NPS Form 10-900-b
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United States Department of the Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form

This form is for use in documenting multiple property groups relating to one or several historic contexts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. For additional space use continuation sheets (Form 10-900-a). Type all entries.

A. Name of Multiple Property Listing

Washington State Highway Bridges, 1941-1950

B. Associated Historic Contexts

Historic Bridges and Tunnels in Washington State - Thematic Nomination, 1980

C. Geographical Data

☐ See continuation sheet

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards for Planning and Evaluation.

[signature] — 2/7/95

Signature of certifying official — Date

State or Federal agency and bureau

I, hereby, certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Signature of the Keeper of the National Register — Date

E. Statement of Historic Contexts

Discuss each historic context listed in Section B.

☒ See continuation sheet

F. Associated Property Types

I. Name of Property Type ______________________________

II. Description

III. Significance

IV. Registration Requirements

[X] See continuation sheet

[ ] See continuation sheet for additional property types

G. Summary of Identification and Evaluation Methods

Discuss the methods used in developing the multiple property listing.

[X] See continuation sheet

H. Major Bibliographical References

[X] See continuation sheet

Primary location of additional documentation:

- [ ] State historic preservation office
- [X] Other State agency
- [ ] Federal agency
- [ ] Local government
- [X] University
- [ ] Other

Specify repository: Washington State Department of Transportation, Olympia; Archaeology and Historical Services; Eastern Washington University, Cheney, Washington

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E. Statement of Historic Contexts.

WASHINGTON STATE HIGHWAY BRIDGES 1941–1950 HISTORIC CONTEXT

The decade of the 1940s represented a period of transition in architectural design, construction methods, materials use, workmanship, and site selection in bridge building in Washington State. A number of forces influenced these changes. Events leading up to American involvement in World War II (1941–1945); subsequent appropriation of iron, steel, timber, fastenings, and other basic materials by the Federal Defense Agency for the war effort; and post-war economic instability and continued shortages of critical fabrications dominated the decade. These wartime and post-war conditions transformed development of bridge building in Washington, as they did elsewhere. During the 1940s, an immense federal public works project, the Grand Coulee Dam–Columbia Basin Project, also substantially influenced bridge building in Washington. The Washington State Department of Highways' growing awareness of, and dependency on, scientific applications determining appropriate and stable sites for bridge replacement and new construction further characterized the 1941–1950 era.

At the beginning of the 1940s, before the onset of war, new construction techniques and design concepts, typified by the rigid frame principle of bridge design, were already gaining widespread (if cautious) acceptance by the Department of Highways:

> In regard to design, it may be reported that advantage continues to be taken of such material economies and structural benefits as can be made possible by modern refinements in design, such as the use of continuous and rigid frame construction. However, each structure is studied as an individual problem and the various factors which have an influence in determining the design are given due consideration. It is felt that enthusiasm for new design methods does not alone justify their unrestricted application . . . (*Eighteenth Biennial Report* 1938–1940:25–26).

The use of continuous and rigid frame construction permitted greater versatility in bridge building than was possible with earlier simple-span fabrication by allowing for construction of large-scale continuous concrete structures. However, because specifications for these designs called for considerable use of reinforcing steel, as the country moved toward war, attendant material shortages delayed widespread advancement of these bridge designs until the post-war period of the late 1940s.

Another trend apparent on the eve of the new decade entailed a move away from "architectural embellishment" popular in bridge design in the past toward a less cluttered, more functional aesthetic standard. The Director of Highways discussed this new criterion in the *Eighteenth Biennial Report*:

> Currently, extraneous architectural embellishment has been omitted and architectural requirements have been met by harmonizing the structures with their environment and designing them with pleasing lines and agreeable proportions (1938–1940:27).

