Levels of Green:
Landscape Housing in the City

by

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CONTENTS

ABSTRACT

In today's housing market, housing quality and affordability are hard to come by. Poor quality, both economic and social, are factors leading to the demise of urban housing. While prefab systems provide a better building quality than other building models, its flexibility in organization and aggregation also provides opportunities for high quality living environments. Contextual awareness and spatial relationships will be the guiding principles for this concept. Norberg-Schulz's 4 Modes of Dwelling will be used as a model for analysis at different scales of the project. The elements and principles derived from example projects and existing housing typologies will be combined and tested to create higher quality living environments through the concept of 'landscape housing'. This housing model hopes to provide better, well connected communities in urban environments. The design project resulting from these attributes will be tested in Toronto's urban context in a mixed-use housing development.

ACKNOWLEDGEMENTS

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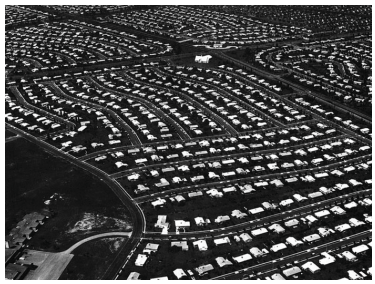
I would also like to acknowledge all of the friends I've made in the last four years. A special shout out to the corner, for sticking through this final year together. I couldn't have done it without everyone's support and friendship. The people truly make this school the special place that it is, to everyone that was there along the way - Thanks!

Most of all I would like to thank my parents for I truly couldn't have done this without you. All of your love and support over the last seven years of school, allowed me to reach this amazing milestone.

CHAPTER 1: INTRODUCTION

Current building trends continue to add new condominium buildings to city skylines, while more established housing models become old, run down and out of reach in meeting the needs of today's population. Those that cannot find homes to suit their needs and/or their budgets are often forced to moved elsewhere, typically to the suburbs, while others relying on government assistance and social housing remain in the city and live in the deteriorating facilities and conditions made available to them.

There is no question that pre-fabricated building systems offer an economically efficient, quality-controlled building process that is relevant and applicable to many issues facing the affordable and public housing populations. The benefits that pre-fab offers can make a substantial impact on those types of developments. Economically, pre-fab provides a more cost effective and higher quality solution for the urgent housing needs of today's society. While necessarily concerned with, and informed by, the specifics of prefabricated building systems, this thesis is not about designing a technically better, more efficient system. This thesis is about describing a value-added approach to pre-fab: an approach that puts the social and environmental landscape first; that creates a complete and beneficial system for the people living there. By creating a housing development from the context, you can help to shape and improve the lives of the residents.



Left - Mobile Home, 2010, photgraph by Muffingg (Wikimedia Commons)

Middle - Prefab House, 2016, photograph by Leonardo Finotti via designmilk (Flickr)

Right - Levittown, PA, 2006, photograph by Shauni (Public Domain)

Existing approaches to pre-fab housing can be described as singular and sometimes isolated in its existence. Some common examples of pre-fab housing are a) manufactured trailer homes, b) one-off modern boxes and c) catalogue villages. Each example comes with its own stigma regarding its use and qualities, but tend to be appropriate for the time and need. My main critique of these existing approaches is that the site is considered as neutral, not really an integral part of the form, and, the site is not usually an urban condition. The urban condition and context in which a building exists is a very important part of its success or failure. This is especially true when it comes to affordable and social housing where many developments have poor access to public transit, local amenities, services and don't create positive spaces for its residents. Most pre-fab systems are unit-centric; existing only within the envelope system, and not formally inclusive of the place outside its skin. The examples of pre-fab previously mentioned are seen as individual objects that can be placed anywhere and are separate from the landscape with no connection to the place or context.

However, it is the lack of place in these types of buildings as well as its adaptability, that are two of the many features is that are sought after.

I believe that an aggregated pre-fab, urban housing system requires the design of the landscape as a component of the system – the Place-in-between approach to pre-fab.

The method used in this investigation is to use Christian Norberg-Schulz's 4 Modes of Dwelling to identify and analyze the buildings context at different scales. The different scales will also dictate the elements used and design of the building on its site. Some of the locational determinants include, climate and aspect, access to local amenities, access to public transit and the in-between spaces the buildings create. Each of these layers will inform the design of the built environment on the site. This method will be applied to three types of urban housing conditions; an infill site, regenerative site and a new build site. These different situations can accommodate different levels of design but are all based on their location and context. The processes of finding the sites highlights several opportunities while the full development of the project proposal will take place on the large new build site. This will model the possibilities available when creating an entire block of housing with a context-based approach.

The evolution of this thesis expanded the view on these topics to a more general view of urban housing and with that, prefabrication fades from being a driving force in the design process. The principles derived in this thesis are therefore more widespread and applicable to more types of housing situations, providing greater opportunities and options for dwelling in the urban context.

CHAPTER 2: BACKGROUND

Affordable Housing Issues

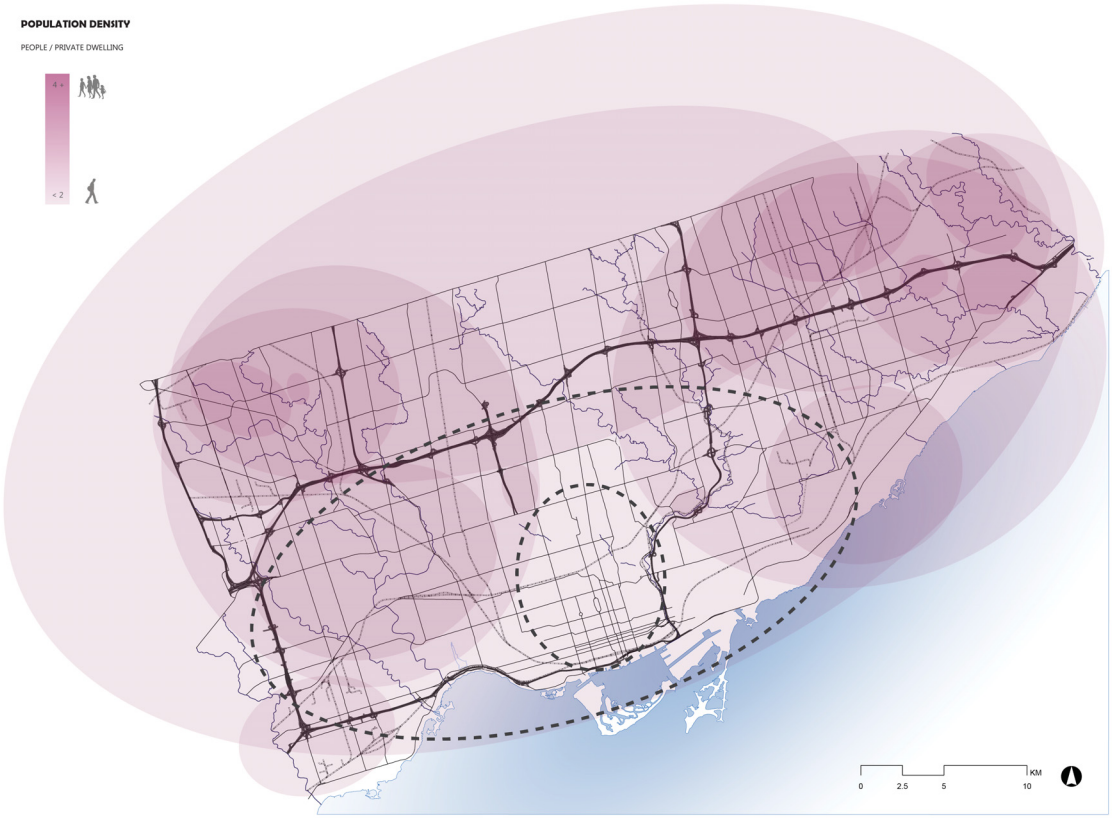
Photo of a cluster of low-Income towers at Eglinton Ave. in Toronto

There is a shortage of affordable housing units generally in highly populated societies and the inventory that does exist is often poor quality or deteriorating. Bryan Bell discusses in his book Good Deeds, Good Design: Community Service through Architecture; "…that no more than 5% of units being built are affordable and that we are tearing down more than we are putting up." (Bell 2004, 19). Many people are being forced out of the downtown and urban areas because of rising prices, moving to more isolated suburban developments often putting additional strains of commuting and remote day care, for example. In S. Davis', The Housing Handbook, he quotes a statement made by Jack Diamond about that very issue;

> …choices become limited by a decentralist policy: if you want a house, you must move out of the city. The dichotomy is self perpetuating; as the suburbs grow without an employment base, reliance on transportation into urban centres increases, so does the value of urban land, thus forcing out housing and other less concentrated uses.
> Jack Diamond (Davis 1977, 5)

While people may want to live downtown, the growing condo market is not supportive of the family demographic since lower cost units are limited to bachelor/bachelorette or roommate

style living. (Davis 1977, 5). This creates a need for a housing style other than traditional condo towers, that is more suitable for families. Current trends are forcing families further out of the city, leaving downtown to singles and childless couples with on average, less than 2 people per dwelling (Figure. 4). While the 'self- perpetuating' system that Diamond talks about continues, it increases the burden of social and affordable housing on the city and developers. Greater land prices, means greater overhead and taxes which is not conducive to building low-income housing (Urban Institute 2016). While boutique and higher end condos bring in enough revenue to cover expenses and make a profit, lower end, affordable units don't have the same luxury.



Map of dwelling density; base map contains information licensed under the Open Government Licence – Toronto.

Image of Toronto Community Housing towers soon to be hidden by new high end condos.

Many social housing developments are run by an agency of the government and depend on taxes and other funds to pay for operations and maintenance (Urban Institute 2016). Many of these developments run on deficits and are in need of more financial support.

Many city governments are looking to address the situation and find ways to provide more affordable housing units. One of the ways to do this is through development regulations, where legislation stipulates certain requirements on developers to include different housing options in their buildings. For example, this City of Toronto By-Law amendment requires 10% of buildings with 100+ units to be 3 or more bedroom units to specifically accommodate and attract families to the downtown core (City of Toronto Zoning By-Law 569-2013 2013). However, the requirements are often not met due to loop holes in the system or the end product is too expensive for the target demographic and the people they were hoping to attract can't afford to live there. Often seen as a burden or liability, affordable housing tends to be treated as such – resulting in autonomous towers with little regard for the sense of community or the context in which they exist (Davis 1977, 7). These buildings also lack a certain quality or respect which leaves them in a state of ruin because of the lack of maintenance and repair.

There are 10 indicators that measure quality. Each indicator contains a series of questions that are completed by the applicant organisation. These indicators are:

1. location
2. site – visual impact, layout and landscaping
3. site – open space
4. site – routes and movement
5. unit – size
6. unit – layout
7. unit – noise, light, services and adaptability
8. unit – accessibility within the unit
9. unit – sustainability
10. external environment

It is important that the design of housing takes into account how people want to use their home and the surroundings in which it is placed. For this reason, the indicators look not only at the home and its design in detail (indicators 5 to 9), but also the home's context and surroundings (indicators 1 to 4 and 10).

Excerpt from the Housing Quality Indicators form (The National Affordable Homes Agency, 2008)

The typical style of affordable housing, now out of date and breaking down, exists all over. Davis explains some of the implications stemming from this type of construction, "simple structure and composition are main goals of the high rise but don't account for the subtle social needs of those who had to live there." (Davis 1977, 7). The high-rise building removes the relationship between the personal dwelling and the ground which limits the use of the large plot of land on which they typically sit. The attempts at efficiency through vertical towers destroys any sense of connection people have with the outdoors as well as with each other. There are very few options for interaction among the residents of the building.

While some jurisdictions have attempted to include social factors in the requirements of affordable housing, others do not. In the UK, the government has measures that specifically identifies the level of quality in their public housing buildings. The HQI (Housing Quality Indicators) are judged on a points system that looks at 10 different areas to determine the quality of an individual unit or building, seen to the left. Five of the ten areas are location or context based indicators, while most of the remaining factors can also be related in some way to the context and location. The success and quality rely heavily on the buildings' situation in the environment, something that is not taken seriously throughout the industry of social housing.

The American system is an example where that is the case. The usual system of measurement, seen in the American Housing Survey, specifically determines if buildings are 'adequate' for occupancy, which has been critiqued in a report by Eggers and Moumen. Their critique states that "adequacy does not equal quality" and further explain that a unit or building, under the current survey system, can have many different deficiencies but can still be considered adequate for living (Eggers and Moumen 2013, 1). They propose an alternative method of calculation that uses the same topics or markers but compile the data so there is a more comprehensive assessment detailing specific issues in individual units over time (Eggers and Moumen 2013). While the methods of calculation are able to determine recurring and consistent issues over time, the actual content does not consider the buildings situation to determine the quality. While American public housing buildings continue to deteriorate, there is little in this assessment that will inspire and change in regards to situational or social quality.

Eggers and Moumen also make an observation of the current system of 'filtering' where units that deteriorate over the years get passed down from higher income families to the lowest of low-income families (Eggers and Moumen 2013). This practice indicates where social housing and low-income housing stands in the US, that it is acceptable to let the poorer

Image of fire at Toronto Community Housing tower in low income area, Toronto

demographics struggle and cope with old and deteriorating homes. It seems that social housing agencies don't care about where and how these people are living, giving it no respect. And the occupants tend to feel no connection with or respect for the agencies or the buildings in which they live, allowing the buildings to deteriorate further until they are condemned. Turned out, the occupants move to another situation of poor living arrangements and the cycle continues. While these people may not be in great financial standing, they should be able to have a place where they don't have to worry about their house falling apart. The government and agencies should invest in providing a better living environment so the residents can make progress elsewhere. Whether it's having to take a bus across town to pick up their kids from daycare or other similarly complex routines of everyday life, relieving one simple stress, could have a major impact.

There is a need for a solution that provides better homes that are higher quality – both economically and socially.

