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# Military Frame, Mission Form, Historic Fabric, and Campus Function: A New Mexico National Guard Perspective

Erin Montoya

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**ERIN M. MONTOYA**

**BACHELORS OF ARTS IN LIBERAL STUDIES**

THESIS

Submitted in Partial Fulfillment of the  
Requirements for the Degree of

**MASTERS OF COMMUNITY AND REGIONAL PLANNING**

The University of New Mexico  
Albuquerque, New Mexico

**MAY, 2014**

## DEDICATION

Dedicated to my heroic fellow Soldiers & Airmen for which I hope you see direct benefit  
of this thesis and case study.

## ACKNOWLEDGEMENT

I would like to thank the many people who believed I would have a contribution to improve the field of planning and lend myself to the future development of the New Mexico Army National Guard. There were several key people who lit the spark for me and through their enthusiasm for my topic gave me a fire to accomplish this task.

I have been blessed with the opportunity to provide reflection of my experiences and hope that they are of benefit to those interested.

I would like to specifically thank MSG Douglas Mallery who always pushed me to achieve higher, SGT Charles Martinez, for his historical wisdom, COL Donnie Quintana, for believing in me, Steve Borbas, for the wonderful enthusiasm that guided me to get off the ground, Ted Jojola for the inspiration and insight into this wonderful world of planning, Francisco Uviña for the constant inquiry as to my project, and Moises Gonzales, for the creativity and application of physical planning techniques.

MILITARY FRAME, MISSION FORM, HISTORIC FABRIC, AND CAMPUS  
FUNCTION: A NEW MEXICO NATIONAL GUARD PERSPECTIVE

by

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ABSTRACT

This thesis will investigate, identify, and develop what campus planning is for military installations; more specifically it will classify specific features that should be included in the planning of military installations to achieve a campus setting. This thesis will include a case study upon which the campus initiative can be exemplified using a National Guard site. The site selected is dynamic enough to include the majority of components within the planning spectrum of regulations for Army National Guard facilities.

This all-volunteer component is the pride of America with multi-faceted missions and capabilities that do not match any other component or agency in the nation. The fundamental purpose, culture, and history of the National Guard will be explored in order to draw conclusions about the requirement and application of a military campus plan.

Research surrounding traditional campus planning for universities and other military institutions will be analyzed to determine the validity of specified features for use in this setting. The overall place-making endeavor will include concepts and features that will increase social interaction, establish linkages to the history and culture of the population, as well as increase quality of life, efficiency, and stewardship. The case study will be of the New Mexico National Guard Oñate Complex Training Site, Santa Fe, N.M., which will allow for an in-depth illustration of concepts discussed.

The end product will include a military campus plan for the New Mexico National Guard's, Oñate Complex Training Site, which will integrate the garrison functions and training area to facilitate the Adjutant General's (TAG) vision for real property development planning as well as incorporate the possibility of cultivating new government partnerships. The project will focus on improving the efficiency and use of the site by conducting qualitative and quantitative analysis of land use, real property data, facility use and space requirements, stationing, environmental resources, utilities, roads and trails, landscape, site edges, buffer zones, anti-terrorism/force protection requirements, and training areas.

The project will directly benefit the Soldiers and Airmen of the New Mexico National Guard as users of the facility, as well as state and federal agencies who may reside in the facilities through usage agreements or partnerships. The Construction & Facilities Management Office will be impacted physically through the creation of a synthesized strategy for use in the planning and development of the Oñate site which includes a readiness center, educational, logistical, and training center facilities.

## FORWARD

I was fortunate enough to come across the amazing field of planning when I was hired to backfill a soldier deploying to Iraq. I was given the opportunity to work as a full-time federal technician on a temporary basis for the New Mexico National Guard's, Construction & Facilities Management Office (CFMO). As I developed skill and knowledge in this job and was in the process of going to Officer Candidate School, I decided it was time to seek a higher education that could provide me with a solid background in what I hoped would be the beginning of a career.

I found the Masters of Community & Regional Planning program at the University of New Mexico and thought it interesting enough to pursue. As I am almost at the close of my degree studies, I think the path thus far has opened my eyes to a much broader much more fulfilling journey in which I can be a bigger part of the solution and influence change for the better. I am inspired to become a life-long student and give back to my community in the National Guard through the knowledge I've gained from this program.

At the New Mexico Army National Guard (NMARNG) I served mostly as a Real Property Specialist, with a responsibility to keep an inventory of all facilities, assets, and properties as well as conduct space analysis of current facilities and proposed stationing actions. During the course of the six years, I have learned much from the initiatives of the National Guard Bureau and I have seen a shift over time where more emphasis is placed on establishing valid requirements and providing proof of analysis to document the need for funding. As the monetary resources become more meager, the creativity and effort put



into establishing the need becomes more fruitful. I can envision a more organized, evenly distributed standard which is a welcome change.

As I learned the functions of my job – to include regulations and requirements – which could positively impact New Mexico’s National Guard (NMNG), I was also learning different methods, concepts and ideas about policy and processes that would improve the overall quality of life for urban communities. In parallel it was difficult for me at the time to see the how both could be linked. On the one hand I was in the military – a very rigid hierarchical setting with little room for qualitative endeavors and more driven by requirements. On the other hand was a holistic, organic conceptualization of place-making based on theory, history, culture, and practice. These two paradigms conjugated in my mind when I accepted the idea that the National Guard is its own community – different from any other community, driven by its federal and state missions. I became curious about the story of New Mexico specifically as it relates the physically built environment.

I enrolled in a Historic Preservation course at UNM. One day while learning different researching techniques and search databases available to students, I was amazed to find an armory that looked so regal and fortress-like in Santa Fe, built in 1909. It was, in fact, located at the heart of Santa Fe, what is currently today a museum. Interestingly, the form of place established in 1610 still exists and surprisingly still has the same quadrangle or plaza form and remains the center of the city of Santa Fe. As I persisted to find out more about it, I struggled to understand why it wasn’t important enough to keep the history of the building within the National Guard. The beauty and magnificence of the building has been converted into a standard Spanish adobe style structure, with little

evidence the armory ever existed. I was driven to investigate how the building came to be. I determined that this building was most likely built with federal funds as a result of the 'great era of armory-building in America' following the end of the Civil War (Everett, 13). During this time there was a great need to keep civil order, and the National Guard was called to do the mission. Prior to that, militia men who volunteered paid dues to the Armory Board to maintain a defensible place to house their equipment and arms. This inspired me to learn more about the history and how the built environment has developed over time. This rich history as it relates to planning and the presence of place needs to be told.

As I compared what I found to what I was experiencing on a daily basis, it felt as though there was an immense disconnect between what was then and what is now. The participatory aspect and approach to life has changed over the years, even though it is still an all-volunteer force, the ratio of guardsman has morphed from being a requirement of all males to defend and protect the dwelling place to being less than one percent of the population bearing the responsibility to defend and protect the rest. The National Guard community has changed from the inclusion of the entire community to just the service members and families of those who serve.

For the NMNG, the physical space is developed by the Construction and Facilities Management Office to serve the members and to better help the NMNG to accomplish the federal and state missions. In order to influence development and integrate all of the diverse history and culture our Soldiers and Airmen have experienced, it will be integral to include them in future planning initiatives.

When first considering this project, I envisioned it as a way to approach creating a new culture with an increased emphasis on planning. I attempted to understand the unique challenges and inspiring changes that can be garnered by logically and methodically working through all the pieces that encompass a well-planned site. I set my sights on learning. As I dug into the vastness, each part captured me as I attempted to understand all of the linkages over time and place. The beauty to me is taking each piece of information and placing it in a way that creates our story – a story that can be translated into our place-making effort. The end result will be a well-developed, flexible, and comprehensive piece of art wherein each contribution is an independently complete story. The whole of each part combined would be a replication of collective experiences over hundreds of years. I envision this as the launching point to rescue our history, cultivate it, and amplify it for all to experience.

Though I wish this could be done solely through this project, I imagine it will be iterative and take time. For this particular study, the most challenging portion for me was limiting my investigation to what I thought would have the most gain for the New Mexico National Guard as a whole, while enabling me to conclude my degree.

I chose to write this thesis on the investigation and development of the terminology specific to military campus planning. I believe that it is important to first decipher between the features representative in a military campus plan and those of a traditional university campus plan because the use, requirements, and functions are completely different. Once the definition is made, the contribution of this paper seeks to integrate the two military and traditional campus plans so that the military can benefit from and experience a place much like the traditional campus. A campus setting specific

to the military would allow service members the ability to accomplish all missions and required tasks in the most effective environment while integrating the beauty and uniqueness of campus planning. The goal is to exploit readiness and display the culture, history, and lineage of the institution, enabling absolute pride for the mission and accomplishments to date.

One final caveat to this contribution of history, culture, and perspectives: It is simply an accumulation of my research and experiences; it does not assume to resolve and interpret historical renditions and accounts into one final concept. A recent TED Talk called “The Danger of a Single Story” given by Chimamanda Ngozi Adichie, an empowering novelist and woman from Nigeria, indicates that single stories (stories from one perspective) are incomplete and imply stereotypes. Although it was my intent to include a rich history that translates to the development of a new improved place, it is understood that the words here are not representative of the entirety of the National Guard population or even the New Mexico National Guard. This thesis is not meant to be the ultimate solution of place over time, but a mere interpretation from my perspective. Given the space within these pages, it does fall short of the depth and grandness of our history.

I would like to start at the beginning and lay the foundation for how the New Mexico National Guard could pursue future planning endeavors, which will include their ideology and contributions to and from the community, in giving them the spaces they deserve.



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## Chapter One: Introduction

As a New Mexico National Guard member, I have deep-rooted pride and abiding concern for the mission of the National Guard; it has become a facet of my life that I am proud to serve and defend. With great admiration for those who served before me and those who have yet to come, I have a pronounced desire to improve and refine the spaces in which the National Guard occupies.

I have chosen to focus on the physical development of the New Mexico National Guard to adapt the campus design concept to a military installation. My personal experience has been that the physical place does not correlate with the long history of New Mexico National Guard's identity and culture. My assumption is an organization of this caliber would desire to create a place that is representative of the culture, history, and experiences of the men and women who defended our great nation and state. While there have been efforts to implement features that display our culture, the holistic coordination of stakeholders has been minimal. Analyses that follow will address how to meet the aspiration to create a show case site that incorporates military regulations and directives, traditional campus design features, sustainability, and technology.

In order to address the current disconnect, the strategy I will use to assess and provide conclusions will progress through this study, organized by a chronology of background information defining historical practices of each respective area to current findings.

I will begin with the literature review, which will identify overarching information influential to the development of the military and campus planning and examine the nation, through social and political changes over the years. The literature

review will address secondary research through consideration of completeness, accuracy, and relevancy to my topic as well as shortfalls or areas that I would have liked to see more of to establish a wholesome perspective.

In chapters three and four, I will engage in specific historical context that created our development in the National Guard and the construct which further establishes my assumptions of a place that requires intervention.

Chapter five links back to the literature review, introducing specific traditional university campus design features while detailing those that are of benefit and aligned with current military doctrine.

Chapter six provides insight on the research methods, results, and implications as a whole; it identifies how the participatory research process was conducted through multiple focus group settings and provides discussion on the results. This chapter will include a conclusion of assumptions for an integrated campus design developed as a result of the historical references of place and culture, the design taxonomy both traditional campus, and the military through the lens of the user that resulted from the focus groups.

Chapter seven will present the military campus design concept applied to the study area – the New Mexico National Guard Oñate Complex Training Site, Santa Fe, NM. Chapter eight will allow for reasoned discussion defined by the research and developed through a succession of reflections and applications, whereby I establish my opinions and recommendations as well as areas that still require additional research.

This thesis will advance planning in the National Guard through research by developing linkages of past, present, and future endeavors, identifying shortfalls of

current planning doctrine; and establishing the need to define place through integrated design.

## Chapter Two: Literature Review

The literature review will develop in two general areas: a thriving force worth remembering and a distinct military campus. In the former, I will examine research that outlines the importance of the National Guard (also referenced as the Guard) to the nation and establishes regional concepts that demonstrate the development process. The thriving force will reference standards, stories, and examples from adept authors of the Guard's rich history. The section will provide a chronological development of a force that has been relied so heavily upon throughout history.

A distinct military campus will reflect on general roots of campus planning from the military perspective, which is presented in the development of military academies such as the New Mexico Military Institute, Roswell, N.M., and the United States Military Academy at West Point, New York. The section will also look at the establishment of campus origins in planning that relate back to European heritage. The initial American campus planning effort was created by federal policy. The introduction of campus planning to military and civilian educational facilities garnered more federal dollars and was logically adopted by many institutions. This section will create the framework and reference points for the next chapters, which will offer definition of a campus historically represented by military institution as a nation.

### ***A Thriving Force Worth Remembering***

The informal development of the volunteer militia required a personal defense of freedom to create a future for this country. In spite of the meager beginnings the militia constituted several ideals; to defend freedom, serve the law of the land, and maintain

order. A weekly publication called, the *National Guardsman* (August 1877) identified the “cardinal principles” that followed the declaration of the organization:

We believe in the National Guard – In its divine authentication, its present purpose, and the glorious possibilities of its future...

We believe in rifle practice as an important element of National Guard education – its benefits in promoting manliness, healthfulness, self-reliance, coolness, nerve, and skill...

We believe in efficiency on the part of the commissioned officers – that the day has gone by when good-fellowship, a plethoric pocketbook, or political influence could command a commission.

We believe in the moral influence for good of the citizen soldiery – that the armory and the parade ground, so far from constituting places of contamination, comprehend schools wherein the members of the National Guard may learn their duty to God and man. (Derthick 18).

Based on my research, my interpretation is that this all-volunteer force began with no place to occupy and provide defense from, no weaponry to defend with, and no uniforms to establish their identity. Subsequently, a requirement began with the Militia Act of 1792 enacted by the second United States Congress. The men of the time were obligated if healthy and between the ages of 18 to 45 to defend their communities, own their own weapons, as well as be available to engage in conflict to establish peace within their nation and state. The requirement, although costly, was a necessity to their way of life for which great pride was taken.



Robert Fogelson, an instructor for the Massachusetts Institute of Technology (MIT), teaching the built environment of urban America – among other areas – focused on the establishment of the armory as a building type for which much was to be understood. The political and social institutions were the fabric which fashioned the development of the armory.

Fogelson indicated, that the diverse organization of the militia attracted men across all classes and ethnic groups, but cautioned that the requirement to own your own weapon, uniform, and pay dues was not something every class could afford, thereby, to the exclusion of poor and colored men and women. This misconception was found in earlier authors' works that the fighting force was all-inclusive may have been inaccurate or an overstatement of the actual practice. Other accounts provide more detail that portrays the institution as primarily for social gatherings of the elite. Although this may have truth, the responsibility to defend the nation was still prevalent and shared by many.

As the military became an established organization within the country, both that of the regulars and the all-volunteer force were seen as necessary contributors to withstanding attacks and defending our nation. From the year 1775 when the first Continental Army was created, the need for a standing Army was evident based on the heavy reliance on the volunteer force. Federal funding began to equip the regular army with uniforms, weapons, housing and training areas.

Conversely, the Armory Law of 1863 directed each state to provide armories for state militia units (Everett, 13). The funding for the National Guard was split between federal and state (as states gained statehood) and still remains that way today. In the beginning of the nineteenth century, the volunteer militia was housed in rented spaces

and locations for which the state did not have a necessity. These establishments were not suitable to train companies, and did not maintain security of weaponry, but did suffice for a time. Funding began to trickle in for weapons through the state, which was the catalyst to the establishment of a place which would allow companies to defend; a place that constituted their community and designated their pride and patriotism.

Martha Derthick, a political scientist who has written many books on politics, gave special interest to the National Guard in *The National Guard in Politics*, providing insight into interesting dynamics and justification for the organization. One clear definition was the fact that, though all able bodied men from the ages of 18 to 45 were subject to the Militia Act, not all did, which was the reason for the organization of the National Guard Association to gain federal legislation that differentiated the “organized” militia, which were those that actually did contribute to wars, and peace keeping efforts, from the unorganized (Derthick 28).

In the late nineteenth century, the state budgets were far greater than that of federal allocation. During this time, “The Guard was four times the size of the Army” (Derthick 22). Many different opinions about the surge in force were attributed to the labor riots of 1877 and the increased need to keep order. A historical account of the Army National Guard entitled, *I Am The Guard: A History of the Army National Guard, 1636-2000*, indicates that, "In 1895, state military budgets reached an aggregate of \$2.7 million, far overshadowing the annual federal allocation of \$400,000" (I Am The Guard 109).

In 1897, the Territorial Militia became the National Guard of New Mexico which changed the perspective of those in communities and within the nation. During this era

much of the large state budgets were allocated to the construction of armories. "Across the nation, Guard units abandoned borrowed public facilities and rented space in private buildings and moved to new armory buildings" (I Am The Guard 109).

The general trend of armories in the nineteenth century was that they were made to be defensible structures that resembled fortress castles; a castellated style with towers, turrets and parapets. "Soldiers and civilians alike believed that castellated armories constituted safe sanctuaries in urban centers from which Guardsmen would emerge to quell labor disturbances and urban rioting" (I Am The Guard, 109).

The new look of armories contained designs that provided for floor space appropriate for social clubs and gatherings as well as contemporary designs that could facilitate training as well as the storage and maintenance of weapons and equipment. "Federal regulations mandated new, stringent requirements for properly storing arms and equipment and accounting for government property even though armory construction remained a State responsibility" (I Am The Guard 132).

One important aspect of the design of these armories was that there were spaces that appeared to be divided along functional lines: main entry way, drill hall, administrative offices, classrooms, an arms room, and stables. This type of arrangement is still prevalent in the guiding regulation established for the construction of these facilities as well as in the space analysis requirements.

Dianna Everett authored a book titled *Historic National Guard Armories; A Brief, Illustrative Review of the Past Two Centuries*, which provides details on architecture and general trends and function of the armory as a defensible space, as a training ground, and as a place of community. "The armory movement spread from New York throughout the

states of the Northeast and Midwest, where cities, towns and regiments competed to build the largest most elaborate armories. In the decades between 1880 and 1910, literally hundreds were constructed” (Everett 13)

An architectural account specific to the Department of Defense (DoD) called *The Architecture of the Department of Defense: A Military Study Guide*, produced by Michelle Michael, Adam Smith, and Jennifer Sin, proved interesting and helped to identify major trends of architecture throughout history. The publication allowed insight into the places that have a more public and published history, such as New York, Philadelphia, and Baltimore. Although difficult to locate specific trends in New Mexico, some examples were found. Research in this area will continue beyond this study, but specific references in chapter three provide some detail.

Several states have recognized the importance of historic preservation and initiatives that sought to maintain the antiquity of the Guard are compiled in a report entitled *Still Serving: Reusing America’s Historic National Guard Armories*. Some states have been able to partner with public and private organizations to convert armories to museums, community centers, or educational facilities to enable the armory to continue to live as the heritage that once bound the community together. The Department of Defense asserts through policy DoDI 4715.16, 2008, that preservation endeavors should be achieved if cultural resources are done so through a sustainable comprehensive program, ensuring support for the mission and stewardship. Though there is a regulation guiding determination of cultural assets which include historic structures and buildings, the primary guidance from the National Guard Bureau focuses on sustainability, the reduction of the overall footprint, and elimination of old infrastructure that is costly to

repair. From the perspective of stewardship and fiduciary responsibility to tax payers, it is justified to streamline and modernize facilities in the National Guard.

One perspective of a former Adjutant General of New Mexico from 1983-1994 and then Chief of the National Guard Bureau from 1994-1998, Lieutenant General Edward D. Baca, taken from a publication entitled *Still Serving: Reusing America's Historic National Guard Armories* reads, "Mobilization and training are first considerations, [old armories get] landlocked [and cannot support the modern training requirements for a unit that operates big equipment]. No matter how beautiful it is, or how historic it is, when old armories are landlocked there isn't time to find an alternative use for the building. The armory can live on; it just won't be with a National Guard unit inside."

General Baca makes a valid point in the recognition of place and culture, counter to the requirement of practical purpose for the mission. However, given the rich identity of these structures, one would hope that a historic program exists to facilitate the transfer of these historic artworks into a functional space as part of a greater repurposing initiative. After all the beauty of these armories is what inspired this thesis.

Further recounts of different places in time identified by Fogelson, from the eyes of an 1894 architect, "[The armory should] be the perfect embodiment of the spirit of the regimental life in peace or in war; which practically means accommodations of every sort for the occupation by the organization, for maintaining them in health, for sustaining life in case of siege..." (Fogelson 46).

During this time much of the nation's focus on policy was refining the Department of War and general military strategy. The Militia Act of 1903 and the

National Defense Act of 1916 established the National Guard as a necessity to the federal government through law as a reserve force. It was at this point in 1916, that drill pay was authorized by the federal government. The National Guard was developed politically and provided for federally while still keeping its identity as an independent state force, formed only by war and conflict. Another important event occurring because of the National Defense Act was the independence of the National Guard Bureau (then called the Military Affairs Division and later the Militia Bureau) from the Department of War. The National Defense Act of 1920 provided that the Bureau be headed by a National Guard Officer who would also serve on the General Staff of the War Department. In 1933, the Bureau was officially named, the National Guard Bureau (Derthick 40-44).

As the Guard became more prevalent and used in federal service, times changed from the initial institution of primarily state funded armories. Upon recognition as a federal entity having a designated office within the Department of War, the funding streams shifted. Derthick notes, “[Soldiers were] recruited under federal statutes, paid with federal money, equipped with material procured by the federal government, and housed in armories for which the federal government had paid much of the construction costs.”

As social philosophies changed, armory functions also changed. “[Armories] were to become both training facilities for local citizen-soldiers and centers for the community events and gatherings - serving the citizens who served in the Guard" (Everett 23).

The period of the defensible places changed into a variety of different styles based on materials within a locale. Though the federal regulations still implied separation of functional spaces, the architectural styles varied.

“President Franklin Roosevelt's New Deal for America inaugurated the second great wave of armory-building and changed the face of armories for decades to come” (Everett 33). By the mid 1930's, 866 National Guard armories were constructed in the U.S. More than 500 were remodeled by the early 1940s and another 400 newly constructed as part of the Work Progress Administration (WPA) and the Public Works Administration (PWA) initiatives.

The New Deal for America was poised to create work for Americans by initiating the construction of armories, these projects were able to be professionally designed and constructed by laborers skilled in development. The design of armories was to be created with community activities in mind.

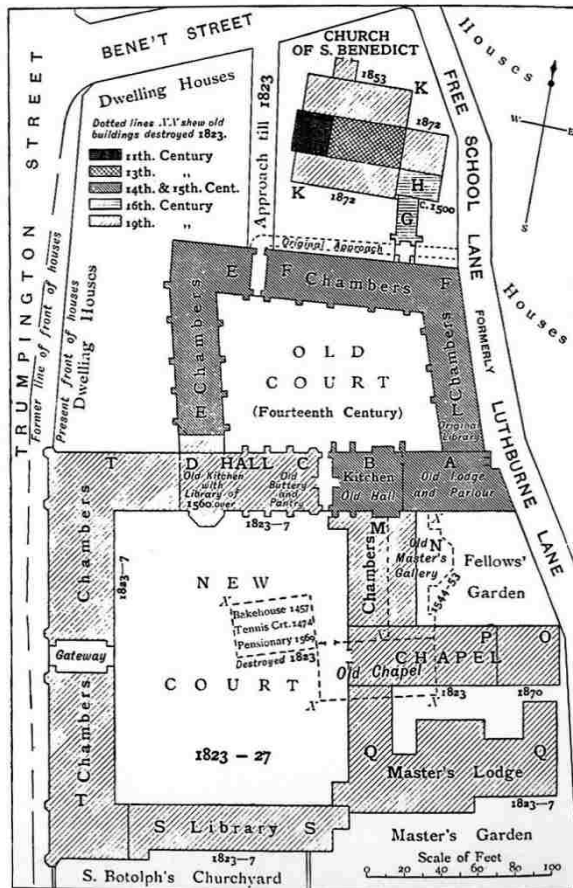
In the 1930s and 1940s armories became the community center, the basketball court, the dance hall, and the performing arts center. “By the end of World War II, the armory had come full circle from its public market days of the early nineteenth century to a renewed public purpose in the mid-twentieth century” (Everett 40).

It was originally thought necessary to create a fortress to defend from. Although in the days past the demonstration of military force may have been enough to deter the enemy, in present day the enemy is disguised among the population. It would be more prudent to defend from places of heightened technological advances planned specifically to be defensible, but camouflaged to fit within the fabric of the community.

The Guard's rich history and development of place has been impacted through political shifts and efforts of the nation. The historical roots have been disturbed many times within the long history, making it difficult to make reference to the identity within the built environment.

## A Distinct Military Campus

The quadrangle, as seen in the Palace of the Governors development and other military posts in New Mexico and the U.S., was created in this fashion to house multiple activities under one roof; sleeping, religious services, collegiate practices, and administrative functions as well. In the southwest, the military called that of the quadrangle the presidio – a military complex. The quadrangle has some architectural



**Figure 1.** This plan of Corpus Christi College, Cambridge from the 11th through the 19th centuries demonstrates the similarity in design to the presidio of the 17th century in America

features that were redeveloped into the armory of the late 19<sup>th</sup> century. It served the same function, where soldiers were required to train, conduct physical fitness, conduct courses, live, and have social interaction areas within one space.

A study was done in 2001 by Ronald Luther Peters which compared the New Mexico Military Institute with other military campuses created in the same time period; Fort Union, NM, United States Military Academy at West Point, and the Virginia Military Institute. The study indicates that the

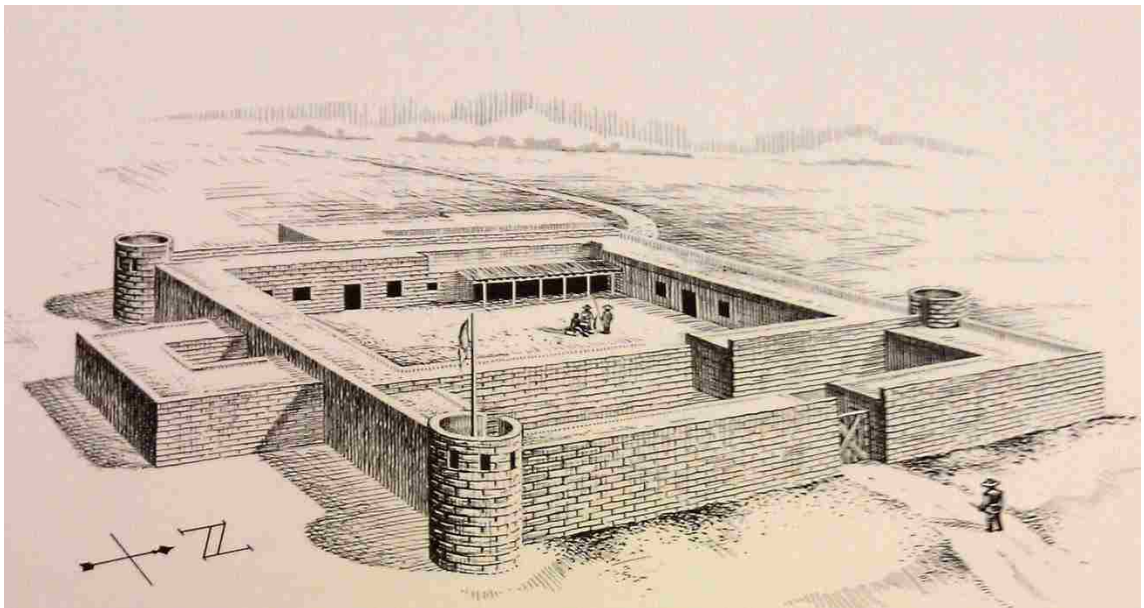
beginning of campus development really began with the passage of the Morrill Act of 1862 allowing states and territories with funding to develop colleges. Because social and political interactions of the time, as well as the requirement to have a standing military,



many of the schools did offer military training without being categorized as a military school. The Morrill Act did not require colleges to have a military training curriculum, but it did authorize additional monies for the institutions that chose to do so.

Campus planning's roots were transferred to the U.S. from European countries whose institutions were far more developed. Over the course of development it should be noted that campus planning didn't always signify well-planned spaces, it was traditionally the administrative professionals and heads of schools that planned and developed their grounds.

The display of the Columbian Exposition of 1893 established the authentication and need to have order in planning. This World's Fair was held to mark the 400<sup>th</sup> anniversary (the year prior) of Columbus' discovery of America. Architect and urban designer Daniel Burnham (1846–1912) and landscape designer Frederick Law Olmstead (1822–1903) were primarily responsible for the enlightened perspective of planned



**Figure 2.** The presidio Janos, the Spanish province of Nueva Viscaya (currently Chihuahua, Mexico) is an example of the architecture developed around a courtyard exactly as the early campuses were, yet called the quadrangle. The military presidio was a defensible structure, but still held the same value as the quadrangle buildings in that the purpose was to house many activities under one roof.

places.

The World's Fair established a benchmark for which future planning should be done. This movement, which focused on beautification of cities provides a good Segway to introduce Richard Dober; the author of *Campus Landscape: Functions, Forms, Features*, which offers designers of new colleges and old colleges to find within it principles of arranging spaces and buildings as a method for giving some control to a campus's growth.

Another gentleman, Ralph Adams Cram, a prominent twentieth century architect, indicated that, "The typical English quadrangle arrangement was abandoned for a grouping of isolated buildings, at first more or less formal, then developing into final chaos as other men with other minds came on the scene and placed their buildings, and designed them also, at their own sweet will" (Peters 49).

"The keynote to development is order," wrote by Charles Klauder, who said that groupings of buildings "should be homogeneous, clearly to be an apprehended scheme, in which there is a studied and happy balance of things, of buildings located with regard to their functions, importance, and architectural effect" (Peters 54).

Planned campuses have relatively formal and informal schemes with which Klauder indicates that the symmetry of buildings should be relative to the plain of the land. The less consistent the topographical outlay is, the better a cluster scheme works for buildings.

Peters concludes his thesis with the summation of military schools being unique in the art of campus planning. "The controlled movement of the Corps of Cadets throughout a campus en mass requires large boulevards and paved areas and the use of

large open space known as the parade ground.” Peters specifies the importance of the relationship between the design of the buildings, campus, and military lifestyle in relation to the parade grounds.

My experience in a training atmosphere is reminiscent of the great parade ground, situated in the heart of the installation, composed to fit thousands of service members, to host grand ceremonies, and to mark the great tradition of customs and annual encampments. A more modernistic approach is to allow the campus to be flexible enough that the place designated for unit formation and physical activity can be done in multiple locations on any military installation. Other features important to the early twentieth century development were barracks, mess halls, and stables for the cavalry.

No matter which design scheme was used, the most prominent feature in any of the military academies or forts during this time was the parade ground with defining structures surrounding the space. In 1860, the Quartermaster General’s Office of the Army published standards for the design of facilities, which appeared to be replicated in many of the forts in New Mexico. Similar to present day, many of the National Guard and Department of the Army regulations offer specific instructions on how to accomplish the design and construction of facilities to meet the federal standard.

The design of facilities and construction requirements has been very specific and detailed from the mid nineteenth century; however, when looking for iterations of planning guidance through the years, I was only able to locate a few publications. More recently, there was a technical manual published by the Army Corps of Engineers, dated March 2011, that modernizes planning to meet the criteria of today’s military, although not necessarily specific to the National Guard. Additionally, a Unified Facilities Criteria

(UFC)<sup>1</sup> on Installation Master Planning (UFC 2-100-01) was published in 2012, which offers current practices in planning and sustainability and guides installations toward a smaller carbon footprint and more efficient utilization of space. Other relevant details of this UFC include details that provide guidance on walkability, connectivity, mixed use development, energy conservation, building automation, and general sustainability practices.

The military has typically been concerned with measured quantitative data with respect to planning. The past has set us on a road of counting installations, acreage, square feet, and uniformed personnel, which have created a lack of detail placed on the quality of place. A good majority of the armories constructed in the U.S. were done in mass during World War II, fifty years later emphasis has shifted to cross between reinvestment or divestment in the deteriorating buildings and aging infrastructure.

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<sup>1</sup> “Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, and Defense Agencies, and the DoD Field Activities in accordance with USD (AT&L) memorandum dated 29 May 2002.”

## Chapter Three: Exploring Place

The exploration of place within this chapter will include a chronological review of the legacy of the National Guard throughout New Mexico over time. This thesis has displayed political and national concepts broadly and seeks to provide insights for what occurred in New Mexico historically with regard to the inhabited places our Soldiers kept. It is merely an informative journey into the development of our tradition and origins. This chapter provides insight into the presidio, the armory, and the readiness center and then attempts to identify a solution to better facilitate future planned spaces.

### *The Presidio*

In 1610, Governor Don Pedro de Peralta laid out the site where Santa Fe's Palace of the Governors is located. The building was developed to be a "quadrangle-shaped courtyard" which is still represented is the Plaza Mayor of Santa Fe. The plaza was, and is a central feature of Spanish towns and cities. The quadrangle of the presidio structure is

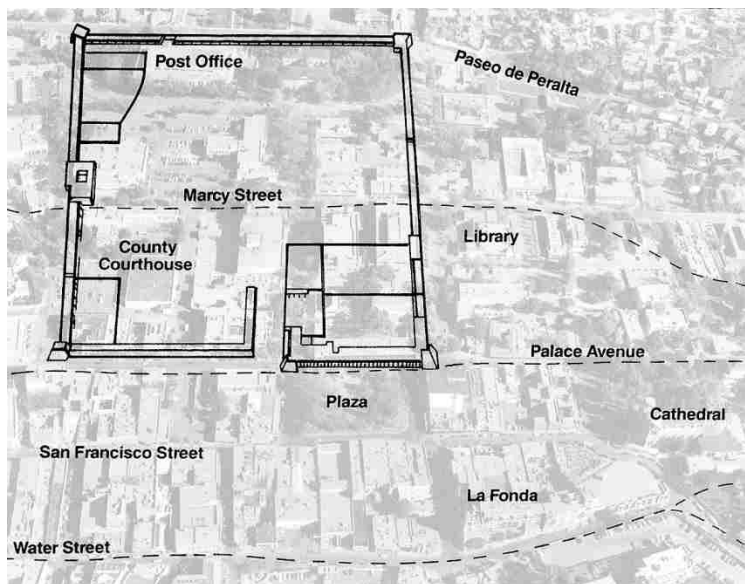


**Figure 3.** The photo above is of a painting by Roy Grinnell, taken from the book, *Santa Fe History of an Ancient City* of "Don Pedro de Peralta surveying the site for Santa Fe in 1610.

now filled with multiple buildings which encompass galleries, stores, restaurants, offices, and other businesses. The architecture of the presidio represented a combination of Spanish and Pueblo influence, which merged, creating a unique architecture of the period and has been the framework for development in Santa Fe. After the Pueblo Revolt of 1680 and the resettlement of Santa Fe, the Palace of the Governors and the Presidio was located on the north side of the quadrangle.

