

**THE DEVELOPMENT OF A METHOD FOR THE IDENTIFICATION AND  
SELECTION OF PRESERVATION VALUES FOR THE PROTECTION OF  
WWII UNITED STATES ARMY AIRBASES IN TEXAS**

A Dissertation

by

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## **ABSTRACT**

Currently no compendiums of values exist that systematically outline criteria needed to guide historical and cultural conservation of the remaining AAF bases in Texas. This study examines buildings previously considered mundane and expendable to provide guidance to preservationists so that they may assign historical and cultural value to WWII AAF bases in Texas.

This study analyzes criteria that could be used to determine the value of remaining assets at Bryan AAB, Hearne AAB, and Carswell AFB in Texas. This project analyzes the prevailing international standards currently used with the intent of developing values and standards across major international preservation societies and organizations that may be applied to AAF bases in Texas. Next, the study develops a process of systematic evaluation that produces an Optimal Conservation Index (OCI). An OCI is derived when a project administrator evaluates the overall project to determine the genotype and phenotype configuration of specific components of the project.

Four primary objectives and fourteen standards were developed to guide the preservation efforts following careful evaluation of word repetition counts using the Getty Institute compilation of international conservation statements. These were categorized in pragmatic, semantic, and syntactic groups to generate a numerical value, intended to give overarching guidance to the leaders and stakeholders of the conservation project. The values were averaged and tabulated to derive the OCI. The

conclusion of this study recommends the initial OCI be used to educate all stakeholders in the project to foster consensus after they have had an opportunity to evaluate and, if necessary, modify the OCI evaluation process. Once the OCI has been established to the agreement of all the stakeholders, it should be utilized to prioritize conservation efforts.

Please note that a substantial number of the photos and all of the charts and graphs in this document are from the private collection of the author. As such, no citation is required as they are explained in the text.

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## **NOMENCLATURE AND ABBREVIATIONS**

AAB	Army Airbase
A&E	Architectural and Engineering
AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
ACC	Air Combat Command
ADM	Administration
AGE	Aircraft Generation and Engine Shop
ALCM	Air Launched Cruise Missile
ANG	Air National Guard
ARNG	Army National Guard
AT-##	Training Aircraft Number
B/CS	Bryan/College Station
B- ##	Bomber Aircraft Number
BW	Bomber Wing
BRAC	Base Realignment and Closure Commission
C-##	Cargo Aircraft Number
CAP	Civil Air Patrol
CE	Civil Engineering
CMU	Concrete Modular Unit/Concrete Block
COE	United States Army Corps of Engineers

CONUS	Continental United States
CRM	Cultural Resources Management
DOD	Department of Defense
Elev.	Building Elevation
EUCOM	European Command
F-##	Fighter Aircraft Number
H-##	Helicopter Aircraft Number
HQ	Military Headquarters
LEED	Leadership in Energy and Environmental Design
MAC	Military Air Command-Cargo Carriers
NOTUM	Navigation Operations Technical Update Message (Facility Condition Reports for Airfields)
JRB	Joint Reserve Base
MK-#	Alpha Numeric Designation Given to an Atomic Bomb
MAG	Military Airlift Group
MAINT	Maintenance
MEP	Mechanical/Electrical/Plumbing
NHPA	National Historic Preservation Act
MWR	Moral Welfare Recreation
NAS	Naval Air Station
NCO	Non-commissioned Officer
OCI	Optimal Conservation Index

OPS	Military Operations
PACAF	Pacific Air Forces
PI	Personal Investigator
PT	Primary Fighter Trainer Aircraft
P-##	Fighter Aircraft during WWII
POV	Private Non-Government Owned Vehicle
POW	Prisoner of War
PX	Post Exchange/Variety Retail Sales
ROIC	Resident Officer in Charge
SAC	Strategic Air Command/Bomber Command
SHPO	State Historical Preservation Office
SRAM	Short Range Attack Missile
SE	South East
SV	Services
TB	Training Bomber
T-##	Training Aircraft Number
T-#	Temporary (when referring to a building)
TAC	Tactical Air Command/Fighter Command
TANG	Texas Air National Guard
TB-##	Training Bomber Number
TAMU	Texas A&M University
THC	Texas Historical Commission

UK	The United Kingdom
USAF	United States Air Force
USAFR	United States Air Force Reserve
USGS	United States Geological Service
VAT	Vinyl/Asbestos/Tile
YRB-##	Reconnaissance Bomber

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## **CHAPTER I**

### **INTRODUCTION**

The purpose of this study is to develop a detailed understanding of what historical and cultural values are and how they may be applied to WWII Army Airbases in Texas to develop a systematic valuation system that permits all stakeholders to participate in the selection process for preservation of WWII AAF facilities. In some cases, these buildings may be considered mundane and as such, it may be difficult to categorize them for preservation. In addition, in many cases limited funding necessitates rank ordering a multitude of facilities so that ultimately only the most deserving are preserved, quickly relegating the remaining buildings to receive preservation treatments at later dates or to be demolished.

The process of determining salient valuation terms began with a review of 82 international charters written from 1877-2008, which can be found at the Getty Conservation Institute website ([http://www.getty.edu/conservation/publications\\_resources/research\\_resources/charters.html](http://www.getty.edu/conservation/publications_resources/research_resources/charters.html)). Each document was evaluated five times to locate all salient terms in context while excluding those incorporated within other words with different meanings and those associated with non-conservation preservation issues. These words were then counted for repetition, alone and in context. The total number of these words was used as an indicator of their importance to the authors of the 82 international documents. Simply put, the more the valuation concept word was used, the more important it was deemed to be. After being summed across all of the charters and

manifestos, the words were grouped by number or repetitions of the concept words into four categories: 1) important (7-88); 2) very important (89-210); 3) extremely important (223-402); and, 4) essential (518-2243). This allowed the author to identify the level of importance of the valuation concept words.

The valuation words that were discovered were grouped by pragmatic, semantic, and syntactic considerations. Next, the pragmatic phenotype criteria values were averaged. In the same manner, the semantic genotype criteria values were averaged. Finally, the syntactic genotype criteria values were averaged. These three averages were summed to determine which category of importance the building fit: important, very important, extremely important, or essential. Finally, the importance value, the value of the averaged pragmatic, the averaged semantic, and the averaged syntactic values were summed to generate the Optimal Conservation Index (OCI) value. The OCI number can then be used to rank the building numerically against all other buildings in the project. To understand fully the potential of implementing an OCI or similar system for historical and cultural conservation valuation of buildings, a detailed understanding of the scale and impact of WWII must first be developed.

### **Scale and Impact of World War II**

Most Americans alive today were not adults during WWII and do not grasp the enormous scope of this endeavor. Even with an understanding of the modern modalities of battle, it is often very difficult to grasp the scope of the Second World War. It was total war and almost three-quarters of the male population of the United States went off to war. During the war, 276,000 aircraft were manufactured in the USA. There were

43,000 planes lost overseas at the front and of these, 23,000 were lost in combat. There were also 14,000 lost in the continental United States to weather-related issues or training accidents. Flying in the 1940s was dangerous at best. In addition, the cost of the aircraft was astronomical. Figure 1 shows the aircraft cost in WWII dollars, when a loaf of bread cost *nine cents*. In comparison, the average cost of a loaf of bread in 2013 was \$1.40.

Type of Aircraft	WWII Cost	Type of Aircraft	WWII Cost
B-17	\$204,370	P-40	\$44,892
B-24	\$215,516	P-47	\$85,578
B-25	\$142,194	P-51	\$51,572
B-26	\$192,426	C-47	\$88,574
B-29	\$605,360	PT-17	\$15,052
P-38	\$97,147	AT-6	\$22,952

**Figure 1      Cost of Aircraft in WWII Dollars (Spitfire Association 2013)**

Although the war began when Germany invaded Poland on September 1, 1939, the United States did not enter the war until after the Japanese bombed Pearl Harbor on December 7, 1941. The war ended on September 2, 1945, when Japan surrendered. From 1942 on, the USA lost an average of 170 planes a day or almost 168,000 aircraft. How many is a 1,000 planes? The total number of B-17 planes produced (12,731), if set wingtip to wingtip, would extend 250 miles. One thousand B-17s carried 2.5 million gallons of high-octane fuel and required 10,000 aviators to fly and fight them. The war

effort consumed 9.7 billion gallons of gasoline; 107.8 million hours flown; 459.7 billion rounds of aircraft ammunition fired overseas; 7.9 million bombs dropped overseas; and 2.3 million combat sorties (one sortie equals one takeoff and landing). The Army Air Corps accepted 299,230 new aircraft, 808,471 additional aircraft engines, and 799,972 propellers over the course of the war. This information covers only what was done by the United States. Figure 2 gives the number of the specific aircraft built.

Type of Plane	# Produced	Type of Plane	# Produced
Ilyushin IL-2 Sturmovik	36,183	Mitsubishi A6M Zero	10,449
Yakolev Yak-1,-3,-7, -9	31,000+	Lockheed P-38 Lightning	10,037
Messerschmitt Bf-109	30,480	North American B-25 Mitchell	9,984
Focke-Wulf FW-190	29,001	Lavochkin LaGG-5	9,920
Supermarine Spitfire/Seafire	20,351	Grumman TBM Avenger	9,837
Convair B-24/PB4Y Liberator/Privateer	18,482	Bell P-39 Airacobra	9,584
North American P-51 Mustang	15,875	DeHavilland Mosquito	7,780
Republic P-47 Thunderbolt	15,686	Avro Lancaster	7,377
Junkers JU-88	15,000	Heinkel HE-111	6,508
Hawker Hurricane	14,533	Handley-Page Halifax	6,176
Curtiss P-40 Warhawk	13,738	Messerschmitt BF-110	6,150
Boeing B-17 Flying Fortress	12,731	Nakajima Ki-43 Oscar	5,919
Vought F4U Corsair	12,571	Lavochkin LaGG-7	5,753
Grumman F6F Hellcat	12,275	Boeing B-29 Superfortress	3,970
Petlyakov Pe-2	11,400	Short Stirling	2,383

**Figure 2      Combat Aircraft Produced in WWII (Spitfire Association 2013)**

From December 1941 through August 1945, the U.S. Army Air Forces lost 14,903 pilots, aircrew, and personnel in 13,873 airplanes. There were 52,651 aircraft accidents (6,039 involving fatalities) in 45 months. Almost 1,000 Army planes disappeared in route to the battle zones. There were 43,581 aircraft lost overseas including 22,948 on combat missions (18,418 against the Western Axis) and 20,633 attributed to non-combat causes overseas.

On average, 6,600 service members died per month during the war and another 18,000 were wounded. There were also over 12,000 missing men declared dead. More than 41,000 were captured, and half of the 5,400 held by the Japanese died in captivity, compared with one-tenth of Germans held by Allied forces. In all, there were 121,867 AAF combat casualties. The AAFs peak strength was reached in 1944 with 2,372,000 personnel (World War II Foundation 2014).

During WWII, flying safety was sacrificed to field aircraft as quickly as possible. The AAF's worst accident rate was in the A-36 Invader version of the P-51. These planes had an accident rate of 274 per 100,000 flying hours. In descending order, the next worst were the P-39 with 245, the P-40 with 188, and the P-38 with 139. There were also similar conditions in the bomber groups. The B-17 averaged 30 accidents per 100,000 flight hours, the B-24 averaged 35, and B-29 was even worse at 40. (World War II Foundation 2014)

### **Purpose of This Study**

To say that the scope of the war effort was monumental diminishes its true impact. The USA was at total war. The war became the all-encompassing issue in

politics, in manufacturing, and in everyday life. These are just a few of the reasons it is worthy of study. This research study attempts to carry on the proud tradition of inquiry into the war by focusing on the buildings built during the war to support the massive air war effort. Clearly, this topic is much too large to be dealt justice in one document. Therefore, this document will focus on three WWII U.S. Army Airbases located in Texas. Specifically, it was decided to focus the research on Bryan AAB, Hearne AAB, and Carswell JRB to determine which criteria might be useful in the selection of buildings to be conserved.

At the end of the war, much of what had been built was rapidly demobilized and excessed to the public. During the course of the war, some 243 Army Airfields were built in Texas. There were also 260 auxiliary fields built. Usually, these auxiliary fields were little more than graded dirt airstrips without buildings. Following the war, most of the Army Airfields became civil airports, while the auxiliary fields were returned to the farmers who owned the land and reverted to agricultural use. Only a very few remained active. The majority of the buildings fell into ruin, were relocated, torn down, reused, or significantly altered. Many simply disappeared. The remaining facilities are precious historical assets that reflect the incredible commitment of this nation to victory during WWII. However, what remains is disappearing rapidly and stakeholders often have vastly different and conflicting interests concerning what should be conserved or how it should be preserved. Therefore, it is the purpose of this study to develop criteria that can be used to determine which buildings are worthy of being preserved.

After extensive research, the author developed a significant understanding of how Bryan AAB, Carswell AFB, and Hearne AAB were developed. *Air Force Manual 88-3: The Air Force Guide to Critical Facilities* provided valuable information about the standardized building plans, elevations, and construction details used at these airbases. The U.S. Army Corps of Engineers' Historical Division and the Texas Historical Commission also contributed valuable information. In addition, the author has over 32 years of experience in construction from this era. Direct communication with the U.S. Army Center for History allowed the author to research their master list of facilities. Other sources that provided valuable data included the National Archives, historical articles published in the Bryan-College Station *Eagle*, the TAMU *Battalion*, and aerial photographs of Bryan AAB, Carswell AFB, and Hearne AAB. Several visits to Camp Hearne, a WWII prisoner of war camp, allowed the author to view and photograph the remaining buildings. Original drawings were located at Hearne AAB and photographed. Information was also gathered from *The World War II and United States Army Mobilization Program: A History of 700 and 800 Series Cantonment Construction* reports, published by the US Department of the Interior (Wasch and Kriv 1994), and the *Historic Structures Report Summaries* published by the Center for Heritage Construction at TAMU. A large trove of 3,973 original Bryan AAB drawings and prints were carefully and systematically evaluated and categorized. The author's experience and expertise, developed during 32 years in the U.S. Air Force as an architect and Chief of Engineering Branch in the 810th Civil Engineering Flight, was a key element in

developing a greater understanding of the criteria necessary to assign valuation to historic buildings.

### **Evaluation of Previous Research on Studying Historical Conservation Values**

How conservation values developed has not been studied extensively. Undoubtedly, it has been discussed repeatedly across the conservation community and certainly, it is important to understand what values are utilized to make conservation decisions. It is also important to understand how these values were derived. In many cases, it is highly probable that consensus values or legal prescriptions concerning values were used. It is also likely that these values were derived for local projects as needed. Furthermore, each stakeholder is likely to have different interpretations of the meaning of the words used to convey these values. This is intrinsically confusing and can be counterproductive. It takes a skilled facilitator to bridge potential confusion and to enhance the overall project by building consensus agreements. Research into the values utilization criteria and meanings of the valuation words used in the past approached this conundrum with some trepidation. Therefore, the facilitation of a consensus about the meanings of valuation terms is one of the goals of this study.

Atlanta's Great Park project, a crisis in urban landscape values, clearly shows how confusion over terms can create controversy. As noted by C. M. Howett in *Environmental Review Magazine*,

... my analysis of this nationally significant confrontation will show that the values in conflict in this case are not exclusively, or even most importantly, conventional issues common to struggles between factions favoring 'progress' and development on the one hand and preservation of a historic fabric on the other. (Howett 1986, 17)

One might suggest that an article concerned with landscapes should be excluded from consideration in this study. However, landscapes are an often forgotten part of our heritage, which fortunately, is now gaining greater currency. In addition, they are an important factor in the cityscapes that we also attempt to preserve. Howett goes on to say that over the course of the community's 30-year struggle with this project, eventually the intrinsic environmental values were more compelling than the isolated economic, functional, aesthetic, or historic values that some stakeholders perceived as more important. This does not mean these other values were excluded. It simply means that eventually the environmental values were considered more important. According to Howett, "They began to define their position by appealing to a moral framework that defended such intangible values as sense of place, quality of life, and community identity." (Howett 1986, 18) The moral imperative that advocated against constructing a highway through the park was based on the desire to restore the existing neighborhood. The concepts of beauty and serenity were considered important for this project as well. Historic communities, historic landscapes designed by Fredrick Law Olmstead, neighborhood residents' desires, historic architecture, and urban context all became values that were used to stop the construction of a highway through the area. Although these are good considerations, the entire process of developing the park revealed values were "... rooted in more nebulous but no less real or critical human values, the acknowledgement of which represents an awareness within the preservation community that should be addressed more often and more analytically." (Howett 1986, 27)

There are no easy answers to address which values should be used to propagate quality historical conservation, as shown in the Howett article. However, in this case intrinsic human values of place proved more powerful than ‘instrumental’ values of function, efficiency, or economy. Sense of place, which is a vital component of the cityscape or urban fabric, and associated environmental considerations were the determining factors in this project.

Rick Cook’s article emphasized the importance of authenticity in the salvation of an entire block of historical buildings along Front Street in New York City. He said, “We find that historic sensitivity is more than the sum of its parts; technical data and historic narrative are equally important in shaping our understanding of the urban environment.” (Cook 2010, 26) Other considerations included context, technology, aesthetics, and environmental sustainability. These were deemed extremely important to the project, and resulted not only in LEED certification, but also in a successful and sensitive salvation of the historical fabric of both the block and the buildings that constitute the fabric of the cityscape.

As one might expect, not all stakeholders agree on which components are most important or should be included when evaluating buildings. Utilization of valuation criteria are of course instrumental in this process including the consideration of cultural resources management and historical context. Under the aegis of the National Preservation Act of 1966, the National Parks Service defined some of the criteria necessary for a building to be eligible to be considered historically significant (NPS 2012). These included association with important events; association with significant

historical figures; places personifying a distinctive type or style; places representing distinctive characteristics of place, time, sites, or groups; and sites that could produce important information on history or prehistory. (ACHP, 2014)

These criteria are prescribed by law and as such are prescriptive for all stakeholders. This is not to say that they are intrinsically distinct or definitively specific. However, they do try to address important considerations that may be employed to propagate excellent historical conservation. The law goes on to say historic integrity is a determination of physical characteristics of the objects or property. This is to be determined based on design, setting, location, workmanship, history, feeling, and association.

Several states including Minnesota, Maryland, Texas, California, and Massachusetts, have expressed growing concern over the cost of postindustrial collection methods and criteria for eligibility. In Texas, these discussions have revolved around late 19th and early 20th century sites, which has led to some clarification by the National Historical Preservation Act (NHPA), which stated that a multidisciplinary analysis should be used that does not employ a single set of oral history, artifacts, or archival data. (Barile 2004, 91) This is a step in the right direction and the process will continue to become more carefully defined over time. This has already caused great discussion in Texas about the criteria to be used and generated a lively discussion between the Texas Historical Commission (THC 2012a, 2012b) and archeologist associations. The THC states that using a process that divorces the project from its historical context greatly diminishes the project. The author agrees with them.

The tendency in the past has been to use criteria in such a way as to favor larger and better-funded projects at the expense of the mundane such as WWII Army Airbase buildings. According to Kerri Barile,

In particular, the often-used methods of evaluation for many CRM (cultural resource management) projects give primacy to artifact quantity, rather than to quality, which is then placed within its historic context. This approach appears to favor large sites with elaborate architecture and high quality of artifacts, rather than lower class sites with vernacular structures. (Barile 2004, 93)

This process inevitably tends to diminish the preservation of the vernacular as well as facilities that may have been built expediently or deemed mundane. This also applies to the construction materials and structural considerations. In the opinion of the author, this is unfortunate as a large component of the fabric of history is lost. It should be noted that the Barile article, which dealt with southeast Texas (Fort Bend, Grimes, Navasota, Waller, and Washington counties, and the Brazos River Basin) although not specifically with WWII Army Airbase construction, made a similar point.

The Barile article recommends several changes that may improve the overall historical conservation effort.

The first step toward remedying this problem is the recognition that there is a general shortsightedness in the recording of historic sites, especially among CRM firms, where the strengths of historical archeology are ignored at times in favor of a single-level analysis. The challenge thus falls to the entire cultural resources community, including academic institutions, CRM firms, and government agencies to improve the education and awareness of present and future CRM researchers. A renewed focus on improving education should recognize the variations in methodology necessary to evaluate an historic site adequately and more importantly how to obtain the greatest amount of information with a restricted budget and timeframe. (Barile 2004, 99)

Barile went on to recommend that SHPO, CRM, archeologists, and universities work together and hold yearly conferences to provide continuing education on more viable valuation criteria. Clearly, an improved dialog is to everyone's benefit. Improved multidisciplinary education, which raises awareness, can shift method lines and perhaps counter biases that in the past excluded ordinary architectural and archeological considerations. Local sampling of criteria within cultural context is also recommended. Barile stated,

To ensure that 'context' is placed back within the NHPA eligibility lexicon of significance, integrity, and context, this sampling strategy should not only be developed per state, but it should also be further subdivided regionally to emphasize local context and conditions. (Barile 2004, 99)

Barile also recommended that an effort should be made to

... move towards multidisciplinary analyses that include the consideration of multilevel, historic contexts can be best achieved through greater awareness and renewed partnership among those involved in CRM, governments and academic work. This will result in a more accurate assessment of all sites by placing them within their specific local or regional contexts and within the larger contextual framework of post-bellum capitalist growth. (Barile 2004, 99)

It is the opinion of the author that similar modalities will work regardless of which timeframe is being conserved.

The uses of historical designations are changing with the times. What was once seen primarily as a way to protect what might be lost has evolved to include greater parts of the community in the process of designating objects or buildings to be preserved. It appears that more objects and buildings are being considered assets of humanity and hence, be worthy of significant preservation. Leichenko et al. commented,

Thus, historic designation is seen as more than just a way to preserve historic buildings; it is also increasingly regarded as both community preservation and an economic development strategy. A recent article noted that economics and revitalization have taken their rightful places as the pillars upon which the preservation ethic is based... (Leichenko et al. 2001, 1774)

These valuations are constant within our capitalist society and yet they are growing to include more subtle and less quantifiable considerations. Issues such as equity within the neighborhood context, hedonistic considerations (aesthetics, etc.), how the burden of public good should be distributed and shown, issues of displacement of lower economic strata populations, and implementation of other stakeholder concerns are all becoming more prevalent. The Leichenko et al. article focuses on cities in Texas with an eye toward fiduciary considerations. Historical projects in Abilene, Dallas, Fort Worth, Grapevine, Laredo, Lubbock, Nacogdoches, San Antonio, and San Marcos were evaluated. The evaluation for these cities in Texas indicated, "Historic preservation generally has a positive impact on property values and that historic designation associated with average property value increases ranging between 5% and 20% of the total property value." (Leichenko et al. 2001, 1984) This is clearly a positive development.

As one of the greatest progenitors of extended thinking in the development of historical conservation, James Fitch makes salient contributions, particularly in his 1992 book, *The Philosophy of Restoration: Williamsburg to the Present*. Fitch was passionately devoted to the city as a generator of civilization. In his essay *In Defense of the City* (1960-1961), Fitch writes:

... promised music, dancing, theater, and spectacle (were important considerations)... But beneath all of these was the city's most splendid gift... a range of choice, an entire spectrum of possible lines of action... Personal face-to-face contact; daily exposure to the friction of competitive ideas; continual exchange of information and opinion... (quoted in Hirsch 2010, 34-35)

In addition, Fitch stated that historical conservation should not be driven by mindless nostalgia, but should be critical to man's emotional well-being. He felt that interest in preservation is an expression of humanity's alienation of place, which occurred due to our rapidly changing environment. In Fitch's opinion, this resulted in psychic disorientation, which could be ameliorated by reorientation and re-immersion in the multidimensional totality of the environment. He also felt that the ultimate intent of architecture should be in the shaping of a holistic environment to satisfy human psychological and physiological needs. Fitch believed using place-based response to urban renewal and demonstrating a passion for the inherited historical city made it possible to reorient the citizens to their environment and re-stimulate their cognitive and perceptual participation. His mechanism of choice was landscape design. (Fitch 1992; Hirsch 2010)

These criteria are also useful for identifying valuation criteria for all historical conservation issues. According to Linn, "People are alienated from their physical environment if they are unable to leave their personal imprints on their immediate surroundings. Relegating human beings to the role of passive spectators of their environment threatens their mental equilibrium." (Linn 1969, 65) Hence, a more holistic approach has evolved that examines the criteria being considered and involves a greater understanding of the interrelatedness of individuals and their physical environment. Both

Fitch (1992) and Hirsch (2010) gave sophisticated arguments in support of preserving the urban fabric of the cityscape.

Many professionals have deliberated over the criteria for salient components that comprise a successful historical conservation project. Unfortunately, the author was not able to locate many documents dealing specifically with the criteria for valuation of historical conservation projects. As mentioned, most of what was found were the carefully thought out criteria utilized for specific projects and fields of landscape design. Other fields such as medicine, genetics, biology, and philosophy consider valuation terms in more detail.

One can conclude two things from this literature review. First, it is clear that the issue of valuation is important to all concerned. Second, precious few have studied the specific criteria as a primary topic. Therefore, the purpose of this project is to add momentum to the process of clarification of these criteria across the profession and to start a dialog that will help clarify what valuations should be used to determine what should be conserved.

### **Research Questions**

The specific research questions and goals of this dissertation are listed as follows:

1. Determine what values criteria should be used to identify conservation targets,

2. Recommend guidelines, goals and principles for preservation of the remaining historically and culturally significant buildings at WWII AABs in Texas, and
3. Develop a replicable systematic process to assist in the cultural conservation, preservation, and/or sensitive reuse of WWII Army airbase facilities so that their cultural and historical information is not lost.

This study develops a definition for historically culturally significant buildings at WWII AAB. Three United States Army airbases were selected for study in Texas. Bryan AAB, Carswell AFB (renamed Joint Reserve Airbase Carswell in 1997), and Hearne AAB will be used as case studies to determine the context, building types, and organization of WWII AAB facilities. These case studies will then be used to extrapolate a generalized set of values and guidelines that incorporate considerations used by the National Parks Service (NPS 2011a, 2011b) and international charter to maximize sensitive reuse and/or preservation. To establish these values, this study reviewed and summarized charter components from 82 historical and cultural conservation organizations that are internationally recognized as important in identifying historical and cultural relevancy. This will then be organized into a unified system that can help develop generalized criteria, which incorporates the salient portions of each the charters.

### **Methodology**

This study utilizes a case study method that researches all available records, documents, books, and electronic media to determine the history associated with these three bases in Texas. This will include a review of the aircraft stationed at the bases as

they significantly influence the type, quantity, and scale of the buildings needed to support them to determine the components of the buildings' genotype and phenotype. Once the histories have been compiled, a site survey of the existing buildings and available drawings of the three bases will be performed. The derived data will be utilized to bring the project into focus and to discover values criteria. Some of the relevant components to be reviewed include:

- 1) building floor plans as they were originally built,
- 2) original and modern building construction documents,
- 3) historical construction documentation,
- 4) Army Air Force Squadron history reports,
- 5) original and modern technical construction specifications, and
- 6) photometric data.

This analysis will also rely upon the expert judgment of the author, who has over 45 years as a licensed architect in Texas and as a retired United States Air Force colonel with 32 years of Air Force experience in the construction and programming of buildings at more than 30 Air Force Bases in the continental United States. The author will also utilize his expertise of over 15 years serving as chief engineer and architect of the 810th Civil Engineer Flight, which is directly responsible for construction activities at Carswell AFB. This experience includes the accomplishment of 1,803 construction projects, of which 627 were concerned with WWII era buildings. The researcher's professional experience and understanding of the methods and criteria utilized in the original construction of army airbases will be useful in evaluating these bases.

There are several important limitations. One of these limitations includes the fact that little remains of the buildings at Hearne AAB although much of the subterranean infrastructure and some of the roads remain. The Hearne AAB flight line was converted into a municipal airport in the late 1950s. All but two of the buildings on the site have been demolished or deteriorated so that little remains except foundations. However, an active avocational conservation organization exists whose members have reconstructed an example of the barracks and are preserving what remains at the site. There is also a rich collection of written material from which to draw information. They have also located and conserved several original construction drawings and a specification for a barracks building.

As was typical of the WWII era, the buildings at Bryan AAB were built as expedient temporary wooden facilities. Much of what was on the base has completely deteriorated or been removed. Bryan AAB closed after WWII, but reopened during the Korean War. In the 1950s, the base was a dispersal point for atomic weapons from Carswell AFB and was upgraded to then-current standards. In the 1960s, it was deeded to Texas A&M University. Most of the ancillary original buildings are now gone. However, several of the 1950s era housing units and a good number of the flight line industrial buildings remain, including most of the warehouses, two of the large hangars, and three smaller hangars. Under the aegis of TAMU, many of the remaining buildings were converted to meet university requirements and additional new buildings were built. A large cache of 3,973 original drawings was discovered in 2011 and reviewed in detail

by the author. These helped provide fundamental information from which the configuration of the WWII base can be derived.

At Carswell AFB, the situation is significantly different as this base has been in continuous military use since it was built. At this time, only 12 of the original buildings on the main base remain. In addition, most of the original buildings have been renovated. Almost half of the Wherry housing units have been sold to civilians who relocated them to other sites. After the houses were moved to other locations, a large commercial area was created along the frontage road, which is now occupied by a Home Depot and other stores.

The base maintains an active file of drawings that may be used to evaluate the base facilities. In 2001, the base was transitioned from the USAF to the USN following a Base Realignment and Closure Commission action. At that point, the drawings and construction records were transferred from the Air Force Base Civil Engineer to the Navy Resident Engineer. Only a portion of the drawings remained in the same Civil Engineering building when the administrative organizations changed. The remainder of the drawings was transferred to the different agencies occupying the buildings. Because of the classified nature of some work done at the base in the past and continuing to the present, some of the records are unavailable. This includes a small portion of base property, primarily in the ordinance storage area and warehousing area.

Once the historical considerations of the bases have been established, the process of developing a detailed understanding of the international valuation of historical conservation included searching for key words in the 82 manifestos and statements of

purpose. Each document in English was located and downloaded verbatim. Several problems occurred while converting PDF files to WD, DOC, or DOCX files, causing caused pagination to shift. In addition, some words were split in a random manner. The author went through each document, reassembled the truncated and mismatched words, and performed a spell check. This also identified European spellings, which were then noted for additional search. Words such as co-operation, neighbourhood, and esthetic were used as found. The search involved 31 concept categories with 45 different specific descriptive words searched.

The search words were derived from the author's research as representative of typical areas for consideration in historical conservation that were deemed important to the profession. Additional research utilizing important books on the topic was also accomplished to generate a greater understanding of the words used to identify conservation issues over time. Words such as conservation and heritage were found in almost every document. Words such as adaptive reuse were not found as often.

The author searched all of the 82 documents for the specific words five times. The first search produced a limited result as only the base words were included in the search. It became apparent that different spellings in British and American English, as well as pagination issues from the PDF conversion resulted in missing a significant number of important words. This first effort was thrown out as unreliable.

The second attempt improved on the process by correcting the already noted discrepancies and resulted in greater numbers of concepts being identified. It was then noticed that associative terms were being missed. An example of this was the

‘neighbourhood’ search. The documents also included the words town, city, village, and urban to reflect neighborhood issues. These were added to the search framework. In addition, beauty was added to the mix of the aesthetic word search. The second review of the documents was also thrown out as it missed significant associated words that reflected the critical concepts being sought.

The third, fourth, and fifth reviews of the documents were accomplished including the above changes as well as the base words so that all tenses could be considered. Examples of this are the words legislation and policy, which were expanded to allow the word legal and its derivations. This search word was then reduced to leg, which created the problem that leg might be part of another word. This was ameliorated by looking at each word in context so that only legal terms in all tenses were included in the study. Words like legitimate were not counted even though leg was found during the search. The selected word was compared to the context around it and if it applied to legislation or policymaking in the document, it was included in the concept word count. The paragraph above and below the word under review were read to determine the context of the word being searched.

The actual process of evaluation of the categories of words began with numbering all of the manifestos and statements of purpose sequentially by chronological date. Next, each document was searched for each word in the specific category and then tabulated (see Appendix A). The process was tedious and the potential for input errors of word counts into an incorrect cell in the matrix was possible. This was taken into account and errors reduced by drawing a heavy black line at the bottom of the entire line

being reviewed for the particular proceedings document being reviewed, then coloring the entire line buff to separate it from all of the other white lines. The researcher opened the word document containing the proceedings, and then opened the find drop down window to search for the topic word. The topmost line of descriptor categories was frozen then copied. Each copied descriptor word was then pasted into the MS Word Find drop down window and applied to the document. Each word was read and the context determined. Once this was completed, the researcher returned to the spreadsheet to input the data in the appropriate cell and continued with the next category word in the same manner until all 82 documents had been reviewed. As a line was completed, the dark line was moved to the bottom of the next line and the completed cell was colored white. Next, the line immediately below it was colored buff. This ensured that only one line was worked on at a time and the placement of any data in the wrong cell on the wrong line was avoided. The process was continued until all 82 documents were reviewed. This was repeated five times with the first two evaluations being thrown out as inaccurate. At this point, the columns were summed from top to bottom and from right to left. This was done to ensure that no input errors of alpha rather than numeric data were placed in the cells. Once this was completed, charts were generated and the evaluation of the data was accomplished.

Approximately 60,400 individual words were reviewed in the process of evaluation of these documents over the course of 18 months. They were specifically reviewed for the individual words, the conjugated words, words with changing tenses, and European spellings. Five percent of the truncated words subsumed into other words

that were rejected and not included in the counts. An example of this would be legal as truncated by the search for the word legislation, which allowed the researcher to find legal as a variant of the targeted concept to be added to the count without adding the word leg. Words such as sign as a truncated form of the word significance were not counted. Once the target word was identified, it was then read and compared with the paragraph in which it appeared for context. If the context was not clear, the previous and following paragraphs were also read. The contextual evaluation and word category were used to determine if the word was appropriate for inclusion in the evaluation.

### **The Science of Word Searches**

It is necessary to review the process of bibliometrics to verify the assumption of this study that it is valid to use a word count to establish a consideration. Bibliometrics is the statistical analysis of books, articles, or other publications. By using impact factor tools with written materials, counting citations and other measures, the impact of publications can be determined. (Oxford Guides 2014)

Prior to 1870, this process was called scientometric and was considered the study of measuring and analyzing scientific research. In practice, it tended to measure the impact of the scientific publications. Modern scientometrics is based primarily on the work of Derek J. de Solla Price (1965) and Eugene Garfield (1955). Garfield founded the Institute for Scientific Information. Qualitative and quantitative methods of research were studied. Although this was very expensive initially, new algorithmic inventions, computer technology, and data mining have made it much more cost effective in the 21st

century. This process has been in use for more than 145 year and is established as a valid scientific method of analyzing selected data in a systematic way. (Harnad 2007)

This process is also used for citation and word analysis. Hence, bibliometrics can also be used to analyze words scientifically. By using this process, it is possible to explain the strengths and weakness of written material. This process is used in social sciences, medicine, and research and development. (Wikipedia 2013a, 2013b)

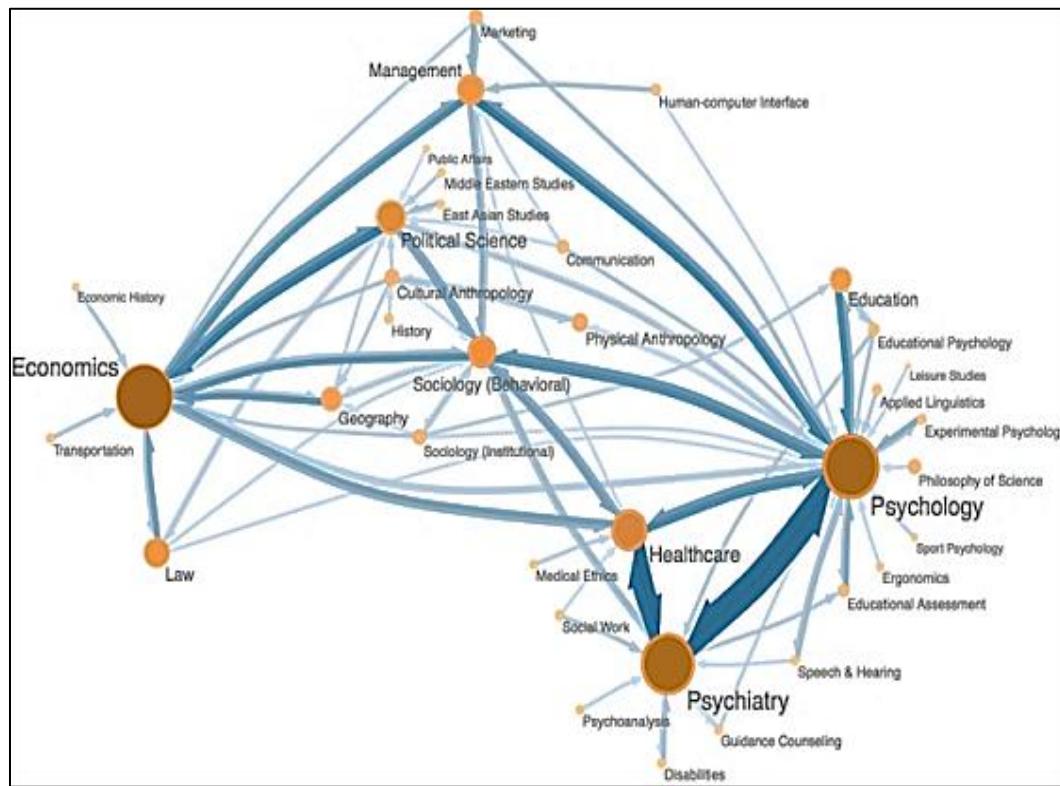
Bibliometric analysis provides a rich tool with which to explore the content of publications.

Bibliometric analysis is an increasingly important part of a broader 'toolbox' of evaluation methods available to R&D policymakers to support decision-making. In the U.S., UK, and Australia, for example, there is evidence of gradual convergence over the past ten years towards a model of university research assessment and ranking incorporating the use of bibliometric measures. In Britain, the Department of Health (England) has shown growing interest in using bibliometric analysis to support prospective R&D decision-making, and has engaged RAND Europe's expertise in this area through a number of exercises since 2005. These range from the macro-level selection of potentially high impact institutions, to micro-level selection of high impact individuals for the National Institute for Health Research's faculty of researchers. (Ismail et al. 2012)

Texts are becoming more and more a source for data collection in empirical studies... Traditional forms of quantitative text analysis are based on counting the occurrence or co-occurrence of concepts indicated by words or phrases. Today more and more attention is given to what is said exactly in a sentence, especially in a clause. (Popping 2012, 89)

The process of bibliometrics can provide detailed information about the cross pollination of many aspects associated with a topic. The 2004 Eigenfactor Social Science Citation Relationships guide, shown in Figure 3, demonstrates how this process can link multiple areas and count the numbers of interactions. Similar relationships between

journals, documents, and words can be derived from virtually any search. The Eigenfactor is a useful method of citation tracking and bibliometrics. By using a variety of impact factor tools on the topic, it can determine a count of citations and reliably measure the impact of publications.



**Figure 3      Eigenfactor Citation Relationships (Oxford Guides, 2014)**

The author took great care to read each concept word in context. When there was a question concerning the relationship of the context to the word being reviewed, the paragraph above and below the entry was read to clarify the situation. Words paint pictures of what is happening. In scientific presentations, they are intended to be factual

representations of the topic. The analysis of words “implies that the investigator exclusively addresses questions about how often and in which way a specific word or... statement appears in a text.” (Popping 2012, 89) Once an investigator starts to explain a word, he or she becomes part of the event because his or her explanations involve interpretations. Hence, this project was careful to use standardized definitions for words reviewed to limit this confounding influence.

The use of bibliometrics in social science and research and development is well documented, with over 140 years of growing utility. This project has extrapolated from this process the utility of word counts as a tool to derive useful information about the topic under study. Later in this document, compilations of word counts are utilized to generate a conservation index to be applied to conservation of WWII AAFs.

How does one define historical and cultural values? This is not an easy matter to accomplish. Succinctly stated, values are the things one believes are important in how one lives and works. Therefore, conservation values are those things we conservationists believe are important in accomplishing our work. They help us organize our priorities and evaluate our outcomes. Organized activities and outcomes are generally deemed as good when they concur with our values. In addition, those things that do not align with our values are deemed not good. Consequently, it is important to understand historical and cultural values that were the underpinnings of the authors of the 82 manifestos and charters evaluated for this study. It should be pointed out that the application of these values and the technical treatments associated with the preservation of historical and cultural objects has changed over time. What was considered worthy of conservation in

1877 and today are different in many respects. However, it is clear to the author that despite almost exclusive Eurocentric cultural influence, the 19th and early 20th century's basic tenants of conservation values have grown and improved over time. The initial expertise and Eurocentric historical criteria have evolved to include a larger view of global valuation.

After a significant literature review, the author concluded that the initial valuation processes were heavily influenced by cultural and religious perspectives. This continues to be the case today. However, dominate western cultural values standards have evolved into an elegant global view that embraces a wealth of multifaceted cultural and historical valuation criteria. We find these expressed in many of the current treaties' and charters' global understandings and valuations. This has been a natural evolution of the profession as it grew to include global venues. Further, it was improved by the development of consensus within and among the developers of these documents. Those who wrote these 82 documents were defined at the time of their writing as experts. In most cases, they also relied on outside technical expertise to assist with the writing of their standards. This gave their efforts another level of credibility by building upon what was done before. For example, the U.S. Secretary of the Interior's 1995 *Standards for the Treatment of Historic Properties* are rooted in the Venice Charter. It reflects the Venice Charter's adroit observations and standards.

As global communication, technical advancement, and increasingly rapid communication spread, the culturally focused valuation criteria have become more

egalitarian. Because of this, international cooperation has grown and criteria have broadened to include greater acceptance by all parties of divergent considerations.

Starting with the *Principles of the Society for the Protection/Safeguarding of Ancient Buildings as Set Forth upon its Foundation*" (a.k.a. the SPAB Manifesto) (1877), and ending with the *Roerich Pact Protection/Safeguarding of Artistic and Scientific Institutions and Historic Monument*" (1935), we find that safeguarding ancient European buildings, restoring monuments, and protecting historical sites were the primary valuation considerations. From the *Hague Convention for the Protection/Safeguarding of Cultural Property in the Event of Armed Conflict* published in 1954, to the *European Convention on the Protection/Safeguarding of the Archaeological Heritage*, " published in 1969, conservationists were concerned with slightly different issues. These included protecting sites during war, European cultural heritage, archeology, access to museums, landscapes, conservation, restoration of monuments, theft of heritage, heritage in the Americas, and European heritage protection and safeguarding.

From 1970 with *The Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property*, to the 1978 *Recommendation for the Protection/Safeguarding of Moveable Cultural Property*, issues continued to focus on global concerns. These included the protection of world heritage, national heritage protection, architecture, small towns, cultural tourism, trade in heritage items, protected areas, exchange of property, and movable property.

In the 1980s, the *Recommendation for the Safeguarding and Preservation of Moving Images* (1980) focused on preservation concerns, as did *The Vermillion Accord on Archaeological Ethics and the Treatment of the Dead* (1989). More attention was paid to preserving moving images, historic gardens, preservation of small American buildings, reconstruction of damaged items, the built environment, conservation in Italy, cultural property offenses, European heritage, economic value, urban areas, preservation of folklore, and human remains.

Almost half of the preservation charters were written and adopted from 1990 to 1999. The primary focus of the *Charter for the Protection/Safeguarding and Management of the Archaeological Heritage* (1990) and the *Second Protocol to the Hague Convention for the Protection/Safeguarding of Cultural Property in the Event of Armed Conflict* (1999) was protection. This included protection of historically significant items as well as guarding against a wide variety of threats. Items to be protected included architectural and cultural heritage, towns, historic artifacts, ecology, indigenous people, cities, monuments, underwater heritage, authenticity, sustainable tourism, university education, protection of complexes, vernacular heritage, timber construction, return of stolen objects, etc. Threats included illicit trade in objects, Eurocentric/western bias, war damage, non-sustainable tourism, etc. Interagency actions and the development of specific criteria to protect historical objects and buildings, such as those developed by the United States National Parks Service, was an important step in the right direction.

Over the last several years, from 2000 to the present, biodiversity was added to the growing interest in cultural and historical conservation. Both *The Convention on Biological Diversity* (2000) and *The ICOMOS Charter on Cultural Routes* (2008) included biodiversity as one of their concerns. Other areas of concern included European landscapes, underwater heritage, intangible cultural items, interpretation, and preservation of sites, and cultural roots.

From 1877 to the present the criteria, topics of interest, and valuation criteria have grown to include global considerations. From 1877 to 1935 there were six documents written (7.3% of the total). From 1936-1953 none were written, primarily because of World War II and the Korean War. From 1954-1959 four documents were written (4.8% of the total). From 1960 to 1969 there were seven documents written (8.5% of the total). From 1970 to 1979 there were 12 documents written (14.9% of the total). From 1980 to 1989 there were 13 documents written (16.1% of the total). From 1990 to 1999 there were 34 documents written (41.1% of the documents written). From 2000 to 2008 there were six documents written (7.3% of the total documents written). The incredible burst of conservation activity in the 1990s helped the global initiative to improve conservation efforts expand significantly. More importantly, it introduced a wider view of what should be valued for conservation based on a significantly increased number of diverse international experts. The globalization efforts were enhanced greatly by the United Nations systematic efforts to define valuation criteria in a global context. Overall, the profession has moved from focused ethnocentric valuation criteria toward a global view modulated by a consensus of experts from multiple cultural venues.

Over the course of this evolution, a great number of divergent expert opinions and professional input were brought to bear on what values should mean. Coupled with the international consensus processes used in the development of the texts of Getty documents, this fostered a broader view of valuation that now permeates the global charter of historical and cultural conservation.

Inherent to this discussion are the latent values that brought to bear during the writing of and consensus building that resulted in these documents. To a large degree, this occurred more often after WWII as a greater number of experts from a greater number of divergent cultural, geographic, and historical viewpoints became involved.

Values can be defined as worth, merit, or importance. Latent can be defined as existing as potential. Hence, latent values may be defined as existing potential worth, merit, or importance. In the context of historical and cultural conservation it is well known that all conservationist have latent values which generally are derived from their personal cultural and religious (or lack of religious) foundations. These affect how they perceive their professional world and drive their decision-making processes. The literature review revealed that Eurocentric latent values were clearly expressed in the earliest documents written in 1877 to the early 1950s tended to demonstrate this trait. As our profession evolved to include South America, Canadian, Japanese, Middle Eastern, and countries, the focus of valuation devolved from Eurocentric latent valuation toward a more global perspective that included many divergent values. This has greatly enriched our profession and resulted in a greater appreciation of the grand diversity of global human historical and cultural achievements. We find ourselves today with more diverse

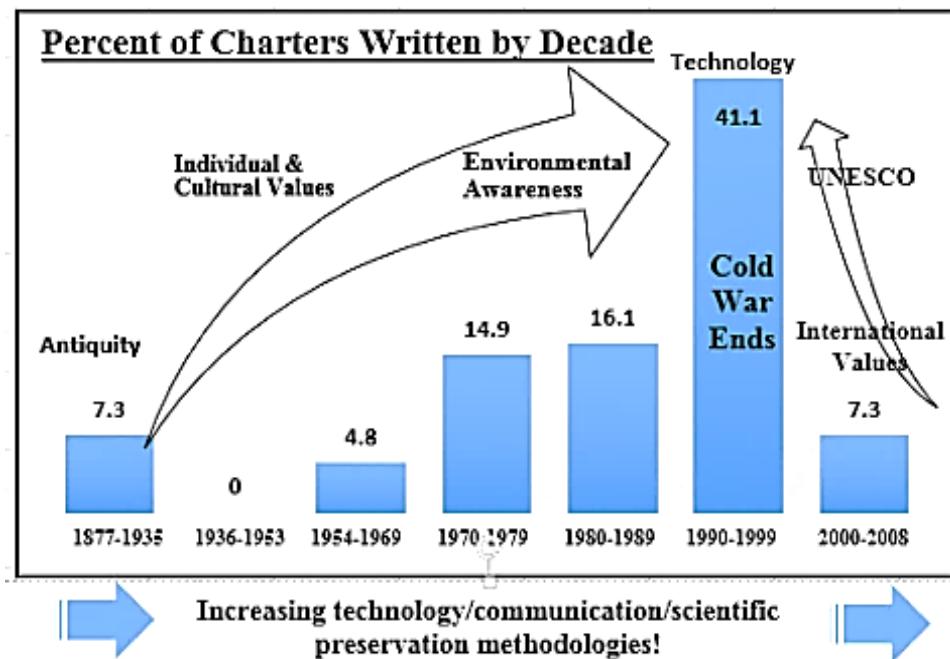
and globally accepted valuation criteria as expressed in the international and United Nations agreements.

This study used the search words shown in the spreadsheet in Appendix A to determine which criteria to consider. It is important to remember that these documents were written by accredited experts involved preservation/conservation. The terms searched in these documents were repeated extensively throughout the reviewed literature. The author is also an accredited expert with 32 years' experience working with hundreds of WWII AAF facilities around the world. In addition, his 40 years' experience as a practicing architect and extensive academic background qualify him to make value judgments concerning these buildings types. The extensive literature review and analysis of the 82 documents gave him additional insight in selecting the terms that were ultimately used to define historical and cultural valuation.

