

RARITAN ARSENAL, WAREHOUSE N-5
2890 Woodbridge Avenue
Bonhamton Vicinity
Middlesex County
New Jersey

HABS No. NJ-1061-A

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

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

HABS
NJ
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HISTORIC AMERICAN BUILDINGS SURVEY
RARITAN ARSENAL, WAREHOUSE N-5 HABS No. NJ-1061-A

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

USGS Perth Amboy Quadrangle, Universal Transverse
Mercator Coordinates: 18.554420.4484790

Present Owner: U. S. Environmental Protection Agency Region II
26 Federal Plaza, New York, New York 10278

Present Use: Vacant

Statement of Significance: With the entrance of the United States into World War I in 1917, the War Department chose a site on the Raritan River in New Jersey as the U.S. Army's primary base for the storage and transshipment of munitions and other war materiel to Europe. The site comprised 2,150 acres, on which 275 buildings that came to constitute the Raritan Arsenal were erected during the period of October 1917 to November 1918. The masonry warehouse building originally designated N-5 was constructed in 1918, as part of the "Manufacturing Plant" group of buildings on the northern portion of the site. It was used to store and package truck and automobile parts. During World War II the building was modified, but continued to be used by the Army for storing non-explosive materiel. The building is utilitarian in nature, one story high, approximately one hundred fourteen feet wide by five hundred eighty feet long. It was constructed with a perimeter of evenly spaced masonry piers and an interior grid of wooden piers, which permitted large openings in the walls. The shallow-pitched roof is pierced by steeply slanted skylights. This warehouse is significant as a typical non-munitions storage component of Raritan Arsenal, which fulfilled an important function in supplying the U.S. Army in Europe in both World Wars I and II.

Part I. Historical Information

A. Physical History:

1. Date of erection: Authorized May 25, 1918.
Known to have been completed before November 1918.
2. Architect: Plans drawn by the Quartermaster General's Office in Washington, D.C., represented by Brigadier General I. W. Littell. Plans were modified for construction on the site by the Supervising Engineer of the Raritan River Ordnance Depot, G.A. Ferguson, (1917-January 1, 1919).
3. Original and subsequent owners: Built for the United States Army, and occupied by it until the Raritan Arsenal was decommissioned in 1964. At that time, the property was turned over to the General Services Administration (GSA). In 1977, GSA transferred the warehouse and other property of the former Raritan Arsenal to the United States Environmental Protection Agency. (See the maps of the property appearing later in this report).
4. Builder, contractor, suppliers: The general contractor for construction of the Raritan Arsenal's World War I buildings was Snare & Triest Company, of New York. Much of the masonry work, presumably including this warehouse building, was done by a team of Italian laborers. The construction crew numbered 4500 in the peak building month of April, 1918. In June, when the warehouse was probably begun, the construction crew on the site numbered 4000. The building originally cost \$137,236.00
5. Original plan and construction: Warehouse N-5 was planned as a large, 114-foot wide and 593-foot long single-story space without heat or plumbing on a concrete slab. When erected, its dimensions were fractionally smaller, 113.7 by 592.7 feet. The rectangular building's interior plan is composed of a grid of eight-inch square wooden piers 16 feet on center extending throughout the building. Tile fire walls divide the long building into seven bays. The shallow-pitched roof is pierced by skylights on either side of the roof. The structure of the building is carried along the exterior on a regularly spaced series of 32-inch-wide brick piers. The 15-foot wide openings were originally filled with paired wooden side-hinged doors. The doors are no longer extant but visible in historic photographs of the property. A 35-foot wide concrete platform extended along the west side of the building to serve as a loading platform for the railroad which ran beside it.

In the documentation of the original construction of Raritan Arsenal, three "storage buildings" are described. All were identical in size, "113.7 x 592.7 ft. with concrete floors, hollow

tile and brick walls, and with mill roof supported on posts. Light is provided by a saw tooth arrangement in the roof. Each has a concrete platform 35 ft. wide on the track side." (Conrad, p. 53). This accurately describes the original condition of Warehouse N-5.

6. Alterations and additions: Steam heating was introduced into one bay of the building (the most northerly) in the autumn of 1918; plans to heat the rest of the building were halted with the Armistice. The Army's own records indicate that very little money was spent on repairs to the building between 1919 and 1935. Electric lighting was introduced sometime before 1935, and upgraded in 1943.

