

# TARGETED REDEVELOPMENT AREA

## SOUTHWEST DETROIT

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First of all, we sincerely thank to our parents for their encouragement, moral support, personal attention and care.

We dedicate our grateful thanks to our teacher Prof. Roberta Ingaramo, for her valuable suggestion and constant help. Many special thanks to all the people whose assistance was a milestone in the completion of the thesis, particularly Zachary and Associate.



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## **TARGETED REDEVELOPMENT AREA SOUTHWEST DETROIT**

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# SUMMARY

The main idea of the thesis is the targeted redevelopment area in Southwest Detroit. The city became a significant industrial district during the 19th century. After World War II years, Detroit has faced with main problems considering, population shrinkage, industry dislocation, movement of Detroiters to the developing suburbs, and downtown decline. Therefore, it emerged large amounts of vacant lands and abandoned buildings in the city.

During the research time in Detroit and cooperation with Zachary and Associates beside Southwest Association Organization, it resulted in Southwest Detroit not only is a high priority area but also it is a remarkable place for community economic development in Detroit.

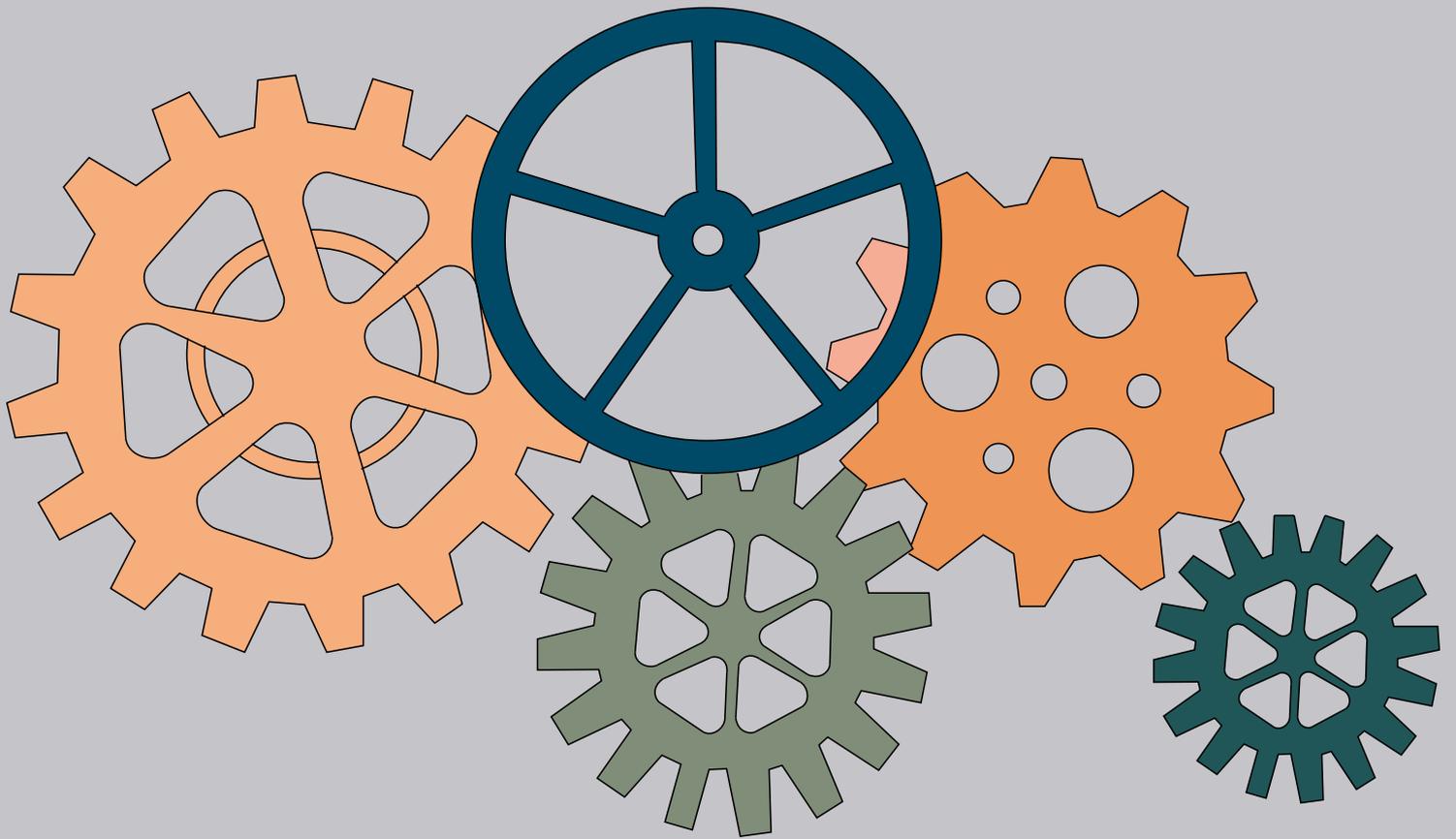
Southwest Detroit is an ideal location within 2 miles (3.2 km) of Detroit's central business district. Mexicantown includes in the region where it is a location to become substantial retail and cultural activity node for southwest Detroit.

In a considerable part of the west and southwest sections of the city are vacant and, Rainwater runoff is one of the main problems in Southwest Detroit. As a result, this is a remarkable challenge for Southwest Detroit how to manage stormwater problems by redeveloping abandoned lands and vacant buildings as well.

Additionally, this region has been a major industrial area in the city of Detroit; it has some railway networks and bridges for transporting industrial materials. Pits under the bridges and holes of roads and streets can be the critical places for the collection of the water, especially during rainy days. A well-designed approach can convert threats to opportunities. A properly design to collect stormwater can transform vacant lands into community spaces, beautify neighborhoods, and stimulate local economic development. Moreover, they could create job opportunities for Detroit residents.

During the last decades, techniques and legislation have been raised in terms of decentralized stormwater management throughout the world considering green stormwater infrastructure (GSI), storing the rainwater in specific spaces (pond) and Bio-retention, etc. Therefore, they could be an appropriate methodology for the city like Detroit since it has more open space available than many other cities in the United States.

The thesis divided into four main chapters. The history of Detroit explained in the first part. Secondly, it is analyzed various techniques for managing stormwater problems since Detroit regularly experienced flooding and rainfall. In the following, Southwest Detroit described in terms of its context and urban planning. The last part dedicated to redeveloping one zone and a vacant warehouse according to the needs of its community, besides solving the stormwater problem.



# DETROIT THEN AND NOW

## The founding of Detroit

*"The history of the city of Detroit begins with the landing of Antoine de la Mothe Cadillac on July 24, 1701, at the site of the present-day City-Country Building at Woodward and Jefferson Avenues."* (Poremba, 2001, p. 08)

According to Poremba, Cadillac was the son of a governor from the mid-Pyrenees area in France and he was an officer in the French navy with powerful connections. He had moved to the Americas since 1683. Cadillac's ambition was to bring security for French by trading fur and he attempted to control the local people under French regulations while keeping them in a peaceful condition. Cadillac left Montreal in Canada with 100 French-Canadians and 100 Indians; they reached Lake St. Claire and Detroit River to Grosse Isle. They tried to find the best possible place for a well-appointed town and finally, they selected a defensive location. They started cutting off the trees to make a shelter and the fort and a church were the primary buildings in this area. Cadillac had chosen Fort Ponchartrain du Detroit and later briefly called Detroit. (Poremba, 2001)



Figure 1: British engineer John Montresor drafted his "Plan of Detroit with its Environs" in 1764.

Source: William L. Clements Library, University of Michigan

*"In a sense, three hundred years ago the rivers and navigable streams were the roads joining the farms, and the Detroit River was the major thoroughfare. The houses were built close to the water's edge, and behind them invariably stood an orchard, after which came the cleared fields for corn, wheat, and other staples."* (Martelle, 2014, p.11)

According to Gay, Detroit has called by other names such as Motown, Motor city, city of trees. These days, Ste. Anne’s church is the only remainder of Detroit during French origin since all the buildings erected by the British who had been in Detroit after French for more than thirty years. (Gay, 2016)

French organized Detroit as a colony of New France in 1701. Although, it was occurred some events such as war, economic troubles, and a great fire in Motown, over this period people have continuously lived there. Early, Detroit established as an agricultural colony and fur trading. However, later it changed to political, construction, and transportation core before it has become a significant industrial city in the world. In the nineteenth century, Motown started to grow along Detroit’s river from the east side to the west side, moreover, most of the vertical streets to the river named by the names of owners of the farms whose boundaries they run to build. (Thomas, Bekkering, 2015)

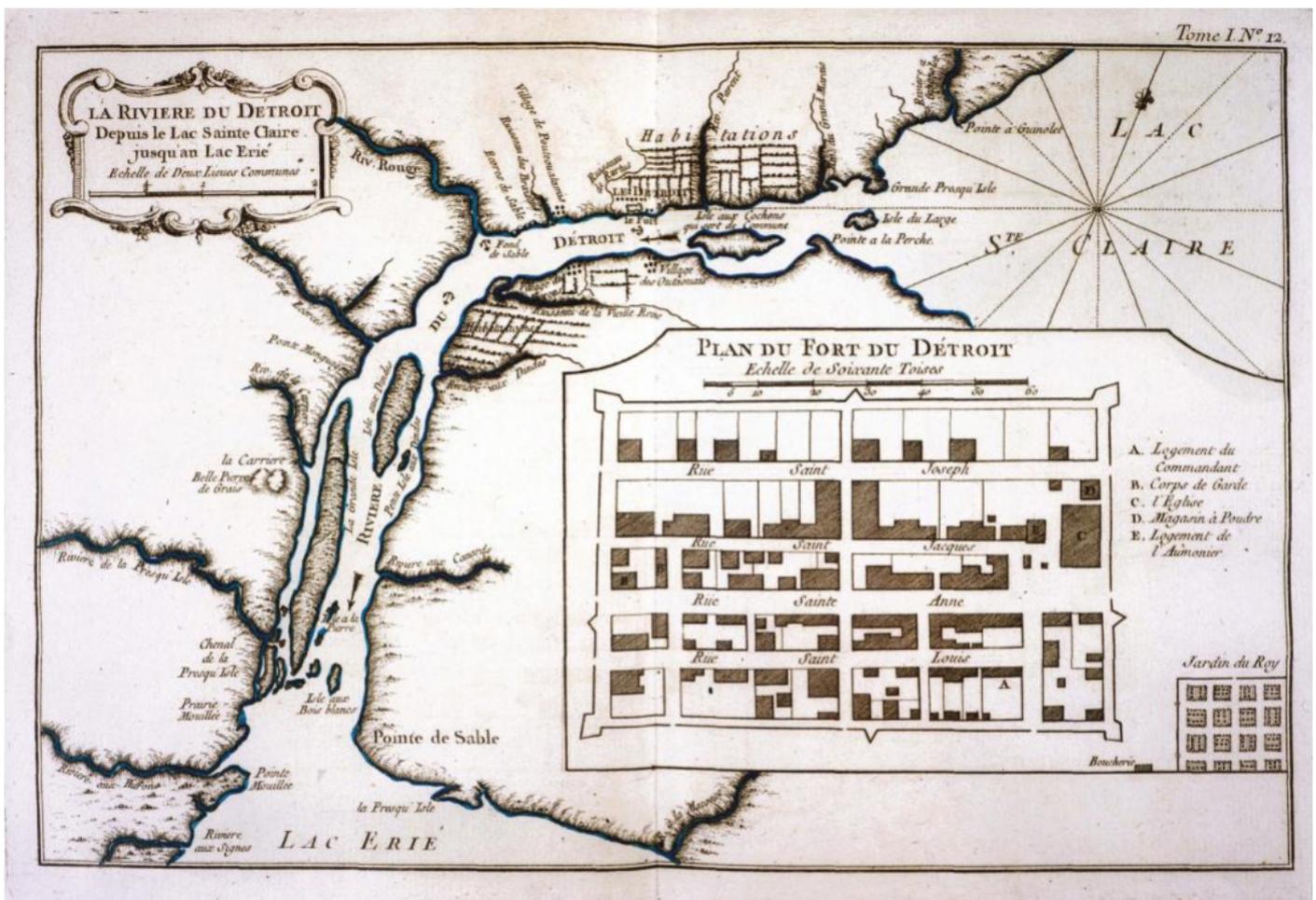


Figure 2: Gaspard-Joseph Chaussegros de Lery's Plan du Fort du Detroit was inset on his map of the Detroit River published in Le Petit Atlas Maritime by J.N. Bellin (1764)  
Source: William L. Clements Library, University of Michigan

Porembe says, In 1805, an extreme fire happened in Detroit and everything in the city destroyed. Therefore, Motown reconstructed once more based on the ideas of Thomas Jefferson.

During the last decades of the eighteenth century as well as at the beginning of the nineteenth, the town grew bigger as same as before, and it included the wider ribbon of the land that Cadillac assumed. Since Cadillac left the colony, this region converted to the domain of the king and then, it became under the Americans, as the public land. This section presented the ground as a base for the development of the town as well as, for paying to victims who faced a great fire in June 1805 with "donation lots" through the new city plan. The eastern and western borders of the domain became the rebuilt areas of the city. Therefore, Detroit's urban within 1701-1835 located inside this district. (Porembe, 2001)

To be more elaborate, there is a noticeable fact in the development of the primary town of Detroit for the first 125 years of its appearance. It was to take action regarding strengths two main aspects of the town, one protecting it and second, limiting the boundaries of the town. In that era, Detroit was the same as a "fortified place" on a tiny scale in comparison with the hundreds of fort towns spread between Europe. (Thomas, Bekkering, 2015)

These days, Woodward Ave. is still the main road in Detroit that starts from the river and continues to the north of the city. The semi-circular Grand Circus Park altogether is located on the north side of the river. Nevertheless, this planning cannot demonstrate Judge Woodward's entire purposes, but the Woodward plan particularly provides us the wide streets and open spaces that make downtown Detroit. (Porembe, 2001)

## A commercial city

During the nineteenth century, Detroit was the pioneer for leading the commercial center as the largest city in the state. As a matter of fact, 35 years after being destroyed by fire, Detroit not only was a main city in the states but also it was belonging to all parts of the world with almost 10,000 people. Detroit had plenty of different manufactories, also, it was growing culturally. Detroit equipped the telegraph installed, as well as its streets, were illuminated by the coal gas, and the first horse-drawn bus lines started to run according to the scheduled regularly. All of these elements converted Detroit as an American town. (Porembe, 2001)

Detroit's population increased more than doubled between 1850-1860, from 21,000 in 1850 to 41,000 in 1855 to 49,000 in 1860. During those years, Detroit was the 21st city in terms of scale were

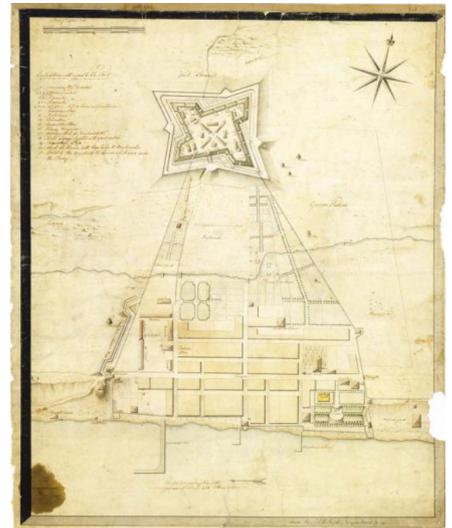


Figure 3: The fortified town that burned in June 1805 had taken on its distinctive triangular ground plan by 1782. Fort Lernoult (Fort Detroit) is at the apex, separated from the civilian area by a broad open space of parade grounds and pasture.  
Source: William L. Clements Library, University of Michigan

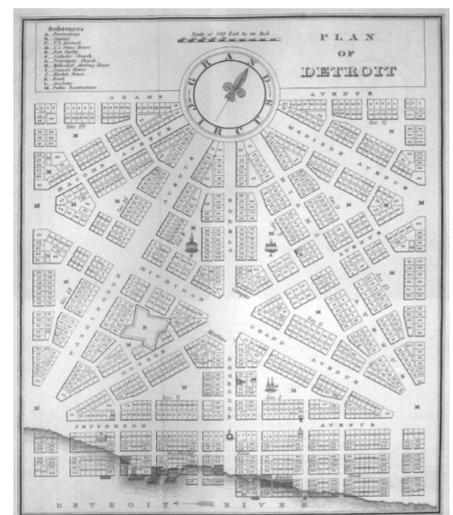


Figure 4: *Plan of Detroit, 1824*. Engraving by James Otto Lewis, 1825.  
Source: William L. Clements Library, University of Michigan

included in the different ethnic mix. Furthermore, the Detroit River has an important role in the expansion of the city. Detroit's location along the river and lake was so well for the ships and they could stop there within their voyage. (Poremba, 2001)

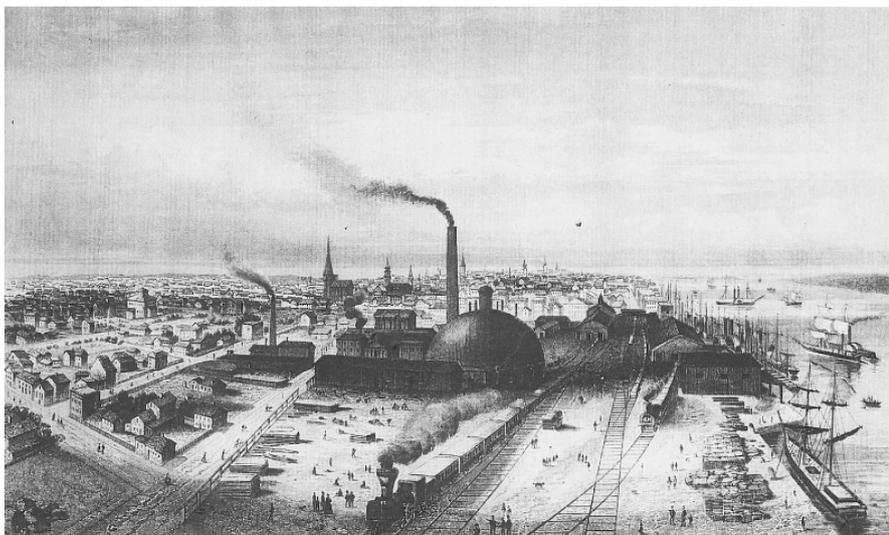


Figure 5: Bird's-eye view of the city of Detroit in 1860. This view shows the bustling riverfront and Michigan Central Railroad roundhouse where train engines were rotated onto different tracks.



Figure 6: Woodward and Jefferson, 1860s. This close-up view of a busy intersection shows various types of carriages and buggies.

## **A manufacturing city**

The United States experienced massive development and growth in the three last decades of the nineteenth century. The population went up and many immigrants from the old European countries entered the United States, therefore, many actions according to Europe created. Industry and manufacturing grew up widely and the country converted recognized as a world power, and these changes were more obvious in Detroit. (Poremba, 2001)

Detroit's population in 1870 was around 80,000; nearly half of them were born in foreign. Commercial and transportation centers were two main aspects of the economy, there were not single large factories and only two biggest, began to produce railroad cars. There were different kinds of natural resources in the state such as iron, copper; moreover, agriculture was a major effect for developing. All of these reasons lead to Detroit's manufacturing, developed along with them. (Poremba, 2001)

## **The motor city**

The new century was a major process of Detroit's development. During those days, the largest percentage of non-English speaking people came to Detroit and the town was a place for a large group of ethnic's immigrants and each area of the city have become for a specific group of people with own traditional life style. As it is obvious, recently each part of Motown has own cultural and linguistic heritage. (Poremba, 2001)

Detroiters had left Motown caused the town converted to Ghost town, At the beginning of the twentieth century, Detroit had the highest growth among the other cities in the United States, it was the core of constructing various goods such as iron, brass, and copper. Additionally, the automobile industry was a main concern but other industries were developing meantime. (Poremba, 2001)

In Detroit, the social layouts transformed by the arrival of the automobile industry, which was created new jobs in the factories for immigrants; moreover, the city needed more buildings for its citizens. Therefore, The town's boundaries stretched and it faced new problems in health and even in education. Between 1910 and 1920, the population of foreigners increased nearly twice. Thus, the enormous assembly factories were constructed near the railroad lines to help worker's needs. Moreover, plenty of houses built between these "belt-ways" of the railroad tracks for the workers. These neighborhoods soared quickly, standardized housing according to a short distance for walking and a short streetcar ride created next to each

other. The immigrants started to live in the city while the native-born leave it. That is why today, all the wealthiest families in Detroit live in a suburb like Gross point shores zone since the “suburbanization” of several of Detroit’s richest families began by 1914. (Poremba, 2001)

### A city on wheels

In the first decade of the twentieth century (1910), Detroit’s population was over 450,000 people. During this decade, an African-American middle class was rising. The Ford’s Highland Park Plant, which was the largest roofed building in Michigan designed by Albert Kahn in four stories tall and started manufacturing cars in 1910, it became a model for industrial factory plants. During this decade, different spaces in the town changed with construction and expansion. Almost three years later, in the latest days in 1913, the new Michigan Central Railroad Station opened on West Vernor by the architects of Grand Central Station in New York. Since the U.S. the stock market and economy fell down on October 24, 1929, the economic boom in Detroit as well as in the nation stopped instantly. As a result, the Great Depression prevented the building boom in Detroit. (Poremba, 2001)

*“As the 1930s began, Detroit was ranked as the fourth largest U.S. city with 1,568,662 people, of which an estimated 400,000 were immigrants.” (Poremba, 2001, p. 92)*



Figure 7: The foot of Woodward at the river, 1890



Figure 8: Dawn of Detroit’s auto age. Detroit can be said to have entered the 20th century a few years earlier than the rest of the country.



Figure 9: World's costliest photograph. To help celebrate the tenth anniversary of the Ford Motor Company in the 1913, Henry Ford posed 12,000 autoworkers in front of his plant.

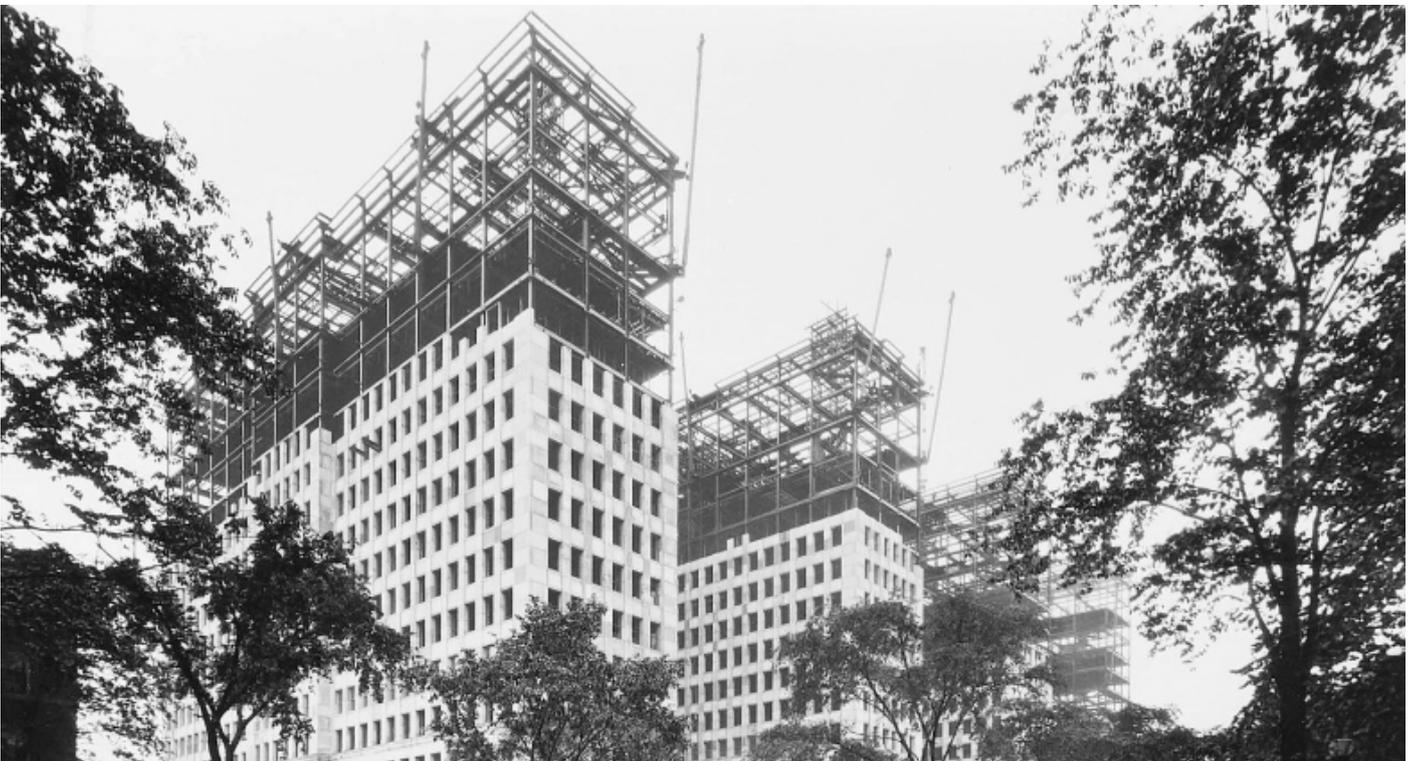


Figure 10: General Motors Building under construction, June 14, 1920.



## A city in depression

In the years after the Second World War and the 1950s, many changes took place in Detroit and the life of its people. The War had a suddenly ending and there were huge requests of different goods among consumers. Therefore, changes were occurring in the Motown. The suburbs were joining to their own through the express highways. On the other hand, the demand of the massive open spaces was a reason that conducted many Detroiters; especially the white citizens began to make communities in the north, south as well as the west of the city. These highways provided access to the city especially the downtown in east-west and north-south direction and led to people work in Detroit while they were living in suburbs communities. Economic failure issues caused intensive changes in Detroit during the decade of the 1960s. By the adventure of modern technologies such as computers and electronics, the character of the industry changed. Due to that, the auto industry was unaware of these new signs of progress in the industry. The central business district of Detroit became smaller with several vacant spaces and empty lots when Detroit's job center transformed from the city to the north and west areas. Different racial residents and unemployed citizens remained. This tension rose until the summer of 1967 when the city exploded. (Poremba, 2001)

Figure 11: The woman's Exchange building on East Adams Street Adams served a unique purpose in Detroit society.

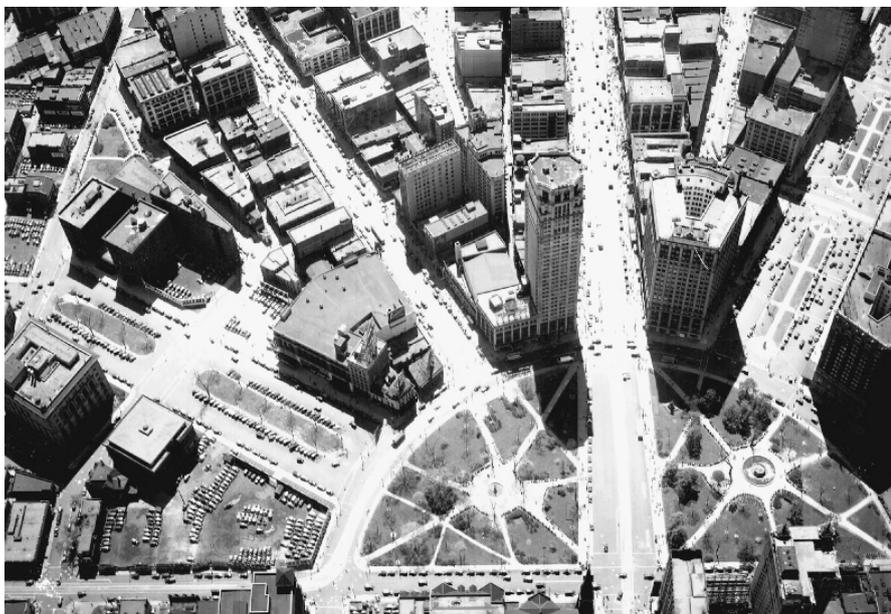


Figure 12: By the 1920s, the city's core was well developed along a truncated version of Justice Augustus Brevoort Woodward's original plan.



Figure 13: A very busy yard, 1930s . The Michigan Central Railroad (MCRR)



Figure 14: Woodward Avenue, 1934. Looking north from West Alexandrine.

## Land and change in Detroit

In *Mapping Detroit: Land, Community, and Shaping a City*, editors June Manning Thomas and Henco Bekkering describe in chapter Land and change in Detroit, during the 60's decade, racism played a key role in dividing the city into the various section. a large group of white people moved to different districts of Detroit's suburbs since they could leave the center of the city without limits at the beginning, but after several years, other groups of the ethnics and lower-income Detroiters could transfer as well, because a law about houses was enacted that allowed even blacks to move. However, after these years there were many people especially the middle-class residents who remained in Detroit's central part. This phenomenon led to converting Detroit as a segregated region; a significant part of suburbs with white and higher-income rates covered a city with a considerable number of blacks.

After that period, a great number of houses were abandoned in the city center. Because people who left their homes were not able to sell or lease them, furthermore movers did not have enough money to pay their mortgages. On the other hand, Banks or financial investors who were owners of these residential buildings could not pay taxes of reverted houses as well, therefore, these properties reverted to state or governments after many years. Additionally, the city government was not able to earn money, especially from taxes of properties since remained citizens had low-income levels. Vacant houses or without residents in different zones of the city were a critical threat to public safety. These empty buildings were the main factor for increasing crime rates in Detroit dramatically.

The racial conflict has been the root of race riots in the United States as well as in Detroit and mentioned in the "Mapping Detroit" book considerably. This civil rights movement was an important issue in American society after World War II and it reached its peak in the 1960s. Always there was a battle between whites and blacks since white citizens preferred to live in neighborhoods where there were not blacks people. Detroit was well-known as an industrial city and was proud of its automobile industry not only in the United States but also in the world, entered into a depression era. A great number of industrial manufacturing had closed since factories went bankrupt, as a result, the city lost its industrial jobs. Many families decided to move out of Detroit because racial conflict and crime rose gradually. White families were the most group who left the city center since they did not have a serious problem regarding racial discrimination, furthermore, they could pay to the banks and financing institutions their loan. Therefore, Detroit lost a remarkable of its population during the second half of the twentieth century. (Thomas, Bekkering, 2015)



Figure 15: Twelfth Street disturbance. Federal troops are called into the riot-torn areas of Detroit to put to rest the violence of the summer of 1967.



Figure 16: The price of violence. An entire block of middle-class, African-American homes is completely destroyed in the wake of violence.

*"By 2010, Detroit had lost more than 60 percent of its population since 1950 and 37 percent of its housing since 1960."* (Thomas, Bekkering, 2015, p.143)

Detroit has experienced numerous challenges during the last decades. Many types of changes such as physical, environmental, and social aspects have affected the process of the city's development. A major part of these changes occurred in the second half of the twentieth century since a large city like Detroit faced by decentralization. Besides, the population loss and an industrial falling were two considerable issues for creating problems in Detroit.



Figure 17: Detroit downtown figure-ground diagrams, Richard Plunz, "Detroit is everywhere," Architecture Magazine, April 1996, vol.85, no.4, pp.55-61.

### **Detroit as a linear city**

According to Thomas and Bekkering, Detroit in the 1930s and 1940s was the most perfect modern city in the world and expanded its boundaries. In this era, the formation of the city was followed by the linear shape. The linear city caused to move large industrial factories to suburb districts and they were surrounded by highways and rail lines. Besides, there were workers' houses, schools as well as agricultural land in a linear zone and they merged with green landscapes. Detroit linear cities could provide cheap housing for

workers between free spaces along highway and railroad, additionally, they lived near the factories. This city model strongly affected the process of production and found an appropriate solution for the industrial dense city. On the other hand, the linear city depicted a new definition between rail lines and roads. (Thomas, Bekkering, 2015)

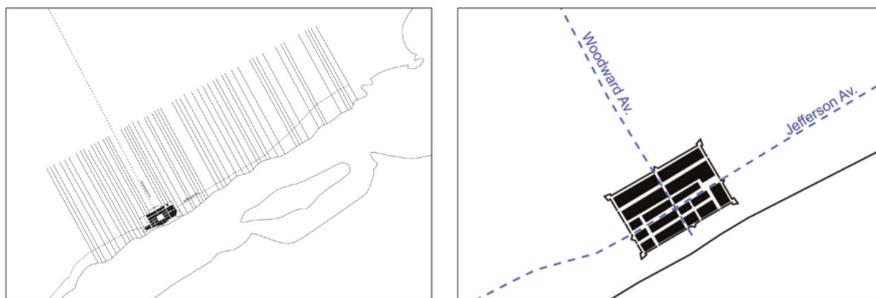


Figure 18: In the left, Map of the agricultural strip farms as layed out by French.  
 Source: Bekkering and Liu. Original image from William L.Clements Library, University of Michigan

In the right, Rendering of the enlarged Fort at Detroit.  
 Source: Bekkering and Liu. Original image from William L.Clements Library, University of Michigan



Figure 19: Decreasing presence of residential parcels over time: 1880s, 1920s, 1960s, 2000s.  
 Source: Elaborated by Thomas and Bekkering, 2015

## Detroit as an archipelago

As described in the previous chapters, various factors such as population shrinkage and industrial loss during the last decades of the twentieth century led to creating vacant lands and abandoned buildings in the city. This issue changed the shape of Detroit gradually and affected the urban infrastructure. Besides, pervasive stagnation in the different fields for instance in the construction, moreover downturn and lack of financial resources were the main

reasons that caused no new buildings to have been built for a long time. In the different zones of the city only remained desolate buildings with no visible residents, nothing in the parcels or streets. a ghost town whereas the economic activities and industrial jobs that supported it have failed. (Thomas, Bekkering, 2015)

The term of terrain vague, was an appropriate name for the different sections of Detroit. The suburban neighbors were not separated from the core of the city. They were unlimited spaces, without a specified boundary where could be a threat to the urban form. This form of the terrain vague was an outstanding drawback to converting Detroit from a modern city to a vacant land through the abandonment and demolition of buildings. (Daskalakis, Waldheim, Young, 2001)

However, the city still has a great number of problems and the shrinkage notion also economic challenges have made drawbacks impacts on the situation of the citizens. But, innovative approaches can push Detroit toward a more livable city since Detroit has considerable opportunities to improve. It is a common demand among the city of Detroit and its citizens to change the situation through new positive approaches.

