NPS Form 10-900
(Oct. 1990)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

18781

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions i *How to Complete the National Register of Historic Places Registration For* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an 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 instruction. Place additiona entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter or computer, to complete all items.

1. Name of Property

historic name: Southbound Interstate 5 Columbia River Bridge

other names/site number: Bridge Number 5/1W Columbia River Bridge

2. Location

street and number: Interstate 5 over the Columbia River N/A not for publication

city or town: Vancouver / Portland [X] vicinity

state: Washington/Oregon county: Clark Co. / Multnomah Co. zip code:

3. State/Federal/Tribal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this [X] 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 [X] statewide [ ] locally. ([ ] See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency or Tribal Government

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

Signature of certifying official/Title Date

State or Federal agency or Tribal Government

4. National Park Service Certification

I hereby certify that the property is: Signature of the Keeper Date of Action

[ ] 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:)

5. Classification

Ownership of Property
(Check as many boxes as apply)

- [ ] private
- [ ] public-local
- [X] public-State
- [ ] public-Federal

Category of Property
(Check only one box)

- [ ] building(s)
- [ ] district
- [ ] site
- [X] structure
- [ ] object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
		buildings
		sites
1		structures
		objects
1	0	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

Bridges and Tunnels Built in Washington State, 1951-1960

Number of contributing resources previously listed in the National Register

N/A

6. Function or Use

Historic Functions
(Enter categories from instructions)

Transportation

Historic Subfunctions
(Enter subcategories from instructions)

Current Functions
(Enter categories from instructions)

Transportation

Current Subfunctions
(Enter subcategories from instructions)

7. Description

Architectural Classification
(Enter categories from instructions)

No Style

Materials
(Enter categories from instructions)

Foundation Concrete
Other Steel
Concrete

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

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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.)

[X] **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.

[X] **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.)

Property is

[ ] **A** owned by religious institution or used for religious purposes..

[ ] **B** removed from its original location.

[ ] **C** a birthplace or grave.

[ ] **D** a cemetery.

[ ] **E** a reconstructed building, object, or structure.

[ ] **F** a commemorative property.

[X] **G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance

(Enter categories from instructions)

Engineering
Transportation

Period of Significance

1958-1960

Significant Dates

1958

Significant Person

(Complete if criterion B is marked above)

N/A

Cultural Affiliation

Architect/Builder

Guy F. Atkinson Company, Builder
U.S. Steel Corp's American Bridge Division
Oregon State Highway Department

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9. Major Bibliographical References

Bibliography

(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
- [X] recorded by Historic American Engineering Record (# HAER No. WA-86)

  - [ ] See continuation sheet for additional HABS/HAER documentation.

Primary location of additional data:

- [X] State Historic Preservation Office
- [X] Other State Agency (Repository Name: WSDOT)
- [ ]
- [ ]
- [ ]
- [ ]

10. Geographical Data

Acreage of Property: 10.00

UTM References

(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing
1	10	524886	5050170
2	10	525556	5051836
3			
4			

- [ ] 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.)

18781

11. Form Prepared By

name/title: Oscar R. "Bob" George, Bridge Engineer (retired)

organization: Washington State Department of Transportation / Environmental Affairs Office date: 6/30/2001

street & number: PO Box 47332 telephone: (360) 570-6639

city or town: Olympia state: Washington zip code: 98504-7332

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: Washington State Department Of Transportation / Oregon Department of Transportation

street & number: PO Box 47300 / 355 Capitol St. NE telephone: 360-705-7000 / 275-6368

city or town: Olympia / Salem state: Washington / Oregon zip code: 98504-7300 / 97301-3871

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

The Columbia River Bridge (5/1W), completed in 1958, carries three lanes of southbound traffic over the Columbia River between Vancouver, in Clark County, Washington, and Portland, in Multnomah County, Oregon. Just to the east, a similar bridge (5/1E), completed in 1917, carries three northbound lanes over the river.