A comparison of photographs of Warehouse N-5 taken in 1919 and 1943 shows the most significant alteration to the building. Originally the exterior brick piers separated large doors along the full length of the building; there was no "wall" but a series of operable doors acting as the screen between interior and exterior. By 1943, the wooden doors had been removed, and the bays were bricked in to accommodate smaller metal doors or windows. The east and west sides of the building were treated identically, with a pattern of a center door flanked by two large windows on each side marking each bay of the building. This alteration was most probably made during 1942, as the Raritan Arsenal rapidly responded to the demands of World War II. In order to allow round-the-clock work shifts, new lighting was installed in the warehouse in the spring of 1943. Rest rooms for men and women were built in the most southerly portion of the warehouse at this time as well.

The 1919 photograph indicates that the exterior wall of the north side of Warehouse N-5 was exposed hollow tile. It is unclear whether the tile was meant to be exposed, or if in the rush of construction, some finishing details were left undone. By the time of the 1943 photograph, however, the gable ends were covered with brick, lending the building a more permanent appearance. This brick and its joints matches that found on the infilled sections of the walls on the sides of the warehouse.

No substantial alterations or additions have been made to the Warehouse N-5 since World War II. Neglect of the roof has caused serious deterioration of the structure since the 1970s.

B. Historical context: With the entrance of the United States into World War I in 1917, the War Department confronted the problem of shipping enormous quantities of munitions and supplies from Atlantic ports to the European front. A site along the Raritan River in New Jersey, accessible to New York harbor by water and by rail, was chosen as the Army's primary site for the storage of munitions and other war materiel. First named the Raritan River Ordnance Base, by 1919 the facility was known as the Raritan Arsenal, acknowledging the importance of munitions storage at the

site. The magazine and bunkers for explosives occupied neat rows well south of this warehouse, far from populated areas. The northerly portion of Raritan Arsenal, near Woodbridge Avenue and the old village of Bonhamton, included offices, a machine shop, and warehouses for assembling and storing materials other than explosives. Warehouse N-5 was part of this group, known in the World War I-era records as the "Manufacturing Plant".

Three "Truck Storage Facilities" were constructed in 1918 as part of the Manufacturing Plant, where trucks could be disassembled and stored for shipment overseas. This seems to have been the use for Warehouse N-5, and its twin across the railroad tracks to the west, Warehouse M-4, as well as a similar building west of these two, no longer standing. The truck storage facility was operated in conjunction with a driving school.

The Armistice of November 1918 brought an end to the nearly constant construction which had characterized the Raritan Arsenal during the war years. Storage and transshipment of Army supplies continued, and buildings were renovated or replaced as needed. Warehouse N-5 seems not to have received much attention during this time. It continued to be part of a group of truck storage buildings, so presumably it maintained its original use.

When war broke out in Europe in 1939, an expansion of the Raritan Arsenal was begun. New buildings were added, and the number of civilian employees began to climb. Warehouse N-5 was renamed Warehouse W-1 in 1941. The building was modified to give it windows, as well as doors. The improvement of electric lighting acknowledged the need for light by round-the-clock shifts at the warehouse, and the addition of rest rooms accommodated the women who worked on the site. No explicit record of the use of the warehouse in World War II has been discovered. Clues remaining in the building include "No Smoking" signs painted on the walls, and another sign stencilled on cardboard, "Bay 4 Guns Mach. & Rifles auth. obsolete". Again, because of its location near the populous northern portion of the depot, the warehouse would certainly not have been used to store live ammunition, but it may have been used for the guns themselves.

A 1942 history of Raritan Arsenal listed some of the items stored at the facility. These included machine guns, automatic rifles, 37 mm guns and carriages, ammunition for these guns, machine gun carts, trench helmets, trucks and trailers, gun slings, pistol and revolver holsters, and bayonets and scabbards.

Due to its size and convenient location, the warehouse was maintained after World War II, even as other buildings on the property were demolished or fell into disrepair. Raritan Arsenal was again active during the Korean War; however the use of Warehouse N-5 at this time is unknown.

