SHELTER TO HABITAT
This thesis design, Shelter to Habitat, attempts to provide a place for dog care, sheltering, housing and education to a community that needs it. It pushes the definition of sheltering and provides dogs with a space scaled and intentionally designed for their mental and physical health. The design prioritizes light, materiality and airflow to create a space that responds to the life of a dog. It addresses the needs of the community and integrates into the fabric of the neighborhood. The design creates an adaptive building that adjusts to the scale of the dog, while providing a public and private face that addresses the various needs of the community.

In this proposed dog shelter design, the 1st floor, which faces the Oxon Run park, acts as the public face of the building. This space houses adoptable dogs, volunteer work spaces, training rooms, and community classrooms. This floor fluctuates the interior-exterior experience by providing a variety of ways to inhabit the spaces. In the main boarding space, the building design scales to the dog, the main user of the space. There are indoor-outdoor runs that accommodate the various needs of the community.

These intentionally designed connection spaces become a very important part of the building design proposal. There are 3 unique scenarios that need to be considered and designed for when it comes to animal shelter. The first is providing shelter that is scaled to the size of the dog. Juxtaposed to this is hallways that are no veterinarians in a community, standard wellness care is not the norm—and familiarity, experience, and knowledge concerning common pet health concerns do not exist.8 9

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South of the Anacostia River in Washington DC, the Oxon Run park runs through the Washington Highlands and Congress Heights neighborhoods. Though these neighborhoods sit within Ward 8 of DC, which is has the lowest education levels and household incomes, Oxon Run park acts as a lively community magnet, sitting adjacent to the metro station, a vibrant community center, the public pool and multiple schools. One resource that is lacking in Ward 8, similarly to under served communities around the country, is animal care. Pets for Life, an organization that attempts to address this inequality, states: “There are animal resource deserts—entire neighborhoods with no veterinarians, no pet supply stores, no groomers, and no animal welfare infrastructure. When there are no veterinarians in a community, standard wellness care is not the norm—and familiarity, experience, and knowledge concerning common pet health concerns do not exist.”

These 3 defining scenarios led the design to a dynamic, flexible building that serves a variety of needs. In this proposed dog shelter design, the 1st floor, which faces the Oxon Run park, acts as the public face of the building. This space houses adoptable dogs, volunteer work spaces, training rooms, and community classrooms. This floor fluctuates the interior-exterior experience by providing a variety of ways to inhabit the spaces. In the main boarding space, the building design scales to the dog, the main user of the space. There are indoor-outdoor runs that accommodate the various needs of the community.

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My love for dogs started even before I could form memories. As a child, I lived in a small town in South Carolina where my mom was a stay-at-home mom for the first couple years of my life. We lived in a small house on a corner lot that had a big fenced-in back yard where we would spend our afternoons. While we were out, my mom would let all the neighborhood dogs in the yard to play. The neighbor’s dog, Chelsea, would hear us outside and come over, knowing how to open the gate herself. Later, when we moved to a different house, a dog that lived a couple houses up the street, Judge, would come to our carport door every night at the same time. I, or someone else in my family, would go out and throw his ball for him for what felt like hours. My home and life had always been a magnet for dogs and continued to be even after I moved away as an adult. I have volunteered at multiple shelters, dog sat 30+ dogs, and befriended any dog I crossed paths with.

Now, I have my own dog, Murphy. Murphy was rescued from a highway, about halfway through working on this project. I had been looking to adopt a dog for a couple months and decided to stop by an animal shelter on the way home one day. Yet when I got there, it was closed. On the way home, I passed a dog on the highway who almost got hit by a car. I stopped, ushered him into the car and tried to find an owner. After reaching out to shelters, posting his photo to missing dog groups and websites, and confirming he wasn’t microchipd, no one claimed him. He was in poor health with fleas and heart worms. At this point, I decided to keep him. Since finding him, Murphy and I have healed each other in so many ways. Murphy and I’s paths were meant to cross that day. This project is for all of the dogs who have crossed my path. They are all deserving of healing. I know that architecture can provide a space that promotes wellbeing and health and can foster a safe and comfortable space, for both humans and dogs.
Can architecture and design expand the definition of “shelter” and provide a space that encourages healing by responding to the physical and mental health needs of the dogs and community it serves?

