

## Urban Gas Stations Land Use

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## 1. STATEMENT OF NEED

Due to the nature of intersections, they are considered to be the main factor for increasing the time spent in traffic. Therefore, special attention must be paid when designing the buildings and land use at these intersection. Accordingly, Toronto the city whose gas stations are mostly located at intersections, and bearing in mind the importance of urban space identity particularly in intersections, has been considered in this proposal.

Christopher Alexander believes that the identity of each space is shaped by constant repetition of a particular pattern of events that takes place in that space. In other words, the identity of a city or a building is most affected by the event that occurs in them. To this end, at Toronto intersections that follow a particular pattern and have their own distinctive identity, there should be more emphasis on its role and identity by introducing a functional and physical landmark.

Kevin Lynch, the urban planner theorist, argues that the space offers activity as well as constrains it. Therefore, the environment must be ideal and physically safe. This security is enhanced by legibility and one way to do this is creating landmarks in appropriate locations such as intersections considered as urban nodes. Elements such as landmark, path, edge, node, and district constitute image of the city. Since landmark is closely related to the culture, the proposed design in Toronto, should also be considered as a symbolic dimension since this city follows the pattern of situating gas stations in intersections.

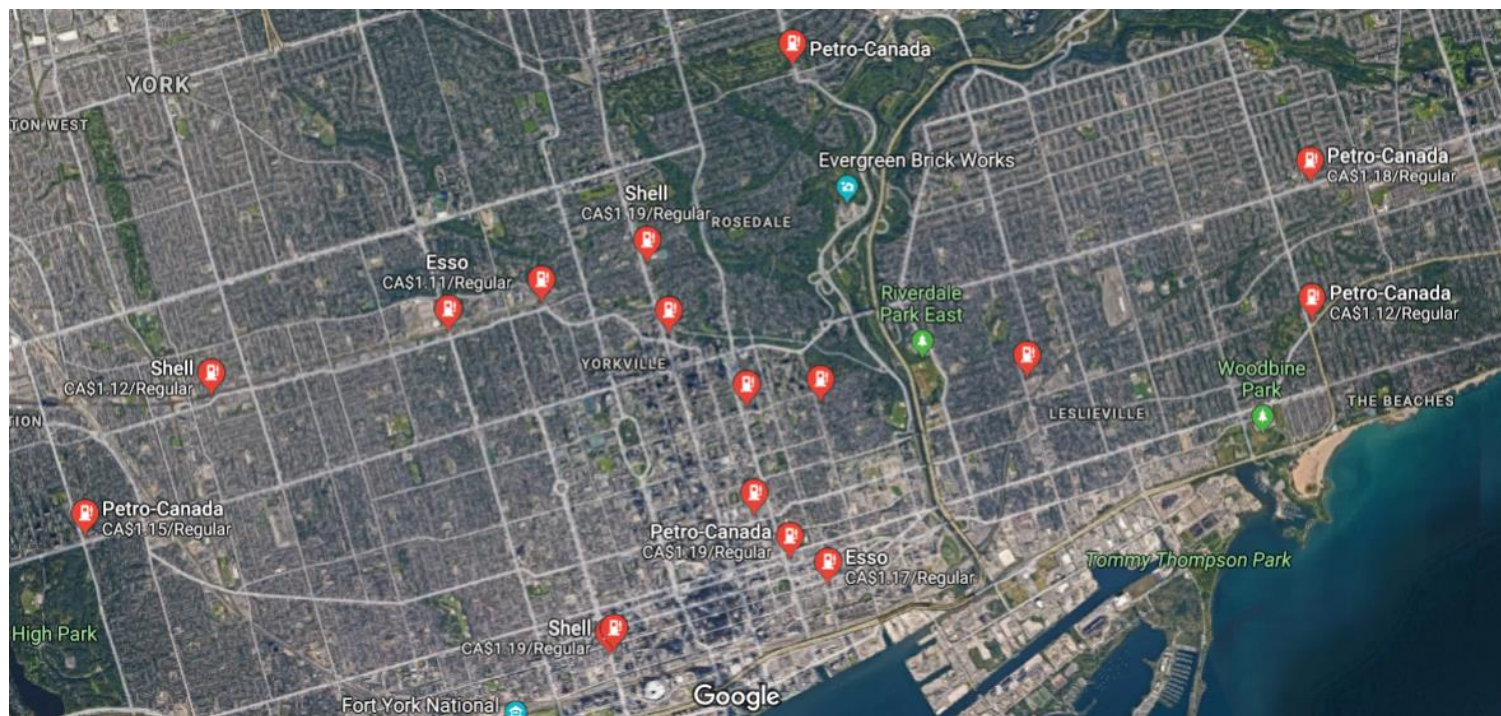
According to other theories of scholars such as Rob Krier and Matthew Carmona, the focus on nightlife does not mean increasing in opening hours of a space, but refers to optimal use of night hours and access to all city services and activities at all hours of the day. In fact, it would be effective in creating and defining night life and the possibility of favorable conditions for creation of a sustainable city for economic, social and environmental growth.

Consequently, considering these notes in urban public spaces that overlap with the subject of this proposal (gas stations at intersections), the importance and necessity of paying attention to this project in Toronto is tangible.

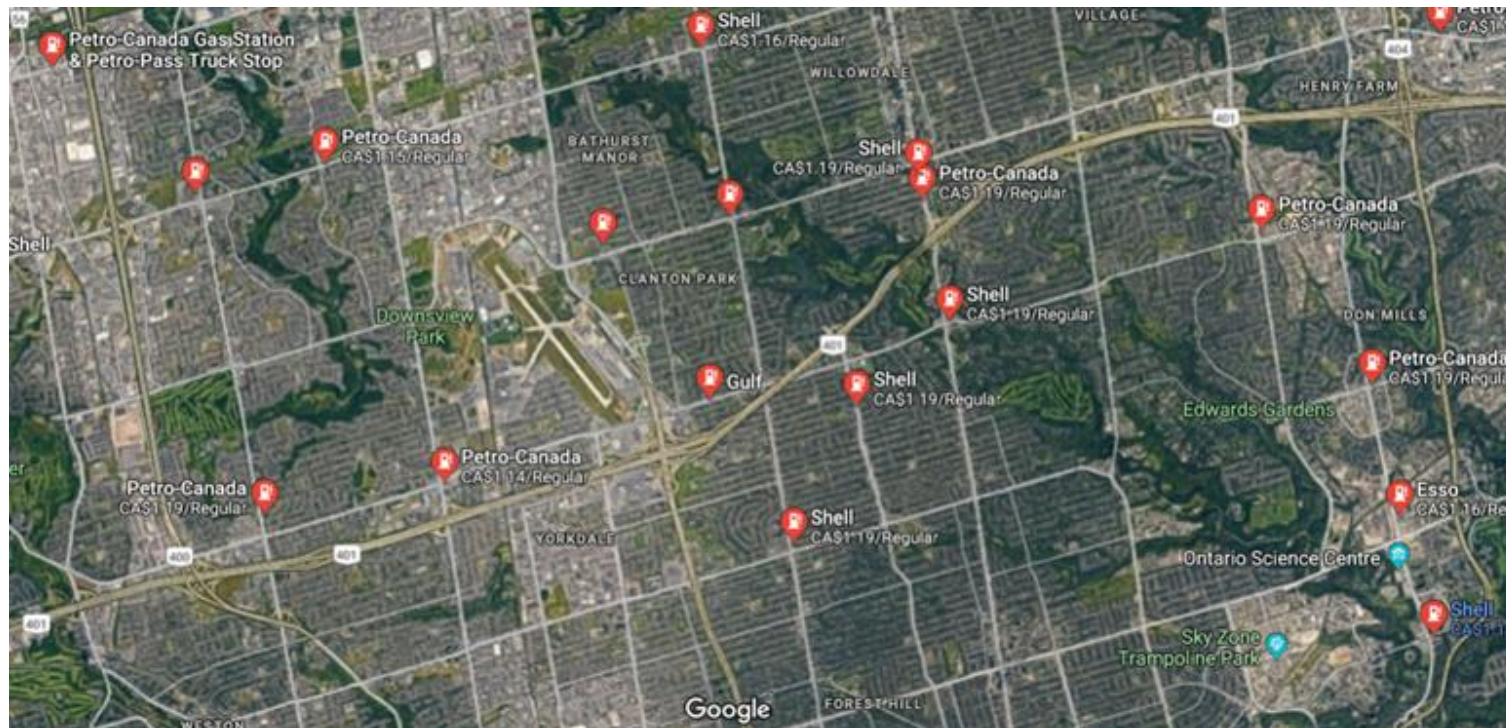
## 2. PROPOSAL OVERVIEW

Identifying elements, with their particular spatial organization, are city’s milestones that play a significant role in creating subjective memory of the city and its legibility. Therefore special attention has to be paid to the elements forming urban spaces, particularly the urban intersections. One of the areas that has been overlooked in this regard, are the detail and syntax of gas stations situated in these intersections, the urban public spaces that operate day and night.

The map of Toronto city and its boundaries show that the city's gas stations are mainly located at intersections. As these intersections are deficient in terms of urban landmarks and legibility, they require complementary functions to be properly defined, from urban planning perspectives.



