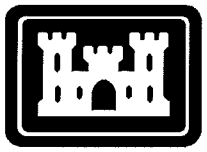

Contract No. DACW51-95-D-0024
Work Order No. 19

U.S. Army Corps of Engineers
New York District

ARCHITECTURAL ASSESSMENT OF HISTORIC STRUCTURES AT PICATINNY ARSENAL, MORRIS COUNTY, NEW JERSEY

FINAL REPORT

August 1999

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Buffalo Branch Office
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Buffalo, New York 14227

PREPARED FOR:

U.S. Army Corps of Engineers
New York District
26 Federal Plaza
New York, NY 10278-0090

FINAL REPORT

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Management Summary

Project Name: Architectural Assessment of Historic Structures at Picatinny Arsenal, Morris County, New Jersey.

Project Location and Environmental Setting: Picatinny Arsenal is located on a 6,500-acre site in the Township of Rockaway, Morris County, New Jersey. The arsenal is located within the Green Pond Brook valley and is flanked by uplands to the west and east. Rocky outcrops, steep slopes and stony soils are characteristic of the region.

Purpose: The U.S. Army Corps of Engineers, New York District, contracted Panamerican Consultants, Inc. in June 1997 to complete an evaluation of historic structures at Picatinny Arsenal, New Jersey. The goal of this contract was two-fold. The first part of the contract was to reevaluate 500 structures which were previously judged potentially eligible for the National Register of Historic Places (NRHP). The second was to identify those structures eligible for nomination to the NRHP either individually or as part of a historic district. This report presents the conclusions of the reevaluation of the 500 historic structures within Picatinny Arsenal.

Methods: PCI reevaluated 500 historic structures on Picatinny Arsenal and the former Lake Denmark Navy Depot which were previously judged eligible for the National Register of Historic Places by WCH/Boston Affiliates (Harrell 1994). The task of reevaluating 500 structures included two methods: in-field inspection and research evaluation. PCI visually inspected the 500 structures and their NRHP status was evaluated utilizing a number of DOD architectural reports concerning the NRHP status of a number of types of military structures present within that system.

When the structures had been initially evaluated in 1994 (Harrell 1994), WCH/Boston Affiliates believed that all of Picatinny Arsenal formed a single historic district. The New Jersey Historic Preservation Office (HPO) has determined that the entire installation lacks sufficient integrity to form a single district and finds only three smaller areas eligible as districts, as well as two individually eligible structures (Guzzo 1999). For a complete discussion of Picatinny's NRHP-eligible districts and buildings, please see *Definition of Historic Districts for Picatinny Arsenal, Morris County, New Jersey* (Nolte and Steinback 1999). Because the structures had originally been judged only against their contributions to a district, it was necessary to look at other means of determining their eligibility.

Since the reevaluated structures met the initial NRHP criterion of age, other relevant factors needed to be considered. It is an accepted research practice to separate a military installation into traditional use areas. Buildings are then further divided into family types (e.g., warehouses, magazines, quarters) and by construction materials. All of these categories help define the structure and its relationship to other military buildings and its place in social and architectural history as determined by a number of DOD and military services reports (Grandine and Cannan 1995; Grashof 1986; Kriv n.d.; and Walsh 1995).

Conclusions: Of the 500 structures resurveyed, PCI judged 443 to be ineligible for the NRHP when reevaluated against new criteria. Two questions raised by the WCH/Boston Affiliates report as to the eligibility of Building 266, a wind tunnel, and the Doland House (3119), a pre-Revolutionary War house site, were also evaluated.

In the former case, the Army converted Building 266, originally a pre-World War I magazine, into a wind tunnel in 1945 and used it to test ordnance. Research was completed on the Army's use of wind tunnels during World War II, the time of the magazine's conversion, which determined that wind tunnels were common on ordnance facilities. (A wind tunnel, for instance, can still be found on Aberdeen Proving Ground in Maryland.) Further research was unable to determine if the Army tested any special ordnance or ordnance design in this particular tunnel at Picatinny Arsenal. Since the tunnel does not appear to have ever been used to test or design any specific ordnance and because it is not a historically or architecturally significant building, it is PCI's opinion that Building 266 is not eligible for the NRHP.

In the later case, there were several research questions about the age of portions of the Doland House (3119) which are beyond the scope of this report. In November 1998 PCI conducted a cultural resource investigation on the house to determine if any portions exist from the eighteenth century as well as to trace the history of the structure and delineate the house site boundaries. The Doland House was found to lack integrity and its surrounding soils are disturbed. PCI has recommended that the structure is not eligible for listing in the NRHP. For more information see Nolte et al. 1999.

Location of file copies of report: Copies of this report are on file at the U.S. Army Corps of Engineers, New York District, New York; and the U.S. Army, Division of Engineering and Housing, Picatinny Arsenal, New Jersey.

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Acknowledgments

Panamerican Consultants, Inc. wishes to thank a number of individuals who assisted us in completing this report. We thank Dr. Patrick Owens, Command Historian at Picatinny Arsenal, for the numerous books, articles, photographs, maps and time he gave us. We also acknowledge the invaluable assistance lent us by the Department of Public Works, Picatinny Arsenal especially by Mr. Jack Lyons, Real Property Specialist, who went that extra mile in providing us access to structures as well as excellent research materials. We thank Mr. Vinod Kapoor, Chief of Master Planning and Programs Office, Mr. Ronald Bailey, Engineering Technician and Mr. Tim Miller, Chief of Environmental and Natural Resources Division, all of Picatinny Arsenal.

This report could not have been completed without the help of Ms. Roselle Henn, New York Army Corps of Engineers and Mr. Dan Saunders of the New Jersey State Historic Preservation Office, Trenton, New Jersey. Assistance was also provided by Ms. Judith M. Matteson, Curator, Fort Jackson Museum, Fort Jackson, South Carolina; Mr. Ben King, Command Historian, Ft. Eustis, Virginia; Dr. Kier Stirling and Mr. Roger Goode, Aberdeen Proving Grounds, Maryland; Dr. William F. "Jack" Atwater, Ordnance Historian; Mr. Tom Snyder, Command Historian, Rock Island Arsenal, Illinois; Mr. David A. Alberg, Curator, College Park Aviation Museum, College Park, Maryland; and Mr. Steve Lawson, Public Relations, Thiokol Corporation, Ogden, Utah.*

Photographs were taken by Ms. Marilyn Kaplan and Ms. Kelly Nolte. Ms. Tina Miller and Ms. Sue Vizzini provided clerical assistance. The graphics were prepared by Mr. Martin Lewars and the report was edited by Mr. Carl W. Thiel at Panamerican Consultants, Inc. Buffalo Branch Office.

* In 1998 the Thiokol Corporation changed its name to Cordent Technologies, with Thiokol Propulsion as a subsidiary division, and moved its corporate offices to Salt Lake City, UT.

1.0 Introduction

The U.S. Army Corps of Engineers, New York District, contracted Panamerican Consultants, Inc. in June 1997 to complete an evaluation of historic structures at Picatinny Arsenal, New Jersey. Picatinny Arsenal, a 6,500-acre United States Army installation, is located in the Townships of Rockaway and Jefferson, Morris County, New Jersey. Located within the current installation is the former Lake Denmark Naval Depot (Figure 1).

The goal of this contract was two-fold. The first portion of this contract was to reevaluate 500 structures which WCH/Boston Affiliates (Harrell 1994) previously judged potentially eligible for the National Register of Historic Places (NRHP). The second was to identify those structures eligible for nomination to the NRHP either individually or as part of a historic district. This report presents the conclusions of the reevaluation of the 500 historic structures within Picatinny Arsenal.

As an agency of the federal government, the U.S. Army has certain responsibilities for protecting and preserving the cultural resources on lands controlled or used by the U.S. Army. Toward this end, Picatinny Arsenal is currently developing a Cultural Resource Management Plan which will enable the installation to adequately manage its cultural resources. The identification of those structures eligible and ineligible for the NRHP is necessary in the development of that plan.

To aid in the development of that plan, Ms. Kelly Nolte, Architectural Historian, researched the historic structures of Picatinny Arsenal and also served as the Principal Investigator and principal author of this report. Ms. Nolte and Mr. Michael V. Taylor, who served as Research Assistant and Photographer, conducted the field work. Dr. Michael A. Cinquino served as Project Director and Technical Advisor. Mr. Mark Steinback, PCI Historian, provided the background historical information.

Two methods were employed in reevaluating the structures: in-field assessment and historic research. PCI visually inspected the 500 structures identified by Harrell (1994) and evaluated their NRHP status utilizing a number of U.S. Army and Department of Defense (DOD) architectural reports concerning the NRHP status of a number of types of military structures present within that system. PCI photographed various structures and pertinent architectural detail was recorded.

The 500 structures surveyed were constructed primarily between World War I and World War II and include both U.S. Navy and U.S. Army buildings since Lake Denmark was originally a Navy depot. There were, however, a number of pre-World War I buildings, most of them utilized for storage since both facilities were originally designated as depots. Two of the structures are from the Cold War years and are associated with the Navy rocket program, specifically development of the X-15. Most of the buildings are directly related to the production, testing and storage of various ordnance and ordnance-related materials. A smaller number of administration and quarters buildings were also included.

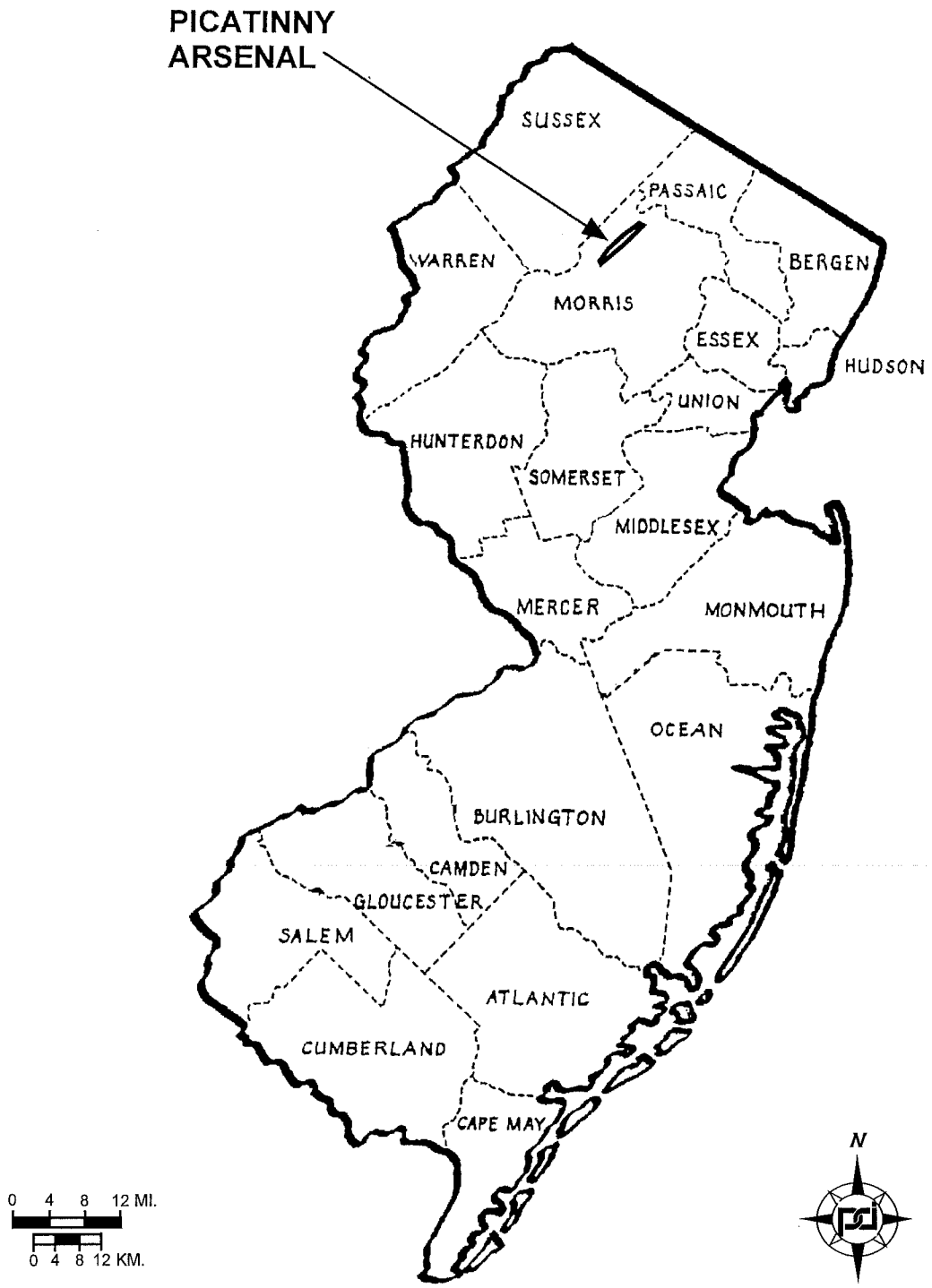

Figure 1. Location of Picatinny Arsenal, Morris County, New Jersey *(Chesler 1982).*

1.1 IN-FIELD EVALUATION

Five hundred structures were visually inspected and their NRHP status evaluated. The evaluation included the review of various U.S. Army and Department of Defense (DOD) architectural reports concerning the NRHP status of a number of types of military structures found within that system. The field inspection was conducted between June 5 and 13, 1997.

Pertinent blueprints located in the Department of Public Works were reviewed for information regarding construction dates, architects or builders, and the evolution of various pieces of the installation's infrastructure such as the railroad net and other transportation systems. Also during this time, the Command Historian, Dr. Patrick Owens, was consulted on Picatinny Arsenal's history. In August 1997, all pertinent information on the Arsenal was reviewed at the New Jersey State Historic Preservation Office.

Before entering the field, PCI completed an initial planning phase identifying the structures to be surveyed. The basic resource used in the planning stage was the WCH/Boston Affiliates Report (Harrell 1994). This report not only identified the historic structures on the arsenal, but also provided the survey team with construction dates, photographs and good architectural descriptions.

The identified structures were then located by numerical sequence on Picatinny Arsenal maps within clusters relating to historical function and accessibility. Field efforts concentrated upon visually inspecting all the structures located in these system of roads and historical oriented clusters. The field crew was accompanied by a Picatinny Arsenal representative into those areas, called "enclosures," that were not open to the public. After all the buildings in each identified area had been surveyed, the survey team then moved to the next area to be surveyed.

Criteria Used for Evaluation. During the architectural survey at Picatinny Arsenal, all buildings were judged against a standardized set of criteria determined by the National Register guidelines. The National Register of Historic Places (NRHP) is the official list of the country's significant cultural resources. The National Register provides a standard by which federal, state, and local agencies can rank historic resources.

The application of these standards at Picatinny Arsenal serves two purposes. First, the NRHP criteria are generally used as standards in the practice of historic architectural surveys and planning work, thereby providing a uniform and unbiased model upon which to evaluate historic structures. Second, Picatinny Arsenal is required under Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), to consider the effect of changes on properties that are eligible for inclusion on the National Register.

Potentially significant historic properties include districts, structures, objects, or sites which are at least 50 years old and which meet at a minimum one of the National Register Criteria. To be eligible for inclusion in the NRHP, a historic property must possess "the

quality of significance in American History, architecture, archaeology, engineering, and culture [that] is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

> A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> B. That are associated with the lives of persons significant in our past; or
>
> C. That embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or possess high artistic value, or that represent a significant and distinguishable entity whose components lack individual distinction; or
>
> D. That have yielded, or may be likely to yield, information important in prehistory or history (U.S. Department of the Interior 1995:2)."

The NRHP recognizes five classifications of significant properties: buildings, principally a shelter for any form of human activity; structures, functional constructions made for purposes other than creating human shelter; sites, location of a significant event where the site itself possesses value regardless of the value of any existing structure; and districts, a significant linkage of sites, buildings, structures or objects united historically or aesthetically by plan or physical development. While a district is usually a single contiguous geographic area, the NRHP recognizes discontiguous districts made up of two or more definable significant areas separated by nonsignificant areas (U.S. Department of the Interior 1995:4-6).

A district derives its importance from being a unified entity, even though it may include a variety of resources. "The identity of a district results from the interrelationship of its resources, which can convey a visual sense of the overall historic environment or an arrangement of historically or functionally related properties" (U.S. Department of the Interior 1995:6). A district must be important for historical, architectural, engineering or cultural values. When visual continuity is not a factor of historical significance, when resources are geographically separate, and when the intervening space also lacks significance, a historic district may contain discontiguous elements (Seifert 1995). Also, the individual components of a district may lack significance provided the group as a whole has significance. Most of the components making up a district must add to the district's character and must possess integrity, as must the district itself.

"Integrity is the ability of a property to convey its significance" (U.S. Department of the Interior 1995:44). To be listed on the NRHP a property must be shown to have significance under the NRHP criteria and it must have integrity. Integrity is determined by looking at the seven elements that create it. They are: location, design, setting, materials, workmanship, feeling and association. To retain integrity, a property must possess several, and usually most, of these aspects. Although determining integrity tends to be a subjective judgment, this is tempered by an understanding of the property's physical features and these features relate to its significance (U.S. Department of the Interior 1995:44).

Under previous guidance over the past ten years, the structures on Picatinny Arsenal appear to have been evaluated with the idea that the arsenal would form one large historic district, as can be found at other Army installations such as Watervliet Arsenal, Albany County, New York. Many structures, however, including most of the production lines, and much of the landscape at Picatinny Arsenal, have changed significantly over the years. Most of the changes have compromised the integrity necessary for a district's inclusion in the NRHP and based on this lack of integrity, the New Jersey HPO has ruled that the entire base is not eligible as a single district. Nevertheless, three smaller districts—an administrative area, the 660 Test Area, and Test Area E—and two individually eligible structures (Buildings 3250 and 3316) do qualify for inclusion as NRHP districts.

The three districts include 55 structures, four of them non-contributing, and cover a time span from the earliest years of the arsenal to the Navy rocket experiments of the 1950s. Most of the structures reviewed, however, are not eligible for nomination to the NRHP. For more information about these districts please see *Definition of Historic Districts of Picatinny Arsenal, Morris County, New Jersey* (Nolte and Steinback 1999).

1.2 DOCUMENTARY RESEARCH

The research portion of this investigation made use of numerous DOD, Army and Navy documents relating to various, specific building types, their occurrences within the greater military community, and their role in military or architectural history. PCI used a number of architectural, archaeological and historical writings on Picatinny's history.

Past architectural studies on Picatinny had divided the structures into their use areas[1], a standard practice, and one advocated in prevailing literature on historic structures of the Army Material Command (AMC), Picatinny Arsenal's current command (Cannan et al. 1996). It is particularly important to look at industrial buildings, one of the most common building types at Picatinny, in their proper use settings. Many of the component structures of an industrial process are not individually significant, but become vital in the larger industrial context. Unfortunately, if the most important structures on a line are missing, then the smaller structures become unimportant because of the loss of integrity. This is also true of such industrial settings as mining operations (Noble and Spude 1992).

It is not enough, however, to examine structures only in their use categories. For instance, isolated structures lack a context, and conversely, without careful research may assume attributes which are false. Buildings were regularly constructed in areas in which they are not connected by use for any number of reasons including space, fiscal constraints, or command structure. Further, buildings in a military industrial line may be

[1]Use area - interrelated individual buildings and structures constructed to accomplish a specific mission.

magazines, storage and ordnance related buildings, administrative and personnel offices, or other building types commonly found throughout the installation. While these common building types may gain a greater meaning in the industrial setting, not all such common buildings are of equal importance on a base. Examining only the use context is misleading. It must also be seen from the larger concept of that specific building type, both historically and architecturally.

The Department of Defense and the various military services have been striving to give historical context to a wide range of building types as well as providing historical context and architectural evaluations for these buildings. In some cases, the DOD, in conjunction with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers, has organized all materials necessary for the final steps in the mitigation of particular types of structures. Other reports have provided guidance on the historical and architectural significance of various types of buildings (Garner 1993; Grandine and Cannan 1995; Grashof 1986; Kriv n.d.; and Walsh 1995). Most of these reports are less than five years old and are difficult to obtain. They are, however, vital to determining the actual NRHP status of certain building types.

Another factor to consider in judging the eligibility of military buildings is the types of materials used. During most of the construction history of the various military branches, the services have distinguished two and sometimes three types of structures: permanent, temporary and the difficult-to-define "semi-permanent." What generally makes a building temporary or permanent is the type of building material used. The distinction between construction techniques is vital to understanding a building's potential NRHP status.

Since immediate use context alone was not sufficient to determine the eligibility of some structures, the Picatinny buildings were placed in individual categories by family type—e.g., storehouses, quarters, labs—and also by use of materials. Further research was then conducted on each of Picatinny's buildings taking into consideration the larger contexts of family types and materials.

In determining the status of a significant number of Picatinny's structures, two publications were influential: *World War II Temporary Buildings: A Brief History of the Architecture and Planning of Cantonments and Training Stations in the United States* by John Garner (1993) and *Support and Utility Structures and Facilities (1917-1946) Overview, Inventory and Treatment Plan* by Katherine Grandine and Deborah Cannan (1995). Since both of these monographs were important, a brief overview of each is presented.

World War II Temporary Buildings (Garner 1993). A significant number of structures reviewed for this report have already been mitigated and reported in a DOD publication that was produced in 1993 as a result of the *Military Construction Authorization Bill of 1983.* This legislation requires the demolition of World War II-era temporary buildings on DOD installations. In 1986, DOD entered into a Memorandum of Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic

Preservation Officers to document World War II temporary buildings on U.S. military bases in preparation for implementing the construction bill. This report serves as partial fulfillment of the requirements of the *National Historic Preservation Act, Section 106.*

In his monograph, Garner (1993): 1) describes the principal types of temporary structures built during mobilization for World War II (1939-1945); 2) documents the approximate numbers and location of surviving World War II temporary structures; and 3) provides a historical context to support the assessment of this architecture's historical significance. The report presents a wide range of buildings from Quonset huts to barracks to air hangers.

A "temporary" building during this period can be described as being constructed with a wooden frame with any number of wall coverings. Garner's report estimated that a temporary building would have a life of five years. While this is the guiding principle, a number of temporary structures were built using light steel frame construction. In addition, General Brehon Somervell, Chief of Ordnance (Picatinny Arsenal was an ordnance facility during the war), announced in January 1941 that all future ammunition plants would be designed as temporary installations (Cannan et al. 1996). Pressure was placed on all ordnance facilities to construct only temporary buildings. Therefore, whole industrial lines at older ordnance facilities, including Picatinny, were built as temporary structures.

Support and Utility Structures and Facilities (Grandine and Cannan 1995). In compliance with the *National Historic Preservation Act (NHPA) of 1966,* DOD continues to provide consistent and comprehensive information on a large segment of real property that is potentially eligible for listing to the National Register. To meet this obligation a study was completed on mundane structures and support and utility buildings constructed between 1917 and 1946 at U.S. military installations.

The report, *Support and Utility Structures and Facilities (1917-1946) Overview, Inventory and Treatment Plan* (Grandine and Cannan 1995), developed a mechanism for classification, evaluation and treatment of support and utility buildings. This report: 1) provides an overview of the construction and historical associations of support and utility facilities; 2) provides a classification system for these structures; 3) provides a partial inventory of the frequency and distribution of 35,077 current support and utility structures; 4) provides a methodology for evaluating the significance of these facilities; and 5) recommends treatment plans for these properties.

The structures in Grandine's and Cannan's monograph can be grouped into the following categories: general storage, ordnance storage, fuel storage, water supply systems, sewage disposal systems, power and heating systems and refuse disposal. There are, of course, a number of sub-types within each of these categories and these were covered within the larger context.

Other important reports used to determine NRHP eligibility included: *A Study of United States Army Family Housing Standardized Plans, 1866-1940,* Vols. 1-6 (Grashof 1986);

World War II and the U.S. Army Mobilization Program (Kriv n.d.); and *World War II Ordnance Department's Government-Owned Contractor-Operated (GOCO) Industrial Facilities: Ravenna Ordnance Plant Historic Investigation* (Walsh 1995).

Aside from the various DOD/Army/Navy reports several architectural studies of Picatinny Arsenal have been performed and these reports aided in identifying important structures and important industrial and research use areas. At least seven important architectural studies (Ashby et al. 1984; Fitch and Glover 1990; Harrell 1993; Harrell 1994; Thurber 1983; Thurber and Norman 1983; and U.S. Department of the Army n.d.) have been completed on Picatinny Arsenal in the past 14 years, three having been performed in the past five years.

A Historic American Building Survey and Historic American Engineering Report (HABS/HAER), Level IV, was completed on more than 800 structures that were 50 years old or older. (Many have since been demolished because of excessive contamination.) This survey (Ashby et al. 1984) and the resulting report (Thurber 1983) were part of a pilot project undertaken by the U.S. Army Materiel Development and Readiness Command (DARCOM) which inventoried structures at five installations: Watertown Arsenal, Massachusetts; Aberdeen Proving Ground, Maryland; Savannah Army Depot, Georgia; Kansas Army Ammunition Plant, Kansas; and Picatinny Arsenal, New Jersey.

The HABS report grouped 310 properties into three Army Categories, now a defunct program, which identified the preservation level required for historic Army properties. The Department of the Army ranked historic buildings according to their degree of significance (U.S. Army Regulation 420-40 1984 and TM 5-801-1). The categories by degree of significance are:

Category I. Historical properties of *great significance* which contribute to the national cultural heritage of that installation and its environs, which should be preserved if at all possible. All Category I historic properties not currently listed on or nominated to the National Register of Historic Places are assumed eligible for nomination regardless of age and should be nominated if they are not. These properties should be documented at Level I in accordance with the Historic American Buildings Survey.

Category II. Historical properties of *importance* which contribute significantly to the cultural heritage or visual continuity (harmony) and interest of the installation and its environs, and which should be preserved if possible. Category II properties should be treated as if they were on the National Register and nominated if they are not. These properties should be documented at Level II in accordance with the Historic American Buildings Survey.

Category III. Historic properties of *value* which contribute to the cultural heritage or visual harmony and interest of the installation and its environs and which should be preserved if possible. These structures should receive routine maintenance and should be protected from modification. If properties are unoccupied, they should, as a minimum,

be maintained in stable condition and prevented from deteriorating. They should be documented at Level III of the Historic American Buildings Survey.

Category IV. Any property that has been inventoried but does not qualify in one of the above categories. These properties remain, however, in the Inventory and in the historic preservation file in order to facilitate subsequent review and possible re-evaluation of their historic significance.

As a result of the HABS report, in 1983 an HAER was completed on Picatinny which more fully documented the historically significant structures related to various industrial processes at the installation (Thurber and Norman 1983). This documentation focused on five areas: 200 Area, Shell Component Loading; 400 Area, Gun Bag Loading; 500 Area, Powder Factory and Power House; 600 Area, Test Area; and the 800 Area, Complete Rounds/Melt Loading. The HAER report produced a number of excellent as-built drawings, schematics for various industrial processes as well as intricate maps of the five areas.

Further, a Draft Multiple Resource National Register Nomination for six Historic Districts at Picatinny Arsenal was prepared. The six districts were: the 200 Area, Shell Components Loading; the 400 Area, Gun Bag Loading; the 500 Area, the Powder Factory and Power House; the 600 Area, the Test Area; the 800 Area, Complete Rounds/Melt; and the Picatinny Multiple Resources Area, a large area primarily of administrative structures that runs roughly down Farley Avenue including the Cannon Gates. The six districts were cited as being eligible under Criteria A, B, C and D. The draft nomination was never finalized or submitted for consideration to the National Park Service.

These three reports seem to have been the basis for all successive architectural studies completed at Picatinny Arsenal.

In 1990 a Prehistoric and Historic Reconnaissance Survey of Picatinny (Fitch and Glover 1990) was published in *Army Materials Technology Laboratory Closure with Transfers to Detroit Arsenal, Michigan, Picatinny Arsenal, New Jersey and Fort Belvoir, Virginia* (Department of the Army 1990). This report, which used the past HABS/HAER reports as a base for architectural evaluation, agreed with and passed on the 1983 HABS report conclusions related to structures and their Army categories.

At Picatinny, only seven properties were designated as Category I, the highest and most significant level, and it was believed that two of those seven had already been demolished by the time the report was completed. Today, only three of those buildings still stand. They are #604D, Drop Tower; #607 and #621 both Fragmentation Tub Buildings. The Drop Tower and the two Fragmentation Tub structures are located in the Testing Area (600 Area).

In 1993, WCH Industries and Boston Affiliates, Inc. prepared an *Annotated Catalogue of Building Drawings and Evaluation of Architectural Features* for 51 structures on the arsenal (Harrell 1993). The structures surveyed included quarters, labs, industrial facilities,

warehouses, support and utilities structures and one building from the now defunct Navy rocket program. Detailed accounts of the blueprints surveyed appear for each of the structures. No architects' names are mentioned and the source of creation of the blueprint is not listed. This report recommended that all of the historic structures on Picatinny be surveyed so that future catalogs would include all components of an industrial line so that patterns of construction and modernization could be defined.

WCH Industries and Boston Affiliates, Inc. prepared such a report in 1994 (Harrell 1994). Five hundred and twenty-seven structures, which were 50 years old or older and were still extant, were chosen from the HABS/HAER studies and then surveyed carefully including an evaluation of each structure's NRHP status. A massive amount of information was gathered to complete this report including fairly detailed architectural descriptions. The opinion of WCH and Boston Affiliates was that 500 buildings were eligible as contributing elements to a single historic district. This report did not place Picatinny Arsenal's structures within a larger United States military architectural and historical context. In the U.S. Army's opinion, there was not enough information to support the nomination of 500 structures. Therefore, PCI was contracted to reevaluate the 500 structures previously judged eligible.

After applying the information gained in the aforementioned monographs and categorizing the structures by use, building type and construction materials, we were able to clarify the actual NRHP status of the 500 buildings at Picatinny Arsenal.

2.0 Historic Overview

Outlining the history of Picatinny Arsenal and the surrounding area, this section summarizes material presented in more detail in Trigger (1978), Klein et al. (1986), Rogers (1931), Fitch and Glover (1990) and Rutsch et al. (1986).

2.1 REGIONAL OVERVIEW

Although the French, employing Florentine navigator Giovanni da Verrazano, explored the Atlantic coast of North America in 1524, the Dutch were the first Europeans to penetrate the streams and forests of what would become New Jersey. The Dutch claim to the region rested on the 1609 voyage of Henry Hudson, an English mariner in the service of the Dutch East India Company. Seeking a shorter route to the Spice Islands and India, Hudson with his ship the Halve Maen reconnoitered the coast of what would become New Jersey and the river that now bears his name. During his reconnaissance, Hudson and his crew exchanged goods with Native Americans in Sandy Hook Bay, but not without incident—one sailor was killed and two others were wounded when Native Americans attacked Hudson's ship. Subsequent voyages by Dutch captains established outposts in this portion of North America to advance the commercial interests of the United Provinces of the Netherlands and included the expedition of Cornelis Jacobsen May, who sailed around the southern tip of present day New Jersey (Cape May) and explored Delaware Bay in 1614. In 1621 the Estates General of the United Provinces organized the Dutch West India Company and granted the company a monopoly to trade along the shores of the Americas for twenty-four years. The center of Dutch operations in North America was New Netherland, a thin band of sparsely settled territory stretched along the Hudson or North River which connected New Amsterdam at the lower tip of Manhattan Island with the frontier outposts of Fort Orange, the present city of Albany, New York, and Schenectady. From their base in New Netherland, the Dutch prosecuted the prized beaver pelt trade, competing with the English in the Connecticut River valley and the Swedes in the Delaware River valley. While the Dutch claimed both regions, only the Delaware valley would actively feel their influence (Brasser 1978:79-82; Goddard 1978:220; Bureau of Electronic Publishing, Inc. 1995:New Jersey File; Ellis et al. 1967:18-23; Burke 1991:1-18).

Loosely linked in political confederacy, subgroups of Algonquian Delaware or Lenni Lenape Indians inhabited the area that would become New Jersey at the time of the arrival of the Europeans. Neither linguistically nor culturally homogeneous, these subgroups spoke "dialects of two closely related Eastern Algonquian languages, Munsee and Unami" (Goddard 1978:213; Williams and Kardas 1982:185-187). Affirmed by the 1758 Treaty at Easton (Pennsylvania), the traditional dividing line between these subcultures was the Raritan River. The native groups north of the Raritan River, including those of the New Jersey Highlands and the lower Hudson River valley spoke Munsee dialects, while the native groups south of the Raritan, including the Delaware River valley and Eastern Pennsylvania, spoke Unami dialects. Although occupying the mountainous region of

northern New Jersey-southern New York, the Minisink Delaware maintained an extensive network of trails through the mountains in order to reach the rich shellfish areas along the Atlantic Ocean (Goddard 1978:213-216, 222; Williams and Kardas 1982:186, 189-190; Kraft and Mounier 1982:139-141; Pitney 1914:2-3).

Disagreement exists among researchers concerning the derivation of the word "Picatinny." Some scholars allege that members of the Pequot tribe, displaced from their Connecticut homes by European intrusion during the late seventeenth century, settled for a time in the Highlands with subsequent intermixing between Pequot and indigenous Delaware groups (Salwen 1978:173; Kraft 1986). As a result, "[local historians have suggested that the place name *picatinny* originates from the Pequot word *Pikka* (meaning 'like rocks broken/cracked in a campfire') and *tinny* (meaning hill or peak)" (Fitch and Glover 1990:B-143). Other researchers disagree. Asserting a strict Delaware origin, one historian speculates that the word may mean either "(Body of) Water by the Hill" or "Village by the (Body of) Water," since in the language of the Delaware "Peek/Pic" means "body of water" and "Atn/Atin" means "Hill" or "Uteney/Utenay" means "Village" (Perry 1993). A third researcher suggests that the word is a "Lenape-Pequote" hybrid, meaning "'the smaller end face of the endless hill' or 'peak with broken rocks and cliffs'" (Myers 1984:7). All of these investigators concur that the word "picatinny" is of Native American origin, however.

Unlike most American colonies, the relationship between the first Europeans in New Jersey and the local Native Americans was relatively peaceful. While tensions between the Dutch and the Delaware increased during the middle decades of the seventeenth century as the Dutch population slowly grew and as competition for European trade goods exacerbated rivalries among the different Delaware groups, these conflicts tended to erupt in violence and bloodshed only along the lower Hudson River valley (Fitch and Glover 1990:B/141-143; Goddard 1978:213-216, 221). Since both Colonial settlers and the Delaware utilized similar subsistence strategies—farming the flats along rivers and fishing in those rivers—both groups tended to regard similar areas highly for the establishment of their settlements. Therefore, as the population of European settlers increased and spread throughout the colony, especially after 1664, the Delaware were forced to move west, ultimately out of New Jersey entirely. The Delaware for the most part generally sold the land to the Europeans, and then migrated to some other place. At conferences held at Easton, Pennsylvania, and Crosswicks, New Jersey, in 1758, the Delaware relinquished their claims to all lands in New Jersey. However, those Native Americans who wanted to remain were assigned to a reservation on Edgepillock Creek (later, Indian Mills). Eventually, the remaining Delaware left the area, resettling in either Pennsylvania, Wisconsin or Indiana (Cinquino et al. 1996: 2/19, 49-52; Goddard 1978:222; Williams and Kardas 1982:186, 189-190; Kraft and Mounier 1982:139-141).

Although establishing several small short-lived communities in the 1620s and 1630s, including Hoboken, Pavonia (on Staten Island) and on Burlington Island in the Delaware River, and more permanent settlements in the 1640s along the Hudson valley, the Dutch population of New Netherland rose only to a meager 1,200 by 1647 (Burke 1991:2). The

paucity of Dutch inhabitants and the presence of a few hundred Swedish settlers along the Delaware River contributed to the problems of the company's governors in New Amsterdam. Wouter Van Twiller (governor from 1633-1638) placed a garrison on the Delaware River to safeguard the beaver trade and protect the land from Swedish and English interlopers. In 1637 the New Sweden Company established a settlement on the Delaware River in the hope of turning a profit, but the Dutch refused to recognize the legitimacy of the outpost. Problems with Colonial neighbors, recognized or not, also troubled notable New Netherland governor Pieter Stuyvesant (1647-1664). After New Englanders successfully established trading posts and settlements on eastern Long Island and in the Connecticut River valley, Stuyvesant feared that they would replicate this success in the Delaware valley. However, Dutch governors failed to move against the Swedes' Delaware River settlement until 1651 when the Dutch invaded the region and erected Fort Casimir. Three years later the Swedes demolished the fort, and Stuyvesant responded by sending an armada of seven ships and 650 soldiers up the Delaware, whereupon the Swedish governor surrendered. The English would not be so easily dispatched (Ellis et al. 1967:20-28; Bureau of Electronic Publishing, Inc. 1995: New Jersey File; Fitch and Glover 1990: B/141-143).

Notwithstanding the founding of their first permanent settlement in what would become New Jersey at Bergen (later, Jersey City) in 1660, Dutch proprietorship over New Netherland was abruptly terminated four years later, when forces loyal to James, Duke of York and Albany, captured the colony during the Second Anglo-Dutch War. New Netherland was renamed New York and the duke was given control over all land west of the Connecticut River and east of the Delaware River. Later, as a gift to two courtiers who had served King Charles II during the English Civil War and his subsequent exile in France, James (who was Charles' brother) awarded the land lying between the Hudson and the Delaware Rivers to John, Lord Berkeley, and Sir George Carteret. In the 1665 patent to the new proprietors, the colony was named Nova Caesaria in honor of Carteret's birthplace, the Isle of Jersey in the English Channel. Jersey is a corruption of Caesaria: "Jer" is a contraction of Caesar, while "ey" represents island—Caesar's Island—therefore, Nova Caesaria becomes New Jersey (Wacker 1982:199; Kim 1978:8-9; Divine et al. 1995:51-53; Halsey 1882:8-9; Bureau of Electronic Publishing, Inc. 1995: New Jersey File; Ellis et al. 1967:25-28; Pomfret 1964:8).

Prior to this time the areas nominally under Dutch control were practically undisturbed by European occupation. Upon Philip Carteret's arrival in 1665 to become the first governor of New Jersey, he found "a cluster of four cabins waiting for him" at the site of what would become the capital, Perth Amboy (Kim 1978:5). Six years later the region's primitive state of settlement had only slightly improved.

> An observer of the New Jersey scene commented in 1671 that there were several villages on the ocean side near the entrance of the Raritan River, but that there was not even one for about a sixty-mile [96.6-kilometer] stretch between the entrance to the Raritan and the Delaware Bay [Kim 1978:5].

Before the arrival of Philip Carteret, English Military Governor Richard Nicolls had allowed migrants from New England to take up farms west of the Hudson River, in what would become Essex, Union and Middlesex Counties. In exchange for the privileges of establishing an assembly and a headright system, the migrants had agreed to pay a small annual quitrent to the Duke of York. The proprietors, Berkeley and Carteret, recruited colonists on similar terms, except they assumed they would be receiving the rent money. The duke's impulsive gift had caused so much confusion that it was unclear who owned what in New Jersey (Wacker 1982:199; Kim 1978:8; Pomfret 1964:8-10; Divine et al. 1995:51-53; Halsey 1882:8-9; Bureau of Electronic Publishing, Inc. 1995: New Jersey File).

Berkeley soon grew tired of the venture, and, in 1674, sold his share to a group of surprisingly quarrelsome Quakers. This sale resulted in the division of the colony into two separate governments, known as East Jersey and West Jersey. Carteret and his heirs tried unsuccessfully to turn a profit in East Jersey, while the West Jersey Quakers went bankrupt. In 1702, the Crown reunited the two Jerseys into a single royal colony, but, while recognizing New Jersey as an independent colony distinct from New York, forced the two colonies to share a Colonial governor from 1702 until 1738. In 1700 the population of New Jersey stood at approximately 14,000. Its residents lived on scattered, often isolated farmsteads; with villages of more than a few hundred people rare. The New Jersey Legislature considered the northwestern portion of the colony, including the study area, uninhabited in 1707 (Pomfret 1964:21; Wacker 1982:200-209; Divine et al. 1995:53; Bureau of Electronic Publishing, Inc. 1995: New Jersey File; Manning 1982:43-46, 49-53; Halsey 1882:17-18).

2.2 LOCAL OVERVIEW

The rugged, hilly terrain of northwestern New Jersey, with its concomitant stony soil and steeply sloping topography, did not readily attract settlers who wanted to cultivate crops for their livelihood. While those agricultural activities that were conducted in the mountains probably provided generally unfavorable results for those early resident colonists, the Highland ridges were well suited to support mining and related industrial endeavors, particularly iron working. Beginning in the early eighteenth century, the initial settlement of the Highlands, including the project area, was associated with the iron industry. Near the close of the seventeenth century, as Colonial ironmasters depleted the poorer grade ores of the coastal plains, they were forced to look to the mountains of the northwest for new sites for their iron mining and production industries (Rogers 1931:2-3; Klein et al. 1986:2-8; Fitch and Glover 1990:B/145-146). Mining is reputed to have occurred at both Mount Hope mine (adjacent to the study area) and Dickerson mine (west of the study area) as early as 1710, making these sites the oldest iron mining operations in both New Jersey and the thirteen colonies (Rutsch and van Voorst 1991:13). By 1737, the northern portion of Hunterdon County (which at that time consisted of the present counties of Morris, Warren and Sussex) had an approximate population of 1,750 whites and 70 slaves (Pitney 1914:4).

The preconditions to support the Colonial iron industry were well-satisfied by environmental conditions in the Highlands, particularly in the Green Pond Brook valley area, the future site of Picatinny Arsenal. "The Highland ridges were rich in magnetite ore and limestone; streams provided the water power sources for furnaces and forges; and the heavy timber cover could be converted to charcoal for fuel" (Fitch and Glover 1990:B/145-146; Halsey 1882:40; Klein et al. 1986:2-8; Rutsch c.1995:6-8, 13-18; Wacker 1982:210). Moreover, since the need for charcoal was constant and substantial, early furnaces and forges in the Green Pond Brook valley were situated on extensive tracts of land. In 1772, Jacob Ford's Mount Hope tract measured 6,271 acres (2,508 hectares) (with exceptions), while his Denmark Tract measured 6,231.21 acres (2,493 ha) (Rutsch c.1995:6-7; Pitney 1914:159; Halsey 1882:41, 53, 334-335; Pope 1945:69-74; Cinquino et al. 1996:61-62).

The Colonial iron industry in the study area involved several stages of production: ore procurement or mining; the separation of iron from slag through smelting, where the iron was processed into pigs or cast into molds; and, the making of wrought iron bars or marketable products in forges. More frequently, these three stages occurred as distinct units and at separate locations, although these processes could be managed under a common owner (Pope 1945:69; Rutsch et al.1986:22).

Highlands iron working communities included not only industrial structures, such as furnaces, forges, bloomaries, coal houses and charcoal kilns, but ancillary residential and commercial structures, as well. Tradition and the difficulties of transportation demanded that ironworkers live near their place of work, especially in the northern wilderness. Often isolated from established towns and roads these settlements became self-contained communities, suggestive of company towns more firmly established during the post-Civil War years. Ironworkers leased houses from the forge or mine owner, were given credit at a company store or paid in scrip. Settlements associated with the operation of a blast furnace have been referred to as "iron plantations." Furthermore, other commercial enterprises, like taverns, stores and mills (both grist and saw), were established near the workers' houses and the ironworks. Later, in order for bar iron and other finished iron goods to get to their eastern markets major roads would be sited close to the ironworks and other major regional trade routes (Pope 1945:75; Fitch and Glover 1990:B/145-146; Halsey 1882:40; Klein et al. 1986:2/8-9; Rutsch and van Voorst 1991:13; Dulles and Dubofsky 1984:Chapter 1; Rutsch c.1995:12-13; Cinquino et al. 1996:2/58-62). Moreover, WES argues that,

> Unlike other regions of British controlled North America, the New Jersey Highlands were an industrial frontier of the British Empire, fully integrated within the trans-Atlantic economy [due to the region's importance as an iron manufacturer]. The site's economic system, transportation network, and settlement pattern were all developed within an industrial, not an agricultural, framework. Roads were constructed to bring iron ore and charcoal to forge sites. Settlements were located at waterpower sites and consisted primarily of industrial structures and housing for workers [1995:70].

During the mid-eighteenth century three forges were established either near or within what would become the Picatinny Arsenal reservation. These ironworks were:

- Mount Pleasant Forge, founded in 1748 and subsequently known as Lower Forge;
- Picatinny Forge, founded in 1749 and called Middle Forge after 1772; and
- Burnt Meadow or Denmark Forge, founded in 1750 and known as Upper Forge.

Although there is little agreement about the structures that may have existed at these forges (Klein et al. 1986:2-10; Fitch and Glover 1990:B-150; Rutsch c.1995:10-19), Halsey suggests that these sites were "bloomary forges," where charcoal, ore and limestone were shoveled into a furnace to create a "bloom" or semi-molten mass of metal and slag. While still hot, this mass was hammered to remove the slag and produce wrought iron (Halsey 1882:48-56; WES 1995:71). In addition, Rutsch et al. assert that, "A forge is always a place where iron is heated and then worked with a hammer . . ." which produces wrought iron by extruding its slag (1986:41).

An important element to the successful operation of these establishments was that the necessary raw materials—iron ore, limestone and charcoal—could be found nearby. The Mount Hope and Hibernia mines were located in the hills just east of these forges, while previous research has uncovered at least two limestone extraction pits within the arsenal and several charcoal kilns adjacent to the arsenal (WES 1995:68-71; Rogers 1931:7; Fitch and Glover 1990:B-150; Sandy and Rutsch 1992:69; Rutsch et al. 1986:184-186; Cinquino et al. 1996:2-65).

