



United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Washington Water Power Bridges

other names/site number One-way Bridge

2. Location

street & number 1/2 mile west of intersection of Spokane and Fourth Streets n/a not for publication

city or town Post Falls n/a vicinity

state Idaho code ID county Kootenai code 055 zip code 83854

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property meets does not meet the National Register criteria. I recommend that this property be considered significant nationally statewide locally. (See continuation sheet for additional comments.)

Signature of certifying official

Date

John R. Hill, State Historic Preservation Officer
State or Federal agency and bureau

In my opinion, the property meets does not meet the National Register criteria. (See continuation sheet for additional comments.)

Signature of commenting or other official

Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that this property is:

entered in the National Register.

See continuation sheet

determined eligible for the National

Register. See continuation sheet

determined not eligible for the

National Register.

removed from the National Register.

other, (explain:)

Ed R. Szymon

12/20/96

Signature of Keeper

Date of Action

Property Name Washington Water Power Bridges

County and State Kootenai County, Idaho

Page 2

5. Classification

Ownership of Property	Category of Property	No. of Resources within Property	
		contributing	noncontributing
<input checked="" type="checkbox"/> private	<input type="checkbox"/> building(s)		<input type="checkbox"/> buildings
<input type="checkbox"/> public-local	<input type="checkbox"/> district		<input type="checkbox"/> sites
<input type="checkbox"/> public-State	<input type="checkbox"/> site		<input type="checkbox"/> structures
<input type="checkbox"/> public-Federal	<input checked="" type="checkbox"/> structure	<u>2</u>	<input type="checkbox"/> objects
	<input type="checkbox"/> object		<input type="checkbox"/> objects
		<u>2</u>	<u>0</u> Total

Name of related multiple property listing: _____
n/a

No. of contributing resources previously listed in the National Register: n/a

6. Functions or Use

Historic Functions (Enter categories from instructions.)

Cat: TRANSPORTATION

Sub: road-related (vehicular)

Current Functions (Enter categories from instructions.)

Cat: TRANSPORTATION

Sub: road-related (vehicular)

7. Description

Architectural Classification (Enter categories from instructions.)

Other: Concrete arch
Concrete girder

Materials (Enter categories from instructions.)

foundation n/a
walls n/a

roof n/a
other Concrete

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

Property Name Washington Water Power Bridges

County and State Kootenai County, Idaho

8. Statement of Significance

Applicable National Register Criteria (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B Property is associated with the lives of persons significant in our past.
- C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations (Mark "x" in all the boxes that apply.)

- A owned by a religious institution or used for religious purposes.
- B removed from its original location.
- C a birthplace or a grave.
- D a cemetery.
- E a reconstructed building, object, or structure.
- F a commemorative property.
- G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance

(Enter categories from instructions.)

Areas of Significance (Enter categories from instructions.)	Period of Significance	Significant Dates
<u>ENGINEERING</u>	<u>1929-1930</u>	<u>1929-1930</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Cultural Affiliation

n/a

Significant Person

n/a

Architect/Builder

Washington Water Power Company Engineering Department/
Grant Smith & Company

Narrative Statement of Significance (Explain the significance of the property on one or more continuation sheets.)

Property Name Washington Water Power Bridges

County and State Kootenai County, Idaho

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # _____

Primary location of additional data:

- State Historic Preservation Office
 - Other State agency
 - Federal agency
 - Local government
 - University
 - Other
- Specify repository:
Washington Water Power Company

10. Geographical Data

Acreage of property less than one

UTM References

1	<u>1/1</u>	<u>5/0/3/3/7/0</u>	<u>5/2/8/4/0/0/0</u>	3	<u>/</u>	<u>/ / / / /</u>	<u>/ / / / / / 0</u>
	Zone	Easting	Northing		Zone	Easting	Northing
2	<u>1/1</u>	<u>5/0/3/5/8/0</u>	<u>5/2/8/3/9/7/0</u>	4	<u>/</u>	<u>/ / / / /</u>	<u>/ / / / / /</u>

See continuation sheet

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Nancy F. Renk, Consulting Historian date June 23, 1995
 organization _____ telephone 208-263-7697
 street & number 8500 Sunnyside Road state ID zip code 83864
 city or town Sandpoint

Additional Documentation

Submit the following items with the completed form:
Continuation Sheets

Maps

- A USGS map (7.5 or 15 minute series) indicating the property's location.
- A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black and white photographs of the property.

