

Rock Island Arsenal
Powerhouse
(Hydroelectric Plant, Building 160)
Sylvan Drive
Rock Island
Rock Island County
Illinois

HAER No. IL-20-~~CC~~

HAER
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D.C. 20013-7127

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HISTORIC AMERICAN ENGINEERING RECORD

ROCK ISLAND ARSENAL
POWERHOUSE
(Hydroelectric Plant, Building 160)
HAER No. IL-20CC

Location: Sylvan Drive,
Rock Island Arsenal,
Rock Island,
Rock Island County, Illinois
UTM: 15.705350.4598640
Quad: Davenport East

Date of Construction: 1900-1901

Present Owner and Occupant: U.S. Army

Present Use: Hydroelectric Plant

Significance: Replacing a waterpower telodynamic system on the same site, the hydroelectric Powerhouse was completed in 1901 to meet the increased power demands of a small arms plant established at the arsenal at the turn of the century. The building was expanded in 1903, and again in 1919. It is still in service, using machinery installed in 1919. Part of the Rock Island Arsenal National Register Historic District, the Powerhouse has long played a key role in the arsenal's manufacturing program.

Historian: Jeffrey A. Hess, February 1985

Architectural Historian: David Arbogast, February 1985

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: In May 1888, high water destroyed the arsenal's waterpower dam, which extended from the south-central shore of Rock Island to the northwestern tip of Sylvan Island ("History of Rock Island Arsenal," p. 63). A new masonry dam with 41 turbine openings was completed at the same site in 1892 ("Report, 1901," p. 43; "History of Rock Island Arsenal," p. 63). The dam supported a telodynamic power station, which was destroyed by fire in January 1899 ("History of Rock Island Arsenal," p. 74). Congress immediately appropriated funds for the erection of a new hydroelectric plant on the 1892 dam ("History of Rock Island," p. 74). Construction commenced in 1900, and the building was completed in 1901 ("Report, 1900," p. 24; "Report, 1901," p. 43).
2. Architect: Unknown.
3. Original and subsequent owners: U.S. Army.
4. Builder, contractor, supplier: General Electric Company supplied generating equipment ("Report, 1900," p. 223).
5. Original plans and construction: The Rock Island Arsenal Engineering Plans and Services Division has one original drawing, dated January 18, 1900, that contains a vertical section, a plan view, and elevations of the north and west facades (see HAER Photo No. IL-20CC-24). The original construction is documented by an undated photograph in the picture collection of the Rock Island Arsenal Historical Office (see HAER Photo No. IL-20CC-19). The photograph is captioned, "152-21762 / Water Power / Date Unknown." It shows an L-shaped, one-story, brick building. The short leg of the "L" is three bays across (north-south) and two bays deep (east-west); the long leg is two bays across (north-south) and 18 bays deep (east-west). The original construction is still intact, although the long leg of the "L" has been extended to the east by a matching, one-story, seven-bay addition that perpendicularly abuts a two-story addition.
6. Alterations and additions: In 1903, the long leg of the "L" was extended to the east by a matching, one-story, seven-bay addition ("Report, 1903," p. 88). Like the original construction, the addition rests upon the 1892 dam. It is documented by a sheet of two photographs originally published in 1905 (Stanley, p. 140), a copy of which is in the picture collection of the Rock Island Arsenal Historical Office (see HAER Photo No. IL-20CC-20).

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In 1917-1918, the 1892 dam was remodeled into an L-shaped structure by the removal of the eastern end and the construction of a new dam wall that extended approximately ninety degrees southward to Sylvan Island. The new dam served as a substructure for a two-story, brick hydro plant addition that abutted the east facade of the 1903 addition. Designed by Central Engineering Company of Davenport, Iowa, the two-story addition was completed in 1919 (War's Greatest Workshop, pp. 28, 91). The addition is documented by a 1919 photograph in the picture collection of the Rock Island Historical Office, captioned "125-31921 / 2-19-19 / R.I.A Water Power Extension looking north" (see HAER Photo No. IL-20CC-22).

