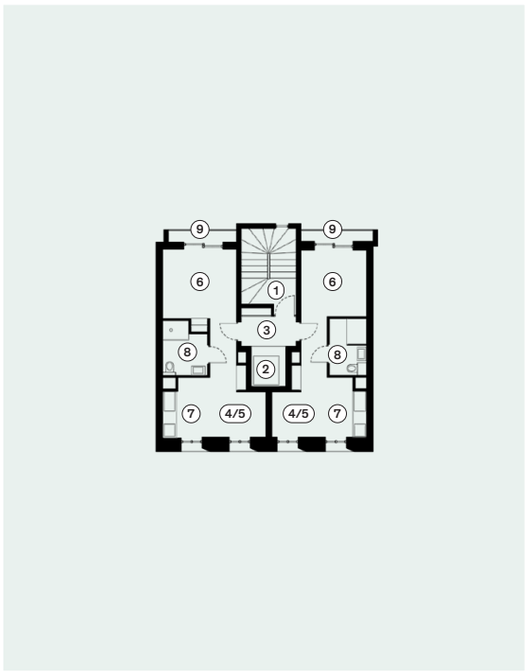


Street View

Question /	Answer
Air Conditioning /	No
Heating Type /	Radiators
Ventilation Type(s) /	Natural and mech. ventilation (heat pump)
Garbage Management /	Garbage room on ground floor
Basement /	No
Courtyard Access /	Shared by all units
Laundry /	Within each unit
Windows /	Double glazed
Bike Storage /	On ground floor
Rental or Condominium /	Rental (social housing)
Building Structure Material /	Mass timber
Approx. Construction Cost /	EUR 2.1 million
Approx. Rental or Sale Price /	EUR 300/month
Outdoor Maintenance /	Building management
Car Parking /	No
Sprinklers /	No



Section



Typical Floor Plan

Building Height: ~16.2 m
Typ. Unit Size: ~35 m²
Number of Units: 8
Typ. Floor Efficiency: ~80%
Commercial at Grade: Yes
Storeys: 5



Courtyard View



1



2



3



4



5



6



8



7



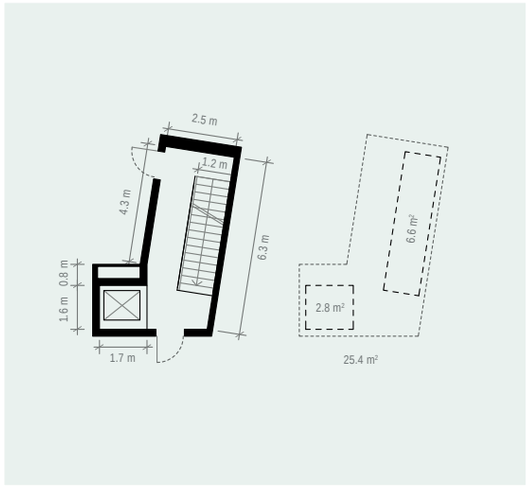
9

CASE STUDY BUILDING ANALYSIS

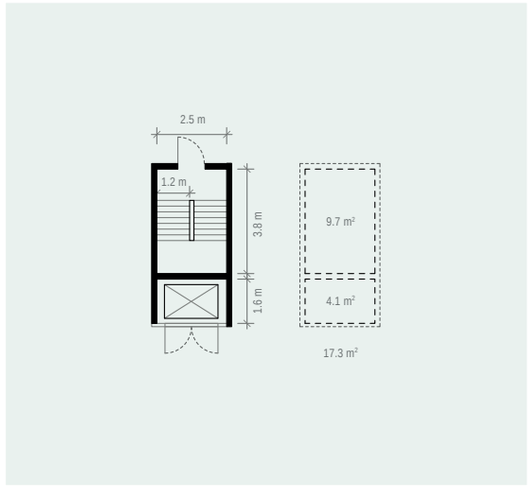
Average metrics for the nine case studies selected

Site Area: 553 m^2
Building Height: 20 m
Typ. Unit Size: 89 m^2
Typ. Floor Efficiency: 88%
Number of Units: 12
Storeys: 6.3