The method can be defined by emphasizing on the neighborhoods and districts of the city in order to give identity to them. These neighborhoods are vital zones in the city that can improve the social and economic aspects of the community. Subsequently, the city would become an archipelago of individual islands and each of these zones has a specific characteristic, therefore, they will create a sustainable city. (Thomas, Bekkering, 2015)

Figure 20: Series of maps on the scale of the city between 1853 and 2009. This series of maps shows the progression up until present situation of holes in the urban fabric. Source: Bekkering and Liu, 2015

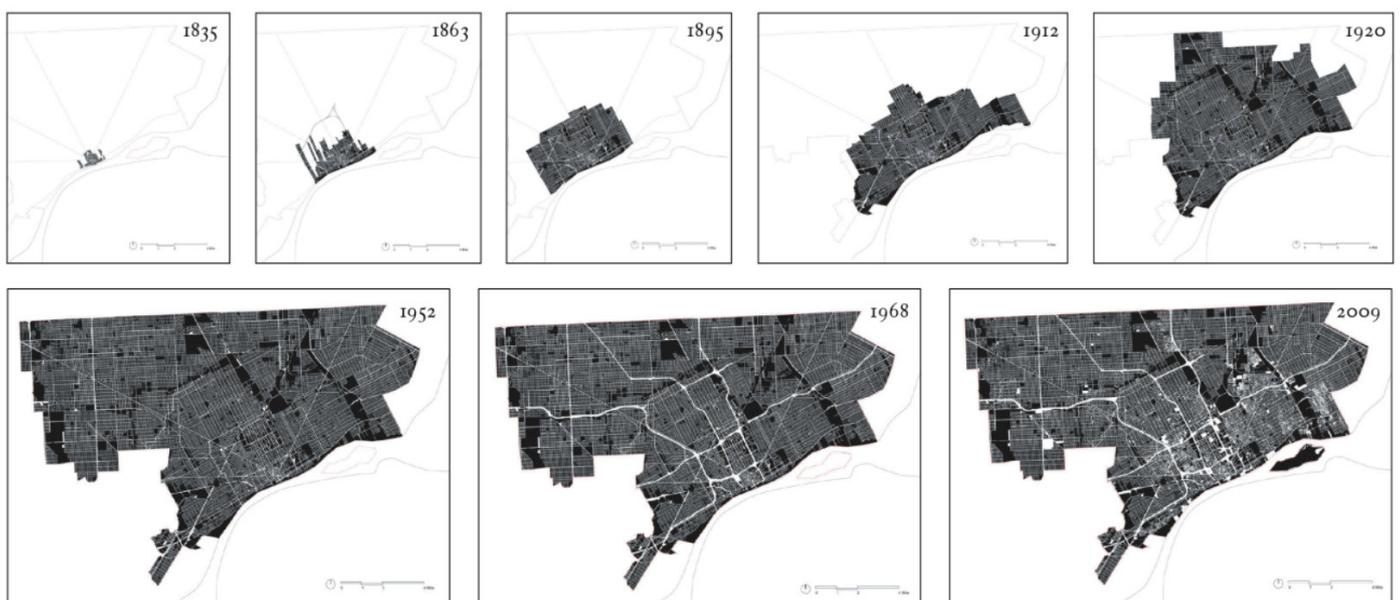




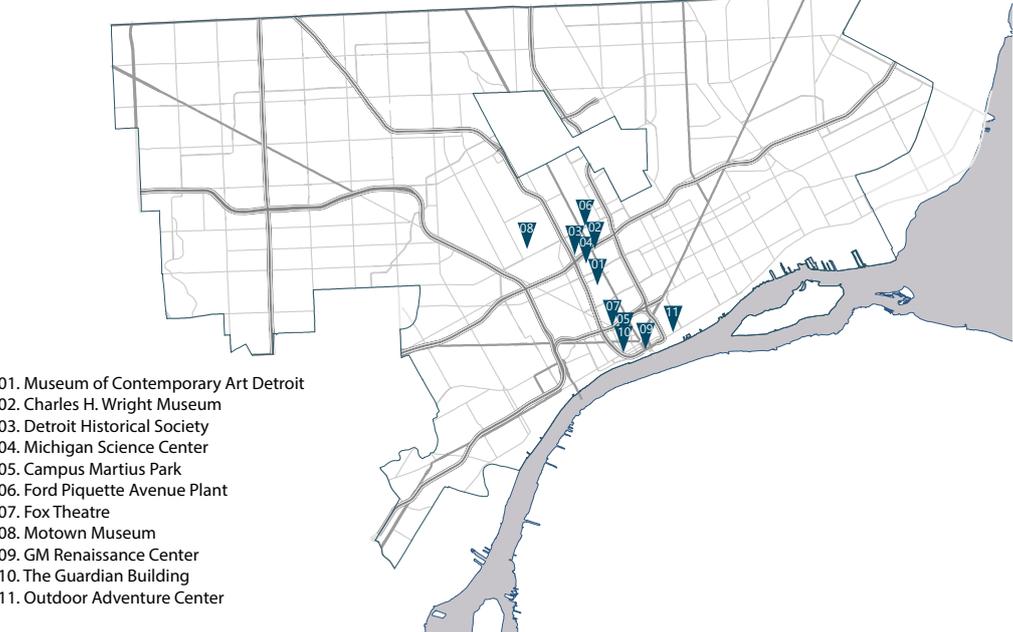


Figure 21: In the previous pages, A detail from Diego Rivera's Detroit Industry at the DIA.  
 Photo: Getty Images.  
<https://stories.vassar.edu>

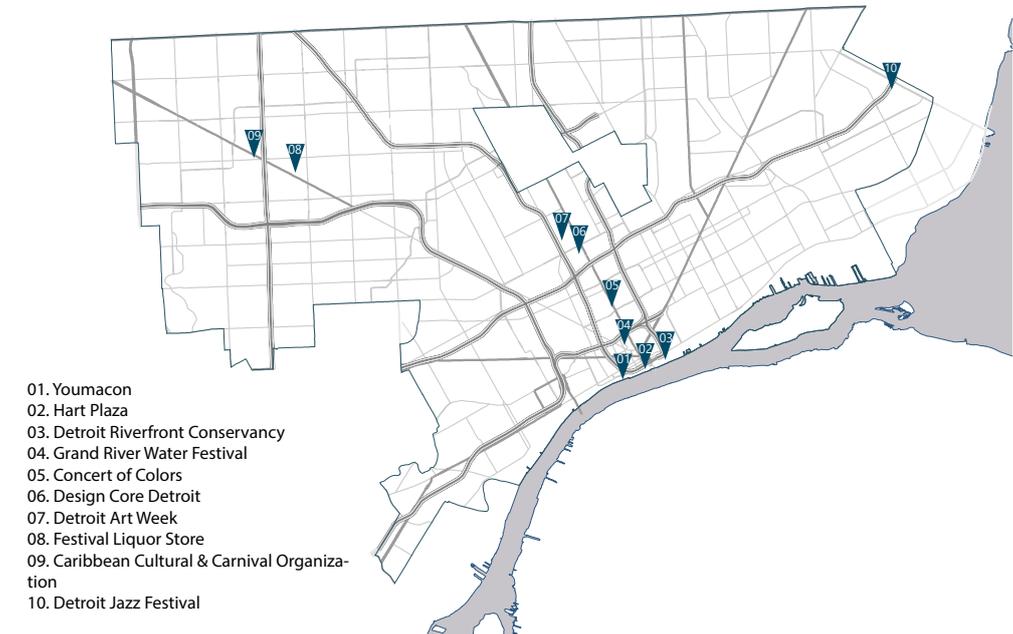
**Cultures in Detroit**

As is told in the previous chapters, Most of the population of Detroit consists of immigrants. Each specific area of the town belongs to a particular society or community. In more detail, the majority of Detroit's Mexican population lives in the Southwest of the city while In the Greektown most of the Greek people live and a large group of Indian people live in Indian village zone. Additionally, each zone has not only its traditional markets and restaurants but also the church of each part was designed based on its local context.

**Attraction**



**Festival**



## Future of the City

As mentioned previously, according to the history of Detroit, the urbanization of the city had changed. Detroit converted into an example of a shrinkage city in the world. Detroit has many vacant buildings available, which can erect a variety of innovative spaces. By improving the vacant buildings and lands to a creative landscape in an urban ecological system. It could lead to economic benefits such as create jobs for Detroiters and create social benefits like rising property values, as well. Therefore, people encourage to live in the city rather than the suburbs.

Moreover, there are neuromas abandoned buildings and houses in the town that they became the appearance of the city is unattractive however, they can be restored based on the needs of each area instead of vacant.

During this time, the advent of technology and online shopping, most people around the world, particularly in the United States citizens prefer to buy products online since they can save time and energy. On the other hand, the small retail on the streets makes the city lively and beautiful like a Cass avenue in Detroit.



Figure 22: A street with vacant lands in Detroit

Source: from the book "Stalking Detroit", 2001



Figure 23: The dream is now  
 Source: "Detroit; the dream is now", Arnaud, 2017



Figure 24: The title of this work is Giant Steps. Paintings of shoes on boards all sizes were placed on an abandoned building next to the Heidelberg Project office in Midtown.  
 Source: "Detroit; the dream is now", Arnaud, 2017

## Detroit and European cities

In terms of urban design, there is a contrast between Detroit and European cities. For instance, in European cities like Paris or Turin, the majority of citizens are keen on living in the downtown since it is more lively and it consists of a great number of shops, retails and well-known restaurants. However, in the city of Detroit, most of the Detroiters are interested to dwell in suburbs such as Livonia, Grosse Pointe, and Birmingham, where a great place to live and properties have a standard well-made, well-designed and their area are safe.

On the other hand, recently the downtown Detroit is changing. It is trying to be a lively place for its citizens. Most of the vacant lands of this area have a well-designed and its buildings are costly like the cost of the house in the suburbs. Moreover, a community open space of downtown was organized not only for children but also for families who can watch and enjoy a movie during summertime in open cinemas.



Figure 25: Downtwon of Detroit, personal photo archive, 2019



Figure 26: A house in Grosse Pointe shores, personal photo archive, 2019



Figure 27: The skyline of Detroit, 1930s  
Source: "Images of America, Detroit 1930-1969", 1999

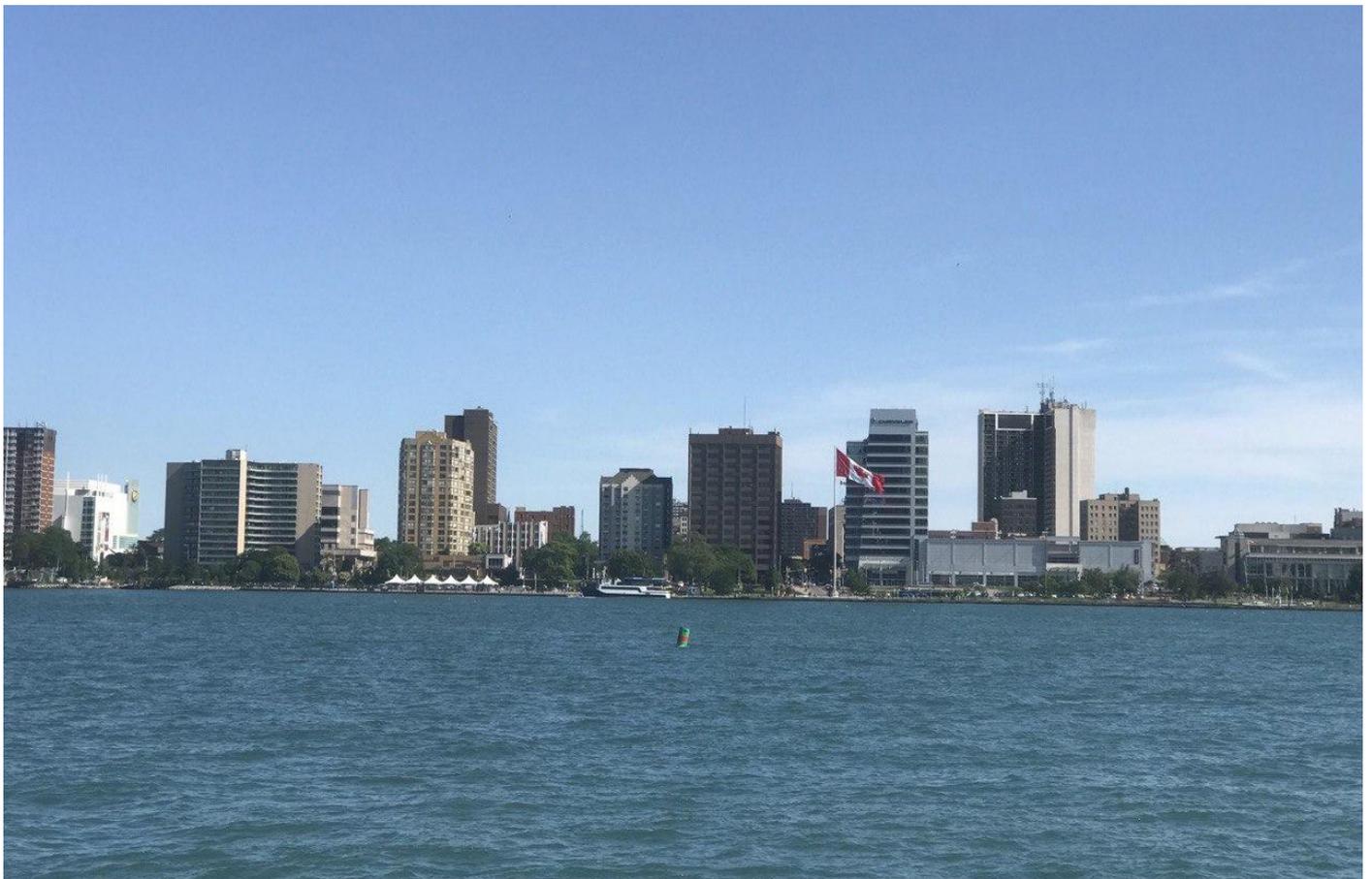
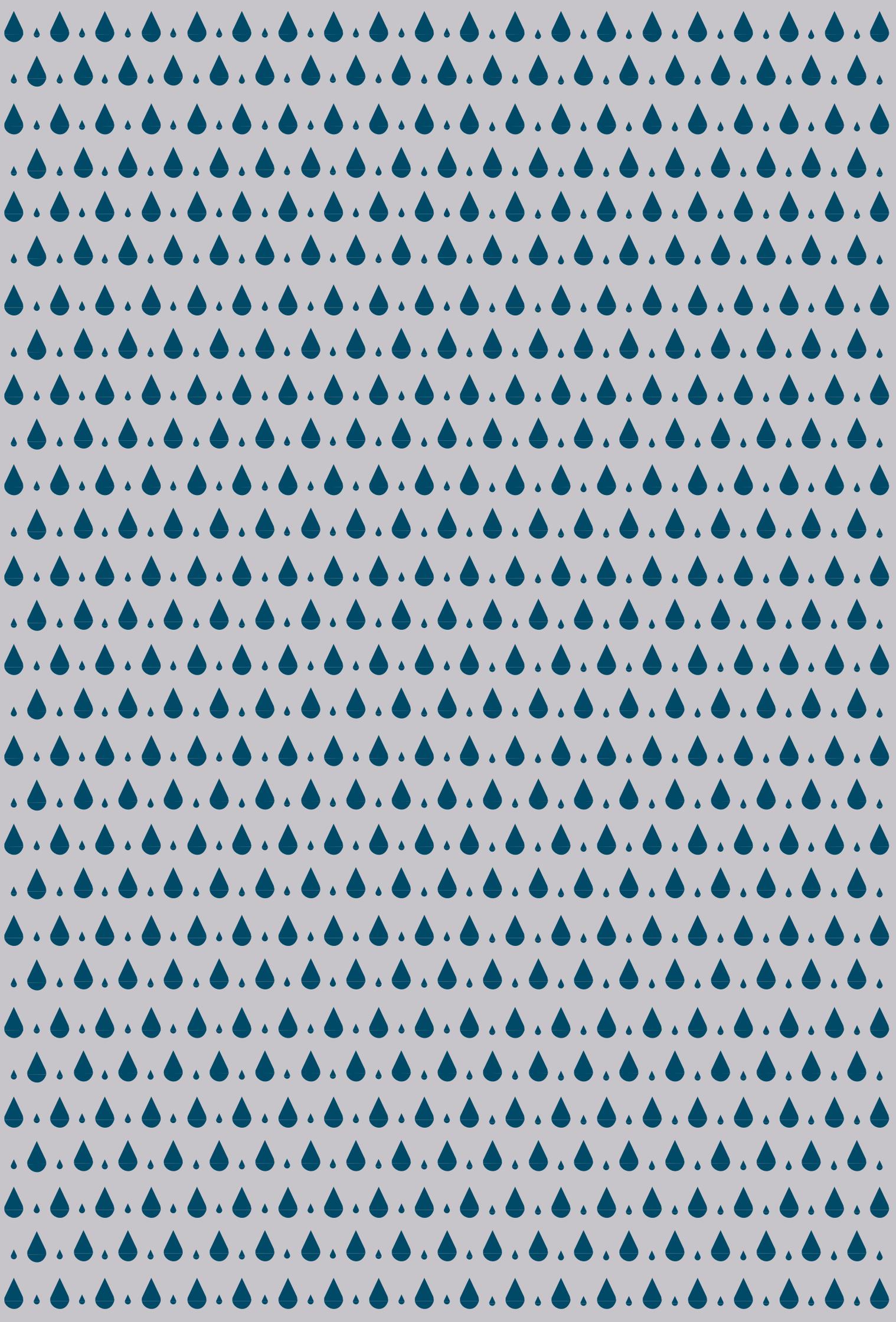


Figure 28: The skyline of Windsor, personal photo archive, 2019



# STORMWATER MANAGEMENT, URBAN REDEVELOPMENT

## The importance of water and nature

During the last decades, water discussion has become a pervasive crisis throughout the world, since water has a significant role in daily life. Different factors such as climate change, urban expansion, and population growth are increasing the demand for water by the day.

There are various challenges in terms of urban water management. Recently, in the majority of developed countries, a great number of people do not have access to drinking water. By urbanization and industrialization, the percentage of people in urban areas encounter with the lack of water sources. Water pollution caused by stormwater, flood, and drought can threaten the sustainability of the urban water system.

Water in the city divides as:

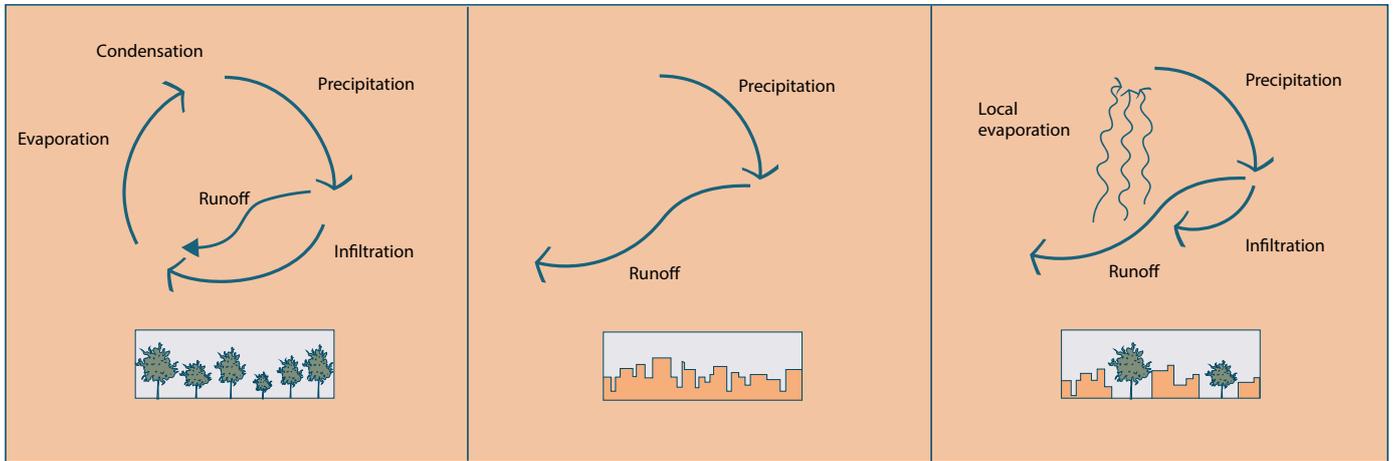
- Drinking and washing water
- Stormwater
- Wastewater and greywater
- Natural water bodies (lake, river, brooks, ...)
- Artificial water bodies (fountain, ponds, ...) (Hoyer, Weber, Dickhaut, Kronawitter, 2011)

## Nature

Nature has inspired by a creative system, while water involves in all nature's factors. In fact, all the natural components have well organized. Generally, A natural process is continuously cycled in various forms like, rainfall, evaporation, absorption by plants, wetlands, flows to rivers and great lakes, remained water infiltration to groundwater thus all these individual systems complete nature. Human has supplied their demands by carryout some activities, therefore, disruption in the environment brings a remarkable issue that it requires ongoing management.

Figure 29: Water cycle in natural system (left); in an urban area without sustainable stormwater management (middle); and in an urban area with sustainable stormwater management (right)

Source: "Water Sensitive Urban Design" Principles and Inspiration for Sustainable Stormwater Management in the City of the Future, Hoyer, Weber, Dickhaut, Kronawitter, 2011



## Stormwater

### What is stormwater runoff?

Any form of rainwater or snowmelt that flows over roads, parking lots, building roofs, and other hard surfaces that do not soak into the ground is called stormwater. It becomes an issue for the environment since it caused flooding and severe inundation. Therefore, the urban sewage system plays a significant role in draining stormwater runoff. (Detroit Future City, 2019)

"Anywhere from 30 to 95 percent of rainfall flows across the typical human development and is referred to as stormwater or urban runoff. Some municipal systems combine sewage with stormwater, and in more than 700 U.S. cities this highly polluted combination drains directly into rivers, lakes, and oceans." (W.Liptan, Santen Jr, 2017, p.15)

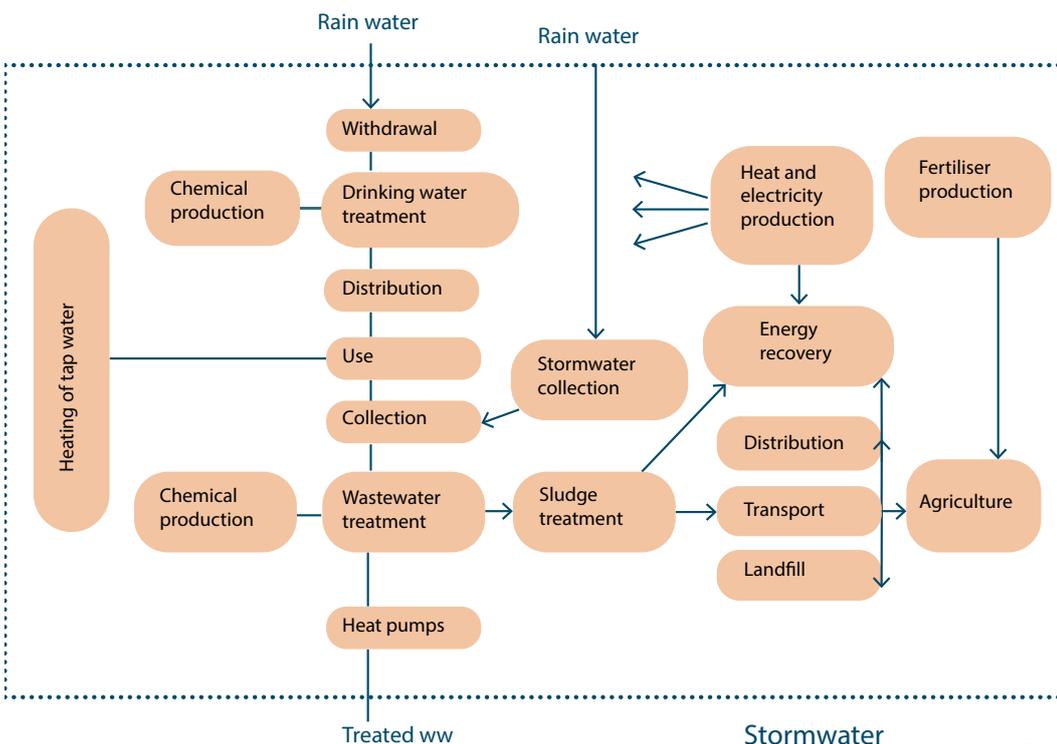


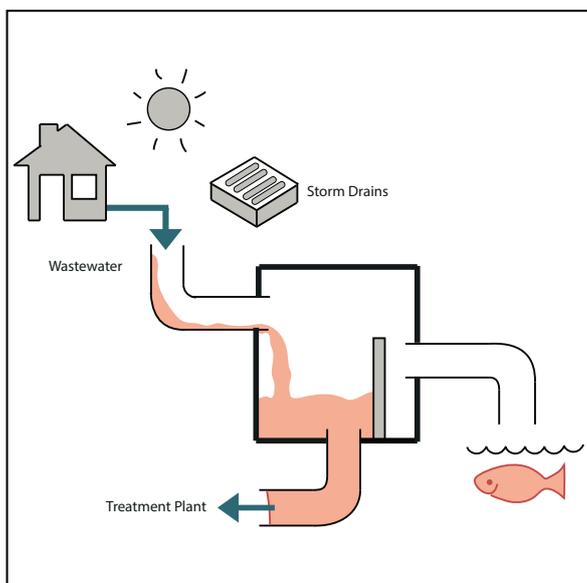
Figure 30: Urban Water System from Lundin and Morrison  
Source: "Integrated Urban Water Management: towards sustainability", Steen, 2007

## Problems of stormwater

As mentioned in the previous chapter, Stormwater runoffs in an urban environment when not managed, caused urban flooding and overflows. Water accumulation can be polluted and released an unpleasant odor in urban areas. People get in a tough situation as well as they could not leave their homes.

Stormwater is not as clean as snow or rainwater. When it runoffs on specific surfaces such as roof buildings or paved areas. In an urban environment, it absorbs oil, road salt, fertilizers, and other pollutants before it gets through the storm drains. Stormwater's issues are categorized in two groups: firstly, issues derived from social, economic, technical and related aspects. Secondly, issues derived from climate changing. (Detroit Future City, 2019)

Normal Condition



Heavy Rain

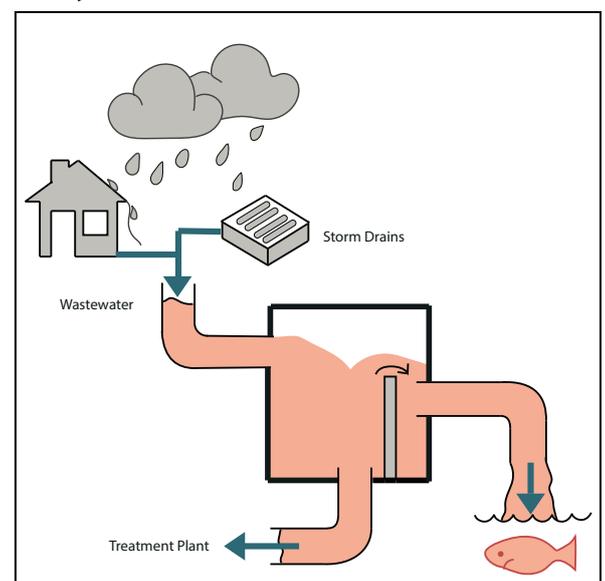


Figure 31: Water Drainage Diagram

## **Impervious and pervious surfaces**

There are two main types of pavement: An impervious surface is any surface that does not allow water from flowing into the soil beneath and causes the water to run off the surface rather than seep through it, rooftops, asphalt or concrete paving, driveways, and parking lots are some kinds of impervious surfaces. On the other hand, pervious pavement is designed surfaces to let water naturally soak into it and garden areas, forested areas, and mulched areas are some great examples of permeable surfaces. (Detroit Future City, 2019)

Based on Upadhyaya, Biswas, and Tam in their article, six issues are recognized in terms of stormwater infrastructure, considering economic, health, population growth, institutional, ecological, and consumer behavior.

### **Economic**

There are various categories of economic costs in terms of flooding; however, stormwater management fees that are collected could be the most important influence of flooding on the community besides the different organizations, which are responsible for stormwater.

### **Health**

Two different aspects arise when a flood occurs. It ruins not only homes and all the properties related to people but also has a considerable negative impact on resident's emotions. Moreover, the number of injuries and illness rise during a heavy storm.

#### **Population growth**

Population growth has a direct influence on the expansion of the city further changing the style of using the land. Usually, extension leads to construct a different kind of buildings for all the purposes. Increasing the impervious areas due to the development and expansion of the city soar the stormwater runoff volume up substantially.

### **Institutional**

In order to modify outdated infrastructures with recent methods, technical knowledge is an essential factor.

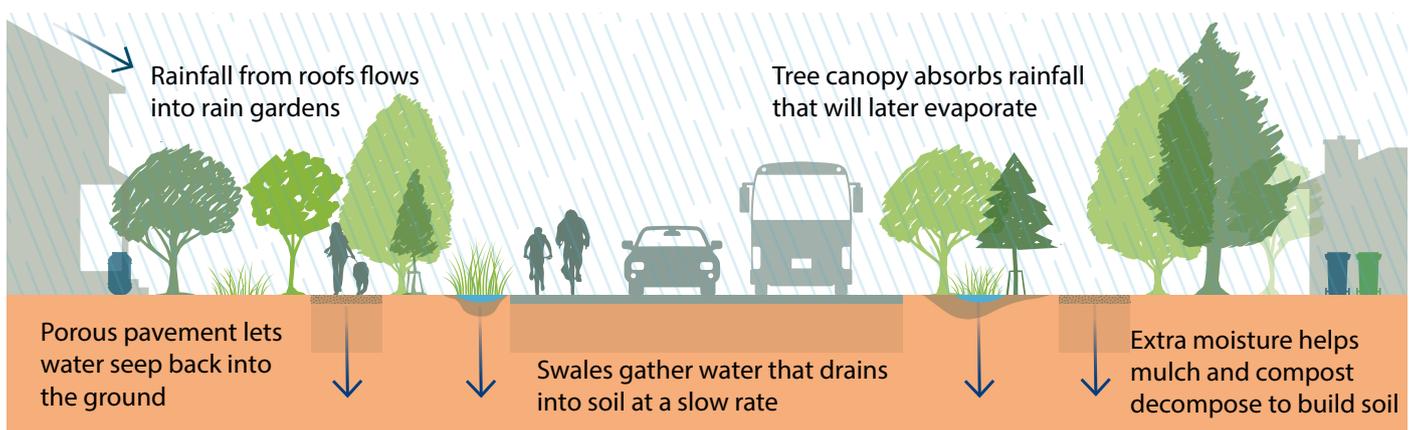
## Ecological

Water pollution is a significant risk for rivers and lakes as well as damages nature. A massive source of energy and funds needed to clean pollution from the water consequence; this action produces a considerable amount of greenhouse gases and releases it to the environment. (2014)

## Sustainable Stormwater management

According to the expansion of rainwater in many cities around the world, humanity is facing water pollution and water scarcity as well, stormwater should be collected and allocated by the Government. As a result, it could be changed a crisis into a better opportunity. When making a plan to manage stormwater runoff from the environment, it should be aware of some factors, in another word, it is reliable to erect, and easy to maintain as well as considering its costs. From an urban planning point of view, stormwater systems should be nice looking, meaningful, and instructional. To be more elaborate, water management has an important issue in the modern world that is gaining more attention. Additionally by using appropriate strategies could lead to manage stormwater as well as rainwater runoff in order to create a beautiful landscape. Managing Stormwater should comply with environmental regulations. It means the public areas are designed safe and invulnerable. This process prepares a safe pathway for passengers who have a certain difficulty during heavy rainy days. Sustainable stormwater management, not only stabilizes all factors in landform but also reduces the flooding drawbacks. Moreover, this technique increases all the land facilities for urban expansion.

Figure 32: Benefits of Green Infrastructure  
Source: "New Solutions for Sustainable Stormwater Management in Canada", 2016



## Landscape stormwater management (LSM)

According to W.Liptan and Santen Jr, before designing a landscape, it would be highly helpful to look at nature, where landscape-soil and vegetation-manage water because a well-designed landscape can inspire by the natural ecosystem. It brings not only a great community environment but also provides a lively urban area for a whole society. This technique is a wonderful opportunity to serve stormwater to avoid using pipes and tanks or plastic methodology. Therefore, it declines our needs for irrigation. LSM is defined by vegetation and pervious surfaces that can obtain opportunities for cities such as green spaces in vacant lands in order to make them livable and sustainable. Additionally, Playing with water in these spaces has a beneficial approach as well. (2017)

*“Design most water-accepting landscape areas with a water storage depth of between 3 and 12 inches (7.6-31 centimeters)”.* (W.Liptan, Santen Jr, 2017, p.139)

*“Avoid depths greater than 12 inches (31 centimeters) for spaces smaller than 2000 square feet (186 square meters)”.* (W.Liptan, Santen Jr, 2017, p.141)

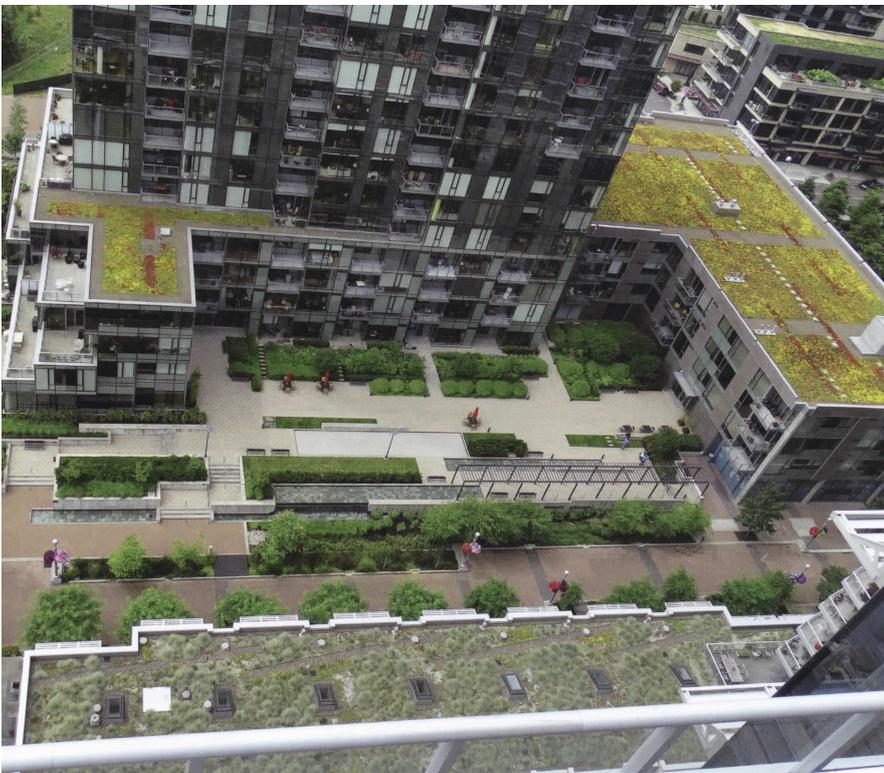


Figure 33: This former brownfield site incorporates many LSM approaches into public and private spaces, including vegetated roofs, trees, porous paving, rain gardens, and riverbank restoration.

Source: *“Sustainable Stormwater Management - A Landscape-Driven Approach to Planning Design”*; W.Liptan, Santen Jr. 2017

## Green Stormwater Infrastructure (GSI)

Green stormwater infrastructure depicts a resilient approach to deal with rainfall effects and it provides many community benefits in the other words it brings some environmental, economic, social upsides. (Detroit Future City, 2019)

### Types of GSI practices

In the book “Water Sensitive Urban Design”, different types of green stormwater infrastructure have described:

#### • Rainwater harvesting

Rainwater harvesting is divided into two different categories, underground and aboveground. Aboveground storage methods can be applied to landscape design or architectural elements as fountains, swimming bath, etc.

Rainwater harvesting is the collection of rain is used for various aims such as toilets flushing or fire sprinklers, gardening, and irrigation when treated; moreover, these methods can be used for complex buildings and individual buildings as well.

#### • Bio retention

This technique appears into the landscape design based on various shapes and measurements of construction site. This system can be adapted for a variety of abandoned spaces in urban land.

This system relies on plants and engineered soils to reduce downstream runoff in urban areas such as parking lots, streets, and roadways. It cleans water, removes pollution like oil and dirt from water that is picked up from roofs, pathways and driveways.

#### • Rooftop retention

Rainwater for rooftop retention typically includes a multilevel, designed by its function and dimension of the roof structure to help enhance stormwater retention. Green roof covered by vegetation and designed by the green landscape. It creates over a waterproofing, drainage layer, root barrier, and irrigation system. Green spaces can be created close to the buildings also they bring psychological upsides for citizens since there is a direct connection between the physical health of people and green roofs.



### • Permeable paving

Permeable paving is a particular type of pavement like concrete or asphalt, which has a high porosity. An important sustainable drainage technique allows water to pass through joint filling material to the soil below.



