

RARITAN ARSENAL, ASSEMBLY PLANT J1
(Raritan Arsenal, Small Arms Shop)
(Raritan Arsenal, Building 14)
2890 Woodbridge Avenue
Bonhamton Vicinity
Middlesex County
New Jersey

HABS No. NJ-1061-D

HABS
NJ
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ID-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDINGS SURVEY
National Park Service
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

HISTORIC AMERICAN BUILDINGS SURVEY

RARITAN ARSENAL, ASSEMBLY PLANT J1

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HABS No. NJ-1061-D

Location: 2890 Woodbridge Avenue, Bonhamton vicinity, Middlesex County,
New Jersey

USGS Perth Amboy, New Jersey Quadrangle
Universal Transverse Mercator Coordinates: 18.554250.4484800

Present Owner: United States Environmental Protection Agency
26 Federal Plaza, New York, New York 10278

Present Use: Vacant

Significance: Assembly Plant J1 is significant as a typical industrial building constructed at the Arsenal during World War I. The building is significant as a core structure in the initial development of the manufacturing plant at the Arsenal and for its ongoing role in military production of small arms and artillery, which continued until World War II.

PART I: HISTORICAL INFORMATION

A. HISTORY OF RARITAN ARSENAL

World War I was the first major military venture Americans faced since entering the industrial era. Although the War Department planned to send one million American soldiers to France by the spring of 1918, Americans had no prior experience with training and transporting a large army overseas (Kennedy 1980:94). World War I “forced both government and business to think and act on an unprecedentedly large and integrated scale.” (Kennedy 1980:94).

Raritan Arsenal was part of this integrated effort. In addition to serving as a storage and transshipment center for munitions, the base had two other missions during World War I. One of these missions was the assembly, repair, and shipment of artillery, tanks and automobiles. These activities were housed in Assembly Plant buildings J1 and K2 (HABS No. NJ-1061-J) (Raritan Arsenal History Vol. 1, Part 2). The other mission was to train troops at the base and at other Mid-Atlantic region installments. The Ordnance School of Instruction was established at the Arsenal for this purpose (Dames & Moore 1993:4-12). The Assembly Plant received up to 265 vehicles a day for inspection, assembly, repairs, painting, and delivery overseas.

Initially the Assembly Plant's mission was limited to tank and chain assembly. In response to a need for increased wartime production in 1918, the plant's mission was expanded to include, the assembly of 75mm field artillery, the inspection and repair of trucks, vehicle and motorized weapon camouflage, electrical installation and vehicle painting. Plant operations were divided into two areas of activity: Plant Engineering, which was responsible for all aspects of vehicle, tank, and motorized artillery production and operated the plant's newly constructed and equipped machine shops; and Plant Administration. Operations at the Assembly Plant were divided into thirteen areas of activity, each performed by a specifically assigned section. These sections were: tank assembly, chain assembly, transportation, repair, camouflage, truck repair, carpentry, plant machine shop, electrical, pump and hose, car painting, and motor vehicle tool box production (Dames and Moore 1993:4-5, 4-6).

B. HISTORY OF THE BUILDING

Assembly Plant J1 was constructed in 1918 as permanent construction at a cost of \$64,082.96 (Labor \$24,846.57, Materials \$23,756.36, Overhead \$15,480.03) (Conard, Appendix A). In 1918, the Arsenal manufacturing plant consisted of two machine shops, identical in construction: J-1, the Machine Assembly Shop, and K-2, the Paint Assembly Shop (HABS No. NJ-1061-J)

(Conard:53). The general contractor for construction of Raritan Arsenal's World War I buildings was Snare & Triest Company of New York. Much of the masonry work, presumably including this building, was done by a team of Italian laborers housed in the construction camp on site (See Raritan Arsenal overview (HABS No. NJ-1061)).

After World War I, the Equipment Shop, the Machine Shop, and the Motor Repair Shop were located in Assembly Plant J1. The Equipment Shop maintained ordnance materiel shipped from overseas, such as small arms, automatic arms, and artillery. The shop was used for overhauling and modifying rifles, machine guns, and pistols, and handling painting and sandblasting of shells. The Machine Shop overhauled and modified light and heavy artillery. The Machine Shop was moved to Building 15C (HABS No. NJ-1061-G) when that building was constructed in 1942. The Motor Repair Shop maintained and repaired small arms trucks, artillery repair trucks, and heavy shop trailers. This activity was later moved to Assembly Plant K2, and to Building 241 ca. 1943 (Dames & Moore 1993:5-9).

