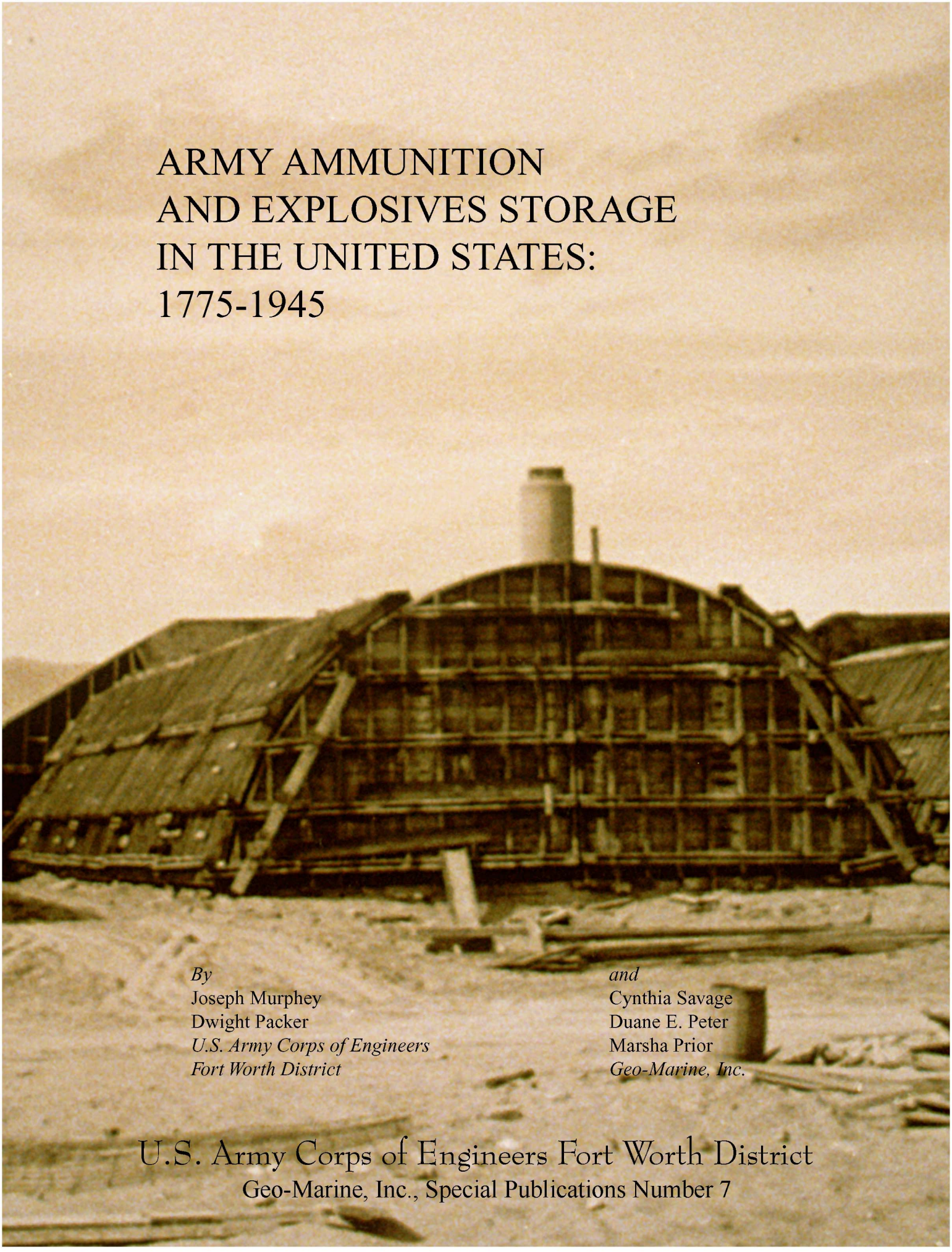
ARMY AMMUNITION AND EXPLOSIVES STORAGE IN THE UNITED STATES: 1775-1945



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This report presents a national historic context for World War II-era Army ammunition storage magazines. The objective of this document is to present the themes and events that influenced the construction, modification, and use of ammunition storage magazines during World War II and during the mobilization effort prior to this war. The historic context covers the evolution of ammunition storage magazines from 1775 to the present with particular attention given to the growing concerns for safety after the 1926 Lake Denmark explosion and the increased need to conserve material during World War II. In addition to the historic context, this document presents a Planning Level Survey in which a classification system for all ammunition storage magazines is presented and includes a discussion of National Register eligibility requirements. The most comprehensive array of ammunition storage magazines with the highest degree of integrity are found at Hawthorne Army Ammunition Plant (A.A.P.), Nevada; McAlester A.A.P., Oklahoma; Pine Bluff Arsenal, Arkansas; Ravenna A.A.P., Ohio; Blue Grass Army Depot, Kentucky; Louisiana A.A.P., Louisiana; Aberdeen Proving Ground, Maryland; Camp Stanley, Texas; and Cornhusker A.A.P., Nebraska.

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MANAGEMENT SUMMARY

This report provides a historic context for Army ammunition and explosives storage structures, usually referred to as magazines, in the continental United States. Although there are over 20,000 magazines within the Army real property inventory that were built between 1775 and 1945, these structures have been largely overlooked by cultural resource managers. This study conducted by the U.S. Army Corps of Engineers (USACE), Fort Worth District, and Geo-Marine, Inc., for the Army Environmental Center was designed to create a historic context in which both aboveground and underground magazines (igloos) could be evaluated. Recommendations concerning potentially significant examples of Army ammunition bunkers, including representation of each identified design type, were made.

The original archival and field investigations were conducted by the USACE, Fort Worth District. The archival research conducted at the Library of the Ordnance Museum, the National Archives, the Corps of Engineers Office of History, the Center for Military History, and the John Byrd Technical Library of the Defense Army Ammunition Center, documented that literature related to magazine design and technology is extremely rare. An oral history supplied by Dr. Chester E. Canada of the Department of Defense Explosives Safety Board provided the most useful information. Field investigations involved visits to Savanna Army Depot, Hawthorne Army Ammunition Plant, Picatinny Arsenal, and Frankford Arsenal.

The development of the context and analysis of the real property inventory revealed that ammunition magazines consist of a few basic types that are redundant in both design character and general layout when used in multiples (e.g., at depots). Aboveground magazines, designed for particular classes of ammunition are similar in design throughout the twentieth century. Earth-covered magazines, or igloos, were developed after the 1926 Lake Denmark disaster and became the standard for the storage of high explosives. Design changes were limited and many occurred in response to materiel shortages during World War II or in response to the storage needs of new weapons (chemical, biological, and nuclear). With only a few basic types and an abundance of examples, the preservation of every magazine or depot would be an unwise use of the limited funds available for cultural resource management. It is recommended that those installations with the most comprehensive array of the various magazine designs may be eligible for the National Register under this context. It is recommended that the following installations provide the most comprehensive array of both aboveground and underground magazines with a high degree of integrity: Hawthorne Army Ammunition Plant (A.A.P.), Nevada; McAlester A.A.P., Oklahoma; Pine Bluff Arsenal, Arkansas; Ravenna A.A.P., Ohio; Blue Grass Army Depot, Kentucky; Louisiana A.A.P., Louisiana; Aberdeen Proving Ground, Maryland; Camp Stanley, Texas; and Cornhusker A.A.P., Nebraska. Potentially eligible aboveground or underground magazines, with the exception of isolated structures, exist in groups that may constitute districts, which encompass a number of similar structures within their original setting. The exact number of structures may be arbitrarily defined; however, the number should be sufficient to

reflect the layout and infrastructure related to the function of the complex and the associated safety concerns. The highly redundant nature of these resources, however, and their evaluation within a national context precludes the preservation of all aboveground and underground storage facilities. Those installations not listed above, but which contain ammunition storage facilities (Appendix A) are considered to have lesser examples of ammunition storage facilities, and may be considered not eligible under this context. However, such property types, in rare instances may have had such an exceptional impact on a State or locality that they could be eligible for the National Register under other State or local themes.

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INTRODUCTION TO THE NATIONAL HISTORIC CONTEXT FOR ARMY AMMUNITION AND EXPLOSIVES STORAGE IN THE UNITED STATES, 1775–1945

Ammunition and explosives storage structures, usually called magazines, are present to some degree at most former and present United States Army installations (Table 1). Ammunition and explosives storage is an area of historical study that has been overlooked in the study of military cultural resources. In general, storage buildings at military installations are a ubiquitous necessity with a mundane function, usually translated into a utilitarian form that lacks excitement to the casual observer. Storage does not usually attract the interest of historic preservation societies or the attention of cultural resources managers. In particular, ammunition storage is especially overlooked, separated by the explosive nature of its contents from the daily activity of military life.

Numerically, ammunition and explosives structures constitute the largest single property type in the current Army real property inventory. Of the estimated 169,000 resources in the Army inventory, over 20,000 are magazines in current use. While there are a number of historic magazines scattered throughout the country at Army forts, the preponderance of magazines date from the World War II-era. As part of the large-scale mobilization efforts for World War II, the Army authorized the construction of 16 new ammunition storage depots and over 10,000 ammunition and explosives storage magazines.

Until the mid-1920s, the Army did not have a standardized approach to the storage of ammunition and explosives. Generally, aboveground warehouse-type structures were constructed to house the volatile materiel. Typically, the magazines were built of stone or brick, which provided a less incendiary environment than timber buildings. For the most part, these magazines were successful in providing isolated, dry, ventilated, and secure storage for ammunition and explosives. However, they did have their limitations, particularly for the mass storage of ammunition and explosives that became common in the twentieth century. Following the disastrous, chain reaction explosion at Lake Denmark, New Jersey, in 1926, it became apparent that the storage of ammunition and explosives required study. In response to the Lake Denmark explosion, a new type of magazine was developed which ameliorated the shortcomings of previous magazines. The new earth-covered, concrete magazines, popularly known as igloos, directed the force of the explosion upward rather than outward, decreasing the chances of sympathetic explosions. Igloo-type magazines continued to be used and built through the 1980s. At that time, a revised design that required less construction material and less land area was designed. This new magazine was designed primarily for use in Europe where land constraints posed a special problem (Howdyshell 1981:5). The majority of magazines currently in use in the United States are igloos or a derived igloo-type magazine.

Although ammunition and explosives structures pale in comparison to other buildings on Army installations that serve more high-profile functions, they are resources that require specialized construction techniques and certain considerations in siting. As a distinct entity, they also have certain terms that apply to them in particular ways. Commonly, ammunition and explosives storage structures are called magazines. The original, late sixteenth-century sense of the word "magazine" meant store. By the mid-eighteenth century, the use of the word began to refer to a "chamber for holding a supply of cartridges in a firearm." In more modern times, "magazine" has come to mean a "military store for arms, ammunition and explosives." In the late 1920s, a new type of earth-covered, barrel-arched, concrete magazine was developed that generally became known as an "igloo" due to its similarity in form to the dome-shaped, Eskimo buildings of the same name (Abate 1998:359).

Table 1
Locations of Military Installations (1775–1945) Referenced in This Document

Military Installation	Military Installation
Aberdeen Proving Ground, MD	Nansemond Ordnance Depot, VA
Allegheny Arsenal, PA	Navajo Army Depot Activity, AZ
Amatol Arsenal, NJ	Neville Island Supply Depot, PA
Anniston Ordnance Depot, AL	Newport Army Depot Activity, IN
Augusta Arsenal, GA	Ogden Depot, UT
Badger Army Ammunition Plant, WI	Old Hickory Powder Plant, TN
Benicia Arsenal, CA	Perriman Ordnance Depot, VA
Camp Stanley, TX	Pig Point General Ordnance Depot, VA
Carlisle Barracks, PA	Picatinny Arsenal (Dover Powder Depot/Lake Denmark Naval Ammunition Depot), NJ
Charleston Army Depot, SC	Pine Bluff Arsenal, AR
Chicago Storage Depot, IL	Portage Ordnance Depot, OH
Columbia Arsenal, TN	Pueblo Ordnance Depot, CO
Columbus Arsenal, OH	Radford Army Ammunition Plant, VA
Coosa River Storage Annex, AL	Raritan Arsenal, NJ
Cornhusker Army Ammunition Plant, NE	Red River Ordnance Depot, TX
Crane Army Ammunition Activity, IN	Redstone Arsenal, CO
Curtis Bay Ordnance Depot, MD	Rock Island Arsenal, IL
Delaware Arsenal, NJ	San Jacinto Ordnance Depot, TX
Dover Powder Depot (U.S. Powder Depot/Picatinny Arsenal), NJ	Sandy Hook Proving Ground, NJ
Erie Howitzer Plant, OH	Savanna Army Depot/Proving Ground, IL
Erie Proving Ground, OH	Seneca Ordnance Depot, NY
Fort D. A. Russell, WY	Seven Pines General Ordnance Depot, VA
Fort Herkemer, NY	Sierra Ordnance Depot, CA
Fort Monroe, VA	Sioux Ordnance Depot, NE
Fort Sam Houston, TX	Sparta General Ordnance Depot, WI
Fort Towson, OK	Springfield Armory, MA
Fort Wingate Ordnance Depot, NM	Susquehanna General Ordnance Depot, MD
Frankford Arsenal, PA	Tooele Army Depot, UT
Hawthorne Naval Depot/Army Ammunition Plant, NV	Tullytown Arsenal, PA
Holston Army Ammunition Plant, TN	Umatilla Ordnance Depot, OR
Indiana Arsenal, IN	Volunteer Army Ammunition Plant, TN
Lake Denmark Naval Ammunition Depot (Picatinny Arsenal), NJ	Watertown Arsenal, MA
Letterkenny Ordnance Depot, PA	Watervliet Arsenal, NY
Longhorn Army Ammunition Plant, TX	West Point, NY
McAlester Naval Ammunition Depot/Army Ammunition Plant, OK	Wingate Ordnance Depot, NM
Middletown Ordnance Depot, PA	Woodberry General Ordnance Depot, [NJ?]
Morgan General Ordnance Depot, NJ	Yorktown Naval Depot, VA
Milan Ordnance Depot, TN	
Mississippi Army Ammunition Plant, MS	

Although ammunition and explosives storage structures are present to some degree at most former and present Army forts, they are located in quantities at Army ordnance depots. According to a 1934 text on Arsenal Organization and Administration, an ordnance depot was a facility for the storage and issuance of ordnance supply. An arsenal, in contrast, was a government-owned and -operated installation for the acquisition, fabrication, and repair of arms and "munitions of war." Arsenals were further broken into two categories: the "manufacturing arsenal" where the primary function was the production of ordnance materiel, and the "field service arsenal" which operated to repair and maintain ordnance materiel. During the nineteenth century, the government maintained numerous arsenals, as well as several armories. Federal armories were used primarily for the manufacture and repair of small arms. Over the course of the nineteenth century, armories developed into storehouses and meeting places for local militia groups. As such, the use of the term for federal facilities became less common over the course of the century (Ordnance School 1934).

Ammunition and explosives magazines did not exist in large numbers prior to World War II; the vast majority were constructed for the war mobilization effort. The Army constructed 16 new ammunition storage depots and over 10,000 magazines for the storage of ammunition and explosives during the war (Table 2). While depot magazines are a reminder of the nation's commitment to large-scale mobilization in World War II, the retention of the ordnance depots after the war clearly demonstrates the United States commitment to maintaining a large-scale military during the Cold War.

Given the association of ammunition and explosives storage with military endeavors critical to the struggle for independence, protection of territory, westward expansion, and international conflict (Criterion A), the history of such facilities is most closely related to national level themes. Most of the installations listed in Table 1 were built in anticipation of or in response to threats to our national security. Although all played an important role as part of our national defense system, it should not be assumed that all installations are of equal integrity or importance. These installations are also redundant in character and layout; consequently, there should be no compulsion to protect every installation or portion of it. One purpose of this document is to define those ammunition and explosives storage facilities that best represent key developments between 1775 and 1945.

Army ammunition and explosives storage facilities may be eligible for listing in the National Register of Historic Places under Criterion A for properties "associated with events that have made a significant contribution to the broad patterns of our history"; Criterion C because they "embody the distinctive characteristics of a type, period, or method of construction . . . or represent a significant and distinguishable entity whose components may lack individual distinction"; or Criterion D because they "have yielded, or may be likely to yield, information important in . . . history" (U.S. Department of the Interior 1991:2). As structures, Army ammunition and explosive storage facilities may be considered for eligibility either as single properties or as districts. The concept of a district is particularly applicable to the World War II facilities that were built as a planned landscape that addressed both functional needs and safety concerns.

Table 2
Army Ammunition Depots Constructed for World War II Mobilization Effort

World War II Name	Date Established
Anniston Ordnance Depot, AL	1941
Blacks Hills Ordnance Depot, SD	1942
Blue Grass Ordnance Depot, KY	1941
Letterkenny Ordnance Depot, PA	1942
Milan Ordnance Depot, TN	1941
Navajo Ordnance Depot, AZ	1942
Portage Ordnance Depot, OH	1940
Pueblo Ordnance Depot, CO	1942
Red River Ordnance Depot, TX	1941
San Jacinto Ordnance Depot, TX	1941
Seneca Ordnance Depot, NY	1941
Sierra Ordnance Depot, Ca	1942
Sioux Ordnance Depot, NE	1942
Tooele Ordnance Depot, UT	1942
Umatilla Ordnance Depot, OR	1942
Wingate Ordnance Depot, NM	1940

Source: Thomson & Mayo 1960:384.

RESEARCH DESIGN

This study relies on two central concepts to evaluate eligibility for inclusion in the National Register of Historic Places: historic context and historic integrity. A historic context is an approach to organizing data according to geographic location, time period, and theme. The local, state, or national significance of a property is assessed within its appropriate historic context. Historic integrity is the ability of a property to convey its significance through its physical characteristics.

A historic context is essential to the evaluation of properties but is especially critical for facilities that are spread nationwide, as is the case in Army ammunition and explosives storage buildings. It is through the historic context that trends and patterns associated with certain property types are brought to light. A historic context also reveals the impact of national concerns or issues upon the development of particular property types. In the case of Army ammunition and explosives storage facilities, single properties or even groups of properties do not convey their significance without a historic context that reveals the evolution of such properties and the impact of national events upon their development. Design changes are intricately linked to events of national importance.

The historic context developed for this study integrates the three conceptual components generally found in a historic context—time period, geographic area, and theme—with the associated property types. This integration is designed to establish the connections between major historical themes in military and history, and real property. All three components were provided in the scope of work provided by the Army Environmental Center. The time period established for the study is 1775–1945. This period covers the development of the military from the early national period through the end of World War II. The end date of 1945 was chosen because the design of various ammunition storage structure types had been refined, and the majority of the Army's current national inventory of ammunition bunkers had been constructed. The geographic area for the investigation is the continental United States (CONUS). Thus, military construction in Hawaii, Alaska, and the U.S. territories was not included in the study.

The theme or subject matter was defined in the scope of work as "ammunition storage bunkers." Subsequent investigation revealed that the terminology that best describes the property type in question is "ammunition and explosives storage." This property type includes the storage of ammunition, explosives, pyrotechnics, and chemical and biological weapons, and includes special weapons (i.e., nuclear devices).[1] This project emphasizes extant military construction at active duty installations, and the historical developments and property types related to the types of installations that remain under Army control. However, several major Army installations that played pivotal roles in magazine design and construction (e.g., Hawthorne Army Ammunition Plant) were originally constructed and operated by the United States Navy. The Navy role in magazine design pertains only as it affects magazine design development or the current Army real estate inventory.

Central to the development of a useful historic context is to answer key research questions that will assist cultural resources managers in the inventory, assessment, and management of historically significant ammunition and explosives storage buildings and structures:

- What were the significant events in the evolution of the building type during the time period in question?
- What were the primary themes and trends emerging from these events that affected the evolution of the building type?
- What are the significant extant examples of ammunition and explosives storage that reflect those primary themes, trends, and events?
- Using the comparative analysis method, how significant are the extant examples in comparison to each other on a nationwide basis?
- How does state and local significance apply to the assessment of ammunition and explosives storage in a nationwide military context?

[1] The real property category codes associated with this property type are presented in the Planning Level Survey.

- How does the traditional concept of a historic district apply to the assessment of ammunition and explosives storage?
- What level of integrity must exist for a significant example to be eligible for the National Register?

Since the majority of ammunition and explosives storage structures are earth-covered igloos dating from World War II, the focus of the study is on the development of this building type.

METHODOLOGY

Five primary tasks were completed in the implementation of the research design. These tasks involved archival research, field investigation, data synthesis, context application, and report preparation. Data were collected and analyzed to identify the broad patterns of military history and trends over time, as well as to develop specific historic themes and to identify ammunition storage property types related to military construction.

Archival Research

The development of a context via archival research for this study proved to be a challenge. For example, primary research materials that contained a tremendous amount of information on the development of magazine design in the *U.S. Army in World War II, The Technical Series*, have been destroyed. Despite the potential significance of the property type and the large number of magazines in the Army inventory, the lack of a written history of this property type is a testament to the forgotten nature of ammunition and explosives storage. Until a major disaster at an ammunition depot in 1926, very little was written on the design and construction of ammunition magazines as a building type. Even after this event, which revolutionized the property type form, design, and layout, the documented history of the evolution is almost nonexistent. Not until 1995, when *Ammunition Storage: Early Twentieth Century Design and Context, Fort McClellan, Alabama* (Reed 1995) was written, had an entire report been the subject of ammunition storage from a cultural resources perspective.

Sources expected to yield considerable amounts of information proved to be of little value. The Library of the Ordnance Museum in Aberdeen, Maryland, contains a plethora of information on ordnance, yet little or no information on ordnance storage. Primary sources, such as *Ordnance Magazine*, again yielded little more than two articles in 70 years of publication, the same information gathered in the study by Reed.

Other sources consulted were the National Archives in Washington, D.C.; the National Archives II in College Park, Maryland; the Corps of Engineers Office of History; and the Library of Congress. Of particular interest were the completion reports for Ordnance Department depots in Record Group 77 of the Corps of Engineers in the National Archives.

The library of the Center for Military History in Carlisle Barracks, Pennsylvania, was consulted but with limited results. The library did have a good collection of Ordnance Department materials, but, again, the focus on the development of magazine design was absent.

The most disappointing avenue of research was the John Byrd Technical Library of the Defense Army Ammunition Center at McAlester, Oklahoma. The center is a wealth of information on safety practices regarding ammunition storage and handling but lacks specific information on past ammunition storage design and development.

One of the best sources of information was an oral history supplied by Dr. Chester E. Canada of the Department of Defense Explosives Safety Board. The DoD Board—established in 1928, two years after the Lake Denmark disaster—has information relating to the regulation of safety concerns regarding ammunition and explosives storage. Dr. Chester has extensive personal knowledge of explosives and the effects of sympathetic detonations.

The lack of any centralized archival information on the subject of ammunition and explosives storage design is partly due to the nature of military construction regarding the building type. Magazine design never had a centralized clearing-house for the issuance of standardized plans for construction prior to the World War II

mobilization. The selection of plan type and the details of construction were historically left to the individual installation commander, resulting in an ever-widening variety of deviations and specialty magazines. Therefore, although upon initial inspection all earth-covered magazine igloos look the same, each installation built and modified its standard plan to suit its individual mission requirements. Design changes and lessons learned were not centrally shared, which thus hinders tracing a linear evolution of the design.

Copies of photographs and line drawings included in this report are on file at the U.S. Army Corps of Engineers, Fort Worth District, with the exception of the photograph of the Hessian Powder Magazine, which is courtesy of the U.S. Army Military History Institute, Carlisle, PA, and the photograph of the Fort Sam Houston ammunition building, taken by Joseph Murphey of the U.S. Army Corps of Engineers, Fort Worth District.

Field Investigation

Field investigation took place at the seminal points of twentieth-century magazine design: Savanna Army Depot, Illinois, where the Army built its first prototype igloos after the Lake Denmark, New Jersey, disaster of 1926; Hawthorn Army Ammunition Plant, Nevada, where the Navy built the first prototype of a modern depot; and Picatinny Arsenal, New Jersey, where a large collection of magazine types is extant and is the site of the Lake Denmark explosion. Frankford Arsenal, Pennsylvania, one of the Army's old-line arsenals, was visited in search of an extant example of the Civil War-era powder magazine design.

CHRONOLOGICAL OVERVIEW OF THE HISTORY OF AMMUNITION AND EXPLOSIVES STORAGE

EIGHTEENTH CENTURY—FORMING A REPUBLIC: AMMUNITION AND EXPLOSIVES STORAGE DURING AND AFTER THE REVOLUTION

In 1775, the Continental Congress appointed a committee to determine the ways and means of supplying the Army with arms and ammunition to fight the Revolutionary War. Previously, the individual colonies had developed their own systems of military procurement and supply. In 1776, the Congress created the Board of War and Ordnance that was composed of five members of the Congress. Part of the responsibilities of the Board of War and Ordnance included making arrangements for the storage and maintenance of arms and ammunition. The board was authorized to rent private magazines at public expense until permanent national facilities could be built (U.S. Army 1956).

In addition to creating the Board of War and Ordnance, the Continental Congress also authorized the establishment of an ordnance center in December 1776 (U.S. Army 1956). The new ordnance site, known as Washingtonburg, was located near Carlisle, Pennsylvania. Subsequently, Washingtonburg was called Carlisle Arsenal, and later, Carlisle Barracks. The primary purpose of the facility was the manufacturing of cannons and ammunition to supply the Continental Army. Within a year of authorization, a rugged gunpowder magazine had been constructed at the site, reportedly by Hessian prisoners of war. Built of fieldstone, the magazine, named Hessian Magazine after the supposed builders, still stands at Carlisle Barracks. The magazine was located at the side of the complex, away from the major buildings. In addition to the gunpowder magazine, the 1777–1782 ground plans for public works at Washingtonburg included a powder house on each side of the magazine (Carlisle Barracks 2000; Figure 1).

Also in 1777, another Continental Congress arsenal was established, this one at Springfield, Massachusetts. Although the arsenal was authorized to manufacture cartridges and gun carriages, during the Revolutionary War no arms were made. Instead, the arsenal was used to store muskets, cannons, and other weapons. Facilities at the site included barracks, shops, and storehouses, as well as a magazine. According to the original authorization for the site, the magazine at Springfield was to be able to hold 10,000 stand of arms and 200 tons of gunpowder. Following the end of the war, the Springfield Arsenal continued in operation as a major ammunition and weapons depot (Springfield Armory 2000).

In 1782, the Revolutionary War was drawing to a close. The British had been defeated at Yorktown, and negotiations were underway to end the hostilities. However, the safe storage of gunpowder was still a significant concern to the military. General Washington issued the following order on the subject:

> To prevent the accidental communication of fire to the powder magazines which would endanger the lives of many persons and total demolition of the fortifications, besides the inconveniences that must arise from the loss of the powder, the Commander in Chief directs that the quartermaster or commissary of military stores may, as soon as possible, have grates fixed to the air holes of the magazines, and that lanthorns [lanterns] made of transparent horn or glass be immediately provided instead of those made of pierced tin, which are at present very imprudently used. Until the horn or glass lanthorns are provided the greatest care is to be taken not to open the door of lanthorns in the magazines, and at all times to have water in the bottom to extinguish sparks. It is, moreover, positively ordered that no person whatever, be permitted to enter a powder magazine without first pulling off his shoes [Hall 1956:8].

Obviously, incidents in the storing of explosives materiel had occurred.

Figure 1. Back view of Hessian Magazine built in 1777, located at Carlisle Barracks (Courtesy of U.S. Army Military History Institute, Carlisle, PA.).

Following the formal end of the Revolutionary War in 1783, the Army began reducing its ranks. However, the manufacture and, therefore, storage needs of arms and ammunition by the national government continued. Government-owned arms and ammunition were deposited at federal facilities at Providence, Rhode Island; Springfield, Massachusetts; Fort Herkemer, New York; West Point, New York; Carlisle, Pennsylvania; Philadelphia, Pennsylvania; New London, Virginia; Manchester, Virginia; and Charleston, South Carolina. Subsequently, several arsenals and armories were established in various areas of the new republic by about 1810.

According to an early Ordnance Department report, arsenals were used as "depots, for the collection and preservation of artillery, arms, ammunition, and military supplies generally, and for the fabrication of gun carriages and other military equipment, for the preparation of ammunition, and for the repair of arms" (U.S. Ordnance Department n.d.). Armories, in contrast, were designated for the manufacture and repair of small arms. Arsenal facilities constructed by the federal government included Rocky Mount, South Carolina; Gray's Ferry, Philadelphia, Pennsylvania; Charlestown, Massachusetts; Bergen Heights, New Jersey; Norfolk, Virginia; Washington, D.C.; Newport, Kentucky; and one in New York. Armories were located at Springfield, Massachusetts, and Harper's Ferry, Virginia. All of these facilities had some type of ammunition storage; however, due to the functional nature of these resources, little information specifically related to magazines is readily available.

In addition to the federal force, individual states also maintained militia groups. During the early years of the Republic, these state-based militia groups were required by the Continental Congress. The Congress believed that standing armies "were inconsistent with the principals of republican governments, dangerous to the liberties of a free people, and generally converted into destructive engines for establishing despotism" (Fogelson 1989:3). As such, they reduced the federal army to a small force and looked to required service by citizens in state-based militias as the primary means of maintaining order and repulsing foreign powers. In May 1792, the Congress enacted the Uniform Militia Act, which required states to conscript free, white men between the ages of 18 and 45 to train in militia units. Men serving in the militia were required to furnish their own arms and equipment and to serve in case of an emergency declared by the governor. The Congress passed additional legislation in May 1792 that allowed the president to call up the state militia in case of invasion (Everett n.d.:1–2).

While men serving in the militia usually supplied their own arms and equipment, a central location was required by the different states to store state-owned arms and ammunition. For example, in 1808, the state of Pennsylvania constructed the powder magazine at Magazine Lane near Penrose Ferry Road in Philadelphia, Pennsylvania. The state built the magazine to store powder and other military stores. The magazine provided both security and the proper dry and ventilated conditions to store the ammunition. The structure had a 52-by-70 foot double-barrel vault running the length of the magazine. It was built with three- to four-foot-thick stone walls with stone buttresses. The stone was acquired locally. The magazine had cut stone and brick trim around the doors and windows, three brick chimneys that served as ventilators, and a simple, single ridge, timber-framed roof with stone gables and a slate covering. The windows on the magazine were bricked-in with voids to allow ventilation and had decorative wood and iron shutters.

By the 1830s and 1840s, most states were not enforcing the compulsory militia laws. Although many militia units disbanded, volunteer units began to take the place of the mandatory units. Many of the volunteer units continued to aid the regular Army during the times of crisis through the end of the century, often with distinction. For the most part, the majority of local units stored their arms and ammunition in rented, frequently inadequate buildings until the 1870s. Due to social unrest during and after the Civil War, local volunteer units were called out 481 times between 1861 and 1906. Over 150 of these incidents involved labor riots. As a consequence of the increased prominence of the local volunteer militia, an armory building movement swept the country. Between 1880 and 1910, hundreds of armories were constructed throughout the nation (Everett n.d.:2–13). However, the local units, rather than the regular Army used these armories. As such, they are outside the boundaries of this study.

NINETEENTH CENTURY—EXPANSION OF THE COUNTRY: STORAGE OF AMMUNITION AND EXPLOSIVES

Twenty-seven years after the signing of the Declaration of Independence, the United States more than doubled its size with the 1803 Louisiana Purchase. In 1819, the southern boundary of the country was extended with the acquisition of Florida from the Spanish. Additionally, under the Adams-Onis Treaty that gave Florida to the United States, a stepped line was drawn along the eastern edge of the remaining Spanish territory up to the Arkansas River. This line defined the western boundary of the area acquired by the federal government under the Louisiana Purchase of 1803. Importantly, this treaty gave to the United States the area between the Arkansas River and the Forty-second Parallel, known as the Oregon Territory. With the acquisition of the Oregon Territory, America claimed for the first time land on both the Atlantic and Pacific coasts. In 1848, the last major segment of land was annexed into the continental United States. Under the treaty of Guadalupe Hidalgo, Mexico gave up its claims to Texas north of the Rio Grande and conveyed rights to California and New Mexico to the United States. Total, the United States grew by over a million square miles with the signing of the treaty. Five years after the treaty of Guadalupe Hidalgo, the United States picked up 30,000 more square miles south of the Gila River in the present states of New Mexico and Arizona under the Gadsden Purchase.

With the acquisition of all this new territory came more responsibility for the Army to protect its ever-changing borders. Additionally, although the United States purchased the land from the countries that claimed it, the local native inhabitants were frequently hostile to the settling of the land by European-Americans. As such, the Army spent much of the nineteenth century establishing various forts and camps along the frontier line, which kept expanding. Countless numbers of forts and temporary camps were established during this period. The majority of these installations were similar, although they were established by different people under diverse environmental conditions. By the 1890s, the frontier era in the continental United States had essentially ended. Because the Army was maintained as a peacekeeping force after this, many existing installations were maintained and a few new ones established to house and train the troops (Prucha 1964:1–36).

All of the installations established by the Army during the nineteenth century required some type of ammunition and explosives storage. Primarily, these magazines stored gunpowder, although explosives would also have been stored there. Additionally, because of the secure nature of the magazine, payrolls, and other precious commodities were sometimes temporarily stored in the magazine. Usually a fort only required one structure for ordnance storage, but multiple structures were constructed at larger installations. If possible, the magazine was constructed of brick or stone. However, depending on the availability of materials at the particular location, sometimes the magazine was constructed of wood. Typical examples include the magazine at Fort D. A. Russell, Wyoming. Constructed in 1890, the magazine had a stone foundation, brick walls, and a hipped, slate roof. Another example is the ammunition building at Fort Sam Houston, constructed in 1888 (Figure 2).

The Army did not provide plans for the layout of forts during the nineteenth century. Much depended on the particular environmental requirements of the site, as well as the overall purpose of the installation. Frequently, the ammunition storage structures were located on or near the parade ground in the vicinity of the officers' quarters. This was probably done for accessibility purposes, as well as security. In other instances, the magazine was located off to the side by other auxiliary function buildings, such as the guard house or even the hospital or chapel.

The design of the individual magazines differed from installation to installation. Generally, the magazines employed more elaborate construction techniques than other fort buildings. For example, the powder magazine located at Fort Towson, Indian Territory, built between 1827 and 1833, was a brick structure measuring about 20-by-16 feet. The magazine had a concrete floor, a single door, two barred windows, and a heavy timbered roof. The primary feature that set this structure apart from the other resources on the fort was the dead air space in the wall. One-brick wide, the dead air

Figure 2. Fort Sam Houston ammunition building, constructed in 1888 (Photograph by Joseph Murphey, U.S. Army Corps of Engineers, Fort Worth District).

space encircled the building one foot in from the outside edge of the wall. The only wall area without dead air space was the single doorway. The magazine probably had the dead air space to act as insulation to keep the ammunition and explosives dry, as well as to serve as a buffer in case of fire. One other feature that set the magazine apart from other buildings at Fort Towson was the informal drain for the interior of the magazine. The magazine was the only structure that featured a drain and remains, to this day, the only resource on the parade ground that does not hold water during a heavy rain (Scott 1975).

In addition to patrolling the frontier during the nineteenth century, the Army was also involved in several congressionally declared wars. The first major crisis the Army faced in the nineteenth century was the War of 1812. With the threat of war looming, Congress recognized the need for an agency that would provide the necessary war materiel. One month before the formal declaration of war was made, Congress established the Ordnance Department on 14 May 1812. The newly created Ordnance Department was responsible for the construction of gun and ammunition wagons and other wheeled ordnance vehicles, had oversight of munitions laboratories, and was responsible for inspection of powder and preparation of ammunition (Thomson 1954).

Although producing much of the ammunition needed during the war, the existing federal arsenals were unable to supply all the required gunpowder. As such, the Ordnance Department bought powder from private firms in Wilmington, Philadelphia, and Georgetown. In addition to the already established federal facilities, arsenals were activated at Marblehead, Massachusetts; Stonington, Connecticut; New Castle, Delaware; and Wilmington, Delaware, during the War of 1812. These arsenals were to serve as coastal fortifications. Following the war, the Bellona Arsenal at Richmond, Virginia, and Frankford Arsenal at Philadelphia, Pennsylvania, were established. Ten additional arsenals in various locations were authorized by

1819. Much of this arsenal building was due to exaggerated war consciousness rather than necessity. However, it must be noted that there was no major munitions-making industry in the United States as there was in Europe. Thus, the United States Army was forced to build its own manufacturing arsenals. By 1830, the Army had 11 arsenals and two armories.

In 1835, the Army became involved in the Seminole War that lasted until 1842. Four years later in 1846, Congress declared war on Mexico. The Mexican War lasted only two years. Both of these wars, in addition to the engagements with Native Americans throughout the western portions of the country, kept the military establishment actively engaged. As such, arsenal building continued as a major activity.

As previously noted, a part of an arsenal's function was to store ammunition and explosives. One example of a powder magazine used as a prototype by other arsenals was the West Magazine at Watervliet Arsenal, New York. The magazine was designed by Colonel Rufus L. Baker, Watervliet Arsenal Commander. Constructed in 1849, the magazine contained no iron in order to avoid any lightning attraction. The magazine had a capacity of 3500 barrels. Each barrel could contain up to 100 pounds of powder. The magazine was located away from the principal workshops and a stone wall was built around the magazine to protect it from fire (Figures 3 and 4).

The Civil War brought new challenges in the Army's manufacture and storage of ammunition and explosives. By the time war was declared in 1861, all of the southern ordnance installations were held by the Confederacy, except for Saint Louis. Additionally, the national armory at Harper's Ferry was attacked by abolitionists in 1859 and was the site of several battles during the war due to its geographic location in the Shenandoah Valley. Combined with the rapid growth of the U.S. Army to over one million men, it was apparent a procurement program for ordnance materiel had to be established immediately. As the conflict continued and ammunition supplies dwindled, the arsenals had to be staffed and production stepped up. Further, new facilities needed to be rapidly established to keep up with demand. The Columbus Arsenal and Indiana Arsenal, among others, were established during the war to replace the lost arsenals. Additionally, ordnance depots were established at Lafayette, Tennessee; Alpine, West Virginia; Baltimore, Maryland; and Denver, Colorado.

The principal magazine at the Frankford Arsenal in Philadelphia is an example of an ammunition storage structure built during the War Between the States. The post commander, Colonel T. T. S. Laidley, emphasized that the construction of the magazine should minimize damage caused by explosion. Laidley worked closely with the arsenal's primary supplier of powder, the duPont Company, to use structural iron in the magazine to fireproof it. The magazine featured brick construction with a slate roof and possibly a cavity wall. The gutters, door hinges, lighting rods, and wainscoted interior of the magazine were of copper. Additionally, the magazine had a ventilator similar to those used on masonry barns.

Following the end of the Civil War, the federal government closed and sold many arsenals. Other arsenals were redesignated. During the 1870s, the need for establishment of a proving ground and development of powder depots for the Army became apparent. As such, the Sandy Hook Proving Ground was quickly established as the Army's first full-scale testing facility. In 1880, two powder depots were established. One powder depot was located at Dover, New Jersey, the other at Saint Louis, Missouri. The Dover Powder Depot was later known as the U.S. Powder Depot and, subsequently, Picatinny Powder Depot. A 200-by-50-foot powder magazine of stone was completed in 1881 at the Dover Powder Depot. The magazine had wood flooring on brick arches spanning wrought-iron beams leveled with concrete. The ceiling was supported by a row of cast-iron columns down the center of the building. The ceiling consisted of brick arches and wrought-iron I-beams with wrought-iron roof trusses. Interestingly, the magazine had a basement. By November 1886, four powder magazines were completed, and the depot received its first shipment of powder, 300,000 pounds. In 1891, 315 acres of the Picatinny Powder Depot site were transferred to the Navy for the construction of the Lake Denmark Powder Depot (Nolte et al. 1998:22).

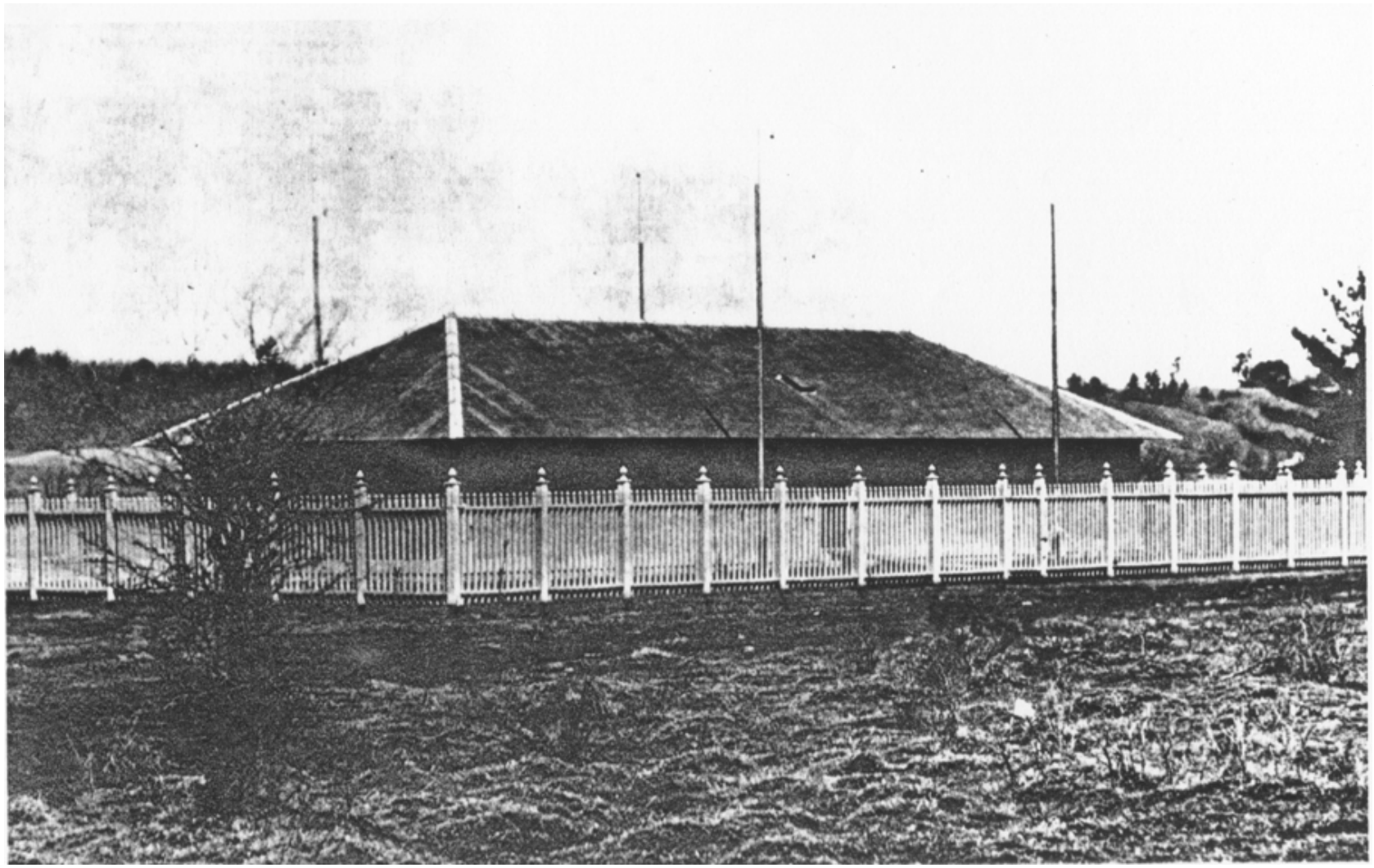


Figure 3. West Magazine at Watervliet Arsenal in New York, constructed in 1849. This is probably the oldest powder magazine in continuous use in the Army. Walls are of limestone and are four feet thick. The fence was a safety measure, and the vertical rods were lightning arrestors. Both features are no longer extant.

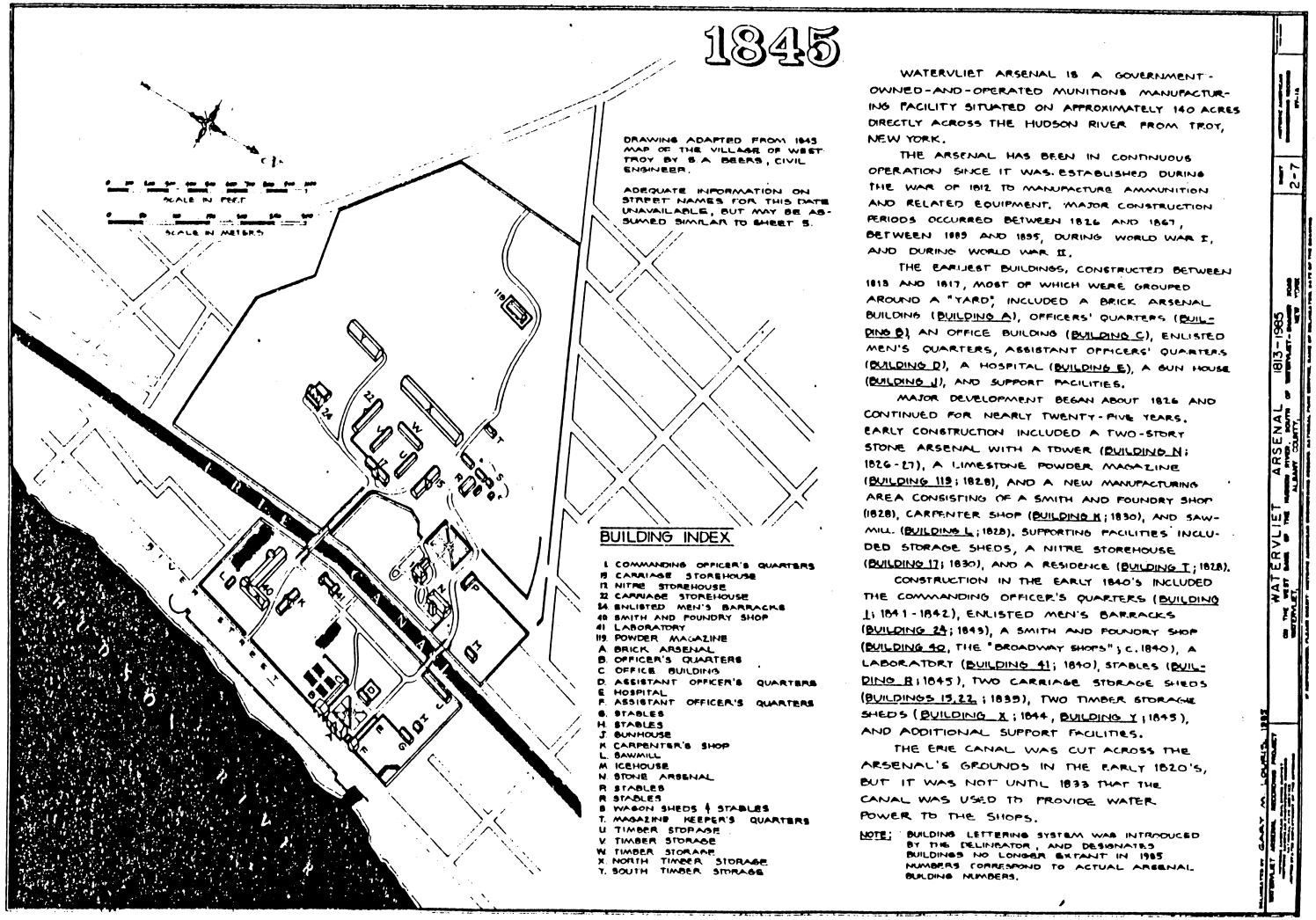


Figure 4. 1845 Map of Watervliet Arsenal. The West Powder Magazine, Building 119, is separated from the other buildings at Watervliet.

Although the government closed some arsenals following the Civil War, it continued to expand the facilities at others through the end of the century. In 1879, a 2,400-square-foot powder magazine was constructed at the Rock Island Arsenal. The structure had a clear height of 12 feet 6 inches. The magazine was constructed of wood frame walls with a brick veneer. It had a stone foundation set on bearing rock. The magazine had a wood floor and a wood roof deck covered with slate shingles (Figures 5 and 6).

In 1898, the Army undertook its first overseas troop movement in support of the Spanish-American War. New arsenals were established to support this venture, both stateside and overseas. By the turn of the century, the Army had 13 installations that manufactured and supplied ordnance. In addition to the Springfield Armory in Massachusetts; the Frankford, Rock Island, Watertown, and Watervliet arsenals were all engaged in the manufacture of ordnance and provided supply and maintenance support. Field service arsenals were located at Allegheny, Augusta, Benicia, Columbia, Fort Monroe, Indianapolis, New York, and San Antonio.

TWENTIETH CENTURY—WORLD WAR AND STANDARDIZATION: DEVELOPMENTS OF AMMUNITION AND EXPLOSIVES STORAGE

American Table of Distances

Among the twentieth-century developments in the storage of ammunition and explosives was the development of distance tables. In June 1909, Colonel B. W. Dunn, Chief Inspector of the Bureau of Explosives, brought to the attention of explosives manufacturers the need for changes in the locations of magazines as related to certain other resources. The resulting conference then appointed a special committee formed by the Association of Manufacturers of Powder and High Explosives to investigate the matter. The work of the committee resulted in the establishment of the American Table of Distances for Inhabited Buildings and Public Railways in December 1910. Subsequently, further study was undertaken concerning the distance needed between structures containing explosives and public highways. Thus, in 1914, the American Table of Distances for Inhabited Buildings, Public Railways and Public Highways was issued (Appendix B) (Assheton and Coy 1919).

In establishing the American Table of Distances for Inhabited Buildings and Public Railways, the committee determined that distance requirements utilized in foreign countries did not meet the needs of the United States or even provide a basis upon which to formulate the American distances. As such, the committee undertook an intensive worldwide study of explosions and their effects. The committee compiled statistics concerning explosions ranging in size from very small amounts of explosives to nearly a million pounds. Additionally, it looked at the manufacture, storage, and transportation of explosives domestically and abroad over a period of nearly 50 years. All recommended distances were for barricaded magazines. The barricades could be natural or artificial but needed to screen the magazine from other buildings, railways, and highways. The committee recommended that distances between non-barricaded magazines and buildings, railways, and highways be doubled (Assheton and Coy 1919).

The most important feature in establishing the distances between magazines and inhabited buildings was the distance at which "substantial structural damage" occurred on buildings in the vicinity. Substantial structural damage was based on two basic requirements: first, that the resulting damage to the property could not be readily repaired, and second, that risk to life and limb was caused by damage to an integral portion of the building. Minor damage, such as the breaking of window glass or falling plaster, was not considered in establishing the distance table. Possible damage due to flying missiles was also not factored into the table. In determining the recommended distances, the structural strength of the building before the explosion was not evaluated. The recommended distances between barricaded magazines and inhabited buildings ranged from 15 feet for magazines storing 1,000 to 5,000 blasting caps to 2,705 feet for structures storing 475,000 to 500,000 pounds of other explosives (Assheton and Coy 1919).

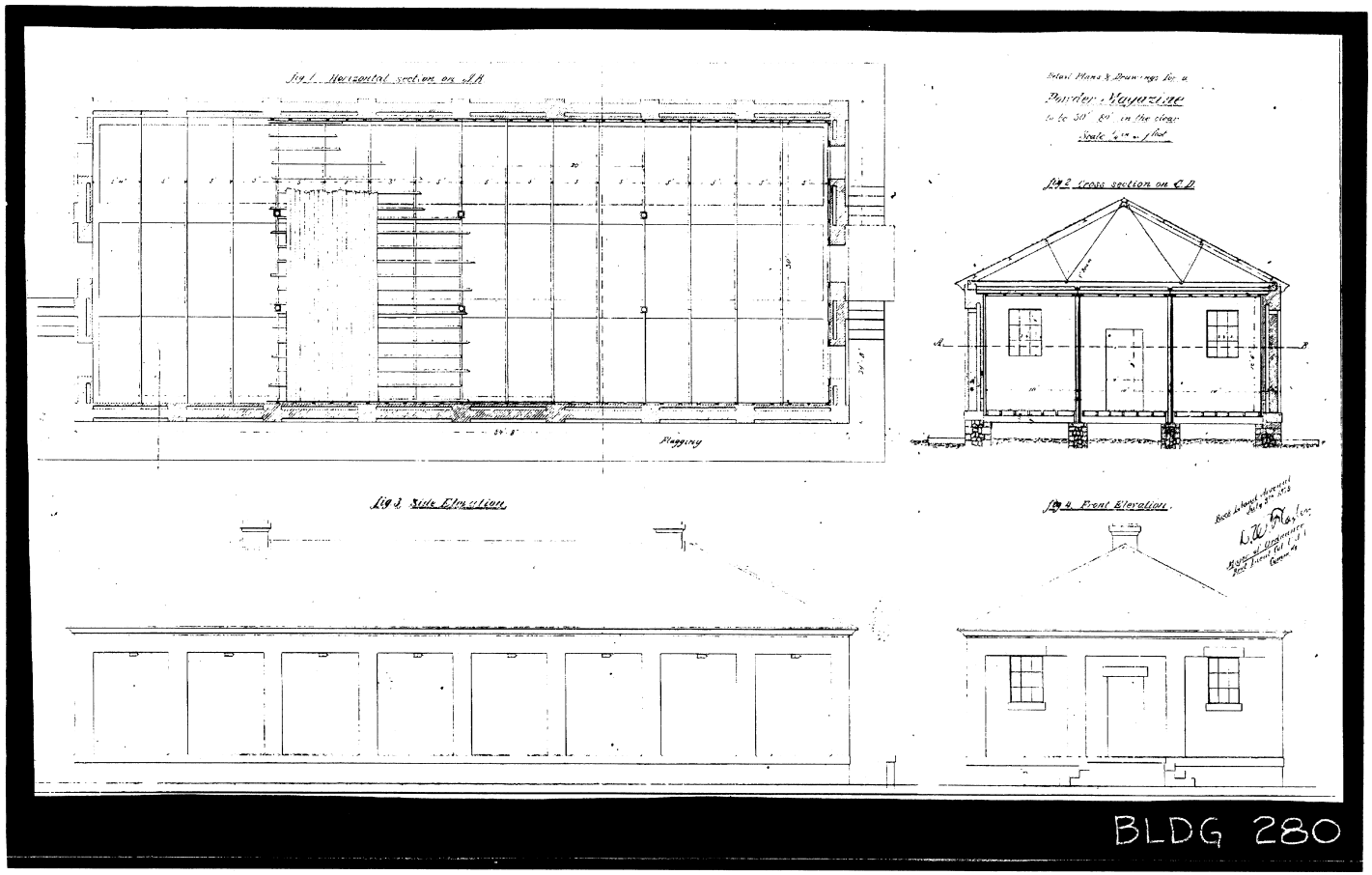


Figure 5. Detail plans and drawing for Powder Magazine (Building 280) at Rock Island Ordnance Center.

Figure 6. Powder Magazine (Building 280) at Rock Island Ordnance Center.

The committee encountered difficulty in establishing distance tables between barricaded magazines and public railways due to a lack of data concerning explosions involving passenger trains. As such, they concluded that distances between magazines and railroads should be established by using 60 percent of the distance between magazines and inhabited buildings. This conclusion was based on comparing the relative smaller size of railroad cars that would be exposed to concussion and the greater strength of the railroad cars to resist the concussion. Additionally, the committee believed that trains, which were only temporarily in the presence of magazines due to their transient nature, required less distance than buildings, which were constantly at risk because of their stationary nature. As such, the distance table called for distances between magazines and barricaded public railways of only 10 feet for those structures storing 1,000 to 5,000 blasting caps, but ranged to 1,620 feet for magazines storing 475,000 to 500,000 pounds of other explosives (Assheton and Coy 1919).

To reduce the risk of danger to persons traveling along public highways, the committee studied over 100 explosions, involving nearly 350 people. Of the total number of explosions studied, nearly 60 explosions contained accounts of about 150 people who were exposed to the direct effects of the explosions by being in the open. In determining the distance table for public highways, the committee used the resistance of the human body to an explosive wave. The committee looked at the amount of explosives involved in the various explosions, the distance at which the persons in the open were located at the time of explosion, and the effect on the person(s), which ranged from being killed to being merely "stunned." The results of the study determined that barricaded magazines containing 1,000 to 5,000 blasting caps should be located at least 5 feet from a public highway. The distance widened to a maximum of 810 feet for magazines containing 475,000 to 500,000 pounds of other explosives (Assheton and Coy 1919).

The Great War

The distance tables were developed by and for private explosives manufacturers. At the time, the federal government and the Army were not as concerned due to the lack of military need. Following the end of the Spanish-American War in 1900, the Army was engaged in peacetime activities until the 1916 Mexican Expedition. However, this was quickly followed by the declaration of war with Germany on 6 April 1917. Because of the relative inactivity of the previous nearly two decades, the Army was not prepared in terms of ordnance or other supplies to outfit the needed troops. The lack of physical plants and the introduction of new warfare methods and technology prevented the rapid manufacture of scarce war materiel. Compounding the problem was the lack of a widespread industrial base in the United States from which the tools of war could be obtained. Although certain private American firms had been providing the Allies with munitions since the beginning of the war in 1914, there was little excess capacity to supply American troops in 1917. As such, to supply the United States troops, agreements were made with Allied nations to provide certain equipment and supplies until American shops could be brought into production. Due to the use of French-made metric weapons early in the American involvement in World War I, artillery and ammunition had to be interchangeable between American and French equipment.

At the beginning of America's involvement in the Great War, the Ordnance Department had 11 arsenals in operation. These consisted of arsenals at Augusta, Georgia; Benicia, California; Frankford, Pennsylvania; New York, Picatinny and Raritan, New Jersey; Rock Island, Illinois; San Antonio, Texas; Springfield, Massachusetts; Watertown, Massachusetts, and Watervliet, New York. The Army also conducted proving ground activities at Sandy Hook, New Jersey. It quickly became apparent that these facilities were not able to handle the demands of a full-scale, modern war. Because the proving ground at Sandy Hook was located away from the coast and did not have direct rail connections, the Ordnance Department purchased 35,000 acres near Aberdeen, Maryland, for a new proving ground. The first test shot was fired on 2 January 1918 at the Aberdeen Proving Ground. Initially, the Aberdeen Proving Ground mission was acceptance testing of field artillery, trench mortars, antiaircraft guns, ammunition, and

railway artillery. Due to the great demand, two additional proving grounds were quickly established at Erie, Ohio, and Savanna, Illinois.

During the war, the Ordnance Department also greatly expanded the nation's arms, ammunition and explosives manufacturing capabilities. The government had responsibility for the construction of many new facilities, but it also relied on private firms to meet the demand. By the end of the war, America had become so proficient in the production of smokeless powder and high explosives that the munitions debts to other Allied countries were paid using these materials. In 1918, there were 92 plants engaged in the manufacture of powder and high explosives in the United States. The government constructed sixteen of the 92 plants. Additionally, there were 93 loading plants in operation. New Army depots were established at Aberdeen, Maryland; Neville Island, Pennsylvania; Tullytown, Pennsylvania; and at the Old Hickory Powder Plant, Tennessee. While manufacturing facilities were made available at the Rochester Arms and Gun Plant, an additional facility was constructed at Erie, Ohio. The success of the artillery in World War I was credited in part to the Ordnance Department's constant and continuous provision of ammunition.