### • Swale

Swale is a linear vegetated technique for capturing and storing rain-water which can be constructed in abandoned and open spaces. Additionally, if swale was correctly designed, it would make a stunning landscape. Erecting a bridge over swale makes it more attractive. (Hoyer, Weber, Dickhaut, Kronawitter, 2011)



### • Pond

One of the typical methods for capturing stormwater is an artificial body, which is called a pond. The pond has open water surrounded by a dam wall to collect stormwater runoff. Usually, the depth of water in this small lake is more than 1.5 meters. To improve the function of water management in ponds or lakes, it would be planting some aquatic vegetation. However, this system typically is dry until heavy rain or snowy days, therefore, by considering other activities like playgrounds for children on the pond during dry periods, it makes lively and sustainable urban space throughout the year. Artificial bodies can be built in abandoned spaces, open spaces, parking lots, and huge parks as well also it helps to cut down summer temperature and makes a pleasant environment. (Melbourne water, 2005)



#### Environmental Benefits

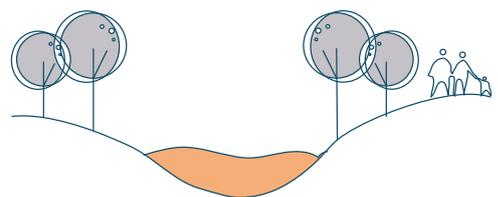
- Fish in streams
- Swimmable streams
- Habitat quality
- Air quality
- Energy savings
- Carbon footprint

#### Economic Benefits

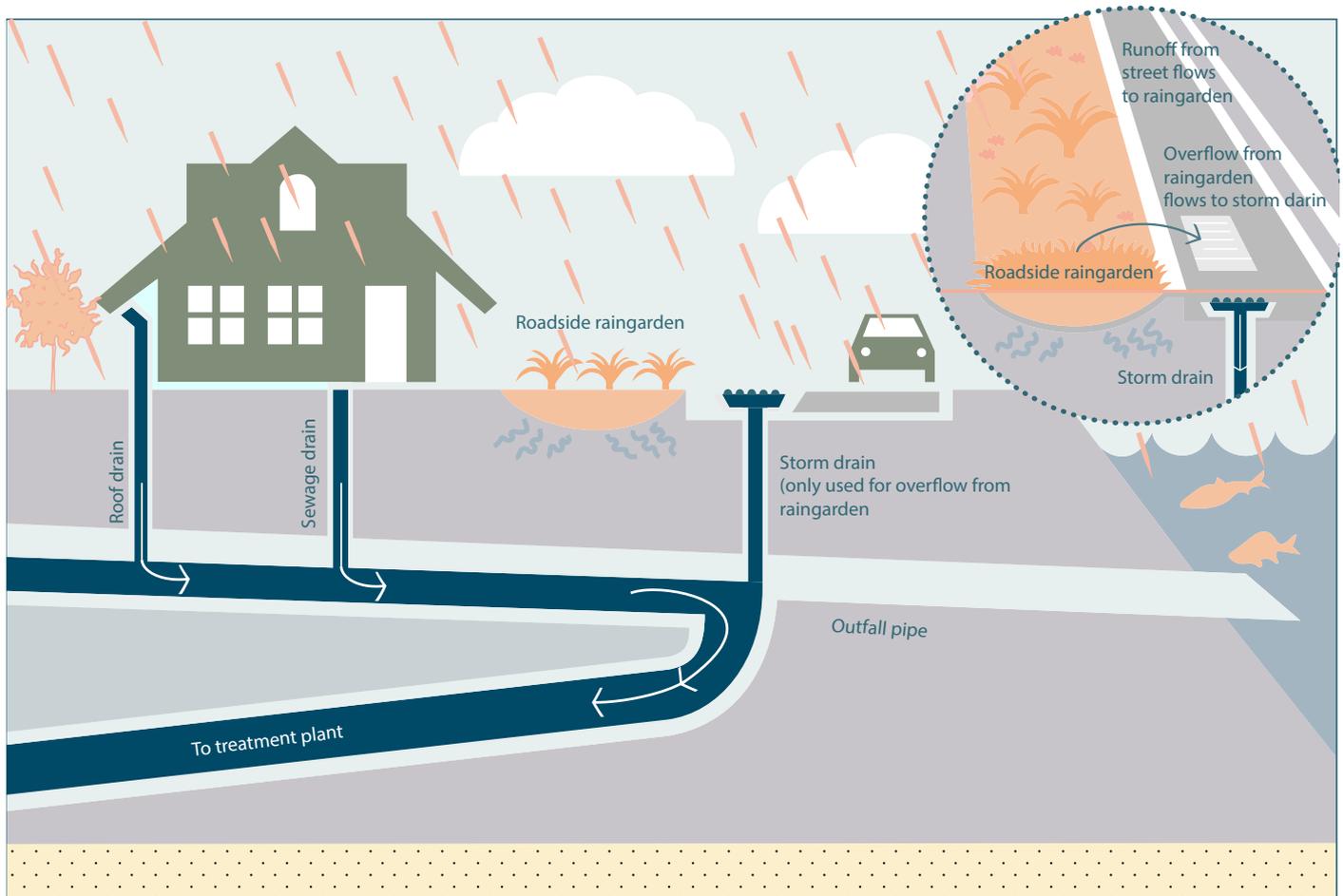
- Property values
- Job creation
- City competitiveness

#### Social Benefits

- Safe and accessible streams
- Recreation
- Aesthetics
- Public health
- Social equity
- Heat Stress Reduction
- Crime Reduction



## Green infrastructure: How it works?



### What happens:

1. Water runs off of impervious “hard” surfaces (roofs, parking lots, streets) to “soft” surfaces (plants, grass, trees)
2. Pervious “soft” surfaces soak up the water
3. With large amounts of rainwater, roots of plants, grass, and trees help water return to the ground by increasing porosity.
4. Green infrastructure keeps rain water out of the sewer system and from overflowing.
5. Thus the treatment facility doesn’t cause overflows or backups into homes.

Figure 34: Green Stormwater Infrastructure diagram

Source: “Detroit Future City -A Detroit Property Owner’s Guide to Bioretention”, Version 1, Summer 2019





**SOUTHWEST DETROIT  
HIGH PRIORITY AREA**



## Southwest Detroit, Springwells Township

From historical point of view, Southwest Detroit was named “Springwells Village”. In addition; there is plenty of historical context for the idea of this name. Firstly, in 1815 the Treaty of Springwells was signed.

### A T R E A T Y

*Between the United States of America and the Wyandot, Delaware, Seneca, Shawanoe, Miami, Chippewa, Ottawa, and Potawatimie, Tribes of Indians, residing within the limits of the State of Ohio, and the Territories of Indiana and Michigan.*

Sept. 8, 1815.

Ratified, Dec. 26, 1815.

WHEREAS the Chippewa, Ottawa, and Potawatimie, tribes of Indians, together with certain bands of the Wyandot, Delaware, Seneca, Shawanoe, and Miami tribes, were associated with Great Britain in the late war between the United States and that power, and have manifested a disposition to be restored to the relations of peace and amity with the said States; and the President of the United States having appointed William Henry Harrison, late a Major General in the service of the United States, Duncan M'Arthur, late a Brigadier in the service of the United States, and John Graham, Esquire, as Commissioners to treat with the said tribes; the said Commissioners and the Sachems, Headmen, and Warriors, of said tribes having met in Council at the Spring Wells, near the city of Detroit, have agreed to the following Articles, which, when ratified by the President, by and with the advice and consent of the Senate of the United States, shall be binding on them and the said tribes:

Figure 35: Aerial view of Corktown and Southwest Detroit, separated from Downtown by the Lodge freeway. Circa 1950s  
Source: Walter P. Reuther Library, Wayne State University  
Source: <https://olddetroit.tumblr.com>



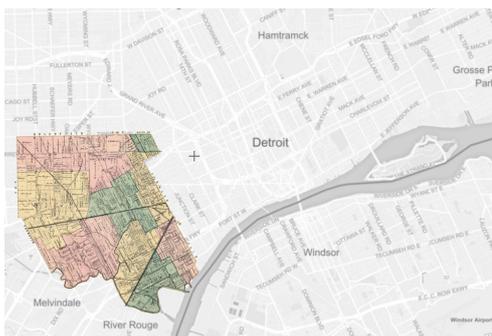
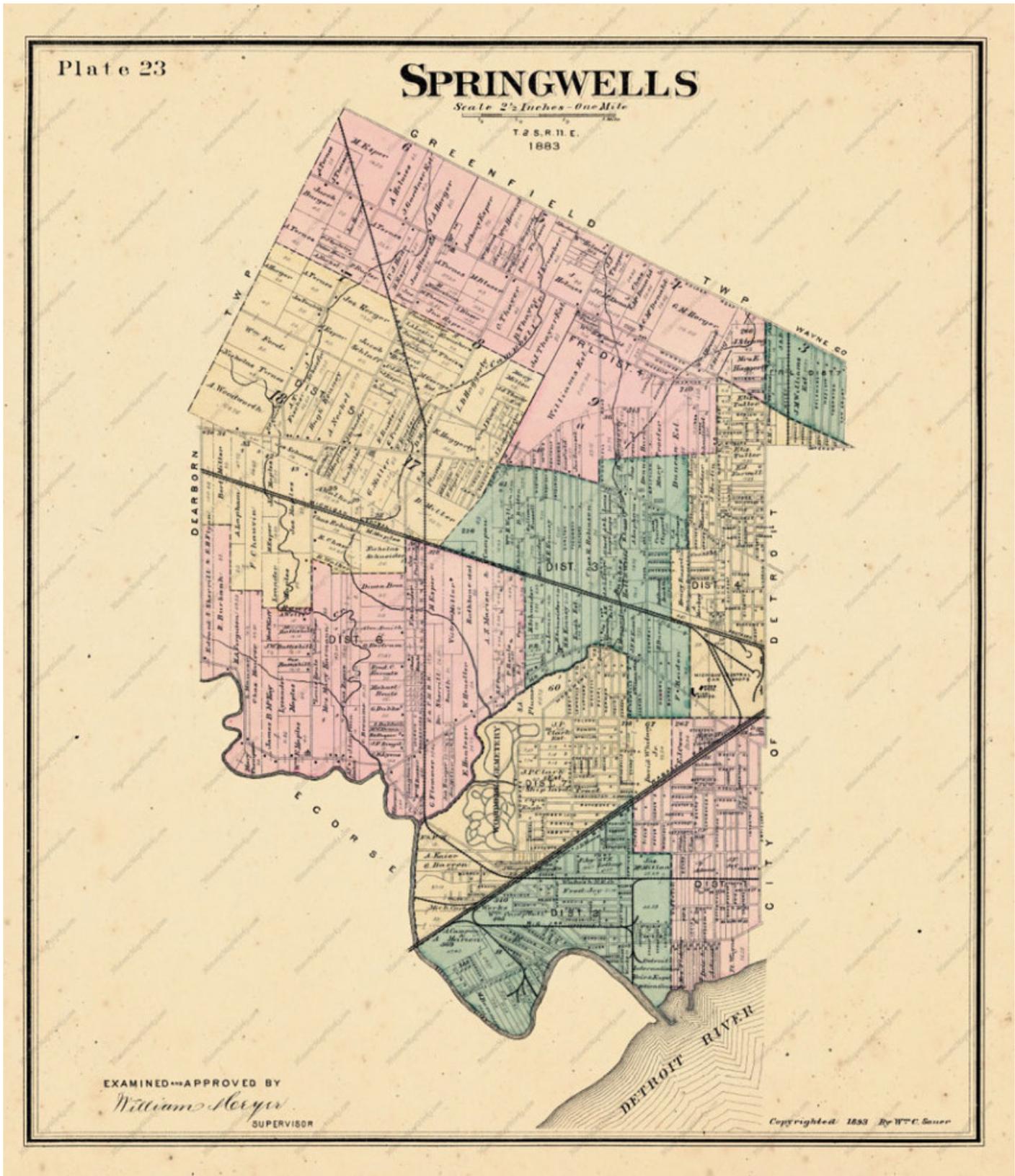


Figure 36: A map of Springwells from 1883  
 Source: <http://www.dailydetroit.com>

Mexicantown is a cultural community located in Southwest Detroit. Over the last few years, Mexicantown has seen reinvestment in the community. Mexicantown is one of the city's few neighborhoods that has experienced new housing development. In addition, places in Mexicantown as a location to become substantial retail and cultural activity core for southwest Detroit.

Figure 37: The road map of "Detroit & Southeast Michigan, 1967"  
 Source: *Images of America Detroit's Mexicantown, 2011*



Figure 38: This particular view shows West Vernor Highway near Campbell Street  
 Source: *Images of America Detroit's Mexicantown, 2011*

Southwest Detroit was growing during the 1910s as an industrial district. Its neighborhood was surrounded by factories and warehouses. This area had some elementary schools, upper grades were not mandatory in the state of Michigan, and there were not several high schools in the city of Detroit. More families came to Southwest, and they enrolled in school. Therefore, the need for a high school in this area rose. (<http://detroiturbex.com>)



Figure 39: John A. Nordstrum High School was built in 1915 to relieve overcrowding on Detroit's southwest side.  
Source: <http://detroiturbex.com>



Figure 40: Southwestern High School, a few months after it closed at the end of the 2011-2012 school year due to declining enrollment.



Figure 41: Most Holy Redeemer Church erected in 1950, southwest corner of Junction Street and Vernor Highway.  
Source: [detroithistorical.pastperfectonline.com](http://detroithistorical.pastperfectonline.com)



Figure 42:  
personal photo archive, 2019

This picture shows his commitment to Mexican society. Father Kern helped erect and make do the Mexican community. (Images of America Detroit's Mexicantown, 2011)

Each Cinco de Mayo (5th), Detroit's Mexicantown illustrates their cultural heritage. These cultural events show about Michigan's Mexican Population. During the fiesta, Streets are full of people and the owners of the restaurant add more outside seating. Moreover, Streets vendors sell corns, tacos, and typical ice cream from small carts. (Michigan Historical Review, 2015)

Figure 44: This couple performed at the 1976 Mexican Festival on Detroit's Riverfront  
Source: *Images of America Detroit's Mexicantown, 2011*



Figure 43: Fr. Clement Kern poses of the 1976 Mexican Festival program  
Source: *Images of America Detroit's Mexicantown, 2011*

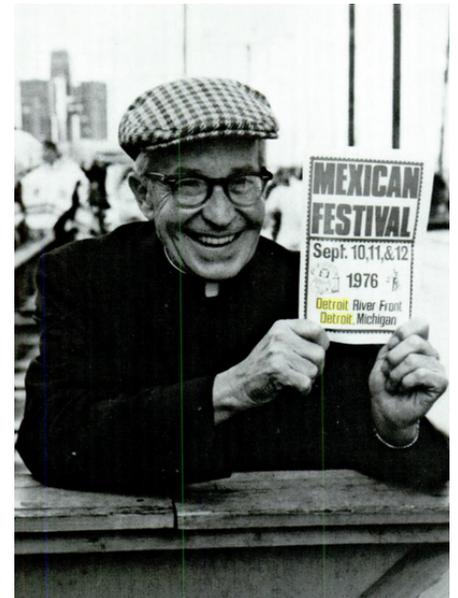




Figure 45: previous image illustrates Mexican-town's Cinco de Mayo Detroit Parade 2017  
Source: <https://goodlifedetroit.com>



Figure 46:  
personal photos archive, 2019

Figures 47, 48: Next page  
personal photos archive, 2019





Figure 49: Metrix Theatre in Vernor highway  
personal photo archive, 2019



Figure 50:  
personal photo archive, 2019



**Map border in the next pages includes:**

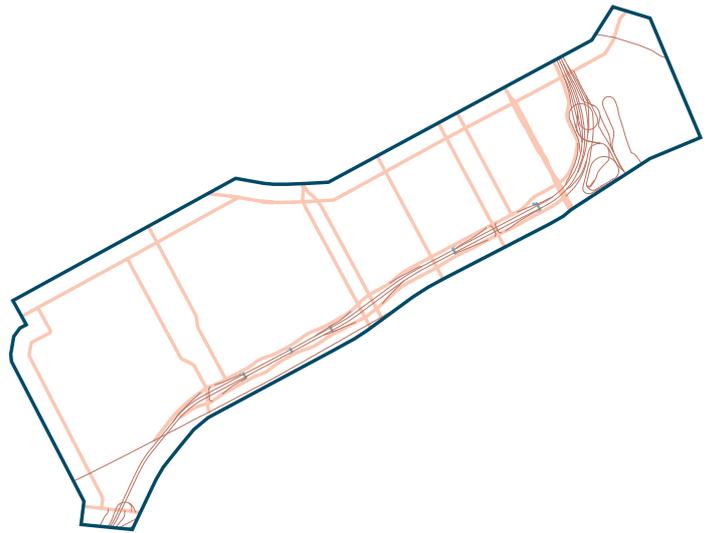
- W. Vernor Hwy from Woodmere Cemetery on the west to Newark St on the east.
- Springwells from W. Vernor to Interstate 75 to the south.
- Bagley Street from 16th St to 21st St.
- 21st St. from W. Vernor to Bagley
- Pershing St, from Springwells to Bagley

Figures 51 , 52:  
personal photo archive, 2019

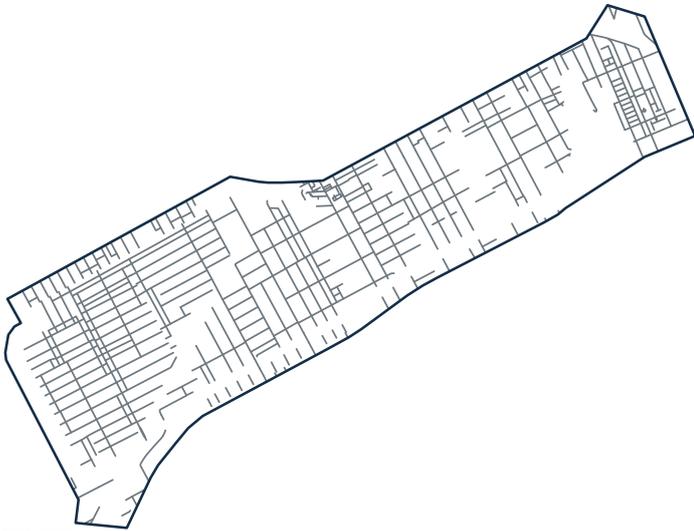
# Infrastructure analysis of Southwest Detroit



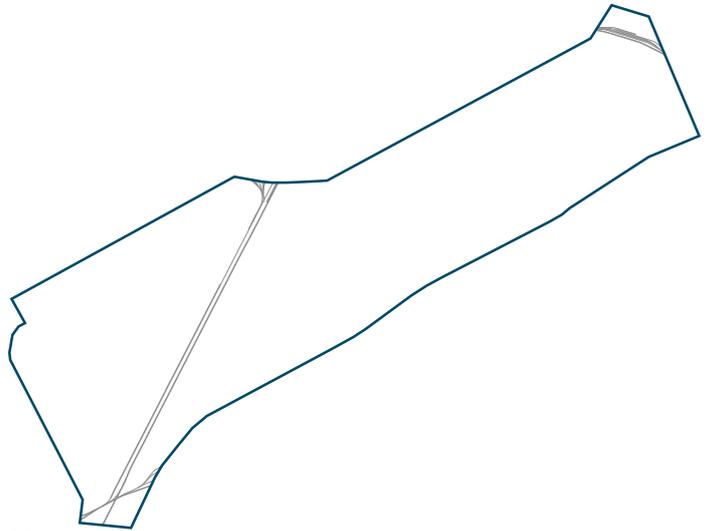
BUILDING



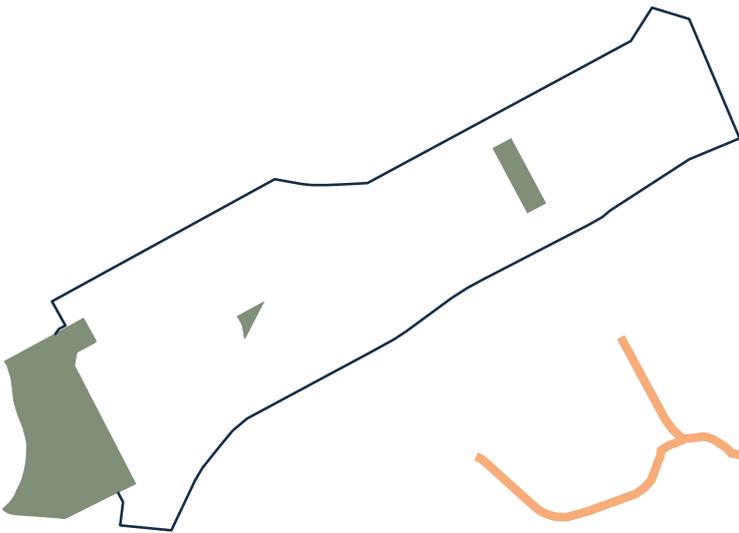
ROAD AND HIGHWAY



STREET



RAILWAY



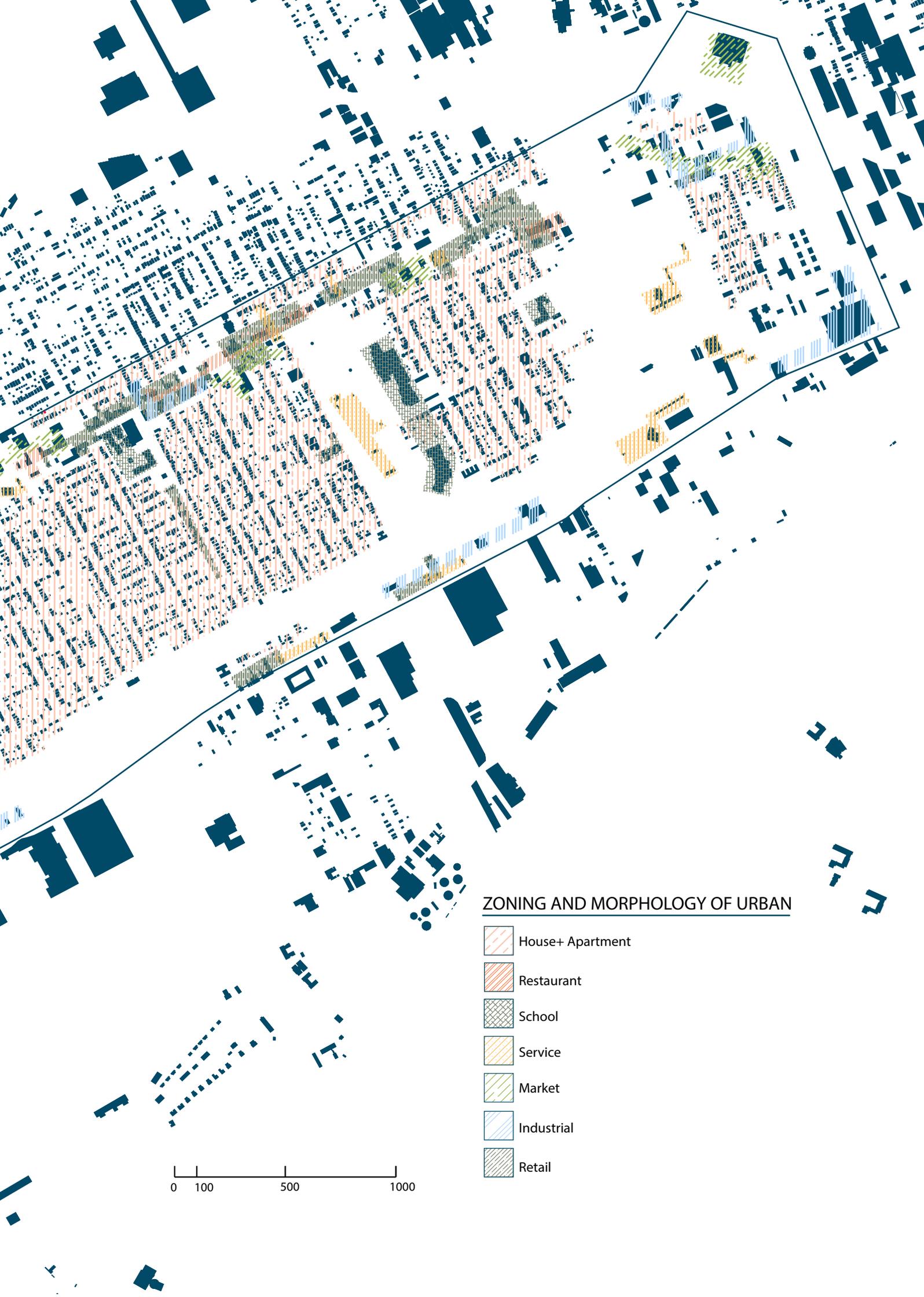
GREEN AREA



WATER

# Morphology map of Southwest Detroit





### ZONING AND MORPHOLOGY OF URBAN

- House+ Apartment
- Restaurant
- School
- Service
- Market
- Industrial
- Retail

0 100 500 1000

# Typology of buildings in the Southwest Detroit





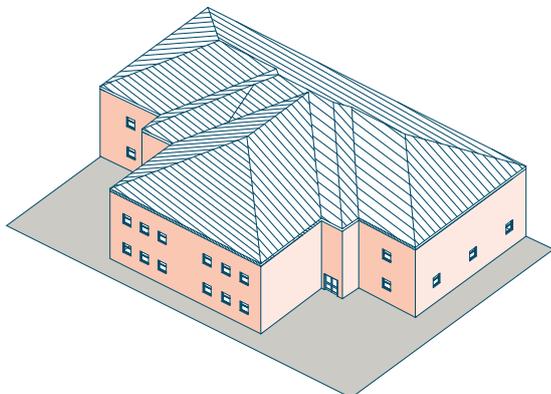
LAND USE

- |  |  |
|--|--|
|  House      |  Official   |
|  Retail     |  Commercial |
|  Market     |  Warehouse  |
|  Shed       |  Church     |
|  Apartment  |  Abandoned  |
|  Restuarant |  School     |
|  Garage     |  Bar        |
|  Service    |  Bakery     |
|  Industrial |  Station    |

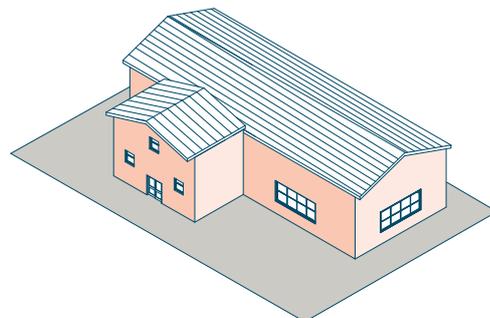
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# Various types of building in Detroit

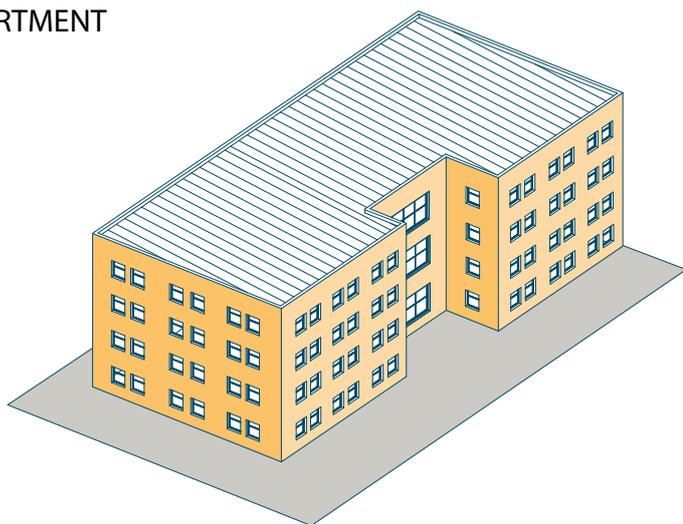
HOUSE



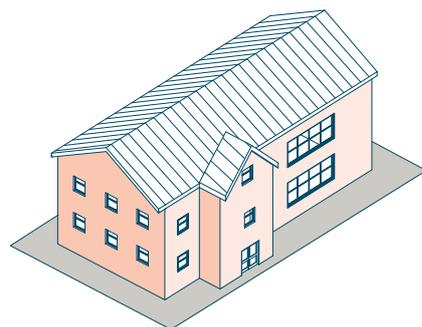
HOUSE



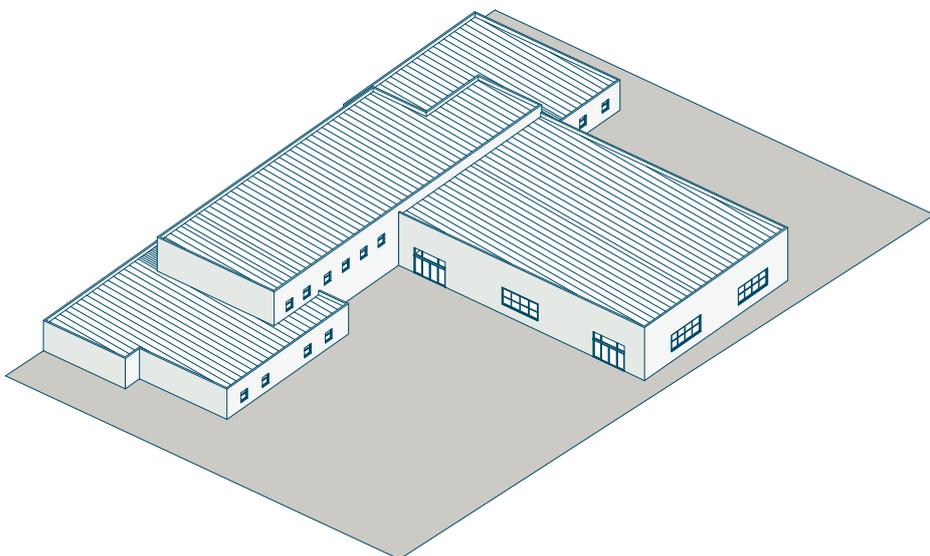
APARTMENT



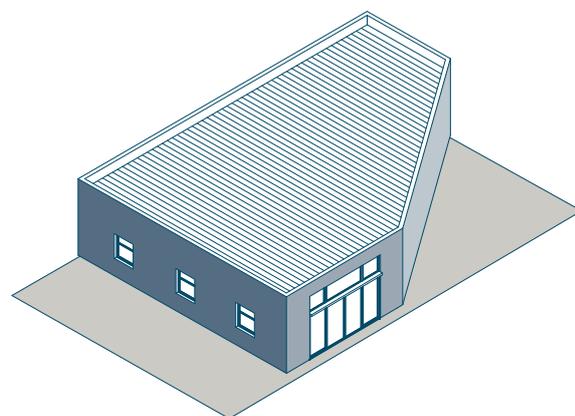
HOUSE



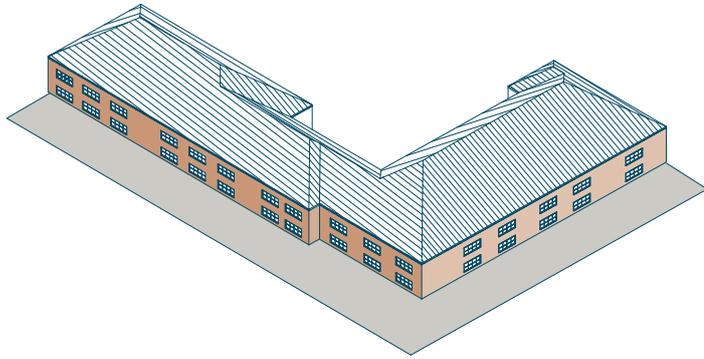
MARKET



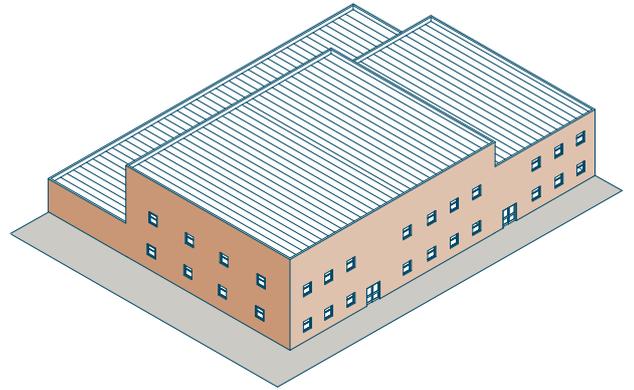
RETAIL



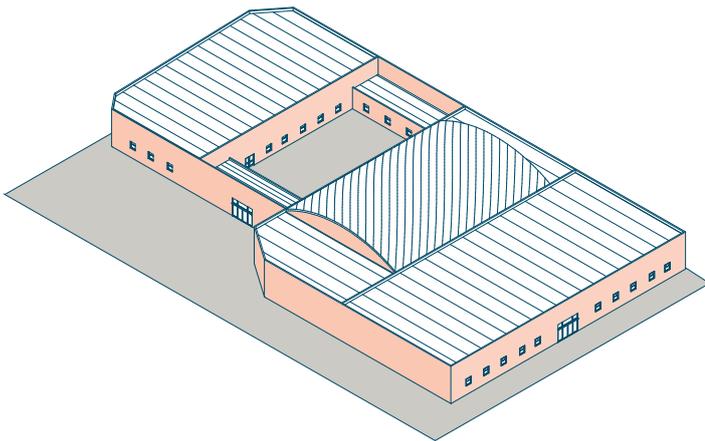
SCHOOL



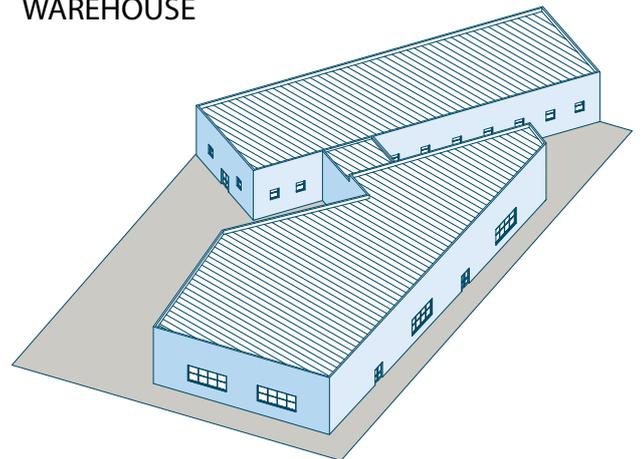
SCHOOL



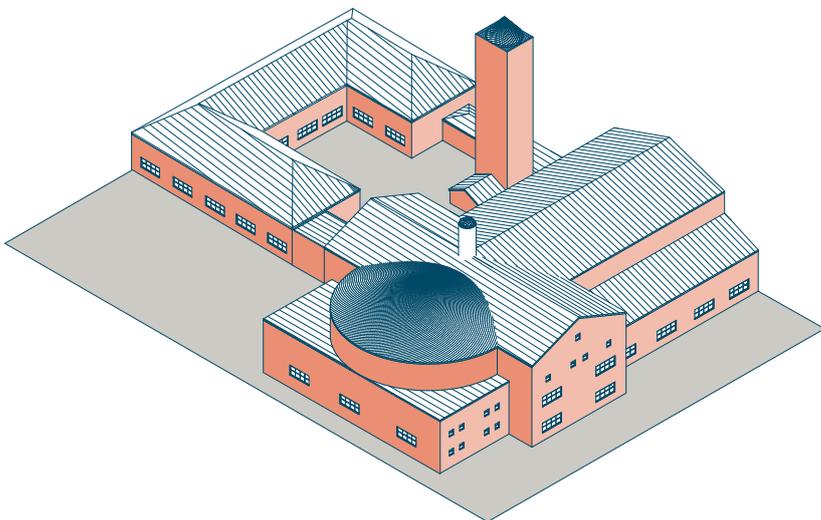
INDUSTRIAL



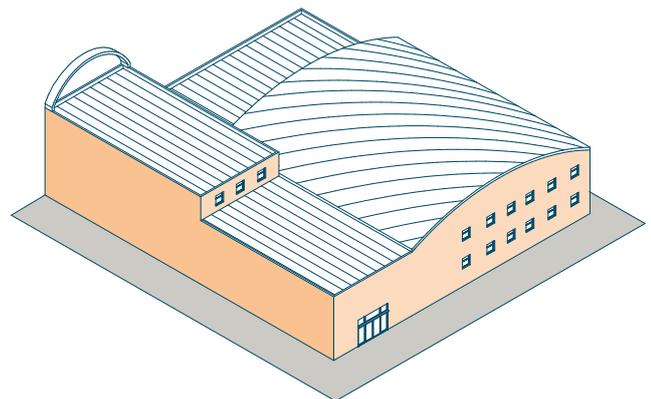
WAREHOUSE



CHURCH



MIXED USE BUILDING



There are essentially three existing retail areas within Mexicantown:

- Vernor Highway
- Restaurant District
- Bagley Street

### **Vernor Highway**

Vernor Highway represents the main retail corridor in Mexicantown. This arterial provides retailers with good accessibility and visibility for customers. There is on-street parking which serves its small shopping centers and individual store fronts. Mexicantown’s only national and regional retailers are located along this corridor.