The goal of this project is to select verified valuation terms (as discussed above) to be used to create the Optimal Conservation Index (OCI) so that the process of selection of WWII AAF buildings can be identified in an easy manner for conservation by all stakeholders. The OCI process is relatively simple. After an analysis of a target facility is accomplished by a trained conservation professional selected terms used to identify and describe the facility are tabulated. The discovered valuation words were then grouped by pragmatic, semantic, and syntactic considerations. Then the pragmatic phenotype criteria values are averaged. Continuing in the same manner, the semantic genotype criteria values are averaged. Next, the syntactic genotype criteria values are averaged. These three averages are added together to determine if the building fits in the

importance one, two, three, or four category. Finally, the importance value, the value of the averaged pragmatic, the averaged semantic, and the averaged syntactic values are summed to generate the OCI value. The resultant number can then be used to rank order the building to allow it to be ranked numerically against all others in the project. This resulted in the Optimal Conservation Index (OCI). Please look at the three AAF building examples starting on page 351.

Latent values utilized by the experts who wrote these conservation documents were by their nature affected by their culture, their language, their historical context and the level of technology associated with all four of the previous considerations. The authors who wrote these documents were selected by their peers as experts for the precise purpose of identifying current valuations that could be applied to the historical and cultural considerations deemed important by that particular group at that particular time. Expert opinion is instrumental in the definition of conservation specific values. We can see from Figure 4 that during certain decades there were spurts of documents being written. As technology, communication among and across borders and the sophistication of the techniques used to define and treat historical considerations increased in quality the number of documents that were also written increased. There was a flow from localized and Eurocentric criteria and valuations toward a more global multi-cultural confluence of ideas dealing with values to be applied to conservation efforts.



**Figure 4      Percent of Charters Written by Decade**

We can also see that major wars had a great impact on the development of these documents as almost nothing happened preceding and during WWII. There was incremental development of 44.3% of the total documents in the period between WWII and the Cold War. During WWII and the Cold War, global interest, wealth, and geopolitical considerations were focused elsewhere. After the Cold War ended, greater interest and wealth became available to address conservation issues and 41.1% of the total documents were written. Vast improvements in global communications, general technical competencies within and across societies, and more substantial technical conservation tools became available. Therefore, there was a greater ability to propagate historical and cultural conservation. This ultimately led to more globalization of the efforts, which in turn brought more divergent and sometimes more complex valuation

systems into contact with each other. This resulted in greater consensus across cultures, as seen in the UNESCO documents. Latent values, which in earlier times tended to be exclusive of other perspectives, have been moderated, and brought into consensus with other divergent expert valuations. Hence, we find 85.4% of the international documents written between 1954 and 1999. During the course of this evolution, a greater number of cross-cultural latent values were exposed to each other and resulted in a leveling of discrepancies as globalized perspective developed. In summary, expert opinions and technological considerations have come together to homogenize valuations and valuation terms as despite hindrances of wars so that a greater global consensus evolved.

Figure 4 also illustrates how the effects of WWII and the Cold War substantially reduced the number of charters written. However, when these events concluded, governments could apply their interest and funds to more useful activities and almost half of the total charters were written. This concurrent with rapid increases in the speed and distribution of communication, technology, and improved scientifically based preservation methods facilitated greater multicultural and international exchange of ideas that tended to level inherent differences in the latent values of individual organization. This evolution has benefited the profession greatly as a greater acceptance of divergent values has resulted in a greater degree of global consensus about what should be protected and valued, culminating in United Nations agreements and charters which strive to define valuation more clearly. (Scott et al. 2011)

## **CHAPTER II**

### **LITERATURE REVIEW**

It has been said that, “it is the relative social attribution of qualities to things or to the environment that makes them valuable to us.” (Mendes-Zanchetti and Jokilehto 1997, 297) These two authors clearly understood innate human propensities for valuation. In as much as social attribution is an imprecise science and cultural definitions tend to change on a cultural basis then it is logical that in the future, conservation of cultural heritage will depend on the repeated education of the society as it periodically and organically regenerates values. Our modern modalities are rifle with fundamental and rapid changes in valuation terminology. It has been said that the modern paradigm is based on relativity and this relativity has generated a new concept of historicity. Hence, the identification of historic structures and objects of art has morphed into values that emphasize different objectives other than traditional repair objectives had done in the past. (Jokilehto 2002)

It is generally accepted that Riegl was the first to develop a clear analysis of values that differentiated between traditional and contemporary modern approaches. He showed the distinction between a monument being intentionally built as a memorialization of a message and a historic monument that was recognized after its construction for specific historical values associated with it. Traditionally the intent of a repair of a memorialization monument was to keep the intended message intact. A more modern view as reflected by Riegl was the value of age, as it related to the specific

culture and the cultures values that were considered important. One result of this manner of thinking was that it is difficult to present the modern interpretation of the valuation of a building or art object in terms of pre-modern considerations, which previously required productive creative action as the primary criterion of what it meant to be an ideal or a universal value. (Mendes and Jokilehto 1997, 295)

American English is a living language. As such, the meanings of terms change significantly over time. Previously, the context for the word “universal” traditionally indicated divine modalities were embodied. This occurred to attempt to ensure that relevance of the object was applicable to human beings and their society at that time for all time. A gradual change in the meanings of the traditional values that existed since Romanticism led to the prevailing accepted universal validity models becoming irrelevant. Today universal values are once again proclaimed and are based on an international collaboration that has resulted in the World Heritage Convention of UNESCO and its reports.

“Modern society, having recognized the specificity of heritage resources in relation to their cultural and physical context and the essence of authenticity in creative diversity, has given a new focus for the issue of universal significance.” (Jokilehto 2002, 295) Accepting the definitions of Brandi, Nietzsche, and Heidegger indicates that universality can be found in what is common among the authentic expressions of specific cultures. These factors can be endemic in the creative process that results in an object or building. Modern sensibilities’ dealing with universal significance values in the heritage of cultures does not derive from this idea. Nor does it derive validity form the

assumption that all projects considered resemble an ideal. Rather it is said to flow from the concept that each item or building is a unique expression of the specific community or creator of the object. It also represents a relevant cultural contextual framework. This does not imply that the object or building being considered is the best example, but that

...it shares a particular creative quality, an uniqueness, and the quality of being ‘true’, original, authentic, as a constituent part of the common, universal heritage of humanity. Within such a context, it may be possible to identify groups or classes of products with similar characteristics, out of which to select the most representative or outstanding. In the essence, universal value implies that the single item be not only seen for its individual merits but always also as a representation of the common heritage of humanity; within this context, the heritage of a particular culture can be characterized by its specificity.” (Jokilehto 2002, 295-296)

Hence, it is possible to develop universally acceptable and applicable criteria for the valuation of WWII AAB facilities in Texas.

### **How Do We Apply Values?**

The question now is how do we apply value to historical assets? There are many opinions on this matter as there are people who work in our profession. David Tomback presents a strong case for his recommendations. He states that, “when valuing our heritage, special and unique factors can often come into play, and how one measures non-financial elements such as historical importance also needs to be considered.” (Forsyth 2007, 204) He recognizes the complexity of the issue as he attempts to focus on areas that are most gamine. He presents four primary areas that he feels are important. He considers market valuation, non-market valuation, heritage love factor, and other factors that affect valuation.

Market value is the easiest area to understand. In a capitalistic society like ours, what makes economic sense is valued.

Put simply, the comparable method involves analyzing recent transactions of similar properties in the same location and applying a rate per square meter to the property to be valued, having made adjustments for location, condition and so forth. Used for commercial and residential valuations this is an accepted and reasonably accurate method, but when applied to historic houses things can be more complex. (Forsyth 2007, 206)

Money talks and if the project is economically viable, it will thrive. Of course, it takes wise management to sustain the assets and to ensure that overuse does not degrade them significantly. If the historical ambiance is sufficient then a historical premium may also be derived with which to validate the value of the historical object or building. Thus, it is likely to be valued and preserved.

Non-market valuation approaches are more complex and somewhat more elusive. For generations, societies have struggled with how to value items in a non-market context. The contingent valuation method is one way to accomplish this. It asks the consumers directly what they are willing to pay for, access and use. There is also the hedonistic pricing method, which tries to determine the relationship between the attributes of the historical object and the price to be paid. Many think that this is the most rigorous valuation method.

“... (T)here is a significant body of research into the impact of architectural style and historic zone designation on property valuation. The basis is that any differentiated product unit can be viewed as a bundle of characteristics, each with its own implicit (or shadow) price. In the case of housing, for example, the characteristics may be structural, such as number of bedrooms, size of plot or presence or absence of a garage, and can range through to environmental matters such as air quality, the presence of views, noise levels, and even crime rate.” (Forsyth 2007, 207)

A third cost valuation method is the travel cost method. This method states that the cost of travel to a site by visitors can be used as a measure of the value of that historical asset. This is a straightforward analysis that produces quantifiable values easily. However, there is also a train of thought stating that this method vastly limits the potential viewership of patrons, and hence, lowers the valuation. It also limits the number of viewer as not everyone can afford the expense of the trip. Further, if the attraction is in a very remote location it limits viewership even more drastically.

The fourth method is managing value delivery in design developed at Loughborough University, UK. This method focuses on helping all stakeholders to understand each other during team formation as well as providing a more comprehensive view of valuation. This of course takes a good leader or team of leaders who operate with finesse who can bridge the different perspectives of individual stakeholders. The author favors this method.

There are also circumstances when the monetary value of the asset is inconsequential. Segmental, emotional, and physical attachments may many times become more important. Tomback is adroit enough to understand that this is not easily quantifiable. He calls this method the heritage love factor. He states, “....actually quantifying the heritage love factor is probably impossible, beauty indeed being in the eye of the beholder/just as one collector will pay more than another for an antique object.” (Forsyth 2007, 208) This is of course is likely to be self-evident to the experienced practitioner. For example, what value can be placed on the Great Wall of

China, or the Mona Lisa or the beauty of any of a myriad of one of a kind objects and works of art or nature?

David Tomback's summary is worth repeating. "Valuations play a vital part in the process of bringing long-term beneficial use back to redundant historic buildings, and understanding of the valuation process is essential for all those involved with our historic environment. There is scope for further guidance and education in this field.....For those involved with the historic environment, a greater understanding of valuation issues and a merging of traditional and non-traditional methods will lead to better decision-making for the benefit of future generations." (Forsyth 2007, 208-209) Clearly, there is a need to develop formal and universally generalizable valuation criteria. In USAAF WWII construction, the need is especially critical because these buildings are disappearing or being insensitively reconfigured at an alarming rate.

### **Authenticity**

To understand valuation further, we must understand what is meant by the term authenticity. Martin Robinson defines authenticity by saying,

....the dictionary demonstrates that authenticity is a concept that has a very real relevance to our perception of the purpose of historic buildings conservation. Authentic means 'honest', surely a self-evident virtue in conservation terms, for what are most historic buildings if not the honest use of locally available materials designed to reflect the social aspirations of their owners? (quoted in Forsyth 2007, 31)

Of course, in today's multi-national economic environment, one must take into consideration that materials can easily be shipped around the world. During WWII Army Airbase construction, the tendency was to use local materials because it was much more

expedient and international shipping was not as common as it is today. He goes on to say,

“The principles for historic buildings conservation work might be stated thus conservation work on historic buildings and monuments should only be undertaken if:

1. It is based on accurate and reliable information.
2. It uses traditional methods of repair where possible.
3. It leads to a historically and emotionally satisfying, honest, appropriate, and responsible result.” (Forsyth 2007, 32)

These are important considerations and they provide meaningful guidance.

However, they are not always directly transferable between cultures or across historical eras. One can easily see that item three is clearly fraught with difficulty if one is a purist who insist on using slave labor repair or reconstruct a Roman ruin. In the context of this project, this is not a problem as we are dealing with CONUS construction, which at the time utilized ubiquitous, inexpensive, and readily available local materials that are still abundant and available. In addition, the designs of these buildings were prescriptive flowing down in standardized plans from the Department of War. If this project were dealing with multi-cultural contexts, Forsyth’s considerations would be more germane.

In 1999, Lauren B. Sickels-Taves analyzed and discussed the writings of Gabby and Bonski, who reviewed several of the Getty documents for organizational criteria. Gabby and Bonski identified the following criteria:

- a) historical cultural study and analysis,
- b) contemporary adaptation,
- c) use of the document (objects),
- d) scope,

- e) preservation, restoration and reconstruction, relationship(s) of building(s) to site concerns, and
- f) visual aspects of a particular work as important.

After identifying the criteria, Gabby and Bonski organized them as either singular/multiple or static/dynamic in their nature. However, they did not make specific efforts to organize the criteria to include other types of international considerations that might have had greater universality. Sickels-Taves noted that they did consider adaption, preservation, reconstruction, restorations, cityscape issues, and visual aesthetics as important concerns in historical and cultural conservation. These significant concepts and terms occurred repeatedly in this study. (Sickels-Taves 1999)

It is important to discuss the recent history of authenticity. The 1994 Nara Conference *Document on Authenticity* states that the ability to understand valuation of heritage depends on the degree to which the important and relevant information sources can be understood and determined to be truthful and credible. If the valuation is accomplished in a manner with acceptable credibility, then it should be considered authentic. Acceptable credibility is the key and care must be taken to avoid confounding influences that might degrade it. Nara helped define authenticity. This concept and term occurred repeatedly in this study.

During the middle ages in Europe, authenticity was relegated almost exclusively to authentication of texts. Over time, it devolved into the authentication of religious objects. At that time, authentic meant that it was not counterfeit. This devolved into, “being authentic refers to acting autonomously, having authority, being original, unique,

sincere, true, or genuine. Being ‘identical’ refers to what is representative of a class with the same properties, e.g., an identical reproduction, replica, copy, reconstruction.” (Jokilehto 2002, 296) These terms relate to time and the creative process. Authenticity was measured against the truthfulness of the internal unity of the creative process, how it related to the work as executed, and the effects of time on it though history. By doing this, a critical assessment of the fundamental essence of the work as it relates to its historical context had to be accomplished to establish validity and value. If it passed this test, then the building was defined as being an original. This clearly demonstrates that throughout the history of cultural conservation certain issues of authenticity were linked directly to value and validity. This study found that the concept of authenticity and specific usage of the term were found repeatedly in the Getty documents.

Cultural values have and will continue to be important constituents of valuation of historical and cultural conservation. In 1979, Walter Benjamin pointed out that there can be only one original and that in the pre-modern era cultural value was an important consideration. He suggested that art was generated only with the start of collections and exhibitions. In as much as art is reproducible, the presence of the original was then a prerequisite to the concept of authenticity. However, authenticity itself was not reproducible. It was believed that historical testimony rested on authenticity and that time no longer matters when a replica is produced. Benjamin’s greatest concern was that the authority of the original object would be jeopardized by the simple act of copying it. (Benjamin 1979, 223) This continues to be a serious consideration because we can replicate virtually anything via computerized printing systems. It will only become more

of a concern as computer-printing technology utilizes materials that are more diverse and becomes more cost effective than traditional methods of copying and manufacture.

Computer generated objects, prints, photography, film, and industrial reproductions decouple the reproduced objects from the traditions that surround the original objects. This allows the reproductions to be substituted for the original, which allowed the beholder to experience the object in his or her specific circumstances. This issue will only become more important in the conservation movement as time progresses. Unfortunately, copies also confound the Venice Charter recommendations that future generations be given inherited cultural properties in as an authentic way as is possible, are being confounded by copies. The conundrum is complicated by the fact that pollution and weathering of the originals has made coping more acceptable when used as a manner of protecting the original objects or buildings. An excellent example of this is the replacement of Michelangelo's statue of David, which used to be located in front of the city hall, with by a replica while the original is protected inside the Academy of Art in Florence. Unfortunately, unless tourists know this has been done and where the Academy of Art is located, they may miss seeing the original object as well as a cornucopia of additional work by Michelangelo and other original Roman artifacts. This deprives them of the opportunity for a detailed understanding of how the artist worked or what his intent may have been, as well as an opportunity to counterbalance that understanding against the other magnificent examples of his work. Authenticity is just as great a concern today as it has been in the past. The term and concept are discussed repeatedly in the Getty documents, as noted by this study.

From the 1970s to the 1990s, authenticity was overshadowed by scientific developments. There is no question that scientific developments that advance the art of conservation are essential. However, care should be taken to ensure that more good is done than harm. A good example of this was Mussolini's 1930s 'state of the art' repairs to the foundation of the Leaning Tower of Pisa, which exacerbated the structural problems almost to the point of complete structural failure. The tower continues to require periodic repairs. (Grow 2001) Scientific and technical considerations are referenced repeatedly in the Getty documents.

Following the 13th anniversary of the 1964 Venice Charter, professional conservationists attempted to clarify the meaning of heritage as it relates to a larger international context. Our profession became aware of a distinct disconnect between western worldviews and traditional European and Asian societies. The realization that these differences were substantial led to a rethinking of the definition of values. The term and its associated considerations (heritage, historical, cultural, and conservation) are fundamental concepts in the profession. Value was the second most repeated term found in the Getty documents. This is a clear indication of its importance to the conservation community.

The 1994 Nara Conference *Document on Authenticity* emphasized credibility and truthfulness of sources along with cultural diversity as fundamental to the concept of authenticity. Furthermore, article six of the Nara document states that cultural heritage diversity is vested in space and time. It also encourages respect for all belief systems and cultures. This is clearly shown in the relationship of authenticity to safeguarding ongoing

traditional cultural assets that may be at risk of losing the basis of what they are when impacted by Western perspectives. By the late 20th century, authenticity was perceived in terms of multicultural context as being closely related to cultural identity. Authenticity, culture, heritage, safeguarding, and cultural context are important concepts in this document.

The 1996 Operational Guidelines for the UNESCO World Heritage list identify authenticity in relationship to the material, design, setting, and workmanship of the site. It is understood that these include the historical and aesthetic considerations of the site as well as its historical context. The function of a site must be included in addition to its physical and social context.

At times, these considerations can create confusion. For example, one might raise valid historical questions about a building conceived by one architect and finished by a second as to what is authentic, and at which time by which architect. However, in the framework of this project this issue is not going to cause difficulty because the AAF building plans were prescriptive. Historical, context, and aesthetic considerations are fundamental in the UNESCO documents, which now have the force of international law behind them. These concepts were repeated throughout the Getty documents as considerations for authenticity.

Charles Taylor (1992) discussed modern society's considerations, which included dissatisfaction with traditional values, exaggerated individualism, restricted choices in transportation, and favoritism for maximum efficiency. In his opinion, people's detachment from traditional values has limited their creative functions

significantly, leading to societal fragmentation and eventually social disorder. However, he stated that the application of quality education and focused sensitization could help society re-establish a collective cultural identity. It is sad this delicate process occasionally leads to the political domination and extension of nationalistic fervor by specific groups. During the 1990s, many items of cultural heritage were targeted for destruction by different groups of enemies. The Taliban's destruction of the magnificent statue of Buddha and the shelling of historical bridges in Croatia are just two examples of this behavior. We have yet to discover the full and horrific extent of destruction of historical sites in Syria.

### **Technical Aspects**

This project would be negligent if it did not include a discussion of the technical aspects of historical and cultural conservation. According to Jokilehto,

In the field of conservation, conflicts of values on aesthetic, historical, or technical grounds are inevitable. Rival attitudes and methods inevitably arise in a subject that is still developing, and at the core of these differences, there is often a deficiency of technical knowledge. (Jokilehto 2002, iv)

Many stakeholders will require time to reach technical proficiency in their efforts to protect and preserve what they value. This educational effort should be applied carefully. It is important to remember that a good administrator with adroit management skills can bridge differences between and among the various stakeholders' knowledge bases. Inherent to this discussion are the values that each stakeholder uses to determine potential conservation targets. This also needs refined management skills to resolve conflicts and misunderstandings as well as foster discussions in a productive manner.

Once all concerned parties are educated in the appropriate areas, the process is likely to progress more smoothly.

In many respects, technology came to the forefront of historical conservation efforts during the 20th century. The initial historical interest of kings and princes in the 18th century has given way to more structured and scientifically sustainable conservation efforts. Curiosity has given away to rigorous study. In addition, a plethora of evolving preservation techniques and philosophical perspectives concerning how conservation is to be accomplished correctly has also arisen. Viollet-le-Duc was among the first scientific historical and cultural preservationists. In article four of the 1931 Athens Accord, he recommends judicious use of modern techniques, specifically careful use of reinforced concrete. In article nine of the 1932 the Italian Norms, Giovanni indicated that strictly scientific solutions should replace imperial practices. Article two of the Venice Charter states that conservation of monuments should benefit from all scientific techniques that can contribute to safeguarding architectural heritage. All these are valid considerations that reflect terms and issues that are important to historical and cultural conservation valuation criteria.

Scientific research for the purposes of preservation/conservation began with efforts of various museums. In 1888, the Staatliche Museum in Berlin was the first to employ scientific research methodology. The British Museum followed suit in 1919. Cairo, Harvard, and The Louvre also began using scientific research to preserve objects in 1925. Good advances occurred in conservation research in the 1970s and 1980s across Since the 1970s, institutions across the globe have helped advance conservation research

by sharing their results and methods. (Jokilehto 2002, 300) Scientific techniques and training have continued to gain in importance and these terms were repeated many times in this study of the Getty documents.

The conservation profession has evolved into a complex philosophical and technical arena. With the advent of globalization and (sadly) more efficient and destructive ways to wage war, it has become increasingly important to develop a global definition of what valuations should be used to identify and protect potential cultural and historical assets. This literature review has found a rich collection of writings concerning the history of preservation and development of worldwide historical conservation movements. It has found a wide variety of different ideas concerning what values should be used to determine what should be conserved and protected. In most cases, what was found concerned a specific circumstance or site. However, it did not find any significant documents that attempted to develop an articulate list of generalized criteria that could be used to determine valuation worldwide. This clearly indicates the need for the present study.

### **Changes in the Meanings of Terms**

Few will disagree that the meanings of words change over time. Between 1877 and the present, there has been astronomical technical and cultural growth in global awareness of the importance of historical and cultural conservation. From its beginnings with the 1877 *Principles of the Society for the Protection/Safeguarding of Ancient Buildings as Set Forth upon its Foundation*, to the 2008 *ICOMOS Charter on Cultural Routes* in 2008, the Eurocentric view of conservation expanded to include a wonderful

mix of vibrant international considerations. Partly due to strong efforts for the propagation of historical and cultural conservation by the United Nation, the scope and depth of international conservation considerations has expanded significantly. New international laws have also helped. Like many international cultural efforts, the conservation movement has grown and changed with the times. Interestingly, the basic terms that convey conservation concepts have not changed substantially. The definitions of the primary descriptors have remained relatively stable. What have changed are the nouns and adjectives to which the primary descriptors are applied. For example, the term conservation has retained the same basic meaning of preventing injury, decay, waste, or loss of aspects related to the project under consideration. What has changed is how we apply it to a specific situation and to what we apply it. The objects to be conserved have changed, as has our definition of what might be preserved. Despite this, the concept of conservation has remained stable.

Adaptive reuse is an excellent example of evolving terms. Adaptive reuse has occurred repeatedly throughout history, but only recently has it been viewed as a stand-alone consideration. Originally, the Pantheon was designed as a temple for all Roman gods. It was adaptively reused as a Christian church after the shift away from the pagan Roman Empire. It is still used as a Christian church, but it also serves as the tomb of the King of Italy Victor Emmanuel II, the great artist Rafael, and as a tourist attraction. The concept of adaptive reuse has been an important part of the pragmatic phenotype of conservation even before conservation became accepted worldwide.

A review of the historical literature and the terms selected for valuation in this study revealed that many of the terms have been used throughout the development of historical and cultural conservation as a discipline. Some of the terms are being applied in new ways because of more sophisticated methods and evaluation processes used in new projects and in widely differing circumstances. To test this, the author reviewed three important books in the profession and the occurrence of similar terms and concepts found in the index and table of contents of these books. If a term is listed in the index, it is an indication of how important the term and its related issues are to the author. If a term is listed in the table of contents this is also an indication of its importance. To demonstrate this point, the author reviewed the terms included in the index and table of contents of several books in addition to the three listed here. The first book reviewed was *A History of Architectural Conservation* by Jokilehto (2002). This book is a systematic overview of historical and cultural conservation. The second book reviewed was *Conservation of Historic Buildings* (3<sup>rd</sup> ed.) by Bernard M. Feilden (2001). This book covers the technical and construction issues associated with historical and cultural conservation. The third book reviewed was the *Historical and Philosophical Issues in the Conservation of Cultural Heritage* (1996), edited by N. S. Price, M. K. Talley Jr., and A. M. Vaccaro. This book concerns philosophical issues related to historical and cultural conservation. These books were chosen because they represent a cross section of important literature in the conservation area, including three critical issues: historical, philosophical, and preservation practices. Inclusion of a concept or term in the table of contents and indexes of these books clearly indicates the importance placed on the topic

by authors who are considered experts in the field. Not all selected items were found, because many historical conservation publications focus on specific areas and are not broad overviews (see Figure 5).

These authors have published several works and have many years' experience in historical and cultural conservation, and are thus considered experts by other professionals in the field. Therefore, the words selected by these authors to describe conservation activities are valid. Furthermore, the detailed and rigorous research behind these books demonstrates sound, well-referenced use of the selected terms in the field of historical and cultural conservation.

The review found that important terms or concepts (also found in the Getty documents) occurred in Jokilehto's book 31 times. Similar terms or concepts occurred 68 times in Feilden's book, and 490 times in the book by Price et al. (1996). Clearly, the terms utilized by the authors of these books, drawn from rigorous research in the field, are terms that have been used repeatedly throughout the history of the profession. The author also found these terms in the 82 Getty documents written from 1877 to 2008. The terms were only counted if they were repeated three times or more in each specific document.

<b>Term Used</b>	<b>Book A</b>	<b>Book B</b>	<b>Book C</b>
Aesthetics/Beauty			x (37)
Adaptive Reuse			
Authenticity			
Conservation	y (5)	x (14) y (2)	x (85) y ( 5)
Contextual Value		x (1)	x (9)
Cooperation	y(1)		
Culture			x (9) y (1)
Education			x (13)
Economic Value/Market Value			
Enhancement			
Heritage	y (2)		x(172) y (15)
History	y (2)	x (18) y (4)	
Identification			
Language			x (1)
Legislation/Law /Policy Making		x (3)	
Management		x (3)	
Preservation		x (9)	x (8)
Presentation/Dissemination		y (1)	x (13) y(1)
Protection/Safeguarding	y (4)		x (1) y (1)
Recording/Records		y (1)	
Reconstruction		x (5)	x (3)
Rehabilitation	y(1)	y (1)	
Restoration/Repair	y(13)	x (2)	x (39) y (10)
Redevelopment			x (3)
Scientific	y(1)		x (34)
Significance			
Spiritual /Secular/Religions			x (3) y (1)
Sustainable			
Technical/Techniques/Professional	y(2)	x (1) y (3)	x (27)
Urban Setting/Towns/ Villages/City			
<b>TOTALS</b>	<b>31</b>	<b>68</b>	<b>490</b>

**Figure 5      List of Terms Found in Reviewed Texts**

## **Literature Review**

The purpose of the literature review is to analyze the professional literature and current practices to discover salient guidance for historic conservation that may be used to determine which criteria have been employed previously to assign value to historic objects. Many types of valuation criteria used for specific locations or specific types of preservation were identified. In many cases, they were formalized in charters or manifestos. However, the author was not able to identify any literature that systematically addressed universal valuation criteria to be used when deciding whether a WWII AAF object or facility is sufficiently valuable to be considered for preservation.

This literature review reviewed a wide variety of documents and books in an attempt to locate a systematic compilation of criteria used to determine historical and cultural values. Multiple organizations have produced a wide variety of representative documents that focus their work in a specific area or on a specific project. However, no compilations of median values or equivalent definitions leveled across cultures were discovered to date. It appears that most organization derived their own specific values criteria based on local concerns, stakeholder inputs, and idiomatic cultural considerations. This is not surprising as many of these organizations had their genesis in a local environment attempting to deal with specific artistic considerations and sites that involved their own cultural and historical predilections. Hence, we find that cultural heritage is not homogeneous and not often are their underpinnings completely discernible.

Kate Clark adroitly describes one of the seminal issues in the consideration of conservation of historical and cultural valuation of assets:

...how (do we attempt) to apply that understanding to conservation projects, such as repair, alteration, development, or management? Understanding for conservation purposes involves forensic, archaeological analysis of the fabric of a building and its landscape. Yet, it goes beyond archaeology to draw upon other specialisms--measured survey, architectural and landscape history, construction history documentary research, architectural paint analysis, dendrochronology, and many other techniques. The ultimate aim of that understanding is to define significance, a process which increasingly goes beyond expert values to encompass the wider view of stakeholders." (Clark 2001, I)

Significance is by its nature transitory, indicative of multifaceted, time-sensitive societal concerns and considerations. Significance was found in the Getty documents 276 times.

Zancheti and Jokilehto focused on urban conservation and cities (1997). They described an interesting process that identified several issues of importance to valuation of all historical objects. The authors organized their article to identify several logical problems in using a category of values in the urban planning conservation process. They did so by first determining and then second identifying the main subjects of the urban conservation process. These include identifying the social process of determining values as well as identifying values in reference to the urban structure and using values as important categories for the conservation of historic urban areas. A similar approach may also be valuable when dealing with small, discrete historical objects or specific buildings. We can draw out of this discussion the importance of the social processes involved and the identification of values in reference to the overall project. The Getty documents discuss urban issues 402 times.

Often we also find ourselves with only fragments of the whole object or building from which to derive cultural value. “Cultural heritage acts as a fragment of information, having a special place in time and space as a survivor of the past. The process of documentation represents a social desire to give a clear statement of the significance of cultural heritage. In terms of documentation, deciding what and what not to document involves an active process of ascribing value and meaning that is to be assigned to the heritage asset. The curatorial selection of what is significant to document, what should be remembered and forgotten, what categories of meaning are given and how the deliverable can be used signify the cultural asset (itself).” (Akboy 2011, 250) It must also be noted that the process of selection of objects and artifacts gives them greater meaning by the fact that they were selected. Much as Heidegger has stated we affect things by the simple act of viewing them. Selection also affects the valuation or importance of the item in the hierarchy of the total grouping of items being evaluated. Hence, the process of determining valuation is not only very important but the process itself tends to change what is being evaluated.

The National Parks Service National Register of Historic Places Program (NPS 2004) established the Historic American Buildings Survey (HABS) in 1933. This program was established to document historic United States places. In so doing, they developed the U.S. values criteria that were appropriate to their scope of work. As such they reflected the “humans’ thoughts, values, and experiences are cultural products, as well as the things that they build. In other words, cultural values are embedded within the structures that they create. Understanding architectural sensibilities, as well as

recognizing the concepts, relations, and values that have governed its creation should be integral to heritage documentation.” (Akboy 2011, 161) Other national, international, and transnational organizations around the globe also attempted to accomplish this same task.

Over the course of this study, it was found that there have also been many interesting and focused efforts on the part of the engineering discipline to define guidelines for historic engineering structures. Obviously, the focus of their concerns differed significantly from landscape designers, architects, and interiors professionals. As of 2007, there were no universally recognized engineering preservation guidelines. Various considerations tended to focus on conformance with life safety and building standards and the effects of remediation activities. Most of the standards were based at the state and local level. “While the National Historic Preservation Act of 1966 (amended) and Section 4(f) United States Department of Transportation Act of 1966 specify nationally applicable processes for considering preservation or replacement of historic bridges, there is no corresponding protocol that ensures a nationally consistent approach to determining which bridges should be rehabilitated or replaced. State and local transportation agencies have developed a wide variety of approaches for addressing historic bridges with each reflecting the priorities and culture of the particular agency as well as the bias, knowledge and expertise of the decision makers.” (Harshbarger 2007, A-1) In part, the local, state, and city criteria included:

- a) applying structural and functional considerations,
- b) applying historical considerations, and

c) applying environmental and safety considerations.

These considerations rested heavily upon the professional judgment of the evaluators and the level of public interest. No attempt has been made to extrapolate these criteria to buildings or other construction types. (Harshbarger et al. 2007)

Other disciplines have attempted to understand what and how historical conservation considerations are generated and validated. An interesting article was discovered that dealt with the interpretative process that historians utilized when evaluating buildings. This article focused on the important criteria that they perceived was used to determine what qualifies as historic. They reviewed the historical thinking of five professional practicing historians and recorded them while they toured the Old North Church in Boston, Massachusetts. They derived five salient protocols. These were origination, stratification, empathetic insight, interconnect -ability and supposition. (Baron 2012) The author was also able to locate an interesting study by A. R. Waller concerning multicultural responses to aesthetics of art. However, it did not present a concise list of criteria for valuation. (Waller 2012)

There were interesting dissertations on post-modern commodification and utilization of electronic devices to standardize opinions of color and geometric designs found during the research for this study. (Cassidy 2000) A considerable volume of written material on the architectural curriculum was located but very little was found on the historical conservation portion of architectural education. (Ryker 2000) The author also found an excellent work on damage to art and the effects of value post-conservation treatment on the art market. (Conrad 2011) These documents delta with local

considerations of valuation and made no attempt to generalize them beyond what they were doing at the time. This review leaves one wanting for more generalizable and specific criteria. The author also looked to the discipline of psychology for criteria to define valuation.

### **History of Cultural Preservation**

Most people agree that one reason the French Revolution was important is that the appreciation and conservation of cultural heritage in western society was threatened. The destruction of monuments during the revolution generated a new understanding of the artistic values contained in cultural heritage previously reserved for royalty and prohibited to the average citizen. However, these citizens now realized they had the moral responsibility as well as accountability to the nation not to destroy their heritage. (Jokilehto 2002, 75)

Another awakening of the responsibilities of the citizen to protect their cultural heritage occurred in the 1790s in England. It developed into an antiquarian criticism of how classically oriented churches were preserved. Similarly, in the 1830s developing societies began to question the status quo. Eventually, the relativity of values and devolution of the ideas grew in prominence. Greater questioning of universal references for art also occurred. This resulted in an emphasis of the artist's creativity and individuality. In the mid-19th century, criticisms included stylistic restoration, arbitrary renewal, and reconstruction of the historic criteria. We find these considerations as being very important in the writings of John Ruskin. Simultaneously communications

technology evolved so that it allowed a greater exchange of ideas between various countries and those who were active in historical conservation within them.

According to Jokilehto, William Morris' perspectives also spread to France, Germany, Greece, Italy, and beyond. The Society for the Protection of Ancient Buildings, which was initially based on criticism, shifted its base to accepted modern approaches to the care of historical buildings and works of art. Eventually, these became the principal references for maintenance and conservation. (Jokilehto 2002, 174) However, evolution of thinking continued its organic development.

Ruskin identified the significance and values associated with the term historic, which provided a foundation for modern conservation philosophical underpinnings. *The Seven Lamps of Architecture* pointed out that when dealing with restoration, Ruskin's "...contribution to the debate on the definition of the qualities and values of architecture... was a major accent on historicity." (Jokilehto 2002, 119) Based on Psalm 119, Ruskin identified seven fundamental laws to be observed by the architect and builder as guiding criteria during conservation: memory, obedience, power, beauty, life, truth, and sacrifice. Inherent to this discussion was that reproducing a historic work even in exactly the same materials represents the obliteration of the authentic charter of the original artist. In Ruskin's view, this meant restoration should not be accomplished. He viewed emotional values in the context of a 'good man's house.' The 'good man's house' was the personification of the persons living in the house, which contained the emotional components of the living. Hence, it was the duty of a man's descendants to preserve it and because God was present in each household, it was to be considered His

altar. As such, the house belonged to the original builder and not to the conservationist. Ruskin believed a man's descendants had the duty to protect, conserve, and transmit the property to those who followed. He also felt that, "Architecture with its relative permanence will create continuity through various transitional events, linking different ages and contributing to the nation's identity." (quoted in Jokilehto 2002, 170) Thus, the cultural heritage would and could be protected and propagated from generation to generation.

A shift to relative cultural values from absolute divine values occurred with the writings of Fredrick Niche (1844-1900). His famous statement that God is dead was meant to say that the absolute higher values were eliminated. This reinforced the issues of relativity in values in relationship to cultural diversity. Over time, these ideas became a part of historical conservation values. Nietzsche's nihilistic intent was to describe man in his new environment, which was imbued with the understanding that there was no way to return to the old values. Inherent to this was the understanding that the cultural processes leading to the change of values are a process that takes place in the specific culture and that each different culture must go through its own process to define its own relevant values. We can readily see this in the many divergent values that arise from specific worldwide cultures as have gone through this process.

Riegl (1857-1905) redirected what Nietzsche called the will to power. In relation to art, this is understood as tendering art through a vital impulse. He emphasized the importance of the artist's creative mind in relationship to the practical, functional, or technical considerations of the artwork. He viewed each era and each culture based on

the conditions and the requirements from which the artist sprang to create their work(s).

He also framed the artistic production in terms of the era in which it was created.

Logically then before conservation might occur one must know the history of the times to comprehend the work. He connected the artist with his culture in such a way as his culture acted as the recipient of and the progenitor of the art. (Jokilehto 2002, 215) His thinking contributed significantly to the valuation of historic criteria. Earlier in the 19th century when absolute art values were important, they evolved to include historic value.

Historic value evolved into an evolutionary value when details became less important.

Riegl divided the resultant values into two specific groups. The first group was called memorial values and included historical value, age value, and intended memorial valuation. The second group was called present-day values. This group included relative art value, art value, use value, and newness value. In as much as a universal absolute criterion for evaluation of works of art of a past era no longer exists, these can only be appreciated in the context of the current cultural modalities. The evolution of conservation thinking continued to evolve until in the 1930's it took a maximalist or minimalist approach.

This caused a divergence in opinions about how conservation should be approached. In 1936, Lemaire divided the approaches to historical buildings into two primary categories. They were either maximalist or minimalist. In addition, Montalembert, Pugin, Tornow, and Mérimée fell into the first group as they attempted to maintain unity of style. The minimalist group was personified by Ruskin who attempted conservation of the original documentary and archeological values.

“Lemaire maintained that historic buildings could have four types of values use value, artistic value, historical archaeological value and picturesque value and that the aim of restoration should be to maintain or augment each of these values as far as possible. In a case when there was a risk that a value might be diminished, the results should be judged from the point of view of benefit to the whole.” (Jokilehto 2002, 250) He felt that historic buildings were either living or dead. The evolution of conservation thinking continued to evolve until in 1963 we find that Brandi extended the consequences of the creative process.

In 1963, Brandi extended and elaborated on the consequences of the creative process on conservation and restoration as he postulated a new theory. Brandi stated, “This theory crystallizes the outcome of the concepts, and forms an essential reference for modern restoration and conservation.” (quoted in Jokilehto 2002, 214) More importantly, Brandi elevates the creative process above cultural valuation judgments in a much more objective way. One of the important outcomes of this was the tendency to make his valuations readily acceptable to different cultural perspectives.

In today’s world, conservation is bounded primarily by changes of values within global contemporary society. It also draws from the long organic development of conservation theory and practice over time. We also find the current paradigm is based on relativity and historicity. This causes some difficulties in applying conservation policies to large areas. To do so we will need to have a population that is ready to reconfigure values favorably and understands the process of valuation. (Feilden and Jokilehto 1998) Inevitably, there are going to be conflicts of interest that arise because

different criteria are used to make valuation judgments. The values that are employed will depend on the community, which is being regenerated repeatedly as part of the living process of the community and its learning process. Few will disagree that in today's society in America that the stakeholder valuation criteria of a primarily American Indian or a historically Black community will differ greatly. The challenge is to understand the differences, take into consideration the inherent criteria and to apply them in such a way as to sensitively preserve what each community feels is important while at the same time reflecting the polyglot of criteria that are endemic in this melting pot nation as a whole. To say that this will be difficult to accomplish is an enormous understatement of the situation. Nevertheless, it is not impossible.

### **Hints from a Study of Psychology in Relation To Values**

The study of the relationship between signs and values has been thoroughly researched in the psychology for many years. Many schools of thought do not directly relate to the discussion at hand. However, Morris's considerations dealing with axiology bear consideration because they relate to valuation of the mundane. According to Morris, "It is customary and important to make a distinction between social and individual values." (Morris 1964, 17) In addition, he said that social values, often framed in the context of religious or political philosophies, would guide groups to move in certain directions. However, there are also individual values (and tastes) to be considered. He felt that it was natural for socially defined values to fragment as individual interpretations and opinions are going to differ. We see this repeatedly in historical and cultural conservation efforts. He went on to say. "Moreover, there is a preferential

behavior of single individuals toward specific persons, art objects, books, ideas, and ways to live, which can be called individual values.” (Morris 1964, 18) Most, if not all, can agree that individual values of what makes a building or an object desirable of being preserved or not are included in these considerations. Morris goes on to extrapolate this to values situations, which he defines as any situation in which preferential behavior occurs. Another example of this can also be selection of a building for preservation. He develops this further by defining an operative value as signifying the direction of preferential behavior of a given individual in a variety of situations. From this context arises what are called conceived values. “If we do not think of ‘values’ in the abstract, but of value situations as considered here, then it becomes understandable why the term ‘value’ is so vague/in different contexts it is used to signify different aspects of value situations.....the term ‘operative value’ signifies the direction of preferential behavior of a given individual in a variety of situations.” (Morris 1964, 19) Hence, directed action in preservation may be an operative value.

Conceived values arise out of operative values. They are often expressed in a like or dislike of a work of art or building. Conceived values involve signs and operative values may not necessarily involve signs. In most cases, these two values diverge. The term value is often applied to objects such as art and buildings. These because they involve likes and dislikes or preferences are by their very nature relative to if the object and to the decision to accept it or not which then reinforces the individual preference.

“Dependence, dominance, and detachment, when so considered are primarily ‘dimensions’ if value-values of some phases of action, conceived values in various

ethical, philosophical, and religious systems.” (Morris 1964, 21) He further explains that there are three stages of action: perceptual, manipulatory, and consummatory. He also states that the three dimensions of signifying are designative, prescriptive and appraisive, as well as stating that the three dimensions of value become detachment, dominance, and dependence. Utilizing this framework, we can see that individual as well as social forms of primary values are derived rather than being innate. They can be expressed in a dimension for the individual and in a dimension for the society that may differ from each other. They manifest themselves with individual taste and desires as well as social implications when a built element is being selected for consideration by the social group. A building or historical object to be preserved are such elements. (Morris 1964)

Morris indicates that here are thirteen possible ways to live, where values can be identified which may be applicable to the determination of historical conservation values. He rated them on a seven-point scale, with seven equaling like very much, and one equaling dislike very much. (Morris 1964, 23) We have all seen scales like this or ones that are very similar in almost every preference poll. They are also likely to be used in some form or another in the process of evaluation of a building for preservation. This simple system has also worked in such diverse places as the United States, China, India, Norway, Japan, and Canada. It remains a useful tool with which to determine valuation. (Morris 1964) This represents a precedent in valuation that involves quantification of a qualitative consideration. The author will extrapolate this later.

By its nature, Aesthetics is integral to the study of art and, by extrapolation, to the preservation of buildings. We can always talk about art in terms of signs and value.

However, this leads us to a discussion of the meaning of the art's or the building's aesthetics. If we follow this logic, we will inevitably run into the social and individual meaning(s) of the object in consideration. This brings us to signification:

...with respect to signification, the distinctions between designative, appraisive, and prescriptive signification are important in the analysis of art. With respect to significance, the distinctions between operative, conceived and objects values are relevant. Insofar as the work of art is a sign or at least indicates signs within itself, aesthetics, as the study of art, has semantical and syntactical aspects, and insofar as aesthetics deals also with the origin, use, and effects of works of art, it has its pragmatic aspects. (Morris 1964, 65)

This article clearly indicates that semantic and syntactic parameters are part of the evaluation of significance and that they can be associated with valuation criteria. The cross pollination between psychology and historical and cultural conservation fields has in the past yielded interesting interactions and will in the view of the author generated new insights. As such, it is postulated that segmentation of the valuation criteria can be organized based on semantic, syntactic, and pragmatic considerations. There is of course a considerable practical difference between art objects and buildings or cityscapes. However, all are created by human hands and valued by man in a related manner.

### **The Valuation of Art**

There have been uncounted documents and books written about the purpose of art its relationship to aesthetics. As already discussed, art is by its nature wrapped in individual and societal values. However, art is also a referent sign because it represents an object, circumstance, emotion, or person. As such, it becomes a reference to the original item. According to Morris,

... a work of art signifies values and that in its iconic charter it embodied in itself the values it signified... Thus not only can the work of art, verbal or nonverbal, signify designatively, appraisively, and prescriptively, but it can portray or embody operative, conceived, and object values; like other human products, it can be used for many purposes. (Morris 1964, 70)

Buildings can be thought of in a similar manner and contain assigned valuations as well. For example, it is difficult to think about the Guggenheim museum in New York without thinking about its architect as well. Similarly, when one observes the palace at Versailles, one immediately thinks of the kings of France. It is also apparent that a referent sign must be interpreted. Such interpretation, whether by society or an individual, will assign levels of likes and dislikes to the observed object. In addition, the sign that is generated in the interpreter's mind will be modulated by his or her personal and cultural experiential perspectives.

For some time conservators have tried without significant success to derive specific valuation criteria that might become globally generalizable. There have also been several significant divergences in opinion as to what should or should not be considered significant. Obviously, this is an organic process, which continues to evolve.

According to Jokilehto,

The definition of objects and structures of the past as heritage, and the policies related to their protection, restoration, and conservation, has evolved together with modernity, and is currently recognized as an essential part of the responsibilities of modern society. Since the eighteenth century, the goal of this protection has been defined as the cultural heritage of humanity; gradually this has included not only ancient monuments and past works of art, but even entire territories for a variety of new values generated in recent decades. (Jokilehto 2002, 1)

Fortunately, in 1989 UNESCO defined a broader scope of heritage, defining it as the entire body of material signs, including artistic or symbolic considerations, handed down by the past to each culture and humanity as a whole. Contingent to this definition is the affirmation and enrichment of cultural identities. A cultural heritage definition also gives each individual place its recognizable features and identifies its storehouse of human experiences. As such, preservation of cultural heritage became the keystone of UNESCO cultural policy. (Jokilehto 2002) The terms culture (2,234) and heritage (1,409) appear repeatedly in the Getty documents. In fact, they are the two largest groups of words and concepts repeated in the documents.

Historicity (915) and aesthetics (58), as well as their relationships with the environment and nature, along with religion (83) and culture (2,243), have generated a more modern conception of time as it relates to value judgments. This has resulted in an improved approach as “these new values of western society represent a paradigm that has effectively detached the present from the past and, at the same time, made it difficult if not impossible to appreciate fully the significance of the heritage.” (Jokilehto 2002, 6) Anthropologists understand that to be human means to become an individual under the onus of cultural patterns and historically created systems of meanings that are bounded by signified significance. These are generally stated in terms that include order, point, form, and direction as applied to the lives of the individual. (Gertz 1993) These processes are universally common to all humans across cultures. In as much as our values, ideas, actions, and emotions are cultural products, it is logical that the things we create and the buildings we construct are also going to become cultural artifacts.

Because our ideas, values, acts, and emotional expressions are culturally modulated products, it follows that the things we build are culturally modulated as well, and could become cultural artifacts. This means, of course that there is an interesting diversity of resulting artifacts and buildings as well as what they mean to different people.

The key issue in modern conservation is the question of values. The notion of value itself has undergone a series of transformations. As stated by Michel Foucault, “Value can no longer be defined, as in the classical age, on the basis of a total system of equivalences, and of the capacity that commodities have of representing one another. Value has ceased to be assign, it has become a product.” (Foucault 1994, 254)

In the past, conservation movements were based on the recognition of the relativity of values and diversity of cultures. These formed the basis of what it meant to have a monument that was part of historical heritage. Initially, this consciousness was expressed in criticism of the prevailing renovation activities, which tended to modify or destroy historic buildings. Later, it paralleled stylistic restorations that emphasized irreversibility of time and the uniqueness of the historical buildings or objects. Modern conservation theory eventually evolved as a thinking process.

Different types of restoration have continued to be practiced simultaneously. Conflicting value judgments have often occurred because definitions of cultural heritage did not agree or were inconstant with each other. Humanists and artists initially generated interest in heritage conservation, which was generally surrounded by a collection of historical objects, cultural touristic considerations, and museums. In some cases, this led to state control and normative protective legislation. In turn, government

control established methods of administration and defined responsibilities for the care and upkeep of historical buildings and objects. It was some time later before these criteria were extended to private property and historic settlements. (Jokilehto 2002, 18)

Some conservationists believe the conservation movement since the 18th century has done a great deal to protect and preserve cultural heritage and that this is sufficient. The author does not agree. Just as our societies and cultures live, grow, die, and change, so too must the criteria we use to assign valuation to the creations those societies generate. Conservation is an organic process, which must do its best to include as many of the varying valuations as is practicable.

## **CHAPTER III**

### **ASSESSING INTERNATIONAL PRESERVATION VALUES**

### **FROM 1877 TO 2008**

This chapter evaluates the many criteria developed over the past 132 years in historical and cultural conservation, which are used to assign valuation. By reviewing the criteria expressed in worldwide conservation documents from 1877 to 2008, valuation terms can be identified. Following a brief discussion of genotype and phenotype categories, the terms will be divided into pragmatic, syntactic, and semantic groups. In addition, the use of consistent definitions for terms will be addressed. The researcher counted the number of times these terms occurred in the Getty documents then tabulated the results. Accessing preservation values is a complex process in which a wide variety of interests and concerned individuals play an important role in the day-to-day definition of terms as well as the allocation of resources to the preservation process. To say that there is one right way to do it is to underestimate the complexity of the process of determining what values are appropriate for a specific conservation situation. Furthermore, it ignores the fact that most preservation efforts are individualized and site specific. This study levels the complexity of this task by utilizing and evaluating 82 preservation criteria as identified in the Getty Conservation Institute document, “Assessing the Values of Cultural Heritage.” (De La Torre 2008)

The Getty Institute has compiled a listing of cultural heritage policy documents grouped chronologically from 1887-1904, 1930-1939, 1950-1959, 1960-1969, 1970-

1978, 1980-1989, 1990-1999, and 2000-2008. Two original documents were not included in their database, but fortunately, the author located and transmitted them to the Getty Institute for inclusion in their web site. Figure 6 lists the documents from the Getty Institute's web site that were reviewed by the author.