**PROGRAMING NEEDS**
- Sheltering for Dogs (Indoor and Outdoor)
- Medical Facility Spaces
- Community/Education Spaces
- Outdoor Space (For Dogs and Community)
- Offices
- Entrance/Intake Space

**DESIGN OBJECTIVES**
- Provide healthy living space for dogs that responds to the physical and emotional needs
- Create a space for community outreach and education opportunities
- Provide needed medical services to pets in the community
- Create community engagement and encourage adoption

**DESIGN FACTORS**
- Acoustics
- Ventilation
- Cleanliness
- Threshold/Intersection
- Natural Light
- Security
- Community
- Enclosure
THE GUIDE TO SHELTER DESIGN

As designers we often consider the way we experience and interact within a building. How does the light, space and material affect how we use and inhabit the space? Yet one facet is often overlooked and under designed. How do animals live and inhabit the spaces we put them in? With close to 80 million households in the United States owning pets, they are ingrained in the way we live, communicate and design.

From my own experience volunteering in a variety of animal shelters, I have seen that the needs of animals change how we design and inhabit the spaces we put them in. People and communities shape the environment and the spaces in which they live and inhabit the spaces we put them in.
When trying to understand the users of dog shelters, it is important to not only understand how they function but also who is inhabiting them and why. If almost 60% of US households are pet owners, then the likelihood of the households needing access to some sort of animal resource is high. (Fig. 5) Because of the high frequency of animals in shelters and the lack of adequate resources for them, nearly 1.5 million shelter dogs get euthanized in the US a year. Many communities don’t have the tools, education and resources to give to the needs of every dog in the shelter. It is evident that a majority of people would prefer to adopt a dog rather than buying one if they could minimize the risk of behavior and health issues. Therefore, by providing a space that is holistic and addresses the concerns of both the physical and mental health of the dog, the success of the shelter only increases. This is why education and outreach to the community and visitors to a shelter is huge in the impact it has to the health and wellbeing of the dog.

### Chart surveying pet owners

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<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Total number of U.S. households</td>
<td>154,000</td>
<td>154,000</td>
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<tr>
<td>Number of households with a pet</td>
<td>85%</td>
<td>85%</td>
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</tr>
<tr>
<td>Percentage of households with a pet</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
</tr>
<tr>
<td>Remaining households with more than 1 pet</td>
<td>14%</td>
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<tr>
<td>Estimated number of pet dogs and cats</td>
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</tr>
<tr>
<td>Percentage of pet owners who consider pets to be family members</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
</tr>
<tr>
<td>Percentage of pet owners who consider pets to be property</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

### Statistics on shelter adoptions

- **What is the main reason that you would NOT adopt a shelter dog?**
  - I don’t want to adopt a dog | 40% |
  - I want a puppy / younger dog | 30% |
  - I think they might have behavioral issues | 20% |
  - The adoption fee | 10% |

### Statistics on buy vs. adopt

- **Would you be more likely to adopt or buy a dog?**
  - Yes, I would be more likely to adopt | 55% |
  - No, I would be more likely to buy | 45% |

### Statistics on gender adopters

- **What is the main reason that you would NOT adopt a shelter dog?**
  - I don’t want to adopt a dog | 60% |
  - I want a puppy / younger dog | 40% |

- **What is the main reason that you would NOT adopt a shelter dog by gender?**
  - I don’t want to adopt a dog | 60% |
  - I want a puppy / younger dog | 40% |
IMPACT OF POVERTY ON ANIMAL RESOURCES

Pets for Life is an organization that specializes in the research and addressing how systemic inequities affect animal care and resources. Their theory for change revolved around the impact goals and objectives to address the way under served communities are involved and animal care that can be made available to them.