B. Historical Context:

In 1879, the Ordnance Department inaugurated a telodynamic power system to drive machinery in the manufacturing shops on Rodman Avenue. The system was originally energized by four 250-horsepower turbines installed in a dam that extended from the south-central shore of Rock Island to the northwestern tip of Sylvan Island ("Report, 1879," p. 207). After the waterpower installation was destroyed by high water in May 1888, it was replaced on the same site by a new masonry dam and frame powerhouse completed in 1892. Although the new dam contained openings for 41 turbines, only eight wheels were installed ("Report, 1901," p. 43). The reconstructed telodynamic system remained in operation until a fire destroyed the powerhouse in January 1899. At the time of the fire, the arsenal command was studying ways of increasing the installation's power supply to meet the additional demands of a recently authorized small arms manufacturing program. Deciding that telodynamic transmission was an inefficient system for the arsenal's new manufacturing responsibilities, the Ordnance Department made plans to construct a modern hydroelectric facility on the 1892 dam ("Report, 1900," pp. 222-223).

Construction of the hydroelectric Powerhouse began in 1900, and the building was completed in 1901. The plant initially contained 14 50-inch, Samson-Leffel turbines installed in the original wheel openings of the 1892 dam. The turbines, operating under about 11 feet of head, transmitted their power through heavy bevel gearing to a horizontal shaft connected to two General Electric, three-phase, alternating current, revolving-field generators rated at about 500-kw each ("Report, 1900," p. 223; "History of Rock Island Arsenal," p. 75; Burr to Chief of Ordnance; see HAER Photo No. IL-20CC-21). In 1903, the Powerhouse was expanded with a matching, seven-bay addition to accommodate an additional six turbines and one 650-kw generator similar in design to the original equipment.

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("History of Rock Island Arsenal," p. 75; "Report, 1903," p. 88; see HAER Photo No. IL-20CC-20).

In 1914, the arsenal command reassessed its power plant and concluded that:

"The water wheels, which were the best available when they were installed. . . , had become obsolete and were far less efficient than the modern turbine. The combination of inefficient wheels, long shaft and bevel gearing involved a great loss of power. The working head of water averaged eleven feet or less, and it required three feet to merely turn the generators, so that the plant, with a rated capacity of 2,200 horse-power, actually was generating only from 1,300 to 1,400 horse-power, or 65 per cent of its supposed capacity" (War's Greatest Workshop, p. 90).

In 1916, Congress appropriated funds for an upgrading of the arsenal's hydro plant, which entailed the construction of a new concrete dam and two-story, brick powerhouse perpendicularly abutting the rear of the existing dam and powerhouse (see HAER Photo No. IL-20CC-22). Designed by Central Engineering Company of Davenport, Iowa, the new dam and superstructure was completed by 1919. The operating equipment included eight vertical, Francis turbines, each direct connected to a 2,400-volt, three-phase, 60-cycle, Westinghouse generator (War's Greatest Workshop, p. 91; see HAER Photo No. IL-20CC-23). In 1922, the generating equipment installed in 1901 and 1903 was dismantled and removed ("Arsenal Plant Brings \$8,000"). At present, the 1919 generating equipment is still in service supplying, on a yearly average, about one-third of the arsenal's electricity needs (Interview with Morris). The Powerhouse has been designated as "Building 160" at least since World War II ("Industrial Facilities Inventory"; for additional documentation, see HAER No. IL-20).

Prepared by: Jeffrey A. Hess
 MacDonald and Mack Partnership
 February 1985

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: The building is composed of three primary blocks. The central and western blocks (HAER Photo Nos. IL-20CC-1, IL-20CC-3, IL-20CC-4, and IL-20CC-6) are utilitarian brick buildings with Classical detailing. The eastern block (HAER Photo Nos. IL-20CC-1, IL-20CC-2, and IL-20CC-5) is a massive, early twentieth-century building typical of its period.
2. Condition of fabric: The building and dam are well-maintained and are in good condition.