<b>Time Period</b>	<b>Documents Reviewed</b>
1887-1904	Principles of the Society for the Protection of Ancient Buildings (The SPAB Manifesto 1877) Recommendations of the Madrid Conference (1904)
1930-1939	General Conclusions of the Athens Conference (1931) Carta Di Atene (1931) Charter of Athens (1933) Roerich Pact Protection of Artistic and Scientific Institutions and Historic Monuments (1935)
1950-1959	Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict (1954) European Cultural Convention (1954) Recommendations on International Principles Applicable to Archaeological Excavation (1956) Recommendations Concerning International Competitions in Architecture and Town Planning (1956)
1960-1969	Recommendations Concerning the Most Effective Means of Rendering Museums Accessible to Everyone (1960) Recommendations Concerning the Safeguarding of the Beauty and Character of Landscapes and Sites (1962) Venice International Charter for the Conservation and Restoration of Monuments and Sites (1964) Recommendation on the Means of Prohibiting and Preventing the Illicit Import Export and Transfer of Ownership of Cultural Property (1964) Norms of Quito Final Report of the Meeting on the Preservation and Utilization of Monuments and Sites of Artistic and Historical Value (1967) Recommendation Concerning the Preservation of Cultural Property Endangered by Public or Private Works (1968) European Convention on the Protection of the Archaeological Heritage (1969)
1970-1979	Convention on the Means of Prohibiting and Preventing the Illicit Import-Export and Transfer of Ownership of Cultural Property (1970) Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) Recommendation Concerning the Protection at National Level of the Cultural and Natural Heritage (1972) Resolutions of the Symposium on the Introduction of Contemporary Architecture into Ancient Groups of Buildings (1972) European Charter of the Architectural Heritage (1975) Declaration of Amsterdam (1975) Resolutions of the International Symposium on the Conservation of Smaller Historic Towns (1975) Declarations on Cultural Tourism (1976) Convention on the Protection of the Archeological Historical and Artistic Heritage of the American Nations Convention of San Salvador (1976) Recommendation Concerning the Safeguarding and Contemporary Role of Historic Areas (1976) Recommendation Concerning the International Exchange of Cultural Property (1976) Recommendation for the Protection of Moveable Cultural Property (1978)

**Figure 6      Documents from the Getty Trust Reviewed for Valuation Terms**

Time Period	Documents Reviewed
1980-1989	<p>Recommendation for the Safeguarding and Preservation of Moving Images (1980)</p> <p>Florence Charter Historic Gardens (1982)</p> <p>Deschambault Charter for the Preservation of Quebec's Heritage (1982)</p> <p>Tlaxcala Declaration on the Revitalization of Small Settlements (1982)</p> <p>Declaration of Dresden (1982)</p> <p>Appleton Charter for the Protection and Enhancement of the Built Environment (1983)</p> <p>Declaration of Rome (1983)</p> <p>European Convention on Offences Relating to Cultural Property (1985)</p> <p>Convention for the Protection of the Architectural Heritage of Europe (1985)</p> <p>First Brazilian Seminar About the Preservation and Revitalization of Historic Centers (1987)</p> <p>Washington Charter on the Conservation of Historic Towns and Urban Areas (1987)</p> <p>Recommendation on the Safeguarding of Traditional Culture and Folklore (1989)</p> <p>Vermillion Accord on Archaeological Ethics and the Treatment of the Dead (1989)</p>
1990-1999	<p>Charter for the Protection and Management of the Archaeological Heritage (1990)</p> <p>Québec City Declaration (1991)</p> <p>Charter for the Conservation of Places of Cultural Heritage Value (1992)</p> <p>A Preservation Charter for the Historic Towns and Areas of the United States of America (1992)</p> <p>Charter of Courmayeur (1992)</p> <p>European Convention for the Protection of the Archaeological Heritage of Europe (Revised 1992)</p> <p>New Orleans Charter for the Joint Preservation of Historic Structures and Artifacts (1992)</p> <p>Declaration of Rio (1992)</p> <p>Declaration of Oaxaca (1993)</p> <p>Fez Charter (1993)</p> <p>Guidelines for Education and Training in the Conservation of Monuments, Ensembles and Sites (1993)</p> <p>UN General Assembly Resolution (A/RES/48/15) on the Return or Restitution of Cultural Property to the Countries of Origin (1993)</p> <p>Buenos Aires Draft Convention on the Protection of the Underwater Cultural Heritage (1994)</p> <p>Nara Document on Authenticity (1994)</p> <p>Resolution on Information as an Instrument for Protection against War Damages to the Cultural Heritage (1994)</p> <p>Unidroit Convention on Stolen or Illegally Exported Cultural Objects (1995)</p> <p>Bergen Protocol on Communications and Relations among Cities of the Organization of World Heritage Cities (1995)</p> <p>Charter for Sustainable Tourism (1995)</p> <p>Secretary of the Interior's Standards for the Treatment of Historic Properties (1995)</p> <p>Charter for the Protection and Management of the Underwater Cultural Heritage (1996)</p> <p>Final Communiqué of the NATO-Partnership for Peace Conference on Cultural Heritage Protection in Wartime and in State of Emergency (1996)</p> <p>Declaration of Valencia (1996)</p> <p>Declaration of San Antonio (1996)</p> <p>Declaration of Quebec (1997)</p> <p>Document of Pavia (1997)</p> <p>Evora Appeal (1997)</p> <p>Stockholm Declaration of ICOMOS marking the 50th anniversary of the Universal Declaration of Human Rights (1998)</p> <p>Declaration of Melbourne (1998)</p> <p>Recommendation on Measures to Promote the Integrated Conservation of Historic Complexes Composed of Immovable and Moveable Property (1998)</p> <p>Burra Charter The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (1999)</p> <p>Charter on the Built Vernacular Heritage (1999)</p> <p>International Wood Committee Charter Principles for the Preservation of Historic Timber Buildings (1999)</p> <p>International Cultural Tourism Charter Managing Tourism at Places of Heritage Significance (1999)</p> <p>Second Protocol to the Hague Convention of 1954 for the Protection of Cultural Property in the Event of Armed Conflict (1999)</p>
2000-2008	<p>Convention on Biological Diversity (2000)</p> <p>European Convention on Landscape (2000)</p> <p>Convention on the Protection of Underwater Cultural Heritage (2001)</p> <p>Convention for the Safeguarding of Intangible Cultural Heritage (2003)</p> <p>ICOMOS Charter on the Interpretation and Presentation of Cultural Heritage Sites (2007)</p> <p>ICOMOS Charter on Cultural Routes (2008)</p>

Figure 6      Continued

Many similarities exist among the various organizations and individuals who have tried to level the definitions and to bring commonality and/or agreement about precisely what value means. This effort by its very nature a difficult task likely to end in consternation as unanimity among the wide variety of stakeholders is difficult to coalesce into a complete and fully acceptable by all agreement(s). Some of the various scholars and organizations like Riegl (1902), Lipe (1984), the Burra Charter (1998), Frey (1977), and English Heritage (1977) have tried to summarize heritage value typologies. Their criteria include aesthetics, age, symbolic associative, bequest, commutative, cultural, educational and academic, economic existence, historical, informational, monetary (market value and use value), newness, option, resources, recreational, scientific, social (including spiritual aspects), political (national and other cultural aspects), and prestige and use criteria. (Mason 2008, 5-30) All of these considerations are useful and have validity in most cases as they serve to define the parameters of cultural and historical heritage value in useful ways within their own contexts.

The Getty Institute documents are important to this process. This study started with a general review of the report, *Assessing the Values of Cultural Heritage*, published in 2008 by The Getty Conservation Institute and edited by Marta de la Torre. This is the most recent report issued by Getty since it began its initial efforts to identify historical and cultural valuations in 1995. The Getty Institute selected essays for this report that provided salient overviews of some of the more pressing issues involved with the assessment of values of cultural heritage, including methodological issues, anthropological-ethnographic issues, economic valuation, and sensitivity to

environmental values, as well as cultural capital and sustainability concepts. The lack of widely accepted systematic methodologies for the assessment of cultural values and the difficulties in comparing results of economic and cultural values assessment necessitated this effort by the Getty Institute so that greater unity and utility might be achieved.

(Getty Institute 2012)

To ensure some semblance of agreement concerning the use of common terms, this project utilized the 11th edition of Merriam-Webster's Collegiate Dictionary as the source for definitions of terms used in this paper and its spreadsheets. (Merriam-Webster Inc. 2012) Please refer to this dictionary for clarification if needed.

Cultural significance is used here to mean the importance of a site as determined by an aggregate of values attributed to it. The values considered in this process should include those held by experts/the art historians, archaeologist, architects and others/as well as other values brought forth by new stakeholders or constituents, such as social and economic values. (De La Torre and Mason 2008, 3)

More simply put, cultural significance can be defined as the aggregate set of positive characteristics or qualities perceived in cultural objects or sites by certain groups and or individuals. (De La Torre and Mason, 4) It is also important to remember that because conservation is multidisciplinary, monetary considerations should not be the solo or primary considerations. Disparate views held by stakeholders often conflict and contradict each other. Social values, social contexts, and unique circumstances all have a hand in shaping the discussions of values. In addition, traditional preservation professionals generally regard their inputs as seminal. However, if preservation professionals are neutral, how can the experts also act as advocates? The natural

challenges of power sharing and collaboration that grow out of this contradiction are difficult but not impossible to reconcile. Some suggest that democratization of the process is the solution; however, this may be fraught with potential disaster if the majority votes to destroy a site based on economic criteria without giving sufficient credence to the views of preservation professionals or other stakeholders. While our society values democratization, this may not always be the best manner in which to make historical and cultural conservation decisions. In most cases, it is expected that wholesale destruction of cultural assets will not occur as an outcome of this process. Nevertheless, it has been suggested that all stakeholders should be educated on the process with an emphasis on compromise that is respectful and meaningful. This would allow different values to be recognized. It will also require collaboration between all stakeholders who must find a balance that allows a divergent cast of professionals and laypeople to make valuable contributions to the overall process. Perhaps a good analogy might be that the preservationist professional serves as the maestro for the orchestra of stakeholders so that as many stakeholders as possible can become vested in and useful to the overall preservation effort. “The challenge ahead is to continue searching for the means to serve the public good by preserving material remains of the past.” (De La Torre and Mason 2008, 4)

Many conservation planning methodologies and choices are guided by considerations dealing with cultural significance. Assessments of the values attributed to cultural significance are critical aspects of historical building conservation. Values strongly shape the decisions that are made. Randall Mason commented, “(T)here is little

knowledge about how, pragmatically, the whole range of heritage values can be assessed in the context of planning and decision making.” (Mason 2008)

It is an understatement to say assessment of heritage values is fraught with conflict and difficulty. This contributed to the difficulties encountered during this project because there were 592 airbases and 260 auxiliary fields in Texas during WWII spread over 268,820 square miles of a very diverse state. It is natural that local considerations are going to be important in determining which buildings are to be conserved and which are to be removed, and these considerations will change depending on the airfield.

The diverse nature of cultural, economic, political, and aesthetic values is at the center of these conflicts. In addition, values change over time along with the mix of stakeholders. Many times experts may have to determine significance based on limited available data, which also complicates the problem. It is believed that utilizing a deliberate, systematic, formal, and transparent process to assess and analyze values would greatly benefit historical building conservation. Randall Mason (2008) states that conservationists should first identify all values of the heritage building being considered, then these values should be integrated and ranked according to the differences in conflicting stakeholder interest. Doing this will facilitate an orderly resolution to conflicts. He also offers nine concepts that he feels are essential to proper assessment of values for historical conservation:

- 1) Heritage conservation is a sociocultural activity. It is not simply a technical process as it encompasses that precede and follow interventions.
- 2) The context is important to conservation projects. Social, economic, cultural, administrative, geographical considerations should be included as equal considerations with the artifact and or site.

- 3) Studying the values is a useful way of comprehending the sociocultural aspects of heritage conservation in context.
  - 4) Heritage values are by their nature conflict and are varied.
  - 5) Models used in the past of assessing significant have relied a great deal on historical, archeological and art criteria held by professionals as applied by un-disciplinary means.
  - 6) Economic value is a strong consideration in shaping heritage and conservation, which is often outside the traditional purview of conservation professionals.
  - 7) No one singular discipline or methodology yields a sufficient assessment of values. Thus, a combination of methods from different disciplines should be included.
  - 8) Conservation management should employ inclusive strategies and call on different disciplines to bring their views as well as other stakeholders views into the planning.
  - 9) More detailed assessment of heritage values as well as the integration of different values will lead to more sustainable conservation planning and management.
- (Mason 2008, 127)

Mason believes that his nine concepts can be focused by characterizing values, analyzing methodological issues and strategies for assessing heritage values, determining tools for eliciting heritage values, integrating assessments, and carefully guiding the decision making process. Characterizing values should include identifying a range of values and utilizing them. They should also be characterized to be relevant to all involved stakeholders. Using strategies to assess heritage values and methodological issues should be focused to determine what specific measures and assessment tools are appropriate to use. The tools used to draw out these values should also include the views of as many stakeholders as possible. This should accommodate the conservation planning process yet not encumber it, which will require integrated assessment and adroit leadership. This assessment should guide the decision making process with a range of heritage values that have been well articulated. Simultaneously, it must

communicate this information to the stakeholders so they can make informed decisions.

(Mason 2008)

The term ‘values’ is used most often when referring to morals or principles that serve as guides for individual and collective action. The term is also used to refer to a set of positive characteristics or qualities (either actual or potential). This second definition will be used in this study. Values imply usefulness and benefits. They also play a critical symbolic function in historical and cultural preservation. We must ask if a thing has value, and if so, what value does it have. Stakeholders often differ on the answers to this question. For this study, a pluralistic approach to values assessment is necessary.

Heritage values tend to be contingent and rarely objective. They are produced as part of our interaction with artifacts and their context. They rarely emanate strictly from the artifact itself. Hence, they are linked to the social, spatial, and historical provenance, as well as the circumstances surrounding the item(s). For example, a civil war uniform is likely to be of less value to a member of the Black Panthers than it might be to a civil war re-enactor or the descendant of a civil war veteran. Both interest and context play an important role in the determination of the value of the uniform to each stakeholder. Clearly, the Black Panther member will have a significantly different interpretation of a Confederate uniform than a descendent of a veteran.

Past generations of conservationists relied primarily on the historical significance of artifacts. Today they also consider economics, cultural change, social issues, and changes in conservation laws and public policy considerations. So where does value come from? According to Mason, “Value is formed in the nexus between ideas and

things... anything defined as heritage is said to be intrinsically and tautologically possess some kind of that value that is not intrinsically given." (Mason 2008, 8) Mason also pointed out that formation factors that operate beyond the objects and emphasize important social processes and interactions in the formation of valuation are important. There are social constructs subsumed within universal or almost universal values in objects like the Great Wall of China that are considered universal because they are widely believed to be so. (Mason 2008) Ascribing value to historical and cultural assets is often a confusing and contradictory process. A plethora of similarities exists among the various organizations and individuals who have tried to level the definitions. Many have tried to reach agreement on exactly what value means. Some of the various scholars and organizations like Riegl (1902), Lipe (1984), Burra Charter (1998), Frey (1977), and English Heritage (1977) attempted to summarize heritage valuation typologies. Their criteria has include resources, recreational, aesthetics, age, symbolic associative, bequest, commutative, cultural, educational and academic, economic existence, historical, informational, monetary (market value and use value), newness, option, scientific, social (including spiritual aspects), political (national and other cultural aspects), prestige, use criteria. All of these considerations are useful and have validity. These criteria have helped define the parameters of cultural and historical heritage valuation. However, more work needs to be done to develop the definition of value so it may be generalized globally.

Accessing cultural and historical values is not an easy task. It is understood that there are a large variety of conflicting criteria and definitions to determine what

constitutes valuation in historical and cultural conservation. Therefore, it is important to identify all values of the specific heritage being questioned. It is also important to integrate and rank the different values so that they may inform stakeholder interest. In this context, we should understand that heritage conservation is a sociocultural activity as well as a technical practice that encompasses many activities preceding and following any intervention. It is very important to consider the context of the conservation project. The social, cultural, geographical, economic, and administrative aspects of the artifact or site must be considered. Past significance has relied heavily on the notions of professionals, which may at times have been applied without sufficient rigor. Economic value was also a seminal force shaping conservation values, and it is important but we must also understand that individuals will not reach a sufficiently balanced assessment of values without including the views of others. A healthy mix of disciplines is required to generate a complete picture. At this point, it is best to employ careful conservation management and planning, which can be greatly improved with a strategy of inclusiveness that includes both insider and outsider views. When divergent views can be brought closer together, it is likely to generate a more encompassing assessment of the heritage values and a more sustainable conservation planning and management effort. This allows greater dividends to be derived from the stakeholders' responsiveness and willingness to work toward a common goal. (Mason 2008)

### **How Do We Think About Values?**

Values are delineated primarily in two ways. As already discussed, we often think of values first in terms of morals, generally based on a religious construct, which

guides actions. In the second context, values reference positive or negative potential or actual qualities we perceive in objects or circumstances. The moral context generally frames the context of the positive or negative potential. In historical conservation, the second context usually predominates. However, this is not always the case. Implicit in the concept of value is the suggestion that there is usefulness or some sort of benefit associated with the object, place, or thing. This generates a new question. What is the value of this object, place, or thing?

This question frequently generates a multivariate response. For example, if we look at an old school building, it has value to the former student, the former teacher, the property developer, and other stakeholders based on different sets of criteria. It may have commercial value due to the value of the building and the land. It may also have aesthetic value due to the quality of the brickwork as well as emotional value because a stakeholder went to 3rd grade there. Emotional and expert observers may or may not share similar valuation processes. However, these differences are quality valuations, which logically suggest using a pluralistic approach to valuation may be best. (Mason, 2008)

Heritage valuation is rarely objective and is often contingent upon aspects not easily identified, quantified or categorized. According to Mason, “Values are produced out of the interaction of artifacts and its contexts; they don’t emanate from the artifact itself.” (Mason 2008, 8) While “experts” were often the sole articulators of values in the past, additional criteria have evolved to become part of the valuation process. Economic, public policy, social issues, and cultural considerations are now part of the equation.

Values are morphing from what was once thought to be intrinsic into a nexus of objects, beliefs, and concepts. Previously, the Pantheon has been considered to be of enormous intrinsic historical value, but this has been based on mutual acceptance rather than objective fact. Mason is not saying that the Pantheon does not have incredible historical value, only that this value is based on criteria other than strictly the facts. The author is inclined to agree with Mason, who he speaks eloquently for the need to have a multifaceted approach that involves all stakeholders in the process. (Mason 2008)

### **Typologies of Values**

A variety of values typologies are used in historical and cultural conservation. These typologies serve the valuable function of guiding policies and planning decisions associated with the typical project. They also relate to the stakeholders and professionals on the project. Historically, values have had at least two primary modes of application; they either dominate or they are treated as sacrosanct and Hence, inviolate. When they dominate, historical values tend to block out considerations of other aspects. When they are treated as sacrosanct, they tend to meld the remaining aspects into what is considered significant. At times dominant values can generate problems when one or more aspects dominate to the point of excluding other important considerations. A good example of this might be the economic considerations associated with tourism. If this is the sole consideration in the project, a parade of tourists may eventually destroy the artifact. In some situations, tourism may destroy the historical context of the artifact more rapidly than normal entropy of the artifact. If the conservationist takes the sacrosanct approach, different types of heritage valuation may be neglected. A good example of this is the

cathedral in Dresden, Germany, which was left in stabilized ruins rather than being rebuilt to memorialize those who died in the WWII firebombing of the city. In its preserved condition, it cannot serve its original ecclesiastical functions. Neither consideration in their rudimentary form of valuation as discussed above is likely to serve the project well. What is needed is a nexus of these two types of valuations so that the various stakeholders are motivated to work together in a stimulating manner that fosters as many of the stakeholders' perspectives as possible.

It is also important that we note that values "typologies implicitly minimize some kinds of value, elevate others, or (generate) foreground conflicts between the cultivation of certain values at the expense of others." (Mason 2008, 10) A good example of this is the minimization of economic values in the Burra Charter. Several indistinct and distinct categories of heritage values are found in the document that, depending on how they are understood, may or may not exclude each other.

To develop a more easily understandable framework, the author elected to the group the typologies of heritage values proposed by the Getty Conservation Institute as pragmatic, semantic, or syntactic as they relate to the core content of valuation. First, the constituent elements of the pragmatic category include adaptive reuse, conservation, cooperation, economic considerations, enhancement, identification, legislation and policy making, management, preservation, protection and safeguarding, recording, reconstruction, rehabilitation, restoration and repair, redevelopment, sustainability, tourism, and urban setting. Second, the constituent elements of the semantic category include aesthetics and beauty, authenticity, contextual value, culture, language, heritage,

and significance. Finally, the constituent elements of the syntactic category include education, history, presentation dissemination, scientific, spiritual or secular, and technical and scientific. These areas were identified as important after an extensive literature search indicated that they were utilized by professionals in the field as important considerations for historical conservation. Many of these were also found in the three books that had their index and table of contents searched for specific valuation words. These are, of course, not absolute categories.

To separate cultural and economic spheres completely is not entirely possible. After all, they are interdependent considerations. No culture exists whose economic system does not affect the way its people live and interact with spaces, buildings, art, and artifacts. Economic systems remain a valuable way to analyze what may remain of an extinct culture well after the culture has declined, even though what may have value may have changed drastically. This has occurred many times in the past and is likely to continue in the future. In many cases it is the dominate consideration in our profession as market logic is pervasive and serves self-interest exceptionally well. As such, this presses deeply into the social area. As our society evolves, it is likely to press even more deeply into the social sphere as it continually modulates attitudes and perspectives as they relate to the subject of values and valuation processes. (Graham et al. 2000)

The next section briefly discusses genotype and phenotype considerations. These deal with the characteristics found in the relationships of the various aspects or components of the constituent elements as they relate to each other – often in repetitive and consistent manners. Genotype considerations represent the genetic constitution of an

individual building or object under consideration. Phenotype considerations are a set of observable characteristics of an individual building or object that result from the interaction of its genotype with the environment and bring order to the situation. (Regan 2012)

At the basic level, artifacts, works of art, buildings, historical and cultural assets of all kinds have both genotype and phenotype characteristics. Their genotype characteristics are found in the relationship of the various aspects or components of their constituent elements as they relate to each other. An example of this might be the Roman Polis where the central court is a constant aspect of the Polis. It relates to the perimeter living spaces because it is generally laid out in a similar manner from home to home, regardless of the city in which it was located. This is also similar to the biological concept that underground ant nests are all built in a similar manner.

The phenotype of the Polis maintains the genotype aspects of the design, but also manifests different individual characteristics of each specific house. An example of this is that a home in Pompeii might have segmented assembled brick columns that are plastered to look like genuine stone as opposed to actual cut stone pillars one might find in Rome during the same era. This is similar to the biological concept that ants of the same species that build nests in the ground follow the same relationship rules of the chambers, but construct the tunnels and rooms in very different unexacting layouts. Both have the genotype characteristics and both have individual phenotype variations in the application of how they were built. This distinction will help conservationists to categorize general areas as well as identify specific variations within the genotype

categorized. This should be helpful in grouping values in the initial stages. By using these distinctions, the researcher was able to determine a finer gradation between numerous expressed terms in the various documents that might otherwise be considered exclusive or contradictory.

However, this gradation is not discrete enough to reach the desired levels of understanding. To refine the systematic categorization, one should also understand that it is useful to organize the categories according to pragmatic, semantic, and syntactic considerations. (Regan 2012) The following section explains the meanings of and the interrelationship between these three considerations as applied to value determinations for historical and cultural conservation.

Pragmatic is defined as relating to matters of fact or practical affairs, sometimes to the exclusion of intellectual or artistic quality, as opposed to idealistic matters. In conservation, one must consider the practical aspects of the process and implementation of conservation treatments. This is not always easy as there is likely to be some differentiation between and among stakeholders concerning what solutions are appropriate and how they are to be applied. Generally, when conflicts arise it is wise to utilize expert opinion to resolve the differences. These will be called practical considerations.

In ancient Greek, semantics was the study of meaning. It focused on the relationships between words, signs, symbols, and phrases and what they signify. The current study defines semantic as relating to language and meaning of objects or buildings. It extrapolates this to include the meaning of aesthetic and symbolic

considerations, which become part of the fabric of the historical object in consideration and what it denotes. Therefore, semantics is identified as a meaning consideration.

Syntactics, also Greek in origin, relate to arrangement, being together, or having an order. It is the study of the principles and processes that help construct language. The language alluded to in this document is that of the arrangement and principles which bring order to the historical objects under consideration. In this study, syntactics is defined as relating to or according to ordered rules of historical conservation. This is also referred to as ordered sequence, which represents the connection to an ordered system that generates a harmonious arrangement of parts or elements. An example is the syntax of classical columns. By ascribing a historical consideration to a specific item or aligning it with syntax, it becomes easier to discuss the aspects of that item in such a way that all stakeholders have a common reference point. The stakeholders can then choose to align with or deviate from the proposed grouping. It is expected that this will facilitate mutual understanding and help all stakeholders develop a useful dialog from which to develop common ground prior to proceeding with their project.

Pragmatic criteria are by their nature practical and tend to be more easily identifiable. Hence, a pragmatic value would be one that is representative of what can be seen and touched rather than inferred. The other two categories are much more ethereal. This study does not suggest that the groupings utilized are completely definitive. The last two are by very their nature much more difficult to identify, quantify, and categorize. Semantic values are those used to assign meaning to the artifact or historical consideration. Syntactic considerations are those used to bring order to or arrange the

aspects into ordered sequences. To simplify this, a common synonym associated with each category is used in this study to encapsulate the meaning: a) pragmatic/practical/phenotype, b) semantic/meaning/genotype, and c) syntactic/ordered/sequence/genotype.

### **Expected Results of the Evaluation of the Three Bases**

It was expected that a majority of the considerations would fall into the pragmatic area. Much of the past literature and the distribution of the definitions of the selected terms appear to be practical in nature. It was also expected that the distribution of incidences of the selected words would not exceed several hundred in many cases. The researchers also expected that there would be several outliers because several of the documents are heavily weighted toward one specific consideration.

The overview of the three bases and their buildings is expected to generate similar findings. The selected three bases were originally built within several months of each other in the great rush to gear up for World War II. All three of the bases followed precise prescriptive U.S. Army Air Corps and Corps of Engineering design, floor plan, planning criteria, and cost requirements. This included what types of buildings, infrastructure, floor plans, and construction materials were allowed. All three were laid out in much the same way around the primary flight mission with runways varying to accommodate prevailing winds and topography. Almost all of the buildings were built under the 700 and 800 series cantonment construction requirements of the Department of War. After the war ended, the design criteria evolved and changed with the different federal budgetary limitations as well as the aircraft platform or mission type being employed. Bryan AAB was for all of its military history of operations a fighter base.

Hearne AAB was also a fighter base. Carswell AFB served both bombers and fighters, thus requiring larger hangers as well as slightly different and a greater number of support buildings.

The basic construction techniques employed in the construction of the buildings was expected to be the same. This is based on the Corps of Engineers requirements and the expedient nature of how they were built. The onset of the war required that they be built inexpensively, in large quantities, and out of the least expensive non-strategic materials available. Therefore, wood framing was the construction type and material of choice. Steel for construction was in short supply because it was needed to produce weapons, equipment, ammunition, and shipping. Over time, these buildings were upgraded to include improved and more generous MEP systems and HVAC equipment. In most cases, minimal MEP and no HVAC systems were part of the original construction.

Unfortunately, the use of wood framing led to maintenance issues throughout the country due to inclement weather and insect activity. Maintenance and repair costs as well as regularly changing government funding limits caused many of these buildings to have deteriorated significantly or to have completely disappeared. The researcher expected to find that the buildings that have survived were either adaptively reused or transferred to civilian owners or other government agencies who maintained them. Many of the buildings, which were little more than tar-papered wooden frame structures without HVAC and with minimum MEP systems, have literally rotted away or were progressively improved with better roofs, asbestos shingle siding, insulation, and interior

wall finishes. Those buildings retained after the war for use by the DOD, other government agencies, or civilians were usually substantially reconfigured to meet new uses. It was expected that very few unaltered buildings would be found. Those that remained were likely to be demolished as safety hazards or considered beyond cost-effective salvation. One notable exception to this is the African-American barracks located at Bryan AAB, which have been restored.

The process employed in this survey was relatively simple. The researcher located an English version of the original documents and evaluated them for intent and content. The researcher assigned one of the terms associated with the three levels of grouping if the overarching concept was replete in the document and or if the specific word associated with the concept within context was repeated in the document more than three times. In the vast majority of these cases, the repetition of the targeted word and concept exceeded this meager limit. A basic assumption made was that if the drafters of the documents intended a concept to be important or prevalent in their work, they would utilize the topic nomenclature associated with it more than three times. This being said, especially with the documents occurring before the early 20th century, it must be understood that the application of the terminology and definitions to projects were somewhat different as cultural, historical, and scientific databases were not as advanced as those in use today. It appears from the research that after the 1950s a more consistent utilization of terms developed.

## **Definition of Terms Used in This Evaluation**

Pragmatic, syntactic, and semantics have already been defined in preceding paragraphs. This section provides a listing of the terms defined as they are used in this document in the same sequence listed on the spreadsheet. Please remember that although several of the terms used herein are not found as exactly printed in the documents, but rather as overall concepts. Examples of this are the terms associated with urban fabric. Town, village, and city were used in some documents or in most cases were subsumed in the concept of neighborhood or urban area. It was the intent of this study to discover a focus of interest in the reviewed documents. Clearly, a town, village, city, or urban area is distinctly different, yet they are all an assemblage of dwellings and produce historical conservation concerns. Hence, they were grouped together for this evaluation as an issue of concern. It is not their discrete differences that are important, but their similarity when used conceptually to represent a consideration of concern and importance in the historical conservation community, as reflected in the reviewed documents. The definitions of words and terms searched for are shown below:

- 1) Adaptive reuse is the process through which an object or building under consideration has been repurposed carefully to maintain as much of its original intent as possible while developing it for new and often different use.
- 2) Conservation is the protection of and careful use of artifacts, buildings, and objects to keep items of historical importance in good condition.

- 3) Cooperation is the mutual activity between and among stakeholders based on agreed upon considerations between and among individuals and groups, resulting in conservation of the items.
- 4) Economic Value is the fiduciary value, which may include special circumstances associated with the object or building under consideration.
- 5) Enhancement is the process of heightening, increasing, or improving the value, quality, desirability, attractiveness, or historical value of objects and buildings being considered.
- 6) Identification is the process of associating shared feelings and understanding the problems or experiences of other stakeholders to identify with them and their process of identifying historical considerations associated with objects or buildings. This requires the use of mutually agreed upon methods for selecting an object or building for consideration as a historical conservation project. Identification is the process of selection and verification of an object or building for consideration for the application of historical or cultural conservation procedures.
- 7) Legislation/Legal/Policy Making is the process of developing laws or rules to foster the restoration and protection of historic objects and buildings. It also includes the procedures and policies generated by conservation agencies, based on their meetings and interactions with legal agencies and governments.

- 8) Management is defined as the professional and judicious use of organized systems as a means to accomplish conservation efforts.
- 9) Preservation is the process of keeping something in its original state or in good condition to keep it safe from harm or loss.
- 10) Protection/Safeguarding includes the processes, techniques, skills sets, and actions of making objects and buildings under consideration safe and stopping the degradation of the object or building.
- 11) Recording is the process of making permanent records of what has happened or been done on a project. This includes all electronic and photometric media; these media can also be objects for conservation. It does not include the specific document being evaluated, only the process of recording the document or historical conservation consideration. It also includes developing and recording all histographic information associated with the project.
- 12) Reconstruction is the process that carefully examines an event or series of events is to find out or show exactly what happened in the past and to use that information to rebuild something as close as reasonably possible to the original object or building.
- 13) Rehabilitation is the process of returning an object or building as close as reasonably possible to its original use and condition without reconstructing it.

- 14) Restoration/Repair is the act or process of returning items to their original condition via relatively minor efforts such as fixing broken items, cleaning them, etc.
- 15) Redevelopment is the act or process of renovation of badly damaged objects or buildings as recommended by scientifically trained restoration professionals or historical conservationists and or consensus of all stakeholders.
- 16) Sustainable refers to the process of historical and cultural conservation being executed using methods that do not completely use up or destroy resources and using them wisely to avoid waste.
- 17) Tourism is the activity of individuals or groups who travel to historic places for pleasure or knowledge. It may or may not involve fees paid by the tourists.
- 18) Neighborhood/Urban/Town/Village/City are aggregate terms referring to community and neighborhood units that represent interests and activities in these administrative areas where people live or have lived in the past.
- 19) Aesthetics/Esthetic/Beauty refers to being appreciative of, responsive to, or zealousness about the attractiveness of objects and buildings based on the cultural and social norms of the stakeholder.
- 20) Authenticity is the act of being real, genuine, true, or accurate and not being copied, false, or fake.

- 21) Contextual is the state of the situation in which a group of specific conditions exist at the time where and when something occurs. It is then assigned worth by a stakeholder, resulting in conservation action. This includes the circumstances and physical considerations surrounding the object or building that affect the historical considerations associated with it or them.
- 22) Culture constitutes the collective beliefs, customs, arts, and other manifestations of human intellectual achievement of a particular society, group, place, or time as related to objects or buildings under consideration for historical and cultural conservation.
- 23) Language is viewed in relation to the object or building to be preserved or conserved including all linguistic and oral considerations as a significant consideration. This also includes dialects, specific tongs, or variants of dialects. This consideration does not include discussions of the language in which the documents were written, reproduced, recorded, or transmitted.
- 24) Heritage refers to the traditions, achievements, beliefs, artifacts, and objects that are part of the history of a group, subgroup, or nation, or of a particular society, place, or time.
- 25) Significance is the quality of being important in relationship to the objects or buildings under consideration.

- 26) Education is the process of teaching someone the knowledge, skill, value of and understanding associated with historical and cultural conservation or conserved objects and buildings.
- 27) History/Historical refers to consideration of famous or important objects or buildings having great and lasting importance emblematic of past events related to a particular subject, place, or organization.
- 28) Presentation/Dissemination refers to activities by stakeholders that demonstrated or spread conservation considerations about historic objects and buildings to the public or other organizations.
- 29) Scientific is used to denote working in an organized way that agrees with the methods and principles of the scientific method and utilizes its prescribed methods.
- 30) Spiritual/Secular/Religious refer to religion or religious beliefs or the lack of them, which result in the identification of an object or facility as being important for, or for the lack of, ecclesiastical theological considerations.
- 31) Technical/Expert/Professional refers to people who have been scientifically trained in the proper use of machines, techniques, and systems to be employed in conservation efforts. This also includes the materials and technical components used by these people.

## **CHAPTER IV**

### **THE THREE BASE STUDY**

The author has over 32 years of personal experience in the USAF dealing with the construction, repair, maintenance, and reuse of buildings from WWII. The author was stationed at Carswell AB from 1990 until 2004. During that time, he served as the chief of engineering for the 810th Civil Engineer Flight, which was assigned to the headquarters of the 10th Air Force. In 1996, the 810<sup>th</sup> transitioned to the 610th Regional Support Group Civil Engineers and the author served as the Chief Engineer (Architect). Over the course of his career, he reviewed hundreds of buildings at bases across the United States, European Command, and Pacific Air Forces. During this study, he was able to develop a deeper understanding of how the three bases developed, then changed as their missions evolved, and in two cases, why they were closed.

Several military and historical sources were reviewed or contacted for information during the course of the research for this study. Two reports that provided particularly relevant material were *The World War II United States Army Mobilization Program: A History of 700 and 800 Series Cantonment Construction Reports*, published by the U.S. Department of the Interior, and the *Historic Structures Report Summaries*, published by the Center for Heritage Construction at Texas A&M University. In addition, the *Air Force Manual 88-3: The Air Force Guide to Critical Facilities*, which contains standardized building plans, elevations, and construction details mandated for use in the construction of AAF facilities, was carefully reviewed. Another valuable

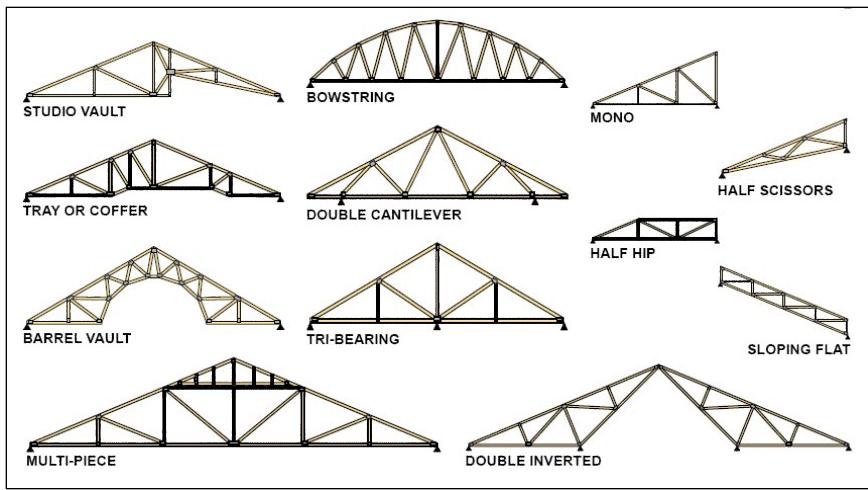
source of information was the U.S. Army Center for History's master list of facilities. Both the Army Corps of Engineers' historical division and the Texas Historical Commission provided pertinent data. More information was found in the National Archives and from historical articles in local newspapers. Aerial photographs of the three bases from WWII and the present day were located. The author repeatedly visited Camp Hearne, a WWII prisoner of war camp, as well as Bryan AAB and Carswell AFB to view and photograph buildings similar buildings.

In April 2011, Dr. David Woodcock, of the College of Architecture at Texas A&M University, reported that he had located a treasure trove of original drawings and plans for Bryan AAB construction from the 1940s. Professor Woodcock requested an evaluation and cataloguing of these materials, which the author agreed to do (Bunch 2011). This presented a unique opportunity to acquire firsthand knowledge of the design and development of Bryan AAB because the drawings were in danger of being destroyed. During the process, the author evaluated and cataloged 3,973 original construction drawings, as well as photos, technical reports, and specifications from Bryan AAB. Some of the photos are included in this document in the Bryan AAB segment of this report.

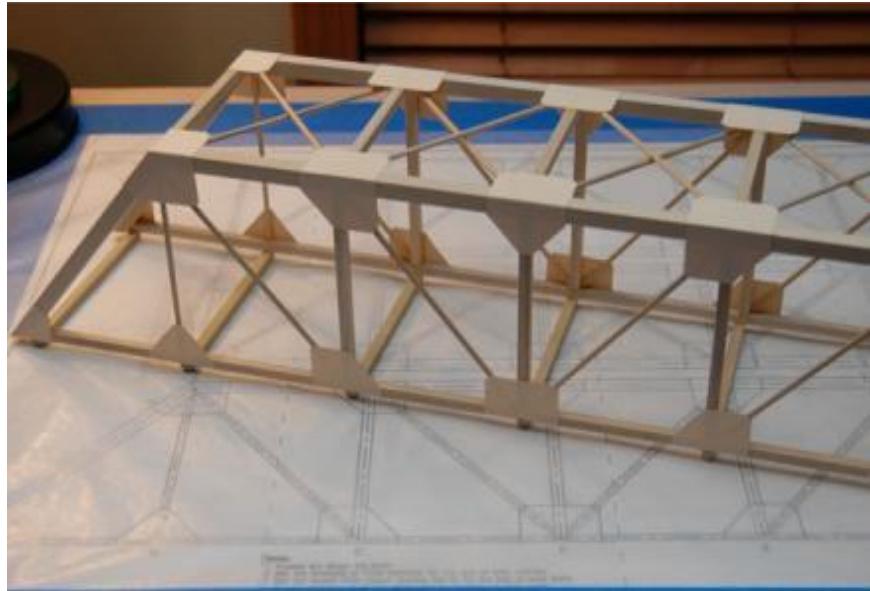
It should be remembered that the charters for construction at all WWII bases were considered expedient and the designs were prescriptive. Thousands of buildings were built as economically and quickly as possible all across the country and on all of the various battlefronts. In Texas, as in most of the USA, use of local materials was a requirement. This generally meant these buildings were built of inexpensive wood

available locally. The most common wood available in Texas at that time was southern pine. Almost all single story buildings, two story buildings, and hangers were built from 2x4, 2x6, or 2x8 wooden planks. Walls consisted of 2x4 framing with gyp-lap wood planking covered with tarpaper and nailing strips. Roofs were usually covered with gyp-lap wood (sometimes plywood), a layer of tarpaper, followed by a layer of asphalt shingles. Initially, the interiors were neither finished nor insulated. The floors were bare wood planking, which was raised off the ground concrete blocks on 2x4 wood subfloor framing, or placed on a concrete slab on grade. Tri-bearing or Fink trusses were used for the roof structure for most one and two story buildings. Hangers also used wooden truss systems usually built from planks bolted together with low-grade, non-strategic steel sucker plates and gussets, bolts, and nuts. Lateral bracing in the walls and ceilings usually consisted of wooden planks.

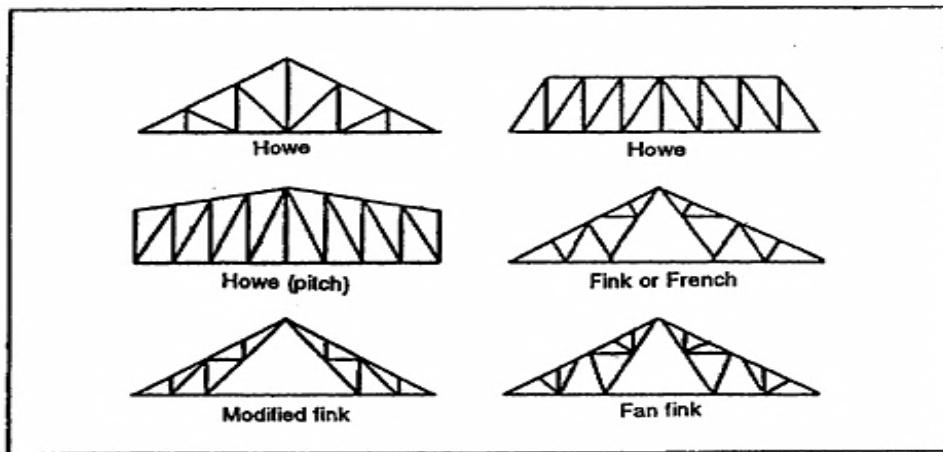
Although there were several types of construction trusses (see Figures 7, 8, and 9) in common use in WWI, most large buildings such as hangers used a flat Pratt truss configuration (without the angled ends). Bowstring trusses were typically used for intermediate size buildings. Smaller buildings primarily used multi-piece Fink trusses or triangular Howe trusses. Other types were also used, but because the vast majority of the construction drawings and designs prescribed by the Army Corps of Engineers were part of the construction contract, there was little deviation. The most common type was the tri-bearing truss, found in almost all small-to-medium one- and two- story buildings. Many flat Howe trusses were found in large buildings.



**Figure 7** Common Wood Trusses (Brankston 2013)



**Figure 8** Pratt Truss (Boon 2007)



**Figure 9      Other Types of Wood Trusses (Heiserman 2013)**

As the war continued, these buildings were upgraded to include interior finishes such as vinyl asbestos floor tiles, sheet rock walls, or composite wood board walls. The exteriors were usually covered with asbestos shingles or occasionally with brick or locally available stone. When the war ended, most of the bases were closed or sold to local government entities. Many bases in Texas converted to municipal airports or industrial parks. The bases that remained part of the Air Force inventory have retained very few of these buildings into the 21st century. As funds have become available, most have been upgraded with new materials and mechanical equipment to meet the standards for new missions (Grant 2002)

In 1995, Congress mandated that all WWII series 700 and 800 cantonment buildings at all active military bases were to be removed by the year 2000 because of high maintenance and utility costs. However, a clause in the mandate allowed the base commander to retain these facilities if they were mission essential. This could be

accomplished if an equivalent amount of square footage to the building being retained was removed from the base inventory from other facilities. Many base civil engineers and their engineering staff were able to save these buildings because they had already been upgraded to the point that it was not cost effective to construct an equivalent amount of space with a new building. Another factor that helped save some of these buildings was that USAF regulations permitted the renovation of existing buildings one year after the previous renovation, if the cost of the new renovation did not exceed half the total value of the existing building.

The study of the three airbases begins with a general overview of each base during WWII and the 1950s. This is followed by a current aircraft flight statistical chart and available photographs of the flight line. A brief history of each base is included so that one can locate these bases in time. Finally, an overview of the fate of these airbases will be presented. All of the bases are in Texas. Bryan Army Airbase in Bryan, Texas was chosen to show what we still have. Carswell Airbase was chosen to show what might still be accomplished in the conservation of an army airbase. Hearne Airbase/Camp Hearne was chosen to show what we have already lost.

### **Historical Overview of the Three Bases**

Bryan Army Airbase currently belongs to Texas A&M University. Although the bulk of the original buildings have been removed or deteriorated beyond repair, the African-American dorms remain. However, they are in a serious state of disrepair. Bryan AAB is called the Riverside Campus of TAMU and is home to several academic, storage, vendor, and maintenance functions. Six hangars, multiple administrative and

shop buildings, as well as eight large warehouses and three brick dorms are still located there. Most of them have been adaptively reused.

Carswell Airbase is the only one of the three bases that has operated continually as a military airbase since WWII. Only 12 of the original buildings remain and much of their original charter has changed over the intervening 70 years of upgrades, renovations, and mission changes. All but 56 of the military housing units at Carswell AFB were excessed in the 1990s and moved from the site. Carswell Airbase was converted to the Naval Air Station Joint Reserve Base Fort Worth following the recommendations of the 1992 Base Realignment and Closure (BRAC). The author was a member of the closure team that made the recommendation. The base is located in Westworth Village near Fort Worth, Texas, and is currently utilized by all branches of the U.S. military services. (Manning 2005) Westworth Village was incorporated in 1941 in response to the military deployment; build up and growth at Carswell AFB; at that time the base was called Tarrant Field.

Hearne AAF was originally a paved emergency landing auxiliary field associated with Bryan AAB. Usually these auxiliary airfields were not paved. It is believed that Hearne AAB was paved due to the extreme expansiveness of the soil at that location, which made grading a level field ineffective because it would have needed to be regraded every few months. During the war, its function changed to include a POW camp that housed mostly German troops captured in the African campaign. It also housed some Italian POWs and in the last few months of the war, Japanese prisoners were housed at the camp. After the war, the Hearne Airbase was converted into the municipal

airport for the city of Hearne, the concrete runway was extended, and a tarmac was built. Unfortunately, all but two small original buildings have been destroyed at Hearne AAB. However, local WWII enthusiasts have reconstructed and furnished a typical barracks.

During the WWII era, the Army Air Forces referred to most of their major air facilities as Army Airfields (AAF), although some were referred to as Army Airbases (AAB). The auxiliary emergency landing airfields were known simply as auxiliaries, usually designated by Auxiliary Airfield and a number. Frequently, the auxiliary field personnel gave the field a name in addition to its number. Because Bryan AAB no longer functions as an official DOD airbase, there is no current Navigation Operations Technical Update Message (NOTUM) data available for it.

The AAF often used a triangle plan layout with two, three, and occasionally four runways. Runway lengths from 3,500 feet to over 5,000 feet were built. Generally, the center or bisecting runway was narrow and was used primarily as a taxiway. There was often a small parking ramp or tarmac along one of the sides of the triangle to provide parking for aircraft. Three hundred forty-nine aircraft base facilities were built in Texas from 1941 to 1945. This included 243 army airbases, 82 naval airbases, five marine airbases, and 19 joint army/navy airbases. Many of these were auxiliary landing fields that often consisted of only a mown, graded field or gravel surfaces near a road so that emergency landings could be serviced or touch-and-go practice landings could be accommodated. A touch-and-go landing is a practice landing in which the pilot lines up on the runway, briefly touches the aircraft's wheels to the pavement, and then takes off again. Typically, this was repeated several times before the pilots returned to their

assigned base for a full landing. There were 260 of these auxiliary fields in Texas, with some main airbases having five or six auxiliary fields associated with them.

