2022

The HIVE

SUSTAINABLE LGBTQIA+ COMMUNITY CENTER

MARK DEGNER | ID 4940

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DEDICATION

The research and design of this thesis could not have been done without the strength of my mother whose support of me for the past twenty-two years has instilled a strength in me as well, without her, I would have never been able to be who I am today.

I'd also like to dedicate this thesis to my partner Junyu Chen, whom without, I would have never been able to pursue my passion for interior design or be the person I am today. All the late nights you stayed awake with me in support of completing the research and design of this thesis, are not unnoticed.

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I would like to acknowledge that this thesis could not have been what it is without the help of all the professors throughout my time in GSU's interior design program and what I learned.

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Thank you all so much.

PROJECT STATEMENT

A Summary of Project Purpose, Hypothesis, and Constraints

Mark Degner

ID 4940 Portfolio I

September 23, 2021

Design Problem

The answers to what keep an LGBTQIA+ individual awake at night can be very serious and heterogeneous. In terms of interior design, it could be having ill-equipped places that discriminate against the LGBTQIA+ community or fail to provide appropriate services. Previous research showed an LGBTQIA+ individual has a significantly higher risk of becoming homeless, losing their job, and suffering from mental health issues. According to Vanguard (2018), the health services program manager at the Los Angeles LGBT Center (LA LGBTC) explained that "LGBT people experience intimate partner violence, sexual violence, and stalking at higher rates, and, yet few programs provide full services." The LA LGBTC has made its goal to provide a multitude of services to address the problems within the LGBTQIA+ community. Although there are many facilities where an LGBTQIA+ individual can go for help in some specific way, there is not a place in the city that provides help to an LGBTQIA+ individual in whatever way one desires. Specifically, in Atlanta, there are no community centers for the LGBTQIA+ community, and even if anything similar exists, they are not at the level needed to enforce positive changes. According to Lin and Israel (2012), the concept of "psychology sense of community (PSOC)" is the feeling of belonging and being able to depend on a larger community.

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1. PSOC-LGBT Global	–										
2. Influencing	.705**	–									
3. Influenced by Others	.582**	.461**	–								
4. Shared Emotion	.691**	.296**	.272**	–							
5. Needs Fulfillment	.807**	.503**	.312**	.504**	–						
6. Membership	.838**	.504**	.305**	.529**	.635**	–					
7. Existence of Community	.648**	.261**	.180**	.393**	.491**	.495**	–				
8. Donating	.142*	.145*	−.008	.025	.124*	.197**	.092	–			
9. Volunteering	.198**	.164**	.071	−.023	.234**	.208**	.170**	.388**	–		
10. Attending	.166**	.146*	.046	−.032	.195**	.254**	.042	.417**	.567**	–	
11. LGBT Support	.585**	.367**	.176*	.392**	.546**	.550**	.450**	.130*	.161**	.113	–
12. LGBT Interaction	.505**	.378**	.101	.341**	.435**	.460**	.434**	.162**	.126*	.095	.676**

Note. PSOC-LGBT = Psychological Sense of LGBT Community Scale; LGBT = lesbian, gay, bisexual, and transgender.
**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Table 1. Correlations between Ideas involving community from PSOC. Journal of Community Psychology (Table is read from same row number to column number. coordinating each topic to associated values)

The PSOC for the LGBTQIA+ was tested through a series of question-and-answer formats to examine how the LGBTQIA+ population across a certain area feels regarding community

factors. The table above shows that there is a strong correlation between LGBT interaction, LGBT support, and the existence of community (see Table 1). This PSOC study was conducted across California, which is one of the most diverse LGBTQIA+ supporting states; for Georgia, where the support of the LGBTQIA+ population is lessened due to political and religious heavy ideals, the PSOC for the LGBTQIA+ is significantly essential. Based on the knowledge and evidence of the issues for the LGBTQIA+ community, it is agreed that an LGBTQIA+ individual's connection to the community is driven by what is available to oneself and supplying a community center in the heart of the city would be an important first step.

Influence & Reflection

In conclusion, it is obvious that the LGBTQIA+ community faces issues at a higher rate, and a community center is urged as solutions. To solve these issues, the site in this thesis will incorporate some of the same tactics as the LA LGBTC. However, it is shown that the LA LGBTC, has nine different locations across the city with each serving different functions. While being able to provide services within the network of centers is great, the failure to provide all services in one location increase the cost and restrict the users' access to multiple care at the same time. Thus, the goal of this thesis is to improve the LGBTQIA+ community center in Georgia and make it more convenient for the users by merging all services in one site.

Hypothesis

The scope of this design is to create a community center that provides services to assist with several issues such as job loss, homelessness, lack of community engagement, and poor health, in hope of making each individual and the community thrive. For example, office spaces will be provided for job services, short-term housing for homelessness, public shared spaces for community engagement, and a variety of physical/ mental health spaces. By designing in a

LEED sustainable bracket and using an existing site within Atlanta, the most heavily populated LGBTQIA+ part of Georgia, it will be environmentally friendly, convenient, and beneficial to the community. The expected results are easier access to community services and improved health of the community, with a positive impact on the planet.

Expected Constraints & Boundaries

Constraints or boundaries within this project are expected regarding the sustainable systems, accessibility of the stairways, and codes involving all the different functional spaces. The design will include water recycling, solar power, and other novel systems which will require a minimum number of square footages to be placed. It is expected there will be some difficulties in keeping them in an area accessible, while away from the public eye for aesthetic purposes.

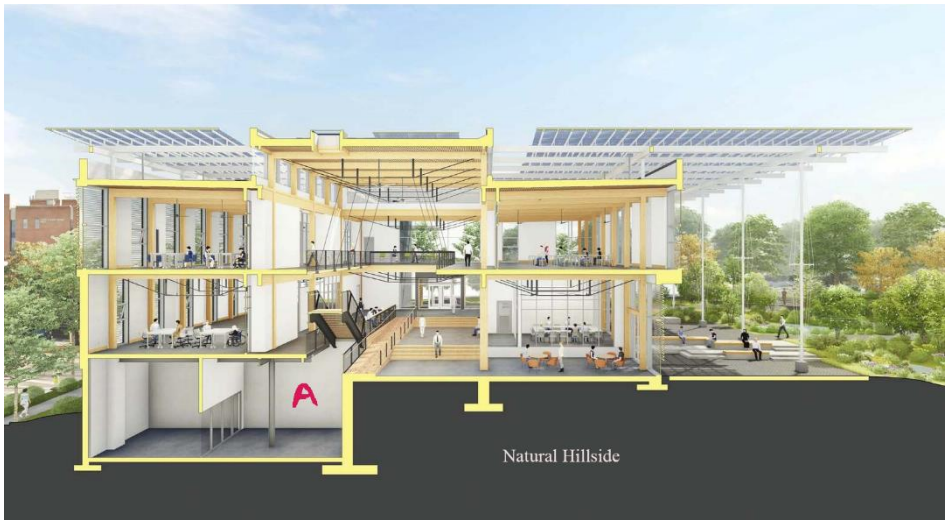


Figure 1. The Kendeda Building for Innovative Sustainable Design (Section). Adapted from Archdaily

This type of constraint is shown with the Kendeda Building by Georgia Tech; the structure of the building hides the sustainable equipment using an excavated space made into the hillside similarly to a basement hidden with stairwells (see A in Figure 1). Furthermore, the sustainable equipment layout could be difficult since the thesis site will require a lot of different systems for water recycling, energy conversion, and others to be monitored together like the Kendeda Building (see Figure 2).

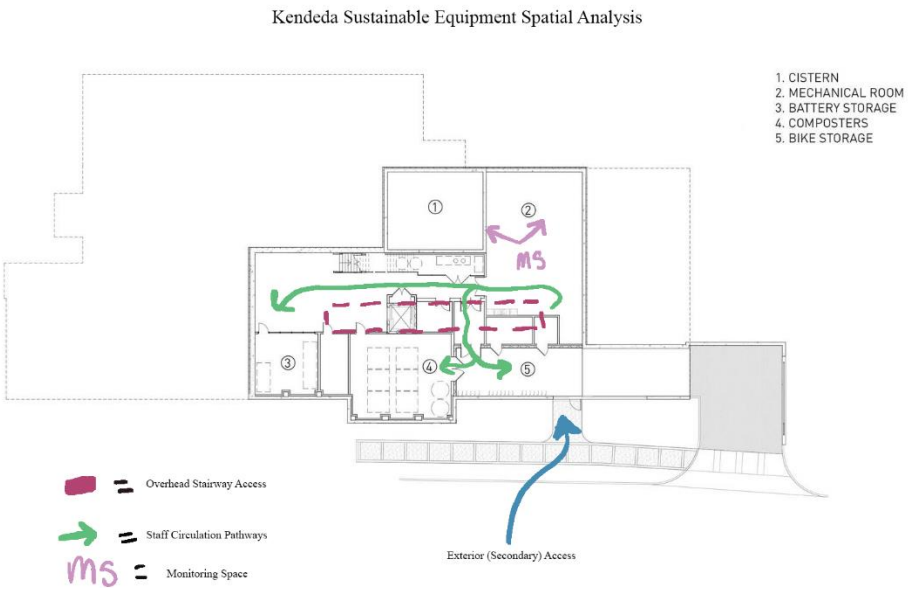


Figure 9.The Kendeda Building for Innovative Sustainable Design (Basement Floorplan). Adapted from Archdaily

Moreover, the existing stairways are steep and vertically span across four floors which could be problematic for navigating the center if lots of users are going from one place to another frequently. Furthermore, the design will involve many spaces like café, fresh market, gym, studios, offices, and residential spaces, which incorporate their share of regulations. The challenge to make sure each space not only passes building codes but also works well together is a definite obstacle.

HISTORY OF COMMUNITY CENTERS

Exploring the History of Community Centers and How it Evolved

Mark Degner

ID 4940 Portfolio I

September 16, 2021

Design Evolution

The history of community centers spans a multitude of subjects, such as multiservice centers, health/ sport centers, recreation/ leisure centers, youth or elderly centers, media centers, and more. The sense of community is a broad spectrum involving multiple types of people across the globe. In this paper, it will discuss the design evolution of community centers, the reasons for the evolution, its historical purpose, and how it relates to my design solutions.

From The Campfire to the Greeks

Community centers first began in the most basic form as a campfire. The campfire was a central part of a community where they were needed for survival. The residents of the community would gather around the fire for warmth, prayer, and other activities. These basic functions of a campfire led to some of the community centers that exist today. The community centers become more structured and refined many years later, as the ancient population began to construct their own spaces. This paper first investigates the Greeks and Romans designs of some of their community spaces, such as the Greek temple and Roman bath.

According to the National Geographic Society (2019), Greek city-states or polis were the community structures of ancient Greece, and each city-state was organized with an urban center and surrounding countryside (see figure 1). The cities were constructed in a manner of having public spaces like temples towards the center. The Greek temples, which mainly functioned as a space for religious activities and sacrificial events, were

Figure 17. National Geographic Society. Adapted from NGS https://www.nationalgeographic.org/encyclopedia/greek-city-states/

some of the first organized community centers, a typical upgrade from the campfire. For example, the Parthenon temple, an acropolis in Athens constructed to honor the goddess Athena, was built on top of a hill where it was convenient for everyone around. These temples, like the Parthenon temple, usually included an adyton which provided space for religious practices. Hollinshead's study (1999), mentioned that "Adyton is consistently used for the exact place where oracular inspiration and prophecy occur, or from which a deity communicates" (p. 5). Located at the center of the city, the Parthenon temple even helped initiate more community involvement surrounding those temples, and later became the epicenter for trade, commerce, culture, and political activity (NGS, 2019).

The Romans

Moreover, the same ideas based on Greek temples were adapted to make the Roman baths. The Roman bath was an even more community-driven space, providing space for exercise activities like running, weightlifting, wrestling, and swimming, as well as bathing and spa afterwards (Sanders, 1999). In this section, the paper will discuss the Panayia Field located in Corinth (see figure 2). The city of Corinth was at the center of trade and connected mainland Greece with the peninsula. The Panayia Field was a famous site that was excavated in 1994 where a villa complex southeast of the Roman forum that included a significantly important Roman bath was uncovered. By the end of the excavation in 1996, the archaeology team discovered even more of the structure within consisting of a frigidarium, tepidarium, caldarium, and a main room with four small chambers attached. According to Sander's research (1999), the frigidarium was a long rectangular room after the entrance hall (see

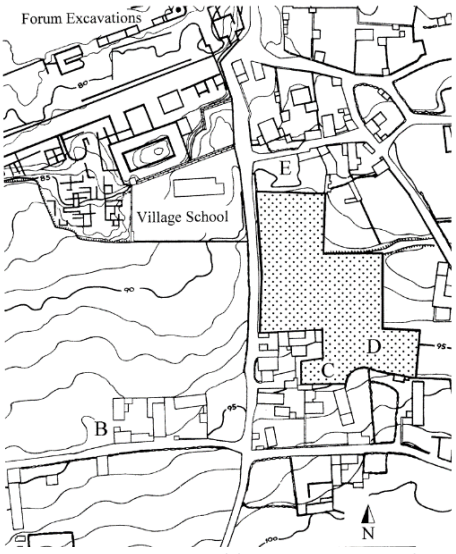


Figure 18. Panayia Field Excavation Site Plan. Adapted from Hesperia

E on figure 3). It was a large cold pool leading into a warm water bath called the tepidarium (see F on Figure 3). The tepidarium was heated through hypocausts, which sent hot air under the floor for warming water. The tepidarium is followed by the caldarium which was the hottest space. It would be what exists in the modern day called a spa for the users (see T on Figure 3). The end of the bath in Panayia Fields is the main room housing the hypocausts in a cardinal compass pattern which heated the water in the prior rooms (see C on figure 3).

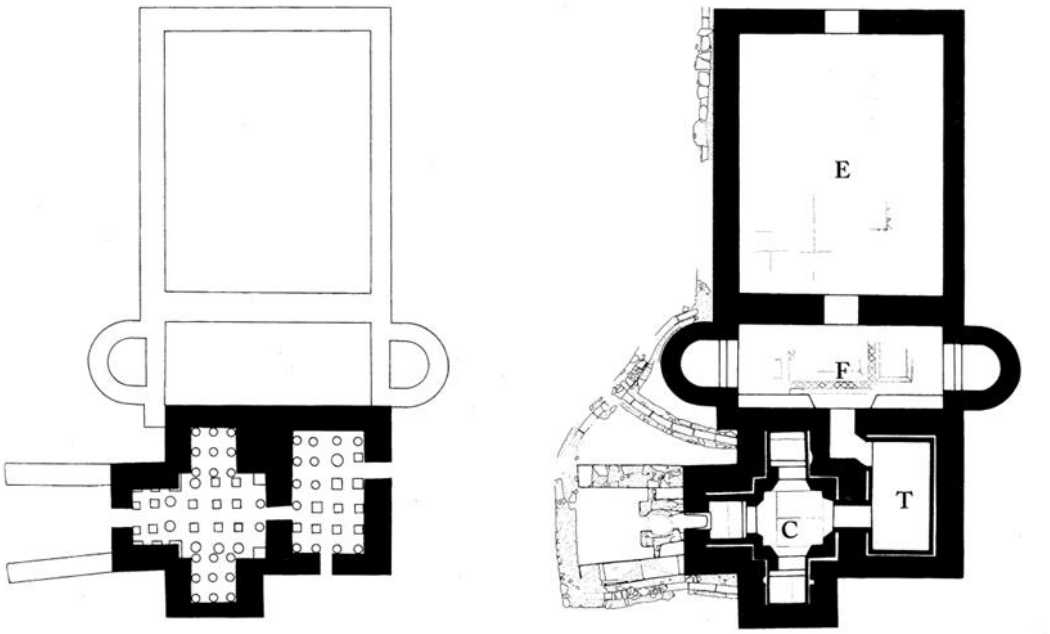


Figure 19. A Late Roman Bath at Corinth: Excavations in the Panayia Field, 1995-1996, Adapted from Hesperia

From the entry to the exit, the roman bath was designed based on a very structural system. The flow from beginning to end is pushed smoothly which not only was an intelligent design but made a lot of sense in the order in which someone would want to take a comforting bath. Roman bath design especially with the Panayia Fields was a function-oriented design focusing on their community use. Unlike the specific Roman bath described prior, other baths served more purposes like the Parthenon. According to Mowdy (2016), public bathhouses were spaces for business. Public bathhouses then rapidly turned into a meeting space for Romans conducting business transactions, socialization, and gossip. Moreover, bathhouses across the cities had

libraries for users to visit, as well as food and drink vendors with other merchants to entertain Roman guests. Roman people spent their whole day at the baths engaging in shopping, exercising, conducting business, and bathing of course was not uncommon at all (p. 6). Roman baths were one of the first community centers to allow equal opportunity no matter what social status people have. In Rome, women and men could equally use the sites and socialize with their fellow community members. According to Mowdy (2016), in small Roman towns with no wayfinding along Roman streets, the baths became a key political and social epicenter. Citizens arranged meetings that took place during the day at the baths, and many client relationships were built because of it (p. 6). Thus, no matter how the condition of a city area was, people still had a place to go for community interaction and benefit in some way. This is a founding idea that has been furthered today: advocation for equal rights and fairer opportunities in a certain area. To conclude this portion of the history explanation, Roman's concept of community and activity combined with the functional design was certainly a positive step in the design evolution.

Mary Parker Follett

Much later in history, hundreds of years, in fact, a big development in the community center design evolution began with one woman. Mary Parker Follett was an integral individual in the community center movement due to her work towards diversity, engagement, and support for communities in need. In accordance with Brown (2021), Mary Follett was a "feminist-pragmatist" philosopher and social settlement worker who was a founding figure in the community centers movement. She helped resolve labor disputes by combining political, social, and management in one site (p. 1). Follett was a founder of the community centers movement and helped in creating many centers in Boston. Follett focused on having centers that enforced civic responsibility and engagement. Follett served as the vice president of the National Community Center Association in 1917, giving her direct influence in how design can contribute

to equality and engagement. Furthermore, Brown (2016) explains that this level of social engagement is seen in Follett's practice of engaging with local communities through community centers using her work on labor issues and workplace organization. This level of focus on the community was not as focused as it was with Mary Parker Follett (p. 3). Mary Parker Follett influenced the people in power across Boston to create these places for a community to provide educational and social solutions. The East Boston Social Center, a community center Follett helped create in 1911, has now transformed into multiple centers as of present day. Mary Parker Follett put a heavy emphasis on societal issues being taken care of in an official center unlike the past spaces such as a Roman bath, temple, etc. Follett devoted her life to social and community work since community centers are more than a physical design and they require a change in societal design as well. Community centers have come a long way thanks to the historic evolution provided by many like Follett.

What has remained the same for community centers?

How the community centers function nowadays is not too different from how a campfire, the earliest community center, brought a community together. People still congregate at the multiple types of centers to make friends, get help, and do many other activities. The original purpose for a community center, which is to bring people together, has not changed at all. The only things that have changed since then are what brings people together now: social work, housing, employment-related, etc. In other aspects, what also remained the same are being near the most populated areas of the community, having a focus on multiple functions, providing a place to communicate, and making sure a positive impact is made. In the same way the Greeks put the acropolis temples on central high elevations in city-states, there are centers located within the most populated city areas across the world. Further evidence of remaining the same since history

will be provided in the case study portion due to evidence on present-day centers are not needed here yet.

Reasons Behind the Evolution

The design of community centers has evolved rapidly due to several reasons: survival, religious purpose, political focus, wellness, growing population in the community and issues come up from the community. Over time, communities have grown larger and more complex, therefore, a change in how communities can come together was unavoidable. In history, Greek temples were for religious purposes that brought a community together, while a Roman bath brought people together for cleanliness and wellness. Much later a community space would focus on diversity and social work thanks to the work of Mary Parker Follett (see page 6). The reasons behind the evolution coordinate with what the community needs and are aware of. Whether it is inspired by politics, wellness, education, social work, or another reason, community centers always have and always will serve the change in the community.

Design Solution

With concerning the design solution, the historic evolution described above will inform spatial arrangements, function diversity, and the social meaning of the space.

Spatial Arrangement

The spatial arrangement of the roman baths will take a primary focus for the design solution. From entering the space in roman baths, it is a system that works correctly functions like an order of operations. The site for the design solution has 6 floors and will include an added rooftop level. For the design solution, starting from the lowest floor in the site will house the sustainable systems having to do with water management and electricity. The water management and electrical recycling systems will require a great amount of space for storage and to be tucked

away from the users. Moving up a floor will house the necessary second systems needed for sustainability and more storage to keep the site as most sustainable as possible. Continuing, the ground floor will include the lobby, reception, and some community spaces. The ground floor is the area where the community can find where they want to go, use some of the community spaces like a gym, spa, or other potential spaces with ease of access. The second floor will include some added community spaces and office space for the more refined services like therapy, job help, displacement help, and more. The top two floors will be used for the short-term housing planned to support LGBTQIA+ community members in need. Having the housing on the top two floors enables more privacy and keeping the community members that are not in need of housing have ease of access to regular community services without disruption. The added rooftop level will incorporate a green space equipped with a greenhouse and seating area. The spatial organization of the space is essential for this design taking what is learned from the Roman baths to a modern-day site.

Function Diversity

The function diversity that came from history in the form of roman baths providing space for wellness activities like exercise and bathing furthered the idea the Greeks created of using a space for one purpose. The Greek temples were for religious community use; however, they provided a place for political discussions, trade, commerce, and culture (NGS, 2019). The temples were not initially intended for those other uses, but the Roman baths intended for a diversity of function, which is the same idea the design solution will use. The library will be converted into a community center equipped with a diversity of functions for an all-in-one type of center for the LGBTQIA+ community. The new design will incorporate a gym, dance/ yoga studios, art spaces, greenhouse space, mental health services, job-finding service, housing, a café, a fresh market, and other similar spaces to give ample resources for the users in one site.

An LGBTQIA+ community center will now solve the problem of not having enough resources in one place by taking what was learned in the Roman design of bathhouses.

Social Meaning

In terms of the social meaning of the space and the design solution, the new design will bring people of all types together within the LGBTQIA+ community that requires help in some way. A place to focus on the social work required for a healthy life is needed. The community needs a place to go where they feel comfortable and welcomed. Learning the history of Mary Parker Follett's work in forming community centers for the youth population in Boston produced this need today for a community center that serves the less fortunate and in need based on societal standards. The design solution calls for social diversity and implementing a change for good that will not only better the mind, but also the community.

Conclusion

Throughout history, community centers have served the purpose to unite people together. Different forms of community centers have emerged due to different needs of the community including religious, political, wellness, and survival, etc. Similarly, today, there is a need to create a community center that provides those same sources of support. This thesis will integrate those same needs and focus on spatial arrangement, functional diversity, and social meaning for the design of a community center that supports the LGBTQIA+ community in need.

CURRENT PRACTICES

Evidence & Relevant Practices: Sustainability & LGBTQIA+ Centric Design

Mark Degner

ID 4940 Portfolio I

October 21, 2021

Introduction

In relation to this thesis's objectives to design a sustainable building and aid in the problems that the LGBTQIA+ community faces, the current practices section will explore both through current evidence which this thesis plans to help with.

Current Practices for LGBTQIA+ Centric Design

Looking at the LGBTQIA+ centers across the United States, on can notice that there are not a lot of current practices by community centers with an LGBTQIA+ centered design. According to ArcGIS Earth (2021), the number of LGBTQ type centers across the U.S. is 196 total. However, centers like the San Francisco LGBT Center (SFLGBTC) "provides a vast array of programs and services for the entire LGBT community", but this center, like countless other LGBTQ+ centers must work alongside a network of other non-LGBTQIA+ focused organizations to serve the community (SF Center Homepage, 2021). The SFLGBTC programs include services in arts/ culture, community, employment, housing/ financial, information, small Business, volunteer, and youth (Archdaily, 2021).

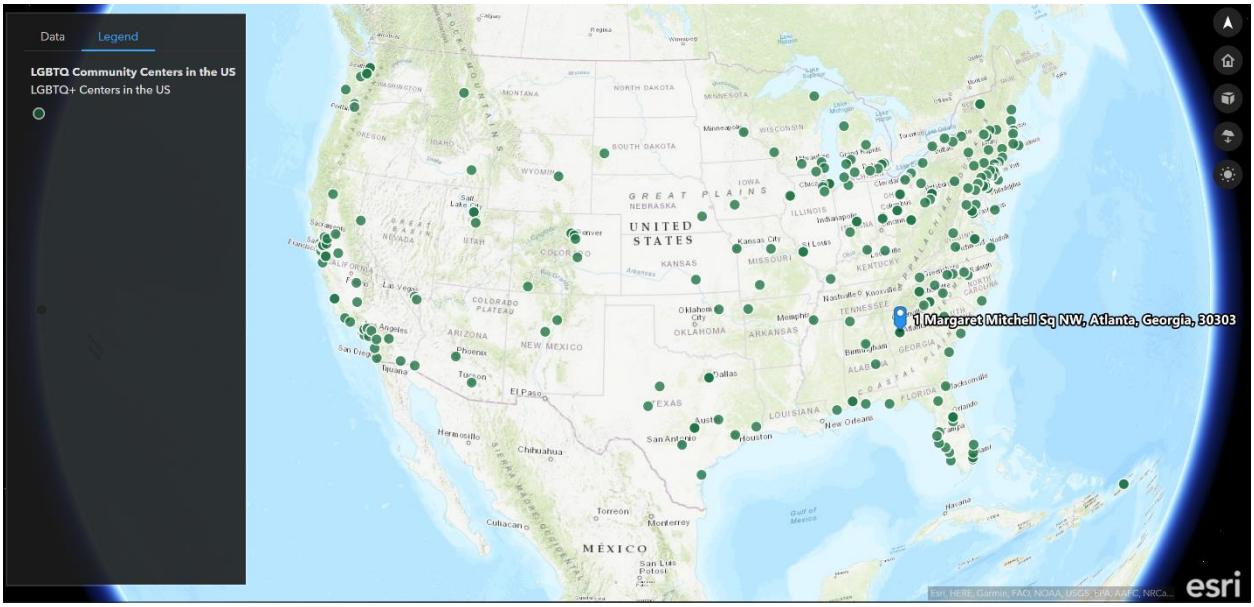


Figure 20. ArcGIS Earth Map: LGBTQ Centers across the U.S. Adapted from ArcGIS Earth &

However, the employment, housing, and financial programs use third party networks. As well as the housing program focuses on the senior LGBTQIA+ population and is not located within the center, showing that the all-in-one housing, employment, and financial on site is not a current practice of LGBTQIA+ community centers.

Furthermore, most centers across the U.S. do not provide services to help someone facing hate crimes, abuse, cyberbullying, or other violence types (Marcovitz, 2020). The lack of current practice or obsolete practice of those services proves there is still room to grow; the multiple types of violence faced by the LGBTQIA+ population is a problem that this thesis wishes to alleviate.

Current Practices of Sustainable Building Design

The importance of sustainable or green building design is the focus on increasing the efficiency of buildings and their sites' use of energy, water, and materials (Greenbuilt Alliance, 2021). As well as reducing the impacts on human health and the environment for the entire lifecycle of the building (Greenbuilt Alliance, 2021). According to the Greenbuilt Alliance (2021), a home building company specializing in sustainable design for the future specifies that the "growth and development" of our community has a large impact on the natural environment. The buildings used everyday consume natural resources nonstop and with green design, this can be reversed in a positive direction. According to the U.S. Environmental Protection Agency (USEPA, 2021), in the United States, buildings account for 39% of total energy use, 68% of total electricity consumption, 30% landfill waste, 38% CO_2 emissions, and 12% of total water consumption. Moreover, the USEPA specifies that the environmental benefits include enhancing/ protecting biodiversity and ecosystems, improving air quality, improving water quality, reducing waste streams, conserving natural resources, and restoring natural resources (USEPA, 2021).

As well as economic benefits which include “reducing operating costs, improving occupant productivity, enhancing asset value/ profits, and optimizing life-cycle economic performance” (USEPA, 2021). Lastly, statistics created under the research of the USEPA prove the social benefits of sustainable building design. The social benefits are enhancing occupant health, enhancing occupant comfort, improving indoor air quality, minimizing strain on local utility infrastructure, and improving overall quality of life. The evidence on sustainable design as a positive enforcement to the world and community is vast, including more specifics expanded through the *Bullitt Center Case Study* section of this thesis. The guidelines of sustainable building design range from LEED, WELL, CBE, and more (Bae, Martin, and Asojo, 2021); for reference, this thesis will be using LEED guidelines.

Conclusion

The current practices of LGBTQIA+ and sustainable centric design are sufficient to prove the need for them in the programing of the thesis project. Looking at what is currently in practice and what is lacking lays the foundation for the proposed LGBTQIA+ community center design solution.

CASE STUDY ANALYSES

A Series of Community Center and Sustainable Site Analyses

Mark Degner

ID 4940 Portfolio I

October 28, 2021

Case Study One: Fisksatra Folkets Hus Community Center

Project History

The Fisksatra Folkets Hus Community Center located in Fisksatra, Sweden is the site for the first case study. The community center penned “The People’s House” by its architects Ivan Grelz, John Pantzar, and Marcus Brogren is in the heart of the city (Pintos). The history of this project starts with an inspiration from nomadic lifestyles and copper tents from Hagaparken, Sweden dated during 1787-1790 (Pintos). The designers created this center for a non-profit group called Fisksatra Folkets Hus (FFH) as an addition to their resources. The history of this project was not well documented; thus, the depth of history introduction in this report is limited to the above.

Project Objectives & Site Conditions

The objectives for this project include promoting social and environmental sustainability, as well as keeping in touch with the historic inspiration of tents. Regarding the social sustainability, the designers aimed to bring the community together unlike the previous FFH community center that did not reach a diverse community. According to the firm Sandellsandberg, the former building was located far from the city center. Therefore, it was important that the new site takes “center stage where it can be both seen and heard” (2021). The new building is in at the “heart of the community” near a commuter station (Archdaily, 2021). As a result, the new building attracts people of all ages and backgrounds with its location and appearance.

Figure 21. Fisksatra Folkets Hun Community Center. Exterior View. Adapted from

Basing their design on historic copper tents from the late 1700s, a green color was painted on the steel plated roof. This green color “creates a vibrant contrast” to the housing complexes surrounding it, which made more interesting for the community to use (Sandellsandberg 2021). The architects were interested in creating a design that would be popular among the children who live in the area as well. The site is located not only near housing, but also an elementary school. The use of a contrasting color and tent-like structure achieves the look that in their mind would interest the younger population into wanting to use the space in whatever way available like after the school day.

Environmental sustainability is another objective the designers wanted to keep at the forefront. The materials used consists of concrete flooring, pine wood walls, and GreenCoat steel painted roof/ walls. These three materials, were initially chosen due to plans for this structure to be provisional, meaning they can be removed and reused which “reduces the environmental footprint significantly” (SSAB 2021). Specifically, the GreenCoat painted steel exterior roof and walls are made of bio-based oil over fossil fuels, which allows the roof and walls to be 100% recyclable since the paint is integrated with the steel (see Figure 2).

Figure 22. Fisksatra Folkets Hun Community Center. Exterior View GreenCoat Detail. Adapted from

The idea of sustainable paint is the biggest element of environmental sustainability the designers wanted to incorporate and in that alone created a more sustainable site, as well as public interest. The tentlike structure features two peak-like circus tents and a series of triangular shapes across the perimeter. In keeping with their first inspiration of Hagaparken nomadic tents, it not only interests the adolescent population, but also remaining true to the history of the Swedish site.

Project Timeline & Cost

The timeline of the project was planned to be as quick as possible not only for sustainability, but also because it was meant as a temporary building. The architects wanted to have the most advantageous impact, so the more time for community use, the better. However, it has become a staple of the community disregarding its original plan to be temporary. The community center design process began in 2019 and was completed in one year in May of 2020. Regarding cost, the economics of the project are not publicly disclosed for reference in this analysis.

Title	Quanity	Function	SF	Title	Subtotal SF
Concept/ Dance Space	1	Shared	1200 SF	Shared	4,300 SF
The People's Room	1	Shared	1250 SF	Maintenance	734 SF
Storage 1	1	Maintenance	264 SF	Private	886 SF
Café/ Atrium	1	Shared	900 SF		
Kitchen	1	Shared	150 SF		Grand SF: 5,920 SF
Meeting Room	1	Shared	200 SF		
Main Entrance	1	Shared	250 SF		
Storage 2	1	Maintenance	200 SF	**Circulation**	**Percentage**
Maker Space	1	Shared	300 SF	Stairs	15%
Studio	1	Shared	50 SF	Passages	20%
Cleaning Room	1	Maintenance	50 SF		Total: 35%
Water Closet (WC)	2	Private	30 SF		
Dressing Room	2	Private	50 SF		
RWC	1	Private	36 SF		
Maintenance Room	1	Maintenance	220 SF		
Study Space	1	Private	220 SF		
Work Space 1	1	Private	250 SF		
Work Space 2	1	Private	220 SF		

Table 2. Square Footage and Circulation Percentages Table. Reference to Figure 3 & 4

Project Analysis

Organization of the Program, Space Utilization, & Circulation

The program organization is organized in a way to take advantage of as much space as possible. On the site, the building is situated in a rectangular format with four entry/ exit doors along the South facing wall. After entering the ground floor either directly into the concert space/ dance room, the café, the maintenance room, or the people's room, there are circulation paths through passages the user takes. The layout of the program allows for privacy amongst the shared spaces due to those passages (see Figure 3).

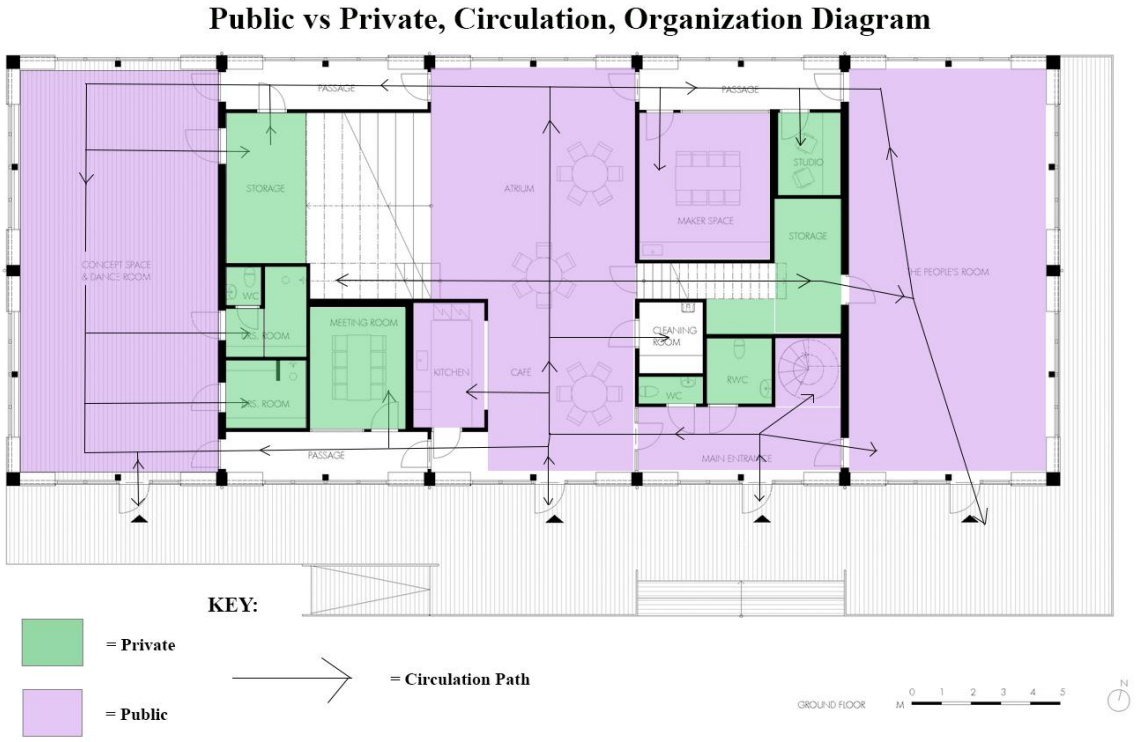


Figure 23. Fisksatra Folkets Hus Community Center, Ground Floor Plan. Adapted from

As the ground floor keeps most of the public shared spaces closest to the user, the first floor above adds more privacy for the users. The first level is situated with two staircase access points for either side. The first level includes the study and workspaces, and another large maintenance room (see Figure 4). Utilization of the upper floor provides privacy as well as makes the most of the odd tent like ceiling, creating something out of what could have been unusable space.

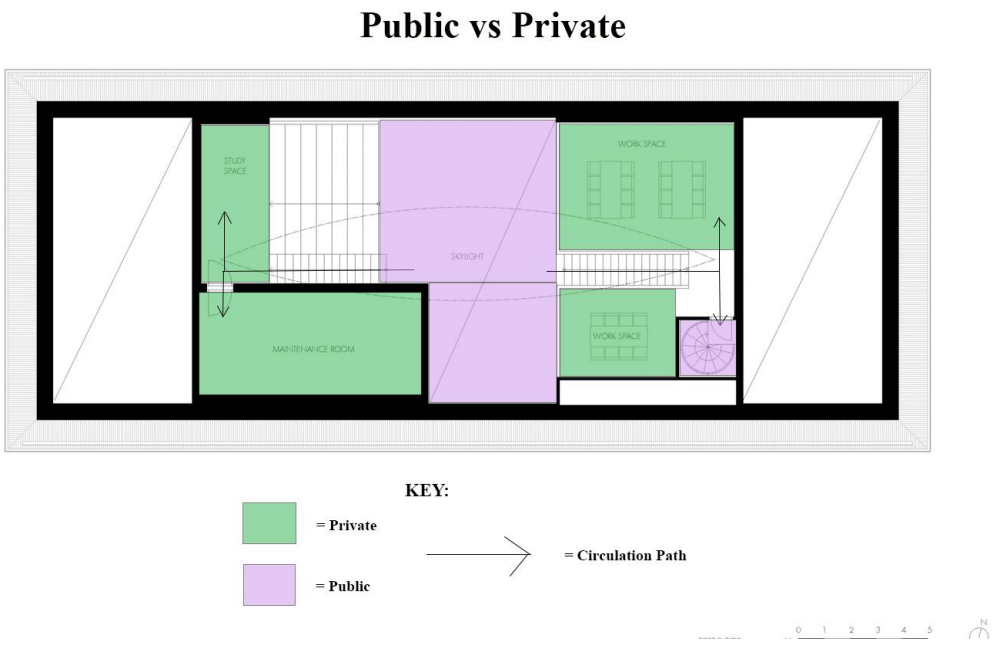


Figure 24. Fisksatra Folkets Hus Community Center, Space Utilization Diagram First Level. Adapted from Archdaily

Every space was thoughtfully placed to make the most of the central circulation plan branching off to shared user spaces and more private ones. The first floor focuses on shared spaces while the second level provided private zones.

Orientation of Daylight and Structural Bays

The structure in keeping with the tent like design allows for an opportunity for a lot of natural light. The perimeter of the building includes fourteen exterior glass windows and one eye-shaped skylight (see Figure 6). The windows surrounding the perimeter transmit light all day no matter where the sun is because there are windows on every face of the building. As well as the giant skylight which brightens the atrium and surrounding upstairs (see Figure 5). The site takes full advantage of the sunlight to brighten the white modern interior for its users to feel warm and invited from first entry.

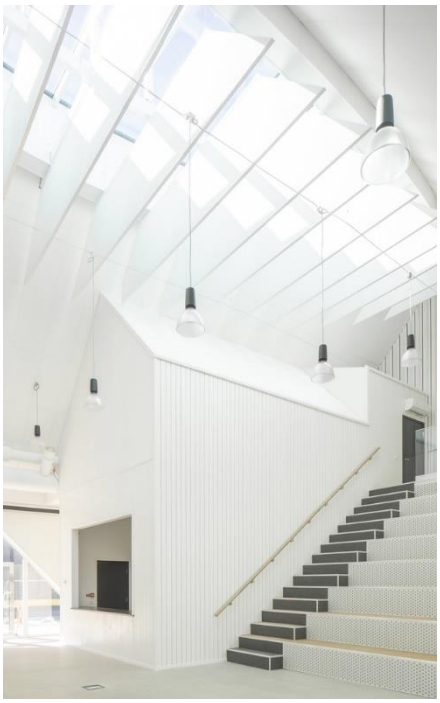


Figure 25. FFH, Skylight and Atrium. Adapted from Archdaily

Regarding the structural bays of this site, the perimeter windows and the eye shaped skylight are the architectural elements that fall into that category. Each perimeter window is the same with a length of nine feet between each supporting steel column (see Figure 6).