A 1936 plan of the building provides information regarding the activities in the building. A paint drying area, one sand blasting booth and two spray paint booths, a machine shop, a small arms section, a spray painting section, a parkerizing and bonderizing section, and an office are depicted ("Historical Record..."). Overhead cranes are also visible in the 1936 drawings; they have since been removed. Between 1936 and 1944, the concrete platform along the west elevation was enclosed. The canopy remains in the 1936 plan and physical evidence indicates that it was enclosed prior to the construction of the Proof Firing Room in 1943.

During World War II, the building received a new designation, Equipment Shop S-2 ("Oversize map" 1943) and was enlarged to include a new location for the parkerizing and bonderizing system in 1942. The parkerization process rust-proofed small arms, inert cartridge storage cases, inert demolition bombs, and inert adapter and booster casings (Metcalf & Eddy 1991:4-10). In 1945 a vertical exhaust fan and ductwork were installed in the new parkerizing room. The steel parkerization tanks and the overhead track remain. Artillery parts were placed in baskets suspended from the track and were dipped into the tanks. Parkerization is a form of controlled oxidization by dipping weapons into an acid phosphate bath that inhibits rust formation (Dames & Moore 1993:5-15) and has the added benefit of creating a dull, or matte, finish on arms and artillery so that they do not glint in the sun, a useful feature when soldiers wished to remain unseen. A 1943 photograph depicting this room contains a hand-written caption indicating that the design of the Parkerizing vats and basket system were locally designed as well as constructed (Dames & Moore 1993:n.p.). This could mean that Arsenal employees or a local contractor were responsible for the design, in contrast to a standardized U.S. Army design that could have been used.

In 1943 a new proof firing room was constructed in the northwest corner of the building, replacing the proof firing room that had been located beneath the office ("Historical Record..."). Proof firing is a final test firing of a few rounds from each renovated weapon (Dames & Moore 1993:5-15). As described in Volume VII of the Raritan Arsenal History, one of the functions of the Maintenance Department at Raritan Arsenal was the proof firing of rifles, 30 calibre and 50 calibre machine guns and small arms. In the room, one chamber was used for the proof-firing of 30 calibre guns, and the other chamber was used for 50 calibre guns. A complete ventilating and filter system was installed. The back of the structure was composed of four feet of reinforced concrete, two inches of steel armor plate, three layers of railroad ties, and approximately twenty tons of sand, installed to break the impact of the bullet and dissipate the force. (Raritan Arsenal History Vol. VII:560-1) A 1943 photograph depicting this room contains a hand-written caption indicating that the room's design was locally designed and constructed (Dames & Moore 1993: n.p.). This could mean that Arsenal employees or a local contractor were responsible for the design, in contrast to a standardized U.S. Army design that could have been used. In 1945 the extant concrete platform was constructed along the west elevation.

PART II: DESCRIPTIVE INFORMATION

A. PHYSICAL CHARACTER OF THE SITE

Assembly Plant J1 is located in the northern portion of the Arsenal site along the four-lane Woodbridge Avenue. This area contained the manufacturing and industrial core of the Arsenal. The building abuts Building 12 (HABS No. NJ-1061-C), Building 15A (HABS No. NJ-1061-E), Building 15C (HABS No. NJ-1061-G), and Building 15D (HABS No. NJ-1061-H). Most of the surrounding buildings have been demolished and only concrete foundation slabs and concrete loading docks remain.

B. PHYSICAL DESCRIPTION OF THE BUILDING

The common bond brick and hollow masonry tile building originally measured 67'x322' and had an area of 21,702 square feet and a volume of 508,695 cubic feet. The 35'x322' concrete loading platform was enclosed later to add 11,600 square feet. The shallow-pitched roof is enclosed with a parapet capped with tile coping. The building sits on a poured concrete slab. A clearspan riveted steel Warren truss with vertical members supports the frame roof in the east section of the building. Steel beams support timber rafters beneath a concrete panel roof in the west section of the building.

