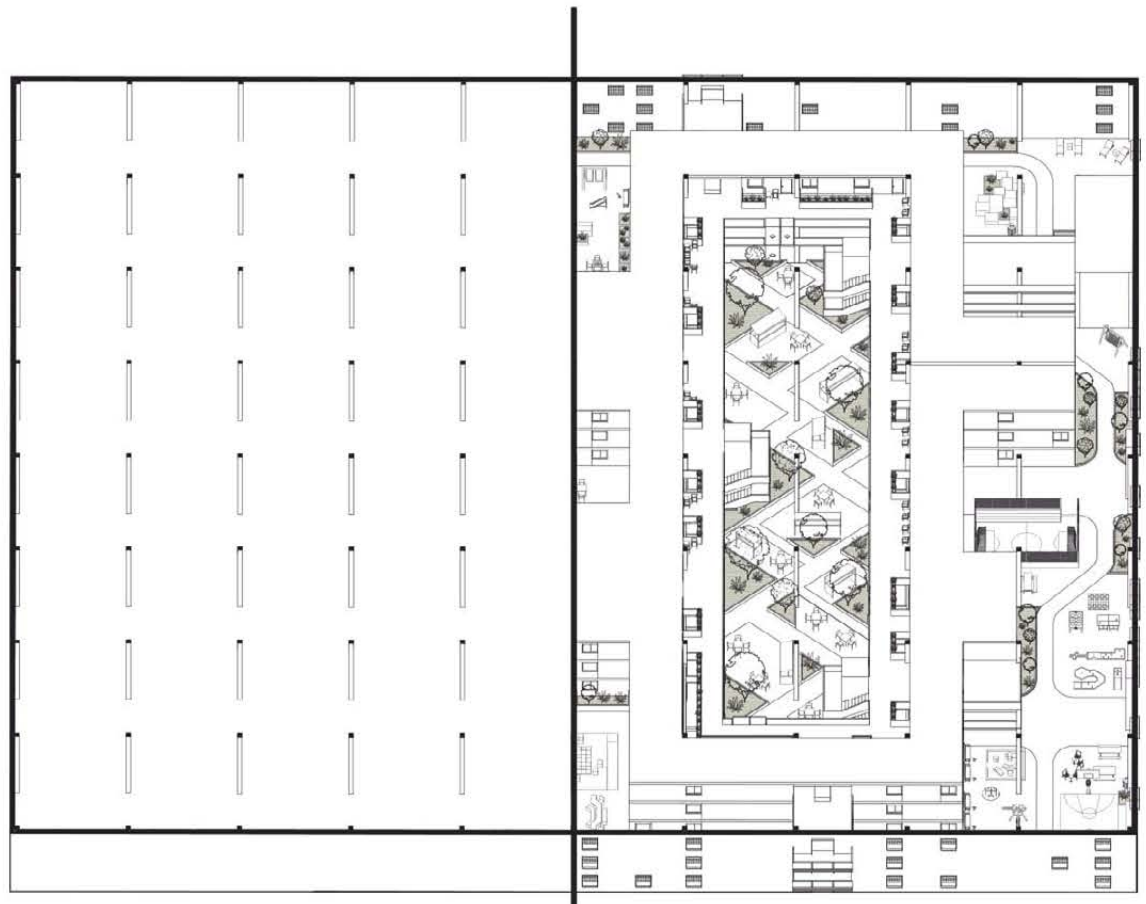


RETHINKING THE BOX

RETHINKING THE BOX

Oscar M. Garza Reza

Texas A&M University, College of Architecture

DEDICATION

El presente estudio está dedicado de todo corazón a todas las personas que me apoyaron a lo largo del programa.

A la Universidad de Texas A&M, a los maestros de la Facultad de Arquitectura y a mi comité por otorgarme los recursos, herramientas y conocimientos necesarios para concluir este trabajo.

A mi padre, con quien no puedo estar más agradecido. Me diste la oportunidad de cumplir una de mis mayores aspiraciones en la vida, y no habría podido iniciar este viaje sin su apoyo. Gracias por mostrarme la importancia del cuidado de la salud, que fue uno de los detonantes de este proyecto. Siempre has sido una persona compasiva y lo has dado todo sin esperar nada a cambio. Gracias por inculcarme esos valores y por enseñarme a ser persistente y a no rendirme nunca. Espero poder dar tanto a este mundo como tú lo has hecho.

A mi madre, por haberme apoyado siempre a lo largo de mi formación académica. Gracias por enseñarme a no conformarme nunca y a trabajar siempre duro para superar nuevos retos. Me diste la fuerza que necesitaba para llegar hasta aquí y me enseñaste a no bajar nunca la mirada ante la adversidad. Gracias por ayudarme a levantarme en los momentos más difíciles y por estar siempre ahí cuando te necesito.

A mi queridísima esposa, Martha, que siempre ha estado a mi lado en los momentos más difíciles de mi vida. Gracias por ayudarme a ser mejor persona, siempre te admiraré por tu bondad. No creo que sea posible encontrar suficientes palabras para expresar lo agradecido que estoy contigo. Me has apoyado incondicionalmente a lo largo de este viaje, que no ha sido nada fácil teniendo en cuenta las actuales circunstancias mundiales. Sin ti no habría sido posible mantener la calma, la motivación y la concentración necesaria para terminar este estudio. Este trabajo es también el producto de todos tus esfuerzos. Gracias por haberlo hecho posible. Te amo meu amor.

En memoria de Gerardo Treviño Chávez.
Mi querido amigo, recientemente dejaste este mundo sin previo aviso. Sé que ahora estás en un lugar mejor, pero reconozco que tu partida no ha sido fácil. Siempre estarás en mi corazón y nunca olvidaré los grandes momentos que pasamos juntos. Gracias por ser de las pocas personas que siempre confiaron en mis capacidades como arquitecto. No te defraudaré. Hasta pronto gordo.

The present study is wholeheartedly dedicated to all the people who supported me throughout the length of the Master's of Architecture program.

To Texas A&M University, the College of Architecture's faculty, and my committee for providing the resources, tools, and knowledge required to complete this piece of work.

To my father, who I cannot be more grateful to. You gave me the opportunity to fulfill one of my greatest life aspirations, and I would not have been able to begin this journey without your support. thank you for showing me the importance of health care, which was one of the triggers for this project. You have always been a compassionate person, and you have given everything without expecting anything in return. Thank you for instilling those values in me and for teaching me to be persistent and never give up. I hope I can give as much to this world as you have done.

To my mother, for having always supported me throughout my academic education. Thank you for teaching me to never settle and always work hard to overcome new challenges. You gave me the strength I needed to get here, and you taught me to never look down in the face of adversity. Thank you for helping me to get up in the hardest moments and always being there when I need you.

To my dearest wife, Martha, who has always stood by my side in the most difficult moments of my life. Thank you for helping me to become a better person, I will always admire you for your kindness. I do not think it is possible to find enough words to express how grateful I am to you. You have supported me unconditionally throughout this journey, which has been anything but easy considering the current global circumstances. Without you it would not have been possible to maintain the calm, motivation, and concentration necessary to finish this study. This work is also the product of all your efforts. Thank you for making this possible. I love you meu amor.

In memory of Gerardo Treviño Chavez.
My dear friend, you recently left this world without any notice. I know you are now in a better place, but I must admit that your departure has not been easy. You will always be in my heart and I will never forget all the great times we had together. Thank you for being one of the few people who always trusted in my abilities as an architect. I will not let you down. See you soon gordo.

COMMITTE & ACKNOWLEDGEMENTS

First and foremost, I would like to express my absolute gratitude to Texas A&M University for having supported me financially throughout the entire master's program. I want to thank Brian Gibbs, Michael O'Brien, Kenneth Hurst, and David Matarrita for all your mentorship and support throughout the study. You all played an essential role in the development of this project, and it was truly an honor to recieve your guidance.

I also want to thank the following faculty from the College of Architecture: Nicole Mcintosh, Jonathan Louie, Ahmed Ali, Anne Nichols, Nancy Klein, Marcel Erminy, Koichiro Aitani, Juan Carlos Baltazar, Harold Adams, Xuemei Zhu, Kirk Hamilton, and Liliana Beltran. You are all admirable professors, and I was fortunate to have learned from such brilliant minds.

I finally want to express my deepest appreciation to James Tate for having guided me throughout the study, without you this project would not have been possible. But more importantly, thank you for helping me to remove the blindfold that prevented me from seeing the world from different perspectives. You changed the way I see and think architecture, and I cannot be more grateful. I will never forget your lessons.

JAMES MICHAEL TATE
DEPT. OF ARCHITECTURE
CHAIR

MICHAEL O'BRIEN
DEPT. OF ARCHITECTURE
MEMBER

KENNETH HURST
DEPT. OF LANDSCAPE ARCHITECTURE
AND URBAN PLANNING
MEMBER

DAVID MATARRITA
DEPT. OF RANGELAND, WILDLIFE AND
FISHERIES MANAGEMENT
MEMBER

BRIAN GIBBS
DEPT. OF ARCHITECTURE
STUDIO PROFESSOR

TABLE OF CONTENTS

ABSTRACT

Rethinking the box explores the idea of revitalizing a vacant grocery store using a more human- and nature-centered approach to create a residential development that promotes social interaction, diversity, environmental care, and active living. Retail stores are typically a reflection of pure capitalistic motives and consumption behaviors, where the quest for the greatest and fastest return of investment becomes the main driver of the design decisions. These projects also reflect how modern societies function, with the automobile as the dominant mechanism for the development of daily operations. The result is a deep enclosed box of large proportions with an interior atmosphere distant from the outdoor environment, surrounded by a vast asphalt plain dedicated to no living beings.

However, conventional retail stores are ceasing to be an important component of contemporary societies. This “retail apocalypse” is now leaving thousands of boxy-looking buildings as concrete inaccessible islands scattered across the American nation. And to make matters worse, the COVID-19 pandemic is accelerating the situation as the ecommerce experiences a substantial growth propelled by social distancing and isolation mandates imposed by the government. Experts expect that 1 in 4 shopping centers will close by 2025 (Coresight Research & Credit Suisse, 2020).

Moreover, the shortage of affordable houses in U.S. continues to be present, with only 36% of the 10.9 million renter households living in extreme low-income conditions having access to affordable dwellings. This means that there is currently a shortage of 7 million affordable and available rental homes. Around 7.7 million extremely low-income renter households spend more than half of their revenue on rent and utilities (NLIHC, 2020). This situation is expected to worsen due to the economic distress caused by the COVID-19 pandemic. An unprecedented housing crisis might be on the way as an estimated of 30 to 40 million Americans are currently at risk of eviction (Aspen Institute, 2020).

The present study seeks to create a potential response to the housing crisis by reusing and adapting these retail spaces, and it is motivated by a rejection to prevailing demolishing practices, generic and individualistic domestic architecture, and vehicle-oriented urbanism.

Three major research questions are explored during the process:

1) How can a vacant retail store be transformed into a residential development?

2) How can architecture support communities in the creation of intergenerational relationships in the domestic environment?

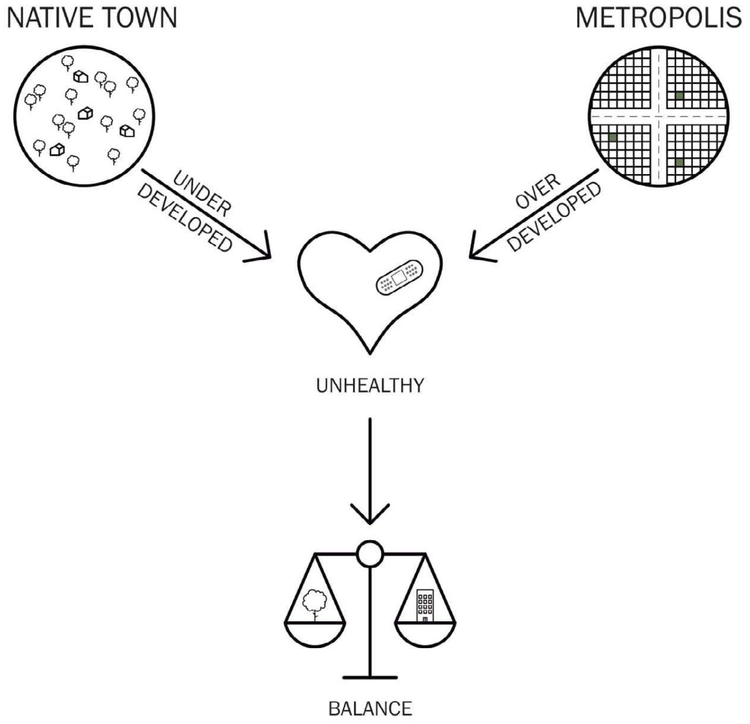
3) How can the built environment support people in the development of healthy lifestyles?

The goals of the study are to demonstrate that vacant retail sites can indeed be converted into sustainable and inclusive residential developments suited to every age group, test how alternative housing configurations and amenities could support intergenerational relationships without compromising the wellbeing, freedom, and privacy of the different age groups, and explore and implement architectural strategies that support active lifestyles.

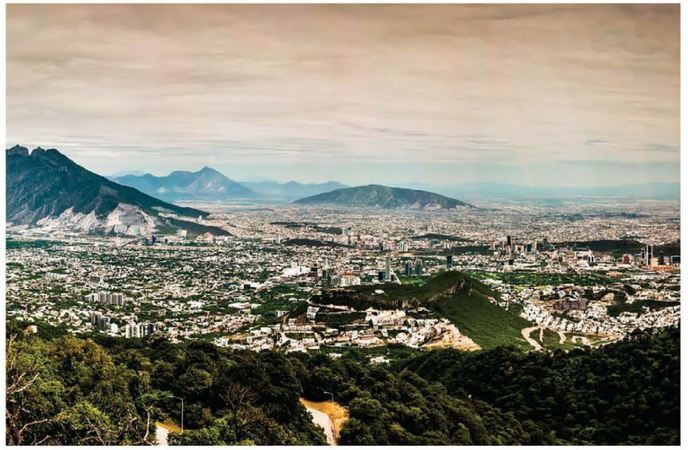
The project consists in the design of an intergenerational community accommodating multiple zoning to create a pedestrian-oriented destination that supports active lifestyles. Nature is incorporated to support the health of the population and reduce the concrete footprint that dominates the urban landscape, which is likely to be a major cause for the origination of new infectious diseases (Quinney, 2020).

The design process was guided by the following ideals: eliminate the grey dominance of the site by reintroducing nature, achieve an inclusive environment by integrating features that support the routines of both residents and outsiders of all age groups, accomplish a pedestrian-oriented development by limiting the circulation of vehicles, reject the conventional restrictions and divisions of current domestic environments, and support collectivism by strategically incorporating shared diverse amenities and architectural features that allow intergenerational interactions.

I aspire that this study becomes a valuable reference for future research of the same nature. A project like the one envisioned in the present document would potentially help reduce the shortage of affordable housing, provide low-income populations with opportunities to return to the cities, reduce carbon emissions and waste originated by demolitions and support the creation of cohesive and diverse communities where every member can cultivate a sense of belonging.



MOTIVATION



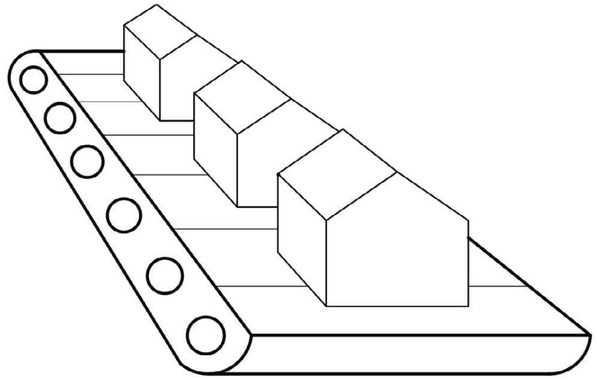
Monterrey City. 2021. By TripAdvisor.

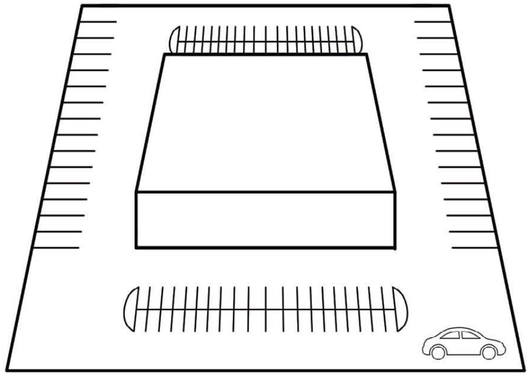
Coscate Town, Sierra de Durango. 2009. By the author.

