

URBAN IVY

FINAL PRESENTATION BOARDS

WHAT'S AT STAKE

BUILDING BREAKDOWN

PROJECT 3 | URBAN IVY | THE AGGREGATE

PROJECT 2 | NAKED AND FOLDED | THE DWELLING UNIT

PROJECT 1 | PERMEATE | THE SYSTEM

CONCLUDING REMARKS

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EVDA 582
Winter 2018
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University of Calgary
Faculty of Environmental Design

Final Board Layout

Presenting the final development of Studio 2 through projects 1, 2 and 3.

Significant lessons were learned here as the massive amount of information, differing representational styles, and conflicting colour schemes all conspired to confuse the project and make understanding the outcome very difficult. Working at such a large board size, combined with a loss of perspective on the project led to a failure in these final steps of the project.

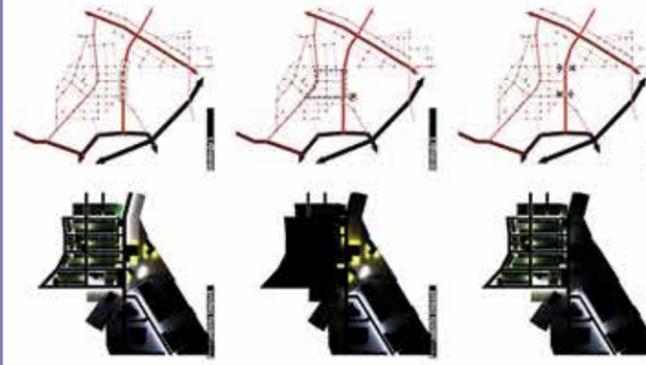
Urban

Studio 2 | Soft Systems + Flexible Dwellings
University of Calgary
M.Arch FY | April 2018
R. Ricupero

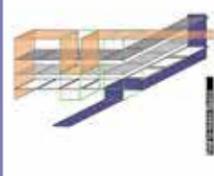
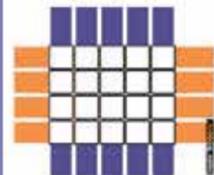
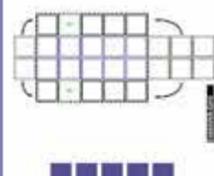
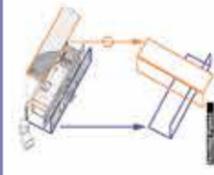
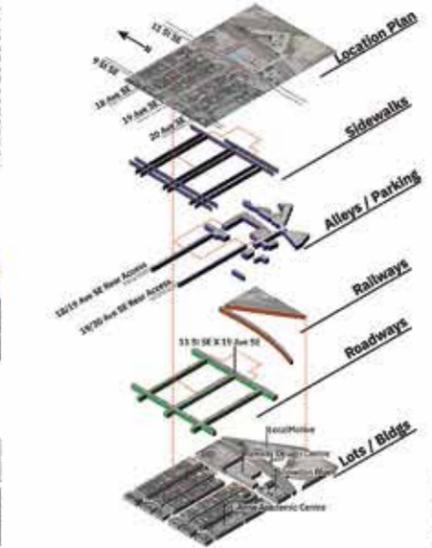


Permeability, dwelling, and connection in Ramsay

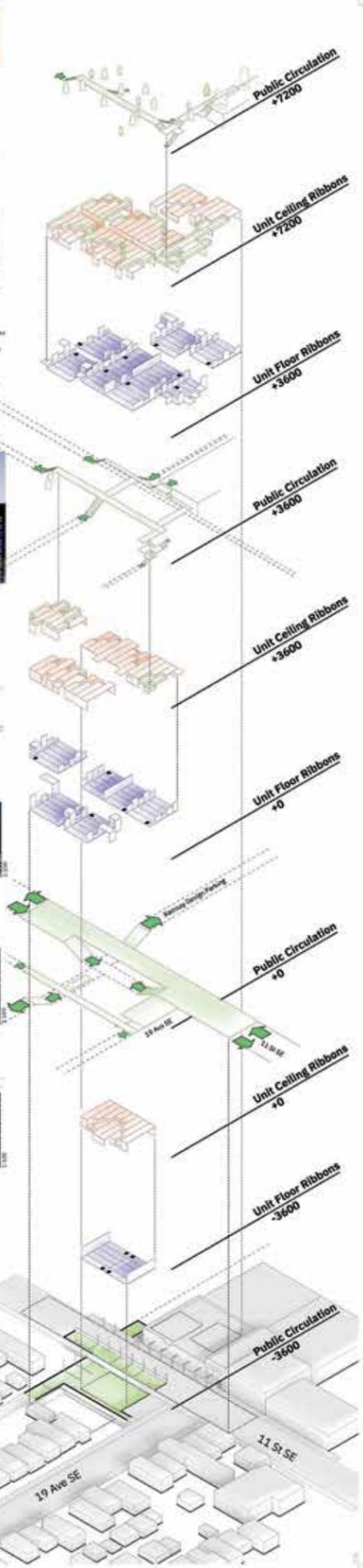
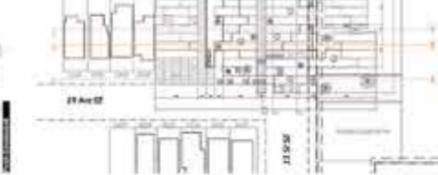
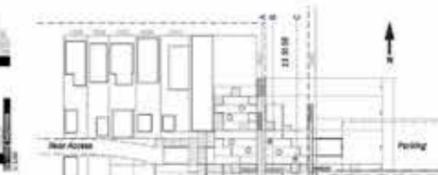
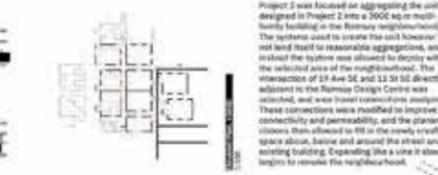
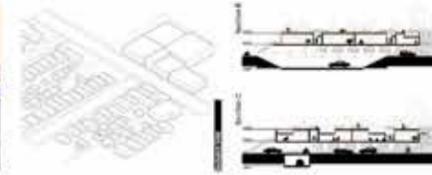
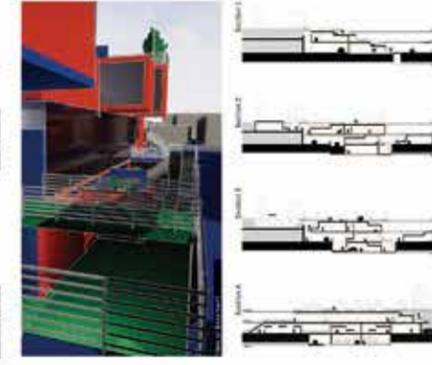
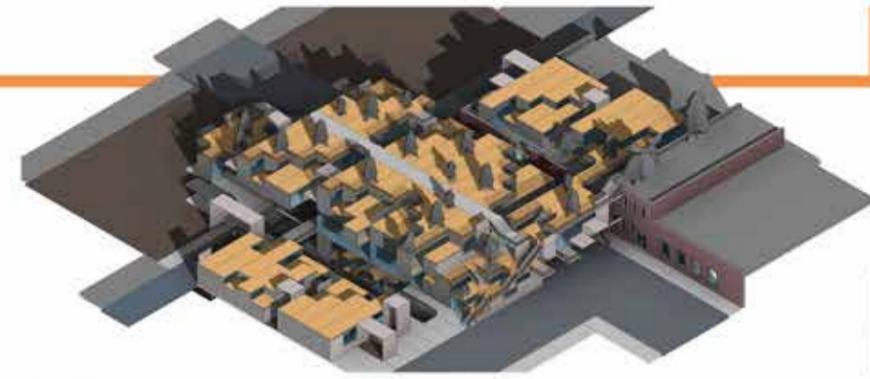
The ground and ceiling planes of the Naked House by Shigeru Ban inform an organic system of growth throughout the Ramsay neighbourhood of Calgary, AB. Through experimentation with neighbourhood permeability a new aggregation of dwelling units for the 21st century emerges. Erupting in, around and through the existing fabric of Ramsay planar, ribbons operating perpendicular to each other make connections, drive permeability and create dwellings.



Project 1 explored soft systems operating through and around the Ramsay neighbourhood. The goal was to identify one of these soft systems, discover its logic and effects, then test how the neighbourhood changes when the system is modified artificially, or allowed to respond to other stimuli. In this exploration, the idea of neighbourhood permeability was defined as the ability for a motorist to transform into a pedestrian. Three strategies to test the system were developed: increasing permeability along the 11 St SE corridor, driving permeability inside the residential neighbourhood adjacent to 11 St SE, and connecting all permeability on or adjacent to 11 St SE. From this perspective scenarios emerged what this neighbourhood may become.



Project 2 used a precedent house to explore neighbourhood dwelling units. The precedent used here was the Naked House, by Shigeru Ban. The expression of the house was defined by its open, flexible interior, strong floor & ceiling planes, and the implied grid of spaces created with the movable lattice rooms. Modifying this to explore a new model for housing the planar were rotated 90 degrees and grid made explicit. By doing this, new floor and ceiling planar "ribbons" could be created, which when folded defined new spaces in which someone could live. This created both opportunities and challenges, but addresses the smaller and deeper, making space, storage, permeability and connectivity with the neighbourhood important for the 21st century.



What's at Stake

Urban Ivy explored a systemic approach to development of a 3,000 sq.m multi-family building.

Starting from the concepts of permeability, it sought to not only provide the necessary dwelling unit space, but to redefine the urban fabric of Ramsay in a way that changed permeability, connection and access.

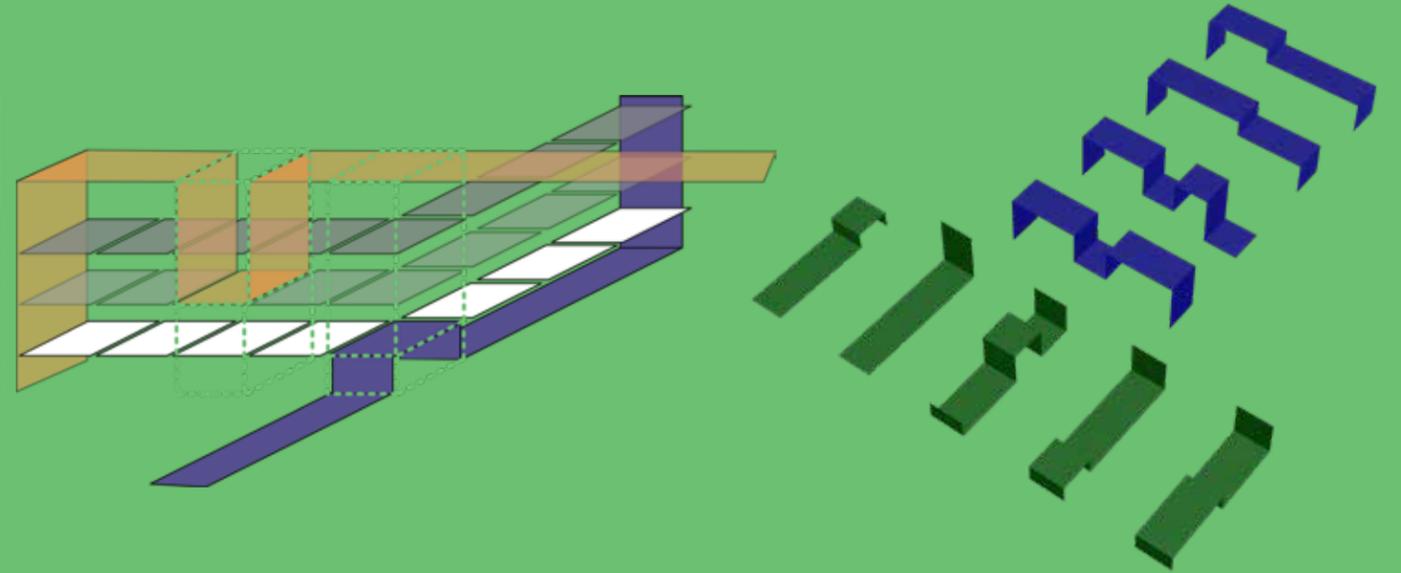
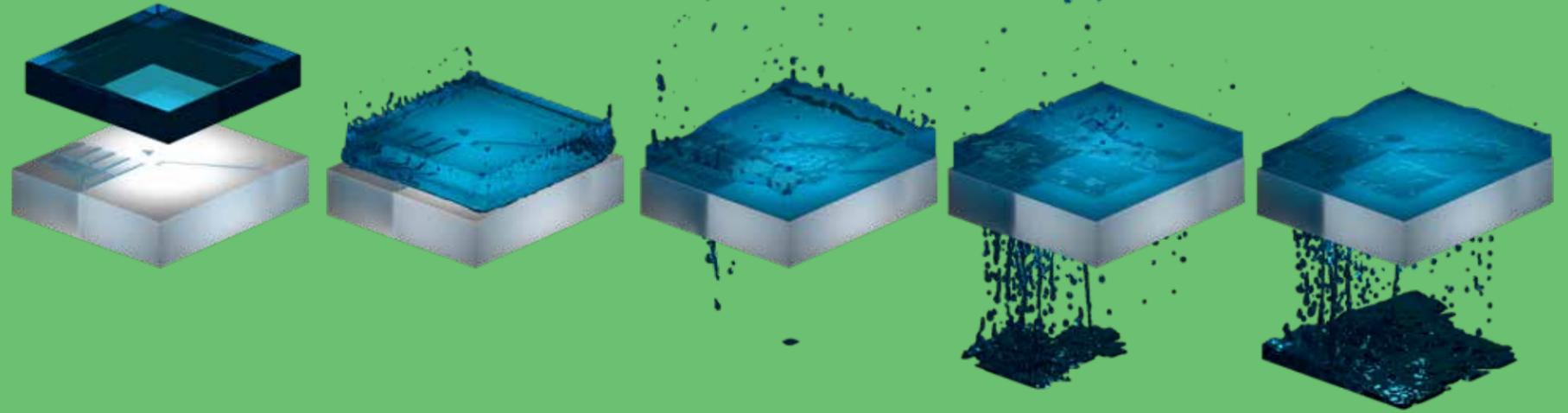
The initial thoughts of how one travels by car, foot and bicycle through the space, and how the space itself allowed or denied permeability, lead to the creation of a scenario that defined this project from its earliest stages.

Using the language of strong planar travel paths, orthogonal development and the existing grid of urban fabric developed in Project 1, the possibilities of a new dwelling unit were explored in Project 2. With the Naked House as a precedent, the unit grid and planar elements were further strengthened, leading to a system of planar 'ribbons' becoming the primary space generators.

This was taken into Project 3 where the neighbourhood connections and travel paths were explored and manipulated, to create a framework for the deployment of these planar ribbons and the generation of an aggregate dwelling unit for multiple families.

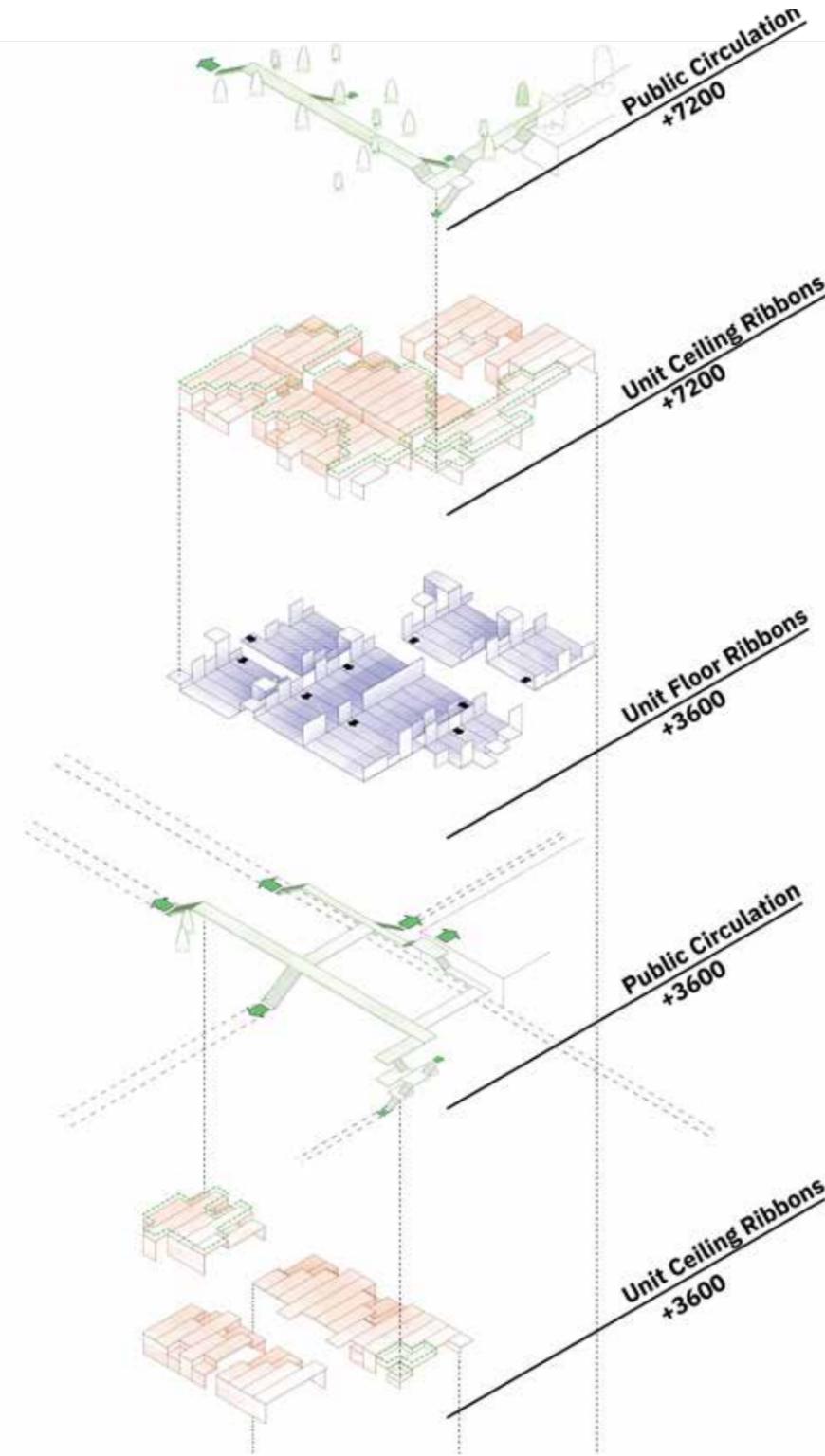
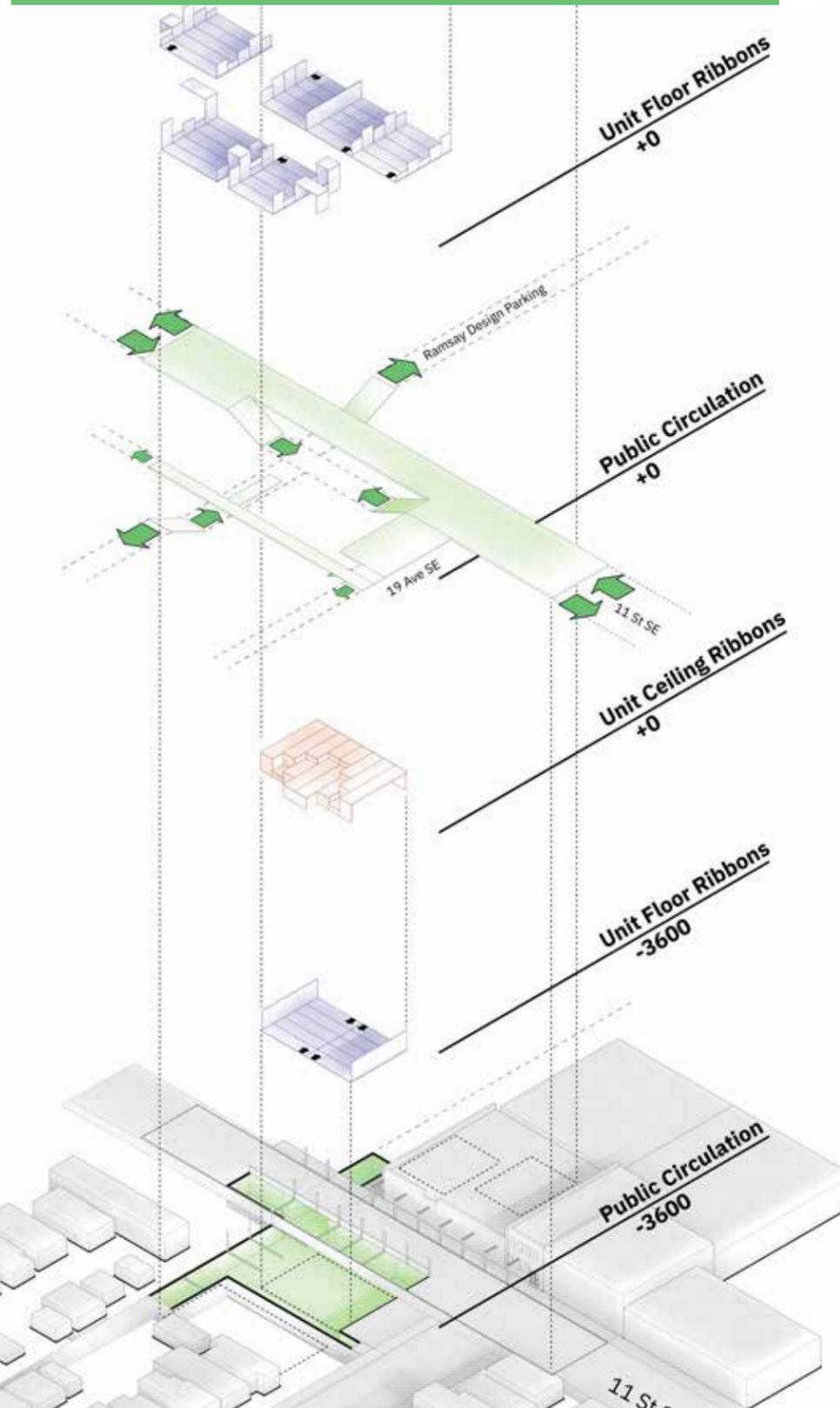
The question I explored was how defined could this system be and still produce a viable project? Was it possible to limit space development to only orthogonal 'ribbons'? Could the travel paths and connection points of Ramsay be sufficient enough to allow deployment of trans-formative system?

