NPS Form 10-900
(Oct. 1990)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

BN 1258

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 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 additional 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: Pioneer Memorial Bridge "Blue Bridge"

other names/site number: Bridge Number 395/40

2. Location

street and number: State Route 395 over Columbia River — N/A not for publication

city or town: Pasco and Kennewick — [X] vicinity

state: Washington — county: Benton County — 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 [X] 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.)

Allyson M — 1-31-02

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)

Road-Related

Current Functions
(Enter categories from instructions)

Transportation

Current Subfunctions
(Enter subcategories from instructions)

Road-Related

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.)

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

1954-1960

Significant Dates

1954

Significant Person

(Complete if criterion B is marked above)

N/A

Cultural Affiliation

Architect/Builder

Washington St. Hwy Bridge Division
PJ Jarvis, Inc., Builder
Cascade Construction Company, Builder
Robert W. Austin Company, Builder
U.S. Steel Corp's American Bridge Divison

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
- ___ recorded by Historic American Engineering Record

☐ 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: 1.00

UTM References

(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing
1	11	335553	5121519
2	11	355259	5120645
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.)

11. Form Prepared By

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

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

street & number: PO Box 47300 telephone: 360-705-7000

city or town: Olympia state: Washington zip code: 98504-7300

Completed in 1954, the Pioneer Memorial Bridge carries State Route 395 across the Columbia River between the Washington cities of Pasco and Kennewick. Better known to local residents as the "Blue Bridge," because of the color of its prominent steel members, the bridge is part of a vital link between Interstate 182 to the north and Interstate 82 to the south.

The main spans of the 2,520-foot bridge are a 520-foot riveted steel tied arch flanked by, and continuous with, a 325-foot riveted steel Warren through truss at each end. Three 160-foot steel stringer approach spans at the north end; and a 60-foot pre-stressed concrete slab span and five 160-foot steel stringer approach spans at the south end complete the bridge. Within a total roadway width of 63 feet, the bridge carries two lanes of north and southbound traffic, separated by a central concrete barrier. A 5-foot sidewalk is cantilevered on the outside of the east roadway barrier. The main spans of the bridge clear the normal McNary Dam pool elevation by about 60 feet.

The three main spans of the bridge are divided into thirty-six 32-foot 6-inch panels along their 1170-foot length. A Warren truss is used throughout this length from the beginning of the outer ends of the through truss spans, except that at the junction with the central span, it rises and continues as a trussed rib for the tied arch. All truss and trussed rib members are riveted built-up steel sections made up of rolled steel shapes (channels or angles) and steel plates. Top and bottom chord lateral bracing for the through truss and trussed rib consist of welded plate girder sections. Girders for the top lateral bracing are placed in a K-pattern within each panel. The lower bracing uses an alternating direction K-pattern. Vertical cross-sway frame bracing is provided at each panel end, above traffic in the through truss panels and in first tied arch panel, and at full rib height in the remainder of the trussed rib panels. The lower struts of this bracing curve upward in parabolic shape within the through trusses, to provide clearance for traffic. The upper strut is horizontal throughout, and intermediate web members brace the struts in a W-pattern as they cross the bridge width.

On each side of the roadway at each panel end in the tied arch span, a riveted built-up section steel hanger extends from the trussed rib to connect with horizontal tension tie members, that extend below the roadway deck full length of span. Riveted steel built-up section floor beams extend below the roadway between the ties at each panel point, and support nine-longitudinal rolled steel wide-flange stringers between each panel point. A reinforced concrete deck rests on this floor system. The weight of traffic, roadway deck and floor system is carried up through the hangers into the trussed arch. The tie members absorb the horizontal thrust component of the load transmitted by the trussed rib to the ends of the arch.

The 60-foot long approach span (reconstructed in 1986) consists of eighteen 4-foot wide by 2-foot 2-inches deep pre-stressed precast slab units placed side-by-side, covered with a latex concrete overlay. The remainders of the approach spans are 160-feet long and consist of reinforced concrete roadway slabs carried on four-longitudinal riveted steel girders. The girders, which were built-up using plate and rolled angle sections, are continuous across the approach piers, and hinged in three of the spans, with seismically restrained link and pin connections.

Supports for the bridge are reinforced concrete abutments at the road approach ends, and reinforced concrete wall piers for all intermediate spans. All piers are founded on reinforced concrete spread footings. Intermediate pier walls are tapered in both directions, and rounded at their transverse ends to reduce the potential effects of scour from the river flowing by the piers.

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National Register of Historic Places Continuation Sheet

Section number 8. Narrative Statement of Significance

The Pioneer Memorial 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 for its association with the expansion of the atomic energy program at the Hanford facility in the 1940s and early 1950s as per the "Bridges and Tunnels Built in Washington State, 1951-1960" MPD. It is also eligible under Criterion C for its type, period, materials and method of construction. The bridge meets the threshold for eligibility established by Criteria Consideration G for properties yet 50 years old for its exceptional engineering significance.

The significant engineering features of this bridge are the 520-foot riveted steel through tied arch span and its 325-foot flanking Warren through truss spans. This appears to be the first steel bridge built in Washington with a tied arch span, and the only bridge of this type built in the 1950s. Constructed in 1954, it is the earliest of three bridges on the state inventory built with this span configuration. The others, the Columbia River Bridge at Beebe and the Snake River Bridge at Central Ferry, were built in 1962 with similar 520-foot tied arch spans and similar, but shorter, 260-foot flanking spans.