Additional items (Check with the SHPO or FPO for any additional items.)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name _____
 street & number _____ telephone _____
 city or town _____ state _____ zip code _____

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7 Page 1 Name of Property Washington Water Power Bridges
County and State Kootenai County, Idaho

Narrative Description

The Washington Water Power (WWP) Company bridges in Post Falls provide vehicular access to the power plant across a canal and then across the north channel of the Spokane River. Both are reinforced concrete structures, the former a simple flat span across a narrow canal, the latter a graceful open spandrel design crossing the rocky gorge of the river below the falls.

The bridges are located at the western edge of town in an area now developed by WWP into a community park. Fourth Street narrows there to a single-lane, restricted-access private road and continues westward across the bridges, then curves south to reach the powerhouse. Other wide asphalt paths provide walkers' access through the small park area.

The Spokane River divides into three channels at Post Falls. The area in the vicinity of the falls on the north channel has attracted industrial development for more than one hundred years. The first sawmill perched on the eastern side of the channel by the mid-1880s operated on power produced by the first dam. A flour mill opened nearby before the end of the decade, but both of these industries are now long gone. The large sawmill to the east of the park is the latest in a succession of mills that have operated at the same location since the early 1900s. A new apartment complex is located northeast of the park area but does not intrude on the historic setting.

The smaller bridge is a reinforced concrete structure that crosses the Spokane Valley Irrigation Co. canal, which is no longer in use. Poured-concrete abutments rest on bedrock on either end, joined by a double ribbed flat concrete girder span. The poured-concrete decking extends past the girders, supported on the outside by curved brackets. The bridge superstructure includes a low concrete wall, embossed on the outside with rectangular panels, and a railing of steel pipe. The roadbed is sixteen feet wide and the bridge is sixty feet long, of which about forty-five feet is the actual span between the abutments. The decking stands about fifteen to eighteen feet above the bed of the canal. Aside from the obvious lack of water in the canal, the only noticeable changes in the bridge after sixty-five years are the asphalt covering the roadbed, removal of the original lights, some chips in the concrete wall, and a few bends in the metal railing.

The larger bridge is a reinforced-concrete arch structure that spans the north channel of the Spokane River. The open spandrel design employs a double-ribbed arch, with the bases of the arch set on bedrock and the center of the arch rising just over thirty-two feet above the ends. Reinforced H-shaped uprights join the arch with the pair of concrete girders that support the decking. Similar H-shaped piers support the bridge approach at either end.

The bridge consists of thirteen sections of seventeen feet, for a length of 221 feet. Of this total, the

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7 Page 2 Name of Property Washington Water Power Bridges
County and State Kootenai County, Idaho

eastern approach contains three sections, the arch eight sections, and the western approach two sections.

The bridge superstructure consists of the concrete decking, now covered with asphalt, and a concrete wall. Like the smaller bridge, the exterior of the wall is embossed with concentric recessed rectangular panels. The bridge decking sits forty feet above the high water level.

There have been a few alterations to the bridge over the last sixty-five years. Lamps originally provided light at each end of the bridge, but these have been removed, along with the signs designating one-way traffic only. The twelve-foot bridge width was originally narrowed with the addition of a three-foot wide wooden walkway running along the upstream side of the bridge; this has since been removed. Similarly, the wooden guard rails which channeled traffic onto the bridge at either end have been removed. In recent years, Washington Water Power Company has added a chain link fence and large chain-link gate to restrict access to both the bridge and the power plant beyond.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 1 Name of Property Washington Water Power Bridges
County and State Kootenai County, Idaho

Narrative Statement of Significance

The Washington Water Power Company Bridges at Post Falls, Idaho are eligible for listing in the National Register of Historic Places under Criterion C as excellent examples of early 20th century concrete bridge engineering and construction methods.

The larger bridge over the north channel of the Spokane River, built in 1929, is the oldest identified open spandrel reinforced concrete arch bridge extant in Idaho and is one of only four of this bridge type known to remain in the state. They include Memorial Bridge on Capitol Boulevard in Boise (1931), the Rainbow Bridge over the North Fork of the Payette River on State Highway 55 (1933), and the bridge over the Upper West Branch of the Priest River on State Highway 57 (1937).¹ This construction method was pioneered in the 1910s and 20s, producing one of the most evocative and aesthetically pleasing bridge designs of this century. The smaller bridge over the Spokane Valley Irrigation Company canal, constructed in 1930, is an excellent example of flat-span, reinforced concrete girder bridge construction, a construction method which gained favor among bridge and road engineers during the second quarter of the 20th century. Both bridges remain in good condition, with few alterations in the structures and little change in the surrounding landscape since the period of significance.