Raritan Arsenal was decommissioned by the Army in 1964, and the property was turned over to the General Services Administration. Warehouse N-5 (now designated Building 202) has received little or no use or maintenance since that time, and has

fallen into serious decay. The Raritan Arsenal property has been subdivided, with major sections going to a private owner for commercial development and to Middlesex County for creation of a County College. The portion of the Arsenal that includes Warehouse N-5 is owned by the Environmental Protection Agency. The building has not been utilized since 1977.

PART II. ARCHITECTURAL INFORMATION

A. General Statement: The warehouse building originally known as N-5 on the Raritan Arsenal property is a large utilitarian building constructed on a grid system. Its design, materials, and workmanship are very simple, within the tradition of industrial building practice in the early 20th century.

1. Architectural character: The warehouse is a single-story rectangular building, with regularly spaced brick piers on the exterior and wooden piers on the interior in a grid of sixteen feet on center. Interior fire walls of hollow tile divide the building into bays. (See attached floorplan). The regular grid gives the building its form, and dictates the spacing of openings within the bays. It is a building whose form is a direct expression of function, not style.

2. Condition of fabric: The warehouse is currently in very poor condition. The skylights leak, and water damage has caused the buckling or collapse of several sections of the building. Window glass is broken, and several frames are missing on the eastern elevation. Doors are in most cases inoperable, having rusted to their hinges in either an open or shut position.

B. Description of Exterior:

1. Over-all dimensions: 113.7 feet by 592.7 feet (according to Army records). The 1964 GSA inventory lists it as approximately 120 feet by x 580 feet. Measurements made for this study: 115 feet by 576 feet.

2. Foundations: poured-in-place concrete slab.

3. Walls: Red brick piers 32 inches wide, spaced 16 feet on center, form the basic wall structure on the east and west sides of the building. The bricks are not first quality, being worn, pitted, and, in some cases, marked with a black crust, evidence of firing problems. The brick is laid in English bond (five rows of stretchers, one row of headers), although there are variations in the pattern from pier to pier. The brick is set in a light-colored, medium-grained mortar, with occasional yellow beach pebbles visible. Every fifth pier rises above the roof height to form a brick parapet above the internal fire wall running the width of the

building. (This spacing is modified in the northernmost bays). Between the piers, a much higher quality hard red brick, evenly laid in a true English bond, is set in a coarse mortar with many bright yellow-orange beach pebbles in the mix. This brick was part of the ca. 1942 alterations to the building, filling in the bays, which had previously only held large paired wooden doors. The brick was used to block down the openings to accommodate smaller doors and windows. The same hard brick is used on the north and south gable ends of the building.

4. Structural system, framing: The building is built on a post-and-beam system of wood and masonry. The structure consists of brick piers (32 inches wide) around the perimeter and wooden piers (eight inches each side) spaced sixteen feet on center throughout the interior of the building. The internal piers are set in metal collars anchored into the concrete slab floor. Metal connectors anchor the 4-inch wide by 8-inch deep wooden beams of the roof system to the piers. On the exterior, a coarse-aggregate concrete lintel spans the space between the brick piers.

5. Porches, stoops, balconies, bulkheads: A concrete platform 35 feet wide extends along the west side of the building. It provided for on-grade transfer of goods from the warehouse into railroad cars, which stood on the siding west of the building. There is no covering over the platform. A ramp at the south end of the platform allows for a change of grade between the street to the south of the warehouse and the platform.

6. Chimneys: There are no chimneys on the building. Heating was accomplished with a steam system, which operated from a central heating plant located north of the warehouse, in a building now demolished.

7. Openings:

a. Doorways and doors: There are seven sets of large metal doors on the east and west elevations of the building, a set to each bay. These doors are side-hinged, hung in pairs. They are 11 feet 10 inches tall, and each door is five feet wide. The doors are rusted; on some the stencilled numbers indicating the bay are visible. Odd numbered bays begin with 1 on the south end and proceed north along the east side of the building; even-numbered bays are on the west.

b. Windows: The north and south gable ends of the building consist of three evenly spaced bays, which contain large metal-frame industrial windows. The individual panes are twelve inches wide and eighteen inches high. Each window is six panes across and six panes high; windows are paired to give an opening twelve feet wide and nine feet high. The windows have a lower frame of fine-grained cast concrete. It is topped by another concrete sill of very coarse, dark aggregate, which matches the flat lintel

above. This may indicate replacement of the window, and insertion of another sill to fill the space. There is no framing other than the brick wall on the sides of the windows. Similar windows are on the east and west sides, centered in the bays formed by the brick piers. The windows on the north side are fixed. The windows on the south side have a six-light tilt-out operable panel in the lower part of the window. Also on the south side of the building, a smaller, six-panel metal window which tilts out to open, is located high on the wall between the center and easterly bays. It lights the rest room inside.

