Better Barracks for Single Soldiers:
An Exploratory Study of Unaccompanied Personnel Housing at Fort Hood, TX.

By
Cristina T. Delgado-Howard
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Abstract

This exploratory study takes an ecological perspective in the study of unaccompanied personnel housing (UPH) or barracks environments. It explores the relationship between features, amenities, and characteristics at six levels: room, module, building, complex, cultural landscape, and social realm with indicators of interest to the military (career satisfaction, career intention, overall satisfaction, fitness, and resilience. This study was developed and undertaken in collaboration with Fort Hood’s Directorate of Public Works from 2014 through 2017. This study found that the tension between military and civilian cultures pull at one another in unexpected ways in the barracks. The resulting housing typology struggles to house the professional Soldier at home, away from conflict. Creating changes that lessen those tensions will help barracks adapt to persistent challenges and make them a more satisfying option for soldiers.
Chapter 1—Problem Statement & Introduction

I. Problem Statement

This exploratory study takes an ecological perspective in the study of unaccompanied personnel housing (UPH) environments, to better understand the relationship of features, amenities, and characteristics (FACs) to satisfaction. The military’s long-held view is that housing and quality of life are intertwined. The link between military housing and quality of life has historically focused on the needs of soldiers with families, and therefore on family housing. The underlying assumption here is that supporting families helps keep warfighters focused and resilient. It was not until the 1970s, with the professionalization of military service and widespread cultural and societal changes, that single soldiers saw a focus on their own housing as a place for the military to make quality of life improvements (Twiss and Martin 1998). Studies of unaccompanied personnel housing by the military in the 1970s revealed that single soldiers disliked barracks housing due to its highly regimented culture, lack of ability to personalize the environment, and absence of privacy (Vineberg and Taylor 1972). Since that study, the military has heavily emphasized privacy as a means of improving quality of life. The result is a move towards one-bedroom “market-style” or apartment-type housing that is inflexible in program and costly to build. Barracks housing design would benefit from an evaluation of other aspects of design that may also impact satisfaction. Identifying specific FACs that also create positive outcomes may assist stakeholders to prioritize design and policy interventions that more effectively improve quality of life for soldiers in barracks housing. This exploratory study investigates the following questions: 1) What are barracks? 2) What features, amenities, and characteristics are most related to soldier satisfaction? 3) Does satisfaction affect soldier outcomes for career satisfaction, resilience, and fitness?
This study was developed and undertaken in collaboration with Fort Hood’s Directorate of Public Works from 2014 through 2017. It explores the relationship between features, amenities, and characteristics at six levels: room, module, building, complex, cultural landscape, and social realm with indicators of interest to the military (career satisfaction, career intention, overall satisfaction, fitness, and resilience). This study explores these questions in six sections. Chapter 1 states the problem and introduces the concept of barracks housing and the rationale for pursuing a study of barracks satisfaction. Chapter 2 reviews the literature describing the application of the theoretical framework to barracks housing research. It also looks at literature related to the role of barracks housing in military operations, public policy, and quality of life. Chapter 3, “Evolution of Unaccompanied Personnel Housing,” is a historical overview of barracks housing design from the country’s founding to the present. With a firm grasp of the issues surrounding barracks housing and its design evolution, we move on to the methodology used in this study. Chapter 4 describes the design and analysis of the study survey and methods of analysis. This survey looked at features, amenities, and characteristics of the built environment as well as soldier demographics, indicators of morale, fitness, and resilience. Chapter 5 reports significant findings from the survey. Finally, this thesis project concludes in Chapter 6, with a discussion of the findings, recommendations for future areas of research, and recommendations for design and policy interventions.

II. Introduction

The move from a conscripted to a volunteer force has had profound effects on the military. As a result, single soldier housing has also changed. Military service has changed from a time-limited, wartime obligation experienced by a broad swath of Americans to the personal, professional calling of a small percentage of the population. The effects of professionalization can be seen in the data. The 2011 report by the Pew Research Center,
The Military-Civilian Gap: War and Sacrifice in the Post-9/11 Era, found that an all-time low percentage (0.5 percent) of the U.S. population has actively served in the decade of continuing conflict between 2001 and 2011. Of millennials aged 18–29, the study found that only 33 percent have an immediate family member who has served, whereas 79 percent of adults aged 50 or over have an immediate family member who served (Taylor et al. 2011).

In the same Pew study, veterans and civilians agreed that the public does not understand the problems faced by military members and their dependents (Taylor et al. 2011). This lack of experience extends to policymakers, too. A 2013 review by the Pew Research Center of data collected by the Brookings Institution found that approximately 20 percent of members of Congress have direct military experience, down from 77 percent in 1977–78 (DeSilver 2013a). As a result, fewer Americans, including the policymakers who make decisions about the use of force, military funding, and military compensation, have direct experience with military service or the conflicts in which our nation engages.

With this shift towards professionalization comes an emphasis on creating a ready force that is also an attractive alternative to civilian employment. Compensation evolved into a critical recruitment tool used by the military to compete with the job market for talent. As a result, the way in which the military houses its soldiers—a key component of compensation—has gained in importance. However, military compensation is not just payment for services; it is a policy tool that safeguards our democracy against misuse of the military by would-be tyrants and contributes to our ability to fight and win wars. Military compensation has evolved from a constitutional responsibility of the federal government to provide its warfighting force at its own expense. Compensation is a vital check against abuses of federal power that could unfairly burden the civilian population against its will and under the threat of state violence (United States Congress 1789). Military compensation checks such abuses in two ways relevant to the understanding of military housing. First, it checks potential abuse of the power
to make war. While Article II of the constitution gives the president limited ability to declare war, a representative body—Congress—must approve and fund it. That funding acts as a tool for limiting the scope and size of the military. This arrangement ensures that a majority of elected representatives agree to both the purpose and expense of war. In turn, the cost of war is borne by all states in “common defense” of the Republic. Within this framework, there is forged a covenant of service and mutual obligation between the government and its warfighters. More specifically and explicitly, the Third Amendment to the Constitution requires the federal government to house (and equip) its soldiers as a safeguard against abusive practices like forced quartering, which was prevalent during the colonial period (Childs 2011, Wood N.D., United States Congress 1789).

Secondly, compensation supports readiness. Money allocated by Congress to fund the military inevitably includes the cost of the warfighter—not just their equipment and arms, but also compensation (pay and benefits). In a volunteer military, compensation must attract, sustain, and support warfighters throughout their lives. Military compensation must predictably support personnel through the trajectory of their careers and beyond to be effective in creating and sustaining readiness as well as transforming professionals back into civilians at the end of their service. Veterans are at greater risk for suicide, substance abuse, mental health issues, homelessness, and interactions with the criminal justice system (US Veteran's Administration 2016). It is important to note that stewardship of service members after service (such as through education or VA benefits) is intended to lessen the cost to civilian society as well as successfully transition warfighters back into civilian life (Under Secretary of Defense for Personnel and Readiness 2011).

It was not until the 1970s, with the professionalization of military service and sociological changes, that single soldiers saw a focus on their own housing as a place to make quality of life improvements (Twiss and Martin 1998). At the time of writing, no
academic literature about the link between barracks design and readiness was available. However, the military’s acceptance of the role of housing in quality of life suggests that satisfaction with barracks environments may have impacts beyond the dwelling structure. In the U.S. Army’s guide to barracks management, this belief that housing is critical to retaining talent and supporting readiness is plainly stated:

“A Soldier’s living environment is an important factor to preserve and enhance the All-Volunteer Force. As the home for the Army’s single Soldiers, quality UH facilities and services are essential to providing a high QOL for single Soldiers, ensuring that all of our Soldiers live in a clean, safe, functional and secure environment. A proper environment should provide privacy and comfort as well as predictable living standards.” (Office of the Assistant Chief of Staff for Installation Management Headquarters 2014, 7-8)

Barracks residents are, by regulation, soldiers entitled (required) to live in barracks because they are single and lower enlisted E-5 (SGT and below). Single, in this context, means “unaccompanied.” These soldiers find themselves particularly detached from non-military support systems, living away from loved ones in locations they may or may not like. Single soldiers live in unaccompanied personnel housing (UPH), the successor to barracks housing. The terms “unaccompanied personnel housing” and “barracks” are used interchangeably, informally. Technically, though, they are different. We will discuss this transformation in Chapter 3. This change in terminology signals a transformation in the conceptual underpinnings of housing design and purpose.

Barracks design is a direct response to policy shifts at the federal level. These policies bear the markings of the cultural, social, and political climates that bore them. A book

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1 The term unaccompanied refers to soldiers without dependents recognized by the military in the Defense Enrollment Eligibility Reporting system (DEERS), or who are “geographical bachelors,” or divorced. Geographical bachelors are stationed separately from their DEERS dependents or are married to another soldier stationed at another duty station.
could be written on this topic, but it is not the focus of this thesis. However, it is critical that we touch on this nexus between policy and architecture throughout the evolution of UPH so that we can better understand how the structures evolved to the point they are at now. Future decisions made about these structures would benefit from hindsight and the lessons it can provide.

The next chapter, which reviews the literature, is separated into three parts. Part 1 explores the theoretical framework used to develop and understand the research presented in this study. Part 2 looks at the barracks residents: the soldiers. Part 3 dedicates its efforts to better understanding the historical and policy context related to barracks housing.
Chapter 2—Literature Review

I. Theoretical Framework

The ecological framework contends that residents and buildings interact at various chronologies, scales, and levels of experience (Bronfenbrenner 1994, Wendel, Garney, and McLeroy 2015, Coolen 2006). In this case, unaccompanied personnel housing (UPH) design is affected by federal policy and by social and cultural shifts, as well as personal feelings. Feelings about working (and living) in the military generate feelings about living in the barracks. The question is, how strong are those feelings? Because feelings about dwellings are dynamic, satisfaction levels herald the tensions between the elasticity of building design and the changing values held by its inhabitants. Buildings reflect culture; studying how satisfied people are with buildings lead U.S. to a better understanding of how to adapt them. Therefore, evaluation of buildings through the eyes of their dwellers is instructive, if not necessary (Carter and Collins Cromely 2005).

Bronfenbrenner describes the reciprocal relationship between humans and the environment as five nested and interrelated structures that move outward from innermost to outermost. He describes five levels: micro (face-to-face settings), meso (linkages between settings), exo (linkages between settings, one of which is absent the person), macro (overarching systems, or subcultures, that incorporate the other settings), and chrono (lifespan and historic period) (Bronfenbrenner 1994, Wendel, Garney, and McLeroy 2015, Coolen 2006). In other words, the ecological perspective attempts to look at a person within the context of the many factors that may influence them: space, place, culture, age, relationships, and time. Applied to barracks housing, this model is instructive because it situates housing as a complex convergence of systems interacting reciprocally with its inhabitants. This model explores how those converging systems may affect one another at
different points in a person’s experience. This model also implicates scale as a factor in how people and environments interact (Bronfenbrenner 1994).

More than just shelter, housing is the most intimate place in which individuals seek refuge from the elements and dwell within the environment; it is meaningful and necessary. Meaning is essential because it creates the rationale for how environments are shaped and used (Rapoport 1990). Amos Rapoport assigns three levels of meaning to the human experience: high level, related to overarching views and systems; middle level, related to identities, power, and wealth, which he refers to as latent functions; and lower level, everyday meanings or manifest functions (Rapoport 1988). Rapoport posits that how humans use and interact with the immediate environment is most closely linked to lower level or everyday meanings, and that therefore it is important to study features (and characteristics) of dwellings (Rapoport 1988). In other words, it is not enough to differentiate between types of environments (e.g., house, apartment, tent); it is necessary also to look at the details of those environments (e.g., table placement, decorations). Henny Coolen builds on this work, stating that dwellings anchor the individual to the environment and that meaning stems from the interaction between dwelling features and an individual’s goals and intentions (Coolen 2006). Coolen states that a dwelling may serve many functions, such as shelter, privacy, control, and status and that the meaning inhabitants may attach to features and functions reflects their intentions and goals. The use of space reflects standards and norms that differ from culture to culture and may affect expectations (Rapoport 2000).

In the development of measurements to capture the interrelated and reciprocal nature of the relationship between environment and inhabitant, Marans and Rodgers (1975) point to the role of an individual’s characteristics, such as social class and life cycle stage, on an individual’s satisfaction with environments. Their work also states that satisfaction can influence behavior. In other words, satisfaction can be used to evaluate environments and
predict behaviors via intentions (Marans and Rodgers 1975). Inhabitants also evaluate their current environment in comparison to their past experiences, and these evaluations may then also shape future aspirations. What’s more, these aspirations may influence satisfaction (Marans 2003). This concept is important because it affirms that objective quality is not enough to understand the impact of the built environment on people’s experiences. Marans suggests that we must look at objective measures, such as health outcomes, as well as satisfaction. Even more nuanced is the incorporation of the evaluation of various levels of the environment into theoretical models by Anderson and Weidemann (1985). They propose that we must not only look at objective built environment measures but also at the reciprocal relationship between environments and the user, through both physical and social variables at various levels, to explore satisfaction and predictors of satisfaction. Based on these ideas of environmental evaluation, self-reported satisfaction with features and amenities at various levels (room, building, community), is assumed to reflect the degree to which inhabitant goals and intentions/meaning harmonize with inhabitant expectations. However, this satisfaction may differ from objective measures of environmental quality and may require more nuanced approaches to indicator development, data collection, policy, planning, design, and construction.

II. Barracks Residents—The Enlisted Soldier

1. Joining

Considering that the age cap for recruits is 35, we can assume that, with a few exceptions, the entire pool of current enlistees is made up of millennials born after 1983. A 2006 thesis at the U.S. War College suggests that millennials are becoming more difficult to recruit (Drago 2006). That study found that the inclination to join the military has declined from 12 to eight percent, and the number of those who said that they would never join rose from 40 percent to 60 percent. This study suggests that a few causes are...
behind the decline: chiefly, an improvement in the economy, better career prospects, and competition by universities, bolstered by a generation who believes college is necessary for success, are blamed for the lack of interest in a military career. A 2011 report by DoD’s Joint Advertising, Market Research and Studies (JAMRS) supports the finding that secondary education draws youth away from military service early on (Carvalho et al. 2011). The JAMRS study also found that among other challenges to recruitment, eligibility plays a factor, because many youths are ineligible for health or physical reasons. A recent report by the conservative group, The Heritage Foundation, found that 71 percent of 17 to 24-year-olds were ineligible for service due to physical fitness or health requirements (Spoehr and Handy 2018). Ineligibility due to lack of physical fitness and poor fitness, especially among southern and southeastern recruits, challenges readiness by restricting the pool or recruits. It also increases the incidence of injuries during basic training (Carvalho et al. 2011, Bornstein et al. 2018).

In addition to patriotism, a call to service is often a family affair, and offers a respectable career path when options are limited. A 2014 RAND study found that money for education, benefits, and a change of life were cited more often than pay as the motivation to join the military (Rostker, Klerman, and Zander-Cotugno 2014). The JAMRS study found that the more education a person had, the less likely they were to indicate a propensity to join the military. Those who were unemployed and were not students were most likely to indicate a propensity to enlist, especially if supported by a significant other. People who felt that finding a good job was difficult were also more likely to consider joining the military. In other words, support from family or friends, education, employment, race, and eligibility were key factors determining a desire to join the military. Notably, propensity to join was highest among Hispanics. The JAMRS study also found that a
higher percentage of older recruits joined the Army; in 2010 eight percent were 29 or over, as opposed to one percent for other branches (Carvalho et al. 2011).

A 2014 RAND study found that 25 percent of older enlistees decided not to join earlier because of concerns that people close to them had about joining, but, as they got older, those opinions either changed, mattered less, or ceased to matter at all (Rostker, Klerman, and Zander-Cotugno 2014). The Drago thesis supports this finding as well; it found parental unfavorable views or ignorance of military careers also factored in declining interest by millennials. Interestingly, the study also found that longer paths towards career decisions were also a factor (Drago 2006). In other words, the military is having trouble competing for young people, who feel like they have better options early on in their career paths. However, the military is more attractive to older people looking for a second chance once they have tested the job market or have decided to pursue education with the assistance of military benefits.

Demographic data from the Department of Defense seems to echo this changing composition of the military. Today, the U.S. military is older and serving longer than in past generations (Taylor et al. 2011). According to the Office of the Under Secretary of Defense, people are entering the military at a later age than even a decade ago, despite ongoing conflicts. Non-prior service (NPS) accessions, or people who were recruited without prior military service and who made it to boot camp, declined from 69 percent to 65 percent in 2014 among those aged 18–20. Meanwhile, 21- to 24-year-old NPS accessions increased from 18 percent in 2000 to 24 percent in 2014. Data from the DoD’s Office of the Under Secretary of Defense, Personnel and Readiness confirm the trend toward older recruits (Office of the Assistant Secretary of Defense for Personnel and Readiness 2011, 2000, 2015, 2014).
Older service members were more likely to have some education or to have tested the job market and found it wanting (Rostker, Klerman, and Zander-Cotugno 2014). Both younger and older recruits cite patriotism, change of life, money for education, and benefits as highly influential to the decision to join the military despite concerns about being deployed (Rostker, Klerman, and Zander-Cotugno 2014). As a result, the military relies heavily on a narrative of professionalism, training, educational opportunities, strong benefits packages, quality of life, and a commitment to service to attract and retain qualified individuals to serve.

2. Serving

Literature and demographic data paint a picture of a fighting force that is diverse, long-serving and more battle-worn.

A) Diversity in the Active Duty Military (Army, Navy, Marines, and Air Force)

While women represented 51 percent of the civilian workforce\(^2\), women only represented 13 percent of the total (officers and enlisted) military workforce in 2016 (Bureau of Labor Statistics 2016, Office of the Deputy Assistant Secretary of Defense (Military Community and Family Policy) 2017). According to the 2016 military demographics report, approximately 15.6 percent of all enlisted service members are women, while in the Army, women make up 14.6 percent of enlisted soldiers. This number represents a slow increase in the percentage of women serving among the enlisted ranks; up just +1.2 percentage points from 2005 military-wide. The Army saw a decline (12.9 percent in 2010) and rebound during the same period, with the percentage of enlisted women remaining at the same level as 2005, at 14.1 percent, in 2016 (Office of the Deputy Assistant Secretary of

\(^2\)Workers between the ages of 16 and 54

As a result of the political climate, sexual orientation has not been reported in the military and estimates vary. In 1993, President Bill Clinton attempted to circumvent a 1982 ban on gays serving in the military with a policy of “Don’t Ask, Don’t Tell.” This policy allowed gays to serve, but not openly. President Barack Obama ended legal discrimination against gays in the military based on sexual orientation in 2011. In 2016, Obama repealed the ban on service by transgender people, although the current administration is challenging this move (Powers 2017). A 2004 publication by the Urban Institute estimated that 2.5 percent of active duty personnel were gay or lesbian (Good 2004). In 2010, Williams Institute researchers put that number at 0.9 percent for active duty service members and 3.4 percent for reserve and guard components (Gates 2010). RAND estimated in a 2016 report that there were approximately 2,450 transgender people on active duty in FY2014; equivalent to about 0.2 percent of the active duty military (Schaefer 2016).

Racial minorities (Black, African American, American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, and other) made up 33.2 percent of all enlisted components of the military, while they represented 34.9 percent of active duty soldiers in the Army in 2016. Questions related to race did not include Hispanic or Latino as a designation, but 15.5 percent of whites across all branches considered themselves to be Hispanic or Latino. This 2010 change in designation from a racial minority to a category within all racial groups makes numbers hard to compare to with previous periods. Between 2010 and 2016, the Army saw a +3.8 percent growth in racial minorities among its ranks, compared to
+1.8 percentage increase across all four branches (Office of the Deputy Assistant Secretary of Defense (Military Community and Family Policy) 2017). Recent data on immigration and military service is not easily accessible, despite the fact that immigrants have served in the U.S. military since the founding of this country (Department of Defense 2008). However, USCIS reports that 109,321 service members were naturalized, or became citizens while in the military, since 2001 (US Citizenship and Immigration Services 2017). This number does not account for immigrants who already held citizenship at the time of joining, or first-generation Americans with at least one immigrant parent. A 2016 study of immigrant veterans by the Migration Policy Institute states that three percent of all 18.8 million living veterans are foreign-born and that 1.5 million veterans had an immigrant parent (Zong and Batalova 2016).

Service members come from all over the United States; California, Texas, North Carolina, Virginia, and Georgia contribute 43 percent of all active duty service members in 2016 (Office of the Deputy Assistant Secretary of Defense (Military Community and Family Policy) 2017). There is a wide education gap between enlisted and officers with only 6.9 percent of enlisted members holding only a bachelor's degree, compared to 43.2 percent of officers.

B) Military Careers

Service members are older and longer-serving than past cohorts. The Pew Research Center confirms military demographics data; according to Pew, the average age of an enlisted soldier rose from 25 in 1973 to 27 in 2015. The average age of officers also rose during the same period, from 32.1 to 34.5 years (Parker, Cilluffo, and Stepler 2017). Although data is surprisingly hard to find on the average length of service during different periods of war, the National WWII
Museum – New Orleans reports that service members served an average of 2.75 months during WWII (National WWII Museum - New Orleans 2018). A 2011 report by the Pew Research Center estimates the average length of service during the Vietnam War, which ended in 1973, at 5.8 years. According to the same report, length of service peaked at 7.5 years in 1996, and fell to 6.7 in 2011 (Taylor et al. 2011).

Warfighters are fighting more. Since 2001, the U.S. has been engaged in multiple major combat operations as well as in additional commitments around the world as a result of the exercise of the War Powers Resolution by the President of the United States, humanitarian efforts, and commitments to international partners (Torreon 2016). The human cost of enduring war in the post-9/11 period (as of March 5, 2018) is 6,949 dead and 52,644 wounded; these numbers are a result of just five major operations and do not include non-combat fatalities and injuries or other operations (Department of Defense 2018). Shifting our focus to the Army specifically, we can get a picture of deployments by looking at the percentage of troops serving internationally since 1977. At times of heavy commitments, the percentage of the military serving outside the U.S. and its territories has been over 50 percent (Office of the Assistant Secretary of Defense for Personnel and Readiness 2011, Department of Defense 2015).

The deployment burden is heavy for the Army; between 2001 and 2011, 73 percent of soldiers had deployed to Iraq and Afghanistan, with 25 percent of

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4 Data related to personnel tempo (PERSTEMPO) is incomplete and/or fragmented prior to the development of the Contingency Tracking System in the 2000s.
soldiers racking up to two years in theater; 17 percent of soldiers deployed cumulated up to four years (Baiocchi 2013). The small, elite community of Special Operators across all branches has been hard hit by the deployment burden; General Mattis recently testified to Congress that Special Operators are working in 149 countries across the world and are at their breaking point (South 2018).

3. Special considerations

A) Quality of Life

The Department of Defense considers quality of life crucial to recruiting and retaining quality personnel in a ready volunteer army (Twiss and Martin 1998, Department of Defense 2013). In addition to providing safe, affordable places to live, military installations provide quality of life programs such as on-post services like health, recreation, child care and schools, commercial areas, and employment-related services. A 2011 study of Army Morale, Welfare, and Recreation (MWR) Programs found that use of those programs is associated with increased attachment to the Army, intention to re-enlist, satisfaction with the Army, and desire to stay in the Army until retirement (Marshall-Mies 2011). A 2014 study of Navy retention found that quality of life also influenced a sailor’s decision to stay or move on from a military career (Snodgrass and Kohlmann 2014).

B) Living where you work

Barracks housing is a live/work environment organized around the concept of unit integrity. Unit integrity, in relationship to housing, means that soldiers who are assigned to a particular unit are housed together. The military believes that good leadership and strong unit cohesion buffer the effects of frequent deployments, direct engagement with combat conditions, and the separation from civilian life (Department of the Army - Headquarters 2013, Office of the Assistant
Chief of Staff for Installation Management Headquarters 2014. A quick look at job satisfaction literature suggests that job satisfaction in the military is tied to its organizational climate; a 1999 review of the literature found that cohesion was positively related to job satisfaction, retention, well-being, and readiness (Oliver et al. 1999). A 2004 study found that high levels of job-related pressure and job-related issues were the biggest indicators of dissatisfaction with military life (Sanchez et al. 2004). The same study found that junior enlisted soldiers were less satisfied than midcareer personnel and officers. African Americans (active and reserve) and Hispanics (reserve) were also less satisfied (2004). Research suggests that work influences satisfaction. Therefore, the concept of unit integrity in barracks has the potential to be a double-edged sword when work and attitudes related to the work place bleed into the private realm. This is an important issue that merits more research.

Military policy recognizes that in-person interactions are necessary to reinforce trust, respect, and understanding between soldiers and their leadership. This philosophy is embedded in the development of the First Sargent’s Barracks Program 2020. This program hands day-to-day management of barracks housing to individual units. The goal is for leadership to play an active role in making sure soldiers are living in good conditions; unit leaders are responsible for their soldiers’ well-being (Office of the Assistant Chief of Staff for Installation Management Headquarters 2014). Unit integrity and unit cohesion are top priorities in the design and implementation of barracks housing projects (Office of the Assistant Chief of Staff for Installation Management Headquarters 2014, Neuhaus et al. 2010b, United States General Accounting Office 1999b).
The impact of leadership on the barracks environment has the potential to influence soldier satisfaction with military life at the individual and group level as well as at the institutional level. Research suggests that how well leadership teams are perceived to work together has an impact on unit morale, performance, and individual perception of work satisfaction (Mael and Alderks 1993). Interestingly, researchers looking at fairness and equal opportunity found that when soldiers perceive the organization at large to have policies that are biased toward their particular demographic group, this feeling also influenced how they felt about their particular work group (McIntyre et al. 2002). Leader support appears to play a heavy role in creating positive outcomes for subordinates. A 2002 study found that perceptions of task and emotional support by leaders buffered the effects of stress (Griffith 2002). While peer support has a positive impact on well-being, job-related self-esteem, company identification, and performance motivation, leader support has a stronger effect (Weiner 1990).

Morale is also affected by the policy environment. In the annual Military Times survey conducted in 2014, reporters found that morale across the branches was low and that a pervasive sense of pessimism was underwritten by long, seemingly intractable wars, and a sense that budget cuts don’t adequately fund missions or compensate the people who execute them. A Military Times survey of 2,300 active-duty troops found declining morale indicators in nearly every aspect of military life. Troops report significantly lower overall job satisfaction, diminished respect for their superiors, and a declining interest in re-enlistment now compared to five years ago (Cohen 2015, Tilghman 2014).

“Today’s service members say they feel underpaid, under-equipped and under-appreciated, the survey data show. After 13 years of war, the all-volunteer
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military is entering an era fraught with uncertainty and a growing sense that the force has been left adrift.” (Tilghman 2014)

The Military Times survey indicating a sharp drop in morale cited various factors: uncertainty due to cuts to equipment, benefits, health care services, and a loss of job security due to troop reductions top the list. Troops also felt underappreciated (Tilghman 2014).

C) Health Effects of Sustained Warfighting

Stress and stress-related health concerns are a major health concern for active duty (AD) and reserve component (RC) military personnel. The U.S. Army’s Medical Department – Department of Behavioral Health has described combat and organizational stress as being experienced by ALL military personnel (Reynolds et al.). Health status is also an important factor in predicting career satisfaction among active-duty components (Sanchez et al. 2004). Sleep disorders and short sleep duration are prevalent in active duty service members whether they are non-deployed or deployed (Mysliwiec et al. 2013, Bramoweth and Germain 2013, Wendy M. Troxel et al. 2015). The 2015 Congressional Research Service report lists cases of newly diagnosed post-traumatic stress syndrome at 138,197 in recently deployed and 39,264 not deployed (Fischer 2015). As a result, the effect of stress on active duty military personnel is an important area of concern. A 2012 study of active duty (Army, Navy, Air Force, and Marines), and reserve components found that military personnel around the world (spanning pay grades and genders) with higher post-traumatic stress syndrome scores (using the PCL-C), typically correlated with problematic alcohol use, driving after drinking, physical aggression, verbal aggression, and risk-taking/impulsiveness (Brown 2012). A notable finding to emerge from this study is that personnel with scores lower than the clinical diagnostic range for PTSD (50 or higher) were at higher risk for
substance use and other problems. For example, 53.81 percent of active duty personnel who scored between 30 and 43 on the PCL-C were considered impulsive, compared to their peers at 27.59 percent who scored between 17 and 29. Heavy alcohol use also increased from 17.39 percent (17–29 score) to 25.49 percent. However, this study was cross-sectional and intended as a descriptive study. The authors cannot infer causality; they suggest that other factors, such as length of deployment, number of deployments, family, and social supports may also play a role in the interaction of PTSD symptoms and “problem behaviors” (Brown 2012). The suicide rate across all active and reserve component services was 19.9 per 100,000 service members in 2014; the suicide rate in the Army was 23.8 per 100,000 members (Pruitt 2014). Veteran suicides occurred at a rate of 37.0 per 100,000 in 2014 (US Veteran's Administration 2016).

Deployments pose additional health and morale concerns for soldiers. Other physical injuries affect mental health and are prevalent in people who been deployed to combat. Traumatic brain injury (TBI) across all branches and all conflicts between 2000 and 2015 was 327,299 (Fischer 2015). Soldiers who have experienced deployments of 12 or months in Iraq or Afghanistan were less likely to reenlist (Hosek and MacDermid-Wadsworth 2013). A 2012 study looking at the effect of mental health symptoms and organization climate among male enlisted U.S. Army infantry brigade soldiers who had been deployed to Afghanistan5 found those with poor mental health—in particular, anxiety-related symptoms—were more than three times more likely to leave the Army than those who didn’t report similar symptoms (Wright et al. 2012). Deployment increases personal and work

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5 Afghanistan (Operation Enduring Freedom (OEF)) or Iraq (Operation Iraqi Freedom (OIF))
stress, although an increased level of preparation and leadership decreases stress among those with supportive leaders (Hosek and MacDermid-Wadsworth 2013).