The 520-foot arch span is exceeded in Washington only by the 550-foot through arch span of the Rainbow Bridge (which is not a tied arch), constructed in 1957 over the Swinomish Channel in Skagit County.

The pre-stressed concrete and steel girder approach spans and the bridge railings are of common design, were built using typical construction methods, and thus are not considered to be of engineering significance.

The bridge is historically significant for its construction in response to the rapid increase of population and traffic in the area due to the national expansion of the atomic energy program in the late 1940s and early 1950s, as reflected in the growth of the Hanford Engineer Works.

Historic Context:

The first highway bridge across the Columbia River between Pasco and Kennewick was completed in 1922. It was on the route of the Inland Empire Highway, one of the state's three original trunk highways. By replacing an outmoded ferry system that could carry at most six cars per trip, the two-lane bridge facilitated cross-river traffic enormously and transformed the wishful designation of "twin cities" into a reality. Construction of the bridge had been spearheaded by a public subscription drive answered by over 1400 "public spirited citizens" from seventeen communities in Washington and Idaho. Described by the Seattle Times as the "greatest community undertaking in the history of the Northwest," the drive subsidized the bridge through formation of the Benton-Franklin Intercounty Bridge Company. When the bridge opened, "a new era dawned for the twin city communities. Before the year was over, about 200 motorists a day were paying the steep 75-cent toll to cross the bridge.(1) The bridge was purchased by the state in 1927, and the tolls were removed in 1931.(2) According to one former toll taker, 'it touched off a celebration that rivaled the Fourth of July'."(1)

The need for a new bridge became all too apparent soon after the end of World War II. The old two-lane structure could not stand up to the heavy postwar traffic generated by the many Hanford war workers who had decided to remain in the Tri-Cities area. Congestion got worse when construction workers for McNary Dam arrived in the late 1940s. One major traffic tie-up occurred in April 1948, when a farmer lost a load of hay on the bridge during an Army Day parade. The spill, and a subsequent investigation by the Army, confirmed that the old bridge was inadequate.(1)

With the expansion of the national atomic energy program in the early 1950s, the Richland-Pasco-Kennewick area became one of the busiest centers of atomic energy activity in the nation. Many millions of dollars were being spent in construction activity at the nearby Hanford Engineer Works. The area experienced a rapid growth in population and traffic, overburdening

the capacity of the existing bridge. Its narrow roadway and other limiting factors held up traffic to the extent that during peak hours it was sometimes backed up for miles. In 1951, a statewide bond issue for road improvements included money for a new bridge, to be located about a mile upstream from the existing one.(3) It took another three years and cost $6.5 million to complete the 2520-foot bridge.

The Washington State Highway Department's Bridge Division designed the bridge in 1951. George Stevens was the Division's Chief Bridge Engineer. Construction began in September 1951, when a contract was awarded for work on the bridge supports (substructure). Three Seattle contractors, P.J. Jarvis, Inc., Cascade Construction Company, and the Robert W. Austin Company, joined together to do the work. Starting with the concrete for the first pier foundations placed that fall, a total of 13 piers were constructed, requiring 41,000 cubic yards of concrete and 610,000 pounds of reinforcing steel. Substructure work was completed in June 1953.(4)

In May 1952, a contract for work on the bridge superstructure was awarded to U. S. Steel Corporation's American Bridge Division. They began the planning and steel fabrication phase of their work while the substructure work proceeded. On June 23, 1953 work began at the site. Erection of the structural steel began with the approach spans, using a traveling derrick and temporary support bents constructed between the permanent piers. Erection of steel for the three main spans was accomplished using three derricks, one at each end riding on the approach deck, and one mounted on a barge in the river.(4) Through truss spans were erected proceeding from the approach ends. Once those spans had been completed, they became the anchor spans for cantilever erection of each half of the tied arch span. A jacking system was provided at the approach end of each anchor span to allow the truss to be moved either horizontally or vertically from that end. Erection of the tied arch span proceeded from each anchor span end toward the center. Arch span closure was accomplished with the help of the jacking system. According to Frank Henager, the state's resident engineer for construction, "No unusual problems were encountered in the erection."(4)

When the completed bridge was formerly dedicated, on July 30, 1954, a crowd of more than 2500 happy citizens celebrated on the bridge. Unity was the keynote of the dedication ceremony: unity among the three cities in the bustling Pasco-Richland- Kennewick area served by the bridge, unity between labor and management during construction, and unity among the various civic groups aiming at a continued prosperity for southeastern Washington. Representative Julia Butler Hansen of Cathlamut, chair of the state legislature's House Roads and Bridge Committee, cut the ceremonial ribbon.(5) Several years before the bridge was built, the Tri-City Herald began its campaign for a new span by labeling the old bridge a "Horse and Buggy Bridge." Following the ribbon cutting, Glen C. Lee, the newspaper's publisher, joined the caravan crossing the new bridge, in a horse-drawn surrey.(6)

Because of the blue paint used on the steel spans, the bridge was affectionately known by Tri-City dwellers as the "Blue Bridge." In later years, as a result of a contest sponsored by a local radio station, the bridge was officially renamed the Pioneer Memorial Bridge. Most people in the area today, however, still refer to the crossing as the "Blue Bridge."(7)

In 1986 a contract was awarded to Johnson Brothers Highway and Heavy Construction Company of Litchfield, Minnesota, to correct severe deterioration problems on the bridge deck, and to increase safety for travelers. The original concrete tee-beam span on the south end was replaced by a pre-stressed concrete span, and the entire bridge deck on the remainder of the bridge was replaced. Sidewalks were removed to accommodate an increased roadway width within the truss spans. Concrete traffic barriers were built to replace the original bridge rail. A 5-foot wide bracket-supported sidewalk was added to the east side of the bridge. Although the original truss portals were raised to provide adequate vertical clearance, the new portal curves are true to the original design. The alterations have a minimal impact on the original appearance, design, and function of the bridge.