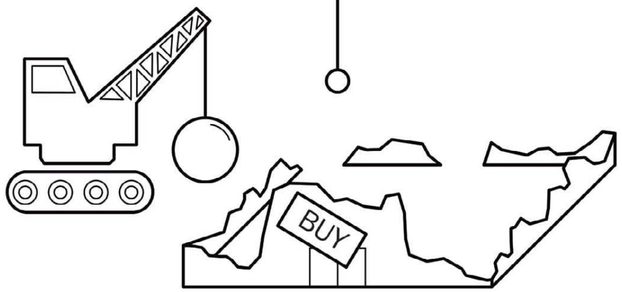
I grew up in Monterrey, a metropolitan city located northeast of Mexico. Monterrey is rich in many ways, it has a good economy founded on the manufacturing industry and a hard-working society, it has beautiful green mountains that guard it from severe weathers, and it has countless leisure destinations including soccer stadiums, shopping centers, and restaurants…But I have been observant. The solid economy has partly caused an uncontrollable urban sprawl resulting in traffic congestions that make people lose their sanity (literally), the mountains are being destroyed to satisfy construction demands or they have been invaded due to the shortage of land and capital obsessions, and leisure, well the soccer fields seem to have more greenery than the entire city. Today, Monterrey, as many other cities around the world, has been shaped by humanity's compulsion to progress and consumption, bad politics, and…you know the rest. The result is a landscape inundated with contamination, cracked streets, narrow sidewalks invaded by vehicles, few low-quality parks/open spaces, and cars, cars, and more cars. I was unconsciously overwhelmed with the greyness that surrounded me all the time, but lucky to have an escape by staring at the remains of those green mountains every now and then.

I never knew I would be an architect; I just knew I liked to draw and imagine things I didn't see in my day to day, and that I wanted to leave a positive mark in the world. I almost decided to be an industrial designer, but a few months before applying to universities I had a life experience that changed my path. I went to do missionary work on the Sierra Madre in Durango, where different native communities live isolated from the urban and rural worlds. I was fortunate to meet the natives from the region, as they completely changed the way I was experiencing life. In short words, they showed me that more is not more, and that happiness is not a quantifiable noun. Even after living in homes made from rough wood, straw, rusty steel sheets, and earth; eating the same food (beans and rice) every day; having no electricity, kitchen appliances and shortage of water. The people of Durango showed me happiness, cooperation, and resiliency in ways I had never seen before. I won't lie, not everything was a bed of roses, they lived in very rough conditions with insufficient resources to satisfy their physiological and safety needs. But they lived in harmony, free from the greyness that dominates the urban world. This experience motivated me to pursue a degree in architecture, as I started aspiring and envisioning a different built environment. One that adapts to current technologies but rejects their actual excessive presence. One that unites all types of individuals rather than separating them. One that modifies an ecosystem rather than destroying one. One that does more with less, nor absolute green or gray, but a fair balance between both.

GOALS & RESEARCH QUESTIONS







This study is motivated by a rejection to prevailing demolishing practices, generic and individualistic domestic architecture, and vehicle-oriented urbanism. Three major research questions are explored during the process:

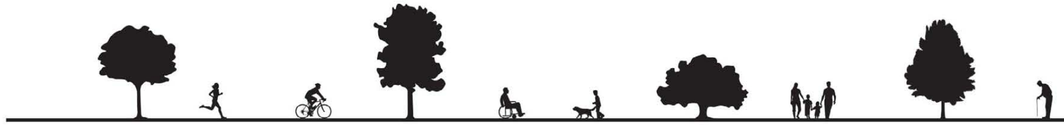
1) How can a vacant retail store be transformed into a residential development?

2) How can architecture support communities in the creation of intergenerational relationships in the domestic environment?

3) How can the built environment support people in the development of healthy lifestyles?

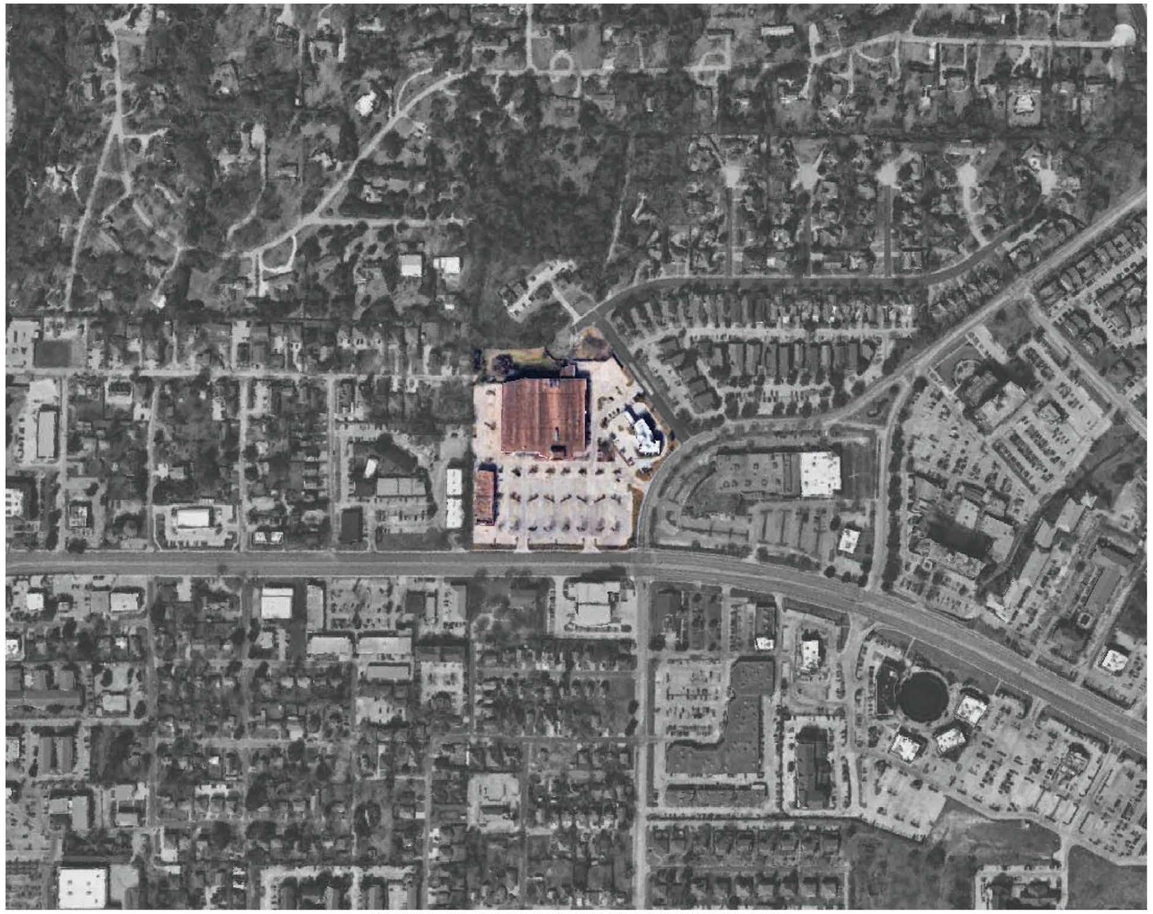
The goals of the study are to demonstrate that vacant retail sites can indeed be converted into sustainable and inclusive residential developments suited to every age group, test how alternative housing configurations and amenities could support intergenerational relationships without compromising the wellbeing, freedom, and privacy of the different age groups, and explore and implement architectural strategies that support active lifestyles. The study additionally seeks to propose a potential response to the housing crisis by reusing and adapting these retail spaces.

The retail project selected for this study is located in College Station, Texas, at the corner of University Drive Av. and Tarrow St. The site has an area of approximately 10.5 acres and is currently occupied by three different buildings: A vacant grocery store, a bank, and a cluster of small commercial shops. Adjacent to the project, along the main avenue, are retail businesses, a park, and a fire station. Various residential developments are encountered behind the commercial strip that runs adjacent to the main avenue. The design process was guided by the following ideals: eliminate the grey dominance of the site by reintroducing nature, achieve an inclusive environment by integrating features that support the routines of both residents and outsiders of all age groups, accomplish a pedestrian-oriented development by limiting the circulation of vehicles, reject the conventional restrictions and divisions of current domestic environments, and support collectivism by strategically incorporating shared diverse amenities and architectural features that allow intergenerational interactions.



RESEARCH HIGHLIGHTS

THE DOWNFALL OF RETAIL STORES



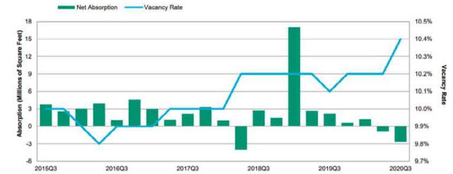
Albertsons grocery store's location: 615 University Drive East.

Albertsons grocery store. 2010. By Pseudo3D blogs.

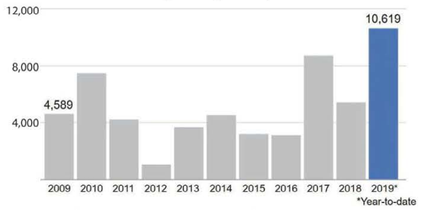
Albertsons grocery store's interior. By AggiePhil.

The world is in continuous change, and we must stop doing architecture based only on past practices and philosophies. We must find sustainable, humanistic, and environmental-friendly methods to transform our current environments into new settings that resonate stronger with our present. Social changes are emerging as more younger generations continue to embrace new technologies. Conventional retail stores are ceasing to be an important component of contemporary societies and have been collapsing over the last decade (Moody's Analytics, 2020). This retail apocalypse is now leaving thousands of boxy-looking buildings as concrete inaccessible islands scattered across the American nation. And to make matters worse, the current pandemic is accelerating the situation as the ecommerce experiences a substantial growth propelled by social distancing and isolation mandates imposed by the government. Experts expect that 1 in 4 shopping centers will close by 2025 (Coresight Research & Credit Suisse).

The "big box" building selected for this study has been another victim of the retail collapse. Located in 615 University Drive East, the building opened its doors in 1991. The function of the building has remained unaltered, serving as a grocery store until its closure in 2011. The store was acquired by H-E-B (KBTX, 2016) as a market strategy, which later limited the lease of the building. The store can't be occupied to provide food or pharmacy services, which is the original function of the big box.



Shopping Center Net Absorption and Vacancy. 2020. By Moody's Analytics.



Annual Store Closure. 2019. By CoStar Group.

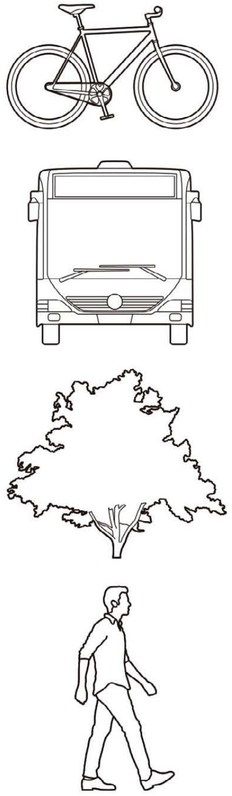
HEALTH

The 2002 World Health Report developed by the World Health Organization (WHO) revealed that chronic diseases (cancer, stroke, heart disease, obstructive pulmonary disease and diabetes) are the main causes of global death and disability. The report informs that chronic conditions are accelerating worldwide, and they were accounted for almost 60% of all deaths occurring in the globe and 43% of all diseases afflicting civilizations during the year in question. According to Health Catalyst (2017), a leading provider of data services to healthcare organizations, chronic diseases are now responsible for 70% of the deaths occurring in United States, a statistic that reflects the growth estimation established by WHO in 2002. Chronic diseases have become the greatest economic burden of the nation regarding healthcare (CDC). The Center for Community Health Development (2019) of Texas A&M University has collected health status and community data of the region of Brazos Valley since 2002 and published its most recent report in 2019. Among the most alarming health indicators is the prevalence of obesity, with 70% of the population being overweight or obese. The region also shows deficient results on healthy food availability and accessibility, scoring below the U.S. average. Around 25% of residents report food insecurity issues. Moreover, 25% of inhabitants report they don't engage in any leisure time physical activity, and the Brazos Valley scores significantly lower (20%) than the U.S. average in terms of accessibility to locations for physical activity. These conditions are important links to the increased prevalence of many chronic diseases in the region, where population suffers from hypertension (40.7%), high cholesterol (31.3%), diabetes (13.3%), heart disease (8.9%), cancer (6.9%) and asthma (12.6%). Therefore, it is vital to develop strategies and standards that reduce the burden of the obesity/sedentary lifestyle epidemic, and the built environment has a key role to play in this matter. WHO (2018) has adopted a comprehensive global monitoring framework (GMF) for the prevention and control of noncommunicable chronic diseases (NCD). Among the most important targets is a 25% relative reduction in risk of premature mortality from cardiovascular diseases, cancer, diabetes and a 15% reduction in the prevalence of sedentary lifestyle by 2030.

Chronic diseases in America. 2020. By CDC.

Key lifestyle risks for the development of chronic diseases. 2020. By CDC.

ACTIVE LIVING



The relationship between the built environment and physical activity was studied throughout this study to implement urban features that support active living and help combat the development of chronic diseases. Physical inactivity is one of the main reasons for the development of chronic diseases and is accounted for 8.3% of all deaths occurring in United States (Carlson, Adams, Yang, & Fulton, 2018). Many organizations and investigators have developed systematic reviews involving studies that analyze the effects of the built environment on people's physical activeness with the objective of identifying evidence-based features that generate a livable environment. This last term, in the architectural extent, is granted to physical settings that incorporate components that provide equal access to health resources and good quality of life. There is no clear and robust scientific evidence based on randomized trials that clearly and significantly associate an increase in physical activity with the modification of the built environment. However, observational studies revealed higher physical activity levels in populations living in activity-friendly environments.

Built environment attributes showing evidence of beneficial influence on physical activity coincide with the principles of new urbanism. The main elements identified are walkability, connectivity, mixed-use development and destinations, density and diversity, parks and greenery, public transport, and safety.

1) Walkability

This principle focuses on the development of infrastructure that supports nonmotorized means of transportation. Most of the evidence pointed at walking and biking as the best transport alternatives. The key elements of walkability are numerous pedestrian paths (sidewalks and walking trails) across and around the project and bike lanes with the same width of a typical automobile lane. It is also important to indicate that these features alone are not sufficient, and they must work in hand with other aspects like good public transport, shading elements, availability of destinations, and safety measures to become successful.

2) Connectivity

The rationale behind this concept is quite simple, if people are to move naturally, they need to have a well-connected urban grid that facilitates that action. Cul-de-sacs that interrupt circulation routes and create dead ends together with large blocks that create long inefficient trails constitute unfavorable conditions for active transport. On the contrary, people will likely move without the need of an automobile if the urban grid is composed by small-scale modules and if it experiences no interruptions.

3) Mixed-use development and destinations

This principle follows the model of compact cities, which intends to reduce people's mobility by allocating the most frequenting destinations within a short distance from residential areas. The idea is to provide commercial, recreational, cultural, and educational destinations in a walkable distance from the zones where people live. The concept opposes to the interminable expansion that metropolitan cities experience, where centralization and sprawl reign and where automobile becomes the only practical mean of transport.

4) Parks and greenery

Many research studies have found a positive relationship between nature and people's well-being. In fact, parks are vital elements for active living since they are some of the few places where people tend to do moderate to vigorous physical activities. Parks need to be numerous and must exist within a walkable distance (from 0.3 to 1 miles) from residential zones. It is important to note that quality is more important than quantity when it comes to green spaces, and these need to be accessible, attractive and must accommodate specific functions to encourage their use. Moreover, walking and cycling trails must also be accompanied by dense trees in hot climates, which serve as canopies that provide shade along the circulation routes.

5) Public transportation

Quality public transport infrastructure is vital for active living since it promotes walking and automobile reduction. Evidence suggests that people using public transport to move to inaccessible destinations tend to achieve greater MVPA levels as a result of walking routines. Public transport must be in good conditions, present across the entire city, and abundant (to reduce waiting times) to encourage people to move by nonmotorized means. Every community must have at least one public transport stop within a short walkable distance and people waiting for the service must be provided with a comfortable and safe environment.

6) Safety

None of the above features can be successfully applied without having the safety of inhabitants as a top priority. If residents of a community do not perceive that they will be free of harm while performing certain activities, they would likely avoid them or reject them completely. This is translated to protective barriers for people walking and biking (against heavy circulations), adequate lighting around the entire project, and in general a built environment free of dangerous features such as sharp steeps, cliffs and deficient borders in terraces and high spaces.

LIVABILITY INDEX

The American Association of Retired Persons (AARP) has developed a tool to measure the livability level of neighborhoods, states and cities based on 7 categories: housing, neighborhood, transportation, environment, health, engagement and opportunity. The score ranges from 0 to 100, and the average community livability level is 50. The zone where the project is located currently scores 43 as a result of a low performance in the following:

○ Middle third ● Bottom third - of all US neighborhoods

1) Housing
Housing costs:
○ $833 dlls. per month
Housing cost burden:
○ 16.1% of income spent on housing

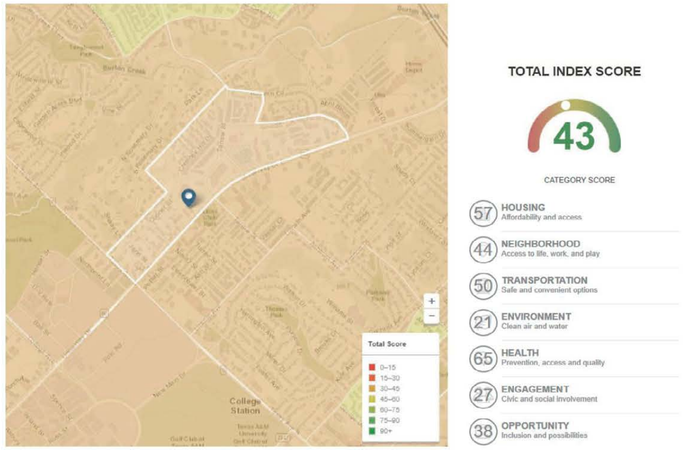
2) Neighborhood
Access to grocery stores and farmers' markets (within a half-mile):
● 0 grocery stores/farmers' markets
Access to libraries (within a half-mile):
● 0 libraries
Diversity of destinations index (mix of jobs within a mile):
○ 0.70 out of 1.
Neighborhood quality (vacancy rate):
○ 9.3% of uniits are vacant.

