Restoring Veterans Through Companionship

A Design Thesis Submitted to the Department of Architecture and Landscape Architecture of North Dakota State University. By Jacob Haack, in partial fulfillment of the requirements for the degree of Masters of Architecture.

Primary Thesis Advisor

Thesis Committee Chair

May 2017 | Fargo, ND
TABLE OF CONTENTS

ABSTRACT 9
NARRATIVE 10
EMPHASIS & GOALS 11
USER / CLIENT 12
PROJECT JUSTIFICATION 13
RESEARCH PAPER 15
PRECEDENT ANALYSIS 25
PROGRAM 33
SITE ANALYSIS 36
CODE ANALYSIS 45
RESEARCH DESIGN PLAN 46
PLAN FOR PROCEEDING 47
PROCESS DOCUMENTATION 50
SOLUTION DOCUMENTATION 54
PERFORMANCE ANALYSIS 72
APPENDIX 74
# List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIGURE 1</td>
<td>Photo on site</td>
<td>2</td>
</tr>
<tr>
<td>FIGURE 2</td>
<td>Photo on site</td>
<td>8</td>
</tr>
<tr>
<td>FIGURE 3</td>
<td>Uncle Sam PTSD graphic</td>
<td>11</td>
</tr>
<tr>
<td>FIGURE 4</td>
<td>Pain of suffering from PTSD</td>
<td>13</td>
</tr>
<tr>
<td>FIGURE 5</td>
<td>Photo on site</td>
<td>14</td>
</tr>
<tr>
<td>FIGURE 6</td>
<td>Park entrance sign</td>
<td>15</td>
</tr>
<tr>
<td>FIGURE 7</td>
<td>Photo on site</td>
<td>16</td>
</tr>
<tr>
<td>FIGURE 8</td>
<td>PTSD symptoms graphic</td>
<td>17</td>
</tr>
<tr>
<td>FIGURE 9</td>
<td>Fighting PTSD graphic</td>
<td>18</td>
</tr>
<tr>
<td>FIGURE 10</td>
<td>Photo on site</td>
<td>19</td>
</tr>
<tr>
<td>FIGURE 11</td>
<td>Photo on site</td>
<td>20</td>
</tr>
<tr>
<td>FIGURE 12</td>
<td>Healing power of dogs graphic</td>
<td>23</td>
</tr>
<tr>
<td>FIGURE 13</td>
<td>Precedent Analysis world map</td>
<td>24</td>
</tr>
<tr>
<td>FIGURE 14</td>
<td>Saffire Resort site plan</td>
<td>26</td>
</tr>
<tr>
<td>FIGURE 15</td>
<td>Saffire Resort floor plan</td>
<td>27</td>
</tr>
<tr>
<td>FIGURE 16</td>
<td>Saffire Resort interior image</td>
<td>27</td>
</tr>
<tr>
<td>FIGURE 17</td>
<td>Saffire Resort Interior Image</td>
<td>27</td>
</tr>
<tr>
<td>FIGURE 18</td>
<td>Ulrichshof floor plan</td>
<td>28</td>
</tr>
<tr>
<td>FIGURE 19</td>
<td>Ulrichshof exterior image</td>
<td>29</td>
</tr>
<tr>
<td>FIGURE 20</td>
<td>Ulrichshof interior image</td>
<td>29</td>
</tr>
<tr>
<td>FIGURE 21</td>
<td>Ulrichshof interior image</td>
<td>29</td>
</tr>
<tr>
<td>FIGURE 22</td>
<td>Writer’s Retreat floor plan</td>
<td>30</td>
</tr>
<tr>
<td>FIGURE 23</td>
<td>Writer’s Retreat section</td>
<td>31</td>
</tr>
<tr>
<td>FIGURE 24</td>
<td>Writer’s Retreat interior image</td>
<td>31</td>
</tr>
<tr>
<td>FIGURE 25</td>
<td>Writer’s Retreat interior image</td>
<td>31</td>
</tr>
<tr>
<td>FIGURE 26</td>
<td>Veteran PTSD statistic image</td>
<td>32</td>
</tr>
<tr>
<td>FIGURE 27</td>
<td>Space List</td>
<td>33</td>
</tr>
<tr>
<td>FIGURE 28</td>
<td>Building Area Summary</td>
<td>34</td>
</tr>
<tr>
<td>FIGURE 29</td>
<td>Land Use Area</td>
<td>34</td>
</tr>
<tr>
<td>FIGURE 30</td>
<td>Relationship Diagram</td>
<td>34</td>
</tr>
<tr>
<td>FIGURE 31</td>
<td>Relationship Diagram</td>
<td>35</td>
</tr>
<tr>
<td>FIGURE 32</td>
<td>Little Falls, MN map</td>
<td>36</td>
</tr>
<tr>
<td>FIGURE 33</td>
<td>Little Falls, MN aerial</td>
<td>37</td>
</tr>
<tr>
<td>FIGURE 34</td>
<td>Site #1 aerial</td>
<td>38</td>
</tr>
<tr>
<td>FIGURE 35</td>
<td>Site context analysis graphic</td>
<td>39</td>
</tr>
<tr>
<td>FIGURE 36</td>
<td>Minneapolis, MN map</td>
<td>40</td>
</tr>
<tr>
<td>FIGURE 37</td>
<td>Minneapolis, MN aerial</td>
<td>41</td>
</tr>
<tr>
<td>FIGURE 38</td>
<td>Image of Mississippi River from site</td>
<td>42</td>
</tr>
<tr>
<td>FIGURE 39</td>
<td>Veteran PTSD statistic graphic</td>
<td>44</td>
</tr>
<tr>
<td>FIGURE 40</td>
<td>Plan for Design Methodology</td>
<td>45</td>
</tr>
<tr>
<td>FIGURE 41</td>
<td>Plan for Documenting the Design Process</td>
<td>46</td>
</tr>
<tr>
<td>FIGURE 42</td>
<td>Image of the trail map on the site</td>
<td>46</td>
</tr>
<tr>
<td>FIGURE 43</td>
<td>Schedule for Project</td>
<td>47</td>
</tr>
</tbody>
</table>
There are roughly 300,000 U.S. veterans of the wars in Iraq and Afghanistan with a diagnosis of Post-Traumatic Stress Disorder (PTSD). Of all those who served, twenty percent reported having PTSD and/or depression. Researchers think there are even more suffering, but there is no good way of getting complete enough data. Fifty percent of veterans suffering from PTSD do not seek treatment. Many are not aware their condition is diagnosable and many do not want to admit their need for help. And of the fifty percent that do receive help, only half get the minimum amount of treatment needed.

There is an abundance of stray and maltreated dogs in the nation that often end up going to a shelter. If the dogs survive their rehabilitation process in the shelter, generally they are later overlooked when it comes to adoption because of their past. On average, nearly four million dogs enter animal shelters every year. And over a million of them are euthanized.

Both of these issues are becoming increasingly worse. What if veterans can start working with these dogs to train them into service dogs. Doing so will be beneficial to both veteran and dog. It gives both of them the chance to get back to a normal life. Having Veterans that are suffering from PTSD, take care of animals is helping veterans to create trust again. Dogs are naturally healing creatures. It is a passive approach of getting veterans to work on their PTSD. Simply, petting a dog can relieve stress. Both will be equally cared for at this rehabilitation center.

Creating a building that can house veterans suffering from this mental condition, near dogs who need love, who will become their companions, surrounded by the great outdoors, will create the perfect atmosphere for healing. This building will be a portion for the no-kill dog shelter and training facility, a portion for the rehabilitation center and area for them to mix. The program of this center will be very specialized since it will be the first of its kind. The building will be on a large piece of land. There will be numerous ways to experience the land and even the river as a patient of the rehabilitation center.

We need locations for rehabilitation in both urban and rural cities. They need treatment in a context that is familiar and comfortable to them. These two social issues, though different, have one thing in common: both need more attention and respect. I will take the research I attain and develop two designs: one in an urban city and the other in a more rural location.

My proposal is to take one of the dogs and pair it with a victim of PTSD. They will form companionship. Every day, they will grow together and learn to trust again. Dogs help evoke the feeling of love. They encourage you to get outside and experience the healing processes of nature. Most of all, they are fun and can help take your mind off the negative things in life.