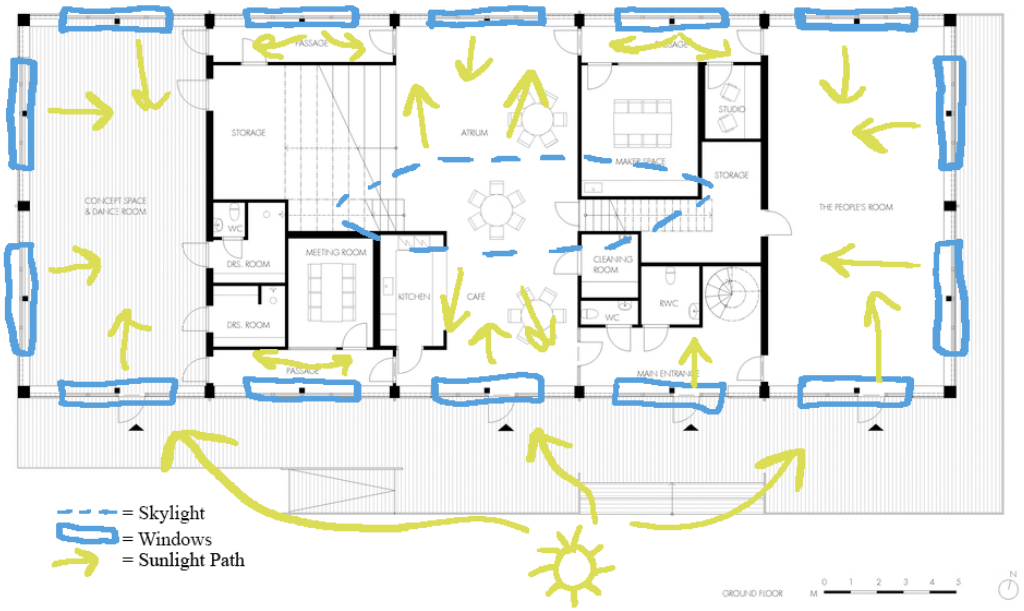


Figure 27. Fisksatra Folkets Hus Community Center, Orientation of Daylight, Skylight. Adapted from Archdaily

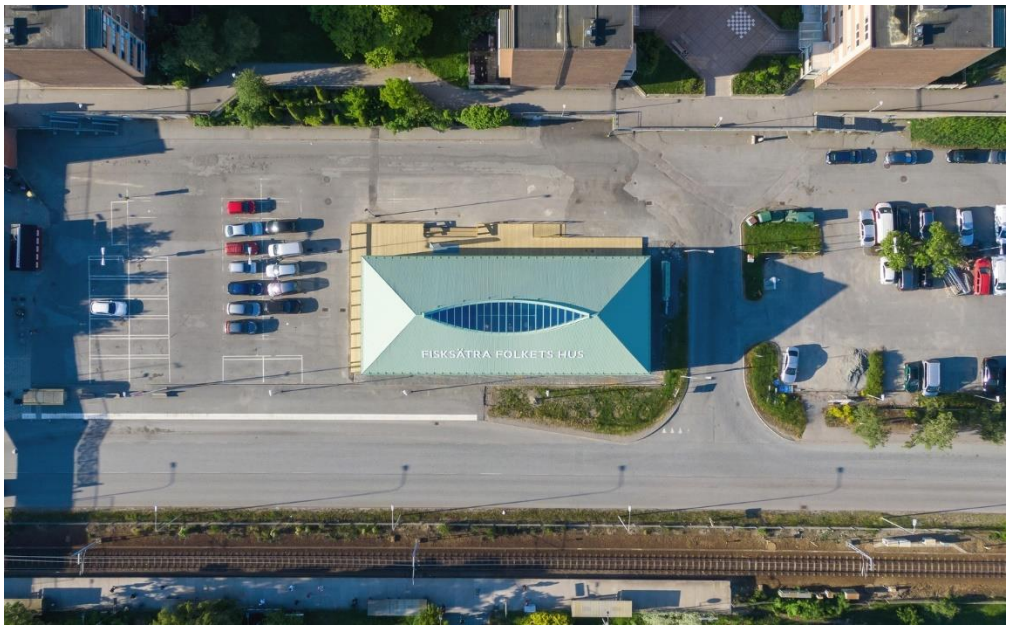


Figure 26. Fisksatra Folkets Hus Community Center, Aerial Site View, Skylight. Adapted from Archdaily

The skylight centered on the roof sits 45 feet from the East and West building faces. The skylight concaves into the structure with the glass supported by twenty-two mullions (see Figure 7).

Urban vs Suburban Solutions

The site is in a suburban setting with the local community living directly around the center. The suburban area contains multiple apartment buildings, a large parking lot, and a train station (see Figure 8). In terms of the suburban solutions, this center thrives on the suburban lifestyle. The site attracts the potential users to the building with easy obtainability. However, the suburban setting does limit the use of natural elements. FFH relies heavily on natural light because of the lack of greenspace available due to the suburban environment. The suburban lifestyle was their target community, so the solutions put in place made the most sense.

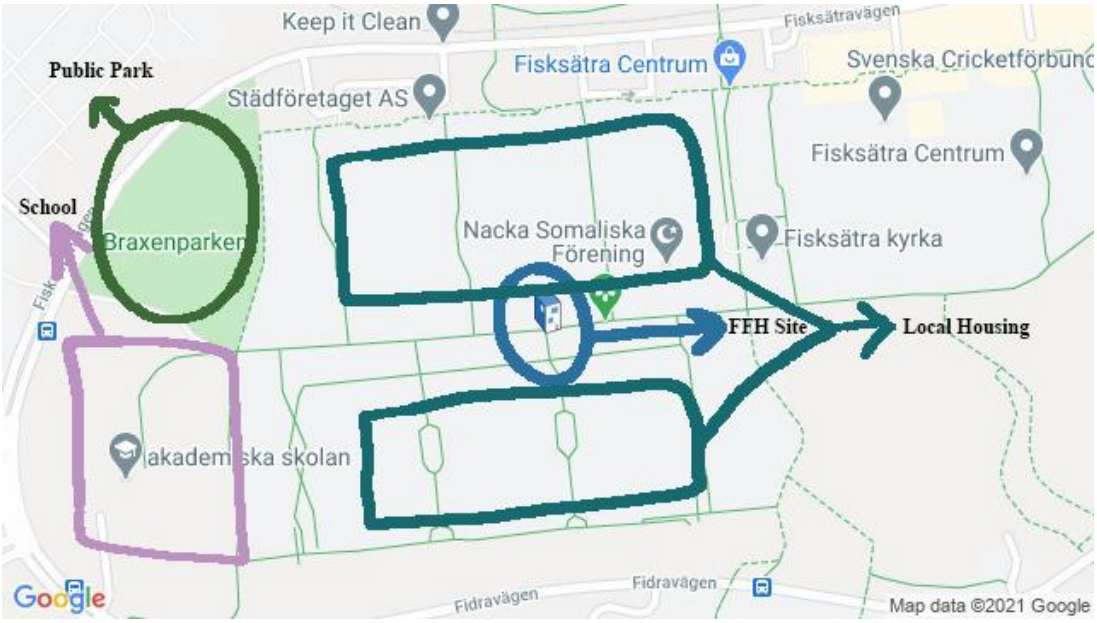


Figure 28. Fisksatra Folkets Hus Community Center. Site Map, Adapted from Archdaily & Google

Conclusion

The FFH Community Center analysis provided insight on social and environmental sustainability. In terms of the goals of the thesis project, it will require both social and environmental sustainability efforts. The FFH use on its location, materials, and daylight enable the user to feel at ease. The thesis site can take some of these ideas on use of sustainable materials like pine wood and GreenCoat paint to benefit its environmental factors. As well as introducing more natural light and having site within community to bring the community in.

Case Study Two: Chongqing Taoyuanju Community Center

Project History

Chongqing Taoyuanju Community Center (CTCC) sits in the mountains of Taoyuan Park in Chongqing, China. The project is a new structure and for the rural community with client Shenzhen Aviation City Corporation. It was designed by Vector Architects. Regarding the history of the project, Chongqing has a significant history and culture, and the area serves as one of China's National Central Cities as a major manufacturing and transportation hub. The Taoyuan Park region features a history of river-based community and this project wanted to keep in touch with that natural element as will be seen further into this case study.

Project Objectives & Site Conditions

In the mountainous topography of Chongqing lies the center with an objective to merge the nature with structure, combining interior with exterior spaces, and bringing the community together through different activity spaces. According to Vector Architects, their "starting point" was to merge the building outline with the fluctuating ground level. The architects designed the site consisting of three buildings that fuse architecture with the hilly landscape (2015). As well as combining outdoor and indoor spaces with two courtyards, a sloped garden, and a green plaza. The community center brings several types of people including everyday citizens, residents of area, and staff of

Figure 29. Chongqing Taoyuanju Community Center, Site Plan. Adapted from Archdaily & Vector Architects

the center. They achieve bringing the community together through different shared spaces such as: a playground, a bookstore, a dance room, a music room, a gym, a badminton court, a restaurant, a chess room, a yoga room, and an outdoor swimming pool (see Figure 12). In terms of the site conditions the site is about 108,000 square feet total. It sits on a hilly landscape with three large structures connected through natural and man-made spaces (see Figure 9).

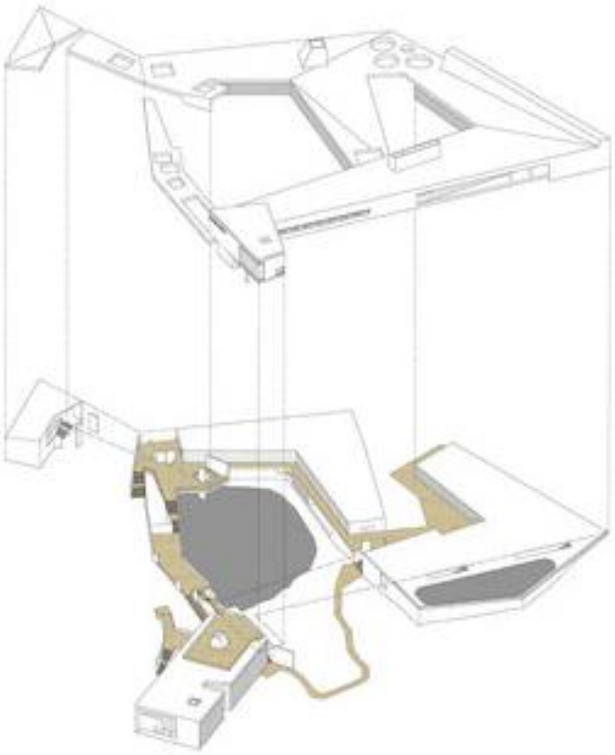


Figure 30. Chongqing Taoyuanju Community Center, Axonometric Diagram. Adapted from Archdaily & Vector Architects

The exterior and interior blend is represented in the above figure using the tan outline as the exterior paths/ areas which function with the interior surrounding (see Figure 10). Along with the natural landscape, the site sits secluded on its own private road away from the city. The site is in line with their focus on nature by being pushed away from city ambiance.

Project Timeline & Cost

The timeline of the project includes a design phase and construction period. Vector Architects' design period lasted over a year from February 2010-December 2011. The construction started

on December of 2011 and finished in August of 2015. The exact cost of the project is not publicly disclosed but it is estimated to be around forty million USD.

Title	Quantity	Function	SF Total
First Floor	1	Healthcare & Cultural	15,320 SF
Playground	1	Healthcare	820 SF
Children's Medical Center	1	Healthcare	1,000 SF
Examination Room	11	Healthcare	1,100 SF
Waiting Room	1	Healthcare	500 SF
Operating Room	7	Healthcare	700 SF
Meeting Room	4	Healthcare	1,200 SF
Lobby	1	Cultural	2,000 SF
Reading Area	1	Cultural	4,000 SF
Bookstore	1	Cultural	800 SF
Meeting Room	3	Cultural	1,500 SF
Classroom	5	Cultural	1,500 SF
Resting Area	1	Cultural	200 SF
Second Floor	1	Healthcare, Cultural, & Sport	37, 320 SF
Outdoor Terrace	1	Healthcare	900 SF
Entrance Hall	1	Healthcare	1,300 SF
Exam Room	7	Healthcare	700 SF
Operating Room	9	Healthcare	720 SF
Infusion Area	1	Healthcare	500 SF
Laboratory	2	Healthcare	1,200 SF
Entrance Hall	1	Cultural	400 SF
Gym	3	Cultural	1,500 SF
Classroom	6	Cultural	1,200 SF
Dancing Room 1	1	Cultural	600 SF
Dancing Room 2	1	Cultural	400 SF
Music Room	8	Cultural	1,600 SF
Outdoor Terrace	1	Cultural	3,800 SF
Resting Area	1	Cultural	500 SF
Restaurant	1	Cultural	2,000 SF
Badminton Court	1	Sport	15,800 SF
Dressing Room	2	Sport	800 SF
Entrance Hall	1	Sport	600 SF
Lobby	1	Sport	1,200 SF
Additonal Lobby	1	Sport	600 SF
Multifunction Room 1	1	Sport	700 SF
Multifunction Room 2	1	Sport	300 SF

Table 3. Chongqing Taoyuanju Community Center, Square Footages & Circulations. Reference to Figure 11, 12, & 13

Title	Quantity	Function	SF Total
Third Floor	1	Sport	24, 360 SF
Resting Area	1	Sport	500 SF
Chess Room	10	Sport	1,500 SF
Aerobics Room	1	Sport	900 SF
Gym	1	Sport	500 SF
Spinning Room	1	Sport	360 SF
Yoga Room	1	Sport	800 SF
Swimmimg Pool	1	Sport	4,000 SF
Rooftop	1	Sport	15,800 SF
Exterior Spaces	2	Outdoor	30,000 SF
Main Courtyard	1	Outdoor Zone	15,000 SF
Nature Path	1	Outdoor Zone	5,000 SF
Additional Courtyard	2	Outdoor Zone	10, 000 SF

Title	Subtotal SF	Circulation	Percentage
		Stairs	10%
Healthcare	10, 640 SF	Corridors	15%
Cultural	22,000 SF	Exterior Passages	20%
Sport	44, 360 SF		
Outdoor	30,000 SF	Total:	45%
Total SF:	107,000 SF		

Table 4. Chongqing Taoyuanju Community Center, Square Footages & Circulations. Reference to Figure 11, 12, & 13

Project Analysis

Organization of the Program, Space Utilization, & Circulation

The program of the site is separated into six sections called cultural center (1), sport center (2), community health center (3), restaurant (4), outdoor swimming pool (5), and green area (6) (see Figure 8). Each center houses its own specific spaces to provide easy navigation and understanding of the functions provided. For example, the cultural center wing provides some classrooms, dancing rooms, a bookstore, and a reading/ resting area (see Figures 11 & 12). These areas were conveniently placed with the user in mind; the spaces are relative to what the user may decide to do within their time visiting. Furthermore, in the sport center it houses the gym, dressing room, badminton court, aerobics studio, chess room, spinning room, yoga room and a resting area (see Figure 12 & 13). The designers utilized this building to keep all the physical activities together which provides access to dressing room and fitness options in proximity.

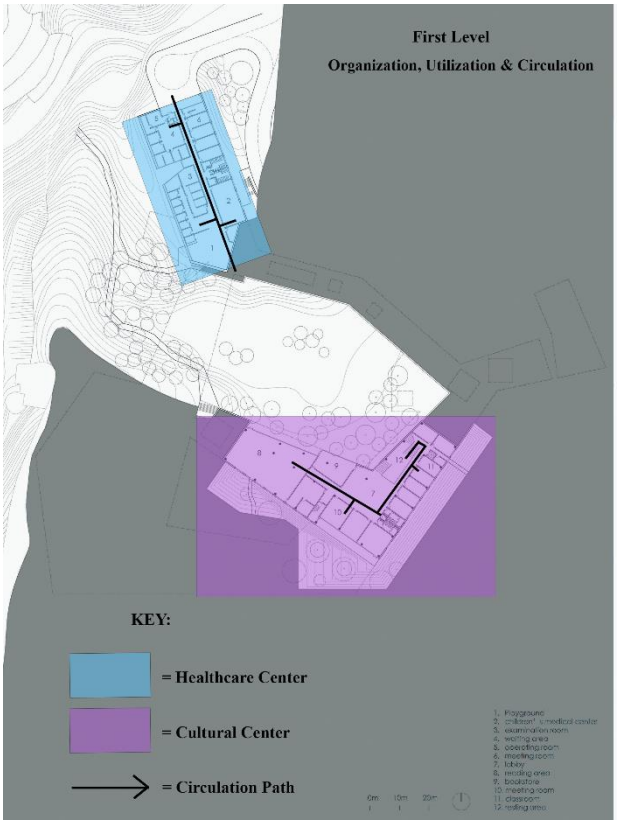


Figure 17. Chongqing Taoyuanju Community Center, First Floor Plan. Adapted from Archdaily & Vector Architects

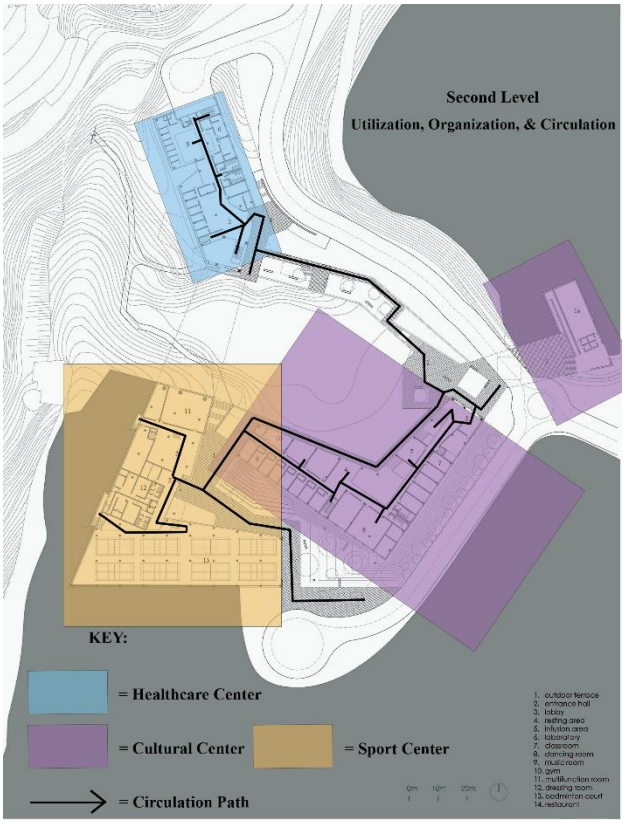


Figure 18. Chongqing Taoyuanju Community Center, Second Floor Plan. Adapted from Archdaily & Vector Architects

The circulation between the three levels is a blend of exterior and interior zones. Regards to the outdoor circulation, there is a continuous outdoor path that goes around the site and within the buildings (see Figure 10). As well as a large open courtyard that connects all three centers providing space for people that will use the outside in the center. The interior circulation includes an entrance hall that connects with multiple pathways; the interior features one major stairwell on the East side of the site which provides access to the three levels (see Figure 11, 12, 13 & Table 2). Overall, in terms of utilizing the space with different buildings housing related facilities and the circulation having more than enough space for comfortable travel, the design is successful. The public and private spaces variate between the three centers; public spaces are focused on the exterior and sport/ cultural centers. The private spaces are primarily held in the community health center due to privacy of exams, procedures, and sensitive information.

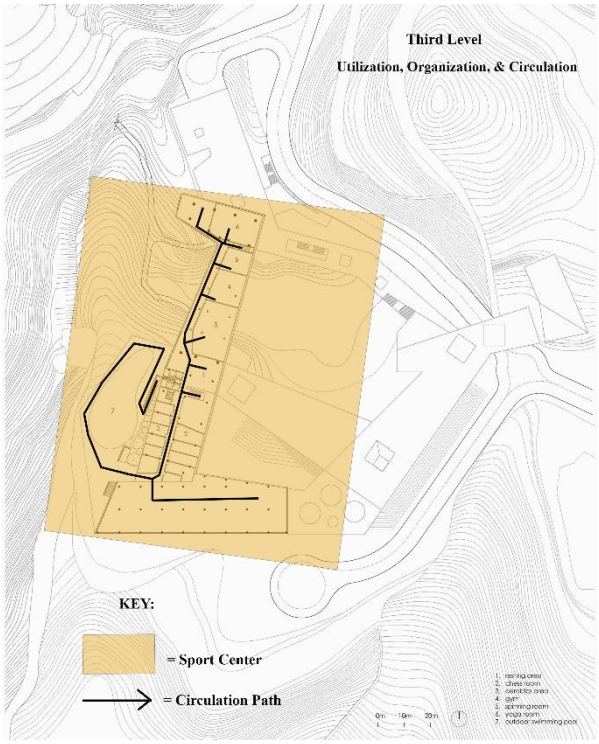


Figure 31. Chongqing Taoyuanju Community Center, Third Floor Plan. Adapted from Archdaily & Vector Architects

Orientation of Daylight and Structural Bays

Figure 20. Chongqing Taoyuanju Community Center, Unique Window Solution. Adapted from Archdaily & Vector Architects

The use of daylight was a large part in their design, it is seen through the number of skylights, the arrays of glass along a wall, and other unique elements added that manipulate the daylight. The skylights are oriented above entrance halls and corridors to provide the most use of daylight and provide a warm environment when the user enters the center (see Figure 8). Long arrays of windows are set in the corridors and some of the shared spaces like the badminton court (see Figure 15 &16). In the hope of giving a relaxing and warm feeling maybe after a day of work for the user to enjoy the sunshine while they use the center. As well as, in the unique spaces for leisure feature accent windows to transcend light from perimeter into user space (see Figure 14). Regarding the structural bays, the columns that support the lowest part of the structure in the badminton courts and all other supporting columns are thirty-two by five feet apart; the other structural columns are fifteen feet apart (see Figure 17). The window arrays along the corridors range from twenty to forty feet in length within their structural systems.

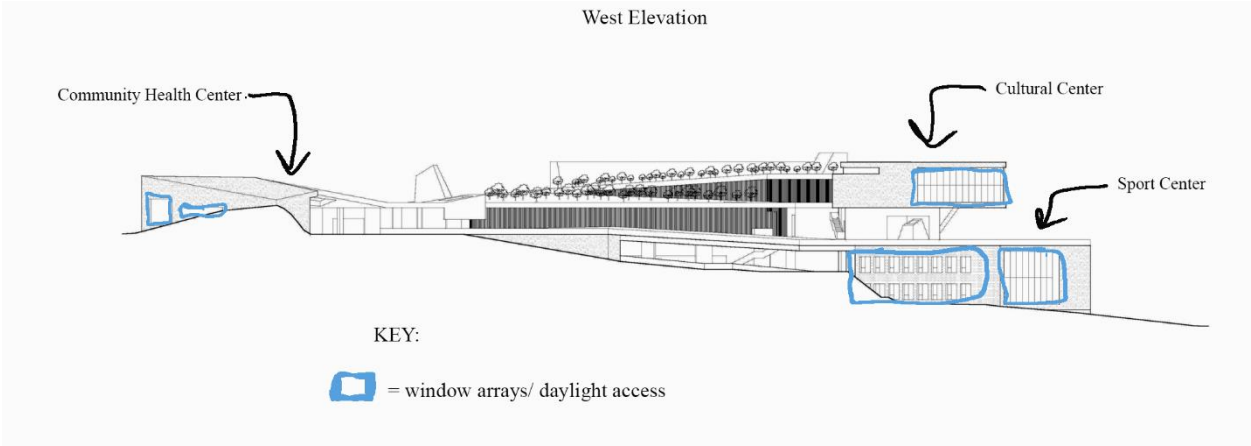


Figure 21. Chongqing Taoyuanju Community Center, West Elevation. Adapted from Archdaily & Vector Architects

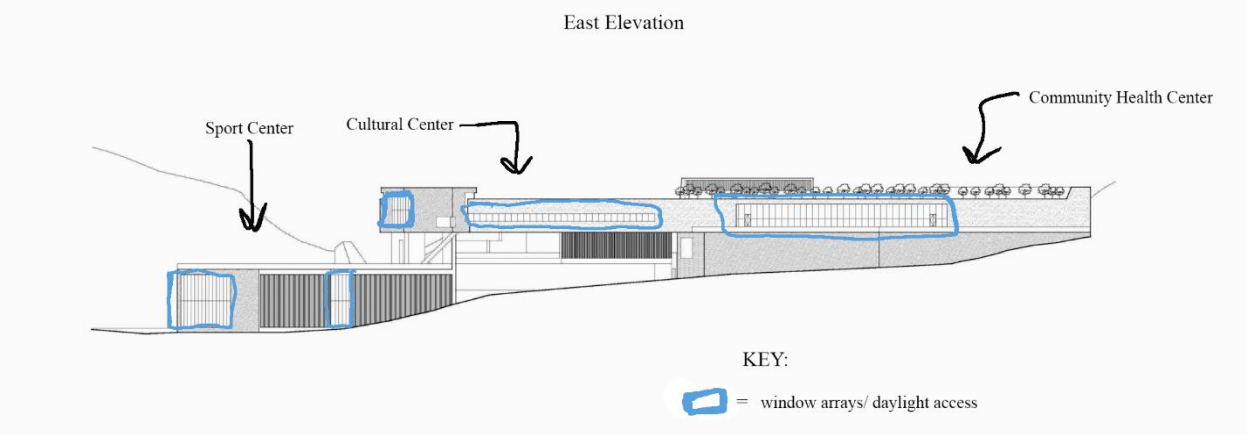


Figure 32. Chongqing Taoyuanju Community Center, East Elevation. Adapted from Archdaily & Vector Architects

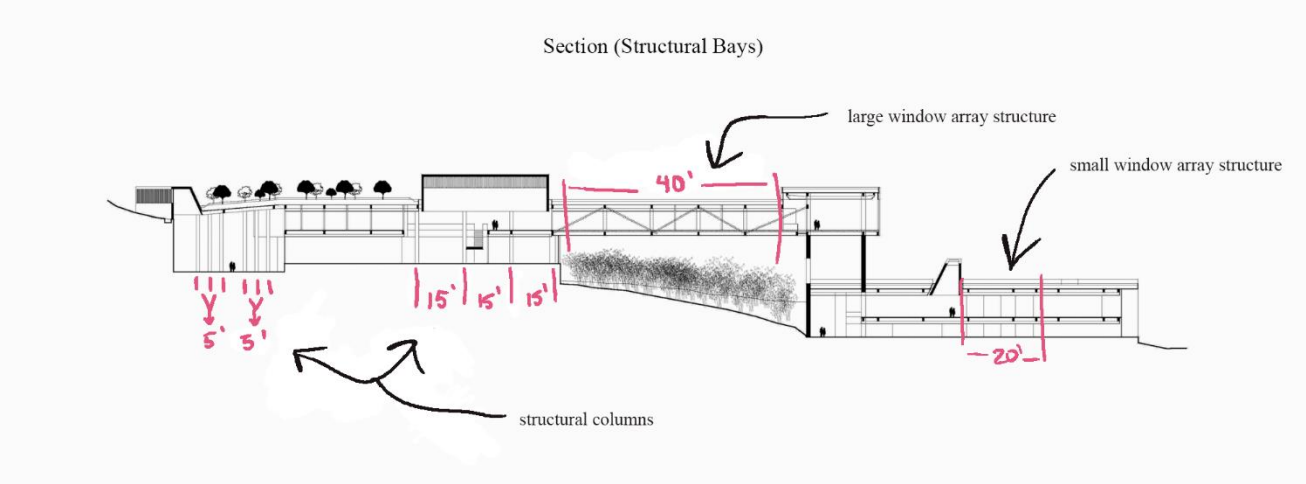


Figure 33. Chongqing Taoyuanju Community Center, Structural Section. Adapted from Archdaily & Vector Architects

Urban vs Suburban Solutions

The site is off a private access road and in a rural area. The solutions taken were for an urban community in a rural part of the surrounding city. The location may be in the rural, but the community it serves is urban; it sits near other solutions such as: a local park called the People's Square and other public spaces like a museum or auditorium (see Figure 18). The urban environment around this community center supports the need for the center in making a place where all these activities could take place. Moreover, the center provides the tranquility that the community lacks in other solutions and the natural elements blended into the community center achieve the designers' goals of giving a break from the bustling city.

Figure 34. Chongqing Taoyuanju Community Center, Site Map. Adapted from Archdaily & Google Maps

Conclusion

The ideas to take from the CTCC analysis are use of exterior/ interior zones, inclusion of nature, and spatial zoning of the three centers. The different centers incorporate a multitude of functions and do not interfere with another. For the thesis site, these strategies can be implemented due ot its urban nature. The different floor levels of the thesis site can incorporate more nature, zone each floor for specific functions with its own access, and blend exterior with interior zones especially at the front entry. The new information learned from the Chongqing Taoyuanju Community Center clarifies the purpose of merging the exterior/ interior which provides a sense of welcoming and inclusivity that the thesis site currently lacks.

Case Study Three: Lendrick Community Center

Project History

The Lendrick Community Center (LLC) exists in Brussels, Belgium and is the site for the third case study. LLC was created in collaboration with local Dutch community network Vlaamse Gemeenschapscommissie (VGC) and the City of Brussels to rehabilitate a small seldom Dutch-speaking part of the city. Using the existing lot, the LLC is an entirely new structure designed by European design group HUB. Much of the project history is unknown to public resources, thus it is limited to the above information.

Project Objectives & Site Conditions

The VGC aims to provide Dutch-speaking citizens of Belgium a place for education, cultural participation, and provide volunteer space (N22, 2021). The Lendrick community center is one of a twenty-two-community center network with many centers scattered across Brussels to enable those objectives in the VGC regulation. Specifically, the LCC had a challenge with the site conditions which is the lot size (HUB, 2017). The LCC has a program of diverse functions and keeping them under one roof due to limiting available space was a challenge. However, HUB designers solved this problem of surface area with a "stacking of the various program components" (HUB, 2017) into a three-level center with proper spatial arrangement around a central foyer (see Project Analysis section). The site conditions and project objectives were

Figure 35. Lendrick Community Center, Site Condition. Adapted from HUB Design Group

harmoniously designed by HUB, thus a successful site for a multi-use community center.

Project Timeline & Cost

The community center timeline is from 2013 to 2017 (HUB Design). HUB design group began the design phase in 2013, concluding with the project's completion in 2017. The budget for this community center was € 2.500.000 which is equal to 2,893,854 USD today. It is estimated the end cost was relative to the planned budget mentioned above.

Project Analysis

Organization of the Program, Space Utilization, & Circulation

The program is organized around a central foyer that drives the staircase vertically through the three levels. The central foyer at the front entrance connects many user spaces in a central circulation plan which each following floor level follows that design (see Figure 20). On the first level there are meeting rooms, primary restrooms, a performance hall, workspace, storage, two terraces and two kitchens (see Figure 20). As shown in table 3, the center utilizes its space for mostly community functions and workplaces, which will be further explained in the *Urban vs Suburban Solutions* section, due to their objectives in promoting more community engagement. All floor levels minimize the amount of circulation as much as possible by, placing spaces directly off central corridor and adjacent rooms. The circulation is 28% of the total program; this shows that the total circulation was minimized to allow for more community driven spaces (see Table 3).

Title	Quantity	Function	SF	
First Level	1	Multi	9,420 SF	
Central Foyer	1	Circulation	1,357 SF	
Performance Hall	1	Community	2,178 SF	
Storage	9	Service/ Utility	598 SF	
Kitchen	2	Service/ Utility	591 SF	
Meeting Space	5	Workplace	773 SF	
Restroom	1	Service/ Utility	636 SF	
Secondary Circulation	4	Circulation	490 SF	
Workspace	1	Workplace	784 SF	
Terrace	2	Outdoor	1760 SF	
Multipurpose	1	Community	253 SF	
Second Level	1	Multi	4,387 SF	
Central Foyer	1	Circulation	1,000 SF	
Kitchen	4	Service/ Utility	243 SF	
Meeting Space	4	Workplace	662 SF	
Restroom	1	Service/ Utility	414 SF	
Secondary Circulation	4	Circulation	245 SF	
Education Space	1	Workplace	391 SF	
Sleeping Room	3	Housing	220 SF	
Terrace	1	Outdoor	304 SF	
Multipurpose	1	Community	435 SF	
Workspace	2	Workplace	473 SF	
Third Level	1	Multi	9,271 SF	
Central Foyer	1	Circulation	1,275 SF	
Library	1	Community	3,150 SF	
Multipurpose	2	Community	1,262 SF	
Storage	1	Service/ Utility	154 SF	
Restroom	1	Service/ Utility	552 SF	
Secondary Circulation	1	Circulation	294 SF	
Library Reception	1	Community	325 SF	
Workspace	5	Workplace	1,685 SF	
Terrace	2	Outdoor	574 SF	
			Total:	23,078 SF
Title	**Subtotal SF**		**Circulation**	**Percentage**
Community	7,603 SF		Stairwells	15%
Service/ Utility	3,188 SF		Elevator	5%
Workplace	4,768 SF		Corridors	8%
Outdoor	2,638 SF			
Circulation	4,661 SF			
Housing	220 SF		**Total:**	28%

Table 5. Lendrick Community Center, Square Footages & Circulation. Reference to Figures 20,21, & 22

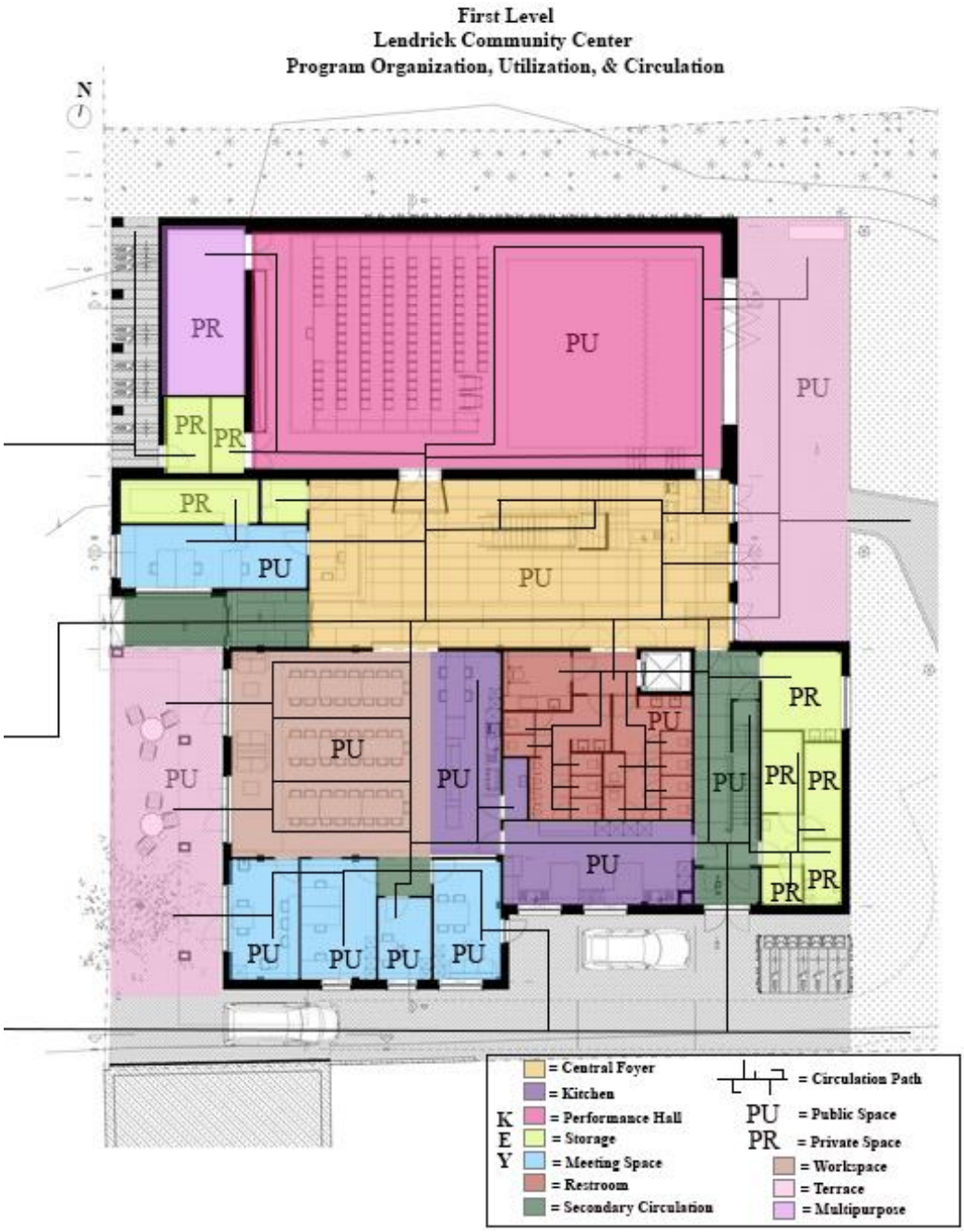


Figure 36. LCC First Level. Adapted from Archdaily & HUB

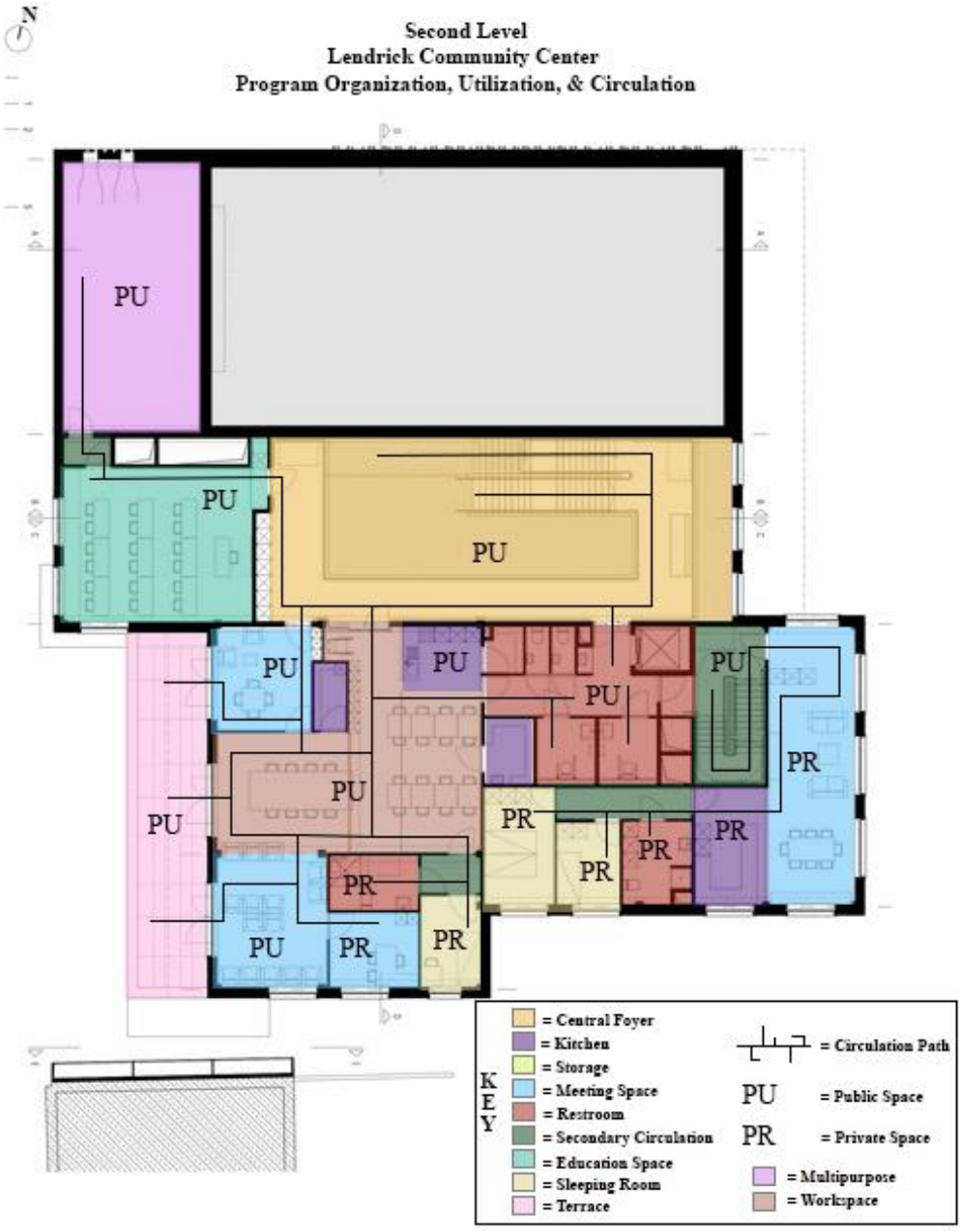


Figure 37. LCC Second Level. Adapted from Archdaily & HUB

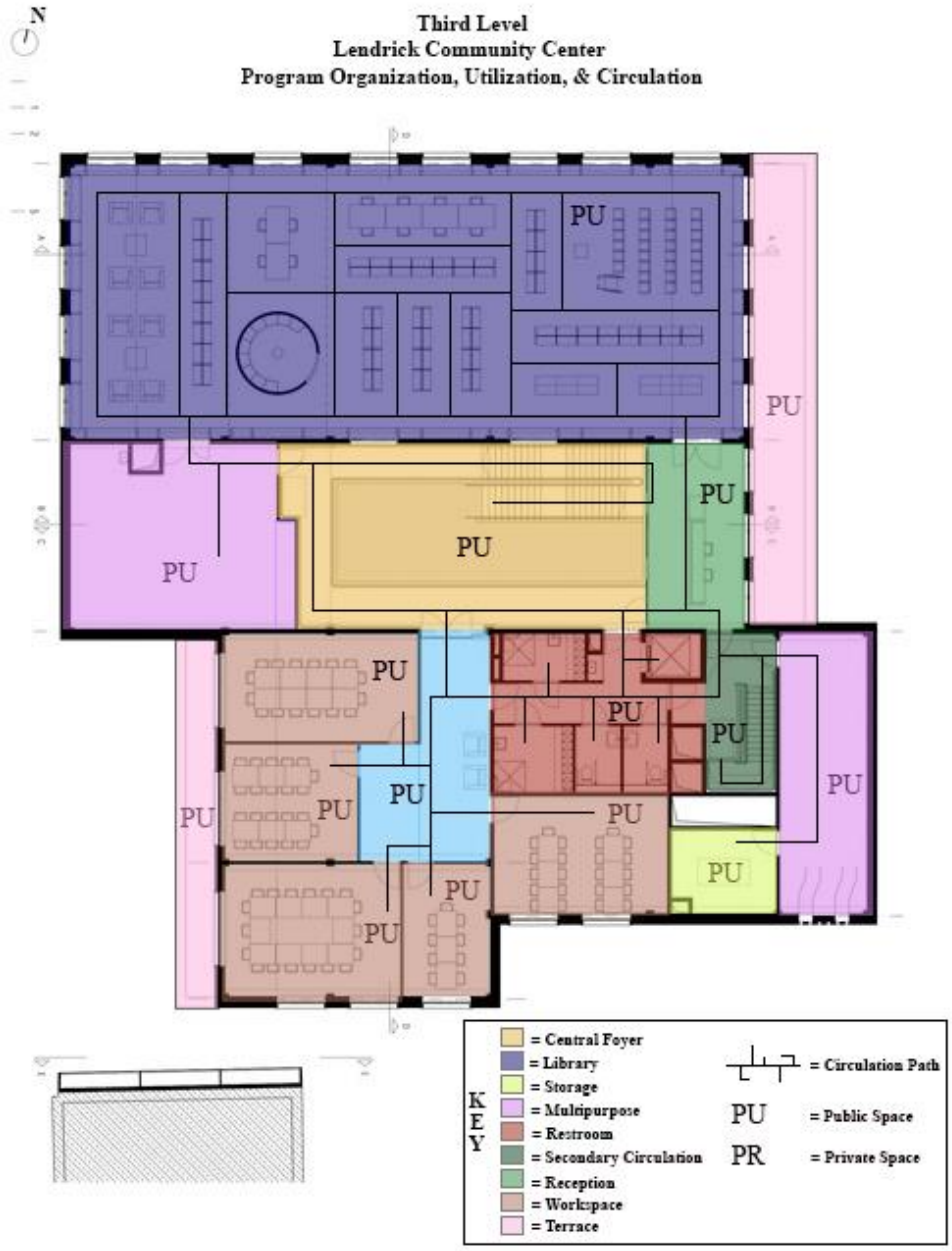


Figure 38. LCC Third Level. Adapted from Archdaily & HUB

The design team at HUB explains that the central foyer acts as a public square between the adjacent street and interior space (Pintos, HUB). Also, it has a “clear and readable” program from street level, which is “visible at a single glance from the foyer” (HUB, see Figure 23).