Between 2002 and 2007 archaeological excavations were conducted as noted in the book *Santa Fe History of an Ancient City*, revealing that there were adobe-walled barracks (fortified) spaces twenty by twenty five feet with fireplaces and store rooms used by soldiers. Additionally there was evidence of a butcher shop with a large volume of sheep, goat, and cattle bones indicating that the space was highly utilized. “The plaza de armas (parade ground) outside the palace later became part of Fort Marcy” (Quesada 24).

“The presidio of Santa Fe, New Mexico (1610-1680, 1692 -1846), was originally



**Figure 4.** The map is of current day Santa Fe, NM, but the overlay depicts what the presidio of the 18<sup>th</sup> century was. Picture is from *Santa Fe history of an ancient city*.

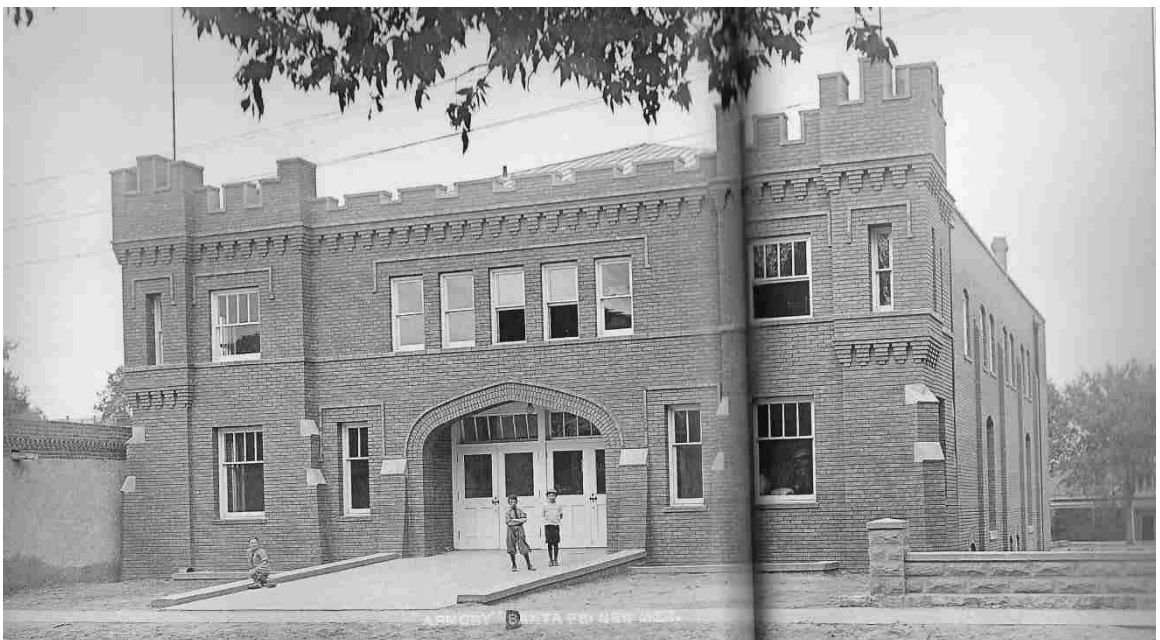
named La Villa Real de la Santa Fe de San Francisco” (Quesada 25). The presidio in Santa Fe as the state capital was established during the Spanish colonial period and still resides today as the oldest territorial/state government building in the United States





Soldiers' past. Prior to getting federal or state funding, rosters can be found that have the signatures of Soldiers who donated their own money to facilitate armory space whether for social or military alliance.

“The word 'armory' is derived from the Middle English word 'armurie' in the Middle Ages, European fortresses, or castles, often had secure rooms, or armories, where military accoutrements and arms were stored” (Everett 2). The function of the armory still serves the original intended purpose, which was clearly stated by Everett to be a storehouse and/or manufactory for arms, ammunition, and equipment. Modern armories – now called readiness centers – are multi-functional assets that serve to meet the needs of all Soldiers and Airmen so that they may remain ready when called upon. As we will see, the armory has served multiple functions over time and it is revealed to be a place of community, safety and security; it houses the culture along with visually representing the many mission changes reflected in the history of the National Guard.

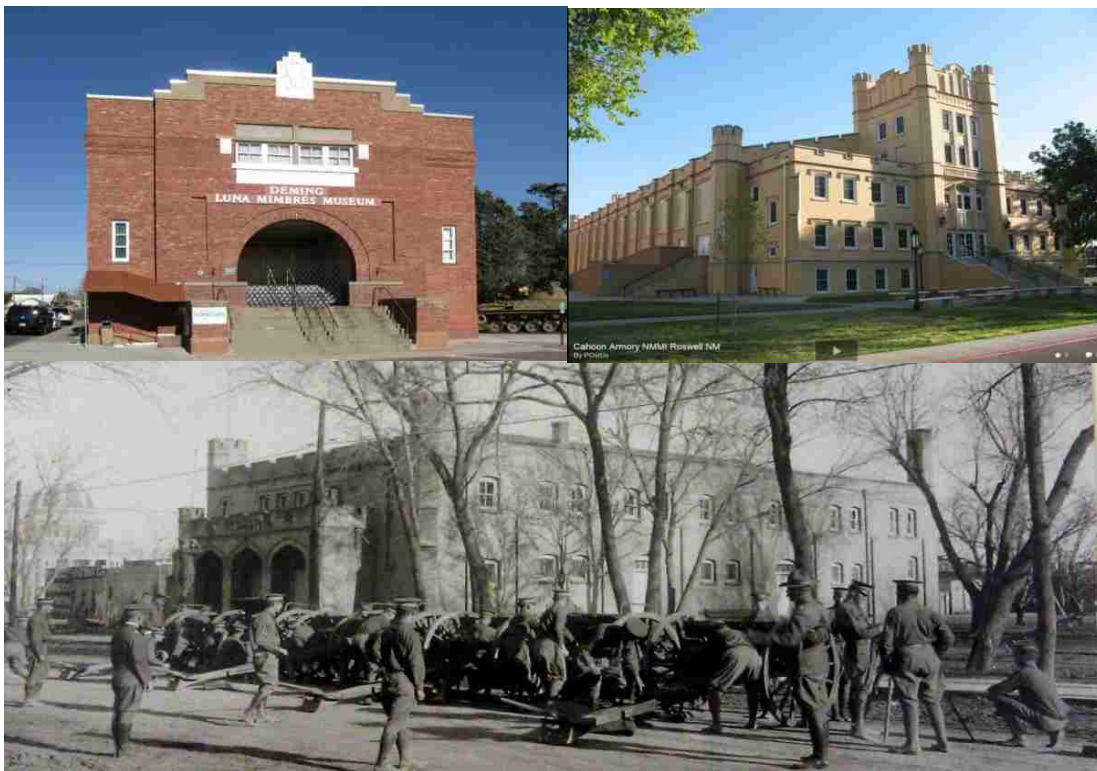


**Figure 6.** The armory shown here was built in 1909 on Washington Street. The Photo taken by Jesse L. Nusbaum, from *Santa Fe, A Walk Through Time*.



“The National Guard built this armory just north of the Palace of the Governors in 1909 to replace an older facility on Water Street. By late 1939, after another armory had been built south of town on Old Pecos Trail (now called the Bataan Memorial Museum). John Gaw Meem drew up plans to remodel the Washington Avenue armory in the new Santa Fe style, building a room onto the front and hiding the original fortress-like details under a coat of brown cement plaster" (Bustamante et al. 44 ).

In Santa Fe on Washington street, the armory was built in 1909 (see Figure 6.) and is now the Museum of New Mexico. The former armory was incorporated into the Museum of New Mexico (which is made up of many buildings and museums). Prior to the construction of this armory, there was an armory noted on the New Mexico



**Figure 7.** The Roswell armory (top left and bottom), (NMMI – Cahoon Armory) was constructed in the late nineteenth century and still remains today, although used by the NMMI. The National Guard maintains a separate location. The Deming armory (top right) built in 1916 for the New Mexico National Guard, converted to a USO during the WWII, and continued to be the armory of the community until 1977 when the building was purchased by the State of New Mexico and became Deming Luna Mimbres Museum.

Sandborne maps in 1903 as being located on Water Street. Preceding the establishment of the National Guard, the militia was typically housed in conjunction with the Regulars, or not at all. The uses of space are not well defined within this report, but it is assumed that the militia did collocate with the Regulars in some aspects dating back to the days of the Presidio, Fort Marcy, and then possibly in rented spaces.

Other locations throughout the state benefited from newly constructed armories as well. In Albuquerque the building was constructed in 1909 and was located on 5<sup>th</sup> & Silver. It was sold to the state and then served as an office building for some time. In 2011 it was converted to a parking garage. The first building on the campus of the New Mexico Military Institute in Roswell was designed by Columbus Carr and constructed in 1897. Finally the Deming armory was built in 1916 and is now the Deming Luna Mimbres Museum. Although the NMMI and the Deming armory are currently on the National Register of Historic Places (NRHP), the National Guard no longer maintains these facilities.

As a side note of historical preservation, the Bataan Memorial Museum is on the NRHP as well, but was constructed much later than those mentioned above, and still remains within the control of the New Mexico National Guard. Much more research should be done to gain a better understanding of the many places the NMARNG has occupied and created history in.

Historical accounts of the armory movement, the differing architectural construction, the shift in use of space from defensible structures to use as community spaces and markets, and the revitalization that did away with the history of our predecessors establish much definition to the path traveled thus far. It leads us into a new

paradigm still concerned with the federal and state mission, but with increased emphasis placed on budget constraints and facilities that face the challenge of regeneration to meet the need of the force for which the future is not known.

## Chapter Four: Defining Culture

“Manliness, physical fitness, duty, and discipline – these were the values that the National Guard promised to serve. It was a fraternal group that fostered loyalty, a social group that promised prestige, an athletic club that promoted physical vigor, and a military organization that offered the opportunity for service” (Derthick, 18)

The culture of the National Guard has been created over the course of four hundred years of service to the nation with varying degrees of operational tempo, political challenges, and differing national and state perspectives on function and use. Through it all one clear perspective has been that the National Guard, or militia in the days of first settlement, has functioned in the capacity of protecting community and serving our nation. With this great responsibility, there is much to be said about the culture and development of today’s force.

There is no other force that can match the mission of the National Guard. It is an accomplished, self-sufficient, multi-faceted agency operated by vigilant citizen-soldiers who have interest beyond themselves to protect our nation selflessly and courageously. The history of the past is a convergence of two time periods that begin at different points, but merge to create the National Guard legacy. The earlier of the two stories, the Spanish colonial militia, is specific to the history of the New Mexico National Guard, which creates a completely unique dynamic.<sup>2</sup> The history that follows is chronological, but there will be some overlap in order to tell the entirety of the two periods.

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<sup>2</sup> The other stems from the English colonial militias on the East Coast.

### *Spanish Colonial Militia*

The Spanish Colonial Militia history begins in Mexico, years prior to actually taking place in NM. “The word ‘militia’ comes from the Latin term *miles*, meaning ‘soldier’,” (Doubler 35). In 1636, the first official militia was enacted, however the concept of a militia has been prevalent since the beginning of time – as it is human nature to protect and safeguard family, livelihood, and self when required. New Mexico’s history with Oñate, the Adelantado (adelante, meaning forward, or roughly someone who is leading) begins when he took possession of New Mexico in April 1595 at the order of King Philip II of Spain through his Viceroy in Mexico City, Luis de Velasco, Marquis of Salinas.

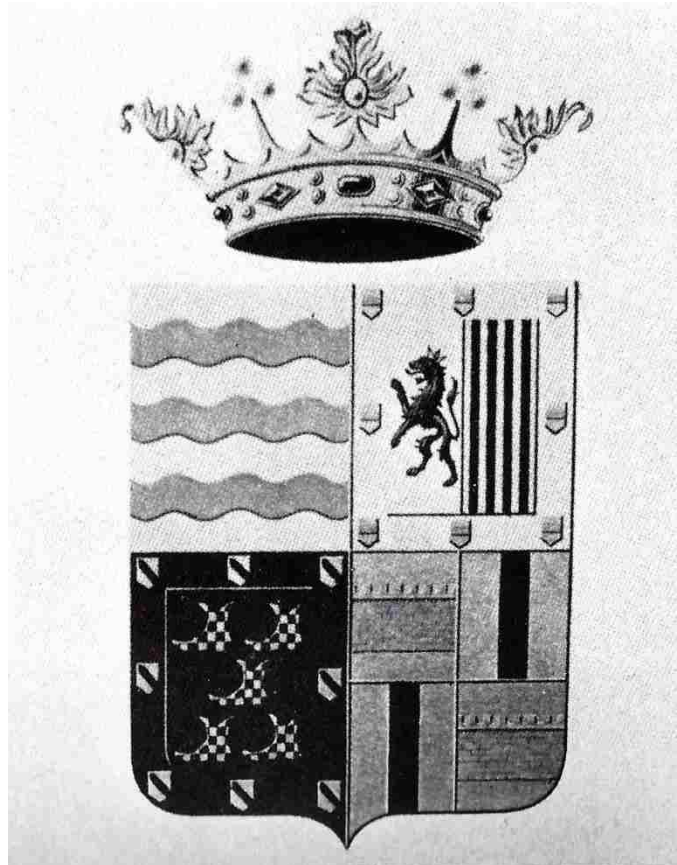
The Colonization contract was established authorizing Don Juan de Oñate to travel at his own expense with provisions of “200 men, thousands of livestock, tools and other necessities” (Jolly, Charleton, Poe, & Martinez 4). It should be noted that the research results fluctuated in the number of men or families that actually came, anywhere from 128 to 500. Many of the soldiers Oñate recruited brought their families with them to colonize the province. Onate originally set out to discover easy riches in New Mexico, but was never able to. During his time as the Governor, he settled San Juan Bautista (north of Española) and San Gabriel (originally Yungue Pueblo, commonly known as Ohkay Owingeh) and he erected the first church at San Juan Bautista, which was built by natives and colonists.

“One of the most distinctive Spanish colonial institutions brought to New Mexico was the *encomienda*, a means by which the Spanish Crown could reward men who played a leading role in the conquest of new territories, the reward being the right to

collect a designated amount of tribute from specified villages of native peoples” (Barrett 17). This brought about animosity and unrest within the territory. This system was replaced with the land grant system whereby land is granted to individuals and communities.

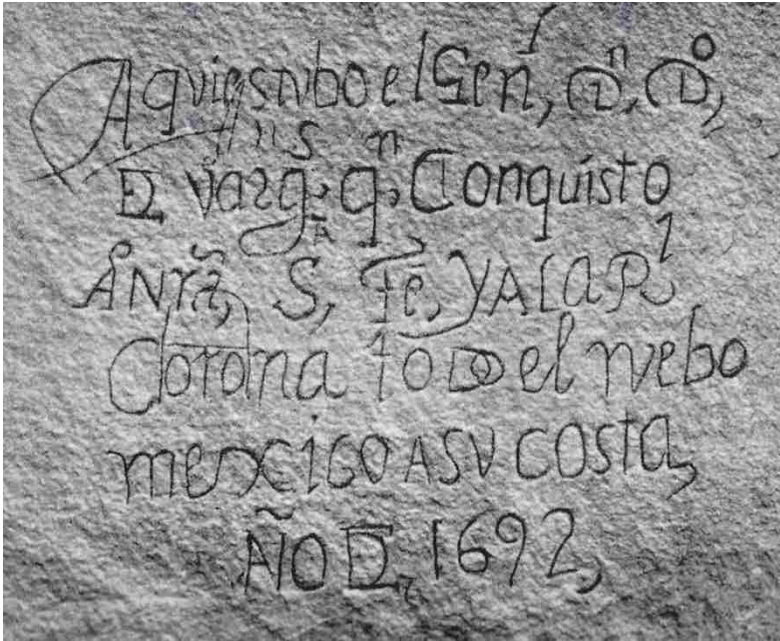
In 1610, Oñate was replaced by Don Pedro de Peralta who established the capital at Santa Fe, took over the legacy of Oñate and was the target of multiple roving Native tribes who sought brutal attacks on Colonists. The Viceroy of Mexico authorized troops from Mexico to be sent in as regular troops that would be able to engage and protect on full-time basis. The soldiers sent to Peralta were convicts from Mexico and, as punishment, were sentenced to compulsory military service (drafted) to complete their prison term. A replacement governor, Antonio de Otermin, was sent with

the convicts to settle New Mexico. The militia soon evacuated the Province when – in 1680 – there was a unanimous revolt of the Pueblos. The Spanish colonists deserted the populated settlements and fled south to El Paso del Norte which was still part of the



**Figure 8.** General Don Diego de Vargas’s Coat of arms. This picture was taken from the book, *Santa Fe history of an ancient city*.

province of *la Nueva México*. It was here that the capital of New Mexico would remain for almost a dozen years.



**Figure 9.** Inscription reads: “Gen. Don Diego de Vargas was here, who conquered all New Mexico for our Holy Faith and the Royal Crown, at his own expense, in the year 1692.” The picture was taken from *Santa Fe history of an ancient city*. This inscription rock is located at El Morro National Monument in NM.

In 1691, Don Diego de Vargas, a well-rounded and competent soldier, was appointed as Governor of the Province by the king through his viceroy. By 1692, Santa Fe was reconquered and the militia flourished. The *vecinos* (taxable residents) or citizen-soldiers were

heavily relied upon as Vargas had only a small number of Regular Spanish soldiers (Frank 122)

This system of military service was prevalent in New Mexico until 1846 when Brigadier General S.W. Kearney occupied Santa Fe and established a Territorial Militia. In 1851, the Territorial Militia created the office of Adjutant General as well as brought with it the establishment of a legal code, the “Kearny Code” or more formally the “Organic Law of the Territory of New Mexico,” which provided that the governor would be the Commander-in-Chief of the militia. During this time, the Missouri volunteers and the Americans merged in an effort to defend the territory through different initiatives. The Missouri troops brought experiences from the English Colonial setting, and the

Spanish-Mexicans brought ideas of their own with them. This was the first distinction between an organized (territorial) militia and an unorganized militia.

In 1862, the N.M. Militia was used to augment the Regular Army troops during the Civil War as the Confederate's aim was to capture Fort Union. The First Regiment, New Mexico Cavalry, the First, Second, Third, Fourth, and Fifth New Mexico Infantry Regiments, two regiments of militia, and the Independent Company of New Mexico Militia were part of the effort. The N.M. Militia – though understrength, under-trained with the majority of the troops being new recruits, and under armed with whatever weapons they had available from their personal collection – were able to apply economy of force by packing two mules with explosives and sending them off to the Confederate camp.<sup>3</sup> The troops effectively applied other principles of war to engage and make the enemy recede.

The all-volunteer troops were able to defeat the Confederates ending their occupation of New Mexico altogether. Historians note that the First New Mexico Cavalry and the Independent Company of New Mexico Militia “were the outstanding units on the Federal side” (Jolly, Charleton, Poe, & Martinez 8-9).

From the period of 1866 to 1883, the militia was called to duty multiple times to defend against raids and community “lawlessness”. The militia was successful at bringing accord to the territory and establishing order. In 1897, the Territorial Militia became the National Guard of New Mexico (Jolly, Charleton, Poe, & Martinez 12).

The specific three areas of importance during this time period were the Spanish influence and the negotiation of settlement, the unfavorable conditions to which the New

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<sup>3</sup> Though it has been said that the mule attack failed because the mules attempted to follow the saboteurs back to their own camp and exploded in the desert.



Mexico Militia was subject, and the long-standing enemies developed because of the leadership that beheld the militia. The establishment of the *encomienda* as a way of settlement in which soldiers were rewarded for taking from the pueblo villages was a profound mistake in that it afforded the entire military landscape to blame for the actions of the Spaniards and those that fell under their command. In addition, the diligence and efforts in war of the New Mexico Militia were equal to or greater than that of the Regular Army. These stories are valuable to the establishment of the heritage and lineage of our present day troops. It further validates the capability and effectiveness of the component as a necessary addition to the Regular Army.



**Figure 10.** “Rough Riders giving the oath of allegiance in front of the Palace, 1898.” Taken from *Santa Fe history of an ancient city*.

There are strong foundations in the Spanish Colonial Militia that represent Pueblo life and the influence of their traditions can be seen in the archaeology, insignia, and land

usage. Although the Spaniards brought a more independent lifestyle and were not so communal, there is much that they learned from the indigenous people of the territory.

### ***Colonial Militia***

The following narrative accounts for the American militia as it is presented in general history books, as opposed to New Mexico specific history. Some very familiar customs were established during the early years of our nation, most of which are still applicable and relevant in today's force. The foundation for the colonial militia was that every able-bodied man would serve with weapons under local leaders to defend his community, more specifically between the ages of fifteen to sixty. There were two groups: the common militia and the trained bands. The common militiaman lived his life as normal, but was summoned whenever a crisis arose. The trained bands were more proficient in their military skill and held musters regularly.

As noted in *American Military Heritage* by General William W. Hartzog, the original weaponry was mostly focused on developing gunpowder. The tactics of the time included a very organized battlefield in which the militia marched in columns and upon meeting their enemy, were deployed in ranks at least three deep. Until one side or the other could take the field through a bayonet charge. These men were required to equip themselves or face fines in some cases.

Development of the militia occurred primarily along agricultural lines. The system of defense included the militia as a volunteer force, the British Regulars.

During that time officers of the militia were elected by the troops and appointed into duty. The concept of a minuteman was resurrected after the Boston Tea Party which

enabled the officers to create one third of their enlisted troops to be prepared to respond and meet at prearranged posts within thirty minutes' notice (Doubler 42). This practice proved necessary then and still remains so today.

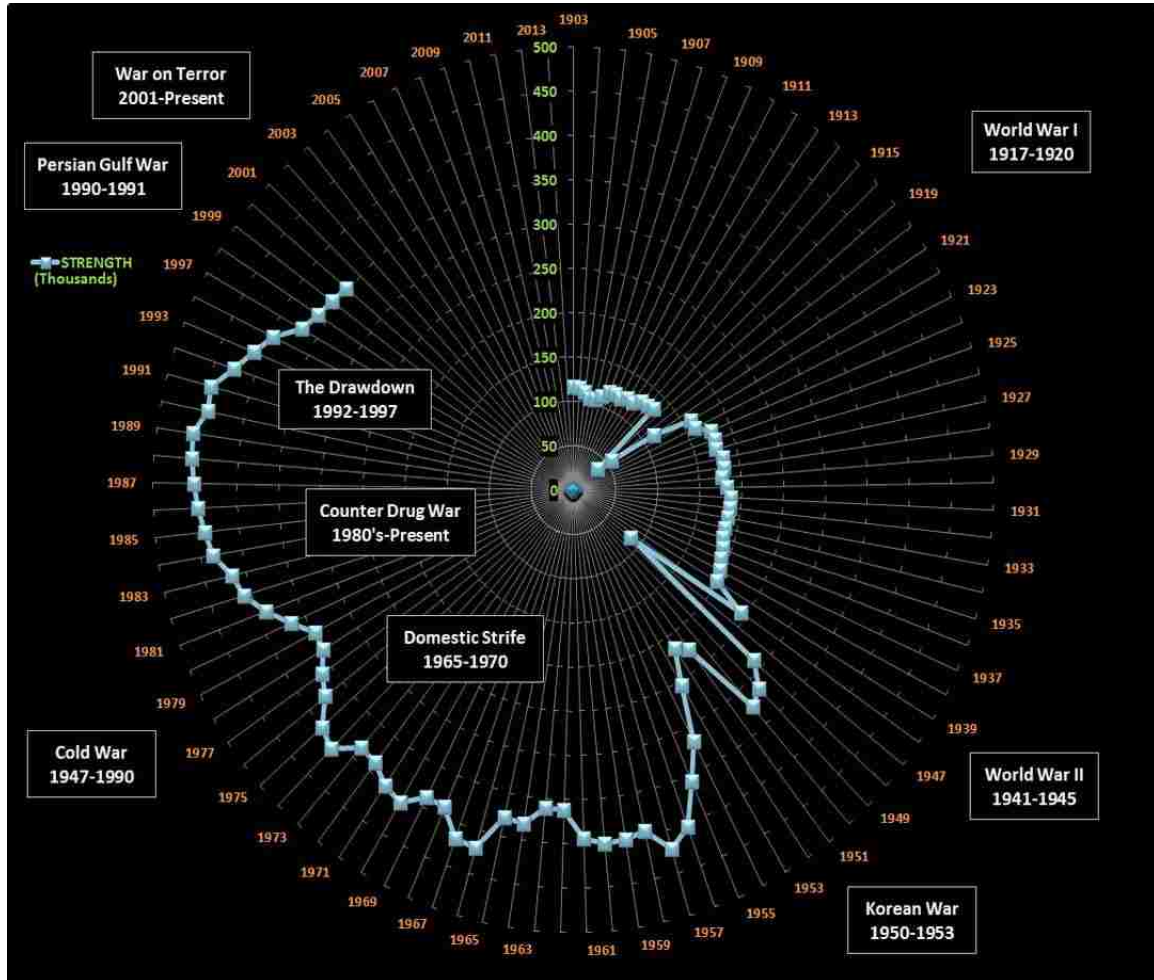
On June 14, 1775, the Continental Army was created as America's first official Regular force, 139 years after the establishment of the initial militia regiments of Pennsylvania, and more than 175 years after the initial settlement of Don Juan de Oñate when New Mexico's militia was fully engaged under his reign. Although the establishment of the Regular force ensures that there is a full-time force ready in times of peace and war, the traditional militiaman or guardsman continue to serve in the capacity as a citizen-soldier. Congress still required the vastness of the militia in that respect to serve alongside the American Regulars.

Throughout history, the U.S. military has been formed through experience with shifting political, social, and identifiably physical modifications such as uniforms, weaponry, tactics, provisions, technology, and even customs. Some of these were adopted by the foundational natives of New Mexico, the Spaniards, and the British. This expansive combination of depth and experience has impacted our nation in the development of our military culture.

The core of our existence lies in the lines above and guides our development through time; it sets the groundwork for the Soldiers we are today. It epitomizes the grandness of our existence, and simplifies the context which establishes our structure, goals, values, and focused fortitude. The embellishment of the pride of our country and history should be conveyed for all to experience; it is our heritage.

## Present Day National Guard Mission

“Over the past decade, Guard members have deployed more than 750,000 times in



**Figure 11.** This chart shows the total Army National Guard membership throughout the history of the nation and provides point of reference that represents the shifts in force and structure driven by war and civil unrest. This is a testament to the service and increased demand through American history of the National Guard as a thriving military force. More work will need to be done to compile Air National Guard data.

support of operations in Iraq, Afghanistan, the Balkans, the Sinai, the Horn of Africa, and other locations across the globe. Our nation has invested tens of billions of dollars in the National Guard and it has yielded a return that has produced one of the best trained, best equipped dual-mission forces in our 376-year history” (2014 National Guard Bureau Posture Statement 8 ).

Both the Army National Guard (ARNG), with an estimated 358,000 Soldiers, and the Air National Guard (ANG) with an estimated 105,000 Airmen, are currently positioned in every state, territory, and the District of Columbia. The issued 2014 posture statement identifies our country as having 2,511 Readiness Centers (armories) and 110 training centers where our Soldiers train to conduct real-world missions to defeat the constant plague of terrorism (2014 National Guard Bureau Posture Statement 10).

The ARNG has capabilities that support air and missile defense, combat teams (infantry, heavy, and Stryker), combat aviation, sustainment, and surveillance, as well as support, military police, engineer assets, and Special Forces groups.

The Air National Guard (ANG) contributes roughly 31% of the fighter forces with 1,160 aircraft, in 89 wings (also noted by the 2014 Posture Statement) as well as airlift, tanker fleet, intelligence, surveillance, and reconnaissance capabilities (2014 National Guard Bureau Posture Statement 11).

The array of forces within the National Guard has increased much over the years, advanced technologically, and contributed greatly to the defense of our nation.

## Chapter Five: Identifying Campus

This chapter seeks to provide for and articulate what campus planning is as a verb, how it is represented, and what it entails. The topic will be discussed as it is used in regard to universities and then translated into a military context. All references were gathered from university campus planning books; however, the information gathered is not only relevant to university campuses, it is directly applicable to any entity seeking to influence place-making in one aspect or another. While not every type of development would benefit from the features indicative of campus settings, the majority of public places and institutions do benefit from the characteristics represented here.

### *Defining Campus*

The term campus, by common definition, “is the grounds and buildings of a university, school, or college, viewed as an academic, social, or spiritual entity” (Campus). For the purpose of this paper, the definition indicates that the built form of a campus should serve a social entity that may be a university or spiritual organization.

While training in the field or on a mission, soldiers used to set up temporary camps, encampments, or bivouac<sup>4</sup> areas when training in the field or while on a route or mission. Although setting up encampments is still a regular practice, the term isn’t used as much as “field training,” or “going to the field.” One meaning of camp is military service or life, among other definitions. Another – yet similar – definition is encampment, which is a place where a group (a body of troops) is camped. The descriptions above, taken from Merriam-Webster on-line dictionary refer to the short-term occupation by

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<sup>4</sup> Bivouac is a temporary encampment under little or no shelter, usually for one night.

soldiers. This thesis is seeking a more permanent establishment of place that defines and reflects the culture of the using organization through design.

Additionally, the term complex is used interchangeably within the built environment with reference to a permanent grouping of buildings. Complex is defined as, “a building or group of buildings housing related units” (Complex). This expression is not comprehensive enough to extend to the parameters of what this thesis is attempting to accomplish.

The vocabulary above, although still used in some fashion, is dated and insufficient. In order to bring the concept into a more modern context, I’d like to use “campus” in reference to the long-term occupation of place by the military as a noun for a garrison<sup>5</sup> function. This assertion relates directly to the definition provided for a university campus by way of it being the “grounds used by a social entity” – even though the entity in this case is much more than that. Perhaps the definition of campus should be expanded to include not only social or spiritual entities, but all entities which have an organized structure and requirement for physical campuses that are well articulated and arranged.

Further discussion as to specific characteristics of traditional university campus design will provide a foundation for examination and application to the military campus concept. The elements contained in the following pages justify why campus design is a specific quality of place that exudes an expression, refined and tailored to the individuals who inhabit the space.

Henry Vincent Hubbard authored the earliest-found reference within my research to landscape design and its principles are still in use today.

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<sup>5</sup> Garrison is a permanent military post or campus.

All landscape designs differ essentially according to three factors in their making: first, their physical environment - the topography, country, climate, vegetation, materials of construction, and so on; second, the people who make them and for whom they are made - their nationality, traditions, tastes, training, and other social conditions; and third, really the product of the first and second factors, their function, the purpose for which they are made.

Some of the goals of campus planning include creating spaces that evoke history and identity, provide connected destinations, allow for informal social activity, provide for walkability, integrate sustainability efforts, provide functional spaces with access to services, and integrate patterns that create continuity established through design.

Typically when campus terminology is used, it implies a green, well-lit, safe, and diverse environment where people are encouraged to participate in the experience of place.

Institutions that incorporate the campus setting predictably will have a more pleased group of users than those that do not.

From the perspective of the President of the U.S. in the early nineteenth century, as indicated by Paul Venable Turner in his book *Campus an American Planning Tradition*:

While designing the University of Virginia, Thomas Jefferson described this goal as the creation of an ‘academical village.’ This term expressed Jefferson’s own views on education and planning, but it also summarizes a basic trait of American higher education from the colonial period to the twentieth century: the conception of colleges and universities as communities in themselves – in effect, as cities in microcosm.



The National Guard or military in general is also a village in its own right, a fully capable, functional independent community that has specific criteria that need to be met in the aspect of place making, but will be discussed in depth later in this chapter.

***Traditional Campus Design Taxonomy***

The biggest impact to the design of a campus is the organization of space which enriches the functionality and use (function follows form). Conversely, it may be the arrangement of use into spaces which influences the overall design (form follows function). Regardless of which component comes first, the end result should satisfy the needs of the user and demonstrate the most efficient use of space. We will begin to investigate the features that – when properly placed and aligned within the culture and history of a place – produce a unique, attractive quality that brings pride and honor.

The taxonomy within this context is used in a logical sense with no theoretical application or assumptions. Different feature types have been taken from Richard P. Dober’s *Campus Landscape Functions, Forms, Features* (2000) and concepts from Thomas A. Gaines’ *The Campus as a Work of Art* (1991) expanded upon, re-grouped, condensed, or dropped so as to easily fit into the proposed framework. Below are a total of five categories. Features within each category will be represented visually and with a general description and purpose as well as identification of usefulness in a variety of applications.

<u>TRADITIONAL CAMPUS DESIGN TAXONOMY</u>	
<p><b>1. Landmarks &amp; First Encounters</b></p> <ul style="list-style-type: none"> <li>Surrounds</li> <li>Perimeter</li> <li>Distinction Markers</li> <li>Gateways</li> </ul>	<p><b>4. Natural Cultivation Spaces</b></p> <ul style="list-style-type: none"> <li>Dryscapes</li> <li>Special Theme Gardens</li> <li>Amphitheater</li> <li>Playfields &amp; Recreation</li> <li>Nature Walks &amp; Trails</li> </ul>

<p><b>2. Circulation &amp; Interconnectivity</b></p> <ul style="list-style-type: none"> <li>Bikeways</li> <li>Threshold (gathering areas)</li> <li>Terminus (end of travel route)</li> <li>Parking</li> </ul> <p><b>3. Story Spaces</b></p> <ul style="list-style-type: none"> <li>Heritage</li> <li>Secondary</li> <li>Tertiary</li> </ul>	<ul style="list-style-type: none"> <li>Horticulture Gardens</li> <li>Arboretas</li> <li>Natural Preserves</li> <li>Landscape</li> </ul> <p><b>5. Refining Elements</b></p> <ul style="list-style-type: none"> <li>Signs</li> <li>Lighting</li> <li>Site Furniture</li> </ul>
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**Figure 12.** The chart above is a quick reference identifying all of the traditional campus design taxonomy that will be presented and identified below.

Military Design Guides and the Unified Facilities Criteria manuals initiate implementation of various levels of the categories below. I have identified each section within the traditional campus design taxonomy; however, within the same context I will provide further detail as to how the feature is translated within military doctrine to establish the requirement and defense of use.

I relied heavily on the Landscape Architecture UFC 3-201-02, February 2009, with Change 1 dated in November 2009, which provides technical requirements and design guidance for landscape site design and improvements for Department of Defense (DoD) projects. The critical requirements of this regulation are security, accessibility, sustainable development, and a planting and irrigation establishment period.

**1. Landmarks & First Encounters:** Landmarks and first encounters are all things that relate to the look and feel of a place as you arrive. These features have the ability to mediate between surrounding elements to make contradictory spaces more congruent, or they can propose immense differences in which there is clear delineation. The different types of features include surrounds, perimeter, distinction markers, and gateways or icons.

### *Surrounds*

pertains to the overall surroundings of the site – more specifically, the situation within a countryside, urbanscape, rural range, or within a



Figure 1. The Architecture building at the University of New Mexico, Albuquerque, NM, is edged by Central Avenue where the transition into commercial and then community space is through the

community. Surrounds could also be that which allows the site to be camouflaged within the locale offering a systematic transition of spaces, or distinct and obviously different – a patchwork of development. Some examples could be the transition from a campus to a business/community district as displayed in Figure 13 from the University of New Mexico, where landmark buildings define the delineation, but are allowed to blend through the courtyard that opens onto Central Avenue.