While Vernor Highway is a major traffic thoroughfare and retail corridor in southwest Detroit, the highway is challenged by the lack of direct access to I-75. Furthermore, the abandoned train station at the northeastern end of Vernor Highway, serves as a psychological barrier between Mexicantown retailers and those along Michigan Avenue.



Figure 53 , 54: Vernor Highway  
personal photo archive, 2019

## Restaurant District

The restaurant district of Mexicantown is a unique pedestrian-friendly shopping node on the southeast corner of Vernor Highway and I-75. Some stores have taken the opportunity to install landscaping and provide for outdoor dining. This district currently has adequate parking provided by a parking lot that faces Vernor Highway. The greatest challenge currently faced by retailers in the restaurant district is visibility and customer awareness.



Figure 55:  
personal photo archive, 2019



Figure 56:  
personal photo archive, 2019

## Bagley Street

The Bagley Street district, while small, offers a good mix of retail, restaurants, and services. This district has great access to the Corktown neighborhood and Detroit's central business district. Street-scaping improvement (i.e., sidewalk and lighting) have helped to make Bagley Street a pedestrian-friendly shopping district. Additionally, unlike Vernor Highway that has a tunnel, Bagley Street has an overpass over the train tracks, which is visually more attractive.



Figure 57: Bagley street  
personal photo archive, 2019

*The survey information was collected by MCDC personnel because of their close working relationship with businesses in Mexicantown. However, MapInfo cannot guarantee the accuracy of the results, but assume that they are reliable.*

### **Greatest challenges for Mexicantown, there were three clear answers:**

1. Safety
2. Business/Community Interactions
3. Homelessness

Safety as a top concern. Other challenges, which were discussed, were the advertising of Mexicantown, the number of empty/vacant buildings, lighting concerns, and a lack of a centralized retail district and stormwater problem.

## Opportunity Overview

Mexicantown is a neighborhood where has great opportunities that it can improve the needs of retails and goals of the community. While the purpose is to achieve its potential, probably the community also has faced some challenges. Currently, the significant challenge of Mexicantown is concerns regarding, safety and a general lack of retail choice. These factors have both pushed local residents to travel to the suburban areas bordering Detroit to shop for retail goods and services, and prohibited new development. This image problem has helped lead to a continual disinvestment in the city for decades. While residents recognize the renewed investment in their community, they are still forced by a lack of choice to spend their retail dollars outside Mexicantown. Furthermore, Mexicantown has the unique opportunity for customers coming to Mexicantown to eat at the Mexican restaurants and to shop at the other Mexican retailers. This cultural market is challenging to quantify as these customers travel from all over Detroit area and from Windsor, Ontario. However, it believes that investment in developing Mexican-oriented retail establishments will serve to not only support existing retailers, but will also create stronger community awareness outside of southwest Detroit.

Figure 58: Bagley Street streetscape west of I-75 in the district known as Mexicantown in Southwest Detroit.



## Needs of Mexicantown

- “movie theaters” and “theaters” or “more stuff for kids” and “children’s activities.”
- More attractions, festivals, and cultural events in Mexicantown. These ranged from street fairs to art/historical places. Art galleries/shows were mentioned frequently, demonstrating an opportunity for entities such as Bagley Housing’s Art Gallery to capture more visitors.
- Some type of recreation including sports and other activities. These included a skate park, bowling alley, basketball courts.
- More bars and nightclubs also received 7% of the vote from respondents, indicating a need for more nightlife within the area.
- Activities for kids/teens also ranked high, being mentioned by 6% of respondents. While there is some overlap here with activities and recreation, the lack of activities for kids can
- Beautification of the area including, but not limited to streetscaping, lighting, better use of vacant buildings, and clean-up efforts.
- More clothing stores to be added to the retail mix.
- Better security/safer streets
- Lack of parking as an issue. However, it was mentioned frequently enough to be considered significant and the addition of any retail, dining or entertainment to Mexicantown will warrant addressing this issue.

## Investing in Green Infrastructure, Multi-Benefits

- Resilience to extreme weather / climate change
- Provide green, open space
- Advance livability and public health
- Increase market values and attractiveness
- Reduce stream pollutant loads
- Create local, green economy
- Support urban revitalization
- Enhance the infrastructure network
- Advance City-wide sustainability programs
- Transform river and stream corridors
- Preserve and restore habitat
- Maximize return on every dollar spent



Festival Parade



Green space park land



Recreation Center



Painting Wall



Festival Parade



Green space park land



Recreation Center



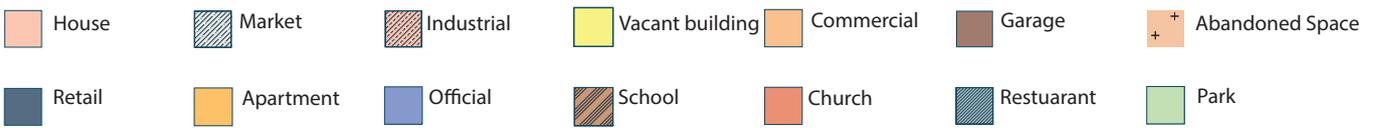
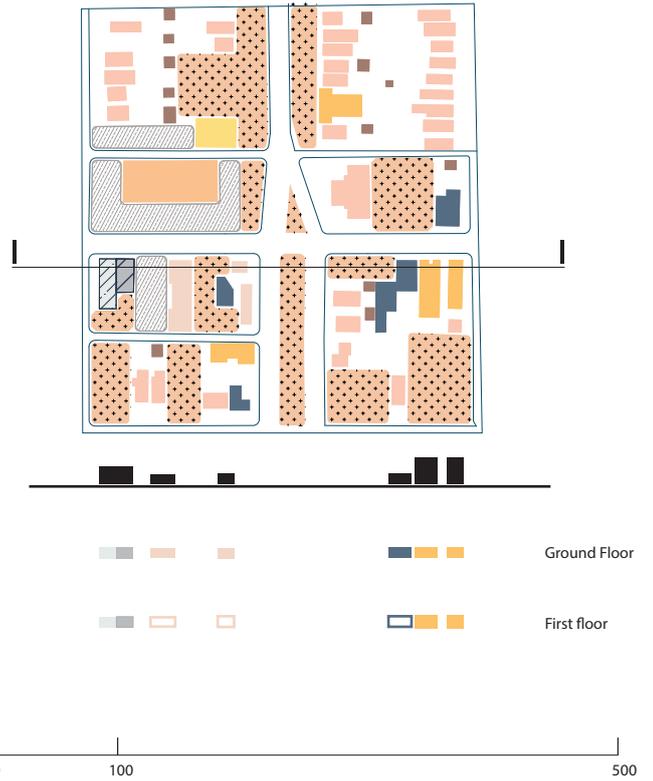
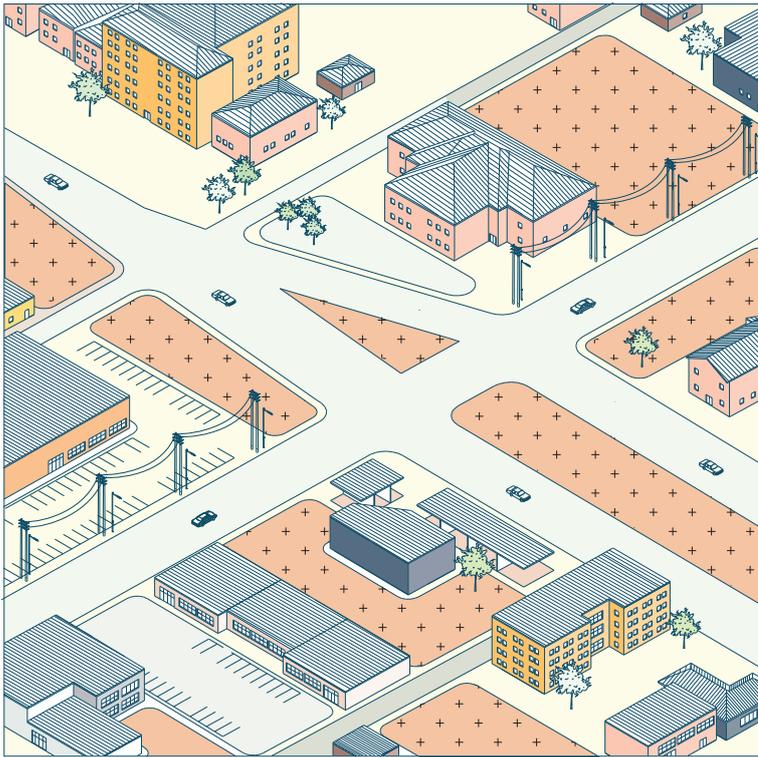
Painting Wall



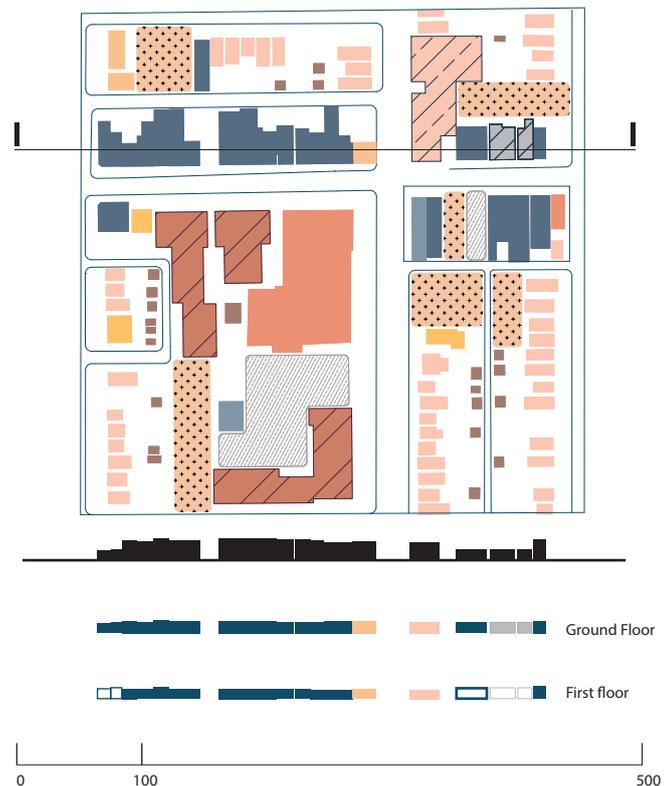
1. 16th and Bagley
2. La Joya Gardens
3. Mexicantown Bakery
4. Nice Price
5. Fiesta Market
6. Scotten Parking Structure
7. Cristo Ray Cultural Center
8. Springwells and LaFayette



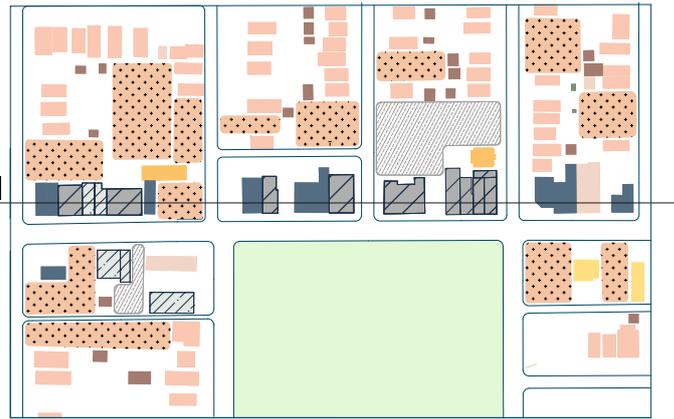
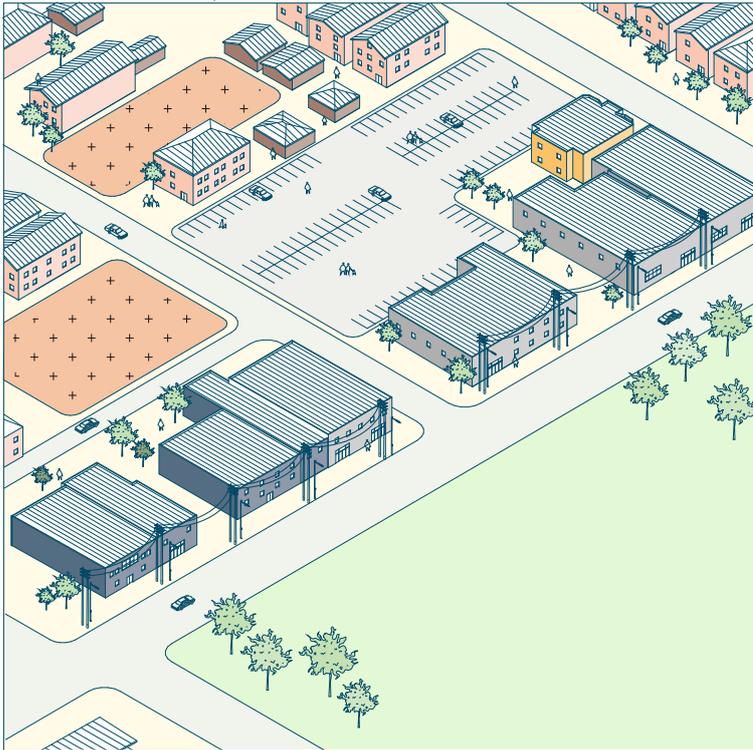
## La Joya Gardens zone



## Cristo Ray Cultural Center

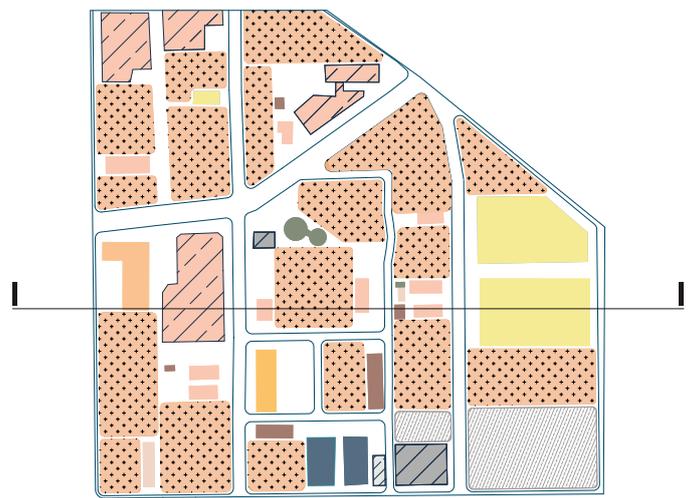
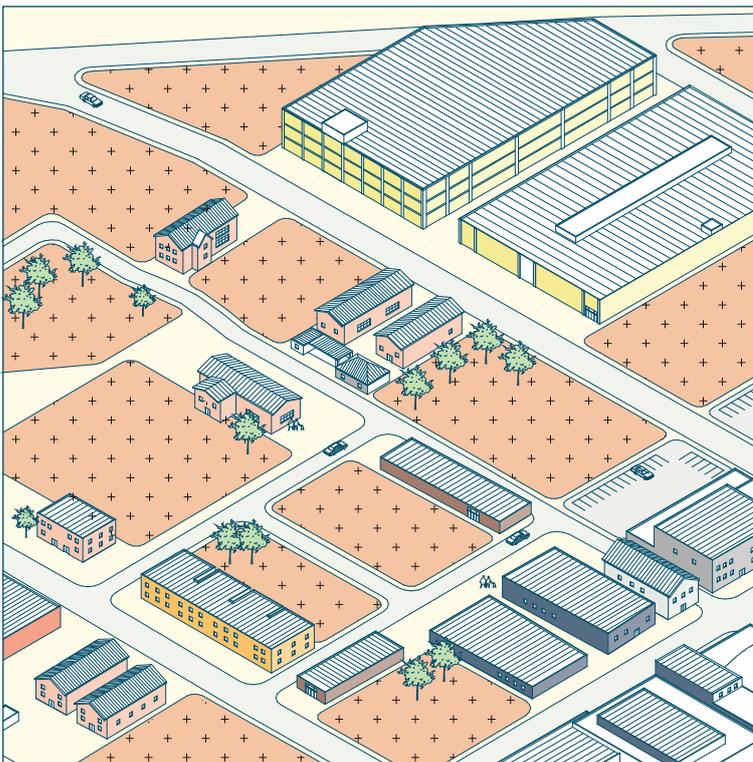


## Mexicantown Bakery zone

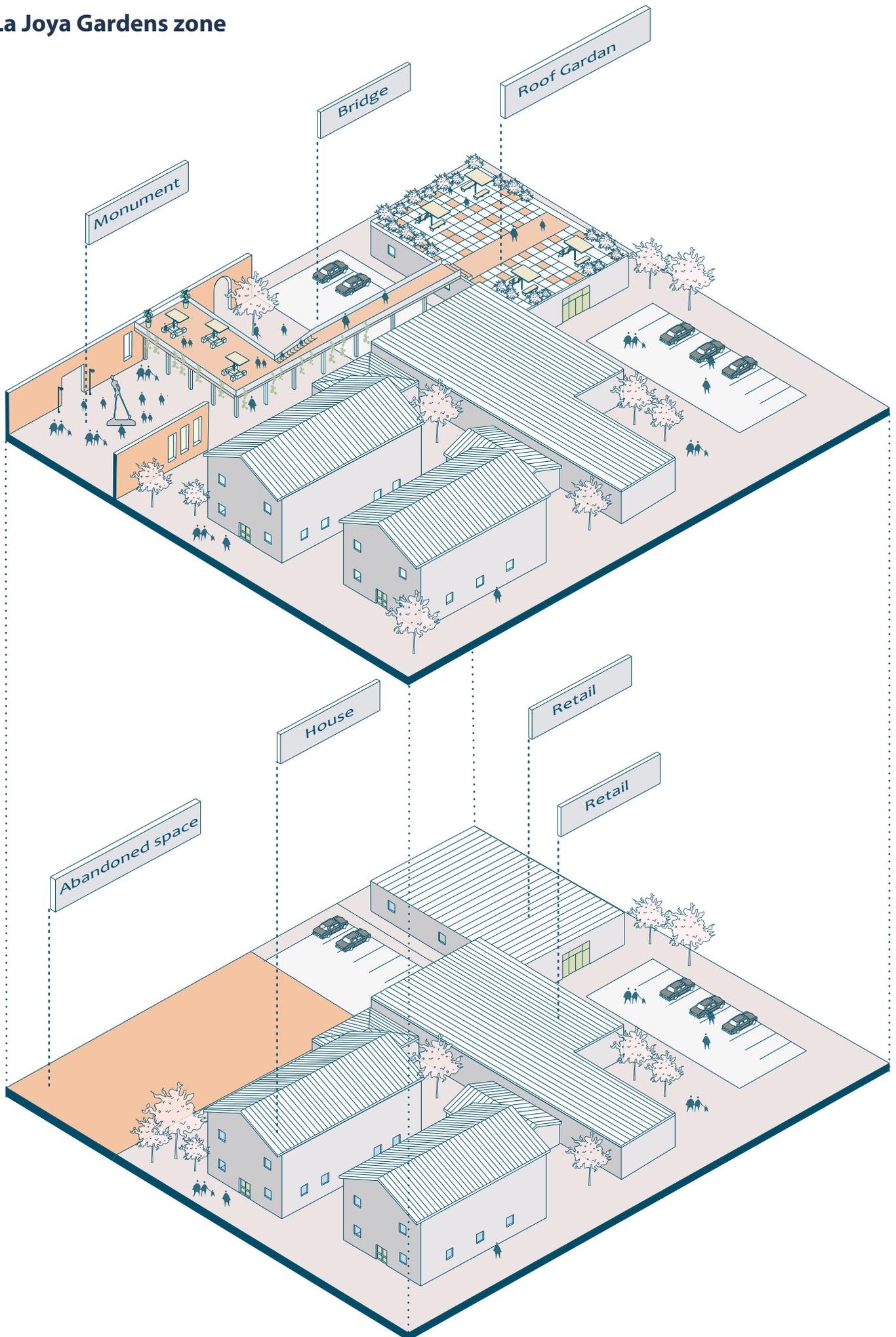


- House
- Market
- Industrial
- Vacant building
- Commercial
- Garage
- Abandoned Space
- Retail
- Apartment
- Official
- School
- Church
- Restaurant
- Park

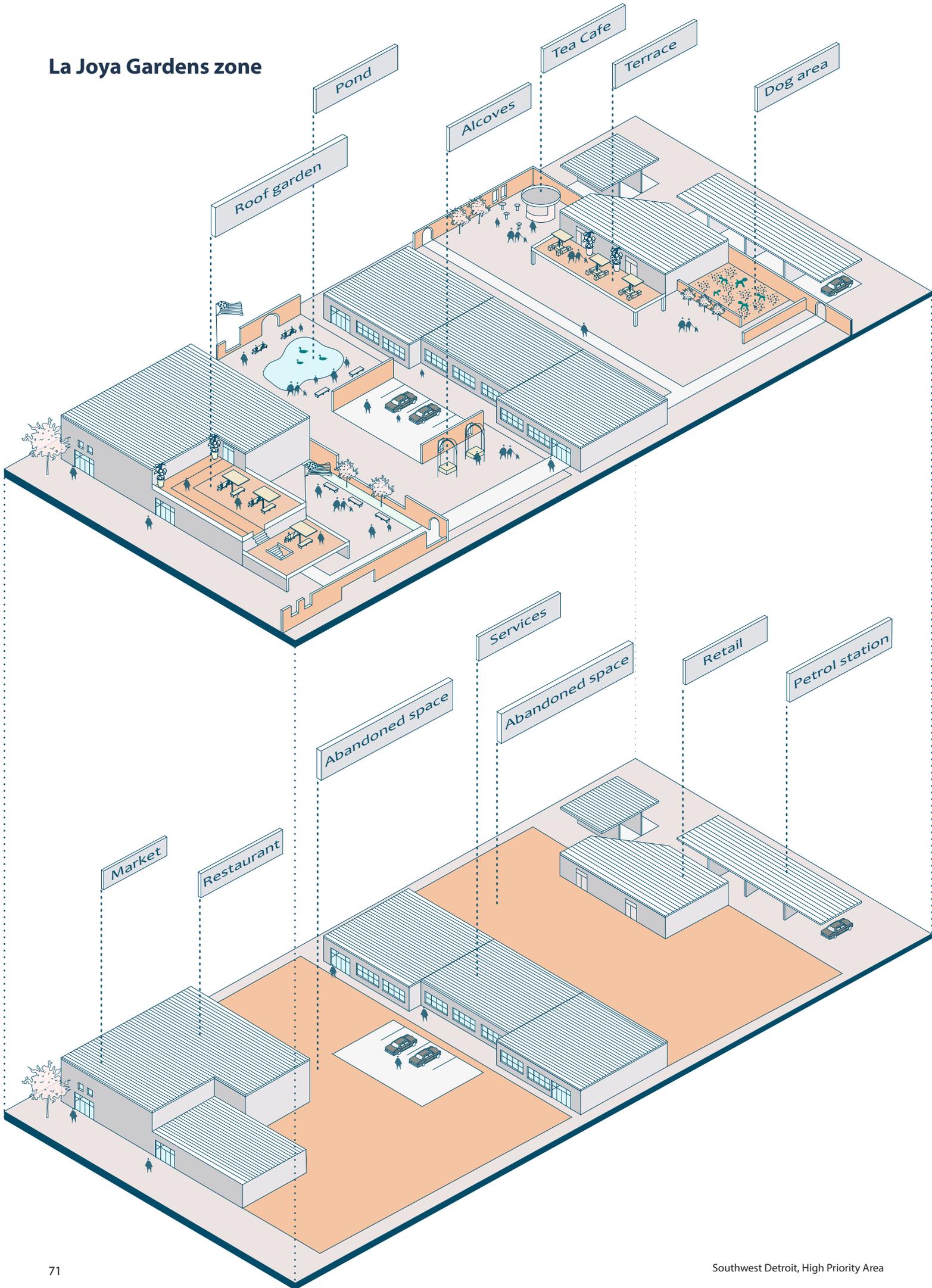
## 16th and Bagley zone



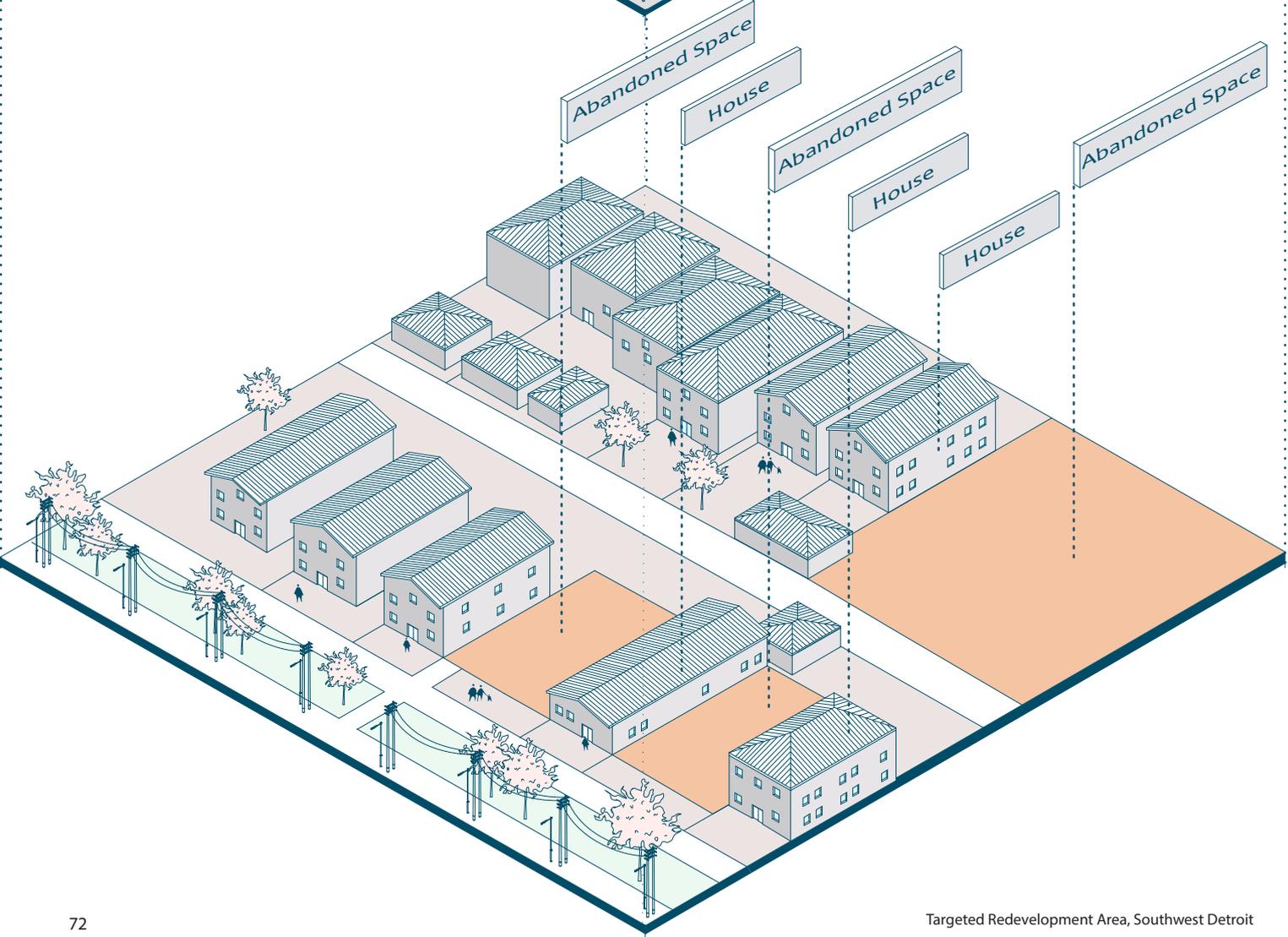
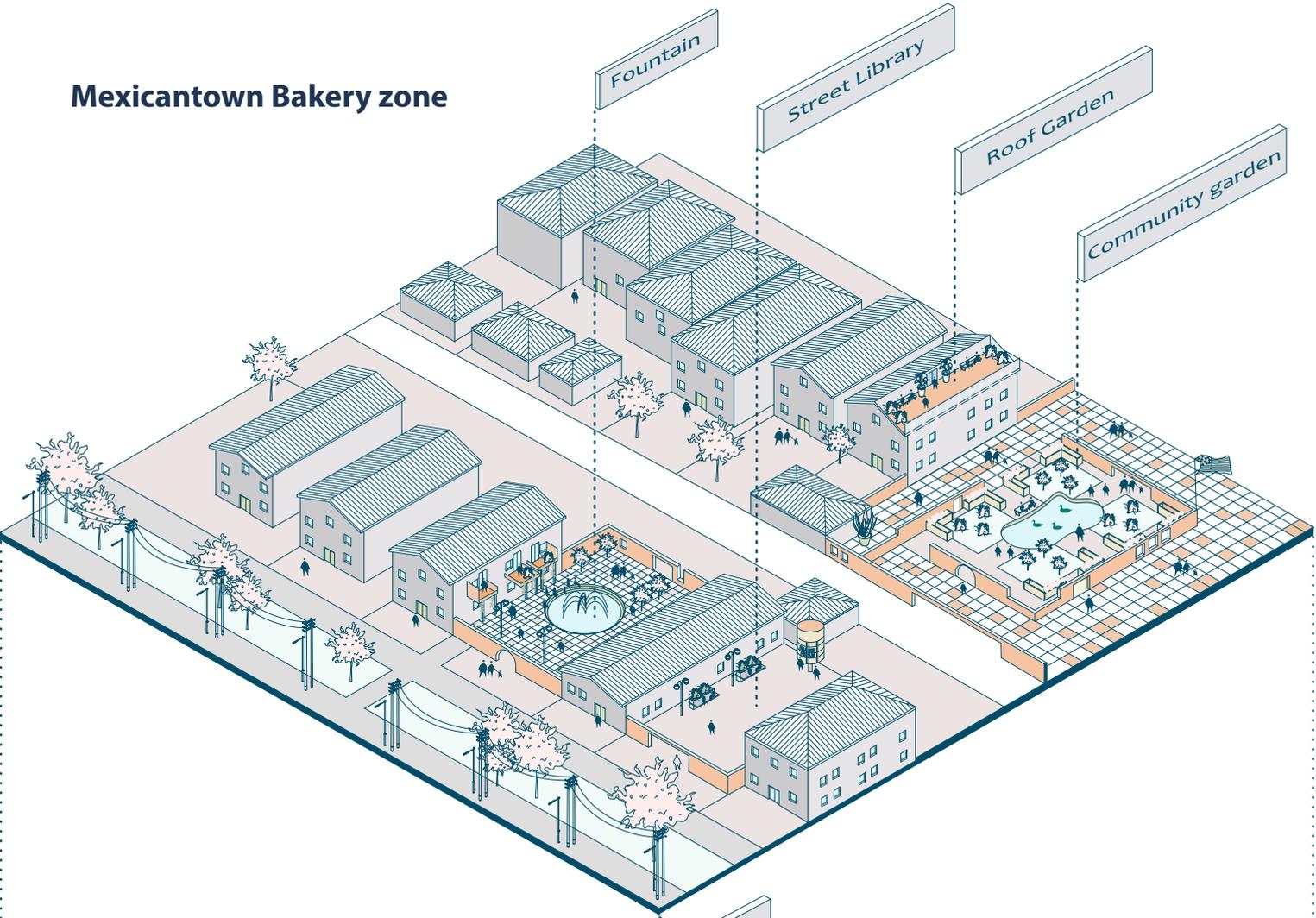
# La Joya Gardens zone



# La Joya Gardens zone



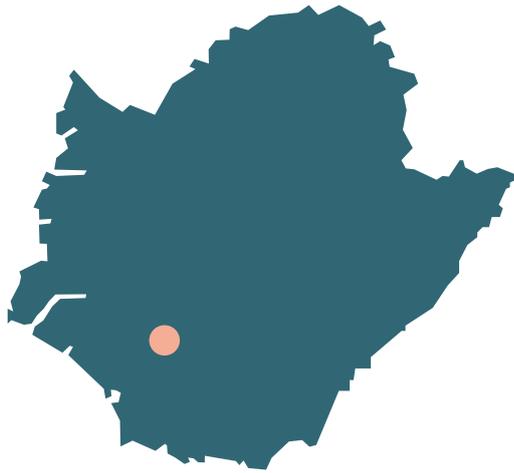
# Mexicantown Bakery zone



# **REUSE SHOPPING MALL TO URBAN LAGOON CASE STUDY**



# TAINAN SPRING, TAINAN, TAIWAN



## Location:

No. 343-15 700, Zhongzheng Road, West Central District, Tainan City, Taiwan

## Architect:

MVRDV

## Client:

Tainan City Government

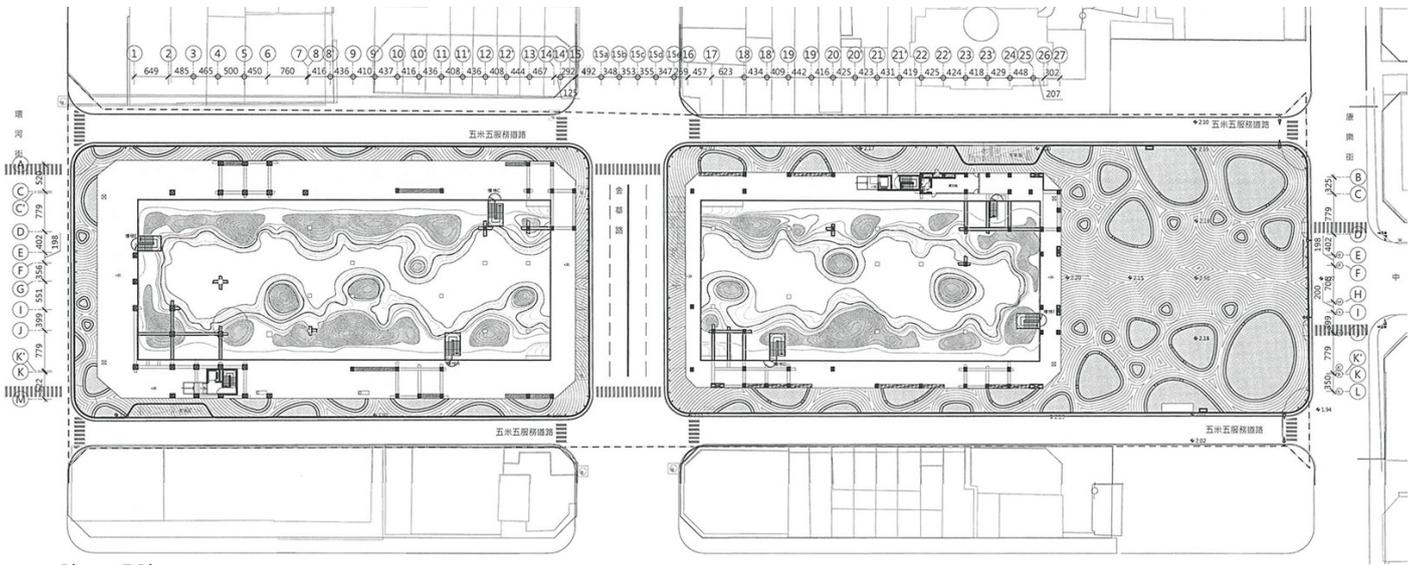
## Team:

Hui Hsin Liao, Angel Sanchez Navarro, Stephan Boon, Xiaoting Chen, Chi Yi Liao, Dong Min Lee, Andrea Anselmo, Yi-Chien Liao, Zuliandi Azli, Olivier Sobels