B. Description of Exterior:

1. Overall dimensions: The western block (HAER Photo Nos. IL-20CC-1, IL-20CC-3, and IL-20CC-4) measures 60' (3 bays) x 42' (2 bays). Running east from the north end of the east elevation of the western block is the central block (HAER Photo Nos. IL-20CC-1, IL-20CC-4, and IL-20CC-6) which measures approximately 21' (2 bays) x 370' (23 bays). The eastern block (HAER Photo Nos. IL-20CC-1, IL-20CC-2, and IL-20CC-5) runs southeast from the eastern end of the central block. It measures approximately 31' (1 bay) x 231' (11 bays on its upstream face and 9 bays on its downstream face) with a projecting block at the downstream side of the intersection with the central block, having one bay on each of its two exterior elevations.
2. Foundations: The western block has rock-faced ashlar limestone foundations (HAER Photo No. IL-20CC-3) below a cut limestone water table. The central block is built upon an ashlar limestone dam (HAER Photo Nos. IL-20CC-1, IL-20CC-4, and IL-20CC-6) to which has been added reinforced concrete sluice gates on the downstream face with each gate having a semi-circular arch. The eastern block is built upon a reinforced concrete dam (HAER Photo No. IL-20CC-5) with rectilinear sluice gates.
3. Walls: The western and central block walls (HAER Photo Nos. IL-20CC-1, IL-20CC-3, IL-20CC-4, and IL-20CC-6) are tan brick laid in running bond. Bays are defined by brick pilasters rising from the water table to a flat brick frieze. Walls of the eastern block (HAER Photo Nos. IL-20CC-1, IL-20CC-2, and IL-20CC-5) are also tan brick laid in 5/1 common bond. The wall surfaces are enlivened with cement belt courses, decorative brick panels, and cement accents related to the panels. The wall continues upward into a parapet which is indented and raised at regular intervals to enliven an otherwise flat roofline.

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4. Structural systems: Brick bearing walls. Reinforced concrete flooring. Reinforced concrete piers (HAER Photo No. IL-20CC-9) in the lower eastern room. Iron Fink trusses support the roof of the western block (HAER Photo No. IL-20CC-15). Simple sawn wood king post trusses (HAER Photo No. IL-20CC-12) support the central block roof. Flat steel trusses (HAER Photo Nos. IL-20CC-7 and IL-20CC-8) support the eastern block roof.
5. Porches: At the center bay of the western block west elevation is a small porch (HAER Photo No. IL-20CC-3) having a poured concrete landing and steps above which is a painted canopy formed to match the segmental arch opening of the doorway it fronts and supported by a pair of simple brackets.

Along the upstream face of the dam a steel walkway is cantilevered on simple steel brackets. A pipe railing guards the outside of the walkway.

6. Chimneys: East of the eastern block is a large, freestanding, square-plan, tan, brick chimney (HAER Photo Nos. IL-20CC-2 and IL-20CC-5).
7. Openings:
 - a. Doorways: The western block has two doorways (HAER Photo No. IL-20CC-3) located in the center bay of the west elevation and the east bay of the north elevation. Both have segmental-arched heads with brick labels, brick jambs, and cut limestone sill blocks. Both retain original pairs of wood doors. Each leaf in the west doorway has two lights above two panels below a two-light, fixed, wood transom over both leaves. Each leaf in the north doorway (HAER Photo No. IL-20CC-18) serves to fill the opening and has six lights above two panels. Centered in the western bay of the north elevation of the central block is a narrow doorway, also with a segmental-arched brick head with label, brick jambs, and a limestone sill block. The doorway has been filled with brick. Near the center of the dam is a pedestrian doorway in upstream face of the eastern block, containing a modern slab door with upper glass panel. The east elevation of the east block has a large doorway centered in it with a flat concrete lintel, brick jambs, and concrete sill. It has been filled with three miscellaneous board doors and four, four-light, fixed, wood transom sash.
 - b. Windows: Typical bays of the western and central blocks have window openings (HAER Photo Nos. IL-20CC-1, IL-20CC-3, IL-20CC-4, and IL-20CC-6) centered in them, having segmental-arched heads with brick labels, brick jambs, and cut limestone sills. Centered below each typical opening is a small, rec-

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tangular brick niche. Each opening contains a pair of one-over-one, double-hung, wood sash. The center bay of the western block east elevation contains a similar opening, but with a single sash. One of the downstream window openings of the central block has been filled with brick. The nineteenth bay from the west on the downstream side of the central block contains an octagonal, brick, oriel window. Each face contains a typical window opening with a single, typical sash.

Typical bays of the eastern block have large, rectangular window openings (HAER Photo Nos. IL-20CC-1, IL-20CC-2, and IL-20CC-5) centered in them, having flat concrete lintels and sills and brick jambs. All eastern block window openings have been filled with glass block. Typical window openings each have two sets of three, raw-aluminum, hopper sash set into the glass block.