The 3,538-foot long west bridge has sixteen spans. Starting at the south end with four variable width continuous reinforced concrete tee-beam spans (maximum span length is just over 74 feet), the bridge continues with seven 265-foot 8¼-inch riveted steel Parker through truss spans; a single 531-foot 4½-inch riveted steel Pennsylvania-Petit through truss span with sub-struts and sub-ties; a three-span steel Parker through truss vertical lift unit consisting of a 274-foot 2½-inch south tower span, a 278-foot 9½-inch lift span, and a 272-foot 11½-inch north tower span; and a 51-foot 7½-inch reinforced concrete tee-beam span at the north end of the bridge. All through trusses are 45 feet 4½ inches wide and have a polygonal top chord.

Each of the seven 265-foot 8½- inch Parker truss spans is divided into eleven equal panels and is simply supported at each end. Maximum height of these trusses is 44 feet at the center of span. The Petit truss span is simply supported at each end and is divided into twenty-two equal panels. This truss rises to a height of 84 feet at center of span.

Integral with the first two panels of the eleven-panel tower spans are the vertical lift towers, which are braced frames. Each tower is about 189 feet tall and supports a counterweight equal to half the weight of the lift span. The lift span truss is divided into eleven equal panels. The span lifting mechanism involves wire rope cables that pass over sheaves at the top of each side of each tower. Eighteen 1 5/8 inch diameter counterweight ropes support each corner of the lift span. Six counterweight ropes pass over each of three sheaves provided at each end of the top of each tower. One end of each lift rope is socketed to the lift span; the other end is socketed to a steel framed concrete counterweight within the tower. The lift unit is raised or lowered by a motor activated span drive, located in the center panel of the lift span on a machinery house platform, above traffic. The span drive consists of two drums on each side of the truss mounted together on a common drive shaft. Four operating ropes at each side of the bridge – two uphaul ropes and two downhaul ropes- wrap around the drums to provide the system to raise and lower the bridge. The span can be raised 139 feet above the level of the roadway deck. Steel wheel guides at each corner of the span roll in tracks mounted to the towers to keep the span in line while being raised or lowered. Other guides within the tower are used to assure the proper positioning of the moving counterweights. When the lift span is in the fully closed position, it rests on two live load shoes located below the span at each end pier. The live load shoes also act as centering devices. Angled side plates are an integral part of the strike plates, to center the lift span when it is being seated.

All truss span and tower members are either rolled steel sections or built-up-sections made from rolled steel angle or channel sections and steel plates. All tower and truss connections are riveted. Each truss has a lateral bracing system at the level of both the top and bottom chords. Truss floor beams extend below the roadway between outer truss frames at each truss panel point and carry six steel longitudinal girders in each adjacent bay. This floor system supports a reinforced concrete roadway slab and traffic above. Steel brackets cantilevering beyond the west side of the trusses support a 5-foot wide sidewalk extension of the roadway slab.

Each of the eleven river piers consists of two tapered circular columns, located below the exterior truss frames. Each column is supported on a precast lightweight concrete shell filled with tremie concrete and supported on multiple timber piles. Each shell consists of three segments: a bottom ring 7 feet 9 inches high with either a 32 inch or 37 inch diameter, a conical section with a bottom diameter matching the ring, that slopes in on an 8-in-12 batter; and an upper cylindrical shaft segment. The upper shaft segment extends up from its connection with the conical segment to elevation plus 10 feet. Bottom of pier elevations vary from minus 45 feet adjacent to the ship canal to minus 19 feet for the main river crossing, resulting in precast shell heights of from 55 to 29 feet. The pier columns are braced transversely by a concrete strut just below the top of the precast shaft segment, by a 1-foot 6-inch thick wall extending about 30 feet above strut, and by an upper concrete cap.

Intermediate piers for the southerly concrete approach spans consist of from two to four rectangular concrete columns supported on individual footings founded on timber piling The support at the south end of the bridge is a short concrete wall on a footing founded on concrete piling. A similar wall with wing walls on pile footings supports the northerly end of the bridge. The first intermediate pier at the northerly end consists of two tapered circular concrete columns, under the outer truss segments, connected by an inner wall and supported on a spread footing.

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Continuation Sheet

The Southbound Interstate 5 Columbia River Bridge is eligible for listing in the National Register of Historic Places under Criterion A for its association with bridge building in Washington in the 1950s, and together with the adjacent historic northbound bridge, for contributing to the economic development of the Pacific Northwest. (The northbound crossing, completed in 1917, is listed in the National Register.) The 1958 bridge is also eligible under Criterion C for its type, period, materials and method of construction. Because of its exceptional engineering significance and the importance of its role in regional transportation, the bridge meets the Criteria Consideration G threshold for eligibility of properties not yet 50 years old.

