DESIGNING HEALING ENVIRONMENTS IN VETERAN HOUSING FOR THOSE
COPING WITH POST-TRAUMATIC STRESS DISORDER

A graduate project submitted in partial fulfillment of the requirements
For the degree of Master of Science in
Family and Consumer Sciences
by
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ABSTRACT

DESIGNING HEALING ENVIRONMENTS IN VETERAN HOUSING FOR THOSE COPING WITH POST-TRAUMATIC STRESS DISORDER

by

Kathleen Barris

Master of Science in

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As an overall communal mission, architects, designers and planners should ensure their designs of the built environment benefit the common good. Within that context, this study explores the impact of incorporating healing design concepts and the environmental psychology design principles of meaning of place/sense of community, personal space, and privacy into the creation of restorative veteran housing environments and the successful role they can play in the healing and recovery process from Post-Traumatic Stress Disorder (PTSD) for those inhabitants.

As a source for solutions to help veterans adjust to civilian life and better cope with the physical, emotional and psychological effects of war, a precedent analysis was established to highlight different veteran housing/garden settings. From this investigation, relevant strategies were integrated into the formation of a conceptual design proposal of a veteran housing complex that includes three typical home schemes, a communal gathering space.
CHAPTER I

INTRODUCTION

The purpose of this project was to explore how the design and development of veteran housing using healing design principles and selected environmental psychology concepts can benefit in the healing and recovery process of veterans coping with Post-Traumatic Stress Disorder (PTSD). PTSD is an anxiety disorder that is precipitated by seeing or living through a traumatic and/or dangerous event. According to Dr. Matthew Friedman, the executive Director of the U.S. Department of Veterans Affairs (VA) National Center for PTSD, “anger, insomnia, anxiety, pain, nightmares and interpersonal difficulties are common experiences for veterans transitioning back to the lives and families they left” (Steinbach, 2004, p.1). Incidentally, many soldiers, especially those recently deployed in Afghanistan and Iraq’s combat theaters are returning home in need of specialized mental health intervention when the symptoms do not subside over time. Reactions to seemingly mundane events such as car engine back fires can evoke feelings of extreme fear, and a sense of helplessness (Anderson, 2011). “The demands, stressors, challenges of survival, and conflicts of participating in war can be traumatizing, spiritually and morally devastating, and transformative in a potentially damaging way, the impact of which can be manifested across the lifespan” (Litz and Orsillo, 2004, p. 21).

Unfortunately, the trauma of war is also carried over in many unexpected readjustment challenges of everyday life experiences including housing issues and home design. Although varied and increased housing options have been created to alleviate issues such as affordability, quality, and homelessness among veterans suffering from
PTSD, the current design of most veteran buildings has not been significantly addressed in terms of providing architecturally healing spaces to these specific occupants in conjunction with psychology environmental design principles. To close this particular research gap, a design proposal of three different residences and a communal gathering space will be created utilizing principles of meaning of place/sense of community, personal space, and privacy.

Statement of the problem

Heroic, patriotic, brave, and valiant are words that convey the spirit of our war veterans. It is our vital act of a grateful nation to take care of them when they come home. Since 9/11, and the onset of both the Iraq and Afghanistan wars, military enrollment has increased dramatically. As a result, these conflicts have amplified the need to care for many more military veterans on their return from combat then in years past (Anderson, 2011). Understandably, within the VA healthcare system, veterans seeking services there has risen exponentially as well. For example, the number of Iraq and Afghanistan veterans receiving VA services has increased from 18,896 in 2003 to 291,426 in 2009 (Desai, 2010). Of the more than two million soldiers returning from these two wars alone, more than 25 percent have been diagnosed with post-traumatic stress disorder, depression, or anxiety (Drew, 2010). The greatest challenge for many returning veterans is dealing with PTSD at the same time striving for a normative life in American society (Finley, 2009). Studies report that cases of PTSD, depression, and anxiety increase 19-21%, 3-12 months after deployment, sometimes leading to a downward spiral into homelessness within only a 3-year period (New Directions, 2013). The Veterans Affairs (VA) healthcare system has embraced a Patient Centered Community Care (PCCC)
initiative in an effort to provide quality care efficiently using outside providers if necessary. Additionally, the VA National Center for PTSD goals and objectives are growing to include understanding emotional changes, resilience and recovery alongside diagnoses and treatment. In terms of housing, various options including ownership, transitional/rental and long-term supported living quarters are available through the VA federal programs and individual state initiatives, as well as collaborations with non-profit community based organizations such as Habitat for Humanity. However, the idea of incorporating evidence-based theories into the architectural and design plans to alleviate suffering associated with PTSD specifically has not been addressed on a wide basis.

Purpose of the Project

The purpose of this project was to create a prototypical design for veteran housing using selected principles of environmental psychology of design with a focus on healing.

Theoretical Foundation

The theoretical framework for this project includes healing design principles, select environmental psychology concepts (meaning of place/a sense of community, personal space and privacy) with attributes of PTSD to adjust the home environment design accordingly. These principles will be the foundation and emphasis of the overall design proposal that includes three different residences, and a communal gathering space.
Scope of Project

To inform the design process, the proposal encompassed a precedent analysis of three existing sites in the Los Angeles area: a veteran housing complex in the San Fernando Valley, a veteran housing development in Santa Clarita and a healing garden located in West Hollywood. Observations were conducted and information was gathered from a review of literature to gain a better understanding of the needs of this particular client population. In addition, a design programming study was established for each of the three housing spaces to determine the possible space planning solutions. I developed this proposal based on the review of literature, precedent analysis, existing guidelines and principles of design. This design proposal also includes inspiration ideas, floor plans, site selection and analysis, landscape solutions, and furniture/material information.

Definitions

1. Ambient Factors: Factors that contribute to the atmosphere of the environment, such as color, sound, lighting and scent (Robson, 1999).

2. Environmental Psychology: The study of human behaviors in relation to their environments and vice versa. (Kopec, 2006).

3. Healing Environment: A therapeutic environment that has a positive influence on the healing process and can be achieved by incorporating design elements that provide comfort, security, stimulation, opportunities for privacy, and control positive distractions and access to a patient’s social support network Suite Dreams Project (as cited in Stewart-Pollack, Menconi, 2005).
4. **Meaning of Place**: The complex notion and meaning of place is further defined and characterized by the aspects of place identity and place attachment. Place identity is the manner in which a person incorporates a place into the larger concept of his or her own identity or sense of self. Place attachment is the emotional bond to a place’s social and physical components (Kopec, 2006).