Existing Approaches to Pre-Fab

While the common understanding of pre-fab lies in the speedy construction time and more cost-efficient product, there are a few more attributes that make it a desirable system. The attributes depend on the specific system being used. There

are 4 systems that fit into two main categories. The first category is a modular or complete system that includes both manufactured (trailer) homes and modular systems (Cartwright 2011, 19). These systems are typically fully finished and delivered to a site or, are in mostly finished large pieces that require very little work to install. The other category, Kit-of-parts models, consist of many smaller pieces that need further assembly to achieve their final form (Cartwright 2011, 19). While the more complete systems provide a very quick construction timeline, they face more issues in regards to transportation to the site. There are rigid regulations and restrictions that determine the size and shape of each mode of transportation which can restrict the individual modal's and the overall dimensions of the homes (Jannasch 2012, 47-48). However, fully constructed these forms are less vulnerable to weather exposure after they leave the controlled factory setting than the piecemeal systems. While meeting the high-quality construction and assurances of the factory, they typically get delivered to the construction site and are left exposed until they are ready to assemble. This exposure could potentially lead to water damage, mold and poor air quality, similarly experienced with traditional stick frame methods (Cartwright 2011, 20).

In Cartwright's thesis, he describes the different factors that affect the use and affordability of modular and factory manufactured homes.

He identifies and explores the opportunities for using pre-fab for affordable applications of housing. While the technological advances over the years have greatly increased both physical and environmental quality of these homes, it has also made aesthetic advancements as well, separating them from cheap looking counter parts. He discusses finding the balance between affordability and aesthetics (Cartwright 2011, 23). This becomes especially important when creating low-income residential developments.

Similar to my thoughts regarding the quality and deficiencies of public housing. Providing quality homes for these families can go a long way to improving their lives. It also means less repair and maintenance down the road. We should be investing in these places by providing good quality units, that withstand years of life and provide spaces the occupants feel proud of, especially the exterior which is a person's first impression of a home. The home's façade should not be an identifier of one's status in society.

Prefabricated systems not only provide quality, but quality at a lesser expense. In a Toronto Star article, Mr. Venema of Royal homes (a prefabricated home builder) describes the increasing popularity over the last 5 years as the "democratization of architecture" (Sanderson 2006). He goes on to explain that the architect's fee is spread out over several homes and reduces the individual costs (Sanderson 2006). The cost

savings would be added to the money saved as a result of shorter construction time with expensive labour and easier to assemble which means fewer delays, where costs can grow exponentially. Cost savings of any kind are especially important when dealing with the very costly efforts that go into keeping social housing systems running, many of which are heavily in debt or experiencing backlogs in repairs because they are short on funds. Although it shouldn't be considered primarily for its cost saving benefits, prefabricated housing has other benefits that are very important features, as explained in Reidelbach's Modular housing in the Real…

> It should be specifically pointed out that, for all intents and purposes, the basic objective of factory produced modular housing is not necessarily to lower the cost of the housing unit, but is instead to provide quality housing in volume, which might not otherwise be available. (Reidelbach 1970, 75)

Reidelbach's perspective on modular housing actually provides a particularly good solution for the public and affordable housing sectors providing a solution that is higher quality and more cost efficient.

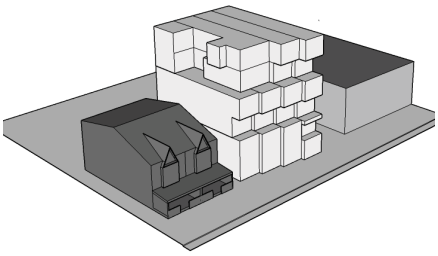
CHAPTER 3: CASE STUDIES & EXISTING EXAMPLES

Case Studies

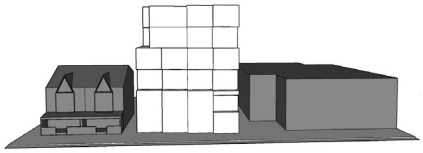
To help develop these ideas further, I have looked at some case study examples that exemplify the ideas of pre-fab/modularity and community, or a combination of both in the design or concept. These case studies will help to provide a more physical answer to the questions of how and why. I will also use the spaces in these cases as an example of successful organizations and layouts which will go towards creating a kit of parts for building communities. These case studies will also shed some light on the importance of, not only the space the building creates, but how they are created. The approach used in these projects also hold implications for how the residents and community interact.

Image of renovated front porches of Toronto duplex homes.

Cabin by RAW



Axonometric view of study model

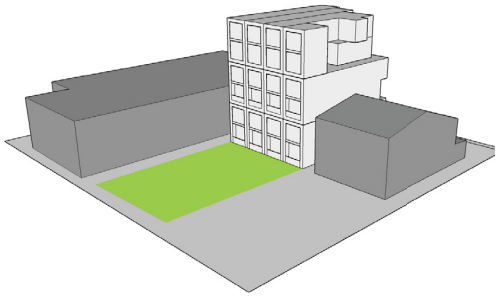


Elevation of study model

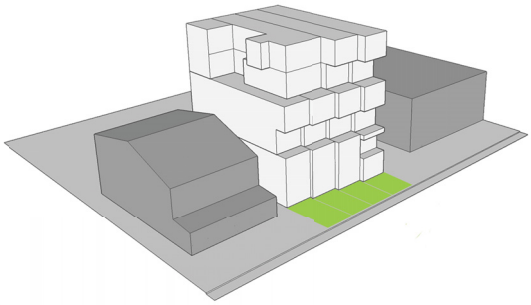
Cabin uses a modular style to create a variety of spaces, both public and private, through the shifted or staggered arrangement of the pieces. The units also step back, each floor up to create private outdoor space for the different levels. This design accommodates a higher density on relatively tight site. While the units are aimed at a higher end clientele, such as boutique condos, the concepts and organization, speaks to opportunities available when using a modular or prefabricated system.

The staggered front entrances and other techniques create different spaces for both public and private interactions, which helps to build a sense of community. While all of the units have access to different types of 'green' spaces, whether it's the shared courtyard space or private balconies, there are other implications and benefits that result from their organization.

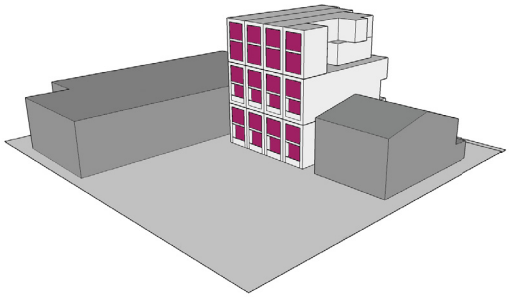
Image of Cabin on-site sales centre, location and beginnings of the project to come

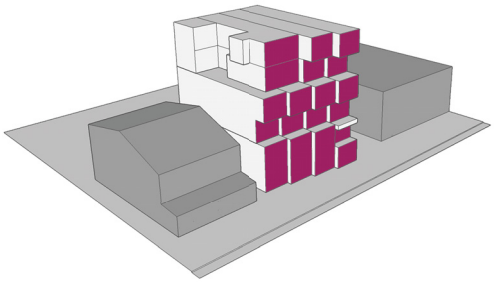


ORGANIZATION - Shared backyard



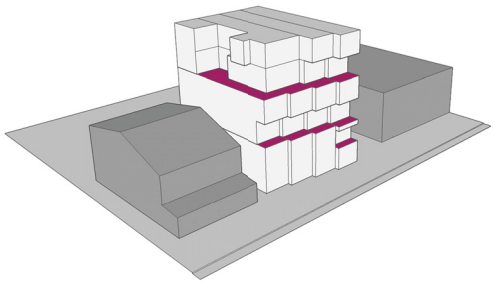
ORGANIZATION - Semi-private front yard

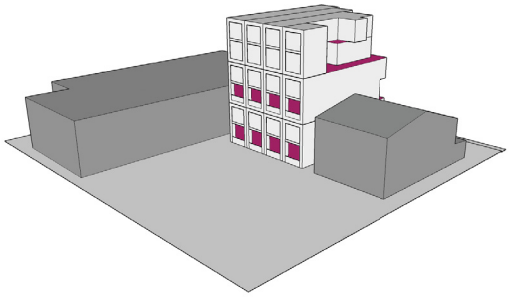


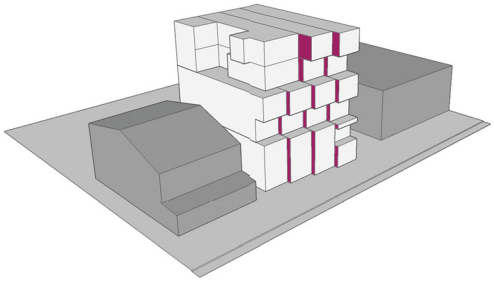


ORGANIZATION - Solar faces

BUILDING - Step backs, staggers and notches







Diagrams of analysis for Cabin, a project on Davenport Street in Toronto

Image of Cottages project under construction

Cottages by bc Workshop

This development was created as a complex for up to 50 homeless persons in Dallas. The people chosen to live here are the most vulnerable on the street and the project showed that by living in this development the city would save $15,000 per year per person (Sisson 2015). The tiny single person homes are organized in small groupings, creating small communities within a larger development. The houses and spaces between, become venues for interaction among the residents. The development is organized around a central green space that is looked on by a larger amenity building, where there are counselling services, laundry, admin, library and computers all for the residents to take advantage of and support them in their development. They are conveniently located there as the site itself, is not surrounded by

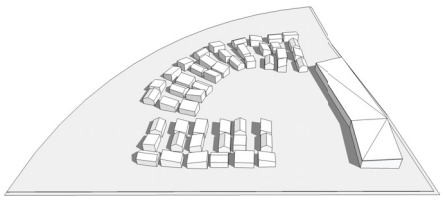
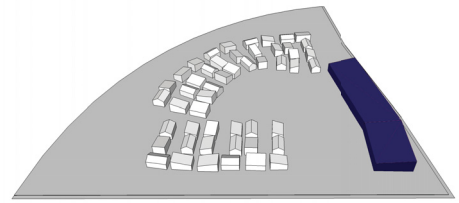
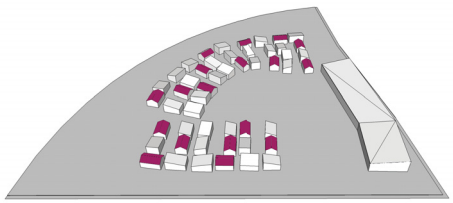


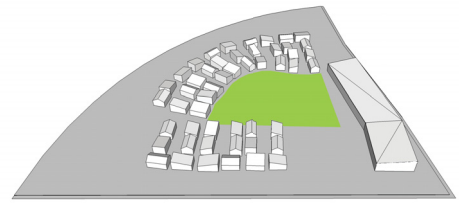
Image of sketch model



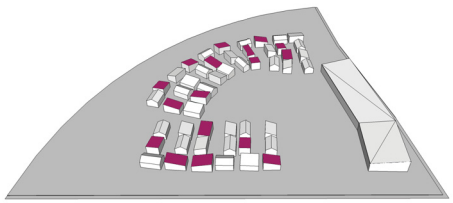
SITE - Proximity to amenities



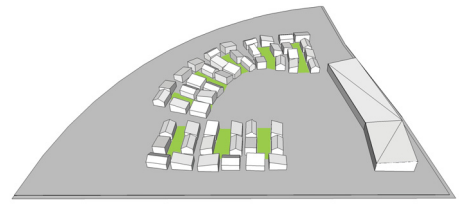
BUILDING - Variety, gable roof



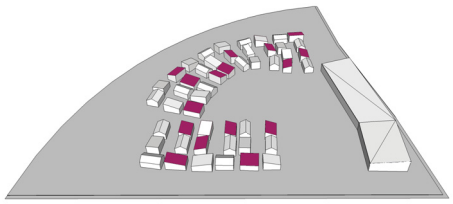
PLANNING - Central shared courtyard



BUILDING - Variety, side shed roof



PLANNING - Smaller group yard space



BUILDING - Variety, front shed roof

Diagrams of analysis for The Cottages at Hickory Crossing

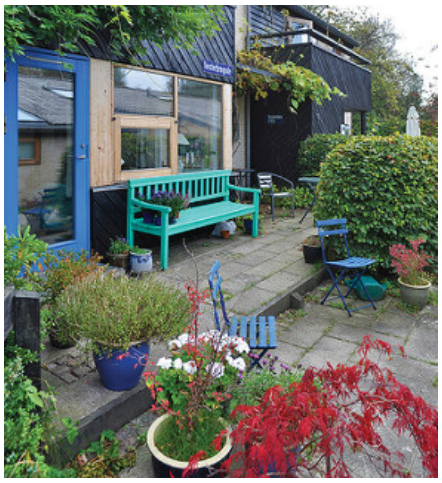
a populated urban centre, rather it's in the corner crux of a highway ramp. By providing these amenities in this building they do not have to travel far – or at all in order to keep moving forward towards a better life. For many occupants, any long-distance travel requiring a vehicle or even public transportation would be challenging. Making daily errands and activities as easy as possible can provide great benefit and opportunity for those struggling to make ends meet.

The various levels of 'green' space provided allows for a variety of interactions and activities to take place. The residents have their own personal private spaces but there are also semi private and public spaces where they can interact and experience other people.

Collaborative Housing

Duwamish Cohousing Community in Seattle, Washington, 2007, photograph by Joe Mabel (Wikimedia Commons)

The ideals of co-housing or collaborative housing employed in Scandinavia, where meals, meal preparation and many other activities are shared everyday with the population of the community, may be too extreme a solution for the public housing market in Toronto and most other cities in North America. There are some elements of this approach that speaks to the benefit of the design and the sought-after success. Collaborative communities are quite common in those regions of Europe but it would take a different mindset for it to be implemented directly in cities of North America. American Co-housing communities tend to run a bit differently than the European counterparts. They tend to be less about the sharing of everyday activities and leaves more room for individual activities such as family dinners, but with similar shared amenities and form. In the book, Collaborative Communities by Dorit Fromm, he describes the various design elements that make up great community settings (Fromm 1991). Of course, in this example the people living in this situation have agreed and accepted to live there and with that particular lifestyle, whereas the opportunities for this type of community sharing might not be appropriate for a social housing setting.



