

ABSTRACT

Title of Document: HEALING HEROES:
A MODEL FOR CONNECTING PTSD
THERAPY CENTERS TO COMMUNITIES

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Preservation

This thesis proposes to further develop the existing Department of Veterans Affairs Design Guide by recommending PTSD therapy centers serve local populations, promote patient recovery through architecture solutions and be removed from the institutional environments they are found in today. With 2.2 million troops deployed since Operation Iraqi Freedom, the number of veterans with injuries both physical and mental continues to increase. Facilities for helping those veterans with visible wounds are making significant strides, while those treating invisible ones remain stagnant. The idea of 'place' will serve as a lens through which this problem is addressed, helping to discover a range of appropriate sites for these centers to be located.

HEALING HEROES WITH PTSD:
A MODEL FOR CONNECTING PTSD THERAPY CENTERS TO COMMUNITIES

By

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Dedication

To the military personnel serving across the world, your service should humble us all.

To my parents, John and Susan Rivers, whose never-ending support is always looked to and appreciated. To my best friend and brother Matt, the person who encourages me to achieve more.

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Chapter 1: The Challenge

Why this Matters

Our service men and women put their lives on the line in order to ensure our freedom. Their service often has an immense psychological impact on them and those who love them. Their perception of the world changes as a result of their service. This thesis proposes to assist architecturally in that change of perception, helping veterans and their families adapt to a veterans wartime experiences. Posttraumatic Stress Disorder affects a large portion of the men and women deployed overseas. With wartime military operations winding down, an influx of soldiers are returning home causing an increased need for veteran healthcare. Veterans are often said to “bring the war home” with them — meaning the habits that perhaps saved their lives in wartime now affect how they interact with a once, but no longer, familiar cultural landscape. Mental health challenges of those that serve are getting more and more media attention causing increased civilian support. Capitalizing on this support becomes crucial to helping more veteran’s readapt to “normal” life. Architecture is an essential medium helping the success of this mental health challenge.

Department of Veteran Affairs

The Department of Veterans Affairs (VA) is the United States second largest department with a budget of \$132 billion in 2012, second only to the Department of Defense. The VA is responsible for providing patient care and federal benefits to veterans and their dependents. This thesis proposes to utilize certain existing VA mental healthcare services but expand their concepts on PTSD treatment through

better building typologies and siting. This thesis will also examine the basic guidelines set forth by the VA for the design of mental health treatment facilities relating to basic programmatic requirements such as staffing and ADA compliances.

Chapter 2: What is Posttraumatic Stress Disorder?

Definition

PTSD is not a new condition — the terminology might be but the experience can be traced throughout documented history. Samuel Peppy's description of personal responses to the 1666 London fire including insomnia, nightmares and anxiety, Jacob Mendes Da Costa's observations of anxiety induced cardiac and respiratory problems and Shakespeare's Hotspur in *Henry IV* social withdrawal after a bloody battle, all indicate a recognition of traumatic events affects on the human condition. It has been known as the Swiss Disease, Soldier's Heart (U.S. Civil War), Combat Neurosis (WWI), Operational Fatigue (WWII) and Vietnam Syndrome (Vietnam War).¹ While termed differently over the years, the prescribed treatment method until recently has largely been a dose of 'go home and get over it.'

It is important to first recognize that PTSD is a social construct. Society determines war veterans to be 'normal' when they easily reintegrate after deployment without experiencing hardships. Once this perception is broken, a label is given to brand the struggles certain veterans go through. This process gives the rest of society the ability to talk about 'them' versus 'us.' Why are they different from us? What do they go through? How can we get them to act like us again? The answers to these questions are not always apparent, nor should they be. Never having gone to war, few civilians can comprehend either the experiences or the calamity that defines it.

¹ Daryl Paulson and Stanley Krippner, *Haunted By Combat: Understanding PTSD in War Veterans*, 2007.

The Diagnostic and Statistical Manual of Mental Disorders defines Posttraumatic Stress disorder as an anxiety disorder triggered from an “exposure to a traumatic event that involved actual or threatened death or serious injury.”² It is easy to get caught up in static descriptions, much harder, and more important, to understand how those descriptions are experienced. This 32-year-old Operation Iraqi Freedom (OIF) Army Veteran captures the degree to which this psychiatric disorder has on the most mundane of tasks:

Standing in line at the check out stand the feeling was almost unbearable, like a low electric current was flowing through my body, not enough to hurt but enough to make me really uncomfortable. The people behind me were standing way too close to me, their kid making way too much noise. I thought of the children I had seen in Iraq and how I never saw one cry, even the wounded ones.

It felt like I was suffocating in the store, near panic, but I was going to maintain, I could do this, JUST BUY YOUR **** AND GET TO THE CAR.

Just then was when the boy behind me popped the balloon he was playing with.

I was on the floor, clawing at the fake marble colored tiles, attempting to crawl under a magazine rack. I may have yelled INCOMING I don't know but when I came back into my body everyone was looking at me.

-A 32-year-old OIF Army Veteran. From his blog “This is Your War II.”³

When standing in a line at the grocery store progresses beyond mild annoyance to severe anxiety attacks, PTSD's definition seems to fade bringing the experiential aspects of the disorder and the necessity of treating such episodes to the forefront.

Causes

A common debate among psychologists is nature versus nurture. Which has a larger affect on certain responses to life events? For example, when a man commits a

² National Council on Disability, “Invisible Wounds - Serving Service Members and Veterans with PTSD and TBI.pdf,” March 4, 2009.

³ National Council on Disability, “Section 3: Post Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI),” accessed November 3, 2013, <http://www.ncd.gov/publications/2009/March042009/section3>.

robbery, did his genetic inheritances cause predispositions to such a crime or was it perhaps environmental factors he was exposed to growing up? PTSD research suggests the amalgamation of both factors increase the likelihood and severity of experiencing the mental disorder. Understanding both influences and how they cause PTSD to surface becomes crucial when designing appropriate architectural responses to the symptoms of the psychiatric disorder.

Biological Influences

Biological evolutions have given humankind tools to encourage survival. A problem arises if the tools we have been endowed with conflict with cultural situations — such as overreacting to a loud noise while standing in a grocery line. Daryl Paulson and Stanley Krippner say it well in their book *Haunted by Combat*,

“In some ways, we are hardwired with Stone Age temperaments and required to deal with contemporary problems that demand postmodern skills. Quick reactions to violent threats were crucial in the Paleolithic Era but can lead to harassment, arrest, and even imprisonment in the twenty-first century.”⁴

Anxiety is one such useful temperament in helping humans assess threats. It is a function of the “flight-or-fight” response offering a person the means of protecting oneself from real or perceived harms. The fear experienced in anxiety-inducing situations prompts instant biological responses preparing a person to react to any immediate danger — a very useful biological adaptation in wartime scenarios, less so in civilian society.

Posttraumatic Stress Disorder results from the destabilization of the amygdala and autonomic nervous system. The amygdala plays a large role in the brain

⁴ Paulson and Krippner, *Haunted By Combat: Understanding PTSD in War Veterans*.

functions including emotion, learning and memory. Research suggests the amygdala is critical in the assessment of fear related events. This process allows a person to ‘fear’ certain situations and therefore learn to avoid them.⁵ An example of this is a child learning not to play with knives after getting cut by one. Events causing this response promote a period of hyperarousal. PTSD biologically occurs when this hyperarousal is continued beyond a typical response timeframe such as taking cover on hearing a sound like an incoming bomb while in a grocery store. The situation no longer has the same biological relevancy as it did in a warzone.

Experiential Influences

As *The Diagnostic and Statistical Manual of Mental Disorders* definition suggests, PTSD is triggered through exposure to a traumatic event — typically involving the threat of death. War provides such situations in vast quantities over extended durations. For American Soldiers, the risk of exposure to such events is drastically increased compared with the everyday life thought of as normal.

Combat situations mean living with the constant possibility that you must kill or be killed. Though trained for war, can one truly prepare for the killing of another? While that may be up for debate, the lack of opportunity to postpone the presence of threats in wartime is not.⁶ The experiences are in the here and

⁵ “NIMH · Post-Traumatic Stress Disorder (PTSD),” accessed September 26, 2013, <http://www.nimh.nih.gov/health/topics/post-traumatic-stress-disorder-ptsd/index.shtml>.

⁶ Paulson and Krippner, *Haunted By Combat: Understanding PTSD in War Veterans*.

now and cannot be deferred into the future. This is why reflections and subsequent emotional responses typically come after the deployment is over. Environmental predispositions of PTSD often come into play once it has been diagnosed. A veteran's childhood may sometimes reflect the experiential (or nurture) causes of the mental disorder. Dave, a veteran of the Gulf War, shows how this is the case:

He "came upon a group of Iraq police who just shot two children for stripping a car for parts. He drove right by the bodies because he had been instructed not to interfere in "internal affairs." However, experiences of this nature came back to haunt him when he returned home, he began having recurrent nightmares, not only about his time in Kuwait and Iraq, but about...his abusive childhood."⁷

There is a typical response continuum, or time frame, resulting from traumatic experiences. Identified as a period of intense arousal and alertness being considered "a normal response to abnormal circumstances."⁸ It is when the response continuum is stretched with lingering emotional responses that cause Posttraumatic Stress Disorder.

The development phase, or first 18 years of a person's life, is where general assumptions and opinions about the world are largely formed. An experiential set of responses (the 'here') is developed and then utilized when experiencing new situations (the 'there'). The experience gained from this is then applied back to the original experiences of the 'here' (Figure 1).

⁷ Paulson and Krippner, *Haunted By Combat: Understanding PTSD in War Veterans*.

⁸ National Council on Disability, "Section 3: Post Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI)."

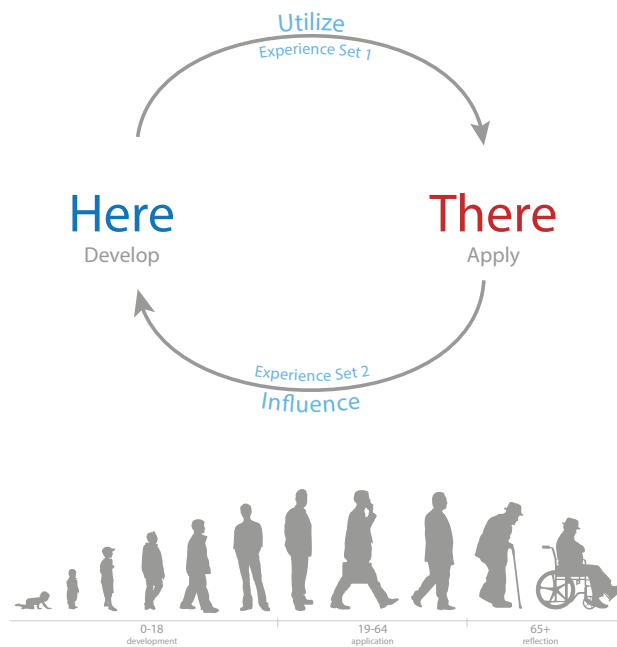


Figure 1: Typical Human Development Process

It is when military situations, specifically wartime environments, are introduced into the typical human lifetime when the first experience set becomes drastically different from the second experience set. Ronnie Janoff-Bulman suggests, “PTSD arises from a general violation of deeply held beliefs and expectations about the world and one’s place in it.”⁹ Imagine then the disparity of experiences if the typical childhood and young adult years are designated as the ‘here’ and wartime experiences in an unfamiliar culture become the ‘there.’ The ‘here’ then can be thought of as recognizable and personal if not entirely comfortable based on a deep understanding of the cultural implications within America. If the ‘there’ not only becomes a foreign country with different cultures, but is also defined by the tragedy and

⁹ Ronnie Janoff-Bulman, *Shattered Assumptions: Towards a New Psychology of Trauma* (The Free Press, 2002).

confusion inherent in war, the experience set learned from a soldier will drastically affect their perception of the ‘here’ after returning home (Figure 2).

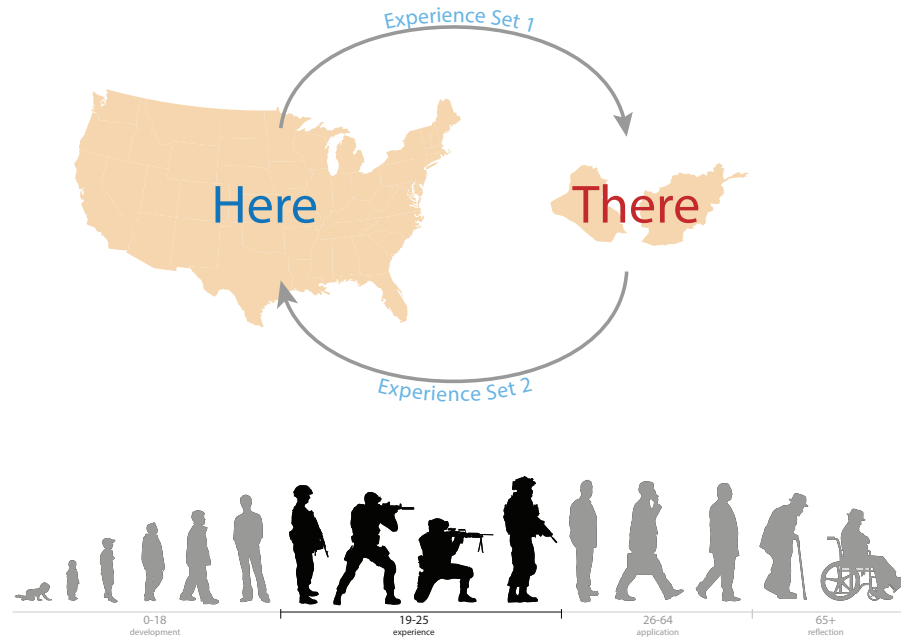


Figure 2: Military Service Affects on Human Development Process

What is then necessary is a respite for returning soldiers to cope with the experiences learned in the ‘there’ causing their PTSD (Figure 3). This transition point becomes critical for two reasons. The first reason is to understand how the combat skills they learned, the survival techniques employed overseas, translate to home-front conditions. Veterans often negatively experience how situational responses critical to their survival over ‘there’ are viewed as negative social responses ‘here.’¹⁰ H.L. Hirsell discusses the second reason as the consequences of delaying treatment after returning home, summarized as saying “if treatment is delayed, veterans may develop unhealthy coping strategies and may damage their relationships and

¹⁰ National Council on Disability, “Invisible Wounds - Serving Service Members and Veterans with PTSD and TBI.pdf.”

social support network, leaving them very isolated.”¹¹ Therefore, the point when a military deployment ends and PTSD begins to surface becomes important for treatment intervention.

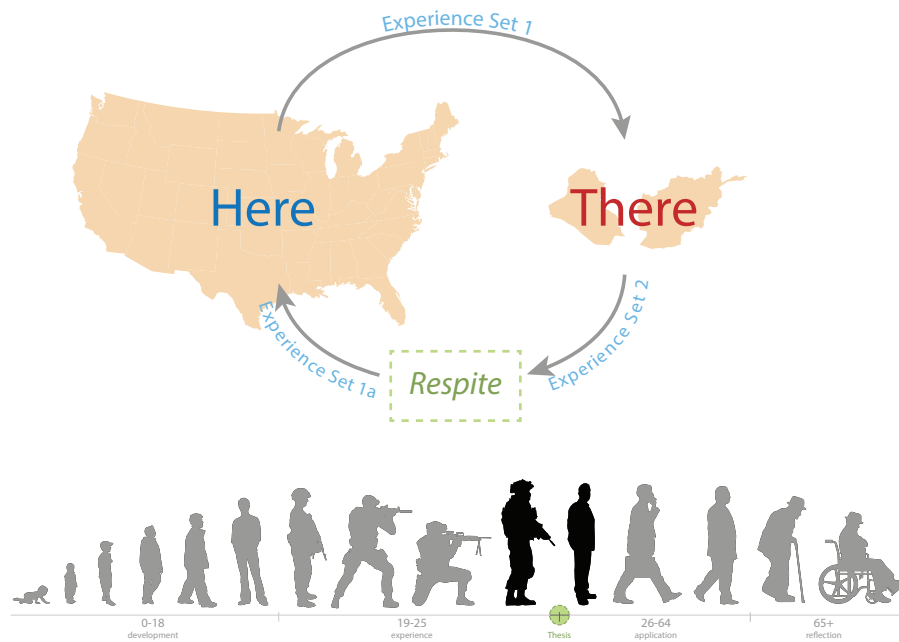


Figure 3: Moment of Thesis Intervention

Symptoms

Symptoms become the dominant form of expression for any health challenge. Posttraumatic Stress Disorder has symptoms ranging from mild anxiety to suicidal thoughts. Like the disorder itself, many of the symptoms are unseen, leaving a person to appear ‘normal’ at times when immense difficulties exist and persist. The symptoms can be clustered into three different categories — re-experiencing, avoidance/numbing and hypervigilance/increased arousal.¹² Listed below are

¹¹ National Council on Disability, “Section 3: Post Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI).”

¹² Department of Veterans Affairs, “PTSD Guide for Military Families.pdf,” September 2010.

commonly encountered symptoms in each category, how they are experienced and design implications associated with each.

Re-experiencing

Perhaps described best by Paulson and Krippner in *Haunted by Combat*, “a veteran “sees” the enemy upon awakening, “hears” a bomb explode during a television drama, or “feels” shrapnel entering his body when getting jostled unexpectedly.”¹³ Re-experiencing can be debilitating. Hallucinations and nightmares are common for those coping with wartime events. Specific cues such as burning scents or loud noises may trigger feelings that a past traumatic event is happening again.¹⁴ These are intense moments of distress that frequently occur in public places. This leads to social embarrassment further affecting a veteran’s anxiety and perpetuating negative opinions a veteran may have of him or herself. This suggests architecture designed to mitigate such occurrences through explorations of environmental impressions.

Avoidance and Numbing

Trying to forget intrusive memories becomes a common coping method for most with PTSD. The purpose is to cleanse the mind of any traumatic memory but this subsequently leads to emotional numbing. This detachment from experiencing reality affects responsibilities both professionally and personally.

Divorce rates among military personnel are higher than civilians — with

¹³ Paulson and Krippner, *Haunted By Combat: Understanding PTSD in War Veterans*.

¹⁴ Erin Finley, *Fields of Combat: Understanding PTSD Among Veterans of Iraq and Afghanistan*, The Culture and Politics of Health Care Work (Cornell University Press, 2011).

divorce rates among veterans experiencing PTSD being twice as high.^{15 16}

When this avoidance is taken to its extremes, veterans become recluses — refusing to be in public for fear of experiencing anything reminding them of a traumatic event they endured. This places a great burden on veteran's caregivers and any dependents that veteran may be responsible for. With veteran caregivers and families being heavily affected, any architectural solutions should incorporate the importance of caregiver and family involvement in treatment processes.