In response to these challenges, including a concern over the growing number of suicides, the U.S. Army adopted a multifaceted approach to readiness at the personnel level, called “Ready and Resilient.” “Ready and Resilient” considers personal physical, emotional, spiritual, family, and social factors as the five pillars of strength (resilience) that are critical to the ability to execute missions (readiness). Army Directive 2013–07 states:

*The Ready and Resilient Campaign is a far-reaching and comprehensive campaign to enhance individual and collective resilience in order to improve readiness across the force. This campaign is integrating and synchronizing Army initiatives aimed at improving physical, psychological and emotional health. (US Army 2013)*

This approach attempts to create a culture of resilience that the Army views as critical to readiness. In this framework, resilience is something that can be trained and reinforced. All levels of personnel, from the command level down to the soldier’s family members, are expected to build and maintain readiness (Department of the Army - Headquarters 2013). The concept of resilience recognizes that physical, mental, and emotional factors play a role in overall fitness. Housing contributes to mission readiness by ensuring that service members and their dependents have adequate, affordable housing no matter where they are stationed. (Under Secretary of Defense for Personnel and Readiness 2011)

In sum, the research suggests that a desire to serve, direct experience with military culture, and strong benefits attract recruits. There is also a demographic shift towards older recruits looking for career and educational opportunities and
Hispanics of all races showing a greater propensity to serve. Education benefits seem to be an important motivator to serve. The military is diverse, with people serving from all over the country; immigrants also serve. Men, women, gender non-conforming people of all races and ethnicities, and sexual orientations also serve. Once recruits are in, they serve longer and see more war than previous generations.

Single enlisted soldiers who live in barracks have special considerations when it comes to their morale and well-being. Barracks housing is designed and managed to leverage leadership to promote unit cohesion and create a safety net for soldiers living away from home. While good leadership promotes good outcomes, bad leadership may have a negative impact. Barracks residents also have special health considerations related to their military service. Stress and stress-related illnesses, physical harm, and increased risk of suicide are considerations to consider within this population.

III. The Barracks Dwelling

Barracks are defined in the *Oxford English Dictionary* as “a large building or group of buildings used to house soldiers” (*Oxford English Dictionary* 2016a). A second definition describes barracks as a “building or group of buildings to house a specific group of people, such as laborers or prisoners, in austere conditions” (*Oxford English Dictionary* 2016b). Looking at the definition of barracks is instructive in understanding the evolution of barracks into unaccompanied personnel housing (UPH). While these terms are used interchangeably, UPH represents a new type of housing—a hybrid of civilian home and military barrack. This chapter explores that evolution and the resulting tension that emerges. We must first understand what makes a barracks, before we understand how it has evolved.
Barracks are highly specific. Typically, barracks residents have been itinerant wards housed while they execute a particular function under the control of a paternalistic entity. They are, as the definition suggests, soldiers housed in service of government, prisoners serving their sentence under control of the state, or workers housed by large companies as they toil. Barracks housing is by nature very different from other types of housing in that its design evolved in response to a temporary and highly controlled activity by a group of people in service to a specific placed-based function separate from where they originate from. In other words, agency is temporarily held by the guardian in return for shelter as a ward moves to fight, serves out a sentence, or labors. This general concept of barracks housing reveals some defining characteristics of the typology. Barracks are paternalistic, temporary, specific, basic and bulky in nature.

John Childs, military historian, suggests that barracks arise with the advent of standing armies and serve to separate the military from the civilian population. Early tensions arising from the ebbs and flows of anti-militarism caused by conflicts, forced quartering, occupation, and bad behavior by soldiers were the primary factors that led to the re-establishment of barracks housing in England after the end of the English civil wars. In some parts of France, barracks were used to protect women from the corrupting influence of soldiers. Meanwhile, the French monarchy felt that soldiers should be shielded from the influence of the Enlightenment to ensure loyalty. Across Europe, after the Napoleonic wars, mass conscription swept the continent and required swift indoctrination. Garrisons were built with barracks to cloister soldiers while reinforcing military values and training (Childs 2011). This reveals three additional defining characteristics of barracks: housing for standing armies, immersion in military culture, and separation from civilian society.

In the nascent United States of post-colonial British rule, the military would be placed under civilian control and forced quartering was prohibited by the Constitution. The housing
of soldiers was institutionalized as a responsibility borne by the citizenry through a representative government. Installations between the periods of independence and 1880 were primarily for protection during federation, western expansion, and training. Early barracks were mostly temporary, built on the outposts of the westward moving frontier by hand with local materials under the supervision of the Quartermaster Corps. These forts were often established and abandoned within a short time. Barracks at the forts typically consisted of group sleeping quarters, a kitchen, and a mess room. The few, mainly coastal, permanent fortifications were built by the Army Corps of Engineers and housed troops within the casements of the stone built fortifications (Kuranda et al. 2003, Harold and Goran 2011). These barracks featured another important characteristic—the integration of food and shelter under one roof.

IV. Why does the military house soldiers?

1. Early Precedents

No Soldier shall, in time of peace be quartered in any house, without the consent of the Owner, nor in time of war, but in a manner to be prescribed by law.

(1791)

A) Guarding against Government Tyranny

John Childs provides a useful description of the role of early British barracks in civil-military relations relevant to the United States. Founded in 1776 by European colonists under British military occupation, the U.S. drew on its European antecedents in housing soldiers. Until the late 1700s, standing armies were temporary. As makeshift armies stood up across the continent, soldiers were quartered in private establishments (inns, taverns, barns, etc.). Discipline, skill, and unit cohesion suffered as soldiers interacted with civilians unrestricted by command structures. Soldiers were moved around or re-billeted regularly to reduce bad habits or the formation of problematic relationships with civilians. While some
economic benefits were reaped by housing, feeding, entertaining, and clothing soldiers, in practice, civilians found it hard to recoup the cost of housing and feeding from the government. As a result of dissatisfaction stemming from forced quartering without financial compensation during the English Civil wars, the Disbandment Act forbade this practice in private households. Going forward, small groups of soldiers would be lodged in public houses near garrisons. However, the presence of soldiers was so unpopular that they adversely affected business, and innkeepers paid soldiers to eat in their rooms and avoid public areas (Childs 2011).

The European experience informed U.S. thinking about standing armies. The Continental Army was formed on June 14th, 1775, predating the declaration of independence by just less than one year (Wright 2016). Ratified in 1781, article IX of the Articles of Confederation allowed the fledgling republic to raise troops in common defense of the United States and gave Congress the sole power to declare war. It also required that the cost of clothing, arming, and equipping troops be borne by the United States collectively (US Continental Congress 1777). The nation’s founders, freshly free of colonial rule and occupation and informed by hard-learned European lessons, were wary of standing armies in peacetime and slashed the Army to a single regiment of 700 men. (Wright 2016) Safeguards were put in place by the Articles of Confederation (US Continental Congress 1777), the Army Clause in 1787, and the Act for the Establishment of Troops in 1789 (Wright and MacGregor 1987) to ensure cooperation between governing branches in the civilian control of the military as well as to provide regulations for how the military would operate. Notably, the Act of Establishment of Troops required service members to pledge an oath to protect and defend the Constitution rather than a particular person, government branch, or state (National Constitution Center Staff
2016). That same year, the First Congress of the United States ratified the Bill of Rights; its Third Amendment treats the housing of soldiers with constitutional significance in the preservation of democracy.

The Founders were sensitive to forced quartering of British soldiers during colonial times. They felt that forced quartering of armed British soldiers within their homes and communities was a form of hostile occupation. Colonists were forced to provide accommodations for soldiers as well as provisions at their own expense. By barring the forced quartering of soldiers during war and peacetime, the 3rd Amendment prioritizes the rights of individuals, their private property, and their privacy over military prerogatives. The Third Amendment also creates an obligation for the government to pay for the military (Wood N.D., 1791). In sum, the policy of government housing for soldiers is designed to protect democracy while preserving private property and privacy from military oppression as a result of occupation.

B) **Food, Shelter, Clothing, and Family—The Ready Warfighter**

Another lesson from the Revolutionary War period instructed that lack of food, clothing, and shelter not only demoralizes troops but also leads to desertion, illness, and mutiny (Bowman and American Council on Public 1943). Exposure to the elements, as well as disease, is thought by historians to have accounted for at least 10,000 deaths during the Revolutionary War; more than the 7,200 soldiers who died in combat (Mintz and McNeal 2016). Not surprisingly, food, shelter, and clothing became critical components of the mission.

During the Revolutionary period, military leaders also recognized the vital role military families played in the support of morale and provision of camp services (Zlatich 2013). Families followed the movements of military camps and were incorporated into the day-to-day running of posts, providing goods and
services—the term “camp follower” was coined. It is estimated that around 20,000 women had paid positions during the American Revolution. These women typically did jobs that soldiers do today (such as engineering, supplying, laundry, cooking, etc.) and sometimes found themselves on the front line (Gundersen 2005). During this time, commanders found that the presence of family member camp followers (and presumably their services) reduced desertion of military personnel; as a consequence, they began issuing partial rations to women and children (J. 2002). Knowles states in his book that Washington understood that the hardships of war and that the specter of desertion could only be offset by increasing soldier comfort (or, as we would call it, quality of life) and reducing the pull of home by bringing home on the road (Bolton 1902) Low morale, poor camp conditions, and homesickness were all distractions to the warfighter. These distractions could be remedied by folding families into the mission. Washington himself expressed the importance of camp followers to military morale and mission in a letter to Robert Morris in 1783:

In a word I was obliged to give Provisions to the extra women in these Regiments or loose by Desertion—perhaps to the Enemy—some of the oldest and best Soldiers in the Service. To suspend the publication of the allowance I could not because it was a link into & became part of a Plan which was to have an operation in a few days, to wit before the first of this Month. (Washington 1783)

George Washington, 1/29/1783

This period sets the precedent for three important and underlying understandings about food, shelter, clothing, and quality of life to military operations: First, mobility brings special challenges—everything and everyone must move. Although somewhat obvious, the mission requires that warfighters live near their duty posts or the battlefield. As a result, the government must provide
food, shelter, and clothing, both in the theater, and at home. Soldiers must also be allowed to have families, and those families must move with them when feasible. The logistics of feeding, sheltering, and clothing a transient force and its families is key to the mission.

Two: Families are part of the mission. Focused warfighters are not only fed, fit, and clothed, but also free of distraction. Until the 20th century, rations provided the fuel for fighting, while tents and handmade structures built of local and available materials provided shelter (Kuranda et al. 2003, Simmons 1983-1984, Bowman and American Council on Public 1943). Appropriate housing and good food ensures that warfighters are undistracted by the elements or hunger. But the Continental Army was also quick to understand that the pull of home is strong, distracting, and demoralizing. Early on, the military learned that when soldiers worry about the welfare of their families or miss the loving support they provide, it hurts the mission. It also recognized that some families took matters into their hands and began following their soldiers around anyway. In doing so, these “camp followers”—chiefly women and children—also cooked, washed, and sold provisions (Gundersen 2005, J. 2002). Folding families into the mission ensures that soldiers aren’t distracted by the immediate needs of a distant home. In return, families provide an enormous amount of emotional, spiritual, and sometimes material support. Today, the Army’s policy of family inclusion is called “Total Army Strong.” It acknowledges that family members and the civilian workforce provide support for warfighters as well as the installation and incorporates them into the force (Leopold 2014). In sum, families were part of the mission from the beginning and their role continues to be mission critical.
Third: food, shelter, and clothing are part of compensation. The Constitution requires that we agree to and pay for our wars collectively. To accomplish the mission of warfighting set forth by this directive necessitates a ready (focused, fit, trained, and provisioned to fight) force. The government is therefore required to provide housing for soldiers during war and peacetime (Wood). The practical effect of this is that if the U.S. wants to have a military, it has to figure food and shelter into the equation as a necessary component of force infrastructure. From the early rations, uniforms, and pay provided to the Continental Army, the genesis of what would become basic military compensation emerges. Over time, the policy of requiring the military to provide housing for soldiers would take the shape of compensation for housing and evolve into what is today called Basic Allowance for Quarters (BAQ) for barracks and Basic Allowance of Housing (BAH) for privatized housing. Food would be covered by Basic Allowance for Substance (BAS) or a meal card. Clothing is today covered by an annual military clothing allowance for lower enlisted soldiers and the issuance of warfighting gear.

C) Conscription and Conflict

Throughout its history, the United States has invoked conscription (the draft) as a means of meeting wartime personnel demands. Conscription is enacted via law (induction authority) and executed through the authority of the Military Selective Service Act that requires all men between the ages of 18 and 25\(^6\) to register with the Selective Service Agency. Its stated purpose is “to provide manpower to the armed forces in an emergency, and to run an Alternative Service Program for men classified as conscientious objectors” (Selective Service System

\(^6\) At the time of writing a proposal was passed by a panel of the House of Representatives to include women in selective service; the proposal is awaiting Senate approval before it can be signed into law. (Shane 2016)
2016). In the case of activation, the Selective Service Agency establishes state, local, and appeal boards to process draftees brought in via random lottery. Typically, conscription has occurred only during wartime and ended when wars ended. In spite of bipartisan resistance to being pressed into service, the Supreme Court upheld the constitutionality of the draft in a 1918 ruling. The ruling cited the duty to bear arms as a duty of citizenship in order to order to defend the sovereignty of the United States:

“The highest duty of the citizen is to bear arms at the call of the nation. This duty is inherent in citizenship; without it and the correlative power of the State to compel its performance society could not be maintained.”

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The draft ensured the military could meet national security challenges and has been used since the Civil War. Most soldiers served out their time in a conflict and returned to civilian life immediately after their service. Soldiers drafted for conflicts would live primarily in mobilization barracks and camps. These temporary structures gave the military a certain elasticity in its ability to respond to conflict as well as keep a small permanent force. Most of these structures haven’t survived, nor were they meant to (Kuranda et al. 2003). Permanent party barracks used by officers and career enlisted men housed one to two companies and were adorned in a simplified style popular to the time. They were conspicuous, character-defining architectural features on the installation (Kuranda et al. 2003, Rostker and Yeh 2006).

The Cold War (1946 to 1989) would bring a subtle but important change to the military—a larger standing army. Previously, the U.S. maintained a small

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7 Selective Draft Law Cases., 38 S. Ct. 159, 245 U.S. 366 (1918)
footprint and expanded in response to conflict. For example, in 1934, during the interwar period, the Army had 118,750 people. In 1945, the last year of WWII, the Army had 8,267,958 people. During peacetime between WWII and the Korean War, the Army maintained an end strength around five times larger than in 1934. After the Korean War, the Army would maintain troop levels eight to nine times that of 1934. This large number of warfighters, permanently stationed on installations, pushed housing capacity to its limits. Starting in 1950, the Army would build new barracks based on standard designs, rather than installation-specific designs, in order to cut costs and increase efficiency (Kuranda et al. 2003).

The Vietnam Era brought about a revolution—the idea that military service was a duty, rather than a choice, was challenged and ultimately lost its political and ideological battle. During the Vietnam War, the baby boomer population reached eligibility for the draft, causing a glut of manpower that the U.S. military could not absorb. This excess of eligible men led to inequitable draft practices that favored middle and upper-class whites. Education and health deferments were more easily obtained by those who could afford to go to college and had access to health care. Early on, exemptions and deferments ensured that they would not see combat, and a disproportionate burden was borne by poor whites and minorities. Draftees (typically poor and/or minorities) were also more likely than volunteers to fight on the front lines and die in combat during the Vietnam War (Griffith 1996). As a result, the draft, intended as an equal and universal service requirement during wartime, was perceived (with good reason) as a discriminatory practice against the poor and minorities.

As the Selective Service Act neared expiration in 1967, two groups were tasked with looking at the issue: the President’s National Advisory Commission
Selective Service and the Congress’ Civilian Advisory Panel on Military Procurement. The draft faced opposition on both sides of the aisle. On the left, anti-war sentiment was bolstered by civil rights concerns. On the right, the draft was seen as an affront to personal liberty; conservatives argued that no citizen should be “pressed” in to service. In the end, no real reforms were enacted, and both groups supported the reenactment of the Selective Service Act while dismissing the idea of a volunteer army all together. However, in the Senate, alternatives to conscription swirled. In 1967, a report by moderate and liberal Republicans entitled “How to End the Draft: The Case for an All-Volunteer Army” was published. The issue of conscription was front and center on the political stage.

During the 1968 election year, all candidates endorsed some sort of draft reform, including the Republican candidate, Richard Nixon, who favored ending the draft at the end of the Vietnam War (Griffith 1996). Once elected, Nixon removed education deferments and instituted a lottery in order to make the draft more equitable. In 1971, he signed into law an end to the draft that went into effect in 1973, eliminating conscription in favor of an all-volunteer force. Selective service went into “deep standby” (Selective Service System 2016). The burden of warfighting shifted to a small cadre of professionals who volunteer to “protect and defend the constitution” on behalf of all citizens of the United States of America as a career. The complete professionalization of warfighting at all its ranks began. No longer was military service considered the (conflict specific, time limited) duty of all Americans. With this change came a re-imagining of barracks housing into a new form called unaccompanied personnel housing—a hybrid barracks and civilian style home. This type of housing is a chimaera of sorts, which keeps some of the
D) Compensation is Part of the Mission

The decision to create a professional military has also resulted in a large financial obligation that must be met in order to recruit and retain service members. The military is a professional organization that relies on strong benefits to attract recruits. Compensation evolved to recruit and retain quality talent, but also to “support the military, strategic, and operational plans” of the United States (Under Secretary of Defense for Personnel and Readiness 2011). The decision to join the military is both a patriotic and professional act. As a result, fair compensation with the opportunity for advancement (in service or as a result of service in the civilian world) is embedded in the pact between service member and government.

Outlined in the Defense Department’s Military Compensation Background Papers (2011), the U.S. military operates under six guiding principles in relation to the compensation of service members:

1. **Manpower and Compensation are linked and are a component of military activity.** When compensation does not support manpower adequately, it can lead to numerous negative outcomes which hurt readiness, including damage to unit cohesion and integrity, poor morale, loss of discipline and motivation, and an inability to execute missions and objectives.

2. **Compatibility with Technology and Tactics.** Changing technologies may warrant additional incentives to draw talent into those talent pools.

3. **Equity.** In order to maintain and/or increase morale, service members must feel that they are being treated equitably and are able to work for
promotions. Pay should also be competitive and comparable with that of civilian counterparts.

4. **Effectiveness in Peacetime and War.** Compensation systems should be reliable and flexible in order to respond to rapid growths and reductions required by military objectives.

5. **Flexibility.** Compensations systems must have a clear idea of a base force strength in order to become efficient and plan for surges or reductions in force size.

6. **Motivational Aspects.** Compensation should encourage advancement while setting a baseline that acknowledges service, the service member’s role, and the institutional importance of that role. In addition, service members must be encouraged to leave service through an adequate retirement or severance package once they can no longer serve due to physical, mental, or age-related reasons.

Understanding DoD’s guiding principles is critical to understanding the role that compensation and benefits have in the sustainment of the U.S. military. It is important to note that principles 1, 3, and 6 underscore the link between morale, readiness, and compensation. What’s more, equity, or the feeling of being treated fairly, is also important to morale.

**Housing: Constitutionally Required Compensation**

Barracks housing serves several purposes. As previously discussed, the housing of soldiers is required by the Constitution, via the 3rd Amendment, in order to guard against abuses of power by the government through practices like forced
quartering (United States Congress 1789). Military service requires warfighters to move to where the need is (“Needs of the Army”) resulting in forced, frequent moves at unpredictable intervals (Twiss and Martin 1998). The military has traditionally housed its soldiers in barracks. Barracks are conceptualized by the military to do three things: 1) ensure safe, predictable, adequate housing for soldiers; 2) allows units to maintain command and control (C2) abilities over a unit; and 3) reduce costs associated with off-post housing allowances (Office of the Assistant Chief of Staff for Installation Management Headquarters 2014).

(1) Safe, predictable, adequate housing for soldiers

A Soldier’s living environment is an important factor to preserve and enhance the All-Volunteer Force. As the home for the Army’s single Soldiers, quality UH facilities and services are essential to providing a high QOL for single Soldiers, ensuring that all of our Soldiers live in a clean, safe, functional and secure environment. A proper environment should provide privacy and comfort as well as predictable living standards.”

(Office of the Assistant Chief of Staff for Installation Management Headquarters 2014)

Inadequate housing and housing shortages have been experienced periodically throughout the history of the U.S. military and is considered a considerable challenge to maintaining readiness and good morale (Kuranda et al. 2003, Twiss and Martin 1998). Barracks housing is conceptualized to provide an equitable (within the ranks) housing environment that enhances readiness (Office of the Assistant Chief of Staff for Installation Management Headquarters 2014).
(2) Command and Control

Barracks are used to maintain order, discipline, and indoctrination in military culture. Here we see many of the characteristics (paternalistic, immersive, separate from civilian life) of barracks housing most clearly articulated. The U.S. military defines command and control as “the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission” (Department of Defense 2016). This broad definition, when applied to barracks, refers to the ability of the commander to ensure that people under his command are safe, healthy, and ready to fight (Office of the Assistant Chief of Staff for Installation Management Headquarters 2014). The commander fulfills a paternalistic role in the care and discipline of warfighters through the provision and management of barracks housing. Barracks are also thought to maintain good order and discipline through strict behavioral control, including rules, regulations and threats to military career—especially for young recruits (Childs 2011, Twiss and Martin 1998). This is perhaps a remnant of the early discipline problems caused by troops staying in private residences, inns, and public houses in Britain, Europe, and the colonial United States during the era of forced quartering (Childs 2011). Residents of barracks housing are subject to a number of responsibilities, rules, and regulations as well as no-notice inspections and health and welfare checks. Barracks are also used to restrict the movements of warfighters who are facing disciplinary actions and to watch those who are under evaluation for suicidal or homicidal behaviors (Brown and Sheridan 2015, Office of the Assistant Chief of Staff for Installation Management Headquarters 2014). Barracks also reinforce and
immerse warfighters in military culture and are thought to aid unit cohesion by housing companies together (Twiss and Martin 1998, Childs 2011). Until the 1970s, when barracks housing morphed into unaccompanied housing, warfighters were typically housed in open bays with large groups or with smaller groups called squads. Today, warfighters live in one to two person modules but are housed with their companies in an attempt to aid unit cohesion (Kuranda et al. 2003, Office of the Assistant Chief of Staff for Installation Management Headquarters 2014).

(3) Reduce Costs Related to Housing

Barracks housing is thought to save the government money. At the time of writing, the cost of providing barracks housing versus privatized UPH is not clear in available reports. The Government Accountability Office issued a report in 2014 that reviews unaccompanied personnel housing privatization pilot projects by the Army, Air Force, Marines, and Navy. It found that privatization was feasible in some areas, because private construction is less expensive then military construction. However, the cost savings quickly dissipated once the future fiscal obligations required by making lower-enlisted soldiers eligible for Basic Allowance for Housing (BAH) and Basic Allowance for Subsistence (BAS) were considered (United States General Accounting Office 2014).

Unmarried service members aged 17 to 35 will live in barracks housing for at least some part of their military careers. As discussed earlier, service members receive a Basic Allowance Quarters (BAQ) in Partial BAH or Full BAH (if eligible), and BAS as part of their regular compensation. Eligible service members who live on-post in privatized housing receive the
Basic Allowance for Housing (BAH), but it is automatically deducted from their pay; BAS is paid in cash. Service members who live-off post receive their BAH and BAS in cash, which they can use to pay for housing and food in the private market (Under Secretary of Defense for Personnel and Readiness 2011). Eligibility for off-post quarters is determined by the availability of on-post housing, rank, dependency status, and geographic location. The purpose of BAH is to provide money to pay for housing when the government does not or cannot provide adequate housing. Each service member receives a different amount based on the median value of rent, utilities, and housing-related expenses in the area where they are stationed (Under Secretary of Defense for Personnel and Readiness 2011). Current regulations require lower-enlisted soldiers E5 and below without dependents to live in barracks housing regardless of age, although installations can adjust that policy based on need. Barracks housing is typically provided, and therefore, junior enlisted soldiers without dependents can't receive a full BAH or BAS in cash and must live in barracks. Warfighters housed in barracks receive a nominal partial BAH and BAS. They are charged back for most of their BAS through the meal deduction, effectively nullifying those benefits in terms of cash income. A difficult issue related to compensation is that peers who are married, regardless of age or rank, are eligible for BAH and BAS and have the choice to live on- or off-post. They have more personal freedom, are less impacted by command and control regulations, and have more choice as to their living space by virtue of being accompanied.
2. Contemporary Context

A) Paying for the All-Volunteer Military: The Cost of Doing Business

The Doctrine for the Armed Forces of the United States says that “the U.S. employs the military instrument of national power at home and abroad in support of its national security goals” (Joint Chiefs of Staff). Warfighting is only one component of military intervention; the military also supports strategic partners, provides nation assistance, and participates in security cooperation with other nations. The U.S. uses its strong posture and its international relationships in the projection of force to deter other nations (Joint Chiefs of Staff 2013). As of September 2016, the U.S. has military and civilian Department of Defense representation in 176 countries worldwide (Department of Defense Defense Manpower Data Center 2016).

In the context of other industrialized and leading nations, the U.S. commits about the same percentage of its peers in population (0.4 percent in 2015) and on average two percent more of its gross domestic product (3.3 percent in 2015) for defense spending in order to meet its extensive domestic and international operations. It is worth noting that with the exception of Russia, military spending among the G8 (including US), Brazil, India, South Korea and China, spending has largely stayed flat or declined since 2010 (Department of Defense Defense Manpower Data Center 2016).

While we may balk at the large price tag of military spending, it is important to note that the Department of Defense is the largest employer in the U.S. In 2016, the Department of Defense employed 2,870,032 military and civilian personnel around the world. (Department of Defense Defense Manpower Data Center 2016) In the 2017 Department of Defense’s budget request, people accounted for 47.9 percent of the cost of doing business (Office of the Under Secretary of Defense
Federal defense spending is a driver for state and local economies.

As an example, let’s take a quick look at Texas—home to Fort Hood and 14 other installations as well as 48 major defense, aerospace, and aviation contractors (Texas Military Preparedness Commission (TMPC) 2017). According to the 2015–2016 Biennial Report of the Texas Military Preparedness Commission, the military was second only to the energy sector in Texas; the military sector employed approximately 233,000 people and had an economic impact of $136.6 billion. In 2016, the Department of Defense and the Department of Veteran’s affairs awarded approximately $45 billion contracts, grants, and other assistance to contractors, agencies, and research institutions in Texas, with the top five contract recipients being defense contractors (Lockheed Martin, Bell Boeing, L-3 Communications, Bell Helicopter, and Raytheon) (Department of Treasury 2016). Military communities rely heavily on installations for jobs and commerce. The Fort Hood area is no different. The Biennial Report estimated that Fort Hood contributed $35.4 billion to the Texas economy in 2015, directly employing 60,159 civilian and military personnel with a combined disposable personal income of $12.2 billion (Texas Military Preparedness Commission (TMPC) 2017). States, local communities, and private corporations benefit from the jobs, contracts, and consumer spending connected to federal military dollars. For this reason, lawmakers are reluctant to support the closure of bases as a cost-cutting method even while supporting policies that reduce overall spending.

B) Sequestration: The Economic Crisis and Political Brinkmanship leads to Austerity

Political brinksmanship leading to arbitrary budget constraints, via sequestration, without the benefit of forethought related to policy mandates
imposed on the military, continue to impact readiness at all levels. Sequestration refers to automatic spending limits split 50/50 between defense (excluding contingency funds for conflicts) and discretionary program funding imposed by the 2011 Budget Control Act (Adler 2013). Sequestration is part of the Budget Control Act of 2011, which was enacted to stem the ballooning National Debt. The U.S. national debt skyrocketed during the George W. Bush era as a result of reduced revenues from tax cuts, the wars in Iraq and Afghanistan, expensive medical, education and veteran’s care initiatives, and the 2007 financial crisis, which led to a decade of recession (Austin 2015, Phillips 2012). When President Obama took office in 2008, the national deficit stood had risen 70 percent from $3.4 trillion or 35 percent of the GDP in 2000 to $5.8 trillion (41 percent of GDP) (Phillips 2012). The purpose of the Budget Control Act was to reduce the national debt by 1.2 trillion dollars over a 10-year period and force bipartisan cooperation during a very contentious political time in which Republican majorities in the House and Senate refused to work with a Democratic White House or Democratic colleagues. The bill required a budget that included both closing tax loop holes exploited by the wealthy, and spending cuts, in order to achieve a balanced budget. If a budget could not be reached, automatic, across the board spending caps would go into effect and the difference between the cap and the original allocation wouldn’t be dispersed—in effect, it would be sequestered. Policymakers on both sides found these caps to be undesirable, but in the end could not agree, failing to pass a budget and triggering sequestration in 2013 (M. 2013, Khimm 2012, Adler 2013).

Automatic spending cuts went into effect on March 1st, 2013, when the Joint Select Committee on Deficit Reduction (aka the "Super Committee") failed to come to a compromise (Matthews 2013). As a result, there have been significant
reductions to military spending resulting in force reductions, deferred maintenance, and modernization projects, and a variety of stop gap measures, including a three month stoppage of twelve combat-coded Air Force squadrons, stopped training above squad level in the U.S. Army, furloughs for 650,000 civilian employees, cancelled contracts, and deferred or canceled deployments (Kirby 2014). The Department of Defense views continued sequestration budget levels as a risk to national security and a detriment to readiness (Ferdinando 2016).