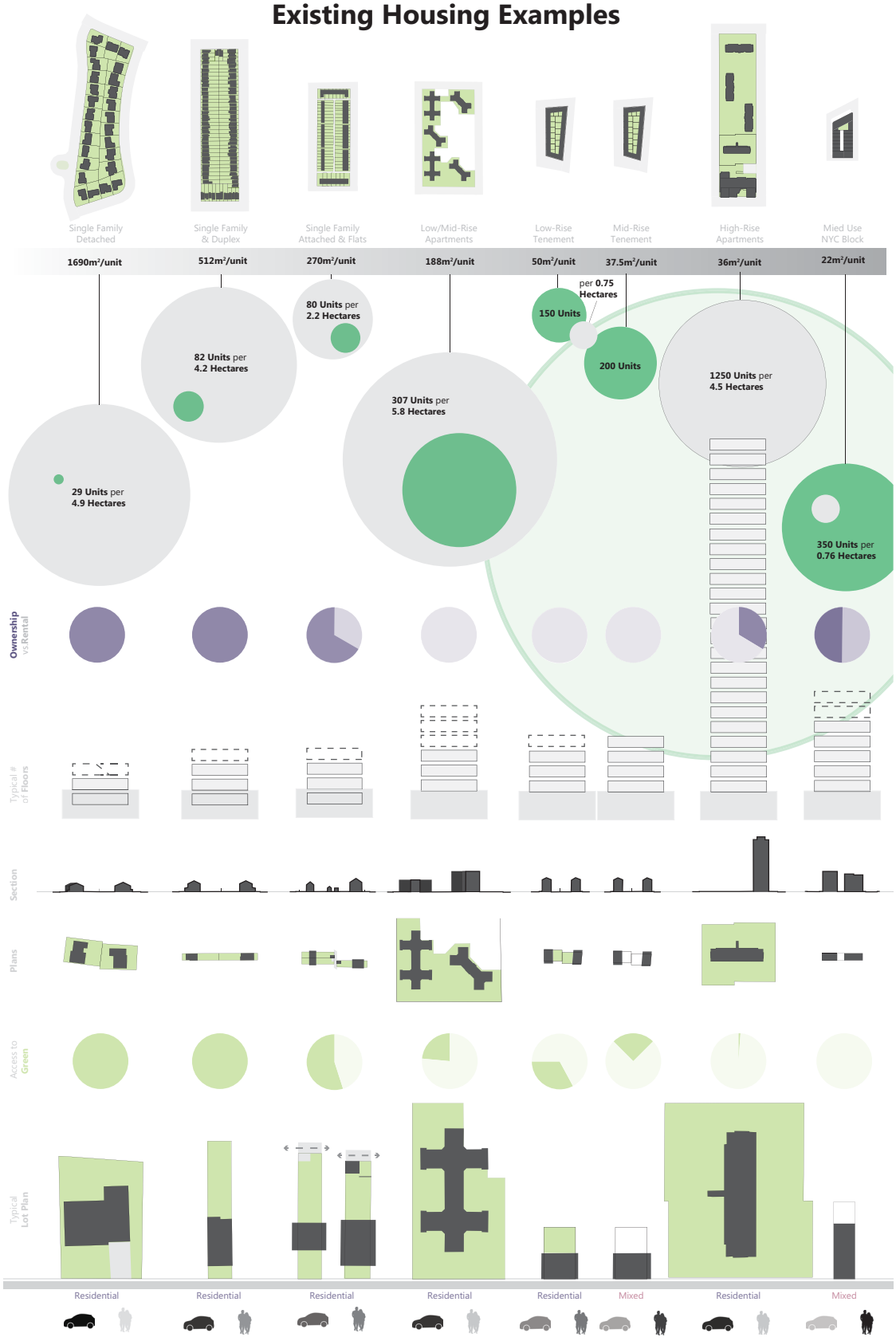
Front garden transitional space in the Trudeslund Cohousing Community, 2011, photograph by Seier+Seier (Flickr)

Front door in Trudeslund Cohousing Community, 2008, photograph by Seier+Seier (Flickr)

Many of the features used by these collaborative communities I have included in the design principles of community section as they contain specifics on the successful features that make these places so attractive. They range from general design principles all the way to the specific location of a child's sandbox, making it a great source of material to work with. The images seen on the left show some of the details of these communities. The top image has an almost terraced front step with opportunities to sit and enjoy the passers by, while the othe creates privacy from the public path with vegetation.

These collaborative communities have a common goal, the "...intention is to strengthen the family by creating supportive social networks, and by sharing social tables," (Fromm 1991, 15). I believe this approach is needed in the public housing market.

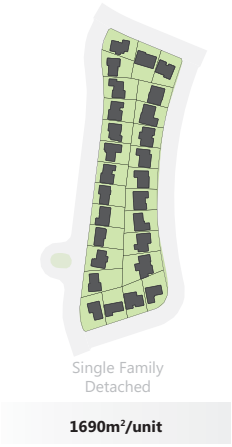
Interior Street, Jystrup Savværk Cohousing Community in Denmark, 2011, photograph by Seier+Seier (Flickr)



Analysis diagram of various residential block types

Investigating the Residential Block

This section will look to further understand the various types of residential blocks and the relationships to their context (figure 11). The examples chosen are traditional forms from different cities that are representative of different block typologies. All of the types have different relationships to their context which inform their design, whether intentional or not there are important things to consider when proposing a residential or mixed-use block.



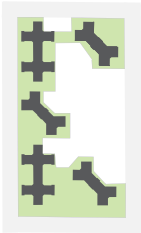
Block of single family detached homes

The lowest density block (figure 12), a classical bungalow suburb, has ample yard space in the front and back. While they have plenty of private space, these types of communities are typically segregated from commercial/retail centers, making them vehicle dominated areas.

Block of single family & duplex/single family attached & flats

The next two block types are denser but yard space is reserved to the back (figure 13). There are small garden areas in the front but they are not intended for playing or much interaction. There is also a mix of housing types with single detached homes and duplexes, or attached homes and flats. Many of these have options for alleys between the backyards providing a service entrance to the house which is oriented to the back yard. The Single Family & Duplex block can be found in a residential neighbourhood (Bloor West

Village in Toronto) where one can walk to a corner store or main street easily in order to run errands or grab a coffee. The Single Family Attached & Flats is located in a suburb of Glasgow, Scotland where a car would be necessary to do the same activities.

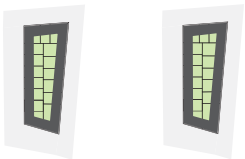


Low/Mid-Rise Apartments

188m²/unit

Diagrammatic map of a block in Regent Park, Toronto

The next block type is actually a part of Regent Park in Toronto (figure 14). The low and mid-rise apartments, in theory, create a courtyard like space in the middle, but upon closer inspection, turn out to be mainly parking lots. Intended for low-income families, these blocks are segregated from their surroundings requiring a vehicle or unreliable transit in order to get out of the community. The green space around the towers lack any planning or consideration, leaving them underutilized and barren. The benefits of higher density are lost because there is limited connectivity to the shared green spaces or options for private balconies.



Low-Rise Tenement

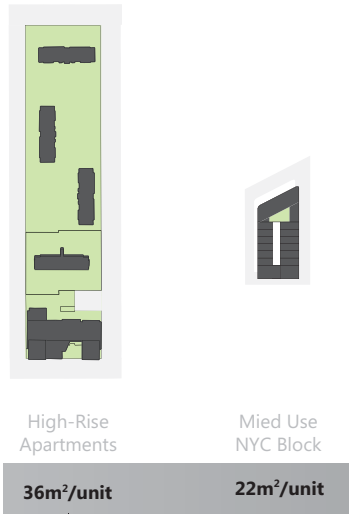
50m²/unit

Mid-Rise Tenement

37.5m²/unit

Tenement Style Blocks

The tenement block, shown in the next two illustrations, while generally the same in concept, the usage of and context of these units are quite different (figure 15). Based on their surroundings the mainly residential block is in an area with other residential blocks compared to the other example which is located on a main street with retail/commercial on the ground floor. The residential block has more of a dedicated yard space where the courtyard is utilitarian and used for servicing and sunlight.



Higher density blocks, high-rise towers and NYC mixed use

The last two most dense block types. While they share similar densities, they have very different characteristics. The high-rise apartment towers accommodate a lot of people under the ‘tower in the park’ concept. Although the connectivity to the ground level outdoor space is completely broken, there isn’t a lot of opportunity for community building and interaction. The land required for these towers is quite large, partially due to the regulations determining distances between buildings of this size. The other block type is found in the Tribeca area of Manhattan. The ground floor is occupied with retail shops and commercial offices, with the remaining floors dedicated to residential. New York City uses all of its space very efficiently from the city blocks to the compact, well designed furniture. The lot size is comparable to that of the tenement but with greater density. It does not consistently use large towers like the other block type, most buildings are 5 or 6 storeys tall. These blocks are also completely different in their contextual situation. The tower block is located in a mainly residential neighbourhood making it more vehicle dependent. The mixed-use block is located near the action with everything within a short walk (including parks) or is easily accessible by transit.

CHAPTER 4: RELATED TOPICS

The use of context to derive and aid in the design of housing carries implications on other aspects. These aspects can be seen to create various spaces to improve interactions and build community. Contextual organization can also provide venues for shared activities and dictate some of the building forms. The following are pieces to the puzzle of housing that can improved by deriving the designs from context and 'levels of green' at each scale. From the larger concepts of community down to the detailed level of construction, they all share relationships that can create positive quality residential and mixed-use blocks. The resulting project and strategies can be utilised to create alternatives to poor quality residential towers housing. The possibilities could also be expanded further to the creation of a new type of suburbia or the adaptation of existing neighbourhoods.

Community

A sense of community is an important missing part in many affordable and social housing developments. The examples that have been chosen provide a basis for various strategies that encourage 'community'. Many ideas stem from the concepts and principles of the collaborative and cohousing developments in Scandinavia. Ideas of efficiency, as well as

High-rise, low income residential building

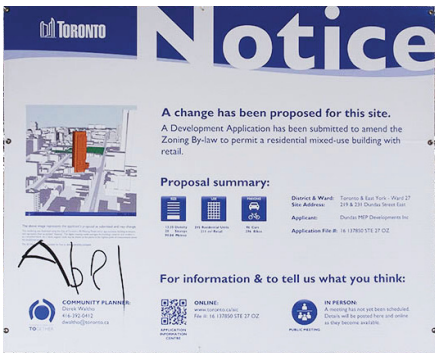
pre-fabrication are apparent. In some cases, densities in low- to mid-rise communities can be greater than those of 10-18 storey towers on the same or similar land (Davis 1977, 5). The lower rise buildings and the associated organizations provide the added benefit of a better community environment than affordable housing towers providing, for example, support for a single mom working extra shifts who needs help with the kids after school or the elderly couple who need help with their groceries. These connections are possible with a diverse population, living in a variety of unit types.

Context and support also speak to the quality of life for residents considering how they live once they move in (Davis 1977, 7). This can be quite contrary to the situation in tower slums that are present today. Poorly planned spaces, originally intended to be shared parks or gardens lack the attractive qualities that would see them thrive. Public housing developments like Regent Park in Toronto, were built with the intention to deter the crime and poverty that is present in many other affordable housing towers and complexes. The use of mid-rise buildings to create better communities was well intended but ended up becoming venues for the exact problems they were trying to avoid. The creation of this ‘utopian’ development was modeled after the Garden City movement –

creating a garden oasis for the residents of the development, focusing inwards away from the busy urban centre that it neighbours (Heather 2012, 11). This development didn't have the necessary amenities to fully support such a large residential community. Created with the intention of walkability, the lack of roadways made it difficult to get around inside or out of the area to get groceries or run other errands (Heather 2012, 12). If originally designed with greater consideration of the needs of the community and its context in the city, it might have seen more positive results. The area of Regent park is currently being redeveloped in to a more mixed use community, providing those things that were missing in the original neighbourhood plan.

Housing

Current housing models aren't working, they're run-down and nearing the end of life as habitable. Sam Davis has some good ideas about the future of density and housing in our cities. "A new goal for housing may be to maintain the features and amenities of the single-family house while aggregating many more units on a single site for economy sake," (Davis 1977, 8). This opportunity supports plans for variety and change which is something that is needed in many cities. With increasing land prices in cities like Toronto, a housing model that retains as many features of a single-family house, would be attractive to more families



A photo of a public notice of a zoning by-law amendment proposal, to allow for a new 24 storey residential condo building. Current development trend in the Toronto Market.

Aerial photo of the ever-growing suburbs, outside Toronto

in need. He also states that “Small groupings of multifamily housing, often inserted into existing urban and suburban neighbourhoods, will prevail over the large, uniform housing development,” (Davis 1977, 8). This concept does not align with what is being built in the market today. So much time and money has been invested in the development of condominium buildings that attract a younger, childless clientele, leaving few options for young families looking for suitable homes. As seen in the previous map of Toronto, the density per dwelling is less than 2 people, while the higher densities are pushed to the outskirts of the city. Many have gone further outside to other suburbs and then commute back into the city for work or school. Traditional homes in the city are now older, potentially need work, but are financially out of reach for many wishing to settle in the city.

Many of the condos being built provide shared patio/terraces, many of which require scheduling or booking requirements to be used. People are less likely to use these types of spaces when there are barriers like schedules, capacity limits or having to share with others. These shared spaces are also located on only one or two floors and anyone not living on that floor must take an elevator or stairs in order to get there. Planning a party in one of these spaces requires multiple trips, a greater hassle than most are willing to endure.

Providing spaces that are visually and physically connected to shared spaces and easing transitions creates more useful spaces. Also limiting the amount of booking required, while creating a variety of spaces for people to share but not feel as though they are intruding on one another are important factors.

Experience has also shown that balconies attached to individual units are usually quite small and/or irregular in shape, making them dysfunctional. Areas with odd shapes or that are very narrow limit the types of activities that can occur, and even the furniture that can be placed on them. If these spaces aren't functional, is there a point to creating them in the first place? The common saying is that 'everybody wants a balcony, but no one actually uses them'. This attitude has potentially led to the creation of bad balconies for those who don't plan to use them. However, those that do want to enjoy their outdoor spaces are limited to a skinny sliver of space or have to find a community terrace to use. If the common areas were easily accessible, the balcony issues would not be such a negative factor. Connecting these types of spaces also allows for certain flows and interactions to occur. One can easily invite a friend they met in the shared space over afterwards and, young friends could easily visit one another.