*Perimeter* is the area that surrounds the site, the edges if you will, and may be fragmented and scattered, unified and self-contained, as well as formal or informal. Some examples could be a campus surrounded by a forest or heavy brush, which would be more natural and less unified and self-contained.

*Distinction markers* are the features that indicate a beginning, end, or transition. They give the user cues through design that can be subtle but definite or substantial frames of space. The pattern of paving may indicate a marked transition into a crosswalk

or safe walking zone, or it could be a more obvious sculpture within a garden that captures the history and makes a statement about the place.

Finally *gateways* or icons represent those things that are definite identifiers of



**Figure 13.** The Cadet Chapel located at the Air Force Academy, Colorado Springs remains the centerpiece of the academy which is a military school for officer candidates.

space as a benchmark for entry or observation. It could be represented by way of art, building, or signage. Gateways are usually large scale, memorable, and may become a symbol of

identification. The United States Air Force Academy in Figure 14 displays a great icon for its site which is extended by a luscious parade field. This has become a substantial identification piece for the site.

## ***2. Circulation and Interconnectivity***

Circulation and Interconnectivity deal with the application of campus roads, walkways, bikeways, thresholds, termini, and parking within a campus. These spaces allow users of a campus to traverse a site with ease and fluidity, unobstructed, and on a continuous path. These are the critical assets that entice the visitor through organization and logical progression. All of the features within this category overlap each other and have shared spaces and interaction within their own definition.

Specificity in *campus road* design includes a feature that serves the campus, is not dominating, but allows for a continuous sequential pattern of differing, inviting, and

thoughtfully placed aesthetic and functional details. Although roads require responsibility to allow vehicles to transfer from one location to another, there are many elements that make a great street. Here I use road and street interchangeably. For clarification, the road is what facilitates travel from A to B, the street, also referred to as streetscape includes all that which makes up the path from the sidewalk or landscape strip, bikeway, road and median to the other side – which may include beyond the typical right-of-way. Roads should be safe first and they should have a hierarchy that is principal, secondary, and service oriented.

*Walkways* are spaces that should be functional, connected, convenient, uplifting and safe. Walkways can have a multitude of differing design patterns and uses. “In principle, a well-designed pedestrian-oriented campus will have most of its buildings, landscapes, and walkways within a largely vehicle-free zone whose diameter can be traversed in about ten minutes” (Dober 54). Another interesting perspective from *Approaches to Contemporary Campus Landscape Design* by Carol Johnson indicates it is important to influence pedestrian movement by creating "desire lines" which entice a walker to connect with another area within a campus through these lines. One very important consideration was expressed during a focus group for this project was stated that in planning walkways; always consider the disabled and the design's ability to allow for safe and continuous navigation.

*Bikeways* should be well articulated either as opined by Dober to be a bike route which is a right-of-way shared with a road; a bike lane, which provides space on the road to allow for bicyclists; or a bike route, which is a path specifically dedicated to bicyclists.

When designing bikeways, storage and parking should also be considered in weather protected areas of the site.

Bikeway and walkway methods required by the Landscape Architecture UFC seek to plan for fitness trails, bikeways, walkways, crosswalks, steps and ramps with the intent to make paths safe, identifiable, connected, and consistent. Fitness trails allow for troops to maintain healthy and required levels of fitness. Use of trails can be increased by added lighting, signage, furnishings, and harmony with other circulation patterns on the complex to include bike lanes, running track or trails and physical fitness areas.

When designing bikeways, they should be kept separate from fitness trails, walkways, and roadways. Considerations for the design of this feature are width, clearances, paving materials, stopping distances, path crossings and street crossings.

A “troop movement walkway” is a feature specific to military campus planning and requires that the walkway should allow four troops abreast to move unobstructed with a minimum of 10ft. (3 m). These walkways should be unbroken with a visual pattern indicating continuity. Crosswalks should be the width of the adjacent walkway or a minimum of 6ft. wide, maintain an unobstructed view, and provide for curb cuts to allow for wheelchair access.

The organization of the above features can be done through the design, which could illustrate visually the differences in use based on pavement or landscaping treatments. This is done typically to make a logical circulation system that is highly visible and widely used and, above all, incorporated into the land use plan to allow for sustainability.

*Threshold* is indicative of the ending or beginning of campus walkways. “The threshold areas are natural gathering places for conversation, conviviality, and participation in the common and corroborative activities that advance and enrich campus



**Figure 14.** Greenspun Hall, University of Las Vegas is exceptionally arranged to allow for a solar-panel covered courtyard area at the end of a stairway that provides a threshold for interaction and protection from the city streets. The picture on the right shows details that include lighting, landscaping, and site furniture.

life” (Dober 37). These places should include signage, site furniture, art work, lighting, and adequate covered areas that allow for protection from the weather. An example is displayed in the photograph of Greenspun Hall, College of Urban Affairs at the University of Las Vegas figure 15.

*Terminus* defined by Dober is the end of a travel route, or the pickup or delivery point. This terminology includes that of people, loading/unloading docks, recycling areas, mailroom, and trash containers. These are places of practicality and logical intuition; a lack of planning in these areas makes a prevalent point from the user perspective. The terminus should be well defined and logical to allow for pedestrian and large vehicle interaction. One well-planned space in this regard would be that of a school bus pick-up and drop-off lane. The one shown in Figure 16 is from the Del Norte High School



campus in Albuquerque, N.M., which has been re-designed to safely allow for heavy traffic as it is located at one of the busiest intersections in the state with a high volume of



**LEGEND**

- |                                 |  |                                |
|---------------------------------|--|--------------------------------|
| 1) Del Norte High School        | 5) Magnet High School (nex+Gen Academy)    | 9) Staff & Visitor Parking     |
| 2) New Proposed Soccer Field    | 6) Existing Student Parking & Bus Drop-Off | 10) Parent Drop-off            |
| 3) Outdoor Plaza                | 7) Industrial Arts and Fine Arts           | 11) Special Needs Bus Drop-off |
| 4) Existing Buildings to Remain | 8) Cafeteria                               |                                |

Figure 1. Above is a plan view of the re-design of Del Norte High School located in Albuquerque, NM done by the architecture firm Dekker, Perich, and Sabatini. This concept shows focus on the terminus areas by way of pick-up and drop-off zones so as to

vehicles during the morning and afternoon rush hour.

*Parking* is a necessity to most campuses, although much could be done to inform the space with qualities representative of a park setting in concert with the practicality of parking so as to reduce the typical vast desert of pavement.

Some important considerations to parking are ensuring handicap accessibility, ease of circulation, connected paths for pedestrians, way-finding signage, and design details that delineate spaces such as patterned crossing zones. Additionally, there is plenty of room to implement solar concepts or parking farm structures with landscaped roofs, especially in the arid climate of New Mexico. Please refer to Figure 17.





**Figure 15.** Above (left) is a picture of a solar “parking park” located in Cincinnati, OH. Above (right) is a picture of Pomona College in Claremont, CA which is a three story 600 space parking lot with an athletic field as a roof.

### ***3. Story Spaces***

Story spaces are spaces that have a distinct character about them, that revisit the past through the perspective of the community. The history and culture of time and place is projected through architectural patterns of physical structures and landscaping. These spaces are the most prideful and memorable of a community. The features included within this category are heritage, site history, secondary, tertiary, special theme gardens, amphitheater, and playfields and other recreation areas.

***Heritage***, also termed primary space, and site history have been grouped together because there is relevance and importance in placing them together. Although these groupings can stand alone, it seems to me that they should deliberately be combined and arranged so as to provide for a much more substantial presentation. These spaces are the grandest areas of a campus, they seek to draw people to them through the earlier mentioned “desire lines” where all paths connect here as a natural function of space. They provide visitors with strong impressions and signify the relevance of the community through a showcasing of organized well-kept gardens, artwork, green spaces, landscaping details, signage, and courtyards. These spaces have been termed “grove, quad, lawn, yard, green, oval, square, plaza, and mall” as presented in conventional higher education

platforms. They represent the community and speak to the relevance of space and time within the boundaries of place, such as shown in Figure 18.

*Secondary and tertiary spaces* are not as grand as those of the heritage, but offer



**Figure 16.** Artwork shown here is located at the New Mexico Veterans Memorial Park in Albuquerque, NM. All of these are excellent representations of site history, artwork, heritage spaces, and even secondary and tertiary spaces. The history and cultural education gained by assets of this nature is beneficial to the pride of a community.

the same appeal of design and fluidity. These areas can be found within a smaller scale, providing for more intimate groups to convene. The areas could be considered sub-nuclei cores throughout a campus. The secondary spaces can facilitate small groups, while tertiary spaces typically are designed for two to three users.

#### **4. Natural Cultivation Scapes**

Natural Cultivation Scapes include those areas defined by the natural environment as dryscapes, nature walks and trails, horticulture gardens, arboretas, natural preserves, and landscaping. The elements within this category have the ability to shape the form of space and transform it into enjoyable, even delightful surroundings. These concepts involve the plant and tree life, but don't necessarily have to be overwhelming to care for and water. The selective choices made in landscape design will allow flexibility within the planning of place. The long-term goal of having a well-rounded scene that provides

continuity to the physical buildings and structures will far outweigh the short-term initial cultivation.

*Dryscapes* include xeriscaped areas which are a combination of plantings that are hardy in arid climates and don't require as much watering and work well in dry conditions. These spaces follow general design guides of landscape architecture, as do all the rest of the features within this category. Some of the general design principles include composition which should be displayed in differing colors, textures, heights, forms, and materials (such as cobblestone, crushed rock, or even hardened dirt). Dryscapes should extend and enhance the physical form and function and provide patterns of continuity that tie the context together.

“Xeriscaping uses native, naturally-occurring plant material on the landscaping design to convey a sense of regional context while embracing sustainable landscape design and preservation of native and endangered species” (UFC 3-201-02 Landscape Architecture, with Change 1 - ufc\_3\_201\_02 45). Some techniques to implement an effective xeriscape design are selection of turf that require minimal water, design areas with slight depressions in the ground to take advantage of any passive water sources, and the use of pine needles, bark, or mulches to reduce water needs and weed growth.

*Special theme gardens* for art are representative of a specific characteristic or guiding harmony. Some concepts from a military perspective could be a garden for art that embraces different eras of war, intervals in time, or generations of service. Some examples of theme gardens are therapeutic ensembles for medicinal purposes, a replication of gardens from the past, or history of place. “They provide the setting and continuity for the people, events, places and artifacts which have contributed to the

changing scene of human experience and they represent an important link in our history” (Dober 63).

The *Amphitheater* (Figure 19) historically has been a place for entertainment and drama. The modern spaces can be that of a showing, or a presentation, but they can also



**Figure 17.** The above picture is an example of an amphitheater that complies with the topography of this site and has an additional arbor that layers an area for some protection of the elements providing a framed setting. This amphitheater is located in Magnuson Community Garden, Seattle, WA.

facilitate ceremonies, instruction, or exercise. The components of the amphitheater are the stage and the seating which is usually in a formal sloped space to allow those seated a good view from any angle. These spaces should be planned into the topography but could serve the same purpose from the aspect of a parade field on a military installation. The necessity of this space is subject to personal opinion, but they do provide profound appeal and character when incorporated with other features such as landscape, gardens, and even heritage space.

*Playfields and recreation areas* serve as the activity cores of a site and should be safe and fully engage participants to promote healthy lifestyles, social interaction, and

competition. From a collegiate perspective, they typically serve as the spaces that create champion athletes and garner pride and declare advocacy for team sports. From a military perspective, they would be the spaces that promote resiliency, physical fitness, even retention, as well as provide for entertainment while allowing troops to endure and sustain good morale. These could also be the places that are created to facilitate physical fitness testing and unit cohesion training.

Guidance from military regulation terms the above areas as “common areas.” One regulation specifies that within a landscape plan, these areas could be programmed for assets such as courtyards, parade grounds, recreational areas and playgrounds, monuments, landscape at main gates, and building entrances.

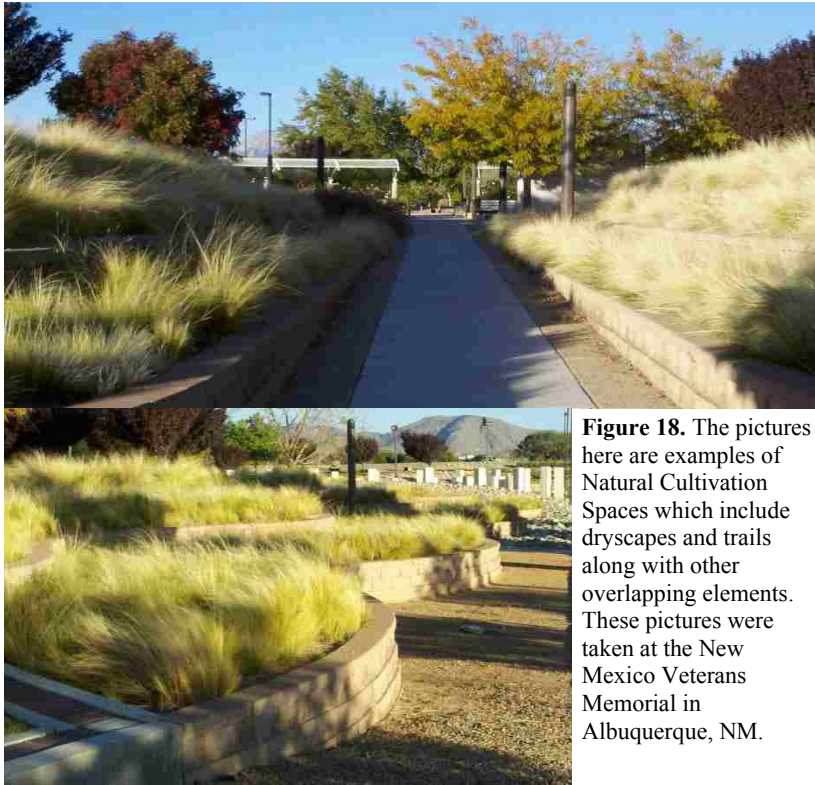
Courtyards should be created to allow for approximately a 4x4 foot space to a 12x12 foot space per person. The courtyard should have features that culminate the historic and cultural resources of a place or the community.

Recreation areas could be a variety of different features such as fitness trails, sports fields, picnic areas, or golf courses, and should be designed to meet the usage requirements.

Playgrounds should be designed to incorporate education, sports, recreation, low-maintenance surface, and planting details where practical. The main entrance and building entrance areas should be informed by antiterrorism force protection requirements.

Monuments are built to display the cultural and historical significance of a place and should be landscaped to allow for pedestrian walkability and visual presentation. It

can include monuments, free-standing equipment, displays, sculptures, statues, or even a plaque attached to a building.



**Figure 18.** The pictures here are examples of Natural Cultivation Spaces which include dryscapes and trails along with other overlapping elements. These pictures were taken at the New Mexico Veterans Memorial in Albuquerque, NM.

*Nature walks and trails* are walkways that have been enhanced to allow users to learn and experience nature while exercising. Typically, they are paths that have specific plantings with signage that provide details on the flora of the locale.

These can be incorporated into a site, but typically require that it be dedicated to a program that has oversight to exploit the full potential.

*Horticulture gardens and arboretas* have both been influential spaces in history. They began with Abraham Lincoln’s Land Grant College Act of 1862 (also known as the Morrill Act of 1862), discussed earlier in chapter 2, which established the importance of including these areas as outdoor classrooms to serve as extensions of the conventional classroom setting. Horticulture gardens are areas that offer a generous variety of specialized plantings. Arboretas are collections of trees, shrubs, and vines. The overall use of these areas is for display, study, teaching, and research. These spaces are most beneficial in a college or public facility setting.



*Natural preserves* are spaces undisturbed, undeveloped, and uncultivated. In natural form these areas are used to study natural resources or to protect those resources from development. Natural preserves may also be identified as cultural preservation, which contains remnants of the past and could identify settlement patterns or historical insight. These spaces may be areas that have been identified because to meet environmental requirements, but should be controlled if there is public access to keep the cultural areas sacred.

*Landscaping*, is inclusive of many different elements that have not been fully developed in previous discussions. However some attributes were covered in conjunction with other categories. I will provide information assembled from different sources; those specific to military requirements are more rigid as compared to concepts introduced in campus planning, but not rigid enough to identify specific requirements. Sustainability in landscape architecture, as described by UFC 3-201-02, should require less maintenance, not more, maximize installation operational efficiency, contribute to the overall visual quality of the installation, and increase erosion control.

Planting areas can be planned to support low maintenance constrained budget requirements based on plant type. Also, when planning to reduce solar glare, reflection, heat island-effect, trees can be located in a way that shades cars, walking paths and streets from the sun. Planting trees is a sustainable practice which offers improvement to the environment, shade, aesthetics, and increased security protection. The regulatory recommendation is that regularly spaced trees will be placed 25 foot to 30 foot on-center along roadways.

Grading and drainage concerns can be limited by adapting some of the features that are able to retain water well, such as rain gardens, bio swales, wet ponds, constructed wetlands, bio retention areas, and green roofs. Functionally, plants can be used to improve conditions of a site by improving energy conservation, wind control, noise abatement, security, glare control, surface erosion control, wildlife habitat, and wetlands. Plants have fantastic ability to advance place-making efforts by providing for visually appealing spaces such as streetscape way-finding, architectural softening, visual barriers to physical movement, screen undesirable elements, accent key places, and parking area buffers.

### 5. Refining Elements

Refining elements are inclusive of those things that may bind the physical patterns with the detailed information that is necessary to the navigation of place. They are those things that further refine and engage users and allow them the benefit of efficiency in decision-making and functionality. The composition of these assets – which



**Figure 19.** Above is the final plan scheme for Purdue University’s signage system which shows examples of signage from a regional scale to a building scale, to include a way-finding map shown on the right. This picture represents the importance of establishing path for which a site user can be guided logically through to each respective location on the site. This way-finding system brings users from the interstate to the site and then provides directional options taking them to an area, building, and finally to the destination while also offering the opportunity to provide visual appeal in an organized fashion.



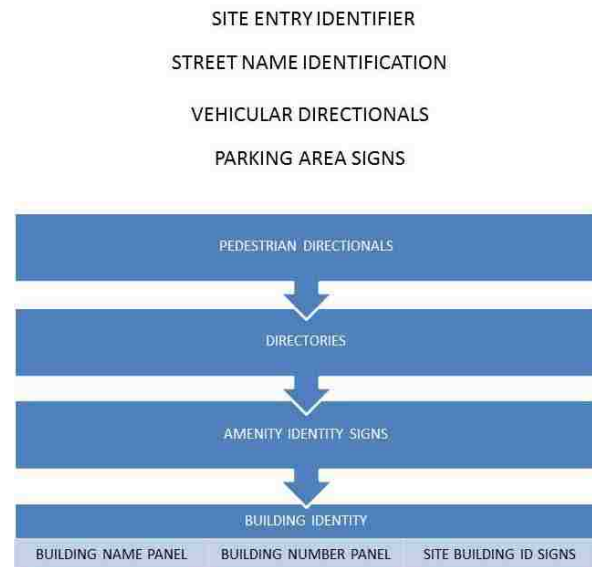
include signage, lighting, sight furniture and seating – is fundamental, but often overlooked systems or parts that support the whole campus concept.

*Signage* is an aesthetic and informative appeal within a campus. Signs if implemented properly, have the potential to heighten and broaden the perspective of users. They are used to direct, define, and assimilate; as art works, symbols, indicators of history, and encourage overall inquiry and interest, as shown in Figure 21. The systematic design

of signage should complement structures and add conviviality to place through a rhythmic application with a tailored color scheme. There is a natural progression of size and placement as well as function within this system that includes; site identifier, entry, area, building, and additionally street, path, and traffic or safety signs. The site identifier and entry signs set the expectation for what a visitor will look for. Signs allow for a continuous system of way-finding within an installation. A logical order and sequence from the roadway entrances to find

buildings shown in Figure 22 are required by the Landscape Architecture UFC.

*Lighting* enables a community to provide continuous visual observation in areas that are used during hours of darkness which make the overall place much more useful and functional. The uniformity and consistency with the application of lighting should behold an



**Figure 20.** Above are guidelines for the systematic representation of signage on an installation per Landscape Architecture, UFC 3-201-02, 2009.

artistic quality. Lighting is first and foremost required for safety and peace of mind in certain applications, but the placement also offers the ability to highlight exceptional qualities of an area or campus. The well-designed spaces that include lighting can inform the user of activities linked to the purpose, such as “stay out, danger, enter, welcome, stay, and use” (Dober 87)

Lighting should be set back a minimum of 2 feet from circulation aisle and parking stalls. Poles should be selected from the following; concrete, aluminum, decorative wood, painted steel, or weathered steel poles, as outlined in the Landscape Architecture UFC.

*Site furniture* has the ability to propose specific meanings or intentions of use to different areas of a campus. Site furniture includes that of trash receptacles, flag poles, mail boxes, seating, and gazebos. The placement of these assets could provide much benefit to the functionality and convenience provided to users. In addition, they promote interaction and engagement. Seating should be provided at all primary building entrances, drop-off zones, congregation points, and high activity areas, and should be placed at least 3 to 6 feet, away from a sign post, trash receptacle, or any stationary obstacle.

All of the features above were grouped this way specifically to be easily interpreted and transferred in to the military schema with which I will discuss in more detail in the next section of this chapter.

In my experience while visiting military installations, I’ve noticed that emphasis in planning has always seemed to focus on training initiatives. Given our current day operations and the implication war has on well-being and health, the implementation of a campus setting should be sought after, tailored to each soldier or airman’s experience in

our state and nation's endeavors with the overarching objective to instill resiliency through place-making.

### ***Military Design Taxonomy***

A specific taxonomy will express the military design features identifiable mostly from experience, but regulation was relied upon to create the framework for each category. The concepts were developed from the standpoint of traditional military installation functions based on military customs, culture, and history as well as pragmatic functions to meet readiness requirements. The overall taxonomy created within this section is specific to that of the National Guard based on my perspective. Regulation and doctrine were consulted as a guide, but in some instances it seems the regulation falls short of the expectation. I will reference specific instances and provide topics of discussion and reason.

The section is divided by five categories in which actual features and programs are identified within the scope of a military campus concept. These features and programs were written in support of the Department of Defense memorandum regarding Installation Master Planning, dated May 28, 2013, to fulfill required planning strategies of: sustainability, resource management, transportation alternatives, defensibility, area and network planning, form-based planning, and local and regional coordination. These topics will be included within the discussion of each of the five categories, with the exception of form-based planning which will be discussed more as it relates to the creation of design guides for installation campus planning.

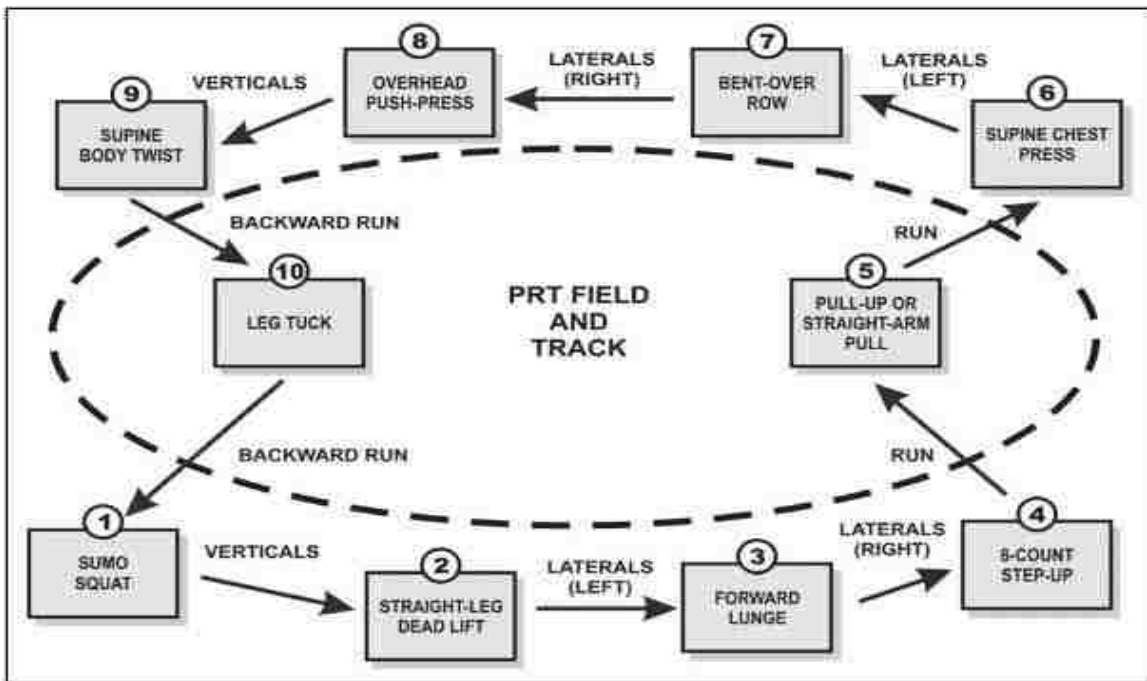
<b>MILITARY CAMPUS DESIGN TAXONOMY</b>	
<p><b>1. Physical Fitness</b>  Parade Ground  Running Track  Physical Fitness Testing Area  Ruck Trail  Outdoor Covered Training Area  Sports Recreation Areas</p> <p><b>2. Training</b>  Maneuver Training Area  Obstacle Course  Simulation Centers  Outdoor Instruction Areas  Cantonment Areas  Organization Day Areas  Auditorium  Physical Fitness Area</p>	<p><b>3. Physical Security</b>  Controlled Perimeter  Controlled Entry Gate  Visitor Control  Standoff Distances  Drive-Up/Drop Off Areas  Building Location  Building Separation  Internal Circulation</p> <p><b>4. Community Places/Public Places</b>  Family Day/Areas  Veterans Access/Areas  Military Clothing &amp; Sales</p> <p><b>5. Partnerships</b>  Joint Initiatives  Joint Use/Training</p>

**Figure 21.** The chart above is a quick reference identifying all of the military design taxonomy that will be presented and identified below.

***1. Physical Fitness***

Physical fitness is crucial to the mission of the National Guard as it relates back to overall readiness to the sustainment of a war fighting mission. In order to “train for combat efficiency,” the features that are developed in accordance with the requirement should be parade ground, running track, physical fitness testing area, ruck trail or terrain running track, outdoor covered training areas, and sports and recreation areas (which will not be duplicated here, as it appears in traditional campus design, which was previously discussed).

*Parade grounds* are a feature specific to military installations and should be sized by 1 acre per 125 persons and should be turf where not otherwise restricted. The reviewing stand should be programmed to the capacity of 5 percent of the total officer authorization.



**Figure 22.** The Strength Training Circuit (STC) enables soldiers to conduct speed and strength training at the same time. Requirements are a flat field, preferably around a running track.

*Running track* specifications include adequate distance on specific material to run safely and maintain physical stamina. A flat, measured 2-mile running course with a solid surface that is not more than 3 percent grade is required per Field Manual 7-22, published in 2012.

Different types of running standards require different physical elements to train on. For example, the Strength Training Circuit (STC)<sup>6</sup> requires a flat surface to run on where conditioning stations can be set up to facilitate the session and whereas hill repeats require an uphill, downhill arrangement (Figure 24). Other types of running scenarios

<sup>6</sup> The STC is a standard training mechanism that includes multiple exercises within a running track platform, which allows soldiers to improve and sustain fitness levels.

include formation, terrain, and speed running. The most efficient distance would be a one-mile track so agility group testing and Army Physical Fitness Testing (APFT) can be conducted.

***Physical fitness testing areas*** should comply with testing events, which are currently pushups, situps, and 2-mile run requirement within a designated time frame based on age and gender. Training guidance as it relates to the facilities available for physical fitness is such that exercise drill activities require flat, grassy areas. The guerilla drill<sup>7</sup> requires speed and sustained running requires well-lighted running routes, tracks, and marked fields. Strength development requires kettle bells, step-up benches, and climbing bars (FM 7-22 125).

***Ruck trail*** or terrain running prepares a soldier for the combat proficiency concept of Physical Readiness Training (PRT). “Running through local training areas, over hills, and around obstacles improves mobility, endurance, and the ability to stop, start, and change direction. Terrain running is designed to be conducted with small unit integrity. This type of running is best performed by squads and sections. Distances should generally be 1 mile for densely wooded areas and up to 2 miles on tank trails and open fields. Intensity is relative to the terrain” (FM 7-22 127).

***Outdoor covered training areas*** can be used to conduct physical fitness training or classroom-style training as it relates to field training infantry tactics. These areas would prove useful to accommodate a location that offers protection from the elements,

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<sup>7</sup> Guerilla drill is a sequence of exercises which include the shoulder roll, the lunge walk, and the soldier carry.

the ability to consolidate and retrain if necessary, or a place to set up Mobile Kitchen Trailers (MKT)<sup>8</sup> where troops can get hot rations while training in the field.

## **2. Training**

Training center doctrine establishes facility requirements based on classification of the training center. Each training center is classified based on mission, manning, and habitual training relationships. For the purpose of this section and the overall requirement, I have included those features that are authorized to support a Regional Training Institute (RTI)<sup>9</sup> as well, given the fact that each state has this facility type as an asset. Some features specific to training are maneuver training areas, obstacle course, simulation centers, outdoor instruction areas, organizational day areas, auditorium, and gymnasium.

**Maneuver training area** is represented within the declaration of a training site, as a Local Training Center<sup>10</sup>, which should constitute a sizeable acreage with a minimum of 75 acres of maneuver land. The maneuver land required should equate to the total land requirement for all units to train at the same time based off the narrative in each unit's Modified Table of Organization and Equipment (MTOE)<sup>11</sup>. The footprint required is much greater than any training site within New Mexico designated as a National Guard

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<sup>8</sup> Mobile Kitchen Trailers (MKT) are expandable, self-contained, trailer mounted, field kitchens in which rations are prepared. They can feed up to 300 warfighters in one meal.

<sup>9</sup> Regional Training Institute (RTI) refers to an educational facility as part of The Army School System (TASS). Often training functions and RTI functions overlap within facilities due to a shortage of square feet within the Oñate Complex Training Site (the case study site for this report), which is where the RTI is established.

<sup>10</sup> Local Training Center (LTC) is one classification of a training site which has a specific requirement of throughput (average soldiers training on the complex) acreage and facilities for a minimum of three years in order to qualify.

<sup>11</sup> A Modification Table of Organization and equipment (MTOE) is an authorization document that prescribes the modification of a basic Table of Organization and Equipment (TOE) necessary to adapt it to the needs of a specific unit or type of unit.

Training Site. The use of enclaves<sup>12</sup> for training is a necessity for the New Mexico

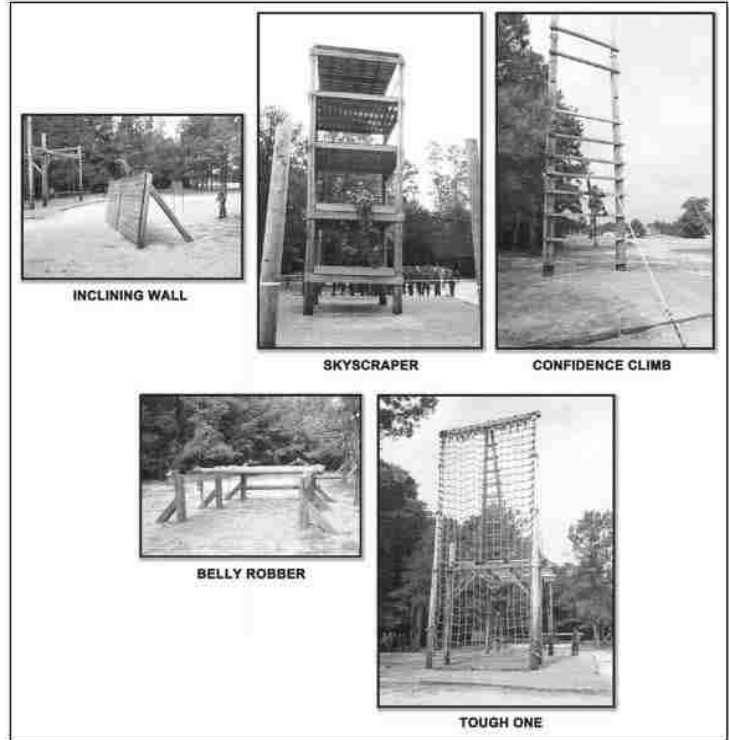
National Guard until a qualified training site can be established.

An *obstacle course* within a training site requires adequate space in conjunction with covered training or instruction areas.

“Obstacle course running develops physical capacities, fundamental skills, and abilities that are important to Soldiers in combat operations. Soldiers must be able to crawl, creep, climb,

walk, run, and jump” (FM7-22 130. These courses are designed to further facilitate readiness through physical fitness and conditioning drills.

*Simulation centers* are those spaces, usually located within a facility, that offer real-world training through the integration of gaming type scenarios where Soldiers can conduct weapon training to remain proficient. These facilities offer intelligent training tactics, immersive learning and synthetic environments, and enable a one-to-one and a one-to-many training platforms. The engagement of these centers is a training function and should be included as part of the training capacity as a feature in planning.



**Figure 23.** This is a sampling of a few of the obstacle course negotiation requirements. The standard obstacle course requires a good amount of land with distance between structures.

<sup>12</sup> Enclave refers to the training sites that are hosted by the Active Army component which include White Sands Mission Range, and Stallion Range. The New Mexico National Guard is a designated user of these training facilities with no ownership of them.



***Outdoor instruction areas*** are places big enough to accommodate both the school and the typical drill population where troops can learn facing movements, train on weapon systems, conduct land navigation instruction, and practice other infantry tactics. These areas could be grass or have a pavement or paver pattern so troops can effectively balance the need to move in formation and congregate in large u-shaped instruction formats.

***Organizational day areas*** should serve to promote the cohesion of units and facilitate camaraderie and fellowship as well as celebrate and commemorate the history of the unit. Organizational days are an annual Army tradition in which one day is set aside to enjoy food, fun, and family. In the National Guard typically this is something that is done at Christmas or outside of training. However, there is a full-time force that consists of Active Guard/Reserve (AGR) Soldiers, federal technicians, and some Active Duty Operational Support (ADOS) soldiers as well as civilian state employees and federal civil service employees who do have annual organizational day functions. Typically, commands will have their employees report to a fun day that is at a local establishment or park that can accommodate a picnic type event. Although there is no doctrinal requirement for a feature or asset of this particular nature, there are recreational facilities that could be created within the context of development in this regard.

