

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

FOR NPS USE ONLY

RECEIVED JAN 7 1976

DATE ENTERED MAY 4 1976

**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM**

SEE INSTRUCTIONS IN HOW TO COMPLETE NATIONAL REGISTER FORMS
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC

Baker River Bridge

AND/OR COMMON

LOCATION

STREET & NUMBER

WA 20

Old Star Route #20

CITY, TOWN

Concrete

VICINITY OF

NOT FOR PUBLICATION

CONGRESSIONAL DISTRICT

#2 - Honorable Lloyd Meeds

STATE

Washington

CODE

53

COUNTY

Skagit

CODE

057

CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE
<input type="checkbox"/> DISTRICT	<input checked="" type="checkbox"/> PUBLIC	<input type="checkbox"/> OCCUPIED	<input type="checkbox"/> AGRICULTURE
<input type="checkbox"/> BUILDING(S)	<input type="checkbox"/> PRIVATE	<input type="checkbox"/> UNOCCUPIED	<input type="checkbox"/> MUSEUM
<input checked="" type="checkbox"/> STRUCTURE	<input type="checkbox"/> BOTH	<input type="checkbox"/> WORK IN PROGRESS	<input type="checkbox"/> COMMERCIAL
<input type="checkbox"/> SITE	PUBLIC ACQUISITION	ACCESSIBLE	<input type="checkbox"/> EDUCATIONAL
<input type="checkbox"/> OBJECT	<input type="checkbox"/> IN PROCESS	<input type="checkbox"/> YES: RESTRICTED	<input type="checkbox"/> ENTERTAINMENT
	<input type="checkbox"/> BEING CONSIDERED	<input checked="" type="checkbox"/> YES: UNRESTRICTED	<input type="checkbox"/> GOVERNMENT
		<input type="checkbox"/> NO	<input type="checkbox"/> INDUSTRIAL
			<input checked="" type="checkbox"/> TRANSPORTATION
			<input type="checkbox"/> MILITARY
			<input type="checkbox"/> OTHER:

OWNER OF PROPERTY

NAME

City of Concrete

STREET & NUMBER

Town Hall, P. O. Box 39

CITY, TOWN

Concrete

VICINITY OF

STATE

Washington 98237

LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
REGISTRY OF DEEDS, ETC.

Skagit County Courthouse

STREET & NUMBER

CITY, TOWN

Mount Vernon

STATE

Washington 98273

6 REPRESENTATION IN EXISTING SURVEYS

TITLE

None

DATE

FEDERAL STATE COUNTY LOCAL

DEPOSITORY FOR
SURVEY RECORDS

CITY, TOWN

STATE

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> DETERIORATED	<input checked="" type="checkbox"/> UNALTERED	<input checked="" type="checkbox"/> ORIGINAL SITE
<input type="checkbox"/> GOOD	<input type="checkbox"/> RUINS	<input checked="" type="checkbox"/> ALTERED	<input type="checkbox"/> MOVED DATE _____
<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The Baker River Bridge is an open spandrel reinforced concrete arch with a clear span of 185 feet. It is located within the city limits of Concrete, Washington about one-half mile north of the confluence of the Skagit and Baker Rivers. The bridge connects the townsite with an addition to the original plat developed across the river -- an area then known as Cement City.

The main arch consists of two parabolic ribs five by six feet in cross section that spring from the base of massive abutment piers anchored in bedrock on opposite shores of the river. These ribs are laterally connected by radial braces which are spaced at a fixed horizontal distance.

Two short approach spans carry the roadbed from the top of the piers to the edge of the canyon. Structurally the approaches are concrete T-beams disguised behind lightly reinforced three-centered arches that stiffen the edges of the deck.

These arches under the approach spans are a continuation of spandrel arcades above the main arch joining the range of columns that transfer loads from the roadbed to the arch itself. The arcades are somewhat of a structural falsehood in that the deck acts as a heavily reinforced T-beam spanning a perpendicular series of sub-panel floor beams which in turn are supported directly on the spandrel posts. The arches run parallel to the central T-beam and are reinforced as a simple continuous girder that completes the structural grid of the floor system by supporting the deck slab along its edges. A second series of sub-panel beams run across the deck at intermediate points half way between the spandrel posts. Both sets of these beams are extended with reinforced brackets beyond the line of the arcade to support the overhanging deck.

Non-structural parapet walls serve as guard rails along the top of the bridge. The roadbed is offset toward one side allowing enough room to provide a raised pedestrian walkway on the other. The road itself has a slight crown at the center to prevent rainwater from accumulating.