5. **Personal space**: Personal space is theorized to act in as buffer zone which serves as protection against perceived threats to one’s emotional well-being (Dorsey and Meisels, 1989).

6. **Post-traumatic Stress Disorder**: PTSD is an anxiety disorder get after seeing or living through a dangerous event (National Institute of Mental Health [NIMH], 2013).

7. **Privacy**: A process by which we control access to ourselves or our group and a condition of selective distance or insolation. (Altman, 1975)

8. **Prospect and Refuge Theory**: Prospect Refuge theory is a concept established by Jay Appleton. His idea is that human aesthetic experience of landscape is based on perceptions that are evolved for survival. The concept is rooted in evolutionary psychology. On one hand you have places to hide (safety), versus areas which are escape routes, places with a clear view (opportunity) (Appleton, 1996).

9. **Sense of Community**: Feelings of community are based on the sharing and commonality of space, attitude, and behavior. Community spirit, or sense of community, is a form of *place attachment* that begins when people share with others a physical space or environment (e.g., a neighborhood or workplace) (Kopec, 2006).
10. Sociofugal and Sociopetal: Type of seating arrangements wherein people face away from each other (sociofugal), or type of seating arrangement wherein people face each other (sociopetal) (Kopec, 2006).
CHAPTER II

REVIEW OF LITERATURE

Introduction

The Review of Literature is comprised of three main components that provide the foundation of this study:

- Understanding PTSD
- Healing Design
- Environmental Psychology Design with an emphasis on the concepts of:
  - Meaning of Place/Sense of Community
  - Personal Space
  - Privacy

The review of each of these sections separately and as a cohesive whole was necessary to comprehend the basis of this project.
Understanding PTSD

Since the events of 9/11, and the involvement of the United States military in Operation Enduring Freedom (OEF) in Afghanistan and Operation Iraqi Freedom (OIF) in Iraq, the number of armed services personnel has grown tremendously. Since 2001, there have been over 1.6 million U.S. military service members deployed to these two combat theaters (Finley, 2009). As a result, many more soldiers than in the past were coming home from these conflicts with significant issues relating to readjustment, disabilities and mental health. According to Dr. Matthew Friedman, Executive Director of the Department of Veterans Affairs (VA), National Center for PTSD, at the time of readjustment, “you can’t just flip an off switch and instantly go back to the way things were before your deployment. People need time to grow back together, to become reacquainted and adjust to the changes each has experienced so that they can develop a

When veterans return from war to find that what they thought would be a chance to create new post-combat lives is, in fact, far more challenging than they ever imagined – when they find themselves dislocated from their loved ones and struggling to meet their most basic expectations for self and life – these challenges make it far more difficult to muster a resilient response to the trauma of war. Thus the aftermath of combat trauma cannot be understood without an appreciation for the larger life course of the individual veteran. (Finley, 2009, p. 397).

“The psychological, social, and psychiatric toll of war can be immediate, acute, and chronic” (Litz and Orsillo, 2004, p. 21). Thus, it is absolutely imperative to understand all the emotional responses credited to a psychological diagnosis to insure a healthy outcome. PTSD symptoms are experience differently from person to person. Therefore, a wide range of emotional distress signs can be expressed throughout a longer period of time.

- an immediate phase characterized by strong emotions, disbelief, numbness, fear, and confusion accompanied symptoms of autonomic arousal and anxiety;
- a delayed phase characterized by persistence of autonomic arousal, intrusive recollections, somatic symptoms, and combinations of anger, mourning, apathy, and social withdrawal, then finally;
- a chronic phase including continued intrusive symptoms and arousal for some, disappointment or resentment or sadness for others, and for the majority a re-

The destructive force of war creates an atmosphere of chaos and compels service members to face the terror of unexpected injury, loss and death. The combat environment (austere living conditions, heavy physical demands, sleep deprivation, period of intense violence followed by unpredictable periods of relative inactivity, separation from loved ones, etc. is itself a psychological stressor that may precipitate a wide range of emotional distress and/or psychiatric disorders. Psychological injury may occur as a consequence of physical injury, disruption of the environment, fear, rage, or helplessness produced by combat, or a combination of these factors (Iraq War Clinician Guide, 2006, p. 11).

Because each service member comes to battle with a different level of personal resilience, response to war and its impact on the individual is varied. Some may indeed develop a severe psychiatric disorder(s) needing supervised therapy. However, other soldiers may only require mental health assistance at one point or occasionally during a military operation. Assessed by VA providers, many Iraq and Afghanistan veterans exhibit signs particularly associated with Post Traumatic Stress Disorder (PTSD) (Cook et al, 2004). PTSD is defined as an anxiety disorder that some people get after witnessing or living through a dangerous event (National Institute of Mental Health [NIMH], 2013). The symptoms can be organized into three categories:

1. Re-experiencing symptoms (flashbacks, bad dreams, frightening thoughts)
2. Avoidance symptoms (emotionally numb, staying away from reminders of the experience, strong guilt, depression, worry, losing interest in past enjoyable activities, trouble remembering the event).

3. Hyper-arousal symptoms (easily startled, tense or “on edge”, difficulty sleeping, eating, concentrating) (NIMH, 2013).

Although PTSD signs manifest themselves universally in all combat situations and not limited to just veterans adjusting from the Iraq and Afghanistan wars, these particular soldiers’ symptoms appears to be more powerful. (Cook et al., 2004). This new intensified version of indicators is likely in part derivatives of the distinct characteristics of these most recent military conflicts (e.g., extended tours, multiple deployments, increased likelihood of redeployment) (Hoge et al., 2004). VA providers also relate that “We have people who are relatively fresh from their traumatic experience. So the anger and the bitterness, the sadness, betrayal, the sense of loss and grief…this really has a much different flavor. It’s much more raw” (Cook et.al, 2004, pg. 20, 21).

