

Comprehensive Honors Thesis

Pivot, Design of an Oklahoma City Youth Shelter

Pivot Inc. is a nonprofit youth center which assists with Oklahoma City youth and families. Pivot is a turning point in young adults' lives, as it helps clients not only receive basic needs like food, clothing, and shelter but also goes beyond by providing education and job assistance, prevention and intervention, and therapeutic care to the youth that come through Pivot's doors. While there is limited space on the Pivot campus to house youth long-term, Pivot helps anyone who comes through its doors. Pivot will soon open a drop-in center and emergency shelter for youth who spend each night at-risk on the streets and exposed to the elements, and Pivot is continuously expanding to offer more help to individuals in need.

Pivot's current building is a renovated one story commercial building which is degrading, poorly laid out, and offers very little daylighting. For an organization which strives to make youth feel safe and welcomed, its current building does quite the opposite. Also on the Pivot campus is housing for youth ages 12-18 as well as the beginnings of a tiny home neighborhood which will act as transitional housing for young adults above the age of 18 as they enter their adult lives. The Pivot campus is situated at the intersection of 50th and Walnut in OKC, just off of a major highway. The area is a primarily industrial commercial district; however, there is some residential construction beginning to enter the area. With few sidewalks and no bike lanes, priority is certainly given to automobiles, and the area is generally unfriendly towards pedestrians with the

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exception of one bus stop which is a 7 minute walk east of the site. The current facility and surrounding area of Pivot is not indicative of the care and openness Pivot embodies. By acting as a beacon of hope, offering protection, and personifying the client transformation, the design illustrated throughout the rest of this paper aims to transform the space and provide Pivot with a facility as welcoming to its clients as are its staff and volunteers.

Early in the design process, great consideration was given to the circumstances and trauma that Pivot's clients experience. Often times, Pivot's clients have experienced trauma in the form of physical abuse, emotional trauma, verbal abuse, or persecution based on their identity. They were beaten and tossed around, be it physically or emotionally, searching for a glimpse of light. Pivot is that light, a hope for the future, thus it's parallel to a beacon of hope in a buffeting storm is a central motif in the design. Whereas the top of the current facility in the sunken site stands nearly even with the ground plane of the street, the entrance to the new design for the Pivot Community Center stands tall above the other forms of the building as well as the street (Figure 1). The tower shines brightly throughout the night, a beacon of light and Hope to the youth of Oklahoma City who may be at risk and living on the streets wandering looking for help and guidance. A beacon at sea is meant to light up the night and guide any ships in distress safely to shore. The iconic pivot entry is a beacon of Hope that guides youth all over Oklahoma City to Pivot for hope and guidance. Pivot's beacon can be accessed from both the North and South sides of the site. Multiple entry points allows clients who arrived by both vehicle and on foot to feel equally welcomed and know that Pivot is

eager to help them in whatever circumstance they have come.



Figure 1

A key element to ensuring the clients feel comfortable in the space is a sense of protection due the trauma they have experienced. A sense of protection calls for a variety of design decisions involving both openness and solidity. During early engagement with Pivot, a staff member noted that each of the tiny homes on the site, though less 300 sq. ft., has two exits in order to comfort the student living there, as two exits means the student still has a way out in case of danger. Given this information, it was all the more reason to have two entries into the core of the building, in addition to ensuring clients feel immediately welcomed however they make their way to the site. Additionally, exits are placed frequently throughout the building for the comfort and peace of mind of clients. Furthermore, the building acts as a protective fortress for the guest, as its arms fold to embrace a central courtyard which looks back towards the

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remainder of the welcoming Pivot campus. The outward facing facades of the building are primarily solid, as if to shelter the youth from the streets of the city and the trauma of the outer world. Although sturdy solid walls can make one feel protected, openness is also important so that one feels they can see any potential threat that may be coming or that others may see if they are in danger as well. For this reason, the interior facades which surround the courtyard are entirely glazing all the way up to allow students to feel that they are seen and that they have clear sight lines (Figure 2). In addition to being physically protected, clients are able to feel emotionally safe with the design of the most emotionally vulnerable spaces, the counseling offices, in the private area of the building - the third floor. With the counseling spaces placed away from all the action of the building, clients feel safe to open up and be vulnerable without fearing judgement from any passersby. A careful combination of openness and solidity along with spatial organization within the design allows clients to feel safe and protected within the walls of Pivot.