As the manufacturing of ammunition and explosives escalated, the need for storage facilities also rose, and as the war progressed, the Ordnance Department acquired land at various depots to build 625 magazines. Various types of magazines were designed to store ammunition, smokeless powder, primers and fuses, or high explosives. An example of a magazine built during this period was Magazine L-13 at the Rock Island Arsenal. This magazine was one of seven similar structures built at the arsenal. Magazine L-13 measured 30-by-20 feet and stood 8 feet 6 inches tall. It had 600 total square feet. The magazine had a concrete foundation on bearing rock and walls of tile and steel under a stucco finish. The floor was concrete and the flat roof was pitch and gravel. The structure was designed with two globe vents and sat on a 5-foot surrounding concrete slab apron (Figure 7).

World War I ended on 11 November 1918. The Ordnance Department at that time consisted of two services—the Manufacturing Service and the Field Service—and controlled 10 arsenals, one armory, one storage depot, two supply depots, one Howitzer plant, one arms and gun plant, three proving grounds, one powder plant, and 11 general ordnance depots. To the Manufacturing Service were assigned the Frankford, Picatinny, Watervliet, and Rock Island arsenals; the Chicago Storage Depot; the Erie Howitzer Plant; the Rochester Arms and Gun Plant; and the Springfield Armory. The Field Service received responsibility for the Amatol, New Jersey; Augusta, Georgia; Benicia, California; Raritan, New Jersey; San Antonio, Texas; and Tullytown, Pennsylvania arsenals; the Aberdeen, Maryland; and Neville Island, Pennsylvania supply depots; the Aberdeen, Maryland; Erie, Ohio; and Savanna, Illinois proving grounds; the Old Hickory Powder Plant, Tennessee; and the Charleston, South Carolina; Curtis Bay, Maryland; Delaware, New Jersey; Middletown, Pennsylvania; Morgan, New Jersey; Perriman, New Jersey; Pig Point, Virginia; Seven Pines, Virginia; Sparta, Wisconsin; Wingate, New Mexico; and Woodberry, New Jersey general ordnance depots.

With the end of the war, overseas shipments of ammunition and explosives were discontinued. As production was at full capacity right up to the end of the war, materiel quickly began piling up in warehouses and on docks. Combined with the large shipments of ordnance returning from overseas and the impending demobilization, the government had a huge inventory of ordnance materiel worth more than one billion dollars. However, the government did not have sufficient storage facilities available.

Overall, there were three basic categories of ammunition and explosives storage structures by World War I. The most prevalent category of magazine was aboveground magazines. Usually rectangular in shape, these structures had either gabled or flat roofs. The structures were constructed using masonry (often tile) or corrugated asbestos on a wood frame, or using ordinary wood-framed construction. The floors were at-grade or at railroad car-floor level.

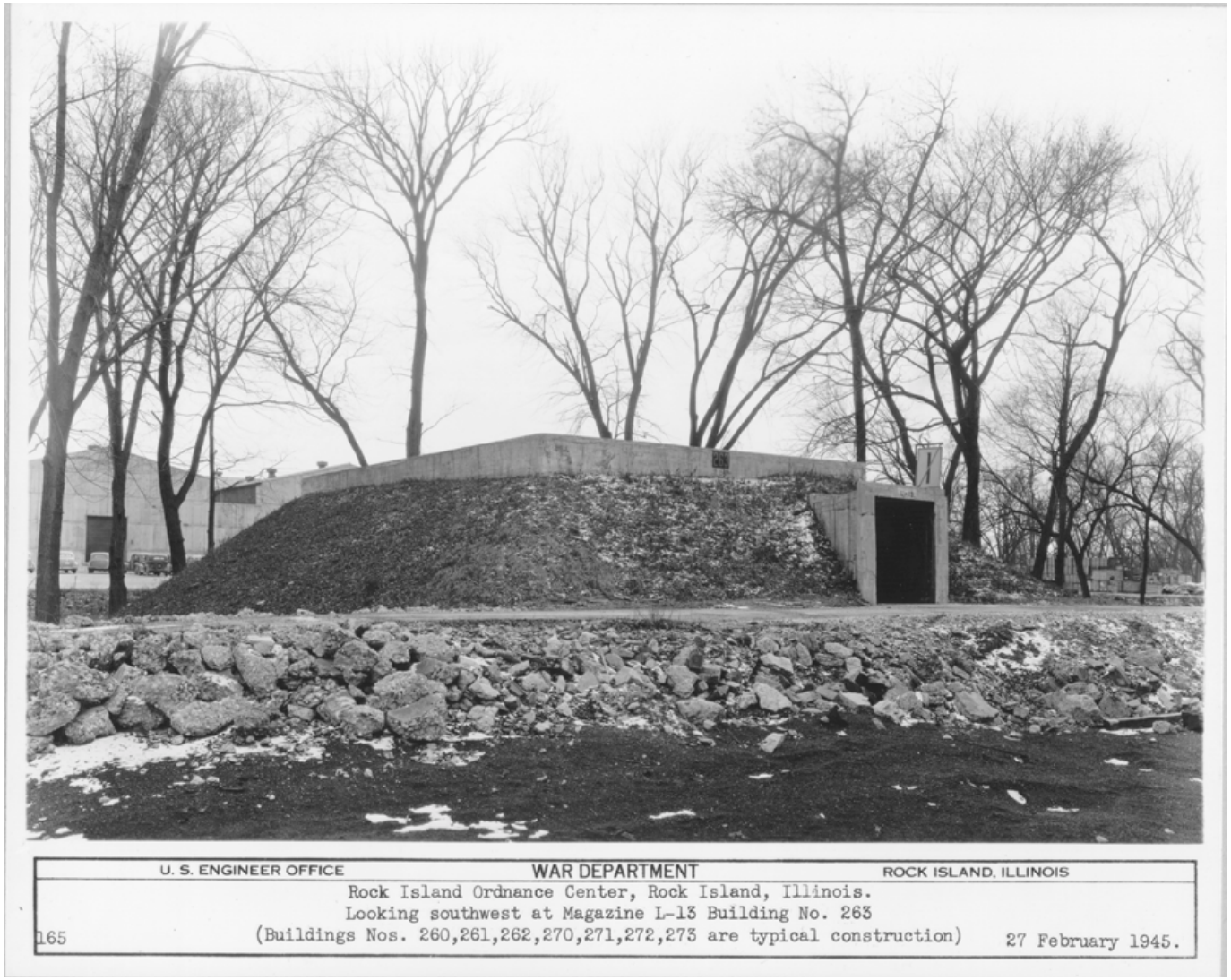


Figure 7. Magazine L-13 at Rock Island Ordnance Center.

Occasionally, separate barricades were erected around the magazines so that safety distances could be reduced. Another type of storage structure was the casemate magazine. These magazines were masonry vaults that were fortified, sometimes in hills. Casemate magazines were used only at coastal artillery installations. The final category of storage resource in use by World War I was a dump. Consisting of open stacks of ammunition, this category of storage was seldom used except in wartime.

Part of the problem in storing the surplus ammunition after World War I was the different requirements needed for the six classes of ammunition. Each class of ammunition was stored in a prescribed type of aboveground magazine based on its explosives potential. The first class included finished ammunition and loaded components. The second class was composed of smokeless powder used in bulk and in the form of separate ready-made propelling charges. Fuses and primers made up the third class of ammunition, while the fourth class consisted of high explosives such as T.N.T., picric acid, explosive D, and tetryl. Sodium nitrate and inert components such as empty shells, boosters, and metallic components of fuses comprised Class Five. The sixth class of ammunition consisted of small arms ammunition.

Class One ammunition was stored in standard ammunition magazines. The principal characteristics of this type of ammunition were great weight and moderate sensitivity. Overall, shells below six inches were not subject to mass detonation. Although it was possible for shells of six inches and larger caliber shells to detonate en masse, it was unlikely unless there were a fire. Typically, the standard ammunition magazines measured approximately 50-by-20 feet. The magazines were spaced 300 feet to 400 feet apart. The structures were of hollow tile construction. The concrete floors had a permissible floor load of at least 1,000 pounds per square foot. Due to the tonnage of ammunition and the weight of an individual shell or package, standard-gauge railroad tracks were always provided to these magazines. The standard ammunition magazine presented a fireproof exterior and was constructed so that in the event of an explosion, the walls and roof would break up into small fragments. As such, there was no danger of large masses of debris being thrown any appreciable distance (Reed 1995:40).

Smokeless powder, Class Two ammunition, was assigned to magazines of lighter construction than standard ammunition magazines. Although smokeless powder was not explosive, if it was ignited it burned with an extremely intense heat. A typical smokeless powder magazine measured about 32-by-96 feet. The usual capacity of this type of magazine was 500,000 pounds of powder, although the actual capacity was limited only by the necessity for limiting losses in case of fire. Smokeless powder magazines were located 300 feet apart. They were constructed with asbestos siding and gypsum slab roofs. This type of magazine had wooden floors. Due to the 300-foot spacing between magazines and the fireproof exterior of the magazines, the threat of fire spreading from one magazine to another was limited (Reed 1995:40).

Fuses and primers were also stored in magazines measuring 32-by-96 feet. The distinguishing characteristics of Class Three ammunition were great sensitivity, high cost, and the fact that the destruction of a comparatively small amount in bulk would render useless a relatively large amount of other components. Similar to smokeless powder magazines, Class Three magazines had hollow tile walls, gypsum slab roofs, and wooden floors. Again, these magazines were spaced 300 feet apart. Due to the characteristics of this type of ammunition, the magazines were comparatively small and the exterior was thoroughly protected against sparks or fire (Reed 1995:40).

Class Four ammunition, high explosives, was consigned to magazines constructed with hollow tile walls and gypsum slab roofs. Typically measuring 26-by-42 feet, these magazines were designed with a capacity of 250,000 pounds of explosives. Complying with the American Table of Distances, high explosives magazines were spaced 800 feet apart. Class Four ammunition was comparatively sensitive. If ignited, it was likely that most of the explosives would detonate. Thus, the hollow tile and gypsum slab construction was necessary to prevent damage from heavy missiles (Reed 1995:40–41).

Class Five ammunition did not require specialized magazines. Sodium nitrate was very soluble in water. It was an oxidizing material rather than an explosive, and it would not burn unless mixed with a combustible material. It was permissible to store sodium nitrate in a concrete trench. The sodium nitrate was simply dumped into the trench, rolled, and then covered with a waterproofing pitch compound (Reed 1995:41).

Small arms ammunition, Class Six, also did not demand storage in magazines because of its stable nature. This class of ammunition included pistol and small arms ammunition, tracer ammunition, incendiary ammunition, armor-piercing ammunition, and trench mortar ammunition. Standard warehouse spaces were constructed for Class Six ammunition in sections of 100-by-160 feet. These warehouses usually had brick walls, wood roofs, and concrete floors. A brick firewall was placed between adjoining sections of these structures (Reed 1995:41).

Following the end of World War I, storage structures were erected at the Aberdeen, Maryland; Erie, Ohio; and Savanna, Illinois proving grounds. Additionally, new ammunition storage depots were constructed and commercial space was leased. However, due to the great quantity of munitions left over from the war, all storage facilities were overburdened. This situation continued as America embraced a policy of isolationism and funding for war-related activities decreased.

The Lake Denmark Disaster

The Army was not the only military branch burdened with a surplus of World War I ordnance. The Navy also had a surplus of munitions inadequately stored at various installations. In 1926, this dangerous situation finally erupted at the Naval Ammunition Depot, located at Lake Denmark, New Jersey. The Naval Ammunition Depot was constructed on land transferred from the Army's Picatinny Arsenal, New Jersey, in 1891. Originally comprising 315 acres, by 1926 the Naval Ammunition Depot included over 200 resources. One-quarter of these were explosives magazines designed for the storage of high explosives, projectiles, black powder, and smokeless powder.

Temporary Magazine Number 8, located in the northeast quadrant of the depot, which was adjacent to the Army's Picatinny Arsenal, was a typical, aboveground, 150-by-200-foot clay tile, storage structure. Like most ammunition storage structures in the decade after World War I, Magazine Number 8 was overloaded with leftover ordnance. Prior to 10 July 1926, the depot's safety record was without incident. On that Saturday, however, lightning struck Magazine Number 8 at 5:15 p.m. during a severe electrical storm. Thick black smoke immediately began issuing from the magazine, prompting the depot's fire alarm to be sounded. Within minutes, the emergency fire fighting team arrived onsite and began to apply a stream of water.

At 5:20 p.m., Magazine Number 8 exploded, rocking both the depot and the adjacent arsenal. Only a crater remained where once the magazine had stood, while embers and missiles catapulted for a distance of over one mile. As a result, two more major explosions detonated in nearby Magazine Number 9 and Shell House Number 22. The direct effect of the blasts caused the complete total annihilation of structures within a radius of 2,700 feet and damaged buildings up to 8,700 feet away. Nineteen people died and over 50 were injured. The damage to munitions and other stores exceeded $40,000,000 *(Army Ordnance* 1945:426; Reed 1995:41).

The Naval Depot and the adjacent Picatinny Arsenal were immediately treated as crime scenes. Blast damage was extensively photographed and documented to ascertain the effects of the blasts on buildings and structures in hopes that scientific study would produce findings that would prevent future disasters (Reed 1995:41).

While the military community was bent on fact finding, the American public was horrified at the extent of the disaster. An editorial published in the *Engineering News Record* summarizes the public view and calls for an official inquiry:

> Of the whole series of major accidents that the Navy has experienced in recent years, none has so closely involved the personal interest of the

> citizen as this one. It has brought sharply to consciousness the danger of destruction and sudden death inherent in great stores of high explosives, and simultaneously has awakened a general conviction that if means can be found to minimize this danger they should be used, whatever the cost. Lightning, if that is what set off the initial blast at the arsenal, is not yet subject to human control, and despite the most elaborate protective devices a powderhouse may be struck as readily as a farmhouse. Even without reckoning the chance of ignition through other causes, then, any powder store is the potential seat of an explosion. But the greatness of the danger grows rapidly with the amount of the explosive and its concentration in unisolated groups; and so also it can be limited by storing smaller quantities and subdividing and isolating them. . . . It is sure to be of wide public interest, for it is as much the public's as the Navy's problem how to maintain adequate supplies of necessary explosives and yet keep the inevitable hazard down to a minimum. The inquiry should also furnish better knowledge than has yet been available as to the width of the danger zone surrounding a store of high explosives [Reed 1995:42, as quoted from *Engineering News Record* 1926, Vol. 97(4):125–126].

The Navy appointed a Court of Inquiry on 14 July 1926, headed by Rear Admiral Robert E. Coontz, U.S.N. The court was charged with rendering an opinion on the cause of the disaster and making recommendations that might prevent future disasters of this type. The court examined the damages to the depot, the loss of life, and the causes of the explosions (*Army Ordnance* 1945:426).

The Court of Inquiry, however, did not satisfy everyone. On 22 December 1927, Congress approved the First Deficiency Act, Fiscal Year 1928, which included a provision that a joint Army-Navy board survey the conditions of ammunition storage. The board, composed of officers appointed by the Secretary of War and the Secretary of the Navy, was to pay special attention to ordnance facilities that, due to their proximity to populous communities and industrial areas might "constitute a menace to life and property." The results of the survey were to include recommendations concerning any needed changes to storage facilities, including location and the feasibility of the joint use of the installations by the Army and Navy (Joint Army and Navy Board 1928:1).

The results of the official inquiry, titled *Report of the Joint Army and Navy Board Convened to Make a Survey of Points of Storage of Ammunition in Compliance with a Provision of the First Deficiency Act, Fiscal Year 1928*, were completed by 3 March 1928. The document was divided into three main sections. The first section consisted of a preliminary statement that noted the most stringent laws in the country concerning explosives belonged to the state of New Jersey. These laws, which incorporated the American Table of Distances, were adopted by the joint board in establishing its standard of safety. The second section of the report listed the procedures by which the study was made. The third discussed the individual ordnance facilities directed by the Army and Navy and provided suggestions to mitigate possible hazards (Joint Army and Navy Board 1928).

The study noted that after World War I, enormous quantities of ammunition destined for France piled up on the Atlantic seaboard and were eventually diverted to the nearest depot. This action dangerously overloaded the depots. Although all ammunition considered not essential for future use was accordingly disposed of, this still left many depots overextended. The study stipulated that no problems had occurred where the ordnance was properly stored and that steps could be taken to appease further concerns. The joint board proposed an overall solution of redistribution and rearrangement of the ammunition and the establishment of a permanent joint Army-Navy Ammunition Storage Board to serve in an advisory capacity to the Secretary of War and the Secretary of the Navy. Today, this board is known as the Defense Ammunition Safety Board. It provides oversight of explosives and chemical agents at military facilities (Reed 1995:42; Thomson and Mayo 1960).

The joint board also made specific recommendations that would profoundly alter the way the American military stored munitions in the future. The board recommended that cast TNT in bombs, depth charges, mines or other similar containers should be segregated from all other explosives stores; that all metallic parts of magazines and their contents should be grounded; that magazine personnel should be instructed to avoid fighting heavy fires in

explosives magazines; that magazines, shell houses, and containers should be made as nonflammable as possible and of construction that would eliminate forming heavy missiles in case of explosion; that dwellings should be located clear of probable injury due to explosions; that ammunition depots should be supplied with improved fire alarm and fire fighting equipment and additional roads to fight fires; that distances between magazines be made "adequate" with the use of barricades and subsurface storage in future construction; that a table of distances be developed that would serve as a future guide; that Lake Denmark should be rebuilt; and that Congress provide two new ammunition depots of at least 100 square miles for the storage of high explosives with one to be located within 1,000 miles from the Pacific Coast and the other within 1,000 miles from the Atlantic Coast (Joint Army and Navy Board 1928).

While the Navy was investigating the Lake Denmark explosion through a Court of Inquiry, the Army also appointed its own board to examine the Lake Denmark explosion and to make recommendations on rebuilding Picatinny Arsenal. The 1926 explosion gave the Army the unprecedented opportunity to assess the damage and effects of large detonations of munitions in storage. The Army board advised that, in addition to rebuilding Picatinny Arsenal, the installation be enlarged to allow for the consolidation of the Army's ordnance activities in northern New Jersey (Joint Army and Navy Board 1928).

Between 1927 and 1931, Picatinny Arsenal was essentially rebuilt at a cost of 2.3 million dollars. As safe handling of explosives was a top priority, the redesigned arsenal included the division of the arsenal into zones based on function or activity. The four zones consisted of a powder and explosives production and handling zone; powder and explosives storage zone; powder and explosives testing zone; and non-hazardous manufacturing and administration and research offices. However, the magazine area of the installation remained essentially unchanged with the use of aboveground magazines. Recommendations concerning safety procedures were adopted and several new sand-filled, wooden bunkers were constructed in the magazine area. Overall, the amount of ammunition stored was reduced, and additional land area was purchased to ensure adequate quantity-distance spacing (Nolte et al. 1998:25).

In 1928, the Army's Ordnance Department issued a new set of standards for the storage of explosives and ammunition. The new standards dictated that explosives and ammunition in quantity be stored only in specially designed structures developed in response to the class of materiel being stored. Interestingly, the 1928 standards do not mention the use of igloo magazines, which were already in use by the Navy. Igloo magazines would subsequently replace the 1928 magazines, although they do not appear in the Army Ordnance Safety Manual until 1941.

In 1931, the Ordnance Department issued another safety manual that detailed five types of ammunition and explosives storage structures. Each magazine had size and distance requirements appropriate to the type of munitions stored in it. All five structures were apparently un-barricaded. The use of barricades would have presumably reduced the needed distance between magazines (U.S. Army 1931).

Explosives magazines were to measure approximately 26-by-42 feet and be spaced 400 to 800 feet apart. These magazines were originally designed to store up to 250,000 pounds of bulk explosives, including black powder, TNT, tetryl, and explosive D. However, to allow for ample aisle space for inspection and shipping and to have piles of convenient height, these magazines were usually limited to 100,000 pounds. Explosives magazines were to be constructed with concrete foundations, hollow tile or brick walls, and wood floors. The flat roof was to have wooden roof trusses and gypsum blocks or slabs covered with fire-resistant built-up roofing (U.S. Army 1931).

Smokeless powder magazines, measuring 32-by-96 feet, were to be spaced 300 feet apart and were designed to store smokeless powder in boxes or propellant charges. The construction of smokeless powder magazines varied considerably from other standard magazines because smokeless powder required good protection from moisture and high temperature and was a significant fire hazard. These magazines were built of frame construction on

concrete or wooden piers. Outside walls that extended to the ground level were of corrugated sheet asbestos. The floor, ceiling, and inner walls of smokeless powder magazines were carefully built to avoid cracks and crevices. Using a roof similar to that of explosives magazines, smokeless powder magazines had ventilators in the roof as well as below the floor in the outside walls. There were also air passages between the inner walls and floors. The capacity of smokeless powder magazines was originally set at 500,000 pounds of powder in boxes. The amount of powder stored in the form of propelling charges was less (U.S. Army 1931).

Primer and fuses magazines were to be the same size as smokeless powder magazines and located the same distance apart. The design of primer and fuses magazines was similar to that of explosives magazines. However, these magazines were to contain primers, primer detonators, adapters, boosters, and fuses. The capacity of these magazines was not detailed because of the danger of losing all of one type of component if stored in one magazine (U.S. Army 1931).

Ammunition magazines, much larger than the three previous types of magazines, were to be nearly 50 feet wide and 220 feet long. These magazines were to be spaced 300 feet apart when constructed in groups. Separate loading shell and shrapnel were to be stored in ammunition magazines. The ammunition magazines were to have solid concrete foundations and floors. Walls were to be of hollow tile or brick. A peaked roof of gypsum blocks or slabs covered with fire-resistant built-up roof was to rest on wooden roof trusses supported on concrete or brick pilasters. Ventilators were to be placed in the roof with openings in the sidewalls that could be opened and closed to regulate airflow. The capacity of ammunition magazines was not defined because of regulations that limited the number of shells to a pile and distances between piles (U.S. Army 1931).

The fifth type of storage structure was the warehouse. Built similarly to commercial warehouses, these structures had solid concrete foundations and floors. Constructed in sections of about 160 feet in width by 100 feet in length, each warehouse had brick or tile walls, as well as interior firewalls separating the sections and sprinkler systems. Warehouses were used for the storage of small arms ammunition, sodium nitrate, and other non-explosive materiel (U.S. Army 1931).

In addition to the design, maintenance, and repair of ammunition and explosives storage structures, the Ordnance Department also dictated specific guidelines in the storing of ammunition and explosives. Generally, these guidelines followed the joint Army-Navy board's findings. The first guideline mandated that magazines should be remote from inhabited buildings and conform to Ordnance Department quantity-distance tables. The magazines were to be arranged so that similar risks were grouped together. Railroads in magazine areas were to have a classification yard for incoming and outgoing shipments. Additionally, magazine areas were to have a main-line railroad track to each row of magazines with a spur at each magazine to allow railroad cars to be loaded and unloaded without blocking the main track. Adequate drainage in magazines was to be provided to reduce moisture that deteriorated ammunition. Good roads for fire fighting and security purposes were to be built. Magazines were to be constructed of materials that would not form missiles or firebrands in case of explosion. Additionally, magazines were to be fireproof and to be designed staunch, low, and narrow to withstand blast pressures from adjacent magazines. The size of magazines was to be determined by the quantity-distance tables, although ample space for aisles to allow ease in inspection and shipping was to be provided. All magazines were to have a loading platform with the floor at railroad car-floor height. If a wooden floor was used, it should be of narrow tongue-and-groove material, blind-nailed, to avoid cracks and crevice where spilled explosives could lodge. Magazine doors were to be placed opposite of the prevailing winds and were to tightly fit in order to seal the opening. Magazines were to be constructed to eliminate the accumulation of explosive dust and were to be provided with ventilators to regulate the temperature. Finally, magazines were to be adequately grounded (U.S. Army 1931:22–26).

Development of the Igloo Magazine

The most notable consequence of the Lake Denmark explosion was the development of a new type of standard ammunition magazine. This new magazine became widely known as the "igloo" due to the general impression that the structure resembled traditional Eskimo dwellings (Abate 1998:359). The igloo magazine was a low, barrel-arched structure constructed of reinforced concrete and covered with earth. The use of the barrel-arch design directed the force of an explosion up instead of out, while the berming of earth upon the structure dampened the force of a potential explosion. Although the floor of the magazine was at or above natural grade, the magazine was considered underground because of the earthen berm on three sides of the structure. The amount of explosives materiel stored in each igloo magazine was limited, and a minimum distance of 400 feet between magazines was specified.

The antecedents of the igloo design are sketchy. The new design was possibly developed simultaneously in several places. For example, the barrel-vaulted German *munitionshaus* was being constructed by the 1930s and possibly before. Further, although the igloo magazine was only widely adopted by the Navy following the Lake Denmark explosion, the basic design elements of earth-covered concrete magazines had existed in the United States almost a decade earlier. As early as 1918, earth-covered concrete magazines with concrete blast walls were constructed at the Lake Denmark Naval Depot. The primary difference between these magazines and igloo magazines was that the 1918 magazines had a flat concrete roof instead of the concrete arch (Fine and Remington 1972; Reed 1995:46).

The arch design had a distinct advantage over flat-roof construction in the event of an explosion. The thick haunches of the concrete arch and the thicker earth covering along the sides would laterally confine the contents of the igloo magazine. Thus, contents would be vented upward through the thinner crown and earth covering at the top of the magazine. This, in turn, would reduce the radius of possible sympathetic detonation. The flat-roofed concrete magazine, on the other hand, would vent evenly upward, not just along a narrow ridge at the arch. Therefore, large portions of the contents and the magazine itself would be randomly discharged, increasing the risk of sympathetic explosions in nearby magazines. Overall, concrete-arched magazines had to be designed to deaden only the loads of the arch and covering itself, while flat-topped magazines had to also take into account blast pressures (Explosives Safety Board 1997).

It has been theorized that the form for the igloo magazine is a copy of a similar form found in the wood-and-steel Nissen Bow hut of the British that developed into the World War II steel Quonset hut of the Americans (Reed 1995). It is more likely, however, that the unique barrel-vaulted, concrete, arch design was introduced at that time due to the practical realities of engineering blast design rather than visual similarity with other forms. As effectively tested by both the Navy and the Army, the design of the igloo magazine was successful in mitigating possible damage to nearby structures and buildings, which, following the Lake Denmark explosion was the major concern.

The many advantages of the igloo magazine over traditional magazines ultimately led to its preference for use as an explosives magazine. The thermal insulation qualities of concrete and earth covering eliminated the extreme high temperatures that were common in aboveground magazines and that accelerated the deterioration of smokeless powder and other munitions. The earth-cover of the igloo magazines also facilitated camouflage of these critical resources. Because the design of the igloo magazine reduced the risk of sympathetic detonation as well as the radius of structural damage and the range of missiles, the igloo magazines were deemed less hazardous to their environs than other aboveground magazines, particularly un-barricaded aboveground magazines. Igloo magazines also did not require separate barricades, thus substantially reducing land area requirements. Additionally, because of the inherent barricaded nature of igloo magazines, distances between magazines, and distances between magazines and inhabited buildings, could be halved. As igloos were supposed to be missile-proof and resistant to structural damage caused by an explosion at an adjacent magazine, explosives subject to detonation by missiles or by structural damage did not need to be separated from missile-forming and mass-

detonating ammunition by inhabited building distance. This allowed additional saving in land requirements and increased flexibility and efficiency in space utilization. Overall, the possibility of propagation of an explosion from magazine to magazine was reduced to practically zero with the use of the igloo magazine.

In July 1928, the Navy's Bureau of Ordnance began testing the newly designed reinforced concrete igloo magazines at Indian Head, Maryland. The experiment, conducted by the Naval Powder Factory, proved the safety of the magazine. Four miniature test models measuring six feet square were loaded with 3,300 pounds of TNT. The models were spaced 25 feet apart. As the object of the test was to see if hot fragments from an initial explosion would trigger secondary explosions, the central magazine was detonated. The central magazine was destroyed, and the concussion caused two other magazines to collapse. The collapsed magazines, however, did not explode, proving the safety of the igloo design (*Army Ordnance* 1928:127–128).

The Navy began constructing igloo magazines at the Yorktown Naval Depot, Virginia, in 1928. A 1928 article on naval construction activities in *Engineering News Record* described the magazine as a semi cylindrical structure of reinforced concrete and covered with earth except on the end walls, which were protected by barricades of earth faced with creosoted wood (*Engineering News Record* 1928:112). As built, the Yorktown magazine was 40 feet in length and 10 feet in height at the crown of the arch. Each magazine had the capacity to store 140,000 pounds of explosives. They were laid out in groups of seven with 500 feet between each magazine and 1,900 feet between groups. The design of the magazine was attributed to Captain E. R. Gaylor, Civil Engineers Corps, U.S.N., under Rear Admiral L. E. Gregory, Civil Engineers Corps, U.S.N., Chief of the Bureau of Yards and Docks (Reed 1995:43).

The article in *Engineering News Record* notes that:

> The outstanding feature of the new design is that the magazines will be sunk into the ground and bulwarked at each end, that in case of an accident, the explosive force would be directed upward instead of horizontally [Reed 1995:43, as quoted from *Engineering News Record* 1928, Vol. 101(3):112].

Additionally, the new design featured a complex system of lightning protection that included lightning rods and steel reinforcing rods, closely set and welded in the arch. All of the reinforcing steel and other metal parts were electrically connected to a copper girdle circling the entire structure and embedded in its footing (Cotter 1930; Fine and Remington 1972; see also Reed 1995:43).

A plan for a magazine, titled "Magazine Plan Elevation and Section," Yards and Docks Drawing Number 104260, has been located on file at Yorktown Naval Weapons Center, Virginia. The plan, dated 15 July 1927, indicated that N. M. Smith was the project manager. Smith was actually Commander N. M. Smith, Civil Engineer Corps, Bureau of Yards and Docks, U.S.N., and a member of the joint Army-Navy board that investigated ammunition storage conditions. The designer of the plan is noted simply as "J.M." A companion sheet to the plan with an analysis of stresses indicates the full name of the designer was Mr. J. M. Michaelson.

Drawings 104260 and 104261 provide a plan, elevation, section, and details of an early barricaded igloo. The elevation shows a 40-foot-long structure. Measuring 11.8 feet in total height, the crown of the arch was 10 feet covered with fill on three elevations. A waterproof membrane capped with a layer of sand shows under the fill but was not described. Vertical steel rods were placed within the concrete arch and two ventilators are in place. A sloped barricade facing the entry wall has protective planking on its top and its vertical face. The head wall is composed of a concrete section fronting the arch; the wing sections were shown as being wood. Double metal doors on the head wall offered access to the interior. Anchors were attached to the back of the head wall wings. The end wall was covered with fill, only one ventilator pipe being visible. The interior plan was open. The concrete floors were gently sloped to the edge gutters that lined each long parallel wall. The arch and the floor were not attached. The half section shows the concrete footing, it's size, and setting in gravel (Figures 8 and 9).

Naval Ammunition Depot, Hawthorne, Nevada

The first entirely modern ammunition depot to house twentieth-century explosives and propellants was the Naval Ammunition Depot at Hawthorne, Nevada.[2] Built by the Navy, the depot was located in an isolated area of the Nevada desert but was still within 1,000 miles of major Pacific coastal ports. Initial construction began in July 1928 and was completed in 1931.

The design of the individual magazines at Hawthorne was almost identical to the structures constructed at Yorktown, VA, in 1928. The typical magazine had a capacity of 143,000 pounds and measured 40 feet 4 inches long and 25 feet wide. The maximum height at the center of the arch roof was 20 feet. The top and sides of the magazine were completely covered with earth except in front where the depressed roadway gave access to the door. All reinforcing steel and other metal parts on the magazines were electrically connected to a copper girdle circling the entire structure and embedded in the footing. Opposite the depressed door was an earth barricade (Figure 10).

The initial magazine area at Hawthorne contained 84 high explosives magazines and two fuse and detonator storage magazines. Concern for safety governed magazine layout and individual magazine design at Hawthorne. The magazines were split into groups of seven with each group forming an approximate hexagon with one building at each angle of the perimeter and one in the center. The magazines in each group were separated center to center by 600 feet of space. This spacing was believed to be adequate to prevent induced or sympathetic explosions within the magazine group. The maximum probable loss within the group was determined to be only the explosives stored in one magazine, which amounted to 143,000 pounds. This equaled only 1.19 percent of the total explosives stored on the facility.

Each group was further spaced 3,000 feet center-to-center from adjacent groups. This distance was believed sufficient to prevent damage from extending from one group to another in the unlikely event that all seven magazines in one group detonated. As such, the maximum loss possible was held to the amount of explosives stored in one group, equaling about 1 million pounds or 8.33 percent of the entire installation's storage capacity.

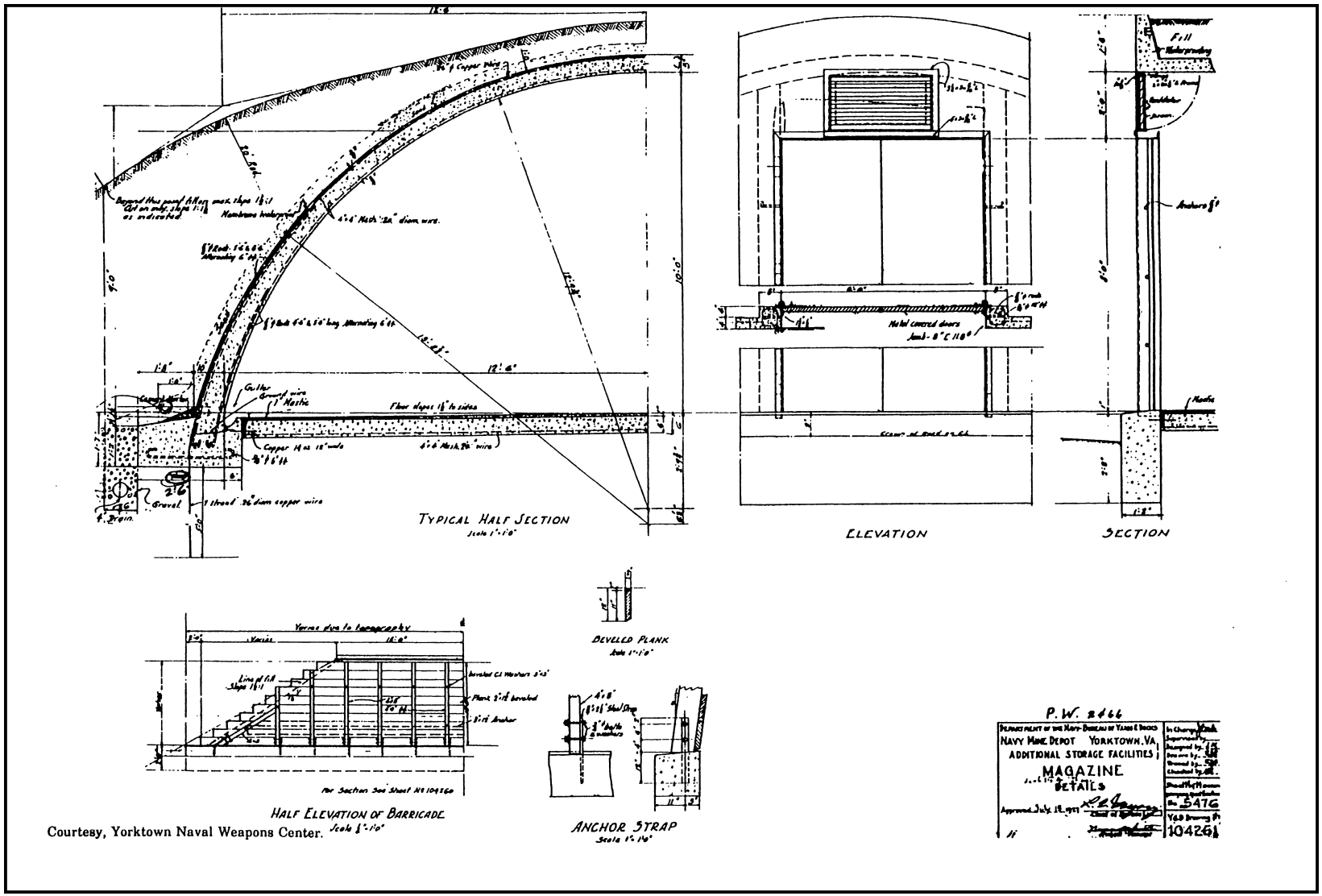
By the outbreak of World War II in Europe in the fall of 1939, the Navy still had only limited capacity for storing munitions. The Naval Ammunition Depot at Hawthorne remained the Navy's only inland depot until after America's entrance into World War II. As such, considerable construction activity occurred at Hawthorne between 1935 and 1945. A total of 1,751 magazines was erected by the Navy at Hawthorne. Nearly two-thirds of these were conventional 25-by-80-foot, single-arch, high-explosives storage igloos. Other magazines constructed at Hawthorne included the triple-barrel-vault, high-explosives magazines in which each vault measured 25-by-80 feet; the 50-by-100-foot rectangular box, high-explosives magazines; the 25-by-20-foot single-arch, fuse and detonator igloos; and the 100-by-50-foot smokeless powder magazines. All of the magazines were laid out for safety according to standard quantity and distance formulas. With the exception of the four, brick, smokeless powder magazines, all magazines were constructed of reinforced concrete (Figure 11 and 12).

Overall, the magazine design and layout at Hawthorne would serve the Navy and the Army as a paradigm for future construction of military ammunition storage facilities and establish the earth-covered igloo as the primary means for safe ammunition and explosives storage for the twentieth century.

Igloos and the Army

Although the Army rebuilt Picatinny Depot without using the newly developed igloo magazines, the Army's Ordnance Department was aware of the Navy's work with the new design. Three years after the Lake Denmark incident, the Ordnance Department undertook

[2] In 1977, the Naval Ammunition Depot at Hawthorne, Nevada, was transferred to the Army and the name was changed to Hawthorne Army Ammunition Plant.



Courtesy, Yorktown Naval Weapons Center.

Figure 8. Magazine details for Drawing 104261.

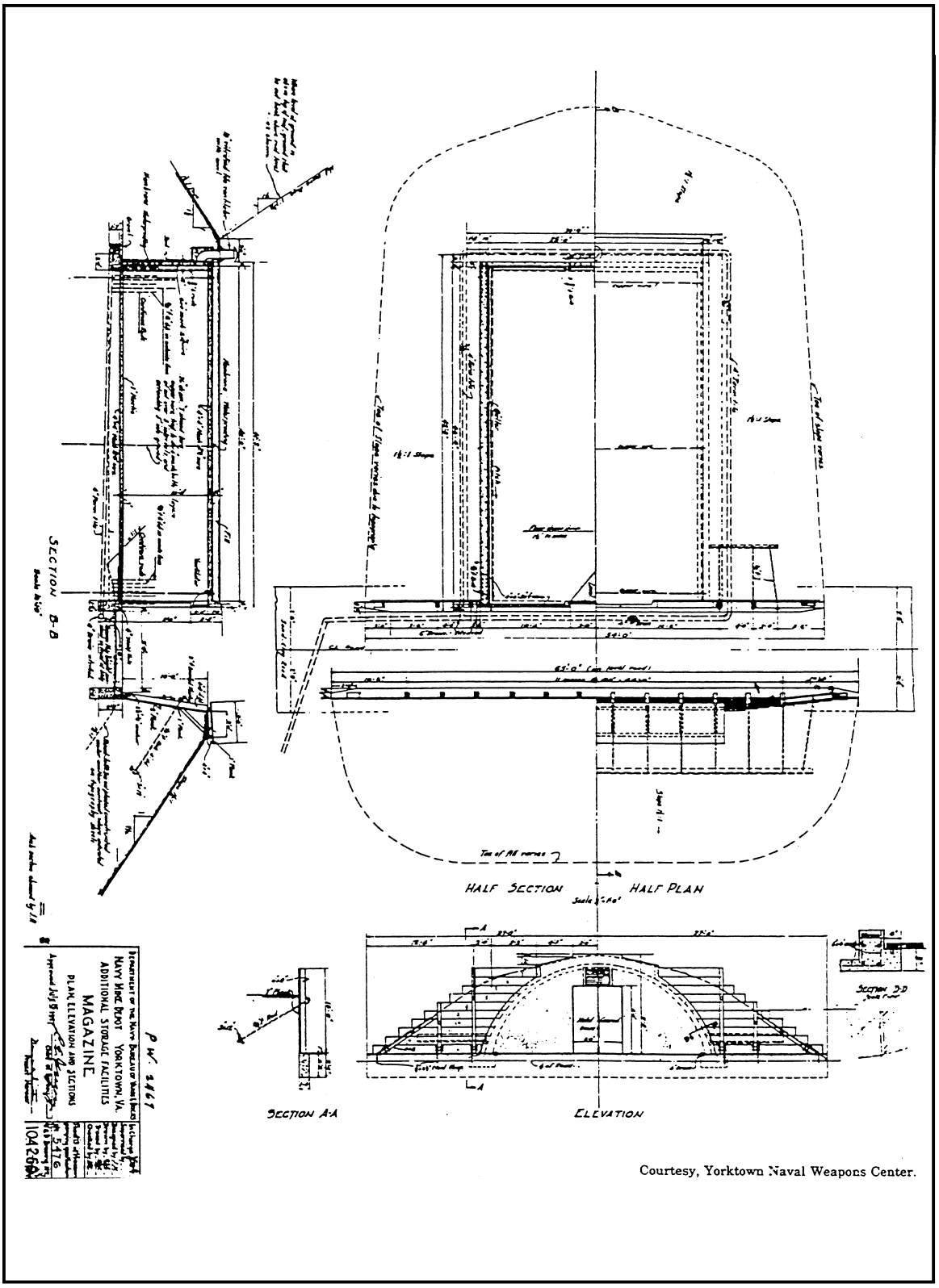


Figure 9. Magazine plan, elevations, and sections for Drawing 104260.

Figure 10. Magazine 56-AT-2 at Hawthorne Naval Ammunition Depot.

Figure 11. Triple Arch Magazine at Hawthorne Naval Ammunition Depot.

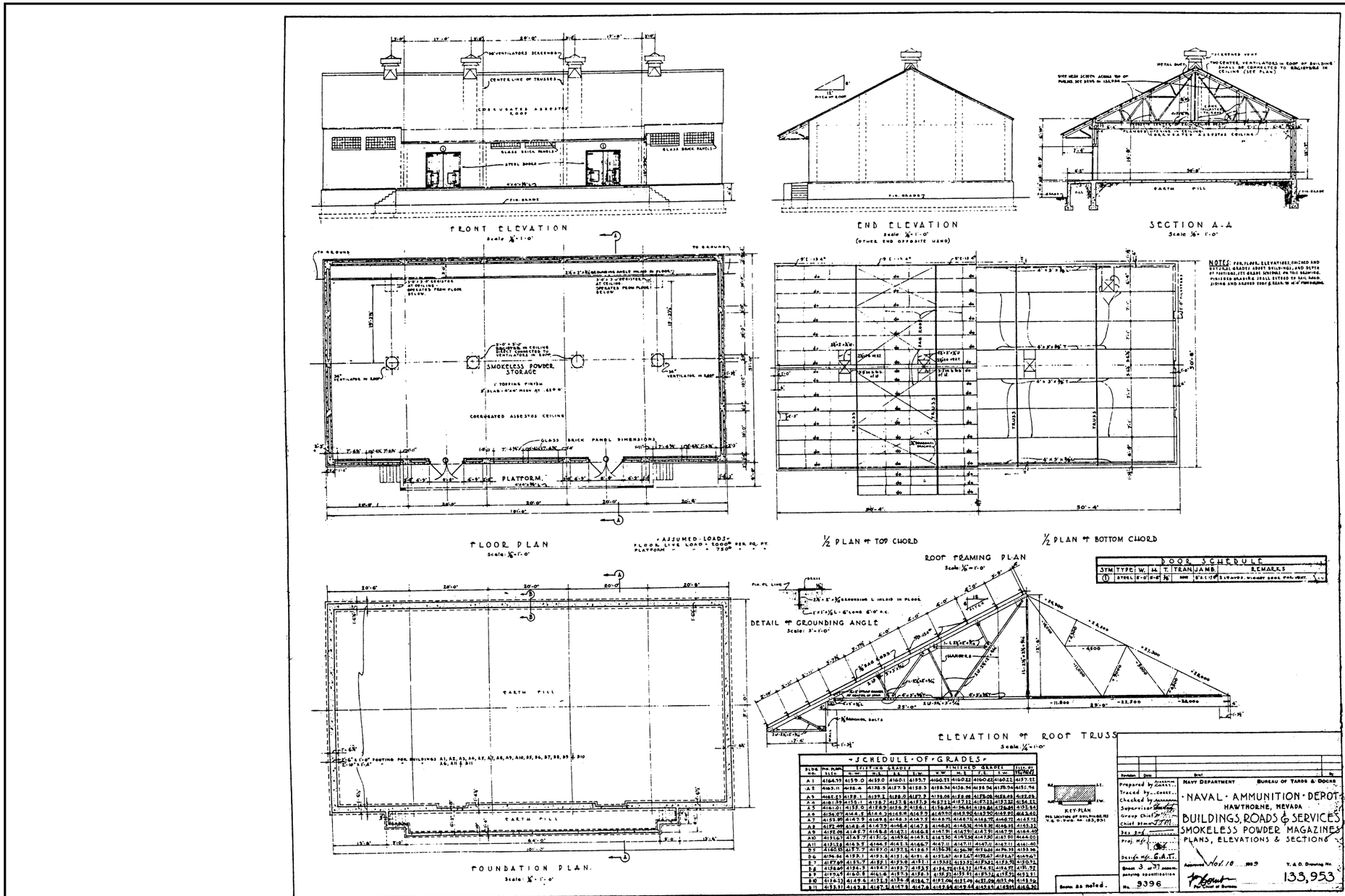


Figure 12. Plans, elevations, and sections for Smokeless Powder Magazine at Hawthorne Naval Ammunition Depot.

expansion of the Savanna Ordnance Depot, Illinois, as a result of the findings of the 1928 joint Army-Navy board investigating ordnance storage. The Savanna depot was particularly well suited for the storage of high explosives, and the joint board recommended that the facility be expanded to accommodate ammunition from the east coast depots where ammunition storage had become too concentrated.

In early 1929, the Ordnance Department constructed 24 earth-covered magazines at Savanna. The first Army standard-type igloo, commonly known as the "Old Savanna" type, was based on Office of the Quartermaster General drawings 6579–160, –160; changed to 652–311, –312 (Ordnance No. 19–2–93,04, Magazine Type 30), dated 19 July 1928. The "Standard Underground Magazine" measured 25 feet wide and 40 feet 4 inches long with a 10-foot crown inside. The magazine's concrete arch was 5 inches thick at the crown and 10 inches thick at the sides. The crown was covered with one foot of earth. The front wall was 4 inches thick, while the rear wall was 6 inches. The magazine's concrete had wire mesh reinforcements in the arch and walls. The single entry, a steel-clad, double, wooden door, measured 6-by-8 feet. The magazine did not have a platform or apron. The full timber net headwall fronted directly onto the road, with an optional timber-revetted barricade across the road. The structure was vented with louvers and was fully grounded (Figure 13).

The 24 magazines at the Savanna Army Depot were constructed in parallel rows. This was considered safe since the basic design of the igloo directed explosions upward rather than outward. As found by the Navy at Indian Head, Maryland, the design of the igloo prevented detonation of adjacent magazines in the event of an explosion. In addition to constructing the Old Savanna type magazine at the Savanna depot, the Army also built them at the Delaware Arsenal, New Jersey; Benicia Arsenal, California; and Aberdeen Proving Ground, Maryland (Figure 14).

In addition to the Old Savanna type igloo, the Army developed two other igloo-type designs in the 1930s. The design of the "Old Line" type was based on the Old Savanna type with some modifications. The plans for the Old Line type magazines were dated 20 June 1933 and labeled Office of the Quartermaster General drawings 652–295 through 296 (Ordnance No. 19–2–107–108, Magazine Type 41). Old Line-type magazines measured 25 feet wide and 40 feet 4 inches long with a 10-foot inside crown. The concrete arch was 5 inches thick at the crown and 10 inches thick along the sides. An exterior monorail was added, and the exterior door was changed from wood to steel plate. The timbered headwall was specified as concrete and 6 inches thick. Earth-cover at the crown was increased to 2 feet, and a sand cushion over a waterproofing membrane was specified. The Army constructed Old Line-type igloos at Savanna Army Depot, Illinois; Delaware Depot, New Jersey; Benicia Arsenal, California; and Aberdeen Proving Ground, Maryland.

The "Old Depot" magazine type was derived from the design of the Old Line magazine type in two lengths, 40 feet and 60 feet. The plans for the 40-foot magazine, known as Type A, were dated 9 December 1935 as Office of the Quartermaster General drawing 652–317 through 320 (Ordnance drawing 19–2–121 through 130, Magazine Type 45). The plans for the 60-foot magazine, known as Type B, were dated 23 July 1937 as Office of the Quartermaster General drawing 652–326 through 331 (Ordnance drawing 19–2–125 through 130, Magazine Type 49). The Old Depot type magazine increased the width of the magazine to 25 feet 6 inches and raised the crown height to 12 feet 9 inches. The thickness of the crown was also increased to 6 inches. The monorail was put only on the inside on pilasters projecting from the back and end walls. The single door increased to 4 feet in width. The concrete reinforcement changed from wire mesh to rebar. The Old Depot-type magazine was constructed at Camp Stanley, Texas; Ogden Depot, Utah; and other pre-World War II depots and stations (Figures 15 and 16).

Preparing for War

Following World War I, American citizens and politicians generally embraced a policy of isolationism. However, certain lessons learned during World War I made a sufficient impression for Congress to instigate some new policies. The National Defense Act, passed by Congress in 1920, reorganized the War Department and,

importantly, mandated that the Assistant Secretary of War organize all military procurement. The latter mandate was important because it would prevent the type of rivalry between military branches for supplies that occurred during World War I. As a consequence of the act, the Planning Branch, Office of the Assistant Secretary of War, was established. The Planning Branch was charged with both procurement and industrial mobilization planning. In 1922, the Planning Branch established the Army and Navy Munitions Board to coordinate Army and Navy planning. Along with the Planning Branch and the Army and Navy Munitions Board, the Office of the Chief of Ordnance and the Manufacturing Service of the Ordnance Department worked together in procurement planning during the interwar years. The planning provided by these groups during the 1920s and 1930s allowed for the successful rearmament of the United States military prior to and during World War II (Kane 1995:14, 19).

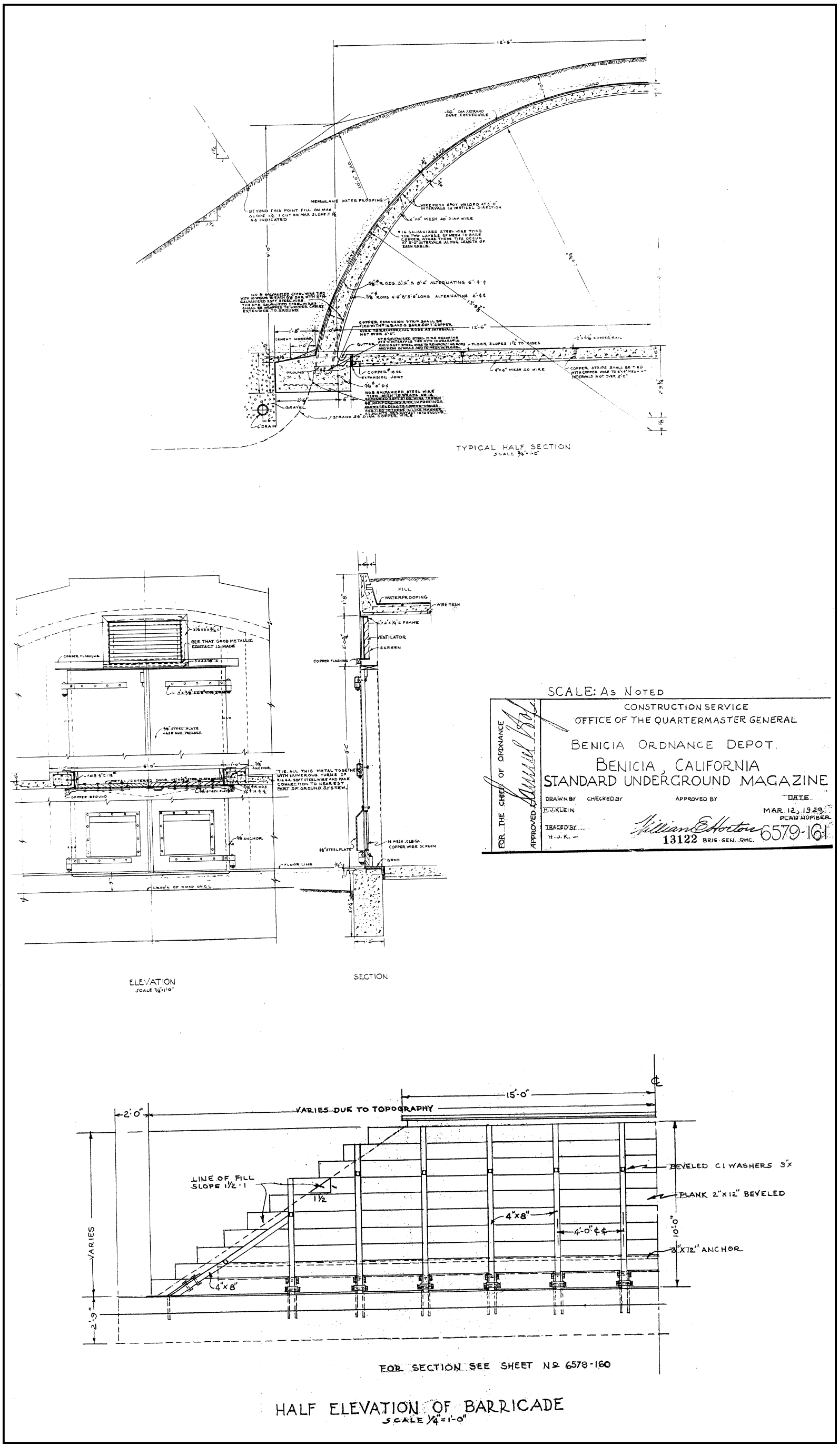
However, Congress also passed certain measures to limit the possibility of American participation in another world war. This culminated with the passage of several neutrality acts in the mid-1930s that restricted contact with warring nations. Additionally during the 1920s and early 1930s, Congress slashed the budgets of all military agencies. Economic conditions were so tough that many older officers took pay cuts so that younger officers could remain on staff. The Great Depression of the 1930s further reduced the budgets and abilities of the military. Military agencies, such as the Ordnance Department, did benefit slightly from New Deal-era work programs such as the Civil Works Authority, Public Works Administration, and Works Progress Administration. These agencies primarily provided labor to help in the maintenance and repair of existing facilities (Kane 1995:26–27).

By 1936, the possibility of war in Europe was an increasing reality. In response to this and despite the isolationist policies of the previous years, Congress started increasing military appropriations. By 1938, with isolationism seriously beginning to fall from favor, Congress gave sufficient monies to the Ordnance Department to permit an increased level of planning, as well as equipment purchases for powder, small arms ammunition, and loading-and-packing installations. Additionally, beginning in 1938, the Allied powers were allowed to place orders for munitions with American companies using a loophole in the neutrality legislation. This loophole allowed warring nations to purchase supplies by paying cash on delivery and transporting the goods on their own ships (Kane 1995:28–29).

On 1 September 1939, war was formally declared in Europe. Seven days later, President Franklin D. Roosevelt proclaimed a state of limited national emergency. Between September 1939 and June 1940, Congress and the President strove to help the Allied powers in various ways. In June 1940, Congress passed the first national defense appropriations act and instituted the Protective Mobilization Program. Critically, the Protective Mobilization Program included a munitions building program that provided for the manufacture of materiel sufficient to supply 1.2 million ground troops. Additionally, the program called for procurement of long-lead-time supplies sufficient to supply a force of 2 million—the production of 18,000 airplanes and the productive capacity to supply a force of more than 2 million on combat status. Together, this provided a major step in the mobilization of the United States Army (Kane 1995:29–30).

Army Depot System

As part of the mobilization efforts for World War II, the Army instigated an extensive network of depots for the sole purpose of receiving, storing, and issuing general military supplies. The Ordnance Department, Quartermaster Corps, and Air Corps operated the most extensive depot systems. The Signal Corps, Corps of Engineers, and Chemical Warfare Service also operated smaller logistical systems. Ordnance Department depots were unique among the service depots. While other depots primarily consisted of facilities for the storage of inert materiel, the primary mission of ordnance depots was the storage and distribution



TYPICAL HALF SECTION
SCALE 3/8"=1'-0"

ELEVATION
SCALE 3/4"=1'-0"

SECTION

SCALE: As Noted

CONSTRUCTION SERVICE
OFFICE OF THE QUARTERMASTER GENERAL

BENICIA ORDNANCE DEPOT.

BENICIA, CALIFORNIA
STANDARD UNDERGROUND MAGAZINE

DRAWN BY	CHECKED BY	APPROVED BY	DATE
H.J. KLEIN			MAR 12, 1929
TRACED BY H.J.K.			PLAN NUMBER 6579-161

APPROVED FOR THE CHIEF OF ORDNANCE
William E. Horton
13122 BRIG. GEN., QMC.

HALF ELEVATION OF BARRICADE
SCALE 1/4"=1'-0"

Figure 13. Plans for standard underground magazine constructed at Benicia Ordnance Depot.

Figure 14. Standard underground magazine at Savanna Army Depot.

of explosives materiel and represented the single largest concentration of ammunition magazines.[3]

In the 1920s and 1930s, the Army did not have large numbers of depots, reflecting the small size of the military during this period. In the interwar years, depots were divided into reserve, intermediate, and area facilities. Reserve facilities held large amounts of supplies for indefinite periods of time. They were intended to provide needed materiel during national emergencies. Intermediate and area depots were constructed to store three months' worth of supplies for the military posts within their jurisdiction. Intermediate depots served strictly for storage. Area depots were used only for distribution. By World War II, the functions of intermediate and area depots were combined. Each Army post also had depot facilities that were intended to store one month's worth of supplies.

During the interwar years, the Ordnance Department maintained reserve depots at Curtis Bay, Maryland; Delaware, New Jersey; Raritan, New Jersey; Nansemond, Virginia; Savanna, Illinois; Wingate, New Mexico; and Ogden, Utah. These reserve depots were mainly responsible for maintaining surplus World War I materiel. Intermediate depots were maintained at Augusta, Georgia; Benicia, California; Rock Island, Illinois; and San Antonio, Texas, to serve Army organizations within their respective areas.