To address the complex problem of PTSD among veterans, the United States Department of Veteran Affairs has created the National Center for PTSD. The center’s highest priority is to promote the best treatment for veterans with PTSD through the Uniform Services Package by supporting VA clinicians and veterans through the development of evidence-based, patient centered treatments for PTSD and the dissemination of best practices throughout the VA system. Requests for research are continuing as demands to increase prevention, resilience and recovery alongside diagnoses and treatment is implemented.
Healing Design

The aim of healing design is to place the human experience at the heart of building design to explore the relationship between the physical environment and emotional reaction to the setting (Stichler, 2008). The holistic approach of healing design as opposed to curing is the process of restoring wholeness by creating harmony of mind, body and spirit and merging humane architecture and design with psychological concepts as part of the recovery process. “In essence, healing environments exists in the intersection between the physical space and the positive human reaction to that space” (Stichler, 2008, p.506)

The connection between the built environment and the potential for healing is not a recent phenomenon. Vital to survival, early humans had to be instinctually alert, intuitive, and sensitive to their environment (La Torre, 2006). The choice of a proper and suitable environment in which health care was administered was considered so significant by Hippocrates that he referred to it as the fourth factor following the disease itself, the patient, and the physician (Stichler, 2008). More recently, the same basic philosophy continued with Florence Nightingale’s Notes on Nursing. She advocated that patients would heal more quickly if the health facility had plenty of natural light, ventilation, cleanliness, and basic sanitation (Stichler, 2001). According to Charles Horsburgh, “Medical care cannot be separated from the building in which it is delivered. The quality of space in such buildings affects the outcome of medical care, and architectural design is thus an important part of the healing process” (Horsburgh, 1995, p.1).

Since past research has demonstrated that this evidence based research can have a positive outcome on patient’s well-being, it continues to be embraced by health care
today (Drew, 2010). By creating healing environments with scientifically proven design features including human centered philosophies, and human interaction, the thoughts and emotions of the inhabitants are addressed in a beneficial and healthy manner (Stichler, 2008). Research has emerged from three main disciplines: physiological proof, psychological studies, and design theory. The question now is not whether the built environment affects healing but how does researched design contribute to it (Francis, 2002).

To succeed in creating successful holistic environment specifically for veterans, designers must embrace healing design research and psychology principles that contribute to the overall wellness of body, spirit and mind of our veterans at the same time promoting awareness of dignity, determination, and pride.

Effective healing design features for both health care settings and residential spaces contribute to the positive mental health of the inhabitants by regulating psychosocial processes such as perceived control, social support, and restoration from stress and fatigue (Johansson, 2012). Three important features of the physical environment are:

**Architecture**  (stimulation (complexity of the space), coherence (comprehensibility of building elements), affordances (understanding of functions provided) and control

**Interiors** (spatial layouts, furnishings, colors, and artwork)

**Ambience**  (lighting, noise levels, odors, and temperature)

These aspects are relevant in creating psychologically healthy spaces by reducing stress (Evans and McCoy, 1998).
**Environmental Psychology Design**

Environmental psychology for design is an interdisciplinary field that concentrates on the physical environment that surrounds us and how it plays an intrinsic role influencing our physiological and psychological well-being. It is a symbiotic relationship in which the built environment and human behavior are intertwined. “Environmental psychology in terms of architecture overlaps with many other established design disciplines, including space planning, ergonomics, lighting, acoustics, way-finding, branding and interior design” (Moses, 2012, p. 1).

The totality of the built environment—geographic location and climate, purpose and function, image and style, occupants and visitors, the impact of the design on the community at large; and even construction materials, methods, and code requirements – must be carefully considered throughout the planning and design process. By anticipating user population levels and constituencies, design professionals can instigate many proactive initiatives to help minimize stress and maximize user satisfaction in all settings (Kopec, 2006, p. xvi).

In respect to veterans coping with PTSD, environmental psychology design concepts should be integrated into the healing process as a scientific based protocol for their well-being and best outcome.

**Meaning of Place/Sense of Community**

As emphasized in Winifred Gallagher’s *Power of Place*, we need spaces that provide sustenance rather than splinter our lives, places that balance the hard, standardized and cost-efficient with the natural, personal, and healthful (Gallagher, 1993). The idea of place becomes important to individuals when an emotional bond is
established to the physical world and positive social interaction is experienced. (Saar and Palang, 2009).

An authentic sense of place fosters the concept of human attachment and belonging making it special, unique and memorable (Pontikis, 2010).

When an acceptable degree of comfort is achieved in conjunction with safety and an emotional connection with a particular venue, both concepts of sense of place and belonging becomes reality. We go through the process of making sense of place, developing a feeling of belonging and eventually identifying with that place. We build a sense of belonging in the world based on the meanings we give our environment by moving through and engaging with it” (Leach, 2002, p.286).

In addition to place attachment, Robert Gifford described the following meanings of place that relate directly to the design field: ideological communication (an abstract idea that a place or building personifies), personal communication (site perception of the inhabitants) and architectural purpose (Gifford, 2002).

Designing facilities for veterans, especially those coping with PTSD, with an emphasis on the social connection aspect is a very prudent approach to aid in the recovery for them (Wagenfeld et al., 2013). Veteran housing, especially those structures built for soldiers coping with PTSD, must be defensible and readily observed in their entirely so that the inhabitants feel no apprehension and therefore exhibit a sense of control over their territory (Newman, 1996). These profound settings have deep meaning of place because our sense of self is intertwined into them resulting in a sense of belonging, freedom, comfort and psychological security (Kopec, 2006).
Personal Space

Ironically, the behavioral concept of personal space cannot exist with only an individual on its own. It is an interpersonal phenomenon that uses interaction to determine spatial distances between people (Kopec, 2006). To maintain a protective barrier around oneself, an invisible “buffer zone” is formed to prevent intrusion from others (Bogovic, Mihanovic, Begic, and Svagejl, 2014). This self-protection mechanism and individual distance together establish adequate spacing distribution between each person (Sommers, 1969). The degree of space necessary for each person is subjective and flexible according to the situation and other preferences (Kopec, 2006). Its purpose is to maintain emotional well-being against harmful perceived threats of both self-esteem and bodily harm with the assumption that higher the risk necessitates the larger the distance to enable escape (Dosey and Meisels, 1969). According to social learning theories, personal space boundaries are established over time as a learned behavior reliant on various relevant factors such as personality, stage of development, societal norms and environmental setting (Kopec, 2006). Established by Edward Hall, boundary distances can be separated into four distinct categories:

1. Intimate (0-18”),
2. Personal (18”-4.0”),
3. Social (4.0’-10.0’), and
4. Public (12.0’ – 25.0’) (Kopec, 2006, pg. 67).