Figure 39. LCC, Public Square SW Elevation. Adapted from Archdaily & HUB

Continuing to the second level, the central foyer still follows the same function connecting different spaces. Off the foyer includes the education space, more workspace, and secondary restrooms. After entering one of the above attached spaces, the user can access a multipurpose room, meeting rooms, a terrace, three private sleeping rooms with private bathrooms, and two kitchens. There is slightly more circulatory space on level two consisting of the secondary stairwell and a couple thresholds. There is a need for more circulation because of the private areas that rely on having separate access to the sleeping rooms and kitchen. (see Figure 21).

The third level still follows the central foyer circulation with spaces directly attached. A library, a multipurpose room, a meeting space, a library reception, and restroom are connected. After entering a connecting room, the adjacent spaces include more workspace, storage, two terraces, and another multipurpose room. These spaces are not limited by circulation and have the most optimal flow across the floor plate. The secondary stairwell throughout the three floor levels

provides access to the private spaces on level two and a secondary path of travel in case the center is too busy for the central foyer (see Figure 20, 21, 22).

The public vs private space is more dependent on the user of the community center. The workspaces are all public while meeting spaces can be more public or private depending on the layouts of workspace. The meeting spaces on level two exemplify that having two private meeting spaces along with the public ones (see Figure 21). As well as the sleeping rooms on the second level are the most private spaces in the community center. Other than the second floor, every other space is publicly shared, because of their objective in community engagement. Overall, utilization of primarily public spaces, and organization of adjacent spaces with a central circulation plan allows for the most seamless program across three levels.

Orientation of Daylight & Structural Bays

The orientation of daylight was a key idea when designing the center because daylight not only promotes activity, but physical health. One of the goals for the center is to have more community engagement and the more daylight in the spaces means more people are willing to stay and use the spaces. Throughout level one, two, and three there are a perimeter of windows around the structure (see Figure 21-23). The orientation of the sun rises from the East which is the right side of center and falls on the West which is the left side of the center. In their design, spending the day at the center whether for schoolwork or meeting for a volunteer program, the design is oriented the get the most sun throughout the day from any space. Every space that needs access to daylight has it, because of the orientation of daylight and windows around the community center (see Figure 24-27). The northeast side takes the high intensity daylight from the morning, while the southwest side absorbs the medium intensity daylight by afternoon in a combination of the northwest and the southeast sides garnering low intensity light throughout the day.

Figure 30. LCC, Orientation of Daylight & Windows, High Intensity Light. Adapted from Archdaily & HUB

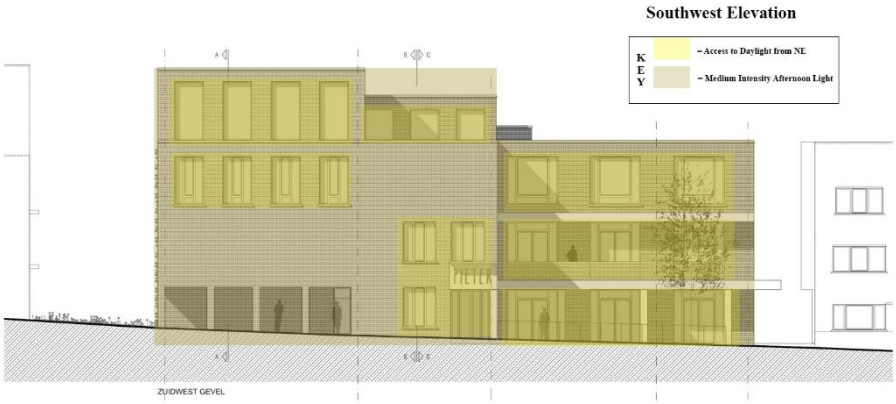


Figure 31. LCC, Orientation of Daylight & Windows, Medium Intensity Light. Adapted from Archdaily & HUB

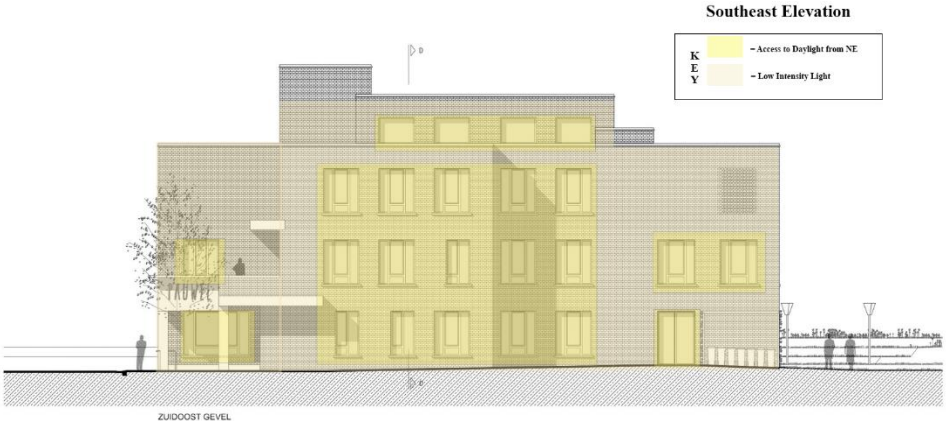


Figure 32. LCC, Orientation of Daylight & Windows, Low Intensity Light. Adapted from Archdaily & HUB

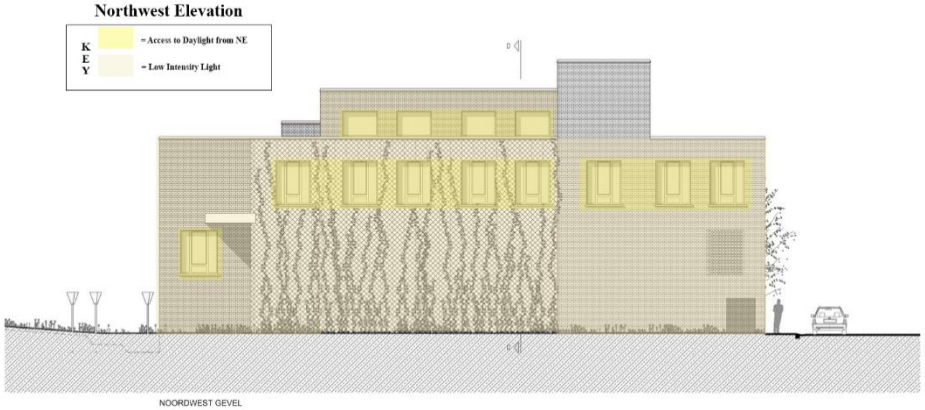


Figure 33. LCC, Orientation of Daylight & Windows, Low Intensity Light. Adapted from Archdaily & HUB

The structural systems present in the community center required focus on minimizing blocked pathways, sightlines, and the open circulation. As well as allowing the light to flow throughout the spaces without structural elements like columns hindering that. In the first level columns are framed within the perimeter walls to provide the necessary load bearing support for the large performance hall (see Figure 28 & 29). Moreover, the array of windows found on all sides of the structure sit in five-foot bays supported by their own systems (see Figure 28). Furthermore, an eight-foot skylight that transmits light into the library is supported in a ten-foot structural bay (see Figure 28). The structural systems used in the community center allowed the opportunity for the designers to implement very low circulation paths and keeping the design filled with light.

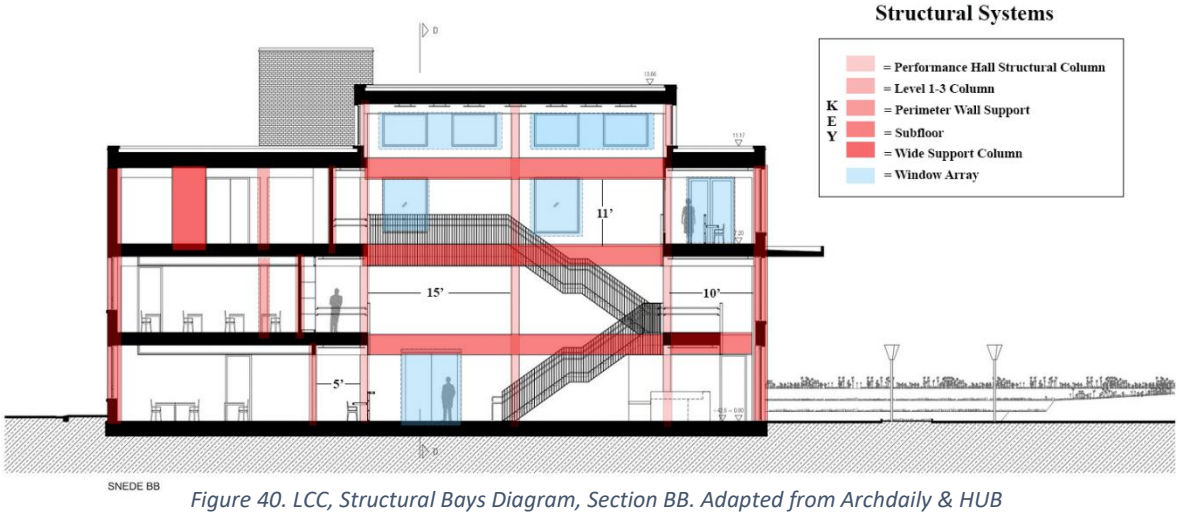


Figure 40. LCC, Structural Bays Diagram, Section BB. Adapted from Archdaily & HUB

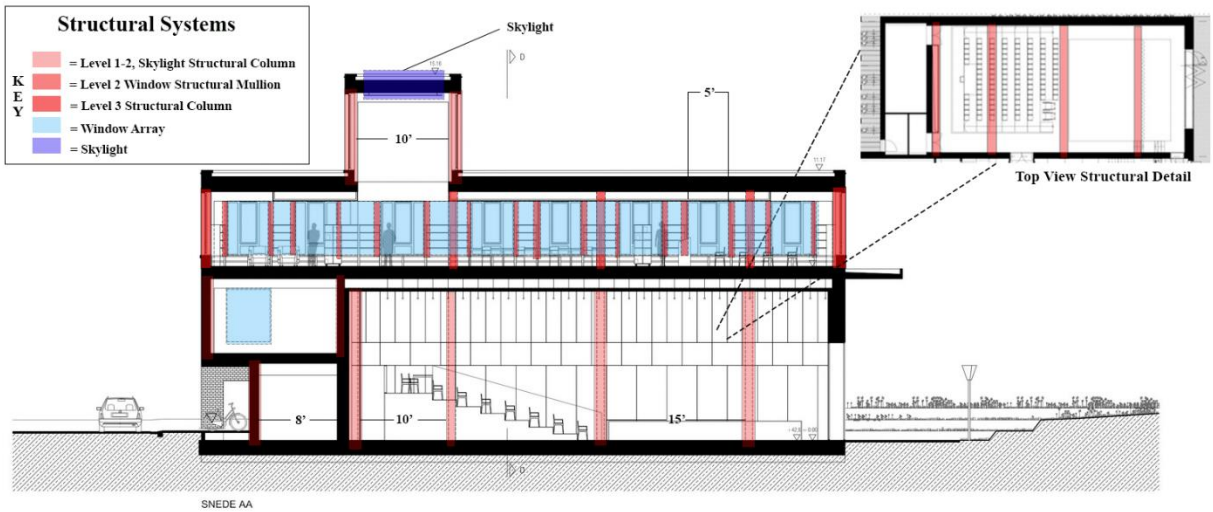


Figure 41. LCC, Structural Bays Diagram, Section AA. Adapted from Archdaily & HUB

Urban vs Suburban Solutions

The community center resides off a busy street with two schools, a local church, and other community centers nearby that bring in the local population around the Lendrick Community Center (see Figure 30). The solutions found in this site were in relation to the suburban environment it exists in; because the local schools were a key element in adding workspaces, meeting rooms and classroom spaces for the students to use in their free time. Furthermore, the local community does lots of volunteer work for Dutch-speaking programs (VGC) and having space to bring those people in was an important solution in more engagement. The performance hall, multipurpose studios, and meeting spaces provide the user room to engage in those ideas and be able to organize volunteer work across the city.

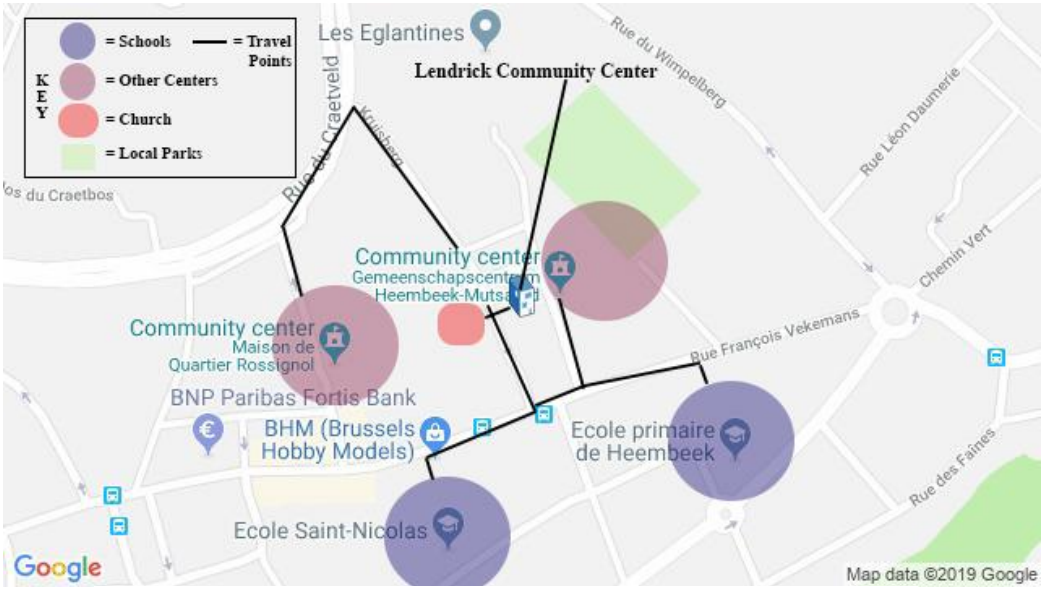


Figure 42. LCC, Suburban Community Map. Adapted from Archdaily & Google Maps

Conclusion

The LCC spatial organization around a central foyer is very similar to the existing site of this thesis. In terms of what can be adapted from the LCC, their use of circulation, serving many functional spaces, and orientation of the daylight are the big ideas that can be used. The thesis site includes its own issues with the where and how will the circulation be designed; so, the circulation design in LCC will be highly beneficial in the final thesis design.

Case Study Four: The Bullitt Center

Project History

The Bullitt Center is a "living building" designed by Miller Hull Partnership (MHP) and fulfilled for the client Bullitt Foundation, whose mission is to safeguard the natural environment and promote sustainable communities in the "Emerald Corridor" of North America (Bullitt, 2021). This project is an education and commercial center for the Bullitt Foundation serving as their headquarters in Seattle, Washington. The Bullitt Center was designed on a previous site that consisted of a 3,317 SF one-story wood and brick building with an asphalt parking lot that covered the remaining 6,750 SF of the lot (ILFI, 2021). The prior structure that occupied the Bullitt Center site was a small one-story bar with restaurant and parking lot. In this project, the designers secured a deal with city regulators to deconstruct and reuse the old bar/ restaurant materials in the new design for their initiative in sustainability instead of the typical demolishment of buildings to improve the project schedule.

Project Objectives & Site Conditions

According to Miller Hull Partnership (2021), the office center "aspires to be the world's greenest commercial building" and demonstrate that carbon-neutral offices can be "commercially viable and aesthetically stunning" while using systems that can be easily copied and used elsewhere. The Bullitt Center is a 50,000 square foot building providing office and education space for the Bullitt Foundation; the objectives also included being self-sufficient under the living building challenge which means it can produce more than it requires to put back into community. The condition of the site includes a corner lot of an office district in Seattle, having a little over 10,000 square feet in the allotted property to use for the Bullitt Center design. The Bullitt Center achieves their "living building" objectives through energy and water systems with the exclusion

of 350 common toxic chemicals such as PVC, lead, mercury, phthalates, BPA, and formaldehyde. Those systems are separated into four large categories: the building life cycle, net zero water, net zero energy, and occupancy (see Project Analysis section for more in depth).

Figure 43. The Bullitt Center, Aerial Site View. Adapted from Archdaily, John Stamets & Brad Kahn

Project Timeline & Cost

The Bullitt Center was completed in April of 2013, meaning the planning/ design/ construction phase consisting of the architects, the engineers, the project management team, the contractors, and the commissioning authority lasted at least for a couple of years prior. According to WBDG (2021), The total building cost was $30 million USD as of 2013 completion.

Title	Quantity	Function	SF
Ground + Level 2			17,334 SF
Education Space	1	Education	17, 334 SF
Rainwater Cistern	1	Sustainability	600 SF
Greywater System	1	Sustainability	300 SF
Waste Compost	1	Sustainability	100 SF
Energy Conversion/ Battery	1	Sustainability	800 SF
Restroom Area	2	Service/ Utility	336 SF
Levels 3-6			34, 668 SF
Office Space	4	Office	34, 188 SF
Restroom Area	4	Service/ Utility	480 Sf
Roof			8,667 SF
Solar Paneling	1	Sustainability	10,000 SF
Rainwater Catchment	1	Sustainability	5,000 SF
Circulation	**Percentage**		
Irresistable Stairwell	10%		
Secondary Stairwell	10%		
Elevator	5%		
Corridors	5%		
Total:	30%		

Table 6. Bullitt Center: Square Footages & Circulation. Reference to Figures 32, 42, & 43

Project Analysis
Organization of the Program, Space Utilization, & Circulation

The program consists of two large concepts, the sustainability educational space on the first through second levels and the commercial office space above on the four other levels. The ground floor includes the lobby, the reception, multiple sitting areas, a restroom, and the start of the sustainable education space that showcases the waste compost, energy, rainwater collection, and greywater systems. For purposes of sustainability in the thesis site, this section will pertain to the organization of the program, space utilization, and circulation regarding the sustainable systems put in place at the Bullitt Center.

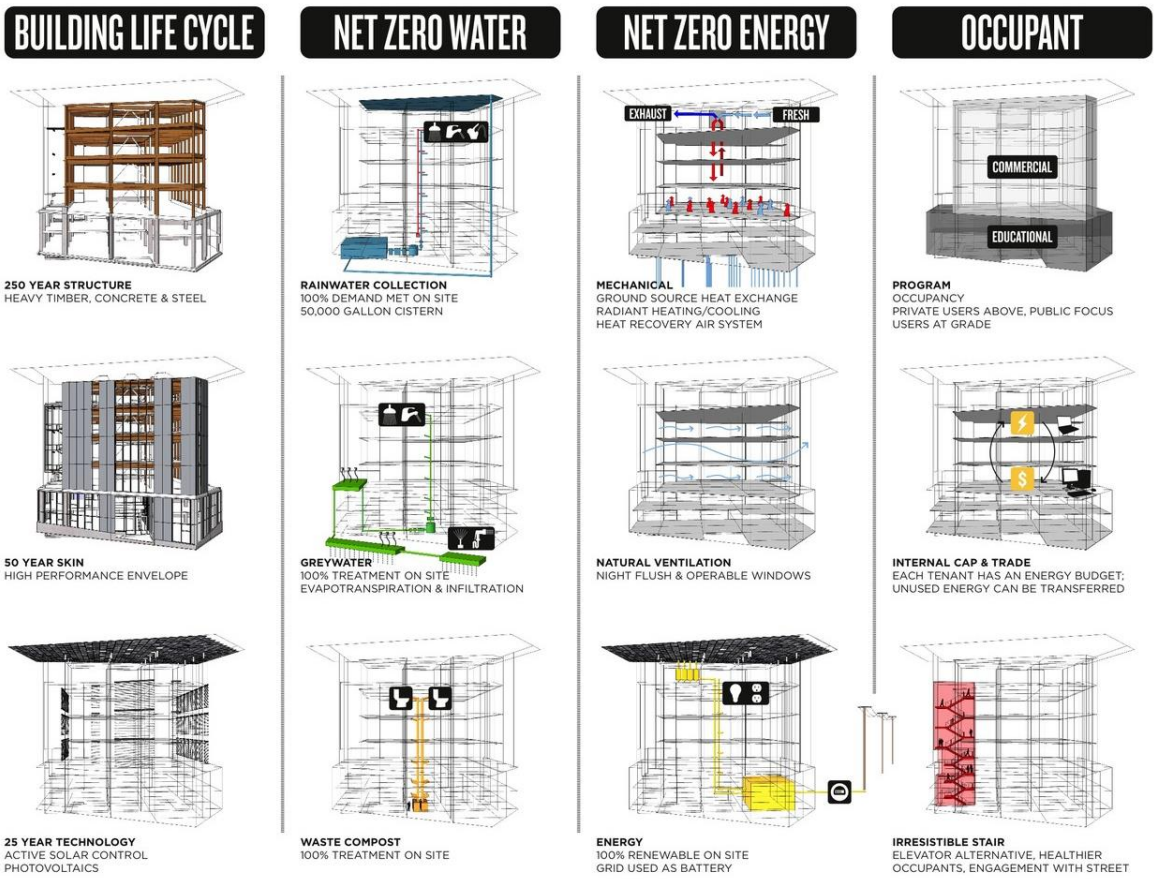


Figure 44. Spatial Organization: Systems. Adapted from Archdaily & Miller Hull Partnership

The sustainable systems used in the project are the ideas worth taking in terms of this thesis. The sustainable systems are organized not only to be educational but functional. The site does not have any below-grade levels, so putting the equipment in the two base levels was the only option. However, this was not a setback for the design because the user of this building is a company specializing in sustainability, so the systems being used decoratively in a way to educate was a genius idea for space utilization and program organization.

Net- Zero Water

In more detail on the sustainability aspect and the objective of net-zero water use, the rainwater collection system begins collecting water from the roof and transports that water to a 50,000-gallon cistern at the first level of the building. The cleansed and recycled water then gets transported through the common plumbing wall central to all the floor levels (see Figure 33). Moreover, the greywater system provides 100% treatment on site, so the evapotranspiration and infiltration work alongside the lowest two floor plates (see Figure 34). Absorbing water from the ground and taking water used in the showers, toilets, sinks, baths, washing machines, and dishwashers (non-wastewater) is cleansed in the treatment containment then transported back through the plumbing network (see Figure 35). The final system used in their objective of net-zero water is the waste compost system. Spatially, the composting machine resides on the ground floor along with most of the sustainable equipment taking the wastewater from the toilets.

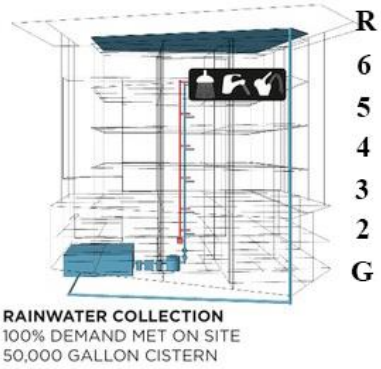


Figure 45. Rainwater System. Adapted from Archdaily, Figure 33, & MHP

Figure 46. Waste Compost System. Adapted from Archdaily, Figure 33, & MHP

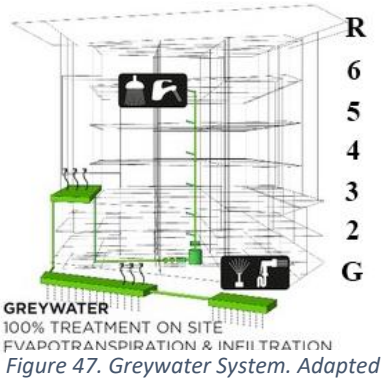


Figure 47. Greywater System. Adapted from Archdaily, Figure 33, & MHP

Net- Zero Energy

In more detail on the sustainability aspect and the objective of net-zero energy use, the Bullitt Center begins with using ground source heat exchange. According to Sustainable Sources LLC (2021), the pipework that collects ground heat is located beneath the foundation and transmitted throughout the building depending on the level of heat needed to keep the site balanced (see Figure 37). As well as radiant heating/ cooling and heat recovery air system which work closely together. The radiant heat/ cooling works through convection as the air temperature lowers when it encounters a cool surface. Radiant cooling cools the floor or ceiling by absorbing the heat radiated from rest of room and combined with a heat recovery system allows there to be zero loss in heat/ cool energy. Also, natural ventilation is a big aspect in the energy standards of the Bullitt Center. Throughout the entire building, operable windows exist and allow for night flushing (see Figure 36). Night flushing is a technique in using the naturally cooler air at night to cool the building before the next morning in reducing heat buildup. A large electricity converter sits on the ground level connecting the solar panels on the roof with it. The solar panels are obviously placed on the roof to receive the most sunlight possible and the converter on the ground floor is the best place spatially to serve as education evidence and easy to access (see Figure 38).

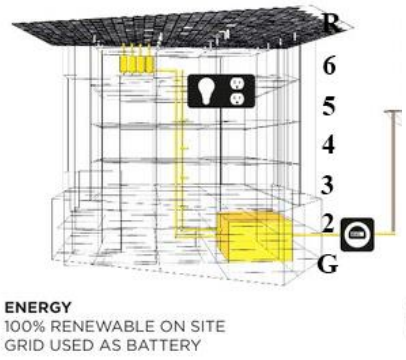


Figure 48. Energy System. Adapted from Archdaily, Figure 33, & MHP

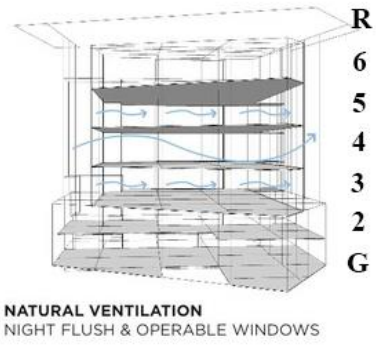


Figure 49, Natural Ventilation. Adapted from Archdaily, Figure 33, & MHP

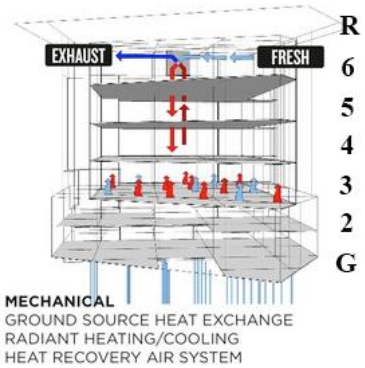


Figure 50. Mechanical Systems. Adapted from Archdaily, Figure 33, & MHP

Occupant (Social Sustainability)

Sustainability can be seen as literal green benefit to the environment itself, but also the occupant can help in sustainability amongst themselves and the center. The Bullitt Center program prioritizes education space on the ground floor and second level as mentioned prior due to the goal in educating about sustainability and using the space efficiently with the below grade restrictions (see Figure 40). Moreover, there is a system put in place called cap-and-trade which sets a standard of energy the office tenants can use to keep building energy positive (see Figure 39). The cap-and-trade system works throughout the entire office portion of the program for the Bullitt Foundation reducing the building's emission levels (EDF, 2021).

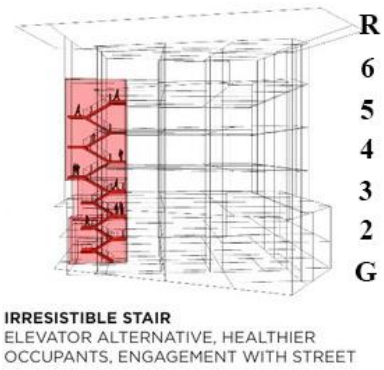


Figure 51. Irresistible Stair. Adapted from Archdaily, Figure 33, & MHP

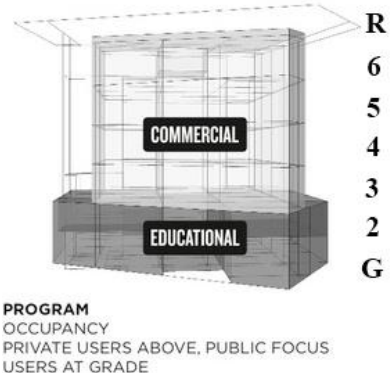


Figure 46. Program Occupancy. Adapted from Archdaily, Figure 33, & MHP

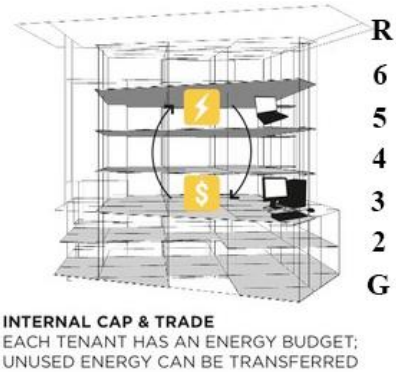


Figure 47. Cap & Trade System. Adapted from Archdaily, Figure 33, & MHP

As well as supplying an alternate route for the occupants to promote social sustainability in health and reducing energy from using the elevator too. The "irresistible stair" features bright window sight lines of the outside and a vibrant palette in wood tones to promote its use. According to MHP (2021), the stairway is "paired with a less conveniently located" elevator that can only be accessed via a key card; thus, the stairwell is an effective way in motivating the visitors and other users to use this energy conserving option (see Figure 41). The occupant sustainability factor weighs big on their design, promoting a space that conserves energy consumption and possibly promotes healthier alternatives to further that benefit.

Circulation

In terms of circulation, this thesis will examine the ground and one of the office floors to detail the relationship the building has with their user and circulation. In looking at the ground level, the front entry directs the user into a large open space, with the main circulatory access in the back of the building. The user is promoted to walking more to get to where they need with their objective in creating healthier people (see Figure 42), this can also be seen throughout the four office levels (see Figure 43).

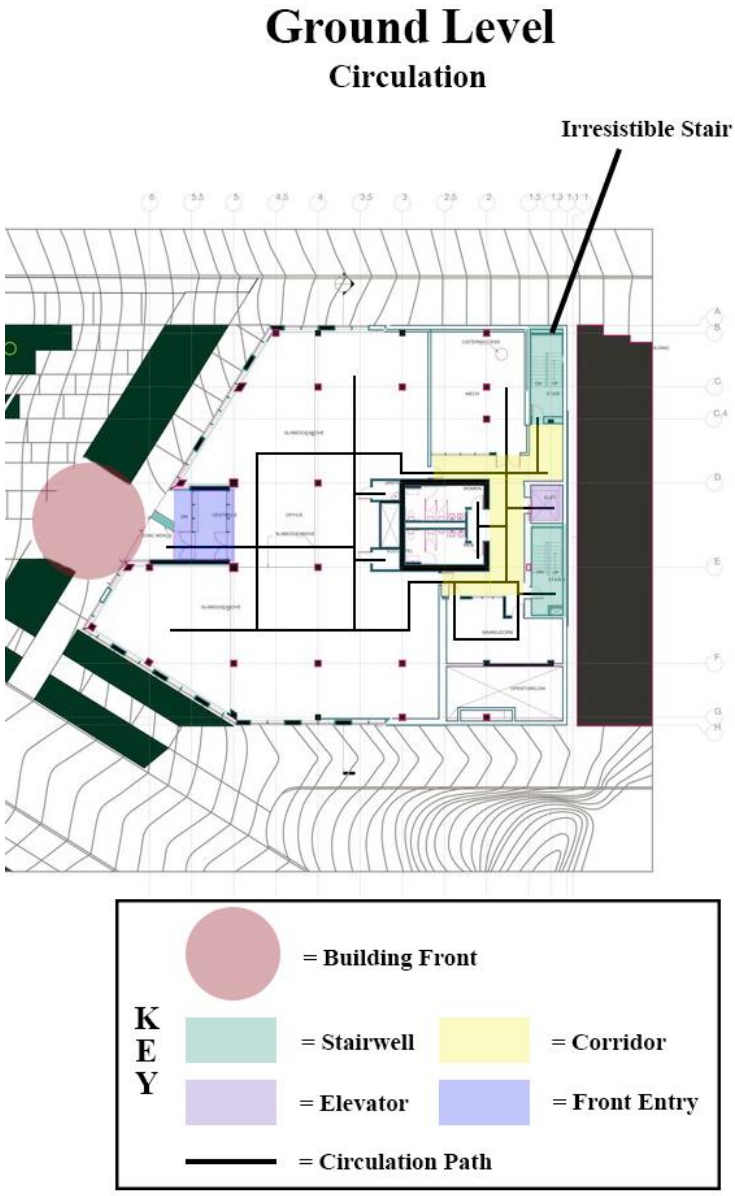


Figure 52. Ground Level: Circulation. Adapted from Archdaily & MHP

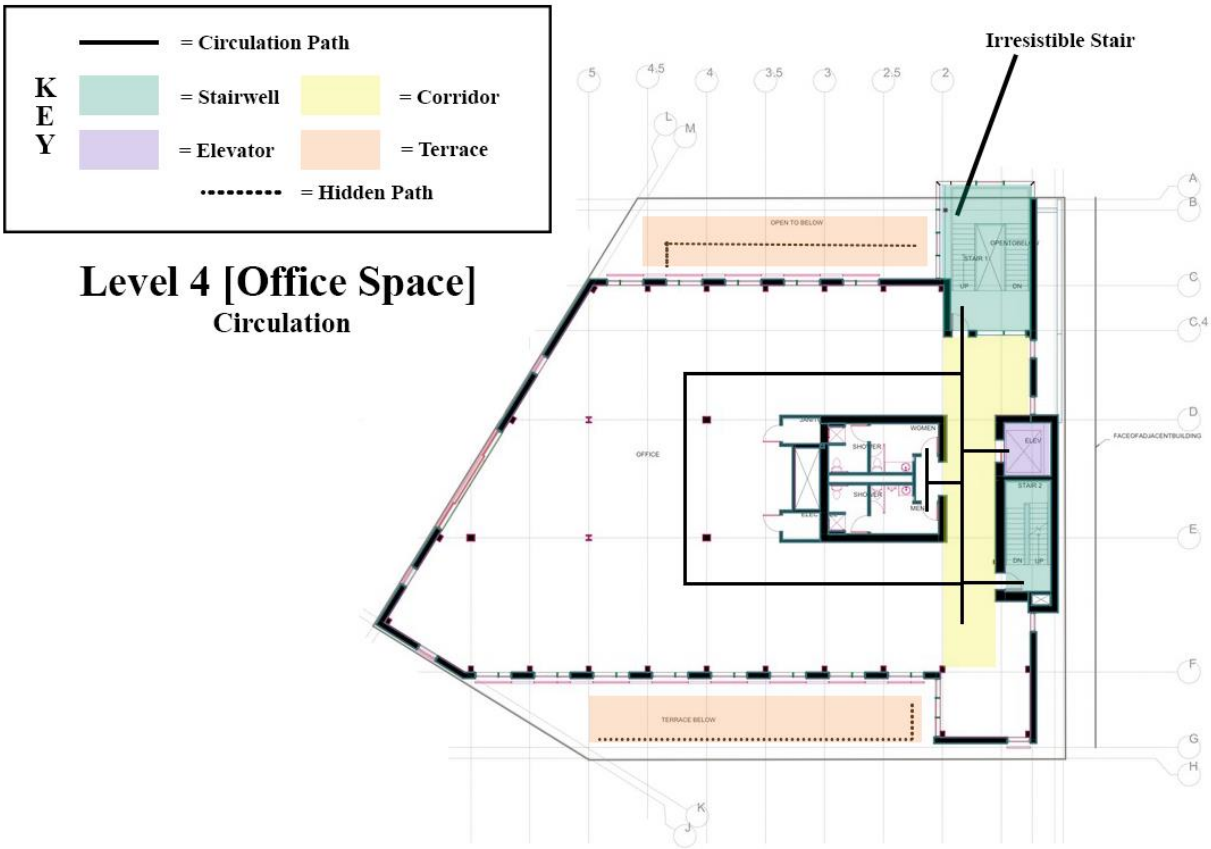


Figure 53. Level 4 Office Space: Circulation. Adapted from Archdaily & MHP

The office levels use even less circulation than the ground floor because of their absence in using corridors where you would expect dedicated circulation to be in detailing multiple offices and rooms. The multiple levels continue with the two stairways and still having one elevator in hopes of reducing the building energy consumption.

Orientation of Daylight & Structural Bays

In looking at the ground floor and level four floor plans from the prior section, one can notice the focus of using the most daylight. The windows surround the perimeter of the building on each floor averaging eight windows on the longest side. The orientation of the building based on the north direction facing the diagonal of the structure allows for the lightest on both longitudinal sides of the center (see Figure 44). The daylight is maximized along the sides able to catch sunlight, the three sides shown in figure 44 with windows gather light all throughout the day.