Pre-Fab Construction

Prefabrication and modular construction can provide more cost-efficient housing solutions which would decrease the burden of development (Cartwright 2011, 1). Pre-fab provides benefits of efficiency, quality and flexibility, all advantages that would create a better system at a lower cost. As stated by Reidelbach, the opportunity with pre-fab is a volume of quality for a lower cost. Certain examples like the catalogue villages of Levittown become monotonous neighbourhoods of cookie-cutter homes more commonly seen today, versus one-off modern homes. These and other perceptions of modular housing can prevent its use (Cartwright 2011, 11). Both factors often prevent planners taking full advantage of prefabricated systems capabilities for affordable housing. There are some particular details of the pre-fab process that can affect its affordability and efficiency, that Emmanuel discusses in his paper Logistical Aspects of Prefabrication that should be further examined in this regard (Jannasch 2012). Joseph Cartwright's graduate thesis breaks down both the advantages and disadvantages of using modular and prefabricated methods for the affordable construction of housing (Cartwright 2011). Sergio Copiello, further investigates how energy efficiency can reduce operating costs for affordable housing, enough to cover the losses of building low rent housing (Copiello 2015).

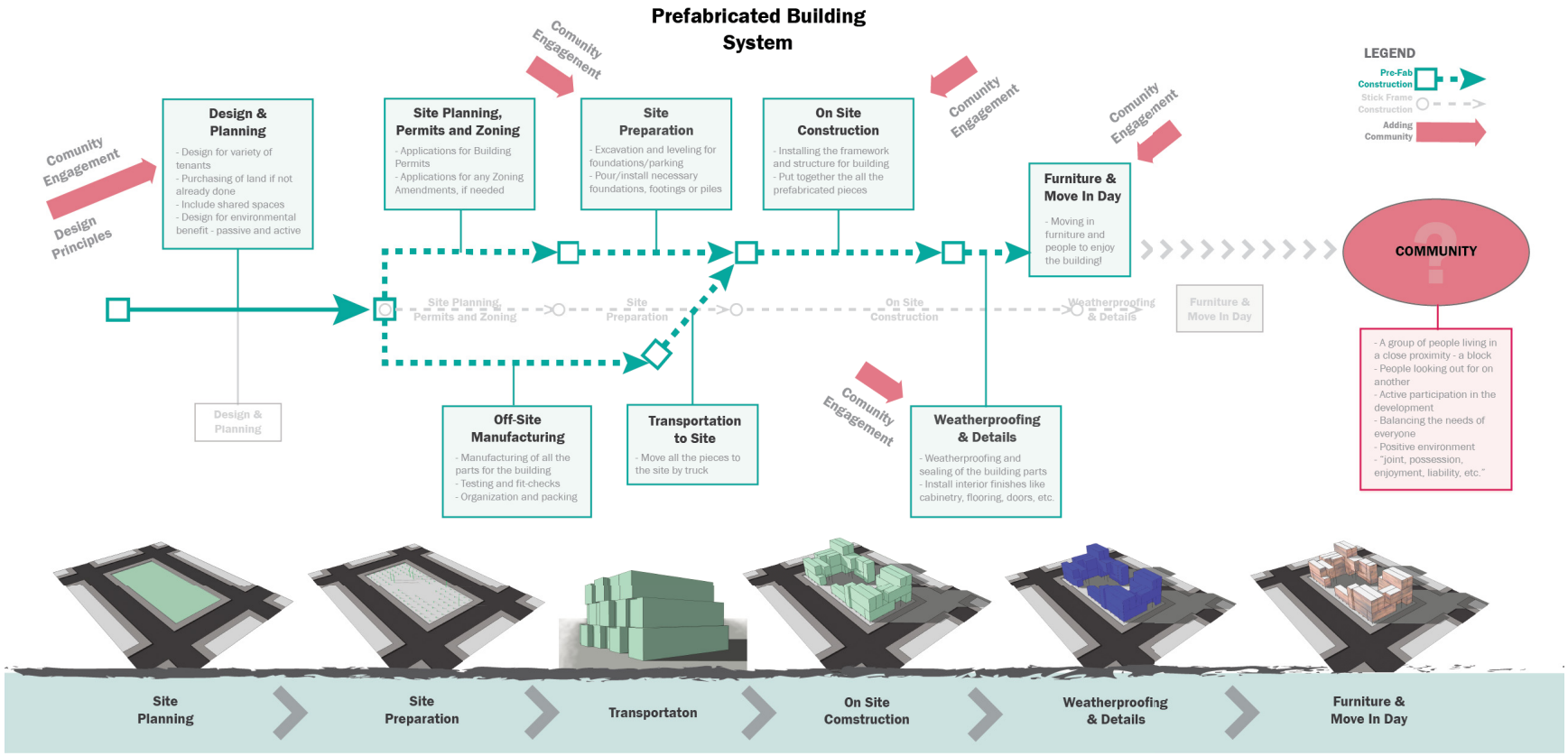


Diagram of Pre-Fab Construction as Timeline Comparison with traditional stick frame construction

There is also the practicality of using existing infrastructure as it is a more efficient use of space and resources. This also provides residents with an established neighbourhood, equipped with, or providing opportunities for the necessary amenities day-to-day life without needing to rely on a vehicle or unreliable public transit routes. Not only does the function and planning for the development become more efficient, but the quality of life for those residents has improved.

Pre-fab, and similar systems provide other benefits that create different opportunities and options for the residents. In Good Deeds, Good Design, Bell states that "…reconfigurable construction systems – changeable assemblies of building components like walls, ceilings, and floors…" provides opportunities for personalization, user input and flexibility/change for little or no cost (Bell 2004, 33). The option for personalization and change provides greater flexibility and helps to accommodate the various needs of people that are a part of the public housing and affordable housing demographics.

On the previous page is a systems diagram that is used for analysis of the prefabricated systems and looking for opportunities for where and how community can result. Comparing the more common, stick frame construction with a more prefabricated system, it shows the more efficient timeline

achievable when using pre-fab. Using this diagram, I was looking to find ways that community could be inserted into the system and at what points so that a sense of community became the result. Community engagement becomes an obvious addition to the process, allowing the people of the neighbourhood to engage in the project planning and gain a sense of accomplishment through their work that would start to build a sense of community. Community engagement is definitely important at as many stages of possible and in particular in the planning for the 'in between' spaces. How these forms and components come together becomes an important part of their function and success in the future.

Access

The approach and access to one's home can be a very important part of the residential experience. Individual homes provide private front door access where control is in the residents' hands. Larger apartments and condo buildings have a foyer with some sort of locked door restricting access to outsiders. Notes regarding letting in strangers are typically plastered on the walls which deters the courteous act of holding open the door for another person. In smaller buildings, one can be more discerning as residents are more likely to know the people in the building. While it is unlikely in a large building, with smaller core

accessing a select group of units, it creates a group of people that can interact on a daily basis resulting in a small community within a series of larger communities.

Once inside a building you may be greeted by a luxurious lobby, or just a hallway or elevators which leads you to a long utilitarian hallway. The main intention is to get you from the elevator to your unit with no invitation to spend any additional time in open circulation spaces that take up a large portion of building. Usually central, they can also be very dark, saving the perimeter exposure for the residential units. These circulation spaces hold potential to extend the interior living spaces into a semi-private realm creating opportunities to meet and interact with neighbours but can also be an enclosed and potentially bright space to move through.

CHAPTER 5: DESIGN

Project Vision

The evolution of this thesis and its strategies to achieve quality living environments has expanded its scope to include urban housing in a more general sense. Prefab and affordable housing are not specifically addressed through the design and proposal but are still viable options using the principles set out in this thesis. This method or system will be based on context and location, deriving its design from its situation in the environment. Similar to the concepts of the Garden City movement where "House + Garden = Home", I propose to change that equation to put the green first; Garden + House = Home. To be a successful development, the context must be considered at all scales.

While typical styles of existing housing for this demographic is based on the easiest possible design, construction and the cheapest lands. Basic towers on large plots of land do not create a sense of pride, ownership or community with the way the buildings are organised and built. The ideals and qualities found in prefabricated homes have inspired their application in an aggregated urban community. The organization and placement of these buildings will be key to their success creating resilient and strong community groups.

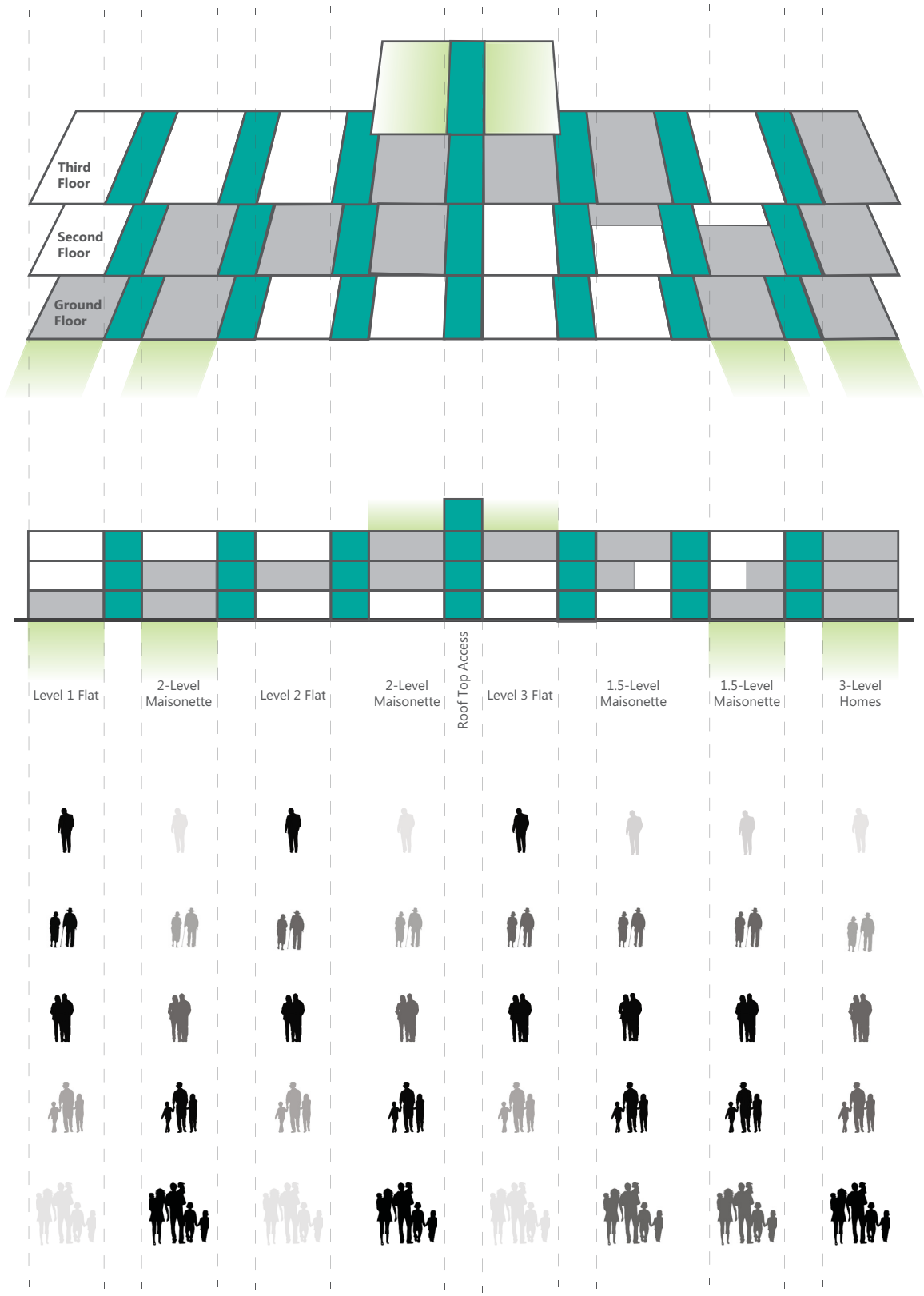


Diagram of family type suitability and community mix when unit variety is used

The use of pre-fab also offers opportunities for variety that will facilitate the accommodation of many different people and family situations. The mix of residents provides opportunities to support and growth within the development. For example, a mother in a single-parent family can potentially look to neighbours for help if she is having trouble finding someone to watch her kids; or an elderly gentleman that has trouble getting his groceries into the house every week could receive a helping hand in the building. Many people living in low-income developments may be struggling with many day-to-day responsibilities, however knowing they have a strong network at home and people to help out, could take some stress off their shoulders. The following diagram examines the possibilities and opportunities when using a variety of units.

Once the community and support networks have been formed, it's hard to leave and start over again if someone's living situation was to change. Having a variety of unit types in a development would help to accommodate people as family needs change. The ability to remain and continue to grow within your own community is a special thing that is not typically offered. Typically, those relying on social housing are at the mercy of the system to determine the location of their next residence. Being able to provide

alternatives within the same developments would make those types of transitions easier for the families. There would be no need to change schools, doctors, community centres, recreation programs and even grocery store. Using context-based design, the new solution will hopefully be within a close proximity to the currently home. Similarly for those looking to downsize or looking to change their family situation, a connection or familiarity with the neighbourhood can be a driving factor in home decisions.

With density and careful planning, the opportunities for energy and cost savings would provide greater relief for the building managers and residents. The volume use of prefabricated housing would provide an increased level of quality at a lesser cost. The finished products would go through testing to ensure the quality before being shipped to site. Greater investment now in these developments can save future costs of repairs, maintenance and escalating energy bills. The use of alternative energy sources to lower operating costs and potentially work on a net energy system that feeds into the city grid, crediting the community with money that could be applied to improvements or community events.

While the pre-fab systems provide a greater economic quality, the contextual-based design that uses the pre-fab will be what brings the social quality, including deriving

locations based on proximity to transportation and amenities and making the communities less dependent on vehicle ownership or complex transit routes. The physical spaces created by and around the buildings will also provide different spaces for shared interactions between people to encourage social relations that will hopefully result in a strong support network. Prefabricated systems can be removed from this equation and/or be applied to many situations. The spatial relationships I am proposing can be utilised with any type of construction, and for any urban housing situation. The opportunities remain in the strategies used to create the residential landscape.