3) Transportation
ADA-Accessible stations and vehicles
● 70.5% of stations
Walk trips
○ 0.79 trips per household per day
Traffic congestion
○ 14.4 hours spent in traffic per person per year

4) Environment
Water quality
● 14.4% of people are exposed to health-based violations
Air quality
● 53.5% of people exposed to near-roadway pollution

5) Engagement
Opportunity for civic engagement
○ 6.9 organizations per 10,000 people
Cultural, arts, and entertainment institutions
● 0 institutions per 10,000 people

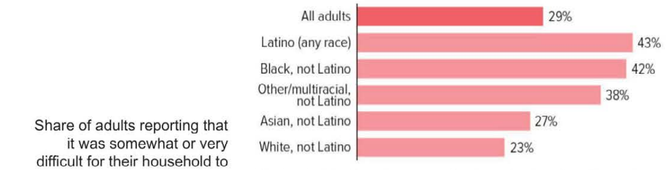
6) Opportunity
Economic opportunity
○ 0.73 jobs per person
Multi-generationality (Age diversity index)
● 0.8 out of 1



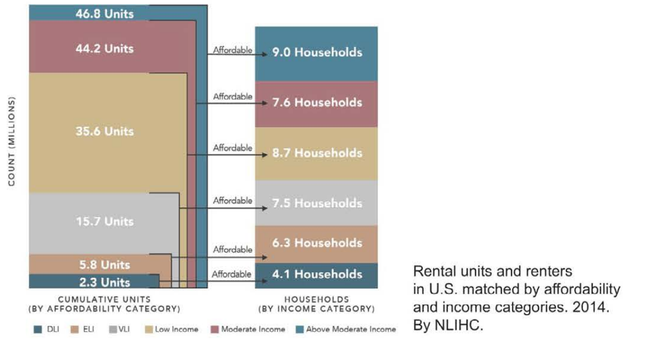
Livability index. 2018. By AARP.

The seven domains of livability. 2020. By AARP.

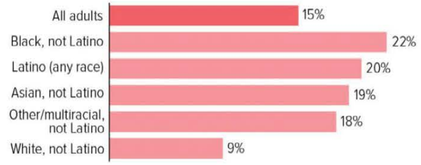
HOUSING CRISIS & INEQUALITY



Share of adults reporting that it was somewhat or very difficult for their household to pay usual expenses. 2021. By CBPP.



Rental units and renters in U.S. matched by affordability and income categories. 2014. By NLIHC.



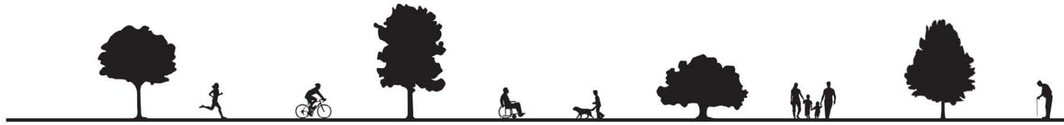
Share of adults renters saying their household is not caught up on rent. 2021. By CBPP.

U.S. currently experiences a severe shortage of affordable rental homes, with only 36% of the 10.9 million renter households living in extreme low-income conditions having access to affordable dwellings. This means that there is currently a shortage of 7 million affordable and available rental homes. Moreover, around 7.7 million extremely low-income renter households spend more than half of their revenue on rent and utilities. 46% of this group is comprised by seniors and disables, and people of color are more likely to fall in this category (NLIHC, 2020). The COVID-19 pandemic is expected to exacerbate this condition, and an unprecedented housing crisis might be on the way as an estimated of 30 to 40 million Americans are currently at risk of eviction (Aspen Institute, 2020).

A recent report from the Center on Budget and Policy Priorities (CBPP) reveals that millions of Americans are currently experiencing food, housing and employment hardships. The data also evidences the longstanding inequalities existing in the American nation, as Latinos, African Americans, and inmigrant households in general experience a greater distress from the economic impact caused by the pandemic. An estimated of 10.7 million adults living in rental housing, equivalent to a 15% of the total adult renters in U.S., are not caught up on their rent. From the total of adult renters unable to pay rent, 22% are African Americans, 20% Latinos, 19% Asian and 9% White Americans. Moreover, approximately 4 in 10 children living in rental houses live a household suffering from both food insecurity and inability to pay rent.

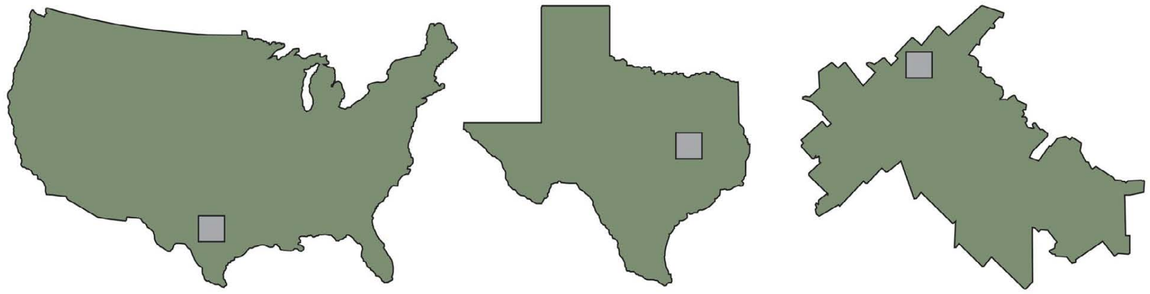
Additionally, the survey conducted by CBPP provided data on the number of adults experiencing difficulties to cover usual household expenses including food, rent or mortgage, car payments, medical expenses, or student loans. 67 million adults, equivalent to 29% of the total adults in U.S., report complications to cover one of these usual expenses. A considerably larger number of Latinos (43%), African Americans (42%), and other multiracial individuals (38%) compared to White Americans (23%) declare difficulties to pay usual household expenses.

Therefore, the need for affordable housing is increasing, and we must create alternatives that help mitigate the impact of this future potential housing crisis. This study juxtaposes this problematic with the retail apocalypse to propose a partial solution to the shortage of affordable housing. The adaptation of retail buildings would likely require less resources to accomodate low-cost housing, diminish the carbon emissions resulting from new construction or demolitions, reduce the energy consumption of the dwelling units (exterior skin's protective action from solar radiation), and create opportunities for lower-income populations to live in areas closer to the center of cities as retail buildings usually occupy convenient territories.



SITE ANALYSIS

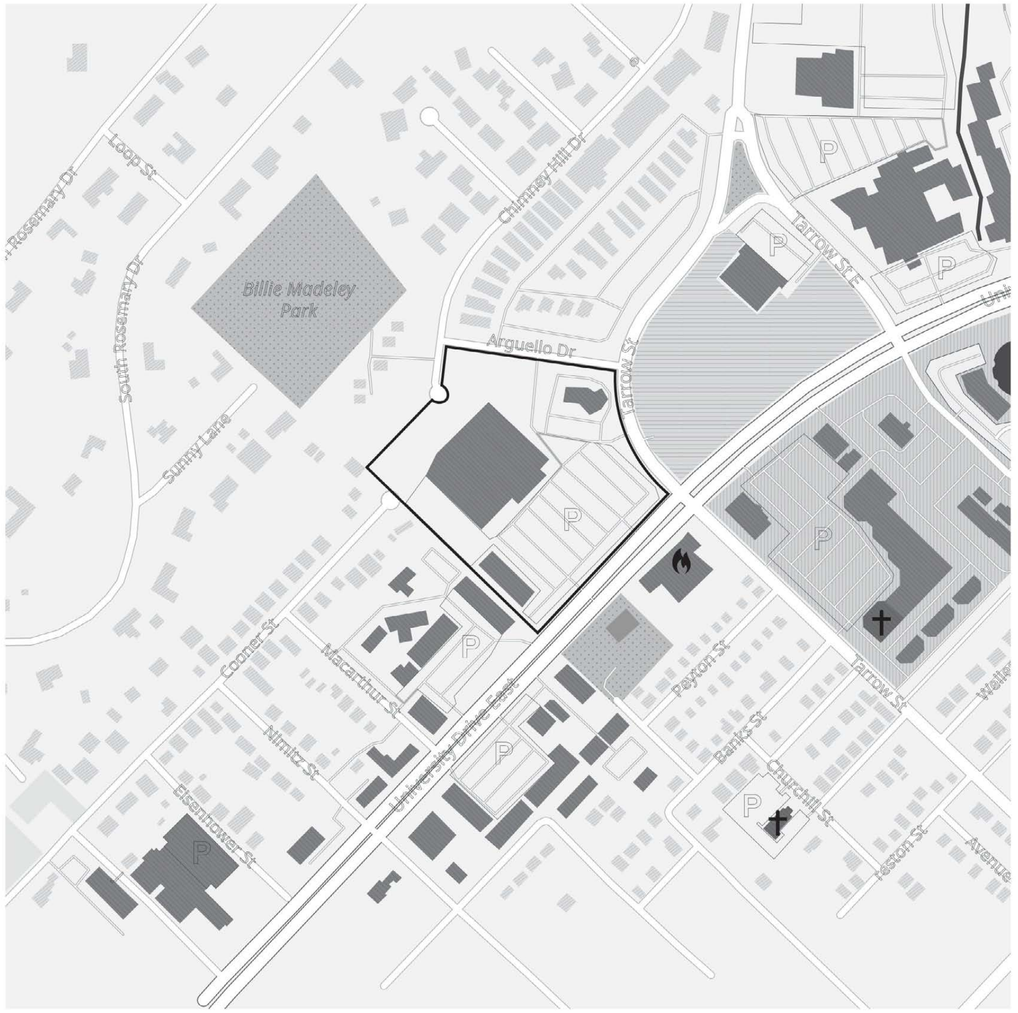
SITE LOCATION



UNITED STATES

TEXAS

COLLEGE STATION



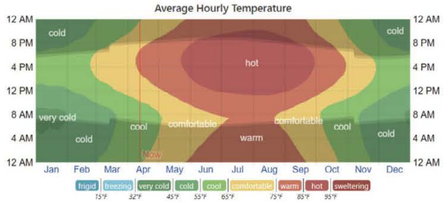
SITE CONTEXT

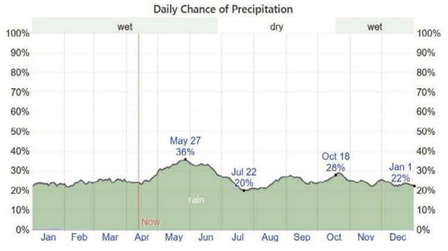
① Retail ③ Residential ⑤ Bank

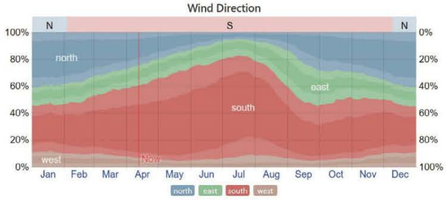
② Commerce ④ Parks ⑥ Fire Department

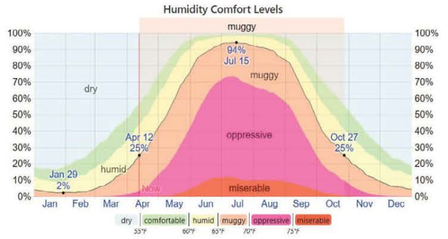
The retail project selected for this study is located in College Station, Texas, at the corner of University Drive Av. and Tarrow St. The site has an area of approximately 10.5 acres and is currently occupied by three different buildings: A vacant grocery store, a bank, and a cluster of small commercial shops. Adjacent to the project, along the main avenue, are retail businesses, a park, and a fire station. Various residential developments are encountered behind the commercial strip that runs adjacent to the main avenue. The existing bank and commercial shops are still in operation. The grocery store has been vacant for almost 10 years.