8. Roof:

- a. Shape, covering: The western block roof (HAER Photo Nos. IL-20CC-1, IL-20CC-3, and IL-20CC-4) is a simple hip covered with black asphalt shingling. The central block roof (HAER Photo Nos. IL-20CC-1, IL-20CC-4, and IL-20CC-6) is a simple gable, also covered with black asphalt shingling. The eastern block has a flat roof covered with tar and gravel.
- b. Cornice, eaves: The western and central blocks (HAER Photo Nos. IL-20CC-1, IL-20CC-3, IL-20CC-4, and IL-20CC-6) have corbelled brick cornices supporting minimal eaves. They have no gutter system. The eastern block has neither cornice nor eaves, but does have a parapet wall (HAER Photo Nos. IL-20CC-1, IL-20CC-2, and IL-20CC-5) and an internal drainage system for its flat roof.
- c. Ventilators: Near the eastern end of the central block a large, round, sheet-copper ventilator (HAER Photo Nos. IL-20CC-1 and IL-20CC-4) is centered on the roof ridge. Three, large, rectangular, sheet-metal ventilators (HAER Photo Nos. IL-20CC-1, IL-20CC-2, and IL-20CC-5) emanate from the eastern block roof.

C. Interior Description:

1. Floor plans: The western block contains a single, open room with a supplemental generator (HAER Photo No. IL-20CC-15) occupying its center. Below it is a basement divided into several small rooms. The central block is primarily open, except toward its eastern end where it is bisected by a partition (HAER Photo No. IL-20CC-13), to the east of which is an enclosed storage room, an office, and a

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restroom on the downstream side. At the western end of the eastern block is a large control room adjacent to a double pit in the floor. The deep pits are square in plan with a dividing wall between them. At the downstream side of the turning point of the dam structure is a large room. The remainder of the eastern block is an open room containing operating electric turbines (HAER Photo Nos. IL-20CC-7, IL-20CC-8, and IL-20CC-11).

2. Stairways: There are a number of stairs and ladders in the building. An original, straight-run, cast-iron stair (HAER Photo No. IL-20CC-16) descends to the west block basement along the south wall. It has an open stringer and openwork, decorative risers and a pipe railing painted black. A steep, steel stair rises to a steel platform above the generator in the west block. It has plain treads and no risers. A minimal pipe railing runs along its sides and along the outside of the platform. Each eastern block pit has a steel cage ladder facing its counterpart across the north side of the dividing wall. A pipe railing painted black surrounds both pits. A U-plan, concrete stair (HAER Photo No. IL-20CC-9) with winders descends to the large room at the turning point. A steel cage ladder rises to a steel grate platform at the upstream side of the turning point of the dam.
3. Flooring: Painted concrete slab (unpainted in the basements).
4. Wall and ceiling finishes: The western and central block outer walls (HAER Photo Nos. IL-20CC-12, IL-20CC-13, IL-20CC-14, IL-20CC-15, IL-20CC-16, IL-20CC-17, and IL-20CC-18) are painted brick. A half-round, projecting brick course runs around the perimeter about four feet above the floor, serving as a high, chair rail. Interior partitions in the central block (HAER Photo No. IL-20CC-13) are original, painted, vertical, beaded, tongue-and-groove, board panelling and later corrugated steel. Both blocks have open ceilings (HAER Photo Nos. IL-20CC-12 and IL-20CC-15) with the wood roof decking painted. There is a corrugated, steel ceiling in the office having the corrugated steel walls.

The outer eastern block walls (HAER Photo Nos. IL-20CC-7, IL-20CC-8, and IL-20CC-11) are painted brick, the pit and lower room (HAER Photo No. IL-20CC-9) walls, piers, and ceiling are unpainted concrete, and the control room walls are painted plywood. The ceiling (HAER Photo Nos. IL-20CC-7, IL-20CC-8, and IL-20CC-11) is painted wood.

5. Openings:
 - a. Doorways and doors: The western block has no interior doorways doorways or doors. The central block has four, simple wood doorway casings retaining original wood doors. The division

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wall (HAER Photo No. IL-20CC-13) at the eastern end has a pair of door leaves, each with four lights over a single, vertical, beaded, tongue-and-groove, board panel. Two openings retain single six-light over three panel doors. The fourth opening has a single four-light over two (originally four) panel door. The eastern block has no original doorways or doors.