“"You have to leave the city of your comfort and go into the wilderness of your intuition. What you’ll discover will be wonderful. What you’ll discover is yourself.”” — Alan Alda
My thesis focuses on three problems. First, post-traumatic stress disorder is a condition that is increasingly common for veterans; veterans are not getting the full treatment they deserve. Many do not know how to help those dealing with the condition, and those suffering often do not know how to get help. Second, we need locations for rehabilitation in both urban and rural cities. They need treatment in a context that is familiar and comfortable to them. Third, there is an abundance of stray and maltreated dogs in the nation that often end up going to a shelter. If the dogs survive their rehabilitation process in the shelter, generally they are later overlooked when it comes to adoption because of their past. These two social issues, though different, have one thing in common: both deserve more attention and respect. I will take the research I attain and develop two designs: one in an urban city and one in a more rural location. With these two designs, I can analyze what works better and how they can both be beneficial. The goal of this thesis project is to develop a couple of prototypes for rehabilitation centers that could be used all over the country.

The use of dogs can help veterans suffering from PTSD overcome their traumatic experiences through a bonding relationship of a man and a dog. In many cases it is not only the veteran that is dealing with trauma; Dogs that have endured a rough past experience have PTSD as well. I want to bring veterans and dogs together to help each other in a unique design setting.

My proposal is to take one of the dogs and pair it with a victim of PTSD. They will form companionship. Every day, they will grow together and learn to trust again. Dogs help evoke the feeling of love. They encourage you to get outside and experience the healing processes of nature. Most of all, they are fun and can help take your mind off the negative things in life. Dogs are powerful beings that humans have connected with ever since the time of Neanderthals. Dogs descend from wolves and have been attracted to humans ever since we lived in settlements. They were attracted to the humans because they were a source of food.

These topics are important because veterans deserve more attention when they return home from deployment and are suffering. I also do not want to see any more dogs suffering in the world. Whether it be neglect as a pet, abandoned, homeless or lonely in a shelter. Both should be given a second chance at a normal life.

“Dogs have a way of finding the people who need them. And filling an emptiness we didn’t even know we had.” – Unknown
EMPHASIS

Post-Traumatic Stress Disorder among veterans continues to increase. When soldiers come back from deployment, they go back to their homes all over the country. They need treatment in a context that is familiar and comfortable to them. Since that could be anywhere in the country, the emphasis of the project will be to design a rehabilitation center in both a rural and an urban context. Both of the projects will be designed with the same parameters and goals.

The second major emphasis will be designing the center not only around the veterans but also for our four-legged friends. This newer form of treatment requires a complex that is fitting to both parties. So developing a design that has spaces for separation when needed as well as spaces for interaction between the two is highly important in the grand scheme of the design.

GOALS

This thesis project is intended to interest the avid dog-lover, those interested in treatment of PTSD and those curious about differences in rural design versus urban design with the same project typology. The overall goal of this thesis project is to develop a couple of prototypes for rehabilitation centers that could be used all over the country: one for a rural setting and one for an urban setting.

Academically

To create an architectural thesis that the department can use as an example for classes to follow and for reaccreditation. Also, to create the best project of my academic career that is an accumulation of my knowledge I have attained over my time here at North Dakota State University. Finally, to become a great addition to my portfolio that will set me up well for my professional future.

Professionally

This project will help me portray the skills I have developed over my education. It will be used as a tool; gauging my experience with program used and my abilities. Firms will be able to look at this project and get a good judgment of my capabilities. It will be used to determine if I am a good fit for the firm. This thesis exploration will prepare me for a career in architecture by taking me through every phase and aspect that a real project goes through.

Personally

I hope this project further develops my skills in all areas of design. Since I am required to be the client, designer and look at it how a contractor would, it should make me a well-rounded designer that can look at design from all angles. This way it will prepare me well for a professional career. This project should be something that I am very proud of and create a fond memory of my time spent at North Dakota State University.
USER/CLIENT DESCRIPTION

Administrative
Director
manages the operations of the building and the program.

Admissions Director
oversees the admittance and release of clients in the rehabilitation program.

Psychotherapist
tracks the progress of the clients at the rehabilitation center. They also act as a counselor to the veterans.

Psychiatrist
is the doctor on the premise to care for the well-being of the clients.

Veterinarian
is the doctor on the premise to care for the well-being of the dogs.

Animal Control
is responsible for finding strays and maltreated dogs that can be brought to the center to start a better life.

Marketing Director
operates the rehabilitation website and creates promotion media to create interest in the rehabilitation center and the dogs that are up for adoption.

Administrative Assistant
is responsible for making sure visitors are taken care of and that the operations in the office are running smoothly.

Custodian
maintains a clean and inviting building for visitors. Also responsible for keeping the canine areas clean.

Grounds-keeper
maintains the landscape over the site. They keep trails clean from debris and make sure the grounds around the building are up kept.

Housekeeper
keeps the residential units of the clients clean and tidy.

Dog Trainer
are responsible for determining if the dog can be trained for assisting veterans or if the dog is more suitable for adoption.

Security
keeps the grounds and building a secure and safe environment for clients, staff and dogs throughout the day and overnight.

Visitor
Clients
are the veterans who suffer from Post-Traumatic Stress Disorder that are seeking treatment through the program.

Prospective Client
comes to see how the program works to determine if they would like to sign up for treatment through our program.

Prospective Adopter
goes to the animal shelter to buy the dogs that are better suited as a family pet than as a working service dog.
PROJECT JUSTIFICATION

I chose this complex mixture of topics as my architecture design thesis for multiple reasons. I will be working for the United States Navy Civil Engineer Core after graduation. Although I will not be directly dealing with soldiers returning from long deployments that have potentially developed PTSD, I will be around it enough to see how it can affect a person. I would like to educate myself more on the topic so that I can gain some understanding and maybe become an outlet to them. Secondly, I have always been a dog-lover. So I wanted to create a topic that I would enjoy researching and incorporate dogs into my design solution. I have always had a dog in my life and I plan to always have a dog. These topics combined create a relevant architecture design thesis because numbers of veterans suffering from PTSD continue to rise. How do we combat those suffering? The veterans are not getting full treatment they should be. And with the veterans living all over the country we need to create a way for them to get help in more than one place. Some may prefer a rehabilitation center in a large city center and some may prefer one more in a nature setting. A design for each of these settings will be developed with same design approach. Does one setting work better than the other? What are the benefits of a rehabilitation center being in a rural context compared to an urban context? My thesis project will focus on these questions. This project, with its many complexities, will demonstrate the accumulation of knowledge and skills I have acquired over my education at North Dakota State University.
What makes the connection between man and dog so powerful? My thesis focuses on two major problems. First, post-traumatic stress disorder is a condition that is increasingly common for veterans. Second, there is an abundance of stray and maltreated dogs in the nation that often end up going to a shelter. If the dogs survive their rehabilitation process in the shelter, generally they are later overlooked when it comes to adoption because of their past. Both PTSD suffering veterans and these dogs deserve the right to have a second chance at a normal life. These two social issues, though different, have one thing in common: both deserve more attention and respect. I will research veterans and PTSD, dogs and training programs, and how they can work together.

The use of dogs can help veterans suffering from PTSD overcome their past experiences through a bonding relationship of man and dog. In many cases it is not only the veteran that is dealing with trauma; Dogs that have endured a rough past experience have PTSD as well. In my thesis, I want to bring veterans and dogs together to help each other in a unique design setting.

Post-traumatic stress disorder, more commonly known as PTSD, is a condition that is hard to cure. Many do not know how to help those dealing with the condition, and those suffering often do not know how to get help. This issue does not easily go away, but in reality is becoming more and more prevalent. According to the National Institute of Mental Health, “PTSD is a disorder that develops in some people who have experienced a shocking, scary, or dangerous event” ("Post-Traumatic Stress," 2016). Most people experience a great amount of emotional stress after a traumatic experience however, the average person gets over these symptoms on their own. Individuals who do not overcome the symptoms are diagnosed with PTSD. What makes it difficult for those with this diagnosis, is that they still have symptoms of fear even when they are not actually in danger.

There are roughly 300,000 U.S. veterans of the wars in Iraq and Afghanistan with a diagnosis of Post-Traumatic Stress Disorder (Colin, 2012). Of the veterans that served during the time of Iraq and Afghanistan conflicts, at least twenty percent reported having PTSD and/or depression (Tanielian and Jaycox, 2008). It is thought that this percentage is actually much higher but it is nearly impossible to collect the most inclusive and complete data. When a traumatic brain injury is involved, the rate of PTSD greatly increases. The amount of veterans suffering from this mental health condition more than triples from the time they arrive home from war to a year later (Tanielian and Jaycox, 2008). Fifty percent of veterans suffering from PTSD do not seek treatment (Tanielian and Jaycox, 2008). Many are not aware that their condition is diagnosable, nor do they want to admit their need for help. Of that half that does seek treatment, only half get the minimum amount of treatment they need (Tanielian and Jaycox, 2008).
Suicide is twice as common among male veterans and three times more likely among female veterans compared to common U.S. civilians. There are 18 suicides a day among veterans (Thompson, 2011). I believe a good solution to try to change these numbers is to incorporate dogs into the healing process.