It became crucial throughout the research and design process, that I consider how the building community and impacts the community it serves. People at all socio-economic backgrounds are serving of animal care and education. By providing a welcoming space, that will serve a variety of functions, animal care resources can be made available to communities in need.

In Pets for Life’s theory of change model, highlighted are some of the different aspects I found most important to moving forward in the design process. Some of these include removing any barriers, providing access, creating supportive tools and inspiriting out of the box thinking that will create effective solutions.

**| 6 | LONG-TERM IMPACT

- **Goals**: Moving access to resources for people and pets living in poverty and underserved communities to industry standard.
- **Objectives**: Establish greater understanding and awareness of the impact of poverty on people and their pets.
- **Outcomes**: A greater movement against the lack of access for animal owners for services and resources.
- **Outputs**: A greater movement against the lack of access for animal owners for services and resources.
- **Theory of change**: Pets for Life's theory of change model tackles the import goals and objectives to address the way under served communities are involved and animal care that can be made available to them.

**| 7 | IMPACT OF SYSTEMIC POVERTY AND INSTITUTIONAL INEQUITIES**

A study conducted by multiple universities found that since 1989, African Americans are served in the criminal justice system at a rate more than 2.9 times greater than whites. For instance:

- **Criminal Justice**: In the United States, communities of color are disproportionately impacted by institutional racism and policymaking that criminalize and incarcerate people for economic opportunities that are unattainable. And thereby creates a systemic issue.
- **Housing insecurity**: In 2016, the net worth of a renter household was $5,200, whereas the net worth of a homeownership household was $171,000. For every 100 affordable, available rentals (in the U.S.), only 35 affordable and available rentals were available.
- **Education**: Children in high poverty communities are put in a disadvantageous position. Generations of wealth are denied to the youth, and access to resources is non-existent. Mass incarceration and the criminal justice system are a social justice issue.
- **Healthcare**: Poverty creates vulnerability; being sick is expensive, and for many people, access to healthcare is out of reach. It’s vital to understand the role that oppressive institutions and policies play in creating endless challenges for millions of pet owners, and, disproportionately, for people of color.

*Note: The majority of this data is sourced from the “The Impact of Systemic Poverty and Institutional Inequities for People and Pets” by Pets for Life.*
CASE STUDIES

The next step in truly understanding animal care architecture is taking a deeper look at some architecture precedents that attempt to tackle animal living environments and how buildings can adapt and be scaled to the need on the animal rather than the human.

The first case study was a building designed by We Architects in Moscow. This building is a long thin building that is pushed and pulled to create a variety of outdoor courtyards with a thin building enclosure. This project was a great representation of enclosure and ventilation, 2 crucial aspects to a building that houses animals.

My next case study explored a different arrangement of shelter spaces. This case study was the Öhringen Petting Zoo. This project as well as many other Zoos were important to research because Zoos generally function differently from shelters, yet they’re both designed for animals. Generally Zoos are designed as a complete ecosystem for an animal to live in while shelters are generally designed for short term stay. Since the zoo is creating a habitat for the animal, it is a great opportunity to understand how they live and react in a space. For the Öhringen Petting Zoo, all of the enclosures are facing outward, each having independent access to the exterior. This allows each animal to have a sense of independence and connection with the outdoors.
SITE ANALYSIS:
The initial stages of choosing a site begins by looking at the animal resources in the greater DMV area. When looking at where both animal shelters and veterinary services are located, there seemed to be one main resource desert. This desert was south of the Anacostia river in Ward 8 in Washington DC.

By diving deeper into the demographics and history of Ward 8, it became apparent that this lower income area was not new to resource scarcity. Compared to the majority of DC, Ward 8 has the highest number of residents living below the poverty line, the lowest education levels and the lowest incomes. As seen previously by Paws for Life research, there are underserved communities around the country that lack resources in a variety of ways that inevitably include animal care. Ward 8 is no different.