Toronto's Housing Crisis

Using the city of Toronto, I will be testing my design principles as a solution to the current housing crisis the city is experiencing. Toronto's public housing stock is run-down so badly that there is a $2.6 billion backlog in repairs (Fox 2016). Also, there are so many people on the waiting list the city has had to add allowances for those people so they can keep their current homes until they can find a spot in subsidized housing (City of Toronto 2016). "…current development is too slow to make an impact…", Seeming to never solving this issue and keeping these people

on the wait list for over 10 years (Walls 1999). Toronto recently held a summit to figure out a national housing strategy to fight housing shortages across Canada. There are initial guidelines and goals that they hope to achieve with the strategy, that I can use as guidelines (Government of Canada 2016). Although there are some general sites chosen for this thesis project, the intent is that the system derived will be applicable to other cities in need of greater quality housing.

Aerial photo of Toronto showing the concentration of high-rise towers in the urban centre

Rendered image of proposed design, from the interior of the courtyard

Key Principles

By bringing together the qualities of pre-fab with the ideals of community and context, I have determined a framework that will be used in conjunction with ‘four modes of dwelling’ that Christian Norberg-Schulz’ described in his book, The Concept of Dwelling. Settlement, Institution, Dwelling and House, will be the various scales in which the three site types will be investigated and designed for. These will relate to the ideas of location or context-based design, which have different effects and elements at different scales of the design. For each unit and scale, there will be an element of ‘green’. These levels will be broken down according to scale; Unit, Building, Block/ Lot and Community, similar to ‘four modes of dwelling’ in their level and condition. These features can then be coordinated and designed for the three site types; infill, regenerative and new build, all of which carry their own opportunities and constraints to work within.

The dominant guiding principle in the design is to consider context at every level; from the site location, to the organisation of units and components within. The levels of green highlight the access and relationships to ‘green’ space, indoor or outdoor, both private and shared. Stemming from that main ideal are more specific principles that help to define those spaces and their organisations. They will highlight other areas that carry

importance to the creation and sustainability of the community as a whole. These points strive to achieve and sustain a well-connected community, not dependent on vehicles.

SITE:

- Locate in areas where regeneration is needed and/or make positive contribution to the area

- Work within existing frameworks and systems, to repair the urban fabric of neighbourhoods

- Provide connections to surrounding amenities

-Provide local access to missing amenities and services

PLANNING:

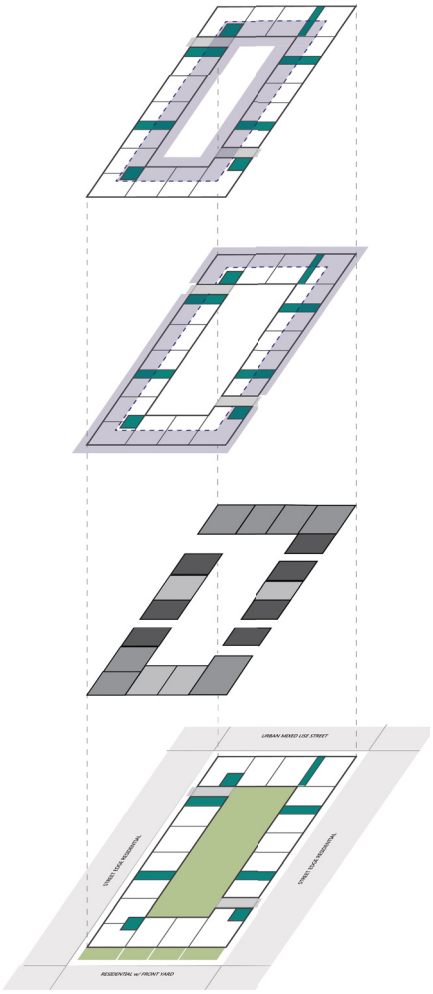
- Use the natural landscape variations, design with changes in elevation

- Keep with existing land uses

- Provide ground level activity space

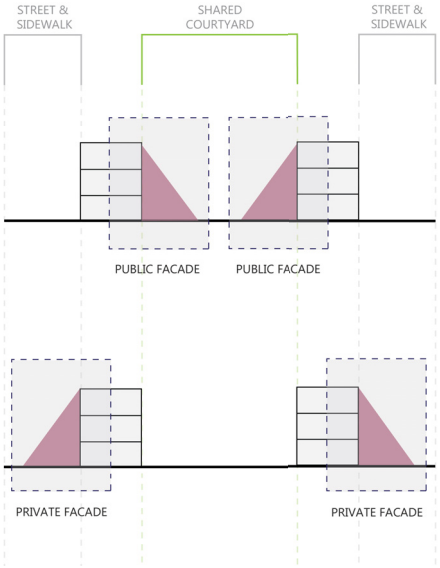
- Limit building height to keep scale comfortable and connection to the ground plane

- Connect shared spaces through path and activities

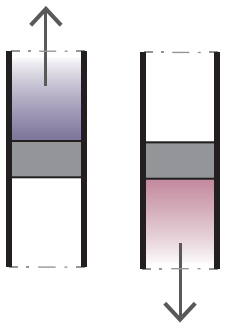


Diagrams of some of the listed principles

Diversity of housing types



Orientation of views and rooms



Public (kitchen/living) spaces to face courtyards/private bedrooms face out to street

FORM FINDING:

- Provide covered entryways, while maintaining the street wall

- Create functional outdoor spaces for every unit

- Maximize natural sun exposure

- Create opportunities for a diverse community

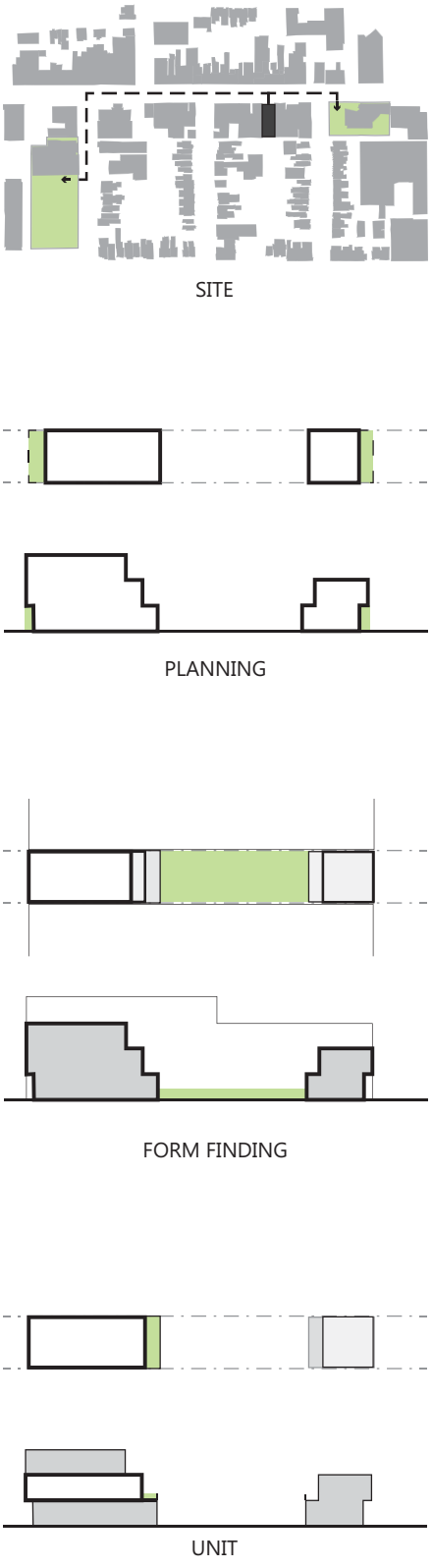
- Create levels of privacy and connectedness

UNIT (Details and Layout):

- Relate interior public rooms to central activity spaces, and interior private spaces street side

- Extend and connect interior rooms to exterior rooms, both visual and physical connections

- Use of green elements to create ‘rooms’ and as transitional screens



Diagrams of the 'Levels of Green', green element at each scale.

Levels of Green

Use the principles and attributes acquired from the previous investigations of the separate concepts to inform the principles and concepts for this idea of context-based design. From these principles came several design features that start to shape the form of the buildings. These various design features will make up a catalogue of parts that can be applied, depending on site analysis, creating various 'Levels of Green'. Each derived level is a scale in which to look at the various spatial relationships that exist or will exist in the design. Those relationships and contextual factors should be valued at every level, from high level site placement to the individual details of the unit. Poor choices can create unpleasant situations with which the residents must manage on a daily basis. The elements or strategies used in the following design proposal are broken down by those different levels and are derived from the previously stated principles.

Design Proposal

SITE

Image of potential site, unused lot space on Queen St. West

Image of potential site, small parking lot on Jarvis St.

Image of potential site, shared back lot on Dundas St. E.

Investigate the site for its orientation, surrounding buildings, zoning and by-law requirements, streets, adjacent buildings, etc. Some of the principles have site specific needs that have to be accounted for. In choosing the actual locations there needs to be sufficient access to public transportation, as a lot of the people in public housing do not have reliable transportation. Access to other amenities like; schools, day care, groceries and social and supportive services, is also a crucial element. Where those facilities are not within an easily walkable distance, they should be included in the development. The project should also be sympathetic to their surroundings, by way of program, organization, layers and characteristics. Those aspects found in the adjacent buildings and surrounding area should be where the design components are derived.

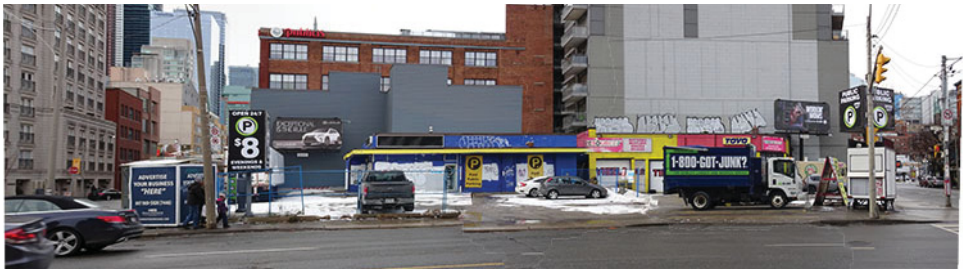
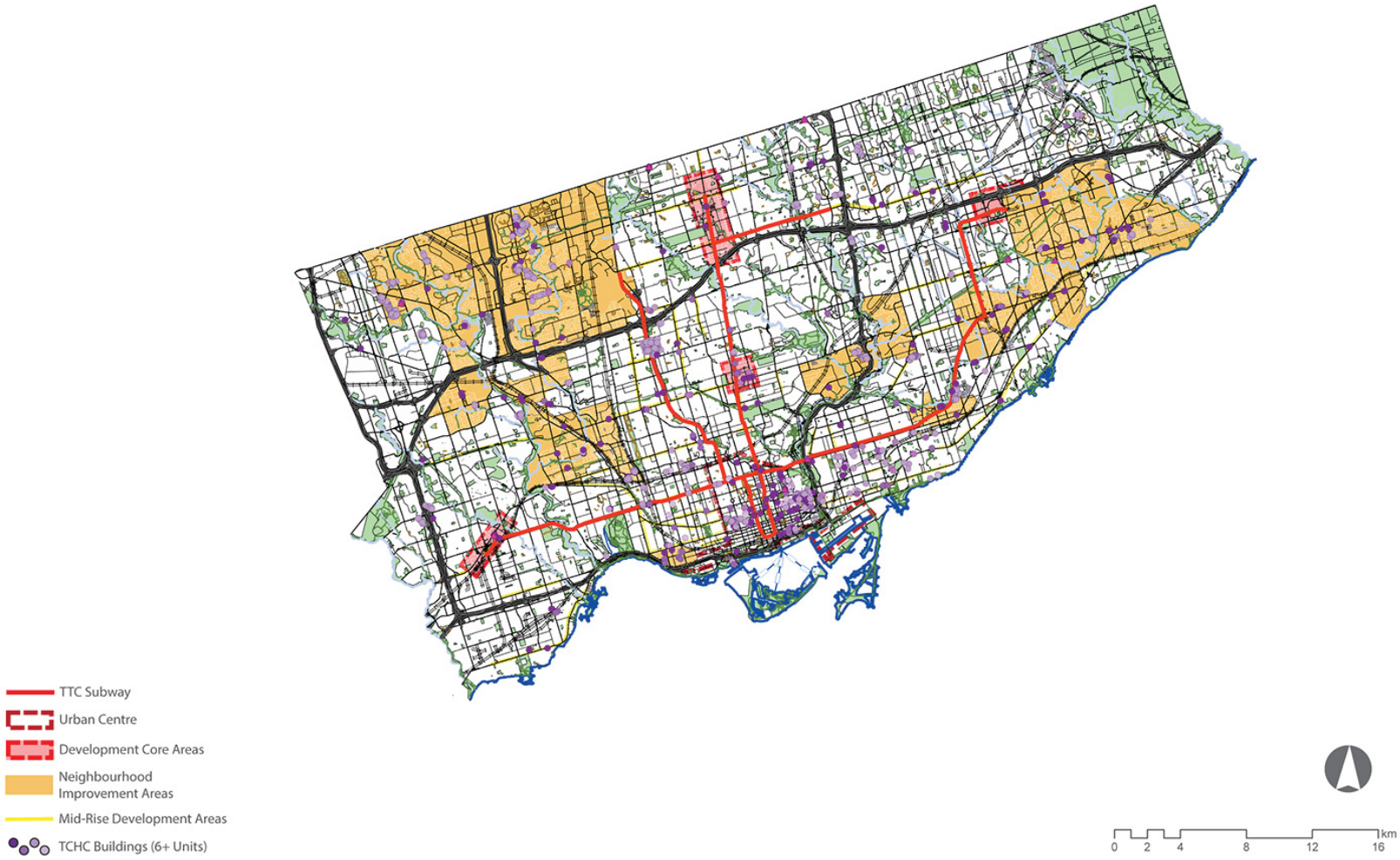


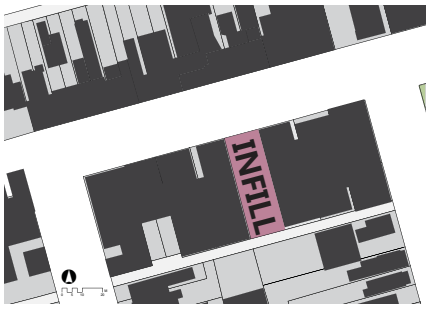
Image of chosen regenerative site, abandoned/unused car repair lot on Jarvis St.