There are an abundance of stray and maltreated dogs in the nation. Every day there are stories in the news about a mass amount of dogs pulled from a house starving to death, wandering around the streets, or left to die while chained to a tree. The average person’s reaction to this initially is sadness but they quickly forget. These dogs then end up going to a shelter, where they are overlooked during the adoption process because of their past. Consequently, they are euthanized because there is no room in the animal shelter for all the dogs. There are no-kill shelters and pet rescues that are working to save as many dogs as they can, but unfortunately it is not enough.

Similar to humans, dogs can also experience trauma. A lot of times I think people forget that dogs can experience a lot of the same feelings as people.

According to Hudenko, Homifar and Wortzel (2016):

From 1999–2010, the suicide rate in the US population among males was 19.4 per 100,000, compared to 4.9 per 100,000 in females. Based on the most recent data available, in fiscal year 2009, the suicide rate among male Veteran VA users was 38.3 per 100,000, compared to 12.8 per 100,000 in females.

According to Hudenko, Homifar and Wortzel (2016):

Some examples of treatment for PTSD include cognitive behavioral therapy, exposure therapy, and medication therapy. Some of these treatments have been successful, but there is no cure for PTSD. Symptoms can also come back over time. Adding a dog to a veteran’s life can be a long-term treatment.

Too many times PTSD leads to depression which may lead to suicide, which is one hundred percent preventable. According to research that looked at combat-related PTSD, Vietnam veteran’s contemplation or attempt of suicide was mainly due to combat-related guilt (Hudenko, Homifar and Wortzel, 2016). A recent study looking at suicide among U.S. veterans found that the amount can reach eight thousand a year (Tanielian and Jaycox, 2008). In 2012, there were more active duty personnel that died by their own hand than in combat. (Williams, 2012) According to the National Center for PTSD,
Not only can they experience trauma, they can also suffer from Post-traumatic Stress Disorder. Dogs can develop this mental condition in these ways:

- After being abused by their owner or trainers
- Enduring a serious illness while transitioning through their fear or social developmental phases
- After being attacked by other dogs
- After serving their country, or if they work as a search and rescue dog
- After going through a natural disaster
- After being neglected or abandoned
- After losing their human caretaker

Exposure to violence is not the only way a dog can develop PTSD, it always is derived from stressful situations. (Kelley, 2016) In extreme cases, some dogs’ symptoms are similar to humans’, such as neurological damage and memory loss (Kelley, 2016). PTSD can be a very hard thing to understand if you have not experienced it. Here is a scientific explanation behind how it works according to a canine PTSD blog,

According to Kelley (2016):

One of the characteristics of PTSD is that the original trauma is continually re-experienced by the victim. And each time the stress response is triggered, or re-triggered, a cascade of hormones and neurochemicals are released into the bloodstream, causing oxidative stress resulting in brain damage. This damage to neural circuitry makes PTSD one of the most difficult psychological illnesses to treat.

It is not easy for dogs to overcome PTSD and often they will never forget that traumatizing experience. But there are some methods to help them regain a normal life.

Play is an essential part of the healing process, games like fetch and tug-of-war have proven to be successful (Kelley, 2016). Dogs can be more sensitive when dealing with PTSD. You cannot act in a threatening manner toward the dog, so you need to refrain from scolding or berating the dog physically (Kelley, 2016). A dog finds a lot of joy in just being in your presence. Belly rubs and deep tissue massages have been found to be very therapeutic for dogs suffering. Petting the dog increases the oxytocin levels in both the dog and owner. Feelings of trust and generosity are also an effect of oxytocin (Kelley, 2016). Another way a dog can cope from PTSD is if he is provided a safe, usually small place of his own. Dogs feel more comfortable in small spaces. This space needs to be quiet and away from anything too distracting. This space can include his favorite toy, a chew toy, a food bowl and an article of the dog owners clothing, so he knows the dog knows he is not alone (Huntingford, n.d.). Lastly, routine is important for these dogs. They need to fed and walked at the same time every day (Huntingford, n.d.).
our level of the hormone oxytocin. This hormone allows us to feel happy and trusting, like I stated earlier. According to Rebecca Johnson, a nurse who heads the Research Center for Human/Animal Interaction (ReCHAI),

> “Dogs have long had special standing in the medical world. Trained to see for the blind, hear for the deaf and move for the immobilized, dogs have become indispensable companions for people with disabilities,” Parker-Pope says in a New York Times article (Parker-Pope, 2008). Recently there have been more and more studies from all over the world that are researching affects that pets have on their owners. A Japanese study found that pet owners made 30% fewer visits to the doctor. A Melbourne study showed that pet owners had lower cholesterol, blood pressure and heart attack risk than those who did not have a pet. In the least, having a dog can lower your stress, thus improving your health (Parker-Pope, 2008).

The use of pets in medical settings dates back more than 150 years. It was not until the late 1970s that researchers start finding proof of the human-animal bond. One of the earliest studies from the 80’s found that heart attack patients who owned pets lived longer than those who did not (Rovner, 2012). Pets increase

According to Rovner (2012)

Oxytocin has some powerful effects for us in the body’s ability to be in a state of readiness to heal, and also to grow new cells, so it predisposes us to an environment in our own bodies where we can be healthier.

Amanda Fiegl (2012), gives some examples of this technique saying:

One boy confided in the gentle-faced golden retriever about exactly what happened in his classroom at Sandy Hook Elementary School that day—which his parents said was more than he’d been able to share with them. A little girl who hadn’t spoken since the shootings
According to Tim Hetzner, leader of the Lutheran Church Charities K9 Comfort Dogs, “A lot of times, kids talk directly to the dog,” he said. “They’re kind of like counselors with fur. They have excellent listening skills, and they demonstrate unconditional love. They don’t judge you or talk back” (Fiegl, 2012). Dogs that are a part of the K9 Comfort Dogs, are trained to just be quiet. Hetzner says, “I think that’s a common mistake people make in crisis situations—feeling obligated to give some sort of answer or advice, when really, those who are hurting just need to express themselves” (Fiegl, 2012). And dogs are the best listeners.

Dogs are superb healers because they are one of the only species that do not exhibit xenophobia, or fear of strangers. Dogs are actually xenophilic, meaning they love strangers. Brian Hare, director of Duke University’s Canine Cognition Center, says “that’s one way in which you could say dogs are ‘better’ than people. We’re not always that welcoming.” Again, simply petting a dog can decrease levels of stress hormones, regulate breathing and lower blood pressure (Fiegl, 2012). Dogs also have the incredible capability of sensing our emotions. To test this, psychologist Debbie Custance of Goldsmith College, University of London performed a study to see whether or not dogs demonstrate empathy. Custance asked volunteers to pretend to cry or “hum in a weird way.” “The response was extraordinary.” Custance said. Nearly all of the dogs came over to the person crying to nuzzle or lick their face (Fiegl, 2012). Dogs do not want us to be sad, they want us to be as happy as they are.

I believe combining these two social issues to work together could be quite successful. In both cases, the dog and the human go through periods of extreme stress due to a dangerous or scary experience. Because of this, they may have a harder time trusting people or environments in some cases. They have trouble doing day-to-day tasks that used to be so elementary. They need a place where they can focus their energy to become accustomed with the world again in a safe environment.

In 2012, there were only four experimental programs nationwide that paired veterans suffering from PTSD with dogs. One of these programs, Paws for Purple Hearts, was launched in 2008 by social worker, Rick Yount. The program arranges for a veteran to spend six weeks with a dog, training it to be a mobility-assistance animal for physically disabled veterans (Colin, 2012). In training these dogs, they require a lot of praise. Having to praise the dogs helps traumatized
According to Luis Carlos Montalvan, veteran and author of Until Tuesday, “the companionship and unwavering support mean the most. Many veterans are isolated and withdrawn when they return. A dog is a way to reconnect, without fear of judgment or misunderstanding” (Thompson, 2011). Montalvan emphasizes how he wishes more dogs were being trained because he knows how much they can change a veteran’s life.