Hypervigilance and Increased Arousal

A common phrase used in military jargon is checking your 'sixes' — meaning always check behind you for danger. During wartime, soldiers rely upon one another to cover each other's 'sixes,' the most vulnerable position to be attacked from. Once home and battling PTSD instead of insurgents, that mindset persists without those fellow troops once depended upon for protection. This causes a veteran to act on "high-alert" at all times causing many to suffer from sleep deprivation. This hyper-arousal affects moods and concentration limiting a veteran's ability to interact. Coupled with military training, sleep deprivation can become crippling as experienced by Joshua, an Iraq veteran suffering from insomnia. One night, in a haze of confusion, Josh

¹⁵ "Military Divorce Rate at Highest Level since 1999," *USATODAY.COM*, accessed November 23, 2013, <http://www.usatoday.com/news/military/story/2011-12-13/military-divorce-rate-increases/51888872/1>.

¹⁶ Jennifer Price and Susan Stevens, "Partners of Veterans with PTSD: Research Findings - PTSD: National Center for PTSD," PTSD: National Center for PTSD, accessed November 23, 2013, http://www.ptsd.va.gov/professional/pages/partners_of_vets_research_findings.asp.

hit his wife in the face while muttering about killing the person coming after him.¹⁷ Dejection, panic attacks, episodes of rage and cycles of anxiety and guilt all contribute to the inability of veterans to properly cope with coming home. This intensity of living should be carefully addressed through siting appropriate facility locations as well as in designing atmospheres sensitive to the way in which veterans live.

These stressors are constantly present for veterans — affecting every waking moment and often turning dreams into nightmares. While some symptoms are internal, designing to mitigate such debilitating symptoms helps a veteran to focus on healing.

Comorbid Conditions

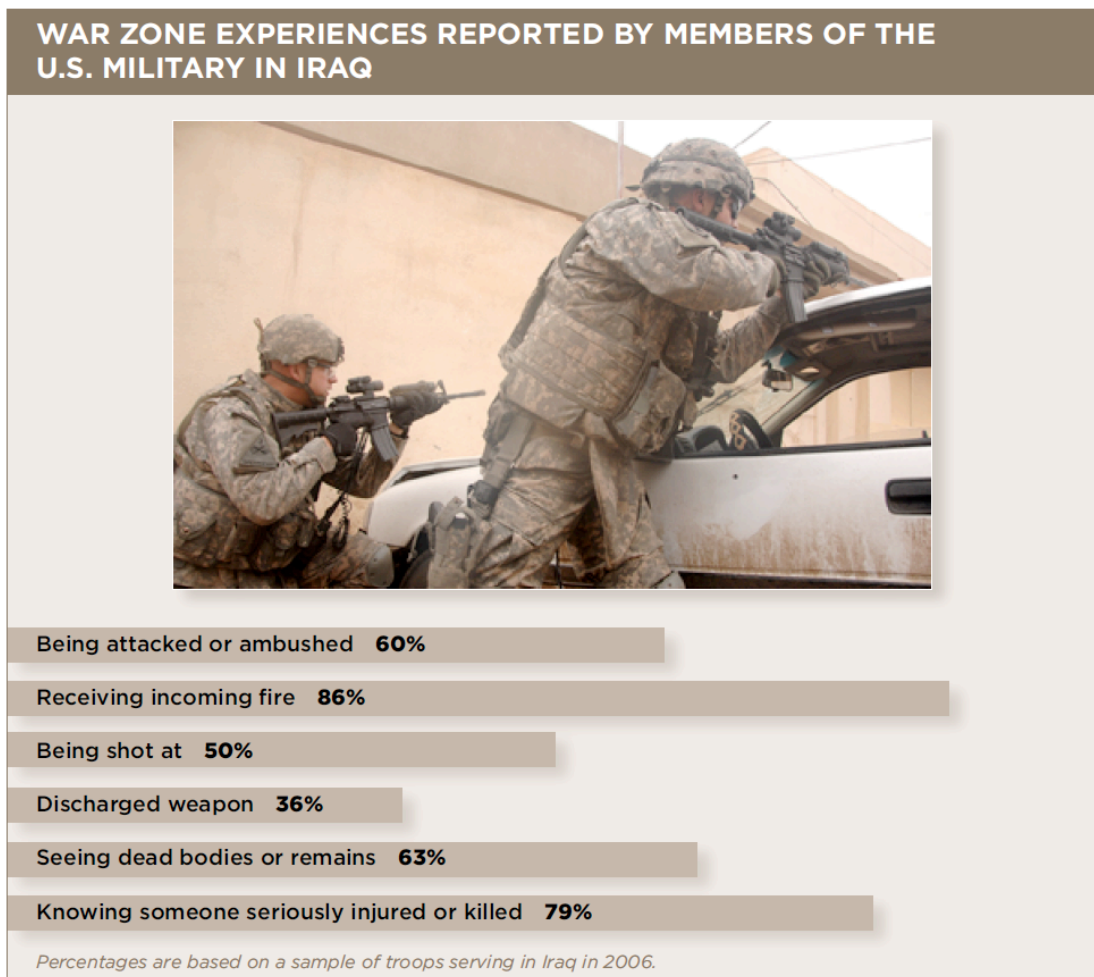
Many times PTSD is experienced in conjunction with other health challenges, both mental and physical. There is a dangerous cycle that is found with many veterans dealing with the disorder. Either PTSD triggers other health challenges or they trigger PTSD. Therefore, designing with sensitivities to other health challenges like suicidal thoughts, substance abuse and physical ailments must be considered. Suicide deaths in the military, many of who experienced PTSD, currently outnumber those service members killed in combat.¹⁸ Suicide prevention must then be incorporated into all aspects of the designs.

¹⁷ Paulson and Krippner, *Haunted By Combat: Understanding PTSD in War Veterans*.

¹⁸ CBS News, “U.S. Military Suicides Exceed Combat Deaths - CBS News,” January 14, 2013, <http://www.cbsnews.com/news/us-military-suicides-exceed-combat-deaths/>.

Chapter 3: The Affected

Evolutionary survival behaviors are perhaps best exposed during wartime. The situations soldiers face demand these primal instincts to survive. They often have to make life or death situations in a split second. It is living through these combat situations with the constant possibility to kill or be killed where PTSD has its roots. Soldiers have to make high-consequence decisions affecting their lives and those around them. A recent study, found below, sheds light on some of the more severe combat stressors.



Source: PTSD Guide for Military Families, 2006

Figure 4: Combat Stressors of those serving

These combat stressors often become too much for a soldier to handle, triggering the symptoms and behaviors mentioned earlier. Situational changes, both geographic and cultural, cause these behaviors to become so maladaptive. Veterans often struggle with the vast differences between warzones and non-war zones. The behaviors that may have saved their lives are no longer relevant propagating feelings of “what is” versus “what should be.” One challenge they face is they are not the same person – war has changed them. Producing architecture that helps the healing process starts with understanding who the veterans were before they went to serve our country.

Characteristics of the Deployed

More than 2.2 million troops have been deployed since 2001. The all-volunteer force has had large affects on military demographics. Those who join make a conscious choice to sign up for a job that may involve experiencing the chaos of war. Their reasons for joining speak to the places they come from and the places they want their enlistments to take them. Enlisted soldiers represent 85.4 percent of the total force. Tradition plays a large role for those who join. Military members often come from military families — joining because there is an unspoken family custom of serving one’s country. Found below is the breakdown of the number of service members who have been deployed by military branch.

Service Members Deployed, by Branch of Service, as of 2010						
Component	Army	Navy	Air Force	Marine Corps	Coast Guard	Total
Regular	608,634	323,701	280,182	219,335	4,813	1,436,665
National Guard	298,728	N/A	79,777	N/A	N/A	378,505
Reserves	173,825	60,161	54,632	42,316	1,271	332,205
TOTAL	1,081,187	383,862	414,591	261,651	6,084	2,147,375
Percentage	50.3%	17.9%	19.3%	12.2%	0.3%	100.0%

Source: Returning Home from Iraq and Afghanistan

Figure 5: Service members deployed by military branch, 2010

Since the 1970's and the shift from the compulsory military service (the draft), the demographics of those who serve and those who do not have seen an increasing divide. Seen today among those that serve are similarities in ages, education levels and marital statuses. How these similarities represent those that serve becomes an important factor in how treatment centers are designed for those that return injured.

Age

The age of a veteran is suspected to affect the likelihood of experiencing PTSD. The current mean age of those deployed is 33.4 years old though research has suggested that veteran's age 18-24 are at the greatest risk for being diagnosed with PTSD when compared with veterans 40 years or older.¹⁹

The table below shows the amount of service members deployed by age distribution.

Age Distributions of Deployed Service Members, as of 2010						
Age	Army	Navy	Air Force	Marine Corps	Coast Guard	Total
<20	4,084	650	222	827	1	5,784
20-24	164,904	48,364	39,222	63,490	456	316,436
25-29	316,570	111,897	101,310	107,262	1,801	638,840
30-34	212,293	83,773	84,739	48,460	1,619	430,884
35-39	134,686	51,049	56,220	19,789	888	262,632
40-44	113,491	43,574	52,842	11,973	632	222,512
45-49	76,570	28,988	45,493	6,606	400	158,057
50-54	35,050	11,025	20,322	2,435	174	69,006
55+	23,466	4,537	14,243	810	113	43,169
TOTAL	1,081,114	383,857	414,613	261,652	6,084	2,147,320
Mean Age	33.4	33.6	35.8	29.5	34.1	33.4

Source: Returning Home from Iraq and Afghanistan

Figure 6: Age distribution of deployed service members, 2010

¹⁹ Brett Litz and William Schlenger, "PTSD in Service Members and New Veterans of the Iraq and Afghanistan Wars: A Bibliography and Critique," *PTSD Research Quarterly* 20/NO. 1 (Winter 2009).

Education

As seen in the table below, those with high school degrees represent 61 percent of the military. Enlisted soldiers dominate this education level. Most Commissioned Officers have at least a college degree with 36 percent of all commissioned officers having post-college degrees. Lower education levels show an increased risk for experiencing PTSD.²⁰

Education Status of Deployed Service Members, as of 2010						
	Enlisted Soldiers		Commissioned Officers			
Education Status	E1–E4,	E5–E9,	O1–O3,	O4–O10,	Warrant Officer	TOTAL
Less than High School	10,722	6,935	55	28	15	17,755
GED	82,194	47,382	82	159	363	130,181
High School	588,084	713,615	1,141	451	5,599	1,308,896
Some College	40,515	218,999	4,837	1,243	16,072	281,669
College Graduate	10,978	77,383	94,387	54,328	8,254	245,332
Post College	622	10,973	21,675	88,152	1,982	123,406
Unknown	10,327	15,469	9,950	3,106	1,307	40,159
TOTAL	743,442	1,090,756	132,127	147,467	33,592	2,147,384
Percentage	34.6%	50.8%	6.2%	6.9%	1.6%	100.0%

Source: Returning Home from Iraq and Afghanistan

Figure 7: Education status of deployed service members, 2010

Marital Status

About 59.4 percent of the total force deployed in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) are married.²¹ This means that at least 60 percent of those coming home have significant others who will, in some way, experience the affects of war. Reports have suggested that significant others of PTSD-diagnosed veterans assume more household responsibilities than those married to veterans without PTSD. This means

²⁰ National Council on Disability, “Section 3: Post Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI).”

²¹ Institute of Medicine, “Returning Home from Iraq and Afghanistan: Assessment of Readjustment Needs of Veterans, Service Members, and Their Families” (The National Academies Press, 2013).

handling finances, time management, relationship maintenance and taking care of children becomes a larger burden for the spouse. Veteran partners often feel compelled to take care of the veteran while he or she copes with PTSD — this may be great for the veteran but it places a heavy burden on the spouse and strains their relationship. Thus, considering the family and caregivers of veterans coping with PTSD is important in designing a facility enabling the healing process to extend beyond the veteran to the family.

Married Marital Status of Deployed Service Members, as of 2010						
Pay Grade	Army	Navy	Air Force	Marine Corps	Coast Guard	Total
E1–E4	167,678	48,528	31,687	52,113	545	300,551
E5–E9	347,800	141,121	181,933	68,257	2,194	741,305
O1–O3	41,765	14,233	18,362	6,817	416	81,593
O4–O10	53,889	22,947	38,189	9,934	386	125,345
Warrant Officer	23,062	1,968	-	2,379	222	27,631
TOTAL	634,194	228,800	270,174	139,500	3,763	1,276,431
Percentage of Military	58.7%	59.6%	65.2%	53.3%	61.9%	59.4%

Source: Returning Home from Iraq and Afghanistan

Figure 8: Number of married military service members

Military Bravado

The military is commonly thought of as a brotherhood, despite an increasing number of servicewomen. The military is still a male dominated population at 88 percent of the total force. The culture is largely one of masculinity in the sense of traditional gender roles — encompassing wining, dominance, violence and power. Weakness is seen among most as something intolerable, perhaps even a necessity when assessing a fellow soldiers ability to do what needs to be done when a situation requires action. This culture subsequently breeds a stigma against seeking help. Soldiers are trained to solve problems causing many experiencing PTSD to develop negative coping mechanisms instead of seeking treatment. The reasons for not seeking treatment include:

- Being seen as weak and therefore being treated differently
- Losing respect and confidence of those in military
- Having poor privacy or confidentiality of treatments
- Failing in treatment methods

Understanding this military culture influences how a PTSD therapy center must be designed. As seeking treatment, especially for mental health issues, is still looked down upon, designing a facility that dissuades these attitudes from impeding treatments effectiveness is critical. This may mean the facility should not advertise its purpose but rather fit contextually into its surroundings, responding to the sense of privacy and subtlety veterans request.

Chapter 4: Today's Treatments

Current Approaches to the Problem

The Department of Veterans Affairs principal charge is to provide veterans with medical care, benefits, social support, and lasting memorials. It does so through its 877 VA in-patient medical centers and outpatient clinics. The majority of VA services are administered in facilities owned and operated by the VA and its contract employees. Eligibility to access these facilities is not established on need but on a priority-based enrollment system. There are eight priority levels in which a veteran can fall under. They are: those with Service-connected disabilities (priority levels 1-3), prisoners of war and recipients of the Purple Heart (priority 3), veterans with catastrophic disabilities unrelated to service (priority 4), low-income veterans (priority 5), veterans who meet specific criteria, such as having served in the first Gulf War (priority 6) and higher-income veterans who do not qualify for other priority groups (priorities 7 and 8).²²

As a testament to the need of more treatment facilities, the VA has currently suspended its service to those veterans in priority level 8 so it may focus on treating those with higher-priority needs. The Iraq and Afghanistan wars have tremendously increased the demand for mental health services posing the question of whether VA facilities can handle the current (and expanding) patient needs. About one in five veterans returning from Operation Iraqi Freedom and Operation Enduring Freedom will have mental health challenges, resulting in 400,000 to 500,000 veterans in

²² National Council on Disability, "Invisible Wounds - Serving Service Members and Veterans with PTSD and TBI.pdf."

need.²³ Not all of these veterans will seek treatment in the Veteran Health Care System but those who do will face longer and longer wait times. Research has shown that the sooner a veteran dealing with PTSD receives treatment the less severe the disorder affects their lives and those around them.²⁴ This need produces an architectural and real estate development challenge this thesis addresses. Expanding upon the in-place VA mental health care system offers a direct implementation method for the department to follow while identifying sites appropriate for locating facilities.

There are currently inpatient and outpatient facilities treating veterans with PTSD within the VA. Outpatient facilities and community based outpatient clinics dominate the treatment programs within the system. Inpatient facilities are typically used for those veterans struggling to cope with acute symptoms. Below are more detailed descriptions of each facility type.

Specialized Outpatient PTSD Programs (SOPPs)

These PTSD outpatient programs can be administered by a specialist or in an outpatient PTSD program including:

- PTSD Clinical Teams (PCTs)
- Substance Use PTSD Teams (SUPTs)
- Women's Stress Disorder Teams (WSDTTs)
- Day Hospitals

²³ National Council on Disability, “Invisible Wounds - Serving Service Members and Veterans with PTSD and TBI.pdf.”

²⁴ National Council on Disability, “Section 3: Post Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI).”

Each of these facility types is designed for veterans to meet a care provider on a regular basis in groups or one-on-one therapy sessions. The services provided at each include: evaluating, diagnosing, and treating PTSD. Day hospitals provide more intense therapy sessions often lasting for 4-8 hours per visit.²⁵ Outpatient centers struggle with effectively treating those with more severe PTSD symptoms due to their temporary involvement with patients. These programs are said to have limited success for those in the program to recover or to be fully integrated into the community.

Specialized Intensive PTSD Programs (SIPPs)

SIPPs provide 24-hours, 7-days a week care. These are live-in facilities designed to provide individualized intensive therapy. The goal is to create a 24-hour therapeutic environment while treating patients in a variety of ways including.²⁶ SIPPs are provided in either an inpatient or residential setting.

There are five types of SIPPs including:

- Evaluation and Brief Treatment of PTSD Units (EBPTUs)
- PTSD Residential Rehabilitation Treatment Programs (PTSD RRTP)
- PTSD Domiciliary Programs (PTSD DOM)
- Specialized Inpatient PTSD Units (SIPUs)
- Women's Trauma Recovery Programs (WTRP)

²⁵ NATIONAL CENTER for PTSD, “PTSD Treatment Programs in the U.S. Department of Veterans Affairs,” accessed October 22, 2013, <http://www.ptsd.va.gov/public/pages/va-ptsd-treatment-programs.asp>.

²⁶ NATIONAL CENTER for PTSD, “PTSD Treatment Programs in the U.S. Department of Veterans Affairs.”

The length of stay for each type varies and is often on an individual patient basis. Most are located within an existing Veteran Affairs Medical Center (VAMC) and near an emergency department. If appropriate, these facilities are located as a separate facility on a VAMC campus. SIPP are not limited to treating PTSD and can address vocational services, homelessness and co-morbid disorders.

This thesis will focus on PTSD Residential Rehabilitation Treatment Programs (PTSD RRTP) and use these facilities and program types as a point of departure for expanding upon the VA facility designs. Of the VA's 877 facilities, there are currently only 22 PTSD-Residential Treatment Programs.²⁷ The majority are located away from urban areas in suburban settings. This is due to existing VA facility locations along with land cost being cheaper in these remote, less dense locales. These facilities currently have long wait-times, which may be decreased if more facilities are developed across the nation. Below is a detailed description of this facility type:

PTSD Residential Rehabilitation Treatment Program (PTSD RRTPs)

While these facilities are focused around PTSD treatment, services include “continuing PTSD treatment, SUD [substance use disorder] treatment (if applicable), residential rehabilitation, and psychosocial rehabilitation, including employment, community supports, and housing.”²⁸ The core values of these facilities are independence, self-determination and self-

²⁷ National Council on Disability, “Invisible Wounds - Serving Service Members and Veterans with PTSD and TBI.pdf.”

