

SIEUR DE MONTS SPRING BRIDGE  
Acadia National Park Roads & Bridges  
Spanning Park Loop Road at Route 3, near Sieur De Monts Spring  
Bar Harbor Vicinity  
Hancock County  
Maine

HAER NO. ME-14

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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

PHOTOGRAPHS

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
Department of the Interior  
P.O. Box 37127  
Washington, D.C. 20013-7127

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HISTORIC AMERICAN ENGINEERING RECORD

SIEUR DE MONTS SPRING BRIDGE

HAER No. ME-14

LOCATION: Spanning Park Loop Road on Maine Route 3, 1/4 mile ESE of Sieur de Monts Spring, Acadia National Park, Bar Harbor vicinity, Mount Desert Island, Hancock County, Maine

Quad: Seal Harbor, Maine  
UTM: 19/563425/4912100

DATE OF CONSTRUCTION: 1940

ENGINEER: Leo Grossman, Associate Highway Engineer, Public Roads Administration, Supervising Engineer

Nathan Gordon, Assistant Highway Engineer, Public Roads Administration, Structural Engineer

CONTRACTOR: J. R. Partridge, Augusta, Maine

STRUCTURE TYPE: Stone faced reinforced concrete segmental arch bridge

FHWA STRUCTURE NO.: 1700-006P

OWNER: Acadia National Park, National Park Service

SIGNIFICANCE: The Sieur de Monts Spring Bridge provided a separated grade crossing between the Bar Harbor-Seal Harbor highway and the Park Loop Road. Boggy soil conditions at the site forced the contractor to employ a reinforced concrete "raft" to support the footings, so in effect the bridge "floats" on its foundations.

PROJECT INFORMATION: Documentation of the Sieur de Monts Spring Bridge is part of the Acadia National Park Roads and Bridges Recording Project, conducted in 1994-95 by the Historic American Engineering Record.

Richard H. Quin, HAER Historian, 1994

## HISTORY

The extension of the Park Loop Road through the Sieur de Monts Spring area necessitated construction of an underpass under the Bar Harbor-Seal Harbor highway, now Maine Route 3. While Mount Desert Island, on which Acadia National Park is located, had an extensive road system, the Park Loop Road was designed as a self-contained closed-loop system separated from local roads by parallel routes or grade separation structures. The Sieur de Monts Spring Bridge was designed to provide a separated grade crossing from the public highway.

The bridge was constructed as part of the Kebo Mountain Extension, Project 6A3, of the Park Loop Road, which also included grading, subgrade reinforcement, installation of drainage structures, and bituminous gravel surfacing of the section between the Harden Farm and Bear Brook roads. Construction of new approaches to the Sieur de Monts Spring from both the loop and the county roads was also included in the project.<sup>1</sup> The work was carried out under the supervision of the Public Roads Administration (PRA), the Depression-era successor to the Bureau of Public Roads (BPR). The BPR became responsible for major road construction and reconstruction projects in the national parks under a 1926 agreement with the National Park Service.

Surveys for the project were carried out in 1938-1939 by the Bureau of Public Roads. Several alternate routes were described, and the final location was decided upon by Thomas C. Vint, Chief of the Branch of Plans and Design for the National Park Service, and by Frederick Law Olmsted, Jr., consulting landscape architect for John D. Rockefeller, Jr.<sup>2</sup>

The project was advertised by the Public Roads Administration in October 1939. Bids were opened in the PRA's Albany, New York district office on 31 October. The contract was awarded to the Bridge Construction Corporation of Augusta, Maine on the basis of the firm's low bid of \$134,673, which was considerably less than the PRA estimate of \$142,050.95. The Public Roads Administration assigned Associate Highway Engineer Leo Grossman, who was

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<sup>1</sup>Leo Grossman, Assistant Highway Engineer/Associate Highway Engineer, Bureau of Public Roads/Public Roads Administration, "Final Construction Report, 1939-1940, Acadia National Park, Kebo Mountain Extension and Champlain Mountain Road, Hancock County, Maine, Project No. 6A3-8A1" (Albany, NY: Federal Works Agency, Public Roads Administration), 1.