Ultimately there comes a point when a purely systematic approach is not viable, and a guiding hand must be brought in.

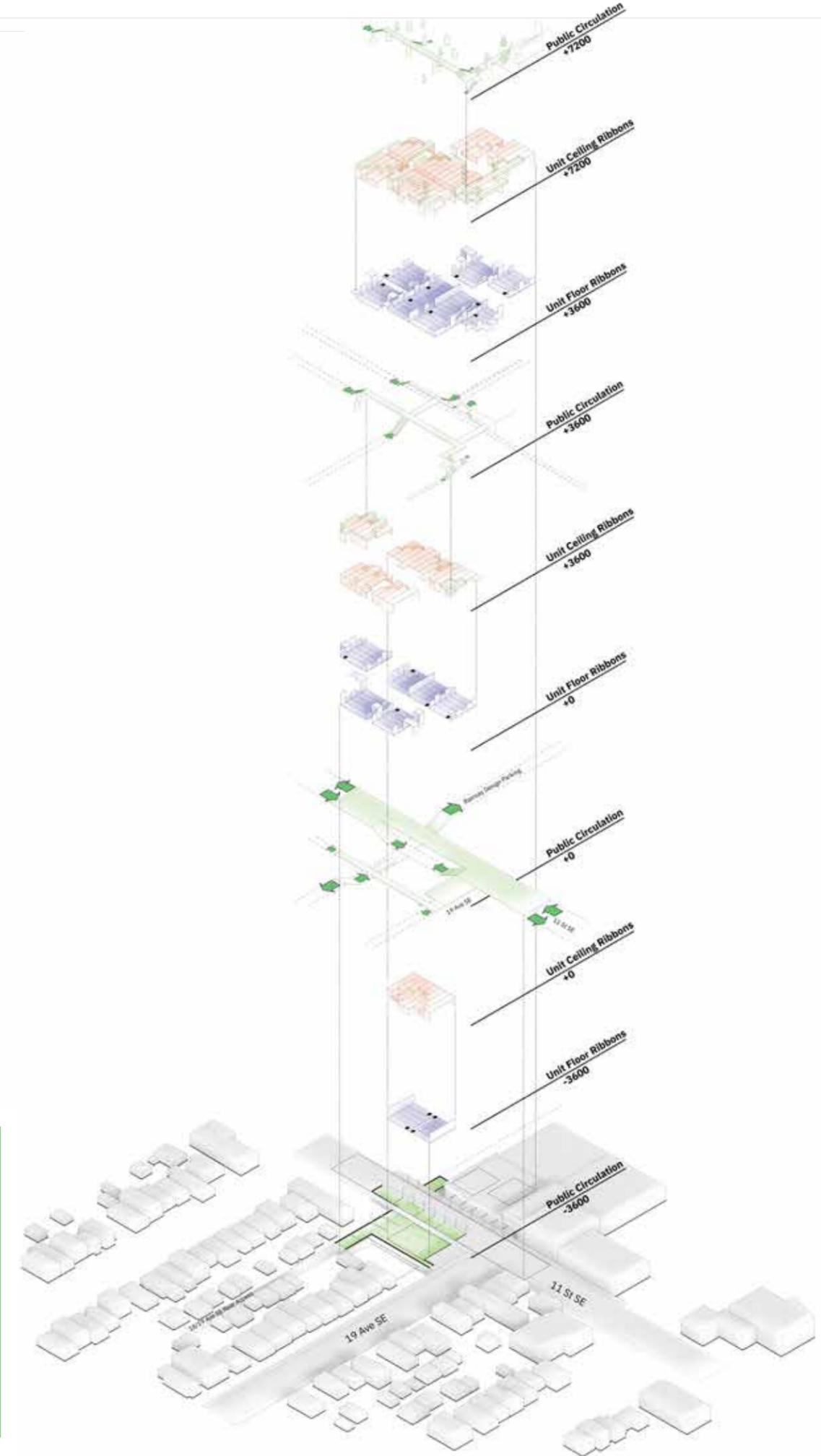


Primary Circulations and Unit Development

An exploded view of the entire aggregation, differentiating the circulation networks (green), EW ceiling planar ribbons (orange) and NS floor planar ribbons (blue).



The entire aggregation uses a systematized approach. The circulation networks were defined first based on the selected site. This framework then allowed the establishment of a unit grid which was used for the deployment of the planar ribbons used to define the dwelling unit in Project 2. This allowed for a variety of units suited to their location in the frame, as well as ensuring connection to existing travel paths on site.



Urban

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Ivy

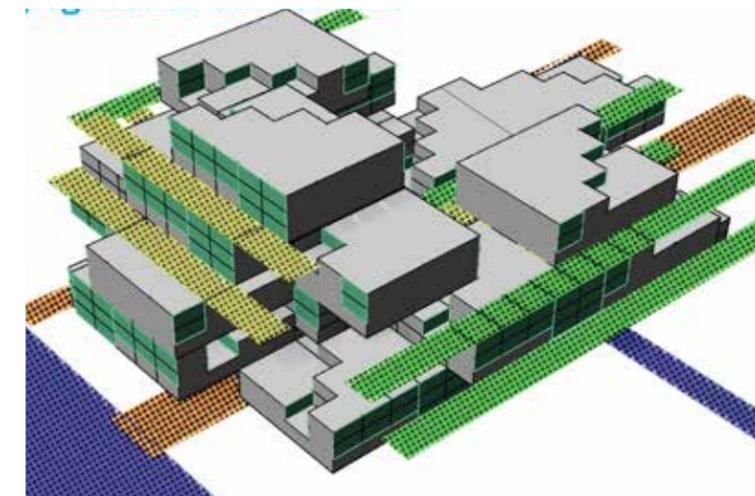
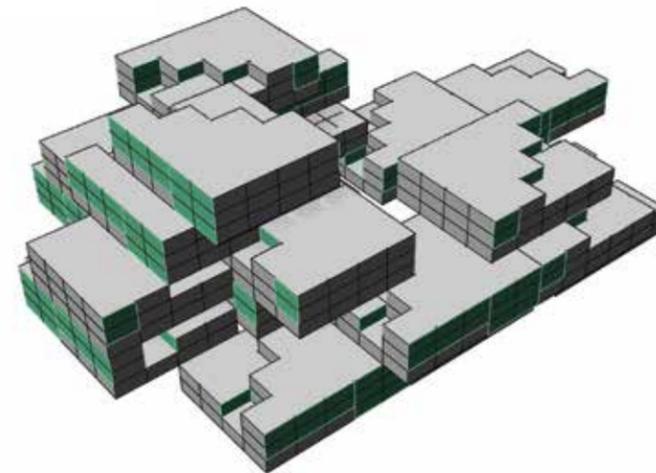
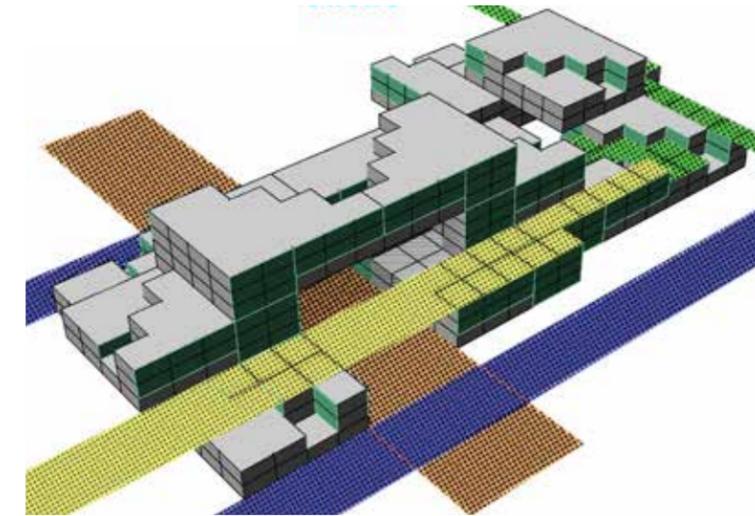
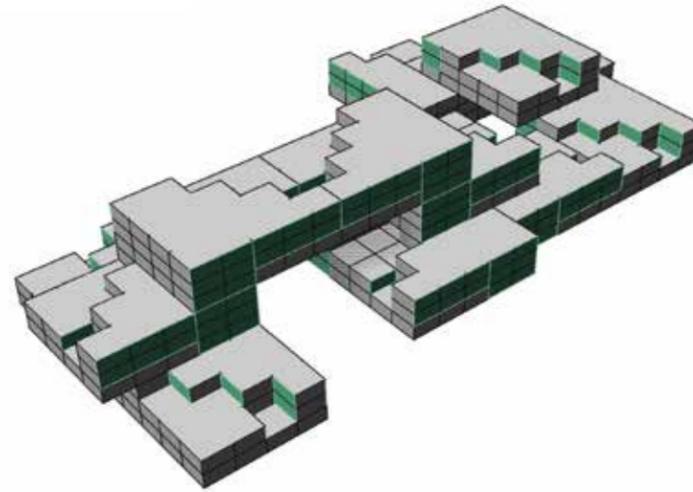
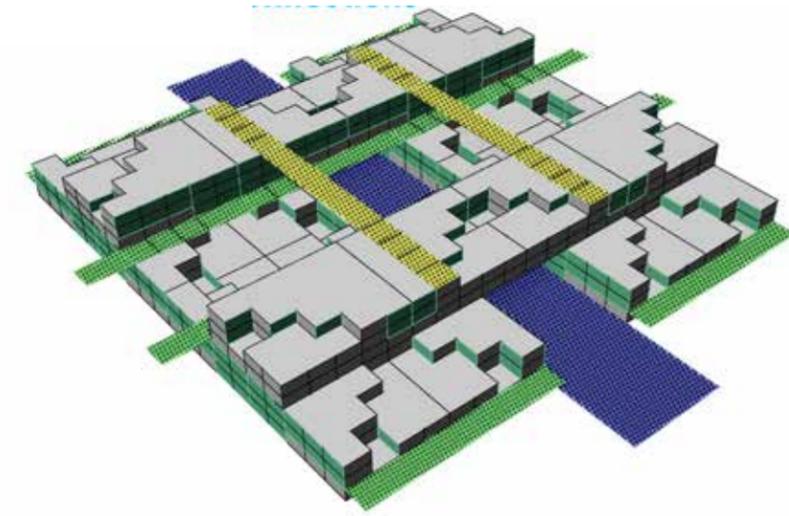
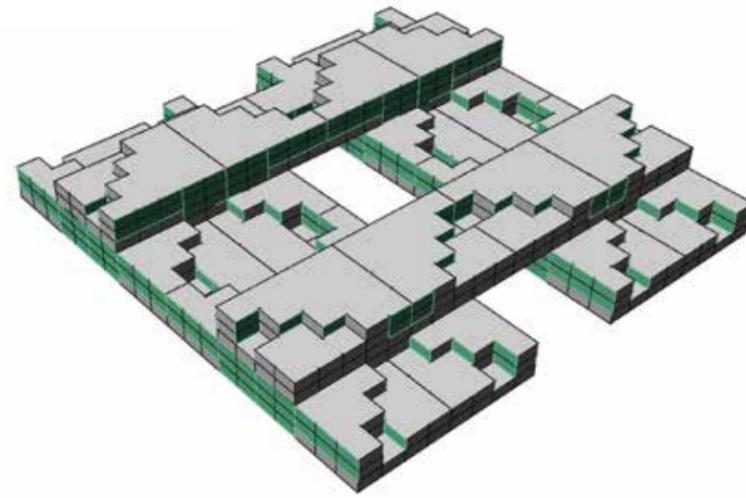
Permeability, dwelling, and connection in Ramsay

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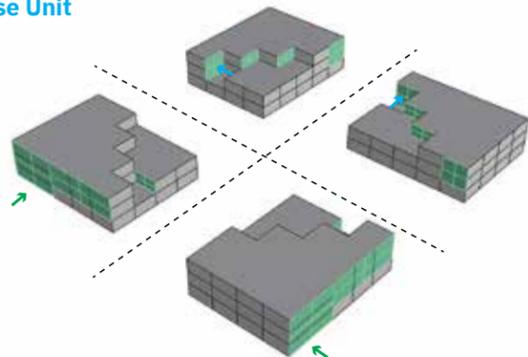
Initial Aggregation

Initial aggregation strategies took the dwelling unit developed in project 2, and attempted to combine them in a way that allowed for reliable access to each unit, and the development of connections to the larger neighbourhood. The base unit was set, with no variation in it. Instead it was treated as a block with which the aggregate building would be defined.

It was at this point however that it was considered that development of connections and paths without focusing on the neighbourhood itself was pointless. These aggregation strategies were abandoned. With it the ideas of using a single base unit as a block, and a variable unit adopted.

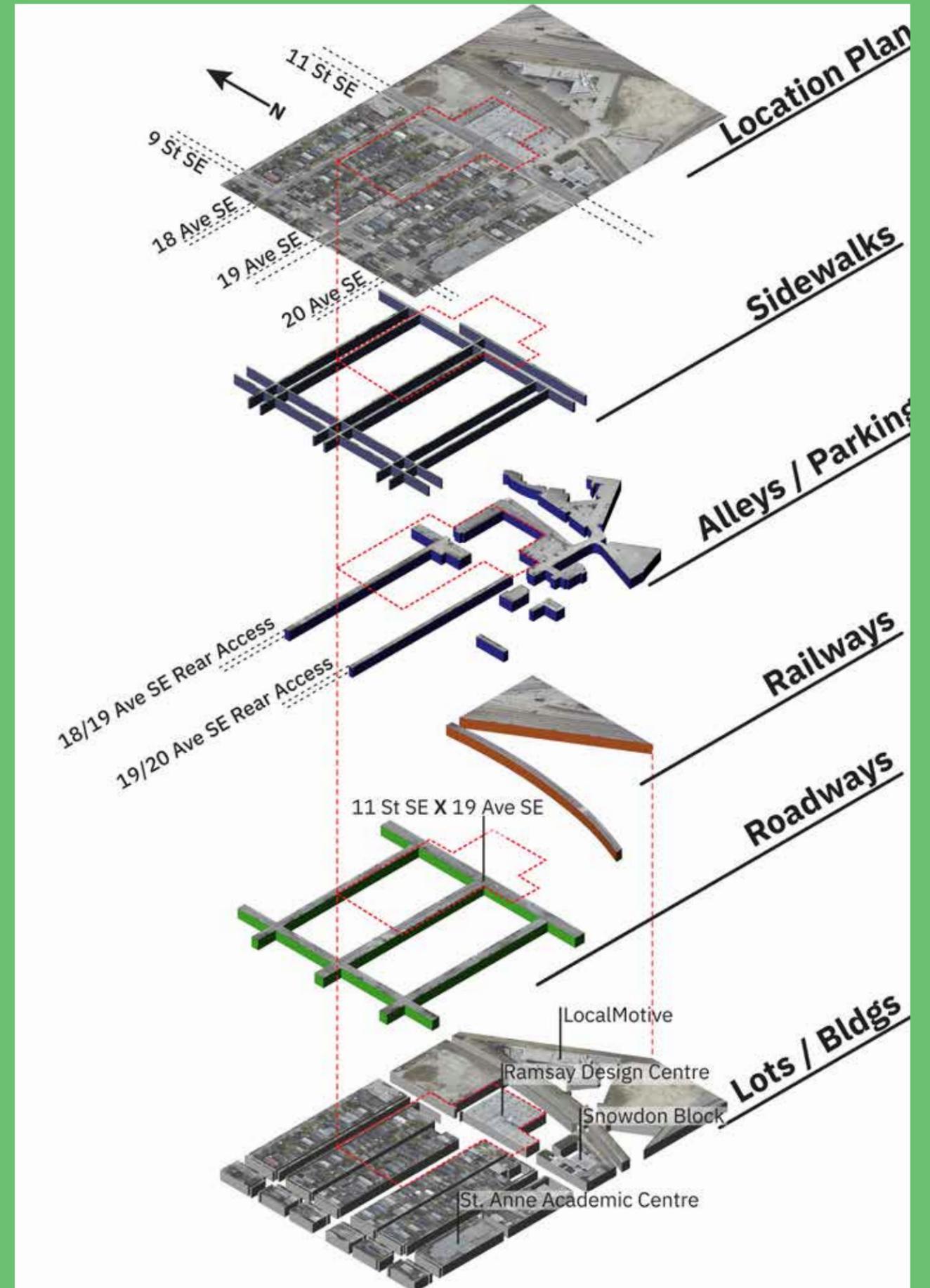


Base Unit



Site Selection

Instead of aggregating units, then finding connections and travel paths, the reverse was explored. An engaging site was selected, and travel paths explored. These could be separated out, and lead to a method of creating space which defined the aggregation second. Without using a set unit, the systems used to define the unit in Project 2 could then be deployed within the framework of connections and travel paths.



Site Aggregation Strategy

Forgoing traditional aggregation strategies explored earlier, the new strategy started with the selected site itself. Having identified various travel and connection paths, the goal was to modify them and create a potential aggregation area.

A) 11 St SE was sliced down its centre.

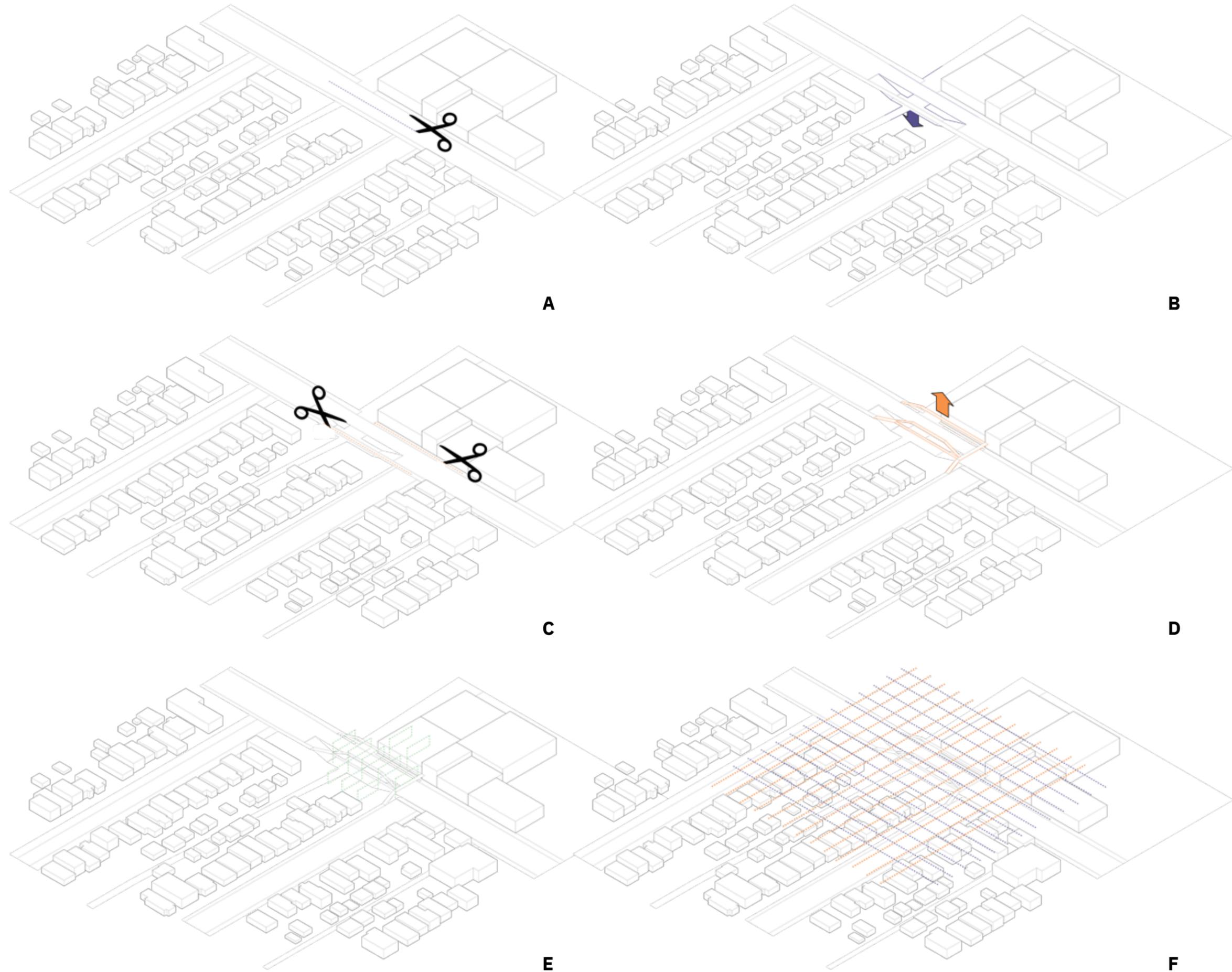
B) One side of the sliced street was dropped, bringing with it the alley access and connection to the Ramsay Design Centre parking lot.

C) The sidewalks either side of the road were sliced down their centres.

D) These sidewalks were then lofted upward, making new connections over the street.

E) These modifications created a usable space above 11 St SE, on top of the Design Centre, and in a stack adjacent to 11 St SE.

F) With this new possible space, the unit grid was overlaid, and the planar ribbons of the dwelling unit system could then be threaded through to develop units.