The DoD’s 2016 budget requested an increase in budget caps, but included reductions to civilian and military personnel, including a large cut to Army personnel, from 510,000 to 450,000. A continuation of sequestration level caps would result in further Army troop reductions to 420,000 by 2018. The DoD views these cuts as damaging to readiness and the ability to carry out military strategy. In addition, installation maintenance and modernization continues to be underfunded in order to meet immediate operational demands (Kirby 2014, Chief Financial Comptroller 2015). While the Bipartisan Budget Act of 2015 gave DoD much of what was asked for in its 2016 proposal, Defense Department Comptroller Mike McCord stated that uncertainty going forward jeopardizes the ability to face real and present threats now and in the future. He cited ongoing commitments in Iraq and Afghanistan, as well as threats from Russia, China, Iran, North Korea, and ISIL (Pellerin 2015).

Military construction and family housing accounts for just a small portion of DoD’s budget, but operating so many installations is very costly. The Department of Defense called for another round of Base Realignment and Closures (BRAC) in 2017, in order to meet budgetary restraints imposed by sequestration, as well as to create a more streamlined military. DoD is in the middle of historic force
reductions, even as it tries to invest in more modern warfighting technology (D. 2014). Base realignment and closure is politically very unpopular, and Congress has denied two previous (2012, 2013) requests by the Department of Defense, as well as barring it from planning such a process (Pincus 2014). Base closures are perceived to have ripple effects on communities where bases are located; these effects can include loss of jobs, loss of business and tax revenues, and population reduction (Hooker and Knetter 1999). Potential negative consequences for local communities, as well as the heavy cost of implementation, make politicians in Congress nervous about authorizing a new round of BRAC (Pincus 2014). However, the DoD believes that there is an excess of 25 percent in military bases and facilities, and estimates that waste is in the range of billions of dollars annually (Pincus 2014). The DoD believes that it could garner substantial savings from another round of BRAC in 2017. It estimates that it saves about $12 billion per year as a result of BRAC rounds in 1988, 1991, 1993, 1995, and 2005 (Garamone 2014). Congressional leaders are loath to authorize BRAC because many communities rely on military installations for jobs, commerce, and services. The DoD is making its case to Congress, but may exploit a loophole based on Title 10; Section 2687 provisions restricting the Secretary of Defense from authorizing base realignment and closures where more than 300 people are employed are waived “if the President certifies to the Congress that such closure or realignment must be implemented for reasons of national security or a military emergency” (Office of the Law Revision Counsel (LRC) of the U.S. House of Representatives 2011). The DoD has suggested that it may pursue this loophole in order to implement BRAC in 2017 (Pincus 2014), which would strip input and tools communities would normally have by law (D. 2014). At the time of this writing, a new round of BRAC had not yet been initiated.
In addition to base closures, sequestration has resulted in the prioritization of construction and maintenance programs, sometimes deferring them all together. In 2016, 18.9 percent of DoD’s facilities were considered failing; installations are prioritizing projects with immediate impacts on missions (Serbu 2016).

Unaccompanied personnel housing (UPH) maintenance and modernization are affected in turn. Not only does uncertainty around force size make it hard to plan adequately for how many people need to be housed, but the money is hard to compete for. Installations compete with other installations for funding from the same pool of money, leaving many projects languishing on the back burner for years. As is the case at Fort Hood, many installations find themselves with barracks which don’t meet current standards or are functionally unusable due to their condition. This is an expensive way of doing business. Not only does the process of preparing project proposals have an internal staff time cost, but those proposal estimates are based on costs and standards at the time of the proposal and may become irrelevant or misestimated as labor, material, and construction costs rise. A 2015 study by the Government Accountability Office (GAO) found that sequestration actually cost the government money—in one case, delays increased the life-cycle cost of the Navy’s P-8A aircraft by $56.7 million. Sequestration has also caused training delays and cancellations that impacted overall readiness and reduced the availability of troops and equipment for contingencies (United States Government Accountability Office 2015).

Top Army officials have expressed public concern about loss or readiness due to fiscal austerity measures, force reduction, and the high tempo of engagement. In the “State of the Military” address on February 7, 2017,
Representative Mac Thornberry, Chairman of the House Armed Services Committee stated:

_I continue to be concerned – and sometimes even disturbed – by evidence that is accumulating on the damage inflicted upon our military in recent years and the stresses on the Force. That damage comes from a variety of factors including budget cuts of over 20 percent, Continuing Resolutions, the failure to recognize – or at least admit – and then address mounting readiness problems, as well as shrinking the size of the force while keeping a high tempo of operations. There is plenty of blame to go around between both parties and both the Executive and Legislative branches for what has been done._ (Committee on Armed Services 2017)

Congressional limitations on the DoD’s ability to manage its own footprint, and insufficient funding via sequestration, sent the DoD searching for other ways to reduce costs via public private partnerships in utility programs, troop reductions, reductions in housing allowances, slower pay increases, and changes to medical and retirement plans (Kirby 2014, J. 2014). These cuts have impacts for soldiers and their families, as well as installations, which have affected morale (Cohen 2015, Tilghman 2014). The politics of Capitol Hill and the resulting disconnect of policy and resources negatively affects the military and the morale of the all-volunteer force. Doing more with less is not sustainable for current or future operational and/or infrastructure needs.

C) Planning for the Future

The U.S. military considers climate change a “threat multiplier,” and in spite of the partisan bickering and climate denials in the political theater, is addressing the impact of climate on its own infrastructure through a series of goals, standards, and regulations to reduce energy dependence, increase resilience, and cut costs (Werrell and Femia 2014).
“Secretary Hagel and his team recognize clearly that climate change is a threat multiplier, a concept first articulated by the CNA Military Advisory Board in 2007. The QDR is clear that we need to prepare today to reduce risk to our forces tomorrow and to ensure DOD’s infrastructure and installations are resilient to rising sea levels and accelerating severe weather patterns.”

- Sherri Goodman, former Deputy Undersecretary of Defense for Environmental Security (Werrell and Femia 2014)


UFC 2-100-1 uses compact, transit-oriented design, In-fill and mixed-use development, green construction, and stakeholder engagement to meet ten guiding principles: Sustainable Planning; Natural, Historic and Cultural Resource Management; Healthy community planning; defensible planning; capacity planning; area development planning; network planning; form-based planning; appropriate

In the future, newly constructed UPH must also meet UFC 1-200-02 – High Performance and Sustainable Building Requirements. These requirements attempt to balance performance, cost, and sustainability. They explicitly set standards for energy efficiency, water conservation, public health, re-use, and climate change mitigation for new construction (U.S. Army Corps of Engineers, Naval Facilities Engineering Command, and Air Force Civil Engineer Support Agency 2017).

Through five rounds of Base Closures and Realignment (BRAC) between 1998 and 2005, the military has reduced its footprint, but continues to reshape its infrastructure through environmentally sustainable master planning (US Government Accountability Office 2016). The renewed interest in master planning stems from a desire to plan long-term for increased sustainability while also maintaining flexibility for short term contingencies. Previous planning efforts resulted in short-term initiatives that produced wasteful, unsustainable installation footprints. The UFC provides specific guidance for area development plans that allow installations to tailor the UFC to their particular needs and current/future construction project development (U.S. Army Corps of Engineers, Naval Facilities Engineering Command, and Air Force Civil Engineer Support Agency 2012, Zekert and M. 2012, Dorko 2011, Zekert 2011). The Defense of Defense has embraced this move towards increased efficiency, reduced energy consumption, and increased sustainability as a way of better utilizing resources and reducing costs.
V. Summary

To summarize, the U.S. military is an all-volunteer force. Compensation is deemed critical to the mission of the armed forces and the morale of its people. It leverages compensation to attract, and retain, well-trained, talented individuals during the longest period of sustained military operations in U.S. history (with an all-volunteer military force) (Department of the Army - Headquarters 2013). Compensation evolved to ensure that volunteers soldiers consider themselves part of a professional organization that values them and provides pathways for career advancement within and without. Compensation also aims to properly equip soldiers mentally, physically, and emotionally for the hardships of military life. Housing is one component of compensation. Political, environmental, and economic conditions affect unaccompanied housing in a couple of ways. Partisan politics leading to stop-gap funding measures and shrinking military spending creates an environment that asks much, hinders long-term planning, and funds little. Lawmakers want to cut military spending, but don’t want to allow base closures and/or restructuring. DoD officials then look to reduce costs in other ways. During sequestration, reductions came in the form of drastic cuts in troop populations and reductions to benefits for housing, health insurance, family programming, and reduction of civilian workforce. In addition, construction projects, installation maintenance, and new contracts and/or projects have been delayed or scrapped to offset costs elsewhere. Unaccompanied Personnel Housing construction is funded from the same pool of money as motor pools, airfields, and warehouses, as opposed to Family Housing, which has its own line item. Prioritization for projects that are considered mission critical receive funding before projects deemed less urgent. As a result, barracks housing programs find it hard to compete in this fiscally austere environment, leading to widely varying conditions and standards across installations.
Chapter 3—From Barracks to Unaccompanied Personnel Housing

Before launching into a study of satisfaction in unaccompanied personnel housing (UPH), or “barracks” as they are commonly known, it is important to understand the context of barracks housing. In their classic field guide *Invitation to Vernacular Architecture: A guide to the study of ordinary buildings and landscapes* (2005), Thomas Carter and Elizabeth Collins Cromely clearly articulated the cultural, historical, and social values of studying buildings: “As both products of culture and its agents, buildings reflect our cultural values. Once created, they not only become symbolic representations of those values but also serve in their own way to reinforce those values actively, making sure they are adhered to and followed” (Carter and Collins Cromely 2005, xxii). Carter and Collins Cromely’s assertion points to the material nature of the relationship between humans and their dwellings. The ecological perspective lends its support to their view as it sees humans and the environment linked and engaged in a reciprocal relationship with one another. Barracks housing is a result of the marriage between form, function, and policy. As early as the American Revolutionary War, the practical matters of materials, resources, and movement have influenced how soldiers were housed and the form that the housing took.

I. Forced Quartering Creates a Need for Barracks

Barracks began slowly cropping up around Ireland and Scotland after the Restoration in the 1660s. Soldiers had not lived in barracks since Roman Britain; in Ireland and Scotland, barracks housed soldiers but were also used as police posts and blockhouses to intimidate the populace. Under Queen Elizabeth I, barracks were constructed as an innovative response to tensions caused by the practice of billeting. Billeting forced private households and/or public house owners to feed and house soldiers. Billeting, like forced quartering, was loathed by the civilian population because the monarchy rarely reimbursed private citizens or public house owners for the meals and lodging they were forced to provide for soldiers.
Furthermore, soldiers were often unruly, and their behavior negatively affected business at the lodging houses where they stayed. The practice also depleted local resources. This issue became a political issue at home in Britain as well as abroad in the colonies. As a result, barracks were eventually constructed to feed and shelter soldiers while separating them from the population (Childs 2011, Undiscovered Scotland 2017).

The first purpose-built barracks were constructed in Berwick-upon-Tweed in 1721. Ravensdowne Barracks housed a battalion in 2 three-story blocks opposite one another on a parade square. They lacked sanitation and water. Meals were cooked in barracks rooms. Typically, officer rooms housed one to two people while enlisted quarters slept eight (Undiscovered Scotland 2017). Figure 1 shows an artist’s drawing of Ravensdowne Barracks with barracks flanking a parade ground. Between 1792 and 1858, the entire British Army was moved into barracks. Crude at first – some structures sleeping thirty men, side by side, on long benches – the Duke of Ellington devised some design standards to reduce overcrowding. He introduced tiered iron beds (bunks) with a minimum gap of twelve inches. Regardless, overcrowding continued, and it wasn’t until after the 1850s that bathrooms were introduced (Childs 2011).

Figure 1: Illustration depicting the first purpose-built barracks at Berwick-upon-Tweed. Unknown artist, n.d.. Barracks at Berwick-upon-Tweed. Retrieved from URL http://www.berwickfriends.org.uk/museum/about-the-museum/
Americans would adopt the use of barracks as a way of guarding against repressive practices like forced quartering. Following independence, the U.S. Army would use similar design elements found in British fort construction. Some of these features no doubt came from past experience with British and European barracks whereas others addressed the functional requirements of the mission. Common replicated features included adjacent parade grounds for drilling and ceremonies, bulk sleeping arrangements – especially for enlisted soldiers – separation of enlisted and officer ranks, use of bunks, and in-barracks food preparation and consumption. Common issues were group hygiene and overcrowding.

II. Early Military Organization and Persistent Features of Barracks Design

Military organization on the battlefield extends to how soldiers are housed off the battlefield. Barracks housing shows traces of early military organizational structures in features that have persisted in unaccompanied personnel housing until today. In 1775, the Continental Army was founded to fight the British in the American War of Independence (US Army 2017). Charles Knowles Bolton’s 1902 book, The Private Soldier Under Washington, describes the living condition of soldiers in the Continental Army as being a force in mobilization, living in temporary camps under-provisioned and dependent on resources native to their encampment. Soldiers often slept exposed to the elements or under leaking tents. Knowles described a conversation by two soldiers overheard by a surgeon in Connecticut: “Good-morning, brother soldier, how are you?” “All wet, I thank ‘e. Hope you are so” (Charles Knowles Bolton).

Both the British and Continental armies were broken down into smaller groups called “messes” (similar to today’s four- to ten-person squad). British messes consisted of five people while Continental messes ranged from six to eight people. Messes prepared and ate meals together. The messes sheltered with their weapons and provisions under one tent (when one was available). Tents had company markings to facilitate camp resource allotment and camp site planning. The tents were designed to house a six-person mess but often
varied in size due to a lack of standards and the tent manufacturing process. Tents were typically wedge-shaped and erected from a light, strong canvas made from flax or hemp that was called “duck cloth” by tent or sail makers. Sometimes, these tents would include a sunshade or bower tents poles were carried by their inhabitants while the rolled tents were transported by wagon for quick shelter wherever they were needed. When available, boards or hay was used to line the ground for soldiers to sleep on. These tents were portable and lightweight but not very watertight. Knowles suggested that the form of the shelter varied by inhabitant and the materials they found around them. Soldiers frequently employed other available materials, such as clay, stones, brush, turf, branches, and logs, especially during longer encampments in which rough cabins or huts might be constructed to protect more men against the elements (Mullins 2011b) (Mullins 2011a) (J. 2002) (Gundersen 2005) (Bolton 1902). Figure 2 shows an example of how a “mess” of soldiers lived in tents during the Revolutionary War.

Messes not only slept together – they also cooked and ate together. Soldiers were issued a kettle and mess kits with utensils. Soldiers often had to share utensils and rations; meals would be prepared by soldiers or a family member following in tow. By making small groups of soldiers responsible for their provisions, the military was able to transport, prepare, and feed large numbers of troops more easily (Mullins 2011a, b).
This precedent on the field was translated off the field – until the mid-1990s, permanent party barracks housed whole companies, at first in large open rooms called “open bays” or “squad bays” and later in smaller groups by squads. These squads were analogous to “messes.” These soldiers worked and lived together. The term “mess” came to describe the area where soldiers ate. Mess halls and kitchens were typically integrated onsite. There were a few periods in which the military experimented with consolidated mess halls, where a few barracks shared one dining facility. These periods were in the 1880s and 1890s, briefly in the 1930s, and during present day. Officers typically had their own separate quarters and dining areas (Kuranda et al. 2003). The tradition of housing units together – for unit cohesion, command and control by superiors, and the separation of ranks on and off the battlefield – is a persistent feature of barracks housing. Notable as well is the intimate relationship between shelter and food rations: sleeping, cooking, and eating in the same space. Shelter and rations are compensation; thus barracks are compensation.
III. A Quick Tour Through the History of U.S. Barracks Designs

1. 1775 to 1869 – Early Barracks

Between independence and the Civil War, the U.S. military had few permanent installations. Most installations were masonry fortifications that defended coastal areas (lakes, rivers, and seas). Temporary frontier forts functioned in defense of Western lands and unsecured borders as the nation expanded westward. The military housed its soldiers together by company; prior to the Civil War, companies ranged from thirty to forty men and a couple officers. During the Civil War, this number grew to seventy-five to one hundred men including officers. Three barracks styles dominated: (1) casements within coastal and masonry fortifications; (2) log-constructed barracks within a stockade wall; and (3) permanent, separate, long and narrow purpose-built structures (Simmons 1983-1984, Cannan et al. 1995, Kuranda et al. 2003, Ney 1969, Minnesota History Center N.D., Newell 2015).

A) Barracks on Permanent Installations

Like the Old Stone Barracks built in Plattsburgh, New York (figure 3), in 1838, barracks built at permanent installations were typically long, narrow buildings that housed one company. The structures could be one to two stories tall with verandas and were built from locally available materials. These structures featured sleeping quarters, a kitchen, and a mess room inside. Lavatories were typically located apart in a separate building. Barracks built during this period often represented a simplified version of the popular architectural style of the time. The long, narrow structures with a unified company dormitory and integrated mess and kitchen would be a persistent design. Their prominent, central placement within the master plan, along a parade ground of the installation, meant that the barracks were typically major features of an installation and contributed to the overall
aesthetic look and feel of the garrison. The Old Stone Barracks was built in the Greek Revival (Cannan et al. 1995, Kuranda et al. 2003, Michael, Smith, and Sin 2011).

![Old Stone Barracks](image)

**Figure 3:** A Civil War-era photo of the Old Stone Barracks at the Plattsburgh Air Force Base. Unknown photographer, n.d. Old Stone Barracks, Plattsburgh, New York. Constructed in 1834. (pp). Brooklyn: Hamodia.

In 1860, unofficial guidelines were provided by the quartermaster general to provide cost-saving, flexible, standardized plans for barracks buildings that could also be adapted for other uses, like administration buildings or guard houses.

“Soldiers Quarters for One Company” called for unornamented one-story, wood-frame, L-shaped buildings. The buildings housed two sleeping areas, washrooms, a lavatory, and a kitchen. Figure 4 shows that the design allotted approximately 32 square feet per man, supposing fifty men to a sleeping room (23 feet by 69 feet 7 inches). The buildings also featured an office and store room. The standardization of barracks structures would become a standard operating procedure for the military, especially during times of rapid mobilization or expansion (Kuranda et al. 2003, Cannan et al. 1995, US Army Quartermasters 1860).

Quarters for enlisted soldiers in coastal fortifications typically were found within the casement walls of the forts and therefore did not require an additional structure. As was typical for their peers on the frontiers and permanent garrisons, living conditions for enlisted men at a coastal fortification were crowded, basic, and without many comforts. Figure 5 shows a good example—Fort Point, California. Soldiers slept in damp rooms, sharing a bed in double bunks (two men to a bunk, stacked two high), twenty-four men per casement. A National Park Service report described the room as being pregnant with the pungent “odor of sour straw, stale tobacco and unwashed, wet woolen uniforms” (Fort Point National Historic Site 2006). Soldiers had few possessions; only those that fit in their pack hung or lay next to their bunk. Mattresses were filled with straw, and the latrine was located at
the end of the third tier, where their quarters were located. Figure 6 shows the interior of a typical casement barracks looked like (Fort Point National Historic Site 1869, 2006, Martini 2006).

Figure 5: View of Fort Point with Lighthouse, 1869. Fort Point National Historic Site. (1869). View of Fort Point with Lighthouse, 1869 (N. P. Service, Trans.). In N. P. Service (Ed.). Washington DC: Golden Gate National Recreation Area National Park Service.
Enlisted Quarters at Temporary Western Outposts

During the 1800s, the army established and abandoned Western posts as necessary. Sleeping quarters were located within the stockade walls, and their design was utilitarian; the goal was to protect soldiers from the elements. Figure 7 shows an example of timber stockade western outpost. These forts were built by hand with locally available materials, such as stone, logs, adobe, brick, etc. Initially, troops constructed these installations themselves, and the style and quality of these posts varied enormously depending on the skill and effort of the men who constructed them (Simmons 1983-1984, Cannan et al. 1995, Kuranda et al. 2003).
Like their coastal cohorts, the enlisted quarters of soldiers on the frontier were prone to overcrowding and poor ventilation. Figure 8 shows the crowded conditions caused by the use of double bunks. Soldiers typically slept end to end in double bunks on straw mattresses.


Figure 8: Typical pre-standardized plan barracks where men slept end to end in double bunks in tight quarters. National Historic Site Fort Larned. (2015). Double Bunks at Fort Larned (1859 to 1878). Larned, KS: National Park Service.
During the surgeon general’s review of installations and hospitals in the late 1860s, living conditions at Fort Wayne were found to be somewhat crowded but well-ventilated (Billings 1870, Cannan et al. 1995, Kuranda et al. 2003, National Historic Site Fort Larned 2015):

The quarters were evidently designed and finished for the accommodation of a battalion of five small companies of troops. The building is divided into five equal divisions, which are in turn subdivided into halls, dormitories, dining-rooms, etc. The halls are 33 feet long, 6 feet wide, and 11 feet high. . . . The facilities for heating the quarters consist of large open fireplaces in the dining-rooms and dormitories. Wood stoves, placed in the center of the sleeping apartments, are used in preference to fireplaces. In addition to that afforded by the doors, windows, and chimneys, the walls of the building, on each floor, are perforated with ventilators for furnishing a constant supply of pure air and aiding in removing the impure gases generated by the occupants.

The amount of cubic space allowed to each occupant of the sleeping apartments is seldom in excess of 300 feet. The quarters occupied by Battery G, Fourth Artillery, are furnished with iron bedsteads. New wooden bunks are used by troops composing two companies of infantry (Billings 1870).

Ventilation and space were major public health concerns at that time. It was thought that chronic ailments and infectious disease were rife where ventilation was inadequate and personal space encroached upon. The 1870 release of the surgeon general’s report would lead to the establishment of the first official guidelines for barracks housing aimed at improving troop health.

2. 1870 to 1917 – The Meigs Barracks – Standardization Comes to the Barracks

The late 1800s would bring a major improvement to the barracks design that focused on reducing cost, increasing quality, and improving public health. In 1870, the surgeon general’s Office of the War Department did a survey of all the barracks and
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hospitals in operation at the time. Frequently, barracks would vary immensely in quality and construction, which led to the army having the reputation as the “best fed, worse housed” branch of the military. A perceived threat to readiness at this time was disease and mortality (Billings 1870, Kuranda et al. 2003). In the 1870 assessment, the assistant surgeon general of the United States Army, John S. Billings, set out the problem:

*It has been said that we have the best-fed and the worst-housed Army in the world, and the statement seems more nearly correct than such generalizations usually are. The ultimate cause of the defect is, of course, ignorance, the immediate cause being a desire for economy, praiseworthy in itself, but producing results which are the reverse of its object; for a saving in boards and bricks, at the expense of the health and life of the soldier, cannot be considered a commendable thrift. When a man enlists as a soldier it is with the understanding, expressed or implied, that, as his food, clothing, and dwelling place are to be regulated by others, they shall be selected, so far as possible, with reference to his health and comfort. It is clearly both the duty and the interest of the Government to reduce, as much as possible, the annual loss to the Army from sickness, invaliding, desertion, and death; and this can only be effected by a judicious application of the laws of sanitary science...*

*... The defects in the plan of a barrack are often so far compensated by faulty construction that evil results are not apparent; and the very cracks and crevices in roofs, walls, or floors, which are so often complained of, may explain why destructive lung affections or fevers have not attended overcrowding to a greater degree than they have done. Hesitation in making or forwarding requests for new buildings, or for repairs involving much expense, is perfectly natural; and it is not to be wondered at that, sometimes, by reason of successive reductions in the estimates and amount recommended to be authorized for expenditure, a proposed reform is practically denied, although such may not have been the wish or intention of any one of the several officers through whose hands the request has passed (Billings 1870).*
His summary commented on the nearly six-hundred-page report, citing issues related to quality, sanitation, maintenance, and tight budgets as the cause of death, disease, and desertion among military members at that time. He also reiterated the obligation of the government to provide adequate housing to warfighters. Design recommendations by the surgeon general suggested the following:

- **Air quality**
  - Each soldier should have a minimum of 600–800 cubic feet of air space or 50–70 square feet of surface area to ensure proper ventilation.
  - Windows should be placed across from one another to ensure ventilation via cross-breeze.
  - Radiant heat is preferred; coal stoves are objectionable.
  - Floors should be raised to at least 2.5 feet above ground to promote ventilation underneath.
  - Structures should be 24 feet wide by 12 feet high; never wider.
- **General sanitation**
  - Sleeping quarters should be housed on the second story, where mosquitos are not prevalent.
  - Washroom should be adjacent to dormitory.
  - Double bunks should not be used.
  - Bathing facilities should exist on post.
  - Dry-earth latrines should be used (Billings 1870).

As a result, in 1872, the Quartermaster Corps, under General M.C. Meigs, produced standardized plans for all buildings typically found on installations including barracks. Figure 9 shows the design that provided housing for one to two companies. Their design reduced overcrowding, increased air quality, and provided entertainment space and bathing and mess facilities within the structure (Meigs 1872).
Figure 9: The Meigs 1872 Plan for Barracks. Meigs, M. C. (1872). Proposed 1872 Quartermaster Plan for Barracks (pp. Quartermaster Meigs' plan for barracks located in the annual report of the Secretary of War). Washington [etc.]: U.S. Govt. Print. Off. [etc.].
While full implementation of the design was challenged by logistical and financial difficulties, the Meigs plans not only represented an improvement in terms of cost savings and public health but also helped to standardized construction. The Army Quartermaster Corps became responsible for military construction on all interior posts and frontier fortifications, with their goals being to eliminate ad hoc construction, increase quality, and reduce costs. However, the Army Corps of Engineers maintained responsibility for coastal fortifications, which were more technically sophisticated (Kuranda et al. 2003, Cannan et al. 1995).

One remaining example of the Meigs Barracks is located at the Fort Laramie Calvary Barracks in Wyoming (figure 10). The Fort Laramie barracks were constructed in 1874 out of lime grout concrete and wood. The Calvary barracks featured not only the Meigs design but also the discontinuation of the double bunk in favor of wrought iron single beds, which gave the men more personal space and improved sanitation and air quality (figure 11) (Hermans 2014b, a, US Army Quartermasters 1860, Keohan 2002).

Figure 10: A typical Meigs plan barracks exterior at Fort Laramie, WY Hermans, P. (2014a). Calvary Barracks at Fort Laramie (1834-1890) Fort Laramie, WY: Wikipedia.
Between the 1880s and 1917, the military shuttered many of its temporary frontier forts and consolidated its soldiers into fewer, larger permanent garrisons. The army experimented with a couple other styles of barracks, but the two-company barracks plan was the most widely used and adapted. Sometimes, two plans would be combined to create multiple company barracks; they were adorned with the dominate architectural style of the day – Romanesque (1870–1900), Queen Anne (1180–1910), Colonial Revival (1880–1940), and Spanish Colonial (1915–1940) – during this period. (US Army Quartermasters 1860, Cannan et al. 1995, Kuranda et al. 2003).

In 1914, with a world war raging in Europe, the military began to prepare. The army designed its first standardized plans for mobilization barracks: the 600 Series (see 12 for plans). The 600 Series single-story barracks were modular, open-bay quarters
without a kitchen and mess. Each soldier was allotted approximately 400 cubic feet of space in a single bunk. The design could be adapted to fit various lengths to accommodate one or two platoons (subdivision of a company). The structure allowed for open-bay dormitories, an office, a store room, and quarters for the noncommissioned officer. The exterior was unpainted, the interior framing was exposed, and the buildings were uninsulated. Mess halls, latrines, and showers were separate structures central to a cluster of barracks buildings. WWI mobilization demonstrated an important need for a larger standing army; not only during war time but also in peace. These standardized modular designs also showed a pragmatic shift toward quick, inexpensive, unornamented construction to house many soldiers who were mobilized for war (Garner 1993c, a).

3. 1917 to 1945 – The Era of the “Temporary” Mobilization Barracks

A) 1917—600 Series Temporary Mobilization Structures

In 1917, the United States joined World War I, and a large-scale mobilization was underway. The army quickly built thirty-two training camps and expanded already existing installations. Each camp was designed to train 40,000 men at a time, putting enormous pressure on soldier housing. Company sizes during this era swelled to approximately 250 enlisted men and 6 officers (Vergun 2017, Garner 1993b, Ney 1969).

In 1917, the 600 Series was enlarged into a two-story design. While similar to the 1872 Meigs, the 1917 600 Series plan did away with any fussy architectural styling common to the Meigs-era barracks as well as its iconic balconies. Figure 13 shows the drawings for the 600 series; the structure was distinguishable by the dark hue of its unpainted plank frame structure, which was punctuated by the first floor’s roof line with pent roofs above its windows. Like its predecessor, nearly all of the design features were functional and used mechanical means to ventilate and heat the space. The pent roofs shed rain so that windows could remain open for ventilation during storms. Sash-type windows allowed for natural ventilation. Each soldier was allotted 500 cubic feet of space in a single bunk to ensure adequate circulation of clean air. Kitchen stoves featured flues that carried the heat from the first floor to the second floor to heat the dormitories, which were monitored and ventilated along the roofline. The 1917 600 Series brought back the separate quarters for NCOs, mess halls, and kitchens of earlier barracks designs, but latrines and showers continued to be found in a separate structure (Garner 1993c, b).
Figure 14: Interior view of one of the seven army barracks built at the University of Pittsburgh during World War I. The men in the photo reported for duty the day this picture was taken. Unknown. (1918). Interior of the Barracks at University at Pittsburg. Pittsburgh, PA: University of Pittsburgh.