Moving forward, Ward 8 acts the ideal site that is in need of animal care, shelter as well as education. By providing these resources, the Ward 8 community can be better equipped to handle the needs of their pets and can be educated to improve animal care for generations in the future.
Knowing that Ward 8 passes the right location for a dog shelter, diving deeper into understanding the accessibility and mobility around the Ward was essential. In lower income areas, many residents rely on public transportation and walk ability to be able to move around the city. This knowledge became a crucial factor in choosing a site that would be accessible to not just the residents of Ward 8 but also the people who would most likely use and be in need of a dog shelter and veterinarian.

By looking at the traffic patterns around Ward 8, high traffic areas can be ruled out as dog walkers and volunteers needing to cross the street to take dogs for walks would be difficult. Though it is not often that you would take your dog with you on public transportation, it is still important to understand as employees and volunteers may be using buses and metros to get to work. Finally, by knowing the zoning of Ward 8 as a whole, we can see where there are more residential, commercial and mixed use zones and how the residents are using the space.

Seeing how residents use and move through Ward 8, locating a site for a dog shelter can be informed on how you would approach, move through, and leave the space.
After diving into the research and history of Ward 8, it became apparent that one central, public park that runs through the ward would be a good place to begin locating an appropriate site. An existing park the houses public facilities, sports courts, picnic areas and trails would be an existing magnet in the Ward for dog owners. I started to dive into some of the open and existing land that was present on the boundaries of this park, being conscience not to dig into any park land as to not disturb the existing public space and infrastructure.

After understanding the options, it became apparent that an existing empty site siting along the Oxon Run park boundary would be the most successful and viable site. This site, (2) on Fig. 26, sits south of the center of Oxon Run making it accessible from the east and west of the park. It also has limited barriers of accessibility with no major roads to access the site from the park. After looking to the history of this specific site, it is evident that it once held housing, yet has been empty and fenced off since 2001. Therefore using this site for a dog shelter will help give it back to the neighborhood and community and allow it to be used.
To understand the community and users of Oxon Run Park, it was important to look at what other public, community oriented services were located in the area. After doing some research, it was evident that the Oxon Run Park was a community magnet, with existing and planned community services scattered along the peripherals of the park.

The chosen site acts a perfect complimentary service to the existing series along Oxon Run park. A couple blocks east of the chosen site is the site of a planned community garden to serve the community. Across the park from the site is the existing Oxon Run public pool which serves the entire Ward 8 community. Last but not least, Thearc sits on the west side of the Oxon Run park. Thearc is the Town Hall Education Arts Recreation Campus and houses a variety of services including the Boys and Girls Club, The Washington Ballet and DC Central Kitchen. Thearc acts as a great community resource that emphasizes providing needed services to an otherwise underserved community, much like the dog shelter is intending to do.
There were many impart factors in the design of the final dog shelter. One of the driving concepts was to understand the idea of enclosure and what that looks like in architecture. How can a building expand and contract to allow for a variety of programs and threshold spaces? Dogs are in need of both indoor and outdoor spaces and understanding how these two areas intersect and interact is integral to the way the spaces is used. Throughout the many iterations of concepts and sketches, creating a design that thoughtfully considered all of the needed program and interacted in a way that allowed light and air to permeate the space was the goal.

Ventilation, light, material and movement all began to develop their own roles in the design as it progressed. Wide hallways, tall ceilings, abundant exterior skin, interior courtyards and intersecting forms all encouraged the healthiest environment possible for the dogs and community using the space. As the design progressed, situating and scaling these concepts to the sloping site began to drive how the final design started to lay out.
EXPLORING THE DESIGN
EXPLORING THE DESIGN
DESIGN PROPOSAL:
THE FINAL DESIGN

Scale all played a huge part in how the final design shaped itself. This interaction of interior and exterior is integral to the design and the design process. Light, Air, Material, Connection, also encourage light and ventilation to move through the space. Each wing shifts to allow for an interaction of interior and exterior spaces. The entire building is built with CLT to create a grid system that can be pushed and pulled, expanded and contracted, to adapt to the needs of the program. The walls are vertical wood panels with interior laminate flooring that wraps 4' up the wall bases as a protector. On the exterior, a stone base mimics this pattern by allowing the ground to wrap the base of the wall.