Gas stations in Toronto










Gas stations in North York

Land value in downtown areas is generally higher and therefore less area is allocated to gas stations; however, in the less congested parts of the city where the value of the land decreases, more land is allocated to gas stations. Accordingly, a number of issues regarding these lands are reviewed in terms of land use and urban perspectives:

- Land use reviews for usable land on the boundaries of gas station
  - Possibility of establishing complementary functions and services for customers as well as passers-by (as these pumps are located in the city and can be accessed by pedestrians or urban transport network users.)



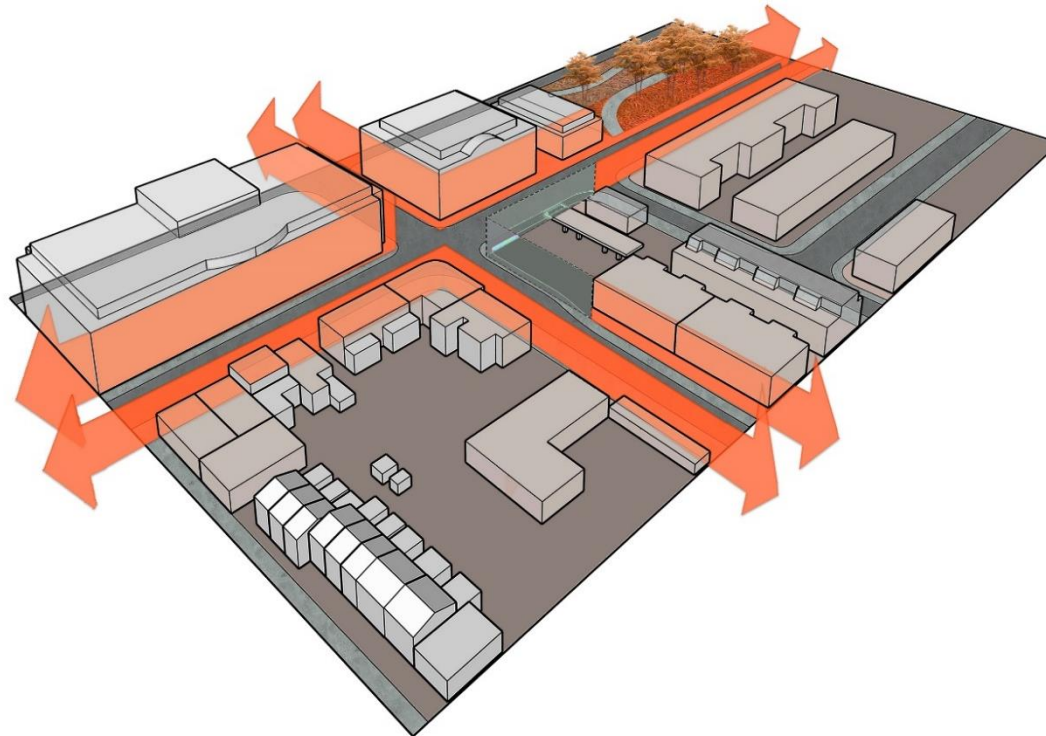
-  Gas station area
-  Gas station
-  circulation area
-  Loadable space
-  Entry/Exit to gas station
-  main street
-  pavement

Loadable space in a gas station

- Possibility of better economic exploitation for usable lands
- Lack of symbolic elements or buildings representing gas stations at intersections (only fuel company sign boards are installed.)

➤ Urban Perspectives

- The open space at intersections with gas station, which is usually assigned for a temporary parking space, does not properly define the intersection concept from urban planning point of view.
- The area and boundary of street urban space at these intersections are not properly defined and the limitations of urban space is not perceptible.



Lack of proper definition for intersections from urban perspectives

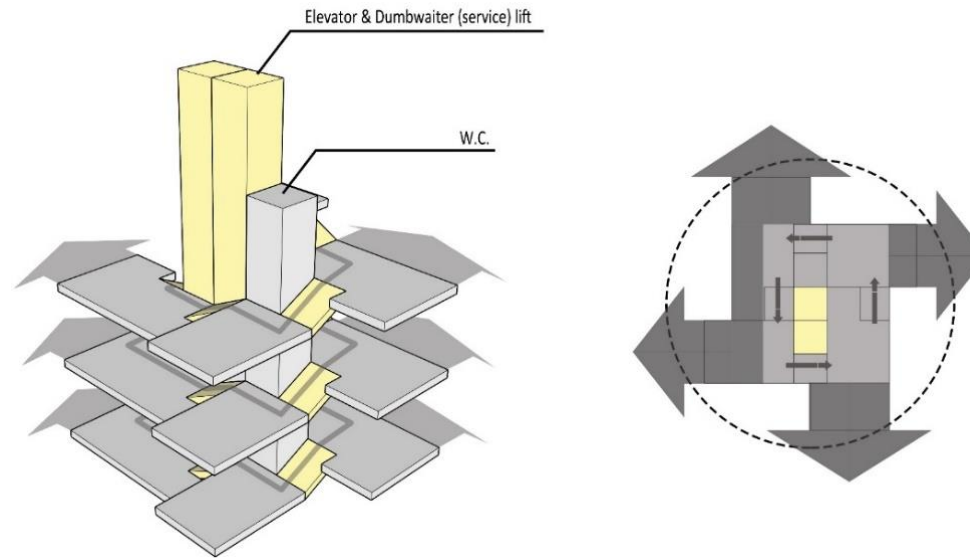
- Intersections are deficient in terms of urban landmarks and legibility.
- Intersections are considered to be important in terms of addressability throughout the city, and therefore their identification should be taken into consideration.
- Intersections are temporary stoppage areas for vehicles and passers-by, and the presence of attractive visual elements at these intersections should be taken into account.
- Bearing in mind the wide range of vision at intersections, the presence of a spectacular building that acts as a beautiful and attractive urban icon and is in harmony with its surroundings should be taken into consideration.

Canada's fuel industry in transportation sector contributes over \$10 billion to the country's GDP each year; it has 12,000 retail and commercial sites with about 85,000 employees in 2018. The statistics show a profitable potential in investing in this industry. There are some gas stations that provide complementary services (such as limited parking space for cars, a carwash and a convenience store and etc.) with respect to standards and requirements, depending on where they are located and land area allocated to them.

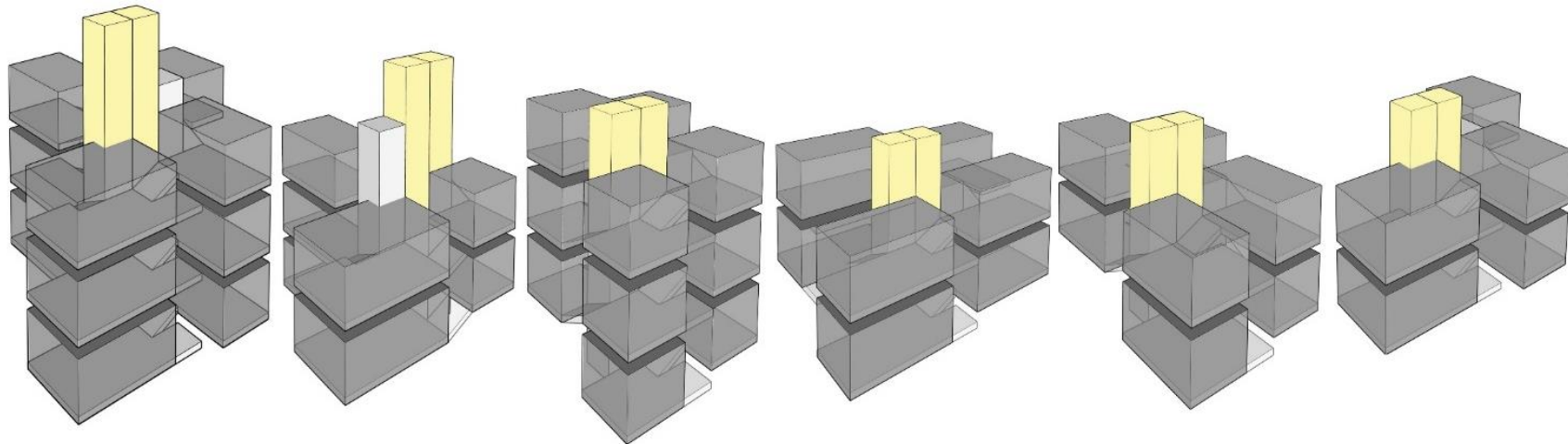
Rah Shahr Canada Architecture & Urban Design Consultants, Inc. proposes small coffee shops to be designed in gas stations located at intersections that would provide hot and cold drinks and snacks for pedestrians, passers-by and gas station users. In this regard, studies show an increasing need for gas station coffee in Canada, as the customers can benefit more in a one-stop-shop destination, they can have fill up cars and enjoy a quality cup of coffee or snacks, resulting in revenue generating income (more taxes in the city coffer) and service to the community.

The proposed coffee shops are located at intersection corner, and is mainly formed by modular expansion of spaces around a fixed core. The core includes an elevator, a dumbwaiter (service) lift and toilets that are located around the stairs, and other spaces (seating area and coffee shop) are spread in four zones in accordance with the available space in different flexible and expandable areas. These four proposed zones can each have a minimum surface area or can be added modularly in different directions. As a result, the width of the building will reduce to less than 6 meters or can be developed in longitudinal, L or square form in accordance with existing land.