B) **Interwar Period**

Between the wars, the United States found it had a larger standing army and a stock of temporary structures decaying under the pressure. Thousands of soldiers were housed in these structures, and in 1926, Public Law 45 was enacted to allow the military to sell off excess property in order to enhance living conditions and medical capability to improve the lives of soldiers. Quality of life programs gained importance and barracks were prioritized for construction funding (Cannan et al. 1995).
Quality of life programs were inspired by early twentieth-century welfare capitalism and large-scale industrialization. Welfare capitalism and military organization shared a paternalistic approach toward their people and their families, providing housing and other benefits to reduce turnover. Like employers of the era, the military began offering its workers more amenities on-post. Long plagued by desertion, they began to offer on-post facilities – such as post exchanges, schools, libraries, and gyms – to improve the quality of life. These changes seemed to coincide with a reduction in desertion. Twiss and Martin stated that it was the first time the military saw a measurable link between retention and quality of life – a concept that underpins housing (and entitlements) policy to this day (Twiss and Martin 1998).

Careful master planning was also embraced; unified architectural styling was applied to new construction. It was at this time that the army built its first regimental barracks (designed to house one or more battalions) rather than company barracks. The first regimental barracks was built by the architectural firm Mc Kim, Mead and White at Governors Island, New York (figures 15, 16, and 17). Barracks built later would vary in style to match the overall style of the installation, but with some notable changes from previous precedents; front porches were mostly absent, replaced by ornamentation. A notable change in the approach to barracks housing was the alterations to garrison landscapes. Set apart in designated housing areas or clustered around specialized facilities rather than around a main parade field, barracks were no longer a centralized and salient feature of the garrison landscape. For example, the medical corps' barracks would be located near the hospital while the quartermaster corps' would be near their warehouse (Cannan et al. 1995).
C) 1940 to 1945—A New War, New Tactics, and New Technology and Installations – Camp Hood Is Born

In May 1940, the German Wehrmacht swiftly overcame the Netherlands, Belgium, and France using new warfighting technology composed of motor vehicles, dive bombers, and tanks. While the concept of blitzkrieg – which emphasized speedy decision making, quick maneuverability, and decentralized action – had been conceived during WWI and developed in the interwar period, the addition of technology – such as tanks, aircraft, and the radio – allowed this “lightning war” military doctrine to acquire new lethality. So overwhelming, swift, and surprising was the defeat to the Allies that they perceived it to be a new form of warfare (Foley 2011).
In response to the German *blitzkrieg*, the United States began preparing for war. Congress passed the Selective Service Act of 1940\(^8\) and tripled the military’s budget for the 1941 fiscal year in anticipation of an American entrance into the war. With new threats posed and fresh challenges, the military responded by reorganizing themselves and how they fought. New technology required training as well as installations to undertake that training. Between 1940 and 1942, many of the precursors to today’s major installations were built to respond to these new threats. A couple examples: Fort Stewart in Georgia began as Camp Stewart in 1940 and was constructed to provide anti-aircraft artillery training against the formidable air power of the German Luftwaffe and Imperial Japanese Navy Air Service. Camp Irwin in California (now Fort Irwin) was created as an anti-aircraft training range in the Mohave Desert in 1942. Camp Hood (now Fort Hood), the subject of this study, was constructed to respond to the new threat of German Panzer divisions. Note: from this point forward, I will reference Fort Hood specifically, when applicable, in the discussion of the evolution of design as relevant context for the findings of this study (US Army N.D.-b, The Urban Collaborative 2013c, d, Webster 2007, US Army N.D.-a).

The threat of German Panzer Divisions required the development of anti-tank weapons development testing and training. Brigadier General Andrew Bruce was selected to tackle the problem. The War Department called for the establishment of a Tank Destroyer and Tactical and Firing Center (TDTFC), and

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\(^8\) Selective Draft Law Cases., 38 S. Ct. 159, 245 U.S. 366 (1918)

\(^9\) The Selective Service Act of 1940 was the first peace time draft enacted in the United States. It required all men between twenty-one and forty-five to register for the draft and to serve one year in the armed services if selected by lottery. During WWII, the service requirement was extended through the duration of the wartime period (United States 1942).
this new command was assigned to LTC Bruce. Conditions for the development of a permanent site for the TDTFC included abundant land fit for tactical maneuvers and ranges, cost of land, water supply, utilities, climate, rail/road, location, and lack of congestion. Various sites were surveyed, but Killeen, Texas came out on top. LTC described his decision in an interview with the Armored Sentinel in 1967:

I visited several areas in the United States and finally picked the site near Killeen. As I recall, some of the reasons for selecting this area for Camp Hood were the strategic railroads (the Cotton Belt could bring in raw recruits and equipment in the north part of the reservation and trained battalions could be shipped easily to any part of the United States via the Santa Fe and connecting railroads); there were large open areas for firing directly on enemy tank targets and for the initial training steps for a new battalion with plenty of rugged terrain for their final training; there was a minimum of pipe lines through the campsite; Temple, with a good hospital and office space, offered a place for temporary headquarters not only for the main camp, but for the headquarters of the major elements of the training center; land in the Temple area was available for an airport; and not in the least, was the patriotic attitude of the people, particularly those who had to move off their land. I left Central Texas convinced that, if we could find sufficient water, this was the site we should have. (Webster 2007)

So it was that the two sparsely populated counties of Bell and Coryell – home to ranchers, farmers, cattle, and cotton – was transformed into one of the United States’ premier warfighting assets. Camp Hood was built in 1942 with additional sites coming online throughout the 1940s. North Fort Hood was developed as a sub-installation during WWII for the training and housing of up to 36,000 troops. Currently, North Fort Hood is used for reserve training, the Army National Guard, and reserve and active component deployment forces preparing to deploy (The Urban Collaborative 2013a, Dase 2014).
D) **1940 to 1945—700 and 800 Series Temporary Mobilization Barracks**

Like in World War I, barracks construction for World War II was focused primarily on temporary structures based on standardized plans; the Series 700 and 800 represented a shift in design that mirrored a shift in the military organization, which focused on specialized training, larger force size, improved building and sanitation standards, and fiscal constraints (Garner 1993c).

The 700 Series temporary mobilization barracks were constructed between 1940 and 1941 and were meant to last five to seven years (figure 18). They represent an improvement over the 600 Series. The most notable change from the 600 Series was a coat of white- or ivory-colored exterior paint; the interior remained unpainted and uninsulated.

![Figure 18: Restored WWII 700 Series Barracks from Fort Benning, GA at National Infantry Museum.](image)

The structures opened from the front with exterior fire escapes located on the ends. The pent roofs were replaced with a continuous “aqua media” to shed water from the first floor. Each structure housed half a company (sixty-three men), and each man was allotted at least 700 cubic feet – a 300-cubic-foot increase from 1914. Figure 19 shows the typical organization of the 63-man WWII barracks. Each company area also featured a 170-person mess hall, recreation building, and store room with a company office. Structural improvements included concrete piers and footings, which, in concert with the paint, have extended the life of some of these structures to the current day – almost seventy-five years! Figure 20 shows some of the new features that the 700 Series introduced: overhead electric lighting, outlets, indoor plumbing, and forced air heating systems (Garner 1993c, National Infantry Museum N.D., Mayes N.D., Unknown ND-b).

The seventy-four-man 800 Series were a more cost-effective “improvement” on its predecessor. It reduced the quantity of nails, lumber, and shingles per structure while adding ten feet to the bay and height to the ceiling (figure 21). The added height made it possible to return to the double bunk, despite the loss of cubic feet per soldier, doubling the capacity of each structure. The 800 Series also lost the distinctive “aqua media” found on the 700 Series. The feature had been found ineffective in blocking rain during strong storms and also leaked (Garner 1993c, Stanton 2011).
The 700 and 800 Series proved to be both resilient and long-lasting in spite of their five- to seven-year intended lifespan. While the army has demolished much of these structures, there are still many in use to this day. Their design is flexible enough to adapt to other uses. However, these structures are not energy efficient, and their materials require constant upkeep or they become prone to destruction by pests and moisture.

Figure 21: 800 Series mobilization barracks at Fort Chaffee, AR. Stanton, J. (2011). Fort Chaffee World War II Style Barracks. Fort Chaffee, AR: Wikifort.
4. 1946 to 1970 – Cold War Barracks

A) Post-War Housing Crisis

At the end of WWII, a large standing army was left to fight the Cold War. These warfighters manned missile silos, nuclear arsenals, intelligence posts, and other U.S.-based operations. For the first time, the army had a force at home at war but without immediate violent conflict. Soldiers went to work and lived their lives at home, resembling the civilian experience of the average worker. The number of married service members swelled among all ranks (Twiss and Martin 1998).

The cold warriors of Fort Hood supported part of the United States’ nuclear arsenal; West Fort Hood (or Camp Hood Air Strip, as it was called during this time) was developed to support activities at Killeen Base National Storage Site. Activated in 1948, Killeen Base was one of three strategic, secret, underground nuclear storage sites across the United States. It was quickly renamed as Gray Air Force Base, and later in 1963, the airstrip was transferred to the army as Robert Gray Airfield. Killeen Base was deactivated in 1969. West Fort Hood currently supports aviation brigades and activities at Fort Hood. It is composed of barracks, company operation facilities, hangars, and the Airfield Operations Facility and Control Tower. In addition, the Killeen Regional Airport operates civilian flights out of the southeast end of the airfield (The Urban Collaborative 2013b, Dase and Katauskas 2011).

This new, large domestic force immediately strained housing and compensation systems. In 1949, the Career Compensation System made public housing or rental allowance available to all service members E-4 (with seven years of service) and above. Lower enlisted and E-4s with less than seven years of
service were required to live in barracks or onboard ships (Baldwin 1996, Twiss and Martin 1998).

Twiss and Martin noted that this policy was also underwritten by a sense that housing was an entitlement for the “committed and deserving” as demonstrated by their rank and years of service. Among the lower enlisted, families were thought to be a distraction; it was assumed that low pay and lack of housing benefits would be enough to eliminate that distraction. In other words, the military used the stick of ineligibility for housing or the carrot of barracks housing to dissuade warfighters from marrying and starting families. However, it did little to dissuade them; many men got married anyway, and the army found itself with a housing crisis. In 1949, Life Magazine published a pictorial chronicling the poor living conditions of army families and the resulting low reenlistment rates (figure 22). Lower enlisted soldiers, as well as some officers, found themselves the victims of price gouging, squalid living conditions, and overcrowding:

*Besides uncovering exorbitant prices, the survey showed that off-the-post GI families are living in garages, plywood pyramidal huts, rooms in overcrowded houses and even a henhouse. Some have no water or electricity. One outdoor toilet serves as many as 25 people (Life Magazine, March 7, 1949).*
Chapter 3—From Barracks to Unaccompanied Personnel Housing

Life Magazine spread from March 9, 1949 about overcrowding and poor housing conditions in the post-World War II Army.


When pressed by Life Magazine reporters about the housing crisis, army officials suggested that they would freeze recruitment or reenlistments from lower enlisted men with families. However, the entire country was feeling the effects of the post-war housing crisis. The National Housing Act was enacted to ensure that every American family would have a decent home and suitable living environment. This would spur two privatized military housing programs, creating 200,000 housing units. While admirable, this fell short of the goal of housing all “eligible” service members. Those not eligible for family housing would continue to look for housing on the private market without rental allowance. Meanwhile, conscripts continued to be housed in aging pre-war barracks, temporary WWII mobilization structures, and tents. Engwar William Nielsen was stationed at Killeen Base at Fort Hood.

Hood between 1951 and 1952. He described the overcrowding he and his fellow recruits experienced during basic training at the beginning of the Korean War at Lackland Air Force base, Texas (Dase and Katauskas 2011, Kuranda et al. 2003, Webster 2007):

I mean they had so many of them that they had, like your regular barracks were full. I happened to get in where, we got in the old barracks, tar-paper shacks. You could actually see through them, you know? And some of these poor guys were in tents. Anyway, boy it got cold down there. That was in January and February, and boy it got cold down there, and boy we’d about to freeze to death. Those old tar-paper barracks, we’d have the little potbelly stoves, one on each end. We’d have them where they’re red-hot, and we’d stand to try to keep warm, and you was burning up in the front and the back was freezing. They’d only issue us two blankets, and man, you’d go to sleep at night and man, I slept in my civilian clothes and put my fatigues over them, and you’d still freeze. It was cold. All they could do is issue us two blankets and that was it. Needless to say, everybody got sicker than hell down there. Then they finally decided they better get us more blankets. It was too late, the whole base was sick. In fact, I wound up with pneumonia, wound up in the hospital (Dase and Katauskas 2011).

Two persistent issues arose from this period. (1) A dilemma over compensation and its associated costs were, for the first time, acutely felt as more enlisted soldiers served domestically with their families in tow. Instead of a housing policy arranged mainly around the mobilization of enlisted soldiers and strict hierarchy, the military had to treat everyone like they had treated officers by providing family housing and other amenities. (2) The barracks housing was less attractive than they had once been. Unlike the two previous centuries, the most attractive features of barracks housing – a roof overhead and three square meals – were not enough. Post-war America was prosperous, and people expected more.
Poor quality and strict command and control policies in a peace time environment were largely unattractive to soldiers and, as evidenced by declining recruitment, future warfighters. Many didn’t want to live the regimented life punctuated by revelry bugles at home. Although married soldiers who were ineligible for housing assistance but living off-post could escape the command and control structures after hours, single soldiers couldn’t. Barracks were now negatively effecting recruitment and retention (Webster 2007, Twiss and Martin 1998, United States General Accounting Office 1999b, Larsen 1949).

B) Cold War Tensions and Military Buildup

After WWII, President Truman vowed to stop the spread of communism anywhere in the world, putting the United States at odds with its former WWII ally, the Soviet Union. Tensions flared during 1948–1949 when the Soviets blocked U.S. access of West Berlin; the United States and the USSR narrowly avoided an armed conflict. Tensions worsened when the Soviets detonated an atomic weapon, causing the United States to enter a formal alliance with Canada and Western European countries, called the North Atlantic Treaty Organization (NATO), to counter Soviet threats. The Soviets pursued a similar treaty with Eastern European countries called the Warsaw Pact. Both groups looked to their nuclear arsenals for deterrence, setting off an arms race and heating tensions. At the same time, Mao Zedong’s Red Army defeated U.S. allies in China, establishing the communist People’s Republic of China. The Soviets were quick to build an alliance with newly communist China. At the same time, communist North Korean forces invaded South Korea. Anxious of a similar spread toward Europe, U.S. and NATO allies began rebuilding their nuclear and conventional forces, leading to a swift buildup of troops and weapons. The stage was set for the Korean War. The U.S. and NATO allies fought in Korea from 1950–1953. Throughout the 1950s, both superpowers,
the USSR and United States, pursued aggressive weapons programs, conventional force buildup, and a space race (Smith A. 2007). It's impact on barracks housing was immediate.

The 1950s buildup for the Korean War turned an eye toward military construction projects including barracks housing construction. The army decided that its abundant stock of temporary structures was failing and should be replaced with permanent structures. To save money and time, the army would again produce standardized plans to be implemented army-wide. A bevy of new barracks styles emerged between 1946 and 1973; each design attempted to address the issues critical to contemporaneous thinking related to military organization and quality of life (Kuranda et al. 2003, Webster 2007).

C) 1950s – Consolidation and Company Cohesion in the Hammerheads and H-Style Barracks

The 1950s saw a focus on consolidation and company cohesion. Designers returned to the pre-war practice of placing an entire company (approximately 225–263 people) under one roof with all necessary functions (mess, admin, and storage) within a single structure. They settled on two main designs: the Hammerhead (constructed from 1951–1957) and “H” style (constructed between 1955 and 1958) barracks. Both the Hammerheads and “H” frames were constructed at Fort Hood (Webster 2007, Kuranda et al. 2003).

This new construction program officially moved away from the previous practice of siting barracks prominently along a parade ground – a practice that the army experimented with during the interwar period – altering garrison landscapes across the nation. New barracks would lack elaborate landscaping and be set apart from officer housing. Post-war military master planning would, like the rest of America, become motor vehicle-oriented. In the case of Fort Hood, this was
especially true since it was the home to specialized tank destroyer training. The main post was distinguished by wide avenues next to motor pools with quick access to vehicle training areas (Webster 2007).

(1) Hammerhead Barracks (Constructed between 1951–1957)

The Hammerhead gets its name from its footprint, which resembles a hammer (see figures 23); the three-story dormitory wing mimics the look of a handle while the kitchen/mess wing looks like the head of a hammer.

Louis and Henry Architects of Louisville, Kentucky were the originators of the Hammerhead design (see figure 24 for architectural drawings). The design was intended to encourage group cohesion and could house an entire company and their administrative functions in one structure. It came in three standard types: 105-, 165-, and 225-troop capacities. Adapted by the military, Fort Hood constructed the styles 225-man a/b and
263-man a/b; a/b configurations were mirrored and depended on the direction of their footprint.


The buildings at Fort Hood varied little from the original designs; the architecture was very utilitarian, there were no adornments, and its materials were in plain view on both the interior and exterior of the building (see figure 25). Hammerheads were sparsely landscaped. The structure was constructed of reinforced concrete with CMU infill. A band of metal sash, awning, and hopper windows set above pre-cast concrete sills ran across all three stories. The only small difference was that the kitchen encroached on the mess hall and increased glazing (Webster 2007).
The first floor featured a suite of offices for company functions, and sleeping quarters for NCOs, the first sergeant, the company, and the commanding officer. There was also a large foyer, bathroom/shower room, utility room, and large lounge. At one end was a thirty-five-person open-bay squad room and a day room that doubled as a classroom. The kitchen/mess wing could seat between 160–200 at a time and featured a kitchen, offices, storage, and a pot washing room. The second and third floors were identical. The floor plan featured separate NCO quarters, two thirty-five-man open-bay squads, a toilet, washroom, and shower suites. The original plan also called for movable partitions to provide additional privacy at a team level, screening off four beds and their lockers. The basement featured an issue room where soldiers checked out arms and supplies. There was also a company storage area and boiler room (Webster 2007).
Fort Hood currently has a small inventory of heavily modified Hammerhead barracks in use; see figure 26. These structures have been renovated down to the superstructure over three waves to conform to evolving standards aimed at increasing privacy and personal space. They were modified in response to the 1983 guidelines –2+2 program and, later, the 1995 –1+1 standard (discussed later in this section). Modifications included the removal of mess halls and the partition of squad bays into modules. The latest modification replaced the exterior wall with a balcony on to which each module opened. These barracks were included in this study (Unknown 1950s-a, Webster 2007, Dase 2014, Davis and Foster Architects 1954, Delgado-Howard 2014c). H Frames (1955 to 1958)

(2) H-Style

Rising construction caused the discontinuation of the Hammerhead program in favor of a more economical design, dubbed the “H” style, due to its footprint visible in figure 27.

![Contemporaneous aerial image of H Style Barracks](images/H_style_barracks.jpg)

**Figure 27: Contemporaneous aerial image of H Style Barracks.** Unknown. (1950s). Fort Worth, TX: US Army Corps of Engineers Fort Worth District.

George M. Ewing Company, Architects and Engineers of Philadelphia and Washington, DC provided a more cost-effective design. They doubled troop capacity and housed two companies under one roof, garnering savings by having both companies share latrines and mess facilities. The barracks once again had the goal of unit cohesion and consolidation of functions but could house two companies under one roof. Figure 28, showing the exterior of the “H” style barracks, demonstrates its plain and utilitarian design. Like its predecessor, “H” style barracks were sparsely landscaped (Webster 2007, Unknown 1950s-b).

The barracks shared similar construction methods and materials with the Hammerhead barracks but had very different floor plans and no
basement. The first floor was home to company functions, laundry, phones, utility closets, and storage. High-ranking officers occupied quarters in the cross member of the “H.” The second and third floors had slightly varied floor plans; however, in general, NCOs had quarters in the cross member of the “H” while enlisted soldiers slept in one of the four squad bays, each sleeping thirty-five men. Moving partitions sub-sectioned the bays for additional privacy. The second floor featured day rooms with adjoining sun decks; the third floor had a large central lounge and additional NCO quarters. The offices, kitchen, and mess hall were attached to the rear of the “H” cross member (Webster 2007).

Figure 28: Contemporaneous image of exterior of the H-style barracks. Unknown. (1950s-b). From Fort Hood Building and Landscape Inventory with WWII and Cold War Context, 2007. Champaign, IL Construction Engineering Research Laboratory.
H-style barracks have undergone waves of successive changes as standards have evolved. During the volar period, open bays were subdivided with concrete walls, and air conditioning was added. There was also the replacement of windows and exterior materials. With the implementation of the 1995 (2+2 standard), these barracks were completely renovated; exterior walls were removed and replaced with balconies and squad bays further subdivided (see figure 29).

![Altered H-Style barracks in 2014](image)

**Figure 29:** Altered H-Style barracks in 2014. Delgado, C., August 2014. H-Style Barracks at Fort Hood in August 2014.

The 1950s would mark the end of thirty-five-man open-bay barracks for single-soldier housing at domestic duty stations. Training and mobilizations barracks continue to use open-bay barracks for temporary housing to this day (Kuranda et al. 2003, Webster 2007, Unknown 1960, Delgado-Howard 2014b).
D) 1960s – Cold War Heats up and Reenlistment Goes Down

By 1960, both superpowers could literally destroy each other and perhaps the entire planet. However, mutually assured destruction was futile; the Soviets and the United States battled for supremacy in a series of diplomatic standoffs (Cuban Missile Crisis and Berlin Crisis), clandestine operations, and proxy wars (Vietnam). One such proxy war, Vietnam, started when the French lost control of Vietnam to communists in 1954, leading to the partition of the country along the 17th parallel. Fearing a domino effect, the United States provided approximately $1 billion in military aid and 740 men to assist South Vietnam. In 1961, John F. Kennedy signed the Treaty of Amity and Economic relations with South Vietnam, beginning a precipitous build of troops. In 1962, there were 11,000 troops in Vietnam. Following the 1964 Gulf of Tonkin Resolution and its unofficial declaration of war, in 1968, there would be over half a million troops fighting in Vietnam (Smith A. 2007).

As a result of the Berlin Crisis and the other developments of the early 1960s, Fort Hood became a permanent installation, and the first AD was reactivated. Its mission quickly changed from training to combat readiness, ready to deploy at a moment’s notice. In 1954, with its new status came a need to upgrade its aging WWII infrastructure – including the barracks. Fort Hood was facing a severe housing crisis; even a lieutenant colonel or a major had to wait eight months for housing. In 1965, construction started and continued throughout the late 1960s. The headline in the Killeen Daily Times on January 1, 1965 about the new barracks construction stated: “Wooden Barracks Give Way to Modern, Air-Conditioned Units” (Webster 2007).
Chapter 3—From Barracks to Unaccompanied Personnel Housing

(1) Rolling Pins (Constructed 1960–1971)

During this period of escalating tensions across the world, the military found itself with retention issues, in part due to poor housing conditions and limitations put on barracks housing funding (but not administrative and support functions) set by Congress. The army took a new approach to housing. This approach was characterized by separating administrative and support structures from housing while shrinking the size from 35-men to 8-men squad bays. Figure 30 shows the interior of a typical 8-man squad bay. Removing the admin and support functions freed up more funds to make improvements to housing and necessitate a new master planning strategy (US Army Engineer District - Kansas City 1965, Webster 2007, Kuranda et al. 2003).

Figure 30: Cold War era squad bay barracks (Lackland AFB, TX). Unknown. (1960). From We Wanted Wings: A History of the Aviation Cadet Program. Dr Bruce Ashcroft, Staff Historian, HQ AETC Office of History and Research, 2005. Online: Wikimedia.
Designed initially by J.N. Pease and Company Engineers-Architects from Charlotte, North Carolina, the three-story Rolling Pins were introduced in 1957 but not built until 1961. Named for their distinctive footprint, Rolling Pins would be built in groups of five. Each building could house 326 enlisted personnel. Five structures were appointed to a battalion consisting of numerous companies, each occupying half a Rolling Pin on all three stories. Rolling Pin complexes generally contained ten structures or an entire regiment (two or more battalions). Additional support functions would be constructed within the complex of Rolling Pins, making the complex independent from the main post. Battalion level clusters typically had two mess halls, two admin buildings, and two supply buildings (see figure 31). A regimental area would also have chapels, dispensaries, and NCO clubs. Complexes were sparsely landscaped. With this master planning strategy, we see further separation from the main post in favor of more contained regimental areas, analogous to suburban areas spawning across metro areas during the same era (Kuranda et al. 2003, Webster 2007, Smith A. 2007, US Army Engineer District - Kansas City 1964).
Figure 31: Typical 5 Rolling Pin complex with support buildings (Fort Leonard Wood, MO). US Army Engineer District - Kansas City. (1964). From FLW Rolling Pin Barracks and Associated Buildings Context and Inventory.

The Pease design, while unadorned, included quality of life features identified by the army: brick exterior in the alternate version, aluminum windows with canopies, smaller open-bay rooms, built-in closets, suspended ceilings in halls and bathrooms, acoustical tile ceilings in dayrooms and lounges, plaster walls, mechanical ventilation, air conditioning, and vinyl and terrazzo flooring (see figure 32).
The Rolling Pin’s post and beam structure was not exposed on the interior like previous barracks types. They were clad in brick (alternate version) or concrete masonry units (basic) on all faces. Fort Hood built the base version. They featured three aluminum window units and distinctive two-foot concrete brise soleils (sun shades) that lent the buildings visual interest (figure 33).

The main footprint, which housed enlisted soldiers, was rectangular. The Rolling Pin handles, where NCOs lived, were the same height but less wide. The first floor had 6 eight-man squad rooms, a laundry room, storage, and two shared and two enlisted toilet/shower rooms. There were also 12 two-man NCO rooms, a lounge, and NCO toilet/shower facilities. The second and third floors were identical to one another, featuring 12 eight-man squad rooms and 16 two-man NCO quarters as well as two small storage rooms at the end of each block. Like the hammerheads and “H” frames, the Rolling Pins have undergone renovations in order to comply with evolving standards, which resulted in the subdivision of squad rooms into smaller modules as well as the removal of the exterior wall in favor of an open balcony. Fort Hood has
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a large number of renovated Rolling Pin barracks currently in use (Webster 2007, Unknown ND-a).

5. 1970s – The Unaccompanied Personnel Housing Revolution

The Vietnam War was met with growing hostility throughout the late 1960s and into the 1970s. The draft, widely unpopular, was ended in 1973 by President Nixon. The shift to an all-volunteer military was not without concerns. Opponents believed it would be costly and difficult to attract volunteers without a draft. In addition, they felt that without a draft, citizens would not feel an obligation to serve and protect the country in which they lived. These concerns were met with a variety of solutions that improved recruitment incentives as well as compensation. Recruits and re-enlisters would be offered different enlistment term lengths and bonuses. Compensation grew to include improved housing and education benefits. For those considering careers in the military, retirement and health benefits, quality of life programs, and a family-friendly atmosphere would become important to recruitment and retention. The old joke, “If the army wanted you to have a wife, it would have issued you one,” no longer applied (Rostker and Yeh 2006). The move to an all-volunteer army prompted a huge shift in the culture, operations, and infrastructure of the military. There were other social changes happening as well; changes to family structures were leading to a decline in two-parent, married households while, at the same time, larger numbers of young people in the military were marrying and starting families – increasing the demand for housing. Single soldiers, still ineligible for family housing, would continue to call barracks “home.” However, officially, the term “barracks” would be discontinued in favor of “Unaccompanied Personnel Housing” (UPH). This change in terminology not only reflected the radical transformation the military would undergo as it professionalized warfighting but also a departure from previous approaches toward housing enlisted soldiers. UPH was being conceived as a competitive alternative to
housing in the private market; it should feel more like a home than a temporary place to
sleep. From this point forward, I will focus more on the standards than the structures
themselves since, typically, old forms were modified to meet standards, and the new
forms that implemented those standards are largely similar. I will discuss particular
structure types when relevant only (Twiss and Martin 1998, Neuhaus et al. 2010b,
Kuranda et al. 2003).

A) 1971 – Studies of the Volar Experiment

In 1971, the army received $25 million from the Secretary of Defense to
fund Project VOLAR – an experimental program to improve soldier living
conditions at three posts: Fort Ord in California, Fort Carson in Colorado, and Fort
Benning in Georgia. Figure 33 shows a feature in Life Magazine covering the pilot
programs. The program aimed to create more comfortable and private barracks. It
also piloted more permissive policies and reduced menial tasks and kitchen police
details. The program loosened some rules. For example, soldiers were allowed to
drink beer in barracks, decorate their rooms, and groom in a style more relevant to
the time (Vineberg and Taylor 1972, Eppridge 1971b).
The program was evaluated, and in 1972, the report, entitled “Summary and Review of Studies of the Volar Experiment, 1971: Installation Reports for Forts Benning, Bragg, Carson, and Ord and HumRRO Permanent Party Studies,” was released (Vineberg and Taylor). The study found that among the top ten “impact items” for enlisted men were various items related to the barracks. These items included privacy and individuality or troop barracks, the policy concerning beer in the barracks, policies and procedures regarding personal furniture and decoration of individual areas in barracks, and a related item – the ability to eat breakfast at the unit mess hall after sleeping late on weekends or holidays. The study also found that among the reasons cited by enlisted soldiers as “the strongest influence on leaving the Army” was the living quarters – specifically, the barracks. Again, the barracks environment was implicated in low quality of life and problems with retention. HumRRO surveys found that being treated with fairness and respect was
an important issue; additionally, the reduction of excessive work schedules (evening, overtime, weekend, and extra duty hours) were also rated as important to improving quality of life (Vineberg and Taylor 1972, Eppridge 1971b, a).

