

Centred in Motion
A Development Proposal for the Suburban
Community of Pickering, Ontario

by

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AUTHOR'S DECLARATION

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ABSTRACT

Centred in Motion presents a strategy for adapting the existing suburban development of Pickering, Ontario to accommodate contemporary needs. The cultural and geographical conditions that generated Pickering, along with similar suburbs in the Toronto area and across North America, are vastly different from current conditions. An adaptive response addressing these suburbs is necessary to foster intelligent future growth in the Greater Toronto Area. The thesis proposes the design of a mixed-use complex that builds on existing infrastructure and adds density in centrally located, underutilized space within Pickering. A key element is an “inhabitable bridge” that connects the Pickering Town Centre mall in downtown Pickering to commuter services at the GO Transit station and lands to the south. The project embeds a variety of residential, commercial, and civic programs within this infrastructure, providing new services to existing residents, and creating expanded living options with a reduced dependency on personal automobiles within Pickering.

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INTRODUCTION

One of the most difficult urban problems facing architecture and planning today is the North American suburb. Suburban developments are all too familiar for the daily lives of most North Americans. They dominate the edges of cities and sprawl beyond into the countryside.

The typical suburb is a primarily residential area, characterized by vast tracts of identical or similar-looking housing on individual lots. These are interspersed with equally large-scale shopping plazas and malls. Beyond their physical layout and components, suburbs represent a particular lifestyle of the nuclear-family oriented 'baby boom' generation that is increasingly seen as unsustainable. The 'suburban dream' is shown in the individual home on its own lot, with a prominent lawn, garage, and driveway. The repetition of the standard house and lot, and the catering of the developments to the use of personal automobiles, resulted in the overall land-intensive plan and monotonous appearance of suburbia.

Although popular and common throughout North America, post-war suburbs have been criticized by urbanists such as Jane Jacobs and Andres Duany. These criticisms are related to their social and cultural dimensions, as well as to their physical form and environmental impacts.

Jane Jacobs analyzes the qualities that make the public domain, focusing on what is around public space rather than within it. She analyses urban space, where the densely-developed and mixed-used edges of streets lead to safe and social environments. These conditions are the opposite of what exists in the low-density func-

i.1
Satellite image of the suburbs
northeast of Toronto.



i. 2

tional zoning of the suburbs, which show a lack of public space and public life.¹

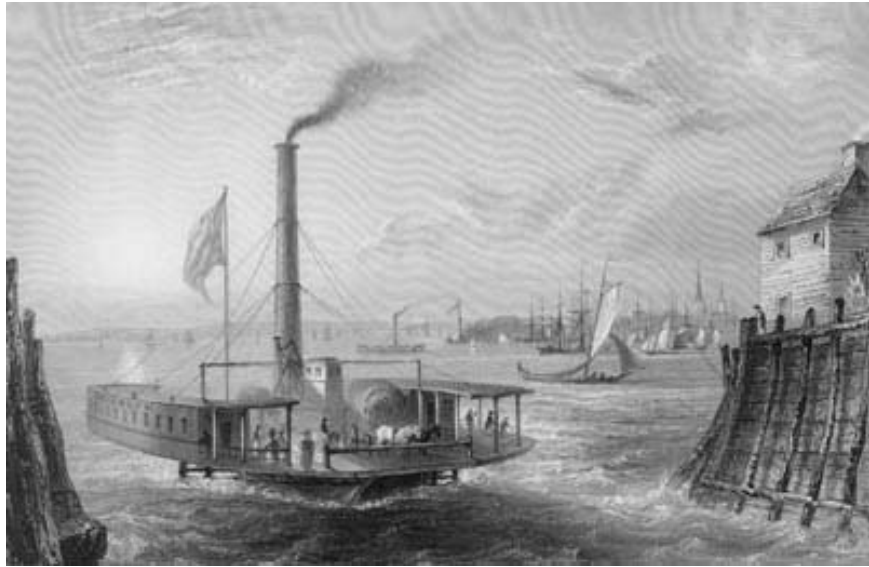
In addition to the social problems associated with suburbs, the environmental impact of these developments is also a source of concern. Andres Duany details how suburbs are built around the personal automobile, and because of this they become sprawling and encourage high fossil fuel consumption. Little thought is given to the existing geography in the planning of a suburb.² The use of fossil-fuel burning cars in the suburb as well as their consumption of land brings up the question of sustainability, especially as the world enters an age of declining oil supply.³

Despite all of these problems, suburbs are a fact of the North American landscape. The idea of replacing suburbs entirely with more sustainable forms of development is not realistic. What is needed are adaptive reuse strategies that retrofit existing suburbs, remedying some of their worse problems. The suburban city of Pickering is the subject of this thesis, as the site of a proposed design that builds on existing infrastructure, creating a mixed-use community that addresses the current limitations of suburban development.

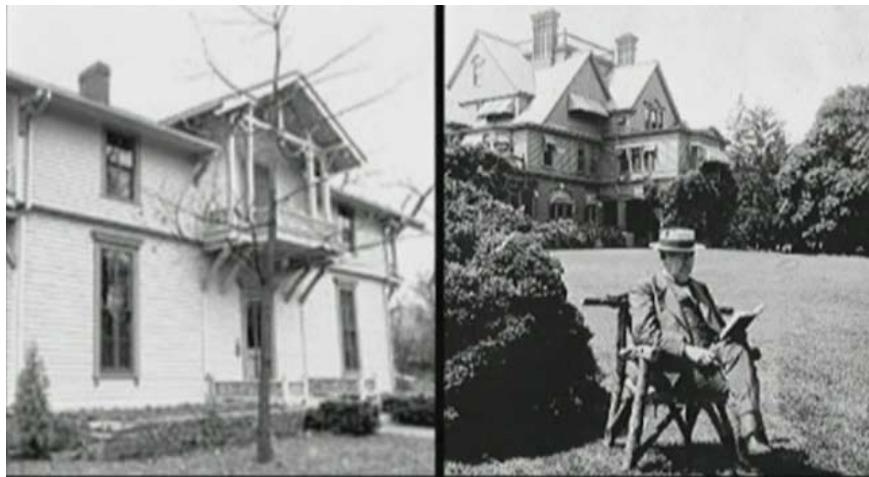
This thesis is divided into four chapters. This introduction addresses the history of suburban development in North America and the history of Pickering. It also gives an overview of some general problems associated with the suburbs, which are the inspiration for the design approach. The first chapter is a design analysis that looks at the transportation infrastructures that shape Pickering, and at the form of Pickering's development in the post-war era. The second chapter looks at the social and urbanistic limitations of suburban living as they apply

i.2

Aerial photo of a suburban residential development in Markham, Ontario.



i. 3



i. 4



i. 5

to Pickering. Chapter three examines the future growth of Pickering, as a North American suburb dealing with changing work models and global resource issues. The fourth chapter presents a design strategy and proposal for a mixed-use complex in Pickering. This innovative development style presents a potential direction that can begin to address the cited shortcomings of current suburban design.

ORIGIN OF THE SUBURBS

The subject of the thesis is the post-war suburb. However, this was not the first form of suburban development. The first suburbs in the 1800s were based on new models of work and transportation models.⁴ One of the first suburbs was Brooklyn, which had a ferry service to Manhattan in the 1810s that allowed people to commute to work in the city during the day, while living in a non-urban area during other times.⁵ In the 1850s, suburbs in America developed in park-like developments for a relatively wealthy class. In the 1870s, streetcar suburbs appeared, which were connected to the city by horse-pulled and then later electric streetcars.⁶

By the turn of the century, low-density subdivisions had emerged, characterized by single-use functional zoning. Low-density functional zoning was a reaction to the over-congested, polluted and substandard living conditions of new industrialized cities, where unplanned housing built close to factories was blamed for the rampant spread of disease.⁷ De-densification by dispersing the population across a larger area was meant to combat congestion. Functional zoning would separate residential, commercial and industrial buildings into large districts to prevent pollution of peoples' living quarters.

i.3
Brooklyn passenger ferry boat.

i.4
Early suburban houses in park-like settings for the wealthy.

i.5
Early streetcar suburb.

THE POST-WAR CAR SUBURB

The mass-produced suburb was developed in the post-war years. These were built in a fast and cost-efficient way compared to earlier suburbs. Large subdivisions were divided into small lots, and sold by developers who offered buyers a handful of model home choices within a narrow price range. Even when these homes differ in their exterior finishes, the result can seem uniform and monotonous. Other characteristics of the suburbs are prominent garages and driveways, since they assume that families would have a car to travel, both within the suburb and to commute to the city.

Post-war suburbia caters to the car. Large arterial roadways connect the different functional zones within suburbs, while malls and retail plazas allow for generous amounts of parking. These roads can be five to six lanes wide, as wide as some expressways. Cars are required to traverse suburbia's sprawling landscape, yet the more cars on the road, the more widespread suburbs become. Since even commercial spaces are separated from one another by large parking lots, driving is not limited to travel between home and commercial areas, but also within business zones. Running multiple errands can require multiple trips and multiple instances of looking for parking, even sometimes in separate sections of the same lot.

Driving around in a car is an inescapable facet of suburban living. The various activities of daily life require significant amounts of time commuting from place to place by car, many of them singly occupied. Thus even a sparsely populated suburb can generate the vehicular traffic of a traditional town of a much larger size.⁸ Congestion increases commuting time, vehicles' wear

and tear, and can affect drivers mentally and physically. More cars also translate to an increase in harmful emissions, which adversely affect air quality.⁹ As well, car ownership is potentially financially draining. Many households require more than one vehicle to satisfy the diverse needs of their members and gasoline prices are continually rising, with no reductions in sight.

A lifestyle that is reliant on the ability to operate and have access to a car can be quite burdensome. For people that cannot drive, suburbia presents a life without autonomy. Both children and senior citizens who cannot drive are very limited in the immediate destinations that are within reasonable walking distances.¹⁰ Subsequently those that can drive often take on the burden of a chauffeur role for the aforementioned family members.⁸ This is more time spent driving in addition to the daily commute if they drive to and from work as well. Suburbanites seem trapped in a vicious cycle. Currently, suburban living necessitates the car, which in turn perpetuates car use.

SUBURBAN GROWTH IN TORONTO

For the greater part of the twentieth century, suburban developments have been the model of choice for the Greater Toronto Area (GTA). Much like other major North American city centres, Toronto experienced significant growth following World War II. The city's sudden population influx, a result of both returning soldiers and new immigration, initiated a construction boom. A large percentage of this new construction took the form of low-density suburban homes. Larger developer-builders became active across Canada at this time, including in the Toronto area. At this time, places including Don Mills

and Scarborough took on the basic form that they have at the present, as suburban communities of Toronto.¹¹

PICKERING AS CASE STUDY

Although Pickering is now identified as one of the suburbs created during Toronto's post-war housing boom, its history goes back further. Established in 1791, Pickering has agricultural, grist-milling, lumber-milling and ship-building roots. As its industries prospered, Pickering's population grew steadily and peaked in 1860, then entered a period of decline as market conditions changed and links to superior agricultural lands in western Canada were completed.¹²

Pickering has long been tied to Toronto by different means of transportation. Kingston road, which was originally surveyed in the 1800s to join between Kinston and Toronto, passed by Pickering and allowed it to connect with both cities. In 1967 a commuter rail connection was created that also linked Pickering to Toronto. The completion of highway 401 in 1947 provided a high-speed vehicular route into the city.

Pickering experienced significant population growth in the post-war era. By that time, the town's population was comprised primarily of munitions plant employees left over from the war. Pickering was favoured for post-war suburban development due to its proximity to Toronto and its aforementioned transportation connections to the city.

As Toronto's downtown core transformed into a business and commercial district in the 1950s, Pickering developed rapidly as the ideal bedroom community.

Home construction occurred primarily along the north and south sides of the 401.

Development was further encouraged after the town was designated as the new home for a nuclear power generating station. Construction of the plant began in 1966 and nuclear power generation soon became one of Pickering's principal industries.¹³

The 1967 introduction of the provincial government's GO commuter service trains also encouraged growth. Pickering became the eastern terminus of the Lakeshore Line, providing connections to Toronto from places including Danforth, Guildwood, and Eglinton to the East, and Hamilton, Burlington, and Oakville to the West. During this time, Pickering's population skyrocketed. In 1945, 8,000 people lived in Pickering; by 1974, when Pickering Township was restructured into the Town of Pickering within the Regional Municipality of Durham, the population had grown to 24,800. Pickering became a city in 2000 and had a population of 94,700 as of 2006.¹⁴

The growth of Pickering is closely tied to its development as a suburb of Toronto in the post-war period. This is evident by how its population boomed just after the war, when it was targeted as a bedroom community for Toronto, and again after the construction of the GO commuter train in the 1970s. This makes it an ideal case study for looking at the problems and potentials of suburbs, it is particularly relevant for looking at potential design solutions for suburbs in the GTA.



i. 6



i. 7



i. 8

TRANSPORTATION & SUBURBAN DEVELOPMENT

Both the history of the suburbs, and the history of Pickering show the importance of transportation to the development of the suburbs. The streetcar and later the personal automobile made the suburbs possible and determined the current form of the suburbs. GO rail has been an important factor in the growth of Pickering. However, this has created a lack of public spaces in Pickering and a movement towards private space, as will be discussed in Chapter 3. Now with a shifting demographic, also discussed in Chapter 3, and with the fossil fuel crisis, discussed in Chapter 4, there is reason to encourage a return to public transportation, moving away from personal automobiles.

ALTERNATIVES TO THE SUBURBS

Urban designers have proposed different alternative models to the suburb. One trend is towards inner-city development, as seen by the development of urban infill lots and the recent condo-building trend in cities like Toronto. Another approach is to develop brownfields or greenfields with mixed-used developments, as is the case with the Downtown Markham development. A number of these developments are heavily influenced by the New Urbanist movement, which arranges single-family homes in more traditional Main Street-inspired configurations, with an increased introduction of pedestrian-friendly areas. In a development the Sheppard line TTC subway extension, transportation infrastructure is built by the city, which then manages the dense development of a surrounding core by private developers. With the exception of urban infill, these approaches

i.6
Condo construction in Downtown Toronto.

i.7
Master plan for the Rouge Bijou development in Markham.

i.8
Condo development near Bayview and Sheppard. Increase in high density construction around the Bayview Village mall with the new connection to the Sheppard subway line extension.

primarily focus on new developments and infrastructure, rather than on adapting existing suburbs to current needs. An alternative approach is needed to retrofit already-built suburbs, adapting them to current social, cultural, and transportation needs.

CENTRED IN MOTION: A NEW APPROACH FOR PICKERING

Centred in Motion proposes an alternative strategy that retrofits an existing suburb to current needs. The approach is built around the idea of transportation as the historic element that shaped the suburb, and the seed of the crisis that is forcing the suburb to change today. The dissertation also uses transportation as a physical centre, building public spaces around the current transportation core.

Pickering has unique opportunities to build public spaces around a core of public transportation infrastructures. The most trafficked gathering spaces in the city – the GO transit station, the hub for local bus transportation, and the Pickering Town Centre Mall – all sit within a close vicinity of each other, intersected by highway 401. This area is the setting-out point for the project.

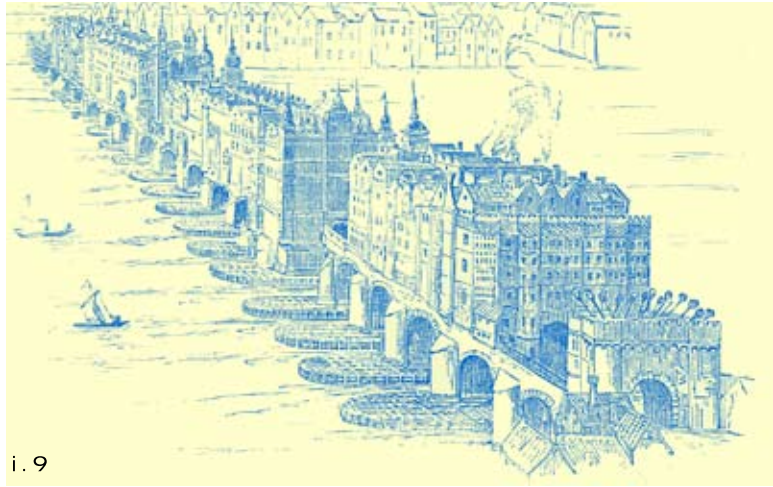
The direction of this strategy is heavily influenced by a few specific sources. The End of Suburbia DVD clearly illustrates the current predicament the world is facing in its dwindling energy sources and the heavy impact that it will have on the suburbs as the situation worsens. Living patterns in suburbs will have to be addressed and adapted because its current form is simply unsustainable and has no future. This of course is very relevant to the Greater Toronto Area as the majority of its residents

live in the suburbs. It is this substantial existing suburban fabric that will have to be tackled. The thesis looks at how to reduce car use in the car oriented landscape of the GTA.

Jane Jacobs talks about the idea of safe streets and public spaces in The Death and Life of Great American Cities. She posits that safe streets require the presence of people watching them throughout most of the day. The same can be said for safe and vibrant public spaces where the conditions that surround the space are composed of elements that provide eyes and a mix of uses throughout all hours of the day. She advocates mixed use arrangements as beneficial for providing these qualities. The thesis is influenced by her theories in its designation of programme types and arrangement to create healthy vibrant environments that are used by a variety of people at all times of the day.

Andres Duany in Suburban Nation: The Rise of Sprawl and the Decline of the American Dream talks about the single use zoning of suburbia and how its reliance on the automobile has resulted in a landscape that is hostile for pedestrians. The form of this environment is dominated by wide, high speed vehicular roads, large parking lots, and the fences, retaining walls, and berms that surround them. All these elements make for a setting that is uninteresting and unsympathetic to the pedestrian. To reduce car dependency, the thesis aims to provide places that satisfy a wide range of people's needs without requiring them to deal with a landscape designed for cars.

In addressing the site and situation, the design strategy recognizes the importance of the mall to Pickering as a public entity, and the GO Station as a very important



i. 9



i. 10



i. 11

node of connection to Toronto and its surrounding suburbs. What is also recognized is that these physically separate elements would be stronger working in unison. This thesis incorporates an inhabitable bridge as a third physical element to connect the two entities into one complex. The significance of its built mass reflects its iconic significance as well. In essence by being a connection and continuation of a major public commercial service to the local and regional transit node, the bridge itself creates and becomes part of a new downtown core for Pickering.

While extremely uncommon in Ontario, the inhabitable bridge type has been used throughout parts of Europe for quite some time. A few of the more famous examples include the Old London Bridge in England, and Ponte Vecchio in Florence, Italy. Within Ontario itself there does exist one pedestrian bridge that spans a highway. Branching off highway 400, highway 11 runs underneath the pedestrian bridge that services the Webers hamburger restaurant north of Orillia. This bridge is also iconic in that it is the physical manifestation of the will of the pedestrian conquering the barrier of a highway. Situated on the eastern northbound side of highway 11, the accessibility of people that crossed the highway from the west side was cut off by the implementation of first a boxbeam barrier, and subsequently an added chain-link fence as people continued to climb over the barrier to get to their hamburgers. The restaurant purchased a portion of the old pedestrian footbridge from the CN Tower and erected it over the highway connecting the restaurant to a new parking lot on the western southbound side. This in turn created a new experience in that people would park on the west side for the opportunity to walk across the bridge.

4.15
Original London Bridge.

4.16
Ponte Vecchio in Florence.

4.17
Webers bridge in Ontario.

The inhabitable bridge of the design proposal also aims to connect desirable entities while creating an opportunity to provide new amenities. The bridge works with conditions at hand to accommodate and span across the highway, an important lifeline to the suburbs, to create a symbolic new centre over the highway. It also allows for a broader station expansion to both sides of the 401 with commuter services and parking garages. The complex acknowledges the importance of vehicular travel for the suburbs and addresses that reality while offering an alternative. The landscape of suburbia will be traversed by cars. This thesis aims to reduce vehicle use to within the suburb itself between the new downtown and homes but promote mass transit between suburbs and the city. The higher efficiency and capacity parking garage aids in increasing the number of cars that can be parked at the complex, encouraging higher use. In utilizing an already highly trafficked node and intensifying it, the complex can then provide public gathering spaces and a wide range of services to its users at one central location and reduce the dependency on the car by reducing the amount of stops between the station and home.

The project proposal connects two separate use entities and effectively becomes an armature for more mixed use programme. It transforms a highly trafficked transit node into more than that mere function. By connecting to and providing new public amenities, the complex becomes the new downtown of Pickering, and the station itself becomes a destination along the service route. Applying this design principle to other underutilized stations in similar surrounding suburbs without a true public centre, the rail line can become a network of connected destinations. The GO train system thus becomes more like the Sheppard subway line with dense

pockets of amenity and residential development above its stops.