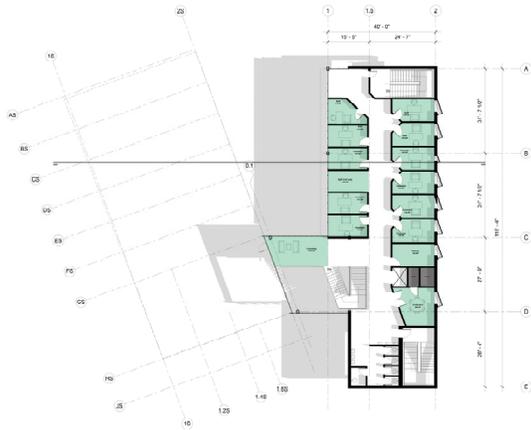
Figure 2, North Elevation

Pivot - a Turning Point for Youth creates transformation in the lives of the clients it serves, so it was essential that the design for the new facility represents such a

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transformation. The form of the building tells the story of clients who enter into Pivot's care and embark on the transformative journey. First, youth enter through the center, embraced by the arms (wings) of Pivot (Figure 3). Clients are taken in from every background; wherever they come from, they are accepted by light which breaks up the darkness. The clients then receive help and education from counselors and coaches. These activities take place in the east wing of the building, nestled on the interior of the site. The most intimate and vulnerable spaces are on the 3rd floor, representing the transition of healing from the ground up. Clients receive all the help they need to become self-sustaining adults in the east wing of the building. The west wing of the building houses spaces with more outward focused activities, such as the lounge, drop-in center, and Multi-purpose space, which can even be rented out to the public. In plan, while the east wing of the building is orthogonal to the beacon, the west wing begins to open up towards the community outside of Pivot, representing the point at which clients leave Pivot, equipped to manage adult life. The two wings are held together and connected by the central beacon; it is where they enter and leave the arms of Pivot, where they come for hope and where they leave with light to combat void. The building form lays out the path of youth from acceptance to healing to self-sufficiency with the help of Pivot.

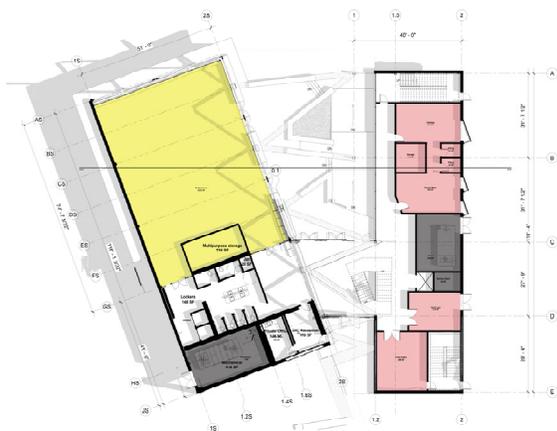
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THIRD FLOOR ■ Recreation ■ Education ■ Mechanical/Service ■ Admin/Health
0 10 50



SECOND FLOOR ■ Recreation ■ Education ■ Mechanical/Service ■ Admin/Health
0 10 50



FIRST FLOOR ■ Recreation ■ Stores ■ Mechanical/Service
0 10 50

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Figure 3, Plans

The structure of the design plays a key role in reinforcing the three ideas conveyed in the concept. The structure, primarily timber, is exposed throughout the building (Figure 4). An exposed structure signifies strength and vulnerability. With the clients able to see what is supporting the building above and around them, they can feel protected, knowing that the space is safe. A safe space opens up the doors for vulnerability, which leads to healing. The exposed timber structure shows that revealing oneself is not weak, rather it is beautiful and strong. The clients can feel hopeful when they see the large timber structure, as a connection with nature is often linked to healing and peace; this biophillic connection is one of the main reasons timber is used in the design, for the clients to feel as if they are almost in nature, among the tall trees. The vocabulary of the structure is varied throughout the design to recall the transformation Pivot brings to its clients. The structural vocabulary relates directly to the function of the space of which it supports. The aforementioned east wing, which is more inward focused, is supported by a more simple and reserved beam, girder, column system, whereas the structure of the outward-focused west wing is more loud and dynamic. The structure of the west wing consists of large glulam vertical braces which lace the facade and pierces straight through the beacon, to the other side. The slanted vocabulary of the structure signifies movement and transition, like a runner at the starting line, focused and eager to take off and run towards their goal, just as the clients are eager to get the resources they need and be able to transition to self-sufficient adulthood. Additionally, the dynamic structure draws from the high activity of the spaces it supports. Not only do the vertical braces run all the way down the west wing, but they are pulled outward past the facade, further representing the clients' passage from Pivot to the community of

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Oklahoma City.