Another example of a successful program is the Warriors and Wolves Project. This case is a little different, instead of dogs being used to heal veterans, wolves are. These wolves have been rescued and veterans overcome emotional numbness. And the dogs help relieve hypervigilance common in veterans suffering from PTSD. Veterans participating in this study reported actually being able to get some sleep knowing there is a readily alert dog in their presence (Colin, 2012). In 2012, about 300 had participated in these programs and some of the graduates who Yount worried “would not make it” made impressive strides (Colin, 2012).

Some of the emotional benefits of having dog while suffering from PTSD are:

- They help bring out feelings of love
- They are good companions
- They take orders well
- They allow you to have fun and reduce stress
- They are a good reason to get out of the house and spend some time outside
- They teach you how to trust again

have recovered. Veterans work with the wolves in training. The unique aspect about this program is that the wolves pick the veteran. Never again will the wolf pick someone to show as much affection to. They are bonded for life. “The wolves notice that you are injured or something is wrong with you. The wolves have experienced trauma also. It creates a strong connection between the two. Their companion teaches the veterans how to be calm and confident. The wolf becomes your friend for life. It has a deeper meaning to the veterans when the wolves accept them. Their mentality is “if the wolves can heal, I can heal” (Pirrone, n.d.).

The last program is very similar to my thesis idea. The Research Center for Human/Animal Interaction (ReCHAI), is doing a Veteran and shelter dogs project. This program takes a veteran suffering from PTSD and a shelter dog, they work together until the dog is ready to be a PTSD service dog. According to Rebecca Johnson the director of ReCHAI, “Health professionals are seeing increasing reports of combat-related stress

“A dog is the only thing on earth that loves you more than he loves himself.” – Josh Billings

FIGURE 10

RESEARCH
in returning veterans” (Pepper, 2014). Working with the dogs allows veterans to become more open to healing and it lessens the symptoms of depression and anxiety. There are three phases of this program:

1. Phase 1 – The veterans learn how to train dogs in basic obedience.
2. Phase 2 – The veterans will be mentors to the families who adopt the shelter dogs.
3. Phase 3 – The best of the trained dogs will continue to be trained as PTSD service dogs to work with soldiers who need assistance.

In the words of veteran, Joe Simpson, “to be able to train a dog that will ultimately help someone else, is incredibly rewarding” (Pepper, 2014). Working with this program has taught him patience and he has seen a daily improvement in his attitude. The dogs have provided those training them unconditional love and acceptance. Next, I will introduce the location that has been chosen for this new program.

My site is going to be in Little Falls, Minnesota on the Mississippi River near Camp Ripley. I believe this location has outstanding potential for a rehabilitation center and animal shelter. It is near a small town but has plenty of nature to be taken in surrounding it. As accessibility to outdoors is important for both the dogs and the veterans. The relationship of architecture in a natural setting can have a huge effect on how dogs work with humans to relieve trauma.

I believe creating a building that can house those suffering from this mental condition, near dogs who need love, who will become their companions, surrounded by the great outdoors, will create the atmosphere for healing. My overall idea for the building will be a portion for the no-kill dog shelter and training facility, a portion for the rehabilitation center and area for them to mix. The program of this center will be very unique since it is the first of its kind. The people don’t have any more importance than the dogs. Both are equally cared for. The building will be on a large piece of land. The entire site will be fenced to keep the dogs secure. There will be numerous ways to experience the land and even the river as a guest in the rehabilitation center and as a dog.

In conclusion, dogs and humans are meant to be together. We should have them working together to cure ailments like PTSD. It can help provide possible solutions for both of these social issues: a rising number of PTSD victims among veterans and too many stray and maltreated dogs. Man’s best friend and man just became a great source of healing power for one another.

“A city isn’t so unlike a person. They both have the marks to show, they have many stories to tell. They see many faces. They tear things down and make new again.”
– Rasmenia Massoud

The Smithsonian magazine did an article about man’s best friend and how they can help veterans overcome PTSD. This article was a good case study because it kept referring back to Robert Soliz, a veteran participating in Paws for Purple Hearts, a program that pairs veterans afflicted from PTSD with Labrador and golden retrievers. The author covers some of the experiences Soliz encountered and how he was saved by a dog. This article gave me some evidence for my paper about the healing effects that dogs can have and how veterans can work with dogs to overcome PTSD symptoms.


This national geographic news article gave me a lot of understanding of how the healing process works for dogs. This article talked about some examples of where dogs have been used to get kids to open up about things they have not been willing to talk about. The dogs make them more comfortable. Fiegl gave examples like using the K9 Comfort Dogs at Sandy Hook Elementary after that tragedy for the kids. This resource allowed me to add a lot of great examples of how dogs make people more comfortable.


This article gave me a lot of good statistics for post-traumatic stress disorder. Who it affects, the comparison of the national population and those who have served. The authors also talked about suicide risk and how it correlates with PTSD. They also emphasized the wars in Iraq and Afghanistan and the men and women who have been affected there. Adding information like this to my research paper backs up my point that PTSD is on the rise.


This Animal Wellness article was the first of the articles that I read about post-traumatic stress disorder in dogs. This was my first time learning that dogs can have the similar symptoms after traumatizing experiences. This article allowed me to make a lot of connections between man and dog. It helped me to understand what the dogs go through and ways that the dogs can be treated.


This article also taught me a lot about post-traumatic stress disorder in dogs. It gave me more reasons for how dogs can become affected from the trauma. It also introduced me to the science behind PTSD. Learning these things helped me to have a strong case in my arguments. Kelley also gave me some more research on the treatment dogs can undergo to help with the symptoms. It also talked about oxytocin in dogs, and made a lot of connections for how both man and dog operate emotionally.
This New York Times article gave me a lot of information on recent studies that have been performed. Studies from all over the world that have proof of the healing nature of dogs. Parker-Pope also gave a lot of examples of symptoms that have been affected because of the healing nature of dogs.


This article talked about the Research Center for Human Animal Interaction’s Veterans and shelter dogs project. Rebecca Johnson started this project and it is a very similar program to what I am proposing. So I took a lot away from this read. From the phases the veterans and dogs go through in training to the effects on the veterans and the dogs. This article was a great addition to my research.


This was an early article I found that made me very excited about my thesis topic. To actually be able to see how the wolves interacted with the veterans was very beneficial. This program pairs wolves and veterans, both need healing and they are both going to be the source of that healing for one another. I talk about how dogs evolve from wolves, so it is incredibly fulfilling to see that what I want to do with dogs can also be done with wolves.


A news article by Julie Rovner helped me initially in finding and understanding the healing nature of animals. She went over some cases of children working with animals to become more trusting and confident. This was the first article that introduced me to the hormone oxytocin, which ended up being a huge characteristic in the healing nature of animals. This article laid a lot of the major groundwork supporting my ideas on how dogs have a healing potential for veterans.


This article allowed me to start to understand how PTSD works. Post-traumatic stress disorder is a very complex mental condition. This article gave me a lot of PTSD statistics that was helpful for my research paper, to give it some credibility. I was also able to take away information about depression and suicide, and how it is very common among those suffering from PTSD.
This research paper covered a wide variety of things pertaining to Military health. It had a lot of great information about post-traumatic stress disorder. The research was very detailed and the statistics were proven to be very helpful. This read adds a lot of credibility to my claims within the paper about PTSD.


In this article, the author talks about the book Until Tuesday. The book is written by Luis Carlos Montalvan and it features himself and his dog Tuesday. Montalvan is a veteran suffering from PTSD. The article covers some of the information from the book. Thompson tries to shed some light to how beneficial it is to have dogs and veterans working together for healing. This read helped back up some of my statements about suicide among veterans and how dogs and veterans can work together.


This New York Times article was interesting to hear how casualties in war compared to suicides by veterans back home. Williams gave a lot of insight on suicide among veterans. Every year suicide numbers seem to be going up and war casualties seem to be going down. This article proves my point that PTSD is becoming more prevalent and more suicides seem to be a result.

FIGURE 12

The Healing Power of Dogs

Early Warning
Researchers at the University of Florida found that some dogs can detect changes and help veterans behave better by noticing things that are concerning.

Emotional Support
The Department of Defense trains service dogs with disorders to help veterans cope with PTSD.

Immunity Boost
Researchers at the University of California, San Francisco believe that dogs can reduce stress and improve the health of their owners.

Healing Touch
Petting a dog can release endorphins, reduce stress, and improve your mood.

OCD Treatment
A trained dog can detect when a person has obsessive-compulsive disorder (OCD), such as washing hands repetitively. This can help veterans who suffer from OCD.