Engineering Context:

The concept of a tied arch (i.e.; use of a tension tie between the end hinges of the arch to absorb the outbound horizontal thrust at that location) was applied as early as 1904, on a railroad bridge in Europe (the Rhine Bridge at Mainz).(8) However, the only known bridge of this type built prior to the 1950s in Washington is the concrete tied arch bridge across the Duckabush River on State Route 101 near Brinnon (built in 1934 and listed on the National Register).

Use of a steel tied arch provided greatly improved appearance over the through truss structures previously used for long river crossings. Therefore, it was not surprising to see the additional tied steel arches that were built, beginning in 1962.

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Continuation Sheet

Section number 9. Major Bibliographical References

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(1) Paul Dorpat and Genevieve McCoy, Building Washington- A History of Washington State Public Works, Washington Chapter of the American Public Works Association, Tartu Publications, Seattle, 1998.

(2) "Washington State Highway Commission, - First Biennial Report Department of Highways- Twenty-Fourth Biennial Report, – 1950-1952", p 39.

(3) William A. Bugge, untitled article, "State of Washington Department of Highways News", Vol. 2, No.5, pp.4-5, November 1952.

(4) "Three Years, $6-1/2 Million Went Into New Bridge Job", Tri-City Herald, Pasco, July 29, 1954.

(5) "Colorful Ceremonies Mark Dedication of Pasco Bridge", The Washington Motorist, August 1954.

(6) Photo caption, Tri-City Herald, Pasco, September 14, 1978, p 51.

(7) "The Cable Bridge", Tri-City Herald, Pasco, March 2, 1978, p 6

(8) C.B. McCullough, "Steel Arch Bridges – General," in Movable and Long Span Steel Bridges, edited by George A. Hool and W.S. Kinne, McGraw Hill Book Company, New York, 1923.

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(8-86)

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United States Department of the Interior
National Park Service

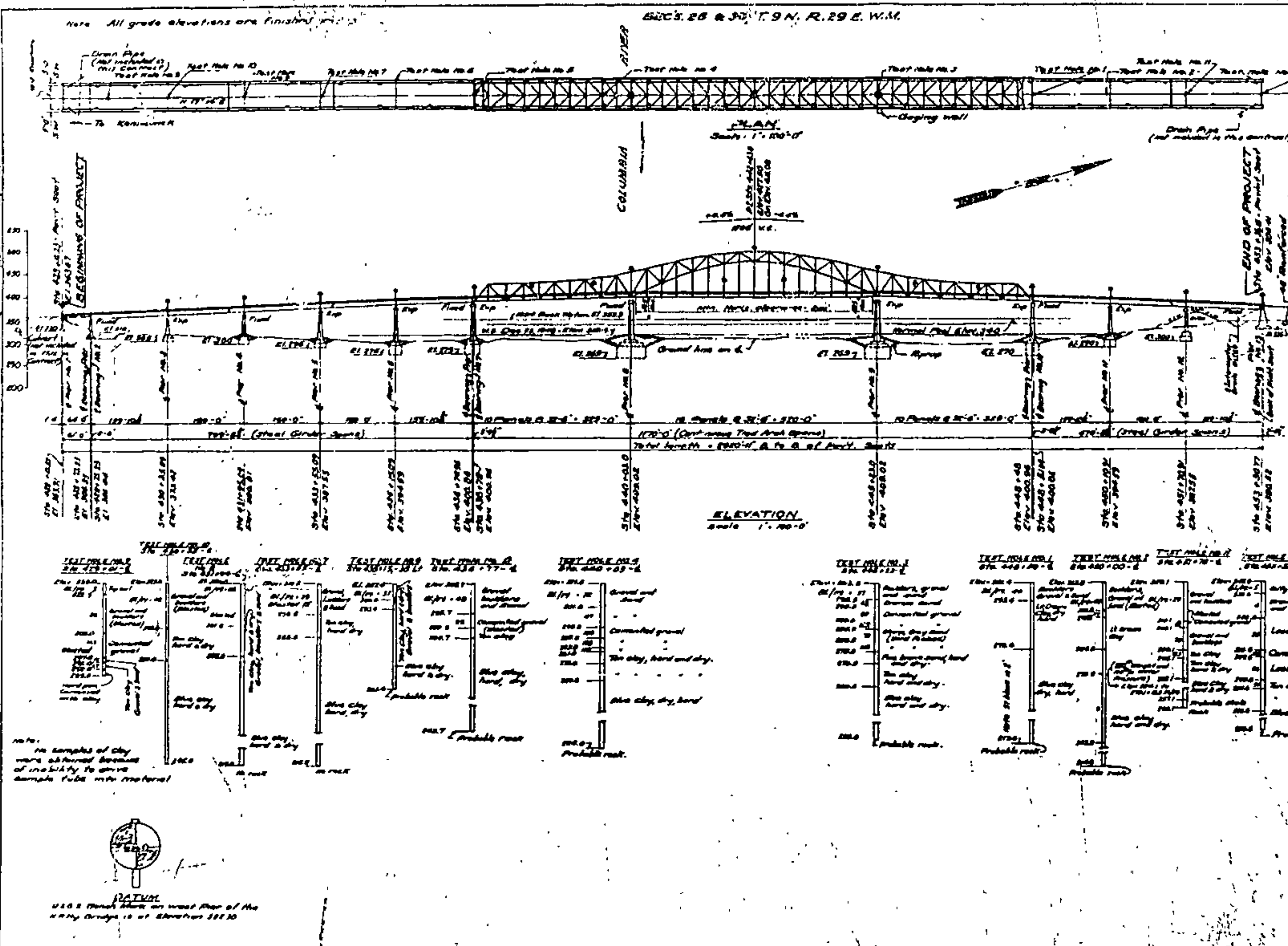
National Register of Historic Places Continuation Sheet