NOTES

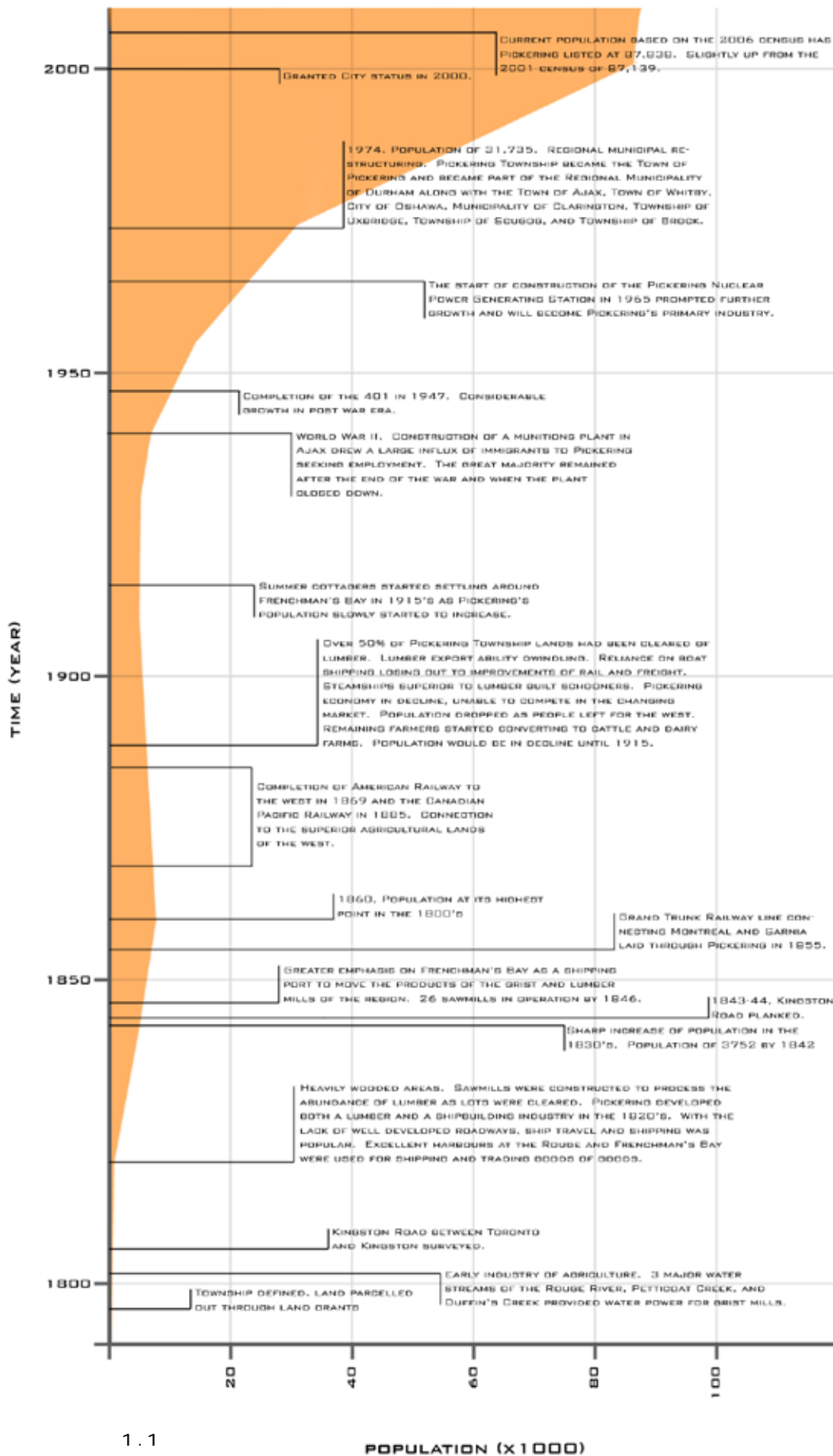
1. Jane Jacobs, *The Death and Life of Great American Cities* (New York: Vintage Books, 1992), 30.
2. Andres Duany et al, *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*. (New York: North Point Press, 2000), 7.
3. *The End of Suburbia: Oil Depletion and The Collapse of The American Dream*, Digital Versatile Disc, directed by Gregory Greene (Canada: The Electric Wallpaper Co., 2004). Chapter 1.
4. Susan Hanson, *Evolution of Transportation and Urban Form in North America and Europe* (New York: Guilford Books, 1995), 29.
5. southbrooklyn.net, "Brooklyn Heights – America's First Suburb," http://www.southbrooklyn.net/b_heights.html.
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7. Chris Trueman, "History Learning Site," *Life in Industrial Towns*, <http://www.historylearningsite.co.uk/towns.htm>.
8. Andres Duany et al., *Suburban Nation* (New York: North Point Press, 2000), 7.
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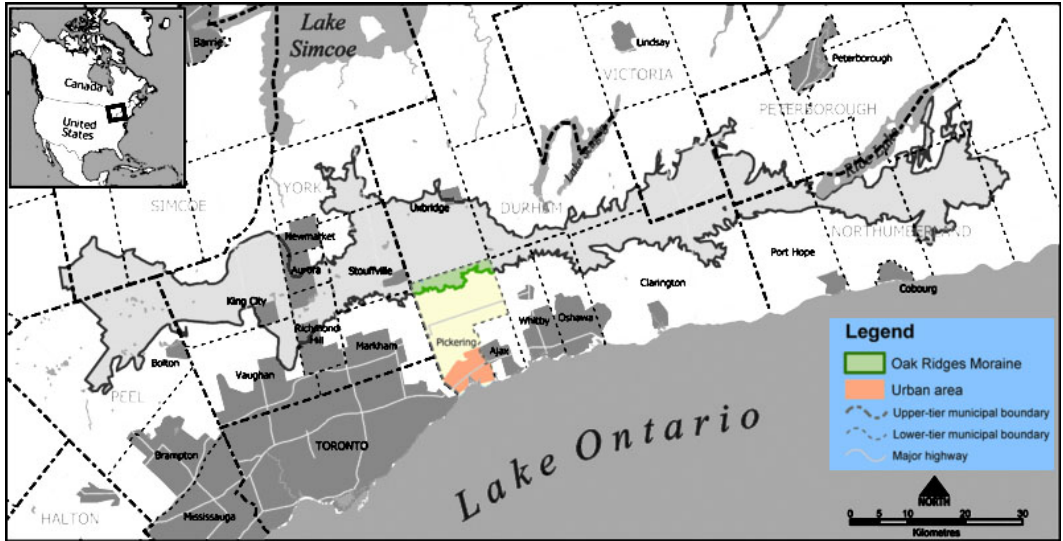
10. Duany, *Suburban Nation*, 116, 123.
11. *Ibid.*, 117.
12. History.CBC.ca, "Birth of the Suburbs," http://history.cbc.ca/history/?Mlval=EpisContent.html&lang=E&series_id=1&episode_id=15&chapter_id=3&page_id=3.
13. William A. McKay, *The Pickering Story* (Pickering: Township of Pickering Historical Society, 1967), 81-95; 128-141.
14. "The Greater Toronto Marketing Alliance," Durham Region, http://www.greatertoronto.org/investing_reg_02.htm.

CHAPTER 1

Pickering *Analysis of a Suburb*

PICKERING DEVELOPMENT TIMELINE





1.3

Pickering lies directly east of Toronto, separated from Markham and Scarborough by the Rouge Valley to the west. The Oak Ridges Moraine sits at its north end, and Ajax and Whitby border its east side. Lake Ontario is at its southern border.

TRANSPORTATION INFRASTRUCTURE

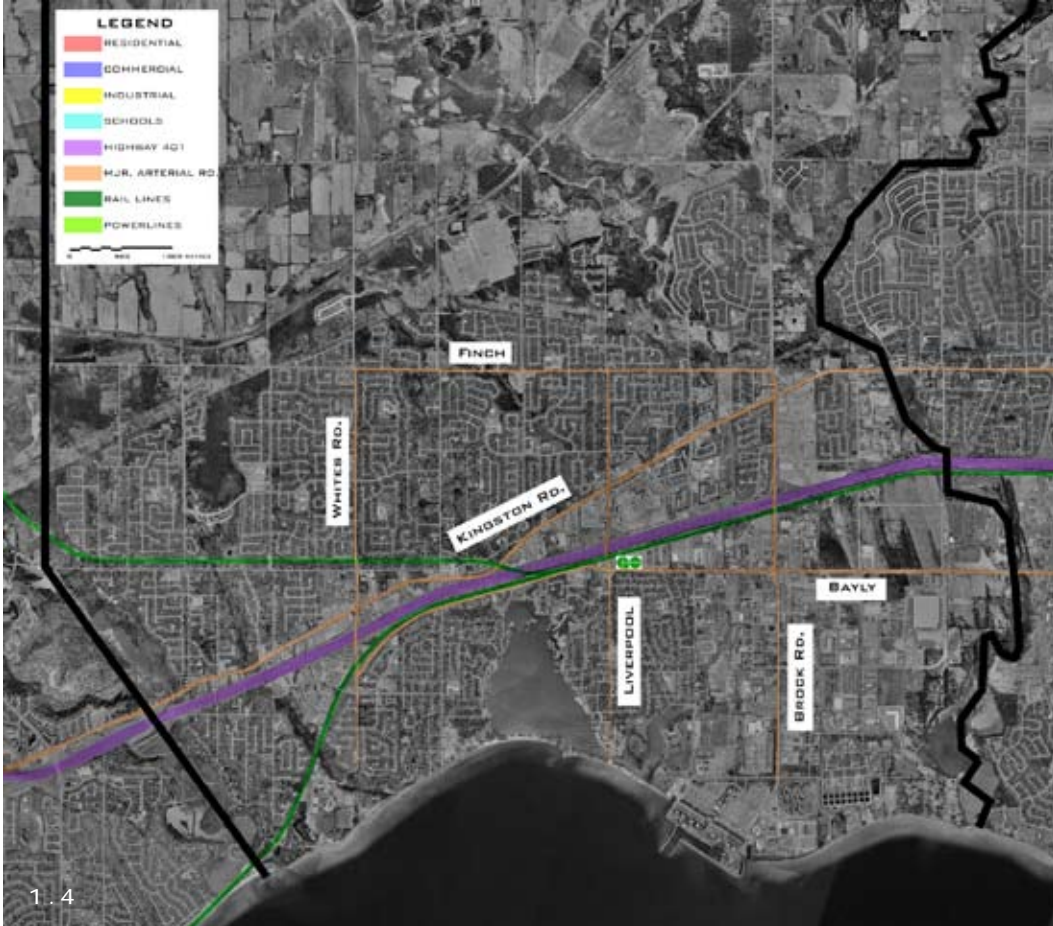
Various transit systems connect Pickering and Toronto. The map in Figure 1.4 outlines the major routes between the two cities.

Roads and highways form the first network of connections both within Pickering, and between Pickering and Toronto. Kingston Road, originally surveyed in the 1800s, is used heavily to both traverse Pickering and access Toronto. Highway 401, shown in purple, passes through to the south and runs roughly parallel to Kingston Road. Two

- 1.1 Pickering development timeline diagram.
- 1.2 Pickering highway entrance signage.
- 1.3 Regional context map



1.2



full interchanges and one partial interchange link Whites, Liverpool and Brock roads to the 401. The connections at Whites and Brock are full interchanges; each one has east and westbound on and off ramps. The interchange at Liverpool does not have an eastbound off ramp. Of the three interchanges, Liverpool is the most central; it leads to the downtown core, with Whites to the west and Brock to the east.

Since there is no eastbound access to downtown from the highway, Kingston Road serves as the main east-west artery through Pickering. It connects to Whites, Liverpool and Brock roads. Other local east-west arterial roads that traverse the three main north-south roads include Finch, which serves the northern neighbourhoods, and Bayly, which provides access to the south side of the 401.

Another major transportation artery is created by the commuter rail service to Toronto. Pickering's GO station is located at the intersection of Liverpool and Bayly streets, shown by the GO logo in the diagram. There is daily service to downtown Toronto's Union Station. Travel times range from approximately twenty-five to forty minutes depending on the train schedule. The GO station also serves as the main bus hub for Durham Region.

Finally, transit buses and GO buses connect to Toronto. These buses make regular stops along Kingston Road and travel to the bus terminal at Scarborough Town Centre, where there is access to the Toronto Transit Commission (TTC) buses and subway.

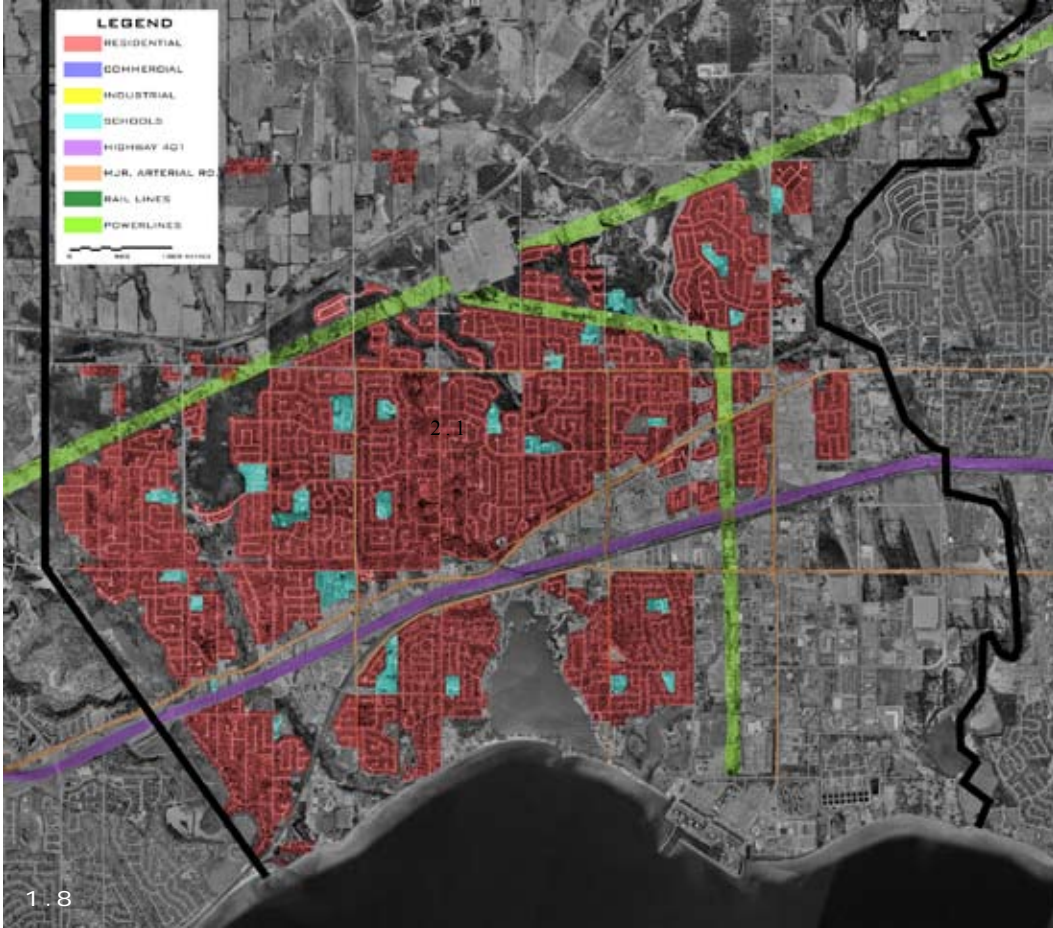


1.4 Pickering transportation infrastructure.

1.5 Highway 401 at Liverpool Rd. looking east.

1.6 Kingston Road at Liverpool Rd. looking east.

1.7 GO Train pulling into station.



PICKERING ZONING

As can be seen by looking at the map in Figure 1.8, suburban development in Pickering occurs mostly alongside the highway. It is contained by the northern shore of Lake Ontario to the south, and ends near the power-line corridor in the north, shown in lime-green. Much of northern Pickering remains rural.

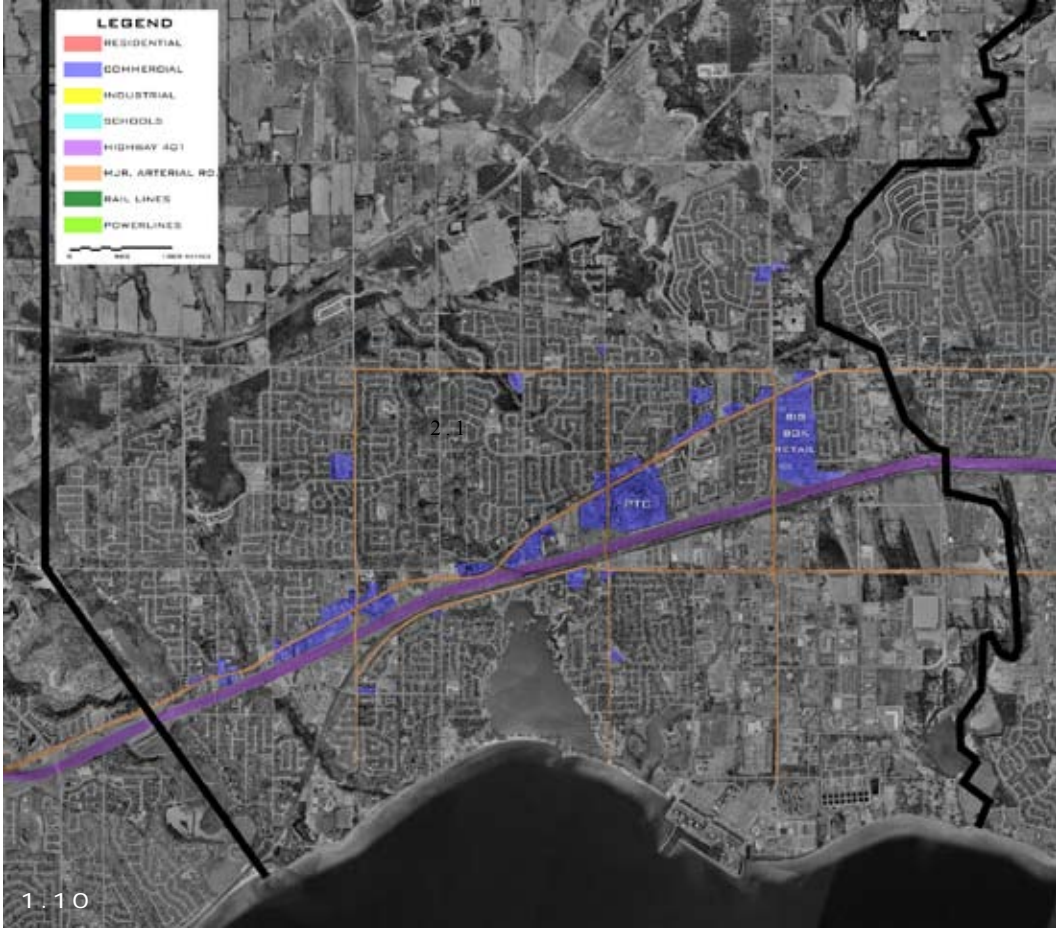
Like the majority of North American post-war residential developments, Pickering took the form of a large, low-density subdivision with single-use functional zoning. This type of planning strategy has resulted in Pickering's distinct residential, commercial and industrial zones.

In Pickering's residential zone, neighbourhoods consist of single-detached homes set on wide, winding streets and cul-de-sacs. Developers offered buyers a handful of model home choices within a narrow price range. While these homes differ in their exterior finishes and colour, and no adjacent home is of the same model, Pickering's residential neighbourhoods seem uniform and monotonous. Most house fronts are dominated by garages and driveways, while their rears open to fenced-in backyards. The only other buildings interspersed in these residential subdivisions are small-scale retail plazas, schools and churches. Subdivisions also contain small parks that are typically adjacent to local schools.

Pickering's older neighbourhoods are located south of the 401, around Frenchman's Bay. Subdivisions get progressively newer north of Kingston Road and up to the power-line corridor. Pockets of higher-density slab apartments have been built near the main commercial zones.

1.8
Pickering residential zoning with neighbourhood schools and parks.

1.9
Monotony of a 'cookie-cutter' Pickering residential neighbourhood.



The majority of commercial and retail spaces have developed at the intersection of Kingston and Liverpool roads, forming Pickering's downtown core. The Pickering Town Centre (PTC) mall sits to the southeast of the Kingston/Liverpool intersection. Adjacent to the mall is a series of retail plazas, some of which offer office space. Also adjacent to the mall is Pickering City Hall, which houses the central branch of the public library. The core also contains the Pickering Recreation Complex, which is surrounded by neighbourhoods of denser townhouse developments and the occasional apartment building.