An ***auditorium*** is a specific requirement linked to Educational Facilities<sup>13</sup> indicated within the Army National Guard Facilities Allowances (NG PAM 415-12). It appears in the form of a space authorization, which is dependent upon soldier throughput

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<sup>13</sup> Educational Facilities, is one of the five different types of facilities within the Army National Guard Facilities Allowances, it is the equivalent of a building type that has a unique function and with that specific supporting features. The school house is another term for this facility type; it is a place where soldiers are sent to schools to train.

with a minimum of 100 personnel to include full-time support and the average training load. The basic allowance authorizes no space for an auditorium, but with more than 100 soldiers 2,000 square feet is authorized. The necessity of an auditorium within the National Guard, separate from that of an educational facility, is fundamental – especially when co-located with a Joint Force Headquarters<sup>14</sup>.

Many of the occasions that require the use of an auditorium include Town Hall Meetings (which is a function that occurs quarterly or as often as required by the Adjutant General); training class graduations, which could occur multiple times within any given month; ceremonies such as commissioning, retirement and promotions; training classes for all full-time support, and community events. Technological advances have afforded the opportunity to tune in to these types of events; however, it does not negate the need for the space. Currently, spaces used to conduct these types of events are the multipurpose room at the RTI, drill halls, or large lobby areas. This should be one of the features that is an authorized stand-alone asset, which is not currently provided for within the National Guard Facility Allowances (NG Pam 415-12).

*Physical fitness areas* are authorized as spaces within a Readiness Center<sup>15</sup>, which is based on the amount of soldiers that are stationed there. The space authorization is also a part of the other facility-type allowances as well, including the Training Center, RTI, and Logistical Facilities. An Army Aviation Support Facility also has space authorization for physical fitness areas, but for the purpose of this discussion they won't

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<sup>14</sup> Joint Forces Headquarters is a category assigned to a location when the JFHQ unit which provides administrative support to the soldiers assigned to the command.

<sup>15</sup> Readiness Center is one of the five different types of facilities within the Army National Guard Facilities Allowances, it is the equivalent of a building type that has a unique function and with that specific supporting features. Originally termed Armory, now readiness center; it is the place where units conduct training.

be included because they typically are not co-located with the other facility types. The square feet minimum authorized space within each of these facility types is 600 square feet (with an additional 700 square feet if there is a Civil Support Team -Weapons of Mass Destruction Team (CST-WMD)<sup>16</sup>. Differences in square feet for Training Centers are based on the training center designation. Generally speaking, the conglomeration of all physical fitness training areas authorized within one site would make for a more beneficial organization. Currently on the Oñate Complex, there are two readiness centers, an RTI, and two Logistic Facilities<sup>17</sup>, which would equate to one gymnasium facility that is 3000 square feet based on the total population.

### ***3. Physical Security***

The Department of Defense (DoD) Minimum Antiterrorism Standards for Buildings (Unified Facilities Criteria (UFC) 4-010-01, February 2012, with change 1, October 2013) and DoD Minimum Antiterrorism Standoff Distances for Buildings (UFC) 4-010-02, February 2012) was created in 1999 for implementation in military construction (MILCON) and major renovations as of 2002. The UFC was created because of a bombing in Dhahran, Saudi Arabia, where the Khobar Towers were in jeopardy due to no force protection standards in fixed DoD facilities. The application is a requirement in order to mitigate the risk of a terrorist attack. Guidance from this regulation states pertains to master planning is that it must be included within planning documents as roadmaps for UFC 4-010-01 compliance for all new and existing facilities.

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<sup>16</sup> Civil Support Team and Weapons of Mass Destruction Team (CST-WMD) specializes in chemical, biological, radiological, and nuclear warfare.

<sup>17</sup> Logistic Facility is one of the five different types of facilities within the Army National Guard Facilities Allowances, it is the equivalent of a building type that has a unique function and with that specific supporting features. This facility type supports the administrative and warehousing functions of the National Guard.

Although there are some conflicting design principles with respect to sustainability and antiterrorism requirements, the harmony in the planning effort will need to be realized, and perhaps recommendations to allow for a better synchronized plan will develop upon further investigation. I've outlined some opportunities to allow for better coordination between the design and the ATFP requirement.

One exception to the standard that does align with planning efforts is the 1-9.4 Town Centers. Here the exception is: "Town Center buildings that include retail, health, or community services space on the first floor and not more than 12 units of family housing above the space are exempt from all provisions of these standards." Other applications that are exempt would be stand-alone fast food operations, shoppettes, or mini marts with areas of less than 15,000 square feet that are exempt from standoff distances to parking and roadways portions of Standard 1 and to the provisions of Standard 2. All other provisions will apply.

Within the physical security section, I will continue to define the features identified within this category with respect to their requirement as it relates to the ATFP standards. Most of these features or topics are written into the design standards for new facilities; however, I'm discussing from the perspective of the need to improve these specific requirements as well as to facilitate later discussion on the research conducted for the case study at the end of this thesis. The features include: controlled perimeter, controlled entry gate, visitor control, standoff distances, drive-up/drop-off areas, building location, building separation, and internal circulation.

Incorporation of a *controlled perimeter*<sup>18</sup>, although not always feasible in the National Guard is a benefit in specific instances: however, it does disconnect the National Guard from the community as a whole when segregated by a fence line. The purpose is understood to control and protect the physical security of the elements within, but in most cases the same type of controls can be implemented by taking advantage of topography, landscaping, and even historical monuments. The concept remains the same that the materials used as a perimeter function as a deterrent of vehicle access points<sup>19</sup>.

*Controlled entry gates* may be at more than one location on an installation, but typically have a visitor's center associated with the development. There are specific requirements on the construction of this feature based on ATFP guidelines; however, for the purpose of context here, this feature is an alert mechanism for the full-time force notifying them of visitors, as well as providing positive control of the site on a 24-7 basis. This feature is a necessary asset to the site, which provides for electronic access through key control cards. The alternate is access at the building level, which has setbacks in that it would allow an aggressor the opportunity to get all the way up to a building before they are stopped.

A *Visitor control* center is typically located outside the controlled perimeter and serves as a community space. Some installations have integrated the visitor control facility as transitional space where communities, families, and visitors can observe the site, historical information can be made available about the National Guard, and children

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<sup>18</sup> Controlled perimeter is a physical boundary at which vehicle access is controlled with sufficient means to channel vehicles to the access control points – which is for our purposes, the controlled entry gate with electronic security equipment and posted guards.

<sup>19</sup> Vehicle access point are opportunities for aggressors to get close to DoD facilities.

can walk around the monuments. The most efficient use of space is two-fold, integration with community, and visitor control.

*Standoff distances* are specific requirements for new construction which are easily accommodated through facility design by Architect and Engineer services; however, it is also required that all facilities be upgraded to meet the same standard. The problem here could be facilities that do not meet the requirement, such as those located too close together, making the adaptation to meet standoff distances quite costly. Some design options that could potentially reduce the investment required are landscaping with boulders or implementing features that allow users of the facility to have clear line-of-sight in all areas.

*Drive-up/drop-off areas* should be a part of the planning requirement of facilities to allow for efficient parking lot circulation; however, the location of these areas should not be at the main entrance of a site. The ATFP standards indicate that drive-up/drop-off areas should be located in areas with proper reinforced construction and barriers that limit the distance a vehicle can get near to a building.

*Building location and building separation* should be situated to deny aggressors a clear “line-of-sight” to the facility from on or off base and to protect the facility from visual surveillance. Regulation also requires that for planning considerations, buildings should be no wider than 50 feet, except for special-purpose type facilities such as hangars or warehouses. These buildings should also include operable windows for 75% of the users of the facility and implement building automation systems in which the installation energy program can manage to reduce energy consumption. Building orientation and

situation within a complex should allow for unobstructed solar access and natural ventilation.

It is recommended that building separation be maximized where there are large populations. The specific guidelines for high-occupancy buildings are a distance of 33 ft. between buildings. The separation of buildings is an integral part of military campus planning, however the negative effect is that it limits the degree to which density can be achieved, which is counter to sustainability requirements. The balance will need to be solidified when infill or new development is attempted; however, the varying regulations differ slightly with differing goals. Within a controlled perimeter, there is no building distance requirement; however, in recent events it is evident that ATFP standards are specified to prevent terrorist attacks, when in reality there is great possibility of mobile “dismounted” shooters, and bombers who have access to a site.

*Internal circulation* deals with the overall capacity to navigate the site uninterrupted and with no specific hindrance. The National Guard often conducts different training scenarios to reinforce the value of training by simulating a real-world event. The planning of a site and the functionality of the circulation system be – it walkways, bikeways, road networks, or even infrastructure (utility, communication, and backup generators) – should all be tested during these times so that in the future planning events the risk assessments will not include limitation of facility plans and the layout of a complex. This should be fundamental to campus planning in that it allows the site to conduct the mission required of it. The need should be demonstrated, and the specific regulating plan should be amended to include the new requirements. One of these

requirements would be that if there is only one path or street on a complex, it should have a primary or alternate egress route.

In my inquiry of the controlled perimeter and controlled entry gate, I often wondered what it would be like to have an open site. I think that the diminished layer of security would be a concern, but again the overall focus should be on creating a site designed to fit the use, and transition well within the surrounds of the site. The perimeter concept takes us back to the days of the castellated armories, where defense was necessary to control riots and civil upheaval. So as not to downgrade the application and requirement of the above measures, I do feel the necessity for them, but I also know that the things that have been achieved to date have great opportunity to be refined from a design perspective. It is an inquiry that is still left to be confirmed.

"Experts have found that the most important way to reduce crime, including terrorism, is to allow for natural surveillance of the physical environment" (Newman 23). "Another strategy used by crime prevention experts is territorial reinforcement. By using physical design to shape defensible areas, with clear property lines, landscape elements that define public and private spaces, and buildings sited to frame identifiable realms, the sphere of influence is expanded. Rather than requiring stand-off distances we should be requiring build-to requirements" (Newman 24).

"A little-known additional problem with ATFP rules that require 25 meters between every primary occupied facility and every road or parking lot is that this pattern forces installations into building fewer and bigger buildings. This is counterproductive since it, in effect, places more eggs in one basket." (Gillem & Zekert, Jerry 37).



#### ***4. Community & Public Places***

***Family Day Areas, Veterans Access Areas, Military Clothing/Sales and other business*** should be co-located with the visitors' center, historical walkways, and the development of a National Guard community face. The traditional armory served as community space where the community knew the Soldiers and there was not a mystical, unexplained curiosity about the function. It was a portion of daily life. Times have changed since the original requirement that all able-bodied males must defend their village; however, the National Guard could do a better job at creating the link with the community through the public space, investigation of public-private partnerships, and programming to facilitate events that family readiness program facilitates. Programs could include high school ROTC, driving schools, veterans' affairs offices, wellness, and community service programs.

#### ***5. Partnerships***

***Joint Initiatives and Joint Use Training Areas*** are part of the requirement for master planning from a Department of Defense (DoD) perspective to be implemented by the year 2018. Joint initiative planning, whether with another DoD agencies or a regional and local agencies, "ensures that planning within the installation boundary considers constraints and opportunities beyond the boundary and promotes compatibility with local authorities" (Department of Defense 2). More specifically, that is to identify other organizations that could bolster and support training exercises, facility requirements, and other uses that are similar to those of the National Guard. Some of these agencies may include the Department of Homeland Security, state and local sheriff's offices, fire stations, and other emergency or community organizations.

Army Major General Timothy Orr, Adjutant General of the Iowa National Guard and the Chair of the Infrastructure/Facilities/Information Technology Committee of the Adjutants General Association of the United States (AGAUS), “encourages States to explore new funding streams and to be open to new partnerships:

We need to focus on alternative solutions for the future. By that, I mean we need to look at the whole process, including the Future Years Defense Plan (FYDP) process, and how we leverage our State and Federal match. The Active Army and a lot of our States have developed alternatives to MILCON. Not all of those solutions will necessarily work for us, but there may be certain situations where these alternative solutions will help. We’re looking at things like leveraging private-public partnerships, and project delivery systems such as design-build and design-build-finance-operate-maintain. We also have to look at our civilian partners and other agencies to see what kind of initiatives they have done to see if we can develop new processes.”

## Chapter Six: Linkages for Integrated Design

This chapter seeks to connect all of the material discussed thus far to include elements of the literature review and the overarching political realm of the National Guard, the place, culture, and campus features and link it with the research conducted both independently and with the New Mexico National Guard at the Oñate Complex Training Site. The research will offer conclusion to the two design taxonomies introduced and provide thoughtful, reasoned recommendations of necessity and applicability in a military setting.

Discussion of research methods and findings to include data results, my expected contribution, and implications for how to address the overall design will provide the framework for the conclusion and expectation. I will establish that a variety of features typical of a traditional campus create a harmony within the regulatory context of military features which will combine to instigate and perpetuate what a military campus plan may include.

### ***Research Methods and Design***

As a traditional Guardsman and as a federal civil-service employee of the New Mexico Army National Guard working as a Real Property Specialist for the Construction and Facilities Management Office, I do have extensive knowledge of the Oñate Complex Training Site from both from a user and evaluator perspective. The site has been developed for ten years in a fragmented way, which has created a lack of implementation of construction standards, design requirements, and synthesis of space and place.

My analysis includes both primary and secondary research methods from a historical, present-day, and within future contexts through published strategic efforts. The incentive to

produce this report and project within the study will provide a two-fold benefit: first, this work will improve the knowledge of the community within the New Mexico National Guard enough to create a desire to improve planning, design, and construction standards and the requirement to include all affected populations, and secondly to influence changes to policy and practice within New Mexico.

The specific objectives identified at the onset of this study were:

1. Investigate and develop what campus planning for military installations means as a place-making effort implemented to increase social interaction, establish linkages to the history and culture of the population, increase quality of life, efficiency, longevity, flexibility, and stewardship.
2. Demonstrate military campus planning as a unique style through the exploration of other military installations that have termed their sites as having “campus plans.”
3. Develop a campus plan for the New Mexico National Guard (NMNG), Oñate Complex Training Site located in Santa Fe, N.M., as a case study that will incorporate campus-style features that will serve the community of the complex.

The overall product of my research includes this synthesized report that establishes the opportunity for a comprehensively planned site by instituting the military design taxonomy as a method to develop place. It has been my experience that the National Guard has great influence and, the National Guard Bureau level, is making great

strides toward a more efficient, tightly organized force, that is properly equipped and ready to answer the call of duty.

Primary research was conducted through focus groups. This community-based participatory research approach was accomplished in two groups, totaling 20 people that included a wide combination of collaboration within the complex as well as diverse knowledge, skill, and experience levels. The multi-faceted participants were able to speak with personal experience and provide explanation as to why they chose one perspective over the another through discussion. I will share some of the comments as I progress through the data analysis and presentation.

The focus groups were limited to two-hour segments. A more full-bodied conclusion could have been achieved with more time; however, working within the constraints of a volunteer-based opportunity I feel as though the information garnered was thoughtful, relevant, and directly applicable toward the fulfillment of my same perspective – as in the majority of the volunteers as you will see.

Each focus group was conducted with the following agenda:

1. Explanation of research protocol and the volunteer's role.
2. Introduction to project through three boards designed from the historical, current day, and future possibilities perspective (see Appendix A).
3. Identification of existing conditions
4. Group facilitation through identification of features displayed in a slide presentation and discussion (see Appendix B).
5. Survey was provided to volunteers to identify how they feel about the features on the Oñate Complex Training Site. The participants were given

the following measurement and response matrix (Figure 26), which identifies how answers should be presented (see Appendix C for consolidated responses).

Existing Situation:	Actions:
+ strong element	1 Add
- weak or missing	2 Extend
o satisfactory	3 Enhance
	4 Conserve
	5 Remove
	6 Other

**Figure 24.** Matrix provided to respondents that identify the required response format, also see Appendix C for visual reference.

An informed consent document was distributed to each member and signed identifying their intent and ability to participate in the focus group. All of the participants were adults over the age of 18 and recruitment was done through a written request sent to each directorate within the New Mexico Army National Guard. All of the data used to compile this report will remain confidential and only those that authorized my request to use pull-quotes will be included in the findings that follow.

Secondary research opportunities I engaged in were; a physical inventory used to determine existing conditions; literature review of historical references to include published articles, books, regulations, directives, memorandums, and journals (including Army, National Guard Bureau, Department of Defense, Federal, and State Regulations); strategic plans and regulatory requirements for the future; and finally evidence of “campus-style” developments to include master plans for military installations.

It should be noted that through my research some discrepancies do appear in regulation and in the funding models that speak to a different trajectory, such as the focus on physical security which does not necessarily align with common planning principles. The intent of this thesis is to provide clarification to these areas, while creating a renewed

perspective that can accomplish this, though there are differing objectives to create a holistic application of the before-mentioned design taxonomy. This perspective will be created through the establishment of the greater requirement of two differing objectives, such as: If the physical security requires that a building should be located 30 feet from the street and the planning requirement is to enable smaller footprints and tighter design and development, then the overall requirement will be a build-to line that is 30 feet from the street. The increased emphasis on the Antiterrorism Force Protection Standards should be the foundational design criteria since it is federally mandated. The building frontage and environmental conditions of the site will be affected; however, if the entire site is developed with these requirements, the overall feel will be more cohesive.

Though I attempted to engage this thesis with a neutral eye, possible limitations of this research may include my personal bias, experience, and familiarity with political details of the NMNG that have impacted development. Other areas for potential limitations remain in the focus group strategy: Sampling was a small amount of the total population, time limit may have affected the outcome of responses, and questionable education necessary to ensure knowledgeable responses. Finally, the study only included one site of the New Mexico National Guard, and though it was the site that has the most variety of military real property assets, the results are skewed from the perspective of the Army National Guard. The Air National Guard is a relevant counterpart for planning purposes, but they are driven by different federal requirements and share space on an active Air Force Base. Though the Adjutant General has control over both components, the focus of this thesis and research was on an Army National Guard Training Site.

## ***Research Findings***

The combination of focus groups and secondary research provided for direct real-world insight into the development of the Oñate Complex Training Site. With complete access to all records and documents available to gain knowledge and insight, as well as the daily experience (which I have not even tried to capture here, but heartily provide my enthusiasm through this document for necessary change), my viewpoint was solidified.

Though the intent of this document was to determine what the military features of design represent, the integrity is compromised if I do not establish the direction as to how the development came to be so fragmented. As I waded through information I processed as I researched, I was able to see that there were a specific set of criteria that, if established, would facilitate the development process. I will establish a set of recommended goals and objectives (see next section, Research Implications) that would benefit the overall process, which in turn would directly affect the features that are encompassed in a military campus plan. After all, the foundation for a campus design should be a collection of community-based input, but without the community it is merely a complex – a grouping of buildings.

Eager to have the conversation about this site, I was mystified by how it came to be what it is today, I encountered enthusiasm in others for my topic as I began recruiting for my focus group sessions. My experience is that people really want to be in control of the environments in which they live and work, however, with the top-down hierarchical military setting that control is limited; it is typical to see decisions being made at the host of self-benefit or inexperienced confidence, as opposed to practical, integral, community-based decision-making.



I don't have enough experience with the hierarchical leadership of the past, but I will refer to a quote I used in chapter two, by Ralph Adams Cram, a prominent twentieth century architect: "The typical English quadrangle arrangement was abandoned for a grouping of isolated buildings, at first more or less formal, then developing into final chaos as other men with other minds came on the scene and placed their buildings, and designed them also, at their own sweet will" (Peters 49).

Another graduate student researching the renewable energy on the Navajo Reservation identified the differences in traditional hierarchical versus facilitation through personal interview conducted with the Aire Group, noted for over 20 years of practice in facilitation with Tribal Nations identified the following chart (Billie, 83):

	Hierarchical Leadership	Facilitational Leadership
ASSUMES:	Top-Down Approach	Many Diverse Perspectives
KNOWS:	What To Do	"How To Do" Methods
SEEKS:	Right Answer	Ownership of Decision
RELIES ON:	Individual Ability	Group Ability

**Figure 25.** The chart above represents the hierarchical leadership vs. facilitational leadership styles which provide a great foundation for discussion with respect to the way the military operates. The diagram was pulled from a thesis by Gapetta S. Billie, 2004.

“Furthermore, tribes who engage in these types of processes stand to gain the ability to reclaim and own ‘the

power’ to be the architects and stewards of the resources and opportunities of their nations and to exercise accountability to their own futures by prudently responding to and addressing the issues that undermine the stability, wellbeing (Kabotie, 2011) because a successful collaborative process yields the following results:

- Enduring ownership of the decision,
- Quality decision-making,
- Collective buy-in,

- Empowerment” (Billie, 83-84).

When asked the question, ‘Have you ever been involved in the planning of any construction project?’, some of the responses received were ‘never’, and ‘I haven’t; typically I come to work and see some dirt being moved so I know something is about to happen in the general area.’ These responses prompt me to believe that the typical community engagement process of that required at a city or county level has been non-existent here. As a young but engaged lieutenant of the NMNG, I view it as my responsibility to implement change in this area. The continued community ignorance displays the one-sided approach to creating a plan used by all.

The objectives of the excerpt taken from the discussion about hierarchy versus facilitation speaks volumes to the planning process, practice and principles that should be implemented within the New Mexico National Guard in order to develop a synergized community-based and community-owned process. My first recommendation (Goal 1., seen in Research Implications) would be to develop a planning process that is both proactive and progressive, and speaks to and for the community with respect to regulatory guidelines that create the military context.

When I conducted my initial physical inventory wearing my “campus feature” goggles, I noticed some aspects of the site that were inefficient, non-functional and disconnected. Though in the past I’ve noticed how obtrusive a lack of connectivity could be on a run around the complex after a good rain, I didn’t really analyze it from the perspective of all the improvement possibilities. There was an attempt with the initial development plan, called the Real Property Development Plan, in 2005 to create buildings with sidewalks, but the plan was based on building types (Joint Forces

Headquarters, Readiness Center – armory at that time – and Regional Training Institute). The plan did not focus on connecting the building types throughout the complex. Often in my experience with military construction projects, when the project is over budget or funding gets cut, the result is to terminate the “amenities.” As I’ve heard numerous times, ‘We’re Soldiers!’ Amenities are the first things on the chopping block, without argument here, but the follow-through should come with a capital investment strategy that identifies the shortfall through Sustainment, Restoration, and Modernization (SRM) funds.

The focus groups adhered to a specific set of questions that related to functionality and safety. When asked about these items, the responses overwhelmingly indicated that there is a lack of connectivity, circulation, and adequate parking. One specific comment from a participant was, “When planning these developments, even though we work for the National Guard, you need to think about the ability to get from A to B from the perspective of the handicapped.” Though there are requirements to meet ADA regulations at a building’s functional level, there should be the same requirements applied to a site, especially for those employees who are civilians working to support the National Guard.

In order to create a comprehensive, overarching Installation Design Guideline (IDG), I recommend the establishment of form-based codes (FBC); this initiative is a Department of Defense requirement for master planning. Creating FBCs through a time-consuming process, will be beneficial and compliment the first recommendation to establish process; goal two is to establish the policy.

“Form-based codes (FBC) are vision-based and prescriptive, requiring that all development work together to create the place envisioned by the community.” (Parolek, Parolek, & Crawford, 11) Whereas conventional zoning primarily seeks to control land use and density, the former is focused on place-based results that enhance unique characteristics.

Some of the attributes of FBC are devised through regulating plans that detail areas of importance to achieve an overall concept. For instance, to achieve a walkable community, the FBC may include walkway, landscape, and street standards that meet the function of the goal. The street widths may be reduced to slow traffic, or crosswalks may be defined with a material other than what is typical, so as to make it known that pedestrians will cross and should have priority to vehicles.

Military installation planning has never been regulated by traditional zoning practices, but typically town and city planners were the primary developers, guided by the modern day codes as they advanced through the years.

The flexibility of FBCs is that they can be created on a site, area, or an installation level to provide for continuity or segregation. For example, segregated areas would be training areas, where no development should occur, but could be defined by design mechanisms that would allow users to navigate away from these zones.

Peter Katz’s article on *Form First* specifies that non-professionals find it easier to use FBC’s over conventional zoning ordinances because they are much shorter, more concise, and organized for visual access and readability as well as requiring less oversight leading to less politicized planning and potentially saving huge amounts of time and money.

In a military setting, service members rotate through multiple assignments within their careers, thereby making it that much more important to establish FBC's to ensure continuity within a program and ease of understanding and implementation.

Part of what makes FBCs easy to use is the ability to identify standards by way of areas or zones so as to establish that within a specific area the design and development criteria that will be specific and easily recognized. "This zoning approach replaces color-coded land-use maps with illustrative drawings, regulating plans, building envelope requirements, and architecture & landscape standards" (Gillem & Zekert, Jerry 38).

Oscar Newman, author of *Defensible Space*, asserts that, "through the manipulation of building and spatial configurations, one can create areas for which people will adopt concern." Some of the design features that would result in increased empowerment and accountability of space are: increased ability of natural surveillance, providing unambiguous differentiation between grounds and paths, and establishing a hierarchy of public, semi-private, and private spaces.

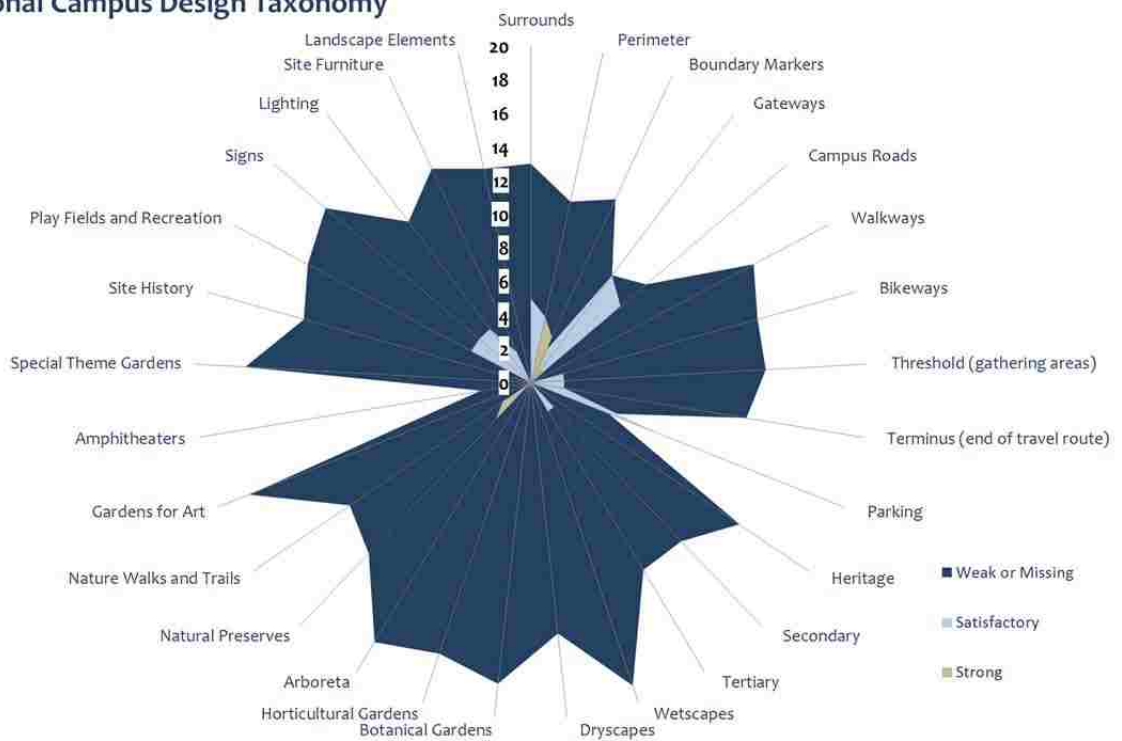
Natural surveillance can be achieved by building heights and the placement of buildings that allows for line-of-sight in all directions. Defining path or walkways from grounds can be done through widening the area and using colored or decorative pavers or paving. Other features to differentiate public and private spaces can be provided through courtyards and low walls that are symbolic in translation of space. Finally, allowing for seating to take place on the main pedestrian walk allows spaces to be free of conflict and enables sufficient surveillance.

The process of creating an FBC begins with a conceptual plan created to identify areas of specificity within the community and from the perspective of the community.

Generally, a concept plan may address new development areas, specific area developments, infill initiatives, and corridor development, as well as non-place-based influences such as sustainability or renewable energy. The input from the community will guide the creation of the FBC. Typically, an installation should have a published Installation Design Guide (IDG) that establishes the intention for development, which may have features of an FBC. The IDG would regulate development and guide concepts being generated for public interpretation and communication.

Through the focus group process, some specific responses and areas of improvement as they relate to general principles of sustainability arose. The design taxonomy that specifically relates to sustainability includes campus roads, walkways, bikeways, terminus, threshold, parking, gardens, and landscaping. The findings of the

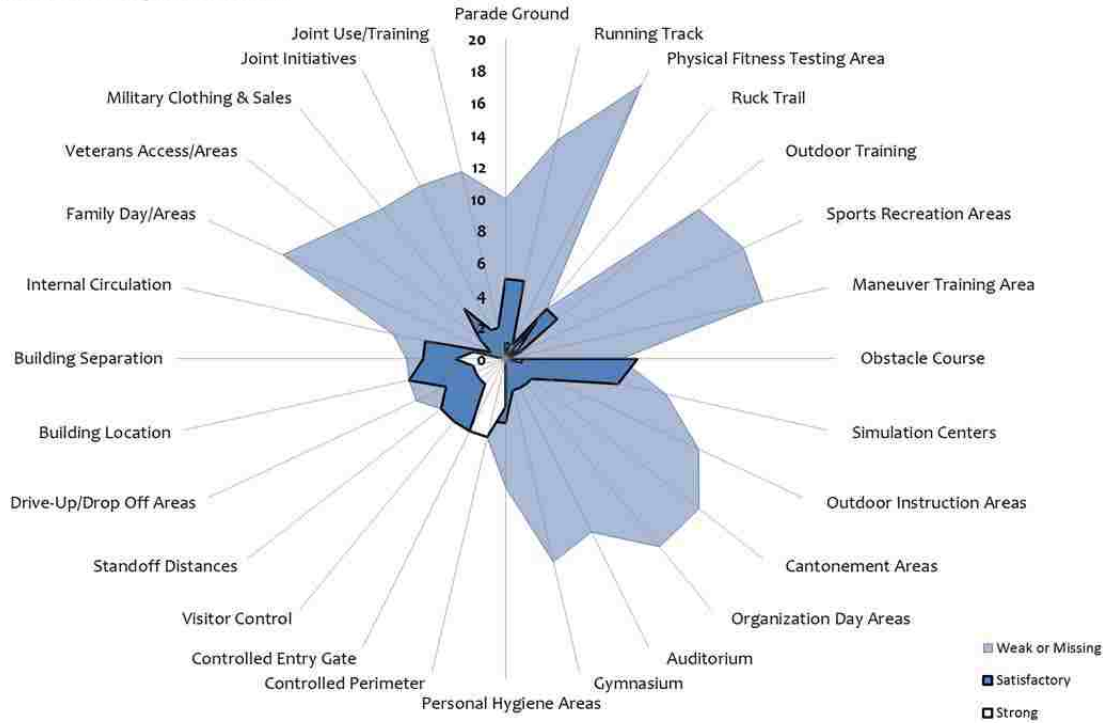
### Traditional Campus Design Taxonomy



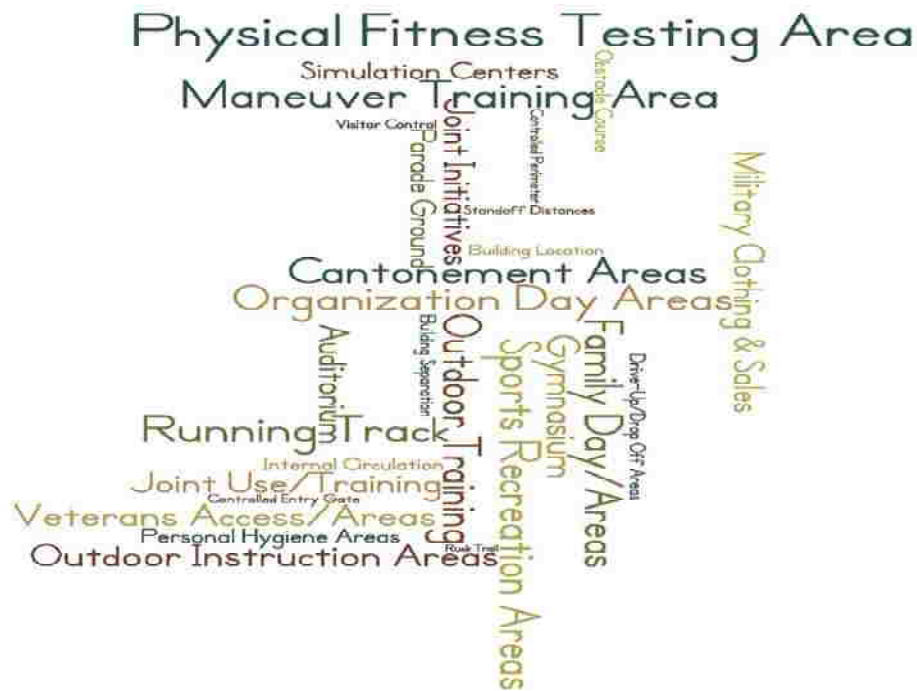
**Figure 26.** The chart identifies all of the surveyed features within the Traditional Campus Design Taxonomy indicating that the majority of these features are weak or missing. Features identified as satisfactory by some respondents are; gateways, parking, signs, lighting, and playfields and recreation.



## Military Campus Design Taxonomy



**Figure 28.** The chart identifies all of the surveyed features within the Military Campus Design Taxonomy indicating that the majority of these features are weak or missing, though there are more that are satisfactory or strong from a user-perspective. Features identified as satisfactory by some respondents perimeter, controlled entry gate, and visitor control.



**Figure 29.** The above visual represents the responses of those military campus design features that appear as most needed to be the largest from the perspective of the respondents.



The definite comparable overall opinion is representative of a need for features specific to a campus plan that would instill pride, ownership, and character. T.B. Jackson relates his inspirational notion of place valued and defined by events, not necessarily the built environment:

Modern America, of course, has abandoned most of that traditional calendar. But to take its place we continue to evolve, in town after town, a complicated schedule of our own. What brings us together with people is not that we live near each other, but that we share the same timetable: the same work hours, the same religious observances, the same habits and customs. That is why we are more and more aware of time, and of the rhythm of the community. It is our sense of time, our sense of ritual, which in the long run creates our sense of place, and of community. In our urban environment which is constantly undergoing irreversible changes, a cyclical sense of time, the regular recurrence of events and celebrations, is what gives us reassurance and a sense of unity and continuity.

The above excerpt ironically defines the National Guard precisely; the events of the Guard and the requirements enable the formation of a unique set of goals, values, and culture that represent a community in and of itself. The presentation of this quote within these pages further defines the integrated need to develop a planning mechanism to capture the events that inspire our livelihood in the Guard, that sustain our foregoing desire to maintain presence in this volunteer force, and drive the spirit to create and define space over time here on the Oñate Complex.

The National Guard Bureau's, Installation Division Mission Statement reads: "To manage [Army National Guard] ARNG installations programs to support readiness and mission execution, provide [The Adjutant General] TAG with policy guidance and resources to create, sustain, and operate facilities, and provide resource accountability to the [Director, Army National Guard] DARNG, [Department of the Army] DA and Congress." The corresponding Vision Statement reads: "Ensure premier facilities and services today and in the future that are relevant, reliable, ready, and assessable and that support ARNG Soldiers and Joint Forces."