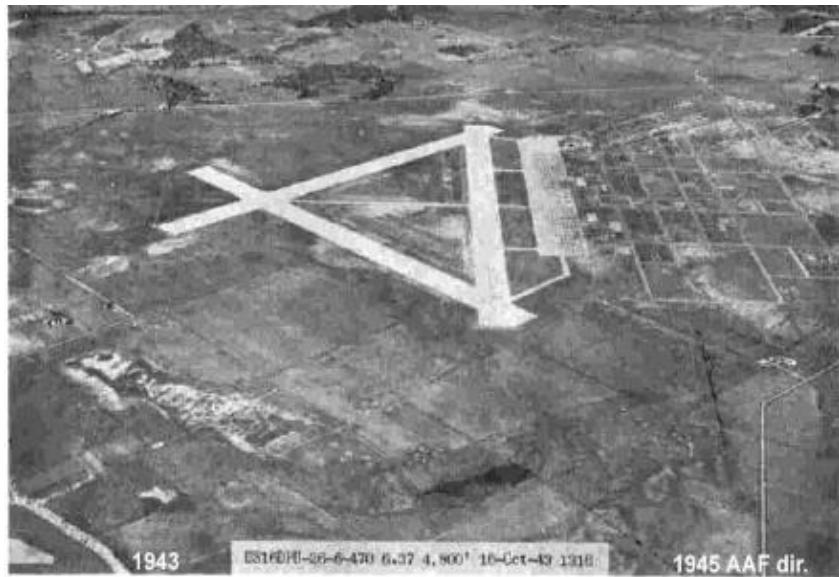
Occasionally more than one main airbase shared the same auxiliary landing field.

Buildings were rarely built at these auxiliary fields because their primary purposes were to practice touch-and-go landings and to provide a safe emergency landing and easy recovery of the aircraft. (Brooks 2011)

### **History of Bryan Army Airbase**

Bryan Army Airbase (Figures 10-15) originally had three auxiliary fields associated with it. One base was located at Hearne, TX; the second was located in College Station, TX; and the third at Somerville, TX. The Hearne Field was a hard field. The Somerville Auxiliary Airfield was located nine miles NNE of Somerville and 12 miles south of Bryan, Texas. It included 258 acres and was a turf field. (Brooks 2011)

The College Station field had three paved concrete surfaces [5150 x 150 (N/S), 5150 x 150 (NE/SW), and 5150 x 150 (NW/SE)] and was located 2.3 miles southwest of College Station. Today, this field serves as the TAMU commercial airfield, Easterwood Field. (Shaw 2004)



**Figure 10      1945 Aerial View Bryan Army Airfield (Brooks 2011)**



**Figure 11      1954 Easterwood Auxiliary Airfield (Brooks 2011)**



**Figure 12      Easterwood Airfield 2011 (Brooks 2011)**



**Figure 13      Bryan Airbase 2011 (Wikipedia 2011a)**

Bryan and Fort Worth Army Auxiliary Airfields								
Name	City	Branch	Lat. Deg.	Lat Dec.	Deg W.	Long Decimal	Type and Elev.	
Bryan AAF	Bryan	AAF	30-38-00	30.633533	96-29-45	-96.495833	Hard 261	
Bryan AAF Aux #1 Somerville Field	Bryan/Somerville	AAF	30-28-17	30.471389	96-29-19	-96.488611	Turf 280	
Bryan AAF Aux #2 Hearne Field	Hearne	AAF	30-52-18	30.871829	96-37-20	-96.622226	Hard 285	
Bryan AAF Aux # 4 Easterwood Field	College Station	AAF	30-35-18	30.588583	96-21-49	-96.363833	Hard 320	
Fort Worth AAF	Fort Worth	AAF	32-46-09	32.769167	97-26-29	-97.441528	Hard 636	
Olney AF Aux Municipal Airport	Olney	AAF	33-21-03	33.350881	98-49-09	-98.819167	Hard 1,274	

Name	Comment
Bryan AAF	(CFTC); 2 Aux; later Bryan AFB
Bryan AAF Aux #1 Somerville Field	Aux to Bryan AAF; aka Snook Field; (CFTC); 2 Aux Bryan AFB aka Smith Fld; aka S. Field
Bryan AAF Aux #2 Hearne Field	Aux to Bryan AFF North Aux
Bryan AAF Aux #4 Easterwood Field	Aux to Bryan AAF
Fort Worth AAF	CFTC
Olney AF Aux- Municipal Airport	Aux to Fort Worth AAF. Assigned to the Navy in 1943. By 1944 it was assigned as Aux to Fort Worth AAF

**Figure 14      Auxiliary Airbase Statistics**

Type	Army Air Force Base
Coordinates	30°38'16"N, 96°28'43"W
Built	1942
In use	1942-1947; 1951-1958; 1960-1961

**Figure 15      Bryan AAB Statistics (Wikipedia 2011a)**

Located six miles west of Bryan in Brazos County, Bryan Air Force Base was known originally as Bryan Army Airfield (Figure 10). It became active in 1943 as an instructors' school and was assigned the task of developing a standardized system of instrument flying. The Full Panel Attitude System developed at the base was one of the

most significant contributions made to pilot training. The instrument training school at Bryan AAF was the only one of its kind in 1943. That same year, Bryan AAF was also the first base to deploy meteorological flights into hurricanes. During this time, the base was assigned to the Army Air Force Training Command's Central Flying Training Command as an advanced, twin-engine pilot training school.

During the development and construction of Bryan Army Airbase, a significant number of aircraft and organizations were based there. The construction at the base began August 7, 1942 after the acquisition of land from forty-three individual landowners. Sixteen prime contractors and 53 subcontractors developed the first contract work, which was completed on January 1, 1943 at a cost of \$6,430,000. At this time, a 300 x 5,000 foot main runway and a 300 x 5,500 foot cross-runway were built. Two hundred thousand square yards of aircraft parking tarmac was also authorized. Auxiliary Field #1, located west of College Station, Texas consisted of 640 acres. Auxiliary Field #2, located about five miles from Hearne, Texas consisted of 640 acres. Auxiliary Field #3, located 17 miles NW of Bryan, Texas consisted of 486 acres. The largest was Easterwood Field located at College Station, which consisted of 922 acres designated as alternate/emergency runways and assigned to Bryan AAB. On December 1, 1942, the contractor began turning buildings and installations over to the Post Engineering unit. By January 1, 1943, 247 theater of operations-type modified buildings and 46 mobilization-type modified buildings were authorized, which meant 61% of the construction was complete. By February 15, 1943, all construction under the original contracts had been accepted and additional construction was authorized. In addition, four theater of

operation type of buildings had been unofficially turned over to the army and were in use.

As base construction continued, the mess and commissary functions were added. Due to the segregation policies in place at the time, black troops were only utilized according to their perceived ethnically based skill sets. The initial group of African-Americans was to manage stocks of materials and supplies at the commissary, dining hall, enlisted club, and officers club.

Colored troops arrived on the Field and in April (1943) the first branch was opened for the colored detachment. It was at first thought that a complete stock would be placed in this branch, but considerable difficulty was encountered in maintaining proper accountability and stock was reduced. It was not possible to get a colored manager with sufficient capabilities to handle more than mere canteen stock. (Sinz 1944)

A significant number of transit aircraft visited the field in its early days. By June of 1943, 269 aircraft had transited the base. In addition, by that date 2100 transit aircraft of some 60 types from 31 states had used the runway. A weather station was opened on March 16, 1943. Pilot training was in full swing by the end of February 1944. Between February 1943 and February 1944, 195,617.7 flight hours were reported with an accident rate of 163 per 1000 hours. The first fatal training accident was reported on February 22, 1943, resulting in the death of a student that day and the instructor pilot the following day. (Sinz 1944)

By January 1, 1944, the base civil engineer had received and was operating 308 facilities, which included:

- 42,573 lineal feet of water main,
- 10,337 lineal feet of water service line,
- 19,833 lineal feet of sanitary sewer main lines,
- 9,884 lineal feet of sanitary sewer service lines,
- a 255,000 gallon aircraft gasoline storage system,
- four water wells,
- 209,866 lineal feet of overhead electric power lines,
- 713,489 square yards concrete runways and aprons,
- a sewage treatment plant,
- a water pumping station,
- 51,101 lineal feet of fence
- 833,483 square feet of building area,
- 1.73 miles of railroad,
- a water treatment plant, and
- a radio range station.

An enormous amount of construction was accomplished in a very short amount of time. The demands of the war necessitated rapid construction so pilots could be trained quickly. As soon as construction was completed, the base was placed on full operational status. A severe housing shortage resulted from the rapid buildup of personnel at the base. By January 1943, the authorized strength of at the base was 4,071

men. In February 1943, a 90-unit civilian housing project called Bryan Field Village was authorized. The first unit was completed by October 6, 1943 and by March 1944, 67 units had been completed. The field was designated as the only instrument flight training school in the U.S. later that month.

In January 1943, the 857th Signal Service Company was up and running. A chemical Warfare Section was opened in March 1943. The 2052nd Ordnance Company started operations that same month. The 720th Army Band was stationed on the base on April 5, 1943. The detachment medical department was activated October 17, 1942. By November 1943, the 908th Quartermaster Company was operational. The 451st Base Headquarters and Airbase Squadron was activated and arrived on the base January 21, 1943. The 499th Two-Engine Flying Training Squadron started operations servicing AT-6, AT-9, AT-10 and AT-17 aircraft with a strength of 216 personnel on November 1, 1942. It was re-designated as the 499th Two-Engine Flying Training Squadron upon being transferred to Bryan AAB on February 5, 1942. The 500th Two Engine Flying Training Squadron was created August 1, 1941, with 372 men and moved to Bryan AAF on February 22, 1943. The 1090th Guard Squadron was on post at Bryan AAB by December 28, 1942. The 501st Two-Engine Flying Training Squadron became active in August of 1942 and transferred to Bryan AAB February 5, 1943. The 325th Aviation Squadron (Colored Squadron) started to arrive at the base on March 23, 1943.

From March 1943 to March 1944, Bryan AAB literally grew out of the pastures and cotton fields of the Brazos River bottom into a fully functional airfield, faster than the community could adjust to it. With the construction of the field came a variety of

aircraft. The base became Bryan AFB when in 1947 the Air Force became a separate branch of the military services.

Following World War II, enrollment at the Texas Agricultural and Mechanical College (TAMC) increased significantly. Student housing was in great demand. Between 1949 and 1952 an estimated 5500 men lived and attended classes at the annex on the former Bryan Air Force Base. When the Korean War started in 1952, the base was reactivated as a training base for jet pilots. The base was also designated as a contingency disbursement point for atomic weapons deployed out of Carswell AFB in the mid-1950s.

In May of 1961, Bryan AFB was deactivated. The land and buildings were deeded to the Texas Agricultural and Mechanical College (now Texas A&M University) in 1962. While under the control of the university, a number of changes occurred. In August 2011, one of the remaining original hangers on the flight line was torn down. Another hangar was transformed into a state-of-the-art training facility for utility workers in the electric power and telecommunications industry. A third was transformed into a facility for the Texas Transportation Institute. Currently, Dr. David Woodcock has a grant to study the configuration of the base and its buildings with an eye to preserving the remaining facilities. He is also active with the TAMU Board of Directors in facilitating a sensitive reuse plan. His ideas were adopted in 2013 when the Board of Directors approved a master plan for the East Campus (Bryan AAF). Space utilization requirements as well as the cost of maintenance and upkeep of the remaining buildings have added urgency to this effort. As shown on the map of the Riverside Campus Plan,

there are 33 WWII buildings remaining at Bryan AAB. During a windshield photograph tour and building count on August 5, 2012, the author verified that these 33 buildings are still in existence. According to the USAF classification standards, there are actually four hangers and seven support buildings remaining at the Riverside campus. The University planning staff utilized different criteria to classify these buildings as other support buildings. Later in this dissertation, photographs will be used to demonstrate the differences in the buildings from the past and present. Figure 16 contains a list of these buildings. (TAMU 2012)

<b>Building Type</b>	<b>Quantity</b>
Air Traffic Control Tower	1
Barracks	13
Fire Station	1
Hangars	2 (4)
Other Support Buildings	9 (7)
Warehouses	9
<b>TOTAL</b>	<b>33</b>

**Figure 16     WWII Buildings Remaining at Bryan AAB (TAMU 2012)**

Bryan AAB, Carswell AFB, and Hearne AAB are emblematic of the exceptionally fast and expedient construction methods and materials utilized at the beginning of WWII in Texas and elsewhere in the continental United States. They are typical in most respects to almost every other military base built at that time. Unfortunately, the vast majority of these bases are now gone. When the atomic bomb was deployed, WWII ended abruptly and rapid demobilization followed. Most of the

facilities and equipment at the end of the war were sold, resulting in the loss of much historical and cultural heritage.

In the case of Hearne AAB, the author discovered only four original drawings and six sheets from an original specification book. At Carswell AFB, an incomplete file of some 250 drawing of several buildings was located and some were photographed. At Bryan AAB, the entire cash of almost 4,000 drawings were reviewed. The next section will detail what was located and preserved.

The primary investigator of this study organized a plan to systematically evaluate, catalog, and sort the recently discovered Bryan AAB WWII era drawings as well as other documents. Duplicate drawings were excessed and those that could not be conserved were destroyed. Photographs of typical drawings were taken. Drawings that were the same except for having revisions on them were considered two unique specimens. Both were cataloged for preservation. Unfortunately, 25 drawings had deteriorated so much that they literally fell to pieces when they were picked up. These could not be salvaged. The entire collection is scheduled for scanning and archiving later at the TAMU Cushing Library Archive.

The process of evaluation started on May 1, 2011 and lasted until May 27. It continued from June 1-19, 2011. During this process, 3,973 drawings were reviewed, 112 aerial photos scanned, 428 1940s photos re-photographed, 950 1950s photos copied, 102 1960s photos copied, 77 1970s photos copied, and 87 8 x 10 construction photographs from the 1950s scanned. In addition, 50 8 x 8 aerial photos of the base done in 1955 were scanned, 230 photos from the Lockwood Andrews-Newnan Bryan AFB

report of 1955 were copied, 77 one-line drawings in the TAMU mini-book photographed, nine black and white film 24 x 30 negatives cataloged, and 106 rolls of drawings evaluated. These were stored in 50 vertical file bound drawing sets and 24 flat file drawers as well as miscellaneous stacked boxes and piles of flat, folded, and rolled drawings. Significant finds of rare original 1941, 1951 and 1953 blueprint drawings, as well as several approval drawings with original signatures of past TAMU presidents were located. These were evaluated and cataloged. A TAMU mini-book from 1969-1972 showing all of the floor plans of the buildings existing in the inventory at that time was also found. From the initial review of the mini book, it appeared that TAMU continued to utilize the 1950s USAF building numbering system at the site as well as maintain and update the standard USAF mini book records of single line floor plans.

Drawings found in rolls were left in their original roll and in the sequence that they were found. They were numbered lightly with a lead pencil in the margin on the back of the drawing behind the nameplate or in the margin on the front near the lower right corner of the nameplate when it was not possible to mark them on the back. The rolls were re-rolled and a numbered tag attached to each roll after they were reviewed. No rolls that were found assembled into sets were disassembled. All of this information was entered into a spreadsheet that was placed on a CD. Drawings bound in stick sets were left on the stick as found and numbered on the back of the drawing in light pencil lead behind the nameplate as already described. A vertical stick file number in ink was added to the hanger rod of the drawings sets at the upper left corner on the front of the stick. There are 50 sets of stick bound drawings. Some contain as few as two drawings.

Most contained more than 15 with some containing 30 or more. These stick files typically represented the as-built drawings for one specific facility. They were added to the spreadsheet and numbered as stick sets. The folded drawings and four small rolled drawings were also evaluated, numbered in a similar manner, and stored in three cardboard boxes. Drawings in the flat files were also marked on the back of the drawing at the lower right corner of the nameplate. The drawings from the flat files were removed, reviewed, and placed back in the flat files in precisely the same sequence that they were discovered. The spreadsheet reflects these drawings by drawers, which were marked in lead in sequential letters from A-Y on the lower right corner of the drawer nameplate. A random stack of photos was also discovered. Many of these were photographed and were delivered to the library on a CD. The name of the scanned photo corresponds directly to the content and dates of the photos. They were marked in sequential order as found in the stack and listed on the spreadsheet. Several specifications books or files were also found. They were evaluated and marked in a similar manner. The spreadsheet contains 210 entries. The headings used in the spreadsheet are:

- item number,
- type of document,
- location of document,
- printing type used,
- modification or revision number used on the drawing or document,
- A&E firm doing the work,

- city location of the A&E office,
- TAMU or Corps of Engineers city location,
- latest date on the drawing,
- COE file number or A&E drawing number,
- condition of the document,
- recommendation for disposition of the document
- base commander's name at the time, and
- salient comments.

All items are sequentially numbered. In a few cases, there may be a missing number or a subscript "a" or "b." This occurred when a drawing or numbering error was identified when the work was rechecked.

Three sets of drawings were so fragile that it was not possible to review them in detail without disintegrating and these were placed on the floor in Room 105 for further evaluation by Cushing Library personnel. Duplicate documents that were in bad condition and exceeded the agreed upon two exact copies of drawings were placed on the floor in Room 104 for disposal after the best copies were retained. After reviewing the drawings, determining that they were in excess of the agreed upon duplicates, they were labeled "excess" on the spreadsheet and recommended to not be retained.

Because there were many similar drawings, the first criteria utilized to determine if the drawings were duplicates was the issue date and revision date on the drawing. Having these dates is standard operational procedure and they are usually listed near the nameplate on all USAF and USAAF drawings. Further review and comparison

determined if any hand drawn additions were made to the drawings. Those that contained additional hand drawn additions were considered different drawings. These were numbered and retained. The following Bryan AAB Drawing and Photo Rating System was employed to rate the quality of the drawings.

- Excellent – The document is 90-100% legible and the substrate materials are in superior condition.
- Good – The document is 80-90% legible and the substrate material has deteriorated to a minor degree.
- Fair – The document is 70-80% legible and the substrate material has deteriorated to a greater degree.
- Poor – The document is less than 50% legible and the substrate material has deteriorated a good degree or it is fragile and or significantly torn.
- Very Poor – The document is 20% legible and the substrate material has deteriorated to the point that the paper is fragile and/or half of the drawing or more is torn or missing.
- Excess – A document is redundant when it is the third exact copy of a document.

The following comments were noted on the spreadsheet:

- Rare drawing should be protected.
- These are a rare find and should be preserved.
- This is the definitive inventory of Buildings on the Research Annex 1969-72.

- Drawings and papers should be kept together as they present a time-dated trail of what happened on the project.
- Top of drawings are water damaged.
- Record drawings as built – These are extremely fragile drawings. The paper is disintegrating.
- Water damaged drawings.
- Hand marked redlines. Corrections or changes made with hand written markings.

Drawings were also listed according to the method of reproduction. A drawing was considered original if it was hand drawn. A blueprint drawing is completely cobalt blue (most were faded) with white lines and lettering. A blue line drawing has a white background and blue lines. Brown line and black line are white paper with brown or black lines. Sepia brown line drawings or buff-colored background drawings were printed on paper, linen, plastic, or Mylar. A few CAD plotted drawings were also found. A number of prints or drawings had been photocopied on standard white paper with black lines. Several linen drawings were also found. Several specifications were also found that were printed on common white paper, mimeographed on white paper, or were onionskin paper carbon paper copies.

During the course of this project, the researcher photographed many drawings and details. The photographs were selected based on quality of the paper, whether the drawing was readable and if the content was significant to the research. Hence, 1942-1956 drawings predominated. Several blueprint drawings from as early as 1941 to the

late 1950s were found, which were largely in good condition. These should be protected and preserved as rare drawings.

Originally, Bryan AAB was designated in 1941 as the Hearne AAB Auxiliary Base. This clearly indicates that it was not the first AAB to be located in this part of Texas. However, it eclipsed its original base mission and became a base of operations for Hurricane Hunter Missions in the 1950s. It appears by the flight line layout that the base was always intended to be a fighter or single engine type of aircraft base. No records were discovered that would indicate that multiple engine or B-17 aircraft were stationed at the base. As many as three aircraft squadrons were stationed simultaneously on the base because three operations buildings were built in 1942. In addition, almost every aircraft in the inventory at one time or another landed there in transit or practiced touch-and-go landings at the base.

### ***Bryan AAB in the 1940s***

The construction of the Bryan AAB was motivated by the rapid involvement of the U.S. in WWII. After the attack on Pearl Harbor, the Department of War moved quickly, building hundreds of bases across the nation using standardized plans. Bryan was selected because of the relatively high number of sun days that afforded greater flying time. Furthermore, it was a defensible distance from the coast should a sea attack occur. In addition, this area of Texas was sparsely populated at the time, which meant aircraft operations could not be observed easily or cause a significant impact on the local population. There was also abundant flat land and utilities were available from the nearby city of Bryan.

The T-6 North American Texas training aircraft was the mainstay trainer used at the base during initial WWII fighter training missions. This was a versatile and durable aircraft capable of handling rough landings inflicted upon it by green student pilots. Despite the robust nature of this aircraft, several fatalities occurred at Bryan AAB due to pilot error.

Learning to fly a piston-driven aircraft was a dangerous business. This was exacerbated by the rush to put as many aviators in the air and on to the front as quickly as possible. The needs of the war often necessitated safety considerations being relegated to a back seat because our military was losing ground and suffering many defeats during the early part of the war. Sadly, the increased accident rate was part of the price of victory.

In addition to the T-6 trainer aircraft (Figure 17), the P-40 (Figure 18) and later P-47s were used extensively at Bryan AAB. Both were tough aircraft. Unfortunately, the P-40 was already obsolete at the start of the war and did not fare well in the Pacific theater of operations (Figure 19). The P-47 (Figure 20) eventually became the mainstay of the Italian interdiction campaign; it is credited with knocking the Italians out of the war as it devastated their railways, road network and associated infrastructure.



**Figure 17**    T-6 Texas Trainer (Lyon Air Museum 2013)



**Figure 18**    P-40 Fighter (Robinson 2013)



**Figure 19** P-40 after Attack at Pearl Harbor (Vance 2013)



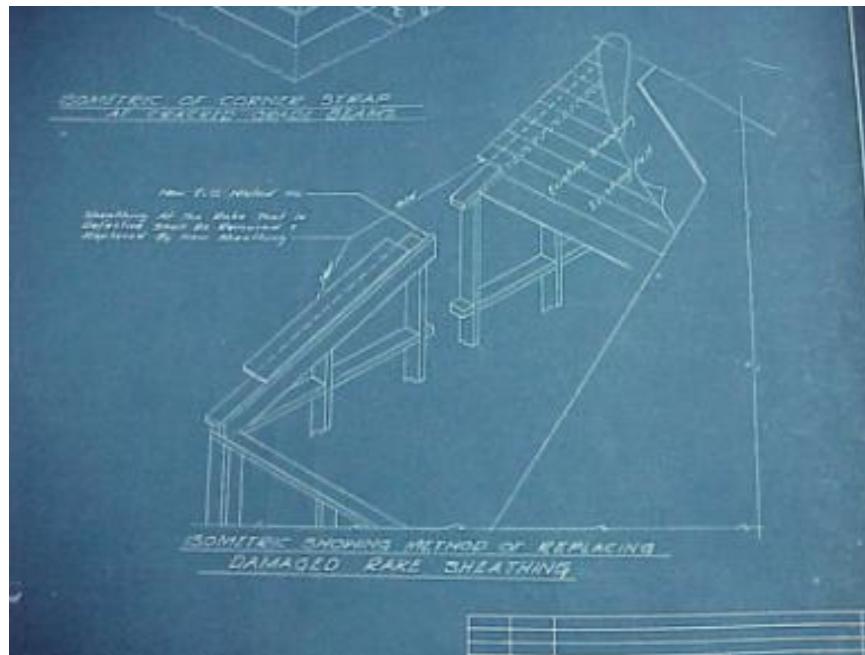
**Figure 20** P-47 Fighter (Jenkins 2010)

In addition to the WWII fighters, F-80 and F-86 fighters were stationed at Bryan AFB during the Korean War. Both were top of the line aircraft of that time and had a significant impact on the aerial war. A myriad of bombers and observational aircraft also called Bryan AAB and Bryan AFB home for a short time during the Korean War. The base was a dispersal site for the strategic bomber fleet from Carswell AFB and accommodated the bomber aircraft on a contingency basis and during dispersal exercises. Please refer to the section on Carswell AFB for photographs of these aircraft.

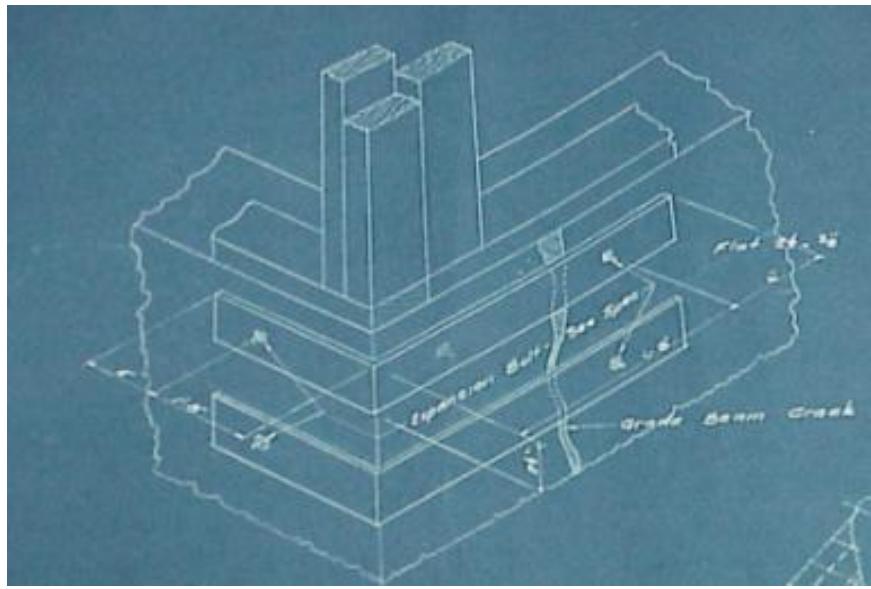
An unexpected find during the review of the collected documents were Military War Housing Drawings. These included a number of types and plans. Additional plans were found from the 1950s. These blue line drawings are particularly rare as the ammonia process used to develop the white lines on the chemically sensitive paper degraded the paper significantly. Exposure to direct sun light for lengthy amounts of time accelerates the degradation of the paper to the point that it can literally fall apart. Fortunately, the process takes several years so the life of the drawings was adequate for the time required for construction. These drawings were identified for special care in conservation but unfortunately, some of the drawings could not be saved.

A number of remarkable drawings from this era did survive. Several of these drawings are included here. It was imperative that construction be fast and cheap, and these blueprint drawings show simple, wooden buildings built with a bare minimum of heating, ventilation, and air-conditioning equipment, as well as a bare minimum of plumbing and site work.

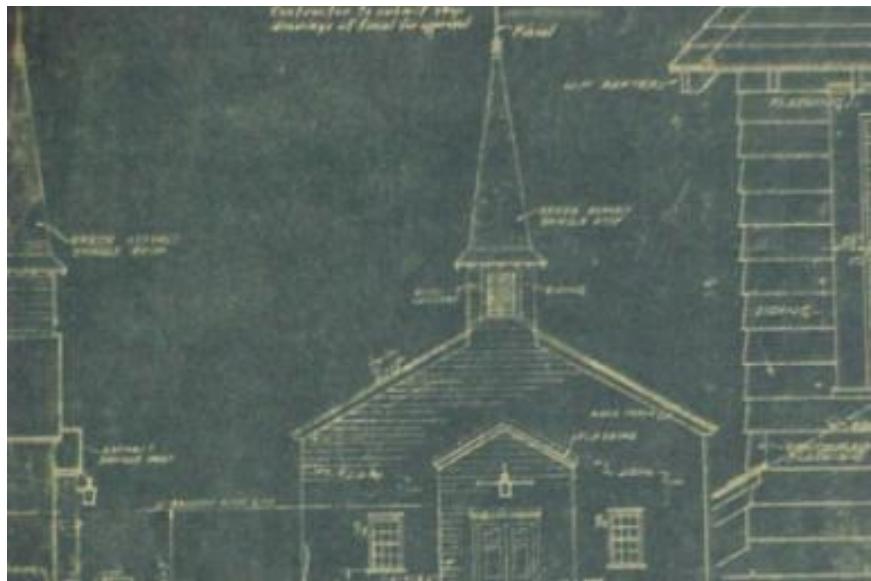
Figures 21 through 36 depict rare blueprint drawings and, for comparison, photos of some of the buildings shown in the drawings. Figures 21 and 22 are typical elevation drawings. Figure 23 is a drawing of the chapel. Figures 24 and 25 show the interior and exterior of the chapel in 1957. Figures 26 and 27 show two views of the chapel as it looked in 2013. Figures 28 through 34 are more blue line drawings. These drawings are especially rare because they dated 1942. Unfortunately, these building no longer exist.



**Figure 21      1942 Isometric Drawing A**



**Figure 22      1942 Isometric Drawing B**



**Figure 23      1942 Drawing of Base Chapel**



**Figure 24      1957 Chapel Interior**



**Figure 25      1957 Front Elevation of Chapel**



**Figure 26**      Base Chapel Front View in 2013



**Figure 27**      Base Chapel Side View in 2013



**Figure 28**      1942 Commissary Type SH-9 Drawing A

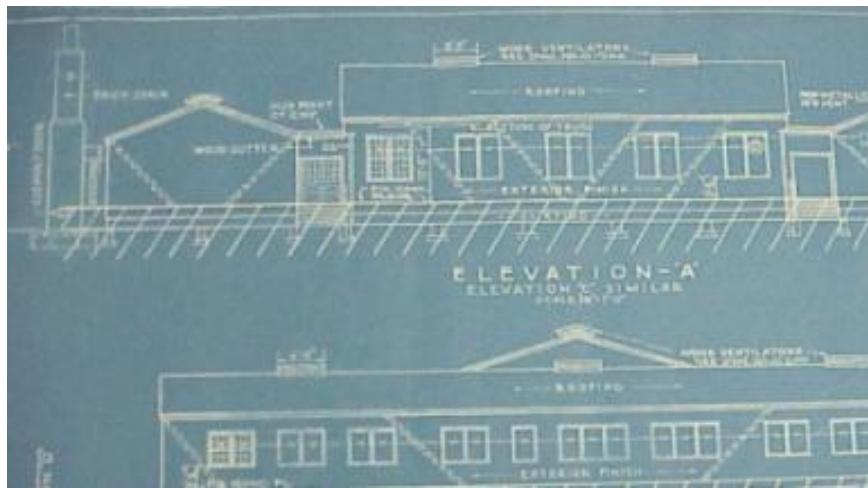


Figure 29 1942 Commissary Type SH-9 Drawing B

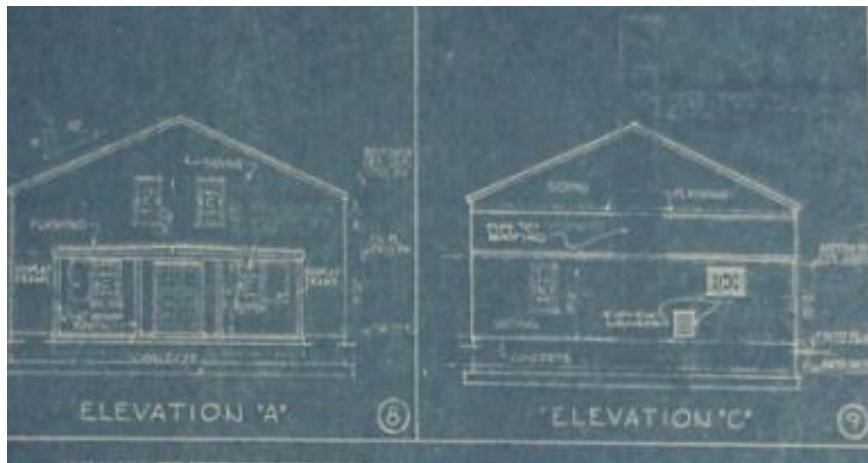


Figure 30 1942 Drawing of Base Theater

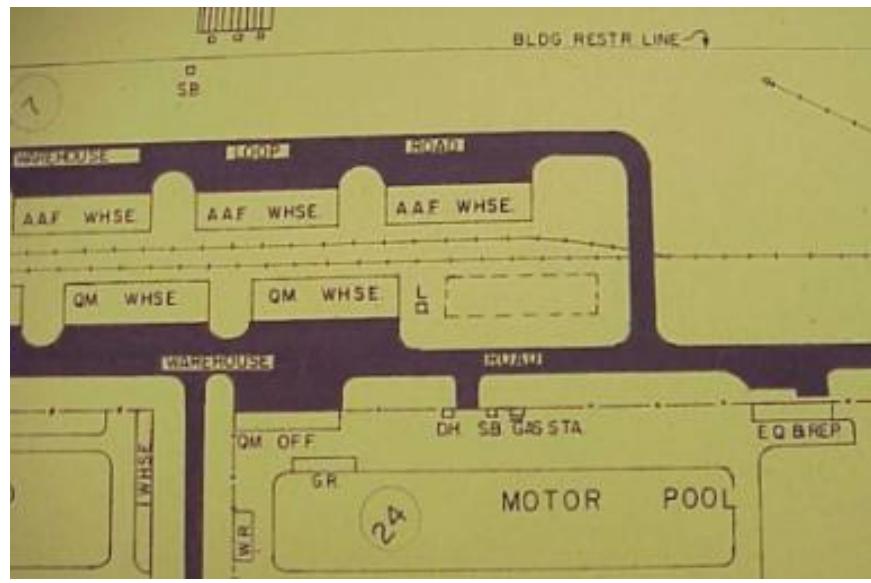


Figure 31 1942 Road Pavement Plan

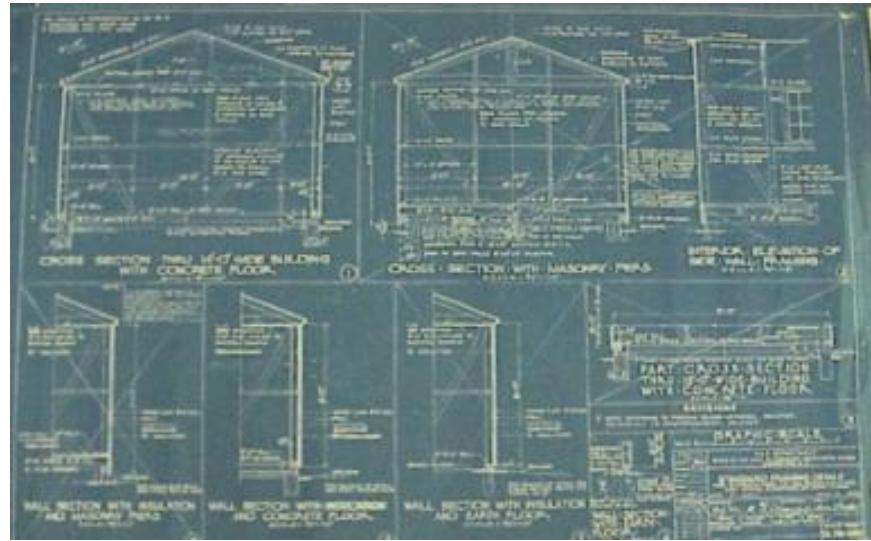
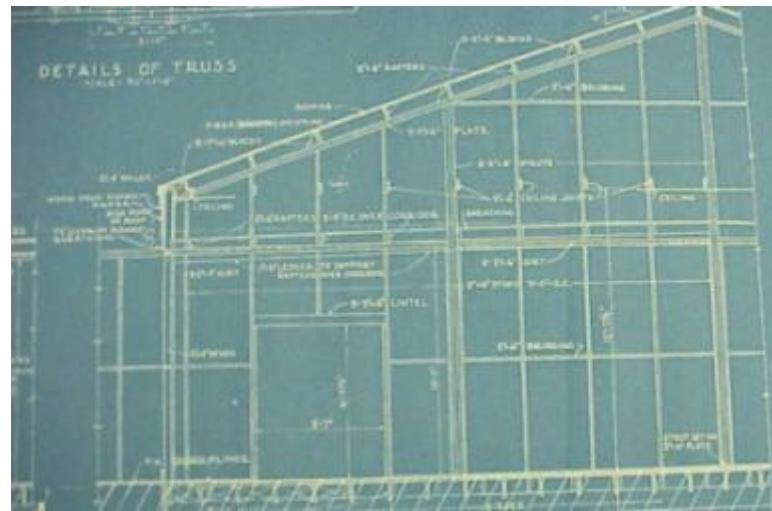


Figure 32 1942 Paint Booth Framing Details

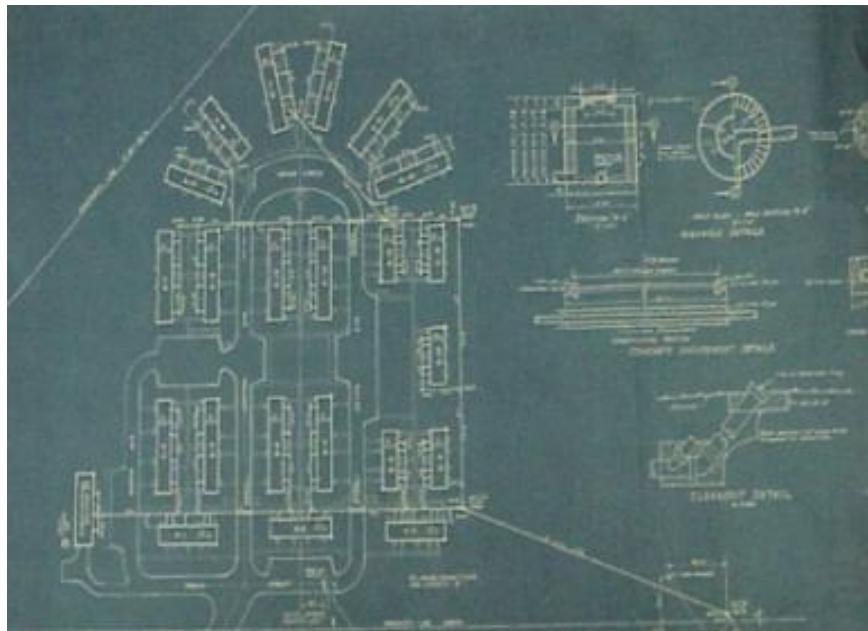


**Figure 33 1942 School Type SH-A-A**



**Figure 34 1942 Typical Building Elevation**

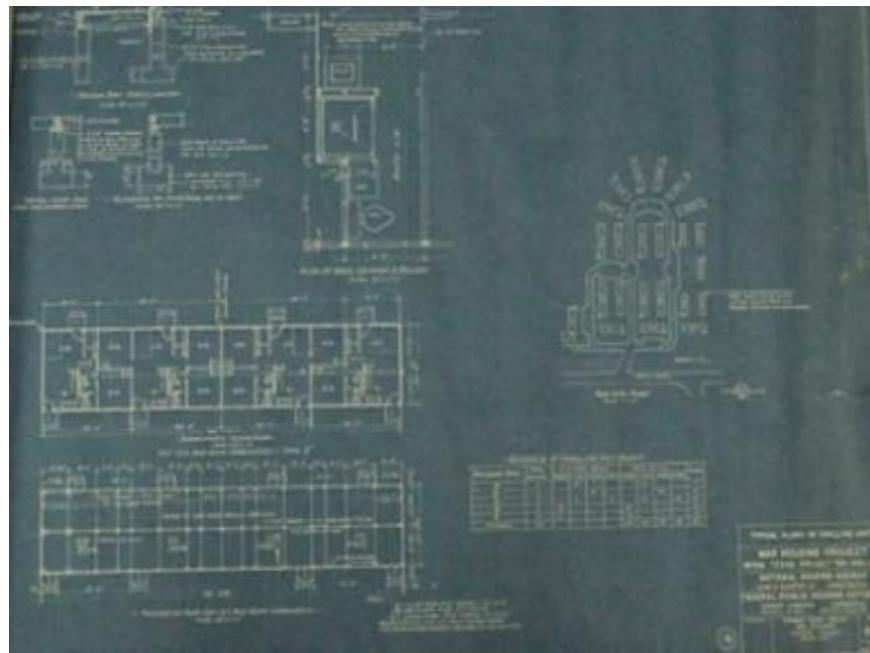
The drawings in Figures 35 through 38 are dated 1943. Of special note are Figures 36, 37, and 38, which are line drawings from the Wherry housing project. Figure 39 depicts a typical Wherry housing duplex in 2013.



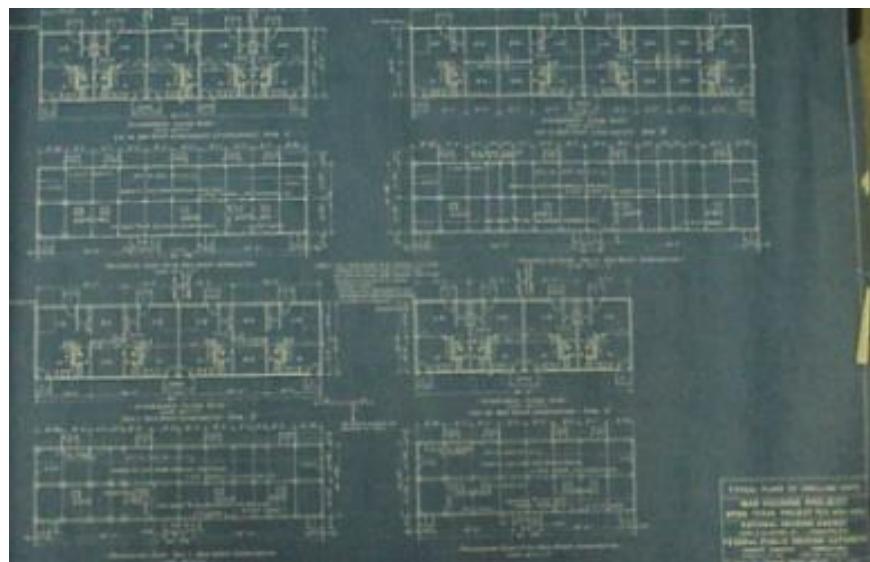
**Figure 35**      1943 South Part of Block 32 Site Plan



**Figure 36**      1943 Wherry Housing Elevations



**Figure 37 1943 Wherry Housing Plan Drawing A**



**Figure 38 1943 Wherry Housing Plan Drawing B**



**Figure 39      2013 Wherry Housing Duplex**

Figures 40 through 44 are photographs of some of the buildings shown in the blue line drawings. However, these photographs are from the 1950s, and in some cases, these buildings had already had some upgrades performed or been adapted for slightly different use.



**Figure 40      Enlisted Men's Barracks**



**Figure 41      1956 Inside of Commissary**



**Figure 42      1951 Commissary Construction**



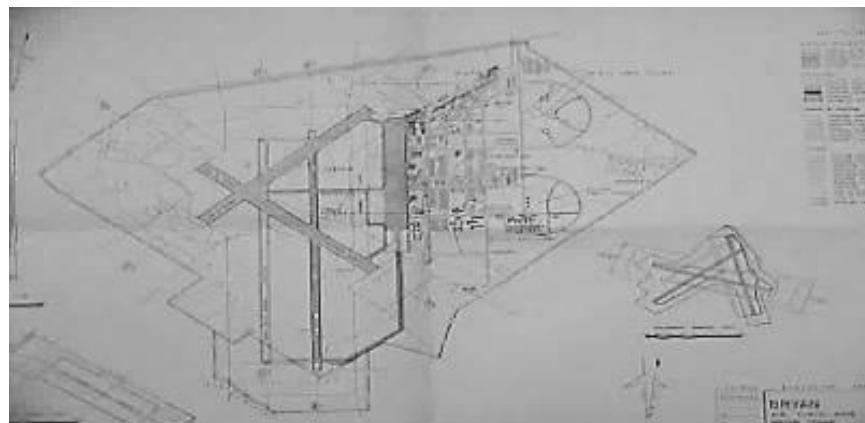
**Figure 43      1953 T-22 Base Theater**



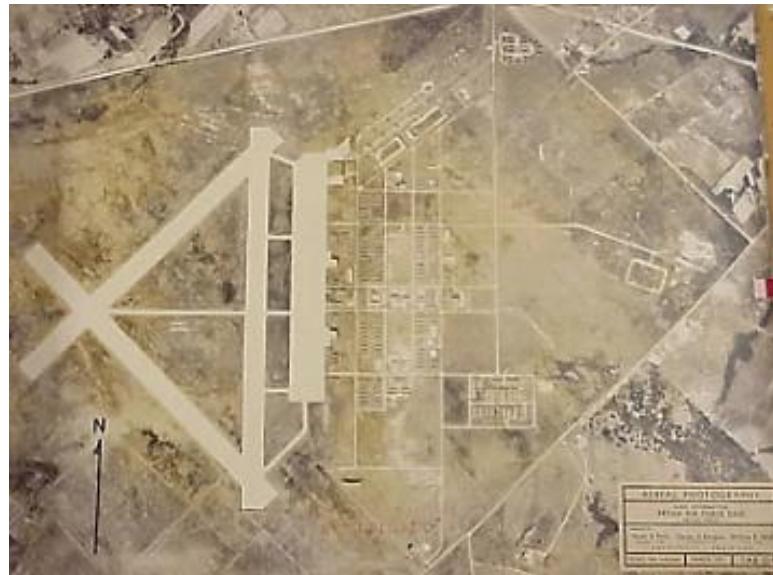
**Figure 44      1956 Base Theater T-11**

### **Bryan AAB in the 1950s**

Airfield pavements are critical to the operations of the airbase. In April and May of 1955 a series of aerial photos were taken to create benchmarks to locate the base accurately. The researcher scanned 112 of these photos, some of which are shown here (Figures 45-51). Additional blue line drawings were also discovered that show the construction details for the airfield pavements (Figures 52 and 53). Several of these will be presented later in this document. North is located at the top of the photographs. Fortunately, the backs of the photos contained benchmark data that directly corresponded to the markings on the front. This appears to have been done to enhance readability because the black ink used on the front of the photographs was sometimes obscured by the darker content of the photograph. Interestingly, the evaluation revealed that the drawings and construction details had not changed a great deal between the 1940s and 1950s.



**Figure 45      1951 Base Plan**



**Figure 46**      1951 Aerial Photo of Base



**Figure 47**      1955 Aerial SW Quadrant View



**Figure 48**      1955 Aerial SSW Quadrant Map



**Figure 49**      1955 Aerial NE Quadrant View

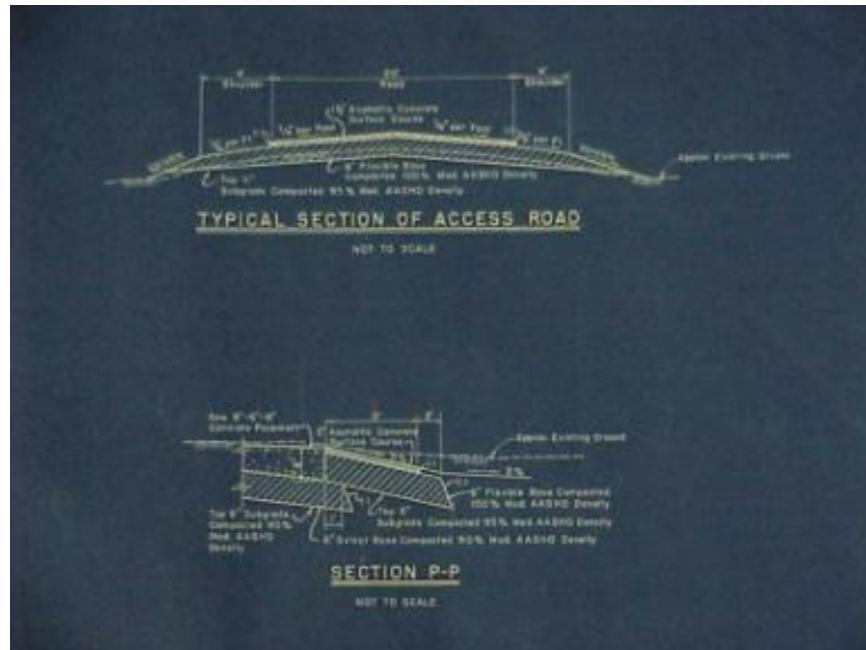


**Figure 50**      1955 Aerial North Center Photo

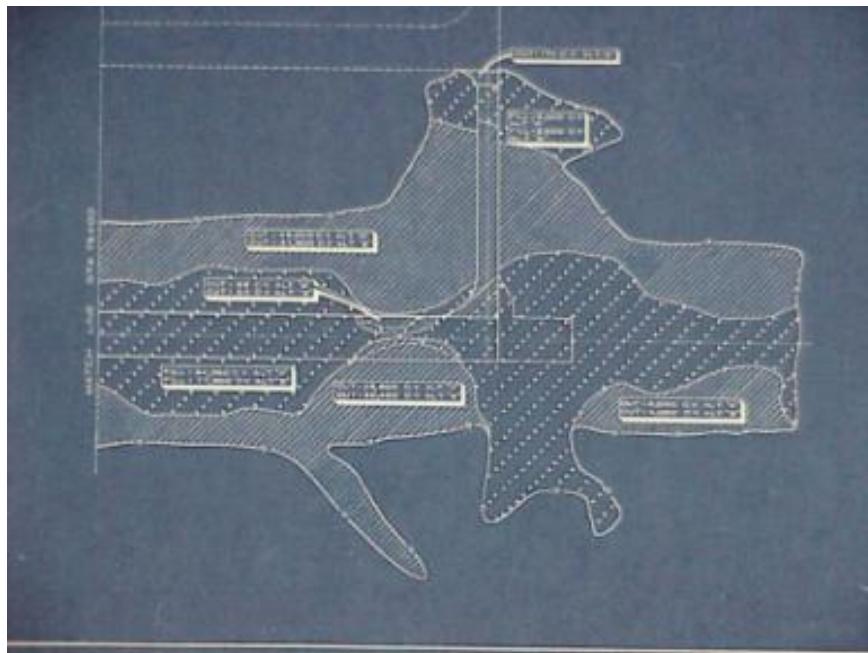


**Figure 51**      1955 South Center Aerial Photo

Additional blueprint contract drawings were found that depicted the airfield construction details. Several are shown in the next section. The quality of the prints was remarkable and they were likely left undisturbed in the flat files for many years. These drawings should be carefully preserved because they are rare original drawings. Blue line drawings that are more recent can be seen in Figures 52 and 53. Figure 54 is several years older. Figures 55 and 56 are blue line prints on linen paper that show the base configuration. Figures 57 through 61 are photographs of general-purpose buildings at Bryan AAB, as they existed in the mid-1950s. Figure 62 shows one of the remaining general-purpose buildings as it is in 2013.