Washington Water Power Company (WWP) was incorporated at Spokane, Washington in 1889. The company constructed its first hydroelectric power plant at Spokane shortly after incorporation. In 1903 company officials announced plans to expand WWP's generating power with a new plant upriver on an island in the Spokane River at Post Falls, Idaho. This was a major project involving the construction of dams on the three river channels and a large power house with a capacity for six 3000 horsepower units. Work was well underway by the fall of 1905, and the plant went on line the following year with three units operational. Unit 4 followed in 1907 and unit 5 the next year. The most recent unit was installed in 1980.²

Wooden bridges originally provided access across the Spokane Valley Irrigation Company canal and the north channel of the Spokane River to the power plant site. In 1929, however, the company decided to replace the bridge over the river with a concrete bridge. Officials signed the work order in August of that year, and construction was begun shortly thereafter. In May 1930 the scope of work was expanded to include construction of a smaller concrete bridge over the canal as well. Actual costs of the concrete arch span exceeded the initial estimate of \$21,000; expenses by May 1930 amounted to nearly \$23,000, with another \$1,000 spent for demolition of the wooden bridge. In addition, costs for the smaller bridge over the canal were estimated at \$4,215, bringing the total project cost to \$28,260.³

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 2 Name of Property Washington Water Power Bridges
County and State Kootenai County, Idaho

Washington Water Power engineers designed the concrete arch bridge and probably were responsible for the design of the smaller canal bridge as well. Chief engineer was V. H. Greisser and consulting engineer was B. J. Garnett. Contractor for the project was Grant Smith and Company.⁴

The actual work on the concrete arch bridge began in September 1929. Within a couple of weeks, the local newspaper reported that the old wooden bridge had been removed and work started on its replacement. Construction progressed well during the fall and was nearly completed by the end of the year. Evidently the smaller span was built in the spring of 1930, but there are no records giving details of its actual construction.⁵

With the advent of portland cement in the second half of the 19th century, concrete became a reliable building material for a wide variety of projects. Bridge builders soon recognized its utility since it had the same structural quality - great compressive strength - as stone and thus was well suited to the arch design. Its lack of tensile strength, however, led to experiments using iron and steel reinforcing. Jean Monier patented designs in Europe while W. E. Ward was one of the first to work with reinforced concrete in the United States. Ernest L. Ransome designed the first reinforced concrete bridge in the United States, the small Alvord Lake Bridge in San Francisco's Golden Gate Park, built in 1889.⁶

Experiments in Austria in the early 1890s led to new engineering methods which guided the design of reinforced-concrete bridges into the 20th century. The Austrian system essentially used concrete to encase a steel structure, with parallel I beams following the arch intrados. American engineers adopted this building system appreciating its durability and safety. This resulted in the construction of many reinforced-concrete bridges which mimicked their stone masonry predecessors featuring heavy abutments and solid arches.⁷

European engineers, most notably Francois Hennebique and Robert Maillart, refined the design of reinforced-concrete bridges in the early 1900s. Maillart fused the arch with the deck to form a strong single unit. He also eliminated all but the most functional engineering elements, leading to the open spandrel design. Engineers in the United States began to adopt this design following World War I. As a result the number of bridges employing the open spandrel form for both highway and railroad construction steadily increased during the 1920s and 1930s. The design was popular not only for its aesthetics but also for its economy as it required less material than traditional forms. In addition, much of the material could come from local sources, less-skilled labor was required for its construction, and initial maintenance costs were less than steel structures.⁸

Paralleling the development of the arched concrete bridge was the adaptation of girder bridge designs for use with reinforced concrete. Girder or beam bridges, which rely on straight horizontal beams to support and define the bridge deck, have been in common use since the 18th century. When

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 3 Name of Property Washington Water Power Bridges
County and State Kootenai County, Idaho

reinforced concrete emerged as a common bridge material at the turn of the 20th century, it was natural to utilize the well tested girder bridge design in building new concrete bridges. Given the solid massing and length limitations of a flat concrete girder span, other designs (both in concrete and in steel) proved to be more cost effective for long bridges. For a short span, such as the WWP bridge over the Spokane Valley Irrigation canal, flat concrete girder construction was ideal.⁹