Overall, the final design spans out into four wings not only to allow for plenty of interior space but it also creates 4 different exterior spaces that are semi enclosed. The second floor, which can be accessed from the south ground level due to the slope of the site, is connected to this first floor through a central atrium. This atrium acts as a circulation core as well as a solar chimney for the building with operable windows to pull out warm air. The second floor houses short term boarding, exam rooms and medical/surgical spaces. These facilities can be accessed for the south entrance for a more private entry for staff and medical services.

On the first floor level, the main entry vestibule is set back and shifted to signal the entry and to give some protected waiting areas on the outside of the corner entry. Once past this vestibule, the double height atrium act as the lobby check in space for adoptable dogs, volunteers and community members. To the north of the atrium, there are training areas, meet and great rooms, restrooms and office spaces. The wing also opens up to a larger courtyard that can be used for community events as well as a fenced in dog play area. To the east of the atrium is the adoptable dog boarding area. This space circulates around a shifting courtyard, with boarding runs that are either all indoor or indoor/outdoor, depending on the size and needs of the dog. Because of the shifting courtyard, views are blocked between dog boarding areas therefore giving dogs their own sense of privacy and helping to eliminate too many distractions that will encourage barking. The third floor throughout this space, and throughout the entire building, are 12' wide to give plenty of space if multiple dogs are being walked at once. The ceiling are also 12' in these areas with operable clerestory window to allow optimal light and airflow throughout the space. Unlike the standing metal seam roof on the rest of the building, the roof on the adoptable dog wing is a green roof to collect water for the site and to act as a sound absorption. On the south side of the adoptable dog wing, a terraced landscape leads to a variety of sized dog play areas that can act as flexible spaces for dogs to run and play.

On the second level, there is an existing tree on the site that is placed within a courtyard to preserve. It’s position allows for an entry pavilion to sit on the west side of the second floor. This pavilion can be accessed by the second parking lot on the west side of the building. From this pavilion, another wide hallway leads to staff areas, veterinary spaces and exam room. The second floor roofs have a split slope with operable clerestory windows that also encourage light and ventilation to move through the space. Each wing shifts to allow for an interaction of interior and exterior spaces. The entire building is built with CLT to create a grid system that can be pushed and pulled, expanded and contracted, to adapt to the needs of the program. The walls are vertical wood panels with interior laminate flooring that wraps 4' up the wall bases as a protector. On the exterior, a stone base mimics this pattern by allowing the ground to wrap the base of the wall.

The final dog shelter design nestles into the site between 2 access streets. By doing this, the north entrance can be the public face of the building while the south entrance is the privative face. On the first floor, positioned to the north, 2 wings house the adoptable dog boarding, some community and education spaces, an entrance lobby space, and a variety of outdoor courtyard spaces, some of which are fully enclosed and some that are semi enclosed. The second floor, which can be accessed from the south ground level due to the slope of the site, is connected to this first floor through a central atrium. This atrium acts as a circulation core as well as a solar chimney for the building with operable windows to pull out warm air. The second floor houses short term boarding, exam rooms and medical/surgical spaces. These facilities can be accessed for the south entrance for a more private entry for staff and medical services.
1st Floor Plan

2ND FLOOR PLAN
BUILDING SECTIONS
RENDERED VIEWS
BUILDING MATERIALS

- Vinyl sheet flooring wraps 4' up interior walls
- Vertical wood panel siding
- Cross laminated timber beams and columns
- Wood grain aluminum curtain walls and windows
- Stone veneer siding 4' up exterior walls

SITE MATERIALS

- Stone Pavers
- Green Roof
- Standing Seam Metal Roof
- Grass
- Asphalt
Standing Seam Metal Roof
Rigid Insulation
CLT beam
Electric Arm to Open Panel
Operable Curtian Wall Panel
Aluminum Mullions with Wood Grain Finish
CLT STRUCTURAL GRID

OPERABLE ATRIUM WINDOW