**Figure 52      1954 Runway Resurfacing Drawing A**



**Figure 53      1954 Runway Resurfacing Drawing B**



**Figure 54      1952 Road Pavements**



**Figure 55      1955 Master Plan Drawing A**



**Figure 56      1955 Master Plan Drawing B**



**Figure 57**      **1956 T-180 Classroom Interior**



**Figure 58**      **Pilot Training Facilities**



**Figure 59 General Purpose Buildings (Classrooms)**



**Figure 60 T175 SP Training Building**



**Figure 61 1956 Headquarters for T-360 Training**



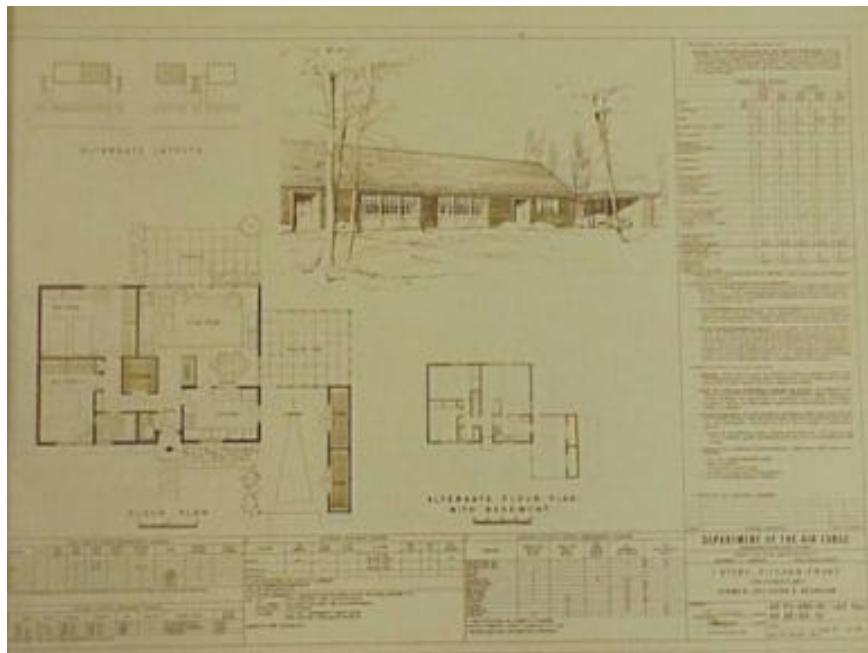
**Figure 62 2013 General Purpose Buildings**

Please note that the photographs' aspect ratio does not always align with their neighbor. This is the result of the photographic cropping necessary to accommodate this document and the fact that many of the original photos do not correspond to modern aspect ratio criteria utilized with a computer system.

Lockwood, Andrews, Newman, and Associates made some very interesting drawings for the military housing at Bryan AAB (Figures 63, 64, 66, 67, and 69 - 75). These drawings were generic multi use drawings with the quantity of units and floor plans being selected as appropriate to the specific base requirements at the time of construction. Several of these plans are labeled for use at other bases as well and these types of homes were built at many bases across the state and the country. Figures 65 and 68 are current building photos as of 2013.



**Figure 63      1953 Duplex**



**Figure 64      1953 Duplex Plan**



**Figure 65      2013 Duplex Wherry Housing**



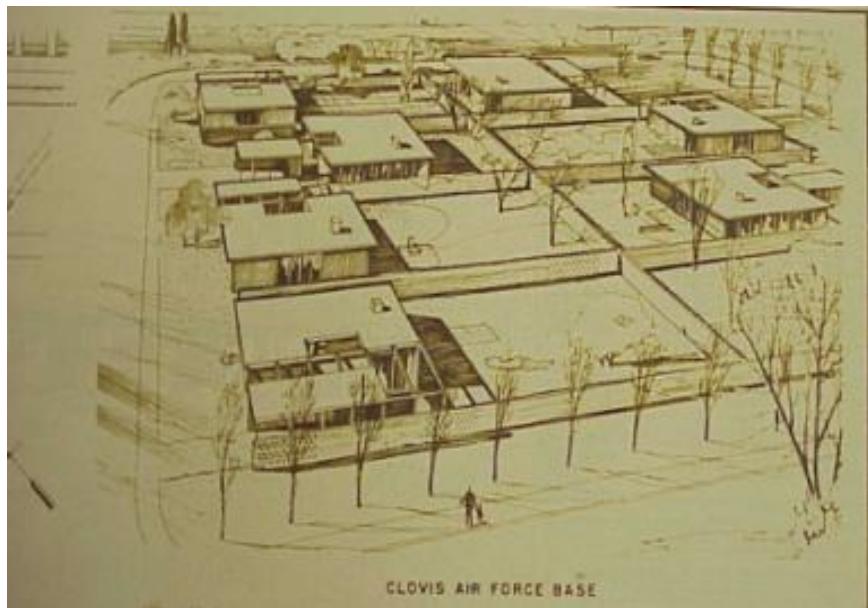
**Figure 66**      Single Family Home



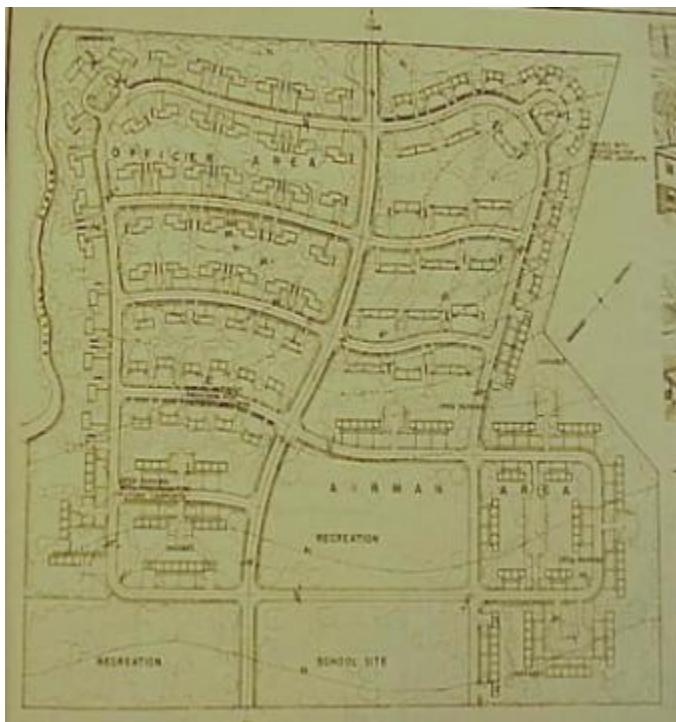
**Figure 67**      Neighborhood Aerial View



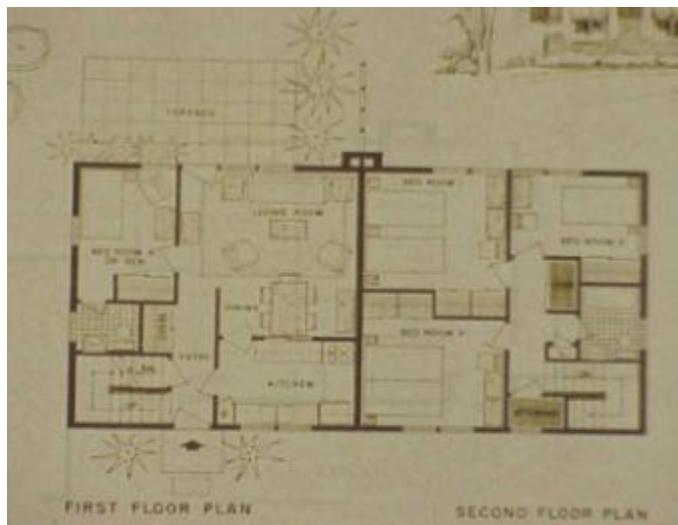
**Figure 68      2013 Single Family Dwelling**



**Figure 69      Similar Clovis AAB, NM Housing**



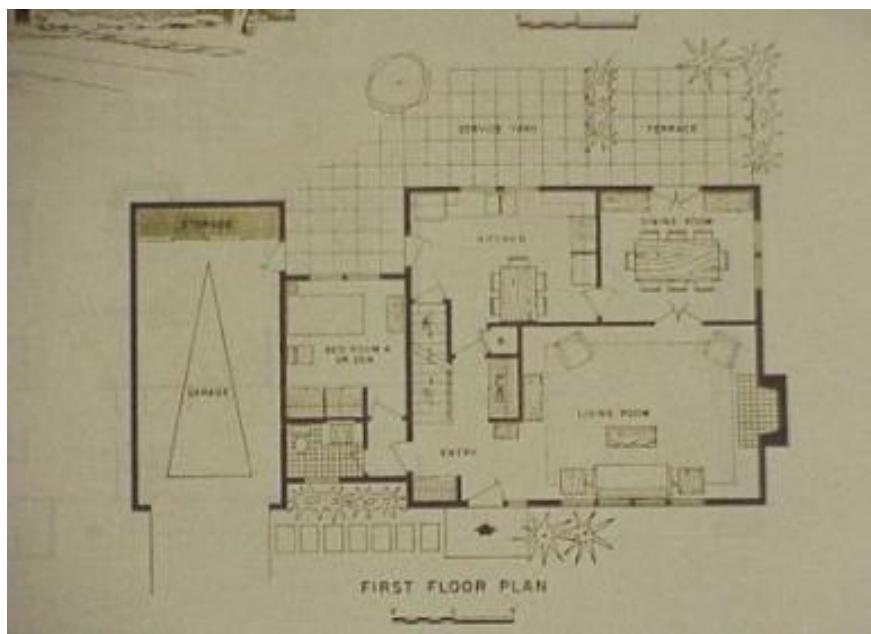
**Figure 70**      Housing Plan Bryan AAB



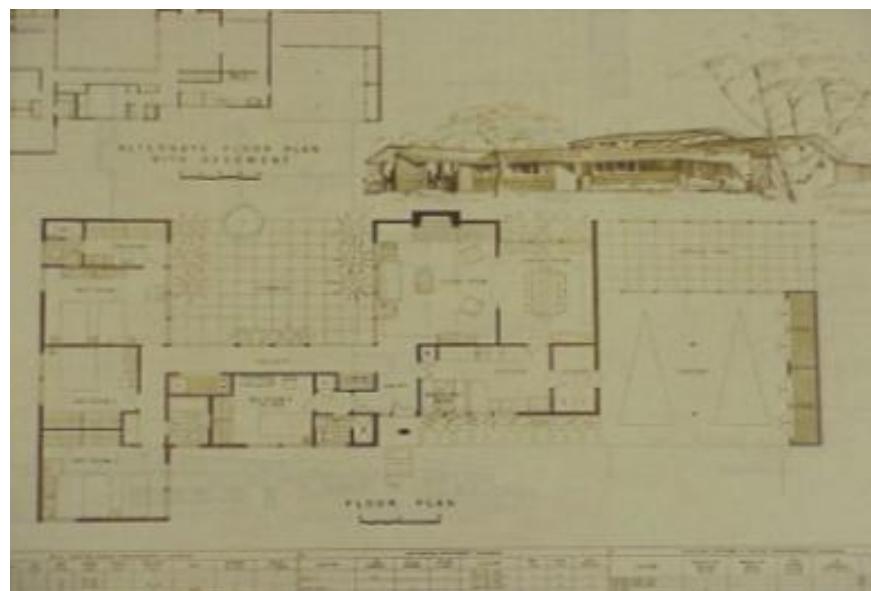
**Figure 71**      Duplex Plan



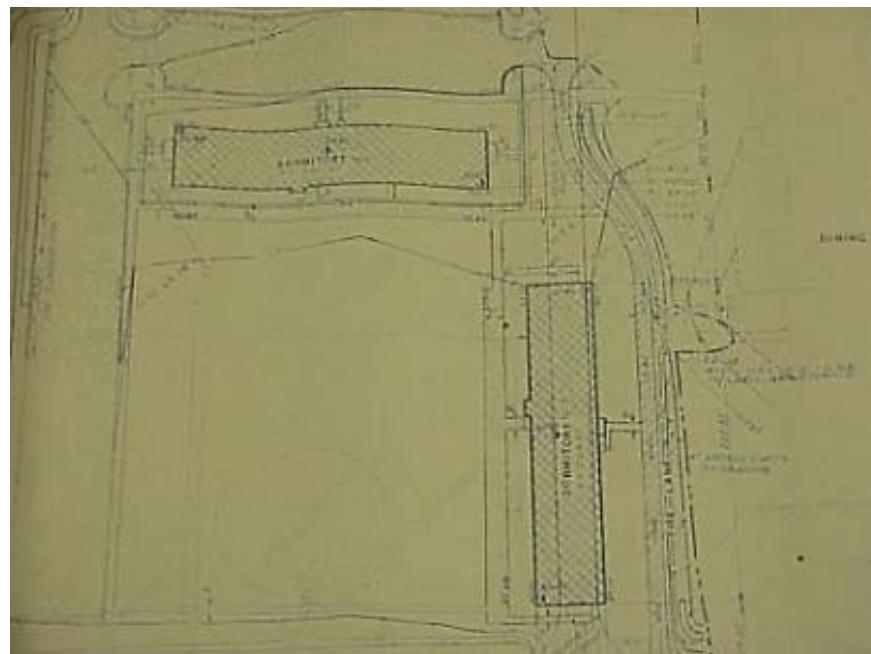
**Figure 72** Single Family Dwelling



**Figure 73** Officers Two Story Home



**Figure 74** Officers Dwelling



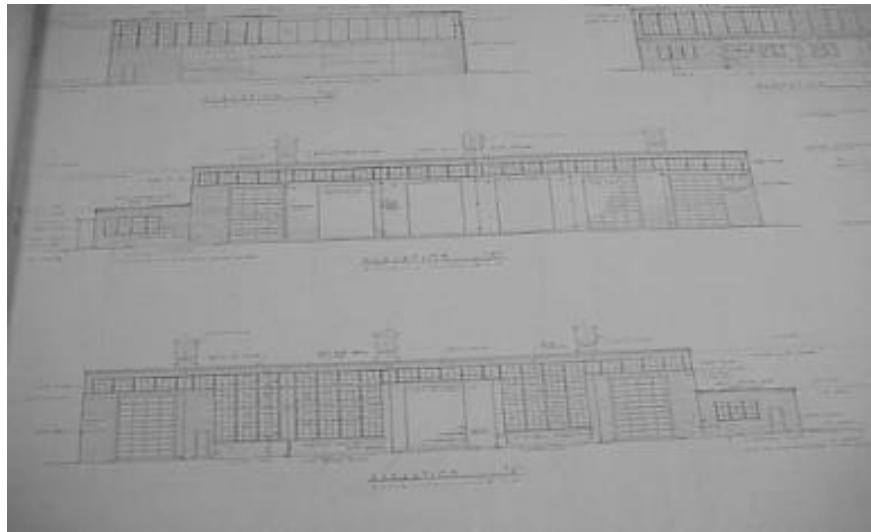
**Figure 75** 1956 African-American Dorms



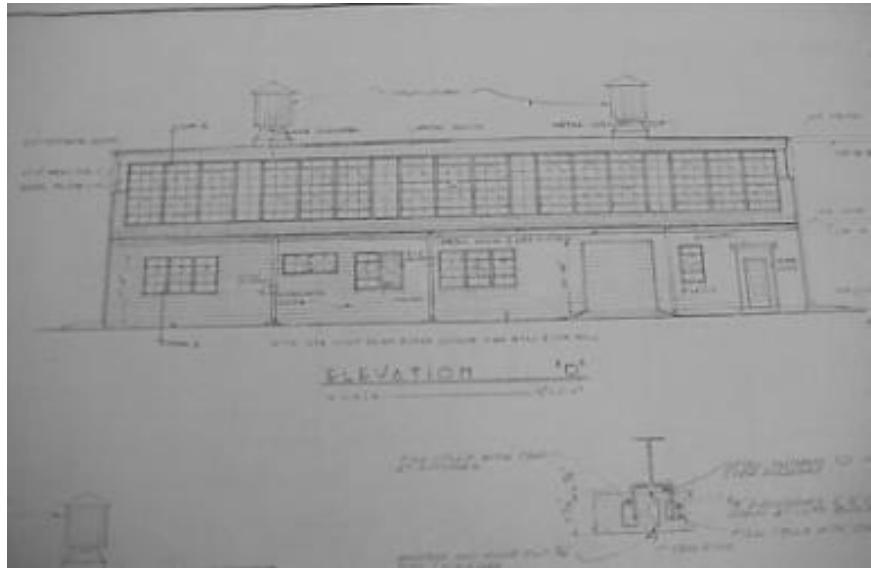
**Figure 76      African-American Barracks in 2013**

The two African-American barracks (Figures 75 and 76) suffered from years of neglect and were in danger of collapsing in 2012. The roofs on both buildings had caved in at the center due to long-term leakage. Professors Woodcock and Warden identified the historical significance of these buildings and successfully campaigned for their preservation to the TAMU facilities department. Although currently the buildings are unused, the roofs have been repaired and the exteriors patched. Without the hard work of Woodcock and Warden, these historic buildings would have been lost.

Figures 77-83 are drawings and photos of major hangers at Bryan AAB that were discovered and cataloged. There are four large hangers still standing at the East Campus of TAMU (Bryan AAB). Two have been sensitively reconfigured by TEC (Figure 80) and TTI (Figure 81) to meet their requirements. Unfortunately, another large hanger was demolished in 2010 because weathering had caused it to become so badly deteriorated that it was no longer safe.



**Figure 77     1954 Hangar Elevation Drawing A**



**Figure 78     1954 Hangar Elevation Drawing B**



**Figure 79      1956 T-46 Hangar**



**Figure 80      2013 Hanger Currently Used by the TEC**



**Figure 81      2013 Hanger Two Currently Used by TTI**



**Figure 82      2013 Hanger Number Three**



**Figure 83 2013 Hanger Number Four**

Figures 84 through 92 are copies of original photographs of Bryan AAB facilities taken in the 1950s. Figure 93 shows the current remaining squadron operations facility. Figure 94 shows the re-clad parachute shop in 2013. Bryan AAB was believed to be home to at least three squadrons at one point. This was verified by the discovery of three separate buildings listed on the inventory in the same year. In all likelihood, these buildings were the same design, barring minor interior changes made for specific unit needs. It was also customary for each unit to apply art to the walls reflecting the type of aircraft they were working with or the history of the unit utilizing the facility.



**Figure 84      1956 Ops Base T-61 Interior**



**Figure 85      1956 Squadron T-220 HQ Interior**



**Figure 86      1956 T-61 Base Ops**



**Figure 87      1956 Lab T-17**



Figure 88 1952 Psychology Building Construction



Figure 89 1956 INT Shop Interior



**Figure 90      1956 INT Shop Exterior**



**Figure 91      1956 Parachute Shop T-64 Interior**



**Figure 92      1956 Parachute Shop T-64 Exterior**



**Figure 93      Squadron Ops Building in 2013**



**Figure 94      Parachute Shop in 2013**

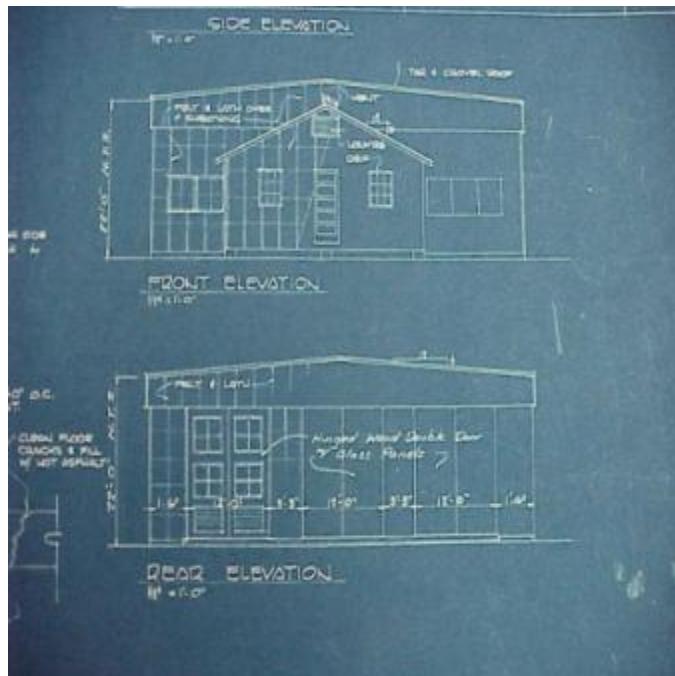
Figures 95 and 96 show the 1956 fire crash facility. Figure 97 is a rare blueprint of part of the building and shows some of the construction details used during the construction of the facility. Figure 98 is a reproduction of an original photograph of the fire crash building under construction. The crash fire station was considered an essential facility and was always built adjacent to the flight line as near to the center of the airfield as possible to minimize travel time to any potential aircraft disaster.



**Figure 95      1956 Fire Crash T-63 Exterior**



**Figure 96      1956 Fire Crash T-63 Interior**



**Figure 97      1951 Fire Crash Station Blueprint**

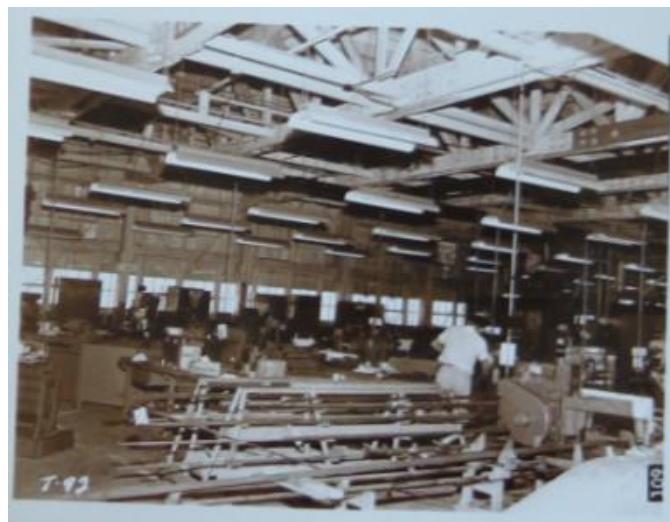


**Figure 98      1951 Crash Station Construction**

Figures 99 and 100 show the 1956 shops. Figures 101 and 102 show how they look in 2013. Figures 103 and 104 show sheds at Bryan AAB in 1954 and 2013. Sheds popped up as needed and torn down when they were no longer needed.



**Figure 99      1956 Shop, F.M.T-9**



**Figure 100      1956 Shop Interior**



**Figure 101 2013 General-Purpose Shop View A**



**Figure 102 2013 General-Purpose Shop View B**



**Figure 103 1954 Building T-507**



**Figure 104 2013 General Storage Building 8083**

Just as it is today, funding limitations during WWII determined which buildings could be built and who built them. At that time, the base commander could authorize small construction if the funds came from his operational budget. Consequently, there were many small buildings such as general usage storage and office spaces built on

bases. Building 8083 is typical of this type of construction (Figure 104). These smaller buildings had a tendency to proliferate as the needs of the base and the population grew. They were simple, readily funded, and usually not taken care of very well. They slowly disappeared from base inventory after falling into disrepair or being torn down to make way for larger facilities, such as the mess halls shown in Figures 105, 106, and 107.



**Figure 105    1956 Cadet Mess T-352 Interior**



**Figure 106    1956 Cadet Open Mess**



**Figure 107    1956 Cadet Dining Hall**



**Figure 108    1956 Storage T-893**



**Figure 109    1956 Storage Shed Structure**



**Figure 110    1956 Railroad and Warehouses**



**Figure 111 2013 General Warehouses**

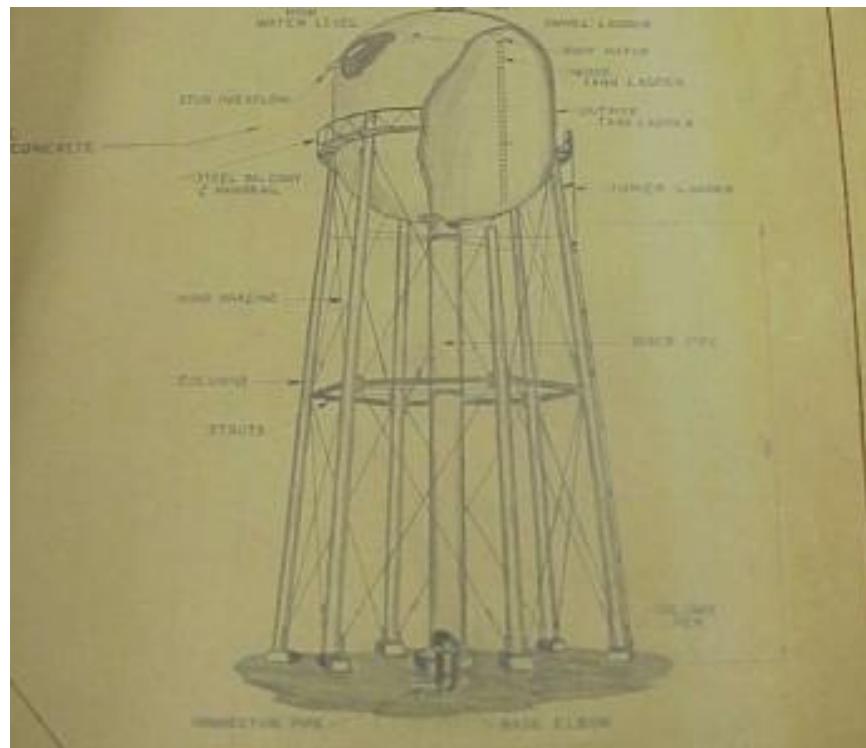


**Figure 112 2013 General Purpose Sheds and Shops**



**Figure 113 2013 Warehouses**

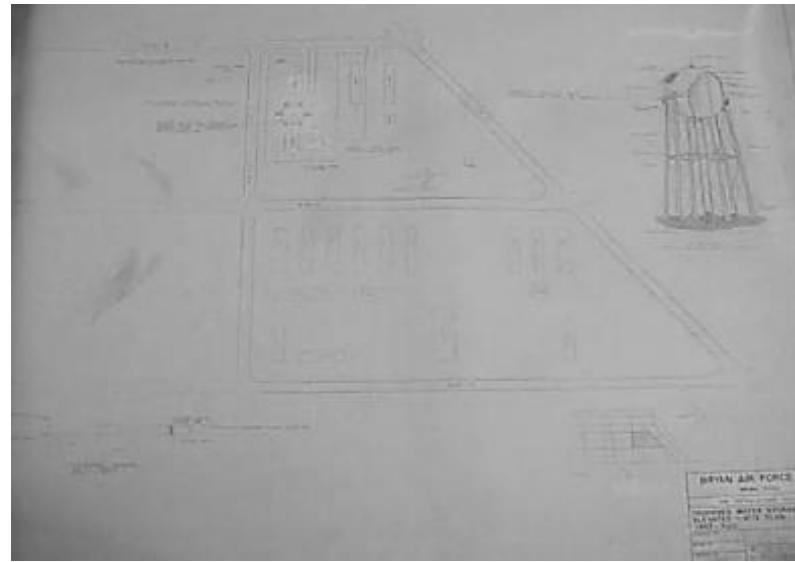
The general warehouses are still used today for storage (Figures 108 through 113). The MEP systems have been upgraded and general maintenance and repairs are made as needed. Some of the railroad tracks and the pavement still exist under the grass. Figures 114 through 117 are drawings and photographs of the water tower, which is still in use at the Riverside Campus.



**Figure 114 1954 Water Tower Elevation**



**Figure 115 2011 TAMU Water Tower**



**Figure 116 1954 Bryan AAB Water Main Plan**



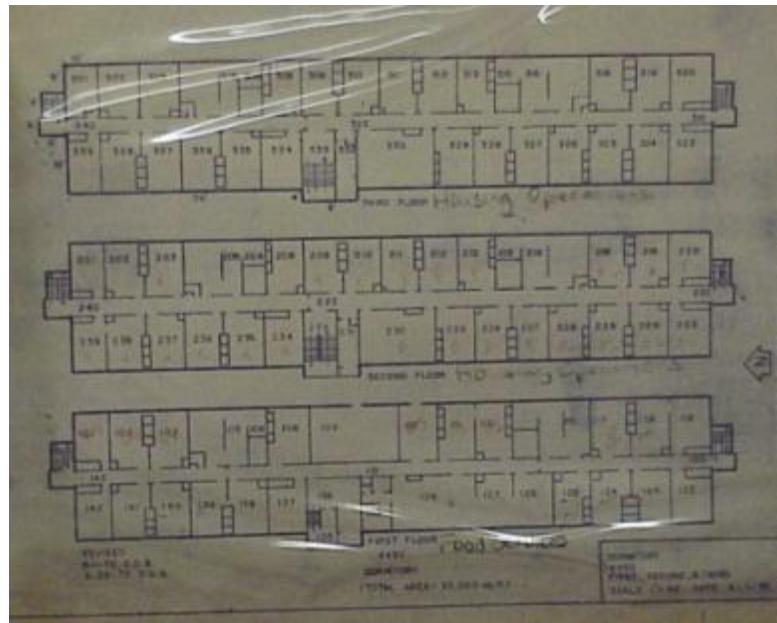
**Figure 117 2013 Water Tower and CE Yard**

#### ***Bryan AFB in the 1960s and Beyond***

In 1962, Bryan AFB transitioned to the Agricultural and Mechanical College of Texas (now Texas A&M University). The files from this period indicate the university continued using the numbering system for the buildings used by the U.S. Air Force in the late 1950s. This four digit numbering system starts with the block number, followed by the building number. This system is still used in the USAF today. All 77 pages of the TAMU 1969-1972 mini book of one-line floor plan drawings were located and photographed, but few drawings from the 1960s or later were found. Most of the drawings were moved to the main campus facilities office. The author worked in the facilities department as a work-study student in 1972 and found many of the 1960s and 1970s drawings in their files. Figures 118 through 121 are from the mini-book.



**Figure 118 1969-1970 Mini Book Base Site Plan**



<u>PARCIL 1</u>	<u>BUILDING AREA</u>	
	<u>260 ACRES</u>	
<u>PARCIL 2</u>	<u>TEXAS TRANS INST.</u>	
	<u>135 ACRES</u>	
<u>PARCIL 3</u>	<u>PLANT SCIENCE</u>	
	<u>92 ACRES</u>	
<u>PARCIL 4</u>	<u>ANIMAL SCIENCE</u>	
	<u>610 ACRES</u>	
<u>PARCIL 5</u>	<u>COLLEGE OF VET. MED.</u>	
	<u>789 ACRES</u>	
<u>PARCIL 6</u>	<u>CONST. EQUIP. TRNG.</u>	
	<u>105 ACRES</u>	
		<b>RA-2</b>

Figure 120 March 1968 Master Plan Color Key



Figure 121 March 1968 Riverside Master Plan

All of the brick dorms built in the 1960s are still on site, but have been adapted for use as office space. Significant changes were made to the configuration of the interior walls. However, the exterior of the building remains the same, minus the original signage. As seen in Figure 122, window unit air conditioners are still installed in the building, which indicates that the MEP equipment at the facility has not been upgraded to central air conditioning.

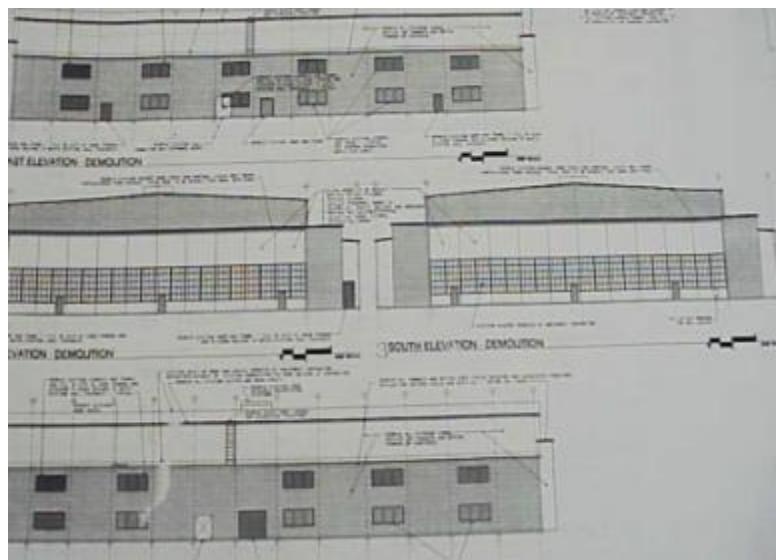


**Figure 122 2013 Dorms Converted to Office Space**

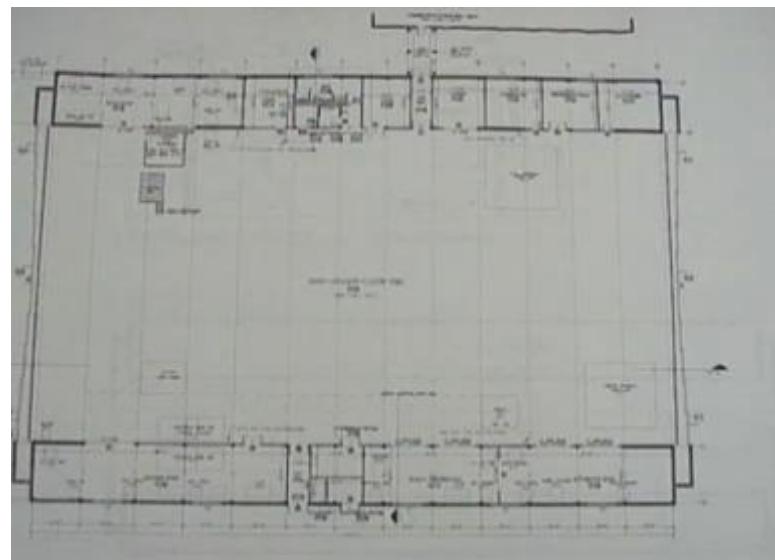
When the Texas Transportation Institute renovation of the hangar was planned, the original genotype architectural character of the building was carefully considered (Figures 123/126). The architects are to be complemented on the care they took with the renovation as it clearly shows respect for WWII history and the cityscape of the base. For example, they replicated the elevation of the original hangar doors even though they no longer serve this function.



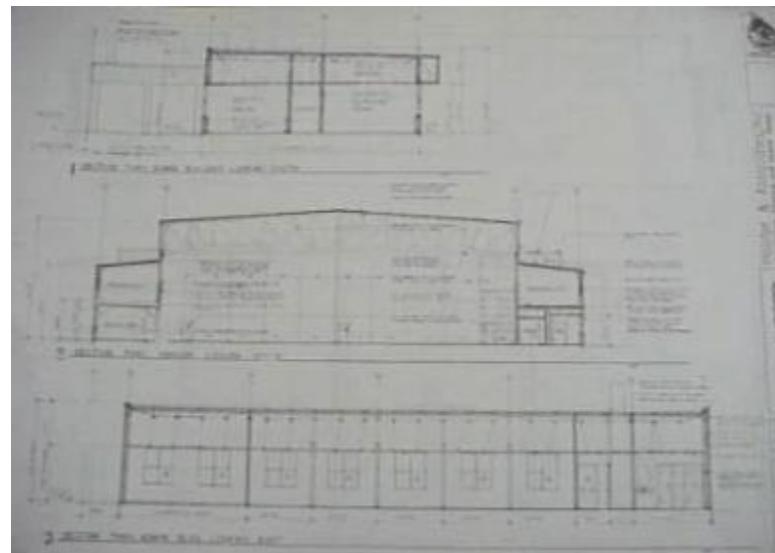
**Figure 123**    TTI Hanger in 2013



**Figure 124**    TTI Hangar 1996 Plan A



## **Figure 125 TTI Hangar Plan 1996 Plan B**



## **Figure 126 TTI Hangar Renovations 1996**

There are also several other structures located at the Riverside Campus that are worth considering for preservation. The air traffic control tower was slated for demolition in 2011. Once again, the timely intervention of Professor Woodcock halted the demolition. Although the exterior skin was removed and the cab interior demolished, the structure itself remains. Ironically, it is closer to the original tower construction now than it was before the demolition started (see Figure 127).



**Figure 127 2013 Air Traffic Control Tower**

Both the swimming pool and POV fuel station remain on site (Figures 128 and 129), although the pool has remained empty for years. The gas station was modified significantly for use as a storage building and the gasoline pumps were removed. It should be noted that both facilities were originally paid for by Moral Welfare Recreation (MWR) funds and no tax dollars were used for the construction or maintenance of these facilities. They were considered important for unit moral but not funded by Congress.



**Figure 128 Swimming Pool Area in 2013**



**Figure 129 POV Fuel Station in 2013**

The Civil Engineer Shop buildings (Figures 130-132) were utilized by the DOD to provide all the building maintenance and construction planning services for the base. These facilities are still used today for maintenance and storage functions. Although they need minor repairs, most are in good condition and are usable.



**Figure 130 2013 Civil Engineering Facilities**



**Figure 131 Civil Engineering Maintenance Yard**



**Figure 132 2013 Multipurpose Shop at CE Yard**

The original Bryan AAB headquarters building is also still on site (Figure 133).

It serves primarily as incidental offices and storage space for important projects.

Undoubtedly, it has changed significantly over the course of its existence. As the base population grew, additional space was needed for administrative personnel. Buildings were usually enlarged by building additional wings and or infill spaces in a C-, I-, or H-shaped floor plan. Military regulations permitted maintenance and operations funds to be utilized for limited construction as long as the value of the building was not increased by more than 50%. The original drawings for this building could not be located, but it is likely that it started with a linear floor plan and additional wings were added as needed.

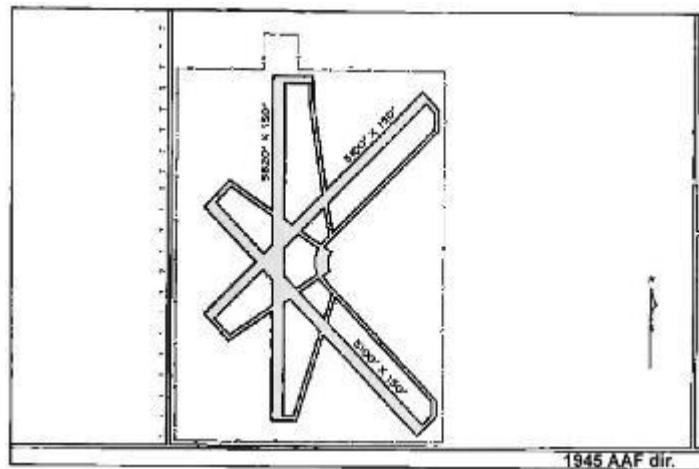


**Figure 133    Headquarters Building 8007 in 2013**

### **History of Carswell AFB**

Carswell Army Airbase had only one auxiliary airfield associated with it because it was located within easy flying distance of several existing primary airfields and facilities associated with other airfields. The Olney Auxiliary Airbase was the only

auxiliary airbase directly assigned to Carswell. Olney Field was built by the Civil Air Administration (CAA) under the National Airport Defense program. In 1943, it was assigned to the Navy. In 1944, it was re-assigned to Fort Worth AAF as an auxiliary landing base. Olney Field serves today as the municipal airfield for Olney, Texas. (Brooks 2011) Figure 134 shows a drawing of Olney Airfield as found in the 1944 AAF references used by new pilots to acquaint themselves with the configuration of the field. Figure 135 is a 2009 photo of the field. One can easily see that the original flight line and runways have been preserved, which is typically the case.

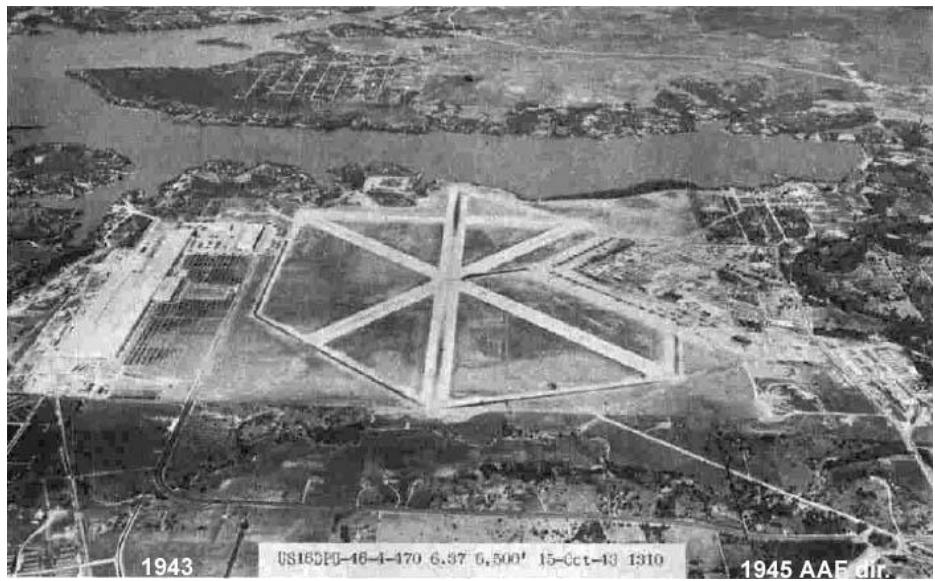


**Figure 134** Olney Auxiliary Airbase 1945 Drawing (Brooks 2011)



**Figure 135    Olney Field in 2009 (Brooks 2011)**

The configuration of the Fort Worth and Carswell AAF runways, ramps, and taxiways remained virtually the same until 1985. One can see from Figures 136 and 137 that much of the star configuration of the runways is still visible. However, changes in the aircraft utilized at the base, including increasingly powerful engines, a need for longer runways, and the reliance on prevailing winds for launch and recovery resulted in the cross-runways and perimeter taxiways becoming less and less useful. Consequently, they were either converted to ramp space for aircraft parking or taxiways to connect the active runways, or removed all together. (THP 2011) In the case of Carswell AAF, two runways were actually lengthened to accommodate the B-36, B-52 and KC-135 (heavy) aircraft stationed there just before the end of the 20th century. Figure 138 shows an aerial view of the airfield.



**Figure 136 1943 Fort Worth AAF (Brooks 2011)**



**Figure 137 1944 Fort Worth AAF Built Up Area (Brooks 2011)**

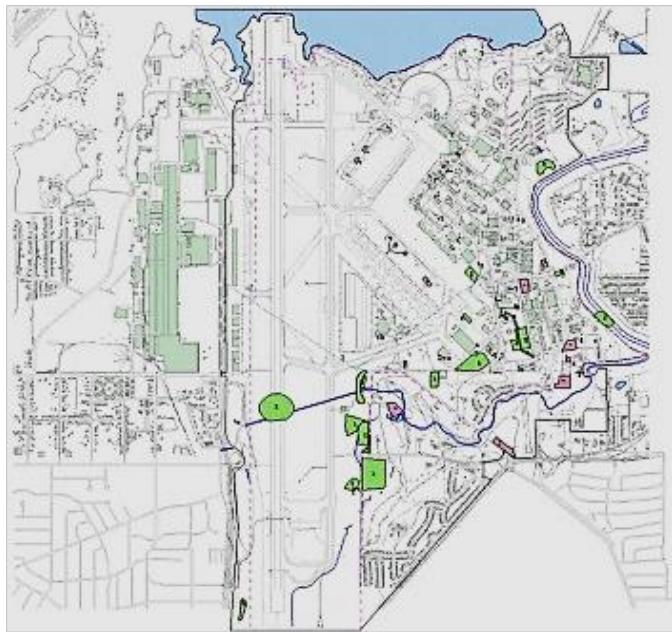
Carswell AFB is now Fort Worth NAS JRB Carswell. It has concrete runways running 7300x150(N/S), 5644x150(NE/SW), 4000x150(E/W), and 7000x150(NW/SE) and is 6.25 miles WNW of Fort Worth, Texas. Additional statistics are given in Figure 139. Figure 140 is a schematic of the base and Figure 141 is an aerial view.



**Figure 138 2011 Carswell JRB 2011 (Brooks 2011)**

<b>Type</b>	Air Force
<b>Coordinates</b>	32.7692° N, 97.4417° W
<b>Built</b>	1942
<b>In use</b>	1942 to Date

**Figure 139 Carswell Air Force Base Statistics (Wikipedia 2011b)**



**Figure 140** Schematic of Carswell AFB (Global Security 2011)



**Figure 141** Carswell AFB 1995 (Window on State Government 2014)

This base is the only one in this study that has been in continuous use as a military airbase. The author was stationed at this base for almost 15 years and served as the Chief of Engineer in the USAFR 810th Civil Engineering Flight. Carswell Air Force Base was also used as a Strategic Air Command base from 1942-1994. Most of the base is situated within Fort Worth city limits. Parts of the base are also within the corporate limits of Westworth and White Settlement. For most of its operational history, the base's mission was to train heavy strategic bombing groups. When the Cold War ended in 1991, the Base Realignment and Closure Commission (BRAC), on which the author served, recommended that Carswell AFB be closed by 1994. This decision was later changed so that most of the installation was eventually converted into a Joint Reserve Base under Navy command. At that time, the mission changed to training U.S. Reserve and National Guard units. In addition to the USAFR, U.S. Navy Reserve, Marine Corps Reserve, and Texas Air National Guard units eventually relocated to the base. The base was renamed the Naval Air Station Joint Reserve Base Fort Worth. Additional DOD units and other governmental organizations stationed at the base are considered tenant units. Figure 142 lists the major U.S. Army Air Forces and U.S. Air Force units assigned to Carswell from WWII to the present.

BASE	DATES	AIRCRAFT
404 <sup>th</sup> Base HQ and Airbase Squadron	August 18, 1942 to May 1, 1944	No Aircraft
2519 <sup>th</sup> Army Air Force Base Unit (Pilot School, Spec 4E)	May 1, 1944 to November 18, 1945	No Aircraft
233 <sup>rd</sup> Army Air Force Base Unit	November 18, 1945 to November 17, 1947	No Aircraft
7 <sup>th</sup> Bombardment Group	October 1, 1946 to 17 November 1947	B-29 Superfortress Aircraft
7 <sup>th</sup> Bombardment Wing	November 17, 1947 to October 1, 1993	B-29 Superfortress, B-36 Peacemaker, B-52 Stratofortress, and KC-135 Stratotankers
11 <sup>th</sup> Bombardment Wing	December 1, 1948 to December 31, 1957	B-36 Peacemaker and KC-97 Stratotankers
43 <sup>rd</sup> Bombardment Wing	March 15, 1960 to September 1, 1964	B-58 Hustler bombers and F-102 Delta Dagger fighters
19 <sup>th</sup> Air Division	February 1, 1951 to September 30, 1988	B-52 Stratofortress and KC-135 Stratotankers
AFRES/AFRC 301 <sup>st</sup> Tactical Fighter Wing/301 <sup>st</sup> Fighter Wing	July 1, 1972 to present	F-105 Thunderchief, F-4 Phantom II, and F-16 Fighting Falcon aircraft

**Figure 142    Units Assigned to Carswell AFB (Wikipedia 2011b)**

In 1941, the site was selected as the site for a Consolidated Vultee factory for the production of B-24 Liberator bombers. Not long after, an additional contract was awarded for the construction of a landing field, named Tarrant Field Airdrome, to support the factory operations. After the Japanese attack on Pearl Harbor, construction of an army airbase on the east of Tarrant Field was authorized. The Army Air Forces took command of Tarrant Field in July 1942 and assigned it to the Army Air Training Command. The base began with a pilot transition school for the B-26 Marauder bombers before becoming a B-24 Bomber transition school. Over 4,000 students were trained in

B-24s at the base. In 1945, the mission was changed again to B-29 aircraft training. (Shaw 2004) Figure 143 shows the 1945 layout of Carswell Field. Figure 144 shows a B-29 bomber, Figure 145 is of a B-36, and Figure 146 shows a Mark 17 30 KT atomic bomb casing. All these weapon systems were stationed at Carswell AFB. To indicate a sense of scale of the bomb, the brick sign in front of it is five feet tall.



**Figure 143 1945 Photo of Fort Worth AAF (Wikipedia 2011g)**



**Figure 144 B-29 Bomber Superfortress (Pima Air and Space Museum 2013)**



**Figure 145 B-36 Peacekeeper Bomber (FAS 2012)**



**Figure 146 Mark 17 30 KT Atomic Bomb**

The Strategic Air Command was formed in March 1946, and on October 1 of that same year, the seventh Bombardment Group (very heavy) was assigned to Fort Worth Army Airfield. Upon its activation, the 7th became part of the 15th Air Force. Boeing B-29 Superfortress planes were then deployed to the base. On November 1, 1946, the 8th Air Force also moved its headquarters to Fort Worth AAF, bringing B-29s with them.