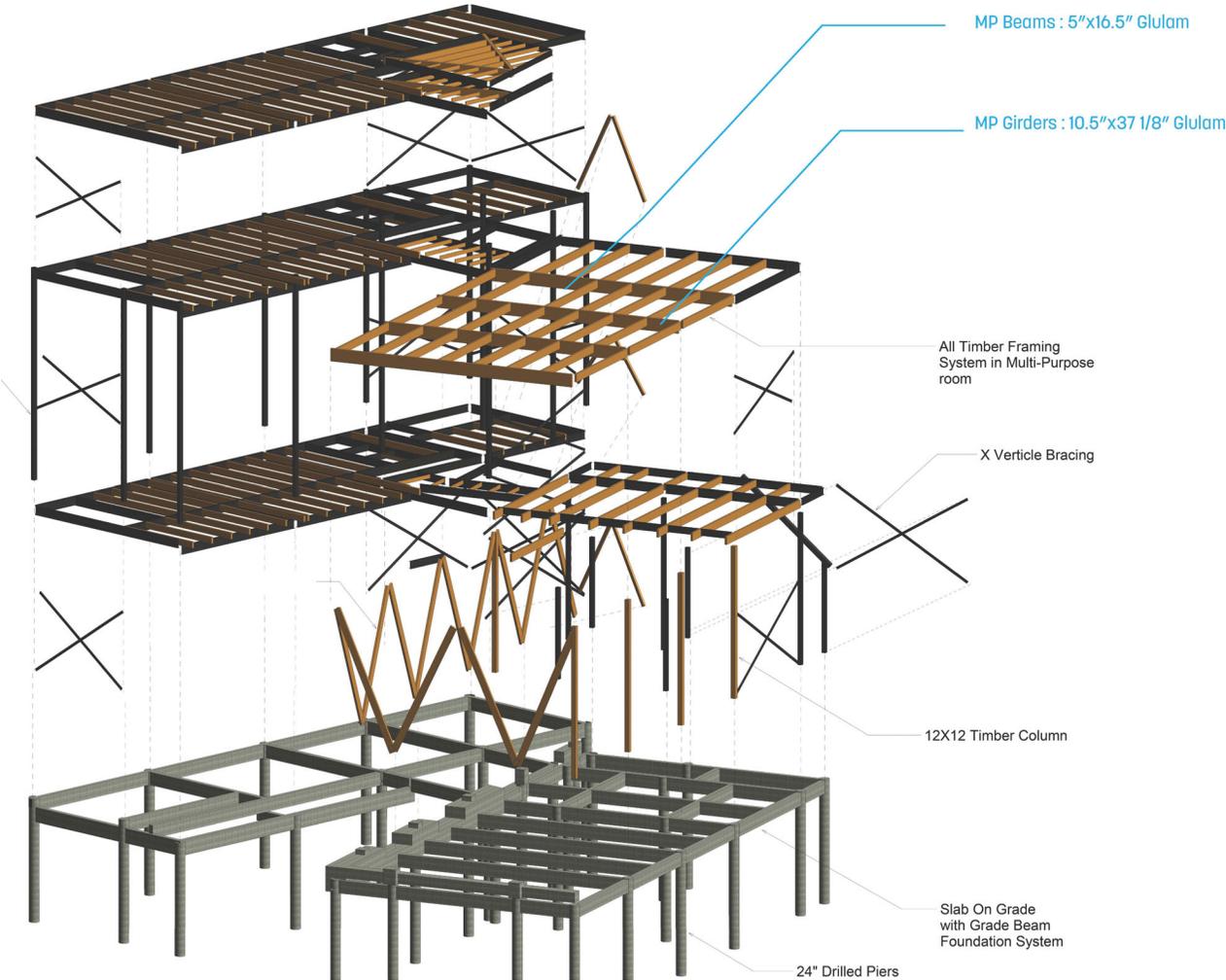


Figure 4, Structure

The two structures, corresponding to the distinct functions of each wing, meet in the central courtyard which ties them together. To correlate to the structure, the courtyard also has a more reserved east side along with a more dynamic west side, accompanied with level changes. The structure on both sides of the courtyard is exposed and hits the ground on the edge of the courtyard. A ribbon of color runs back and forth from one side of the courtyard to the other, tying together the two structures

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and signifying their relationship and dependence to one another. For a client is not yet equipped to leave Pivot without the inward healing and recovery, yet once they do receive all the tools they need, they must return to the outer world, or the help Pivot gives them would be moot.