Toronto Urban Analysis

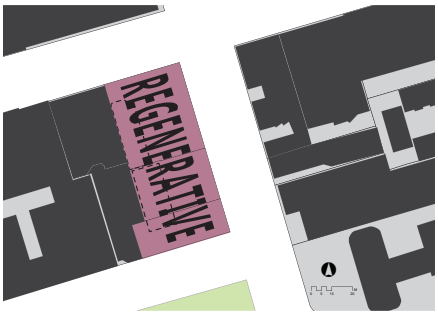


Areas of interest map of Toronto; map contains information licensed under the Open Government Licence – Toronto.

Map image showing the blocks along Toronto's Queen Street, highlighted are the two areas that contain the clusters of chosen sites.
Base map contains information licensed under the Open Government Licence – Toronto.



Best site option for an infill project



Best site option for a regenerative project

Site chosen for this design proposal - New Build Project

From my experience in Toronto and further analysis and mapping, I chose an initial 13 sites under the three categories (Infill, Regenerative, New Build). From those sites, I did further analysis to determine the proximities to the necessary amenities and services to narrow down each category to one site to work with. The chosen lots are located in lower-end communities, near or in Neighbourhood Improvement Areas - prime areas for regenerative housing solutions. They are also located near clusters of Toronto Community Housing buildings. According to current reports, many of the units are falling apart or in dire need of repair. Providing new higher quality housing in these areas would allow families to stay within their existing neighbourhood communities, schools, programs, etc. These areas also hold opportunities for people that are not in the social housing system, as they are being redeveloped to improve the historical perceptions of being 'rough' areas.

The site that has been chosen to fully develop is a large parking lot in the east end of Toronto, in the area of Moss Park. Located along a main streetcar route, (south edge of lot – Queen Street) and a short walk to the King St subway station, its location is just outside the city core, with fewer high rise buildings but surrounded by small shops, restaurants and other services. There are also some parks and

PARKDALE

West End

Map showing some of the 7 of 13 potential sites; base map contains information licensed under the Open Government Licence – Toronto.

Images of three potential regenerative sites

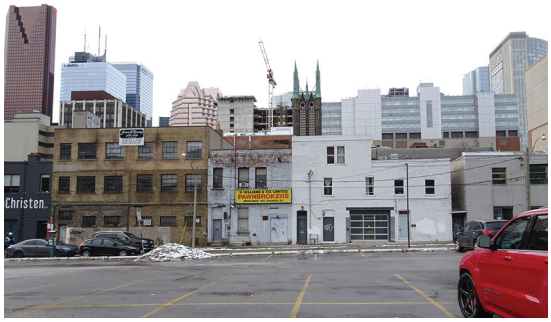
MOSS PARK

East End

Project Site

Map highlighting the 5 of 13 potential sites; base map contains information licensed under the Open Government Licence – Toronto.

View from site, south to Queen St. E.



View from site, west to Dalhousie St.

View from site, north west to Shuter St.

View from site, east to Mutual St.

schools in the area for the residents to utilize. It is bordered by two busier retail streets (short side) and two quieter residential streets (long sides). The two residential streets are quieter but oversized for on-street parking in addition to the current parking lot on the site itself.

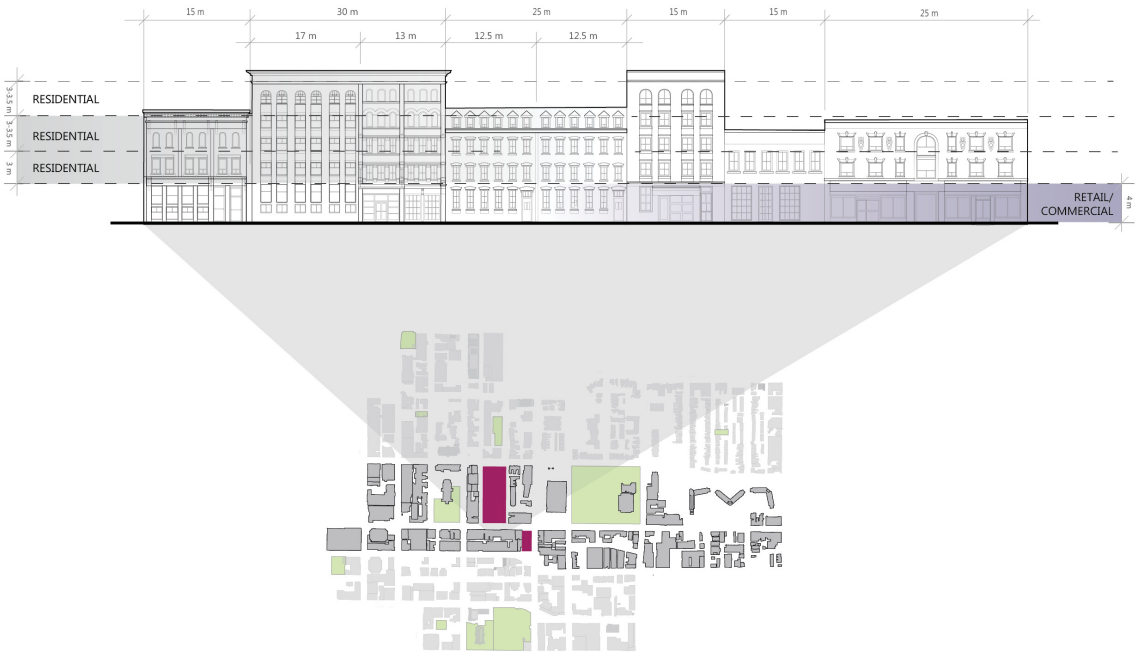
Key Elements: Include program opportunities in the building.

Red Solid Lines - TTC Subway
Red Dotted Lines - Streetcar
Purple - TCHC Buildings
Dark Blue - Institutional Buildings
Light Blue - Child Care/
School Buildings
Green - Park Areas
Blue Streets - Main Retail/
Commercials Ways

Diagrammatic plan of surrounding amenities and services.

PLANNING

To keep with existing land uses the short ends of the lot, both have retail or commercial spaces at ground level. It becomes a positive aspect of the site's orientation because the longer sides are quieter, leaving more opportunity for units that connect directly to the ground. If it was opposite it would take away a majority of those units and more units would be raised on top of ground floor shops. This project will mirror those ground floor uses to ensure the continuity of the street. Continuing and repairing the broken fabric that exists currently. Especially on the main road of Queen Street East.



Elevation of Queen St. E. opposite the proposed site; base map contains information licensed under the Open Government Licence – Toronto.

PROGRAM & STREET TYPE

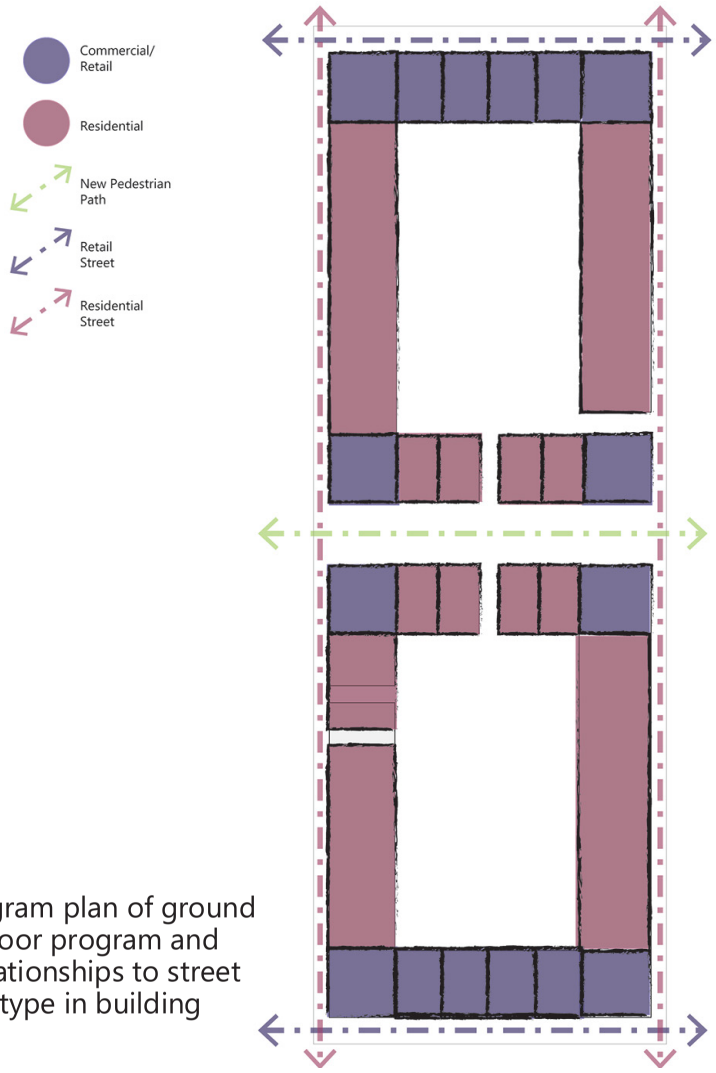


Diagram plan of ground floor program and relationships to street type in building

PROGRAMMATIC ANCHORS

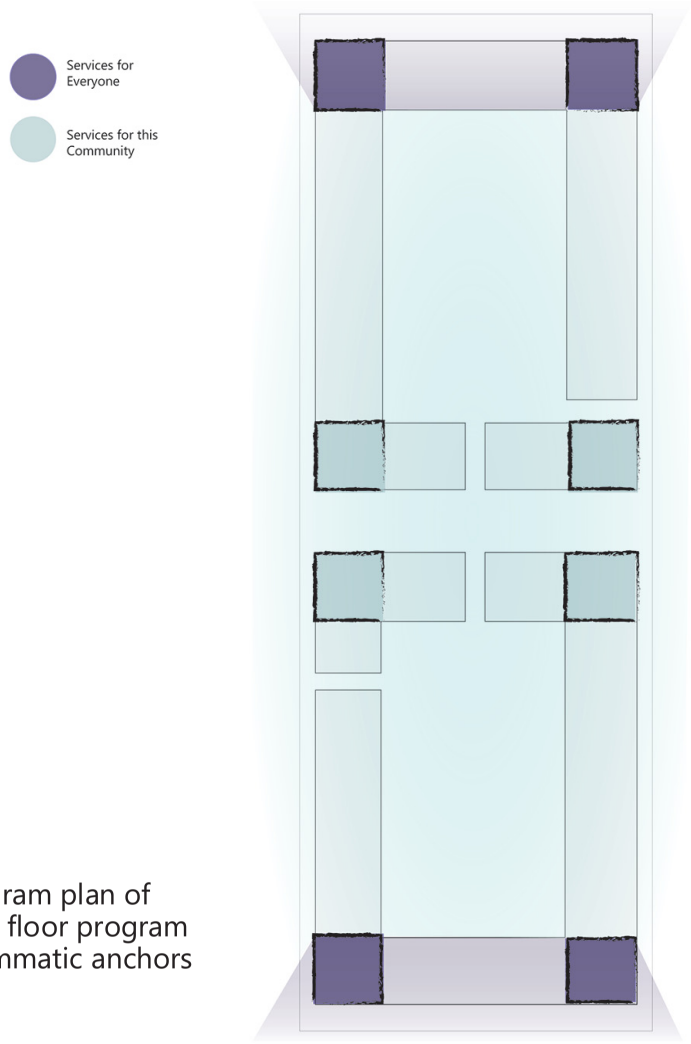
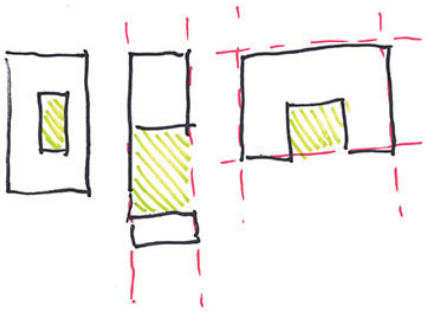