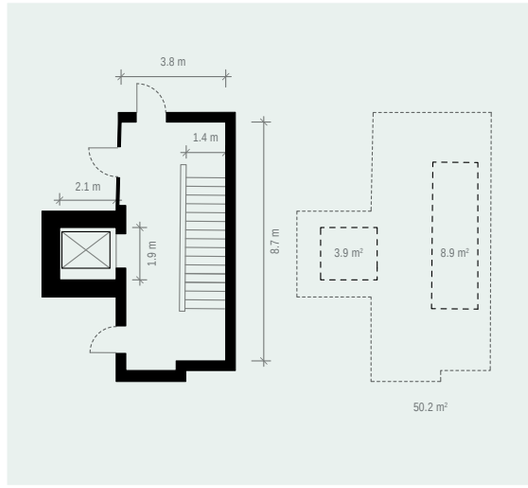
1 **Feld4 Cooperative Housing /** MASStudio
2 **Lofthaus /** Buchner Bründler Architekten
3 **Townhouse /** Hildebrand
4 **Fasanen 36 /** CAMA A
5 **Libauer Strasse /** JWA
6 **Apartment House on Beckmanngasse /** Nerma Linsberger
7 **Frauenheimgasse /** AllesWirdGut
8 **14 Logements Sociaux et un Commerce /** rh+ architecture
9 **Quatre Cheminées /** Déchelette Architecture



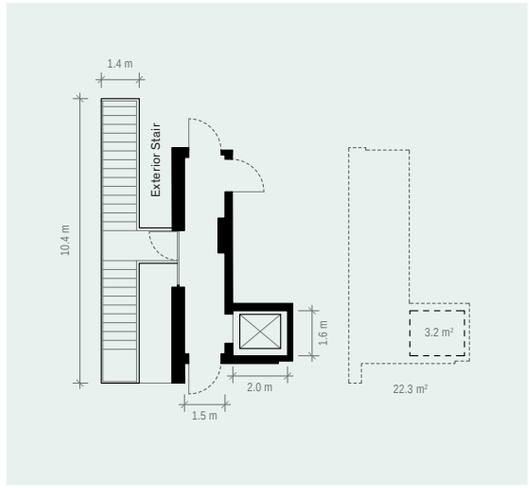
Feld4 Cooperative Housing Basel, Switzerland
MASStudio



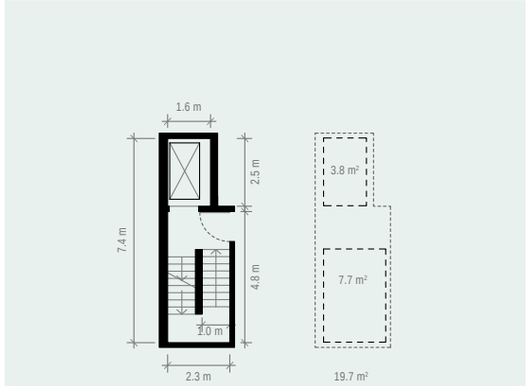
Lofthaus Basel, Switzerland
Buchner Bründler Architekten



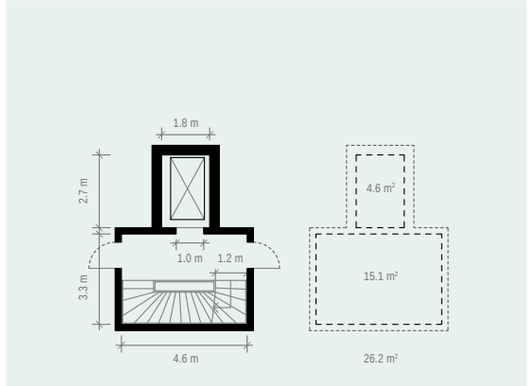
Frauenheimgasse Vienna, Austria
AllesWirdGut



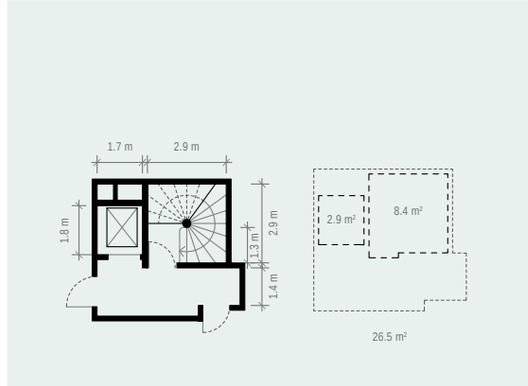
Apartment House on Beckmanngasse Vienna, Austria
Nerma Linsberger