B) 1972–1978 VOLARs

In an attempt to create uniformity and improve housing quality in bachelors’ quarters across branches, DoD attempted to reconcile differing standards among branches. Each branch had been instituting different standards; for example, the air force had more generous allotments for space and amenities while the marines were conservative and more primitive. Over time, each iteration of standards allotted more space and privacy to service members in response to studies, polls, and surveys conducted throughout the subsequent decades (Twiss and Martin 1998, Vineberg and Taylor 1972, Comptroller General of the United States 1982b, a).

The first set of all force guidelines for barracks construction, called DoD Instruction 4165.47, were issued in 1972. These standards represented a move away from open-bay barracks to more private living situations. Service members E1–E4 were designated four people to a room at 90 square feet per person, although 85 square feet could be considered adequate; for construction completed in 1970 and before, 80–90 would be accepted. While it was clear that increased privacy was the goal, giving each soldier an individual apartment was not considered feasible due to cost. (Comptroller General of the United States 1982b, Kuranda et al. 2003).
In 1973, the Army Corps of Engineers held an architectural competition with the following goals:

- New, attractive living arrangement
- Contain costs
- Three-man rooms (270 square feet with full bath)
- Maximum privacy
- No more than three to eight rooms clustered around a lounge area
- Support spaces
- Not to exceed three stories

Two new housing forms emerged from the competition: the Lyle, Bisset, Carlisle & Wolfe (LBC&W) and the Benham-Blair & Affiliates (BB&A). Two radical changes would characterize these two new designs: (1) squad bays were discontinued, and (2) the designs featured irregular massing that made them look more like apartment buildings; gone were the rectangular footprints that were common until the "H" frames.
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(1) 1972 – Benham-Blair & Affiliates (BB&A)

These barracks featured 8 three-men rooms that used wardrobes to create cubicles, where each person would get a window, desk, chair, bed, and wardrobe. The rooms were clustered around a lounge with kitchenette. Stairwells and interior halls were accessed on the ends. BB&As were preferred for cold-weather environments and not built at Fort Hood; they were built at Fort Carson in Colorado. BB&A barracks were preferred by the Women’s Army Corps (WACS). No historic plan or images of this barracks type was available at the time of writing (Kuranda et al. 2003, Webster 2007).

(2) 1972 to 1982 – The Lyle, Bisset, Carlisle & Wolfe (LBC&W) UPH

Fort Hood constructed thirty-five LBC&W barracks during 1974–1978. Fort Hood refers to these as VOLARs. This housing was built at Fort Bragg, Fort Polk, and Fort Hood. The designers of the VOLARs were Lyle, Bisset, Carlisle & Wolfe and Associated of Columbia, South Carolina and Alexandria, Virginia (LBC&W). LBC&W was a prolific regional firm founded by WWII veterans during the post-war period. Until the recession in the late 70s forced the dissolution of their firm, they built residential, civic, educational, military, and public housing projects in a range of modernist styles. Their “total design” philosophy emphasized the client at as a central figure, the economy as a restraining element, and the function as a driving purpose and “architectural correctness” – or beauty – as the outcome. LBC&W also integrated architecture, landscaping, parking, and traffic into its designs. This approach is evident in the design of the VOLARs; see figure 36 for an architectural rendering of the concept (Kuranda et al. 2003, Lee 2016, Webster 2007).

The VOLARs aimed to provide service members with housing that was similar to civilian apartment living. Not only were the buildings radically different in their footprints but also in their master planning. The VOLARs maintained a separation between military/residential areas. It provided parking for privately-owned vehicles for the first time. Open space, recreational areas, and parking were connected by pedestrian-only networks to provide a more civilian atmosphere. These apartment-like campuses were separated from their military support facilities by the consolidated dining halls, which provided a transition space from the residential to the military (Kuranda et al. 2003, Webster 2007).

The apartment-style buildings were built in seventy-two-man clusters; the structures were linked to created irregularly-shaped units, patterned across the landscape (figure 37).
Each cluster was three stories, with each story housing a twelve-man, four-bedroom module. Each three-man bedroom suite had a private bathroom. The suite opened into a lounge shared with three other bedroom suites. There were no interior hallways because the lounges were accessed directly from an exterior staircase. There was a central courtyard for light and air. Each occupant was allotted a cubicle with a window, desk, chair, a wardrobe, and bed. Areas could be separated by accordion screens. VolarRs were outfitted with air conditioning as well (see figure 38 and 39) (Kuranda et al. 2003, US Army Corps of Engineers 1976d, b, c, a).
The VOLARs at Fort Hood have undergone some renovations. Recent renovations begun in 2012 have improved energy efficiency to meet LEED-Silver ratings; the original floor plan is bisected, creating a more secure interior hallway and adding kitchenettes. They’ve also had exterior renovations that include pitched metal roofs, stucco, and architectural detailing with Austin limestone around entrance ways to make structures more cohesive with other newer construction on-post, in accordance with their Installation Development Plan (see figure 40). Interestingly, these renovations don’t apply the 1995 1+1 standard (The Urban Collaborative 2013c, d, Architects 2017).

VOLARs renovated before 2012 have also been bisected to make way for a hallway but don’t apply the 1+1 standard (see figure 41). A partially enclosed interior hallway enters directly into a narrow entryway with a pantry, refrigerator, microwave, sink, and bathroom. There is a two-man room divided by an armoire and desk unit. Each inhabitant has a window, closet,
and ceiling fan (Delgado-Howard 2014a, Lyons 2009). VOLARs were evaluated in this study. However, none had the original floorplans remaining, although the original landscape and circulation plans appear to be largely intact (see figure 42).

(3) 1972 to 1974 – A-Style

These barracks were constructed only at Fort Hood, between 1972 and 1974, and represent a modified regimental barracks that occupied a smaller footprint than a complex of Rolling Pins. These large structures housed five companies in a building that formed a square “A” footprint. Since these barracks have since been demolished and represent an isolated design type, I will not elaborate further.

6. 1983 to Present – The March toward Market-Style Housing and Privatization

As outlined earlier in this text, housing and quality of life are conceptually joined for the military. Throughout the 1980s and 1990s, this framework pushed toward greater privacy, increased space, and better quality of life programs. By the 2000s, two paths had emerged: The Barracks Modernization Program and a Pilot UPH privatization program. The goal of both of these initiatives was to approximate a standard of living found in the civilian housing market. This led to the development of new standards for construction,
which began to more closely resemble university dorms or apartments. Continually advocated for in Congress as a means of saving the government money, privatization was implemented in family housing. UPH privatization found champions in Congress as well, and a pilot program was kicked off in the late 2000s. Let's quickly explore the march toward market-style housing (Twiss and Martin 1998, United States General Accounting Office 1999b, Tyler 2009).

A) 1983 – 2+2 Standard

In 1981, the Congressional Army Housing Committee conducted a study of barracks buildings to ensure that they were meeting health and safety standards. As a result of this study, they identified some areas for improvement, including controlled access to buildings, relocation of company admin and supply buildings in closer proximity to barracks, provision of four-person rooms, and a simplified design (Kuranda et al. 2003).

Later, in 1982, the comptroller general issued a report to Congress on UPH. This report found that, in spite of the Department of Defense’s enactment of minimum standards, each service branch was implementing different standards. The report also generally found UPH, with the exception of the air force, to be below minimum standards. The report suggested inadequate housing wasted funds as DoD was forced to house people off-base. It also cited other issues that were plaguing UPH: inefficient management of housing, inaccurate projections of need for housing, and housing/modernization projects that did not address the need for housing and/or were too expensive. For example, the air force adopted a minimum standard above those suggested in 1973 and was using their housing dollars to move toward that standard before increasing the number of barracks spots. This led to additional projects and more expenditures. In addition, because
the air force lacked spaces, they sent people off-post, resulting in additional expenditures to cover housing in the private market. The comptroller general report deemed this excessive and suggested that the air force fall in line with DoD standards by reducing their standards and redirecting funds toward more barracks spaces. Overall, the comptroller general’s report, entitled, “DoD’s Unaccompanied Enlisted Personnel Housing – Better Living Conditions and Reduced Costs Possible,” recommended that DoD push all service branches to adopt and resource the same minimum standards. It also stated that service branches needed to be more efficient in how they allocated space by considering all installation assets in the housing of soldiers rather than allocating them just by unit. It also recommended that all branches review how they calculated need and cancel unnecessary UPH housing projects (Comptroller General of the United States 1982b).

DoD responded to the 1981 study and 1982 report a year later with the 2+2 standard. The new standard was developed to provide design guidance on the implementation of minimum standards that improved privacy and removed elements of barracks living that were considered substandard. To illustrate, at the beginning of the 1980s, soldiers were still using gang latrines and sleeping on bunk beds in Korean War-era facilities. The two-room modules addressed these issues by limiting the number of people sharing a room to two in twin (not bunk) beds. It also equipped each module with a bathroom shared by all four inhabitants rather than the whole floor (see figure 43). This standard also met the 90-square-feet-per-person guideline for E1–E4 lower enlisted soldiers and allocated at least 125 cubic feet for storage (United States General Accounting Office 1999b, Office of the under Secretary of Defense (Acquisition and Technology) 1994).
B) 1983 to 2000s – Quadrangle Barracks

The Quadrangle barracks were the result of the 2+2 standard and offered a flexible design approach that could be expand horizontally, vertically, or replicated across footprints. These brick structures could be altered into various footprints to form an “L” or “C” shape, typically sited around a quadrangle. Quadrangle barracks typically were two to three stories in height with one-over-one metal stash windows on all floors. Each building block had an enclosed central corridor flanked by 2+2 suites. The first floor contained a lobby, day room, laundry room, storage, and mechanical rooms. The staircase was located where the buildings connected perpendicularly. These barracks were served by a consolidated mess hall. No

high-resolution images of these structures were available at the time of writing (figure 44 and 45). These barracks are notable because variations on this design is seen in contemporary UPH design (Kuranda et al. 2003).

Figure 44: Satellite Imagery of Quad Style Barracks. Online: Google Maps. (2017)

Figure 45: 82nd Sustainment Brigade Memorial Run in Front of Quad Style Barracks. Fort Bragg, NC: 82nd Sustainment Brigade. Photo by: Baumgartner, S. R. H. (2009).
C) 1994 to Present – The Barracks Modernization Program

In 1992, the Department of Defense conducted a Tri-service Survey about quality of life issues affecting recruitment, retention, and morale. The survey found that 84 percent of respondents preferred to live off-post. When asked which one improvement would increase retention, 35 percent of respondents stated fewer restrictions and no inspections. Private bedrooms were mentioned by 24 percent of respondents. In addition, a mid-term review of the updated barracks standards found that, compared to Army Family Housing barracks, modules lagged behind in amenities. In that survey, respondents indicated that they wanted more space and privacy, private bathrooms, and more storage. The second request was for increased equity of housing benefits between single and married soldiers since married soldiers got to live in multi-room homes with more living space per square foot (United States General Accounting Office 1999b).

In response, the Department of Defense began the Barracks Modernization Program with the goal of providing every soldier with a “1+1” or equivalent standard barracks by the end of FY15. The new standards were a direct response to concerns raised in the Tri-service Survey. The goal was to improve quality of life as well as readiness, retention, and motivation. It also aimed to replace outdated, aging, and costly WWII- and Korean War-era structures (Preston 2008).

D) 1995 – 1+1 Standard

The new barracks standard, the 1+1, featured two individual sleeping rooms with one bathroom in one shared module, with two people per module. (see figure 46). This new standard increased personal space from 90 square feet to 118 square feet, added large closets, limited kitchenettes, and gave soldiers their own sleeping room. Through design, privacy was addressed, but policy concerns related to excessive regulations and forced inspections were not altered in any
substantive way. The 1+1 standard was notable because it moved toward a
standard described as “market style,” meaning a civilian one-bedroom apartment.
It also moved away from concerns related to cost savings and unit cohesion, which
have always been integral to the barracks design philosophy (United States
General Accounting Office 1999b).

![1+1 Module Interior Access](image)

**Figure 46: 1+1 Typical Floor Plan.** United States General Accounting Office. (1999a). Featured in Military Housing: Status of the Services' Implementation of Current Barracks Design Standards. Washington, DC: Department of Defense.

At $63,000 per space, the cost of building these barracks types were
estimated to be almost double that of the 2+2 standard ($38,000) in 2000.
Additionally, it shed the concept of unit cohesion from the design program, though
not from the building management. In a GAO evaluation of the implementation of
these standards in 1999, the Marine Corps is described as shunning the standard
in favor of a 2+0 design, due to cost and concerns related to a loss of unit
cohesion. The army, on the other hand, was not as concerned. They stated that
unit integrity was achieved by housing companies in the same building; sharing a
bedroom wasn’t necessary for unit cohesion. The army also decided that it was
worth the cost if it improved retention. The GAO noted in their report that they felt that DoD lacked the metrics to make the claim that better barracks result in improved readiness and retention, but that each branch needed to assess its own needs and make decisions that best-suited their culture, goals, and mission. In response to the GAO report, DoD reiterated their stance on housing and quality of life and its importance to readiness and retention (United States General Accounting Office 1999b):

_The DoD remains committed to providing quality housing for our unaccompanied members. We continue to believe that a critical component of attracting and retaining high quality personnel is the ability to provide service members with a quality of life that is competitive with the outside job market. . . . the Department maintains that providing more privacy and amenities is important to addressing concerns raised by our military members. It is important to note the two reasons that DoD has no precise quantitative analysis linking the 1+1 standard and readiness and retention. First, the services are only now completing construction on their first set of barracks built to the new standard. There is not enough data to currently assess a standard that is only now coming on line. Second, readiness and retention encompasses many different components. Quality of living conditions is just one factor of the total quality of life picture, which, in turn is only one of the many factors that affects DoD's readiness and retention. (Randall A. Yim, Acting Deputy Under Secretary (1999b)._

This is important because it demonstrates the consistent position of the Department of Defense, that housing is a component of quality of life. It also demonstrates that DoD finds itself pulled in two directions: toward military culture and political pressure to cut costs. Often, it would appear that the two positions are in direct opposition to one another. It is at this point that Congress also began to
push unaccompanied personnel housing privatization as a way of reducing costs (United States General Accounting Office 1999b).

E) 2000 – Revisions to the 1+1 Standard

In 1999, a mid-term review of the Barracks Modernization Program was conducted by the Army Corps of Engineers Headquarters and the Office of the Assistant Chief of Staff for Installation Management. The results were released in 2001. One of the main findings of the study was that previous building standards were too restrictive and expensive. Previously, all military construction had to be type I or II non-combustible; this meant that all materials – indoor and outdoor – had to be non-combustible. However, due to improvements in building technology, the report indicated that the cost of building to this standard was unwarranted. The report argues for the adoption of industry standards in barracks construction because “with less restrictive functional criteria, the Army could obtain more value by allowing barracks to more closely resemble economical commercial housing such as apartments, hotels, extended stay suites, condos, or college dormitories. This change would be especially suitable for design-build contracts, as the industry has been asking that solicitations not be so prescriptive” (OACSIM & HQUSACE Barracks Team 2001).

DoD Installation Policy Board approved changes to the 1+1 standard that increased the maximum room size, deleted the module limit, and allowed for private modules. It also suggested a number of other improvements based on feedback from the mid-program review surveys. Improvements included adding cooking facilities to barracks modules, downsizing or removing the Soldier Community Buildings (housed storage, laundry, day room, etc.), grouping all company operations in a battalion, grouping all battalion HQs in a brigade, and planning for change – flexible site plans and buildings with interior architecture that
could be altered for new uses. Notably, it also called for the buildings to be acquired under design build contracts or via privatization to encourage innovative design at a competitive cost (OACSIM & HQUSACE Barracks Team 2001).


**F) 2003 – 1+1 Enhanced**

In 2003, the barracks criteria were amended to reflect the recommendations from the mid-term review. The 1+1E standard featured a two-bedroom/one-bath module with a stove or cook top (see figure 47). The standard
increases from 118 square feet per person to 140 square feet included two 32-square-feet closets and a shared bath. A shared kitchen featured a microwave, cooktop, sink, and refrigerator. When feasible, each module should also have its own laundry or, at minimum, a laundry room on each floor. Interestingly, the new design standard barred windows opening to a balcony or landing to safeguard privacy, guard against terrorism, and support command and control. The new criteria began in FY 2005, or FY 2004 if feasible. The army set a goal of meeting 1+1E for every soldier by FY13 but was not able to meet this goal (Lust and Strock 2003, Neuhaus et al. 2010a, United States General Accounting Office 1999a).

Figure 49: Washington’s Joint Base Lewis-McChord’s Jackson Avenue Barracks garden-style 1+1. Joint Base-Lewis McChord: US Army Corps of Engineers. (US Army Corps of Engineers. (2008).)

Figure 50: 1+1E Barracks Kitchen and seating area; Spc. Kyle Wilhelmi and Pvt. Murphy Edison, Soldiers from B Company, 3rd Squadron, 38th Cavalry Regiment, enjoy the common area in their new barracks room. Joint Base Lewis-McChord, WA: US Army. (Sgt James Hale (FORSCOM). (2011))
In 2012, another memo revised UPH standards again to go into effect in FY2015. This time, the standard included a larger private sleeping room, living room, and full-sized refrigerator. It also allowed an elevator when buildings were higher than four stories, required ADA standards be met for entrances and lobbies, ensured telecommunications infrastructure was included in each room (phone, TV and internet capability), and directed construction to meet energy and sustainability requirements set by the army (Ferriter 2012). At the time of writing, the army had not yet constructed a Market Style (2/1M) barracks.

**H) 2008 – The First Sergeant’s Barracks Initiative**

In 2008, the army also made an organizational and policy change to unaccompanied personnel housing with the implantation of the First Sergeant’s Barracks Initiative. This change was rolled out army-wide in 2012. This initiative removed some of the administrative aspects of managing UPH away from
individual units (barracks tenants) in order to free up time for mission requirements. Units remained responsible for assigning rooms, cleanliness, health and discipline, move-in and move-out inspections, and common custodial tasks while the Single Soldier Housing Office (part of DPW) was responsible for building management, furnishings, common area custodial, and maintenance (Neuhaus et al. 2010b, Office of the under Secretary of Defense (Acquistion and Technology) 2013).

I) UPH Privatization

In 1997, the Office of Management and Budget with DoD set criteria for scoring privatization projects. UPH has had some challenges in terms of privatization. Typically, developers rely on set occupancy rates and BAH payments to fund privatized projects. However, as units deploy, soldiers are rotated to other duty stations or are promoted out of barracks housing, thus maintaining high occupancy rates can be difficult. In addition, unaccompanied service members aren’t typically approved for BAH payments, which are set at the market rate for housing prices, because this would create a large ongoing fiscal burden for DoD. Another challenge facing privatization was the potential impact on unit cohesion and command and control (Neuhaus et al. 2010b, United States General Accounting Office 2014).

Between 1997 and 2011, each service branch conducted several feasibility studies related to privatization on UPH. After three studies, the army concluded that privatization was feasible but generally more expensive than barracks construction and sustainment. Privatization, however, could be under a specific set of criteria, such as where an installation has limited space for UPH or BAH is already approved for unaccompanied service members due to their rank but adequate housing is unavailable on-post. For example, in 2014, nearly half of all
junior single soldiers at Fort Meade in Maryland were receiving UPH because there wasn’t enough housing on-post. In this case, the army felt that privatized housing was appropriate, and they entered into an agreement with a developer to create privatized UPH on-post. The development, called Reese Crossings, features one- and two-bedroom utilities-included apartments as well as amenities common in private sector apartment complexes, such as a pool, clubhouse, and basketball court, for $1,075 per person. In order to maintain its occupancy levels, DoD civilians and retirees are also allowed to live in the complex. There are four other army privatized UPH housing projects geared toward upper enlisted unaccompanied personnel (E6 and above) who are eligible for BAH: Fort Irwin in California, Fort Drum in New York, Fort Bragg, in North Carolina, and Fort Stewart in Georgia (United States General Accounting Office 2014).

The army’s willingness to experiment with privatized UPH under these conditions goes back to their thinking about UPH as a cost-effective way to maintain unit integrity as well as command and control structures. In the case of Fort Meade in Maryland, the army was already spending the money due to a lack of housing, and privatized UPH allowed them to bring soldiers back on-post where they could remain close to the command and control structure as well as the unit. In the four other cases, privatization does the same thing for soldiers eligible for BAH due to rank but who aren’t married. This is interesting because it responds to a demographic trend in which people are staying single longer or may have gotten divorced or separated. This trend creates a demand for unaccompanied housing for older soldiers (Wolfinger 2015).
IV. Historical Design Research Summary

A small percentage of Americans are professional warfighters who assume the responsibility of defending and supporting the constitution of the United States of America. They are tasked with accomplishing U.S. domestic and foreign military policy at a great physical and mental risk to themselves. Enshrined within the Third Amendment and embedded in the decision to stand up an all-volunteer military, a system of compensation has evolved as a pact between the government and service members. Warfighters work, sacrifice, and risk themselves for the defense of the Constitution and for the national security of the nation. The government supports service members throughout the trajectory of their career and beyond so they can focus on the fight. Since its inception, the U.S. military has recognized housing as a critical component of readiness. Compensation, including housing, is specifically designed to support morale and readiness in the all-volunteer military.

As the all-volunteer army evolves, so does the design of unaccompanied personnel housing. UPH presents an opportunity and challenge for military planners working under fiscal austerity, political uncertainty, and high-tempo operational needs. There are inherent tensions in the evolution of barracks, from an institutional housing type to a more market-style dwelling. Central to this design concept is the need to compete with civilian accommodations in order to enhance recruitment and retention without sacrificing unit cohesion. The very characteristics that define barracks (temporary, group housing/unit cohesion, control, mess halls, austerity, and economy) are the same ones that are absent in civilian housing. I would argue that the only aspect contemporary unaccompanied personnel housing (OACSIM & HQUSACE Barracks Team) has retained is its controlled environment and an echo of early architectural design. The shift toward market-style apartment living is centered around the individual but situated within military culture and the command and control structure. The march toward market-style housing is an architectural one; the agency
that defines civilian living spaces struggles to find a place within the command and control structure of barracks environments (United States General Accounting Office 1999b).

The evolution of barracks to UPH is a rich area of inquiry that has many open questions. This study attempts to explore a few of those. It explores the relationship between barracks housing its features, amenities and characteristics, and satisfaction. It then asks if satisfaction has an impact on indicators of interest to the Army: career satisfaction, recruitment and retention, fitness, and resilience. This project attempts to measure the impact of housing quantitatively to that understanding. The question of readiness is also explored but is not the focus of this thesis. This question was addressed to the DoD in 1999, and at the time, they said they lacked data. This project attempts to measure the impact of housing quantitatively to help further that understanding.
Chapter 4—Methods

I. Purpose

This study uses an ecological perspective to examine unaccompanied personnel housing (UPH). In particular, it looks at the interaction of the individual with the different realms of barracks housing. This model situates housing as a complex convergence of systems interacting reciprocally with the inhabitants. This mixed-method study has three components:

- Review of government and historical documents related to the barracks design, including government surveys, studies, and photographs. Refer to Chapter 3.
- Quantitative analysis of data collected via a specially designed online survey.

II. Participants – People and Structures

1. People

   The survey participants comprised the barracks residents who resided at Fort Hood during the months of July through September 2015. There are approximately 16,000 barracks spots at Fort Hood, TX. Barracks residents are limited to unaccompanied personnel or “bona fide single military personnel” with the rank of E-5 (Sergeant) and below and who are eligible to receive Basic Allowance for Housing (BAH) at the “without dependent” rate. In other words, they are unmarried soldiers with the rank of E-5 and below (Office of the Assistant Chief of Staff for Installation Management Headquarters 2014).

2. Structures

   This study looks at the interaction of the building design with the residents. Therefore, it was considered essential to investigate and consider the various sources of information available about the barracks. Consequently, the researcher conducted a review of historic, government, and media documentation (photographs, articles, and architectural drawings) of
the barracks housing from 1775 to the present. The intention of such a review was to understand how policy influenced the evolution of the barracks housing and the underlying concepts embodied in their design. Based on this review, it was decided that the barracks examined in this research could be categorized into three groups for comparative analysis. These three types were: 1) Traditional (pre-1973); 2) Transitional (1973–1982); and 3) Contemporary (1983 to the present). While the traditional and transitional structures have all experienced some alteration since their original design to conform more closely to the design standards relevant at the time of their renovation, their original structures were conceptually different from the structures constructed after 1983. The main difference is that these barracks were originally designed to house and feed groups in a communal setting, while the later structures, i.e., the LCBW VOLARS, were conceptualized to be closer to apartment-style living and emphasized increased privacy rather than fully self-contained living. Thus, VOLARS are considered here as transitional for this reason. Meanwhile, the barracks in the contemporary group were built to conform to the 2+2 standard (or better) from the initial design concept and were conceptualized to house soldiers as individuals rather than as groups. It is important to note that all of the traditional and transitional structures and some of the contemporary structures have been renovated from their original design concepts to conform to at least the 2+2 or better standards. The barracks types present in this analysis include:

<table>
<thead>
<tr>
<th>Traditional</th>
<th>Transitional</th>
<th>Contemporary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hammerhead (1950s)</td>
<td>LCBW Volar (1970s)</td>
<td>Quadrangle (1983 to present)</td>
</tr>
<tr>
<td>Rolling Pin (1960s)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Barracks Design Era Groups for Comparative Analysis
III. Barracks Survey

This survey was developed in collaboration with the Fort Hood Directorate of Public Works to look at the built environment, amenities, and personal characteristics of the soldiers. The survey looks at six barracks realms and the personal characteristics of the residents with an aim to explore the relationship between the features, amenities, and characteristics of the barracks environment, with the outcome variables, namely satisfaction, recruitment, and retention. These realms were conceptualized out of an ecological perspective construct whereby humans have a reciprocal relationship with their environments at various levels (Bronfenbrenner 1994, Rapoport 1988). The realms present in this study range from the most intimate space of interaction between the resident and the environment, moving outward toward the most public. The outcome variables were selected because they are components of wellbeing that support military readiness. In Army doctrine, they represent three out of five pillars (physical, psychological, and social) for personal readiness (US Army 2014). This study does not look at issues of spirituality or specific family ties—the other two pillars. See appendix M for a copy of the survey.

1. Concepts and Variables

A) Satisfaction—Measured in three variables

(1) Realm Satisfaction

Participants were asked directly about their level of satisfaction related to one of six realms of the barracks: room, module, building, complex, cultural landscape, and social. These responses were measured by 5-point Likert-scale items.
Chapter 4—Methods

Table 2: Individual Items Measuring Realm Satisfaction—Scale (Least) 1 to 5 (Most)

<table>
<thead>
<tr>
<th>Likert Items</th>
<th>Realm</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, how satisfied are you with your room?</td>
<td>Room</td>
</tr>
<tr>
<td>In general, how satisfied are you with your module?</td>
<td>Module</td>
</tr>
<tr>
<td>In general, how satisfied are you with your building?</td>
<td>Building</td>
</tr>
<tr>
<td>In general, how satisfied are you with your complex?</td>
<td>Complex</td>
</tr>
<tr>
<td>The barracks complex where I live is attractive from the outside.</td>
<td>Cultural Landscape</td>
</tr>
<tr>
<td>I don’t feel lonely in the barracks.</td>
<td>Social</td>
</tr>
</tbody>
</table>

(2) FAC Evaluations: Features, Amenities, and Characteristics (FAC)

Within each realm, participants were asked to indicate their level of agreement related to different features, amenities, and characteristics on a five-point Likert scale; for example, “My barracks room is easy to keep clean and tidy.” An index representing the FAC mean was computed. The indexes had a high level of internal consistency, as evidenced by their Cronbach’s alpha scores (Laerd Statistics 2016a).

<table>
<thead>
<tr>
<th>FAC Index Realm</th>
<th>Cronbach’s alpha</th>
<th>Number of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>.882</td>
<td>7</td>
</tr>
<tr>
<td>Module</td>
<td>.854</td>
<td>6</td>
</tr>
<tr>
<td>Building</td>
<td>.789</td>
<td>7</td>
</tr>
<tr>
<td>Complex</td>
<td>.826</td>
<td>7</td>
</tr>
<tr>
<td>Cultural Landscape</td>
<td>.663</td>
<td>3</td>
</tr>
<tr>
<td>FAC—Social</td>
<td>.766</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 3: Features, Amenities, and Characteristics (FAC) Indices with Cronbach’s Alpha Scores

(3) Satisfaction Index

The overall satisfaction index was computed using the mean of three general survey items. Participants were asked to indicate their level of satisfaction with their experience living in the barracks on a five-point Likert
scale item, e.g., “In general, how satisfied are you with your experience living in the barracks?” They were also asked for their level of agreement with the statements, “The barracks building I live in meets my expectations as a nice place to live” and “My barracks module seems well constructed.” This index had a high level of internal consistency, as evidenced by its Cronbach’s alpha score of .856 (Laerd Statistics 2016a).

B) Soldier Outcomes

To explore the work life of soldiers, questions related to their morale and leadership were measured using items adapted from the Platoon Cohesion Index (1998) developed by the US Army Research Institute for Behavioral Health by G. Siebold and D. Kelly (Siebold and Kelly 1988). The original tool consists of 129 items.

(1) General Career Satisfaction: Likert Items

Satisfaction with the choice of pursuing an Army career was probed with the item: “In general, how satisfied are you with your decision to join the Army?” Respondents responded on a 5-point Likert scale from “Very dissatisfied” to “Very satisfied.” To measure retention, respondents were asked to indicate their agreement with the statement “I would like to re-enlist or pursue a long-term career in the US Army” from “Strongly disagree” to “Strongly agree.”