The design of the bridge included some simple architectural embellishments to dress up the bare structure. These are essentially neo-classical in spirit including such details as a capital and base for each spandrel column, shallow recessed panels on the piers and parapet and ogee curves on the supporting brackets. The spandrel arcades are apparently an attempt to suggest the traditional shapes of unreinforced classical masonry. There were originally eight decorated obelisks (possibly light standards) mounted on the parapet wall at the approaches. These were later broken off by logging trucks that had difficulty making the tight turn onto the bridge at either end. Also the sidewalk has been damaged and repaired, and the road has been repaved with asphalt several times.

There has been considerable spalling off of the surface concrete wherever it is exposed to the weather. In some places this has been grouted to prevent further deterioration. In addition, one of the abutments has been partially buried in fill to build up a level roadway parallel to the river passing under one of the approach spans.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input type="checkbox"/> SCIENCE
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input checked="" type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER
<input type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input checked="" type="checkbox"/> TRANSPORTATION
<input checked="" type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)
		<input type="checkbox"/> INVENTION		

SPECIFIC DATES

1916

BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

Built in 1916, the Baker River Bridge is an early example of the use of a long span reinforced concrete arch in highway bridge construction. Although at the time it was not a unique engineering achievement in terms of its structural principals or its total unsupported span, it represents the growing recognition of reinforced concrete as an alternative material to steel or heavy timber construction. Concrete reinforcement technology was relatively new when the design for the Baker River Bridge was proposed by the engineer, and its use in this case demonstrates the growing acceptance in the Pacific Northwest.

In 1914 the only access to the upper Skagit Valley was a wooden truss bridge across the Baker River in the City of Concrete. Late in December of that year, A. L. Strong, the County Engineer, condemned the bridge as rotten and unsafe. Testing it with an auger he determined that critical structural members were "punk" and the bridge was beyond repair. J. W. Bowerman, a Seattle consultant, was hired to study the situation. The old timbers were immediately shored up to temporarily strengthen the bridge while the question of a more permanent solution was being considered -- including the problem of financing a replacement. Bowerman was commissioned to do a comparative cost analysis of building a new bridge with concrete versus the cost of building it in steel. Although the engineer reported that a steel bridge would be slightly less expensive, two local concrete manufacturers responded by offering to donate cement for the project. This changed the economics of the problem sufficiently to favor the proposal for a bridge that would be "the first of its kind in the county" as it was announced on the front page of the Concrete Herald.

Preliminary plans called for two arches and a center pier, however this idea was abandoned because of the risk of causing log jams when spring floods turned the Baker River into a "raging canyon". The bridge was to be located a short distance upriver from the old crossing at a point where the bedrock of the canyon wall was suitable for the foundation of the abutments. This location allowed a design configuration that would eliminate the existing steep grade on the short section of road from the bridge into town.

The County Commissioners voted to approve construction in April of 1916, and the contract was let in May to J. R. Wood of Seattle. Two months later construction began on falsework for the arch. After 37 days the forms were completed and the contractor began to pour concrete. When this had cured, and the falsework was removed on October 28, the arch settled only $\frac{1}{4}$ inch under its own deadweight -- far less than expected. Formwork for the superstructure was carried directly on the unsupported arch as construction continued, but soon progress was hindered by

9 MAJOR BIBLIOGRAPHICAL REFERENCES

None

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY Less than one

UTM REFERENCES

A

1	0
ZONE	EASTING

5	9	2	8	0	0
NORTHING					

B

ZONE	EASTING

NORTHING					

VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE

Jacob Thomas and Otto M. Walberg (Skagit County Planning Department)

ORGANIZATION

Wasington State Parks and Recreation Commission

STREET & NUMBER

P. O. Box 1128

CITY OR TOWN

Olympia

DATE

February 10, 1975

TELEPHONE

(206) 753-4116

STATE

Washington 98504

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL

STATE

LOCAL

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

Arthur M. Sholnik

TITLE

State Historic Preservation Officer

DATE

December 19, 1975

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

acting W. D. Minter

DATE

5/4/76

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST:

Charles Abney

DATE

5-3-76

KEEPER OF THE NATIONAL REGISTER

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

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CONTINUATION SHEET

ITEM NUMBER 8 PAGE 2

freezing weather. After a series of delays the bridge was completed January 13, 1917.

Work on the bridge received considerable press coverage in the Concrete Herald which published accounts of the progress in minute detail. A donation of 1,500 barrels of cement by the Superior and Washington Portland Cement Companies was gratefully acknowledged, and it was announced that the bridge was "one of the longest single span concrete structures in the West" -- a true enough claim that failed to mention it was little more than 2/3 the length of similar arches in Spokane (Monroe Street Bridge - 281 feet, 1911) and California (Pit River Bridge - 242 feet, 1915). There is no mention in the newspaper of a dedication ceremony which might be expected at the opening of such a bridge to traffic, but at the time the population was distracted by the growing American involvement in World War One.