CLIMATE ANALYSIS

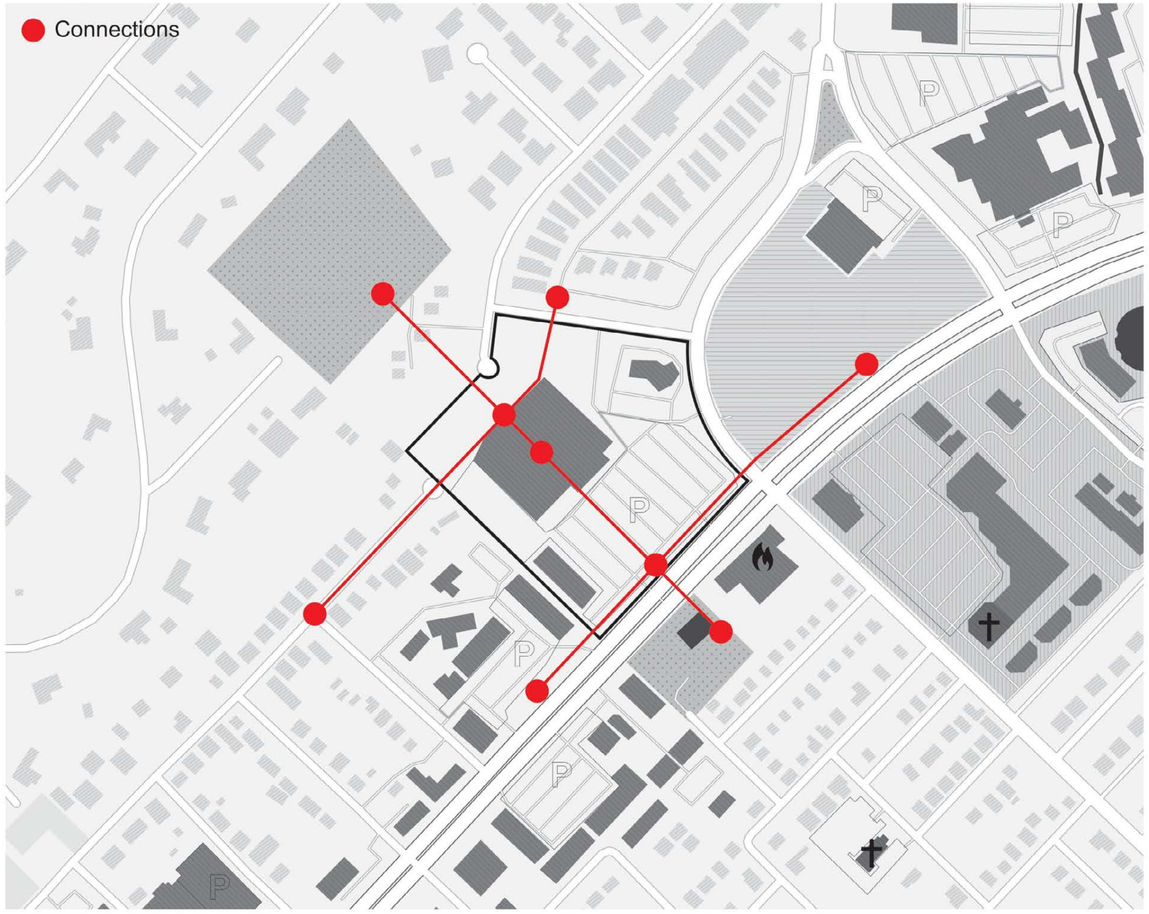




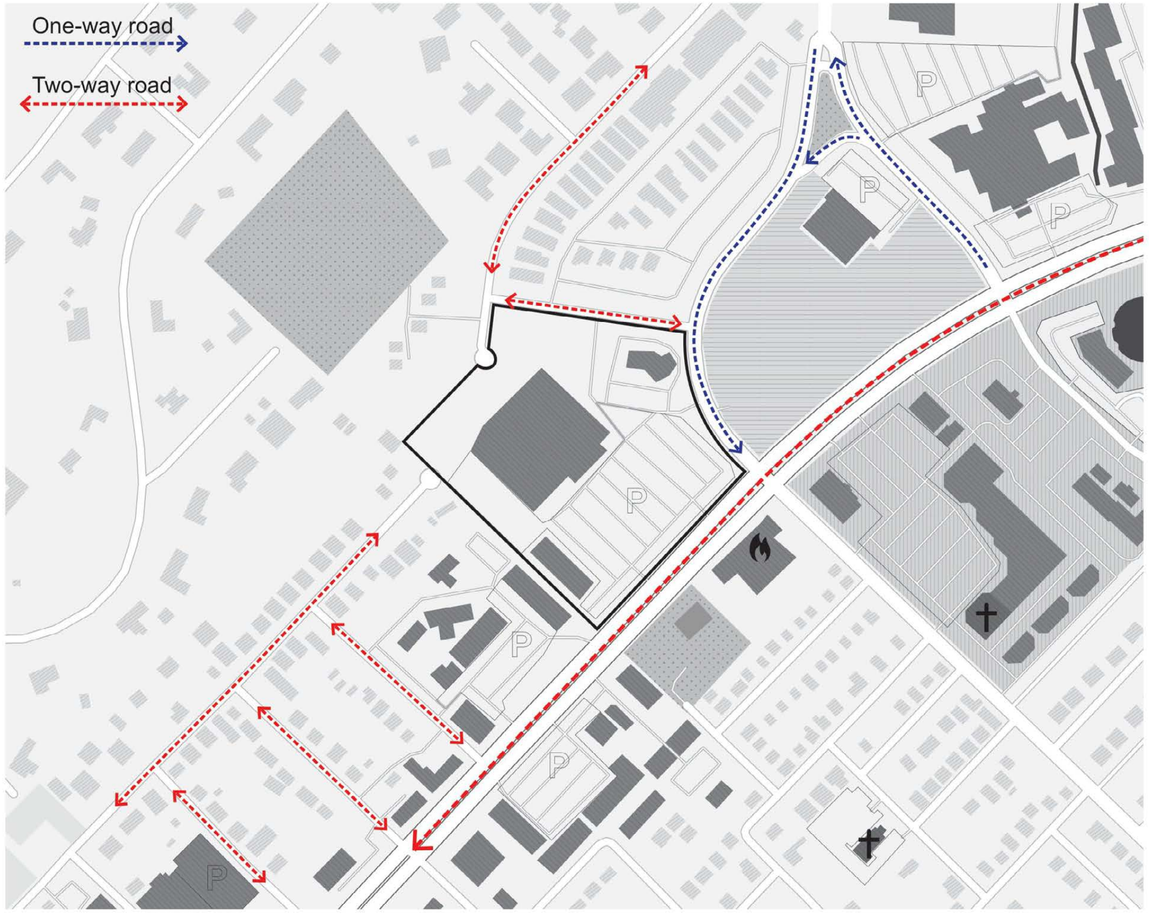




CONNECTIVITY

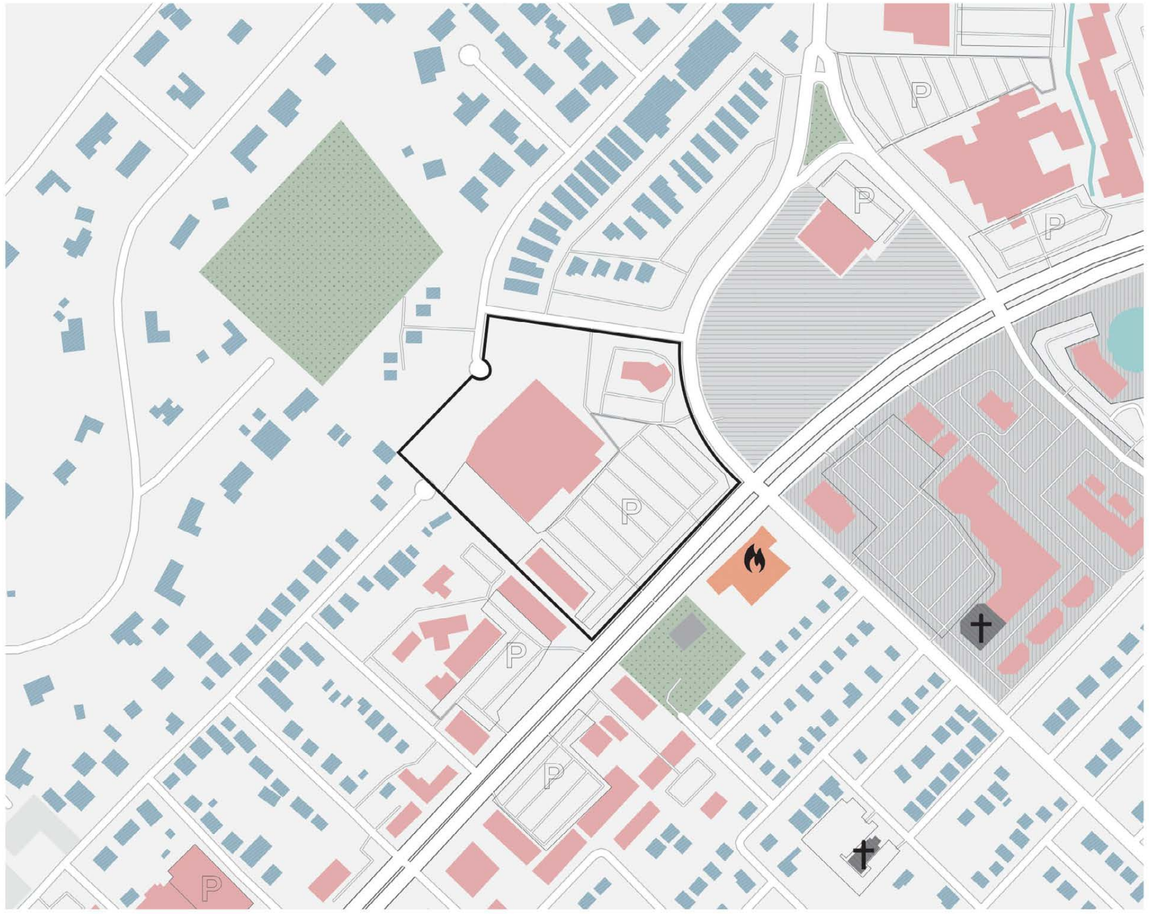


CIRCULATIONS



ZONING

Residential Commercial Governmental Parks



PROGRAM

TOTAL PROJECT AREA: 466,745.31 SQFT

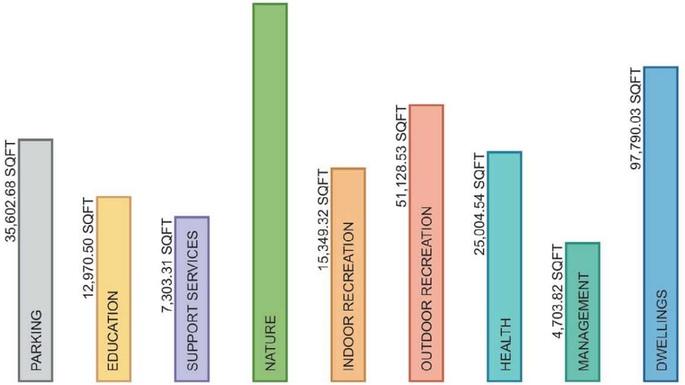
DWELLING AREAS
- Individual
- Couple
- Young family
- Extended family
- Elderly
- Temporary

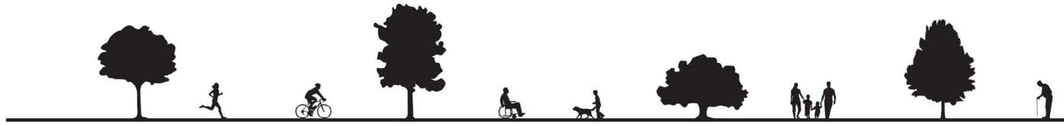
SUPPORT AREAS
- Management
- Parking
- Services

PUBLIC SPACES
- Indoor Recreation
- Outdoor Recreation
- Health Support
- Education

NATURE
- Parks
- Gardens

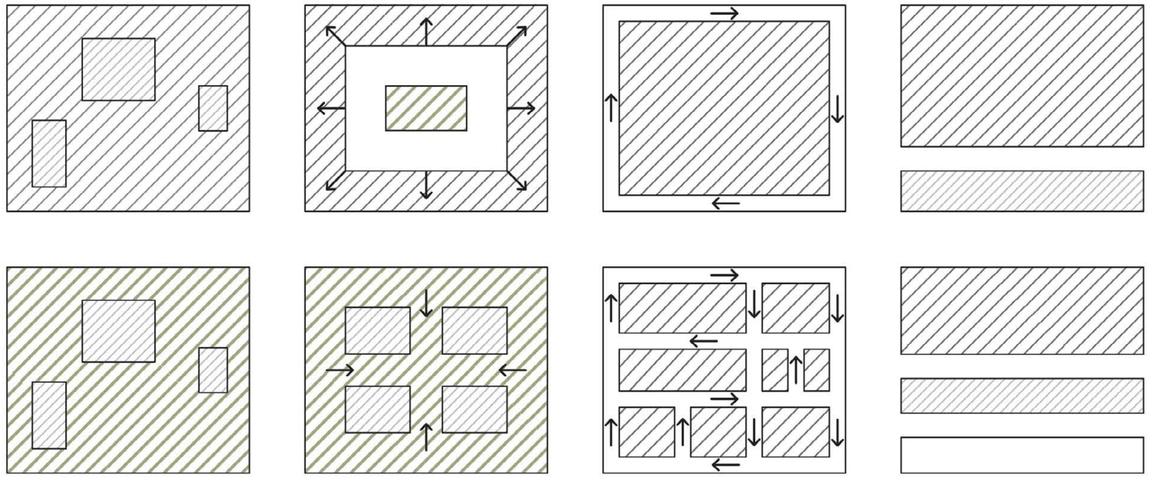
"We must understand that we are not the only living beings in this planet. We are all parts of the same system, which must remain in balance if it is to operate flawlessly. I propose a 50-50 use of land. Half for us, half for the local biome".





DESIGN RESPONSE

MAIN DRIVERS OF THE DESIGN



FROM GREY TO GREEN

FROM EXCLUSIVE TO INCLUSIVE

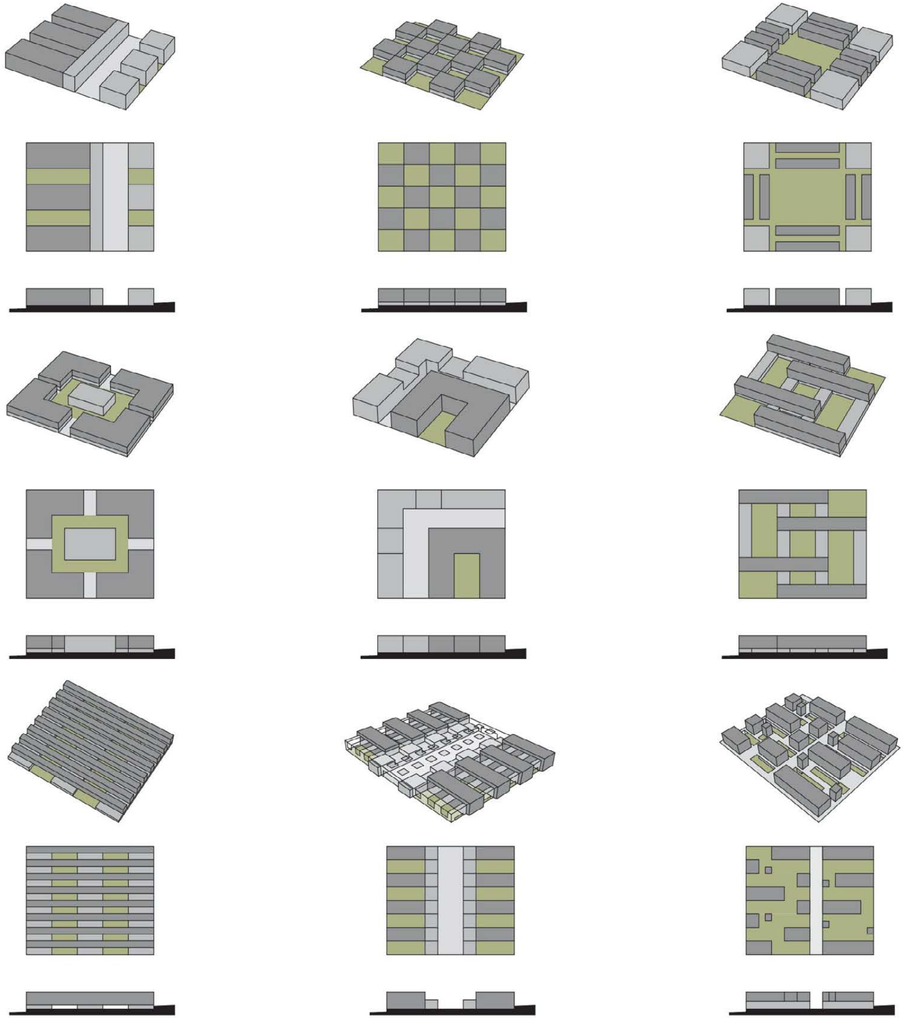
FROM VEHICLE-OR TO PEDESTRIAN-OR

FROM PRIVATE DOMINANCE TO PUBLIC-PRIVATE BALANCE

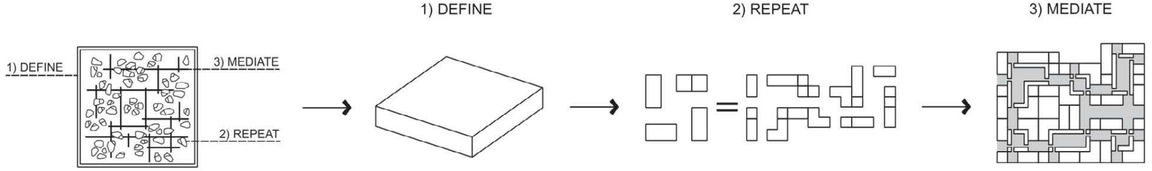
"A place that adapts to current technologies but rejects their actual excessive presence. One that unites all types of individuals rather than separating them. One that modifies an ecosystem rather than destroying one. One that does more with less, nor absolute green or gray, but a fair balance between both".

The design process was guided by the following ideals: eliminate the grey dominance of the site by reintroducing nature, achieve an inclusive environment by integrating features that support the routines of both residents and outsiders of all age groups, accomplish a pedestrian-oriented development by limiting the circulation of vehicles, reject the conventional restrictions and divisions of current domestic environments, and support collectivism by strategically incorporating shared diverse amenities and architectural features that allow intergenerational interactions. The idea is to convert these concrete inaccessible islands, which become no man's land, into healthy places that resonate stronger with the current needs of all living beings and the world.

FORM EXPLORATION

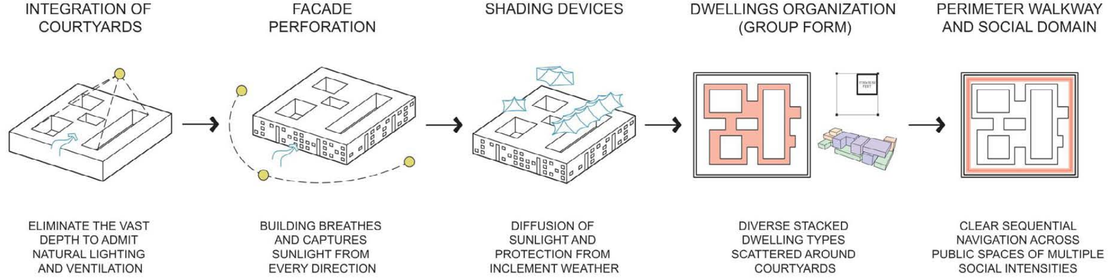


CONCEPT



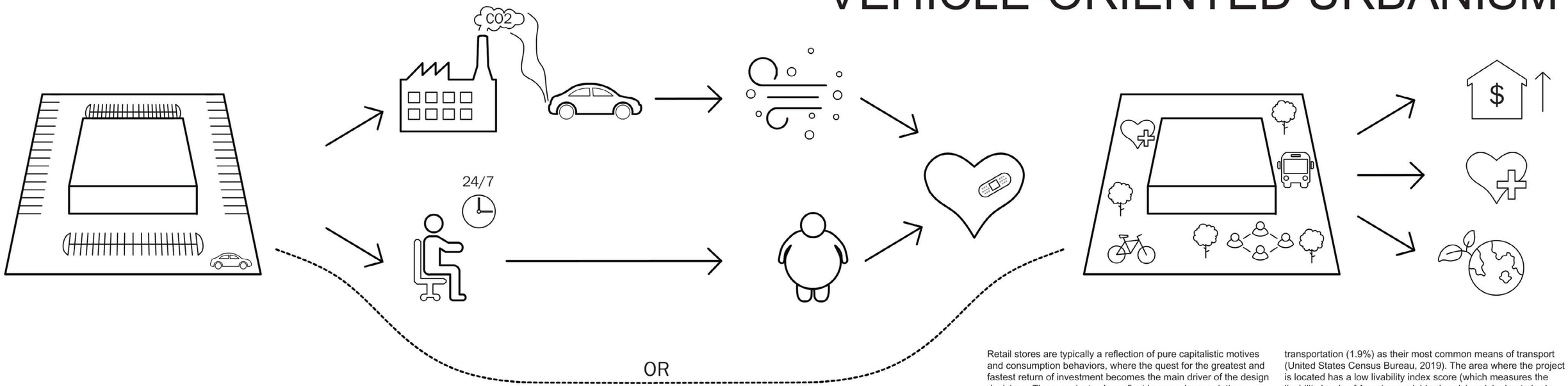
"A collective form with no clear start nor ending. A place where every individual can feel part of the same community".