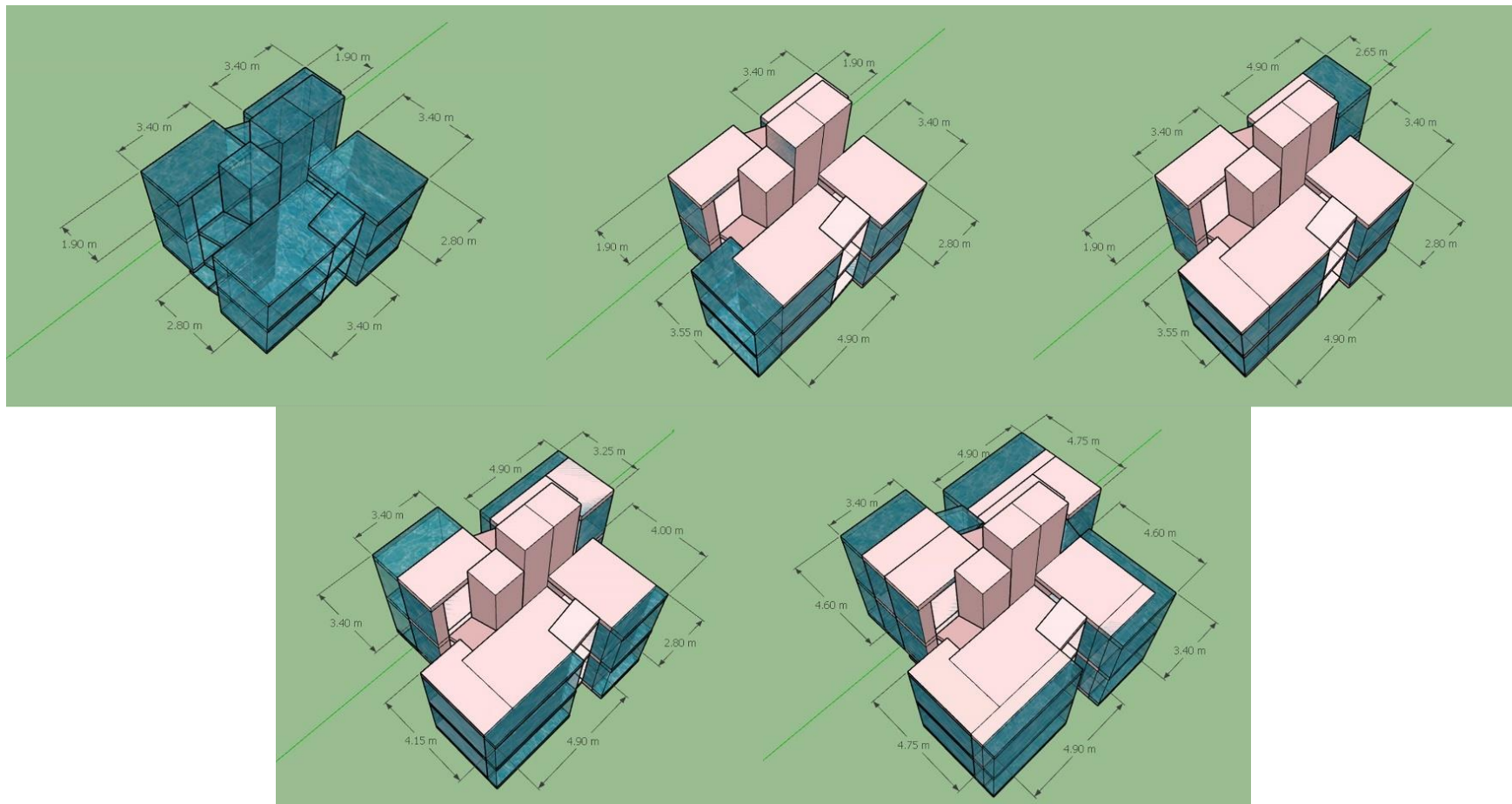


Central core & flexibility of other spaces expansion



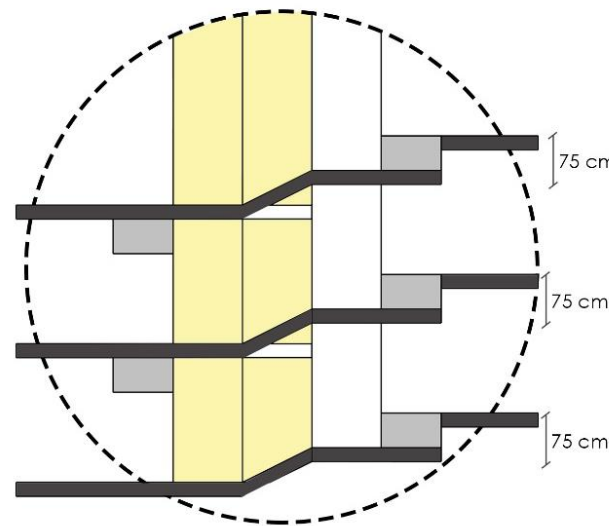
Modular expansion of building in different directions

The number of floors of the building can vary from one to two or three floors with roof garden, depending on where it is located. Lower levels are designed such that they do not obstruct the view at the street level. Situated at intersections along with its clear windows the building profits from a wide range of view to the surrounding landscape. Green roof and interior corners would also provide pleasant view for customers.



Modular expansion of building in different directions

For accessibility of customers with special needs, an elevator is placed adjacent to building entrance. After passing the vestibule, the customer reaches the upper level which is 75 cm above, where taking and preparing orders are done by relevant staff. Customers can place their orders in person at the counter as well as using digital devices. Upon ordering, customers go to other levels that are elevated 75 cm from each other and are also accessible by lift. Customers receive their orders by dumbwaiter (service) lifts.



Schematic section of building levels

One of the characteristic of these buildings is that they do not interfere with the visibility of the gas station, in physical terms and while every building possesses a definite identity, they have integrated structures and unique characteristics in terms of color and form, number of floors and they relate to the green space and the existing land. The ground level of the coffee shop does not interfere with the soft landscaping strip along the lot line of the gas station, as specified in chapter 150.92.50.10 (Chapter 150 Specific Use Regulations of the City of Toronto Zoning By-law)

Sign boards of oil companies and their prices will also be projected on the facades of the building that act as symbol of the gas station. In other words, the building itself acts as the company signboard while promoting the gas station. The colors used in the oil company logos and the color of the coffee shop brands can be chosen to be in harmony. These coffee shops can be leased to famous brands such as (Tim Horton, Starbucks, etc.) or even new brands can be defined for exploitation or partnerships with fuel companies as there are 88 distinct brands of gasoline in Canada ([www.canadianfuels.ca](http://www.canadianfuels.ca)).



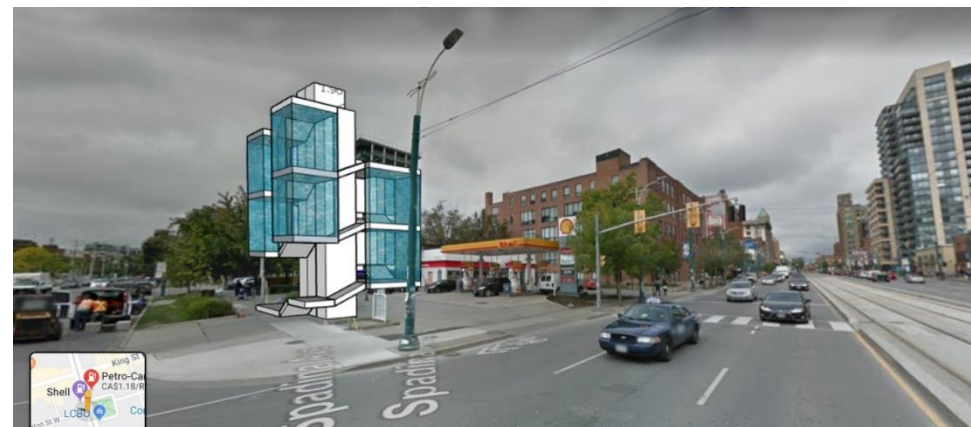
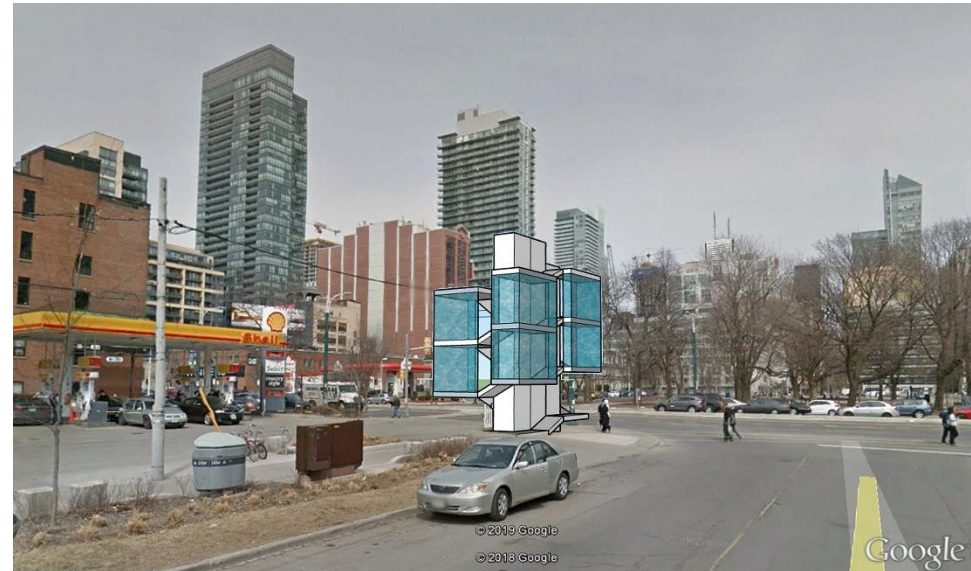
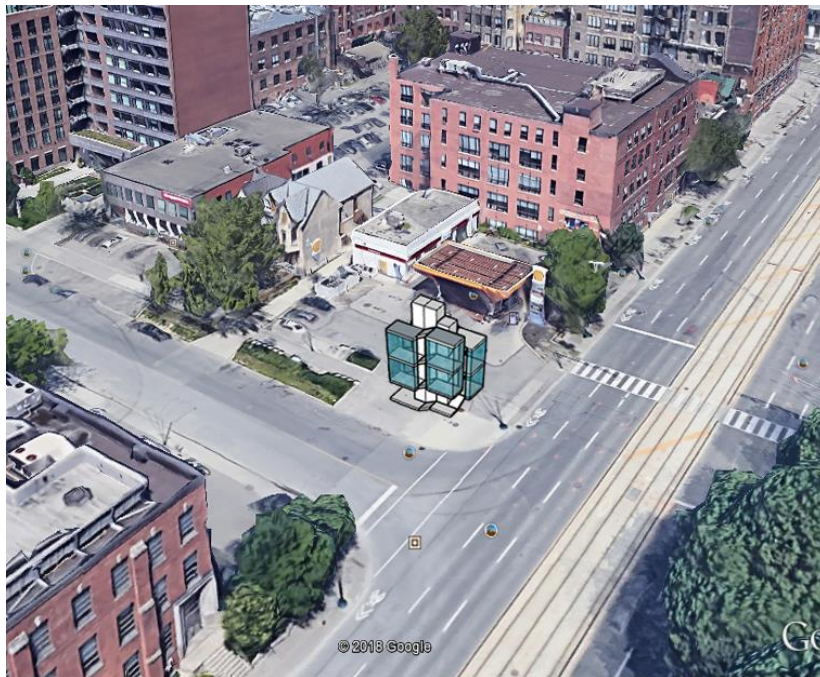
Possible outlook for the proposal