The early agriculturalists of the Colonial-era Highlands consisted of Dutch, English, Scotch-Irish, German and Swiss homesteaders, whose valley settlements have been characterized as comprising a pattern of dispersed rural residences and functional outbuildings (barns, sheds, and smokehouses) utilizing a subsistence economy of animal grazing and limited crop production (Fitch and Glover 1990:B-145; Manning 1982:44, 56; Wacker 1982:211). For industrial activities, the type of work associated with iron extraction and production industries attracted German and Irish Roman Catholics to the region, groups not common "to the Mid-Atlantic region during the Colonial period" (Klein et al. 1986:2-9; Wacker 1982:210-211). In addition, these endeavors also utilized slaves in the performance of the heavy, labor intensive work of Colonial furnace operations (Pope 1945:69).

European penetration of the area that would become Morris County occurred from both the east and the south. The first actual settlement by Europeans probably occurred in the northeastern portion of the future Morris County, near what is now Pompton Plains. In June 1695, Dutch speculator Arent Schuyler and his associates purchased from the Indians "all the territory lying between the Passaic [River] on the south and the Pompton [River] on the north, and between the foot of the hills on the east and [those] on the west" (Halsey 1882:19). Moreover, the proprietors of West Jersey began to divide their large land tracts among themselves beginning around 1710:

> William Penn, John Reading, William Biddle, John Kays and others took up tracts of at least 1,200 acres [480 ha) in West Jersey as far east as Morristown, but not further north than Budd's Lake and Dover or Rockaway valley. The country north of these places seeming to these early speculators too forbidding and unpromising for their purposes [Halsey 1882:19, 40].

Despite tract ownership by connected speculators, mines were reputed to have been worked in what would become Morris County as early as 1685, and in 1719 a mine was discovered that was alleged to have been worked by early Dutch squatters (Halsey 1882:15, 18-19; Pitney 1914:3).

Dating to 1710 and reputed to be the oldest mine in the United States, Mount Hope mine was purchased by ironmaster Jacob Ford in 1750, and later acquired by ironmaster John Jacob Faesch in 1772 (Halsey 1882:53; Fitch and Glover 1990:B-146; Acroterion 1986/87:1, Form #1435-035). In 1714, John Reading, one of the proprietors, began to exploit a tract embracing Dickerson mine for its minerals. He sold this tract to Joseph Kirkbride two years later. The first iron forge at what would become Dover was erected in 1722 by John Jackson. The alleged site was still referred to as Jackson's Brook as late as 1882. Jackson purchased 527 acres (211 ha) of land from Joseph Latham, which included considerable property to the west of Dover. The financially unsuccessful forge and associated farm were divided and sold to Josiah Beman and Hartshorne Fitz Randolph, respectively, in 1757 (Halsey 1882:39-40, 314; Rogers 1931:4).

The iron industry would expand into the Green Pond Brook valley when Jonathan Osbourne (various spellings) established one of the earliest forges in New Jersey in 1749 at the southern end of what is now Picatinny Lake. Within the boundaries of what is now Picatinny Arsenal, Osbourne's ironworks was called Picatinny Forge, but later became known as Middle Forge. Osbourne may have used ores from the nearby Mount Hope mine (Klein et al. 1986:2-10; Rogers 1931:7; Halsey 1882:41). Establishing his forge at the foot of Picatinny Peak near Green Pond Brook, Osbourne created Picatinny Lake by damming the brook for his forge. Machinery and other implements from Middle Forge are on display at the arsenal museum (Rogers 1931:6; Myers 1984:7; WES 1995:71). The following year (1750), Colonel Jacob Ford, Sr., owner of Mount Hope mine, established a forge at Mount Pleasant. Since this forge was south of Osbourne's forge it was sometimes referred to as the Lower Forge. South of the project area, the Mount Pleasant Forge site is reputed to be in the vicinity of a "Gulf" gas station near the intersection of Route 15 and Route 80 (WES 1995:70; Rutsch c.1995:12). Also in 1750, Ford, a leader in the Colonial iron working industry in New Jersey, constructed a dam on Burnt Meadow Brook, creating Lake Denmark in the process, in order to erect another forge. Subsequently located near the southern end of Lake Denmark, this forge is referred to as the Upper Forge, or, later, as John Harriman's Iron Works or Burnt Meadow Forge (Fitch and Glover 1990:B-146; WES 1995:71; Klein et al. 1986:2-9). Jacob Ford, Jr., who would continue the family business of owning numerous iron operations in the Green Pond Brook valley, reacquired Middle Forge in 1772 (Fitch and Glover 1990:B-146; Rogers 1931:6-7; Halsey 1882:41; Cinquino et al. 1996:2/61-63).

Playing a leading financial role in the development of the northern New Jersey iron industry, the London Company (sometimes referred to as the American Iron Company) dispatched John Jacob Faesch and Peter Hasenclever to the colonies in 1764 to create three "iron plantations" (furnace and forge) in the resource rich New Jersey Highlands—at Charlotteburg (overseen by Faesch), Ringwood and Long Pond (Klein et al. 1986:2-10;

Rutsch and van Voorst 1991:13; Fitch and Glover 1990:B-146). After a falling out with company management, Faesch, a Swiss, left the London Company and began to dominate the valley's iron industry. Southeast of the future arsenal near the village of Dover, he established the Mount Hope Furnace in 1772. Also in 1772 Faesch purchased a large tract of land in the Green Pond Brook valley from East Jersey Board of Proprietors. This 5,192.2-acre (2,077 ha) tract included 2,079.33 acres (932 ha) of "mountainous woodland" north of the road to Middle Forge (Mount Hope Road). Of the remaining property, much of the land south of the future Mount Hope Road had been stripped of timber. Moreover, numerous parcels were excluded from Faesch's control since they had been previously occupied (Without exemptions, the total lot size would have equaled 6,271 acres [2,508 ha].) (Rutsch et al. 1986:46). After demolishing two standing mills (a grist and a hemp mill) to construct the Mount Hope furnace on the best location for water power, Faesch increased his holdings by renting contiguous properties from Jacob Ford, Jr. (Rutsch et al 1986:46-48; Fitch and Glover 1990:B-146, B-150). He purchased Middle Forge from the Ford heirs in 1778 as well as over 1,900 acres (760 ha) of forested land adjacent to his forges. Faesch, like the Fords, Sr. and Jr., before him, acquired other forges in the Green Pond Brook valley as well as the Mount Hope mine. Moreover, he operated his forges, including Middle Forge, in conjunction with Mount Hope mine until his death in 1799 (Fitch and Glover 1990:B-150; Rutsch et al. 1986:49; Klein et al. 1986:2-10; Rogers 1931:7; Halsey 1882:41, 53).

Faesch's various iron works played an important role in the American War for Independence by providing the Continental Army with iron matériel, such as "cannon, shot, bar iron, shovels, axes and other iron implements" (Myers 1984:7). George Washington visited the ironworks at Mount Hope, and approved the transfer of a number of Hessian prisoners to Faesch in order to work at the facilities (Myers 1984:7; Fitch and Glover 1990:B-150; Rogers 1931:5; Rutsch et al. 1986:48; Klein et al. 1986:2/9-10; Rutsch c.1995:21). Within the arsenal's boundaries, the Walton Family Cemetery (known alternatively as the Walton Burial Ground or the Hessian Cemetery) lies near Picatinny's Mount Hope gate and is reputed to contain graves of several of the Hessian prisoners. Since most of the graves in the cemetery are marked with field stones, following early custom, the Hessian connection is extrapolated from prisoner work at the local forge and those Hessians who remained in the area after the war's conclusion. Additional reports allege that three other Revolutionary War veterans, besides Peter Doland, are buried there, as well as a possible Civil War veteran, whose grave is unknown (Historical Office n.d.:Item 19; Rutsch et al. 1986:41, 55; Rogers 1931:7-8).

Known as the Denmark Tract (the location of the subsequent mid-1850s L. Bruden sawmill), Jacob Ford, Jr.'s tract contained 6,231.21 acres (2,493 ha) and was located west of Mount Hope and east of Green Pond Mountain (or right in the middle of the Green Pond Brook valley). Sources report that the property was "returned to Courtland Skinner and John Johnson" on 21 June 1774 (Halsey 1882:334; Rogers 1931:5), although Skinner and Johnson appear to have purchased this tract for Jacob Ford, Jr. (Sandy and Rutsch 1992:43). The substantial tract included Mount Pleasant, Washington Forge, the Spicer properties, Middle Forge and Denmark lands, and remained in the Ford family until 1806,

when it was purchased by Benjamin Holloway who rebuilt the abandoned forge. The historical records are unclear regarding the relationship between Ford's Denmark Tract and Faesch's Tract, which, upon initial review, seem either to overlap or to be contiguous.

In any event, properties within the Denmark Tract changed hands often during the next seventy-five years. In 1818 Holloway sold the property to George Stickel, who, in turn, sold it to John Hardy in 1829. Twelve years later, in 1841, Hardy sold the Denmark Forge property, which contained almost 2,658 acres (1,063 ha), for $7,000 to John Eddy with several exceptions. Ernest Fielder acquired the Denmark Forge complex in 1858 from Edward R. Biddle, who owned Mount Hope at the same time (Sandy and Rutsch 1992:46-51; Halsey 1882:45, 334).

Upon Faesch's death in 1799, his sons, John Jacob Faesch, Jr., and Richard B. Faesch, inherited the extensive Faesch iron holdings. After several years of unprofitabilty and his brother's death, Richard B. sold the properties to Moses Phillips in 1809. Phillips sent his sons, Henry Wisner Phillips and Lewis Phillips, to the Highlands to manage his properties. While the Phillips siblings purchased additional properties in the area, they operated old Middle Forge under the name of Aetna Forge until 1839, when the forge was purchased by Jacob Righter. The property was owned by George E. Righter, Jacob's son, from 1853 until the U.S. Government purchased it in 1879. The forge's fire had been long extinguished by that time (Fitch and Glover 1990:B-150, B-154; Rogers 1931:5-6: Rutsch et al. 1986:59).

The area Picatinny Arsenal now occupies was initially part of Burlington County, when counties were first created for West Jersey in 1694. Later, about the same time that the Rockaway area began to be settled (c.1714), the area was reclassified as part of Hunterdon County. Finally in 1739, the area was included in Morris County, named in honor of Lewis Morris, then Colonial governor of New Jersey (the first governor after New Jersey's political separation from New York). During the initial municipal division of the county in 1740, the project area was included within the boundaries of Pequannock Township, which had been informally organized in 1720 within Hunterdon County. Created in 1844, the present Township of Rockaway was hewn from the Townships of Pequannock and Hanover. The southern portion of Rockaway was removed in 1913 to form the Town of Denville (Halsey 1882:20; Pitney 1914:5-6, 158; Rutsch and van Voorst 1991:11-12; Fitch and Glover 1990:B-145).

The nascent system of trails and paths active prior to the Revolutionary War connected the various valley forges and furnaces with regional mines, and facilitated communication with Morristown. In use by the mid-1750s, Mount Hope Road connected Middle Forge with David Beman's White Meadow Forge (east of the project area). Snake Hill Road was also active at this time linking the mines of Hibernia with Denmark or Upper Forge. Another pre-Revolutionary War road connected the Mount Hope mining complex to Snake Hill Road near Denmark. As iron working industries in the Green Pond Brook valley became more extensive, the network of roadways developed in turn, linking the prominent forges. By the beginning of the nineteenth century, the Mount Hope-Denmark

Road was an important north-south artery, while the east-west route connected Middle Forge and Mount Hope. Communication and trade with communities south of the project area was facilitated by a road along the Green Pond Mountains between Middle Forge and Dover (Rutsch et al. 1986:41; Fitch and Glover 1990:B-151; Rogers 1931:7-8).

After the Highlands was organized into counties and townships developers sought to link the area with the rest of New Jersey. Opening in 1801, the Morris Turnpike connected Elizabethtown to Morristown, allowing for increased access and trade to the sparsely populated uplands (Halsey 1882:66). The Union Turnpike (now Route 15 and the present road between Spicertown and the arsenal) connected Morristown to Sparta, Sussex County, through Dover and Mount Pleasant and was the first turnpike established in the vicinity of the project area (c. 1805) (Fitch and Glover 1990:B-151; Rogers 1931:7; Halsey 1882:66). The Mount Hope and Longwood Turnpike (after 1815) traversed part of the arsenal before going over Green Pond Mountain to Longwood valley (Rogers 1931:7).

As one might expect, nineteenth century settlement within the area that would become Picatinny Arsenal occurred along the nascent road system and in the vicinity of two forge locations. While most of the population of the valley was situated south and east of future arsenal property at such villages as Rockaway, Hibernia, and Dover, a small settlement emerged called Denmark to serve the iron community near that lake, and groups of structures clustered near Picatinny Lake (then known as Lake Clifford) as well as the Mount Hope mining complex. Several farmsteads were also scattered throughout the level areas of the Green Pond Brook valley (Fitch and Glover 1990:B-151, B-154; Rutsch et al. 1986:30, 32). The population of the Township of Rockaway vacillated with the swings in the economic health of the iron industry. After the township was established in 1844, the population rose steadily until the area was purchased by the United States government in the early 1880s, rising from 3,139 to 6,445 between 1850 and 1879. In 1882, the population reached its nineteenth century zenith of 7,366 (Fitch and Glover 1990:B-151, B-154).

Despite a depletion of forest timber (and subsequently charcoal), which began in the 1820s and contributed to the volatility of early nineteenth century iron markets, Middle and Upper Forges continued to operate until the 1850s. Other factors reflecting the general volatility of the industry included the frequent ownership changes detailed above and a continuous pattern of forge shut-downs and start-ups (Klein et al. 1986:2-10). On the other hand, providing new blood to the region's sclerotic economy, the Morris Canal was built between 1825 and 1831. Passing just south of the project area through Rockaway and Dover, the canal connected Jersey City on the Hudson River to Phillipsburg on the Delaware River by 1865. Constructed to carry cheap coal from Pennsylvania to the industrial centers developing along the coast, the canal also provided coal to fuel the iron forges and furnaces of the Highlands, replacing the depleted timber supply. While anthracite coal traveled east, ore from the New Jersey Highlands was shipped westward in great quantities to newer furnaces constructed in Pennsylvania near the Delaware River (Klein et al. 1986:2-11; Rutsch et al. 1986:65-66; Halsey 1882:68-69; Fitch and Glover 1990:B/150-151).

Another important economic development supporting the continued growth of the iron industry was the development and proliferation of railroads during the middle decades of the nineteenth century. The Morris and Essex Railroad (incorporated in 1835 to connect Morristown with Newark and Elizabethtown) effectively replaced the Morris Canal by 1865 as the chief method of freight shipment. Spurs from the main route went to Rockaway and Dover by 1848 (Halsey 1882:69-70; Rutsch et al. 1986:75; Acroterion 1986/87:Form #1435-035).

> In 1866, the Mount Hope Mineral Railroad was chartered with authorization to build a line from the mines [at Mount Hope] to Port Oram [now the Borough of Wharton] which included connections with the Morris & Essex Railroad [later Delaware, Lackawana & Western Railroad] and Morris Canal. This route allowed access to other important mines . . . and by 1867 to Hibernia [Acroterion 1986/87 Form #1435-035; see also Rutsch et al. 1986:75; Halsey 1882:358].

By 1873, the mines of the Mount Hope Mining Company were excavating over 100 tons of iron ore annually (Rutsch et al. 1986:78). However, the Panic of 1873 and subsequent depression of the mid-1870s nearly killed all mining activities for the rest of the decade (Rutsch et al. 1986:79).

Other railroad lines in the vicinity of the project area included: an 1874 line from Charlotteburg south to the Green Pond Iron Mining Company's Copperas Mine, which went bankrupt a year later (Klein et al. 1986:2-11; Fitch and Glover 1990:B-155); the Wharton and Northern Railroad which traversed the arsenal in the 1880s (Rutsch c.1995:28-30); and a line constructed by the Morris County Railroad Company in 1887 through Picatinny Arsenal, which connected the Delaware, Lackawanna & Western Railroad and the Central Railroad of New Jersey at Wharton with the Erie Railroad at Green Pond Junction (Rogers 1931:53-54).

With the discovery of iron ore in the Mesabi Range in Minnesota and cheaper Lake Superior shipping, the Highlands iron industry was doomed. Even during the industry's most productive years, other economic endeavors began to emerge in the Green Pond Brook valley. Historic maps reveal farmsteads in the region after the Civil War, although the settlement pattern throughout the valley remained dispersed along existing roadways and clustered at the southern ends of Picatinny Lake and Lake Denmark (Rutsch c.1995: 26-27; Fitch and Glover 1990:B-151, B/154-155; Acroterion 1986/87:4; Sandy and Rutsch 1992:34-37). As transportation networks improved access to iron industrial sites beginning in the 1830s, the salubrious environment of the Highlands became attractive as a setting for summer resorts and vacation get-aways. Klein et al. note that in 1844 a contemporary account of the Green Pond area included bucolic descriptions of a resort "abounding in fish, and surrounded by wild, romantic scenery" (1986:2-11). Rutsch adds, "The forge ponds made excellent swimming ponds, and soon the stops on the rail line were used by patrons of summer boarding houses, hotels and cottage communities" (c.1995:30). Moreover, by 1876 the Denmark Land and Improvement Company had purchased land around Green Pond and was building roads to develop the residential potential of the area. By the mid-1880s, those plans were abandoned (Sandy and Rutsch 1992:45-46; Halsey 1882: 358-359; Rogers 1931:8; Acroterion 1986/87:4-6; Cinquino et al. 1996:2/64-66).

By the start of the twentieth century, only 20 iron mines in the Highlands were in operation, including the Mount Hope Mine, which had passed to the control of the Empire Steel & Iron company. The decline of the iron industry continued through the twentieth century and resulted in a continual ebbing of the region's population over the next forty years (Fitch and Glover 1990:B-155; Sandy and Rutsch 1992:37). By 1882 the Denmark Forge was no longer in operation and was followed into inactivity five years later by the Denmark Mine (Sandy and Rutsch 1992:53). The U.S. Army founded Picatinny Powder Depot in 1880 and provided a major shift in the area's economy and land use. The southeastern portion of Lake Denmark was later occupied by the U.S. Navy, which maintained a munitions depot there as well as a detachment of Marines. As the profitability of the iron industry declined after 1880, the population of the region declined in tandem, to a low of 2,423 in 1940 (Fitch and Glover 1990:B-155; Rutsch et al. 1986:27-29, 35). While the Highlands lakes continued to be popular as resorts and vacation spots, the area around Picatinny Arsenal became attractive to suburban development with improvements in the automobile and the region's transportation infrastructure. Population surged following World War II with the construction of Interstate Routes 80 and 287, the development of suburban residential communities and ancillary commercial construction. The population of Rockaway Township rose from 4,418 in 1950 to nearly 20,000 by 1980 (Fitch and Glover 1990:B-155; Rutsch c.1995:30-31).

Picatinny Arsenal. Established on 6 September 1880 as the Dover Powder Depot by Special Orders No. 189 under the command of Major Francis H. Parker of the Ordnance Department, Picatinny Arsenal's initial purpose was the storage of "powder, projectiles, and explosives, both for reserve supply and for issue; also for the preparation and issue of these stores" (Rogers 1931:53). A Board of Ordnance Department Officers chose the Green Pond Brook valley near Dover as the location of the depot based on several criteria: the site had to be a sparsely populated region near New York City, capable of storing a large amount of powder, and, accessible by train (Acroterion 1986/87:3-4; Fitch and Glover 1990:B-160; Rogers 1931:10). Once the site was selected on 28 February 1880, the Ordnance Board began purchasing land in the valley, which included both wooded hillsides and level valleys. Between 1880 and 1881 the government acquired 1,866.12 acres (746 ha) from various owners for a total of $62,750, or about $34 per acre. Table 1 depicts the initial land purchases in the Green Pond Brook valley for the creation of Picatinny Arsenal. After Major Parker requested that the installation's name be changed, the new depot became Picatinny Powder Depot on 10 September 1880 with construction beginning six days later (Fitch and Glover 1990:B-160; Rogers 1931:10-11).

Between 1880 and 1890, construction activities focused on the erection of storage magazines, officer's quarters, and service facilities. The first powder storage magazine was completed in 1881 with the storage capacity of 10,000 pounds (4,500 kilograms) of black powder. With four powder magazines completed by November 1886, the depot received its first shipment of powder (300,000 pounds [135,000 kg]) for storage later that month (Klein et al. 1986:2-12; Fitch and Glover 1990:B-164). To facilitate access to the installation and the general shipment of freight, the Morris County Railroad began building a rail line through the depot in 1886. By 1887, 23½ miles (37 km) of track traversed the

Table 1. Initial Land Purchases for Picatinny Arsenal (Rogers 1931).

Property Owner	Amount of Purchase in acres (in ha)	Amount Paid	Date
George E. Righter (Middle Forge)	1,195.8 (478.3)	$ 35,874.00	26 June 1880
Uel H. Wiggins & wife	167.32 (66.9)	$ 8,500.00	17 July 1880
Edward C. Fielder et al. (Denmark)	304.2 (121.7)	$ 9,126.00	30 July 1880
Henry and Michael Doland	11.0 (4.4)	$ 750.00	20 August 1880
John E. Kindred	187.8 (75)	$ 8,500.00	5 March 1881
Lewis H. Spicer & wife	8.5 (3.4)	$ 200.00	12 May 1881
Morris County RR	9.3 (3.7)	$ 1.00	1 February 1887

Note: 315 acres (126 ha) transferred by depot to Navy Department on June 9, 1891.

powder depot and connected it to the Delaware, Lackawanna and Western Railroad and the Dover Central Railroad of New Jersey at Wharton. A privately owned line called the Northern and Wharton Railroad also ran through the arsenal and maintained five associated stations. In addition, seventy men were employed at Picatinny and 900,000 pounds (405,000 kg) of powder were stored at the facility by that time. From 1893 until 1907, the facility was known as the United States Powder Depot (Klein et al. 1986:2-12; Fitch and Glover 1990:B/164-166; Rogers 1931:53-54, 71; Rutsch c.1995:28, 30).

In June 1891, 315 acres (126 ha) of Picatinny Powder Depot land near Lake Denmark were ceded to the Navy for the establishment of a Navy powder depot. (This area is now part of Picatinny Arsenal.) After vacating its powder magazine on Ellis Island in New York harbor, the Navy utilized the Lake Denmark facility as its primary depot on the east coast. Storing powder, ammunition, high explosives and artillery shells, the Lake Denmark Powder Depot was enlarged when the Navy acquired over 146 additional acres (58 ha) in two purchases in 1902. By 1892 a shell house, a storage magazine and three residential structures were complete (Rogers 1931:29-31; Klein et al. 1986:2/12-13; Fitch and Glover 1990:B/166-168; Harrell 1994:6).

Historical development within Picatinny Arsenal has been concentrated in the areas south and east of Picatinny Lake, which included most of the areas initially purchased by the federal government in 1880-1881 (Rogers 1931:58-61, 77; Harrell 1994). Construction phases at the arsenal dovetail with the installation's manufacturing activities and changes in the arsenal's mission over time (WES 1995:73). The initial phase of development covers the Depot/Storage period from 1880 until 1907, when powder storage and increasing

involvement in the assembly of cannon charges were the facility's primary mission. In 1897, workers at the depot assembled powder charges which included manufacturing and filling the storage bags. Between 1902 and 1906 armor-piercing shells were assembled at the depot. This process involved filling projectiles with explosives, such as Maximite and Explosive "D" (Rogers 1931:54; Fitch and Glover 1990:B-168; Harrell 1994:6; Klein et al. 1986:2-13).

A major change in the installation's mission occurred in 1907 with the construction of the first Army-owned smokeless powder factory. This activity resulted in the redesignation of the depot as Picatinny Arsenal, and marks the beginning of the arsenal's important manufacturing phase, which continued until the early years of World War II (Rogers 1931:54-55; Klein et al. 1986:2-13; Fitch and Glover 1990:B/168-169). Manufacturing increased gradually in the years before World War I as Congress approved continual expansion of the arsenal's production facilities. Picatinny Arsenal maintained sole responsibility for the assembly of fixed ammunition over .50 caliber by 1909. By 1913 the arsenal was operating a plant for the manufacture of Explosive "D," which was used in armor piercing projectiles. In addition, an Officer's Training School was established in late 1911 to provide training in chemistry, explosives and ballistics, as well as ammunition manufacturing processes (Rogers 1931:55-56; Klein et al. 1986:2-13; Fitch and Glover 1990:B-169). With the entry of the United States into World War I Picatinny Arsenal saw a rapid development of its physical plant both around Picatinny Lake and Lake Denmark to meet the exigencies of preparing for war and to accentuate its storage capabilities. During this time the development of the arsenal as a research and administrative installation also began as the arsenal provided technical assistance to the private sector producing explosives for the war effort. During the 1920s, munitions experimentation and training had replaced powder production as the arsenal's mission, foreshadowing the later expansion of the facility into a complete ammunition arsenal (Rogers 1931:54-55; Fitch and Glover 1990:B-170; Harrell 1994:7).

While the Ordnance Department was transforming Picatinny Arsenal into a center for explosives research and development through an intensive renovation and construction program, the Navy was constructing additional powder storage magazines at its Lake Denmark installation. On Saturday afternoon, 10 July 1926, lightning struck the 461-acre (184-ha) Lake Denmark Powder Depot, causing a series of fires and explosions throughout the southwest end of the depot. These explosions killed 19 people, including eleven Marines fighting the fires, and sent shock waves throughout the Green Pond Brook valley, destroying everything within a 3,000 foot (915 m) radius of the epicenter. Outside this 3,000 foot (915 m) radius many structures were severely damaged both within the Navy depot and the adjacent Picatinny Arsenal and among the nearby non-military residences (Rogers 1931:Chapter IX; Fitch and Glover 1990:B/171-174; Klein et al. 1986:2/13-14).

Once the fires were extinguished, the Navy appointed a Court of Inquiry to investigate the incident. The results of the investigation led to changes in safety and ammunition

storage procedures and standards. Since Picatinny Arsenal stored material similar to that stored by the Navy at Lake Denmark and had been damaged by the explosions, the Army also investigated the incident. This commission recommended that Picatinny Arsenal not only be reconstructed but enlarged for the purpose of consolidating the Army's ordnance activities in northern New Jersey. Devised with the safe handling of explosives as a top priority, plans for rebuilding Picatinny Arsenal called for the division of the arsenal into zones based on the function or activity occurring in that zone (Klein et al. 1986:2-14; Rogers 1931:94-96; Fitch and Glover 1990:B/174-176). These functional zones were:

1) powder and explosives production and handling;
2) powder and explosives storage;
3) powder and explosives testing; and,
4) non-hazardous manufacturing, and offices for administration and research (Rogers 1931:94).

Between 1927 and 1937 both the Navy Powder Depot and Picatinny Arsenal were completely rebuilt. With rehabilitation nearly complete in 1931, Picatinny became not only the major ammunition arsenal of the U.S. Army but was an important center of ammunition research, development and manufacturing. At the onset of the Second World War, Picatinny Arsenal contained 567 buildings and produced smokeless powder, high explosives, primers and fuses, assembled artillery rounds, bombs, grenades, and pyrotechnics (flares and signals) (Fitch and Glover 1990:B/177-180; Harrell 1994). While expanding production capabilities to meet the munitions requirements of fighting a two-front war, Picatinny continued to conduct research on tetryl manufacturing and nitrocellulose powder. The arsenal also provided explosives and powder production training to both civilian and military personnel. During the war Lake Denmark Powder Depot continued to operate as the Navy's propellant and projectile storage area (Fitch and Glover 1990:B/179-183). Several sources suggest that the 340 Area of the Lake Denmark Depot was built to house prisoners-of-war, but no evidence has been located to document whether POWs were ever held there (Fitch and Glover 1990:B-183; Vernon Shankle, personal communication 1995).

The post-war years were marked by both the Cold War and hot wars in Asia and the Middle East. During this period, Picatinny Arsenal continued as a center for research and development for new weapons systems and advances in the production process. Innovations in production processes had occurred consistently at the arsenal over its history and included the development of the explosive Haleite and advances in artillery fuses, grenades and pyrotechnics during World War II. These types of innovations increased after the war and included the development of photoflash cartridges and bombs, the study of plastics and adhesives in the packaging of ammunition, the research on warheads for the Nike nuclear missile and other missile programs, and the production of a tank-piercing rocket for the 3.5-in bazooka and an atomic shell for the 250mm gun (Fitch and Glover 1990:B/182-184).

In 1948, the Lake Denmark depot became home to the Navy's east coast rocket engine test center. The facility was called the Naval Aeronautical Rocket Laboratory, but was renamed the Naval Air Rocket Test Station (NARTS) in April 1950. The NARTS was established for the testing and evaluating of "rocket engines, components and propellants, and training service personnel in handling, servicing and operating rocket engines" (Department of the Navy 1997b). The Navy subcontracted with private industry to attain these goals. Founded in 1941, Reaction Motors, Inc. (absorbed by the Thiokol Corporation in 1958) was one of these companies and their work led to the development of both the XLR-II and the XLR-99 engine. Tested at Lake Denmark, the XLR-99 liquid rocket engine was the first large, throttle-able, restartable liquid propellant rocket engine. The XLR-99 was used for the X-15, the experimental hypersonic aircraft, and a preliminary design for the Space Shuttle called for its use (Historical Office 1984:23; Harrell 1994:8; Department of the Navy 1997a, 1997b, 1997c; Thiokol Propulsion 1999; Jenkins 1996:9-11, 40-41). "The X-15 program contributed significantly to the U.S. manned space program in general, and was the only existing database on winged manned reentry vehicles available when the development of the Space Shuttle was begun in the 1970s" (Jenkins 1996:11). Decommissioned by the Navy, the Lake Denmark installation reverted to Picatinny Arsenal in August 1960.

By 1977 most production of weapons and ammunition had ceased at Picatinny Arsenal and its activities focused on research and development. Today, over 1,000 buildings are spread out over the arsenal's nearly 6,500 acres (2,600 ha), making Picatinny Arsenal "the largest Army installation devoted solely to research and development" (STV/Lyon Associates, Inc. 1994:1.2.2; Cinquino et al. 1996:2/66-67).

3.0 Architectural Overview

3.1 EVALUATION RESULTS

Although this report evaluates only those structures ineligible for the NRHP, the second part of this study identified 55 buildings (including four non-contributing) in three historic districts, and two individual structures (Buildings 3250 and 3316) that were all eligible for listing in the NHRP (Nolte and Steinback 1998). The 443 structures remaining were considered ineligible by assessing their place within a historical use grouping as well as their place within the larger building family category. When divided by use category and evaluated by building family, most of the structures on Picatinny Arsenal become ineligible. This section of the report will review these conclusions.

A detailed review of each of the 500 structures evaluated is presented in Table 2, *Index of Surveyed Structures, Picatinny Arsenal.* In order to facilitate review, the evaluations of a number of structures have been broken into the following categories: World War II Temporary Structures, Storage and Utility Buildings, Standardized Building Plans, Common New Jersey House Styles and Transportation Infrastructure. A final category has been added to this section that deals not with common building types but loss of integrity. A great number of industrial structures at Picatinny have lost their past associations with the important larger industrial buildings within a complex, thereby losing integrity. Please note that approximately 50 buildings within this report fall into more than one category and so are discussed in each category. The location of each structure is presented on eight maps (Figures 2a through 2h).

Table 2. Index of Surveyed Structures, Picatinny Arsenal

Bldg #	Date Built	Historic Name	Present Name	Fig. this rept.	pg # this rept.	BA[1] pg #	Mitigation/Report of final disposition[2]	Other Surveys	Former Army Category	N R Eligibility	Comments
2	1918	Magazine	Museum	2b	71	E-2	Harrell 1994	HABS, Closure Report	3	no	
3	1918	Magazine	Legal Counsel	2b	71	E-3	Grandine & Cannan 1995	HABS, Closure Report	3	no	
4	1918	Storage	Electrical Equipment	2b	63; 89	E-4	Grandine & Cannan 1995	Closure Report	3	no	
5	1918	Magazine	Operations General Purpose	2b	61	E-6	Grandine & Cannan 1996	Closure Report	3	no	
6	1942	Storage	Engineering Administration	2b	63	E-7	Grandine & Cannan 1995	HABS	none	no	
9	1942	General Purpose Administration	General Purpose Administration	2b	106	E-8		HABS	none	no	loss of integrity, now connected to building #10
10	1941	General Purpose Administration	General Purpose Administration	2b	106	E-8		HABS	none	no	loss of integrity, now connected to building #9
11	1941	Tin Liner and Packing Box Building	Facilities Engineering Maintenance Shop	2b	106	E-9		HABS	none	no	typical WW II building type, Francisco and Jacobus, Architects, NY
13	1930	Box Manufacturing Building	Operations General Purpose	2b	106	E-11		HABS	none	no	typical pre-WWII building type, no special significance
17	1918	General Purpose Warehouse	Flammable Materials Storehouse	2a	63	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
18	1918	Flammable Materials Storehouse	General Purpose Laboratory	2b	63	E-15	Grandine & Cannan 1995	HABS, Closure Report	3	no	
19	1918	Flammable Material Storehouse	Electronic Equipment Facility / School	2b	63	E-16	Grandine & Cannan 1995	none	none	no	
20	1918	Flammable Material Storehouse	Administration Building / R&D	2b	63	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
21	1918	Flammable Materials Storehouse	Weapons Instrumentation Building	2b	63	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
22	1918	Precision Machine Shop	Precision Machine Shop	2b	110	E-17	slated for demolition in mitigation process	HABS, Closure Report	3	no	
22C	1944	General Storehouse	General Storehouse	2b	63	E-18	Grandine & Cannan 1995	HABS	none	no	
23	1939	Processing	General Storehouse	2b	106	E-19	DOD WW II mitigation	HABS	none	no	construction drawings prepared at Picatinny Arsenal
24	1942	Plating Shop / Operations and Shipping Building	Metallurgy Laboratory	2b	110	E-20	slated for demolition in mitigation process	HABS	none	no	
30	1918	Ammunition Parts Storehouse	Saw Room / Offices / Credit Union	2b	63	E-22	Grandine & Cannan 1995	HABS, Closure Report	3	no	
31	1930	Precision Machine Shop	Precision Machine Shop / Administration	2b	106	E-23		HABS	none	no	loss of integrity
31A	1942	Storage of Metal Components	General Purpose Maintenance Shop	2b	63	E-27	Grandine & Cannan 1995	HABS	none	no	construction drawings prepared at Picatinny Arsenal
33	1922-33	Vehicle Maintenance Shop / Administration General Purpose	Vehicle Maintenance Shop / General Purpose Administration	2b	95	E-28		HABS, Closure Report	3	no	possesses no significant historical or architectural merit
33B	1938		Flammable Materials Storehouse	2b	57	E-29	DOD WW II mitigation	none	none	no	
34	1940	Quality Assurance Division	General Purpose Administration / Post Restaurant	2b	63	E-30	Grandine & Cannan 1995	HABS, Closure Report	3	no	construction drawings prepared at Picatinny Arsenal
36	1918	General Purpose Warehouse	General Purpose Warehouse	2b	63	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	

Note: n/a* = not applicable to this report; see Nolte and Steinback 1999

[1] Boston Affiliates report (Harrell 1994)

[2] National Register eligibility in this document

Table 2. Index of Surveyed Structures, Picatinny Arsenal

Bldg #	Date Built	Historic Name	Present Name	Fig. this rept.	pg # this rept.	BA[1] pg #	Mitigation/Report of final disposition[2]	Other Surveys	Former Army Category	N R Eligibility	Comments
39	1918	General Purpose Warehouse	Facilities Engineering Maintenance Shop	2b	63	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
40	1918	General Purpose Warehouse	General Purpose Warehouse	2b	63	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
41	1918	General Purpose Warehouse	General Purpose Warehouse	2b	63	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
45	1918	General Purpose Warehouse	General Purpose Warehouse	2b	63	E-4	Grandine & Cannan 1995	HABS, Closure Report	3	no	construction drawings prepared at Picatinny Arsenal
46	1940	Magazine	General Storehouse	2b	71	E-31	Grandine & Cannan 1995	HABS, Closure Report	none	no	construction drawings prepared at Picatinny Arsenal
47	1940	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS, Closure Report	none	no	construction drawings prepared at Picatinny Arsenal
48	1940	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS, Closure Report	none	no	construction drawings prepared at Picatinny Arsenal
49	1940	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS, Closure Report	none	no	construction drawings prepared at Picatinny Arsenal
50	1940	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS, Closure Report	none	no	construction drawings prepared at Picatinny Arsenal
51	1940	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS, Closure Report	none	no	construction drawings prepared at Picatinny Arsenal
52	1941	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS, Closure Report	none	no	construction drawings prepared at Picatinny Arsenal
52A	1942	Waiting Shelter	Bus Shelter	2b	57	E-32	DOD WW II mitigation	HABS	none	no	
53	1941	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS	none	no	
54	1941	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS	none	no	construction drawings prepared at Picatinny Arsenal
55	1941	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS	none	no	construction drawings prepared at Picatinny Arsenal
56	1941	Magazine	General Storehouse	2a	71	E-31	Grandine & Cannan 1995	HABS	none	no	construction drawings prepared at Picatinny Arsenal
57	1941	Magazine	Shipping and Receiving	2a	71	E-31	Grandine & Cannan 1995	HABS	none	no	construction drawings prepared at Picatinny Arsenal
58	1937	Printing Plant / Lumber storage Instrumentation / Administration	Operations General Purpose / General	2b	63	E-33	Grandine & Cannan 1995	HABS	none	no	construction drawings prepared at Picatinny Arsenal
59	1937	Lumber Storage	Main Library / General Purpose Administration	2b	63	E-33	Grandine & Cannan 1995	HABS	none	no	
60	1942	Storage	General Purpose Laboratory / General Purpose Administration	2b	64	E-34	Grandine & Cannan 1995	HABS	none	no	Francisco and Jacobus, NY, Architects
61	1941	Inert Component Warehouse	Ordnance Administration / Engineering Admin. Bldg.	2b	64	E-35	Grandine & Cannan 1995	none	none	no	
62	1941	Inert Component Warehouse	Ordnance Administration Bldg.	2b	64	E-35	Grandine & Cannan 1995	none	none	no	Francisco and Jacobus, Chicago, architects
63	1942	Lumber and Box Storage	Facility Engineering / Lumber and Pipe Shed	2b	64	E-37	DOD WW II mitigation	HABS	none	no	
64	1942	Cutting Oils Storage	General Purpose Administration / Administration Building / R&D	2b	64	E-38	DOD WW II mitigation	HABS	none	no	
65	1942	Storage	General Purpose Laboratory / Administration R & D	2b	64	E-39	Grandine & Cannan 1995	HABS	none	no	
66	1944	Inert Component Storehouse	Inert Component Storehouse	2b	64	E-40	DOD WW II mitigation	HABS	none	no	

Table 2. Index of Surveyed Structures, Picatinny Arsenal

Bldg #	Date Built	Historic Name	Present Name	Fig. this rept.	pg # this rept.	BA[1] pg #	Mitigation/Report of final disposition[2]	Other Surveys	Former Army Category	N R Eligibility	Comments
78A	1945	Turret	Ordnance Facility	2a	57	E-41	DOD WW II mitigation	HABS	none	no	
79	1942	Field Office / Bombproof Shelter	Realignment Engineering Office	2a	95	E-42		HABS	none	no	typical WWII building style, possesses no historical or architectural merit
80A	1942	Ejector Station	Sewage Pump	2a	83	E-43	Grandine & Cannan 1995	HABS	none	no	
80B	1942	Sewage Treatment Laboratory	Sewage Treatment Plant Building	2a	83	E-44	DOD WWII mitigation, Grandine & Cannan 1995	HABS	none	no	
84	1944	General Purpose Warehouse	General Purpose Warehouse	2b	64	E-45	DOD WWII mitigation, Grandine & Cannan 1995	HABS	none	no	
91	1942	General Storehouse Warehouse	Office and Supply	2b	64		Support Utilities Report	HABS	none	no	
99	1943	Boiler House ("High Pressure Boiler")	HIPR BL + 3.5M CL	2b	69	E-47	Grandine & Cannan 1995	HABS	none	no	construction drawing by U.S. Engineers Office, Philadelphia
100	1939	Officers' Quarters	Quarters (Col)	2b	86	E-50		HABS, Closure Report	2	no	standard military plan, same houses found at Revenna Ordnance Plant, Ohio, construction drawings by War Plans Division, Ordnance Dept.
101	pre-1880	Residence	Quarters (LC MJ)	2b	97	E-51		HABS	none	no	late 19th century farm house with no particular significance
101A	1937	Garage	Garage	2b	86	E-51		HABS	none	no	standard garage plan, no special significance
102	1939	Officers' Quarters	Quarters (Col.)	2b	86	E-50		HABS, Closure Report	2	no	standard military plan, same houses found at Revenna Ordnance Plant, Ohio, construction drawings by War Plans Division, Ordnance Dept.
104	1938	Officers' Quarters	Quarters (Col.)	2b	87	E-50		HABS	none	no	standard military plan, same houses found at Revenna Ordnance Plant, Ohio, construction drawings by War Plans Division, Ordnance Dept.
104A	1942	Waiting Shelter	Bus Shelter	2b	57	E-53	DOD WW II mitigation	HABS	none	no	
105	pre-1880	Residence	Quarters (LC MJ)	2b	97	E-54		HABS	none	no	late 19th century farm house with no particular significance
106	1899	Officer's Quarters	Quarters (Col.)	2b	97	E-55		HABS, Closure Report	3	no	late 19th century farm house with no particular significance
108	1882	Storehouse / Schoolhouse Quarters	Quarters (LC MJ)	2b	106	E-56		HABS, Closure Report	3	no	loss of integrity
109	1939	Officers' Quarters	Quarters (MJ)	2b	87	E-50		HABS	none	no	standard military plan, same houses found at Revenna Ordnance Plant, Ohio, construction drawings by War Plans Division, Ordnance Dept.
110	pre-1880	Superintendent's House	Distinguished Visitor's Quarters / Guest Quarters	2b	97	E-57		HABS, Drawings Catalog	none	no	early base quarters, no special architectural or historic significance

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111	1909	Root Storage / Greenhouse	Storage / Greenhouse	2b	n/a*	E-59	Criterion A	HABS	none	yes district	
112	1909	Commanding General's Quarters	Family Housing General	2b	n/a*	E-60	Criterion A	HABS, Drawings Catalog	none	yes district	
113	1909	Family Housing General	Family Housing General	2b	n/a*	E-61	Criterion A	HABS, Drawings Catalog	none	yes district	
114	1884	Administrative / Headquarters Commanding Officer's Quarters	Family Housing Colonel	2b	n/a*	E-62	Criterion A	HABS, Drawings Catalog	none	yes district	
114A	1937	Garage	Garage	2b	87	E-64		HABS	none	non-contributing	
115	1884	Guardhouse / Fire Engine House / School / Officers' Quarters	Quarters (Col.)	2b	n/a*	E-65	Criterion A	HABS	none	yes district	
115A	1943	Garage	Garage	2b	87	E-66		HABS	none	non-contributing	
115B	c. 1942	Waiting Shelter	Bus Shelter	2b	57	E-67	DOD WW II mitigation	HABS	none	no	
116A	1942	Waiting Shelter	Bus Shelter	2b	n/a*	E-68	DOD WW II mitigation	HABS	none	no	
117	1885	Stable / Storehouse No.5 / Transient Officers Quarters	Quarters (LC MJ)	2b	106	E-69		HABS, Closure Report	3	no	loss of integrity; questions remain about historical significance of roof trusses. If building is slated for irrevocable changes further study is recommended.
118	1918	Barracks	Civilian Personnel Administration	2b	87	E-71		HABS	none	no	originally a temporary WW I structure, loss of integrity
119	1887	Officers Quarters / Fill Plant / Hospital	Quarters (LC MJ)	2b	n/a*	E-72	Criterion A	HABS	none	yes, district	
120	1918	Enlisted Men's Quarters	Civilian Personnel Building	2b	106	E-73		HABS, Closure Report	3	no	originally a temporary WW II structure, loss of integrity
121	1936	Recreation	Golf Club House Officer's Mess	2b	87	E-74		HABS	none	no	typical of Army building type, no particular significance
121A	1944	Golf Cart Storage	Administrative Office	2b	57; 64	E-75	DOD WW II mitigation	HABS	none	no	
123	1939	Garage	Garage	2b	57	E-76	DOD WW II mitigation	HABS	none	no	
124	1936	Garage	Garage	2b	87	E-77		HABS	none	no	standard garage plan, no special significance
126	1939	Officers' Quarters	Quarters (Col.)	2b	87	E-50		HABS	none	no	standard military plan, same houses found on Revenna Ordnance Plant, Ohio, construction drawings by War Plans Div., Ordnance Dept.
127	1939	Officers' Quarters	Quarters (Col.)	2b	87	E-50		HABS	none	no	
128	1939	Garage	Garage	2b	57; 87	E-76	DOD WW II mitigation	HABS	none	no	
151	1929-41	Post Headquarters Building	Administrative Building / General Purpose Administration	2b	n/a*	E-78	Criterion A	HABS, Closure Report	3	yes, district	1941 addition by Francisco and Jacobus, Chicago, 1928 const drawing by Office of Quarter Master General
154	1943	Solvent / Chemistry Laboratory	Chemistry Laboratory	2b	n/a*	E-80	slated for demolition in mitigation process	HABS	none	within a district, but already in mitigation	