Despite changing attitudes in bridge design aesthetics, some bridges built during the 1940s clearly embody earlier artistic preferences. As an example, the graceful concrete arch of the Spokane River Bridge at Long Lake Dam, completed in 1950, reflects the ornate style associated with bridge design popular before 1940. It was the only concrete arch bridge built between 1940 and 1950 that integrated the concrete arch design with use of a considere hinge at the skewbacks. The Jim Creek Bridge (completed in 1945), also a concrete arch bridge, likewise exhibits characteristics indicative of earlier design standards. Continued, though limited, construction of bridges reflecting earlier design patterns suggests that while new forces influenced changed artistic perspectives, the appeal of certain "classic" styles lingered among bridge designers and builders years after the introduction of new aesthetic standards.

By 1941, material shortages and decreased federal funding curtailed work on all Department of Highways projects except those deemed essential to the national defense. This war-time austerity provided impetus for the movement away from expensive architectural ornamentation favored in the past toward the more streamlined (and economical) paradigm of bridge design that prevailed in bridge construction following World War II. In addition to scarcity of materials during the early 1940s, the Department of Highways lost the majority of its skilled laborers and experienced equipment operators, as workers all across the country volunteered or were called to serve in the military. The Department's *Nineteenth Biennial Report* (1940–1942:24) describes this loss of manpower as "a crippling blow."

Following the Japanese attack on Pearl Harbor, on 7 December 1941, the Department of Highways adjusted to circumstances of a country at war by revising former construction schedules and project development. The Department altered bridge building projects already in progress, and engaged in innovative use of surplus materials to ensure completion of the few new permanent bridges built between 1941 and 1950. For the most part, the Department adopted a policy of creative maintenance for existing bridges, in place of implementing previously planned new construction projects. A number of Department contracts let before December 1941, for instance, were abandoned entirely, while other contracts were amended to substitute untreated timber pile trestles in place of originally specified concrete structures. Intended as "temporary crossing," the Department's *Nineteenth Biennial Report* (1940–1942:21) noted that these inferior timber bridges could be relied on to "serve for the duration of the emergency." Other temporary construction measures adopted by the Department to compensate for shortages of "critical materials" (most notably iron, steel, reinforced concrete, and treated lumber) involved the use of "mass construction of plain concrete" in place of reinforced concrete in wall and pier work (1940–1942:12).

At the same time, steel salvaged from the Tacoma Narrows Bridge (which had collapsed in 1940), and steel and fastenings procured from previously dismantled obsolete bridges, served as fabricating and repair materials for pivotal Department bridge projects. Similarly, the Department of Highways' acquisition, in September 1943, of 430 tons of steel reinforcing bars from surplus war stocks "made possible the construction of a number of structures which otherwise could not have been built" (*Twentieth Biennial Report* 1942–1944:20). The Jim Creek

National Register of Historic Places Continuation Sheet

Bridge, a reinforced concrete arch structure completed in 1945, is an example of a bridge built from World War II surplus. In the main, however, bridge construction (then considered the "most acute problem facing the Department") was appreciably curtailed for the duration of the War (1940–1942:24). The status of bridges in Washington, and the nature and severity of the dilemma faced by the Department in maintaining existing bridges, was a subject of obvious concern, as voiced by the Director of Highways in the *Nineteenth Biennial Report* (1940–1942:24):

> On some of the primary highways and many of the secondary highways are numerous light steel truss and timber truss bridges that should be replaced immediately and scores of timber spans and trestles that have reached a state of decay approaching complete failure. The replacement of these structures without structural steel, without reinforcing bars, without timber, and without nails, spikes and bolts is an enigma that has not yet been answered.

Following the War, manpower and material shortages were somewhat alleviated. Accordingly, "the early months of 1946 showed accelerated activity in preparation of projects and in the awarding of contracts" (*Twenty-first Biennial Report* 1944–1946). However, new post-war pressures continued to delay bridge building projects throughout the mid-1940s. In particular, economic instability, as evidenced in dramatically escalated labor, materials, and equipment costs, resulted in the rejection of contract bids that the Department considered to inflated compared with 1940 prices.