Early, Seed propagation



3,000 sq.m propagation



Neighbourhood scale propagation

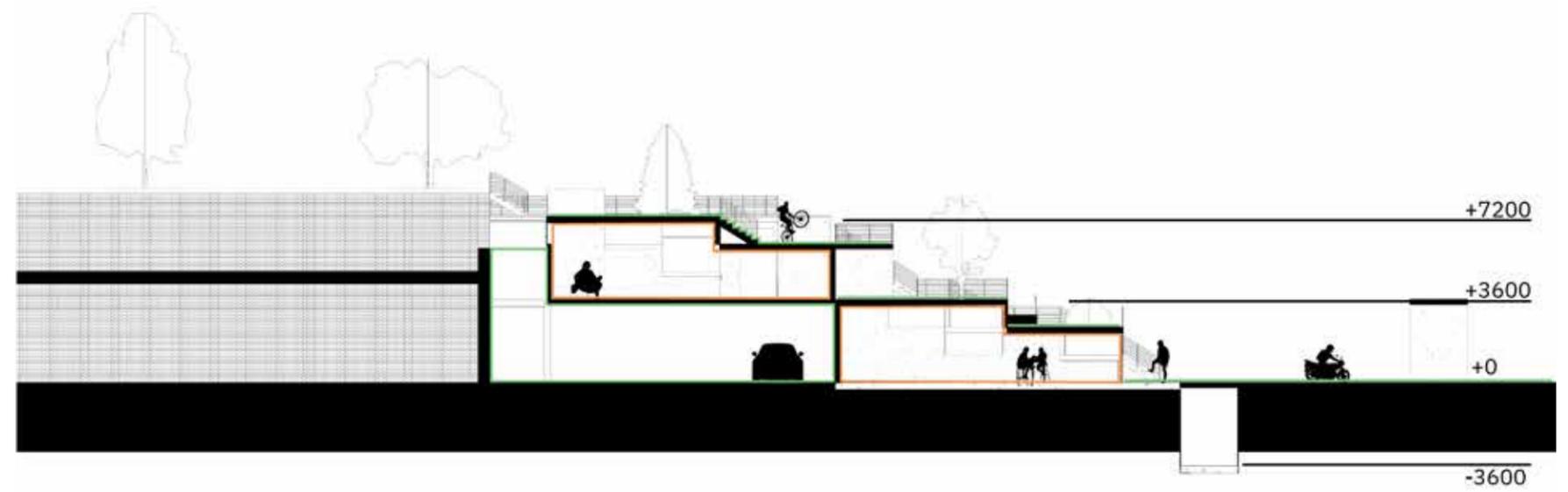
Propagation of Aggregation System

Three possible time-lines of propagation of the aggregation system. An early, seed development of the primary stack immediately west of 11 St SE across from the Ramsay Design Centre. A mid-level ~3,000 sq.m aggregation (which is explored in this project), and a proposed further propagation as it begins to take over more of the neighbourhood.

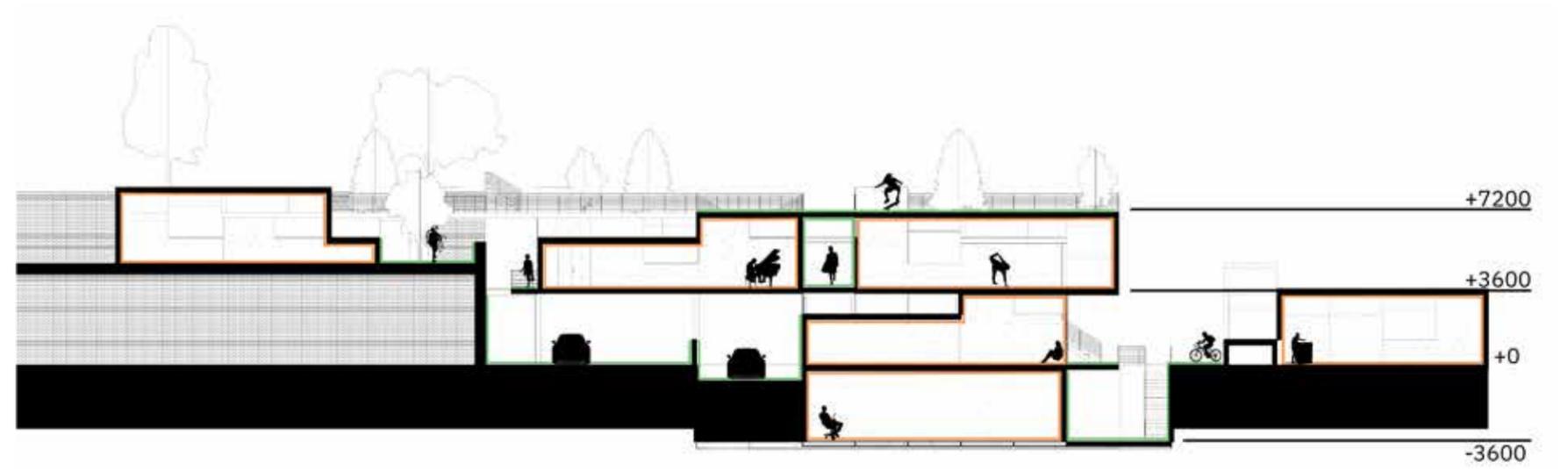
East-West Sections (1:200)

Sections drawn along the east-west direction through the aggregation. Showing various movements through public spaces, as well as the unit private spaces.

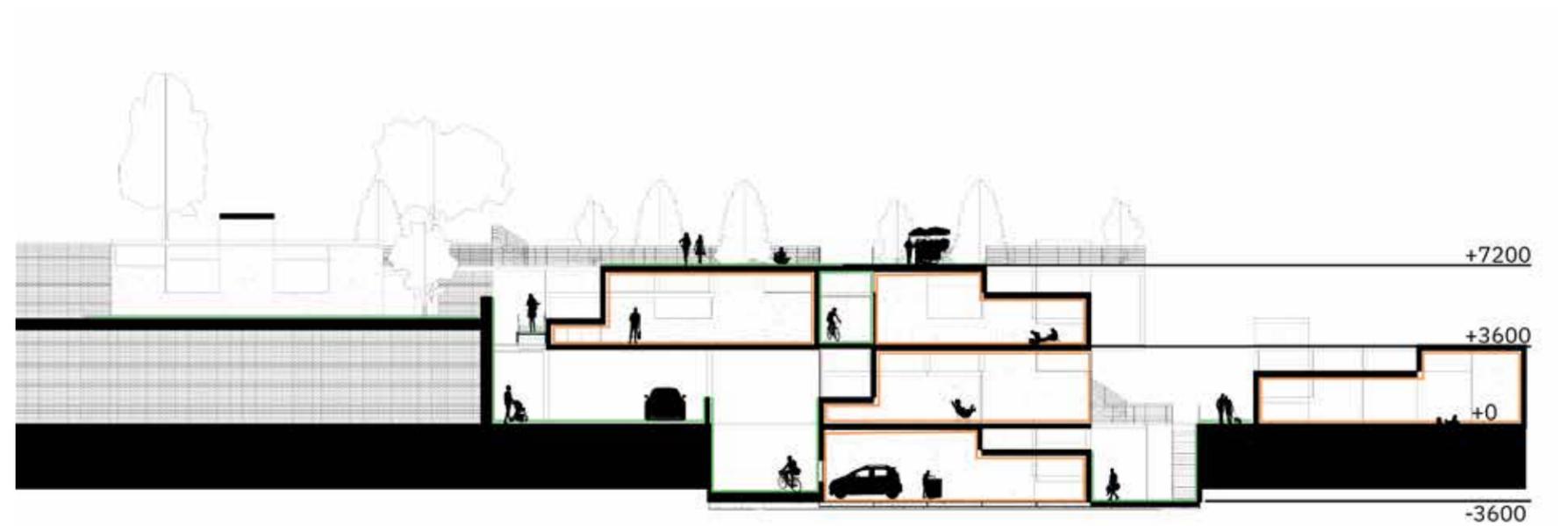
Section 1



Section 5



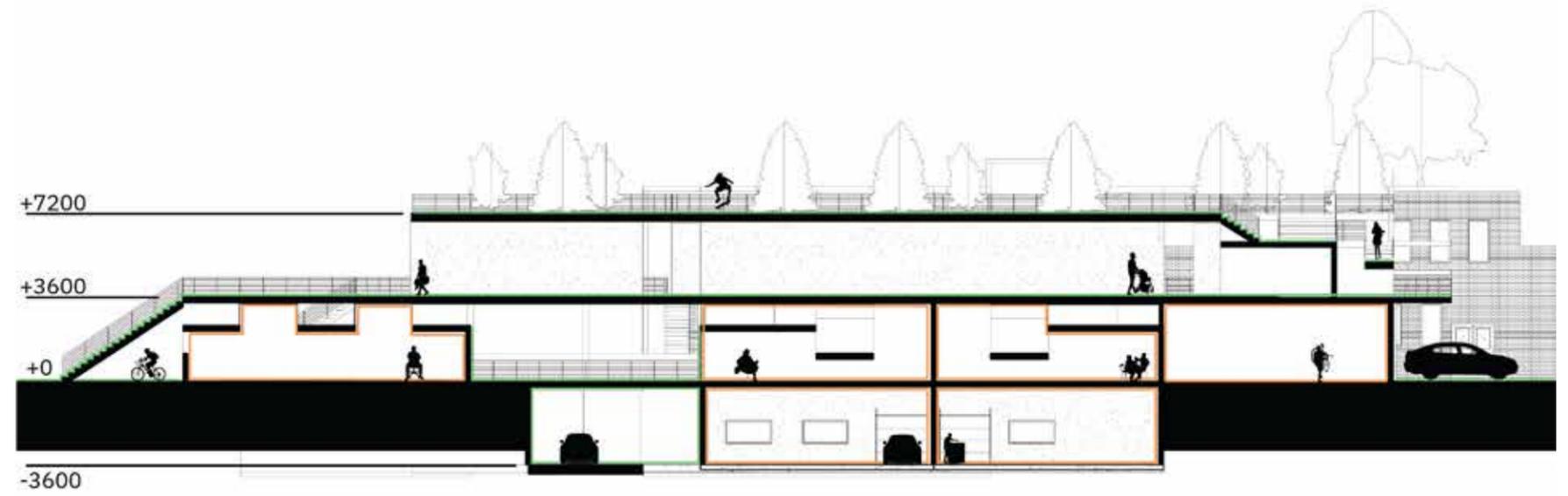
Section 7



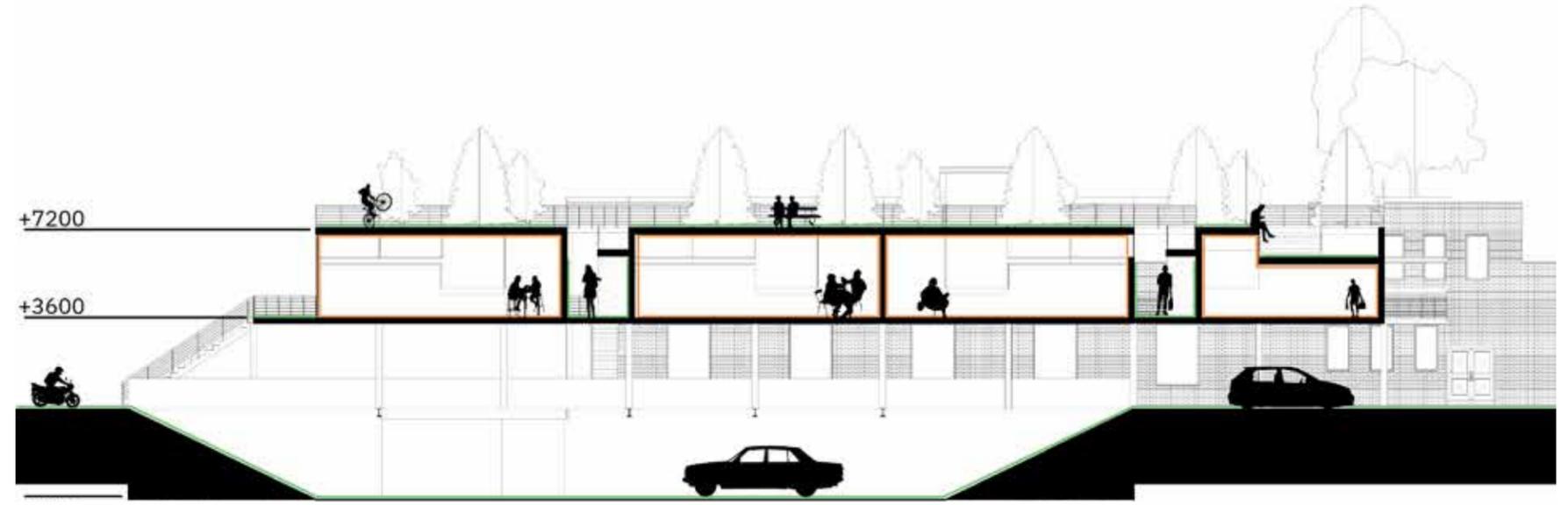
North-South Sections (1:200)

Sections drawn along the north-south direction through the aggregation. Showing various movements through public spaces, as well as the unit private spaces.

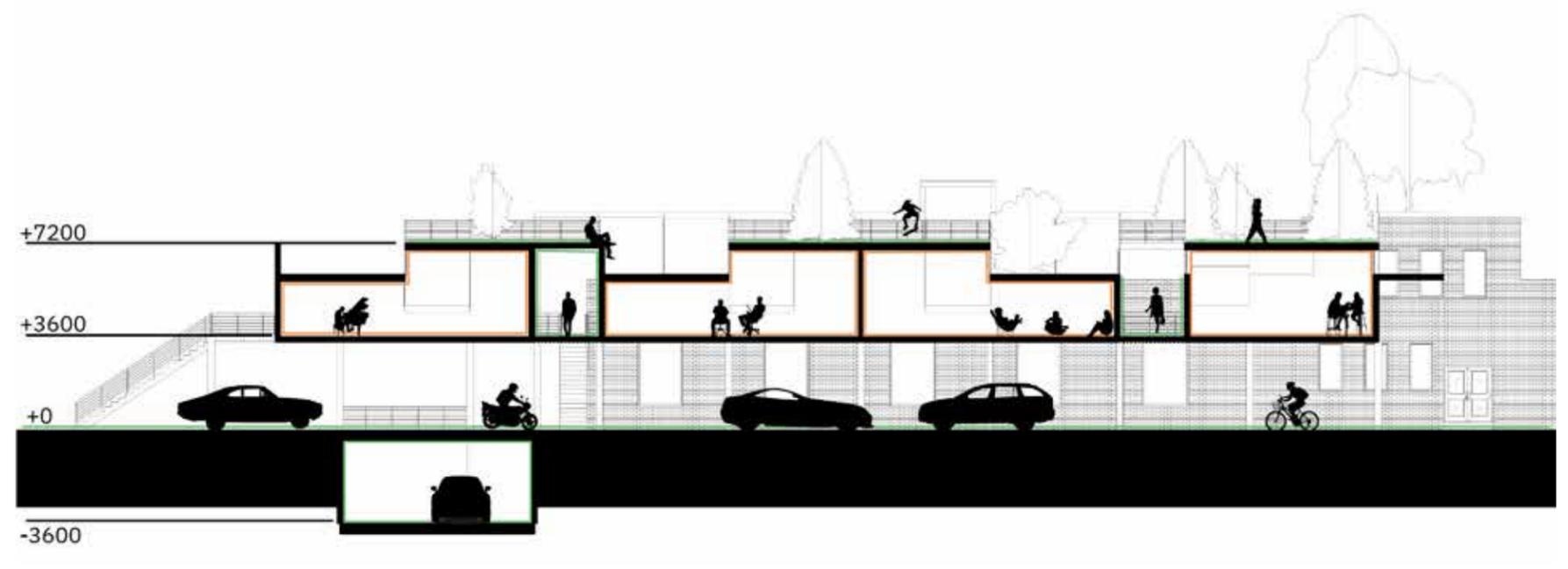
Section A



Section B

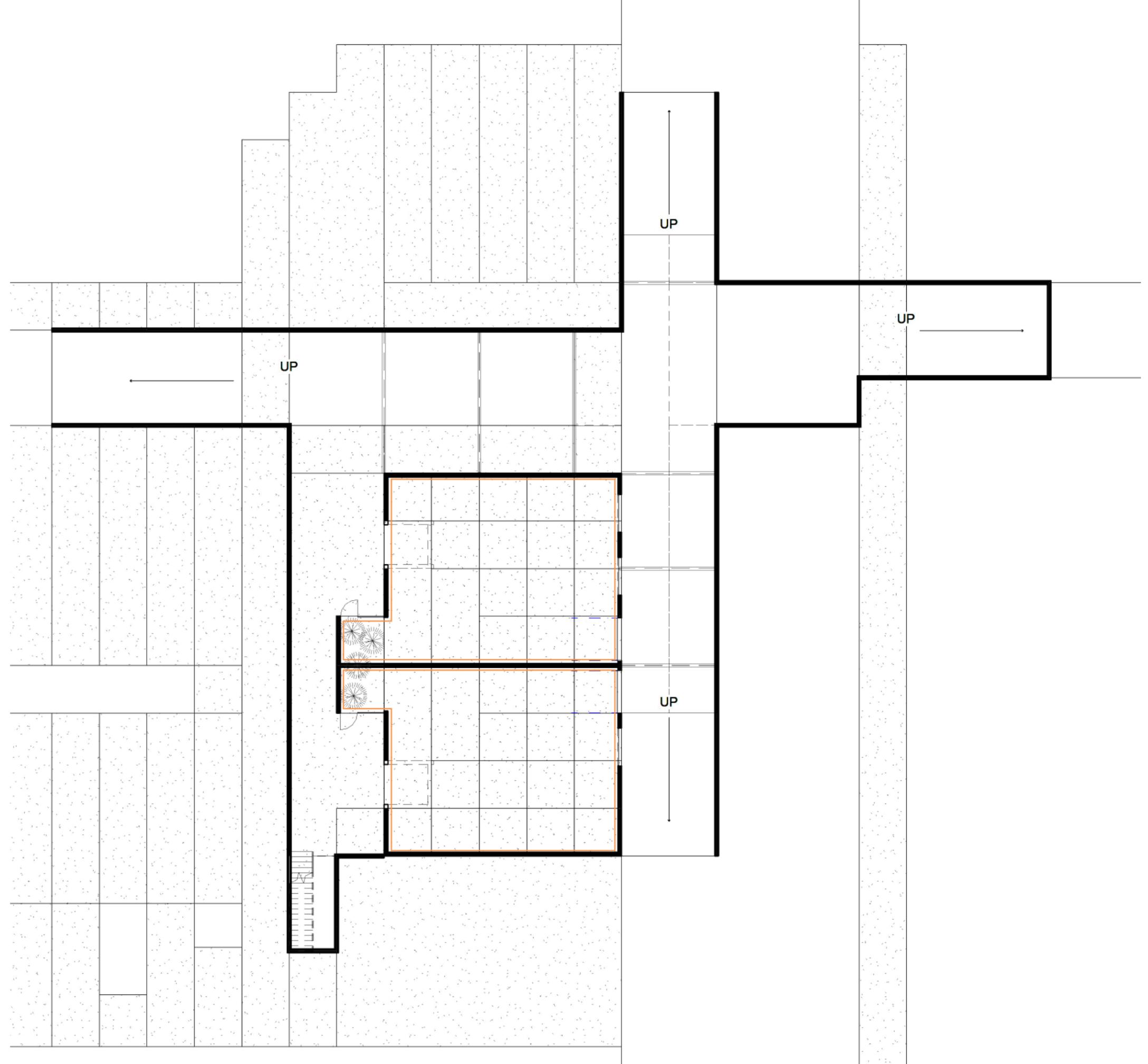


Section C



Lower Level Plan (-3600, 1:200)

Plan of the level, with multiple units directly connected to both the dropped segment of 11 St SE and new pedestrian access.



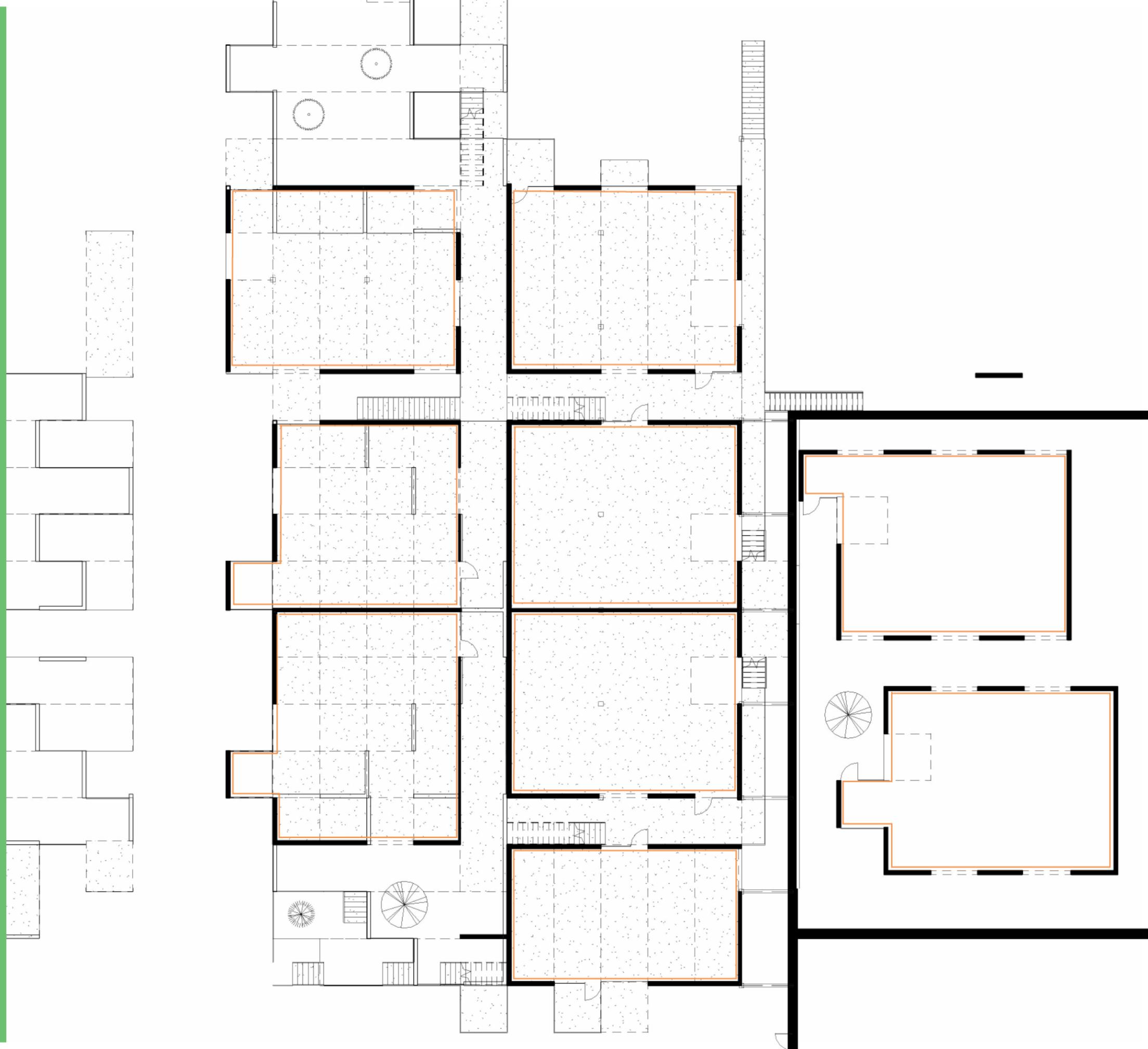
Ground Level Plan (+0, 1:200)

Plan of the ground floor level, with both discrete units developed away from the main stack, and ground level units in the stack accessed from a variety of pedestrian paths.