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161	1942	General Storehouse	General Storehouse	2b	57; 64	E-81	DOD WWII mitigation and Grandine & Cannan 1995	HABS	none	no	
162	1930-42	Physics / Chemistry Laboratory	Applied Instrument Building	2b	n/a*	E-82	Criterion A	HABS, Closure Report	3	yes, district	construction drawing by the Service Office of the Quarter Master General
163	1930	High Explosives Research Laboratory	Signal Photo Laboratory	2b	n/a*	E-84	Criterion A	HABS, Closure Report	3	yes, district	
164	1930	Chemistry / Stability Laboratory	General Purpose Laboratory	2b	n/a*	E-85	Criterion A	HABS, Closure Report	3	yes, district	
164B	ca. 1943	World War II Pay Station	General Purpose Laboratory	2b	n/a*	E-86		HABS	none	non-contributing to district	
166	1930	Test Conditioning Chamber	General Purpose Laboratory	2b	n/a*	E-88	Criterion A	HABS	none	yes, district	construction drawings by War Plans Div., Ordnance Dept., structure is derelict and rumored to be site of radioactive spill
167	1930	High Explosives Preparation and Test Laboratory	Chemistry Laboratory	2b	n/a*	E-167	Criterion A	HABS, Closure Report	3	yes, district	
168	1930	Ammunition and Explosives Magazine	General Purpose Laboratory	2b	n/a*	E-168	Criterion A	HABS, Closure Report	3	yes, district	
171	1940	Administration Building	Administration	2b	n/a*		Criterion A	HABS	none	yes, district	construction drawing by War Plans Div., Ordnance Dept.
172	1942	Ordnance Administration Building	Engineering Administration Building	2b	n/a*	E-92	Criterion A	HABS	none	yes, district	Francisco and Jacobus, Chicago, architects
173	1942	Guard House / Transformer Station	Police Station and Communication Center	2b	n/a*	E-93	Criterion A	HABS	none	yes, district	Francisco and Jacobus, Chicago, architects
174	1942	Service Magazine	Administration	2b	n/a*	E-94	Criterion A	HABS	none	yes, district	
176	1944	Laboratory Equipment / Sampling of Ammunition	Administration	2b	n/a*	E-95	Criterion A	HABS, Closure Report	3	yes, district	
183	1945-63	Steam Flow Meter House	Non Metal Materials Facility / Administration Building R & D	2b	n/a*	E-96	Criterion A	HABS, Closure Report	3	yes, district	1963 2-story addition by Lawrence Picone & Associates, Metuchen, NJ
197	1930	Laboratory and Test Building	General Purpose Laboratory	2b	n/a*	E-88	Criterion A	HABS, Closure Report	3	yes, district	
213	1916	Fuzz Testing and Loading	Ordnance Facility	2b	110	E-97	slated for demolition in mitigation process	HABS, Drawings Catalog, Closure Report	2	no	
214	1941	Change House	Change House	2b	106	E-98		HABS	none	no	Loss of integrity
216	1941	Change House	Administration Building R & D	2b	107	E-99		HABS	none	no	Loss of integrity
221	1941	Binder Preparation Plant Cast High Explosive Fill House	Ordnance Facility	2b	107	E-100		HABS, Closure Report	3	no	Loss of integrity
230	1918	Primer and Detonator Loading	Ordnance Facility	2b	107	E-102		HABS, Drawings Catalog, Closure Report	2	no	Loss of integrity
230A	1944	High Explosives Magazine	Magazine	2b	57; 59	E-104	DOD WW II mitigation	HABS	none	no	
230B	1944	High Explosives Magazine	Magazine	2b	58	E-105	DOD WW II mitigation	HABS	none	no	
230F	1941	General Storehouse	Inert Storage	2b	58; 64	E-106	DOD WW II mitigation	HABS	none	no	
230G	1944	Motor and Blower Building	Motor Room	2b	58	E-107	DOD WW II mitigation	HABS, Closure Report	3	no	

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232	1918	Detonator Loading	Ordnance Facility	2b	107	E-108		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
232C	1943	Equipment Building	Air Conditioning Plant	2b	107	E-109		HABS, Closure Report	3	no	loss of integrity
235	1918	Mercury Fulminate Mixing	Ordnance Facility	2b	107	E-110		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
240	1942	Change House	Dispatch / Administration General Purpose	2b	107	E-112		HABS	none	no	loss of integrity
241	1920-42	Demising / Disassembly Explosive "D" Loading Plant	Facilities Engineering Maintenance Grounds / Indr Fir / Archery Range	2b	110	E-113	slated for demolition in mitigation process	HABS, Closure Report	3	no	
252	1918	Press Loading	Ordnance Facility	2b	107	E-116		HABS, Drawings Catalog	none	no	loss of integrity
252A	1942	Storage	Flammable Materials Storehouse	2b	57; 64; 107	E-118	DOD WW II mitigation	HABS	none	no	
252C	1920	Ammonium Picrate Screening	Ready Magazine	2b	107	E-119	DOD WW II mitigation	HABS	none	no	
252F	1943	Magazine	Ready Magazine	2b	71	E-120	Grandine & Cannan 1995	HABS	none	no	loss of integrity
256	1889	No. 6 Powder Magazine / Booster and Fuze Loading Building	Ordnance Facility	2b	71	E-121		HABS, Drawings Catalog, closure Report	2	no	loss of integrity
266	1903	Original Magazine for High Explosive "A" / Pump and Change House	Laboratory General Purpose ("Wind Tunnel Building")	2b	71	E-123		Drawings Catalog		no	loss of integrity
266A	1938	Storage	Flammable Material Storehouse	2b	57; 64; 107	E-125	DOD WW II mitigation	HABS	none	no	
267	1941	Change House	Ordnance Facility	2b	107	E-126		HABS	none	no	loss of integrity
268	1941	Primary Explosives / Detonator Painting	General Storehouse	2b	107	E-127		HABS, Closure Report	3	no	loss of integrity
281	1921	Pelleting / Offices / Change House	Administration / OED Laboratory	2b	107	E-128		HABS, Closure Report	3	no	loss of integrity
282	1942	Pelleting Building	Office Init Research and Development Laboratory	2b	107	E-129		HABS	none	no	loss of integrity
282B	1942	Fuze and Detonator Magazine	High Explosives Magazine	2b	57; 72	E-130	DOD WW II mitigation	HABS	none	no	
282C	1942	Fuze and Detonator Magazine	High Explosives Magazine	2b	57; 72	E-131	DOD WW II mitigation	HABS	none	no	
282D	1938	Magazine	General Purpose Warehouse	2b	57; 72	E-132	DOD WW II mitigation	HABS	none	no	
290	c. 1960	Sentry Station	Sentry Station	2b	95	E-133	Harrell 1994	HABS	none	no	
291	1942	Guard Tower	Radio Tower	2b	107	E-134		HABS	none	no	loss of integrity
301	1943	Storehouse	Storehouse	2b	57; 64	E-135	DOD WW II mitigation	HABS	none	no	
301A	1943	Oil House	Storehouse	2b	57; 64	E-136	DOD WW II mitigation	HABS	none	no	
302	1905	Storehouse for Sodium Nitrate	Administrative General Purpose / Facility Engineering Maintenance Shop	2b	64	E-137	Grandine & Cannan 1995	HABS, Closure Report	3	no	
302B	1943	Sewage Pump	Sewage Pump	2b	83	E-139	Grandine & Cannan 1995	HABS	none	no	
302C	1939	Storehouse	Facility Engineering Storehouse	2b	64	E-140	Grandine & Cannan 1995	HABS	none	no	
302D	1921	Water Pump Station	Well NP W / PS	2b	83	E-141	Grandine & Cannan 1995	HABS	none	no	
302E	1944	Storehouse	Facility Engineering Storehouse	2b	57; 64	E-142	DOD WW II mitigation	HABS	none	no	

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303	1940	Fabrication	Facility Engineering Maintenance Shop / Storage	2b	58	E-143	DOD WW II mitigation	HABS	none	no	
304	1941	Storehouse	Facility Engineering Storehouse	2b	64; 110	E-144	slated for demolition in mitigation process	HABS	none	no	
307	1880	Original Powder Magazine	Facility Maintenance Shop / General Purpose Administration	2b	72	E-145	Grandine & Cannan 1995	HABS, Closure Report	3	no	
308	1922	Sewage Pump / Facility Engineering Storehouse	Sewage Pump / Facility Engineering Storehouse	2b	83; 110	E-147	slated for demolition in mitigation process	HABS	none	no	
308A	1943	Sewage Pump	Sewage Pump	2b	83	E-148	Grandine & Cannan 1995	HABS	none	no	
308B	1922	Sewage Pump	Sewage Pump	2b	83	E-149	Grandine & Cannan 1995	HABS	none	no	
311	1941	Gasoline Station	Gasoline Station	2b	110	E-150	slated for demolition in mitigation process	HABS	none	no	
314	1942	Salvage and Surplus Property	Salvage and Surplus Property	2b	64	E-151	Grandine & Cannan 1995	HABS	none	no	
314C	1943	Salvage and Surplus Property	Salvage and Surplus Property	2b	58	E-152	DOD WW II mitigation	HABS	none	no	
315	1908	Storehouse for Sodium Nitrate	Post Engineering Maintenance	2b	64	E-153	Grandine & Cannan 1995	HABS Drawings Catalog, Closure Report	2	no	
316	1907	Storehouse for Sodium Nitrate	Metallurgy Laboratory	2b	64	E-154	Grandine & Cannan 1995	HABS, Drawings Catalog, Closure Report	2	no	
318	1907	Storehouse for Sodium Nitrate	Metallurgy Laboratory	2b	65	E-155	Grandine & Cannan 1995	HABS, Drawings Catalog, Closure Report	2	no	
319	1906	Storehouse for Sodium Nitrate	General Purpose Administration	2b	65	E-156	Grandine & Cannan 1995	HABS, Closure Report	3	no	
321	1903	Storehouse for Fuzed Projectiles "O"	Ordnance Facility	2b	65	E-157	Grandine & Cannan 1995	HABS, Drawings Catalog, Closure Report	2	no	
321D	1941	Magazine	General Storehouse	2b	72	E-159	Grandine & Cannan 1995	HABS, Closure Report	2	no	
322	1906	Storehouse for Sodium Nitrate / 87mm Loading Plant / Foundry	Metallurgy Laboratory	2b	65	E-160	Grandine & Cannan 1995	HABS, Drawings Catalog, Closure Report	2	no	
323	1906	Storehouse for Sodium Nitrate	General Purpose Laboratory	2b	65	E-161	Grandine & Cannan 1995	HABS, Drawings catalog, Closure Report	2	no	
323D	1942	Inert Storage Building	Term Equipment Building	2b	65	E-162	Grandine & Cannan 1995	HABS	none	no	
324	1905	Storehouse for Sodium Nitrate	General Storehouse	2b	65	E-163	Grandine & Cannan 1995	HABS, Closure Report	3	no	
324A	1943	Ejector Station	Sewage Pump	2b	83	E-164	Grandine & Cannan 1995	HABS	none	no	
326	1918	Shell Sandblasting	Facility Engineering Maintenance Shop	2b	111	E-165		HABS, Closure Report	3	no	Derelict
329	1903	Storehouse for Sodium Nitrate	Propellant Systems Facility	2b	65	E-166	Grandine & Cannan 1995	HABS, Closure Report	3	no	
332	1942	Change House	Change House	2b	107	E-167		HABS	none	no	loss of integrity
333	1902	Power House / Turbine House	Human Engineering Laboratory	2b	71	E-168	Grandine & Cannan 1995	HABS, Closure Report	3	no	

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337	1914-28	Boat House	Recreation Building ("Picatinny Rod and Gun Club")	2d	95	E-169		HABS	none	no	possesses no particular architectural or historical significance
342	1942	Ejector Station	Sewage Pump	2d	83	E-170	Grandine & Cannan 1995	HABS	none	no	
350	1938-40	Storage	Engineering Administration Building	2b	65	E-171	Grandine & Cannan 1995	HABS	none	no	
351	1938-40	Storage	ADP / Technical Library	2b	65	E-171	Grandine & Cannan 1995	HABS	none	no	
352	1938-40	Storage	TV Studio / ADP / Engineering Administration	2b	65	E-171	Grandine & Cannan 1995	HABS	none	no	
353	1938-40	Parts Storage	Physics Lab	2b	65	E-171	Grandine & Cannan 1995	HABS	none	no	
354	1938-40	Engineering Research and Development / Storage	Engineering / Administration Building	2b	65	E-171	Grandine & Cannan 1995	HABS	none	no	
355	1938-40	Engineering Research and Development	Administration Building / Research and Development	2b	95	E-171	Grandine & Cannan 1995	HABS	none	no	
382	1942	Loading Branch Office	General Purpose Administration	2b	107	E-172		HABS	none	no	loss of integrity
403	1906	Storehouse for Sodium Nitrate	Woodworking, Packaging and Testing Laboratory	2b	65	E-173	Grandine & Cannan 1995	HABS, Closure Report	2	no	
404	1906	Storehouse for Sodium Nitrate	Thermo Chemistry Laboratory	2b	65	E-175	Grandine & Cannan 1995	HABS, Drawings Catalog, Closure Report	2	no	
405	1920	Chemistry Laboratory	General Purpose Laboratory	2b	107	E-176		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
407	1942	Experimental Chemistry Laboratory	General Purpose Laboratory	2b	58	E-178	DOD WW II mitigation	HABS, Drawings Catalog	none	no	
407A	1942	Smokeless Powder Magazine	Equipment Storage	2b	72	E-179	Grandine & Cannan 1995	HABS	none	no	
407F	1938	High Explosive Magazine	High Explosive Magazine	2b	72	E-180	DOD WW II mitigation	HABS	none	no	
408	1920	Nitrating Building	General Purpose Laboratory	2b	107	E-181		HABS, Drawings Catalog	2	no	loss of integrity due to explosion which damaged building beyond repair
410	1943	Water Pump Station	Well NP W / PS	2b	84	E-183	Grandine & Cannan 1995	HABS	none	no	
410A	1943	Chlorinating Building	General Storehouse	2b	84	E-184	Grandine & Cannan 1995	HABS	none	no	
424	1903	Combustible Cartridge Case Factory	Ordnance Facility	2b	107	E-185		HABS, Closure Report	3	no	loss of integrity
424B	1938	General Purpose Magazine	General Purpose Magazine	2b	72	E-187	Grandine & Cannan 1995	HABS	none	no	
424C	1938	Nitroglycerin Separation Building	General Purpose Magazine	2b	107	E-189		HABS, Closure Report	3	no	loss of integrity
424D	1924	High Explosives Magazine	High Explosives Magazine	2b	72	E-190	Grandine & Cannan 1995	HABS	none	no	
427	1938	Experimental Propellants Plant	Ordnance Facility	2b	107	E-191		HABS, Closure Report	3	no	loss of context
427B	1939	Dry House	Ordnance Facility	2b	107	E-193		HABS, Closure Report	3	no	loss of integrity
429	1942	Chemistry Laboratory	Propellant Systems Facility	2b	107	E-194		HABS	none	no	loss of integrity
430	1922	Laboratory / Propulsion Systems	Propellant Systems Facility	2b	107	E-195		HABS, Closure Report	3	no	loss of integrity
430A	1943	Water Pump Station	Well NP W / PS	2b	84	E-196	Grandine & Cannan 1995	HABS	none	no	
430B	1941	High Explosives Magazine	High Explosives Magazine	2b	72	E-197	Grandine & Cannan 1995	HABS	none	no	
437	1918	General Purpose Magazine	General Purpose Magazine	2b	72	E-198	Grandine & Cannan 1995	HABS	none	no	

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438	1942	Boathouse	Boathouse	2d	58	E-199	DOD WW II mitigation	HABS	none	no	
445A	1918	Small Arms Pyrotechnic Magazine	Igloo Storage	2d	109	E-202		HABS	none	no	Demolished
445F	1942	Small Arms Pyrotechnic Magazine	Storage	2b, 2d	72	E-203		HABS	none	no	loss of integrity
448	1930	Howitzer and Aliquot Bag Loading	Ordnance Facility	2d	72; 107	E-204		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
448A	1930	Ammunition Components Magazine	Fixed Ammunition Magazine	2d	107	E-206		HABS	none	no	loss of integrity
448C	1942	Weighing and Mixing	General Storehouse	2b, 2d	107	E-207		HABS	none	no	loss of integrity
452B	1930	Storage	General Purpose Magazine	2b, 2d	65; 108	E-208	DOD WW II mitigation	HABS	none	no	loss of integrity
454	1930	Bag Charge Filling Plant	Ordnance Facility	2b	108	E-209		HABS, Drawings Catalog, Closure Report	1	no	loss of integrity
455	1930	Cloth Storage, Dyeing, Cutting and Sewing	Engineering Administration Building	2b, 2d	108	E-211		HABS, Closure Report	3	no	loss of integrity
456	1931	Field Office	Engineering Administration Building	2b	108	E-212		HABS, Closure Report	3	no	loss of integrity
456B	1941	Sentry Station	Sentry Station	2d	108	E-213	DOD WW II mitigation	HABS	none	no	loss of integrity
462	1942	Tracer Loading Building	Ordnance Facility ("Chemistry Laboratory")	2b	96	E-214		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
462A	1941	General Purpose Magazine	General Purpose Magazine	2b	72; 108	E-215		HABS	none	no	loss of integrity
462B	1942	General Purpose Magazine	General Purpose Magazine	2b	72; 108	E-216		HABS	none	no	loss of integrity
462C	1942	General Storehouse	General Storehouse	2b	65	E-217	Grandine & Cannan 1995	HABS	none	no	
462D	1942	General Storehouse	General Storehouse	2b	65	E-217	Grandine & Cannan 1995	HABS	none	no	
462E	1943	General Purpose Magazine	General Purpose Magazine	2b	72	E-218	Grandine & Cannan 1995	HABS	none	no	
477	1945	Non-Gaseous Projectile Loading	Ordnance Facility	2b	108	E-219		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
477F	1945	Magazine	General Purpose Magazine	2b	72	E-221		HABS	none	no	loss of integrity
506	1906-56	Power House	Power House	2d	71	E-222	Grandine & Cannan 1995	HABS, Closure Report	3	no	
506A	1939	Water Pump Station	Water Pump NP W/S	2d	84	E-223	Grandine & Cannan 1995	HABS	none	no	
507	1929	Railroad Engine Shop	Railroad Engine House	2d	108	E-224		HABS, Closure Report	3	no	loss of integrity
507A	1941	Change House	Spare Parts Storage	2d	108	E-225		HABS	none	no	loss of integrity
507B	1942	Equipment Inspection Office / Offices	Spare Parts Storage	2d	108	E-226		HABS	none	no	loss of integrity
514	1930	Boiling Tub House	General Purpose Laboratory	2d	108	E-227		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
525	1930	Control Laboratory / Change House	Electronic Equipment Facility	2d	108	E-229		HABS, Closure Report	3	no	loss of integrity
525A	1930	Acid Laboratory	Chemistry Laboratory	2d	108	E-231		HABS, Closure Report	3	no	loss of integrity
537A	1938	Storehouse	Flammable Materials Storehouse	2d	58; 108	E-232	DOD WW II mitigation	HABS	none	no	loss of integrity
542B	1930	Change House	Change House	2d	108	E-233		HABS, Closure Report	3	no	loss of integrity

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550	1918	General Purpose Warehouse	General Storehouse	2d	65	E-4	Grandine & Cannan 1995	HABS, Closure Report	3	no	
550A	1921	Air Raid Shelter	Air Raid Shelter	2d	108	E-234		HABS, Closure Report	3	no	loss of integrity
602B	1934	Black Powder Magazine	General Purpose Magazine	2d	72	E-235	Grandine & Cannan 1995	HABS	none	no	
603A	1941	Climate Control House	Ordnance Facility	2d	108	E-236		HABS	none	no	loss of integrity
603J	1970	General Storehouse	General Storehouse	2d	65	E-237	not eligible, BA 1994	HABS	none	no	
604	1928	Environmental Testing	Ordnance Facility	2d	n/a*	E-238	Criteria A & C	HABS	none	yes district	
604A	1928	Control House	Ordnance Facility	2d	n/a*	E-240	Criteria A & C	HABS	none	yes district	
604B	1931	Detonating Chamber	Ordnance Facility ("Detonating Chamber")	2d	n/a*	E-241	Criteria A & C	HABS, Closure Report	2	yes district	
604C	1928	Sectioning	Ordnance Facility ("Sectioning / Teardown Facility")	2d	n/a*	E-242	Criteria A & C	HABS, Closure Report	2	yes district	
604D	1928	Drop Tower ("Drop Tower")	Ordnance Facility	2d	n/a*	E-243	Criteria A & C	HABS, Closure Report	1	yes district	
604E	1942	Wind Tunnel	Ordnance Facility	2d	n/a*	E-244	Criteria A & C	HABS, Closure Report	2	yes district	
604F	1928	Bull Pen	Ordnance Facility ("Bull Pen / Rifling Chamber")	2d	n/a*	E-245	Criteria A & C	HABS, Closure Report	2	yes district	
604I	un-known	unknown	unknown	2d	n/a*					non-contributing to district	
605	1924	Screening Building	Ordnance Facility	2d	110	E-246	Slated for demolition in mitigation process	HABS, Closure Report	2	no	contamination
607	1940	Fragmentation Tub Building	Ordnance Facility ("Fragmentation Tub Building")	2d	n/a*	E-247	Criteria A & C	Drawings Catalog, HABS, Closure report	1	yes district	
607A	1938	Testing Facility	Ordnance Facility ("Testing Facility")	2d	n/a*	E-249	Criteria A & C	HABS, Closure Report	2	yes district	
609	1928	High Explosives Magazine	Ordnance Facility	2d	72	E-250	Grandine & Cannan 1995	HABS	none	no	
610	1928	High Explosives Magazine	Ordnance Facility	2d	72	E-250	Grandine & Cannan 1995	HABS	none	no	
611B	1929	Gas Gun Test Tunnel	Ordnance Facility	2d	n/a*	E-251	Criteria A & C	HABS, Closure Report	2	yes district	
611C	1934	Shop	Ordnance Facility	2d	108	E-253	DOD Mitigation	HABS	none	no	
611D	c. 1940	Slug Butt	Ordnance Facility ("Slug Butt")	2d	109	E-254	Derelict	HABS	none	no	
613	1928	Mortar Powder Building / Ballistic Mortar Testing	Ordnance Facility	2d	n/a*	E-255	Criteria A & C	HABS, Closure Report	2	yes district	
617	1928	Fragment Cleaning, Reconstruction and Photography Building	Administration Building / Research and Development	2d	n/a*	E-256	Criteria A & C	HABS, Closure Report	2	yes district	
617A	1928	High Explosives Magazine	High Explosives Magazine	2d	72	E-257	Criteria A & C	HABS	none	yes district	
617B	1928	Magazine	General Storehouse	2d	72	E-258	Criteria A & C	HABS	none	yes district	
617E	1928	Flammable Material Storage Magazine	Flammable Material Storage Magazine	2d	72	E-259	Criteria A & C	HABS	none	yes district	
617F	1928	Magazine	Fuze and Detonator Magazine	2d	72	E-258	Criteria A & C	HABS, Closure Report	2	yes district	
617G	1938	Gun and Powder Shed	Ordnance Facility	2d	72	E-260	Criteria A & C	HABS	none	yes district	
620	1928	Test Range	Test Tunnel / Offices	2d	n/a*	E-261	Criteria A & C	HABS, Closure Report	2	yes district	

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620B	1921	Test Range / Tower	Ordnance Facility ("Test Range / Tower")	2d	n/a*	E-263	Criteria A & C	HABS, Closure Report	2	yes district	
620C	1943	Test Range	Ordnance Facility	2d	95	E-265	Harrell 1994	HABS, Closure Report	2	no	
621	1941	Fragmentation Tub Building	Ordnance Facility (Fragmentation Tub Building")	2d	n/a*	E-247	Criteria A & C	Drawings Catalog, HABS, Closure Report	1	yes district	
621B	1914	Shipping and Receiving Building	Ordnance Facility	2d	n/a*	E-266	Criteria A & C	HABS	none	yes district	
623	1929-42	Elevated Water Tank	Elevated Water Tank	2d	n/a*	E-267	Criteria A & C	HABS	none	yes district	
623A	1929-42	Elevated Water Tank	Elevated Water Tank	2d	n/a*	E-267	Criteria A & C	HABS	none	yes district	
623B	1929-42	Elevated Water Tank	Elevated Water Tank	2d	n/a*	E-267	Criteria A & C	HABS	none	yes district	
623C	1929-42	Elevated Water Tank	Elevated Water Tank	2d	n/a*	E-267	Criteria A & C	HABS	none	yes district	
623D	1929-42	Elevated Water Tank	Elevated Water Tank	2d	n/a*	E-267	Criteria A & C	HABS	none	yes district	
623E	1929-42	Elevated Water Tank	Elevated Water Tank	2d	n/a*	E-267	Criteria A & C	HABS	none	yes district	
625	1942	Closed Bomb Testing	Ammunition Hut	2d	95	E-268		HABS	none	no	typical WW II Army building type, possesses no architectural or historical significance
629	1942	High Explosive Magazine	High Explosive Magazine	2d	72	E-269	Grandine & Cannan 1995	HABS	none	no	
634S	1930	Slug Butt ("Slug Butt")	Ordnance Facility	2d	109	E-270	Harrell 1994	HABS, Closure Report	2	no	
635	1943	Plate Shed Facility	General Purpose Storage Shed	2d	58	E-271	DOD WW II mitigation	HABS	none	no	
636A	1928	Flammable Materials Storehouse	Flammable Materials Storehouse	2d	73	E-272	Grandine & Cannan 1995	HABS	none	no	
642B	1945	Turret	General Purpose Magazine ("x-ray Gun Test Site")	2d	109	E-273	Demolished or moved, could not be found on the site	HABS	none	no	
717	1926-41	Major Caliber Projectile Loading Plant	Physics Laboratory	2d	108	E-274		HABS	none	no	So many changes that building has lost integrity
717A	1941	Ordnance Facility	Control and Data Recording	2d	108	E-275		HABS	none	no	loss of integrity
717B	1941	Powder Storage	General Storehouse	2d	73	E-276	Grandine & Cannan 1995	HABS	none	no	
717D	1928	Magazine	Chemistry Laboratory	2d	73	E-277	Grandine & Cannan 1995	HABS, Closure Report	3	no	
722	1920	Office and Testing Laboratory	Physics Laboratory	2d	110	E-278	slated for demolition in mitigation process	HABS, Closure Report	2	no	
727	1929	Ejector Station	Sewage Pump	2d	84	E-280	Grandine & Cannan 1995	HABS	none	no	
732	1938	Pyrotechnic Pellet / Receiving / Packing and Shipping Building	Ordnance Facility	2d	110	E-281	slated for demolition in mitigation process	HABS, Closure Report	3	no	
732A	1942	Inert Storage Magazine	General Storehouse	2d	73	E-283	Grandine & Cannan 1995	HABS	none	no	
732H	1943	High Explosives Magazine	High Explosives Magazine	2d	73; 110	E-284	demolished	HABS	none	no	
803	1942	Magazine	Ordnance Facility	2d	73	E-285	Grandine & Cannan 1995	HABS	none	no	
806	1928	Bombproof Shelter / Change House	Ordnance Administration Building	2d	108	E-286		HABS, Closure Report	3	no	loss of integrity
807	1930	Receiving, Cleaning and Inspection	Ordnance Facility	2d	108	E-288		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
810	1930	Loading and Cooling Plant	Ordnance Facility	2d	108	E-290		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity

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813	1930	Drilling and Assembly Plant	Ordnance Facility	2d	108	E-292		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
816	1930	Assembly Building	Ordnance Facility	2d	108	E-294		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
820	1930	Packing and Shipping Building	Ordnance Facility	2d	108	E-296		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
824	1930	TNT Screening	Ordnance Facility	2d	109	E-298		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
904	1918	Magazine	General Purpose Magazine	2d	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
905	1927	Magazine	Special Weapons Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
906	1918	Magazine	Fixed Ammunition Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
907	1918	Magazine	General Purpose Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
908	1918	General Purpose Magazine	Physics Laboratory / Administration R & D	2f	73	E-301	Grandine & Cannan 1995	HABS, Closure Report	3	no	
909	1918	Magazine	General Storehouse	2d	73; 110	E-299	slated for demolition in mitigation process	HABS	none	no	
911	1918	Magazine	General Purpose Magazine	2d	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
912	1918	Magazine	Fixed Ammunition Magazine	2d	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
913	1941	Magazine	General Purpose Magazine	2d	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	Francisco and Jacobus, Chicago, architects
914	1918	Magazine	High Explosive Magazine	2d	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
915	1918	Magazine	General Purpose Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
916	1918	Magazine	Small Arms Pyrotechnic Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
917	1918	Magazine	Fuse and Detonator Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
918	1918	Magazine	General Purpose Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
919	1918	Magazine	General Purpose Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
920	1918	Magazine	Fixed Ammunition Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
921	1918	Magazine	General Purpose Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
922	1918	Magazine	Fuze and Detonator Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	

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923	1918	Magazine	Fuse and Detonator Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
924	1941	Magazine	Fuse and Detonator Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
925	1941	Magazine	General Purpose Magazine	2f	73	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
927	1943	Flammable Material Storehouse	Flammable Material Storehouse	2d	65	E-302	Grandine & Cannan 1995	HABS	none	no	
928	1918	General Purpose Warehouse	Fixed Ammunition Magazine	2d	65	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
929	1918	General Purpose Warehouse	General Purpose Magazine	2d	65	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
930	1918	Magazine	Fuse and Detonator Magazine	2d	74	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
931	1918	Magazine	General Purpose Magazine	2d	74	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
932	1918	Magazine	Fixed Ammunition Magazine	2f	74	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
933	1918	Magazine	Fuse and Detonator Magazine	2f	74	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
934	1918	Magazine	Fuse and Detonator Magazine	2f	74	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
935	1941	Air Raid Shelter	Air Raid Shelter	2f	110	E-303	slated for demolition in mitigation process	HABS	none	no	
936	1918	Magazine	Smokedrum Storehouse	2f	74	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
937	1918	Magazine	Fixed Ammunition Magazine	2f	74	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
938	1918	Magazine	General Purpose Magazine	2f	74	E-299	Grandine & Cannan 1995	HABS, Closure Report	3	no	
939	1918	Magazine	General Purpose Magazine	2f	74; 110	E-299	slated for demolition in mitigation process	HABS, Closure Report	3	no	
940	1918	General Purpose Warehouse	General Purpose Magazine	2d	65	E-4	Grandine & Cannan 1995	HABS, Closure Report	3	no	
941	1918	General Purpose Warehouse	General Purpose Magazine	2d	65	E-4	Grandine & Cannan 1995	HABS, Closure Report	3	no	
942	1918	General Purpose Warehouse	Fuse and Detonator Magazine	2d	65	E-4	Grandine & Cannan 1995	HABS, Closure Report	3	no	
943	1918	General Purpose Warehouse	Fuse and Detonator Magazine	2d	68	E-4	Grandine & Cannan 1995	HABS, Closure Report	3	no	
944	1918	General Purpose Warehouse	Fixed Ammunition Magazine	2d	68	E-4	Grandine & Cannan 1995	HABS, Closure Report	3	no	
945	1918	General Purpose Warehouse	General Purpose Magazine	2d	68	E-4	Grandine & Cannan 1995	HABS, Closure Report	3	no	
946	1918	General Purpose Warehouse	Fixed Ammunition Magazine	2d	68	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
948	1918	General Purpose Warehouse	General Purpose Magazine	2f	68	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
949	1918	General Purpose Warehouse	Fixed Ammunition Magazine	2f	96	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	

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950	1918	General Purpose Warehouse	General Purpose Magazine	2f	74	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
951	1918	General Purpose Warehouse	Fuse and Detonator Magazine	2f	68	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
952	1918	Fixed Ammunition Magazine	Fixed Ammunition Magazine	2f	74	E-952	Grandine & Cannan 1995	HABS	none	no	
953	1918	General Purpose Warehouse	General Purpose Magazine	2f	68	E-13	Grandine & Cannan 1995	HABS, Closure Report	3	no	
975	1942	Bombardment Shelter	Sup SVC Administration Building	2d	110	E-305	slated for demolition in mitigation process	HABS	none	no	construction drawing completed at Picatinny arsenal
1053	1931	Office and Change House	Facility Engineering Maintenance Shop	2c	109	E-306		HABS	none	no	loss of integrity
1061	1941	Water Pump House	Water Pump	2c	84	E-307	Grandine & Cannan 1995	HABS	none	no	
1071	1942	Crystallization Building	Ordnance Facility	2c	110	E-308	slated for demolition in mitigation process	HABS, Drawings Catalog, Closure Report	2	no	
1071D	1941	Dry House	Ordnance Facility	2c	109	E-309		HABS	none	no	loss of integrity
1093	1942	Magazine	Chlorinator Building	2c	74	E-310	Grandine & Cannan 1995	HABS	none	no	
1094	1942	Screening and Pulverizing Building	General Storehouse	2c	109	E-311		HABS, Closure Report	3	no	loss of integrity
1095	1943	Change House	Community Center	2c	109	E-312		HABS, Closure Report	none	no	loss of integrity
1103	1942	Maintenance	Golf Course Maintenance	2a	58	E-313	DOD WW II mitigation	HABS	none	no	
1104	c. 1920	Residence	Quarters (NCO)	2a	110	E-314	slated for demolition in mitigation process	HABS	none	no	
1104A	c. 1920	Garage	Garage	2c	87	E-315		HABS	none	no	standard garage, no historical significance
1105	c. 1900	Residence	Quarters (Col.)	2a	110	E-316	slated for demolition in mitigation process	HABS	none	no	
1109	c. 1920	Residence	Quarters	2a	97	E-317		HABS	none	no	typical bungalow, commonly found in NJ, not significant
1111	1936	Residence	Quarters (LC MJ)	2a	97	E-318		HABS	none	no	typical farm house, common in NJ, no significance
1112	1936	Garage	Garage	2c	87	E-319		HABS	none	no	standard garage, no historical significance
1113	c. 1900	Residence	Quarters (BOQ-Male)	2a	110	E-320	slated for demolition in mitigation process	HABS	none	no	
1116	c.1930	Garage	Garage	2a	110	E-321	derelict	HABS	none	no	
1117	c. 1900	Residence	Quarters (Col.)	2a	110	E-322	slated for demolition in mitigation process	HABS	none	no	
1118	c. 1900	Residence	Quarters (BOQ-Male)	2a	111	E-323	slated for demolition in mitigation process	HABS	none	no	
1120	c.1930	Garage	Garage	2a	87	E-324		HABS	none	no	standard garage, no historical significance
1123	c. 1890	Residence	Quarters (LC MJ)	2a	97	E-325		HABS	none	no	typical farm house, common in NJ, no significance
1124	c. 1920	Garage	Garage	2a	87	E-326		HABS	none	no	standard garage, no historical significance

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1125	c. 1920	Residence	Quarters (Col.)	2a	97	E-327		HABS	none	no	typical Colonial Revival style, common in NJ, no significance
1126	c. 1930	Garage	Garage	2a	87	E-328		HABS	none	no	standard garage, no historical significance
1127	c. 1925	Residence	Quarters (LC MJ)	2a	97	E-329		HABS	none	no	typical bungalow, commonly found in NJ, no significance
1130	c. 1890	Residence	Quarters (LC MJ)	2a	97	E-331		HABS	none	no	a very nice Victorian farm house with pretensions to high style+L348
1132	c. 1900	Residence	Quarters (LC MJ)	2a	97	E-332		HABS	none	no	typical farm house, common in NJ, no significance
1137A	1942-82	Waiting Shelter	Bus Shelter	2a	58	E-333	DOD WW II mitigation	HABS	none	no	
1138	c. 1918	Residence	Quarters (LC MJ)	2a	97	E-334		HABS	non	no	typical bungalow, commonly found in NJ, no significance.
1139	c. 1920	Garage	Garage	2a	87	E-335		HABS	none	no	typical garage, not historically significant
1140	c. 1890	Residence	Quarters (CG WO)	2a	97	E-336		HABS	none	no	typical farm house, common in NJ, no significance
1142	c. 1920	Residence	Quarters (NCO)	2a	97	E-337		HABS	none	no	typical Colonial Revival style, common in NJ, no significance
1144	c. 1903	Residence	Quarters (CG WO)	2a	97	E-338		HABS	none	no	typical farm house, common in NJ, no significance
1144A	c. 1942	Waiting Shelter	Bus Shelter	2a	58	E-339	DOD WW II mitigation		none	no	
1145	c. 1920	Garage	Garage	2a	87	E-340		HABS	none	no	typical garage, not historically significant
1146	1938	Residence	Quarters (CG WO)	2a	97	E-341		HABS	none	no	typical Colonial Revival style, common in NJ, no significance
1147	c. 1900	Residence	Quarters (CG WO)	2a	97	E-342		HABS	none	no	typical bungalow, commonly found in NJ, no significance
1148	c. 1900	Garage	Garage	2a	87	E-343		HABS	none	no	typical garage, not historically significant
1149	c. 1920	Residence	Quarters (NCO)	2a	97	E-344		HABS	none	no	typical bungalow, commonly found in NJ, no significance
1176	1944	Rest House	Snack Bar / Halfway House	2b	58	E-345	DOD WW II mitigation	HABS	none	no	
1179	1942	Field Office	Field Office	2a	58	E-346	DOD WW II mitigation	HABS	none	no	
1200A	1944	Car Blocker Shed	Vehicle Storage	2f	58	E-347	DOD WW II mitigation	HABS	none	no	
1200S	1944	Field Office	BL & Band Facility	2f	58	E-348	DOD WW II mitigation	HABS	none	no	
1202	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1203	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1204	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1205	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1206	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1207	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1208	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1209	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1210	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1211	1943	Igloo Storage	Igloo Storage	2h	74	E-349	Grandine & Cannan 1995	HABS	none	no	

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1212	1943	Igloo Storage	Igloo Storage	2f	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1213	1943	Igloo Storage	Igloo Storage	2f	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1214	1943	Igloo Storage	Igloo Storage	2f	74	E-349	Grandine & Cannan 1995	HABS	none	no	
1217	1944	Surveillance Building	General Purpose Magazine	2f	95	E-350		HABS, Closure Report	3	no	no special architectural or historical significance
1222B	1944	Public Toilet	Public Toilet	2f	58	E-351	DOD WW II mitigation	HABS	none	no	
1227	1941	Recreation Building	Recreation Building	2f	58	E-352	DOD WW II mitigation	HABS	none	no	
1301	1945	Mortar Powder Building	Ordnance Facility	2c	58	E-353		HABS, Drawings Catalog, Closure Report	2	no	loss of integrity
1302	1945	General Purpose Magazine	General Purpose Magazine	2c	74	E-355	Grandine & Cannan 1995	HABS	none	no	
1303	1945	Office and Rest House	General Purpose Administration	2c	109	E-356		HABS	none	no	loss of integrity
1305	1945	Rest House / Dry House	Ordnance Facility	2c	58	E-357	DOD WW II mitigation	HABS	none	no	
1306	1945	Rest House / Dry House	Ordnance Facility	2c	58	E-357	DOD WW II mitigation	HABS	none	no	
1307	1945	Change House	Change House	2c	58	E-358		HABS	none	no	loss of integrity
1357A	1945	Fan House	Fan House	2c	58	E-360	DOD WW II mitigation	HABS	none	no	
1359A	1945	Fan House	Fan House	2c	58	E-360	DOD WW II mitigation	HABS	none	no	
1363	1945	Neutralizing Building	Neutralizing Building	2c	111	E-361	slated for demolition in mitigation process	HABS, Closure Report	3	no	
1363A	1945	Slum House	Ordnance Facility	2c	58	E-362	DOD WW II mitigation	HABS, Closure Report	3	no	
1381	1904	Reservoir Raw	Reservoir Raw	2c	84	E-363	Grandine & Cannan 1995	HABS, Closure Report	3	no	
1382	1906	Reservoir Raw	Reservoir Raw	2c	84	E-363	Grandine & Cannan 1995	HABS, Closure Report	3	no	
1398	c. 1920	Residence	Quarters (LC MJ)	2c	97	E-364		HABS	none	no	typical bungalow, commonly found in NJ, no significance
1408B	1944	Weigh House	Ordnance Facility	2c	58	E-365	DOD WW II mitigation	HABS	none	no	
1412A	1942	Fan House	Ordnance Facility	2c	58	E-366	DOD WW II mitigation	HABS	none	no	
1418	1942	Storage and Shipping Building	Ordnance Facility	2c	111	E-367	slated for demolition in mitigation process	HABS	none	no	
1604	1942	Pyrotechnics Assembly Plant	Ordnance Facility	2b	111	E-368	slated for demolition in mitigation process	HABS	none	no	
1608A	1942	Flammable Material Storehouse	Flammable Material Storehouse	2b	66	E-369	Grandine & Cannan 1995	HABS	none	no	
1609	1942	Machine Shop	Ordnance Facility	2b	109	E-370		HABS, Closure Report	3	no	loss of integrity
1610	1942	Offices / Change House Administration	General Purpose	2b	109	E-371		HABS	none	no	loss of integrity
1616	1942	Pyrotechnic Preparation	Ordnance Facility	2b	110	E-372	slated for demolition in mitigation process	HABS, Closure Report	3	no	
1617	ca. 1942	Dry House	Dry House	2b	109	E-373	slated for demolition in mitigation process	HABS, Closure Report	3	no	
1618	1942	General Purpose Magazine	General Purpose Magazine	2b	74	E-374	slated for demolition in mitigation process	HABS, Closure Report	3	no	
1619	1942	Radiographic Laboratory	General Purpose Laboratory	2b	109	E-375	slated for demolition in mitigation process	HABS, Closure Report	3	no	
3002	1934	General Storage Building	Engineering Administration Building	2e	66	E-376	Grandine & Cannan 1995	HABS, Closure Report	3	no	

Table 2. Index of Surveyed Structures, Picatinny Arsenal

Bldg #	Date Built	Historic Name	Present Name	Fig. this rept.	pg # this rept.	BA[1] pg #	Mitigation/Report of final disposition[2]	Other Surveys	Former Army Category	N R Eligibility	Comments
3005	1941	Construction Equipment Storage	Vehicle Maintenance Shed	2e	66	E-377	Grandine & Cannan 1995	HABS, Closure Report	none	no	
3007	1940	Storehouse	Storehouse	2e	66	E-378	Grandine & Cannan 1995	HABS, Closure Report	none	no	
3008	pre-1926	General Purpose Administration	General Purpose Administration	2e	95	E-379	Harrell 1994	HABS, Closure Report	3	no	
3010	1902	Ordnance Administration Building	NY COE Resident Engineer's Office	2e	95	E-380		HABS, Closure Report	3	no	no special architectural or historical significance; construction drawing by the 3rd Naval District, NY
3012	1905	Hydrant House	Hydrant House	2e	84; 111	E-381	slated for demolition in mitigation process	HABS	none	no	
3013	1901	Boiler House	Boiler House / Heating Plant	2e	71	E-382	Grandine & Cannan 1995	HABS, Drawings Catalog, Closure Report	2	no	
3018	1918	Underground Storage Facility	Igloo Storage	2e	74	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3022	1922	Storage	Offices / Laboratory	2e	66	E-385	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3028	1900	Storage Building	Chemistry Laboratory and Administration	2e	66	E-387	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3029	1917	General Purpose Warehouse	General Purpose Warehouse	2e	66	E-389	Grandine & Cannan 1995	HABS	none	no	
3030	1918	Underground Storage Facility	Igloo Storage	2e	74	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3032	1918	Underground Storage Facility	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3033	1918	Underground Storage Facility	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3035	1918	Underground Storage Facility	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3036	1918	Underground Storage Facility	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3038	1918	Underground Storage Facility	Igloo Storage	2e	75; 111	E-384	slated for demolition in mitigation process	HABS, Closure Report	3	no	
3039	1918	Underground Storage Facility	Igloo Storage	2e	75	E-384	slated for demolition in mitigation process	HABS, Closure Report	3	no	
3041	1918	Underground Storage Facility	Igloo Storage	2e	75	E-384	slated for demolition in mitigation process	HABS, Closure Report	3	no	
3042	1918	Underground Storage Facility	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3045	1918	Underground Storage Facility	Igloo Storage	2e	75; 111	E-384	slated for demolition in mitigation process	HABS, Closure Report	3	no	
3047	1918	Underground Storage Facility	Igloo Storage	2e	75	E-384	slated for demolition in mitigation process	HABS, Closure Report	3	no	
3050	1934	Naval Enlisted Men's Barracks	Detachment Headquarters	2e	87	E-390		HABS, Closure Report	3	no	nice but typical Navy pre-WWII barracks, probably based on a Giffles and Valet, Chicago, plan, construction drawing by 3rd Naval HQ, NY