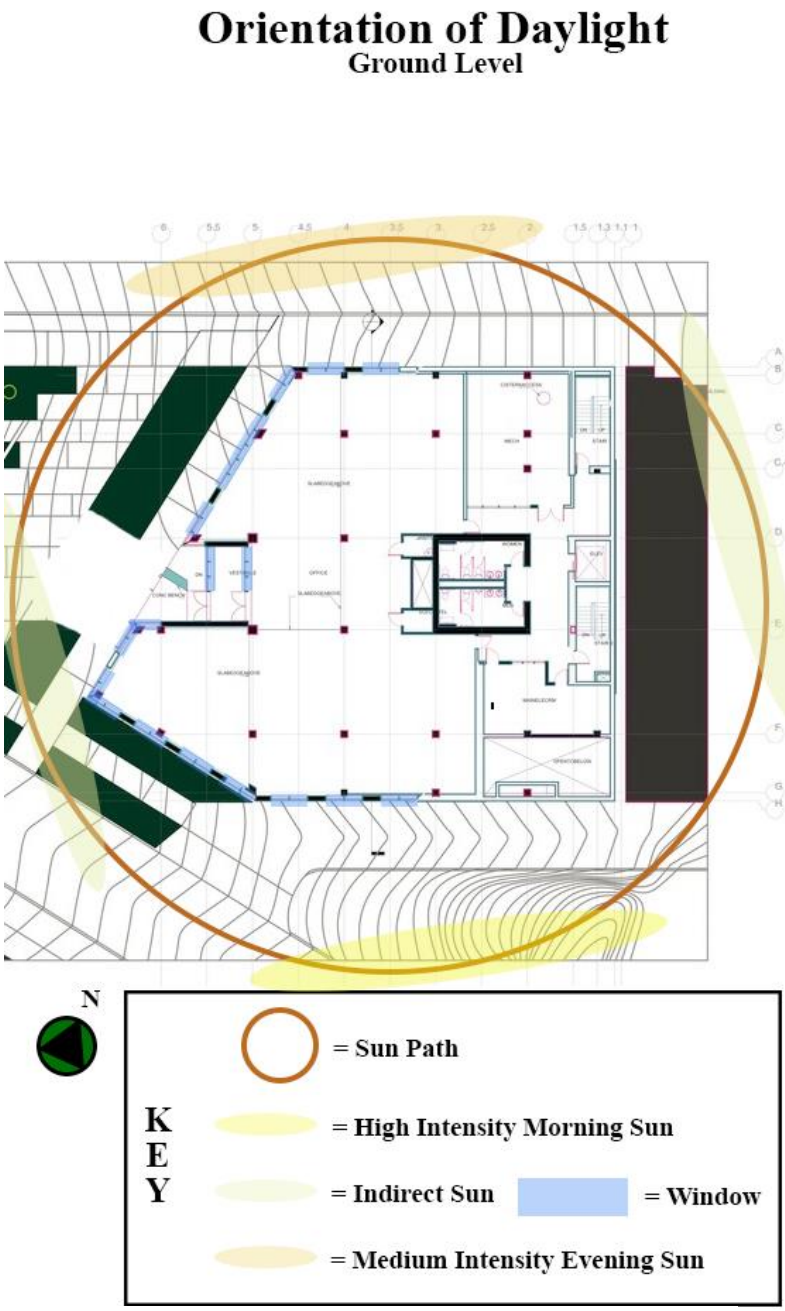


Figure 54. Orientation of Daylight. Adapted from Archdaily & MHP

One main reason for the orientation of daylight is to maximize daylight for the office spaces. The office spaces are laid out in relation to the light as well. The multiple arrays of windows around the East and West facing sides are large and encapsulate a vast amount of light for the floor space (see Figure 45). Daylight fills the space as a low amount of artificial light is added to the ceiling elements, prioritizing crisp daylight over artificial (see Figure 45).

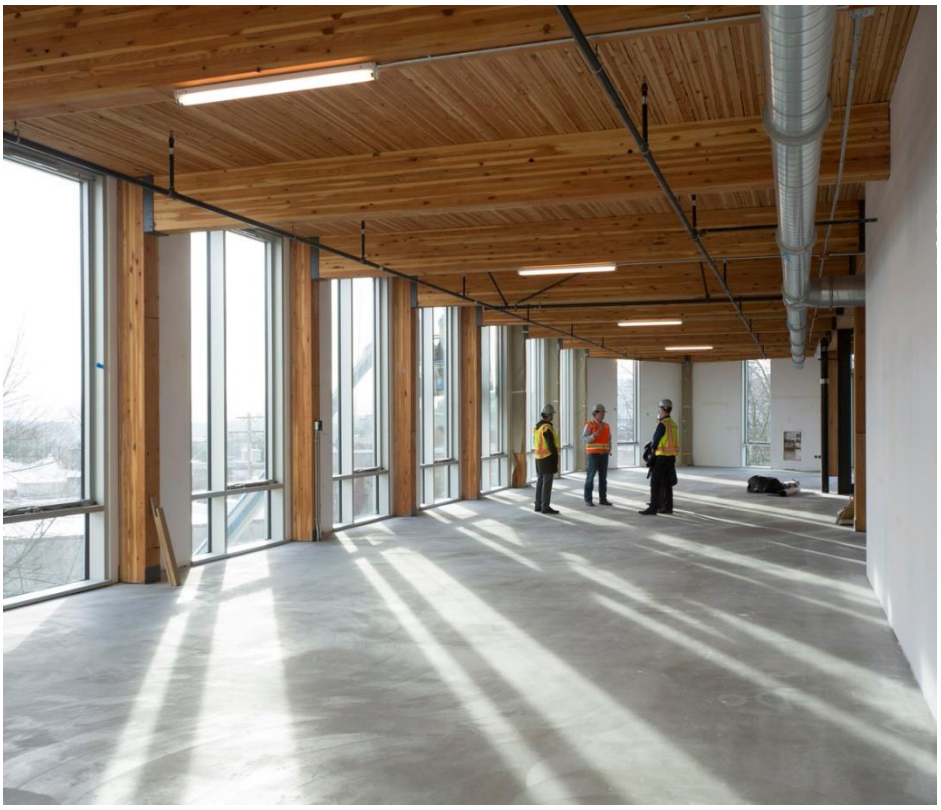


Figure 55. Window Array Detail View. Adapted from Archdaily & MHP

The structural elements of the site range from interior supporting columns, window columns, and large overhead beams supporting the floor levels (see Figure 46, 47 & 48). The interior columns are two square feet with an average structural bay distance of twenty feet from one another. The perimeter columns supporting the window arrays and overhead beams are twelve inches in width creating a structural bay of roughly ten feet between them housing the windows. The overhead beams spanning across all columns supporting the floor above are building length long and coordinate with the structural bays of the interior columns at twenty feet apart (see Figure 48).

Figure 56. Timber Frame. Adapted from Archdaily & MHP

As well as the structure is a combination of timber, concrete and steel which was all locally sourced to adhere to proper sustainability codes (see Figure 45). The heavy timber used details the frame of the building with multiple structural bays allowing for access to daylight and views.

Structural Systems
Section A

Figure 53. Structural Systems: Section A. Adapted from Archdaily & MHP

Structural Systems
Section B

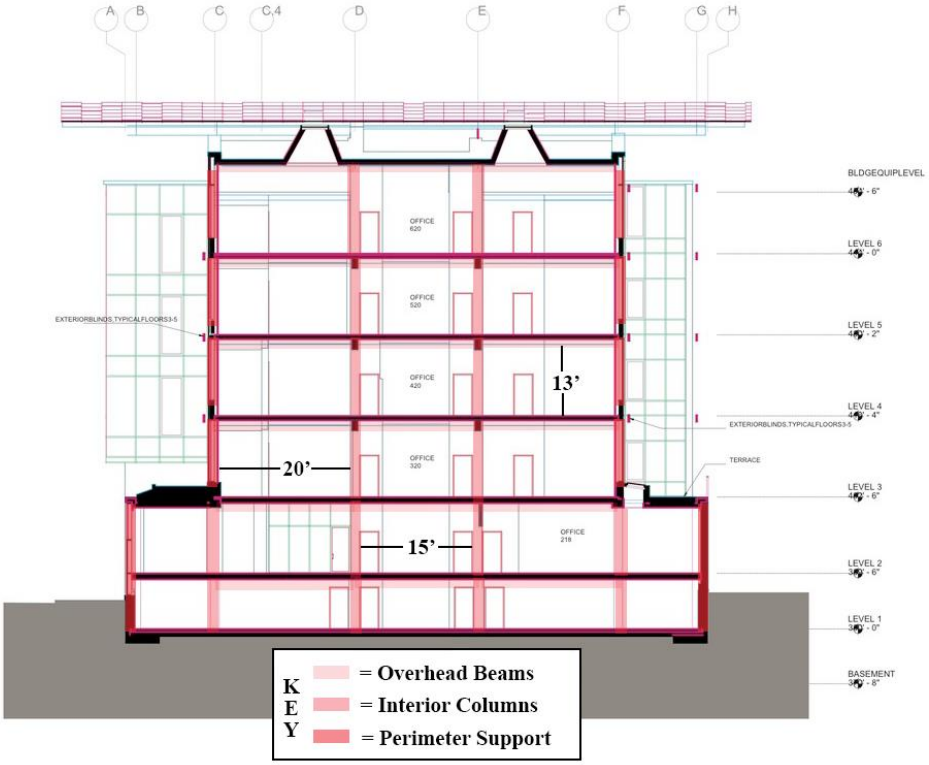
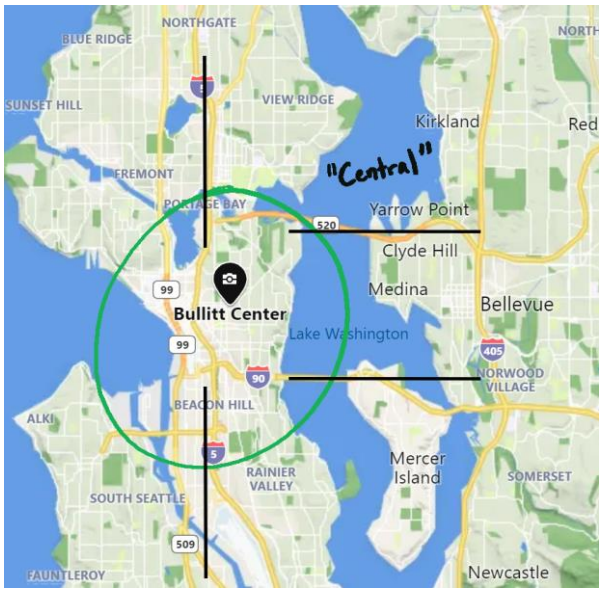


Figure 54. Structural Systems: Section B. Adapted from Archdaily & MHP

Urban vs Suburban Solutions

The Bullitt Center lies within the heart of Seattle; the center is central to six interstates and three districts surround it (see Figure 50). The Bullitt Center is in an urban environment, thus the solutions made by the designers were intentional for the urban parameters. The site uses sustainable "living building" design to help in the removal of emissions that alter the urban environment it exists in. Generating enough electrical energy from solar panels on the roof are 100% renewable and output enough energy to input into the surrounding electrical components (see Figure 36). The urban and sustainable solutions are harmonious working to benefit the physical health of the users and planet.



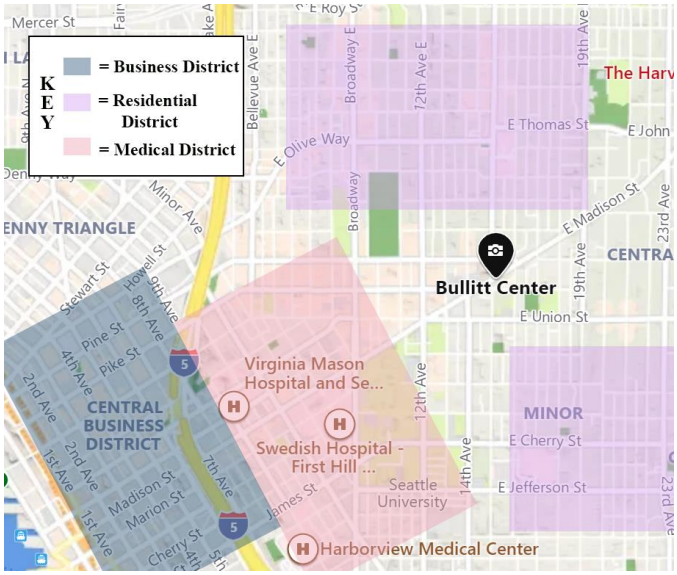


Figure 57. Urban Map: Enlarged Scope. Adapted from Google Maps *Figure 58. Urban Map: Detail View. Adapted from Google Maps*

Conclusion

The Bullitt Center is perfect in terms of sustainable systems application, reducing emissions, and serving a part for educating the community on sustainability, as well as providing workspace for the company. As the center efficiently provides sustainability, however, it brings up the idea that how these sustainable systems are made and disposed of. The materials used to create them form waste whether twenty years in the future, which is something to expand upon for the thesis site.

Case Study Five: Los Angeles LGBT Center

Project History

The Los Angeles LGBT Center (LALGBTC) is a community center designed by Killefer Flammang Architects (KFA) and Leong Leong Architecture group in the city of Los Angeles in California. The LALGBTC is a new building within the network of LGBT centers across California featuring the Anita May Rosenstein Campus. The history of the project is limited to the above, due to the lack of information prior to finished design and construction.

Project Objectives & Site Conditions

The LALGBTC exists on a side street in the city of Los Angeles, California and uses adjacent lots for their housing initiative (see Figure 51). According to KFA, the center is a "new typology for community-based urban development" which includes social and affordable housing programs. The objective of the center is to integrate unique programs and spaces that welcomely connects residents, neighbors, clients, and staff around the city. The center features programs in housing, administration, youth, seniors, arts, education, health, culture, leadership, social services and more. The main building site expanded from its original center form to incorporate cultural arts program and housing across the main site (see Figure 51).

Project Timeline & Cost

According to the Leong Leong (2021), Los Angeles LGBT Center finished construction in 2019. The timeline of the project includes no exact start date for the preliminary phases. The estimated cost is not publicly given, thus the information is limited to the above.

Title	Quantity	Function	Total SF		
Below-Ground Level					
Parking Garage	2	Services/ Utility	12,000 SF		
Ground Level					
Senior Center	1	Senior	4,600 SF		
Senior Housing	1	Senior	20,000 SF		
Main Building	1	All	4,600 SF		
Building Services	1	Services/ Utility	5,000 SF		
Public Restrooms	8	Services/ Utility	1,600 SF		
Youth Center	1	Youth	14,600 SF		
Youth Housing	1	Youth	5,000 SF		
Retail Center	1	All	3,000 SF		
General Administration	1	All	4,600 SF		
EOB Dorm + TLP Housing	1	All	6,000 SF		
Outdoor Space	1	All	5,700 SF		
Second Level					
Senior Center	1	Senior	4,600 SF		
Senior Housing	1	Senior	20,000 SF		
Public Restrooms	4	Services/ Utility	800 SF		
Main Building	1	All	5,000 SF		
Youth Housing	1	Youth	5,000 SF		
General Administration	1	All	4,600 SF		
EOB Dorm + TLP Housing	1	All	6,000 SF		
Arts Center	1	All	5,000 SF		
Third Level					
Senior Housing	1	Senior	20,000 SF		
Public Restrooms	2	Services/ Utility	400 SF		
Main Building	1	All	5,000 SF		
Youth Housing	1	Youth	5,000 SF		
General Administration	1	All	9,600 SF		
EOB Dorm + TLP Housing	1	All	6,000 SF		
		Combined Total SF	183, 700 SF		
Circulation	**Amount**	**Percentage**		**Title**	**Subtotal SF**
Stairwells	14	10%			
Elevators	8	5%		Services/ Utility	19,800 SF
Corridors	N/A	10%		Senior	69,200 SF
				Youth	29,600 SF
Total:		25%		All	65,100 SF

Table 7. Square Footages & Circulation Data Table. Reference to Figures 51-56

Project Analysis
Organization of the Program, Spatial Utilization, & Circulation

The program consists of 185,560 square feet of space utilizing the main building, a senior center, senior housing, a kitchen, a building service center, a youth center, youth housing, an EOB (Emergency Operations Board) dorm, TLP (Transitional Living Program) housing, an administration center, a retail center, and outdoor space. In the organization of the program, the project is efficiently organized based on the youth and senior LGBTQIA+ population (see Figure 51). The program is organized around a main building using it for priority functions including a kitchen, multipurpose space, and other utilities. The ground level includes access to the senior center, the main building, the youth center, the building services, the arts center, the EOB dorm, the TLP housing, the general administration, the retail center, the senior housing, the youth housing, and all outdoor space.

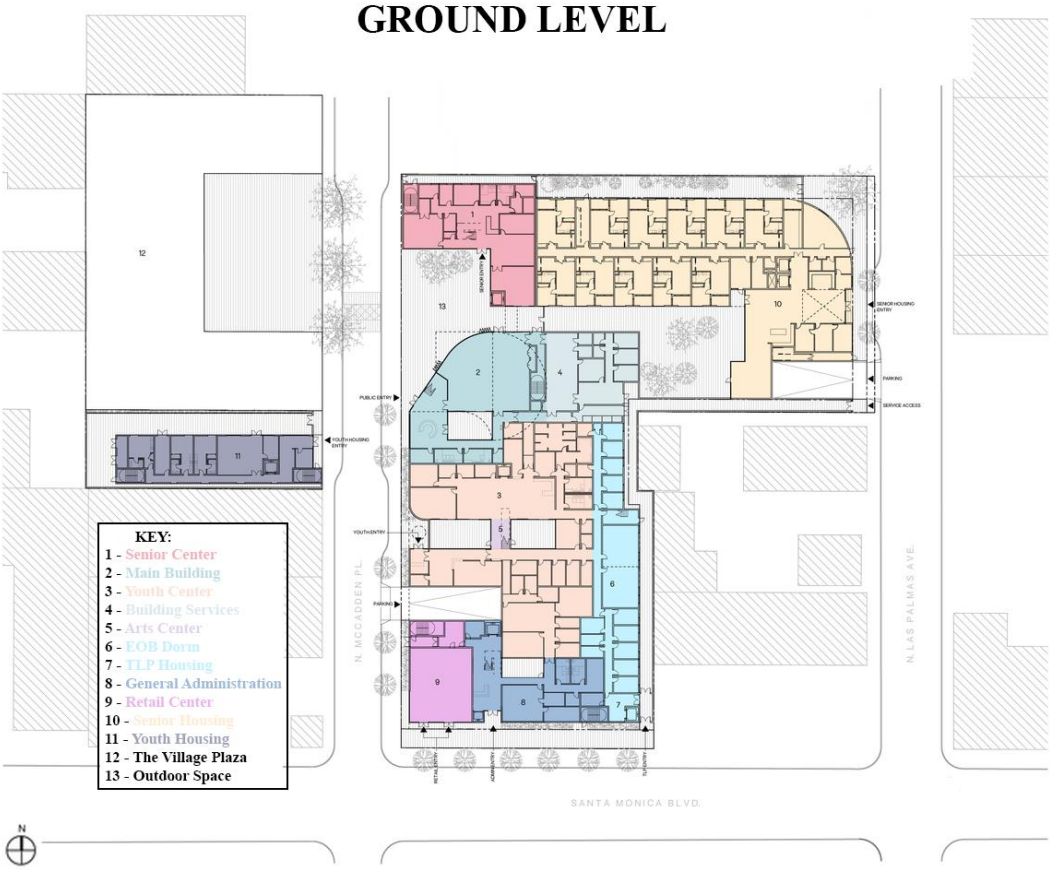


Figure 59. Ground Level Plan: LA LGBT Center. Adapted from Archdaily, Leong Leong, & KFA

The second level provides access to more of the senior center, the main building, the arts center, the EOB dorm, the TLP housing, more general administration offices, senior housing, and youth housing. It can be seen how the designers prioritized giving more housing across the floorplates, including three floors of housing. They utilized the space efficiently to prioritize the senior and youth community that is homeless or struggling in some way with a decent place to stay. Moreover, the second level continues the large administration offices for job, health, and other services that provide to the entire LGBTQIA+ community. As well as the organization of the program is categorized by the services it provides, keeping the access throughout that type of service within their certain allotments whether above or below levels (see Figures 51-53).

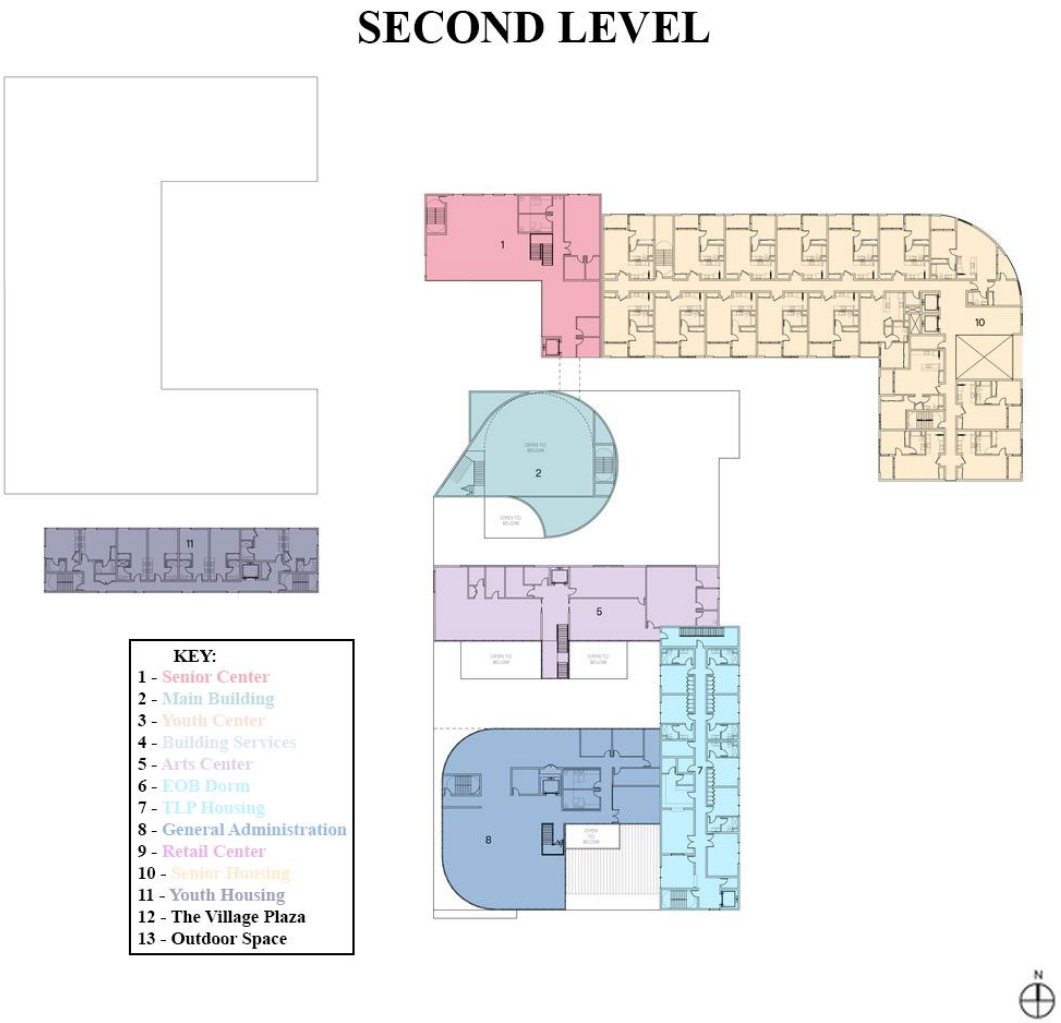


Figure 60. Second Level Plan: LA LGBT Center. Adapted from Archdaily, Leong Leong, & KFA

The third level of the LALGBTC features more access to the main building services, the EOB dorm, the general administrative offices, the senior housing, and the youth housing. In terms of the spatial utilization, the three housing centers and administrative services took priority using all three levels (see Table 5). The center continues with organizing the program based on connectivity, keeping the relative services near each other like the EOB dorm & TLP housing. Instead of having the program surround a central foyer like in the *Lendrick Community Center Case Study*, the LALGBTC distinguishes separate zones across the lot site.

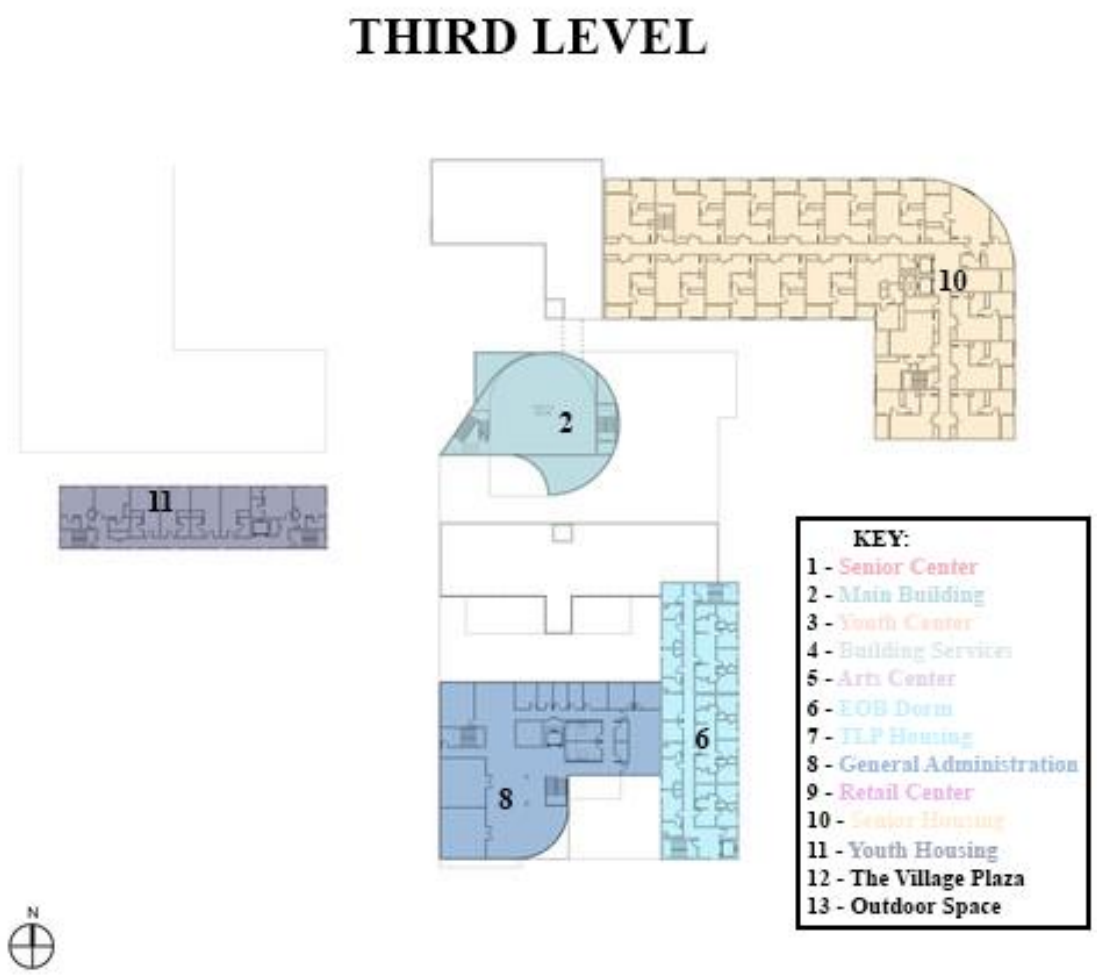


Figure 61. Third Level Plan: LA LGBT Center. Adapted from Archdaily, Leong Leong, & KFA

Circulation

The circulation of the center includes multiple corridors, stairwells, and open pathways like outside connection points. LALGBTC primarily uses corridors for the access to different building zones like from the youth center to the general administrative services (see Figure 54). There are fourteen stairwells within the floor levels; some only for accessing the multiple floors inside a particular zone like the housing or for accessing the parking garages like in the retail center (see Figures 54-46). Elevators are provided in every zone of the LALGBTC except in the retail center, main building, and the building services. There are two elevators primarily placed in the senior housing specifically because the users will be of older age and therefore, the designers thought the user will benefit physically by not using the stairwells (see Figures 54-56). The circulation spans across multiple building types while keeping them separated if need be private or public use (see Figure 57) and the lack of open corridors allows for the circulation to be easier to navigate this large site. As well as the outdoor access along the ground level allows the user to directly travel where they need to go without having to travel through the other building zones which is an important element (see Figure 54).

Figure 62. Ground Level: Circulation. Adapted from Archdaily, Leong Leong, & KFA

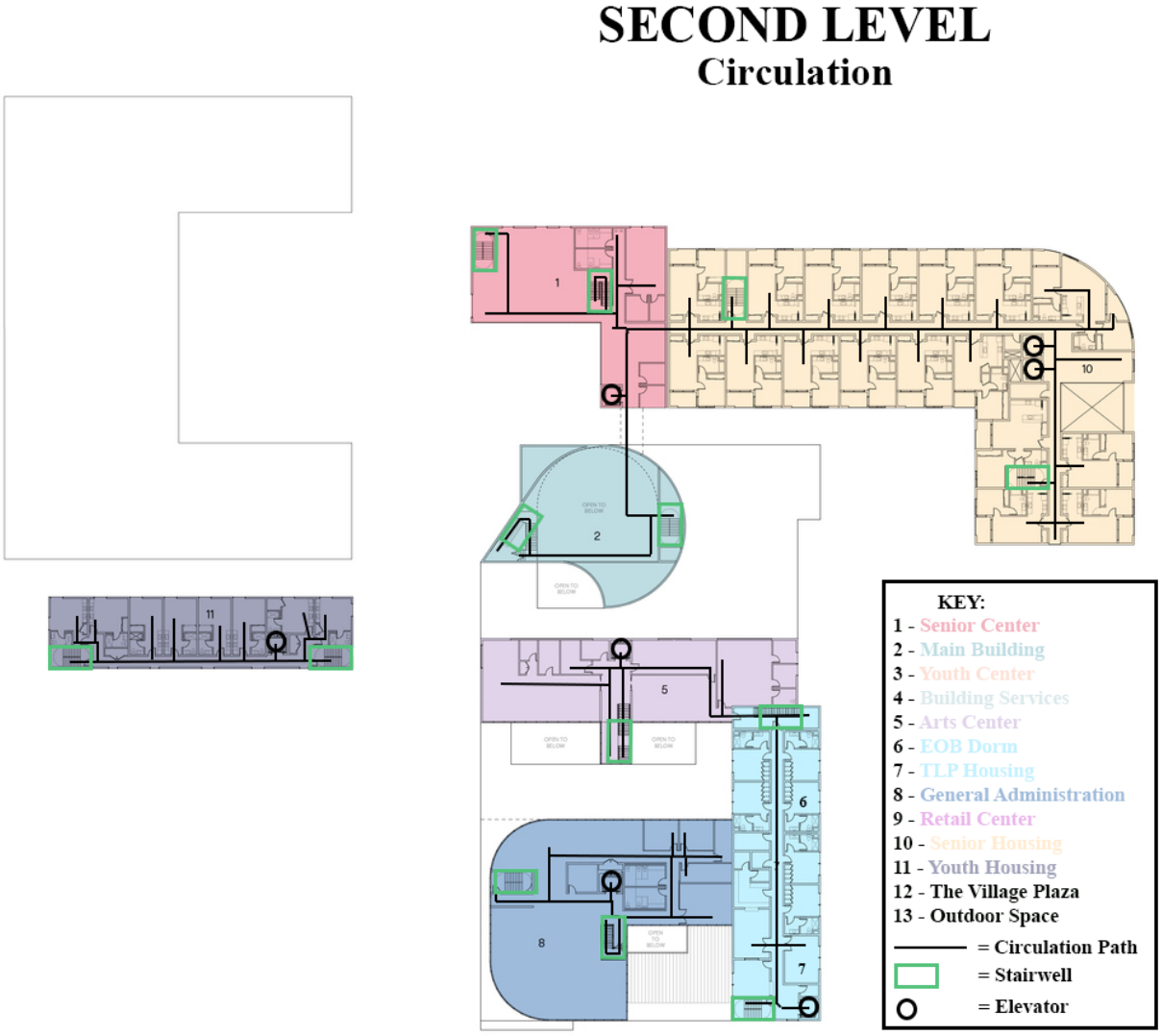


Figure 63. Second Level: Circulation. Adapted from Archdaily, Leong Leong, & KFA

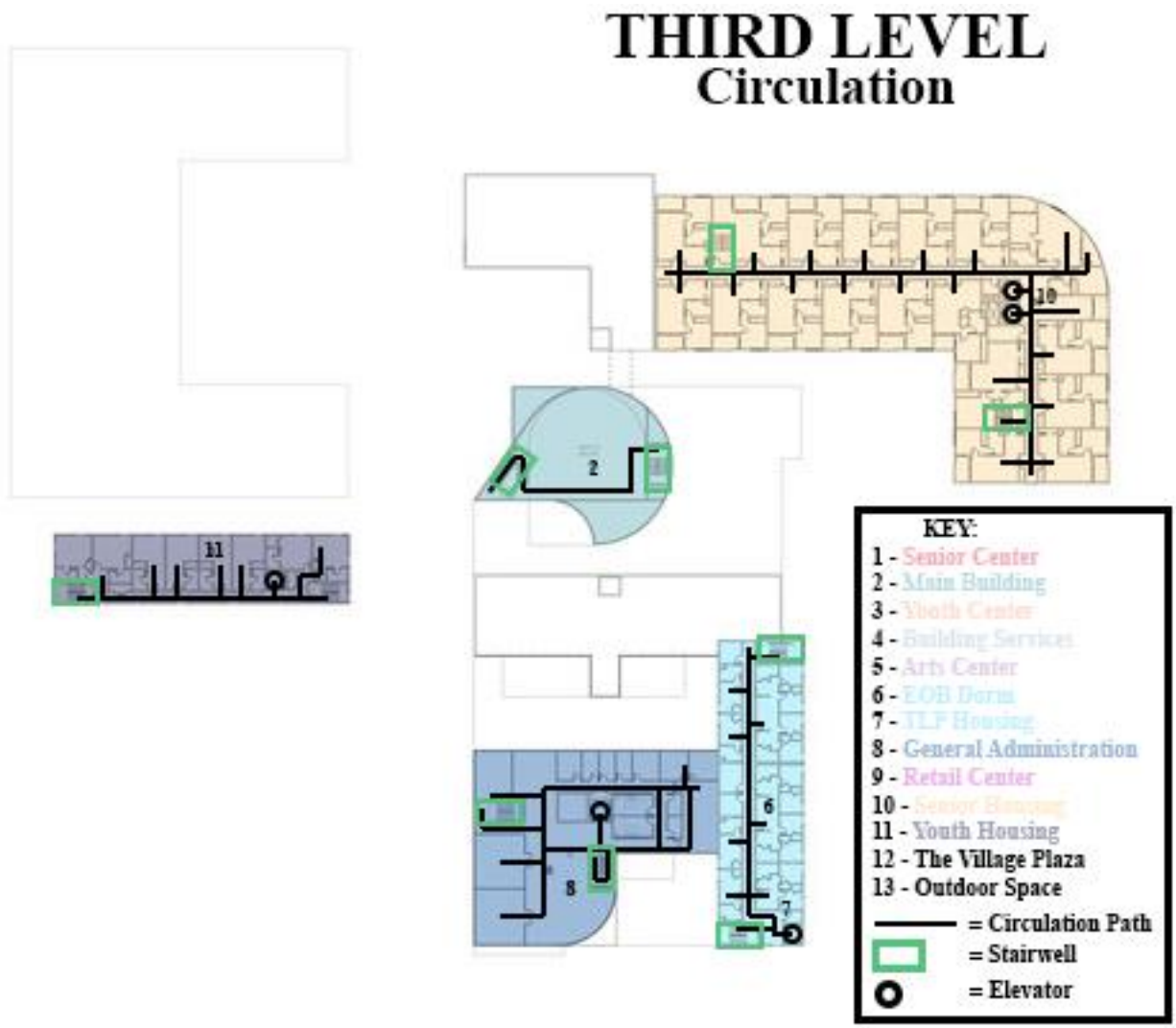


Figure 64. Third Level: Circulation. Adapted from Archdaily, Leong Leong, & KFA

Public vs Private

Furthermore, the youth and senior housing is located adjacent to the main building which informs that these spaces are more private than the rest of the program. The zones of the project site that are public to any user include the outdoor space, the main building, the building services area, the retail center, and the Village Plaza. These spaces are publicly accessible by anyone of the LGBTQIA+ community and useable no matter youth or senior. However, the private spaces dictated as the youth housing, the senior center, the senior housing, the general administration, the EOB dorm, the TLP housing, and the youth center are all private to specific types of people like the youth or senior population (see Figure 57). The spatial planning of the site allows for all the public users to not interfere with the private services which may be going on; the housing is separated from the larger center and the other private zones are separated by corridors keeping the user in mind.

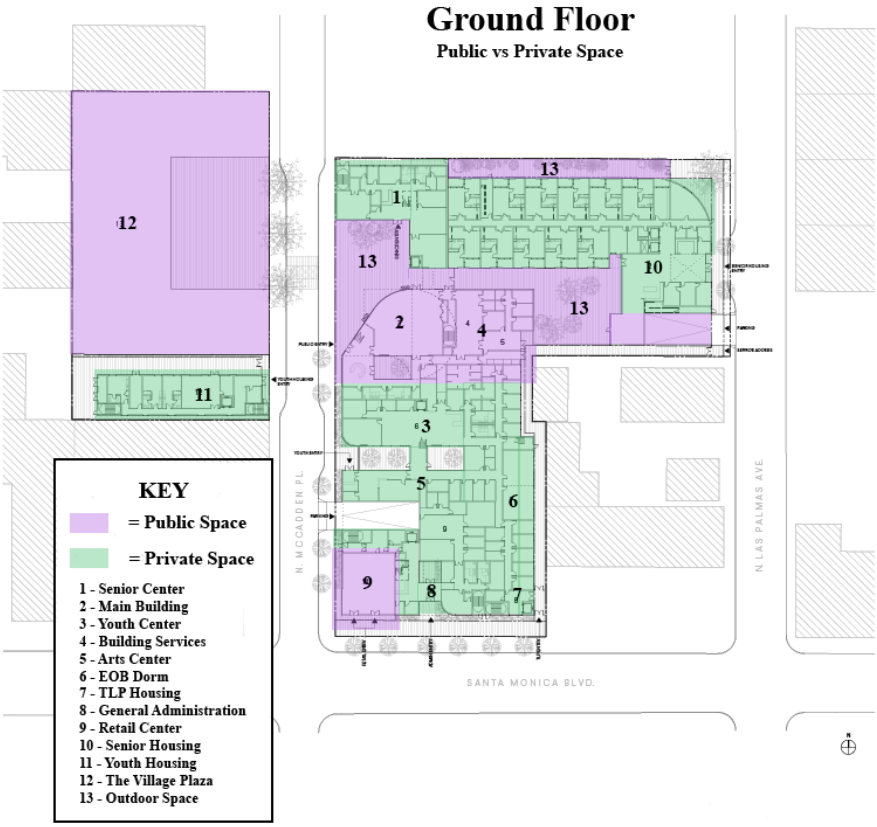


Figure 65. Ground Floor [All Center Zones]: Public vs Private Space. Adapted from Archdaily, Leong Leong, & KFA

Orientation of Daylight & Structural Bays

Regarding the orientation of daylight, the site sits on a corner lot with access to daylight in all the building zones due to the amount of glazing provided. The North end of the center site includes the senior center and housing which receives a lower intensity light than the other zones (see Figure 58). The reasoning behind this is senior community members may be more susceptible to irritation from the sun or could be bothersome if high intense light shines on that area. Moreover, high intensity daylight shines on the center's East side against the entire central center including the main building, the youth center, the EOB dorm, the TLP housing, the art center, the general administration, and the building services (see Figure 58). The focus of high intensity light on those zones is understood because they require daily lighting for activities happening throughout the day and, they are more general use versus the senior zones. Furthermore, the South end of the center receives indirect low intensity light daylight in the retail zone, the general administration, and the TLP housing (see Figure 59). Lastly, the West side of the center receives medium intensity evening daylight and having most of the glazing on this side allows for a warm comfortable lighting at the end of the day for the center. (see Figures 58-60).

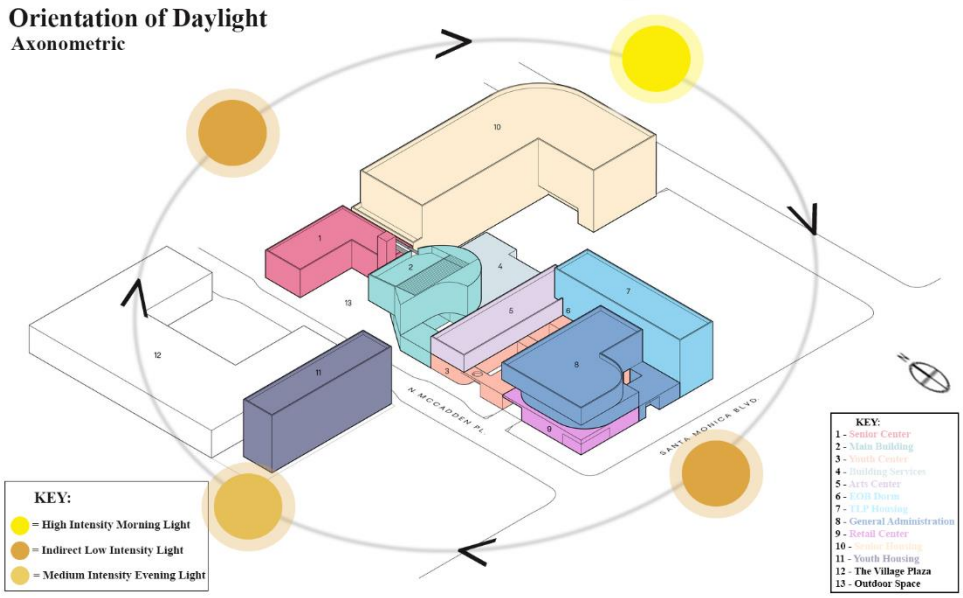


Figure 66. Axonometric: Orientation of Daylight. Adapted from Archdaily, Leong Leong, & KFA

The structural bays throughout the floor levels are consistent of perimeter elements like window glazing, tall walls, and overbearing beams due to the scale of the design. In the center, the SW view of the center displays the use of window glazing as a structure perfectly (see Figure 59). The ground floor window glazing is twenty-five feet long and the average window width is four feet (see Figure 59). While the walls forming the center get larger the number of windows increases without changing the window widths, allowing for ample support overhead.

