NORTH RIVER CANAL SYSTEM, INDIAN
GAP RUN AQUEDUCT
Located in the canal path running parallel
to and on the east side of the Maury
(North) River on the west side of the
town of
Buena Vista
Rockbridge County
Virginia

HAER No. VA-61-A

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

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

HAER
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HISTORIC AMERICAN ENGINEERING RECORD

NORTH RIVER CANAL SYSTEM, Indian Gap Run Aqueduct HAER No. VA-61-A

Location: Located in the canal path running parallel to and on the east side of the Maury (North) River on the west side of the town of Buena Vista, Rockbridge County, Virginia.

UTM: Indian Gap Run Aqueduct 17.644450.4176600

Quad: Buena Vista, Virginia

Date of Construction: ca. 1858

Present Owner: CSX Transportation, Inc.
Real Estate Division
500 Water Street, SC J350
Jacksonville, Florida 32203

Present Use: Canal abandoned. The abutments for the Indian Gap Run Aqueduct was reused to support railroad bridges during the 1880s. Much of the canal tow path serves for this now abandoned rail line.

Significance: The North River Navigation represents a rare example of stone lock construction in Virginia, exhibiting remarkable similarities to earlier structures of the Potomac Canal at Great Falls, Virginia. It was, moreover, an unusually late example of canal building, erected in an era when these systems were being rapidly superseded by railroads.

Part of a state-sponsored project to connect the James and Ohio Rivers, the canal extended navigation northward from the James River to Lexington, Virginia, transforming the area's economy. Furthermore, the presence of the canal seems to have been an important factor in determining the trajectory of the railroad which, in the 1880s, superseded it, incorporating the old path towpath and aqueduct abutments in its construction.

It was over the North River Navigation that General Stonewall Jackson's body was conveyed after his death in May of 1863 from wounds received at the Battle of Chancellorsville. One of the best preserved canal systems in the state, these features reveals much about lock and aqueduct construction seen only in fragments elsewhere. Additionally, the technology used here is much the same as that found more than a half century earlier and attests to the soundness of design adopted by early canal engineers in Virginia.

Project Information: This documentation was undertaken in 1991 in accordance with the Memorandum of Agreement by the Army Corps of Engineers, Norfolk District, to mitigate the affects of the Buena Vista floodwall/levee project. Charles M. Downing was responsible for the historical research, and Donald W. Linebaugh provided administrative oversight. Downing and Linebaugh are employees of the Center for Archaeological Research, College of William and

Mary. Willie Graham and Mark R. Wenger, consultants to the Center for Archaeological Research, undertook the physical analysis, recordation, and photographic documentation of the canal system. The Center for Archaeological Research subcontracted with Telemark, Inc. to perform this work for the Corps of Engineers.

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College of William and Mary
Center for Archaeological Research
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23185

Construction activity on the Indian Gap Run Aqueduct must have been well underway hy 1858. Though none of the mechanical work had started by October of 1857, the entire canal system from the James River to Lexington was complete by 1860 (Lorraine 1857:374). Of the three aqueducts in the Buena Vista stretch it is the most complete. The structure consisted of two stone ahutments that bore a timber-frame trough. In plan, the abutments splay gently at the upstream end to facilitate the flow of Indian Gap Run. Under the timber span the two ahutments run parallel to one another. Beyond the span they splay back rather more sharply than the upper end, acting as a retaining wall to secure the banks of the stream. Lorraine indicated that this aqueduct was to have a span of 20 feet, yet the actual measurement is slightly more than 30 feet (Lorraine 1857:374).

The stone abutments were dry-laid using a yellowish-gray, locally quarried limestone. Some stones bear evidence of drilling and wedging employed in the quarrying process. Drill and wedge marks are approximately six inches apart. This stonework was dressed in a rudimentary fashion and roughly coursed when laid. Some hard mortar was used in pointing the masonry, probably at the time of construction. The mortar is composed of a fine, buff-colored sand in a yellowish matrix. The top of the abutments stand slightly over 13 feet above the surface of Indian Gap Run.