Moving Motivation
A 2015 study showed that dogs have a positive effect on the well-being of people with depression.

People Over 54
Dog owners visit the doctor less often than people without dogs. They also take fewer medications than people without canine companions.

Yearly Doctor Visits

| % on Medication |
|-----------------|-----------------|
| Men             | Women           |
| No Pet          | 34%             |
| Yes Pet         | 55%             |

FIGURE 12
The case studies I researched are located all over the world. This allows me to get a good variety of design styles and techniques. I looked at other case studies but these are the three I found to be most relevant. It is important to find inspiration in other designs. They do not even have to be the same typology of my building. Just like my thesis project is taking multiple typologies to create one custom typology, I found a variety of case studies to get ideas from.
“Everybody needs beauty as well as bread, places to play in and pray, where nature may heal and gives strength to body and soul.” – John Muir
SAFFIRE RESORT

COLES BAY, AUSTRALIA
CIRCA ARCHITECTURE
10,920 SF
20 PRIVATE SUITES
DESIGNED FOR HIGH-END TOURISTS
UNIQUE FORM
NEW PURPOSE FOR DISUSED PARK
Saffire Resort has a very organic connection with the site, it blends into the context while still being a beautiful piece of architecture. The resort is situated in a forest to create a sanctuary from the city and connect its guests to nature. The building captures the views from the suites and from the public spaces to bring the beauty of the surrounding nature into the interior. The suites are also very efficiently designed allowing views from both the bedroom and living area. The Saffire Resorts use of natural material in their design is something I would like to bring into the design of my rehabilitation center. I hope to incorporate my building into my site the way the Saffire Resort did and to draw inspiration from the living accommodations. This project is similar to mine in the sense that we are bringing new purpose to a site that had a poor previous use.
ULRICHSHOF

BOLZANO, ITALY
NOA ARCHITECTS
VARIOUS PARTS FORM CAMPUS
SITUATED IN A BAVARIAN FOREST
FARMSTEAD TURNED HOTEL
FOREST INSPIRED DESIGN
TIMBER FRAME INSPIRED BY FARM

FIGURE 18
The Ulrichshof is a complex of multiple buildings to create a campus. With multiple typologies in my thesis project, the separation of spaces is an idea I would like to bring into my design. I am not sure if they will be completely different buildings or one building that is fairly separated to simulate that feeling. The use of natural materials in the building helps connect it to the natural setting in which it exists. There are a variety of warm and modern spaces throughout these buildings. The Ulrichshof is a great case study for my thesis because of its construction type. It is a heavy timber construction that is exposed on the interior. I would like to do the same thing with my rehabilitation center. Not only is timber used in the structure but also in the details, from the counter top to the reception desk. All of this wood creates a very warm and inviting space. This is key in creating a space that is comfortable for veterans suffering from PTSD.
WRITER’S RETREAT

PETROPOLIS, BRAZIL
ARCHITECTARE
93 SF
21 SF VERANDA
EFFICIENT USE OF SPACE
NATURAL BUILDING MATERIALS
SYMBOLISM OF A CAVE
Writer’s Retreat is a great example of efficient use of space in a residence. My rehabilitation center will need private rooms for the guests, so this is a great study to gain inspiration from. A dynamic, well-designed unit like this could be very beneficial in my building. Also I would like to design private balconies like the veranda in the Writer’s Retreat to give those staying here a variety of private space in their unit. With my sites being located in Minnesota, they will not be able to use their private outdoor space for the entire year. But when it is nice, it can be a great resource for healing in their private units. The Writer’s Retreat’s use of natural materials is also something I would like to incorporate into my design.
Through the development of a program, many times the client will tell you exactly the type of spaces they want in their building. So starting from scratch it takes a bit of research and looking at similar buildings. Since this building is a first of its kind, it requires research on many different typologies. So I looked at rehabilitation centers, animal shelters, and training facilities. I analyzed how all of the programs could work together into one cohesive building typology. This facility incorporates a typology where humans and canines will be coexisting. So the program needs to be well thought out. Dogs are not always quiet when you need them to be, so the dog kennels will most likely be on one end of the facility and the veteran residential units will be on the other side. All the spaces in the building need to be thought of from placement of the lobby to the custodian’s office to wash room for the dogs. Obviously, some require more thought and organization than others but developing a master plan of the whole building or site, if I am to do multiple buildings, requires a ton of planning. This will be one of the greatest tasks next semester when I am designing my floor plans.
## SPACE LIST

<table>
<thead>
<tr>
<th>Function</th>
<th>People</th>
<th>Capacity</th>
<th>Unit</th>
<th>No. of Units</th>
<th>Area/Unit</th>
<th>Net Area</th>
<th>Net Area Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rehabilitation Facility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managers Office</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>150</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Office</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Reception</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Reception Seating</td>
<td>1</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Conference Room</td>
<td>0</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>240</td>
<td>240</td>
<td>240</td>
</tr>
<tr>
<td>Lounge</td>
<td>0</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Staff Toilet</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>150</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Medical Office</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>180</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td>Work Room</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>9</td>
<td>44</td>
<td>10</td>
<td>10</td>
<td>1480</td>
<td>1480</td>
<td>1480</td>
</tr>
<tr>
<td><strong>Wellness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gym</td>
<td>0</td>
<td>30</td>
<td>1</td>
<td>1</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Storage - Equipment</td>
<td>0</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>150</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Office</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Mens Locker Room</td>
<td>0</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Women's Locker Room</td>
<td>0</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Pool</td>
<td>0</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>2000</td>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td>Storage - Pool Equipment</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Studio</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>1</td>
<td>83</td>
<td>8</td>
<td>8</td>
<td>3540</td>
<td>3540</td>
<td>3540</td>
</tr>
<tr>
<td><strong>Residential</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Room</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>15</td>
<td>400</td>
<td>400</td>
<td>6000</td>
</tr>
<tr>
<td>Single Suite</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>15</td>
<td>500</td>
<td>500</td>
<td>7500</td>
</tr>
<tr>
<td>Room for Dog</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>15</td>
<td>500</td>
<td>500</td>
<td>7500</td>
</tr>
<tr>
<td>Office</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>120</td>
<td>120</td>
<td>240</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>47</td>
<td>1520</td>
<td>1520</td>
<td>2120</td>
</tr>
<tr>
<td><strong>Commons/Courtyard</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lounge</td>
<td>0</td>
<td>15</td>
<td>1</td>
<td>2</td>
<td>260</td>
<td>260</td>
<td>520</td>
</tr>
<tr>
<td>Small Lounge</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>120</td>
<td>120</td>
<td>480</td>
</tr>
<tr>
<td>Theater</td>
<td>0</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>0</td>
<td>33</td>
<td>3</td>
<td>7</td>
<td>580</td>
<td>580</td>
<td>1200</td>
</tr>
<tr>
<td><strong>Cafeteria</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen</td>
<td>0</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>480</td>
<td>480</td>
<td>480</td>
</tr>
<tr>
<td>Seating</td>
<td>0</td>
<td>50</td>
<td>1</td>
<td>1</td>
<td>1200</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>Cafè</td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>360</td>
<td>360</td>
<td>360</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>0</td>
<td>68</td>
<td>3</td>
<td>3</td>
<td>2040</td>
<td>2040</td>
<td>2040</td>
</tr>
<tr>
<td><strong>Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility Room - Soiled</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Utility Room - Clean</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Storage</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>150</td>
<td>150</td>
<td>600</td>
</tr>
<tr>
<td>Custodial</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>120</td>
<td>120</td>
<td>240</td>
</tr>
<tr>
<td>Mechanical</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>12</td>
<td>680</td>
<td>680</td>
<td>1570</td>
</tr>
<tr>
<td><strong>Animal Shelter / Training Facility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kennels</td>
<td>0</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Classrooms</td>
<td>0</td>
<td>12</td>
<td>1</td>
<td>2</td>
<td>225</td>
<td>225</td>
<td>450</td>
</tr>
<tr>
<td>Private Rooms</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>100</td>
<td>100</td>
<td>400</td>
</tr>
<tr>
<td>Bathing Area</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Turf Gym</td>
<td>0</td>
<td>50</td>
<td>1</td>
<td>1</td>
<td>2000</td>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td>Storage</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>120</td>
<td>120</td>
<td>240</td>
</tr>
<tr>
<td>Office</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>120</td>
<td>120</td>
<td>240</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>1</td>
<td>94</td>
<td>7</td>
<td>13</td>
<td>3865</td>
<td>3865</td>
<td>4630</td>
</tr>
</tbody>
</table>