The model for the presidio – and then the traditional armory – has morphed into a more agile and comprehensive construct required of a force more integrated in Homeland Security<sup>20</sup> and Homeland Defense<sup>21</sup> than ever before. The shift takes place with the integration of multiple facility needs and types, which allow for constructive partnerships that can span the vast majority of emergency response and natural disaster operations.

Today's Army National Guard Installation, which is the set of sites within each state that house readiness centers and other facility types pertinent to the modern day Guard, "are a critical enabler of readiness, retention, recruiting, and community relations" as noted by The Army National Guard Directorate Installations Management (ARNG-IM) Strategic Plan 2011-2016.

To become the agile force that is ready to respond, there is much work that is necessary to improve the guiding regulation entitled National Guard Readiness Centers

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<sup>20</sup> Homeland Security is the "collective efforts and shared responsibilities of Federal, State, local, tribal, territorial, nongovernmental, and private-sector partners – as well as individuals, families and communities – to maintain critical homeland security capabilities (*Quadrennial Homeland Security Report*).

<sup>21</sup> Homeland Defense is defined as "the protection of U.S. sovereignty, territory, domestic population, and critical defense infrastructure against external threats and aggression, or other threats as directed by the President. The Department of Defense is responsible for homeland defense (*Strategy for Homeland Defense and Civil Support*)

(DA Pam 415-12). This regulation provides a baseline authorization for the facility types of the National Guard. Some modification and improvements to the doctrine would be allowing for more flexibility within the space authorization model and the implementation of assets that would be beneficial in all primary facility types such as; emergency response operations center, secure briefing area, specified authorization to house state agency partners, and communications center – given that developing regional and local partnerships are a focus area for master planning. Additionally the construction methods should enable the expectation that a building structure should be constructed to last more than 25 years.

With shifting emphasis to sustainability, installations should be flexible enough in design to accommodate changing missions from that of an operational force to a reserve component, to a force that responds to natural disasters and state missions. Emphasis should be placed on how to obtain modularity within a permanent infrastructure, create design that implements recycle reuse techniques, and use technology as an enabler that can catapult the Guard to new advances enabling self-reliance.

Modularity would allow the Guard to adapt to accommodate modernized equipment that may be larger than what the facilities were originally constructed to house. For example, an armory may house primarily infantry soldiers, but through re-stationing actions, the building now needs to adjust to accommodate a new set of Modified Table of Organization and Equipment (MTOE)<sup>22</sup> for an engineer company and the sizeable equipment that accompanies them.

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<sup>22</sup> A Modification Table of Organization and equipment (MTOE) is an authorization document that prescribes the modification of a basic Table of Organization and Equipment (TOE) necessary to adapt it to the needs of a specific unit or type of unit.

Recycle/reuse techniques would count as a credit toward the SRM program and would enable a state to be able to seek out more sustainment, restoration, and modernization dollars based on how much they were able to save on recycle/reuse projects. This would positively impact the renovation of existing buildings on the installation to comply with the increased focus on sustainability through implementation of energy efficiency, environmental compliance, and physical security measures while ensuring more stability within the design and planning of facilities.

The ARNG-IM Strategic Plan indicates that the ARNG installations and facilities are expected in many ways to operate similarly to the Active Component (AC) installations. It is a necessity to operate in that fashion since the National Guard competes against the AC for Military Construction (MILCON) funding. It is more imperative now than in past years that the Guard build requirements that establish the need to sustain the force.

After all, when the expectation is to engage in the same war that the AC does with the added mission to maintain Homeland Security, there is no reason the Guard should expect anything less. In fact, it is very possible that the National Guard requires more specialized facilities.

For the benefit of this section and the establishment of the plan in chapter seven, I have combined and consolidated the two Campus Design Taxonomy Criteria, Military and Traditional, into one format which will enable a more focused discussion.

<b>CAMPUS DESIGN TAXONOMY</b>	
<b>(Consolidated for Application)</b>	
<b>TRADITIONAL</b>	<b>MILITARY SPECIFIC</b>
<b>First Encounters</b>	<b>Physical Security</b>
Surrounds	Perimeter & Controlled Entry Gates
Gateways	Building Envelope
Boundary Markers	<b>Training &amp; Range Features</b>
<b>Story Spaces</b>	Parade Ground
Heritage (Site History)	Physical Fitness & Trails
Secondary	Maneuver Training Area
Tertiary	Obstacle Course
Dryscapes	Covered Training Areas
<b>Groves, Gardens &amp; Fields</b>	Simulation Centers
Natural Preserves	Cantonment Areas
Theme Gardens	Auditorium / Natural Amphitheater
Play Fields & Recreation	<b>Community/Public Places</b>
<b>Place Making Elements</b>	Organizational Day Areas
Signage	Commercial Venues/Military Clothing Sales
Lighting	Joint Use/Training Areas
Site Furniture	
Landscape Elements	
<b>Circulation &amp; Interconnectivity</b>	
Streetscape	
Bikeways	
Walkways/Running Paths	
Threshold (gathering areas)	
Terminus (end of travel route)	
Parking	
Drive-Up/Drop Off Areas	

***Research Implications***

**Goal 1:** Implications for this goal reside in the high turn-over and rotational demand for military leaders within the Construction & Facility Management Office. “The lack of overall and long-term planning is due largely to the fact that the military is operating under a contingency operation mode that does not fall under the same guidelines as permanent bases of operation” (Day 22).

Christopher Day, author of the article *Master Planning in the AOR*<sup>23</sup>, identifies several reasons master planning initiatives may fail; troop turnover, the length of deployment for civil engineers – may be as short as six months, and changing priorities. Day indicates that the planning of spaces often mirrors the rotation for deployment. Current unmanageable workloads coupled with increasing requirements doesn't allow much time to provide that necessary to seek community input to provide sound justified updates to plan. Though this perspective is one from an Area of Responsibility (AOR) located in a combat zone, as opposed to one that is in a garrison within the U.S., the general practices and problems are very similar.

"All too often, an installation's real property master plan is simply a report card on the current state of the installation. Actual plans are rarely more than installation maps with arrows pointing to possible locations for future projects. When more tailored plans, like area design guides, are created they are often too specific. Planners at Ft Lewis, Washington, have recognized these limitations and have refined the mode so that plans are useful for decision-makers, design-build contractors, and designers. The focus has been on the creation of area development plans (ADPs) and form-based codes that can flexibly guide development in the short and long term (Parolek, D, K. Parolekm and P. Crawford, 12)."

<b>GOAL 1.</b>
Develop planning process that is proactive and progressive.
<b>OBJECTIVE 1-A.</b>
Establish a comprehensive vision statement that incorporates the command, directorates, and users that will include the most current initiatives that are facing each imperative.
<b>STRATEGY 1-A.</b>

<sup>23</sup> Area of Responsibility (AOR), is a pre-defined geographic region assigned to combatant commanders.

	Create master plan for the Onate Complex Training Site that addresses current issues, and is able to be updated annually thereafter.
	Charge the Installation Real Property Planning Board (IRPPB) with the objective of developing a succinct vision.
<b>OBJECTIVE 1-B.</b>	
	Establish processes within the CFMO that allow for a more efficient way to plan and program for construction projects (SRM & MILCON), real property management (acquisitions & investigations), and streamline the customer experience.
<b>STRATEGY 1-B.</b>	
	Implement a process mapping exercise to enable the CFMO to better facilitate the management of documents that enable planning.
	Document information in a transparent way that allows the NMNG to access information that is pertinent to enable informed decision-making.
<b>OBJECTIVE 1-C.</b>	
	Provide Soldiers & Airman with facilities that are planned and programmed accurately in order to achieve the best quality solution to meet condition, quality, and mission objectives.
<b>STRATEGY 1-C.</b>	
	Conduct a charrette for every construction project to allow relevant stakeholders the ability to provide input, allow for correct scoping, and comprehensive investigation of intent. This will allow the CFMO to properly fulfill the requirement and program accordingly.
	Present information to the IRPPB for approval, keeping all parties neutral and addressing the facts so that decisions are community-based. Each Master Plan will have the approval signature for all RPPB voting members.

**Figure 30.** This graphic illustrates the proposed goal with established definitions of objectives and strategies as to how to achieve the end state.

**Goal 2:** As an initiative to meet the changing requirements of the National Guard in the form of master planning, it will be critical to establish a framework to enable that flexibility needed within the organization of process and place. To create an atmosphere of increased empowerment for the community of the National Guard and define standards of planning and design, it will be required to evolve from a fragmented concept of planning into a system that has a pre-established requirement. That system will be created by instituting Form-Based Codes (FBC).

<b>CAMPUS DESIGN TAXONOMY</b> (Consolidated for Application)		<b>INSTALLATION DESIGN GUIDE</b>
<b>TRADITIONAL</b>	<b>MILITARY SPECIFIC</b>	<b>Building Envelope Standards (BES)</b>
<b>First Encounters</b>	<b>Physical Security</b>	Physical Security
Surrounds	Perimeter & Controlled Entry Gates	Training & Range Features
Gateways	Building Envelope	Community/Public Places
Boundary Markers	<b>Training &amp; Range Features</b>	Circulation & Interconnectivity
<b>Story Spaces</b>	Parade Ground	
Heritage (Site History)	Physical Fitness & Trails	<b>Street Envelope Standards (SES)</b>
Secondary	Maneuver Training Area	Circulation & Interconnectivity
Tertiary	Obstacle Course	
Dryscapes	Covered Training Areas	<b>Landscape Design Standards (LDS)</b>
<b>Groves, Gardens &amp; Fields</b>	Simulation Centers	First Encounters
Natural Preserves	Cantonment Areas	Story Spaces
Theme Gardens	Auditorium / Natural Amphitheater	Groves, Gardens & Fields
Play Fields & Recreation	<b>Community/Public Places</b>	Place Making Elements
<b>Place Making Elements</b>	Organizational Day Areas	
Signage	Commercial Venues/Military Clothing Sales	
Lighting	Joint Use/Training Areas	
Site Furniture		
Landscape Elements		
<b>Circulation &amp; Interconnectivity</b>		
Streetscape		
Bikeways		
Walkways/Running Paths		
Threshold (gathering areas)		
Terminus (end of travel route)		
Parking		
Drive-Up/Drop Off Areas		

**Figure 31.** This depiction of the transition between identification of Campus Design Taxonomy to the development of an Installation Design Guide (IDG) is a good place to begin to develop conversation about the inclusion of the above features when addressed with the reality of creating a guide that establishes the requirement.

This topic will be explored later as a viable option to revitalize the study area in chapter seven where I will seek to identify specific guidelines based on community input received during the focus group sessions established within the research framework. More current Installation master planning guidance issued by the Department of Defense (DoD) establishes the creation of FBCs as being one of the seven imperatives necessary to improve master planning functions at the Installation level.

<b>GOAL 2.</b>	Develop planning guidelines to regulate and guide development
<b>OBJECTIVE 2-A.</b>	Establish a form-based code Design Guide for all sites in the NMNG.
<b>STRATEGY 2-A.</b>	



Develop through visioning process; create draft for acceptance and endorsement through the IRPPB.

**Figure 32.** This graphic illustrates the proposed goal with established definitions of objectives and strategies as to how to achieve the end state.

**Goal 3:** A military campus should be defensible and protected, yet be able to partner with state and federal agencies to conduct real-world missions that provide security and safety to the people of our nation. In light of financial resource halts and the unstable political forefront, the National Guard – although not for-profit – would benefit by beginning to explore public private partnerships and the idea of creating well-rounded campus style complexes to improve the world-view of the training area, thereby developing a desire for troops to come from other states to train, effectually increasing the throughput, and thus increasing training dollars received from National Guard Bureau through sustainment, restoration, & modernization, military construction, and operation and maintenance dollars.

The planning focus for creating a campus complex is about increasing sustainability and increasing efficiencies to ensure readiness. Although all of the fundamental interests of campus planning are still applicable, the mindset for the planner should be from a conservative application through the lens of stewardship with a target of readiness. The Installation Master Planning UFC asserts that through publication of the criteria, this will result in, “reduce[d] energy consumption, reduce[d] paving requirements, and minimize[d] overall life cycle costs.”

In addition, implementation will allow for a reduction in maintenance costs through low-density auto-oriented development and improved safety through concepts that cater to pedestrian use. Finally, application of the UFC to ATRP requirements will enhance force protection overall. It is important to note that although I have chosen to

specifically cater the information in this thesis, the UFC described above does “apply to the preparation of master plans for all United States Army, Navy, Air Force, and Marine Corps permanent installations and reserve component locations in the United States, its territories, and overseas. The UFC does not apply to overseas contingency operations” (UFC 2-100-01 74).

It is the responsibility of the state to manage the cultural resource program and ensure the antiquity of the past is preserved as a physical asset within our heritage. In light of the loss of many historic buildings within the New Mexico National Guard, education and initiatives to create a more robust cultural awareness and preservation program would be beneficial. Though much has been lost, due diligence can be done to prevent further leakage of preservation. Investigation relating to partnerships or creative use agreements with public or private entities within the state is possible and necessary.

It would serve the National Guard well to keep as many historical structures within their control as possible in order to preserve and keep the culture and lineage with the original using authority. Losing history through negotiations to get rid of outdated facilities is due to ignorance of such loss. Historical places – although sometimes costly to convert into sustainable places – should be cherished and sacred, given the embodied energy of those who hold lineage that once upon a time rescued our nation through the very training conducted within those walls. In a lot of cases, the familiarity of place is lost through refurbishment or redesign and the sale of property; for example, if you weren't aware that there was an armory constructed in 1909 on 5<sup>th</sup> and Central, you would never know today that it existed.

"Rather than rethink planning patterns, the default has been to expand into range and training land, which is not a sustainable approach from a mission perspective" (Parolek, D, K. Parolekm and P. Crawford 13).

One consideration in the way of establishing training land and training sites within a state is the prerequisite of the Principles for Military Development Criteria (Appendix E. Although not identified on the Sustainability Credit Designation sheet, it is to “preserve mission critical resources by protecting range and training land from development.” The assumption is that training and range land is not co-located with other functions. The UFC further states, “ 0% of the [project] development area is located on installation-designated range and training land.” This statement in and of itself is limiting to an installation if there is limited acreage and co-location of facilities. It is important to determine the full cost of designating a training site prior to projecting for development.

<b>GOAL 3.</b>	
	Increase emphasis on sustainability, safety, security, functionality, form, historical perspective in planning, and efficiency in space and development.
<b>OBJECTIVE 3-A.</b>	
	Design to meet current guidance of NGB to include; Sustainability, Preserve/enhance natural, historic, and cultural resources, Transportation alternatives for pedestrian, bicycle, and transit-friendly communities, Defensibility protecting critical infrastructure, Area and network planning, and Form-based planning.
<b>STRATEGY 3-A.</b>	
	Train personnel to get certification to conduct sustainability analysis. Implement process to enable analysis of each project that requires construction over \$25K.
	Initiate quarterly Environmental Review Board meeting that assesses general direction and objectives of plan, project, and overall intent to ensure integration of environmental facets.
	Create a Master Plan that will be endorsed by the Adjutant General and certified annually thereafter.
<b>OBJECTIVE 3-B.</b>	

	Ensure ATFP standards, regulation updates, and requirements are met through the CFMO when planning all projects.
<b>STRATEGY 3-B.</b>	
	The CFMO will work closely with the Security Officer to ensure approval of all plans, projects, and ATFP issues are brought to his attention. Master Plans will include approval signature line.
	All ATFP reports will be copied to the CFMO office for integration in planning.
<b>OBJECTIVE 3-C.</b>	
	Develop emphasis on achieving net-zero sites that integrate renewable energy and the most efficient energy systems.
<b>STRATEGY 3-C.</b>	
	Develop criteria through the Design Guide that will shift emphasis and requirements annually toward achieving net-zero.

**Figure 33.** This graphic illustrates the proposed goal with established definitions of objectives and strategies as to how to achieve the end state.

**Goal 4:** All campus types – whether university or military – seek to find a neutral coexistence with its surrounding community. In order to become neutral spaces that connect the two places, Halsband explores the need for roots to be blurred so that communities to accept the patterns that push outward into the communities through a disguise of multi-use functional spaces that provide services and amenities. Specific functions of military form have always been one of separation and distinction – a guarded perimeter that ensures safety while offering a historical perspective of the past.

<b>GOAL 4.</b>	
	Increase community, regional, and joint initiatives.
<b>OBJECTIVE 4-A.</b>	
	Develop platform to enable regional, local, and community groups the opportunity to be part of our planning initiatives and projects if feasible.
<b>STRATEGY 4-A.</b>	
	CFMO to initiate we-based community application to engage other agencies that are interested in facility partnership, training, or project initiatives.
<b>OBJECTIVE 4-B.</b>	

	Implement methods to self-sustain the infrastructure of the NMNG through public/private partnerships or revenue based out-granting and housing for Soldiers.
<b>STRATEGY 4-B.</b>	
	Investigate current trends and evaluate the benefit of creating an environment that will allow for a more robust budget to accomplish the management of real property and construction projects.
<b>OBJECTIVE 4-C.</b>	
	Embark on a joint project that is relevant to branches other than the Army National Guard.
<b>STRATEGY 4-C.</b>	
	Investigate through the Joint Services Component Review Board annually.

**Figure 34.** This graphic illustrates the proposed goal with established definitions of objectives and strategies as to how to achieve the end state.

## Chapter Seven: Future Development Oñate Complex Training Site

“The existing public path system is redundant and fails to channel pedestrians along predictable, well-lit or patrolled routes” (Newman 28).

My intent at the initial proposal meeting for this thesis was to create change and to positively influence the way business is done within the Construction & Facilities Management Office of the New Mexico National Guard. I believe that if we do not attempt to shift the direction of the current operations, the end result will be increased disorder, lack of pride, a lack of empowerment, and an uninterested, unattached community. My fear is that if we do not take hold of the future and shift our paradigm to improve our processes, we will be left with a dysfunctional system of spaces that speaks volumes about the priorities of the organization and the future.

The intent of this chapter is to further evolve the Military Campus Design Taxonomy to allow for the application of these features in the following way:

1. Enable continuity of a recaptured culture,
2. Improvement to a recruiting and retention program that needs to maintain the technologically advanced younger troops of our future, and
3. Enable the clear depiction of how enacting this plan will reposition resourcing to improve efficiencies and establish a phasing scheme for accomplishing this plan.

The plan that follows was designed to serve within this thesis as a case study as well as a stand-alone document for the future use of the New Mexico Army National Guard’s Construction & Facilities Management Office.

Multiple features within this plan have been developed to cater to the military and such will provide a direct correlation with the past culture of our beginnings. Some of those improvements sought out were 10 foot wide running paths that allow formation runs through the complex which reflects the institution of our British heritage when we were a force that went to battle in formation.

Most of those areas within the plan are developed to serve as multiple use areas – such as the covered training areas, and the secondary and tertiary spaces developed in close proximity to buildings that allow for squad and company level training, as well as places to present Soldier briefs, places to set up tables to serve food during training. These covered training areas are a specific authorization within a Local Training Area (LTA), but also they mirror some of the daily conduct in the days troops trained in the field setting up temporary encampments.

Finally, the parade field in this plan demonstrates that it should be the center point of the campus, as it has been through history. I see our young Soldiers in the Warrior Leadership Courses (WLC) training to lead formations in the parking lot where we have a designated motorcycle course. The Soldiering skills are playing second fiddle to the space intended for a motorcycle course. The priority is educating and training the Soldiers of the future. This is not something that should be compromised.

Having identified some of the features and how they help to develop our culture will by virtue allow our recruiting and retention program to improve. Prior to enlisting into the National Guard, my recruiter used to bring me to training events where I had the opportunity to see what the expectation was, as well as visualize how I would fit into the organization. Creating a campus the New Mexico National Guard can be proud to have as

a showpiece will improve inclusion, social functions, and overall morale by creating a desire to experience place. In the planning world, one common way for a small town to get the benefit of an improved economic base is to make it a destinations spot. Evolving the Oñate Complex Training Site into a campus with features that provide benefit to the community would entice and improve the overall character and maintain our force.

Improved recruiting and retention rates offer two things; a stronger force, and one that brings in more federal funding for training, maintenance of facilities, and construction projects. In conjunction with a larger population, it would be easier for the New Mexico National Guard to identify the need for improved facilities and grounds. Though I have not conducted a study on the cost to improve the Oñate site to implement the proposed plan, I would venture to say that it would be more beneficial to create the plan and develop the site once as opposed to the practice of recreating a place multiple times to meet the need of the incoming commander, or Construction & Facilities Management Officer.

The goals, objectives, and strategies I discussed in chapter six reflect how I believe we can get from current day operations to a leaner more cost effective organization. Along those same lines, the implementation of this plan will need to be one that occurs in phases. I recommend that the Installation Design Guide (IDG) be developed, approved, and fully understood prior to addressing these proposed recommendations. At each Installation Real Property Planning Board meeting (semi-annual), the board will vote on proposals for the IDG by section; Building Envelope, Street Envelope, and Landscape Design Standards. Once the IDG is in place, these standards will naturally take over the full spectrum of development.

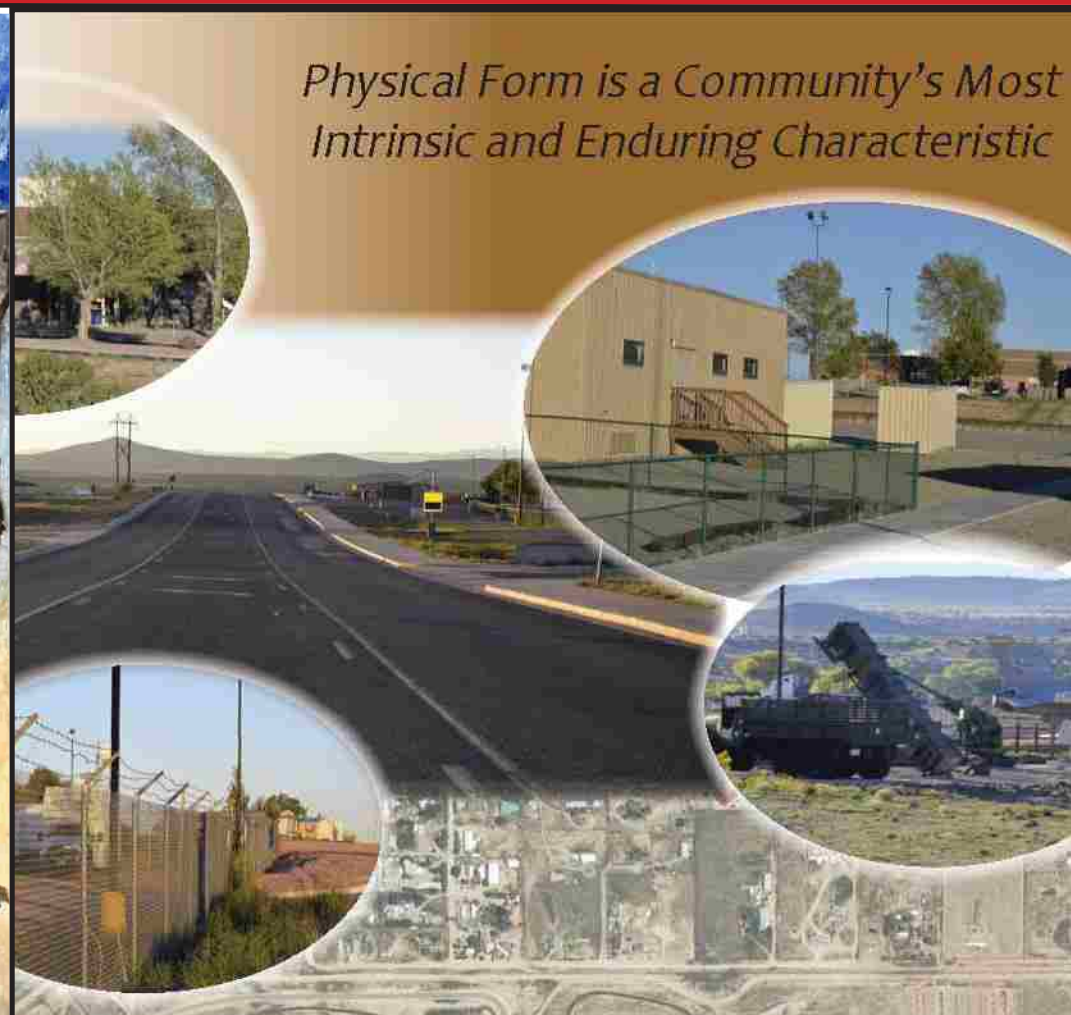


The proposed plan in this chapter is a conceptual plan, and does not develop into a Capital Investment Strategy (CIS) which would identify a project and associated cost, however the plan once approved can be further developed in this regard.

Additionally, I recommend that the site be broken up and prioritized into functional areas: Readiness Center, Logistics Facilities, Training Center, Regional Training Center, and Administrative Facilities. This would allow the projects to be budgeted to meet the intended plan time-line. It is conceivable to implement a better standard for our troops. I hope that you will find the proposed plan relevant and beneficial.

"Change based on principle is progress. Constant change without principle becomes chaos," Dwight D. Eisenhower, 1956.

DEVELOPED FOR THE  
**NEW MEXICO ARMY NATIONAL GUARD**  
CONSTRUCTION & FACILITIES MANAGEMENT OFFICE



*Oñate Complex Proposed  
Campus Plan*  
**by Erin Montoya**

University of New Mexico Community & Regional Planning Program

May 2014



# Masters Thesis Project

## PROFESSIONAL COMMITTEE

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## PURPOSE

The campus plan initiative for the New Mexico National Guard (NMNG) Oñate Complex Training Site, Santa Fe, NM (also referred to as Oñate Complex for short) was identified as being important by the Construction and Facilities Management Office to examine what a “military campus plan” entails, how it supports the overall mission, and improves the character and quality of an installation.

The proposed campus plan implements recommendations based on the research conducted to merge the regulatory requirements of the Department of Defense, the Department of the Army, and the National Guard Bureau, with the traditional campus taxonomy. This plan serves as the case-study represented in one chapter within the thesis that details the history of the National Guard through politics, place, and culture over time. The thesis also analyzes and merges two campus design taxonomies; traditional and military. This plan seeks to synergize the combination of military campus design taxonomy into a practical framework to represent how the features could be implemented.

The site plan will allow the NMNG to; maintain a higher level of readiness and sustainability, support the the Adjutant General’s strategic goals, include flexibility to operate within shifting paradigms, balance development with conservation, establish a pattern of land use, and serve as a decision-making tool in the development of an Installation Design Guide (IDG) and for future developments.





## 2014 REAL PROPERTY DEVELOPMENT VISION

**VISION:** The New Mexico National Guard must be constantly ready to fight and win on the battlefield as well as to support our state mission in spite of the reality of reduced resourcing. We must look to the future and plan ahead when it comes to force structure and stationing, continually identifying functions and programs that can be made more efficient. It will be critical for us to get our priorities right and move forward as a team. All options must be considered when it comes to stationing units in the right place and in properly locating facilities that support training and readiness.

**GOALS & OBJECTIVES:** The New Mexico National Guard is committed to providing its soldiers with facilities that are properly designed, sized and maintained to provide the state and nation with trained and ready forces. In order to be successful, we must execute our military construction projects on time. For military construction projects currently on the Future Year Defense Plan (FYDP) we must endeavor to maximize project scope while remaining within the currently programmed FYDP amounts. We must also be sensitive to the amount of state share required for readiness center projects and carefully consider what is feasible during the realities of our economic situation.

**PRIORITIES:** Readiness Centers, Surface Maintenance Shops and Range Facilities are our top priorities. The primary objective of these facilities is to provide a world-class resource for platoons and companies to conduct individual and small unit training. Facilities must be of sufficient size to provide for unit training and readiness functions as well as adequate military parking space for unit assigned vehicles and equipment. Facilities must be considered for replacement at the 30-40 year mark. Well maintained facilities provide for better recruiting and retention and serve as staging areas for agencies that react to state emergencies.

## REGIONAL PERSPECTIVE



**Figure 1:** The map above shows regionally where the Oñate Complex Training Site is located within the state of New Mexico. The blue rings (top) indicate the drive-time distance of 10 minutes by Interstate 25. The map below represents the site area and the abutting land and communities.



# History

## A BRIEF HISTORY OF THE NEW MEXICO NATIONAL GUARD

Over the years the National Guard's mission and focus has changed multiple times. The Spanish Colonial Militia began on April 30, 1598 when Juan de Oñate's colonization expedition crossed the Rio del Norte (Rio Grande) in the vicinity of present-day Ciudad Juarez, Mexico. There were no regular Spanish soldiers with the expedition and none were assigned to the new colony of Nuevo Mexico during the seventeenth century through the Pueblo Rebellion of 1680.

This militia system prevailed until 1846, when General Stephen W. Kearny occupied New Mexico. The first Territorial Militia was provided for by a system of laws devised by Kearny, commonly known as the Kearny Code. Then in 1851 the first territorial Legislature created the office of the Adjutant General and placed the territorial Militia under its jurisdiction.

The New Mexico National Guard has roots in cavalry, infantry, field artillery, engineering, coast artillery, antiaircraft artillery, and tank destroyer, among others which demonstrates the need to include flexibility within the planning spectrum. Much of the history is captured at the Bataan Memorial Museum in the form of artifacts and uniforms, but the physical built history has not been pieced together. This document is an attempt to begin to cultivate that history and reveal the architecture, facility conditions, and development strategies implemented through the many mission changes. There is much to be learned from our historical ancestors with regard to; choices made to switch locations, building requirements and construction standards, and development practices.

### Defined by Our History

**Timeline of Armories:**

- Presidio 1876:** [Architectural drawing]
- Armory 1908:** [Architectural drawing]
- Armory 1913:** [Architectural drawing]
- Armory 1921:** [Architectural drawing]
- Burns General Hospital 1930-1940's:** [Architectural drawing]
- Armory 1940's:** The armory moved to 1634 Old Pecos Trail and remains today at the Bataan Memorial Museum which is on the National Register of Historic Places.
- Armory 1950's:** The armory moved to Garrison Road which remained the single location for almost 70 years until the Oñate Site was acquired.
- Joint Forces Headquarters 1995 - Present:** The Oñate Complex served as the Joint Forces Headquarters and was acquired in 1995, and the majority of the buildings we see today were constructed prior to 1995.

**Architectural and Historical Images:**

- 1. Armory on Washington Street was the first building constructed for the National Guard with Works Progress Administration funds. Above is a picture of the tables located on Water Street, Santa Fe. Left is a typical drawing for an Armory and Community Center - there was no indication this was constructed. Right is a typical Armory layout with drill hall and upper level (1935).
- 2. [Architectural drawing]
- 3. [Architectural drawing]
- 4. [Architectural drawing]
- 5. Picture of quarter master's corral with quarters and barracks in the rear, see Post Santa Fe (Delano) 1875. Gift from the Southwest Co. "San Antonio who won top honors for shooting down two drone radio-control planes" (Jolly, 1964) Ft. Bliss Texas 1952. 7. [Photograph of aircraft]
- 6. [Photograph of soldiers]
- 7. [Photograph of soldiers]
- 8. [Photograph of aircraft]
- 9. [Regimental Insignia]

**REGIMENTAL INSIGNIA FOR CAVALRY**  
 The Coat of Arms of the 11th Cavalry is a shield with a blue chief and a red base. The shield is divided into four quarters. The quarters contain a white cross, a white cross, a white cross, and a white cross. The shield is surrounded by a blue border with the words "REGIMENTAL INSIGNIA FOR CAVALRY" and "11th CAVALRY" written in white. The shield is supported by two white horses. The shield is topped by a blue crest with a white cross and a white cross. The shield is surrounded by a blue border with the words "REGIMENTAL INSIGNIA FOR CAVALRY" and "11th CAVALRY" written in white.

**Historical Locations:**

- POST FILLMORE N.M. - 1872
- CAMPBELL BARRACKS N.M. - 1872
- FORT SELDEN N.M. - 1869
- FORT STATION N.M. - 1872
- POST SANTA FE N.M. - 1872
- FORT UNION N.M. - 1872





# Existing Conditions

The Oñate Complex Training Site is the Joint Forces Head Quarters (JFHQ) location for the New Mexico National Guard which includes both the Air and Army Guard; however, the Army National Guard is most prevalent on the selected site. The Oñate Complex is located in the northern center of the state, more precisely, on the east side of I-25 and approximately 6 miles from downtown Santa Fe, NM. The land was acquired in 1987 and encompasses an area of 313.27 acres of state-owned land. The majority of the building development occurred in the 1990's. The site is completely enclosed by a combination of chain linked and iron fencing serving as the controlled perimeter. There is a portion of land on the south east side which is a privately owned range, for the purpose of this study, that section of land will not be included, as it is not used by the NMNG.

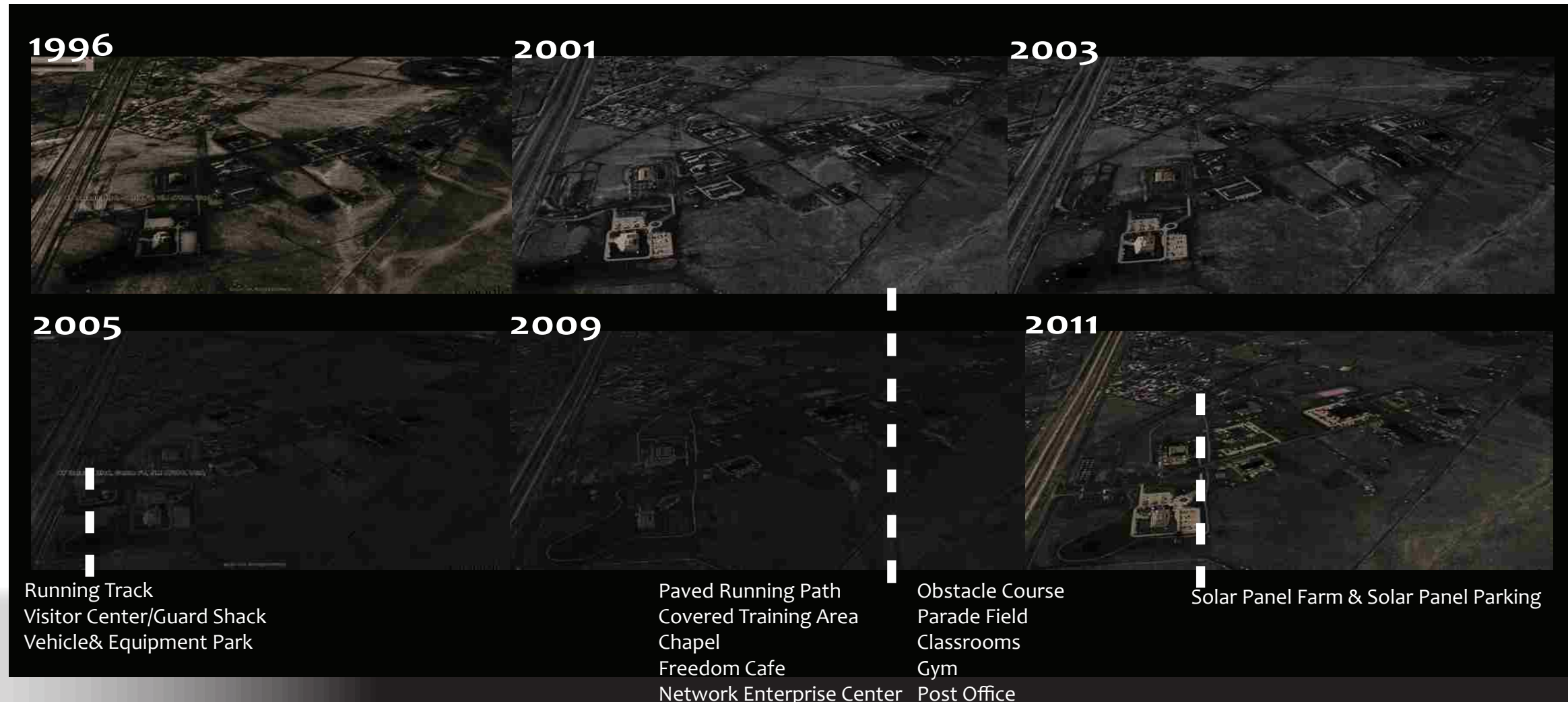
On the north side of the complex is a community with small businesses dispersed throughout; directly west is the frontage road from the I-25 corridor; the south side includes a vast amount of vacant privately-owned land with homes; and the east side of the complex is abutted by the N.M. State Penitentiary.