8. Roof:

a. Shape, covering: The roof of the warehouse is a shallow-pitched gable. The wooden plank roof deck is covered with tar and gravel roofing.

b. Cornice, eaves: The building's brick wall is topped with a corrugated copper gutter where it meets the roof. The roof does not extend past the walls. Water runoff is carried in these internal gutters to a metal downspout that is attached to the side of the building at most of the brick piers which mark the bay divisions.

c. Dormers, cupolas, skylights: The warehouse has two rows of seven skylights, two in each bay. The skylights are set on each side of the roof ridge in copper frames. Each triangular-shaped skylight is 48 feet long, and has a vertical "window" of metal-mesh reinforced corrugated glass facing east. Each has a steep, tar-and-gravel covered shed roof on the west side. At the north and south ends of each skylight are the remains of metal ventilators.

C. Description of Interior

1. Floor plans: The single-story building is arranged on a grid system. The building has six wooden piers, each sixteen feet apart and sixteen feet from the side walls, across its width (east-west axis). In five bays of the building, four wooden piers, each sixteen feet apart, occupy the length (north-south axis) of five bays in the building; the end piers are each sixteen feet from an internal fire wall. The 80-foot long by 112-foot wide interior sections comprise a standard bay, with a door and four windows on each of the exterior (east-west) walls. The exceptions are the most northerly bay, which contains eight piers, increasing its length to 144 feet. The most northerly bay is partitioned with wallboard to form an office approximately 32 feet wide x 16 feet long. The bay immediately south of that is only three piers long, or 64 feet. The fire walls originally had three evenly-spaced openings; variations in this pattern in some spaces are due to later alterations. The building is thus composed of a series of large rooms, lighted on

two sides and from the skylight above, with direct exterior access as well as access from identical rooms through internal fire doors.

2. Stairways: There are no stairways. The entire warehouse is on a single floor, and entry is made directly at ground level to facilitate movement of goods in and out of the warehouse.

3. Flooring: The floor of the warehouse is concrete.

4. Wall and ceiling finish: The exterior brick walls are exposed on the interior of the sides of the warehouse. Interior fire walls are made of hollow tile, as are the interior faces of the north and south gable ends of the building. The brick piers and tile walls bear traces of white paint. The wooden piers inside the building are also painted white. The lower third of some are painted red, bright yellow, or yellow and black striped, to increase their visibility. The wooden roof truss and ceiling planks are also painted white.

5. Openings:

a. Doorways and doors: Internal fire doors are steel, hung on tracks, that are installed above the openings in the hollow tile walls. The heavy doors are held open by a counterbalanced weight system.

6. Decorative features and trim: The buildings are entirely utilitarian and have no decorative features.

7. Hardware: There is no hardware of note inside the building.

8. Mechanical equipment:

a. Heating: Metal pipes, part of a multi-building steam heating system, are still extant in the most northerly bay of the building.

b. Lighting: Electric lights in metal shades are hung from the roof, centered in each of the squares formed by the building's grid pattern. Wooden utility poles stand to the south of the building, and the pipe-like conduit which brought the electricity into the building from the exterior wires is visible.

On the exterior, "safety lights" in a copper-finish "cage" are positioned over each door.

c. Plumbing: The warehouse has a ceiling-hung sprinkler system. Plumbing for rest rooms was also introduced in the south section of the building.

Hydrants are placed at several locations around the perimeter of the building.

D. Site

1. General setting and orientation: The warehouse was built as one of a trio of identically sized and sited warehouses. (One is no longer standing; the other was known as Warehouse M-4). Warehouse N-5 is the more easterly of the two extant warehouses. A railroad siding ran between the two warehouses and terminated at the northern end of the buildings. The buildings are parallel to each other; their long axes run north-northwest to southeast.