The 7th Bomb Wing flew a wide variety of aircraft under several different designations at the base until its deactivation in 1993. (USAF 2011)

In June 1948, the Consolidated B-36 Peacekeeper was delivered to the unit and assigned to the 492nd Bomb Squadron. With the arrival of this aircraft, the wing was redesignated as the 7th Bombardment Wing (heavy), and served as an atomic bomb platform. The 7th Bomb Wing of the 11th Bomb Group was activated on December 1, 1948; it included the 26th, 42nd, and 98th Bomb Squadrons. The 11th Bomb Group was equipped with B-36As for training purposes. In February 1949, a B-50 Superfortress developed on the B-29 platform made the first nonstop flight around the world from the base. That same year the B-29 flew 23,108 miles (37,189 km) and remained aloft for 94 hours and one minute, making aeronautical history. The 11th Bombardment Wing (heavy) was established at the base on February 16, 1949. The 19th Air Division Bombardment was designated as the 19th Air Division on the same day. In so doing, they assumed responsibility over the 7th and 11th Bomb Wings at Carswell AFB. (USAF 2011) In March 1950, the Strategic Air Command reorganized its numbered air forces, placing the 7th Bomb Wing under the control of the 8th Air Force. In February 1951, the 19th Air Division Bombardment was renamed the 19th Air Division and assumed responsibility for the 7th and 11th Bomb Wings at Carswell AFB.

In 1954, Carswell AFB was used as a filming location for the *Strategic Air Command* movie starring James Stewart. On June 13, 1955, Carswell AFB was reassigned to the 2nd Air Force. In December 1957, the 98th Bomb Squadron was detached from the wing and assigned to the newly activated 4123rd Strategic Wing at

Carswell AFB. This was the first Boeing B-52 Stratofortress unit assigned to Carswell AFB. In January 1958, the wing began transferring its B-36 bombers to various other SAC wings. By late January of the same year, the wing had transferred all B-52 equipment to the 4123rd Strategic Wing. The 7th Bomb Wing officially became a B-52 organization on February 1, 1958. Once the Boeing B-52 Stratofortress wings were in place, the SAC activated the 7th Air Refueling Squadron at Carswell AFB on April 1, 1958. The refueling squadron was equipped with Boeing KC-135 Stratotankers the following year (Figures 147 and 148). (Shaw 2004)



**Figure 147    KC-135 Stratotanker (Ghost Town Explorers 2013)**



**Figure 148    KC-135 Tanker in T-Hanger (Fielder 2013)**

Figures 149 and 150 depict two aircraft, a tanker, and a transport, which were stationed frequently at Carswell AFB. The C -141 shown in Figure 149 was never actually assigned to Carswell AFB, but sometimes stopped there while in transit to other destinations. However, the C-130 has been assigned to the base on more than one occasion and is still assigned there as of 2014. Although the C-130 aircraft is no longer manufactured, it continues to be upgraded and used by all branches of the U.S. military at home and throughout much of the world. The KC-135 is being phased out of the USAF over the next few years and is being replaced by the KC-10, which carries a significantly larger fuel and cargo load and has greatly improved fuel consumption. As of 2014, both these aircraft continue to stop over at Carswell AFB, but none is permanently stationed at this airbase.



**Figure 149 C-141 at T Hanger (Aron 2011, 5-11)**



**Figure 150 B-52-40 on Apron (Wikipedia 2013a)**

In January 1960, the first Convair B-58 Hustler Wing was created. It was designated the 43rd Bombardment Wing. On March 1, the 3958th Operational, Test, and Evaluation Unit transferred to the 43rd Bomber Wing. On August 1, the USAF took over responsibility for testing the B-58 operations. The 43rd BW took deliveries of the aircraft beginning in December 1960. The 43rd BW was declared operationally ready in August 1962, setting its first alert for September. The 43rd operated a school to evaluate the new supersonic jet bomber. The SAC crews trained with the F-102 Delta Dagger fighter because its flight characteristics were similar to the B-58's unique flying delta wing. The 43rd received training versions of the B-58 Hustler bomber (Figure 151) and the YRB-58 reconnaissance version soon after. The wing continued B-58 evaluations from July 1961 to June 1962 then served as one of two active-duty SAC B-58 wings that carried out strategic bombardment missions until the end of 1969.



**Figure 151 B-58 Hustler (Shorpy Inc. 2003)**

On April 13, 1965, the 7th Bomber Wing deployed its forces to Anderson Air Force Base, Guam, to support SAC combat operations in Southeast Asia targeting the Ho Chi Min Trail and locations in Laos. The wing flew more than 1,300 missions over Vietnam before returning to Carswell AFB in December 1965. Rotational deployments to Guam and the U-Tapao Royal Thai Navy Airfield in Thailand continued until 1975. The USAFR 916th Troop Carrier Group also flew Douglas C-124 Globemaster II aircraft out of Carswell during this time (Figure 152) after being activated April 1, 1963. The group supported military airlifts to South Vietnam beginning in 1965 and to United States forces in the 1965 Dominican Republic Crisis.



**Figure 152 Globemaster Cargo Transport (Wikipedia 2013b)**

In 1972, the 301st Fighter Wing began operations at Carswell AFB as a U.S. Air Force Reserve Command unit, training for tactical air missions. It was assigned to the Air Combat Command (ACC) that same year. The 301st replaced the Air Force Reserve's 916th Military Airlift Group (916 MAG) after it was deactivated. The 301st's 457th Tactical Fighter Squadron flew F-105 Thunderchief fighter aircraft from 1972 to 1982. In 1981, it changed to the F-4 Phantom II fighter, then to the F-16 Fighting Falcon fighter in 1990. The wing deployed personnel to southwest Asia during Operation Desert Storm, January-March 1991, and Operation Deny Southern Flight in Iraq, as well as supporting Operation Deny Flight in the Balkans in the mid-1990s. While stationed at Carswell AFB, the author was part of the Deny Southern Flight, Deny Northern Flight, Operation Noble Eagle, and Enduring Freedom missions in Iraq as well as the Balkans missions.

In the 1980s, the base received modified B-52H aircraft. In 1983, B-52 crews began training with the SRAM (Short Range Attack Missile), and in 1985 with the ALCM (Air Launched Cruise Missile). The wing also flew atmospheric sampling missions during 1986 and 1987 after the Chernobyl nuclear reactor accident. By 1984, Carswell AFB was the largest unit in the SAC. The west side of the airfield housed Air Force Plant #4, a 602-acre industrial complex, which was occupied by Lockheed-Martin. This plant built most of the Air Force's Convair B-36, B-58 Hustler, F-111 Aardvark, EF-111 Raven, and F-16 Fighting Falcon fleet. An F-16 Fighting Falcon is depicted in Figure 153. In the 1970s and 1980s, the F-15 Eagle, an air superiority fighter, and the C-130 Hercules, designed for short take-offs from unimproved runways (dirt and gravel), were stationed at Carswell AFB (Figures 154 and 155). As of July 2014, these aircraft are part of the active duty reserves and guard configurations.



**Figure 153 F-16 Fighting Falcon (F-16 Net 2013)**



**Figure 154 F-15 Eagle (Defense Industry Daily 2013)**



**Figure 155 Lockheed C-130 Hercules (Cook 2008)**

The 7th Bomber Wing participated in Operation Desert Storm in 1991. However, in September of 1991, President George H. W. Bush ordered a stand down of all nuclear alerts due to the end of the Cold War. The B-52s once stationed at the base were transferred to Barksdale AFB in Louisiana and to Minot AFB in North Dakota. They were held in reserve as the nuclear alert mission stood down. Once this task was accomplished, the base converted to other uses, including the deployment of the F-15

Eagle fighters shown in Figure 154. The 301st Fighter Wing was created at the base with the arrival of these aircraft. This fighter is used by both the air force and the marines in the reserves and Texas state guard. However, it is not used by the army or the navy because it was considered too light for sea and land-based missions. In addition, it serves as an air superiority fighter, flown by NATO and other nations, because of its exceptional air-to-air mobility.

Carswell AFB was selected for closure under the 1990 Base Realignment and Closure action (BRAC). As part of BRAC 91, the decision was made to relocate the 7th Bomb Wing to South Texas. The Strategic Air Command was decommissioned in June 1992 as part of the complete reorganization of the U.S. Air Force. On September 30, 1993, Carswell Air Force Base ceased USAF active duty operations. It was transferred to the Air Force Base Conversion Agency (AFBCA), which was charged with distribution of property for reuse. (USAF 2011) It also oversaw the sale of DOD buildings and land following the base closure.

The USAF Reserve 301st Fighter wing began operations on October 1, 1993, thus establishing Carswell Air Reserve Station. In addition, the 10th Air Force Reserve's Headquarters (10AF) were relocated to Carswell in 1993. Congress, authorized by the BRAC, ordered the creation of the nation's first joint reserve base and on September 30, 1994, the USAF transferred operational control of Carswell AFB to the U.S. Navy. (USAF 2011) As of 2014, the aircraft in shown in Figures 154 and 155 are still deployed at the base under the aegis of the USN, ANG, and USAFR.

The navy assumed control of the base on October 1, 1994. At this point the base was renamed the Naval Air Station Fort Worth Joint Reserve Base, Carswell Field (NAS Fort Worth JRB). At the time, the west side of the base continued to serve as Air Force Plant #4 and employed 17,000 personnel under Lockheed-Martin contracts. The eastern portion of the base was occupied by several groups, including: 1) the Texas State Air National Guard's 136th Airlift Wing, 2) the Air Force Reserve Command 10th Air Force, 3) the 301st Fighter Wing, the 610th Security Forces Squadron, 4) the Fleet Logistics Support Wing, 5) Fleet Logistics Support Squadron 59, 6) Marine Aircraft Group 41, 7) Marine Aviation Logistics Squadron 41, 8) Marine Fighter Attack Squadron 112, and 9) the Marine Aerial Refuel Transport Squadron 234. The 14th Marines' Headquarters Battery is also located at NAS Fort Worth JRB.

The Naval Air Station Joint Reserve Base Fort Worth has been in continual operation as a military airbase from its inception. Currently, it is a multi-agency base. There are several Navy operational units, including aviation squadrons, intelligence commands, and Seabees located on the base. The 10th Air Force headquarters and KC-130s are based there, as are the 301st Fighter Wing F-16 planes. The 136th Airlift Wing of the Texas Air National Guard's C-130s is also based there, as well as several Marine F/A-18 aviation and ground units. The base's runway is also used by Lockheed-Martin as part of its activities because its aircraft are built adjacent to the base. (Department of the Air Force 2011) The aircraft assigned to the base have remained much the same since 2011. USAFR search and recovery helicopters were added in 2012.

Throughout Carswell's history, several mission changes occurred that required significant changes in the types of buildings located on the base, as well as the reconfiguration of existing buildings. Yet a dozen WWII buildings remain. Most have been significantly modified, but several warehouses, office buildings, training buildings, aircraft shops, and hangers still serve the same basic functions for which they were originally designed. However, because of these many changes, Carswell AFB no longer looks as it did in 1945 (see Figure 156).



**Figure 156 1945 Carswell AFB (Hankins 2009, 11)**

Figure 157 is a photo of the Lockheed aircraft manufacturing plant and adjacent parking apron and parallel runways from 1947. B-36 aircraft can be seen at the center bottom portion of the photograph. One can see from Figure 157 that additional cross taxiways and parallel landing strips had already been added at this time.



**Figure 157    1947 Flight Line (Hankins 2009, 11)**

The aircraft factory was complete and operational by 1949, shown in Figure 158. It can be seen on the left side of the photograph; to the right is the aircraft manufacturing plant and at the bottom is Lake Worth. The Lockheed aircraft manufacturing plant is almost half the length of the 6000-foot long primary landing strip. In the center left of the photo is the active fight line, which is lined with a row of heavy B-36 bombers

parked on the apron. The author's father flew out of this base in March of 1950. He was the tail gunner in a B-36 that crashed into the lake following a landing gear malfunction. Eight of the plane's 11 crewmembers perished.



**Figure 158 Aircraft Factory in 1949 (Hankins 2009, 148)**

The photo in Figure 159, taken in September 1952, shows 7th and 11th Air Force bombers along the flight line, right after a tornado crossed nearby. Support equipment is scattered across the apron. To get a sense of scale, look at the tail of the bomber in the center. The black smudge directly behind it is a full size pickup truck. The aircraft in Figure 159 are B-36 Peacemakers. (More photos of the tornado damage may be found at <http://www.cowtown.net/proweb/tornado/tornado.htm>.) Figure 160 shows a B-52 heavy bomber, which ultimately replaced the B-36 and B-58 aircraft as the mainstay of the Strategic Air Command.



**Figure 159** 1952 Flight Line with B-36 Bombers (Hankins 2009, 151)



**Figure 160** 1958 Flight Line (Hankins 2009, 108)

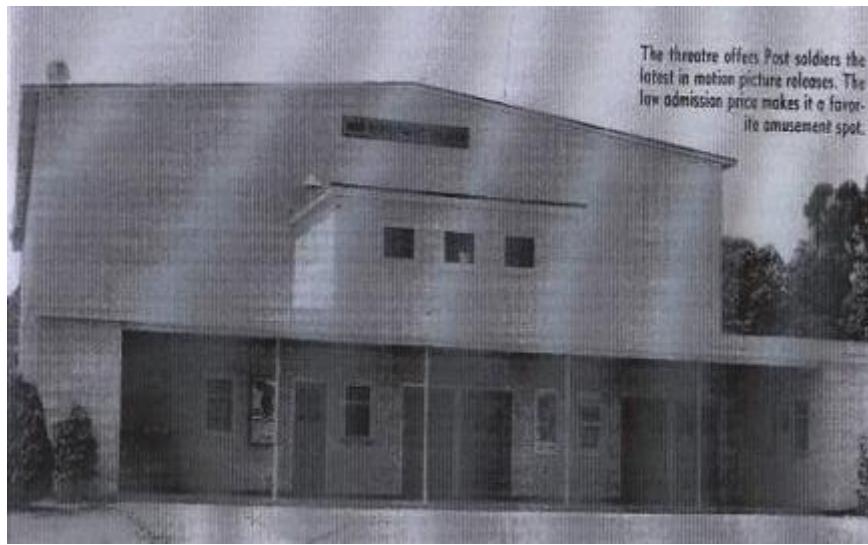
The year 1958 was a time of transition at Carswell. At the back of the line in Figure 160 is a KC-135 fuel tanker, with a B-52 Bomber in front of it. A B-58 medium bomber is first in line. There are three F-101 Voodoo fighters at the top right of the picture. The transition from one aircraft platform to another necessitated a multitude of interior changes to buildings including the construction of several larger facilities as well as reconfiguration of ramps and runways.

<b>Date Built</b>	<b>Facility #</b>	<b>Facility Name</b>	<b>Builders</b>
1942	1602	Age Shop	USAAF
1942	1838	Chapel Center	USAAF
1942	1428	Fire Department Training	USAAF
1942	1413	Hazard Storage	USAAF
1942	1515	Navy Marine Corps Relief	USAAF
1942	1515	Navy Marine Corps Relief	USAAF
1942	1619	Security Forces Admin	USAAF
1942	789	Senior Enlisted Training	USAAF
1942	1229	Servmart Storage	USAAF
1943	1615	Aerial Port	USAAF
1945	1630	Squadron Operations	USAF
1942	1815	Base Theater	USAAF
1942	789	NCO Club	USAF
1957	2570	Officers Club	USAF
1960	Many	Wherry Housing	USAF

**Figure 161 2013 Carswell WWI Buildings**

Assisted by the current base civil engineering staff, the author located a list of buildings built during WWII and in the 1950s that remain on the base. Unfortunately, the remaining buildings have been upgraded significantly over the years and none of the original floor plans and elevations are the same as when they were built. Figure 161 is the list of the WWII buildings still located at Carswell AFB.

The original base theater was built with wood framing. It had asbestos shingle siding, gypsum rock walls, minimal HVAC, minimum insulation, austere finishes, and a sloped concrete floor. It was refurbished in 1957 and again in 1980. No drawings remain of the original building. However, the floor plan follows the standard floor plan designs used during WWII. Figures 162 through 164 show the theater as it looked in 1942, 1957, and in 2013. It can be seen from the photographs that the base theater/assembly hall has changed little since the 1960s. The DOD upgrades mechanical systems when the equipment wears out, and audio and projection systems are updated as needed. The theater's exterior was replaced with modular brick in the 1960s and the roof has been changed a number of times. However, the building still has the original WWII floor plan and designed genotype uses. The author was stationed at Carswell from 1992 to 2004 and had the opportunity to use the building frequently.



**Figure 162 1942 Base Theater (Hankins 2009, 42)**



**Figure 163 1957 Base Theater (Hankins 2009, 116)**



**Figure 164 2013 Base Theater Building 1845**

When the Base Realignment and Closure Commission convened, it mandated that the base be transitioned between several new civilian owners, the Navy, Marines, Texas Army Guard, Texas Air National Guard, Navy Reserves, Coast Guard Reserves, and the Air Force Reserves. As a result, the base civil engineers office lost control of the building drawings. The civil engineering shop's drawings were distributed among the different branches of the services. Unfortunately, this means few of the WWII drawings have survived. Each branch gathered their particular buildings' plans and moved them to locations under their control. The author was not able to locate any drawings that were disbursed to the other agencies.

The 1943 base headquarters building no longer exists (Figure 165). This building had a typical wooden frame, wood sash windows, asphalt shingle roof, and raised floor on two concrete blocks and did not weather the changes of missions. As the base transitioned from airframe to airframe and missions shifted, the size and space requirements of the headquarters building varied significantly. Figure 166 shows the

base operations facility in 1948, with some changes to the front of the building already evident. The current headquarters building retains the shape of the center portion of the 1943 headquarters building and serves similar management functions today. The exterior was modified so maintenance costs could be reduced. The original wood battens are likely still in place, but it has been re-clad with synthetic stucco, hard board insulation, and a standing seam metal roof. Security concerns prevented the author from taking any photographs of this building.



**Figure 165 1943 Headquarters Building (Hankins 2009, 55)**



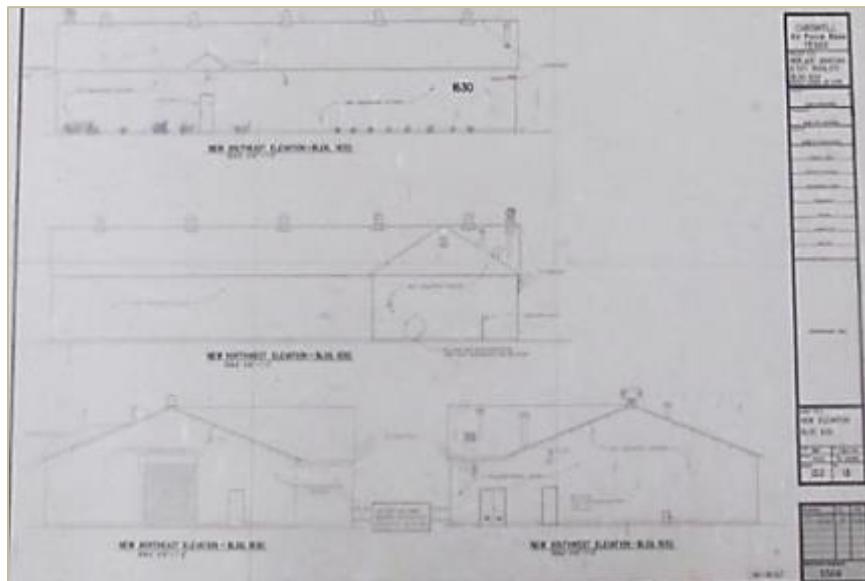
**Figure 166 1948 Base Operations Facility (Hankins 2009, 45)**



**Figure 167 Fighter Squadron Operations Building 1630**

According to base records, building 1630 (Figure 167), which is used currently as a Squadron Operations building, was built in 1945. Because of its location near the flight line, it is unlikely that it was ever used as the base headquarters. However, it is still used for flight line functions similar to its original purpose. The May 1969 elevation

drawings of Building 1630 clearly show the original exterior elevations of the building (Figure 168). At this time, the building was being refinished with synthetic stucco. The interior has also been remodeled. After inspecting the drawings, it was determined that the exterior clapboard had not been removed during the renovation process. The March 1977 partial floor plan of building 1630 shows the functions employed in the building at the time of this partial renovation (Figure 169). Although one floor plan produced in 1947 was located, the author was not able to reproduce or photograph it effectively as it was in a significant stage of deterioration. However, it showed a similar floor plan.



**Figure 168 Building 1630 Elevations**

**Figure 169 Building 1630 Electrical Plan**



**Figure 170 1943 Canteen (Hankins 2009, 28)**

The 1943 Red Cross Canteen was demolished long ago (Figure 170). It was replaced by the Airman's Club. Over the years, the Air Force's welfare division switched from the Red Cross to an official branch of the military. Today it is the responsibility of the Moral Welfare Recreation section (MWR). It does not use any tax monies and is responsible for raising its own funds, primarily from profits from the sale of sundries and groceries at the Base Exchange and Base Commissary, proceeds from vending machines, and the sale of alcohol. Fully functioning airbases have separate clubs for Airmen, NCOs, and Officers, which only admit those who have the appropriate rank.

The NCO Club building was built in 1956 (Figures 171 and 172). Comparing the second photo to the first reveals that the exterior configuration of the building remains pretty much the same. Today, Building 2570 serves as the consolidated Officers and NCO Club. The current floor plan shows splits at the canopy entry with the NCO entrance to the right and Officers to the left. The two share a common dining room and kitchen. This occurred after BRAC actions recommended the Officers Club be sold to the civilian sector. It was eventually torn down and replaced with apartments. Records on this building were not available during the site survey. However, the author was told by the current Navy resident engineer that his records indicated this particular building was built in the 1950s as a wood frame stucco building with a bitumen and gravel roof. The building was built and supported by user fees and profits from the previous clubs' operations.



**Figure 171 1956 NCO Club (Hankins 2009, 50)**



**Figure 172 2013 Officers/NCO Joint Club Building 2570**

In 1953, the enlisted housing facilities provided for our service men were very small (Figure 173). Under the Wherry Act that changed substantially. The act was extended several times and designs improved greatly over time. The older buildings were eventually replaced with larger units. Slightly over half of these were sold to private homeowners and relocated off base following BRAC actions in 1991. At that time, 187 acres of housing were transferred to the Westworth Redevelopment Agency. (Allen 2007) The bulk of the Wherry housing bordered State Highway 183. Today the houses and duplexes have been replaced with three story apartments, strip retail centers, a Lowe's, and a Wal-Mart.



**Figure 173 1953 Enlisted Housing (Hankins 2009, 53)**

When housing construction was finished in the 1950s, there were 114 residential units including single-family housing, duplexes, and senior officer housing. Outside the

main Wherry housing area, only a few homes reserved for senior officers remain, including three on Wasp Court, seven on Hornet Court, and four general grade houses on Captains Row. These were built near and on Lake Worth. Fifty-four buildings remain on Nimitz Drive and Phillips Circle. These are currently used by active duty navy personnel and almost half of these facilities are duplexes. The current state of these housing units is very good. They have been extensively remodeled from the original wood frame, cement stucco, or wooden siding configurations. Their mechanical systems have been upgraded, wooden windows replaced with energy efficient aluminum frame insulated glass, some masonry applied, and vinyl siding and new composite shingle roofs added. It is the trend in DOD to sell off these facilities because they are expensive to maintain as they are also labor intensive (Figure 174).



**Figure 174    Typical Wherry Housing in 2013**

Figures 175-177 show the layout of some of the remaining housing on Phillips Circle. Yards are spacious and trees remain an excellent asset. These houses were built with several standardized floor plans much like those at Bryan AAB. The elevations and floor plans were repeated throughout the neighborhood. As seen in Figures 176-177, elevations have not changed a great deal. When regulations changed, homes were built and/or renovated to meet federally mandated minimum square footage as required by HUD and Title 10 legislation. Patrons were not permitted to make changes to the buildings or to change the colors or materials used on the exteriors. Strict military guidelines are in place for maintenance, which was initially the responsibility of the Base Civil Engineer. This responsibility shifted to civilian contractors, but the maintenance and fenestration change guidelines remain. Great care was taken to preserve trees and the residents are held to a high standard for maintenance of their lawns and gardens. As a result, the residents' environment is both well maintained and aesthetically pleasing.



**Figure 175** 1960s Wherry Housing Renovation Drawing A



**Figure 176** 1960s Wherry Housing Renovation Drawing B



**Figure 177** 1960s Wherry Housing Renovation Drawing C



**Figure 178** Flight Tower and Fire Department in 1956

Figure 178 shows the flight tower and fire department in 1956. These are considered mission critical facilities. The fire station is located on the apron immediately adjacent to an active runway so equipment can move as quickly as possible to aid stricken aircraft if a mishap occurs. Because of this and security concerns dealing with the Global War on Terrorism, the researcher was not allowed to photograph the building from the flight line side.

The author was directly involved in the renovation of the fire station when he was stationed at Carswell AFB. The original configuration of the building is the same; changes were made only as needed to fenestration and MEP systems, as well as communications, radar, and aircraft control equipment. The corrugated metal tower in Figure 178 was the original flight line control tower, but was removed in the 1960s when the new concrete and steel air traffic control tower was built. One can see from the photograph that the metal clad tower on the right is the fire station's original control tower. It still exists but is no longer in use. However, the corrugated asbestos siding was replaced with synthetic stucco and the wooden windows with steel frame windows in the early 1990s. Presumably, the floor plan remains the same albeit with periodic changes to toilet fixtures and interior surfaces.



**Figure 179 1956 NCO Preparatory School (Hankins 2009, 12)**

The building in Figure 179 was used as the NCO Preparatory School and for the 824th Food Service Personnel Squadron in 1956. It remains on the site and is currently used for transit billeting. Although the exterior has not changed appreciably, the interior has been extensively upgraded several times because space allocation and aesthetic criteria regulations have changed. Having been billeted in this building as well as taking part in more than one renovation of it, the author can attest to the fact that upgrades were made about once every five to six years. With the passage of Title 10, requirements for billeting military personnel in these dormitory buildings underwent significant changes. They became one and two person rooms with shared toilet facilities. The original 1940s barracks with open bay bedding and gang showers were torn down and replaced with concrete frame and CMU construction.



**Figure 180 2013 Dorm 1525**



**Figure 181 2013 Side Elevation Building 1525**

Building 1525 has also changed significantly over the years (Figures 180 and 181). Exterior fenestration changes included replacement of wooden sash windows with aluminum frame energy efficient windows and the exterior received a coating of stucco over the CMU. MEP systems have been replaced as they wore out and Title 10 regulations required genotype reconfiguration of the interior. Looking at the end of

Building 1525 in Figures 180 and 181, one can see that all of the adjacent dorm facilities have been changed significantly to include exterior walks on all floors and enclosing stair towers to meet the new standards. These buildings are currently used for bachelor enlisted and transit personnel quarters.



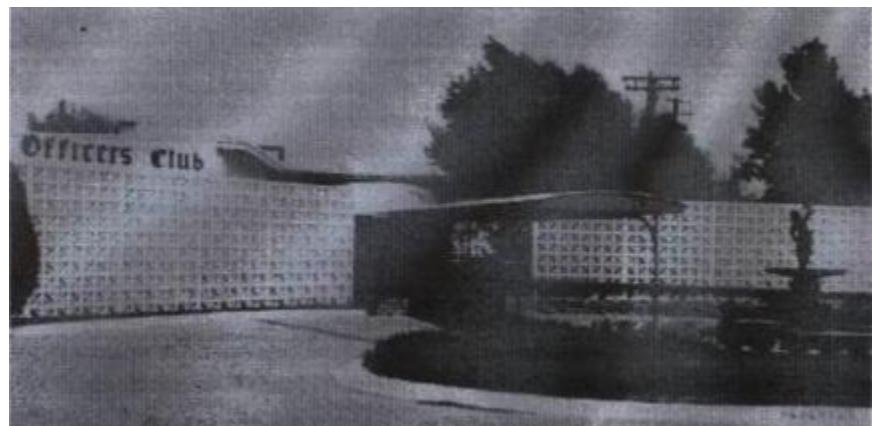
**Figure 182 1957 Base Hospital under Construction (Hankins 2009, 44)**

The base hospital (Figures 182 and 183) was built in 1957 as a major military regional hospital because the base population at the time included several thousand personnel. The construction consisted of a reinforced concrete frame with CMU infill and steel frame windows. The interior corridors were glazed tile and base with VAT flooring. The mission of the hospital changed significantly following BRAC recommendations. It is currently used as a female prison. Phenotype changes to the

interior reflect the current usage. However, the exterior remains much the same except for heavy galvanized wire mess screens and bars on windows. Because of its current function, the researcher was not permitted to photograph the building. The site foliage obscured the building from the road, which prohibited peripheral photography.



**Figure 183** Base Hospital in the Late 1950s (WorthPoint 2013)



**Figure 184** 1958 Officers Club (Hankins 2009, 86)

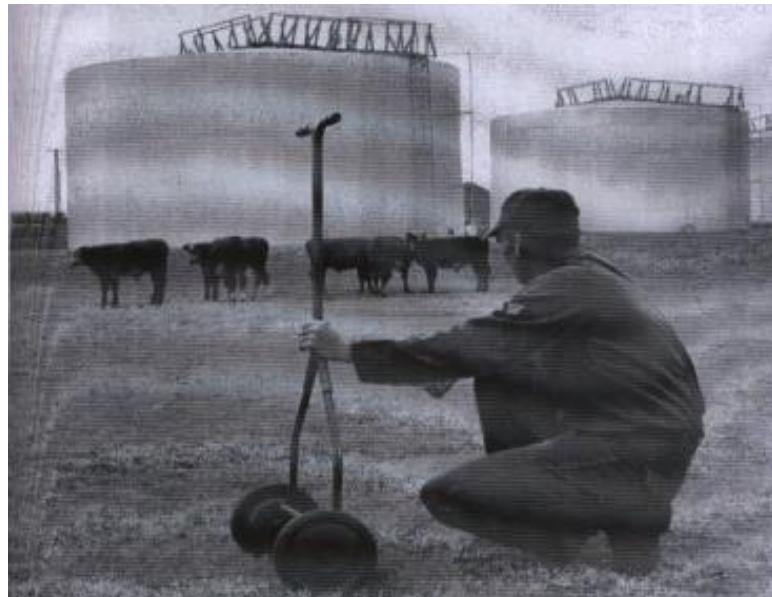
The officers' club was built in 1958 (Figure 184). The club has been renovated many times over the years. As of 2014, it retains its original genotype utility. The Consolidated Club, which joins the NCO and Officers' Clubs, is used to provide club functions for officers.

The Leo Portishman home was acquired by the base in 1960s (Figure 185). It was used originally as a golf course clubhouse. Later it reverted to residential function and provided housing for generals and colonels. It was sold to civilians following BRAC recommendations. The exterior remained unchanged during that time. Unfortunately, it was torn down in the late 1990s.



**Figure 185 1960 Golf Clubhouse (Hankins 2009, 84)**

In 1963, the fuel farm at Carswell AFB served a dual purpose (Figure 186). Cattle no longer graze nearby, but the tanks remain in service. The tanks have been upgraded periodically to meet fire safety and environmental standards. Today, they are surrounded by paved concrete and a concrete berm deep enough to contain 100% of any spilled fuel. (Note the raised concrete lined berm, which is almost eight feet tall, next to the tree limb shredder in Figure 187.) In addition, outgassing recirculation units were added to the roofs of the tanks. Because of security considerations, the author was not permitted to photograph these facilities. However, he was able to photograph a similar tank across the street. Although this tank is used to store water for the fire suppression systems in the hangers behind it, it gives the reader a reasonable idea of how the fuel tanks look and an indication of the changes applied to these facilities.



**Figure 186 1963 Fuel Farm (Hankins 2009, 35)**



**Figure 187 Water Storage Tank near Flight Line**

The physical fitness facility (Figures 188 and 189) is still used for the same genotype function for which it was designed with only minor revisions and upgrades. The floor plan remains unchanged from its original design. The shower areas have been refurbished and the exterior concrete frame painted several times. The weight rooms and gymnasium are still used by base personnel daily. The gym with its folding bleachers and high quality, maple basketball court are in continual use and good condition.



**Figure 188 1968 Physical Fitness Facility (Hankins 2009, 36)**



**Figure 189 2013 Physical Fitness Facility**

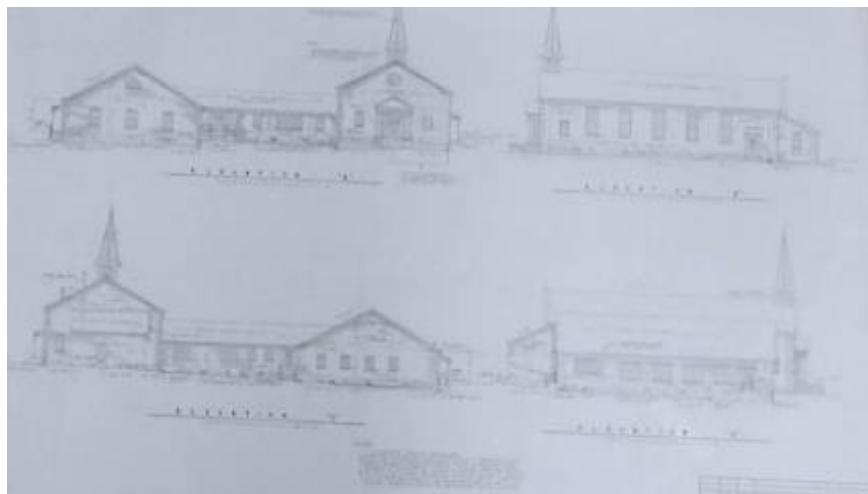
In 1968 the base chapel was configured according to Corps of Engineers drawings, which are strikingly similar to the original designs of the 1930s (Figures 190-194). Comparing Figure 190 to the chapel at Bryan Army Airbase, one can see that they are the same, although the chapel at Bryan Airbase no longer has a steeple. The chapel at JRB Fort Worth has been upgraded significantly. Two large wings were added in the 1970s. The north wing contains a large meeting space. The south wing includes various offices and administrative spaces. The phenotype considerations of the exterior of the building were changed when it was sheathed in modular red brick. The steeple was covered with bronze roofing materials and the windows were upgraded to be more energy efficient. MEP systems were repaired and upgraded as needed. However, the genotype floor plan remains the same.



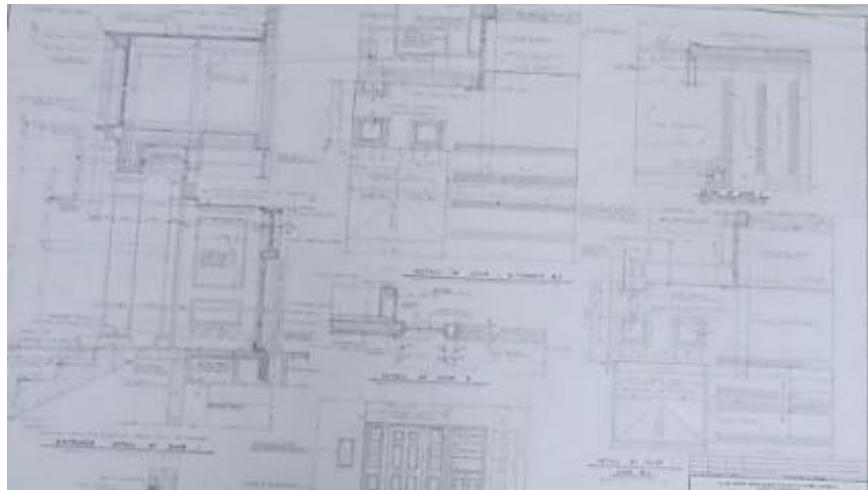
**Figure 190    1968 Base Chapel (Hankins 2009, 34)**



**Figure 191    2013 Base Chapel Building 1838**



**Figure 192 1970 Renovation of Base Chapel**



**Figure 193 1970 Renovation Details Base Chapel**

It should be remembered that chapels do not receive funding from the government because separation of church and state laws do not permit Congress to finance any renovations. These renovations are funded from donations by the parishioners and from fund raising events such as bazaars, cake sales, fairs, etc. In this

case, these resources were used to upgrade the facilities and to allow more people to have access to them.

The author located a 1942 drawing of a typical inert storage facility. Interestingly this drawing is titled Tarrant Airbase (Figure 196). (The base was renamed Carswell Air Force Base (AFB) in 1948 in honor of a Fort Worth native, Major Horace S. Carswell.) Building T16 became Building 691 when the base transitioned from the Army Air Corps to the United States Air Force. Although it is a typical design of the time and several similar buildings exist, the reconfiguration of the airfield runway pattern from a star configuration to a longitudinal plan resulted in many of these buildings being torn down or changed to other functions.

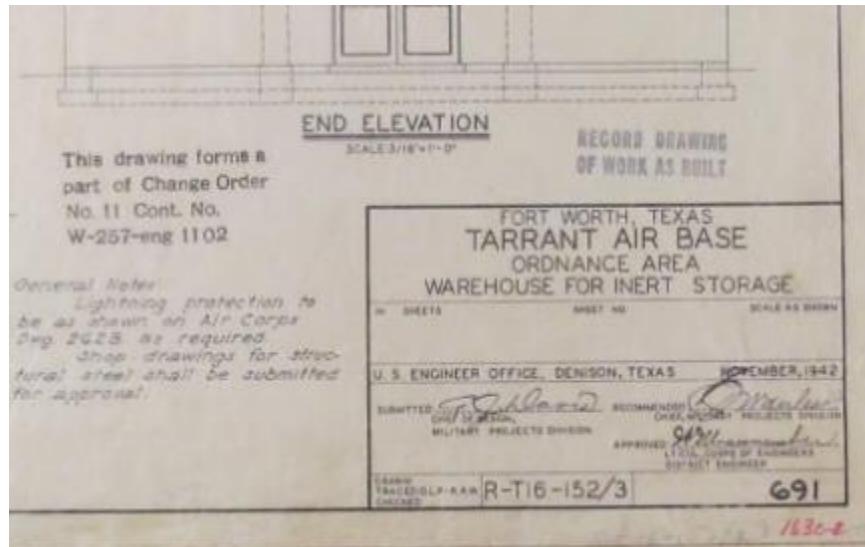
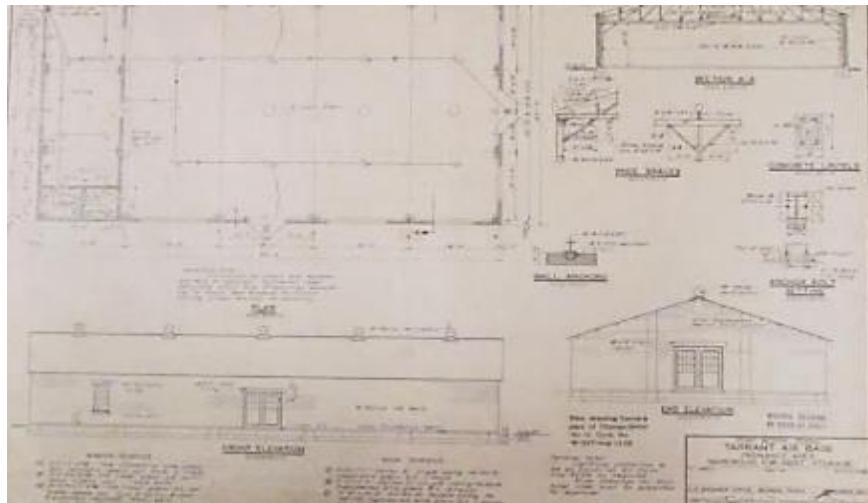


Figure 194 1942 Tarrant Airbase Warehouse Elevation



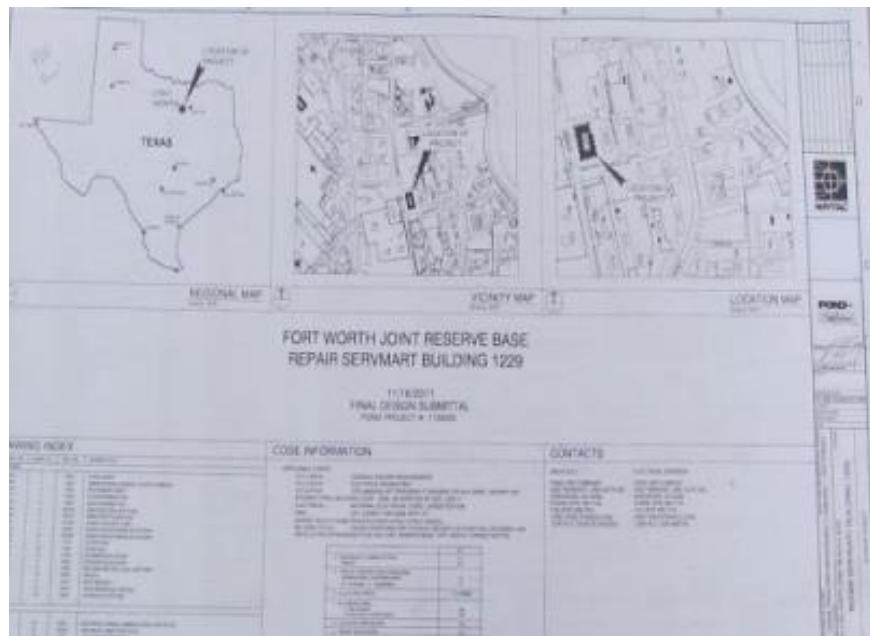
**Figure 195 1942 Tarrant Air Force Base Storage Building Plan**

It was unclear at the time of this study if Building 691 (the weather building) is the same as Building 789. However, it appears to be similar in construction (see Figure 196 for more detail). The location of this building near the flight line indicates that this is likely the case. It also appears that at one time it may have been used as the NCO club. Building 789 is used currently as the senior enlisted navy training center. It has been re-roofed with standing seam metal roofing and the exterior siding was upgraded from horizontal clapboard to vertical plywood paneling. The author was the project officer for the renovation of this building in 1995.

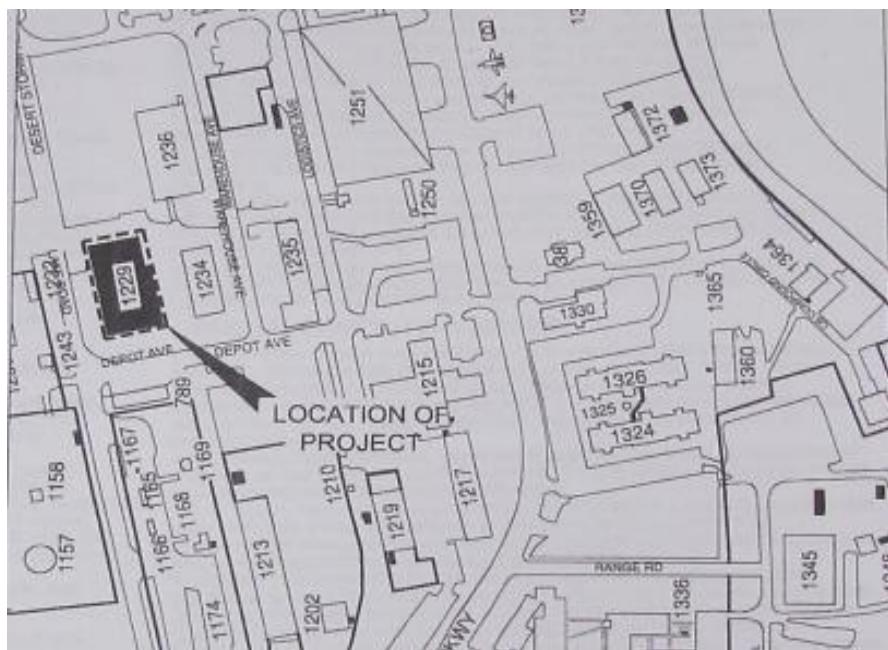


**Figure 196    Building 789 in 2013**

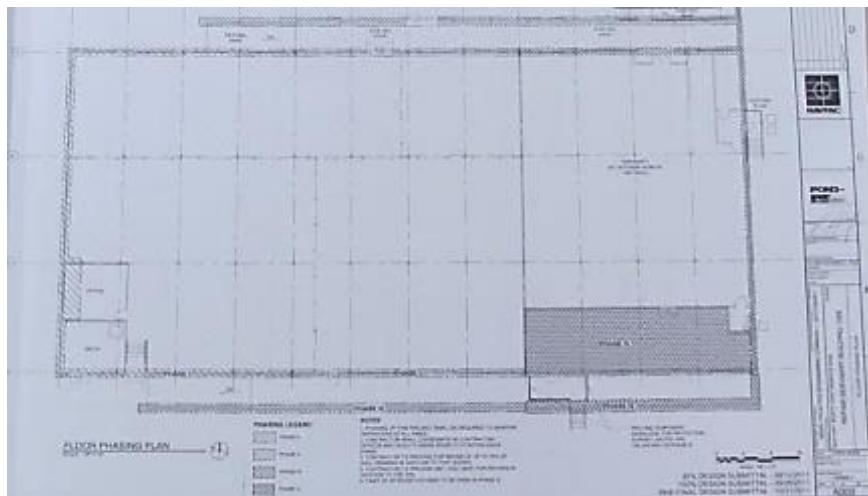
Building 1229 was built in 1942. It is currently used as storage for Navigation Logistic Support (warehouse). Renovated in 2011, it retains most of its original genotype floor plan configuration. This is typical of the treatment of warehousing on the base. The buildings retained the same function over the years due to their proximity to the rail lines and the service area of the flight line. The drawings shown in Figures 197-201 indicate the original character of the plan and elevations. Renovations redeveloped the fenestration and removed asbestos shingles and composite shingle roofing. The exteriors were reconfigured with synthetic stucco, metal roofing, and new insulation to meet current energy standards. No warehouses remain on the base that have not have had their fenestration updated.



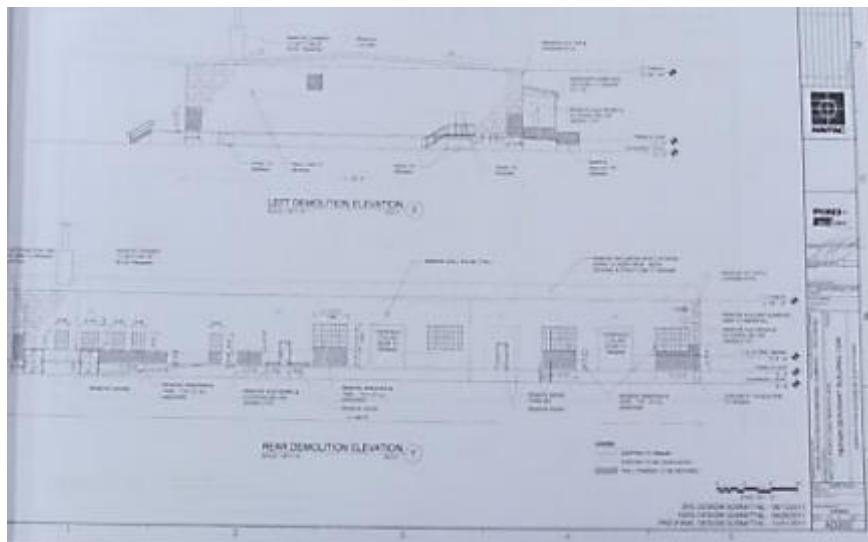
## **Figure 197 2011 Renovation of Building 1229**



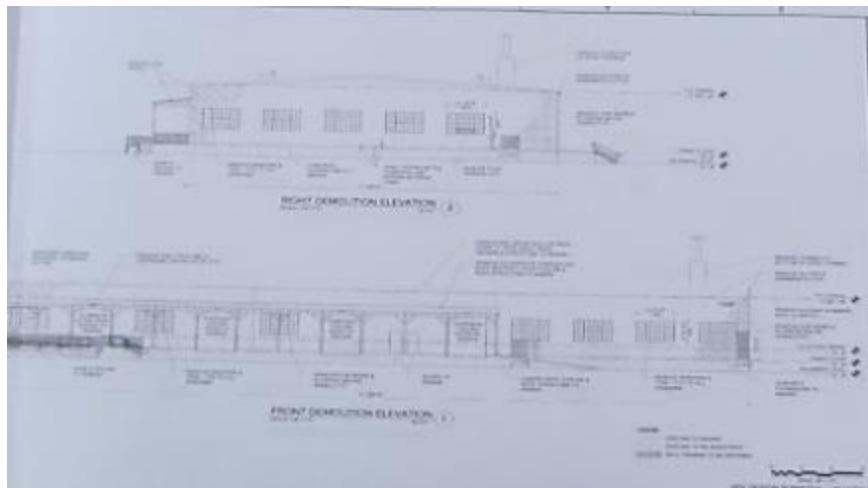
## **Figure 198 Site Location Map for Building 1229**



**Figure 199** 2011 Plan of Building 1229



**Figure 200** Building 1229 Renovation Elevations A



**Figure 201** Building 1229 Renovation Elevations B



**Figure 202** Building 1428 in 2013

Building 1428 was originally built during the WWII era and has been renovated several times (Figure 202). It was originally configured as a warehouse but is currently used as the USAF Security Forces office. Synthetic stucco walls and new aluminum frame windows and doors were added recently. It retains its asphalt shingle roof. At the top left of Figure 202, one can see the back of the fire station observation tower, which

has been renovated in a similar manner. The drawings for Building 1428 have disappeared. However, it is likely it was configured in the same manner as Building 1229.

Building 1515 was built in 1942 with an addition in the late 1970s (Figures 203 and 204). Looking at Figure 204, one can see the firewall protruding above the roof. The section to the left of that firewall is the newer part of the building. It serves as the Navy and Marine Relief Agency, which is similar to a Red Cross function at a local level. It appears this building has always served an office function.