The significant engineering features of this 1958 bridge are its lift spans and flanking tower spans, its steel Pennsylvania-Petit through truss span, and the unusual supports used for the underwater elements of the eleven river piers.

This bridge includes one of the eight steel vehicular lift spans currently on the State Bridge Inventory and one of only two built in the 1950s, the other being the southbound crossing of State Route 529 over the Snohomish River. The almost 279-foot-long lift spans on the I-5 southbound bridge and on the adjacent northbound bridge share the state record for length of lift spans.

The 1958 bridge's 531-foot 4½-inch-long Pennsylvania-Petit truss span is the tenth longest simply supported steel truss span in North America.(2) After completion of the 1958 bridge, changes were made in the span configuration of the 1917 bridge to align its spans with the new bridge. This included addition of a Pennsylvania-Petit truss span matching the span length of the similar truss on the 1958 bridge. These appear to be the only two remaining Pennsylvania-Petit trusses in either Washington or Oregon. The long truss span rises from the north end to the south end to provide over 54 feet of vertical clearance at normal high water. This allows most marine traffic to pass under this span, reducing the need to raise the lift span for only the highest vessels.(3)

An unusual precast concrete shell design was used for the river pier foundations. Both this design and a more conventional design of constructing the piers within sheet pile cofferdams were presented as alternates on the plans. On the basis of the successful contractor's bid for use of the precast concrete shell foundations, a substantial savings was realized on the river pier construction. The concept for a shell foundation had been developed by the Ben C. Gerwick Company of San Francisco several years earlier for use on Maryland's Chesapeake Bay Bridge, where steel shells had been used, and on California's Richmond-San Rafael Bridge, where in 1956 precast concrete shells were first used.(1,4)

The two adjacent bridges crossing the Columbia River between Vancouver, Washington, and Portland, Oregon, share a long and significant role in the history of the cooperative development of transportation and commerce between the two states.

Historic Context:

An interstate bridge had been a dream ever since people had started settling in Vancouver. Prior to construction of the first bridge, traffic crossing the Columbia did so on a small steam ferry. It was a traffic jam at this ferry that had sparked the first large demand for construction of a bridge. On June 30, 1905, when Clark County Day at Portland's Lewis and Clark Centennial Exposition was in progress, some 2,000 Vancouverites tried to swarm aboard the ferry to Portland, and threatened to swamp it. The ferry eventually made numerous trips as lines of cars waited.(5)

In February 1912, the noted bridge engineer Ralph Modjeski had estimated the cost for a bridge over the Columbia at $1.93 million.(6) In March 1912, 300 Vancouver men, led by civic leader Lloyd Dubois, marched through the streets of Portland, each wearing a tall black hat emblazoned with the words "Pacific Highway Bridge." Dubois dared Portlanders to match his

$2,500, secured by donations from local dignitaries and companies, and get a bridge survey started.(5) Led by a Joint Pacific Highway-Columbia Bridge Committee from members of the Vancouver and Portland Commercial Clubs, and widening support from important business people, the bridge campaign achieved, in 1914, approval from the Oregon and Washington legislatures for the sale of bonds to construct the bridge. Construction began in March 1915. Official dedication of the bridge on February 15, 1917, on the lift span commenced when, at 12:30 p.m. the two daughters of Multnomah and Clark County officials untied a ribbon, dropping a rope separating a thrall of Portland residents from the equally joyous crowd from Vancouver. At the same time the mayors of the two cities and the governors of the two states clasped hands with one another as four flags were unfurled from the towers of the lift span and a band played "The Star Spangled Banner." At two o'clock, in the opening address Rufus C. Holman, Chair of the Interstate Bridge Committee and the Multnomah County Commission, reflected the sentiments of the day: "Let us consider this bridge not only a necessary thing of great utility, but a monument commemorating the unity of interests between the states of Oregon and Washington. This is an enterprise demonstrating what we can do by cooperation." To collect payment for the $1,683,000. bond issue 5-cent tolls were collected for each crossing. The bridge earned $287.75 on its opening day and had paid for itself within twelve years of opening. On January 1, 1929, Oregon and Washington purchased the bridge from Multnomah and Clark counties and abolished the tolls.(6)