The qualities of thriftiness and ingenuity practiced by most state and local agencies in completing new construction projects during the War carried over to post-war bridge projects as well. The Barstow Bridge, a single-lane highway bridge spanning the Kettle River in Stevens County, is an example. The prefabricated through Pratt truss bridge was formerly stocked by the War Department for use as a railroad bridge in the European theater of operations. In 1947, Stevens County purchased the bridge from surplus bridge stock controlled by the War Assets Administration for the nominal cost, including shipping and labor, of $44,818.58. Today the Barstow Bridge exemplifies the ingenuity of local agencies in undertaking new construction projects during times of material shortages and as well illustrates an occurrence of creative recycling of surplus war stocks for use in the civilian/public sector.

Rather than reflecting temporary post-war economic woes, however, marked increases in construction costs signaled the beginning of a new and substantially higher contract price structure, and a comparison of contract award prices from the beginning of the 1940s and those at the close of the decade clearly indicates. In addition, closure of steel mills following the War perpetuated shortages of that vital material. Similarly, treated timber remained a scarce commodity throughout the 1940s. To compound these problems, critical materials which were available after 1945 were of an inferior quality compared to pre-war fabrications. As a result, bridge contracts following the War generally involved more repair and maintenance projects, such as bridge redecking and renewal of approaches, rather than awards for new construction. The new bridges which were constructed from 1945 to 1950 typically consisted of concrete slab and reinforced concrete rigid frame designs that called for minimal use of steel and timber. In short, construction throughout the decade of the 1940s was not only impeded but "at times sharply curtailed" because of chronic material shortages resulting from the National Defense Program's policy of permitting "only small quantities of steel, copper, and other critical metals to be used on non-military projects" (*Twenty-fourth Biennial Report* 1950–1952:33).

Despite critical shortages of steel both during and following World War II, several large steel bridges besides those associated with the Grand Coulee Dam–Columbia Basin Project were constructed in Washington between 1941 and 1950. These include the Grande Ronde River Bridge, the Agate Pass Bridge (with a main steel span of 540 feet), and the Columbia River Bridge at Wenatchee. That these bridges were constructed despite shortages of critical materials and manpower indicates their priority as vital connecting links in the transportation network of the state's highway system.

The Grand Coulee Dam–Columbia Basin Project, one of the greatest public works projects undertaken by the federal government in the twentieth century, decidedly influenced bridge building in Washington during the 1940s. Two bridges, the Columbia River Bridge at Kettle Falls and the Spokane River Bridge at Fort Spokane, exemplify the monumental scope of the Columbia Basin Project. These bridges illustrate the principal physical characteristic that typified structures completed as part of the undertaking: great length and size.

The construction of Grand Coulee Dam and formation of Lake Roosevelt necessitated the erection of both the Columbia River Bridge at Kettle Falls and the Spokane River Bridge at Fort Spokane. Constructed in 1941, the Columbia River Bridge at Kettle Falls (ca. 1,267 feet overall length) featured a central span of 600 feet, the longest main span of any of the bridges built in Washington during the 1940s. Also constructed in 1941, the Spokane River Bridge at Fort Spokane (953 feet long) was the second largest single structure erected by the State in 1941. From engineering and construction standpoints, these two structures were among the few ambitious bridge projects completed by Washington State during the trying years immediately preceding World War II. The U.S. Bureau of Reclamation reimbursed the State of Washington for all costs associated with the construction of these bridges as part of the Grand Coulee Dam–Columbia Basin Project. In the 1938–1940 biennium, the Bureau of Reclamation contributed $2,751,000 of a total of $14,751,000 of state and federal funds allotted to the Department of Highways. These figures demonstrate the economic boost this mammoth federal project provided the state for bridge and highway work necessitated by the construction of Grand Coulee Dam.

In addition to a world war, the 1940s ushered in a decade of widespread acceptance of mathematical formulas previously developed to calculate difficult design concepts, as well as introduced advances in scientific analysis and equipment that influenced bridge building in the state during that decade. By 1940, state engineers had adopted a revolutionary new method of balancing and distributing fixed-end moments (force x distance) in continuous structures, a mathematical system introduced in the 1930s by Hardy Cross, a professor at the University of Illinois. His technique enabled engineers to calculate rapidly and accurately the moments and shear forces and to determine tension and compression in structures. Whereas in the past, simple span bridges, whose loads had been laboriously calculated using the "slope deflection" method of analysis, served as the dominant design model, the precision of the Hardy Cross method for the first time permitted a more simplified method in designing large-scale, indeterminate continuous concrete structures.