Figure 67. Southwest View: Structural Systems. Adapted from Archdaily, Leong Leong, & KFA

In looking at more structure within the center's perimeter, the South view shows more glazing and the use of bays in the exterior entries. The exterior entry bays from column to column are ten feet wide providing ample space for two-way traffic and overhead support to the second level (see Figure 60). As well as showing the tallest structure of the center, the EOB dorm and TLP housing zones. This area of the center introduces traditional windows and shows the structure stacking between levels (see Figure 60). The structure is fifty feet wide like the middle glazing, which is fifty-two feet, producing the need for large beams across the plenum.

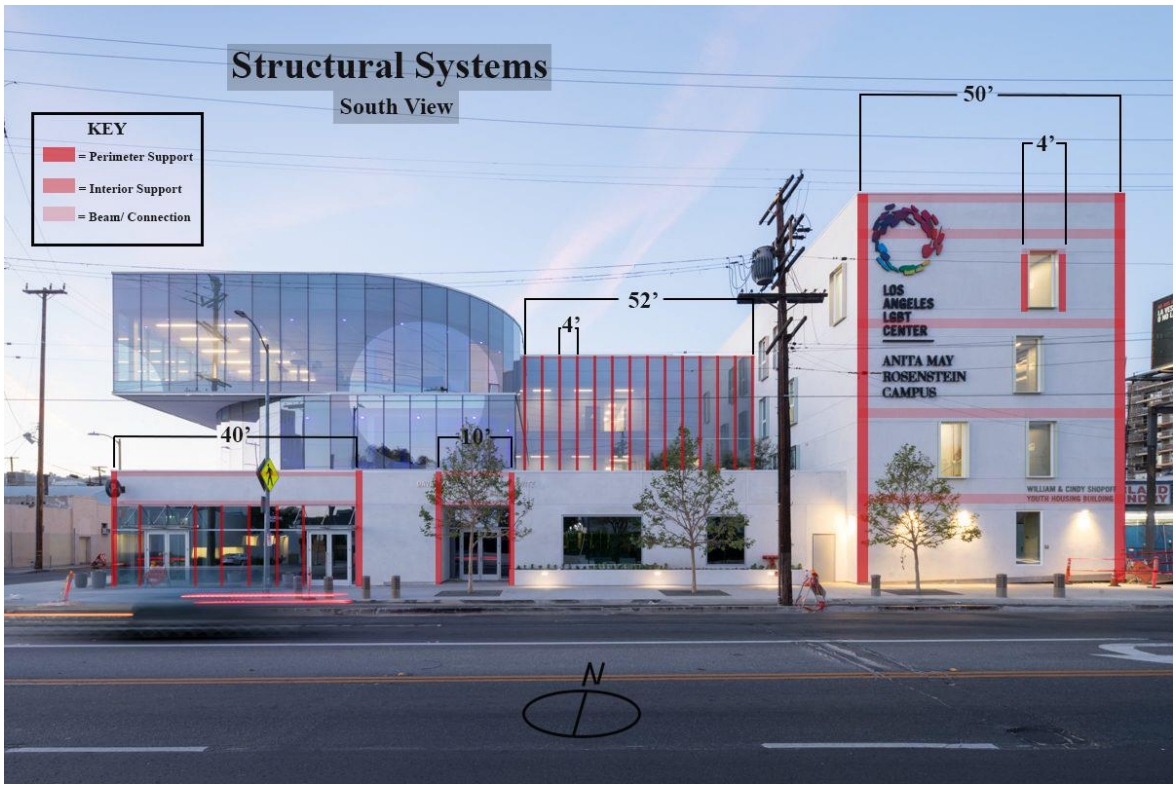


Figure 68. South View: Structural Systems. Adapted from Archdaily, Leong Leong, & KFA

Looking at the East view of the center, it can be further seen the use of a more traditional structural system. The long walls feature traditional four-foot inset windows across a typical framework with a length of 105 feet. The structure is more traditionally laid out due to the fact there are housing spaces facing this way and window glazing structure would be too overwhelming for the users (see Figure 61). The combination of structure and orientation of daylight go hand in hand because the daylighting dictates the windows, which the windows determine whether structural bays will be glazing or traditional wall to wall.

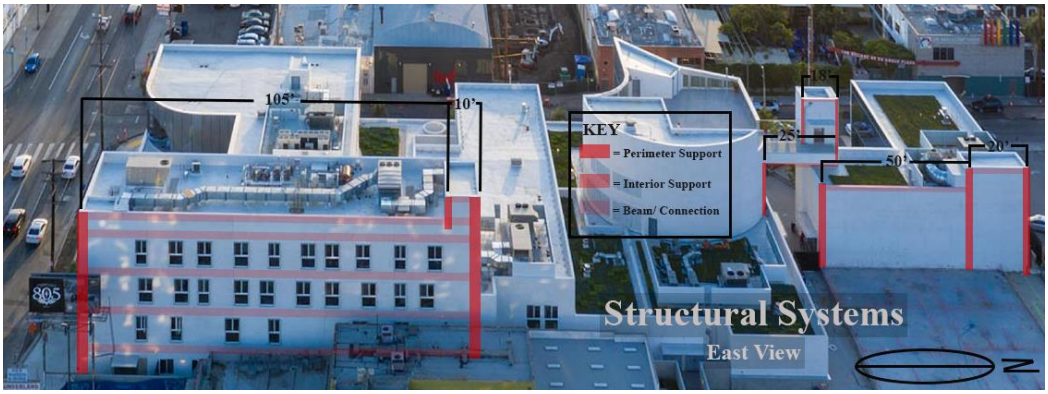


Figure 69. East View: Structural Systems. Adapted from Archdaily, Leong Leong, & KFA

Urban vs Suburban Solutions

The Los Angeles LGBT Center is in an ever-growing and diverse urban setting; the solutions made by the designers from the program, the structure, the daylight orientation, and more were all made with keeping in mind the urban site it is in. The LALGBTC sits on a large lot of public space surrounded by an intercepting highway, multiple heavy populated LGBTQIA+ cities, residential areas, and within a heavy tourist populated area (see Figure 62). The opportunity to serve and benefit the LGBTQIA+ community is higher by putting this design in an urban setting near all these parameters. The highways provide easy transit, as well as the public commute stations, and the cities surrounding are populated with the community it wishes to support.

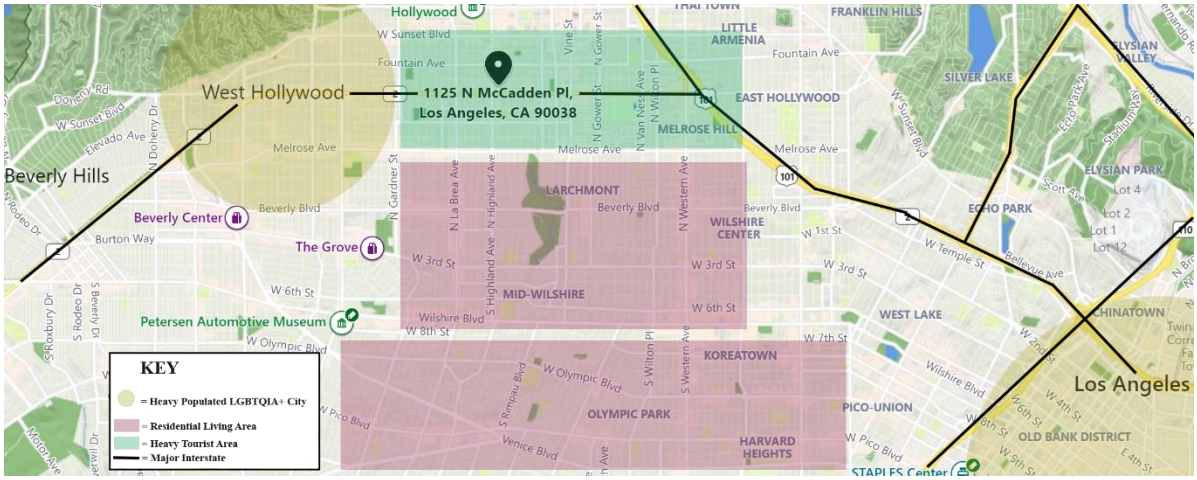


Figure 70. Urban Map: Large Concept. Adapted from Google Maps

The urban solutions also include short walking distance of five minutes from five public transit stations and multiple public places (see Figure 63). The designers kept in mind this urban environment by also providing a solution of parking garages. The parking garages are another urban solution that can promote more visitors and easy access (see Figure 51). The LALGBTC becomes a part of the community itself having easy access and from understanding the community it is surrounded by.

Figure 71. Urban Map: Detail. Adapted from Google Maps

Conclusion

The Los Angeles LGBT Center is a project that incorporated a lot of relevant elements to this thesis. It's use of structure and prolific program provide great insight on how much community center design can provide. The use of housing on site is not a common practice, in fact, it is the first center to implement on-site housing within the case study research. In the aspect of public vs private space, the use of zoning specific functions within their own building with multiple levels is refreshing. Having the various programs easy to navigate and use because of the precisely calculated circulation allows for a more optimal center. The LALGBTC is an integral piece to this thesis research and design, proving again, that community center design can be both beautiful and a communal necessity. On the other hand, the center focuses most of its housing program to the senior demographic, if a community center wishes benefit more people, it could be best to not separate the adult housing by age at all (see Table 5).

PROPOSED PROGRAM

Explanation of Client, Design Parameters, Critical Spaces, & FFE

Mark Degner

ID 4940 Portfolio I

November 4, 2021

Client Identity

The Atlanta Fulton Central Library is currently being used by the Fulton county government, thus the client initially is the Fulton county library system. The library system includes a committee of sorts and, the historical society because this building is a registered historical building because of its significance in the Brutalist movement by Marcel Breuer. The client also includes LGBTQIA+ community organizations that would be supporting this future community center. The local Atlanta LGBTQIA+ organizations that enable easier access and trust with the community are a big part of client profile. For a community center to work, there must be an interested and supportive source. On top of the clients who own the existing building and regulate it, there are the users. The users of the community center consist of members who identify openly or privately as LGBTQIA+. The location includes client users of LGBTQIA+ students from local universities, the general public, and the staff to be trusted in working here.

Design Parameters

This section of the proposed program will detail what parameters will be set for lighting, ventilation, materials, structure, and other systems for sustainability.

Lighting

The lighting across the community center will use all lighting layers including daylight, focal, decorative, ambient, and task. Daylighting will come from perimeter windows across all building levels except the below-ground level due to limiting factors of sunlight access. The daylighting will provide clean and crisp light for the open concept ground floor, offices spaces, housing, and other levels of the center. Focal layer will be minimal due to the size of center and need for more larger lighting, but focal lighting will be used in hopes of an LGBTQIA+ history gallery. Also, providing focal lighting around the front entry and on the rooftop because those areas require the

ability to see clearly, especially at night. Ambient lighting will fill spaces like corridors, public restrooms, and other auxiliary places requiring warm ambiance. Decorative layer will be mostly seen in lighting for reception, housing units, and the multiple center spaces like the café or the fresh market. Task lighting will primarily be used in spaces like restrooms and the office relative spaces of center. Task lighting will work with the ambient layer to keep the space bright and useable whether working or other functions like washing hands in the restroom.

Ventilation

In terms of ventilation, the sustainable design sets the parameters for this. Ventilation will have to be efficient and use energy optimally. Taking inspiration from *Case Study Four: Bullitt Center*, using night flushing to reduce energy and bring in natural ventilation for the space. Natural ventilation from night flushing technique can be achieved with minimal opening distance windows to provide enough ventilation access and safety for occupants. The air from the night will naturally cool the building for opening each morning. As well as using an high efficiency HVAC system with the best rating that fits under LEED guidelines to work well with the natural ventilation system.

Materials

The materials of the community center will include renewable, reusable, and/ or recyclable materials from the building structure and interior. LEED-based criteria for material selections include being ethically, locally, and sustainably sourced, ASTM rating (Wood products with ASTM D7612-10 rating for 100% of their value), and other will be further developed in the design phase of this thesis. As well as having material purchases within 100 miles of project site increases material value by 200%, thus their sustainability factor from putting economy into the community. Also, in total within a 500-mile radius to keep with the guidelines in general.

In terms of the look of materials like wood, it will be unfinished highlighting natural warm tones free of VOCs from common finishes. Structure-wise, materials like beams and metal supports will be minimal in their consumption of space and extra materials to hide them. Reducing the number of materials in keeping the structure shown allows for better building life efficiency.

Figure 72. Materials Inspiration: Japanese Wood Style. Adapted from Homedit

Equipment & Furnishings

The equipment would include within a LEED sustainable bracket like low-flow toilets, optimal sinks, and other equipment. This mostly includes plumbing equipment due their direct contact with the greywater and waste composting systems. Other equipment may include innovative floor tiles that convert foot traffic to energy production with the energy conversion system. Furnishings will be sustainable and rated for LEED design parameters. For example, possibly using Knoll's sustainable collection of furniture if aligns with design (see Figure 2), for thesis design phase. As well as using rated furniture qualified from EPDs (Environmental Products Declarations), FSC (Forest Stewardship Council) certification for wood products, being red list

free, and other parameters. According to Green Building Alliance (2021), the red list currently consists of asbestos, cadmium, chlorinated polyethylene and chlorosulfonated polyethlene, chlorofluorocarbons (CFCs), chloroprene (neoprene), formaldehyde, halogenated flame retardants, hydrochlorofluorocarbons (HCFCs), lead, mercury, petrochemical fertilizers and pesticides, phthalates, polyvinyl chloride (PVC), wood treatments containing creosote, arsenic, or pentachlorophenol. These items on the red list will need to be specified as not present to work with the LEED sustainable design.

Figure 73. Knoll Autostrada LEED Certified Workspace System. Adapted from Knoll Furniture

Growth & Expansion Objectives

In terms of growth, this project can expand across the world. Future centers can take after the practice of having community centers designed to provide all services in one site. The Atlanta HIVE can become a part of a chain of LGBTQIA+ center across the globe, essentially. As well as expanding the physical site in Atlanta into other buildings for more housing if need be.

Critical Spaces & Functions

Title	Amount	Function	Total SF
Below-Ground (B) Level			**24, 467 SF**
Water (Rainwater) Management System	1	Service/ Utility	1, 000 SF
Energy Conversion/ Battery	1	Service/ Utility	3, 000 SF
Greywater System	1	Service/ Utility	900 SF
Ground Source Heat Exchange	1	Service/ Utility	400 SF
Waste Management System	1	Service/ Utility	500 SF
Maintenance Office	2	Service/ Utility	200 SF (100 SF EA)
Maitnenance Closet	2	Service/ Utility	200 SF (100 SF EA)
Mechanical Storage	3	Service/ Utility	1, 200 SF (400 SF EA)
Restroom	5 (1 stall EA)	Service/ Utility	300 SF (60 SF EA)
Ground Level			**22, 954 SF**
Main Lobby/ Reception	1	Service/ Utility	1, 000 SF
Public Restroom	2 (All Gender/ 10 stalls)	Service/ Utility	1, 200 SF (600 SF EA)
Market	1	Cultural	3, 000 SF
Private Meeting Space	5	CUltural	600 SF (120 SF EA)
Public Meeting Space	8	Cultural	2, 400 (300 SF EA)
LGBTQIA+ Museum	1	Cultural	954 SF
Volunteer Center	1 (4 organization organization booths with studio space)	Cultural	4, 000 SF (1, 000 SF EA)
Auditorium	1	Cultural	5, 000 SF
Outdoor Plaza	1	Cultural	4, 800 SF
Second Level			**26, 380 SF**
Gym	1	Physical	4, 000 SF
Private Gym	10	Physical	4, 000 SF (400 SF EA)
Yoga Room	2	Physical	3, 000 SF (1, 500 SF EA)
Dance Studio	2	Physical	3, 000 SF (1, 500 SF EA)
Auditorium (Upper Section)	1	Cultural	5, 000 SF
Music Room	2	Physical	1, 180 SF (590 SF)
Tennis Court	1	Physical	5, 000 SF
Public Restoom	2 (All Gender/ 10 stalls)	Physical	1, 200 SF (600 SF EA)
		Service/ Utility	
Third Level			**27, 965 SF**
Building Administration	1 (30 cubicles)	Professional	1, 800 SF (60 SF EA)
Therapist Office	5	Professional	500 SF (100 SF EA)
Job Finding Office	10 (cubicles)	Professional	600 SF
Homelessness Outreach	1 (20 cubicles)	Professional	1, 200 SF
Public Restroom	1 (All Gender/ 5 stalls)	Service/ Utility	600 SF
Break Lounge	1	Service/ Utility	800 SF
Fourth Level			**28, 517 SF**
Youth Housing w/ Private Bathrooms	1 (28 apartments/ 600 SF EA)	Youth Housing	16, 800 SF
Playground	1	Youth Housing	1, 250 SF
Public Restroom	1 (All Gender/ 5 stalls)	Service/ Utility	600 SF
Dining Hall w/ Kitchen	1	Youth Housing	2, 000 SF
Public Hangout Area	2	Youth Housing	800 SF (400 SF EA)
Caretaker Office	4	Youth Housing	280 SF (70 SF EA)
Caretaker Lounge/ Break Room	1	Youth Housing	400 SF
Caretaker Housing w/ Private Bathrooms	4 apartments	Youth Housing	3, 200 (800 SF EA)
Theater	1	Youth Housing	1, 000 SF
Fifth Level			**28, 597 SF**
Adult Housing	1 (32 apartments)	Adult Housing	25, 600 SF (800 SF Each)
Public Restroom	1 (All Gender/ 5 stalls)	Service/ Utility	697 SF
Public Lounge	2	Adult Housing	1, 600 SF
Reception/ Lobby	1	Adult Housing	700 SF
		Adult Housing	
Sixth Level			**28, 597 SF**
Adult Housing	1 (32 apartments)	Adult Housing	25, 600 SF (800 SF Each)
Public Restroom	1 (All Gender/ 5 stalls)	Service/ Utility	697 SF
Public Lounge	2	Adult Housing	1, 600 SF
Reception/ Lobby	1	Adult Housing	700 SF

Table 8. Thesis Site: HIVE Community Center Proposed Program SF & Circulation. 1/2

Seventh Level + Roof			**13, 741 SF**
Garden	1	Cultural	5,000 SF
Rooftop Community Space	1	Cultural	2, 441 SF
Greenhouse	1	Cultural	1,800 SF
Solar Panel System	1	Service/ Utility	4, 500 SF
Eigth Level			**12, 485 SF**
Pool	1	Physical	5, 000 SF
Pool Bar	1	Cultural	2, 500 SF
Lounge Area	1	Cultural	2, 000 SF
Rainwater Catchment	1	Service/ Utility	2, 985 SF
		TOTAL SF:	**213, 703 SF**
Circulation Type	**Percentage**		
Corrdors	15%		
Elevators	5%		
Secondary Stairwell	5%		
Central Stairwell	10%		
TOTAL %:	**35%**		

Table 9. Thesis Site: HIVE Community Center Proposed Program SF & Circulation. 2/2

SITE SELECTION

Site Parameters, Building Appropriateness, & Codes/ Zoning

ID 4940

Mark Degner

November 23, 2021

Building Selection

Project Location

The location of the project is in Downtown Atlanta (1 Margaret Mitchell Sq NW, Atlanta, GA 30303); surrounded by public transit, residential districts, and other public use spaces. The existing building sits on its own lot with street access around all sides. The location of the project is an optimal location for sustainability and community engagement efforts because of access to public transit, walkability, and relation to local LGBTQIA+ population. The Atlanta Fulton Central Library's current location is a five-minute walk to multiple bus stations and community used locations meaning the opportunity to bring people in is high (see Figure 1).

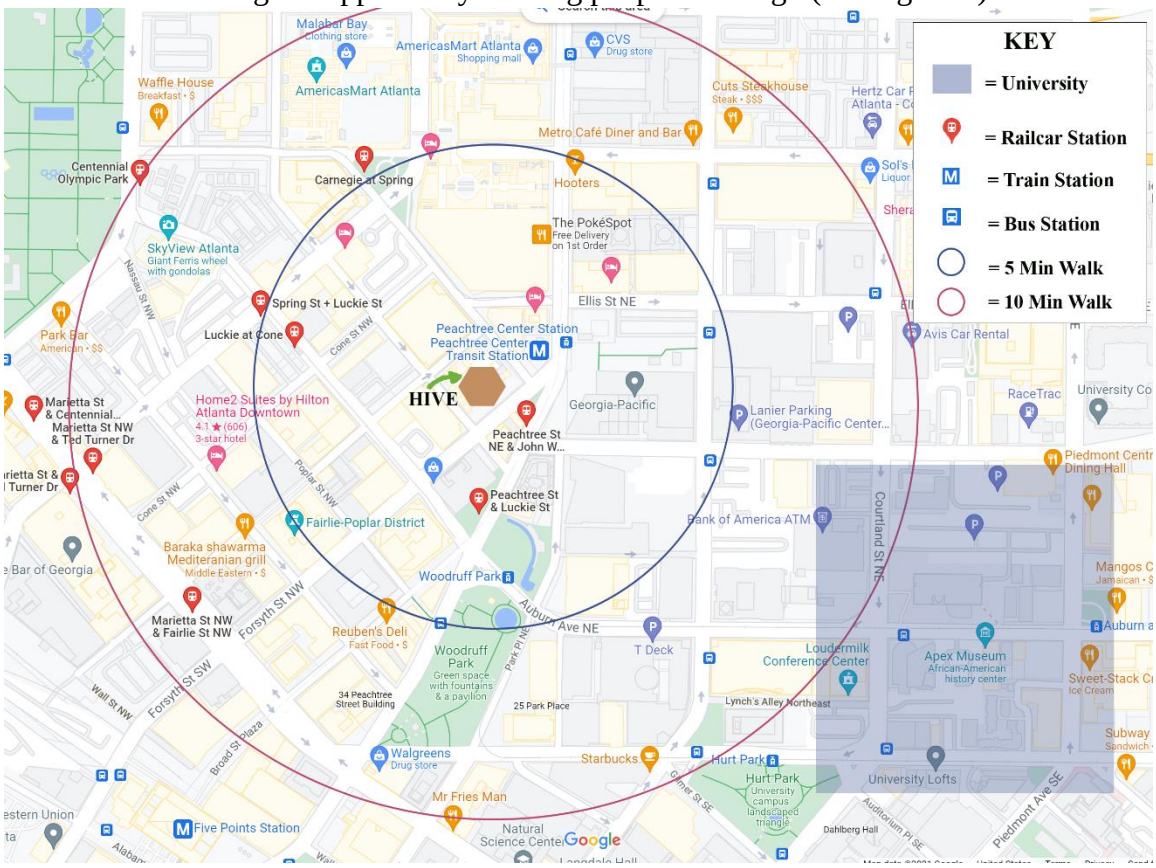


Figure 74. HIVE Project Location Map. Adapted from Google Maps

The LGBTQIA+ population which is most concentrated in major cities like Atlanta are within a ten-minute walk to two city-wide train station, public parks, and universities (see Figure 1). In

terms of the LGBTQIA+ population and sustainability, the existing location fits perfectly for the proposed thesis design of the HIVE Community Center.

Parameters of Site/ Building

In looking at the building, there are a number of parameters to examine such as its access to daylight, historical importance, the size of the building itself, and its circulation factor. Regarding the access to daylight, the existing building provides access to daylight very minimally across the front entry side. The current access to daylight will not effectively support the thesis design of a community center, so considering its daylight access is highly important. Moreover, the building is a registered historical building because of its prolific design style and importance to introducing the Brutalist style of architecture to Atlanta. The building is in partnership with the Atlanta Historical Society, meaning the building must adhere to their own set of parameters. Thus, this proposes a theoretical obstacle in achieving the LGBTQIA+ community center design. As well as the size of the building is massive spanning across an existing eight levels with high ceilings and irregular shapes made by the perimeter walls to manage (see *Design Objectives*). In looking deeper into the building structure, another parameter stems from it being the building's lack of exterior space because of the building's staggering width across the building site. A key component of this community center is bringing the community in, and outdoor space to make the center feel more welcoming and comfortable will be imagined. Along with the size of the building comes another parameter to address, which is the circulation factor. Currently, the existing building features three stairwells, one elevator system, and a great amount of corridor percentage in looking at the circulation factor. The main stairwell is used from ground level to fourth level while two additional stairwells in the back corners of the building are for the whole building. In looking at the proposed program table (see

Proposed Program section), it is seen that the thesis design is vast including spaces like housing which deserve better circulation than two stairwells situated at the back of the building. If a user decides to go to the eighth level, the user should not have to travel that far and then go up eight levels by foot or be unable to use the elevator because it is not properly planned spatially to the rest of the existing program. To conclude, there are a number of parameters to work with and change for the proposed design to work in a LEED sustainable bracket focused on LGBTQIA+ community engagement.

User Socioeconomic Summary

The socioeconomics (SES) and demographics of the LGBTQIA+ community is extremely broad including different types of people and conditions like race or sexuality that can affect their life whether financial, social, mental, physical, and more. As well as how the ongoing coronavirus pandemic has affected their socioeconomics due to its influence on work, social issues, and more. In looking at the socioeconomics alone, there is a blatant disparity between the LGBTQIA+ community and their cis-heterosexual counterparts. According to the American Psychological Association (APA, 2021), socioeconomic status (SES) “encompasses” income and also other factors including educational access, financial security, and “subjective perceptions” of social status. Socioeconomic status affects the lives of the LGBTQIA+ community greatly, one being enduring poverty. According to APA (2021), in women between 18 to 44 in age, 29% of bisexual women and 23% of lesbians are living at or in the poverty level as compared to 21% of their heterosexual counterparts. Moreover, amongst men 18-44, 20% of gay men and 25% of bisexual men are living at or in the poverty level as compared to the 15% of heterosexual men. As well as a study of transgender adults in the United States found they were four times more likely to hold an income of less than $10,000 per year than the general population.

Socioeconomic position also contributes to experiences of discrimination; according to APA (2021), gay and bisexual men with higher incomes were less likely to report discrimination compared to "those of lower socioeconomic position." Thus, relative effects from discrimination also attribute to higher depressive symptoms and anxiety for those of lower socioeconomic status. Another factor that causes socioeconomic differences is employment discrimination; 42% to 68% of LGBTQIA+ individuals report having discrimination in the workplace (APA, 2021). In a study by APA (2021), 90% of the transgender individuals surveyed reported experiencing workplace "harassment, mistreatment, or discrimination" because of their gender identity. As well as 47% of transgender individuals reported discrimination during hiring, firing, or promotion periods; greater than 25% reported losing their job because of discrimination of their gender identity (APA, 2021). Violence in the adult LGBTQIA+ community is often overlooked because of lack in representation or not taken seriously. Domestic violence among LGBTQIA+ relationships is one form of violence happening in the United States that can be alleviated with a

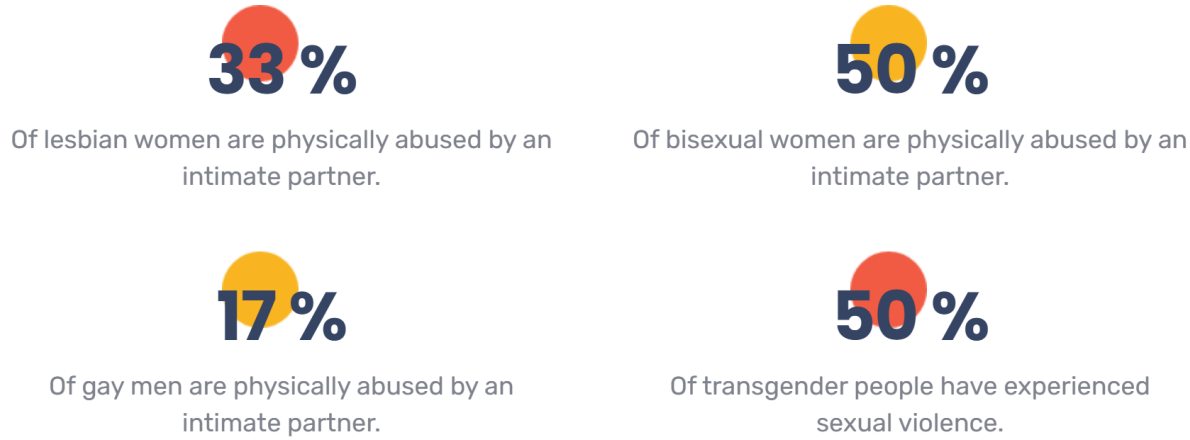


Figure 75. Live Violence Free: Domestic Violence Data U.S. 2021. Adapted from LiveViolenceFree.org

community center. The SES is affected by domestic violence situations greatly, the percentages are staggering when often overlooked (see Figure 2).

Another sector of the LGBTQIA+ population is the youth, LGBTQIA+ youth experience fear of acceptance and discrimination that can lead to homelessness, rejection, and socioeconomic issues

that can last through a lifetime. According to APA (2021), 11% to 45% of homeless youth identify as LGBTQIA+. A result of facing homelessness during such an important period of growth result in substandard mental and physical health than their heterosexual counterparts which includes major depressive disorders, PTSD, and substance abuse (APA 2021). SES is relative to all of its causes in the youth population, whether depression/ anxiety, disorderly conduct, or substance abuse, it "highlights the long-term impact of unstable housing" occurring in homeless LGBTQIA+ youth (APA, 2021). Other factors in LGBTQIA+ homeless youth are suicide, sexual abuse, exploitation, sexual violence, and drug abuse. According to the National Alliance to End Homelessness (2009), LGBT homeless youth are 62% more likely to attempt suicide than their heterosexual counterparts. The three most common reasons for LGBTQIA+ youth becoming homeless are running away from families who reject them because of their sexual orientation/ gender identity, being forced from their homes after coming out, and aging out/ running away from foster care (APA, 2021).

Legal barriers in the U.S. affect SES among LGBTQIA+ individuals and their families. In 2015, the United States Supreme Court defined states "must issue marriage licenses to same-sex couples and recognize same-sex unions that have been legally performed in other states" but legality still has its troubles. The barriers of workplace and housing discrimination result in SES unbalancing for LGBTQIA+ people and their families.

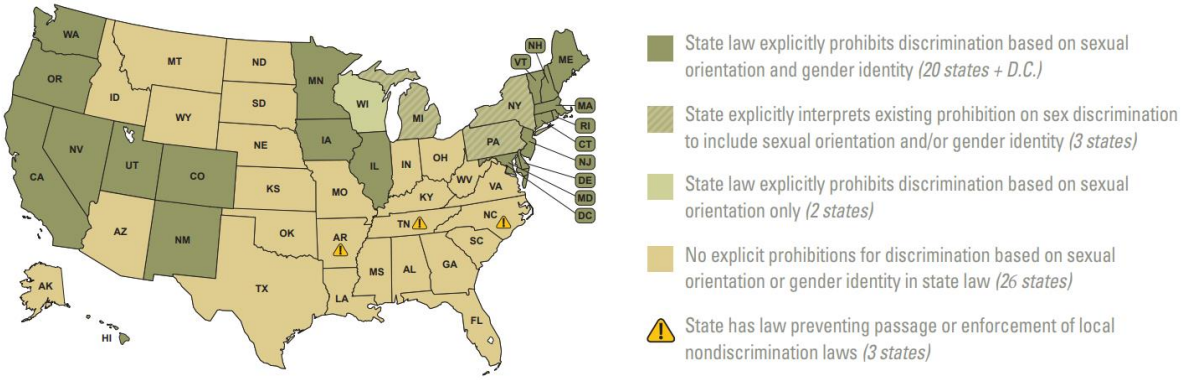


Figure 76. LGBT People in the Workplace USA. Adapted from LGBTMap.org

Currently only twenty states plus the District of Columbia "explicitly" prohibit discrimination based on sexual orientation and gender identity (APA, 2021). Moreover, eighteen states have zero laws preventing workplace discrimination on the basis of sexual orientation and gender identity (APA, 2021). According to APA (2021), 19% of transgender individuals from research have been refused a home/ apartment, while 11% report eviction due to "gender identity or expression." The legal barriers that restrict SES from evolving are a current issue and prominent reason whether workplace related or other that influence LGBTQIA+ socioeconomics in the United States particularly.

Other factors that affect SES amongst the LGBTQIA+ community are fear, workplace hostility, and the covid-19 impact. The fear from hiding sexual orientation and gender identity in the workplace by LGBTQIA+ people in the United States affects their ability to work and quality of life (see Figure 4).

Issue	Percentage
Exhausted from hiding sexual orientation	17%
Exhausted from hiding gender identity	13%
Fear hiding their authentic self (UK)	35% of LGBTQIA+ employees (51% are transgender employees)

Figure 77. Fear amongst LGBTQIA+ Identity Table. Adapted from Catalyst

The hostility faced within the workplace has a large effect on SES development. LGBTQIA+ individuals are under more risk to facing these acts whether verbal or physical (see Figure 5). Keep in mind, transgender workers are face different types of harassment than other LGBTQIA+ workers. These types include bathroom accessibility, being referred to by incorrect pronouns purposely, and experiencing inappropriate questions.

Issue	Percentage
Hostility in the Workplace	32% (LGBTQIA+ people of color)
Hostility in the Workplace	13% (LGBTQIA+ who are white)
Equal Pay	22% LGBTQIA+ Americans not paid equally or promoted same rate
Biased Jokes	53% have heard lesbian or gay jokes
Biased Jokes	37% have heard bisexual jokes
Biased Jokes	41% have heard transgender jokes

Figure 78. LGBTQIA+ Workplace Hostility Table. Adapted from Catalyst

The coronavirus pandemic has made an impact on LGBTQIA+ SES in the form of available work. According to Catalyst (2021), within the U.S. alone, the exposure to infection affected

Issue	Percentages
Exposure to infection/ and or economic security	40% (2 million in restaurants/ food services, 1 million in hospitals)
Reduced work hours	30%
Became unemployed	12%

Figure 79. Covid-19 Impact on LGBTQIA+ Population Table. Adapted from Catalyst

40% of the LGBTQIA+ population (see Figure 6). As well as 30% faced reduced work hours and 12% became unemployed (see Figure 6).

The covid-19 pandemic affected LGBTQIA+ SES and continues to with the effects outlined above. The coronavirus not only disrupts work life, but further reduces their quality of life.

Demographic Summary

The LGBTQIA+ population varies throughout region and country; for relation to this thesis, the United States will serve as the parameter for data. According to the National LGBTQ Workers Center (2019), there is an approximate 4.5% of the population who are of LGBTQIA+ identity, openly. Thus, this does not include the percentage of the population who have not identified publicly for this data. Regarding the 4.5% of the U.S. population who are openly of LGBTQIA+ identity, that means roughly 14, 827, 500 million people across the U.S. openly identify within the LGBTQIA+ community from the current estimated 329.5 million U.S. total population (The World Bank, 2021). The demographic of the LGBTQIA+ community can be more specialized when looking at race and immigration status. According to the National LGBTQ Workers Center (2016), one-third of LGBTQIA+ people are of color, meaning Hispanic, Black, and Asian individuals are more likely to identify as LGBTQIA+. Apart from the one-third who are white, 5% are Black, 6.1% are Hispanic, and 4.9% are Asian (see Figure 7).

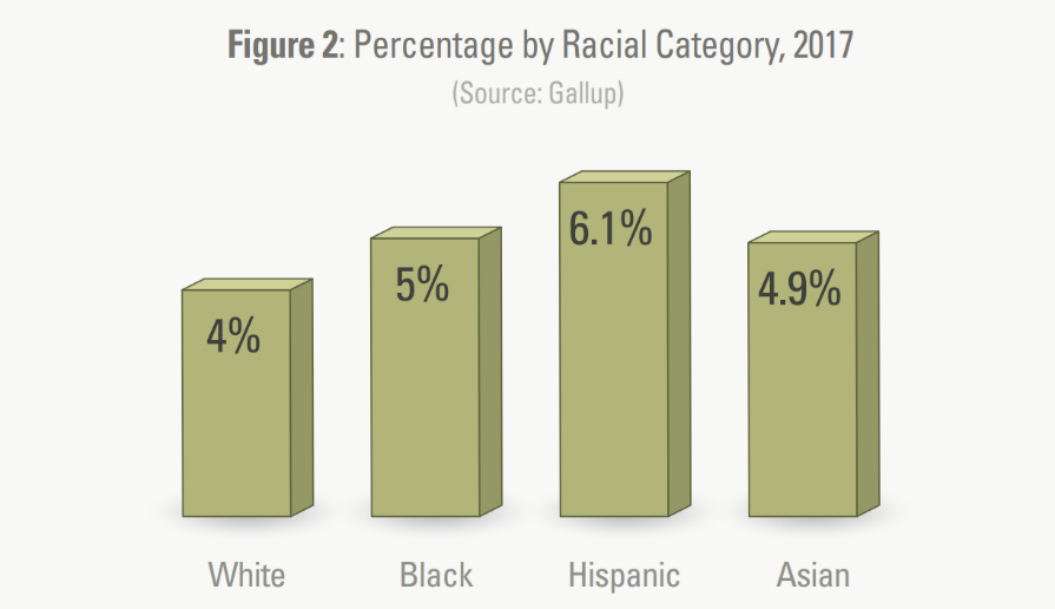


Figure 80. LGBTQIA+ Race Percentage. Adapted from LGBTMap.org

Furthermore, a distinction is made with the legal status amongst people in the United States. According to the National LGBTQ Workers Center (2016), there are an estimated one million LGBTQIA+ immigrants in the U.S., with 30% being undocumented. The U.S. has a reputation for severe immigration policies and the absence of "nondiscrimination protections," this is exacerbated for undocumented LGBTQIA+ people (National LGBTQ Workers Center, 2016).

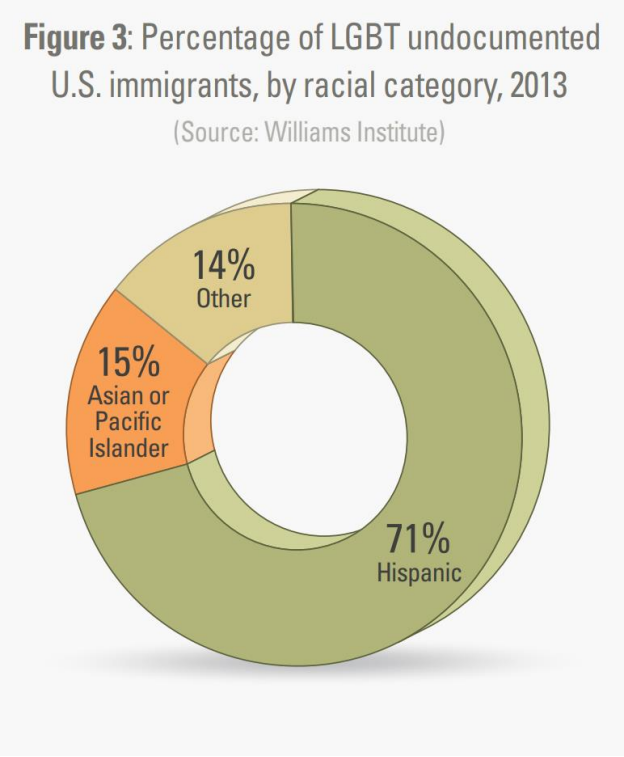


Figure 81. LGBTQIA+ Undocumented U.S. Immigrants 2013. Adapted from LGBTMap.org

Looking at the undocumented LGBTQIA+ immigrants, 71% of undocumented immigrants are Hispanic, 15% are Asian/ Pacific Islander, and 14% are of another race (see Figure 8). This specific portion of the LGBTQIA+ community needs special attention if there is to be positive change and impact. The demographic of the LGBTQIA+ population is expanding and culminating of multiple categories, that not only affect their SES, but also their quality of life.

Building Appropriateness

In terms of achieving LEED sustainability and providing a community center in an area that can be obtainable, the building choice is perfection. The current building as the Atlanta Central Library features plentiful square footage and prime location for use. However, the building has more distinctive qualities that make it a formidable solution. These qualities apart from the previous include daylight potential, energy use intensity (EUI), and renewable energy potential.

The current building benefits LEED sustainable goals because has been built for years, relying on no new construction to the major structure. LEED O+M are the guidelines for an existing building design and using an existing building already puts the building in a positive direction. As of now, the building features a lack of daylight, which is one main reason the building is not being used now. The building has potential to be exemplary and using daylight analysis displays this perfectly (see Figure 9).