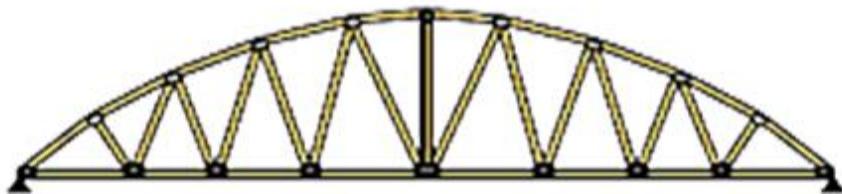
**Figure 203    Front Elevation of Building 1515 in 2013**



**Figure 204 Firewall at Rear of Building 1515**



**Figure 205 Rear of Building 1602 in 2013**



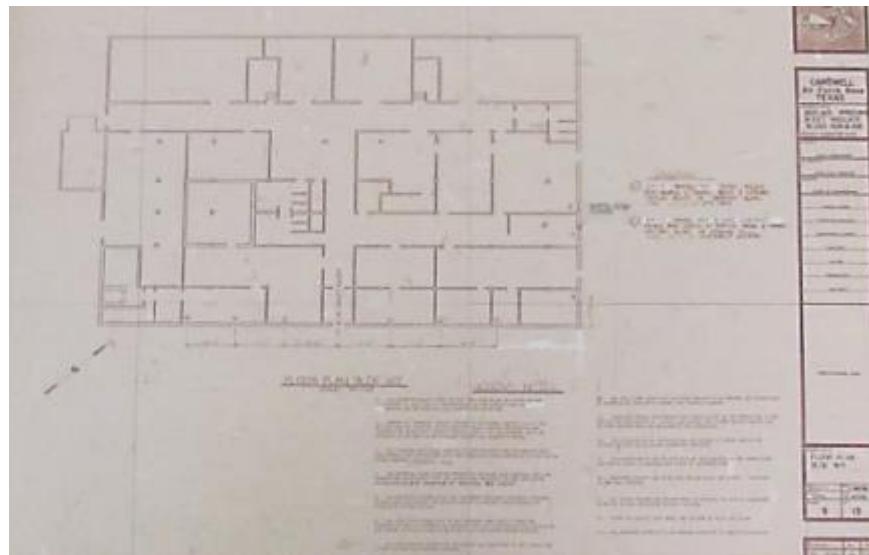
**Figure 206 Bowstring Truss (Classic Truss 2012)**

Building 1602 was built in 1942 (Figure 205). The author provided architectural service for this building while at Carswell AFB. Aircraft maintenance requires a large open space so the entire fighter aircraft can be brought into the building during inclement weather. This building is a wood frame structure with a 150-foot clear span built-up wooden bowstring truss. The bowstring truss is built up of individually cut pieces of 2 x 8 lumber bolted together using gusset plates, bolts, and washers (Figure 206). This building remains essentially the same as when originally designed; however, the exterior of the building was recovered with corrugated metal siding when the original asbestos shingles were removed. It operates in an associated function as the AGE shop where electrical equipment that supports the aircraft is maintained and stored. Earlier in its career, the building was used to maintain fighter aircraft, which were much smaller than today's jet fighters. However, should it be necessary to do a complete depot-maintenance level repair on an aircraft, the entire aircraft can still be placed inside the building to be repaired once the AGE equipment is relocated.



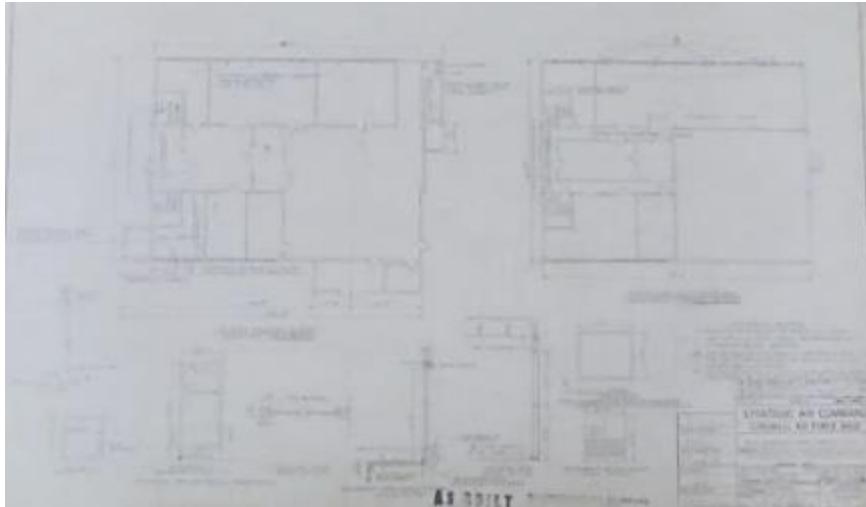
**Figure 207 Building 1615 Front Elevation in 2013**

Building 1615 is used currently as the Aerial Port (Figure 207). In the top left corner appears a building that is very similar to the AGE shop. Four of these types of buildings remain in use on the base. Building 1615 was built in 1943. Once again, the exterior has undergone significant phenotype renovations. Windows, siding, and doors have been replaced in a similar manner as other buildings already discussed. The roof of this building was originally gravel ballast. However, due to the low angle of the roof and its proximity to the flight line, it was changed to a membrane roof in May 1989. Figure 208 is a drawing of the plans used for Building 1615 in 1989.



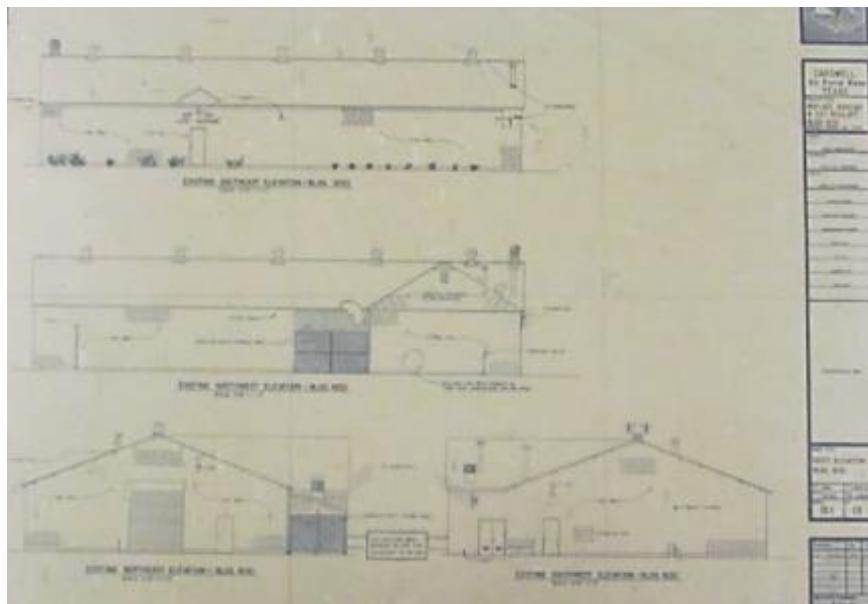
**Figure 208    1989 Floor Plan Building 1615**

Building 1619 was also built in 1945. During renovations performed in May 1968, alternate air traffic aids and maintenance training shops were added. The exterior of the building did not receive significant changes, but the interior of the facility did. There were also numerous MEP upgrades. Due to security concerns, the author was not permitted to photograph this building. From the road, it appeared Building 1619 had many of the same types of changes as other buildings located near the flightline. However, it is believed Building 1619 had significant upgrades. In addition, MEP changes were made as the security work accomplished in this building requires the most current systems to accommodate the mission requirements. The as-built drawings of building 1619 (Figure 209) show how the floor plan was modified. Smaller details indicate toilet, door frame, and cabinet changes. The changes to the fenestration were limited to maintenance items during this renovation cycle.



**Figure 209    Building 1619 Floor Plan**

Figure 210 indicates that building 1630 was modified in May of 1989. It was built in 1945 with a concrete block exterior wall and wood structural truss roof with an asphalt shingles. It had wooden frame doors and windows. Note the static air vents on the roof, which indicate the original building did not have air conditioning. This building is currently used as a Squadron Operations facility. Over the course of its existence, several different types of aircraft operations occurred. These necessitated changes in the electrical, electronic, and radio equipment. However, the floor plan probably did not change significantly because the basic functions of weather service, aircraft action reports, and briefing rooms remained the same. The interior decoration likely changed with each aircraft type, as squadrons prefer to personalize their space with idiomatic art items related to their specific unit history and aircraft. In addition, equipment specific to the aircraft as well as security equipment is normally added to the new spaces so that the squadron can accomplish their mission in a seamless manner. There are of course limitations on funding and what specific things may be accomplished, with the exception of squadron-provided art, because all expenditures must be coordinated and approved through the civil engineering office of the base. Sometimes projects are prepared in advance of the close of the fiscal year in September to take advantage of leftover funds for projects that were not funded, canceled, or resubmitted for the following fiscal year. This particular building was funded in this manner when the author was the primary architect for its exterior 2000 renovation.



**Figure 210 1989 Building 1630 Elevation**

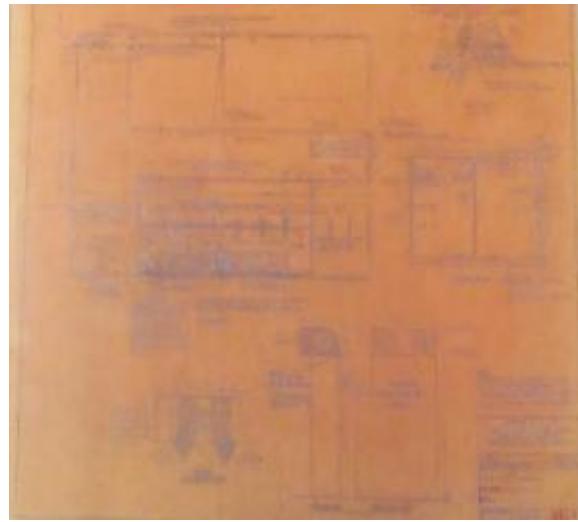
Figure 211 depicts Building 2525, which resembles a WWII barracks, does occupy the previous location of the WWII aviator billeting site. The base civil engineer records show that it was built in 1945. However, the site survey was unable to verify its construction date because the drawings for this building for that era no longer exist. Today it is used as the Security Police Headquarters. It has changed significantly from its original configuration and fenestration. When originally built, it would have had a wooden frame with wooden trusses. The interior would have been open bay sleeping with gang showers and toilets at each end on each floor. It would have been covered initially only with tarpaper that was eventually replaced with either asbestos shingles or wooden clapboard. The roof had asphalt shingles and the building would have been insulated. Today the exterior is covered with synthetic plaster, but the roof is the same. Phenotype apertures are now steel doors and aluminum frame windows. While stationed

at Carswell JRB, the author worked on this specific building and several others used for Security Forces administration. However, due to security concerns he was not allowed to photograph the interior. The normal configuration for such buildings has offices on a double-loaded corridor, a section for a jail, and a control desk at the entry control point.

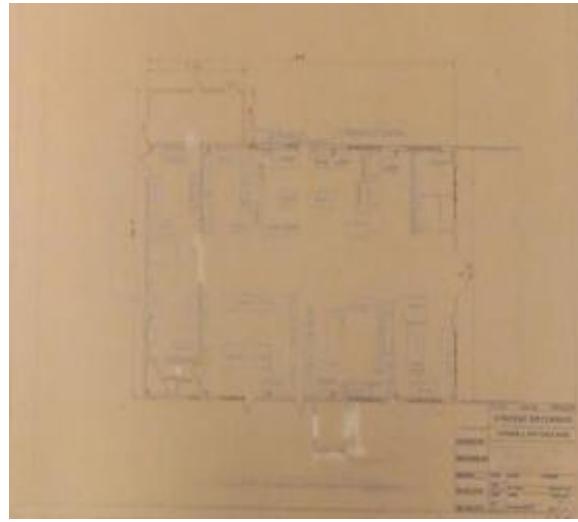


**Figure 211 Building 2525 in 2013**

During the survey, only one set of 1940s drawings could be located in the base drawings fire vault (Figures 212 and 213). Unfortunately, they are sepia paper drawings and difficult to read because they had deteriorated significantly. These were for the Super Sonic Shop T-222, built in January 1942. If the shop still exists, it is not clear which building it is. The numbering system of the base changed following the shifts from Army to Air Force to Navy to when the Guard and Reserve components acquired the base. The drawings that could be read indicate it was built along the star-shaped runway of the 1940s-1950s. It is likely the building was demolished as operational needs changed, new facilities were required, and the flight line moved.



**Figure 212 1944 Building T-222 Mechanical Drawing**



**Figure 213 1944 Building T-222 Floor Plan**

Building 1410 is an aircraft hangar (Figure 214). There are four of these buildings remaining at the base. The site survey was not able to locate drawings for these buildings, nor was the investigator permitted to photograph the interiors for security

reasons. However, the classical shaped roof and the massive rail-mounted bypass hangar doors in the front are consistent with other WWII aircraft hangers. Over time, the size and configuration of aircraft has increased, rendering these buildings obsolete for bomber aircraft use. Therefore, they have been torn down or converted to aircraft maintenance functions for fighters and support equipment. Building 1410 is still used for fighter aircraft repair. During the primary investigator's USAF career, he executed dozens of projects in buildings of this type all over the continental United States and Europe, the last of which was to change a similar building into a repair shop for the Predator aircraft, a pilotless drone built of a classified plastic substance. The tall smoke stack in Figure 214 was once used to burn classified documents and manuals. Today such smokestacks go unused or function as outgassing vents for filtered air used in the maintenance activities.



**Figure 214 Building 1410 Hangar in 2013**

It should also be noted that Building 1413, which is listed on the Carswell Airbase facility roster as being built in 1942, no longer exists. The original building was replaced with a manufactured steel building that stores hazardous waste, primarily hydrazine, which is used for emergency restart of jet engines. This substance is literally rocket fuel and it is extremely volatile. Storage of rocket fuel in a wooden building violates fire safety codes so the original building had to be removed. It was relocated to a site adjacent to the perimeter road near the aircraft-parking ramp because real estate near the flight line is always at a premium. The building number was then reassigned to the new metal structure. This is customary when mission requirements demand it. This is not always accomplished with consideration to architectural and historical values, but such changes are annotated in the base facility records because they require the approval of the base facility board.

### **History of Hearne AAF and POW Camp**

The facilities at the Hearne Army Auxiliary Airbase and POW camp are completely gone except for the pump house, water tower, conference building, foundations, roads, underground utilities, and the cityscape layout. However, one can access a rich source of information simply by observing the cityscape and talking with the avocational archeologist and historic preservationist who are active at the site. Figure 215 shows the water tower in 2011.

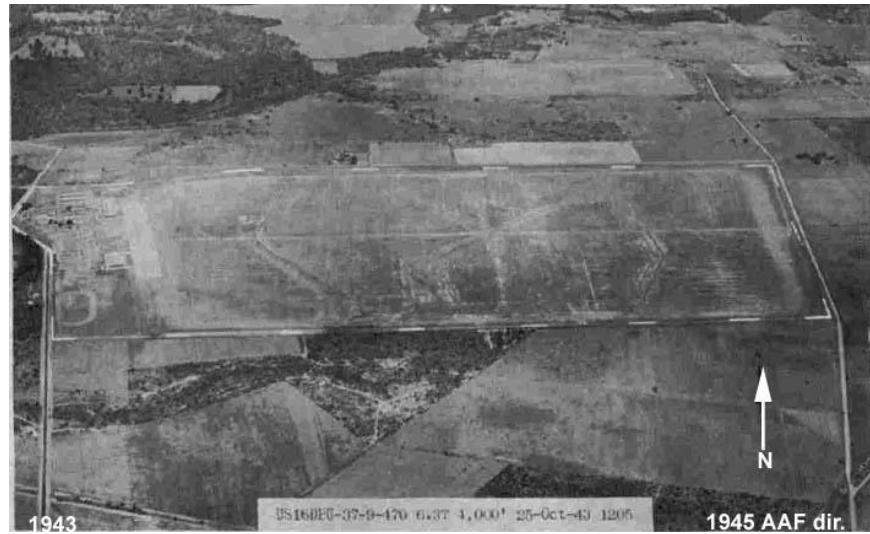


**Figure 215    Camp Hearne Water Tower in 2011**

With the activation of Bryan Army Airbase, the Hearne Army Airbase mission changed to an alternate emergency airfield during the remainder of World War II. Most of the aircraft that flew into or executed touch-and-go landings at Bryan AAB visited Hearne AAB at one time or another. Unfortunately, because Hearne AAB was an auxiliary field there were no permanent personnel assigned to the airfield and no records were kept at the field concerning sortie rates or the particular aircraft types that used the field. Please refer to the photographs of aircraft in the sections on Bryan AAB and Carswell AFB for a better understanding of the aircraft that used Hearne AAB during WWII.

The original airfield was a turf field, but before Hearne AAB was converted to a POW camp, the flight line was paved. The precise date is uncertain. This study was not able to locate an original photograph of the WWII airfield. However, it is likely that it

looked similar to the Cuero Airfield shown in Figure 216. Notice the classic diamond shape where the soil was leveled, compacted, and mown. The longer elements represent the runway and those adjoining it are taxiways. The diamond shape was useful when an aircraft emergency occurred; it was best to land as quickly as possible without taking time to line up for the landing. Touch-and-go landings were less demanding, but the pilot was required to practice approaches from all angles to be proficient enough to land safely and quickly in an emergency. At the end of the war, the vast majority of these fields were returned to the farmers from whom they were leased. They reverted to their original agricultural use and in most cases, were lost to history. Only sketchy records remain of the precise location of most of these emergency fields and virtually nothing remains of the few buildings that were built on them.



**Figure 216 1945 Cuero, Texas Auxiliary Airfield (Brooks 2011)**

Emergency auxiliary airfields like the ones in Cuero and Hearne were often little more than graded grass or dirt strips. They rarely had any buildings associated with them nor did they have refueling capabilities. Their primary purpose was for emergencies or for touch-and-go practice landing. They were called “touch-and-go” because that is exactly what one did. One lined up the aircraft to land, touched the wheels briefly on the ground, and went around for another practice or returned to your primary airfield.

Figures 217 and 218 show what the Hearne Municipal airport looks like today, with north at the top of the map. The Hearne AAB statistics can be seen in Figure 220.



**Figure 217    Hearne Municipal Airport Aerial View A (Wikipedia 2011c)**



**Figure 218    Hearne Municipal Airport Aerial View B (Google Earth 2011)**

Type	Public
Owner	City of Hearne
Serves	City of Hearne
Elevation AMSL	285 Fort. / 87 m
Coordinates	30°53'6"N 96°37'0"W
Direction	18/36
Length	4,001 Feet or 1,200 Meters
Surface	Asphalt
Aircraft Operations	5,700

**Figure 219    Hearne AAB Statistics**

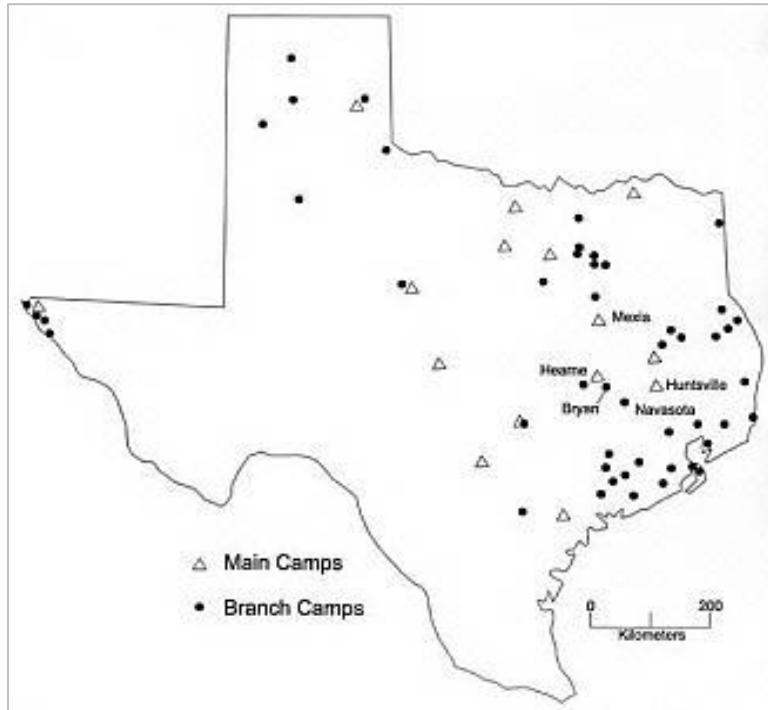
#### ***POWs at Camp Hearne***

Camp Hearne was a primary WWII POW Camp located north of Hearne, Texas on Highway 485 West. As U.S. troops were delivered to the front in 1942-1943, large numbers of prisoner of war troops were returned on empty transport ships from North Africa and Italy. Some 425,000 POWs were shipped to U.S. camps. Hearne was chosen

to house 4,800 prisoners. Because of the flat terrain, significant distance from the coastline, low local population, railroad access, and local need for farm laborers, it was considered a good site for a prisoner of war camp. As required by the prevailing Geneva Convention, the U.S. Army treated all POWs well. They were provided food, shelter, activities, and clothing. The convention also required that a fair wage be paid for work done by enlisted men (officers were not required to work). The original perimeter of the camp can still be discerned, but only a few of the original buildings remain. (Camp Hearne Association 2011)

In 1942, the U.S. Army Provost Marshal General's Office was actively looking for POW campsites. The president of the Hearne Chamber of Commerce, Roy Henry, and other civic leaders began lobbying for a camp. Mr. Henry wrote a letter to Congressman Luther Johnson on March 10, 1942 asking for support in placing one in Hearne. Congressman Johnson then forwarded the proposal to Colonel B. M. Bryan of the Provost Marshal General's Office. As the month ended, Colonel Bryan sent engineers to Hearne to execute a preliminary survey for potential sites. By mid-April, the inspection was completed and Hearne was selected. At the end of June 1942, Colonel Bryan approved the basic design the camp. In July 1942, the Army acquired the land and began detailed planning of the camp. Construction started in September 1942 and the camp was completed in February 1943. The first group of prisoners arrived in May 1943, mostly from Rommel's Afrika Korps captured in the North African Campaign in Tunisia. By June 1945, there were 371,000 Germans, 50,000 Italians, and 4,000

Japanese housed in over 650 POW camps across the United States with some 70 camps located in Texas. Figure 220 shows the locations of the Texas camps.

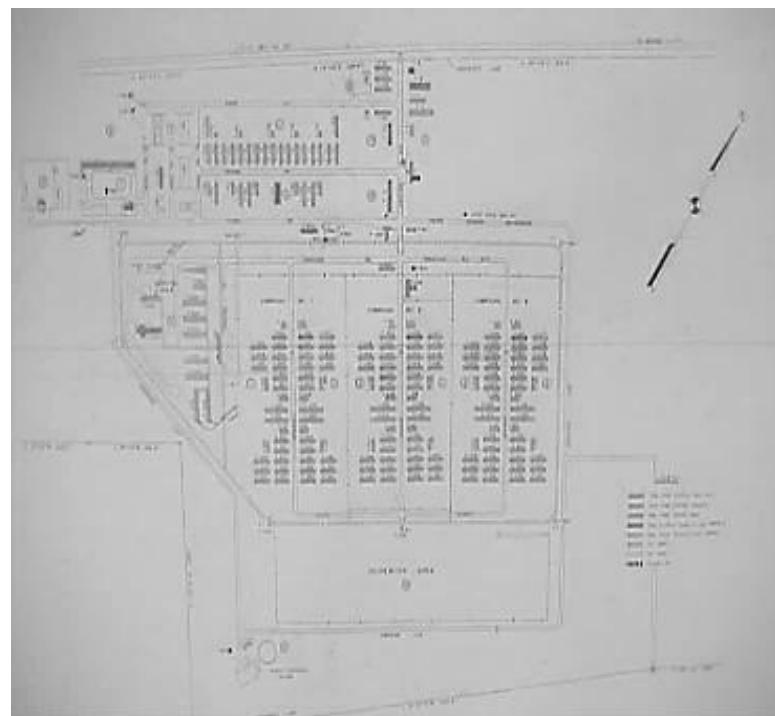


**Figure 220 POW Camps in Texas WWII (Waters et al. 2006, 52)**

Figures 221-223 show the layout of the POW camp as well as the remains of the facilities that existed in 2011. These plans were prescribed by the Department of War. According to Waters et al., Camp Hearne followed the standard camp layout approved by the Provost Marshal General's Office (2006). The camp was divided into three compounds with each compound subdivided into four companies with 400 prisoners each. Each company area had a mess hall, lavatory, company office, and eight barracks. Barbed wire fences isolated the camp and each compound was enclosed with fencing.



**Figure 221 Layout of German POW Camp**



**Figure 222 Drawing of POW Camp Layout**



**Figure 223 Model of Camp**

Camp Hearne was designated as a main camp and was originally designed to accommodate 3,000 prisoners, but the plans were modified later to house almost 5,000. The first POWs arrived in June 1943. By 1945, the population at Camp Hearne had grown to almost 4,800 prisoners in 1945. (Waters et al. 2006) About 20% of the camp's population was enlisted and as per the criteria of the Geneva Convention, they were required to work. Non-commissioned officers and officers were not allowed to work. Consequently, a significant number of personnel did not perform any daily work. This resulted in a number of extracurricular activities and ultimately in the construction of

ponds, fountains, miniature concrete models, a theater, and other amenities not normally associated with a POW camp. (THC 2009)

The largely unemployed population of the camp also devoted time to recreational and educational programs. The inmates organized classes on various topics such as history, accounting, and foreign languages. They played soccer and other games on the sports field, made crafts, painted, and read books. There were weekly movies, musical concerts, and theatrical performances at the camp. Hearne had an excellent orchestra because a German regimental military orchestra with all its instruments was captured in Tunisia and transferred as a group to Hearne. (Waters et al. 2006) Figures 224 through 231 depict typical scenes at Camp Hearne. More information can be found at the web site, *Camp Hearne, Texas: A German Prisoner of War Camp during the Second World War*, <http://campHearne.com/>.



**Figure 224 American Sector Barracks A (Waters et al. 2006, 3)**



**Figure 225 American Sector Barracks B (Waters et al. 2006, 8)**



**Figure 226 German POWs in Compound One (Waters et al. 2006, 11)**



**Figure 227 Fountain Built by POWs at Compound One (Waters et al. 2006, 220)**



**Figure 228 Compound Two POW Post Office (Waters et al. 2006, 98)**



**Figure 229**    POWs in Main Post Office (Waters et al. 2006, 98)



**Figure 230**    Compound Two Mess Hall in 1944 (Waters et al. 2006, 234)



**Figure 231    East of Compound Three PX (Waters et al. 2006, 42)**

In March 1944, Camp Hearne became the Central POW Post Office responsible for distributing all censored mail coming from Germany to the prisoners in the United States. This unit was successful in moving the mail; however, the operation was poorly supervised by the Americans and abuses occurred. Prisoners often inserted messages to their friends in other camps and wrote greetings on the outside of envelopes. While this was harmless, the Nazi element within the camp infiltrated the post office and developed a secret system of inter-camp correspondence. The Nazis had access to the names of all POWs in the United States and compiled a list of anti-Nazi prisoners who would be dealt with after the war. Following numerous investigations, the postal unit was transferred to another camp in July 1945.

There were a number of issues at the camp as a small hard-core group of Nazis controlled the camp via intimidation and German military regulations. For example,

Corporal Hugo Krauss was murdered in 1943 and several prisoners committed “suicide.”

In addition, the prisoners developed a secret short-wave radio beneath the barracks, which enabled them to receive news from Germany daily. A number of prisoners also attempted to escape, but fortunately, all were caught.

Near the end of the war, several hundred Japanese prisoners were interned at Camp Hearne. They arrived in the summer of 1945. To accommodate them, Compound Three was cleared of Germans and the Japanese were isolated there. They were repatriated in October 1945. (Waters et al. 2006)

All the German POWs at Hearne were repatriated to Europe by January 1946. In most cases, the prisoners were first sent to England, Belgium, Scotland, or France. They were put to work in those countries, repairing war damage for approximately two years before being returned to Germany. Although this might seem vindictive, it was necessary as the infrastructure in Germany no longer existed and they were not able to support themselves until some semblance of normalcy returned.

The army closed Camp Hearne in January 1946. The buildings and property were sold as surplus property. Eventually, most of the land was purchased by the City of Hearne, which converted the auxiliary field into the municipal airport and used about 20% of the POW land for a sanitary landfill. (Waters et al. 2006) The sanitary fill operations continue today.

### ***Remains of Camp Hearne***

Unfortunately, little remains of the original camp buildings today. The photographs shown in Figures 232 through 244, show just how little of the camp has

been preserved. Of the 130 buildings and seven guard towers in existence at the height of the camp's occupation, only two buildings remain. The conference building and the pump house continue to be used. Unfortunately, the rear wall of the pump house was damaged by the city when they enlarged the pump, associated water well, and water line.



**Figure 232    Compound One Remains of Fountain (Waters et al. 2006, 214)**



**Figure 233    Compound Two Barracks Excavation (Waters et al. 2006, 221)**



**Figure 234 Compound Two Pond Remains (Waters et al. 2006, 217)**



**Figure 235 Compound Three Fountain Remains (Waters et al. 2006, 220)**



**Figure 236 Compound Three Remains of Mess Hall (Waters et al. 2006, 234)**



**Figure 237** Compound Three View of Stage in 1944 (Waters et al. 2006, 229)



**Figure 238** Theater Foundation (Waters et al. 2006, 229)



**Figure 239    Compound Three Seating Area and Pit in 1944**  
**(Waters et al. 2006, 230)**



**Figure 240    Compound Three Remains of Orchestra Pit**  
**(Waters et al. 2006, 230)**



**Figure 241** Compound Three Looking West (Waters et al. 2006, 215)



**Figure 242** Compound One Entrance of Barracks (Waters et al. 2006, 225)



**Figure 243 Compound Tow Pond at Entry to Barracks (Waters et al. 2006, 227)**



**Figure 244 Compound Three Lavatory Foundation (Waters et al. 2006, 236)**

Figures 245 and 246 are of the most complete remaining original building, which is now used as a conference room. The reconstructed barracks are shown in Figures 247 and 248 and Figure 249 depicts examples of original construction drawings used to construct the barracks. Fortunately, a small cadre of dedicated, avocational archeologists and preservationists worked to preserve what remains of Hearne POW Camp. They sponsor an annual WWII living history demonstration during the third week of October. The event is located at Camp Hearne Historic Site, 12424 Camp Hearne 3rd Street, Hearne, Texas 77859. Additional information can be found at their website, <http://campHearne.com>.



**Figure 245    Original Conference Building**



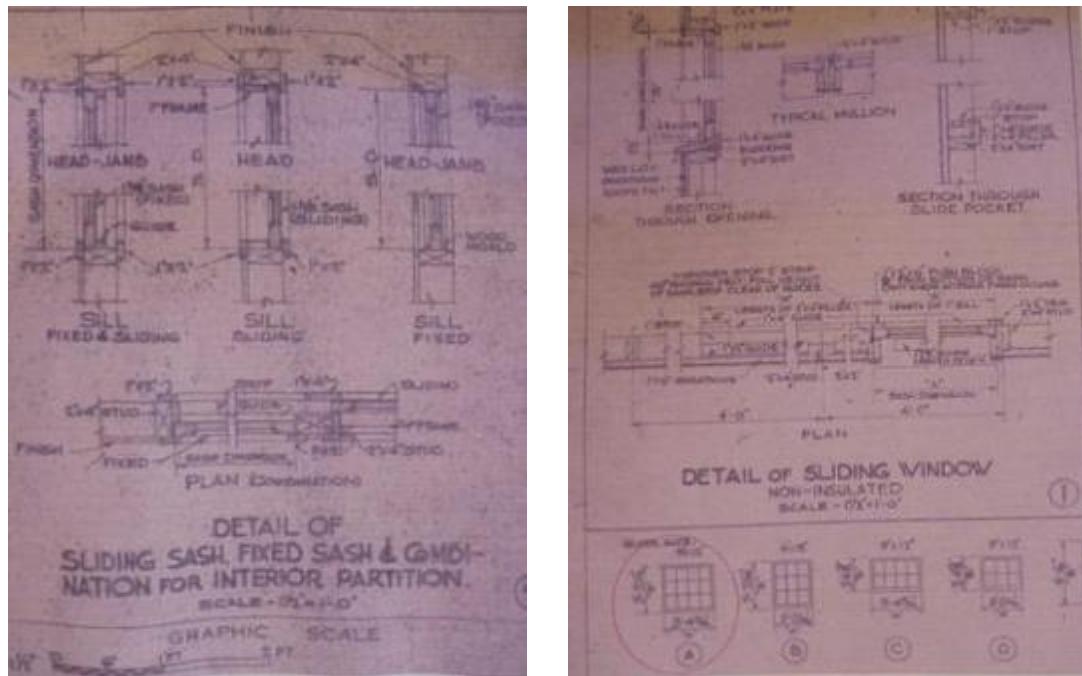
**Figure 246    Rear of Original Pump House**



**Figure 247    Exterior and Interior Views of Reconstructed Barracks**



**Figure 248    Interior Views of Reconstructed Barracks**



**Figure 249    Original Drawings for Barracks (THC 2009)**

After the POW camp closed, the city of Hearne bought most of the land with the intent of turning it into an industrial park. The Hearne Steel Company now occupies the original locations of the guardhouses and parts of compounds two and three. In addition, the Robertson County Fair parking area is located where the base commander's house and administrative buildings once stood. Today little remains except the buildings' foundations, the underground utilities, and the cityscape street grid.

### **Summary**

The buildings at Bryan AAB, Carswell AFB, and Hearne AAB are typical of the types of WWII buildings that remain at many airbases across the nation and in some foreign countries (primarily Europe and Korea). Many have been modified from their original purposes multiple times, which is why they were not demolished. Fortunately, the attitudes of many base civil engineers have changed over the years and they have become more interested in historical preservation. Regulations have also changed so that it has become mandatory for DOD personnel to consider preservation issues and to work with state preservation offices during construction. However, when Congress decides to limit DOD funding, these considerations often take a back seat to mission requirements. Although Congress mandated that all WWII buildings be removed by the year 2000 because of increasing maintenance and energy costs, most base engineers have been creative in upgrading them to accommodate energy consumption requirements. The WWII buildings outside operational military bases and in the hands of private historical organizations and museums largely remain intact. Those that were not owned by such organizations were torn down.

Much work remains to be done to protect the buildings remaining in the DOD inventory so that they are not demolished and the history they represent is not lost to posterity. Buildings similar to those that remain at Carswell AFB and at Bryan AAB (TAMU East Campus-Riverside Campus) can still be preserved. One building has been reconstructed at Hearne AB, and Bryan AAB and Carswell AFB have warehouses that retain their genotype considerations and are currently in use. The chapel at Hearne is gone, but those at Bryan AAB and Carswell AFB remain. Two very large hangers and four smaller hangers similar remain at Bryan AAB. Four small hangers remain in use at Carswell AFB. Bunkers exist at Carswell AFB and are currently in use. It is the opinion of the author that despite their humble utilitarian nature, these buildings and the general lack of understanding concerning their value as historical buildings demand that we make stronger efforts to preserve them. Chapter V outlines a proposed method to determine what should be saved, using four principles, fourteen objectives, and the Optimal Conservation Index (OCI) as guidelines.

## **CHAPTER V**

### **FINDINGS**

This project evaluated 82 international charters and manifestos from 1887 to 2008 that were previously compiled by the Getty Conservation Institute. Each document was evaluated five times. The logic of this evaluation is relatively simple. These documents were searched for key words relating to several global conservation organizations' indications of the importance of particular concepts. The stated logic of is that if a specific word or words were used, they were selected by the originators of these documents to reflect an important concept or consideration in historical and cultural conservation. If the concept was repeated several times, then it is logical to infer that the creators of these documents did so to emphasize that concept's importance. Each of the concept words used were selected because they were repeated many times in the original documents found in the Getty Institute compilation and in the literature review for this project. Each word was searched for its meaning in the context of that specific document. If the word was used to relate to a different non-conservation concept or circumstance, it was not counted. The base word was searched, as well as conjugations, derivations, and tenses of the word. For example, the word redevelopment was searched, as was the word development. In this case, development was not counted as it was a primary activity and not consistent with the meaning of redevelopment. Conserve, conservation, conserving, conserves, conserved, and conservator were searched as derivations of the word conserve. The word conserve was searched down to the root

word and the configuration of “con.” All words on the list in Figure 250 were processed in this manner. Words outside the concept of conserve that contained “con,” such as content, were not counted. The concepts shown in Figure 250 were found to be the most repeated in the Getty compilation and the literature review, and thus worthy of review for this project.

---

Adaptive Reuse	Preservation
Aesthetics/Beauty	Preservation/Dissemination
Authenticity	Protection/Safeguarding
Conservation	Reconstruction
Contextual Value	Recordings/Records
Cooperation	Redevelopment
Culture	Rehabilitation
Economic/Market Value	Restoration/Repair
Education	Scientific
Enhancement	Significance
Heritage	Spiritual/Secular/Religious
History	Sustainable Reuse
Identification	Technical Science/Techniques/Trained Professionals
Language	Tourism/Tourist
Legislation/Legal /Policy	Urban Settings/Towns/Village/City
Management	

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**Figure 250    List of Concept Words Searched**

To ensure no important words were missed, the search continued until all basic components of the word were checked. For example, conservation was reduced to con, cooperation to coop (or co-op), legislation to leg and legal, etc. Care was taken to ensure that the words searched were not used in a context outside the defined parameters. An

example is the word spirit. When used in a sentence referencing the spirit of an agreement, instead of the desired religious context, it was not counted.

Economic Value was reduced to econ. In addition, when paired with the term value, the term market was counted. Enhancement was reduced to *enhan*. Management was minimized to *mana*. This process continued until all descriptor words were searched. Urban settings included searches for the words city, town, village, and neighborhood and their conjugations as already described. The search for tourism included tourist and tour. History included pre-history, post-history, historical, histographic, and historic. Presentation included dissemination, but did not always include present if it were used to connote being present at a location or meeting rather than making a presentation of data and information. Scientific was reduced to include science. Religious included spiritual and secular if they were used in a religious connotation. The search for restoration also included the word repair and its derivations. The last discriminator word selection was intended to determine if trained professionals were employed. It included the word profession but not profess, even though the word search was developed to this finer level of derivation to ensure that no professional was excluded. Culture was reduced to the word cult and derivations found in different or similar words were not used. Preservation was reduced to *preser* to include all applicable conjugations of the concept. The term recording included all types of visual and auditory recordings used for conservation and the act of recording documents or the various administrative functions associated with the charters, etc.

After evaluation of all the documents and a detailed literature review, these concepts were repeated as shown in Figure 251. One can easily see the areas of greatest concern of those who wrote the various charters, manifestos, and conservation documents. Culture (2,243), heritage (1,409), protection (1,097), and conservation (672) are by far the greatest concerns. This is no surprise as these documents were written to deal specifically with these issues. If one examines the chronological order shown in the spreadsheet attachment found in Appendix A, one can see that cultural considerations gradually became more important as global initiatives expanded to include global environmental issues.

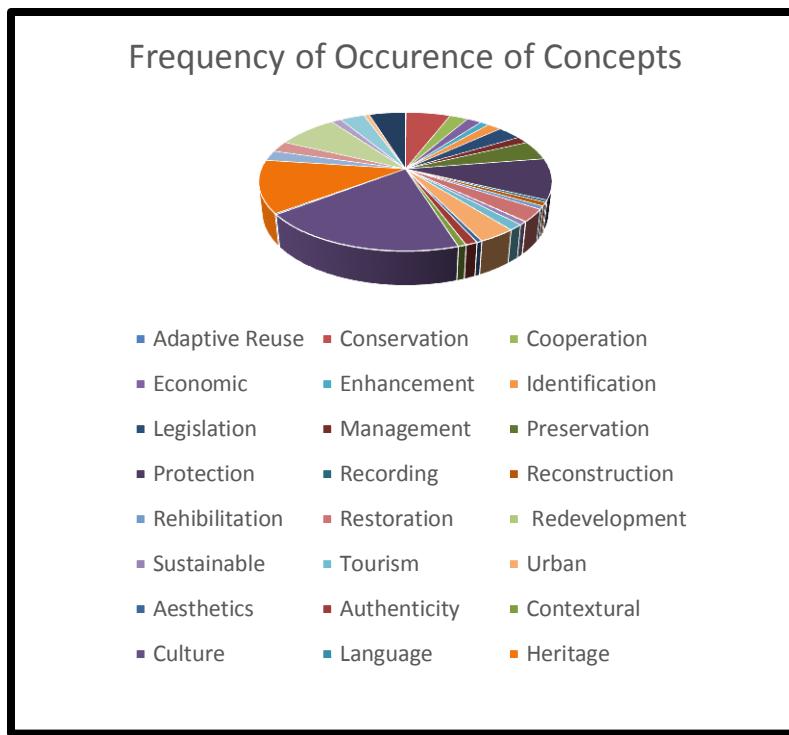
There are several outliers in the data in which an inordinate number of repetitions of one concept or another occurred in a specific document. This was expected as these documents were organized to deal explicitly with specific issues. This occurred most often in the culture and heritage considerations. In all, there were 61 incidences of a specific concept being repeated between 30 to 223 times in the same document. In the 1994 *Buenos Aires Draft Convention on Protection and Safeguarding of Underwater Cultural Heritage*, the word culture was repeated 101 times and heritage 113 times. In the 1995 *Standards for Treatment of Historic Properties*, the words restoration and repair were repeated 94 times. In the 1999 *Burra Charter*, culture is repeated 100 times. In the 2001 *Convention on the Protection and Safeguarding of Underwater Cultural Heritage*, culture is repeated 96 times and heritage 93 times. These considerations clearly underscore the importance placed on these concepts by the authors of these documents. It is understood that in several situations an abundance of one or another of

the selected words occurred because that particular document is primarily concerned with that specific concept. Another good example of this is the 1972 *Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property*, which is concerned with economic value. Over 30 references and 55 incidences of the words protection and safeguarding can be found in his document. We see it again in the 1970 *Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property* where the word culture is used 79 times. Similarly, history and its derivations occurred most in the 1995 *Secretary of the Interior's Standards for the Treatment of Historic Properties*, appearing 223 times. In all these cases, the utilization of the descriptors is consistent with the major intent of the specific documents. This is not to suggest that utilization of any other descriptor term is inconsequential. Indeed, all are important, in the context of historical and cultural conservation, and have even more impact depending on the focus of the documents in which they were used.

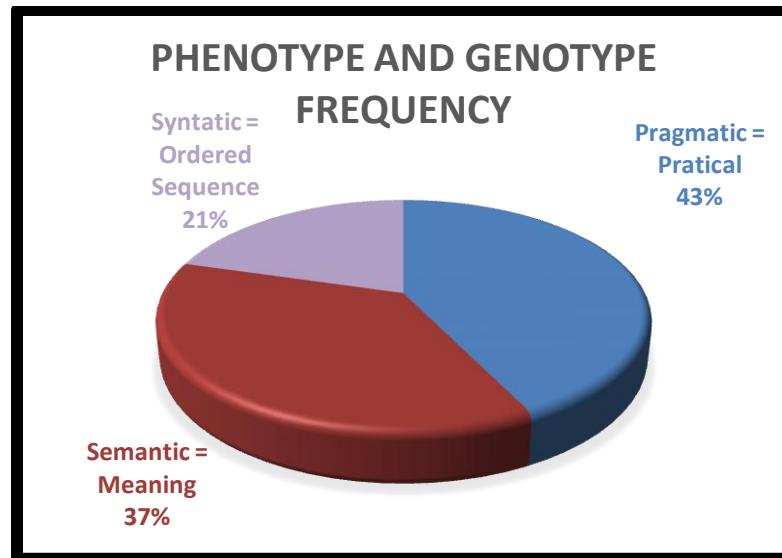
Initially, it was assumed that these concepts would be overwhelmingly pragmatic. However, if they are grouped by genetic composition and type, one can see this impression is not correct. Figure 251 shows the concepts in rank order. The initial distribution between the phenotype and genotype considerations was also a surprise. There were 18 phenotype and 13 genotype considerations. Figure 252 shows the distribution of the three major categories by frequency of occurrence of concepts and Figure 253 shows the frequencies of phenotype and genotype.

Rank Ordered Word Search			
Word	Value	Type	Genetics
Redevelopment	7	Pragmatic	Phenotype
Adaptive Reuse	8	Pragmatic	Phenotype
Language	27	Semantic	Genotype
Aesthetics/Beauty	58	Semantic	Genotype
Recording/Records	59	Pragmatic	Phenotype
Spiritual/Secular/Religious	83	Syntactic	Genotype
Rehabilitation	85	Pragmatic	Phenotype
Contextual Value	88	Semantic	Genotype
Sustainable Reuse	89	Pragmatic	Phenotype
Reconstruction	95	Pragmatic	Phenotype
Authenticity	129	Semantic	Genotype
Enhancement	135	Pragmatic	Phenotype
Presentation/Dissemination	150	Syntactic	Genotype
Tourism/Tourist	157	Pragmatic	Phenotype
Management	187	Pragmatic	Phenotype
Identification	210	Pragmatic	Phenotype
Economic and Market Value	223	Pragmatic	Phenotype
Significance	276	Semantic	Genotype
Cooperation	277	Pragmatic	Phenotype
Education	293	Syntactic	Genotype
Restoration/Repair	334	Pragmatic	Phenotype
Legislative/Policy Making	364	Pragmatic	Phenotype
Scientific	371	Syntactic	Genotype
Urban Settings/City/Town/Village	402	Pragmatic	Phenotype
Preservation	518	Pragmatic	Phenotype
Technical/Technique/Professional	550	Syntactic	Genotype
Conservation	672	Pragmatic	Phenotype
History	915	Syntactic	Genotype
Protection/Safeguarding	1097	Pragmatic	Phenotype
Heritage	1409	Semantic	Genotype
Culture	2243	Semantic	Genotype

**Figure 251 Rank Ordered Word Search**



**Figure 252 Frequency of Occurrence of Concepts**



**Figure 253 Frequencies of Phenotype and Genotype**

Initially, it was thought that the three major categories would be approximately equal. However, it appeared from an initial review that the distribution between pragmatic, semantic, and syntactic concepts was weighted heavily in favor of the pragmatic. The final numbers indicated that this was not correct. Pragmatic considerations constituted 42% or 4,919 incidences. Semantic concepts constituted 37% or 4,230 incidences of use. Syntactic concepts represented 21% or 2,362 terms utilized.

It is important to remember that meanings of words change over time. For example, the specific definitions of conservation terms used in 1877 are not applied in exactly the same way as in 2008. Therefore, the author made the decision to use the current generally understood definitions of the terms to limit confusion. This was done to level the differences between generational definitions of words. Obviously, this leaves room for disagreement, but the ensuing dialog is welcome. However, chaos would ensue without an attempt to develop a common understanding of word definitions. For example, the term “adaptive reuse” was not used in 1877 as we use it today and as shown by the study, it was not an important descriptor at that time. However, adaptive reuse of buildings has occurred since the inception of conservation. It simply was not called that.

The spreadsheet that reports the results in Appendix A does not list every word checked in each category. For example, the terms expert and technique were also checked and associated with the technical and professional category. Despite the living nature of language, in many cases the conceptual framework of words has remained strikingly similar over time. Beauty and aesthetics still relate to perceptual appreciation

of objects. Protection and repair relate directly to preservation of the objects or buildings under consideration. Education still relates to transferal of information across generations. Presentations, although they differ in technical complexity and format, still refer to demonstration and dissemination of data in one form or another. Technically trained professionals and their techniques are certainly more sophisticated in 2014 than they were in 1877, but they still represent the idea of professionals being trained in a scientific manner to maximize what they do.

Several of these documents were written in languages other than English. Some were originally written in Spanish, Italian, Portuguese, or French. These are Romance languages with strong similarities. This helped the Getty Institute translate them into English with a minimum of linguistic syntactic and semantic inconsistencies. The author did not evaluate any of the documents in their original language, but relied on the Getty Institute's professionally translated documents. Those written originally in oriental languages were small in number and undoubtedly lost something in translation. This was unavoidable. It would require a linguist with significantly better skills than the author to identify any such inconsistencies. Because this was beyond the scope of this study and after defining terms carefully, the decision was made to use the Getty Conservation Institute translations at face value.

To focus this study in a cogent manner, the project employed the above understanding about the translations of non-English documents and used a current English Merriam-Webster's Collegiate Dictionary to determine meanings for the terms that were used. (Merriam-Webster Inc. 2012) In addition, the plurals, conjugations, and

normal derivations of the words searched were also evaluated. Each word was devolved to its base word or phrase to ensure that none was missed. If the devolution caused the sequence of letters to include another unrelated word, that word was not counted.

Both United States and European spellings were checked as found in the documents. European spellings differ in words like labour, centre, endeavour, co-operation, colour, and programme. These words were included in the evaluation. For example, the word cooperation and co-operation were both used in the evaluation of this concept. In addition, the words aesthetic/esthetic and neighborhood/neighbourhood were checked. When technical professional concepts were checked, the word technique was also included as it was assumed that this was a subset of what technical professionals do.