Although the degree of influence exerted by bridge designers, such as Homer Hadley, employing the Hardy Cross method of calculating loads has not been fully determined, indications are that the Hardy Cross method was an important new mathematical tool in bridge design. For example, the Department of Highways used a manual outlining Cross' method as a design aid throughout the 1930s and 1940s. Bridges subsequently constructed during the 1940s that display design features suggestive of the Hardy Cross method include the continuous open spandrel, column and parabolic beam supporting the girder-slab (T-beam) roof of the Lake Keechelus Snowshed; the combination concrete and steel box girder, Patton Bridge; and the continuous reinforced concrete box girder Donald–Wapato and Toppenish–Zillah bridges. By 1950, the Hardy Cross method of calculating loads, together with increasing availability of critical materials, promoted widespread adoption of streamlined construction elements, whose simple lines and uncluttered appearance became standardized features in bridge construction in succeeding decades.

In addition to the influences of advanced mathematical methods of bridge design, new systems of scientific analysis, and the introduction of advanced technical and mechanical equipment influenced bridge building in Washington. At the beginning of the decade, the state owned and operated two core drilling machines used in compiling accurate and comprehensive data on foundation conditions and analysis of soils and their behavior under loads. The fact that the core drilling machines were "kept busy almost continuously investigating proposed bridge sites" demonstrated the state's growing awareness of the benefits of scientific analysis in averting costly construction problems caused by improper selection of bridge sites (1938–1940:27). By the close of World War II, accelerated utilization of increasingly sophisticated scientific methods in determining bridge sites had become standard practice in the Department. By 1948, the state employed six soils engineers (one for each of the six districts) as well as a geologist. Among his other functions, the geologist participated in field investigations to determine the nearest sources of gravel or quarry rock suitable for construction purposes on each project. As revealed in the *Twenty-second Biennial Report* (1946–1948:30), following World War II, locating adequate quarry sites had become a subject of increasing concern:

> The location of gravel pits and quarries is being made as far in advance of construction as possible to permit thorough study of alternate sites. The need for advance acquisition of aggregate sites is becoming acute in some localities because of scarcity of materials or cultural development of available areas.

Dramatic increases in population following the War also affected bridge building in Washington. Demographics influenced the need for additional bridge sites, with more importance placed on the long-term geologic adequacy of the sites than had been apparent in the past. In order to meet the transportation needs of its rapidly growing population, by 1950, the state regarded scientific investigation and analysis as indispensable tools for determining suitable and cost-effective bridge sites:

> For a number of years, the Department has secured information regarding foundation material at proposed bridge sites by test drilling. This information is essential in the design of foundations and is obtained by State forces. Recently a new drilling machine has been acquired to replace existing worn out and depreciated equipment . . . . The value of the information which is obtained has proven to be very important and, from the data secured, a rational and economical design of structural foundations can be made. As a result, a saving is assured in constructions (*Twenty-third Biennial Report* 1948–1950:24–25).

As further indicated, the state's willingness in acquiring new, ever more complex, scientific technology attests to the success of scientific procedures in meeting bridge construction, inspection and maintenance needs during the 1940s:

> The Department has recently purchased a fathometer for use in determining the contour of stream beds at bridge sites. The equipment is essentially a radio transmitter and receiver operated from a boat and capable of sending signals directed downward which when reflected upward are detected by the receiver and the machine plots a graph of the stream bed surface. The equipment is sensitive to a fraction of a foot variation in the stream bed and is most valuable in swift running water where soundings by weights are impossible. By the use of the fathometer, the condition of the stream bed in the vicinity of existing bridge piers can readily be ascertained This information is essential at locations where swift water may undermine bridge piers and without such equipment the damage may not be detected (1948–1950:24–25).