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The three east bays of the south elevation constitute the original portion of the building; the two west bays are a later addition when the loading dock along the west elevation was enclosed. The brick is a different shade and is less pitted and worn than on the original section. A poured concrete loading dock and wing walls and metal rolling doors are located at the two west bays. The recessed east bays are corbelled at the frieze. The windows contain multi-light metal frame industrial windows that sit on hollow tile sills. The center bay has been altered from an overhead rolling metal door to a residential-scale paneled wood door. The east elevation is similar in treatment to the south elevation, with eight bays of industrial windows and two bays of overhead doors altered to include paneled wood doors and infilled with hollow tile. The west elevation is clapboard siding punctuated with paneled wood doors beneath a wood plank shed roof and above a poured concrete sill. A six foot-wide concrete loading dock is located along the west elevation; a railroad spur originally ran alongside it.

There is little physical evidence on the interior of the building to determine the activities that occurred within, with the exception of labeled electrical panels and occasional instructional signs. The concrete slab floor contains remnants of linoleum tiles in various locations. The building is divided into two sections: the east section is located beneath a clearspan truss; the west section is separated by a series of brick piers. The series of brick piers was originally the west exterior wall. The banks of windows within that wall and the sills below have been removed.

An office is located at the mezzanine level in the northwest corner of the building. It is frame construction and is supported by frame posts. The room is enclosed by banks of six-over-one light double-hung-sash wood windows. The interior is finished with battened wall board. At the north end of the building, the bays of windows have been infilled with hollow tile. It is at this end of the building that Buildings 15A and 15C abut Assembly Plant J1. A 1943 photograph reproduced in the Dames and Moore report photograph indicates that the windows remained at that time. A steel pocket door adjoins Building 15C.

A brick and frame addition is located at the northwest corner of the building. It was in this room that the Parkerization process took place after 1942. The east wall of the room is the infilled west wall of the main building, the north and south walls are constructed of common bond brick, and the west wall is constructed of clapboards. The room contains three bays; the two east bays are supported by steel posts and the west bay is separated by brick piers. Based on the similarity of construction, it appears that the west bay may be an enclosed canopy similar to that in the main section of the building. The extant chemical tanks and the overhead basket system are visible in a March 31, 1943 photograph of the room reproduced in the Dames and Moore report.

The Proof Firing Room is constructed of reinforced concrete and is located at the corner formed between the main building and the Parkerization room on the building's west elevation. The banked flat-roofed structure contains two rooms and is constructed of reinforced poured concrete. All visible surfaces in the two rooms are covered with adhesive acoustical panels. The door to the room is constructed of riveted steel.

PART III: SOURCES OF INFORMATION

A. ORIGINAL ARCHITECTURAL DRAWINGS

No original architectural drawings have been located, although references to drawing numbers have been located in Conard, Report on the Construction of Raritan Arsenal, 1919. The sheet numbers for this building are "19-3-192, 193, 194, 196, 201, and 202."

A 1936 plan and elevation of the building is located at the National Archives, Washington, D.C., "Historical Record of Ordnance Buildings," R.G. 77, Entry 393, Box 205.

B. HISTORIC VIEWS

Photographs of the Arsenal from 1919 and 1943 are available at the National Archives. All photographs listed below are also xerographically reproduced in Dames & Moore report, 1993.

1919

"Report on the Construction of Raritan Arsenal Metuchen, New Jersey. C.K. Conard, Major, Ordnance Department, U.S.A. Constructing Quartermaster." October 15, 1919. National Archives, Washington, D.C. Record Group 77, Entry 391, Box 264. Photographs labeled "Raritan Assembly Plant" and "Machine Shop Assembly Plant."

1943

"Raritan Arsenal (Original), Vol. 106 "Photographs, Illustrations to Vol. IV [i.e. July-September 1943 Quarterly Reports]."
Photographs No. 17808 "Equipment Shop Repair and Overhaul of Small Arms," No. 17809 "Proof Firing Garand Rifle," No. 17810 "Rust Proofing by Parkerization."

Undated

Private Collection of Peter Giulias, former Operating Engineer at the Arsenal 1941-1963.
Xerographically reproduced in Dames and Moore report, 1993.

"The Small Arms Shop in Building S-2," "Locally designed and constructed tanks with ventilating system," "Penetrate Tanks in Small Arms Shop in Building S-2," "Locally designed and built Proof Firing Room with various equipment. Small Arms Shop S-2," "Water Bullet Traps in the Proof Firing Room of the Small Arms Shop in Building S-2."

C. INTERVIEWS

No interviews were undertaken for this documentation.