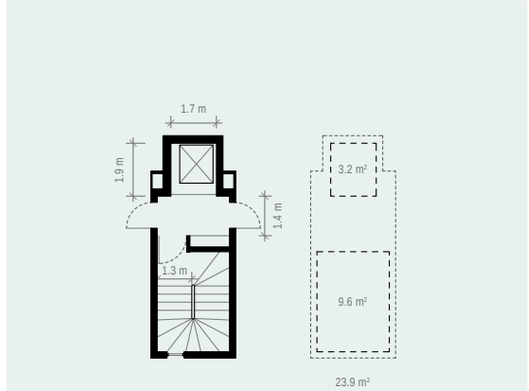
Fasanen 36 Berlin, Germany
CAMA A



Libauer Strasse Berlin, Germany
JWA

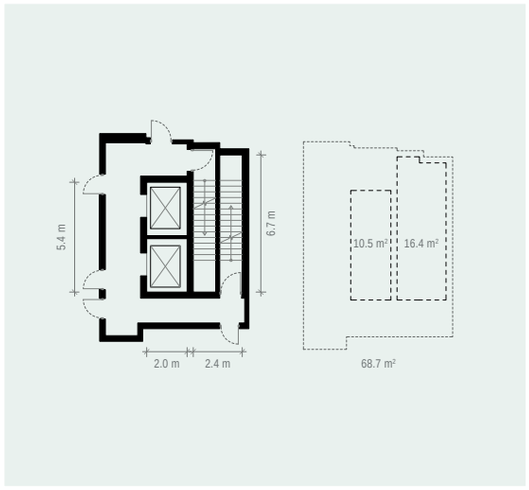


14 Logements Sociaux et un Commerce Paris, France
rh+ architecture

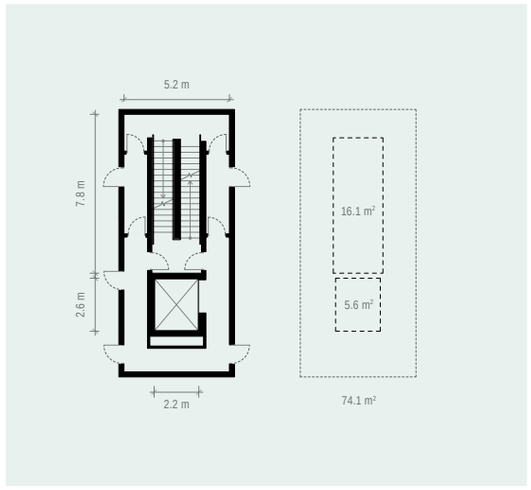


Quatre Cheminées Paris, France
Déchelette Architecture

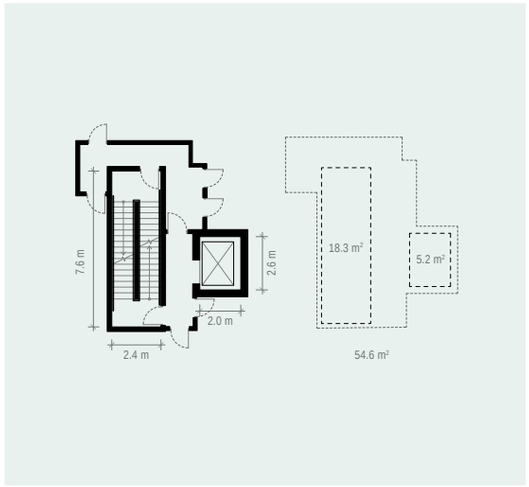
Above are the cores (elevators, stairs, and corridors/landings) from eight of our case studies. In addition to basic dimensions, we have provided the overall core area, the elevator area, and the stair area for each project.