Section number 10. Geographical Data

Verbal Boundary Description
Longitudinal Boundaries: Extends to the pavement seats at either end of the bridge.

Lateral Boundaries: Boundaries extend to the edges of the structure.

Verbal Boundary Justification
The boundaries include all structural elements of the bridge.



GENERAL NOTES

All materials and workmanship shall be in accordance with the requirements of the State of Washington, Department of Highways, Standard Specifications for Road and Bridge Construction, dated April, 1948.

Materials for construction shall conform to the following requirements:

Concrete	Class A Mix
Steel Reinforcing Bars	A.S.T.M. A15 & A16
Structural Low Alloy Steel *	A.S.T.M. A-242
Structural Carbon Steel	" A-7
Rivet Steel	" A-141
Cast Steel	" A-148 Gr. 80-40
Steel Forgings	" A-235 Cl. C
Copper Seals	" B 152-41T
Galvanized Steel Pipe	" A-120
Paint - See Special Provisions	

* Indicated on plans by suffix "X"

Span No. 1 and all piers except as noted not included in this Contract.

SUMMARY OF QUANTITIES

Unit No.	Item	Quantity	Unit
1	Concrete, Class A	3800	Cu. Yd.
2	Steel Reinforcing Bars	855000	Lbs.
3	Structural Carbon Steel	4273000	Lbs.
4	Structural Low Alloy Steel	5192000	Lbs.
5	Cast Steel	17000	Lbs.
6	Bridge Drains	54	Only
7	Downspouts	490	Lin. Ft.
8	Copper Seals	575	Lbs.
9	Lighting System	Lump	Sum