The concept is not only expressed in large scale design decisions like the building's form and structure, but it is also expressed in little details which are more human scale. For example, in the multi-purpose space of the building, which is surrounded by the exposed glulam vertical braces of the west wing, the space is also wrapped by a concrete bench which carries the same dynamic sloped form and which also carries outside as well, representing the transition of clients from Pivot back out to the community. The theme of inward focus and healing which takes place in the east wing is taken into consideration with the design of the windows on the east facade. The windows project out at an angle from the facade which allows ample daylight to flood the space while remaining small fenestrations. The elevation of the east facade appears completely solid which allows a sense of privacy for the clients which share very vulnerable and painful pieces of their lives just on the other side of the facade in counseling rooms. With the design of the windows, which are a playful and youthful Pivot blue on the exterior, clients have privacy while also receiving the biophilic healing nature of sunlight flooding the space. From large scale to small scale, care is taken to ensure that the space makes clients feel hopeful, secure, and transformed.

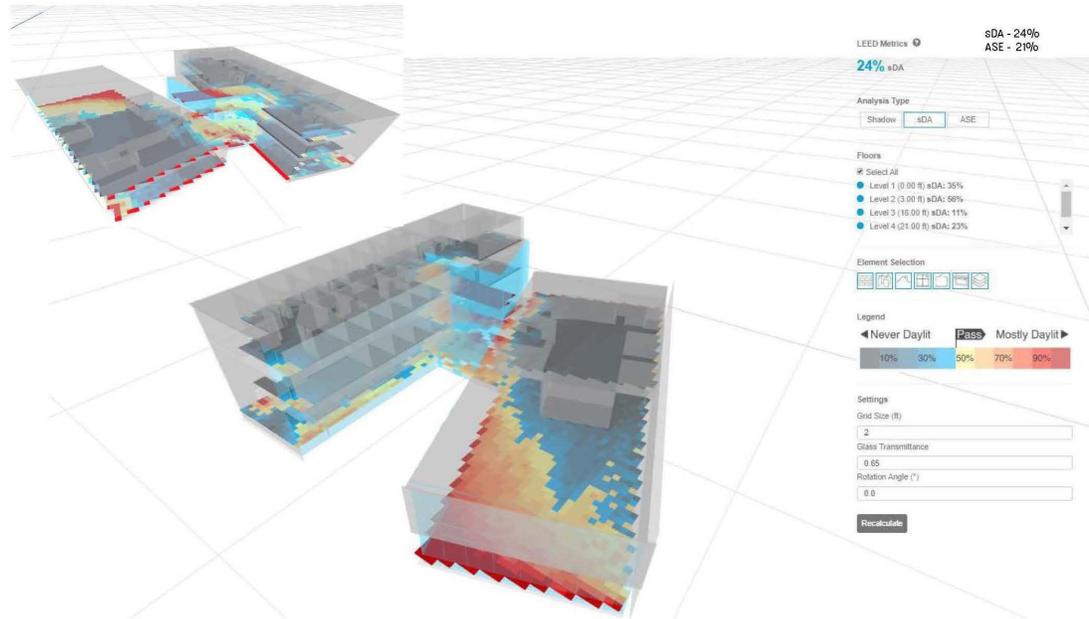
Pivot places great value on the future of the clients it serves, so the design's impact on the clients' future is important as well. The design takes great care into its effects on the environment since the health of the environment corresponds to the

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future well-being of the clients and their potential future families. One of the first decisions towards an eco-conscious design was to build up rather than out. Maintaining a small building footprint on the site allows for more green space and less of the surrounding ground to be in upheaval. Another goal was to use as much daylighting as possible in order to cut down lighting required by electricity. However, with that comes caution of having too many openings which would result in heat gain which would then require excess energy to cool the building. In the final design, glazing is restricted almost entirely to the north side of the building where there is only bright indirect sunlight. Partition walls in the space do not extend all the way to the ceiling, so this allows daylighting to reach even past the spaces immediately adjacent to the glazing. A program known as CoveTool was used early on in the design process to evaluate the efficiency of the design (Figures 5 & 6). The software showed where glare would present an issue in the design, and this information informed where to put shading devices on the building facade. Additionally, the program allowed for comparison between a baseline code compliant design and the current design of the building,

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quantifying the benefit of using, for example, a ground source heat pump system.