The actual evaluation of these documents was time consuming and somewhat frustrating. The Getty website hot links were transferred carefully to the spreadsheet so that the links could be opened and reviewed. In some cases, PDF files scrambled the pagination of the document and it did not always transfer as originally published on the Getty site. In these cases, the author manually corrected spelling, pagination, word breaks, and line alignment. No corrections were made for textural content. Every effort was made to select the correct document to be evaluated, as well as the correct line and cell in the reporting spreadsheet. All selections were double-checked. The line being worked on was colored tan and a dark black line was placed on the bottom of the row while the document was being evaluated. As the evaluation was completed, the color and the darker line were moved lower until all documents had been reviewed. The author copied the concept of each column and pasted it into the word search for each document

to preclude spelling errors born of repeated entries. This afforded a visual clue based on the location of the column being reviewed. The spreadsheet program automatically placed a moving, hashed line around the perimeter of the cell containing the selected concept. This helped keep the researcher from wandering inadvertently into a different cell. As European spellings emerged, that particular column was colored blue so that the evaluator could go back through the already finished documents to recheck for spellings that might have been missed. Each concept term and reduced concept word were checked five times against the source documents and tabulated for their occurrence as related to the concept in the column. The words were not counted if they were not related directly to the concept at hand. After the fifth evaluation, the columns were auto summed top to bottom and left to right. Because long lists in a matrix can visually vibrate and one might lose one's place in the evaluation process, using an outline of each cell helped ensure the correct cell was being evaluated and avoid missing any cells or columns during the evaluation. These results were recorded on the spreadsheet.

The results of the evaluation of the selected conceptual terms from the 82 manifestos and statements of purpose are listed in Figure 254. Please refer to the spreadsheet in Appendix A to find the specific number count per category. There was no mode because no value was repeated twice. Figure 255 shows the range of values discovered, which will be utilized later in this document to develop a level of importance of the optimal conservation index. Figure 256 shows the scoring values used in development of the optimal conservation index.

Range of Values Discovered		
7	129	364
8	135	371
27	150	402
58	157	518
59	187	550
83	210	672
85	223	915
88	276	1409
89	277	1097
95	293	2243
		334

**Figure 254 Range of Values Discovered**

Numerical Value	Level of Importance	Range of Occurrence
1	Important	7-88
2	Very Important	89-210
3	Extremely Important	223-402
4	Essential	518-2,243

**Figure 255 Level of Importance Ranges**

To merge the 31 concepts into a useful tool, it was necessary to group them so that they might be used to determine which concepts come to the forefront and which might be considered less urgent. These ranges were grouped roughly in quarters of the total ranges discovered. Doing this allowed the author to develop a plan for the conservation of WWII army airbase facilities. The ranges discovered are listed in Figure 255. Note that level of importance was used to group the range of values found by quarters and to assign an importance value to each quarter, as shown in Figure 256.

Adaptive Reuse	Presentation/Dissemination
Aesthetics/Beauty	Preservation
Authenticity	Protection/Safeguarding
Conservation	Reconstruction
Contextual Value	Recording/Records
Cooperation	Redevelopment
Culture	Rehabilitation
Economic Value/Market Value	Restoration/Repair
Education	Scientific
Enhancement	Significance
Heritage	Spiritual/Secular/Religious
History	Sustainable
Identification	Technical/Techniques/Professionals
Language	Tourism/Tourist
Legislation/Law /Policy Making	Urban Settings/Towns/Village/City
Management	

**Figure 256    Searched Concepts Listed on Spreadsheet**

During the review of the 82 documents, the author observed that some had been written over varying amounts of time. It became clear that not all organizations were able to commit an equal amount of time, resources, and participants to the production of their documents. This might lead one to conclude that greater weight was given to charters and manifestos, which tend to be more verbose. It is the author's opinion that this is shortsighted because, generally, the organizations that met for longer periods and had more participants discussed topics in greater depth and placed great emphasis on what they were doing. However, those who spent less time also committed great emphasis to what they were doing. The charters of all of these organizations, regardless of the time that they met, focused on developing standards for conservation issues. Each of the committees and organizations were committed to their task at hand and it is felt

that their intrinsic motivations were the same regardless of the number of days spent generating their documents. All were internationally recognized and committed to conservation and experts. As the research continued, it became apparent that each organization strove diligently to place their most important concerns within their documents to preserve and protect historical and cultural considerations and objects. Although the specific focus of what they were doing may have differed, their commitment to conservation did not.

To aid the reader in understanding the phenotype and genotype grouping used in this study, the author included a common term in the header to clarify the meaning. Figure 257 shows the count of all pragmatic words searched and lists the rank ordered number of phenotype words used in the documents. Figure 258 shows the count and the rank order of the semantic and syntactic genotype words used in the documents. Please refer to the definitions at the beginning of this document for the specific intended meanings for each of the considerations used in this study; these were drawn from a commonly used recognized college dictionary.

<b>Pragmatic (Practical) Phenotype</b>	<b>Number of Mentions</b>
Repair	7
Adaptive Reuse	8
Recordings/Records	59
Rehabilitation	85
Sustainable Reuse	89
Reconstruction	95
Enhancement	135
Tourism/Tourism	157
Management	180
Identification	210
Economic Value/Market Value	223
Cooperation	277
Restoration	334
Legislation/Legal/Policy Making	364
Urban Setting/Town/Village/City	402
Preservation	518
Conservation	672
Protection/Safeguarding	1097

**Figure 257 Pragmatic (Practical) Phenotype Count**

<b>Semantic (Meaning) Genotype</b>	<b>Number of Mentions</b>
Language	27
Aesthetics/Beauty	58
Contextual Value	88
Authenticity	129
Significance	276
Heritage	1,409
Culture	2,234

<b>Syntactic (Ordered Sequence)</b>	<b>Genotype</b>
Spiritual/Secular	83
Presentation/Dissemination	150
Education	293
Scientific	371
Technical/Techniques/Professional	550
History	915

**Figure 258 Semantic and Syntactic Counts**

## **Conclusions from the Survey of the Getty Documents**

The professional expert conservationists who created the 82 documents employed concise wording to emphasize their criteria for conservation. In the latter portion of the 20th century, these documents were created and approved under the aegis of the United Nations. The concept words found in these documents can be used to determine which considerations the creators of these documents deemed important. As such, these words can be considered appropriate for use in determining which items and buildings should be conserved, once a consensus has been reached by the many stakeholders. The basic assumption of this study is that the number of times a concept word is used in a document is an indication of the importance that the framers of the document placed on that concept. In addition, several of the concepts were found to have occurred in significant clusters.

This being said, it is prudent to discuss the groupings as well. Eighteen practical concepts cluster around the pragmatic or practical considerations. There were seven semantic considerations intended to identify concepts that provide meaning. Six additional categories fell into the syntactic realm, which identify the considerations that bring order and sequence to what a conservationist does to assign valuation to a project. A numerical count of the occurrence of each conceptual term within the category is a clear indication of the locus of importance of these concepts within the documents. It also purports to be a good indication of how conservationists focus their efforts. Further, it demonstrates that over the 130+ years of the development of the profession,

conservationists have focused on several specific concepts. How and to what these concepts were applied differed somewhat from area to area and decade to decade.

The 1995 *Secretary of Interior Standards for the Treatment of Historic Properties* goes into detail about and gives several examples of how to treat historic buildings. These standards include interiors and exteriors of sites and the components of the restoration of historic buildings. The document develops recommendations for how to accomplish the conservation and defines some terms. The document implies values, but it does not detail how to make valuations of a facility or object for conservation. (Grimmer and Weeks 1995) It goes into considerable discussion about reconstruction, restoration, and preservation. However, it focuses primarily on how this is to be accomplished rather than what is to be protected. To complicate the circumstances, architectural conservation contains jargon, but often there is no universally accepted concise glossary of definitions of that jargon. (Stubbs and Makaš 2011) This can lead to confusion. Dealing with the technology of the conservation treatments appears to be more common in the professional literature than trying to form well-developed considerations of what values should be employed to select potential projects for conservation.

In the 1972 *Convention Concerning the Protection of the World Cultural and Natural Heritage*, Articles I and II state that cultural heritage is to be considered important. The document defines cultural heritage as consisting of monuments, buildings, and parts of buildings that demonstrate history, art, or science, or that have outstanding universal value from the perspective of history, art, or science, or represent

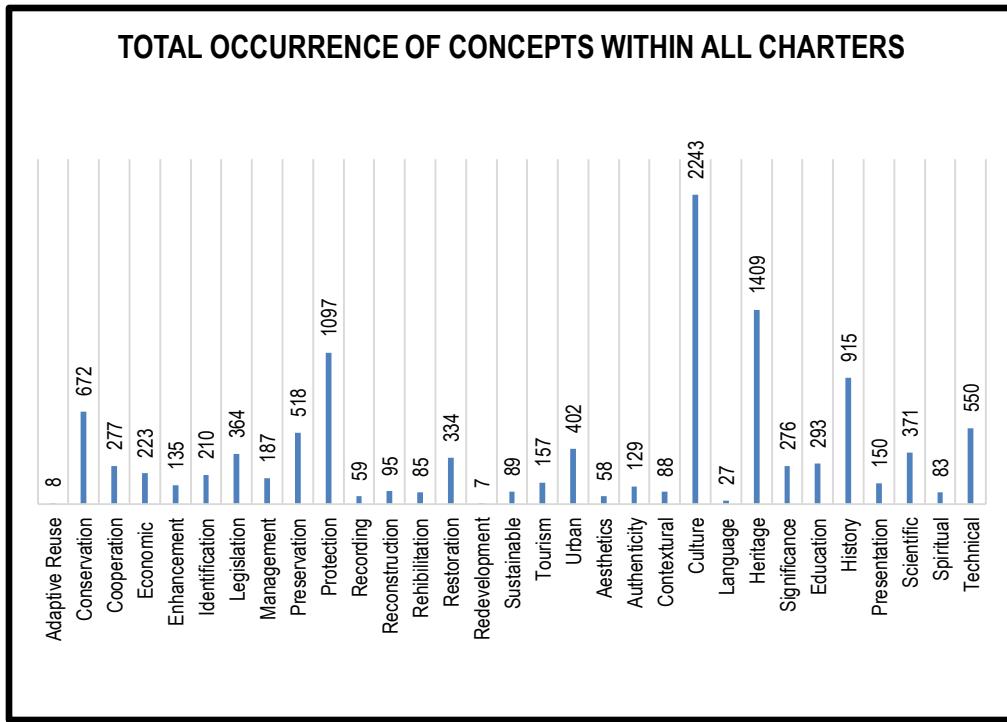
the aesthetic or scientific point of view. These are lofty and valuable concepts used in the definition of values. The UNESCO documents define the terms in detail, but do not attempt to come to a consensus among the many worldwide organizations involved in conservation work. (Global Mountain Summit 2012)

To be included on UNESCO's World Heritage List, a site must be of "outstanding universal value" and meet at least one out of ten of their selection criteria. (Global Mountain Summit 2012) These criteria include:

- 1) being a masterpiece of human creative genius;
- 2) being an important interchange of human values;
- 3) demonstrating an exceptional cultural tradition;
- 4) being an exemplary building type;
- 5) being an outstanding example of traditional human activity;
- 6) being associated with ideas or history or beliefs;
- 7) being a unique natural phenomena;
- 8) representing major stages of earth's and man's history;
- 9) representing important ecological or biological processes; or
- 10) being a significant in-situ conservation effort.

No concise compendium of values was found across the entire spectrum of global historical conservation organizations. However, these documents do repeatedly utilize many words that can be used as searchable conceptual terms from the Getty documents.

Figure 259 shows the occurrences of specific concepts in bar chart format. The summary statement for this study was drawn from the higher-ranking occurrences of concepts in the charters. There are many considerations to be addressed in all of the areas shown in Figure 259. However, for the purposes of this dissertation, it was decided to focus on those elements that constitute valuation. The first value shown in Figure 259 represents the number count of topics across the 82 documents reviewed. There were 11,511 entries. The highest cumulative value was 2,243 and the lowest was seven. The mean of the cumulative values is 371.3. The median of the cumulative value is 220. There is no mode because no two values repeated. There were 18 pragmatic considerations, seven semantic considerations, and six syntactic considerations. To refine the process of selection of useful criteria to apply to the selection of WWII U.S. Army Airbase buildings, it is necessary to assign value to the incidence of repetition of the considerations. These were grouped as follows, with 7-88 considered important, 89-210 very important, 223-371 extremely important, and 402-2343 were considered essential. Please note that the numbers are not continuous and directly reflect the ranges found in the evaluations as shown on the spreadsheet.



**Figure 259 Total Occurrences of Concepts**

Based on the summary data for each conceptual category evaluation, the clearly essential concepts are urban setting (402 pragmatic), preservation (518 pragmatic), technical (550 syntactic), conservation (672 pragmatic), history (915 syntactic), protection and safeguarding (1097 pragmatic), heritage (1409 semantic), and culture (2,243 semantic). There are four pragmatic considerations, two syntactic considerations, and two semantic considerations.

Those concepts identified as extremely important are scientific (371 syntactic), legislation and policy (364 pragmatic), restoration and repair (334 pragmatic), cooperation (277 pragmatic), significance (9276 semantic), and economic considerations (223 pragmatic). There are four pragmatic, two syntactic, and one semantic consideration.

Those concepts identified as very important are identification (210 pragmatic), enhancement (135 pragmatic), management (187 pragmatic), tourism (157 pragmatic), presentation (150 syntactic), authenticity (129 semantic), reconstruction (95 pragmatic) and sustainable (89 pragmatic). There are six pragmatic, one semantic, and one syntactic concept.

Those concepts identified as important are shown to be contextual value (88 semantic), spiritual/secular/religious (83 syntactic), recordings and records (59 pragmatic), aesthetics/beauty (58 semantic), adaptive reuse (8 pragmatic) and redevelopment (7). There were two pragmatic, two semantic, and one syntactic consideration.

Outliers have already been discussed in this document. They have been shown to be indications of even greater concern of the framers of the specific documents for a particular issue.

### **Summary Statements Based on the Findings**

It can be said that conservation professionals have set clear priorities. Culture, heritage, and protection are critical to the preservation of history. Conservation efforts using proper scientific techniques and technical professionals who include the entire urban setting are essential to these efforts. Culture (2,243) is overwhelmingly important because it resulted in almost twice the number of mentions as its nearest concept, significance (1409). Culture was 280 times more important than the lowest concept, redevelopment (7). Protection/Safeguarding occurred 1,097 times, Heritage 1,409 times, History 915 times, Conservation 672 times, Technical/Scientific/Professional 550 times,

and . Preservation occurred 518 times. In summary, it is essential to protect culture (2,243) while safeguarding (1,097) heritage (1,409) that propagates history (915) and uses conservation (672) techniques that are professionally applied (550) to preservation (518).

The extremely important considerations can be summarized as follows. Urban settings (402) should be preserved using scientific tools and skills (371) with appropriate legislation and policymaking (364) applied to propagate restoration and repair (334) by using education (293) and cooperation (277) to protect significance (276), while taking economic considerations (223) into account.

The very important considerations can be summarized as follows. First, identify (210) and enhance (135) then manage (187) conservation for tourism (157) so that presentations and dissemination of information (150) show authenticity (129). Where possible, projects should be reconstructed and repaired (95) in a sustainable way (89).

Important considerations can be summarized as follows. Contextual value (88), rehabilitation (85), and spiritual considerations (83) are vital. Records and recordings (59) should be carefully made and maintained so that aesthetics and beauty (58) may be preserved. Language (27) should also be preserved. Adaptive reuse (8) and redevelopment (7) fall very low on the scale and at this time can be considered of lesser importance. This is not to imply that these two concepts are inconsequential; indeed, adaptive reuse has occurred from the outset of historical conservation. An excellent example of this is the repurposing of the Pantheon from Roman temple to Christian church. To accomplish this, the building had to be redeveloped. There are countless

more examples of this behavior across the globe, across cultures, and across religious and political boundaries.

## **CHAPTER VI**

### **CONCLUSIONS**

Throughout the civilized world, historical and cultural conservationists have had to analyze the specific nature of a wide variety of criteria in an attempt to meet the important interests of a wide variety of stakeholders. This is a difficult task as many times stakeholder interests may be widely divergent.

#### **Recommendations for WWII Army Airbases in Texas**

This study was not intended to address all of the potential pitfalls associated with negotiating a preservation plan for conservation of WWII AAB facilities, but it does offer a systematic plan to address this issue. After carefully analyzing 82 international charters created over the last 130+ years, the author discovered specific considerations that represent global core valuation criteria. To say that this evaluation is absolute is not accurate; however, it can be replicated. In as much as charters morph with society and change over time, it can be expected that these criteria will change organically as well. It is also expected that the criteria will be modified by the dialog that inevitably will surround them. Based on the literature review, it can be said that the principles derived from the Getty Conservation Institute documents have been recognized as valid throughout the global professional preservation community for many years.

This study proposes four objectives and fourteen standards founded on the compartmentalized groupings that have already been discussed. It is recommended that these criteria be used to determine the valuation of historical objects and buildings from the WWII era. Figure 260 serves as a reference for selecting the desired level of

importance to be applied to these objects and buildings, based on the four principles and fourteen guidelines. Figure 260 also shows the rank order/importance value assigned to the individual words derived from the evaluation of the Getty Documents.

<b>Essential (518-2,243)</b>	<b>Very Important (89-210)</b>
Culture	2,243
Protection/Safeguarding	1,097
Heritage	1,409
History	915
Conservation	672
Technical/Professional	550
Preservation	518
<b>Extremely Important (223-402)</b>	<b>Important (7-88)</b>
Urban Settings/Town/City	402
Scientific	371
Legislation/Policy Making	364
Restoration/Repair	334
Cooperation	277
Protection/Safeguarding	276
Significance	276
Economic Considerations	223

**Figure 260 Rank Order of Words**

### **Four Recommended Principles**

These are four fundamental principles recommended for the preservation of historic WWII AABs in Texas.

1. The first principle is that the cultural heritage and history associated with the WWII army airbases should be preserved utilizing the best available

technical professionals employing the most current techniques. This effort should be an essential component of the community's comprehensive planning. Planning efforts should include economic development, adaptive reuse plans for land, utilities, and facilities (including residential functions, transportation, open spaces, social services, and recreation and urban design) and incorporate clear historic and cultural preservation goals.

2. The second principle emphasizes the importance of utilizing a scientific base to preserve urban settings and that they be protected by legislation and policy making that fosters cooperation, restoration, and repair while protecting the significance of the items being conserved within available economic considerations. Property owners are critical to the outcome of any project. Careful consideration of the preeminence of individual rights over property must be taken to ameliorate property owners' concerns. Eminent domain actions should be used only as a last resort. When developing a historic preservation plan, special attention should be given to fundamental human needs for personal safety, housing, and security as well as to public and political needs. Historic WWII AABs are primarily important to people who have lived and worked on base, or who are currently working there. These people should be a primary concern and remain at the forefront of the planning process.
3. The third principle recommends that proper identification, management, and presentation of the historically authentic objects and buildings can be

maintained and supported by funds generated by sustainable tourism. This can enhance reconstruction and repair efforts as needed. Preservation efforts for historic WWII AABs should reflect consistent standards. These policies should reflect local governing agency criteria as much as is practicable while incorporating the particular needs or priorities of individual communities and their inhabitants. The policies must also be flexible enough to meet the special needs of unique cultural populations within the area under consideration.

4. The fourth principle recommends retaining important contextual values when rehabilitating spiritual/secular/religious considerations. These are to be used and recorded faithfully so that aesthetics and the idiomatic character of languages identified as historically important are preserved. Redevelopment should be accomplished in a sustainable manner where possible when adaptive reuse is employed.

Unique or important features of a historic base should be protected. These include intangible, physical, and spiritual elements. Great efforts should be made to limit any threat to eliminate or mediate the following:

- a) The unique relationship between the historic bases as it relates to the surrounding area should be maintained.
- b) The relationship between the buildings of the base urban setting and its surrounding landscape and cityscape should be protected.

- c) The historic development patterns of the base as they have evolved over time should be protected.
- d) Where possible, the genotype and phenotype attributes of the interior and exterior of the buildings should be protected. Included in these considerations are the facades, interior spaces, and construction typology.
- e) Major considerations of specific buildings such as important construction features, materials, overall scale, size, ornamentation, style, and landscapes should be protected.
- f) Where possible, an integrated approach to the above elements should be utilized to retain the ambiance of the base as it developed over time.

### **Fourteen Recommended Standards**

A historical army airbase preservation program should be guided by the following standards.

1. The preservation plan should present and maintain a compatible relationship between the historic area and the setting of the base urban scape.
2. Continuing informational and educational programs should be established to foster communication across all stakeholders.
3. A detailed documentation plan and report for all aspects of the base and its buildings should be prepared before work starts. This report should be used as a guide to preservation of the site.
4. Effective planning for the preservation of a historic army airbase should begin with a systematic and careful study of the base and its complete

history. At a minimum, this should include the essential and extremely important considerations. This will establish a contextual framework and help determine what chronological point in history the conservation project should focus upon. Appropriate economic, land use, and demographic projections and plans are endemic to the plan.

5. The primary objectives of the preservation plan should be clearly stated. These principles should be explained in graphic, legal, auditory, verbal, financial, administrative, and computer formats. When possible, the use of video presentations is encouraged. A listing of measures and actions necessary to complete the objectives should be included. If possible, the very important and important considerations should be included along with the essential and extremely important considerations.
6. Current residents of a historic base should be involved in the planning process and their considerations should be accommodated where possible. They are to be granted access to all information on the project.
7. Adaptive reuse of buildings is preferred to construction of new ones. When new buildings are built, they should reflect the materials, scale, landscape, and base scape of the area where they are to be built, and not overshadow what is already there. Sustainable considerations should be included where practicable and cost effective.

8. Continuing education programs, which present the archeological considerations of the base, markers, and historical plaques, should be provided where possible to locate historical points and missing facilities.
9. Arbitrary displacement of current facility users should be avoided.
10. When new activities or buildings are planned for the base, they should be accomplished within the overall charter of the base and supporting infrastructure should not detract from the original base site plan.
11. Care should be taken not to modify the vehicular or aircraft transportation patterns, pedestrian flow patterns, landscape, and utility configuration of the site in such a way that might obscure historic considerations. New transit links, major road repairs, or utility works should not detract from the historical character of the base.
12. Archeological research should continue when possible to expand the knowledge about the site and facilities. That knowledge should be used to update the educational and conservation plan for the base regularly.
13. Designs for the protection of existing facilities on the historic bases should be very important to the plan. If damage occurs to the fabric of the base, it should be repaired as soon as possible.
14. All professionals, volunteers, and public officials involved in the preservation projects should have specialized training, including site-specific historical training.

## **A Preservation Plan for Historic WWII AABs in Texas**

Because societies change over time, it can be expected that the criteria and considerations for preserving historical objects and buildings will change as well. Further dialog regarding the criteria and considerations will also modify them. This being said, the definitions of the terms utilized in this study should be reviewed before drawing conclusions. As revealed by the research, the concepts presented in this study have been recognized as valid throughout much of the global professional preservation community. These concepts are the basis for the four principles and fourteen standards recommended for the preservation of the historic airbases.

It should be noted that each of the three bases included in this study used the same standard prescriptive Department of War planning and building design criteria outlined in the 700 and 800 series cantonment construction requirements. Although the Hearne AAB flight line did not originally contain any substantial buildings, those at Bryan AAB and Carswell AFB were operational at the height of their use. After Hearne AAB was converted to a prisoner of war camp, it still had only type 700 and 800 buildings built on the site for POW use. Sadly, all but two of these have disappeared or been torn down. All but 33 of the type 700 and 800 buildings at Bryan AAB have also disappeared. However, several excellent examples of building types remain, which should be protected. These include dorms, the flight tower, warehouses, and hangers. Carswell has fared much better because of its continuous use as a flight generation base. Although most have been modified, 12 of the type 700 and 800 buildings continue to be

used. In addition, fewer than half of the Wherry housing units are still in place and occupied by Navy personnel.

Little remains of the base at Hearne except the layout of the base plan and subterranean utility system. The City of Hearne desires to convert the base into an industrial park and to continue their landfill actions. Avocational archeologists and preservation enthusiasts have reconstructed one of the prisoner of war barracks at the site and hold historical WWII reenactments there annually. This site would benefit from a detailed conservation plan so that development of the industrial park does not destroy the scope and scale of the base plan. Relocation of the landfill would also greatly improve preservation of this site. Application of the four principles and fourteen standards will do a great deal to save what remains and to ensure that the cityscape of the base is not completely obliterated.

The circumstances at Bryan AAB are stable because the facility is under the control of Texas A&M University, which has a vital historical conservation contingent that regularly interacts with the university planning committees to ensure that historically significant buildings are given careful consideration before being torn down or significantly modified. Application of the four basic principles and fourteen basic standards can be used to save the African-American dorms, fight line tower, warehouses, and the three remaining residential units.

The situation at Carswell AFB is perhaps the most opportune. The various DOD agencies that currently occupy the facilities on the base are obligated by military regulations to follow the historical conservations laws that are in place and work with

the SHPO. Carswell AFB was compartmentalized by BRAC actions several years ago.

Each military unit on the base has assumed responsibility for maintenance and upkeep of their own facilities under the observation of, but not necessarily under the control of, the ROIC from the Navy Civil Engineer Battalion, which has titular control over facilities at the Joint Naval Airbase. Interagency agreements mandate that each branch coordinate its construction and major repair projects with the ROIC. This poses an opportunity for historical preservation considerations to be applied at the facility utilization monthly board meetings, from which the Navy administers and coordinates all base construction efforts.

Obviously, the mission requirements at active bases will dictate much of what needs to be changed as aircraft and mission platforms evolve (some of which will be difficult to project). It is recommended that the Essential and Very Important considerations be applied in all cases at all three locations. In addition, these considerations should be applied first to the DOD primary mission support areas as their DOD missions change. This is recommended because this is what will drive the funding of new construction and renovation work. In addition, these projects generally are the largest and most complex buildings in use on active USAF bases. Hence, hangars, warehouses, maintenance shops, and administrative facilities should be focused on first. Next, the focus should fall upon the minor support facilities, residential facilities, dorms, and pavements. The last buildings to be focuses on are the MWR facilities because these are funded via non-appropriated funds and administered by civilian organizations.

Application of these criteria is not simple. However, by focusing first on the two most important categories the conservator can develop a strong plan for preservation at these AABs. Unfortunately, most WWII airbases built in Texas and their buildings have disappeared. What remains is a hodgepodge of disassociated buildings and facilities. The greatest urgency exists to save the buildings of which the fewest were originally built. It is also recommended that every effort should be made to accommodate as many of the stakeholders' concerns as possible when preserving these facilities.

When selecting the building to be preserved, it is recommended that the conservator study genotype considerations such as the scale of the building, its place in the cityscape, and the original design intent and use of the buildings. This should be followed up by carefully studying the phenotype considerations such as apertures, fenestration, roof configuration; materials used on the exterior and interior as well as other architectural details to determine the acceptability of the building proposed for conservation. Next, the conservator should employ the pragmatic, semantic, and syntactic considerations as already outlined and prioritized in this study. After as much as can be done to save the cityscape and the scale of the base has been accomplished, and the infrastructure is protected, individual facilities can be addressed. It is recommended that the Optimal Conservation Index (OCI) be used to make these decisions. The OCI is generated from the scaled concept words.

Most of these words were found repeatedly in the literature review and in the evaluation of the Getty documents. They represent the intended areas of concern and groupings of activities of the professionals who wrote these 130+ conservation

documents. As already discussed, bibliometric analysis was used across many professions to garner the level of importance and validity. This technique has a strong history of accepted use in many professions. Therefore, it is appropriate for developing a greater understanding of the conceptual considerations deemed important to those who define historical conservation.

Figures 261 through 263 provide a quick reference for the evaluation criteria used in this study. It is recommended that an effort be made to quantify what is admittedly a qualitative issue. Valuation will likely have differing stakeholder concerns. However, the author believes that it is possible to bridge those differences with wise administration by well-trained project administrators. By using the recommended objectives and standards developed from the summary data gleaned from the Getty Conservation Institute documents, we can make a strong effort to categorize our valuations. We must also remember that each project has a myriad of considerations, many of which are specific to the individual project. However, we can make logical decisions if we apply the Optimal Conservation Index (OCI) process so that the conservator can generate a starting point from which to move toward a consensus among the stakeholders. Figure 264 shows the derived levels of importance, which will be utilized later in this document.

<b>Pragmatic (Practical) Phenotype</b>	<b>Number of Mentions</b>
Repair	7
Adaptive Reuse	8
Recordings/Records	59
Rehabilitation	85
Sustainable Reuse	89
Reconstruction	95
Enhancement	135
Tourism/Tourism	157
Management	180
Identification	210
Economic Value/Market Value	223
Cooperation	277
Restoration	334
Legislation/Legal/Policy Making	364
Urban Setting/Town/Village/City	402
Preservation	518
Conservation	672
Protection/Safeguarding	1097

**Figure 261 Number of Phenotype Mentions**

<b>Semantic (Meaning) Genotype</b>	<b>Number of Mentions</b>
Language	27
Aesthetics/Beauty	58
Contextual Value	88
Authenticity	129
Significance	276
Heritage	1,409
Culture	2,234

**Figure 262 Number of Semantic Genotype Mentions**

<b>Syntactic (Ordered Sequence) Genotype</b>	<b>Derived Levels of Importance</b>
Spiritual/Secular	83
Presentation/Dissemination	150
Education	293
Scientific	371
Technical/Techniques/Professional	550
History	915

**Figure 263 Syntactic Genotype Levels of Importance**

<b>Numerical Value</b>	<b>Level of Importance</b>	<b>Range of Occurrence</b>
1	Important	7-88
2	Very Important	89-210
3	Extremely Important	223-402
4	Essential	518-2,243

**Figure 264 Scoring by Concept Level of Importance**

This process is designed to begin the dialog among all stakeholders and to help educate them so that a consensus can be reached. The team leader or professional in charge should do the initial evaluation so it can be presented to all stakeholders as a starting point for working together to reach the desired solution. The OCI process will be explained in the next section, using three example buildings selected from this study.

### **Three Examples of Use of the OCI Scoring System**

One building from each base was selected to use as evaluation examples in this study. The African-American dorms from Bryan AAB, general office building 1425 from Carswell AFB, and the conference room building from Hearne AAB were selected. These buildings are excellent examples of typical facilities on the specific bases. One

may wonder why a hangar or a warehouse was not selected. Generally, these are the first buildings to be adaptively reused. In addition, they are reused with minimal genotype and phenotype changes. Although they are certainly important, these types of buildings are in the least danger of being lost, massively reconfigured, or demolished, although this happens occasionally. In many cases, old bases were transitioned to county or municipal authorities where they were located. Subsequently, they were either sold off, or more commonly, converted to fair grounds or industrial parks.

The author recommends that the remaining WWII buildings at these three bases be conserved, based on the recommended genotype and phenotype considerations and OCI evaluation process. Application of the pragmatic, syntactic, and semantic criteria to the remaining buildings should facilitate accurate valuations significantly.

Two of the bases, Carswell AFB and Hearne AAB have fewer buildings to be conserved. Those remaining retain considerable genotype and phenotype characteristics that can still be discerned. Selecting a representative building at these two bases was limited to some degree because of the small percentage of original buildings remaining. Furthermore, while significant infrastructure and cityscape remain intact to which the recommended principles could be applied, many refurbished buildings at Carswell AFB continue to be in use because the base must still meet active duty and reserve mission requirements on a daily basis. As such, building selection was limited to the dozen remaining WWII era buildings that retain some intact genotype considerations. Many of the phenotype issues at Carswell have been covered over by multiple renovations over the intervening years. The 33 WWII buildings remaining at Bryan AAB present a better

opportunity for conservation because many of them have had few, if any, genotype or phenotype changes applied to them.

One building from each base was selected to demonstrate how the recommended OCI valuation system might be applied to individual buildings to develop a numerical valuation recommendation for selecting a building for conservation. This process is applicable to all potential buildings, whether their importance score is one or four.

Selection of the importance score is derived by summing all the Getty word counts from the chosen concept words from the pragmatic, semantic, and syntactic considerations and averaging them by the number of selected words from each of the three areas. The three areas are then added together to generate the importance score: 1) important (7-88); 2) very important (89-210); 3) extremely important (223-402); and, 4) essential (518-2243).

All of the buildings noted in this evaluation are expected to meet the four recommended objectives previously discussed. These objectives deal with important elements in the overall cityscape, which should be preserved in context of location, scale, building type, and configuration as much as possible. In addition, it is considered important that the use of the best available technical procedures and materials be an integral part of the comprehensive plan. Incumbent to the four objectives is adherence to the fourteen recommended standards. These standards include:

- preparation of preservation plans,
- educational programs,
- detailed documentation plans,

- a systematic and careful study of the entire base,
- clear statements of goals for all plans,
- involvement of current residents of the space,
- consideration of adaptive reuse of the buildings before reconstruction,
- integration of new construction in context and scale with the historic buildings,
- limiting changes to traffic pattern,
- continued archeological research,
- repairing damage done to existing historical facilities, and
- using well-trained, communicative technical professionals.



**Figure 265 African-American Dorm**

## **Bryan AAB OCI Example**

The African-American dorm was selected for conservation evaluation at Bryan AAB (Figure 266). This building is in a significant state of disrepair and was at the point of collapse until recently. The following four objectives were developed to guide conservation and restoration efforts at Bryan AAB:

- 1) The TAMU Board of Directors has accepted a comprehensive plan for Bryan AAB that includes sensitive considerations for the African-American Dorms and the application of scientific, technical, and professional restoration activities.
- 2) Property owner considerations are minimal as the building and surrounding area belong to one legal entity. Safety considerations have already been applied because the roof was recently rebuilt after near collapse. Continued work on the interiors is recommended so that the people who use the building can be safe and comfortable.
- 3) Proper identification, management, and presentation of the building are still needed because it is in a significant state of disrepair. Funds should be acquired and used to accomplish this task. It is recommended that historical plaques and markings be utilized to enhance public awareness and tourist interest.
- 4) Contextual historical values and considerations should be maintained and enhanced. The idiomatic character of the building, its original use, and its aesthetics should be emphasized. Care should be taken to protect the

surrounding area and relationship to adjacent buildings, infrastructure, landscape, and cityscape as well as historical development patterns. The facades, interior spaces, and construction typology should be protected and reconstructed. These should be accomplished in a sustainable, adaptive reuse mode.

The pragmatic/practical/phenotype criteria used for this evaluation were repair (value 1), adaptive reuse (value 2), sustainable reuse (value 5), restoration (value 13), conservation (value 17), and protection (value 18). This generates a pragmatic value score of 56 for six word considerations. The semantic/meaning/genotype criteria used were contextual value (value 3), authenticity (value 4), significance (value 5), heritage (value 6), and culture (value 7). This gives a semantic value score of 25 with five word considerations. The syntactic/ordered sequence/genotype criteria used were presentation (value 2), education (value 3), and history (value 6). This gives a syntactic value score of 11 with three word considerations. Each of the three areas was averaged by its respective number of considerations to generate a pragmatic value of 9.3, semantic value of 5.0, and syntactic value of 3.7.

To derive the importance score it is necessary to look at the Getty values for each conservation word selected. This process is described in the following paragraphs.

The sum of the pragmatic concept words is 2207. If we divide the total words found by the six pragmatic considerations (repair, adaptive reuse, sustainable reuse, restoration, conservation, and protection), it yields an average of 367.8. There were 4,136 semantic concept words found. Dividing the total semantic words by the five

semantic considerations (contextual value, authenticity, significance, heritage, and culture) yields an average of 872.2. The syntactic count totaled 1,358 words. When this was divided by the three syntactic considerations (presentation, education, and history), the average was 452.7.

The importance score is derived by adding these three averages:  $367.8 + 872.2 + 452.7 = 1692.7$ . This score puts it in category four (essential = 518-2243). Finally, the averaged value scores and the importance score category are added ( $9.3+5+3+4=21.3$ ), which results an optimal conservation index of 21.3.

Figure 266 contains the information compiled from the evaluations of the criteria that were identified for the Bryan AAB African-American dorm. This generates the Optimal Conservation Index value, which is used to make the determination if a particular facility should be preserved. Given the special historical considerations of African-American dorm, it was expected to have a high importance score.

<b>Bryan AAB African-American Dorm</b>		
<b>Merit Consideration</b>	<b>Averaged Word Count</b>	<b>Averaged Score</b>
Pragmatic Occurrence	367.8	9.3
Semantic Occurrence	872.2	5
Syntactic Occurrence	452.7	3
Importance Score	1692.7 (total)	4
Conservation Index		21.3 (total)

**Figure 266    OCI Merit Tabulations for African-American Dorm**

### **Carswell AFB OCI Example**

Carswell AFB has been in continuous use since its original construction. The author was stationed at this base for many years and was active in the renovation of many of the existing buildings including the security police office, Building 1428 (see Figure 267).



**Figure 267 Building 1428**

Building 1428 is the building chosen to test the OCI evaluation. It was built during WWII as a general administrative building. It retains its general character, although the fenestration has been significantly changed (due in part to some of the author's architectural work). The following four objectives were developed to guide conservation and restoration efforts at Carswell AFB.

- 1) As mandated by USAF and USN regulations, a comprehensive urban and building use plan exists for Carswell AFB (now NAS JRB Fort Worth) because it continues to be an active military establishment. Technical and

professional work and compressive planning processes are in place and can be expected to continue as long as the base remains on active status.

- 2) The DOD is the sole owner and operator of this building. Some improvements have already been made in consideration of the safety and comfort of the users and as required by Title 10 criteria, prescriptive planning designs, and military regulations. The exteriors and interiors need to be sensitively brought back to historical standards, as current materials are out of historical context with the original building phenotype criteria.
- 3) Proper identification, management, and presentation of the building are in place as part of DOD facility maintenance and identification procedures. It is recommended that historical plaques and markings be utilized to enhance public awareness. Due to the nature of the operations in this building, it will not be possible to encourage tourist activity.
- 4) Contextual historical values and considerations should be maintained and enhanced. As part of the conservation efforts, the character of the building and its aesthetics should be recreated and returned to the era of WWII. Care should be taken to continue to protect the surrounding area and its relationship to adjacent buildings and infrastructure, landscape, cityscape, and historical development patterns because these remain intact and are consistent with the original genotype intent and design. The facades, interior spaces, and construction typology should be brought into greater compliance

with those of the original phenotype design. The sustainable adaptive reuse modes in place should continue.

Building 1428 is one of the original WWII buildings on the base. This building has been modified considerably. The exterior wall finishes and about 40% of the interior plan have been changed over the years. The pragmatic/practical/phenotype criteria used for this evaluation were enhancement (value 7), management (value 9), and protection (value 18). This generated a pragmatic value score of 34 for three word considerations. The semantic/meaning/genotype criteria used were aesthetic (value 2), contextual value (value 3), and heritage (value 6). This gave a semantic value score of 11 with three word considerations. The syntactic/ordered sequence/genotype criteria used was historic (value 6). This gives a syntactic value score of 6.0 with one word consideration. The three areas were averaged to generate a pragmatic value of 11.3, semantic value of 3.6, and syntactic value of 6.0.

The OCI for Building 1428 was calculated in the same way as for the dorm at Bryan AAB. The sum of the pragmatic word count is 2374; dividing this number by three yields an average value of 791.3. The sum of the semantic word count equals 1 555; dividing this number by three gives us 518.3. The syntactic word count totaled 915; dividing this number by one yields 915. The importance score is derived by adding the pragmatic, syntactic, and semantic word averages ( $791.3 + 518.3 + 915 = 2224.6$ ). The result places it in category four, essential. The optimal conservation index is derived by adding the averaged value scores ( $11.3 + 3.6 + 6 + 4 = 24.9$ ). Figure 268 shows the calculations for the OCI for Building 1428.

<b>Carswell AFB Building 1428</b>		
<b>Merit Consideration</b>	<b>Averaged Word Count</b>	<b>Averaged Score</b>
Pragmatic Occurrence	791.3	11.3
Semantic t Occurrence	518.3	3.6
Syntactic Occurrence	915	6
Importance Score	2224.6 (total)	4
Conservation Index		24.9 (total)

**Figure 268 Building 1428 OCI Merit Tab Chart**

### **Hearne AAB OCI Example**

The Hearne AAB conference building was selected for evaluation (Figure 269) because it is one of the few remaining structures on site. Originally used for on-base briefings and official military receptions, it has been partially reconstructed. The roof leaks and requires repairs. The rear door is missing, but the main conference room has been developed into an excellent display for information and historical artifacts found on the site.



**Figure 269 Original Conference Building at Hearne**

The following four objectives were developed to guide conservation and restoration efforts at Hearne AAB:

- 1) The City of Hearne initially had a general plan to develop this site into an industrial park. Although it managed to attract several businesses in the 1980s, the plan was not extensively developed. Use of the southern part of the site for a city landfill has destroyed much of the cityscape on the south side of the site. The construction of the county fairgrounds and inclusion of one manufacturing entity destroyed roughly two-thirds of the northern part of the original POW camp. What remains is primarily foundations, roads, and below grade infrastructure. The Friends of Camp Hearne organization has preserved the three remaining facilities and sensitively reconstructed a historically accurate POW barracks on the site. Cathy Lazarus or Melissa Freeman at 979-314-7012 or [www.campHearne.com](http://www.campHearne.com) can be contacted for updates of continued protection and preservation work. They lead the Friends of Camp Hearne non-profit organization, which is dedicated to preservation at the site. They supervised the renovation of the conference building, using scientifically trained technical professionals in the planning and execution of their restoration and reconstruction efforts. It is recommended that a comprehensive preservation plan be developed for what remains at this site.
- 2) Property owner considerations are minimized as the building and surrounding area belong to the city of Hearne. The Friends of Camp Hearne have worked extensively on the building and it meets current safety criteria. Continued

work on the interiors is recommended so the buildings reflect WWII historical context with greater accuracy.

- 3) Proper identification, management, and presentation of the building have been met as the non-profit has already developed and installed historically accurate signage. There are ongoing educational efforts as well as an annual historical reenactment.
- 4) The few remaining contextual historical values and considerations for the larger site should be maintained and enhanced. The character of the remaining buildings and their aesthetics should be protected during use. Care should be taken to protect the surrounding area and its relationship to infrastructure, landscape, cityscape, and historical development patterns. The facades, interior spaces, and construction typology should be protected.

The conference building at Hearne AAB has already had restoration applied to it.

However, the exterior of the building requires attention. The pragmatic/practical/phenotype criteria used for this evaluation were repair (value 1), rehabilitation (value 4), sustainable reuse (value 5), enhancement (value 7), tourism (value 8), management (value 9), restoration (value 13), and urban setting (value 15). This generates a pragmatic value score of 62 for eight concept word considerations. The semantic/meaning/genotype criteria used were contextual (value 3), authenticity (value 4), and heritage (value 6). This gives a semantic value score of 13 with three word considerations. The syntactic/ordered sequence/genotype criteria used were presentation (value 2), education (value 3), and history (value 6). This gives a syntactic value score of 11 with three

concept word considerations. Each of the three value scores was averaged by the respective number of considerations to generate the pragmatic value of 7.75, semantic value of 4.3, and syntactic value of 3.6.

The OCI for the Hearne conference building was calculated similarly to the dorm at Bryan AAB and security police building at Carswell AFB. First, the pragmatic criteria were totaled, equaling 1 389. This was divided by the eight concept words, which yielded an average value of 463. The semantic criteria equaled 1 626. This was divided by the three concept words, which averaged 542. The syntactic criteria totaled 1 358. When divided by the three concept words, the average was 452.6. The importance score was derived by adding the word count averages ( $463 + 542 + 452.6 = 1,457.6$ ). This result placed the conference building in category four (essential). Summing all of the value scores ( $7.75+4.3+3.6+4=19.65$ ) result in an optimal conservation index of 19.65.

Figure 270 contains the OCI information for the Hearne AAB Conference Building.

<b>Hearne AAB Conference Building</b>		
<b>Merit Consideration</b>	<b>Average Word Count</b>	<b>Average Score</b>
Pragmatic Occurrence	463	7.75
Semantic t Occurrence	542	4.3
Syntactic Occurrence	452.6	3.6
Importance Score	1457.6 (total)	4
Conservation Index		19.65 (total)

**Figure 270 Conference Building OCI Merit Tabulation Chart**

We find from the three examples that the Hearne AAB conference building generated an OCI of 19.5. The Bryan AAB dorm generated an OCI of 21.3. The Carswell AFB administrative building generated an OCI of 24.9. If these were all on the same base and part of the same conservation project, the OCI provides a quantifiable value with which to rank the conservation efforts.

It is understood that stakeholder concerns will likely change some of the selected pragmatic, semantic, and syntactic terms selected to develop the OCI values. Once the stakeholders are educated concerning the finer points of the project conservation efforts then the project can proceed. Adroit interactions between conservation professionals, team leaders, and other stakeholders will have a significant impact on the outcome. The OCI evaluation can serve as a useful tool in the education of the stakeholders so an informed consensus can be reached before pursuing conservation projects. This evaluation system is intended to be a starting point from which to generate agreement among all stakeholders. There are many remaining opportunities in the continental United States to utilize a systematic valuation system like the OCI system.

The author has over 32 years' service in the USAFR and (as an inspector) has had the opportunity to visit all of the USAFR bases and most of the active duty bases in the continental United States. In addition, he has had the opportunity to visit many bases in Europe, Korea, and Japan. Some WWII vintage facilities remain on all of these bases. In most cases, they are being utilized for new functions. Unfortunately, on most of the bases affected by closure actions, the WWII facilities are rapidly being torn down or

they are falling into disrepair, much like Merced AFB in California. These are very sad losses!

### **Additional Conservation Opportunities**

Significant opportunities to save large numbers of buildings exist nationwide. This study demonstrates that the criteria proposed for valuation are useful and replicable. The OCI system provides a way to quantify a complex qualitative issue. It is hoped that after reviewing these considerations, conservationists will agree and members of our profession may start the important task of preserving what were once considered mundane and unimaginative buildings from this critical historical time in U.S. history.

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Barksdale AFB LA	Langley AFB VA
Brooks AFB TX	Little Rock AFB Arkansas
Cannon AFB NM	Luke AFB AZ
Castle AFB CA (closed)	Maelstrom AFB MT
Charleston AFB SC	Maxwell AFB AL
Davis/Mothan AFB NV	March AFB CA
Dobbins AFB GA	McCord AFB NJ
Dover AFB DE	Mc Connell AFB KA
Dyess AFB TX	Minot AFB ND
East Kelly AFB TX (closed)	Moffett Field CA
Edwards AFB CA	NAS New Orleans LA
Elgin AFB FL	Nellis AFB NV
Elmendorf AFB AK	Offutt AFB NB
Ellington Field TX (closed)	Portland IAP OR
Ellsworth AFB SD	Randolph AFB TX
Fairchild AFB WA	Robins AFB GA
F. E. Warren WY	Scott AFB IL
Fort Sam Houston TX	Seymour Johnston AFB SC
Goodfellow AFB TX	Shaw AFB SC
Grissom AFB Indiana	Sheppard AFB TX
Hickam AFB HI	Shreveport AFB FL
Hill AFB UT	Tinker AFB OK
Holloman AFB NM	Travis AFB CA
Homestead AFB FL	Tyndall AFB FL
Hulbert Field FL	Vandenberg AFB CA
Kelley AFB TX	Whiteman AFB MO
Keesler AFB MS	Wright Patterson AFB
Kirkland AFB NM	

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**Figure 271 CONUS AFBs with WWII Buildings**

Figure 271 contains a list of WWII era buildings remaining at CONUS Air Force Bases that should be considered for conservation. These facilities are in various states of use and disrepair. Many have been converted to civilian use while others sit abandoned, open to vandalism and deterioration. It would be a tragedy to allow this to continue and it is hoped that some may be saved.

### **Final Comments**

After the detailed review of the many documents and terms associated with valuation in historical and cultural conservation, it can be seen that the basic nature of what is being considered (for preservation/conservation) can be identified as either a genotype or a phenotype. This means either it is the genetic foundation of the object or building, or it is the ordered sequence of what it is to be that object or building. Furthermore, by grouping these concepts in pragmatic, semantic, and syntactic groups we may better understand the intentions of the creators of the studied documents. It is also logical to state that as the profession moves forward, the conservation/restoration of buildings, towns, and other artifacts by technically and scientifically trained professionals will likely result in more concise, validated historical preservation projects. (Stipe 2003) In addition, conservation accomplished with the cooperation of the stakeholders, buttressed by carefully crafted legislation and policymaking, will generate preservation projects that are likely to promote long-term protection for and safeguarding of our global cultural heritage. If we continue to educate the public and ourselves, as well as utilize increasingly accurate scientific study and preservation techniques (as they become available), we are likely to improve historical and cultural

conservation efforts systematically in ways that will result in greater agreement among stakeholders. Based on the study of more than 130 years of mission statements, manifestos, and statements of purpose, it is the opinion of the author that these efforts are the culmination of worldwide historical and cultural conservation movements.

The next step in the development of a systematic method of evaluating buildings and artifacts for preservation/conservation is to field test the OCI system. Ideally, the system should be tested on the same site by several independent groups to see if they produce similar results. Although the OCI system is intended to quantify valuation of buildings in a project containing more than one building, it also presents an excellent opportunity to explore differing stakeholder considerations for a single building. The initial evaluation should be considered a first order test. In some cases, it may be necessary to repeat the process to achieve consensus among all stakeholders.

The focus of this study was to understand the constituent elements of valuation as described by the documents compiled by the Getty Institute. It is felt that the use of genotype and phenotype criteria as well as pragmatic, semantic, and syntactic groupings will help stakeholders better understand all aspects of the valuation process, enabling them to reach a consensus on the best methods for preserving/conserving valuable historic artifacts and buildings. In addition, it is hoped that OCI system will help direct each project toward high quality preservation/conservation. Appendix A contains a spreadsheet that levels definitions across the interest groups and focuses on what was found in common. This is not an all-inclusive list. It is, however, an attempt to bring order to the valuation process and reduce confusion among stakeholders.

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## **APPENDIX A**

Please review the spreadsheet attached to this document for the tabulations of the terms and concepts used in the Getty documents.