2. Historic landscape design: The warehouses were constructed as part of a major building campaign to create a modern, efficient munitions storage facility in World War I. Buildings throughout the complex were arranged in rows, with the main streets of the base running northeast to southwest. Railroad sidings were constructed beside the buildings to facilitate loading and unloading goods at the Arsenal. The main railroad lines run along the south edge of the Arsenal property, headed east to the Raritan Bay and New York Harbor. There was no landscaping of the warehouse site originally, although the twenty-foot patch of ground directly north and south of the warehouses were later planted in grass and treated as lawn between the warehouse and the internal roads to the north and south of it.

3. Outbuildings: While there are dozens of standing buildings of approximately the same age and history at Raritan Arsenal, none is an outbuilding to Warehouse N-5.

III. SOURCES OF INFORMATION

A. Original architectural drawings were sought in the Cartographic and Architectural Branch of the National Archives (NNSC), Pickett Street, Alexandria, Virginia. Their holdings include standardized plans drawn by the Quartermaster General's Office for army forts and accessory buildings from the late 19th century through the mid-20th century. They do not have any plans for any of the World War I-era buildings at the Raritan Arsenal.

B. Photographic documentation for the buildings comes from two sources, both in the Suitland Reference Branch of the National Archives (NNRR), Suitland, Maryland. The first is found in Report on the Construction of Raritan Arsenal, Metuchen, New Jersey, by Major C.K. Conrad. His report, done in 1919, documents the construction of the arsenal with a lengthy description and some photographs. A photograph titled "Raritan Assembly Plant" is a view to the south from the old gateway into the facility near Woodbridge Avenue. In the background stands a row of warehouses, including the subject of this report. It shows that every bay on the east side held a pair of huge wooden doors, that filled the space between the brick piers. The north gable end was not brick but hollow tile,

indicating it was not completely finished before the War's end. This document of the original appearance of the building is reproduced in as Figure 4 in the 1990 Stage I Cultural Resources Survey of the E.P.A Edison facility, but the details clear in the original photograph are impossible to make out in reproduction.

The second photograph is in a bound volume of Raritan Arsenal Photographs, from Records of the Office of the Chief of Ordnance, from 1940-1945. This photograph, dated June 22, 1943, is a view north from the concrete loading platform on the west side of Warehouse N-5. It documents doors and windows in the west elevation of the building identical to those which are presently visible. This photograph was not been reproduced in the 1990 Cultural Resources Survey or for this report.

C. Interviews: No interviews were undertaken for this project.

D. Bibliography:

1. Primary and unpublished sources:

Conrad, C.K., Major. Report on the Construction of Raritan Arsenal, Metuchen, N.J. Bound typescript. 1919
R.G. 77, Entry 391, Box 264, Suitland Reference Branch National Archives, (NNRR) Suitland, Maryland.

Raritan Arsenal History, Vol. I, Part 2, 1919-1942.
R.G. 156, Entry 646, Box 225, (NNRR).

Raritan Arsenal, New Jersey. Completion Reports of Various Construction Projects, 1920-1937. R.G. 77, Entry 391, Box 264, (NNRR).

Records of the Office of the Chief of Ordnance, Vol. 106.
Bound volume of Raritan Arsenal Photographs (ca. 1943).
R.G. 156, Entry 646, Box A234, (NNRR).

United States Environmental Protection Agency, Region II, New York, New York. Stage I Cultural Resources Survey, U.S. Environmental Protection Agency Edison Facility, Edison Township, Middlesex County, New Jersey. October 1990.