BASELINE

Baseline Energy



Office

Envelope | Usage and Schedules | Building System | Energy Generation | General

Occupancy First Day of Week	Monday	System Type	VAV/ Water Cooled Chiller/ Electric Boiler
Occupancy Last Day of Week	Friday	Integrated Part Load Value	Variable Speed Drive Centrifugal Chiller
Occupancy Hour First	06:00	Heating System COP	3.2
Occupancy Hour Last	17:00	Cooling System COP	4
Daylight Sensors	Partial Sensors	Heat Recovery System	Run Around Coil, No Pipes
Occupancy Sensors	Partial Sensors	Fan Flow Control Factor	Variable Speed
Lighting (W/ft²)	0.62	Specific Fan Power	Central Mechanical Ventilation With Heating And Cool
Lighting (Unocc. Hrs) (W/ft²)	0.15	Ventilation Type	Mechanical
Exterior Lighting Power (Watts)	1300.0 Zone 4 (High Activity Commercial Desk... X	Mechanical ventilation supply air flow rate (CFM)	410.14
Appliance Use (W/ft²)	0.75	Air Changes per Hour (ACH)	1.16
Maintenance (W/ft²)	0.15	Building Energy Management System	Advanced
Heating Set Point (F)	70	Exhaust Recirc. %	Exhaust Air Recirculation 60%
Heating Set back (F)	59	DHW Gen.	Heat Pump
Cooling Set Point (F)	74	Hot Water Distribution System	Taps Within 3 Meters Of Heat Generation
Cooling Set back (F)	84	Domestic Hot Water Demand (gal/yr)	28487.67
Occupant Density (Occupied Hours) (#/Person)	275.56	Pump Control for Cooling	All Other Cases
Occupant Density (Unoccupied Hrs) (#/Person)	1681.32	Pump Control for Heating	All Other Cases

Figure 5, Covetool

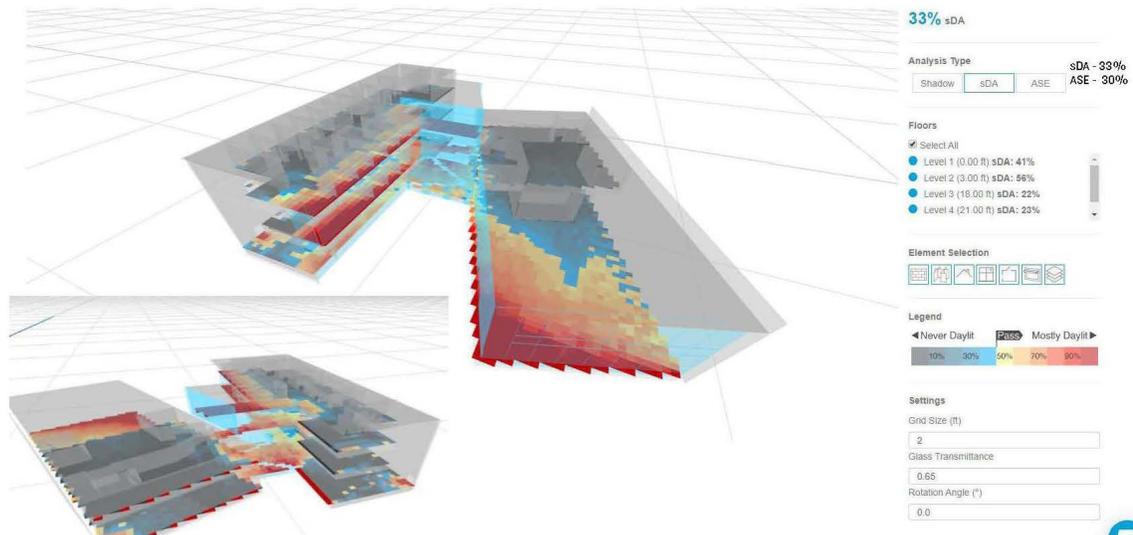


Figure 6, Covetool

In recent years, people are beginning to pay more attention to the embodied energy of buildings as opposed to solely their operational carbon outputs. Operational carbon is the amount of carbon emissions from energy used to run the day-to-day systems of a building, whereas embodied carbon is the total energy and emissions from the materials and construction of a building. Embodied carbon makes up a large part of negative implications on the environment from a building, but many people have disregarded it until now. Systems like the ground source heat pump are used in the design to lower operational carbon emissions, but great attention was given to materials chosen for the design to lower embodied carbon. For example, sustainably sourced timber is a great choice because trees naturally take in carbon from the atmosphere, so by removing some trees, one takes away carbon from the atmosphere because it remains stored in the trees, and then more trees can be planted in the void to continue removing carbon from the atmosphere. Additionally, trees are a renewable resource, unlike steel and concrete which also required extensive mining. In addition to supporting

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the design premise, brick is the chosen material for the majority of the exterior because it is locally sourced and therefore releases less emissions due to less transportation. It's important that the design of the building takes care to protect the environment because the earth's well-being affects the people on it. Sustainable choices were made to strengthen the design concept of hope, protection and transformation for the well-being of Pivot and its clients.