(2) Career Intentions Index

The two overall satisfaction Likert items discussed in the previous paragraph were combined to create a career intentions index. The index had a questionable level of internal consistency, as determined by a Cronbach’s alpha score of .688; whereas it is recommended for reliability that the values should range between .70 and .90 (Laerd Statistics 2016a). A low Cronbach’s
alpha score can be the result of having too few items in an index and/or a low inter-item correlation (Borgatti N.D.). A meta-analysis of the Cronbach’s alpha scores revealed some variation in the recommended reliability levels; Nunnally initially stated that levels between .5 and .6 were acceptable for preliminary research, but later raised the threshold to .7. Meanwhile, Murphy and Davidshofer pegged levels below .6 as unacceptable (Nunnally 1978, Peterson 1994, Murphy and Davidshofer 2014). In view of the literature and the fact that this measure only has two items, a further correlation was conducted to ensure that there was an acceptable correlation; whereby Pearson’s correlation was applied, returning a score of .53 with \( p=0.005 \). Therefore, this measure will be used in spite of its borderline acceptability.

(3) Career Satisfaction Index

The career satisfaction index used for this study was derived from the mean of four items measured on a 5-point Likert scale. The index had a high level of internal consistency, as determined by a Cronbach’s alpha score of 0.864.

Participants were asked to indicate their level of agreement from “Strongly disagree” (1) to “Strongly agree” (5) for the following statements:

- “Soldiers in this platoon have opportunities to better themselves.” (Same as Item 75 in the Platoon Cohesion Index.)
- “I am proud to be in this platoon.” (Adapted from Item 65 of the Platoon Cohesion Index—originally, “Soldiers are proud to be in this platoon.”)
- “This platoon has high morale.” (Adapted from item 94 of the Platoon Cohesion Index—originally, “How high is the morale in your platoon?”)
• “Good leadership makes my quality of life better.”

C) Resilience

The Connor–Davidson Resilience Scale RISC-10 was used with permission. This is widely used in the US and abroad as a highly validated measure of resilience. The measure was developed by Dr. Connor and Dr. Davidson as a result of their work with PTSD. The scale has been validated as a measure of resilience and has been used with both children and adults. (Connor KM 2017) The RISC-10 score is a composite measure of 10 items with a Cronbach’s alpha score of .909. Mean scores for people under stress and/or mainly healthy subjects in the US for the 10-item scale range from 30 to 36.7 (Connor KM 2017).

D) Physical Fitness

The most recent, self-reported Army Physical Fitness Test (APFT) score was used to measure the outcome of fitness. While this is not a comprehensive metric, it does measure a physical component of readiness. The APFT is age adjusted and consists of three events that test endurance, strength, and speed. The test features sit-ups, pull-ups, and a timed two-mile run. The minimum passing score is a 60 in each event or 180 (Department of the Army - Headquarters 2012). Scoring stops at 300, although on rare occasions, some people have achieved more points than can be scored. For example, in 2008, PFC Holden Isley set a record when he scored 402 points in his basic training APFT (Terrill 2008).

IV. Survey Protocols

Participants were invited to participate in a 51-question, anonymous, online survey via Operations Order by the Directorate of Public Works at Fort Hood, TX, sent to all active-duty units with personnel residing in the barracks housing. Web-
based surveys are commonly used to conduct POEs (Federal Facilities Council 2001). An Operations Order (OPORD) is a document issued at the regimental, brigade, divisional, or headquarters level and is used to assist units in the completion of military operations. In this case, this OPORD was communicated via unit leadership down through the organizational structure with instructions about who should take the survey and how. The survey was anonymous and did not offer any incentives for completion. Once the soldiers reviewed the info page, they had the option to participate or not participate in the survey by choosing to open the link and/or to advance the survey – thus self-selecting themselves for participation in the study. The survey was formatted for computer and mobile devices and could be completed at the place and time of a soldier’s choosing. By the time the survey closed, 900 barracks residents had participated in the survey. Using 16,000 as a potential participant pool, the survey thus had a response rate of 5.6%. While this response rate may seem low, deployment of the survey was at the discretion of unit commanders and individual involvement was voluntary. The researcher did not interact with the participants or unit commanders, and there is no way to track how many people actually received or saw the survey link.

V. Ethical Considerations

The survey was a low-risk, anonymous survey administered using SurveyMonkey©. The investigator did not have access to the list of participants receiving the link to ensure the survey participants remained anonymous. In addition, the Directorate of Public Works did not have access to the list of participants as the survey was administered via an Operations Order (OPORD). The OPORD was deployed to unit leaders, who then passed the information along to subordinates. There was no follow-up required by unit leaders regarding the survey response rates and therefore no undue pressure placed on barracks residents to
answer the survey. Since no identifying information was collected, the survey results cannot be traced back to any individual. Participation in the survey was completely optional and anonymous. Once the study was completed, the raw data (data downloaded directly from SurveyMonkey©) were deleted from SurveyMonkey©, along with the data collection link. This survey was determined to be low-risk and exempt by the University of Buffalo’s Institutional Review Board under protocol number and title [633259-1] Unaccompanied Personnel Housing Complex Design to Support US Army Resilience based on Exemption criteria #2 – Educational tests, survey procedures, interview procedures or observation of public behavior.

VI. Methods of Analysis

All the statistical analysis was performed using IBM’s SPSS Ver. 24. Much of the survey was performed using 5-point Likert scales or the data were in a response format measured by Likert scores. While technically ordinal, the data were analyzed as interval data because the responses involved evenly spaced gradations, arranged horizontally, and represented increasing levels of agreement with varying statements related to specific features, amenities, and characteristics or increasing levels of satisfaction (Uebersax 2006, John McDonald, 2014 #432). If we accept the response data format as interval, it is acceptable to use parametric tests (McDonald 2014, Simon 2010). Some scholars suggests parametric tests, such as Pearson’s, can be used with non-parametric variables when the sample size is large enough (Sullivan and Artino 2013, Norman, 2010 #428). Further, some scholars challenge the use of Likert-like items independent from Likert-scale scores in parametric tests, stating a Likert scale produces a score made up of added or averaged results from the Likert item responses. The practice of using parametric tests with non-parametric data is also discouraged by some (Boone and Boone 2012, Carifio and Perla 2008). However, for this study, it was decided that parametric tests would be used as social science research routinely uses parametric tools to study Likert-type items when the sample
sizes are large enough because parametric analysis offers more analytic sensitivity (McDonald, 2014).

1. **Associations**

   Pearson’s correlation approach was selected to analyze relationships in this data set due to its robustness (a normal distribution is not a strict requirement) and common use in the analysis of Likert data in social science and architectural research (Kero and Lee 2016, Laerd Statistics 2016b, g).

2. **Comparisons and Predictions**

   In looking at the responses of soldiers living in the different types of barracks, one-way ANOVAs and t-tests were used to compare measures of the central tendency to see if there were any differences between the respondents in the different living conditions (Laerd Statistics 2016c, e). Multiple regression analysis (excluding cases list wise) was conducted to see if any of the environmental variables could predict the main outcome variables (Laerd Statistics 2016f, d).

3. **Limited Qualitative Analysis**

   While some qualitative data was collected, this study was limited primarily to quantitative data. A limited qualitative data analysis was undertaken to surmise soldier feedback on barracks improvements. Soldiers were asked, “how can for Fort Hood improve barracks living?” as an open-ended question. Their responses were split into two groups: those with roommates (shared sleeping room) and those with private rooms. The responses were then summarized into thematic areas or keywords, ranked and aggregated in word cloud generator at https://www.jasondavies.com/wordcloud/ to synthesize key suggestions.

   However, a future study should conduct a more through and systematic study of the qualitative data collected for this study.
VII. Summary

A measurable link between barracks design and satisfaction has not been explored in the literature yet. However, the ecological approach, as well as the military's acceptance of housing's role in the soldiers' quality of life and readiness, suggest that the experience of living in barracks environments may be consequential. The Army states plainly that the barracks environment is critical to providing quality of life and retaining talent (Office of the Assistant Chief of Staff for Installation Management Headquarters 2014). The next chapter covers findings to explore the relationship between the barracks environment and an individual's satisfaction, resilience, career satisfaction, retention, and fitness.
Chapter 5—Findings

I. Building Quality V. Soldier Perceptions of Quality

1. Is there a relationship between Army quality ratings10 and resident perceptions of quality?

Before focusing on residents’ satisfaction, it is important to know whether resident assessments match up with institutional quality measures. It is important to see whether people’s opinions are related to alternative “official” ways of evaluating the environment. Institutional measures are guided by specific technical criteria; if resident assessments line up with quality measures, both are equally valid for evaluating a structure.

The Army uses Installation Support Ratings (ISR) to monitor and maintain current facility assets. The rating comprises two ratings: quality ratings or Q-scores and Mission Support Ratings (MSR). Q-ratings correspond to the replacement value of the buildings. Buildings are rated Q1–Q4, with Q4 being the worst rating and the most expensive to fix. Mission Support Ratings (MSR) indicate how well a building supports the mission of the tenant, on a scale of F1 to F5, with F1 being the best and F5 being uninhabitable. For the purpose of this study, we can use these Army ratings to determine three things about the barracks:

(1) Condition of housing stock
(2) Uniformity of quality across barrack types
(3) Barracks most affected by quality issues

To evaluate whether there is a relationship between Army measures of quality (Q-scores and MSR) and perceived quality (“meets my expectations as nice place to live” and

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10 It should be noted that the occupying unit is considered the building tenant. Unit leadership carries out the first assessment of the environment using a set of guidelines and an audit tool. Their assessment is re-assessed by the Directorate of Public Works (DPW) through the First Sergeant’s Barracks Program. DPW then reviews and adjusts scores to better represent technical issues that tenants may not pick up in their audits. This score is then entered into a database and used to prioritize repairs, maintenance, and renovations as well as manage assets (Office of the Assistant Chief of Staff for Installation Management Headquarters 2014).
“seems well constructed”), a Pearson’s correlation coefficient analysis was conducted across the full sample, with missing data being excluded pairwise. Table 4 shows those results. All listed results are significant at the .001 level.

<table>
<thead>
<tr>
<th>Institutional Measures</th>
<th>Resident Quality Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meets my expectations as a nice place to live.</td>
</tr>
<tr>
<td>Q-Ratings (n=835)</td>
<td>Pearson’s Correlation</td>
</tr>
<tr>
<td>Mission Support Ratings (N=835)</td>
<td>Pearson’s Correlation</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4: Correlations between Institutional and Resident Quality Measures

The results indicate that there is a moderate relationship between resident subjective measures of building condition (“Seems well constructed”) and how well the building meets expectations (“Meets my expectations as a nice place to live”) with both institutional quality measures (Q-ratings and MSR). These results suggest that residents’ assessments of quality are associated with Army measures, although not perfectly. It is possible to measure quality from both the institutional measures and end-user evaluation; they are associated, but they are most likely affected by other factors since the correlations were only moderate.

2. Is there a relationship between residents’ satisfaction with living in the barracks and the quality of the barracks’ construction?

Table 5 shows the result of the Pearson’s correlation that was performed to answer this question; results indicate a positive, strong, and statistically significant correlation between agreement with the statement “that the barracks seemed well-constructed” and satisfaction with the experience of barracks living (r = .605, p<.0001,
n=835). A moderate relationship between satisfaction and institutional measures of quality was also observed. In other words, residents’ satisfaction with living in the barracks was strongly related to their perception that the barracks were well constructed, whereas the institutional correlation with residents’ satisfaction was less.

<table>
<thead>
<tr>
<th>Institutional Quality Measure</th>
<th>Resident Assessment of Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q-Ratings (n=784)</td>
<td>Seems well constructed (n=834)</td>
</tr>
</tbody>
</table>

Table 5: The correlation strength between satisfaction and quality measures.
II. Part II: Survey Results

1. Descriptive Statistics—How Satisfied are Barracks Residents?

This section reports on three types of satisfaction. These address reports of satisfaction with 1. realm satisfaction (for the six realms of barracks life), 2. FAC Indices (satisfaction as indicated by an index of evaluative items for each realm), and 3. an overall satisfaction index.

1. Realm Satisfaction

This study looks at six realms related to the barracks. These six realms range from the most intimate of spaces—the barracks bedroom outward to the social space of barracks living. Residents were directly asked about their level of satisfaction with four realms of the barracks experience with Likert scale items scored on a five-point scale. In addition, they were asked about their level of agreement with statements related to cultural landscapes and social life; see Table 6. All items were measured on a five-point scale, where 1 is most negative, 3 is neutral, and 5 is most positive.

<table>
<thead>
<tr>
<th>Realm Satisfaction Items</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, how satisfied are you with your barracks room?</td>
<td>2.4</td>
<td>884</td>
<td>1.209</td>
</tr>
<tr>
<td>In general, how satisfied are you with your barracks module?</td>
<td>2.4</td>
<td>871</td>
<td>1.161</td>
</tr>
<tr>
<td>In general, how satisfied are you with your barracks building?</td>
<td>2.4</td>
<td>862</td>
<td>1.191</td>
</tr>
<tr>
<td>In general, how satisfied are you with your barracks complex?</td>
<td>2.6</td>
<td>850</td>
<td>1.152</td>
</tr>
</tbody>
</table>
The barracks complex is attractive from the outside. (Level of agreement) | 2.6 | 839 | 1.206
I feel (don't) lonely living in the barracks (Level of agreement) | 2.8 | 833 | 1.230

Table 6: Descriptive Statistics—Realm Satisfaction (full sample)

As shown in Table 6, all levels of satisfaction were on the negative side of the five-point scale. The most positive response was agreeing that they did not feel lonely living in the barracks. Mean scores for satisfaction for the barracks room, module, and building were all somewhat negative (mean=2.4).

B) FAC Indices—Features, Amenities, and Characteristics by Realm

Residents evaluated specific features, amenities, and characteristics (FACs) for each realm. A Likert scale index for each realm was created by calculating the mean of all items measuring aspects within that realm. See Table 7 for the means of those indices.

<table>
<thead>
<tr>
<th>FAC Indices—5-point scale; 1 (least) to 5 (most)</th>
<th>Cronbach’s Alpha</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAC Room Index (7 items)</td>
<td>.882</td>
<td>2.6</td>
<td>885</td>
<td>1.209</td>
</tr>
<tr>
<td>FAC Module Index (6 items)</td>
<td>.854</td>
<td>2.8</td>
<td>868</td>
<td>1.161</td>
</tr>
<tr>
<td>FAC Building Index (7 items)</td>
<td>.789</td>
<td>2.5</td>
<td>860</td>
<td>1.191</td>
</tr>
<tr>
<td>FAC Complex Index (7 items)</td>
<td>.826</td>
<td>2.8</td>
<td>855</td>
<td>1.152</td>
</tr>
<tr>
<td>FAC Cultural Landscape Index (3 items)</td>
<td>.664</td>
<td>2.5</td>
<td>854</td>
<td>1.099</td>
</tr>
<tr>
<td>FAC Social Index (7 items)</td>
<td>.768</td>
<td>2.2</td>
<td>895</td>
<td>1.230</td>
</tr>
</tbody>
</table>

Table 7: Descriptive Statistics—Realm Evaluations (full sample)
Chapter 5—Findings

As shown above, the most negatively evaluated index was for the Social Index with a mean of 2.2, in contrast to the direct question of satisfaction with the social realm (shown in Table 7), where the mean of “I don’t feel lonely in the barracks” was 2.8. The index contains items measuring concepts representing the ability to form and maintain a healthy social life and the policy environment of the barracks. The seven items in the index are as follows:

1. My barracks room has enough room for me to comfortably entertain people. 
   (Mean 1.95, n=769)
2. My module has enough room to entertain guests. 
   (Mean 1.9, n=769)
3. There are lots of people to hang out with in the barracks. 
   (Mean 2.89, n=769)
4. It is easy to spend time with non-military loved-ones (dependents, family members, friends, romantic partners) while living in the barracks. 
   (Mean 2.00, n=769)
5. It’s not hard to date while living in the barracks. 
   (Mean 2.7, n=769)
6. Policies (don’t) negatively affect me. 
   (Mean 2.7, n=769)
7. Prefer to live in the barracks. 
   (Mean 1.77, n=769)

The most likely reason for this finding is that the FAC realm scores include very specific features, amenities, and characteristics that were broader in scope than the feeling of loneliness, which could be interpreted as a temporary state. Interestingly, item 3—"There are lots of people to hang out with in the barracks"—had a mean of 2.9. This could indicate that the group living situation in the barracks may track with loneliness. This is an area that deserves attention in future research.

C) Overall Satisfaction Index
Chapter 5—Findings

The overall satisfaction index was created from the mean of three Likert-type items measured on a five-point scale. One item measured overall satisfaction, while two others addressed construction quality and expectations. The index had a high level of internal consistency, as determined by a Cronbach's alpha of 0.856.

The three items in the index are as follows:

1. In general, how satisfied are you with your experience living in the barracks? (Mean 2.68, n=831)
2. Level of agreement with the statement, "My barracks module seems well constructed." (Mean 2.27, n=831)
3. Level of agreement with the statement, "My barracks building meets my expectations as a nice place to live." (Mean 2.33, n=831)

The mean of the overall satisfaction index for the full sample was 2.4 (n=871, SD 2.4). The next section focuses on comparisons.

Which Individual Features, Amenities, and Characteristics (Likert items) are the Worst Performing?

Table 8 (below) shows the worst-performing individual features, amenities, and characteristics with means equal to or below 2 (out of 5).

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Worst Performing Realm Evaluation Individual Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual Evaluation Items</strong></td>
<td><strong>Mean</strong></td>
</tr>
<tr>
<td>5-point scale; 1 (negative) to 5 (positive)</td>
<td></td>
</tr>
<tr>
<td>I prefer to live in the barracks.</td>
<td>1.8</td>
</tr>
<tr>
<td>My barracks building has a day room or common room that I like to use.</td>
<td>1.8</td>
</tr>
<tr>
<td>My barracks building has healthy options in the vending machines.</td>
<td>1.8</td>
</tr>
<tr>
<td>My module has enough room to entertain guests.</td>
<td>1.9</td>
</tr>
<tr>
<td>My room has enough room for me to comfortably entertain people.</td>
<td>1.9</td>
</tr>
<tr>
<td>It is easy to spend time with non-military loved-ones (dependents, family members, friends, romantic partners) while living in the barracks.</td>
<td>2.0</td>
</tr>
</tbody>
</table>
Table 8: Descriptive Statistics—Mean Scores, Worst-Performing Individual Realm Evaluation Items (full sample)

Table 8 shows that four out of six of the worst-performing individual realm evaluation items measuring social realm factors, three of which relate directly to the space available to participate in social life and our activities on-site. The fourth—*It’s easy to spend time with non-military loved ones*—could speak to space as well as policies that limit the ability of non-military personnel to be in the barracks.

Which Individual Features, Amenities, and Characteristics (Likert items) are the best performing?

Table 9 (below) shows the best-performing individual features, amenities, and characteristics with means equal to or above 3 (out of 5).

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Best Performing Realm Evaluation Individual Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual Evaluation Items</strong></td>
<td><strong>Mean</strong></td>
</tr>
<tr>
<td>5-point scale; 1 (negative) to 5 (positive)</td>
<td></td>
</tr>
<tr>
<td>Complex has an exterior layout that is easy to navigate.</td>
<td>3.5</td>
</tr>
<tr>
<td>Module has a good ceiling height.</td>
<td>3.4</td>
</tr>
<tr>
<td>Room is easy to keep clean and tidy.</td>
<td>3.4</td>
</tr>
<tr>
<td>Building has the right amount of wiring and outlets for technology needs.</td>
<td>3.2</td>
</tr>
<tr>
<td>Complex has adequate facilities for unit required activities (such as PT, formations, and CQ).</td>
<td>3.1</td>
</tr>
<tr>
<td>Building has enough working washers and dryers.</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Table 9: Descriptive Statistics—Mean Scores, Worst-Performing Individual Realm Evaluation Items (full sample)

It is notable that no realm evaluation items score above 4 (out of 5). Table 9 shows the top-performing items are utilitarian in nature: wiring for technology, washers and dryers, and space for unit required facilities. Some design features
also topped the list: easy to navigate, ceiling height, and easy to keep clean and tidy. Interestingly, all the items listed are supportive of military required activities with the exception of ceiling height. For example, barracks residents are subject to room inspections; therefore, a room that is easy to clean is useful. Another example is that, while wiring for technology can be used for entertainment purposes, military members are required to complete many online training and correspondence courses. Adequate wiring and outlets support these activities.

**Soldier Outcomes—How are the soldiers doing?**

This study also uses five main soldier outcome variables that are important to the Army: career satisfaction, career intentions, reenlistment and/or the desire to pursue a long-term career in the Army, fitness, and resilience. Table 10 (below) describes mean values for the survey sample.

<table>
<thead>
<tr>
<th>Soldier Outcome Measures</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Satisfaction Index</td>
<td>3.16</td>
<td>825</td>
<td>.99</td>
</tr>
<tr>
<td>5-point scale; 1 (negative) to 5 (positive)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Career Intentions Index</td>
<td>3.13</td>
<td>830</td>
<td>1.09</td>
</tr>
<tr>
<td>5-point scale; 1 (negative) to 5 (positive)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is your most recent Army Physical Fitness Test (APFT)? Min. passing score (60/100pts in all 3 events) 180; Max. score is 300.</td>
<td>250</td>
<td>730</td>
<td>32.69</td>
</tr>
<tr>
<td>Resilience Score (RISC-10) Mean scores for people under stress and/or mainly healthy US subjects range from 30 to 36.7.</td>
<td>29.09</td>
<td>810</td>
<td>5.97</td>
</tr>
<tr>
<td>I would like to reenlist or pursue a long-term career in the US Army. 5-point scale; 1 (negative) to 5 (positive)</td>
<td>2.84</td>
<td>807</td>
<td>1.34</td>
</tr>
</tbody>
</table>

Table 10: Descriptive Statistics—Mean Scores for Soldier Outcomes (full sample)
Chapter 5—Findings

Soldier outcome results demonstrate that career indicators can be described as ambivalent. However, when asked directly about reenlisting or pursuing a long-term career, the mean indicates a negative response. Meanwhile, the APFT mean is 83% of the total possible score of 300. Resilience in the sample is slightly under the national average for people under stress in the US (Connor KM 2017).

2. Comparisons—Does the Building Structure Impact Building Evaluations?

This section looks at the impact of the structure on resident FAC scores. FAC scores were highly correlated to general satisfaction items and considered a good measure of realm evaluation that also includes evaluation of specific items within that realm.

Is there a difference in how residents evaluate their building realms (FAC scores) based on the quality of their building?

Mission support ratings (MSR) measure how well a building supports the mission of the tenant on a scale of F1 to F5. Table 11 show the results of a comparison between MSRs.

<table>
<thead>
<tr>
<th>FAC Indices</th>
<th>FAC Indices: 5-point scale; 1 (Negative) to 5 (Positive)</th>
<th>MSR Rating Groups</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAC ROOM INDEX++</td>
<td>F1 (Best Condition)</td>
<td>2.80</td>
<td>374</td>
<td>.92</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F3/F4 (Bad Condition)</td>
<td>2.45</td>
<td>459</td>
<td>1.00</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>FAC MODULE INDEX++</td>
<td>F1 (Best Condition)</td>
<td>3.01</td>
<td>362</td>
<td>.69</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F3/F4 (Bad Condition)</td>
<td>2.53</td>
<td>446</td>
<td>.82</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>FAC BUILDING INDEX++</td>
<td>F1 (Best Condition)</td>
<td>2.71</td>
<td>359</td>
<td>.76</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F3/F4 (Bad Condition)</td>
<td>2.39</td>
<td>442</td>
<td>.82</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>FAC COMPLEX INDEX++</td>
<td>F1 (Best Condition)</td>
<td>3.13</td>
<td>355</td>
<td>.67</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F3/F4 (Bad Condition)</td>
<td>2.61</td>
<td>441</td>
<td>.80</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>FAC CULTURAL LANDSCAPE INDEX*</td>
<td>F1 (Best Condition)</td>
<td>2.66</td>
<td>355</td>
<td>.82</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 5—Findings

<table>
<thead>
<tr>
<th>FAC SOCIAL INDEX*</th>
<th>F3/F4 (Bad Condition)</th>
<th>2.37</th>
<th>440</th>
<th>.86</th>
<th>.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Best Condition)</td>
<td>2.31</td>
<td>374</td>
<td>.76</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>F3/F4 (Bad Condition)</td>
<td>2.09</td>
<td>459</td>
<td>.72</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>OVERALL SATISFACTION*</td>
<td>F1 (Best Condition)</td>
<td>2.82</td>
<td>364</td>
<td>.99</td>
<td>.000</td>
</tr>
<tr>
<td>F3/F4 (Bad Condition)</td>
<td>2.08</td>
<td>447</td>
<td>.98</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

+Welch’s T-Test || *5 Point Scales (1 Negative, 5 Positive)

Table 11: Comparison of Individual Realm Evaluation (FAC Scores) Items Between Building Quality Categories; Highest Scores Accented.

The sample contains 375 (44.9%) people living in F1-rated buildings, 431 people (51.6%) in F3-rated buildings, and 29 (3.5%) people in F4-rated buildings. Groups rated F3 and F4 were combined after a one-way ANOVA found statistical differences in means for all six realms between F1 and the two other groups; there was no statistical difference between realm scores between F3 and F4. Therefore, an independent samples t-test was performed to compare means between respondents living in buildings and those living in the combined sample of F3 and F4 buildings. The results show that buildings in better condition had more positive mean FAC index scores across all six realms and for overall satisfaction.

B) Does the era of the building have an impact on FAC scores for the different barrack realms?

The study of the history of barrack design revealed three main eras of barrack design and construction. It is important to note, however, that all the traditional and VOLAR barrack (and some early contemporary) types have been renovated many times to conform to evolving standards that enhance privacy. Each barrack design was sited, planned, and designed to be used in a specific way. Renovations altered the structures in ways that changed their initial designs.

This led the researcher to ask whether buildings built during different eras were evaluated by their residents differently, and if so, is that difference
significant? For analysis, the VOLAR group was divided into two groups because a t-test for independent samples showed that recently renovated VOLARS were evaluated differently than non-recently renovated VOLARs. Thus, the four groups used for an analysis of building eras were traditional, transitional (VOLARs), and transitional renovated (recently renovated VOLARs).

Table 12 shows that, for most measures, the contemporary era barracks have higher mean scores, with the exception of the FAC Complex and Cultural Landscapes, in which the renovated transitional period (VOLARs) barracks scored slightly higher. This is interesting because these two measures refer to the plan and exterior realms of the barracks. The VOLARs have a unique footprint and plan compared to typical barracks for every measure. The one exception was Cultural Landscapes—a measure that refers not to the building itself but to the surrounding exterior. The data indicate a wide overall satisfaction gap between traditional (Mean 1.9) and contemporary barracks (Mean 3.0).
### Table 12: Comparison of Individual Realm Evaluation (FAC Scores) and Satisfaction Between Building Eras; Highest Scores Accented.

<table>
<thead>
<tr>
<th>FAC Indices</th>
<th>Building Era</th>
<th>N</th>
<th>Mean +/- Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAC ROOM INDEX*</td>
<td>Traditional (Pre-1973)</td>
<td>326</td>
<td>2.3 ± 1.0</td>
</tr>
<tr>
<td></td>
<td>Transitional – VOLARs (1973-1982)</td>
<td>129</td>
<td>2.4 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Transitional – Renovated VOLARs</td>
<td>220</td>
<td>2.7 ± 0.9</td>
</tr>
<tr>
<td></td>
<td>Contemporary (1983 to present)</td>
<td>160</td>
<td>3.3 ± 0.8</td>
</tr>
<tr>
<td>FAC MODULE INDEX*</td>
<td>Traditional (Pre-1973)</td>
<td>316</td>
<td>2.5 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Transitional – VOLARs (1973-1982)</td>
<td>125</td>
<td>2.7 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Transitional – Renovated VOLARs</td>
<td>215</td>
<td>3.0 ± 0.7</td>
</tr>
<tr>
<td></td>
<td>Contemporary (1983 to present)</td>
<td>154</td>
<td>3.0 ± 0.7</td>
</tr>
<tr>
<td>FAC BUILDING INDEX*</td>
<td>Traditional (Pre-1973)</td>
<td>314</td>
<td>2.3 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Transitional – VOLARs (1973-1982)</td>
<td>120</td>
<td>2.4 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Transitional – Renovated VOLARs</td>
<td>216</td>
<td>2.7 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Contemporary (1983 to present)</td>
<td>154</td>
<td>2.9 ± 0.7</td>
</tr>
<tr>
<td>FAC COMPLEX INDEX*</td>
<td>Traditional (Pre-1973)</td>
<td>314</td>
<td>2.5 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Transitional – VOLARs (1973-1982)</td>
<td>120</td>
<td>2.9 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Transitional – Renovated VOLARs</td>
<td>213</td>
<td>3.2 ± 0.7</td>
</tr>
<tr>
<td></td>
<td>Contemporary (1983 to present)</td>
<td>151</td>
<td>3.1 ± 0.6</td>
</tr>
<tr>
<td>FAC CULTURAL LANDSCAPE INDEX*</td>
<td>Traditional (Pre-1973)</td>
<td>313</td>
<td>2.4 ± 0.9</td>
</tr>
<tr>
<td></td>
<td>Transitional – VOLARs (1973-1982)</td>
<td>120</td>
<td>2.6 ± 0.9</td>
</tr>
<tr>
<td></td>
<td>Transitional – Renovated VOLARs</td>
<td>213</td>
<td>2.7 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Contemporary (1983 to present)</td>
<td>151</td>
<td>2.6 ± 0.8</td>
</tr>
<tr>
<td>FAC SOCIAL INDEX*</td>
<td>Traditional (Pre-1973)</td>
<td>326</td>
<td>2.0 ± 0.7</td>
</tr>
<tr>
<td></td>
<td>Transitional – VOLARs (1973-1982)</td>
<td>128</td>
<td>2.1 ± 0.7</td>
</tr>
<tr>
<td></td>
<td>Transitional – Renovated VOLARs</td>
<td>221</td>
<td>2.3 ± 0.8</td>
</tr>
<tr>
<td></td>
<td>Contemporary (1983 to present)</td>
<td>160</td>
<td>2.4 ± 0.8</td>
</tr>
<tr>
<td>OVERALL SATISFACTION</td>
<td>Traditional (Pre-1973)</td>
<td>317</td>
<td>1.9 ± 0.9</td>
</tr>
<tr>
<td></td>
<td>Transitional – VOLARs (1973-1982)</td>
<td>126</td>
<td>2.4 ± 1.0</td>
</tr>
<tr>
<td></td>
<td>Transitional – Renovated VOLARs</td>
<td>216</td>
<td>2.8 ± 1.0</td>
</tr>
<tr>
<td></td>
<td>Contemporary (1983 to present)</td>
<td>154</td>
<td>3.0 ± 0.9</td>
</tr>
</tbody>
</table>
C) Does Having a roommate effect satisfaction?