Manufacturing Portland cement has been an industrial activity that has made a major contribution to the growth and development of the City of Concrete. The Baker River Bridge is an early showpiece of the technological applications of this material which was for many years the only connection between the east and west parts of town.

1. SITE I.D. NO

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HAER INVENTORY

Historic American Engineering Record
Department of the Interior, Washington, D.C.

2. INDUSTRIAL CLASSIFICATION

Bridges, Trestles and Aqueducts

7 5 9 5

3. PRIORITY

1

4. DANGER OF DEMOLITION?
(SPECIFY THREAT) YES NO UNKNOWN

ARCH: Concrete

5. DATE

1916-17

6. GOVT SOURCE OF THREAT

OWNER

ADMIN

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

7. OWNER/ADMIN

City of Concrete

8. NAME(S) OF STRUCTURE

Baker River Bridge

9. OWNER'S ADDRESS

Town Hall
P.O. Box 39
Concrete, WA 98237

10. STATE

WA

COUNTY NAME

Skagit

CITY/VICINITY

Concrete

CONG. DIST.

0 2

STATE

COUNTY NAME

CITY/VICINITY

COUNTY

CONG. DIST.

11. SITE ADDRESS (STREET & NO)

Old Star Route #20

SC 20

12. EXISTING SURVEYS

 NR NHL HABS HAER-I HAER NPS CL6

76

 CONF STATE COUNTY LOCAL OTHER

13. SPECIAL FEATURES (DESCRIBE BELOW)

 INTERIOR INTACT EXTERIOR INTACT ENVIRONS INTACT

14. UTM ZONE

EASTING

NORTHING

SIGN

SCALE

 1:24 1:62.5 OTHER

QUAD NAME

Lake Shannon, WA quad

UTM ZONE

EASTING

NORTHING

SIGN

SCALE

 1:24 1:62.5 OTHER

QUAD NAME

15. CONDITION

70 EXCELLENT71 GOOD72 FAIR73 DETERIORATED74 RUINS75 UNEXPOSED76 ALTERED82 DESTROYED85 DEMOLISHED

16. INVENTORIED BY

Beverly N. Baynes

AFFILIATION

HAER

DATE

March 1, 1976

17. DESCRIPTION AND BACKGROUND HISTORY, INCLUDING CONSTRUCTION DATE(S), HISTORICAL DATE(S), PHYSICAL DIMENSIONS, MATERIALS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ENGINEERS, ETC.

An open spandrel reinforced concrete arch with 185' clear span, the Baker River Bridge is located ½ mile north of the confluence of the Skagit and Baker Rivers connecting the former Cement City area with Concrete. The main arch consists of two parabolic ribs (5x6' in cross section) that spring from the base of massive abutment piers anchored in bedrock. The ribs are connected laterally by radial braces spaced horizontally at fixed distances.

The bridge replaced a wooden truss bridge across the Baker River condemned in 1914 as rotten and unsafe. A slightly less expensive steel bridge was considered, until two local concrete manufactures (Superior and Washington Portland) offered to donate cement for the project. The risk of causing log jams during spring floods precluded use of preliminary plans calling for two arches and a center pier. The bridge was "one of the longest single span concrete structures in the West" when it was built.

(CONT OVER)

18. ORIGINAL USE

vehicular

PRESENT USE

vehicular

ADAPTIVE USE

19. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Concrete Herald

(CONT OVER)

20. URBAN AREA 50,000
POP. OR MORE? YES NO

21. HCRS REGION

N W

22. PUBLIC ACCESSIBILITY

 YES, LIMITED YES, UNLIMITED NO UNKNOWN

23. EDITOR

INDEXER

24. LOCATED IN AN HISTORIC DISTRICT?

 YES NO

NAME

DISTRICT I.D. NO

DESCRIPTION (CONTINUED)

Manufacturing Portland cement has been an industrial activity that has made a major contribution to the growth and development of the City of Concrete. The Baker River Bridge is an early showpiece of the technological applications of this material which was for many years the only connection between the east and west parts of town.

REFERENCES (CONTINUED)

ABSTRACT											
HAER NO	LC	TECH REPORT	HIST REPORT	CONTEMP PHOTO	HIST PHOTO	CONTEMP DRWG	HIST DRWG	COLOR PLATE	PHOTOGRAM	SW	FILM