Nothing of the original timber bridging remains, but pockets in the surviving masonry, together with patches of mortar bearing impressions of wooden members, offer clear evidence concerning construction of the timber span. At the base of this span was a 9 by 11 inch sill member, laid into the stonework on its broader face. Bearing on this sill was a series of girders that hridged the stream. The outside girder on each side was approximately 11 by 11 inches in section. The inner girders were 12 1/2 inches in height and of unknown width, spaced closely to provide the necessary bearing capacity.

Pockets in the stonework and patches of mortar suggest that a series of closely spaced vertical posts formed the sides of the aqueduct, and that the lower ends of these vertical posts were notched on both sides, forming a tenon which dropped into the space between the first and second girders at each side. Evidently the principal function of the 11 by 11 inch outside girder was to counteract the outward thrust of the water at the base of these vertieal members. (The nearby Chalk Mine Run Aqueduct exhibits evidence of a similar arrangement, though in that structure the vertical posts at each corner were let into the stonework and made fast at the top with an iron bolt anchored deep into the masonry. As at Indian Gap Run, mortar was used in fitting of these members to the stonework). The framing system used for the trough construction--large sills carrying a system of closely spaced girders on which the flooring is nailed--is essentially the same as required for the lock construction (JR&K 1859:1-3).

At Indian Gap Run there was probably a cap member which secured the tops of the verticals in some fashion. From the remaining stonework it is clear that this could not have been an outboard member like the girder below. Most likely, it mortised down over the upper ends of the verticals. The sides of the aqueduct, from the top surface of the outer girder to the top surface of the cap member, was five feet in height. The vertical post which abutted the stonework was approximately 12 by 10 3/4 inches in section, with the long dimension oriented parallel to the bank of the stream. The hack side of this post was shimmied out several inches from the stonework. On the outside face, the stone abutments would have counteracted the outward thrust transferred by the verticals to the cap member. In the middle of the span, buttressing of the verticals and cap member may have been achieved through some sort of strut arrangement, though all evidence of such is lost.

The floor of this frame structure was lined with two-by-four-inch planking, spaced about 3/4 of an inch apart. As with the lock specifications, there must have been an additional layer of planking to create a water-tight enclosure. The sides were lined with 2 1/2-by-five-inch horizontal planking, butted on its edges. This sheathing was applied directly to the interior face of the vertical members. The ends of this planking died against the stonework so that its interior surface came flush with the vertical stone cheek walls. The lock floors were sealed using two layers of tightly fitted planking. This detail probably sufficed for the aqueduct troughs as well.

To achieve a transition between the sloping earthen sides of the canal and the narrowed, rectilinear channel of the aqueduct, it was necessary to splay these cheek walls outward in plan and in section as they moved away from the aqueduct. When construction of the aqueduct was nearly completed, a two by 14 inch board was placed across the ends of the inner girders. This acted as a form for the rubble/mortar fill which brought the canal invert up flush with that of the aqueduct. Chalk Mine Run Aqueduct was provided with the same retaining wall and is not too similar to the breast wall construction of the locks.