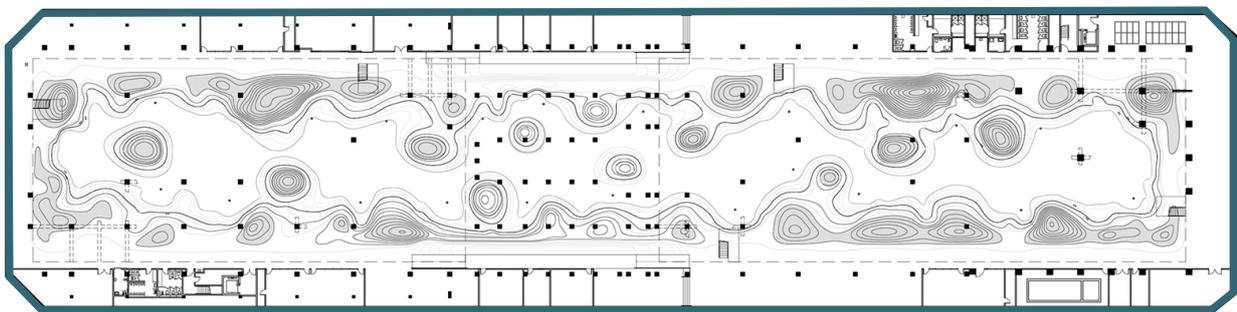
## Status:

Realized





Plaza 1F Plan



Plaza B1 Plan

*Tainan Spring is a public space design that includes the transformation of a former city-centre shopping mall into an urban lagoon surrounded by young plants that will develop into a lush jungle, reconnecting the city with nature and its waterfront. (<https://www.mvrdv.nl/projects/272/tainan-spring>)*

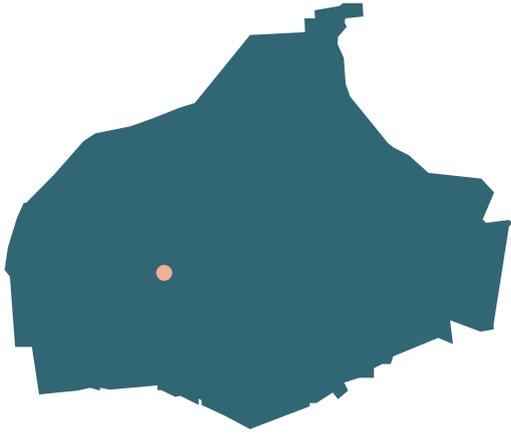




# **FLOOD RESILIENCE CASE STUDY**



# LINDEVANGS PARK, FREDERIKSBERG, DENMARK



**Location:**  
2000 Frederiksberg, Denmark

**Architect:**  
Marianne Levinsen Landscape

**Client, Team:**  
Frederiksberg Council  
Frederiksberg Water Supplier

**Status:**  
Flood Resilience



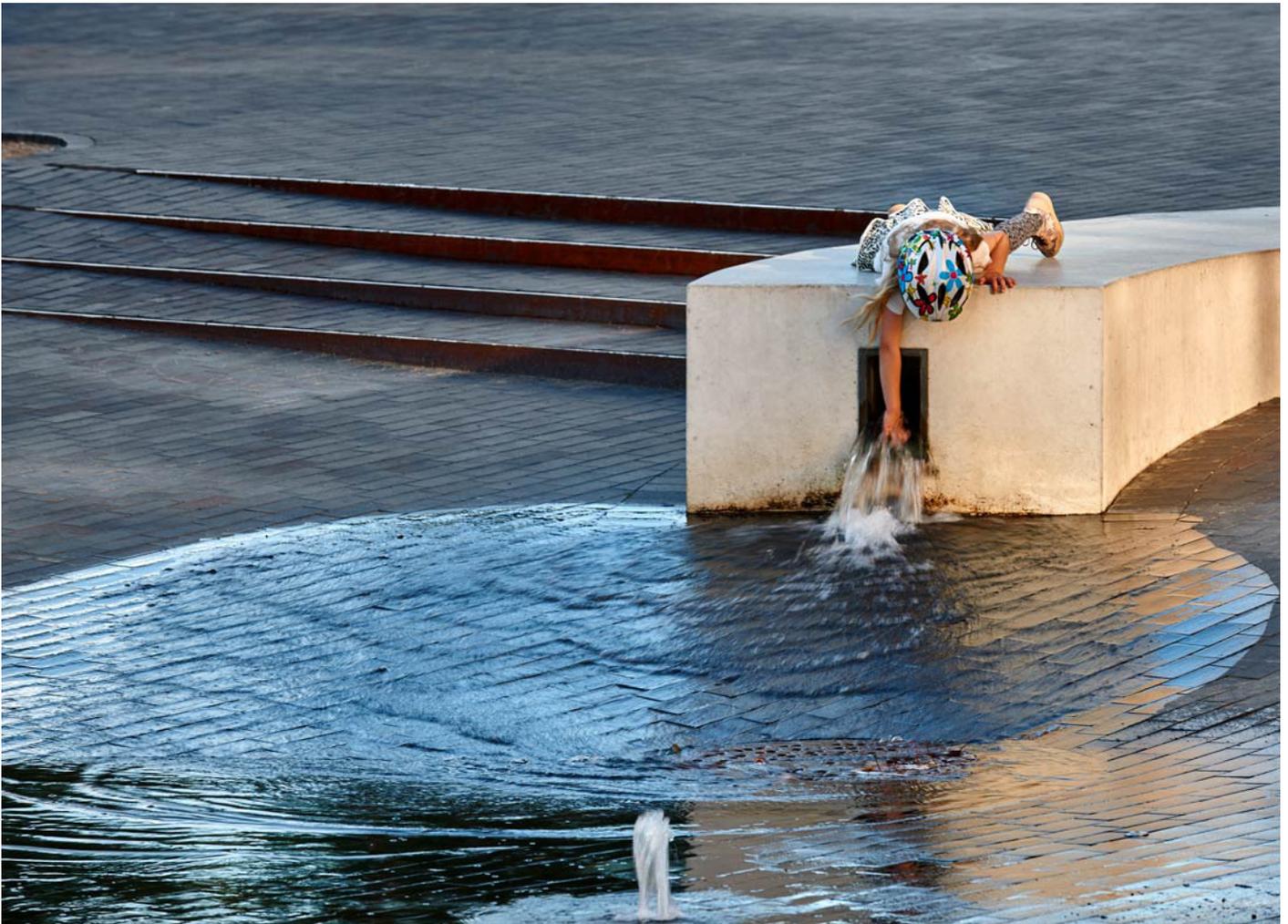


"Marianne Levinsen Landscape", Site plan





*Cloudbursts and increased flooding are regular occurrences in many urban areas today. The task of Lindevangs Park is to respond to the challenges of a wetter future by looking at ways to adapt the urban landscape. The project is based on the existing park, Lindevangs park, where new initiatives with dual functions are designed. These solutions solve flooding issues and doubles as the public space “Sløjfen”, a new communal city garden and an open grass field with a stage for various activities. (<http://landezine.com/index.php/2017/11/lindevangs-park-by-marianne-levinsen-landscape/>)*



# **CULTURAL GARDEN CASE STUDY**



# FOREST OF TALES, ODENSE, DENMARK



2014



## Location:

Hans Jensens Stræde 45, 5000 Odense, Denmark

## Architect:

AND-RÉ

## Client:

Odense City Museums

## Team:

Bruno André  
Francisco Salgado Ré  
Catarina Fernandes  
Fernando Ferreira  
Filipe Paixão

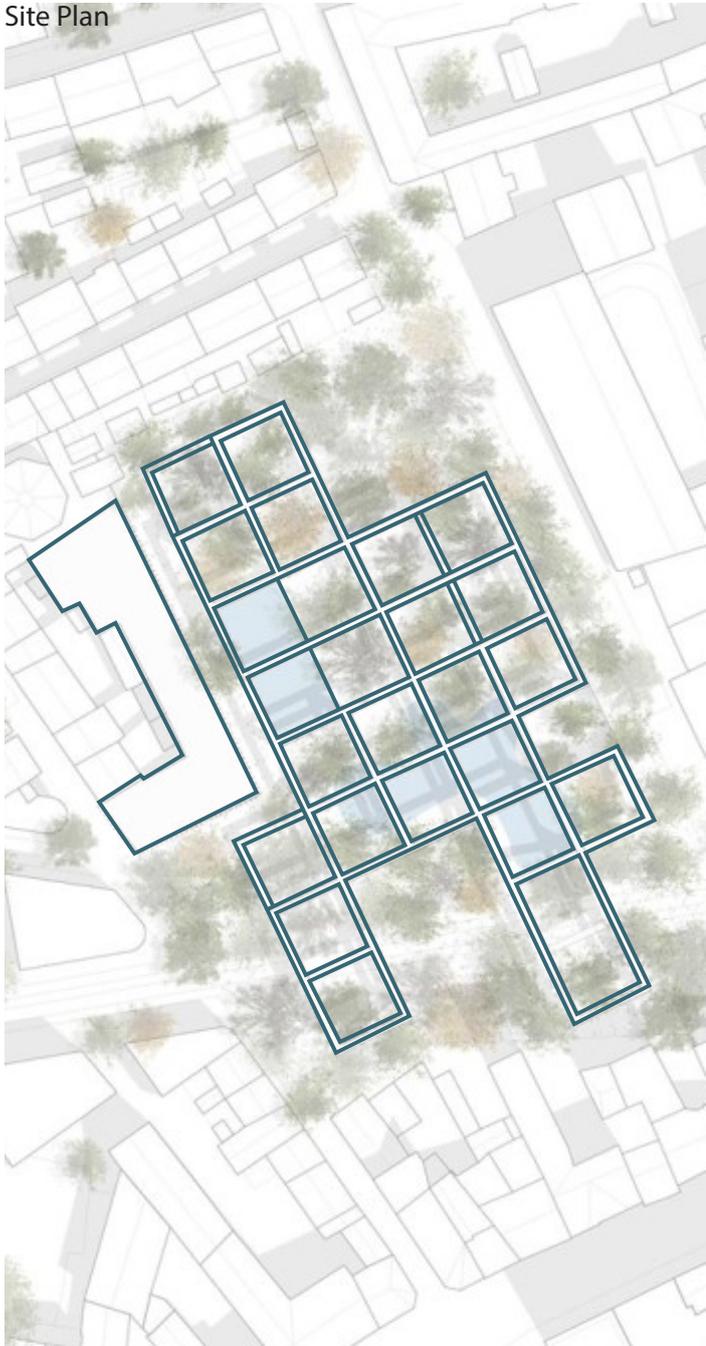
## Status:

Competition Proposal

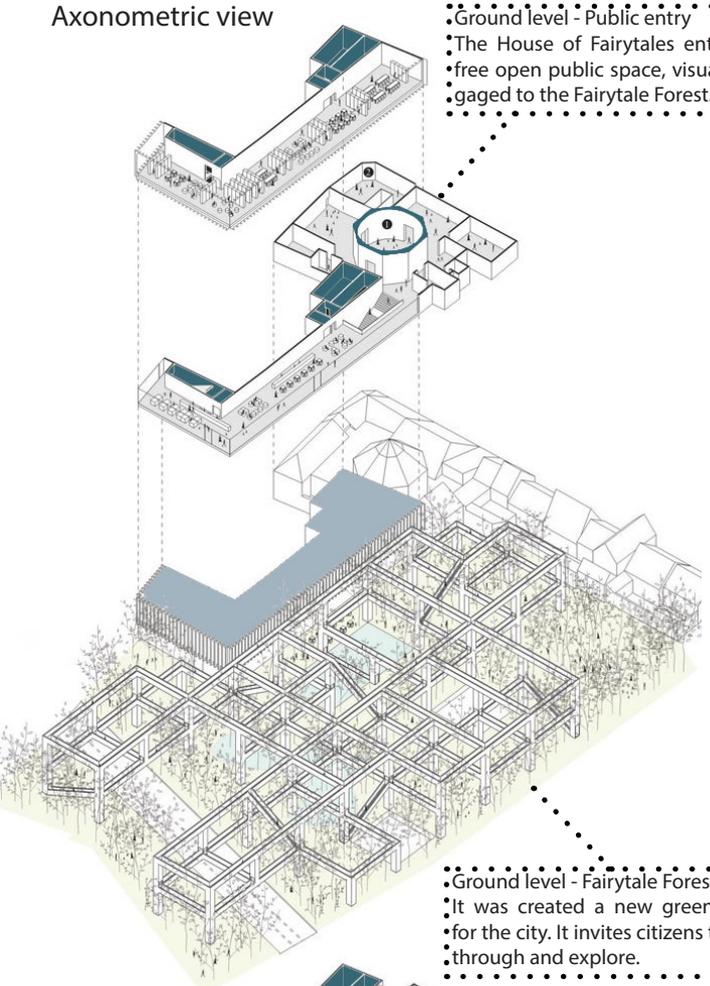


The concept is a garden that grew into a deep forest, transforming the public space into a magical experience. This Fairytale Forest merges the public and private domain, in a coherent and unified whole, made of moments that gently connect the outdoor with the indoor spaces. (<https://and-re.pt/portfolio/house-of-fairy-tales/>)

Site Plan

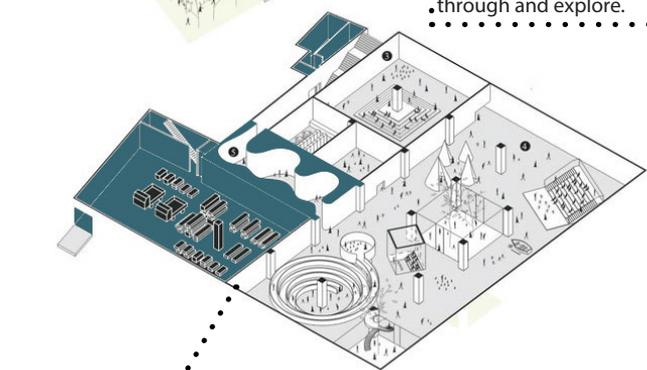


Axonomic view



• Ground level - Public entry  
 • The House of Fairytales entry is a  
 • free open public space, visually en-  
 • gaged to the Fairytale Forest.

• Ground level - Fairytale Forest  
 • It was created a new green heart  
 • for the city. It invites citizens to pass  
 • through and explore.



• -1 level - Exhibition  
 • The underground level is organized  
 • in 3 parts. On this level is placed the  
 • workshop room, storage and tech-  
 • nical rooms



**MIX OF NATURAL AND CULTURAL HISTORY  
CASE STUDY**



# TANNER SPRINGS PARK, PORTLAND, USA



## Location:

Pearl District, Portland, OR 97209, USA

## Architect:

Gerhard Hauber

## Client:

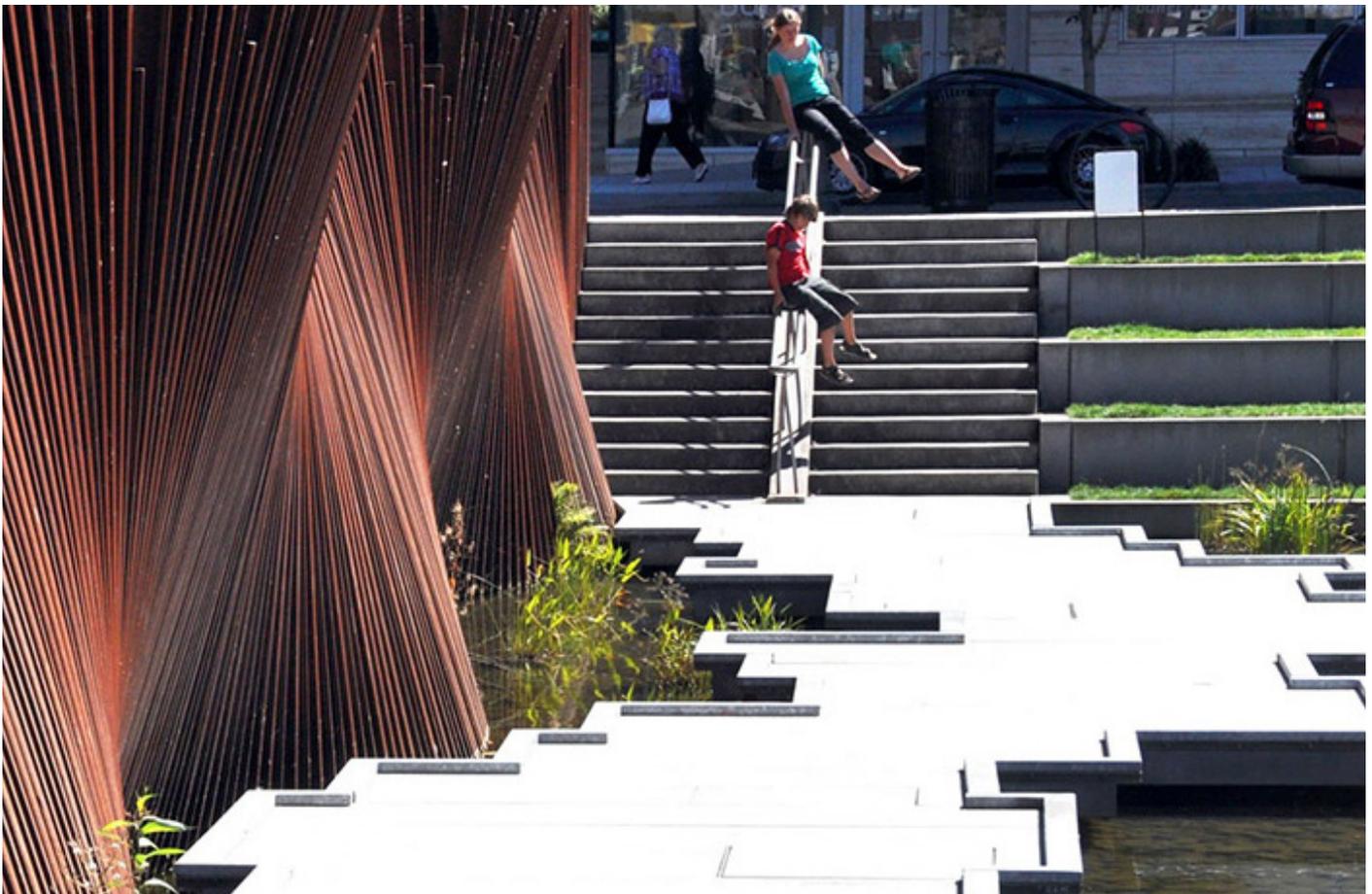
City of Portland

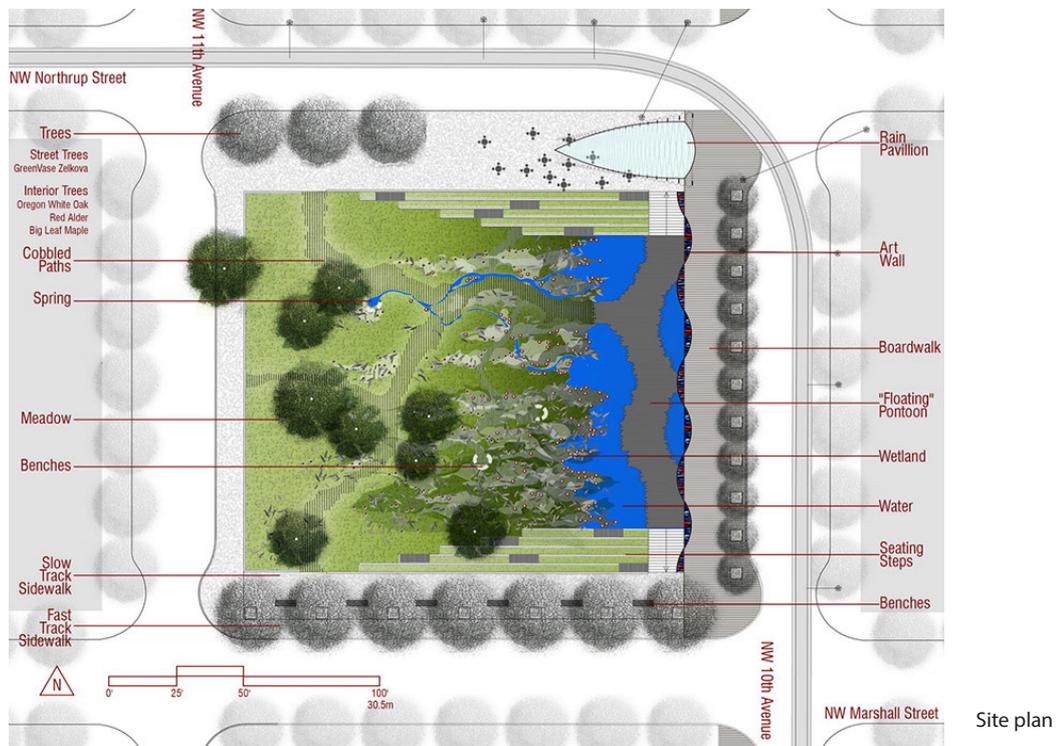
## Team:

Hendrik Porst,  
Jessica Read  
Andreas Bockemühl

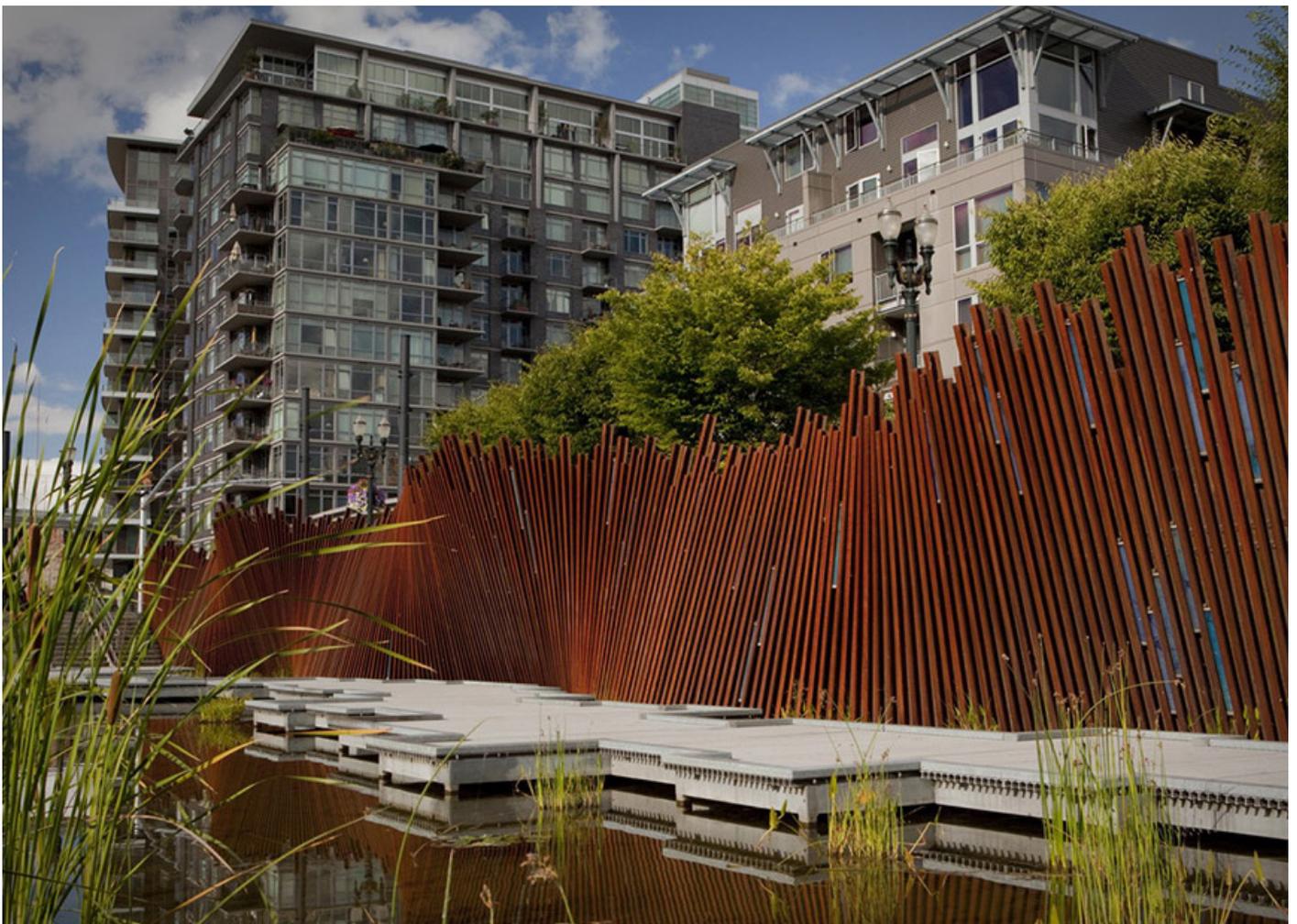
## Status:

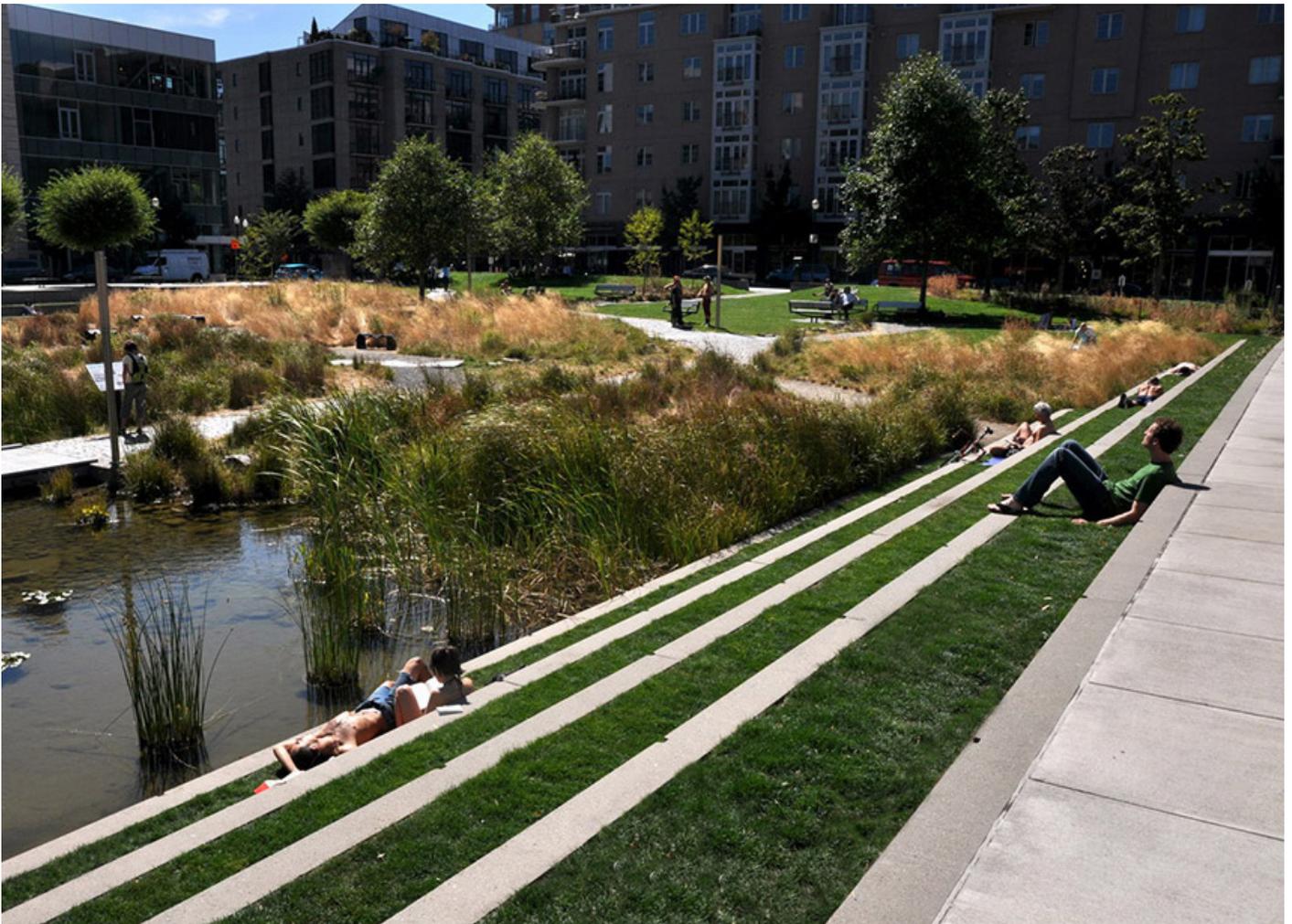
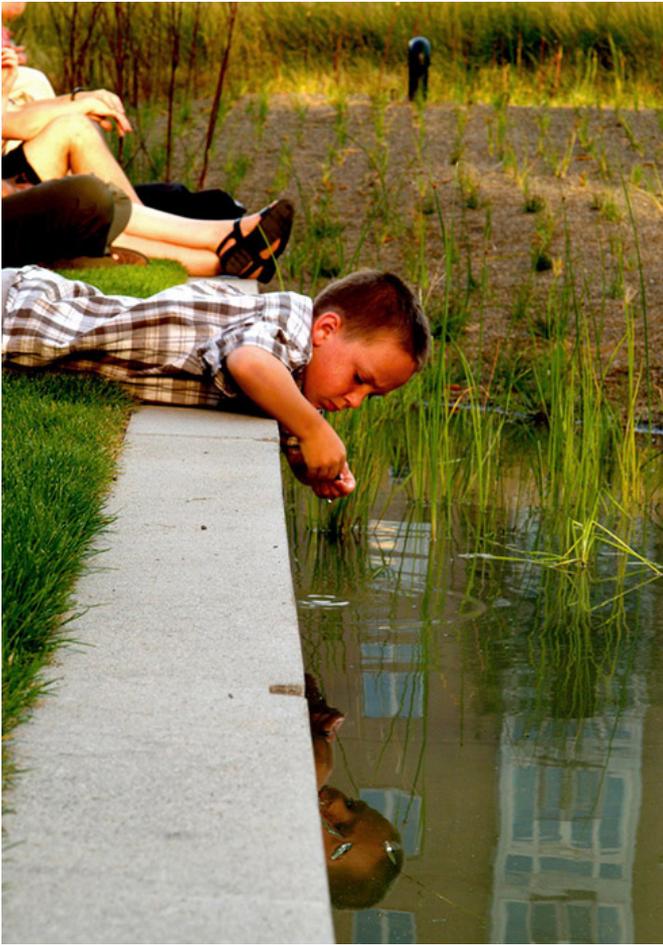
Flood Resilience

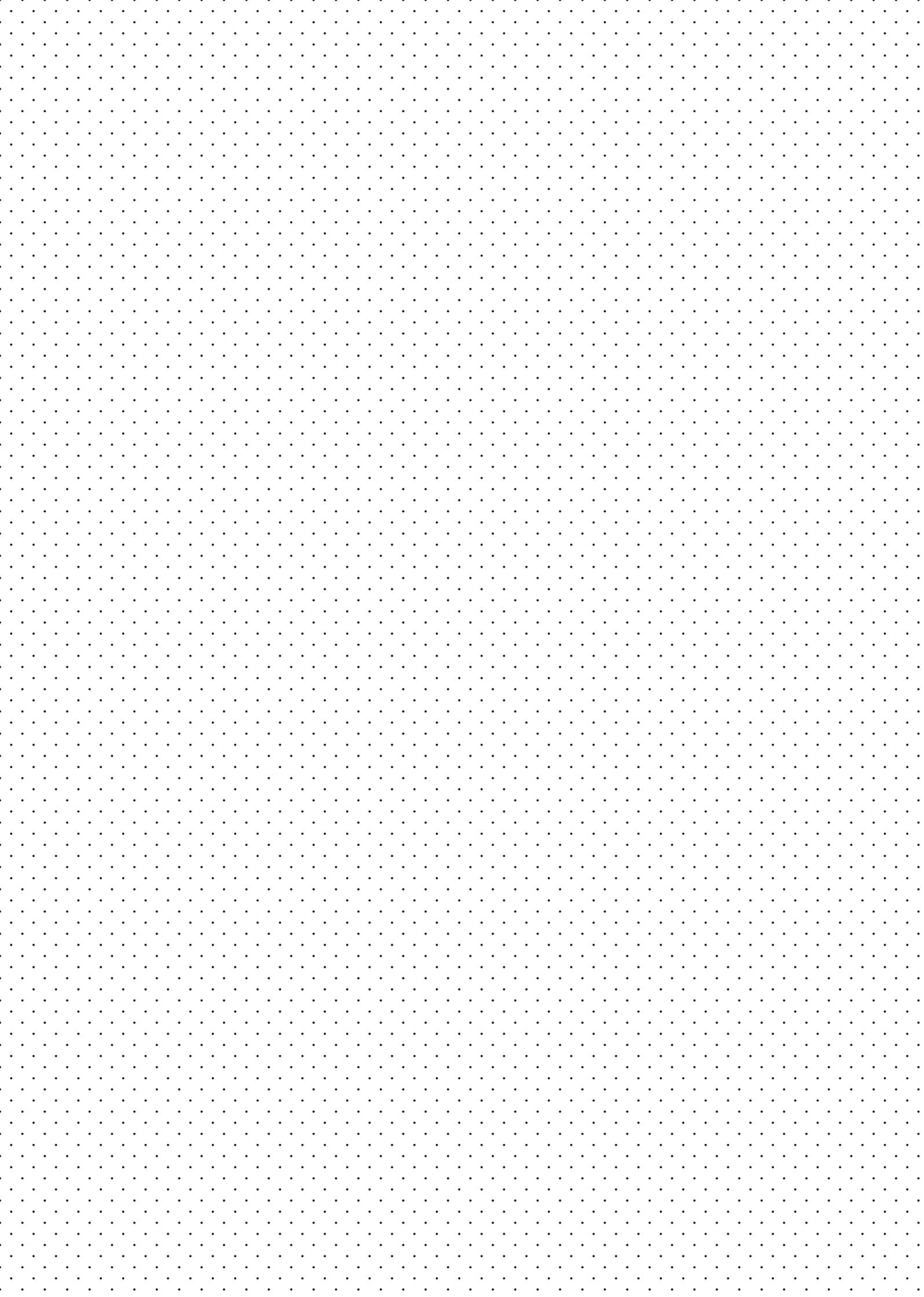


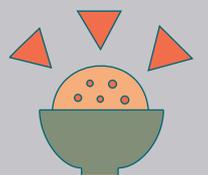
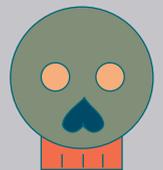
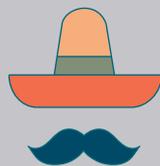
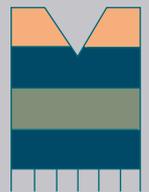
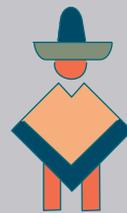
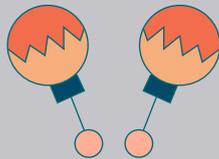
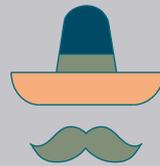
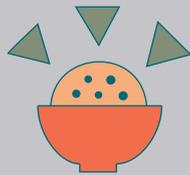
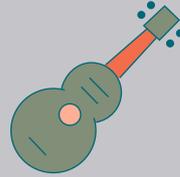
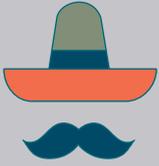
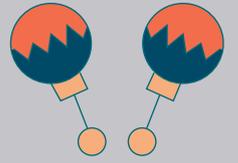
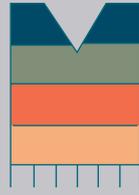


Stormwater runoff from the park block is fed into a natural water feature with a spring and natural cleansing system. The `Art Wall` recycles historic rail tracks, oscillating in and out and inlaid with fused glass pieces hand-painted with nature images by Herbert Dreiseitl. Ospreys dive into the water, art performances unfold on the floating deck, children splash and explore. (<http://landezine.com/index.php/2013/03/tanner-springs-park-by-atelier-dreiseitl/>)









# **1800 18TH STREET: REDEVELOPMENT OF WAREHOUSE**

### 1800 18th Street, vacant warehouse

The property as a warehouse is located near the Michigan Central Station, right between Corktown and Mexicantown. The building has three-story and its area is 128,000 square feet (12,820 square meters). This building was built in 1924 and its property type was industrial.

The vacant warehouse is on the west side of the former train station just past the train viaduct on Vernor Highway. The viaduct is often considered the dividing line between the Corktown and Mexicantown neighborhoods. Besides, the stretch of 18th Street where the abandoned warehouse is located is also a part of the Hubbard-Richard historic district within the Mexicantown zone.