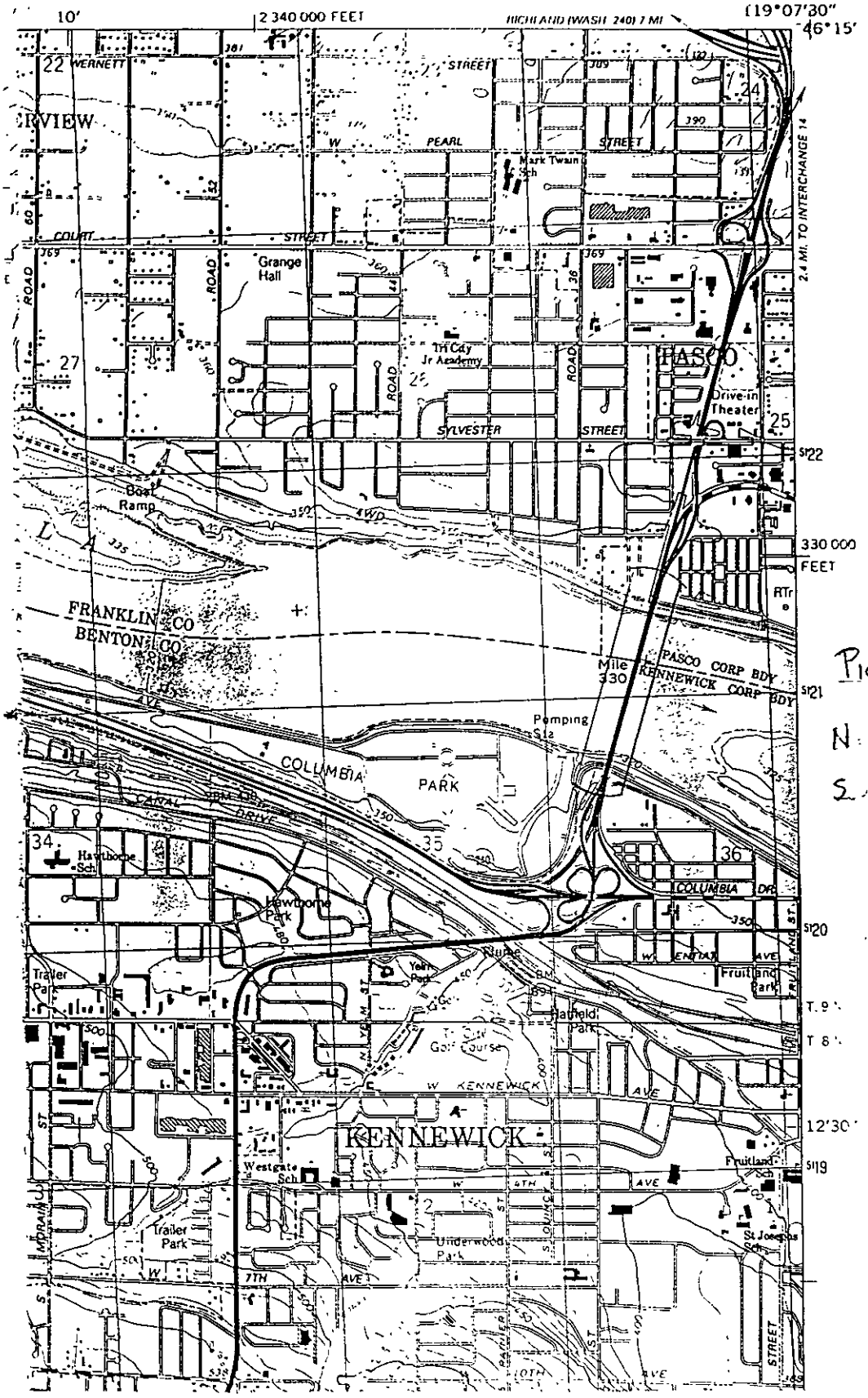
LOADING H 20-S16

PRIMARY STATE HIGHWAY NO. 3
COLUMBIA RIVER BRIDGE AT PASCO
SUPERSTRUCTURE
BENTON AND FRANKLIN COUNTIES

LAYOUT

4195

KENNEWICK QUADRANGLE
WASHINGTON