The access points to the gas station lot provide vehicular access to the coffee shop which is in accordance with chapter 150.92.100.30 (2), to ensure a safe and controlled traffic circulation. Also there are bicycle racks provided for customers who ride their bikes to get to the coffee shop.

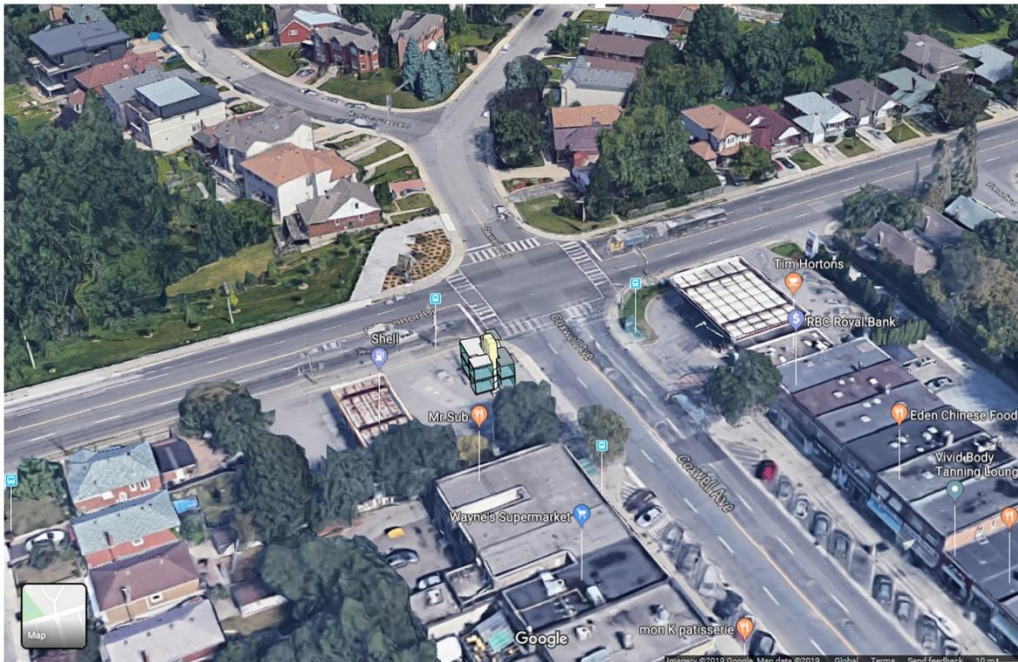
This proposal could also be viable for electric vehicle charging stations in which the process of charging cars usually take longer time.

Clearly, in order for such projects to achieve the expected results, a more detailed and complementary study must be undertaken in economy, sociology, access and traffic, and other urban related regulations.

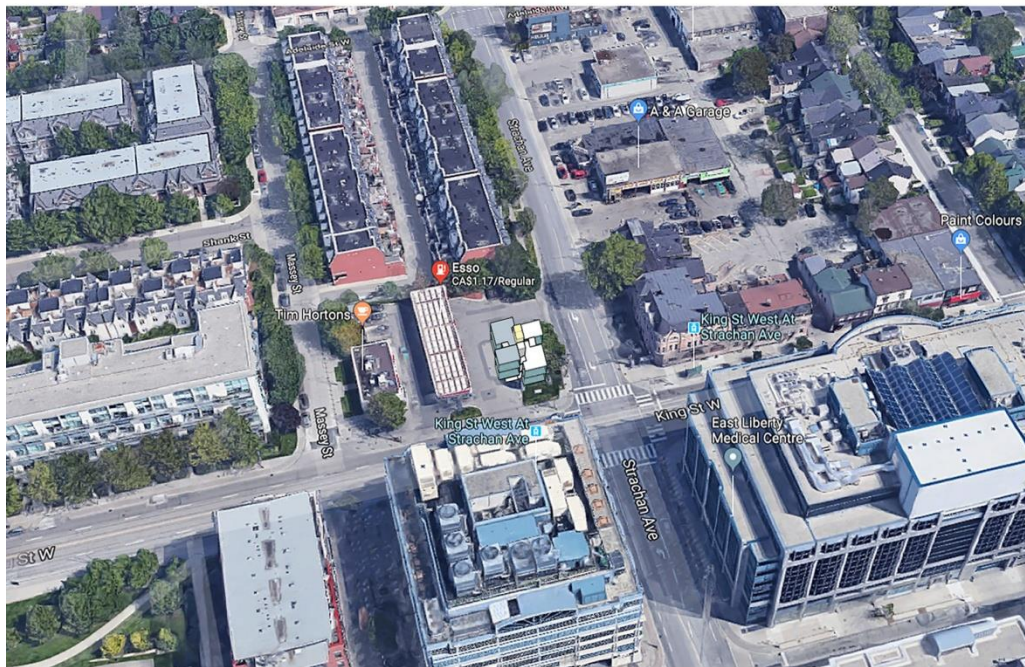
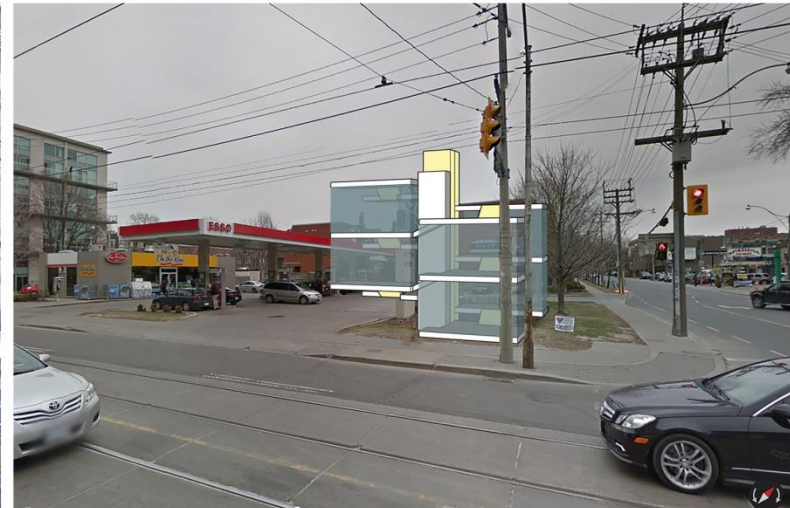
3D views of a sample could be seen in the following:



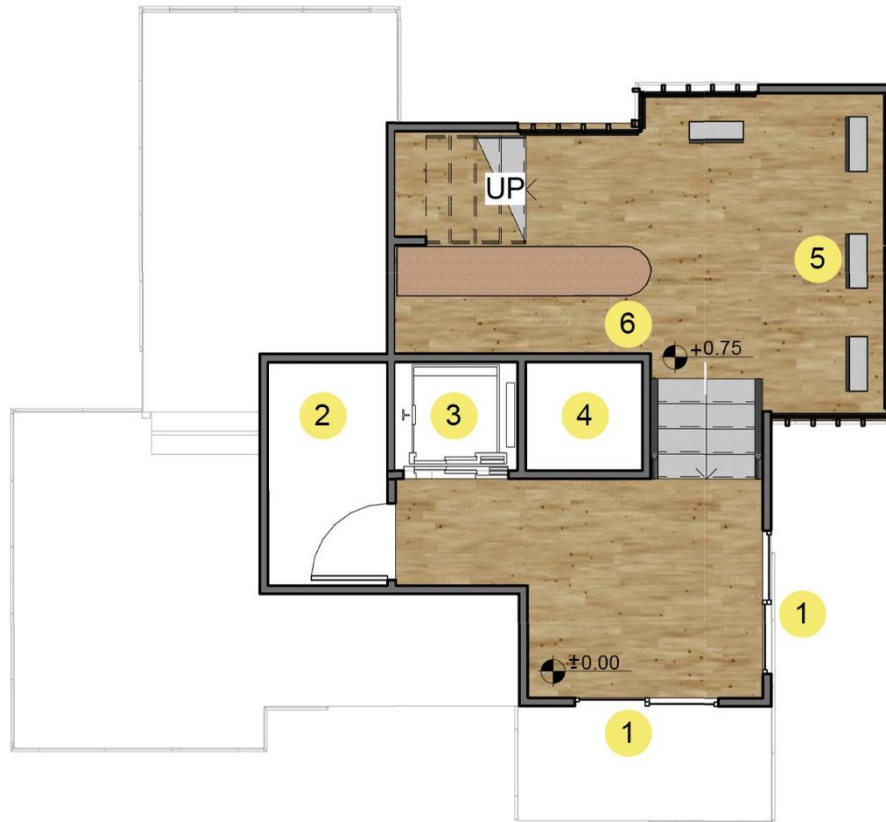
Sample (1)



Sample (2)



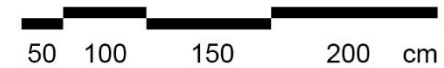
Sample (3)



first level plan

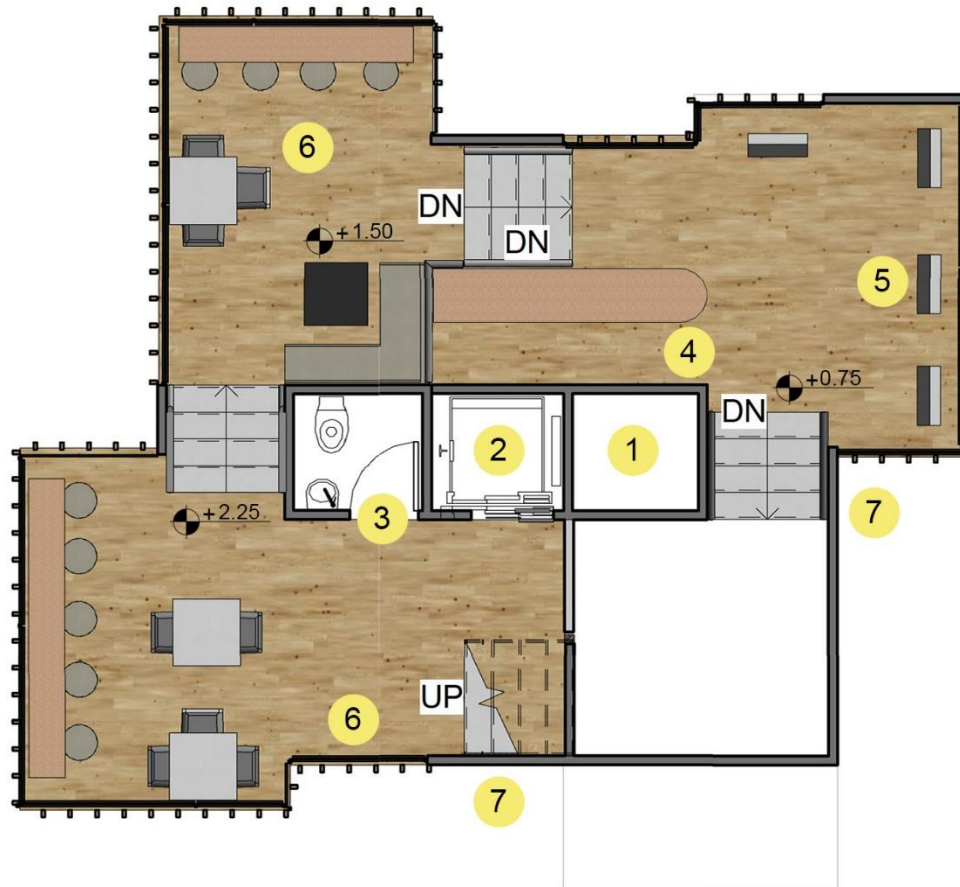
SC: 1/100

- 1 Entrance
- 2 Storage
- 3 Double sided elevator
- 4 Dumbwaiter
- 5 Order/ Grab and Go
- 6 Counter/preparation



1<sup>ST</sup> Level Plan

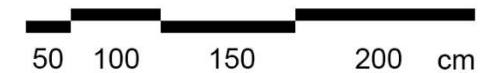




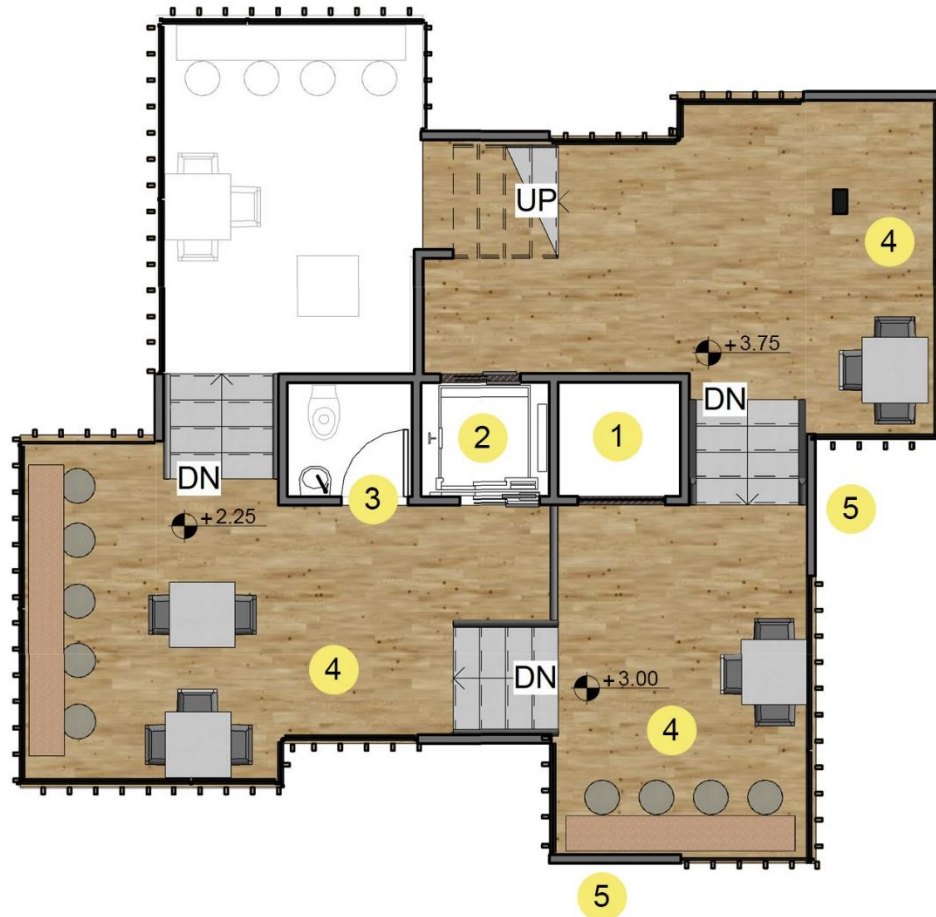
## Second level plan

SC: 1/100

- 1 Dumbwaiter
- 2 Double sided elevator
- 3 Rest room for women
- 4 Counter/preparation
- 5 Order/ Grab and Go
- 6 Lounge seating
- 7 Board instalation place