Little was done during the interwar years to address the potential future depot needs of the military. Though the Army conducted studies of existing facilities that highlighted inadequacies

[3] Other services built ordnance depots that eventually came under Army control. These include the Hawthorne, Nevada, and McAlester, Oklahoma, army ammunition plants and the several former Chemical Warfare Service depots. Hawthorne and McAlester were navy ammunition depots that were transferred to the Army in 1977. Chemical ordnance depots were established near three of the Chemical Warfare Service arsenals at Edgewood, Maryland; Huntsville, Alabama; and Pine Bluff, Arkansas.

of the current system, no action was taken. For example, the Ordnance Department noted in 1937 that, ideally, 25 percent of ordnance depot capacity within the United States should be concentrated along the eastern seaboard, 60 percent should be situated in the continental interior, and the remaining 15 percent in the West. When war erupted in Europe in 1939, Ordnance Department planners studied their distribution of depots and found that 65 percent of available storage space was in the East, 27 percent in the Midwest, and seven percent in the West. Little was done to prepare for the needs anticipated by planners until mid-1940 when the Protective Mobilization Plan was assembled and funded by Congress.

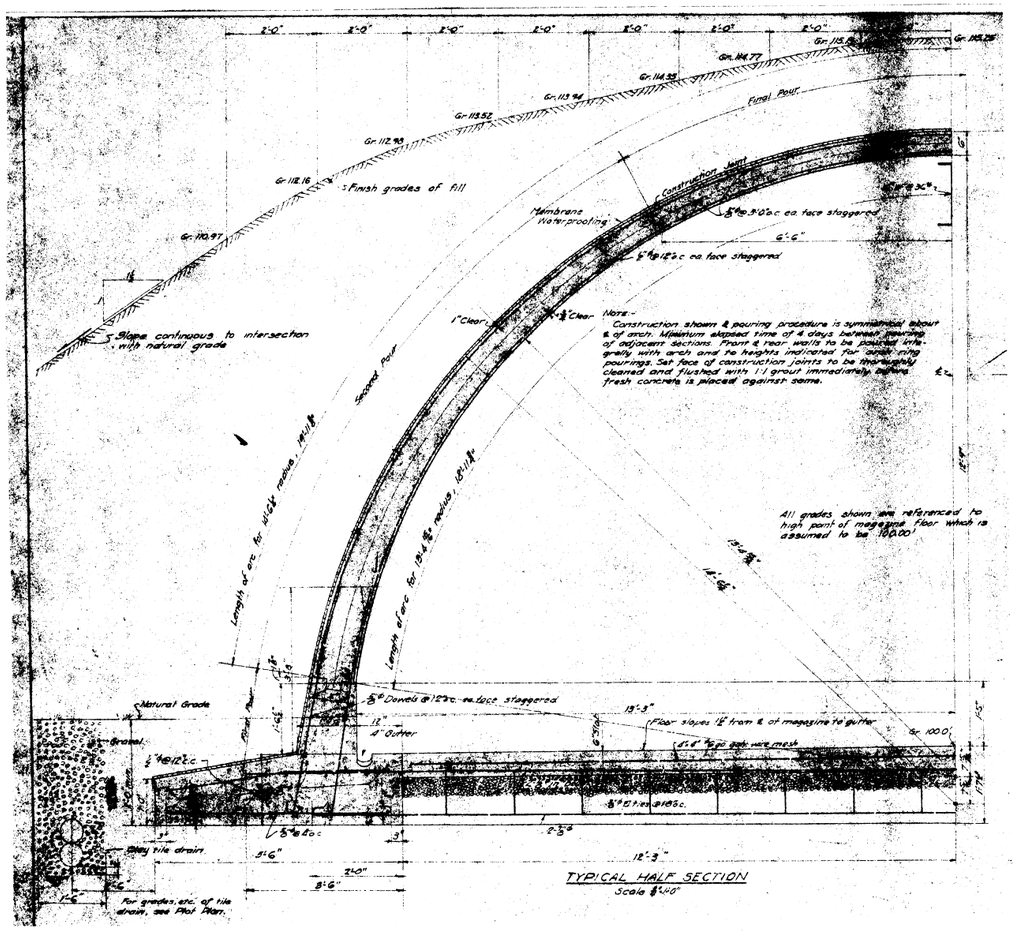
When Congress enacted the Protective Mobilization Plan of 1940, Ordnance Department planners moved to correct the problems identified in 1939 concerning the national distribution of ordnance storage facilities. The Army also was rapidly establishing new ordnance works and plants, which resulted in the expansion of the depot system to accommodate the influx of materiel from the new plants.[4] New ordnance depots were established along the Atlantic, Gulf, and Pacific coasts. By 1942, the Ordnance Department had developed an extensive system of ordnance depots, supplemented by general supply depots, back-up storage facilities, war aid depots, holding points, and motor bases to ensure adequate supplies of ordnance and to repair equipment (Figure 17).

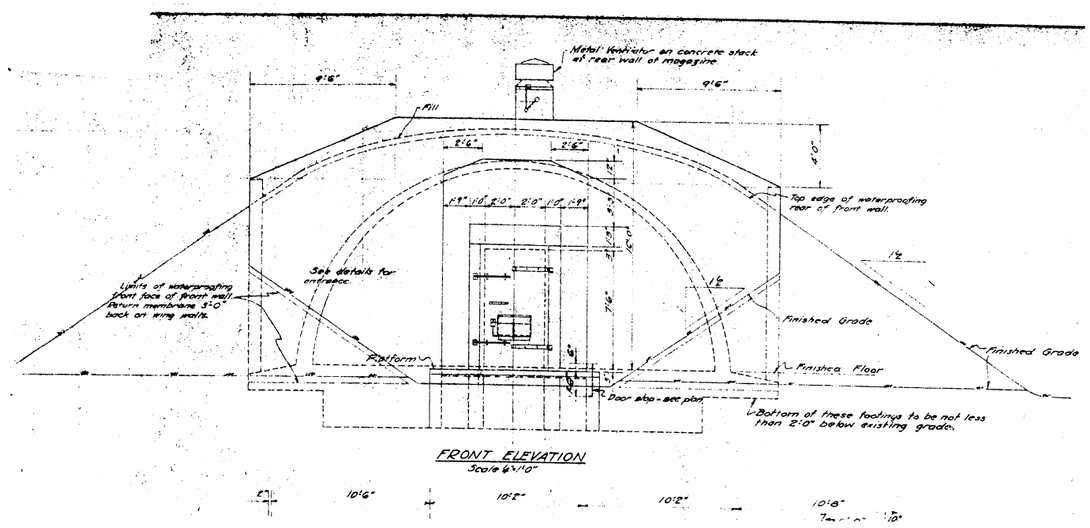
Immediately after passage of the protective mobilization legislation, the Ordnance Department established four new depots. These consisted of Anniston Ordnance Depot in Anniston, Alabama; Portage Ordnance Depot, located contiguous to the Ravenna Ordnance Plant in Ravenna, Ohio; Umatilla Ordnance Depot in Umatilla, Oregon; and Fort Wingate Ordnance Depot, located within the boundaries of Fort Wingate, New Mexico. Before construction of these four facilities was complete, Ordnance Department officials recognized that more storage capacity was required, and construction was begun on four more depot facilities: Milan Ordnance Depot in Milan, Tennessee; Red River Ordnance Depot in Texarkana, Texas; San Jacinto Ordnance Depot in San Jacinto, Texas; and Seneca Ordnance Depot in Seneca, New York. All eight depots were classed as "Class A" depots, and the Ordnance Department intended to retain these installations after the war. Thus, it was preferred that buildings and structures constructed at these facilities use permanent construction materials such as brick and stone.

Following the declaration of war by the United States in 1941, the Ordnance Department undertook construction of a second wave of eight depots. These depots were classed as "Class B" depots. As such, the explosives storage areas were built using permanent construction materials, while the administration and other non-explosives storage structures were constructed utilizing temporary mobilization building plans and materials when possible. The eight depots constructed in the second wave included Blue Grass Ordnance Depot in Lexington, Kentucky; Letterkenny Ordnance Depot in Letterkenny, Pennsylvania; Pueblo Ordnance Depot in Pueblo, Colorado; Sierra Ordnance Depot near Herlong, California; and Tooele Ordnance Depot near Tooele, Utah.

The first four "Class A" Ordnance depots were located roughly within the four corners of the United States, in accordance with plans for defending the United States from potential foreign attacks. As the mobilization program continued to swell the size of the Army and its air component, the need for more depots and a more diverse geographic distribution was recognized. Whenever feasible, the Ordnance Department located its depots near loading plants to reduce transportation costs. Two extant examples of this practice are the Portage Ordnance Depot, Ohio, which became part of the Ravenna Army Ammunition Plant, and Milan Ordnance Depot, Tennessee, which became part

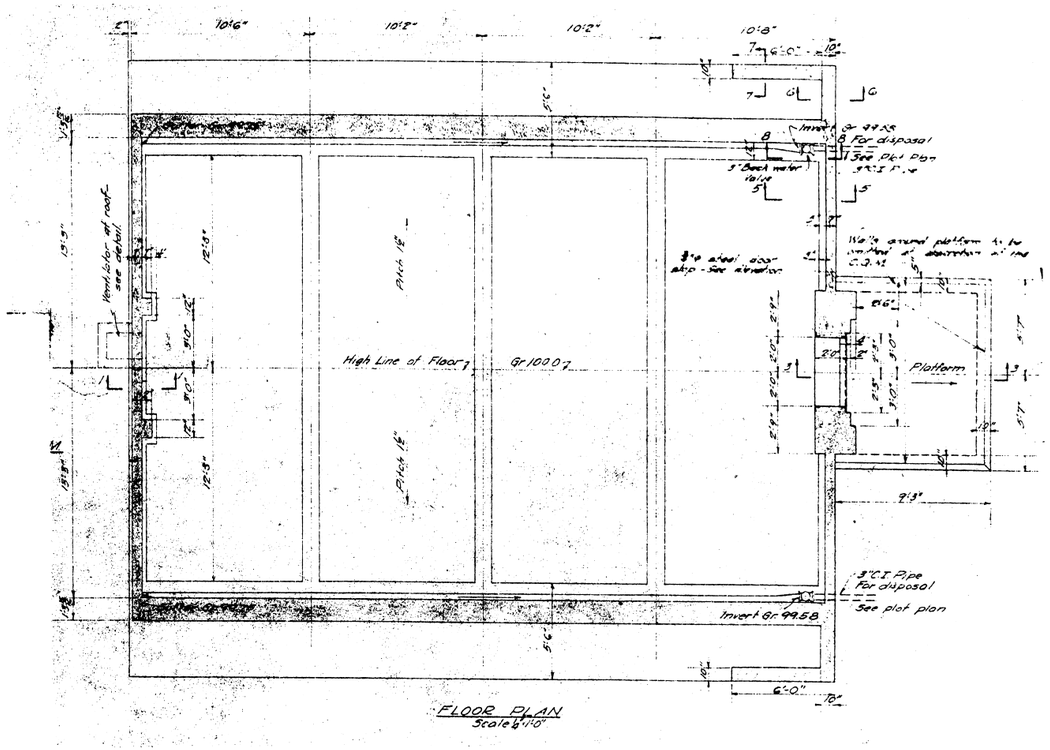
[4] In addition to the ordnance depots, the Army authorized the construction of 77 government-owned, contractor-operated (GOCO) ordnance plants during the World War II-era. These plants also included extensive ammunition and explosives storage areas. The majority of these areas are identical to those found at ordnance depots. Kane (1995) presents an excellent historic context concerning the development and operation of the GOCO ordnance plants. Because of the similarity in the ammunition and explosives storage areas in these plants and ordnance depots as well as the existence of the GOCO historic context, the plants are not discussed in this report.





MAGAZINE TYPE NO. 48 OQ Cat. No. Dwg. 121	SCALE As Noted	CONSTRUCTION DIVISION OFFICE OF THE QUARTERMASTER GENERAL
APPROVED: Brig. General, The Quartermaster General	REVISIONS	UNDERGROUND MAGAZINE PLAN, ELEVATIONS, SECTIONS IGLOO TYPE
DATE Dec. 8, 1936		DRAWN BY Loehler Copes; CHECKED BY F.; APPROVED BY DIRECTION; DATE Dec. 9, 1936; TRACED BY Copes Smith Mss; PLAN NUMBER 652-317

Figure 15. Typical half section and front elevation for underground magazine, Drawing 652-317.



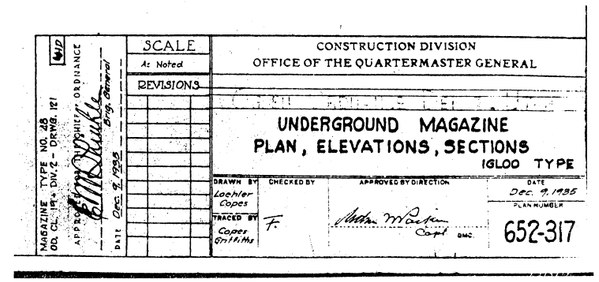


Figure 16. Floor plan and longitudinal section for underground magazine, Drawing 652-317.

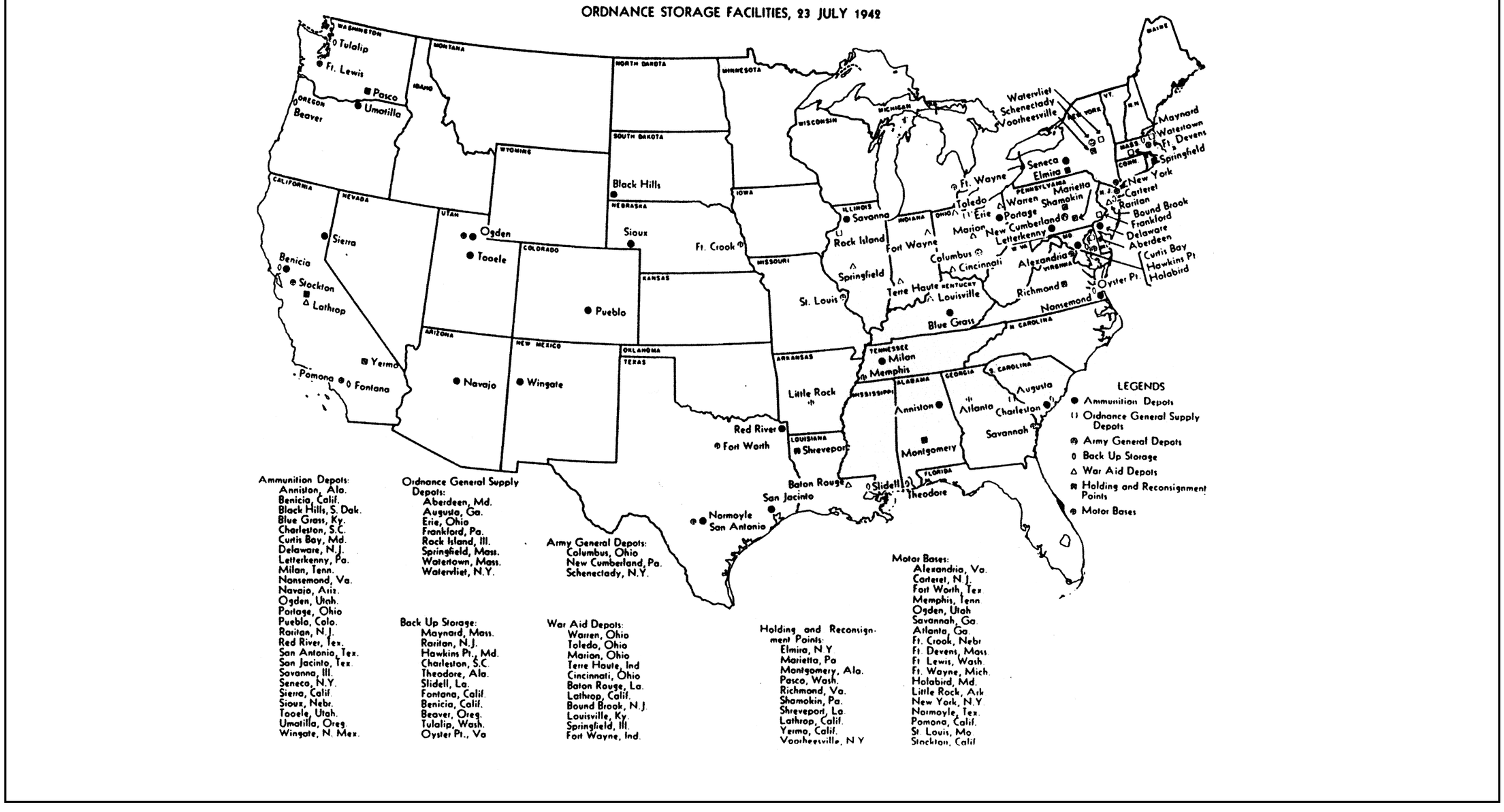


Figure 17. Location of ordnance storage facilities in 1942 (from Thomson and Mayo 1960).

of the Milan Army Ammunition Plant. As American forces began to be transferred overseas, the Ordnance Department began to build more depots near the coasts to support movement of ammunition to port facilities.

In addition to ammunition and explosives storage, Ordnance Department depots also received, stored, and issued a wide variety of other materiel. Traditionally, the Ordnance Department was responsible for weapons, tanks, and similar items in addition to ammunition. After August 1942, its responsibilities expanded to include motor vehicle inventory, maintenance, distribution, and repair. Ordnance depots, therefore, included general storage facilities in addition to explosives storage facilities.

Architectural Design and Layout of Ordnance Depots

The architectural design of World War II-era ordnance depots exhibits the characteristics of standard, utilitarian, World War II mobilization construction. Like most other ordnance facilities, ordnance depots were separated into functionally distinct areas: administration, inert storage, and explosives storage. Some depots also incorporated repair and maintenance facilities or training facilities. Most depots utilized standardized plan types established by the Ordnance Department in the construction of buildings and structures.

Both the layout and infrastructure associated with ordnance depots developed out of the need to ensure safety and to facilitate transportation of volatile munitions. Safety regulations concerning ammunition storage defined the minimum distance between munitions storage structures, the maximum number of structures allowed in a group, and the minimum distances between munitions storage groups. As a result, ordnance depots required vast tracts of land, typically occupying between 10,000 and 20,000 acres of land.

The development of road and railway systems was fundamental to the transport of munitions; thus, ordnance depots were frequently located near railroad lines where railway spurs could easily connect ammunition storage magazines to the main rail line. The existence of railroads was often one of the key factors in determining the location of an ordnance depot. The site for Seneca Army Depot, for example, was selected on the basis that the area was rural (thus, requiring that a fewer number of people be dislocated), relatively flat, and that two lines of the Lehigh Valley Railroad ran along the western and eastern boundaries of the site. Savanna Army Depot was bounded on the northeast by the Burlington Railroad. Ravenna Ordnance Plant was conveniently located in an area graced by three railroad lines (Walsh 1995:19). Throughout the nation, ordnance depots were constructed, in part, with rail transportation for munitions in mind. The existence of such features greatly influenced the layout of each depot as the ammunition storage area was typically located in an area bordering the main rail line (see Kane 1995:89).

Railroad tracks within the boundaries of ordnance depots were laid close to the doors of igloo magazines to enable the loading and unloading of munitions into railroad cars. Railroad lines also facilitated movement of munitions from production areas to storage areas. Ravenna Ordnance Plant, for example, maintained 130 miles of railroad track within its boundaries (Walsh 1995:34).

The vast majority of structures constructed at ordnance depots reflected the installation's primary mission, ordnance storage. Two types of ordnance storage magazines were erected: standardized, aboveground, structural clay tile magazines; and standardized, earth-bermed, concrete igloo magazines. Aboveground storage magazines were used to store explosives with a relatively low volatility, mainly raw explosives materiel and smokeless powder. Some loaded projectiles were stored in these magazines also. The aboveground magazines were steel-frame, one-story structures constructed on a concrete platform foundation and sheltered by a gabled roof. Walls were clad in 8-inch structural clay tile. Magazine sizes varied from 8-by-8 feet to multiple-bay structures spanning 51 feet in width. Reinforced steel doors provided access to the interior. Entrances were limited to only one side of the structure. The larger magazines featured concrete loading docks. Some aboveground magazines incorporated overhanging eaves to shelter the loading platform.

Although the design of igloo magazines was modified to suit differing needs and budgetary concerns, utilized standard plan types were utilized. All igloo storage magazines were 26 feet wide and were constructed in lengths of 40, 60 or 80 feet. These explosives magazines were to be spaced a minimum of 400 feet apart and were to be grouped in clusters of no more than 100, with at least 1,400 feet separating igloo clusters. Extensive road and rail networks were constructed to link the storage areas at each depot.

The igloo was preferred by the joint Army-Navy Ammunition Storage Board and the Ordnance Safety Board for all types of ammunition storage except small arms. In January 1941, the Ordnance Department required that igloos be used in all future depot construction. However, with the construction of large depots looming, reducing construction costs became a significant issue. Additionally, building material shortages that affected other aspects of the mobilization program also affected explosives storage construction. Unlike other mobilization programs, though, safety considerations prohibited the construction of igloos using temporary construction materials such as wood. However, modifications to the igloo design were made to assuage the material shortages and slash construction costs (Thomson and Mayo 1991:368; see also Reed 1995:46).

To meet the escalating demand for ammunition and explosives storage structures in 1941, temporary igloo magazines were authorized for use. These magazines were constructed of steel and covered with earth. By varying the number of sections built, temporary igloo magazines were constructed in various sizes. These magazines were adopted for emergency use during the war and were predominantly built on Army forts (U.S. Army 1941:31).

The concerns regarding building material shortages prompted the design and use of three alternative igloo types—the Triple-Barrel Vault, the Huntsville magazine, and the Corbetta Beehive magazine. All three were designed specifically to reduce the amount of materials required for construction. In addition, two new igloo designs were introduced during the World War II era. Both designs were considered to be improvements over those igloos constructed in the interwar era. The new igloo types became known as the "New Depot" and the "Army Standard Igloo."

Colonel Hugh J. Casey was appointed construction officer in charge of directing the redesign project for igloos. Eventually, Casey adopted an idea proposed by Colonel Edwin V. Dunstan, which eliminated the tie beams by reinforcing the concrete slab floor to take the thrust of the arch. By adopting these changes, an estimated $800 to $2,000 per igloo was saved (Fine and Remington 1989:334). Even with reductions of that nature, an average 50-foot igloo used the following quantities of materials: 160 cubic yards of concrete, 7,641 pounds of reinforcing steel, 4,323 pounds of reinforcing mesh, 240 pounds of copper, and an estimated 1,500 man-hours (MacLeay 1942:75; see also Reed 1995:46).

Many additional alternative designs were introduced to reduce the amount of material necessary in explosives magazine construction. One variation of the igloo design was the triple-barrel vault, which was composed of three hemispheres that shared common walls, foundations, and loading docks. In this design, three rectangular structures spaced approximately 12 feet apart were interconnected by a common concrete wall and loading platform. Each unit measured 26 feet 6 inches wide and 80 feet long. The concrete walls were 12 inches thick at the base and tapered to 6 inches near the peak. A set of double metal doors was centered on each vault.

In 1941, construction duties for the Army were transferred from the Quartermaster to the Corps of Engineers. By 1942, the Army had developed four basic designs of earth-covered magazines constructed during World War II. The first two designs were improvements over the igloo designs of the interwar years. The latter two designs were the direct result of attempts to cope with construction material shortages, primarily steel.

The first was the "New Depot" type. Based on the Old Depot type magazine, the New Depot magazines were constructed using Office of the Quartermaster General drawings 652–340 through 349, dated 27 September 1940, tracings lost and superseded by Office of the

Quartermaster General drawings 652–377 through 392, dated 30 October 1940. This new igloo design offered three standard lengths: 40 feet 4 inches, 60 feet 8 inches, and 81 feet. In this design, monorails and pilasters were deleted. This changed the square footage to 1,003, 1,528 and 2,147 respectively. The vents were deleted from the design but restored in a 1941 revision. The New Depot type magazines were constructed at the new Ordnance Department depots of Anniston Ordnance Depot, Alabama; Portage Ordnance Depot, Ohio; Umatilla Ordnance Depot, Oregon; Fort Wingate Ordnance Depot, New Mexico; Milan Ordnance Depot, Tennessee; Red River Ordnance Depot, Texas; San Jacinto Ordnance Depot, Texas; and Seneca Ordnance Depot, New York (Figure 18).

The second igloo design was the Army Standard Igloo magazine. These magazines were constructed at Ordnance Department Field Service depots and at line stations. The design of Army Standard Igloo magazines typically featured fully reinforced arch and walls, a full concrete headwall, and vents. Concrete doors were added as an alternative. The front wall increased to 10 inches in thickness, and the sand fill was deleted. The magazines were constructed using Corps of Engineers drawings 652–686 through 693, dated 27 December 1941, revised 4 March 1942 (Underground Magazine-Igloo Type O).

The Huntsville magazine was the third derivative igloo design used by the Army during World War II. This type of alternative magazine was the result of the effort to conserve critical materials, primarily steel. Reinforcing in the concrete was reduced. The headwalls were stubbed (earth fill spilled around the front corners). The door was changed to a 6-foot, double sheet of steel. The thickness of the front wall was decreased to 8 inches. Huntsville type magazines were constructed under Corps of Engineers drawings 652–1012,–1014,–1013, dated 29 April 1942 (Magazine Type A-O). Huntsville magazines were built at ordnance industrial installations and elsewhere.

The fourth alternative design was the Corbetta Beehive. Designed in 1941 by the Corbetta Construction Company of New York City, this structure consisted of an at-grade floor, elliptical dome-shaped (an oblate hemispheroid), earth-covered magazine with a 6-foot, double sheet, steel door. The first sample magazine was completed by mid-January 1942. By 1943, more than 2,000 of these magazines had been built (*Engineering News Record* 1943:95). The advantage of the Corbetta Beehive magazine was that it equaled the standard igloo magazine in structural strength but required only one-half the steel, one-third the copper and two-thirds the concrete used in the standard type igloo. The Corbetta Beehive was executed in single units or triple units with footprints of 44 feet 7 inches or 52 feet. These magazines were constructed under Corps of Engineers drawings 652–1000 through 1010, dated 19 February and 23 March 1942 (Underground Magazines 52 feet 0 inches and 44 feet 7 inches Corbetta Beehive Types). The first Corbetta Beehive magazines were constructed at Curtis Bay Ordnance Depot, Maryland. They were also constructed at the Sioux Ordnance Depot, Nebraska; Susquehanna, Maryland; the Naval Ammunition Depot at McAlester, Oklahoma; and other various ordnance industrial installations (Figures 19 and 20).

The Richmond Magazine, though not an alternative igloo design, is commonly mistaken for one. It is not earth-covered and, thus, does not meet the definition of an Army igloo. This magazine has massive side and rear walls banked with earth and a wood-framed, gabled roof with roll roofing. The front wall is wood-framed with asbestos shingles. The Richmond Magazine was constructed as a wartime substitute and has never been classified as an igloo for quantity distance purposes. Richmond Magazines were constructed at Savanna Army Depot and various ordnance industrial installations (Figures 21 and 22).

An example of the construction activities undertaken at the ordnance depots during the war was the building of 700 igloos at the Anniston, Alabama ammunition depot in 1941. The magazines were constructed under the direction of Lt. Col. Edmund Randall, constructing quartermaster. Local firms from Mobile and Birmingham handled the design of the magazines, while firms from Mobile and Montgomery handled the contracting. As described in the *Engineering News Record* these storage structures were

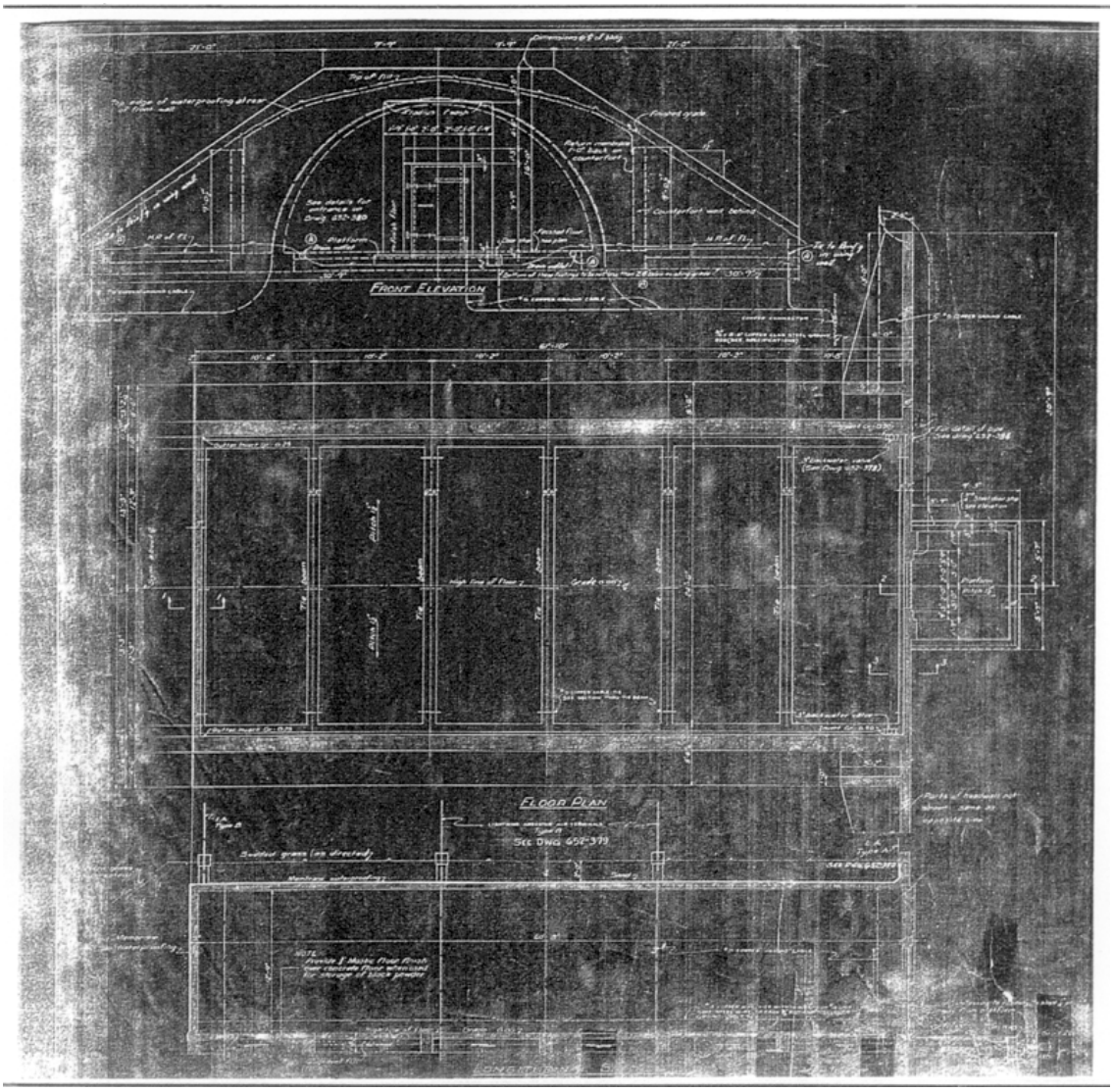


Figure 18. Floor plan and front elevation for underground magazine, Drawing 652–383.

> . . . not a true igloo shape, being rather half a barrel arch supported on spread footings carried down to firm subsoil. The floor of each structure, 26 feet 6 inches by 60 feet 8 inches, is placed separately from the exterior frame and rests directly on the ground. The igloo's rear wall is merely a "barrel head" while the front is a counterforted retaining wall. Access is through a vault type door in the front wall [*Engineering News Record* 1941a:4].

In addition to having a multiple-ply waterproofing, these concrete magazines were to have a minimum of two feet of earth over the top and rear. The protection of the magazines depended largely on the use of wide distances between the structures. The magazines were to be located 450 feet apart. As such, construction was spread over approximately 14,000 acres of land. Over 110 miles of arterial, secondary, and access roads were constructed as part of the project. Materiel was to be trucked from a central terminal area to the magazines. Additionally, a new spur to existing railroad tracks was constructed to move the ammunition and explosives in and out of the depot (*Engineering News Record* 1941a:4).

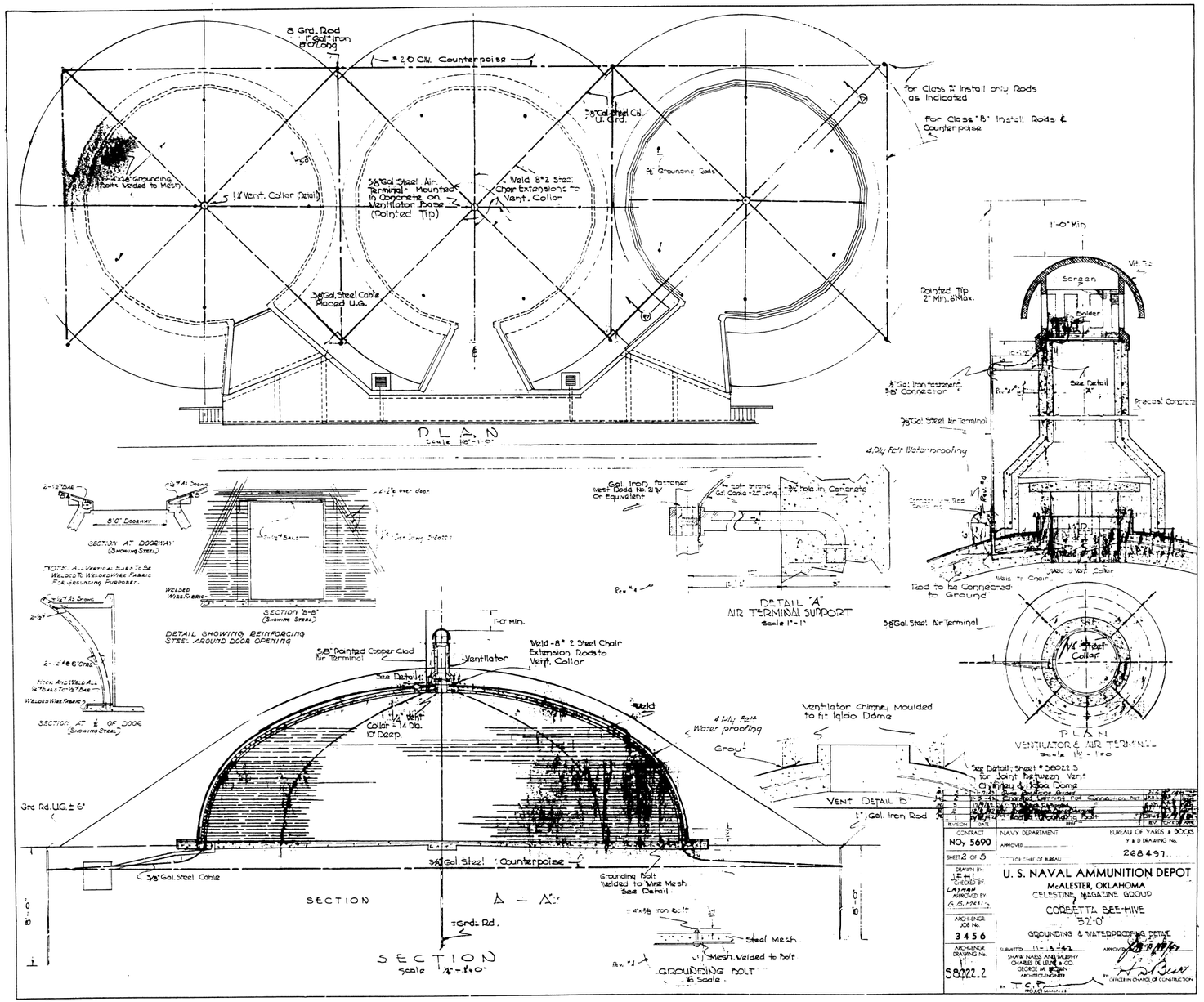


Figure 19. Drawings for Corbetta Beehive.

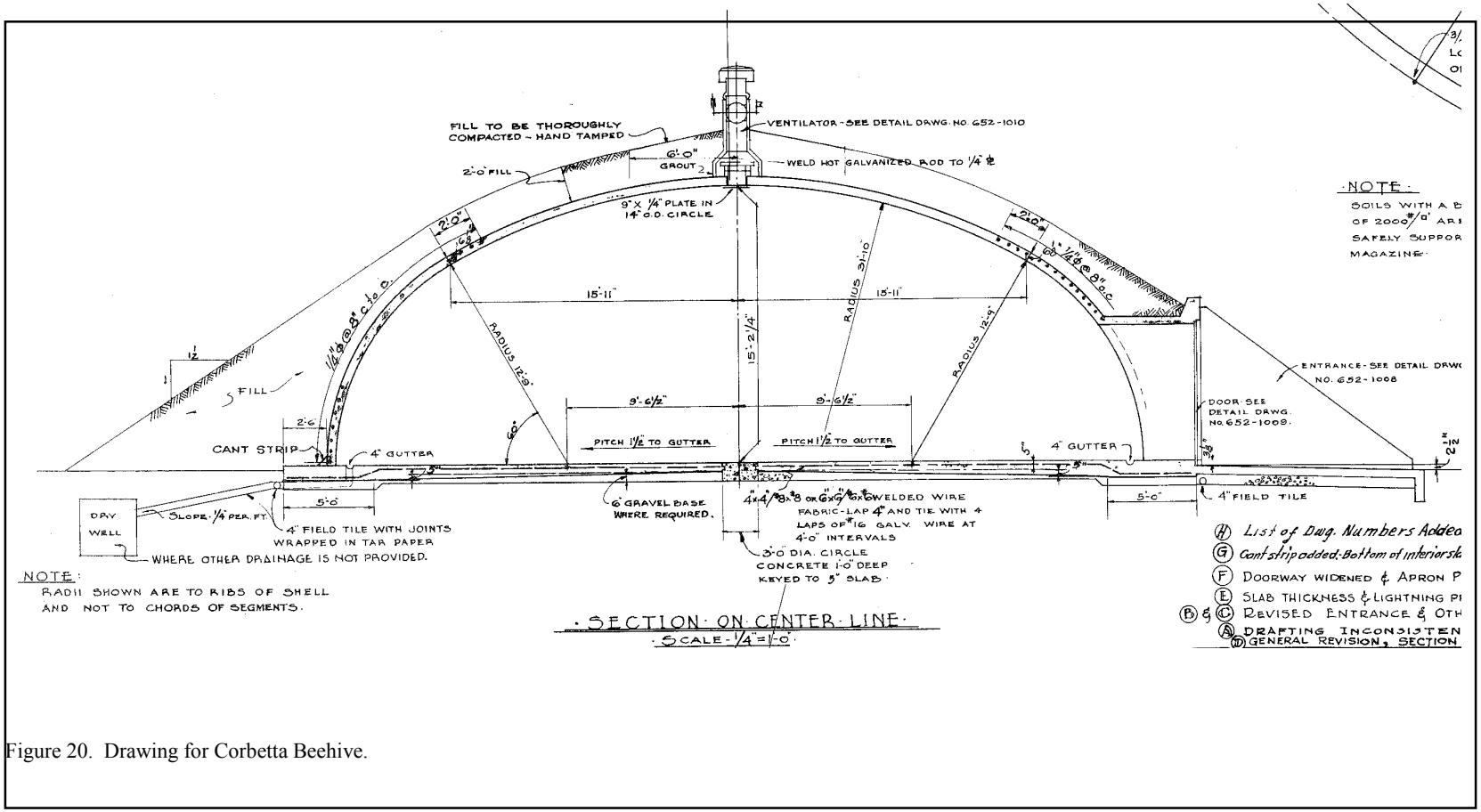


Figure 20. Drawing for Corbetta Beehive.

In September 1941, the War Department announced that Army contractors were establishing a record in the construction of igloos and storage warehouses. At that time, the contractor at the Umatilla, Oregon ordnance depot held the lead with 14 igloos being constructed in one day and 74 in a week. The first claim for a record had come from the Anniston, Alabama, ordnance depot, which had completed eight igloos in one day. But that record was soon superseded by the contractor at the Fort Wingate, New Mexico, ordnance depot who built nine igloos in a single day (*Engineering News Record* 1941b:13).

By December 1942, the ordnance depot system possessed more storage space than all of the commercial warehouses in the United States combined (Table 3). Over the course of World War II, over 10,000 ammunition and explosives storage structures were built by the Army at ordnance depots. This space was critical to the success of the Army during the war because safe storage of munitions was just as essential to the munitions production process as was the actual manufacture of munitions themselves.

Post-World War II Ammunition Storage Facilities

Following the Lake Denmark explosion in 1926, the primary concern in ammunition storage facilities for the next several decades was that of safety. Underground igloos had been specifically planned with catastrophic events in mind. Their shape and construction were designed to direct an explosion upward instead of outward, thereby reducing the chance that adjacent storage facilities or nearby buildings would be impacted. Underground ammunition storage facilities have changed little, though they have undergone modifications. By the late 1950s, Black and Veatch Consulting Engineers had designed a Stradley Magazine (Drawing Number 33–15–58) for the storage of special weapons (Figure 23).

In 1981, the U.S. Army Construction Engineering Research Lab (CERL), anticipating the construction of 1,700 new ammunition storage magazines over the next five years, published the results of its study on the functional requirements for ammunition storage facilities. While safety was still an important criterion, the authors found that other considerations, mainly the need to improve space efficiency, were equally important. The four standard magazine designs in use at that time were all earth-covered arches—circular and oval. The oval arch, while similar to the circular arch magazines, had been an improvement over the circular design. Both, however, used reinforced concrete or corrugated steel arch barrels (Howdyshell 1981:5–6).

The CERL report noted several inherent problems with the circular and oval designs. Both the reinforced concrete and corrugated steel leaked moisture through bolt holes, lap joints, or cracks in the concrete arches. The repair of such leaks was expensive. Condensation was also problematic in earth-covered igloos and even more difficult to control than leaks. In addition to these issues, it was noted that the doors of many older magazines were too small for forklifts to maneuver and that the igloos lacked hard surfaces just outside of the doorway that would facilitate loading and unloading of ammunitions and explosives. Another important drawback to the circular magazines was their lack of straight, vertical walls that were necessary for maximum space efficiency. An arch shape reduces the amount of storage space available (Howdyshell 1981:6–7).

Concerned with both cost and space efficiency, the Army would turn, once again, to the Navy for ideas on ammunition storage. Intrigued by a rectangular earth-covered, flat-roofed structure designed by the Navy, CERL noted that it had performed well in large-scale explosives model tests. Its rectangular shape would allow greater efficiency in storage, which would, in turn, reduce the number of buildings required and the amount of real estate needed. As an added benefit, precast concrete could be used for the roof and front wall, reducing the need for form work, which was expensive and time-consuming (Howdyshell 1981:9).

While a new design was under consideration, the existing magazines continued to serve the Army. In some cases, underground magazines were modified to accommodate new needs in ammunition storage. Pine Bluff Arsenal, for example, fit underground magazines with refrigerators for storing chemicals used in

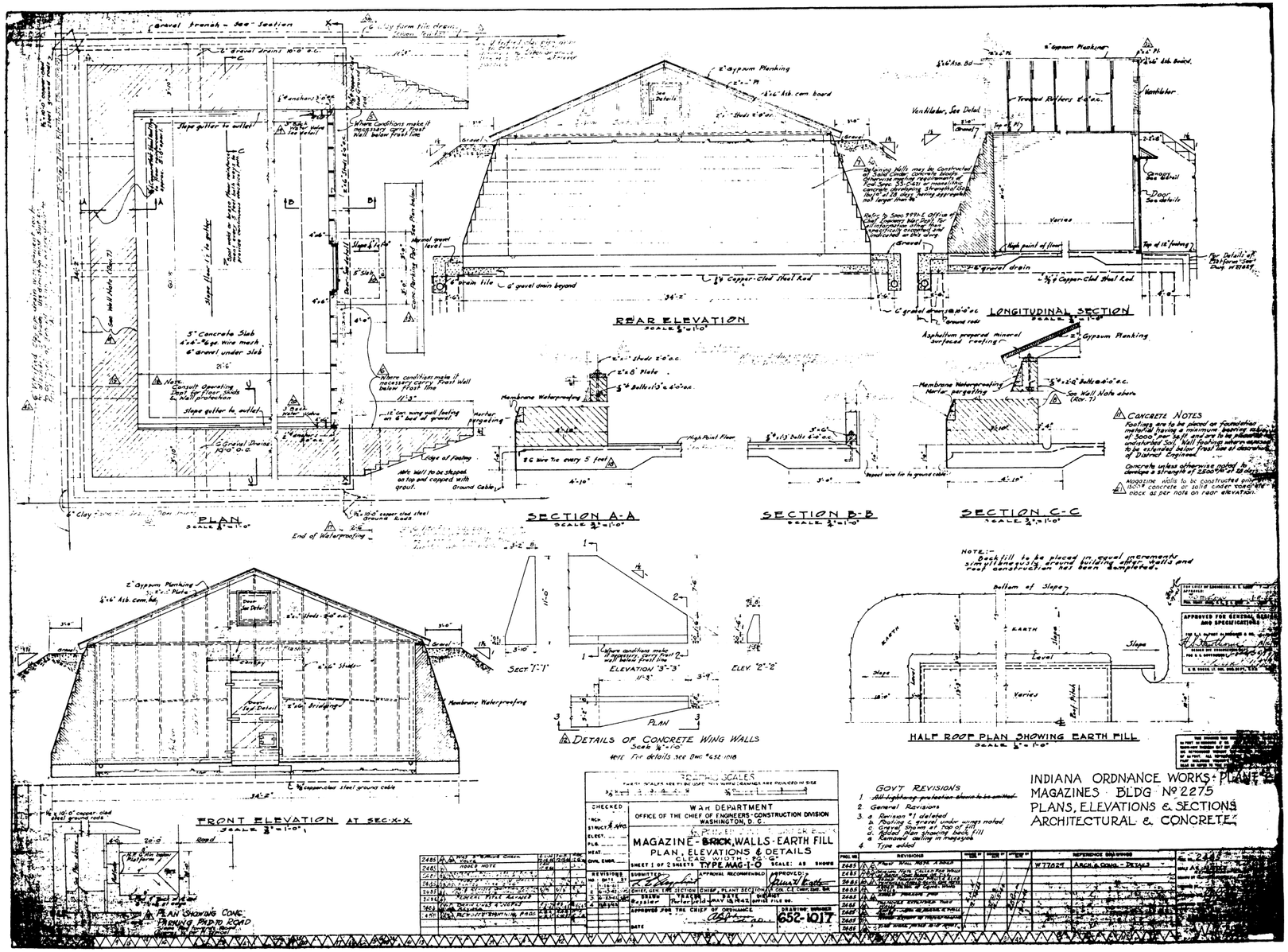


Figure 21. Front and rear elevations for Richmond Magazine.

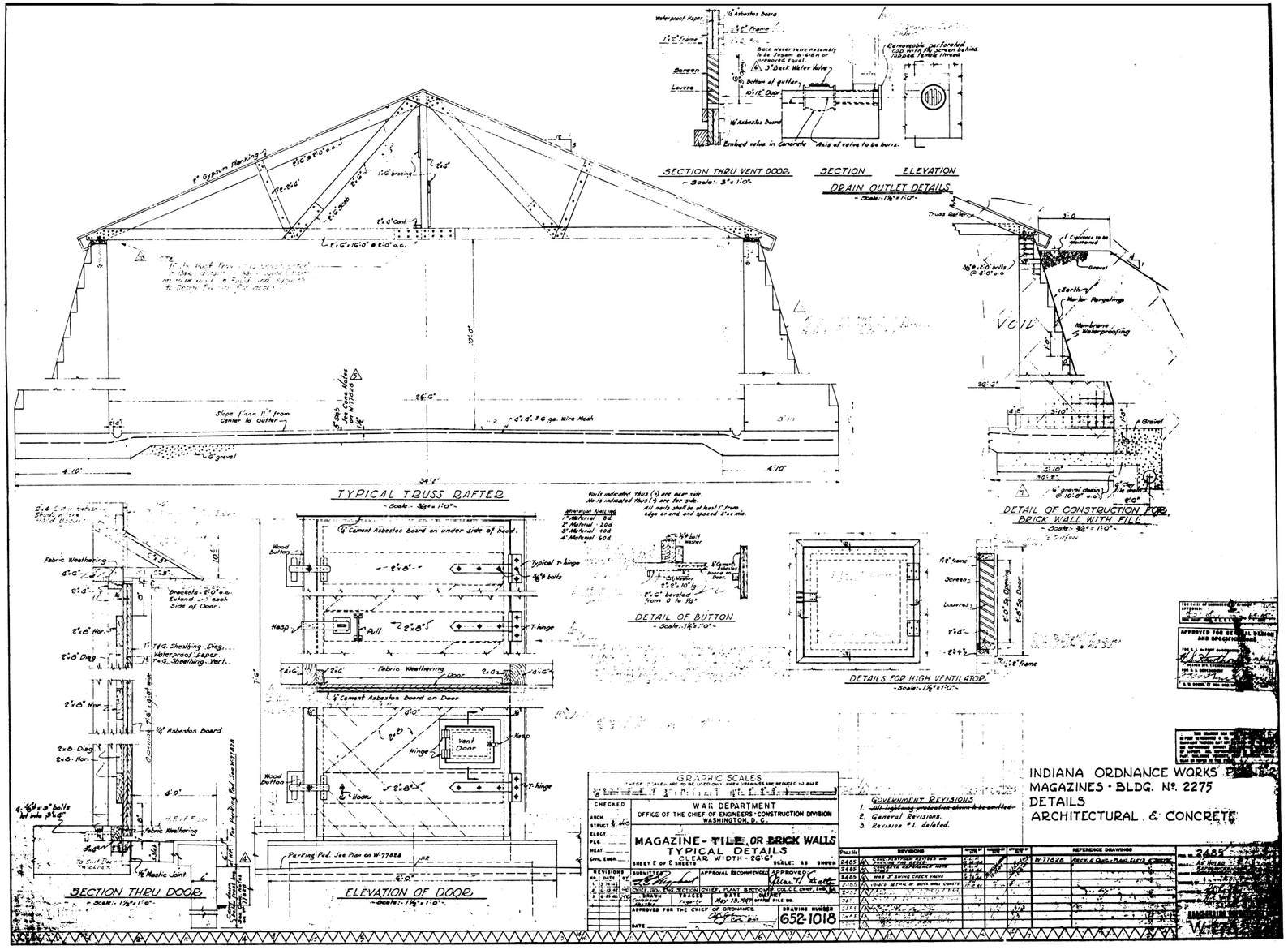


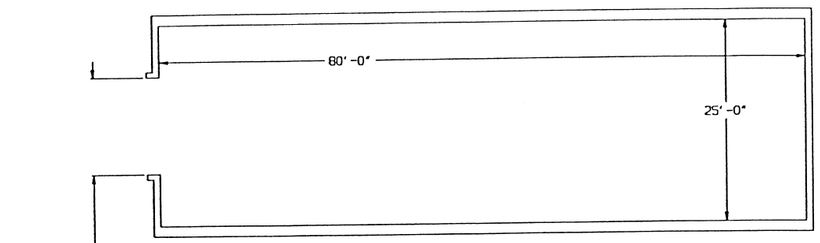
Figure 22. Typical details for Richmond Magazine.

Table 3
Reinforced-Concrete Underground Magazines Constructed During World War II and Initial Mobilization Effort

		Standard Type		Huntsville Type			Corbetta Beehive	
Ordnance Depot	Construction Started	60'	80'	40'	60'	80'	44'7"	52'
Umatilla OR	8 February 1941	642	358	2	—	—	—	—
Wingate NM	24 February 1941	550	100	2	—	—	—	—
Anniston AL	19 March 1941	200	600	2	—	—	—	—
Portage-Ravenna OH	19 March 1941	354	100	2	—	—	—	—
Milan TN	25 June 1941	600	100	2	—	—	—	—
San Jacinto TX*	1 July 1941	146	54	2	—	—	—	—
Seneca NY	9 July 1941	400	100	2	—	—	—	—
Red River TX	4 August 1941	300	400	2	—	—	—	—
Letterkenny PA	26 February 1942	200	600	2	—	—	—	—
Pueblo CO	4 March 1942	—	—	2	200	600	—	—
Sierra CA	4 March 1942	200	600	2	—	—	—	—
Black Hills* SD	25 March 1942	—	—	2	200	600	—	—
Blue Grass KY	27 March 1942	—	—	2	200	600	—	—
Navajo AZ	2 April 1942	—	—	2	200	600	—	—
Tooele UT	7 April 1942	—	—	2	200	600	—	—
Sioux* NE	15 April 1942	—	—	—	—	—	202	600

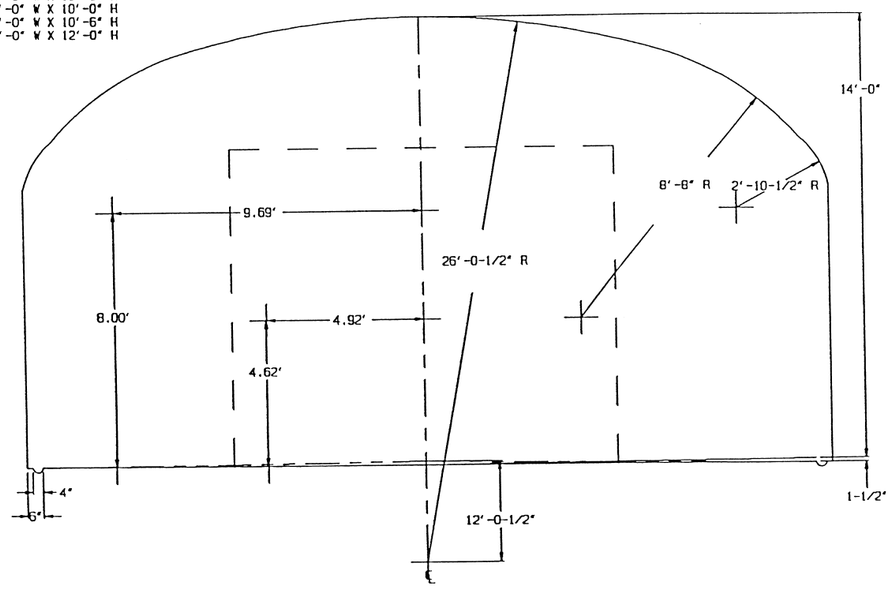
* These facilities are no longer within the federal government real property inventory.

biological warfare (Figure 24). As of 1993, 39 Army installations were equipped with a variety of ammunition storage magazines (Table 4). The magazines are broken down into nine types recognized by Industrial Operations Command (IOC): igloos/arch earth-covered magazines, Stradley magazines, rectangular earth-covered magazines, Corbettas, Richmonds, miscellaneous earth-covered magazines, magazines used specifically for chemicals and special weapons, standard aboveground magazines, and miscellaneous aboveground magazines. Table 5 provides a listing of ammunition and explosives storage buildings by Major Command (MACOM).

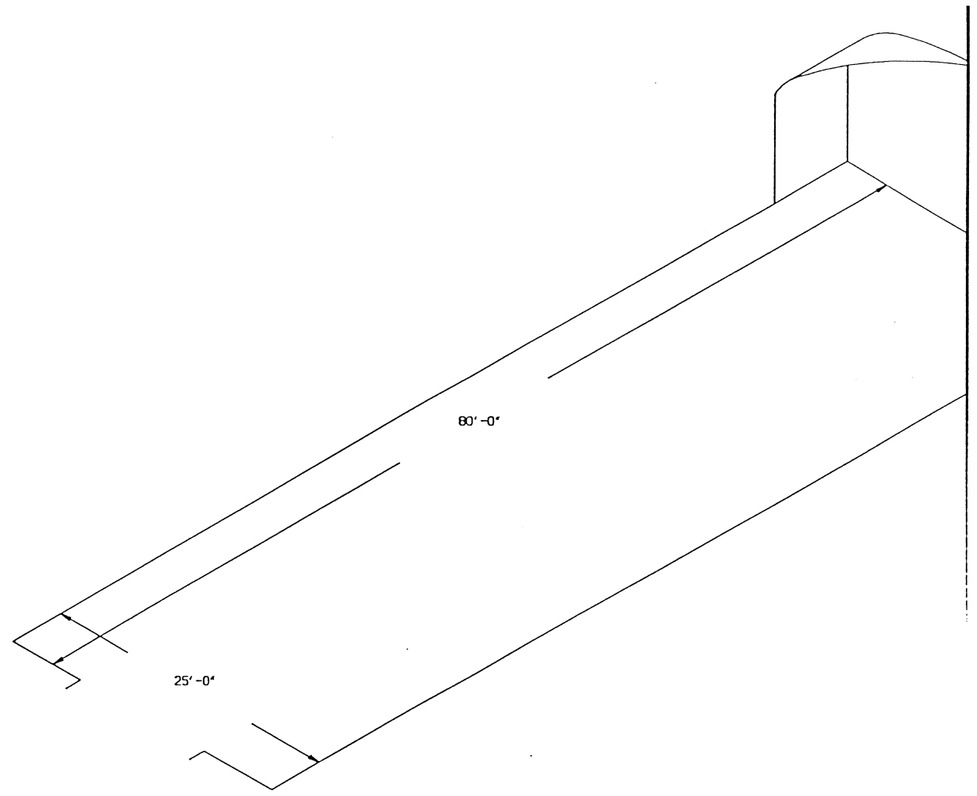


PLAN VIEW

DOOR SIZES
8'-0" W X 8'-0" H
10'-0" W X 9'-6" H
10'-0" W X 10'-0" H
12'-0" W X 10'-0" H
12'-0" W X 10'-6" H
12'-0" W X 12'-0" H



SECTION



ISOMETRIC VIEW

CONSTRUCTION DRAWINGS

DRAWINGS CITED IN DOD STD 6055.9, CHAPTER 5, 15 JANUARY 1992. MAGAZINES APPROVED FOR UP TO 500,000 LBS NEW.

OCE NO. 33-15-58
OCE NO. 33-15-61
OCE NO. 33-15-74

80'-0" L X 25'-0" W X 14'-0" H STRADLEY MAGAZINE

80'-0" L X 25'-0" W X 14'-0" H STRADLEY MAGAZINE

Figure 23. Drawings for Stradley Magazine (from Industrial Operations Command 1993).

Figure 24. Igloo at Pine Bluff Arsenal that has been modified with refrigeration for biological weapons storage.