7.5 MINUTE SERIES (TOPOGRAPHIC)



Pioneer

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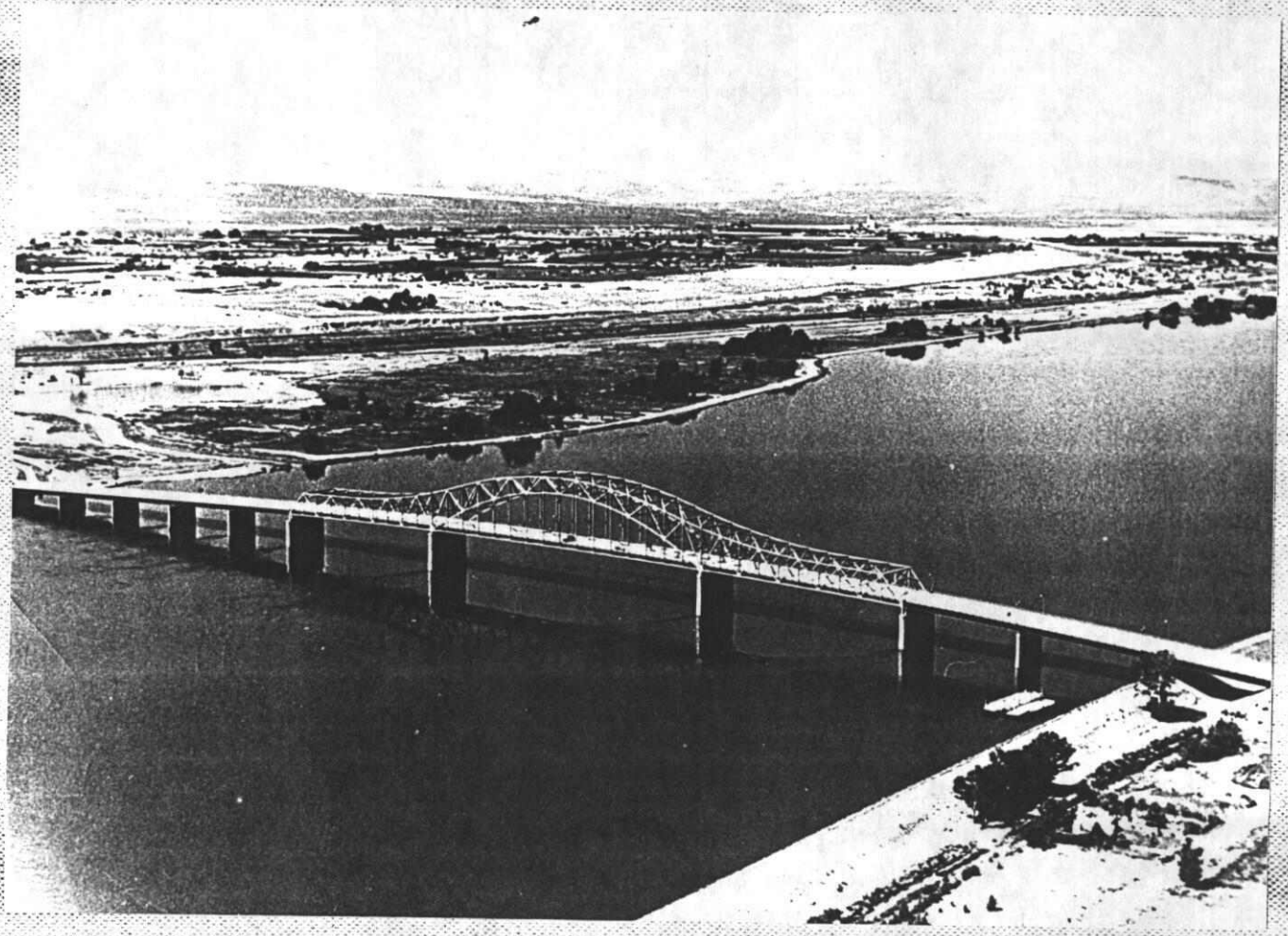
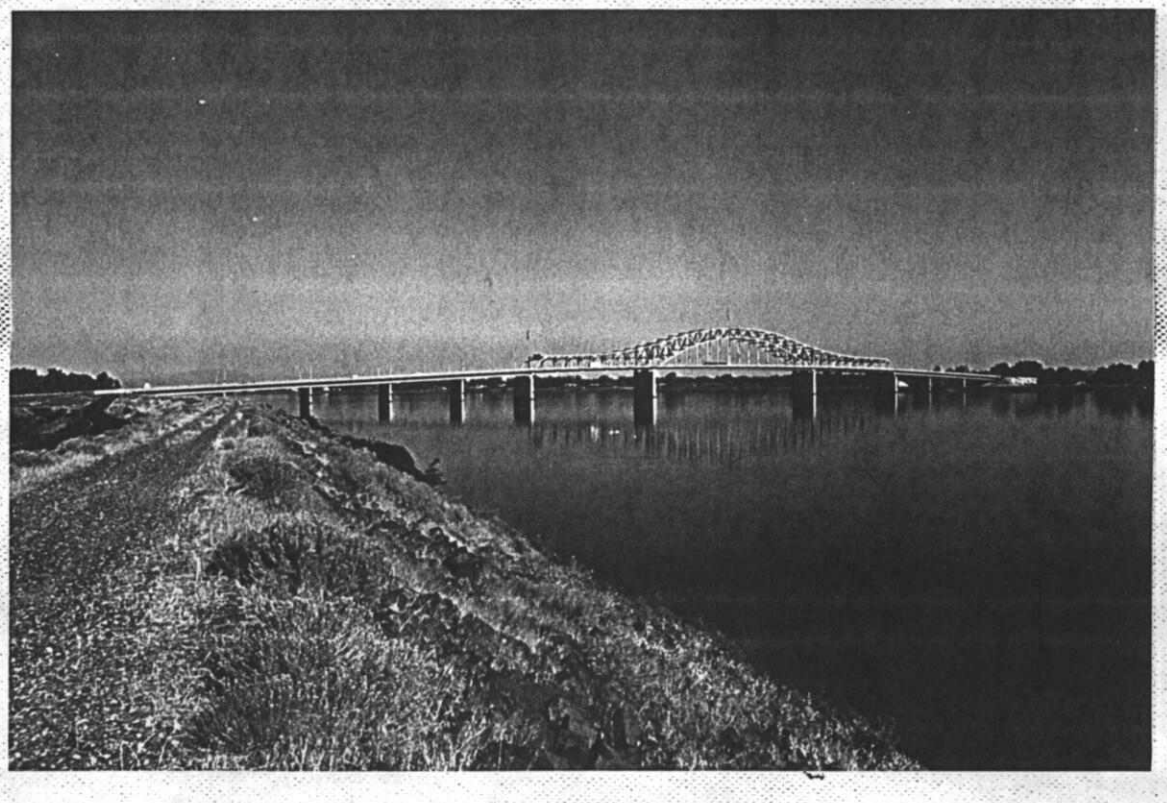
S ... 11 335259E 5120645N