Upper Level Plan (+3600, 1:200)

Plan of the upper level of the aggregation, with units in the main stack, as well as suspended over 11 St SE, and developed on top of the Ramsay Design Centre roof, with a variety of pedestrian access routes.



General View Renders

Renderings exploring the aggregation from a human, and elevated point of view.

The first, the view of a driver traveling south of 11 St SE about to travel under the aggregation. It highlights the separated sidewalk connections over the building, as well as the dropped roadway connection to the cross street and lower units.

A second view, from an elevated vantage point southwest of the aggregation shows the general form and its interaction with the road and Ramsay Design Centre. It redefines the amount of space utilized by buildings in the area, and the relationship it has with the roadways.

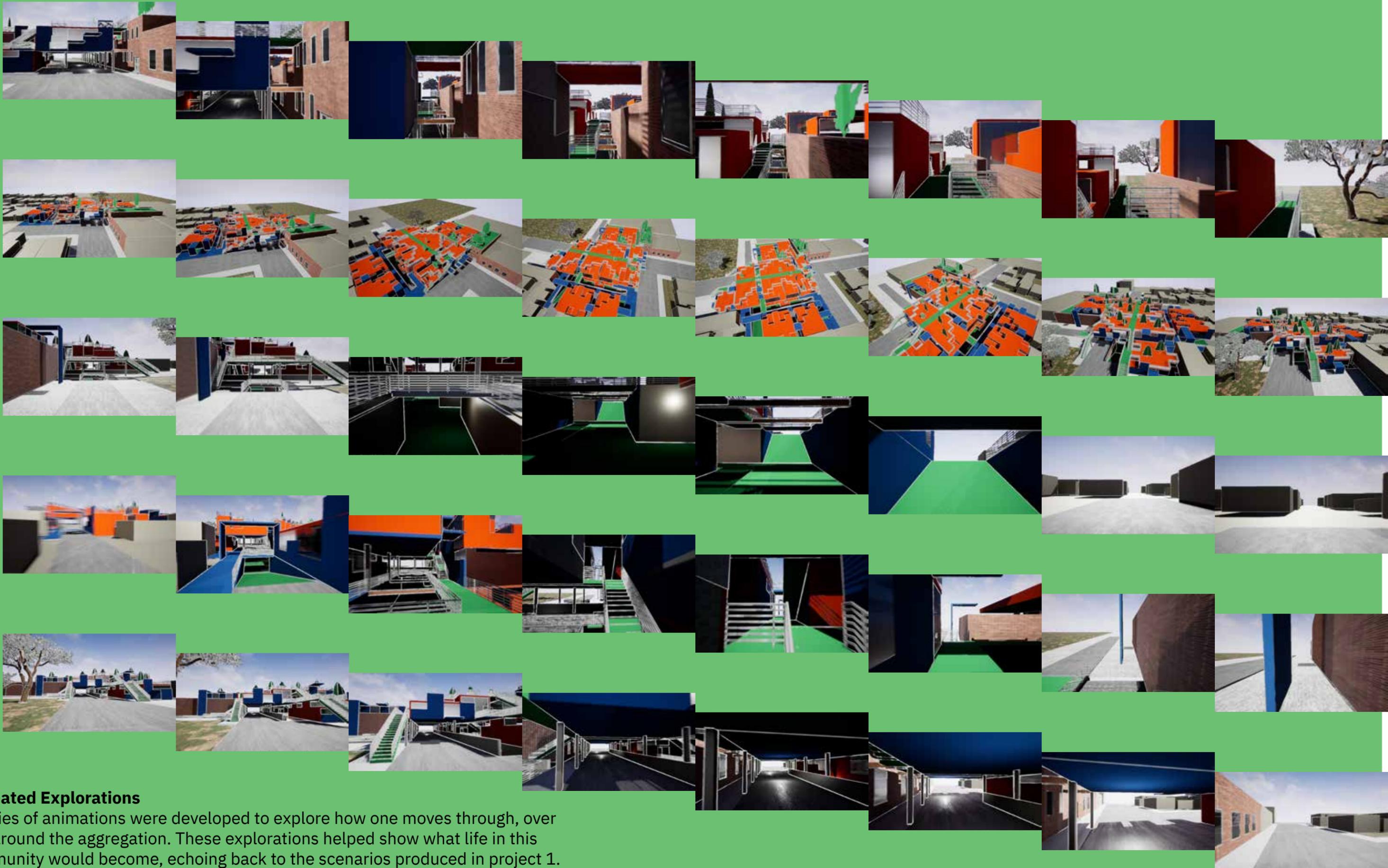


Unit View Renders

Renderings exploring the views from various units in the aggregation. The first, a view from a ground floor unit looking out over the 'moat' created by the dropped road connection. It clearly shows the various travel paths, as well as the main bulk of units at the lower, ground and upper levels.

A second view, from a unit situated on top of the Ramsay Design Centre, looks out at what was 11 St SE. Completely obscured by new units and raised sidewalk connections it helps show the redefinition of public space above a public road.





Animated Explorations

A series of animations were developed to explore how one moves through, over and around the aggregation. These explorations helped show what life in this community would become, echoing back to the scenarios produced in project 1.

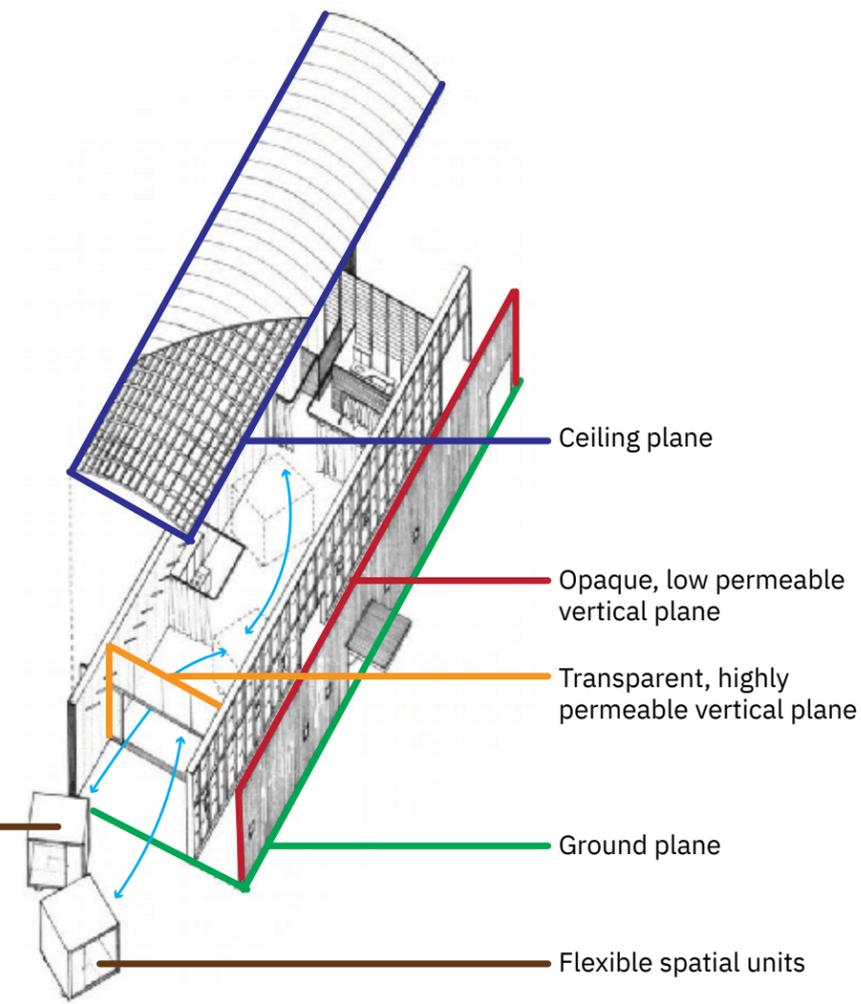
MAKED

AND

FOLDED

Project 2

This project explored the possibilities of dwelling units when normative conventions are ignored. Through the analysis of a precedent house, application of system from Project 1, and generative process through physical model making, a dwelling unit for the 21st century was created.

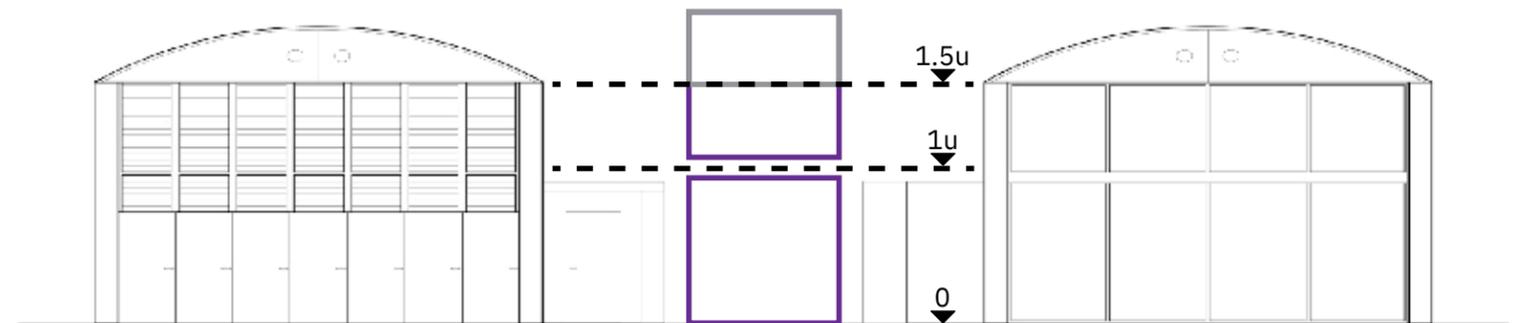
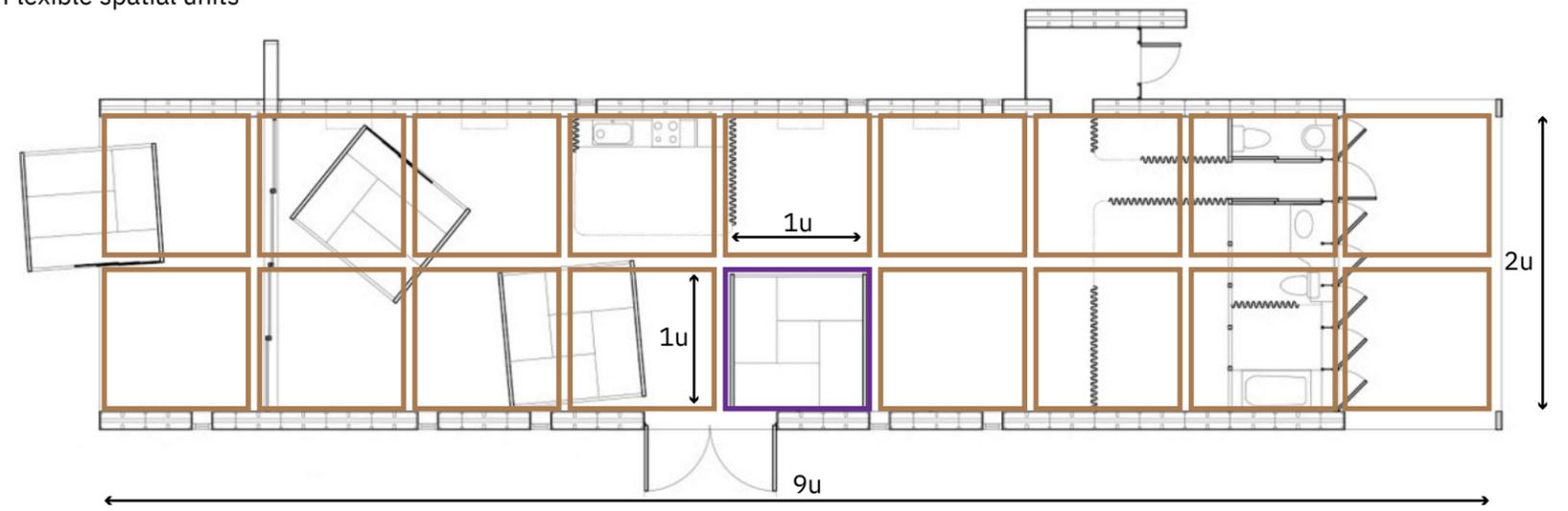


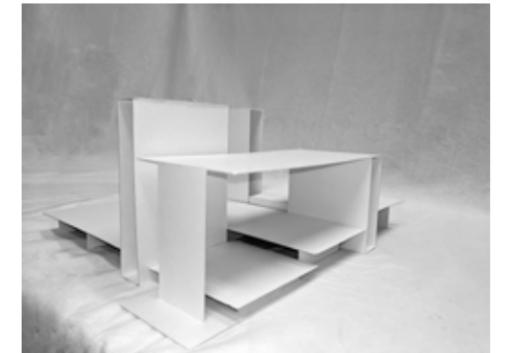
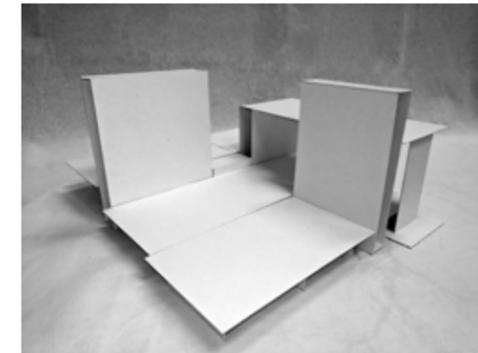
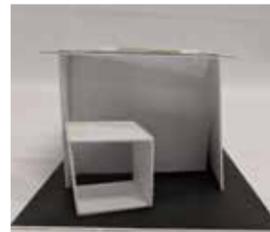
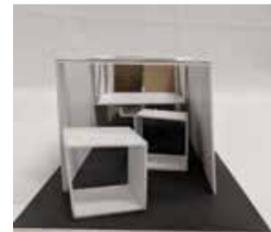
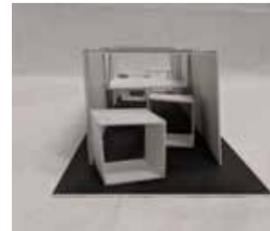
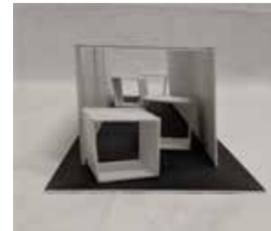
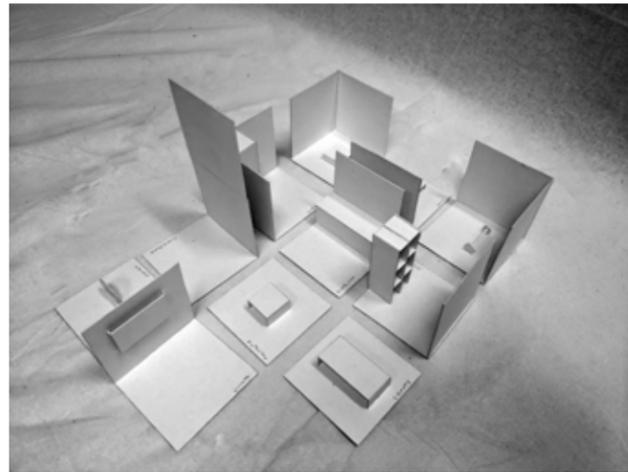
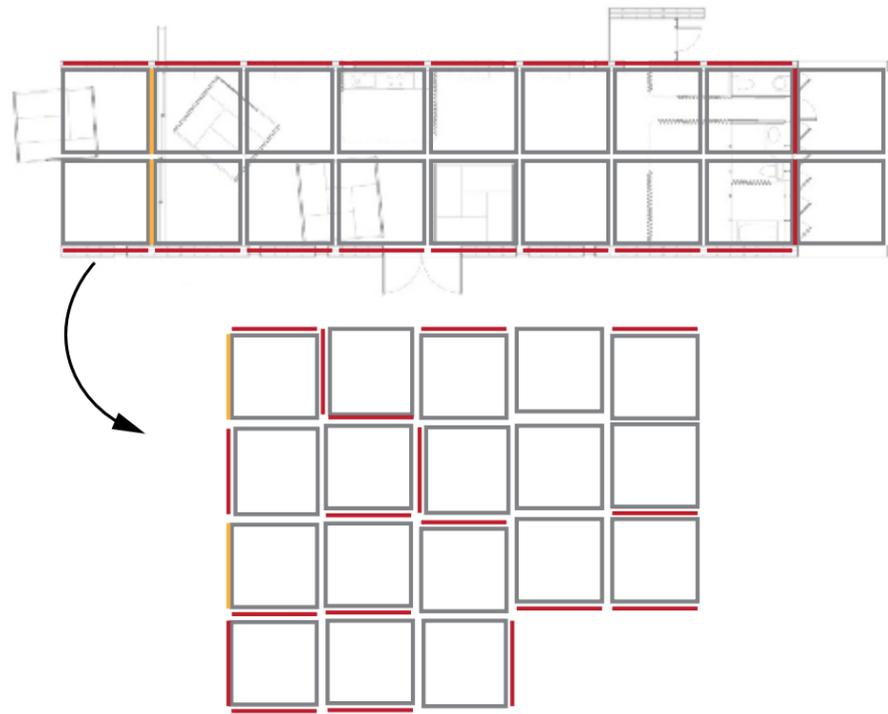
The Naked House, by Shigeru Ban

The precedent house explored for Project 2 was the Naked House, by Shigeru Ban. This is a linear, open space, defined by a very strong ceiling and floor plan, as well as opposite vertical wall planes connecting them. It also is defined by a set of movable units which can be moved around the open space of the home, and outside of it, to create a variety of spaces both public and private.

The planar elements and these movable rooms defined the explorations into generating new dwelling unit possibilities, and I wanted to capture what possibilities they allow. I started by defining the various planes in the house, as well as discovering the unit grid system operating throughout it, with the floor space and vertical space defined by this system.

These two elements proceed forward and ultimately define the system used to generate the dwelling unit at the end of Project 2.