²⁸ Department of Veterans Affairs, “Mental Health Residential Rehabilitation Treatment Program.pdf” (Veteran Health Administration, December 22, 2010).

management and should be thought of when structuring and designing the program and facility. The target populations of these facilities are those veterans who meet the DSM-5 criteria (diagnostic criteria for assessing PTSD among veterans). Many times veterans have co-morbid mental health diagnoses and thus the architectural designs must accommodate multiple disorders.

Treatment within these facilities varies based on its current patients but largely include evidence-based treatment methods. The Veterans Health Administration (VHA) Mental Health Residential Rehabilitation Treatment Program Handbook describes, “a recovery orientation in rehabilitation is integral to the PTSD-RRTP. Programs must engage the Veteran in peer support while enrolled in the program and encourage the extension of peer support to outpatient care following discharge.” Therefore, designs and facility locations should enhance these program desires. The programs implemented try to build a veteran up by emphasizing self-determination, mimicking the military culture.

Staffing of these facilities is regulated by the VHA and helps determine the level of staffing program spaces within each facility. PTSD-RRTPs are sized by the number of beds it houses — dictating the amount of staff required is each. The goal of staffing is to employ an appropriate number of people to complete the goals and missions of the program. Found below are staffing requirements based on number of beds per facility as well as a description of staff responsibilities.

Minimum FTE by Number of Beds											
Position per Beds	Less than (<) 20	21-30	31-40	41-50	51-60	61-80	81-99	100-125	126-150	150-175	176-200
Chief or Manager	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assistant Chief or Clinical Manager	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0
24/7 Coverage	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
MD, PA, or NP	0.3	0.4	0.5	0.6	0.8	1.0	1.3	1.6	1.9	2.2	2.5
Psychiatrist	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.3	1.5	1.8	2.0
Psychologist	0.4	0.6	0.8	1.0	1.2	1.6	2.0	2.6	3.0	3.6	4.0
Nurse	0.5	0.8	1.0	1.3	1.5	2.0	2.5	3.1	3.8	4.4	5.0
Social Worker	0.8	1.2	1.6	2.0	2.4	3.2	4.0	5.0	6.0	7.0	8.0
Peer Tech	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.3	1.5	1.8	2.0
Recreation Therapist	0.2	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.2	1.4	1.6
Dietician	0.2	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.2	1.4	1.6
Pharmacist	0.3	0.3	0.5	0.5	0.6	0.8	1.0	1.0	1.2	1.4	1.6
Medical or Program Assistant	0.5	0.8	1.0	1.3	1.5	2.0	2.5	3.1	3.8	4.4	5.0
PTSD Specialty Staffing	2.5	3.8	5.0	6.3	7.5	10.0	12.5	15.6	18.8	21.9	25.0
Total FTE	12.5	15.3	18.6	21.7	24.6	30.2	36.2	44.6	51.9	62.3	66.3
Staff to Bed Ratio	0.63	0.51	0.47	0.43	0.41	0.38	0.37	0.36	0.35	0.36	0.33

Source: VHA Handbook 1162.02

PTSD-RRTP Position	Description					
Program Manager	Managing all clinical and administrative operations of the MH RRTP to ensure the safe, efficient, and effective provision of rehabilitation and treatment services.					
Assistant Chief or Clinical Manager	Provide administrative back-up to the Domiciliary Chief (or Program Manager) and clinical supervision of specialty units.					
24/7 Coverage	6.0 FTE is the minimum staff necessary for a single unit to cover the sixteen off-tour shifts. Additional coverage staff are necessary for units on separate floors or in separate buildings. Coverage staff may be comprised of any combination of Rehabilitation Technicians, Health Technicians, Nurses Aids, Domiciliary Assistants, Peer Technicians, Addiction Technicians, Licensed Practical Nurses (LPN), or Licensed Vocational Nurses (LVN). It is recommended that in addition to covering evening, night, and weekend shifts, some of these positions be allotted to regular business hours, as these individuals play a vital role in the establishment and maintenance of a healthy therapeutic milieu. In medically-supervised units, the coverage staff may need to be comprised primarily of LPNs or LVNs in order to dispense medications on all shifts.					
MD, PA, or NP	Provides medical care including admission orders, history and physical (H&P), discharge orders, sick call and medication orders. Coordinates referrals and oversees continuity of medical care. PAs and NPs must be under direct clinical supervision of an MD.					
Psychiatrist	Provides psychiatric care including medication management, assessments, referrals, and crisis intervention. The psychiatrists may also provide components of the medical care (see (4)).					
Psychologist	Provides psychological assessments and psychotherapeutic interventions.					
Nurse	RNs assess patients, establish and monitor the plan of care including the medication management of the individual's rehabilitation needs, and provide staff education as appropriate. Some medically-supervised units may need to be comprised primarily of LPNs or LVNs so that they may dispense medications on all shifts. NAs provide nursing care as directed by the plan of care.					
Social Worker	Provides psychosocial assessment, case management, group and individual counseling, and discharge planning.					
Peer Tech	Provides peer support, mentoring, and counseling.					
Recreation Therapist	Provides treatment services, assessments, and therapeutic recreation activities.					
Dietician	Provides nutritional assessments, counseling, and education.					
Pharmacist	Provides medication assessments, counseling, and education as outlined by the self medication policy. Pharmacy technicians may be substituted when appropriate.					
Medical or Program Assistant	Provides ward clerk, evaluation, and administrative functions.					
PTSD Specialty Staffing	Provides primary PTSD-related assessments, education, group, and individual counseling.					

Figure 9: VA Regulated Staffing Requirements

The average length of stay at a PTSD-RRTP is approximately 2-3 months during which time the program “identifies and addresses goals of rehabilitation, recovery, health maintenance, improved quality of life, and community integration in addition to specific treatment of medical conditions, mental illnesses, addictive disorders, and homelessness.”²⁹

Therapy Center Locations

Location often dictates access to care for veterans. As described in an Institute of Medicine report, “distance to drive” was the most frequently selected barrier [to receiving treatment] by patient and provider; other barriers included travel related challenges such as time, limited transportation, and cost or expense.”³⁰ The majority of current PTSD-RRTPs are located in inappropriate areas. They are in suburban areas far from veteran population centers and existing support networks (Figure 15). This places strains on veterans trying to seek treatment but not wanting to be far from home. This also makes it hard for families to visit veterans during treatment — something research has suggested is critical in the recovery process. Not only do these challenges persist when facilities are located in suburban areas but it makes it hard for veterans to re-adapt to society. If the goal of these facilities is to reintegrate veterans back into the community, why are they placed outside those communities? Should land cost and existing facility locations really be the driver in veteran rehabilitation? Are there not better ways to structure development deals to

²⁹ Department of Veterans Affairs, “Mental Health Residential Rehabilitation Treatment Program.pdf.”

³⁰ Institute of Medicine, “Returning Home from Iraq and Afghanistan: Assessment of Readjustment Needs of Veterans, Service Members, and Their Families.”

make these facility locations more aligned with program treatments and goals?

Perhaps best explained through the siting of military bases, Phillip Carter and David

Baro talk to this issue in their article *How The Military Isolates Itself— And Hurts Veterans*.

“In Afghanistan and Iraq, the wire ringing our bases divided two starkly different worlds. Inside the wire, life revolved around containerized housing units, cavernous dining facilities, well-appointed gyms and the distant but ever-present risk of a falling rocket or mortar round.

The wire defines a similar divide in the United States. Inside, troops and their families live and work on massive military bases, separated geographically, socially and economically from the society they serve.

The geographic isolation of military bases further divides the services from society. The military increasingly concentrates itself on large bases nowhere near major population centers. Rural settings afford vast ranges and runways for training purposes, but they limit interaction with civilians. City-dwellers, including the nation’s political and business elites, may rarely see service members in uniform — perpetuating the military’s tendency to draw recruits from rural, Southern and Western populations. And when jobs are scarce in the communities surrounding bases, it makes the transition of veterans out of the military especially difficult.

In thinking about its future geographic footprint, the military should try to locate bases closer to population centers. Range space and the ability to expand should be balanced against the value of close relations between the military and society.”³¹

The VHA recently reported that out of four mental health facilities researched it identified an average wait of 86 days for a patient to see a psychiatrist.³² This backlog of patients can be partially attributed to a lack of staffing but also to a lack of appropriate facilities. Having veteran’s wanting treatment but not being able to access it is incredibly unfortunate. This thesis intends to offer the VA a design model for future facilities to be based upon — expediting the development process

³¹ Phillip Carter and David Baro, “How the Military Isolates Itself — and Hurts Veterans,” *The Washington Post*, November 10, 2013, sec. Opinions, http://www.washingtonpost.com/opinions/military-bases-are-our-most-exclusive-gated-communities--and-that-hurts-veterans/2013/11/08/27841b1e-47cb-11e3-a196-3544a03c2351_story.html.

³² Veterans Health Administration, “Veterans Health Administration Review of Veteran’s Access to Mental Health Care.pdf” (VA Office of Inspector General, April 23, 2012).

while providing quality atmospheres conducive to its patient's recovery.

Architectural Approaches

Current Veterans Affairs Mental Health Facilities Design Guide

In December of 2010, the VA's Office of Construction & Facilities Management published a design guide for its mental health facilities. The purpose of this guide was to reflect on "the important psychological impact environments have on patients and staff."³³ It provides technical architectural and engineering specifications along with a set of principles mental health facilities should utilize in their design and construction. This design guide is successful at providing a base platform giving designers a place to start. This thesis advances this platform; transforming it into a structure, providing a model future facilities can be designed towards. This is done through an in-depth look at how spacial phenomenology affects therapeutic environments and siting conditions affect the involvement of community in PTSD therapy. Listed below is the design guide's set of principles. As read, some principles are ambiguous offering this thesis an opportunity to expand upon them.

- Mental health services should be recovery-oriented.
- Mental health services should be provided in a therapeutically enriching environment.
- Mental health services should be provided in a safe and secure environment.

³³ Department of Veterans Affairs, "VA_Mental Health Design Guidelines.pdf," December 2010.

- Mental health services should be integrated and coordinated.
- Mental health services should be provided in settings that respect and can accommodate a diverse range of patient populations and care needs.

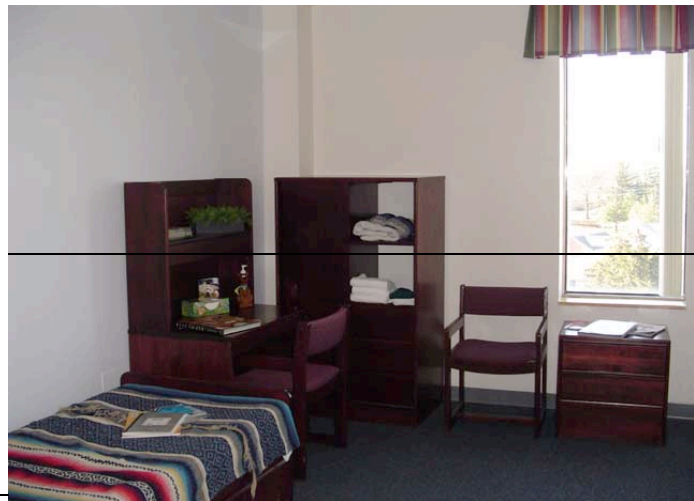
Treatment Methods

The treatment methods used in these facilities help determine the types of spaces necessary to effectively treat PTSD patients. There exist conflicting beliefs that constantly shift as to which treatment methods are most successful — suggesting that perhaps the best designed therapy spaces are programmatically flexible.

Today's Facilities

The current 22 PTSD-RRTP facilities all appear to have been built before the design guide was published. The facilities are largely reminiscent of institutional hospital atmospheres — appearing sterile and rigid. This directly contrasts the principles developed for encouraging a “home-like setting” and “therapeutically enriching environment.”³⁴ Found below are images of current PTSD RRTPs which begin suggesting ways they can be improved.

³⁴ Department of Veterans Affairs, “VA_Mental Health Design Guidelines.pdf.”



Source: Author, 2013
Figure 10: Current Facility Designs

Chapter 5: Breaking the Mold

Demographic Analysis

To select an appropriate site, a new thinking of the design process had to be created. As shown in the diagram below, this thesis analyzes the problem at opposite ends of the design scale. The problem had to be addressed at the national scale down through the room scale. Instead of starting at one extreme and following a linear path to get to the other, both extremes were examined simultaneously. This afforded the site selection process an in-depth look precisely determining where appropriate sites may be located.

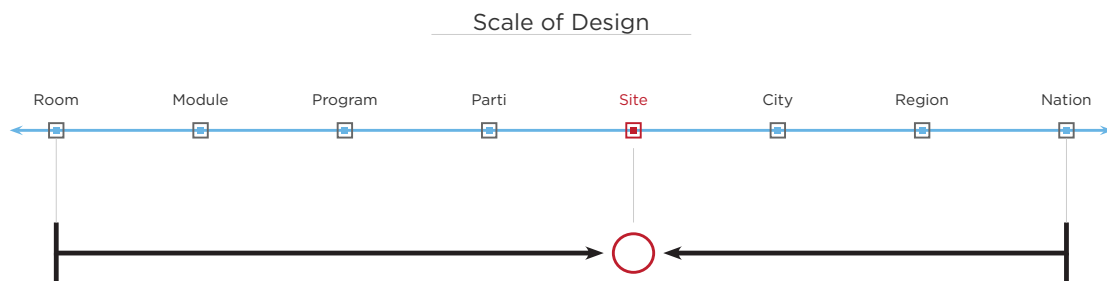


Figure 11: Design Approach Diagram

The national scale of this process defined where countrywide areas in need are located. Sites for these facilities should therefore be selected on a need basis. This need can be identified in a number of ways. By cross referencing locational maps identifying categories of civilian population, veteran population, military bases, VA medical centers, existing PTSD RRTP facilities, sustainable cities, top civilian rehabilitation hospitals and top civilian psychiatric hospitals, potential cities lacking appropriate intensive PTSD treatment centers can be identified. This national examination is shown below.