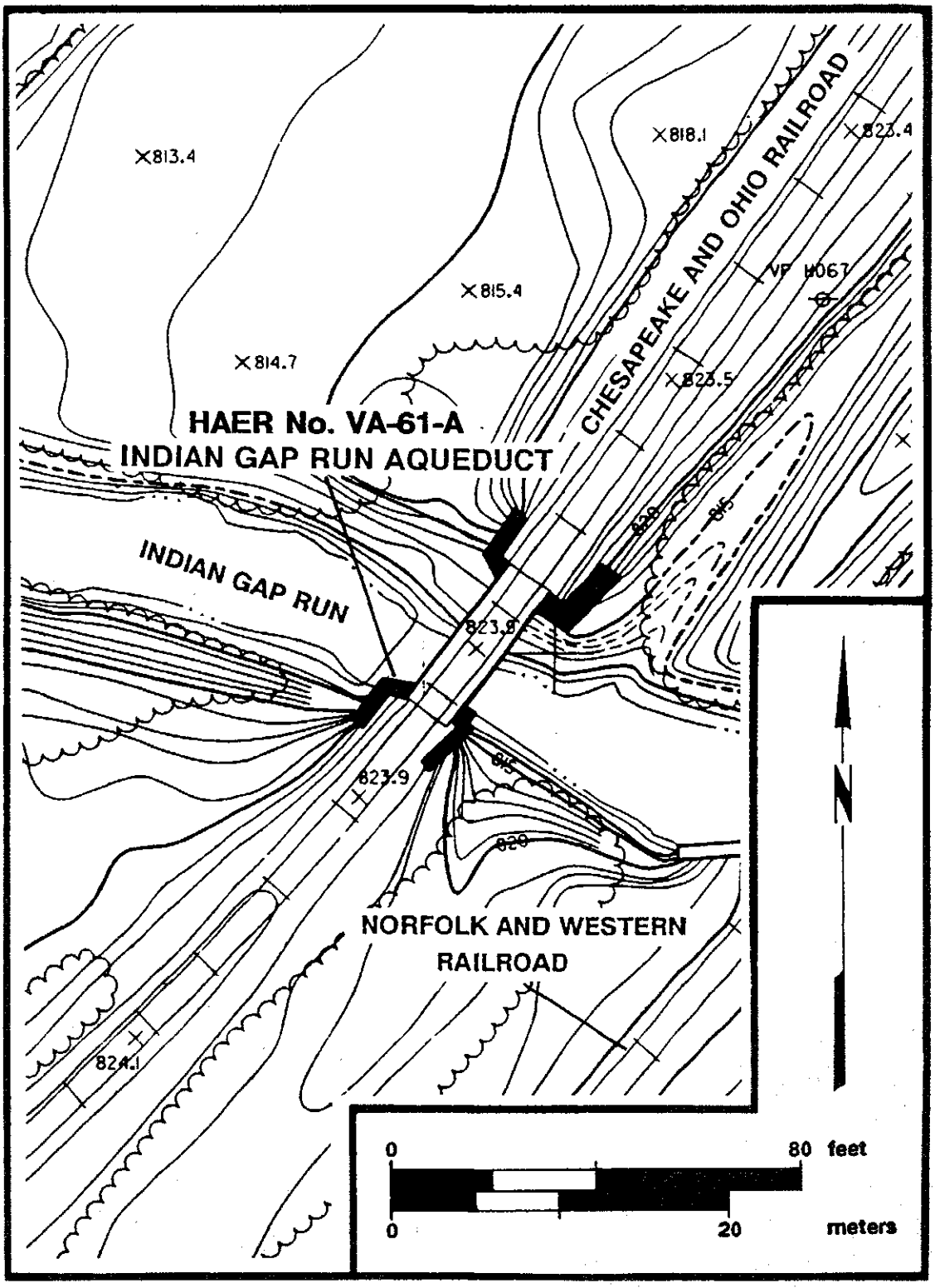
During this century, the present railroad bridge was built over the northern portion of both abutments probably replacing an 1880s bridge. Besides covering the stonework, this construction appears to have had little impact on the original installation, assuming the timber span had already been dismantled. More recently, perhaps, a storm sewer was cut through the lower portion of the east abutment, using the existing stonework as a headwall to secure the end of the pipe.

The overgrowth which obscured the surviving abutments was removed by the College of William and Mary to facilitate investigation and photography. The vegetation, together with the activities of scavengers and railroad maintenance crews has dislodged a number of stones. Otherwise, the stonework of this aqueduct remains in relatively good condition. Most of the canal in this vicinity has been filled and so that its outline is barely discernable from above.

Just upstream from the aqueduct is a railroad bridge built in 1940, this date being imprinted in its stepped concrete revetments. These revetments are coped with roughly squared and dressed stone, the faces of which project slightly beyond the concrete walls, giving the appearance of quoining along the upper edge. Spanning between these concrete and stone abutments are a series of steel I beams. Still further upstream is a second, more recent railroad bridge, composed of poured-in-place concrete piers and girders.

Prior to the construction of the aqueduct, a mill powered by the creek and a distillery were located in this vicinity. By the middle of the 19th century a saw mill was powered by Indian Gap Run, but it was located further upstream (Oltmanns 1868). No visible, above-ground evidence
of these features survives.

Site Plan


HAER No. VA-61-A
INDIAN GAP RUN AQUEDUCT
CHESAPEAKE AND OHIO RAILROAD
INDIAN GAP RUN
NORFOLK AND WESTERN RAILROAD
813.4
814.7
815.4
818.1
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823.5
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