---

**FIGURE 27**
### BUILDING AREA SUMMARY

<table>
<thead>
<tr>
<th>Space Name</th>
<th>People</th>
<th>Capacity</th>
<th>Net Area</th>
<th>Net Gross</th>
<th>Gross Building Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rehabilitation Facility</td>
<td>9</td>
<td>44</td>
<td>1,480</td>
<td>0.62</td>
<td>2960</td>
</tr>
<tr>
<td>Wellness</td>
<td>1</td>
<td>83</td>
<td>3,540</td>
<td>0.63</td>
<td>7080</td>
</tr>
<tr>
<td>Residential</td>
<td>45</td>
<td>91</td>
<td>21,240</td>
<td>0.68</td>
<td>42480</td>
</tr>
<tr>
<td>Commons/Courtyard</td>
<td>0</td>
<td>33</td>
<td>1,200</td>
<td>0.61</td>
<td>2400</td>
</tr>
<tr>
<td>Cafeteria</td>
<td>0</td>
<td>68</td>
<td>2,040</td>
<td>0.61</td>
<td>4080</td>
</tr>
<tr>
<td>Support</td>
<td>0</td>
<td>5</td>
<td>1,570</td>
<td>0.88</td>
<td>3140</td>
</tr>
<tr>
<td>Animal Shelter / Training Facility</td>
<td>1</td>
<td>94</td>
<td>4,630</td>
<td>0.66</td>
<td>9260</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>56</strong></td>
<td><strong>418</strong></td>
<td><strong>71400</strong></td>
<td><strong>71400</strong></td>
<td></td>
</tr>
</tbody>
</table>

### LAND USE AREA

<table>
<thead>
<tr>
<th>Space Name</th>
<th>People</th>
<th>Gross Building Area</th>
<th>Floors</th>
<th>Building Footprint</th>
<th>GAC</th>
<th>Land Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>9</td>
<td>2,960</td>
<td>1</td>
<td>2960</td>
<td>0.25</td>
<td>11840</td>
</tr>
<tr>
<td>Parking</td>
<td>2,436</td>
<td>7080</td>
<td>1</td>
<td>7080</td>
<td>0.25</td>
<td>28320</td>
</tr>
<tr>
<td>Residential</td>
<td>7,080</td>
<td>5,684</td>
<td>1</td>
<td>5684</td>
<td>0.7</td>
<td>8120</td>
</tr>
<tr>
<td>Parking</td>
<td>34,104</td>
<td>34,104</td>
<td>1</td>
<td>34104</td>
<td>0.7</td>
<td>48720</td>
</tr>
<tr>
<td>Commons/Courtyard</td>
<td>0</td>
<td>2,400</td>
<td>1</td>
<td>2400</td>
<td>0.25</td>
<td>9600</td>
</tr>
<tr>
<td>Parking</td>
<td>1,949</td>
<td>1</td>
<td>1</td>
<td>1949</td>
<td>0.7</td>
<td>2784</td>
</tr>
<tr>
<td>Cafeteria</td>
<td>0</td>
<td>4,080</td>
<td>1</td>
<td>4080</td>
<td>0.25</td>
<td>16320</td>
</tr>
<tr>
<td>Parking</td>
<td>3,248</td>
<td>1</td>
<td>1</td>
<td>3248</td>
<td>0.7</td>
<td>4640</td>
</tr>
<tr>
<td>Support</td>
<td>0</td>
<td>3,140</td>
<td>1</td>
<td>3140</td>
<td>0.25</td>
<td>12560</td>
</tr>
<tr>
<td>Parking</td>
<td>2,517</td>
<td>1</td>
<td>1</td>
<td>2517</td>
<td>0.7</td>
<td>3596</td>
</tr>
<tr>
<td>Animal Shelter / Training Facility</td>
<td>1</td>
<td>9,260</td>
<td>1</td>
<td>9260</td>
<td>0.25</td>
<td>37040</td>
</tr>
<tr>
<td>Parking</td>
<td>7,470</td>
<td>94</td>
<td>1</td>
<td>7470</td>
<td>0.7</td>
<td>10671</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>56</strong></td>
<td><strong>128,808</strong></td>
<td><strong>93018</strong></td>
<td></td>
<td></td>
<td><strong>243660</strong></td>
</tr>
</tbody>
</table>

### RELATIONSHIP DIAGRAM

![Relationship Diagram](image)

**FIGURE 28**

**FIGURE 29**

**FIGURE 30**
There are a multitude of typologies at this rehabilitation center. So a master plan is needed to answer how they will all flow together to create one cohesive building. This program will focus on the relationship between a veteran suffering from PTSD and a dog. They will have a lot of interaction in different areas throughout the day. Most areas of the building need to be suitable for both man and dog.

This facility will be designed for long-term use. The areas more geared towards only human interaction will be designed with the highest quality. Areas for the dogs, like kennel spaces, will be designed to have updates done every 5-10 years since it will be used a little harder.

Since dogs are not always the quietest creatures. The facility will be designed in a campus-style. The site is large, over 100 acres, so there will be buildings spread out across the land. They will all be connected within a short walk of each other. The site is heavily wooded. The buildings should reflect the natural setting surrounding them using natural materials. The buildings will be very inviting with elegant, modern design.

This facility will be designed and built all at one time. With a typology of a rehabilitation center and using newer methods of healing, the need for more space is a possibility if a successful program. There is room on the site for expansion.
MICRO SITES

LITTLE FALLS

HEAVILY WOODED

MODERATELY WOODED

OPEN FIELD

MISSISSIPPI RIVER

CHRISTIAN RETREAT CENTER CHURCH
An image on the road in the loosely wooded area of the site, in the winter. Close to the proposed shelter location.

This image, taken during the fall, on one of the walking trails that weave through the site.

An image taken on the road, in the heavily wooded section of the site approaching the river and start of the trails.
This image of the site looking southeast shows how the parking lot is a poor use of the site.

This image looking north shows that it is an infill site that has some pretty tall neighboring buildings.

An image looking at the underpass that will be turned into an urban green way connecting the site to the river.
CODE ANALYSIS

REHABILITATION CENTER

Codes are a big part of design today, they facilitate many design decisions. It is all for the safety of the building occupants. Codes help determine everything from how tall your building can be according to city code, based off the building typology or construction type to how much fire protection you need on your walls. These standards create a safer world around us and they make it easier to construct the buildings as well. Codes allow things to be built more rapidly because they are standards of design. The codes listed below are what I have chosen based off my building typology and those who will be using it. These codes should allow the best possible design solution for my thesis.

Occupancy Type
Institutional I-1 Group 1
This occupancy shall include buildings, structures or parts thereof housing more than five persons, on a 24-hour basis, who because of age, mental disability or other reasons live in a supervised residential environment that provides personal care services. The occupants are capable of slow evacuation in an emergency situation without physical assistance from staff. For the purposes of applying this provision, slow evacuation shall mean the movement of all occupants, residents and staff to an exit in more than three minutes, but no more than 13 minutes.

Construction Type
IV

Maximum Square Footage
54,000 max ground floor

Maximum Height
85’

Maximum Stories
5 Floors

Fire Rating
2 hours for exterior walls and 1 hour for interior walls between accessory spaces.

Maximum Occupancy
500

Minimum Exit Width
8’

Exit Access Distance
250’

“Take a quiet walk with Mother Nature. It will nurture your mind, body and soul.” — Anthony Douglas Williams
RESEARCH DESIGN PLAN

DESIGN METHODOLOGY

Descriptive Research

Descriptive Research produces new knowledge by systematically observing, collecting, and/or recording new information. I will be using this method of research primarily because the use of case studies falls under this category. With designing two buildings that are of the same typology in two very different settings, studying numerous case studies to determine the best way to achieve successful designs will be a necessity. After this research I should be able to describe the requirements for each building: situated in an urban setting and a rural setting.

Design Research

Design Research projects new configurations, relationships, possibilities and, thus, new “realities.” The typology of my building is basically a mutt. The building will bring together a few different typologies to create a first-of-its-kind typology. So the design that I will be researching does not necessarily exist. This will be a problem-solving endeavor especially when I tie in the reality that this typology need be placed in not just a rural context but also in an urban context. The outcome of my research should be able to show the benefits of a building designed for the city and the benefits of a building designed for the country.