A second commercial sector is situated along Brock Road, between the 401 and Kingston Road, indicated on the map in blue. The former site of Metro East Trade Centre and home of the Pickering Flea Market, it was demolished in 2002 and redeveloped as a 'big-box' complex with tenants including Walmart, Sam's Club and Canadian Tire. Similar to PTC, these commercial destinations are accessed primarily by car, as reflected by their ample parking lots.

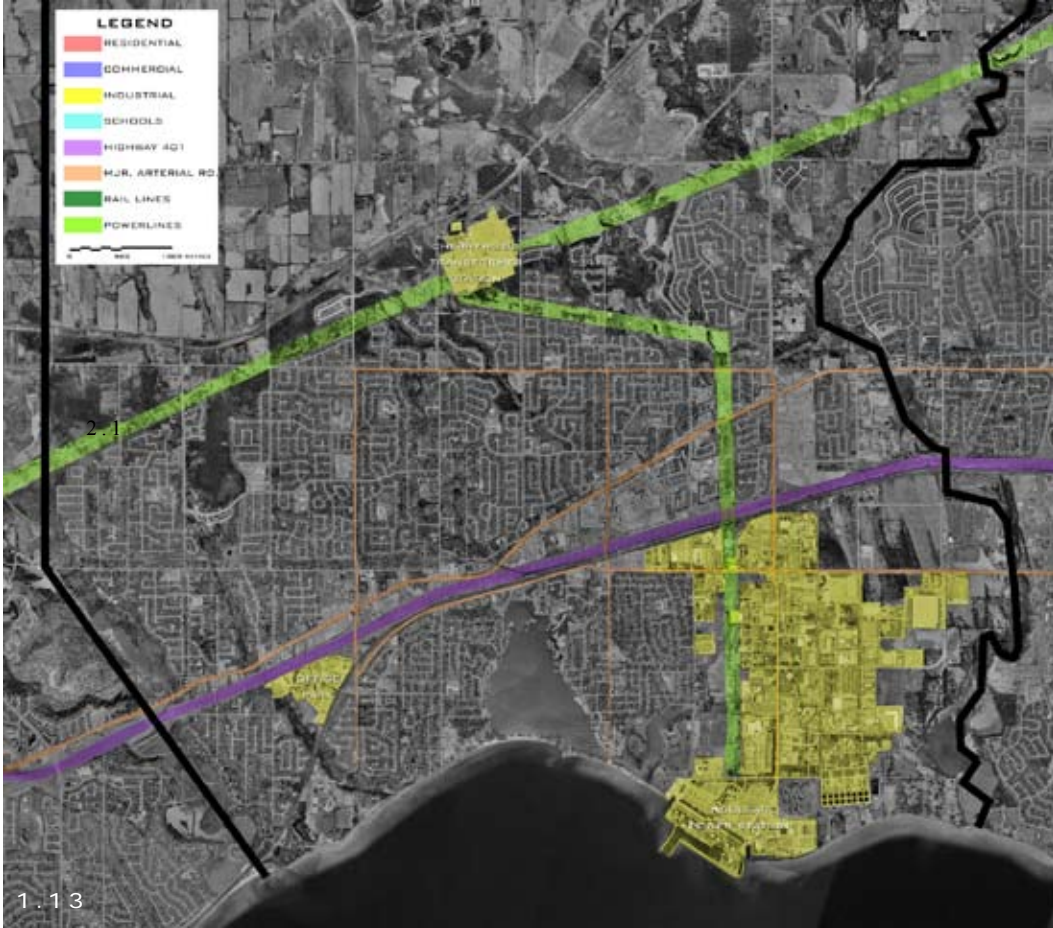
Low-scale retail plazas are present across the width of Pickering. These provide a commercial buffer between the transit corridor and residential areas to the north. Car dealerships comprise the majority of businesses along Kingston Road running west out of Pickering.

Pickering has only a small industrial sector, much of which is located south of the 401 along Brock Road, as indicated in yellow. Occupants of the low-rise warehouses found there include mechanics, distributors and manufacturers. Brock leads to the Pickering Nuclear Generating Station, which sits near the shores of Lake Ontario. Directly south of the 401 between Liverpool and Brock are more low-density industrial warehouses. Another small commercial

1.10
Pickering commercial zoning.

1.11
Pickering Town Centre north entrance and parking lot.

1.12
Big Box retail plaza at Brock Road.



area, containing an office park and additional warehouses, lies to the west of Whites Road on Granite Court. The only industrial unit north of the 401 is the massive Cherywood transformer station within the power-line corridor.



1.13
Pickering Industrial Zoning.

1.14
Ontario Power Generation nuclear power station, with commemorative wind turbine to the left.

1.15
Typical industrial buildings along Brock Rd.

1.16
Aerial photo of the Pickering nuclear station.

CHAPTER 2

Growing Pains *Living in the Sprawl*



2.

CAR DEPENDANCY

The low-density functional zoning strategy of Pickering has resulted in the dispersal of the community. With large residential subdivisions separated from commercial and retail buildings, few services lie within walking distance of the homes in Pickering. Inhabitants require a means by which to commute between their homes to the places they shop, work, learn, and back again. The personal vehicle provides a solution for this need.

While public transit is also available, the personal car is a more convenient mode of transportation for a number of reasons. There is no schedule to follow, you typically do not have to walk too far to where it is parked, it provides cargo room for the transportation of goods, and it also allows for spontaneity of destinations. Bus routes such as the system in Pickering, shown in image 3.1, are designed to provide service between the various residential neighbourhoods and few specific destinations. In Pickering, the routes all converge at the mall and the GO transit station. For a family that has a variety of destinations to travel to in their daily routines, a personal car is more flexible in accommodating these tasks.

THE PUBLIC DOMAIN: PICKERING'S MAIN STREET?

Pickering's vehicle use dominated urban planning policies, resulting in a city without a true pedestrian district. Unlike neighbouring towns *Whitby* and *Unionville*, Pickering lacks a historic Main Street lined with small shops, churches and cafes. In these other communities, the Main Street serves as an iconic heart of the community and a hub of street life.

2.1
Durham Transit Pickering bus
route map.



2.2



2.3



2.4



2.5



2.6

Kingston Road, also known as Highway 2, is Pickering's primary vehicular thoroughfare and the closest thing it has to a 'Main Street'. The road spans from the southeast end of Toronto across to Whitby. In Pickering, Kingston Road is a five-lane arterial road running just north of Highway 401. The street is lined with strip malls, car dealerships and big box retailers. Retail parking lots dominate the street edge, creating deep building setbacks. Because of this configuration, the streetscape presents no charm and does not encourage pedestrian activity.

Civic space in Pickering is unfortunately sited. The Pickering City Hall was constructed in 1990 and represents a missed opportunity for urbanism - it is not placed in a prominent location, but instead hidden on a small side street bordering the west parking lot of the Pickering Town Centre mall. Although its design incorporates a pedestrian walk and square, the design is inverted so that the public areas are at the rear of the building, fronting onto a private retirement home and gated townhouse community. Its front entrance consists of a driveway drop-off, where visitors are met by a glass-block stairwell.

Ironically, perhaps the most successful pedestrian gathering space is indoors and below street level - within the Pickering Town Centre's basement food court. Newly renovated, this space is heavily trafficked and replete with ample seating and natural light. However, it is not truly a public space since the food court is privately owned: it is intended only for paying mall patrons and accessible only during the PTC's open hours.

2.2
Unionville Main Street.

2.3
Kingston Road at Liverpool in downtown Pickering.

2.4
Pickering City Hall front entrance adjacent to mall parking lot.

2.5
Rear entrance to the Pickering City Hall.

2.6
Pickering Town Centre food court.



PUBLIC AND PRIVATE GATHERING SPACES

Pickering has some 'green' space in the form of retail plazas, local parks, and individual lawns, but these are not effective as public gathering spaces. Shopping plazas typically have minimal public seating, even in front of eateries where seating would be desirable. Like the commercial areas along Kingston road, the plazas' large parking lots demonstrate that they were designed for car access rather than pedestrian traffic. Similarly, parks are not heavily used as public spaces. Most residential neighbourhoods have parks, but they are usually connected to schools and used primarily by local elementary school students. Because of the city's largely suburban fabric, green spaces already exist in front and back yards. In the spring, summer and fall, Pickering's adult neighbourhood residents can often be seen spending time tending to these private green spaces, as opposed to occupying public green spaces.

Pickering's suburban zoning policies have resulted in the absence of an animated street life, the traditional realm of public life. When they occur, entertainment and communal gathering happen within the home itself. The absence of public fabric is substituted by an increased array of personal entertainment amenities. Homes are filled with commodities such as home-theatre systems, recreational gaming rooms, home gyms, separate dining rooms, Jacuzzis and bars, along with private gardens, barbeques and pools – and many of these amenities are procured from the big-box retailers that have replaced outdoor public space. The suburban home has become a place to live, gather and entertain. Private houses are connected to the outside world via the internet, television and radio, and filled with an abundance of commercial goods that

2.7
Benches at Amberlea plaza. The only outdoor seating in the whole plaza. Note the "No Loitering" sign.

2.8
Neighbourhood playground/park.

2.9
Private backyard green space.

2.10
Personal entertainment room.

2.11
Home workout room.



act as substitutes for the shopping, gathering and public dining that has traditionally occurred within a city's streets, squares and parks.

CHANGING DEMOGRAPHICS

North American post-war values supported the idea of family and child rearing as the ideal lifestyle.¹ This ideology resulted in the proliferation of nuclear-family culture and triggered the Baby Boom.² In Canada, suburbia's current incarnation caters to the families of this generation of people, born between 1946 and 1962.³

But North American society has changed. Baby Boomers are nearing or entering retirement and their children, sometimes referred to as the "echo boom generation", are entering the workforce and purchasing homes. This demographic has never experienced the hardships associated with a global war and has a different set of home-buying preferences. Today, the demand for housing no longer originates predominantly from the desire to create nuclear families. As urban researcher Adrienne Schmitz explains,

"Buyers that are considered a niche are actually the majority: nearly three-quarters of all suburban households are considered "non-traditional" and are typically not married couples with children but some kind of "neotraditional" household. Of these, most are made up of only one or two people. While some of these smaller households do gravitate to four-bedroom suburban homes with rolling lawns, many are looking for alternative product types. In many regions, the existing stock of traditional suburban housing will meet the demand for years to come, but there is a shortage of attached housing (both for rent and for

2.12

The Cleavers of "Leave it to Beaver", the quintessential nuclear family.

2.13

Senior citizens.

2.14

Co-op students seeking short term rentals.



2.15



2.16



2.17

sale), of affordable units, and of other kinds of smaller housing types.”⁴

Baby boomers themselves, who remain an important market segment, often want to downsize from their empty nester homes for more urban lifestyles. Century 21’s Toronto real estate team of Laurin and Natalie Jeffrey indicate the current type of housing in demand. Using data gathered from Statistics Canada, their findings indicate that while home ownership has been increasing in the past decade by 24%, there is a national trend towards the purchase of townhouses, condos, and other multi-family types and away from single-detached homes.⁵

This would indicate that diverse housing should be the norm, not the exception. Neighbourhoods should be suitable for a wide range of people. These places should be “walkable” and senior-citizen-friendly. There should be a supply of smaller homes for single people and for those seeking a shorter-term rental option, and mixed-used communities for the burgeoning home office set.⁶ Diverse neighbourhoods are especially desirable in the case of home workers, where the relationship between home dweller and home can change, and one’s house ceases to be a sanctuary and instead becomes one’s workplace. As Adrienne Schmitz writes in The New Shape of Suburbia:

“As more people work at home either full- or part-time, homes have changed to accommodate work spaces. But communities need to change as well. Work-at-homers often feel isolated in typical suburban communities and would like access to the amenities that are available to downtown office workers. The corner coffee bar, a nearby copy center, handy lunch spots and carry-outs, and convenience retail facilities all serve the daily needs of work-

2.15
A problem with home offices.

2.16
Home office setup.

2.17
Woman working from home.

ers. Residential communities that best serve those who work at home must include such amenities. The number of people who work from home has increased in past years due to innovations in information technology. Approximately 2.8 million (17%) of Canadian workers did a portion or all of their work from home in 2000, an increase from 2.1 million (16%) in 1995.⁷”

With significant population growth predicted by the province in the coming decades and suburban sprawl putting a strain on transportation and other service infrastructure, the thesis proposes that it would be beneficial to integrate new types of communities into the substantial existing suburban fabric of Pickering to appeal to a wider range of potential new residents.

NOTES

1. Doug Ooram, *Born at the Right Time: A History of the Baby Boom Generation* (Toronto: University of Toronto Press Inc., 1996), 7.

2. *Ibid.*, 16.

3. *Ibid.*, 61.

4. Adrienne Schmitz et al., *The New Shape of Suburbia: Trends in Residential Development* (Washington: Urban Land Institute, 2003), 9.

5. Schmitz, *The New Shape of Suburbia*, 7.

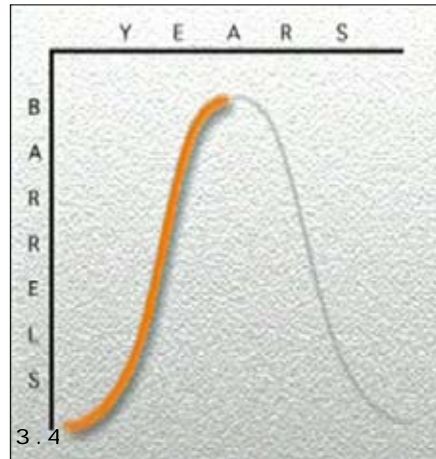
6. The Jeffrey Team, “Toronto Condo Loft and Real Estate Blog,” *First-Time Buyer Survey*, <http://www.jeffreyteam.com/blog/toronto-real-estate-market/first-time-buyer-survey/>.

7. Ernest B. Akyeampong et al., "Statistics Canada," Evolution of the Canadian Workplace: Work from Home, http://www.statcan.ca/english/studies/75-001/00901/hi-fs_200109_02_a.html.

8. Schmitz, The New Shape of Suburbia, 6.

CHAPTER 3

Pickering of Tomorrow *Changing Suburbia*



UNSUSTAINABLE SCALE

A number of key conditions and driving forces enabled North American suburbia to proliferate in the post-war era. As a business model, the suburbs were beneficial to the economy. They provided an empty vessel away from the city in which to promote consumerism. Under the influences of marketing and advertising, people were driven to fill the empty rooms of their suburban homes with the latest-and-greatest appliances and personal amenities.¹

Suburbia's sprawling landscape was feasible because cars provided a convenient method of commuting between home and work, and between home and retail areas. North America's wealth in fossil fuels helped to support the automobile's rise in popularity.² Cars allow suburbia to function. People like Henry Ford brought affordable cars to the masses during a time when there was a seemingly endless supply of underutilized fossil fuels.

Suburbia soon found other uses for fossil fuels. From the long-distance transportation of goods to fueling power generating stations, gasoline has made suburbia's grandiose scale possible. The suburbs operate and survive on the availability of cheap fossil fuels, which were obtainable. This is no longer the case.

Fossil fuels are a finite resource. In influential geologist Dr. M. King Hubbard's analysis, oil extraction from anywhere on the earth follows a bell curve. There is a point in crude oil extraction when the maximum rate of efficiency is attained and the quality of oil is at its finest. Following this point, more effort is required to extract the remaining supply, the quality of which gets increasingly worse as the supply is exhausted. According to Hubbard, North America's oil supply peaked in the 1970s.³ Scientists and ge-

3.1
Henry Ford, 1921.

3.2
Oil pump.

3.3
Natural gas power plant.

3.4
Hubbard curve.

3.5
Refrigerated long distance transport truck.

3.6
Empty fuel guage metaphor for a future without gasoline.





ologist experts from the Association for the Study of Peak Oil and Gas (ASPO) are now presenting alarming reports that suggest that even remaining global oil resources are reaching or have already reached their plateau and that the global supply of crude oil has peaked.⁴ Declining oil supplies will adversely affect suburbia. Following the law of supply and demand, all crude oil-based products from natural gas to fertilizers have the potential to continue to rise in price as demands outweigh supply. Suburbia will become unsustainable as all of the commodities that allow it to exist and function today become unaffordable.

In its current form, Pickering is in danger of becoming a deserted town as fewer people will be able to afford to live there. The way the Pickering and other suburbs are built needs to be re-evaluated and adapted to the future.

DENSIFICATION INITIATIVES

In 2006, the Government of Ontario released its Growth Plan for the Greater Golden Horseshoe in response to concerns about the future of suburbia. Predicting a population increase of 3.7 million people and 1.8 million new jobs by 2031, the plan is concerned with the form of existing communities and the integration of new construction to address the predicted growth. The plan offers guidelines for accommodating future growth in the GTA, including containing urban sprawl, and providing a wider range of housing and community options.⁵

The plan proposes densification and intensification. The goal is to increase the density of existing urban areas through redevelopment. An intensification target is also defined wherein a minimum of 40% of all residential development is to occur within defined municipal areas

3.7
Satirical image predicting the future of gasoline prices.

Table 1: 2031 Minimum Gross Density Targets for Urban Growth Centres

400 people & jobs combined per hectare	200 people & jobs combined per hectare	150 people & jobs combined per hectare
Downtown Toronto Etobicoke Centre North York Centre Scarborough Centre Yonge-Eglinton Centre	Downtown Brampton Downtown Burlington Downtown Hamilton Downtown Kitchener Uptown Waterloo Downtown Milton Markham Centre Mississauga City Centre Newmarket Centre Midtown Oakville Downtown Oshawa Downtown Pickering Richmond Hill/ Langstaff Gateway Vaughan Corporate Centre	Downtown Barrie Downtown Brantford Downtown Cambridge Downtown Guelph Downtown Peterborough Downtown St. Catharines

3.8



3.9



3.10



3.11

marked as Urban Growth Centres.

Downtown Pickering is one of twenty-five identified Urban Growth Centres. These areas are divided into three subcategories, with specific density targets assigned to each area. Pickering falls in the medium-density category, which means it has a minimum gross-density target of 200 people and jobs per hectare by 2031.

Aside from this provincial plan, there are other indications of growth in Pickering. Following a period of relative stagnation due to zoning restrictions in north Pickering, new residential developments are again emerging. Previously contained by the power-line corridor, the land north of this demarcation has recently been rezoned for residential use. The halted plans for the Pickering Airport as well as the Seaton Community in north Pickering have also re-emerged. First proposed in the 1970s for a second international airport but stalled by opposition, a smaller regional airport is currently being negotiated.⁶ The proposed Seaton community is also showing signs of progress. It is a major component of a land exchange deal between the province and private developers where environmentally sensitive land located on the Oak Ridges Moraine in Richmond Hill and Uxbridge is being exchanged for provincially owned lands in northern Pickering.⁷ The exchange was completed in August of 2007 when four major developers took control of the Seaton lands.⁸ The City of Pickering projects a 48% increase in its population by 2023.⁹

In terms of developing its existing core, Pickering has unveiled a preliminary plan to create a series of new downtown office towers. The first tower scheduled for construction has been planned to contain more than 18,500 square metres of leasable space and will be situated in the southern parking lots of the Pickering Town

3.8
Provincially designated density targets for selected growth centres.

3.9
New subdivision in Pickering.

3.10
Advertisement billboard for new residential developments.

3.11
Temporary road sign at the growing frontier of Pickering development.



Centre. This plan also incorporates a pedestrian bridge that spans the 401 and rail lines that connect to the GO Transit station. Images 3.12, 3.13, and 3.14 taken from the City of Pickering's website show the context of the tower and bridge in relation to the mall, the highway, and the GO station. Plans for a condominium and townhouse development named 'San Francisco by the Bay' was proposed in early 2007.¹⁰ Image 3.16 sites the development to the southwest of the Liverpool and Bayly intersection, adjacent to the GO station.

NOTES

1. The End of Suburbia: Oil Depletion and The Collapse of The American Dream, Digital Versatile Disc, directed by Gregory Greene (Canada: The Electric Wallpaper Co., 2004). Chapter 1.

2. Ibid., Chapter 3.

3. Ibid., Chapter 5.

4. Ibid., Chapter 7.

5. Ministry of Public Infrastructure Renewal, "Places to Grow," Introduction,
<http://www.pir.gov.on.ca/English/growth/gghdocs/GGH-Targets-Backgrounder.pdf>.

6. CBC News, "30 years later, Ottawa unveils plan for Pickering Airport,"
<http://www.cbc.ca/canada/story/2004/11/17/airport041117.html#skip300x250>.