Re-organization of Grid

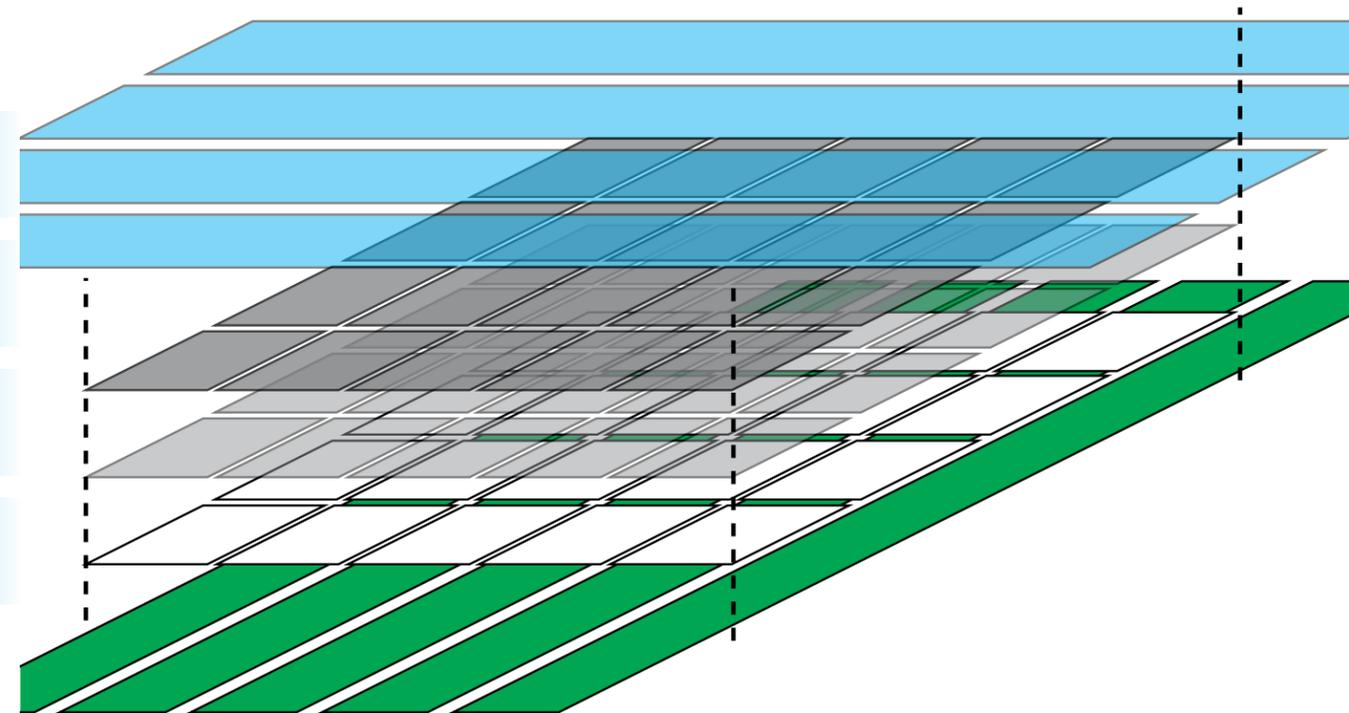
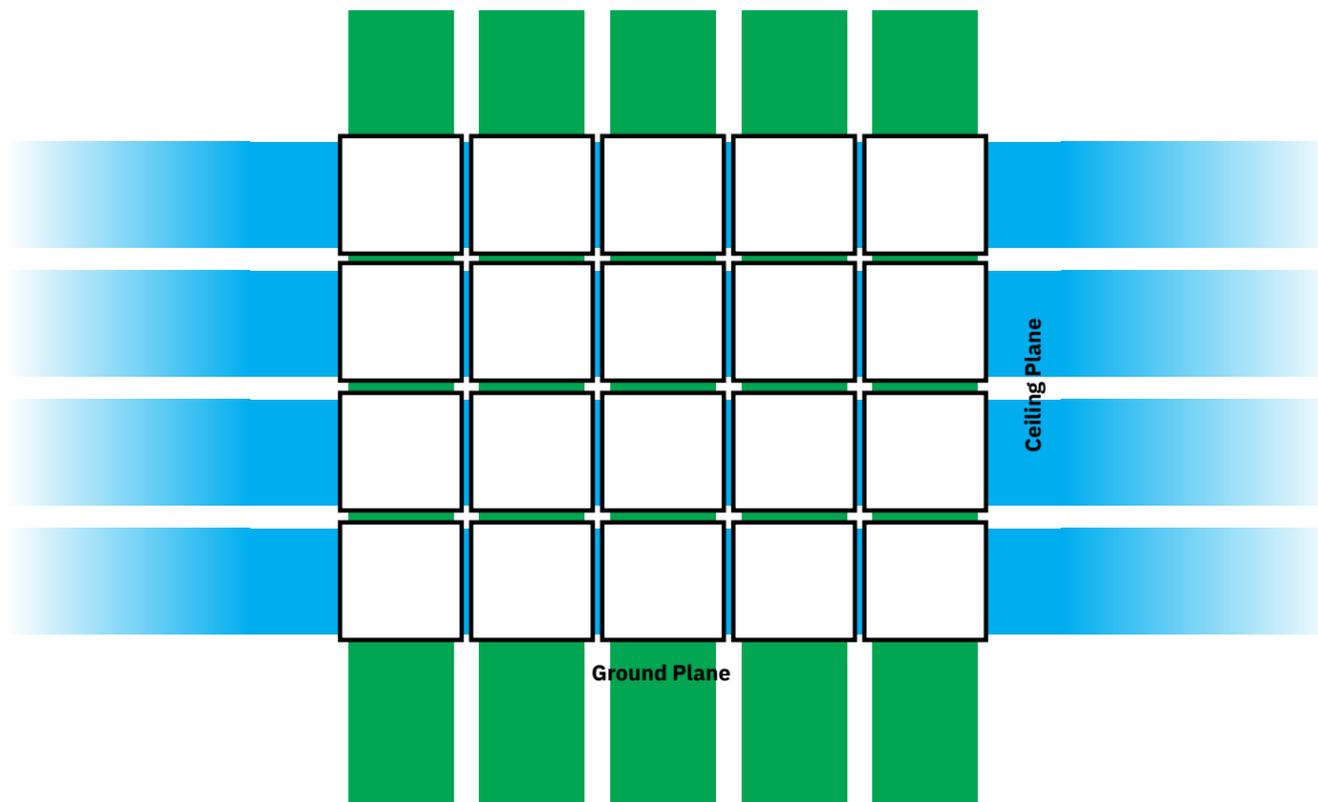
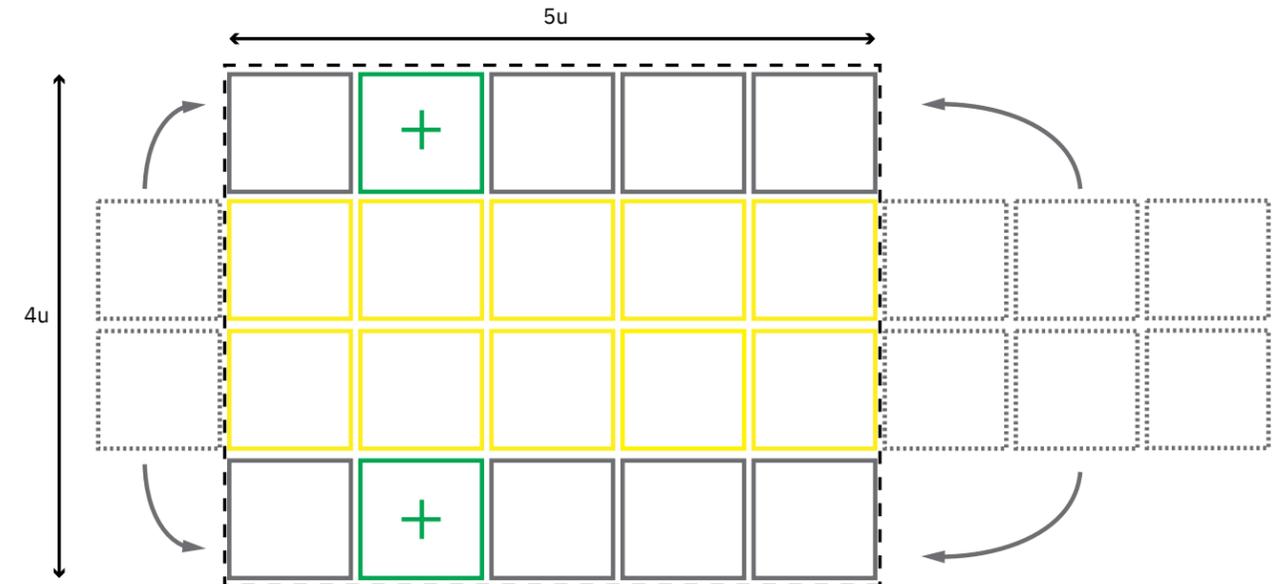
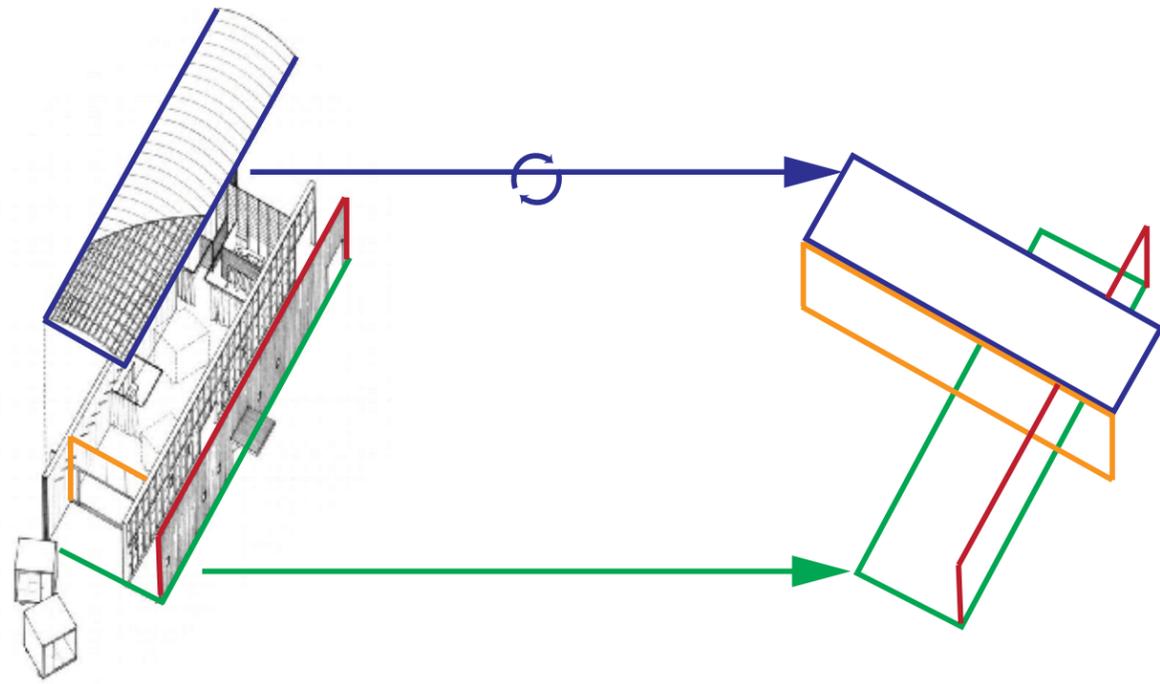
A primary exploration looked at the inherent unit grid operating throughout the Naked House. From this, discrete programmatic functions were defined on a grid, which was then broken apart with any associated impermeable membrane. Recombining the unit grid into a new form allowed for the exploration of what adjacency means, and what new spaces can be generated.

Insertion of Membranes

Utilizing the Naked House's very permeable west face, and the concept of the movable room, an exploration was made into inserting membranes of varying permeability into the space. Having a very open primary entrance, which is when constricted the further into the home you move played on the root concept of permeability.

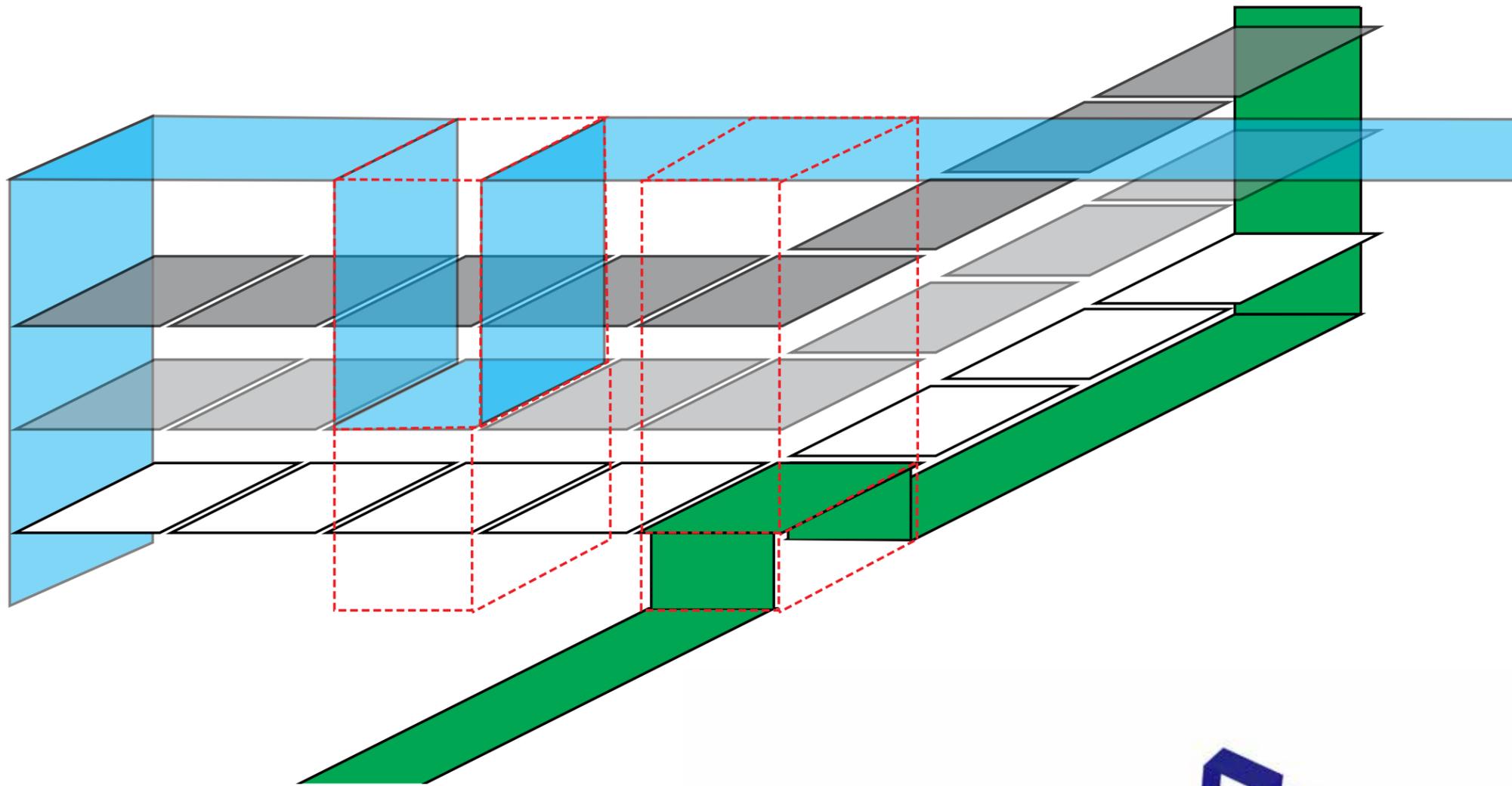
Connection of Planes

A third exploration looked at the strong ceiling and floor planes of the Naked House, and the possibilities inherent in connecting them, as well as introducing a new, intermediate plane. It played with the base concept of the planar separation to create new space, and was the immediate predecessor to the selected system used to generate the dwelling unit.



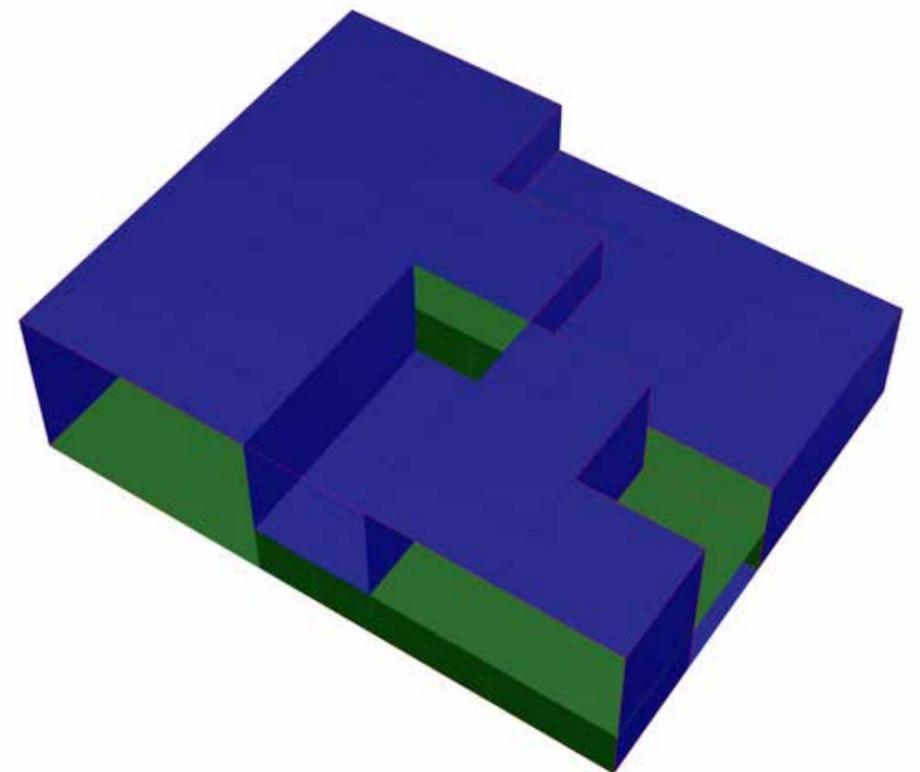
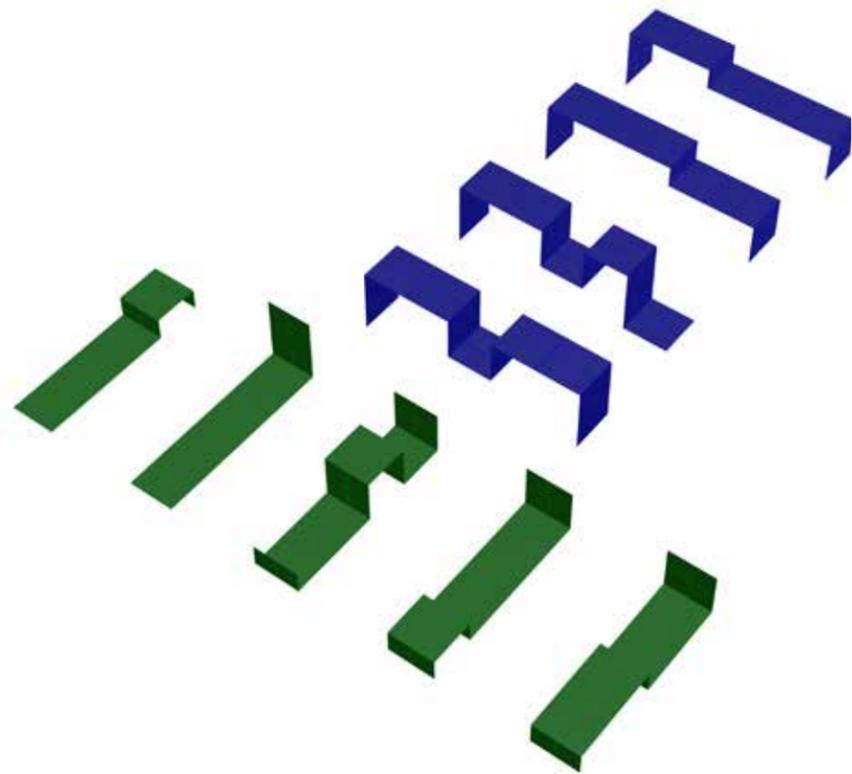
System Intentions

After exploring the possibilities of the Naked House in generating a new dwelling unit, a series of intentions were defined which led to the creation of a systematized approach to form generation. The strong planes of the Naked House were maintained, but twisted, to allow new possibilities. This required the adjustment of the unit grid into a more rectangular form. Using the planes, and the grid, planar ribbons could be generated which operate perpendicular to each other, and at different elevations of the unit's 3d grid.



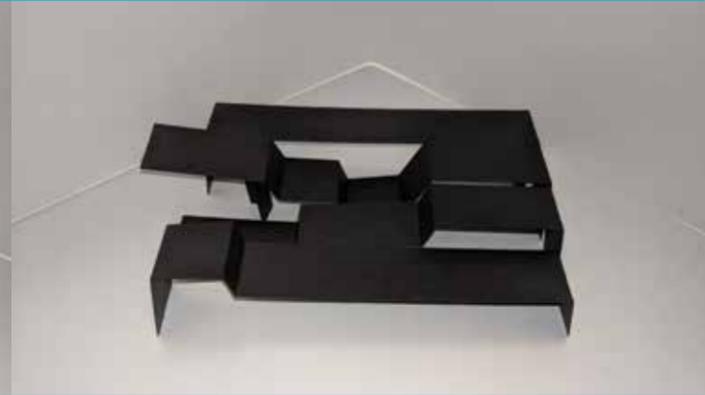
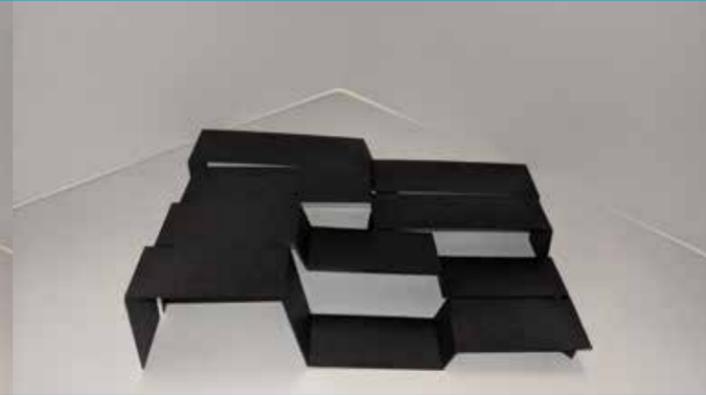
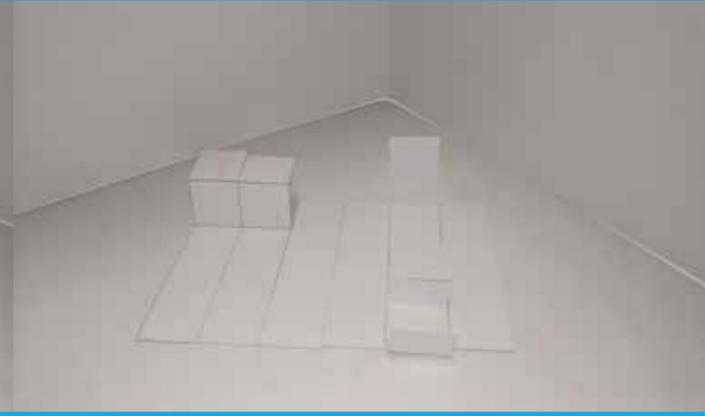
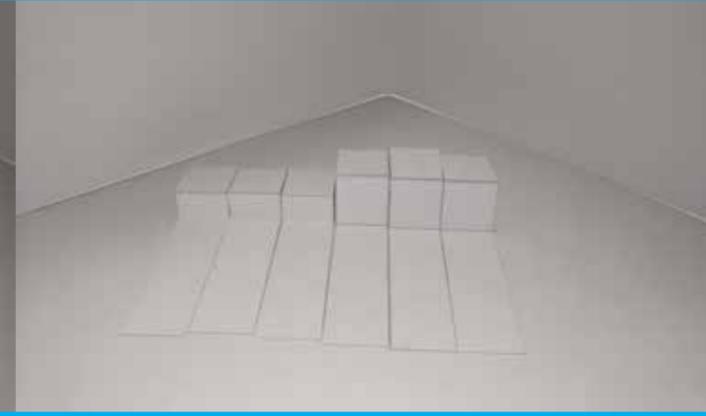
Folding to Create Space

With a three-dimensional grid established, and planar ribbons operating at right angles to each other, space could be generated by folding the ribbons along the grid. This created space of multiple sizes and dimensions. This is the final system that would be used to generate a dwelling unit. Using a folded ribbon in the floor plane and ceiling plane corresponding with each grid, a total of nine ribbons could be joined together for a single unit.