The closest air assets are located about 15 miles northwest at the Army Aviation Support Facility, which is located on the City of Santa Fe Municipal Airport.

There is maneuver training space available north west of the Oñate Complex, called Camel Tracks Training Site, where the National Guard maintains a use agreement with the Bureau of Land Management to use the site for training events such as; land navigation, maneuver training, infantry tactics, and driver's training.

The Oñate Complex houses the New Mexico National Guard (NMNG) Headquarters (HQ), the 93rd Brigade Headquarters (HQ), the Regional Training Institute (RTI), the state Combined Support Maintenance Shop (CSMS), and the United States Property & Fiscal Office (USPFO) and warehouse. With most of the facility types all housed on one complex, an incredible challenge and opportunity is presented for the NMNG.

**Figure 2:** In 1996, a Real Property Development Plan (RPDP) was created to develop the Oñate Complex Site. Though there were guidelines to project the general look and feel of the site, no development standards were initiated which enabled the site to develop in piece-meal way. Most of the site was developed in 1996, however no aerial imagery was available prior to this to prove that point. This figure shows what features have been added since 1996.





# Military Campus Design Taxonomy



## INSTALLATION DESIGN GUIDE CONTENT PROPOSAL

### BUILDING ENVELOPE STANDARDS (BES)

- Physical Security .....8**
  - Perimeter & Controlled Entry Gate
  - Building System
- Training & Range Features .....9**
  - Parade Ground
  - Physical Fitness Trail
  - Obstacle Course
  - Covered Training Areas
  - Simulation Centers
  - Cantonment Areas
  - Auditorium/Natural Amphitheater
- Community/Public Spaces.....10**
  - Organizational Day Areas
  - Commercial Venues/Military Clothing & Sales
  - Joint Use/Training Areas
- Circulation & Interconnectivity.....11**
  - Threshold (gathering areas)
  - Terminus (end of travel route)
  - Parking
  - Drive-up/Drop-off Areas

### STREET ENVELOPE STANDARDS (SES)

- Circulation & Interconnectivity.....12**
  - Streetscape
  - Bikeways
  - Walkways/Running Paths

### LANDSCAPE DESIGN STANDARDS (LDS)

- First Encounters.....13**
  - Surrounds
  - Gateways
  - Boundary Markers
- Story Spaces.....14**
  - Heritage (Site History)
  - Secondary
  - Tertiary
  - Dryscapes
- Groves, Gardens, & Fields.....15**
  - Natural Preserves
  - Theme Gardens
  - Play Fields & Recreation
- Place Making Elements.....16**
  - Signage
  - Lighting
  - Site Furniture
  - Landscape Elements

The development of an Installation Design Guide (IDG) will create the framework for the standards with which campus design can be implemented. Though the IDG was mentioned throughout the thesis, it was not ever developed. Given the opportunity to demonstrate the contents and organization, it is clearly represented here to allow the reader to visualize the logical progression of spaces. This page serves as a Table of Contents to show where Military Campus Design features can be located within this plan. Seven areas of focus identified by the Department of Defense (DoD) within the thesis will be included throughout the plan detailing different concepts. Those elements are; sustainability, resource management, transportation alternatives, defensibility, area and network planning, form-based planning, and local and regional coordination (Secretary of Defense Memorandum, May, 2013).





# Research & Visioning Process

## RESEARCH METHODS & DESIGN

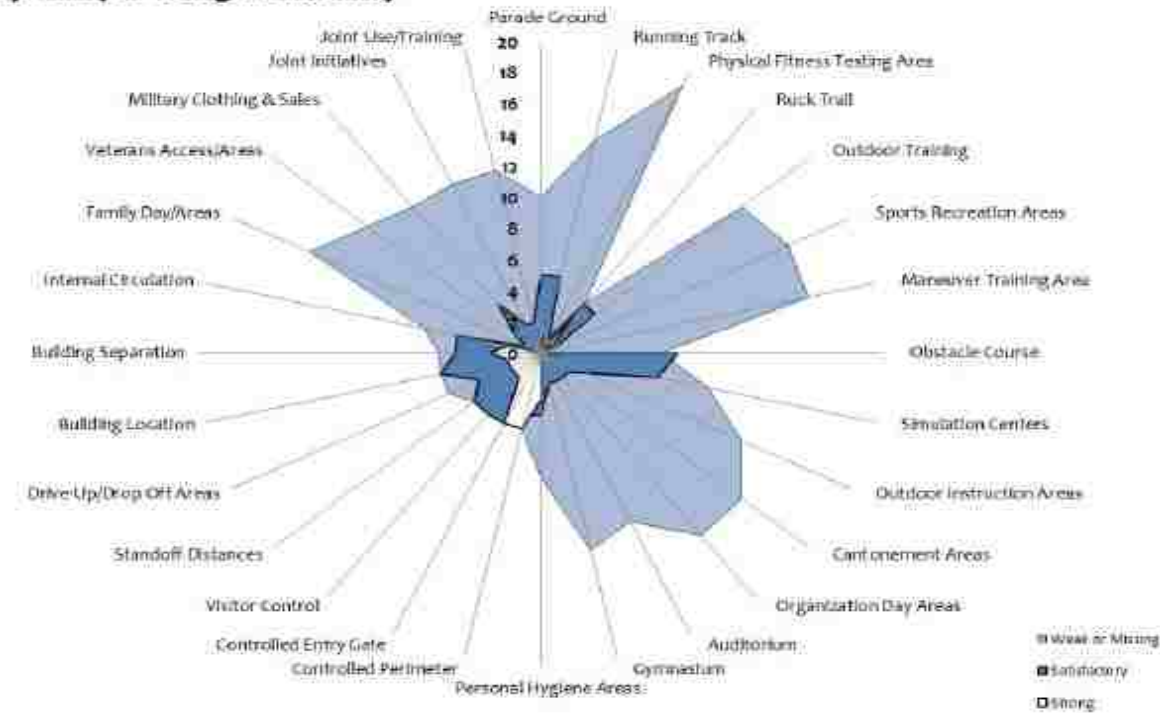
The secondary research methods used to develop the Military Campus Design Taxonomy concept included many historical, current, and strategic resources. These references were used to identify historical perspectives and tie them to current day missions to be applied to the planning and development of the Oñate Complex Training Site.

Primary focus groups were conducted to establish the need for campus features which were not only geared to add aesthetic value to a site, but also allow the organization to meet much of the criteria required of Installation Master Planning from a Department of Defense perspective. The criteria which are listed on the previous page, are generally understood as sound planning practice - with added emphasis on Antiterrorism Force Protection (ATFP).

The focus groups were extremely beneficial to the overall project and thesis as a whole because they provided the opportunity to seek community input in order to establish a fruitful product. As a recruiting mechanism, a memo was distributed to the NMNG Directorates requesting volunteers for this graduate project. A total of two focus groups took place, with a total of twenty participants. The sessions included an introduction to the project, an explanation of both Traditional and Military Design Taxonomy features, and finally a survey for participant to grade each feature discussed as applied to the Oñate Complex.

The survey conducted asked participants to identify if a feature had a strong, satisfactory, or weak/missing presence on the Oñate Complex. The survey included both Traditional and Military Campus Design Taxonomy features. In the graphs created to demonstrate the responses, both design taxonomies seemed to be lacking overall in most areas, though it seems not all respondents answered all questions. It is understood that based on the responses, the majority of the volunteers thought that the features representative of a campus needed a stronger presence on the Oñate Complex. The group discussions seemed to meander to ideas about improvements to the site that would allow for a better reflection of the NMNG heritage, addition of paths to connect places within the complex, and improvement of overall aesthetics.

### Military Campus Design Taxonomy



### Traditional Campus Design Taxonomy

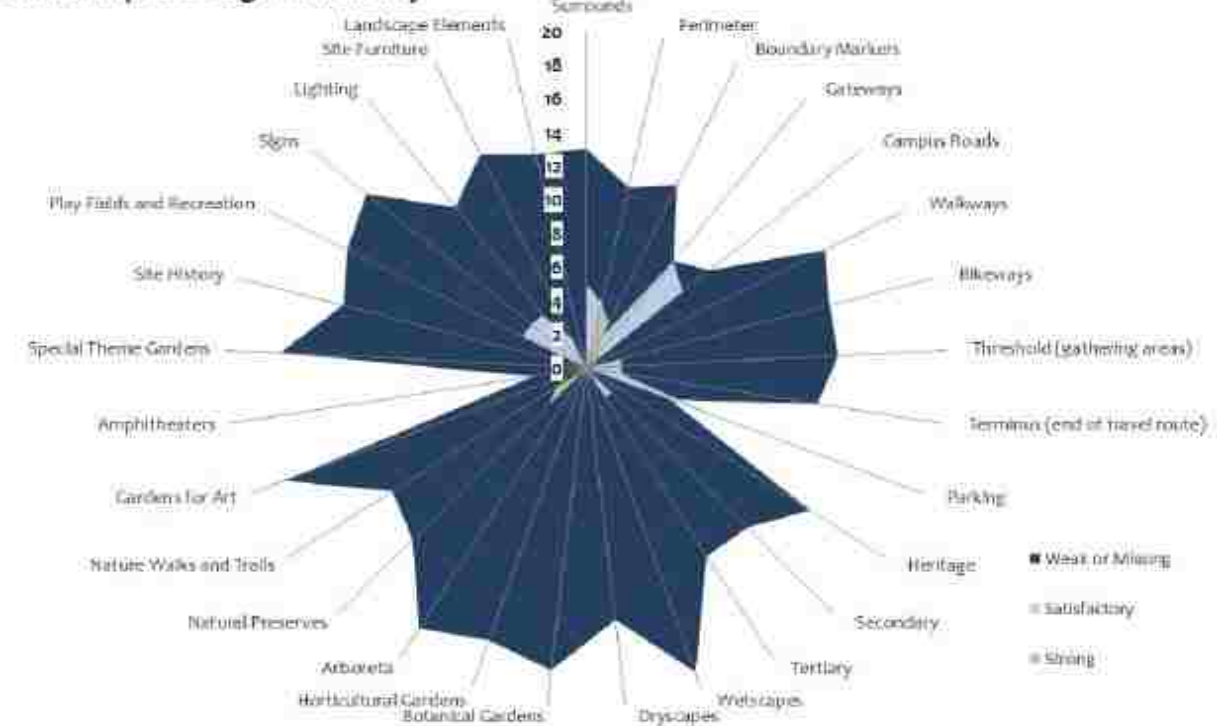


Figure 3: The graphs depict the responses received from twenty participants who work on the NMNG Oñate Complex. Both charts have features that did not get translated through to the development of the final Military Campus Design Taxonomy due to general logical organization, duplication, or lack of pertinence. The graphs visually identify which features the Oñate Complex lacks and which features the community felt had strong representation.





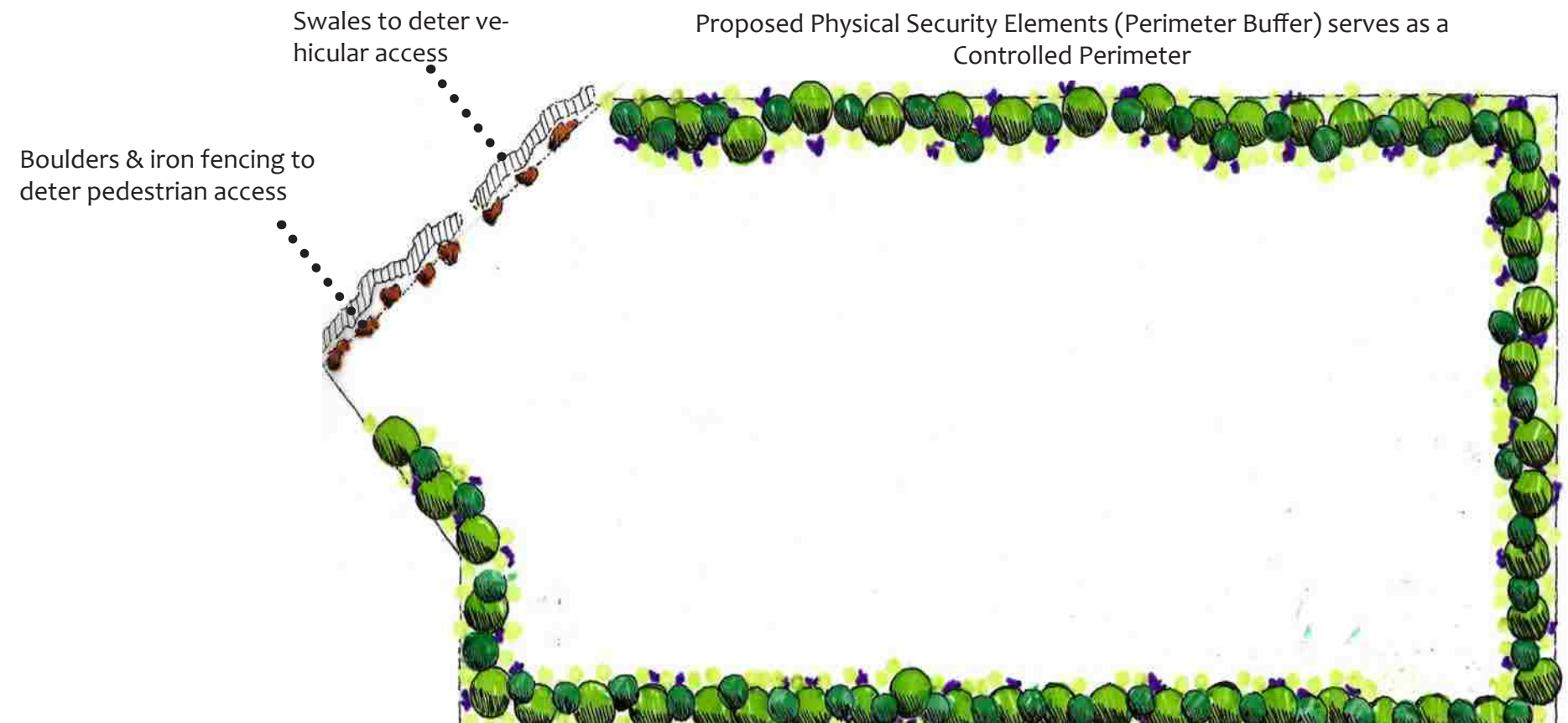
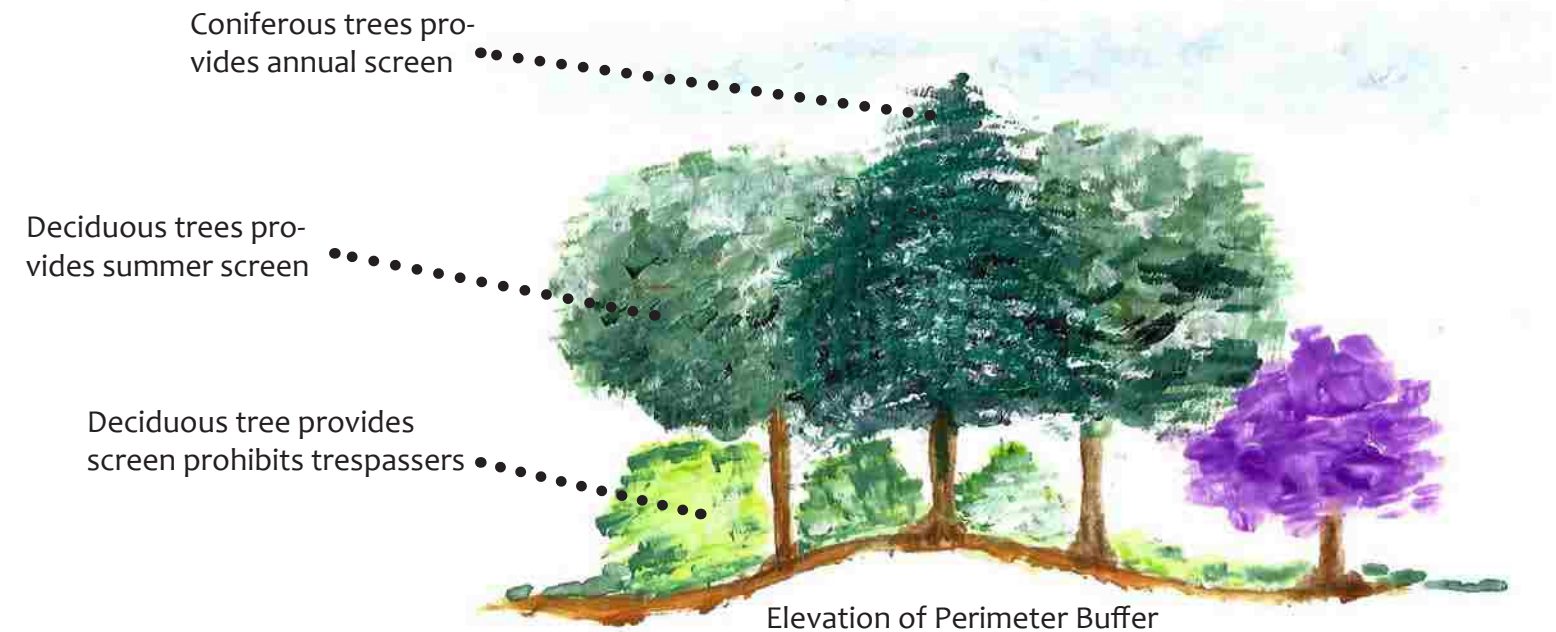
# Building Envelope

## PHYSICAL SECURITY

The current perimeter is lined with a chain link fence that offers no buffer to local residence, and provides no obscurity to the Oñate Complex Training Site. There are areas of the fence that require improvements to be brought into compliance with Antiterrorism Force Protection Standards (ATFP).

The proposed physical security elements include a year-round landscape buffer lining the perimeter; to include twenty to fifty foot deciduous and coniferous trees that will enable more secure edges. The trees will also provide shade and act as a barrier during inclement weather. The increased tree canopy will offer a natural outdoor training area for troops who are conducting courses at the Regional Training Institute (RTI). The plantings will reduce the heat island effect, increase aesthetics, increase erosion control, act as noise abatement, and wind control. The overall sustainability measures far outweigh the cost to incorporate the buffer into the site design.

The proposed entryway has been converted from fencing into a combination of large boulders, and swales that hinder vehicular physical security threats. The iron fencing remains to deter common pedestrian access, but the composition is more appealing.







# Building Envelope

## TRAINING 7 RANGE FEATURES

The proposed physical fitness area includes the addition of two new buildings; a pavillion, two covered training areas, and two new sections of auditorium spaces that line the parade field, to increase the capacity for community events and ceremonies.

The perspective below is a combination trail, running path that connects to a covered arbor implemented within the final plan around the perimeter trail. These areas are developed with the proposed landscape design which offers native species as a preservation mechanism to maintain our natural resources.



The plan above includes community areas that have the potential to serve as physical fitness areas, cook-out areas for fundraisers, and recreation areas for softball, mush-ball, or baseball. The amphitheater seating has the capacity, by design, to seat large groups of servicemembers for ceremonies and other events; It can easily be converted into an area where physical training can be facilitated for running stairs or box-jumps. Additionally tennis and basketball courts have been added increasing the diversity and availability of moral boosting activities. Possible solutions for the amphitheater seating (right) include stone or cement features with multiple step paths from the base to the top. (picture retrieved from [M2planning&design.com](http://M2planning&design.com))





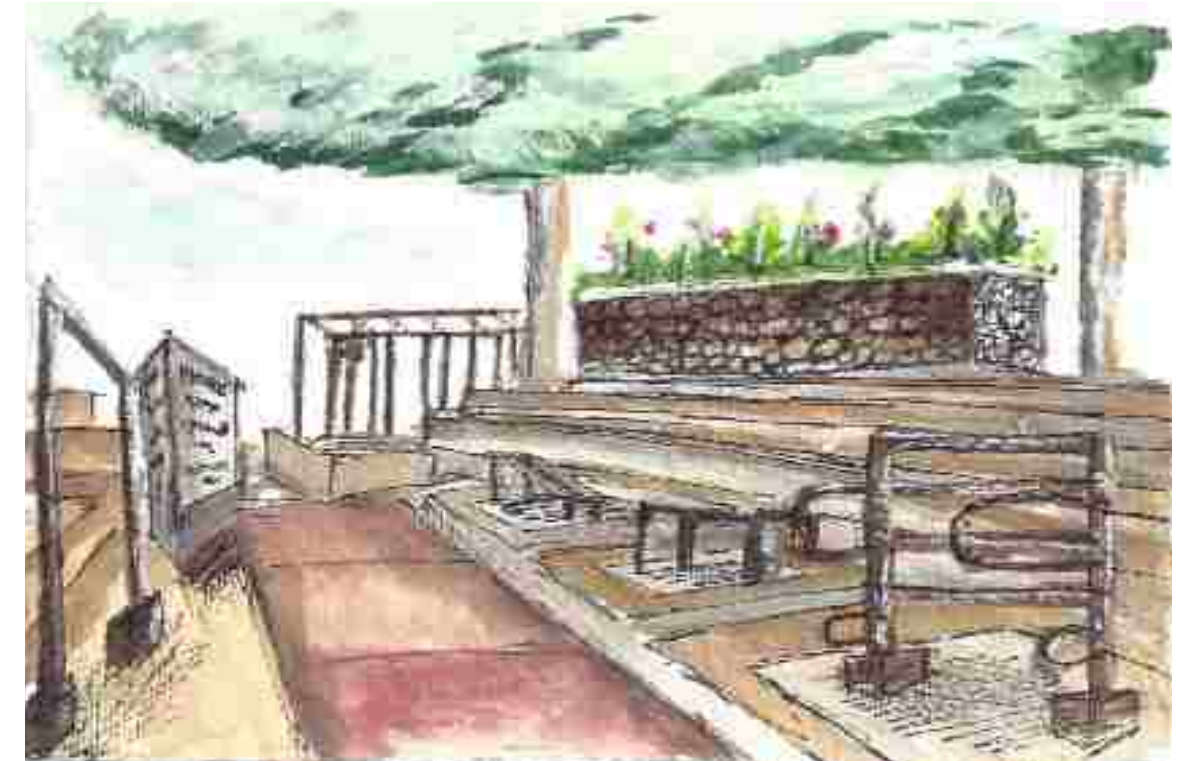


# Building Envelope

## COMMUNITY/PUBLIC SPACES



The proposed physical fitness area and natural cultivation space displays how the NMNG could decrease the carbon footprint by building two-story, multi-use facilities. The buildings in the perspective above are proposed to serve as a pavilion (marked A. on plan, pg. 9) and an organizational classroom building (B.). The building on the left, has a green roof that increases the use of space as well as the life of the roof. The building in the perspective on the right is designed to be an organizational classroom building with multiple spaces to conduct training sessions. The roof implements solar energy panels. The proposed plan includes a great combination of landscaping, seating areas, site furniture and signage as well as multiple recreation and organizational day training areas. All of these features increase morale and socialization opportunities thereby improving resiliency.

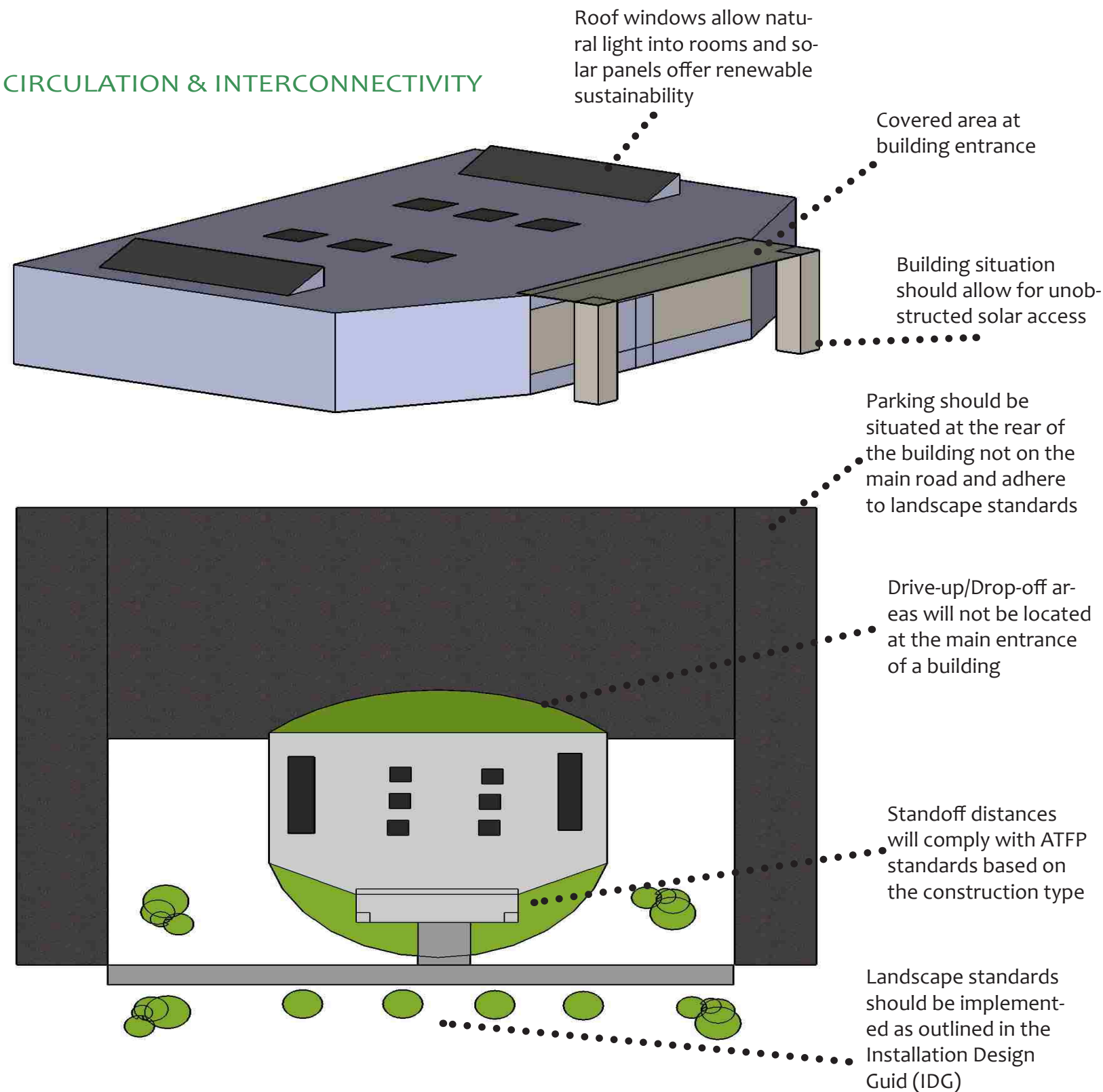


The proposed outdoor training area is situated under a canopy of trees to allow for cover from inclement weather. The area also includes seating that is beneath the trees and in an amphitheater style so a platoon-size element could conduct briefings or training. The stained sidewalks are lined with multiple strength-training fitness structures such as; pullup bars, inclined situp bench, tricept dip station, parallel bars, and monkey bars. The walkway includes a diagrammatic sign display for all fitness equipment to ensure exercises are conducted safely. All of the equipment is built for the outdoors to withstand the weather. The above area could also be used during the annual summer camp where children spend two weeks on site with Soldiers facilitate the the youth camp.



# Building Envelope

## CIRCULATION & INTERCONNECTIVITY



Within the context of the building envelope, features that pertain to site circulation and interconnectivity are as follows:

1. Clear articulation and uniform setback from the street based on the identified 'build-to line' within the Installation Design Guide (IDG).
2. Access roads on either side of the building connected to the parking area in the rear.
3. Buildings should have a clear line of sight by all sides, no other structure should obstruct that line of sight.
4. The landscape and streetscape should follow the IDG requirements thereby offering a uniform pattern to the planned development.
5. Site furniture and signs should not be placed directly outside of the door, but on the walkways that lead to the entrance.
6. Buildings should all have bike racks installed and should be connected through pedestrian friendly walkways.
7. Functionally within the site, the building should be located so that it is unobstructed from solar access, and in the best position to benefit the needs of the site as a whole.
8. Terminus (end of a travel route) areas refers to recycling locations, loading/unloading areas, and trash receptacle areas - all of which should be placed functionally in the most efficient area to meet the need.
9. Threshold (gathering areas) - at the front and rear of the building should enable social gathering. The incorporation of site furniture and landscaping enables this function along with the creating; Heritage, Primary, Secondary and Tertiary spaces which also allow for community gathering areas.

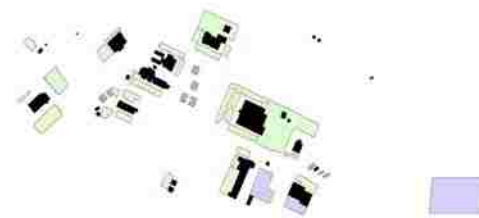




# Street Envelope

## CIRCULATION & INTERCONNECTIVITY

Current Circulation Pattern  
(east to west with one Bataan Blvd.)



Parking Areas Paved/Unpaved



Road Paths in Parking Areas



Road Network

**Figure 4:** The graphics above show the visual data layers as they appear extracted from GIS. They represent some of the infrastructure elements on the Oñate Complex.



The Oñate Complex Training Site currently has a two-directional layout that connects on the west side of the site with New Mexico State Penitentiary. From a functional perspective, the site is lacking maneuverability; both in a vehicle and on foot. The layout allows one way in and one way out. From an Antiterrorism Force Protection (ATFP) standard, having a loop pattern would enable access to all areas. The NMNG conducts training scenarios regularly which typically require a road

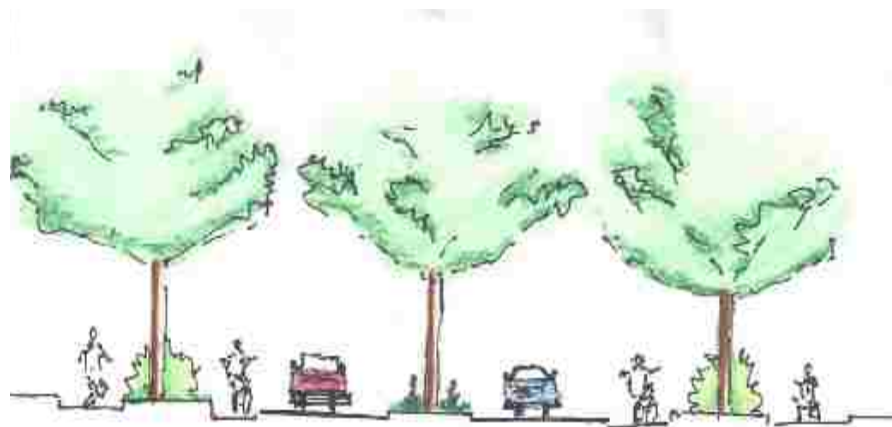
to be cordoned. If there were a loop, given the scenario training, the community would still be able to operate without disrupting the training. Logistically this pattern makes more sense because it offers large truck deliveries to bypass the main street and navigate to the warehouse - located on the west side of the complex. Finally the additional street, sidewalk, and running path will increase the variety of paths to take during morning physical training.



# Street Envelope

## CIRCULATION & INTERCONNECTIVITY

The current street envelope is lacking in character, navigability and efficiency. The main road that bisects the site has only one sidewalk on the north side of the street which is not functional for the whole complex. In order to establish that Military Campus Design Taxonomy, the proposed streetscape includes sidewalks, landscaping strips, bicycle paths, and a landscaped median to better facilitate the intended uses. The added median will allow the military vehicle and delivery truck traffic to go on the bypass loop instead of down the main street. Filtering out that traffic will allow a smaller, more compact, and pedestrian friendly space. The main street landscaping pattern should be a combination of shrubs and ornamental trees to allow a continuously shaded path for pedestrians to walk. The 'desire lines' will lead to commercial eateries, military clothings and sales, and heritage spaces and courtyards. The development of the streetscape form will better facilitate the function of the site and effectiveness of the development.



Proposed Bataan Blvd.



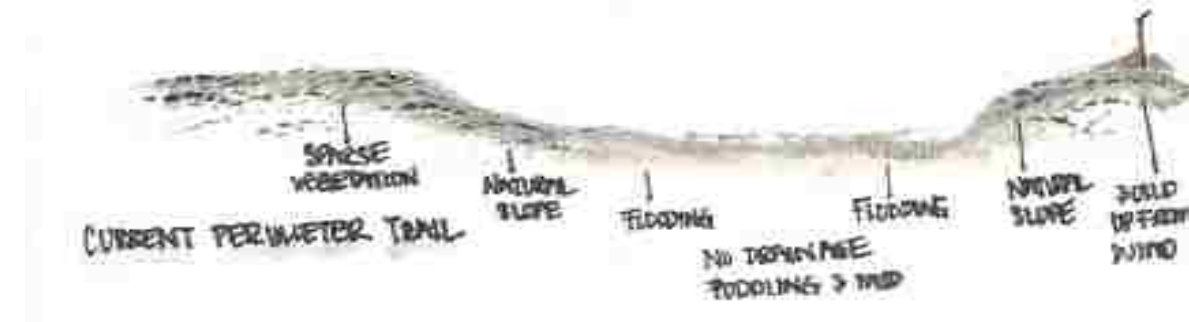
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Street Feature	Width
Sidewalk	6'
Landscape Strip	6'
Bike Path	5'
Traffic Lane	12'
Median (with turn lane)	11'
Bike Path	5'
Sidewalk	6'

Proposed Perimeter Trail



Current Perimeter Trail



The proposed path above is the perimeter trail that remains unkept and often floods when it rains. The above proposal includes crowning and grading the path so enable efficient runoff and implement swales to catch water during the rainy season. In addition to that the site has a general slope that further impacts the trail with eroded material from the slopes. To prevent the erosion, the plan above includes rock gabions and landscaping to control the water flow. The buffer that lies on the inner circle of the perimeter establishes continuous shade and acts as a physical barrier to meet Antiterrorism Fore Protection standards (ATFP). The path has continuous solar lighting to allow for the safe passage for those training beyond hours of daylight.