Each of these bridges embody the distinctive characteristics of concrete bridge construction during the second quarter of this century. As such they are both worthy of inclusion in the National Register of Historic Places under Criterion C.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 4 Name of Property Washington Water Power Bridges
County and State Kootenai County, Idaho

Endnotes

1. Rebecca Herbst, NPS Inventory forms for Memorial Bridge, Rainbow Bridge, and Upper West Branch Priest River bridge.
2. "New Electric Plant Here," Spokesman-Review, 13 September 1903, 5:1; "Build Big Plant at Post Falls," Spokesman-Review, 1 October 1905, II, 1:4; H. E. LuBean, "Pertinent Post Falls Events," 1988.
3. Washington Water Power Co., work orders dated 14 August 1929 and 15 May 1930.
4. Washington Water Power Company, Post Falls Station Concrete Arch Bridge, plans dated 25 September 1929; Grant Smith and Company bill to Washington Water Power Company, dated 2 January 1930.
5. "Post Falls," Rathdrum Tribune, 20 September 1929, 1:1; Grant Smith and Company, bill to Washington Water Power Company dated 2 January 1930.
6. David Plowden, Bridges: The Spans of North America (New York: W. W. Norton & Co., 1974), 297-298.
7. Plowden, 298; Henry Grattan Tyrrell, History of Bridge Engineering (Chicago, G. B. Williams Co., Printers, 1911), 409-410.
8. Plowden, 319; Elizabeth B. Mock, The Architecture of Bridges (New York: The Museum of Modern Art, 1949), 86-89; Donald C. Jackson, Great American Bridges and Dams (Washington, D. C.: The Preservation Press, 1988), 35-38.
9. Jackson, Donald C., Great American Bridges and Dams, The Preservation Press, Washington D.C. 1988, 38-39.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 9 Page 1 Name of Property Washington Water Power Bridges

County and State Kootenai County, Idaho

Bibliography

"Build Big Plant at Post Falls," Spokesman-Review, 1 October 1905, II, 1:4.

Grant Smith & Company

Bill No. 6-24, dated 2 January 1930, to Washington Water Power Company for labor and material furnished for bridge at Post Falls during December 1929. Copy on file, Washington Water Power Co., Coeur d'Alene, Idaho.

Herbst, Rebecca

NPS Inventory forms for Memorial Bridge on Capitol Blvd., Rainbow Bridge on North Fork of the Payette River, and Upper West Branch of Priest River bridge. 1982. Forms on file with SHPO, Boise, Idaho.

Jackson, Donald C.

Great American Bridges and Dams. Washington, D. C.: The Preservation Press, 1988.

LuBean, H. E.

"Pertinent Post Falls Events." Fact sheet dated 5-23-88. On file, Washington Water Power Co., Coeur d'Alene, Idaho.

Mock, Elizabeth B.

The Architecture of Bridges. New York: The Museum of Modern Art, 1949.

"New Electric Plant Here." Spokesman-Review, 13 September 1905, 5:1.

Plowden, David

Bridges: The Spans of North America. New York: W. W. Norton & Co., 1974.

"Post Falls," Rathdrum Tribune, 20 September 1929, 1:1.

Tyrrell, Henry Grattan

History of Bridge Engineering. Chicago: G. B. Williams Co., Printers, 1911.

Uhden, C. F.

"System of Washington Water Power Company," Journal of Electricity, Power and Gas Vol. 33, No. 10 (5 September 1914): 5-7.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 9 Page 2 Name of Property Washington Water Power Bridges
County and State Kootenai County, Idaho

Washington Water Power Company

Work orders dated 14 August 1929 and 15 May 1930. On file, Washington Water Power Co.,
Coeur d'Alene, Idaho.

Post Falls Station Concrete Arch Bridge. Four pages of plans and specifications for bridge
construction, dated 25 September 1929. On file, Washington Water Power Company, Coeur
d'Alene, Idaho.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 10 Page 1

Name of Property Washington Water Power Bridges

County and State Kootenai County, Idaho

Verbal Boundary Description:

The boundary includes the two separate bridges and their abutments.

Boundary Justification:

The surrounding area does not contribute to the area of significance for the two bridges, so only the structures themselves are nominated.