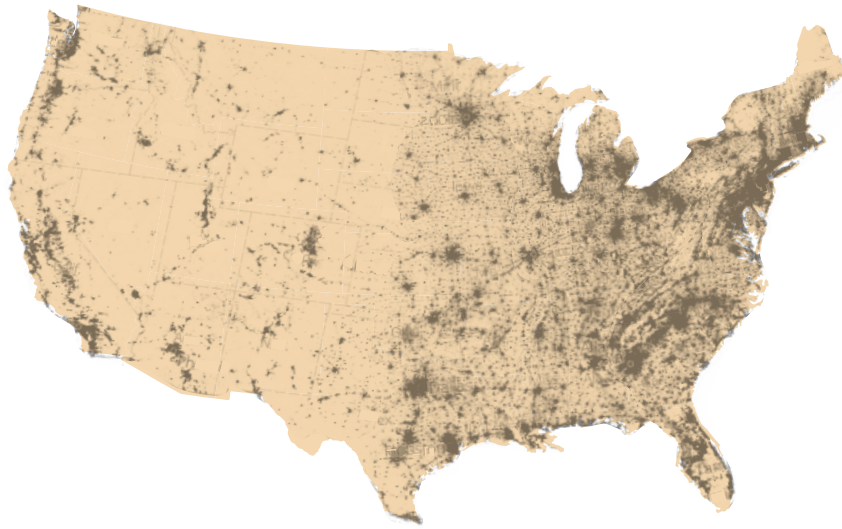


Figure 12: Civilian Population

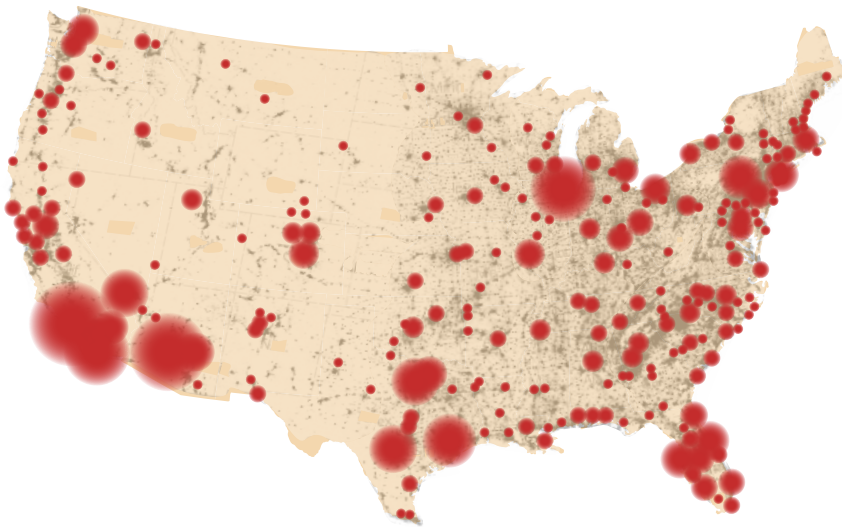


Figure 13: Veteran Population

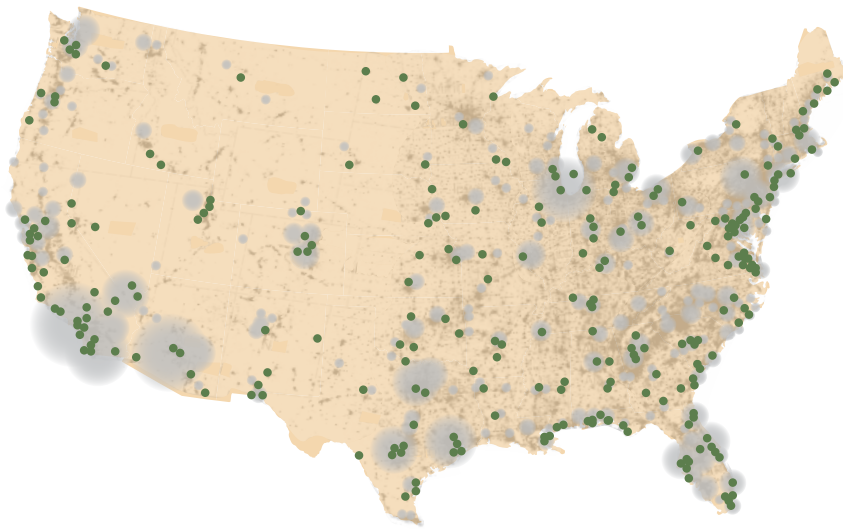


Figure 14: United States Military Bases

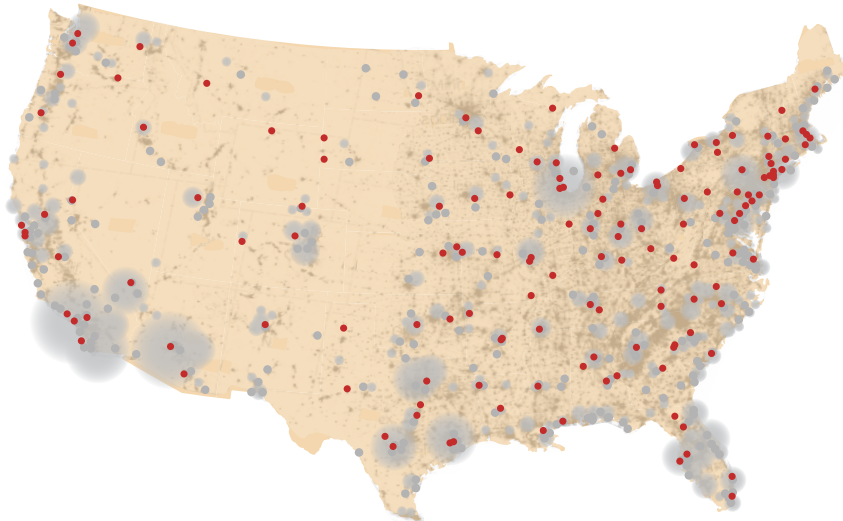


Figure 15: Veterans Affairs Medical Centers

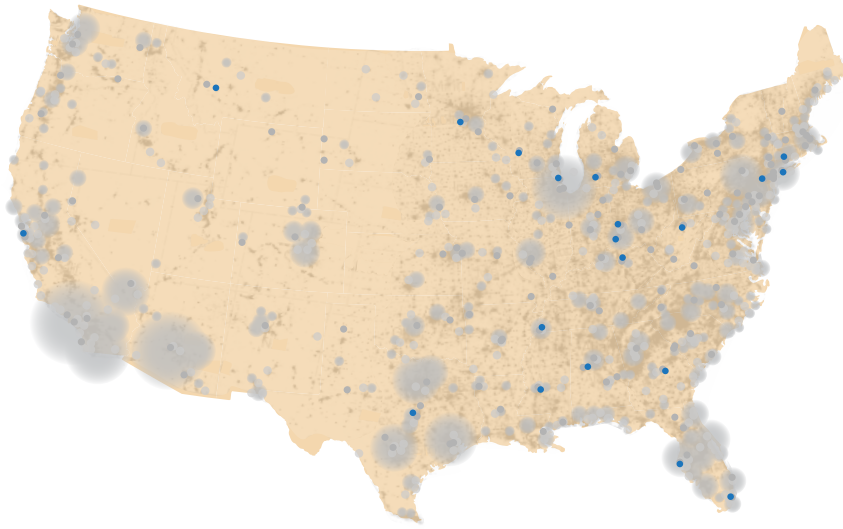


Figure 16: Veterans Affairs PTSD Residential Rehabilitation Treatment Programs

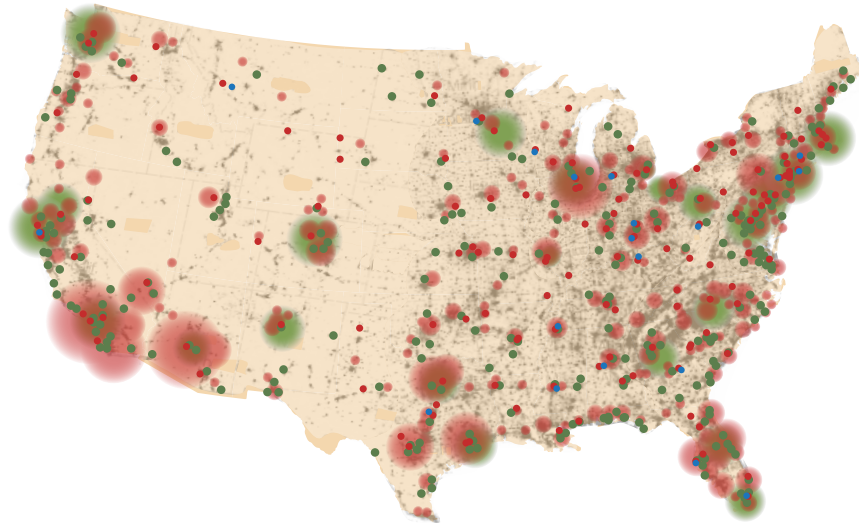


Figure 17: Cross Referenced Overlay of Categories

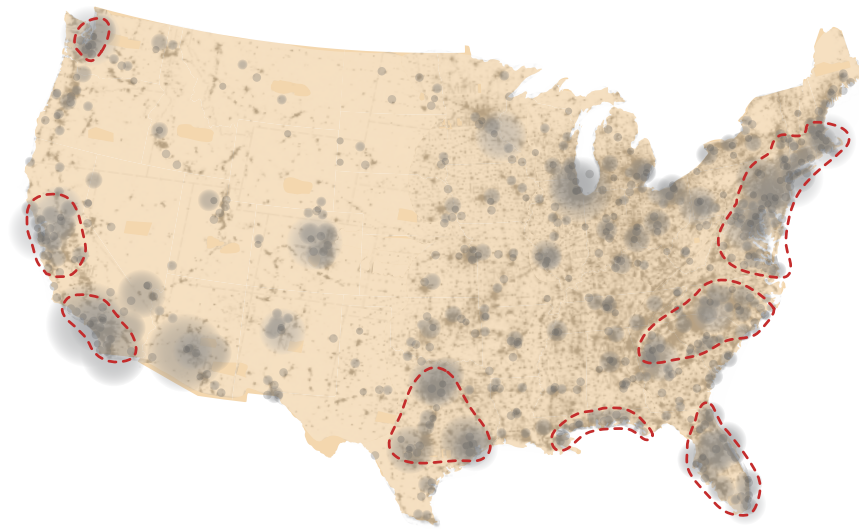


Figure 18: Regions of Dense Overlays

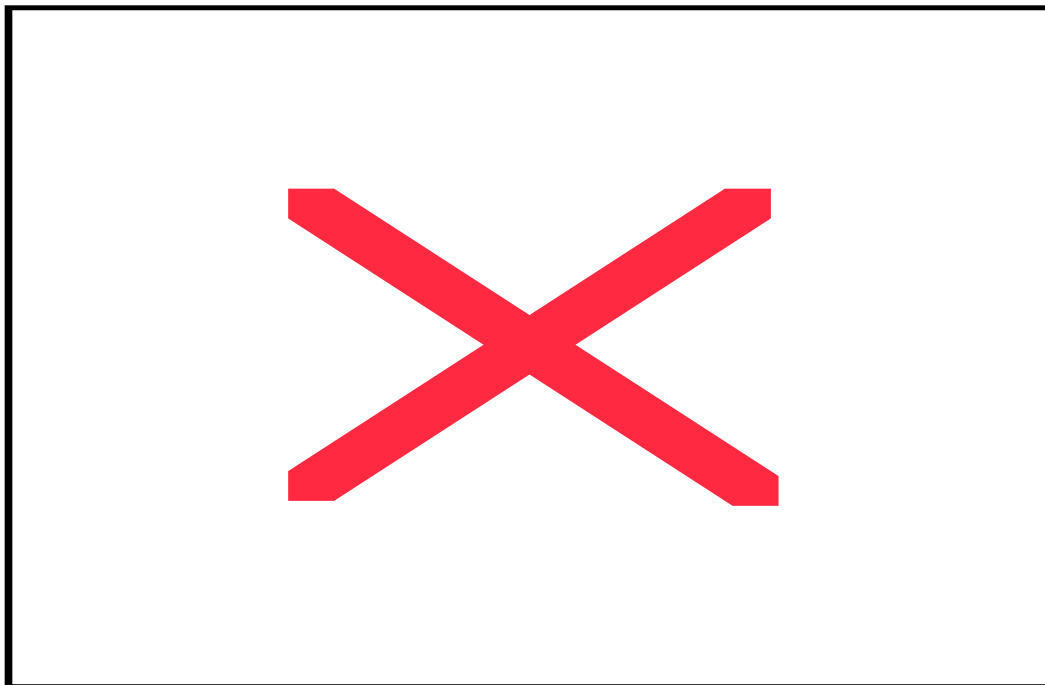


Figure 19: Locations of PTSD-RRTPs around Regions

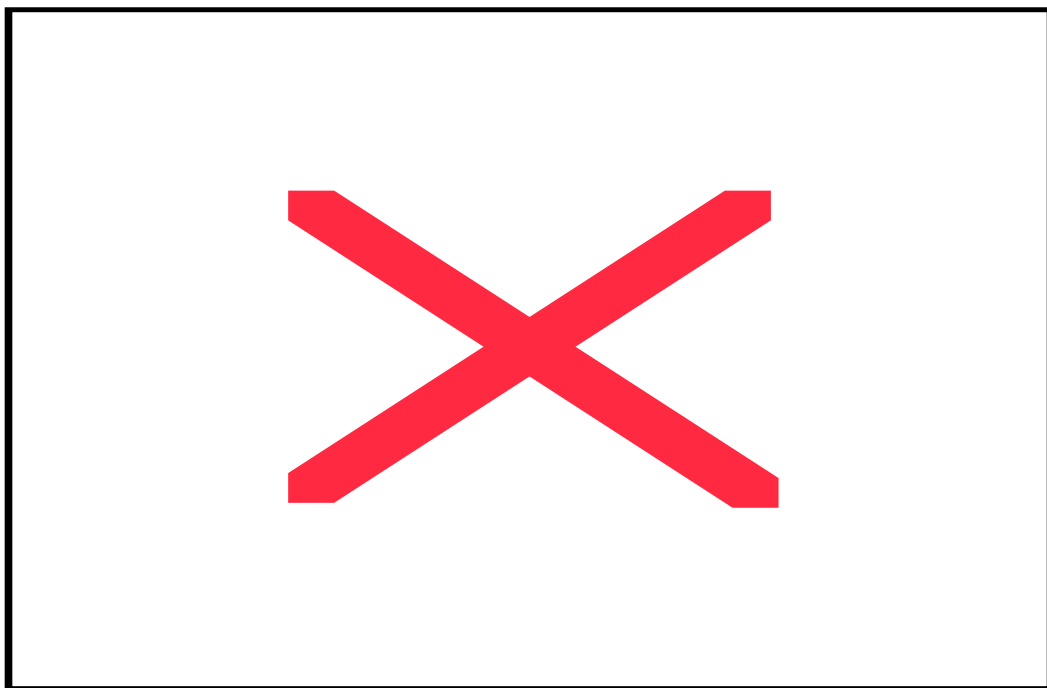


Figure 20: Areas of Region in Need

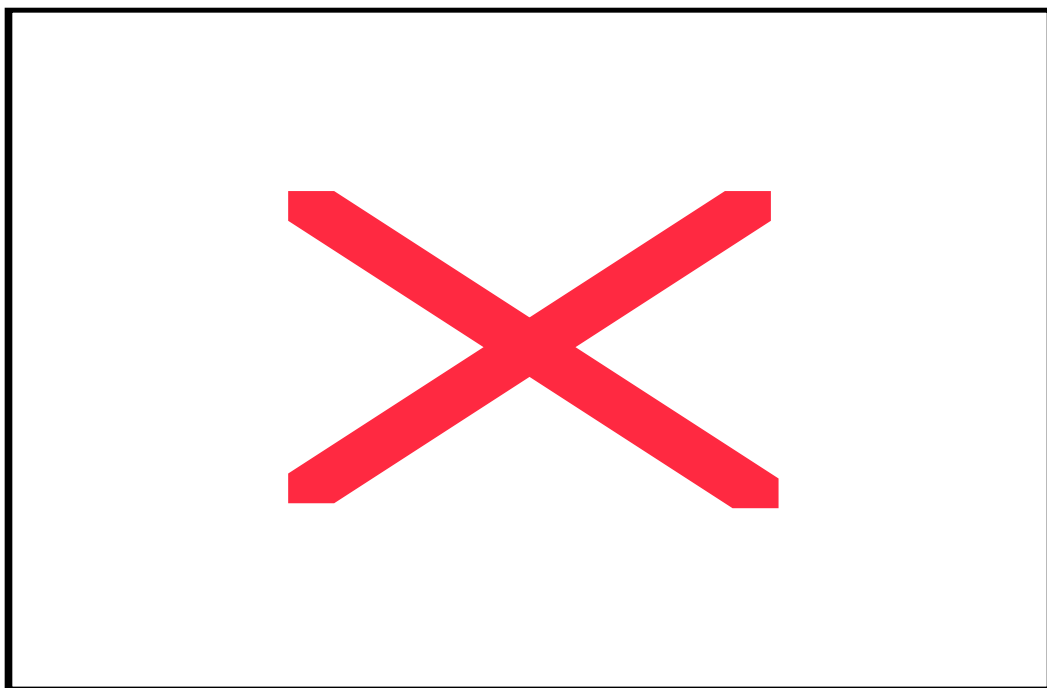


Figure 21: Top Psychiatric Hospitals in Nation

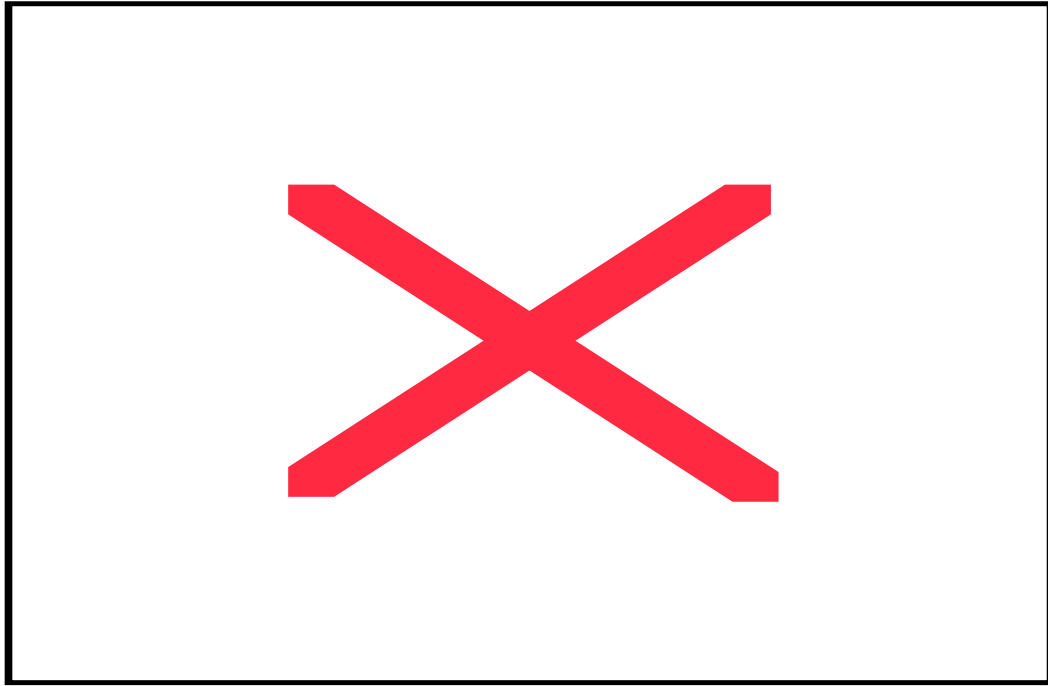


Figure 22: Top Rehabilitation Hospitals in Nation



Figure 23: Potential Cities for Study
-Identified based on lack of PTSD-RRTPs and proximity to top hospitals

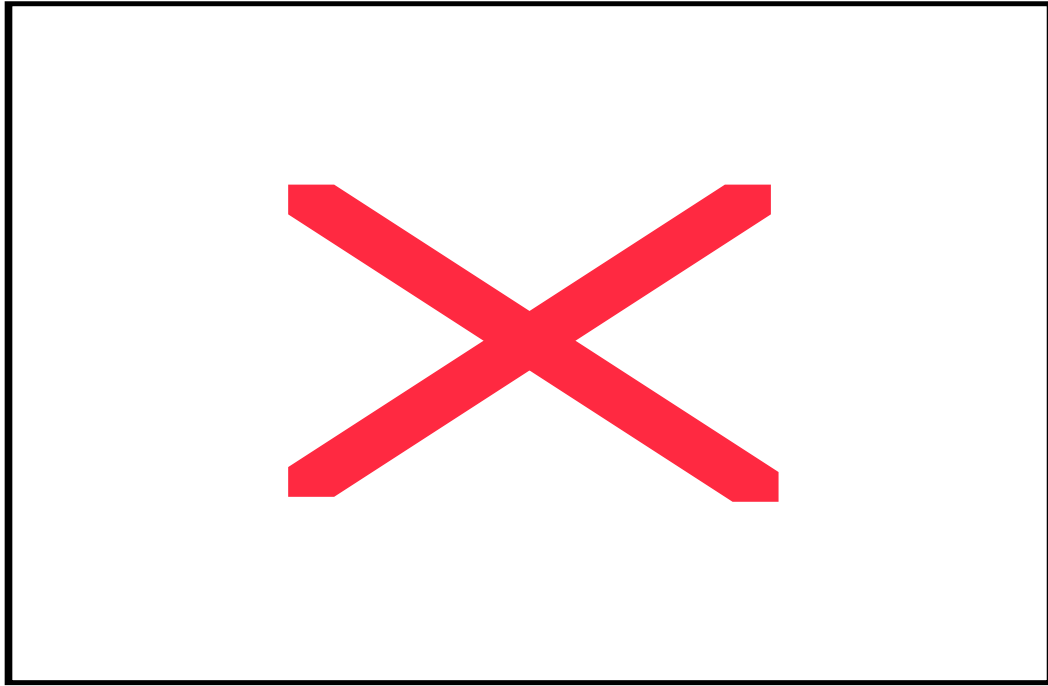


Figure 24: Other Regions in Need
-Locations for future facility development

A regional analysis was conducted to further determine how facility locations might impact the veterans they serve (Figure 25). The conclusions drawn from this indicated a disconnect inherent in the existing RRTP facilities siting. This disconnect comes in the form of family connection as well as employment. As these facilities try to promote engagement with communities and include families in treatment methods, it is important they be located in appropriate areas to facilitate their goals. Examining Washington, DC as an example, it would take a family 231 miles, approximately, 4.5 hours to reach a family member in a RRTP facility. Many patients are assisted through vocational services. A patient enrolled in this program often works while living on site. Again, looking at Washington, DC as an example, if a patient has a job in the city but has to travel 231 miles to attend the facility, this becomes impossible to accommodate. The location of facilities perhaps even discourages more veterans from attending treatments.