7. Ministry of Municipal Affairs and Housing, "Principles: North

3.12

City of Pickering proposal for a new office complex and pedestrian bridge.

3.13

Illustration of proposed office tower.

3.14

Illustration of pedestrian bridge at GO station.

3.15

Rendering of San Francisco by the Bay development.

3.16

Illustration of site context of development within Pickering.

Pickering Land Exchange and Development,” <http://www.mah.gov.on.ca/Page1725.aspx>.

8. Kristen Calis, “Seaton land exchange complete,” <http://news-durhamregion.com/news/article/85077>.

9. City of Pickering, “Community Profile 2007,” <http://www.cityof-pickering.com/business/economics/pdfs/Profile2007.pdf>.

10. UrbanDB, “San Francisco By the Bay,” http://www.urbandb.com/canada/ontario/pickering/san_fran_by_the_bay/

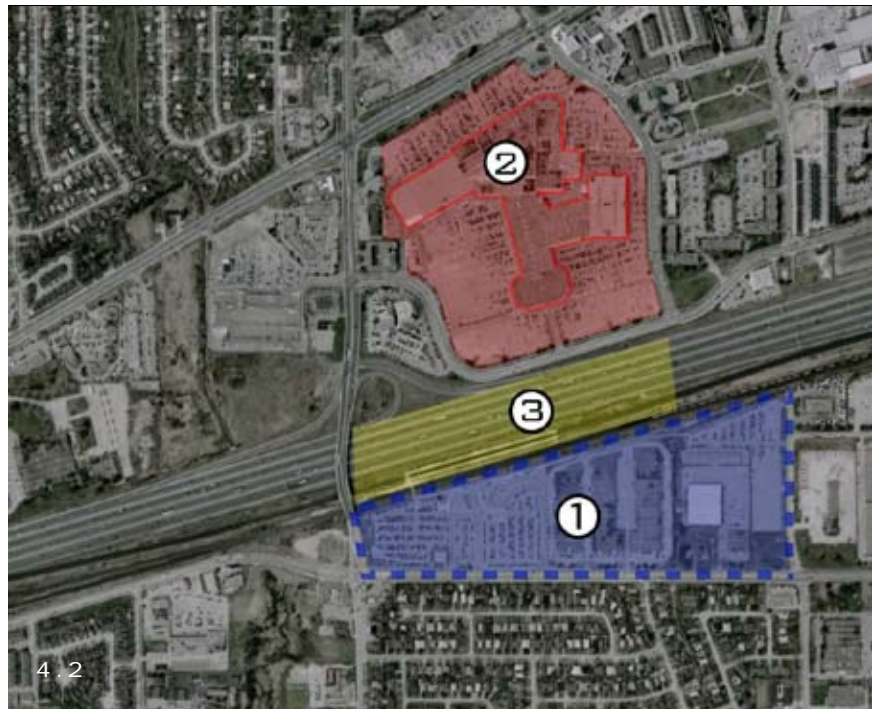
CHAPTER 4

Mixed-use Complex *Design Proposal*



4.1

- 1 South site including existing GO Transit lands.
- 2 Pickering Town Centre.
- 3 Transit corridor of 401 and railway tracks between.



4.2

DESIGN PROPOSAL

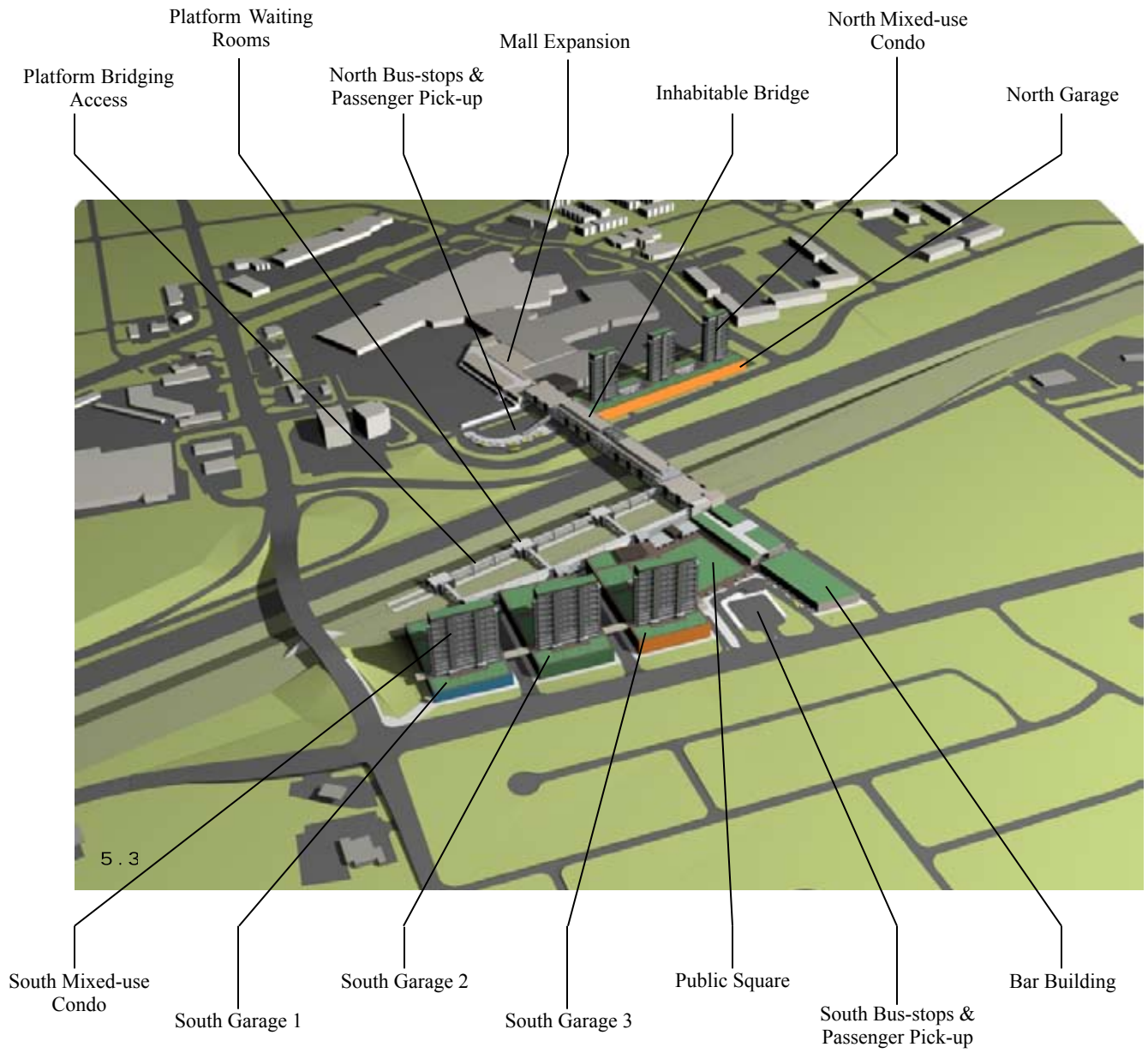
In the suburbs of Toronto, notable areas of density can be observed when certain elements coexist, usually that of a shopping mall and a transportation node. Locations such as Yorkdale incorporate a mall, TTC bus terminal, and TTC subway. Scarborough Town Centre integrates a mall, town hall, community centre, restaurants, GO bus terminal, TTC bus terminal, and the TTC subway connection in one campus. Several condominium developments have sprung up around this location to provide higher density living within Scarborough. With access to Downtown Toronto via the subway and a wide range of everyday services in close proximity, areas like Scarborough Town Centre allow for a more pedestrian-oriented lifestyle.

When examining the central core of Pickering, these same elements of a shopping mall and a regional transit node exist. However in the case of Pickering, they are separated by a significant physical barrier: the Pickering Town Centre shopping mall is on the north side of the six-lane 401 freeway corridor and rail lines, while the GO Transit hub is situated on the south. The opportunity for denser, more pedestrian-oriented living exists if these elements can be united.

This thesis proposes the design of a mixed-use complex with residential and commercial components that connects these elements. The complex provides convenient amenities for commuters, existing Pickering citizens, and new on-site residents alike. The proposal introduces the infrastructure to promote a more pedestrian-oriented lifestyle in Pickering. The strategy is to locate common services and amenities at Pickering's main transit node, which a large number of Pickering commuters funnel through every day of the work-week. A connection with the mall

4.1
Aerial massing perspective looking north-west.

4.2
Satellite context map of site and downtown core. (n.t.s)



to the north incorporates the existing collection of facilities into one stronger centre, rather than allowing them to continue to exist as two separate competing centres with duplicate services. Amenities are dispersed along this connection to create this unity through pedestrian traffic. Upon exiting the GO train, commuters can take care of a variety of daily errands before returning to their parked cars or entering a bus for the last leg of their commute home. The proposal thus aims to reduce the number of car trips made subsequent to getting off the train. It replaces the perceived convenience of owning a personal automobile with the convenience of nearby, walkable services. By extension, the strategy encourages the use of public bus transit by reducing the number of post-train station destinations to one destination: home. With only one destination, the bus system should be equally suitable for the task as a personal car.

The project incorporates public amenities and gathering spaces to further promote the complex as a destination, rather than solely a transitory pause along a daily commute. It thus attracts patrons of a variety of types, including residents in the immediate area, commuters, Pickering locals, and office workers. This diversity allows for a larger variety of services and longer operating hours, since the complex would be inhabited at all times of the day and the week. These qualities are what urbanist Jane Jacobs notes as being key elements for good public space. She states that successful public spaces are not defined as much by what they contain, as by the surrounding elements that contain them. Good public spaces are surrounded by a variety of programmes that, collectively, are used during all hours of the day.¹

5.3
Aerial massing perspective looking
north-east.

- 1 West tunnel exit.
- 2 Passenger pick-up/drop-off.
- 3 GO Transit Station.
- 4 Bus stops.



STATION EXPANSION

The GO Transit station as it exists currently is comprised of the ticket counter itself, a convenience store, three train platforms linked by two underground tunnels, and an exit structure for the west tunnel. All this is surrounded by pavement for the main parking lot, the pick-up and drop-off area, and the bus stop turnabout. The scale of the design proposal and the importance of the role of the GO station within it necessitates an expansion and reconfiguration of existing elements.

While advocating public transit in an existing suburban fabric, there will still be a significant number of residents who prefer to drive their personal cars to the station and park there. With the existing stable of parking spots and the current commuting population of Pickering, the parking lot appears to typically be at capacity during the work week. Further population growth in Pickering as predicted and targeted by the province would require more parking capacity than the current station provides.

For expanding the parking capabilities of the complex, the project incorporates a system of parking garage structures for commuters as well as on-site residents and daytime office workers. Three separate structures occupy the north-east corner of Bayly and Liverpool roads. Each is three storeys tall, with a unique façade giving each one a unique identity. As shown in image 4.5, the garages on the south side are differentiated both by colour and fenestration treatment. The nearest garage to the intersection is enclosed by a blue skin with square pixel-like openings, the second has a green triangular motif and the last garage has a circular orange theme. This visual system helps commuters remember which garage they parked in.

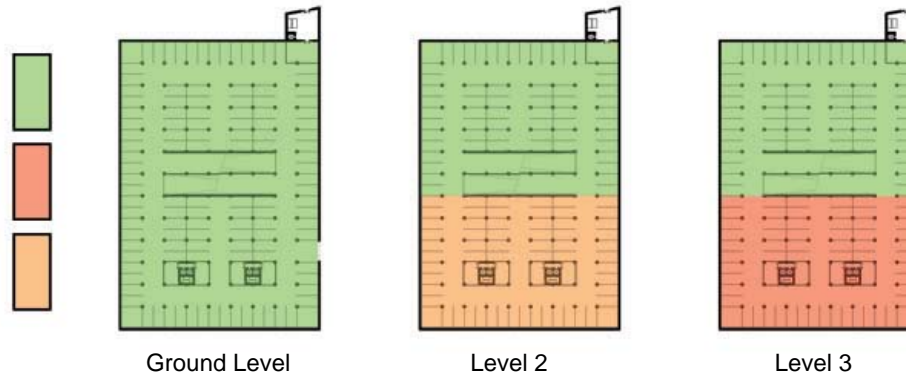
4.4
Existing GO Transit site elements.

4.5
View of parking garages looking east along Bayly Road.

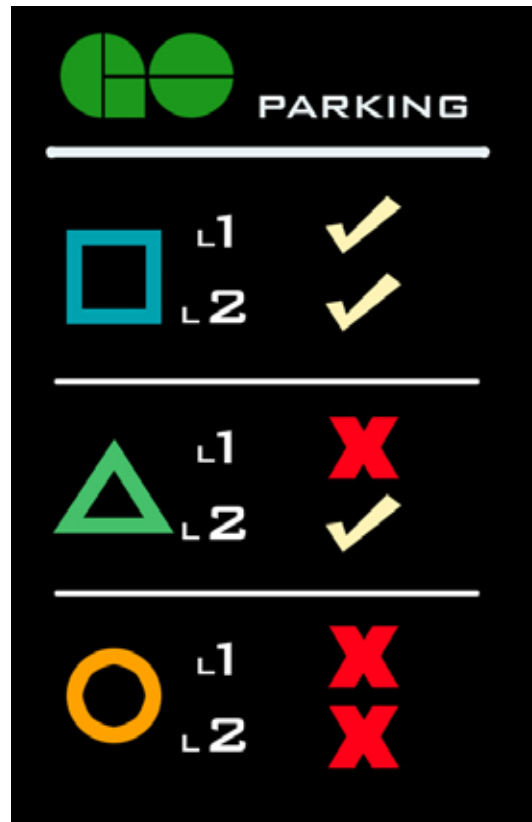
Weekday GO Transit parking
with public access on weekends.

Residential tower parking.

Weekday office parking, evening
and weekend visitor parking and
extra unit parking.



4.6



4.7

Each garage is also equipped with a tracking system to determine which garage has available spots and what level they are on, aiding in the efficiency of finding a parking spot. Through an implementation of sensors at the entrance/exit and at the ramps leading between parking levels, this information is gathered and fed to digital signage at the garage entrances. Also aiding in efficiency of movement, the garages themselves are subdivided in a way that the commuter parking spots are located as close to the train platforms as possible. As shown in image 4.7, the entirety of the ground levels are occupied by GO Transit parking. The second and third levels have sections allocated for on-site residents as well as visitor parking and daytime office worker parking zones. The remaining spots for GO Transit are closest to the train platform access. Since the structures are used by several different groups, distribution of spots change depending on different times of the week, and this information is also updated on the digital signage outside. For instance, spots used by daytime office workers can be used as extra residential or visitor parking spots in the evening. Portions of the GO Transit parking can be used as public parking on the weekends, when there is reduced commuter traffic and more people coming to take advantage of the complex's services and amenities.

A similar situation exists at the north mall side, where another parking garage is located for residents at that location and for commuters who chose to park by the mall. By splitting the parking to both sides, the impact of a concentration of cars leaving the site should also be divided whenever a train carrying home-bound commuters arrives at the station. Along with a percentage of the commuters who linger to run errands, the layout aims to spread out the concentrations of traffic congestion. Both sides also



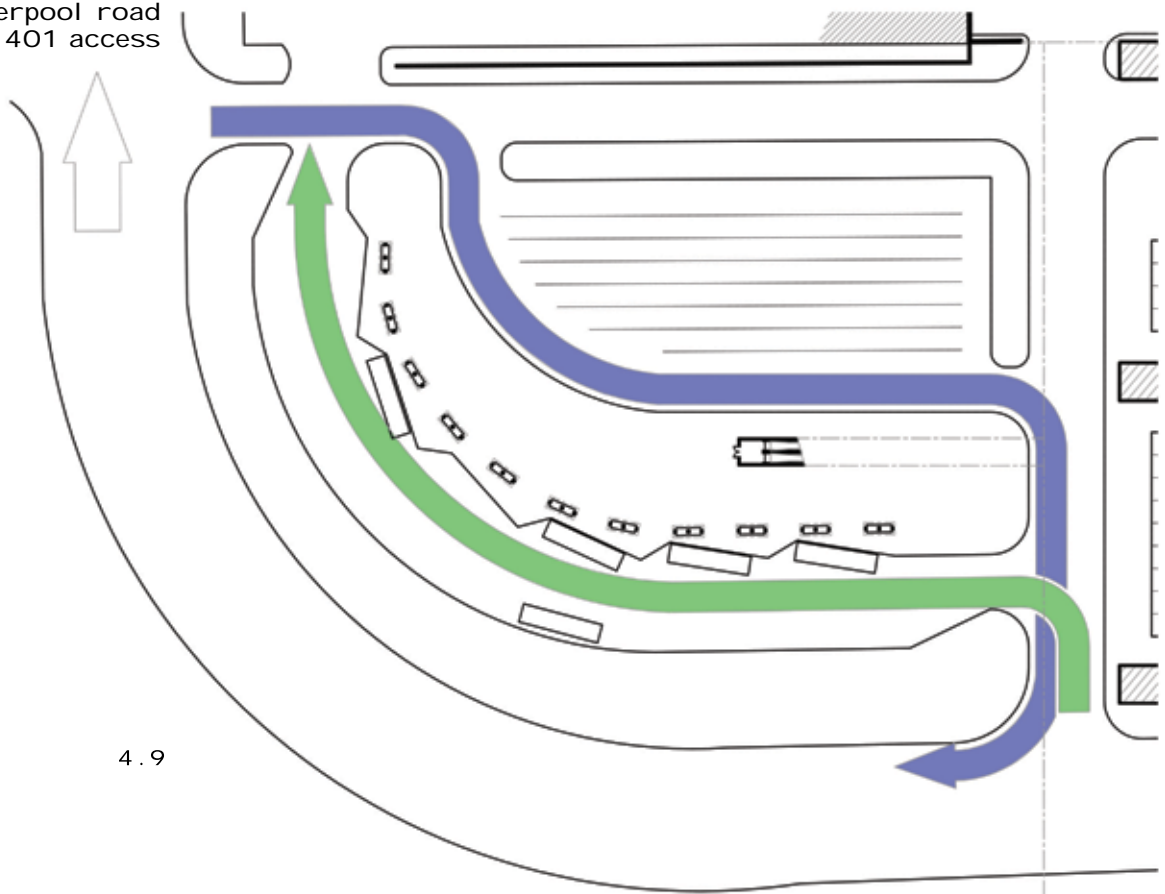
4 . 8

4.6
Diagram indicating allocation of parking spots for different users.

4.7
Example of garage digital signage.

4.8
Plan showing locations of garage structures.

toward Liverpool road
and 401 access

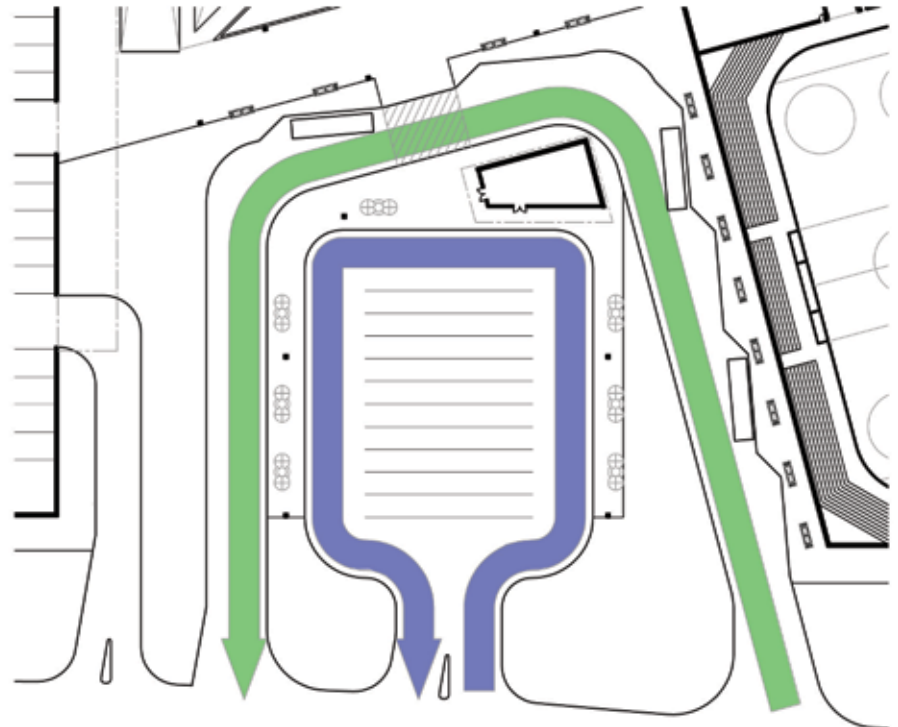


4.9

Passenger Pick-up &
Drop-off Loops



GO Bus and Durham
Transit Bus Loops



toward Liverpool road
and 401 access

4.1 C

have bus stops and passenger pick-up and drop-off locations, arranged along a convenient loop close to the freeway access on Liverpool Road. For commuters arriving at the mall side, a second ticket booth is located where the main bridge structure connects to the train platforms.