Paper Fold Variations

Once the folding system was established to create spaces within the unit, a variety of fold variants could be made simply with card stock. Combining these allowed for a large number of permutations of units to be quickly made, exploring potential spaces.



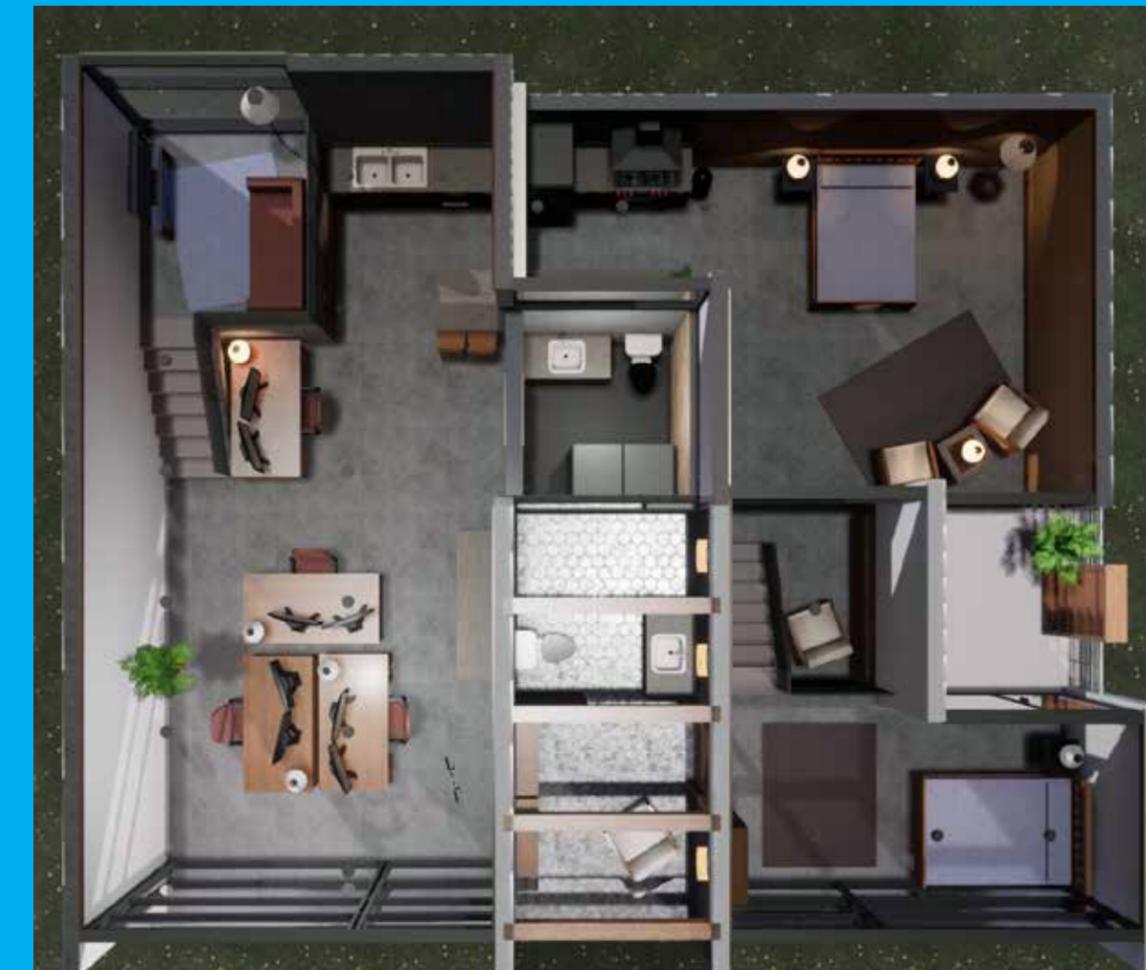
Unit Model

A physical model exploring one selected folds for the dwelling unit. This model was in separate pieces representing the ceiling and floor plane folds, and could be brought together to create the final unit.



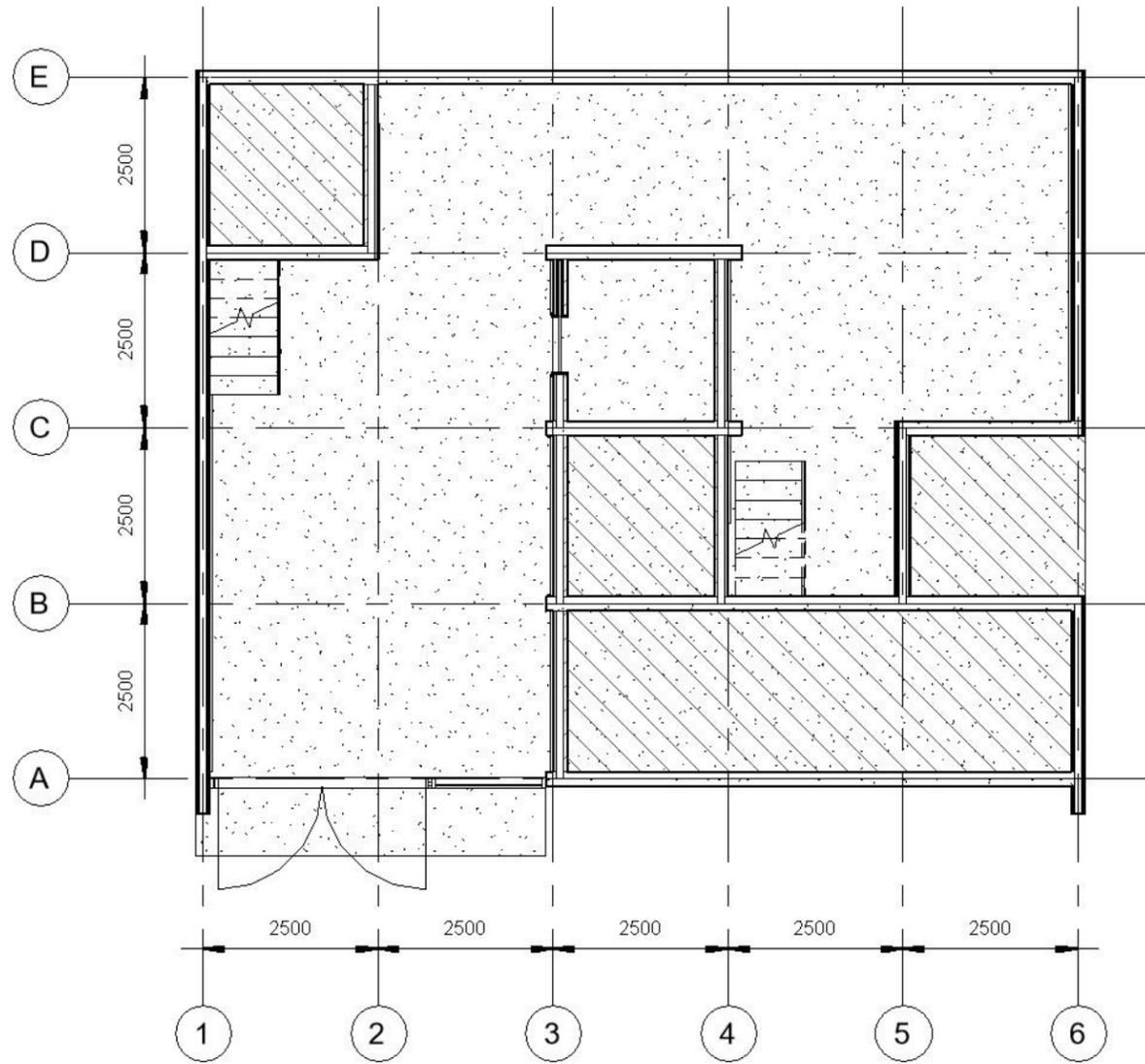
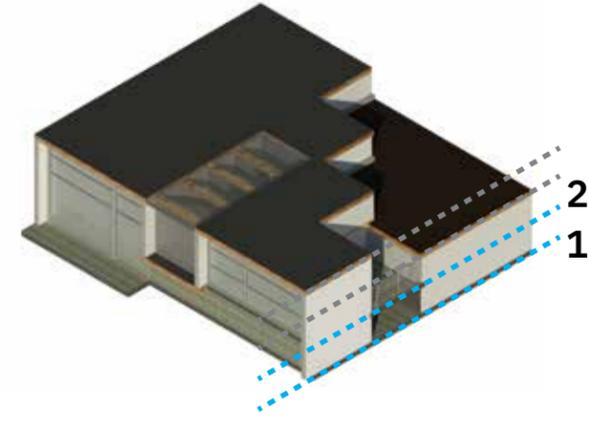
Unit Scenarios

A key element of the 21st century dwelling I wanted to explore was flexibility of space, and the allowance of work and storage areas within the home. These scenario renders posited the unit with a variety of spaces, from a single bedroom with garage, to a multi-bedroom with flexible co-working space. It prioritizes the use of space with storage and mechanical systems built-in below other rooms and areas.

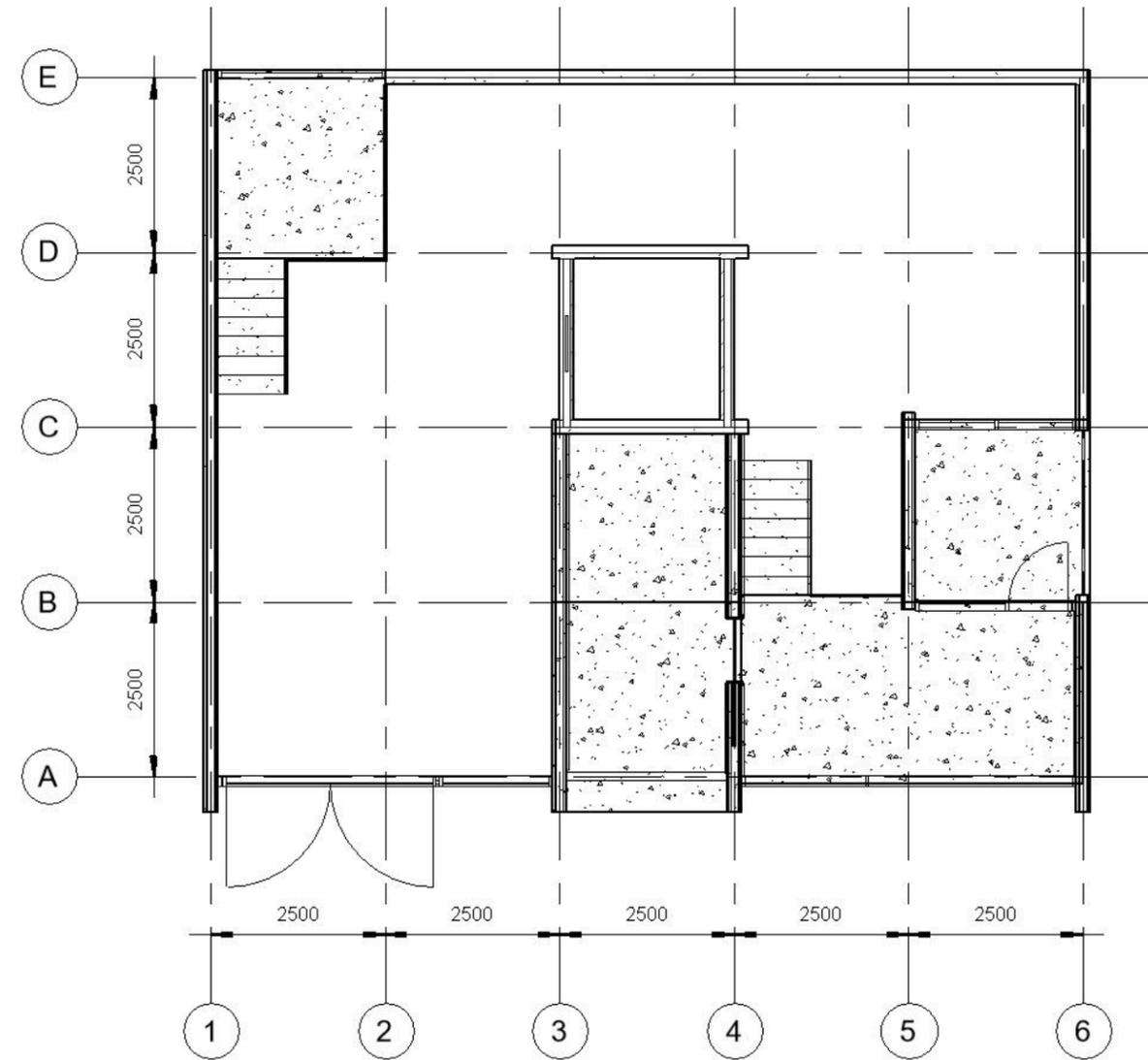


Unit Plans

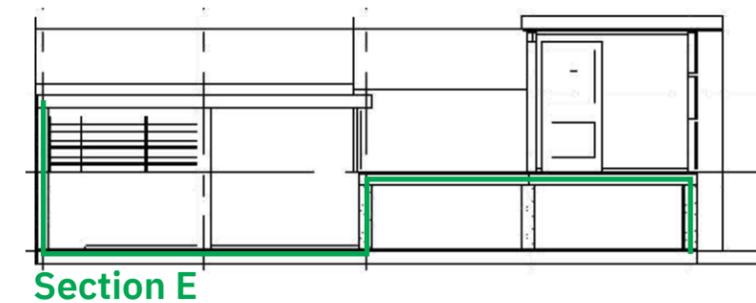
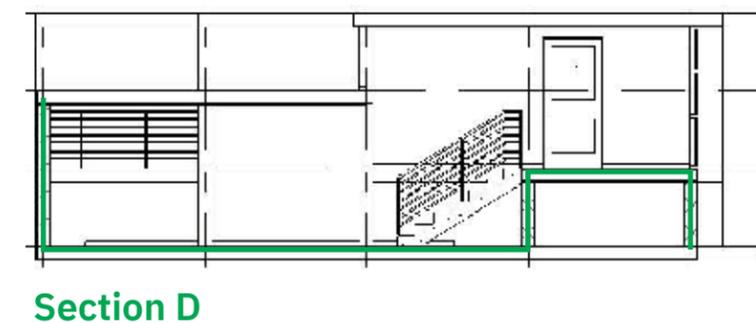
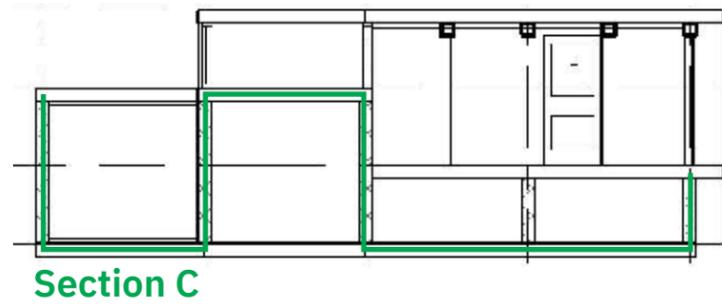
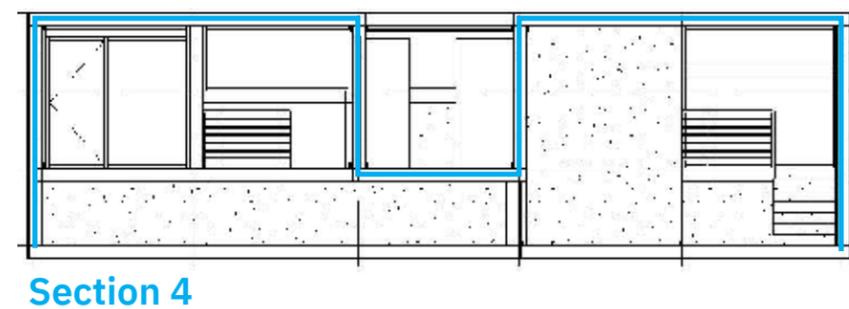
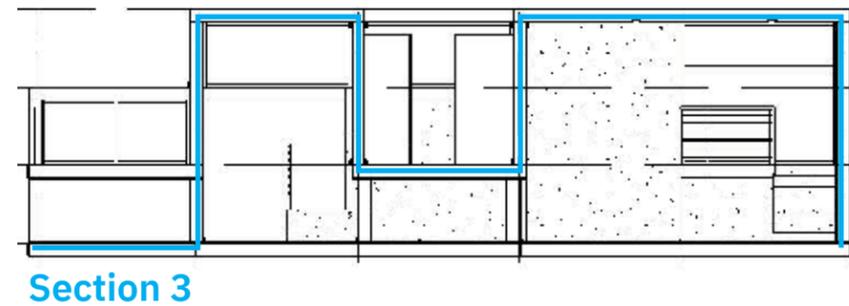
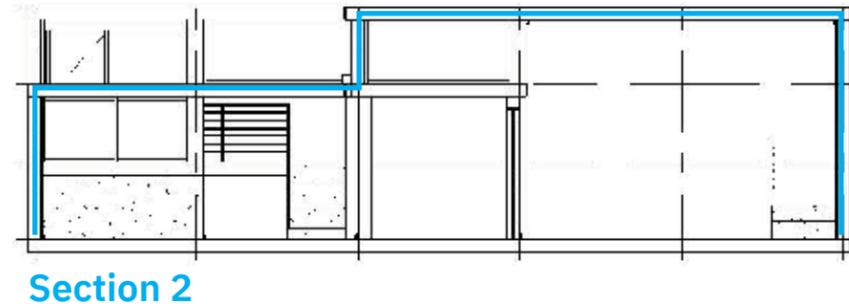
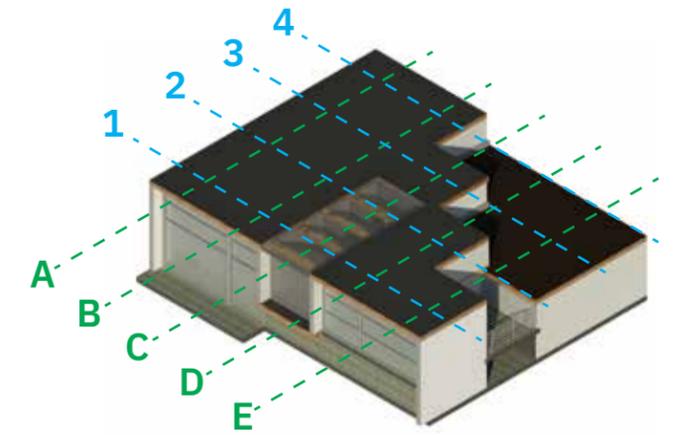
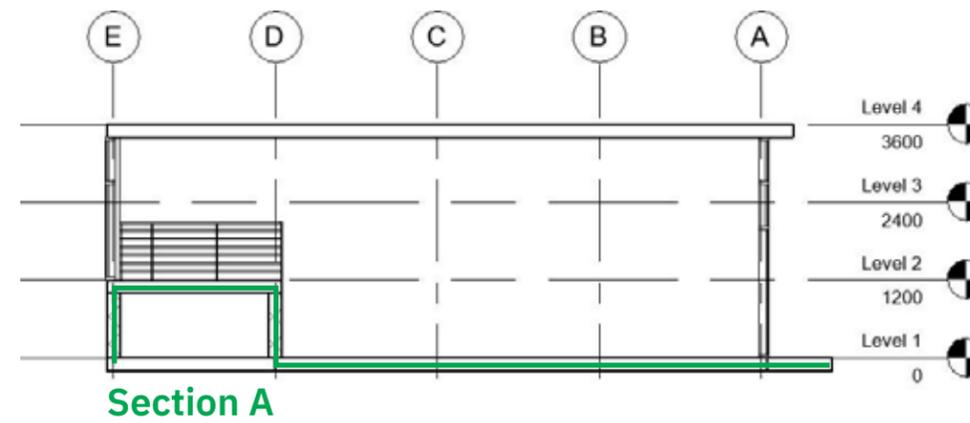
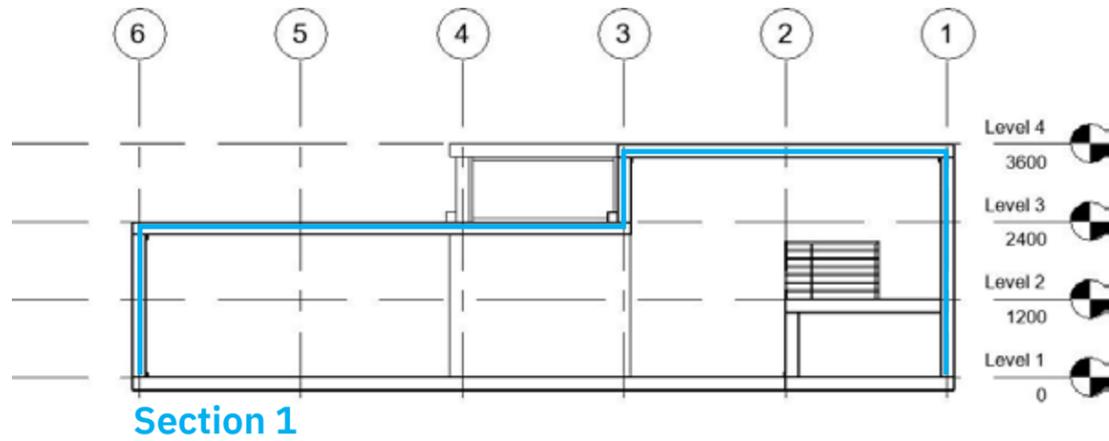
The plans of the designed unit show the very strong adherence to the unit grid, with rooms and living spaces defined explicitly by the 2.5m x 2.5m grid.