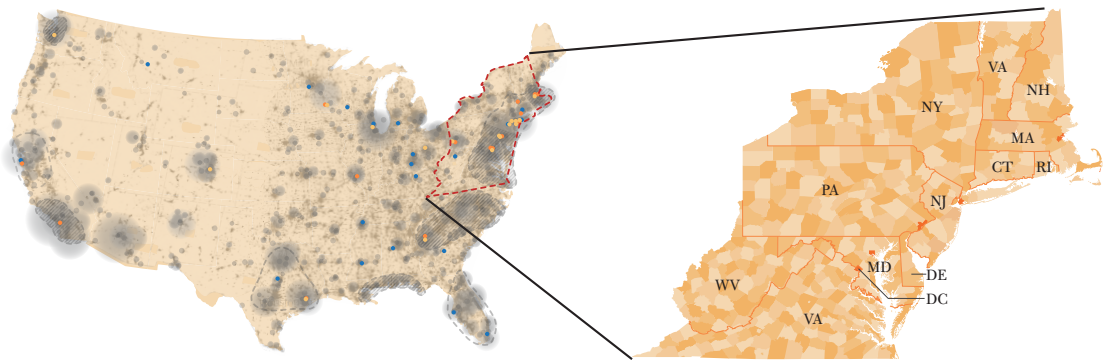


Figure 25: Other Regions in Need

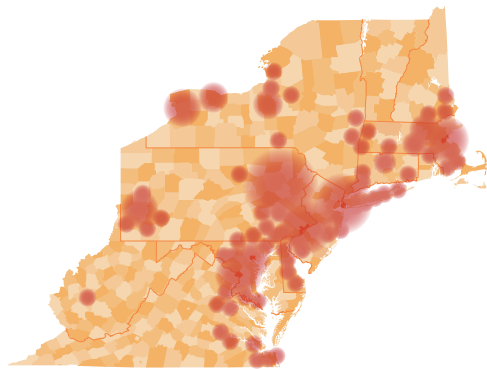


Figure 26: Veteran Population

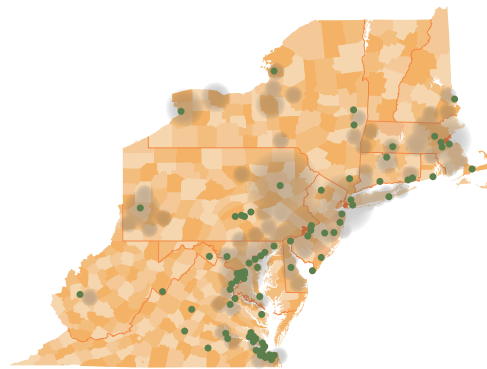


Figure 27: Military Bases

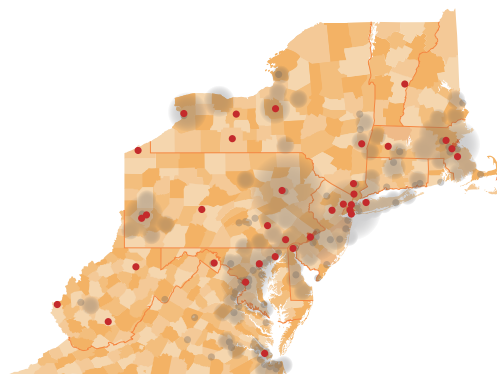


Figure 28: VA Hospitals

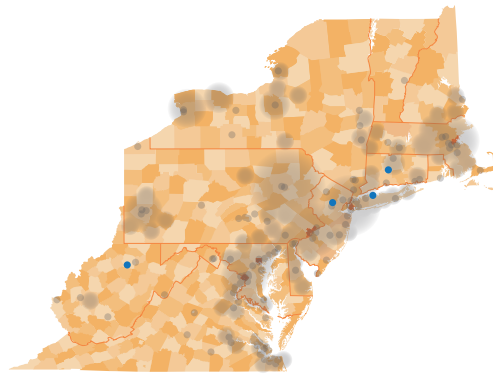


Figure 29: PTSD-RRTP Facilities

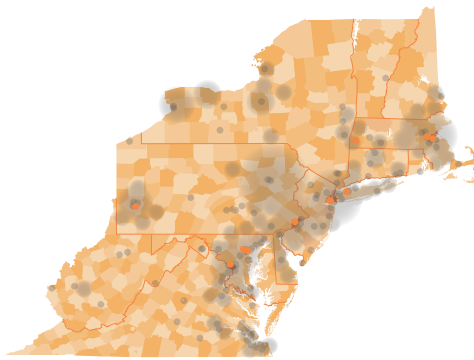


Figure 30: Top Psychiatric Hospitals

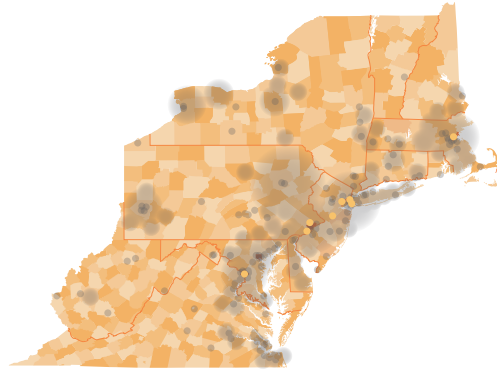


Figure 31: Top Rehabilitation Hospitals

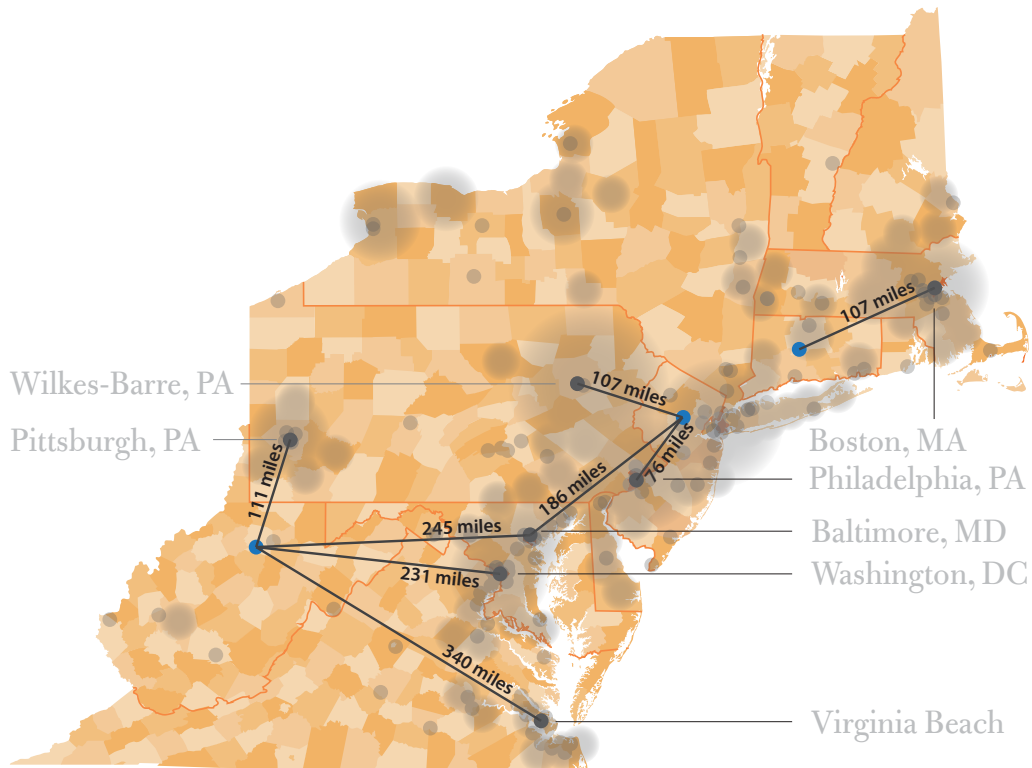
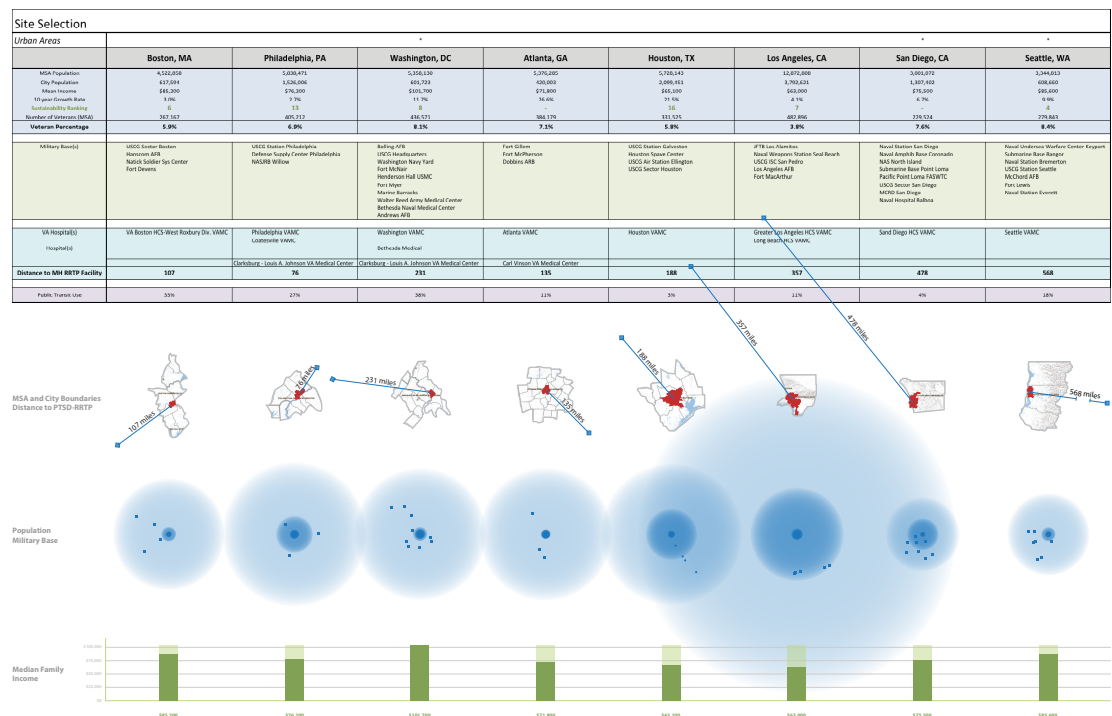


Figure 32: City Distance to RRTP Facility

After identifying potential cities in need through the national analysis, a demographic analysis of each identified city defined which were in the most need (Figure 33). Of the cities examined, Washington DC appears to be an appropriate location to test this thesis. The veteran population of Washington, DC's Metropolitan Statistical Area

(MSA) currently represents 8.3 percent of its total population. The closest PTSD-RRTP is 231 miles away taking approximately 4.5 hours to get to by car. There are ten United States Military Bases near the city. The public transit metro system is used by 38 percent of the DC population offering patients access to employment and families access to a facility. All of these factors make Washington, DC a prime city to site this thesis. Found below is a table and graphical comparison between each city identified.



Defining a Program

This project involves both invariable and variable elements. The invariables are the constants in the process and include programmatic elements, staffing requirements and number of beds per facility. The variables are the environmental conditions and include the selected sites and the application of the invariables to those sites. By applying a constant program to a variety of siting conditions, this thesis examines

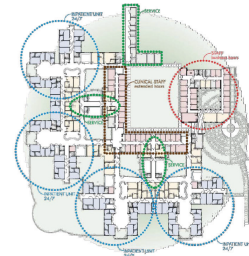
flexibly within therapy centers offering a model for how future facilities are designed and developed.

The programmatic elements of this thesis developed from the combination of RRTP and Inpatient Treatment Program components. Thus, a blended program was developed between RRTP's core principles of independence, self-determination and self-management and Inpatient facilities "leveling" approach to patient treatments. Therefore, this thesis has a gradient of spaces beginning at inpatient-like facilities monitoring patients with acute symptoms of PTSD and ending at condo-mimicking living units for patients near the end of their treatments. This allows a gradual transition of patients through program spaces offering the patient a transition from intense monitoring to independent lifestyles. This has the potential benefit of using patients nearing the end of their treatments to be involved with and be successful examples for those beginning the program.

Residential Rehabilitation Treatment Program



Inpatient Treatment Programs



Blended Program

Independence, Self-determination and Self-management
Levels of patient care - progressing through til complete
- Inpatients see past success stories -

Figure 34: Defining a Program

Spacial Phenomenology

At the same time the locational and program examinations were taking place, a detailed exploration was conducted to understand the spacial environments essential programmatic rooms might have (Figure 35). The study thematically grouped similar program spaces into three categories: Facility Spaces, Residential Spaces and Relaxation Spaces.

Facility Spaces encompass the majority of therapy areas necessary to treat PTSD. These treatments are completed in many different ways including one-on-one therapy, group therapy, and recreational therapy. Thus, a variety of spacial requirements are needed each having their own atmosphere.

Residential Spaces consist of the living areas within the facility. These include areas such as the bedroom and living room. They are where patients spend a great portion of their time. Based on the VA Mental Health Design Guidelines these spaces should provide a home-like and familiar environment with “visual and physical access to nature to promote healing.”³⁵

Relaxation Spaces include spaces promoting a relaxing and therapeutic environment. They typically include physical or visual connections to natural settings or elements. The *Medical News Today* describes how an analysis of ten existing studies in the United Kingdom show providing connections to natural environments can have physical affects on the body, often inducing a sense of calm and relaxation,

³⁵ Department of Veterans Affairs, “VA_Mental Health Design Guidelines.pdf.”

improving overall mental health.³⁶ This design feature begins to accomplish some of the broad design principles the VA discusses in its Mental Health Design Guidelines. Seen below is a taxonomy of room types, potential precedents to influence design, and a collage of necessary atmosphere elements each room type should have. Conclusions of the study are located to the right of the collaged image of each individual room study.



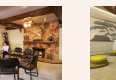














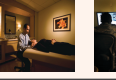

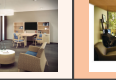

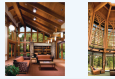
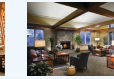
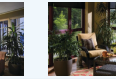
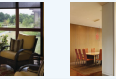







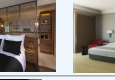



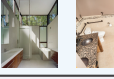


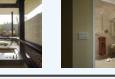


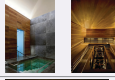

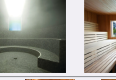











Room Studies								
Group Therapy								Group therapy rooms are defined by high ceilings. They should be attractive and stimulating, promoting patient openness. They should be flexible to accommodate multiple therapy techniques. Light and color are important.
Recreation Space								Recreation rooms should be open, spacious and flexible allowing for a variety of activities to be performed. They should be stimulating and promote social engagement and stress reduction. Light and color are important and should be incorporated.
Consultation Room								Consultation rooms should be safe and secure. They should include technology for video conferencing and other medical specialties. The rooms should be intimate with flush surfaces.
Living Room								The goal of this space is to replicate an independent living setting and may include considerations for the surrounding environment. A home-like atmosphere is critical with resident connections.
Bedroom								Bedrooms should provide a safe environment, replicating the familiarity found in a typical home bedroom. Light and views to the outdoors provide ways to mitigate stress.
Bathroom								Accessible considerations must be made for use of physically restricted residents. They should, if possible, include natural light and views to nature. Access resistant surfaces should be included in the design.
Relaxation Space								These rooms are used as tools for stress reduction. They should incorporate natural elements such as sunlight and water allowing for a meditative atmosphere promoting periods of reflection.
Natural Space								These spaces should be designed to include natural elements to a greater extent. Courtyards are better than enclosed outdoor areas for many reasons. They should allow for healing gardens and access from patient units. Passive and active activities should be possible.

Figure 35: Room Atmosphere Study

After a careful examination of each room's atmospheric qualities was completed, plan and sectional studies were done to understand the spatial scale each room required. This analysis helped provide insights as to an approximate square footage a facility might need. Each room, as defined in the VA Mental Health Design Guideline, has an inherent 'level' associated with it. This level assignment dictates the amount of

³⁶ "Just 5 Minutes Of 'Green Exercise' Optimal For Good Mental Health," *Medical News Today*, May 4, 2010, <http://www.medicalnewstoday.com/articles/187390.php>.

staff supervision each room experiences as well as the types of spaces typically found in each. The spacial scale studies as well as the leveling system start to imply program relationships between rooms. Precedents were also examined to understand typical program relationships found in RRTP facilities, Inpatient facilities, pocket neighborhoods as well as elderly care facilities. From this information, program relationship diagrams were completed to begin testing initial ideas (Figure 36).

The program relationship diagrams take the three categories, Facility Spaces, Residential Spaces and Relaxation Spaces and organizes them. This process offered the ability to determine different ways to provide appropriate adjacencies. What soon became clear were necessary relationship patterns between many program diagrams. These patterns were then characterized into six different partis including courtyard, linear, cluster, checkerboard, mat and radial. Each parti had advantages and disadvantages associated with their organizations. For example, certain partis provide an identifiable center to a facility while others provide spacial efficiency. The benefits of this study can be found in how each parti might be utilized based on siting conditions. Future therapy centers, on a diagrammatic scale, can begin to determine which parti may be appropriate to incorporate based on certain site limitations.

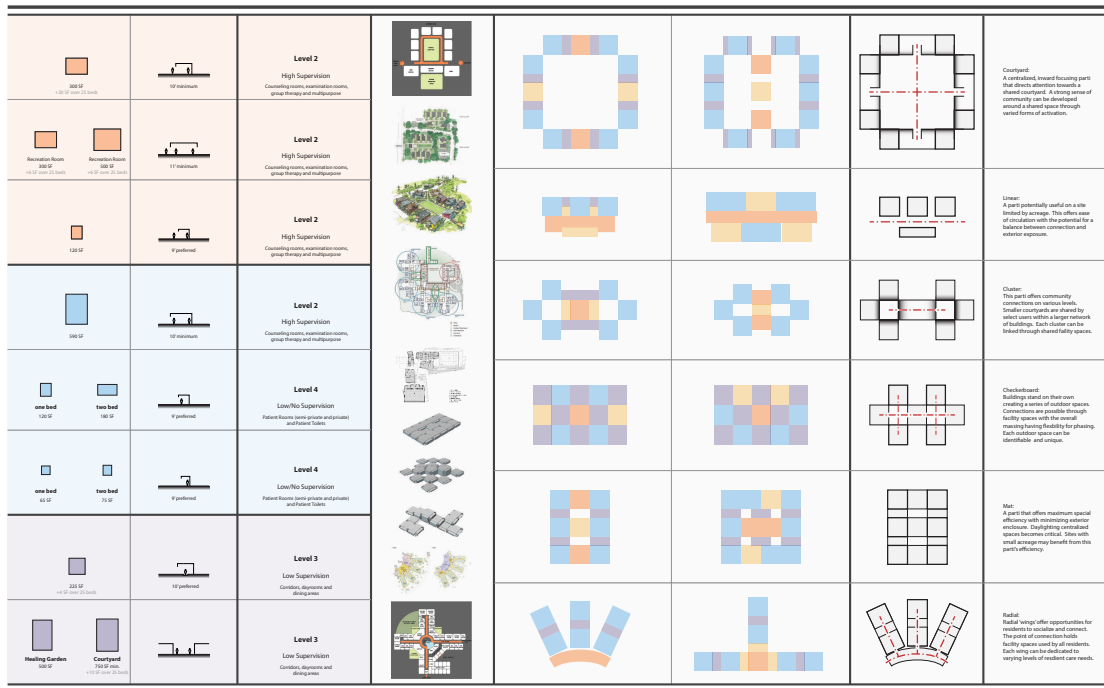


Figure 36: Program Relationship Study

Enhanced-Use Leasing

A third factor was considered before selecting an appropriate site to test this thesis' theories. As this thesis also introduces real estate development factors, the site must align with the real estate processes needed to offer practical translations from academic work to professional feasibility.