Space limitations caused by high numbers of eligible soldiers and reduced inventory of barracks spots (due to ongoing building renovations) have resulted in some soldiers at Fort Hood sharing a sleeping room. Table 13 shows the results of a comparative analysis between those with roommates and those without.

<table>
<thead>
<tr>
<th>FAC Indices</th>
<th>Roommate Status</th>
<th>Mean**</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*5-point scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (Negative) to 5 (Positive)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+Welch’s T-Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAC ROOM INDEX++</td>
<td>Yes, Priv. Room</td>
<td>3.1</td>
<td>351</td>
<td>.97</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>No, Roommate</td>
<td>2.3</td>
<td>532</td>
<td>.85</td>
<td></td>
</tr>
<tr>
<td>FAC MODULE INDEX*</td>
<td>Yes, Priv. Room</td>
<td>3.0</td>
<td>341</td>
<td>.77</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>No, Roommate</td>
<td>2.5</td>
<td>515</td>
<td>.82</td>
<td></td>
</tr>
<tr>
<td>FAC BUILDING INDEX*</td>
<td>Yes, Priv. Room</td>
<td>2.7</td>
<td>336</td>
<td>.78</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>No, Roommate</td>
<td>2.4</td>
<td>512</td>
<td>.82</td>
<td></td>
</tr>
<tr>
<td>FAC COMPLEX INDEX++</td>
<td>Yes, Priv. Room</td>
<td>3.1</td>
<td>334</td>
<td>.70</td>
<td>.022</td>
</tr>
<tr>
<td></td>
<td>No, Roommate</td>
<td>2.6</td>
<td>510</td>
<td>.85</td>
<td></td>
</tr>
<tr>
<td>FAC CULTURAL LANDSCAPE INDEX*</td>
<td>Yes, Priv. Room</td>
<td>2.7</td>
<td>334</td>
<td>.83</td>
<td>.992</td>
</tr>
<tr>
<td></td>
<td>No, Roommate</td>
<td>2.4</td>
<td>509</td>
<td>.89</td>
<td></td>
</tr>
<tr>
<td>FAC SOCIAL INDEX++</td>
<td>Yes, Priv. Room</td>
<td>2.3</td>
<td>352</td>
<td>.79</td>
<td>.008</td>
</tr>
<tr>
<td></td>
<td>No, Roommate</td>
<td>2.1</td>
<td>531</td>
<td>.72</td>
<td></td>
</tr>
<tr>
<td>OVERALL SATISFACTION*</td>
<td>Yes, Priv. Room</td>
<td>2.8</td>
<td>341</td>
<td>1.06</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>No, Roommate</td>
<td>2.1</td>
<td>518</td>
<td>1.07</td>
<td></td>
</tr>
</tbody>
</table>

Table 13: Comparison of Individual Realm Evaluation (FAC Scores) and Overall Satisfaction Between Residents With and Without Private Sleeping Rooms; Highest Scores Accented
Changes to design standards since 1973 have primarily focused on increasing privacy for single soldiers. Moving from a 12-person module in the VOLAR design to the 1+1E (two-person module with separate sleeping rooms) standard today however in practice many soldiers share a room. The survey asked participants to indicate whether they had a private sleeping room ("Do you have a private bedroom? [In other words, no one else sleeps in the same room as you.]

Yes or No). An independent samples t-test (excluding pairwise) compares FAC indices as well as the overall satisfaction index between people who share a bedroom and those who do not.

Table 13 shows that there is a statistically significant difference between those in private rooms vs. those sharing a sleeping room for five of the six FAC realm indices, as well as for overall satisfaction. Mean scores were higher (more positive) for those in private bedrooms. There was one exception, and that was for Cultural Landscapes, but this result was not statistically significant.
3. Does satisfaction matter?

A) Is there a relationship between soldier outcomes, realm evaluations, and satisfaction?

To explore the association between satisfaction and outcomes relevant to the Army, Pearson’s correlations were conducted. Pearson’s correlations (excluding pairwise) between FAC indices, overall satisfaction, and each of the three main soldier outcomes (resilience, career satisfaction, and fitness) are represented in the following two figures.

Figure 52: Association between Resilience and FAC, Career Satisfaction, and Overall Satisfaction Indices. Pairwise Bivariate Pearson Correlations (r) values above .20 shown; **significant at the 0.01 level (2-tailed).
Results from the APFT Pearson’s correlations did not show any associations with the study variables and are not shown. Resilience showed only a weak association with career satisfaction and complex realm. No additional analysis on fitness and resilience was completed.

Figure 53: Association between Career Satisfaction, FAC, and Overall Satisfaction Indices. Pairwise Bivariate Pearson Correlations (r) values above .20 shown; **significant at the 0.01 level (2-tailed) Full Sample.

Figure 53 shows that career satisfaction was moderately associated with four out of six realms (room, building, complex, and cultural landscapes) and was weakly associated with the other two realms. There was also a moderate association with overall satisfaction. These results show that, while the strength of association varies, the barrack realms and overall satisfaction with the barracks
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does influence career satisfaction. A multivariate regression was then run to explore which, if any, FAC indices predicted overall satisfaction and career satisfaction.

A linear regression was run to predict how FAC scores predicted the index measuring career satisfaction. The index is a mean score composed of responses recorded on a five-point, evenly spaced scale. The Cronbach’s alpha for the index is .864. A stepwise weighted least squares (WLS) regression (excluding listwise) was performed to account for heteroscedasticity.

![Diagram showing FAC indices and career satisfaction](image)

Figure 54: Realm Evaluation of Features, Amenities, and Characteristics (FAC indexes) to Predict Career Satisfaction.

Figure 54 shows the FAC indices for complex, social, cultural landscape and building realms statistically significantly predicted career satisfaction $F(4, 813)=45.548$, $p<.0005$ and these four realms accounted for 18% of variation in career satisfaction; a medium effect size according to Cohen (Cohen 1998).

A linear regression was run to predict how FAC scores predicted overall satisfaction. The index is a mean score composed of responses recorded on a five-point, evenly spaced scale. The Cronbach’s alpha for the index is .856. A
stepwise weighted least squares (WLS) regression (excluding listwise) was performed to account for heteroscedasticity.

Figure 55: Realm evaluation of features, amenities, and characteristics to predict overall satisfaction.

Figure 55 shows the model which included FAC indices for room, module, social, complex, and building; the model had an R=.870 and accounted for 75.7% of variation in the overall satisfaction index with an adjusted $R^2 = .757$; a large effect size (Cohen 1998, Maxwell SE 2000, Dunlap 2013). The model was statistically significant ($F (5, 844) =526.64, p<.0005$). The room, module, and social FAC indices had the most influence in the model.

B) Is There a Relationship Between Satisfaction and Career Intentions?

The career intention index measures satisfaction with the decision to join the military as well as the intention to reenlist or pursue a long-term career. To explore the relationship to satisfaction, Pearson’s correlations (excluding pairwise)
were conducted between the FAC, overall satisfaction, career satisfaction, and career intentions indices. See Figure 56 for results.

The results showed weak associations between the FAC and overall satisfaction indices. However, the career satisfaction and career intentions indices were moderately correlated. A multivariate regression explored which if any FAC realms predicted career intentions therefore a linear regression was run to predict how FAC scores predicted career intentions. The index is a mean score composed of responses recorded on a five-point, evenly spaced scale. The Cronbach's alpha
was .682. A stepwise weighted least squares (WLS) regression (excluding listwise) was performed to account for heteroscedasticity.

Figure 57: Realm Evaluation of Features, Amenities, and Characteristics and Overall Satisfaction to Predict Career Intentions.

Figure 57 shows the model which included the overall satisfaction index and FAC scores for complex and social; the model had an $R=.304$ and accounted for 9.2% of variation in the career intention index with an adjusted $R^2 = 0.89\%$, a small effect size (Cohen 1998, Maxwell SE 2000, Dunlap 2013). The model was statistically significant ($F (3, 813)=27.803, p<.0005$). While the model only predicted 9.2% of career intention, satisfaction, complex, and social factors were predictors.

C) Which Individual Features, Amenities, and Characteristics Are Associated with Satisfaction and Career Indicators?

Finally, Pearson’s correlation (excluding pairwise) were conducted between individual features, amenities, and characteristics items and major outcome variables at each realm level. See the next six figures below.
Figure 58: Room Realm and Soldier Outcomes. Pairwise Bivariate Pearson Correlations (r) values above .20 shown; **significant at the 0.01 level (2-tailed)

Figure 58 shows that outcomes related to career (indices and individual items) have weak associations with features, amenities, and characteristic individual items. In contrast, associations are moderate or strong in relation to both the indices and individual item measuring satisfaction.
Figure 59: Module Realm and Soldier Outcomes. Pairwise Bivariate Pearson Correlations (r) values above .20 shown; **significant at the 0.01 level (2-tailed)

Similar to Figure 58, figure 59 shows that outcomes related to career have weak associations with features, amenities, and characteristic items, whereas the majority of associations are moderate or strong in relation to the satisfaction variables.
Figure 60: **Building Realm and Soldier Outcomes.** Pairwise Bivariate Pearson Correlations (r) values above .20 shown; **significant at the 0.01 level (2-tailed)

Like the previous two figures (58 and 59), this figure shows weak associations between outcomes related to career, with the exception of one item (wiring/outlets) that is moderately associated with career satisfaction.
Notably, figure 61 shows that the feeling of safety and security as well as adequate facilities for unit activities are moderately correlated with career satisfaction, whereas all other career-associated items are weakly associated.
Figure 62: Cultural Landscape Realm and Soldier Outcomes. Pairwise Bivariate Pearson Correlations (r) values above .20 shown; **significant at the 0.01 level (2-tailed).

Figure 62 shows that agreement with the statement that the barracks complex is nicely landscaped is moderately associated with career satisfaction as well as general satisfaction; it is highly associated with overall satisfaction, as is the impression that the exterior is attractive.
Figure 63: Social Realm and Soldier Outcomes. Pairwise Bivariate Pearson Correlations (r) values above .20 shown; **significant at the 0.01 level (2-tailed).

Figure 63 shows that room to entertain in one’s personal room and module had the strongest correlations with overall and general satisfaction. In addition, the ability to spend time with non-military loved ones and the feeling that there were people to hang out with in the barracks had a moderate association with satisfaction.
III. Soldier Recommendations to Improve Barracks

Approximately, 60.5% of respondents live in barracks where they have a private sleeping room, meanwhile 39.5% share a sleeping room. Table 14 shows that most people with roommates in the sample are not brand new to the military. Specialists or Corporals (E-4s) account for 18% and Sergeants (E-5) 8%. Corporals and Sergeants also have supervisorial responsibilities.

<table>
<thead>
<tr>
<th></th>
<th>E 1</th>
<th>E 3</th>
<th>E 4</th>
<th>E 4C</th>
<th>E 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roommate</td>
<td>13%</td>
<td></td>
<td>18%</td>
<td></td>
<td>8%</td>
</tr>
<tr>
<td>Single Room</td>
<td>28%</td>
<td>31%</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 14: Breakdown of Respondents With and Without Roommates by Rank.

Soldiers were asked to give feedback on ways to improve the barracks via an opened question in the survey.

Figure 64: Word cloud comparing the recommendation priorities based by roommate status.

Each group varied in their prioritization of proposed changes to the barracks. The group with roommates focused heavily on space, privacy, and security. The group without roommates on the other hand focused more on quality of life issues, rules, and age/rank separation of barracks residents see Figure 67 for a word cloud comparing the two groups.
The feedback was separated into two groups: with roommates (n=166) and without roommates (n=76). Table 15 features the top ten suggestions for improvements to the barracks by group.

<table>
<thead>
<tr>
<th>Residents with Roommates</th>
<th>Residents without Roommates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-rooms</td>
<td>Quality of Life/Amenities</td>
</tr>
<tr>
<td>Rebuild and/or Destroy Current Barracks</td>
<td>Rebuild and/or Destroy Current Barracks</td>
</tr>
<tr>
<td>Quality of Life/Amenities</td>
<td>Choice to move-out (off post or privatized housing)</td>
</tr>
<tr>
<td>Privacy</td>
<td>Less Rules</td>
</tr>
<tr>
<td>In-unit or shared Kitchen in Barracks</td>
<td>Age/Rank Separation</td>
</tr>
<tr>
<td>Space</td>
<td>Kitchen</td>
</tr>
<tr>
<td>Shuttle/buses</td>
<td>In-unit or shared Kitchen in Barracks</td>
</tr>
<tr>
<td>Better barracks</td>
<td>Space</td>
</tr>
<tr>
<td>Storage</td>
<td>“Be treated like an adult.”</td>
</tr>
<tr>
<td>Security</td>
<td>Equal accommodations across the board</td>
</tr>
</tbody>
</table>

Table 15: Soldier Suggested Top-ten Ranked Improvements by Roommate Status.

Qualitative data also revealed a strong desire to have a pet which prompted a look at the descriptive statistics which found most barracks residents (67%) were pet owners as civilians.

IV. Summary

Buildings with poor institutional quality ratings received lower satisfaction scores. Even the perception of quality was strongly related to satisfaction with living in the barracks. Additionally, barracks residents living in buildings in better condition gave more positive mean scores across all six realms (room, module, building, complex, cultural landscape, and social) as well as for overall satisfaction. Most striking were the differences in overall satisfaction for barracks with MSR ratings of F1 (best) versus F3/F4 (worst). The difference in satisfaction
scores between buildings of different eras was also interesting. For most measures, the contemporary era barracks have higher mean scores, except the realms of complex and cultural landscapes, in which the renovated transitional period (VOLARs) barracks scored slightly higher. This is interesting because these two measures refer to the plan and exterior realms of the barracks.

A review of features revealed that measures related to the ability to conduct social activities in one’s room, module, or day room, as well as the ability to maintain non-military relationships within the confines of the barracks were among the worst performing. Another interesting finding was that most barracks residents were pet owners as civilians and desired to have a pet again. On the other hand, privacy also revealed itself to be a major issue for barracks residents. Mean scores were higher (more positive) for those in private bedrooms; room satisfaction jumped from a mean of 2.3 to 3.1 for people with private sleeping rooms. Overall satisfaction also jumped from a mean of 2.1 to 2.8.

In the next section we discuss these findings and their relationship to soldier outcomes and feedback for how to improve the barracks. The results offer specific areas of improvement for creating meaningful improvements which address the concerns and priorities of people living in the barracks.
Chapter 6 – Discussion

I. Thinking about the barracks.

The ecological model presupposes that humans and the environment interact reciprocally; we are affected by experience, time, and environment and by social, political, and cultural forces (Bronfenbrenner 1994, Bronfenbrenner 1979, 2005, Wendel, Garney, and McLeroy 2015). This model, borrowed from the social sciences, gives architectural researchers a methodology that understands buildings and its inhabitants to be part of an ecosystem. Rapoport offers the justification for looking at human dwellings in this context, stating that where we dwell is meaningful and necessary to analysis because it is the level of everyday meanings that bears the rationale for how we shape and use the environment (Rapoport 1988, 1990). Where we live is a reflection of our response to existing in the world. We can learn about who we are—our fears, values, priorities, dreams—through how we use space and the traces we leave behind (Carter and Collins Cromely 2005). Coolen offers the idea that the meaning that shapes our environment also reflects our goals and intentions (Coolen 2006). Satisfaction with our environment therefore reflects how well that environment aligns with our needs, aspirations, and intents and can impact our behavior going forward (Marans 2003, Marans and Rodgers 1975). This is an important point because it links satisfaction with outcomes. The ecological framework helps us to parse out some of the details of everyday life even as they are shrouded by the complicated machinations of forces that we have little ability to influence on a day-to-day level (Coolen 2006, Rapoport 1990, 1988, 2000). We can read buildings by looking for physical traces, measuring satisfaction, and looking at resident outcomes (Carter and Collins Cromely 2005, Marans and Rodgers 1975, Marans 2003, Weidemann and Anderson 1985). This study explores the relationship between satisfaction with different aspects of living in barracks and resilience, career
satisfaction, career intentions, and fitness. A future study using qualitative methods should explore how inhabitants use spaces by examining the physical traces of dwelling.

Barracks offer an interesting place for inquiry because by nature, they are very close to higher-level forces—the things we can't control. Barracks would not exist without the need for a national defense and the resulting need to house soldiers. Their form reflects this origin. To live in barracks is to live within an institution of power shaped by global forces but constrained by the Constitution. Yet, barracks residents dwell in the “every day” at the lower level. This tension between the forces that shape barracks as a housing type and the way that people live in them is critical to evaluating them as places to live and how they impact their inhabitants, as much of the tension that arises is sown within their form. This brings us to the first question this study sought to understand: What are barracks?

1. Understanding the barracks

   Historical research reveals some critical and persistent concepts inherent in barracks housing: utilitarian design, the influence of constrained power and constitutional controls, and diminished agency.

   A) **Utilitarian design**

   The origin story for today’s unaccompanied personnel housing (UPH) starts at the country’s founding, when the Constitution outlawed forced quartering (1791). Its form has adapted to the military’s policies and priorities of every proceeding era to the present day. Until World War I, America’s standing army was intentionally small; it routinely built and abandoned outposts as a function of westward expansion (Michael, Smith, and Sin 2011, Cannan et al. 1995). As discussed in chapter three, until the consolidation and modernization period of 1875 to 1917, permanent installations with permanent barracks were few. A soldier’s residence in them was brief; most enlisted soldiers served out short contracts or were drafted
for a short stint to engage in a conflict or mission-specific activity before returning to civilian life (Newell 2015, Cannan et al. 1995). Career soldiers were mostly officers who had separate, more comfortable quarters. It wasn’t until the Cold War and the age of enduring threat without immediate conflict, that enlisted soldiers did their jobs at home in more permanent accommodations. For the first time, quality of life issues beyond the basics gained importance in supporting the force (Dase 2014, Webster 2007, Twiss and Martin 1998). After 1973, the revolutionary transition to a volunteer force required incentives to build and maintain a fighting force big enough to support America’s large role in international affairs (Laurence 2004, Rostker and Yeh 2006). Spartan housing conditions would not attract people to careers in the military. This led to a major shift in housing that puts its typology at odds with policies that push barracks to become something else—namely, UPH—while still requiring them to function as barracks.

A review of barracks history reveals that they were quickly and intentionally built to be cheap, temporary, and efficient housing for large numbers of soldiers. Their purpose was to provide quarters that met soldiers’ basic needs (safety, shelter, food, hygiene, and access to training grounds). Early on, barracks were constructed by the soldiers themselves with locally procured materials. Standardization brought flexible, economical, and efficient designs to barracks construction. In the late 1800s, poor hygiene and sanitary conditions detracted from the readiness of the force, pushing the designs to address health concerns. Hygiene features like reduced overcrowding, indoor bathrooms, minimum ventilation, and climate control were introduced (Cannan et al. 1995).

The form these requirements produced were rectangular structures of one to three stories, with little embellishment, and built with the cheapest local
materials or timber. Soldiers slept in long, open bays in rows with evenly spaced windows on either side for ventilation. Group dining facilities were housed within the same structure or later between related structures. Barracks were sited flexibly to accommodate full battalions adjacent to parade grounds or unit PT areas for convenience. Except for the VOLARs this form has largely persisted into the contemporary period. What has changed is the interior of the barracks, as it is no longer considered desirable to house barracks residents in large open rooms. Early studies of barracks housing in the VOLAR era found that soldiers desired more privacy as well as a separation from work in the barracks environment (Vineberg and Taylor 1972). Since then, the military has moved toward smaller modules for fewer people, to mimic apartment living in the civilian world. They call this style unaccompanied personnel housing and have even dubbed it “market-style.” However, building housing in this way undermines functional aspects inherent in the barracks typology that are still relevant in the contemporary context.

A key characteristic of barracks housing—efficient, economical construction—is a victim of the new standards, which increase the cost of construction and reduce the flexibility of the structure. Today, UPH standards stipulate that modules are built with separate bedrooms, bathroom, and kitchen for two people. This necessarily increases construction costs (materials, plumbing, fixtures, and so on). It also makes the building much less adaptable to reuse or changing vacancy levels caused by changes in troop levels. Congressional budget restrictions not only limit the funds available for construction and maintenance, but also contribute to troop level and the resulting demand for housing. Cost is an enduring and critical issue for barracks construction and design. Insufficient funding for construction and maintenance has long been the enemy of full
implementation of standards in the Army (Ferdinando 2016, United States Government Accountability Office 2015).

B) Higher-level Forces—constrained power and constitutional controls

Barracks housing design is heavily affected by higher-level forces, over which barracks dwellers have little control. As housing is a critical component of military operations and mandated by the Constitution, it is governed by the constrained power of the military through constitutional controls. In response to colonialism, a principle enshrined in our founding documents is that the military is under civilian control and funded by Congress. To ensure that the military can’t be turned on its own people, the founders created a system in which war-making authority and funding lie with the representative branch of government. As a result, the republic has an obligation to fund the military in accordance with the burden it places upon it (Wood N.D.). The mission, wherever it lies, requires the provision of basic amenities such as housing, food, and clothing, and is the collective responsibility a representative government using taxpayer dollars, not funding from individuals.

Each warfighter is entitled to basic amenities as part of the mission. In the contemporary context, housing is also compensation and soldiers have expectations about its form and quality. Those expectations have evolved over time and have stretched the form. Until the Cold War, barracks were purpose-built, basic, communal structures housing whole companies under one roof, with large groups of soldiers sleeping in one room. Soldiers did not have an expectation of privacy, nor did they have an expectation that the barracks were permanent housing. However, Cold Warriors served at home, and expectations began to evolve (Dase 2014, Webster 2007). Today housing is a key component of
compensation and used to recruit people into longer military careers. People considering a career in the military expect housing in the United States to resemble what their peers have in the civilian world. That is not to say that soldiers don’t expect and accept Spartan conditions in theater. They do. At home, however, they expect a better standard of living.

The military responded to demands for increased privacy by reducing the number of people sleeping in a room, which inevitably increases the cost of construction. High costs paired with tight funding has resulted in the uneven implementation of standards aimed at providing a better quality of life across the board. Deferred maintenance of aging structures and the inability to build new structures has also impacted the barracks housing stock.

Buried in the gulf between policymaking and reality remains the immovable fact that current funding does not support current military readiness requirements or the military’s physical footprint (Ferdinando 2016, United States Government Accountability Office 2015, United States General Accounting Office 2014, Office of the under Secretary of Defense (Acquistion and Technology) 2013, Neuhaus et al. 2010b). In regards to unaccompanied personnel housing, funding shortfalls result in some installations having a variety of out-of-date, out-of-standard UPH types of varying levels of standards and quality. In addition, pressure on funding for housing affects soldiers differently based on their marital status. This disparity in compensation is captured by a soldier in response to the question a question asking them to explain their level of satisfaction with the experience of living in the barracks:

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“This is the smallest barracks room I’ve ever lived in. I have less personal space in this room without a roommate than I’ve had in previous installation barracks rooms with roommates. Inadequate storage space. As an NCO I have four Soldiers who are all married. 2 PFC’s without children, and 2 SPC’s with one child each. Because of this they are allotted BAH and all live off-post. They have on average half the THIS that I have but all have living spaces at least 3-4x the size as my barracks room as well as have extra income from pocketed BAH and BAS money. I am their leader, but because I live in the barracks I make only a fraction of the money they - my juniors - do, and know full well that the entire amount of living space allotted to myself could fit into the master bedrooms of both my SPCs. Am I satisfied about living in the barracks? What do you think?”

Two more soldiers echo this feeling of disparity as well as the feeling of being under appreciated and/or not prioritized:

Having 8 years time-in-service I just find it annoying to live in the barracks when many e4 and below live off post. Being married gives them that right, I would just rather live on my own off post.

I have nothing against the Army and I enjoy serving my country but these barracks are a huge motivation killer. I have friends in other units and the old barracks that they moved out of are light years beyond ours. It is very disappointing that III Corps has money for new signs and fancy obstacle courses (that no one uses) but cannot seem to provide suitable living conditions for single soldiers.

This creates, in effect, uneven compensation and substandard living conditions, as some warfighters will find themselves in housing that is poor in quality and unequal to that of their military peers, let alone civilians.

C) Diminished agency

One of the defining characteristics of life in the barracks is diminished agency, or the sense of control over one’s own life (Bryan et al. 2014). Barracks residents, by their choice to become warfighters, are forced to yield personal
Chapter 6 – Discussion

agency to the structure and hierarchy of the military. Residents must adhere (or face personal and professional consequences) to barracks rules and regulations designed to reinforce the military code of conduct, protect the health of soldiers, and support readiness. Good leadership buffers the impact of stressors and PTSD, and increases self-efficacy in soldiers (Britt et al. 2004, Britt et al. 2013). In contrast, bad leadership negatively affects soldiers and is a major contributor to nondeployment stress (Brooks and Greenberg 2018). In view of this, the impact of leadership on barracks residents is an important area for future research because barracks are managed by units through the chain of command.

Barracks residents are subject to forced health and welfare checks, scheduled inspections, and restrictions on overnight guests and personal behavior, all of which are enforced by noncommissioned officers. Soldiers must live in barracks at their assigned duty station. They don’t get to choose where they live, which building, barracks type they live in, their room or roommates, how and when they eat, or which rules they would like to abide by. The majority of suggestions that Soldiers made related to their housing relate to issues of agency more than anything else

As discussed, the feeling of personal control (agency) is a contributor to psychological well-being at all ages (Smith et al. 2000). The lack of agency in the barracks appears to have negative effects on Soldier satisfaction. Soldiers regain agency related to their personal living conditions once they reach the rank of E-6 or get married; these milestones force soldiers out of barracks and into privatized housing on-post or civilian housing off-post. This has the effect of making barracks residents feel trapped and out of control—they have to wait for a promotion, or a major life change.
Agency in the civilian world, on the other hand, is constrained mainly by financial resources. Civilians can select a residence based on their cultural values or personal needs. Residents can define what life looks like within the walls of their homes and live by their own rules. As their circumstances (personal and financial) change, they can change where and how they live. For this reason, a study of satisfaction is particularly important if we accept the premise put forth by the ecological model—that we are satisfied with our dwellings when they reflect our needs (values, aspirations, intentions). The act of selecting our dwelling is one way we express these needs. Absent this ability, the flexibility of the structure to adapt to our needs is critical to its success as a dwelling. In the barracks environment of diminished agency, privacy has consistently appeared as a problem in studies of barracks housing (Vineberg and Taylor 1972, Neuhaus et al. 2010b, Comptroller General of the United States 1982b).

II. Interpreting the survey results

The results of the survey reveal some interesting areas of tension and opportunity that are consistent with the tension between barracks as a typology and its uneasy evolution into unaccompanied personnel housing, despite the efforts made by the Army to create a style of housing closer to what soldiers would experience in the private sector.

1. Low satisfaction levels overall, quality

This study looks at six realms in the barracks environment, from the most intimate of spaces—the bedroom—outward to the social space of barracks living. Residents evaluated each realm (room, module, building, complex, cultural landscape, and social) as well as its related individual features, amenities, and characteristics. Residents rated all realm levels on the negative side of the five-point scale. So what's causing the low levels of satisfaction?
Chapter 6 – Discussion

The quality of structures is an important factor in satisfaction with barracks living. This study found that institutional quality measures and soldier evaluations were moderately associated, indicating that self-reported satisfaction with different aspects of barracks living can flag real issues (positive and negative) in the barracks environment.

The difference in satisfaction scores between buildings of different eras was also interesting. For most measures, the contemporary era barracks have higher mean scores, except the realms of complex and cultural landscapes, in which the renovated transitional period (VOLARs) barracks scored slightly higher. This is interesting because these two measures refer to the plan and exterior realms of the barracks. The VOLARs in particular have a unique footprint and plan compared to typical barrack plans, being designed to provide a civilian atmosphere buffered from military support functions. While the interior design of the VOLARs is so altered from the original, the exterior plan remains largely intact. The data indicate a wide overall satisfaction gap between traditional (mean 1.9) and contemporary barracks (mean 3.0). These results indicate that maintenance, renovation, and new construction had a real and positive impact on satisfaction with barracks living. Again, aside from the discomfort of living in housing with quality issues, housing is both compensation and benefit, so uneven quality is effectively uneven compensation.