Table 2. Index of Surveyed Structures, Picatinny Arsenal

Bldg #	Date Built	Historic Name	Present Name	Fig. this rept.	pg # this rept.	BA[1] pg #	Mitigation/Report of final disposition[2]	Other Surveys	Former Army Category	N R Eligibility	Comments
3052	1926	unknown	Skill Development Center	2e	95	E-392		HABS	none	no	no special architectural or historical significance
3057	1942	Tennis Courts	Tennis Courts	2e	95	E-393			none	no	no special architectural or historical significance
3100	1942	Covered Storage	Covered Storage	2c	66	E-394	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3106	1934	Magazine Laboratory	Explosives Test	2c	75	E-395		HABS	none	no	no special architectural or historical significance
3109	1943	Environmental Conditioning	Ordnance Facility	2c	109	E-396		HABS, Closure Report	3	no	loss of integrity
3111	1943	Storage Building	Ordnance Facility ("Air Gun")	2c	66	E-397	Grandine & Cannan 1995	HABS	none	no	
3114	1934	Flammable Materials Storehouse	Flammable Materials Storehouse	2c	66	E-398	Grandine & Cannan 1995	HABS	none	no	
3116	1943	Magazine	Ready Magazine ("Sand Bags")	2c	75	E-399	Grandine & Cannan 1995	HABS	none	no	
3119	1785	Farmhouse	Residence	2c	97	E-400		HABS	none	unknown	Doland House; for more information see Nolte et al. 1999
3124	1918	Storage	General Purpose Administration	2e	66	E-402	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3128	1929	Flammable Materials Storehouse	Flammable Materials Storehouse	2e	66	E-403	Grandine & Cannan 1995	HABS, Closure Report	4	no	
3136	1944	Magazine	Flammable Material Storehouse	2e	75	E-404	Grandine & Cannan 1995	HABS, Closure Report	5	no	
3137	1934	Flammable Materials Storehouse	Magazine	2e	66	E-405	Grandine & Cannan 1995	HABS	none	no	
3140	1934	Flammable Materials Storehouse	Facility Engineering Storehouse	2e	66; 111	E-405	slated for demolition in mitigation process	HABS, Closure Report	3	no	
3141	1924	Standpipe	Standpipe	2e	84	E-406	Grandine & Cannan 1995	HABS	none	no	
3150	1942	Heavy Materials Machine Shop / Bowling Center / Gym	Heavy Materials Machine Shop / Bowling Center / Gym	2e	58	E-407	DOD WW II mitigation	HABS	none	no	
3155	1929	Magazine	General Purpose Warehouse	2e	75	E-409	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3157	c. 1897	Pump House	Facility Engineering Storehouse	2e	84	E-411	Grandine & Cannan 1995	HABS	none	no	
3159	1930	Laboratory Storage	Administration Building / Research & Development	2e	66	E-412	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3162	1942	Covered Storage	Covered Storage	2e	66; 111		slated for demolition in mitigation process	HABS	none	NO	
3164	1918	Ordnance Storage	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3166	1929	Shell House	General Purpose Warehouse	2e	75		Grandine & Cannan 1995	HABS, Closure Report	3	no	
3172	1918	Subsurface Magazines	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3173	1902	Carpenter Shop	Youth Center	2e	109	E-415		HABS, Closure Report	3	no	loss of integrity
3175	1901	Coal Bin	Coal Bin	2e	110	E-416	derelict	HABS, Closure Report	3	no	
3176	1902	Paint Shop	General Purpose Administration	2e	109	E-417		HABS, Closure Report	3	no	loss of integrity
3177	1914	Storage Building	Electronic Equipment Facility	2e	66	E-418	Grandine & Cannan 1995	HABS, Closure Report	3	no	

Table 2. Index of Surveyed Structures, Picatinny Arsenal

Bldg #	Date Built	Historic Name	Present Name	Fig. this rept.	pg # this rept.	BA[1] pg #	Mitigation/Report of final disposition[2]	Other Surveys	Former Army Category	N R Eligibility	Comments
3178	1905	Paint Locker Storehouse	Flammable Material	2e	57; 111	E-419	slated for demolition in mitigation process	HABS, Closure Report	3	no	
3180	1918	Subsurface Magazines	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	No	
3183	1939	Dikes or Dams	Dikes or Dams		84	E-420	Grandine & Cannan 1995	HABS	none	no	
3200	1943	Post Engineering Storehouse	Facility Engineering Storehouse	2e	66	E-421	DOD WW II report	HABS	none	no	quonset hut
3201	1934	Water Treatment Plant	Water Treatment Plant	2e	84; 111	E-422	slated for demolition in mitigation process	HABS	none	no	
3203	1930	General Purpose Warehouse	General Purpose Warehouse	2e	67	E-409	Grandine & Cannan 1995	HABS	none	no	
3208	1929	Transmitter Building / General Warehouse	Electric Equipment Facility	2e	67	E-423	Grandine & Cannan 1995	HABS	none	no	
3211	1929	General Purpose Warehouse	General Purpose Warehouse	2e	67	E-409	Grandine & Cannan 1995	HABS	none	no	
3213	1942	Flammable Material Storehouse	Flammable Material Storehouse	2e	67	E-424	Grandine & Cannan 1995	HABS	none	no	
3214	1943	Reservoir Raw	Reservoir Raw	2e	84	E-425	Grandine & Cannan 1995	HABS	none	no	
3217	1942	Quarters	Quarters	2e	59	E-426	DOD WW II mitigation	HABS	none	no	
3218	1928	Lumber Salvage Shop	Snack Bar	2e	99	E-427	slated for demolition in mitigation process	HABS	none	No	
3219A	1938	Chlorinator Building	Chlorinator Building	2e	111	E-428	DOD WW II mitigation	HABS	none	no	
3220	1945	Navy Barracks for Enlisted Workmen	Officers' Quarters / Development Center / Chapel	2e	59	E-429	DOD WW II mitigation	HABS	none	no	construction drawing by 3rd Naval District HQ, NY
3221	1911	Blacksmith's Shop	Post Chapel	2e	67; 109	E-430	Harrell 1994	HABS, Closure Report	3	no	
3223	1911	General Storehouse	General Storehouse	2e	67	E-431	Grandine & Cannan 1995	HABS	none	no	
3226	1942	Softball Field	Little League Field	2e	95	E-432		HABS	none	no	no special architectural or historical significance
3228	1931-63	Theater	Open Dining NCO / General Installation Building	2e	95	E-433		HABS, Closure Report	3	no	typical Army theater design and plan, no special architectural or historical significance
3231	1944	Ice House	Quarters (G & WO)	2e		E-434	Grandine & Cannan 1995	HABS	none	no	
3236	1930	Flammable Materials Storehouse	Flammable Materials Storehouse	2e	67	E-409	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3242	1919	Flammable Materials Storehouse	Flammable Materials Storehouse	2e	67	E-436	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3244	1945	Quarters	Quarters (Duplex: Gen. & Col.)	2e	87	E-437		HABS	none	no	standardized plans
3246	1935	Garage	Garage	2e	87	E-438		HABS	none	no	standard garage, no significance
3250	1890	Navy Hill Colonel's Quarters	Family Housing (Gen. and Col.)	2e	n/a*	E-439	Criterion A	HABS, Drawings Catalog	none	yes	
3254	1905	Elev. Water Storage	Elevated Water Storage	2e	84	E-441	Grandine & Cannan 1995	HABS	none	no	
3259A	1942	Waiting Shelter	Bus Shelter	2e	59	E-442	DOD WW II mitigation	HABS	none	no	
3300	1918	Underground Storage Magazine	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3303	1918	Underground Storage Magazine	Igloo Storage	2e	75	E-384	Grandine & Cannan 1995	HABS, Closure Report	3	no	
3305	1939	General Instruments Building	Administration Building / Research and Development	2e	95	E-443	Grandine & Cannan 1995	HABS	none	no	
3306	1939		Storage	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3308	1939	Storage	Drill Hall / Storage	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	

Table 2. Index of Surveyed Structures, Picatinny Arsenal

Bldg #	Date Built	Historic Name	Present Name	Fig. this rept.	pg # this rept.	BA[1] pg #	Mitigation/Report of final disposition[2]	Other Surveys	Former Army Category	N R Eligibility	Comments
3310	1939	Garage / Marine Reserves / Storage	Administration / Supply	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3311	1939		General Purpose Warehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3315	1931	General Storehouse	Skill Center / Auto	2e	67	E-445	Grandine & Cannan 1995	HABS	none	no	
3316	1903	Stable	Fire Station	2e	n/a*	E-446	Criteria A & C	HABS, Drawings Catalog, Closure Report	2	yes	
3317	1940	Post Engineering Facility	Greenhouse	2e	59	E-448	DOD WW II mitigation	HABS	none	no	
3320	1939	Salvage and Surplus Property	General Storehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3321	1939	General Purpose Warehouse	Sel Service Supply Center	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3324	1939	Storage	Storage	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3326	1935	Garage	Garage	2e	87	E-449		HABS	none	no	typical garage, no significance
3327	1933	Quarters	Quarters (NCO)	2e	97	E-450		HABS	none	no	typical four square house, commonly found in NJ, no significance
3328	1939	Storage	Calibration Laboratory	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3329	1939	Fabrication Reliability Welding	Exchange Warehouse	2e	95	E-443	Grandine & Cannan 1995	HABS	none	no	
3330	1939		General Purpose Warehouse	2e	67; 111	E-443	slated for demolition in mitigation process	HABS	none	no	
3331	1939		General Purpose Warehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3334	1939		General Purpose Warehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3337	1939		General Purpose Warehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3338	1939		General Purpose Warehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3339	1939		General Storehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3340	1939		General Storehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3341	1939	General Purpose Warehouse	General Storehouse FH	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3342	1939	Engineering Machine Shop	Administration General Purpose	2e	95	E-443	Grandine & Cannan 1995	HABS	none	no	
3344	1939		General Storehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3345	1939		General Storehouse	2e	67	E-443	Grandine & Cannan 1995	HABS	none	no	
3349	1939		General Purpose Warehouse	2e	68	E-443	Grandine & Cannan 1995	HABS	none	no	
3350	1939		General Purpose Warehouse	2e	68	E-443	Grandine & Cannan 1995	HABS	none	no	
3352	1939		General Purpose Warehouse	2e	68	E-443	Grandine & Cannan 1995	HABS	none	no	
3353	1939		General Purpose Warehouse	2e	68	E-443	Grandine & Cannan 1995	HABS	none	no	
3354	1939		General Purpose Warehouse	2e	68	E-443	Grandine & Cannan 1995	HABS	none	no	
3357	1939		Salvage and Surplus Property	2e	68	E-443	Grandine & Cannan 1995	HABS	none	no	
3359			General Purpose Warehouse	2e	68	E-443	Grandine & Cannan 1995	HABS	none	no	
3401	1944	Administration	National Guard Reserve / Driver's School	2g	59	E-451	DOD WW II mitigation	HABS	none	no	
3402	1944	Dispensary	General Purpose Warehouse / Administration	2g	59	E-452	DOD WW II mitigation	HABS	none	no	Hugh A. Kelley, Architect, Jersey City, NJ
3408	1944	Barracks	National Guard Reserve Center / Army Reserve Center	2g	111	E-453	slated for demolition in mitigation process	HABS	no	no	
3409	1944	Barracks	Applied Instrumentation Building	2g	59	E-453	DOD WW II mitigation	HABS	none	no	
3409A	1944	Storehouse	Army Reserve Center	2g	59; 68	E-455	DOD WW II mitigation	HABS	none	no	quonset hut
3410	1944	Subsistence (Mess Hall)	General Purpose Administration	2g	59	E-457	DOD WW II mitigation	HABS	none	no	

Table 2. Index of Surveyed Structures, Picatinny Arsenal

Bldg #	Date Built	Historic Name	Present Name	Fig. this rept.	pg # this rept.	BA[1] pg #	Mitigation/Report of final disposition[2]	Other Surveys	Former Army Category	N R Eligibility	Comments
3617	1953	Control House Facility	Propellant Systems	2g		E-458	Criteria A & D	HABS, Closure Report	3	yes	Area E, Rocket Firing, Frank Grad & Sons, Architects and Engineers
3618	1953	Test Cell 1-E (Test Stand)	Propellant Systems Facility	2g		E-458	Criteria A & D	HABS, Closure Report	none	yes	Area E, Rocket Firing, Frank Grad & Sons, Architects and Engineers
3700A	ca 1942	Waiting Shelter	Bus Shelter	2g	59	E-460	DOD WW II mitigation	HABS	none	no	
B-4	1917-36	Bridge	Bridge	2b	101	E-461	DOD WW II mitigation	HABS	none	no	loss of integrity due to numerous changes
B-14	1937	Railroad Bridge	Railroad Bridge	2b	101	E-462	DOD WW II mitigation	HABS	none	no	loss of integrity due to numerous changes
B-19	1930	Footbridge	Footbridge	2a	101	E-463	DOD WW II mitigation	HABS	none	no	loss of integrity due to numerous changes
------	1880s	Railroad Tracks	Railroad Tracks		101	E-464	DOD WW II mitigation	none	none	no	loss of integrity due to numerous changes
------	1901	Steam Distribution System	Steam Distribution System			E-465	Grandine & Cannan 1995	HABS	none	no	
------	1885	Cannon Gates	Cannon Gates	2b	101	E-49	Guzzo 1999	HABS, Drawings Catalog	none	no	created by Cornell Ironworks

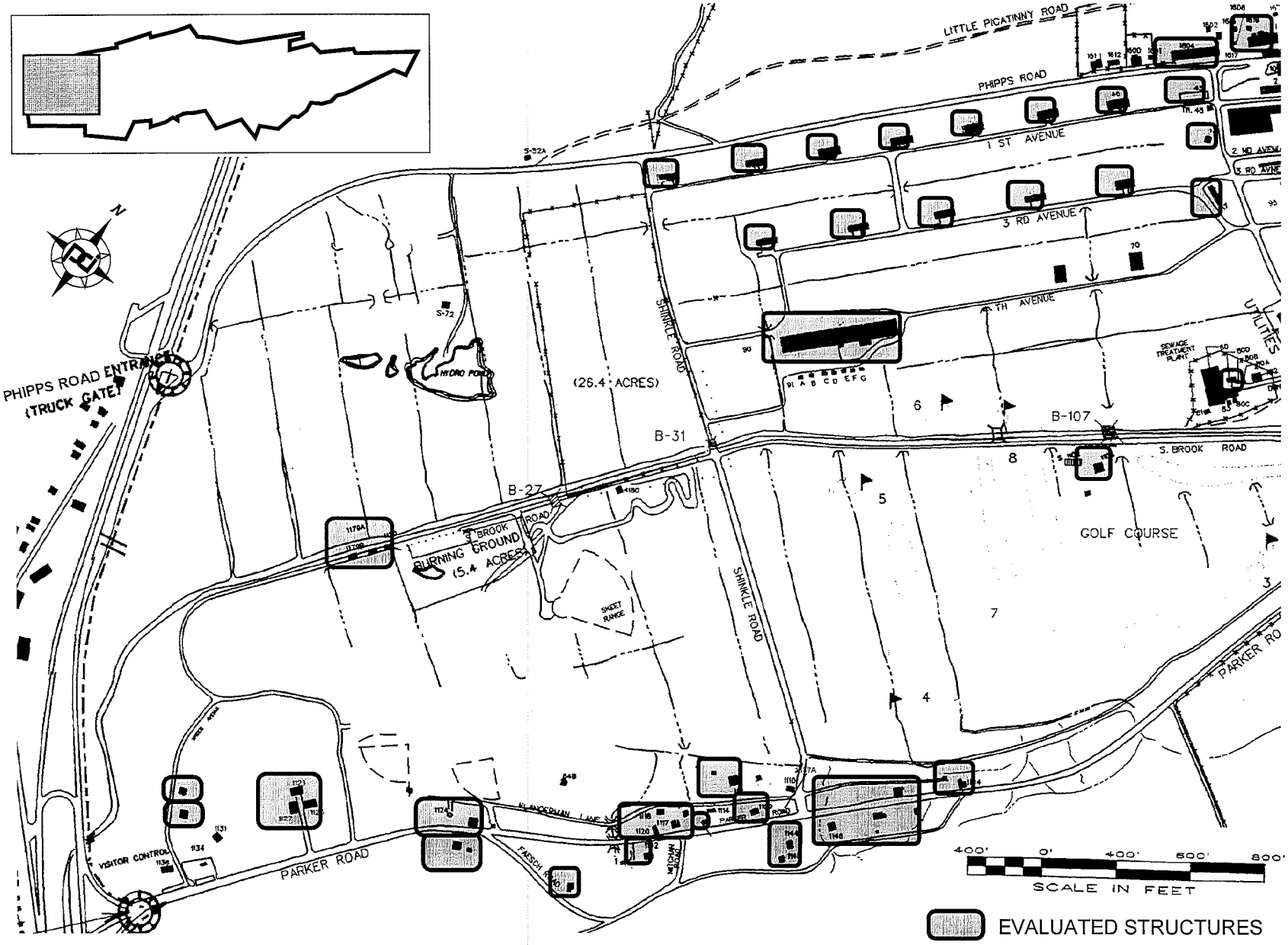

Figure 2a. Location of evaluated structures within Picatinny Arsenal, Morris County, New Jersey *(ARDEC 1995).*

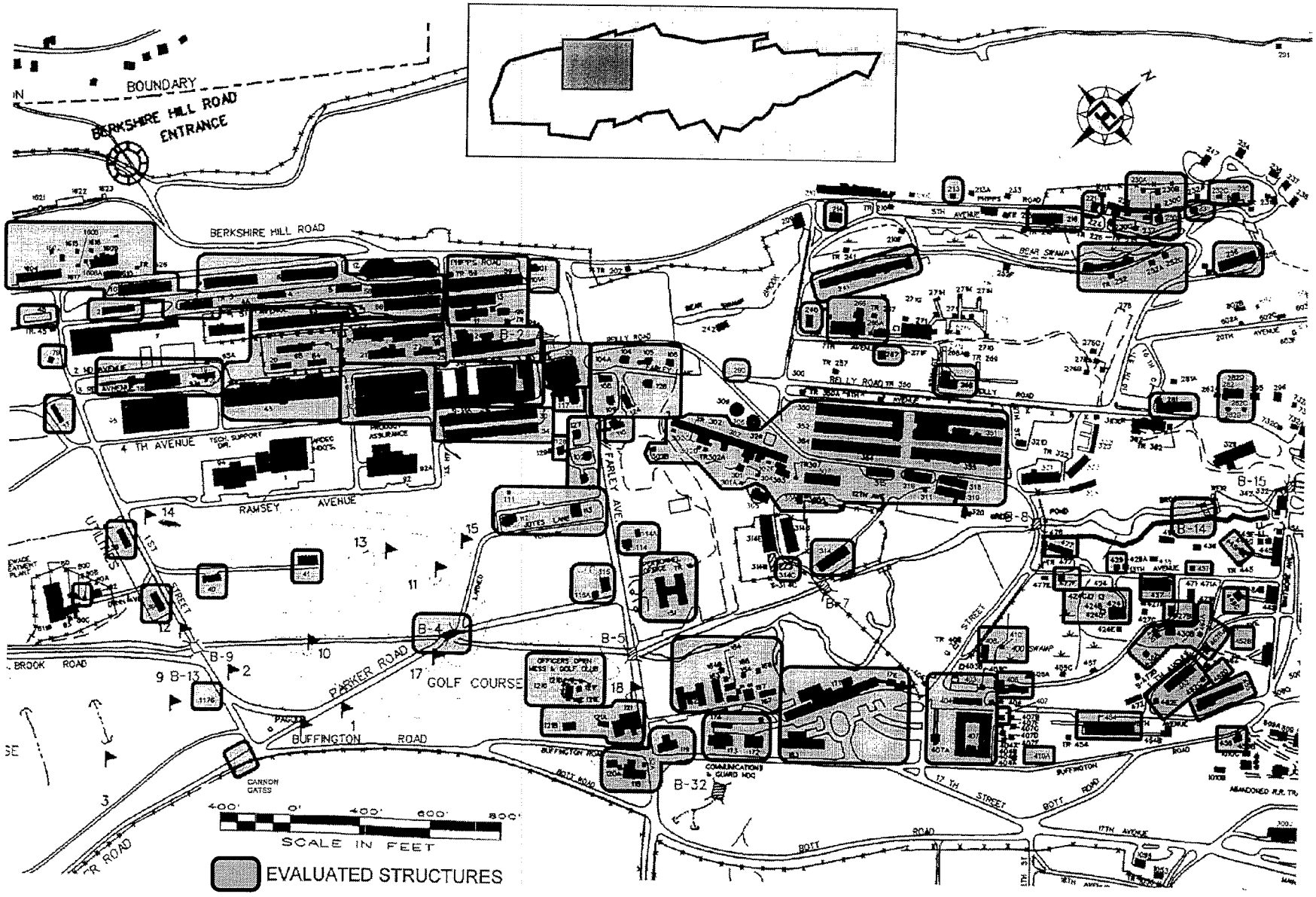

Figure 2b. Location of evaluated structures within Picatinny Arsenal, Morris County, New Jersey *(ARDEC 1995).*

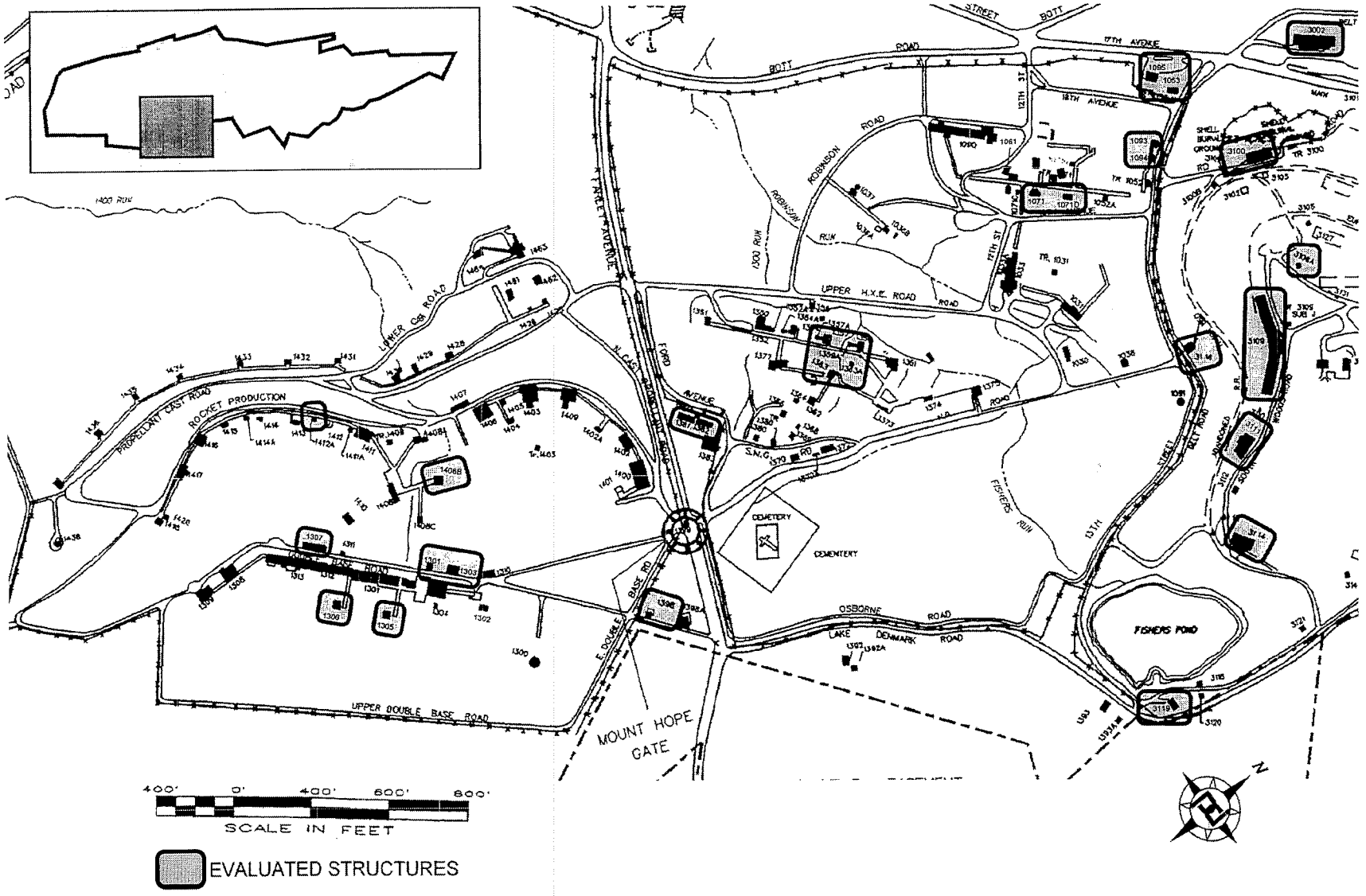

Figure 2c. Location of evaluated structures within Picatinny Arsenal, Morris County, New Jersey *(ARDEC 1995).*

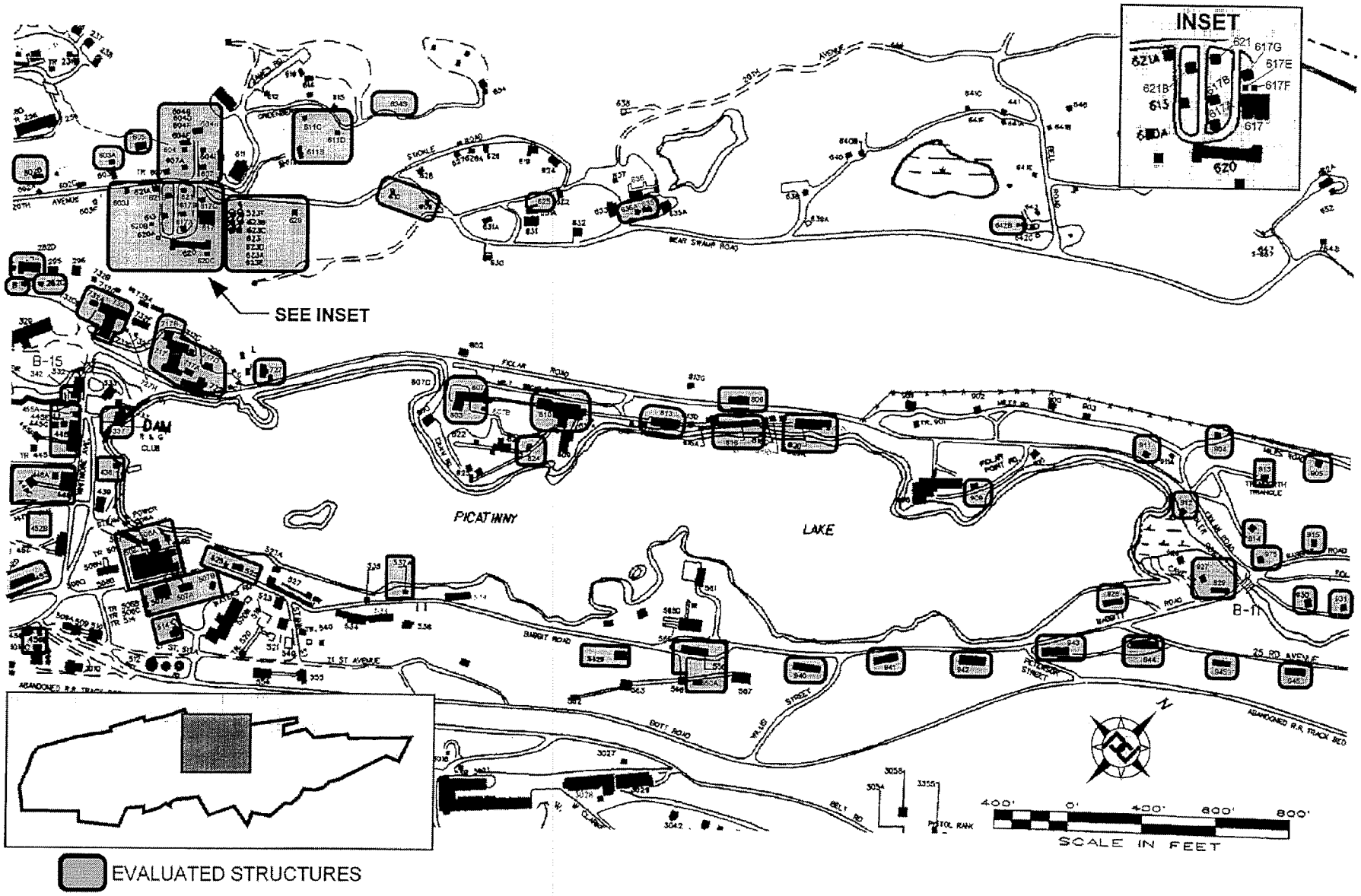

Figure 2d. Location of evaluated structures within Picatinny Arsenal, Morris County, New Jersey *(ARDEC 1995).*

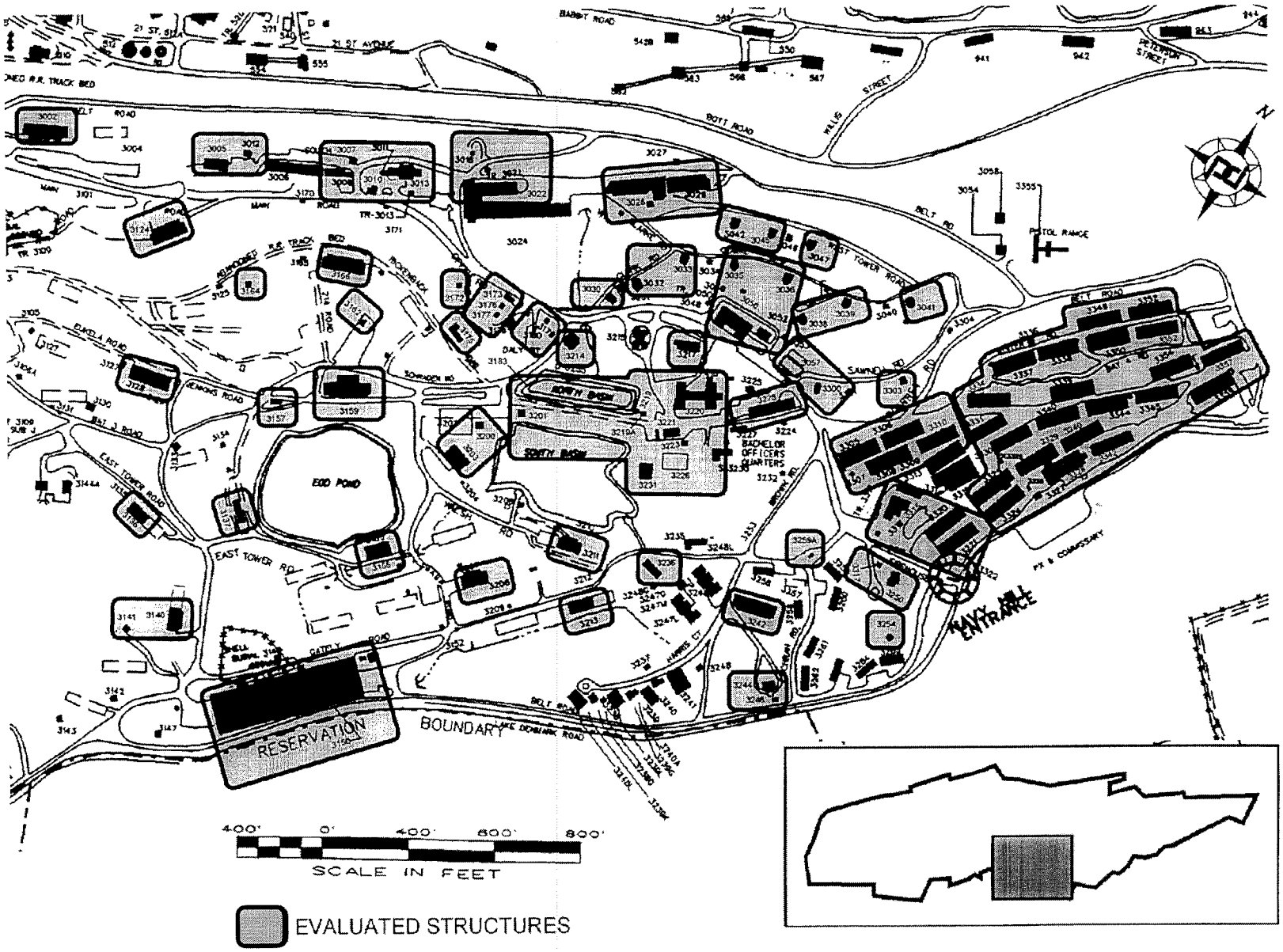

Figure 2e. Location of evaluated structures within Picatinny Arsenal, Morris County, New Jersey *(ARDEC 1995).*

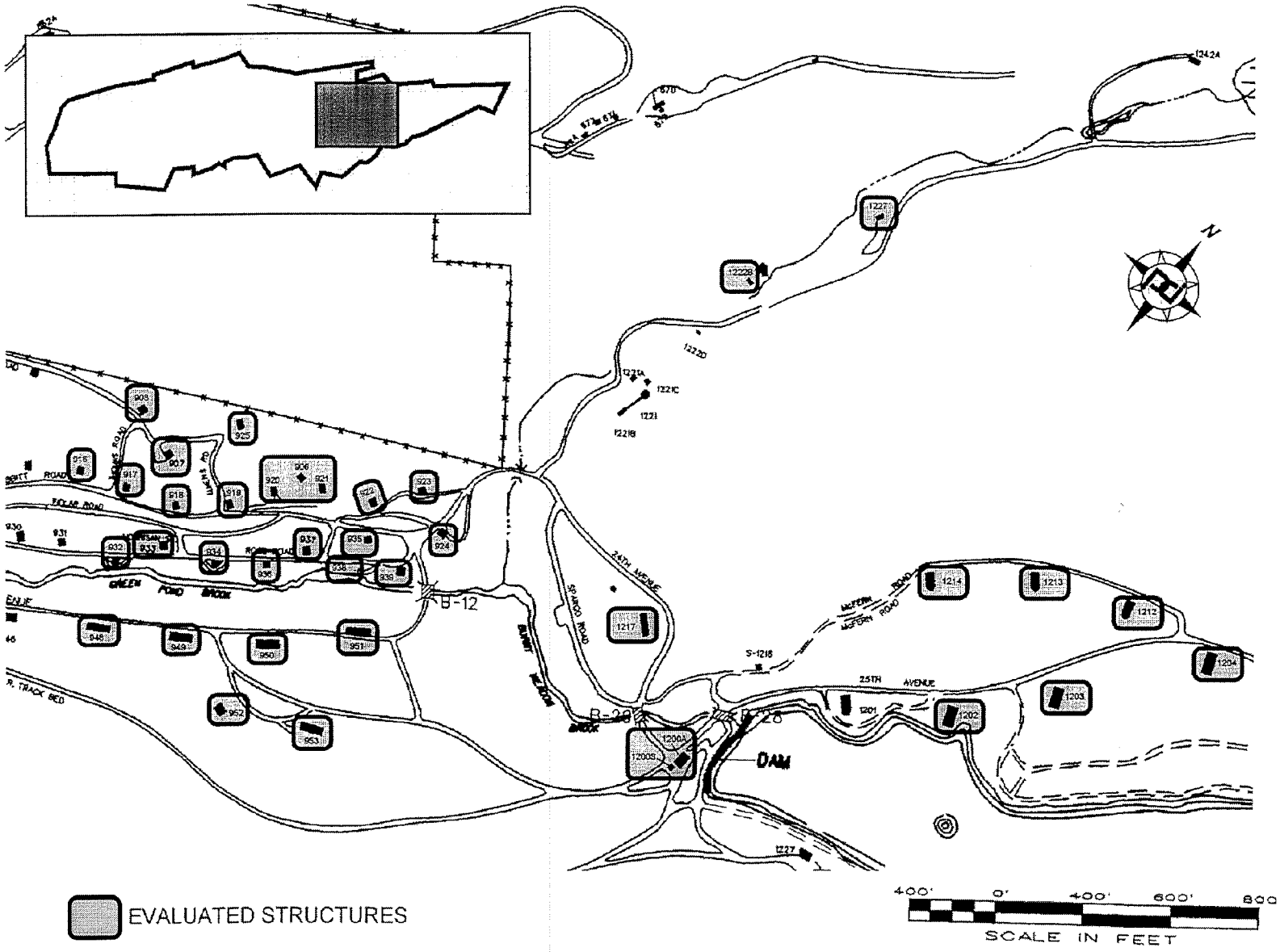

Figure 2f. Location of evaluated structures within Picatinny Arsenal, Morris County, New Jersey *(ARDEC 1995).*

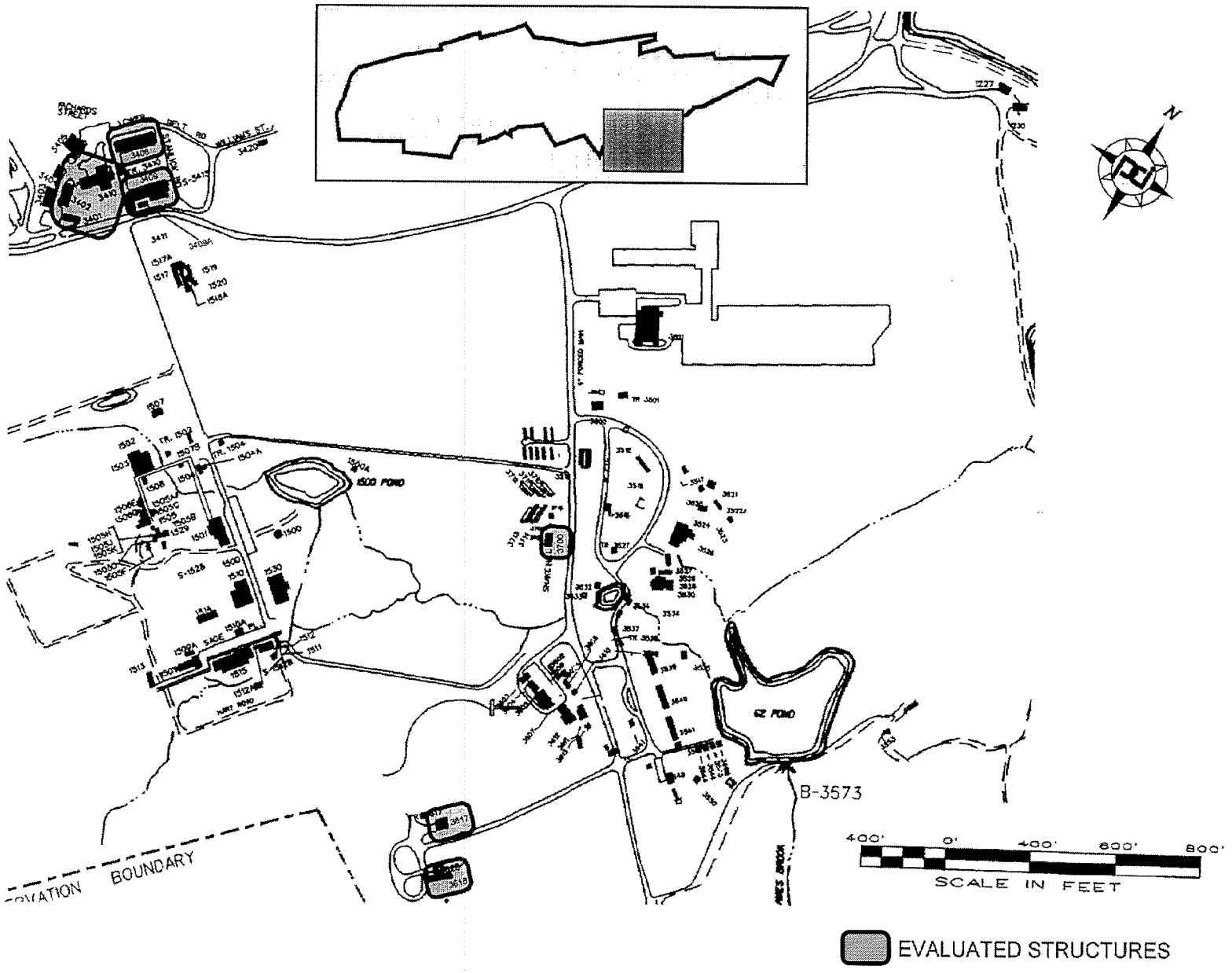

Figure 2g. Location of evaluated structures within Picatinny Arsenal, Morris County, New Jersey *(ARDEC 1995).*

Figure 2h. Location of evaluated structures within Picatinny Arsenal, Morris County, New Jersey *(ARDEC 1995.)*

3.1.1 World War II Temporary Structures

Picatinny Arsenal has 58 structures that fall into the World War II temporary category. As such they have been documented in partial fulfillment of the National Historic Preservation Act, Section 106, by the Garner report (1993) on World War II temporary structures, as previously discussed in Section 1.2 of this report. A detailed review of each of these buildings is presented in Table 2.

Bldg. No.	Date of Constr.	Historic Name	Present Name
33B	1938	unknown	Flammable materials Storehouse
52 A	1942	Waiting Shelter	Bus Shelter
78A	1945	Turret	Ordnance Facility
104 A	1942	Waiting Shelter	Bus Shelter
115 B	ca. 1942	Waiting Shelter	Bus Shelter
116 A	1942	Waiting Shelter	Bus Shelter
121 A	1944	Golf Cart Storage	Administrative Office
123	1939	Garage	Garage
128	1939	Garage	Garage
161	1942	General Storehouse	General Storehouse
230A	1944	High Explosives	Magazine
230B	1944	High Explosives Magazine	Magazine
230 F	1941	General Storehouse	Inert Storage
230 G	1944	Motor and Blower	Motor Room
252 A	1942	Storage	Flammable Materials Storehouse
266 A	1938	Storage	Flammable Material Storehouse
282 B	1942	Fuze & Detonator Magazine	High Explosives Magazine
282 C	1942	Fuze & Detonator Magazine	High Explosives Magazine
282 D	1938	Magazine	General Purpose Warehouse
301	1943	Storehouse	Storehouse
301 A	1943	Oil House	Storehouse
302 E	1944	Storehouse	Facility Engineering Storehouse

Bldg. No.	Date of Constr.	Historic Name	Present Name
303	1940	Fabrication	Facility Engineering Maintenance Shop/Storage
314 C	1943	Salvage & Surplus Property	Salvage & Surplus Property
407	1942	Experimental Chemistry Lab	General Lab
438	1942	Boathouse	Boathouse
537 A	1938	Storehouse	Flammable Materials Storehouse
635	1943	Plate Shed Facility	General Purpose Storage Shed
1103	1942	Maintenance	Golf Course/Maintenance
1137 A	1942-82	Waiting Shelter	Bus Shelter
1144 A	ca.1942	Waiting Shelter	Bus Shelter
1176	1944	Rest House	Snack Bar/Golf Course Halfway house
1179	1942	Field Office	Field Office
1200 A	1944	Car Blocker Shed	Vehicle Storage
1200S	1944	Field Office	BL & Bland Facility
1222 B	1944	Public Toilet	Public Toilet
1227	1941	Recreation Building	Recreation Building
1301	1945	Mortar Powder Building	Ordnance Facility
1305	1945	Rest House/Dry House	Ordnance Facility
1306	1945	Rest House/Dry House	Ordnance Facility
1307	1945	Change House	Change House
1357 A	1945	Fan House	Fan House
1359 A	1945	Fan House	Fan House
1363 A	1945	Slum House	Ordnance Facility
1408 B	1944	Weigh House	Ordnance Facility
1412 A	1942	Fan House	Ordnance Facility
3150	1942	Heavy Materials Machine Shop/Bowling Ctr./Gym	Heavy Materials Shop/Bowling/Gym

Bldg. No.	Date of Constr.	Historic Name	Present Name
3217	1942	Quarters	Quarters
3219 A	1938	Chlorinator Bldg.	Chlorinator Bldg.
3220	1945	Navy Barracks for Enlisted Men	Officers Quarters/ Development Qtrs./Chapel
3259 A	1942	Waiting Shelter	Bus Shelter
3317	1940	Post engineering Facility	Greenhouse
3401	1944	Administration	Ntl. Guard Reserve/Drivers School
3402	1944	Dispensary	General Purpose Warehouse
3409	1944	Barracks	Applied Instrumentation Bldg.
3409 A	1944	Storehouse	Army Reserve Center
3410	1944	Subsistence (Mess Hall)	General Purpose Admin.
3700 A	ca. 1942	Waiting Shelter	Bus Shelter

Although the United States had mobilized rapidly for the First World War (1917-1918), preparations for the Second World War were unprecedented. The war required enormous amounts of industrial output focused solely on bringing the hostilities to an end. Ascertaining the growth of the military-industrial complex is vital to understanding how the Army perceived wartime construction activities.

Contemporary American industrial architecture and international trends in design all influenced the construction of military industrial buildings. Steel and reinforced concrete were used as building materials in industrial architecture and contemporary innovative designs. These new materials were cost-effective, resistant to sway, and capable of supporting heavy loads. New structural support systems replaced massive load-bearing masonry walls that had been a part of industrial architecture since the nineteenth century. New technology made possible the uninterrupted clear spans associated with modern industrial buildings (Cannan et al. 1996).

During the 1930s, the Army had created a set of standardized plans, called the 700 Series, of typical structures that it would be required to build in event of war. Based in part on the inadequate 600 series of World War I, the new blueprints for structures as varied as barracks, chapels, warehouses, and movie theaters incorporated the modern requirements of an Army such as indoor toilets, heating, and accounted for the sheer numbers of solders using any type of facility. The industrial end of military building was not as fully addressed since in the past any industrial needs had been met by private contractors. When it became clear that private contractors alone could not produce the

material necessary for running a prolonged global war, the Army began construction of government-owned industrial facilities to be operated by the private sector. This was considered a fortuitous marriage since the military could not keep specialized scientists and engineers on staff the way private industry could. However, by using private industry as a contractor at a government facility, the military could make use of the firm's expertise and workers.

During the Protective Mobilization in 1939, private industry and the military came together to design prototypical industrial structures for specialized materiel production. Picatinny Arsenal and Edgewood Arsenal became testing grounds for new industrial buildings and processes related to chemicals and ordnance. The experience gained at the two arsenals, combined with the building plans from the private sector, formed the basis of military industrial building design.

Also during the Protective Mobilization period, industrial facilities were planned to be of permanent construction much like private sector factories. *Permanent* in this case refers to buildings with a 25-year life span. Functional design was the top priority for industrial facilities and determined the basic architectural and engineering design. Levin Campbell, Chief of Ordnance from 1941 to 1942, declared that "the object of building plants [was] to produce munitions required to win the war" (Kriv n.d.). These industrial buildings were plain, utilizing the pioneering work of Albert Kahn, the great industrial facilities architect, as spring board for understanding how buildings best shelter industrial processes.

In the private sector the cost of building materials was not necessarily an inhibiting factor; the military, however, was always concerned about expense and sought ways to keep costs down. Although the early military industrial buildings were permanent, they used a number of less expensive building materials such as construction tile. Construction tiles were essentially hollow brick tiles, approximately eight inches wide, that took the place of bricks. Their tensile strength allowed them to be used in self supporting walls and they were virtually maintenance free. Larger industrial buildings were constructed with steel frames using other types of traditional building materials.