In short, whereas in the past, locating stream crossing site had been largely a matter of subjective determination dictated by existing travel routes or structures, expediency, and on occasion, undoubtedly by personal whim, the decade of the 1940s propelled the Department into an age of objective, scientific site selection. Bridges built in Washington during that era represent the evolution and refinement of this revolutionary advance in the history of American bridge building and design.

As illustrated by their design features and construction methods, bridges built in Washington during the 1940s exemplify forces peculiar to that decade—events of national and international consequence, advances in science and in technology, and post-war demographic pressures. Diverse as they were complex, these influences stamped their singular imprint on bridge design and architecture of that important era and contributed to trends in bridge building that have continued beyond 1950 and into succeeding decades.

F. Name of Property Types

I. Name of Property Type Bridges built between 1941-1950

II. Description

Bridges nominated under this grouping are concrete and metal. No timber bridges are addressed in this MPD. Because concrete and metal types are fully described in the earlier thematic nomination of Bridges and Tunnels in Washington State, the latter document serves as the complete descriptive narrative for this submission. In general, three bridge types are nominated with this MPD:

1) Simple span concrete: These are defined by slabs or tee beam construction. Such bridge have concrete piers, often simply driven concrete pilings; exhibit a center span in excess of fifty feet; a parabolic, aesthetically pleasing soffit; and are designed to span a stream crossing of moderate width and engineering difficulty.

2) Continuous concrete spans: Continuous spans consisting of slab, girder or tee beam construction. Like the simple spans, only those of at least fifty feet in length were found to have engineering merit.

3) Steel structures: Steel bridges built during this period are of unique truss designs. Because of the shortage of steel in the 1940s, all bridges built during these years were addressed for nomination, regardless of length.

III. Significance

Each of the sixteen bridges nominated to the National Register of Historic Places in this multiple properties submission, amendment to "Historic Bridges and Tunnels in Washington State," conveys, either through architectural design or historical associations or both, conditions, events, and technological advances peculiar to the period 1941-1950. Eleven of the sixteen nominated bridges structures are not yet fifty years old at the time this nomination is being prepared, the minimum age at which properties are considered "historic," as designated in Section 60.4 (Criteria for Evaluation) of the Department of the Interior's regulations at 36 CFR Part 60 (National Register of Historic Places). However, these eleven structures, both individually and collectively, have achieved significance in their local context because of their ability to convey a sense of the richness, technical advances, social and political turbulence, and qualities of human resourcefulness that distinguished the decade of the 1940s. Some of these properties therefore meet the criterion for listing within the past fifty years because they are of exceptional importance.

IV. Registration Requirements

The structures nominated to the National Register in this multiple properties nomination which have recently reached fifty years of age, or which are not yet fifty years old, are worthy of inclusion in the National Register for their exceptional engineering artistic, and historical significance. Construction of several of the nominated properties are important because they represent the first successful use of new design techniques and material fabrications developed during the previous decade (the 1930s); or served as prototypes for new construction methods, architectural styles, and aesthetic standards that have continued to the present day.

Other nominated structures are significant because they illustrate the transition from past preferences in bridge design to new models of artistic expression, and because they represent especially harmonious blendings of manmade structures with their natural surroundings. Completed as part of perhaps the nation's most monumental public works undertaking of this century, the Grand Coulee Dam-Columbia River Basin Project, three properties, the Columbia River bridges at Northport (built 1949) and at Kettle Falls (built 1941), and the Spokane River Bridge at Fort Spokane (built 1941), number among the state's most spectacular engineering feats in highway bridge construction from the 1940s. Other bridges, including the Jim Creek Bridge (completed 1945) and the Barstow Bridge (installed 1947), stand as monuments to the ingenuity of state and local transportation agencies in completing highway bridge construction, despite the difficult and challenging circumstances engendered by war and post-war conditions.