# Landscape Design

## FIRST ENCOUNTERS

The proposed landscape elements established in the matrix here will help to give more depth and character to the site offering a variety of textures and colors throughout the year. The selected vegetation is a sampling of those plantings that would thrive on the Oñate complex given the weather and drought patterns of the region.

The matrix identifies which vegetation would be more appealing in specific areas of the complex to facilitate the desired pattern of streetscape, perimeter security buffer, and general landscaping strips. Implementation of this type of matrix will enable a well-defined sustainable destination place for our community.

### SITE DESIGN WITH NATIVE VEGETATION

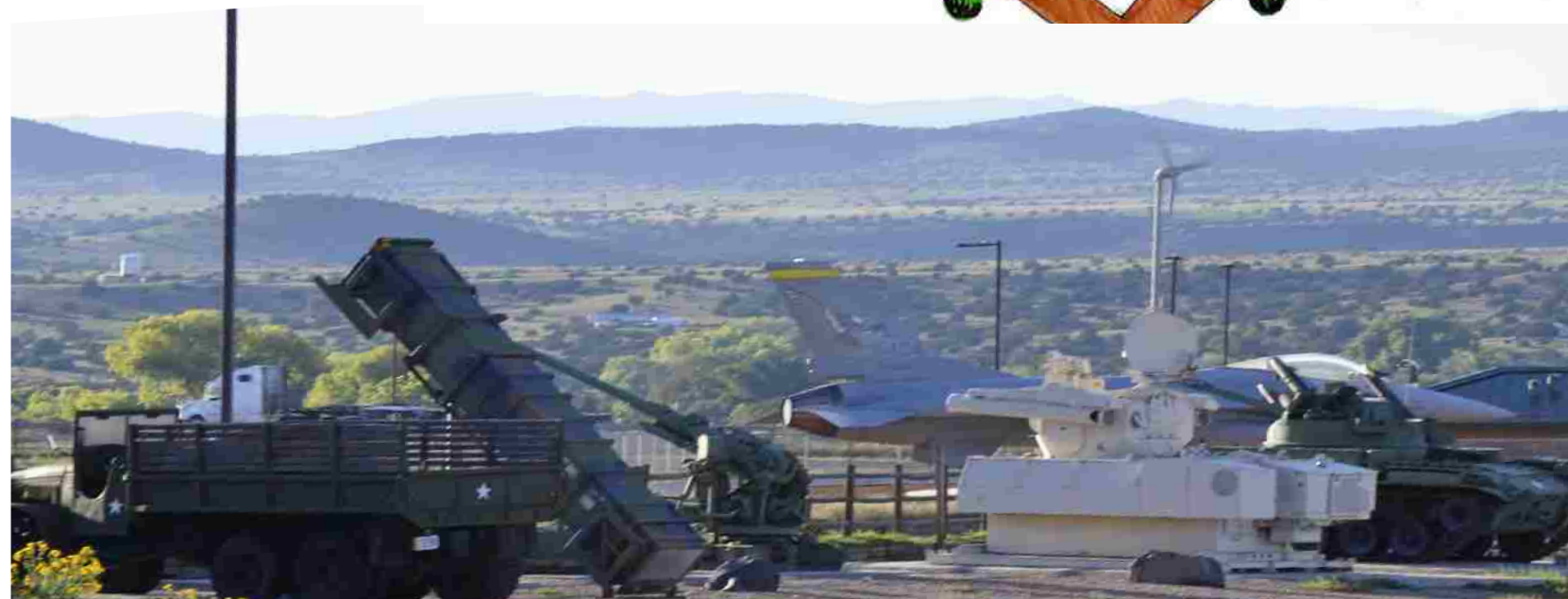
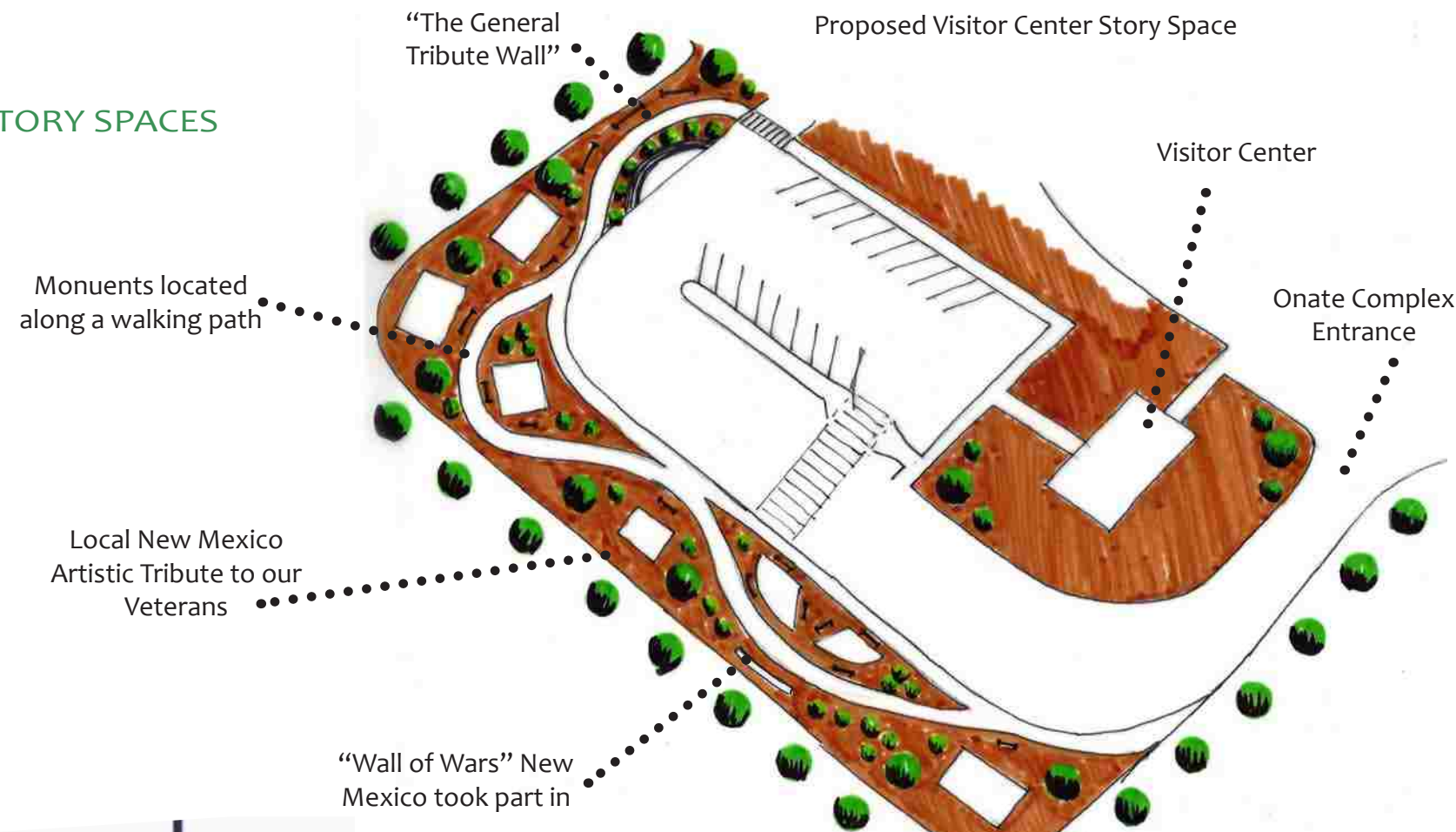
**GROUND LEGEND:** Multiple sustainable treatments for landscape strips or walkways.

DECIDUOUS	EVERGREEN	CACTI & SHRUBS	GRASSES & PERENNIALS	
 <p>Streetscape: Aristocrat Pera (<i>Pyrus Calleryana</i>) Height 12'-20' Pyramidal growth, heat and cold tolerant, flowering</p>	 <p>Perimeter: Ponderosa Pine (<i>Pinus Ponderosa</i>) Height 30'-60' Dependable native to New Mexico</p>	 <p>Ornamental: Agave Century Plant (<i>Agave americana americana</i>) 6'H x 10'W Perennial Makes a dramatic focal point</p>	 <p>Ornamental: Pampas Grass (<i>Cortaderia selloana</i>) 10'H x 8'W Fast growing saw-toothed, light green, grassy leaves</p>	
 <p>Streetscape: Chinese Pistache (<i>Pistacia chinensis</i>) Height 14'-28' Drought tolerant does well in urban settings</p>	 <p>Perimeter: White Fir (<i>Abies concolor</i>) Height 24'-40' Native to New Mexico, bluish or greyish green</p>	 <p>Ornamental: Ocotillo (<i>Fouquieria splendens</i>) 18'H x 10'W Desert shrub with long, grooved, spiny canes with red flowers</p>	 <p>Ornamental: Mexican Feather Grass (<i>Nassella tenuissima 'Stipa'</i>) 2'H x 1.5'W Fine textured, clumping ornamental grass fast growth</p>	
 <p>Streetscape: Honey Locust (<i>Gleditsia triacanthos</i>) Height 20'-30' Used in landscape as shade tree, thornless variety</p>	 <p>Ornamental: Japanese Black Pine (<i>Pinus thunbergii</i>) Height 16'-62' Salt tolerant, best in full sun, heat and drought tolerant</p>	 <p>Ornamental: Spanish Broom (<i>Spartium junceum</i>) 10'H x 10'W Blooms in early spring, moderate growth rate, drought tolerant</p>	 <p>Ornamental: Bee Balm (<i>Monarda didyma</i>) 3'H x 1.5'W Can be invasive, should be reserved for large areas or in swales, full sun to part shade</p>	
 <p>Perimeter: White Ash (<i>Fraxinus americana</i>) Height 30'-50' Fast growing shade tree, reddish purple in fall</p>	 <p>Ornamental: Austrian Pine (<i>Pinus nigra</i>) Height 38'-48' Reliable, adaptable specimen, known to grow easily in Santa Fe, NM</p>	 <p>Ornamental: Boxwood Japanese (<i>Buxus microphylla japonica</i>) 4'H x 4'W Dense evergreen shrub used in partly shaded areas</p>	 <p>Ornamental: Lavender 'Hidcote' (<i>Lavandula angustifolia</i>) 1.5'H x 2'W Deep blue blossoms, grows in a uniform broad compact mound</p>	
Mulch	Colored gravel	Colored stone	Pebbles	Colored Concrete
<p><b>VEGETATION LEGEND:</b> Streetscape: For use along the edges of streets, walkways, or bicycle ways. Generally smaller shade trees.</p>		<p>Perimeter: For use along the edges of the site or large open areas, to mark boundaries, gateways, parade grounds, or provide large shaded areas.</p>		<p>Ornamental: For use to accent areas in gardens, groves, recreation, or story spaces. These trees provide character and enhance quality of place.</p>





## STORY SPACES



Story spaces are those very special places that tell the story of our heroic Soldiers' and Airmen. They depict the trials and depth of suffering faced for the freedom of our great Nation. The picture on the lower left is our current 'story space'. It does not allow visitors to access on foot to read the signs posted in front of each monument. The above plan (left) depicts a proposed story space that includes the visitors center where the NMNG heritage can be on display for community members that reside outside the perimeter. The perspective above is a representation of another possible pavillion with monuments surrounding it. Both concepts speak to the importance of well thought out stories told in our spaces.





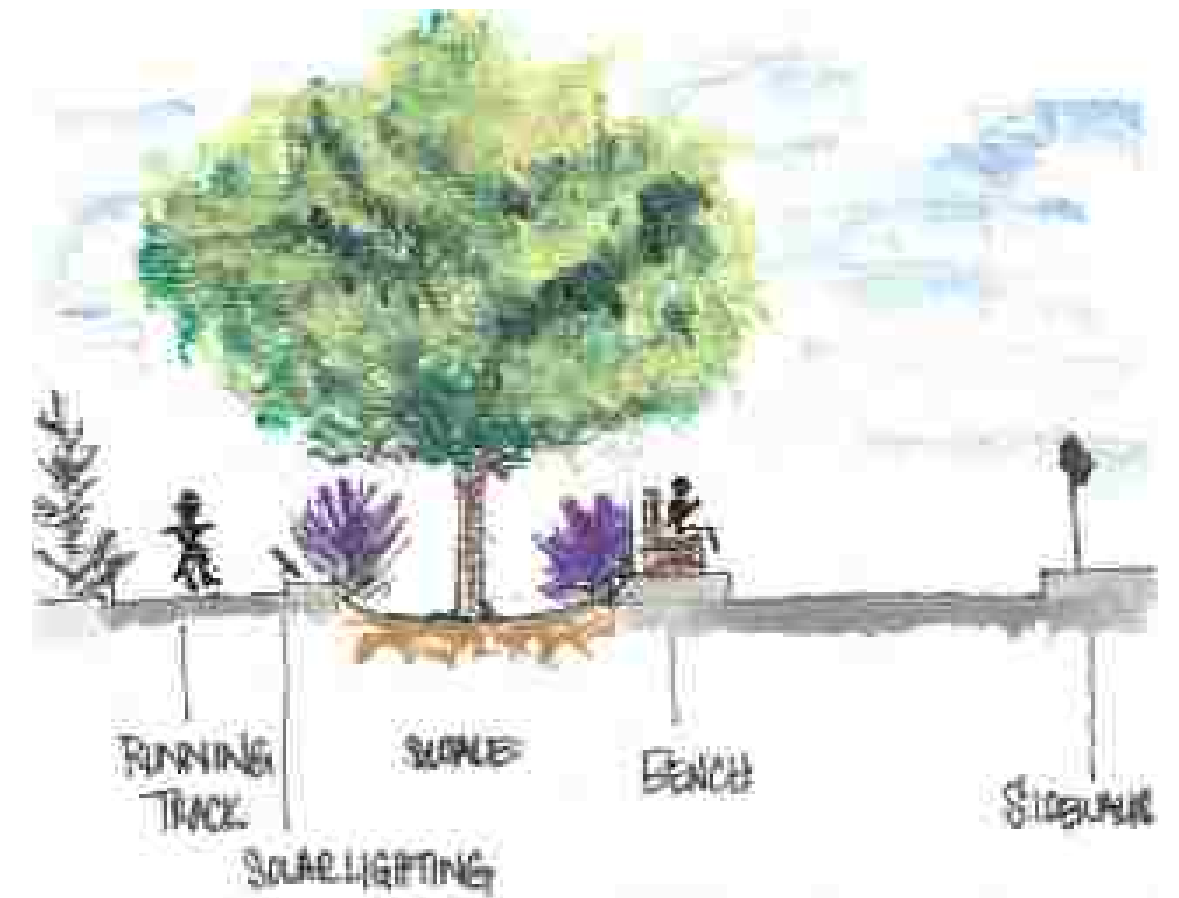
# Landscape Design

## GROVES, GARDENS & FIELDS



Some of the above pictures represent the visual appeal that gardens, and groves as a Military Campus Design Taxonomy create in site design. These concepts here show layering of multiple textures and effects with edges that are complimented by landscaping. Groves, gardens, and fields was combined within the design taxonomy to represent the following concept; “they provide the setting and continuity for the people, events, places and artifacts which have contributed to the changing scene of human experience and they represent an important link in our history” (Dober, 2000).

The pictures on the left were taken at the New Mex-



ico Veterans Memorial in Albuquerque. As I walked through the spaces, I felt as though each space was created specifically for the intended theme, and was designed to facilitate the great pride and honor represented by those who have sacrificed of themselves.

The perspective drawn above is a proposal to use swales when designing running tracks and walking paths in close proximity. On the Onate Complex, there are multiple areas that this would be beneficial. Adding swales would also provide the opportunity for themed garden spaces thereby increasing visual appeal, delineation of spaces, and character within the place-making effort.





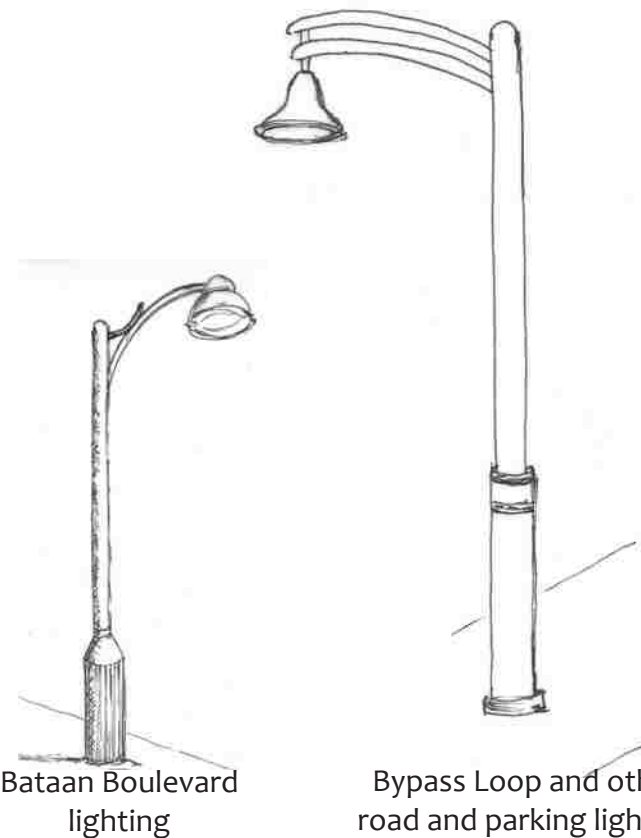
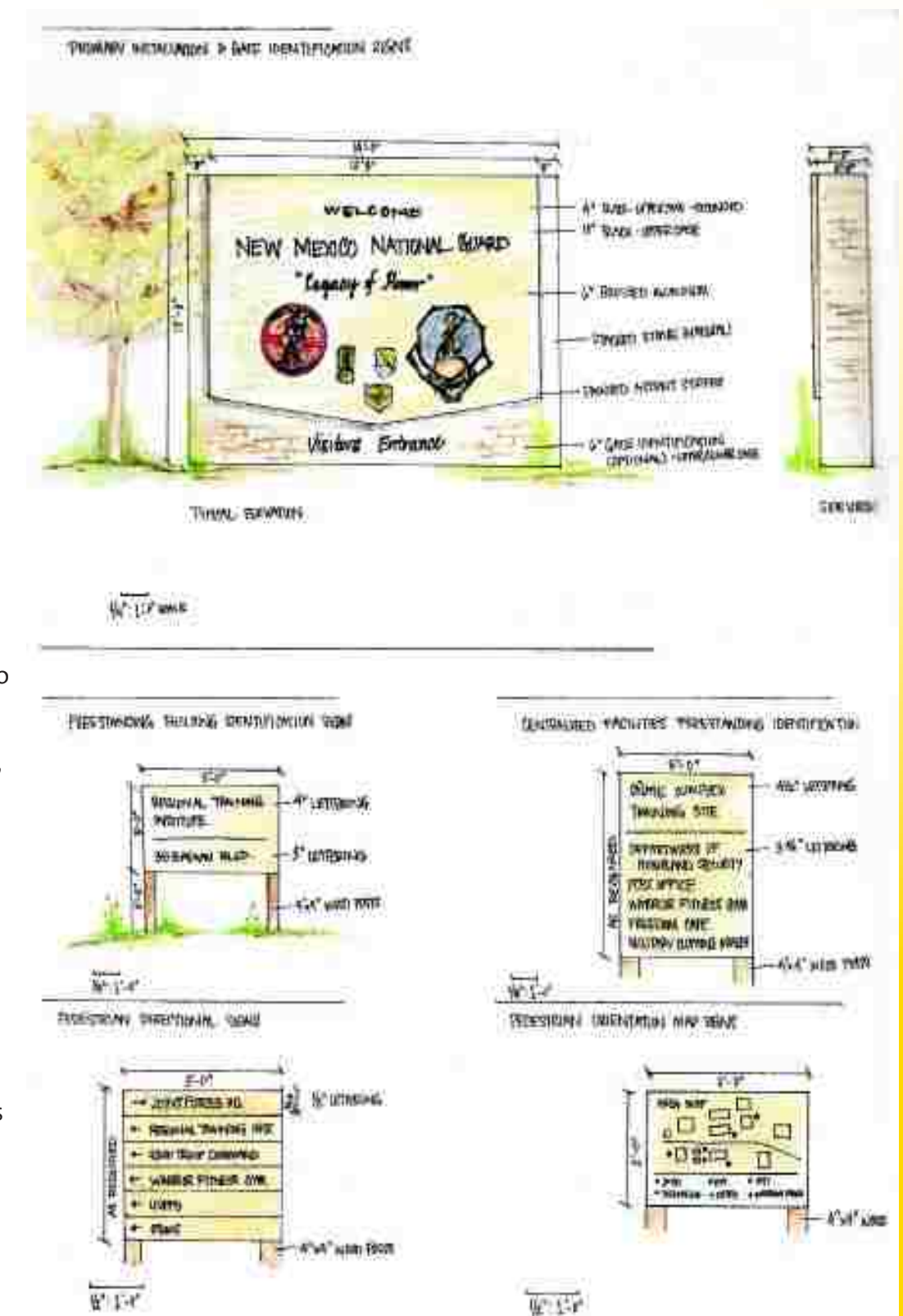
## PLACE-MAKING ELEMENTS

The proposed place-making elements consist of lighting, signage, site furniture and landscaping. The recommended lighting variety introduces larger pole for the proposed bypass loop. The smaller lighting selected for Bataan Boulevard has the ability to create the main-street feel that provides a pattern for the two-lane street. The path-lighting bollard displayed is solar powered and will increase safety on the site by providing continuously lit paths and networking spaces together for greater connectivity.



The perspective above displays what a re-designed controlled entry gate could offer by way of further controlling the entry of vehicles so there is not a direct path onto the complex. In addition it would allow the opportunity to create a custom sign that displays the NMNG heritage, motto, and mission (brigade) patches.

The sign standards identified on the left are an example of the type of signage that would benefit the community and visitors of the Onate Complex Training Site. The sign standards were obtained from Unified Facilities Criteria (UFC) 3-120-01 Design: Sign Standards, which are used by active duty military branches. Other personalized options for signage recommendations are; dedication of buildings to heroic servicemembers, street signs that identify specific periods of time, or signs that provide historical insight for a monument.

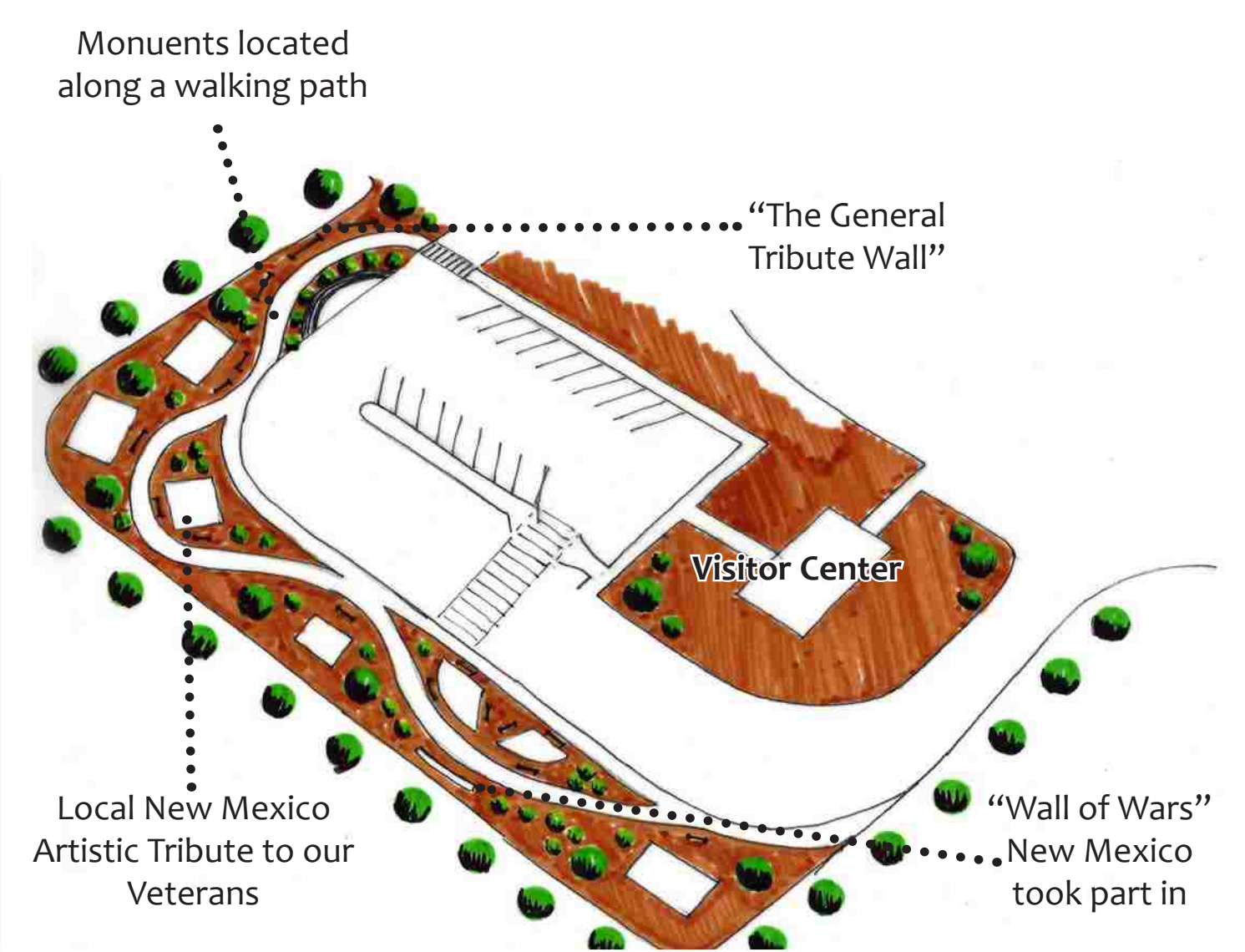
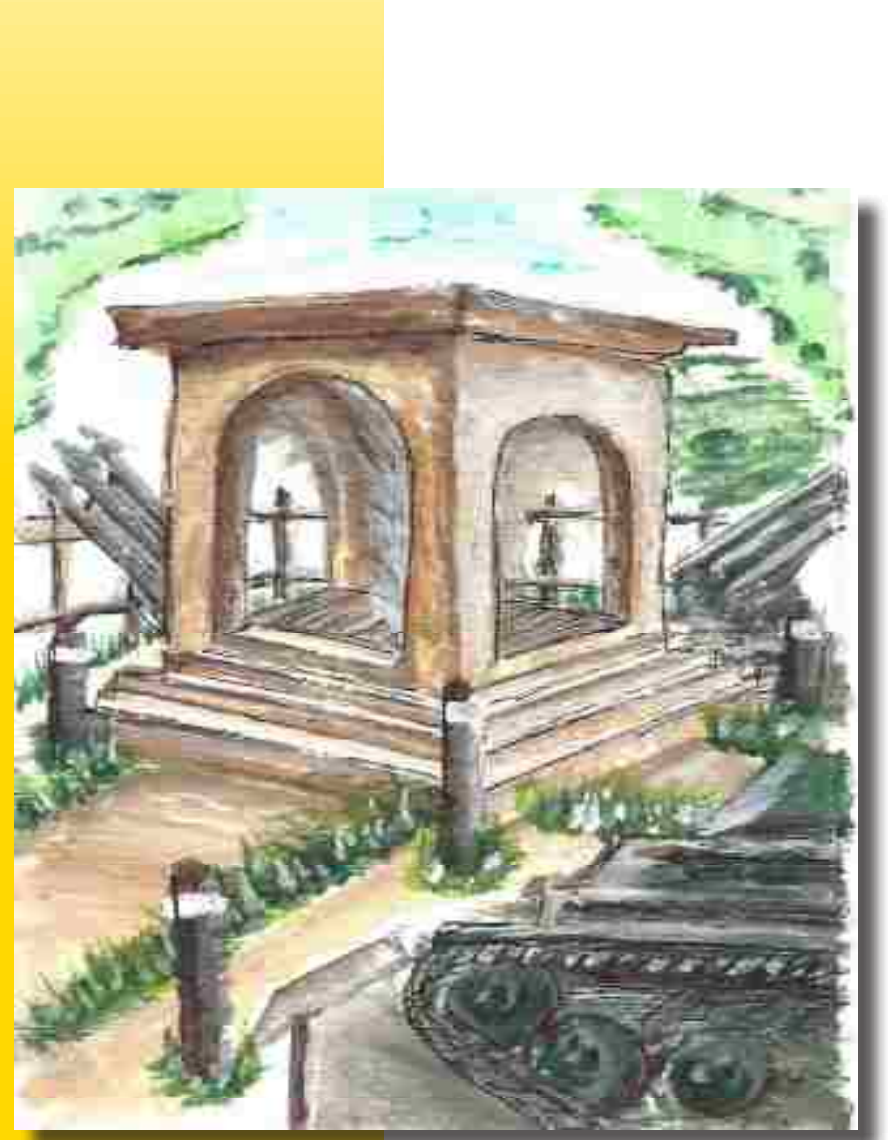




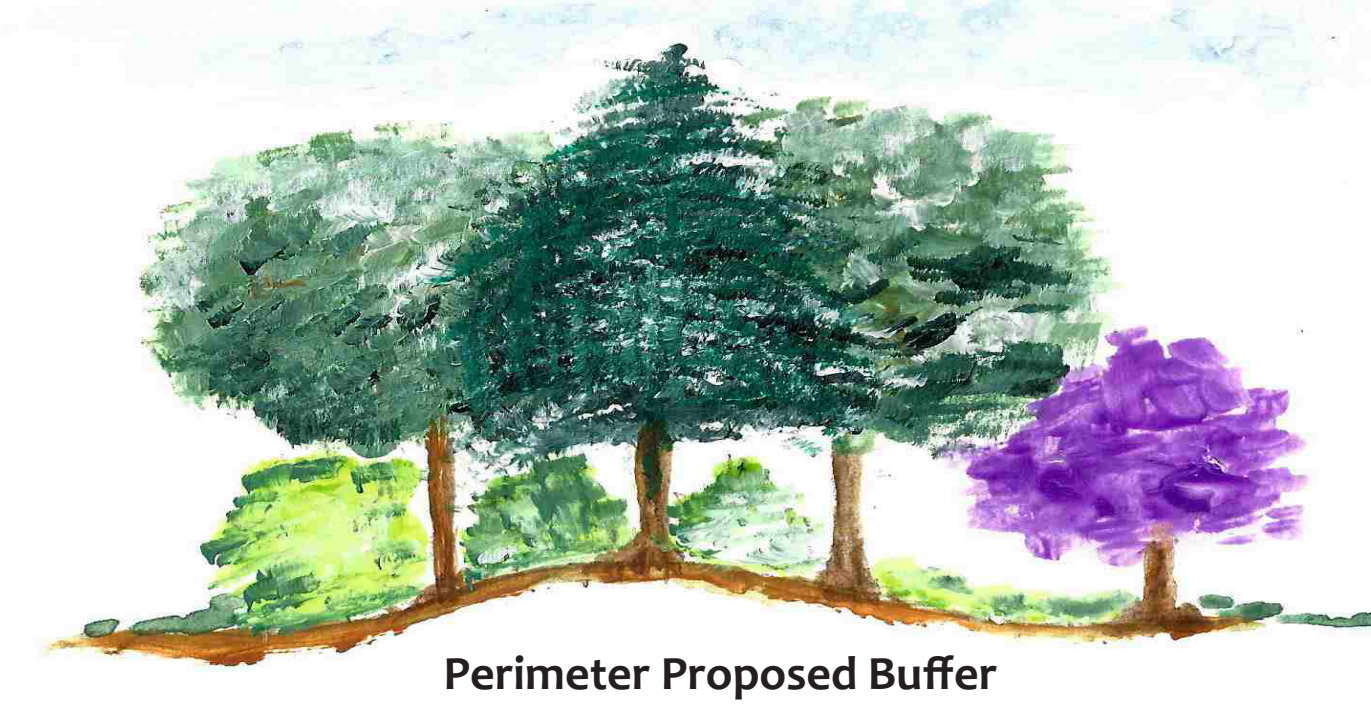


# New Mexico National Guard

## Onate Complex Training Site, Santa Fe NM Proposed Campus Plan



**New Mexico National Guard Monument Walk**  
Displaying these historical monuments for the public to visit next to the visitors center would open up a portion of the campus to the community.



Perimeter Proposed Buffer



**Physical Fitness Pavilion & Multipurpose Buildings**  
The improved area is located on the east side of the oval running track. The development incorporates a plaza area that can be used for ceremonies, group fitness, and walking/running paths. The Pavilion on the left makes use of green roof concepts which enables the NMNG to reduce the carbon footprint, make use of the arid climate, and increase the life of the roof system.