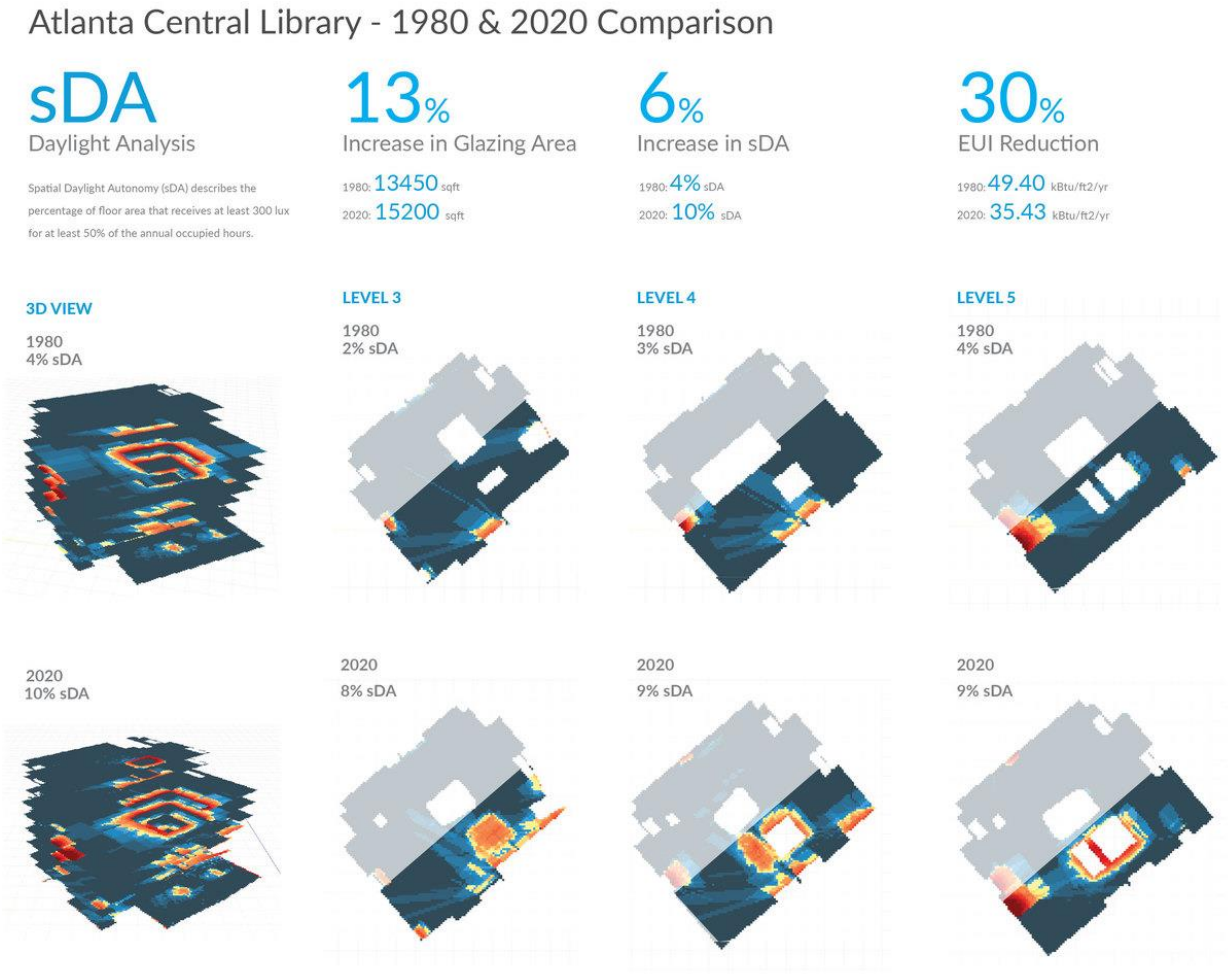


Figure 82. sDA Diagram, Original Design vs 2020 Redesign. Adapted from Cooper Carry & Archdaily

The original building design was made to prevent light from getting inside, to keep the cold exterior façade relative with a cold interior. However, daylight is an important factor to bring people in and feel comfortable. The current design features most access to daylight from a series of series of skylights central to floor plate and minimal windows. The sDA (Spatial Daylight

Autonomy) shows a 4% sDA score, meaning the light is inadequate. The 2020 proposed redesign by Cooper Carry featured added glazing on the front exterior and few windows on the North/ South corners. The implementation of just those changes increased the sDA rating to 10% proving the building has the ability to change (see Figure 6). A low sDA rating does not mean the building is not appropriate; it is the areas at which it can evolve that make it more than appropriate.

Figure 83. Before 2020 Renovation, Overall Analysis. Adapted from Cooper Carry & Archdaily

The building currently is featured in an optimal location, giving it more than enough hours of sunlight and GHI (Global Horizontal Irradiance) for energy production. The building will include sustainable approaches in renewable energy, with solar power an obvious solution. The current building has a GHI score of 296 and receives twelve hours of intense sunlight in the area where solar paneling will exist (see Figure 10). The building's current receival of this amount of

sunlight means it will provide more than enough for solar energy. The lack of shadow onto the current building from neighboring structures allows for this to be true (see Figure 10). Regarding the building's appropriateness for sustainability, it could not be more perfect from being an existing structure and its potential for renewable energy.

The current building's energy usage intensity (EUI) is already in a good state, with a score of 49.40 kBtu/ ft2/ yr (see Figure 11). According to a study by the New Building Institute (NBI & USGBC, 2008) the average EUI from the 21 high energy type LEED buildings analyzed is 238 kBtu/ sf depending on the size of the building and usage, the value can be larger (see Figure 11).

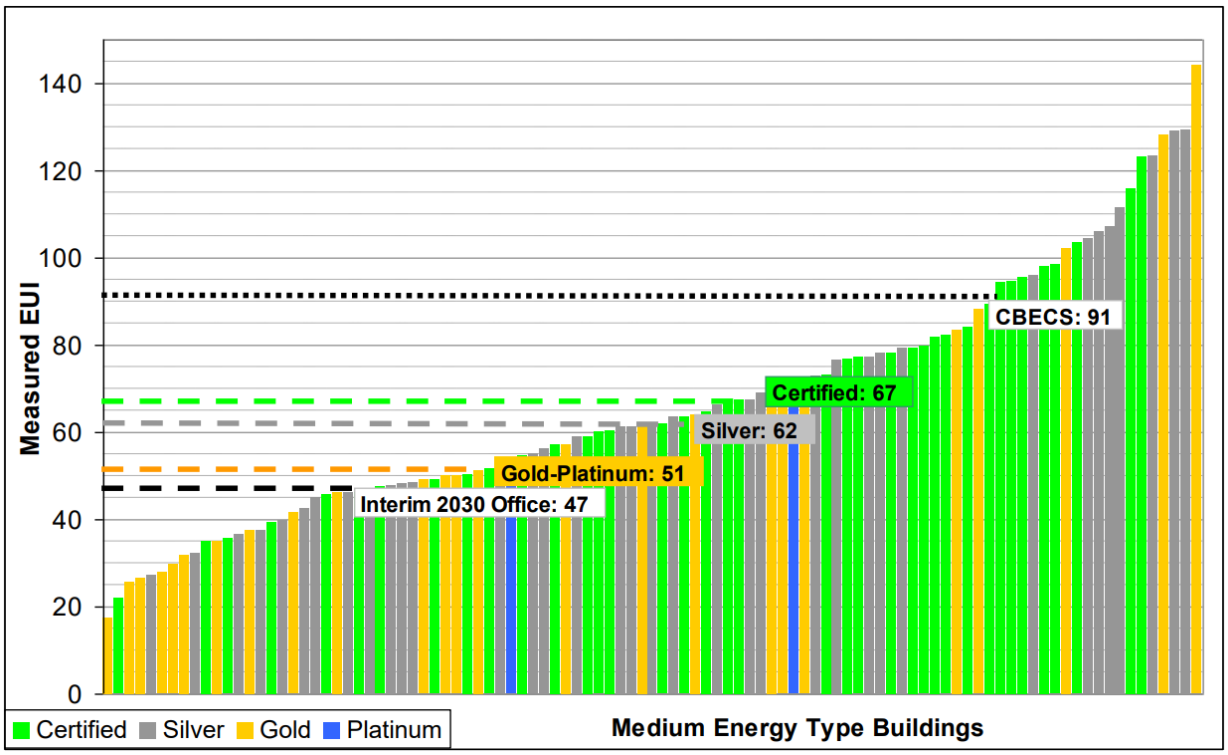


Figure 84. EUIs (kBtu/ sf) for LEED Medium Energy Buildings. Adapted from NBI & USGBC

In relation to this thesis, the proposed design means the building would be a high energy type building with various uses, equipment, and a large total square footage. In looking at its current score of 49.40 kBtu/ ft2/ yr and the approximate average of 238 kBtu/ ft2/ yr only corroborates that the building's potential with low EUI is useful for a LEED sustainable design. It is estimated with the thesis design, the building's EUI will rise at least to the average of 238 kBtu/ ft2/ yr.

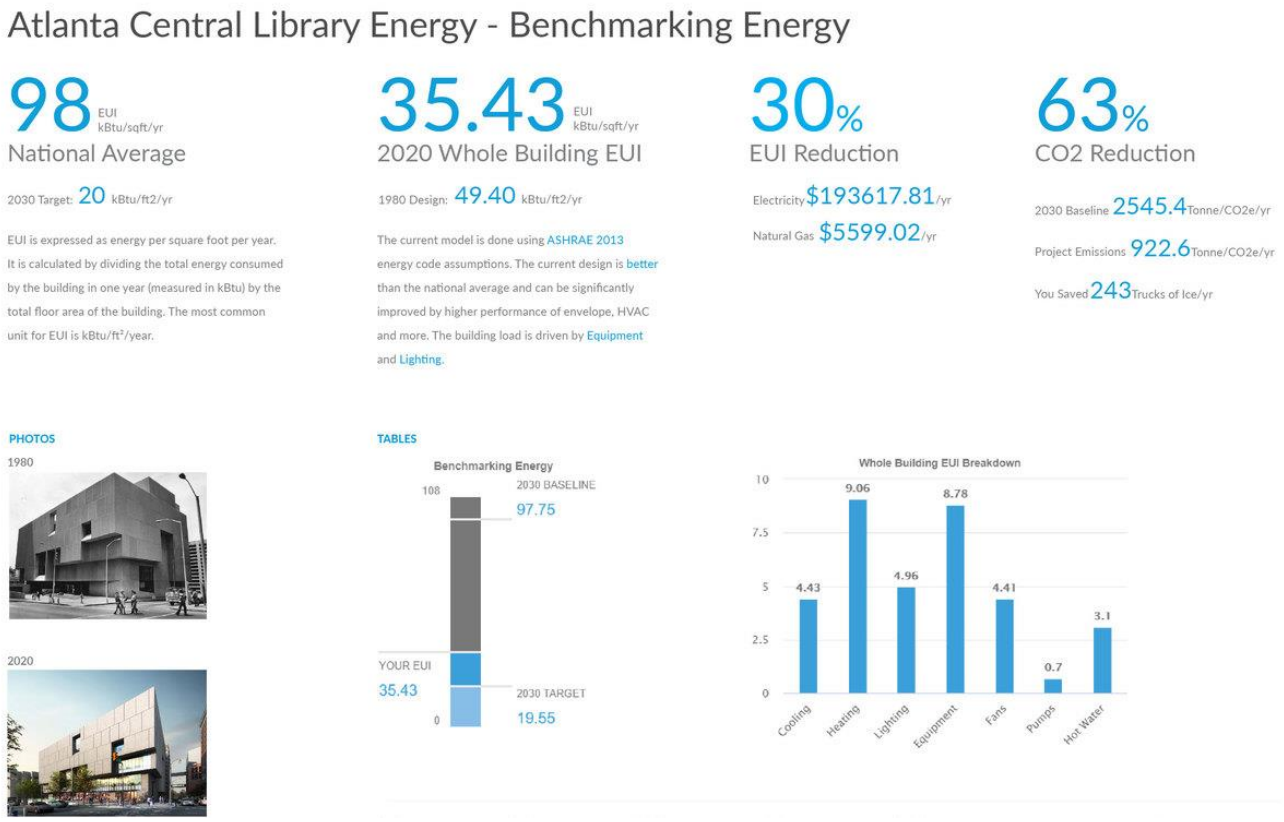


Figure 85. Energy (EUI) Data Diagram of Existing Building. Adapted from Archdaily and Cooper Carry

In Cooper Carry's proposed 2020 redesign, with the introduction of more windows and other changes to the interior allowed for an estimated EUI of 35.43 kBtu/ ft2/ yr (see Figure 12). Regarding the goal of designing in a LEED sustainable bracket, the EUI reduction would only be more positive by using proper HVAC, lighting, heating/ cooling, equipment, etc as dictated in the LEED guidelines (see Figure 12).

Building Codes/ Zoning

The building would adhere to International Building Code (IBC), ADA guidelines and Atlanta zoning as dictated by the city's government. In looking at the existing building, it passes IBC codes of course, but for the redesign of a community center, this building's code evaluation changes. Regarding the *Proposed Program* section of the thesis, it is seen that eight levels featuring a multitude of uses and users will require better circulation. Currently the building may pass these codes, but it can be better. The exiting central stairwell allows access from the ground

level to the fourth level. The central stair coincides with the proposed thesis design, but the two stairwells at the back of the existing building will not work well with proposed community center (see Figure 13).

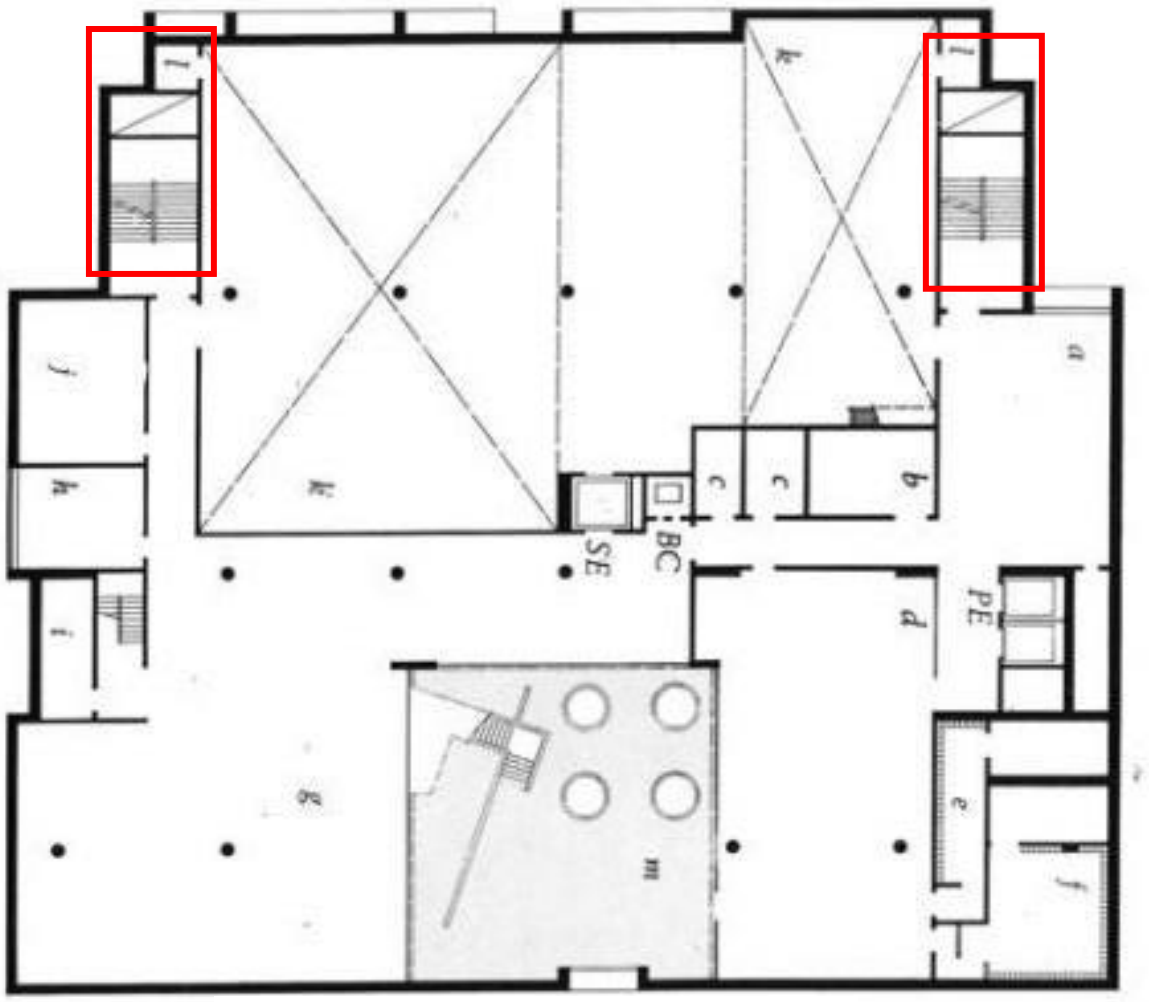


Figure 86. Fifth Floor Plan. Adapted from Nick Kahler via Pinterest

Moreover, the Atlanta zoning has its own set of standards to manage; the building is a part of the SPI-1 SA7 (Downtown Special Public Interest) district (see Figure 14). Due to its historical value with the city of Atlanta, the building must adhere to specific regulations like certifications for maintenance, changes, and repairs. On the contrary, in the special public interest zoning regulations, it states multiple intents these buildings are for. The intents of a building in the SPI-1 SA7 district include creating a 24-hour site where people can work/ live/ meet, promote the use

of MARTA/ other public transit, promote usage mixture of residential/ commercial/ cultural/ entertainment/ recreational, and preserve Atlanta's urban role (Municode Library 2021).

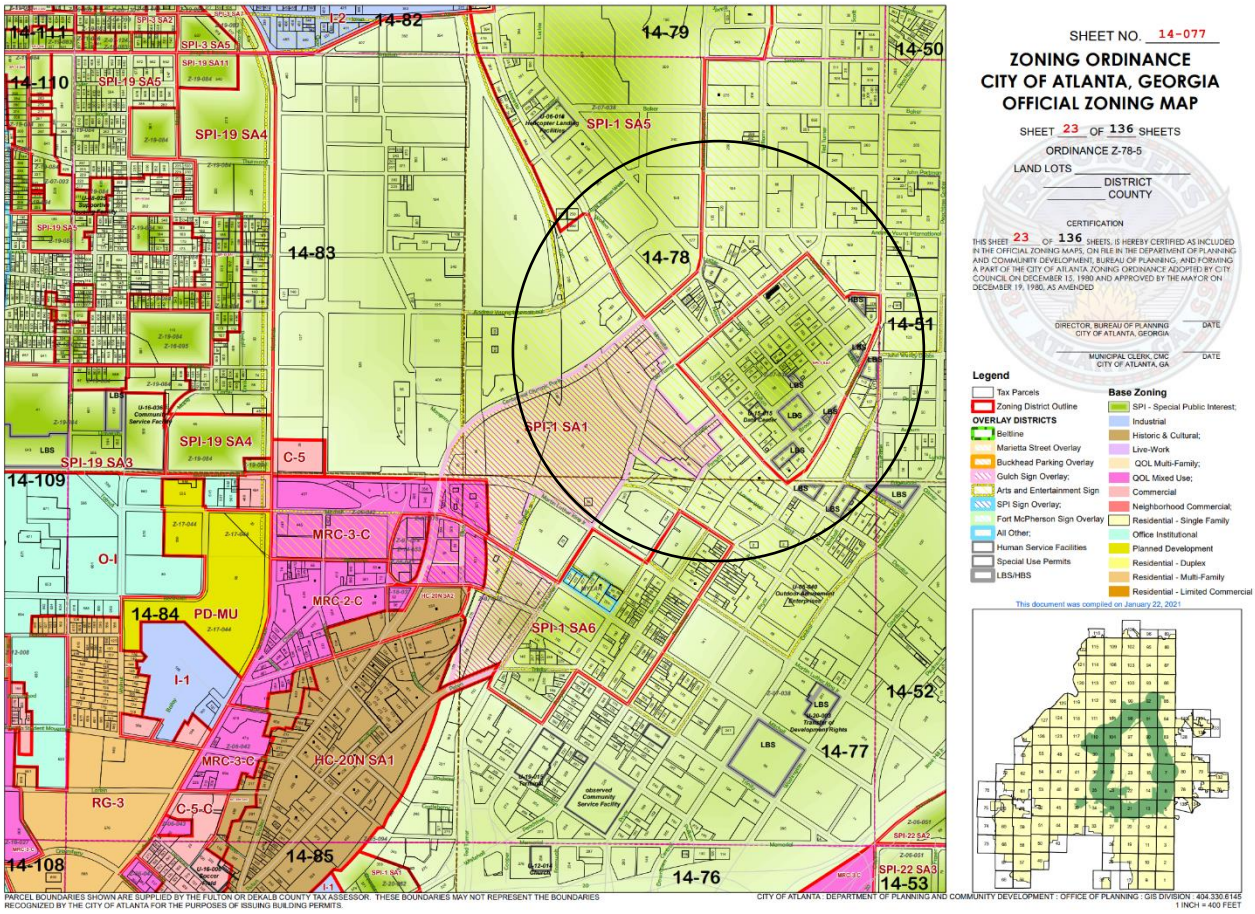


Figure 87. Official Atlanta Zoning Map. Adapted from Fulton/ Dekalb County Tax Assessor & Department of City Planning

The HIVE community center design would encompass all of these intents and continue to evolve into a staple of the downtown environment for the LGBTQIA+ community. Furthermore, important regulations regarding the exterior and site must be followed. According to the Municode Library (2021), sidewalks must allow thirty feet between each tree and be inside "tree planting zone." The sidewalk guidelines are especially important because the proposed program details outdoor space on the ground level. As well as the sidewalk must be a minimum of four feet "unobstructed" and sidewalk separation may exist in the form of "movable planters, fencing, or other non-fixed barriers" not exceeding 36 inches in height. In adhering to other zoning

guidelines and codes, the thesis design should have no issues in meeting the requirements while providing its proposed program.

DESIGN OBJECTIVES

Intent/ Goals, Problem/ Concept, & Potential Questions to Explore

ID 4940

Mark Degner

November 30, 2021

Intent

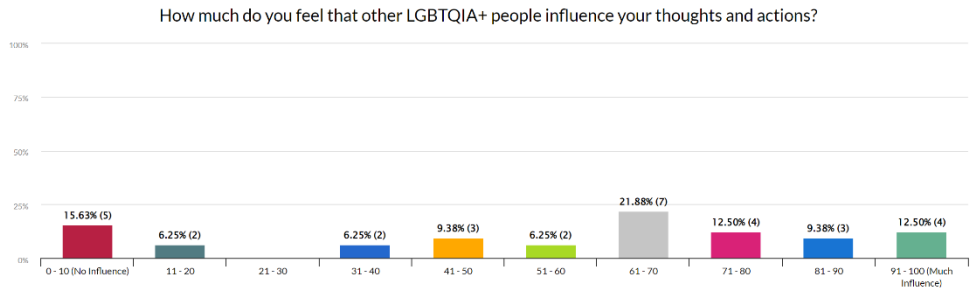
Goal I

In aim to improve the quality of life for the LGBTQIA+ community, is one primary goal of this thesis. The thesis proposal includes a vast array of functions to help in homelessness, joblessness, other programs, and the inclusion of sustainable design. The inclusion of these programs will not only serve the community, but also better their quality of life as the issues they face are detrimental to it. As well as, while sustainable building design will improve their physical quality of life.

Goal II

Moreover, this community center will improve community engagement amongst the local LGBTQIA+ community. The issue in lack of LGBTQIA+ community engagement for the state of Georgia can be better than its current state. Using data results supported by a custom PSOC (Psychological Sense of Community) survey fitted for the community surrounding the proposed site, it can be seen there is a desire to connect with the community more (see Figures 1-10).

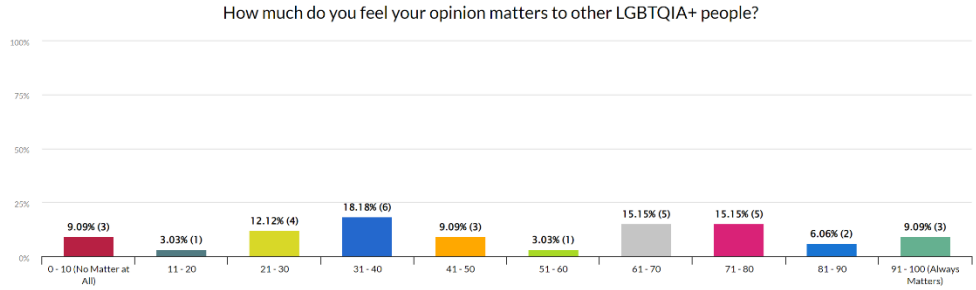
Figure 88. PSOC Question One Results. Conducted by Author



0 - 10 (No Influence)	15.63%	5
11 - 20	6.25%	2
21 - 30	0.00%	0
31 - 40	6.25%	2
41 - 50	9.38%	3
51 - 60	6.25%	2
61 - 70	21.88%	7
71 - 80	12.50%	4
81 - 90	9.38%	3
91 - 100 (Much Influence)	12.50%	4
		32

Average value: ø 56.94

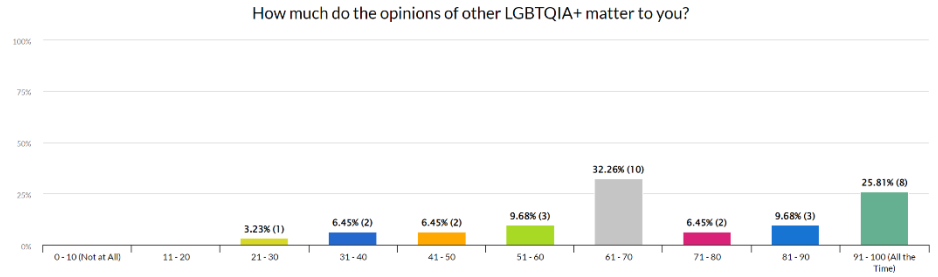
Figure 87. PSOC Question Two Results. Conducted by Author



0 - 10 (No Matter at All)	9.09%	3
11 - 20	3.03%	1
21 - 30	12.12%	4
31 - 40	18.18%	6
41 - 50	9.09%	3
51 - 60	3.03%	1
61 - 70	15.15%	5
71 - 80	15.15%	5
81 - 90	6.06%	2
91 - 100 (Always Matters)	9.09%	3
		33

Average value: ø 52.48

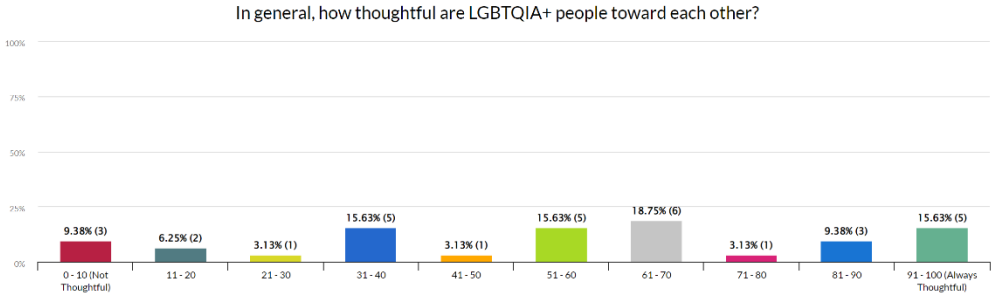
Figure 88. PSOC Question Three Results. Conducted by Author



0 - 10 (Not at All)	0.00%	0
11 - 20	0.00%	0
21 - 30	3.23%	1
31 - 40	6.45%	2
41 - 50	6.45%	2
51 - 60	9.68%	3
61 - 70	32.26%	10
71 - 80	6.45%	2
81 - 90	9.68%	3
91 - 100 (All the Time)	25.81%	8
		31

Average value: ø 71.10

Figure 89. PSOC Question Four Results. Conducted by Author



0 - 10 (Not Thoughtful)	9.38%	3
11 - 20	6.25%	2
21 - 30	3.13%	1
31 - 40	15.63%	5
41 - 50	3.13%	1
51 - 60	15.63%	5
61 - 70	18.75%	6
71 - 80	3.13%	1
81 - 90	9.38%	3
91 - 100 (Always Thoughtful)	15.63%	5
		32

Average value: ø 56.31

Figure 90. PSOC Question Five Results. Conducted by Author

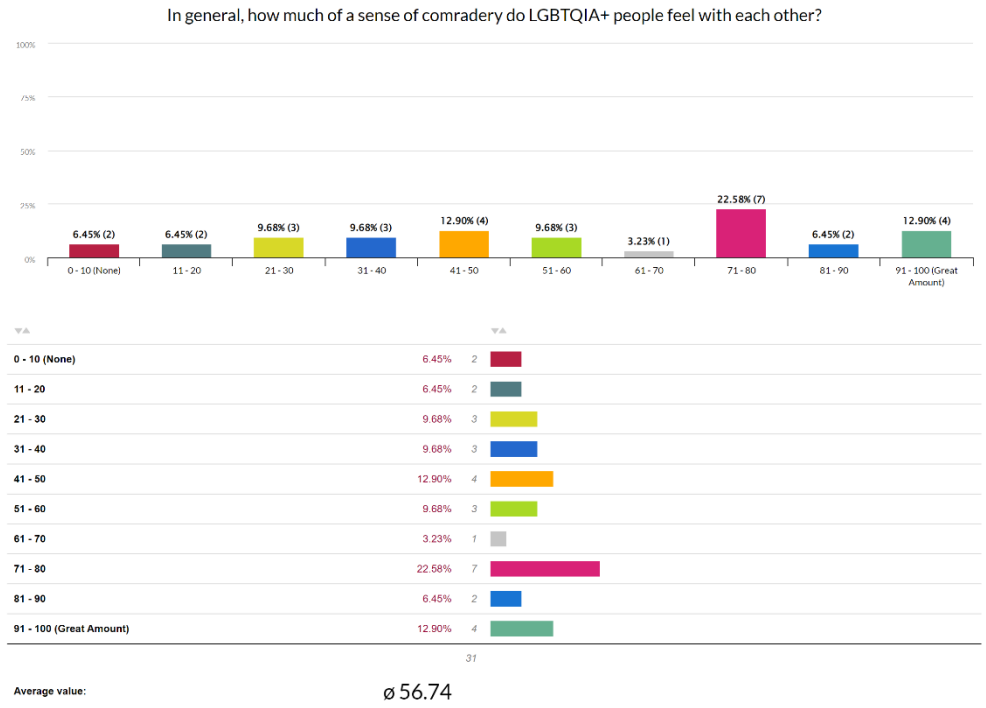


Figure 91. PSOC Question Six Results. Conducted by Author

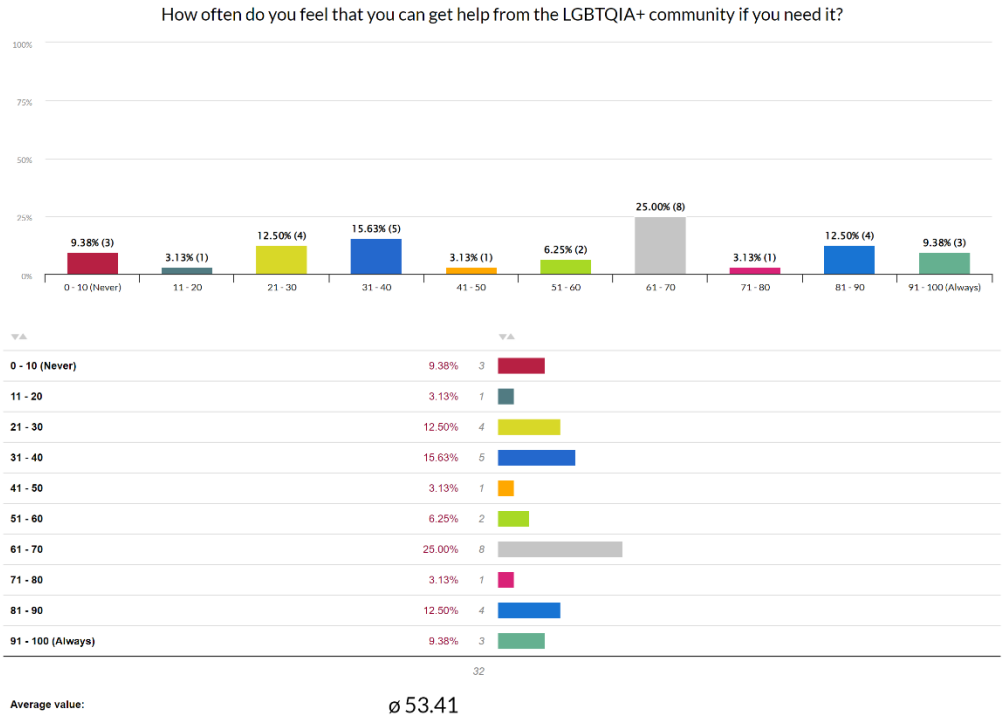


Figure 92. PSOC Question Seven Results. Conducted by Author

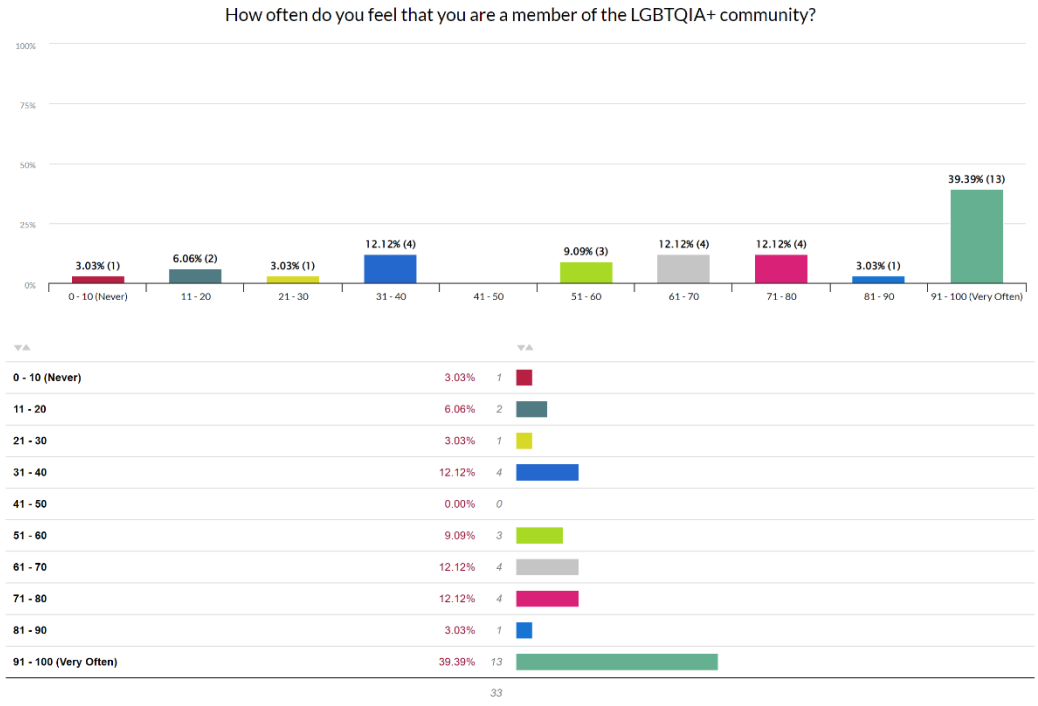


Figure 93. PSOC Question Eight Results. Conducted by Author

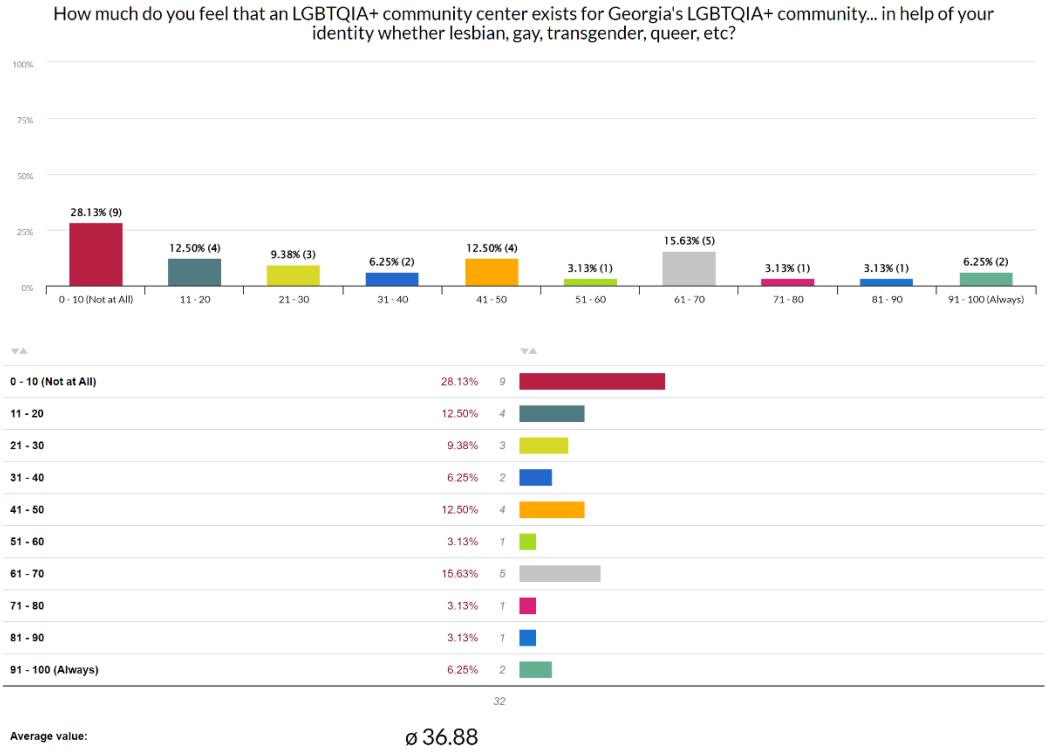


Figure 94. PSOC Question Nine Results. Conducted by Author

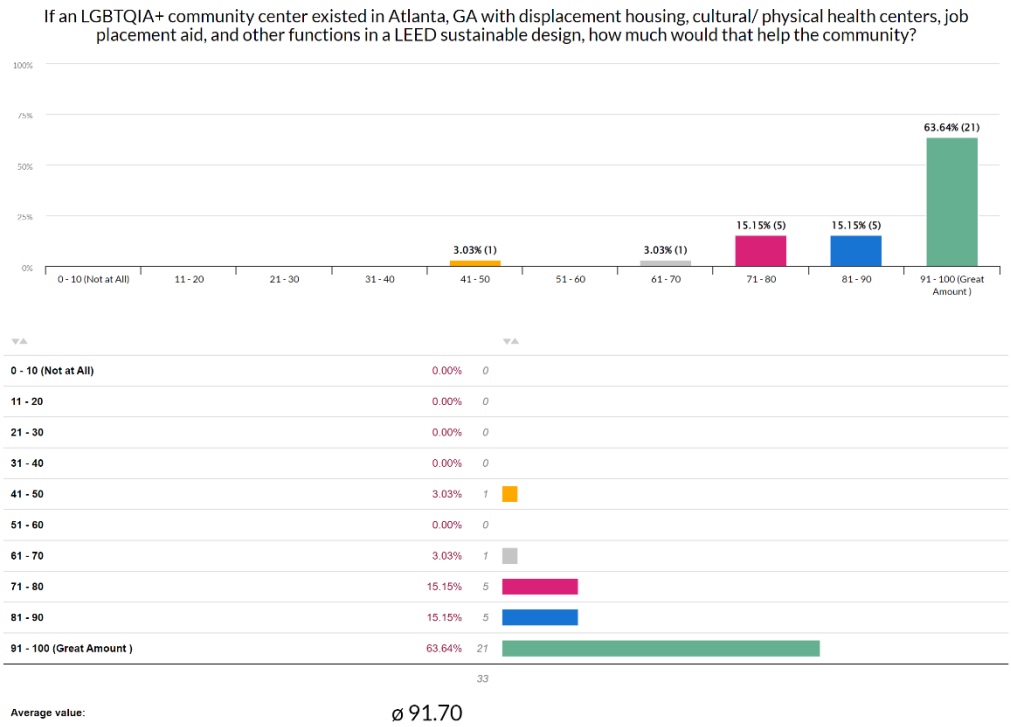


Figure 95. PSOC Question Ten Results. Conducted by Author

Goal III

The thesis site will accompany various sustainable systems, materials, and other factors that fall under LEED O+M guidelines, with the goal of advancing the quality of life for the planet and reducing the negative impacts of current building practices. Using LEED standards, sustainable building systems such as renewable water/ energy, and USGBC certified materials will make a positive impact on the planet within the local area. Green building design not only keeps energy usage within the site optimal, but also the possibility to put that energy back into the other areas surrounding.

The Atlanta metropolitan area includes ambition in achieving more sustainable buildings, but it is currently not growing as positively as it could. In the area near the thesis site, there are a variety of LEED related buildings, but not all are completely LEED regulated (see Figure 11).