Although the 1917 bridge had been designed to accommodate future traffic growth, it became clear by the 1940s that traffic demands were nearing the capacity of the bridge. In 1936 the average daily vehicle count was just 13,100, well below the bridge's rated capacity of 36,250. By 1950, however, the count had risen to 30,747. Also, a dramatic increase in marine traffic, requiring more openings of the lift span worsened the problem. During the first year of operation, the lift span opened 1,000 times for marine traffic. By 1948 the number of openings had almost doubled.(6)

Between 1944 and 1951, Oregon and Washington joined in studies of Columbia River crossings, followed by a detailed look at the Portland-to-Vancouver issue.(12) Although alternate sites for a second crossing were investigated, it was determined that a new bridge immediately adjacent to the 1917 bridge was the most feasible solution. It was further determined that following construction of a new bridge, the old bridge would be remodeled. The total cost of the project was estimated at $14,500,000. This included $6.7 million for construction of the new bridge and the Oregon Slough Bridge (included in the project, but not in this nomination), $3 million for remodeling the old bridge, $250,000 for grading and paving, $400,000 for lighting, landscaping and toll plaza equipment, and $4.15 million for engineering, right-of-way, legal and financing.(1)

In 1953 the legislatures of both states authorized the sale of bonds to design and build the bridge. The bonds were to be secured and paid off by revenue collected from tolls on the two bridges. On August 9, 1954, the Highway Commissions of the two states entered into an agreement carrying out this legislative authorization under which Oregon would prepare design plans, and with Washington's assistance, would advertise, award a contract for and administer bridge construction. The Washington State Toll Bridge Authority would sell bonds and collect tolls until the bonds, plus interest, were paid off.

The new bridge was designed by the bridge section of the Oregon State Highway Department. Bridge Engineer P. M. Stephenson approved the final plans in June 1955. On March 27, 1956, the Guy F. Atkinson Company from Portland executed a contract to build this bridge and the 1,200-foot Oregon Slough Bridge to the south for $6,681,940. Work began on April 23, 1956, with Marshall Dresser as Oregon State Highway Department's resident engineer.(3)

In the summer of 1956 work began on casting the concrete shell foundations for the river piers. This work was done in a central casting yard on the south bank of the river. Following steam curing, the shells, weighing from 59 to 90 tons, were placed on barges and floated to the pier sites where they were lowered by floating cranes into pre-excavated holes and onto pilings pre-driven into the riverbed. The first shells were lowered into place in September 1956.(7)

Structural steel was fabricated by the United States Steel Company's American Bridge Division at their Gary, Indiana, plant. Steel erection began in March 1957. The two tower spans and towers were erected early in the contractor's erection schedule. Contract specifications provided that the lift span could be erected in the raised position. The contractor was permitted by the United States Army Corps of Engineers to impair the vertical clearance for a period not to exceed 45 days. The lift span, complete with machinery house and machinery, was erected on seven panels of one of the truss spans, which, in turn, was supported on three barges. The lift span was floated into place and seated in a position 15 feet above its closed position. At this time counterweight cables and uphaul and downhaul cables were installed, the concrete deck and a balancing portion of the counterweight concrete was poured, and auxiliary operating machinery put in service, making the lift span operable. The counterweights were then completed and electrical works installed.The structural steel for the truss spans was erected on falsework towers, three towers for the 265-foot spans and six towers for the 531-foot span. Jacks at each tower enabled exact adjustment to the true cambered position prior to riveting.(1)