Level 1



Level 2



Unit Sections
Key to understanding the livable space, sections of the produced unit emphasize how the floor and ceiling plans combine to create space. Low spaces, up to Level 2, create mechanical or storage space, while large areas, from level 1 to 4, allow a highly flexible use including storage of vehicles or workshop space. Privacy created by ceiling folds allow bathroom or meditation areas.

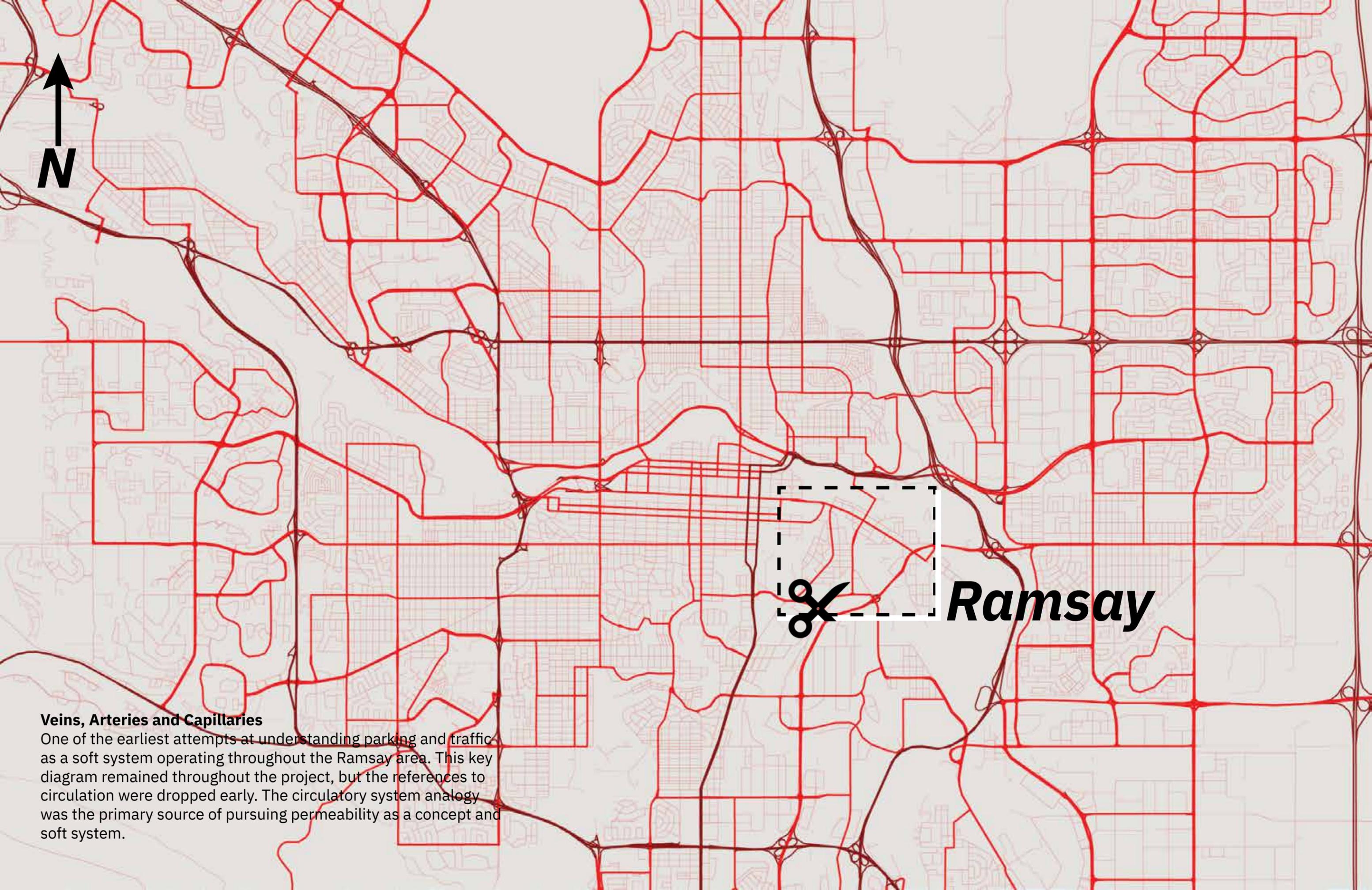
PERP

MAE

AVE

Project 1

This project explored soft systems operating in, through and around the selected neighbourhood of Ramsay. The goal was to define a soft system, explore how it operates and generates the urban fabric, then introduce modifications to explore changes to this fabric. Finally, scenarios were developed positing how the neighbourhood changes in response to these effects.

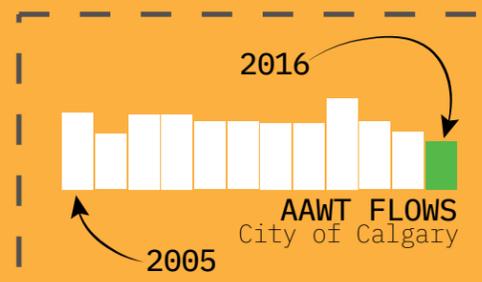
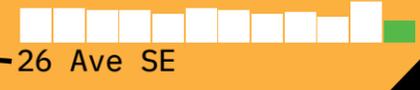


 ***Ramsay***

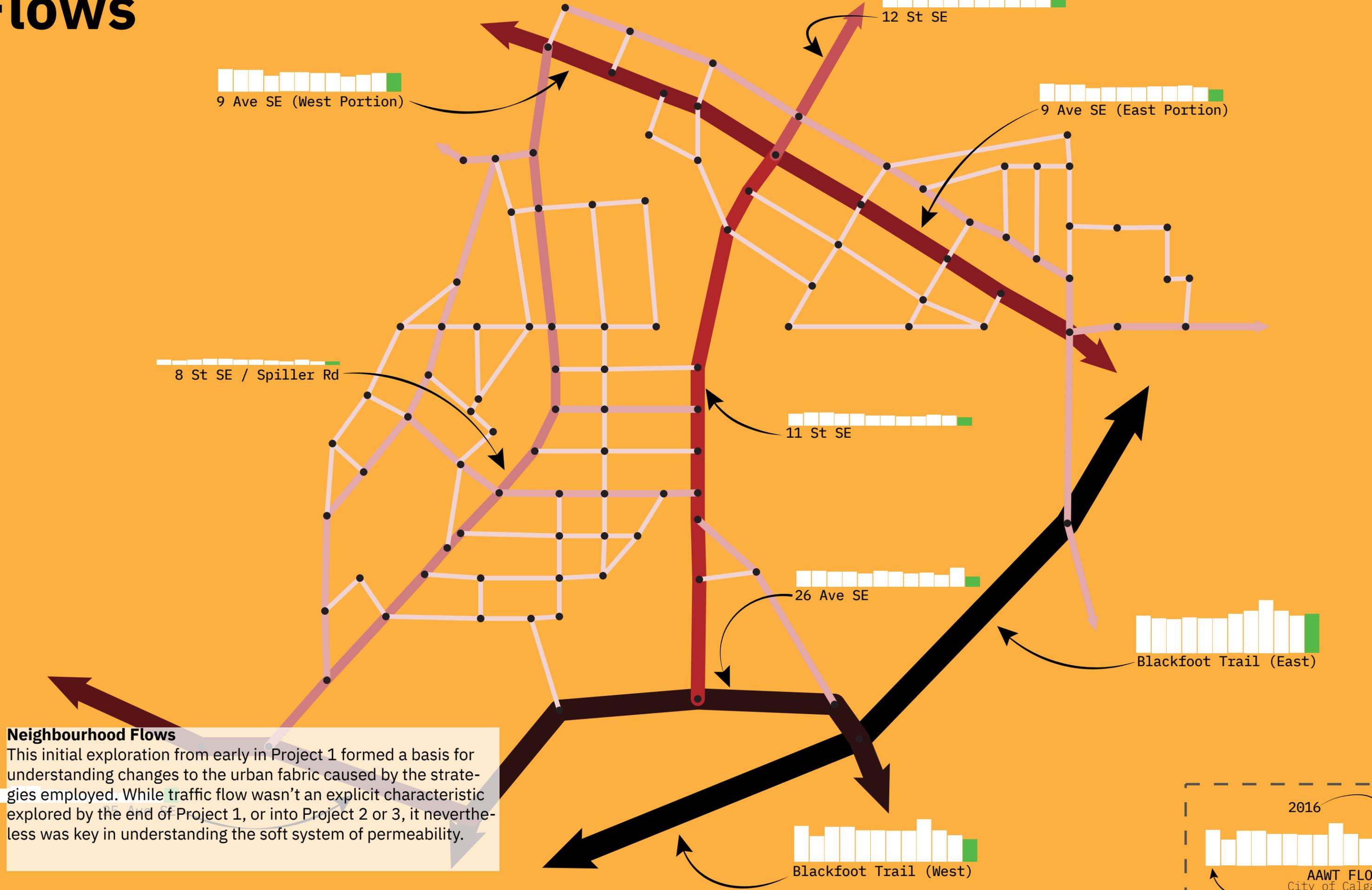
Veins, Arteries and Capillaries

One of the earliest attempts at understanding parking and traffic as a soft system operating throughout the Ramsay area. This key diagram remained throughout the project, but the references to circulation were dropped early. The circulatory system analogy was the primary source of pursuing permeability as a concept and soft system.

Flows

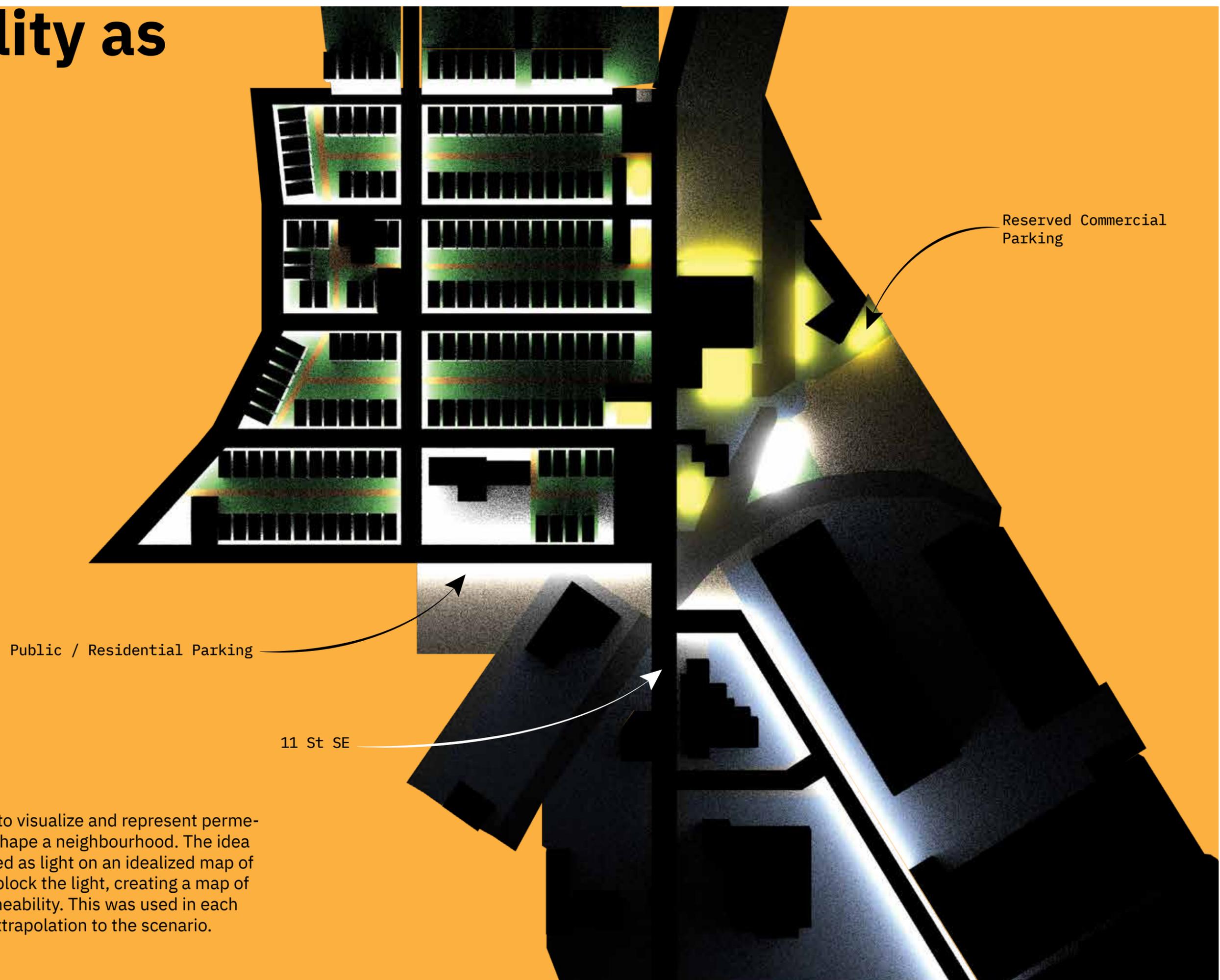


Neighbourhood Flows
This initial exploration from early in Project 1 formed a basis for understanding changes to the urban fabric caused by the strategies employed. While traffic flow wasn't an explicit characteristic explored by the end of Project 1, or into Project 2 or 3, it nevertheless was key in understanding the soft system of permeability.



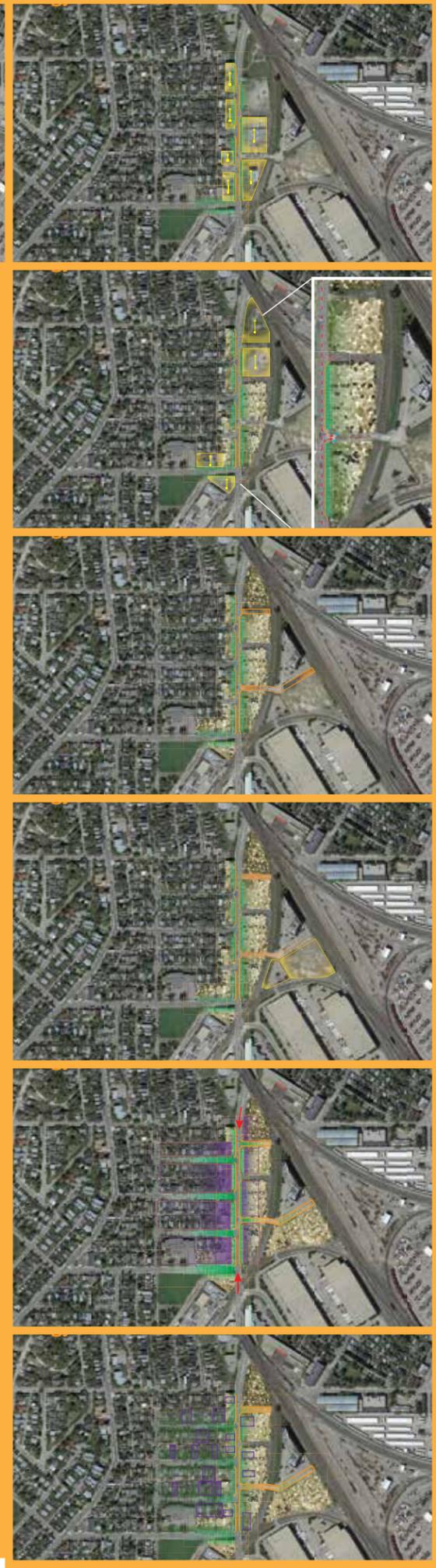
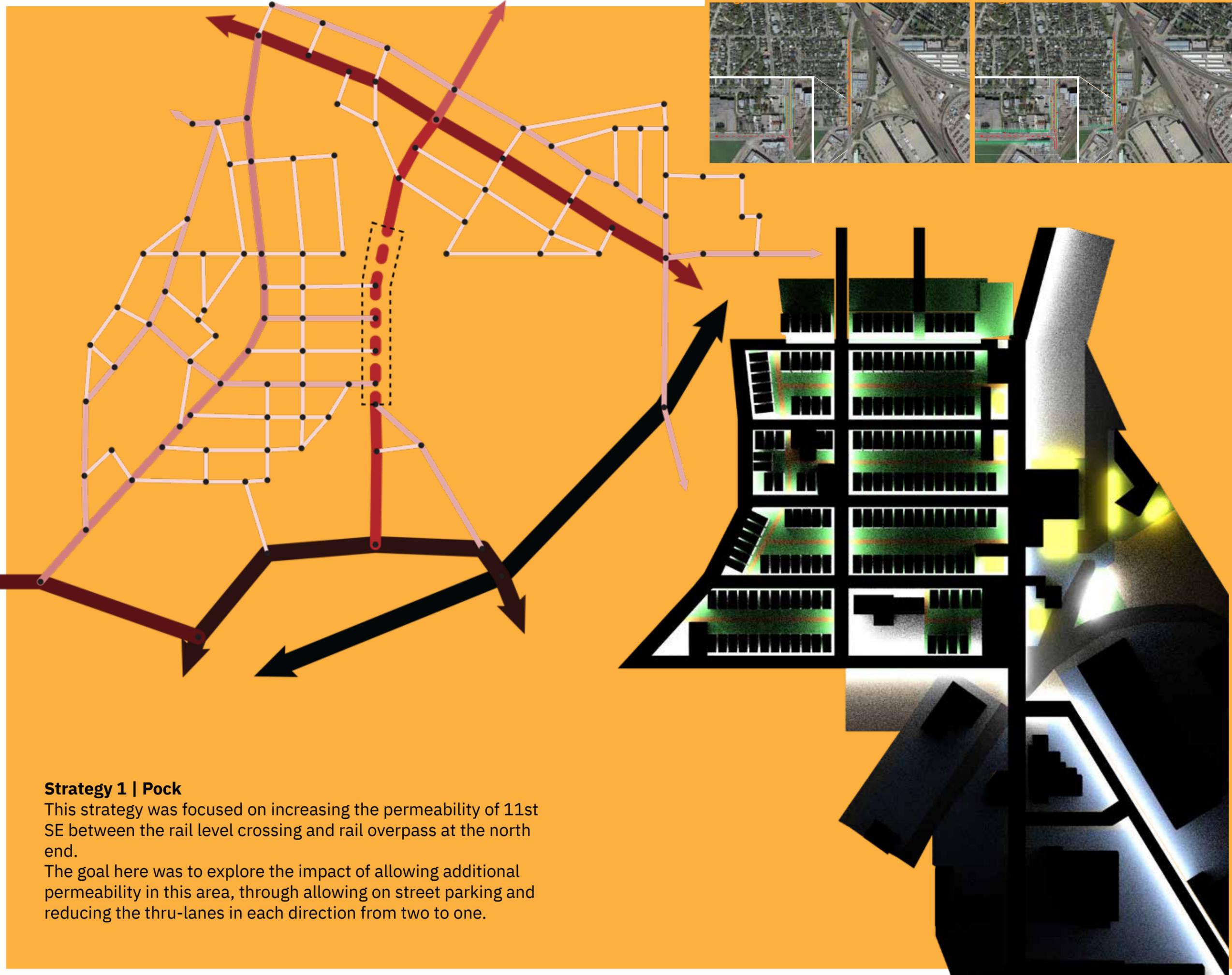
Permeability as Light

Base System



Permeability as Light

A product of repeated struggles to visualize and represent permeability as a concept that can re-shape a neighbourhood. The idea is that permeability is represented as light on an idealized map of the area. Buildings and barriers block the light, creating a map of areas shown as intensity of permeability. This was used in each strategy as a starting point for extrapolation to the scenario.