These distant markers are not rigid and vary in terms of exposure and length of time of interactive personal exchanges (Bogovic et al, 2014). People who exhibit more
levels of anxiety have been shown to prefer a significantly larger personal space which would include veterans suffering from PTSD (Pedersen, 1973).

One possible explanation for the need for significantly larger interpersonal distances among individuals with PTSD is that the complexity of symptoms related to the disorder. The self-protective and arousal regulation functions of personal space become more prominent in this particular population. They are comfortable being in a corner of a room verses the middle or center and preferred to orient themselves in a room to visual control the door due to exposure to life threatening combat situations (being attacked from all sides) (Bogovic et al, 2014).

Thus, personal space perimeters should be taken into consideration during the schematic phase of designing for veterans. In addition to the need for protection, personal space can be understood though the function of communication and the nature of relationships leading to understanding, trust and empathy (Hall, 1966).

Privacy

Since ancient times, privacy has been considered a significant social value among many cultures. Privacy as defined by Irwin Altman is the selective control over another’s access to ourselves, our groups, or our environments (Altman, 1975, p.69). There have been a number of explanations utilizing a variety of situations to clarify why privacy is considered a way to manage both personal activities and social interactions (Pederson, 1999). These different understandings of privacy are due to a diversity of needs of people that are influenced by culture, socioeconomic levels, personalities, stages of live, gender, and experiences (Kopec, 2006). “The major thrust of the interactive perspective is that
people do not operate in a vacuum. They have past experiences, present environmental context both physical and social, and plans for the future. At different times of their lives and under different circumstances they find different types of privacy to be more appropriate than others” (Newell, 1995, p. 91).

Alan Westin recognized six essential behaviors (solitude, isolation, intimacy with friends, intimacy with family, anonymity, and reserve) of this vital human need (Kopec, 2006). To understand how privacy affects our personal welfare, it plays four crucial functions in our lives: communication, sense of control and autonomy, self-identity, and emotional release (Kopec, 2006). In later research, Pedersen identified six further activities: uninterrupted contemplation, creative expression, concealment of self, and concealment of illicit activities, rejuvenation and recovery (Kopec, 2006). “The dynamic nature of privacy requires that our built environments respond to our changing physical and psychological needs to interact with others or to be alone” (Stewart-Pollack & Menconi, 2005, p. 53). Many architectural and design elements are associated with the essence of privacy and can enrich the functionality of private aspects within the built environment (Stewart-Pollack & Menconi, 2005). The following synopsis detailed in Designing for Privacy and Related Needs, Stewart-Pollack & Menconi, 2005, lists definitions pertaining to privacy issues within the built environment:

Spatial Hierarchy and Depth:

- The sequential steps of going from less private to more private
- The number of areas required for passage from one point to another
- Acts like a gateway to other parts of the overall space affording coherence
- Space is enhanced if generous and well lit
• Personal space zones can be improved by design strategies that allow for encouragement (socio-petal) or discouragement (socio-fugal) communication and interaction as determined by the users

Thresholds
• Effective means to distinguish various territories
• Process of leaving one territory and entering another
• Transitional

Stimulus Shelters
• Restorative spaces that allow inhabitants to continue to maintain a sense of connection while providing a temporary retreat from over-stimulation (alcoves, window seats)

Light
• Generous amount of natural light
• Most beneficial if coming from two sides
• Choice allowance in degree of brightness
• Lower levels of light should be in private areas to define the area and discourage people to come in

Color
• Warm colors promote activity and interaction
• Cool colors are calming
• Response to colors are inextricably to the quality of light

Prospect and Refuge
• Consideration of degrees of enclosure and exposure
• A protected vantage point to view surrounding areas
• Still allows for sense of connectedness
• A sheltering roof, cloister, and window seats are prime example of refuge spaces

“In regard to restorative veteran housing, the three functions of flexibility, rejuvenation and recovery are specifically desired and necessary. Being able to regulate personal space in the physical environment by intertwining social interaction and separation effectively is a significant personal value” (Duddridge, 2010, p. 56). Since privacy is associated with the success of both individual and group functioning, failure to meet these needs can lead to undesirable emotional stress and antisocial behaviors (Pederson, 1997). Thus, the achievement of privacy needs among individuals seeking mental health stability is crucial to recovery, and personal fulfillment.
CHAPTER III
METHODOLOGY

Introduction

To better incorporate the issues involving housing for veterans dealing with PTSD, the design and architecture community needs to offer pragmatic, aesthetic, and life affirming solutions for these specific spaces. Vital to understanding the design concerns surrounding the healing and recovery process of veteran residents suffering from PTSD, a descriptive qualitative approach using precedent analysis was conducted and examined in this project of two veteran housing complexes: A veteran housing tract in construction and a newly renovated VA transitional structure. A healing garden in West Hollywood was also included as a precedent. This study takes an in-depth look at each site to evaluate the design features that were created for this population.

The veteran housing complexes are part of a partnership that includes approximately 180 communities across the country that have addressed and implemented housing strategies for homelessness among veterans many of whom suffer from PTSD. The mission of the healing garden located in West Hollywood was to create a space that assisted in the healing process of patients as well as friends, family and the community as a whole.

Precedent Analysis

These sites were analyzed to illustrate and determine the validity of intertwining healing and environmental psychology design concepts with PTSD symptoms to see how designers and architects can construct home sanctuaries that encompass a sense of
harmony and balance that aids in recovery for the inhabitants. A comprehensive survey of these three spaces was conducted to inform the design proposal recommendations.
Veteran Housing Tract Santa Clarita Valley

A veteran permanent housing project is under construction in Santa Clarita, California. The mission of the lead organization for the project, is “to provide a decent, safe and affordable places to live for every man, woman and child in the San Fernando, Santa Clarita and Antelope Valleys.” The project was created as part of a Revitalization Initiative that emphasizes the partnership between neighborhood need and nonprofit response.

Along with constructing the village and building the homes (including generous sweat equity of the new owners), the project is part of an “Enriched Neighborhood Model”. This exceptional program provides social and educational services like health information, financial literacy workshops, home ownership and repair, PTSD counseling and veteran specific services. This supportive neighborhood program assists in creating a sense of place and community.