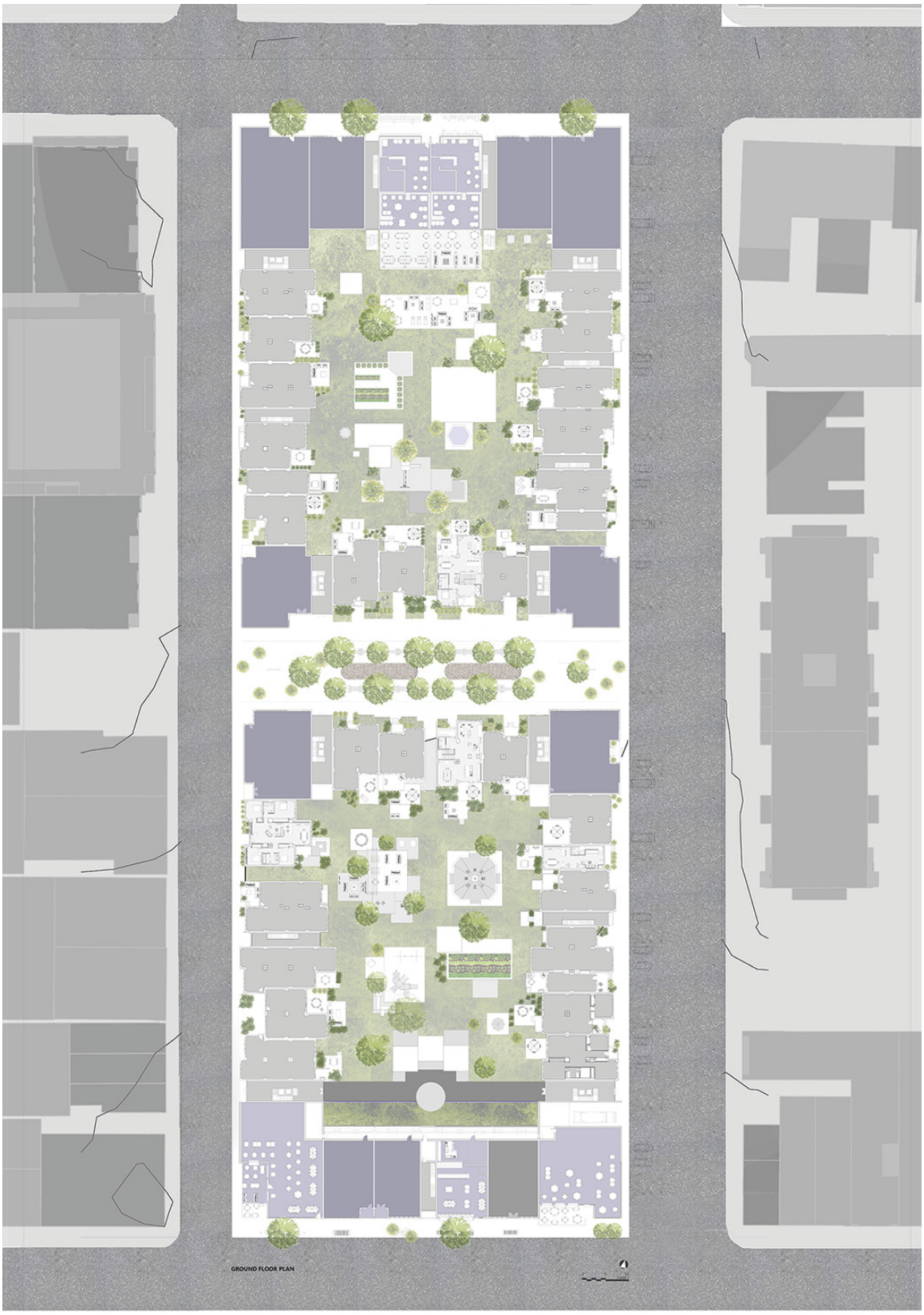
Diagram plan of ground floor program programmatic anchors



Diagrams of other courtyard options applicable to different site typologies

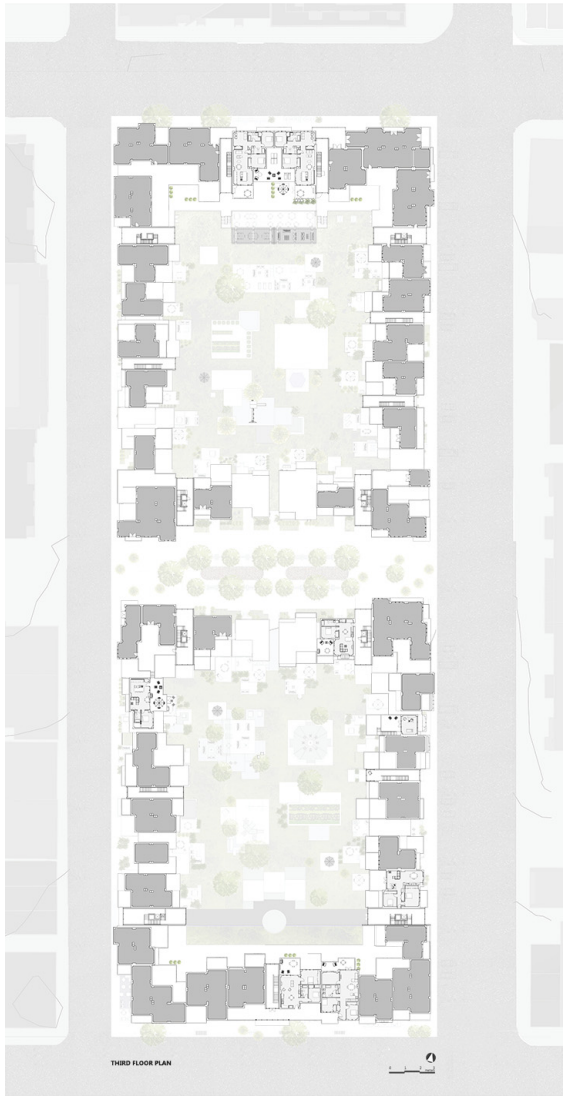
Since this lot is very long, and the resulting interior space would feel overwhelmingly large, it has been divided in to two smaller sections. This adds more perimeter space to place units on and provides an internal pedestrian path. It also creates a new type of frontage, additional to the retail street and quiet multi-residential units that line the outside edge of the block. The interior pedestrian path creates the opportunity for a more traditional front yard typology. This green pathway could also be carried over to adjacent blocks in future developments to provide connection through the city off of the main streets. The two courtyard spaces then become two smaller communities within the larger block, each with its own activities. The separate courtyards are still connected through pathways that penetrate the outside building form and provides opportunities for the residents to interact with both communities but also keeps it open to allow the public to explore this block as well.

To encourage the cross-pollination of the communities, the programming of the spaces will have specific, larger areas that attract a certain activity or program. For example, having one or two unique options on either side that would bring people who share an interest or want to engage in that element to mix with the other community group, bringing the community together as a whole. In

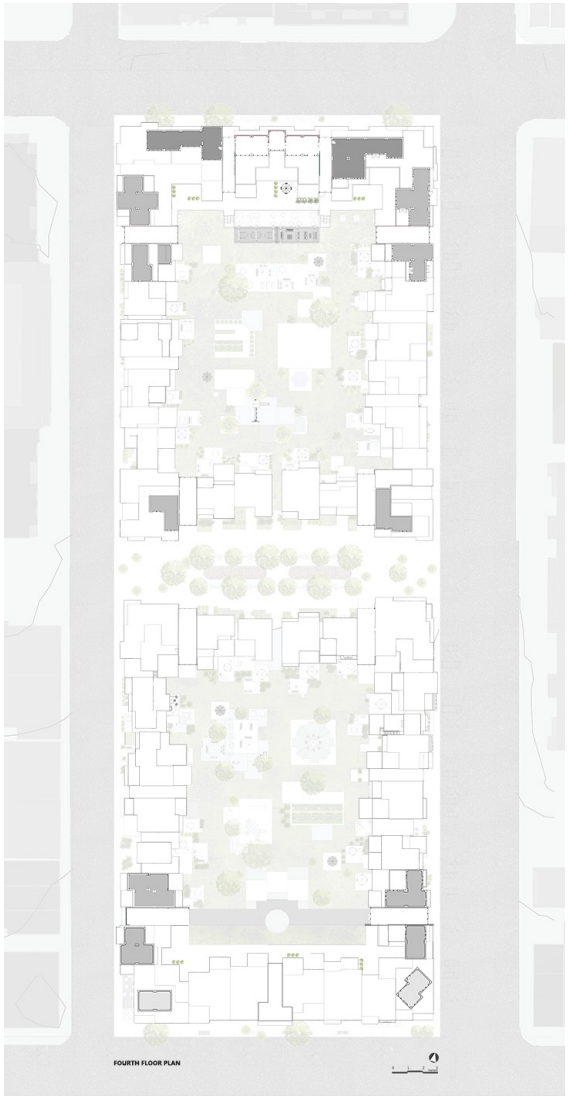


Ground floorplan

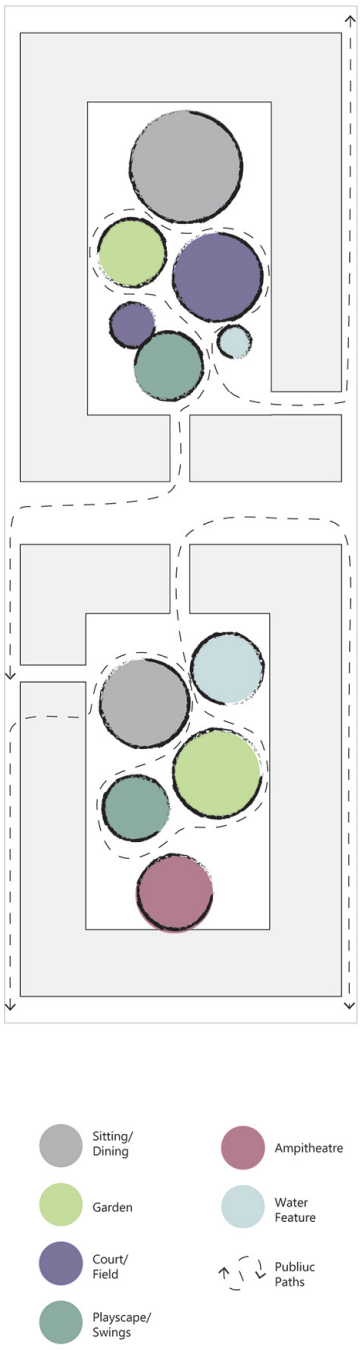
Second floor plan



Third floor plan



Fourth floor plan



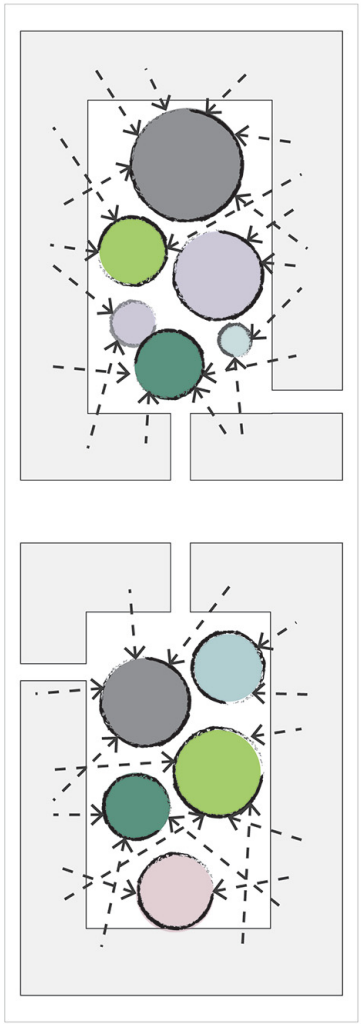
Program map for the courtyard spaces

this project, there is an amphitheatre type area where everyone can come together to watch a movie, children could hold performances or other events needing that type of space could be held. On the other side, there is space for court/field activities where sports-related activities could occur, from pick-up basketball/ soccer or community tournaments. Both hold opportunities for organisation of group activities for residents and managing different events in either space. These specific activities would be complimentary to the individual elements that each side would have; including playgrounds, sitting areas, community gardens, water features, providing a variety of options to attract and involve different age groups.

The interior corner spaces also hold programmatic elements that may be missing in the surrounding areas, and that are directed at the population of this community. The interior corners, or programmatic anchors, will house exercise/gym space, library/computers, social services, daycare centre or space to rent. These services can also provide job opportunities for the people in the community.

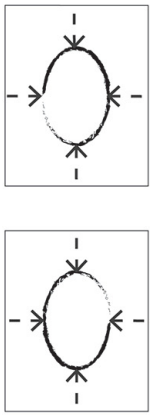
Key Elements: Central courtyards, mirroring ground floor usage/program type, 3 floor maximum on residential streets and 4 floor maximum on retail, shared activities, pedestrian paths

DIRECTED PROGRAMS



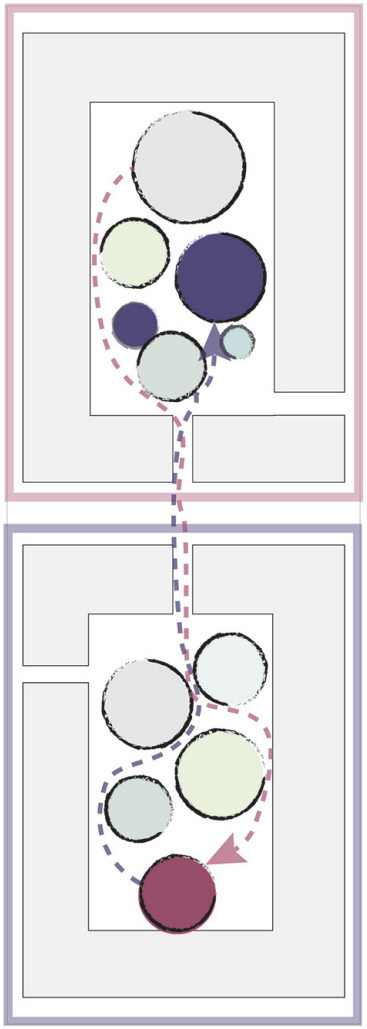
Sitting/ Dining
Garden
Court/ Field
Playscape/ Swings
Ampitheatre
Water Feature

Direct Access to One Courtyard



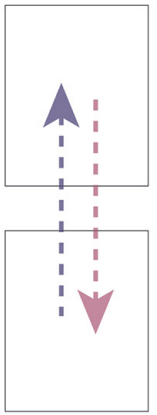
Courtyard independant activities

SHARED PROGRAMS



Sitting/ Dining
Garden
Court/ Field
Playscape/ Swings
Ampitheatre
Water Feature

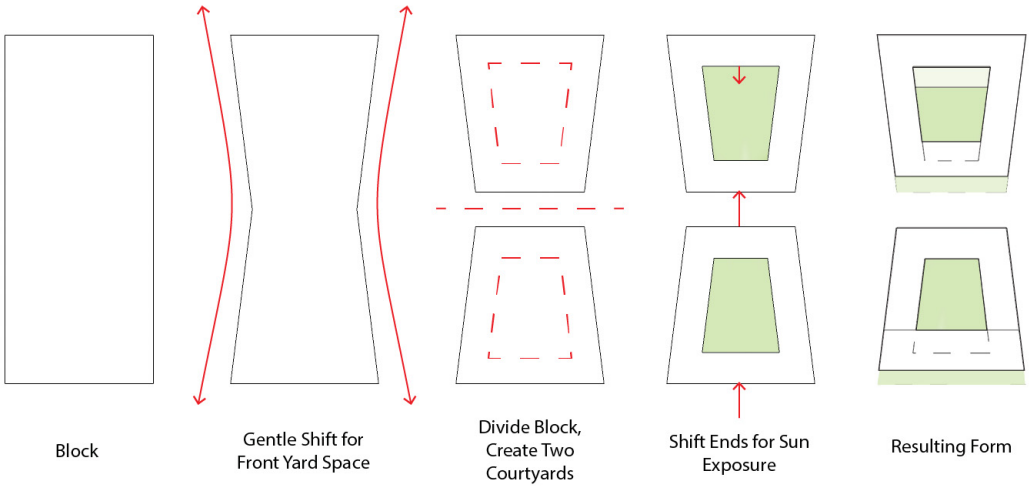
Cross-pollination of two courtyard communities



Courtyard shared activities

FORM FINDING

The overall building form will create a perimeter around the central courtyard spaces, enclosing them as small green oases in the city. The further away from the busy streets, the building is set back further from the sidewalk, allowing more of a front yard for those units. The short ends that have the most direct sun exposure are shifted to maximize that effect. The most southern edge is pushed back to allow for outdoor patio spaces for the retail and restaurants along that edge. The northern edge remains at a normal sidewalk distance but includes a sunken patio area for the same purpose. A pergola and green hedges aid the separation between the clientele and residents. The central units are spaced enough to ensure one is not majorly shadowed during the day.