On March 27, 1958, with the new bridge nearing completion, a contract was awarded to the General Construction Company of Portland for just under $3 million for remodeling of the 1917 bridge. This remodeling included the replacement of two of the original 265-foot 8½-inch Parker through truss spans with a single 531-foot 4½-inch Pennsylvania Petit through truss span set to provide a navigational channel width and vertical clearance equal to that on the new bridge. Work on the old bridge, however, could not begin until the new bridge was opened to traffic, which occurred on July 1, 1958, with fanfare closely mirroring the 1917 dedication ceremony for the old bridge. A ribbon held by the mayors of Portland and Vancouver was untied by Mrs. Helen McAleer and Mrs. Eleanor Holman Burkitt (the same pair who as young girls had untied the 1917 ribbon). Several 1917 model cars lead a parade of vehicles across the bridge from the Vancouver end. The roar of jet aircraft overhead and artillery fire provided an opening salute, which was followed by the playing of the National Anthem. Speeches followed with many speaking of their wish to make the bridge toll-free. Francis Pearson, a member of the state Toll Bridge Authority, predicted that the cost and duration of tolls would be significantly lower and shorter than was the case for the 1917 bridge because of the significantly increased volume of traffic.(6)

Two years later, with the remodeling completed, the old bridge was re-opened to traffic. Tollbooths were installed with a toll of 20 cents for cars, 40 cents for light trucks and 60 cents for heavy trucks and buses. Despite an estimated loss of from $60 to $150 per day due to substitution of foreign objects for coins or tokens on the three automatic toll lanes, it took just six years to pay off the construction bonds. On November 1, 1966 the last toll was collected and with more ribbon cutting by Mrs. McAleer and Mrs. Burkitt, the bridges were re-opened free of tolls.(6)

The Interstate 5 Bridges continue to serve a heavy volume of traffic. In 1999, an average of 122,000 vehicles crossed the Columbia River daily on the two bridges.(8)

Engineering Context:

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The use of truss spans declined considerably following the 1950s as other bridge types, which could be widened to handle future growth in traffic, gained favor. Those that were built used a Warren, rather than a Parker truss configuration, as used on the Columbia River Bridges.

The Pennsylvania-Petit truss, like the Parker, was a modification of the basic Pratt truss, patented by Thomas and Caleb Pratt in 1844. While the Parker used the basic Pratt configuration with a polygonal top chord, the Pennsylvania-Petit added sub-struts and sub-ties to stiffen the truss. It had been developed in 1875 and derived its name from its extensive use by the Pennsylvania Railroad. The Pennsylvania was most often used on spans between 250 and 600 feet, and had nearly disappeared from the scene by the 1920s.(9) The reasons for its selection for the long truss span for both Interstate 5 Bridges is not known.

The use of movable bridges has declined significantly since the 1940s. Starting in the mid-1940s, the use of movable bridges declined significantly, reflecting changes in patterns of marine commerce and the costs associated in operating and maintaining these bridges. In many cases movable bridges have been replaced by fixed spans. In 1944, the State

Department of Highways managed the operation of thirty-two movable highway bridges. Of these, 16 (50%) were swing bridges, 9 (28%) were lift bridges, and 7 (22%) were bascule bridges.(10) In 2001, only twenty-four operating movable bridges remain on the inventory: 11 (46 %) are bascules, 8 (33%) are lifts, and only 5 (21%) are swing bridges.(11) (1944 and 2001 statistics exclude movable spans associated with the state ferry system).

Since the end of the 1950s, only one lift bridge has been built on Washington highways (excluding those associated with the state ferry system). That bridge was the Hoquiam River Bridge at Riverside, constructed in 1970. It is unlikely that we will see many more lift bridges in the future.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

(1) Ivan D. Merchant, Bridge Engineer, Bridge Division, Oregon State Highway Department, "Construction of the Columbia River (Portland-Vancouver) Bridges," Journal of the Construction Division, Proceedings of the American Society of Civil Engineers, September 1959.

(2) The World Almanac and Book of Facts, "Notable Bridges in North America," World Almanac Books, Mahwah, New Jersey, 2001, p. 665.

(3) J. W. Harris, "New Methods Help In Work On Interstate Bridge," Washington State Department of Highways-Highways News, Volume 6, Number 9, pp. 2-4, March 1957.

(4) Staff photo report, "Piers Poured In-the-Wet on Interstate Bridge," Pacific Builder & Engineer, pp. 60, 61, February 1957.

(5) Unauthored article, "With Iron Bands We Clasped Hands,"Vancouver Columbian, pp. A10, A11, December 12,1982.

(6) Jonathan Clarke, historian, "Vancouver-Portland Interstate Bridge", HAER No. WA-86, Washington State DOT, Olympia, August 1993.