Table 4
Types of Magazines Associated with Army Installations

Army Installation	Igloo/Arch Earth-Covered	Stradley	Rectangular Earth-Covered	Corbetta	Richmond	Misc. Earth-Covered	Chemical & Special Weapons	Standard Above-ground	Misc. Above-ground
Anniston A.D., AL	646	478	—	—	—	—	155	6	5
Badger A.A.P., WI	—	—	—	—	25	—	—	—	98
Coosa River S.A., AL	136	—	—	—	—	—	—	—	—
Cornhusker A.A.P., NE	—	—	—	—	219				
Crane A.A.A., IN	1,108	—	467	—	—	3	—	—	—
Dugway P.G., UT	11	—	—	—	—	—	—	—	15
Fort Wingate A.D.A., NM	731	—	—	—	—	—	—	12	—
Hawthorne A.A.P., NV	1,786	—	332	—	—	13	—	—	98
Holston A.A.P., TN	—	—	—	130	—	—	—	—	8
Indiana A.A.P., IN	173	—	—	—	—	—	—	—	117
Iowa A.A.P., IA	271	—	—	—	—	4	—	16	—
Joliet A.A.P., IL	395	—	—	—	—	—	—	34	—
Kansas A.A.P., KS	183	—	—	—	—	4	—	25	—
Lake City A.A.P., MO	5	—	—	—	—	6	—	—	24
Letterkenny A.D., PA	902	—	—	—	—	—	—	10	—
Lexington-Bluegrass A.D., KY	853	—	—	—	—	—	49	12	—
Lone Star A.A.P., TX	196	—	—	—	—	4	—	38	—
Longhorn A.A.P., TX	—	—	—	—	58	—	—	—	5
Louisiana A.A.P., LA	141	25	—	—	—	—	—	—	—
McAlester A.A.P., OK	1,280	—	323	660	—	—	—	—	163
Milan A.A.P., TN	871	—	—	—	—	4	—	22	—
Mississippi A.A.P., MS	—	—	—	—	—	42	—	—	1
Navajo A.D.A., AZ	779	—	—	—	—	—	—	12	—
Newport A.D.A., IN	2	—	—	—	52	—	—	—	—
Picatinny Arsenal, NJ	—	—	—	—	—	32	—	—	135
Pine Bluff Arsenal, AR	175	—	—	—	—	1	86	25	54
Pueblo A.D.A., CO	921	—	—	—	—	—	—	—	—
Radford A.A.P., VA	89	—	—	—	59	—	—	—	62
Ravenna A.A.P., OH	691	—	—	—	—	—	—	25	47
Red River A.D., TX	702	—	—	—	—	—	—	17	—
Redstone Arsenal, AL	413	—	—	—	—	—	—	—	49
Rocky Mountain Arsenal, CO	10	—	—	—	—	—	—	—	29
Savanna A.D.A., IL	429	8	—	—	—	—	—	100	56
Seneca A.D., NY	455	—	—	—	—	—	64	8	—
Sierra A.D., CA	749	—	—	—	—	—	50	12	—
Sunflower A.A.P., KS	—	—	—	—	—	—	—	—	95
Tooele A.D., UT	902	—	—	—	—	—	239	12	—
Umatilla A.D.A., OR	1,001	—	—	—	—	—	—	14	—
Volunteer A.A.P., TN	100	—	—	100	—	—	—	—	—

A.A.A. = Army Ammunition Activity
A.A.P. = Army Ammunition Plant
A.D. = Army Depot
A.D.A. = Army Depot Activity
S.A. = Storage Annex

Table 5
Number of Ammunition/Explosives Storage Buildings by MACOM

MACOM	No. of Ammunition/Explosives Storage Buildings	No. of Buildings Over 50 Years	No. of Historical* Buildings
HQDA	25,841	19,873	27
AMC	21,496	19,151	5
EUSA	197	0	0
FORSCOM	556	45	1
MDW	39	12	4
MEDCOM	12	8	5
MTMC	1	0	0
NG	299	162	0
SMDC	18	3	0
TRADOC	400	152	11
USACE	114	0	0
USARC	219	92	1
USAREUR	2,036	49	0
USARPAC	324	80	0
USARSO	119	112	0
USMA	11	7	0

*Historical in this list means designated as historical in the IFS database (information entered by installation real property managers)
Information is based on 4th quarter, FY99 data

PLANNING-LEVEL SURVEY

As indicated in Table 5, the HQDA real property inventory in the fourth quarter of FY99 revealed the presence of 25,841 ammunition storage facilities throughout the MACOMs. The majority of these (21,496) are the property of Army Materiel Command. The distribution of the various types of magazines among the AMC installations is noted in Table 4 of this document.

Examples of storage facilities date from the late eighteenth century and include structures built in the 1940s during World War II. Magazines for the storage of ammunition and explosives can be classified into two broad categories—aboveground magazines and underground igloo magazines. Both broad types exhibit variations that developed out of the necessity to (1) store different types of ammunition or explosives, (2) contend with shortages of construction material, (3) reduce costs, (4) reduce amount of land required, or (5) reduce safety hazards.

ABOVEGROUND MAGAZINES

Aboveground magazines built during the late eighteenth to early twentieth centuries follow no standardized plans. They vary in size, shape, construction material, and architectural/ engineering features. Early aboveground magazines were constructed of wood, brick, and stone. Some of the early magazines include the Hessian Powder Magazine, Carlisle, Pennsylvania; the magazine at Fort Towson, Oklahoma; the West Magazine at Watervliet Arsenal, New York; the principal magazine at Frankford Arsenal, Pennsylvania; the magazine at Rock Island Arsenal, Illinois; Picatinny Powder Depot, Picatinny Arsenal, New Jersey; the magazine at Fort D. A. Russell in Wyoming; and the ammunition building at Fort Sam Houston, Texas (see Figures 1, 2, 3, 5, and 6).

By the time World War I occurred, most aboveground magazines were rectangular in shape with gabled or flat roofs. The construction material most often used was masonry (often tile) or corrugated asbestos on a wooden frame. Some magazines, however, were of ordinary wood-framed construction. Floors were located at grade or at railroad car-floor level, and safety distances were sometimes reduced by installing a separate barricade. An example of a magazine built during this time period is that of L-13, Building 263, at Rock Island Arsenal (see Figure 7).

By the end of World War I, ammunition and explosives were stored in standardized magazines that varied in construction materials, spacing, and size, in accordance with the classification of ammunition or explosives being stored (Figure 25; Table 6). Finished ammunition and loaded components (Class I) were stored in magazines measuring 50-by-20 feet and spaced 300 to 400 feet apart. Structures were of hollow tile with concrete floors. Because of the tonnage of ammunition and weight of an individual shell or package, standard gauge railroad tracks ran to the magazines. These magazines had fireproof exteriors and were constructed so that in the event of an explosion, the walls and roof would break up into small fragments.

Smokeless powder (Class II) was stored in magazines of lighter construction than those for Class I. Smokeless powder magazines typically measured 32-by-96 feet and were spaced 300 feet apart. These magazines were constructed of asbestos siding and had gypsum slab roofs with wooden floors. Class III ammunition—fuses and primers—were also stored in magazines of 32-by-96 feet and were spaced 300 feet apart. Magazines had hollow tile walls, gypsum slab roofs, and wooden floors. High explosives (Class IV) were stored in smaller magazines measuring 26-by-42 feet and spaced 800 feet apart. These magazines were also constructed with hollow tile and had gypsum slab roofs.

The 1931 Ordnance Department Safety Manual that detailed the specifications for aboveground magazines varied somewhat from the previous specifications. Most obvious were the modifications that would reduce safety hazards. Storage facilities for high explosives (Class IV type) now measured 26-by-42 feet and were spaced 400 to 800 feet apart. At the same time, the facilities for finished ammunition and loaded

components (Class I) became much larger and were spaced 300 feet apart (see Table 6). The construction of smokeless powder magazines (Class II) varied from other standard magazines because smokeless powder required protection from moisture and high temperatures. Magazines were built of frame construction on concrete or wooden piers. Outside walls, which extended to the ground level, were of corrugated sheet asbestos. The floor, ceiling, and inner walls were carefully built to avoid cracks and crevices; the roof was similar to that of explosives magazines. Smokeless powder magazines also had ventilators in the roof, as well as below the floor in the outside walls. There were also air passages between the inner walls and floors. Smokeless powder magazines retained the same measurements as before (Figure 26; see Table 6).

In general, all magazines were to be adequately grounded and fireproof, have ventilators to regulate temperatures, have loading platforms with the floor at railroad car-floor height, have adequate drainage, and have tightly fitting doors placed opposite of the prevailing winds.

In addition to the specifications regarding the actual buildings, the surrounding landscape was to have a mainline railroad track to each row of magazines with a spur at each magazine to allow railroad cars to be loaded and unloaded without blocking the main track. Well-maintained roads were to be present to facilitate fighting fires if necessary and to enhance security.

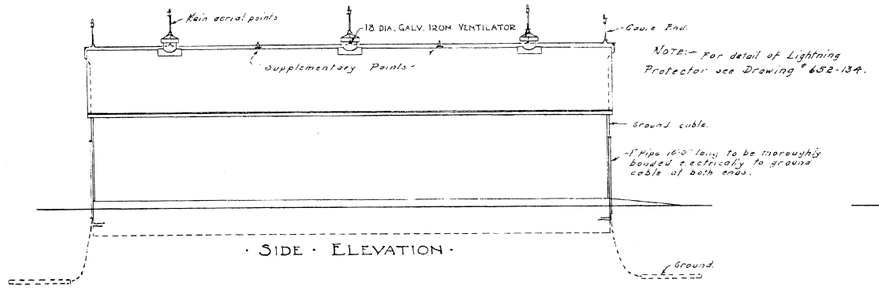
During World War II and the mobilization effort leading up to the war, the Army continued to build aboveground storage facilities, though underground igloos were preferred for all types of ammunition and explosives storage. World War II aboveground magazines built during this era were used to store explosives with relatively low volatility. The magazines were steel-frame, one-story structures constructed on a concrete platform foundation and sheltered by a gabled roof. Walls were clad in 8-inch structural clay tile. Magazine sizes varied from 8-by-8 feet to multiple bay structures spanning 51 feet. Reinforced steel doors provided access to the interior, and entrances were limited to only one side of the structure. The larger magazines featured concrete loading docks. Some aboveground magazines incorporated overhanging eaves to shelter the loading platform (Figure 27).

IGLOO MAGAZINES

Soon after the Lake Denmark disaster of 1926, underground igloos became the preferred design for ammunition and explosives storage. The Navy was the first to install a group of this design in 1928 at the Yorktown Naval Depot, Virginia. The Army quickly followed suit in 1929 when 24 igloos were built at Savanna Army Depot (see Figure 14).

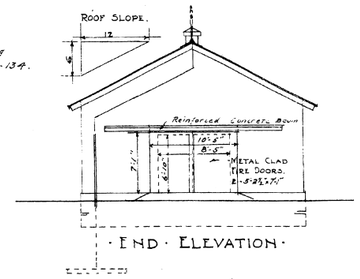
The first magazines built by the Army are now referred to as the Old Savanna type. These igloos were based on Office of the Quartermaster General drawings 6579–160,–160; changed to 652–311,–312 (Ordnance No. 19–2–93,04, Magazine Type 30), dated 19 July 1928. They measured 25 feet wide and 40 feet 4 inches long with a 10-foot crown inside. The magazine's concrete arch was 5 inches thick at the crown and 10 inches thick at the sides; the crown was covered with one foot of earth. The front wall was 4 inches thick, while the rear wall measured 6 inches. The magazine's concrete had wire mesh reinforcements in the arch and walls. The only entry, a steel-clad, double, wooden door, measured 6-by-8 feet. The magazine did not have a platform or apron. The full timber net headwall fronted directly onto the road, with an optional timber-revetted barricade across the road. The structure was vented with louvers and it was fully grounded. In addition to the igloos constructed at Savanna, Old Savanna igloos are found at Delaware, Benicia, and Aberdeen (see Figure 13).

In the 1930s, a new plan for igloos, similar to the Old Savanna type, was introduced. Plans for the Old Line-type igloo were dated 20 June 1933 and were identified as Office of the Quartermaster General drawings 652–295 through 296. These magazines measured 25 feet wide and 40 feet 4 inches long, with a 10-foot inside crown. The concrete arch was 5 inches thick at the crown and 10 inches thick along the sides. An exterior monorail was added, and the exterior wooden door was changed to steel plate. The timbered headwall was composed of six-inch-thick concrete. The earth covering at the crown was increased to two feet and a sand cushion

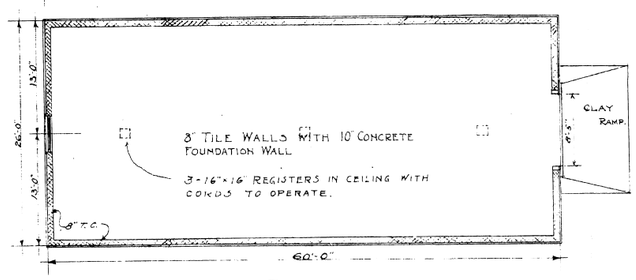


· SIDE · ELEVATION ·

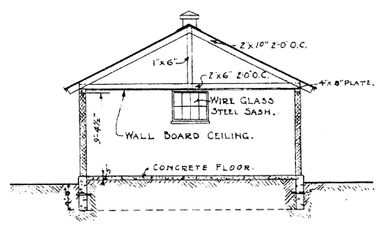
NOTE:— For detail of Lightning Protector see Drawing # 652-134.



· END · ELEVATION ·

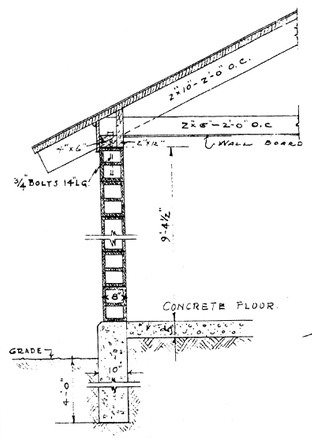


· PLAN ·
SCALE 1/8" = 1'-0".

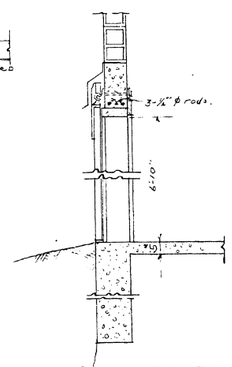


· SECTION ·

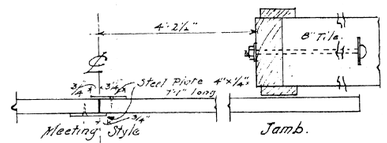
KEY
Indicates Concrete.
" Tile.



· WALL SECTION ·
Scale ½"=1'-0".



SECTION THRO. DOOR.
Scale: ½"=1'-0".



FIREPROOF DOORS
Scale: 1½"=1'-0"

-NOTES-

LINTELS OF REINFORCED CONCRETE OVER DOOR AND WINDOW.
SILLS OF CEMENT POURED IN PLACE
DOOR JAMBS 5"x 8" WITH 3-¾" ANCHOR BOLTS ANCHORED IN THE TILE. TILE AT DOOR TO BE FILLED WITH CONCRETE.
METAL CLAD FIRE DOORS 1¾"x x 7'-1", CUT FROM DOORS TO BE SHIPPED TO JOB FROM SEVEN PINES GEN. ORD. DEPOT.
FLOOR LEVEL AT CENTER OF BUILDING TO BE SAME AS TOP OF ADJACENT RAIL OR ADJUSTED TO ALLOW DRAINAGE FROM ALL SIDES

97

APPROVED FOR THE CHIEF OF ORDNANCE BY Thas R Baxter CAPT. O.D. U.S.A.

CONSTRUCTION SERVICE Q.M.C.-U.S.A.—WASHINGTON, D. C.
· SAVANNA · PROVING · GROUNDS ·
· SAVANNA · ILLINOIS ·
· STANDARD · MAGAZINE · FOR · HIGH · EXPLOSIVES ·
JOB No. 6379. DATE JULY 24, 1920.
PLAN No. 119. APPROVED BY Jell Whistler Capt Ord Dept Exec. Officer

DATE	REVISIONS	ACPT BY	APPROVED

DRAWN BY	CHECKED BY	ACCEPTED BY	PLAN NUMBER
TRACED BY			119.

Figure 25. Plans and elevations for standardized aboveground magazine for high explosives.

Table 6
Summary Characteristics of Aboveground Magazines

	Post-World War I Building			1931 Building		
Class*	Dimensions	Placement	Description	Dimensions	Placement	Description
I	50-x-20 ft	300–400 ft apart	Hollow tile construction; concrete floors; standard gauge railroad tracks	50-x-220 ft	400–800 ft apart	Concrete foundations and floors; brick or hollow tile walls and interior firewalls; peaked roof of gypsum blocks on slabs covered with fire-resistant, built-up roofing rested on wooden roof trusses supported on concrete or brick pilasters
II	32-x-96 ft	300 ft apart	Asbestos siding and gypsum slab roofs; wooden floors	32-x-96 ft	300 ft apart	Frame construction on concrete or wood piers; corrugated sheet asbestos siding; roof ventilators; ventilators below the floor on the outside wall
III	32-x-96 ft	300 ft apart	Hollow tile walls; gypsum slab roofs; wooden floors	32-x-96 ft	300–400 ft apart	Concrete foundation; brick or hollow tile walls; wooden floors; flat roof, wooden trusses; gypsum block or slabs with fire-resistant built-up roofing
IV	26-x-42 ft	800 ft apart	Hollow tile walls; gypsum tile roofs	26-x-42 ft	300 ft apart	Concrete foundation; brick or hollow tile walls; flat roof, wooden trusses; wooden floors; gypsum blocks or slabs covered with fire-resistant, built-up roofing
V	—	—	Concrete trench; did not require magazine	—	—	—
VI (Ware-houses)	100-x-160-ft sections		Did not require magazine. Brick walls; brick firewall between adjoining sections; wooden roofs; concrete floor	100-x-160-ft sections		Concrete foundations and floors; brick or tile walls; interior firewalls; sprinkler systems

* Class I—finished ammunition and loaded components
Class II—smokeless powder
Class III—ammunition, fuses and primers
Class IV—high explosives
Class V—sodium nitrate and inert components
Class VI—small arms ammunition

over a waterproofing membrane was specified for this design. Old Line-type igloos were built at Savanna, Illinois, Delaware, New Jersey, Benicia, California, and Aberdeen, Maryland.

Evolving in the 1930s from the Old Line type was the Old Depot-type igloo, which was constructed in 40-foot and 60-foot lengths. Plans for the 40-foot magazine were known as Type A and were dated 9 December 1935 as Office of the Quartermaster General drawing 652–317 through 320 (Ordnance drawing 19–2–121 through 130, Magazine Type 45). Plans for the 60-foot magazine, Type B, were dated 23 July 1937 as Office of the Quartermaster General drawing 652–326 through 331 (Ordnance drawing 19–2–125 through 130, Magazine Type 49; see Figures 15 and 16).

The Old Depot type increased the width of the magazine to 25 feet 6 inches and raised the crown height to 12 feet 9 inches. The thickness of the crown was also increased to 6 inches. The monorail was put only on the inside on pilasters projecting from the back and end walls. The single door increased to 4 feet in width. The concrete reinforcement changed from wire mesh to rebar. Old Depot magazines were constructed at Camp Stanley, Texas; Ogden, Utah; and other pre-World War II depots and stations.

Although Hawthorne was a naval depot when igloos were constructed there during the 1930s, the facility is now an Army depot. The igloos built during the 1930s were almost identical to those at Yorktown. Typical magazines measured 40 feet 4 inches long and 25 feet wide. The maximum height at the center of the arch roof was 20 feet. The top and sides of the magazine were completely covered with earth except in front where the depressed roadway gave access to the door. All reinforcing steel and other metal parts on the magazines were electrically connected to a copper girdle circling the entire structure and embedded in the footing. Opposite the depressed door was an earth barricade.

Igloos were constructed in groups of seven with each group forming an approximate hexagon with one building at each angle of the perimeter and one in the center. Magazines in each group were separated center to center by 600 feet of space. Each group was further spaced 3,000 feet center to center from adjacent groups.

The igloo was preferred by the joint Army-Navy Ammunition Storage Board and the Ordnance Safety Board for all types of ammunition storage except small arms. In January 1941, the Ordnance Department required that igloos be used in all future depot construction. But with heavy construction activity to commence, there was a need to reduce costs. Additionally, the Army had to contend with construction material shortages. Thus, modifications to the standard igloo design were made to assuage these material shortages and to slash construction costs. All igloo storage magazines were 26 feet in width and were constructed in lengths of 40, 60 or 80 feet, and were to be spaced at least 400 feet apart. They were to be grouped in clusters of no more than 100 and to have at least 1,400 feet separating igloo clusters. Extensive road and rail networks were constructed to link the storage areas at each depot.

By 1942, the Army had developed a standardized plan for igloos—the Army Standard Igloo Magazine or Type 49 (Figures 28 and 29). Variations of this design included the Triple-Barrel Vault (Figure 30), the New Depot, and the Huntsville.

The Corbetta Beehive (see Figures 19 and 20) was designed in 1941 by the Corbetta Construction Company of New York City. This structure consisted of an at-grade floor, elliptical dome-shaped (an oblate hemispheroid), earth-covered magazine with a double sheet, steel door. The advantage of the Corbetta Beehive was that it equaled the standard igloo magazine in structural strength but required only one-half the steel, one-third the copper, and two-thirds the concrete used in the standard-type igloo. Corbetta Beehives were constructed at the Army installations at Curtis Bay (the first Beehives to be constructed), Maryland; Holston, Tennessee; Sioux (no longer in federal real property inventory), Nebraska; and McAlester, Oklahoma.

Although Richmond Magazines (see Figure 21 and 22) are often mistaken for underground igloos because of the banked earth at their side and rear walls, they were constructed as a wartime substitute and have never been classified as igloos for quantity distance purposes. Richmond Magazines have a wood-framed, gabled roof with roll roofing, and the front wall is wood-framed with asbestos

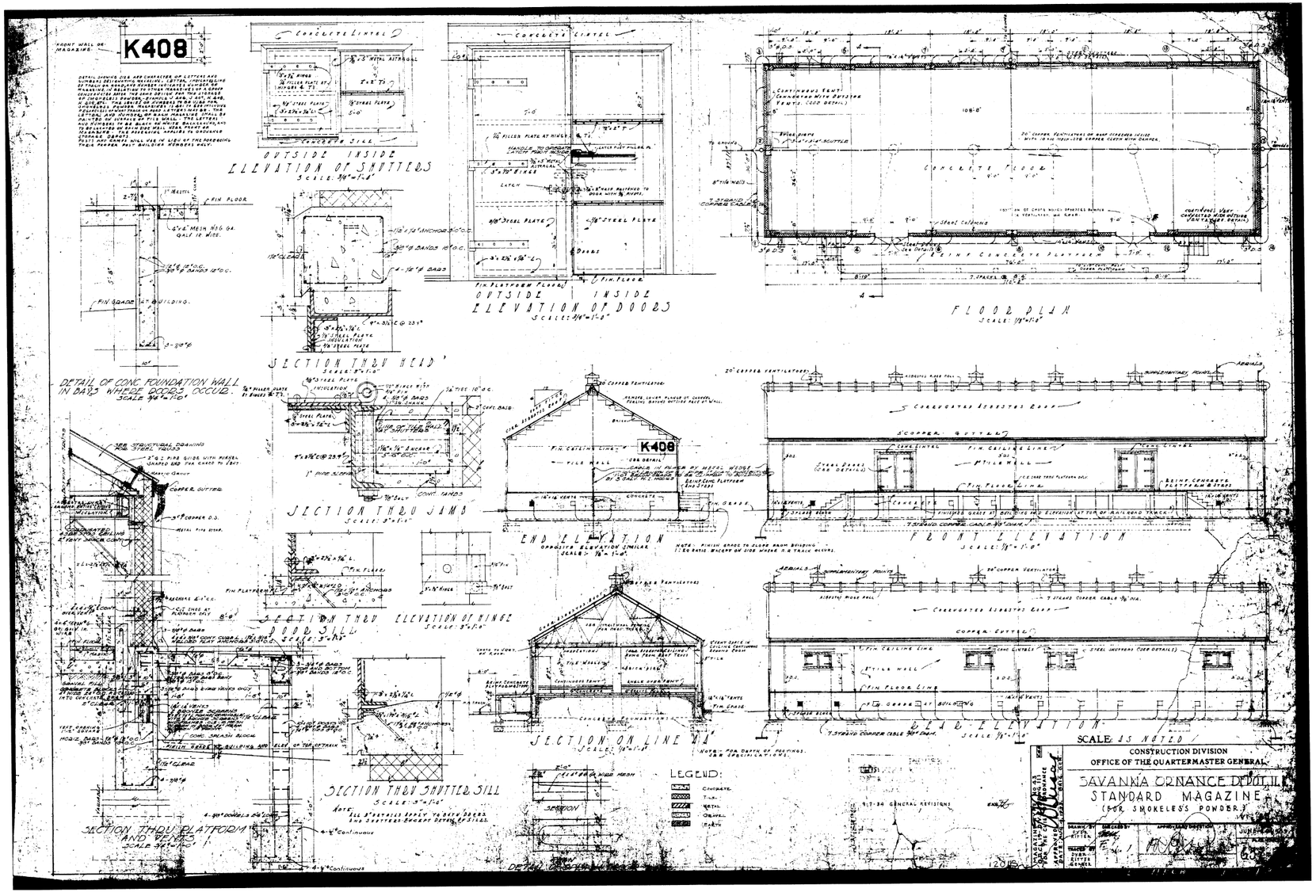


Figure 26. Plans and elevations for standardized aboveground magazine for smokeless powder.

Figure 27. Hollow clay tile aboveground magazine.

shingles. The retaining walls are concrete cinder block or poured concrete. Richmond Magazines were constructed at the Badger, Wisconsin; Cornhusker, Nebraska; Longhorn, Texas; Newport, Indiana; Radford, Virginia; and Savanna, Illinois Army installations.

With the development of the atomic bomb during World War II and the escalation of the Cold War in the 1950s, the Stradley Magazine was designed for the storage of special weapons. The construction of Stradley Magazines was limited to Anniston Army Depot, Alabama; Louisiana Army Ammunition Plant, Louisiana; and Savanna Army Depot, Illinois; however, there are examples of Army Standard Igloos that were converted to a Stradley design through the reconstruction of the front wall (Figure 31).

SUMMARY OF TYPES OF AMMUNITION STORAGE MAGAZINES

As real estate properties, ammunition storage magazines are classified into one of two basic category groups—421, "Ammunition Storage, Depot and Arsenal" and 422, "Ammunition Storage, Installation and Ready Issue." Included within category group 420 are the following types of property: (1) Explosive Transfer Depot Level—F421 04; (2) Stradley, Non-atomic Blast Resistant, Depot Level—F421 07; (3) Fuse and Detonator Magazine, Depot Level—F421 10; (4) High Explosive Magazine, Depot Level—F421 20; (5) Smokeless Powder Magazine, Depot Level—F421 50; (6) Special Weapons Magazine, Depot Level—F421 60; (7) Guided Missile Magazine, Depot Level—F421 70; (8) Igloo Storage, Depot Level F421 80; (9) Ammunition Storehouse, Depot Level—F421 81; (10) Small Arms Ammunition Magazine, Depot Level—F421 82; (11) General Purpose Magazine, Depot Level—421 83; and (12) Ammunition Hut, Depot Level—F421 84.

Property types found within category 422 include: (1) Fuse and Detonator Magazine, Installation—F422 10; (2) High Explosive Magazine, Installation—F422 15; (3) Small Arms Ammunition and Pyrotechnics Magazine,

Installation—F422 30; (4) Ammunition Storehouse, Installation—F422 31; (5) Ready Magazine, Installation—F422 35; (6) Fixed Ammunition Magazine, Installation—F422 40; (7) Special Weapons Magazine, Installation—F422 50; (8) Igloo Storage, Installation—F422 80; (9) Ammunition Hut, Installation—F422 81; (10) General Purpose Magazine, Installation—F422 83; and (11) Unit Small Arms Ammunition Storage, Installation—F422 85.

While the real property classification system is useful for real estate inventory and building management, it is not useful in dealing with such properties as cultural resources. Therefore, ammunition storage magazines have been classified into two broad categories—aboveground magazines and underground igloo magazines—each with subtypes.

The aboveground magazines may be divided into two types on the basis of time period and the presence or absence of standardization. "Early Isolated Magazines" are found singly or in very small groups at Army posts throughout the United States and represent ammunition storage efforts between 1775 and 1918. The primary examples are presented in Table 7. From 1919 to 1945, the design of aboveground magazines became very standardized, according to the classes of ordnance or explosives being stored. Although the size of these structures and their spatial distribution may vary, most (Classes I, III, IV, VI) share a similar design and the use of similar materials (see Table 6). Only the Class II structures, constructed for smokeless powder, exhibit a different design plan and the use of different materials (see Table 6).

The underground igloos, although exhibiting considerable variation, share a very basic design plan—that of a barrel vault. Nevertheless, four subtypes are recognized. The earliest is the Old Savanna or Type 42. The Old Line and Old Depot design plans evolved from this design. As World War II approached, the fourth arched subtype—the Army Standard Igloo or Type 49—became the standard storage magazine for the Army. Variations of this standard design were known as the Triple-Barrel Vault, the New Depot, and the Huntsville. The Corbetta Beehive was unique for its shape and its savings in critical building materials; nevertheless, the circular design was not considered very practical for efficient storage. The Richmond Magazine was a wartime substitute and lacked the arched concrete roof and the concrete front wall. As such, it was not a true igloo.

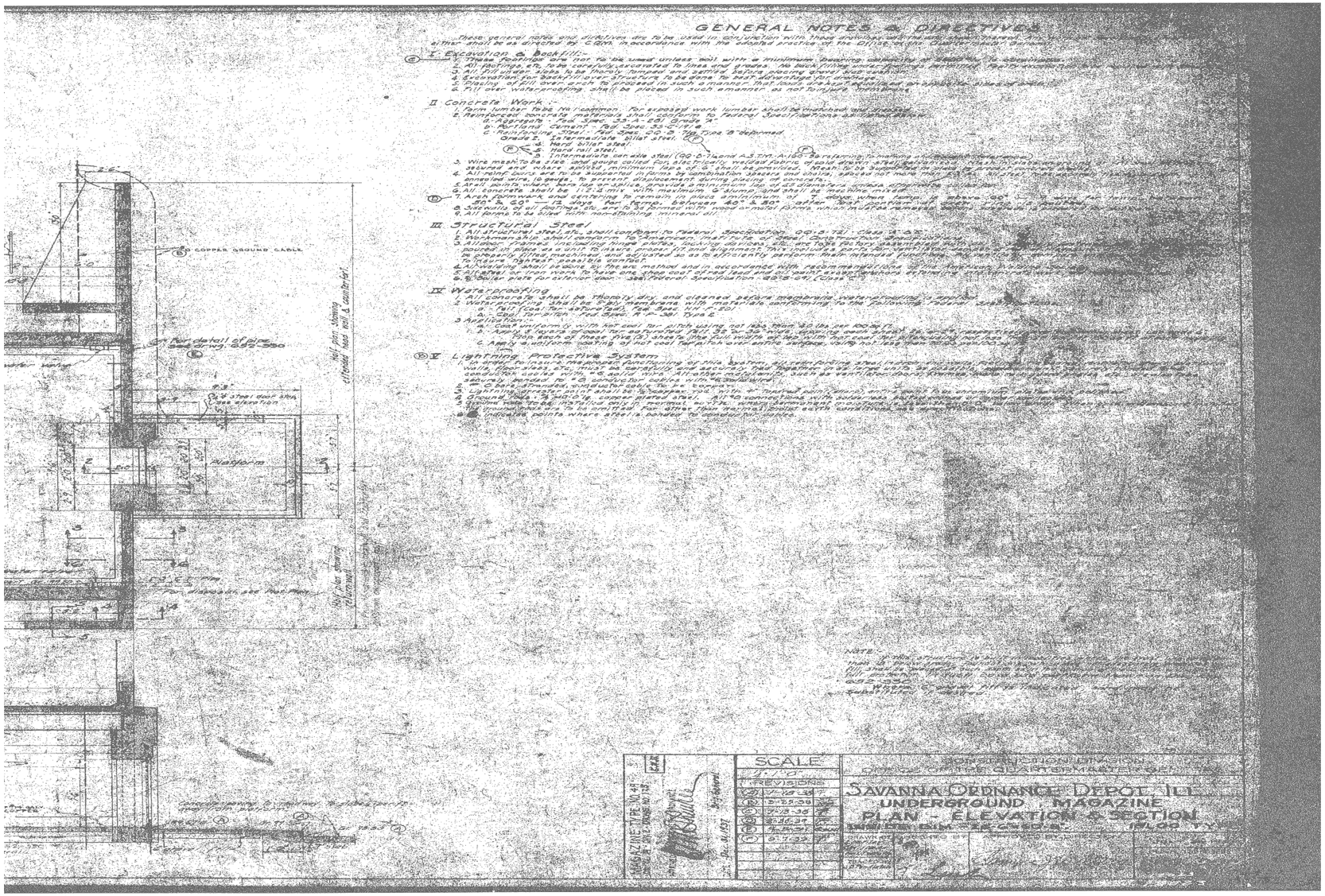


Figure 28. Plans and elevations for Army Standard Igloo (Type 49).

Figure 29. Army Standard Igloo (Type 49).

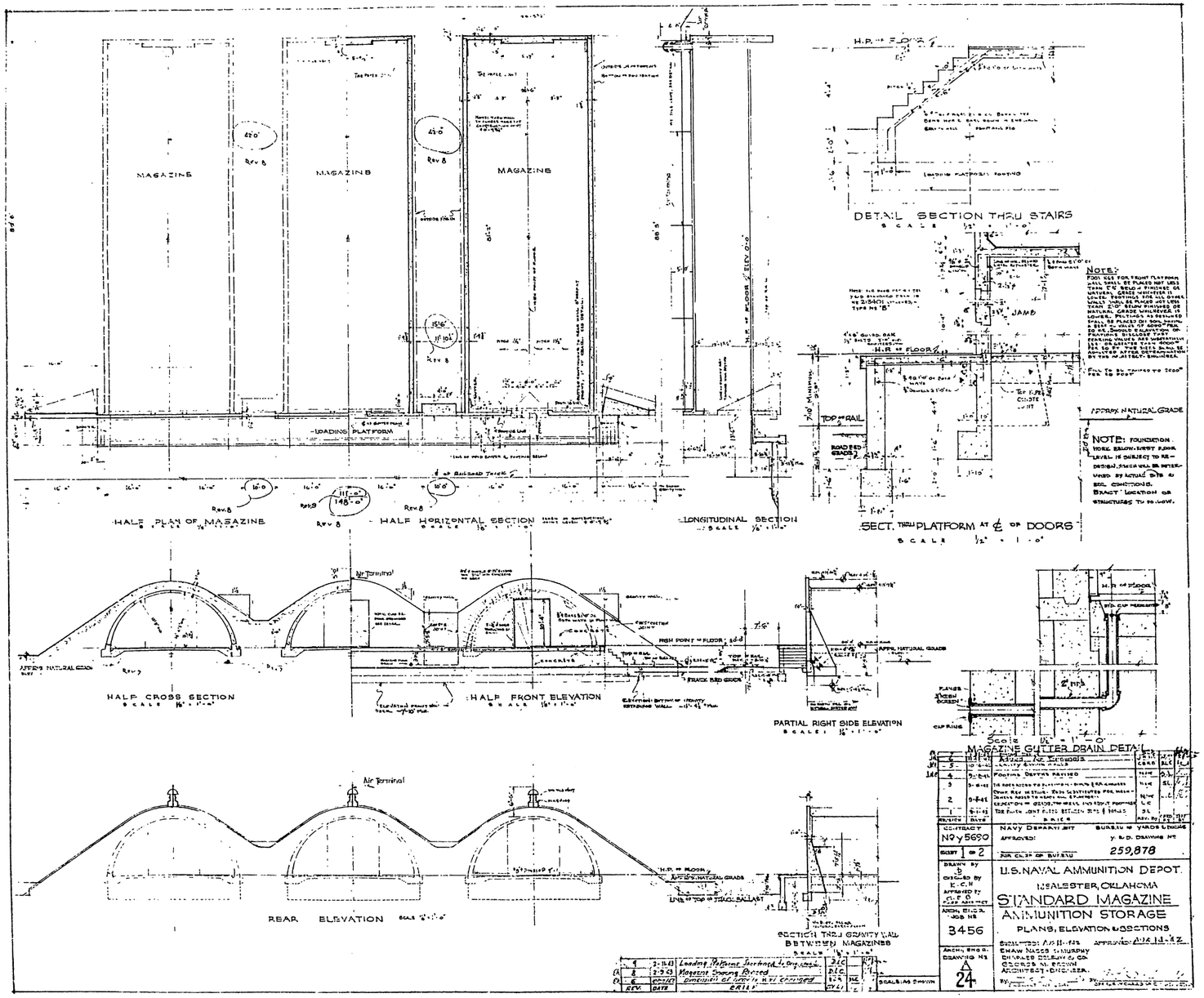


Figure 30. Plans and elevations for Triple-Barrel Vault.

Figure 31. Exterior and interior views of a Stradley Magazine.

Table 7
Classes of Ammunition Storage Magazines within AMC Property Inventory

	Aboveground Magazines		Underground Igloo Magazines
Early Isolated (1775-1918)	Hessian Powder Magazine at Carlisle Barracks PA Fort Sam Houston TX Fort Towson OK West Magazine at Watervliet NY Principal Magazine at Frankford Arsenal PA Rock Island Arsenal IL—1879 Picatinny Powder Depot NJ—1881 Fort D. A. Russell WY Rock Island Arsenal IL—L–13	1929-1940	Old Savanna or Type 42 Old Line Old Depot
Standardized (1919-1945)	Class I, III, IV, VI* Class II	World War II	Army Standard Igloo or Type 49 New Depot Triple-Barrel Vault Huntsville Corbetta Beehive Richmond Magazine

* Class I, II, III, IV, VI = classes of ammunition and ordnance.

GENERAL STATEMENTS OF DESCRIPTION, SIGNIFICANCE, AND REGISTRATION REQUIREMENTS

DESCRIPTION

The history of Army ammunition and explosives storage in the United States dates to the very beginning of our nation's pursuit of independence, when in 1776 the Board of War and Ordnance was created. Part of the board's responsibilities was to make arrangements for the storage and maintenance of arms and ammunition. The earliest facilities constructed for this purpose were aboveground structures. Since no standardized plans were used, these early facilities demonstrate variation in floor plan, design, and construction material. In spite of these variations, however, a concern for safety appears to have been an important consideration in the design, construction, and layout of early magazines.

Although somewhat constrained by the limitations of technology and available building materials, magazines constructed during the late eighteenth, the nineteenth, and the early twentieth centuries were often done so with fire hazards in mind. When possible, magazines were constructed of brick or stone. The West Magazine at Watervliet Arsenal in New York did not contain iron elements so as to avoid attracting lightning, and a stone wall encompassed the magazine to protect it from fire. Structural iron was used to fireproof the principal magazine, built during the Civil War period, at Frankford Arsenal in Philadelphia. In some instances, magazines were located away from other buildings, thus reducing the chance of fire spreading either to or from a store of ammunition. The Hessian Powder Magazine at Carlisle Barracks, Pennsylvania, for example, was located away from other major buildings at the complex, as was West Magazine at Watervliet, New York. However, it should be noted that there was no observed plan for the layout of forts, thus in many cases, ammunition and explosives storage buildings were frequently located on or near the parade ground by the officers' quarters.

Although fire hazard appears to have been the primary concern of those responsible for the design and construction of magazines, other issues were also considered. The Fort Towson magazine, located in Indian Territory, contained dead air space, one-brick wide, that encircled the building. This space probably served as insulation to keep stored ammunition and explosives dry. The building also had a drain installed that is effective even today in keeping the interior dry.

Beginning in 1909, a greater consideration for the layout of ammunition and explosives storage facilities emerged through the concerns expressed by Colonel B. W. Dunn, Chief Inspector of the Bureau of Explosives. Dunn's interest in greater safety led to the issuance of the "American Table of Distances for Inhabited Buildings, Public Railways, and Public Highways" in 1914. By this time, there had evolved three basic types of ammunition and explosives storage facilities. The most prevalent was the aboveground magazine, generally rectangular in shape with a gabled or flat roof. This type was often constructed of masonry (tile) or corrugated asbestos on a wooden frame, though some were constructed of wood. Ammunition and explosives were also stored in casemate-type magazines, which were masonry vaults, or were stockpiled in open dumps; neither of these storage types was as commonly used as the aboveground magazines. The casemates were found only at coastal artillery installations, and dumps were used infrequently except during wartime.

The end of World War I left the Ordnance Department with an overabundance of ammunition and explosives. Classified into six categories, the type of storage facility used to store ammunition and explosives depended upon the classification scheme. Munitions with a high explosive potential were stored in aboveground magazines of various construction material and sizes that were designed and spaced so as to reduce the potential for fire and sympathetic explosions. The less volatile materiel was stored in warehouses or even concrete trenches, as in the case of sodium nitrate.

Although the Ordnance Department had given careful consideration to safety issues, nothing had prepared the department for the full impact and consequences that a major explosion would have upon the loss of life, resources, and materiel. That was to change on 10 July 1926 when lightning struck a temporary magazine at the Naval Ammunition Depot at Lake Denmark, New Jersey. Minutes later, the magazine exploded sending embers and missiles as far as a mile away, leaving nothing but a crater in the magazine's place. Two other nearby structures caught fire and exploded, causing massive damage to both the naval depot and to Picatinny Arsenal, which was located near the naval depot. All totaled, the Lake Denmark disaster, as the tragic event was referred to, cost 19 lives, numerous injuries, and over $40,000,000 worth of damage to munitions and other stores.

Almost immediately, the Navy appointed a Court of Inquiry to study the explosion and to make recommendations. However, there was some dissatisfaction with the Court of Inquiry, prompting Congress to approve a provision for a joint Army-Navy board that would survey the conditions of ammunition and explosives storage. By 3 March 1928 the board had completed its survey and recommendations.

The Lake Denmark disaster revolutionized ammunition and explosives storage. Clearly, the design and construction materials of the aboveground storage magazine that detonated had not sufficiently contained or directed the explosives materiel in a way to curtail the damage incurred, nor had it reduced the chances of sympathetic explosions from occurring. Ironically, the building had been constructed of fireproof material (hollow tile) and was equipped with lightning rods (Reed 1995:41).

Although the new underground igloo design would soon become the most prominent type of ammunition and explosives storage facility in use, the Army's Ordnance Department issued new sets of standards for storing explosives and ammunition in aboveground structures during the first few years following the Lake Denmark incident. The 1931 safety manual issued by the Ordnance Department recognized five types of ammunition and explosives storage structures based on the type of ammunition or explosives to be stored. These structures were (1) explosives magazines; (2) smokeless powder magazines; (3) primer and fuses magazines; (4) ammunition magazines; and (5) warehouses. The manual also issued a number of requirements that dictated the spacing, grouping, and arrangement of magazines.

While new regulations for aboveground storage facilities were under development, a radically new concept in munitions storage was underway as the Navy considered ways to make storage of explosives and ammunition safer. The result was the igloo magazine; a barrel-arched structure built of reinforced concrete and covered with earth. The barrel-arch design would direct the force of an explosion upward instead of outward, and the earth berm would reduce the force of an explosion. The Navy had actually experimented with a similar design in 1918 when an igloo was constructed at the Lake Denmark Naval Depot. This first igloo, however, had a flat concrete roof instead of the concrete arch. Safety tests conducted in 1928 proved barrel-arch igloos with an earth covering to be more effective in reducing the radius of possible sympathetic explosions. In addition to safety, igloos had other advantages as well. Because explosions were directed upward, reducing the potential for sympathetic explosions, the distance between magazines could be reduced, thereby, requiring less land. The earth covering assisted in camouflaging these important resources and also kept inside temperatures down. While the Navy constructed igloos at Yorktown and Hawthorne, the Army installed igloos at Savanna Depot in Illinois. In 1929, 24 igloo magazines were constructed using standardized plans for a type known now as the Old Savanna. During the 1930s, two more versions evolved—the Old Line type and the Old Depot type.

The mobilization effort of World War II induced the Army to instigate an extensive network of depots for receiving, storing, and issuing general military supplies. Ordnance depots were specifically tasked with the storage and distribution of explosives materiel. As part of the mobilization effort, the depot system was expanded to ensure that there was a sufficient amount of ammunition storage. During this active period of construction, both standardized aboveground magazines and standardized underground igloo magazines were constructed. The aboveground magazines were used to store

explosives with relatively low volatility. The Ordnance Department, however, preferred the igloo design; thus in 1941, it required that design to be used in all future depot storage construction, except for the storage of small arms.

The escalating demand for igloos occurred at a time when the country was experiencing a shortage of construction materials due to the war effort. By this time, the Army was using a standardized barrel-arch igloo design, sometimes referred to as the Army Standard Igloo, but also known as Type 49, that offered improvements over the earlier igloos constructed during the interwar period. The Army Standard Igloo had fully reinforced arches and walls, full concrete headwall and vents, and concrete doors. The front wall was increased to 10 inches in thickness, and the sand fill was deleted.

A concerted effort to reduce the amount of building material used in igloo construction led to variations on the basic standard igloo design. One variation, the Triple-Barrel Vault, consisted of three standard igloos built side-by-side so that they shared walls, a foundation, and a loading dock. The Huntsville, another variation, was designed to reduce the amount of steel that was used. Besides these modifications to the standard igloo design, a new alternative design, the Corbetta Beehive, was introduced. The Corbetta Beehive required only half the amount of steel used in the standard igloo and used one-third of the copper and two-thirds of the concrete in standard igloos.

Though technically not an igloo, the Richmond Magazine, built during the World War II era as a substitute, had massive side and rear walls that were banked with earth and a wood-framed, gabled roof with roll roofing. The front wall was wood-framed with asbestos shingles.

While the reduction in construction materials and cost for magazines was an important consideration during World War II, there were other matters to consider that affected the layout of ordnance depots. Safe storage of explosives was still a primary concern, which meant that vast amounts of land were required in order to accommodate distance safety regulations. Ordnance depots had to abide by the safety regulations pertaining to both the distances between magazines as well as distances between storage groups. Explosives storage magazines were to be spaced at least 400 feet apart, grouped in clusters of no more than 100, and have at least 1,400 feet separating igloo clusters. Since the mobilization effort required a large number of magazines to store the huge amounts of ammunition and explosives being produced, ordnance depots typically required 10,000 to 20,000 acres of land. Fundamental to the depot was an extensive system of roads and railways that linked various areas of the depot together and facilitated the movement of munitions into and out of the depot.

The history of ammunition and explosives storage magazines reflects, in part, the military's technological advancements and the nation's wartime activities. Dramatically illustrating this last point is the mobilization effort of World War II whereby the production of explosives storage facilities was so intense that within two years the ordnance depot system contained more storage space than all the commercial warehouses in the U.S. combined. Moreover, an overview of the country's magazines documents the architectural and engineering development of a class of buildings designed for the specific function of storing ammunition and explosives. An inherent aspect of such facilities is the issue of safety and how it has been addressed throughout the Army's history. Ammunition and explosives storage facilities, thus, reflect some of the broader trends in military planning and design.

SIGNIFICANCE

Army ammunition and explosives storage facilities may be eligible for listing in the National Register of Historic Places under Criterion A for properties "associated with events that have made a significant contribution to the broad patterns of our history"; Criterion C because they "embody the distinctive characteristics of a type, period, or method of construction . . . or represent a significant and distinguishable entity whose components may lack individual distinction"; or Criterion D because they "have yielded, or may be likely to yield, information important in . . . history" (U.S. Department of the Interior 1991:2).

The National Register recognizes five basic types of properties—buildings, structures, objects, sites, and districts. Ammunition and explosives storage magazines are an example of a structure that is defined by the National Register Bulletin as "those functional constructions made usually for purposes other than creating human shelter" (U.S. Department of the Interior 1991:4). Since certain types of magazines (e.g., underground igloos) were often grouped together at ordnance depots, the concept of a district is also applicable. A district is defined as a resource that "possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (U.S. Department of the Interior 1991:5).

Army ammunition and explosives storage facilities may not be as significant for their architectural characteristics as they are for their engineering attributes and the utilitarian value they held for the military. As storage facilities, they have played an important role in preserving stores of ammunition and making available to military personnel resources critical to the struggle for independence, protection of territory, westward expansion, and international conflict (Criterion A).

While storage facilities may lack prominent or aesthetic architectural features, they do "embody the distinctive characteristics of a type, period, or method of construction" (U.S. Department of the Interior 1991:17; Criterion C). This is particularly applicable to underground storage facilities, or igloos, whose design is associated with a specific event (the Lake Denmark disaster of 1926) in which safety concerns took precedence. Modifications to the basic igloo design include alterations in their size, slight modifications to their shape, and modifications in their construction and the type of building material used. These changes were a result of events associated with World War II when the production (and hence need for storage) of ammunition and explosives was at an all-time high; when material shortages demanded a reduction in the use of certain materials (especially steel) and the use of alternative materials; and when cost effectiveness was an important consideration.

Not only does the design of storage facilities reflect certain time periods and national concerns, the layout of such buildings is also associated with time periods and concerns of national importance (Criterion C). During the eighteenth and nineteenth centuries, the layout of aboveground magazines did not follow a particular pattern, though in some cases, it appears that safety was a consideration. Not until 1914, with the implementation of distance tables was the layout of magazines an associated feature. The impetus behind this new pattern was an increased concern for safety that was magnified even more after the Lake Denmark explosion in 1926.

An important aspect of the groups of ammunition and explosives storage structures is an infrastructure consisting of roads and railroads (Figure 32). Both roads and railroad tracks facilitated the loading and unloading of munitions. Roads were also necessary for maintaining security and for fighting fires.

Administration areas are often associated with the large complex of aboveground and igloo magazines. The administrative buildings do not always reflect the same singular time period as the magazine area. Furthermore, modernization, modifications, and demolition have usually compromised the overall integrity of the administrative area. Therefore, inclusion of the administrative area within a large historic district encompassing the storage areas is not always warranted. However, where the administrative area and the storage area together reflect a singular and cohesive development on the landscape for a particular time period, inclusion of the administration area within the proposed district should be considered.

Ammunition and explosives storage facilities provide valuable information regarding technological advancement and are examples of structures in which architecture, function, and technology all interface (Criterion D). Although simple in design, early aboveground magazines demonstrate the knowledge, existing at the time of their construction, regarding the characteristics of various types of munitions and architectural or engineering features that might protect the munitions themselves and the surrounding environment. As magazines

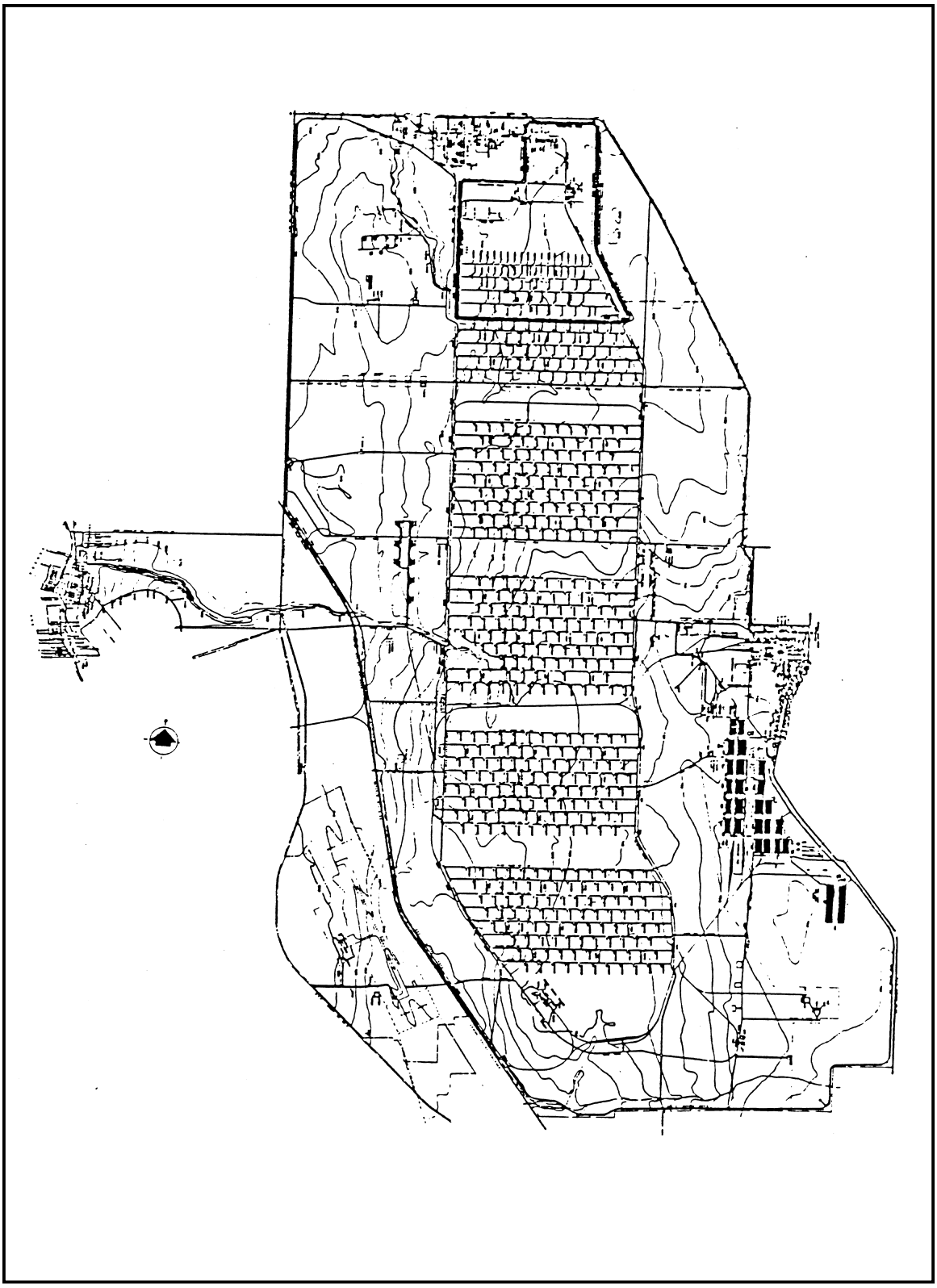


Figure 32. Map of Seneca Depot.

continued to evolve and as technology advanced, the interplay between architecture, engineering, and technology is even more evident—with underground igloos serving as a prime example. With this design, a technological understanding of explosives materiel, combined with architectural and engineering knowledge, produced a structure that greatly reduced the risks associated with storing explosives. As such, underground igloo magazines contribute valuable information pertaining to the safety of the surrounding environment, including human life.

REGISTRATION REQUIREMENTS

Ammunition and explosives storage structures have been key components in the Army's efforts to secure national safety and to achieve governmental objectives. Examples of storage facilities range in age from the late eighteenth century to structures built in the 1940s during World War II. Magazines for the storage of ammunition and explosives can be classified into two broad categories—aboveground magazines and underground barrel-arch igloos. Both broad types exhibit variations that developed out of the necessity to (1) store different types of ammunition or explosives, (2) contend with building material shortages, (3) reduce costs, (4) reduce the amount of land required, or (5) reduce safety hazards.

In considering National Register eligibility of structures, a property must maintain its integrity or, in other words, be able to convey its significance. The National Register defines seven aspects of integrity: (1) location, (2) setting, (3) design, (4) materials, (5) workmanship, (6) feeling, and (7) association. Although not all seven aspects of integrity must be present for the property to be eligible, the property must retain, overall, the defining features and characteristics that were present during the property's period of significance.

Aboveground Magazines

Registration requirements for the two types of aboveground magazines differ due to factors related to temporal period, number of properties, and spatial setting. Given the limited number of representative buildings of the Early Isolated (1875–1918) type, the integrity requirements in relation to design, materials, and workmanship are very high. To demand integrity in relation to setting and association is unrealistic, for most of these isolated examples represent remnants of an earlier phase of the development of the installation. These structures are significant only if they convey the construction and engineering efforts of that era to provide safe storage of munitions and explosives (Criterion C). Consequently, if these structures lack significant modification, retain original materials and the original design plan, each may be considered individually eligible. These structures may be contributing elements to a National Register Historic District if they are part of a larger complex dating to the same time period (Criterion A).

The Standardized Magazines (1919–1945) were designed and constructed to function as part of a much larger complex. Their construction was part of the increasing role of the United States in international politics (Criterion A). Safety concerns dictated the number of individual structures within a cluster and the distances between structures and between the clusters. Efficient handling of the materiel also required the presence of a rail and road infrastructure connecting the entire complex. Eligibility therefore depends on the integrity of setting, location, feeling, and association. These structures would not be considered eligible individually, but would rather be considered as contributing elements to a larger district.

The design of these structures, which differed significantly from the Early Isolated examples, reflects the use of new materials (hollow clay tile) that were fire resistant and would break into small pieces in the event of explosions (Criterion C). Defining characteristics are the hollow clay tile or brick walls and roofing consisting of gypsum blocks or slabs covered with fire-resistant built-up roofing. Alteration of the roof profile, the replacement of doors, the enclosure of loading docks, or the addition of canopies to the exterior would detrimentally impact the integrity of the structure.

Very similar registration requirements would apply to the Class II (smokeless powder) magazines, for the same infrastructure and

spatial elements are relevant. These magazines, however, were built with different materials. The defining characteristics are a frame construction on concrete or wooden piers, corrugated sheet asbestos siding, and ventilators on the roof and on the outside wall. Removal of these features or replacement with dissimilar materials would detrimentally impact the integrity of the structure.

Underground Igloos and Richmond Magazine

Registration requirements for the underground igloos are primarily related to Criterion C or Criterion A, or both. The Old Savanna igloos represent the primary engineering response to the Lake Denmark disaster (Criterion C). The variations of the Army Standard Igloo were built in response to the needs of the United States in its war effort during World War II (Criterion A). The Corbetta Beehive was primarily an engineering solution for the lack of critical resources during the war period (Criteria A and C). The Richmond Magazine, not a true igloo, was a temporary response to storage needs during World War II (Criterion A). The Stradley was designed to meet the stringent requirements of special weapons storage in the 1950s (Criteria A and C).

Setting, location, feeling, and association are the primary issues of integrity related to the underground igloo magazines. The spatial patterning and setting of the igloos were critical elements related to both safety and efficiency (see Figure 32). An integral part of the setting was the rail and road infrastructure that connected the individual structures. Therefore, these structures would not be considered eligible individually; rather, they would be contributing elements of a larger district.

Given the rather simple design of the igloo—a barrel vault constructed of concrete and covered with earth—the integrity of the design, workmanship, and materials is not easily impacted. For example, the replacement of the doors or the replacement or augmentation of the earth fill does not significantly impact the integrity of the igloo. Additions or alterations of the basic design would be the only factors that would detrimentally impact the structure's integrity.

Due to their unique designs, the Corbetta Beehive and the Richmond Magazine storage types exhibit different registration requirements. The circular dome shape of the Corbetta Beehive is its defining characteristic, and as such, represents an engineering solution to the lack of critical resources during World War II. Spatially, the Corbetta Beehives appear either singly or in threesomes. Alterations to the setting, such as the demolition of one or more of the cluster of three, would be detrimental to its integrity. The Richmond Magazine must retain its wood-framed front wall with asbestos shingles, its infrastructure, and wall materials of either concrete block or poured concrete in order to retain its integrity. Alterations to these features may result in loss of integrity and disqualification.

CONCLUSIONS

There are over 20,000 storage magazines at Army installations around the country. While there are some extant examples of early magazine design and construction, virtually all ammunition storage magazines currently in Army use for ammunition and explosives storage were built in response to the World War II mobilization mission; the majority reside at ammunition plants and depots. Mission changes in the post-Cold War era have dictated major changes in the Army's real property inventory, resulting in a continuing reduction of this property type throughout the 1990s. This trend is likely to continue into the next century under Congressional Base Realignment and Closure (BRAC).

Ammunition and explosives storage magazines have significance as historic resources. Magazines have associations with the struggle for independence, protection of territory, westward expansion, and international conflict and therefore may qualify under National Register Criterion A for their association with the broad patterns of American history at a national level. The property type may also be eligible for its unique design and construction values under National Register Criterion C. Because of the massive mobilization effort during World War II, ammunition and explosives storage facilities often form a distinct, cohesive entity that may constitute a historic district or a designed landscape.