This building was designed for the postal service and its station side location was great merit. The warehouse was built with reinforced concrete that making its structure strong enough to support all types of plan's vision. Moreover, it is the most well-kept industrial spaces and all these opportunities have converted this building to a unique space.



## Urban analysis of warehouse

As mentioned in previous chapters, the vacant warehouse is located in a critical district. This is a high priority area that has greenway opportunities. The empty building is near the railways and is surrounded by abandoned green spaces as well as commercial properties. There are a lot of parking lots in this area that could be full of rainwater during flooding times. Moreover, a large number of retail shops are situated in Vernor Highway. The combination of physical, social, and economic capability in Vernor corridor neighborhoods leads to create opportunities for improved quality of life.

On the other hand, vacant buildings always are a major threat to urban areas and communities. These buildings can increase the overall crime rates in the whole area, thus they should be organized. Since there are a great number of empty buildings in different zones, an appropriate approach is needed to reuse them.

Through the research area, the warehouse and surrounded vacant lands are further focused since they can promote growth, enduring resident's benefits, and community.

Figure 59: Black and white aerial photograph of Michigan Central Station, and surrounding neighborhoods, 1966

Source: <https://detroithistorical.pastperfectonline.com>





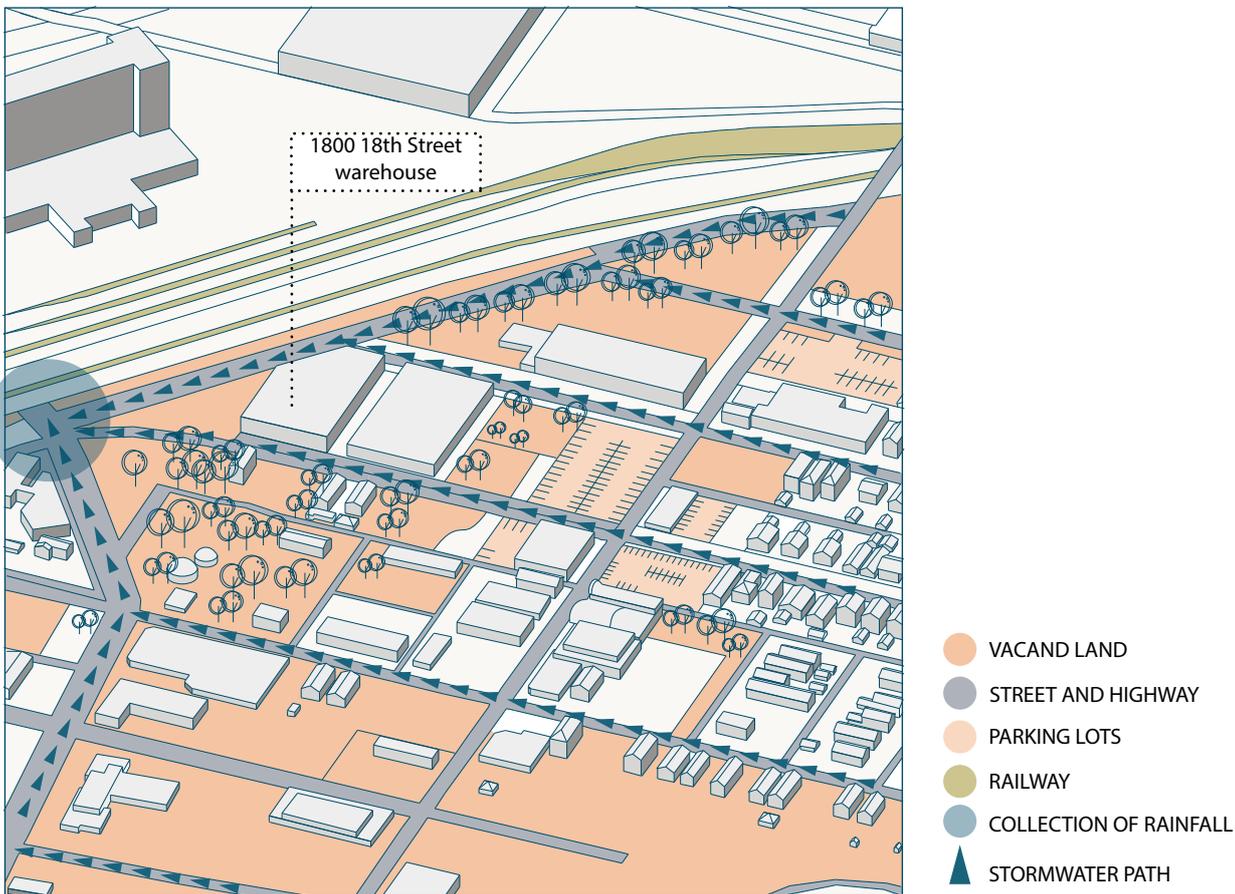
personal photo archive, 2019



personal photo archive, 2019



personal photo archive, 2019



### Vacant warehouse, a cultural garden

According to the survey analysis, community members especially people who live in Mexicantown mentioned changes and improvements were most needed. They request a livable public place with more attractions where could be held festivals and cultural events. Furthermore, they demand a safe place for great gatherings in order to work out sports and other activities, especially for kids and teens. They need local stores, movie theaters, bars, and in general a safer place for entertainment. Therefore, the vacant warehouse can provide all these facilities on one site since it is located in a great position.

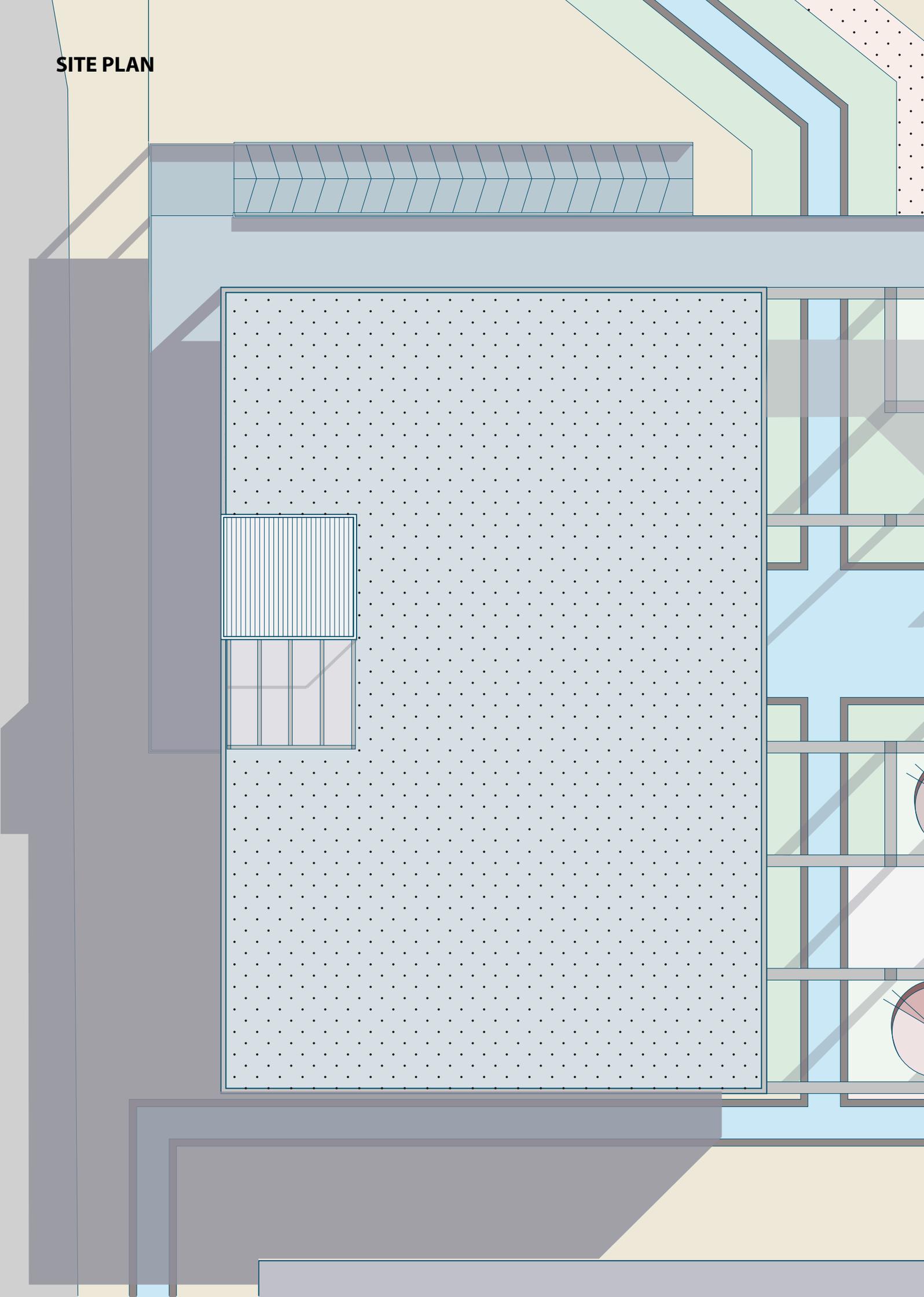
As mentioned before by using different types of sustainable stormwater management the water can involve through the building as well, thus water enters inside the warehouse and will be collected in a certain place such as a beautiful pond. This approach would be a livable part of the cultural garden and can be designed by green stormwater infrastructure (GSI).

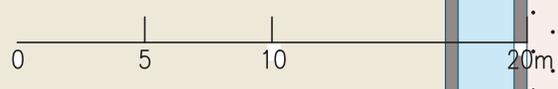
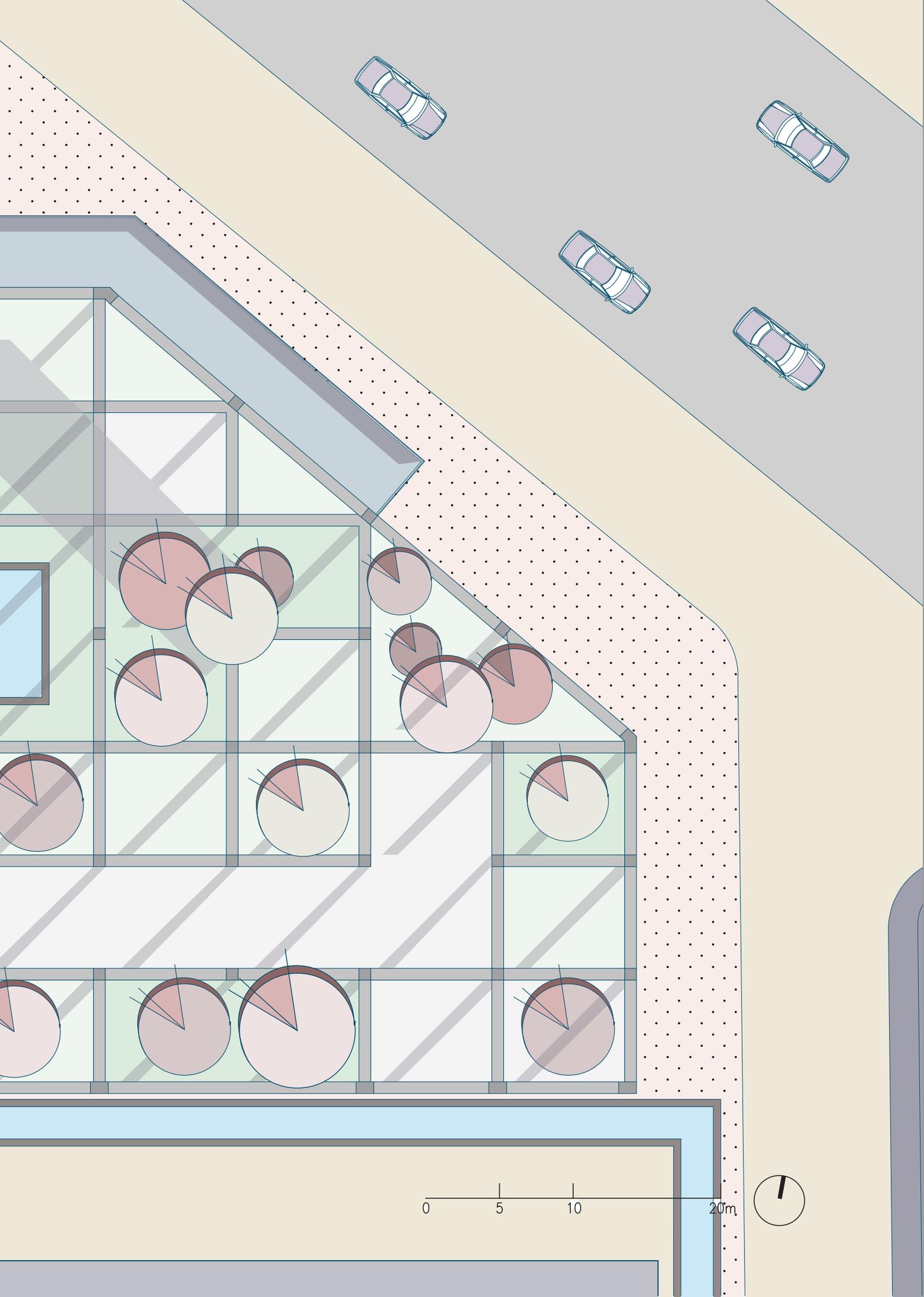
On the other hand, by erecting a bridge between the cultural garden and designed open spaces, the idea of making a connection between two different areas will happen. With this bridge, people who are in the public open spaces can enter the building. All these ideas could lead to creating a great mixed-use building and a healthy neighborhood.

To be more elaborate, the approach of design for the cultural garden is an adaptive reuse process. Around 100years after the construction of this building, its structure is still completely intact, therefore adaptive reuse is an impressive method for improving the efficiency of the usable performance of built assets. Additionally, this strategy can be an effective technique for new construction in terms of sustainability. As Detroit has several abandoned buildings, adaptive reuse approach prevents thousands of building's demolition and allows them to become a new urban generation. Therefore, the concrete structure of the old building was preserved and new parts were added based on the needs studied in the design process.

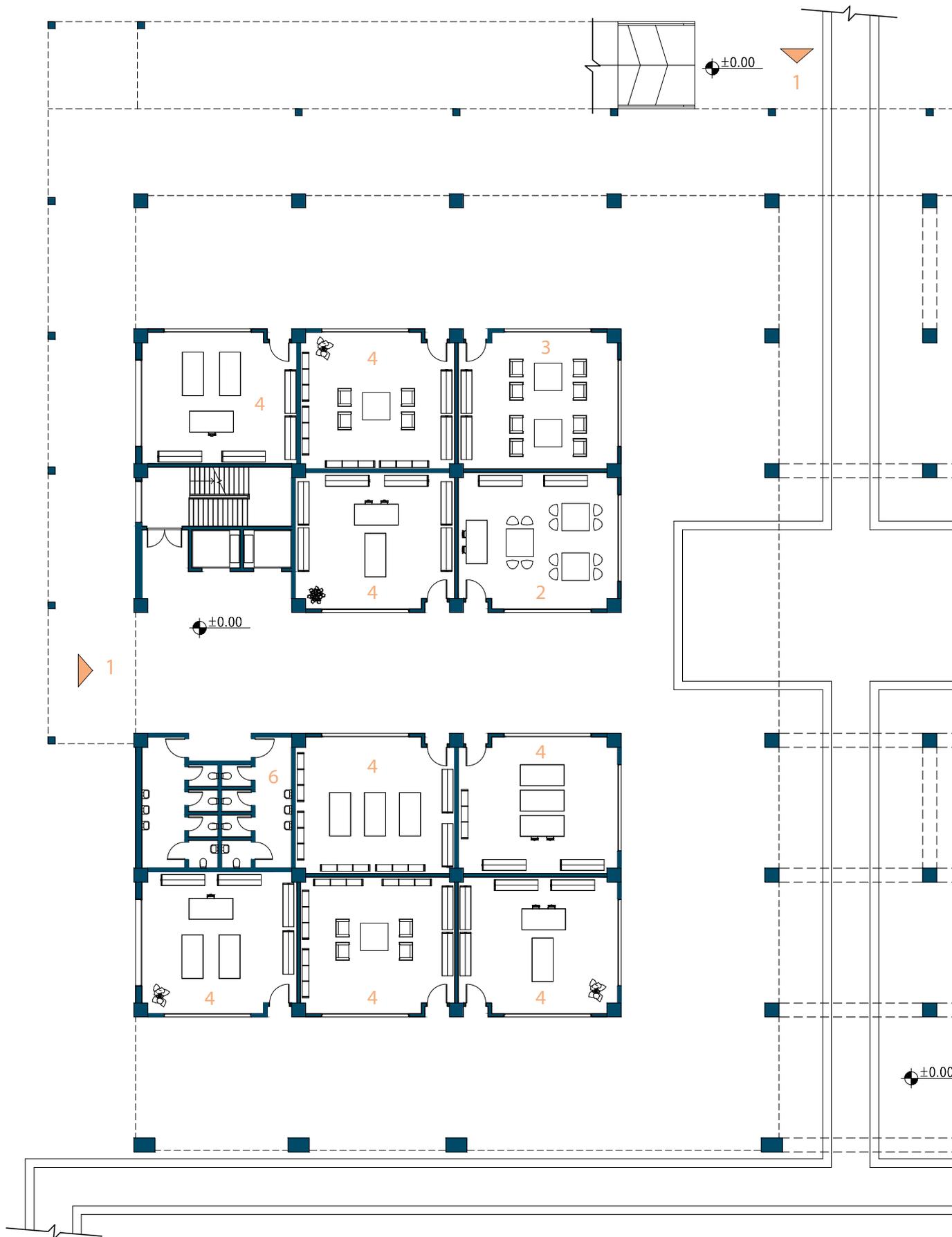
According to the needs of Mexicantown based on the survey, festival or cultural activities is the first choice of the people in that area. As vacant warehouse has a great location (the corner of the Vernor highway) and it is erected in front of Michigan Station, it can be redeveloped and restored as a cultural garden to gather Southwest's citizens. As the warehouse has a massive roof, the festival and cultural activities can be held on its roof since the building has a wonderful view of the gardens and plants as well.

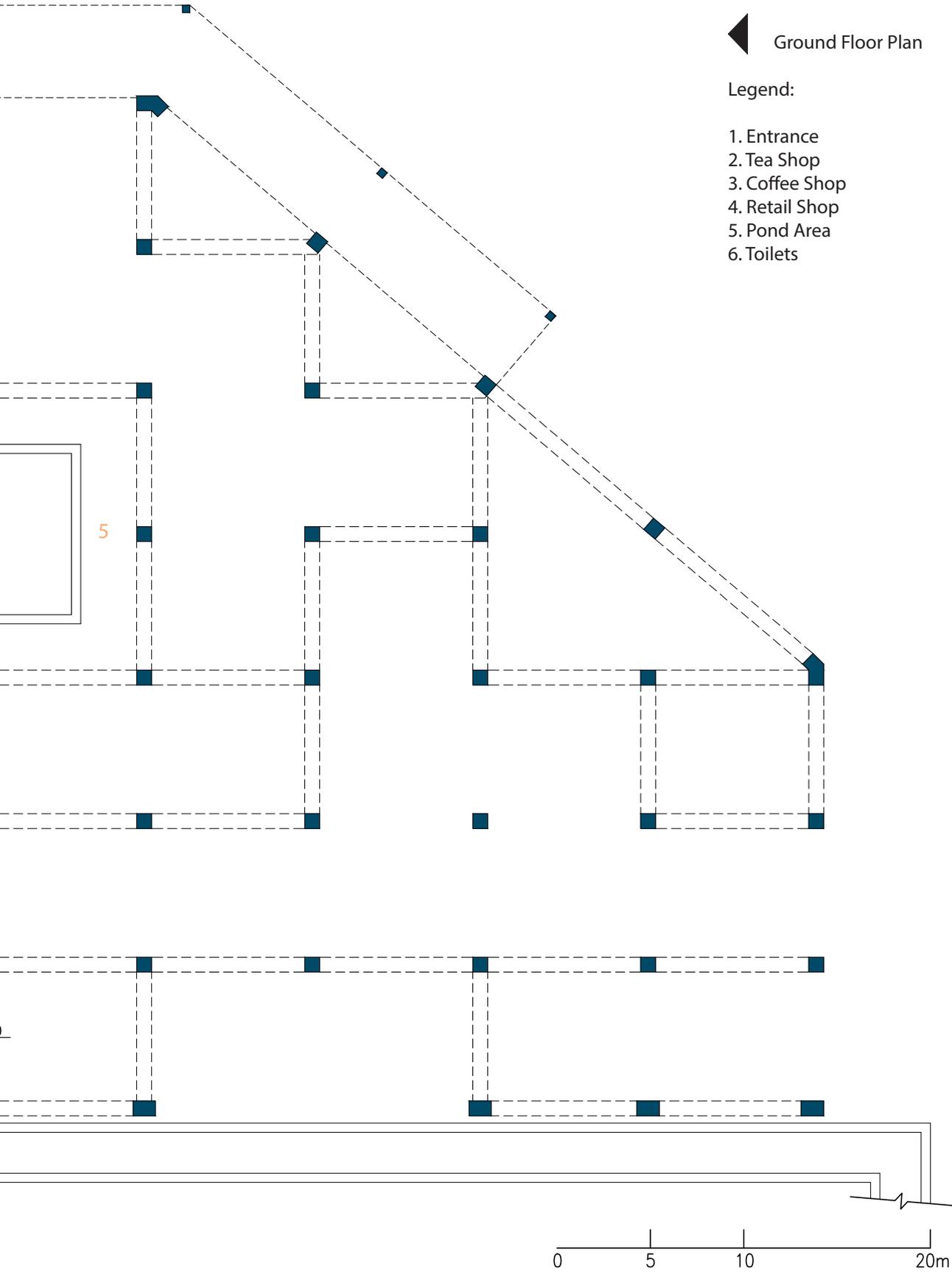
**SITE PLAN**





# GROUND FLOOR PLAN





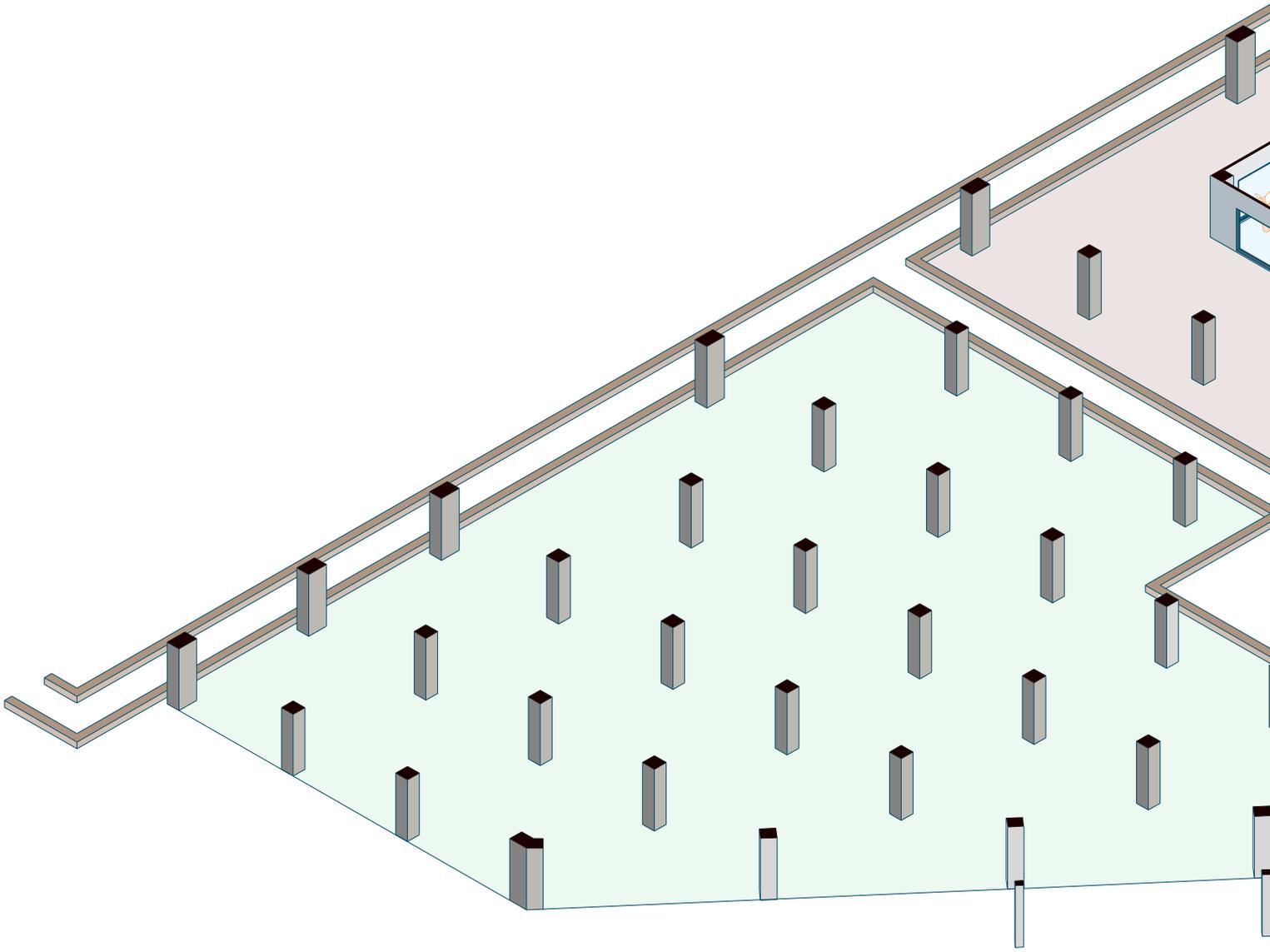
Ground Floor Plan

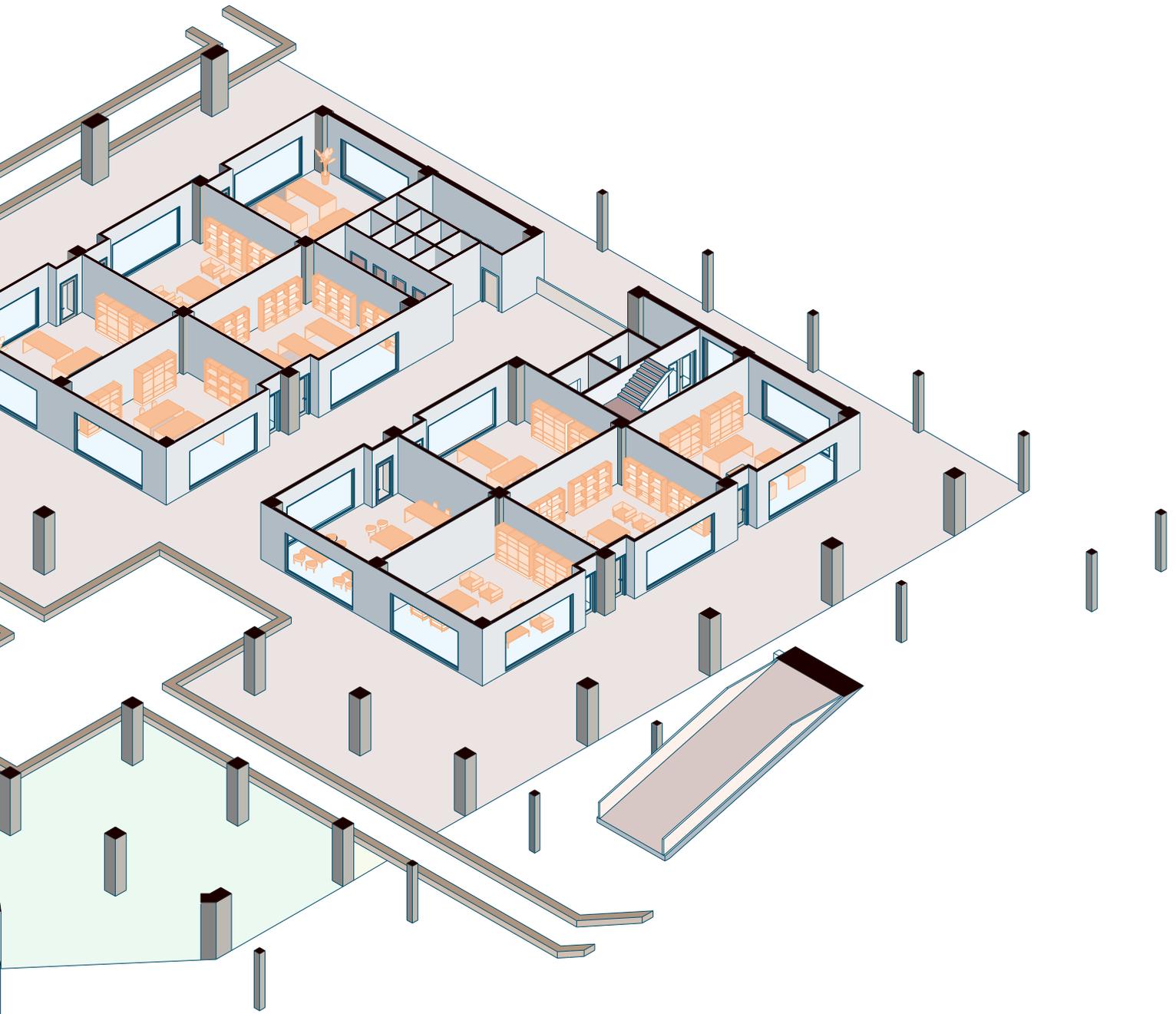
- Legend:
- 1. Entrance
  - 2. Tea Shop
  - 3. Coffee Shop
  - 4. Retail Shop
  - 5. Pond Area
  - 6. Toilets