(7) Unauthored article, "New Interstate Bridge Progressing", taken from the Seattle Journal of Commerce, re-printed in Washington State Department of Highways, Highway News, Volume 8, Number 4, pp. 17 & 18, October 1956.

(8) 1999 Annual Traffic Report, Washington State DOT, Olympia, 1999.

(9) T. Allan Comp and Donald Jackson, "Bridge Truss Types: A Guide to Dating and Identifying," American Association for State and Local History, Technical Leaflet 95, History News, Vol. 32, No. 5, May 1977.

(10) Major Leonard W. Bindon, U.S. Army Corps of Engineers, letter to R. W. Finke, Bridge Engineer, Washington Department of Highways, December 16, 1944.

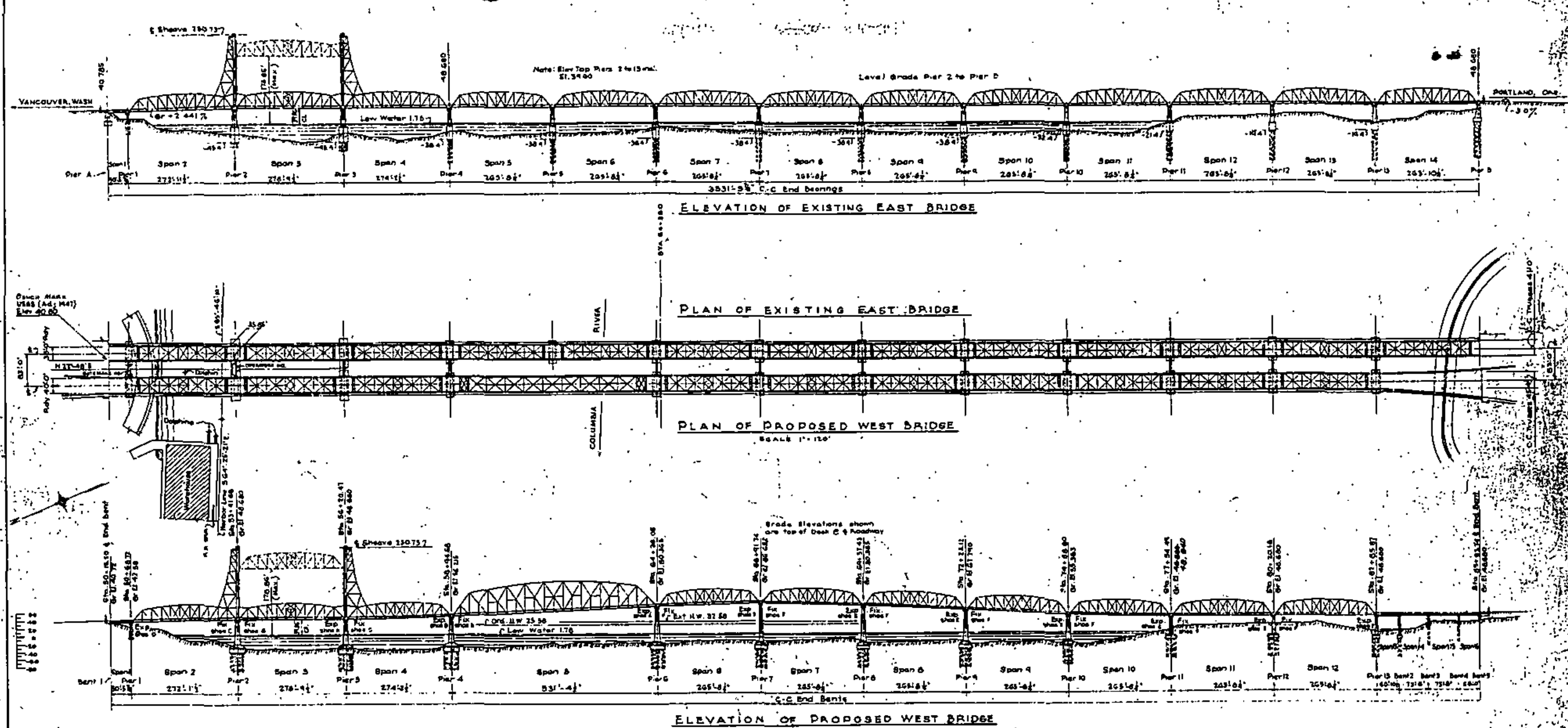
(11) Washington State Inventory of Bridges and Structures, March 2001.