Veterans and their families will be able to purchase these universal design homes with a 30-40 year mortgage and pay no more that 35% of their monthly income for their mortgage payment, HOA dues, water and taxes. This village of 87 sustainable homes sits on a 22.8 acre site is being constructed in partnership with the City of Santa Clarita, State of California’s Department of Veteran Affairs, SoCal Gas Company, KHTS Radio, Home Depot, and MilitaryConnection.com. The goal of this veteran home ownership model is lifelong self-sufficiency. The purchase of these new properties will allow the ex-service members to “acquire a piece of the American Dream”.

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Figure 3.1. Santa Clarita Aerial Site Plan.

Figure 3.2. Santa Clarita Landscape Development Plan.
This 87 home village is located on Centre Pointe Drive off the main traffic corridor of Soledad Canyon Road. The homes are comprised of 11 single story and 76 two story buildings. It is nestled up against a hillside dotted with oak trees and native vegetation on the west. The property was selected because of its proximity to retail stores and to agencies such as a community mental health center.

Surrounding the whole village is landscaping that identifies the complex’s border. The village is protected by a boomeranged shape grassy area with a veteran monument honoring the six branches of service designating the community. This feature allows for a strong home identity for the residents within the complex. It also welcomes residents and visitors alike by featuring project signage created with stonework and waterfalls.

The landscape planting will be all drought tolerant native vegetation with native oak tree incorporated into the slope plantings. Natural area plant life and trees surrounding the complex will be mostly left untouched other than soil redistribution. Although situated over the hillside from an environmental clean-up site (Whittaker-Bermite Munitions), multiple soil samples were taken to assure resident health safety. No levels of toxins were found. In addition, the hillside slope acts as a separation between properties and allow water to run off in the direction away from the homes.
Healing Design

As part of the healing process, several attributes are to be considered (safety, space planning, perceived control, restoration, sound/acoustics, color, furnishings, artwork, lighting, and a sense of smell) to help with the overwhelming symptoms of PTSD. A proper site for the complex was carefully selected and due to the community boundaries, low vegetation, patio fencing, and interconnected walkways, the residents have a heightened sense of safety on this site. The space planning decision to have an open space concept within the homes allows for both open communal areas (common area of the heart) and private rooms providing a private area for retreat.

For a restorative quality to the homes, a community garden as well as individual ones are planned to help with the reduction of stress and a native California landscape will directly influence the sense of smell in a positive way.

Figure 3.3. Santa Clarita Existing Site.
Universal design properties and ADA guidelines have been also been addressed and included with veteran issues in mind. One of the design considerations is walk-in/wheel-in showers with no doors for safety and easy accessibility.

Included in the design of all the homes, quality windows, built to save energy will allow for plenty of natural light and fresh air. LED lights come in various Kelvin temperatures matching incandescent lights and will be placed throughout the homes; no fluorescents light are included to not disturb the residents with white noise and flickering. To advocate user participation and the power of choice, paint tint for the bedrooms will be chosen by the residents. All the paint is environmental with low VOC properties for healthy indoor air quality.

**Meaning of Place/Sense of Community**

Off the main traffic corridor, a private entry road creates a neighborhood boundary that helps residents make a public/private transition in and out of the complex. This high density village is close to public transportation (city bus stops, a Metrolink station) and bike trails are available throughout the city including along Soledad Canyon Road. Various communal outdoor spaces (open space park, passive viewing garden, dramatic play area, gazebo, and community garden) will allow residents to relax and release tension or interact if desired. Paths lined with trees and plants are included at the perimeter of the community as well as throughout the village. Throughout the encompassing complex, trees, plants, pockets of grassy areas and various open space areas are incorporated into the site along with the homes with pathways connecting them together. This allows residents and a quiet repose in a natural habitat. The village (off the main
thoroughfare), has both a natural boundary and a built one that enforces the feeling of security, and well-being. To accommodate as many homes in the village as possible, the single story homes are stand-alone units and the two story homes are connected to each other by one main wall between two units. The homes are arranged in an organic curving pattern that follows the curvature of the natural landscape. Each building is located adjacent to spaces of nature, or within sight of plantings, trees and/or garden areas.

**Personal Space**

Having an open floor plan allows for larger personal buffer space. This is especially needed for the comfort of veterans dealing with PTSD. The design also allows for awareness of activities and people from any area of the home as well as the front entrance.

**Privacy**

Homes include either 3 or 4 bedrooms for quiet respite/place of refuge if necessary for all occupants. All walls throughout the house are well insulated to provide good acoustical sound proofing qualities and energy properties for quietness and comfort respectively. Walls that have adjacent homes are 5” inches thick and filled with high rated batting to prevent the noise from other residents migrating through the common wall. The master bedrooms are located away from the street in the back of the house for refuge.
Figure 3.4. Santa Clarita Floor Plans.

Figure 3.5. Santa Clarita Exterior Elevations.
VA Los Angeles/Sepulveda Housing

Two non-profit organizations based in Los Angeles dedicated to helping those less fortunate joined forces to renovate a VA housing complex in the San Fernando Valley. For over two decades, the first has developed permanent supportive housing for the homeless while the other has focused their energy on providing comprehensive services for local veterans. They have collaborated on the Housing for Veterans renovation project in North Hills to rehabilitate Buildings 4 and 5 situated in the middle of the VA campus. The buildings leased from the Department of Veteran Affairs have undergone extensive renovation that included asbestos abatement and seismic retrofitting and opened July, 2013.

Figure 3.7. VA Sepulveda Housing.

This 73 studio supportive housing complex is located in middle of the Sepulveda VA campus in the heart of the San Fernando Valley. Along with these buildings, there are several various VA buildings providing services to veterans in the area. This complex is close to public transportation (city bus stops, Metrolink station), cultural venues (Valley Performance Arts Center), shopping, and California State University, Northridge. Bike trails are available throughout the valley and within the village. The landscape planting has been established for many years beautifying the area with natural stability.
Throughout the complex, trees, plants and pockets of grassy areas are incorporated into the site.

This development consists of 73 permanent supportive studio apartments for homeless (including those suffering from PTSD), low-income and disabled veterans and a case manager with dining, recreation, and classroom spaces as well. In this supportive housing complex, residents receive a variety of services (case management, counseling, educational programs, etc.) to maintain their independence. In addition to the services provided in the two buildings, veterans will be in close proximity to all of other VA services on the property.

**Healing Design**

In the homes, large operable windows allow for both plenty of natural light and fresh air to be distributed throughout the area easily for comfort and calmness. Universal design properties and ADA guidelines have been also been addressed in the design of the buildings. 5% of the units are fully accessible and 2% are adaptable. The basement level of the buildings houses vital supportive services for all of the residents to accommodating on-going needs.