2<sup>nd</sup> Level Plan

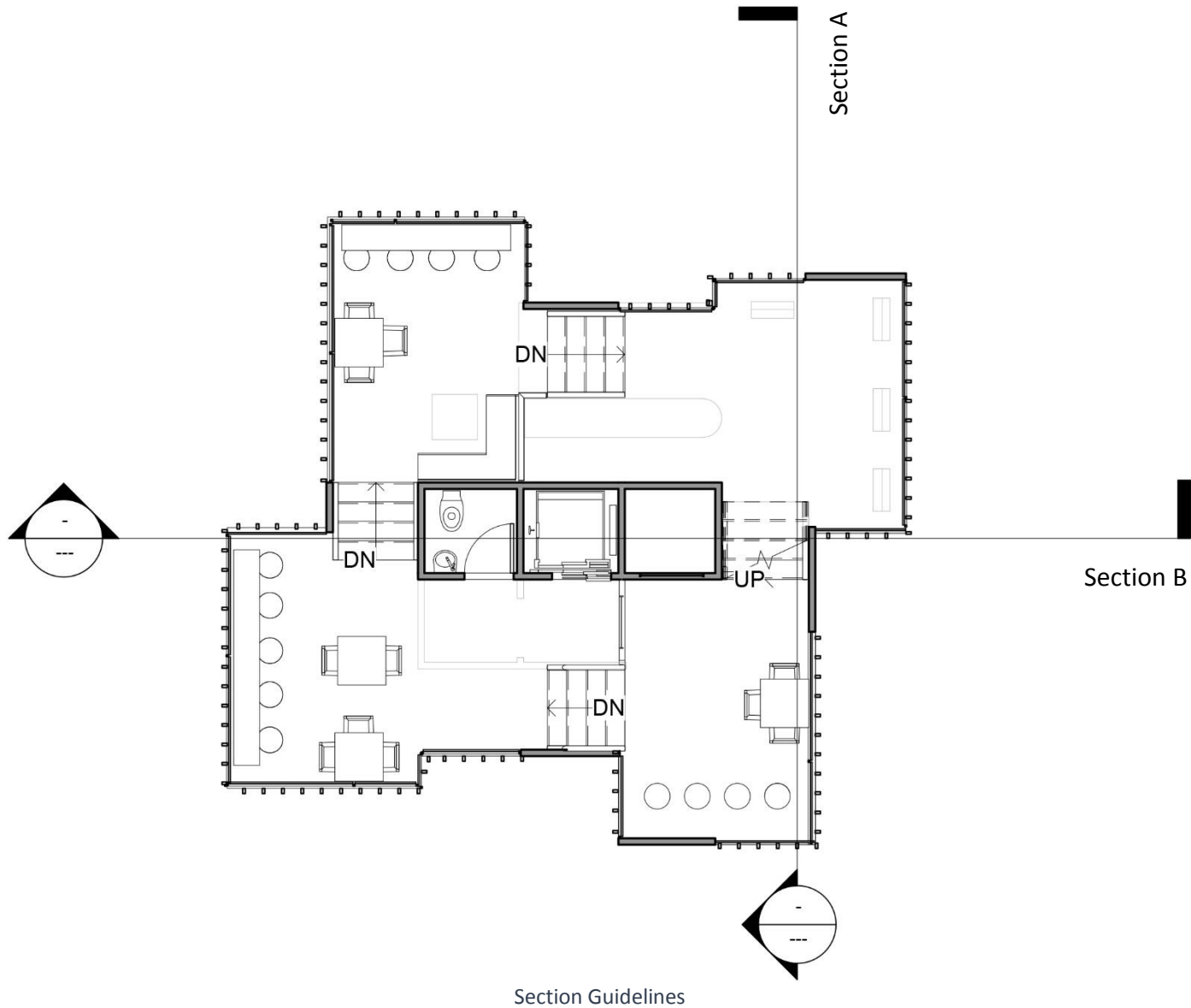


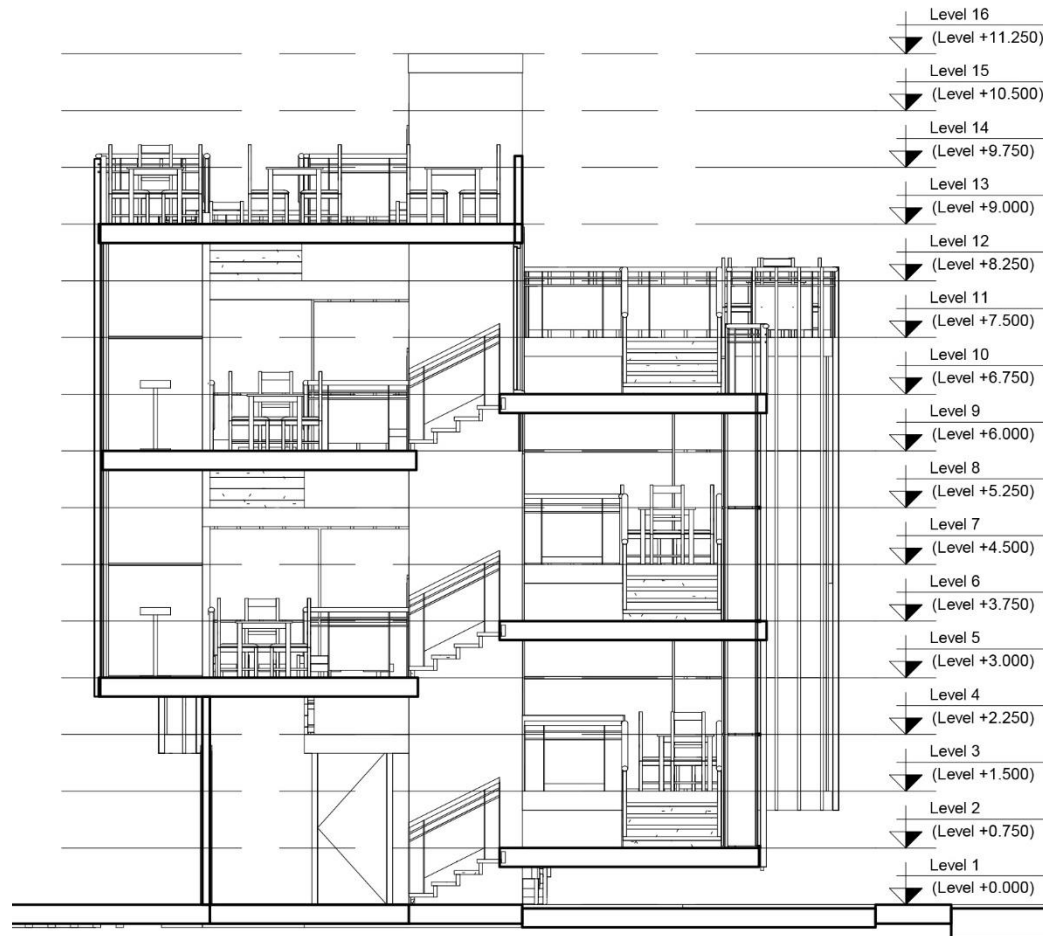
### Third level plan

SC: 1/100

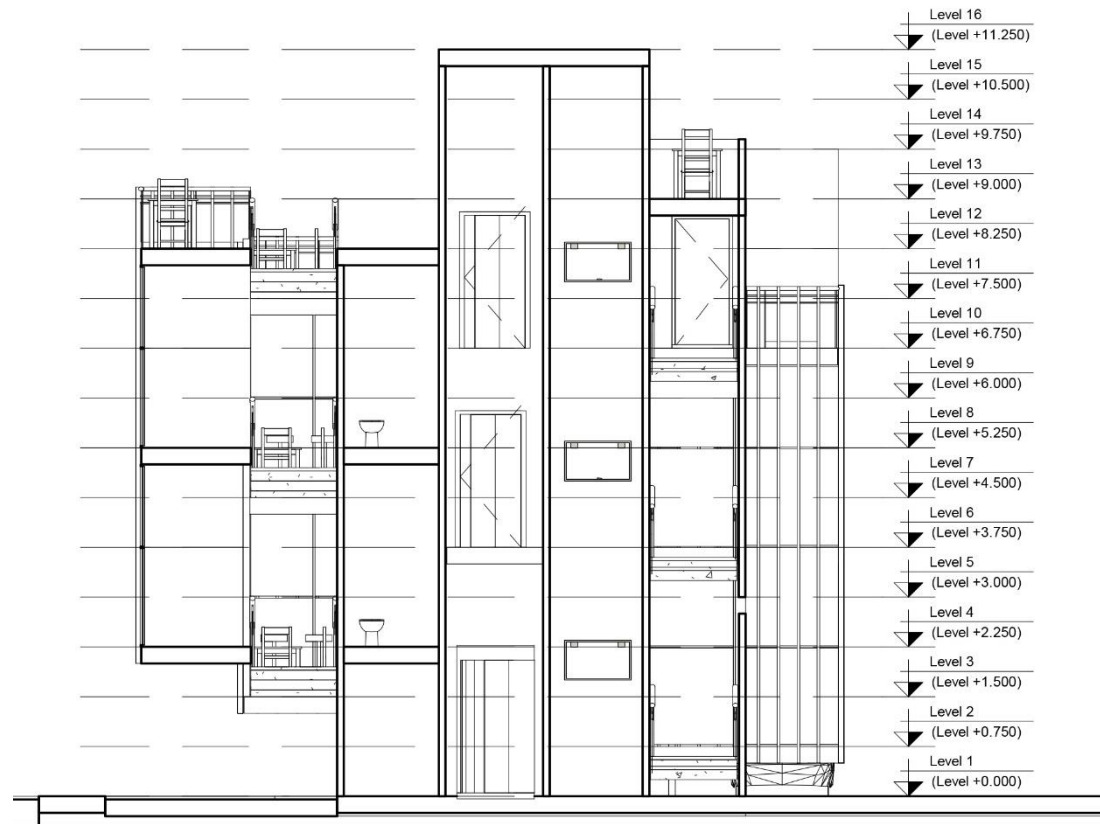
- 1 Dumbwaiter
- 2 Double sided elevator
- 3 Rest room for men
- 4 Lounge seating
- 5 Board instalation place