This proposal provides a service the VA is heavily seeking to capitalize on never before had opportunities. Changes in the national health care delivery system coupled with shifting veteran demographics have created expensive inefficiencies the government is ill suited to handle. As such, the VA has utilized a capital asset management tool entitled Enhanced-Use Leasing (EUL). This program gives the VA authority to enter into public/private partnerships with the purpose of developing vacant or underutilized VA properties.

The Department of Veterans Affairs received legislative authority to enter into

Enhanced-Use leases (EULs) in 1991 with the purpose of expanding available services to veterans through better allocations of resources. The authority was given in title 28 U.S.C. in section 8161 to 8169. At its core, an EUL is an agreement for the VA to make its underutilized properties available to public or private entities in exchange for in-kind consideration promoting the VA's mission. The in-kind consideration often depends on many factors such as the market demand, the scope and nature of the project, and the level of involvement the VA has.³⁷ EUL deals are leased for up to 75 years.

Traditionally, the EUL authority allowed for the VA to enter into deals that were developed for either VA or Non-VA uses so long as the use furthered the VA's mission. The program has since changed with its expiration and subsequent congressional modifications in December of 2011. The program's new authority is now almost exclusively used for completing the VA's Building Utilization Review and Repurposing (BURR) initiative. As defined by the VA, the BURR Initiative is "a VA strategic effort to identify and repurpose underutilized VA land and buildings nationwide in support of VA's goal to end Veteran homelessness."³⁸ As such, the VA may now only enter into EUL's for the purpose of creating supportive and permanent housing for veterans. The EUL program also now limits the VA to receive monetary consideration for its EUL projects.

The VA is currently proposing amendments of the modified EUL Program to pursue EULs beyond supportive housing. The goal is to reinstate the broader authority the

³⁷ Department of Veterans Affairs, "Chapter 9.1 Enhanced-Use Leasing with the Annual Consideration Report."

³⁸ Department of Veterans Affairs, "VA Building Utilization Review and Repurposing Initiative - Enhanced-Use Lease (EUL)," accessed February 13, 2014, <http://www.va.gov/assetmanagement/burr/>.

VA had in EUL deals prior to the program's 2011 alterations. Strong support is behind this change, especially now when the VA is under extreme public and political pressure to find ways to increase its patient treatment. For the purpose of this thesis project, amendments are assumed to pass allowing the VA to enter into EUL's to show the benefits of such a change. Below are examples VA benefits and developer benefits.

VA Benefits

Benefits to the VA are numerous and highly impactful through EUL deals. The benefits can include: existing building alterations or renovations, new construction based on VA need, fair market monetary consideration, expanded services to veterans, improved health care options for veterans, provision of housing options, benefits to local communities, distribution of VA capital costs, transferring of land maintenance costs and improvements, and strengthening of network services available to veterans.

An EUL deal is typically categorized by the type consideration they provide to the VA. There are three categories listed and briefly described below.

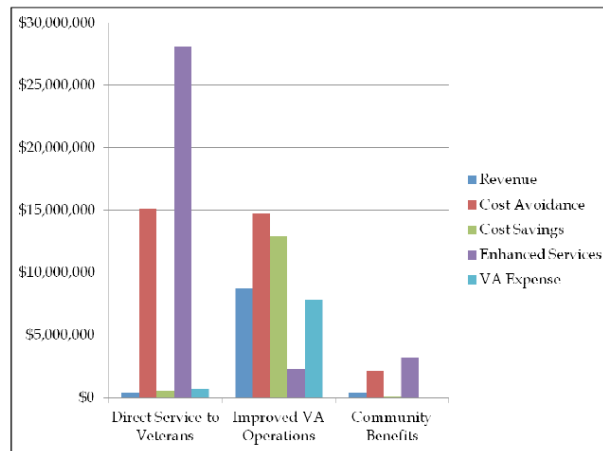
Direct Service to Veterans: The provision of services not available in VA Medical Centers. These include services the VA is not authorized to make such as providing housing or vocational services.

Improved VA Operations: The provision of services that better enable the VA to complete its operations. Examples of this include providing VISN offices, parking spaces, or more efficient energy consumption. This service often directly reduces the Vas capital costs.

Community Benefits: The provision of services indirectly benefitting the VA and its operations. This can include such things as a child care service for VA employees or parking spaces that benefits both the VA and the surrounding community.

The breakdown of consideration by project in 2012 can be seen below.

Figure 9-2: FY 2012 Comparison of Consideration by Project Category



Note: Program overhead expenses for FY 2012 are not included in the chart above. Expenses associated with program overhead are attributed to the program as a whole, including contractor expenses related to formulation, execution and oversight.

Source: PTSD Guide for Military Families, 2012

Figure 37: Consideration Amount by Project Category

Developer Benefits

This program also creates attractive, long-term opportunities to any developer willing to partner with the VA. The developer benefits include long-term property interests, the opportunity to provide sole-source services and products in lieu of rent for the ground lease, prime secure access to VA land for up to 75 years, amortization of any capital investments put into the deal, VA's commitment to streamline the process, and the opportunity to assist veterans in need.

The process for being awarded an EUL as described by the VA can be found below.

Selection Process

- VA's stated goals for the project
- Benefits to Veterans
- Developer's Financial and Organizational Capabilities
- Qualifications and Experience
- Proposed Development Plan
- Technical merit
- Financing strategy and proposed consideration

EUL Process

- Request for Proposal Release
- Industry Forum
- Proposals Due
- Selection
- Business and Lease Plan
- Lease Execution

Site Selection

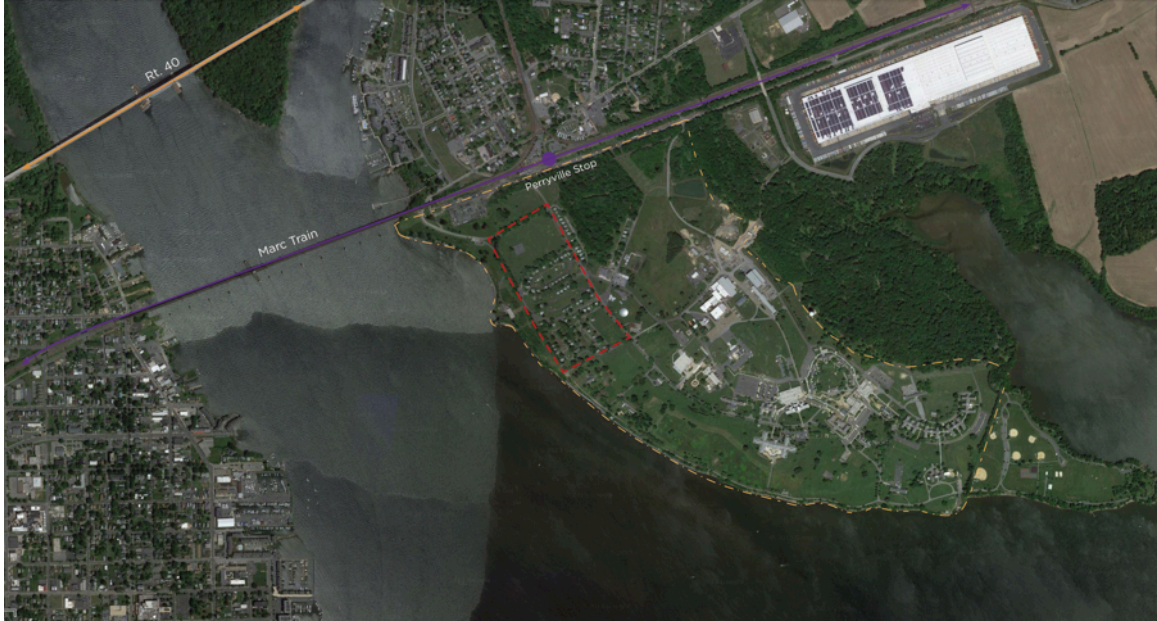
Introducing three major influencers of site selection — Demographic Analysis, Spatial Phenomenology, and Enhanced-Use Leasing — allowed for a comprehensive evaluation on potential sites. After careful consideration, a site was selected on the Perry Point Veterans Affairs Medical Center (VAMC) adjacent to Perryville, Maryland. While the current EUL site identifies 28.9 acres of the 400-acre campus as usable, this proposal intends to seek 12 additional acres previously suggested by the VA as potentially usable along with 14.4 acres of vacant waterfront edge.³⁹

³⁹ Office of the Associate Medical Center Director, *Perry Point Public Hearing Notice 011310* (Perry Point VA Medical Center, Bldg. 314, Theater Perry Point, MD 21902, 2010).

The proposed site is approximately 55.3 acres located on the westernmost waterfront edge of the VAMC campus (Figure 1). The campus itself is defined by the serene and relaxing benefits of expansive green landscapes ranging from the picturesque to the American forest. The site offers beautiful vistas presenting views of the setting sun out over the water of the Chesapeake Bay. Havre de Grace, Maryland can also be seen across the mouth of the Susquehanna River. The site itself is situated adjacent to the MARC Train railroad tracks, which span over the Susquehanna River towards Havre de Grace. This affords the rustic and rural beauty found in America's industrial past —embodied in the railroad's steel trusses — to harmonize with the natural beauty inherent in water of the Susquehanna River.

The site's accessibility is one of its most appealing features. Halfway between Baltimore, MD and Wilmington, DE, the site has the ability to utilize I-95, the Route 40/Pulaski Highway, and the Marc Train. As mentioned, the Marc train is situated adjacent to the site offering a short (5-10 minute) walking distance from the site to the Perryville train station.





Source: Google Maps, 2014

Figure 38: Project Site Location

Site History

This thesis seeks to build upon the rich history of Perryville, dating back to 1882 and treasured by its residents. The town has approximately 4,500 residents and is the second largest town in Cecil County.⁴⁰ Its architecture boasts a combination of timeworn buildings made of wood and stone along with modern adaptations of these historic construction methods (Figure 2). Perryville currently has plans to redevelop its downtown and waterfront to include ideals found in Transit Oriented Developments and include a waterfront taxi to Havre de Grace, also within walking distance of the site (10 minute walking radius map/TOD).⁴¹

⁴⁰ WILMAPCO and Design Collective, “Town of Perryville: Transit-Oriented Development Plan,” March 8, 2012.

⁴¹ WILMAPCO and Design Collective, “Town of Perryville: Transit-Oriented Development Plan.”



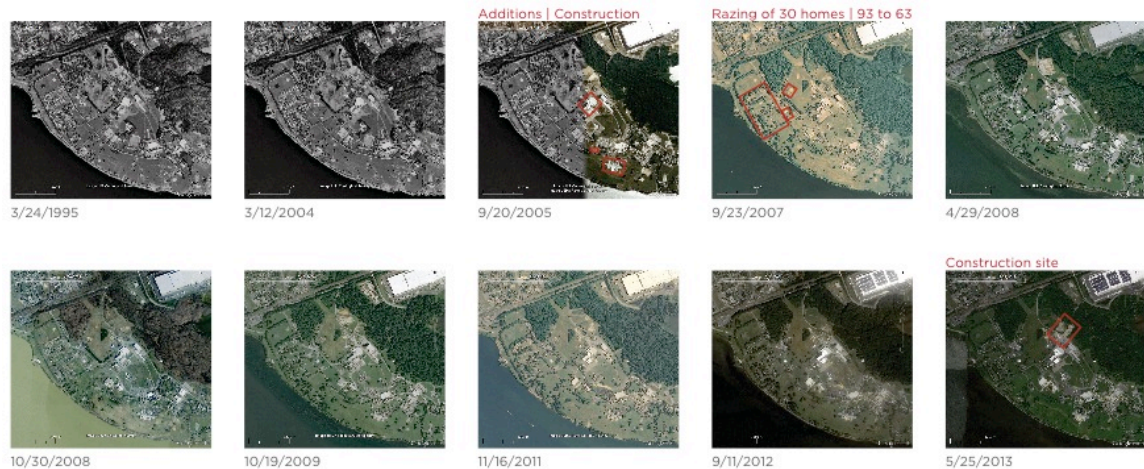
Figure 39: Perryville Context

The site is currently home to 63 vacant two-story wood-frame homes ranging from three to four bedrooms. Most are currently highly dilapidated (Figure 3), some even uninhabitable. As seen in Figure 4, between September 2005 and September 2007, 30 homes were razed leaving 63 of the 93 homes.



Source: Author, 2014

Figure 40: Existing Site Homes



Source: Google Maps, 2013

Figure 41: Site History (1995-2014)

HelpUSA, a firm dedicated to ending homelessness, is currently planning to renovate 60 of the 63 homes. According to HelpUSA, “44 of the homes will be occupied by formerly homeless Veterans or Veterans at risk for becoming homeless and their families. The remaining 16 houses will be utilized as dormitories for the AmeriCorps Program, which is a tenant organization on the Perry Point campus.”⁴² This proposal seeks to display how the property can be better utilized beyond simply renovating the existing homes.

⁴² “HELP USA Selected by Department of Veterans Affairs for Innovative Housing for Formerly Homeless Veterans Initiative at Perry Point VA Medical Center,” *Helpusa.org*, accessed February 5, 2014, <http://www.helpusa.org/RecentVets>.

Chapter 6: The Design

Site Design

As the idea of community and atmosphere were integral throughout each part of the design process, the site design had to look across the MARC railroad tracks and include Perryville. The town is currently planning to create a Transit-Oriented Development (TOD) to re-center its downtown around the Perryville MARC train stop. This TOD will be the catalyst for new growth in the area and something this thesis seeks to incorporate (Figure 10-12). As the figures show, this thesis proposes expanding Perryville's planned TOD to include new market rate housing on the VAMC creating mutually beneficial relationships while promoting adhesion between the two sides. This ultimately helps breakdown what was previously thought of as the Them (VAMC) versus Us (Perryville) scenario.



Figure 42: Proposed Perryville TOD Location

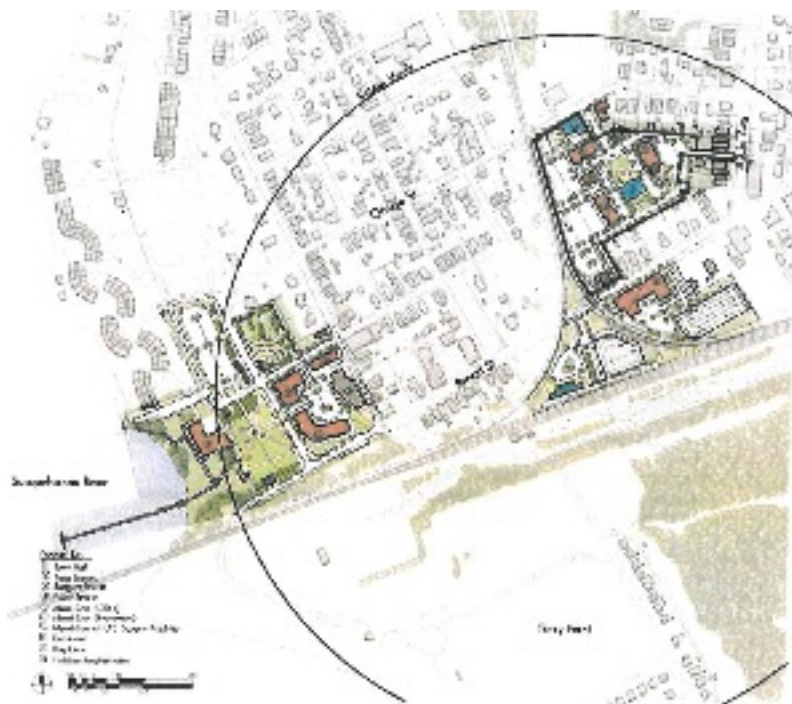


Figure 43: Proposed Perryville TOD

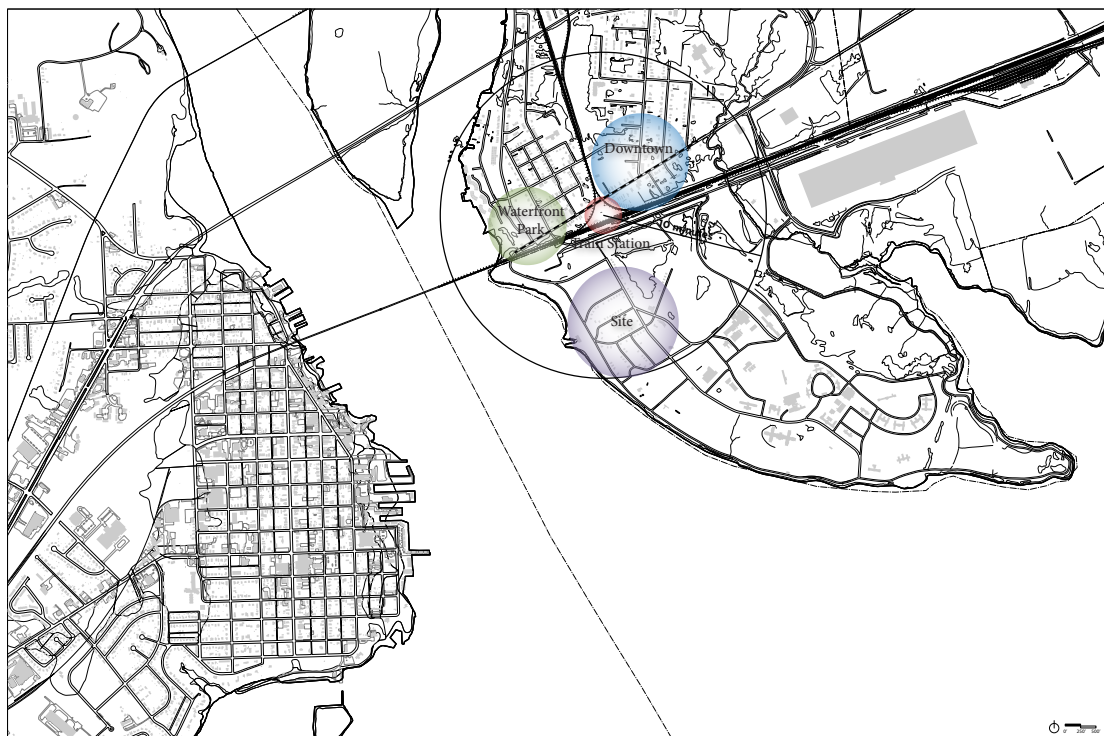


Figure 44: Proposed TOD continuation to include site

Perhaps the best explanation of the importance of the railroad to Perryville and this project is described in a WILMAPCO and Design Collective report entitled *Town of Perryville: Transit-Oriented Development Plan*. It states:

“Rail service is a critical part of Perryville's history and future plans to further economic development and provide greater travel choices to this rapidly growing area. The Town of Perryville, located on the Susquehanna River, is poised for major growth as a result of the military-base relocation and closure activities of the federal government, which will bring about 40,000 jobs to the area surrounding the Aberdeen Proving Ground, just across the river.”