0 5 10 20m

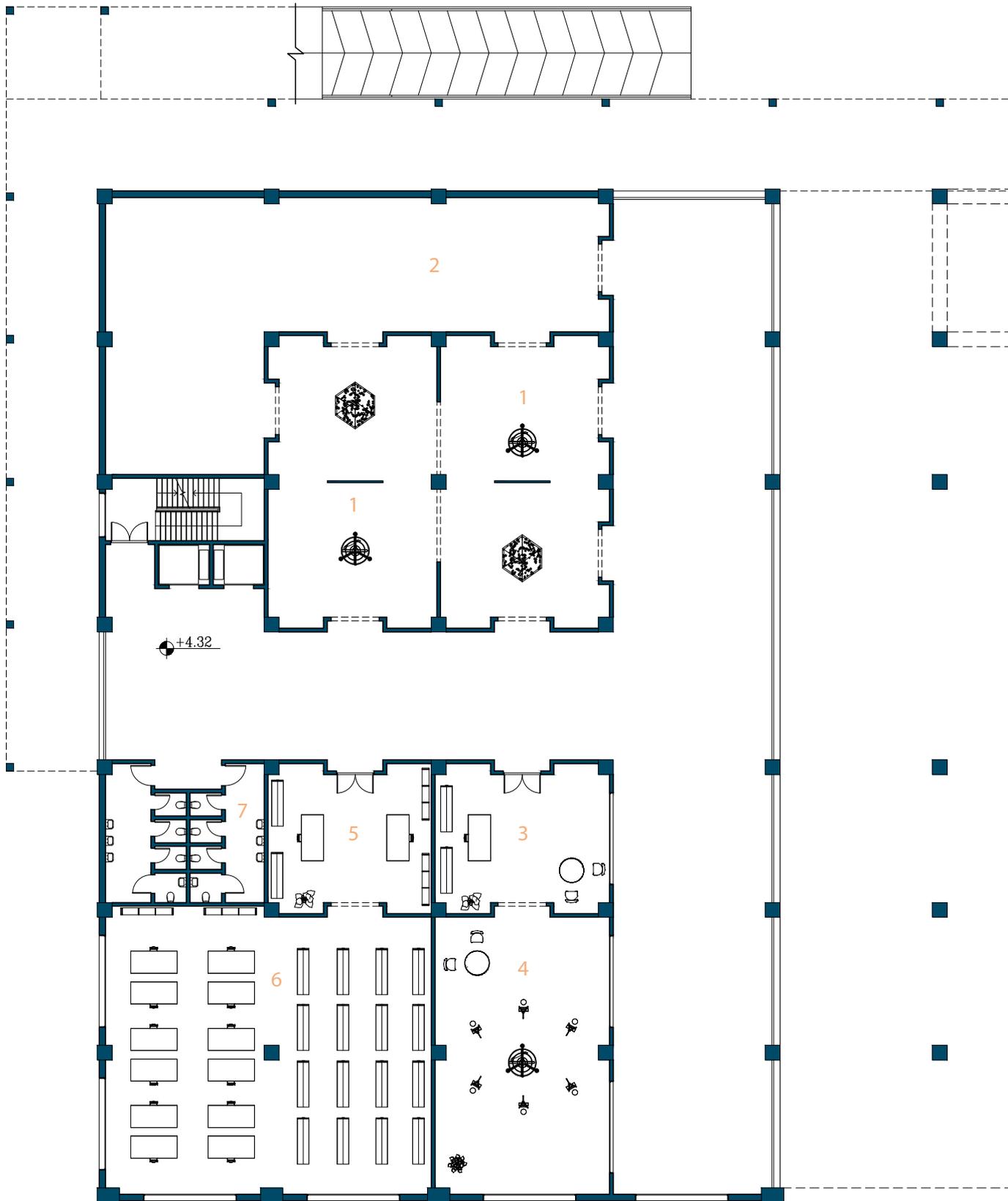


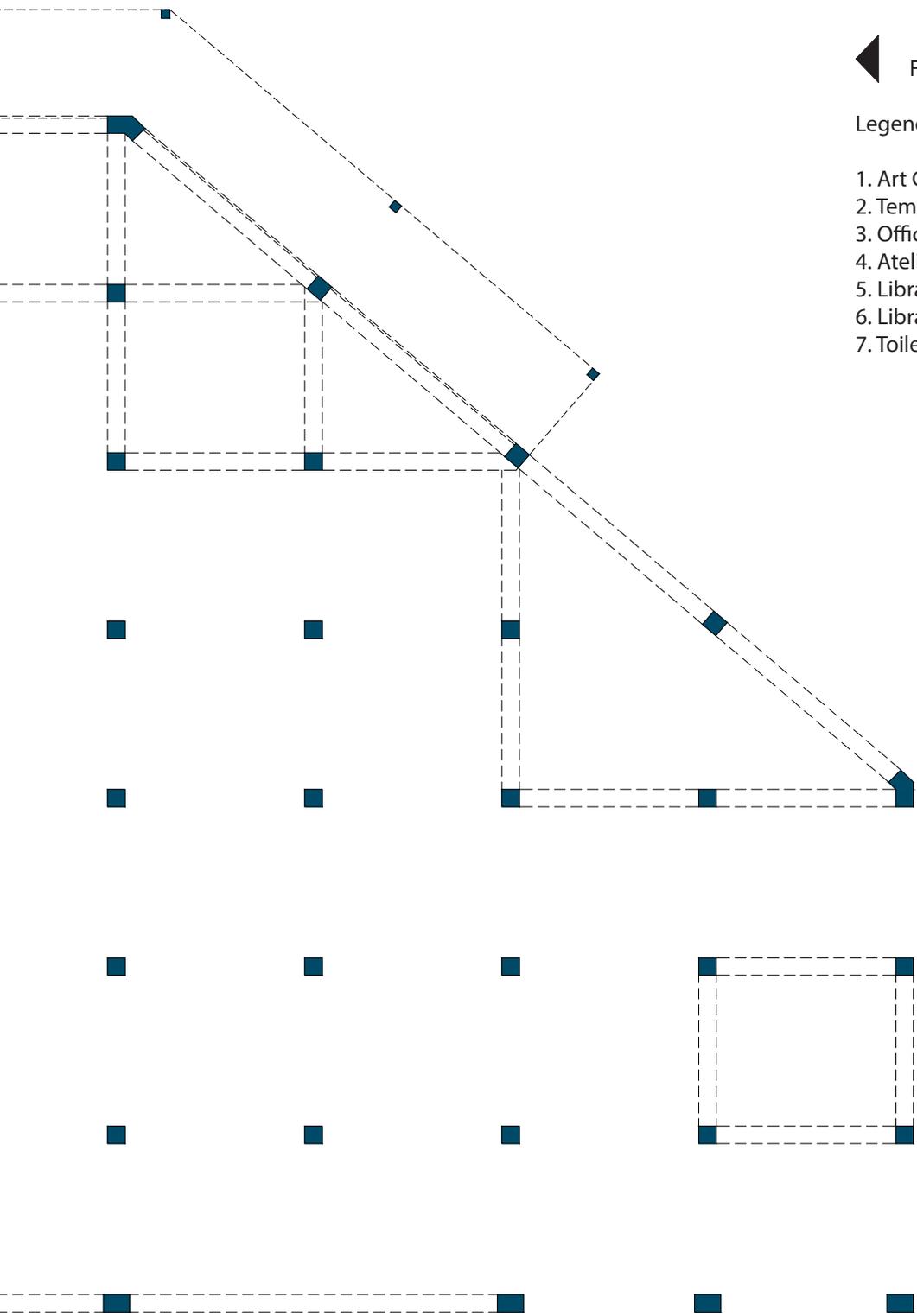
# GROUND FLOOR ISOMETRIC





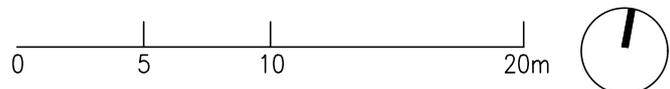
# FIRST FLOOR PLAN



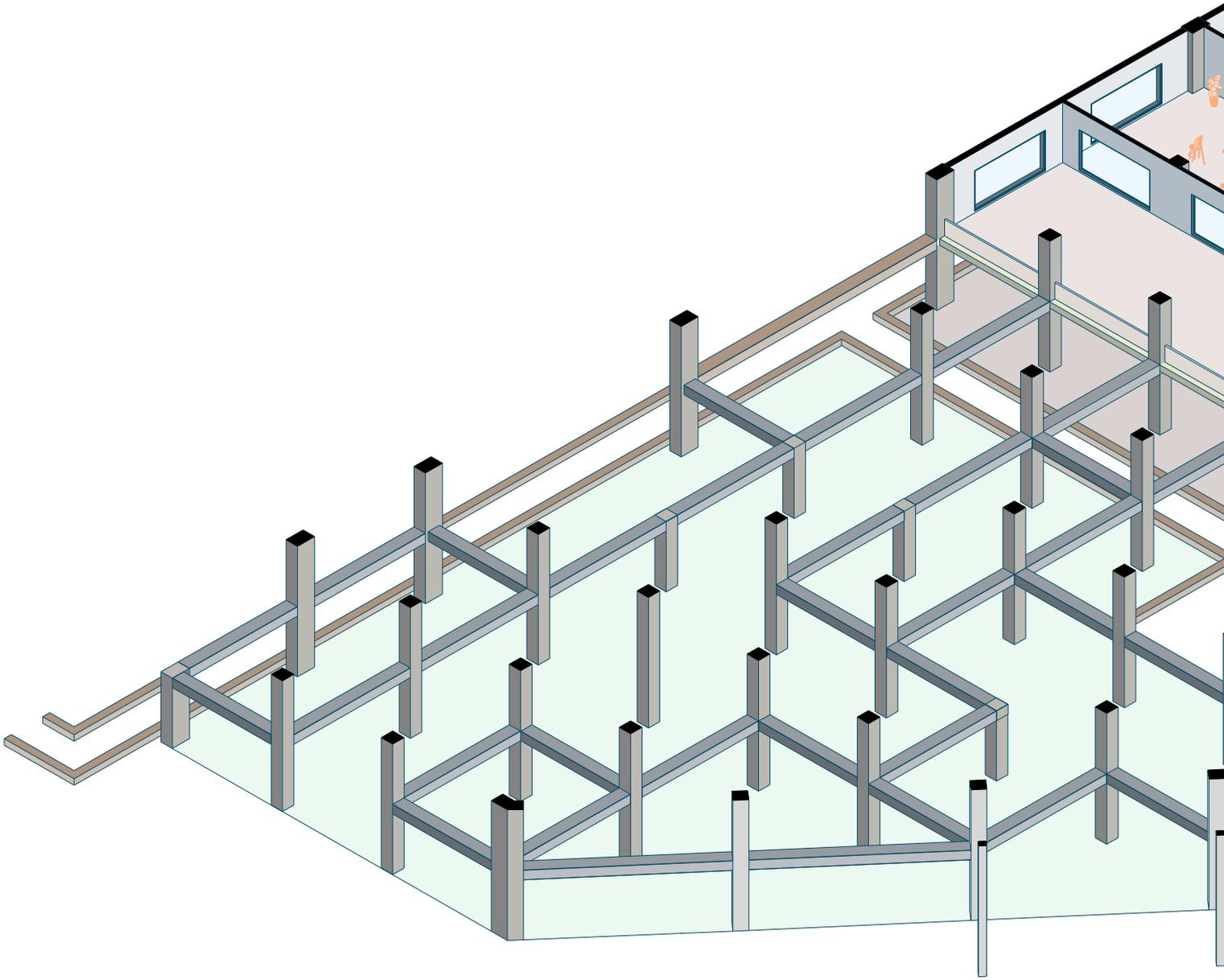


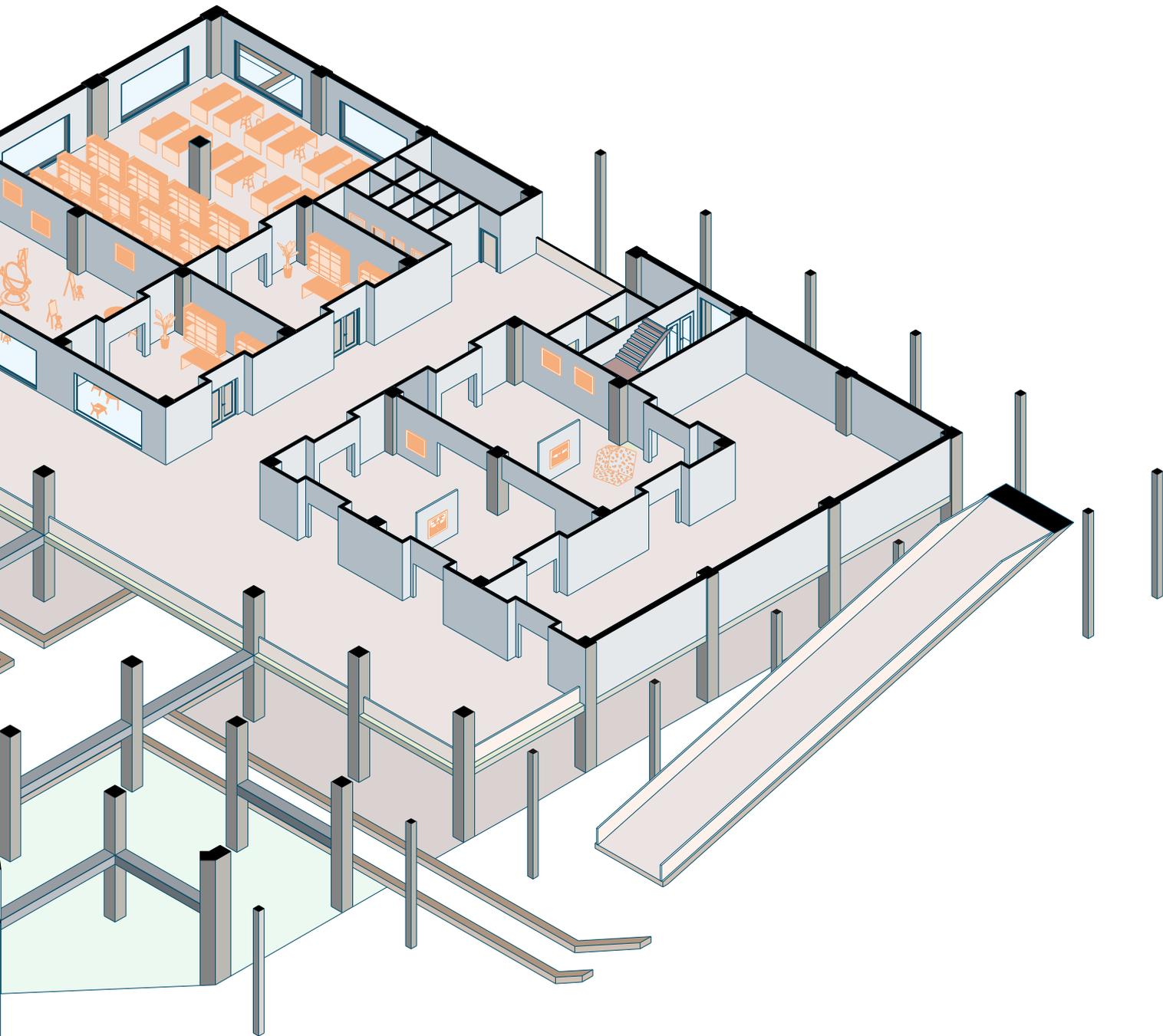
◀ First Floor Plan

- Legend:
- 1. Art Galleries
  - 2. Temporary Art Exhibition
  - 3. Office
  - 4. Atelier
  - 5. Library Reception
  - 6. Library
  - 7. Toilets

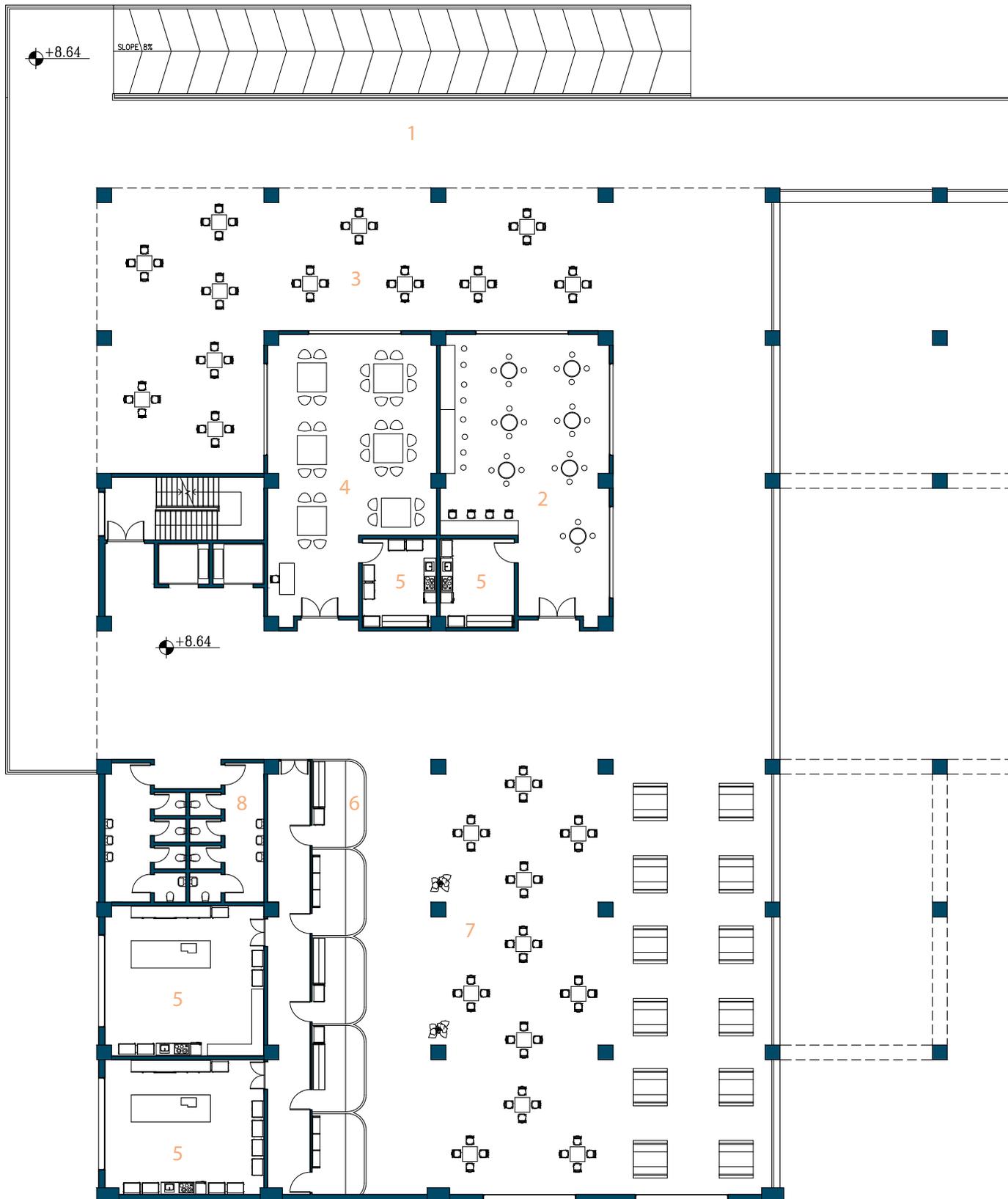


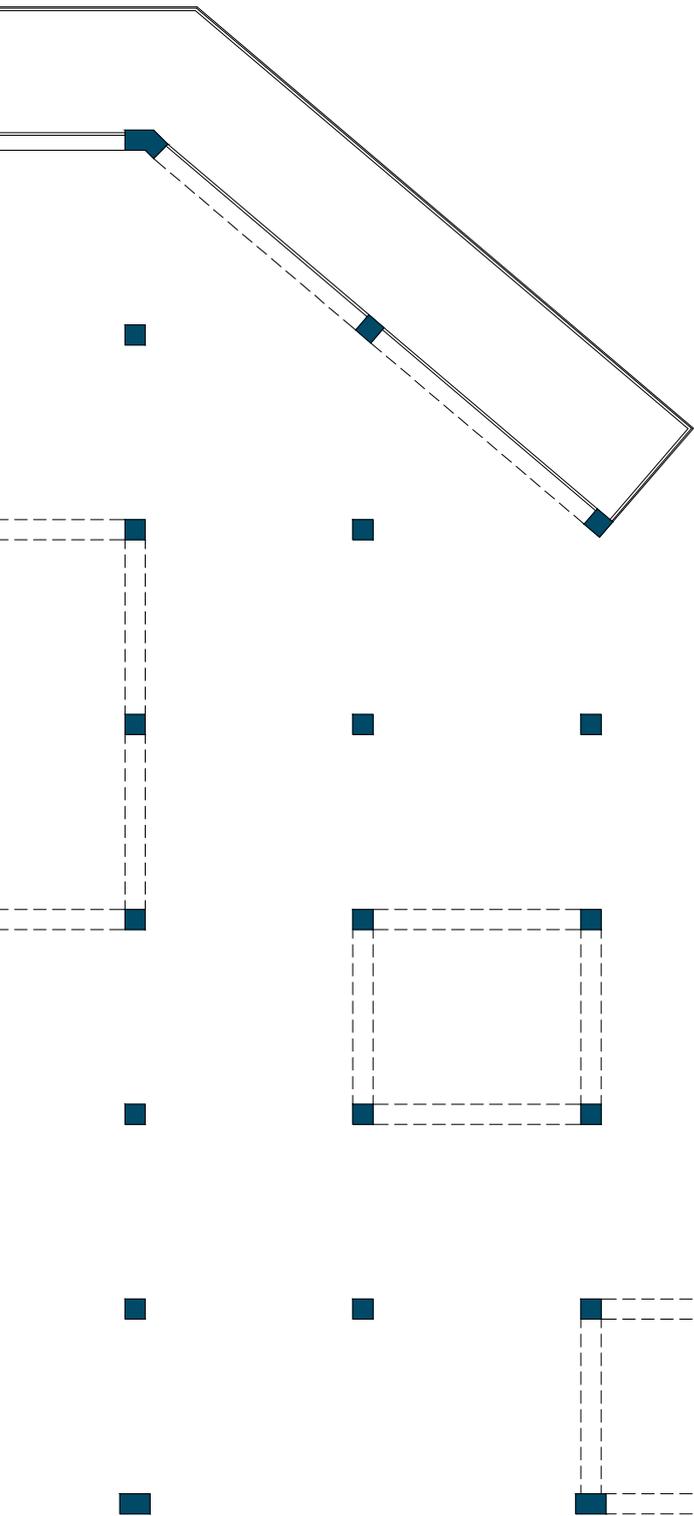
# FIRST FLOOR ISOMETRIC





# SECOND FLOOR PLAN

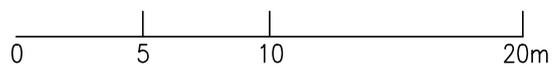




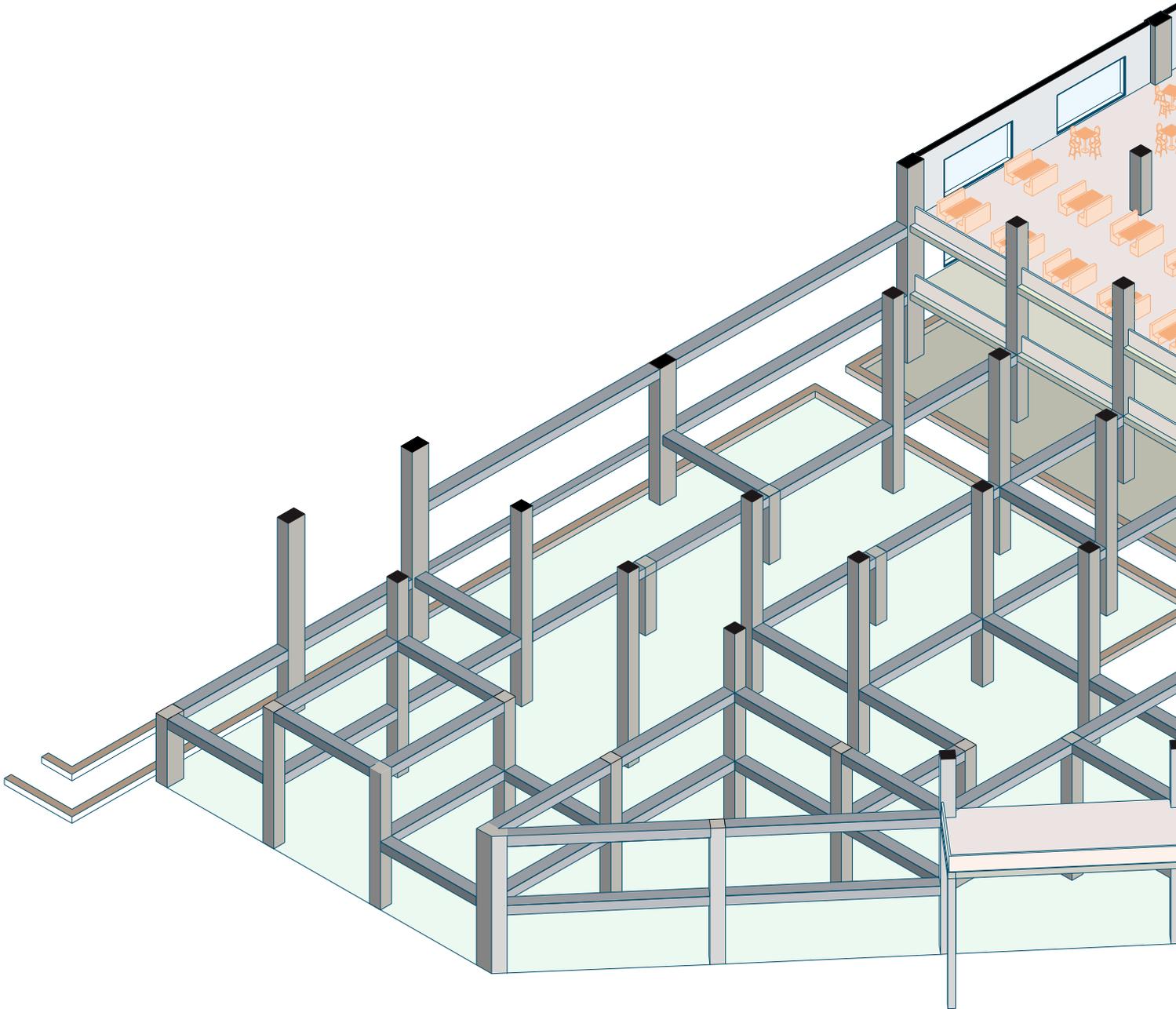
◀ First Floor Plan

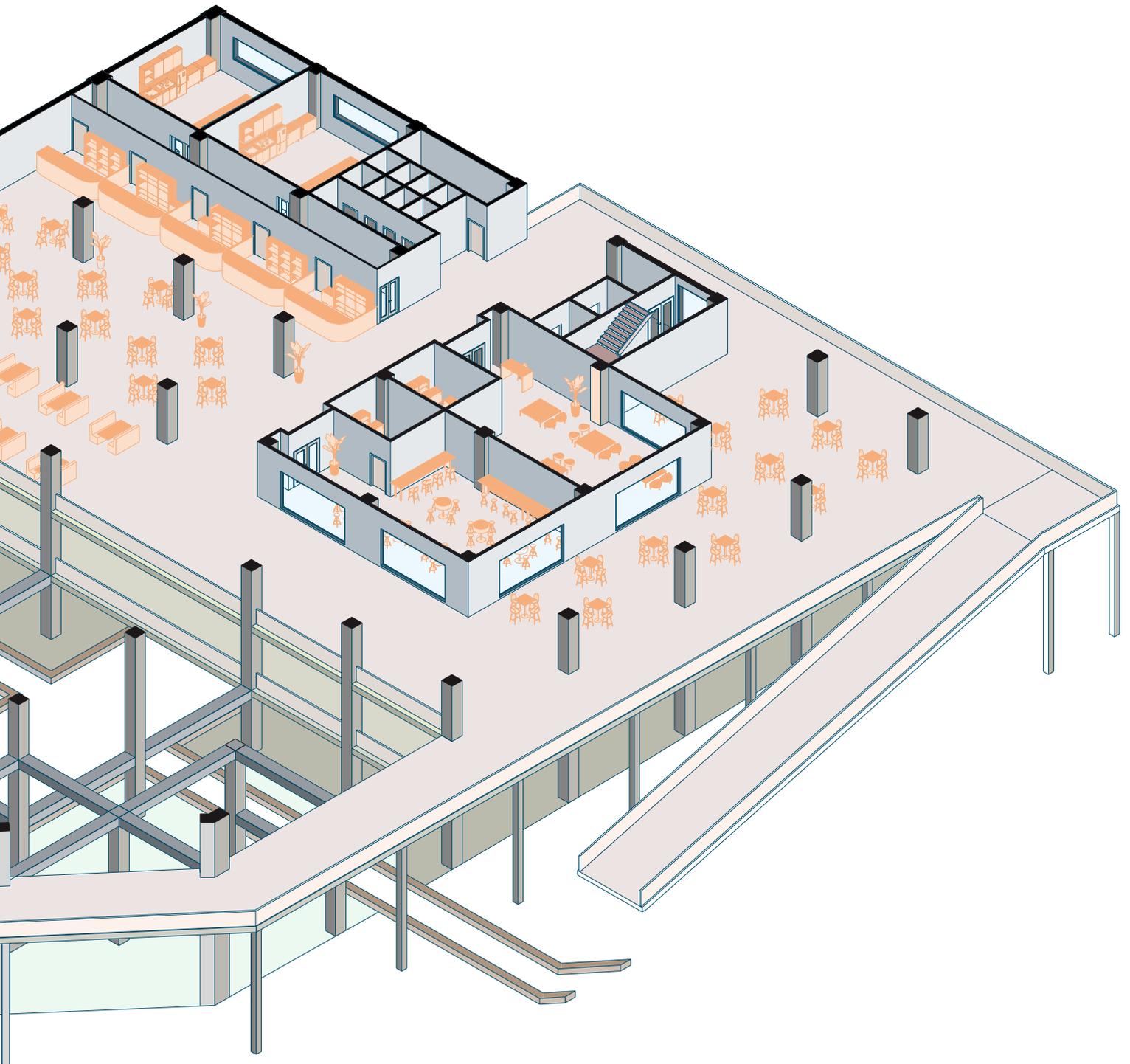
Legend:

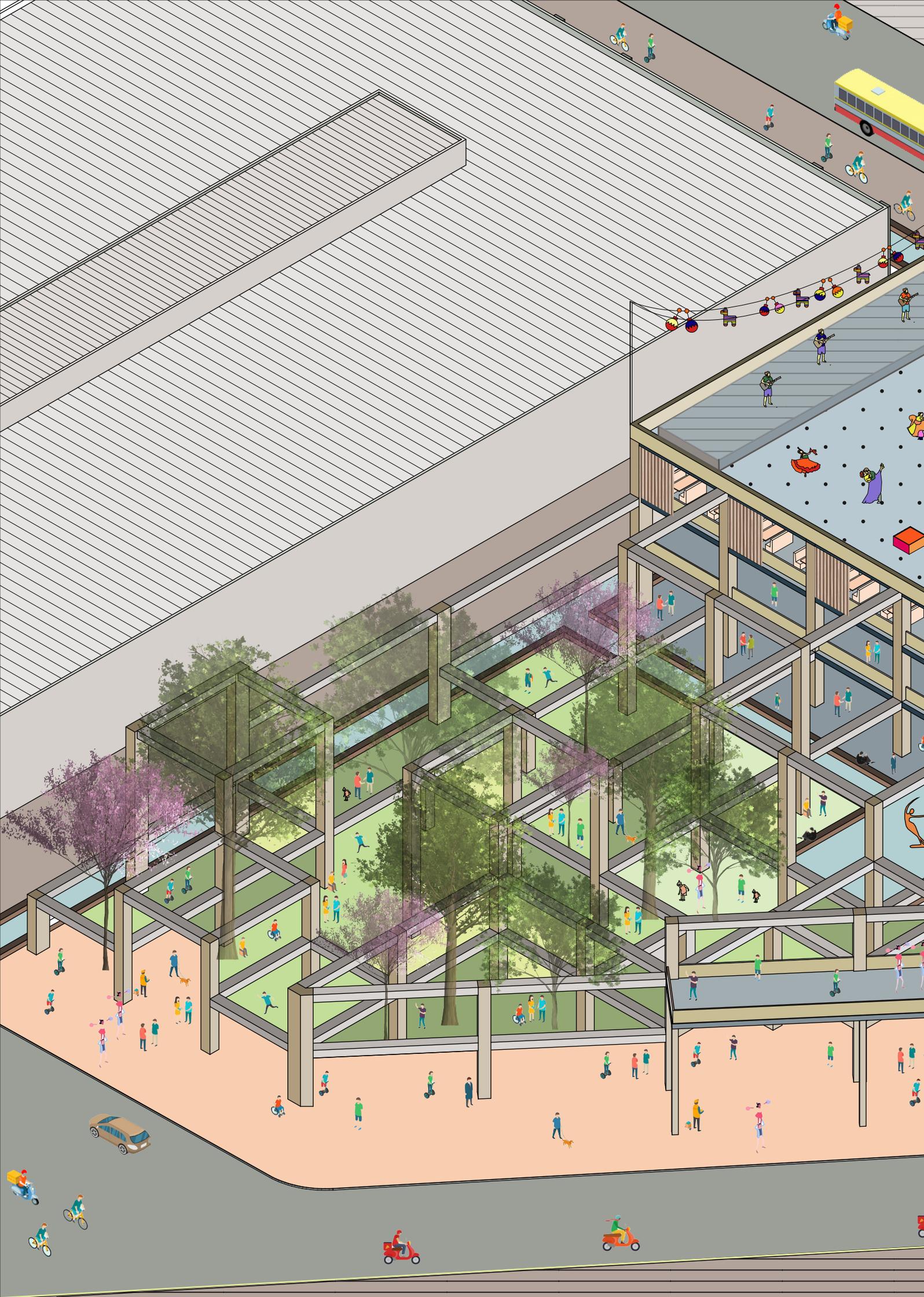
- 1. Terrace Corridor
- 2. Bar/ Restaurant
- 3. Terrace Bar
- 4. Mexican Restaurant
- 5. Kitchen
- 6. Food Court Canteen
- 7. Food Court Area
- 8. Toilets

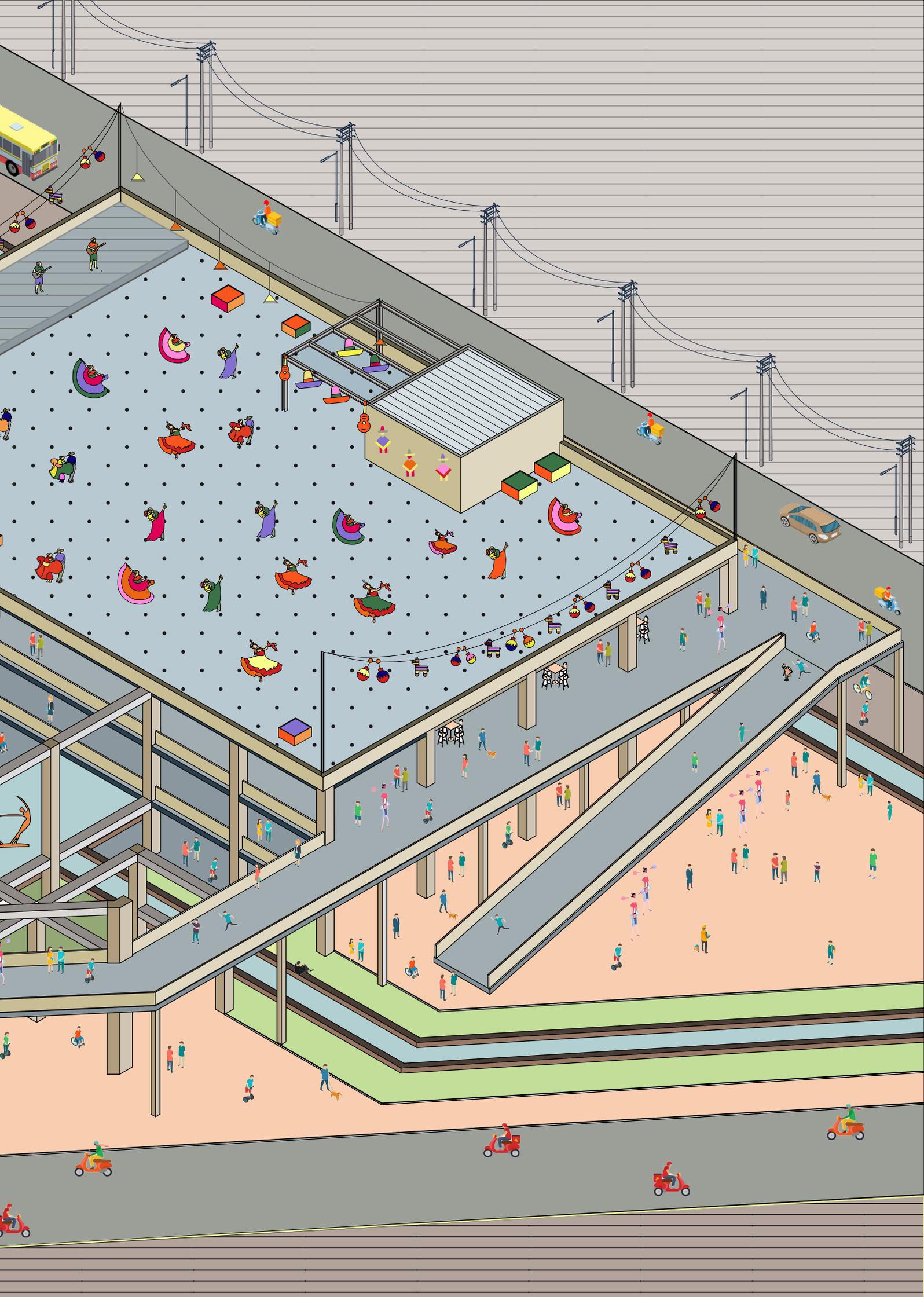


# SECOND FLOOR ISOMETRIC















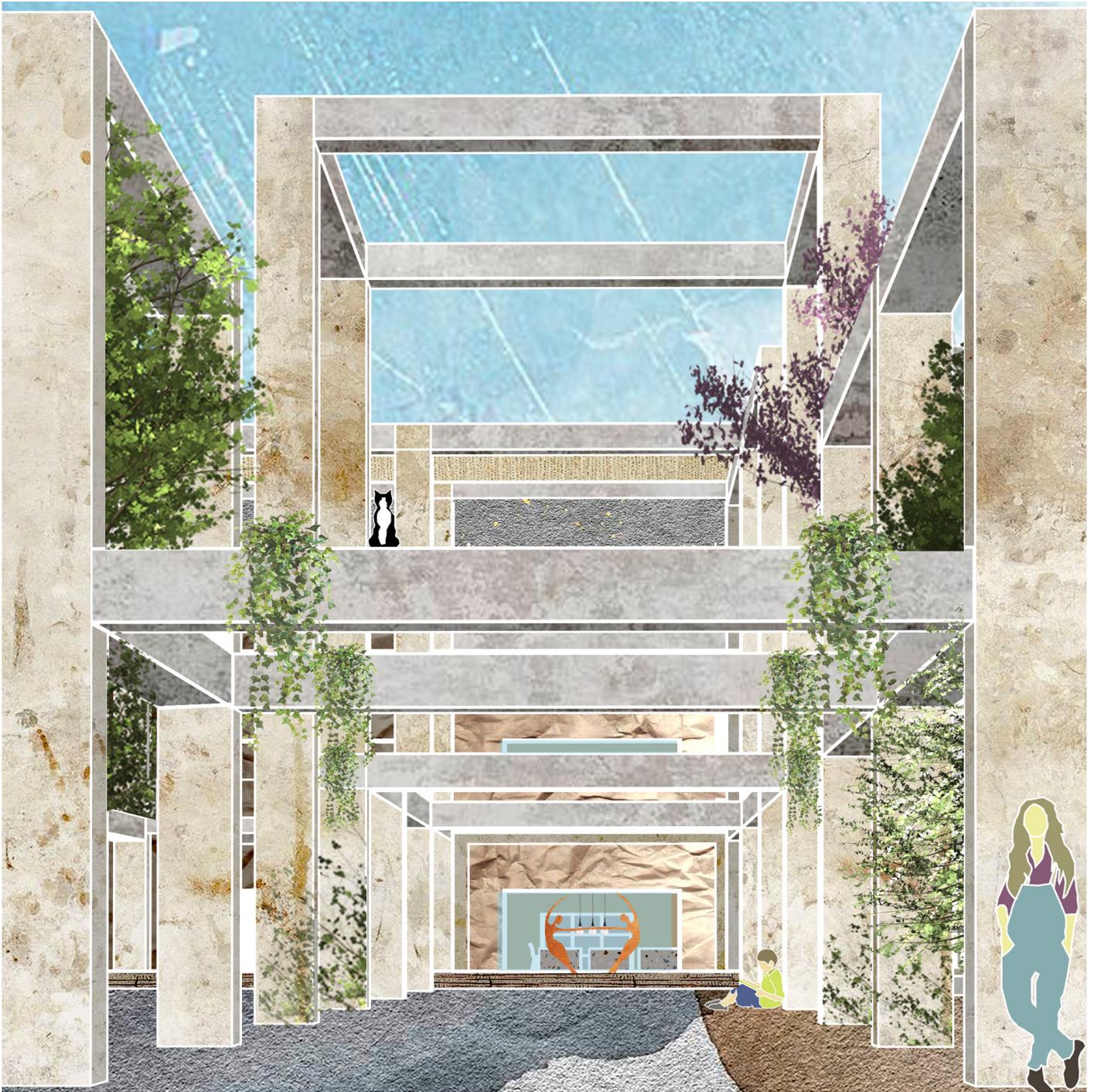










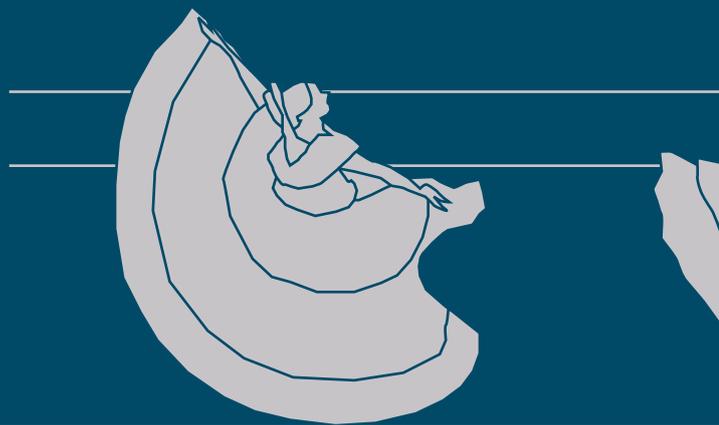


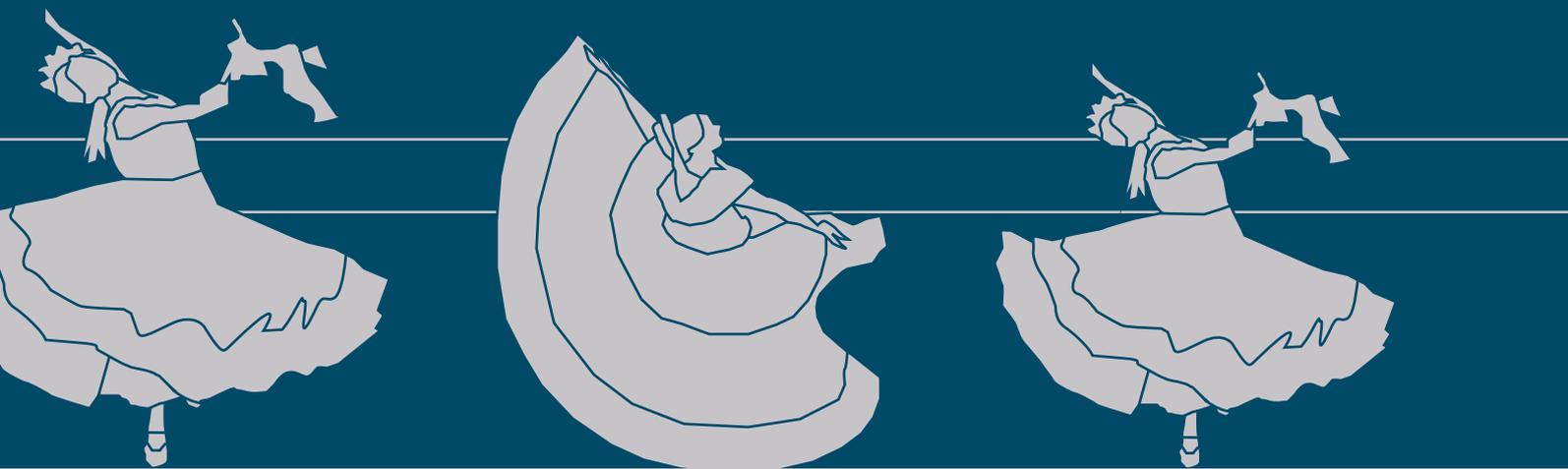
# CONCLUSION

Targeted redevelopment area in Southwest Detroit depicts recreation of vacant land and abandoned mass area can be accompanied by managing rainwater runoffs. Whereas, as whole the world conflicts with lack of water, sustainable projects are increasing in order to reuse the water repeatedly through various functions.