PARTI



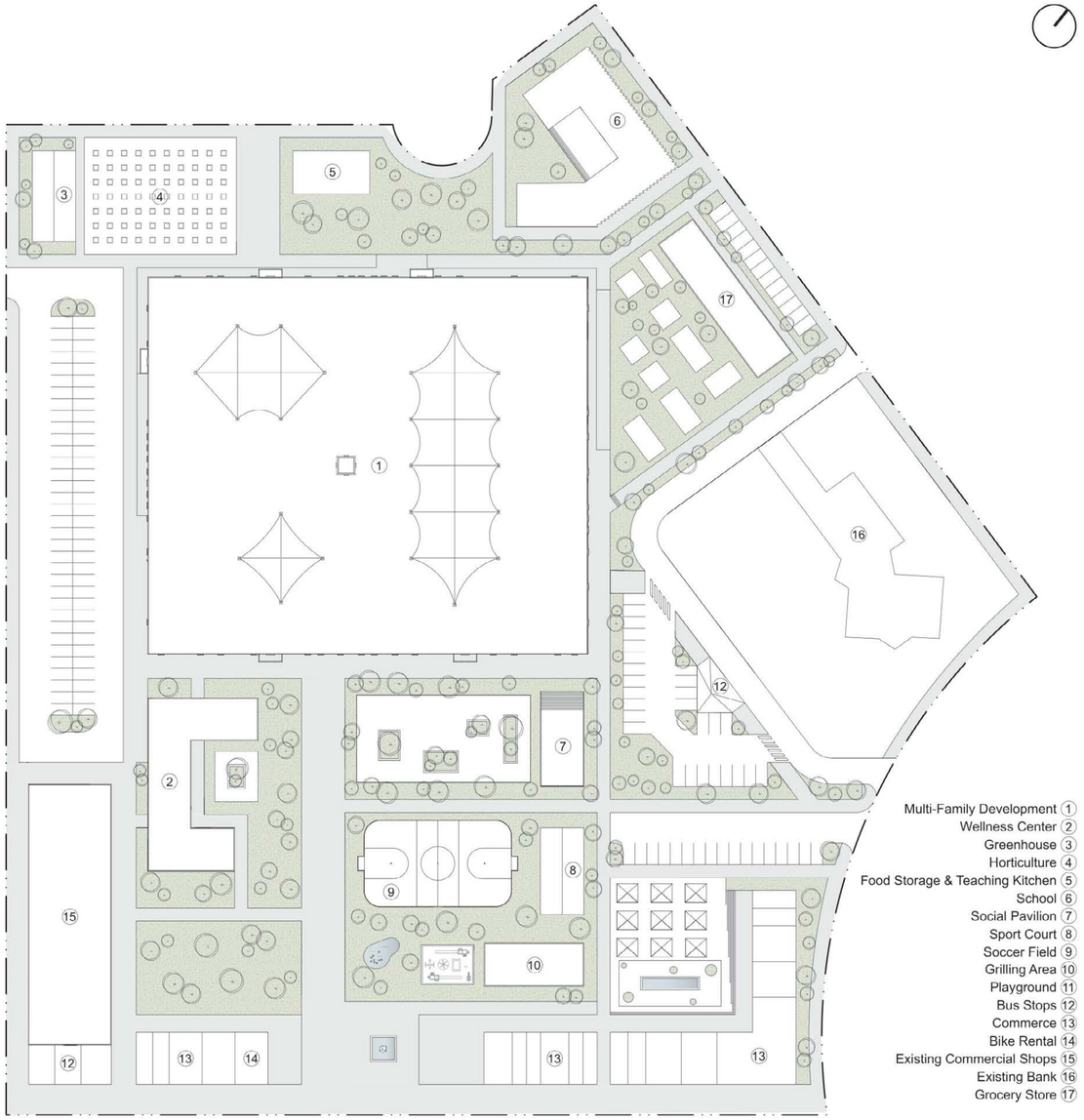
"Big box retail buildings were typically designed to fully operate through active systems. Interventions are necessary to create a strong dialogue between the structure and the environment".

AGAINST CULTURE: VEHICLE-ORIENTED URBANISM

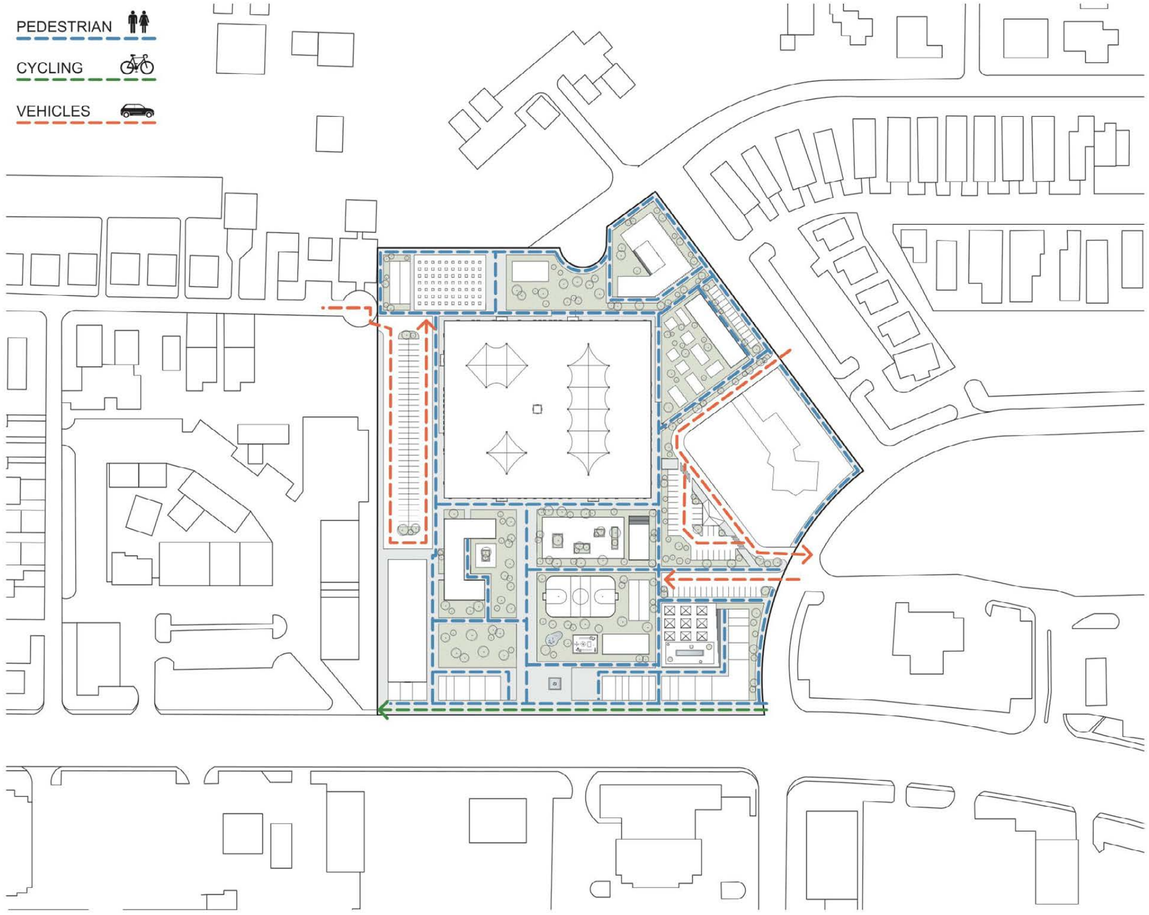


Retail stores are typically a reflection of pure capitalistic motives and consumption behaviors, where the quest for the greatest and fastest return of investment becomes the main driver of the design decisions. These projects also reflect how modern societies function, with the automobile as the dominant mechanism for the development of daily operations. The result is a deep enclosed box of large proportions with an interior atmosphere distant from the outdoor environment, surrounded by a vast asphalt plain dedicated to no living beings. The building codes stipulate that we must always seek for the welfare of the population. This study envisions an alternative where people can have equal access to health resources, affordable housing, and inclusive spaces. An environment that takes into consideration the needs of everyone, and not just those of the few.

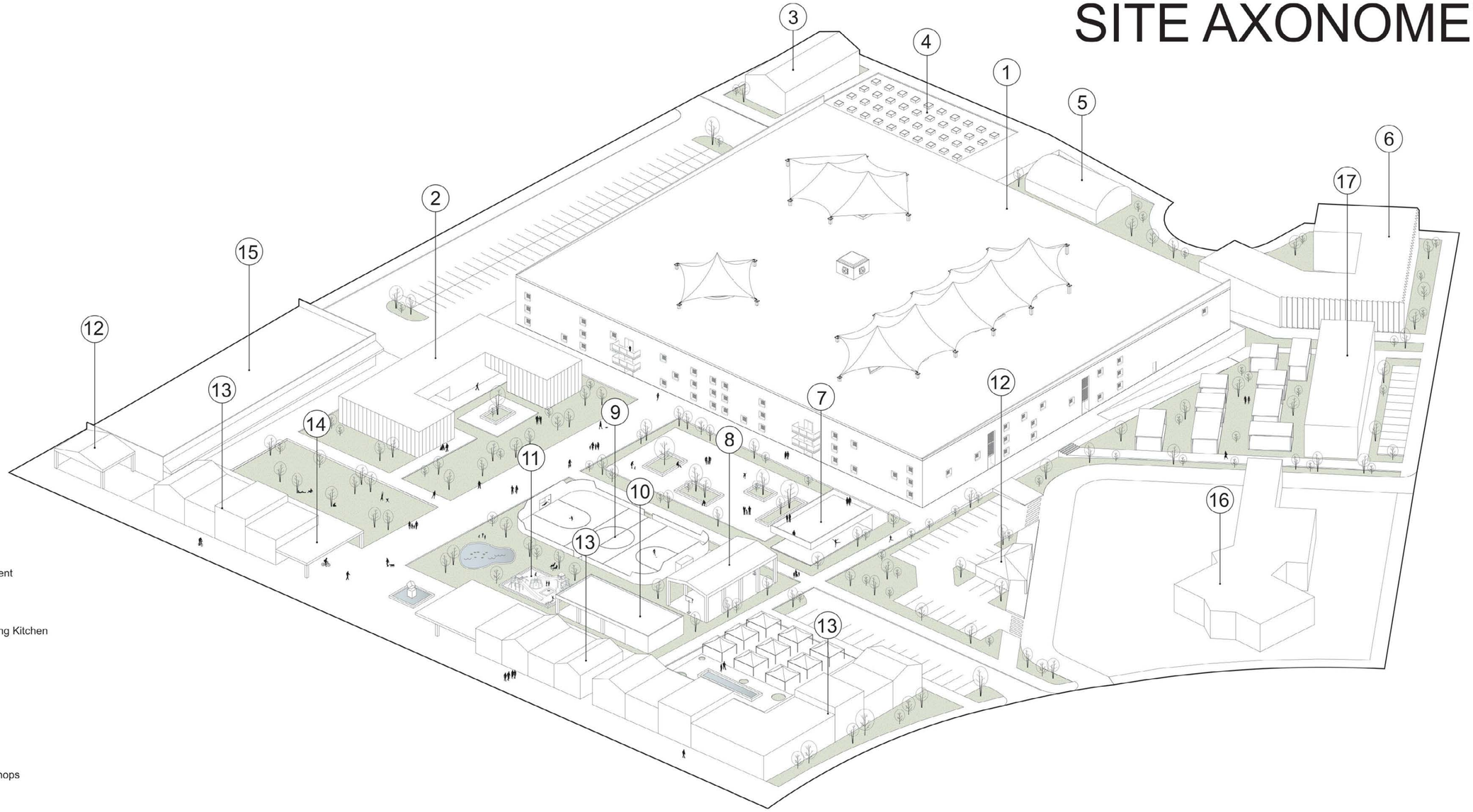
Most of our current urban environment do not escape from this fate and neglect non-motorized transportation, resulting in environments with a weak or null pedestrian infrastructure. Other additional factors as a large-scale urban grid, low-quality public transport, and unavailability of destinations within walkable distances contribute to an absolute automobile dependence (Sallis et. al., 2015). Around 80% of the population of College Station drive their personal vehicles alone, and very few residents report walking (2.0%), micro-mobility mechanisms (2.4%), and public transportation (1.9%) as their most common means of transport (United States Census Bureau, 2019). The area where the project is located has a low livability index score (which measures the livability levels of American neighborhoods) mainly due to bad performances in affordable housing, public transport, proximity to destinations, equality and age diversity, and social engagement (AARP, 2018). All these factors are reflected in health indicators, as 70% of the city's population falls within the overweight and obesity categories (Center for Community Health Development, 2019). Therefore, the relationship between the built environment and physical activity was studied throughout this study to implement urban features that support active living and help combat the development of chronic diseases, which is the leading cause of death in America (CDC, 2020). Sidewalks are introduced across the entire project to support walking, along with trees to provide shading during hot weather. Three different parking lots were strategically located around the periphery of the site to support walking across the development and incentivize active mobility. Outdoor diverse amenities including open green areas, a school, a wellness center, grilling spaces, and a gardening area, were integrated using a decentralized approach to provide various destinations within walkable distances and encourage the use of non-motorized means of transport.



NEW SITE PLAN & CIRCULATIONS

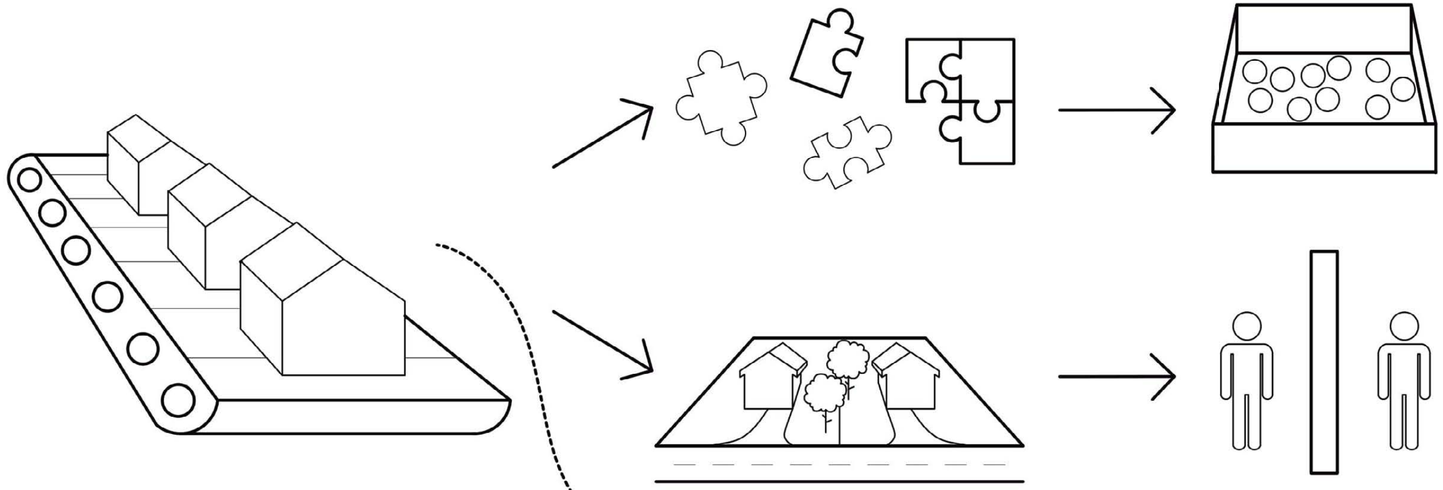


SITE AXONOMETRIC

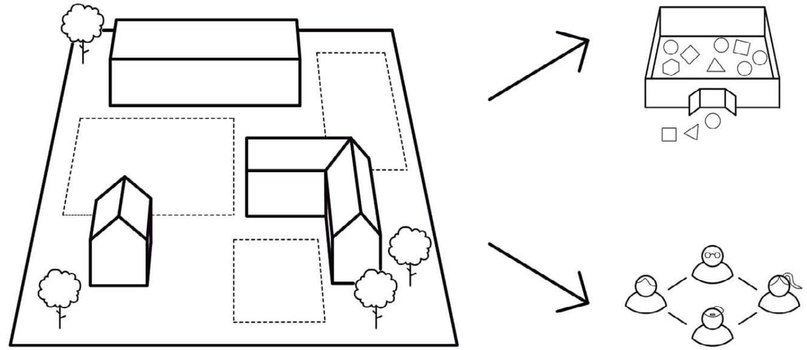


1. Multi-Family Development
2. Wellness Center
3. Greenhouse
4. Horticulture
5. Food Storage & Teaching Kitchen
6. School
7. Social Pavilion
8. Sport Court
9. Soccer Field
10. Grilling Area
11. Playground
12. Bus Stops
13. Commerce
14. Bike Rental
15. Existing Commercial Shops
16. Existing Bank
17. Grocery Store

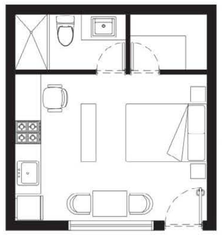
AGAINST CULTURE: GENERIC HOUSING



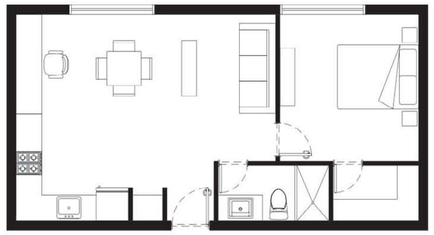
OR



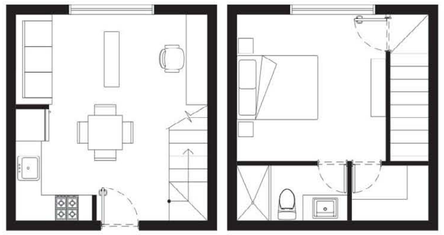
Most of current housing developments disregard the fact that our societies are not composed by just one family structure. Generic housing forces the creation of inclusive communities that hinder many individuals and other types of families from living in the same territory. A predominance of row houses also exists around the entire American nation, which in hand with individualistic cultural aspects creates an environment of full seclusion. There is a great lack of architectural features that support collective behavior, which reduces the opportunities for local social interaction. Many neighborhoods around the world capitalize housing to the maximum extent possible to obtain the highest and fastest return of investment. This translates into few low-quality shared spaces where residents hardly have opportunities to develop strong bonds with their neighbors. Moreover, many of the public spaces integrated in communities lack appropriate infraestructure to hold various leisure activities. The result are open low-quality spaces underutilizied because of the limited activities that can happen in these zones. According to Lee, Min, and Ohno (2012), public spaces should be composed of a proper balance between nature and built features to ensure that diverse activities can be performed, and that pleasant visuals are achieved through the use of vegetation. Unfortunately, many multi-family developments integrate nature just in residual or transitional spaces such as easements, parking corners, and buffer zones next to dwellings' windows used to provide privacy. Although these areas satisfy essential needs, they rarely promote local social interaction. Relationships can only be developed through time spent together, and many communities fail to provide destinations where residents can share that time. Today around 60% of Americans report infrequent communications with their neighbors (Pew Research Center, 2019). Although the reason behind the lack of social interaction in the American is greatly attributed to cultural aspects, I believe that it lies in architectural grounds too. Therefore, this study envisions an alternate approach for developing housing, one that embraces diversity and supports intergenerational relationships to help societies build a greater sense of community. Various structures of different scales are scattered across the interior of the present grocery store's structure, which are connected through circulation elements to achieve a collective form and ensure that every resident feels part of the same community. These buildings incorporate 5 different types of dwellings for singles, couples, elders, young families, and extended families to maximize the opportunities for people from different backgrounds to live there. Moreover, diverse amenities are strategically distributed along the periphery of the grocery's store interior to allow social interactions between different age groups. This ensures that residents are connected from the moment they arrive, unlike the conventional arriving by car to a garage or a parking lot in proximity to the dwellings. The public spaces also hold different activity densities to ensure different intimacy levels.