The construction of these resources had immediate and long-term impacts, both socially and economically, on the local population. However, the design, construction and operation of ammunition and explosives storage were conceived and executed at a national level with only minor variation for local conditions. The true significance of this property type is derived from its role in protecting and providing materiel critical to national defense at a national scale and should therefore be evaluated under the appropriate national context. However, such property types, in rare instances may have had such an exceptional impact on a State or locality that they could be eligible for the National Register under other State or local themes.

Ammunition magazines consist of a few basic types that are redundant in both design character and general layout when used in multiples (e.g., at depots). Aboveground magazines, designed for particular classes of ammunition are similar in design throughout the twentieth century. Earth covered magazines, or igloos, were developed after the 1926 Lake Denmark disaster and became the standard for the storage of high explosives. Chemical and biological weapons storage was accomplished by altering the basic Army Standard Igloo rather than through the development of a new design. Locks and security measures were added for the storage of chemical weapons, while security and refrigeration were added for the storage of biological weapons. Special weapons storage was also accomplished through modification of the Army Standard Igloo; however, the Stradley Magazine was designed specifically to meet the more stringent requirements for securing nuclear devices in the 1950s.

With only a few basic types and an abundance of examples, the preservation of every magazine or depot would be an unwise use of the limited funds available for cultural resource management. A review of the present-day real property inventory indicates that six geographically dispersed installations contain an array of primary examples of both aboveground and underground magazines with a high degree of integrity: Hawthorne A.A.P., Nevada (early igloo examples), McAlester A.A.P. Oklahoma (Corbetta Beehive igloos), Pine Bluff Arsenal, Arkansas (biological and chemical weapons igloos), Ravenna A.A.P., Ohio (standard World War II igloos and aboveground magazines), Blue Grass Army Depot, Kentucky (standard World War II igloos and aboveground magazines) and Louisiana Army Ammunition Plant (Stradley special weapons igloos). Examples of the early igloo designs are best represented at Aberdeen Proving Ground, Maryland and Camp Stanley, Texas. The Richmond Magazine, not a true igloo, is best represented at Cornhusker A.A.P., Nebraska. It is recommended that primary examples of these classes and subtypes may be eligible for the National Register under this historic context. Extant examples of aboveground magazines dating prior to the end of World War I are extremely limited; consequently, all of the examples listed may be eligible under this context (Table 8).

Potentially eligible aboveground or underground magazines (with the exception of the "Early Isolated" facilities) should focus on districts that encompass a number of similar structures within their original setting. The exact number of structures may be arbitrarily defined; however, the number must be sufficient to reflect the layout and infrastructure related to the function of the complex and the associated safety concerns. The highly redundant nature of these resources, however, and their evaluation within a national context precludes the preservation of all aboveground and underground storage facilities. The previously identified installations are considered to have the best examples of aboveground and underground magazines under this historic context, and are potentially eligible for the National Register. All other installations with ammunition storage facilities contain lesser examples, which may be considered not eligible for the National Register under this context (see Appendix A).

Table 8
Recommended Locations Where Primary Examples of Ammunition and Explosives Storage Facility Classes
May Be Eligible for the National Register

	Aboveground Magazines	Underground Igloo Magazines
Early Isolated (1775-1918)	Hessian Powder Magazine at Carlisle Barracks PA Fort Sam Houston TX Fort Towson OK West Magazine at Watervliet NY Principal Magazine at Frankford Arsenal PA Rock Island Arsenal IL—1879 Picatinny Powder Depot NJ—1881 Fort D. A. Russell WY Rock Island Arsenal IL—L–13	1929-1940 Old Savanna or Type 42 – Aberdeen Proving Ground, MD Old Line – Aberdeen Proving Ground, MD Old Depot – Camp Stanley, TX
Standardized (1919-1945)	Class I, III, IV, VI* – Hawthorne Naval Ammunition Depot, NV McAlester Army Ammunition Plant, OK Pine Bluff Arsenal, AR Ravenna Army Ammunition Plant, OH Lone Star Army Ammunition Plant, TX Class II – Hawthorne Naval Ammunition Depot, NV McAlester Army Ammunition Plant, OK Pine Bluff Arsenal, AR Ravenna Army Ammunition Plant, OH Lone Star Army Ammunition Plant, TX	World War II Army Standard Igloo or Type 49 – Red River Army Depot, TX New Depot – Red River Army Depot, TX Triple-Barrel Vault – Hawthorne Naval Ammunition Depot, NV Huntsville – Blue Grass Army Depot, KY Corbetta Beehive – McAlester Army Ammunition Plant, OK Richmond Magazine – Cornhusker Army Ammunition Plant, NE Chemical and Special Weapons** – Pine Bluff Arsenal, AR Anniston A.D., AL Louisiana A.A.P., LA

* Class I, II, III, IV, VI = classes of ammunition and ordnance.
** Special weapons facilities, such as the Stradley Magazine were developed during the 1950s

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ADDITIONAL DOCUMENTS

DEPARTMENT OF THE ARMY
ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

REPLY TO
ATTENTION OF

DAIM-ZA

JUN 0 6 2007

MEMORANDUM FOR

INSTALLATION MANAGEMENT COMMAND (IMAH-Z/BG JOHN A. MACDONALD) 2511 JEFFERSON DAVIS HIGHWAY, ARLINGTON, VA 22202-3926
NATIONAL GUARD BUREAU (NGB-ARZ/LTG CLYDE A. VAUGHN), 111 SOUTH GEORGE MASON DRIVE, ARLINGTON, VA 22204-1382
US ARMY MATERIEL COMMAND, G9 (AMCEDCG/MR. ROBERT HARRISON), 9301 HALL ROAD, FORT BELVOIR, VA 22060-5527

SUBJECT: National Historic Preservation Act Compliance Concluded for World War II and Cold War Era Historic Properties

1. The Army has achieved a major goal in addressing departmental-wide environmental compliance responsibilities. The Program Comments that conclude Army National Historic Preservation Act (NHPA) compliance responsibilities for 35,000 Cold War Era Unaccompanied Personnel Housing (UPH), World War II and Cold War Era Ammunition Storage Facilities, and World War II and Cold War Era Army Ammunition Production Facilities and Plants are now complete and available for installation execution.

2. The Program Comments are a model of an effective and efficient environmental business practice. They combine an Army-wide economy of scale in mitigation with an investment today that addresses current and future compliance liabilities, creating a compliance cost avoidance of $25 million through 2013. Their effect is to allow Army installations to proceed, without further NHPA Section 106 compliance, with actions including: building demolition, maintenance and repair, renovation, remediation activities, and transfer, sale, lease, and closure for all Cold War Era (1946-74) UPH, World War II and Cold War Era (1939-74) Ammunition Storage Facilities, and World War II and Cold War Era (1939-74) Army Ammunition Production Facilities and Plants.

3. With this current effort, and the Program Comment that was completed in 2002 for all Army Capehart and Wherry Housing, the Army has reduced the real property inventory requiring NHPA compliance by a total of 55,000 buildings. These combined actions enable Base Realignment and Closure (BRAC), the Residential Communities Initiative, Barracks Modernization, and installation infrastructure transformation.

4. Further information is in the enclosed Program Comments Fact Sheet. Detailed installation guidance for the Program Comments can be found on the AKO Cultural Resources website, at https://www.us.army.mil/suite/page/412399.

DAIM-ZA
SUBJECT: National Historic Preservation Act Compliance Concluded for World War II and Cold War Era Historic Properties

5. My point of contact for this action is Mr. Lee Foster, Office of Director Environmental Programs, (703) 601-1591, email: Alfred.Foster@hqda.army.mil. For technical questions, please contact Ms. Susan Thompson, US Army Environmental Command, (410) 436-1203, email: susan.l.thompson@us.army.mil.

Encl

ROBERT WILSON
Lieutenant General, GS
Assistant Chief of Staff
for Installation Management

CF: (w/encl)
IMCOM, WEST REGION (IMNW-ZA/MR. RANDY ROBINSON), 2405 STANLEY RD, SUITE 101, BLDG 1000, FT SAM HOUSTON, TX 78234-6106
IMCOM, NORTHEAST REGION (IMNE-ZA/MS. DIANE DEVENS), 5A NORTH GATE RD, FT MONROE, VA 23651-1048
IMCOM, SOUTHEAST REGION (IMSE-ZA/MR. DAVE TINDOLL), 1593 HARDEE AVE, SW, FT MCPHERSON, GA 30330-1053
IMCOM, PACIFIC REGION (IMPC-ZA/MS. DEBRA ZEDALIS), H PLACE BLDG, FT SHAFTER, HI 96858-5520
IMCOM, ARMY RESERVES (IMCOM-AR/COL BRIAN D. PERRY), 2511 JEFFERSON DAVIS HIGHWAY, ARLINGTON, VA 22202-3926
US AEC (IMAE-CO/COL O'KEEFE), (IMAE-EQP/MS. THOMPSON), 5179 HOADLEY ROAD, ABERDEEN PROVING GROUND, MD 21010-5401
NGB (NGB-ARE/COL GERALD I. WALTER), ARMY NATIONAL GUARD READINESS CENTER, 111 SOUTH GEORGE MASON DRIVE, ARLINGTON, VA 22204-1382
US AMC, G9 INSTALLATIONS AND FACILITIES DIVISION (AMCIN-I/TERRY L. FUNDERBURG) 9351 HALL ROAD, FORT BELVOIR, VA 22060

Texas

This spreadsheet contains a master listing of each Army property in the state affected by the Program Comments on World War II and Cold War era (1939-1974) Ammunition Plants, Ammunition Production Facilities, and Ammunition Storage Facilities, and Cold War Era (1946-1974) Unaccompanied Personnel Housing. These National Historic Preservation Act compliance documents can be found on-line at https://www.denix.osd.mil/denix/Public/Library/NCR/program_alternatives.html

Each individual property is listed by installation and facility (building) number, with tabs for the different classes of historic properties affected by the Program Comments. Some properties on this list may not currently be designated as "42xxx", "72xxx," or "226xx." These properties have since changed use, but were designed as one of the covered property types. For these properties, the design code is also provided.

Contents

Site Name	Facility	Cat Code Desc	Year Built
LONE STAR AAP	1503	VEH ST BD DEP	1948
LONE STAR AAP	1504	VEH ST BD DEP	1948
LONE STAR AAP	1505	VEH ST BD DEP	1948
LONE STAR AAP	1506	VEH ST BD DEP	1948
LONE STAR AAP	1507	VEH ST BD DEP	1948
LONE STAR AAP	1508	VEH ST BD DEP	1948
LONE STAR AAP	1509	VEH ST BD DEP	1948
LONE STAR AAP	1510	VEH ST BD DEP	1948
LONE STAR AAP	1511	VEH ST BD DEP	1948
LONE STAR AAP	1515	SAFETY BUILDING	1948
LONE STAR AAP	1516	VEH ST BD DEP	1948
LONE STAR AAP	1517	VEH ST BD DEP	1948
LONE STAR AAP	1518	VEH ST BD DEP	1948
LONE STAR AAP	1519	VEH ST BD DEP	1948
LONE STAR AAP	1520	VEH ST BD DEP	1948
LONE STAR AAP	1521	VEH ST BD DEP	1948
LONE STAR AAP	1522	VEH ST BD DEP	1948
LONE STAR AAP	1523	VEH ST BD DEP	1948
LONE STAR AAP	1524	VEH ST BD DEP	1948
LONE STAR AAP	1525	VEH ST BD DEP	1948
LONE STAR AAP	1530	STORAGE GP INST	1942
LONE STAR AAP	1535	RR EQ/EN MAINT	1942
LONE STAR AAP	1536	STORAGE GP INST	1972
LONE STAR AAP	1541	FUEL/POL BLDG	1942
LONE STAR AAP	1545	COMP REB DEPOT	1942
LONE STAR AAP	1548	COMP REB DEPOT	1968
LONE STAR AAP	1549	COMP REB DEPOT	1968
LONE STAR AAP	1550	VEH ST BD DEP	1948
LONE STAR AAP	1551	VEH ST BD DEP	1948
LONE STAR AAP	1552	VEH ST BD DEP	1948
LONE STAR AAP	1553	VEH ST BD DEP	1948
LONE STAR AAP	1554	VEH ST BD DEP	1948
LONE STAR AAP	1555	SAFETY BUILDING	1948
LONE STAR AAP	1556	VEH ST BD DEP	1948
LONE STAR AAP	1557	VEH ST BD DEP	1948
LONE STAR AAP	1558	VEH ST BD DEP	1948
LONE STAR AAP	1559	VEH ST BD DEP	1948
LONE STAR AAP	1560	VEH ST BD DEP	1948
LONE STAR AAP	1561	VEH ST BD DEP	1948
LONE STAR AAP	1562	VEH ST BD DEP	1948
LONE STAR AAP	1563	VEH ST BD DEP	1948
LONE STAR AAP	1564	VEH ST BD DEP	1948
LONE STAR AAP	1565	VEH ST BD DEP	1948
LONE STAR AAP	1566	VEH ST BD DEP	1948
LONE STAR AAP	1567	VEH ST BD DEP	1948
LONE STAR AAP	1570	VEH ST BD DEP	1948
LONE STAR AAP	1571	VEH ST BD DEP	1948
LONE STAR AAP	1572	VEH ST BD DEP	1948
LONE STAR AAP	1573	VEH ST BD DEP	1948
LONE STAR AAP	1574	VEH ST BD DEP	1948
LONE STAR AAP	1575	VEH ST BD DEP	1948
LONE STAR AAP	1576	VEH ST BD DEP	1948
LONE STAR AAP	1577	VEH ST BD DEP	1948
LONE STAR AAP	1578	VEH ST BD DEP	1948
LONE STAR AAP	1579	VEH ST BD DEP	1948
LONE STAR AAP	1580	VEH ST BD DEP	1948
LONE STAR AAP	1581	VEH ST BD DEP	1948
LONE STAR AAP	1582	VEH ST BD DEP	1948
LONE STAR AAP	1583	VEH ST BD DEP	1948
LONE STAR AAP	1584	VEH ST BD DEP	1948
LONE STAR AAP	1585	VEH ST BD DEP	1948
LONE STAR AAP	1586	VEH ST BD DEP	1948
LONE STAR AAP	1587	VEH ST BD DEP	1948

LONE STAR AAP	1588	VEH ST BD DEP	1948
LONE STAR AAP	1589	VEH ST BD DEP	1948
LONE STAR AAP	1590	VEH ST BD DEP	1948
LONE STAR AAP	1591	VEH ST BD DEP	1948
LONE STAR AAP	1592	VEH ST BD DEP	1948
LONE STAR AAP	1593	SAFETY BUILDING	1948
LONE STAR AAP	1600	VEH ST BD DEP	1948
LONE STAR AAP	1601	VEH ST BD DEP	1948
LONE STAR AAP	1602	VEH ST BD DEP	1948
LONE STAR AAP	1603	VEH ST BD DEP	1948
LONE STAR AAP	1604	VEH ST BD DEP	1948
LONE STAR AAP	1605	VEH ST BD DEP	1948
LONE STAR AAP	1606	VEH ST BD DEP	1948
LONE STAR AAP	1607	VEH ST BD DEP	1948
LONE STAR AAP	1608	VEH ST BD DEP	1948
LONE STAR AAP	1609	VEH ST BD DEP	1948
LONE STAR AAP	1610	VEH ST BD DEP	1948
LONE STAR AAP	1611	VEH ST BD DEP	1948
LONE STAR AAP	1612	VEH ST BD DEP	1948
LONE STAR AAP	1613	SAFETY BUILDING	1948
LONE STAR AAP	1614	VEH ST BD DEP	1948
LONE STAR AAP	1615	VEH ST BD DEP	1948
LONE STAR AAP	1616	VEH ST BD DEP	1948
LONE STAR AAP	1617	VEH ST BD DEP	1948
LONE STAR AAP	1618	VEH ST BD DEP	1948
LONE STAR AAP	1619	SAFETY BUILDING	1948
LONE STAR AAP	1620	VEH ST BD DEP	1948
LONE STAR AAP	1621	VEH ST BD DEP	1948
LONE STAR AAP	1622	VEH ST BD DEP	1948
LONE STAR AAP	1623	VEH ST BD DEP	1948
LONE STAR AAP	1624	VEH ST BD DEP	1948
LONE STAR AAP	1625	VEH ST BD DEP	1948
LONE STAR AAP	1626	VEH ST BD DEP	1948
LONE STAR AAP	1627	VEH ST BD DEP	1948
LONE STAR AAP	1628	VEH ST BD DEP	1948
LONE STAR AAP	1629	VEH ST BD DEP	1948
LONE STAR AAP	1630	VEH ST BD DEP	1948
LONE STAR AAP	1631	VEH ST BD DEP	1948
LONE STAR AAP	1632	VEH ST BD DEP	1946
LONE STAR AAP	1633	VEH ST BD DEP	1946
LONE STAR AAP	1634	VEH ST BD DEP	1946
LONE STAR AAP	1635	VEH ST BD DEP	1946
LONE STAR AAP	1636	VEH ST BD DEP	1946
LONE STAR AAP	1640	VEH ST BD DEP	1948
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LONE STAR AAP	1642	VEH ST BD DEP	1948
LONE STAR AAP	1643	VEH ST BD DEP	1948
LONE STAR AAP	1644	VEH ST BD DEP	1948
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LONE STAR AAP	1668	VEH ST BD DEP	1948
LONE STAR AAP	1669	VEH ST BD DEP	1948
LONE STAR AAP	1670	VEH ST BD DEP	1948
LONE STAR AAP	1671	VEH ST BD DEP	1948
LONE STAR AAP	1672	VEH ST BD DEP	1948
LONE STAR AAP	1673	VEH ST BD DEP	1948

LONE STAR AAP	1674	VEH ST BD DEP	1948
LONE STAR AAP	1675	VEH ST BD DEP	1948
LONE STAR AAP	13510	COMMO LINES UNG	1966
LONE STAR AAP	81230	EXT LIGHTING	1942
LONE STAR AAP	81241	OH ELECT LINES	1942
LONE STAR AAP	81242	UNG ELECT LINES	1942
LONE STAR AAP	81360	TRANSFORMERS	1971
LONE STAR AAP	82210	STEAM COND LINE	1942
LONE STAR AAP	82240	STEAM LINES	1942
LONE STAR AAP	82410	GAS PIPELINES	1942
LONE STAR AAP	83150	SEWAGE LFT STAT	1942
LONE STAR AAP	83210	SANITARY SEWER	1942
LONE STAR AAP	84210	WATER DIST POT	1942
LONE STAR AAP	85215	NONORG PK PAVD	1942
LONE STAR AAP	85220	SIDEWALKS PVD	1942
LONE STAR AAP	87110	STORM SEWER	1971
LONE STAR AAP	87120	DRAINAGE DITCH	1974
LONE STAR AAP	88010	FIRE ALARM SYS	1942
LONE STAR AAP	89320	COMPRESS AIR LN	1942
LONE STAR AAP	A0008	HAZ MAT STR INS	1942
LONE STAR AAP	A0011	EMP CHG FAC	1942
LONE STAR AAP	A0012	FLAM MAT STR D	1942
LONE STAR AAP	A0020	ACCESS CNT FAC	1943
LONE STAR AAP	A0022	SAWMILL	1953
LONE STAR AAP	A0023	HEAT PLT BLDG	1953
LONE STAR AAP	A0024	STR SHED GP INS	1953
LONE STAR AAP	A0025	STR SHED GP INS	1953
LONE STAR AAP	A0026	LD/UNLD DOC/RMP	1953
LONE STAR AAP	A0039	STR SHED GP INS	1969
LONE STAR AAP	A0040	WAT STR TK POT	1942
LONE STAR AAP	B0001	LD PT 76-120MM	1942
LONE STAR AAP	B0002	LD PT 76-120MM	1942
LONE STAR AAP	B0003	LD PT 76-120MM	1942
LONE STAR AAP	B0004	LD PT 76-120MM	1942
LONE STAR AAP	B0005	LD PT 76-120MM	1942
LONE STAR AAP	B0006	LD PT 76-120MM	1942
LONE STAR AAP	B0007	LD PT 76-120MM	1942
LONE STAR AAP	B0008	LD PT 76-120MM	1942
LONE STAR AAP	B0009	LD PT 76-120MM	1942
LONE STAR AAP	B0010	LD PT 76-120MM	1942
LONE STAR AAP	B0011	LD PT 76-120MM	1942
LONE STAR AAP	B0012	LD PT 76-120MM	1942
LONE STAR AAP	B0013	LD PT 76-120MM	1942
LONE STAR AAP	B0014	LD PT > 120MM	1942
LONE STAR AAP	B0015	HEAT PLT BLDG	1942
LONE STAR AAP	B0016	EMP CHG FAC	1942
LONE STAR AAP	B0017	LD PT > 120MM	1942
LONE STAR AAP	B0023	LD PT > 120MM	1942
LONE STAR AAP	B0027	ACCESS CNT FAC	1943
LONE STAR AAP	B0028	ACCESS CNT FAC	1942
LONE STAR AAP	B0029	LD PT > 120MM	1942
LONE STAR AAP	B0031	AMMO PROD STRUC	1954
LONE STAR AAP	B0032	PROTEC BARRIER	1955
LONE STAR AAP	B0034	LD PT > 120MM	1954
LONE STAR AAP	B0035	LD PT 76-120MM	1954
LONE STAR AAP	B0036	PROTEC BARRIER	1942
LONE STAR AAP	B0040	LD PT > 120MM	1962
LONE STAR AAP	B0041	LD PT > 120MM	1962
LONE STAR AAP	B0042	LD PT > 120MM	1962
LONE STAR AAP	B0043	LD PT > 120MM	1962
LONE STAR AAP	B0044	LD PT > 120MM	1962
LONE STAR AAP	B0045	LD PT > 120MM	1962
LONE STAR AAP	B0046	LD PT > 120MM	1962
LONE STAR AAP	B0047	LD PT > 120MM	1962

LONE STAR AAP	B0048	LD PT > 120MM	1962
LONE STAR AAP	B0049	ACCESS CNT FAC	1962
LONE STAR AAP	B0050	EMP CHG FAC	1965
LONE STAR AAP	B0051	ACCESS CNT FAC	1965
LONE STAR AAP	B0052	ACCESS CNT FAC	1965
LONE STAR AAP	B0053	ACCESS CNT FAC	1963
LONE STAR AAP	B0055	LD PT > 120MM	1966
LONE STAR AAP	B0056	LD PT > 120MM	1963
LONE STAR AAP	B0057	LD PT > 120MM	1963
LONE STAR AAP	B0058	LD PT > 120MM	1963
LONE STAR AAP	B0059	LD PT > 120MM	1953
LONE STAR AAP	B0060	AMMO PROD STRUC	1962
LONE STAR AAP	B0061	AMMO PROD STRUC	1962
LONE STAR AAP	B0063	LD PT > 120MM	1963
LONE STAR AAP	B0064	PROTEC BARRIER	1944
LONE STAR AAP	B0065	PROTEC BARRIER	1942
LONE STAR AAP	B0066	LD PT > 120MM	1953
LONE STAR AAP	B0067	AMMO PROD STRUC	1953
LONE STAR AAP	B0068	AMMO PROD STRUC	1953
LONE STAR AAP	B0069	AMMO PROD STRUC	1962
LONE STAR AAP	B0070	AMMO PROD STRUC	1953
LONE STAR AAP	B0071	LD PT > 120MM	1963
LONE STAR AAP	B0072	AMMO PROD STRUC	1962
LONE STAR AAP	B0073	LD PT > 120MM	1965
LONE STAR AAP	B0074	LD PT > 120MM	1969
LONE STAR AAP	B0075	PROTEC BARRIER	1942
LONE STAR AAP	B0076	PROTEC BARRIER	1942
LONE STAR AAP	B0077	LD PT > 120MM	1953
LONE STAR AAP	B0078	LD PT > 120MM	1962
LONE STAR AAP	B0079	AMMO PROD STRUC	1962
LONE STAR AAP	B0080	AMMO PROD STRUC	1962
LONE STAR AAP	B0082	LD PT > 120MM	1953
LONE STAR AAP	B0083	LD PT > 120MM	1963
LONE STAR AAP	B0084	LD PT > 120MM	1963
LONE STAR AAP	B0085	LD PT > 120MM	1963
LONE STAR AAP	B0086	LD PT > 120MM	1963
LONE STAR AAP	B0087	PROTEC BARRIER	1955
LONE STAR AAP	B0088	PROTEC BARRIER	1955
LONE STAR AAP	B0089	LD PT > 120MM	1953
LONE STAR AAP	B0090	AMMO PROD STRUC	1962
LONE STAR AAP	B0091	AMMO PROD STRUC	1962
LONE STAR AAP	B0098	LD PT > 120MM	1962
LONE STAR AAP	B0102	AMMO PROD STRUC	1962
LONE STAR AAP	B0103	AMMO PROD STRUC	1962
LONE STAR AAP	B0104	AMMO PROD STRUC	1962
LONE STAR AAP	B0105	AMMO PROD STRUC	1963
LONE STAR AAP	B0106	AMMO PROD STRUC	1962
LONE STAR AAP	B0107	AMMO PROD STRUC	1962
LONE STAR AAP	B0108	LD PT > 120MM	1962
LONE STAR AAP	B0110	LD PT > 120MM	1962
LONE STAR AAP	B0111	AMMO PROD STRUC	1962
LONE STAR AAP	B0112	AMMO PROD STRUC	1962
LONE STAR AAP	B0113	AMMO PROD STRUC	1962
LONE STAR AAP	B0114	LD PT 76-120MM	1966
LONE STAR AAP	B0115	LD PT 76-120MM	1966
LONE STAR AAP	B0116	ACCESS CNT FAC	1968
LONE STAR AAP	B0117	COMPRESS AIR PT	1972
LONE STAR AAP	BB027	HAZ MAT STR INS	1942
LONE STAR AAP	BB029	ACCESS CNT FAC	1969
LONE STAR AAP	C0001	STORAGE GP INST	1942
LONE STAR AAP	C0002	LD PT 76-120MM	1942
LONE STAR AAP	C0003	LD PT 76-120MM	1942
LONE STAR AAP	C0004	LD PT 76-120MM	1942
LONE STAR AAP	C0005	LD PT 76-120MM	1942

LONE STAR AAP	C0006	LD PT 76-120MM	1942
LONE STAR AAP	C0007	LD PT 76-120MM	1942
LONE STAR AAP	C0008	LD PT 76-120MM	1942
LONE STAR AAP	C0009	LD PT 76-120MM	1942
LONE STAR AAP	C0010	LD PT 76-120MM	1942
LONE STAR AAP	C0011	LD PT 76-120MM	1942
LONE STAR AAP	C0012	LD PT 76-120MM	1942
LONE STAR AAP	C0013	LD PT 76-120MM	1942
LONE STAR AAP	C0014	LD PT 76-120MM	1942
LONE STAR AAP	C0015	EMP CHG FAC	1942
LONE STAR AAP	C0016	LD PT 76-120MM	1942
LONE STAR AAP	C0017	LD PT 76-120MM	1942
LONE STAR AAP	C0018	LD PT 76-120MM	1942
LONE STAR AAP	C0023	LD PT 76-120MM	1942
LONE STAR AAP	C0031	ACCESS CNT FAC	1943
LONE STAR AAP	C0032	ACCESS CNT FAC	1942
LONE STAR AAP	C0033	LD PT 76-120MM	1944
LONE STAR AAP	C0039	LD PT 76-120MM	1946
LONE STAR AAP	C0040	PROTEC BARRIER	1954
LONE STAR AAP	C0042	LD PT 76-120MM	1952
LONE STAR AAP	C0043	PROTEC BARRIER	1942
LONE STAR AAP	C0044	PROTEC BARRIER	1942
LONE STAR AAP	C0045	AMMO PROD STRUC	1946
LONE STAR AAP	C0047	LD PT 76-120MM	1963
LONE STAR AAP	C0048	AMMO PROD STRUC	1962
LONE STAR AAP	C0049	PROTEC BARRIER	1942
LONE STAR AAP	C0055	LD PT 76-120MM	1953
LONE STAR AAP	C0056	AMMO PROD STRUC	1962
LONE STAR AAP	C0058	PROTEC BARRIER	1944
LONE STAR AAP	C0059	PROTEC BARRIER	1944
LONE STAR AAP	C0060	PROTEC BARRIER	1944
LONE STAR AAP	C0061	PROTEC BARRIER	1944
LONE STAR AAP	C0062	AMMO PROD STRUC	1962
LONE STAR AAP	C0063	AMMO PROD STRUC	1962
LONE STAR AAP	C0064	AMMO PROD STRUC	1962
LONE STAR AAP	C0065	AMMO PROD STRUC	1962
LONE STAR AAP	C0066	LD PT 76-120MM	1963
LONE STAR AAP	C0067	LD PT 76-120MM	1963
LONE STAR AAP	C0068	PROTEC BARRIER	1952
LONE STAR AAP	C0069	AMMO PROD STRUC	1962
LONE STAR AAP	C0070	LD PT 76-120MM	1963
LONE STAR AAP	C0074	LD PT 76-120MM	1965
LONE STAR AAP	C0075	LD PT 76-120MM	1965
LONE STAR AAP	C0076	STORAGE GP INST	1971
LONE STAR AAP	C0077	PROTEC BARRIER	1971
LONE STAR AAP	C0078	PROTEC BARRIER	1971
LONE STAR AAP	C0079	COMPRESS AIR PT	1972
LONE STAR AAP	CEM01	POST CEMETERY	1942
LONE STAR AAP	CEM02	POST CEMETERY	1942
LONE STAR AAP	CEM03	POST CEMETERY	1942
LONE STAR AAP	CEM04	POST CEMETERY	1942
LONE STAR AAP	CEM05	POST CEMETERY	1942
LONE STAR AAP	CEM06	POST CEMETERY	1942
LONE STAR AAP	CEM07	POST CEMETERY	1942
LONE STAR AAP	CEM08	POST CEMETERY	1942
LONE STAR AAP	CEM09	POST CEMETERY	1942
LONE STAR AAP	D0001	STORAGE GP INST	1942
LONE STAR AAP	D0002	STORAGE GP INST	1942
LONE STAR AAP	D0003	STORAGE GP INST	1942
LONE STAR AAP	D0004	STORAGE GP INST	1942
LONE STAR AAP	D0005	STORAGE GP INST	1942
LONE STAR AAP	D0006	STORAGE GP INST	1942
LONE STAR AAP	D0007	STORAGE GP INST	1942
LONE STAR AAP	D0008	STORAGE GP INST	1942

LONE STAR AAP	D0009	STORAGE GP INST	1942
LONE STAR AAP	D0010	STORAGE GP INST	1942
LONE STAR AAP	D0011	STORAGE GP INST	1942
LONE STAR AAP	D0012	STORAGE GP INST	1942
LONE STAR AAP	D0023	EMP CHG FAC	1973
LONE STAR AAP	E0001	STORAGE GP INST	1942
LONE STAR AAP	E0002	LD PT 76-120MM	1942
LONE STAR AAP	E0003	LD PT 76-120MM	1942
LONE STAR AAP	E0004	LD PT 76-120MM	1942
LONE STAR AAP	E0008	LD PT 76-120MM	1942
LONE STAR AAP	E0009	LD PT 76-120MM	1942
LONE STAR AAP	E0011	LD PT 76-120MM	1942
LONE STAR AAP	E0012	LD PT 76-120MM	1942
LONE STAR AAP	E0014	LD PT 76-120MM	1942
LONE STAR AAP	E0015	LD PT 76-120MM	1942
LONE STAR AAP	E0016	LD PT 76-120MM	1942
LONE STAR AAP	E0017	LD PT 76-120MM	1942
LONE STAR AAP	E0018	LD PT 76-120MM	1942
LONE STAR AAP	E0019	LD PT 76-120MM	1942
LONE STAR AAP	E0020	EMP CHG FAC	1942
LONE STAR AAP	E0021	EMP CHG FAC	1942
LONE STAR AAP	E0022	LD PT 76-120MM	1942
LONE STAR AAP	E0023	LD PT 76-120MM	1942
LONE STAR AAP	E0024	LD PT 76-120MM	1942
LONE STAR AAP	E0030	LD PT 76-120MM	1942
LONE STAR AAP	E0031	ACCESS CNT FAC	1943
LONE STAR AAP	E0032	LD PT 76-120MM	1942
LONE STAR AAP	E0033	LD PT 76-120MM	1944
LONE STAR AAP	E0037	ACCESS CNT FAC	1943
LONE STAR AAP	E0038	ACCESS CNT FAC	1942
LONE STAR AAP	E0044	SHIP/RECV FAC	1974
LONE STAR AAP	E0054	LD PT 76-120MM	1951
LONE STAR AAP	E0057	PROTEC BARRIER	1942
LONE STAR AAP	E0061	LD PT 76-120MM	1963
LONE STAR AAP	E0062	AMMO PROD STRUC	1942
LONE STAR AAP	E0063	PROTEC BARRIER	1942
LONE STAR AAP	E0064	PROTEC BARRIER	1942
LONE STAR AAP	E0065	PROTEC BARRIER	1942
LONE STAR AAP	E0066	AMMO PROD STRUC	1942
LONE STAR AAP	E0067	LD PT 76-120MM	1953
LONE STAR AAP	E0068	AMMO PROD STRUC	1942
LONE STAR AAP	E0069	AMMO PROD STRUC	1953
LONE STAR AAP	E0072	LD PT 76-120MM	1962
LONE STAR AAP	E0073	PROTEC BARRIER	1942
LONE STAR AAP	E0074	PROTEC BARRIER	1942
LONE STAR AAP	E0075	PROTEC BARRIER	1942
LONE STAR AAP	E0076	AMMO PROD STRUC	1962
LONE STAR AAP	E0077	AMMO PROD STRUC	1942
LONE STAR AAP	E0078	AMMO PROD STRUC	1962
LONE STAR AAP	E0079	AMMO PROD STRUC	1942
LONE STAR AAP	E0080	PROTEC BARRIER	1942
LONE STAR AAP	E0081	LD PT 76-120MM	1962
LONE STAR AAP	E0083	LD PT 76-120MM	1962
LONE STAR AAP	E0084	PROTEC BARRIER	1942
LONE STAR AAP	E0085	PROTEC BARRIER	1942
LONE STAR AAP	E0086	PROTEC BARRIER	1942
LONE STAR AAP	E0087	PROTEC BARRIER	1942
LONE STAR AAP	E0088	PROTEC BARRIER	1942
LONE STAR AAP	E0089	PROTEC BARRIER	1942
LONE STAR AAP	E0090	PROTEC BARRIER	1942
LONE STAR AAP	E0091	PROTEC BARRIER	1942
LONE STAR AAP	E0092	PROTEC BARRIER	1942
LONE STAR AAP	E0093	PROTEC BARRIER	1942
LONE STAR AAP	E0094	PROTEC BARRIER	1951

LONE STAR AAP	E0095	PROTEC BARRIER	1951
LONE STAR AAP	E0096	PROTEC BARRIER	1951
LONE STAR AAP	E0097	AMMO PROD STRUC	1942
LONE STAR AAP	E0098	AMMO PROD STRUC	1942
LONE STAR AAP	E0100	LD PT 76-120MM	1954
LONE STAR AAP	E0101	LD PT 76-120MM	1962
LONE STAR AAP	E0104	LD PT 76-120MM	1962
LONE STAR AAP	E0105	LD PT 76-120MM	1962
LONE STAR AAP	E0106	LD PT 76-120MM	1962
LONE STAR AAP	E0109	AMMO PROD STRUC	1942
LONE STAR AAP	E0110	PROTEC BARRIER	1942
LONE STAR AAP	E0111	PROTEC BARRIER	1942
LONE STAR AAP	E0115	PROTEC BARRIER	1960
LONE STAR AAP	E0128	COMPRESS AIR PT	1972
LONE STAR AAP	F0001	SP WEAP PLANT	1942
LONE STAR AAP	F0002	SP WEAP PLANT	1942
LONE STAR AAP	F0003	SP WEAP PLANT	1942
LONE STAR AAP	F0004	SP WEAP PLANT	1942
LONE STAR AAP	F0005	SP WEAP PLANT	1942
LONE STAR AAP	F0006	SP WEAP PLANT	1942
LONE STAR AAP	F0007	SP WEAP PLANT	1942
LONE STAR AAP	F0008	SP WEAP PLANT	1942
LONE STAR AAP	F0009	SP WEAP PLANT	1942
LONE STAR AAP	F0010	SP WEAP PLANT	1942
LONE STAR AAP	F0011	SP WEAP PLANT	1942
LONE STAR AAP	F0012	SP WEAP PLANT	1942
LONE STAR AAP	F0013	SP WEAP PLANT	1942
LONE STAR AAP	F0014	SP WEAP PLANT	1942
LONE STAR AAP	F0015	SP WEAP PLANT	1942
LONE STAR AAP	F0016	SP WEAP PLANT	1942
LONE STAR AAP	F0017	SP WEAP PLANT	1942
LONE STAR AAP	F0018	SP WEAP PLANT	1942
LONE STAR AAP	F0019	SP WEAP PLANT	1942
LONE STAR AAP	F0020	EMP CHG FAC	1942
LONE STAR AAP	F0023	SP WEAP PLANT	1942
LONE STAR AAP	F0024	SP WEAP PLANT	1942
LONE STAR AAP	F0025	SP WEAP PLANT	1942
LONE STAR AAP	F0026	SP WEAP PLANT	1942
LONE STAR AAP	F0027	SP WEAP PLANT	1942
LONE STAR AAP	F0028	SP WEAP PLANT	1942
LONE STAR AAP	F0029	HEAT PLT BLDG	1942
LONE STAR AAP	F0033	ADMIN GEN PURP	1952
LONE STAR AAP	F0040	SP WEAP PLANT	1942
LONE STAR AAP	F0046	ACCESS CNT FAC	1943
LONE STAR AAP	F0047	ACCESS CNT FAC	1942
LONE STAR AAP	F0053	SP WEAP PLANT	1962
LONE STAR AAP	F0054	ACCESS CNT FAC	1962
LONE STAR AAP	F0056	LD PT 76-120MM	1962
LONE STAR AAP	F0057	AMMO PROD STRUC	1942
LONE STAR AAP	F0058	AMMO PROD STRUC	1942
LONE STAR AAP	F0059	AMMO PROD STRUC	1942
LONE STAR AAP	F0060	SP WEAP PLANT	1962
LONE STAR AAP	F0061	PROTEC BARRIER	1962
LONE STAR AAP	F0062	AMMO PROD STRUC	1942
LONE STAR AAP	F0063	SP WEAP PLANT	1962
LONE STAR AAP	F0064	PROTEC BARRIER	1962
LONE STAR AAP	F0065	AMMO PROD STRUC	1942
LONE STAR AAP	F0066	SP WEAP PLANT	1962
LONE STAR AAP	F0067	PAD	1963
LONE STAR AAP	F0068	FLAM MAT STR IN	1942
LONE STAR AAP	F0070	PROTEC BARRIER	1942
LONE STAR AAP	F0071	AMMO PROD STRUC	1942
LONE STAR AAP	F0072	AMMO PROD STRUC	1942
LONE STAR AAP	F0073	SP WEAP PLANT	1962

LONE STAR AAP	F0074	AMMO PROD STRUC	1942
LONE STAR AAP	F0075	LD PT 76-120MM	1963
LONE STAR AAP	F0076	PROTEC BARRIER	1942
LONE STAR AAP	F0078	PROTEC BARRIER	1942
LONE STAR AAP	F0079	PROTEC BARRIER	1942
LONE STAR AAP	F0080	SP WEAP PLANT	1963
LONE STAR AAP	F0081	LD PT 76-120MM	1963
LONE STAR AAP	F0082	PROTEC BARRIER	1951
LONE STAR AAP	F0083	PROTEC BARRIER	1951
LONE STAR AAP	F0084	AMMO PROD STRUC	1942
LONE STAR AAP	F0085	AMMO PROD STRUC	1942
LONE STAR AAP	F0086	AMMO PROD STRUC	1942
LONE STAR AAP	F0087	SCALE HOUSE	1942
LONE STAR AAP	F0090	COMPRESS AIR PT	1972
LONE STAR AAP	FEA01	FENCING/WALLS	1942
LONE STAR AAP	G0001	MTL PARTS LD PT	1942
LONE STAR AAP	G0002	MTL PARTS LD PT	1942
LONE STAR AAP	G0003	MTL PARTS LD PT	1942
LONE STAR AAP	G0004	PYRO PRODUCTION	1942
LONE STAR AAP	G0005	PYRO PRODUCTION	1942
LONE STAR AAP	G0006	PYRO PRODUCTION	1942
LONE STAR AAP	G0007	PYRO PRODUCTION	1942
LONE STAR AAP	G0009	PYRO PRODUCTION	1942
LONE STAR AAP	G0010	PYRO PRODUCTION	1942
LONE STAR AAP	G0011	PYRO PRODUCTION	1942
LONE STAR AAP	G0012	PYRO PRODUCTION	1942
LONE STAR AAP	G0013	PYRO PRODUCTION	1942
LONE STAR AAP	G0014	PYRO PRODUCTION	1942
LONE STAR AAP	G0015	MTL PARTS LD PT	1942
LONE STAR AAP	G0016	MTL PARTS LD PT	1942
LONE STAR AAP	G0017	MTL PARTS LD PT	1942
LONE STAR AAP	G0018	MTL PARTS LD PT	1942
LONE STAR AAP	G0019	MTL PARTS LD PT	1942
LONE STAR AAP	G0020	EMP CHG FAC	1942
LONE STAR AAP	G0023	LD PT 76-120MM	1942
LONE STAR AAP	G0024	MTL PARTS LD PT	1942
LONE STAR AAP	G0025	MTL PARTS LD PT	1942
LONE STAR AAP	G0026	MTL PARTS LD PT	1942
LONE STAR AAP	G0027	MTL PARTS LD PT	1942
LONE STAR AAP	G0028	MTL PARTS LD PT	1942
LONE STAR AAP	G0029	HEAT PLT BLDG	1942
LONE STAR AAP	G0030	PYRO PRODUCTION	1942
LONE STAR AAP	G0031	PYRO PRODUCTION	1942
LONE STAR AAP	G0032	PYRO PRODUCTION	1942
LONE STAR AAP	G0033	AC MAINT HGR	1942
LONE STAR AAP	G0034	PYRO PRODUCTION	1942
LONE STAR AAP	G0035	MTL PARTS LD PT	1942
LONE STAR AAP	G0036	MNT GEN PURPOSE	1943
LONE STAR AAP	G0037	FUEL/POL BLDG	1943
LONE STAR AAP	G0038	FUEL/POL BLDG	1943
LONE STAR AAP	G0050	AMMO PROD STRUC	1942
LONE STAR AAP	G0054	ACCESS CNT FAC	1943
LONE STAR AAP	G0055	ACCESS CNT FAC	1942
LONE STAR AAP	G0058	MTL PARTS LD PT	1942
LONE STAR AAP	G0062	MNT GEN PURPOSE	1953
LONE STAR AAP	G0063	MTL PARTS LD PT	1955
LONE STAR AAP	G0065	MTL PARTS LD PT	1955
LONE STAR AAP	G0069	MNT GEN PURPOSE	1968
LONE STAR AAP	G0070	AMMO PROD STRUC	1942
LONE STAR AAP	G0071	AMMO PROD STRUC	1942
LONE STAR AAP	G0072	AMMO PROD STRUC	1966
LONE STAR AAP	G0076	PYRO PRODUCTION	1963
LONE STAR AAP	G0077	PYRO PRODUCTION	1963
LONE STAR AAP	G0078	MTL PARTS LD PT	1953

LONE STAR AAP	G0079	MTL PARTS LD PT	1963
LONE STAR AAP	G0081	PROTEC BARRIER	1942
LONE STAR AAP	G0082	PROTEC BARRIER	1942
LONE STAR AAP	G0083	AMMO PROD STRUC	1942
LONE STAR AAP	G0084	MTL PARTS LD PT	1963
LONE STAR AAP	G0085	AMMO PROD STRUC	1942
LONE STAR AAP	G0086	PROTEC BARRIER	1942
LONE STAR AAP	G0088	PROTEC BARRIER	1942
LONE STAR AAP	G0089	PROTEC BARRIER	1942
LONE STAR AAP	G0090	PROTEC BARRIER	1945
LONE STAR AAP	G0091	AMMO PROD STRUC	1942
LONE STAR AAP	G0093	AMMO PROD STRUC	1953
LONE STAR AAP	G0094	MTL PARTS LD PT	1953
LONE STAR AAP	G0096	AMMO PROD STRUC	1942
LONE STAR AAP	G0097	MTL PARTS LD PT	1953
LONE STAR AAP	G0098	LD/UNLD DOC/RMP	1942
LONE STAR AAP	G0099	LD/UNLD DOC/RMP	1942
LONE STAR AAP	G0100	LD/UNLD DOC/RMP	1942
LONE STAR AAP	G0102	PROTEC BARRIER	1951
LONE STAR AAP	G0103	PROTEC BARRIER	1951
LONE STAR AAP	G0108	MTL PARTS LD PT	1963
LONE STAR AAP	G0109	ENG/HOUSING MNT	1963
LONE STAR AAP	G0110	OPEN STR DEPOT	1967
LONE STAR AAP	G0111	OPEN STR DEPOT	1967
LONE STAR AAP	G0112	OPEN STR DEPOT	1967
LONE STAR AAP	G0113	PROTEC BARRIER	1942
LONE STAR AAP	G0114	ENG/HOUSING MNT	1963
LONE STAR AAP	G0115	PROTEC BARRIER	1954
LONE STAR AAP	G0116	MTL PARTS LD PT	1965
LONE STAR AAP	G0117	AMMO PROD STRUC	1954
LONE STAR AAP	G0118	PYRO PRODUCTION	1963
LONE STAR AAP	G0120	PYRO PRODUCTION	1965
LONE STAR AAP	G0121	STORAGE GP INST	1971
LONE STAR AAP	G0123	COMPRESS AIR PT	1967
LONE STAR AAP	G0127	STR SHED GP INS	1967
LONE STAR AAP	G0130	SEW/WST WTR TRT	1967
LONE STAR AAP	G0131	LD/UNLD DOC/RMP	1968
LONE STAR AAP	G0132	AMMO PROD STRUC	1968
LONE STAR AAP	G0135	PROTEC BARRIER	1971
LONE STAR AAP	G0136	PROTEC BARRIER	1971
LONE STAR AAP	G0137	COMPRESS AIR PT	1972
LONE STAR AAP	G0140	AMMO PROD STRUC	1974
LONE STAR AAP	H0001	STORAGE GP INST	1942
LONE STAR AAP	H0002	STORAGE GP INST	1942
LONE STAR AAP	H0003	STORAGE GP INST	1942
LONE STAR AAP	H0004	STORAGE GP INST	1942
LONE STAR AAP	H0005	STORAGE GP INST	1942
LONE STAR AAP	H0006	STORAGE GP INST	1942
LONE STAR AAP	H0007	STORAGE GP INST	1942
LONE STAR AAP	H0008	QA/CAL GEN PURP	1942
LONE STAR AAP	I0004	COMMO CTR	1974
LONE STAR AAP	I0005	ADMIN GEN PURP	1942
LONE STAR AAP	I0006	RECREATION CTR	1942
LONE STAR AAP	I0009	ADMIN GEN PURP	1942
LONE STAR AAP	I0011	BATTERY SHOP	1942
LONE STAR AAP	I0013	CHEMISTRY LAB	1942
LONE STAR AAP	I0014	AMMO QA/CAL PRO	1942
LONE STAR AAP	I0015	AMMO QA/CAL PRO	1942
LONE STAR AAP	I0016	AMMO QA/CAL PRO	1942
LONE STAR AAP	I0017	AMMO QA/CAL PRO	1942
LONE STAR AAP	I0029	VEH MAINT SHOP	1952
LONE STAR AAP	I0030	MNT GEN PURPOSE	1953
LONE STAR AAP	I0032	STORAGE GP INST	1952
LONE STAR AAP	I0034	FLAGPOLE	1951

LONE STAR AAP	I0036	FAC INFO SIGN	1952
LONE STAR AAP	I0037	VEH MAINT SHOP	1962
LONE STAR AAP	I0038	COM ITM REP DOL	1963
LONE STAR AAP	I0039	COM ITM REP DOL	1968
LONE STAR AAP	I0049	STR SHED GP INS	1953
LONE STAR AAP	I0050	FLAM MAT STR IN	1953
LONE STAR AAP	I0051	FLAM MAT STR IN	1953
LONE STAR AAP	I0052	FLAM MAT STR IN	1953
LONE STAR AAP	I0054	COMPRESS AIR PT	1962
LONE STAR AAP	I0056	ENG/HOUSING MNT	1966
LONE STAR AAP	I0057	ACCESS CNT FAC	1969
LONE STAR AAP	I0060	PLT/UTIL BLDG	1969
LONE STAR AAP	I0061	MNT GEN PURPOSE	1971
LONE STAR AAP	I0062	PLT/UTIL BLDG	1971
LONE STAR AAP	I0064	ACCESS CNT FAC	1974
LONE STAR AAP	I0066	FAC INFO SIGN	1965
LONE STAR AAP	I0068	DISPATCH BLDG	1974
LONE STAR AAP	I0069	STORAGE GP INST	1944
LONE STAR AAP	J0001	MTL PARTS LD PT	1942
LONE STAR AAP	J0002	MTL PARTS LD PT	1942
LONE STAR AAP	J0003	MTL PARTS LD PT	1942
LONE STAR AAP	J0004	MTL PARTS LD PT	1942
LONE STAR AAP	J0005	LD PT 76-120MM	1942
LONE STAR AAP	J0006	MTL PARTS LD PT	1942
LONE STAR AAP	J0007	MTL PARTS LD PT	1942
LONE STAR AAP	J0008	EMP CHG FAC	1942
LONE STAR AAP	J0012	ACCESS CNT FAC	1943
LONE STAR AAP	J0013	ACCESS CNT FAC	1942
LONE STAR AAP	J0016	COMPRESS AIR PT	1972
LONE STAR AAP	J0017	MTL PARTS LD PT	1962
LONE STAR AAP	J0018	LD PT 76-120MM	1962
LONE STAR AAP	J0020	LD PT 76-120MM	1963
LONE STAR AAP	J0021	STORAGE GP INST	1971
LONE STAR AAP	J0022	PROTEC BARRIER	1971
LONE STAR AAP	K0001	MTL PARTS LD PT	1942
LONE STAR AAP	K0002	MTL PARTS LD PT	1942
LONE STAR AAP	K0003	MTL PARTS LD PT	1942
LONE STAR AAP	K0004	MTL PARTS LD PT	1942
LONE STAR AAP	K0005	MTL PARTS LD PT	1942
LONE STAR AAP	K0006	MTL PARTS LD PT	1942
LONE STAR AAP	K0007	MTL PARTS LD PT	1942
LONE STAR AAP	K0008	MTL PARTS LD PT	1942
LONE STAR AAP	K0009	MTL PARTS LD PT	1942
LONE STAR AAP	K0010	MTL PARTS LD PT	1942
LONE STAR AAP	K0011	MTL PARTS LD PT	1942
LONE STAR AAP	K0012	MTL PARTS LD PT	1942
LONE STAR AAP	K0013	MTL PARTS LD PT	1942
LONE STAR AAP	K0014	MTL PARTS LD PT	1942
LONE STAR AAP	K0015	AMMO QA/CAL PRO	1942
LONE STAR AAP	K0016	AMMO QA/CAL PRO	1942
LONE STAR AAP	K0017	AMMO QA/CAL PRO	1942
LONE STAR AAP	K0018	MTL PARTS LD PT	1942
LONE STAR AAP	K0019	EMP CHG FAC	1942
LONE STAR AAP	K0020	HEAT PLT BLDG	1942
LONE STAR AAP	K0021	LAUNDRY/DRY CLN	1942
LONE STAR AAP	K0022	MTL PARTS LD PT	1942
LONE STAR AAP	K0023	ACCESS CNT FAC	1943
LONE STAR AAP	K0024	ACCESS CNT FAC	1942
LONE STAR AAP	K0028	MTL PARTS LD PT	1960
LONE STAR AAP	K0029	MTL PARTS LD PT	1960
LONE STAR AAP	K0030	MTL PARTS LD PT	1960
LONE STAR AAP	K0031	MTL PARTS LD PT	1960
LONE STAR AAP	K0032	MTL PARTS LD PT	1960
LONE STAR AAP	K0036	AMMO PROD STRUC	1942

LONE STAR AAP	K0037	PRIMARY TREAT	1942
LONE STAR AAP	K0038	PRIMARY TREAT	1942
LONE STAR AAP	K0039	STORAGE GP INST	1971
LONE STAR AAP	K0040	STORAGE GP INST	1971
LONE STAR AAP	K0041	PROTEC BARRIER	1971
LONE STAR AAP	K0042	PROTEC BARRIER	1971
LONE STAR AAP	K0043	COMPRESS AIR PT	1972
LONE STAR AAP	LDA01	LAND HELD PUR	1942
LONE STAR AAP	M0001	LD PT 76-120MM	1942
LONE STAR AAP	M0002	MTL PARTS LD PT	1942
LONE STAR AAP	M0003	MTL PARTS LD PT	1942
LONE STAR AAP	M0004	MTL PARTS LD PT	1942
LONE STAR AAP	M0005	MTL PARTS LD PT	1942
LONE STAR AAP	M0006	MTL PARTS LD PT	1942
LONE STAR AAP	M0007	MTL PARTS LD PT	1942
LONE STAR AAP	M0008	EMP CHG FAC	1942
LONE STAR AAP	M0014	ACCESS CNT FAC	1943
LONE STAR AAP	M0015	ACCESS CNT FAC	1942
LONE STAR AAP	M0017	FAC INFO SIGN	1952
LONE STAR AAP	M0018	ACCESS CNT FAC	1962
LONE STAR AAP	M0019	LD PT 76-120MM	1963
LONE STAR AAP	M0021	LD PT 76-120MM	1963
LONE STAR AAP	M0022	LD PT 76-120MM	1962
LONE STAR AAP	M0024	STORAGE GP INST	1971
LONE STAR AAP	M0026	PROTEC BARRIER	1971
LONE STAR AAP	M0027	COMPRESS AIR PT	1972
LONE STAR AAP	O0001	MTL PARTS LD PT	1942
LONE STAR AAP	O0002	LD PT 76-120MM	1942
LONE STAR AAP	O0003	MTL PARTS LD PT	1942
LONE STAR AAP	O0004	MTL PARTS LD PT	1942
LONE STAR AAP	O0005	LD PT 76-120MM	1942
LONE STAR AAP	O0006	MTL PARTS LD PT	1942
LONE STAR AAP	O0007	MTL PARTS LD PT	1942
LONE STAR AAP	O0008	MTL PARTS LD PT	1942
LONE STAR AAP	O0009	EMP CHG FAC	1972
LONE STAR AAP	O0010	LD PT 76-120MM	1942
LONE STAR AAP	O0011	MTL PARTS LD PT	1942
LONE STAR AAP	O0013	AMMO PROD STRUC	1942
LONE STAR AAP	O0015	ACCESS CNT FAC	1943
LONE STAR AAP	O0016	ACCESS CNT FAC	1942
LONE STAR AAP	O0019	PROTEC BARRIER	1942
LONE STAR AAP	O0025	PROTEC BARRIER	1942
LONE STAR AAP	O0026	AMMO PROD STRUC	1942
LONE STAR AAP	O0027	MTL PARTS LD PT	1962
LONE STAR AAP	O0028	MTL PARTS LD PT	1952
LONE STAR AAP	O0029	MTL PARTS LD PT	1952
LONE STAR AAP	O0030	MTL PARTS LD PT	1962
LONE STAR AAP	O0031	AMMO PROD STRUC	1962
LONE STAR AAP	O0032	MTL PARTS LD PT	1962
LONE STAR AAP	O0035	AMMO PROD STRUC	1962
LONE STAR AAP	O0039	AMMO PROD STRUC	1962
LONE STAR AAP	O0041	STORAGE GP INST	1971
LONE STAR AAP	O0042	AMMO PROD STRUC	1969
LONE STAR AAP	O0043	LD PT 76-120MM	1970
LONE STAR AAP	O0044	PROTEC BARRIER	1971
LONE STAR AAP	O0045	PROTEC BARRIER	1971
LONE STAR AAP	O0046	COMPRESS AIR PT	1972
LONE STAR AAP	P0001	MTL PARTS LD PT	1942
LONE STAR AAP	P0002	LD PT 76-120MM	1942
LONE STAR AAP	P0003	MTL PARTS LD PT	1942
LONE STAR AAP	P0004	LD PT 76-120MM	1942
LONE STAR AAP	P0005	MTL PARTS LD PT	1942
LONE STAR AAP	P0006	MTL PARTS LD PT	1942
LONE STAR AAP	P0007	MTL PARTS LD PT	1942