D. BIBLIOGRAPHY

1. Primary and unpublished sources

Conard, C.K., Major, Constructing Quartermaster. Report on the Construction of Raritan Arsenal Metuchen, New Jersey. Bound typescript, October 15, 1919. R.G. 77, Entry 391, Box 264, National Archives, Washington, D.C.

"Historical Record of Buildings." R.G. 77, Entry 393, Box 205, National Archives, Washington, D.C.

Kennedy, David M. Over Here: The First World War and American Society, Oxford University Press: New York, 1980.

Oversize manuscript map "Raritan Arsenal Building Numbers, January 2, 1943." R.G. 156, Entry 646, Box 225, National Archives, College Park, Md.

Raritan Arsenal History, Vol. I, Part 2 History 1919-1942. R.G. 156, Entry 646, Box 225, National Archives, College Park, Md.

Raritan Arsenal History, Vol. VII 1 April 1944 thru 30 June 1944. R.G. 156, Entry 646, Box 229, National Archives, College Park, Md.

Raritan Arsenal History, Vol. XIII 1 October 1945 thru 31 December 1945. R.G. 156, Entry 646, Box 232, National Archives, College Park, Md.

Raritan Arsenal History, Vol. 106, Photographs, Illustrations to Vol. IV [i.e. July-September 1943]. R.G. 156, Entry 646, Box 232, National Archives, College Park, Md.

2. Secondary and published sources

Dames & Moore. Archival Search Report Former Raritan Arsenal, Edison, New Jersey, Volumes 1 and 2, Prepared for the Army Corps of Engineers, Kansas City District, Kansas City, Missouri, July 1993.

Metcalf & Eddy. Archives Search Report for Raritan Center and the General Services Administration Area, Prepared for the Army Corps of Engineers, Huntsville Division, Huntsville, Alabama, December 1991.

United States Environmental Protection Agency Region II, Gannett Fleming, Inc., Ecolsciences, Inc., and Historic Sites Research. Stage I Cultural Resources Survey United States Environmental Protection Agency Edison Facility, Edison Township, Middlesex County, New Jersey, October 1990.