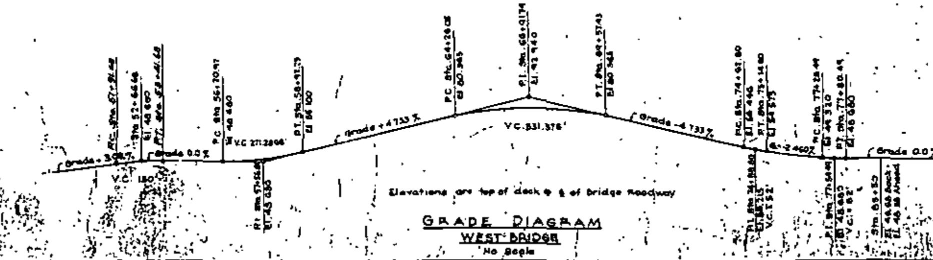
(12) Unauthored article, "Report on Trans-Columbia River Insterstate Bridge Studies," Oregon State Highway Department Technical Bulletin No. 16, Oregon State Highway Commission, 1944.

Verbal Boundary Description
Longitudinal Boundaries: Extend to the pavement seats on either end of the bridge.

Lateral Boundaries: Extends to the edges of the structure.

Verbal Boundary Justification
The boundaries include all contributing elements and non-contributing elements of the structure.





GENERAL NOTES:

Bridge designed for H 20-S16-44 Loading
All concrete shall be Class 'A' and as modified by the special provisions with a 28 day breaking strength of 3300 psi and fc=1320 psi.
All reinforcing steel shall be intermediate grade deformed bars.
Bars No 3 to No. 11 inclusive shall conform to A.S.T.M. specification A-305 and shall be lapped 20 diameters at all splices unless noted or shown otherwise. 1¼" Square bars shall be lapped 60 diameters at all splices unless noted or shown otherwise.
All reinforcement shall be placed 2" clear of nearest face of concrete unless noted or shown otherwise.

APPROVED:
BRIDGE ENGINEER
ASST. STATE HIGHWAY ENGINEER

OREGON
STATE HIGHWAY COMMISSION

INTERSTATE BRIDGE
OVER
COLUMBIA RIVER
PACIFIC HIGHWAY
PLAN & ELEVATION

SCALE
JUNE 2, 1955
CAT.C. BK. NO. 320
ACCOMP. BY DRWGS. NO. 12302 (12303 INCL.)

DRAWN BY C.G.S.
TRACED BY C.G.S.
CHECKED BY

18781

OREG
7.5-MINUTE

Southbound Interstate 5 Columbia River Bridge
#5/1W
Clark Co, WA & Multnomah Co, OR
C. Holstine, Photographer

Southbound Interstate 5 Columbia River Bridge
#5/1W
Clark Co, WA & Multnomah Co, OR
C. Holstine, Photographer

Southbound Interstate 5 Columbia River Bridge
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Clark Co, WA & Multnomah Co, OR
C. Holstine Photographer

Southbound Interstate 5 Columbia River Bridge
#5/1W
Clark CO. WA . Multnomah Co., OR
C. Holstine, Photographer

SB Interstate 5 Columbia River Bridge
5/1W
Clark Co, WA Multnomah Co, OR
Photographer Unknown

SB Interstate 5 Columbia River Bridge
5/1W
Clark Co, WA Multnomah Co, OR
Photographer Unknown

Portland Vancouver

SB Interstate 5 Columbia River Bridge
5/1W
Clark Co, WA Multnomah Co, OR
Photographer Unknown

SB Interstate 5 Columbia River Bridge
5/1W
Clark Co, WA   Multnomah Co, OR
Photographer Unknown

SB Interstate 5 Columbia River Bridge
5/1W
Clark Co, WA Multnomah Co, OR
Photographer Unknown

SB Interstate 5 Columbia River Bridge
5/1 W
Clark Co, WA Multnomah Co, OR
Photographer Unknown

Portland Vancouver