G. Summary of Identification and Evaluation Methods.

In 1980, the Washington State Department of Transportation (WSDOT) sponsored an inventory of approximately 1,400 bridges and structures constructed before 1941 in the state. Conducted in cooperation with the Washington State Office of Archaeology and Historic Preservation (OAHP) and the Historic American Engineering Record (HAER), the inventory resulted in the nomination and listing of ninety-five bridges and tunnels in the National Register of Historic Places (Soderberg 1980). Bridges on the WSDOT highway system, county and city bridges, and privately owned structures, including railroad bridges, were included in the nomination. In addition, approximately 500 structures were included in the HAER inventory.

The present nomination is an amendment to the 1980 multiple property nomination. The sixteen bridges here nominated represent the most significant WSDOT or local agency owned bridges built in Washington between 1941 and 1950. No privately owned structures were evaluated, nor bridges built and/or maintained by public agencies other than cities, counties, and WSDOT; i.e., no structures owned/maintained by railroads, federal agencies, or other state or local agencies were evaluated.

WSDOT provided a list of 335 bridges for evaluation. The bridges were taken from the State of Washington Inventory of Bridges and Structures (SWIBS) computer file maintained by WSDOT, as required by the Federal Highway Administration. The SWIBS provided structural data, including span lengths and bridge type. Bridges submitted for evaluation measured a minimum 50 feet in total length, with the exception of sixteen steel stringer bridge of less than 50 feet. These are believed to be worthy of consideration despite their size. During the course of the project, several bridges were eliminated from consideration when it was learned that they were either not built (begun or completed) between 1941 and 1950, inclusive, or not of sufficient length.

Two historians and two retired bridge engineers (hereafter referred to as advisory engineers) conducted the evaluations, with the engineers providing the expertise necessary to identify structures for their engineering significance. Evaluation proceeded in three phases.

First Phase

The first phase consisted of an initial screening of bridges based upon structural information provided on the SWIBS list. Utilizing their extensive experience and expertise, the advisory engineers identified those bridges requiring minimal design engineering and construction skills. Those bridges were also of the types that have rarely displayed historical significance warranting National Register eligibility, including timber bridges and concrete bridges with spans less than 50 feet. As a result of the initial screening, 158 bridges were eliminated from consideration, leaving 177 for further study.

Second Phase

To determine the relative significance of the remaining structures, the study team developed a numerical rating system which assigns points to certain attributes or "evaluation factors." The factors were developed independent of, but similar to, other methodological approaches to bridge evaluation (Soderberg 1980; Chamberlin 1983). In the present study, as with those cited here, evaluation factors were intended to expand upon, but not replace, the National Register criteria for eligibility.

Evaluation factors used in the present study to select bridges potentially eligible for inclusion in the National Register were as follows:

1. Historic events associated with the bridge that contributed to the advancement of bridge design technology, materials, construction techniques, workmanship, engineering innovation, or site challenge.

2. Role of the bridge in social, economic, and industrial development of the locality, state, region, or nation, including World War II-related significance.

3. Designer and builder were considered renowned engineers and contractors.

4. Efforts of individuals or groups (exclusive of the designer) contributing to the location, type, development, financing, etc. of the bridge.

5. Design and construction efforts commonly used for a specific purpose or reason, i.e., any World War II conditions or measures that influenced these efforts.

6. Representative of a specific type.

7. Rarity and uniqueness of the bridge type. Distinctive quality of the bridge.

8. Sole remaining example of a specific bridge type.

9. Architectural or artistic efforts to beautify the design. Arrangement of functional members to achieve a pleasant appearance and blending with the environmental.

10. Structural integrity, especially regarding alterations that may have compromised appearance, design, or function.

Each of the ten evaluation factors were rated using an incremental scale that ranged from zero (signifying unknown or no significance to ten (indicating great significance). In most instances, factors 1, 2, and 4 were unknown and received zero ratings. When there were no known alterations and the structural integrity appeared to be intact, a bridge received a rating of ten.

For state-owned bridges, the Kardex files in the WSDOT Bridge Preservation Unit served as the principal sources of information. For each bridge, all materials and photographs in the files were examined. When uncertainties prevented establishing a numerical measure of significance for a bridge, design plane were then reviewed to supplement the Kardex files. Notes in the files often brought attention to the modifications or reconstruction that were helpful in determining a rating for integrity.