On the other hand, the managing of the stormwater problem is highly-priced, targeted redevelopment area represents to manage stormwater parallel into the revision of vacant land as well. As sustainable methods can be cost-effective, to collecting rainwater more naturally meanwhile providing environmental, social, and economic welfares, to be more elaborate; stormwater practice can be shared in different property owners and serving water for several purposes. Southwest Detroit has had more vacant lot and population moves toward growth, therefore, vacant land has a great opportunity to transform into a green open space and it can be designed by water through its land that will improve well-being and economic development all over Detroit neighborhood.

This innovative system in Southwest Detroit can be a perfect alternative that involves abandoned mass areas, vacant land, and stormwater that it can be adapted for other districts of Detroit where they have as same as problems like Southwest Detroit.





# ANNEX 1

## COSTUMER INTERCEPT SURVEY

During the research time of this project in Detroit, there were various cooperation with firms in order to reach best results for surveys. The results of these surveys, along with fieldwork, demographic/psychographic analysis, and expenditure potential forecasting were used to develop this retail market analysis.

- Planners of Mexicantown: Zachary and Associates – Silveri Architects
- Client: Mexicantown Community Development Corporation

### Mexican Market Analysis:

- Planner: Mapinfo
- Clients: Mexicantown Community Development Corporation – Bagley Housing – Southwest Solution



“Mexicantown Market Analysis”, Needs of Mexicantown according to the survey (Percentage)



**Customer Intercept Survey**

**LOCATION:** \_\_\_\_\_

**Business Type:** \_\_\_\_\_

**SURVEY #** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**INTERVIEWER INITIALS:** \_\_\_\_\_

ETHNICITY OF RESPONDENT

1. Caucasian/White
2. African-American/black
3. Hispanic
4. Asian
5. Arabic
6. Other \_\_\_\_\_

GENDER OF RESPONDENT

1. Male \_\_\_\_\_
2. Female \_\_\_\_\_

Introduce yourself and explain the purpose of your visit. Emphasize the fact that all information will be treated as highly confidential and that under no circumstances will individual data or comments be repeated to anyone else or published. However, the more co-operative each retailer, the more accurate the results can be. Since the goal of the study is to determine the optimal tenant mix that will complement their business and help bring them more customers, they stand to benefit from assisting in the process. Always probe for more answers than just yes or no to each question – try to get at the why.

1. How long have you been in business at this location?
  
2. Do you keep track of the zip codes of your customers to identify where they live?  
 Yes \_\_\_\_\_ No \_\_\_\_\_
  
3. What percentage of your customers comes from the local community?  

_____ 100% Local	_____ 60% Local / 40% Visitors
_____ 10% Local / 90% Visitors	_____ 70% Local / 30% Visitors
_____ 20% Local / 80% Visitors	_____ 80% Local / 20% Visitors
_____ 30% Local / 70% Visitors	_____ 90% Local / 10% Visitors
_____ 40% Local / 60% Visitors	_____ 100% Visitors
_____ 50% Local / 50% Visitors	
  
4. Where do you think your customers come from?

5. How far away do you pull customers from? (Check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> Detroit                 | <input type="checkbox"/> Windsor                      |
| <input type="checkbox"/> Suburbs                 | <input type="checkbox"/> Other parts of Canada        |
| <input type="checkbox"/> Other parts of Michigan | <input type="checkbox"/> Other parts of United States |
| <input type="checkbox"/> Windsor                 | <input type="checkbox"/> Other countries              |

6. Over the last 5 years has your business

- Improved  
 Declined  
 Stayed the same

7. Over the last 5 years, do you think the business of other retailers in the area has

- Improved  
 Declined  
 Stayed the same

8. What things can be done to help individual retailers improve sales performance

9. Are you aware of programs that are available to help individual retailers?

- Yes     No    If yes, what are they?

10. What significant changes have you seen to the area in the past 2 years?

The past 5 years?

11. What changes would you like to see?

12. What are the strengths of Mexicantown?

13. What are the weaknesses of Mexicantown?

14. If new retail were to be added to the community, what types would you like to see?

15. Do you participate in any business associaton?

\_\_\_\_\_ Yes      \_\_\_\_\_ No      If yes, which one(s)?

16. With the understanding that this informaton is highly confidential, can you share what your business' annual sales were for 2005?



# SURVEY RESULTS

## INTERVIEW LOCATION

	All	Regional	Local
ALGO ESPECIAL MARKET	2.1%	-	3.9%
AMMICI'S PIZA	3.1%	-	5.7%
ARMANDO'S RESTAURANT	7.2%	15.9%	-
BAGLEY FOOD STORE	0.9%	-	1.7%
DONOVAN'S PUB	1.3%	-	2.4%
EL COMAL RESTAURANT	6.1%	-	11.1%
EL ZOCALO RESTAURANT	7.0%	15.4%	-
EVIE'S	3.0%	-	5.5%
HONEY BEE MARKET	2.7%	-	5.0%
LA CARRETA MARKET	2.4%	-	4.4%
LA GLORIA BAKERY	2.5%	-	4.6%
LA JALISCIENSE TORTILLA FACTORY	2.5%	-	4.6%
LA MEXICANA MARKET	2.2%	-	4.1%
LA MICHOACANA TORTILLA FACTORY	2.0%	-	3.7%
LA RANCHERITA RECORD STORE	2.1%	-	3.9%
LOS GALANES RESTAURANT	9.5%	21.0%	-
LUPITA'S TAQUERIA	4.4%	-	7.9%
MEXICAN VILLAGE RESTAURANT	6.1%	13.4%	-
MEXICANTOWN BAKERY & GROCERY	2.2%	-	4.1%
MEXICANTOWN RESTAURANT	7.2%	15.9%	-
NUEVO LEON	4.0%	-	7.4%
RICKY'S LIQUOR STORE	0.5%	-	0.9%
TAQUERIA DON CHUY	3.1%	-	5.7%
TAQUERIA LA TAPATIA	3.1%	-	5.7%
VERNOR EXPRESS LIQUOR STORE	1.6%	-	3.0%
XOCHIMILCO RESTAURANT	8.3%	18.3%	-
XOCHJ'S GIFT STORE	2.0%	-	3.7%
EL RANCHO	0.5%	-	0.9%
Total	988	447	541
	100.0%	100.0%	100.0%

## DAY OF SURVEY

	All	Regional	Local
WEDNESDAY	3.5%	3.1%	3.9%
THURSDAY	17.6%	8.9%	24.7%
FRIDAY	33.6%	33.1%	33.9%
SATURDAY	31.6%	39.4%	25.3%
SUNDAY	13.7%	15.4%	12.2%
Total	989	447	542
	100.0%	100.0%	100.0%

## TIME OF SURVEY

	All	Regional	Local
7AM - 10AM	2.2%	0.4%	3.7%
10AM - 2PM	35.9%	31.8%	39.4%
2PM - 5PM	33.2%	23.9%	40.9%
5PM - 8PM	19.1%	27.3%	12.3%
8PM - 11PM	9.5%	16.6%	3.7%
Total	985	447	538
	100.0%	100.0%	100.0%

## RACE OF RESPONDENT

	All	Regional	Local
CAUCASIAN/WHITE	43.5%	62.8%	27.0%
AFRICAN-AMERICAN/BLACK	16.4%	17.0%	16.0%
HISPANIC	37.5%	16.5%	55.3%
ARABIC	1.3%	2.1%	0.6%
ASIAN	1.3%	1.6%	1.0%
OTHER	0.1%	0.0%	0.2%
Total	950	436	514
	100.0%	100.0%	100.0%

## AVERAGE PURCHASE AMOUNT AT INTERVIEW LOCATION

	All	Regional	Local
Average purchase amount	18.60	17.94	19.15

## AVERAGE PURCHASE AMOUNT AT MEXICANTOWN

	All	Regional	Local
Average purchase amount	33.12	28.01	37.38

## RESPONDENTS MAKING CIRCULAR TRIPS

	All	Regional	Local
OTHER COMBINATIONS	42.5%	42.8%	42.3%
HOME TO HOME	40.5%	32.5%	47.2%
WORK TO WORK	12.4%	18.6%	7.1%
OTHER TO OTHER	2.0%	2.0%	2.1%
FOX TOWN TO FOX TOWN	0.4%	0.7%	0.2%
GREEK TOWN TO GREEK TOWN	0.3%	0.7%	-
SCHOOL TO SCHOOL	0.3%	0.7%	-
EASTERN MARKET TO EASTERN MARKET	0.2%	-	0.4%
WINDSOR TO WINDSOR	0.2%	0.2%	0.2%
RENAISSANCE CENTER TO RENAISSANCE	0.2%	0.4%	-
JOE LOUIS ARENA TO JOE LOUIS ARENA	0.2%	0.4%	-
DOWNTOWN TO DOWNTOWN	0.2%	0.4%	-
FRIENDS HOUSE TO FRIENDS HOUSE	0.2%	-	0.4%
ROYAL OAK TO ROYAL OAK	0.2%	0.4%	-
WYANDOTTE TO WYANDOTTE	0.1%	-	0.2%
Total	978	446	532
	100.0%	100.0%	100.0%

## NUMBER OF VISITS PAST MONTH TO THIS STORE

	All	Regional	Local
4 TIMES A WEEK OR MORE OFTEN	8.7%	2.5%	13.8%
2 TO 3 TIMES A WEEK	8.4%	4.0%	12.0%
ONCE A WEEK	12.2%	7.6%	16.1%
2 TO 3 TIMES A MONTH	14.5%	15.2%	13.8%
ONCE A MONTH	14.2%	17.0%	11.8%
ONCE EVERY 2 TO 3 MONTHS	10.9%	12.5%	9.6%
ONCE EVERY 4 TO 5 MONTHS	4.2%	4.9%	3.7%
ONCE OR TWICE A YEAR	9.7%	12.5%	7.4%
LESS THAN ONCE A YEAR	4.2%	7.4%	1.7%
THIS IS MY FIRST VISIT	12.9%	16.3%	10.1%
Total	989	447	542
	100.0%	100.0%	100.0%

## NUMBER OF VISITS PAST MONTH TO MEXICANTOWN

	All	Regional	Local
4 TIMES A WEEK OR MORE OFTEN	21.0%	10.1%	30.1%
2 TO 3 TIMES A WEEK	12.4%	7.6%	16.4%
ONCE A WEEK	8.8%	9.2%	8.5%
2 TO 3 TIMES A MONTH	13.8%	15.4%	12.4%
ONCE A MONTH	12.8%	15.7%	10.5%
ONCE EVERY 2 TO 3 MONTHS	9.7%	12.5%	7.4%
ONCE EVERY 4 TO 5 MONTHS	3.6%	3.8%	3.5%
ONCE OR TWICE A YEAR	9.0%	14.3%	4.6%
LESS THAN ONCE A YEAR	2.5%	4.3%	1.1%
THIS IS MY FIRST VISIT	6.3%	7.2%	5.5%
Total	989	447	542
	100.0%	100.0%	100.0%

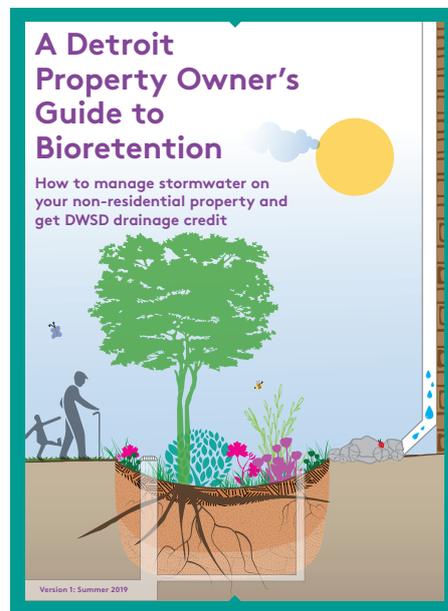
# ANNEX 2

## WORKSHOP IN DETROIT

According to the research in terms of the stormwater problem in Southwest Detroit, we were trying to improve the knowledge about the Detroit problem; therefore, we participated in two workshops and one tour.

One workshop was held on 27 September 2019 at Grand River Workplace by Detroit Future City during one day. Considering, How to manage stormwater on your non-residential property and get DWSD drainage credit. Director of Land use and Sustainability explained the basics of stormwater management and GSI, along with key information on DWSD's drainage charge and Green Credit Program. Moreover, described different types of GIS practices. It was covered what bioretention is, how to determine if it will work on your site, the process for designing and implementing a bioretention practice, how to apply for a drainage charge credit, and funding opportunities to help pay for GSI on your property.

As a result, It was collected a lot of information about the Drainage system of Detroit and how the GSI system works. In addition, we described in detail with images and diagrams that we collected during the workshop in chapter two of the thesis.



# ANNEX 3

## IMPLEMENTATION TOUR IN DETROIT

On 17 October 2019, one implementation tour (Working with lots implementation tour) held in 2990 W Grand Blvd, by Detroit Future City in one day. The tour guide showed to participates in various open spaces that some Detroiters have bought each vacant land, and they tried to improve the empty lots by planting some flowers, grass, and different kind of plants. The tour showed the people not only several organizations are trying to redevelop the city but also most of the Detroiters are keen on bringing back a beautiful community to the city of Detroit. In the following, it showed some images of these types of open spaces.



personal photo archive, 2019



personal photo archive, 2019



personal photo archive, 2019



personal photo archive, 2019

# ANNEX 4

## FELLOWSHIP IN DETROIT

Humanity in action Detroit fellowship was started on 18 October 2019 for one weeks in Detroit, more than 24 persons were participated in the workshop from all around the world, we participated in a group which Zachary and Associates was a leader of our group. In more detail, the concept of the workshop was based on which methodology can consider to improve the city, each group should be introduce a way either in open lands and empty building or street for regenerating of the City.

Our group tried to introduce a way to regenerate the “Brownfield” abandoned site into a Greenfield productive community. Component:

1. Building material must all be recycled on site
2. New materials brought on site must (to the extent possible) be recycled
3. Water is recycled from rooftop and reused on site
4. All power is provided through solar and geothermal
5. Vehicles are electric powered
6. Food is produced on site
7. Meadows are regenerative for insects and birds
8. Sewerage is managed on site
9. Materials are sold or used on site
10. Teaching facility to provide hands-on experience for area residents in construction and renewable energy trades
11. Live-work village
12. Bio-char production from alley trees and scrap wood
13. Compost created from food waste of the district
14. Recycling substation for the neighborhood
15. Electric charging station for other neighborhood vehicles

Materials on site include a wide variety of building materials from the architectural Salvage warehouse including vintage woods, glass, stone, and concrete blocks. Also buildings and materials are left behind from previous uses- that will be incorporated into the overall site design. Shipping containers left behind in Detroit will be used as the primary new structures. Topography will be altered to maximize site using materials on site including salvage asphalt, concrete, biochar and soils.

# Bellevue Block: Recycled Assets to Heal Abandoned Places

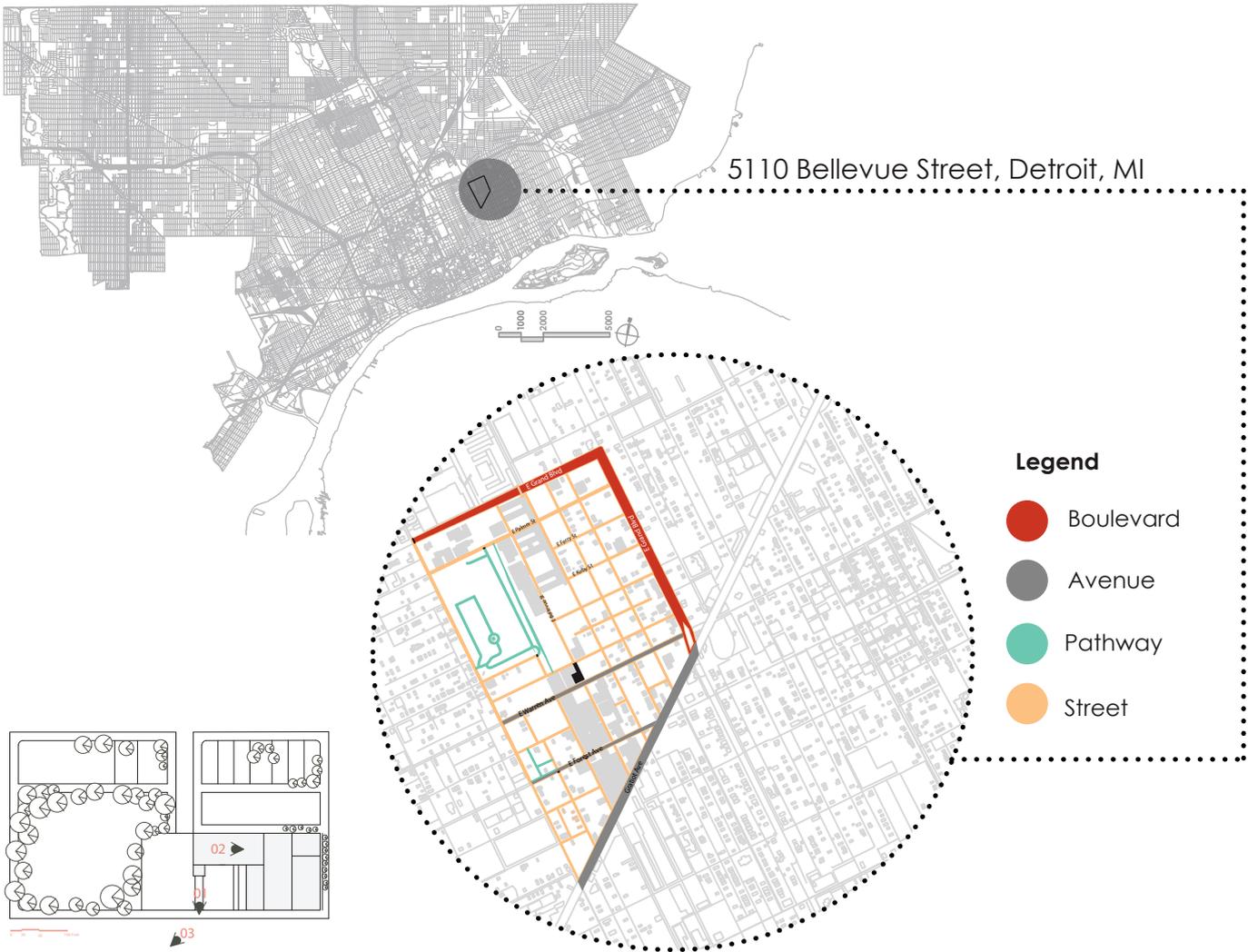
To assist in the creation of a development plan to take to the city of Detroit planning commission.



## History of Building

Preserving the history of the Bellevue Block includes restoring the sense of community that was lost to industry along the former Beltline rail line that transformed the district by 1920. This transition to heavy industry was also subsequently lost and only vacant land and a scattering of houses and warehouses remain today. To respect that history (which is commonly buried underground), the project seeks to rebuild following a triple bottom line of social, environmental and economic equity to return the area to a working neighborhood without displacing current residents and includes preserving equity for the local workforce, creating new green jobs and valuable open space that includes food gardens and recreation space utilizing materials from the area preventing losing more history to the landfill.

## Location



01



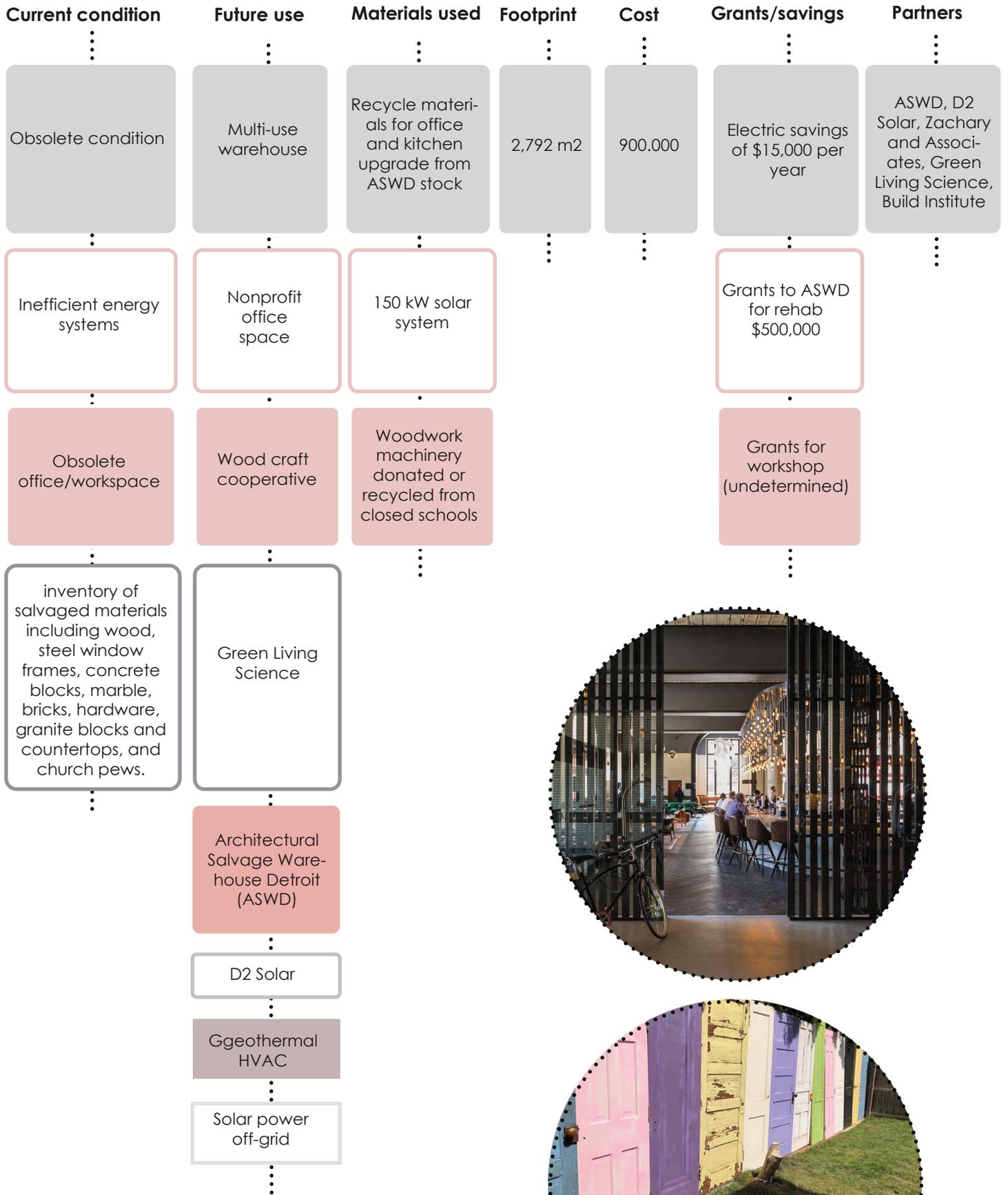
02



03



# Warehouse



# Exterior warehouse

Current condition

Future use

Materials used

Footprint

Cost

Grants/savings

Partners

cluttered with materials storage and overgrown weeds, small solar charging station

Redevelop into showroom demonstration patio and water reclamation center including water drainage ponds, foot paths, container gardens and geothermal field.

Build all demonstration projects from recycled materials from ASWD stock including, reclaimed stone, concrete blocks, wood scraps, bricks. Crush concrete from service ramps for water drainage ponds. Build planter boxes from all recycled materials.

900 m2

\$200,000

Water drainage charge savings of \$7,200 per year, HVAC savings of \$18,000 per year.

Detroit Future City (water drainage design); Keep Growing Detroit (Garden design); ASWD (materials, construction).



# Meadows

**Current condition**

cluttered with materials storage and overgrown weeds, small solar charging station

**Future use**

Redevelop into passive use Meadow and public education site to allow plant remediation of brownfield site and demonstration site for public education. Will include above ground seating and utilize back wall of warehouse building for stage and movie screen. Solar charging stations for electric use and battery storage for community use.

**Materials used**

Meadows set aside will utilize recycled brick and crushed concrete for walking paths and wildflower bed borders. Cap site for public use with recycled materials including sawdust and recycled brick and crushed concrete. Encourage pollinators with insect hotels made made recycled wood products from ASWD.

**Footprint**

0.29 m2

**Cost**

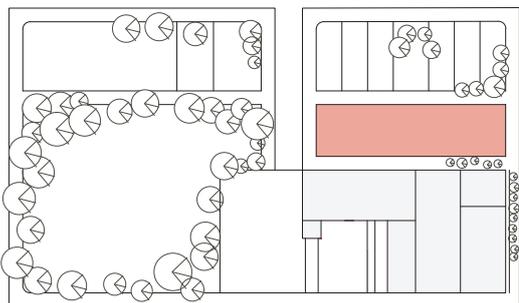
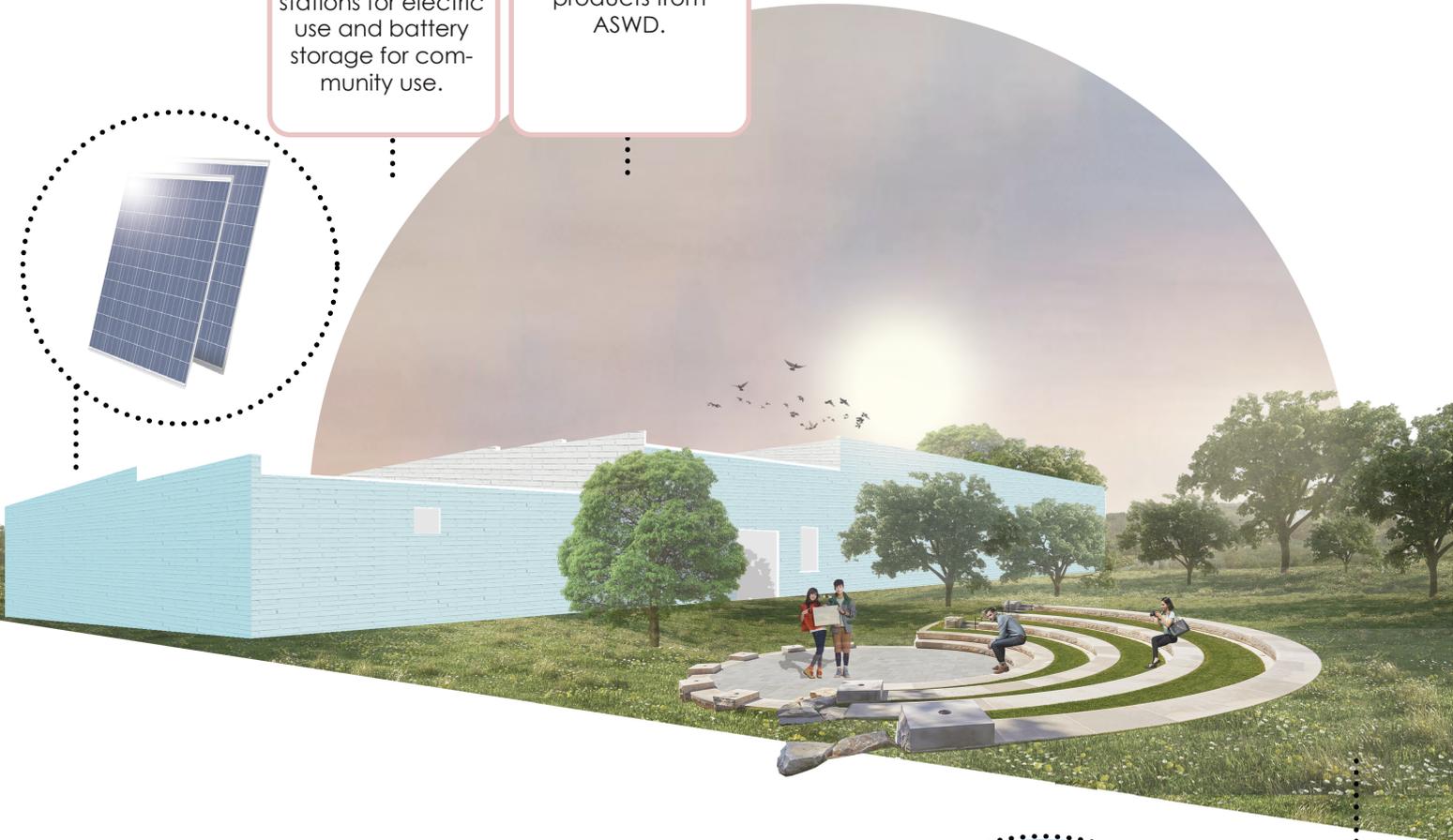
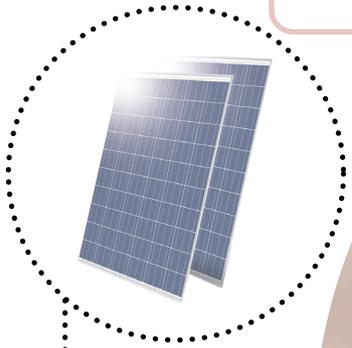
\$200,000

**Grants/savings**

Electricity production \$4,000 per year; Green Living Science (undetermined)

**Partners**

D2 Solar, ASWD, Audobon Society 1,000 acre project, Green Living Science outdoor education programming.



# Shipping container

Current condition

Future use

Materials used

Footprint

Cost

Grants/savings

Partners

Brownfield site used for storage, blighted with piles of sawdust, used machinery asphalt and wood piles,

Redeveloped as a shipping container display, sales and office village connected with walkways, water drainage pond and solar roofs. Geothermal field will service the units.

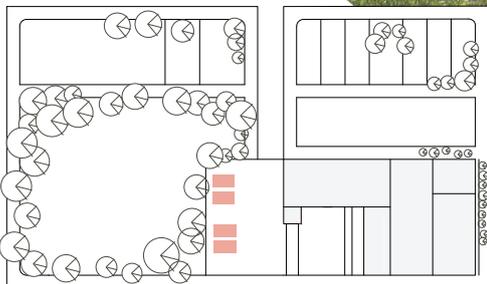
Recycled shipping containers (up to 10) from vast inventory of unreturned stock in Detroit. All build-out with windows, doors, interiors will utilize the ASWD warehouse stock or other local sources. Recycled asphalt and crushed concrete will cap ground, mounds of earth will form insulation at north end of shipping containers and will utilize asphalt and other material from site; ponds will be warmed with geothermal for year-round water drainage and fish stock.

800 m<sup>2</sup>

750,000

ASWD grants (undetermined); electric savings \$12,000 per year; water drainage savings \$4,800;

ASWD, Green Living Science, Detroit Future City



# Parking lots/charging stations

Current condition	Future use	Materials used	Footprint	Cost	Grants/savings	Partners
Brownfield site former factory parking lot	Redeveloped for new parking lot including rain swales, impervious water drainage system and solar-powered charging stations for up to 4 electric vehicles.	Recycled asphalt and crushed concrete from on-site materials. Charging stations will incorporate recycled steel window frames and assorted iron and steel materials for sculptural apertures.	400 m2	100,000	\$35,000 income from charging stations	D2 Solar, Detroit Future City, ASWD



# New Outdoor Enterprise

Current condition	Future use	Materials used	Footprint	Cost	Grants/savings	Partners
Brownfield site former factory parking lot	Redeveloped with new enterprise business opportunities from the recycled/upcycle partners in Detroit. Concepts for this area include a portable sawmill to upcycle harvested fallen trees, a biochar burning facility to upcycle unusable recycled wood into a valuable garden filtering product, compost facility for area restaurants to compost food product, a sculpture garden to upcycle materials to new use.	Recycled asphalt and crushed concrete from on-site materials to cap brownfield site.	4330 m2	100,000	Grants for small business development - New employment for up to 20 Detroit residents, job training year-round.	Build Institute



# Orchards/community gardens/bee keeping

Current condition	Future use	Materials used	Footprint	Cost	Grants/savings	Partners
Brownfield site former factory parking lot, residential before 1970.	Redeveloped as passive greenspace for community gardens and orchards to create a visual and noise barrier to neighboring houses.	As former residential site, the ground contamination might include subsurface rubble in addition to asphalt parking lot which will be removed and recycled to cap other locations on site. Compost, biochar and uncontaminated soil removed to construct water drainage ponds will be used for new garden beds. Recycled wood, bricks and crushed caged concrete will form garden beds, potting sheds, water drainage areas and walkways.	1400 m2	25,000	Food production provides a savings to area residents of up to \$2,000 per year.	Keep Growing Detroit



## Passive land

Current condition	Future use	Materials used	Footprint	Cost	Grants/savings	Partners
Former public infrastructure	Redevelop vacated alley and streets into passive land for neighborhood walkways and public uses.	Crushed concrete, bricks and stone will form a walkway system throughout the block with information platforms, shade, charging stations and pleasant seating areas.	1400m2	50,000	City is not required to maintain abandoned road and infrastructure. City of Detroit Block grant	City of Detroit Planning Department, Humanity in Action Fellowship program

## Existing House (3)

Current condition	Future use	Materials used	Footprint	Cost	Grants/savings	Partners
part of a neighborhood	Assist neighbors with solar power and participation in community gardens, job training and other community benefits of the new land use.	as needed	1233 m2	30,000	Solar savings to residents up to \$5,000 per year	D2Solar

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