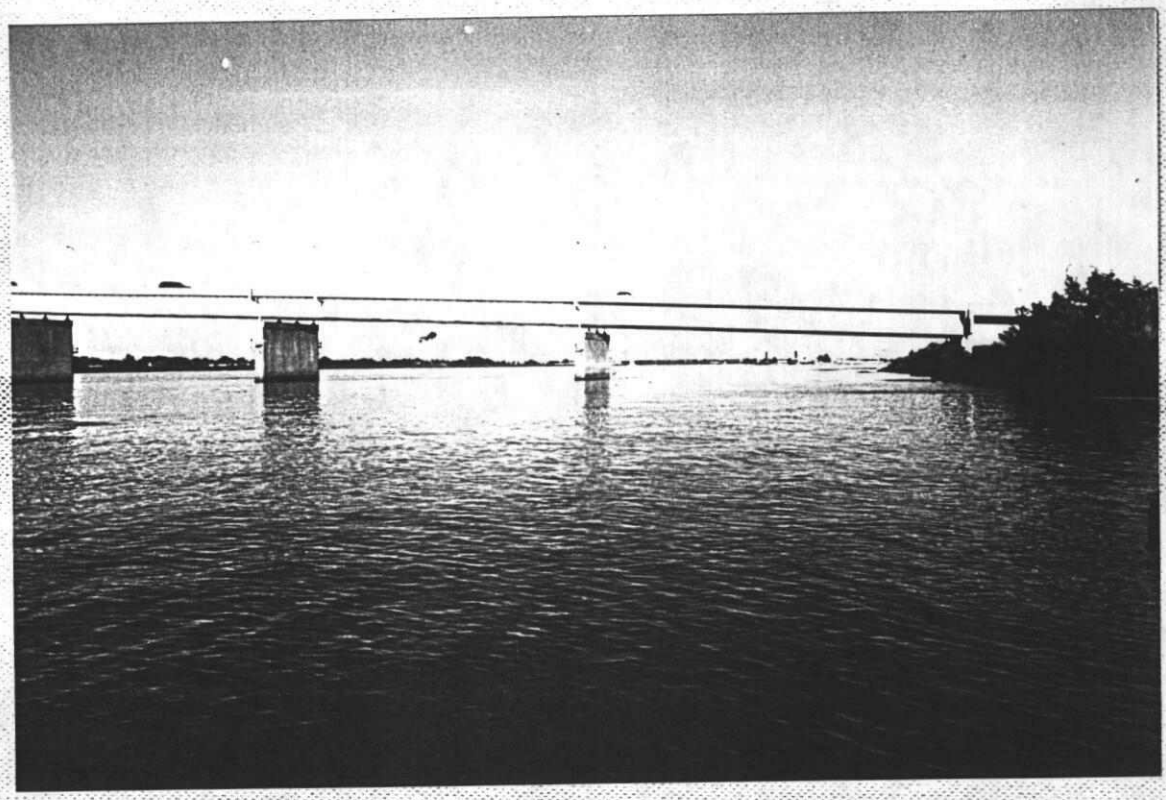


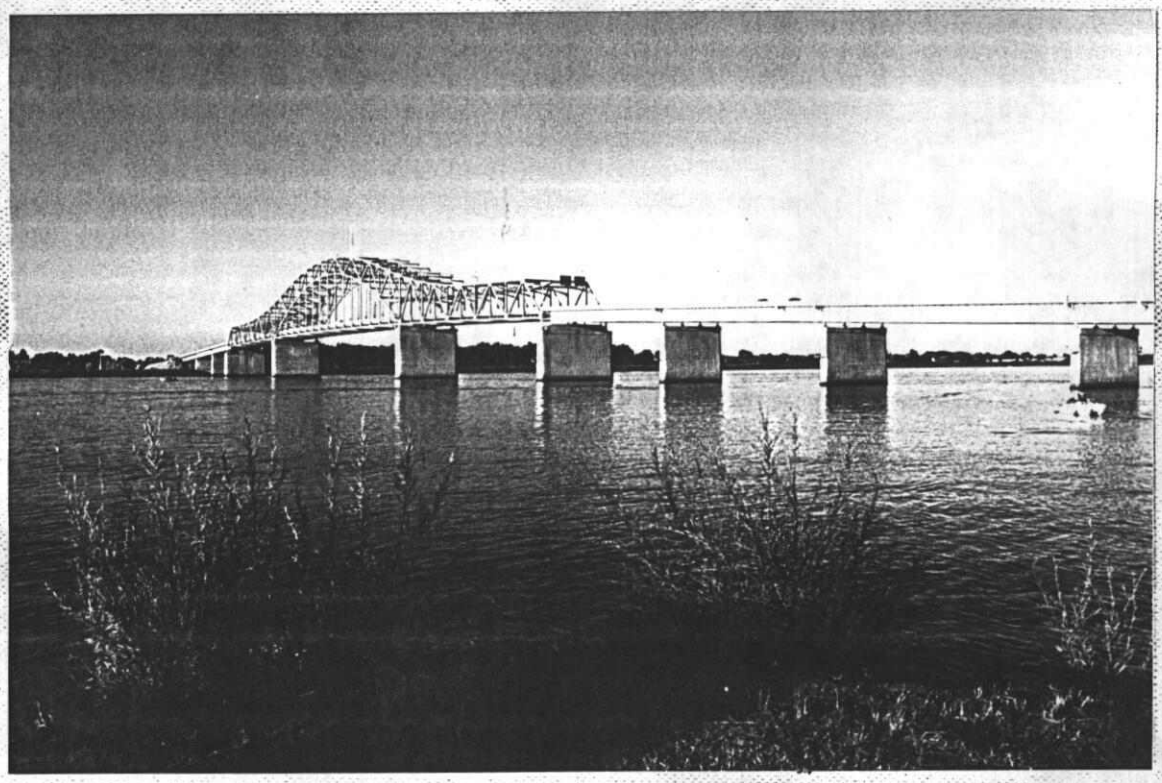
Pioneer Memorial "Blue" Bridge
#395/40
Benton & Franklin Counties, WA
Photographer Unknown



Pioneer Memorial (Blue) Bridge #395/40
Benton + Franklin Cos. WA
C. Holstine, photographer 8/28/01
S. approach to E.

Pioneer Memorial "Blue" Bridge
#395/40
Benton & Franklin Counties, WA
C. Holstine, photographer 8/28/01
Elevation view to NW