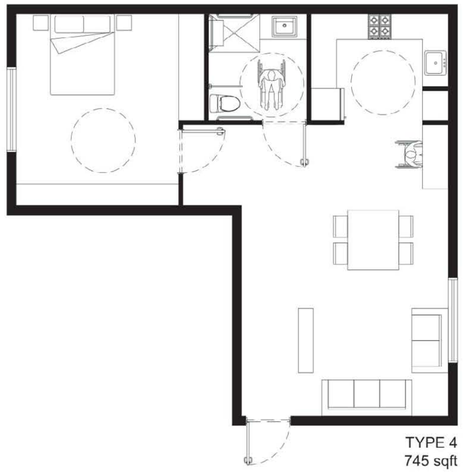
TYPE 1
234 sqft



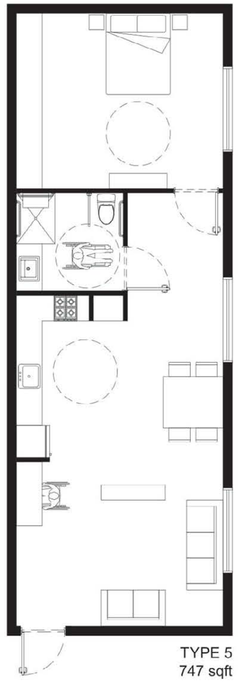
TYPE 2
490 sqft



TYPE 3
467 sqft



TYPE 4
745 sqft

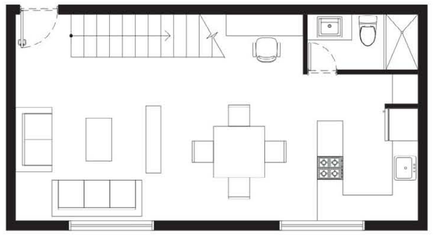


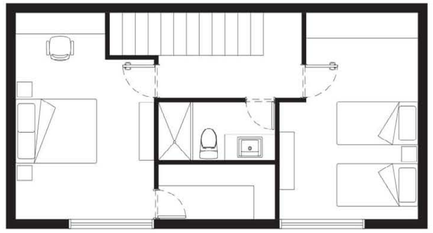
TYPE 5
747 sqft

"Generic housing results in exclusive environments suited only for a specific target population. This study proposes a combination of different dwelling alternatives to increase the opportunities that any individual has to live in this development. Inclusion is only achieved through universal design".

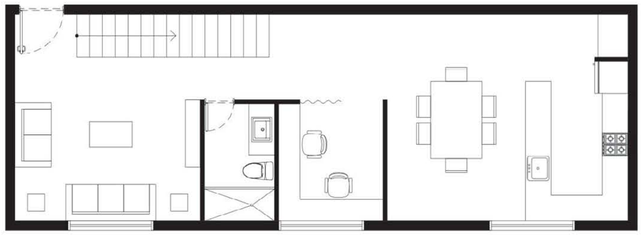
DWELLING PLANS

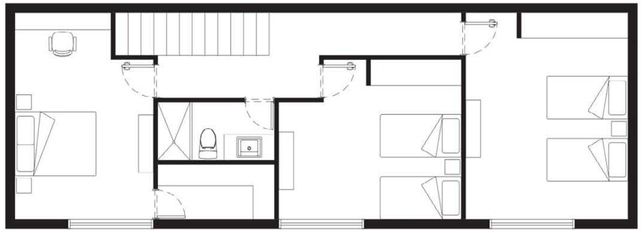
0 1' 5' 10'





TYPE 6
980 sqft





TYPE 7
1,493 sqft

TYPE 8
1,490 sqft

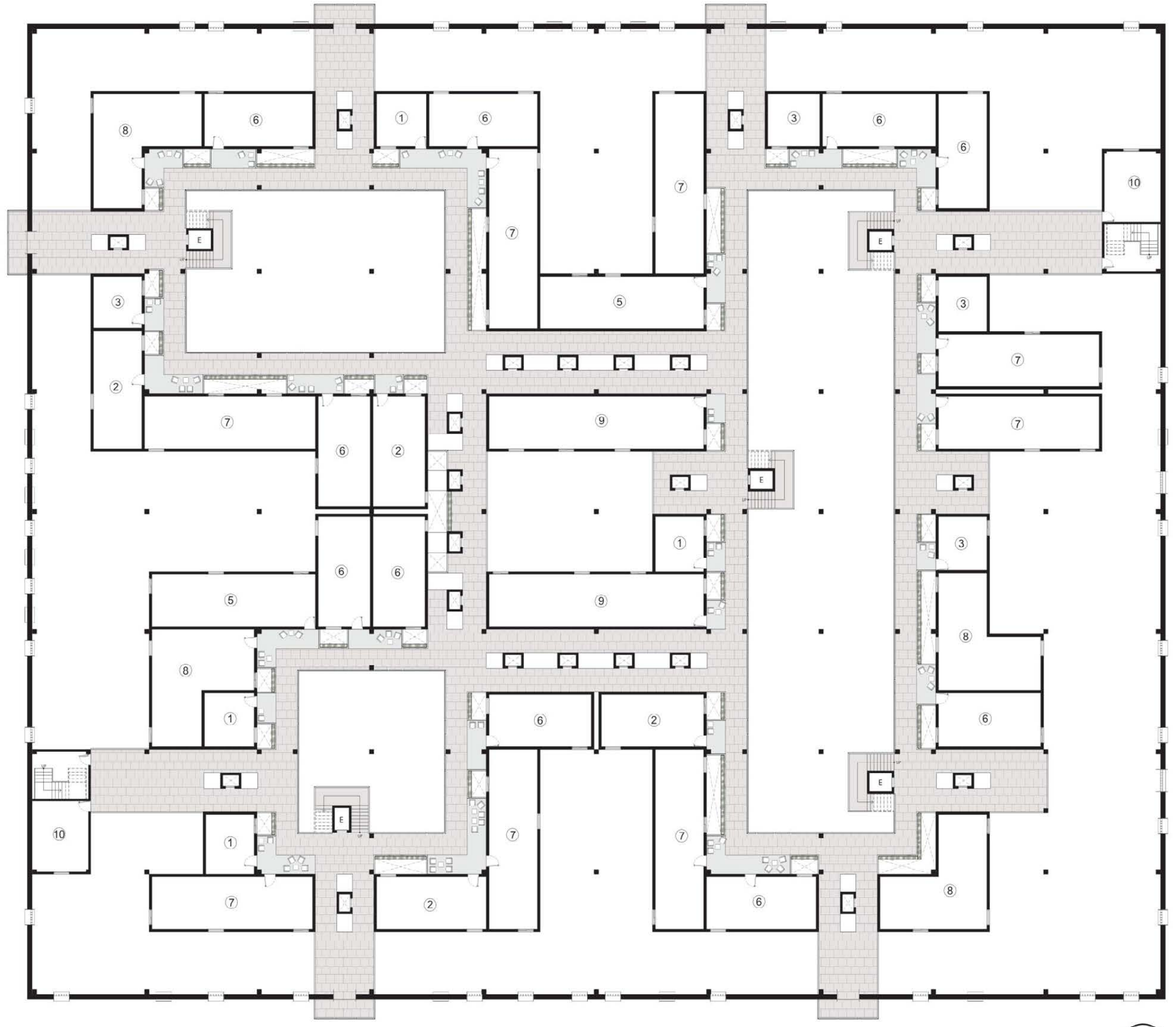
DWELLING PLANS

0 1' 5' 10'

1 One-Bedroom Micro-Apartment - Type 1
2 One-Bedroom Apartment - Type 2
3 One-Bedroom Apartment - Type 3
4 ADA Apartment - Type 4
5 ADA Apartment - Type 5
6 Two-Bedroom Apartment - Type 6
7 Three-Bedroom Apartment - Type 7
8 Three-Bedroom Apartment - Type 8
9 Three-Bedroom Apartment - Type 9
10 Laundry
11 Administration Office
12 Multipurpose Room

GROUND FLOOR

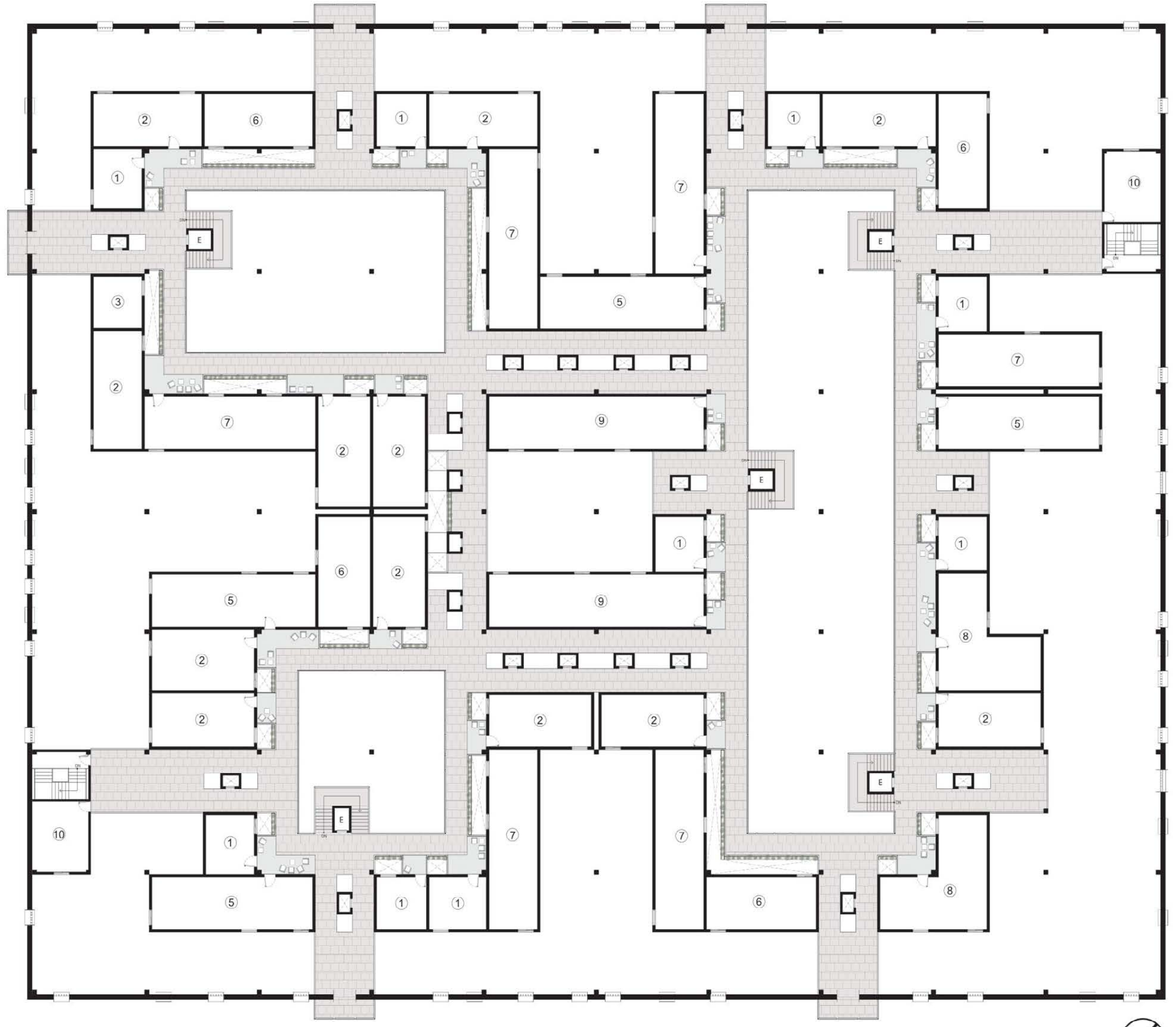
0 10' 20' 40'



1 One-Bedroom Micro-Apartment - Type 1
2 One-Bedroom Apartment - Type 2
3 One-Bedroom Apartment - Type 3
4 ADA Apartment - Type 4
5 ADA Apartment - Type 5
6 Two-Bedroom Apartment - Type 6
7 Three-Bedroom Apartment - Type 7
8 Three-Bedroom Apartment - Type 8
9 Three-Bedroom Apartment - Type 9
10 Laundry
11 Administration Office
12 Multipurpose Room

SECOND FLOOR

0 10' 20' 40'



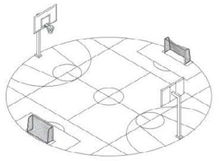
1 One-Bedroom Micro-Apartment - Type 1
2 One-Bedroom Apartment - Type 2
3 One-Bedroom Apartment - Type 3
4 ADA Apartment - Type 4
5 ADA Apartment - Type 5
6 Two-Bedroom Apartment - Type 6
7 Three-Bedroom Apartment - Type 7
8 Three-Bedroom Apartment - Type 8
9 Three-Bedroom Apartment - Type 9
10 Laundry
11 Administration Office
12 Multipurpose Room

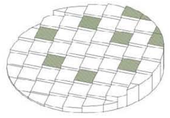
THIRD FLOOR

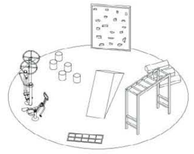
0 10' 20' 40'

THE SOCIAL DOMAIN

"Relationships can only be developed through time spent together. Diverse social incentives are strategically organized to connect all the age groups of the community".