**Meaning of Place/Sense of Community**

The VA complex is contained within a set boundary for a contained neighborhood thus; the village has a built-in boundary. Once inside the complex perimeter, it is anticipated that the veterans will feel a sense of community belonging. Surrounding the buildings, landscaping will consist of native plantings and drought tolerant plantings. Various outdoor spaces will allow residents to relax, heal and enjoy their surroundings. A community garden will be situated on-
site next to the buildings within viewing distance of several of the units. By having communal areas and residences in the same building fosters a sense of control in individuals.

**Personal Space**

Although small (approximately 700 square feet), each resident has his or her own space that includes living, eating, and bathing areas.

**Privacy**

The communal space in the basement gives the residents the opportunity to join others in activities but still have the ability to retreat to their own rooms for privacy if desired. All walls throughout the buildings have good acoustical and energy properties for quietness and comfort respectively. Walls are well insulated for sound proofing qualities to prevent the noise from other units migrating through the common wall.
A Healing Garden

A healing garden is located on the campus of, a world-renowned hospital in the heart of the Los Angeles area in the city of West Hollywood. It is the largest not-for-profit academic medical center on the west coast. Integral to its 21st century masterplan mission of continuing to provide exemplary patient care and services, a welcoming healing garden, it has been designed to benefit patients, visitors and the community at large.

The park is a combination of both verdant native landscape and modern hardscape features that together create a peaceful sanctuary while situated right on the corner of a bustling urban intersection. As well as providing a respite space, the garden acts as a natural buffer between the busy street traffic and campus parking and state of the art buildings such as the newly built Advanced Health Sciences Pavilion.

Meaning of Place/Sense of Community

As a focal point, three central planters containing native landscape flora are positioned in a curvilinear pattern that welcome visitors off the main sidewalk into the tranquil garden area. Reinforcing the natural curved shape created by the planters, Ipe wood seating built along the stainless steel backdrop allows users a chance to relax, meditate or experience a momentary sense of peace. A hedge wall sets the perimeter of the garden allowing for a sense of safety, security and shelter.
Figure 3.8. A Healing Garden, West Hollywood.
CHAPTER IV
DESIGN PROGRAMMING AND PROPOSAL

Design Programming

The basis of this design process is built upon the information gathered from the review of literature and the in-depth examination of the three precedents outlined in the methodology chapter. Included in this investigation is design programming with site analysis, relevant program requirements including residential zoning studies and space adjacencies, and design concept applications.

Site Analysis

The open space chosen for the site of this project is located in the Hasley Canyon area of Castaic, Los Angeles County, California. Castaic is an unincorporated community approximately 10 miles north of Santa Clarita. The attributes that contributed to the site selection include available abundance of acreage and close vicinity to crucial amenities (health services, veteran resources). Equally important to the health of veterans is their continued well-being. Many sports and therapeutic arts are accessible locally. The Los Angeles County Sports Complex and Aquatic Center is approximately five minutes away by car. Miles of bicycle trails/paseos are positioned throughout the valley and an extensive amount of hiking trails of all ability levels have been created in the surrounding valleys and mountains. To also assist in the health of its citizens, the City of Santa Clarita has established two separate farmer’s markets once a week stocked with locally

grown farm fresh foods. Additionally, numerous health-related classes (yoga, exercise) are offered on an on-going basis that is beneficial to all but especially to the veteran residents. Essential to a balanced life is the abundance of various employment opportunities as well. Industries residing in this area include amusement/theme parks, entertainment, biomedical, manufacturing and aerospace among others. Public transportation (bus, metrolink, access services) is available for both the immediate area as well the entire Santa Clarita Valley. Significant cultural venues are also close at hand including Rancho Camulos, Repertory East Playhouse, Santa Clarita Performance Arts Center and William S. Hart Ranch and Museum.
This three parcel site resides on one of Castaic’s main thoroughfares, Hasley Canyon Road. The roadway begins at the Golden State/5 freeway and travels through urban areas, an industrial section and country homes and ranches. Although the site is more rural in nature with soft rolling hills dotted with oak trees and native vegetation, the expanse of space allows for both seclusion and available site lines necessary for the healing of these particular residents. Three sizes of homes will be developed and positioned in clusters of three for a total of 15 residences with the inclusion of a communal building that will be used as a meditative retreat and gathering spot. Each cluster of houses and the overall neighborhood will have meandering paths from home to home, and a community edible garden with restorative vistas of the site remaining mostly in its natural state. The access to the development will include a secondary road off the main traffic corridor to allow a sense of transition into the community. A stone clad monument and wall with plantings will designate the neighborhood, identify the village boundary and welcome both residents and visitors alike. This perfect location provides an opportunity to meet the elements of design discussed in the methodology section and build a combination of a sense of community with other inhabitants along with individual privacy and security.

Although the location is ideal, some considerations will have to be implemented. The Los Angeles County Castaic Area Community Standards District (CSD) has provided guidelines “to protect the rural character, unique appearance, and natural resources of the community”. Specifically in the Hasley Canyon area, new developments must “protect and preserve the serene, rural environment which is characterized by large lots, equestrian trails, rolling hills and significant ridgelines” (Community Standards
District, Development Restrictions, 22.44.100). This design proposal is created to be consistent with the goals of the CSD and provide significant public benefit. Meeting the burden of proof, a conditional use permit would be excepted to be approved. The goals and design of this proposal are anticipated to also have substantial community support established by the requirements.
Figure 4.1. Santa Clarita Valley Area Boundary Plan.
Figure 4.2. Aerial Site View for Proposed Project. Google earth satellite image.
Figure 4.3. Los Angeles County Assessor’s Map. Parcels 3247-032-010, 011, 041.
Figure 4.4. Los Angeles County Assessor’s Parcel 3247-032-010.
Figure 4.5. Los Angeles County Assessor’s Parcel 3247-032-011.
Figure 4.6. Los Angeles County Assessor’s Parcel 3247-032-041.
**Space Requirements**

The framework for the program requirements is the design of three different hypothetical residential spaces and a community gathering retreat concentrating on healing design concepts, select environmental psychology principles of meaning of place/sense of community, personal space, and privacy that correlated with attributes and issues of PTSD. Neighborhood program space components to assist in the healing and recovery process of veterans consist of:

- Home Space Requirements #1
  - Living Area
  - Dining Area
  - Kitchen
  - Pantry
  - Laundry Room
  - Master Bedroom
  - Master Bathroom
  - Secondary Bedroom
  - Secondary Bathroom
  - Third Bedroom
  - Studio
  - Garage
  - Outdoor living area
    - Decks
    - Breezeway
- Edible Garden

- Home Space Requirements #2
  - Living Area
  - Dining Area
  - Kitchen
  - Pantry
  - Laundry Room
  - Master Bedroom
  - Master Bathroom
  - Secondary Bedroom
  - Secondary Bathroom
  - Studio
  - Garage
  - Outdoor living area
    - Decks
    - Breezeway
    - Edible Garden

- Home Space Requirements #3
  - Living Area
  - Kitchen
  - Laundry Room
  - Master Bedroom
  - Master Bathroom
• Studio
• Garage
• Outdoor living area
  o Decks
  o Breezeway
  o Edible Garden
• Community Retreat Requirements
  • Activity/classroom area (yoga)
  • Community gathering
  • Bathroom
  • Deck
• Site Requirements
  • Home groupings
  • community retreat
  • communal garden location
  • paths
Figure 4.7. Typical Zoning Study Matrix.
Figure 4.8. Typical Adjacency Matrix.
Design Proposal

Employing the information gathered from the precedent analysis research and review of literature, a new veteran housing development is proposed which consists of three residences and a community retreat. Under the umbrella of healing design, the three design psychology concepts of meaning of place, personal space, and privacy are explored as a means to help alleviate the symptoms of PTSD experienced by veterans in their neighborhoods and homes. Through the application of these concepts directly to the homes and community retreat, specific design criteria are established to aid in the recovery of these particular inhabitants (Table 4.1). These important design details, utilized with awareness to promote health by reducing stress, anxiety, and empowering the user can create an environment of overall wellness (LaTorre, 2006, 1998).
<table>
<thead>
<tr>
<th>Healing Design Attributes</th>
<th>Concepts from Literature Review and Precedent Analysis</th>
<th>Application</th>
</tr>
</thead>
</table>
| Safety (physical/emotional) | - Freedom from fear of danger  
- Inclusion of defensible spaces  
- Sense of security | - Proper site selection  
- Outdoor space for overall viewing of site lines  
- Low vegetation  
- Combination of seclusion and open spaces  
- Community boundaries  
- Yard fencing  
- Larger overhangs  
- Deck transition  
- Patio pergola |
| Space Planning | - Spatial layouts  
- Stimulation  
- Coherence  
- Affordances | - Open space concept  
- Expanded living space with deck  
- One floor homes  
- Use of one flooring material throughout except bathrooms |
| Perceived Control | - Flexibility  
- Restoration | - Various seating areas in open concept (island, banquette, living room)  
- Access to outside spaces through multiple door configurations  
- Variation in window and door design  
- Front and back outdoor spaces including breezeway  
- Choice in furniture arrangements  
- Choice in ingress and egress  
- Choice of open/close spaces |
| Restoration | - Coping strategies  
- Stress reduction | - Gardening area  
- Interconnected paths |
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
</table>
| Sound/Acoustics| - Alleviation of PTSD Symptoms  
                 - Place of refuge  
                 - Ambient factor                                           | - Increased sound absorption wall properties                           |
| Color         | - Orientation to design  
                 - Stress reduction  
                 - Ambient factor  
                 - Model of person-environmental interaction  
                 - Cohesive transition | - Only three different wall colors  
                 - Various and ample light sources  
                 - Use of paint color mapping  
                 - Subtle hues                                                             |
| Furnishings   | - Orientation to design  
                 - Psychosocial processes  
                 - Person-environmental interaction model | - Simple lines  
                 - Sense of stability and strength  
                 - Color calmness  
                 - Lack of clutter                                                               |
| Artwork       | - Psychosocial processes  
                 - Relief from anxiousness                                      | - Additional connection to outdoors  
                 - Natural color choices                                                                 |
| Lighting      | - Psychosocial processes  
                 - Increased perception  
                 - Ambient factor                                               | - Variety of lighting sources  
                 - No fluorescent lighting due to flickering  
                 - Use of dimmers  
                 - Use of full spectrum light bulbs for increased visual acuity |
| Sense of Smell| - Positive psychological experience  
                 - Ambient Factor                                              | - Installation of native California garden for natural fragrance          |
<table>
<thead>
<tr>
<th><strong>Design Psychology Principles</strong></th>
<th><strong>Meaning of Place</strong></th>
<th><strong>Personal Space</strong></th>
<th><strong>Privacy</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comfort with safety/emotional</strong></td>
<td>• Comfort with safety/emotional connection create a sense of place attachment and belonging &lt;br&gt; • Home must be defensible and readily observed &lt;br&gt; • Sense of control over territory &lt;br&gt; • Social support</td>
<td>• Larger perimeters needs &lt;br&gt; • Need for protection &lt;br&gt; • Function of communication</td>
<td>• Respond to physical and psychological needs to augment interaction with of others or to be alone &lt;br&gt; • Spatial hierarchy &lt;br&gt; • Spatial depth &lt;br&gt; • Circulation paths &lt;br&gt; • Thresholds &lt;br&gt; • Sociopetal/Sociofugal &lt;br&gt; • Transition &lt;br&gt; • Prospect and Refuge</td>
</tr>
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Figure 4.9. Concept and Inspirational Photographs.
Figure 4.10. Proposed Site.
Figure 4.11. Residence One Floor Plan.
Figure 4.12. Residence Two Floor Plan.
Figure 4.13. Residence Three Floor Plan.
Figure 4.14. Community Retreat Floor Plan.
Figure 4.15. Residence One Dimensioned Floor Plan
Figure 4.16. Residence Two Dimensioned Floor Plan.
Figure 4.17. Residence Three Dimensioned Floor Plan.
Figure 4.18. Community Retreat Dimensioned Floor Plan.
Figure 4.19. Typical Elevation Plan
Figure 4.20. Typical Elevation Plan
Figure 4.21. Typical Furniture and Material, Living Room Photographs.
Figure 4.22. Typical Furniture and Material, Kitchen Photographs.
Figure 4.23. Typical Furniture and Material, Dining Photographs.
Figure 4.24. Typical Furniture and Material, Master Bedroom Photographs.
Figure 4.25. Typical Furniture and Material, Master Bathroom Photographs.
Figure 4.26. Typical Furniture and Material, Second Bedroom Photographs
Figure 4.27. Typical Furniture and Material, Third Bedroom Photographs.
Figure 4.28. Typical Furniture and Material, Second Bathroom Photographs.
Figure 4.29. Community Retreat Photographs.
<table>
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<tr>
<th>FURNITURE AND MATERIALS LIST</th>
<th>LIVING ROOM</th>
<th>KITCHEN</th>
<th>DINING ROOM</th>
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<td>1.</td>
<td>Area Rug</td>
<td>1. Artwork</td>
<td>1. Artwork</td>
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<td>A. PB Thyme Persian Style</td>
<td>A. Robin Purcell Clouds over Cabernet</td>
<td>A. Chris Zambon Greeting Spring</td>
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<td>B. Water Color</td>
<td>B. Water Color</td>
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<td>2. Backsplash</td>
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<td>A. Mission Tile West #178</td>
<td>A. PB Staten with antique nailheads</td>
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<td></td>
<td>B. Spinneybeck Volo</td>
<td>B. Limestone 112</td>
<td>B. Carmello Leather</td>
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<td>Coffee Table</td>
<td>3. Bar Stools</td>
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<td>A. PB Sea Grass</td>
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<td>B. Bronze</td>
<td>B. Havana Dark Weave</td>
<td>B. Cayenne DMS2-B07</td>
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<td>A. PB Reclaimed wood and metal</td>
<td>A. Mission Tile West #205</td>
<td>A. PB Rectangular Pendant</td>
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<td>B. Dark Bronze</td>
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<td>A. Milstone Eco Series Birch</td>
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<td>B. Cayenne DMS2-B07</td>
<td>B. Cayenne DMS2-B07</td>
<td>B. Subtle Velvet Finish</td>
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<td>Floor Lamp</td>
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<td>A. John Boos Butcher Block</td>
<td>A. Benchwright Fixed</td>
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<td>B. Counter Poise floor lamp</td>
<td>B. Dunn Edwards 6034 Blustery Wind</td>
<td>B. Rustic Mahogany Finish</td>
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<td>A. RH Flax</td>
<td>A. Quoizel Pendant</td>
<td>A. Custom</td>
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<td>B. Laguna</td>
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<td>A. Kraus Farmhouse sink</td>
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<td>B. Fossil Leaf Random</td>
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<td>A. Pella Designer Series</td>
<td>A. RH Flax Paint Linen</td>
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<td>10. Windows</td>
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<td>A. Pella Designer Series</td>
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<td>B. Knoll Coco K1024/3 Ciel</td>
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<td>MASTER BEDROOM</td>
<td>MASTER BATHROOM</td>
<td>SECOND BEDROOM</td>
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<td>A. Quoizel Edison</td>
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<td>A. PB Lauren Upholstered Camelback</td>
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<td>A. RH Silver Sage Silver Sage</td>
<td>A. DEFirhiz doors</td>
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<td>A. Kohler AIP Shower</td>
<td>A. RH Butter Butter</td>
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<td>B. Cayenne DMS2-B07</td>
<td>B. Espresso Finish</td>
<td>B. Subtle Velvet Finish</td>
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<td>6. Nightstand</td>
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<td>A. Campaign Accordion Table</td>
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<td>7. Paint</td>
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<td>A. RH Silver Sage Light Silver Sage</td>
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<td>THIRD BEDROOM</td>
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<td>STUDIO</td>
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<td>A. Uttermost Frisco</td>
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<td>4.       Paint</td>
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<td>A. PB Stella</td>
<td>A. RH Butter Buttercream</td>
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<td>B. Tuscan Chestnut</td>
<td>B. Subtle Velvet</td>
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<td>5.            Nightstands</td>
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<td>A. RL Jamaica</td>
<td>A. PB Mason Single</td>
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<td>B. Cherry</td>
<td>B. Rustic Mahogany Finish</td>
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<td>6.            Flooring</td>
<td>6.       Tub</td>
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<td>A. Milstone Eco Series Birch</td>
<td>A. Kohler Drop-in</td>
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<td>B. Cayenne DMS2-B07</td>
<td>B. White</td>
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<td>A. RH Flax Latte</td>
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<td>B. Subtle Velvet Finish</td>
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<td><strong>COMMUNITY RETREAT</strong></td>
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<td>A. RH Bay Laurel Sycamore Green</td>
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<td>B. Subtle Velvet Finish</td>
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Figure 4.30. Landscape Concept and Inspirational Photographs.
Figure 4.31. Typical Landscape Plan.