DESIGN PROCESS PLAN DOCUMENTATION

This chart is a monthly look at how I will plan my time. With submitting progress every week, it will keep me on track to reach my goals and my professors goals. He will have submittal requirements weekly that will keeping me producing work evenly spread out of the semester. This will allow me to manage my time really well. So when it comes down to crunch time near the end of the semester, I should not be too stressed out. This plan will help me to keep developing my design on a weekly basis, and keep me thinking about it even while I step away from design to work on other aspects of the project.

PROJECT SCHEDULE

This schedule, that is based on the entirety of the year, should be well thought out. Every aspect of the design process, to due dates and the final presentation should be scheduled out. By planning this out ahead of time, it will allow me to look at it throughout the semester and get a feel for what I need to be working on. This should allow me plenty of time to gather all of my information together at the end of the project in preparation for the final presentation. Procrastination should be no worry as long as I follow this schedule.

FIGURE 39

22% of veterans suffer from posttraumatic stress disorder or major depression

34% suffer from other mental concerns

1 out of 3 of these people seek help
DEFINITIONS OF RESEARCH DIRECTION

The two research methods I will primarily be using are those derived from case studies and design research. Because I am designing two buildings that are of the same typology in two very different settings, it is important to study numerous case studies and determine the best way to achieve successful designs. After this research I should be able to describe the requirements for each building: situated in an urban setting and a rural setting. The building will bring together multiple typologies to create a brand new typology. So the design that I will be researching does not necessarily exist. This will be a problem-solving endeavor especially because this typology needs to be placed in not just a rural context but also in an urban context. The outcome of my research should be able to show the benefits of a building designed for the city and the benefits of a building designed for the country.

PLAN FOR DESIGN METHODOLOGY

<table>
<thead>
<tr>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Research New Case Study</td>
<td>Analyze Sites</td>
<td>Research New Case Study</td>
<td>Non - Thesis Related Time</td>
</tr>
<tr>
<td>LUNCH</td>
<td></td>
<td></td>
<td>Thesi Studio 11 - 4 pm</td>
<td>Thesis Studio 11 - 4 pm</td>
</tr>
<tr>
<td>AFTERNOON</td>
<td>Seminar Focused Time</td>
<td>Non - Thesis Related Time</td>
<td>Cost &amp; Price Seminar 1 - 4 pm</td>
<td>Weekly Progress Submittal</td>
</tr>
</tbody>
</table>

FIGURE 40
PLAN FOR DOCUMENTING THE DESIGN PROCESS

<table>
<thead>
<tr>
<th>WEEK 1</th>
<th>WEEK 2</th>
<th>WEEK 3</th>
<th>WEEK 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Case</td>
<td>Research Case</td>
<td>Research Case</td>
<td>Research Case</td>
</tr>
<tr>
<td>Studies</td>
<td>Studies</td>
<td>Studies</td>
<td>Studies</td>
</tr>
<tr>
<td>Site Analysis</td>
<td>Site Analysis</td>
<td>Site Analysis &amp;</td>
<td>Site Analysis &amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development</td>
<td>Development</td>
</tr>
<tr>
<td>Design Development</td>
<td>Design Development</td>
<td>Design Development</td>
<td>Design Development</td>
</tr>
<tr>
<td>Progress Submittal</td>
<td>Progress Submittal</td>
<td>Progress Submittal</td>
<td>Progress Submittal</td>
</tr>
</tbody>
</table>

FIGURE 41
FIGURE 43

PLAN FOR PROCEEDING
The rural process consisted of a thorough site analysis, determining where would be the best build locations on the site. Could not build in the wetlands, the buildings needed to be near the walking trails. Should it be one building or two? Figuring out form for the rural buildings so that they respond well to the site. And doing all of these things keeping in mind the veterans and the dogs and how they would use the buildings within the site.
The urban process was little different. Finding the right site in Minneapolis took more work. I did an in-depth study of 6 sites, looking at surrounding building typologies and heights, proximity to the river, and I made a pros and cons list before deciding on one site. Then analysis of that site included transportation, property lines, zoning and contextual analysis. The form of the urban building went through many iterations. With the program designed for veterans and dogs, creating one building that can best house them was tricky. Also, the urban building included a parking ramp, so that needed to be designed to code as well.
Using the 3D printers to quickly produce small massing models of the buildings was a great benefit with developing the right design for the rural buildings. The form of the residential units portion of the building went through many design changes before finding the one that worked best. Below are the images of the final model for the rural rehabilitation center.
Using the 3D printers to quickly produce small massing models of the buildings was a great benefit with developing the right design for the urban building. This tactic was great for comparing multiple physical models and determining which to move forward with. A lot of iterations were gone through before choosing the final design. Below are images of the final model for the urban rehabilitation center.
The final thesis display is shown here. The rural and the urban project each have their own side with the same building or space lining up as you read down the board so they can be compared. They are separated in the middle by an extrude title board explaining the project and a shelving system that shows the iterations of the small 3D printed models. The table shows the final models at the same scale and some of the larger same scale and some of the larger 3D printed study models.
On the rural site it is an open field where the building sits near the drop off to the river. But to actually gain access and get close to the river, the veteran must walk through the canopy of the trees parallel to the river before reaching a set of stairs that leads down to the waterside.

On the urban site it is mostly hardscape surrounded by buildings, and going through an underpass before reaching the greenery and the river walk. The hardscape was softened by incorporating a public green way between my building and the underpass.
The west wing of the dog shelter is where the dogs that are being trained with the veterans are kept. This wing is kept more private to keep the public who are there to adopt a dog out. There are 50 indoor, outdoor kennels. With a back entrance for the veterans, a foyer and a nearby bath room for the dogs to get cleaned up after a dirty day’s play, it keeps the shelter clean. There is also an indoor, turf training gym where the veterans can work with the dog they have been paired with.

The east wing of the dog shelter will house the dogs that are not suitable for training with the veterans but are available for adoption. There are 54 indoor, outdoor kennels for the dogs. The indoor/outdoor kennels allow people to see the dogs available for adoption before even entering the building, making the dogs act as their own marketers. There are private rooms designed for potential adopters to play with the dogs. They can even be brought on a walk on one of the many surrounding trails.
On the sixth floor of the urban building starts the five floor high, open lobby above the void in the building. This will be a place that the public has access to and can lounge. This area also gives the veterans an opportunity to interact with strangers which is an important step in the healing process. This floor has the indoor turf gym for training the dogs.

The third floor can be accessed by the grand stair that leads up from the ground level. This is one of three floors with this same layout for the kennels. There are 54 indoor, outdoor kennels for the dogs. This allows people to see the dogs available for adoption before even entering the building, allowing them to act as their own marketers. There are private rooms designed for potential adopters to play with the dogs.

To access the kennels where the dogs that are being trained are kept, the veterans cross the bridge that spans the lobby below. There are 50 kennels indoor, outdoor kennels. This the floor plan for the two floors above also.
The Urban rehabilitation center starts on the eighth floor to maximize the views of the surrounding area. Being in an urban, downtown area enclosed by tall buildings, the bulk of the building is vertical. In order to achieve this, there is a seven story parking ramp on the north side of the void. Since a portion of the parking will be taken away from the site, it will be replaced. Amenities in the building include a workout center, pool, sauna, theater, and library. This is the floor plan for the 9th and 10th floor also.
LEGEND

A  WORKOUT CENTER
B  CAFETERIA
C  KITCHEN
D  MECHANICAL
E  POOL
F  MULTI-PURPOSE ROOM
G  THEATER
H  LIBRARY
I  LOBBY
J  ADMINISTRATION
K  LOUNGE
L  INDOOR KENNEL
M  OUTDOOR KENNEL
N  BATH ROOM
The Rural rehabilitation center was designed to capture the views of the site. With a glass hallway corridor there is always a sight to take in. Amenities in the building include a workout center, pool, sauna, theater, and library. There is a connection to the residential units to the south.
RESIDENTIAL UNITS

These residential units for the veterans were designed for healing and comfort. Each unit has a full bath, full kitchen, bed, and living area. Each unit has a large glazing wall to illuminate the entire room. Some units offer a private outdoor balcony. Multiple iterations were created so there would be options for the veterans. Each room has views of the surrounding city or site.

Rural 1 and 2 were used for the final design.

Urban 1, 2, and 3 were used for the final design.
Floors fourteen through twenty-one are the residential units. With only six units on each floor, there needs to be eight floors to reach the forty-eight in-patient quota. The urban building offers three different units for the veterans to choose from. Two of the three units have a private balcony.

The residential units were designed in a linear, centralized pattern. This form responds well to the site and allows for privacy from unit to unit. This building consists of two different unit configurations for the veterans to choose from. Both styles are comparable, one is larger than the other and has a larger kitchen and walk-in closet. There are two floors of residential units.