Strategy 1 | Pock

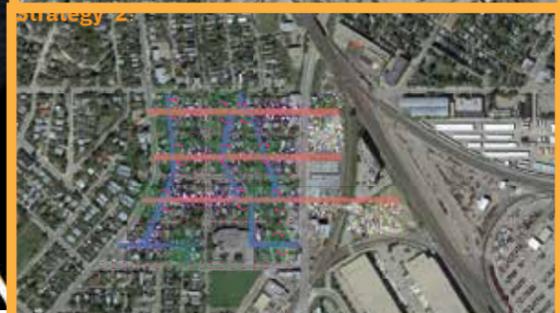
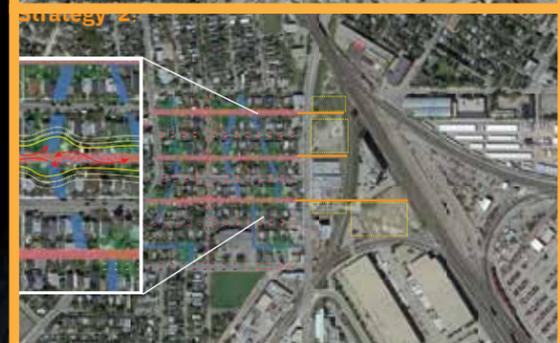
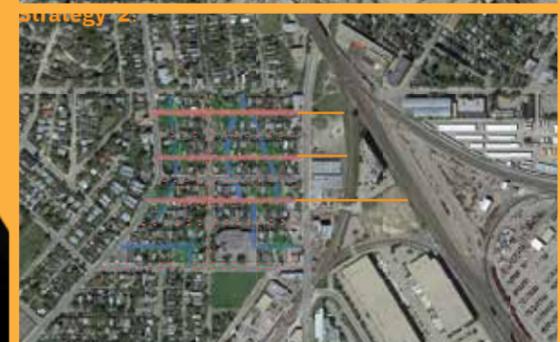
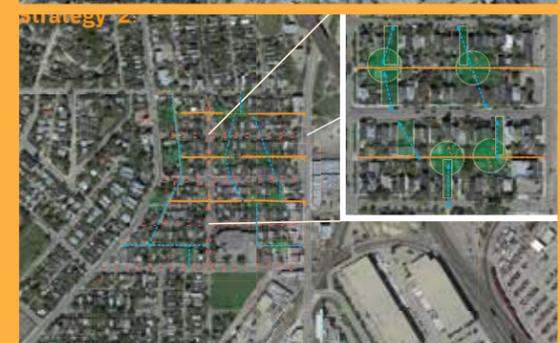
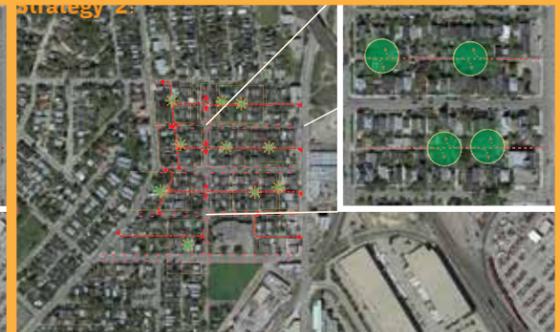
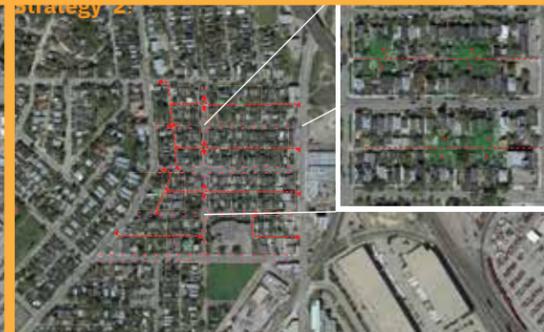
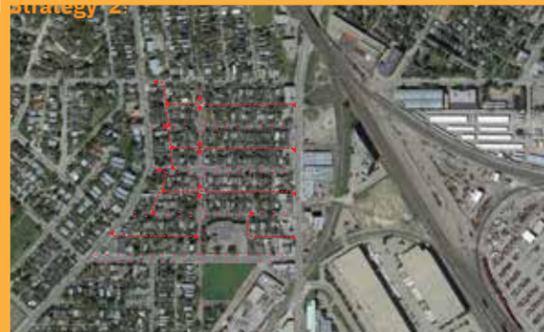
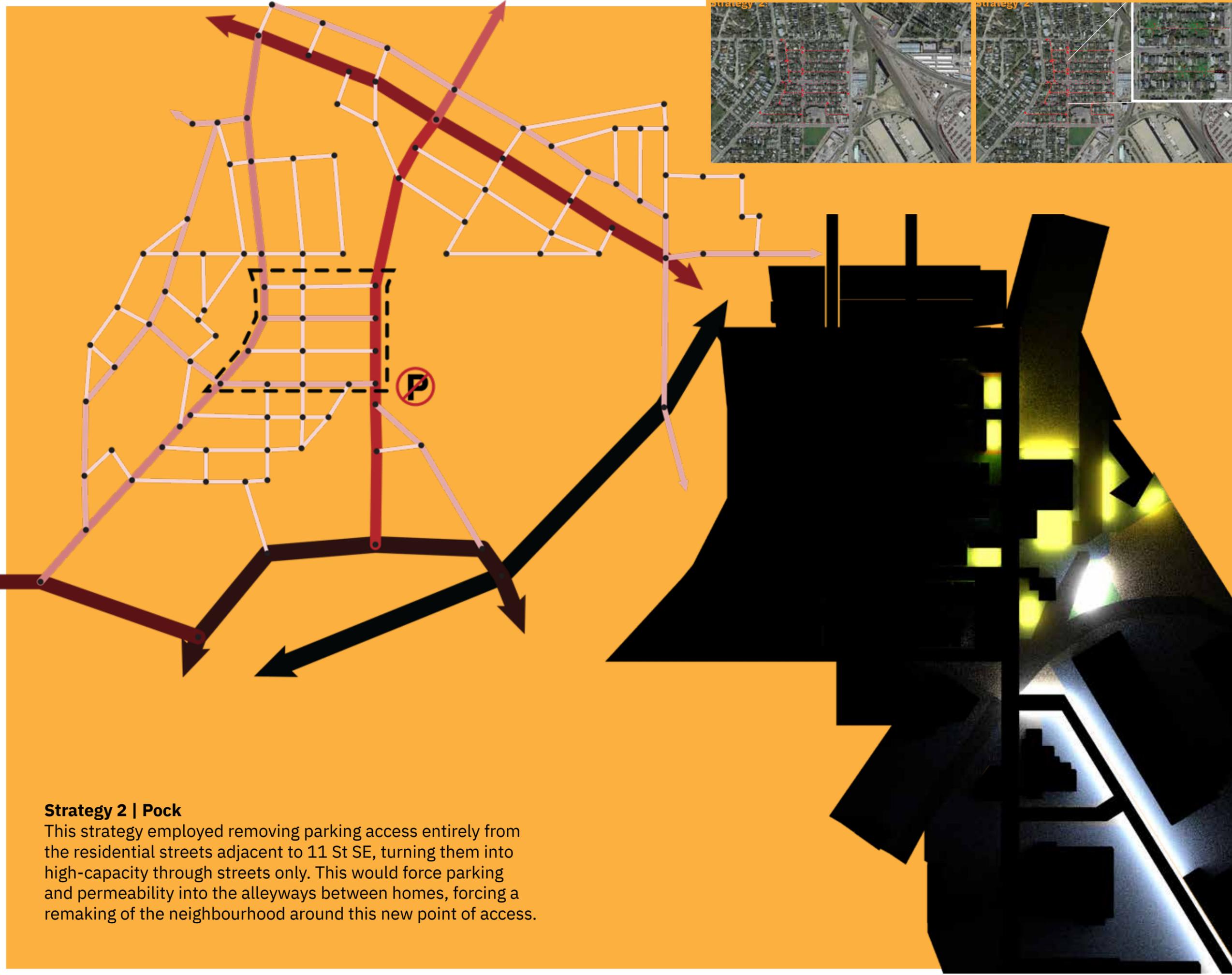
This strategy was focused on increasing the permeability of 11st SE between the rail level crossing and rail overpass at the north end.

The goal here was to explore the impact of allowing additional permeability in this area, through allowing on street parking and reducing the thru-lanes in each direction from two to one.

Scenario 1 | Squeeze

A scenario envisioning an urban fabric of busy, complicated, mixed travel paths and permeability. Lifting, dropping, crossing and connecting roadways, rail, sidewalks to allow maximum flexibility in how people move and live throughout the area.



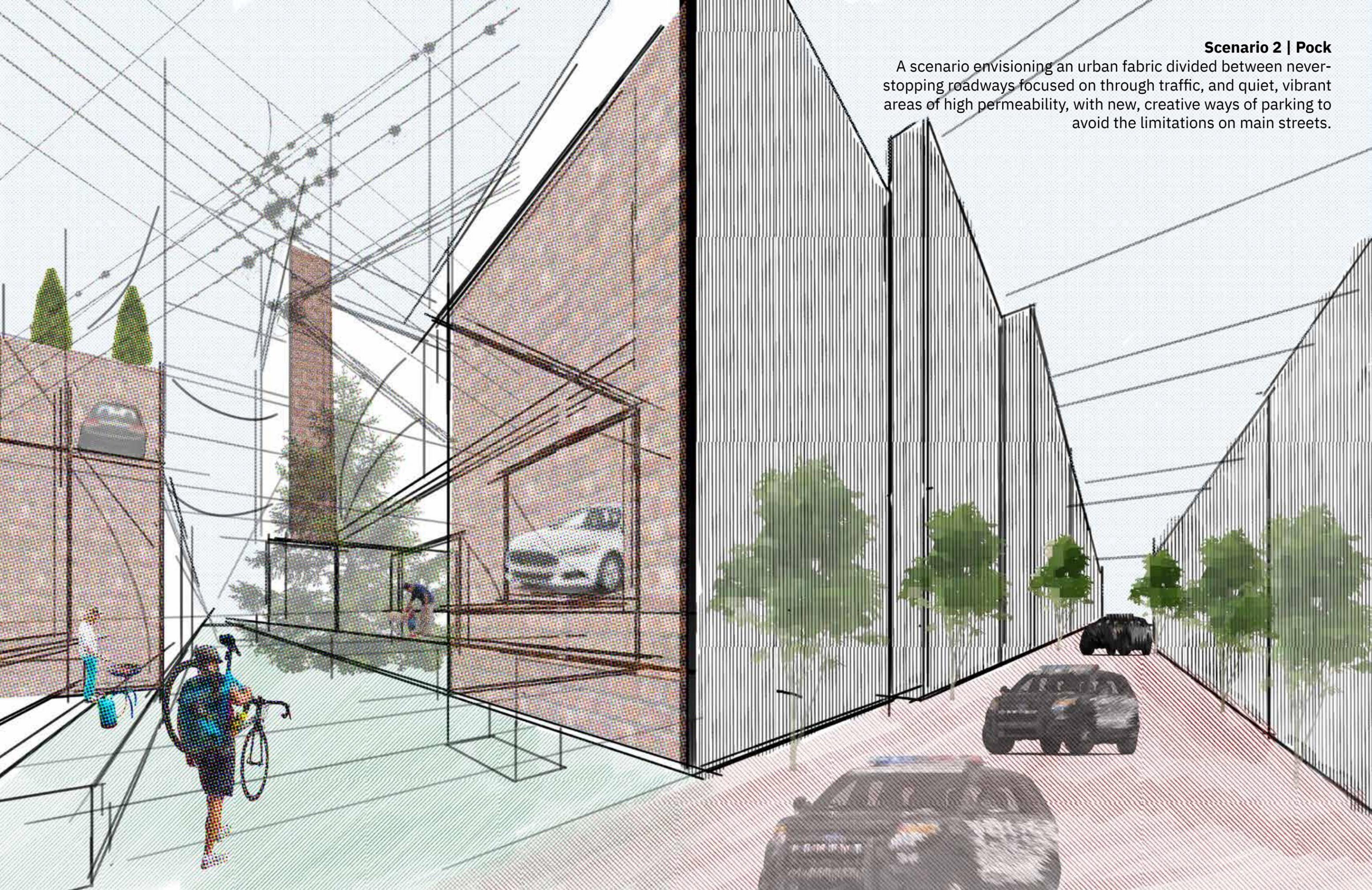


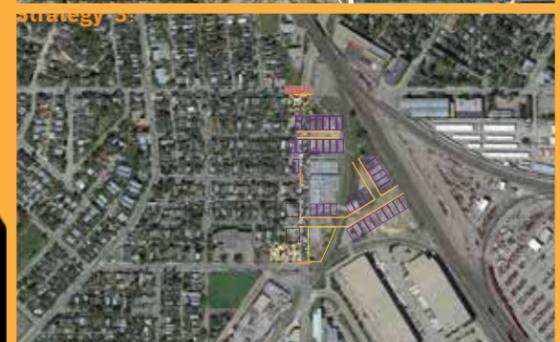
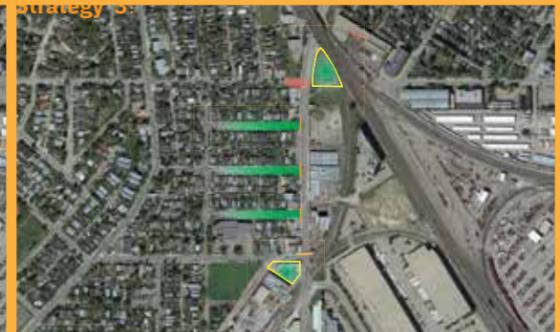
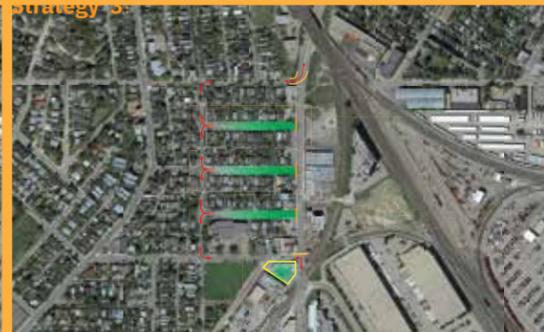
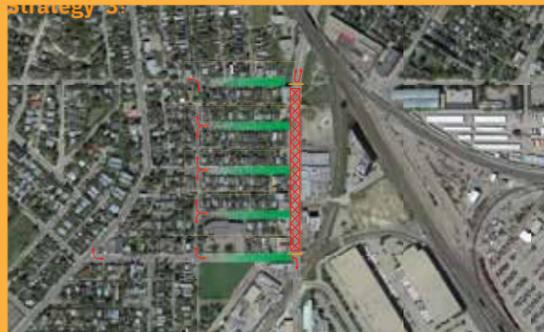
Strategy 2 | Pock

This strategy employed removing parking access entirely from the residential streets adjacent to 11 St SE, turning them into high-capacity through streets only. This would force parking and permeability into the alleyways between homes, forcing a remaking of the neighbourhood around this new point of access.

Scenario 2 | Pock

A scenario envisioning an urban fabric divided between never-stopping roadways focused on through traffic, and quiet, vibrant areas of high permeability, with new, creative ways of parking to avoid the limitations on main streets.



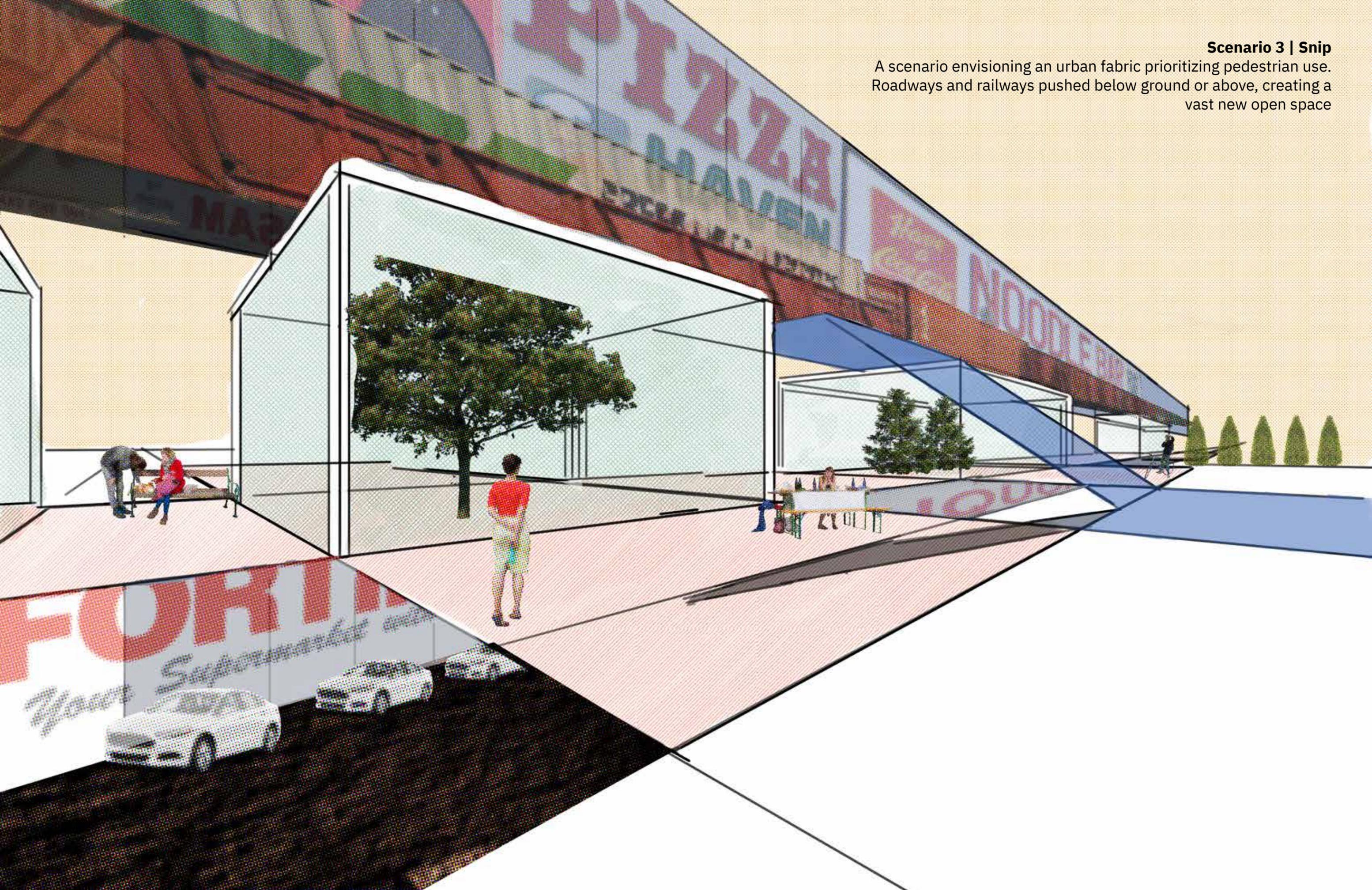


Strategy 3 | Snip

This strategy employed removing access entirely from the 11 St SE corridor between the level cross and the elevated rail crossing. It extrapolated forward new parking and permeability strategies that reformed the residential neighbourhood, and eventually remade the commercial area east of 11 St SE.

Scenario 3 | Snip

A scenario envisioning an urban fabric prioritizing pedestrian use. Roadways and railways pushed below ground or above, creating a vast new open space



Urban Ivy:

Too many self-imposed restrictions, and realizing too late when you're off the rails.

I approached studio 2 with the explicit goal of pushing myself to try new things.

After the challenges of Studio 1 and seeing how quickly things compound and get out of hand when restrictions and self-editing are ignored, I wanted Studio 2 to be different. Throughout the term I quietly set and followed several rules:

- 1) Not using complex curved geometries
- 2) Establishing a discrete system for development of tectonics and form, and
- 3) Focusing on constructibility and realistic structural forms.

In addition, I wanted to use different software packages, rendering techniques, and ways of representing information that I didn't use in Studio 1. This meant avoiding Rhino and V-Ray and attempting to use hand drawing, Photoshop compositing, Blender, Revit and a real-time rendering engine named Unreal I've been experimenting with.

These restrictions and goals led to some great successes (such as the scenarios produced for Project 1) and some disappointing failures (such as the final boards for Project 3). Some of the software restrictions led me to find creative ways of representing information which opened up new tools that I plan to work on and will utilize again (such as the massive exploded axonometric and simple site development diagrams for Project 3), whereas the freedom and power of some tools were a time-sink that had little payoff beyond looking pretty (the photo-realistic renders of Project 2).

There were distinct advantages to my approach, as I greatly expanded my knowledge of other software and techniques, but ultimately it distracted from the studio goals themselves at times. Sometimes forcing myself to use a non-traditional program led to a breakthrough with understanding soft systems (such as the permeability-as-light diagrams in Project 1) and really enhanced my studio work, while others (again, the photo-realistic renders of Project 2) were a major distraction and pulled my away from the work at hand.

Very early in the studio it felt like most of my effort was going to understanding what the studio was really about. What were soft systems, why did they matter, how did one engage with them, let alone utilize them to generate architecture. There was a breakthrough toward the end of project 1 that made things more clear, and the remainder of the studio became an exercise of finding and leveraging systems in Ramsay and the Naked House which I could combine with my own goals to generate a unit, and ultimately an aggregation.

Now that the studio is over, and it is possible to have some perspective while creating this portfolio, I can clearly see points during the term where I was working on studio, and points where I was working on learning software and adhering to my goals. As mentioned sometimes these worked together, and there was a valuable pay-off (finding the inherent grid in the Naked House was because of technique I used of distilling geometries into unit grids, utilized in Project 1 and the graphics course), but too much of the term was focused on shoe-horning a new rendering package into the studio.

This desire to render out photo-realistic images and videos of the project was the greatest failing, and the biggest lesson learned. Just as project 2 was ending and I succeeded in leveraging this new rendering system to produce my unit scenarios, I made plans to do the same with project 3 and the final aggregation. This plan was maintained through a lot of project 3, and only in the final week did I realize that photo-realistic renders truly didn't serve my project at all. Cutting this component led to a collapse of my representational strategy for my project, and only once I had printed my final boards did I realize how far I had strayed from my project. I was too focused on making the project look a certain way, I neglected to focus on the project itself.

Studio 2 has been a major learning experience. I appreciate the self-imposed limitations and challenges I set for myself, and believe that they have truly advanced by abilities moving forward into M1. I have also learned an important lesson in stepping back from a project at regular intervals to maintain objectivity and perspective. As was mentioned at the final review, it's a reminder that it's better to fail, iterate and move-on to find something that works, than stubbornly try to make a bad idea work.

Exploring soft systems, and approaching architecture from a neighbourhood level down was enlightening and informative. The importance of understanding site, neighbourhood, city and the urban fabric was critical to this studio, and it was exciting to figure out how to leverage this to generate architecture. There were times I felt like the system I was exploring was driving my work, leading me to discover new possibilities. I'm happy that I abandoned the initial aggregation strategies I was employing in favour of deploying my system on the site itself, and letting it produce a solution that made much more sense.

Now that this project is over I am left with a desire to revisit the unit development stage, and explore computer-aided generation of forms, applying programming and living solutions to hundreds of permutations. This would be a valuable process which would improve the aggregation strategy I employed, as there wasn't a single defined 'unit', but rather a generative system that fit permutations of units within the urban fabric framework. I believe moving through the aggregation steps again, but with stronger systems and rules in place for unit development, would yield a vastly more interesting multi-family building. Only from there does moving forward even more and allowing the system to take over the neighbourhood make sense. I am excited by what this can produce.