LONE STAR AAP	P0008	MTL PARTS LD PT	1942
LONE STAR AAP	P0009	MTL PARTS LD PT	1942
LONE STAR AAP	P0010	LD PT 76-120MM	1942
LONE STAR AAP	P0011	MTL PARTS LD PT	1942
LONE STAR AAP	P0012	MTL PARTS LD PT	1942
LONE STAR AAP	P0013	LD PT 76-120MM	1942
LONE STAR AAP	P0014	MTL PARTS LD PT	1942
LONE STAR AAP	P0015	MTL PARTS LD PT	1942
LONE STAR AAP	P0016	MTL PARTS LD PT	1942
LONE STAR AAP	P0017	MTL PARTS LD PT	1942
LONE STAR AAP	P0018	MTL PARTS LD PT	1942
LONE STAR AAP	P0019	MTL PARTS LD PT	1942
LONE STAR AAP	P0020	MTL PARTS LD PT	1942
LONE STAR AAP	P0021	MTL PARTS LD PT	1942
LONE STAR AAP	P0022	MTL PARTS LD PT	1942
LONE STAR AAP	P0023	MTL PARTS LD PT	1942
LONE STAR AAP	P0024	AMMO PROD STRUC	1942
LONE STAR AAP	P0025	MTL PARTS LD PT	1942
LONE STAR AAP	P0026	MTL PARTS LD PT	1942
LONE STAR AAP	P0027	MTL PARTS LD PT	1942
LONE STAR AAP	P0028	MTL PARTS LD PT	1942
LONE STAR AAP	P0029	MTL PARTS LD PT	1942
LONE STAR AAP	P0030	MTL PARTS LD PT	1942
LONE STAR AAP	P0031	MTL PARTS LD PT	1942
LONE STAR AAP	P0032	LD PT 76-120MM	1942
LONE STAR AAP	P0033	MTL PARTS LD PT	1942
LONE STAR AAP	P0034	EMP CHG FAC	1942
LONE STAR AAP	P0035	MTL PARTS LD PT	1942
LONE STAR AAP	P0036	LD PT 76-120MM	1942
LONE STAR AAP	P0037	MTL PARTS LD PT	1942
LONE STAR AAP	P0041	ACCESS CNT FAC	1943
LONE STAR AAP	P0042	ACCESS CNT FAC	1942
LONE STAR AAP	P0046	MTL PARTS LD PT	1942
LONE STAR AAP	P0047	MTL PARTS LD PT	1964
LONE STAR AAP	P0048	MTL PARTS LD PT	1966
LONE STAR AAP	P0049	AMMO PROD STRUC	1942
LONE STAR AAP	P0050	AMMO PROD STRUC	1942
LONE STAR AAP	P0051	AMMO PROD STRUC	1942
LONE STAR AAP	P0052	PROTEC BARRIER	1942
LONE STAR AAP	P0053	AMMO PROD STRUC	1942
LONE STAR AAP	P0055	LD PT 76-120MM	1962
LONE STAR AAP	P0057	AMMO PROD STRUC	1942
LONE STAR AAP	P0058	AMMO PROD STRUC	1942
LONE STAR AAP	P0059	AMMO PROD STRUC	1942
LONE STAR AAP	P0060	AMMO PROD STRUC	1942
LONE STAR AAP	P0061	PROTEC BARRIER	1942
LONE STAR AAP	P0062	AMMO PROD STRUC	1942
LONE STAR AAP	P0063	MTL PARTS LD PT	1963
LONE STAR AAP	P0064	LD PT 76-120MM	1963
LONE STAR AAP	P0066	LD PT 76-120MM	1963
LONE STAR AAP	P0069	STORAGE GP INST	1971
LONE STAR AAP	P0070	STORAGE GP INST	1971
LONE STAR AAP	P0071	MTL PARTS LD PT	1966
LONE STAR AAP	P0072	MTL PARTS LD PT	1969
LONE STAR AAP	P0073	MTL PARTS LD PT	1969
LONE STAR AAP	P0074	AMMO PROD STRUC	1969
LONE STAR AAP	P0075	COMPRESS AIR PT	1972
LONE STAR AAP	P0079	WAT STR TK POT	1942
LONE STAR AAP	Q0022	MTL PARTS LD PT	1942
LONE STAR AAP	Q0034	EMP CHG FAC	1942
LONE STAR AAP	Q0036	HEAT PLT BLDG	1942
LONE STAR AAP	Q0043	ACCESS CNT FAC	1943
LONE STAR AAP	Q0044	ACCESS CNT FAC	1942
LONE STAR AAP	Q0046	MTL PARTS LD PT	1942

LONE STAR AAP	Q0049	COMPRESS AIR PT	1957
LONE STAR AAP	Q0050	MTL PARTS LD PT	1965
LONE STAR AAP	Q0057	AMMO PROD STRUC	1942
LONE STAR AAP	Q0059	AMMO PROD STRUC	1942
LONE STAR AAP	Q0060	AMMO PROD STRUC	1942
LONE STAR AAP	Q0061	AMMO PROD STRUC	1942
LONE STAR AAP	Q0066	AMMO PROD STRUC	1942
LONE STAR AAP	Q0077	AMMO PROD STRUC	1942
LONE STAR AAP	Q0078	AMMO PROD STRUC	1942
LONE STAR AAP	Q0079	AMMO PROD STRUC	1942
LONE STAR AAP	Q0080	MTL PARTS LD PT	1957
LONE STAR AAP	Q0081	AMMO PROD STRUC	1942
LONE STAR AAP	Q0082	AMMO PROD STRUC	1942
LONE STAR AAP	Q0083	AMMO PROD STRUC	1942
LONE STAR AAP	Q0084	AMMO PROD STRUC	1942
LONE STAR AAP	Q0085	AMMO PROD STRUC	1942
LONE STAR AAP	Q0086	MTL PARTS LD PT	1965
LONE STAR AAP	Q0087	STORAGE GP INST	1971
LONE STAR AAP	Q0088	STORAGE GP INST	1971
LONE STAR AAP	Q0091	COMPRESS AIR PT	1972
LONE STAR AAP	R0001	MTL PARTS LD PT	1942
LONE STAR AAP	R0003	MTL PARTS LD PT	1942
LONE STAR AAP	R0004	MTL PARTS LD PT	1942
LONE STAR AAP	R0005	MTL PARTS LD PT	1942
LONE STAR AAP	R0006	MTL PARTS LD PT	1942
LONE STAR AAP	R0008	MTL PARTS LD PT	1942
LONE STAR AAP	R0009	MTL PARTS LD PT	1942
LONE STAR AAP	R0010	MTL PARTS LD PT	1942
LONE STAR AAP	R0011	MTL PARTS LD PT	1942
LONE STAR AAP	R0012	MTL PARTS LD PT	1942
LONE STAR AAP	R0013	EMP CHG FAC	1942
LONE STAR AAP	R0014	MTL PARTS LD PT	1942
LONE STAR AAP	R0017	ACCESS CNT FAC	1943
LONE STAR AAP	R0018	ACCESS CNT FAC	1942
LONE STAR AAP	R0021	MTL PARTS LD PT	1963
LONE STAR AAP	R0023	MTL PARTS LD PT	1963
LONE STAR AAP	R0024	MTL PARTS LD PT	1963
LONE STAR AAP	R0025	MTL PARTS LD PT	1942
LONE STAR AAP	R0027	MTL PARTS LD PT	1963
LONE STAR AAP	R0028	MTL PARTS LD PT	1962
LONE STAR AAP	R0030	STORAGE GP INST	1971
LONE STAR AAP	R0031	COMPRESS AIR PT	1971
LONE STAR AAP	R0032	LD PT 76-120MM	1973
LONE STAR AAP	R0033	PLT/UTIL BLDG	1973
LONE STAR AAP	R0034	HEAT PLT BLDG	1973
LONE STAR AAP	R0035	LD PT 76-120MM	1973
LONE STAR AAP	R0036	HE MAG INST	1973
LONE STAR AAP	R0037	PLT/UTIL BLDG	1973
LONE STAR AAP	R0038	LD PT 76-120MM	1973
LONE STAR AAP	R0039	PLT/UTIL BLDG	1973
LONE STAR AAP	R0040	LD PT 76-120MM	1973
LONE STAR AAP	R0041	AMMO PROD STRUC	1973
LONE STAR AAP	R0042	PLT/UTIL BLDG	1973
LONE STAR AAP	R0043	BLOCK/BAND FAC	1973
LONE STAR AAP	R0044	MTL PARTS LD PT	1973
LONE STAR AAP	RAMPA	AMMO PROD STRUC	1942
LONE STAR AAP	RAMPI	AMMO PROD STRUC	1942
LONE STAR AAP	RPA01	"""ROADS, PAVED """"	1942
LONE STAR AAP	RPI01	"""ROADS, PAVED """"	1942
LONE STAR AAP	RRA01	RAILROAD TRACKS	1942
LONE STAR AAP	RRI01	RAILROAD TRACKS	1942
LONE STAR AAP	RUA01	"""ROADS, PAVED """"	1973
LONE STAR AAP	RUI01	"""ROADS, PAVED """"	1973
LONE STAR AAP	S0001	AMMO QA/CAL PRO	1942

LONE STAR AAP	S0002	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0003	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0004	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0005	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0006	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0007	LD PT 76-120MM	1942
LONE STAR AAP	S0008	LD PT 76-120MM	1942
LONE STAR AAP	S0009	LD PT 76-120MM	1942
LONE STAR AAP	S0010	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0011	EMP CHG FAC	1942
LONE STAR AAP	S0012	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0015	ACCESS CNT FAC	1943
LONE STAR AAP	S0016	ACCESS CNT FAC	1942
LONE STAR AAP	S0017	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0018	LD PT 76-120MM	1942
LONE STAR AAP	T0003	ADMIN GEN PURP	1953
LONE STAR AAP	T0004	LD/UNLD DOC/RMP	1956
LONE STAR AAP	T0006	ACCESS CNT FAC	1943
LONE STAR AAP	T0008	SEP TOIL/SHOWER	1969
LONE STAR AAP	T0101	IGLOO STR INST	1942
LONE STAR AAP	T0102	IGLOO STR INST	1942
LONE STAR AAP	T0103	IGLOO STR INST	1942
LONE STAR AAP	T0104	IGLOO STR INST	1942
LONE STAR AAP	T0105	IGLOO STR INST	1942
LONE STAR AAP	T0106	IGLOO STR INST	1942
LONE STAR AAP	T0107	IGLOO STR INST	1942
LONE STAR AAP	T0201	IGLOO STR INST	1942
LONE STAR AAP	T0202	IGLOO STR INST	1942
LONE STAR AAP	T0204	IGLOO STR INST	1942
LONE STAR AAP	T0205	IGLOO STR INST	1942
LONE STAR AAP	T0206	IGLOO STR INST	1942
LONE STAR AAP	T0207	IGLOO STR INST	1942
LONE STAR AAP	T0208	IGLOO STR INST	1942
LONE STAR AAP	T0301	IGLOO STR INST	1942
LONE STAR AAP	T0302	IGLOO STR INST	1942
LONE STAR AAP	T0303	IGLOO STR INST	1942
LONE STAR AAP	T0304	IGLOO STR INST	1942
LONE STAR AAP	T0305	IGLOO STR INST	1942
LONE STAR AAP	T0306	IGLOO STR INST	1942
LONE STAR AAP	T0401	IGLOO STR INST	1942
LONE STAR AAP	T0402	IGLOO STR INST	1942
LONE STAR AAP	T0403	IGLOO STR INST	1942
LONE STAR AAP	T0404	IGLOO STR INST	1942
LONE STAR AAP	T0405	IGLOO STR INST	1942
LONE STAR AAP	T0406	IGLOO STR INST	1942
LONE STAR AAP	T0407	IGLOO STR INST	1942
LONE STAR AAP	U0004	LD/UNLD DOC/RMP	1951
LONE STAR AAP	U0007	LD/UNLD DOC/RMP	1951
LONE STAR AAP	U0010	LD/UNLD DOC/RMP	1951
LONE STAR AAP	U0013	LD/UNLD DOC/RMP	1951
LONE STAR AAP	U0016	LD/UNLD DOC/RMP	1951
LONE STAR AAP	U0019	LD/UNLD DOC/RMP	1951
LONE STAR AAP	U0022	LD/UNLD DOC/RMP	1951
LONE STAR AAP	U0031	EMP CHG FAC	1942
LONE STAR AAP	U0033	SHIP/RECV FAC	1973
LONE STAR AAP	U0035	PLT/UTIL BLDG	1973
LONE STAR AAP	U0101	FIX AMMO MAG IN	1942
LONE STAR AAP	U0103	FIX AMMO MAG IN	1942
LONE STAR AAP	U0104	FIX AMMO MAG IN	1942
LONE STAR AAP	U0201	FIX AMMO MAG IN	1942
LONE STAR AAP	U0202	FIX AMMO MAG IN	1942
LONE STAR AAP	U0203	STORAGE GP INST	1942
LONE STAR AAP	U0204	FIX AMMO MAG IN	1942
LONE STAR AAP	U0301	FIX AMMO MAG IN	1942

LONE STAR AAP	U0302	FIX AMMO MAG IN	1942
LONE STAR AAP	U0303	FIX AMMO MAG IN	1942
LONE STAR AAP	U0304	FIX AMMO MAG IN	1942
LONE STAR AAP	U0305	FIX AMMO MAG IN	1942
LONE STAR AAP	U0306	FIX AMMO MAG IN	1942
LONE STAR AAP	U0401	FIX AMMO MAG IN	1942
LONE STAR AAP	U0402	FIX AMMO MAG IN	1942
LONE STAR AAP	U0403	FIX AMMO MAG IN	1942
LONE STAR AAP	U0404	FIX AMMO MAG IN	1942
LONE STAR AAP	U0405	FIX AMMO MAG IN	1942
LONE STAR AAP	U0406	FIX AMMO MAG IN	1942
LONE STAR AAP	U0501	FIX AMMO MAG IN	1942
LONE STAR AAP	U0502	FIX AMMO MAG IN	1942
LONE STAR AAP	U0503	FIX AMMO MAG IN	1942
LONE STAR AAP	U0504	FIX AMMO MAG IN	1942
LONE STAR AAP	U0505	FIX AMMO MAG IN	1942
LONE STAR AAP	U0506	FIX AMMO MAG IN	1942
LONE STAR AAP	U0507	FIX AMMO MAG IN	1942
LONE STAR AAP	U0601	FIX AMMO MAG IN	1942
LONE STAR AAP	U0602	FIX AMMO MAG IN	1942
LONE STAR AAP	U0603	FIX AMMO MAG IN	1942
LONE STAR AAP	U0604	FIX AMMO MAG IN	1942
LONE STAR AAP	U0605	FIX AMMO MAG IN	1942
LONE STAR AAP	U0606	FIX AMMO MAG IN	1942
LONE STAR AAP	U0701	FIX AMMO MAG IN	1942
LONE STAR AAP	U0702	FIX AMMO MAG IN	1942
LONE STAR AAP	U0703	FIX AMMO MAG IN	1942
LONE STAR AAP	U0704	FIX AMMO MAG IN	1942
LONE STAR AAP	U0705	FIX AMMO MAG IN	1942
LONE STAR AAP	U0706	FIX AMMO MAG IN	1942
LONE STAR AAP	V0013	LD/UNLD DOC/RMP	1951
LONE STAR AAP	V0014	LD/UNLD DOC/RMP	1951
LONE STAR AAP	V0015	LD/UNLD DOC/RMP	1951
LONE STAR AAP	V0029	EMP CHG FAC	1942
LONE STAR AAP	V0101	IGLOO STR INST	1942
LONE STAR AAP	V0102	IGLOO STR INST	1942
LONE STAR AAP	V0103	IGLOO STR INST	1942
LONE STAR AAP	V0104	IGLOO STR INST	1942
LONE STAR AAP	V0105	IGLOO STR INST	1942
LONE STAR AAP	V0106	IGLOO STR INST	1942
LONE STAR AAP	V0107	IGLOO STR INST	1942
LONE STAR AAP	V0201	IGLOO STR INST	1942
LONE STAR AAP	V0202	IGLOO STR INST	1942
LONE STAR AAP	V0203	IGLOO STR INST	1942
LONE STAR AAP	V0204	IGLOO STR INST	1942
LONE STAR AAP	V0205	IGLOO STR INST	1942
LONE STAR AAP	V0206	IGLOO STR INST	1942
LONE STAR AAP	V0207	IGLOO STR INST	1942
LONE STAR AAP	V0301	IGLOO STR INST	1942
LONE STAR AAP	V0302	IGLOO STR INST	1942
LONE STAR AAP	V0303	IGLOO STR INST	1942
LONE STAR AAP	V0304	IGLOO STR INST	1942
LONE STAR AAP	V0305	IGLOO STR INST	1942
LONE STAR AAP	V0306	IGLOO STR INST	1942
LONE STAR AAP	V0307	IGLOO STR INST	1942
LONE STAR AAP	V0401	IGLOO STR INST	1942
LONE STAR AAP	V0402	IGLOO STR INST	1942
LONE STAR AAP	V0403	IGLOO STR INST	1942
LONE STAR AAP	V0404	IGLOO STR INST	1942
LONE STAR AAP	V0405	IGLOO STR INST	1942
LONE STAR AAP	V0406	IGLOO STR INST	1942
LONE STAR AAP	V0407	IGLOO STR INST	1942
LONE STAR AAP	V0501	IGLOO STR INST	1942
LONE STAR AAP	V0502	IGLOO STR INST	1942

LONE STAR AAP	V0503	IGLOO STR INST	1942
LONE STAR AAP	V0504	IGLOO STR INST	1942
LONE STAR AAP	V0505	IGLOO STR INST	1942
LONE STAR AAP	V0506	IGLOO STR INST	1942
LONE STAR AAP	V0601	IGLOO STR INST	1942
LONE STAR AAP	V0602	IGLOO STR INST	1942
LONE STAR AAP	V0603	IGLOO STR INST	1942
LONE STAR AAP	V0604	IGLOO STR INST	1942
LONE STAR AAP	V0605	IGLOO STR INST	1942
LONE STAR AAP	V0606	IGLOO STR INST	1942
LONE STAR AAP	V0701	IGLOO STR INST	1942
LONE STAR AAP	V0702	IGLOO STR INST	1942
LONE STAR AAP	V0703	IGLOO STR INST	1942
LONE STAR AAP	V0704	IGLOO STR INST	1942
LONE STAR AAP	V0801	IGLOO STR INST	1942
LONE STAR AAP	V0802	IGLOO STR INST	1942
LONE STAR AAP	V0803	IGLOO STR INST	1942
LONE STAR AAP	V0804	IGLOO STR INST	1942
LONE STAR AAP	V0901	IGLOO STR INST	1942
LONE STAR AAP	V0902	IGLOO STR INST	1942
LONE STAR AAP	V1001	IGLOO STR INST	1942
LONE STAR AAP	V1002	IGLOO STR INST	1942
LONE STAR AAP	V1003	IGLOO STR INST	1942
LONE STAR AAP	V1004	IGLOO STR INST	1942
LONE STAR AAP	V1005	IGLOO STR INST	1942
LONE STAR AAP	V1101	IGLOO STR INST	1942
LONE STAR AAP	V1102	IGLOO STR INST	1942
LONE STAR AAP	V1103	IGLOO STR INST	1942
LONE STAR AAP	V1104	IGLOO STR INST	1942
LONE STAR AAP	V1201	IGLOO STR INST	1942
LONE STAR AAP	V1202	IGLOO STR INST	1942
LONE STAR AAP	V1301	IGLOO STR INST	1942
LONE STAR AAP	V1302	IGLOO STR INST	1942
LONE STAR AAP	V1303	IGLOO STR INST	1942
LONE STAR AAP	V1304	IGLOO STR INST	1942
LONE STAR AAP	V1401	IGLOO STR INST	1942
LONE STAR AAP	V1402	IGLOO STR INST	1942
LONE STAR AAP	V1403	IGLOO STR INST	1942
LONE STAR AAP	V1404	IGLOO STR INST	1942
LONE STAR AAP	V1501	IGLOO STR INST	1942
LONE STAR AAP	V1502	IGLOO STR INST	1942
LONE STAR AAP	V1503	IGLOO STR INST	1942
LONE STAR AAP	V1504	IGLOO STR INST	1942
LONE STAR AAP	V1601	IGLOO STR INST	1942
LONE STAR AAP	V1602	IGLOO STR INST	1942
LONE STAR AAP	V1603	IGLOO STR INST	1942
LONE STAR AAP	V1604	IGLOO STR INST	1942
LONE STAR AAP	V1701	IGLOO STR INST	1942
LONE STAR AAP	V1702	IGLOO STR INST	1942
LONE STAR AAP	V1703	IGLOO STR INST	1942
LONE STAR AAP	V1704	IGLOO STR INST	1942
LONE STAR AAP	V1801	IGLOO STR INST	1942
LONE STAR AAP	V1802	IGLOO STR INST	1942
LONE STAR AAP	V1803	IGLOO STR INST	1942
LONE STAR AAP	V1804	IGLOO STR INST	1942
LONE STAR AAP	W0015	LD/UNLD DOC/RMP	1951
LONE STAR AAP	W0018	LD/UNLD DOC/RMP	1951
LONE STAR AAP	W0024	LD/UNLD DOC/RMP	1951
LONE STAR AAP	W0027	LD/UNLD DOC/RMP	1951
LONE STAR AAP	W0033	ACCESS CNT FAC	1962
LONE STAR AAP	W0037	EMP CHG FAC	1942
LONE STAR AAP	W0039	ACCESS CNT FAC	1973
LONE STAR AAP	W1001	IGLOO STR INST	1942
LONE STAR AAP	W1002	IGLOO STR INST	1942

LONE STAR AAP	W1003	IGLOO STR INST	1942
LONE STAR AAP	W1004	IGLOO STR INST	1942
LONE STAR AAP	W1005	IGLOO STR INST	1942
LONE STAR AAP	W1006	IGLOO STR INST	1942
LONE STAR AAP	W1007	IGLOO STR INST	1942
LONE STAR AAP	W1008	IGLOO STR INST	1942
LONE STAR AAP	W1009	IGLOO STR INST	1942
LONE STAR AAP	W1010	IGLOO STR INST	1942
LONE STAR AAP	W1011	IGLOO STR INST	1942
LONE STAR AAP	W2001	IGLOO STR INST	1942
LONE STAR AAP	W2002	IGLOO STR INST	1942
LONE STAR AAP	W2003	IGLOO STR INST	1942
LONE STAR AAP	W2004	IGLOO STR INST	1942
LONE STAR AAP	W2005	IGLOO STR INST	1942
LONE STAR AAP	W2006	IGLOO STR INST	1942
LONE STAR AAP	W2007	IGLOO STR INST	1942
LONE STAR AAP	W2008	IGLOO STR INST	1942
LONE STAR AAP	W2009	IGLOO STR INST	1942
LONE STAR AAP	W2010	IGLOO STR INST	1942
LONE STAR AAP	W2011	IGLOO STR INST	1942
LONE STAR AAP	W2012	IGLOO STR INST	1942
LONE STAR AAP	W2013	IGLOO STR INST	1942
LONE STAR AAP	W2014	IGLOO STR INST	1942
LONE STAR AAP	W3001	IGLOO STR INST	1942
LONE STAR AAP	W3002	IGLOO STR INST	1942
LONE STAR AAP	W3003	IGLOO STR INST	1942
LONE STAR AAP	W3004	IGLOO STR INST	1942
LONE STAR AAP	W3005	IGLOO STR INST	1942
LONE STAR AAP	W3006	IGLOO STR INST	1942
LONE STAR AAP	W3007	IGLOO STR INST	1942
LONE STAR AAP	W3008	IGLOO STR INST	1942
LONE STAR AAP	W3009	IGLOO STR INST	1942
LONE STAR AAP	W3010	IGLOO STR INST	1942
LONE STAR AAP	W3011	IGLOO STR INST	1942
LONE STAR AAP	W3012	IGLOO STR INST	1942
LONE STAR AAP	W3013	IGLOO STR INST	1942
LONE STAR AAP	W3014	IGLOO STR INST	1942
LONE STAR AAP	W4001	IGLOO STR INST	1942
LONE STAR AAP	W4002	IGLOO STR INST	1942
LONE STAR AAP	W4003	IGLOO STR INST	1942
LONE STAR AAP	W4004	IGLOO STR INST	1942
LONE STAR AAP	W4005	IGLOO STR INST	1942
LONE STAR AAP	W4006	IGLOO STR INST	1942
LONE STAR AAP	W4007	IGLOO STR INST	1942
LONE STAR AAP	W4008	IGLOO STR INST	1942
LONE STAR AAP	W4009	IGLOO STR INST	1942
LONE STAR AAP	W5001	IGLOO STR INST	1942
LONE STAR AAP	W5002	IGLOO STR INST	1942
LONE STAR AAP	W5003	IGLOO STR INST	1942
LONE STAR AAP	W5004	IGLOO STR INST	1942
LONE STAR AAP	W5005	IGLOO STR INST	1942
LONE STAR AAP	W5006	IGLOO STR INST	1942
LONE STAR AAP	W5007	IGLOO STR INST	1942
LONE STAR AAP	W6001	IGLOO STR INST	1942
LONE STAR AAP	W6002	IGLOO STR INST	1942
LONE STAR AAP	W6003	IGLOO STR INST	1942
LONE STAR AAP	W6004	IGLOO STR INST	1942
LONE STAR AAP	W6005	IGLOO STR INST	1942
LONE STAR AAP	W6006	IGLOO STR INST	1942
LONE STAR AAP	W6007	IGLOO STR INST	1942
LONE STAR AAP	W6008	IGLOO STR INST	1942
LONE STAR AAP	W7001	IGLOO STR INST	1942
LONE STAR AAP	W7002	IGLOO STR INST	1942
LONE STAR AAP	W7003	IGLOO STR INST	1942

LONE STAR AAP	W7004	IGLOO STR INST	1942
LONE STAR AAP	W7005	IGLOO STR INST	1942
LONE STAR AAP	W7006	IGLOO STR INST	1942
LONE STAR AAP	W7007	IGLOO STR INST	1942
LONE STAR AAP	W7008	IGLOO STR INST	1942
LONE STAR AAP	W7009	IGLOO STR INST	1942
LONE STAR AAP	W7010	IGLOO STR INST	1942
LONE STAR AAP	W7011	IGLOO STR INST	1942
LONE STAR AAP	W7012	IGLOO STR INST	1942
LONE STAR AAP	W7013	IGLOO STR INST	1942
LONE STAR AAP	W7014	IGLOO STR INST	1942
LONE STAR AAP	W8001	IGLOO STR INST	1942
LONE STAR AAP	W8002	IGLOO STR INST	1942
LONE STAR AAP	W8003	IGLOO STR INST	1942
LONE STAR AAP	W8004	IGLOO STR INST	1942
LONE STAR AAP	W8005	IGLOO STR INST	1942
LONE STAR AAP	W8006	IGLOO STR INST	1942
LONE STAR AAP	W8007	IGLOO STR INST	1942
LONE STAR AAP	W8008	IGLOO STR INST	1942
LONE STAR AAP	W8009	IGLOO STR INST	1942
LONE STAR AAP	W8010	IGLOO STR INST	1942
LONE STAR AAP	W8011	IGLOO STR INST	1942
LONE STAR AAP	X0014	PROTEC BARRIER	1942
LONE STAR AAP	X0015	AMMO DEMIL DEP	1942
LONE STAR AAP	X0017	PROTEC BARRIER	1942
LONE STAR AAP	X0035	ACCESS CNT FAC	1962
LONE STAR AAP	X0036	AMMO DEMIL DEP	1962
LONE STAR AAP	X0037	AMMO DEMIL DEP	1962
LONE STAR AAP	X0038	AMMO DEMIL DEP	1962
LONE STAR AAP	X0039	AMMO DEMIL DEP	1962
LONE STAR AAP	X0040	PROTEC BARRIER	1969
LONE STAR AAP	X0041	PROTEC BARRIER	1969
LONE STAR AAP	X0042	PROTEC BARRIER	1969
LONE STAR AAP	X0043	PROTEC BARRIER	1969
LONE STAR AAP	X0044	PROTEC BARRIER	1969
LONE STAR AAP	X0045	AMMO DEMIL DEP	1963
LONE STAR AAP	X0049	AMMO DEMIL DEP	1963
LONE STAR AAP	X0050	AMMO DEMIL DEP	1967
LONE STAR AAP	X0054	EMP CHG FAC	1964
LONE STAR AAP	X0055	AMMO DEMIL DEP	1963
LONE STAR AAP	X0056	PROTEC BARRIER	1942
LONE STAR AAP	X0057	AMMO DEMIL DEP	1967
LONE STAR AAP	X0058	COMPRESS AIR PT	1963
LONE STAR AAP	X0059	AMMO DEMIL DEP	1963
LONE STAR AAP	X0060	PROTEC BARRIER	1942
LONE STAR AAP	X0061	PROTEC BARRIER	1942
LONE STAR AAP	X0062	AMMO DEMIL DEP	1967
LONE STAR AAP	X0065	SEP TOIL/SHOWER	1953
LONE STAR AAP	X0066	PROTEC BARRIER	1942
LONE STAR AAP	X0070	AMMO DEMIL DEP	1967
LONE STAR AAP	X0071	AMMO DEMIL DEP	1967
LONE STAR AAP	X0072	EMP CHG FAC	1967
LONE STAR AAP	X0073	AMMO DEMIL DEP	1967
LONE STAR AAP	X0074	AMMO DEMIL DEP	1967
LONE STAR AAP	X0075	PROTEC BARRIER	1967
LONE STAR AAP	X0076	PROTEC BARRIER	1967
LONE STAR AAP	X0077	AMMO DEMIL DEP	1967
LONE STAR AAP	X0078	AMMO DEMIL DEP	1967
LONE STAR AAP	X0083	ACCESS CNT FAC	1969
LONE STAR AAP	X0085	PROTEC BARRIER	1970
LONE STAR AAP	X0086	ACCESS CNT FAC	1970
LONE STAR AAP	X0087	AMMO DEMIL DEP	1970
LONE STAR AAP	X0088	PROTEC BARRIER	1970
LONE STAR AAP	X0089	PROTEC BARRIER	1973

LONE STAR AAP	Z0002	RESERVOIR POT	1942
LONGHORN AAP	101	ADMIN GEN PURP	1945
LONGHORN AAP	102	EMP CHG FAC	1945
LONGHORN AAP	103	EMP CHG FAC	1945
LONGHORN AAP	201	STORAGE GP INST	1945
LONGHORN AAP	202	STORAGE GP INST	1945
LONGHORN AAP	203	STR SHED GP INS	1953
LONGHORN AAP	204	ENG/HOUSING MNT	1953
LONGHORN AAP	205	FLAM MAT STR IN	1953
LONGHORN AAP	206	GEN ITM REP DOL	1955
LONGHORN AAP	207	ADMIN GEN PURP	1953
LONGHORN AAP	2.60E+02	SEP TOIL/SHOWER	1955
LONGHORN AAP	272	STR SHED GP INS	1945
LONGHORN AAP	401	HEAT PLT BLDG	1942
LONGHORN AAP	402	PYRO PRODUCTION	1945
LONGHORN AAP	403	PYRO PRODUCTION	1945
LONGHORN AAP	404	SEP TOIL/SHOWER	1945
LONGHORN AAP	405	SEP TOIL/SHOWER	1945
LONGHORN AAP	406	PYRO PRODUCTION	1954
LONGHORN AAP	407	PYRO PRODUCTION	1954
LONGHORN AAP	408	PYRO PRODUCTION	1954
LONGHORN AAP	409	PYRO PRODUCTION	1955
LONGHORN AAP	410	PYRO PRODUCTION	1945
LONGHORN AAP	414	WTR SUP BLD NP	1942
LONGHORN AAP	451	COMPRESS AIR PT	1942
LONGHORN AAP	701	STORAGE GP INST	1942
LONGHORN AAP	702	ADMIN GEN PURP	1942
LONGHORN AAP	703	ADMIN GEN PURP	1942
LONGHORN AAP	705	ADMIN GEN PURP	1942
LONGHORN AAP	707	ADMIN GEN PURP	1945
LONGHORN AAP	712	FLAGPOLE	1942
LONGHORN AAP	713	STORAGE GP INST	1942
LONGHORN AAP	714	STORAGE GP INST	1942
LONGHORN AAP	715	FLAM MAT STR IN	1942
LONGHORN AAP	716	VEH MAINT SHOP	1942
LONGHORN AAP	717	MNT GEN PURPOSE	1942
LONGHORN AAP	719	HEALTH CLINIC	1942
LONGHORN AAP	723	LAUNDRY/DRY CLN	1945
LONGHORN AAP	726	STR SHED GP INS	1942
LONGHORN AAP	730	VEH STR SHED IN	1942
LONGHORN AAP	734	STR SHED GP INS	1942
LONGHORN AAP	744	FUEL/POL BLDG	1943
LONGHORN AAP	813	PYRO PRODUCTION	1968
LONGHORN AAP	814	PYRO PRODUCTION	1942
LONGHORN AAP	815	COMPRESS AIR PT	1968
LONGHORN AAP	1300	EXT LIGHTING	1942
LONGHORN AAP	1500	WATER DIST NP	1942
LONGHORN AAP	1520	FIR PROT SYS NP	1942
LONGHORN AAP	1530	WATER DIST POT	1942
LONGHORN AAP	1540	WATER DIST NP	1955
LONGHORN AAP	1600	OH ELECT LINES	1942
LONGHORN AAP	1700	FENCING/WALLS	1942
LONGHORN AAP	1800	FIRE ALARM SYS	1942
LONGHORN AAP	1850	WATCH REPORT SY	1971
LONGHORN AAP	1900	STORM SEWER	1954
LONGHORN AAP	2101	PROTEC BARRIER	1965
LONGHORN AAP	2126	PYRO PRODUCTION	1945
LONGHORN AAP	2140	OPEN STR INST	1971
LONGHORN AAP	2150	RETAIN STRUCTUR	1971
LONGHORN AAP	2300	SANITARY SEWER	1942
LONGHORN AAP	2350	SEP TK/DRN FLD	1959
LONGHORN AAP	2351	SEP TK/DRN FLD	1955
LONGHORN AAP	2352	SEP TK/DRN FLD	1955
LONGHORN AAP	2353	SEP TK/DRN FLD	1954

LONGHORN AAP	2354	SEP TK/DRN FLD	1955
LONGHORN AAP	2355	SEP TK/DRN FLD	1954
LONGHORN AAP	2356	SEP TK/DRN FLD	1954
LONGHORN AAP	2357	SEP TK/DRN FLD	1955
LONGHORN AAP	2358	SEP TK/DRN FLD	1945
LONGHORN AAP	2359	SEP TK/DRN FLD	1953
LONGHORN AAP	2360	SEP TK/DRN FLD	1954
LONGHORN AAP	2361	SEP TK/DRN FLD	1955
LONGHORN AAP	2362	SEP TK/DRN FLD	1958
LONGHORN AAP	2363	SEP TK/DRN FLD	1958
LONGHORN AAP	2367	SEP TK/DRN FLD	1955
LONGHORN AAP	2500	COMMO LINES UNG	1942
LONGHORN AAP	19001	IND WASTE TREAT	1954
LONGHORN AAP	19003	STORM SEWER	1954
LONGHORN AAP	21001	"""ROADS, PAVED """"	1942
LONGHORN AAP	21002	"""ROADS, PAVED """"	1942
LONGHORN AAP	21003	"""ROADS, PAVED """"	1942
LONGHORN AAP	21004	"""ROADS, UNPAVED """"	1942
LONGHORN AAP	21101	BREAK/LUNCH RM	1945
LONGHORN AAP	21102	BREAK/LUNCH RM	1945
LONGHORN AAP	21201	PYRO PRODUCTION	1945
LONGHORN AAP	21202	PYRO PRODUCTION	1945
LONGHORN AAP	21203	PYRO PRODUCTION	1945
LONGHORN AAP	21204	PYRO PRODUCTION	1945
LONGHORN AAP	21205	PYRO PRODUCTION	1945
LONGHORN AAP	21206	OPEN STR INST	1960
LONGHORN AAP	21207	PYRO PRODUCTION	1945
LONGHORN AAP	21208	PYRO PRODUCTION	1945
LONGHORN AAP	21209	PYRO PRODUCTION	1945
LONGHORN AAP	21210	PYRO PRODUCTION	1945
LONGHORN AAP	21211	PYRO PRODUCTION	1945
LONGHORN AAP	21212	PYRO PRODUCTION	1945
LONGHORN AAP	21213	PYRO PRODUCTION	1945
LONGHORN AAP	21214	PYRO PRODUCTION	1945
LONGHORN AAP	21215	PYRO PRODUCTION	1945
LONGHORN AAP	21216	PYRO PRODUCTION	1945
LONGHORN AAP	21217	PYRO PRODUCTION	1945
LONGHORN AAP	21218	PYRO PRODUCTION	1945
LONGHORN AAP	21219	PYRO PRODUCTION	1945
LONGHORN AAP	21220	PYRO PRODUCTION	1945
LONGHORN AAP	21221	PYRO PRODUCTION	1945
LONGHORN AAP	21223	PYRO PRODUCTION	1945
LONGHORN AAP	21225	PYRO PRODUCTION	1945
LONGHORN AAP	21227	PYRO PRODUCTION	1945
LONGHORN AAP	21229	PYRO PRODUCTION	1945
LONGHORN AAP	21231	PYRO PRODUCTION	1945
LONGHORN AAP	21232	PYRO PRODUCTION	1945
LONGHORN AAP	21233	PYRO PRODUCTION	1945
LONGHORN AAP	21234	PYRO PRODUCTION	1945
LONGHORN AAP	21235	PYRO PRODUCTION	1945
LONGHORN AAP	21236	PYRO PRODUCTION	1945
LONGHORN AAP	21237	PYRO PRODUCTION	1945
LONGHORN AAP	21238	PYRO PRODUCTION	1945
LONGHORN AAP	21239	PYRO PRODUCTION	1945
LONGHORN AAP	21240	PYRO PRODUCTION	1945
LONGHORN AAP	21242	PYRO PRODUCTION	1945
LONGHORN AAP	21244	PYRO PRODUCTION	1945
LONGHORN AAP	21246	PYRO PRODUCTION	1945
LONGHORN AAP	21248	PYRO PRODUCTION	1945
LONGHORN AAP	21250	PYRO PRODUCTION	1945
LONGHORN AAP	21251	PYRO PRODUCTION	1945
LONGHORN AAP	21252	PYRO PRODUCTION	1945
LONGHORN AAP	21253	PYRO PRODUCTION	1945
LONGHORN AAP	21254	PYRO PRODUCTION	1945

LONGHORN AAP	21255	PYRO PRODUCTION	1945
LONGHORN AAP	21256	PYRO PRODUCTION	1945
LONGHORN AAP	21257	PYRO PRODUCTION	1945
LONGHORN AAP	21259	PYRO PRODUCTION	1945
LONGHORN AAP	21301	SIDEWALKS PVD	1942
LONGHORN AAP	21302	SIDEWALKS PVD	1942
LONGHORN AAP	21304	SIDEWALKS PVD	1942
LONGHORN AAP	21305	SIDEWALKS PVD	1954
LONGHORN AAP	22001	PROTEC BARRIER	1955
LONGHORN AAP	22002	PROTEC BARRIER	1955
LONGHORN AAP	22003	PROTEC BARRIER	1955
LONGHORN AAP	22141	STR SHED GP INS	1968
LONGHORN AAP	24001	PROTEC BARRIER	1960
LONGHORN AAP	24002	PROTEC BARRIER	1961
LONGHORN AAP	24004	PROTEC BARRIER	1960
LONGHORN AAP	25004	PROTEC BARRIER	1945
LONGHORN AAP	25005	PROTEC BARRIER	1945
LONGHORN AAP	25006	PROTEC BARRIER	1945
LONGHORN AAP	26005	PROTEC BARRIER	1955
LONGHORN AAP	26006	PROTEC BARRIER	1955
LONGHORN AAP	29001	PROTEC BARRIER	1945
LONGHORN AAP	31001	PROTEC BARRIER	1945
LONGHORN AAP	31004	PROTEC BARRIER	1945
LONGHORN AAP	31005	PROTEC BARRIER	1945
LONGHORN AAP	31006	PROTEC BARRIER	1945
LONGHORN AAP	40001	PROTEC BARRIER	1963
LONGHORN AAP	40002	PROTEC BARRIER	1963
LONGHORN AAP	40004	PROTEC BARRIER	1963
LONGHORN AAP	50001	PROTEC BARRIER	1954
LONGHORN AAP	50002	PROTEC BARRIER	1954
LONGHORN AAP	50003	PROTEC BARRIER	1954
LONGHORN AAP	81101	HE MAG INST	1942
LONGHORN AAP	81102	HE MAG INST	1942
LONGHORN AAP	81103	HE MAG INST	1942
LONGHORN AAP	81104	HE MAG INST	1942
LONGHORN AAP	81105	HE MAG INST	1942
LONGHORN AAP	81106	HE MAG INST	1942
LONGHORN AAP	81107	HE MAG INST	1942
LONGHORN AAP	81108	HE MAG INST	1942
LONGHORN AAP	81109	HE MAG INST	1942
LONGHORN AAP	81110	HE MAG INST	1942
LONGHORN AAP	81111	HE MAG INST	1942
LONGHORN AAP	81112	HE MAG INST	1942
LONGHORN AAP	81113	HE MAG INST	1942
LONGHORN AAP	81114	HE MAG INST	1942
LONGHORN AAP	81115	HE MAG INST	1942
LONGHORN AAP	81116	HE MAG INST	1942
LONGHORN AAP	81117	HE MAG INST	1942
LONGHORN AAP	81118	HE MAG INST	1942
LONGHORN AAP	81119	HE MAG INST	1942
LONGHORN AAP	81120	HE MAG INST	1942
LONGHORN AAP	81121	HE MAG INST	1942
LONGHORN AAP	81122	HE MAG INST	1942
LONGHORN AAP	81123	HE MAG INST	1942
LONGHORN AAP	81124	HE MAG INST	1942
LONGHORN AAP	81125	HE MAG INST	1942
LONGHORN AAP	81126	HE MAG INST	1942
LONGHORN AAP	81127	HE MAG INST	1942
LONGHORN AAP	81128	HE MAG INST	1942
LONGHORN AAP	81129	HE MAG INST	1942
LONGHORN AAP	81130	HE MAG INST	1942
LONGHORN AAP	81131	HE MAG INST	1942
LONGHORN AAP	81132	HE MAG INST	1942
LONGHORN AAP	81133	HE MAG INST	1942

LONGHORN AAP	81134	HE MAG INST	1942
LONGHORN AAP	81135	HE MAG INST	1942
LONGHORN AAP	81136	HE MAG INST	1942
LONGHORN AAP	81137	HE MAG INST	1942
LONGHORN AAP	81138	HE MAG INST	1942
LONGHORN AAP	81139	HE MAG INST	1942
LONGHORN AAP	81140	HE MAG INST	1942
LONGHORN AAP	81141	HE MAG INST	1942
LONGHORN AAP	81142	HE MAG INST	1942
LONGHORN AAP	81143	HE MAG INST	1942
LONGHORN AAP	81144	HE MAG INST	1942
LONGHORN AAP	81145	HE MAG INST	1942
LONGHORN AAP	81146	HE MAG INST	1942
LONGHORN AAP	81147	HE MAG INST	1942
LONGHORN AAP	81148	HE MAG INST	1942
LONGHORN AAP	81149	HE MAG INST	1942
LONGHORN AAP	81150	HE MAG INST	1942
LONGHORN AAP	81151	HE MAG INST	1942
LONGHORN AAP	81152	HE MAG INST	1942
LONGHORN AAP	81153	HE MAG INST	1942
LONGHORN AAP	81154	HE MAG INST	1942
LONGHORN AAP	81155	HE MAG INST	1942
LONGHORN AAP	81156	HE MAG INST	1942
LONGHORN AAP	81157	HE MAG INST	1942
LONGHORN AAP	81158	HE MAG INST	1942
LONGHORN AAP	81301	STR SHED GP INS	1968
LONGHORN AAP	91110	LAND HELD PUR	1942
LONGHORN AAP	92110	EASEMENT PRCHD	1942
LONGHORN AAP	0004Y	EMP CHG FAC	1945
LONGHORN AAP	0008T	EMP CHG FAC	1957
LONGHORN AAP	0013G	PRIMARY TREAT	1942
LONGHORN AAP	0013T	ADMIN GEN PURP	1955
LONGHORN AAP	0013Y	MAG GP INST	1955
LONGHORN AAP	0015G	SEW/WST WTR TRT	1942
LONGHORN AAP	0016G	PRIMARY TREAT	1942
LONGHORN AAP	0016T	AMMO QA/CAL PRO	1955
LONGHORN AAP	0016Y	PYRO PRODUCTION	1954
LONGHORN AAP	0017G	PRIMARY TREAT	1942
LONGHORN AAP	0018G	SEW/WST WTR TRT	1942
LONGHORN AAP	0018K	BATTERY SHOP	1955
LONGHORN AAP	0018T	FLAM MAT STR IN	1959
LONGHORN AAP	0018Y	PYRO PRODUCTION	1955
LONGHORN AAP	0019I	WAT STR TK NP	1955
LONGHORN AAP	0020T	AMMO QA/CAL PRO	1955
LONGHORN AAP	0020X	ADMIN GEN PURP	1956
LONGHORN AAP	0021A	ADMIN GEN PURP	1945
LONGHORN AAP	0021T	MAG GP INST	1955
LONGHORN AAP	0021X	AMMO DEMIL DEP	1969
LONGHORN AAP	0022A	ADMIN GEN PURP	1945
LONGHORN AAP	0022B	STORAGE GP INST	1945
LONGHORN AAP	0022G	SEW/WST WTR TRT	1942
LONGHORN AAP	0022X	MAG GP INST	1955
LONGHORN AAP	0024X	COMP CLEAN DEP	1955
LONGHORN AAP	0025D	PROPELLANT PT	1955
LONGHORN AAP	0025G	BREAK/LUNCH RM	1955
LONGHORN AAP	0025X	DECON FAC	1959
LONGHORN AAP	0026E	PROPELLANT PT	1954
LONGHORN AAP	0026G	EMP CHG FAC	1955
LONGHORN AAP	0027A	ADMIN GEN PURP	1945
LONGHORN AAP	0027F	PROPELLANT PT	1960
LONGHORN AAP	0027X	MAG GP INST	1955
LONGHORN AAP	0029A	CHEMISTRY LAB	1954
LONGHORN AAP	0029D	PROPELLANT PT	1955
LONGHORN AAP	0029Y	MAG GP INST	1955

LONGHORN AAP	0030G	FLAM MAT STR IN	1959
LONGHORN AAP	0031A	STR SHED GP INS	1954
LONGHORN AAP	0031G	PROPELLANT PT	1955
LONGHORN AAP	0031M	MAG GP INST	1954
LONGHORN AAP	0031T	AMMO QA/CAL PRO	1954
LONGHORN AAP	0032B	STORAGE GP INST	1945
LONGHORN AAP	0032E	PROPELLANT PT	1957
LONGHORN AAP	0032G	PROPELLANT PT	1972
LONGHORN AAP	0032Y	MAG GP INST	1955
LONGHORN AAP	0033W	FLAM MAT STR IN	1954
LONGHORN AAP	0034G	PROPELLANT PT	1962
LONGHORN AAP	0034T	AMMO QA/CAL PRO	1954
LONGHORN AAP	0034Y	PYRO PRODUCTION	1955
LONGHORN AAP	0035B	PYRO PRODUCTION	1945
LONGHORN AAP	0035G	FUEL/POL BLDG	1960
LONGHORN AAP	0035M	MAG GP INST	1954
LONGHORN AAP	0035T	AMMO QA/CAL PRO	1969
LONGHORN AAP	0035W	FLAM MAT STR IN	1954
LONGHORN AAP	0036B	PROPELLANT PT	1945
LONGHORN AAP	0036G	STR SHED GP INS	1960
LONGHORN AAP	0036T	AMMO QA/CAL PRO	1954
LONGHORN AAP	0037E	PROPELLANT PT	1960
LONGHORN AAP	0037F	AMMO PROD STRUC	1960
LONGHORN AAP	0038B	PROPELLANT PT	1945
LONGHORN AAP	0038D	AMMO PROD STRUC	1961
LONGHORN AAP	0038E	PROPELLANT PT	1960
LONGHORN AAP	0038Y	PYRO PRODUCTION	1945
LONGHORN AAP	0039E	AMMO PROD STRUC	1960
LONGHORN AAP	0039F	PROPELLANT PT	1960
LONGHORN AAP	0039M	MAG GP INST	1954
LONGHORN AAP	0039T	AMMO SURV DEP	1954
LONGHORN AAP	0040D	PROPELLANT PT	1960
LONGHORN AAP	0040E	AMMO PROD STRUC	1961
LONGHORN AAP	0040H	PROPELLANT PT	1965
LONGHORN AAP	0040T	STORAGE GP INST	1969
LONGHORN AAP	0040Y	PYRO PRODUCTION	1955
LONGHORN AAP	0041E	PROPELLANT PT	1960
LONGHORN AAP	0041W	QA/CAL GEN PURP	1954
LONGHORN AAP	0041X	FLAM MAT STR IN	1963
LONGHORN AAP	0042E	PROPELLANT PT	1960
LONGHORN AAP	0042W	STORAGE GP INST	1954
LONGHORN AAP	0043X	MAG GP INST	1955
LONGHORN AAP	0044W	STORAGE GP INST	1954
LONGHORN AAP	0045Y	PYRO PRODUCTION	1955
LONGHORN AAP	0046A	PROPELLANT PT	1960
LONGHORN AAP	0046B	PROPELLANT PT	1957
LONGHORN AAP	0046W	STORAGE GP INST	1954
LONGHORN AAP	0047B	PROPELLANT PT	1945
LONGHORN AAP	0048G	SEW/WST WTR TRT	1942
LONGHORN AAP	0048Y	MAG GP INST	1955
LONGHORN AAP	0049B	PROPELLANT PT	1957
LONGHORN AAP	0049W	LD/UNLD DOC/RMP	1955
LONGHORN AAP	0050G	PROPELLANT PT	1958
LONGHORN AAP	0053B	PROPELLANT PT	1945
LONGHORN AAP	0053H	STR SHED GP INS	1959
LONGHORN AAP	0054B	PROPELLANT PT	1945
LONGHORN AAP	0054F	PROPELLANT PT	1955
LONGHORN AAP	0054G	PROPELLANT PT	1955
LONGHORN AAP	0055B	PROPELLANT PT	1945
LONGHORN AAP	0055H	STR SHED GP INS	1959
LONGHORN AAP	0056B	PROPELLANT PT	1945
LONGHORN AAP	0059B	PROPELLANT PT	1945
LONGHORN AAP	0060B	PROPELLANT PT	1945
LONGHORN AAP	0060I	PLT/UTIL BLDG	1974

LONGHORN AAP	0061I	COMPRESS AIR PT	1955
LONGHORN AAP	0061J	EMP CHG FAC	1955
LONGHORN AAP	0062I	STORAGE GP INST	1955
LONGHORN AAP	0065D	STR SHED GP INS	1962
LONGHORN AAP	0068C	PROPELLANT PT	1961
LONGHORN AAP	0068F	PYRO PRODUCTION	1955
LONGHORN AAP	0075J	FLAM MAT STR IN	1955
LONGHORN AAP	0082G	STORAGE GP INST	1964
LONGHORN AAP	0090J	ACCESS CNT FAC	1955
LONGHORN AAP	0098Y	REC PIER/PLAT	1970
LONGHORN AAP	0099Y	GEN INST BLDG	1956
LONGHORN AAP	00B06	PYRO PRODUCTION	1953
LONGHORN AAP	00B07	PYRO PRODUCTION	1970
LONGHORN AAP	00B08	PYRO PRODUCTION	1969
LONGHORN AAP	00M01	PYRO PRODUCTION	1954
LONGHORN AAP	00M02	ADMIN GEN PURP	1955
LONGHORN AAP	00P01	PYRO PRODUCTION	1953
LONGHORN AAP	00P03	PYRO PRODUCTION	1953
LONGHORN AAP	00P09	PYRO PRODUCTION	1953
LONGHORN AAP	00S09	STORAGE GP INST	1966
LONGHORN AAP	00T01	PYRO PRODUCTION	1969
LONGHORN AAP	00T02	PYRO PRODUCTION	1953
LONGHORN AAP	00T03	SEP TOIL/SHOWER	1968
LONGHORN AAP	016T1	SEP TOIL/SHOWER	1955
LONGHORN AAP	016Y1	SEP TOIL/SHOWER	1955
LONGHORN AAP	018K1	SEP TOIL/SHOWER	1955
LONGHORN AAP	018Y1	SEP TOIL/SHOWER	1955
LONGHORN AAP	0201A	ADMIN GEN PURP	1953
LONGHORN AAP	020T1	SEP TOIL/SHOWER	1955
LONGHORN AAP	0212R	AMMO PROD STRUC	1945
LONGHORN AAP	0213R	AMMO PROD STRUC	1953
LONGHORN AAP	0235R	AMMO PROD STRUC	1945
LONGHORN AAP	025C1	SEP TOIL/SHOWER	1955
LONGHORN AAP	025D1	SEP TOIL/SHOWER	1955
LONGHORN AAP	025G2	ACCESS CNT FAC	1963
LONGHORN AAP	026B1	SEP TOIL/SHOWER	1945
LONGHORN AAP	028G1	SEP TOIL/SHOWER	1955
LONGHORN AAP	028H1	SEP TOIL/SHOWER	1955
LONGHORN AAP	029D1	SEP TOIL/SHOWER	1955
LONGHORN AAP	0308A	STORAGE GP INST	1968
LONGHORN AAP	0308B	STORAGE GP INST	1968
LONGHORN AAP	033G1	SEP TOIL/SHOWER	1955
LONGHORN AAP	034T1	SEP TOIL/SHOWER	1955
LONGHORN AAP	036T2	AMMO QA/CAL PRO	1954
LONGHORN AAP	036T3	AMMO QA/CAL PRO	1954
LONGHORN AAP	036T4	AMMO QA/CAL PRO	1954
LONGHORN AAP	039T1	SEP TOIL/SHOWER	1955
LONGHORN AAP	0402L	WAT STR TK POT	1942
LONGHORN AAP	0405L	SUBSTATION	1942
LONGHORN AAP	0406L	HEAT PLT BLDG	1942
LONGHORN AAP	0413A	WTR SUP/TRT BLD	1942
LONGHORN AAP	041W1	SEP TOIL/SHOWER	1954
LONGHORN AAP	041W2	ACCESS CNT FAC	1959
LONGHORN AAP	0450B	HEAT FUEL UNGD	1969
LONGHORN AAP	04Y02	ACCESS CNT FAC	1963
LONGHORN AAP	053B1	SEP TOIL/SHOWER	1945
LONGHORN AAP	054F1	SEP TOIL/SHOWER	1955
LONGHORN AAP	054G1	SEP TOIL/SHOWER	1955
LONGHORN AAP	054H1	SEP TOIL/SHOWER	1955
LONGHORN AAP	056B1	SEP TOIL/SHOWER	1955
LONGHORN AAP	061J2	ACCESS CNT FAC	1963
LONGHORN AAP	062G1	SEP TOIL/SHOWER	1955
LONGHORN AAP	068F1	SEP TOIL/SHOWER	1955
LONGHORN AAP	068G1	SEP TOIL/SHOWER	1955

LONGHORN AAP	0703A	ADMIN GEN PURP	1942
LONGHORN AAP	0703B	ADMIN GEN PURP	1961
LONGHORN AAP	0703C	HEAT PLT BLDG	1953
LONGHORN AAP	0703D	INFO PROC CTR	1969
LONGHORN AAP	0703E	INFO PROC CTR	1971
LONGHORN AAP	0704A	ADMIN GEN PURP	1942
LONGHORN AAP	0704D	ADMIN GEN PURP	1956
LONGHORN AAP	0707A	EMP CHG FAC	1942
LONGHORN AAP	0707C	STORAGE GP INST	1942
LONGHORN AAP	0707E	ELE MAINT DEPOT	1942
LONGHORN AAP	0707F	EMP CHG FAC	1942
LONGHORN AAP	0707G	EMP CHG FAC	1942
LONGHORN AAP	0707J	EMP CHG FAC	1942
LONGHORN AAP	0709A	FIRE STATION	1942
LONGHORN AAP	0713B	SHIP/RECV FAC	1968
LONGHORN AAP	0713R	LD/UNLD DOC/RMP	1968
LONGHORN AAP	0718A	RR EQ/EN MAINT	1942
LONGHORN AAP	0720A	ADMIN GEN PURP	1942
LONGHORN AAP	0720C	ACCESS CNT FAC	1942
LONGHORN AAP	0722E	GEN INST BLDG	1942
LONGHORN AAP	0722F	BREAK/LUNCH RM	1942
LONGHORN AAP	0722G	DUN BLDG DEPOT	1942
LONGHORN AAP	0722P	ENG/HOUSING MNT	1957
LONGHORN AAP	0726C	ACETYL STR INST	1957
LONGHORN AAP	0726D	OXY STR INST	1957
LONGHORN AAP	0727R	STR SHED GP INS	1945
LONGHORN AAP	0736A	GEN INST BLDG	1942
LONGHORN AAP	0744A	GREASE RACK	1957
LONGHORN AAP	075I1	SEP TOIL/SHOWER	1955
LONGHORN AAP	0801F	LG RKT MTR LD	1942
LONGHORN AAP	0821A	LD/UNLD DOC/RMP	1968
LONGHORN AAP	08T02	ACCESS CNT FAC	1963
LONGHORN AAP	090J1	SEP TOIL/SHOWER	1955
LONGHORN AAP	0B010	PYRO PRODUCTION	1953
LONGHORN AAP	0B011	PYRO PRODUCTION	1953
LONGHORN AAP	0B012	PYRO PRODUCTION	1953
LONGHORN AAP	0B013	PYRO PRODUCTION	1953
LONGHORN AAP	0B014	PYRO PRODUCTION	1953
LONGHORN AAP	0B015	PYRO PRODUCTION	1953
LONGHORN AAP	0B016	PYRO PRODUCTION	1953
LONGHORN AAP	0B101	PROTEC BARRIER	1953
LONGHORN AAP	0B102	PROTEC BARRIER	1953
LONGHORN AAP	0B103	PROTEC BARRIER	1953
LONGHORN AAP	0B104	PROTEC BARRIER	1953
LONGHORN AAP	0B105	PROTEC BARRIER	1953
LONGHORN AAP	0B106	PROTEC BARRIER	1953
LONGHORN AAP	0B107	PROTEC BARRIER	1953
LONGHORN AAP	0B108	PROTEC BARRIER	1953
LONGHORN AAP	0B109	PROTEC BARRIER	1953
LONGHORN AAP	0B201	PROTEC BARRIER	1953
LONGHORN AAP	0B202	PROTEC BARRIER	1953
LONGHORN AAP	0B401	PROTEC BARRIER	1954
LONGHORN AAP	0B402	PROTEC BARRIER	1954
LONGHORN AAP	0HC02	POST CEMETERY	1942
LONGHORN AAP	0HC03	POST CEMETERY	1942
LONGHORN AAP	0IST1	AMMO QA/CAL PRO	1953
LONGHORN AAP	0P010	PYRO PRODUCTION	1953
LONGHORN AAP	0P011	PYRO PRODUCTION	1953
LONGHORN AAP	0P012	PYRO PRODUCTION	1953
LONGHORN AAP	0P013	PYRO PRODUCTION	1953
LONGHORN AAP	0P014	PYRO PRODUCTION	1953
LONGHORN AAP	0P10R	AMMO PROD STRUC	1953
LONGHORN AAP	0RRCS	RR XING SIGNAL	1971
LONGHORN AAP	0S013	STR SHED GP INS	1969

LONGHORN AAP	0S30R	AMMO PROD STRUC	1953
LONGHORN AAP	0S3S4	STORAGE GP INST	1953
LONGHORN AAP	1020R	AMMO PROD STRUC	1955
LONGHORN AAP	16Y02	BREAK/LUNCH RM	1969
LONGHORN AAP	2120A	NONORG PK PAVD	1954
LONGHORN AAP	2120B	NONORG PK PAVD	1942
LONGHORN AAP	2120C	NONORG PK PAVD	1942
LONGHORN AAP	2120D	NONORG PK PAVD	1958
LONGHORN AAP	22X01	SEP TOIL/SHOWER	1955
LONGHORN AAP	25TP2	AMMO QA/CAL PRO	1959
LONGHORN AAP	510B1	HEAT FUEL ABV	1942
LONGHORN AAP	510B2	WTR SUP/TRT BLD	1942
LONGHORN AAP	6010A	SCALE HOUSE	1942
LONGHORN AAP	6010B	SCALE HOUSE	1942
LONGHORN AAP	A0000	PYRO PRODUCTION	1953
LONGHORN AAP	B0000	PYRO PRODUCTION	1953
LONGHORN AAP	B1010	PROTEC BARRIER	1953
LONGHORN AAP	BST02	HE MAG INST	1953
LONGHORN AAP	BST04	HE MAG INST	1953
LONGHORN AAP	C0000	PYRO PRODUCTION	1953
LONGHORN AAP	D0000	PYRO PRODUCTION	1953
LONGHORN AAP	DST03	FUSE/DET MAG IN	1953
LONGHORN AAP	E0000	PYRO PRODUCTION	1953
LONGHORN AAP	F0000	PYRO PRODUCTION	1953
LONGHORN AAP	G0000	PYRO PRODUCTION	1953
LONGHORN AAP	H0000	PYRO PRODUCTION	1953
LONGHORN AAP	J0000	PYRO PRODUCTION	1953
LONGHORN AAP	K0000	PYRO PRODUCTION	1953
LONGHORN AAP	L0000	PYRO PRODUCTION	1953
LONGHORN AAP	L0005	STR SHED GP INS	1953
LONGHORN AAP	L0006	STR SHED GP INS	1953
LONGHORN AAP	LR001	BREAK/LUNCH RM	1953
LONGHORN AAP	P140R	AMMO PROD STRUC	1953
LONGHORN AAP	S0001	STORAGE GP INST	1953
LONGHORN AAP	S0002	STORAGE GP INST	1953
LONGHORN AAP	S0005	PYRO PRODUCTION	1953
LONGHORN AAP	S0007	PYRO PRODUCTION	1953
LONGHORN AAP	S0008	PYRO PRODUCTION	1953
LONGHORN AAP	S0011	STORAGE GP INST	1968
LONGHORN AAP	S0015	STR SHED GP INS	1974