- b. Windows: The window openings of the western and central blocks (HAER Photo No. IL-20CC-14) have painted, brick, segmental-arch beads and jambs and painted, molded, wood sills. The eastern block window openings (HAER Photo Nos. IL-20CC-7 and IL-20CC-8) have neither casings nor trim.
6. Decorative features and trim: On the east wall of the western block south of its intersection with the central block is a cast-bronze dedication plaque (HAER Photo No. IL-20CC-17). At the east end of the eastern block there is a cast-bronze dedication plaque (HAER Photo No. IL-20CC-10).
 7. Hardware: Original doors retain their original utilitarian knuckle hinges and round brass knob and rectangular plate sets. The window sash of the western and central blocks have original sash cords, pulleys, weights, and locks with porcelain knobs.
 8. Mechanical equipment:
 - a. Heating, air-conditioning, ventilation: The plant is heated by steam radiators (HAER Photo Nos. IL-20CC-7, IL-20CC-8, IL-20CC-12, and IL-20CC-14). There is no air-conditioning system. Forced ventilation is through the roof ventilators described above.
 - b. Lighting: An incandescent lighting system (HAER Photo Nos. IL-20CC-9) serves the building, of which components in the western and central blocks appear to date from the original construction.
 - c. Plumbing: Other than piping associated with the production of electricity (which is inaccessible under normal conditions) no original plumbing fixtures survive in the plant.
 - d. Machinery: Most equipment appears to date from the erection of the eastern wing. The auxiliary generator (HAER Photo No. IL-20CC-15) in the western block appears to be contemporaneous with that building. The central block has two 8,000 gallon fuel oil tanks serving the auxiliary generator. The set of eight Westinghouse alternators (HAER Photo Nos. IL-20CC-7 and IL-20CC-8) in the eastern block are each direct-connected to a vertical Morgan-Smith turbine. Two Electric Machinery Company

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(Minneapolis) exciter units (HAER Photo No. IL-20CC-11), also in the same block, are also each direct-connected to a vertical Morgan-Smith turbine. Controls and monitoring equipment have been modernized, appearing to date from within the past decade.

D. Site:

General setting and orientation: The plant crosses the Moline Pool of the Mississippi River as it turns south near the center of the south side of Rock Island. The central manufacturing core of the arsenal lies to the north and west of the plant. East Street passes to the west of the western block and intersects Beck Lane southwest of the plant.

Prepared by: David Arbogast
Architectural Conservator
February 1985

PART III. SOURCES OF INFORMATION

A. Original Architectural Drawings:

The Rock Island Arsenal Engineering Plans and Services Division has an original drawing dated January 18, 1900 and entitled "Rock Island Arsenal Power House" (see HAER Photo No. IL-20CC-24). The drawing contains a vertical section, a plan view, and elevations of the north and west facades. Original construction conformed to the details shown.

B. Early Views:

The following photographs are in the picture collection of the Rock Island Arsenal Historical Office:

Photograph of the west and south elevations, captioned "152-21762 / Water Power / Date Unknown" (see HAER Photo No. IL-20CC-19); the view documents the original construction.

Sheet of two photographs showing the north and south elevations, captioned "Fig 7. The Power-House From Above and Below the Dam" (see HAER Photo No. IL-20CC-20). Originally published in 1905 (Stanley, p. 140), the views document the 1903 addition.

Photograph of original generators and horizontal shafting, captioned, "Fig. 8. Interior of Power-House, Showing Long Generator Shaft" (see HAER Photo No. IL-20CC-21). Originally published in 1905 (Stanley, 141).

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Photograph of the west and south facades of the 1919 addition, captioned "125-31921 / 2-19-19 / R.I.A. Water Power Extension looking north" (see HAER PHoto No. IL-20CC-22); the view documents the 1919 addition.

Photograph of 1919 generators, captioned "125-31920 / 2-19-19 / R.I.A. Water Power Extension. / Interior view looking north" (see HAER Photo No. IL-20CC-23).

C. Interviews:

Interview with Norman Morris, Building 160 Foreman, conducted by Jeffrey A. Hess, May 30, 1984; provided information on the plant's current operating machinery and yearly output.

D. Bibliography:

1. Primary and unpublished sources:

Burr, George W. to Chief of Ordnance, June 24, 1914. Records of the Office of the Chief of Ordnance, General Correspondence, 1910-1915 (Record Group 156, Entry 29, File 2232), National Archives, Washington, D.C.; photocopy in Rock Island Arsenal Historical Office. Letter analyzing deficiencies of arsenal's hydro plant and recommending new construction.