“The Perryville Connection is a fixed-route bus transit service that connects Elkton, North East and Perryville. The busiest bus stops include the stop at Perry Point and a stop along Aiken Avenue, each with eleven on more passengers boarding or getting off per day¹. The 2010 Transportation Development Plan for Cecil County (TDP) identified the area from Perry Point to Port Deposit as one of the three greatest areas of "potentially transit dependent population" based on concentrated populations of youth (ages 12-17), seniors (ages 60 and greater), income, and households without”⁴³

An additional study completed by the Perryville Towing Commission suggest that

“Base Relocation and Closure (BRAC) impacts will also most likely increase development pressures in the West Cecil County towns of Port Deposit, Perryville, and Rising Sun. Although some residential development is also expected in the areas between Perryville and Charlestown (but beyond the Perryville Growth Area), Perryville expects to see a somewhat higher degree of impact (on a proportional basis) from BRAC than the County.”⁴⁴

The importance of these studies is in justifying the opportunity to develop such a community with the ability to support a PTSD therapy center. To connect a PTSD therapy center with a community, the market must be able to support a new community as well as create a supportive atmosphere.

The Community

The site down to the therapy cottages are designed to allow the concept of community and atmosphere to permeate through (Figure 45). The site is divided into three neighborhoods each with their own individual character and

⁴³ WILMAPCO and Design Collective, “Town of Perryville: Transit-Oriented Development Plan.”

⁴⁴ Perryville Towing Commission, “Town of Perryville: Comprehensive Plan,” January 2010.

largely based on existing block widths. Each neighborhood is named after the features that define it. They are Garden Path, Common Green, and Pocket Courtyards (Figure 46). The Garden Path Neighborhood has the smallest block widths producing an opportunity for intimate paths running within the center of the blocks. These paths will be lined with trees, vegetation and water features. The Common Green Neighborhood is defined by two expansive fields opening towards the water. This neighborhood translates ideas from Commonwealth Avenue in Boston by having a community “front yard” where recreation and socializing can take place. Single way streets and townhouse facades line the edges helping to define the fields. The Pocket Courtyard neighborhood includes six diverse courtyard spaces, each with its own identity. Courtyard atmospheres differ from one to the next with examples being a courtyard to barbeque, one to relax by a coy pond, and one to host a picnic.

The neighborhoods are designed differently to promote a diverse range of experiences and foster movement from one place in the community to another. They are connected through a series of paths running perpendicular to the streets helping to provide a logical pedestrian movement system.

The community includes four different housing options offering 2,078 market rate rental units. Figure 47 reveals the location of each housing type. The community is designed to have higher density through taller buildings towards the center, helping to give importance to the common greens.

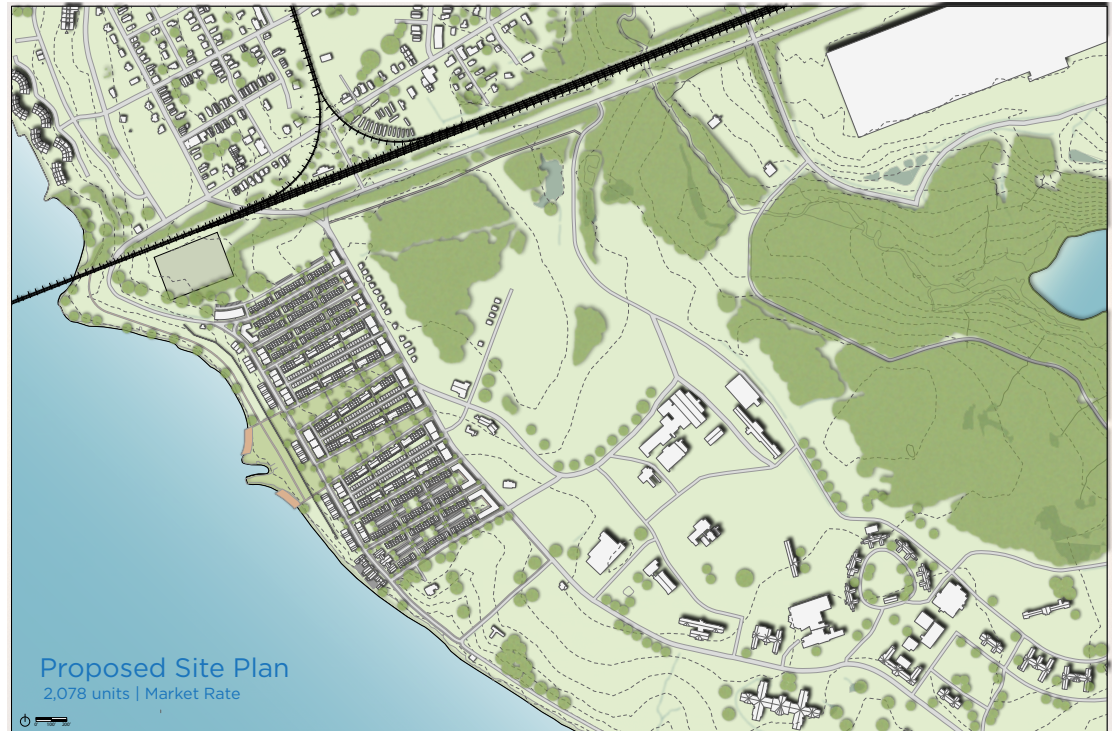


Figure 45: Proposed Site Plan

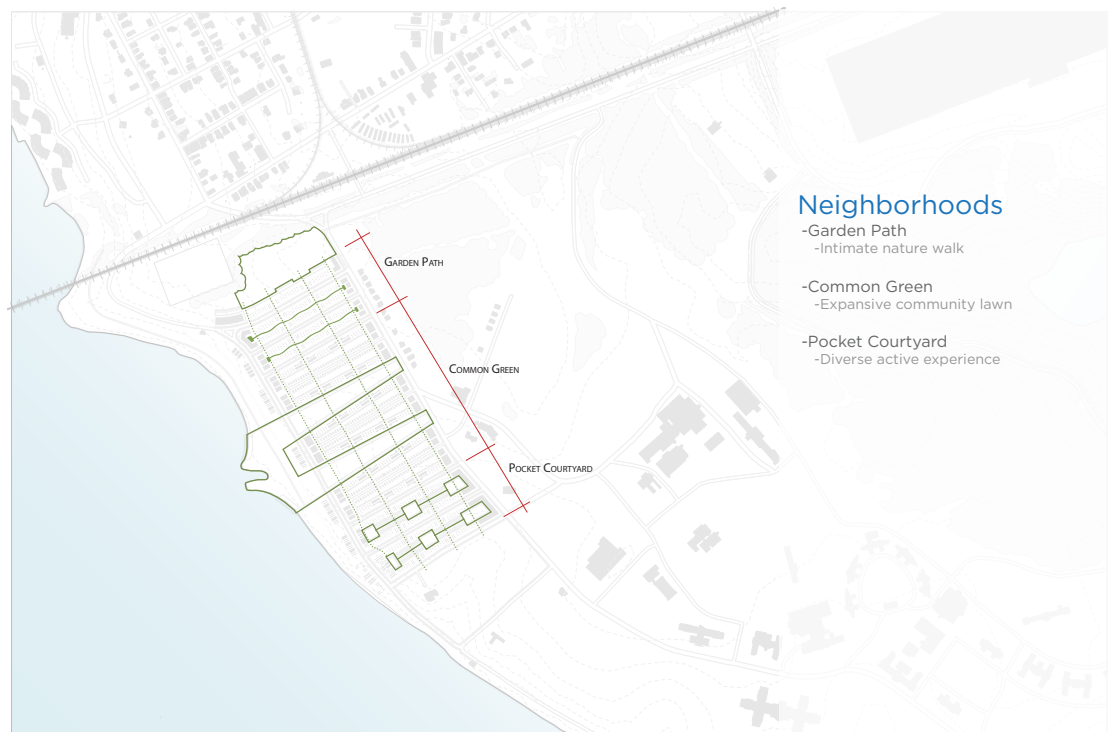


Figure 46: Neighborhoods

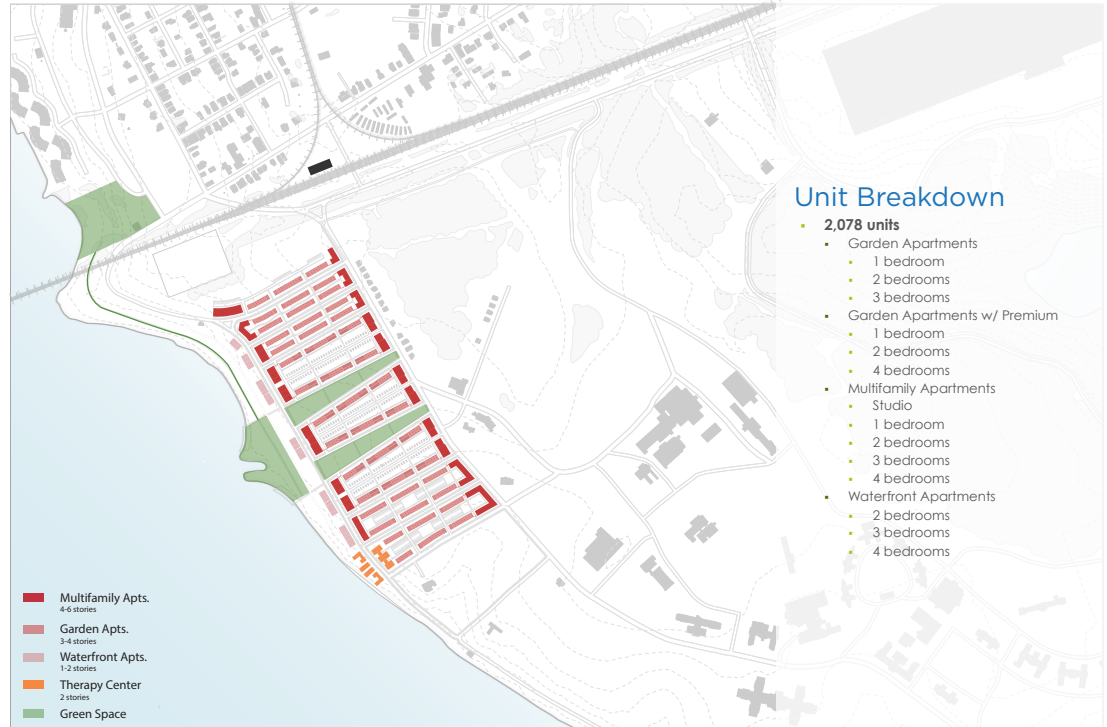


Figure 47: Housing Options



Figure 48: Dense Edges

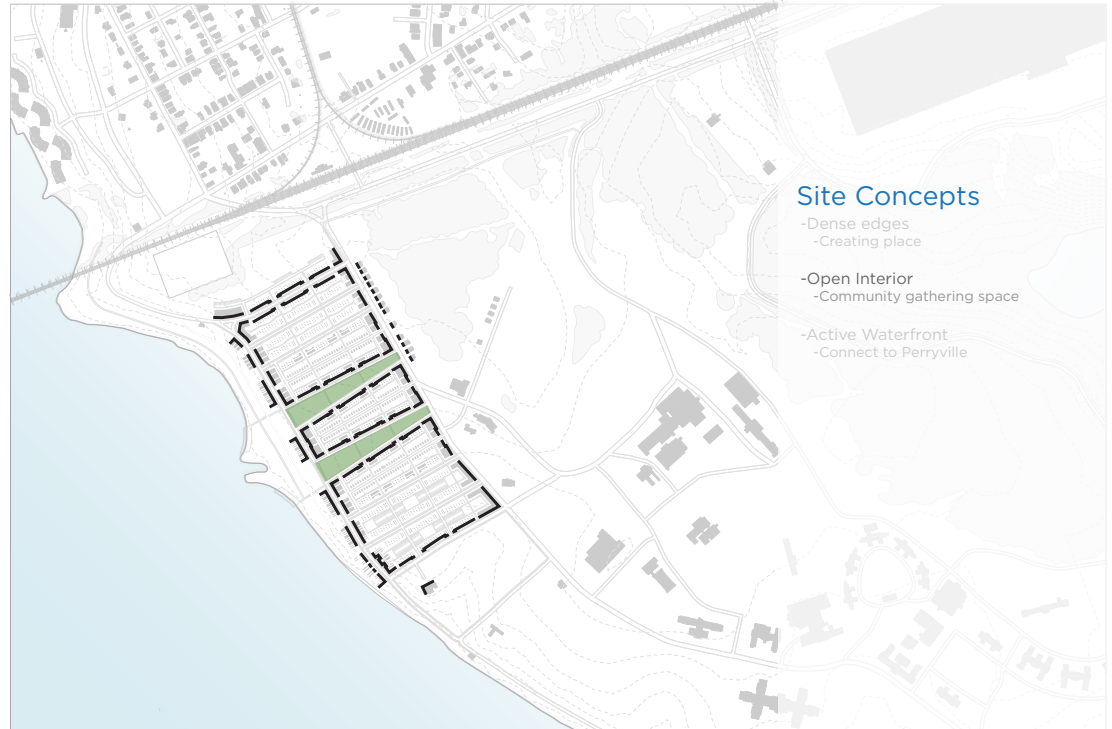


Figure 49: Common Green



Figure 50: Waterfront Connection

Community Phasing

The construction for this proposal will be completed in four phases over a span of eight years (Figures 51-54). Each phase will have two parts, each taking one year. The phasing structure was determined based on numerous factors such as market absorption capacity and the creation of community neighborhoods promoting the sense of community.

The number and type of units constructed in each phase varies from one to the next but are balanced to ensure the project is not dependent on the success of any single phase. This spreads and mitigates the risk of each so as to not limit the projects profitability if any one phase performs less than expected. Below shows the planned units for each phase with a table depicting the types of units being constructed and their relative square footage (Figures 51-54).

The Therapy Center is planned for construction in phase one. As the goal of this project is to assist with the mental health care of veterans, the project plans to include the center as early in the construction process as possible. This method will allow for more veterans to be treated as soon as possible while still allowing for rental units to generate income assisting in the center's financing.