The final numbers for GO Transit parking within the proposed garage structures come to 950 spots on the south side and 308 on the north mall side. With the existing parking lot capacity of 770, the proposal increases parking on the south side by 23% while using a footprint of the same physical ground area. With the north side garage, parking capacity shows a net 63% increase.



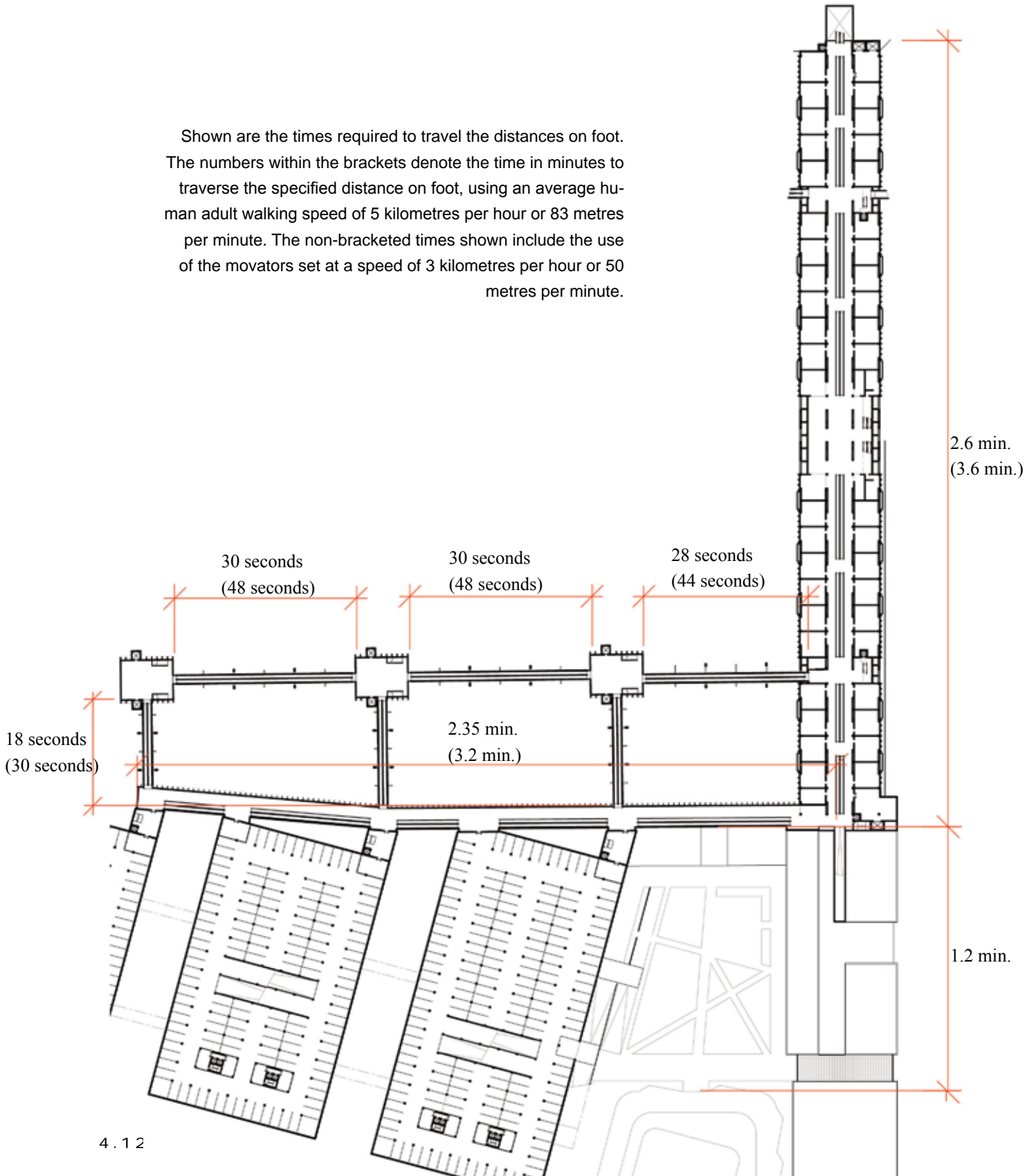
4.11

4.9
North passenger pick-up/drop-off
and bus loop. 1:1000.

4.10
South passenger pick-up/drop-off
and bus loop. 1:1000.

4.11
Plan showing locations of bus
loops.

Shown are the times required to travel the distances on foot. The numbers within the brackets denote the time in minutes to traverse the specified distance on foot, using an average human adult walking speed of 5 kilometres per hour or 83 metres per minute. The non-bracketed times shown include the use of the movators set at a speed of 3 kilometres per hour or 50 metres per minute.



4.12

PEOPLE MOVING

With efficient parking systems, the complex also has to be efficient in moving the pedestrians. Even with a physical walkable connection bridging between the mall side and GO station side, the amount of time it takes to walk across and to the train platforms will still be a factor on the people's decisions to utilize the north side parking and access. When dealing with substantial distances of up to 290 metres between the two sides, the complex makes use of moving sidewalks to augment the walking speed. Also known as horizontal escalators, people movers, or movators, these devices are common in airports and transit stations. For the complex, they span the first level of the bridge structure as well as along the connections to the rail platforms and between the three garages on the south station side. Translating at speeds of three kilometres per hour for typical models, the movators can reduce the walking time of an average adult by 37.5%. The effect of movators on walking speeds can be seen in image 4.12. With the implementation of movators, it should take no longer than five minutes to walk from either of the bus stops, passenger drop-offs, or parking garages to the train platforms.

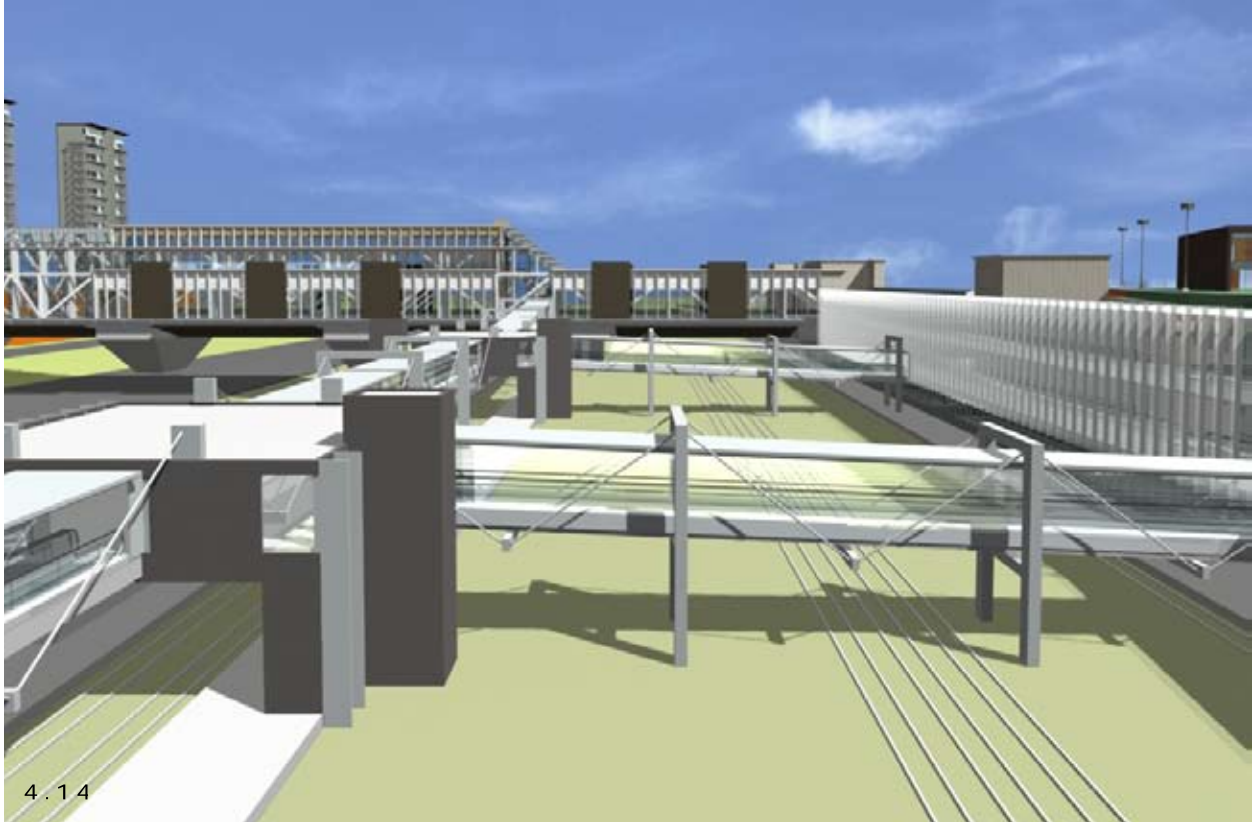
Ease of connections between the three south garages and the train platforms is especially important when dealing with people moving efficiency. With the decision to use above ground open air parking structures, the existing platform access system of underground tunnels is not ideal in that depending on which level commuters parks on, they would have up to three storeys to descend to get to the access tunnels. The project instead uses a system of bridges and elevated waiting rooms over the train platforms. A three storey glazed spine connects all three parking garages to each other as well as to the rest of the



4.13

4.12
Plan illustrating the effects of movators on time needed to traverse the distances. 1:2000.

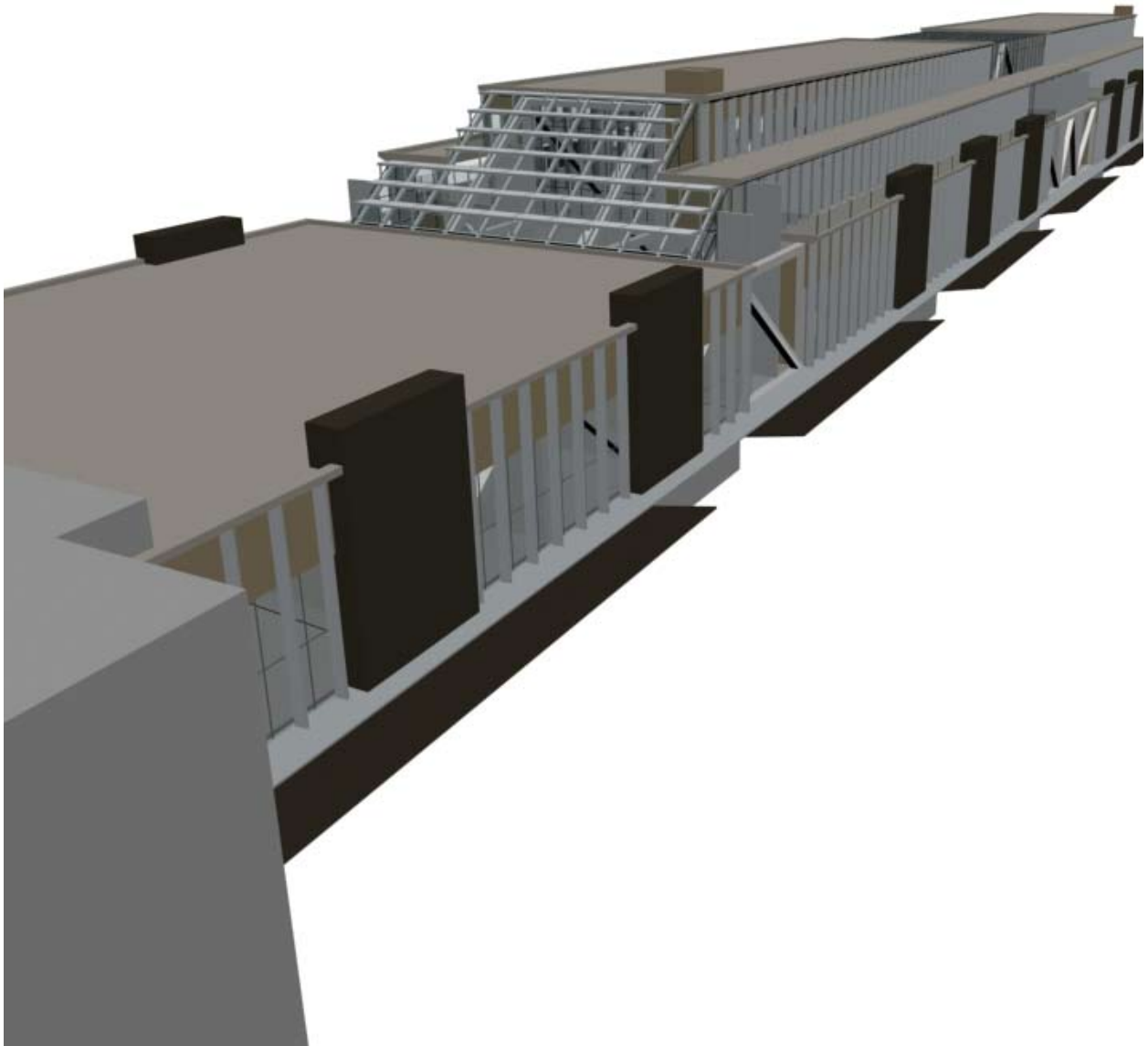
4.13
Location of commuter moving elements.



4.14

complex to the east. A vertical access shaft of stairs and elevators occur at the connection to each garage. Where the ground level of the spine has direct entry to platform one, platforms two and three are connected by bridges with movators which are accessed at the second level of the spine. With this setup, the maximum number of flights a commuter would have to travel to get to the bridges is reduced to one. The bridges lead to the three sheltered waiting rooms above platforms two and three. They have seating areas with digital displays indicating when the trains are arriving and departing as well as destinations. Besides being connected to the garage spine, these rooms are also connected to each other through similar movator bridges as well as directly to the main bridge structure to the east that spans the transit corridor.

4.14
Rendering of bridging system
between garages and platform
waiting rooms.



4.1 E

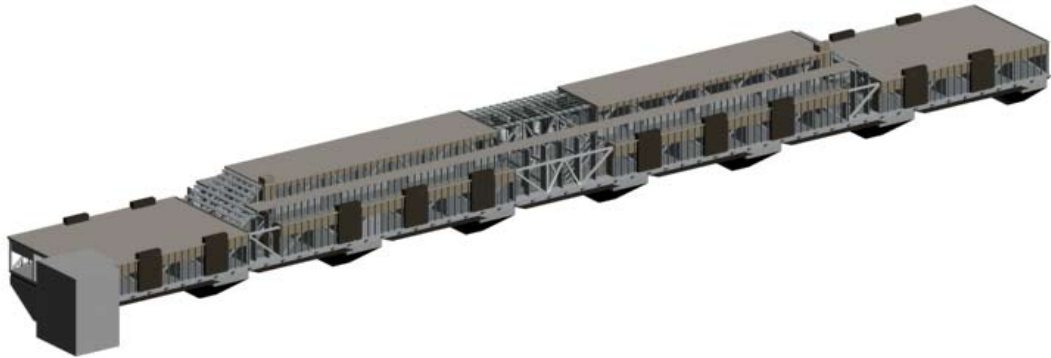
THE INHABITABLE BRIDGE

The inhabitable bridge structure is a major component of the thesis design proposal. It is not merely a means of providing a pedestrian connection between the two destinations of the mall and the GO station but a destination in itself that unifies both sides into a continuous public entity. The City of Pickering's plan for the site is simply an office tower on the mall side connected with a pedestrian bridge to the existing GO station. The simplicity of this scheme is a missed opportunity in that it does not introduce desirable public amenities to either side. At most it provides a sheltered connection between the mall and the station but does not do more to promote the use of this connection. For people who want to walk between the station and the mall complex, they already can do so across the Liverpool overpass. To plan a pedestrian bridge mainly to be in conjunction with the proposed office tower would suggest that the city envisions a large number of its workers to commute into Pickering by GO transit. Without any other programme, the bridge is quite a significant piece of infrastructure for a single tower.

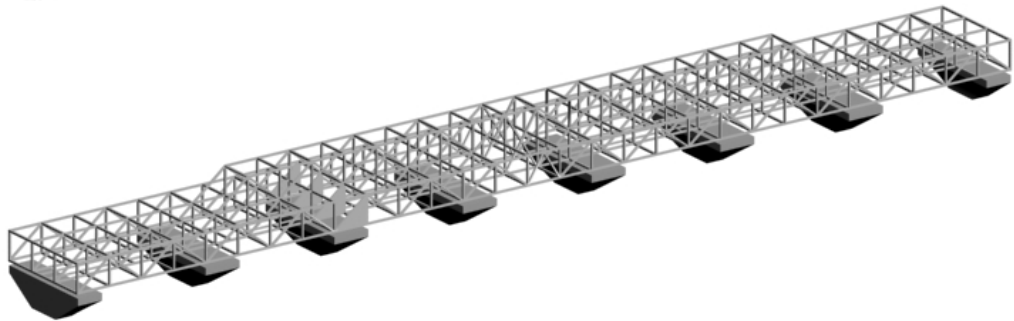
The thesis proposal utilizes an inhabitable bridge to span the transit corridor and connect the two sides. This bridge type forms a spine of amenities and a continuation of the mall across to the station. By being an inhabitable destination in itself, it aims to encourage pedestrian use.

The main structure of the bridge is a system of four trusses spanning the two hundred and eighty metre distance atop of equi-distant vertical pier structures. These four trusses form the three interior ten metre wide bays of the bridge and are assembled from welded square hollow sections. The centre bay is the main thoroughfare across the bridge with the moving sidewalks running down the

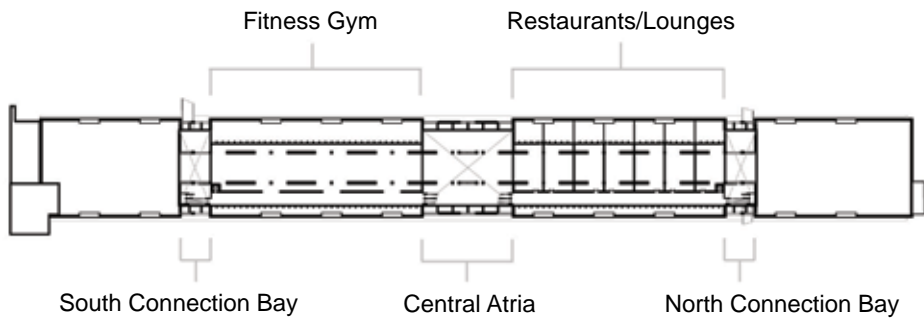
4.15
Exterior birds-eye perspective of inhabitable bridge.



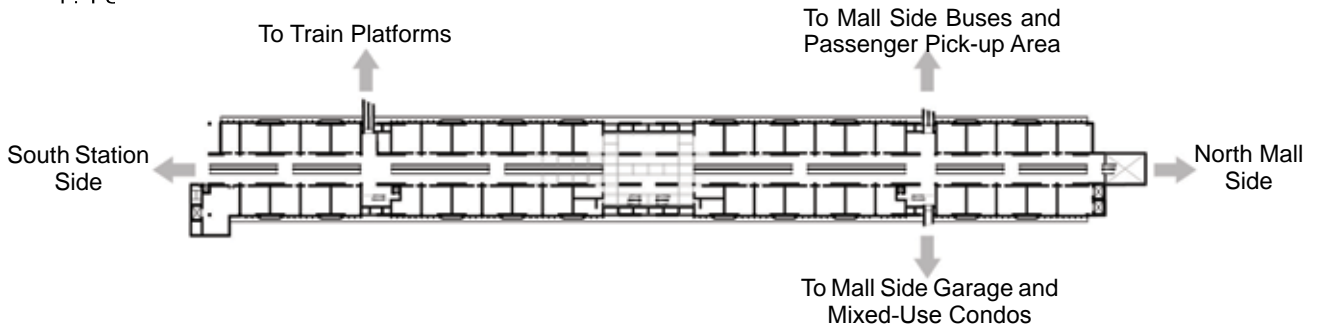
4.16



4.17



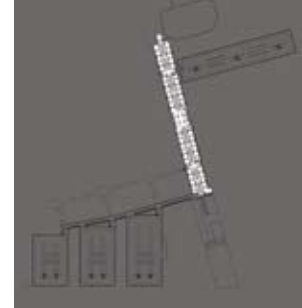
4.18



4.19

centre. Shops and services line the side bays. At three points along the span of the bridge, the continuation of these side bays are interrupted. Two of these are for connection purposes. Closer to the mall side, the bridge provides connections to the bus stops and passenger pick-up area as well as to the parking garage podium with its residential and office towers. The south side of the bridge has access directly to the waiting rooms atop of GO platforms two and three. The secondary GO Transit ticket counter is also at this location with a clear view overlooking the tracks. At the midway point of the inhabitable bridge, there is a double-height glazed area for gathering and resting, with food and drink amenities, seating, and washrooms. A partial second storey can be accessed via elevators and escalators at all three of these points. This second storey occupies mainly the centre bay of the truss structure and is divided into two sections by the centre atria of the bridge. The north area is occupied mainly by restaurants and lounge type services where the south area houses the fitness gym. As this second level does not span the entire width of the bridge, it enjoys access to an outdoor area that can be used for additional patio dining areas in warmer weather as well as stretching and yoga areas for the gym.