IV. PROJECT INFORMATION

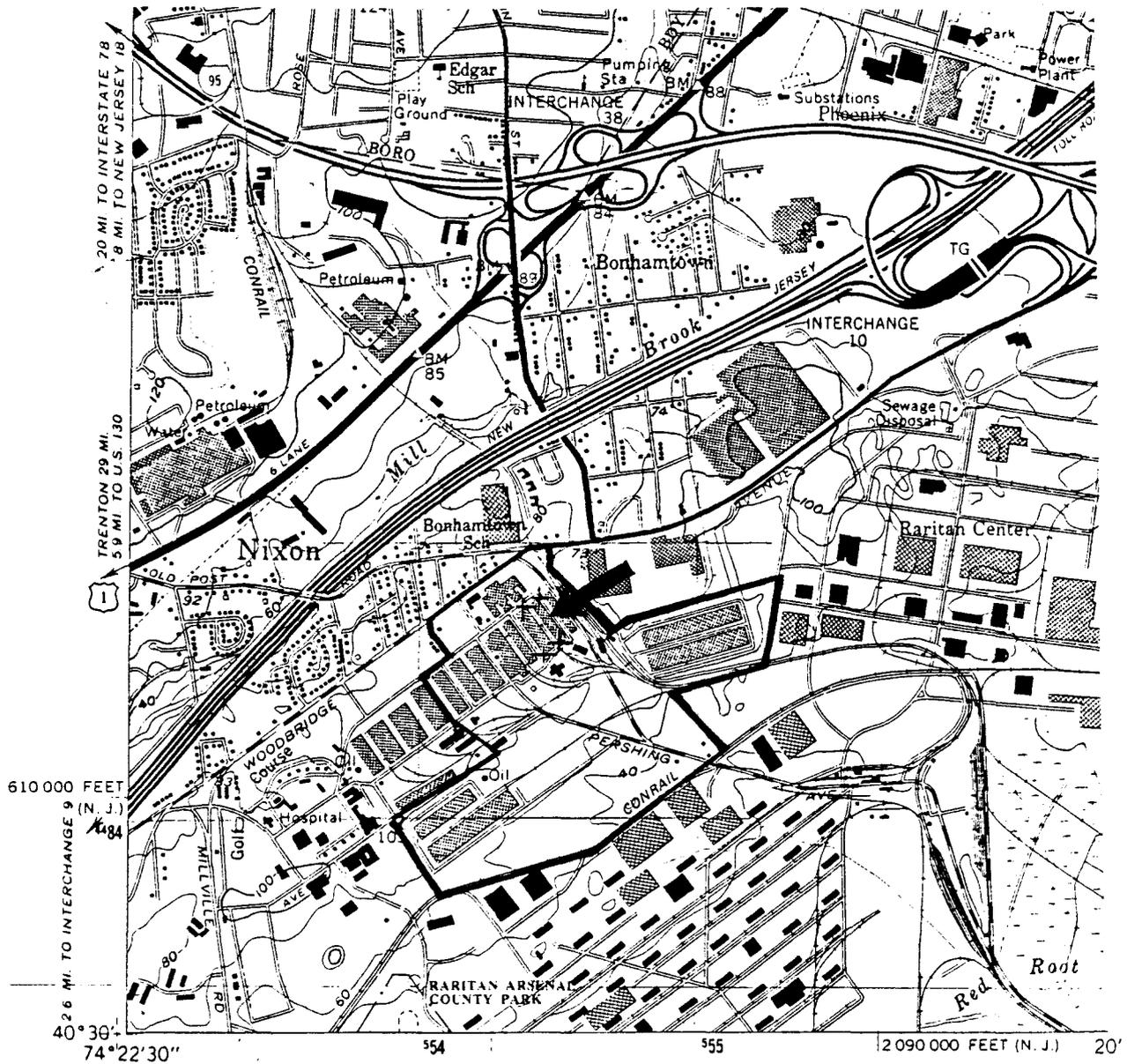
Documentation for Warehouse N-5 was undertaken at the request of the U.S. Environmental Protection Agency under the terms of a Memorandum of Agreement between the U.S. Environmental Protection Agency, the Advisory Council on Historic Preservation, and the New Jersey State Historic Preservation Officer, dated June 1992.

Research was carried out by Janet W. Foster, of Acroterion, Historic Preservation Consultants, P.O. Box 950, Madison, New Jersey 07940. Photography was done by E. Kenneth Hoffman, 14 Hill Street, Morristown, New Jersey 07960.