By 1941, however, enormous cost overruns and the shortage of strategic materials led to a decision to make temporary structures when possible. Temporary buildings were to have a five-year life span. At first, only amenities were cut and changed, but eventually whole industrial complexes would be built of wood and asbestos paneling, with little or no steel frames. A wide variety of construction materials were used including: clay tile, wooden frame, metal frame, wood and transit siding, asbestos siding and most interestingly, metal siding covered in asphalt. Whatever corners could be cut were cut.

No time was spent on stylistic qualities of a building. The function of each building was to aid in winning the war. Not only industrial buildings were constructed according to this imperative; barracks, recreational facilities, officers quarters, hospitals, warehouses, sewage and power structures, in short, anything that could be made using cheaper, less strategic materials in the most functional forms possible was so manufactured.

Figure 3. Building 3220, Officers Quarters / Developmental Center and Chapel, formerly Navy Barracks for Enlisted Workmen, a temporary World War II structure, 1944. Picatinny Arsenal, Morris County, New Jersey *(Nolte 1997).*

Today, a wide variety of World War II temporary structures are extant on most U.S. military bases. Garner (1993) lists 36 Army bases as having a hundred or more units of temporary World War II buildings and some bases such as Fort Chafee, Fort Bragg, Fort Lewis, Fort McCoy and Fort Polk have more than a thousand units. These structures include barracks, sewage treatment plants, industrial process buildings, ball fields and tennis courts, and the inevitable general and ordnance warehouses. Building 3220, formerly on the Lake Denmark Navy Depot, was built in 1945 as a Navy Barracks for enlisted workmen, and today serves as Officers' Quarters, Child Development Center, and Chapel (Figure 3). It is a classic World War II barracks of wood frame construction and covered with simple drop wood clapboards (Figure 4). Bus shelters represent another World War II building type common at Picatinny Arsenal and can be found on both the Army and the Navy facilities. These are relics reminiscent of a time when large numbers of workers required dependable daily transportation, supplied by both branches of the military, in order to meet the increased demands of providing materiel for the burgeoning war effort.

Although these World War II buildings are fascinating in many ways, they have already been mitigated by the DOD and await only the New Jersey HPO's final approval. None of these World War II structures at Picatinny are unique architecturally nor do they have any special historical merit. Given the DOD mitigation and the lack of significance, the World War II temporary structures at Picatinny Arsenal are not eligible for the NRHP.

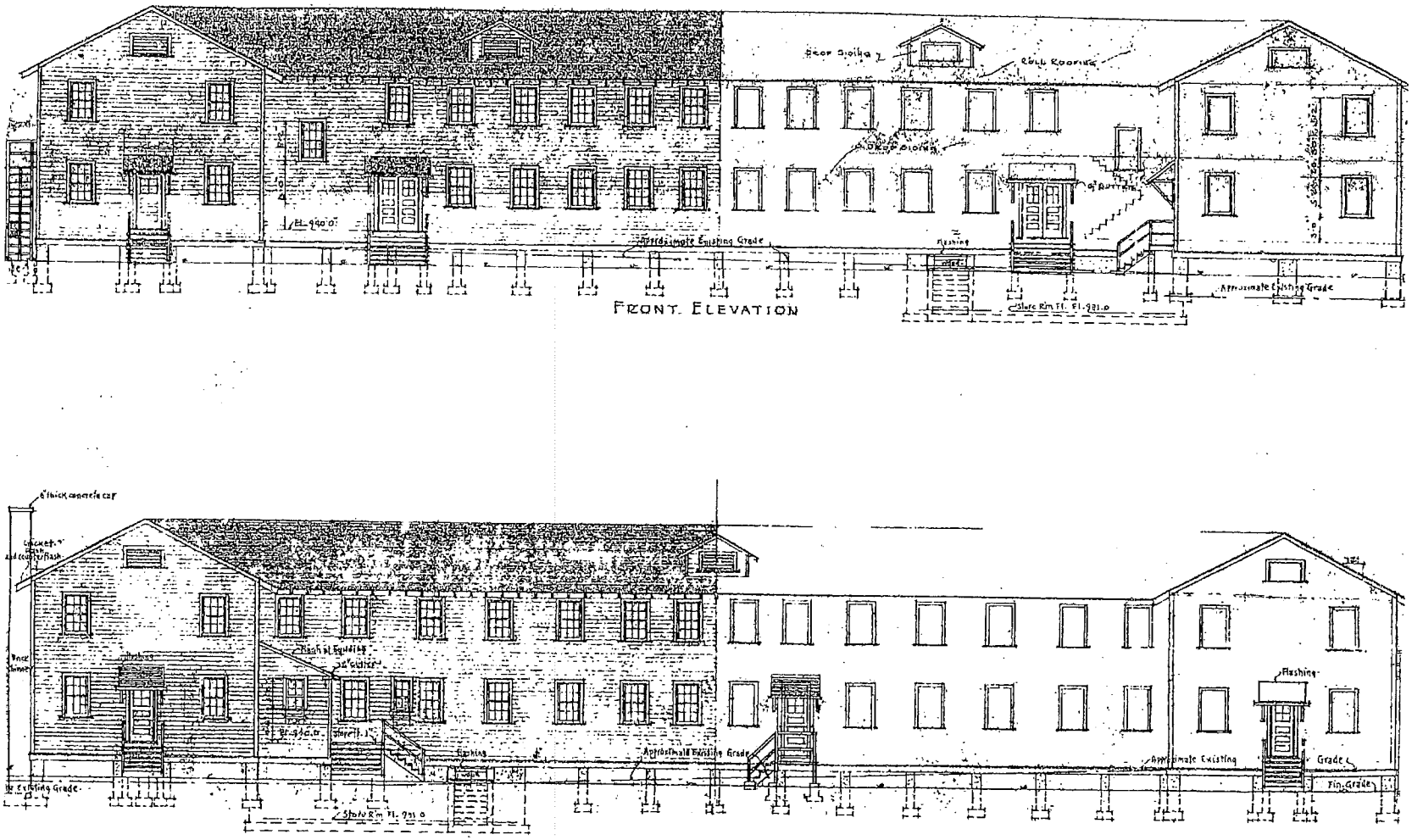

Figure 4. Building 3220, Navy Barracks for Enlisted Workmen, detail from blueprint (#PW-B-7574, *Barracks for Enlisted Workmen, Elevations*, 3/29/40), Third Naval District, New York. Picatinny Arsenal, Morris County, New Jersey *(on file in DPW, Picatinny Arsenal).*

3.1.2 Storage and Utility Buildings

A significant number of Picatinny Arsenal's structures are grouped in this use category. Included in this category are general storage, ordnance storage, power generating plants and support structures as well as water and sewage buildings. The largest number of this category's buildings are storage related, both general and ordnance. It is not surprising that Picatinny has so many storage buildings since it began life as a depot and also served as a factory while Lake Denmark Navy Depot had only one function, to store items for future dispersal.

Bldg. No.	Const Date	Historic Name	Present Name
4	1918	Storage	Electrical Equipment
6	1942	Storage	Engineering Administration
17	1918	General Purpose Warehouse	Flammable Material Storehouse
18	1918	Flammable Material Storehouse	General Purpose Lab.
19	1918	Flammable Material Storehouse	Electronic Equip. Facility/School
20	1918	Flammable Material Storehouse	Administration Bldg./ R & D
21	1918	Flammable Material Instrumentation Building	Weapons Storehouse
22C	1944	General Storehouse	General Storehouse
30	1918	Ammunition Parts Storehouse	Saw Room/Offices/Credit Union
31A	1942	Storage of Metal Components	General Purpose Shop
34	1940	Quality Assurance Division	General Purpose Administration/ Post Restaurant
36	1918	General Purpose Warehouse	General Purpose Warehouse
39	1918	General Purpose Warehouse	Facilities Engineering Maintenance Shop
40	1918	General Purpose Warehouse	General Purpose Warehouse
41	1918	General Purpose Warehouse	General Purpose Warehouse
45	1918	General Purpose Warehouse	General Purpose Warehouse
58	1937	Printing Plant/Lumber Storage Instrumentation	Operation General/ General Administration
59	1937	Lumber Storage	Main Library/General Purpose Administration

Bldg. No.	Const Date	Historic Name	Present Name
60	1942	Storage	General Purpose Lab./ General Purpose Administration
61	1941	Inert Component Warehouse	Ordnance Administration Engineering Administration
62	1941	Inert Component Warehouse	Ordnance Administration Engineering Administration Bldg.
63	1942	Lumber and Box Storage	Facility Engineering/ Lumber and Pipe Shed
64	1942	Cutting Oils Storage	General Purpose Admin./ Administration Bldg./ R & D
65	1942	Storage	General Purpose Lab./ Administration R & D
66	1944	Inert Component Storehouse	Inert Component Storehouse
84	1944	General Purpose Warehouse	General Purpose Warehouse
91	1942	General Purpose Warehouse	Office and Supply
121 A	1944	Golf Cart Storage	Administration Office
161	1942	General Storehouse	General Storehouse
230 F	1941	General Storehouse	Inert Storage
252 A	1942	Storage	Flammable Material Storehouse
266 A	1938	Storage	Flammable Material Storehouse
301	1943	Storehouse	Storehouse
301 A	1943	Oil House	Storehouse
302	1905	Storehouse for Sodium Nitrate Maintenance Shop	Administration General Purpose/ Engineering
302 C	1939	Sewage Pump	Sewage Pump
302 E	1944	Storehouse	Facility Engineering Storehouse
304	1941	Storehouse	Facility Engineering Storehouse
314	1942	Salvage and Surplus Property	Salvage and Surplus Property
314 C	1943	Salvage and Surplus Property	Salvage and Surplus Property
315	1908	Storehouse for Sodium Nitrate	Post Engineering Maintenance
316	1907	Storehouse for Sodium Nitrate	Metallurgy Laboratory

Bldg. No.	Date of Constr.	Historic Name	Present Name
318	1907	Storehouse for Sodium Nitrate	Metallurgy Lab
319	1906	Storehouse for Sodium Nitrate	General Purpose Administration
321	1903	Storehouse for Fuzed Projectiles "O"	Ordnance Facility
322	1906	Storehouse for Sodium Nitrate/ 87mm Loading Plant/Foundry	Metallurgy Lab
323	1906	Storehouse for Sodium Nitrate	General Purpose Lab
323D	1942	Inert Storage Building	Term Equipment Building
324	1905	Storehouse for Sodium Nitrate	General Storehouse
329	1903	Storehouse for Sodium Nitrate	Propellant Systems
350	1938-40	Storage	Engineering Admin. Building
351	1938-40	Storage	ADP/Tech. Library
352	1938-40	Storage	TV Studio /ADP/ Engineering Administration
353	1938-1940	Parts Storage	Physics Lab
354	1938-1940	Storage/Engineering R&D	Engineering
403	1906	Storehouse for Sodium Nitrate	Woodworking, Packaging and Testing Lab
404	1906	Storehouse for Sodium Nitrate	Thermo Chemistry Lab
452B	1930	Storage	General Purpose Magazine
462C	1942	General Storehouse	General Storehouse
462D	1942	General Storehouse	General Storehouse
550	1918	General Purpose Warehouse	General Storehouse
603J	c. 1970	General Storehouse	General Storehouse
927	1943	Flammable Material Storehouse	Flammable Material Storehouse
928	1918	General Purpose Warehouse	Fixed Ammunition Magazine
929	1918	General Purpose Warehouse	General Purpose Magazine
940	1918	General Purpose Warehouse	General Purpose Magazine
941	1918	General Purpose Warehouse	General Purpose Magazine
942	1918	General Purpose Warehouse	Fuze and Detonator Magazine

Bldg. No.	Date of Constr.	Historic Name	Present Name
943	1918	General Purpose Warehouse	Fuze and Detonator Magazine
944	1918	General Purpose Warehouse	Fixed Ammunition Magazine
945	1918	General Purpose Warehouse	General Purpose Magazine
946	1918	General Purpose Warehouse	Fixed Ammunition Magazine
948	1918	General Purpose Warehouse	General Purpose Magazine
949	1918	General Purpose Warehouse	Fixed Ammunition Magazine
950	1918	General Purpose Warehouse	General Purpose Magazine
951	1918	General Purpose Warehouse	Fuze and Detonator Magazine
953	1918	General Purpose Warehouse	General Purpose Magazine
1608A	1942	Flammable Material Warehouse	Flammable Material Warehouse
3002	1934	General Storage Building	Engineering Admin. Building
3005	1941	Construction Equipment Storage	Vehicle Maintenance
3007	1940	Storehouse	Storehouse
3022	1922	Storage	Offices/Lab
3028	1900	Storage Building	Chemistry Lab and Administration
3029	1917	General Purpose Warehouse	General Purpose Warehouse
3100	1942	Covered Storage	Covered Storage
3111	1943	Storage Building	Ordnance Facility ("Air Gun")
3114	1934	Flammable Material Storehouse	Flammable Material Storehouse
3124	1918	Storage	General Purpose Administration
3128	1929	Flammable Materials Warehouse	Flammable Materials Warehouse
3137	1934	Flammable Materials Warehouse	Magazine
3140	1934	Flammable Material Warehouse	Facility Engineering
3159	1930	Laboratory Storage Admin	Building/R & D
3162	1942	Covered Storage	Covered Storage
3177	1914	Storage Building	Electronic Equipment Facility
3178	1905	Paint Locker Storehouse	Flammable Material
3200	1943	Post Engineering Storehouse	Facility Engineering Storehouse

Bldg. No.	Date of Constr.	Historic Name	Present Name
3203	1930	General Purpose Warehouse	General Purpose Warehouse
3208	1929	Transmitter Building/ General Warehouse	Electronic Equipment Facility
3211	1929	General Purpose Warehouse	General Purpose Warehouse
3213	1942	Flammable Material Storehouse	Flammable Material Storehouse
3223	1911	General Storehouse	General Storehouse
3231	1941	Ice House	Quarters (G & WO)
3236	1930	Flammable Material Storehouse	Flammable Materials Storehouse
3242	1919	Flammable Material Storehouse	Flammable Materials Storehouse
3306	1939	Storage	Storage
3308	1938	Storage	Drill/Hall
3310	1939	Garage/Storage	Admin/Supply
3311	1939	Storage	General Purpose Warehouse
3315	1915	General Storage	Skill Center/Auto
3320	1939	Salvage and Surplus Property	General Storehouse
3321	1939	General Purpose Warehouse	Self Service Supply Center
3324	1939	Storage	Storage
3328	1939	Storage	Calibration Laboratory
3330	1939	Fabrication Reliability Welding	Exchange Warehouse
3331	1939	Storage	General Purpose Warehouse
3334	1939	Storage	General Purpose Warehouse
3337	1939	Storage	General Purpose Warehouse
3338	1939	Storage	General Purpose Warehouse
3339	1939	Storage	General Storehouse
3340	1939	Storage	General Storehouse
3341	1939	General Purpose	General Storehouse FH
3344	1939	General Purpose	General Storehouse
3345	1939	General Purpose	General Storehouse

Bldg. No.	Date of Constr.	Historic Name	Present Name
3349	1939	General Purpose	General Purpose Warehouse
3350	1939	General Purpose	General Purpose Warehouse
3352	1939	General Purpose	General Purpose Warehouse
3353	1939	General Purpose	General Purpose Warehouse
3354	1939	General Purpose	General Purpose Warehouse
3357	1939	General Purpose	Salvage and Surplus Property
3359		General Purpose	General Purpose Warehouse
3409 A	1944	Storehouse	Army Reserve Center

General storehouses varied in size and in construction material depending on their purpose and their age. Typical construction materials included concrete, brick, structural clay tile, corrugated metal or wood. Many storehouses were built by standardized or generic plans and could be used to store almost anything that would fit through the doors. Others had more specialized designs to enable them to meet specific purposes such as cold storage. Some storage structures were simply open-sided pole barns. Surprisingly, a significant amount of storage on any base was not in a structure at all but was simply a collection of homogeneous items in a designed open space.

In the first two years of the war, military industrial complexes were forced by decree and the lack of specific building materials, such as steel, to construct temporary buildings for various industrial processes. Such volatile items as TNT—which had originally been produced in buildings of substantial steel beam construction—were manufactured in less sturdy, almost flimsy structures. Even old-line production facilities, like Picatinny Arsenal, had to make do with temporary, light frame buildings. A number of these can still be found in the former production areas. Individual buildings in a military production complex were linked typically by covered walkways or monorails for the transport of materials. Walkways were often used as work sites. To make work in an essentially open space more comfortable and therefore more productive, Cel-O-Glas, a type of flexible, opaque plastic enmeshed in a screen, was used to cover the walks. This inexpensive material can still be seen on a number of Picatinny's extant covered walks in the 1600 Area, Little Picatinny.

Fully 132 structures out of 500 can be classified as Storage and Utility (or General Support) buildings making this the building family with the largest number of structures. General storage buildings, used for the storage of everything except explosives, are common on all military installations. Between World War I and World War II, the numbers of storage buildings grew exponentially in an effort to handle the increased amounts of materials required for bigger and more complex wars. In the state of New Jersey it is

estimated that more than 300 of these structures on a variety of military installations are 50 years old or older (Grandine and Cannan 1995).[2]

Some of Picatinny's oldest remaining structures are brick warehouses, built at the turn of the century (Figure 5). A warehouse's typical open interior plan makes it especially adaptable for reuse. At Picatinny, warehouses have been converted into office buildings, labs, machine shops, and magazines (Figure 6).

Large groups of these buildings are clustered together, as can be seen in the 300 Area of Picatinny and the 3300 Area of the former Lake Denmark Depot. Originally a great web of railroad tracks connected each warehouse to the next and ultimately the product of each warehouse moved by rail to its final destination.

Warehouses and storage buildings were also built as individual units for a variety of needs. Storage units were built in conjunction with industrial lines, to cover and store lumber or to provide personnel supplies and can be found in almost every part of the installation.

The Grandine and Cannan report (1995) found that buildings individually used as general storage "rarely have important and specific associations with an historical event or pattern of events. Storage buildings are typically found at all installations, where they support the primary mission of the installation, such as training or industrial production." In the case of those general storage buildings in the former Navy area, the report found that General storage buildings are an important property type at supply depots, where the primary mission of the installation was to receive, store and distribute supplies. . . . During World War II, which was characterized as a war of supplies, the role of logistical support was particularly important." In order to possess integrity a supply depot should "maintain the character-defining features of a supply depot from the period(s) of significance. These included the organization and layout of the depot, the number, location, design, and construction materials of the warehouses, and the roads, piers, and/or rail lines that provide the depot's essential transportation network" (Grandine and Cannan 1995:287).

None of the general storage structures at Picatinny are significant architecturally nor do they have any distinctive historical merit. None of the remaining warehouse groupings are united by rail, thereby eliminating the former connection to an essential transportation network as discussed by Grandine and Cannan (1995). Given the lack of significance, the general storage buildings at Picatinny Arsenal are not eligible for listing in the NRHP. A detailed review of each of these buildings may be found in Table 2.

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[2] The New Jersey active duty military bases surveyed by Grandine and Cannan (1995) include: Earle NWS, Lakehurst NAWC ACFTDIV, Trenton NAWC ACFTDIV, Fort Dix, Fort Monmouth, Fort Monmouth - Charles Wood Area, Fort Monmouth - Evans Area, Military Ocean Terminal, Pedricktown Support Facility, Picatinny Arsenal, Atlantic City IAP, McGuire AFB, and Warren Grove WRG.

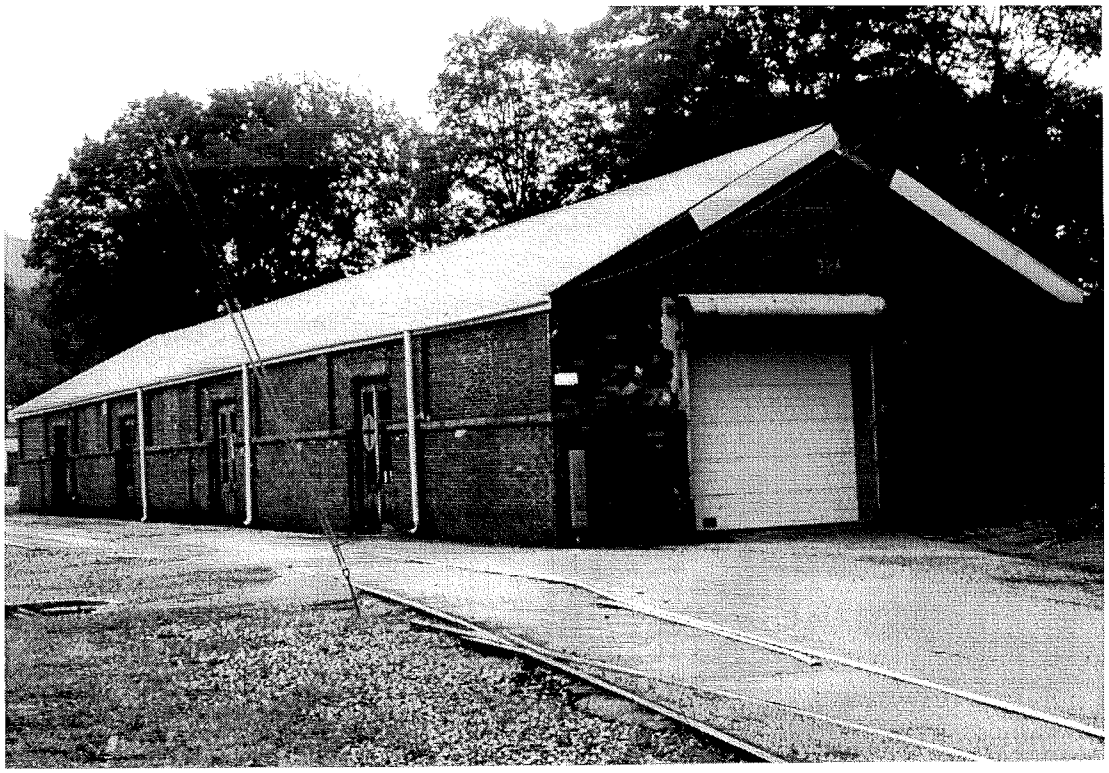

Figure 5. Building 324, brick storehouse (1905). Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

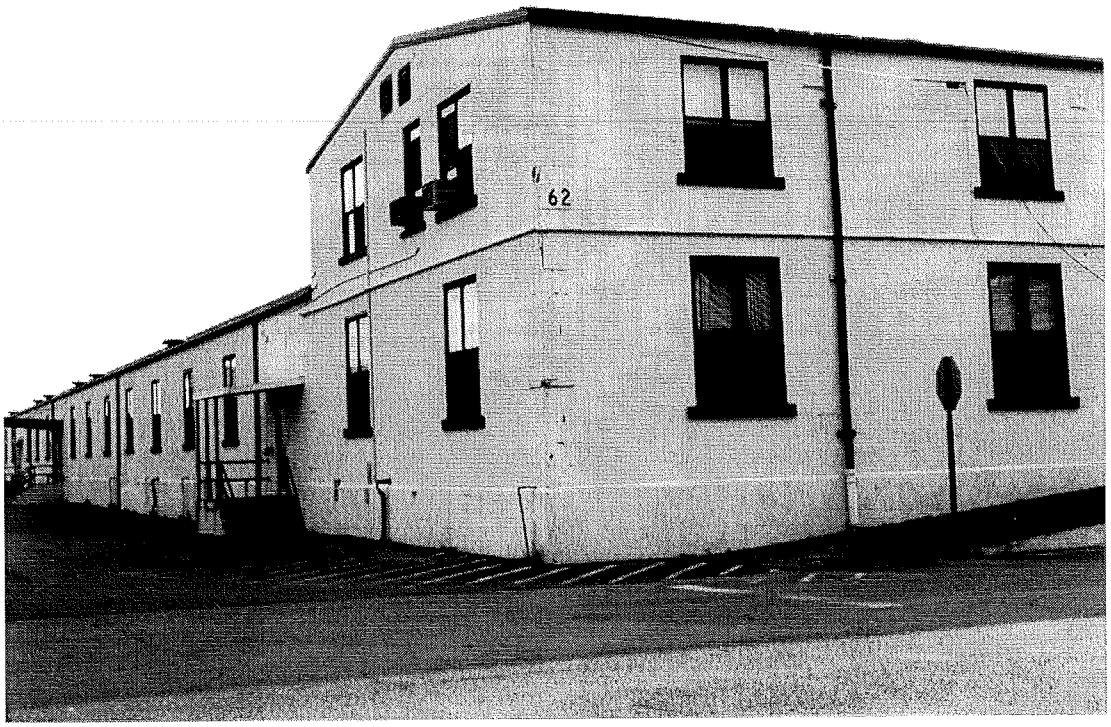

Figure 6. Building 62, originally a storehouse (1941), converted into an office. Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

3.1.3 Ordnance Storage

A total of 122 structures at Picatinny Arsenal fall into the Ordnance Storage category. Grandine and Cannan (1995) estimate that in New Jersey alone there are 376 ordnance storage structures on a number of government facilities that are 50 years old or older. The development, production, use and storage of ordnance is related to the military's mission of national defense. The storage of ordnance requires specialized structures that generally are recognized as building types separate from general storage. The type of ordnance stored has greatly influenced the design and construction of ordnance buildings.

Bldg. No.	Date of Constr.	Historic Name	Present Name
2	1918	Magazine	Museum
3	1918	Magazine	Legal Counsel
5	1918	Storage	Electrical Equipment
46	1940	Magazine	General Storehouse
47	1940	Magazine	General Storehouse
48	1940	Magazine	General Storehouse
49	1940	Magazine	General Storehouse
50	1940	Magazine	General Storehouse
51	1940	Magazine	General Storehouse
52	1941	Magazine	General Storehouse
53	1941	Magazine	General Storehouse
54	1941	Magazine	General Storehouse
55	1941	Magazine	General Storehouse
56	1941	Magazine	General Storehouse
57	1941	Magazine	Shipping and Receiving
230A	1944	High Explosives Magazine	Magazine
230B	1944	High Explosives Magazine	Magazine
252F	1943	Magazine	Ready Magazine
256	1889	No. 6 Powder Magazine/ Booster and Fuse Loading Building	Ordnance Facility
266	1903	Original Magazine for High Explosive "A" Pump and Change House	Laboratory General Purpose ("Wind Tunnel Building")

Bldg. No.	Date of Constr.	Historic Name	Present Name
282B	1942	Fuse and Detonator Magazine	High Explosives Magazine
282C	1942	Fuse and Detonator Magazine	High Explosives Magazine
282D	1938	Magazine	General Purpose Warehouse
307	1880	Original Powder Magazine	Facility Maintenance Shop/ General Purpose Admin.
321D	1941	Magazine	General Storehouse
407A	1942	Smokeless Powder Magazine	Equipment Storage
407F	1938	High Explosive Magazine	High Explosive Magazine
424B	1938	General Purpose Magazine	General Purpose Magazine
424D	1924	High Explosives Magazine	High Explosives Magazine
430B	1941	High Explosives Magazine	High Explosives Magazine
437	1918	General Purpose Magazine	General Purpose Magazine
445F	1942	Small Arms Pyrotechnic Magazine	Igloo Storage
448A	1939	Ammunition Components Magazine	Fixed Ammunition Magazine
462A	1941	General Purpose Magazine	General Purpose Magazine
462B	1942	General Purpose Magazine	General Purpose Magazine
462E	1943	General Purpose Magazine	General Purpose Magazine
477F	1945	Magazine	General Purpose Magazine
602B	1934	Black Powder Magazine	General Purpose Magazine
609	1928	High Explosives Magazine	Ordnance Facility
610	1928	High Explosives Magazine	Ordnance Facility
617A	1928	High Explosives Magazine	High Explosives Magazine
617B	1928	Magazine	General Storehouse
617E	1928	Flammable Storage Material Magazine	Flammable Material Storage Mag.
617F	1928	Magazine	Fuse & Detonator Magazine
617G	1938	Gun and Powder Shed	Ordnance Facility
629	1942	High Explosive Magazine	High Explosive Magazine

Bldg. No.	Date of Constr.	Historic Name	Present Name
636A	1928	Flammable Materials Storage	Flammable Materials Storage
717B	1941	Powder storage	General Storehouse
717D	1928	Magazine	Chemistry Laboratory
732A	1938	Inert Storage Magazine	General Storehouse
732H	1943	High Explosives Magazine	High Explosives Magazine
803	1942	Magazine	Ordnance Facility
904	1918	Magazine	General Purpose Magazine
905	1927	Magazine	Special Weapons Magazine
906	1918	Magazine	Fixed Ammunition Magazine
907	1918	Magazine	General Purpose Magazine
908	1918	General Purpose	Physics Lab./Administration Research and Development
909	1918	Magazine	General Storehouse
911	1918	Magazine	General Purpose Magazine
912	1918	Magazine	Fixed Ammunition Magazine
913	1941	Magazine	General Purpose Magazine
914	1918	Magazine	High Explosive Magazine
915	1918	Magazine	General Purpose Magazine
916	1918	Magazine	Small Arms Pyrotechnic Magazine
917	1918	Magazine	Fuse and Detonator Magazine
918	1918	Magazine	General Purpose Magazine
919	1918	Magazine	General Purpose Magazine
920	1918	Magazine	Fixed Ammunition Magazine
921	1918	Magazine	General Purpose Magazine
922	1918	Magazine	Fuse and Detonator Magazine
923	1918	Magazine	Fuse and Detonator Magazine
924	1941	Magazine	Fuse and Detonator Magazine
925	1941	Magazine	Fuse and Detonator Magazine

Bldg. No.	Date of Constr.	Historic Name	Present Name
930	1918	Magazine	Fuse and Detonator Magazine
931	1918	Magazine	General Purpose Magazine
932	1918	Magazine	Fixed Ammunition Magazine
933	1918	Magazine	Fuse and Detonator Magazine
934	1918	Magazine	Fuse and Detonator Magazine
936	1918	Magazine	Smokedrum Storehouse
937	1918	Magazine	Fixed Ammunition Magazine
938	1918	Magazine	General Purpose Magazine
939	1918	Magazine	General Purpose Magazine
950	1918	General Purpose Warehouse	General Purpose Magazine
952	1918	Fixed Ammunition Magazine	Fixed Ammunition Magazine
1093	1942	Magazine	Chlorinator Building
1202	1943	Igloo Storage	Igloo Storage
1203	1943	Igloo Storage	Igloo Storage
1204	1943	Igloo Storage	Igloo Storage
1205	1943	Igloo Storage	Igloo Storage
1206	1943	Igloo Storage	Igloo Storage
1207	1943	Igloo Storage	Igloo Storage
1208	1943	Igloo Storage	Igloo Storage
1209	1943	Igloo Storage	Igloo Storage
1210	1943	Igloo Storage	Igloo Storage
1211	1943	Igloo Storage	Igloo Storage
1212	1943	Igloo Storage	Igloo Storage
1213	1943	Igloo Storage	Igloo Storage
1214	1943	Igloo Storage	Igloo Storage
1302	1945	General Purpose Magazine	General Purpose Magazine
1618	1942	General Purpose Magazine	General Purpose Magazine
3018	1918	Underground Storage Facility	Igloo Storage

Bldg. No.	Date of Constr.	Historic Name	Present Name
3030	1918	Underground Storage Facility	Igloo Storage
3032	1918	Underground Storage Facility	Igloo Storage
3033	1918	Underground Storage Facility	Igloo Storage
3035	1918	Underground Storage Facility	Igloo Storage
3036	1918	Underground Storage Facility	Igloo Storage
3038	1918	Underground Storage Facility	Igloo Storage
3039	1918	Underground Storage Facility	Igloo Storage
3041	1918	Underground Storage Facility	Igloo Storage
3042	1918	Underground Storage Facility	Igloo Storage
3045	1918	Underground Storage Facility	Igloo Storage
3047	1918	Underground Storage Facility	Igloo Storage
3106	1934	Magazine Lab	Explosives Test
3116	1943	Magazine	Ready Magazine ("Sand Bags")
3136	1944	Magazine	Flammable Material Storehouse
3155	1929	Magazine	General Purpose Warehouse
3164	1918	Ordnance Storage	Igloo Storage
3166	1929	Shell House	General Purpose Warehouse
3172	1918	Subsurface Magazine	Igloo Storage
3180	1918	Subsurface Magazine	Igloo Storage
3300	1918	Underground Storage Facility	Igloo Storage
3303	1918	Underground Storage Facility	Igloo Storage

Explosives can be divided into two general categories: high explosives and propellants. High explosives are used to fill artillery shells and aerial bombs. Propellants are relatively slow-burning materials used to force the round out of a barrel or to act as a rocket motor. During World War II the military had three broad classifications of ordnance materials:

1. Most hazardous materials which included bulk high explosives, high explosives in thin containers, fuses and detonators;
2. Less hazardous materials which included smokeless powder, loaded but unfuzed projectiles, and small arms ammunition, all of which tended to be more stable than the preceding group;

3. Inert materials such as unloaded shells, cartridge cases, empty powder cans and bag materials (Grandine and Cannan 1995:287).

The Navy designed and constructed specific building types for each of the three classifications. The Army designed and constructed buildings only for the first two categories, using general storage for inert materials.

The organization of the military services, the development of ordnance technology, and the level of military activity influenced construction of ordnance storage. The Army's Ordnance Department and the Navy's Bureau of Ordnance were responsible for production, repair, testing and storage of weaponry within each service. A system was developed of distributing ordnance from strategic depots to other installations or activities. As a result, ammunition storage depots had many identical ordnance storage buildings. During World War II, the military required huge numbers of ordnance storage buildings and as a result vast storage depots were created.

New designs for ordnance structures were developed during World War II. One of the most noteworthy was the igloo (Fine and Remington 1989) which was a direct result of the 1926 explosion (caused by lightning) at the Navy's Lake Denmark ammunition depot. The standard, earth-covered barrel-arched igloo was conceived in 1928 with two important features. First, the cylindrical shape would direct the force of an explosion upward not outward. Second, an elaborate lightning protection system, composed of lightning rods and closely set steel reinforced and welded rods, was added.

When the igloo's standard plans and drawings were revised in 1941, the reinforcement rods were eliminated as was most of the welding. The footings and a number of small details were changed. The revisions saved steel, a progressively rarer commodity as the war went on, as well as labor and money. These changes produced an estimated monetary savings of $800 to $2,000 per igloo (Fine and Remington 1989).

Ordnance storage structures at Picatinny are of various types, building materials and sizes. Igloos make up a small portion of these types (Figure 7) and can be found on both the Army and Navy installations, clustered in isolated areas like former Navy 3000 Area. Magazines of all types are common. Many of these are also clustered together, but others stand in relative isolation, relics of a former industrial line or abandoned because of their location. Building 610 is an example of a magazine associated with a specific industrial process, the 600 Testing Area (Figure 8). This standard high explosive magazine is constructed on a concrete foundation and has corrugated asbestos walls on a steel frame with a corrugated metal protected asbestos roof.

Although ordnance supply buildings tend to be made of substantial materials, by the end of World War II, even high explosive magazines were made of wood. Many of these wooden magazines were associated with industrial lines and were isolated from the line itself by blast walls or berms or simply by distance. Wood is far from being an ideal ordnance building material and after the war many wooden magazines were abandoned or used only for special types of materials.

Figure 7. Building 1213, Igloo storage (1943). Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

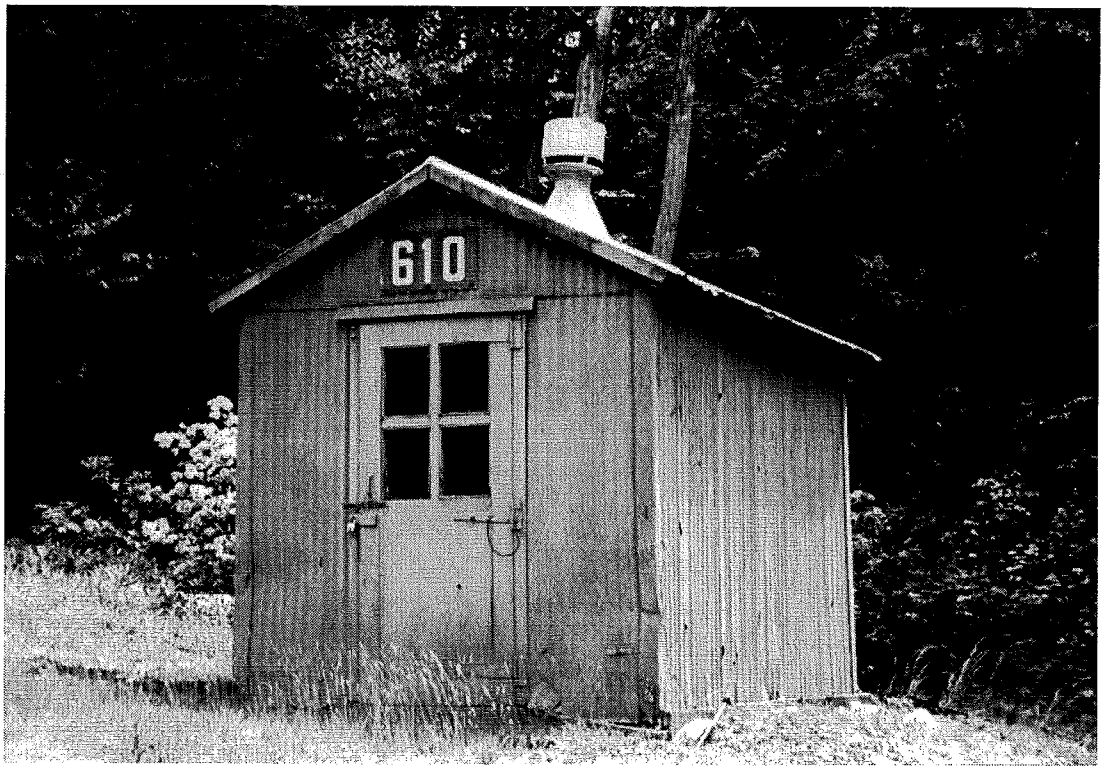

Figure 8. Building 610, Standard Magazine (1928). Picatinny Arsenal, Morris County, New Jersey *(Nolte 1997).*

Although the 1926 explosion destroyed many structures at Picatinny, a number of pre-explosion magazines are extant. By and large these brick magazines date to around World War I and it is difficult to tell a magazine from a general storehouse (Figures 9 and 10). Today, in fact, these structures are used interchangeably.

Harrell (1994) identified Building 266, originally the Number 6 Powder Magazine built in 1903 and converted into a Wind Tunnel during World War II, as being potentially eligible for the NRHP as an individual structure (Figure 11 and 12). Research on wind tunnels during World War II revealed them as a common feature on ordnance facilities; they still can be found, like the one listed by NRHP at Aberdeen Proving Ground. Further research was unable to determine if any special ordnance or ordnance design was tested in this particular tunnel. Since the tunnel does not appear to have ever been used to test or design any specific ordnance and because it is not a historically or architecturally significant building, it is PCI's professional opinion that Building 266 is not eligible for the NRHP.

The Grandine and Cannan report (1995) found that buildings individually used as ordnance storage

> rarely have important and specific associations with an historical event or pattern of events. Single examples or small groups. . .may be found on many types of installations. . . . However, isolated examples of installation ordnance storage are not near enough to the main areas of an installation to be included in a main base or cantonment historic district and do not possess important and specific associations with the historical mission of non-depot installations to qualify as historic districts on their own merits.

While facilities like Picatinny Arsenal had many ordnance storage structures, to possess integrity as a representative sample of an ordnance depot it should

> maintain the character-defining features of an ordnance depot from the period(s) of significance. These included the organization and layout of the depot, the number, location, design, and construction materials of the warehouses, and the roads, piers, and/or rail lines that provide the depot's essential transportation network (Grandine and Cannan 1995:287).

None of the ordnance storage structures at Picatinny are significant architecturally nor do they have any special historical merit. None of the remaining ordnance groupings are united by rail, eliminating that former connection to an essential transportation network as discussed by Grandine and Cannan (1995). Given the lack of significance, the general storage buildings at Picatinny Arsenal are not eligible for the NRHP. Table 2, *Index of Surveyed Structures,* provides a detailed review of each of these buildings.

Figure 9. Building 952, Fixed Ammunition Magazine (1918), Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

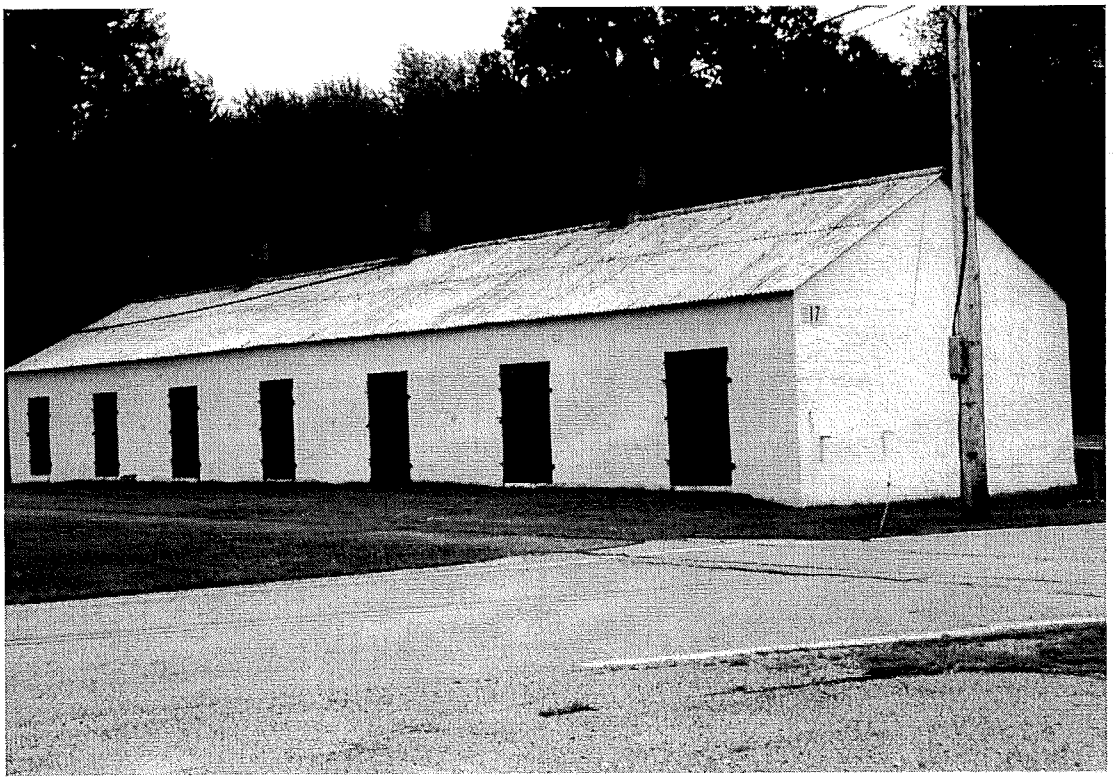

Figure 10. Building 17, General Purpose Warehouse (1918), Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

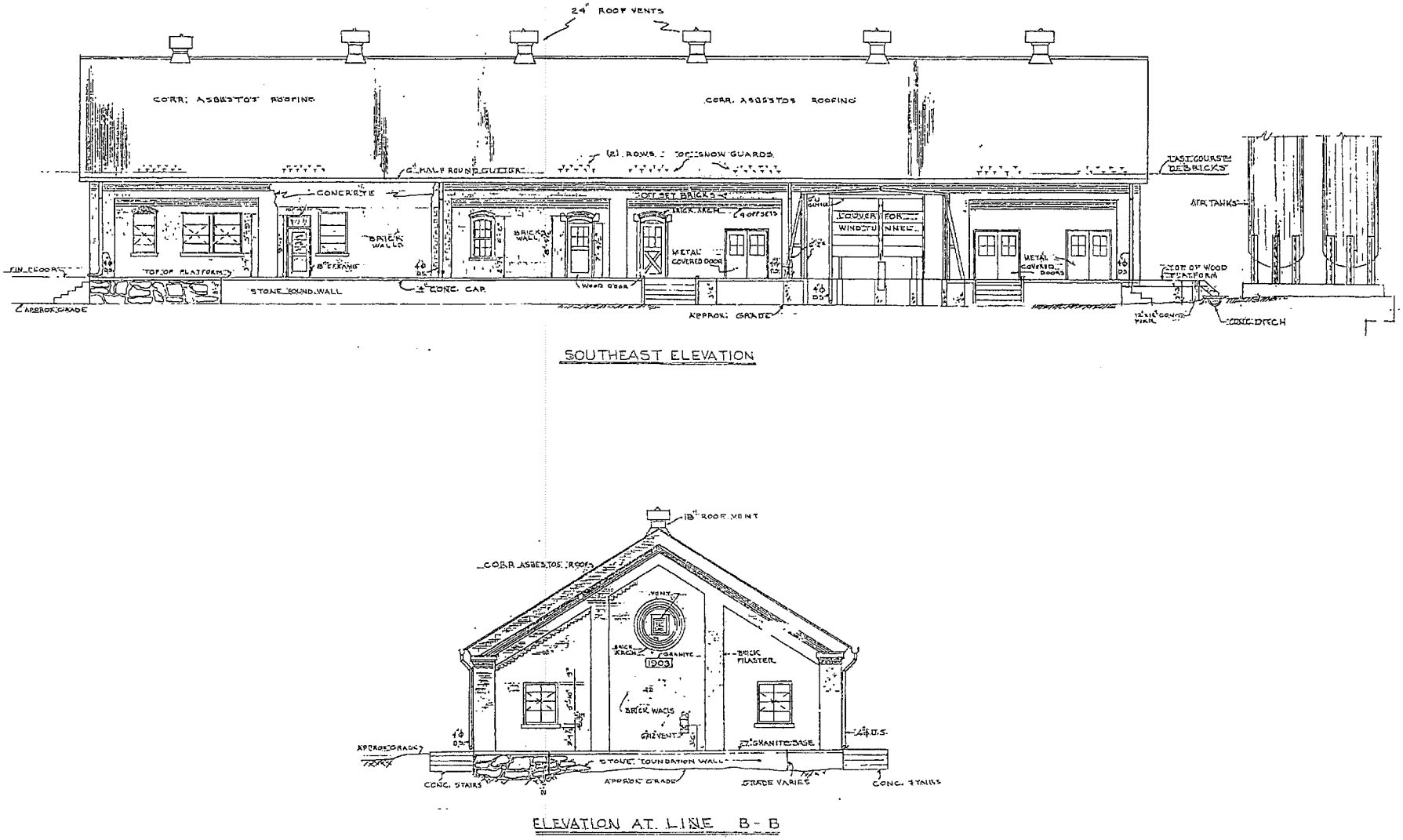

Figure 11. Building 266, Wind Tunnel, detail from blueprint # DP-A6875, *Record Drawing, Building 266, Wind Tunnel Elevations and Sections*, 23 June 1959. Picatinny Arsenal, Morris County, New Jersey *(on file in DPW, Picatinny Arsenal)*.