As an occupied structure spanning over vehicular arteries that present the danger of traffic accidents and vehicle fires, the piers are clad in a weather resistant and fire-proof mineral stone product. The structural steel is also fireproofed and covered by a fire resistant undercarriage that contains lighting components as well as a sprinkler system.



4.2 C

4.16
Inhabitable bridge exterior

4.17
Interior truss structure atop piers.

4.18
Upper level of inhabitable bridge.
1:2500.

4.19
Lower level of inhabitable bridge.
1:2500.

4.20
Plan showing location of inhabitable bridge.

4.21 - View of interior of the lower level of the inhabitable bridge structure. Central movator system is clearly visible, situated within the pedestrian pathway. The structural truss system is exposed with shops and storefronts situated in each bay. The view looks towards the main central atria of the structure. With ample tables and seating in this space, adjacent shops are used for food services. Clerestory window on the second level above look down into this atria area.

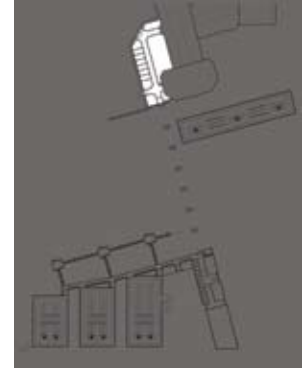


END BUILDINGS

A mall extension is proposed to anchor the bridge on the north side. Meeting at the second level of the mall, an existing main entrance is removed and the interior hallway is continued into this extension and makes a right angle south to line up with the central spine of the inhabited bridge. The new entrance is located at the convergence of these two axes along with a secondary entrance in line with the now interiorized second level entrance into The Bay department store. New retail spaces line the corridor of this extension along with a new grocery store, a vital necessity for the residents of this complex and a convenient location for commuters to do their grocery shopping before heading home. This location is serviced by an expanded shipping and receiving area beneath the extension, accessible from the ground level of the mall parking lot. The existing location for the loading dock for The Bay, the expansion will include freight elevators to service both the grocery store as well as the bridge structure.

A multi-purpose bar building anchors the bridge on the south side. This structure has internal ramps that rise from grade at the main entrance to meet with the lower level of the bridge. It also connects to all three levels of the parking garage spine. Stairs and elevators are located at this junction of the bridge and the garage access as well as a shipping and receiving area to service both the bar building as well as the inhabited bridge from the south.

This bar defines the eastern edge of the complex's main public square outside. Shops line this edge at grade and are intended to be used as cafes, pubs, lounges, and small eateries with outdoor seating and patio space. The GO station is located at the end of this strip by the main entrance into the bar building.

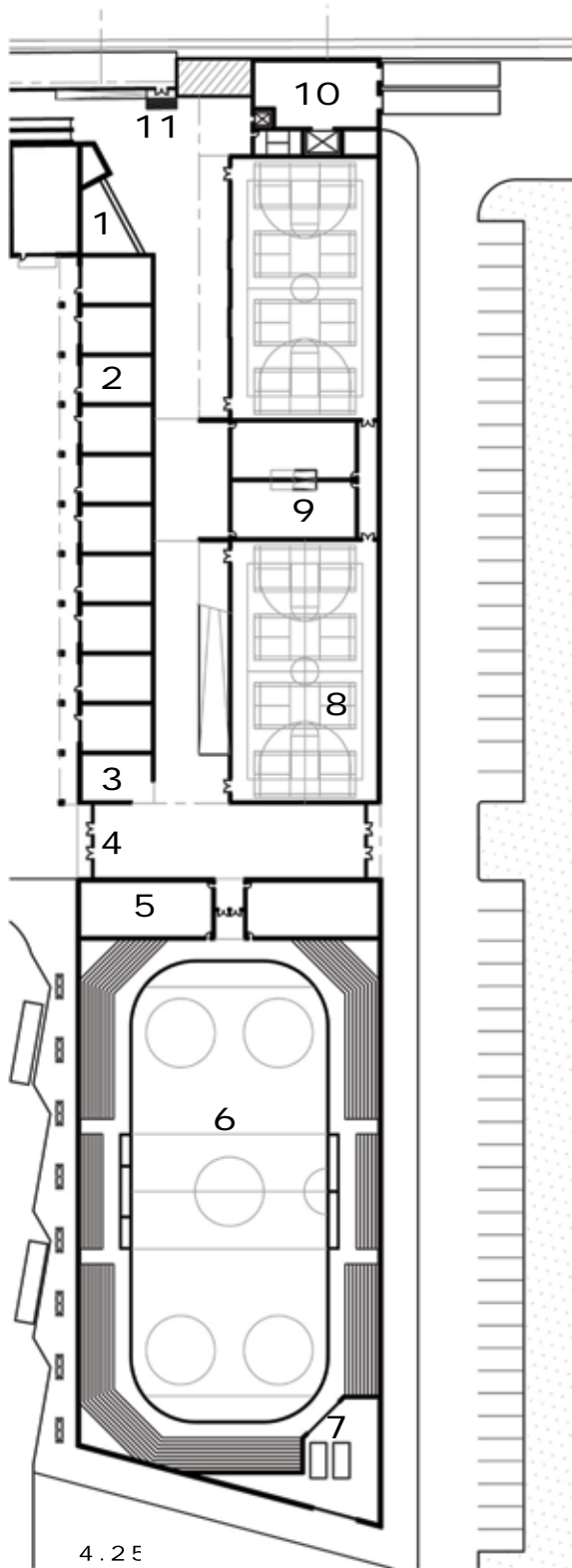


4 . 2 4

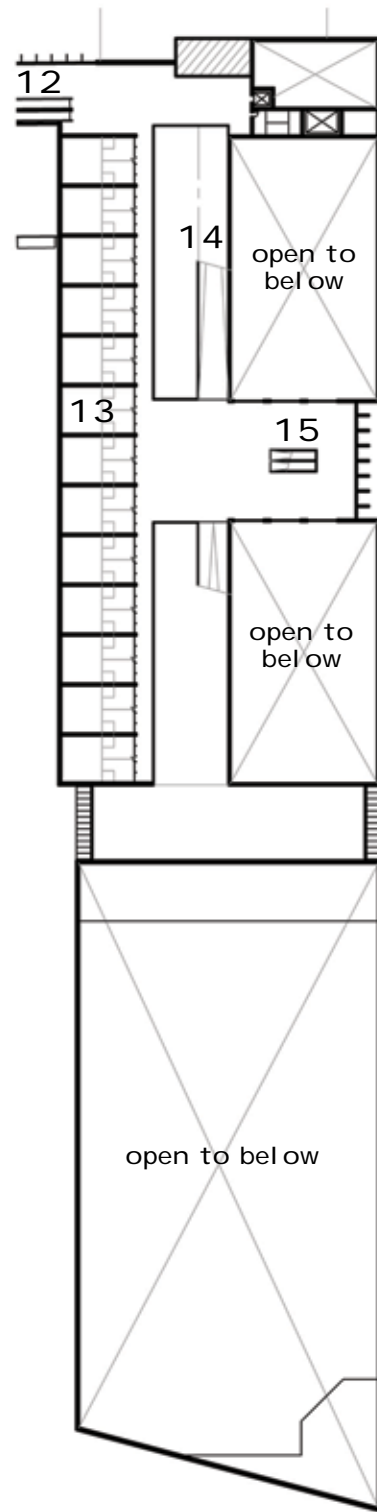
4.22
Mall extension level 2. 1:1000

4.23
Mall extension ground level service dock. 1:1000.

4.24
Plan showing locations of mall extension.

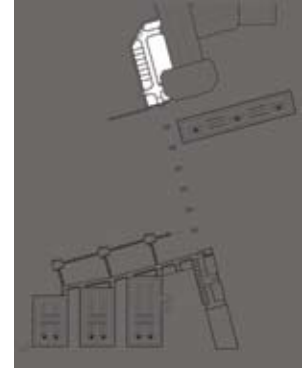


- 1 Gymnasium services.
- 2 Ground level shops.
- 3 GO Transit counter.
- 4 Main entrance.
- 5 Skating rink change-room.
- 6 Skating rink.
- 7 Zamboni and rink servicing room.
- 8 Multi-purpose gymnasium.
- 9 Athletics change-room.
- 10 Service and loading dock.
- 11 Access to GO train platform 1.



- 12 Access to garage connection spine.
- 13 Squash court.
- 14 Ramp up to inhabitable bridge.
- 15 Change-room access and viewing gallery.

The rest of the structure is primarily used as recreational athletic facilities. Two large gymnasiums line the east side and can be used for a variety of indoor sports such as basketball, floor hockey, volleyball, badminton, lacrosse, and soccer. These gyms can be used for recreational league play or booked by the public during allotted free timeslots. Locker and change rooms are located on the ground floor between the two gyms with a viewing gallery on the second level. A line of squash courts are also on the second level above the line of shops. An ice skating rink continues the bar south of the main entrance to Bayly. Equipped with its own locker rooms, the rink can be used for hockey and ringette games as well as open skating periods. The bar building is envisioned to be used mainly for recreational league use during weekday evenings with a more open public schedule on weekends for family outings.

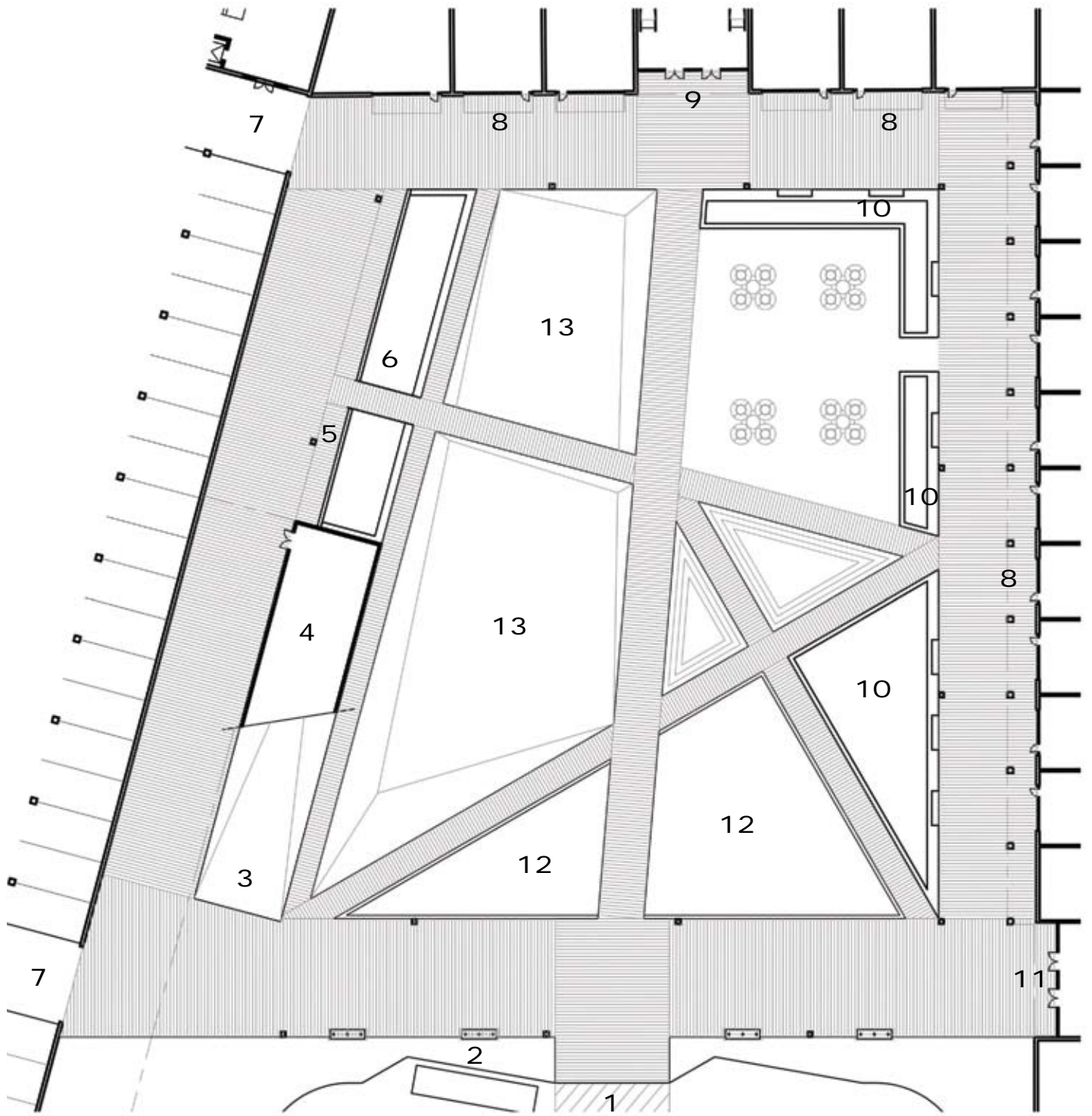


4.27

4.25
Bar building ground plan. 1:1000.

4.26
Bar building level 2. 1:1000.

4.27
Plan showing locations of bar building.



4.2 E

- 1 To passenger pick-up/drop-off loop.
- 2 Bus stop seating.
- 3 Ramp to garage roof plateau.
- 4 Site maintenance storage shed.
- 5 Bicycle storage.

- 6 Fountain and pond element.
- 7 Entrance into parking garage.
- 8 Outdoor patio space.
- 9 Entrance into garage connection spine and train platforms.

- 10 Planters.
- 11 Entrance to bar building and GO Transit ticket office.
- 12 Water catchment basin.
- 13 Sculpted lawn.

THE PUBLIC SQUARE

A public square is proposed on the south site outside the bar building. For the other defining edges, the north is lined with more food and drink based shops running along the ground level of the parking garage spine. The west border is formed by the east-most parking garage, where the south is contained by the bus stop loop and passenger pick-up and drop-off area. This commuter area is directly adjacent to the main entrance into the bar building where the GO transit ticket and information booth is located. Those that have either a monthly pass or a multiple use ticket can opt to walk along a path cutting through the square to the north entrance for direct connection to the train platforms.

The square itself is comprised of a variety of surfaces and treatments. Pathways of permeable concrete planking criss-cross the square, subdividing it into smaller parcels. Of the different types of parcels include a large sculpted lawn, a catchment basin, paved areas with tables and seating, and planters with trees. The square offers a place to have lunch, to gather on the weekends or after work, an outdoor patio space to enjoy a meal from the numerous eateries, a spot to have a drink after working out or playing recreational sports, or simple a place to wait for your train, bus, or ride. Large flat panel television screens are mounted along the exterior wall of the bar building and can be used to show movies, advertise the services of the complex, promote community events, and list time schedules and statuses of buses and trains. Of the remaining built elements of the square, there is a covered bicycle storage area near the parking garage, a waiting room near the bus stops and passenger pick-up area for seasons with harsher weather, and a system of ramps that lead up to the roof level of the garages.



4 . 2 9

4.28
Plan of public square. 1:500.

4.29
Plan showing location of public square

4.30 - View of the public square from the passenger pick-up/drop-off area. From this vantage, the permeable pavers of the waiting area as well as the permeable concrete roadway can clearly be seen. Some seating and tree planter elements adorn this area and the beginning of the sheltered waiting room is seen to the right. The bus loop surrounds the passenger loop.

The orange skin of the adjacent parking garage can be seen to the left as well as the ramp leading up to its rooftop plateau. The sculpted lawn can be seen beside the ramp behind the railings surrounding the catchment basin. Planters with trees line the right side of the square along the bar building with its ground level shops and patio seating. The glazed entrance into the bar building can be seen behind the passenger waiting room.

The glazed and louvered connection span lies in the background of the square, spanning between the bar building and the vertical elevator and stair structure connected to the garage. A hint of the inhabitable bridge peeks up behind the spine as well as the three mixed-use condo buildings on the mall side beyond.

GARAGE ROOFSCAPE

The roofscapes of the parking garages are also inhabitable and act as the ground level for a number of structures that are located on this plateau. A daycare building is located on the roof of the largest garage closest to the square. Adjacent to the vertical access of that garage, commuters can take a quick detour to drop their children off at this facility before boarding their trains. With an inhabitable roofscape, the daycare has its own personal fenced in outdoor area.

The other buildings that occupy the roofs are the combination office and live-work residential buildings. With one of these per garage, the lobbies of these open out onto the roofscape. Designed to bring a variety of daytime users to the site, the second and third floors are available as rentable office space. Above are residential units arranged with the possibility of using them as live-work units. These upper storeys are arranged in a skip-stop configuration. Each apartment is two storeys in height with access corridors and doorways on the lower level only. The level separation allows for the lower level to be used either as the unit's living room or as office and work space that can accommodate clients. The upper level would contain the bedrooms and kitchens as well as the balconies for the units. Three narrower versions of this building type occupy the roof of the garage on the mall side as well.

The rest of the roofscape is treated similarly to that of the public square, with permeable concrete planks creating smaller parcels that can be occupied by a variety of planting, small playgrounds, rainwater collectors, skate parks, or tennis courts. The three roofs are connected with each other by bridges. A ramp leads from the Bayly and Liverpool intersection up to the roof level of the first garage. Another ramp at the last garage steps down directly into the public square. The garage plateau on the mall side has a connection directly into the inhabitable bridge.

4.31
Plan of north garage roofscape.
1:2000.

4.32
Plan of south garage roofscapes.
1:2000.

4.33 - View taken from atop the roofscape of the garage directly adjacent to the public square. Pathways surround two parcels of mixed-use amenity space and continue on to the elevator and stairwell leading to the connection spine. The closer parcel is seen to be used as a variety of planted surfaces and seating while the further parcel is occupied by a water retention pond with tree planters.

The multi-coloured daycare building is situated in the background in close proximity to stairway and elevators. Commuters can quickly drop their kids off for the day before boarding their trains.

Railings line the right edge of the roofscape. The public square can be seen below, accessible by a pedestrian ramp.

Further in the background, the glazed connection spine can be seen leading towards the bar building off-frame, with the inhabitable bridge spanning into the background.