PROPERTY PLOT PLAN

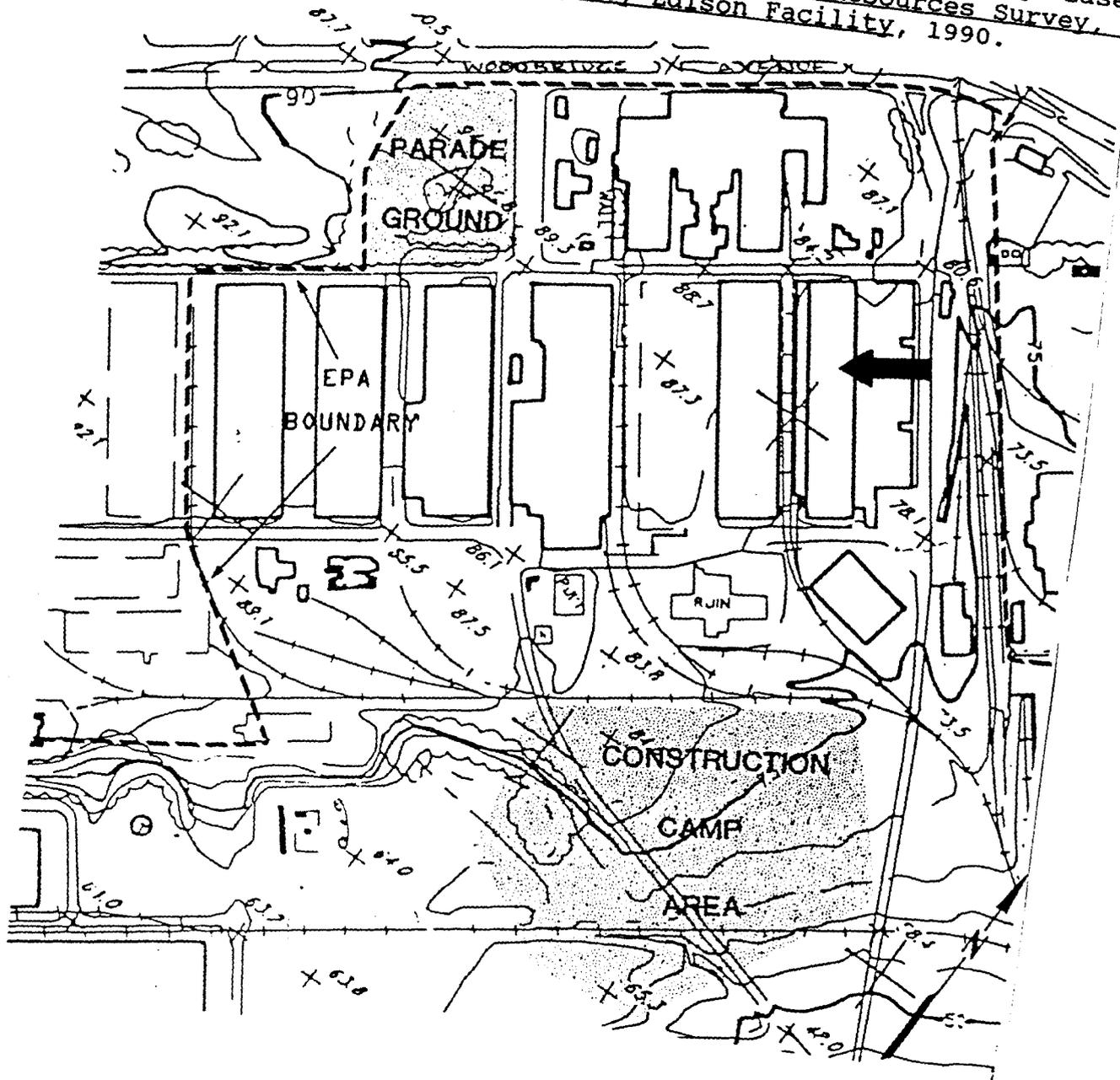
Map showing the extent of the Raritan Arsenal now owned by U.S. E.P.A. Arrow points to subject building.

Base map is USGS Perth Amboy Quad (1956, photorevised 1981), 7.5 minute series.



PROPERTY PLOT PLAN

Map of the E.P.A.-owned property which includes part of the former Raritan Arsenal. Arrow points to subject building. Base map is from Figure 17 of the Stage I Cultural Resources Survey, U.S. Environmental Protection Agency Edison Facility, 1990.



SKETCH FLOORPLAN
Not to scale