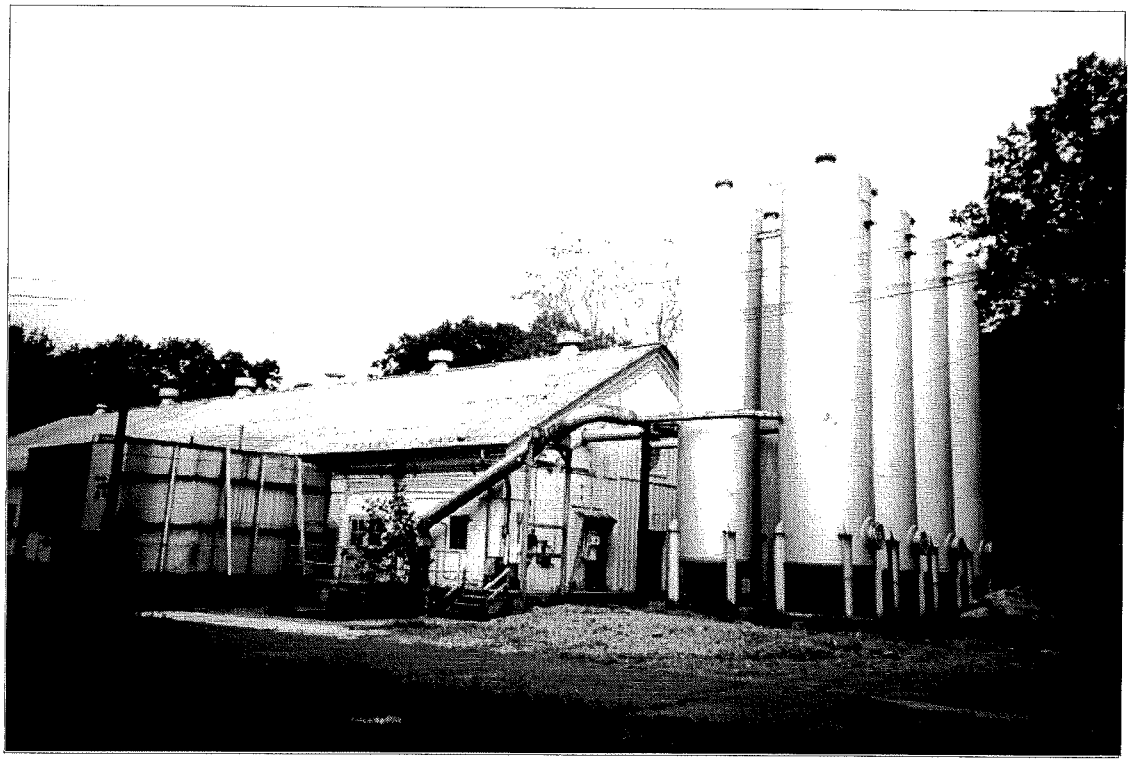

Figure 12. Building 266, Wind Tunnel, originally Magazine for High Explosive "A" (1903). Picatinny Arsenal, Morris County, New Jersey *(Nolte 1997).*

3.1.4 Power Generating Plants

Picatinny Arsenal has five power generating plants. A 'power generating plant' is a general term that includes power and heating and their associated distribution systems that provide power, heat and electricity. Grandine and Cannan (1995) estimate that on many military facilities in New Jersey alone there are 101 power generating structures, 50 years old or older.

Bldg. No.	Date of Const	Historic Name	Present Name
99	1943	Boiler House ("High Pressure Boiler")	HIPR BL+3.5M CL
333	1902	Power House/Turbine House	Human Engineering Laboratory
506	1906-56	Power House	Power House
3013	1901	Boiler House	Boiler House/Heating Plant
no #	1901	Steam Distribution System	Steam Distribution System

The military did not originate this infrastructure technology, but followed, instead, civilian and industrial application of modern utilities (Grandine and Cannan 1995). The

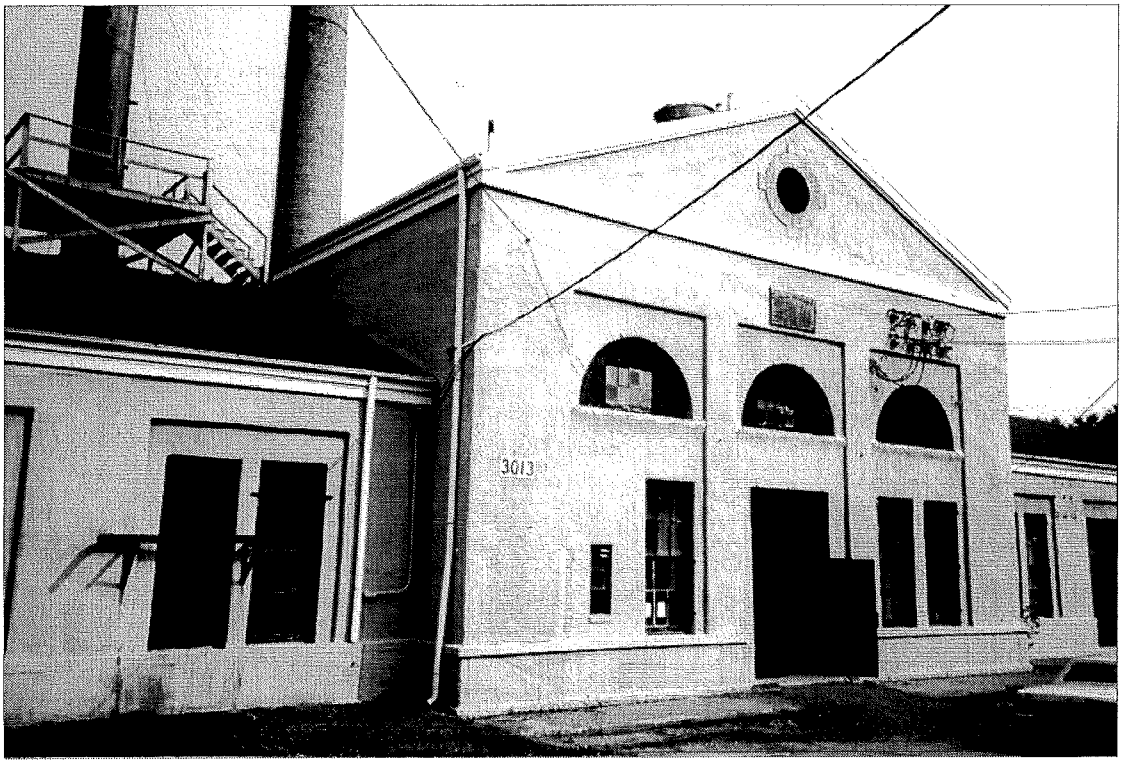

Figure 13. Building 3013, Navy Boiler House (1901). Picatinny Arsenal, Morris County, New Jersey *(Nolte 1997).*

history of the use of types of power on military bases and the buildings designed to house that power closely follow the changes in the civilian sector. By the 1900s, the services had largely abandoned steam engines in favor of electrical current. Both the Army and the Navy tended to purchase electrical power from local utilities with the exception of Navy shipyards. During World War II, many industrial areas on military bases had their own small power plants making them individual production units not reliant on any source but themselves. However, the other non-industrial areas of these bases relied on shared power sources.

Central power plants constructed on Navy bases before 1914 were generally grand industrial buildings featuring classical revival details such as arched windows with keystones, gable fronted porticos, pilasters and rich brick work detailing (Grandine and Cannan 1995). These great edifices were intended to show the power and might of the Navy and were built of permanent materials to blend with the base's architecture. This is true of Building 3013, the former Navy Boiler House built in 1901 (Figure 13). The Boiler House has had many changes, not just to the facade, but also to the internal machinery. As is typical of most large Navy power plants, over time the Navy decided to upgrade and change these power plants rather than build new ones (Grandine and Cannan 1995). Whispers of its former glory can be seen in its pedimented front with its soaring arched windows. The feel and design is reminiscent of Charleston's Navy Base Power House built in 1907.

Less imposing structures were also built including several hollow tile boiler houses, most of which were built in 1943 and reflected the use of typical non-essential war building materials and construction. The exposed concrete frame with in-filled construction tile walls can clearly be seen on some of them.

> Most individual examples of utility infrastructure at military installations do not represent important themes associated with the military's installations and their construction. These facilities were built to support the primary function of the base and typically qualify for listing on the NRHP as contributing elements in a historic district. . . Isolated utilities without important associations to historical events or that are not representative of distinctive design or construction are not eligible for the National Register" (Grandine and Cannan 1995:287).

The power generating plants at Picatinny do not represent a distinctive design or construction nor do they represent any important themes associated with the facility. While the plant (Building 3013) on the former Navy area is quite elegant, it is not unique and has undergone a number of changes that have considerably altered the building. Given the lack of significance, the power generating buildings at Picatinny Arsenal are not eligible for the NRHP. (Table 2, *Index of Surveyed Structures*, provides a detailed review of each of these buildings.)

3.1.5 Water and Sewage Buildings

Twenty-four water supply and sewage systems buildings exist on Picatinny Arsenal. At one time, the installation had many hydrant houses used in the explosives areas. Over the years, these buildings have been greatly reduced by demolition and neglect. Grandine and Cannan (1995) estimate that in New Jersey alone there are 85 water and sewage buildings on a variety of bases that are 50 years old or older.

Bldg. No.	Date of Const	Historic Name	Present Name
80 A	1942	Ejector Station	Sewage Pump
80 B	1942	Sewage Treatment Laboratory	Sewage Treatment Plant
302 B	1943	Sewage Pump	Sewage Pump
302 D	1921	Water Pump Station	Well NP W/PS
308	1922	Sewage Pump/ Facility Engineering Storehouse	Sewage Pump/ Facility Engineering Storehouse
308A	1943	Sewage Pump	Sewage Pump
308 B	1922	Sewage Pump	Sewage Pump
324 A	1943	Ejector Station	Sewage Pump
342	1942	Ejector Station	Sewage Pump

Bldg. No.	Date of Const	Historic Name	Present Name
410	1943	Water Pump Station	Well NP W/PS
410 A	1943	Chlorinating Building	General Storehouse
430 A	1943	Water Pump Station	Well NP W/S
506 A	1939	Water Pump Station	Well NP W/S
727	1929	Ejector Station	Sewage Pump
1061	1941	Water Pump House	Water Pump House
1381	1904	Reservoir Raw	Reservoir Raw
1382	1906	Reservoir Raw	Reservoir Raw
3012	1905	Hydrant House	Hydrant House
3141	1924	Stand pipe	Stand pipe
3157	ca.1897	Pump House	Facility Engineering Storehouse
3183	1983	Dykes or Dams	Dykes or Dams
3201	1934	Water Treatment Plant	Water Treatment Plant
3214	1943	Reservoir Raw	Reservoir Raw
3254	1905	Elev. Water Storage	Elev. Water Storage

An adequate water supply system is essential in operating a military installation. Water supply systems provide for the storage of clean, potable water. These systems include four primary elements: 1) water collection from a primary source; 2) water distribution systems; 3) water treatment facilities; and 4) storage facilities (Grandine and Cannan 1995). Clean water was not just a health issue, industrial processes and steam generating equipment all required vast amounts of clean water.

Sewage disposal systems are devised to collect and treat storm and waste water before returning it to the environment. Waste water is generally of two types, industrial and domestic, and most sewage systems are created to treat both types. Treatment of waste and storm water is a three-part process involving the separation of solids from liquid and the biological and chemical treatment of water to ensure its cleanliness.

Although the Army and the Navy were both concerned about clean water, the services had different ways of approaching the matter. From 1917 to 1946, the Navy's standard sewage disposal practice was to discharge raw sewage into the nearest body of water. If shellfish beds, residences, bathing beaches or ship's berths were located nearby, it was

recommended that the sewage be at least partially treated. The Army, on the other hand, began during the World War I mobilization to stress clean water. In order to keep from polluting in-ground water supplies, the Army set up various levels of sewage treatment systems. The level of intensity of sewage treatment depended upon the number of people using the system. Generally, the sewage was then dumped into the local municipality's sewage system.

As bases expanded, many were pressed for additional water supplies. When reserves could not be found underground, reservoirs were created. Generally these were above-ground reinforced concrete structures or earthen berms. Water was also stored in elevated tanks or other types of above-ground storage units.

By World War II both the Army and Navy became more concerned with the problems of potable water and sewage disposal. The huge military expansion during World War II gave the military a unique opportunity to study sewage treatment operations and compare various processes. In 1945, the Committee on Sanitary Engineering conducted a survey of Army and Navy sewage systems (Grandine and Cannan 1995). This study included the Lake Denmark Naval Ammunition Depot.

Lake Denmark's water supply came from wells. The depot stored its water in five concrete reservoirs, two basins, one cistern and two stand pipes. All sewage was treated in two disposal plants (Grandine and Cannan 1995). Today, only one stand pipe and one reservoir are extant. While this seems like an astonishing amount of water to be stored for such a small depot, most of that stored water was there to be utilized in an extensive system of hydrant houses in place for use in fighting fires. During World War II, both facilities had more than one hundred hydrant houses. Now only one exists, Building 3012, and it is scheduled for demolition.

The most common sewage treatment-related buildings found on Picatinny are sewage pump stations and ejector houses (Figure 14). Pump stations are part of the water relay system involved in moving the sewage process and are designed to service particular areas tied into the process.

The Grandine and Cannan (1995) report found that isolated water supply systems and sewage disposal systems along with their attendant facilities are not significant. "They [generally] do not represent a distinctive type, period or method of construction. Therefore, as a category of properties, they do not meet the NRHP Criteria of Evaluation" (Grandine and Cannan 1995). Further, the water treatment and sewage disposal structures at Picatinny Arsenal do not represent a distinctive design or construction nor do they represent any important themes associated with the facility. Given the lack of significance, water treatment and sewage disposal structures at Picatinny Arsenal are not eligible for the NRHP. A detailed review of each of these buildings may be found in Table 2.

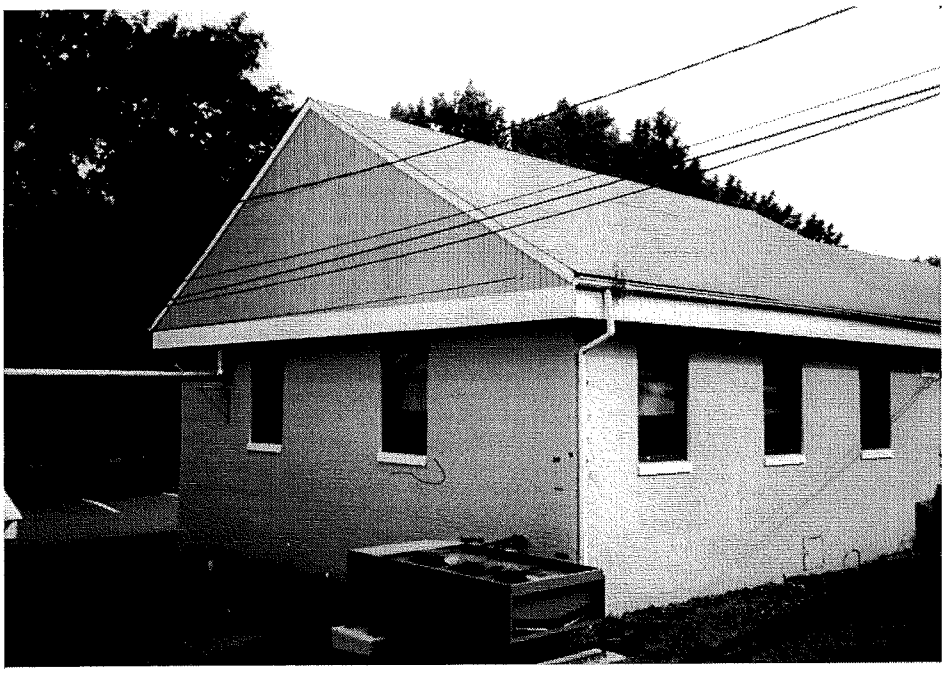

Figure 14. Building 302D, Sewage Pump House (1921). Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

3.1.6 Standardized Building Plans

As the military services grew during the late-nineteenth century, the need for family housing intensified. As late as 1920, over half of the army personnel stationed in the continental United States was living in temporary structures built in 1917 or in very old structures, many dating from the Civil War (Grashof 1986). The demand for inexpensive, permanent housing was immediate and growing. The Army began constructing quarters of various types, many designed by Army architects with excellent credentials, that met all the many requirements and restraints imposed. These successful plans were passed along and became standardized in the Army vocabulary of architecture. Two branches of the Army have been most associated with construction activities: the Quartermaster Corps and the Corps of Engineers. Until 1940, the Ordnance Department and the Signal Corps also exercised limited responsibilities in construction activities on various posts. Each branch created its own set of standardized plans.

Bldg. No.	Date of Const	Historic Name	Present Name
100	1939	Officers' Quarters	Quarters (Col.)
101 A	1937	Garage	Garage
102	1939	Officers' Quarters	Quarters (Col.)
104	1938	Officers' Quarters	Quarters (Col.)

Bldg. No.	Date of Const	Historic Name	Present Name
109	1939	Officers' Quarters	Quarters (MJ)
114 A	1937	Garage	Garage
115 A	1943	Garage	Garage
118	1918	Barracks	Civilian Personnel Administration
121	1936	Recreation	Golf Club House / Officers Mess
124	1936	Garage	Garage
126	1939	Officers' Quarters	Quarter (Col.)
127	1939	Officers' Quarters	Quarters (Col.)
128	1939	Garage	Garage
1104 A	ca.1920	Garage	Garage
1112	1936	Garage	Garage
1120	ca.1930	Garage	Garage
1124	ca.1924	Garage	Garage
1126	ca.1920	Garage	Garage
1139	ca.1920	Garage	Garage
1145	ca.1920	Garage	Garage
1148	1900	Garage	Garage
3050	1934	Naval Enlisted Men's Barracks	Detachment HQ
3244	1945	Quarters	Quarters (Duplex: Gen. and Col.)
3246	1935	Garage	Garage
3326	1935	Garage	Garage

Several of Picatinny's quarters, built just before the General Mobilization for World War II, are located off Farley Avenue (Figure 15). Identical quarters can also be found at Revenna Ordnance Plant, Ohio (Figure 16). These square, hipped roof, Colonial Revival style two-storied houses feature a sun room/enclosed porch on one side (Figure 17 and 18). These Ordnance quarters differ from other Army quarters in that they are permanent structures covered in wood clapboards, generally considered a temporary material, and are most interesting when compared to older and larger Picatinny quarters which were constructed of brick and stone. Most other permanent Army housing have walls of stone, brick or stucco. Permanent housing with wood exteriors tends to occur only in times of war at other Army bases.

Figure 15. Building 106, Standardized Family Housing, Colonel's Quarters (1938). Facing northeast. Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

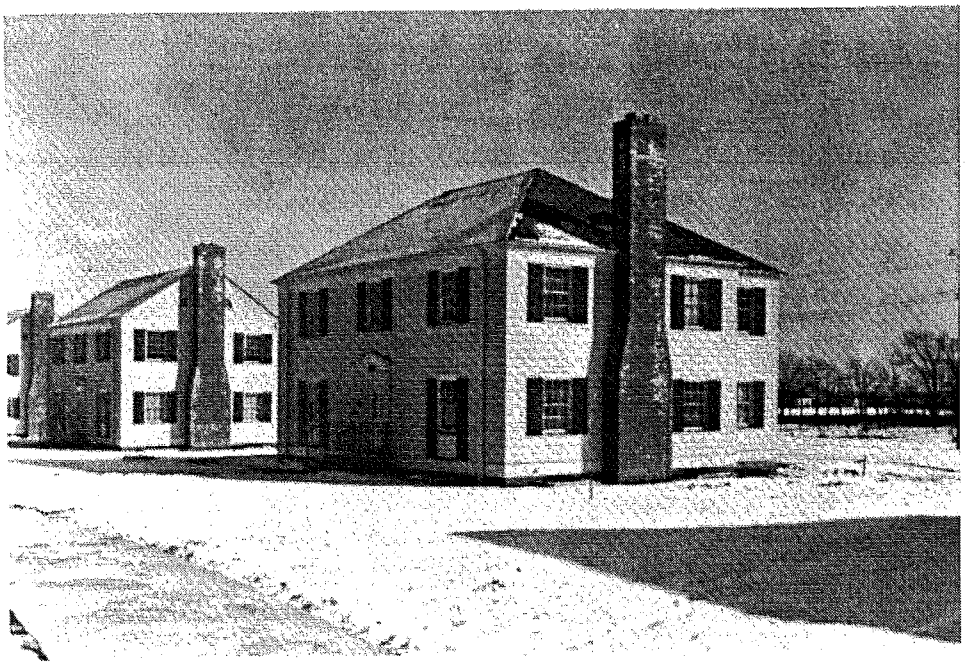

Figure 16. Standardized Ordnance Department Housing, Ravenna Ordnance Plant, Ohio *(Walsh 1995:36, Plate 11).*

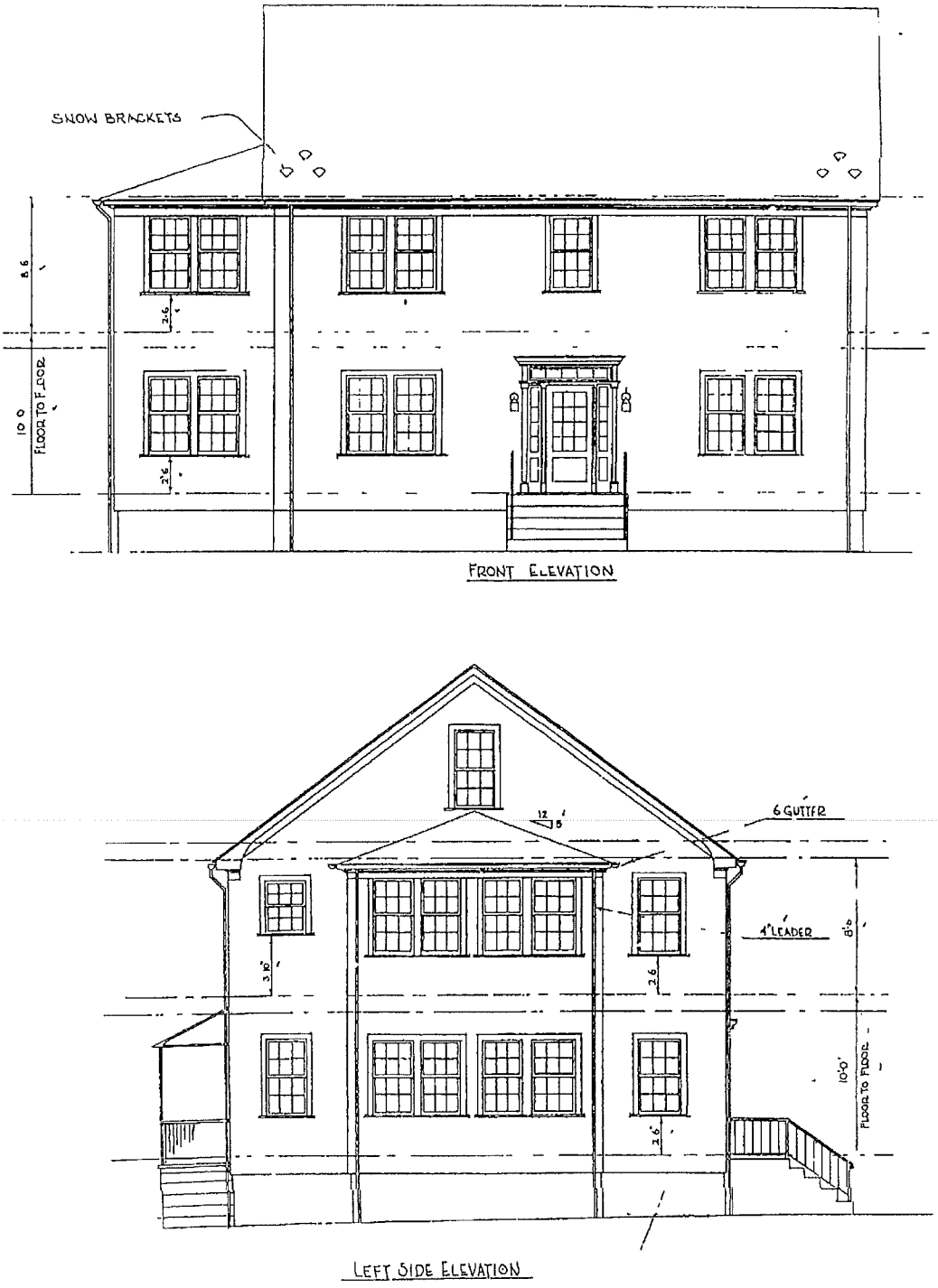

Figure 17. Building 102, Standardized Family Housing, details from blueprint # DP-27541, *Quarters 102, Elevations,* August 30, 1939, War Plans Division, Ordnance Corps, Picatinny Arsenal, Morris County, New Jersey *(on file in DPW, Picatinny Arsenal).*

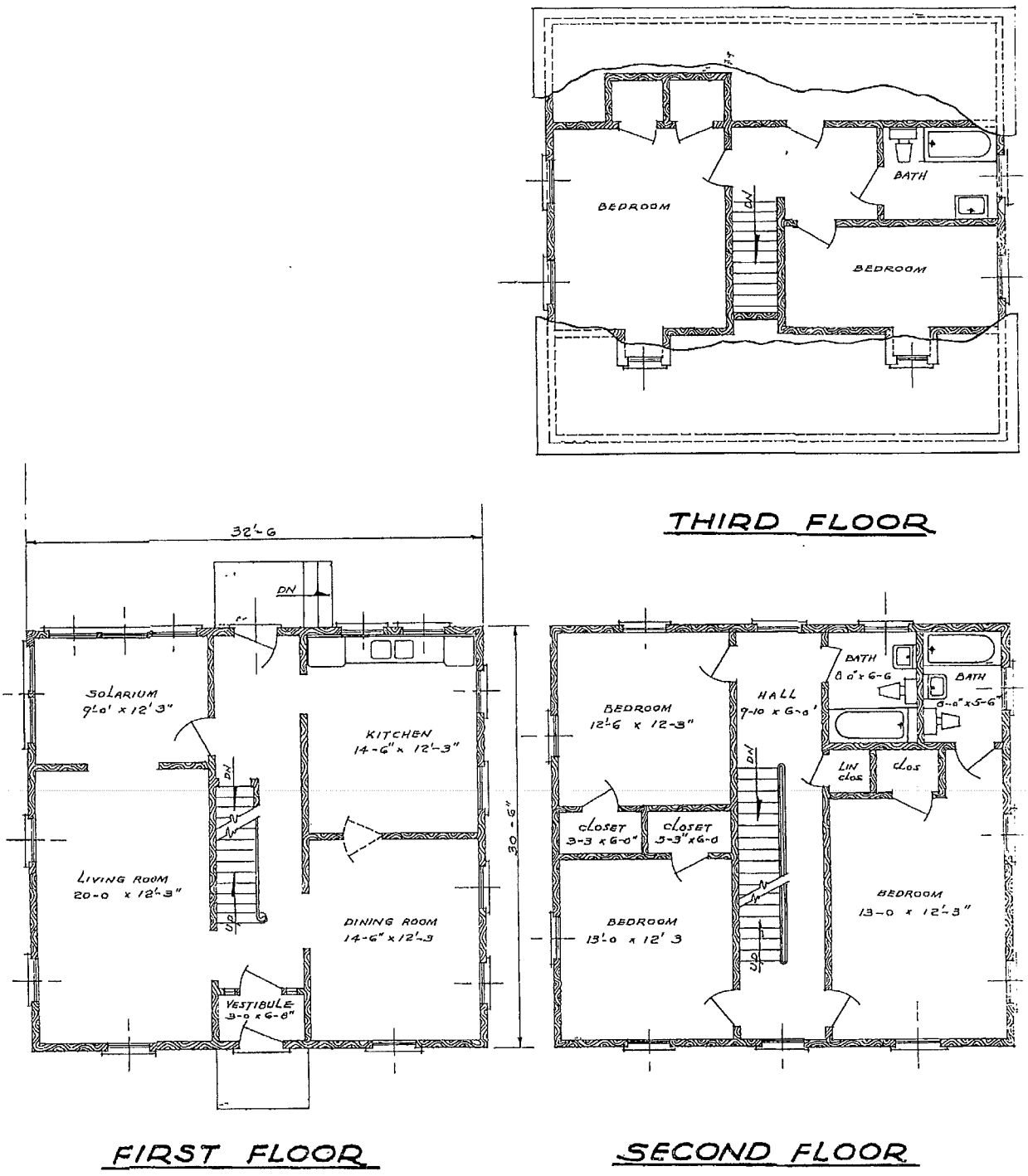

Figure 18. Building 106, Standardized Family Housing, blueprint # SK-54675, *Quarters No. 106*, copied July 16, 1963. Picatinny Arsenal, Morris County, New Jersey *(on file in DPW, Picatinny Arsenal).*

Figure 19. Building 3244, Officers Duplex (1945) on the former Lake Denmark Naval Depot. Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

An elegant Colonial Revival Duplex (Building 3244) is located in the former Navy section of Picatinny (Figure 19). This large brick duplex features front doors with heavy pediments and surrounds and four front-gabled dormers that punctuate the side-gabled roof. Each side has a one-story wing, originally, perhaps, a side porch that has now been turned into a sun room. These are most standardized plans which can be found on a number of Army and Navy bases. During the 1930s, when this duplex was built, the Navy was particularly fond of using designs by Giffles and Valet, Detroit, Michigan. Most of their military buildings from this period were in a well-proportioned but restrained Georgian style, as is this building. Original blueprints for these structures were not filed in the Department of Public Works (DPW) at Picatinny, but it can be safely assumed that this was at least a Giffles and Valet-inspired creation. The Naval Enlisted Men's Barracks, Building 3050, was probably also designed by this same firm which had created numerous barracks of this style on the Norfolk Navy Base, Virginia (Figures 20, 21, and 22).

3.1.7 Standardized Structure Plans

The most common standardized building plan found on Picatinny Arsenal shelters cars instead of people. Many of the quarters were built before the automobile became the dominant means of transportation. As discussed earlier in this report, an important public transportation system utilizing buses was in place by World War II. The automobile's eventual replacement of the bus in the post-war era demanded garages for winter protection. In response, the Army built garages of standard plans (Figure 23) which utilized a number of different types of building materials including brick, stone and wood.

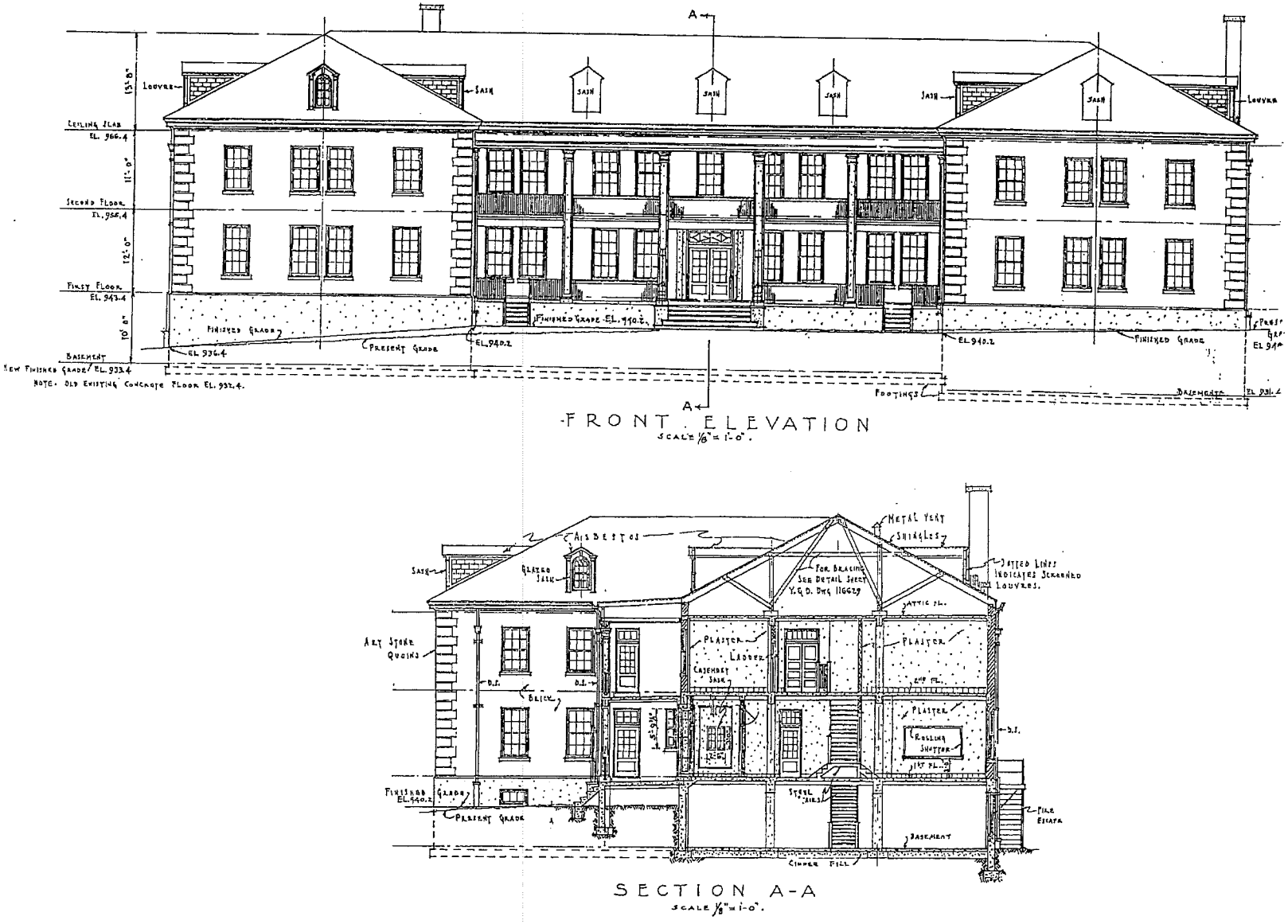

Figure 20. Building 3050, Naval Enlisted Men's Barracks, detail from blueprint # DP-142324, *Marine Barracks Building B, Location Plan and Elevation*, Jan. 31, 1943, Third Naval District, New York. Picatinny Arsenal, Morris County, New Jersey *(on file in DPW, Picatinny Arsenal).*

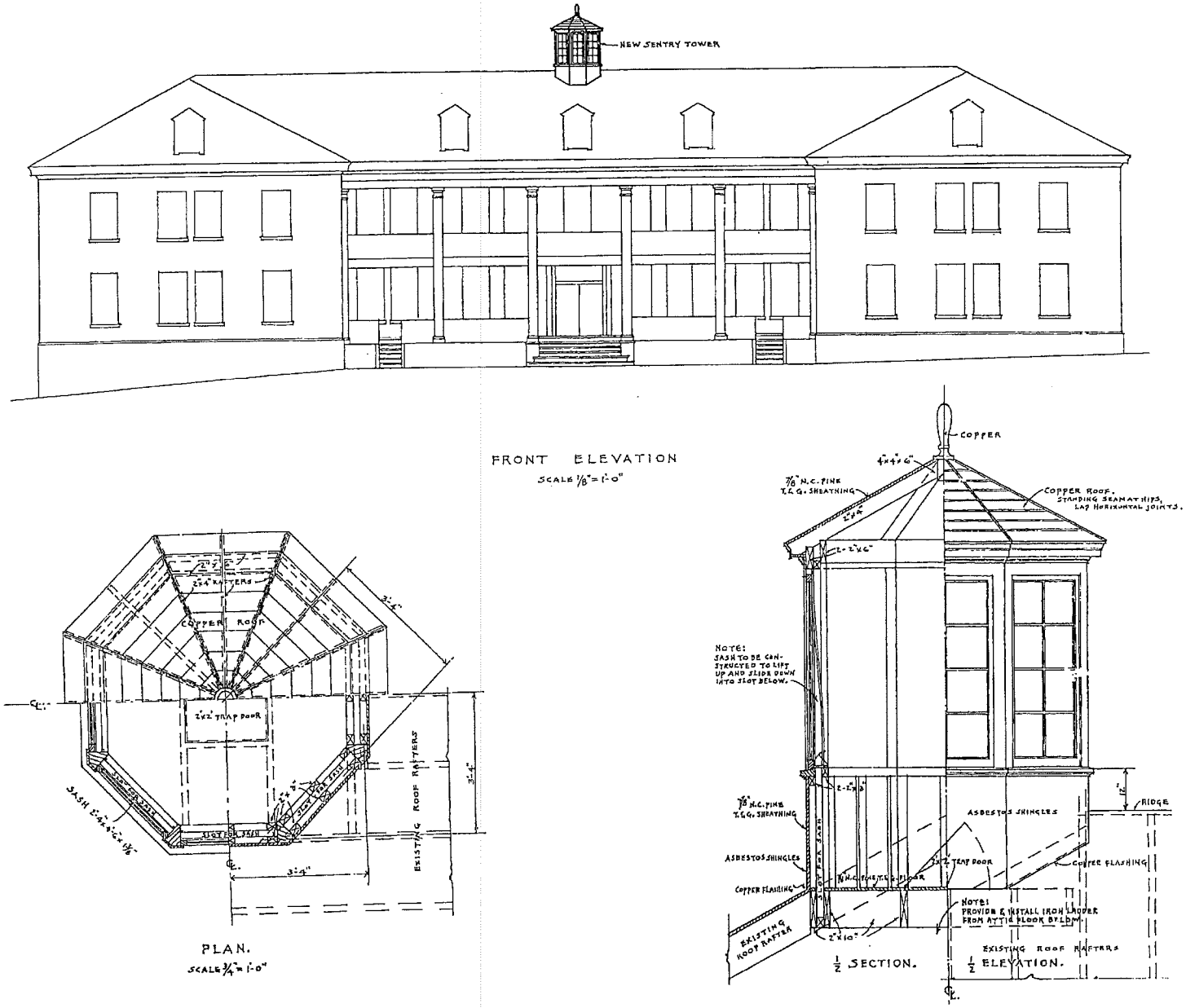

Figure 21. Building 3050, Naval Enlisted Men's Barracks, details from blueprint # DP-142331, *Marine Barracks Sentry Tower*, Aug. 14, 1943, Picatinny Arsenal, Morris County, New Jersey *(on file in DPW, Picatinny Arsenal).*

Figure 22. Building 3050, Naval Enlisted Men's Barracks (1943), now Detachment Headquarters on the former Lake Denmark Navy Depot. Picatinny Arsenal, Morris County, New Jersey *(Nolte 1997).*

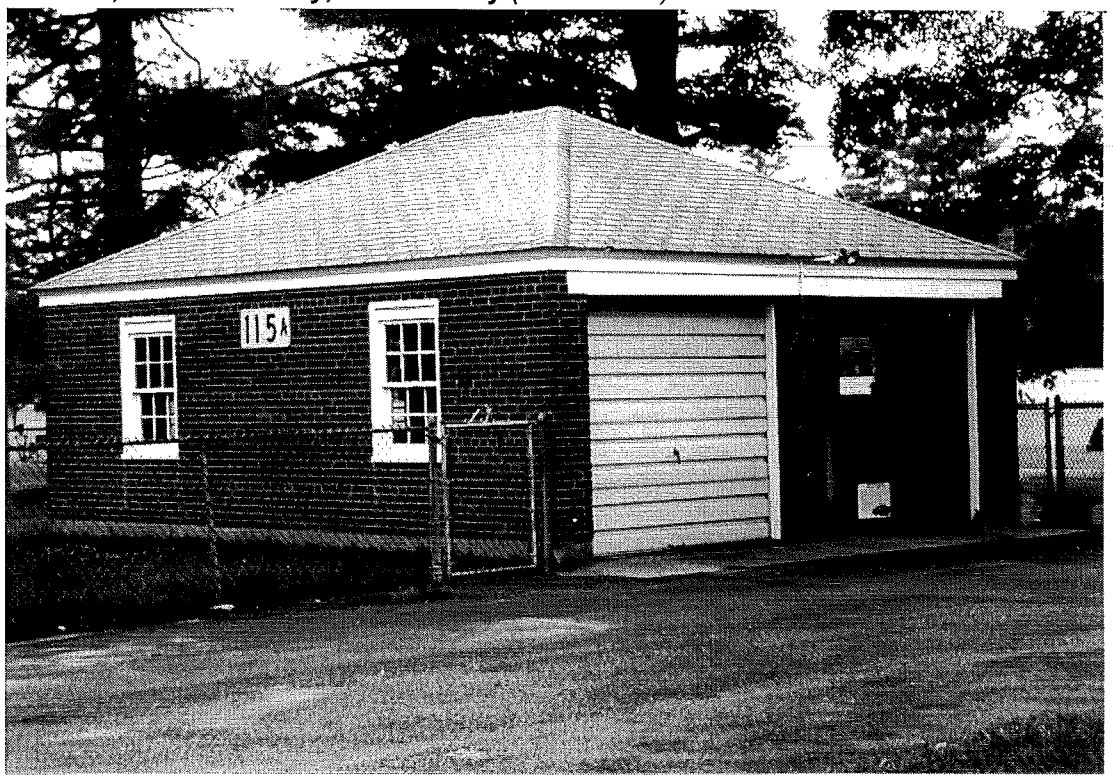

Figure 23. Building 115A, standardized garage plan (1943). Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

Bldg. No.	Date of Const	Historic Name	Present Name
33	1922-33	Vehicle Maintenance Shop General Purpose Admin.	Vehicle Maintenance Shop/ General Purpose Administration
79	1942	Field Office/Bombproof Shelter	Realignment Engineering Office
290	1960	Sentry Station	Sentry Station
337	1914-1928	Boat House	Picatinny Rod and Gun Club
355	1938-40	Engineering Research	Engineering Administration
620C	1943	Test Range	Test Range
625	1942	Closed Bomb Testing	Ordnance Building
1217	1944	Surveillance Building	Ammo Hut
3008	pre-1926	General Purpose Admin.	General Purpose Administration
3010	1902	Ordnance Administration	NYCOE Office
3052	1926	unknown	Skills Development Center
3057	1942	Tennis Courts	Tennis Courts
3226	1942	Softball Field	Little League Field
3228	1931-1963	Theater	Open Dining NCO/ General Installation Building
3305	1939	General Instruments Bldg	Administration R&D
3329	1939	Fabrication Reliability	Exchange Warehouse
3342	1939	Engineering Machine Shop	General Administration

During the 1930s, the Army had created a set of standardized plans, called the 700 and 800 Series, for a number of typical structures that would be required during the event of war. Based in part on the inadequate 600 Series of World War I, the new blueprints—for structures as varied as barracks, chapels, warehouses, and movie theaters—incorporated the requirements of a modern Army such as indoor toilets and heating and accounted for the sheer numbers of solders using any type of facility. Standardized plans were not just for quick mobilization during war, they were also a way of controlling costs and materials and of standardizing construction quality beyond times of war.

The Army experimented with a number of strategies for building construction on a large scale including the use of pre-fabricated structures. Pre-fabricated buildings, the Army reasoned, could be constructed on site by the soldiers themselves. This idea met with immediate resistance from the construction trades. A number of building units, however, were pre-fabricated, the most legendary being the Quonset Hut, named for Quonset Point, New Jersey where the buildings were fabricated. Never a favorite of the

Figure 24. Building 79, Field Office (1942), now Realignment Engineering Office. Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

Army, the Quonset Hut became synonymous with the Navy. Several Quonset Huts are extant on the former Navy Depot at Picatinny. The DOD has placed the Quonset Hut in the category of Temporary World War II buildings.

Standard Army plans were often generic. Actual plans were designed for structures labeled only *25' 4" Wide Buildings* or *29' 6" Wide Two Story* (Kriv n.d.). The object of standardized plans was to create blueprints of the most general type which could be used for a number of purposes. Because of this generic approach to building, many of Picatinny's standardized plan buildings already fall into other mitigation categories. Field offices were commonly built from standardized plans, such as Building 79 (Figure 24).

The importance of recreational activities and team sports in building camaraderie was appreciated by the military. In the twentieth century installations began to plan areas for recreation. Softball fields, tennis courts and golf courses became a regular part of any military facility. These common recreational facilities were designed and constructed using standardized plans.

The standardized structures at Picatinny do not represent a distinctive design or construction nor do they represent any important themes associated with the facility. Given the lack of significance, standardized buildings at Picatinny Arsenal are not eligible for the NRHP. Table 2, *Index of Surveyed Structures,* provides a detailed review of each of these buildings.