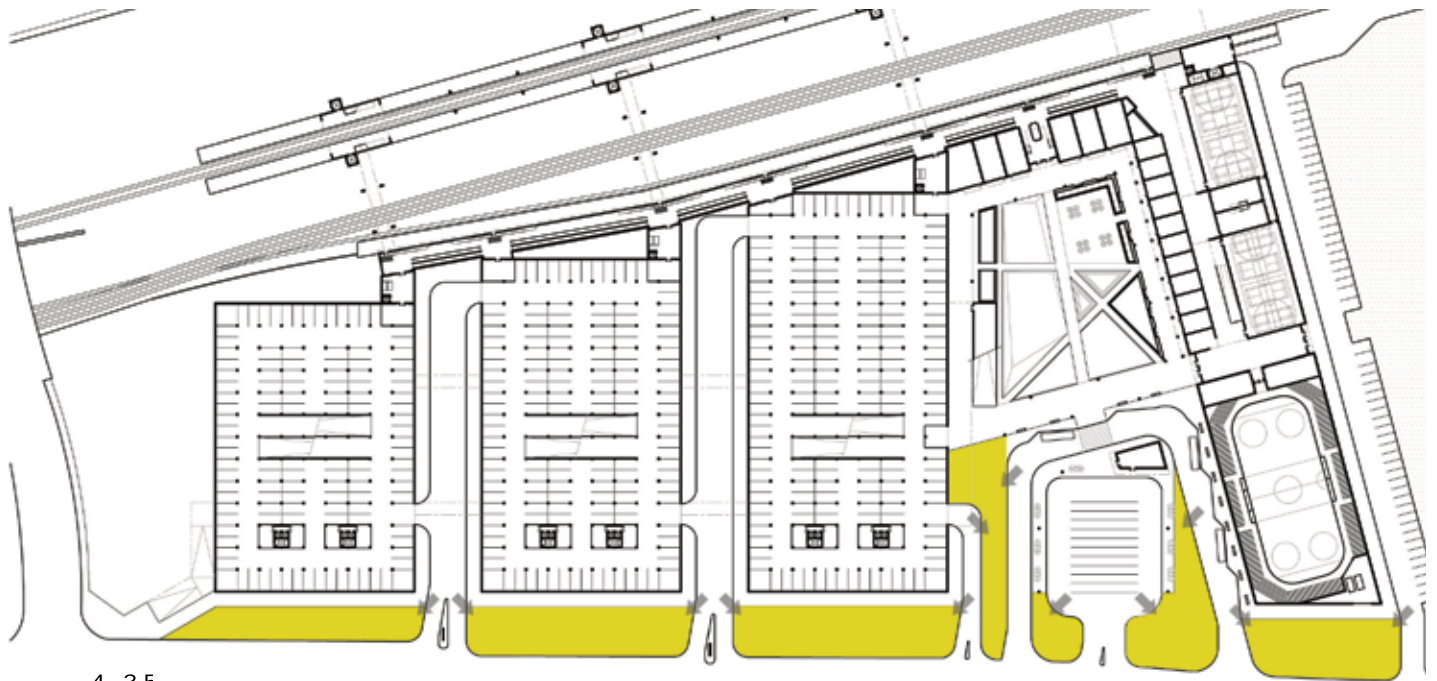
GREEN STRATEGIES

As a project addressing issues of resource usage by suburban developments, green strategies are an important aspect to consider. The project incorporates many tactics for a more environmentally friendly complex. Most of the large non-inhabited roof surfaces such as over the mall extension, bar building, and mixed-use commercial and residential buildings are covered in an extensive type green roof. Using drought resistant low maintenance planting, these types of green roofs have greater rainwater retention capabilities than a conventional roof. They also act as additional insulation to reduce heat islands, affecting cooling loads.²

For large exterior inhabitable roof areas such as the garage plateaus, intensive green roofs are implemented that allow for a larger variety of planting. While these planted areas retain rainwater as well, non-planted areas of the garage roof also aid in rainwater management to reduce the amount of storm-water runoff. The hard surfaces are paved with permeable concrete planks that allow water to absorb below the surface and be directed to catchment basins. Stored untreated rainwater can be used to water the planted areas and reduces the use of treated water for these purposes. The public square is also designed in this manner with a variety of permeable surfaces as well as a water retention pond for collecting runoff rainwater from the square.

Surfaces for cars such as the turnabouts and parking garages that are susceptible to higher amounts of pollutants are surfaces with permeable concrete to reduce the rate of water runoff that can carry these pollutants into the storm-water sewers. The rest of the runoffs from these surfaces are directed into vegetated bio-swales. Located

4.34
Plan showing types of green roofing. 1:2500.



4.35



4.36

near each of the parking garages as well as the bus stops and passenger pick-up areas, bio-swales can hold volumes of polluted storm-water and allow the vegetation to process and break down the contaminants before being absorbed into the ground. Improving the quality of storm-water runoff reduces the harmful impacts on the environment from developed surfaces.³

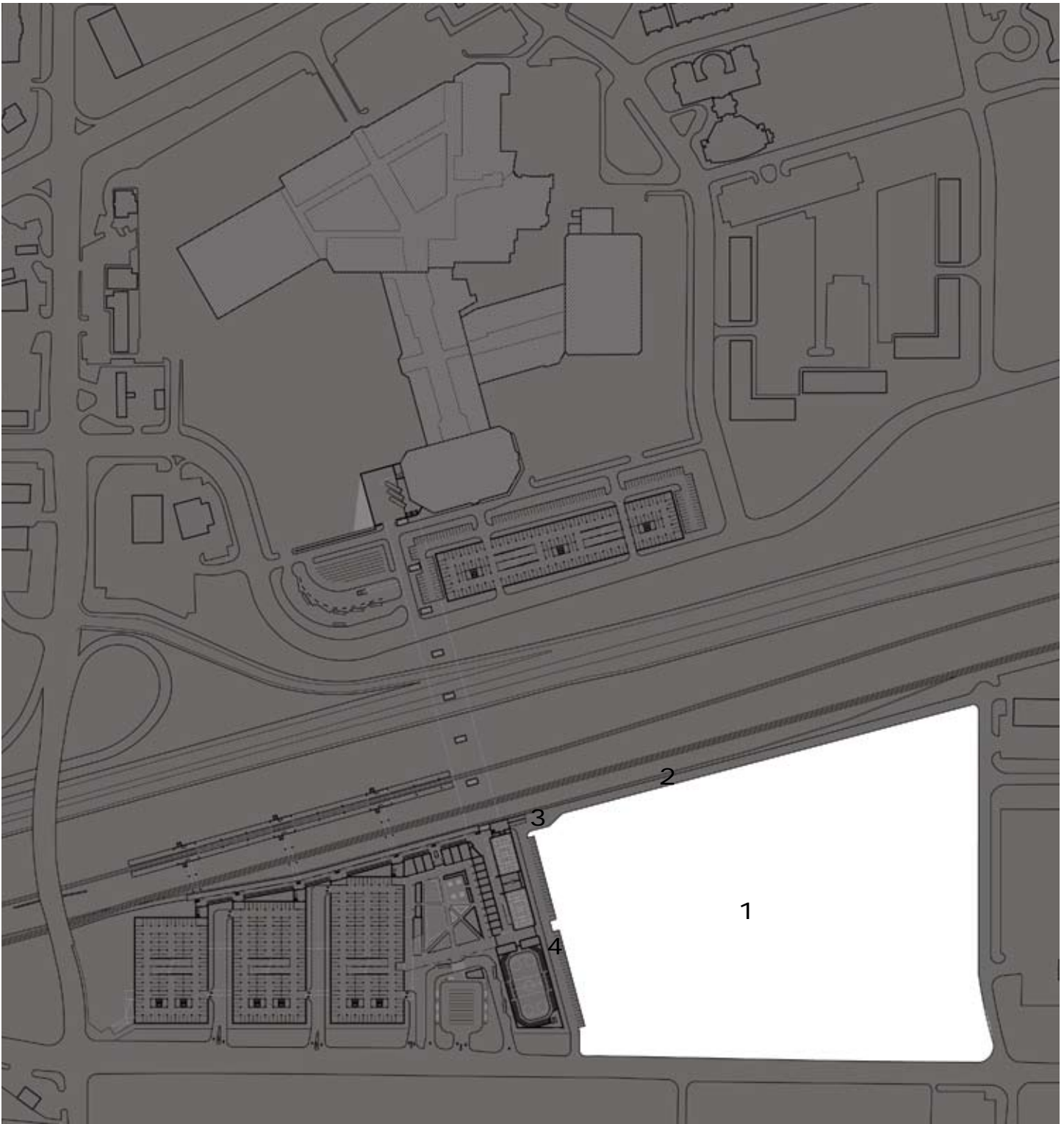
Other minor green strategies include orienting the balconies and hallways of the skip-stop mixed-use buildings to the south. The balconies can then act as solar shades for the storey below, reducing cooling loads. Streetlamps are also chosen to be non-light polluting and reduces the amount of light and glare that is trespassed from the site and reduces sky glow.⁴

4.35

Plan showing location of water retention bioswales and points of infiltration from roadways. 1:2500.

4.36

Example of a bioswale.



4.37

- 1 Adjacent plot of land suitable for future development.
- 2 Service road along train tracks.
- 3 Loading dock.
- 4 Additional public parking.

FUTURE EXPANSION

With the infrastructure in place, there is a large plot of land to the east of the bar building currently occupied by an ice skating rink and a series of low-rise industrial buildings and offices. Where most of the existing uses can be relocated into spaces available in the design proposal, this site is ideal for future development for more residential units in a variety of sizes and types for a wider range of living options. These units would enjoy the benefits of being directly adjacent to a major centre of transit connections as well as services and public amenities.

NOTES

1. Jane Jacobs, *The Death and Life of Great American Cities* (New York: Vintage Books, 1992), 97-98.
2. Xero Floor Canada Ltd., "What is a Green Roof?," <http://www.xeroflor.ca/what.htm>
3. Dianna Lopez, *A Primer on Sustainable Building* (Colorado: Rocky Mountain Institute, 1998), 80.
4. In the LEED., "Sustainable Sites 8 - Light Pollution Reduction," <http://www.intheleed.com/ss8/>

4.37

Plan showing location of ideal adjacent developable land. 1:5000.

CONCLUSION

This project began when I decided to explore a place I am personally very familiar with: my hometown of Pickering, Ontario. I grew up in a typical suburban house, and daily life involved trips between home, shopping, school, and work. As in most suburbs, these areas were separate and distant from each other, and our family usually used a personal car to travel between each point. After I moved out and lived in cities such as New York City and Rome, I experienced different lifestyles, where pedestrian-friendly areas, along with mixed commercial and residential zones made daily living more interesting and convenient.

When I returned to Pickering I wondered how elements of urban life could be brought to a place like this suburb. The thesis went through several different versions as I analyzed Pickering's development, researched the history and future of suburbs, and tested design proposals that would improve the suburb. First I tried creating alternative housing typologies that could introduce a greater mix of uses within Pickering's residential areas. After, I focused on the transportation infrastructure of the city. Pickering's most trafficked places were the PTC shopping mall and the GO transit hub. By building adjacent and connecting these areas, there was the potential to create new public spaces which Pickering needed. New commercial, recreational, and gathering places would offer amenities to existing Pickering residents and workers who use the GO transit and bus lines regularly. As well, this would create a core of services that could seed new types of housing development in the immediate area.

Pickering is a unique site, but it also has a place in a larger network of post-war Toronto suburbs. Unlike communities like Whitby and Unionville, Pickering lacked a Main

Street or other active area for public gathering. However, compared to suburbs such as Scarborough, Pickering had special potential since the PTC mall and GO transit hub were situated near to each other, on opposite sides of the 401 freeway.

The project's main strategy was creating an 'inhabitable bridge' connecting these two sites, and in the process adding new recreational spaces, gathering places, commercial and new forms of residential areas. Responding to the culture of transportation that created the suburbs, efficiency of vehicle and pedestrian movement was an important design principle. This was provided for by planning moves such as stacked parking garages that connected directly to the train platforms, decreasing the distance of travel for inter-nodal transitions. A digital tracking system maximizes how parking is used at different times of the day and week, allowing spaces to be most efficiently used and shared by commuters, residents, and visitors alike. Moving sidewalks are used throughout the complex, which ease connections between the garages and train platforms, and also help transition between different levels. The moving sidewalks reduce the time it takes to travel between any two places within the complex to a maximum of five minutes.

The design also addresses the need for pedestrian-accessible, public gathering spaces within the predominately car-oriented, private spaces of the suburbs. The 'inhabitable bridge' itself is not merely a pedestrian connection, but a destination in itself, as an extension of the mall. A partial second storey provides a restaurant, lounge area, and a fitness gym. Anchoring the bridge on the north side is a mall extension, while anchoring it on the south side is a multi-purpose bar building, which includes recreational athletic facilities. The bar building defines the eastern

edge of an outdoor public space. Cafes, pubs, eateries, and lounge amenities line the east and north edges of this space. The square itself is composed of a variety of surfaces, which allow it to take on a variety of functions for gathering and socializing. The project aims to become a destination in itself, providing services for commuters in a central location that helps to decrease the necessity of using a car. Because of its multi-use planning, the complex is useful at all times of day and every day of the week by a diversity of audiences.

Suburbs also need to change in the kind of housing they provide. With the retiring of the baby boom generation, the shift away from nuclear family values, and the new need for live/work spaces, a diverse set of housing options should now be the rule rather than the exception. The complex therefore incorporates several residential housing towers, which use a skip-stop typology to be used flexibly as either live or live/work spaces. These condos are part of the mixed-use complex, giving easy access to services and to the transportation hub. There is potential for further residential expansion in adjacent areas to the site chosen.

Another major concern with the suburbs is sustainability. Suburbia is environmentally detrimental because of the many ways it increases fossil fuel use, a limited commodity. To counter the environmental problems of suburbia, the project uses a number of green building strategies. A landscaped, active roofscape over the parking garages provides access into the lobbies of combination office and live-work residential buildings. Other roofs are covered with extensive-type green roof plantings. Permeable pavement, permeable concrete and bio-swales also help to reduce storm water runoff in the street areas. These all help the complex to achieve environmental sustainability.

The proposal builds on the potential of underutilized areas around the existing transportation and commercial nodes. Instead of developing a greenfield or demolishing existing areas, the project proposes an unconventional public center in a transition zone spanning the highway.

While not all suburbs have the same configuration, they could still use a similar strategy to *Centred in Motion* for the future. The GO transit line is an important connector for bedroom communities to both the East and West of Toronto, many of which are sprawl developments like Pickering, without a defined Main Street or city centre. GO stations are highly trafficked funnels for populations in these areas. Like in Pickering, most of these stations are sited adjacent to large surface parking lots. By using these areas of land to build at increased density, there is the possibility for creating nodes of development that provide new public amenities. In some cases, the development can be an inhabited bridge, in other cases it might be a more conventional building type. The fundamental concept and key features would be the same. Important elements are a centralized transit system, active mixed-use zones, and public gathering spaces. Principals of design centre on convenience: building in places where people already funnel through, and maximizing efficiency of flows to keep travel times short. *Centred in Motion* therefore suggests possibilities for how other suburbs situated along the GO line could approach incorporating elements of urban life - in new centres built around their existing transit hubs. The development of these nodes would transform the GO system from mere transit connections between outlying suburbs and the downtown core to a network of destinations.

On a larger scale, the same approach could be extended to the problem of adapting other North American sub-

urbs to contemporary lifestyles. A similar idea of creating mixed-used developments at transit hubs is at the core of the transit-oriented development principal of New Urbanism. However, this is usually only used in new suburban developments. Meanwhile many suburban communities exist throughout North America, many of which face similar problems as Pickering. Originally designed for the personal automobile, they lack pedestrian areas, mixed-use spaces, central gathering places, alternative housing types, etc. As lifestyles change, population distributions shift, working patterns change, and environmental awareness becomes a concern, these sprawling suburbs are seen as problematic for many reasons. *Centred in Motion* suggests a strategy for adapting these places to modern lifestyles and away from a fossil-fuel dependant, private-space model. Instead of being centered on the private home, the thesis suggest a way that these places could develop new centres around public transportation hubs and public spaces, opening up to new, dynamic modes of living.

REVIEW ARTICLE
AS POST-DEFENCE REFLECTION

Pickering's new centre: urban intent, muddy execution

In an attempt to provide a wider range of living options for new residents as well as re-energizing the downtown core of suburban Pickering, a major architectural intervention has been planned to be constructed over the 401 and rail lines to connect the GO station at Bayly and Liverpool Roads to the Pickering Town Centre Mall to the north. Designers of this new development of an expanded station and mall complex, boasts the ability to provide denser urban living in the heart of Pickering without being dependant on a car. The new centre aims to offer a variety of new public gathering spaces.

There is often a rift between intent and design execution. The new centre sadly seems to have fallen prey to this calamity. In examining the scheme, the first sight of the centre for most pedestrians from the Liverpool and Bayly intersection would be the three colourful and imposing parking garages. The flat walls of the garages offer nothing in the form of shops or storefronts one would expect from a centre for urban pedestrian living. These qualities do exist in a new public square east of the last garage, but one must dodge across the busy driveways of motorists flooding into and out of the garages to get there. Unfortunately the entrance into the square is dominated by a bus loop and passenger pick-up and drop-off area. So far, for a centre for pedestrians, there seems to be a resistant quality against people to walk into the complex.

The square itself will include some nice amenities to gather and loiter, from the sculpted lawn to an outdoor patio

seating along the shops lining the north and east sides of the square. The bordering edges appear to be a bit half baked as only two of the edges are planned to contain public services. The south is contained by the previously mentioned bus stops and passenger drop-offs, where the orange skin of the adjacent parking garage defines the west.

A large ramp scissors up from the square to the roof level of the garages. Linked to each other by footbridges, another ramp leads back down to the Bayly and Liverpool intersection at the west end. A slab building sits on each one of these landscaped pedestals. Seemingly this elevated plateau is in place as a compromise to the lack of pedestrian amenity on the ground level in front of the garages. With a lot of attention to the planting on this level for pedestrian use as well as storefronts lining the lobbies of the combination residential and commercial buildings, this roof level is a secondary space for gathering and leisure. This level would likely be used mainly by the office workers and the children living in the slab buildings, as well as for the savvy pedestrians that know to ascend the ramp at the intersection of Bayly and Liverpool. It is a quieter outdoor space than the square below but not necessarily more private for trysting purposes, with a twenty storey building watching over each roof. The roofscape would also be a nice vantage point to watch trains zoom by.

The most visually significant piece of the new complex, the inhabitable bridge exhibits a clash of identities. It seems to be unable to decide whether it is a high speed pedestrian thoroughfare with its airport-esque moving sidewalks running down the middle, or a place for leisurely gathering and shopping along the retail stores and refreshment stands running down the sides. These two functions

have the potential to disrupt each other, as slower paced shoppers would have to look both ways before crossing the corridor or risk being bowled over by a speedy commuter. Similarly commuters looking to traverse the bridge at faster speeds with the motorist just might be hindered by children playing on them.

The bridge would offer some nice areas of gathering with views out onto the freeway below. A large central glazed atrium is sited at the centre of the bridge and would have clear views east and west down the 401. Surrounded by the drink and snack vendors and washrooms with seating and tables, this area would be one of the two main spaces to hang around within the bridge structure. The second would be on the second level which is designed to house a series of restaurants and lounges with outdoor seating overlooking the highway. This terrace might possibly be the best space in the proposal to market a public transit and pedestrian lifestyle, as diners and patrons can relax and dine while watching the congested herd of cars crawl along the 401 below.

While the proposal does have the potential to provide some nice gathering spaces, the major components of this new centre all seem to be struggling with its conflicting elements. It wants to be an urban centre in a suburban context. It wants to be a place of rest and gathering but also a corridor for fast efficient movement. The design compromises itself to try to cater to all these elements without addressing each individually with a clear resolution. While its intent of trying to inject car independent and urban living options into the suburbs is logical and needed, the plan itself is unconvincing that it knows how to do that exactly.