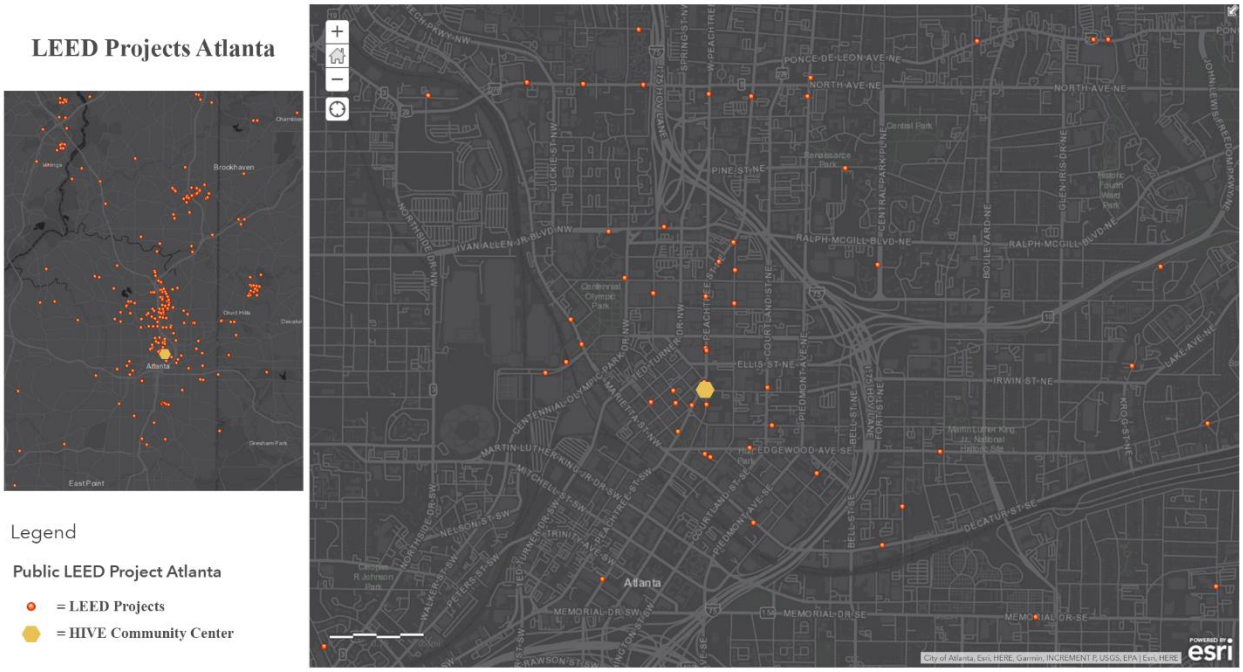


Figure 96. Atlanta LEED Sustainable Sites. Adapted from ArcGIS Maps, ESRI, & Georgetown University

The Problem

In the United States, there are approximately 196 community centers focused on the LGBTQIA+ community (see *Project Statement*), but amongst that, only 1/196 are in Georgia. The access to programs, services, and other aid are not readily available for the LGBTQIA+ community around the Atlanta metropolitan area. The LGBTQIA+ community faces a multitude of issues affecting SES, demographics, and other factors (see *Site Selection*) that can be reversed with a community center.

The Concept (Edited 2022 Phase)

Taking inspiration from natural honeybee hives, where honeybees work, support, and strengthen one another. The scope of this design is to create a community center that provides services to assist with issues mentioned before, such as job loss, homelessness, lack of community engagement, poor health, and more. The design will be supported with a sustainable design approach using LEED guidelines to positively impact the user quality of life. In hopes of making each individual and the community thrive, by being connected to services, resources, and other LGBTQIA+ individuals, it will proactively strengthen the community.

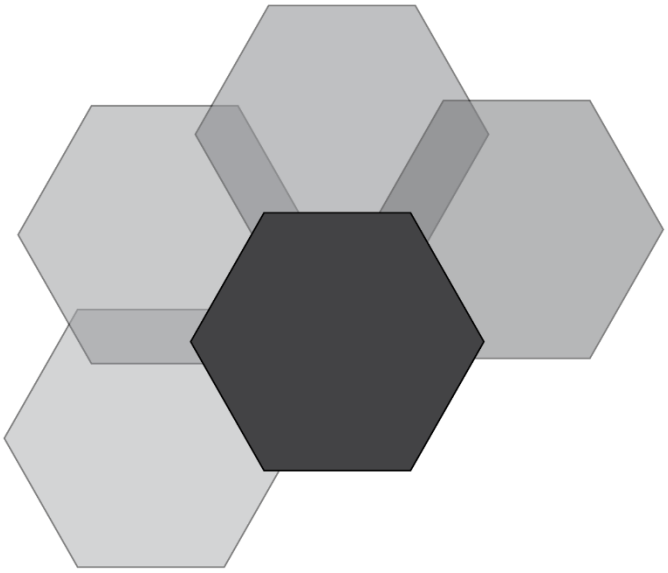


Figure 97. Parti Diagram One. Created by Author

Theories to Design By (Added 2022)

The HIVE will be designed keeping these theories in mind: Environmental Sustainability, Social Sustainability, Community-Based Design, Evidence-Based Design, and Biophilia. These theories will work with the concept and provide the best solution for the HIVE Community Center.

Environment Sustainability

Using LEED guidelines/ practices and sustainable equipment/ systems, to improve environmental quality with green building design. From climate change to high energy building

usage, lack of water renewability, emissions, and more, these problems produce negative impacts each day. This sustainable design effort will not only benefit the community, but also the surrounding environment. Some of the ways this green building design will be achieved is by using the below-ground level (*see Figure 14 below*) to house various sustainable systems that will work in collaboration with the rest of the building. The systems/ equipment includes rainwater management/ cistern, solar energy conversion/ battery, ground source heat exchange, greywater management, waste management, night flushing, and EMS system.

Social Sustainability

This will be achieved through an LGBTQIA+ centric program consisting of job outreach, homelessness outreach, mental health center, and more to positively benefit the individual human quality of life.

Community-Based Design

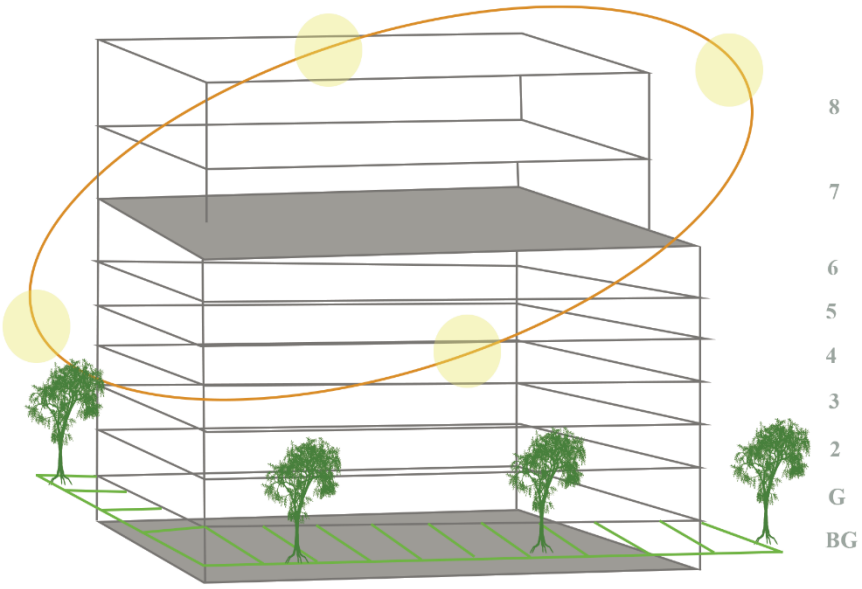
This will be achieved by providing spaces for the community as a whole to use for culture, physical activity, community connection, etc.

Evidence-Based Design

This is achieved through the research of the user, site, history, case studies, design and more as seen in the thesis complete document.

Biophilia

Using natural resources, greenspace, and naturally influenced materials, combined with sustainability, this will empower the user to feel their best throughout the space.



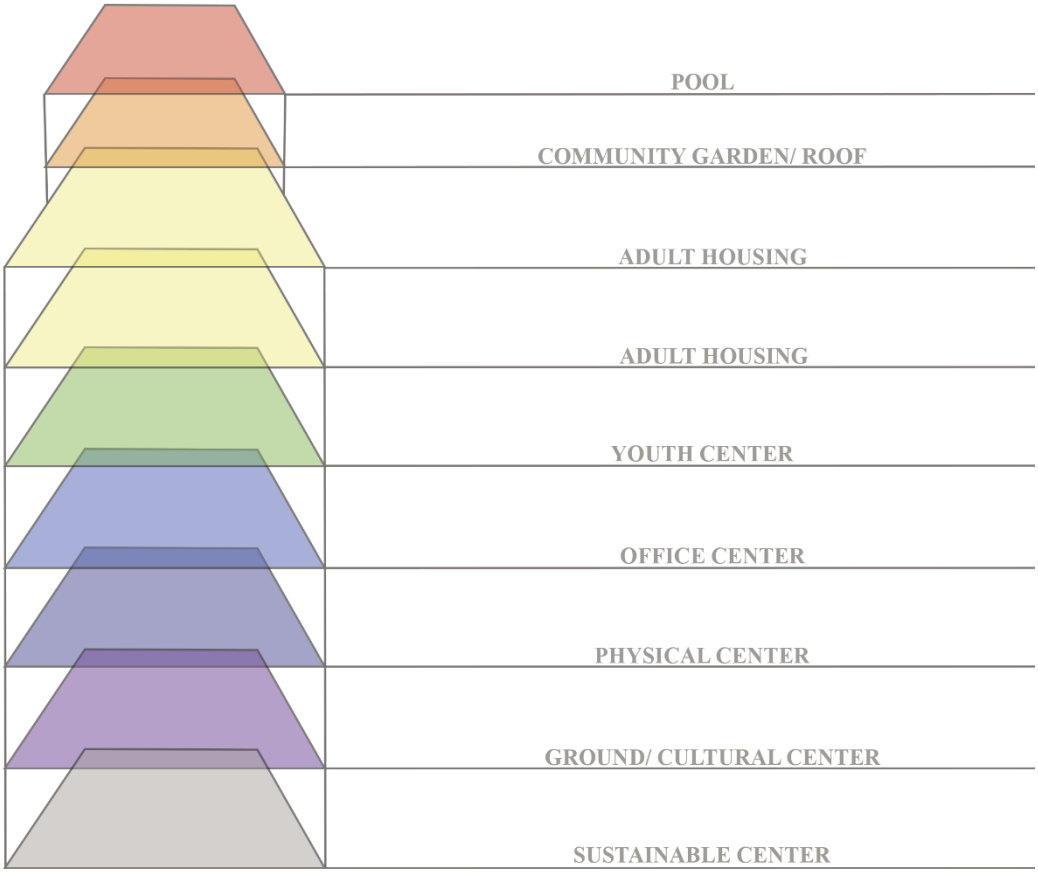


Figure 98. Concept Preliminary Diagram. Created by Author

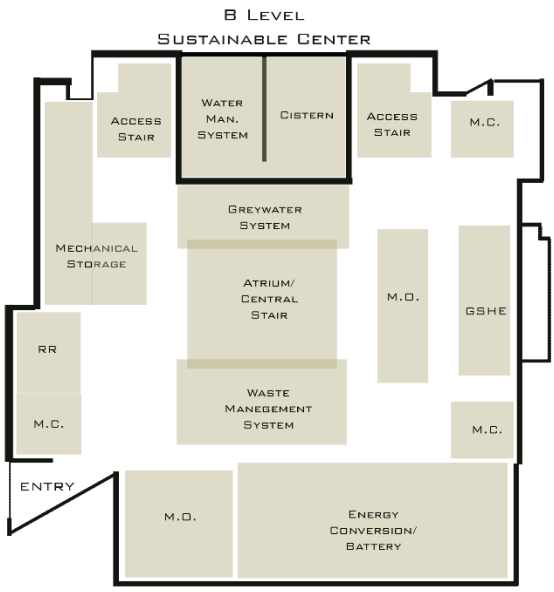


Figure 99. B Level Block Diagram. Created by Author

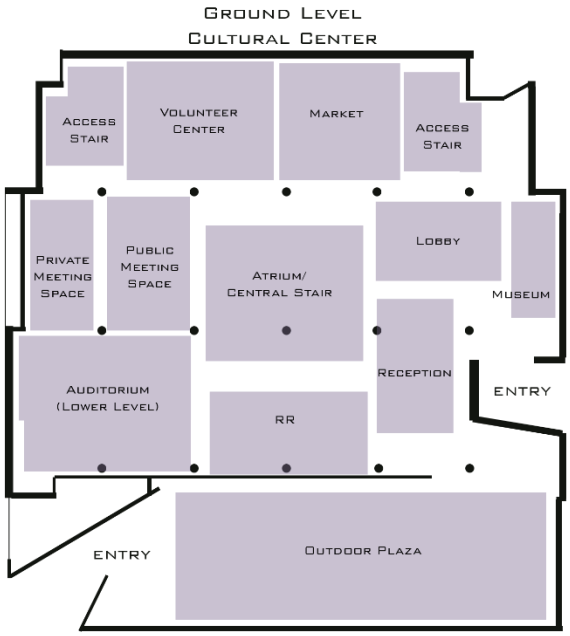


Figure 100. Ground Level Block Diagram. Created by Author

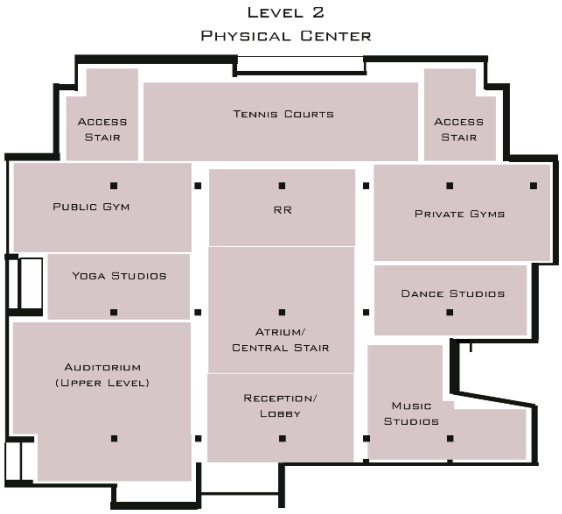


Figure 101. Level Two Block Diagram. Created by Author

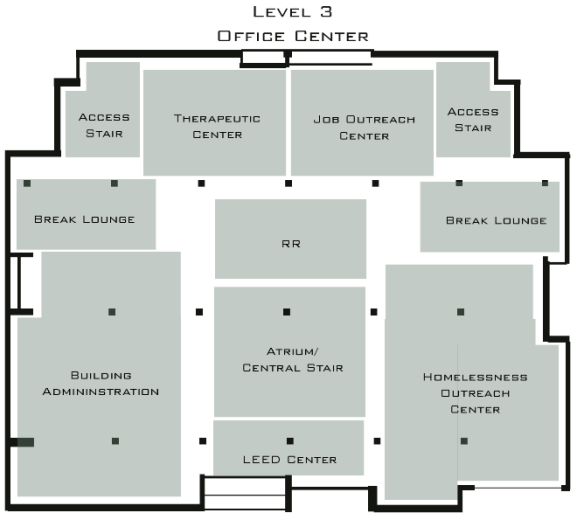


Figure 102. Level Three Block Diagram. Created by Author

Figure 103. Level Four Block Diagram. Created by Author

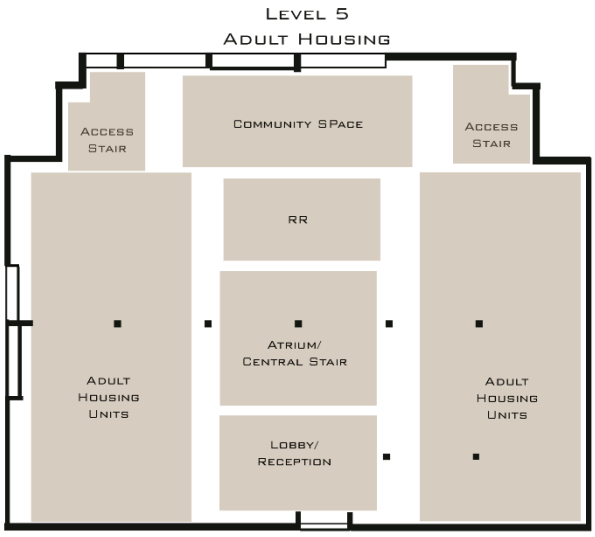


Figure 104. Level Five Block Diagram. Created by Author

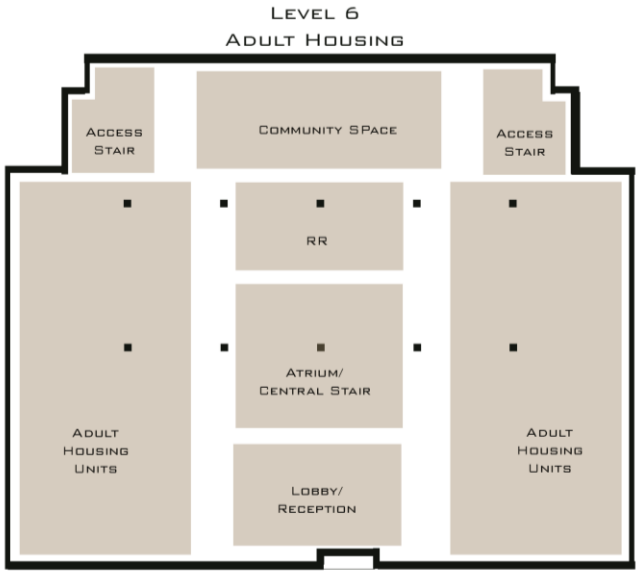


Figure 105. Level Six Block Diagram. Created by Author

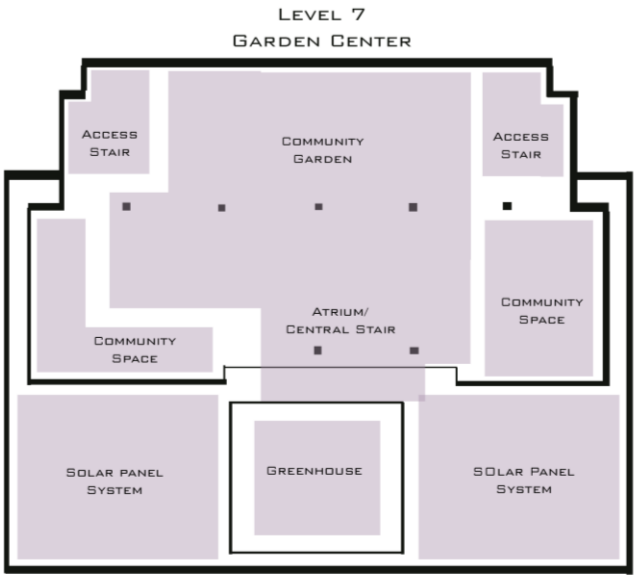


Figure 106. Level Seven Block Diagram. Created by Author

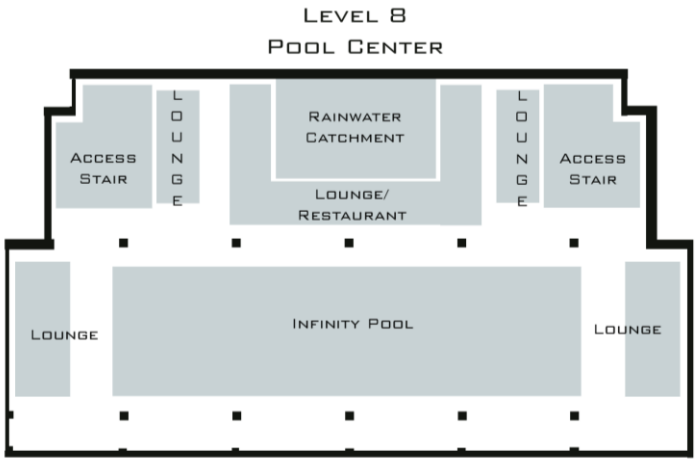


Figure 107. Level Eight Block Diagram. Created by Author

Preliminary Design Development (Added 2022)

The ground level along with the other levels are currently being developed in the 2022 design phase. In figure 23, the ground floor test fit resembles the parti diagram (*see Figure 12*) and concept, furthering the beehive motif to create an experience upon entry for the users. Multiple test fits will be finalized, unfinished prior to this documentation, please reference Figure 23 as a placeholder. All above and below-ground level will follow the same central circulation and two access stairwells (*see Figure 24*).

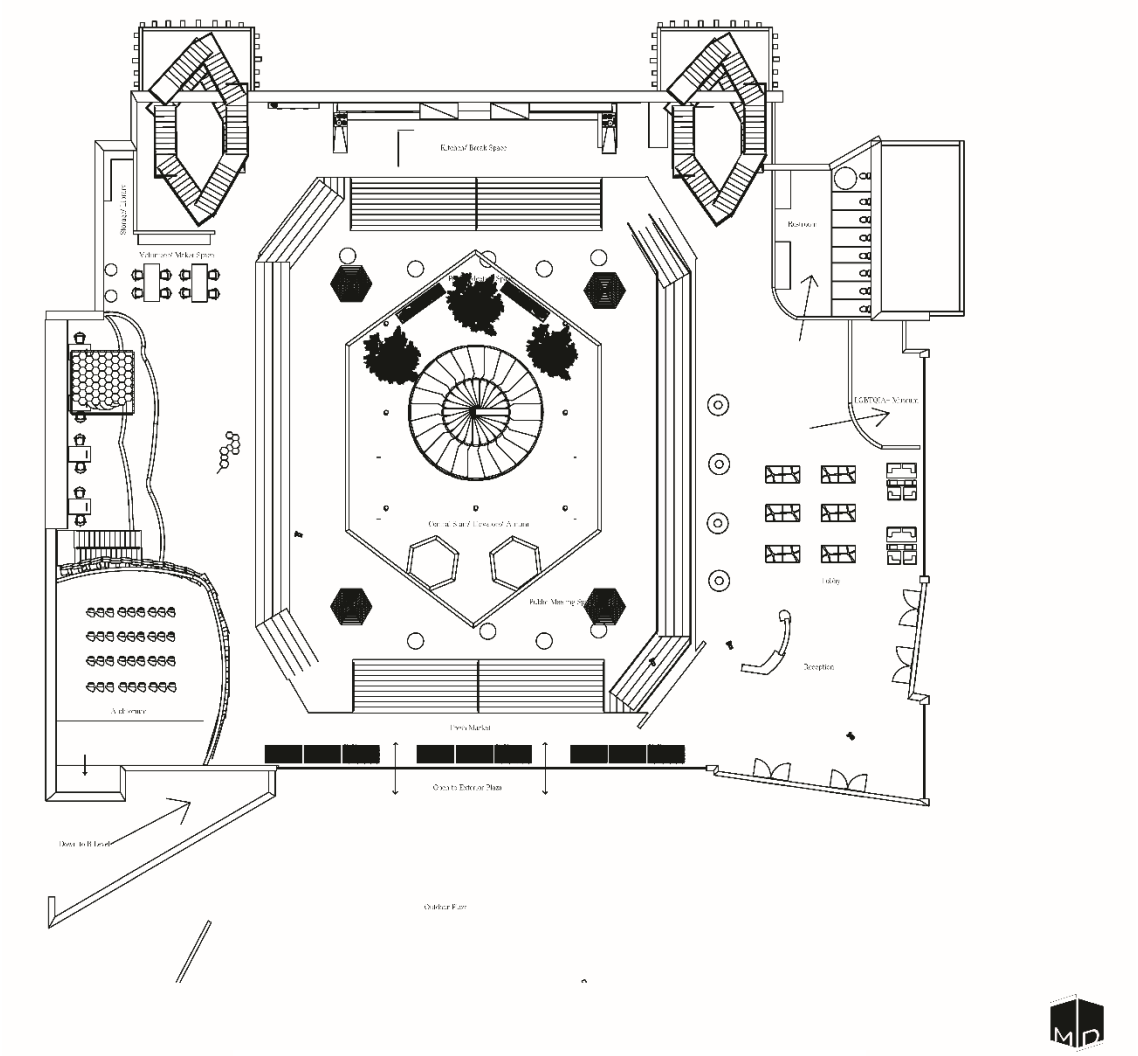


Figure 108. HIVE Ground Floor Rough Test Fit. Created by Author

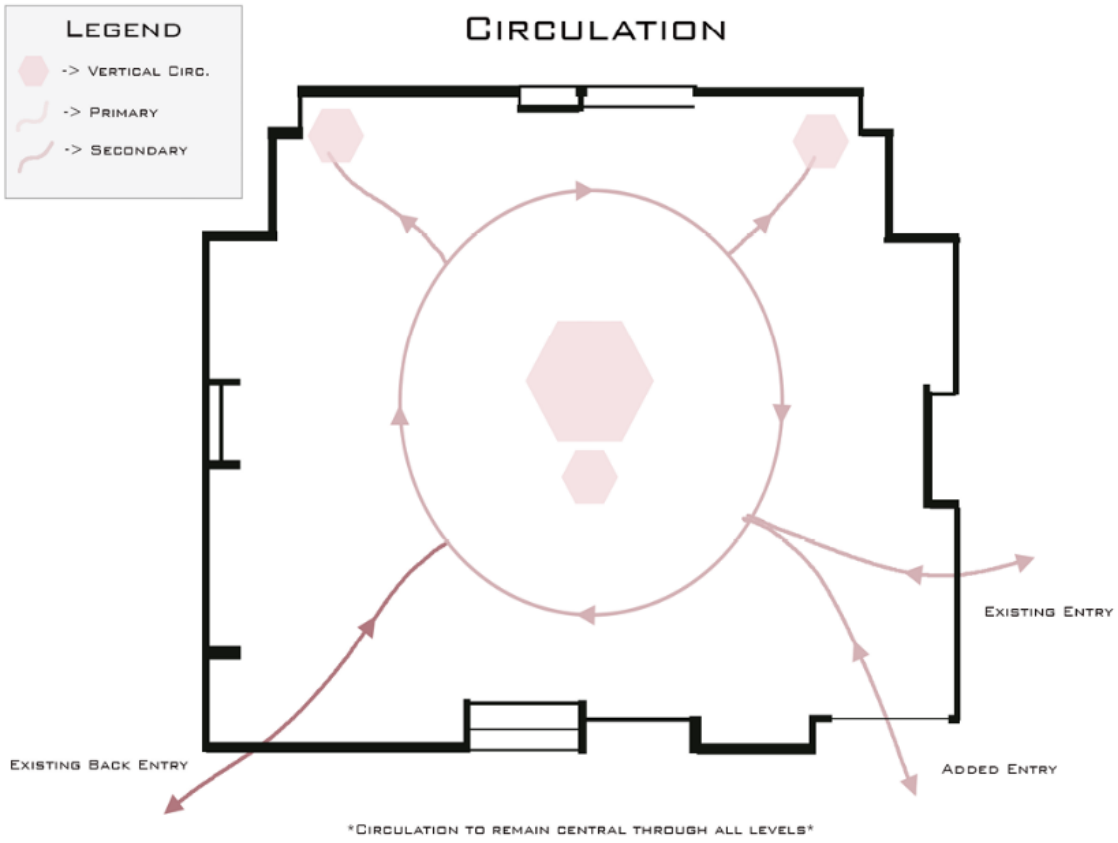


Figure 109. Circulation Diagram. Created by Author

Potential Ideas to Explore

The idea of a community center involves a lot of individuals and different issues. Potential ideas to keep in mind are the building's approachability and how can the interior contribute to LGBTQIA+ initiatives from color, form, or shape. Regarding approachability, the user should feel like one can enter the space with no hesitance, especially concerning homeless users. As well as the color, shape, and form could be developed to support each branch of LGBTQIA+ and support the design cohesively. These ideas will be further explored in the design phase for this thesis; thus, it is limited only as potential ideas for exploration.

APPENDIX I: SCHEMATICS PHASE

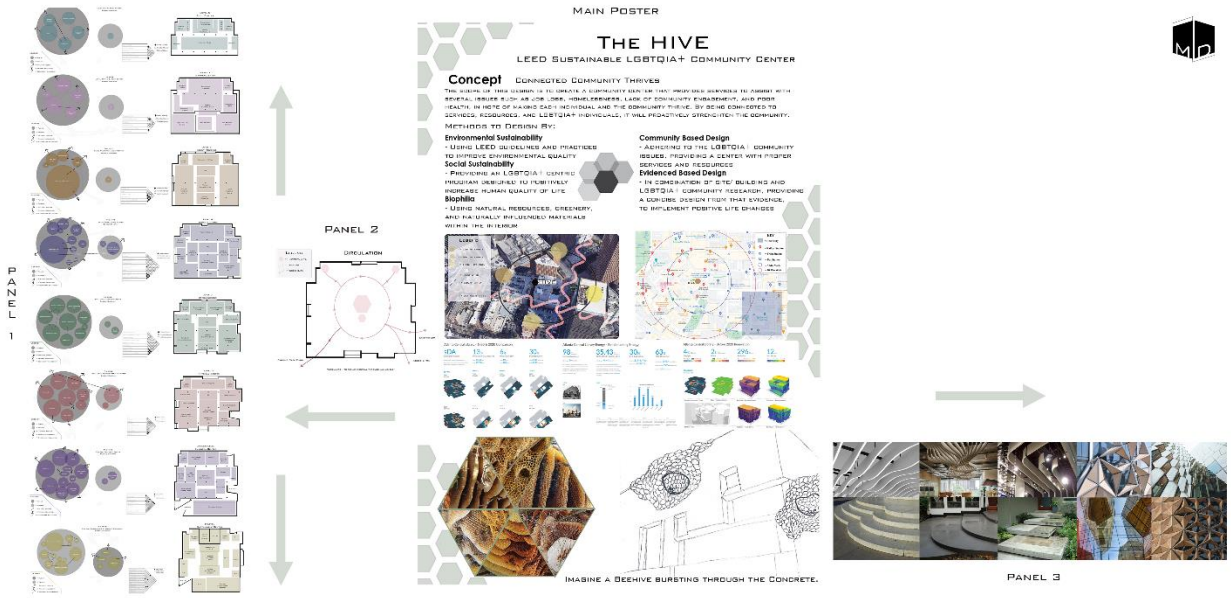


Figure 110. Schematics Complete Poster. Created by Author

The HIVE

LEED Sustainable LGBTQIA+ Community Center

Concept

Connected Community Thrives

The scope of this design is to create a community center that provides services to assist with several issues such as job loss, homelessness, lack of community engagement, and poor health, in hope of making each individual and the community thrive. By being connected to services, resources, and LGBTQIA+ individuals, it will proactively strenghten the community.

Methods to Design By:

Environmental Sustainability

- Using LEED guidelines and practices to improve environmental quality

Social Sustainability

- Providing an LGBTQIA+ centric program designed to positively increase human quality of life

Biophilia

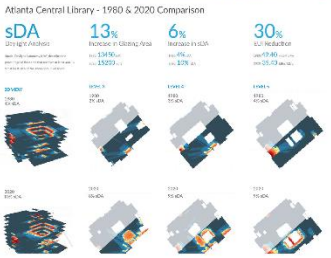
- Using natural resources, greenery, and naturally influenced materials within the interior

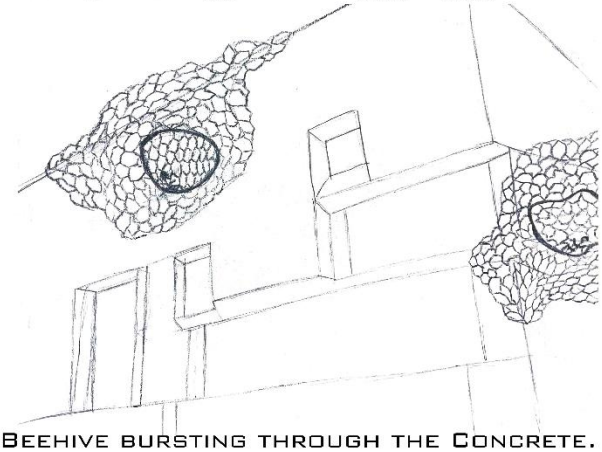
Community Based Design

- Adhering to the LGBTQIA+ community issues, providing a center with proper services and resources

Evidenced Based Design

- In combination of site/ building and LGBTQIA+ community research, providing a concise design from that evidence, to implement positive life changes





Imagine a Beehive bursting through the Concrete.

Figure 111. Schematics Main Panel. Created by Author

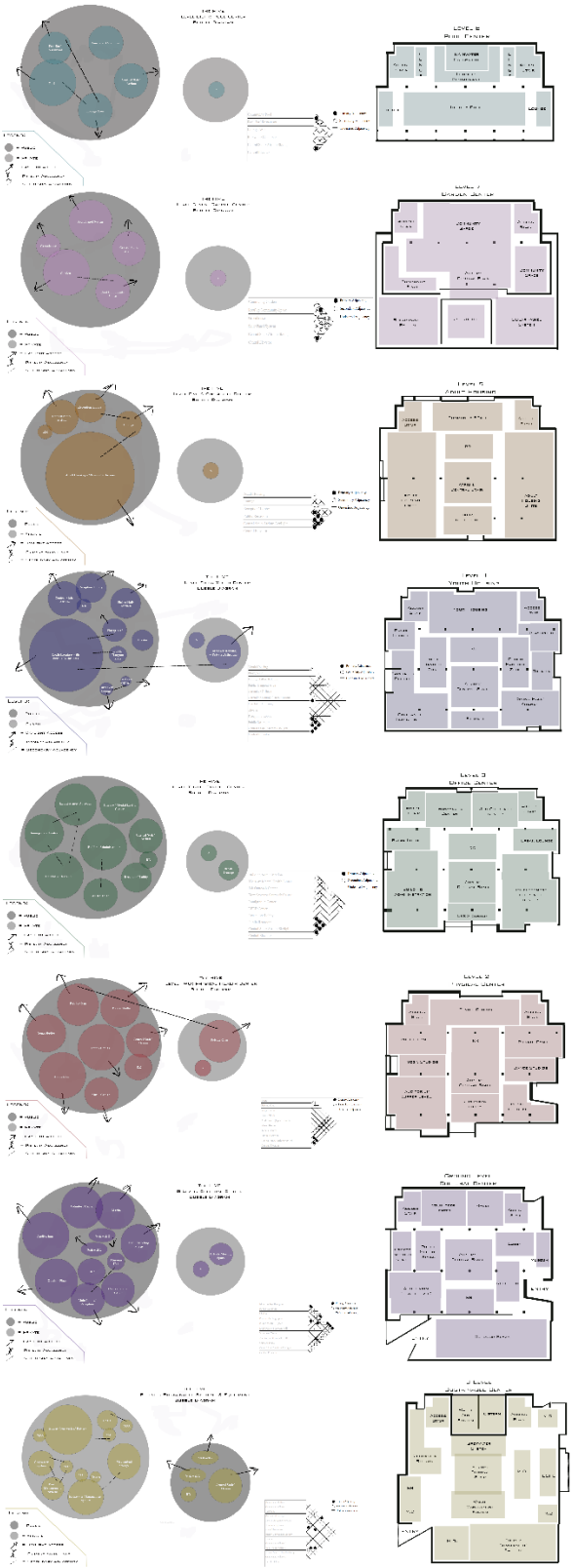


Figure 112. Bubble Diagram, Adjacency Matrixes, Blocking Diagram Panel. Created by Author

Figure 113. Preliminary Design Direction Panel. Created by Author

APPENDIX II: DESIGN DEVELOPMENT

The HIVE: Concept

In hope of making the LGBTQIA+ community thrive
and ultimately imrpoving their quality of life,
the intended users of The HIVE will be connected to
a variety of services, resources, and other LGBTQIA+ individuals.

Afterall, a connected community thrives.