3.1.8 Common New Jersey House Styles

The number of military-built quarters on Picatinny is small. An almost equal number of civilian-built homes are scattered across the installation which the Army obtained with land purchases. While one house is a fine vernacular expression of a Victorian farmhouse, most of the others are undistinguished bungalows, Folk National farm houses, Four Squares and Colonial Revival-style homes which are present throughout New Jersey. The Army has added separate garages to many of these quarters.

Bldg. No.	Const. Date	Historic Name	Present Name
101	pre-1880	Residence	Quarters (LC MJ)
105	pre-1880	Residence	Quarters (LC MJ)
106	1899	Officer's Quarters	Quarters (Col.)
110	pre-1880	Superintendent's House	Distinguished Visitors' Quarters/ Guest Quarters
1109	ca.1920	Residence	Quarters
1111	1936	Residence	Quarters (LC MJ)
1123	ca.1890	Residence	Quarters (LC, MJ)
1125	ca.1920	Residence	Quarters (Col.)
1127	ca.1930	Garage	Garage
1130	ca.1890	Residence	Quarters (LC, MJ)
1132	ca.1900	Residence	Quarters (LC, MJ)
1138	ca.1918	Residence	Quarters (LC, MJ)
1140	ca.1890	Residence	Quarters (CG,WO)
1142	ca.1920	Residence	Quarters (NCO)
1144	ca. 1930	Residence	Quarters (CG, WO)
1146	1938	Residence	Quarters (CG,WO)
1147	ca.1900	Residence	Quarters (CG,WO)
1149	ca.1920	Residence	Quarters (NCO)
1398	ca. 1920	Residence	Quarters (LCMJ)
3119	1785-1956	Doland House	Quarters
3327	1933	Quarters	Quarters (NCO)

Folk National farmhouses constitute a large portion of the non-Army-built housing now used on Picatinny. As related in the Historic Overview section of this report, the land around Picatinny was not favorable for agricultural pursuits beyond subsistence and cattle grazing, and few farmers engaged in such activities. Other rural residents worked in the more prosperous mining and forging industries that dotted the landscape around the Picatinny area. Eventually the growth of Picatinny Arsenal and the Lake Denmark Depot encouraged construction of communities very close to the two bases such as Spicertown which later began as physical part of those bases.

Between 1850 and 1900, with the expansion of the railroads, the nature of American folk housing changed significantly. Rural communities were no longer restricted to local building materials and their stylistic limits. Lumber, brick, windows, decorative elements, pattern books and even the pre-cut houses themselves became available through the railroad. Traditional building techniques were abandoned or translated into the newly available pattern book styles. Easy to construct inexpensive homes were obtainable by everyone, even in the most remote parts of America. As a result, houses in rural Oklahoma began to look like houses in rural New Jersey.

Folk National house styles are of six general types: gable-front, gable-front and wing, hall and parlor, I-plan, side gable massed plan, and pyramidal (McAlester 1984). These vernacular styles are most noted for their plainness of form. Decorative elements are few, so that the form itself becomes a decorative element. Such houses are common throughout America, including New Jersey where they illustrate the state's strong ties to its agricultural past. At Picatinny an example of a Folk National house is Quarters 105 (Figure 25).

Another represented style at Picatinny is Vernacular Victorian. Quarters 1130, located in Spicertown, is an excellent example of the translation of two high styles—Queen Anne and Stick—into a more generic text (Figure 26). The exuberance of the Victorian period has been captured in this house which appears to be the oldest and one of the finest buildings in the Spicertown area. Finely executed carpentry work adorns the house, fish scale shingles appear in the upper gable areas and an abundance of stained glass enhances the windows. While an interesting and beautiful translation of Victorian it does not appear to meet any of the criteria necessary for nomination to the NRHP.

Picatinny also has some four square houses which were popular in New Jersey towns after World War I (Guter and Foster 1992). Four squares are less a style than a house type. The house has a nearly square perimeter plan and contains three or four rooms on each level. These plain houses could be embellished in almost any way and were popular because of their economy in construction and maintenance. Quarters 1111 is a good example of a four square at Picatinny.

Colonial Revival houses are also present on the arsenal. Colonial Revival, which refers to an entire rebirth of interest in the early English and Dutch architecture on the Atlantic Seaboard, was popular from about 1880-1955 (McAlester 1984). Colonial Revival,

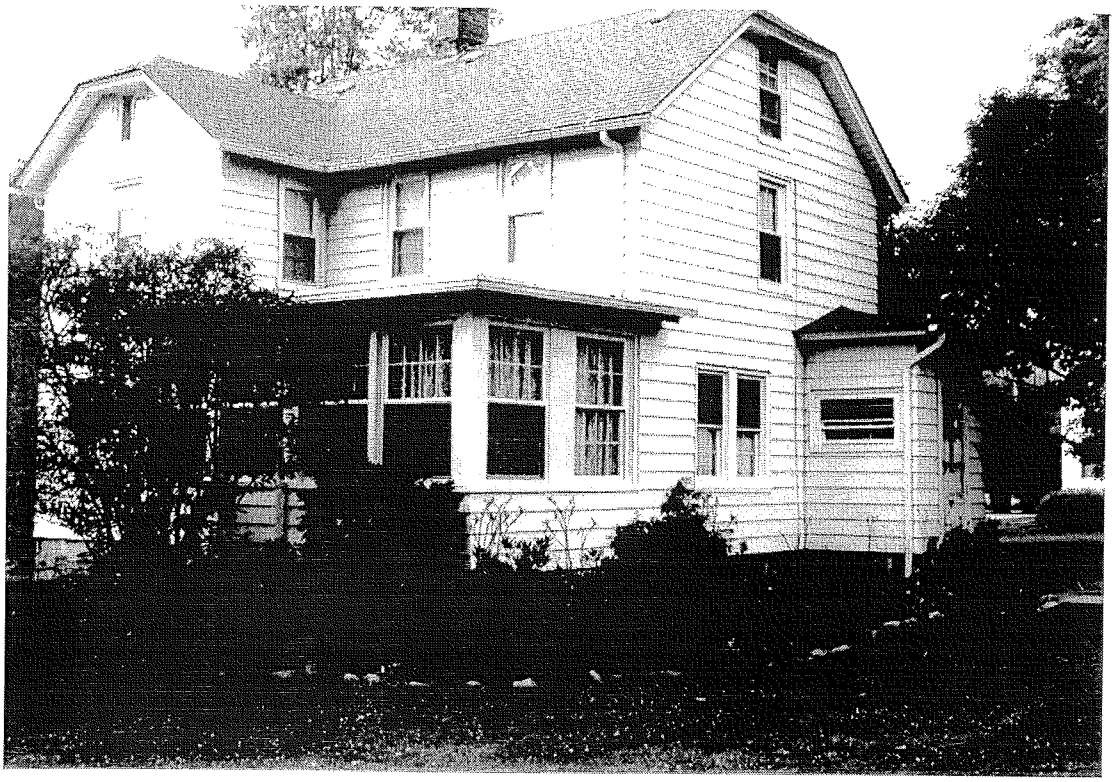

Figure 25. Building 105, Folk National style house (1886), now quarters. Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

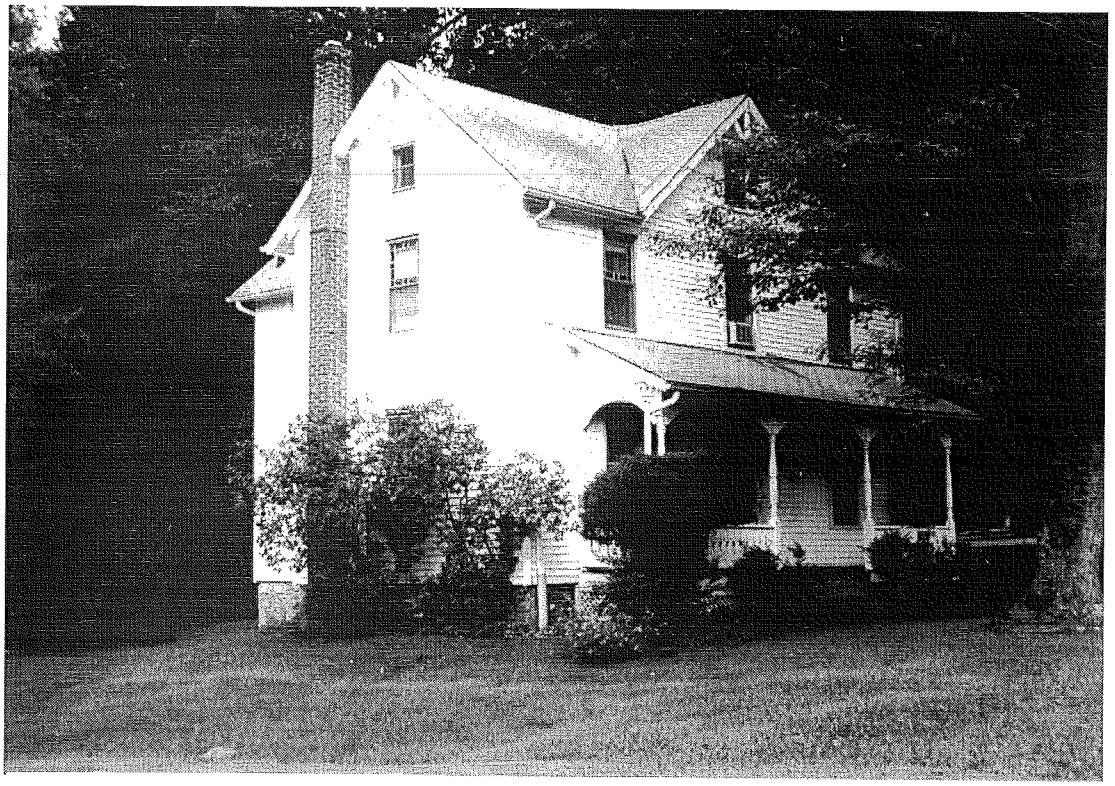

Figure 26. Building 1130, Vernacular Victorian house (ca. 1890), now quarters. Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

which purported to be a return to the pure classical forms of architecture was more a blending of Adam and Georgian with strong influences from the Post-Medieval English and Dutch Colonial traditions. Colonial Revival was one of the most popular house styles in New Jersey during the twentieth century (Schwartz 1983).

Over time (and distance), the decorative elements of the style became less and the allusion to form and classical elements became more common. In part this was an economical solution to building a house while at the same time acknowledging one's patriotism (Schwartz 1983). The Colonial Revival houses at Picatinny fall into this later time period. Quarters 1125 is an excellent example of the most basic Colonial Revival form. The austerity of Quarters 1142 is broken by a small Colonial Revival front porch. These small porches are often enclosed; finding a house with an intact porch is rare.

Also represented at Picatinny is the bungalow style. Between 1900 and 1930, the bungalow was the dominant style for smaller houses in the United States. Although begun in California, the style quickly spread to all parts of the country. The American middle class could no longer afford eccentric and personalized homes because the cost of materials and labor was soaring, as was heating and the cost of domestic help. These combined problems created a demand for lower-cost, easy to maintain houses. Social Historian, Gwendolyn Wright, notes: "The ideal middle class dwelling underwent a major transformation: from an exuberant, highly personalized display of irregular shapes, picturesque contrasts, and varieties of ornament, supposedly symbolizing the uniqueness of the family to a restrained and simple dwelling" (Jakle, Bastian and Mayer 1989:172). Simplicity and organization were the orders of the time. Nevertheless, bungalows could be quite large and highly decorated. It was a highly adaptable house form.

One cannot discuss bungalows without discussing pattern books and mail order companies. Popular magazines of the day such as *House Beautiful, House and Garden, The Architect, The Western Architect,* and *The Ladies Home Journal* extensively covered these houses, giving the entire country a familiarity with the style. In turn, large numbers of individuals began to seek out pattern books for the houses and these books began to appear on the market. For instance, the J.D. Loizeaux Lumber Company of Plainfield, New Jersey and the Loizeaux Builders Supply Co. of Elizabeth, New Jersey, in 1927 offered 136 "Attractive and Practical Home Designs" and had done so for more than thirty years (Loizeaux 1992:1). Gordon Van-Tine, Sears, Roebuck and Co., and Aladdin Co. also offered pre-cut houses for sale, most of them some variation of the bungalow. Bungalows became ubiquitous on the American landscape although their popularity in northern towns was never as great as it was in the south and west (Jakle, Bastian and Mayer 1989:172).

Picatinny's bungalows range from the small and plain, like Quarters 1127 (Figure 27), to the large and decorative, such as Quarters 1138.

At the time of PCI's initial study at Picatinny Arsenal several research issues about the Doland House (Building 3119; Figure 28) remained to be addressed. In November 1998 PCI conducted a cultural resource investigation on the house to determine if any

Figure 27. Building 1127, bungalow style house (ca. 1925) in the former Spicertown area, now quarters. Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

Figure 28. Building 3119, the Doland House, now quarters. Picatinny Arsenal, Morris County, New Jersey *(Kaplan 1996).*

portions exist from the eighteenth century as well as to better trace the history of the structure and delineate the house site boundaries. PCI has recommended that the structure is not eligible for listing in the NRHP (see Nolte et al. 1999).

Finally, the Vernacular Victorian farmhouse with high style pretensions (Building 1130; see Figure 26) in the former Spicertown area is a fine example of vernacular expression, but is not eligible for inclusion in the NRHP.

The common New Jersey house styles at Picatinny do not represent a distinctive design or construction nor do they represent any important themes associated with the facility. Given the lack of significance, the common New Jersey house styles represented at Picatinny Arsenal are not eligible for the NRHP. Table 2, *Index of Surveyed Structures*, provides a detailed review of each of these buildings.

3.1.9 Transportation Infrastructure

Bldg. No.	Const Date	Historic Name	Present Name
B-4	1917-1936	Bridge	Bridge
B-14	1937	Railroad Bridge	Railroad Bridge
B-19	1930	Footbridge	Golf Course Footbridge
no number	1880s	Railroad Tracks	Railroad Tracks
no number	1885	Cannon Gates	Cannon Gates

When military installations are designed and built, a primary concern is transportation of troops, civilians, supplies and material on and off the base. Roads are usually the first items constructed at a site since they are necessary for moving all other building-related items. A number of toll roads existed in the area around Picatinny Arsenal and several were expanded, without the tolls, for use through the facility. Initially, the army spent $387,000.00 on the construction and improvement of Picatinny Arsenal's roads and grounds (Rogers 1931).

By 1930 there were 4.1 miles of concrete roads; 8.2 miles of improved roads; 10.2 miles of unimproved roads, all government-owned, and there were approximately 1.8 miles of improved dirt roads and .42 mile of concrete roads, both owned by the Township (Rogers 1931). Bridges were an integral part of Picatinny's road system which traverses large swampy areas. Bridge B-4 was originally constructed in 1917 as part of a continuing road building effort. By 1966 this small, narrow, poured concrete bridge was inadequate for modern traffic. A major widening and renovation effort was undertaken to upgrade it (DPW, Blueprint # DP-144039 and 144091, 1966). Bridge B-4 has undergone extensive alterations, thereby degrading its integrity and, further, lacks significant historical or architectural merit. It is PCI's professional opinion, based on the lack of significance and integrity, that Bridge B-4 is ineligible for listing in the NRHP.

The remoteness of the Powder Depot from rail or water transportation was a principal concern when the site was selected. The selection was made with the understanding that the Army would build a branch railroad from Port Orca (Wharton), a distance of three miles, to connect with the Delaware, Lackawanna & Western Railroad, the High Bridge Branch of the Central Railroad of New Jersey, and the Morris Canal. In so doing, Picatinny would have complete rail connections in all directions (Rogers 1931).

To facilitate access to the installation and the general shipment of freight, the Morris County Railroad began building a rail line through the depot in 1886. The track had a 100-foot-wide right-of-way. By 1887, 23½ miles (37 km) of track traversed the powder depot and connected it to the Delaware, Lackawanna & Western Railroad and the Dover Central Railroad of New Jersey at Wharton. The track was laid out by the Morris County Railroad Co. of New Jersey under the terms of a 9-acre right-of-way given by a 99-year lease. A privately owned line, the Northern and Wharton Railroad, also ran through the arsenal and maintained five associated stations.

Initial Army investment in the construction of railroads at Picatinny Arsenal was $481,000.00. By 1930, the arsenal had approximately 25 miles of railroad tracks and slightly more than 24 miles of roads (Rogers 1931). The railroad system became vital to Picatinny; new track was added every few years (Rogers 1931), covering its largest area during World War II (Figure 29). Spur lines fed into every industrial area and all large warehouse groupings were completely serviced by rail including the farthest reaches in the 900 Area. A World War II railroad map was not available for the Lake Denmark Depot, but it can be safely assumed that it too reached its highest peak of trackage during World War II. By 1949, Picatinny was so criss-crossed with rail lines that it required five Classification Yards to keep up with the traffic (Figure 30).

After the war, the requirement for such extensive trackage lessened. Whole industrial facilities were closed and material was not being generated at the same rate. Picatinny's work emphasis gradually returned to R&D and the railroad system was allowed to fall into disrepair; in many places track was removed. In 1964 Picatinny undertook an extensive rehabilitation of the arsenal's railroad system. More than 21 miles of track were restored, reconstructed or were under consideration for reconstruction. Three railroad bridges (Bridges 11, 12 and 13) and a turnout were replaced, and slightly more than three miles of abandoned track were removed (DPW, Blueprint #DP-59541 1964). Some abandoned tracks became the bed for walking and jogging paths.

Today portions of the railroad system are found throughout Picatinny and the former Lake Denmark Depot. The web of track so essential to World War II production exists only in fragments and is not complete in any of the production or warehouse areas. The earliest portions of the system which ran roughly down Parker Road are completely covered in asphalt or torn up to accommodate the golf course. It is PCI's professional opinion that the railroad system, including Railroad Bridge #14, is not eligible for nomination to the NRHP since it lacks integrity. Further, no one depot or industrial area was integral to the war effort; our success was instead a combined effort of many military industrial sites. While

Figure 29. Location Plan, 1942 Railroad Program, U.S. Engineer Office, Phila., PA, Plan No. 6538-1750. Picatinny Arsenal, Morris County, New Jersey *(on file in DPW, Picatinny Arsenal).*

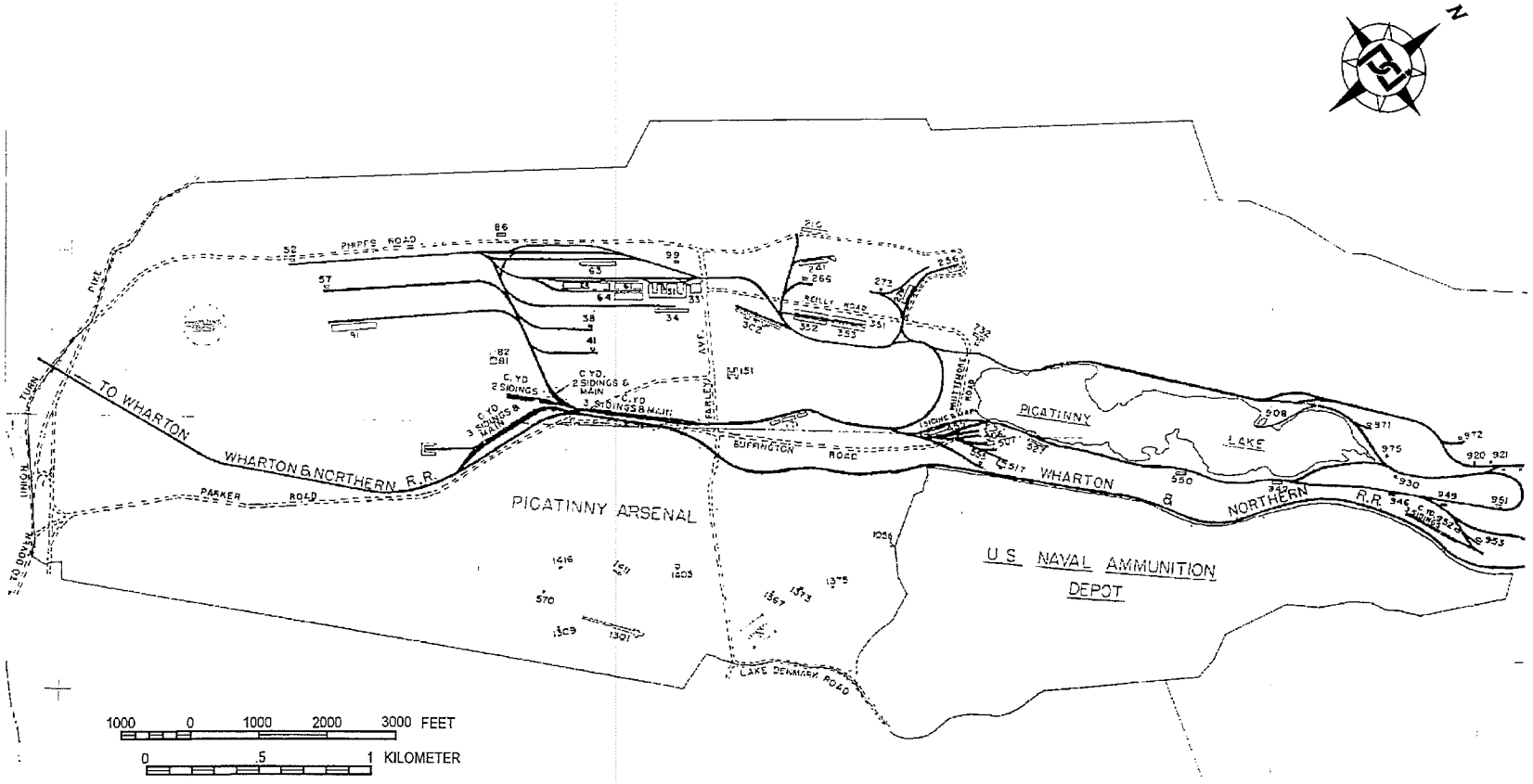

Figure 30. Outline Map, Railroad System, 18 April 1949, Plan no. SK-29495. Picatinny Arsenal, Morris County, New Jersey *(on file in DPW, Picatinny Arsenal).*

the tracks have a close association with Picatinny's war effort, that is not a sufficient reason to give the tracks special historical significance.

Although concerns for vehicular traffic are important at military installations, pedestrian traffic must also be considered. Large tracts of Picatinny are in low-lying swampy areas. Over the years many of these areas were drained and used for a number of purposes, among them recreational. Bridge B-19 was created as a footbridge across Green Pond Brook on the golf course. The golf course was an early recreational area at the arsenal. Several footbridges of the same type as B-19 can be found on the course. These bridges have no historical or architectural merit. Because they lack architectural or historical significance they are not eligible for listing to the NRHP.

3.1.10 Loss of Integrity

Integrity is the ability of a property to convey its significance. To be placed in the NRHP a building must be significant and it must have integrity. Integrity is determined by seven elements: location, design, setting, materials, workmanship, feeling and association. To retain integrity, a property must possess several, and usually most, of these aspects. Although determining integrity is subjective, this is tempered by an understanding of the property's physical features and how they relate to its significance (U.S. Department of the Interior 1995).

Bldg. No.	Date of Const	Historic Name	Present Name
9	1942	General Purpose Administration	General Purpose Administration
10	1941	General Purpose Administration	General Purpose Administration
11	1941	Carpenter's Shop	Facilities Eng. Maintenance Shop
13	1930	Carpenter's Shop	Operations General Purpose
23	1939	Processing	General Storehouse
31	1930	Precision Machine Shop	Precision Machine Shop
108	1882	Storehouse/Schoolhouse/Qtrs	Quarters (COL)
117	1885	Stable/Storehouse No. 5/ Transient Officers Quarters	Quarters (LC MJ)
120	1918	Enlisted Men's Qtrs	Civilian Personnel
214	1941	Change House	Change House
216	1941	Change House	Administration Building R & D
221	1941	Binder Preparation Plant Cast	HighOrdnance Facility
230	1918	Primer and Detonator Loading	Ordnance Facility

Bldg. No.	Date of Const	Historic Name	Present Name
232	1918	Detonator Loading	Ordnance Facility
232C	1943	Equipment Building	Air Conditioning Plant
235	1918	Mercury Fulminate Mixing	Ordnance Facility
240	1942	Change House	Dispatch/Administration General Purpose
252	1918	Press Loading	Ordnance Facility
252C	1920	Ammonium Picrate Storage	Ready Magazine
252 A	1942	Storage	Flammable Materials Storehouse
266 A	1938	Storage	Flammable Materials Storehouse
267	1941	Change House	Ordnance Facility
268	1941	Primary Explosives/ Detonator Painting	General Storehouse
281	1921	Pelleting/Offices/Change House	Administration/OED Laboratory
282	1942	Pelleting Building	Office Init R&D Lab.
291	1942	Guard Tower	Radio Tower
332	1942	Change House	Change House
382	1942	Loading Branch Office	General Purpose Administration
405	1920	Chemistry Lab	General Purpose Lab
408	1920	Nitrating Bldg.	General Purpose Lab
424	1903	Combustible Cartridge Case	Ordnance Facility Factory
424C	1938	Nitroglycerine Separation Bldg.	General Purpose Mag
427	1938	Experimental Propellants Plants	Ordnance Facility
427B	1939	Dry House	Ordnance
429	1942	Chemistry Laboratory	Propellant Systems Facility
430	1922	Laboratory/Propulsion Systems	Propellant Systems Facility
448	1930	Howitzer and Aliquot Bag Loading	Ordnance Facility
448A	1930	Ammunition Components Magazine	Fixed Ammunition Magazine

Bldg. No.	Date of Const	Historic Name	Present Name
448 C	1942	Weighing and Mixing	General Storehouse
452 B	1930	Storage	General Purpose Magazine
454	1930	Bag Charge Filling Plant	Ordnance Facility
455	1930	Cloth Storage, Dyeing, Cutting	Engineering Administration Bldg. and Sewing
456	1931	Field Office	Engineering Administration Building
456B	1941	Sentry Station	Sentry Station
462	1942	Tracer Loading Building	Ordnance Facility ("Chemistry Lab.")
462A	1941	General Purpose Magazine	General Purpose Magazine
462B	1942	General Purpose Magazine	General Purpose Magazine
477	1945	Non-gaseous Projectile Loadings	Ordnance facility
507	1929	Railroad Engine Shop	Railroad Engine House
507A	1941	Change House	Spare Parts Storage
507B	1942	Equipment Inspection Office/	Offices Spare Parts Storage
514	1930	Boiling Tub House	General Purpose Laboratory
525	1930	Control Laboratory/Change House	Electronic Equipment Facility
525A	1930	Acid Laboratory	Chemistry Laboratory
537A	1938	Storehouse	Flammable Materials Storehouse
542B	1930	Change House	Change House
550A	1921	Air Raid Shelter	Air Raid Shelter
603A	1941	Climate Control House	Ordnance Facility
611C	1934	Shop	Ordnance Facility
717	1926-41	Major Caliber Projectile Loading Plant	Physics Laboratory Plant
717A	1941	Ordnance Facility	Control and Data Recording
806	1928	Bombproof Shelter/Change House	Ordnance Administration Building
807	1930	Receiving, Cleaning and Inspection	Ordnance Facility
810	1930	Loading and Cooling Plant	Ordnance Facility
813	1930	Drilling and Assembly Plant	Ordnance Facility
816	1930	Assembly Building	Ordnance Facility
820	1930	Packing and Shipping building	Ordnance Facility

Bldg. No.	Date of Const	Historic Name	Present Name
824	1939	TNT Screening	Ordnance Facility
1053	1931	Office and Change House	Facility Engineering
1071D	1941	Dry House	Ordnance Facility
1094	1942	Screening and Pulverizing Bldg.	General Storehouse
1095	1943	Change House	Community Center
1303	1945	Office and Rest House	General Purpose Magazine
1609	1942	Machine Shop	Ordnance Facility
1610	1942	Offices/Change House Administration	General Purpose
1617	1942	Dry House	Dry House
1619	1942	Radiographic Lab	General Purpose Lab
3109	1943	Environmental Conditioning	Ordnance Facility
3173	1902	Carpenter Shop	Youth Center
3176	1902	Paint Shop	General Administration
3221	1911	Blacksmith's Shop	Post Chapel

Clearly, integrity is lost when a structure has been allowed to deteriorate or has been severely damaged by weather or fire/explosion and there are a few such structures on Picatinny. In Picatinny's case, a number of these buildings have been left to deteriorate because of the excessive levels of toxic chemicals found in and around the structures, a not uncommon occurrence on properties associated with industrial processes. Others, like a slug butt (#634S), have deteriorated from disuse. This is especially true of structures which have had intensive, potentially destructive past uses —like the gravity fed coal bin (#3175)—that have contributed to its present dilapidation. Eight buildings of the 500 were derelict beyond repair or were already demolished at the time of this review. They are:

Bldg. No.	Date of Const	Historic Name	Present Name
326	1918	Shell Sandblasting Maintenance Shop	Facility Engineering
445 A	1918	Small Arms Pyrotechnic Igloo Storage	Magazine
611D	ca. 1940	Slug Butt	Ordnance Facility ("Slug Butt")
634S	1930	Slug Butt	Ordnance Facility
642B	1945	Turret	General Purpose Magazine ("X-Ray Gun Test Site")
732 H	1943	High Explosives	High Explosives Magazine

Bldg. No.	Date of Const	Historic Name	Present Name
1116	ca. 1930	Garage	Garage
3175	1901	Coal Bin	Coal Bin

Picatinny has scheduled a number of structures for demolition and these structures are now undergoing preparations to be presented to the New Jersey HPO or are already under consideration by the New Jersey HPO. Buildings to be demolished include:

Bldg. No.	Date of Const	Historic Name	Present Name
22	1918	Precision Machine Shop	Precision Machine Shop
24	1942	Plating Shop/Operations and Shipping Building	
213	1916	Fuse Testing and Loading	Ordnance Facility
241	1920-42	Demilling/Disassembly Explosive "D" Loading Plant	Facilities Engineering Maintenance Grounds/Indr Fir/Archery Range
304	1941	Storehouse	Facility Engineering Storehouse
308	1922	Sewage Pump/Facility Engineering Storehouse	Sewage Pump/Facility Engineering Storehouse
311	1941	Gasoline Station	Gasoline Station
445	1930	Physics Laboratory	Gun Bag Loading
605	1924	Screening Building	Ordnance Facility
722	1920	Office and Testing Laboratory	Physics Laboratory
732	1938	Pyrotechnic Pellet/Receiving/ Packing & Shipping Building	Ordnance Facility
909	1918	Magazine	General Storehouse
935	1941	Air Raid Shelter	Air Raid Shelter
939	1918	Magazine	General Purpose Magazine
975	1942	Bombardment Shelter	Sup SVC Administration Building
1071	1942	Crystallization Building	Ordnance Facility
1104	ca.1920	Residence	Quarters (NCO)
1105	ca.1900	Residence	Quarters (Col.)
1113	ca.1900	Residence	Quarters (BOQ-Male)
1117	ca.1900	Residence	Quarters (Col.)
1118	ca.1900	Residence	Quarters (BOQ-Male)

Bldg. No.	Date of Const	Historic Name	Present Name
1363	1945	Neutralizing Building	Neutralizing Building
1418	1942	Storage and Shipping Building	Ordnance Facility
1604	1942	Pyrotechnics Assembly Plant	Ordnance Facility
1616	1942	Pyrotechnic Preparation	Ordnance Facility
3012	1905	Hydrant House	Hydrant House
3038	1918	Igloo Storage	Igloo Storage
3045	1918	Igloo Storage	Igloo Storage
3140	1934	Flammable Materials Storehouse	Facility Engineering Storehouse
3162	1942	Covered Storage	Covered Storage
3178	1905	Paint Locker Storehouse	Flammable Material
3201	1934	Water Treatment Plant	Water Treatment Plant
3219	1938	Lumber Salvage Shop	Snack Bar
3231	1944	Ice House	Quarters (G & WO)
3330	1939	Storage	General Purpose Warehouse
3408	1944	Barracks	National Guard Reserve Center/Army Reserve Center

Integrity can also be lost when a structure has been changed beyond recognition—as in the case of the Museum (Building #2)—or been moved. But more importantly for this evaluation, integrity can be lost when the setting of a structure has been changed.

Setting is the physical environment of a historic property. While location refers to a specific place where a structure was built or an event occurred, setting refers to the character of the place. It involves how, not just where, the property is situated and its relationship to surrounding features and open space. Setting reflects the basic physical conditions under which a property was built and the functions it was intended to serve.

A great many structures on Picatinny associated with industrial production have lost their settings and setting is the very element that defines them. An Army industrial setting is composed of a number of large and small buildings, all directly related. The industrial process was spread out among several structures to reduce the chances of sympathetic explosions and the loss of an entire plant. The loss of one building specializing in only one activity could be quickly replaced, whereas an entire factory housed in a single building could not be so easily restored. This concern resulted in construction of redundant buildings or easily adaptable ones, reducing the risk of complete loss of production.

Through trial and error and the exigencies brought about by the First World War, the Army discovered that the best industrial buildings were those most easily changed. A building outfitted to load only one type of ammunition was useless for loading another type; therefore, Army industrial buildings tended to be large open span structures with fire and blast walls at various intervals. A few possessed specialized cranes, gravity feeding systems and isolation rooms, but they were never so specialized that they could not be adapted to other uses or to the movement of new materials. Traditional magazines, office buildings/change houses, storehouses and power generating structures were enfolded into the industrial line. The easy adaptability of former industrial buildings to other uses after production ceased is mute testament to this concept. The military industrial line was created to be efficient, safe, productive, adaptable and inexpensive.

Picatinny's industrial lines performed a variety of functions, so that describing a typical line is difficult. The lines contained, however, a number of common elements. In general, one or two large structures dominated a single production line where the product was made or loaded. These buildings set the context for the rest of the plant. These larger buildings were connected to a number of smaller support buildings by a series of covered walkways or monorails. The walkways provided pedestrian cover and extra working space for a line that many times covered several acres. The monorails moved material from one space to another in safety. Many of the smaller buildings such as magazines were quite a distance away in order to reduce the chance of a sympathetic explosion, and a covered monorail was efficient in moving material from these distant places. Other support buildings which might be connected by walkways included employee Change Houses, Labs, Offices, paint and box buildings and shipping and receiving buildings. One of the most essential elements of a line was the railroad connection. Picatinny had its own rail yard and was covered in an intricate web of railroad tracks. While trucks played a role in the movement of material, the train was the universal transportation element in the production sequence.

Today, Picatinny Arsenal is covered in trees and native vegetation, but during the heavy production years, the areas around the industrial complex would have been bare. While some trees would have been left to serve as wind breaks, most trees close to the line were cut down because they were a fire hazard. Landscaping was of no interest; mud and erosion were trivial concerns compared to the daily need to produce war material in ever-increasing production quotas.

Picatinny Arsenal was built originally to be a powder depot, but by 1906 the Army built a smokeless powder plant at the installation. This would be the first Army-owned smokeless powder plant (Thurber and Norman 1983). Further production capabilities were added to the base in 1908 with the creation of a small arms powder plant. Picatinny gradually assumed more production responsibilities including the creation of an Officers Training School to provide instruction in the chemistry of explosives and ballistics. Slowly, Picatinny's mission had also evolved to include original research in ballistics and explosives. After the 1926 explosion at Lake Denmark, Picatinny had an opportunity to reinvent itself with a special emphasis on R&D. The arsenal was divided into three distinct

functional zones: 1) powder and explosives production areas; 2) powder and explosives testing areas; and 3) non-explosives manufacturing including all administrative and research facilities.

While Picatinny's rebirth signaled its role as the center of the Army's research and development activities related to ammunition, it continued to be a central player in ammunition manufacture. By the time of World War II, the arsenal had been divided into manufacturing areas. The 200 Area was the Shell Component Loading District (Figure 31); the 400 Area, the Bag Loading Unit (Figure 32); the 500 Area, Smokeless Propellant Powder Factory (Figure 33); the 600 Area, the Test Area; the 700 Area, Pyrotechnics District; the 800 Area, the Complete Loads/Melt Loading District (Figure 34); the 1000 Area was the Tetryl Production Plant; the 1300 Area was the Nitroglycerine/ Mortar Powder District; and the 1600 Area was Pyrotechnics Production called "Little Picatinny." All other areas were responsible for either research, administration, or storage.

The 1983 HAER report (Thurber and Norman 1995) focused on five of these production areas, Shell Component Loading District (200 Area); the Gun Bag Loading District (400 Area); the Powder Factory District (500 Area); the Test Areas District (600 Area); and the Complete Rounds/Melt Loading District (800 Area). It is not known why only these production areas were chosen. Perhaps it was because the other areas were built much later during World War II. The 600 Area, Testing, will not be discussed since it is more fully explored in the report on Picatinny's historic districts (Nolte and Steinback 1999).

During the preparation of the 1983 HAER report, a series of illustrations were produced showing the organization and placement of buildings within each production line (Figures 31, 32, 33 and 34); minor buildings or those built after a specific date are not included. Figures 35, 36, 37 and 38 show these same areas as they appear today, with many production buildings missing. The Smokeless Powder Plant, formerly one of the largest production areas with 48 structures, is now reduced to 9 structures. All of the areas are missing vital structures that set the context and hence the integrity of that line.

None of the production lines at Picatinny remain intact. All of them have lost their major production buildings or these buildings are in the approval process for demolition due to toxic chemical contamination. The railroad lines that connected each line to the other are gone and the covered walkways that connected the line to its component buildings are missing or are in a state of serious disrepair. Some areas, like the 500 Powder Area, have been so fractured by the loss of original buildings and the introduction of new ones that it is difficult to tell that any industrial activity ever occurred there. In other areas, structures stand isolated, having lost all defining elements. These solitary structures tell little and mean even less without the proper setting.

Such serious loss of setting and therefore integrity means that no industrial areas of Picatinny Arsenal and their associated structures are eligible for the NRHP. Table 2, *Index of Surveyed Structures,* provides a detailed review of each of these buildings.

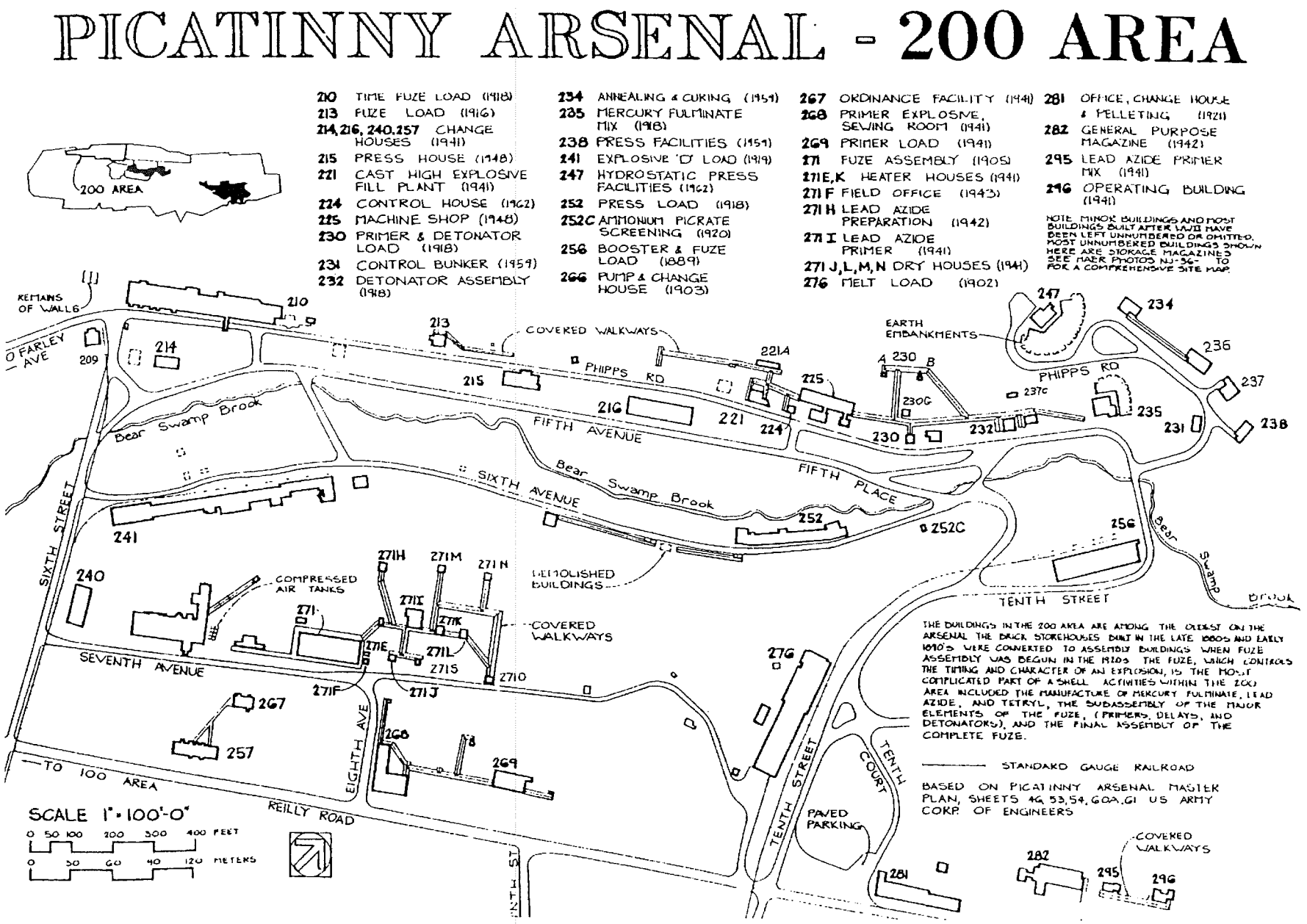

Figure 31. 200 Area, structures built between 1889 and 1962. Picatinny Arsenal, Morris County, New Jersey *(Thurber and Norman 1983).*

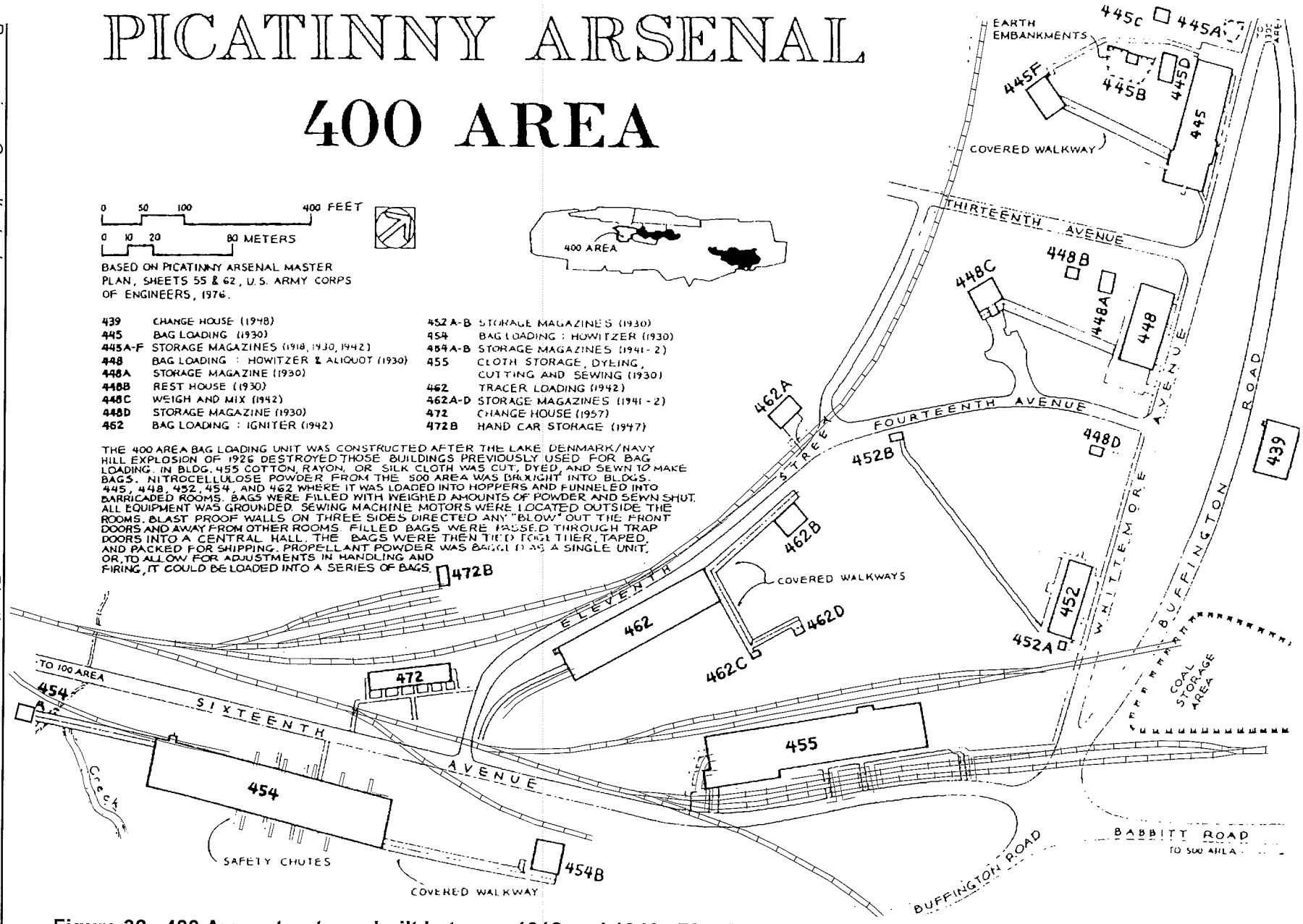

Figure 32. 400 Area, structures built between 1918 and 1948. Picatinny Arsenal, Morris County, New Jersey *(Thurber and Norman 1983).*