Sports Courts

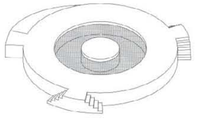

Steps

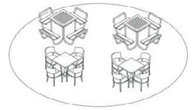

Fitness Circuit

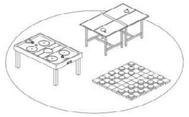

Hammocks

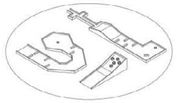

Toddler's Playground


Porch Swings


Rest Net

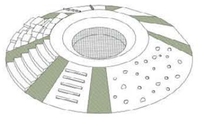

Board Games

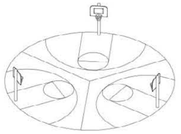

Games


Minigolf

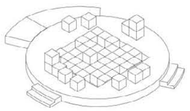

Seating


Slide


Children Playground

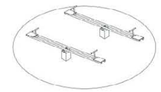

Children Basketball Courts

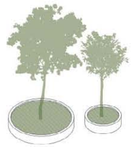

Swings

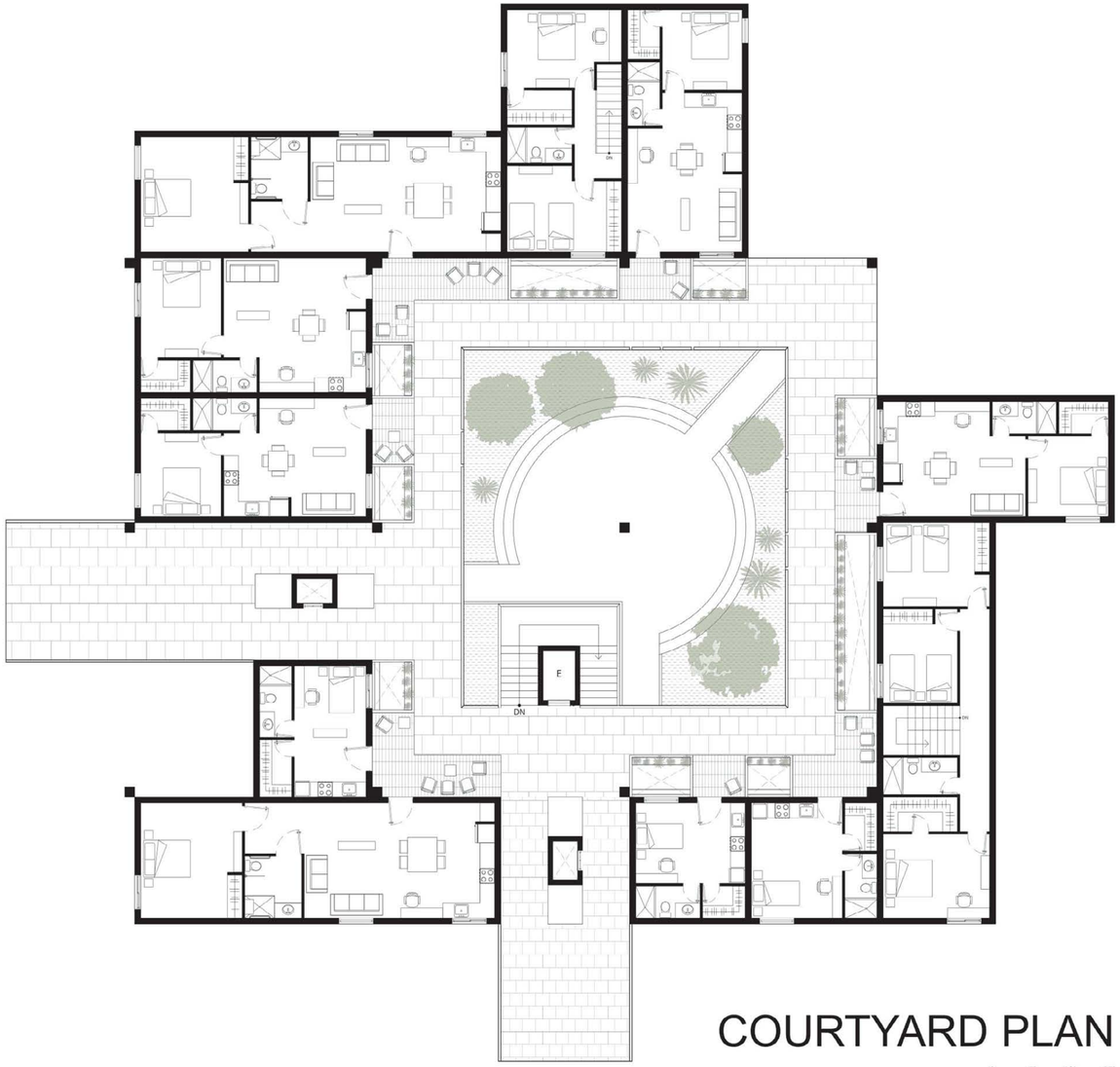

Multifuncional space


Hideout


Low-intensity exercise

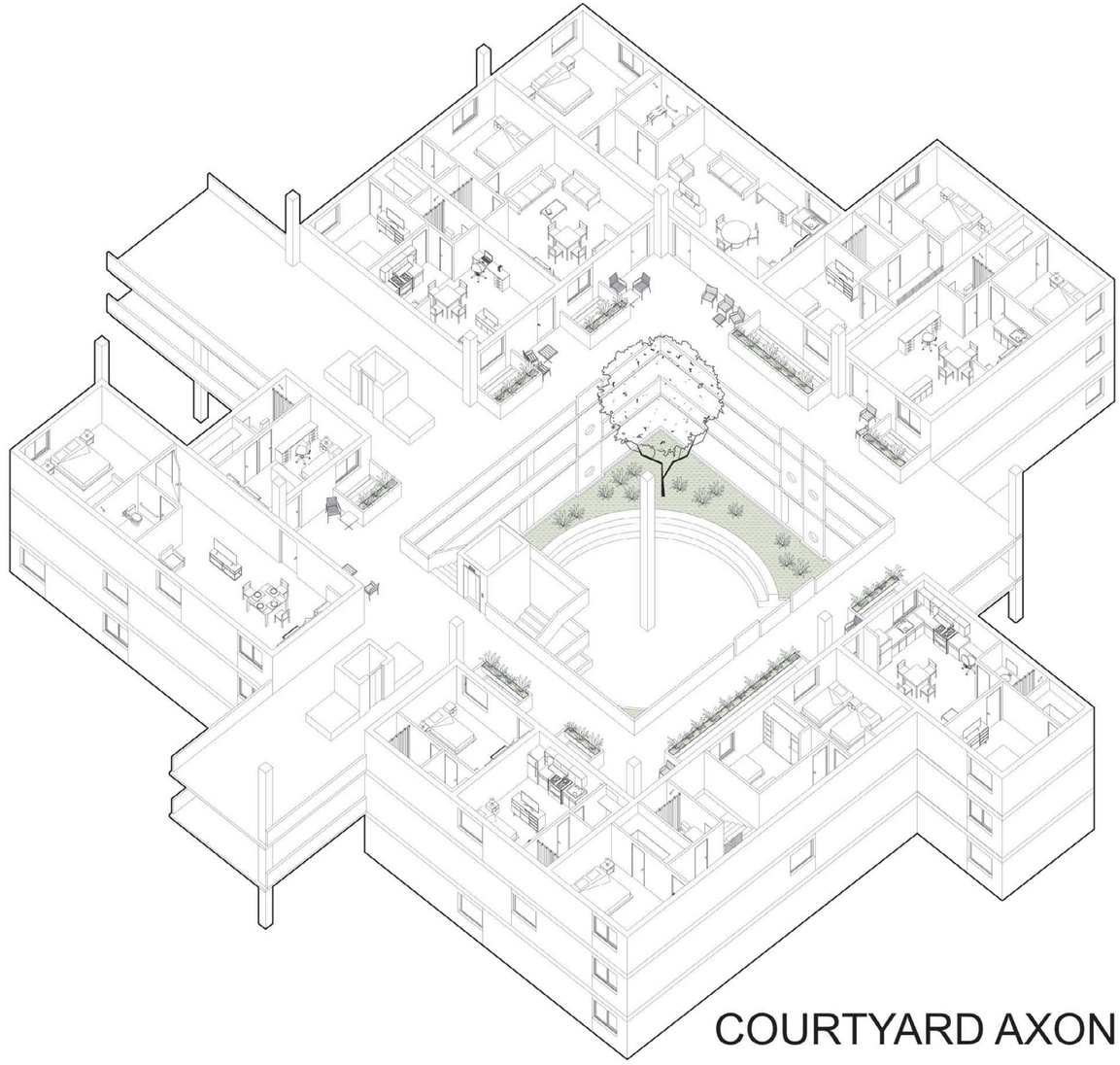

Seesaws


Greenery



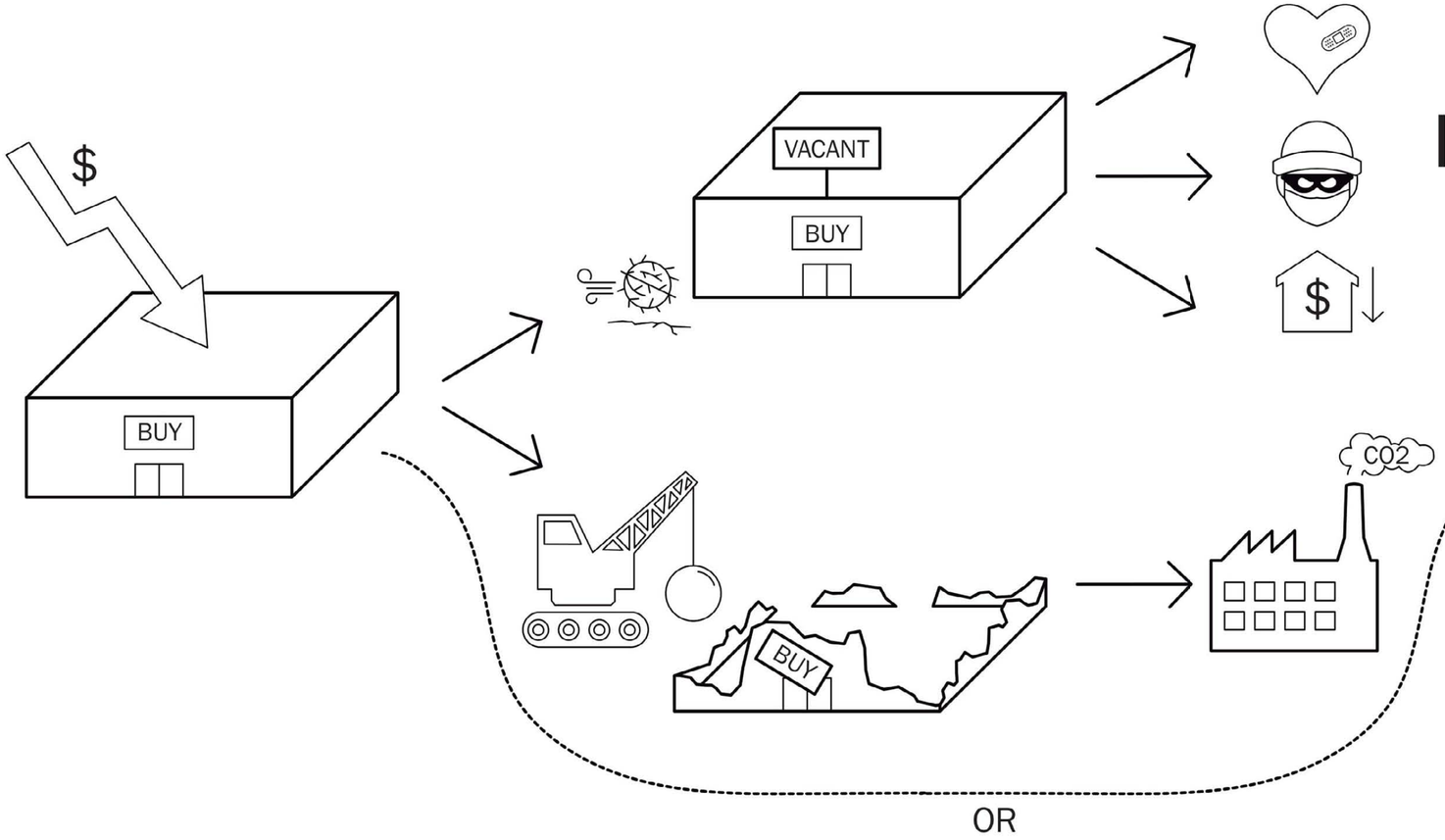
COURTYARD PLAN

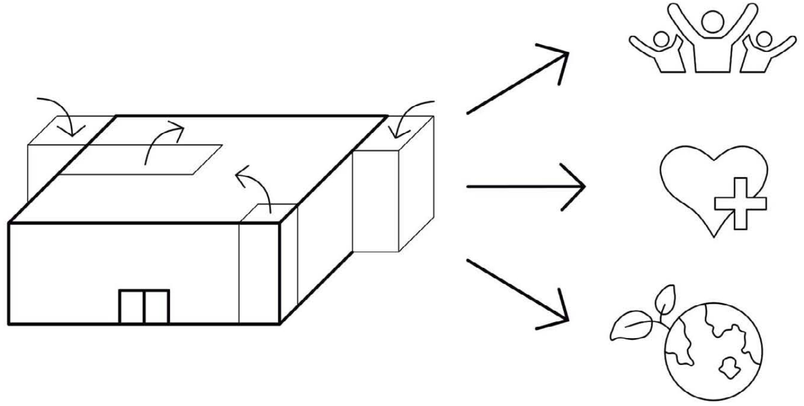
0 5' 10' 15'



COURTYARD AXON

AGAINST CULTURE: IRRATIONAL DEMOLITIONS

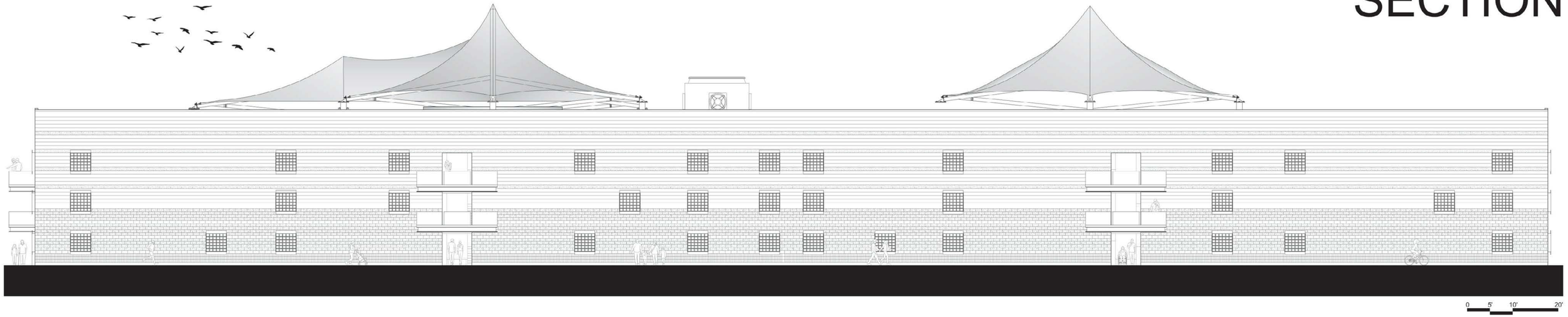


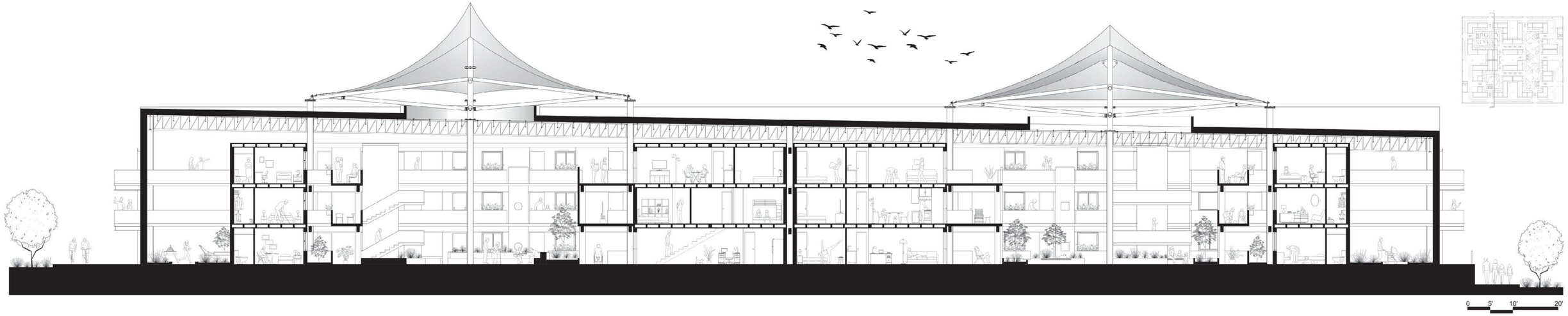


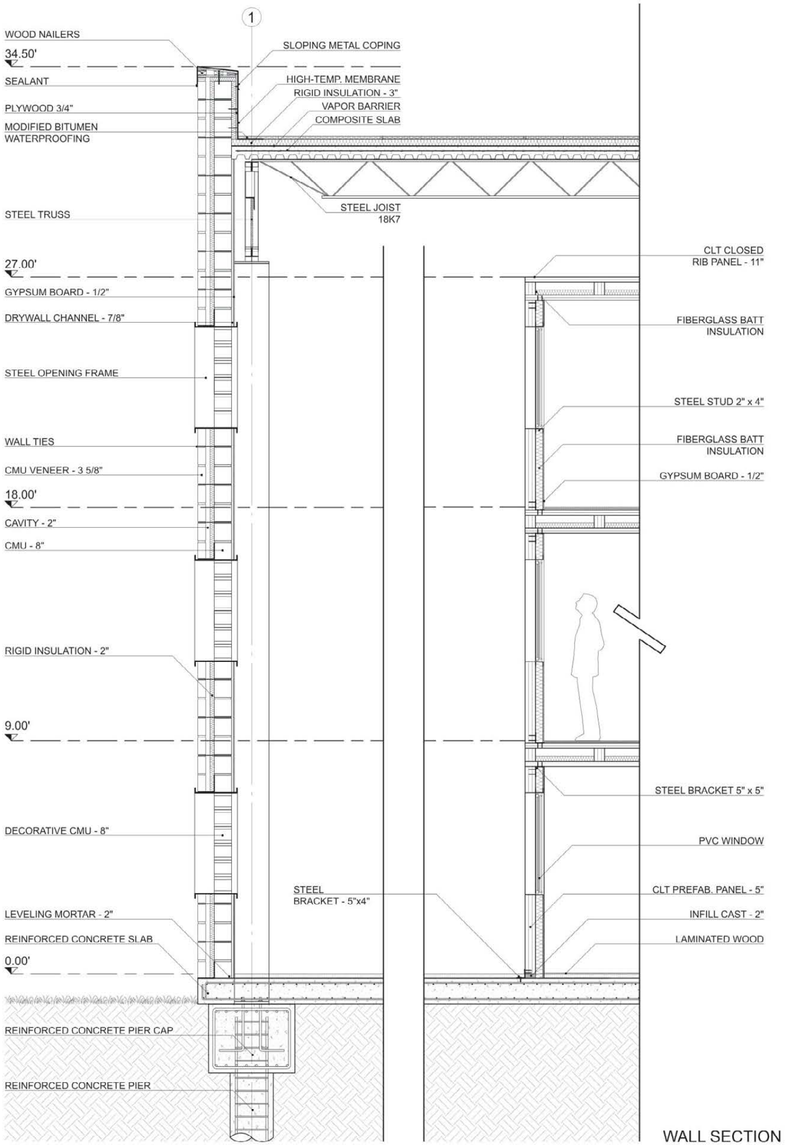
The current culture considers demolition as the most logical alternative in the events that retail buildings cease to be profitable, as they usually do not possess numerous attributes to hold alternate functions. However, the care for the environment is ceasing to be an option, and it is vital to generate alternatives that extend the life span of buildings to reduce the carbon emissions resulting from construction and demolitions. This study proposes several built interventions to convert a grocery store into a structure compatible with residential uses. The building's existing structure is composed of a steel frame system. Columns are arranged every 32 feet on center in both directions to support trusses that run in one way, which in turn hold the joists that carry the load of the roof. The exterior walls are built with a concrete masonry unit (cmu) cavity wall system. This system is composed of an interior cmu wall, an intermediate void, and an exterior cmu veneer attached to the interior wall through steel ties. The roof of the building is made of a composite system, which incorporates a layer of reinforced concrete over steel corrugated panels. There are several challenges implicit in the repurposing of boxy retail buildings. These projects totally or substantially operate through active systems, which demands the demolishing of portions of the present structure and the integration of new structural components to achieve appropriate passive lighting and ventilation. These alterations must additionally be consistent with the new function of the building, supporting the needs of the new occupancy type. This study proposes small openings on the exterior walls of the building and the introduction of steel frames to protect the cavity of the system, together with the incorporation of tensile structures for a passive waterproofing action.