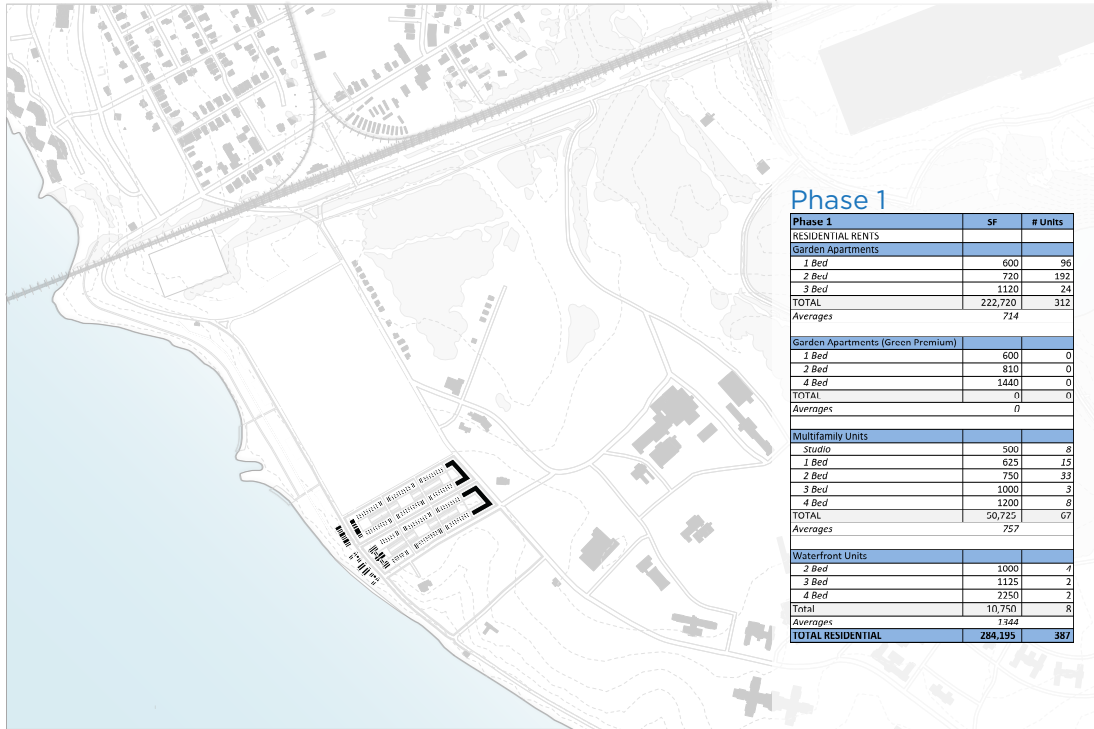


Figure 51: Phase 1

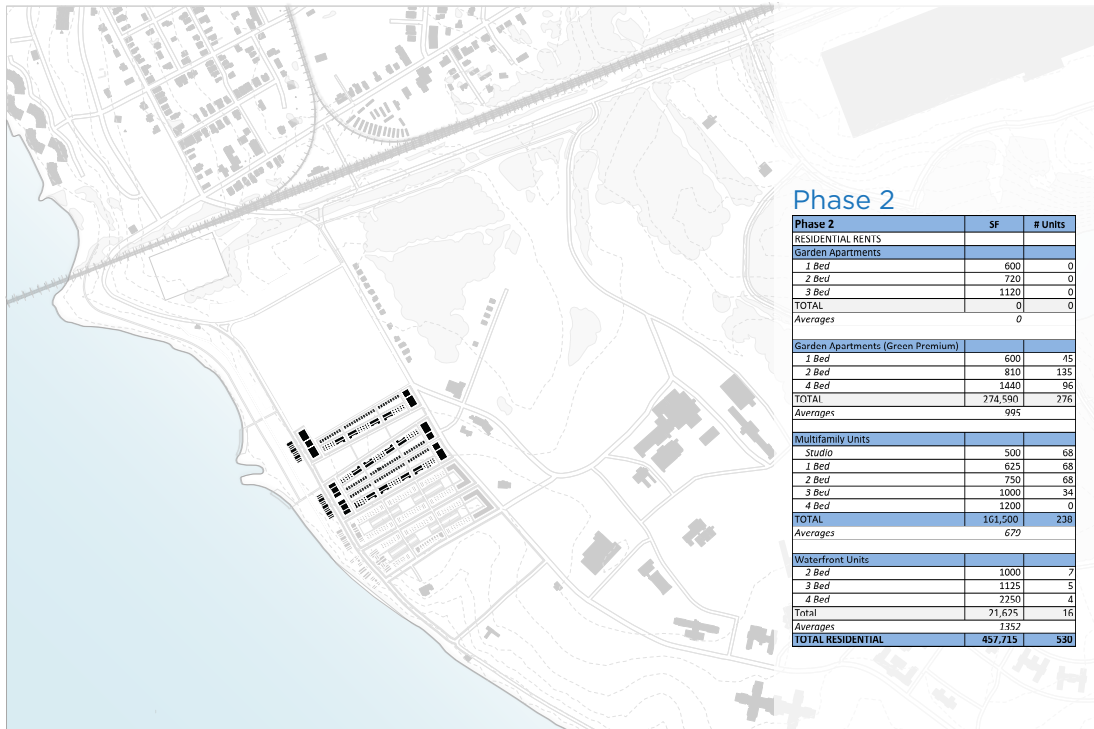


Figure 52: Phase 2

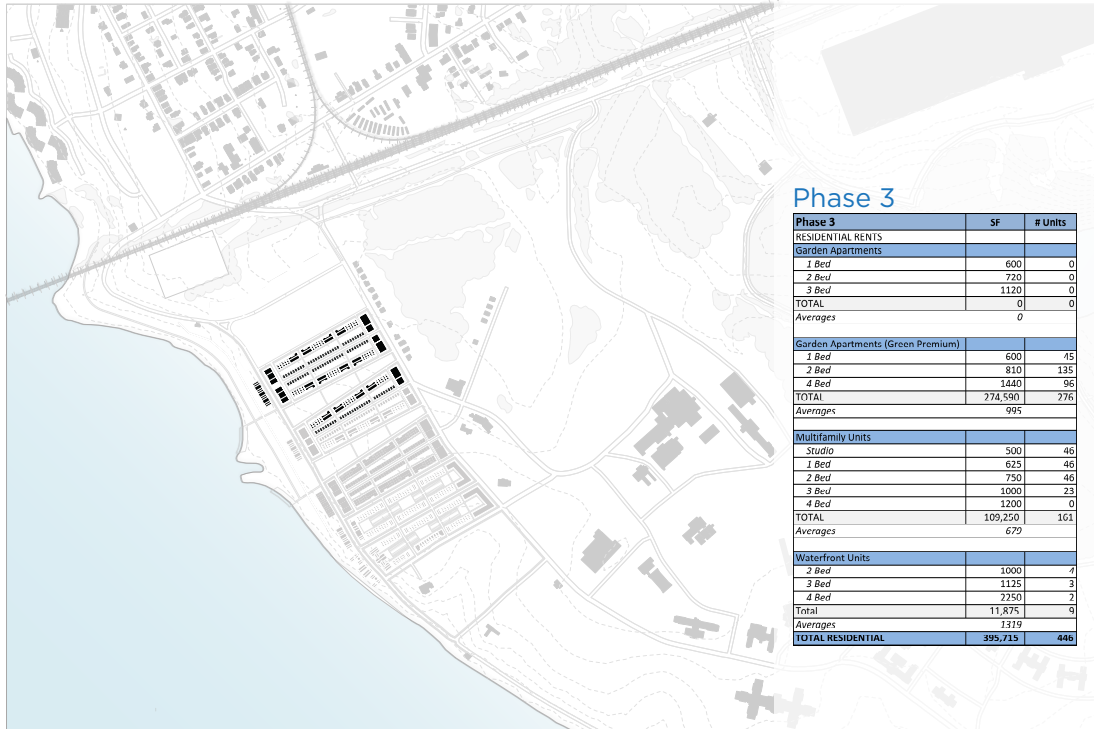


Figure 53: Phase 3

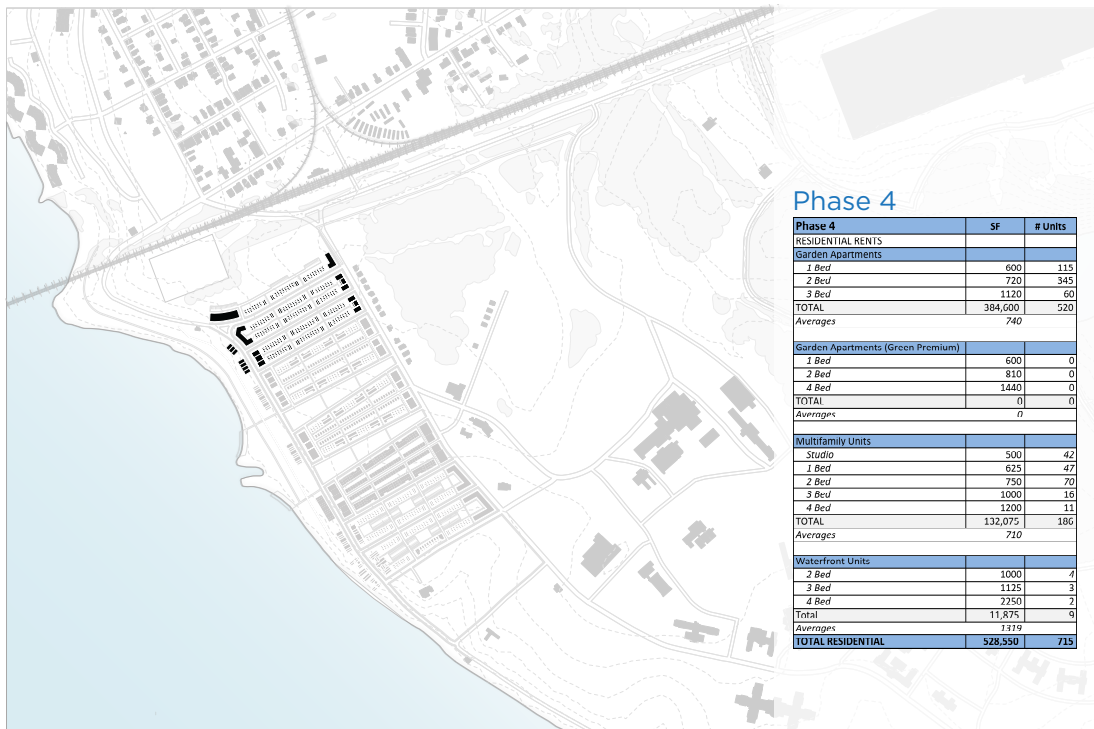


Figure 54: Phase 4

Therapy Center Design

Center Design Goals

After examining existing PTSD therapy centers today and evaluating all the research that was collected over this yearlong process, five specific design goals were determined to ensure the therapy center had targeted design. The design goals are listed below along with a brief description of what each goal solved.

1. Integrate center with community — Bring positive community aspects through the scales of design integrating the community with the therapy center.
2. Provide safe and secure atmospheres — Design spaces with appropriate atmospheres fostering a sense of security among veterans residing there. Balance safe and secure feelings with the integration of the therapy center within the community.
3. Utilize surrounding natural landscapes — Form connections to the natural beauties inherent in water and greenery. Research has shown connections to nature reduce stress and anxiety and should be included.
4. Promote camaraderie among veterans — Incorporate opportunities to build upon military culture of camaraderie through gathering spaces.
5. Design “homelike” environments — Create comforting environments to bridge therapy spaces with the home. Create flexible spaces within the home for therapy to breakdown traditional institutional perception of therapy only happening in facilities.

Therapy Centers Form

The form of the center is designed to be recognizable. This is because something recognizable is something that is already understood. Something already understood is something that requires no anxiety about the unknown. When veterans serve this country abroad they are often in unfamiliar situations and environments. This heightens already escalated feelings of anxiety found in wartime scenarios. It is because of this that the design of the therapy center began with perhaps the most recognizable residential form, the gable roof.

When asking a six year old to draw a house, they will most likely construct a façade depicting a gabled roof, a door, and some windows with mullions (Figure 55). This is a universal symbol drawn by most (non-artistic) Americans and is where the exploration of form began for this thesis. Once the form is given three-dimensional qualities and replicated to accommodate the required programmatic size, the idea of community and atmosphere, the conceptual foundations of this thesis, were woven in. The community aspect generates gathering spaces for veterans to socialize while the safe and secure atmospheres arise from the careful placement of construction types and materiality.

What materials promote security? Which promote comfort or encourage healing? A palette of contrasting properties was designed to answer these questions. Heavy and light, dense and transparent, these are the characteristics of the materials and construction types used to promote the

right atmospheres within the design. They helped inspire a parti of security yet embrace the vast openness and serenity found in connections to nature.

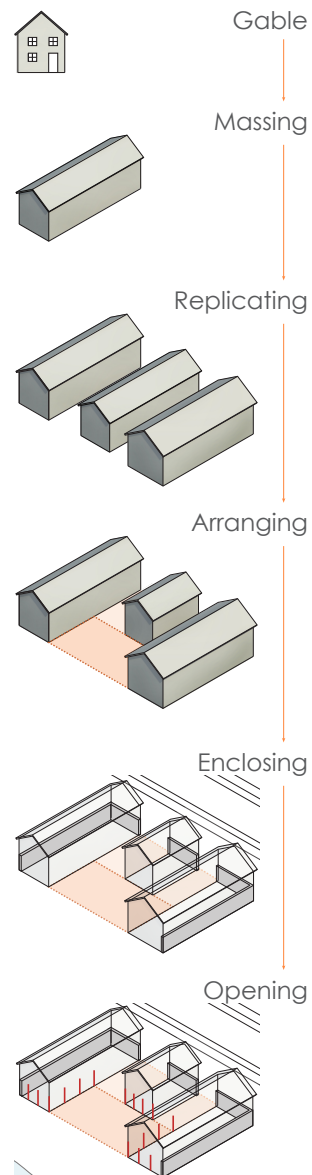


Figure 55: Therapy Center Concept Diagram



Figure 56: Therapy Center Street Perspective

The therapy center is divided into two parts, the center itself, housing therapy rooms, traditional offices, and necessary living components such as a dining facility, and the four living cottages, mimicking living situations found in traditional homes and apartments. As this therapy center is considered the last step in treatment for veterans before returning to “normal” living, the cottages were designed in such a way to embodied “homelike” environments found in society.

Careful consideration went into how each cottage was designed promoting the safe and secure atmosphere by utilizing materials such as stone to symbolize protection from street activities while employing frame construction to allow maximum glazing towards the water. Warmer materials such as a deep rich wood are used to counterbalance the heaviness of the protecting stone wall.

This is used as a tool to direct attention towards the water while “protecting the sixes” of any veteran with a heavier stone material (Figure 60).

The cottages have three essential parts. The first are living spaces connected to outdoor terraces. These can be used for veterans to gather and socialize while having the flexibility to be used for larger group therapy activities. The second are the sleeping areas. These are designed in modules of two bedrooms with individual bathrooms sharing a small den. This encourages social interaction and bonding from community scales down to personal ones. The third is having a den or office space for individual therapy. This is a flex space in each cottage that staff can use for individual meetings. This promotes the idea of therapy not happening solely in the therapy center. It encourages working through problems continually as opposed to isolated instances while in any facility setting (Figure 61).



Figure 57: Therapy Center Aerial

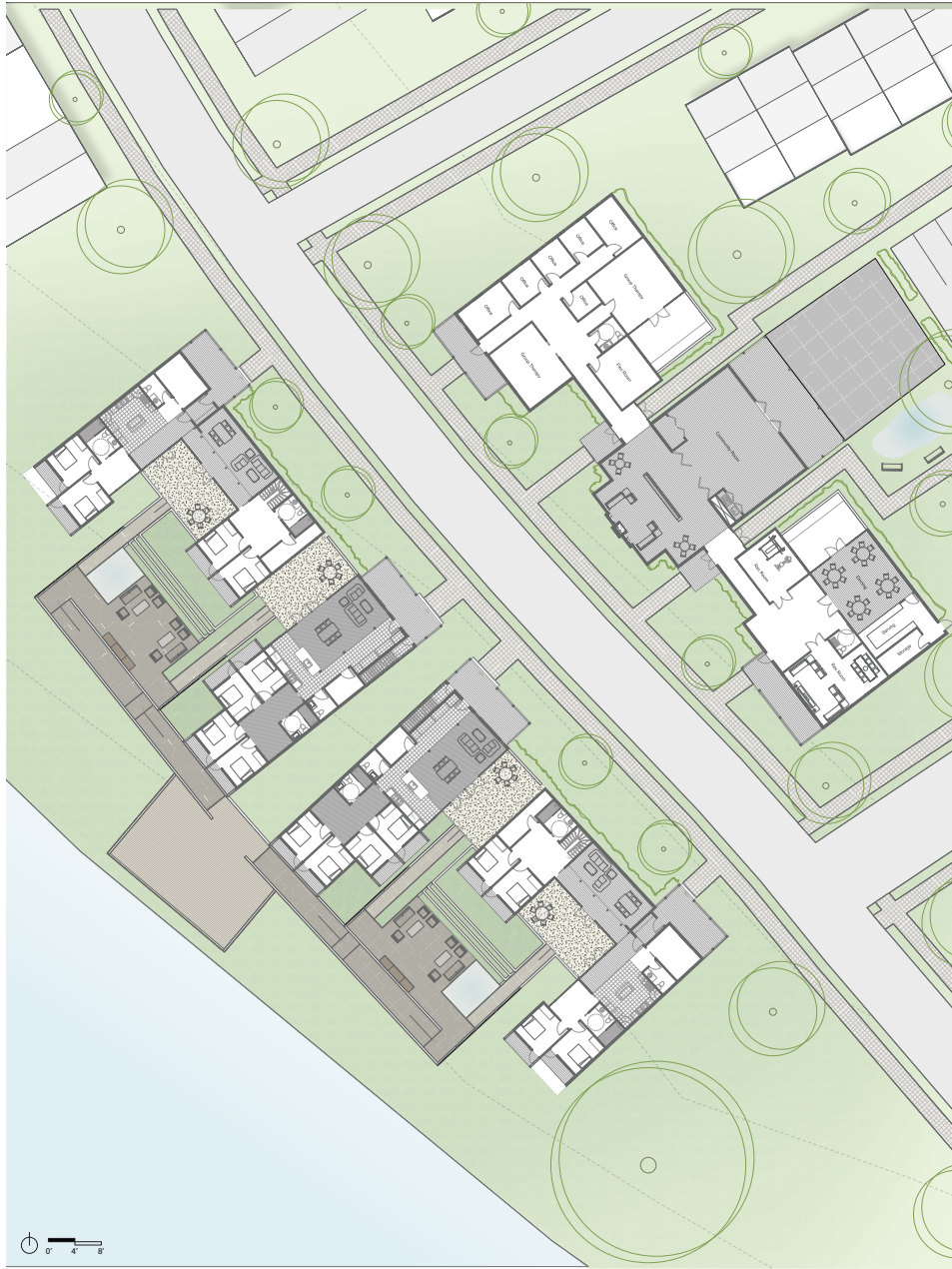


Figure 58: Therapy Center First Floor Plan

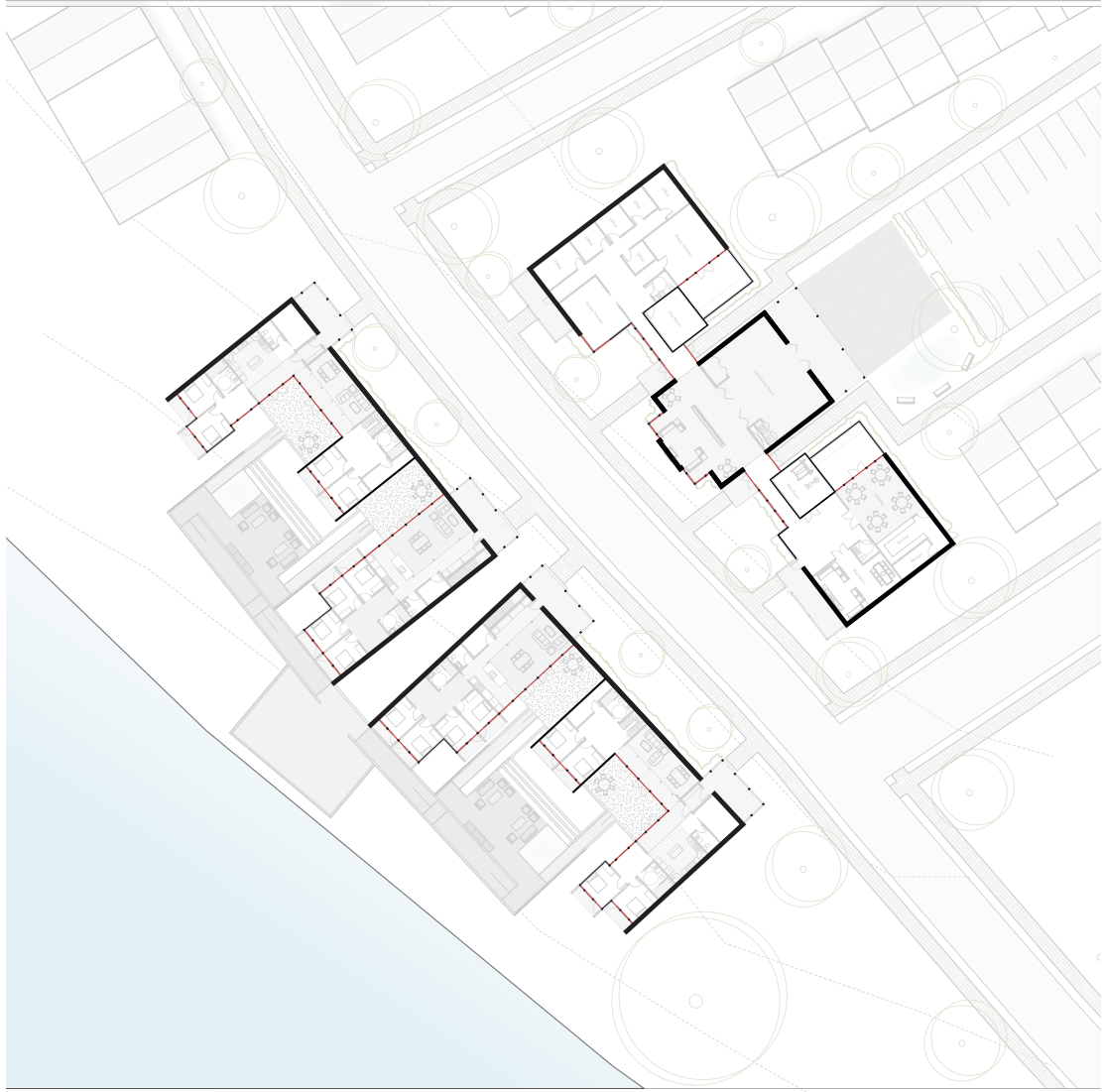


Figure 59: Structure Diagram



Figure 60: Directionality Diagram



Figure 61: Program Diagram



Figure 62: Cottage Living Room Perspective



Figure 63: Shared Cottages Terrace

Conclusion

To conclude this thesis is not the right way to end this yearlong exploration.

This is a topic that needs more attention and more dedication from many more

people. Finding ways to help those who served us should be a priority within this field. From its inception, this thesis proposed to develop new ways to use architecture as a means to enhance therapeutic spaces for veterans. It has since grown into understanding how design can influence all aspects of treatment at many different scales, benefitting not only veterans dealing with PTSD but the staff that treat them, veteran's families, as well as the communities they reside in. This research will continue and hopefully influence people to understand the great need for architectural intervention in assisting veterans dealing with mental health challenges.

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