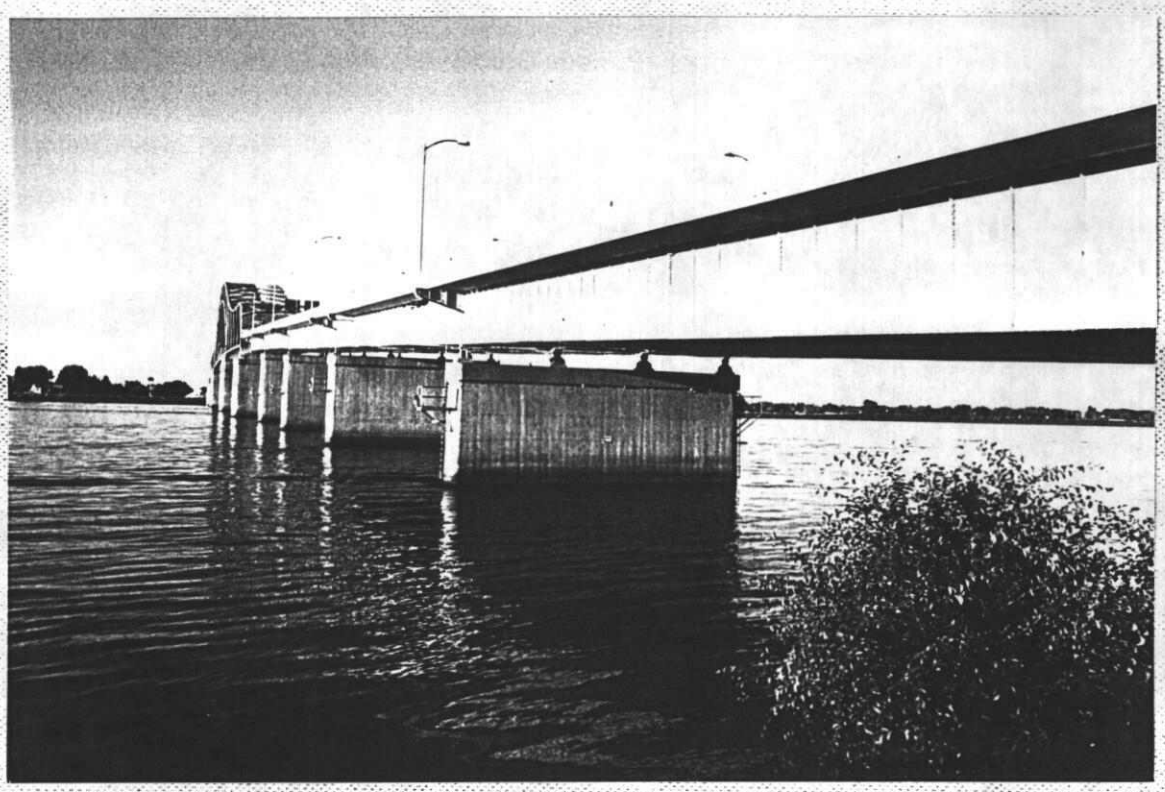


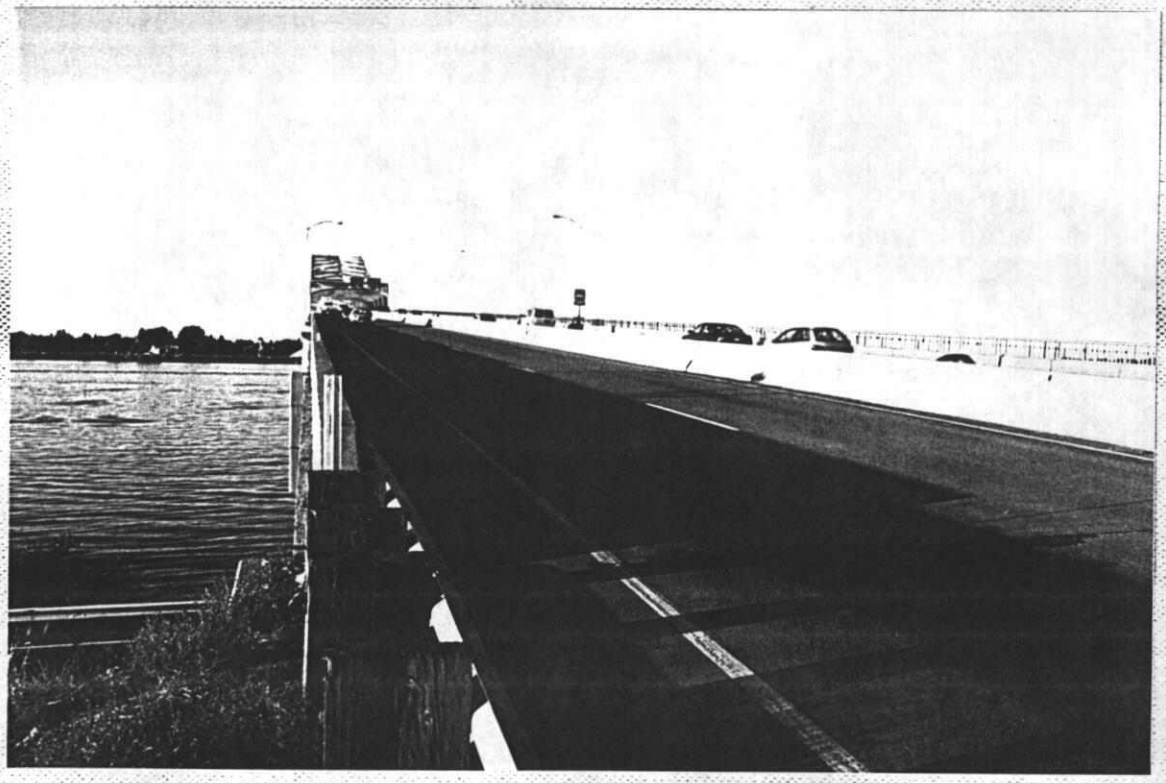
Pioneer Memorial "Blue" Bridge
395/40
Benton & Franklin Counties, WA
C. Holstine, Photographer 8/28/01
South approach to E.

HAER WA-72 KENN-4H

Pioneer Memorial "Blue" Bridge
395/40
Benton & Franklin Counties, WA
C. Holstine, Photographer 8/28/01
Oblique view of W. elevation to NE

HAER WA-72 KENN-4J





Pioneer Memorial "Blue" Bridge #395/40
Benton : Franklin Counties, WA
C. Holstine. Photographer 8/28/01
South approach to north

Pioneer Memorial "Blue" Bridge
395/40
Benton: Franklin Counties, WA
C. Holstine. Photographer 8/28/01
Deck view on S. approach to North