Appendices

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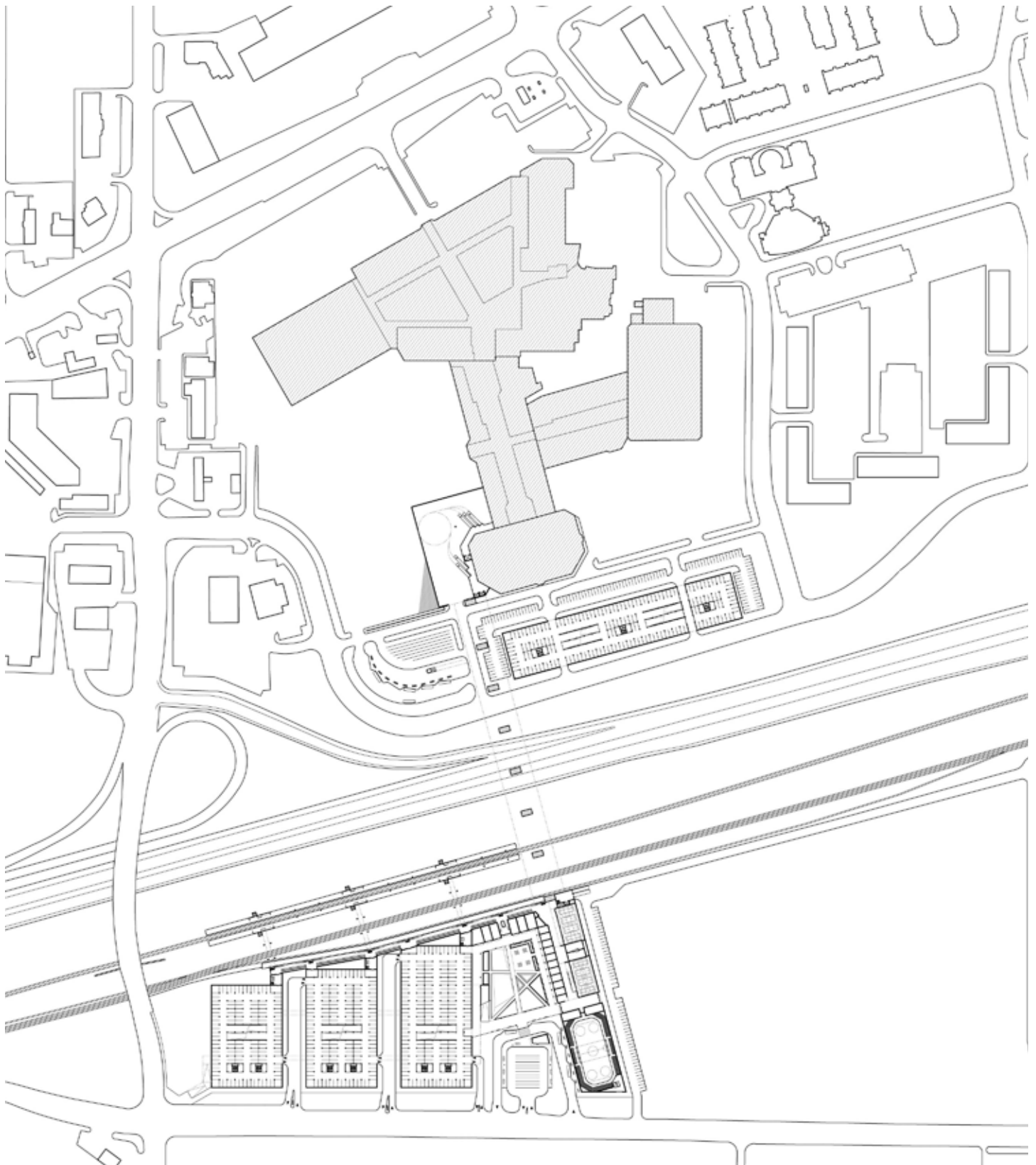
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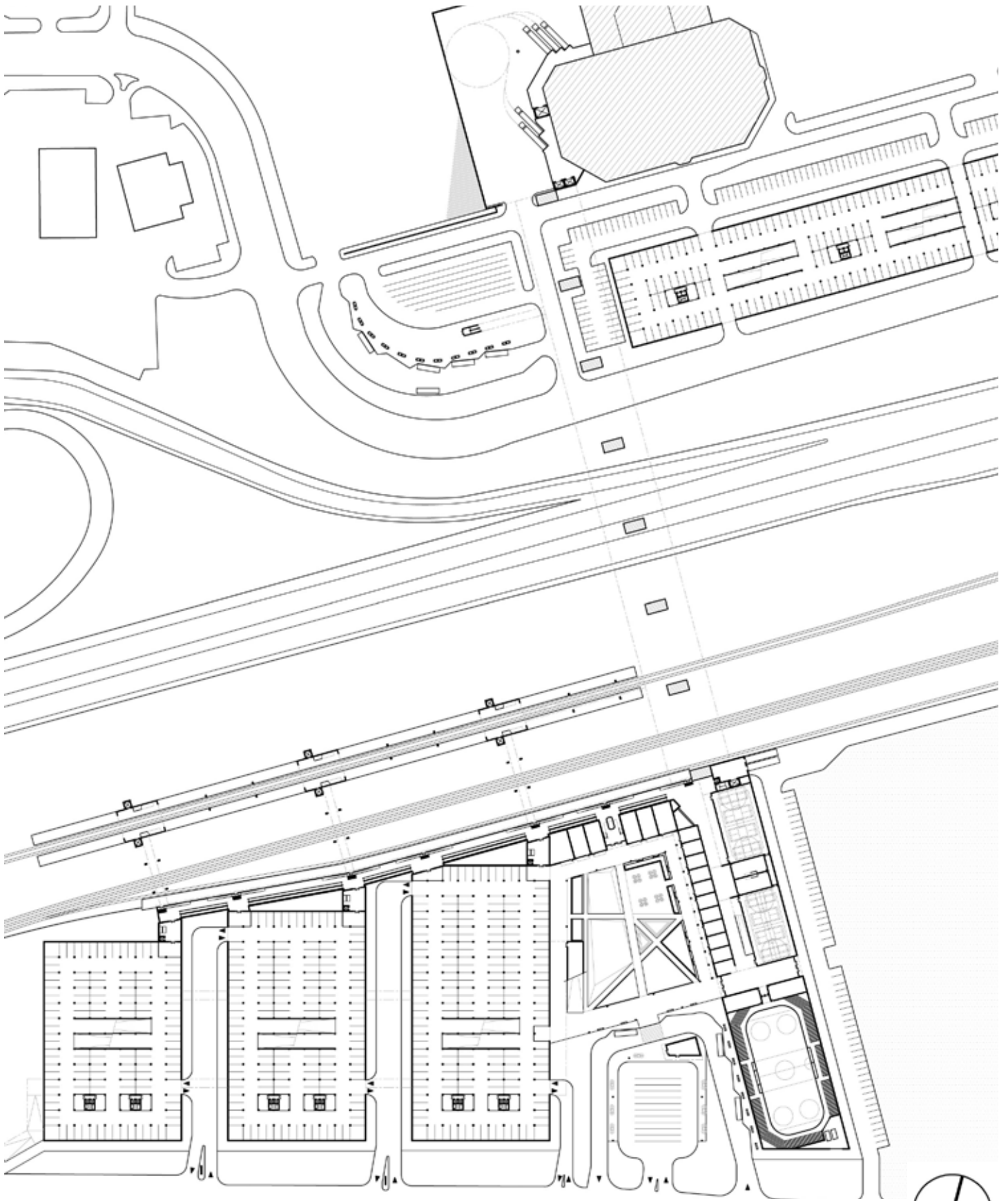
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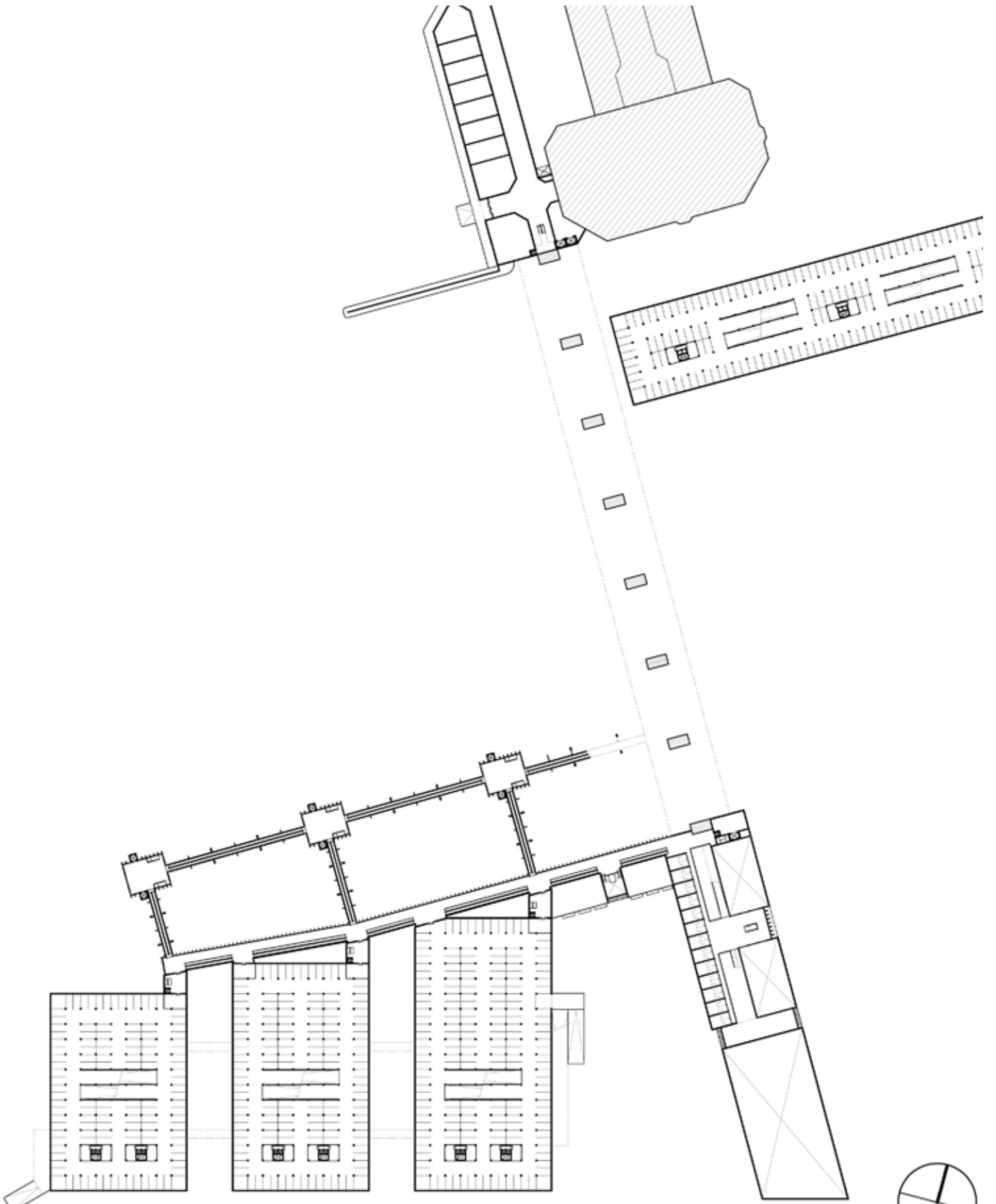




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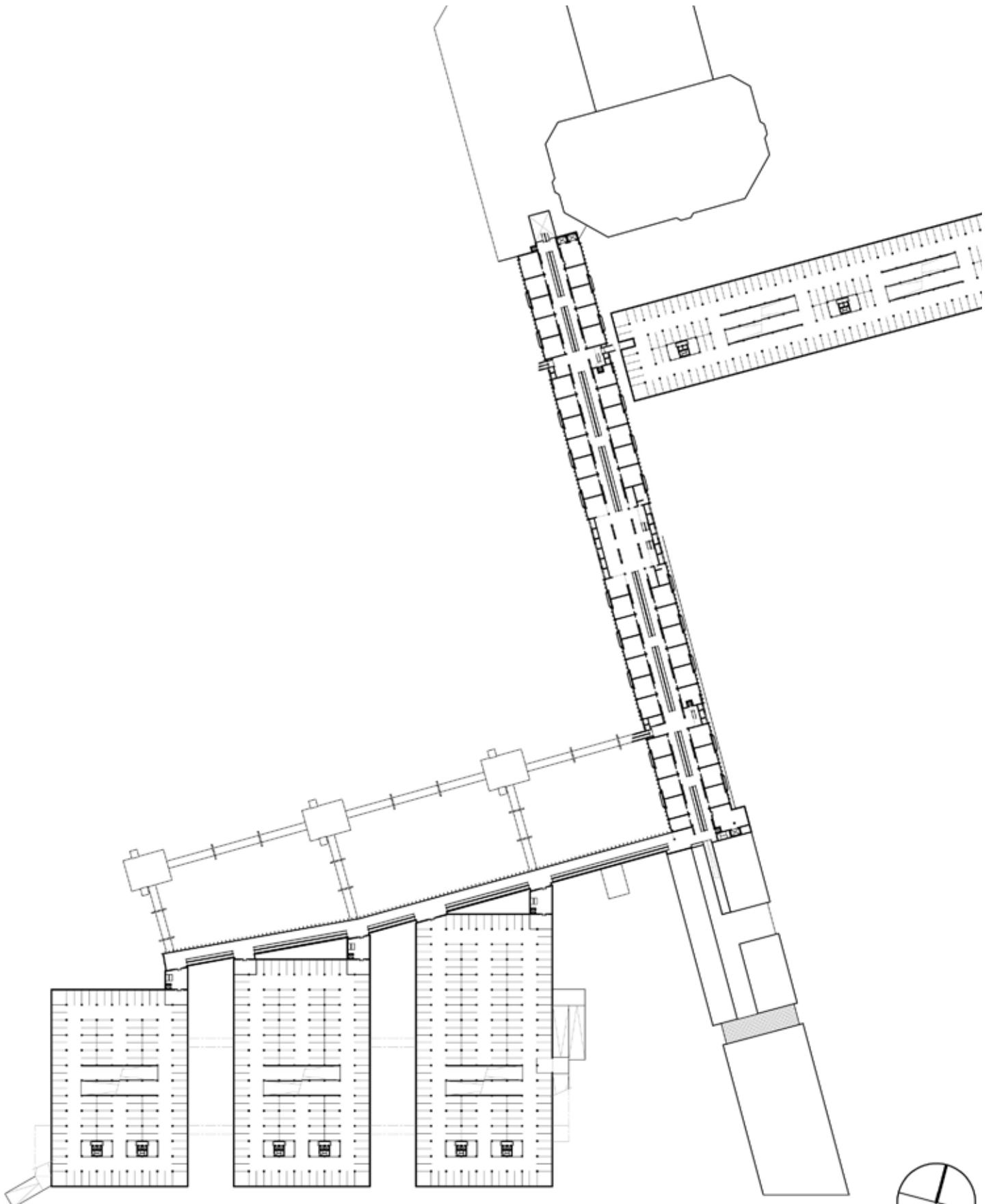
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Dwg A.02



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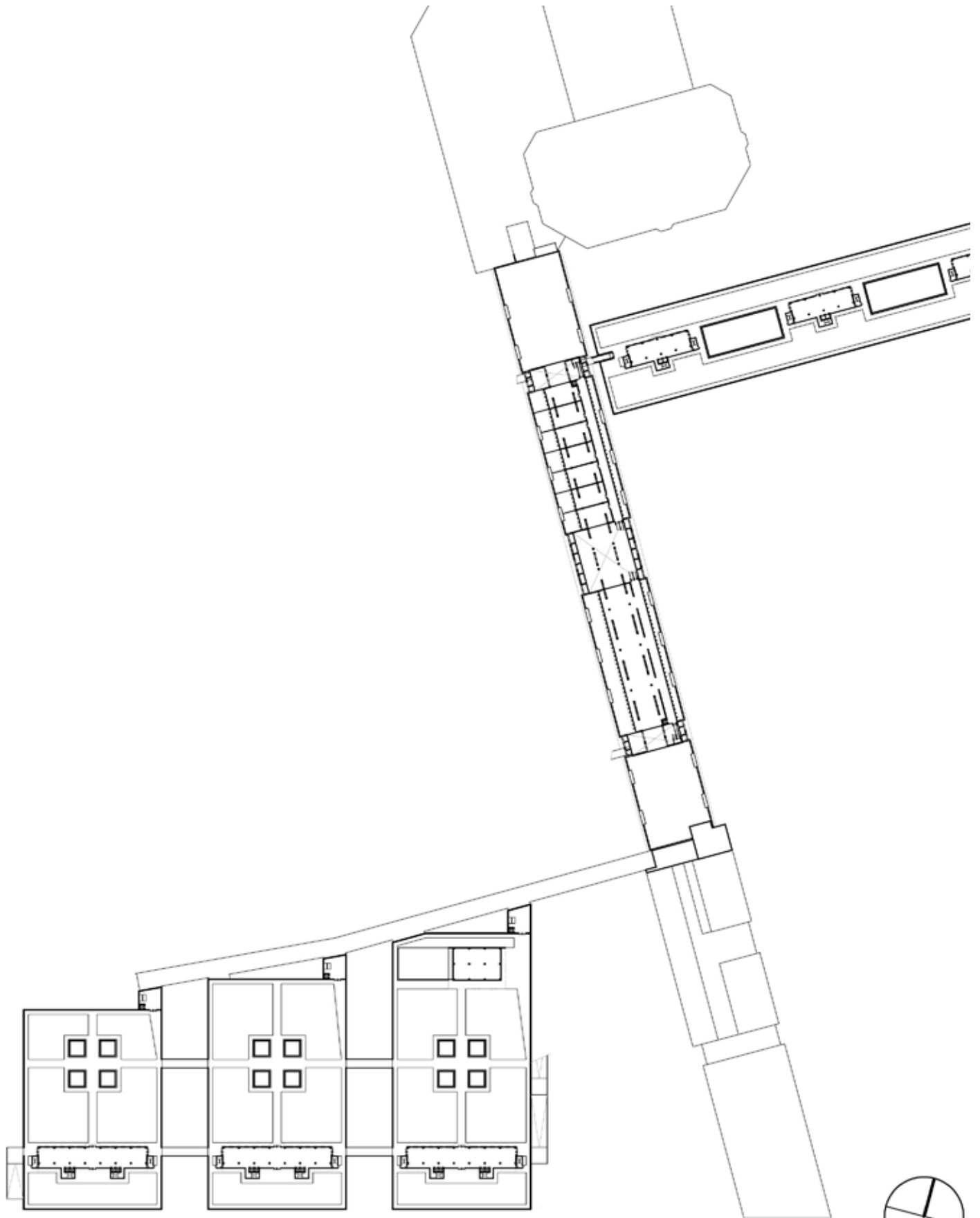
Level 2 Plan - 1:2500
Dwg A.03



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Level 3 Plan - 1:2500
Dwg A.04

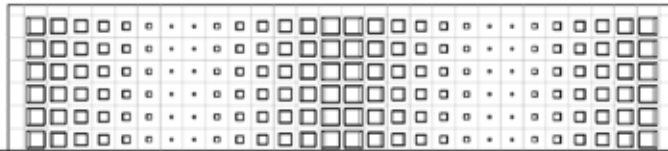


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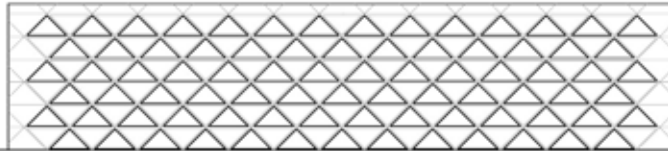


Level 4 Plan - 1:2500
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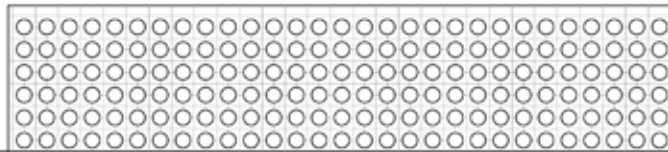




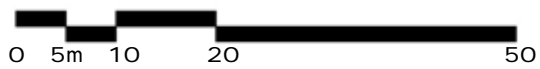
Garage 1 Typical Elevation - Dwg A.11



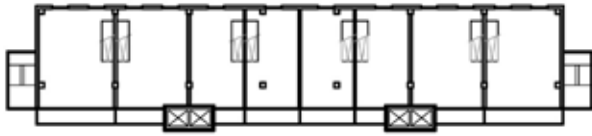
Garage 2 Typical Elevation - Dwg A.12



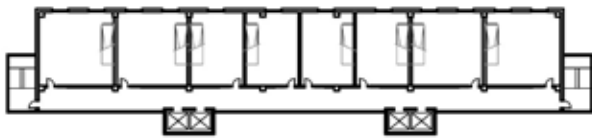
Garage 3 Typical Elevation - Dwg A.13



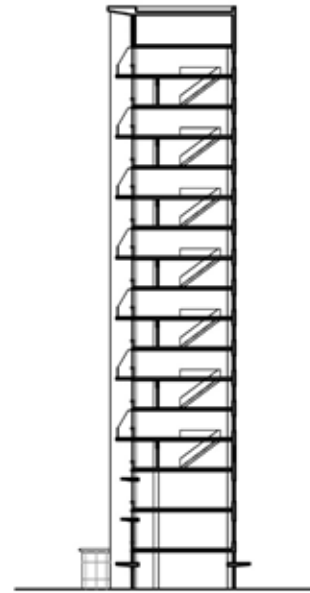
Garage Elevations - 1:750



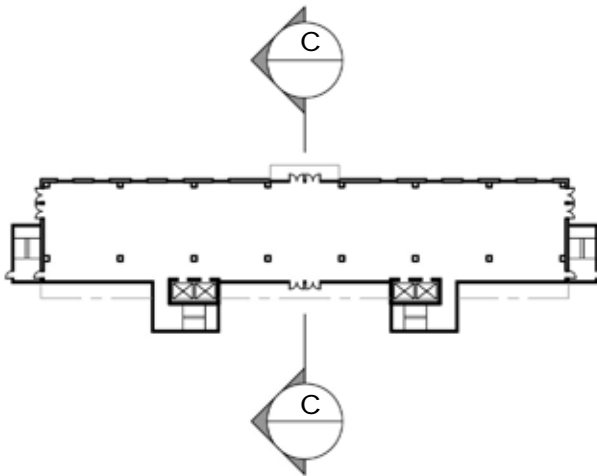
Live-work Unit Upper Level Typical - Dwg A.14



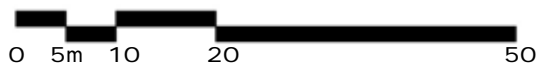
Live-work Unit Lower Level Typical - Dwg A.15



Section C-C - Dwg A.17



Lobby Plan - Dwg A.16



Mixed Use Condo Drawings - 1:750