For local agency-owned bridges, a file for each bridge was compiled from plans, photographs, and other information supplied by each local agency. Site visitations and consultations with officials by telephone clarified questions arising during the evaluation phase.

Review of files and photographs, and consultations with local officials, occasionally revealed discrepancies in the SWIBS. When differences appeared, it was so noted on the bridge evaluation forms, along with other comments that may have had an influence on the numerical rating.

Both advisory engineers made an independent numerical rating for each evaluation factor for each bridge. After comparing their ratings, the engineers discussed their reasons for selecting the values assigned to each factor. Ultimately the advisory engineers reached a consensus rating for each factor. Using this method, the engineers had little difficulty clearly identifying candidates of potential historical significance. A conscientious effort was made to give maximum points under each factor, providing as many bridges for the final phase of evaluation as possible.

Third Phase

By the conclusion of the second phase of evaluation, each bridge had been assigned a numerical rating. No arbitrary "cutoff" value had been previously determined, as no basis for establishing a threshold for potential National Register eligibility had been established. When numerical ratings for the 177 bridges evaluated in the second phase were reviewed, it became apparent that those structures appearing to be the most promising for potential historical significance had received ratings of 30 and above, while those scoring lower appeared to be of lesser significance. With the threshold then designated at 30, the advisory engineers were left with nineteen state-owned bridges and eleven local agency-owned bridges for consideration in the final, third phase evaluation.

The third phase evaluation included more detailed examinations of the information previously perused, as well as additional correspondence and documents found in WSDOT files. Particular attention was given to the details shown on the design plans. Further consideration was given to modifications which detracted from the original integrity. Comparisons were made among bridges of the same type to select the best representatives.

NOTE: Although the pony truss bridge type was identified as significant within the context of historic bridges in Washington, only a limited number were evaluated. None is included in this nomination. A pony truss selected as representative of its type was omitted from the nomination at the request of the local agency which owns the bridge.

Bridges Nominated to the National Register of Historic Places

As a result of the third and final phase of evaluation, the following bridge were selected for inclusion in this nomination:

WSDOT Bridges

Agate Pass Bridge	305/10
Columbia River Bridge at Bridgeport	17/401
Columbia River Bridge at Kettle Falls	395/545
Columbia River Bridge at Northport	25/130
Columbia River Bridge at Wenatchee	285/10
Grande Ronde River Bridge	129/2
Jim Creek Bridge	503/112
Lake Keechelus Snowshed	90/110N
Spokane River Bridge at Fort Spokane	25/6
Spokane River Bridge at Long Lake Dam	231/101

Local Agency Bridges

Barstow Bridge	No. 224
Donald–Wapato Bridge	No. 396
Marshall Bridge	No. 2404
Patton Bridge	No. 3015
Toppenish–Zillah Bridge	No. 485
Winnifred Street Bridge	No. 1130

H. Major Bibliographic References.

Chamberlin, William P. 1983. *Historic Bridges: Criteria for Decision Making*. National Cooperative Highway Research Program, Synthesis of Highway Practice 101. Transportation Research Board, National Research Council, Washington, D.C.

Countryman, Amy S. 27 November 1990. Letter to Craig Holstine. Provides a brief historical description of the Barstow Bridge, Ferry and Stevens counties, Washington. On file, Archaeological and Historical Services, Eastern Washington University, Cheney, Washington.

Soderberg, Lisa. 1980. "Historic Bridges and Tunnels in Washington State," on file in the Washington State Office of Archaeology and Historic Preservation, Olympia, Washington.

United States. 18 August 1944. *TM5–373 War Department Technical Manual: Through Truss Railway Bridge*. Manual on file in the office of the Stevens County Department of Public Works, Colville, Washington.

Washington State Department of Highways. *Biennial Reports*, 1938–1940, 1940–1942, 1942–1944, 1946–1948, 1948–1950, 1950–1952.

Washington State Department of Transportation. Bridge Condition Cards (various bridges), on file in the Bridge Preservation Office, WSDOT, Olympia, Washington.