- A. Proposed Pavilion & Gym
- B. Proposed Organizational Classroom
- C. Proposed Covered Training Area Company
- D. Proposed Covered Training Area Company
- E. Proposed Auditorium Stands
- F. Proposed Auditorium Stands

Proposed Delivery Truck & Military Vehicle Entrance with Mail Room and Checkpoint

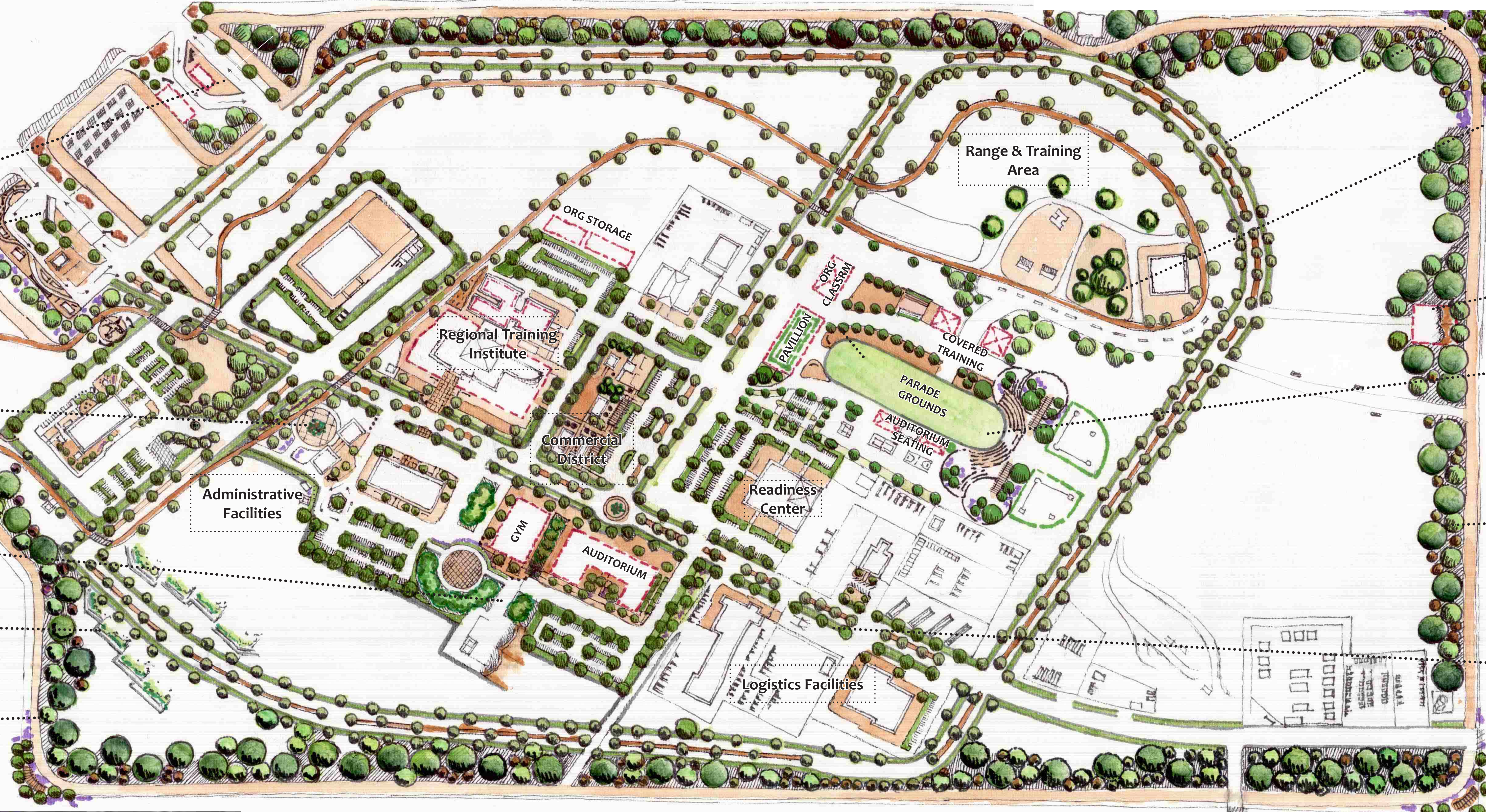
Signage implemented throughout the campus, along with lighting on trails, paths, walkways and streets

Added gardens throughout the campus to engage Secondary and Tertiary Spaces, and to create 'desire lines'

All proposals for new buildings include the proposed building envelope standards parking in the rear, drive-up/drop-off area concept, and standoff distances.

Rock gabion structures to control erosion

Improved perimeter trail - crowned to control runoff, swales added to hold runoff, solar lighting added to path



Proposed Bypass Loop added for improved functionality and direct delivery truck and military vehicle access

Improved training area allowing for shade while at the repel tower or obstacle course

Proposed Ammunition Supply Point - more secure distance from community & structures

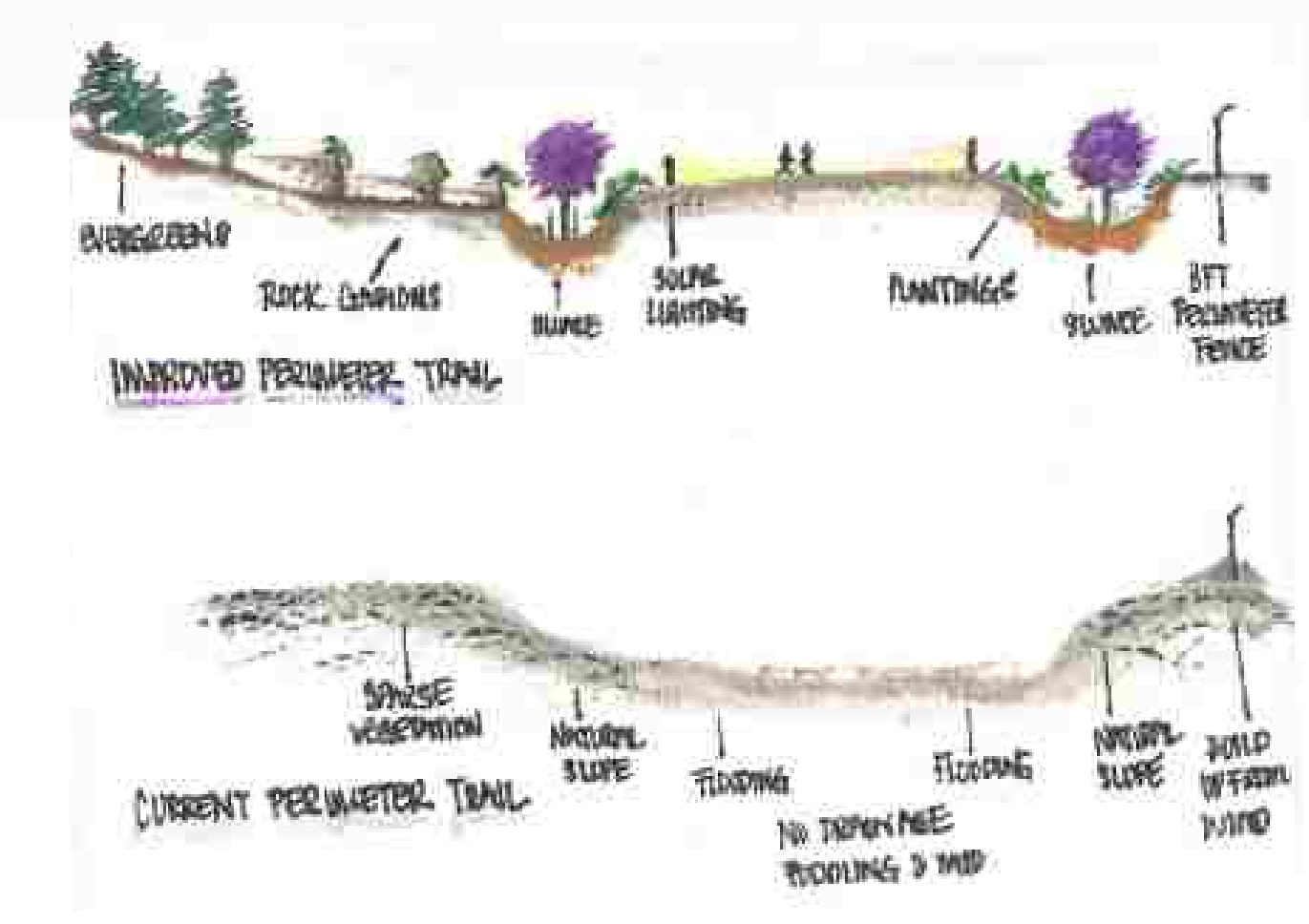
Improved training area to include parade field, amphitheater seating, recreation and play fields, community areas, a pavilion and gym, organizational classroom, and two covered training areas

Proposed Controlled Perimeter (Buffer) provides an annual screen and shade for the trail and training activities

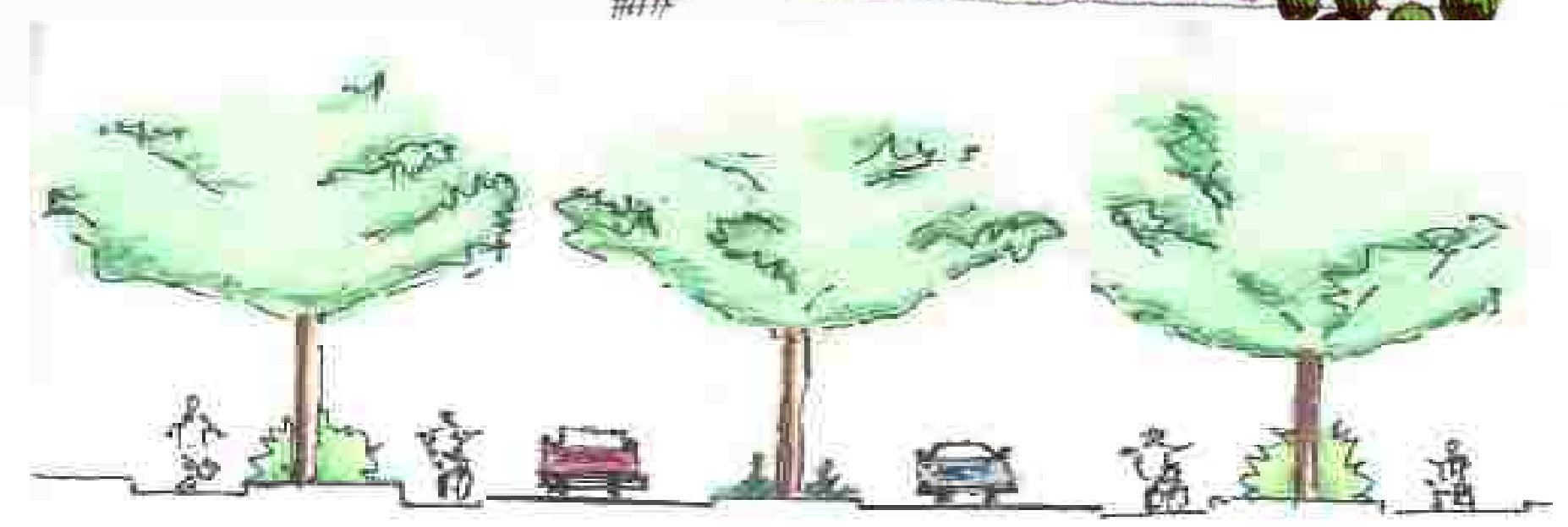
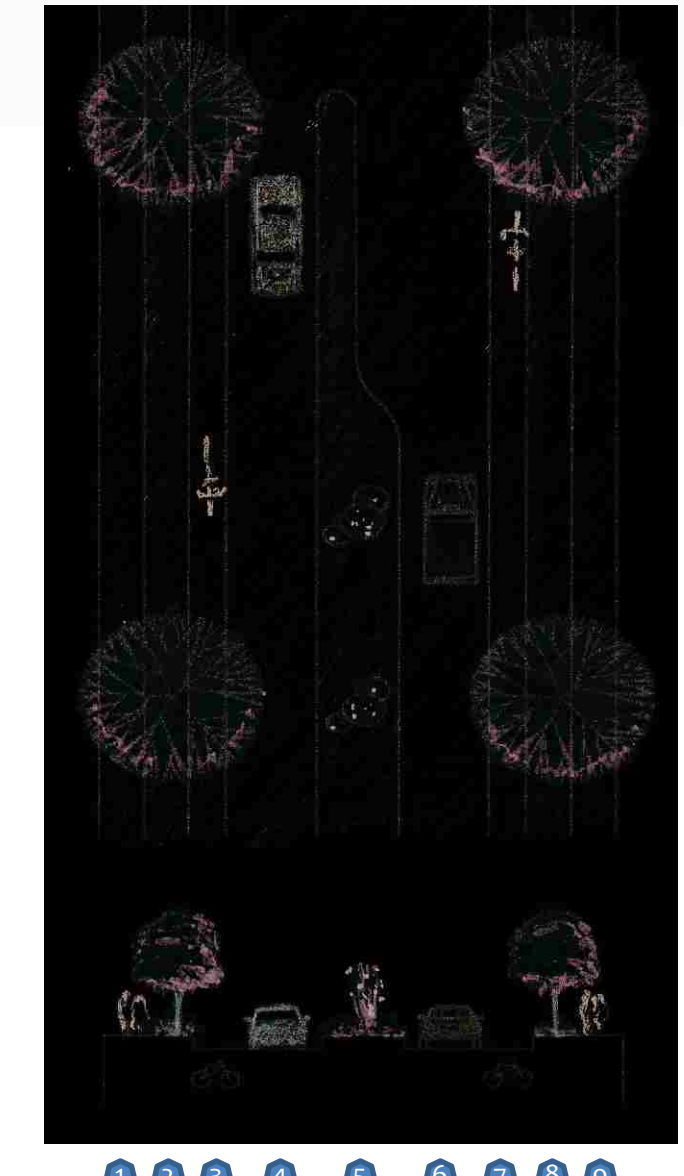
Proposed improvement to all streetscapes include sidewalks, landscape strip, bike path, and median



**Trails & Covered Areas**  
This perspective shows a trail with continuous solar lighting, landscaping, and a covered area with solar panels. The area is located close to the oval running track. Beyond the covered area are softball fields and tennis/basketball courts. The area improves the functionality of the current space, and allows for compact spaces that can fit many users.



**Perimeter Trail Erosion Control**  
The improved perimeter trail would allow the natural environment to remain in tact while enabling Soldiers and Airmen the opportunity to run on the trail during bad weather. Solar lighting will line the trail to improve safety, security, and implement sustainable materials.



Street Feature	Width
1 Sidewalk	6'
2 Landscape strip	6'
3 Bike Paths	7'
4 Traffic Lane	12'
5 Median (with turn lane)	11'
6 Bike Paths	7'
7 Sidewalk	6'


**National Guard Main Street**  
The proposed main street would decrease the speed of traffic, and would allow for walking and biking paths on both sides. It would reduce front parking spaces, and increase the ability for handicapped people to navigate the site while integrating sustainable concepts such as landscaping, solar lighting, and continuous pathways. This development would also increase safety measures and increase standoff distances.




# Appendix A: Focus Group Boards

## Defined by Our History


**Presidio 1876**



**Armory 1908**




**Armory 1913**



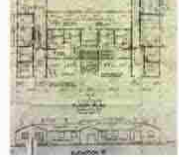
**Armory 1921**




**Burns General Hospital 1930-1940's**




**Armory 1940's**  
The Armory moved to 18th Old Post Trail, and remains today as the Bataan Memorial Museum which is on the National Register of Historic Places.


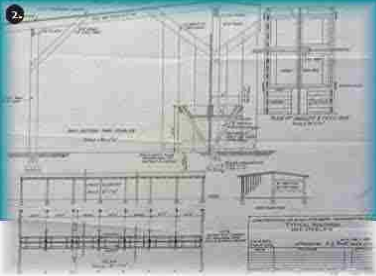
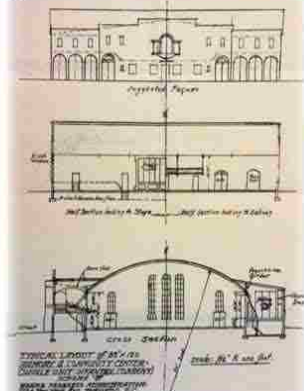
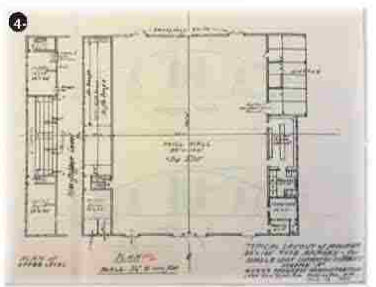
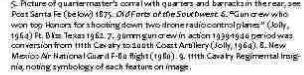






**Armory 1980's**  
The Armory moved to Central Road which remained the single location for the next several years and the Oneas Site was acquired.









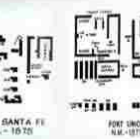
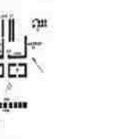
**Joint Forces Headquarters 1996 - Present**  
The Oneas Complex served as the Joint Forces Headquarters and was acquired in 1992, and the majority of the buildings we see today were constructed prior to 1996.



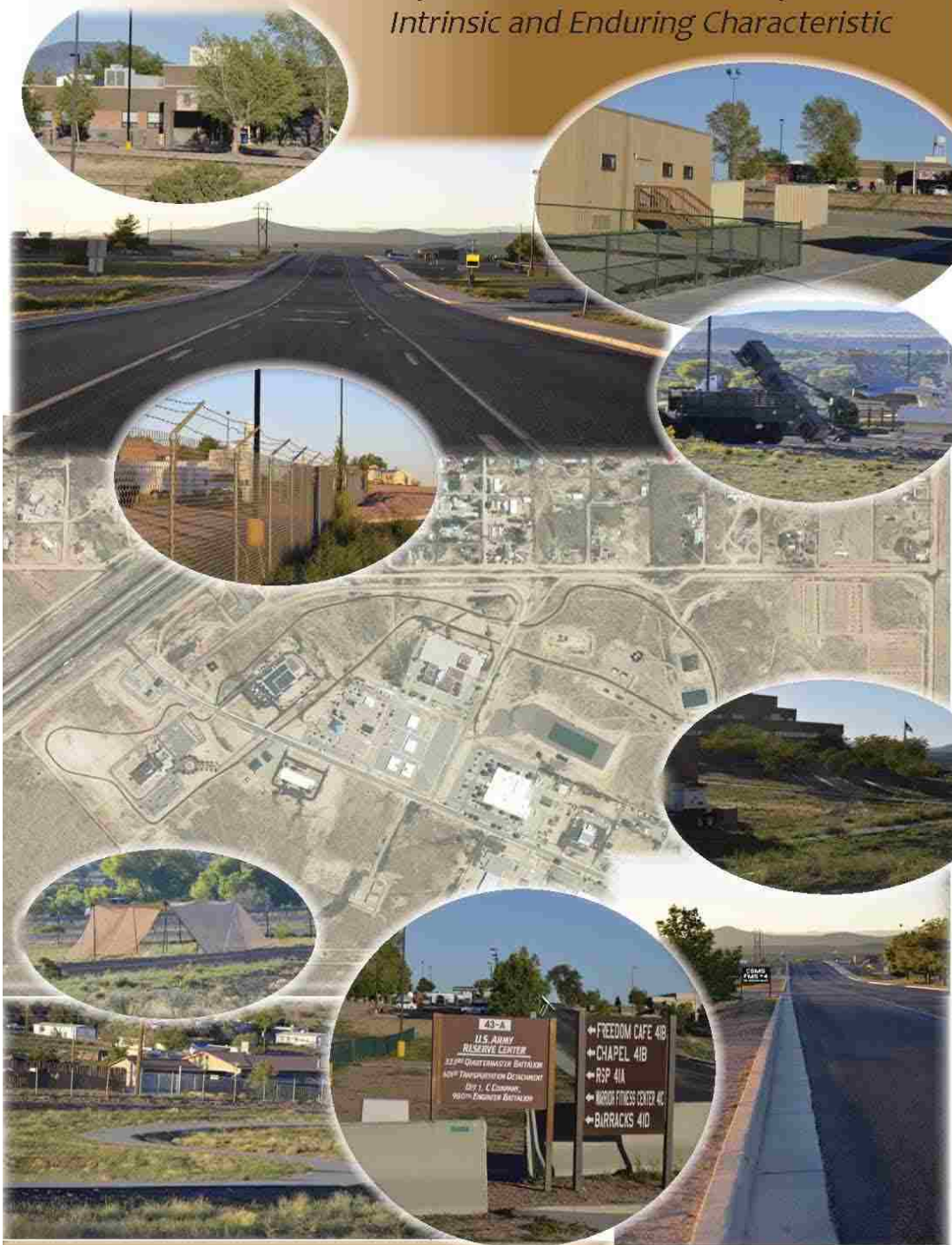










**REGIMENTAL INSIGNIA 11th CAVALRY**  
The Coat of Arms of the 11th Cavalry is a shield with a fanny banner on the AVANTU! on the crest of it. The AVANTU! is a figure representing happiness and prosperity which was used by the original Civil Cavalry in New Mexico. There are two crossed lances from the crest of it, and the motto banner is on a scroll.

The first one crossed lances of the crest of the 11th Cavalry of New Mexico and was used by that organization for several years before the crest of the whole unit. It was a shield of AVANTU! (the spirit of war) the goddess of good and peace and the banner of the crest of the 11th Cavalry. The crest of the 11th Cavalry is a shield with a fanny banner on the crest of it. The AVANTU! is a figure representing happiness and prosperity which was used by the original Civil Cavalry in New Mexico. There are two crossed lances from the crest of it, and the motto banner is on a scroll.

*Physical Form is a Community's Most  
Intrinsic and Enduring Characteristic*



*“Sow a thought, reap an action; sow an action, reap a habit;  
sow a habit, reap a character; sow a character, reap a destiny.”*

Ralph Waldo Emerson  
famous American essayist

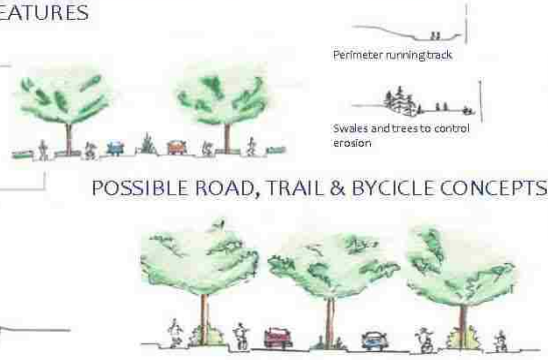
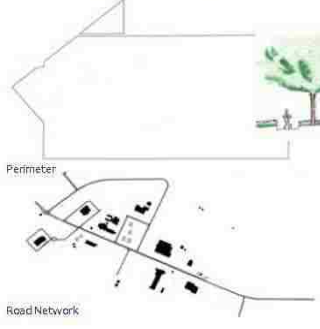




## Exploration of Ideas

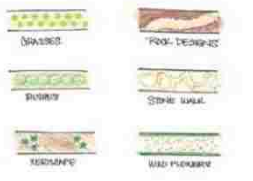
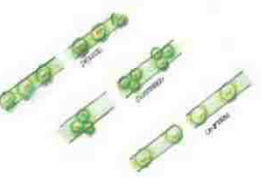


### CURRENT PHYSICAL FEATURES



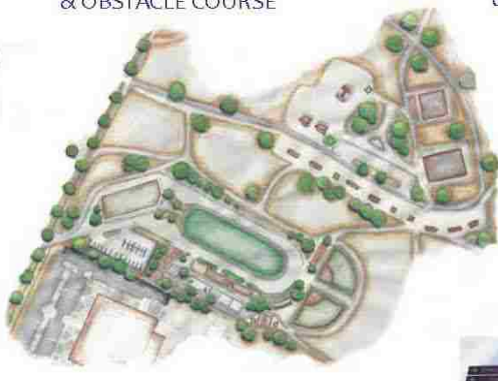
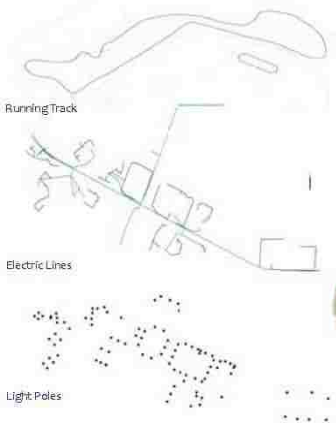
Plant Name	Width
Maple	4'
Juniper	4'
Boxwood	4'
Yew	4'
Redwood	4'
Oak	4'
Walnut	4'
Cherry	4'
Apple	4'
Pear	4'
Plum	4'
Almond	4'
Walnut	4'

### LANDSCAPE TREATMENTS & CONCEPTS



### PLAN VIEW OF PARADE FIELD & OBSTACLE COURSE

### PLAN VIEW OF AUDITORIUM & GYMNASIUM



### HERITAGE & SIGNAGE OPPORTUNITIES



Appendix B: Focus Group Questions  
**Onate Complex Training Site Proposed Campus Plan Questions**

*General Questions to be asked to each participant:*

**1. Functionality:** Please think about the functionality of spaces within the complex to include check point, running tracks, buildings, and location of destination spots within the complex throughout the day.

- Do you find the Onate complex easy to navigate?
- Are there any physical improvements that would make it easier or more efficient to navigate?
- Are there any physical attributes of the site that circumvent your daily functions?
- Does the location of and/or distance to other areas on the complex hinder your ability to accomplish tasks or conduct business?
- Does the facility you work in offer adequate indoor/outdoor training space, physical fitness space, locker/shower bathrooms, instruction/classroom space, maneuver space, parking areas, wash bays, maintenance bays, controlled areas, storage spaces, loading areas, and privately owned vehicle parking?

**2. Appearance:** Please think about the landscape features, signage, buffer spaces, design of buildings, sidewalks, roads, and layout of complex.

- What qualities do you enjoy about the site aesthetically?
- Are there any additional features that would make it more enjoyable?
- Are there any features that you would like to see less of?

**3. Safety:** Please consider the sidewalks, running trails, parking, roads, walking trails, open space, training areas, positioning of buildings and connection to physical fitness areas or highly used areas on the complex.

- Do you feel safe when walking, exercising (running or biking), or driving on the complex?
- Would you prefer to walk or drive when you need to conduct business in another area of the complex?
- What features can we implement to make you feel safer while working, exercising, or navigating the complex?

**4. Identity & Community/Partnerships:** Please think about our heritage, historical monuments or static displays, signage, as well as our state and federal mission.

- Do you feel a sense of pride and ownership in regard to the site?
- How can we better develop an identity for our complex?
- Do you feel as though the site captures our historical past and culture?
- Throughout our history the Armory concept has always been a place of community gathering; do you feel as though the Onate Complex offers that opportunity? (ie. open houses, or family functions)
- Is building community or partnerships of interest to us as a military installation?
- Are there specific partnerships that are missed because of a lack of physical infrastructure or communication?

**5. Policy:** *Please think about the way in which information is disseminated, the decision-making process, the process of inclusion and capacity building, and education of CFMO guidelines.*

- *How far in advance were you made aware that new construction project was going to be implemented?*
- *Have you ever been involved in the planning of any construction project?*
- *Have you ever been asked for your opinions about the kind of development you'd like to see in your community?*
- *What format do you feel the best way to seek input on projects is?*
- *Are you aware of your facility requirement based on National Guard Bureau guidelines?*




# Appendix C: Design Taxonomy Presentation

## Campus Design

### New Mexico National Guard

Onate Complex Training Site

Erin Montoya  
October 24, 2013

 **UNM** SCHOOL of ARCHITECTURE & PLANNING

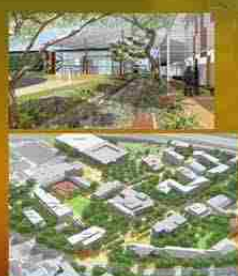
### RESEARCH PROTOCOL

- Volunteer only, no requirement to participate
- Read & sign consent form
- Information will be recorded and saved until shared to publishers
- Please indicate if you are adverse to being quoted
- Confidential

### INTRODUCTION

- Seeking to define military "campus" as a unique style
- Military culture
- Place
- Campus Design
- Integration


- Establish objective criteria for military campus design
- Onate Complex case study




### POSSIBILITIES

Tour of Campus Design


### FIRST ENCOUNTERS




### PERIMETER, BOUNDARY, GATEWAYS



### CAMPUS ROADS, WALKWAYS, BIKEWAYS



### THRESHOLD, TERMINUS, PARKING



### HERITAGE, SECONDARY, TERTIARY



### GARDENS & FIELDS



### PLACE-MAKING



### SPACES



### OTHER OPTIONS



### OTHER OPTIONS

- Focus Group
  - Functionality
  - Appearance
  - Safety
  - Identity & Community Partnerships
  - Policy
- Design Taxonomy Survey

## Appendix D: Focus Group Survey Responses

Traditional Campus Design Taxonomy												
	Existing Situation			Total	Actions						Notes	
	Strong	Satisfactory	Weak or Missing		1	2	3	4	5	6		
Surrounds	0	5	13	18	2	1	6					Add more landscaping
Perimeter	4	4	11	19		2	5	1				Redesign fence area, Enhance aesthetics,
Boundary Markers	3	2	12	17	1	1	4					
Gateways	1	8	8	17			8				1	Non-existent, I like the front entrance, Need to incorporate heritage into gateway,
Campus Roads	1	7	9	17	2	1	5					Need more for flow and security, Bypass routes,
Walkways			15	15	4	1	6					lifestyle, Need more sidewalks/walkways everywhere, Add between buildings
Bikeways		2	14	16	6		3					Needs to be major & integral in planning process
Threshold (gathering areas)		2	14	16	5		3					Not very useable, Very few - need to build/enhance
Terminus (end of travel route)		2	13	15	6		2					Respondents
Parking	3	8	5	16			5	1				At the RTI, Conduct adequate repairs to parking areas,
Heritage			15	15	5		4					Non-existent, Add to front entrance at visitors center - well done at pyramid, We are horrible in this area - we should integrate into all areas, No quick build prospects,
Secondary		2	13	15	6		1					Non-existent
Tertiary		2	13	15	6		1					Non-existent
Wetscapes			19	19	3		1	1	1	2		Non-existent, Wrong climate,
Dryscapes	1	3	15	19	5		1	1				Non-existent, We have dirt! Need xeriscape planning integration, Xeriscape,
Botanical Gardens			18	18	1		1				3	Not needed - desert environment, Too much expense/maintenance
Horticultural Gardens			17	17	3		2				1	Not needed - desert environment, Need desert centric garden,
Arboreta			18	18	1		2				2	Not needed - desert environment
Natural Preserves	3		14	17	1	1	2				1	
Nature Walks and Trails	2	3	13	18	3		4				1	Update, Perimeter fence/open area, Not enough nature to focus on this,
Gardens for Art			18	18	1		3				2	Not needed
Amphitheaters		1	3	4	3		2				1	Enhance the amphitheater we have,
Special Theme Gardens			17	17	3		1				2	Not needed, Could be integrated into a library
Site History			14	14	3	1	3					Guard has a great history - no signage, Plenty exists - needs to be incorporated,
Play Fields and Recreation		4	15	19	4		4					Should be family friendly, Not needed, Need gym to be a separate facility, Around parade field,
Signs		4	16	20	3	1	6					buildings & site map at entrance, Signs are old/do not stand out, Need common theme & method, Add more / efficient,
Lighting	1	4	12	17	1		5				1	Needs improvement, Need lighting on roads and all parking areas, Need street & perimeter lights
Site Furniture		2	14	16	3	1	4					Needs improvement, Add picnic & lunch areas,
Landscape Elements	2		13	15	4		3					Needs improvement, Natural environment - strong, Currently horrible. Integrate landscaping into design elements of buildings which should incorporate historical an building type identifiers, Add with limits to environment,

Military Campus Design Taxonomy												
	Existing Situation				Actions						Notes	
	Strong	Satisfactory	Weak or Missing	Total	1	2	3	4	5	6		
Parade Ground	1	5	10	16	1		9					More useable, Redesign, Add lighting, Improve aesthetics,
Running Track	1	5	14	20	3		6					Asphalt degrading - gravel too loose, Rubberized
Physical Fitness Testing Area		1	19	20	3		5					Needs enhancement, Need dedicated two-mile track,
Ruck Trail	3	4	4	11		1	5					Need design to eliminate climate and weather hazards,
Outdoor Training	1	4	15	20	3	1	3				1	Not really needed,
Sports Recreation Areas		1	16	17	4		3				1	Redesign, Need separate gym,
Maneuver Training Area			16	16			4			3	2	Not needed - no space, Not this location & purpose,
Obstacle Course	1	8	7	16			4	1	1	1	1	No change, Is it safe?,
Simulation Centers	1	7	10	18	1		2	1	2	1	1	No change, Move to another
Outdoor Instruction Areas		3	13	16	4	1	3				1	Use them for what they are for, No change
Cantonment Areas		2	15	17	2	1	5					
Organization Day Areas		2	15	17	4		3					Make 1 common area,
Auditorium		2	12	14	5		2					auditorium, Premium seating would help, Multipurpose room not sufficient
Gymnasium		2	13	15	3		5					Add stand alone PT area, Incorporate all, 93rd BDE gym is too small,
Personal Hygiene Areas	3	4	8	15	1	1	5				1	Locate with standalone fitness building, Updated bathrooms, no change, increase area,
Controlled Perimeter	5	4	5	14			5	1				Add emergency and alternate, need more secure,
Controlled Entry Gate	5	5	5	15			4	1				Enhance look to include visitor center and historical pieces, curb appeal
Visitor Control	2	5	5	12		1	7					Not user friendly, Two entry gates, Include heritage at site,
Standoff Distances	2	5	5	12	1	1	4				1	No change
Drive-Up/Drop Off Areas	2	4	6	12	1	1	2	2			1	No change
Building Location	2	6	6	14			4	1			1	Doesn't flow, Improve walkways, no change
Building Separation	3	5	6	14		1	3	2			1	Large unused space (infill), Too much separation, Improve walkways, need bi-tricycle commuting system for speed, Buildings are too far apart,
Internal Circulation	2	5	7	14	1		2	1			1	There isn't any, Non-existent,
Family Day/Areas		1	15	16	7		1				1	Non-existent, Non-existent,
Veterans Access/Areas		2	13	15	4		4				1	Need true public access, move vehicle display to front gate
Military Clothing & Sales		4	12	16	1	1	6			1	1	Need true public access, mini mall concept, New location - more centralized
Joint Initiatives		2	12	14	1		4			1	1	This would add revenue to support a cafe
Joint Use/Training		2	12	14	1		5				1	Ranges, This would add revenue to support a café

## Appendix E: Sustainability Credit Designation

SP15	On-Site Renewable Energy Sources*	3
SP16	District Heating and Cooling*	2
SP17	Wastewater Management*	2
SP18	Solid Waste Management Infrastructure*	1
SP19	Close-in Training	2
SP20	Hidden Parking	6
SP21	Car Parks	6
SP22	Mixed-Use Buildings	5
SP23	On-Installation Housing	5
<b>NATURAL AND CULTURAL RESOURCE PRESERVATION (RP)</b>		<b>5 Max</b>
RP1	Imperiled Species and Ecological Communities*	R
RP2	Wetland and Water Body Conservation*	R
RP3	Floodplain Avoidance*	R
RP4	Range and Training Land Conservation	R
RP5	Steep Slope Protection*	1
RP6	Site Design for Habitat or Wetland and Water Body Conservation*	1
RP7	Restoration of Habitat or Wetlands and Water Bodies*	1
RP8	Long-term Conservation Management of Habitat or Wetlands and Water Bodies*	1
RP9	Minimized Site Disturbance in Design and Construction*	1
<b>HEALTHY COMMUNITY PLANNING (HP)</b>		<b>17 Max</b>
HP1	Walkable Streets*	R
HP2	Porches	R
HP3	Walkable Streets*	12
HP4	Access to Civic and Public Spaces*	1
HP5	Access to Recreation Facilities*	1
HP6	Visitability and Universal Design* (note 4)	1
HP7	Local Food Production* (note 5)	1
HP8	Neighborhood Schools*	1
<b>DEFENSIBLE PLANNING (DP)</b>		
DP1	AT/FP Compliance	R
<b>MAXIMUM POSSIBLE SCORE</b>		<b>81</b>
<b>CERTIFICATION LEVELS</b>		
	Certified	42-51
	Silver	52-61
	Gold	62-71
	Platinum	72-81
<b>NOTES</b>		
1	Applicable LEED-ND criteria is incorporated by reference from LEED-ND (2009) revised February 2011. R refers to a Prerequisite and Credits are indicated with variable points possible. LEED-ND criteria are shown with an asterisk.	
2	The requirement for a connected community applies to land within the installation only. The prohibition against gated communities applies only to districts or neighborhoods within the installation.	
3	Community outreach and involvement applies to on-installation populations only.	
4	Universal design applies to 5% of housing units - not the 20% noted in LEED-ND	
5	Local food production allowance should be stated in the Master Plan and not in CC&Rs.	

## References

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