<sup>2</sup>Ibid.

resident engineer for most of the road work at Acadia National Park, as supervising engineer. Assistant Highway Engineer Nathan Gordon was resident engineer overseeing the bridge construction.<sup>3</sup>

The Bridge Construction Corporation engaged a subcontractor, J. R. Partridge, also of Augusta, to construct the bridge. Excavations at the bridge site began 11 April 1940 and was completed two weeks later.<sup>4</sup>

Preliminary investigations indicated that the underlying ground was heavy clay and the bridge would have to be supported by piles. When work began, the first piles were driven with a McKiernan Terry drop hammer, and easily went down their full length of 40'. After several were driven, the engineers noticed the piles were simply punching holes in the soil, which immediately filled with water. As each pile was driven, the others would pop out three or four feet. A load was then placed on each pile to hold it in place. Finally, a reinforced concrete platform was poured to hold the piles in place. This platform was extended across the road to ensure that the abutments and wing walls would remain in static position. This created a structure on which the bridge "floated" on the surface.<sup>5</sup>

PRA engineers weighed the soil removed between the existing county road grade and the top of the "float," and were relieved to find the removed material weighed more than the final structure. This indicated the structure was stable and would remain in place.<sup>6</sup>

While the project's final report offers few details on the bridge work, construction photographs and materials manifests provide some information on the operations. The piles were shown in place and cut down to uniform length on 15 May, and form work was in place for the abutment footings. Reinforcing steel for the footings were in place by the end of the month, and the concrete

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<sup>3</sup>Ibid., 2-3, 5.

<sup>4</sup>Ibid., 4; A. G. Bruce, District Engineer, Public Roads Administration, "Progress Views, Structure, Kebo Mountain Road Extension and Champlain Mountain Road (Ocean Drive), Project 6A3-8A1, Acadia National Park, Maine, 1939-1940" (Albany, NY: Public Roads Administration, 1940), 1.

<sup>5</sup>Bruce, 4-6; Grossman, "Unusual Engineering and Construction Features, Acadia National Park," 4-5. MSS, n.d. Bar Harbor Historical Society Collection, Jesup Memorial Library.

<sup>6</sup>Grossman, "Unusual Considerations," 5.

work for the footing was completed in early June. Steel for the wing walls was erected next, and was anchored to the abutments. The dimensioned masonry facing for the abutments was erected next, and then the concrete was poured into the wing walls from a derrick. By late July, the wing walls and abutments were complete, and formwork was in place for the barrel arch. Meanwhile, cutting stone continued at the bridge site. The derrick was used to hoist the reinforcing steel for the arch which was placed over wooden centering. The arch ring stones or voussoirs, which had been cut to size from wooden templates, were hoisted into place in August. With the arch ring and steel set in place, pouring the concrete arch proceeded. The voussoirs acted as the outer formwork, and were bonded to the concrete by their irregular inner face and by steel cramps projecting from the stones. The concrete was kept from drying by water sprayed through a lawn sprinkler. The concrete arch was complete by early September, and a rolled membrane waterproofing was applied to the inner surface. The mortar was protected against moisture by a mastic damp proofing and a wire mesh, against which the final seal coat was applied. The gravel fill was added in mid-September. The formwork was removed, and crews placed the stone parapet walls.<sup>7</sup> Surfacing was done by the primary contractor.