Site Name	Facility	Cat Code Desc	Year Built
FORT HOOD	92026	SP WEAP PLANT	1969
FORT HOOD	92050	SP WEAP PLANT	1969
LONE STAR AAP	B0003	LD PT 76-120MM	1942
LONE STAR AAP	B0004	LD PT 76-120MM	1942
LONE STAR AAP	B0005	LD PT 76-120MM	1942
LONE STAR AAP	B0006	LD PT 76-120MM	1942
LONE STAR AAP	B0007	LD PT 76-120MM	1942
LONE STAR AAP	B0008	LD PT 76-120MM	1942
LONE STAR AAP	B0009	LD PT 76-120MM	1942
LONE STAR AAP	B0010	LD PT 76-120MM	1942
LONE STAR AAP	B0011	LD PT 76-120MM	1942
LONE STAR AAP	B0012	LD PT 76-120MM	1942
LONE STAR AAP	B0013	LD PT 76-120MM	1942
LONE STAR AAP	B0017	LD PT > 120MM	1942
LONE STAR AAP	B0023	LD PT > 120MM	1942
LONE STAR AAP	B0029	LD PT > 120MM	1942
LONE STAR AAP	B0031	AMMO PROD STRUC	1954
LONE STAR AAP	B0034	LD PT > 120MM	1954
LONE STAR AAP	B0035	LD PT 76-120MM	1954
LONE STAR AAP	B0040	LD PT > 120MM	1962
LONE STAR AAP	B0041	LD PT > 120MM	1962
LONE STAR AAP	B0042	LD PT > 120MM	1962
LONE STAR AAP	B0043	LD PT > 120MM	1962
LONE STAR AAP	B0044	LD PT > 120MM	1962
LONE STAR AAP	B0045	LD PT > 120MM	1962
LONE STAR AAP	B0046	LD PT > 120MM	1962
LONE STAR AAP	B0047	LD PT > 120MM	1962
LONE STAR AAP	B0048	LD PT > 120MM	1962
LONE STAR AAP	B0055	LD PT > 120MM	1966
LONE STAR AAP	B0056	LD PT > 120MM	1963
LONE STAR AAP	B0057	LD PT > 120MM	1963
LONE STAR AAP	B0058	LD PT > 120MM	1963
LONE STAR AAP	B0059	LD PT > 120MM	1953
LONE STAR AAP	B0060	AMMO PROD STRUC	1962
LONE STAR AAP	B0061	AMMO PROD STRUC	1962
LONE STAR AAP	B0063	LD PT > 120MM	1963
LONE STAR AAP	B0066	LD PT > 120MM	1953
LONE STAR AAP	B0067	AMMO PROD STRUC	1953
LONE STAR AAP	B0068	AMMO PROD STRUC	1953
LONE STAR AAP	B0069	AMMO PROD STRUC	1962
LONE STAR AAP	B0070	AMMO PROD STRUC	1953
LONE STAR AAP	B0071	LD PT > 120MM	1963
LONE STAR AAP	B0072	AMMO PROD STRUC	1962
LONE STAR AAP	B0073	LD PT > 120MM	1965
LONE STAR AAP	B0074	LD PT > 120MM	1969
LONE STAR AAP	B0077	LD PT > 120MM	1953
LONE STAR AAP	B0078	LD PT > 120MM	1962
LONE STAR AAP	B0079	AMMO PROD STRUC	1962
LONE STAR AAP	B0080	AMMO PROD STRUC	1962
LONE STAR AAP	B0082	LD PT > 120MM	1953
LONE STAR AAP	B0083	LD PT > 120MM	1963
LONE STAR AAP	B0084	LD PT > 120MM	1963
LONE STAR AAP	B0085	LD PT > 120MM	1963
LONE STAR AAP	B0086	LD PT > 120MM	1963
LONE STAR AAP	B0089	LD PT > 120MM	1953
LONE STAR AAP	B0090	AMMO PROD STRUC	1962
LONE STAR AAP	B0091	AMMO PROD STRUC	1962
LONE STAR AAP	B0098	LD PT > 120MM	1962
LONE STAR AAP	B0102	AMMO PROD STRUC	1962
LONE STAR AAP	B0103	AMMO PROD STRUC	1962
LONE STAR AAP	B0104	AMMO PROD STRUC	1962
LONE STAR AAP	B0105	AMMO PROD STRUC	1963
LONE STAR AAP	B0106	AMMO PROD STRUC	1962
LONE STAR AAP	B0107	AMMO PROD STRUC	1962
LONE STAR AAP	B0108	LD PT > 120MM	1962
LONE STAR AAP	B0110	LD PT > 120MM	1962
LONE STAR AAP	B0111	AMMO PROD STRUC	1962
LONE STAR AAP	B0112	AMMO PROD STRUC	1962
LONE STAR AAP	B0113	AMMO PROD STRUC	1962
LONE STAR AAP	B0114	LD PT 76-120MM	1966
LONE STAR AAP	B0115	LD PT 76-120MM	1966
LONE STAR AAP	C0002	LD PT 76-120MM	1942
LONE STAR AAP	C0003	LD PT 76-120MM	1942
LONE STAR AAP	C0004	LD PT 76-120MM	1942
LONE STAR AAP	C0005	LD PT 76-120MM	1942
LONE STAR AAP	C0006	LD PT 76-120MM	1942
LONE STAR AAP	C0007	LD PT 76-120MM	1942
LONE STAR AAP	C0008	LD PT 76-120MM	1942
LONE STAR AAP	C0009	LD PT 76-120MM	1942
LONE STAR AAP	C0010	LD PT 76-120MM	1942
LONE STAR AAP	C0011	LD PT 76-120MM	1942
LONE STAR AAP	C0012	LD PT 76-120MM	1942
LONE STAR AAP	C0013	LD PT 76-120MM	1942
LONE STAR AAP	C0014	LD PT 76-120MM	1942
LONE STAR AAP	C0016	LD PT 76-120MM	1942
LONE STAR AAP	C0017	LD PT 76-120MM	1942
LONE STAR AAP	C0018	LD PT 76-120MM	1942
LONE STAR AAP	C0023	LD PT 76-120MM	1942
LONE STAR AAP	C0033	LD PT 76-120MM	1944
LONE STAR AAP	C0039	LD PT 76-120MM	1946

Category Abbreviation	Category	Category Description
BAG CHG FIL PT	22610	Bag Charge Filling Plant
ACID MFG PLANT	22612	Acid Manufacturing Plant
LD AZIDE MFG PT	22614	Lead Azide Manufacturing Plant
EXPLOS MFG PT	22616	Explosive Manufacturing Plant
CASE OHAUL & TK	22620	Case Overhaul and Tank Facility
PYRO PRODUCTION	22622	Pyrotechnic Production
MTL PARTS PROD	22624	Metal Parts Production
SM CAL LD < 40MM	22625	Small Caliber Loading Plant (Under 40MM)
BOMB HE FIL PT	22626	Bomb High Explosives Filling Plant
MTL PARTS LD PT	22627	Metal Parts Loading Plant
LD PT 40-75 MM	22630	Minor Caliber Loading Plant (40-75MM)
LD PT 76-120 MM	22635	Medium Caliber Loading Plant (76-120MM)
AMMO QA/CAL PRO	22638	Ammunition Quality Assurance/Calibration Facility, Production
LD PT > 120 MM	22640	Major Caliber Loading Plant (Over 120MM)
LG RKT MTR LD	22645	Large Caliber Rocket Motor Loading Plant
MED RKT MTR LD	22650	Medium Caliber Rocket Motor Loading Plant
CAST HE FIL PT	22655	Cast High Explosive Filling Plant
SP WEAP PLANT	22660	Special Weapons Plant
AMMO WASHOUT	22665	Ammunition Washout Facility
CASE FIL PLANT	22670	Case Filling Plant
PROPELLANT PT	22680	Propellant Plant
AMMO PROD STRUC	22685	Ammunition Production Structure

LONE STAR AAP	C0042	LD PT 76-120MM	1952
LONE STAR AAP	C0045	AMMO PROD STRUC	1946
LONE STAR AAP	C0047	LD PT 76-120MM	1963
LONE STAR AAP	C0048	AMMO PROD STRUC	1962
LONE STAR AAP	C0055	LD PT 76-120MM	1953
LONE STAR AAP	C0056	AMMO PROD STRUC	1962
LONE STAR AAP	C0062	AMMO PROD STRUC	1962
LONE STAR AAP	C0063	AMMO PROD STRUC	1962
LONE STAR AAP	C0064	AMMO PROD STRUC	1962
LONE STAR AAP	C0065	AMMO PROD STRUC	1962
LONE STAR AAP	C0066	LD PT 76-120MM	1963
LONE STAR AAP	C0067	LD PT 76-120MM	1963
LONE STAR AAP	C0069	AMMO PROD STRUC	1962
LONE STAR AAP	C0070	LD PT 76-120MM	1963
LONE STAR AAP	C0074	LD PT 76-120MM	1965
LONE STAR AAP	C0075	LD PT 76-120MM	1965
LONE STAR AAP	E0002	LD PT 76-120MM	1942
LONE STAR AAP	E0003	LD PT 76-120MM	1942
LONE STAR AAP	E0004	LD PT 76-120MM	1942
LONE STAR AAP	E0008	LD PT 76-120MM	1942
LONE STAR AAP	E0009	LD PT 76-120MM	1942
LONE STAR AAP	E0011	LD PT 76-120MM	1942
LONE STAR AAP	E0012	LD PT 76-120MM	1942
LONE STAR AAP	E0014	LD PT 76-120MM	1942
LONE STAR AAP	E0015	LD PT 76-120MM	1942
LONE STAR AAP	E0016	LD PT 76-120MM	1942
LONE STAR AAP	E0017	LD PT 76-120MM	1942
LONE STAR AAP	E0018	LD PT 76-120MM	1942
LONE STAR AAP	E0019	LD PT 76-120MM	1942
LONE STAR AAP	E0022	LD PT 76-120MM	1942
LONE STAR AAP	E0023	LD PT 76-120MM	1942
LONE STAR AAP	E0024	LD PT 76-120MM	1942
LONE STAR AAP	E0030	LD PT 76-120MM	1942
LONE STAR AAP	E0033	LD PT 76-120MM	1944
LONE STAR AAP	E0054	LD PT 76-120MM	1951
LONE STAR AAP	E0061	LD PT 76-120MM	1963
LONE STAR AAP	E0062	AMMO PROD STRUC	1942
LONE STAR AAP	E0066	AMMO PROD STRUC	1942
LONE STAR AAP	E0067	LD PT 76-120MM	1953
LONE STAR AAP	E0068	AMMO PROD STRUC	1942
LONE STAR AAP	E0069	AMMO PROD STRUC	1953
LONE STAR AAP	E0072	LD PT 76-120MM	1962
LONE STAR AAP	E0076	AMMO PROD STRUC	1962
LONE STAR AAP	E0077	AMMO PROD STRUC	1942
LONE STAR AAP	E0078	AMMO PROD STRUC	1962
LONE STAR AAP	E0079	AMMO PROD STRUC	1942
LONE STAR AAP	E0081	LD PT 76-120MM	1962
LONE STAR AAP	E0083	LD PT 76-120MM	1962
LONE STAR AAP	E0097	AMMO PROD STRUC	1942
LONE STAR AAP	E0098	AMMO PROD STRUC	1942
LONE STAR AAP	E0100	LD PT 76-120MM	1954
LONE STAR AAP	E0101	LD PT 76-120MM	1962
LONE STAR AAP	E0104	LD PT 76-120MM	1962
LONE STAR AAP	E0105	LD PT 76-120MM	1962
LONE STAR AAP	E0106	LD PT 76-120MM	1962
LONE STAR AAP	E0109	AMMO PROD STRUC	1942
LONE STAR AAP	F0001	SP WEAP PLANT	1942
LONE STAR AAP	F0002	SP WEAP PLANT	1942
LONE STAR AAP	F0003	SP WEAP PLANT	1942
LONE STAR AAP	F0004	SP WEAP PLANT	1942
LONE STAR AAP	F0005	SP WEAP PLANT	1942
LONE STAR AAP	F0006	SP WEAP PLANT	1942
LONE STAR AAP	F0007	SP WEAP PLANT	1942
LONE STAR AAP	F0008	SP WEAP PLANT	1942
LONE STAR AAP	F0009	SP WEAP PLANT	1942
LONE STAR AAP	F0010	SP WEAP PLANT	1942
LONE STAR AAP	F0011	SP WEAP PLANT	1942
LONE STAR AAP	F0012	SP WEAP PLANT	1942
LONE STAR AAP	F0013	SP WEAP PLANT	1942
LONE STAR AAP	F0014	SP WEAP PLANT	1942
LONE STAR AAP	F0015	SP WEAP PLANT	1942
LONE STAR AAP	F0016	SP WEAP PLANT	1942
LONE STAR AAP	F0017	SP WEAP PLANT	1942
LONE STAR AAP	F0018	SP WEAP PLANT	1942
LONE STAR AAP	F0019	SP WEAP PLANT	1942
LONE STAR AAP	F0023	SP WEAP PLANT	1942
LONE STAR AAP	F0024	SP WEAP PLANT	1942
LONE STAR AAP	F0025	SP WEAP PLANT	1942
LONE STAR AAP	F0026	SP WEAP PLANT	1942
LONE STAR AAP	F0027	SP WEAP PLANT	1942
LONE STAR AAP	F0028	SP WEAP PLANT	1942
LONE STAR AAP	F0040	SP WEAP PLANT	1942
LONE STAR AAP	F0053	SP WEAP PLANT	1962
LONE STAR AAP	F0056	LD PT 76-120MM	1962
LONE STAR AAP	F0057	AMMO PROD STRUC	1942
LONE STAR AAP	F0058	AMMO PROD STRUC	1942
LONE STAR AAP	F0059	AMMO PROD STRUC	1942
LONE STAR AAP	F0060	SP WEAP PLANT	1962
LONE STAR AAP	F0062	AMMO PROD STRUC	1942
LONE STAR AAP	F0063	SP WEAP PLANT	1962
LONE STAR AAP	F0065	AMMO PROD STRUC	1942
LONE STAR AAP	F0066	SP WEAP PLANT	1962
LONE STAR AAP	F0071	AMMO PROD STRUC	1942

LONE STAR AAP	F0072	AMMO PROD STRUC	1942
LONE STAR AAP	F0073	SP WEAP PLANT	1962
LONE STAR AAP	F0074	AMMO PROD STRUC	1942
LONE STAR AAP	F0075	LD PT 76-120MM	1963
LONE STAR AAP	F0080	SP WEAP PLANT	1963
LONE STAR AAP	F0081	LD PT 76-120MM	1963
LONE STAR AAP	F0084	AMMO PROD STRUC	1942
LONE STAR AAP	F0085	AMMO PROD STRUC	1942
LONE STAR AAP	F0086	AMMO PROD STRUC	1942
LONE STAR AAP	G0001	MTL PARTS LD PT	1942
LONE STAR AAP	G0002	MTL PARTS LD PT	1942
LONE STAR AAP	G0003	MTL PARTS LD PT	1942
LONE STAR AAP	G0004	PYRO PRODUCTION	1942
LONE STAR AAP	G0005	PYRO PRODUCTION	1942
LONE STAR AAP	G0006	PYRO PRODUCTION	1942
LONE STAR AAP	G0007	PYRO PRODUCTION	1942
LONE STAR AAP	G0009	PYRO PRODUCTION	1942
LONE STAR AAP	G0010	PYRO PRODUCTION	1942
LONE STAR AAP	G0011	PYRO PRODUCTION	1942
LONE STAR AAP	G0012	PYRO PRODUCTION	1942
LONE STAR AAP	G0013	PYRO PRODUCTION	1942
LONE STAR AAP	G0014	PYRO PRODUCTION	1942
LONE STAR AAP	G0015	MTL PARTS LD PT	1942
LONE STAR AAP	G0016	MTL PARTS LD PT	1942
LONE STAR AAP	G0017	MTL PARTS LD PT	1942
LONE STAR AAP	G0018	MTL PARTS LD PT	1942
LONE STAR AAP	G0019	MTL PARTS LD PT	1942
LONE STAR AAP	G0023	LD PT 76-120MM	1942
LONE STAR AAP	G0024	MTL PARTS LD PT	1942
LONE STAR AAP	G0025	MTL PARTS LD PT	1942
LONE STAR AAP	G0026	MTL PARTS LD PT	1942
LONE STAR AAP	G0027	MTL PARTS LD PT	1942
LONE STAR AAP	G0028	MTL PARTS LD PT	1942
LONE STAR AAP	G0030	PYRO PRODUCTION	1942
LONE STAR AAP	G0031	PYRO PRODUCTION	1942
LONE STAR AAP	G0032	PYRO PRODUCTION	1942
LONE STAR AAP	G0034	PYRO PRODUCTION	1942
LONE STAR AAP	G0035	MTL PARTS LD PT	1942
LONE STAR AAP	G0050	AMMO PROD STRUC	1942
LONE STAR AAP	G0058	MTL PARTS LD PT	1942
LONE STAR AAP	G0063	MTL PARTS LD PT	1955
LONE STAR AAP	G0065	MTL PARTS LD PT	1955
LONE STAR AAP	G0070	AMMO PROD STRUC	1942
LONE STAR AAP	G0071	AMMO PROD STRUC	1942
LONE STAR AAP	G0072	AMMO PROD STRUC	1966
LONE STAR AAP	G0076	PYRO PRODUCTION	1963
LONE STAR AAP	G0077	PYRO PRODUCTION	1963
LONE STAR AAP	G0078	MTL PARTS LD PT	1953
LONE STAR AAP	G0079	MTL PARTS LD PT	1963
LONE STAR AAP	G0083	AMMO PROD STRUC	1942
LONE STAR AAP	G0084	MTL PARTS LD PT	1963
LONE STAR AAP	G0085	AMMO PROD STRUC	1942
LONE STAR AAP	G0091	AMMO PROD STRUC	1942
LONE STAR AAP	G0093	AMMO PROD STRUC	1953
LONE STAR AAP	G0094	MTL PARTS LD PT	1953
LONE STAR AAP	G0096	AMMO PROD STRUC	1942
LONE STAR AAP	G0097	MTL PARTS LD PT	1953
LONE STAR AAP	G0108	MTL PARTS LD PT	1963
LONE STAR AAP	G0116	MTL PARTS LD PT	1965
LONE STAR AAP	G0117	AMMO PROD STRUC	1954
LONE STAR AAP	G0118	PYRO PRODUCTION	1963
LONE STAR AAP	G0120	PYRO PRODUCTION	1965
LONE STAR AAP	G0132	AMMO PROD STRUC	1968
LONE STAR AAP	G0140	AMMO PROD STRUC	1974
LONE STAR AAP	I0014	AMMO QA/CAL PRO	1942
LONE STAR AAP	I0015	AMMO QA/CAL PRO	1942
LONE STAR AAP	I0016	AMMO QA/CAL PRO	1942
LONE STAR AAP	I0017	AMMO QA/CAL PRO	1942
LONE STAR AAP	J0001	MTL PARTS LD PT	1942
LONE STAR AAP	J0002	MTL PARTS LD PT	1942
LONE STAR AAP	J0003	MTL PARTS LD PT	1942
LONE STAR AAP	J0004	MTL PARTS LD PT	1942
LONE STAR AAP	J0005	LD PT 76-120MM	1942
LONE STAR AAP	J0006	MTL PARTS LD PT	1942
LONE STAR AAP	J0007	MTL PARTS LD PT	1942
LONE STAR AAP	J0017	MTL PARTS LD PT	1962
LONE STAR AAP	J0018	LD PT 76-120MM	1962
LONE STAR AAP	J0020	LD PT 76-120MM	1963
LONE STAR AAP	K0001	MTL PARTS LD PT	1942
LONE STAR AAP	K0002	MTL PARTS LD PT	1942
LONE STAR AAP	K0003	MTL PARTS LD PT	1942
LONE STAR AAP	K0004	MTL PARTS LD PT	1942
LONE STAR AAP	K0005	MTL PARTS LD PT	1942
LONE STAR AAP	K0006	MTL PARTS LD PT	1942
LONE STAR AAP	K0007	MTL PARTS LD PT	1942
LONE STAR AAP	K0008	MTL PARTS LD PT	1942
LONE STAR AAP	K0009	MTL PARTS LD PT	1942
LONE STAR AAP	K0010	MTL PARTS LD PT	1942
LONE STAR AAP	K0011	MTL PARTS LD PT	1942
LONE STAR AAP	K0012	MTL PARTS LD PT	1942
LONE STAR AAP	K0013	MTL PARTS LD PT	1942
LONE STAR AAP	K0014	MTL PARTS LD PT	1942
LONE STAR AAP	K0015	AMMO QA/CAL PRO	1942

LONE STAR AAP	K0016	AMMO QA/CAL PRO	1942
LONE STAR AAP	K0017	AMMO QA/CAL PRO	1942
LONE STAR AAP	K0018	MTL PARTS LD PT	1942
LONE STAR AAP	K0022	MTL PARTS LD PT	1942
LONE STAR AAP	K0028	MTL PARTS LD PT	1960
LONE STAR AAP	K0029	MTL PARTS LD PT	1960
LONE STAR AAP	K0030	MTL PARTS LD PT	1960
LONE STAR AAP	K0031	MTL PARTS LD PT	1960
LONE STAR AAP	K0032	MTL PARTS LD PT	1960
LONE STAR AAP	K0036	AMMO PROD STRUC	1942
LONE STAR AAP	M0001	LD PT 76-120MM	1942
LONE STAR AAP	M0002	MTL PARTS LD PT	1942
LONE STAR AAP	M0003	MTL PARTS LD PT	1942
LONE STAR AAP	M0004	MTL PARTS LD PT	1942
LONE STAR AAP	M0005	MTL PARTS LD PT	1942
LONE STAR AAP	M0006	MTL PARTS LD PT	1942
LONE STAR AAP	M0007	MTL PARTS LD PT	1942
LONE STAR AAP	M0019	LD PT 76-120MM	1963
LONE STAR AAP	M0021	LD PT 76-120MM	1963
LONE STAR AAP	O0001	MTL PARTS LD PT	1942
LONE STAR AAP	O0002	LD PT 76-120MM	1942
LONE STAR AAP	O0003	MTL PARTS LD PT	1942
LONE STAR AAP	O0004	MTL PARTS LD PT	1942
LONE STAR AAP	O0005	LD PT 76-120MM	1942
LONE STAR AAP	O0006	MTL PARTS LD PT	1942
LONE STAR AAP	O0007	MTL PARTS LD PT	1942
LONE STAR AAP	O0008	MTL PARTS LD PT	1942
LONE STAR AAP	O0011	MTL PARTS LD PT	1942
LONE STAR AAP	O0013	AMMO PROD STRUC	1942
LONE STAR AAP	O0026	AMMO PROD STRUC	1942
LONE STAR AAP	O0027	MTL PARTS LD PT	1962
LONE STAR AAP	O0028	MTL PARTS LD PT	1952
LONE STAR AAP	O0029	MTL PARTS LD PT	1952
LONE STAR AAP	O0030	MTL PARTS LD PT	1962
LONE STAR AAP	O0031	AMMO PROD STRUC	1962
LONE STAR AAP	O0032	MTL PARTS LD PT	1962
LONE STAR AAP	O0035	AMMO PROD STRUC	1962
LONE STAR AAP	O0039	AMMO PROD STRUC	1962
LONE STAR AAP	O0042	AMMO PROD STRUC	1969
LONE STAR AAP	O0043	LD PT 76-120MM	1970
LONE STAR AAP	P0001	MTL PARTS LD PT	1942
LONE STAR AAP	P0002	LD PT 76-120MM	1942
LONE STAR AAP	P0003	MTL PARTS LD PT	1942
LONE STAR AAP	P0004	LD PT 76-120MM	1942
LONE STAR AAP	P0005	MTL PARTS LD PT	1942
LONE STAR AAP	P0006	MTL PARTS LD PT	1942
LONE STAR AAP	P0007	MTL PARTS LD PT	1942
LONE STAR AAP	P0008	MTL PARTS LD PT	1942
LONE STAR AAP	P0009	MTL PARTS LD PT	1942
LONE STAR AAP	P0010	LD PT 76-120MM	1942
LONE STAR AAP	P0011	MTL PARTS LD PT	1942
LONE STAR AAP	P0012	MTL PARTS LD PT	1942
LONE STAR AAP	P0013	LD PT 76-120MM	1942
LONE STAR AAP	P0014	MTL PARTS LD PT	1942
LONE STAR AAP	P0015	MTL PARTS LD PT	1942
LONE STAR AAP	P0016	MTL PARTS LD PT	1942
LONE STAR AAP	P0017	MTL PARTS LD PT	1942
LONE STAR AAP	P0018	MTL PARTS LD PT	1942
LONE STAR AAP	P0019	MTL PARTS LD PT	1942
LONE STAR AAP	P0020	MTL PARTS LD PT	1942
LONE STAR AAP	P0021	MTL PARTS LD PT	1942
LONE STAR AAP	P0022	MTL PARTS LD PT	1942
LONE STAR AAP	P0023	MTL PARTS LD PT	1942
LONE STAR AAP	P0024	AMMO PROD STRUC	1942
LONE STAR AAP	P0025	MTL PARTS LD PT	1942
LONE STAR AAP	P0026	MTL PARTS LD PT	1942
LONE STAR AAP	P0027	MTL PARTS LD PT	1942
LONE STAR AAP	P0028	MTL PARTS LD PT	1942
LONE STAR AAP	P0029	MTL PARTS LD PT	1942
LONE STAR AAP	P0030	MTL PARTS LD PT	1942
LONE STAR AAP	P0031	MTL PARTS LD PT	1942
LONE STAR AAP	P0032	LD PT 76-120MM	1942
LONE STAR AAP	P0033	MTL PARTS LD PT	1942
LONE STAR AAP	P0035	MTL PARTS LD PT	1942
LONE STAR AAP	P0036	LD PT 76-120MM	1942
LONE STAR AAP	P0037	MTL PARTS LD PT	1942
LONE STAR AAP	P0046	MTL PARTS LD PT	1942
LONE STAR AAP	P0047	MTL PARTS LD PT	1964
LONE STAR AAP	P0048	MTL PARTS LD PT	1966
LONE STAR AAP	P0049	AMMO PROD STRUC	1942
LONE STAR AAP	P0050	AMMO PROD STRUC	1942
LONE STAR AAP	P0051	AMMO PROD STRUC	1942
LONE STAR AAP	P0053	AMMO PROD STRUC	1942
LONE STAR AAP	P0055	LD PT 76-120MM	1962
LONE STAR AAP	P0057	AMMO PROD STRUC	1942
LONE STAR AAP	P0058	AMMO PROD STRUC	1942
LONE STAR AAP	P0059	AMMO PROD STRUC	1942
LONE STAR AAP	P0060	AMMO PROD STRUC	1942
LONE STAR AAP	P0062	AMMO PROD STRUC	1942
LONE STAR AAP	P0063	MTL PARTS LD PT	1963
LONE STAR AAP	P0064	LD PT 76-120MM	1963
LONE STAR AAP	P0066	LD PT 76-120MM	1963
LONE STAR AAP	P0071	MTL PARTS LD PT	1966

LONE STAR AAP	P0072	MTL PARTS LD PT	1969
LONE STAR AAP	P0073	MTL PARTS LD PT	1969
LONE STAR AAP	P0074	AMMO PROD STRUC	1969
LONE STAR AAP	Q0022	MTL PARTS LD PT	1942
LONE STAR AAP	Q0046	MTL PARTS LD PT	1942
LONE STAR AAP	Q0050	MTL PARTS LD PT	1965
LONE STAR AAP	Q0057	AMMO PROD STRUC	1942
LONE STAR AAP	Q0059	AMMO PROD STRUC	1942
LONE STAR AAP	Q0060	AMMO PROD STRUC	1942
LONE STAR AAP	Q0061	AMMO PROD STRUC	1942
LONE STAR AAP	Q0066	AMMO PROD STRUC	1942
LONE STAR AAP	Q0077	AMMO PROD STRUC	1942
LONE STAR AAP	Q0078	AMMO PROD STRUC	1942
LONE STAR AAP	Q0079	AMMO PROD STRUC	1942
LONE STAR AAP	Q0080	MTL PARTS LD PT	1957
LONE STAR AAP	Q0081	AMMO PROD STRUC	1942
LONE STAR AAP	Q0082	AMMO PROD STRUC	1942
LONE STAR AAP	Q0083	AMMO PROD STRUC	1942
LONE STAR AAP	Q0084	AMMO PROD STRUC	1942
LONE STAR AAP	Q0085	AMMO PROD STRUC	1942
LONE STAR AAP	Q0086	MTL PARTS LD PT	1965
LONE STAR AAP	R0001	MTL PARTS LD PT	1942
LONE STAR AAP	R0003	MTL PARTS LD PT	1942
LONE STAR AAP	R0004	MTL PARTS LD PT	1942
LONE STAR AAP	R0005	MTL PARTS LD PT	1942
LONE STAR AAP	R0006	MTL PARTS LD PT	1942
LONE STAR AAP	R0008	MTL PARTS LD PT	1942
LONE STAR AAP	R0009	MTL PARTS LD PT	1942
LONE STAR AAP	R0010	MTL PARTS LD PT	1942
LONE STAR AAP	R0011	MTL PARTS LD PT	1942
LONE STAR AAP	R0012	MTL PARTS LD PT	1942
LONE STAR AAP	R0014	MTL PARTS LD PT	1942
LONE STAR AAP	R0021	MTL PARTS LD PT	1963
LONE STAR AAP	R0023	MTL PARTS LD PT	1963
LONE STAR AAP	R0024	MTL PARTS LD PT	1963
LONE STAR AAP	R0025	MTL PARTS LD PT	1942
LONE STAR AAP	R0027	MTL PARTS LD PT	1963
LONE STAR AAP	R0028	MTL PARTS LD PT	1962
LONE STAR AAP	R0032	LD PT 76-120MM	1973
LONE STAR AAP	R0035	LD PT 76-120MM	1973
LONE STAR AAP	R0038	LD PT 76-120MM	1973
LONE STAR AAP	R0040	LD PT 76-120MM	1973
LONE STAR AAP	R0041	AMMO PROD STRUC	1973
LONE STAR AAP	R0044	MTL PARTS LD PT	1973
LONE STAR AAP	RAMPA	AMMO PROD STRUC	1942
LONE STAR AAP	RAMPI	AMMO PROD STRUC	1942
LONE STAR AAP	S0001	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0002	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0003	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0004	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0005	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0006	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0007	LD PT 76-120MM	1942
LONE STAR AAP	S0008	LD PT 76-120MM	1942
LONE STAR AAP	S0010	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0012	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0017	AMMO QA/CAL PRO	1942
LONE STAR AAP	S0018	LD PT 76-120MM	1942
LONGHORN AAP	402	PYRO PRODUCTION	1945
LONGHORN AAP	403	PYRO PRODUCTION	1945
LONGHORN AAP	406	PYRO PRODUCTION	1954
LONGHORN AAP	407	PYRO PRODUCTION	1954
LONGHORN AAP	408	PYRO PRODUCTION	1954
LONGHORN AAP	409	PYRO PRODUCTION	1955
LONGHORN AAP	410	PYRO PRODUCTION	1945
LONGHORN AAP	813	PYRO PRODUCTION	1968
LONGHORN AAP	814	PYRO PRODUCTION	1942
LONGHORN AAP	2126	PYRO PRODUCTION	1945
LONGHORN AAP	21201	PYRO PRODUCTION	1945
LONGHORN AAP	21202	PYRO PRODUCTION	1945
LONGHORN AAP	21203	PYRO PRODUCTION	1945
LONGHORN AAP	21204	PYRO PRODUCTION	1945
LONGHORN AAP	21205	PYRO PRODUCTION	1945
LONGHORN AAP	21207	PYRO PRODUCTION	1945
LONGHORN AAP	21208	PYRO PRODUCTION	1945
LONGHORN AAP	21209	PYRO PRODUCTION	1945
LONGHORN AAP	21210	PYRO PRODUCTION	1945
LONGHORN AAP	21211	PYRO PRODUCTION	1945
LONGHORN AAP	21212	PYRO PRODUCTION	1945
LONGHORN AAP	21213	PYRO PRODUCTION	1945
LONGHORN AAP	21214	PYRO PRODUCTION	1945
LONGHORN AAP	21215	PYRO PRODUCTION	1945
LONGHORN AAP	21216	PYRO PRODUCTION	1945
LONGHORN AAP	21217	PYRO PRODUCTION	1945
LONGHORN AAP	21218	PYRO PRODUCTION	1945
LONGHORN AAP	21219	PYRO PRODUCTION	1945
LONGHORN AAP	21220	PYRO PRODUCTION	1945
LONGHORN AAP	21221	PYRO PRODUCTION	1945
LONGHORN AAP	21223	PYRO PRODUCTION	1945
LONGHORN AAP	21225	PYRO PRODUCTION	1945
LONGHORN AAP	21227	PYRO PRODUCTION	1945
LONGHORN AAP	21229	PYRO PRODUCTION	1945
LONGHORN AAP	21231	PYRO PRODUCTION	1945

LONGHORN AAP	21232	PYRO PRODUCTION	1945
LONGHORN AAP	21233	PYRO PRODUCTION	1945
LONGHORN AAP	21234	PYRO PRODUCTION	1945
LONGHORN AAP	21235	PYRO PRODUCTION	1945
LONGHORN AAP	21236	PYRO PRODUCTION	1945
LONGHORN AAP	21237	PYRO PRODUCTION	1945
LONGHORN AAP	21238	PYRO PRODUCTION	1945
LONGHORN AAP	21239	PYRO PRODUCTION	1945
LONGHORN AAP	21240	PYRO PRODUCTION	1945
LONGHORN AAP	21242	PYRO PRODUCTION	1945
LONGHORN AAP	21244	PYRO PRODUCTION	1945
LONGHORN AAP	21246	PYRO PRODUCTION	1945
LONGHORN AAP	21248	PYRO PRODUCTION	1945
LONGHORN AAP	21250	PYRO PRODUCTION	1945
LONGHORN AAP	21251	PYRO PRODUCTION	1945
LONGHORN AAP	21252	PYRO PRODUCTION	1945
LONGHORN AAP	21253	PYRO PRODUCTION	1945
LONGHORN AAP	21254	PYRO PRODUCTION	1945
LONGHORN AAP	21255	PYRO PRODUCTION	1945
LONGHORN AAP	21256	PYRO PRODUCTION	1945
LONGHORN AAP	21257	PYRO PRODUCTION	1945
LONGHORN AAP	21259	PYRO PRODUCTION	1945
LONGHORN AAP	0016T	AMMO QA/CAL PRO	1955
LONGHORN AAP	0016Y	PYRO PRODUCTION	1954
LONGHORN AAP	0018Y	PYRO PRODUCTION	1955
LONGHORN AAP	0020T	AMMO QA/CAL PRO	1955
LONGHORN AAP	0025D	PROPELLANT PT	1955
LONGHORN AAP	0026E	PROPELLANT PT	1954
LONGHORN AAP	0027F	PROPELLANT PT	1960
LONGHORN AAP	0029D	PROPELLANT PT	1955
LONGHORN AAP	0031G	PROPELLANT PT	1955
LONGHORN AAP	0031T	AMMO QA/CAL PRO	1954
LONGHORN AAP	0032E	PROPELLANT PT	1957
LONGHORN AAP	0032G	PROPELLANT PT	1972
LONGHORN AAP	0034G	PROPELLANT PT	1962
LONGHORN AAP	0034T	AMMO QA/CAL PRO	1954
LONGHORN AAP	0034Y	PYRO PRODUCTION	1955
LONGHORN AAP	0035B	PYRO PRODUCTION	1945
LONGHORN AAP	0035T	AMMO QA/CAL PRO	1969
LONGHORN AAP	0036B	PROPELLANT PT	1945
LONGHORN AAP	0036T	AMMO QA/CAL PRO	1954
LONGHORN AAP	0037E	PROPELLANT PT	1960
LONGHORN AAP	0037F	AMMO PROD STRUC	1960
LONGHORN AAP	0038B	PROPELLANT PT	1945
LONGHORN AAP	0038D	AMMO PROD STRUC	1961
LONGHORN AAP	0038E	PROPELLANT PT	1960
LONGHORN AAP	0038Y	PYRO PRODUCTION	1945
LONGHORN AAP	0039E	AMMO PROD STRUC	1960
LONGHORN AAP	0039F	PROPELLANT PT	1960
LONGHORN AAP	0040D	PROPELLANT PT	1960
LONGHORN AAP	0040E	AMMO PROD STRUC	1961
LONGHORN AAP	0040H	PROPELLANT PT	1965
LONGHORN AAP	0040Y	PYRO PRODUCTION	1955
LONGHORN AAP	0041E	PROPELLANT PT	1960
LONGHORN AAP	0042E	PROPELLANT PT	1960
LONGHORN AAP	0045Y	PYRO PRODUCTION	1955
LONGHORN AAP	0046A	PROPELLANT PT	1960
LONGHORN AAP	0046B	PROPELLANT PT	1957
LONGHORN AAP	0047B	PROPELLANT PT	1945
LONGHORN AAP	0049B	PROPELLANT PT	1957
LONGHORN AAP	0050G	PROPELLANT PT	1958
LONGHORN AAP	0053B	PROPELLANT PT	1945
LONGHORN AAP	0054B	PROPELLANT PT	1945
LONGHORN AAP	0054F	PROPELLANT PT	1955
LONGHORN AAP	0054G	PROPELLANT PT	1955
LONGHORN AAP	0055B	PROPELLANT PT	1945
LONGHORN AAP	0056B	PROPELLANT PT	1945
LONGHORN AAP	0059B	PROPELLANT PT	1945
LONGHORN AAP	0060B	PROPELLANT PT	1945
LONGHORN AAP	0068C	PROPELLANT PT	1961
LONGHORN AAP	0068F	PYRO PRODUCTION	1955
LONGHORN AAP	00B06	PYRO PRODUCTION	1953
LONGHORN AAP	00B07	PYRO PRODUCTION	1970
LONGHORN AAP	00B08	PYRO PRODUCTION	1969
LONGHORN AAP	00M01	PYRO PRODUCTION	1954
LONGHORN AAP	00P01	PYRO PRODUCTION	1953
LONGHORN AAP	00P03	PYRO PRODUCTION	1953
LONGHORN AAP	00P09	PYRO PRODUCTION	1953
LONGHORN AAP	00T01	PYRO PRODUCTION	1969
LONGHORN AAP	00T02	PYRO PRODUCTION	1953
LONGHORN AAP	0212R	AMMO PROD STRUC	1945
LONGHORN AAP	0213R	AMMO PROD STRUC	1953
LONGHORN AAP	0235R	AMMO PROD STRUC	1945
LONGHORN AAP	036T2	AMMO QA/CAL PRO	1954
LONGHORN AAP	036T3	AMMO QA/CAL PRO	1954
LONGHORN AAP	036T4	AMMO QA/CAL PRO	1954
LONGHORN AAP	0801F	LG RKT MTR LD	1942
LONGHORN AAP	0B010	PYRO PRODUCTION	1953
LONGHORN AAP	0B011	PYRO PRODUCTION	1953
LONGHORN AAP	0B012	PYRO PRODUCTION	1953
LONGHORN AAP	0B013	PYRO PRODUCTION	1953
LONGHORN AAP	0B014	PYRO PRODUCTION	1953
LONGHORN AAP	0B015	PYRO PRODUCTION	1953

LONGHORN AAP	0B016	PYRO PRODUCTION	1953
LONGHORN AAP	0IST1	AMMO QA/CAL PRO	1953
LONGHORN AAP	0P010	PYRO PRODUCTION	1953
LONGHORN AAP	0P011	PYRO PRODUCTION	1953
LONGHORN AAP	0P012	PYRO PRODUCTION	1953
LONGHORN AAP	0P013	PYRO PRODUCTION	1953
LONGHORN AAP	0P014	PYRO PRODUCTION	1953
LONGHORN AAP	0P10R	AMMO PROD STRUC	1953
LONGHORN AAP	0S30R	AMMO PROD STRUC	1953
LONGHORN AAP	1020R	AMMO PROD STRUC	1955
LONGHORN AAP	25TP2	AMMO QA/CAL PRO	1959
LONGHORN AAP	A0000	PYRO PRODUCTION	1953
LONGHORN AAP	B0000	PYRO PRODUCTION	1953
LONGHORN AAP	C0000	PYRO PRODUCTION	1953
LONGHORN AAP	D0000	PYRO PRODUCTION	1953
LONGHORN AAP	E0000	PYRO PRODUCTION	1953
LONGHORN AAP	F0000	PYRO PRODUCTION	1953
LONGHORN AAP	G0000	PYRO PRODUCTION	1953
LONGHORN AAP	H0000	PYRO PRODUCTION	1953
LONGHORN AAP	J0000	PYRO PRODUCTION	1953
LONGHORN AAP	K0000	PYRO PRODUCTION	1953
LONGHORN AAP	L0000	PYRO PRODUCTION	1953
LONGHORN AAP	P140R	AMMO PROD STRUC	1953
LONGHORN AAP	S0005	PYRO PRODUCTION	1953
LONGHORN AAP	S0007	PYRO PRODUCTION	1953
LONGHORN AAP	S0008	PYRO PRODUCTION	1953

Category Abbreviation	Category Code	Category Description
EXP TRANS DEPOT	42104	Explosive Transfer Building, Depot Level
STRAD NONATOM D	42107	Stradley, Nonatomic Blast Resistant, Depot Level
FUSE/DET MAG D	42110	Fuse and Detonator Magazine, Depot Level
HE MAG DEPOT	42120	High Explosive Magazine, Depot Level
SMKLESS PDR DEP	42150	Smokeless Powder Magazine, Depot Level
SP WEAP MAG DEP	42160	Special Weapons Magazine, Depot Level
GM MAG DEPOT	42170	Guided Missile Magazine, Depot Level
IGLOO STR DEPOT	42180	Igloo Storage, Depot Level
AMMO STRHS DEP	42181	Ammunition Storehouse, Depot Level
SM ARM AMMO MAG	42182	Small Arms Ammunition Magazine, Depot Level
GP MAGAZINE DEP	42183	General Purpose Magazine, Depot Level
AMMO HUT DEPOT	42184	Ammunition Hut, Depot Level
FUSE/DET MAG IN	42210	Fuse and Detonator Magazine, Installation
HE MAG INST	42215	High Explosive Magazine, Installation
SMKDRUM STRHOUS	42225	Smokedrum Storehouse, Installation
SM ARM AMMO MAG	42230	Small Arms Ammunition and Pyrotechnics Magazine, Installation
AMMO STRHS INST	42231	Ammunition Storehouse, Installation
READY MAG INST	42235	Ready Magazine, Installation
FIX AMMO MAG IN	42240	Fixed Ammunition Magazine, Installation
SP WEAP MAG INS	42250	Special Weapons Magazine, Installation
GM MAG INST	42260	Guided Missile Magazine, Installation
IGLOO STR INST	42280	Igloo Storage, Installation
AMMO HUT INST	42281	Ammunition Hut, Installation
MAG GP INST	42283	General Purpose Magazine, Installation
UNIT AMMO STR	42285	Unit Small Arms Ammunition Storage, Installation
AMMO STR OTHER	42288	Ammo Storage Other than Depot or Unit
LIQ PROP STR BD	42310	Liquid Propellant Storage, Ammunition, Building
LIQ PROP FAC	42311	Liquid Propellant Storage, Ammunition, Facility
LIQ PROP STRUC	42312	Liquid Propellant Storage, Ammunition, Structure
BATT COLD STR	42410	Battery Cold Storage Building
AMMO STR PAD	42510	Ammunition Storage Pad

Site Name	Facility	Cat Code Desc	Year Built	Design Category
CAMP BULLIS	6088	READY MAG INST	1941	
CAMP STANLEY STOR ACTV	101	SM ARM AMMO MAG	1939	
CAMP STANLEY STOR ACTV	102	SM ARM AMMO MAG	1939	
CAMP STANLEY STOR ACTV	103	SM ARM AMMO MAG	1939	
CAMP STANLEY STOR ACTV	104	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	106	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	108	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	110	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	112	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	114	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	116	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	118	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	120	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	122	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	124	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	126	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	128	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	135	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	136	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	137	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	138	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	139	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	140	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	141	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	142	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	143	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	144	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	145	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	146	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	147	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	148	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	149	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	150	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	151	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	152	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	153	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	154	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	155	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	156	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	157	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	158	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	159	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	160	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	161	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	162	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	163	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	164	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	165	IGLOO STR DEPOT	1940	
CAMP STANLEY STOR ACTV	202	IGLOO STR DEPOT	1973	
CAMP STANLEY STOR ACTV	203	IGLOO STR DEPOT	1973	
CAMP STANLEY STOR ACTV	212	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	213	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	214	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	215	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	216	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	217	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	218	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	219	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	220	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	221	IGLOO STR DEPOT	1939	
CAMP STANLEY STOR ACTV	222	IGLOO STR DEPOT	1939	

CAMP STANLEY STOR ACTV	223	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	224	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	225	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	226	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	227	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	228	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	229	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	230	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	231	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	232	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	233	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	234	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	235	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	236	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	237	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	238	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	239	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	240	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	241	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	242	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	243	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	244	IGLOO STR DEPOT	1939
CAMP STANLEY STOR ACTV	245	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	246	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	247	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	248	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	249	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	250	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	251	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	252	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	253	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	254	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	255	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	256	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	257	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	258	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	259	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	260	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	261	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	262	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	263	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	264	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	265	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	266	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	267	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	268	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	269	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	270	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	271	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	272	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	273	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	274	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	275	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	276	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	277	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	278	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	279	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	280	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	281	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	282	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	283	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	284	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	285	IGLOO STR DEPOT	1940
CAMP STANLEY STOR ACTV	286	IGLOO STR DEPOT	1940

CAMP STANLEY STOR ACTV	287	GP MAGAZINE DEP	1939	
CAMP STANLEY STOR ACTV	288	GP MAGAZINE DEP	1939	
CAMP STANLEY STOR ACTV	289	GP MAGAZINE DEP	1939	
CAMP STANLEY STOR ACTV	290	GP MAGAZINE DEP	1939	
CAMP STANLEY STOR ACTV	291	GP MAGAZINE DEP	1939	
CAMP STANLEY STOR ACTV	A0262	IGLOO STR DEPOT	1940	
FORT BLISS	3664	MAG GP INST	1957	
FORT BLISS	11500	IGLOO STR INST	1952	
FORT BLISS	11505	IGLOO STR INST	1952	
FORT BLISS	11506	IGLOO STR INST	1956	
FORT BLISS	11507	IGLOO STR INST	1956	
FORT BLISS	11509	IGLOO STR INST	1952	
FORT BLISS	11511	IGLOO STR INST	1952	
FORT BLISS	11512	IGLOO STR INST	1956	
FORT BLISS	11513	IGLOO STR INST	1956	
FORT BLISS	11514	IGLOO STR INST	1956	
FORT BLISS	11516	MAG GP INST	1956	
FORT BLISS	11530	AMMO HUT INST	1943	
FORT BLISS	11540	IGLOO STR INST	1943	
FORT BLISS	11550	AMMO HUT INST	1943	
FORT HOOD	51015	STORAGE GP INST	1966	Fix Ammo Mag In (42240)
FORT HOOD	51016	STORAGE GP INST	1966	Fix Ammo Mag In (42240)
FORT HOOD	51017	STORAGE GP INST	1966	Fix Ammo Mag In (42240)
FORT HOOD	51018	STORAGE GP INST	1966	Fix Ammo Mag In (42240)
FORT HOOD	51019	STORAGE GP INST	1966	Fix Ammo Mag In (42240)
FORT HOOD	51020	STORAGE GP INST	1966	Fix Ammo Mag In (42240)
FORT HOOD	92101	SP WEAP MAG INS	1969	
FORT HOOD	92102	SP WEAP MAG INS	1969	
FORT HOOD	92103	SP WEAP MAG INS	1969	
FORT HOOD	92104	SP WEAP MAG INS	1969	
FORT HOOD	92105	SP WEAP MAG INS	1969	
FORT HOOD	92106	SP WEAP MAG INS	1969	
FORT HOOD	92107	SP WEAP MAG INS	1969	
FORT HOOD	92108	SP WEAP MAG INS	1969	
FORT HOOD	92109	SP WEAP MAG INS	1969	
FORT HOOD	92110	SP WEAP MAG INS	1969	
FORT HOOD	92111	SP WEAP MAG INS	1969	
FORT HOOD	92112	SP WEAP MAG INS	1969	
FORT HOOD	92113	SP WEAP MAG INS	1969	
FORT HOOD	92114	SP WEAP MAG INS	1969	
FORT HOOD	92115	SP WEAP MAG INS	1969	
FORT HOOD	92116	SP WEAP MAG INS	1969	
FORT HOOD	92117	SP WEAP MAG INS	1969	
FORT HOOD	92118	SP WEAP MAG INS	1969	
FORT HOOD	92119	SP WEAP MAG INS	1969	
FORT HOOD	92120	SP WEAP MAG INS	1969	
FORT HOOD	92121	SP WEAP MAG INS	1969	
FORT HOOD	92122	SP WEAP MAG INS	1969	
FORT HOOD	92123	SP WEAP MAG INS	1969	
FORT HOOD	92124	SP WEAP MAG INS	1969	
FORT HOOD	92125	SP WEAP MAG INS	1969	
FORT HOOD	92126	SP WEAP MAG INS	1969	
FORT HOOD	92130	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92131	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92132	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92133	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92134	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92136	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92137	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92138	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92139	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92140	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92141	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92142	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)

FORT HOOD	92143	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92144	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92145	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92146	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92147	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92148	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92149	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92151	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92152	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92163	SP WEAP MAG INS	1969	
FORT HOOD	92164	SP WEAP MAG INS	1969	
FORT HOOD	92165	SP WEAP MAG INS	1969	
FORT HOOD	92166	SP WEAP MAG INS	1969	
FORT HOOD	92167	SP WEAP MAG INS	1969	
FORT HOOD	92168	SP WEAP MAG INS	1969	
FORT HOOD	92169	SP WEAP MAG INS	1969	
FORT HOOD	92170	SP WEAP MAG INS	1969	
FORT HOOD	92171	SP WEAP MAG INS	1969	
FORT HOOD	92172	SP WEAP MAG INS	1969	
FORT HOOD	92173	SP WEAP MAG INS	1969	
FORT HOOD	92174	SP WEAP MAG INS	1969	
FORT HOOD	92175	SP WEAP MAG INS	1969	
FORT HOOD	92176	SP WEAP MAG INS	1969	
FORT HOOD	92177	SP WEAP MAG INS	1969	
FORT HOOD	92178	SP WEAP MAG INS	1969	
FORT HOOD	92179	SP WEAP MAG INS	1969	
FORT HOOD	92180	SP WEAP MAG INS	1969	
FORT HOOD	92181	SP WEAP MAG INS	1969	
FORT HOOD	92182	SP WEAP MAG INS	1969	
FORT HOOD	92183	SP WEAP MAG INS	1969	
FORT HOOD	92184	SP WEAP MAG INS	1969	
FORT HOOD	92185	SP WEAP MAG INS	1969	
FORT HOOD	92186	SP WEAP MAG INS	1969	
FORT HOOD	92187	SP WEAP MAG INS	1969	
FORT HOOD	92188	SP WEAP MAG INS	1969	
FORT HOOD	92189	SP WEAP MAG INS	1969	
FORT HOOD	92190	SP WEAP MAG INS	1969	
FORT HOOD	92192	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92193	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92194	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92195	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92196	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92197	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92198	SP WEAP MAG INS	1969	
FORT HOOD	92199	SP WEAP MAG INS	1969	
FORT HOOD	92200	SP WEAP MAG INS	1969	
FORT HOOD	92201	SP WEAP MAG INS	1969	
FORT HOOD	92202	SP WEAP MAG INS	1969	
FORT HOOD	92203	SP WEAP MAG INS	1969	
FORT HOOD	92204	SP WEAP MAG INS	1969	
FORT HOOD	92205	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92208	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92209	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92210	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92211	SP WEAP MAG INS	1969	
FORT HOOD	92212	SP WEAP MAG INS	1969	
FORT HOOD	92213	SP WEAP MAG INS	1969	
FORT HOOD	92214	SP WEAP MAG INS	1969	
FORT HOOD	92215	SP WEAP MAG INS	1969	
FORT HOOD	92216	SP WEAP MAG INS	1969	
FORT HOOD	92217	SP WEAP MAG INS	1969	
FORT HOOD	92218	SP WEAP MAG INS	1969	
FORT HOOD	92219	SP WEAP MAG INS	1969	
FORT HOOD	92220	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)

FORT HOOD	92221	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT HOOD	92222	STORAGE GP INST	1969	Sp Weap Mag Ins (42250)
FORT SAM HOUSTON	4112	AMMO STRHS INST	1942	
FORT SAM HOUSTON	4113	UNIT AMMO STR	1942	
FORT SAM HOUSTON	4114	UNIT AMMO STR	1942	
FORT SAM HOUSTON	4124	UNIT AMMO STR	1942	
LONE STAR AAP	T0101	IGLOO STR INST	1942	
LONE STAR AAP	T0102	IGLOO STR INST	1942	
LONE STAR AAP	T0103	IGLOO STR INST	1942	
LONE STAR AAP	T0104	IGLOO STR INST	1942	
LONE STAR AAP	T0105	IGLOO STR INST	1942	
LONE STAR AAP	T0106	IGLOO STR INST	1942	
LONE STAR AAP	T0107	IGLOO STR INST	1942	
LONE STAR AAP	T0201	IGLOO STR INST	1942	
LONE STAR AAP	T0202	IGLOO STR INST	1942	
LONE STAR AAP	T0204	IGLOO STR INST	1942	
LONE STAR AAP	T0205	IGLOO STR INST	1942	
LONE STAR AAP	T0206	IGLOO STR INST	1942	
LONE STAR AAP	T0207	IGLOO STR INST	1942	
LONE STAR AAP	T0208	IGLOO STR INST	1942	
LONE STAR AAP	T0301	IGLOO STR INST	1942	
LONE STAR AAP	T0302	IGLOO STR INST	1942	
LONE STAR AAP	T0303	IGLOO STR INST	1942	
LONE STAR AAP	T0304	IGLOO STR INST	1942	
LONE STAR AAP	T0305	IGLOO STR INST	1942	
LONE STAR AAP	T0306	IGLOO STR INST	1942	
LONE STAR AAP	T0401	IGLOO STR INST	1942	
LONE STAR AAP	T0402	IGLOO STR INST	1942	
LONE STAR AAP	T0403	IGLOO STR INST	1942	
LONE STAR AAP	T0404	IGLOO STR INST	1942	
LONE STAR AAP	T0405	IGLOO STR INST	1942	
LONE STAR AAP	T0406	IGLOO STR INST	1942	
LONE STAR AAP	T0407	IGLOO STR INST	1942	
LONE STAR AAP	U0101	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0103	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0104	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0201	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0202	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0203	STORAGE GP INST	1942	Fix Ammo Mag In (42240)
LONE STAR AAP	U0204	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0301	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0302	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0303	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0304	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0305	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0306	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0401	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0402	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0403	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0404	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0405	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0406	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0501	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0502	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0503	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0504	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0505	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0506	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0507	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0601	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0602	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0603	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0604	FIX AMMO MAG IN	1942	
LONE STAR AAP	U0605	FIX AMMO MAG IN	1942	

LONE STAR AAP	U0606	FIX AMMO MAG IN	1942
LONE STAR AAP	U0701	FIX AMMO MAG IN	1942
LONE STAR AAP	U0702	FIX AMMO MAG IN	1942
LONE STAR AAP	U0703	FIX AMMO MAG IN	1942
LONE STAR AAP	U0704	FIX AMMO MAG IN	1942
LONE STAR AAP	U0705	FIX AMMO MAG IN	1942
LONE STAR AAP	U0706	FIX AMMO MAG IN	1942
LONE STAR AAP	V0101	IGLOO STR INST	1942
LONE STAR AAP	V0102	IGLOO STR INST	1942
LONE STAR AAP	V0103	IGLOO STR INST	1942
LONE STAR AAP	V0104	IGLOO STR INST	1942
LONE STAR AAP	V0105	IGLOO STR INST	1942
LONE STAR AAP	V0106	IGLOO STR INST	1942
LONE STAR AAP	V0107	IGLOO STR INST	1942
LONE STAR AAP	V0201	IGLOO STR INST	1942
LONE STAR AAP	V0202	IGLOO STR INST	1942
LONE STAR AAP	V0203	IGLOO STR INST	1942
LONE STAR AAP	V0204	IGLOO STR INST	1942
LONE STAR AAP	V0205	IGLOO STR INST	1942
LONE STAR AAP	V0206	IGLOO STR INST	1942
LONE STAR AAP	V0207	IGLOO STR INST	1942
LONE STAR AAP	V0301	IGLOO STR INST	1942
LONE STAR AAP	V0302	IGLOO STR INST	1942
LONE STAR AAP	V0303	IGLOO STR INST	1942
LONE STAR AAP	V0304	IGLOO STR INST	1942
LONE STAR AAP	V0305	IGLOO STR INST	1942
LONE STAR AAP	V0306	IGLOO STR INST	1942
LONE STAR AAP	V0307	IGLOO STR INST	1942
LONE STAR AAP	V0401	IGLOO STR INST	1942
LONE STAR AAP	V0402	IGLOO STR INST	1942
LONE STAR AAP	V0403	IGLOO STR INST	1942
LONE STAR AAP	V0404	IGLOO STR INST	1942
LONE STAR AAP	V0405	IGLOO STR INST	1942
LONE STAR AAP	V0406	IGLOO STR INST	1942
LONE STAR AAP	V0407	IGLOO STR INST	1942
LONE STAR AAP	V0501	IGLOO STR INST	1942
LONE STAR AAP	V0502	IGLOO STR INST	1942
LONE STAR AAP	V0503	IGLOO STR INST	1942
LONE STAR AAP	V0504	IGLOO STR INST	1942
LONE STAR AAP	V0505	IGLOO STR INST	1942
LONE STAR AAP	V0506	IGLOO STR INST	1942
LONE STAR AAP	V0601	IGLOO STR INST	1942
LONE STAR AAP	V0602	IGLOO STR INST	1942
LONE STAR AAP	V0603	IGLOO STR INST	1942
LONE STAR AAP	V0604	IGLOO STR INST	1942
LONE STAR AAP	V0605	IGLOO STR INST	1942
LONE STAR AAP	V0606	IGLOO STR INST	1942
LONE STAR AAP	V0701	IGLOO STR INST	1942
LONE STAR AAP	V0702	IGLOO STR INST	1942
LONE STAR AAP	V0703	IGLOO STR INST	1942
LONE STAR AAP	V0704	IGLOO STR INST	1942
LONE STAR AAP	V0801	IGLOO STR INST	1942
LONE STAR AAP	V0802	IGLOO STR INST	1942
LONE STAR AAP	V0803	IGLOO STR INST	1942
LONE STAR AAP	V0804	IGLOO STR INST	1942
LONE STAR AAP	V0901	IGLOO STR INST	1942
LONE STAR AAP	V0902	IGLOO STR INST	1942
LONE STAR AAP	V1001	IGLOO STR INST	1942
LONE STAR AAP	V1002	IGLOO STR INST	1942
LONE STAR AAP	V1003	IGLOO STR INST	1942
LONE STAR AAP	V1004	IGLOO STR INST	1942
LONE STAR AAP	V1005	IGLOO STR INST	1942
LONE STAR AAP	V1101	IGLOO STR INST	1942
LONE STAR AAP	V1102	IGLOO STR INST	1942