2. Social life in the barracks

The most negatively evaluated index was for the social realm, with a mean of 2.2/5, although the mean of “I don’t feel lonely in the barracks” was more positive (mean=2.8/5), which could indicate that the communal living situation in the barracks buffers loneliness. This is an area that deserves attention in future research.

Not surprisingly then, did measures related to the ability to conduct social activities in one’s room, module, or day room, as well as the ability to maintain non-military
relationships within the confines of the barracks were among the worst performing. Many expressed the desire to have a pet and for the Army to allow pets in the barracks (with regulations). Here are a few comments from people who wanted to have pets again:

[I had] a very large chocolate lab, would get married to get out of the barracks to get him back.

Pets are a very good way for many people to relieve stress. Pets also provide good companionship to a single soldier/person. The barracks don't allow for that. Another reason the barracks program needs to be absolved.

I don’t remember ever NOT having at least a dog or a cat. I have always had an animal around me and it's very lonely and somewhat depressing not having any pets because of the barracks regulations.

Animal companions as service animals or pets has a contribute to self-perceived health; they are associated with social facilitation, social support and affection (McNicholas et al. 2005). A review of studies found that some physical health improvements as well mental health improvements were seen in the literature. In particular, animals improved social interactions, decreased loneliness and improved morale (J. and C. 1999). The inability to have a pet because of barracks regulations removes choice in the ability to a meaningful relationship with a pet. This may be of particular concern to millennials. A report in the Washington Post described millennials as “picking pets over people.” The article cites millennial men as most likely to look for companionship through pet ownership (Bhattarai 2016). This appears to have a negative effect on some barracks residents and this would be a fruitful area for additional research especially in view their potential benefits.

These poorly rated items are highly related to agency. This sense of diminished agency in an area critical to emotional and personal well-being is of concern. It impacts a soldier’s ability to create and maintain social supports and may indicate the perception
that they have lack free will to engage in a basic human activity. This has implications for job performance and, ultimately, readiness. The belief in free will has been associated with a variety of positive outcomes, including higher self-efficacy (Baumeister R.F. and Brewer L.E. 2012), meaningfulness (Seto et al. 2014), better job performance (Stillman et al. 2010), and heightened brain readiness for motor skills (Rigoni et al. 2011). A recent study across cultures found that there was a consistent positive relationship between the belief in free will and job satisfaction (Feldman, Farh, and Wong 2018). This is a fruitful area for future research, especially in the context of a volunteer force, as the loss of agency could dissuade people from becoming new recruits as well as from reenlisting.

3. Privacy

Changes to design standards since 1973 have primarily focused on increasing privacy for single soldiers, moving from a 12-person module in the VOLAR design to the 1+1E (two-person module with separate sleeping rooms) standard today. However, due to space limitations caused by high numbers of eligible soldiers and reduced inventory of barracks spots resulting from ongoing building renovations, some soldiers at Fort Hood during the study period shared a sleeping room. As a result, the researcher investigated whether having a roommate affects satisfaction. Result show that there was a statistically significant difference between those with private rooms and those sharing a sleeping room on five of the six FAC realm indices, as well as for overall satisfaction. Mean scores were higher (more positive) for those in private bedrooms. Most notably but not surprisingly, room satisfaction jumped from a mean of 2.3 to 3.1 for people with private sleeping rooms. Overall satisfaction also jumped from a mean of 2.1 to 2.8. Soldiers who shared rooms had much to say on the issue in response to the question, “how can Fort Hood Improve the barracks?”
“Again, there really is no ""Right"" answer for these particular barracks because they are so old that renovation is unfeasible. Too small, too moldy, no privacy, poorly insulated, no kitchen, no storage, black mold in the walls, frequent plumbing malfunctions, etc., etc. I PCS soon but please, please square my battle buddies away so that they have a decent place to stay. morale will skyrocket.”

“Most of my complaints would vanish if I had my own room, and if not if we could just get bigger rooms. Please.”

Even with having a roommate. People need at least a little privacy. Need, need at least a bedroom even a small one that we can lock and have privacy and security.

Give to solid nicer barracks... We are not little kids and I feel having roommates is just completely uncalled for.

Having your own room and own space is a better living condition; its relaxing and don’t have to worry about your roommate’s friends coming and going along with my friends coming and going also. If we didn’t have the roommates, we would have enough room for all of our gear along with our hobby items.

I would prefer to be able to have my own room so I could actually have family or a boyfriend/girlfriend in my room without my roommate complaining.

Dissatisfaction with having a roommate in one’s sleeping room indicates a desire for privacy but also a feeling of a lack of agency; Soldiers feel like they can’t control access to their space, things (personal and Army related), or social life. In addition, sharing a bedroom appears to have undertones of being treated like a child. Perhaps noting that adults expect to have their own bedrooms, except if they decide to share it with a romantic partner.

Having a private sleeping room as well as access to communal spaces is important for emotional well-being (Nelson, Hall, and Walsh-Bowers 1998). A private sleeping area allows residents to exert selective control over themselves as well as their
possessions. One study of family student housing found that when students were able to regulate privacy, relationships with family members were enhanced. The same study also found that people can become attached to temporary housing (in the case of this study, student housing). The study also found that the ease of closing a door to regulate privacy increased attachment to a place (Harris, Brown, and Werner 1996). The research at hand into military housing supports the findings of the student housing study. It also validates the Army’s move to increase privacy through ensuring all soldiers have a private sleeping room. However, small modules may have drawbacks as well. For example, a 2012 article in the Christian Science Monitor describes internal findings that increased privacy in barracks was linked to increased sexual assaults (Mulrine 2012). Increased privacy could also lead to increased isolation during mental health crises. In 2015, 18.3% of suicides and 39.7% of attempted suicides occurred in barracks across all service branches (Pruitt et al. 2015).

4. Soldier Outcomes

The question that arises is, does satisfaction matter or is it “nice to have”? This study explores five main soldier outcomes important to the Army: career satisfaction, career intentions, reenlistment and/or the desire to pursue a long-term career in the Army, fitness, and resilience. Soldier outcome results demonstrate that career indicators can be described as ambivalent. However, when asked directly about reenlisting or pursing a long-term career, the mean indicates a negative response. Meanwhile, the APFT mean is 83% of the total possible score of 300. Resilience in the sample is slightly under the national average for people under stress in the US (Connor KM 2017). This study did not find a relationship between resilience or fitness in the data.

A surprising finding across the sample was a desire for an in-unit kitchen/shared cooking facilities or expanded hours for the DFAC. Eating is fundamental to health and
performance as well as culture; the ability to control one’s own eating habits is a matter of agency that deserves future research in the military context. The data in this study showed a strong correlation between satisfaction with food prep/storage areas and overall satisfaction as well as a weak association with career satisfaction and career intentions. Many soldiers voiced their desire to control their eating habits especially when work caused them to miss dining hall hours. Here is some feedback from three Soldiers on this topic:

*I am extremely dissatisfied. It is very demoralizing to work hard all day come home to insufficient living quarters. The lack of any sort of kitchen area (or area in general) makes it difficult to eat healthy.

*We are not allowed to have hot plates, all we are provided is a microwave, not able to make and have a healthy sustainable meal plan due to no way to properly make it.

*As stated before there are no vending machines where you are able to purchase a snack. It is very difficult getting around town because I currently don’t have a vehicle so if I miss a meal at the DFAC I will be out of luck for food.

This is interesting because the ability to choose your own food, regulate nutrients, and eat when you want is an issue of personal agency.

Less surprising was that the results showed that career satisfaction was a major predictor for the career intention index, which measures satisfaction with the decision to join the Army as well as a desire to reenlist or pursue a long-term career. This study also showed that four realms predicted career satisfaction: complex, social, cultural landscapes, and building. While overall satisfaction had only a moderate association with career satisfaction and career intention, it was most strongly predicted by the most intimate realms of the barracks experience: room, module, and social. Improvements to these realms, in particular the social realm, could prove fruitful for improving satisfaction.
III. Recommendations

Cost, higher-level forces, and diminished agency are persistent points of conflict in the design and management of barracks housing. Focusing on buffering these three elements may help barracks housing adapt more fully to the realities of an all-volunteer Army whose members serve at home in between deployments. Increasing personal agency while preserving the supportive aspects of command and control in the barracks is particularly important.

1. Avoid shared sleeping rooms. Change the guidelines for who can live in barracks and move the rest into on-post housing with housemates.

Barracks housing has long been a tool to help with indoctrination into military culture and to inculcate standards (in behavior and grooming), as well as to ensure that soldiers have access to three square meals and live in healthy conditions. Barracks housing also brings soldiers into close contact with their direct chain of command for supportive and disciplinary measures when necessary. These same goals can still be achieved with adjustments to the current policy that reframe the barracks as a stepping stone rather than an imposition. The imposition of barracks housing also reduces agency by limiting options. Currently, the only way to get out of the barracks is to rank up, which takes years, or to get married.

Currently, all single soldiers E-5 and below are required to live in the barracks regardless of their age. This requirement creates a high demand for barracks housing stock, even when some of it isn’t in good condition. As discussed earlier, housing people in structures of differing quality creates problems in individual satisfaction as well as a de facto gap in housing compensation. This study suggests the following changes:

- Make barracks housing mandatory for soldiers under the age of 21 and for those with the rank of E-4 (not corporals) with less than three years of
service. Barracks under the age of 21 can’t drink. Underage drinking can be a wellness concern and therefore the additional restrictions on their off-duty behaviors can be justified.

- Allow single soldiers 21 and who have leadership responsibilities (older E-4 corporal and above) with three years of service to opt-in to barracks housing or choose on-post housing with roommates from the same unit. Among soldiers who had private sleeping rooms, the age/rank divide was of great concern to leaders because it causes fraternization issues. There is also a sense with greater rank and responsibility, there should be a commiserate improvement in housing. NCOs also expressed a desire to be treated “as an adult.” Soldiers expressed this in their comments:

As an NCO, I tend to stray away from lower enlisted as they are the only ones who live around me.

Allow NCOs to have bigger rooms, only NCO roommates, allow NCOs option to live off post.

I feel that the barracks is a fine place to live for a new, young soldier just coming into the Army. After about 5 years of service, I feel that I, as well as any other soldier that has been on this installation for this amount of time, outgrow the barracks and the barracks lifestyle. I fairly quickly acquired items that would no longer fit into a barracks room. Aside from acquiring household goods, extended periods of time in a small, gloomy, room made me felt like I wasn’t progressing in the Army. As a single NCO, I was treated and talked to like a day-one junior soldier, not just by leaders that would walk through but also soldiers that did not realize they were addressing an NCO. Barracks management not once, while I resided in the barracks, addressed a single issue or concern that was brought to their attention. Finally, all barracks personnel are treated like children, not adults. Their home is constantly under scrutiny from others and the “Hey You” detail is still very much alive for barracks soldiers.
These suggestions increase personal agency but keep single soldiers on base and housed within their units, and within the footprint and safety net of the installation. All of which supports the Army’s goal of unit cohesion in barracks housing. It also allows older soldiers who have already benefited from indoctrination to exercise choice in selecting their housing while younger people see a shortened time horizon for their stay in the barracks. Another benefit would be an improvement in overall satisfaction scores which was predictive of career intentions even if the model was only able to predict 9.2% of career intention. Overall satisfaction was also moderately associated with career satisfaction.

2. Implement and rethink the 1+1E standard

Privacy is important to soldiers; this is a consistent finding through various studies. However, going to bigger modules with fewer people and more amenities is not efficient, cost-effective, or flexible. If we look back to the VOLAR experiment, the design of these modules was an elegant solution that increased privacy while creating a more homelike environment. The design of the complex has also held up, garnering higher satisfaction ratings than other barracks types. On the other hand, the rectangular shape of the contemporary structures echoes early barracks forms and is efficient. Buildings housing many modules require much more plumbing and additional fixtures, and they reduce the number of people a building can fit. Two-person modules also foster increased isolation for soldiers, who may experience mental health issues as a result of their stressful careers.

If part of the motivation for moving toward a market-style housing type is to provide housing comparable to what their civilian peers have, it is not necessary to reduce the number of roommates. Many people have roommates and enjoy living with others. Barracks housing would be more competitive if it had features that are expensive in the
civilians. Housing that meets the 1+1E standard already has many features that make it competitive. This study recommends:

- Creating four-person modules with shared living room, kitchen, bathroom (double vanity and two showers) and individual sleeping rooms with sufficient storage for TA-50 and personal items. This idea was also echoed by a respondent who had a private sleeping room:

  I feel the architectural design would be better for living if they had four people share a large room. Each individual would have their own private bedroom, there would be two full baths, and one kitchen with all the current appliances and the addition of a stove.

- Increase access to quality of life programs and amenities that are expensive in the civilian world: free Wi-Fi, in-unit washer/dryers, etc. In addition, respondents suggested more recreation nearby, bike racks, shuttle services, bigger beds.

- Increase the ability of soldiers to control their diets.
  
  - Expand food options in the DFAC
  - Expand DFAC hours
  - Make healthy vending available
  - Ensure all units have full kitchens with ovens
  - When individual kitchens are not possible, a shared common kitchen in a day room

3. Rethink regulations

This study showed that satisfaction with the social realm was strongly associated with overall satisfaction, and weakly associated with career satisfaction and career intentions. Making some adjustments to current barracks policies in combination with other recommendations here could help increase individual agency and create conditions for young, single soldiers comparable to those of their married colleagues as well as their civilian peers. This study suggests the following changes:
• Allow registered overnight guests on the evening before duty-days (Friday through Saturday) or during DONSAs.
• Consider allowing small pets with an approved care plan. Many soldiers had to leave pets before joining the military and have had pets their whole lives.

IV. Summary

The revolutionary shift to an all-volunteer force in the 1970s created a class of professional warfighters who entered into a contract with the government and acquiesced to a certain loss of personal control in service to the mission until that mission ended and they returned to civilian life. Today’s warfighter trains and fights but does not return to civilian life. Barracks aren’t temporary in the way they were up until the Cold War. Today’s soldiers straddle the military and civilian worlds, moving between them with each training mission or deployment. Ironically, the total separation from the civilian world is eroding, even as the military-civilian divide grows (Taylor et al. 2011). The military and civilian cultures pull at one another in unexpected ways, resulting in a housing typology that struggles with what it means to be a professional soldier when one is not in conflict. Creating changes that lessen those tensions will help barracks respond to persistent challenges and make them a more attractive option for soldiers.
Fort Hood Unaccompanied Housing (Barracks) Survey  © Cristina Delgado-Howard

1. About this survey

Thank you in advance for taking the time to participate in this survey. Your time and feedback is valued and may help in the creation of better barracks in the future. You are invited to take part in this study because you live in barracks housing at Fort Hood. This study explores unaccompanied personnel (single soldier) housing and its relationship to individual resilience and quality of life. The purpose of this survey is to better understand how you feel about, and experience, your current housing.

This survey is being conducted by the Directorate of Public Works - Fort Hood with the assistance of urban and regional planner, Cristina Delgado, at the University at Buffalo, School of Architecture and Planning.

This online study will take about 20 minutes of your time. The survey asks about your current barracks housing as well as about your feelings and experiences related to how you deal with stress.

Your decision to participate in this study is completely up to you. You have the right to end your participation at any time without penalty. Your participation in the survey will not affect your Army benefits in any way. You may skip any questions you do not wish to answer. If you do not wish to complete this survey, just close your browser window. However, any information collected up to that point may be used in analysis.

Your participation in this research is completely confidential. We will not collect any identifiable information about you. Information will be collected and analyzed by Cristina Delgado and the research team at the University at Buffalo and reported back to the Directorate of Public Works in combined form. Results will be reported through a report and presentation, a thesis paper (available online) and may also appear in an academic research article.

Although your participation in this research may not benefit you personally, it will help us understand the role that barracks housing may play in supporting soldiers as they deal with stress as well as quality of life. Findings will be used to inform design recommendations that may be used in the upcoming renovations of barracks housing at Fort Hood. There are no risks to people participating in this survey beyond those that exist in daily life.

If you have questions about this project you may contact Cristina Delgado at cristina@buffalo.edu. You may also contact the research participant advocate at the University at Buffalo at 716-888-4845 or researchadvocate@buffalo.edu.

By clicking “Next” below you are indicating that you are at least 18 years old, have read and understood this consent form and agree to participate in this research study. Please print a copy of this page for your records.

Fort Hood Unaccompanied Housing (Barracks) Survey

2. Tell us about your barracks room...
(Later we will ask you about other areas of the barracks.)

Note: Barracks room means your bedroom where you sleep. It does not include common areas such as bathrooms, kitchenettes, etc. unless those areas are in the same room in which you sleep.

1. What building number do you live in?
2. Do you have a private bedroom? (In other words, no one else sleeps in the same room as you.)

- Yes
- No

3. How many people share a barracks room with you?

4. How much do you agree or disagree with the following statements? My barracks room...

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>offers me the level of privacy I like.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has enough storage for Army-issued equipment (uniforms, armor, ruck, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has enough storage for personal items.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is big enough for me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has safe and secure from theft or unwanted entry.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is furnished to my needs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has enough room for me to comfortably entertain people.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is easy to keep clean and tidy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has a view of nature from my window (parks, lawns, trees, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Which of these items do you have in your barracks room? Select all that apply.

- Plants
- Electronics (For example: TV, Radio, Gaming Console, E-book, Laptop, etc.)
- Personal objects with special meaning to me.
- Posters or other decorative items
- Pictures or paintings with nature scenes (For example: a print of landscape painting, pictures of trees or flowers, etc.)
- Reminders of home
- Pictures of friends and loved ones
- Work out equipment (For example: Hand weights, Kettle bell, etc.)

Other (please specify)
## Fort Hood Unaccompanied Housing (Barracks) Survey

### 3. Tell us more about your barracks room...

6. Tell us about the **temperature** in your room...
   - Too cold
   - Somewhat too cold
   - Just right
   - Somewhat too hot
   - Hot
   - Too hot

   My room is usually...

7. Tell us about the **light** in your room...
   - Too bright
   - Somewhat too bright
   - Just right
   - Somewhat too dim
   - Dim
   - Too dim

   My room is usually...

8. How much do you agree or disagree with the following statements?

   The **light** in my barracks room...
   - Strongly disagree
   - Disagree
   - Neither agree nor disagree
   - Agree
   - Strongly agree
   - N/A

   - From outside the building (parking lot lighting, flood lights, etc.) annoys me.
   - From inside the building (other rooms, hallways, etc.) annoys me.
   - From the overhead lighting annoys me.
   - Makes it hard for me to sleep.
   - Outside natural light is good.

   Is there anything else you’d like us to know about the light in your barracks room?

9. Tell us about the **noise levels** in your room...
   - Too loud
   - Somewhat too loud
   - Just right
   - Somewhat too quiet
   - Quiet
   - Too quiet

   My room is usually...
12. How much do you agree or disagree with the following statements?

The noise in my barracks room...

<table>
<thead>
<tr>
<th>Strongly</th>
<th>Disagree</th>
<th>Neither agree</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from outside the building (cars, aircraft, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from within the building (other rooms, hallways, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from the furnace and/or air conditioning equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the noise from my neighbor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>makes it hard for me to sleep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is there anything else you'd like us to know about noise in your barracks room?

11. In general, how satisfied are you with your barracks room?

- Very dissatisfied
- Dissatisfied
- Neither satisfied nor dissatisfied
- Satisfied
- Very satisfied

Please explain your answer.

12. Have you submitted any work orders thru barracks maintenance to assist in fixing your barracks room to maintain your standard of living?

- Yes
- No
- I don't know how or didn't know I could

Please explain your answer.
13. What improvements could be made by Fort Hood to make your barracks room better?

14. Please rate your agreement or disagreement with the following statements. My barracks module...

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>...is a color that I like</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...is built with materials I like</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...has a good ceiling height</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...has attractive furniture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...has good sized windows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...has a convenient layout</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...seems well constructed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...has enough room to entertain guests</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Do you have any other comments about the architectural features of your barracks module?

15. In general, how satisfied are you with your barracks module?

- Very dissatisfied
- Dissatisfied
- Neither satisfied nor dissatisfied
- Satisfied
- Very satisfied

Please explain your answer.
15. What improvements could be made by Fort Hood to make your barracks module better?

---

**Fort Hood Unaccompanied Housing (Barracks) Survey**

5. Tell us about your barracks building?

**NOTE:** Barracks building means the building where your barracks module is housed.

17. Please rate how much you agree or disagree with the following statements related to the things offered in your barracks building.

<table>
<thead>
<tr>
<th>The barracks building that I live in...</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>... provides good facilities to prepare and store fresh food when I can't use the DFAC.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... has a day room or common room that I like to use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... has healthy options in the vending machines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... has enough working washers and dryers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... has the right amount of outlets for technology needs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... makes it easy for me to store or park a bicycle.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... meets my expectations as a nice place to live.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... has enough trash cans and recycling bins.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... has a convenient mud room and/or boot wash station.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Are there any amenities that you would like to see in your barracks building that don't exist currently? Or are there issues with the amenities that are there currently?
18. Please answer yes or no to the following statements related to your unit's role in cleaning and maintaining the barracks building where you live.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Yes</th>
<th>No</th>
<th>Don't know</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning and maintenance schedules are adequate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My leadership has high standards for building cleanliness and maintenance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My unit has an R&amp;U (Repairs and Utilities) person detailed to the barracks building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional comments:

19. In general, how satisfied are you with your barracks building?

[ ] Very dissatisfied
[ ] Dissatisfied
[ ] Neither satisfied nor dissatisfied
[ ] Satisfied
[ ] Very satisfied

Please explain your answer:

20. What improvements could be made by Fort Hood to make your barracks building better?

Fort Hood Unaccompanied Housing (Barracks) Survey

6. Tell us about the barracks complex where you live.

Note: Barracks complex means the combination of buildings that make up where you live on post.
21. How much do you agree or disagree with the following statements about your barracks complex?

<table>
<thead>
<tr>
<th>The barracks complex where I live...</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>has an exterior layout that is easy to navigate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has outdoor basketball courts or other sporting facilities I like to use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has outdoor grilling facilities that I like to use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has enough facilities for unit-required activities (such as PT, formations, and CQ).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has outdoor common areas that people like to use to hang out or relax.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>feels safe and secure.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>does not have negative water issues (e.g., flooding, pooling, freezing, etc.).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is visually appealing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is attractive from the outside.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is uniquely Texas to it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>obviously belongs to our brigade or unit because of mural, unit insignias or other markings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is there anything else you'd like us to know about your barracks complex?
22. In general, how convenient is your barracks complex to on-post services (DFAC, medical, dental, shops, etc.)

- Not at all convenient
- Not convenient
- Neutral
- Convenient
- Very convenient

Please explain your answer.

23. In general, how satisfied are you with your barracks complex?

- Very dissatisfied
- Dissatisfied
- Neither satisfied nor dissatisfied
- Satisfied
- Very satisfied

Please explain your answer.

24. How could Fort Hood improve the barracks complex where you live?
25. Please rate how much you agree or disagree with the following statements related to your experience living in the barracks.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living in the barracks requires vehicle ownership</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>I can easily walk or bike to things from the barracks</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>There are lots of people to hang out with in the barracks</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>It is easy to spend time with non-military loved ones (dependents, family members, friends, romantic partners) while living in the barracks</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Dating is harder because I live in the barracks</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I feel lonely living in the barracks</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Barracks regulations negatively affect my experience living in the barracks</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I would rather live off-post or in on-post non-barracks housing</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Please add any additional comments related to your experience living in the barracks.
26. Tell us how frequently you use the following types of transportation to get around on-post...

<table>
<thead>
<tr>
<th>Transportation</th>
<th>Never</th>
<th>Almost never</th>
<th>Occasionally/Sometimes</th>
<th>Almost every time</th>
<th>Everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single soldier shuttle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My own private car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Someone else’s car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motorcycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walk</td>
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<tr>
<td>Taxis</td>
<td></td>
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</tr>
</tbody>
</table>

Other (please specify):

27. Tell us how frequently you use the following types of transportation to get around off-post...

<table>
<thead>
<tr>
<th>Transportation</th>
<th>Never</th>
<th>Almost never</th>
<th>Occasionally/Sometimes</th>
<th>Almost every time</th>
<th>Everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Hop (Central Texas Public Transportation)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>My own private car</td>
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<tr>
<td>Someone else’s car</td>
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<tr>
<td>Motorcycle</td>
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<td></td>
</tr>
<tr>
<td>Bicycle</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Walk</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Taxis</td>
<td></td>
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</tr>
</tbody>
</table>

Other (please specify):

28. How could transportation on or off post be improved?


29. In general, how satisfied are you with your experience living in the barracks?

- Very dissatisfied
- Dissatisfied
- Neither satisfied nor dissatisfied
- Satisfied
- Very satisfied

Please explain your answer.

30. How could Fort Hood improve barracks living?

31. How old are you?

32. What is your gender?

- Male
- Female
- Transgender
33. Which race/ethnicity best describes you? (Please choose only one.)

- American Indian or Alaskan Native
- Asian / Pacific Islander
- Black or African American
- Hispanic American
- White / Caucasian

Multiple ethnicity / Other (please specify)

34. Which of the following best describes your current relationship status?

- Married (or in a domestic partnership) but spouse does not live at this duty station
- Widowed (and no boyfriend or girlfriend)
- Divorced (and no boyfriend or girlfriend)
- Separated (and no boyfriend or girlfriend)
- Single, never married and no boyfriend or girlfriend
- Single, divorced or widowed, but I am in a relationship
- Other (please specify)

35. Select all that apply: I provide financial support for...

- a child or children
- a spouse who lives away from my duty station
- a spouse to whom I am no longer married or separated from
- a parent or grandparent
- a sibling or other family member
- a romantic partner (girlfriend or boyfriend)
- myself only
- Other (please specify)

36. What US state or territory do you consider to be home?
37. Did you live by yourself or with roommates before moving into the barracks?
- Yes
- No

Please describe your pre-army living situation:

38. Did you have a pet before you joined the army?
- Yes
- No

Comments:

Fort Hood Unaccompanied Housing (Barracks) Survey

9. Tell us about your military career:

39. What year did you join the Army?

40. What is your rank?

41. What is your MOS?

42. What is your most recent GT (General Technical Score)?

43. What is your most recent APFT (Army Physical Fitness Test) score?

44. Have you been deployed?
- Yes
- No
45. What year did you come to Fort Hood?

46. Please rate your agreement or disagreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soldiers in this platoon have opportunities to better themselves.</td>
<td></td>
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<tr>
<td>I believe that seeking counseling for personal problems or mental health issues can make it hard for me to get promoted.</td>
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<tr>
<td>This platoon has high morale.</td>
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<tr>
<td>I am proud to be in this platoon.</td>
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<tr>
<td>Good platoon leadership makes my quality of life better.</td>
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<tr>
<td>I would like to re-enlist or pursue a long-term career in the US Army.</td>
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</tbody>
</table>

Is there anything else you'd like to tell us about how being part of your unit affects your Army career?

47. In general, how satisfied are you with your decision to join the Army?

- Very dissatisfied
- Dissatisfied
- Neither satisfied nor dissatisfied
- Satisfied
- Very satisfied

Please explain your answer.
48. For each item, select the bubble that best indicates how much you agree with the following statements as they apply to you over the last month. If a particular situation has not occurred recently, answer according to how you think you would have felt.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am able to adapt when changes occur.</td>
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<tr>
<td>I have at least one close and secure relationship that helps me when I am stressed.</td>
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<tr>
<td>I can deal with whatever comes my way.</td>
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<tr>
<td>I try to see the humorous side of things when I am faced with problems.</td>
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<tr>
<td>Having to cope with stress can make me stronger.</td>
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<tr>
<td>I tend to bounce back after illness, injury, or other hardships.</td>
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<tr>
<td>I believe I can achieve my goals, even if there are obstacles.</td>
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<tr>
<td>During times of stress/crisis, I know where to turn for help.</td>
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<tr>
<td>Under pressure, I stay focused and think clearly.</td>
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<tr>
<td>I am not easily discouraged by failure.</td>
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<tr>
<td>I think of myself as a strong person when dealing with life’s challenges and difficulties.</td>
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</tr>
<tr>
<td>I am able to handle unpleasant or painful feelings like sadness, fear, and anger.</td>
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<td></td>
</tr>
<tr>
<td>I have a strong sense of purpose in life.</td>
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</tr>
</tbody>
</table>
48. The statements below refer to the events you may have experienced AT ANY TIME. Please mark "Yes, before I joined the Army," "Yes, after I joined the Army," or "No" for each question below. You can select multiple options.

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Yes, before I joined the Army</th>
<th>Yes, after I joined the Army</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>I experienced serious financial problems.</td>
<td></td>
<td></td>
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<tr>
<td>I experienced stressful legal problems.</td>
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<tr>
<td>I went through a divorce or have been left by a partner or significant other.</td>
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<tr>
<td>Someone close to me died.</td>
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<tr>
<td>I experienced a very traumatic non-military event related or multiple events.</td>
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<td></td>
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</tr>
<tr>
<td>I experienced a very traumatic military service related event related or multiple events.</td>
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<tr>
<td>Other (please specify)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

50. Have you attended Master Resilience Training?

- Yes
- No
- I don't know
- Other (please specify)
51. Please add anything else you'd like us to know about yourself below.

You're done! Thanks for your time.
US Bill of Rights,. 12/15/1791.


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Unknown. 1950s-b. Contemporaneous image of exterior of the H-style barracks. Champaign, IL Construction Engineering Research Laboratory


Unknown. ND-a. Contemporaneous Rolling Pin Barracks at Fort Hood, TX Champaign, IL Construction Engineering Research Laboratory