Diagrams illustrating some of the form making steps to achieve the final form

Long section through the proposed project;
image attempts to illustrate the flow and connection across the site and the creation of a housing landscape.

Close up images of the above section where cutting through the building

Short section drawing through the proposed project.

Close up image showing the covered entry ways that open out on to the pedestrian pathway

Close up image showing the stepped deck spaces and connection between the interior and exterior dwelling spaces

Close up image showing the interior restaurant opening up to the street with a garage style store with counter seating

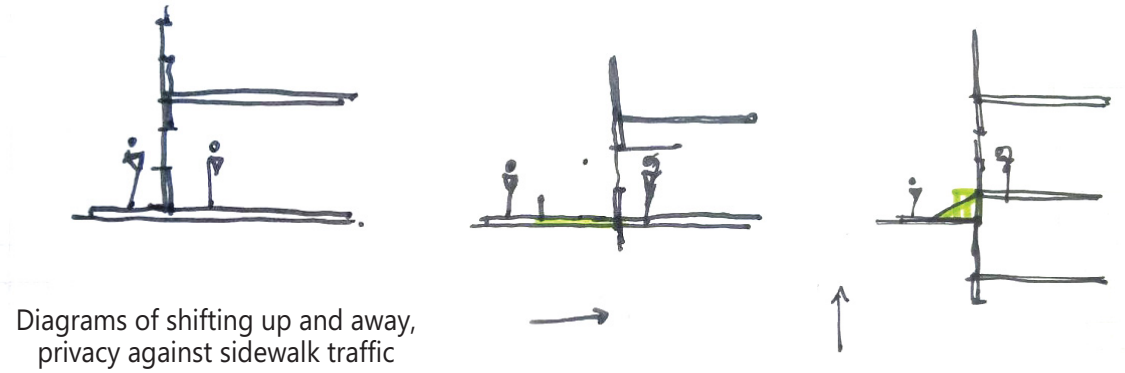
This parking lot has a 4-metre change in elevation from the north to south end. Using the slope creates opportunities for vertical separation between the units. This also allows for the elevation of indoor spaces from onlookers on the sidewalks and other outdoor spaces. Working with the landscape also allows for variation through the site and provides different spaces when creating activity in the shared courtyard spaces. Other types of shifting, provide other opportunities as well. Notching spaces on the front face of the units provides covered entrances and balcony spaces. At the back of the building, each floor steps back to create functional decks that connect to living/ kitchen spaces and look out over the courtyard. This also helps to reduce the shadows to units below. This stepping pattern allows for larger units, those accommodating larger families to be on the ground level with immediate access to the shared yard and activities in them. That reduces the need for children to navigate access cores and key entry systems to play freely with others. The units then get smaller as they move upwards, potentially separating those people a little more from the action.

There are also a variety of unit types being used create diversity among the community and provide different housing options. On the residential street sides there is a mix of flats, accessed by a stair core, and more traditional attached multi-level houses.

Diagrammatic plans of each floor showing unit type and layout.

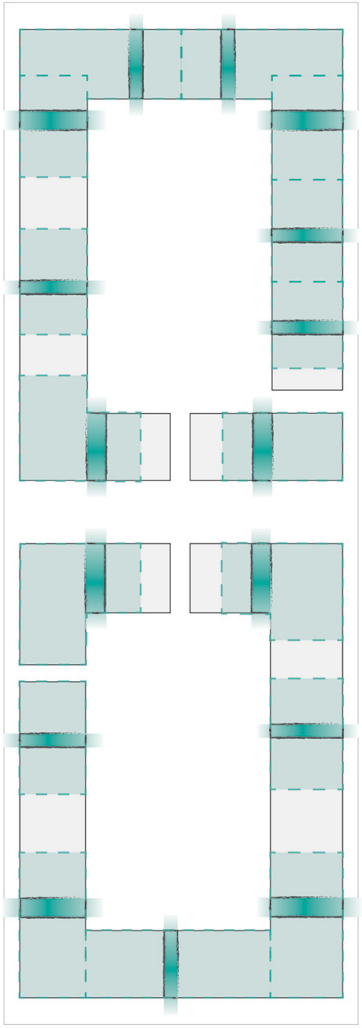
The residential units on the main street ends, are being considered an apartment style and are located above the ground floor retail. These units are accessed by either stairs or elevators. The smaller cores provide access to the units on either side, for up to three floors of flats – maximum six units. The larger cores, that include both stairs and an elevator, provide access to some flats and apartment style units. They provide direct and indirect access to those units. Some of the units are connected to the cores by a shared outdoor corridor type spaces. All of these access points have been oversized to create opportunities for personalization or extension of the hallways/landings as living spaces and parts of the unit. The glass end walls provide light and create a greenhouse type space to enjoy all year round.

Key Elements: Building notches on street face, full step-backs on court face, stepping down with landscape, vertical, horizontal and lateral shifts, variety of unit types, layering of outdoor patio spaces, sunken and raised areas, oversized access cores

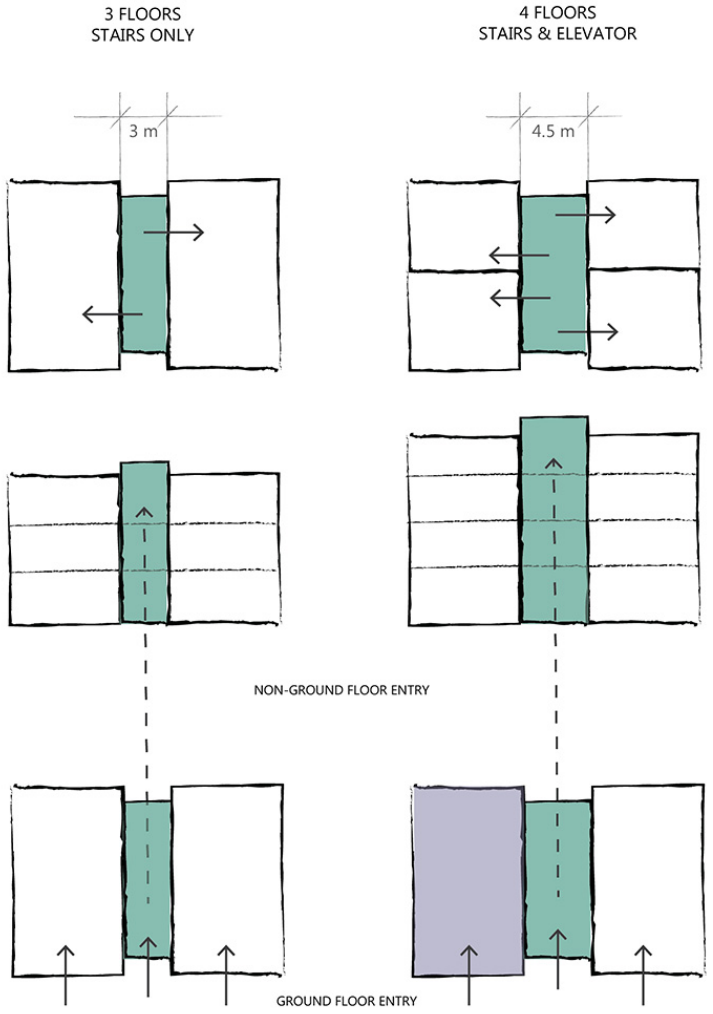


Diagrams of shifting up and away, privacy against sidewalk traffic

ACCESS CORES



Diagrammatic map of access core loctations and the adjacent units they serve



Diagrams of the two core types

Unit Plan - 1 bedroom unit on the second floor, fronting on the pedestrian path

UNIT (Details/Layout):

To provide connection to both the street and shared courtyard space, almost all of the units are through units, except for a few in the corners. This then allows the public interior spaces (kitchen/living) to look out on to the courtyard and the private spaces (bedroom) to look out to the street. The orientation of the kitchen and living spaces are then able to the connect to the courtyard spaces, through a series of decks or semi-private outdoor spaces that transitions the private dwelling to the public dwelling. The use of green vegetative elements creates privacy and shading.

To balance the privacy and connection from the interior private dwelling and outside areas, especially in areas where people are likely to be at the same level walking by, the size and location of windows will be chosen accordingly. The variety of windows can be used to create different levels of privacy and openness. Smaller head height windows allow for a greater level of privacy while still allowing some light and ventilation. The counter and bench height windows provide more light and ventilation, but less privacy. Sitting on that bench or working at that counter height window one can feel more connected with the outside, especially when those elements continue through to the outside by way of outdoor kitchen counters or wrap around benches. Full height windows and doors really

expose those rooms but make it available to completely open the interior spaces to the interior.

Key Elements: Through units and access cores, private rooms (bedrooms) to face street, public rooms (kitchen, living) to face courtyard, green wall screen elements, activity/situation specific windows

(Left) Unit Plan - 2 bedroom unit on the third floor, fronting on the Queen St, accessed by covered open air corridor.

(Down) Unit Plan - 4 bedroom unit on the first floor, fronting on the east side of the lot off Dalhousie St.

Unit Plans - 2 level (second floor, left) 3 bedroom unit on the ground floor, fronting on the pedestrian pathway.

Unit Plan - 2 bedroom unit on the ground floor

Photograph of the proposed site, looking north east to the corner of Mutual and Shuter Streets.

An rendered image of the proposed project, same view as the above photo.

CHAPTER 6: CONCLUSION

To conclude, urban housing has and continues to be a very complex topic that many cities are managing. With so many competing factors, finding a single solution is very difficult. Changing cultures, values and technology are some of the variables that continue to change and shapes what housing looks like now and in the future.

The elements used in this thesis and the proposed project include some important opportunities to guide the design of urban housing options for the City of Toronto. While Toronto is definitely in need of new life in downtown living, it can also be applied to many cities looking to find alternatives to house their growing populations.

The principles highlighted in this project, propose alternatives to traditional urban housing models – mainly high-rise condos and apartment buildings. It describes density in a different way, a way that facilitates connectivity to the ground and to one another making it not only possible but enjoyable. The project attempts to illustrate that the greater variety possible provides more than just the one and two bedroom units that are dominant in most of the towers being built, but also allows people to decide where they want to live, not because they are limited in their options but because they actually have a choice. It shows

that a low-rise solution can be created within the right urban context and that context is an important aspect that should be considered. The resulting communities will not only be connected with their surroundings but the people in them can also connect, providing a supportive network in their backyard.

While the evolution of design strayed away from a specific solution for affordable housing or the use of prefabricated materials, the elements and principles can be used to define all types of urban dwellings. They speak more to the spatial relationships and organization of elements which can be modular components or traditional construction methods. A method that pays attention to both the spaces created and spaces resulting. The creation of a landscape, ensuring flow and connection from space to space as if in a series and allows ease of transition. Well-connected spaces are more likely to be used, especially if those spaces are shared. This thesis proposes a different way of living in the urban context by bringing together various elements and concepts from other areas to create a positive urban residential landscape.

Reflection

Looking back on this process and the evolution of this thesis, its direction and focus has changed. While still related to the original themes, the final proposal has arrived at a wide-ranging solution to some general social issues in all types of urban housing. I reflected back on how the concepts shifted away from pre-fab and affordable housing, drawing out the relationships between several topics that were relevant to the complex nature of urban housing as a whole. Those topics were boiled down to two separate themes having to do with 'quality'. Originally, I attempted to address both of those issues of quality in one thesis. In the diagram below, I have tried to illustrate the process in which the focus shifted from 'Pre-Fab Communities' to 'Landscape Housing'

I set out to create a value-added system applied to prefabricated/modular technology, where the intent was to create 'community' through the organisation and in between spaces using prefab/modular solutions. However, as the thesis evolved, the significance of modular and prefab began to fade as an essential element to achieve the desired outcome. It was no longer driving the design although I continued to include those aspects in the project throughout the process as a way of keeping with the original intent. Prefab remains a cost-efficient method of providing higher quality buildings that can

and should be used in the low income and social housing markets. The opportunities for easier maintenance, longer lasting buildings that have potential for variation or customization can provide a more sustainable system than the current models. Modular systems could also be a valuable solution in more temporary communities to house people while repairs are being done or during the construction of new communities. These and many other issues I envisioned solving with those systems are, I believe, still important and possible but this thesis directed its focus to how you can create better quality, community living environments in the city.

The development of higher quality buildings became more a of a technical solution that would have involved more attention to the design and construction of a building system. The original direction and intent of my thesis was to find an organizational framework in which prefab would be used to create a better sense of community. Removing the pre-fabricated/modular components of the thesis made little impact on the results of design project and principles, many of which stayed the same. The thesis evolution opened up the opportunity to include other types of housing and construction methods while continuing to strive for better residential communities and a quality of environment that is supportive and connected to its surroundings.

As a result of the shift in focus, it leaves some area to redefine what the thesis question has become. While the two ideas of quality have been constant themes throughout the design process, the quality of the living environment from a social and relationship place seems to dominate the principles of this thesis. While the resultant principles can and should be used in affordable low income and social housing situations, they apply to all types of housing. These principles hold opportunities to create better suburbs and adapt existing parking lots or residential areas to be more complete and connected. Less dependence on vehicle use will result in open green spaces that wouldn't traditionally be found in most urban housing. A new or updated question would hope to direct the focus immediately at the goal of spatial relationships and connectivity to create better communities.

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