Hess, Jeffrey A., and Mack, Robert C. "Historic Properties Report Rock Island Arsenal, Rock Island, Illinois". Prepared by MacDonald and Mack Partnership, and Building Technology Incorporated for the Historic American Buildings Survey/Historic American Engineering Record, National Park Service, U.S. Department of the Interior, 1985. The report, with accompanying inventory cards, is filed as field records in the Prints and Photographs Division, Library of Congress, under HAER No. IL-20.

"History of Rock Island Arsenal, Called for by O.O. 25302-D-195," n.d. Rock Island Arsenal Historical Office. Provides a good overview of the arsenal's telodynamic and hydro systems from 1879 to 1903.

"Industrial Facilities Inventory, Rock Island Arsenal." Prepared by U.S. Army Corps of Engineers, Rock Island District, 1946. Rock Island Arsenal Engineering Plans and Services Division. Lists building as "Building 160."

Real Property Cards, Rock Island Arsenal Engineering Plans and Services Division. Briefly describes building's

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structural characteristics, machinery, and maintenance history.

2. Secondary and published sources:

"Arsenal Plant Brings \$8,000." Rock Island Argus, October 20, 1922. Notes removal and sale of generating equipment installed in 1901 and 1903.

Bouilly, Robert. "Arsenal Island." Joined by a River: Quad Cities, ed. Frederick I. Anderson. N. pl.: Lee Enterprises, Incorporated, 1982. Excellent historical analysis of the arsenal's development to about 1910, written by a historian in the Rock Island Arsenal Historical Office.

"Report of the Chief of Ordnance, 1879." House Documents, vol. 1907. Washington, D.C.: Government Printing Office, 1879. Describes operation of telodynamic power system installed in 1879.

"Report of the Chief of Ordnance, 1900." House Documents, vol. 4097. Washington, D.C.: Government Printing Office, 1900. Discusses planning and initial construction of the hydroelectric plant.

"Report of the Chief of Ordnance, 1901." House Documents, vol. 4285. Washington, D.C.: Government Printing Office, 1902. Discusses construction of the hydroelectric plant.

"Report of the Chief of Ordnance, 1903." House Documents, vol. 4641. Washington, D.C.: Government Printing Office, 1903. Notes completion of the hydroelectric plant.

Stanley, F. A. "The United States Arsenal at Rock Island." American Machinist (February 2, 1905), 135-142. Contains photographs documenting original generating equipment and the 1903 addition (see HAER Photo Nos. IL-20CC-21; IL-20CC-20).

War's Greatest Workshop Rock Island Arsenal. N. pl.: Arsenal Publishing Co. of the Tri-Cities, 1922. Rock Island Arsenal Historical Office. Describes planning and construction of the 1919 addition.

E. Likely Sources Not Yet Investigated:

Record Group 156 at the National Archives contains correspondence on the construction and operation of Rock Island Arsenal from 1871 to 1903. This material is also available on 216 reels of microfilm at the Browning Museum, Rock Island Arsenal.

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PART IV. PROJECT INFORMATION

This project was part of a program initiated through a memorandum of agreement between the National Park Service and the U.S. Department of the Army. Stanley J. Fried, Chief, Real Estate Branch of Headquarters DARCOM, and Dr. Robert J. Kapsch, Chief of the Historic American Buildings Survey/Historic American Engineering Record, were program directors. Sally Kress Tompkins of HABS/HAER was program manager, and Robie S. Lange of HABS/HAER was project manager. Building Technology Incorporated, Silver Spring, Maryland, under the direction of William A. Brenner, acted as primary contractor, and MacDonald and Mack Partnership, Minneapolis, was a major subcontractor. The project included a survey of historic properties at Rock Island Arsenal, as well as preparation of an historic properties report and HABS/HAER documentation for 38 buildings. The survey, report, and documentation were completed by Jeffrey A. Hess, historian, Minneapolis; Barbara E. Hightower, historian, Minneapolis; David Arbogast, architectural historian, Iowa City, Iowa; and Robert C. Mack, architect, Minneapolis. The photographs were taken by Robert A. Ryan, J. Ceronie, and Bruce A. Harms of Dennett, Muessig, Ryan, and Associates, Ltd., Iowa City, Iowa. Drawings were produced by John Palmer Low, Minneapolis.