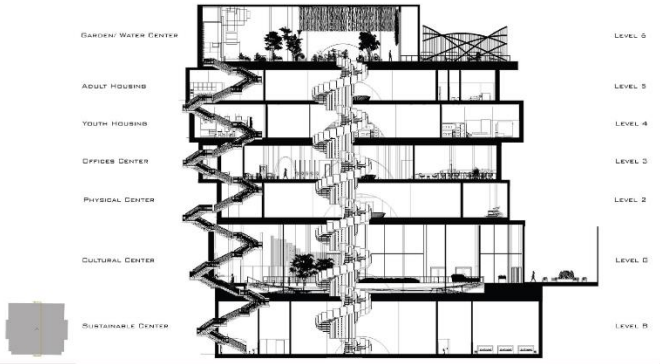
1

Design Development Contents

The Glass Box

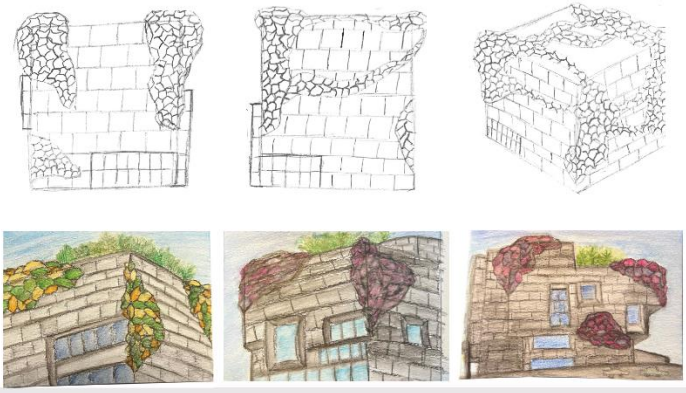
2

The HIVE: Structure & Exterior Architecture



Section A

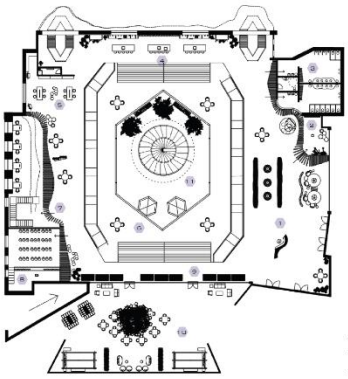
3



Front | Side | Back

4

The HIVE: Cultural Center



Includes:

1. Reception/ Lobby
2. LGBTQIA+ History Space
3. Public Restroom
4. Break Area/ Kitchen
5. Volunteer/ Maker Space
6. Public Meeting Space
7. Private Meeting Space
8. Auditorium
9. Fresh Market
10. Outdoor Courtyard
11. Central Atrium

Notable Attributes:
- Rain Chain
- Hexagonal ramp
- 6' dropped central floor
- Parametric Reclaimed wood Wall System

Ground Level Plan

5

Ground Level Entry

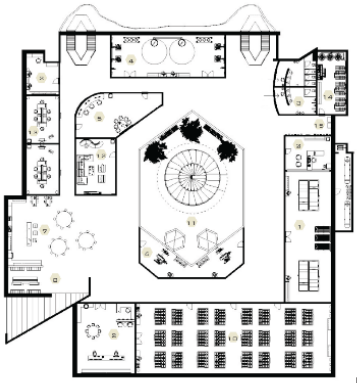
6

Reception/ Lobby/ Central Atrium

7

Kitchen/ Break Area (Top) + South Wall (Bottom)

8



The HIVE: SUstainable Center

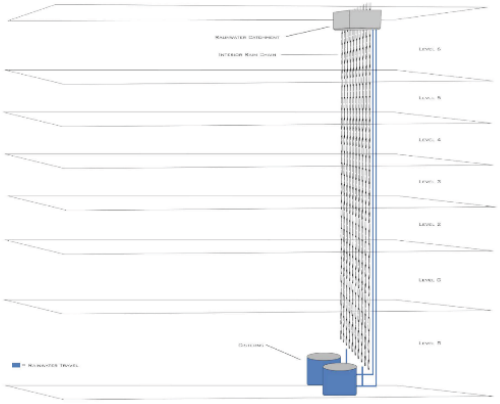
Includes:

1 - Ground Source Heat Exchange
2 - Maintenance Office
3 - Public Restroom
4 - Rainwater Management
5 - LEED Control Center
6 - Elevator Maintenance
7 - Kitchen/ Break Area
8 - Locker/ Personal Storage
9 - Maintenance Office
10 - energy Grid/ Management
11 - Central Atrium
12 - Wellness Space
13 - Meeting Space
14 - Greywater/ Waste Management
15 - Mechanical Storage

Notable Attributes:
- Wellness Room

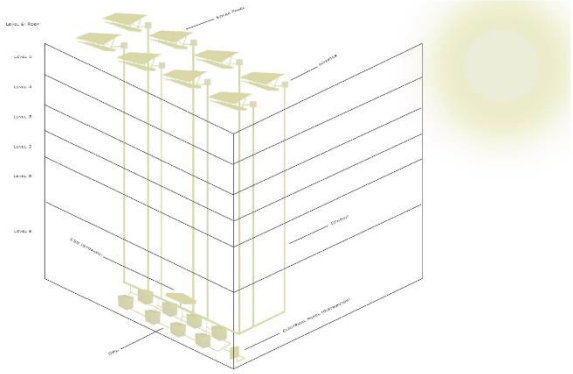
Below-Ground Level Plan

9



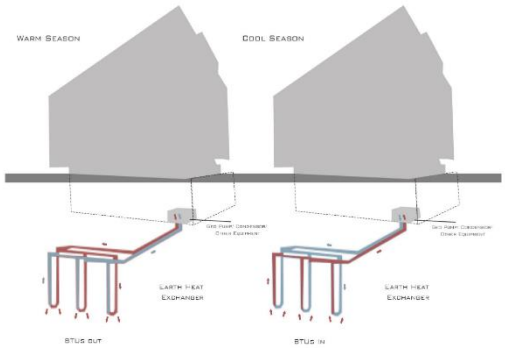
Rainwater System

10



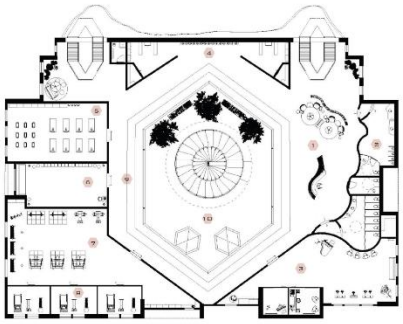
Solar Energy & Grid System

11



Ground Source Heat Exchange

12



The HIVE: Physical Center

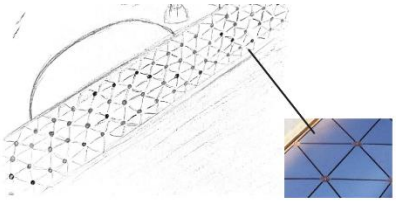
Includes:

1 - Reception/ Lobby
2 - Public Restroom
3 - Music Expression Studio
4 - Locker/ Personal Storage
5 - Yoga Studio
6 - Dance Studio
7 - Public Gym
8 - Private Gym Space
9 - Pavagen Energy Track
10 - Central Atrium

Notable Attributes:
- Rain Chain
- Recording Studio
- Pavagen Energy Track
- Parametric Reclaimed Wood Wall System

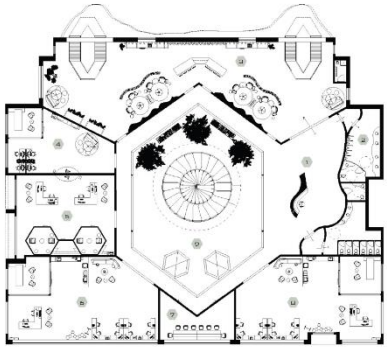
Level Two Plan

13



Pavagen Energy Track (Left) + Preliminary Public RR (Right)

14



The HIVE: Offices Center

Includes:

1 - Reception
2 - Public Restroom
3 - Kitchen/ Lobby/ Break Area
4 - Immigrant/ P.O.C Resources
5 - Mental Health Office
6 - Job Outreach Office
7 - Conference Room
8 - Homelessness Outreach Office
9 - Central Atrium

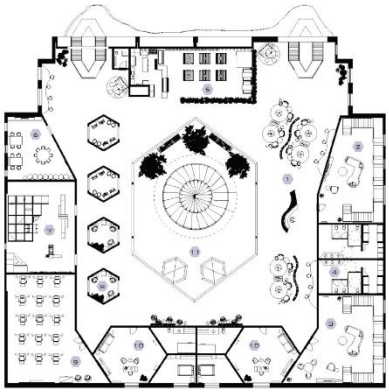
Notable Attributes:
- Rain Chain
- Hexagonal Corridor
- Parametric Reclaimed Wood Wall System

Level Three Plan

15

Kitchen/ Break Area/ Lobby

16



The HIVE: Youth Housing

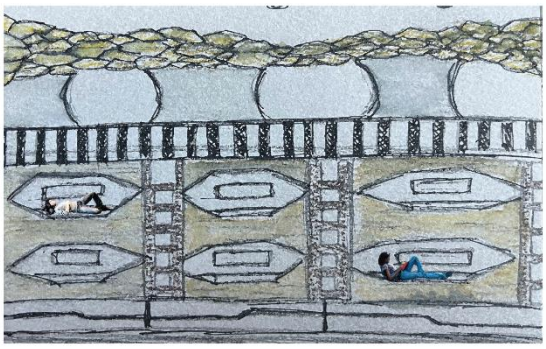
Includes:

1 - Reception
2 - Housing Side A
3 - Housing Side B
4 - Restroom/ Showers/ Laundry
5 - Dining Hall/ Kitchen
6 - Maker Space
7 - Playground/ Rock Climbing
8 - Game/ Social Pod
9 - Theater Room
10 - Caretaker Living Unit/ Office
11 - Central Atrium

Notable Attributes:
- Rain Chain
- Lofted Hangout Space
- Hexagonal Game/ Social Pods

Level Four Plan

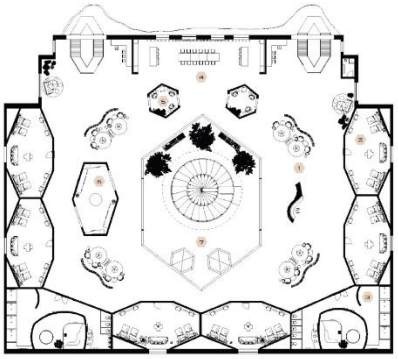
17



Sleeping Pod System + Lofted Hangout Space

18

The HIVE: Adult Housing



Includes:

1. Reception
2. Housing Unit
3. Restroom/ Sauna/ Showers
4. Kitchen/ Lounge
5. Social Pod
6. Laundry
7. Central Atrium

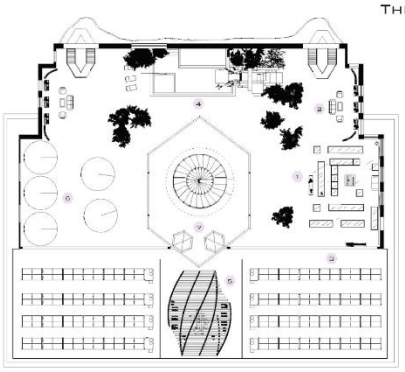
Notable Attributes:

- Sauna
- Rain Chain
- Hexagonal Game/ Social Pods

Level Five Plan

Housing Unit + Restroom, Sauna, Shower Room

The HIVE: Garden Center/ Rooftop



Includes:

1. Vegetable Garden
2. Lounge
3. Solar Panel System
4. Pool & Waterfall
5. Greenhouse
6. Beehive Garden Experience Pods
7. Central Atrium

Notable Attributes:

- Pool
- Rain Chain
- Beehive Inspired Garden Pods

Level Six Plan

Pool + Waterfall

Beehive Inspired Garden Pods (Left) + vegetable Garden + Skylights (Right)

Section B

All Appendix II Figures 114-127. Completed Design Development. Created by Author

APPENDIX III: FINAL PRESENTATION/ DEVELOPMENT

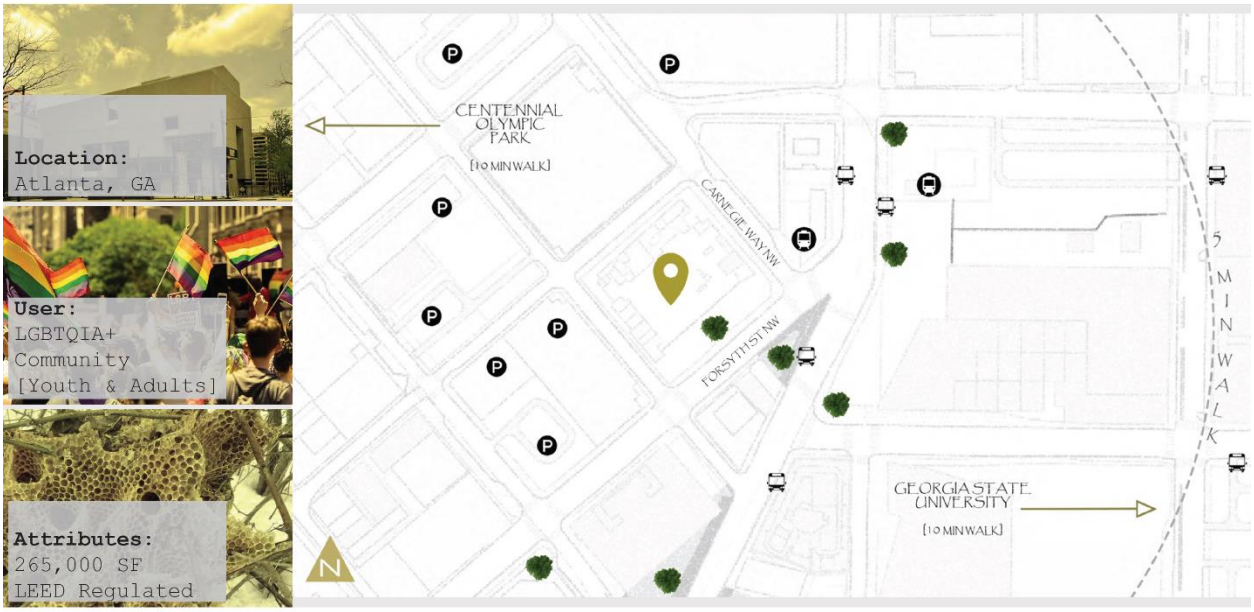
The HIVE:

Sustainable LGBTQIA+ Community Center

Research & Design By:
Mark Zane Degner

The HIVE: Contents

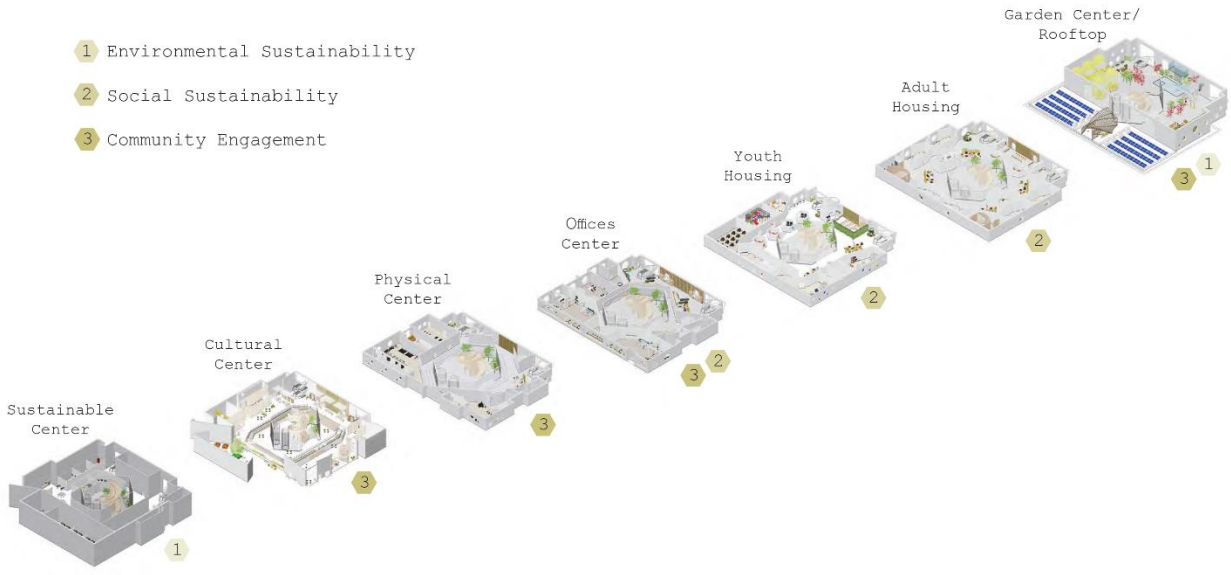
The HIVE: Concept + Site



A center where a connected community thrives, unlike anything existing before, a 1 of 196.

1

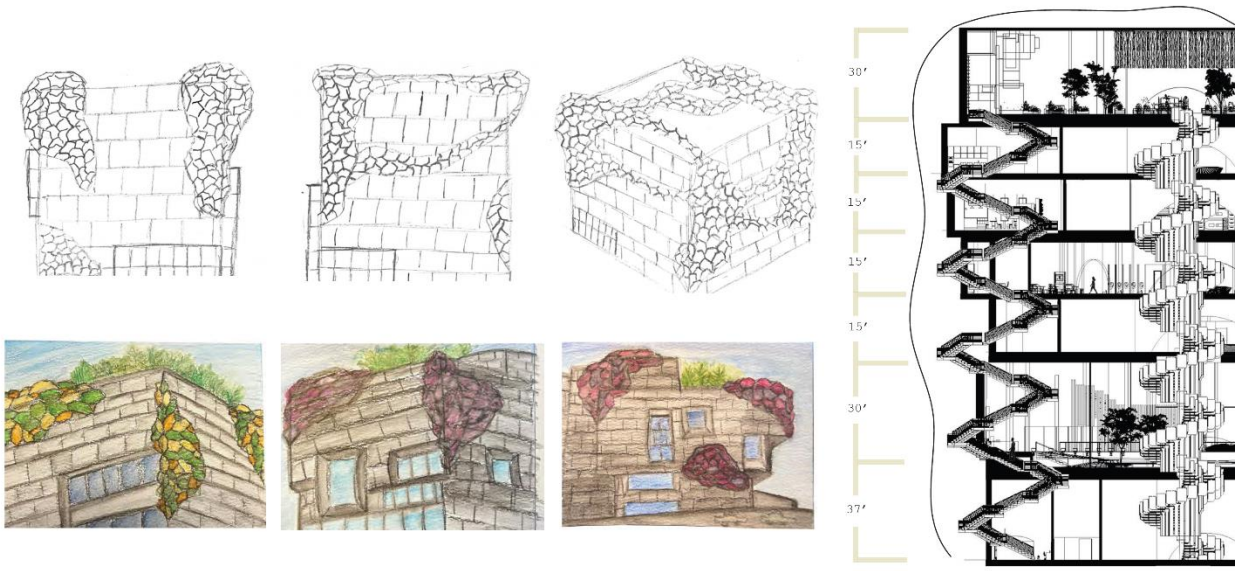
The HIVE: Building Program



A center where the user has access to a multitude of programs, in one location.

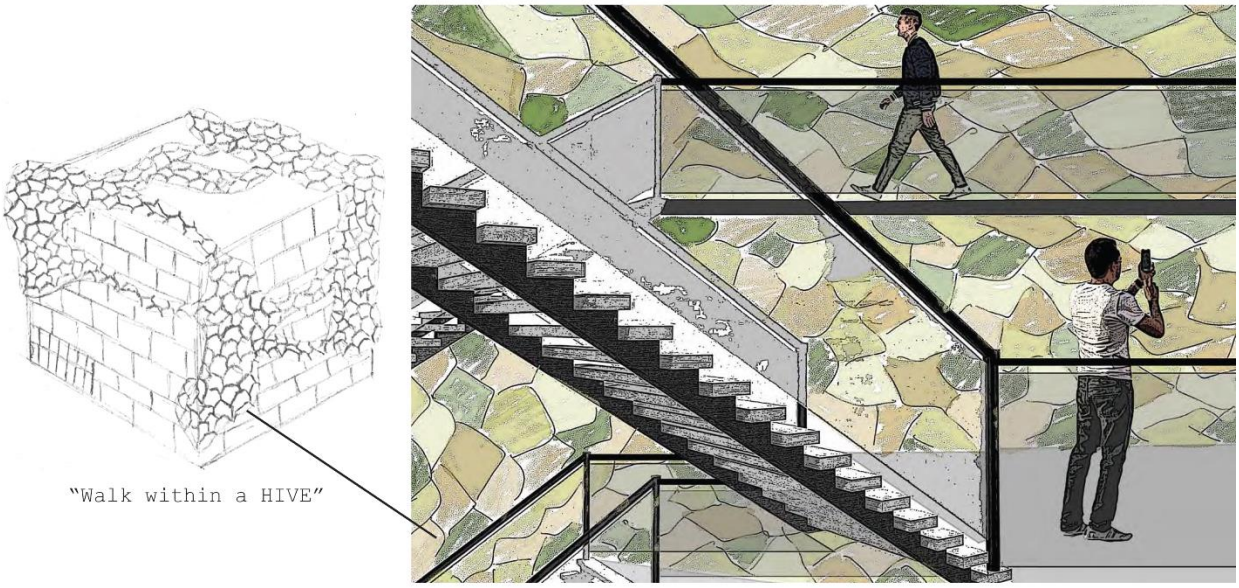
2

The HIVE: Exterior Architecture



A center where the exterior architecture evokes its own identity in the urban environment.

The HIVE: Exterior Architecture + Secondary Stair



A center where the exterior architecture not only peeks interest, but enages the user.

The HIVE: North Side Exterior

A center that invites the user immediately to a vibrant and inclusive environment.

5

The HIVE: Outdoor Courtyard

6

The HIVE: Outdoor Courtyard + Fresh Market

The HIVE: Fresh Market

The HIVE: Main Lobby + Reception

9

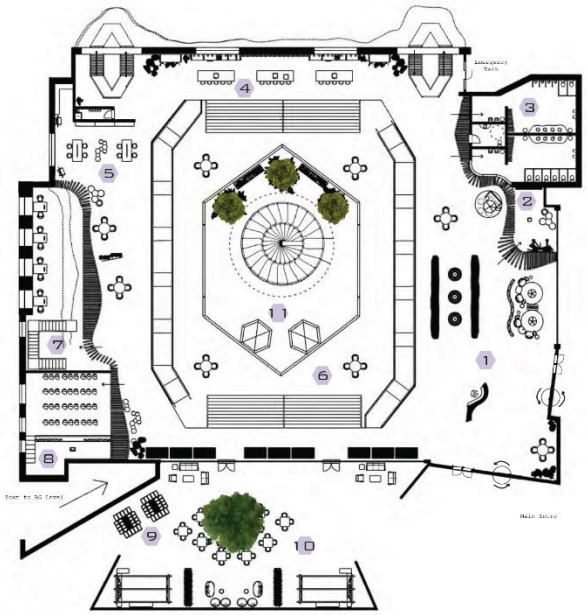
The HIVE: Cultural Center [Ground Level]

Includes:

1 - Reception/ Lobby
2 - LGBTQIA+ Learning Space
3 - Public Restroom
4 - Break Area/ Lounge
5 - Volunteer/ Maker Space
6 - Public Meeting Space
7 - Private Meeting Space
8 - Auditorium
9 - Fresh Market
10 - Outdoor Courtyard
11 - Central Atrium

Attributes:

60,000 SF
Irresistable Stair
Green Acoustical Ceiling
Parametric Wood Wall System
Hexagonal Irresistable Ramp



A center that engages the user to an open and explorative interior environment.

10

The HIVE: Reception

48% FEEL UNABLE TO INFLUENCE THEIR THOUGHTS, IDEAS, AND ACTIONS TO OTHER LGBTQIA+ INDIVIDUALS

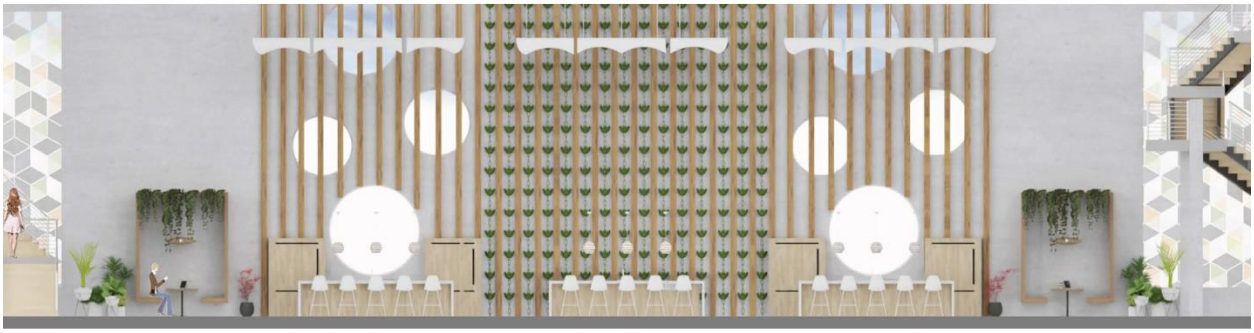
53% OFTEN FEEL UNABLE TO RECIEVE HELP FROM THE LGBTQIA+ COMMUNITY, IF NEEDED

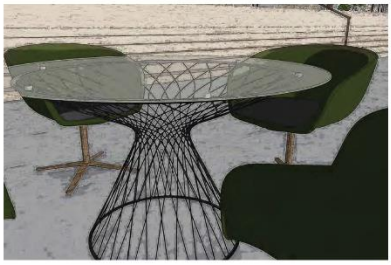
9% FEEL THERE IS A COMMUNITY CENTER TO GO TO, IN HELP OF LGBTQIA+ RELATED ISSUES

92% FEEL THAT IF THE HIVE EXISTED, WITH ITS INTENDED SERVICES/ DESIGN, IT WOULD BE BENEFICIAL

L1

The HIVE: Break Lounge + Public Meeting Space





L2

The HIVE: Auditorium + Private Meeting Space + Volunteer/ Makerspace

13

The HIVE: Volunteer + Maker Space

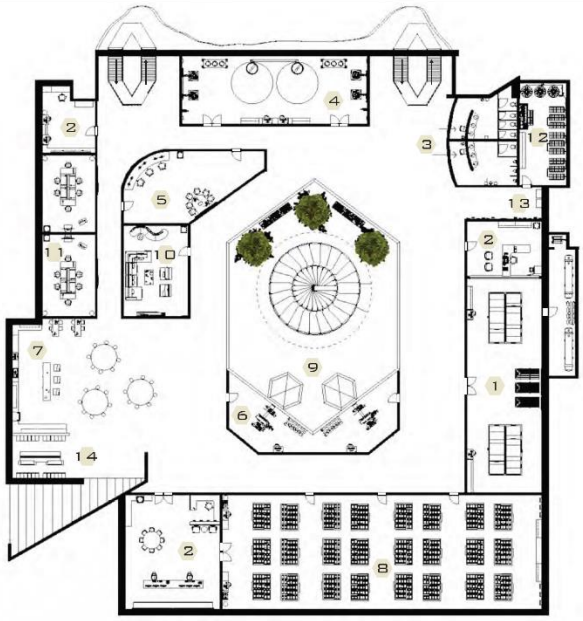
14

The HIVE: Sustainable Center [BG Level]

Includes:

1 - Ground Source Heat Exchange
2 - Monitoring Station/ Office
3 - Restroom
4 - Rainwater Management System
5 - LEED Control System
6 - Elevator Control/ Equipment
7 - Break Area/ Lounge
8 - Energy Grid/ Management
9 - Central Atrium
10 - Wellness Space
11 - Meeting Space
12 - Greywater/ Waste Management
13 - Mechanical Storage
14 - Personal Storage/ Lockers

Attributes:
50,000 SF



A center that uses prospective net-zero green building design to shape the environment.

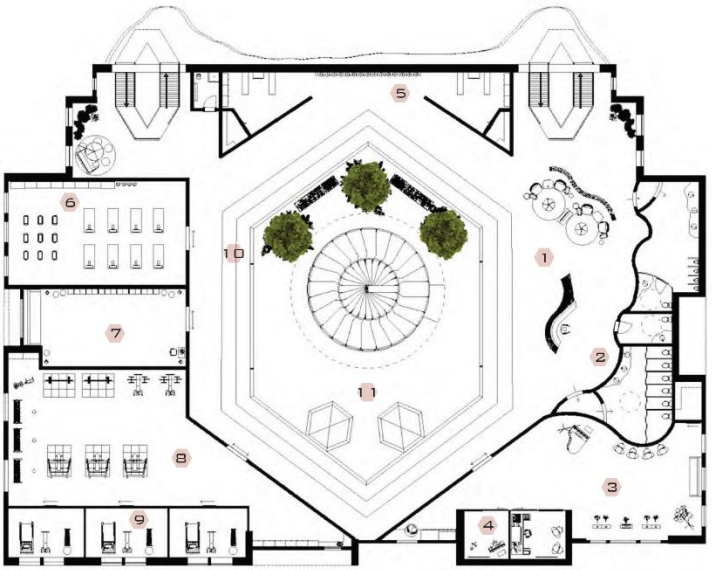
15

The HIVE: Physical Center [Level Two]

Includes:

1 - Reception/ Lobby
2 - Public Restroom
3 - Music Expression Studio
4 - Recording Studio
5 - Locker Room
6 - Yoga/ Aerobics Studio
7 - Dance Studio
8 - Public Gym
9 - Private Gyms
10 - Pavagen Energy Track
11 - Central Atrium

Attributes:
28,000 SF
Rain Chain
Recording Studio
Pavagen Energy Track



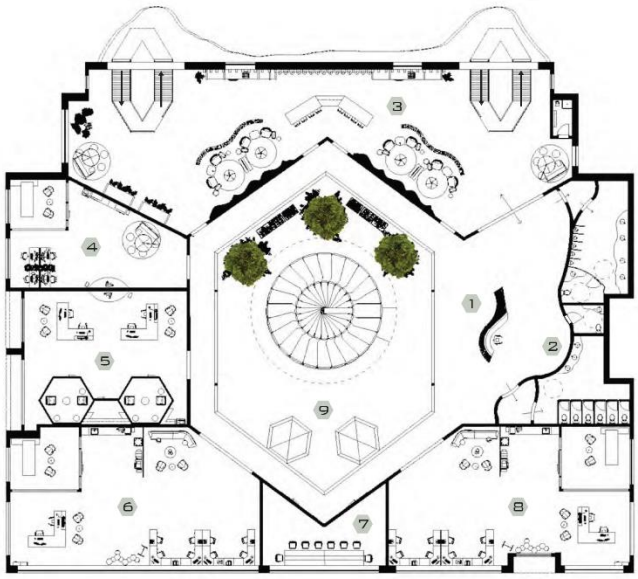
A center that provides space for activity and expression, increasing engagement together.

16

The HIVE: Offices Center [Level Three]

Includes:

1 - Reception
2 - Public Restroom
3 - Lounge/ Break Area
4 - Immigrant/ P.O.C Resources
5 - Mental Health Office
6 - Job Outreach Office
7 - Conference Room
8 - Homelessness Outreach Office
9 - Central Atrium



Attributes:
29,000 SF
Rain Chain
Hexagonal Corridor
Parametric Wood Wall System

A center that provides resources and outreach for a community in need, when they need it.

17

The HIVE: Offices Center Break Lounge + Lobby

20 states EXPLICITLY PROHIBIT WORKPLACE DISCRIMINATION BASED ON SEXUAL ORIENTATION & GENDER IDENTITY (APA, 2021)

18 states HAVE ZERO LAWS PREVENTING WORKPLACE DISCRIMINATION BASED ON SEXUAL ORIENTATION (LGBTMAP.ORG, 2021)

19% OF TRANSGENDER INDIVIDUALS FROM RESEARCH HAVE BEEN REFUSED A HOME/ APARTMENT (APA, 2021)

11% OF TRANSGENDER INDIVIDUALS REPORT EVICTION DUE TO "GENDER IDENTITY OR EXPRESSION." (APA, 2021)

18

The HIVE: Job Outreach Office

19

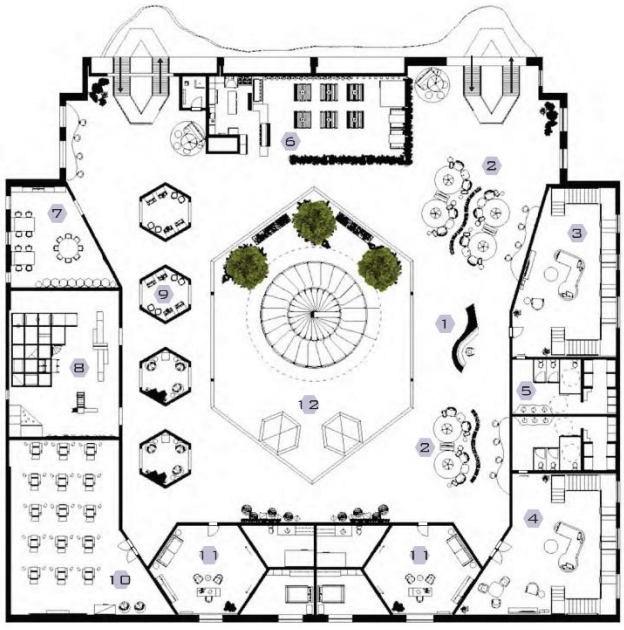
The HIVE: Youth Housing [Level Four]

Includes:

1 - Reception
2 - Lounge
3 - Housing Side A
4 - Housing Side B
5 - Restroom/ Shower/ Laundry
6 - Dining Hall/ Kitchen
7 - Maker Space/ Classroom
8 - Playground/ Rock Climb Wall
9 - Game/ Social Pods
10 - Theater
11 - Caretaker Living Unit/ Office
12 - Central Atrium

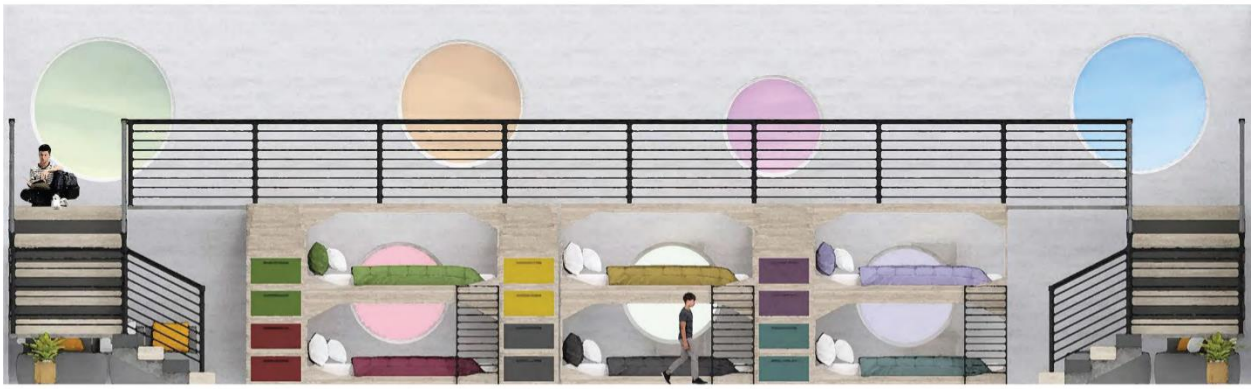
Attributes:

29,000 SF
Rain Chain
Lofted Sleeping Bunks
Hexagonal Game/ Social Pods



20

The HIVE: Housing Side A



A center that uses interesting and inclusive design as an escape for all underserved youth.

21

The HIVE: Dining Hall/ Kitchen

Dining Space

Rainwater Chain

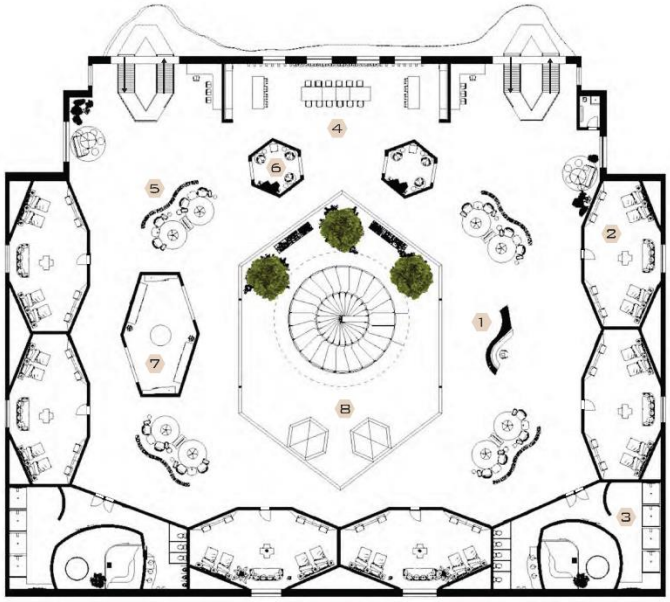
Kitchen

22

The HIVE: Adult Housing [Level Five]

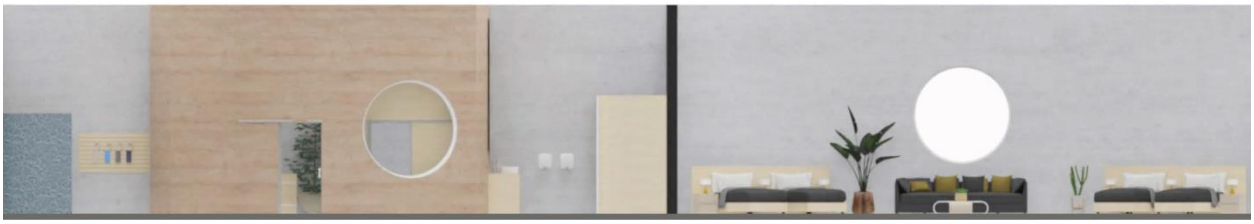
Includes:

1 - Reception
2 - Housing Unit
3 - Restroom/ Sauna/ Showers
4 - Community Kitchen/ Dining
5 - Lounge
6 - Social Pod
7 - Laundry
8 - Central Atrium



Attributes:
Sauna
29,000 SF
Rain Chain
Hexagonal Game/ Social Pods

The HIVE: Sauna/ Restroom/ Shower Space

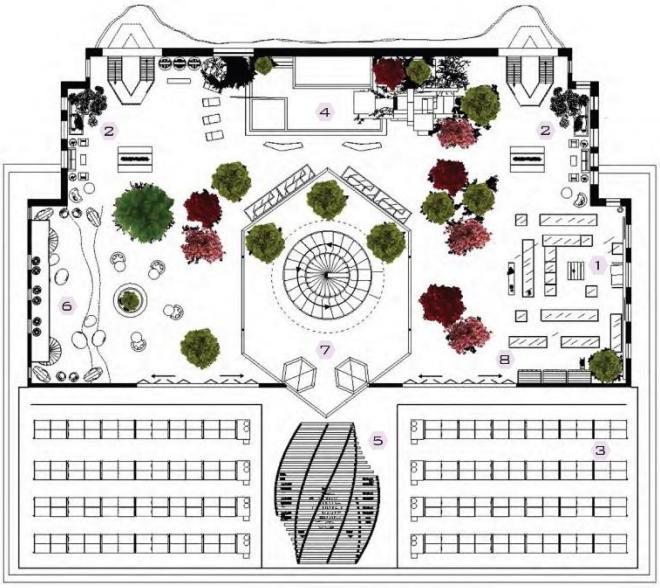


A center not providing the bare minimum, but space for relief and comfort from homelessness.

The HIVE: Garden Center + Rooftop [Level Six]

Includes:

1 - Vegetable Garden
2 - Lounge
3 - Solar Panel System
4 - Pool & Waterfall
5 - Greenhouse
6 - Beehive Engagement Space
7 - Central Atrium
8 - Beehive Keep

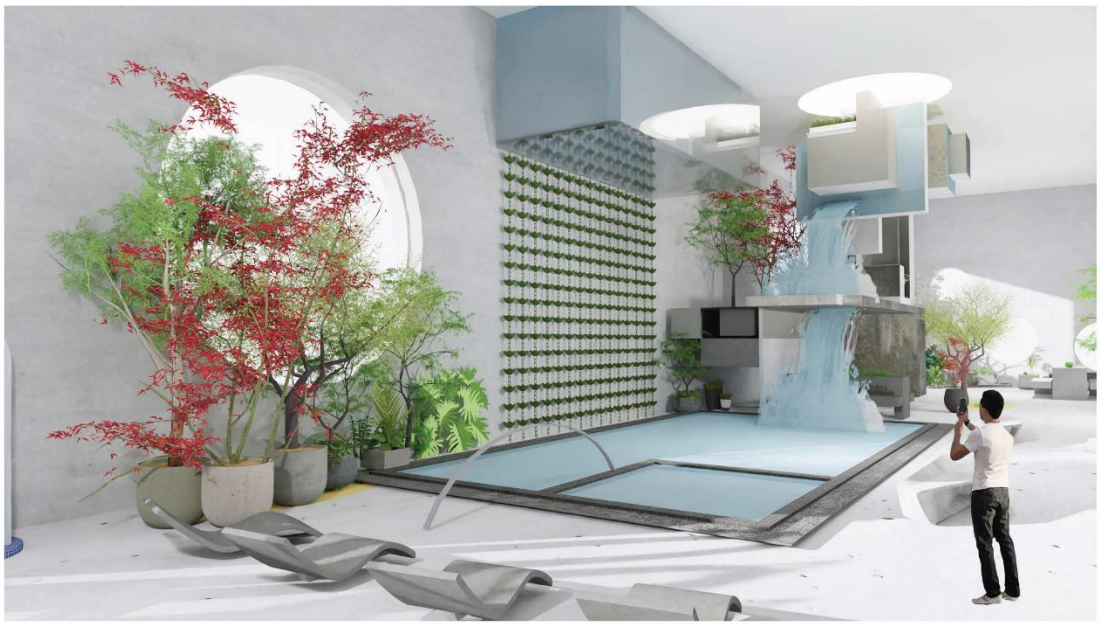


Attributes:
Pool
40,000 SF
Rain Chain
Beehive Engagement Space

A center that provides an oasis, but also space for engagement, learning, and funding.

The HIVE: Garden Lounge Space

The HIVE: Community Pool



27

The HIVE: Pool Washing Station

28

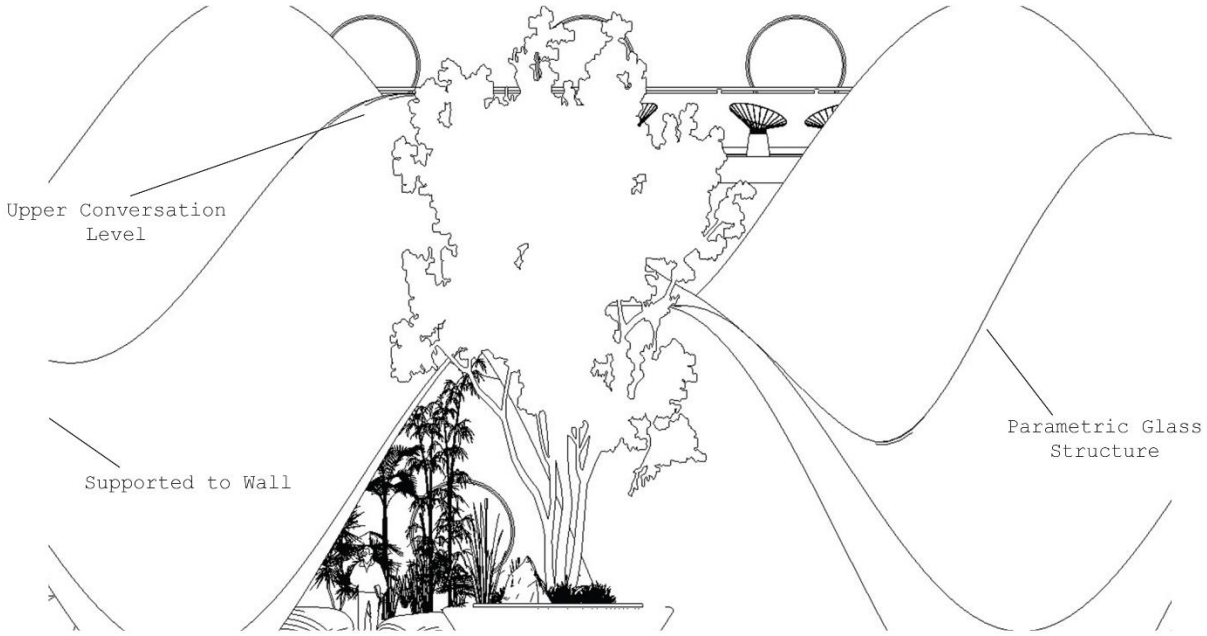
The HIVE: Vegetable Garden + Beehive Keep

29

The HIVE: Vegetable Garden + Beehive Keep

30

The HIVE: Beehive Engagement Space



31

The HIVE: Beehive Engagement Space

32

The HIVE: Beehive Engagement Space

33

The HIVE: Beehive Engagement Space

34

The HIVE: Beehive Engagement Space

35

Thank you for visiting The HIVE!

36

The HIVE: Citations

Image 1, "Concept + Site" – Taken by Author at site

Image 2, "Concept + Site" – McNeill, Leila A. "Episode 40: A Brief History of Protest against Anti-LGBTQ Science." Lady Science, Lady Science, 16 June 2021, https://www.ladyscience.com/podcast/ep40-brief-history-of-protest-against-antilgbtq-science-2021.

Image 3, "Concept + Site" – Rusty, et al. "Open-Air Colonies from Coast to Coast." Honey Bee Suite, 10 Jan. 2016, https://www.honeybeesuite.com/open-air-colonies-from-coast-to-coast/.

Image 4, "Housing Side A" – "Category:LGBT Pride Flags." Wikimedia Commons, 20 Apr. 2020, https://commons.wikimedia.org/wiki/Category:LGBT_pride_flags.

Image 5, "Housing Side A" – "Category:LGBT Pride Flags." Wikimedia Commons, 20 Apr. 2020, https://commons.wikimedia.org/wiki/Category:LGBT_pride_flags.

Image 6, "Housing Side A" – "Category:LGBT Pride Flags." Wikimedia Commons, 20 Apr. 2020, https://commons.wikimedia.org/wiki/Category:LGBT_pride_flags.

Image 7, "Housing Side A" – "Category:LGBT Pride Flags." Wikimedia Commons, 20 Apr. 2020, https://commons.wikimedia.org/wiki/Category:LGBT_pride_flags.

Image 8, "Housing Side A" – "Category:LGBT Pride Flags." Wikimedia Commons, 20 Apr. 2020, https://commons.wikimedia.org/wiki/Category:LGBT_pride_flags.

All other images produced by author

All Appendix III Figures 128-166. Completed Final Presentation/ Development. Created by Author

FIGURE/ TABLE INDEX

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