RURAL RESIDENTIAL UNITS

URBAN RESIDENTIAL UNITS
LEGEND
A  LARGE UNIT
B  MEDIUM UNIT
C  SMALL UNIT

0'  16'  32'  64'
RESPONSE TO THE SITES

Site was one of the most important factors of this thesis project. It took a new project typology and incorporated it into two very different sites. One being a rural site that was surrounded by farmland and the other being an urban site that was in a dense downtown area. Since I was trying to create a model for both contexts, a lot of thought and consideration needed to go into the project. The rural site currently is Belle Prairie County Park. The site was successful for a rehabilitation center and dog shelter because it is over 100 acres, it is bordered by the Mississippi River, it has miles of walking trails, and a variety of ground cover that makes the site dynamic and appropriate for the function of buildings. The buildings were placed on the site where they would not destroy much of the existing vegetation or require much of the ground to be moved. The urban site currently just had two mixed-use condo buildings finish construction. I was not aware of the plans for this site when I started researching urban site options. The urban site was successful in a different way. It has a close connection the Mississippi River, but it is surrounded by hardscape. Green roofs were incorporated in the design and an urban greenway to try to soften the context. With a limited lot size, the building was vertical compared to the horizontal design of buildings on the rural site. I believe this project responded well to the sites that were chosen, not creating much of an impact and designing the building to fit into the site rather than have the site warp for the buildings.

RESPONSE TO PRECEDENT RESEARCH

Precedent research was not a major role in the development of my project. If you look at the two typologies that make up my thesis project, a rehabilitation center for veterans suffering from trauma and a dog shelter, nothing there are no other buildings like it currently. I looked at rehabilitation centers and some of the functions they incorporated into their design, but not all were too influential. The majority of rehabilitation centers that have inpatients are drug abuse and physical recovery programs. When veterans are getting help for PTSD, it does not require them to be inpatients. Also, looking at animal shelters, they are nearly all designed with the same set of construction documents. They are built to be cheap and easily built. So when it came to taking both of these typologies and merging them so that they can best suit the veterans and dogs that would occupy this space and give both a real second chance. A lot of my precedent research was focused on healing rooms and the best design for small, comfortable living units. I believe this research helped me to design two very successful living quarters on each site.
RESPONSE TO GOALS AND PROJECT EMPHASIS

The emphasis of this thesis project is about how veterans come back from deployment and go back to their homes all over the country. Some live in the city and others out in the country. They need treatment in a context that is familiar and comfortable to them. That is the reasoning behind designing a rehabilitation center and dog shelter in both urban and rural contexts. Another emphasis is placed on the interaction between the veterans and the dogs. So the buildings need to have places for refuge to keep them separate and areas for interaction between the two. That is how the dogs will become trained and how the veterans can work on their healing. Similarly, the goals of the project are to create a new, successful hybrid project typology, develop designs that respond to their site, and create a model for each site.

The project concluded with two designs that could be compared side-by-side. Both rural and urban buildings have the same program and both have their benefits. Aspects from both designs can be used as a template for similar buildings elsewhere. Interaction between veterans and dogs on the rural site is spread out compared to the urban site where they are separated between different sides of the building. The veterans and dogs were thought about in every aspect of the design solution.
RESEARCH REFERENCES


IMAGE REFERENCES

FIGURE 3  http://www.ptsd hotline.com/assets/images/unkle_sam.jpg
FIGURE 9  https://www.royalqueenseeds.com/img/cms/Blog/PTSD-cannabis.jpg
FIGURE 12  http://3pzxs1yj5e53o4u85czq3d0.wpengine.netdna-cdn.com/wp-content/uploads/HealingPowerOfDogs.png
FIGURE 14  http://www.archdaily.com/117672/saffire-resort-circa-architecture/5013a40f2ba0d39630005ed-saffire-resort-circa-architecture-site-plan
FIGURE 15  http://www.archdaily.com/117672/saffire-resort-circa-architecture/5013a3fc28ba0d39630005e8-saffire-resort-architecture-plan
FIGURE 16  http://www.archdaily.com/117672/saffire-resort-circa-architecture/5013a3f92b0a0d39630005e7-saffire-resort-architecture-photo
FIGURE 17  http://www.archdaily.com/117672/saffire-resort-circa-architecture/5013a3da28ba0d39630005dc-saffire-resort-circa-architecture-photo
FIGURE 18  http://www.archdaily.com/567316/the-ulrichshof-noa/546410f8e58eeceb71100013c-ground-floor-plan
FIGURE 19  http://www.archdaily.com/567316/the-ulrichshof-noa/54640fbee58eeceb71100013d-_dsc9501.jpg
FIGURE 20  http://www.archdaily.com/567316/the-ulrichshof-noa/54641023e58eeceb500012f-_dsc9872.jpg
FIGURE 21  http://www.archdaily.com/567316/the-ulrichshof-noa/546410f658eeceb71100013b-_dsc9798.jpg
FIGURE 22  http://www.archdaily.com/612092/writer-s-retreat-architecture/55069c6e58eeceb270000233-section
FIGURE 23  http://www.archdaily.com/612092/writer-s-retreat-architecture/55069c6e58eeceb270000234-unnamed._-4.jpg
FIGURE 24  http://www.archdaily.com/612092/writer-s-retreat-architecture/5506a17e58eeceb270000235-unnamed._-3.jpg
FIGURE 33  https://www.google.com/maps/place/Little+falls,+MN+56345/@45.9954607,-94.3969078,11179m/data=!3m2!1e3!4b1!4m5!3m4!1s0x52b42523547e7c27:0x911ebf3d7d1565c85b8582f45.9805556/4d-94.3694444?hl=en
FIGURE 34  https://www.google.com/maps/place/Little+falls,+MN+56345/@45.9954607,-94.3969078,11179m/data=!3m2!1e3!4b1!4m5!3m4!1s0x52b333909377b3d45.9805556/4d-94.3694444?hl=en
FIGURE 37  https://www.google.com/maps/place/Minneapolis,+MN/@44.970797,-93.3315182,22768m/data=!3m2!1e3!4b1!4m5!3m4!1s0x52b333909377b3d45.9805556/4d-94.3694444?hl=en
FIGURE 39  http://events.adelphi.edu/files/2013/10/PTSD_infographic.jpg
PREVIOUS STUDIOS

Arch 271 - Fall 2013
Darryl Booker
Tea House | Moorhead, MN
Tea Cottage | Moorhead, MN

The first studio taught me a lot about process. Everything was hand-drawn, even of the final boards. The Tea House was the first project that helped me design with the site in mind.

Arch 371 - Fall 2014
Steve Martens
Community Center, Fire Station | Sioux Falls, SD
TAT Center Center for Education | Watford City, ND

This semester was a lot about construction of the building. So there was a lot of focus on structure and building materials. These projects forced me to to learn a lot about my site and contexts.

Arch 471 - Fall 2015
Bakr M. Aly Ahmed
High Rise | San Francisco, CA

High Rise was a comprehensive project that was beneficial for me in the way that I had to think about all aspects of design. My thesis was not comprehensive but having done the High Rise project, it allowed me to incorporate the knowledge I had learned into thesis.

Arch 272 - Spring 2014
Cindy Urness
Dance Studio | Moorhead, MN
Dwelling | Cripple Creek, CO

The dance studio was not the most relevant project to my thesis. It did require me to learn about a new building typology. The Dwelling was similar to the Tea House project the semester before.

Arch 372 - Spring 2015
Malini Srivastava
EFargo Sustainable Learning Center | Fargo, ND

This project had me thinking about how people move throughout the site and the context which was an important part of my thesis. It was also the first time I had designed a vertical building. EFargo was the first time sustainability was a factor.

Arch 472 - Spring 2016
Paul Gleye
Saint-Gilles Redevelopment | Brussels, Belgium

This was a project I worked on while I was studying abroad. We interviewed people to get feedback about what would be beneficial on the site. This was an important strategy that could have been utilized in a thesis project. It did not influence my thesis greatly.

Arch 771 - Fall 2016
Malini Srivastava
Solar Decathlon | Lake Itasca, Minnesota

This semester was a test that required us to think outside the box in the aspect of design and innovation. This project was helpful in preparing me for Thesis because it challenged me to think about design in irregular ways. And that is what a thesis project is supposed to do also.
IDENTIFICATION

Jacob Haack

Home Address
15266 71st Place North
Maple Grove, Minnesota 55311

Contact Information
(612) 718-7546
tomahaack10@gmail.com