Key
1. McMinn Manzanita
2. Desert Willow
3. Coast Melic
4. Verbena
5. Woolly Blue Curls
6. Buttercup
Figure 4.32. Typical Landscape Photographs.
CHAPTER V
FINAL DISCUSSION

Summary of Findings

The purpose of this project was to investigate how interior design can contribute in the healing and recovery process of veterans dealing with the potentially debilitating effects of PTSD. Using healing design principles and design psychology concepts as strategies, this project attempts to lessen the gap between theory and pragmatic solutions addressing the profound issues related to veteran housing.

A comprehensive analysis of the relevant literature revealed a direct connection to evidence based design and healing spaces. The result of the project was the creation of a design framework to respond effectively to the critical relationship between the built environment and its inhabitants, specifically those people dealing with PTSD.

Implications for Designers

This project offers a model for similar future interior design projects to incorporate healing design concepts and the environmental psychology design principles of meaning of place/sense of community, personal space, and privacy into the creation of restorative housing environments and the successful role they can play in the healing and recovery process from Post-Traumatic Stress Disorder (PTSD). To succeed in creating successful holistic environment specifically for veterans, designers must embrace healing design research and psychology principles that contribute to the overall wellness of body, spirit and mind of our veterans at the same time promoting awareness of dignity, determination, and pride.
Limitations

This project was designed to be a general model rather than replicated in its entirety. It can serve as a practical base for the design of healing environments related to PTSD. The model needs to be implemented and evaluated to determine its efficacy. Although useful data was gleaned and applied to the project from the precedent analyses, there was no direct contact with veterans due to time restraints. By interviewing the subjects personally, more pertinent information could possibly be assessed to improve on the design success.
REFERENCES


New Directions. (2013).


APPENDIX

National Public Radio “Porches Knit Together New Urbanist Communities”