3<sup>rd</sup> Level Plan

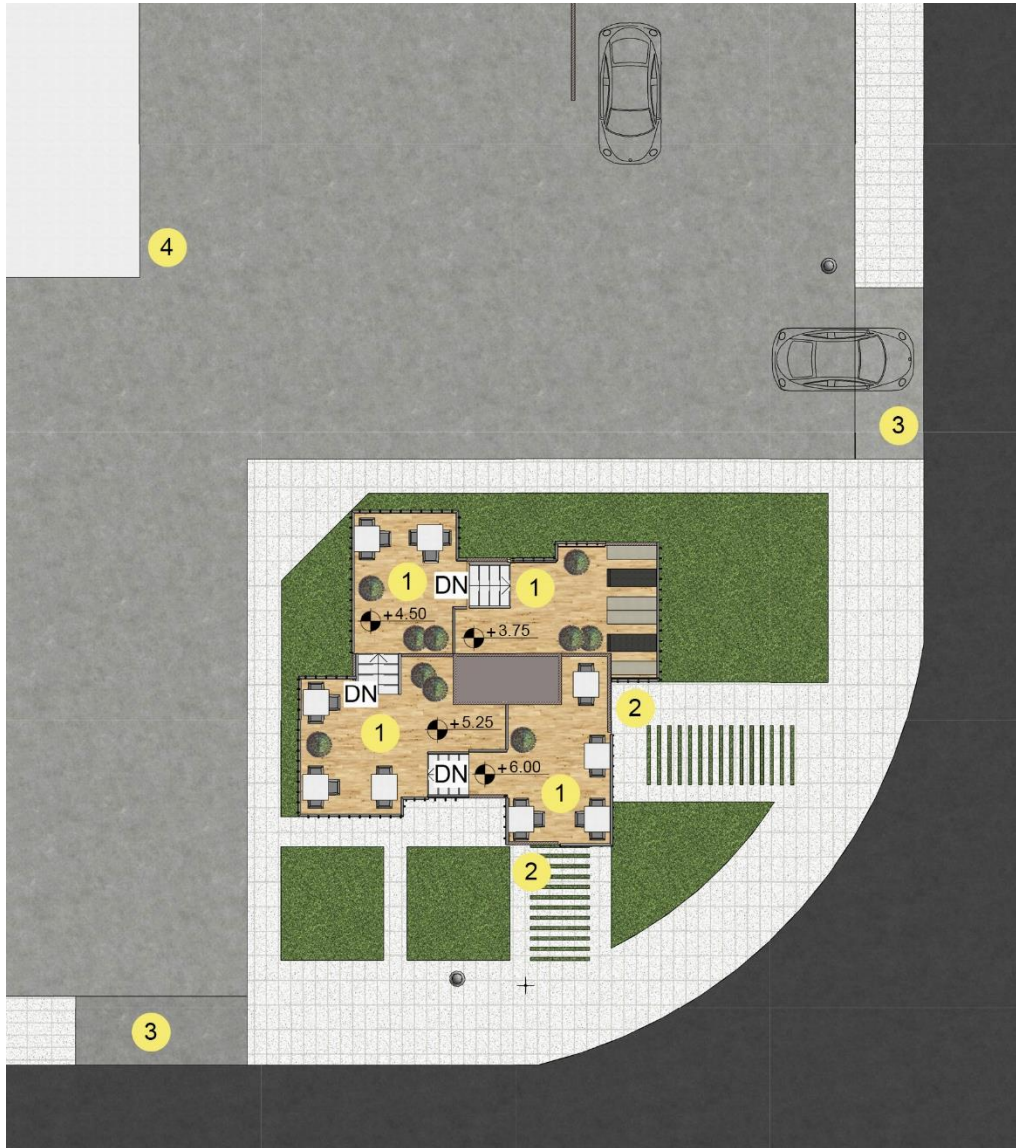




Section A-A



Section B-B

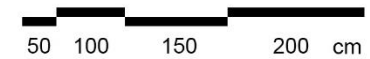


Site plan

#### Fourth level plan

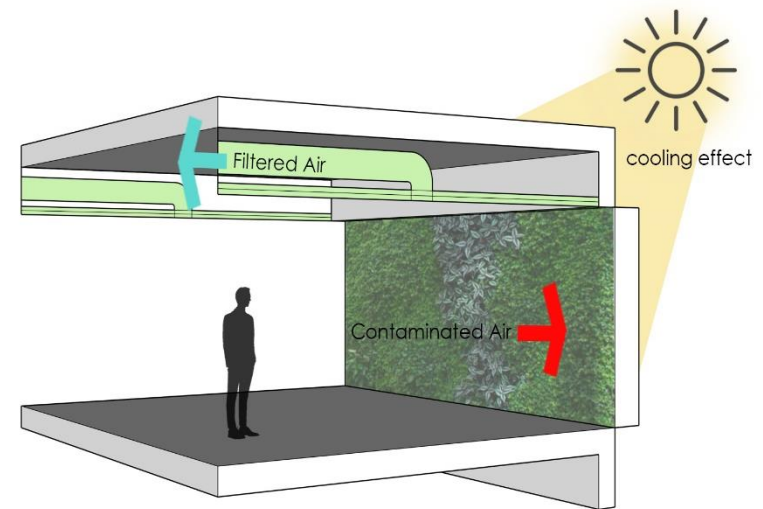
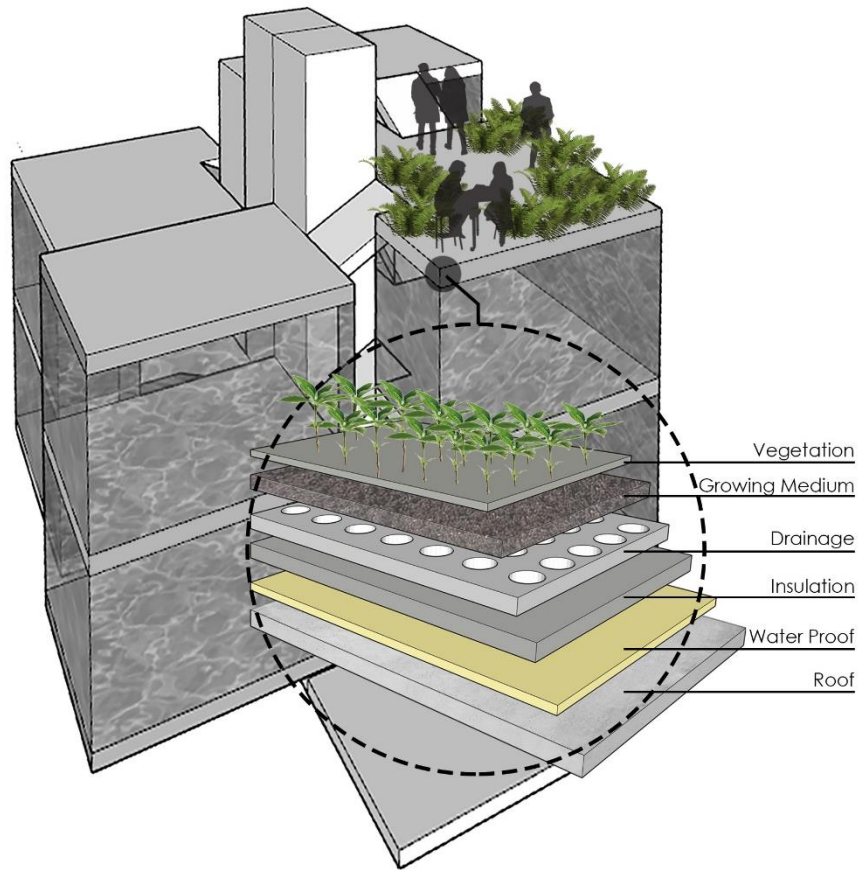
SC: 1/100

- 1 Outdoor lounge Seating (on the roof)
- 2 Board instalation place
- 3 Entry/Exit of main street
- 4 Gas station



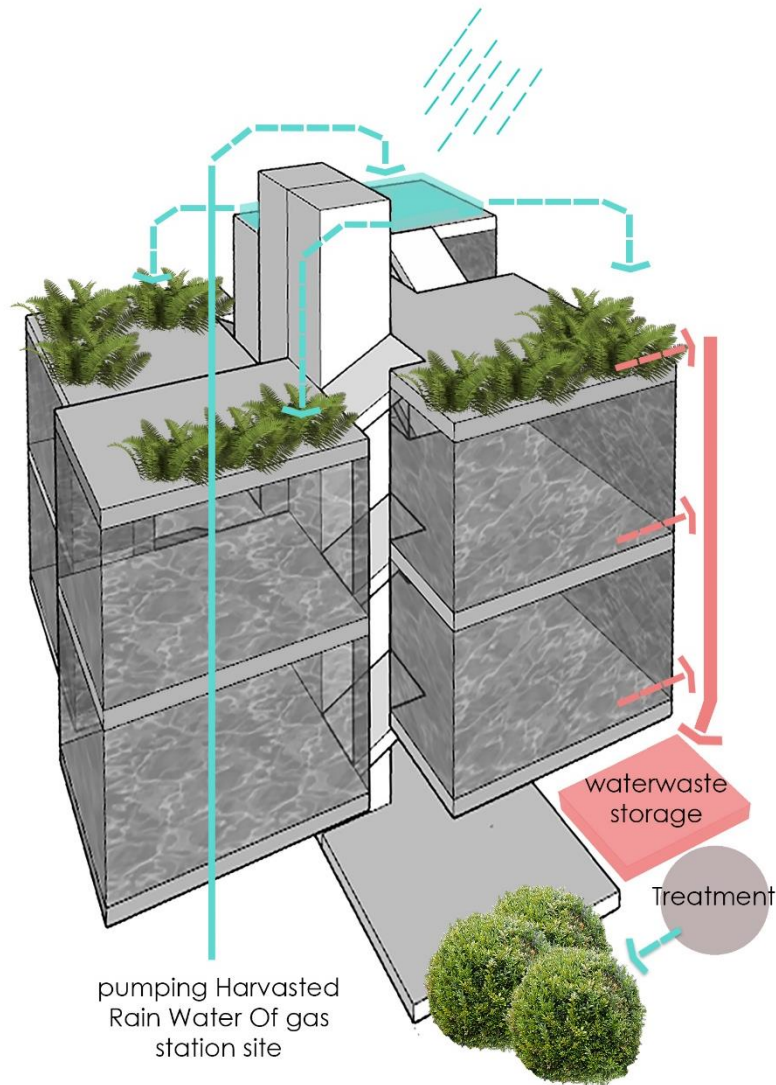
- Green Roof**
- Insulation (reducing energy consumption)
  - Aesthetic
  - Better rainwater management
  - Planting (using the coffee grounds as fertilizer)