LONE STAR AAP	V1103	IGLOO STR INST	1942
LONE STAR AAP	V1104	IGLOO STR INST	1942
LONE STAR AAP	V1201	IGLOO STR INST	1942
LONE STAR AAP	V1202	IGLOO STR INST	1942
LONE STAR AAP	V1301	IGLOO STR INST	1942
LONE STAR AAP	V1302	IGLOO STR INST	1942
LONE STAR AAP	V1303	IGLOO STR INST	1942
LONE STAR AAP	V1304	IGLOO STR INST	1942
LONE STAR AAP	V1401	IGLOO STR INST	1942
LONE STAR AAP	V1402	IGLOO STR INST	1942
LONE STAR AAP	V1403	IGLOO STR INST	1942
LONE STAR AAP	V1404	IGLOO STR INST	1942
LONE STAR AAP	V1501	IGLOO STR INST	1942
LONE STAR AAP	V1502	IGLOO STR INST	1942
LONE STAR AAP	V1503	IGLOO STR INST	1942
LONE STAR AAP	V1504	IGLOO STR INST	1942
LONE STAR AAP	V1601	IGLOO STR INST	1942
LONE STAR AAP	V1602	IGLOO STR INST	1942
LONE STAR AAP	V1603	IGLOO STR INST	1942
LONE STAR AAP	V1604	IGLOO STR INST	1942
LONE STAR AAP	V1701	IGLOO STR INST	1942
LONE STAR AAP	V1702	IGLOO STR INST	1942
LONE STAR AAP	V1703	IGLOO STR INST	1942
LONE STAR AAP	V1704	IGLOO STR INST	1942
LONE STAR AAP	V1801	IGLOO STR INST	1942
LONE STAR AAP	V1802	IGLOO STR INST	1942
LONE STAR AAP	V1803	IGLOO STR INST	1942
LONE STAR AAP	V1804	IGLOO STR INST	1942
LONE STAR AAP	W1001	IGLOO STR INST	1942
LONE STAR AAP	W1002	IGLOO STR INST	1942
LONE STAR AAP	W1003	IGLOO STR INST	1942
LONE STAR AAP	W1004	IGLOO STR INST	1942
LONE STAR AAP	W1005	IGLOO STR INST	1942
LONE STAR AAP	W1006	IGLOO STR INST	1942
LONE STAR AAP	W1007	IGLOO STR INST	1942
LONE STAR AAP	W1008	IGLOO STR INST	1942
LONE STAR AAP	W1009	IGLOO STR INST	1942
LONE STAR AAP	W1010	IGLOO STR INST	1942
LONE STAR AAP	W1011	IGLOO STR INST	1942
LONE STAR AAP	W2001	IGLOO STR INST	1942
LONE STAR AAP	W2002	IGLOO STR INST	1942
LONE STAR AAP	W2003	IGLOO STR INST	1942
LONE STAR AAP	W2004	IGLOO STR INST	1942
LONE STAR AAP	W2005	IGLOO STR INST	1942
LONE STAR AAP	W2006	IGLOO STR INST	1942
LONE STAR AAP	W2007	IGLOO STR INST	1942
LONE STAR AAP	W2008	IGLOO STR INST	1942
LONE STAR AAP	W2009	IGLOO STR INST	1942
LONE STAR AAP	W2010	IGLOO STR INST	1942
LONE STAR AAP	W2011	IGLOO STR INST	1942
LONE STAR AAP	W2012	IGLOO STR INST	1942
LONE STAR AAP	W2013	IGLOO STR INST	1942
LONE STAR AAP	W2014	IGLOO STR INST	1942
LONE STAR AAP	W3001	IGLOO STR INST	1942
LONE STAR AAP	W3002	IGLOO STR INST	1942
LONE STAR AAP	W3003	IGLOO STR INST	1942
LONE STAR AAP	W3004	IGLOO STR INST	1942
LONE STAR AAP	W3005	IGLOO STR INST	1942
LONE STAR AAP	W3006	IGLOO STR INST	1942
LONE STAR AAP	W3007	IGLOO STR INST	1942
LONE STAR AAP	W3008	IGLOO STR INST	1942
LONE STAR AAP	W3009	IGLOO STR INST	1942
LONE STAR AAP	W3010	IGLOO STR INST	1942
LONE STAR AAP	W3011	IGLOO STR INST	1942

LONE STAR AAP	W3012	IGLOO STR INST	1942
LONE STAR AAP	W3013	IGLOO STR INST	1942
LONE STAR AAP	W3014	IGLOO STR INST	1942
LONE STAR AAP	W4001	IGLOO STR INST	1942
LONE STAR AAP	W4002	IGLOO STR INST	1942
LONE STAR AAP	W4003	IGLOO STR INST	1942
LONE STAR AAP	W4004	IGLOO STR INST	1942
LONE STAR AAP	W4005	IGLOO STR INST	1942
LONE STAR AAP	W4006	IGLOO STR INST	1942
LONE STAR AAP	W4007	IGLOO STR INST	1942
LONE STAR AAP	W4008	IGLOO STR INST	1942
LONE STAR AAP	W4009	IGLOO STR INST	1942
LONE STAR AAP	W5001	IGLOO STR INST	1942
LONE STAR AAP	W5002	IGLOO STR INST	1942
LONE STAR AAP	W5003	IGLOO STR INST	1942
LONE STAR AAP	W5004	IGLOO STR INST	1942
LONE STAR AAP	W5005	IGLOO STR INST	1942
LONE STAR AAP	W5006	IGLOO STR INST	1942
LONE STAR AAP	W5007	IGLOO STR INST	1942
LONE STAR AAP	W6001	IGLOO STR INST	1942
LONE STAR AAP	W6002	IGLOO STR INST	1942
LONE STAR AAP	W6003	IGLOO STR INST	1942
LONE STAR AAP	W6004	IGLOO STR INST	1942
LONE STAR AAP	W6005	IGLOO STR INST	1942
LONE STAR AAP	W6006	IGLOO STR INST	1942
LONE STAR AAP	W6007	IGLOO STR INST	1942
LONE STAR AAP	W6008	IGLOO STR INST	1942
LONE STAR AAP	W7001	IGLOO STR INST	1942
LONE STAR AAP	W7002	IGLOO STR INST	1942
LONE STAR AAP	W7003	IGLOO STR INST	1942
LONE STAR AAP	W7004	IGLOO STR INST	1942
LONE STAR AAP	W7005	IGLOO STR INST	1942
LONE STAR AAP	W7006	IGLOO STR INST	1942
LONE STAR AAP	W7007	IGLOO STR INST	1942
LONE STAR AAP	W7008	IGLOO STR INST	1942
LONE STAR AAP	W7009	IGLOO STR INST	1942
LONE STAR AAP	W7010	IGLOO STR INST	1942
LONE STAR AAP	W7011	IGLOO STR INST	1942
LONE STAR AAP	W7012	IGLOO STR INST	1942
LONE STAR AAP	W7013	IGLOO STR INST	1942
LONE STAR AAP	W7014	IGLOO STR INST	1942
LONE STAR AAP	W8001	IGLOO STR INST	1942
LONE STAR AAP	W8002	IGLOO STR INST	1942
LONE STAR AAP	W8003	IGLOO STR INST	1942
LONE STAR AAP	W8004	IGLOO STR INST	1942
LONE STAR AAP	W8005	IGLOO STR INST	1942
LONE STAR AAP	W8006	IGLOO STR INST	1942
LONE STAR AAP	W8007	IGLOO STR INST	1942
LONE STAR AAP	W8008	IGLOO STR INST	1942
LONE STAR AAP	W8009	IGLOO STR INST	1942
LONE STAR AAP	W8010	IGLOO STR INST	1942
LONE STAR AAP	W8011	IGLOO STR INST	1942
LONGHORN AAP	81101	HE MAG INST	1942
LONGHORN AAP	81102	HE MAG INST	1942
LONGHORN AAP	81103	HE MAG INST	1942
LONGHORN AAP	81104	HE MAG INST	1942
LONGHORN AAP	81105	HE MAG INST	1942
LONGHORN AAP	81106	HE MAG INST	1942
LONGHORN AAP	81107	HE MAG INST	1942
LONGHORN AAP	81108	HE MAG INST	1942
LONGHORN AAP	81109	HE MAG INST	1942
LONGHORN AAP	81110	HE MAG INST	1942
LONGHORN AAP	81111	HE MAG INST	1942
LONGHORN AAP	81112	HE MAG INST	1942

LONGHORN AAP	81113	HE MAG INST	1942
LONGHORN AAP	81114	HE MAG INST	1942
LONGHORN AAP	81115	HE MAG INST	1942
LONGHORN AAP	81116	HE MAG INST	1942
LONGHORN AAP	81117	HE MAG INST	1942
LONGHORN AAP	81118	HE MAG INST	1942
LONGHORN AAP	81119	HE MAG INST	1942
LONGHORN AAP	81120	HE MAG INST	1942
LONGHORN AAP	81121	HE MAG INST	1942
LONGHORN AAP	81122	HE MAG INST	1942
LONGHORN AAP	81123	HE MAG INST	1942
LONGHORN AAP	81124	HE MAG INST	1942
LONGHORN AAP	81125	HE MAG INST	1942
LONGHORN AAP	81126	HE MAG INST	1942
LONGHORN AAP	81127	HE MAG INST	1942
LONGHORN AAP	81128	HE MAG INST	1942
LONGHORN AAP	81129	HE MAG INST	1942
LONGHORN AAP	81130	HE MAG INST	1942
LONGHORN AAP	81131	HE MAG INST	1942
LONGHORN AAP	81132	HE MAG INST	1942
LONGHORN AAP	81133	HE MAG INST	1942
LONGHORN AAP	81134	HE MAG INST	1942
LONGHORN AAP	81135	HE MAG INST	1942
LONGHORN AAP	81136	HE MAG INST	1942
LONGHORN AAP	81137	HE MAG INST	1942
LONGHORN AAP	81138	HE MAG INST	1942
LONGHORN AAP	81139	HE MAG INST	1942
LONGHORN AAP	81140	HE MAG INST	1942
LONGHORN AAP	81141	HE MAG INST	1942
LONGHORN AAP	81142	HE MAG INST	1942
LONGHORN AAP	81143	HE MAG INST	1942
LONGHORN AAP	81144	HE MAG INST	1942
LONGHORN AAP	81145	HE MAG INST	1942
LONGHORN AAP	81146	HE MAG INST	1942
LONGHORN AAP	81147	HE MAG INST	1942
LONGHORN AAP	81148	HE MAG INST	1942
LONGHORN AAP	81149	HE MAG INST	1942
LONGHORN AAP	81150	HE MAG INST	1942
LONGHORN AAP	81151	HE MAG INST	1942
LONGHORN AAP	81152	HE MAG INST	1942
LONGHORN AAP	81153	HE MAG INST	1942
LONGHORN AAP	81154	HE MAG INST	1942
LONGHORN AAP	81155	HE MAG INST	1942
LONGHORN AAP	81156	HE MAG INST	1942
LONGHORN AAP	81157	HE MAG INST	1942
LONGHORN AAP	81158	HE MAG INST	1942
LONGHORN AAP	0013Y	MAG GP INST	1955
LONGHORN AAP	0021T	MAG GP INST	1955
LONGHORN AAP	0022X	MAG GP INST	1955
LONGHORN AAP	0027X	MAG GP INST	1955
LONGHORN AAP	0029Y	MAG GP INST	1955
LONGHORN AAP	0031M	MAG GP INST	1954
LONGHORN AAP	0032Y	MAG GP INST	1955
LONGHORN AAP	0035M	MAG GP INST	1954
LONGHORN AAP	0039M	MAG GP INST	1954
LONGHORN AAP	0043X	MAG GP INST	1955
LONGHORN AAP	0048Y	MAG GP INST	1955
LONGHORN AAP	BST02	HE MAG INST	1953
LONGHORN AAP	BST04	HE MAG INST	1953
LONGHORN AAP	DST03	FUSE/DET MAG IN	1953
RED RIVER ARMY DEPOT	610	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	612	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	614	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	616	HE MAG DEPOT	1942

RED RIVER ARMY DEPOT	618	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	620	GM MAG DEPOT	1942
RED RIVER ARMY DEPOT	626	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	628	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	630	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	632	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	634	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	650	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	652	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	655	EXP TRANS DEPOT	1942
RED RIVER ARMY DEPOT	656	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	658	HE MAG DEPOT	1942
RED RIVER ARMY DEPOT	660	GM MAG DEPOT	1942
RED RIVER ARMY DEPOT	682	EXP TRANS DEPOT	1943
RED RIVER ARMY DEPOT	930	FUSE/DET MAG IN	1970
RED RIVER ARMY DEPOT	2155	SMKLESS PDR DEP	1942
RED RIVER ARMY DEPOT	2203	EXP TRANS DEPOT	1942
RED RIVER ARMY DEPOT	2455	AMMO HUT DEPOT	1945
RED RIVER ARMY DEPOT	2459	AMMO HUT DEPOT	1945
RED RIVER ARMY DEPOT	A0101	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0102	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0104	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0105	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0106	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0107	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0201	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0202	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0203	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0204	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0205	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0206	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0207	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0301	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0302	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0303	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0304	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0305	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0306	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0307	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0401	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0402	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0403	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0404	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0405	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0406	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0407	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0501	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0502	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0503	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0504	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0505	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0506	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0507	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0601	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0602	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0603	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0604	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0605	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0606	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0607	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0701	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0702	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0703	IGLOO STR DEPOT	1942

RED RIVER ARMY DEPOT	A0704	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0705	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0706	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0801	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0802	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0803	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0804	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0805	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0806	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0807	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0901	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0902	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0903	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0904	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0905	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0906	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A0907	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1001	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1002	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1003	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1004	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1005	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1006	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1007	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1101	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1102	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1104	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1105	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	A1107	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1201	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1202	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1203	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1204	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1205	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1206	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1207	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1301	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1302	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1303	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1304	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1305	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1306	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1307	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1401	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1402	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1403	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1404	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1405	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1406	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	A1407	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0101	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0102	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0104	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0105	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0106	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0107	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0201	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0202	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0203	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0204	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0205	IGLOO STR DEPOT	1942

RED RIVER ARMY DEPOT	B0206	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0207	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0301	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0302	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0303	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0304	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0305	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0306	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0307	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0401	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	B0403	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0404	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0405	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0406	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0501	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0502	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0503	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0504	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0505	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0506	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0507	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0601	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0602	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0603	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0604	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0605	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	B0607	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	B0702	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0703	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0704	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0705	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0706	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0801	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0802	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0803	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0804	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0805	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0806	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0901	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	B0903	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0904	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0905	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0906	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B0907	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1001	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1002	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1003	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1004	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1005	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1006	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	B1101	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1102	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1104	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1105	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1106	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1201	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1202	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1203	IGLOO STR DEPOT	1942

RED RIVER ARMY DEPOT	B1301	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1302	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1303	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1304	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1305	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1401	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1402	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1403	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1404	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1405	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1501	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1502	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1601	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1602	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1701	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1702	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1703	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1704	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1705	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1801	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1802	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1803	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1804	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1805	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1806	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1807	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1808	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1809	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1810	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	B1811	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0101	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0102	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0104	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0105	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0106	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0107	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0108	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0201	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0202	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0203	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0204	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0205	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0206	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0207	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0208	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0209	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0301	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0302	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0303	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0304	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0305	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0306	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0307	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0308	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0401	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0402	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0403	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0404	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0405	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0406	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0407	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0408	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0409	IGLOO STR DEPOT	1942

RED RIVER ARMY DEPOT	C0501	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0502	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0503	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0504	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0505	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0506	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0507	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0508	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0601	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0602	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0603	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0604	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0605	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0606	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0607	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0608	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0609	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0701	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0702	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0703	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0704	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0705	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0706	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0707	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0708	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0801	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0802	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0803	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0804	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0805	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0806	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0807	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0808	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0809	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	C0902	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0903	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0904	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0905	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	C0907	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C0908	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	C1002	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1003	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1004	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1005	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1006	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1007	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1008	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1009	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1101	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1102	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1104	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1105	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1106	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1107	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1108	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1201	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1202	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1203	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1204	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	C1205	IGLOO STR DEPOT	1942

RED RIVER ARMY DEPOT	D0101	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D0102	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D0103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D0104	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D0105	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D0201	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	D0203	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D0204	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D0205	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D0206	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D0207	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	D0307	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	D0702	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	D1002	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	D1003	IGLOO STR DEPOT	1942

RED RIVER ARMY DEPOT	D1004	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	D1007	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	D1103	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	D1305	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	E0403	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0404	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	E0406	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0407	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0501	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0502	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	E0606	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0607	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	E0702	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0703	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0704	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0705	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	E0901	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0902	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0903	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0904	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E0905	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	E1003	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E1004	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	E1103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E1104	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	E1106	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E1107	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	E1206	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	E1207	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	F0803	IGLOO STR DEPOT	1942

RED RIVER ARMY DEPOT	F0804	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	F0806	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F0807	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	F1107	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1108	IGLOO STR DEPOT	1942
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RED RIVER ARMY DEPOT	F1202	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1203	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1204	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1205	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1206	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1207	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1301	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1302	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1303	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1304	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1305	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1306	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1307	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1401	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1402	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1403	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1404	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1405	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	F1406	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0101	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0102	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0104	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0105	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0106	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0107	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0201	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0202	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0203	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0204	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0205	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0206	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0207	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0301	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0302	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0303	IGLOO STR DEPOT	1942

RED RIVER ARMY DEPOT	G0304	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0305	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0306	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0307	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0401	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0402	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0403	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0404	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0405	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0406	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0407	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0501	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0502	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0503	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0504	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0505	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0506	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0507	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0601	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0602	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0603	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0604	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0605	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0606	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0607	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0701	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0702	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0703	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0704	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0705	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0706	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0707	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0801	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0802	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0803	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0804	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0805	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0806	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0807	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0901	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0902	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0903	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0904	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0905	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0906	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G0907	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1001	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1002	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1003	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1004	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1005	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1006	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1007	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1101	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1102	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1103	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1104	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1105	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1106	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1107	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1201	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1202	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1203	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1204	IGLOO STR DEPOT	1942

RED RIVER ARMY DEPOT	G1205	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1206	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1207	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1301	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1302	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1303	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1304	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1305	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1306	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1401	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1402	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1403	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1404	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1405	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1406	IGLOO STR DEPOT	1942
RED RIVER ARMY DEPOT	G1407	IGLOO STR DEPOT	1942

Category Abbreviation	Category Code	Category Description
ARMY LODGING	72010	Army Lodging
ENLISTED UPH	72111	Enlisted Unaccompanied Personnel Housing
TT ENL BARRACKS	72114	Enlisted Barracks, Transient Training
MOB ENL BRKS	72115	Enlisted Barracks, Mobilization
TRANS UPH AIT	72121	Transient UPH, Advanced Individual Trainees (AIT)
TRANS UPH AST	72122	Transient UPH, Advanced Skills Trainees (AST)
UPH SR NCO	72170	Unaccompanied Personnel Housing, Senior NCO
TRAINEE BKS	72181	Trainee Barracks
DINING FACILITY	72210	Dining Facility
DINING FACIL TT	72212	Dining Facility, Transient Training
UPH LAUNDRY DET	72310	UPH Laundry Building, Detached
GARAGE UPH DET	72350	Garage, UPH, Detached
CARPORT, UPH	72351	Carport, UPH
MISC FAC DET	72360	Miscellaneous Facilities, Detached (Lounge/Dayroom)
UOQ MILITARY	72410	Unaccompanied Officers Quarters, Military
TT OFF QTRS	72412	Transient Training Officers Quarters
HUTMENT	72510	Hutment
TENT PAD	72520	Tent Pad

Site Name	Facility	Cat Code Desc	Year Built	Design Category
BEE CAVES	4	DINING FACILITY	1960	
CAMP BULLIS	5219	HUTMENT	1969	
CAMP BULLIS	5220	HUTMENT	1969	
CAMP BULLIS	5221	HUTMENT	1969	
CAMP BULLIS	5222	HUTMENT	1969	
CAMP BULLIS	5223	HUTMENT	1969	
CAMP BULLIS	5224	HUTMENT	1969	
CAMP BULLIS	5225	HUTMENT	1969	
CAMP BULLIS	5226	HUTMENT	1969	
CAMP BULLIS	5235	HUTMENT	1969	
CAMP BULLIS	5237	HUTMENT	1969	
CAMP BULLIS	5238	HUTMENT	1969	
CAMP BULLIS	5239	HUTMENT	1969	
CAMP BULLIS	5240	HUTMENT	1969	
CAMP BULLIS	5241	HUTMENT	1969	
CAMP BULLIS	5242	HUTMENT	1969	
CAMP BULLIS	5243	HUTMENT	1969	
CAMP BULLIS	5244	HUTMENT	1969	
CAMP BULLIS	5245	HUTMENT	1969	
CAMP BULLIS	5246	HUTMENT	1969	
CAMP BULLIS	5247	HUTMENT	1969	
CAMP BULLIS	5248	HUTMENT	1969	
CAMP BULLIS	5252	HUTMENT	1969	
CAMP BULLIS	5253	HUTMENT	1969	
CAMP BULLIS	5256	HUTMENT	1969	
CAMP BULLIS	5257	HUTMENT	1969	
CAMP BULLIS	5258	HUTMENT	1969	
CAMP BULLIS	5259	HUTMENT	1969	
CAMP BULLIS	5260	HUTMENT	1969	
CAMP BULLIS	5261	HUTMENT	1969	
CAMP BULLIS	5262	HUTMENT	1969	
CAMP BULLIS	5263	HUTMENT	1969	
CAMP BULLIS	5264	HUTMENT	1969	
CAMP BULLIS	5265	HUTMENT	1969	
CAMP BULLIS	5266	HUTMENT	1969	
CAMP BULLIS	5269	HUTMENT	1969	
CAMP BULLIS	5270	HUTMENT	1969	
CAMP BULLIS	5271	HUTMENT	1969	
CAMP BULLIS	5272	HUTMENT	1969	
CAMP BULLIS	5273	HUTMENT	1969	
CAMP BULLIS	5274	HUTMENT	1969	
CAMP BULLIS	5275	HUTMENT	1969	
CAMP BULLIS	5276	HUTMENT	1969	
CAMP BULLIS	5277	HUTMENT	1969	
CAMP BULLIS	5278	HUTMENT	1969	
CAMP BULLIS	5279	HUTMENT	1969	
CAMP BULLIS	5280	HUTMENT	1969	
CAMP BULLIS	5283	HUTMENT	1969	
CAMP BULLIS	5284	HUTMENT	1969	
CAMP BULLIS	5285	HUTMENT	1969	
CAMP BULLIS	5286	HUTMENT	1969	
CAMP BULLIS	5287	HUTMENT	1969	
CAMP BULLIS	5288	HUTMENT	1969	
CAMP BULLIS	5289	HUTMENT	1969	
CAMP BULLIS	5290	HUTMENT	1969	
CAMP BULLIS	5291	HUTMENT	1969	
CAMP BULLIS	5292	HUTMENT	1969	
CAMP BULLIS	5293	HUTMENT	1969	
CAMP BULLIS	5294	HUTMENT	1969	
CAMP SWIFT	306	DINING FACILITY	1967	
CAMP SWIFT	307	DINING FACILITY	1968	
CORPUS CHRISTI ARMY DEP	1727	UPH SR NCO	1968	
FORT BLISS	1002	ENLISTED UPH	1956	

FORT BLISS	1003	TRANS UPH AST	1956	
FORT BLISS	1004	TRANS UPH AST	1956	
FORT BLISS	1005	TRANS UPH AST	1956	
FORT BLISS	1006	TRANS UPH AST	1956	
FORT BLISS	1007	ENLISTED UPH	1956	
FORT BLISS	1008	TRANS UPH AST	1956	
FORT BLISS	1009	TRANS UPH AST	1956	
FORT BLISS	1010	TRANS UPH AIT	1956	
FORT BLISS	1011	TRANS UPH AIT	1956	
FORT BLISS	1012	TRANS UPH AIT	1956	
FORT BLISS	1013	TRANS UPH AIT	1956	
FORT BLISS	1014	TRANS UPH AIT	1956	
FORT BLISS	2410	ENLISTED UPH	1953	
FORT BLISS	2411	ENLISTED UPH	1953	
FORT BLISS	2412	ENLISTED UPH	1953	
FORT BLISS	2413	ENLISTED UPH	1953	
FORT BLISS	2414	ENLISTED UPH	1951	
FORT BLISS	2416	ENLISTED UPH	1953	
FORT BLISS	2417	ENLISTED UPH	1953	
FORT BLISS	2418	ENLISTED UPH	1953	
FORT BLISS	2419	MOB ENL BRKS	1953	
FORT BLISS	2420	ENLISTED UPH	1953	
FORT BLISS	2421	ENLISTED UPH	1953	
FORT BLISS	2442	ENLISTED UPH	1953	
FORT BLISS	2444	TT ENL BARRACKS	1953	
FORT BLISS	2445	TT ENL BARRACKS	1953	
FORT BLISS	2447	ENLISTED UPH	1953	
FORT BLISS	2448	ENLISTED UPH	1953	
FORT BLISS	2449	ENLISTED UPH	1953	
FORT BLISS	2450	ENLISTED UPH	1953	
FORT BLISS	2452	ENLISTED UPH	1953	
FORT BLISS	2471	ENLISTED UPH	1953	
FORT BLISS	2472	ENLISTED UPH	1953	
FORT BLISS	2473	ENLISTED UPH	1953	
FORT BLISS	2474	ENLISTED UPH	1953	
FORT BLISS	2475	ENLISTED UPH	1953	
FORT BLISS	2476	ENLISTED UPH	1953	
FORT BLISS	2477	ENLISTED UPH	1953	
FORT BLISS	2478	ENLISTED UPH	1953	
FORT BLISS	2479	ENLISTED UPH	1953	
FORT BLISS	2480	ENLISTED UPH	1953	
FORT BLISS	2901	ENLISTED UPH	1955	
FORT BLISS	2902	ENLISTED UPH	1955	
FORT BLISS	2903	ENLISTED UPH	1955	
FORT BLISS	2904	ENLISTED UPH	1955	
FORT BLISS	2905	ENLISTED UPH	1955	
FORT BLISS	5015	ARMY LODGING	1956	UPH Senior NCO (72170)
FORT BLISS	5016	ARMY LODGING	1956	UPH Senior NCO (72170)
FORT BLISS	5017	ARMY LODGING	1956	UPH Senior NCO (72170)
FORT BLISS	5018	ARMY LODGING	1956	UPH Senior NCO (72170)
FORT BLISS	5019	ARMY LODGING	1956	UPH Senior NCO (72170)
FORT BLISS	5020	ARMY LODGING	1956	UPH Senior NCO (72170)
FORT BLISS	5023	ARMY LODGING	1956	UPH Senior NCO (72170)
FORT BLISS	5039	ARMY LODGING	1958	UOQ Military (72410)
FORT BLISS	5040	UOQ MILITARY	1958	
FORT BLISS	5041	UOQ MILITARY	1962	
FORT BLISS	5042	UOQ MILITARY	1962	
FORT BLISS	5043	UOQ MILITARY	1962	
FORT BLISS	5044	UOQ MILITARY	1962	
FORT BLISS	5045	UOQ MILITARY	1962	
FORT BLISS	7309	ENLISTED UPH	1955	
FORT BLISS	11142	DINING FACILITY	1967	
FORT BLISS	11144	TT ENL BARRACKS	1967	
FORT BLISS	11147	TT ENL BARRACKS	1967	

FORT BLISS	11150	TT ENL BARRACKS	1967
FORT BLISS	11151	TT ENL BARRACKS	1967
FORT BLISS	11152	TT ENL BARRACKS	1967
FORT BLISS	11153	TT ENL BARRACKS	1967
FORT BLISS	11174	ENLISTED UPH	1957
FORT BLISS	11175	ENLISTED UPH	1957
FORT BLISS	11265	ARMY LODGING	1957
FORT BLISS	11266	ARMY LODGING	1957
FORT BLISS	11285	TT ENL BARRACKS	1967
FORT BLISS	11332	ARMY LODGING	1953
FORT BLISS	11340	ARMY LODGING	1959
FORT BLISS	11354	UPH SR NCO	1959
FORT HOOD	5786	UOQ MILITARY	1956
FORT HOOD	5788	UOQ MILITARY	1956
FORT HOOD	5790	UOQ MILITARY	1956
FORT HOOD	5792	UOQ MILITARY	1956
FORT HOOD	9210	ENLISTED UPH	1958
FORT HOOD	9211	ENLISTED UPH	1958
FORT HOOD	9213	ENLISTED UPH	1958
FORT HOOD	9214	ENLISTED UPH	1958
FORT HOOD	9418	ENLISTED UPH	1956
FORT HOOD	9419	ENLISTED UPH	1956
FORT HOOD	9420	ENLISTED UPH	1956
FORT HOOD	9421	ENLISTED UPH	1956
FORT HOOD	9422	ENLISTED UPH	1953
FORT HOOD	9423	ENLISTED UPH	1956
FORT HOOD	9424	ENLISTED UPH	1956
FORT HOOD	9425	ENLISTED UPH	1956
FORT HOOD	10001	ENLISTED UPH	1952
FORT HOOD	10002	ENLISTED UPH	1952
FORT HOOD	10003	ENLISTED UPH	1952
FORT HOOD	10004	ENLISTED UPH	1952
FORT HOOD	10005	ENLISTED UPH	1952
FORT HOOD	10006	ENLISTED UPH	1952
FORT HOOD	10007	ENLISTED UPH	1953
FORT HOOD	10008	ENLISTED UPH	1953
FORT HOOD	10009	ENLISTED UPH	1953
FORT HOOD	10010	ENLISTED UPH	1956
FORT HOOD	10011	ENLISTED UPH	1953
FORT HOOD	10016	ENLISTED UPH	1953
FORT HOOD	10018	ENLISTED UPH	1953
FORT HOOD	10020	ENLISTED UPH	1953
FORT HOOD	10021	ENLISTED UPH	1953
FORT HOOD	10022	ENLISTED UPH	1956
FORT HOOD	12003	ENLISTED UPH	1963
FORT HOOD	12004	ENLISTED UPH	1963
FORT HOOD	12005	DINING FACILITY	1964
FORT HOOD	12006	ENLISTED UPH	1966
FORT HOOD	12007	DINING FACILITY	1966
FORT HOOD	12008	ENLISTED UPH	1963
FORT HOOD	12009	ENLISTED UPH	1966
FORT HOOD	14019	ENLISTED UPH	1958
FORT HOOD	14020	ENLISTED UPH	1958
FORT HOOD	14022	ENLISTED UPH	1958
FORT HOOD	14023	ENLISTED UPH	1958
FORT HOOD	16003	ENLISTED UPH	1966
FORT HOOD	16004	ENLISTED UPH	1966
FORT HOOD	16006	ENLISTED UPH	1966
FORT HOOD	16008	ENLISTED UPH	1966
FORT HOOD	16009	ENLISTED UPH	1966
FORT HOOD	21002	DINING FACILITY	1972
FORT HOOD	21003	ENLISTED UPH	1972
FORT HOOD	21006	ENLISTED UPH	1966
FORT HOOD	21008	ENLISTED UPH	1966

FORT HOOD	21009	ENLISTED UPH	1966
FORT HOOD	31007	ENLISTED UPH	1972
FORT HOOD	31008	DINING FACILITY	1972
FORT HOOD	31009	ENLISTED UPH	1972
FORT HOOD	34006	ENLISTED UPH	1974
FORT HOOD	34008	DINING FACILITY	1974
FORT HOOD	34010	ENLISTED UPH	1974
FORT HOOD	36001	ENLISTED UPH	1968
FORT HOOD	37003	ENLISTED UPH	1969
FORT HOOD	37004	ENLISTED UPH	1969
FORT HOOD	37006	ENLISTED UPH	1968
FORT HOOD	37008	ENLISTED UPH	1968
FORT HOOD	37009	ENLISTED UPH	1968
FORT HOOD	41002	ENLISTED UPH	1972
FORT HOOD	41007	DINING FACILITY	1969
FORT HOOD	41008	ENLISTED UPH	1969
FORT HOOD	41009	ENLISTED UPH	1969
FORT HOOD	56413	DINING FACILITY	1951
FORT HOOD	56414	DINING FACILITY	1951
FORT HOOD	56522	DINING FACILITY	1951
FORT HOOD	56523	DINING FACILITY	1951
FORT HOOD	56524	DINING FACILITY	1951
FORT HOOD	56525	DINING FACILITY	1951
FORT HOOD	56529	DINING FACILITY	1955
FORT HOOD	56532	DINING FACILITY	1951
FORT HOOD	56533	DINING FACILITY	1951
FORT HOOD	56534	DINING FACILITY	1951
FORT HOOD	56535	DINING FACILITY	1951
FORT HOOD	56539	DINING FACILITY	1955
FORT HOOD	56542	DINING FACILITY	1951
FORT HOOD	56543	DINING FACILITY	1951
FORT HOOD	56544	DINING FACILITY	1951
FORT HOOD	56545	DINING FACILITY	1951
FORT HOOD	56549	DINING FACILITY	1955
FORT HOOD	56618	DINING FACILITY	1951
FORT HOOD	56622	DINING FACILITY	1951
FORT HOOD	56623	DINING FACILITY	1951
FORT HOOD	56624	DINING FACILITY	1951
FORT HOOD	56625	DINING FACILITY	1951
FORT HOOD	56629	DINING FACILITY	1955
FORT HOOD	56632	DINING FACILITY	1951
FORT HOOD	56633	DINING FACILITY	1951
FORT HOOD	56634	DINING FACILITY	1951
FORT HOOD	56635	DINING FACILITY	1951
FORT HOOD	56639	DINING FACILITY	1955
FORT HOOD	56702	DINING FACILITY	1951
FORT HOOD	56710	DINING FACILITY	1951
FORT HOOD	56752	DINING FACILITY	1951
FORT HOOD	56753	DINING FACILITY	1951
FORT HOOD	56754	DINING FACILITY	1951
FORT HOOD	56755	DINING FACILITY	1951
FORT HOOD	56759	DINING FACILITY	1955
FORT HOOD	87012	ENLISTED UPH	1974
FORT HOOD	87013	ENLISTED UPH	1974
FORT HOOD	87015	ENLISTED UPH	1974
FORT HOOD	87017	DINING FACILITY	1974
FORT HOOD	90041	ENLISTED UPH	1963
FORT SAM HOUSTON	590	TRANS UPH AIT	1957
FORT SAM HOUSTON	591	TRANS UPH AIT	1957
FORT SAM HOUSTON	1002	TRANS UPH AIT	1957
FORT SAM HOUSTON	1152	TT ENL BARRACKS	1967
FORT SAM HOUSTON	1153	TT ENL BARRACKS	1967
FORT SAM HOUSTON	1159	TT ENL BARRACKS	1967
FORT SAM HOUSTON	1160	TT ENL BARRACKS	1967

FORT SAM HOUSTON	1161	TT ENL BARRACKS	1967
FORT SAM HOUSTON	1377	DINING FACILITY	1972
FORT SAM HOUSTON	1379	TRANS UPH AIT	1972
FORT SAM HOUSTON	1380	TRANS UPH AIT	1972
FORT SAM HOUSTON	1382	TRANS UPH AIT	1972
FORT WOLTERS	630	DINING FACILITY	1951
FORT WOLTERS	741	TT ENL BARRACKS	1951
FORT WOLTERS	742	DINING FACILITY	1951

Preserving America's Heritage

PROGRAM COMMENT FOR
WORLD WAR II AND COLD WAR ERA (1939 – 1974)
AMMUNITION STORAGE FACILITIES

I. Introduction

This Program Comment provides the Department of Defense (DoD) and its Military Departments with an alternative way to comply with their responsibilities under Section 106 of the National Historic Preservation Act with regard to the effect of the following management actions on World War II and Cold War Era ammunition storage facilities that may be eligible for listing on the National Register of Historic Places: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities.

The term Ammunition Storage Facilities means all buildings and structures, listed in or eligible for listing in the National Register of Historic Places, that were designed and built as ammunition storage facilities within the years 1939-1974, regardless of current use, and that are identified by a DoD Category Group (2 digit) code of 42, Ammunition Storage (category code 42XXXX), in the Military Service's Real Property Inventory currently or at the time of construction. Table 1 (attached) provides all such buildings and structures associated with ammunition storage, by Military Department, that are applicable to this program comment.

In order to take into account the effects on Ammunition Storage Facilities, DoD and its Military Departments will conduct documentation in accordance with The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. As each Military Department will be responsible for conducting its own mitigation actions, the following required documentation is structured by Military Department, followed by DoD-wide requirements.

II. Treatment of Properties

A. Army Mitigation

1. The Army shall expand and revise its existing context study, Army Ammunition and Explosives Storage in the United States, 1775-1945 to include the Cold War Era. This document provides background information and criteria for evaluating the historic significance of such buildings. The updated context study will:

identify the changes in ammunition storage during the Cold War;

focus on the changes required for ammunition storage due to technological advancement in weaponry;

consider the importance of major builders, architects or engineers that may have been associated with design and construction of Ammunition Storage Facilities throughout the Army or at specific Army installations; and

describe the inventory of Ammunition Storage Facilities in detail, providing information on the various types of buildings and architectural styles and the quantity of each.

2. The Army shall undertake in-depth documentation on Ammunition Storage Facilities at nine installations. The existing context study concluded that the Army possessed "only a few basic types and an abundance of examples" of Ammunition Storage Facilities, due to the standardization of ammunition storage facilities beginning in the 1920s. The context study suggests that six geographically dispersed installations contain an array of primary examples of both aboveground and underground magazines with a high degree of integrity:

Hawthorne Army Depot, Nevada – early igloos;

McAlester Army Ammunition Plant, Oklahoma – Corbetta Beehive;

Pine Bluff Arsenal, Arkansas – biological and chemical igloos;

Ravenna Army Ammunition Plant, Ohio – standard World War II and aboveground magazines;

Blue Grass Army Ammunition Plant, Kentucky – standard World War II igloos and aboveground magazines; and

Louisiana Army Ammunition Plant, Louisiana – Stradley special weapons.

The Army shall document these six as well as three additional installations that possess Cold War Era Ammunition Storage Facilities. Documentation at the three additional installations will be determined after completion of the expanded context study described in section II.A.1., above. This study will include a brief history of the installation and the surrounding community, if appropriate, and a detailed history of the storage facilities and documentation of the buildings. The documentation will primarily consist of historic photographs and existing plans. Documentation will be tailored to address the different natures of aboveground and underground storage.

B. Navy Mitigation

1. The Navy will develop a supplemental context study that will be attached as an appendix to the Army's existing context study, Army Ammunition and Explosives Storage in the United States, 1775-1945. The final product will be a separately bound volume of additional information and photographs and tabular appendices that, when presented with the Army's and Air Force's context studies, provide a clear picture of the Department of Defense's Ammunition Storage facilities. This context study appendix will:

cover both World War II and the Cold War Era, from 1939-1974;

explore the changes in ammunition storage resulting from World War II;

examine the changes required for ammunition storage due to technological advancement in weaponry during the Cold War;

consider the importance of major builders, architects or engineers that may have been associated with design and construction of Ammunition Storage Facilities; and

describe the inventory of Ammunition Storage Facilities in detail, providing information on the various types of buildings and architectural styles and the quantity of each.

2. The Navy shall document a representative sample of the basic types of both aboveground and underground ammunition storage facilities. The Navy will choose three geographically dispersed installations with the greatest number and variety of such resources. The Marines will choose one such installation. The sample chosen shall be the best representative examples of the range of Ammunition Storage types constructed during World War II and the Cold War era. This documentation will include collecting existing plans and drawings, writing a historic description in narrative or outline format, and compiling existing historic photographs of the structures. Documentation will be tailored to address the different natures of aboveground and underground storage.

C. Air Force Mitigation

1. The Air Force will develop a supplemental context study that will be attached as an appendix to the Army's existing context study, Army Ammunition and Explosives Storage in the United States, 1775-1945. The final product will be a separately bound volume of additional information and photographs and tabular appendices that, when presented with the Army's and Navy's context studies, provide a clear picture of the Department of Defense's Ammunition Storage facilities. This context study appendix will:

cover the Cold War Era, from 1946-1974;

explore the changes in ammunition storage resulting from the Cold War;

examine the changes required for ammunition storage due to technological advancement in weaponry during the Cold War;

consider the importance of major builders, architects or engineers that may have been associated with design and construction of Ammunition Storage Facilities; and

describe the inventory of Ammunition Storage Facilities in detail, providing information on the various types of buildings and architectural styles and the quantity of each.

2. The Air Force shall document a representative sample of the basic types of both aboveground and underground ammunition storage facilities. The Air Force will choose three geographically dispersed installations with the greatest number and variety of such resources. The sample chosen shall be the best representative examples of the range of Ammunition Storage types constructed during the Cold War era. This documentation would include collecting existing plans and drawings, writing a historic description in narrative or outline format, and compiling existing historic photographs of the structures. Documentation will be tailored to address the different natures of aboveground and underground storage.

3. The Air Force will not be required to consider its World War II Era facilities in these mitigation actions. The Air Force was established in September 1947 and therefore was not associated with structures constructed during this era. Rather the Air Force has inherited its current inventory of 263 World War II Era Ammunition Storage facilities from former Army installations. Given the substantial

mitigation actions that will be undertaken by the Army to document its facilities, further documentation for the small number of similar facilities located at Air Force installations provides no additional historic value. While no documentation will be done on World War II facilities under the Air Force's control, all of the 263 facilities in its inventory are covered under this Program Comment.

D. DoD-Wide Mitigation

1. Copies of the documentation described above will be made available electronically, to the extent possible under security concerns, and hard copies will be placed in a permanent repository, such as the Center for Military History.

2. In addition, as a result of on-going consultations, each Military Department will provide a list of properties covered by the Program Comment, by State, to State Historic Preservation Officers, Tribal Historic Preservation Officers, and other interested parties, as appropriate. Each Military Department will be responsible for determining how to convey its information.

3. All Military Departments will encourage adaptive reuse of the properties as well as the use of historic tax credits by private developers under lease arrangements. Military Departments will also incorporate adaptive reuse and preservation principles into master planning documents and activities.

The above actions satisfy DoD's requirement to take into account the effects of the following management actions on World War II and Cold War Era ammunition storage facilities that may be eligible for listing on the National Register of Historic Places: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities.

III. Applicability

A. 1. This Program Comment applies solely to Ammunition Storage Facilities as defined in Section I, above. The Program Comment does not apply to the following properties that are listed, or eligible for listing, on the National Register of Historic Places: (1) archeological properties, (2) properties of traditional religious and cultural significance to federally recognized Indian tribes or Native Hawaiian organizations, and/or (3) ammunition storage facilities in listed or eligible National Register of Historic Places districts where the ammunition storage facility is a contributing element of the district and the proposed undertaking has the potential to adversely affect such historic district. This third exclusion does not apply to historic districts that are made up solely of ammunition storage facility properties. In those cases the Program Comment would be applicable to such districts.

Since the proposed mitigation for the Ammunition Storage facilities documents site plans, building designs, and the spatial arrangement of ammunition storage facilities, along with the events and actions that lead to the development of standardized ammunition storage facilities in DoD, the important aspects of ammunition storage, whether single buildings or districts made up entirely of ammunition storage, will be addressed regardless of the type of undertaking that may affect this particular property type. The one currently known ammunition storage district, at Hawthorne Army Ammunition Plant, has been identified for further study, as outlined in Section II(A)(2) above.

2. An installation with an existing Section 106 agreement document in place that addresses ammunition storage facilities can choose to:

(i) continue to follow the stipulations in the existing agreement document for the remaining period of the agreement; or

(ii) seek to amend the existing agreement document to incorporate, in whole or in part, the terms of this Program Comment; or

(iii) terminate the existing agreement document, and re-initiate consultation informed by this Program Comment if necessary.

3. All future Section 106 agreement documents developed by the Military Departments related to the undertakings and properties addressed in this Program Comment shall include appropriate provisions detailing whether and how the terms of this Program Comment apply to such undertakings.

IV. Completion Schedule

On or before 60 days following issuance of the Program Comment, DoD, its Military Department and ACHP will establish a schedule for completion of the treatments outlined above.

V. Effect of the Program Comment

By following this Program Comment, DoD and its Military Departments meet their responsibilities for compliance under Section 106 regarding the effect of the following management actions on World War II and Cold War Era ammunition storage facilities that may be eligible for listing on the National Register of Historic Places: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities. Accordingly, DoD installations are no longer required to follow the case-by-case Section 106 review process for such effects. As each of the Military Departments is required under this Program Comment to document their own facilities, failure of any one Military Department to comply with the terms of the Program Comment will not adversely affect the other Departments' abilities to continue managing their properties under the Program Comment.

This Program Comment will remain in effect until such time as the Office of the Secretary of Defense determines that such comments are no longer needed and notifies ACHP in writing, or ACHP withdraws the comments in accordance with 36 CFR § 800.14(e)(6). Following such withdrawal, DoD and its Military Departments would be required to comply with the requirements of 36 CFR §§ 800.3 through 800.7 regarding the effects under this Program Comments' scope.

DoD, its Military Departments and ACHP will review the implementation of the Program Comment seven years after its issuance and determine whether to take action to terminate the Program Comment as detailed in the preceding paragraph.

John L. Nau, III
Chairman

August 18, 2006
Date

Attachment: Table

TABLE 1 - RPCS Hierarchy for Category Group 42

CG & Title	BC	BC Title	FAC	UM	FAC Title	MilDep	CAT CODE	UM AREA	UM OTH	UM ALT	CATCODE LONG NAME
- 42 - Ammunition Storage											
	421	Depot and Arsenal Ammunition Storage									
			4211	SF	Ammunition Storage, Depot and Arsenal						
						Army	42104	SF			EXPLOSIVE TRANSFER BUILDING, DEPOT LEVEL
						Army	42107	SF			STRADLEY, NONATOMIC BLAST RESISTANT, DEPOT LEVEL
						Army	42110	SF			FUSE AND DETONATOR MAGAZINE, DEPOT LEVEL
						Army	42120	SF			HIGH EXPLOSIVE MAGAZINE, DEPOT LEVEL
						Army	42150	SF			SMOKELESS POWDER MAGAZINE, DEPOT LEVEL
						Army	42160	SF			SPECIAL WEAPONS MAGAZINE, DEPOT LEVEL
						Army	42170	SF			GUIDED MISSILE MAGAZINE, DEPOT LEVEL
						Army	42180	SF			IGLOO STORAGE, DEPOT LEVEL
						Army	42181	SF			AMMUNITION STOREHOUSE, DEPOT LEVEL
						Army	42182	SF			SMALL ARMS AMMUNITION MAGAZINE, DEPOT LEVEL
						Army	42183	SF			GENERAL PURPOSE MAGAZINE, DEPOT LEVEL
						Army	42184	SF			AMMUNITION HUT, DEPOT LEVEL
						Army	42186	SF			AMMUNITION STORAGE STRUCTURE, DEPOT LEVEL
						Army	42288	SF			AMMO STORAGE OTHER THAN DEPOT OR UNIT
						Navy	42112	SF		CF	FUSE&DETONATOR MAGAZINE
						Navy	42122	SF		CF	HIGH-EXPLOSIVE MAGAZINE
						Navy	42132	SF		CF	INERT STOREHOUSE
						Navy	42142	SF		CF	SMOKEDRUM STOREHOUSE
						Navy	42148	SF		CF	SMALL-ARMS PYROTECHNIC MAGAZINE
						Navy	42152	SF		CF	SMOKELESS-POWDER-PROJECTILE MAGAZINE
						Navy	42162	SF		CF	SPECIAL-WEAPONS MAGAZINE
						Navy	42172	SF		CF	MISSILE MAGAZINE

		4212	SF	Intercontinental Ballistic Missile Storage Facility				
					Navy	42182	SF	SUBMARINE LAUNCHED BALLISTIC MISSILE STORAGE FACILITY
422	Installation and Ready Issue Ammunition Storage							
		4221	SF	Ammunition Storage, Installation				
					Air Force	422253	SF	STORAGE, MULTI-CUBICLE MAGAZINE
					Air Force	422256	SF	STORAGE, ROCKET CHECKOUT AND ASSEMBLY
					Air Force	422257	SF	STORAGE SEGREGATED MAGAZINE
					Air Force	422258	SF	STORAGE MAGAZINE ABOVE GROUND TYPE A, B, &C
					Air Force	422259	SF	MISSILE STORAGE FACILITY
					Air Force	422264	SF	EA STORAGE IGLOO
					Air Force	422271	SF	STORAGE, MODULE BARRICADED
					Air Force	422273	SF	STORAGE IGLOO STEEL ARCH UNDERPASS
					Army	42210	SF	FUSE AND DETONATOR MAGAZINE, INSTALLATION
					Army	42215	SF	HIGH EXPLOSIVE MAGAZINE, INSTALLATION
					Army	42225	SF	SMOKEDRUM STOREHOUSE, INSTALLATION
					Army	42230	SF	SMALL ARMS AMMUNITION AND PYROTECHNICS MAGAZINE, INSTALI
					Army	42231	SF	AMMUNITION STOREHOUSE, INSTALLATION
					Army	42235	SF	READY MAGAZINE, INSTALLATION
					Army	42240	SF	FIXED AMMUNITION MAGAZINE, INSTALLATION
					Army	42250	SF	SPECIAL WEAPONS MAGAZINE, INSTALLATION
					Army	42260	SF	GUIDED MISSILE MAGAZINE, INSTALLATION
					Army	42280	SF	IGLOO STORAGE, INSTALLATION
					Army	42281	SF	AMMUNITION HUT, INSTALLATION
					Army	42283	SF	GENERAL PURPOSE MAGAZINE, INSTALLATION
					Army	42285	SF	UNIT SMALL ARMS AMMUNITION STORAGE, INSTALLATION
					Army	42286	SF	AMMUNITION STORAGE STRUCTURE, INSTALLATION

				Navy	42135	SF	CF READY MAGAZINE
423	Liquid Propellant Ammunition Storage						
		4231	GA	Liquid Propellant Storage, Ammunition Related			
				Air Force	423111	GA	LIQUID PROPELLANT AMMO STORAGE
				Army	42310	SF GA	LIQUID PROPELLANT STORAGE, AMMUNITION, BUILDING
				Army	42311	GA	LIQUID PROPELLANT STORAGE, AMMUNITION, FACILITY
				Army	42312	SF GA	LIQUID PROPELLANT STORAGE, AMMUNITION, STRUCTURI
				Navy	42310	GA	LIQUID-PROPELLANT STORAGE
424	Weapon-Related Battery Storage						
		4241	SF	Battery Storage, Weapon Related			
				Army	42410	SF	BATTERY COLD STORAGE BUILDING
				Navy	42410	SF	SH WEAPON-RELATED BATTERY STORAGE
425	Open Ammunition Storage						
		4251	SY	Open Ammunition Storage			
				Army	42510	SY	AMMUNITION STORAGE PAD
				Navy	42510	SY	OPEN-AMMUNITION-STORAGE PAD
				Navy	42520	SY	CONTAINER-HOLDING YARD -EMPTY
				Navy	42530	SY	BARRICADED MODULE (OPEN)

APPENDIX A

CONUS INSTALLATIONS
WITH AMMUNITION STORAGE (FY00)

CONUS Installations with Ammunition Storage (FY00)*
Installations with Potentially Eligible Resources Under this Context

AMC

Aberdeen Proving Ground
Anniston Army Depot
Badger AAP
Blossom Pt. Field Test Facility
Blue Grass Army Depot
Cornhusker AAP
Corpus Christi Army Depot
Defense Dist. Depot, Ogden UT
Deseret Chemical Depot
Hawthorne Army Depot
Holston AAP
Indiana AAP
Iowa AAP
Jefferson Proving Ground
Joliet AAP – Elwood
Kansas AAP
Lake City AAP
Letterkenny Army Depot
Lone Star AAP
Longhorn AAP
Louisiana AAP
McAlester AAP
Milan AAP
Fort Monmouth, Main Post
Newport Chemical Depot
Picatinny Arsenal
Pine Bluff Arsenal
Pueblo Chemical Depot
Radford AAP
Radford AAP New River
Ravenna AAP
Red River Army Depot
Redstone Arsenal
Rock Island Arsenal
Rocky Mountain Arsenal
Savanna Depot Activity
Seneca Army Depot Activity
Sierra Army Depot
Camp Stanley Storage Activity
Sunflower AAP
Tooele Army Depot
Twin Cities AAP
Umatilla Chemical Depot
U.S. Army Garrison Selfridge
Volunteer AAP
Watervliet Arsenal
Fort Wingate Depot Activity

ATEC

Dugway Proving Ground
White Sands Missile Range

FORSCOM

Fort Campbell
Fort Drum
Fort Gillem
Fort McPherson
Hunter Army Airfield
NTC and Fort Irwin
Fort Riley

MDW

Fort Myer
Fort Hamilton
USA Fort Belvoir

MEDCOM

Camp Bullis
Fort Detrick
Fort Sam Houston

NG

ARNG-MTC Fort Pickett
Fort Chaffee
MTA Camp Roberts
MTA Fort Wm. Henry Harrison
NG Hammer Field
NG Hastings MTA
NG Mead MTA
NG New Castle TS Rifle Range
NG Youngstown WETS
Sandstone Armory
TS-AFRC Los Alamitos
TS-Newton Falls (RAAP)

TRADOC

Carlisle Barracks
Fort Benjamin Harrison
Fort Bliss
Fort Bliss AAA Ranges
Fort Benning
Fort Gordon
Fort Huachuca
Fort Jackson
Fort Knox
Fort McClellan
Fort Monroe
Fort Ord
Fort Rucker
Fort Sill

USARC

Camden USAR (OMS)
Fort Devens Training Annex – Sudbury
Fort Dix
Fort McCoy
Fort Sheridan
Parks Reserve Forces TNG Area
USARC Hinghan Cohasset

USMA

West Point Military Reserve

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*Taken from FY00 IFS data – CONUS installation with ammo storage facilities at least 50 years old.

APPENDIX B

AMERICAN TABLE OF DISTANCES

AMERICAN TABLE OF DISTANCES

Blasting and Electric Blasting Caps		Other Explosives		Inhabited Buildings Barricaded*	Public Railway Barricaded*	Public Highway Barricaded*
Number Over	Number Not Over	Pounds Over	Pounds Not Over	(Feet)	(Feet)	(Feet)
1,000	5,000			15	10	5
5,000	10,000			30	20	10
10,000	20,000			60	35	18
20,000	25,000		50	73	45	23
25,000	50,000	50	100	120	70	35
50,000	100,000	100	200	180	110	55
100,000	150,000	200	300	260	155	75
150,000	200,000	300	400	320	190	95
200,000	250,000	400	500	360	215	110
250,000	300,000	500	600	400	240	120
300,000	350,000	600	700	430	260	130
350,000	400,000	700	800	460	275	140
400,000	450,000	800	900	490	295	150
450,000	500,000	900	1,000	510	305	155
500,000	750,000	1,000	1,500	530	320	160
750,000	1,000,000	1,500	2,000	600	360	180
1,000,000	1,500,000	2,000	3,000	650	390	195
1,500,000	2,000,000	3,000	4,000	710	425	210
2,000,000	2,500,000	4,000	5,000	750	450	225
2,500,000	3,000,000	5,000	6,000	780	470	235
3,000,000	3,500,000	6,000	7,000	805	485	245
3,500,000	4,000,000	7,000	8,000	830	500	250
4,000,000	4,500,000	8,000	9,000	850	510	255
4,500,000	5,000,000	9,000	10,000	870	520	260
5,000,000	7,500,000	10,000	15,000	890	535	265
7,500,000	10,000,000	15,000	20,000	975	585	290
10,000,000	12,500,000	20,000	25,000	1,055	635	315
12,500,000	15,000,000	25,000	30,000	1,130	680	340
15,000,000	17,500,000	30,000	35,000	1,205	725	360
17,500,000	20,000,000	35,000	40,000	1,275	765	380
		40,000	45,000	1,340	805	400
		45,000	50,000	1,400	840	420
		50,000	55,000	1,460	875	440
		55,000	60,000	1,515	910	455
		60,000	65,000	1,565	940	470
		65,000	70,000	1,610	970	485
		70,000	75,000	1,655	995	500
		75,000	80,000	1,695	1,020	510
		80,000	85,000	1,730	1,040	520
		85,000	90,000	1,760	1,060	530
		90,000	95,000	1,790	1,075	540
		95,000	100,000	1,815	1,090	545
		100,000	125,000	1,835	1,100	550
		125,000	150,000	1,900	1,140	570
		150,000	175,000	1,965	1,180	590
		175,000	200,000	2,030	1,220	610
		200,000	225,000	2,095	1,260	630
		225,000	250,000	2,155	1,295	650
		250,000	275,000	2,215	1,330	670
		275,000	300,000	2,275	1,365	690
		300,000	325,000	2,335	1,400	705
		325,000	350,000	2,390	1,435	720
		350,000	375,000	2,445	1,470	735
		375,000	400,000	2,500	1,500	750
		400,000	425,000	2,555	1,530	765
		425,000	450,000	2,605	1,560	780
		450,000	475,000	2,655	1,590	795
		475,000	500,000	2,705	1,620	810

*Barricaded, as here used, signifies that the building containing explosives is screened from other buildings, railways, or from highways by either natural or artificial barriers. Where such barriers do not exist, the distances should be doubled.

Source: Report on the Joint Army and Navy Board Convened to Make a Survey of Points of Storage of Ammunition in Compliance with a Provision of the First Deficiency Act, Fiscal Year 1928. On file, U.S. Army Corps of Engineers, Fort Worth District.