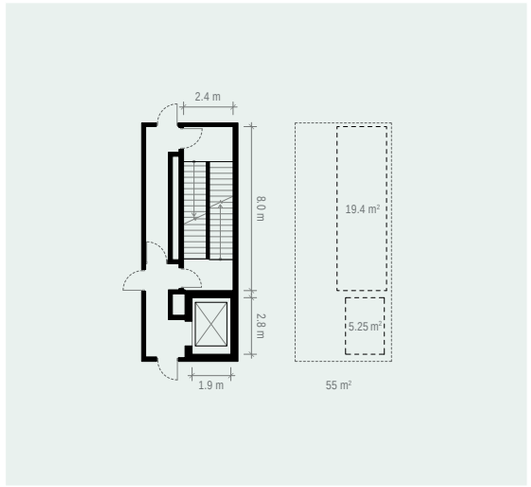
Biblio Lofts 7 Storeys
BDP Quadrangle



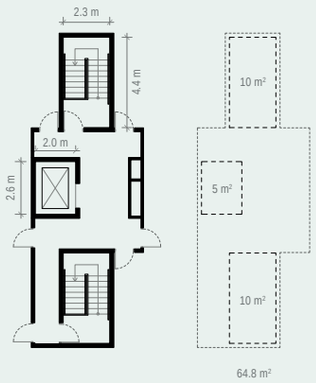
230 Royal York Road 9 Storeys
LWPAC



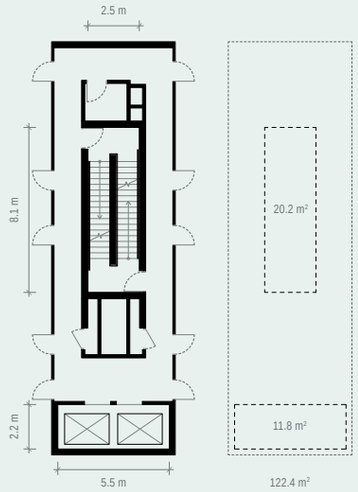
2760 Dundas Street West 6 Storeys
Gabriel Fain Architects



1505 Dupont Street 6 Storeys
Studio VAARO &
Gabriel Fain Architects



41 River Street 5 Storeys
Studio JCI



Parkdale Affordable Housing 10 Storeys
LGA

Above is a sample of typical Toronto cores (elevators, stairs, and corridors/ landings) for multi-unit residential buildings in the five- to 10-storey range. Along with the basic dimensions, we have provided the overall core area as well as the elevator and stair areas for each project.

05 Conclusion Acknowledgements & Credits

The *Impossible Toronto* framing device gave us a valuable opportunity to set aside the usual technical, financial, and regulatory limitations that often hinder ambitious architectural thinking. What might initially appear unachievable can, with closer scrutiny, reveal itself to be unexpectedly within reach and worth reaching for—especially when a strong idea begins to gather support and inspire broader public enthusiasm for change.

We hope that *On the Courtyard* helps Torontonians reconsider how they live and build in the city and helps them envision a future in which urban planning goes beyond simply increasing housing supply, aiming instead to foster vibrant, high-quality communities. With a thoughtful and integrated approach, we can open the door to design solutions that not only provide more homes but also improve the overall livability of the city.

We don't claim to have all the answers. In fact, this project raises important questions—that, perhaps, bring us closer to understanding the one question underlying all the others: Why can't we have this at home?

■ Graig Uens
Director of Planning, Batory Planning + Management

GU *The single-lot missing-middle typologies are getting a reasonable amount of policy- and zoning-reform attention at the moment, but similar reforms to support mid-rise construction—and especially block-scale building typologies that fit together in a more cohesive way than scattered multiplexes with garden suites—is largely absent. What is being developed, such as the new mid-rise guidelines that were issued in 2024, is a variation on the existing theme and not the needed wholesale change in thinking about this distinct building typology detailed throughout this research.*

STUDIO VAARO

Studio VAARO is a multidisciplinary architecture practice that pursues local and international research to investigate vernaculars and reimagine urban conditions. Based in Toronto, the studio prioritizes experimentation, craftsmanship, and natural materials to realize architecture that fosters ease, efficiency, and engaging experiences.

Aleris Rodgers and Francesco Valente-Gorjup founded Studio VAARO after spending a dozen years working abroad in Los Angeles, Switzerland, and Hong Kong. Their work includes residential, commercial, and institutional projects of various scales as well as furniture and lighting design. Blending the contextual and the elemental with the contemporaneous and the novel, they seek out opportunities to apply their diverse experience to rethinking residential typologies in Toronto's rapidly evolving urban landscape.

Aleris graduated from Harvard University with a Bachelor of Arts in Psychology and earned a Master of Architecture at the University of California, Los Angeles (UCLA). She worked at Johnston Marklee, HHF, and Herzog & De Meuron, where she focused on Hong Kong's M+ museum, before settling in Toronto and co-founding Studio VAARO. Aleris is also an Assistant Professor, Teaching Stream, at the University of Toronto John H. Daniels Faculty of Architecture, Landscape, and Design and a licensed architect in New York State.

Francesco graduated from the University of Toronto with a Bachelor of Arts in Architecture and English Literature and earned a Master of Architecture at UCLA. Before co-founding Studio VAARO, he worked at numerous award-winning offices, such as Johnston Marklee, Herzog & De Meuron, Renzo Piano, and KPMB, where he developed an expertise in innovative façade design. Francesco is also a Sessional Lecturer at the Daniels Faculty of Architecture, Landscape, and Design and a licensed architect in Ontario.

Studio VAARO's award-winning work has been featured in various publications, including *Dwell*, *Azure*, and *Designlines*.