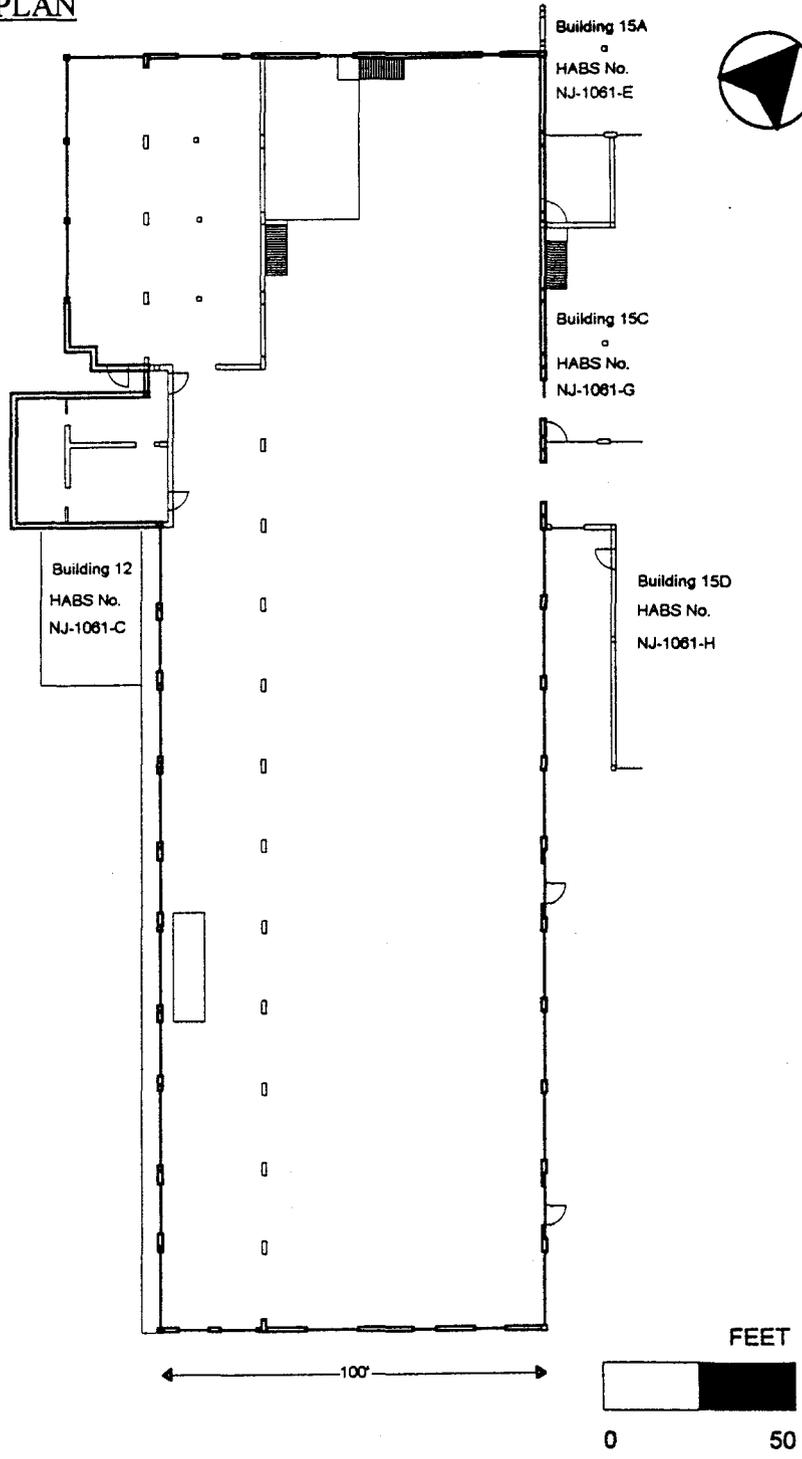
PART IV: PROJECT INFORMATION

This documentation was undertaken to fulfill a 1992 Memorandum of Agreement among the Advisory Council on Historic Preservation, the Environmental Protection Agency, and the New Jersey State Historic Preservation Office, in accordance with the Raritan Arsenal Management Plan prior to demolition of the structures.

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Marilyn Frasier, Historian
Affiliation: Richard Grubb & Associates
Date: October 1996

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SKETCH FLOORPLAN



Historical Record of Ordnance Buildings at

RARITAN ARSENAL.

(see give name of Arsenal or Depot)

DESIGNATION Shop Building.

Bldg. No. J-1.

Total cost, \$ 70,293.67	Annual depreciation.	Concrete.	REPAIRS	
Material: Walls Masonry.	Foundation	One, Concrete.	reviously expended	\$ 250.00
Roof Tar & Gravel.	Floors	One, Concrete.		
Total floor area above basement (sq. ft.) 11000.				
Dimensions 322' x 67'.	Date completed.	1918.		
PROVIDED WITH—	ARRANGEMENT OF ROOMS BY FLOORS			
Heating Steam, Indirect.	See Photostat attached.			
(Electric (t. rad.)				
Lighting 1-1/4" O.I.				
Water connections 6" T.C.				
Sewer connections				
Water closets, No.				
Urinals, No.				
Wash sinks, No.				
Washbasins, No.				
Laundry tubs, No.				
Shower baths, No.				
Bathtubs, No.				
Screens, No.				
Storm sash, No.				
Storm doors, No.				
Window shades, No.				
			Year ending	
			June 30, 1922	532.70
			June 30, 1923	125.80
			June 30, 1924	153.67
			June 30, 1925	61.75
			June 30, 1926	835.68
			June 30, 1927	451.20
			June 30, 1928	531.00
			June 30, 1929	591.40
			June 30, 1930	947.82
			June 30, 1931	47.89
			June 30, 1932	1446.23
			June 30, 1933	407.59
			June 30, 1934	4161.06
			June 30, 1935	69.81
			June 30, 1936	
			June 30, 1937	
			June 30, 1938	
			June 30, 1939	
			Total	

ADDITIONS AND INSTALLATIONS

Here enter chronologically all modifications, additions, introduction of water, sewer, lights, etc.
This Building serves as a Repair Shop for Small Arms, Light Artillery and Inert Components of Ammunition, Machine Shop. In this Shop there is located a Parkering and Bondrizing Section, Spray Section and a Sand Blast Outfit.

U. S. GOVERNMENT PRINTING OFFICE: 1917

Shop Building No. J-1, Historical Record Sheet. "Historical Records of Buildings" and "Record of Equipment and Conditions of Buildings" at Active Army Posts 1905-1942." R.G. 77, Entry 393, Box 205, National Archives, Washington, D.C.