- Internal Green Walls**
- Improving the internal air quality
  - Healthy and relaxing environment for staff and customers

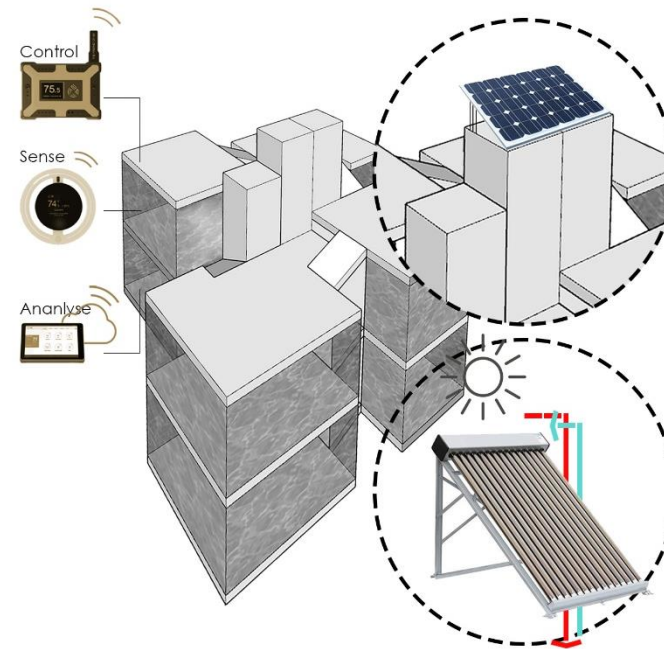


Green roof and internal green walls in the coffee shop

## Water | • Rainwater harvesting for irrigation and other uses • Waste water management



## Energy Management | • Photovoltaics • Solar hot water • Intelligent sensors

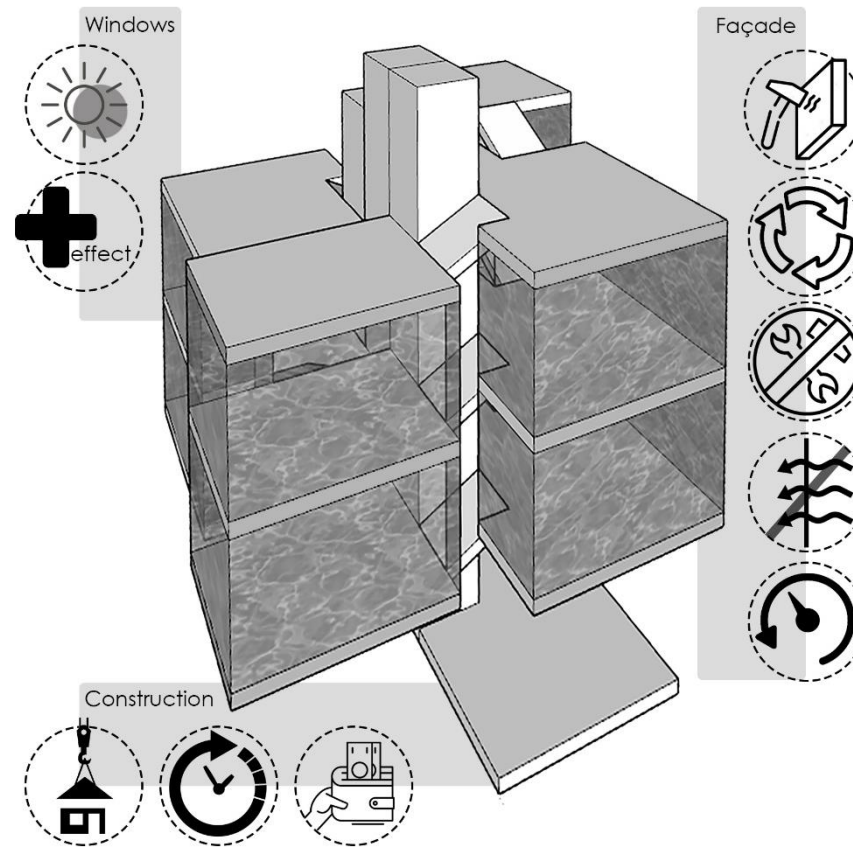


Water and energy management in the coffee shop



## Material

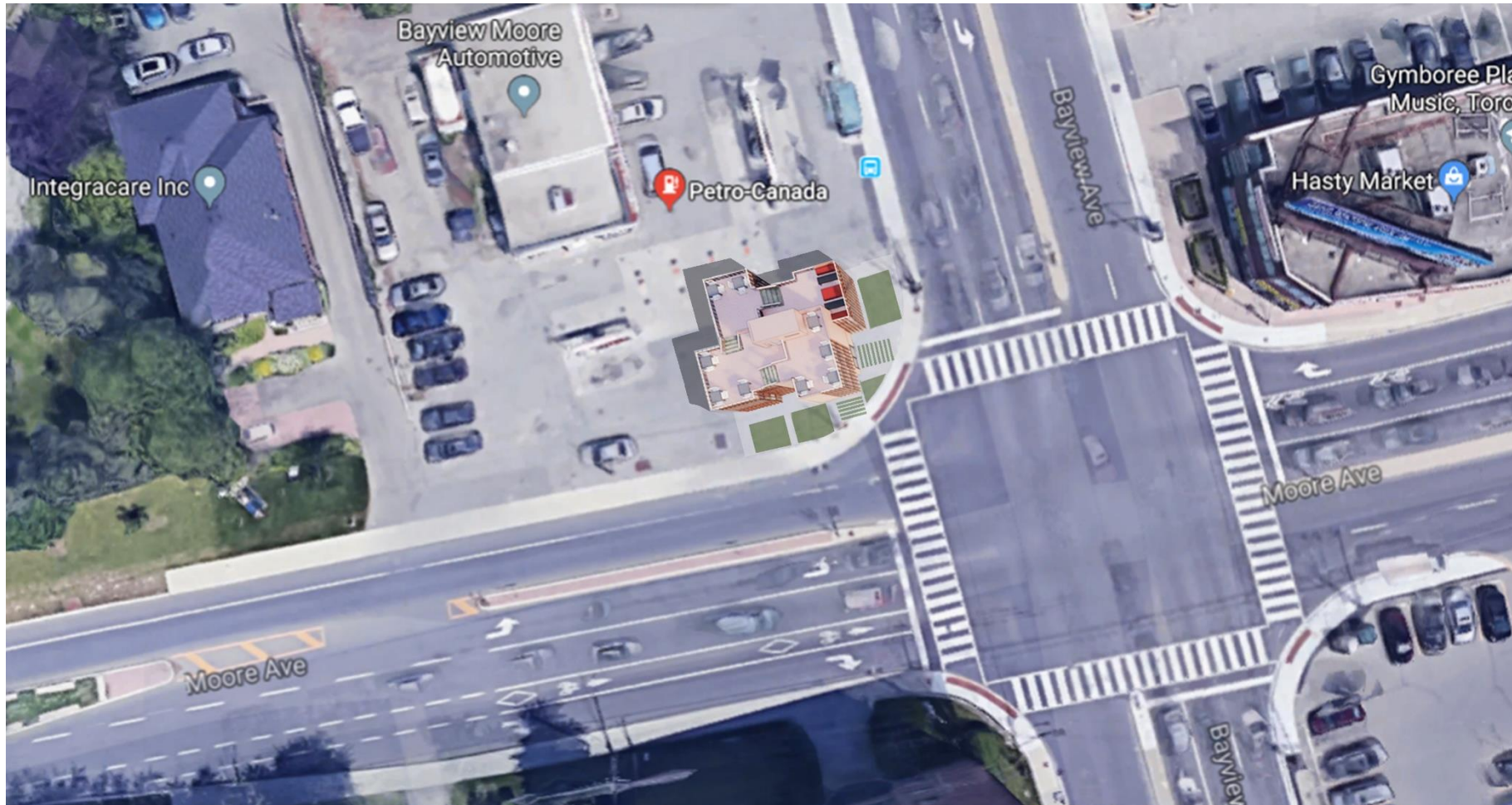
- Façade: durable, sustainable, easy to maintenance, heat transfer decrease, minimizing energy consumption
- Windows: Natural light (decrease in power demand), positive effect on customers and staff
- Prefabrication construction, shorter construction period, economically profitable



Sustainable material and construction



Bird's-eye view (1)



Bird's-eye view (2)



3D perspective view