The existing envelope of the store is recognized as a protective mechanism from solar radiation and water, which allows the use of austere materials for the interior residential units and a reduction in the energy consumption of HVAC systems. Cross natural ventilation is achieved through the new openings integrated in the existing envelope, and warm air is released through the roof's apertures located over the courtyards. Moreover, operational adversities might be encountered since there is a limitation on the variety of machinery that can be used in the interior of the building. As a result, this study proposes the establishment of a modular unit (1/4 of the 32' x 32' bay) which dictates the size of the apartment units, allowing a systematic prefabrication of small lighter components that facilitate the construction processes. Furthermore, this study proposes the use of crossed laminated timber (CLT) as an eco-friendly strategy due to the material's ability to capture and store carbon dioxide. However, this study acknowledges the need of lightweight construction systems due to the structural capacity limitations that retails stores may have. Systems composed of lightweight materials such as sheetrock, plywood, structural insulated panels, cardboard, light-gauge steel, and lightwood can be used to avoid expensive foundation interventions. The idea is to provide sustainable quality housing by taking advantage of the store's structure, which acts as a protective shell that insulates the interior buildings from all exterior conditions that typically cause deteriorations with the pass of the time. This protective action from inclement weather brings a unique opportunity to implement austere materials of less embodied energy.

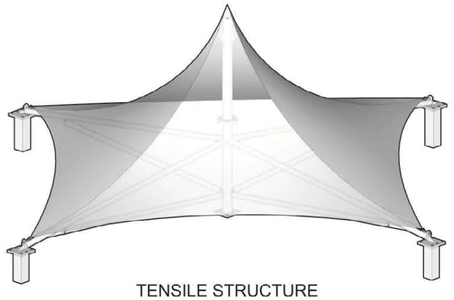
ELEVATION & SECTION



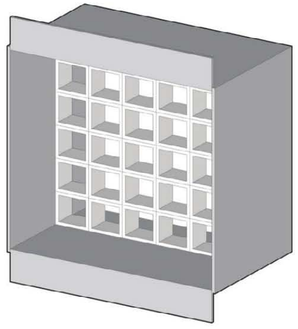




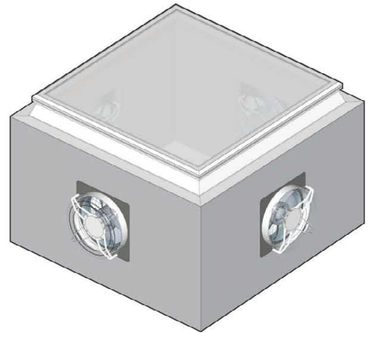
WALL SECTION



TENSILE STRUCTURE

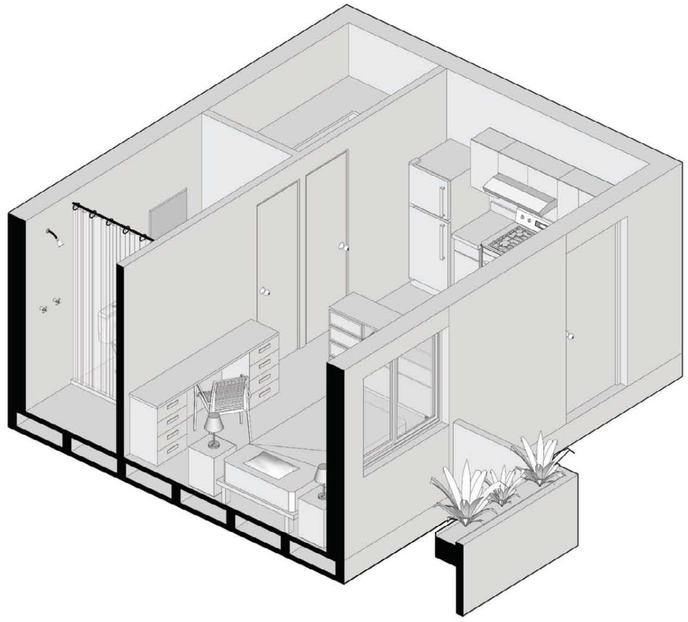


STEEL FRAME OPENINGS



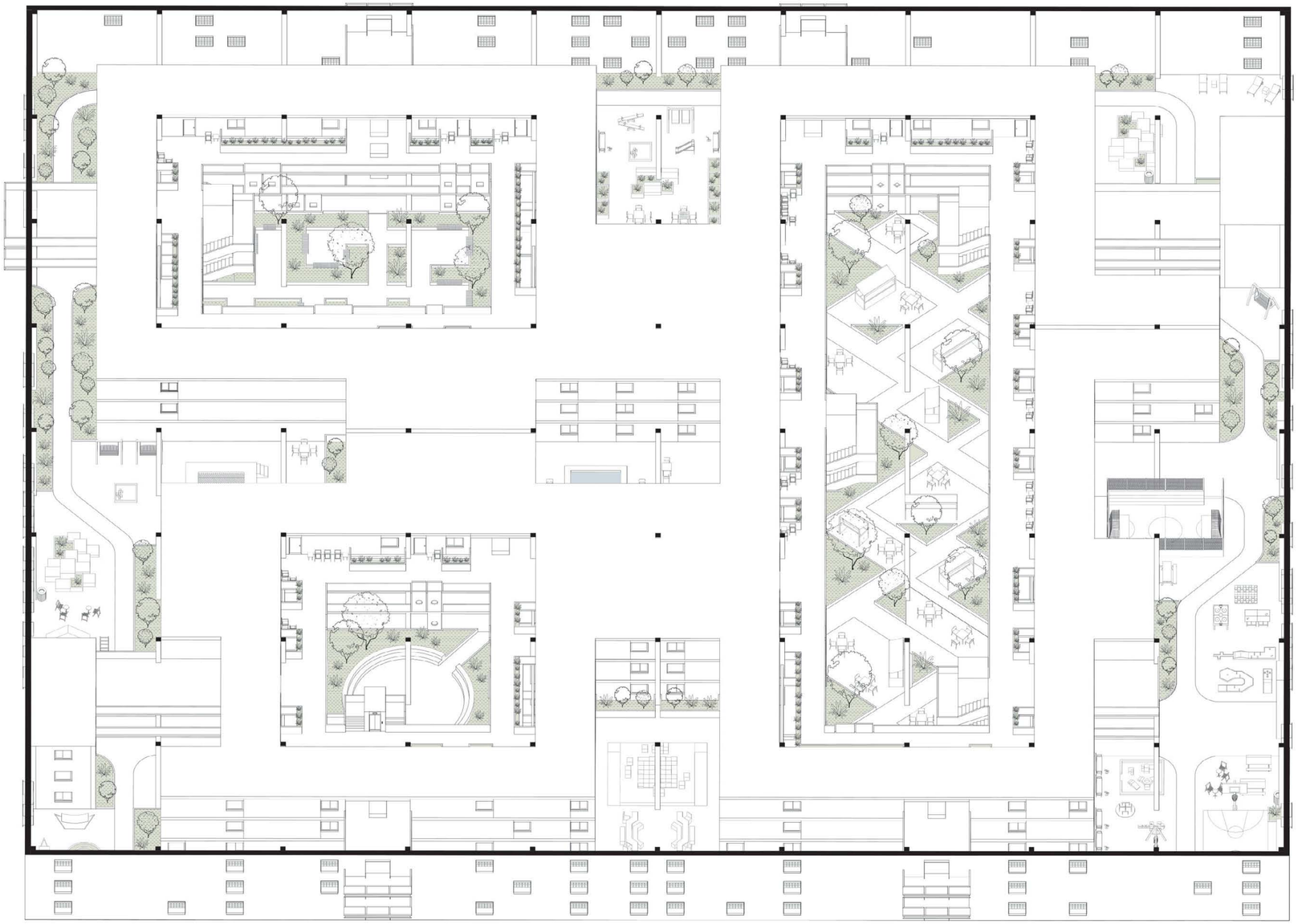
OPERABLE SKYLIGHT

CONSTRUCTION DETAILS



DWELLING SECTION

TOP-DOWN OBLIQUE



INTERIOR PLAZA

SQUARE COURTYARD

SOCIAL DOMAIN

CIRCULAR COURTYARD

EXTERIOR PLAZA

CONCLUSIONS & LIMITATIONS

The present study was inspired by several urbanism movements including new urbanism, compact city, neighborhood unit, garden city, and smart growth. These movements have one main common goal, to achieve healthy people-oriented built environments by developing less land, embracing density and mixed-use zoning, integrating infrastructure for active transportation, and destining more territory for nature. The idea is to build in a more conscious manner by reducing the scale of cities and communities and mixing different zoning to diminish automobile dependence and achieve healthier and more ecological environments. However, most of these movements mainly focus on new development.

This study emphasizes the importance of creating alternatives for existing construction. It explores opportunities to improve current built environments with a reasonable number of interventions to limit carbon emissions. It attempts to illustrate an approach in which we could transform vacant construction into people-oriented developments that advocate for environmental care, inclusion, collectivism, and wellbeing. A site that balances the natural and built domains to create a place that achieves the best possible use of the land. A destination that enhances quality of life not just for people, but for the rest of beings living in the same ecosystem. A place free from the barriers that typical multifamily domestic architecture imposes, where people from different backgrounds can live together.

The study departs from pure capitalistic ideals to depict an alternative aimed to provide residents with the resources required to meet their fundamental needs (Max-Neef, 1989). The project distinguishes from conventional multifamily developments as it:

- Integrates diverse dwelling types together to maximize the opportunities that any individual has to live in the community.
- Adapts an existing vacant building to get the maximum benefits out from it (energy efficiency, protection from inclement weather, and low carbon emissions).
- Allocates an extensive area for public space to support collectivism and social interaction.
- Strategically organizes public spaces to incentivize intergenerational relationships.
- Limits motorized circulations and integrates commercial, cultural, institutional, and natural destinations to encourage active mobility.
- Designates a large territory for nature, to admit local biome and support physical and mental health.

Among the challenges inherent in the development of a project of this nature are:

- Current building codes full compliance giving that a building is built inside a building.
- Social disturbances resulting from living in proximity with public spaces and diverse age groups.
- Disruptions derived from the spatial qualities that result from living inside an enclosure (visuals, noise, natural lighting).
- Structural capacity of existing structures and the need of lightweight components for the interior development.
- Passive design strategies in buildings that are typically designed to fully operate with active environmental systems.
- Design strategies in syntony with construction processes that allow the assembly of structures without the need of heavy machinery.

This study contained several limitations, which must be considered for future studies of similar nature:

- The methodology used to develop the concept (collective form through modular units based on existing grid) is only considering the typical grid (around 33x33 ft.) of big box buildings. However, there is a wide range of retail formal typologies including strip malls, L-shape centers, cross-shape malls, community centers, and U-shape stores. Structural grids vary and the approach for distributing public space might not be fully compatible with other forms.
- This study proposed the use of CLT for the construction of the interior structures due to its environmental attributes. However, not all retail buildings are designed to withstand such dead loads. Other lightweight materials like sheetrock, plywood, structural insulated panels, cardboard, light-gauge steel, and lightwood can be explored to avoid expensive foundation interventions.
- The study neglected an iconic element (a big arch) that emphasizes the main entrance of the existing building to illustrate a more simplified and generic response. Nevertheless, similar components are present in retail buildings, and these elements need to be addressed in a conscious manner.
- The study considered that the grocery store had no interior partitions. However, this is not typical in retail buildings and demolitions must be ideally minimized to reduce waste and carbon emissions. Interior enclosed spaces could be potentially used to hold administrative or public uses.
- The proposal developed during this study contains interventions with specific built features compatible with the existing envelope systems (CMU cavity wall and composite roof). However, a more thorough analysis must be undertaken to ensure that openings remain consistent with other wall and roof systems.

I aspire that this study becomes a valuable reference for future research of the same nature. A project like the one envisioned in the present document would potentially help reduce the shortage of affordable housing, provide low-income populations with opportunities to return to the cities, reduce carbon emissions and waste originated by demolitions and support the creation of cohesive and diverse communities where every member can cultivate a sense of belonging.

THANK YOU

REFERENCES

• AARP (2018). Livability Index: Great neighborhoods for all ages. Retrieved from:
https://livabilityindex.aarp.org/search#607+University+Dr+E+College+Station+TX+77840+EE+UU+USA

• Aspen Institute (2020). The covid-19 eviction crisis: an estimated 30-40 million people in America are at risk. Retrieved from:
https://www.aspeninstitute.org/blog-posts/the-covid-19-eviction-crisis-an-estimated-30-40-million-people-in-america-are-at-risk/

• CDC (2020). Chronic diseases in America. Retrieved from:
https://www.cdc.gov/chronicdisease/resources/infographic/chronic-diseases.htm

• Center for Community Health Development (2019). 2019 Brazos Valley Regional Health Assessment Report. Texas A&M School of Public Health.

• Chermayeff, S. & Alexander, C. (1963). Community and privacy: toward a new architecture of humanism.
The enemy number one of humanity is the car". Contemporary societies have a great dependence on motorized means of transport, which is reflected in the way our cities are designed. "Walking has been nearly eliminated today". Large distances are required to fulfill everyday tasks. "The devotion to automobile has serious consequences". Today our streets are dead and there are very few opportunities for local social interaction. People live secluded and can't find the privacy they seek even in the interior of their houses. There is a great need for meaningful transitional spaces, that allow privacy and collectivism at the same time.

• Coresight Research & Credit Suisse (2020). Retail Analyses. Retrieved from:
https://www.businessinsider.com/a-quarter-of-shopping-malls-will-close-according-to-credit-suisse-2017-5
https://www.cnbc.com/2020/06/09/coresight-predicts-record-25000-retail-stores-will-close-in-2020.html

• Koolhaas, R. (2002). Junkspace.
Architecture has become generic and profit-driven, and no longer resonates with the surrounding environment. Extreme consumption and materialism predominate in current societies, which only benefits the economically stable sector of the population. This generates divisions between the different members of societies and hinders social cohesion. Architects have become servants of this system, designing projects to fulfill the requirements and desires of the few. The result are buildings with no fundamental meaning, which harm existent environments rather than improving them.

• Lee, H., Min, B., & Ohno, R. (2012). Use of natural environments by urban residents: the effects of natural elements on residents' outdoor behaviors. Journal of Architectural and Planning Research, 29(3), 204-223.

• Lynch, K. (1984). Site planning. Third edition.
Ecosystems have been constantly changing since the beginning of time, with or without human interference. Our challenge is to read and understand current ecosystems to minimize the impact of new interventions. It is about creating new settings that consider all the environmental factors to create places in harmony with the natural domain.

• Maki, F. (1964). Investigations in collective form. Washington University School of Architecture.

• Maslow, A. (1943). A theory of human motivation.
Every individual possesses existential fundamental needs that must be met to a achieve dignified living conditions. I believe there is a positive relationship between architecture and people's ability to fulfill most of these fundamental needs, and that the design of every community we develop must be guided by all these elements to truly create people-oriented architecture.

• Max-Neef, M. (1989). Human scale development: conception, application, and further reflections.

• Pew Research Center (2019). A half-century after 'Mister Rogers' debut, 5 facts about neighbors in U.S. Retrieved from:
https://www.pewresearch.org/fact-tank/2019/08/15/facts-about-neighbors-in-u-s/

• Quinney, M. (2020). Covid-19 and nature are linked. So should be the recovery. World Economic Forum. Retrieved from:
https://www.weforum.org/agenda/2020/04/covid-19-nature-deforestation-recovery/

• Sallis, F., Spoon, C., Cavill, N., Engelberg, J., Gebel, K., Parker, M., Thornton, C., Lou, D., Wilson, A., Cutter, C. & Ding, D. (2015). Co-benefits of designing communities for active living: an exploration of literature. International Journal of Behavioral Nutrition and Physical Activity.

• United States Census Bureau (2019). The American Community Survey (ACS). Retrieved from:
https://data.census.gov/cedsci/profile?g=0500000US48041