GABRIEL FAIN ARCHITECTS

Gabriel Fain Architects is a Toronto-based multidisciplinary design studio founded in 2016. The practice operates at the intersection of architecture and urbanism, with a focus on reimagining urban living through innovative approaches to mid- and high-rise residential design. Driven by a deep commitment to the art and craft of building, the studio explores new possibilities for rental, affordable, and condominium housing. Many of the studio's current projects integrate cutting-edge construction systems—such as mass timber and other engineered-wood technologies—synthesizing traditional principles with progressive, future-oriented thinking.

Principal Architect Gabriel Fain is a licensed member of the Ontario Association of Architects. He holds a Master of Architecture from the University of Toronto John H. Daniels Faculty of Architecture, Landscape, and Design, where he received the Heather M. Reisman Gold Medal in Design. Gabriel is an active voice in the architectural community, frequently serving as a guest critic at the Daniels Faculty and contributing to *Canadian Architect* magazine. The firm's work has been featured in *Azure* and *Designlines* magazines, among others.

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Alex Bozikovic is an architecture critic for *The Globe and Mail* and co-author of *Toronto Architecture: A City Guide*. He has also written for *Toronto Life*, *Azure*, and *Metropolis*, among others.

Brandon Donnelly is a real estate developer, blogger, and founder of the Globizen Group.

Kelly Alvarez Doran is an architect, educator, and activist. He led the design and implementation of several of MASS Design Group's projects in East Africa, notably the award-winning Munini District Hospital and the Rwanda Institute for Conservation Agriculture. In 2022, Kelly co-founded Ha/f Climate Design to bring a life-cycle approach to projects at the scale of a building, a neighbourhood, a city, or a nation.

Christoph Elsässer heads the fire protection division at Pirmin Jung, a team of leading engineers and planners specializing in structural engineering, fire protection, building physics, sustainability planning, and circular construction. The company has been developing and promoting timber construction for over 25 years and is responsible for the fire engineering of Hildebrand architects' Townhouse project in Basel, Switzerland.

Jonathan English is a writer and policy consultant on urban, transportation, and infrastructure issues and is based in Toronto. He is a Fellow at the Marron Institute of Urban Management, NYU, and has a PhD in urban planning from Columbia University.

Krista Palen is a partner and **Jonathon Brearley** an associate at Transsolar, a global leader in climate-responsive architecture and innovation in the built environment. They are based in Toronto and New York, respectively.

Marc Ryan, principal and co-founder of PUBLIC WORK, is a landscape architect dedicated to the design of cities' public realms. Marc's approach engages the evolving role of landscape and public space in reshaping the quality, performance, and vitality of urban environments.

Stephen Smith founded the Center for Building in North America in 2022, with the goal of pursuing research into and advocacy for building codes, standards, and related construction policy. With a focus on small-scale infill multi-family construction, the centre has published two major reports so far—one on the cost and availability of elevators and another on single-stair apartment buildings.

Graig Uens is a professional planner and the director of planning at Batory Planning + Management. In his previous role with the City of Toronto, Graig led the City's review and facilitation of several transformative projects, including the Honest Ed's and Mirvish Village site, and also led the city's Laneway Suite Expanding Housing Options in Neighbourhoods (EHON) initiatives. With Batory, Graig is engaged in a variety of development work from missing-middle housing to multi-tower projects across the GTA.

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On the Courtyard, by Studio VAARO and Gabriel Fain Architects, is the first project in this series. The Neptis Foundation is proud to champion this inaugural work and anticipates future projects supporting public and policy discussions within the *Impossible Toronto* framework.

Studio VAARO and Gabriel Fain Architects are immensely grateful to our dedicated team and collaborators for their time, valuable input, and perspective.

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  Berlin / GER
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- 16 Rue Quincampoix
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  Photographer:
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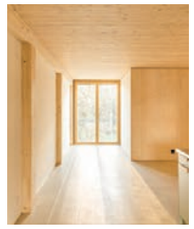
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  Basel / CH
  Photographer: Jinsu Park



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  Basel / CH
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- 123 MASStudio: Cooperative
  Housing Feld 4
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- 138-139 JWA: Libauer Strasse
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- 142-143 Nerma Linsberger:
  Apartment House
  on Beckmanngasse,
  Vienna / AUT
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- 146-147 AllesWirdGut:
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On the Courtyard was created by Francesco Valente-Gorjup & Aleris Rodgers of Studio VAARO and Gabriel Fain of Gabriel Fain Architects as part of The Neptis Foundation's research program: Impossible Toronto.

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