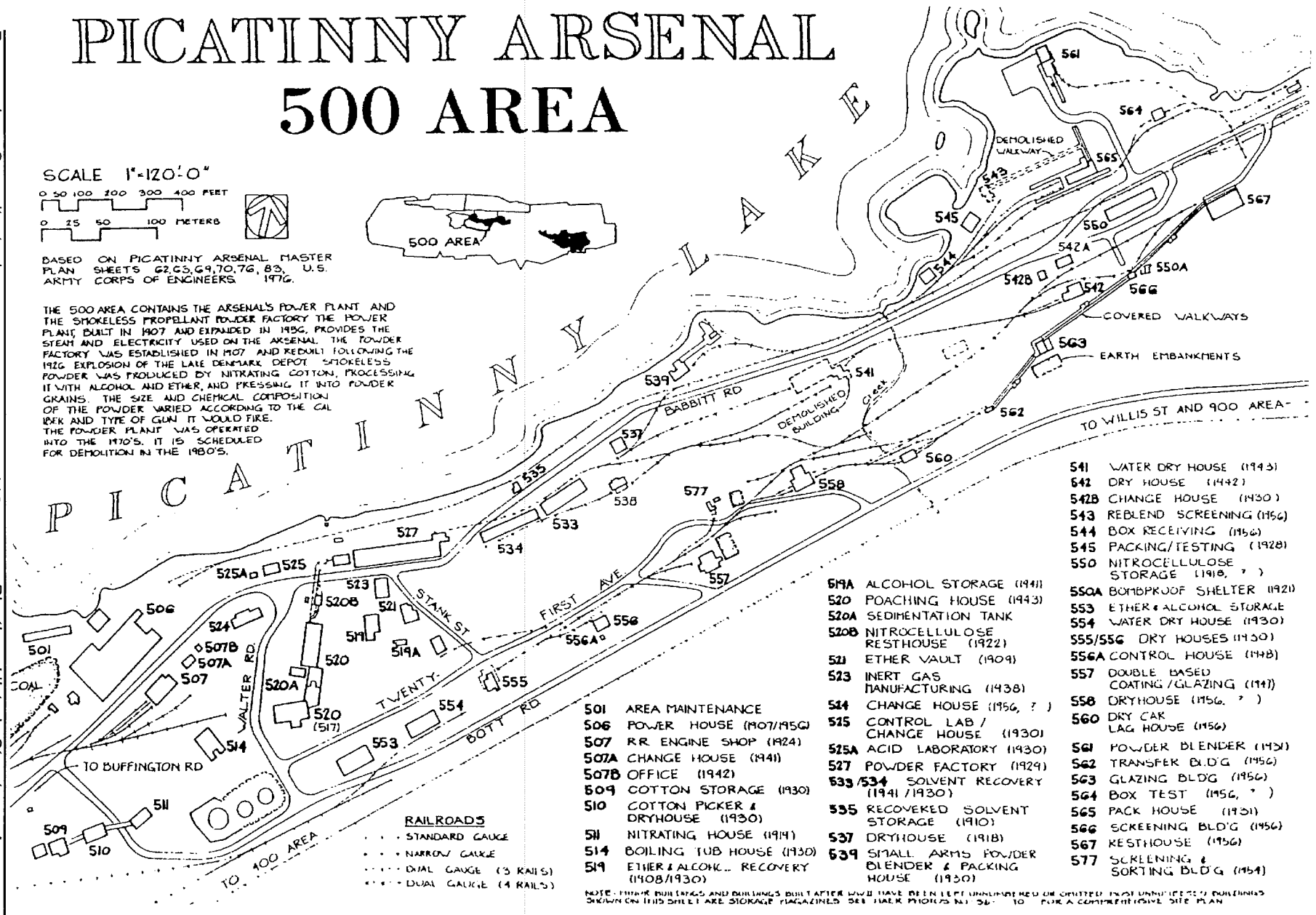

Figure 33. 500 Area, structures built between 1907 and 1956. Picatinny Arsenal, Morris County, New Jersey *(Thurber and Norman 1983).*

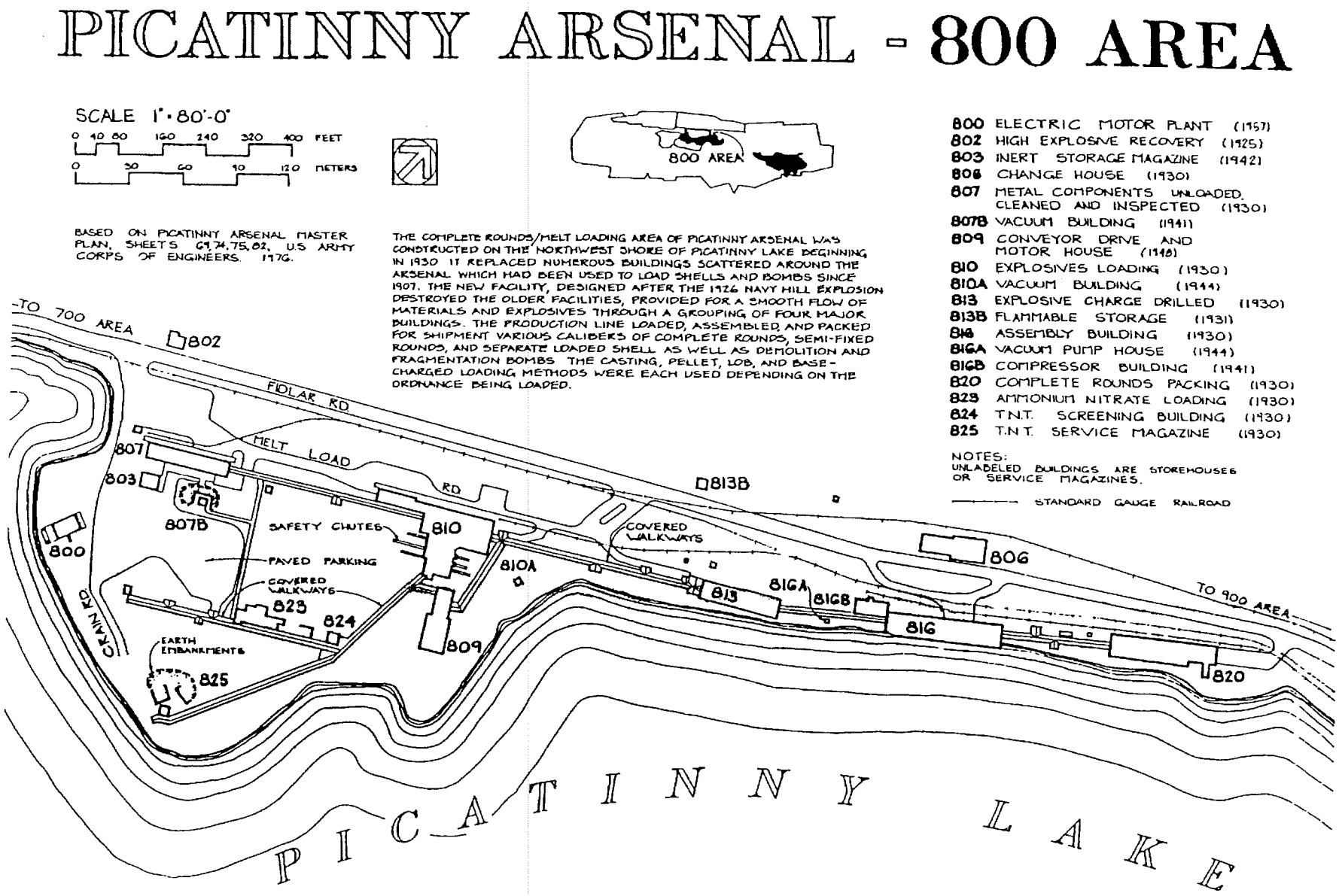

Figure 34. 800 Area, structures built between 1930 and 1957. Picatinny Arsenal, Morris County, New Jersey *(Thurber and Norman 1983.)*

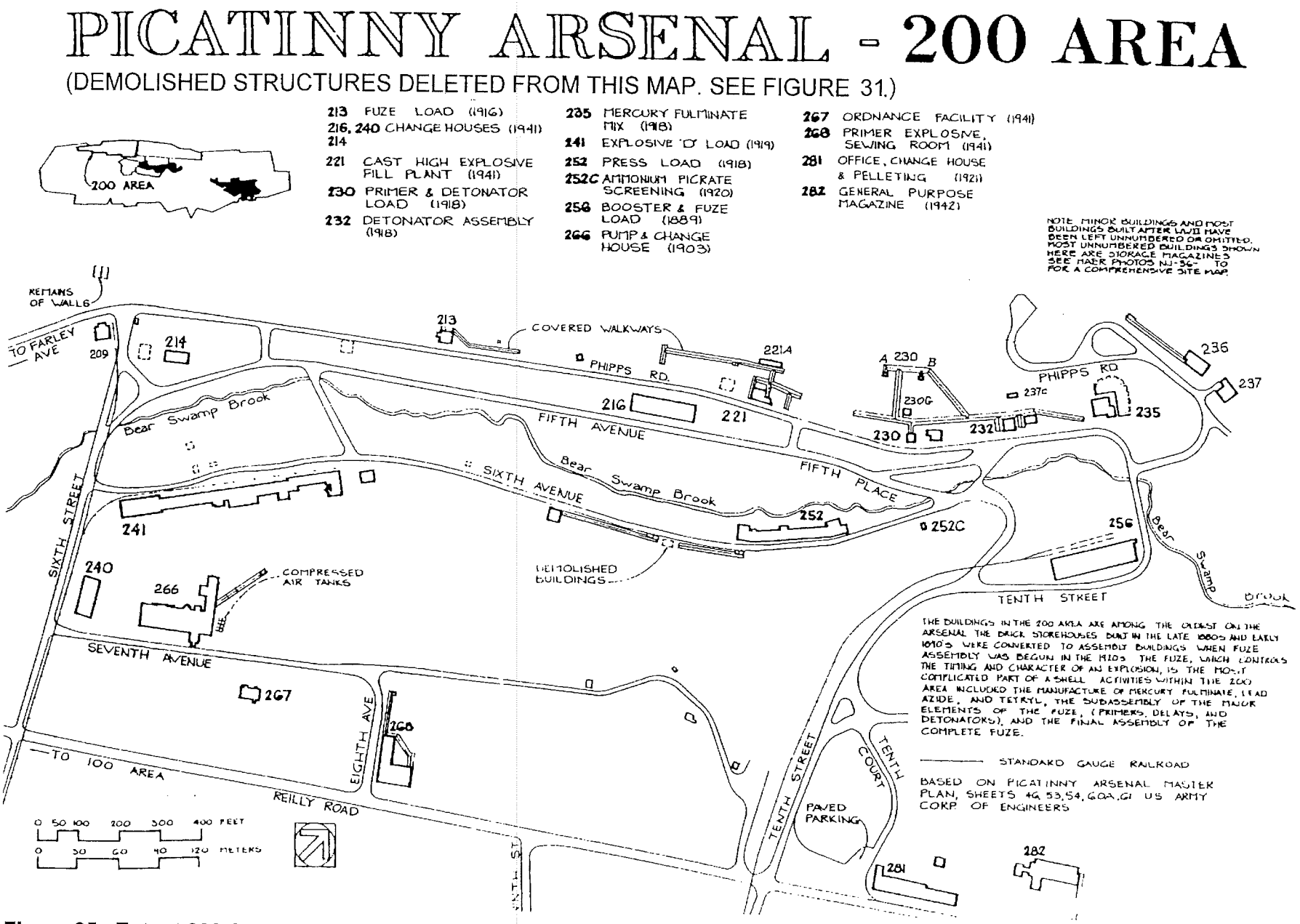

Figure 35. Extant 200 Area structures. Picatinny Arsenal, Morris County, New Jersey *(Adapted from Thurber and Norman 1983).*

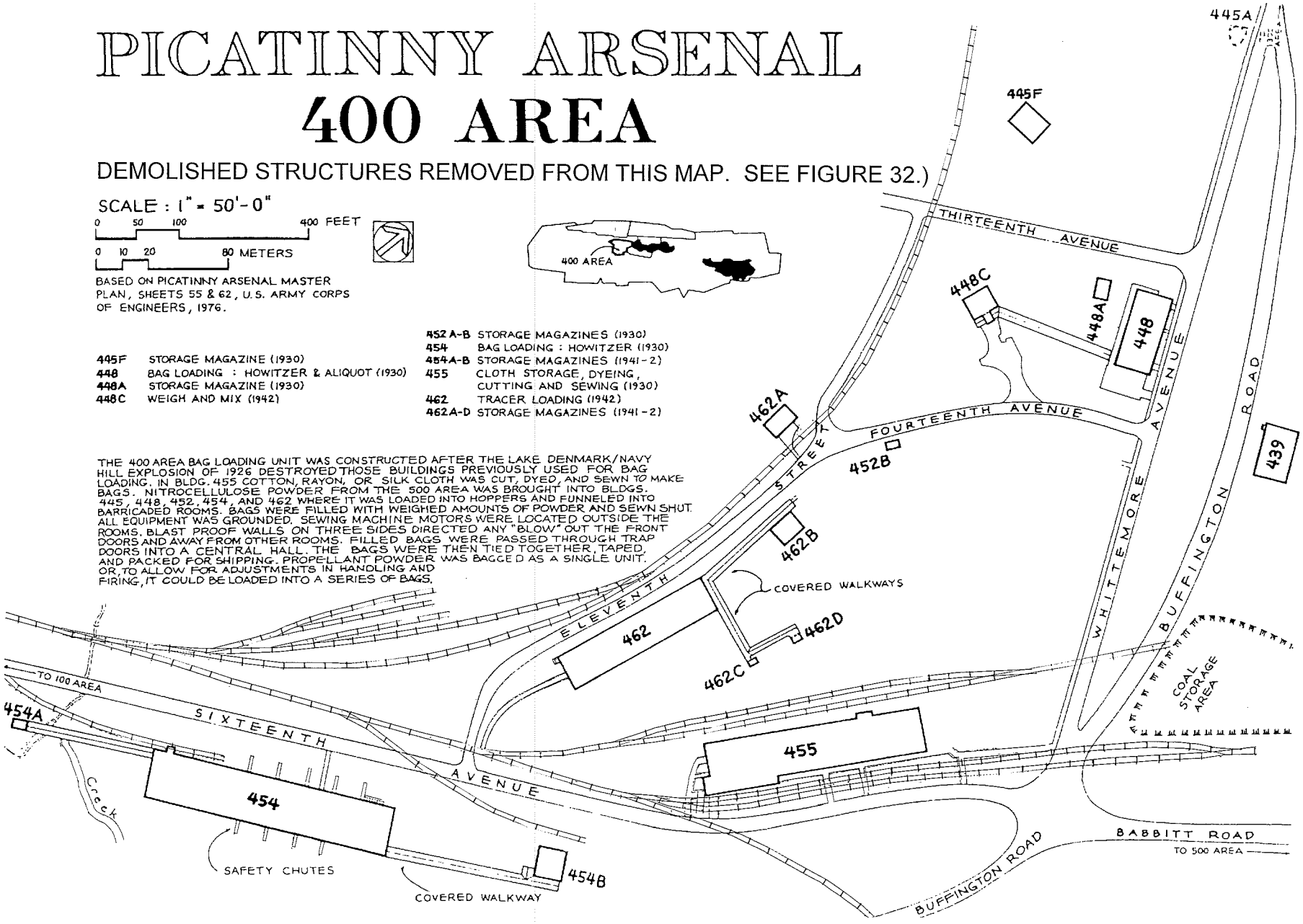

Figure 36. Extant 400 Area structures. Picatinny Arsenal, Morris County, New Jersey *(Adapted from Thurber and Norman 1983).*

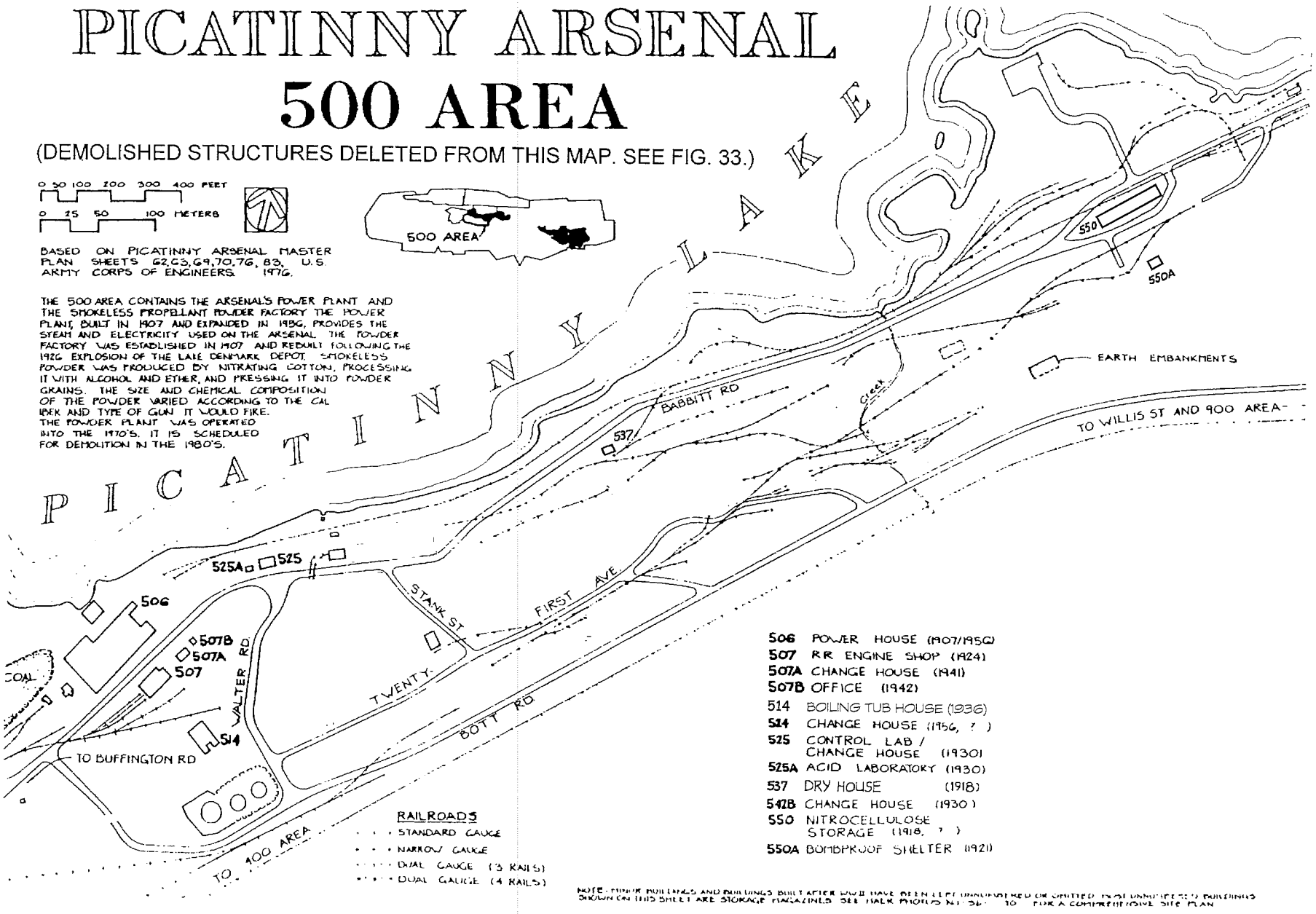

Figure 37. Extant 500 Area structures. Picatinny Arsenal, Morris County, New Jersey *(Adapted from Thurber and Norman 1983).*

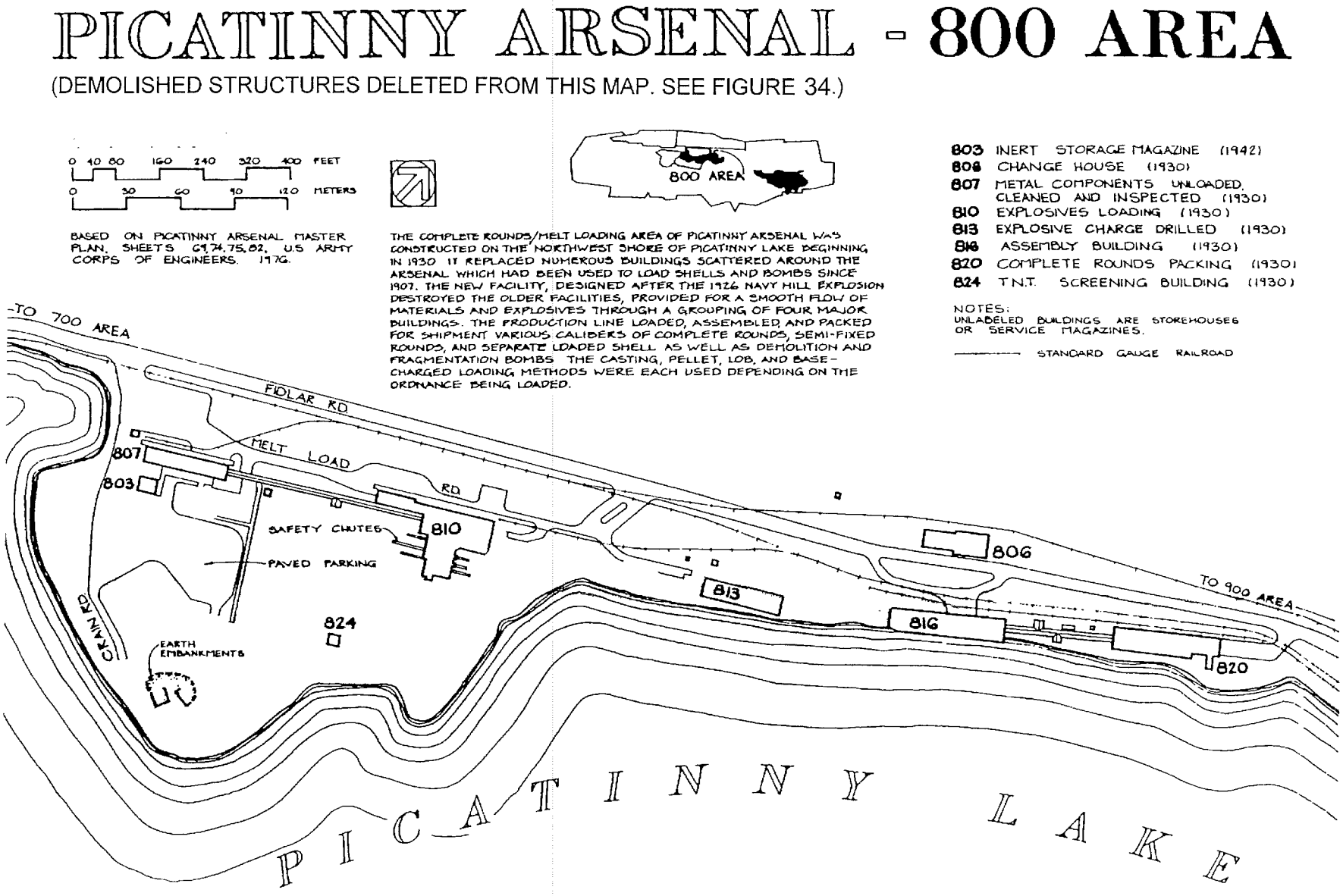

Figure 38. Extant 800 Area structures. Picatinny Arsenal, Morris County, New Jersey *(Adapted from Thurber and Norman 1983).*

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4.0 Summary

PCI reevaluated 500 historic structures on Picatinny Arsenal and the former Lake Denmark Navy Depot which were previously judged eligible for the National Register of Historic Places by WCH/Boston Affiliates (Harrell 1994). The task of reevaluating 500 structures included two methodological strategies: in-field inspection and research evaluation. The 500 structures were visually inspected and their NRHP status evaluated. The evaluation was based on National Park Service criteria and the incorporated results from a number of DOD architectural reports concerning the NRHP status of various types of military structures present within that system.

When the structures had been initially evaluated in 1994 (Harrell 1994), it was believed that all of Picatinny Arsenal formed a single historic district. However, the New Jersey HPO ruled that the entire installation lacks sufficient integrity to form a single district; instead, three smaller areas, as well as two individually eligible structures, were determined to be eligible as districts (Guzzo 1999). For a comprehensive discussion of Picatinny's NRHP eligible districts and buildings, please see *Definition of Historic Districts for Picatinny Arsenal, Morris County, New Jersey* (Nolte and Steinback 1999). Because the structures had originally been judged only against their contributions to a district, it was necessary to look at other means of determining their eligibility.

Since all of the reevaluated structures met the initial NRHP criterion of age, they required further research to determine other relevant factors. It is accepted practice in researching a military installation to divide it into traditional use areas. Buildings are then subdivided into family types (e.g., warehouses, magazines, quarters) and by construction materials. Each category helps define the structure and its relationship to other military buildings, in addition to establishing its place in social and architectural history as determined by a number of DOD and military services reports (Garner 1993; Grandine and Cannan 1995; Grashof 1986; Kriv n.d.; and Walsh 1995).

Of the 500 structures resurveyed, 443 were judged to be ineligible for the NRHP when reevaluated against new criteria. Further, two questions were raised by the WCH/Boston Affiliates report regarding the eligibility of Building 266, a wind tunnel, and the Doland House, Building 3119, a pre-revolutionary war site.

Building 266, formerly a pre-World War I magazine, was converted into a wind tunnel in 1945 and used to test ordnance. Research was completed on the Army's use of wind tunnels during World War II, the time of the magazine's change into a wind tunnel, and wind tunnels on ordnance facilities were found to be common and can still be found on other ordnance facilities such as Aberdeen Proving Ground. Further research was unable to determine if any special ordnance or ordnance design was tested in this particular tunnel. Since the tunnel does not appear to have ever been used to test or design any specific ordnance and because it is not a historically or architecturally significant building, it is PCI's recommendation that Building 266 is not eligible for the NRHP.

In November 1998 PCI conducted a cultural resource investigation on the Doland House (Building 3119) to determine if any portions exist from the eighteenth century as well as to trace the history of the structure and delineate the house site boundaries. The Doland House was found to lack integrity and its surrounding soils are disturbed. PCI has recommended that the structure is not eligible for listing in the NRHP. For more information see Nolte et al. 1999.

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Appendix A

New Jersey Historic Preservation Office Letter

Christine Todd Whitman
Governor

State of New Jersey
Department of Environmental Protection
Division of Parks & Forestry
Historic Preservation Office
PO Box 404
Trenton, NJ 08625-0404
TEL: (609)292-2023
FAX: (609)984-0578

Robert C. Shinn, Jr.
Commissioner

July 2, 1999
HPO-G99-10

Ronald J. Kraus, Director
Public Works
Department of the Army
United States Army Tank – Automotive and Armaments Command
Armament Research, Development and Engineering Center
Picatinny Arsenal, New Jersey 07806-5000

Dear Mr. Kraus:

As Deputy State Historic Preservation Officer for New Jersey, in accordance with 36 CFR Part 800: Protection of Historic Properties, as published in the Federal Register 18 May, 1999 (Vol. 64, No. 95, 27071-27084), I am providing **Consultation Comments** for the following project:

Morris County, Picatinny Arsenal
General Officer's Quarters
Buildings 112 and 113 Exterior Rehabilitation
U.S. Department of the Army

Summary: These comments on the proposed exterior rehabilitation of Buildings 112 and 113 are in response to your letter about the project. The project will have **no adverse effect** on Buildings 112 and 113. This letter also includes revised boundaries for the Picatinny Historic District.

800.4 Identification of Historic Properties

Please note that these comments address only architectural/above ground resources.

I largely concur with the boundaries of the Picatinny Arsenal Historic District established in the submitted reports: *Definition of Historic Districts for Picatinny Arsenal, Morris County, New*

Jersey, Revised Draft, March 1996, prepared by Panamerican Consultants, Inc. for U.S. Army Corps of Engineers; *Architectural Assessment of Historic Structures at Picatinny Arsenal, Morris County, New Jersey* Revised Draft, March 1998, prepared by Panamerican Consultants, Inc. for U.S. Army Corps of Engineers; and *Response to New Jersey Historic Preservation Office Review of Architectural Assessment of Historic Structures at Picatinny Arsenal, Morris County , New Jersey and Definition of Historic Districts for Picatinny Arsenal, Morris County, New Jersey, Addendum,* August 1998, prepared by Panamerican Consultants, Inc. for U.S. Army Corps of Engineers. Buildings 112 and 113 are contributing buildings in the Picatinny Arsenal Historic District as defined above.

I accept that Picatinny Arsenal no longer forms the larger (series) of contiguous Historic Districts as identified in the draft nomination of Picatinny prepared ca.1987, and the subsequent revised draft report *Evaluation of Structures Built Prior to 1946 At Picatinny Arsenal, New Jersey* prepared by WCH Industries, Inc. dated December 30, 1994. The originally proposed district (as identified in the draft nomination) has been rendered ineligible due substantial loss of buildings, often buildings which were key parts of the larger district, and due to the extent of alteration of many of the buildings which remain. I have also considered Picatinny Arsenal as a cultural landscape, in part because of its separated lines and storage areas. Unfortunately, because of the almost complete loss of the extensive rail system which connected the isolated components of Picatinny together, the Arsenal no longer reads as a coherent cultural landscape of separate, but functionally connected facilities.

Based on the reports referenced above, and on site visits made by staff reviewer Dan Saunders, it is my opinion that the following properties are eligible at Picatinny Arsenal:

1. The Administration and Research District which is eligible under Criteria A and C. While I concur with the eligibility of this District, I do not accept the discontiguous components of the District as part of this District. The Cannon Gates fall too far from this District to be included. Rather than including the Navy Commander's Quarters and stable in this District, I have listed them as eligible as a separate entity at #4 below.
2. The 600 Ordnance Testing Area is eligible under Criteria A and C.
3. Test Area E, Naval Air Rocket Test Station is eligible under Criteria A and D.
4. The Navy Commander's Quarters (Building 3250) and stable (Building 3316, now the firehouse.) are eligible under criteria A and C.

800.5 Assessment of Adverse Effects – Apply the Criteria of Adverse Effect

The project will have no adverse effect on Buildings 112 and 113.

Additional Comments

While the contractor you have chosen is very experienced in preservation work, it is very unusual to rely solely on the expertise of the contractor to ensure that the project will be completed to the standard of quality that we would all like to see. In future, I strongly encourage

you to consider using an architect who meets the Secretary of the Interior's Standards for Historic Architecture on projects within the Picatinny Arsenal Historic District.

If you have any questions, please contact Dan Saunders of my staff at (609) 633-2397.

Sincerely,

Dorothy P. Guzzo

Dorothy P. Guzzo
Deputy State Historic
Preservation Officer

DPG/DS981218
C: Nancy Brighton

Appendix B

Vitae of Project Personnel

PCI BUFFALO • TUSCALOOSA • MEMPHIS • TAMPA

Buffalo Branch Office • 36 Brunswick Road • Depew, NY 14043 • (716) 685-4198 • Fax (716) 685-6286

KELLY NOLTE
Architectural Historian

EDUCATION

M.A. Humanities, Old Dominion University, Norfolk, VA, 1989
Emphasis: Architectural History
Thesis: *John Kevan Peebles: Dean of Virginia Architects, 1875-1943*

B.A. Humanities, Cum Laude, University of West Florida, Pensacola, 1976
Emphasis: Architectural History

EXPERIENCE

Ms. Nolte has more than twenty (20) years experience researching and writing about American architecture and architects. Her research on historic structures has been national in scope and has included residences, exhibition buildings, industrial and military structures, religious and public service edifices as well as the architects who built them. Currently Architectural Historian with Panamerican Consultants, Inc. (February 1996-present), Ms. Nolte's duties include acting as Principal Investigator, conducting field work and research, and writing reports related to historic architecture as well as aiding in the development of proposals and budgets for projects. Her other responsibilities include supervision of field crew members, maintenance of field reports and budget management. Ms. Nolte works closely with other departments to develop budgets, plan field expeditions and create new business opportunities. In addition, she maintains working relationships with State Historic Preservation Offices (SHPOs); national, state, and local agencies, advisory groups and commercial organizations; cultural and social groups and individuals. She is well-versed in the Section 106 process, Historic American Building Survey (HABS)/Historic American Engineering Record (HAER) levels and recordation, National Register of Historic Places (NRHP) nomination criteria, and U.S. Department of Defense cultural resource regulations. She is experienced at conducting investigations on large-scale projects such as military installations and highway projects as well as for smaller, individual buildings.

REPRESENTATIVE PANAMERICAN CONSULTANTS, INC. EXPERIENCE

For the Niagara Mohawk Power Corp., Ms. Nolte served as Architectural Historian for a recently completed HAER-level recordation of a nineteenth century former gasholder structure in Saratoga Springs, New York. The investigation was required by the USEPA as part of the design of an environmental remediation project at the site. The investigation included background historical research, field recordation, and photographic documentation.

Currently, Ms. Nolte is serving as Principal Investigator and Architectural Historian for HAER-level recordations of three historic period bridges (Double Bridges, B.B. Comer Bridge, and Montgomery Swing Bridge) for the Alabama Department of Transportation.

She also served as Principal Investigator and Architectural Historian for a HAER-level recordation of the Greenbrook/Lincoln Boulevard/East Main Street Bridge in Somerset and Middlesex Counties, New Jersey. The investigation was conducted for the U.S. Army Corps of Engineers, New York District.

Ms. Nolte served as principal investigator and architectural historian for a Phase 1B cultural resource survey of the Denis Bay Plantation (Archaeological Site Number 12VAm3-71 and NRHP number 81000095), St. John, U.S. Virgin Islands. She co wrote the report.

Ms. Nolte served as principal investigator and architectural historian for the evaluation of 23 bridges and 158 buildings for the Green Brook Flood Control Project in Union, Middlesex and Somerset Counties, New Jersey under contract to the U.S. Army Corps of Engineers, New York District in 1997. In 1998-99 she completed investigations/evaluations for an additional 19 structures in this area.

In 1997 she served as architectural historian and principal investigator for an architectural reevaluation of more than 500 structures at Picatinny Arsenal, Morris County, New Jersey. Three historic districts were recommended for creation. Two reports were prepared for the New York District, USACE. At Picatinny in 1998 Ms. Nolte conducted architectural investigations and National Register evaluations at the Doland House (a nineteenth century civilian residence) and investigations for developing treatment strategies for structures at the former Naval Air Rocket Test Station facility.

Ms. Nolte was the architectural historian during the cultural resources investigations including National Register eligibility assessment of selected buildings at the Fort Hamilton Military Reservation, Brooklyn, NY. The purpose of architectural component of this study was to document Building 117, the reputed home of Robert E. Lee during his assignment at Fort Hamilton. The project included an historical and archival background research combined with a detailed photographic and architectural recordation. Several other historic period buildings also were included in the study for the possible creation of a National Historic District at the fort.

She served as architectural historian for the Cultural Resources Investigations for the Joseph G. Minish Passaic River Waterfront Park and Historic Area, Newark, Essex County, New Jersey. The investigation documented the remains of three historic nineteenth century manufacturing sites along the Passaic River. She co-wrote the report for the New York District, USACE.

Ms. Nolte served as architectural historian for a Phase 1B cultural resources survey of selected sites on Lovango Cay, U.S. Virgin Islands and co-wrote the report.

She served as Principal Investigator and architectural historian for an archaeological Phase I Survey and architectural structures assessment of a factory village in Huntsville, Alabama; co-wrote the report with Matthew Hartzell in March 1996.

As architectural historian and Principal Investigator she conducted an Historic American Buildings Survey of the Taylor-Cook House, Sylacauga, Talladega County, Alabama; co-wrote report with Kristen Zschlomer in 1996.

In 1996, she was architectural historian and Principal Investigator for an *Architectural Assessment of the World War II Military and Civilian Works on and Around Lines 1, 2, 3, 4, and 5 of the Former Redstone Ordnance Plant (1941-1945) Now the Redstone Arsenal Rocket Engine (RARE) Facility, U.S. Army Missile Command, Redstone Arsenal, Madison County, Alabama.*

OTHER EXPERIENCE

Architectural Historian/Cultural Resources Manager, Portsmouth, VA, August 1994- February 1996.

Partner in a Cultural Resources Management group specializing in Phase I, II, and III archaeological and architectural surveys. Performed field work, research, recordations—both written and photographic—and creation of reports. Accessed and analyzed findings for dispensation recommendations including National Register Nominations and preservation plans. Qualified as a Historian and Architectural Historian under the Federal Government Professional Guidelines.

Education Programs Manager, Nauticus, The National Maritime Center, Norfolk, VA, January 1994-1995.

Director of Public Programs, The Virginia Air and Space Center and Hampton Roads History Center, Hampton, VA, November 1992-January 1994.

Public Programs Manager, The Virginia Air and Space Center and Hampton Roads History Center, Hampton, VA, November 1991-November 1992.

Assistant Director, Jamestown Settlement Museum, Williamsburg, VA, May 1986 - October 1991.

Senior Education Officer, The Mariners' Museum, Newport News, VA, January 1986 - May 1986.

Education Officer, The Mariners' Museum, Newport News, VA, January 1984 - January 1986.

Assistant Education Officer, The Mariners' Museum, Newport News, VA, August 1981- December 1983.

Program Director III, Phyllis Wheatley Branch, Peninsula Association, Y.W.C.A., Newport News, VA, August 1980 - August 1981.

Instructor/Research, Museum Bureau, Education Department, Pensacola Preservation Board, Pensacola, FL, January 1975 - October 1977.

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MARK A. STEINBACK
Historian

EDUCATION

M.A. Local and Regional History, State University of New York at Albany, 1987
B.A. History (with Honors), State University of New York at Albany, 1985

EXPERIENCE

Mr. Steinback is currently Historian for Panamerican Consultants, Inc. (PCI) and director of report and proposal production at the Buffalo Branch office (in Depew, New York). He has over ten (10) years experience conducting historic period and archival research and analysis. His experience includes preparing summaries of local ethnohistoric and historic period background and assessing historic period site sensitivities and significance for various cultural resource and archaeological projects. These investigations include preparation of historic period background of project sites; archival, documentary, ethnohistoric, and cartographic research; prehistoric and historic site file analysis; relevant federal and state census and deed research; and preparation of written evaluations for inclusion in archaeological and cultural resources reports.

He is experienced at conducting historical and archival research for large-scale projects including pipeline/corridor projects, military installations, and flood control projects, which often require detailed archival and historical map research, design of research questions as part of field methodologies, and report preparation (including Historic American Engineering Record [HAER]-level documentation). In addition, he has more than five (5) years editorial experience and has edited more than twenty (20) cultural resource, archaeological, structural, and environmental assessment reports for both public and private sector clients.

Between 1991 and 1995 Mr. Steinback taught courses in American History and Western Civilization at Schenectady County Community College, Schenectady, New York, as an adjunct history instructor. His early research interests focused on the development and practice of mercantilist theory as it concerned English colonization of North America and the Caribbean. Later research interests involved the industrialization of America from the 1840s through the 1920s with a special focus on socio-cultural history of workers and their responses to industrialization, immigration and urbanization. He is a member of the Organization of American Historians.

REPRESENTATIVE PANAMERICAN CONSULTANTS, INC. EXPERIENCE

For the New York District Corps of Engineers, Mr. Steinback conducted background and archival research and prepared the historic period background for seven (7) projects at the United States Military Academy (USMA) at West Point, Orange County, New York. These projects included five (5) Phase I cultural resource surveys (the proposed Stony Lonesome Child Development Center, the proposed Stony Lonesome One-Stop Shopping Center [PX], the proposed Cat Hollow

Swamp/Beaver Pond Timber Harvest, the proposed Long Pond/ Stillwell Lake Timber Harvest, and the proposed Firebreak 2 Timber Harvest), one Phase II survey (the proposed Stony Lonesome PX), and one Phase III data recovery project (Revolutionary War Hut Site #6).

For the Savannah District Corps of Engineers, he has conducted background and archival research in preparation for the development of a Historical and Archaeological Resources Protection Plan (HARP) for the Beaufort-Marine Corps Air Station, Beaufort, South Carolina. The focus of the research was pre-installation land use activities. In addition, he has conducted archival and documentary research for Phase II investigations at six selected historic period and prehistoric archaeological sites at the U.S. Marine Corps Recruit Depot, Parris Island, South Carolina. He prepared the historic period discussion for these documents.

Since 1996, Mr. Steinback has also conducted historic research and prepared reports involving numerous local (Buffalo-area) projects, including a Phase I cultural resources survey for the Proposed French Road Commons, Town of Cheektowaga, New York for Seneca Creek Development Corp.; Phase IA cultural resources survey for the Main-LaSalle Revitalization Project (GEIS), City of Buffalo, New York for Phenix Environmental, Inc.; a Phase IA/B cultural resource survey for the proposed Images West Subdivision, Town of Greece, Monroe County, New York for LaDieu Associates P.C.; a Phase I cultural resource survey for the proposed Line K realignment in the Town of Orchard Park, Erie County for NEA, Inc. and National Fuel Gas Corporation; a Phase IA cultural resources survey for Woodlawn Beach, Erie County, New York for URS Greiner; a Phase I cultural resource survey for the Marczak Property, Union Road, Cheektowaga, New York; a Phase I cultural resource survey for 437 Tonawanda Street, City of Buffalo for the Blind Association of Western New York; a Phase IA for the Quaker Road Retail Development, East Aurora, New York for Benderson Development Company, Inc.; a Phase IA for the proposed Cayuga Road Sports Complex, Town of Cheektowaga, New York for TVGA Engineering, Surveying, P.C.;a Phase IA for the proposed Ellicott Creek Trailway Extension, Audubon Recreation Area, Town of Amherst, New York for URS Greiner Woodward Clyde; a Phase I for the proposed waterline construction for the Town of Newstead Water District #5, Erie County, New York for Wendel Design; and two Phase IA for the Chautauqua County Department of Public Facilities (the proposed Chadakoin Riverfront Park and Waterway Trail, Town of Ellicott and the proposed property acquisition adjacent to the Chautauqua County Airport, Town of Ellicott).

For the New York District Corps of Engineers, Mr. Steinback conducted background research and prepared the historic period and environmental background sections for the archaeological and historic structures investigation of selected sites within the Fort Hamilton Military Reservation, Fort Hamilton, Brooklyn, New York. He was also principal historian for cultural resource investigations of the Morris Canal Right-of-Way for the Joseph G. Minish Passaic River Waterfront Park and Historic Area, Newark, New Jersey, under subcontract to Northern Ecological Associates, Inc.

For the New York District, USACE, Mr. Steinback has conducted research and written historic period background sections for the Phase I survey at the airfield area at Seneca Army Depot Activities, Romulus, New York, and for the Phase I survey of the Upper Basin of the Green Brook Flood Control Project, Union and Somerset Counties, New Jersey, and its addendum for the Stony Brook Sub-Basin. He also edited the final report for each of the above mentioned projects.

For the Jacksonville District, USACE, Mr. Steinback edited the report for cultural resource survey of the Río Ojo de Agua flood protection project in the Municipio of Aguadilla, Puerto Rico, and the report for the cultural resource survey of the Río Loco flood protection project in the Municipio of Guánica, Puerto Rico.

For the New York District Corps of Engineers, Mr. Steinback prepared historic period overviews and compiled environmental and relevant background information for inclusion in integrated cultural resource management plans (ICRMPs) for Watervliet Arsenal, Albany County, New York, the Rotterdam Housing Areas (of Watervliet Arsenal), Schenectady County, New York, Fort Hamilton, Brooklyn, New York, and Picatinny Arsenal, Dover, New Jersey.

For the New York District, USACE, he prepared the historic period overview for an evaluation of 23 bridges and 158 flood proofing/buy out structures for the Green Brook Flood Control Project, Middlesex, Union, and Somerset Counties, New Jersey.

In 1995 Mr. Steinback conducted archival and background research and prepared the historic period overview section of the report for the Phase I archaeological investigation at Griffiss Air Force Base, Rome, New York for Tetra Tech, Inc. In 1996, he conducted archival research and prepared the site-specific historic discussion section for the Phase II archaeological investigation of 20 sites at Griffiss Air Force Base. He also edited the draft and final reports of the Phase II. In 1997, he prepared the site-specific historic discussion for the Phase II investigation at PCI Site 3 at Griffiss Air Force Base and edited the draft report.

In 1996, Mr. Steinback co-authored the *Research Design: Phase I Cultural Resources Survey of Civil War and Postbellum Sites (1862-1892)* for U.S. Marine Corps Recruit Depot at Parris Island, South Carolina for Savannah District Corps of Engineers. In 1997, he conducted additional archival and background research and prepared the historic period write-up for Phase II archaeological investigations of six (6) sites at the Marine Corps Recruit Depot at Parris Island and for the historical and archaeological resources protection plan for the Marine Corps Air Station, Beaufort, South Carolina.

In 1997, Mr. Steinback conducted archival research and prepared the historic discussion for the Phase II cultural resources site mitigation for the Proposed One-Stop Shopping Center (PX) at the USMA, West Point, New York, for the Phase III archaeological mitigation of Revolutionary War Hut #6 (USMA-81) at the USMA, and for the Phase I cultural resource investigation for the Long Pond-Stillwell Lake Timber Harvest at the USMA. In addition, he prepared the historic period background sections for an architectural study of bridges and flood proofing/buy-out structures for the Green Brook Flood Control Project, Middlesex, Union, and Somerset Counties, New Jersey, and for an architectural assessment of structures and potential historic districts at Picatinny Arsenal, Dover, New Jersey.

In 1998, Mr. Steinback conducted archival research and prepared the historic discussion for the Phase I cultural resources investigation for the Proposed Firebreak 2 Timber Harvest at the USMA, West Point, New York. In addition, he conducted documentary research and prepared a written historical context for the draft environmental impact statement for the proposed renovation of the Arvin Physical Development Center at the USMA, and for the Phase I cultural resource investigation for the Long Pond-Stillwell Lake Timber Harvest at the USMA.