J. R. Partridge completed operations at the bridge in October 1940. Final cost of the structure was \$136,361.26, representing a \$2,094.75 or 6 percent loss for the subcontractor. The PRA final construction report noted that Partridge was a small "one job" operator, and while experienced, proved inefficient and completed the work behind schedule. Had the work been better organized, the contractor would have realized a profit. For the entire project, including the road work, the Bridge Construction Corporation made a \$13,245.12 or a 9 percent profit.<sup>8</sup>

In October 1952, Arthur W. McFarland, a Boston architect who also maintained a practice at Bar Harbor, inspected the bridge at the request of John D. Rockefeller, Jr., the industrialist and philanthropist who funded much of the work on the Park Loop Road. McFarland prepared sketches of the bridge showing suggested landscape treatments, including pockets for vines on the upper level and places for shrubs and vines at the ends of the stone balustrade. He recommended planting the bare banks with sweet fern interspersed with maples, spruce or pines.<sup>9</sup>

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<sup>7</sup>Bruce, 4-31.

<sup>8</sup>Grossman, "Final Construction Report," 5.

<sup>9</sup>Arthur W. McFarland, Cambridge, MA to John D. Rockefeller, Jr., New York City, 27 October 1952. Rockefeller Archives

Robert De Revere, the superintendent of Rockefeller's Seal Harbor estate, wrote his employer in December asking about the planting plans for the bridge. He thought any trees planted at the ends of the bridges should not be too high, and favored using grasses and sweet fern along the banks. Bittersweet had been suggested for the banks, but De Revere opposed it, as it would grow rapidly and climb the trees unless pruned. As for the planting along the sides of the bridges, De Revere again thought this was a poor idea, as the road was sanded with calcium chloride in snowy weather and the chemical would kill trees and shrubs. Also, the road was regularly tarred in the spring and this would also damage any plantings. He recommended planting vines at the base of the bridge, allowing them to cover the walls in part. Rockefeller replied a week later, accepting De Revere's recommendations and directing Roy Young, one of his estate workers, to carry out the planting of shrubs and vines from materials found in surplus on the estate.<sup>10</sup>

A 1991 bridge safety inspection report prepared by the Federal Highway Administration reported the bridge as "deficient or functionally obsolete," but did not recommend posting the bridge for lower load limits or speeds. The report noted minor to moderate asphalt cracking at both approaches, moderate to severe spalling on the underside of the slab deck, and efflorescence at construction joints on the base of the slab. Settling had caused a longitudinal crack along the edge of the asphalt roadway, and the shoulders were slumping. Debris was accumulating and vegetation had established itself along the edge of the parapet walls. The report suggested a rehabilitation program including repairing the spalls and cracks in the concrete slab, sealing the asphalt roadway surface, and removal of the debris and vegetation; the costs were estimated at \$10,000.<sup>11</sup>

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Center, Office of the Messrs. Rockefeller, Record Group 2, Homes (Seal Harbor), Box 121 Folder 1216.

<sup>10</sup>Robert De Revere, Seal Harbor, ME to Rockefeller, 1 December 1952; Rockefeller to De Revere, 8 December 1952. Rockefeller Archives Center, Office of the Messrs. Rockefeller, Record Group 2, Homes (Seal Harbor), Box 121 Folder 1216.

<sup>11</sup>U.S. Department of Transportation, Federal Highway Administration, "Bridge Safety Inspection Report, Maine Route 3 Over Park Loop Road, Acadia National Park, Str. No. 1700-006P" (Sterling, VA: Federal Highway Administration, Eastern Direct Federal Division, 3 April 1991), 3-9.

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### Construction drawings

McFarland, Arthur W. "Sieur de Monts Spring Bridge, Bar Harbor, Maine." Rendering, n.d. (October 1952). Rockefeller Archives Center, Office of the Messrs. Rockefeller, Record Group 2, Homes (Seal Harbor), Box 121 Folder 1216 Map 114.

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SIEUR DE MONTS SPRING BRIDGE

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Route 3 near Sieur de Monts Spring, spanning Park Loop Road  
Acadia National Park Roads and Bridges  
Bar Harbor Vicinity  
Hancock County  
Maine

JET LOWE, PHOTOGRAPHER, SEPTEMBER 1994

ME-14-1 SE ELEVATION, FACING NW



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