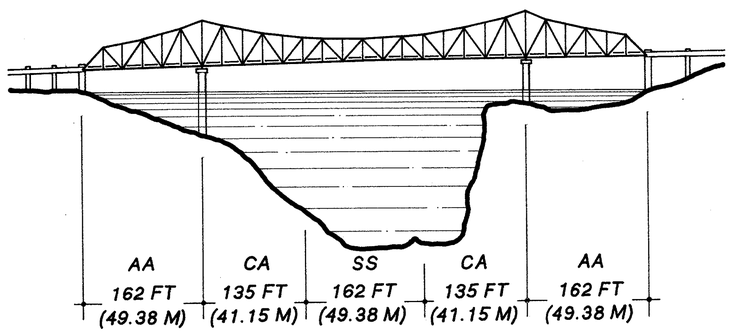
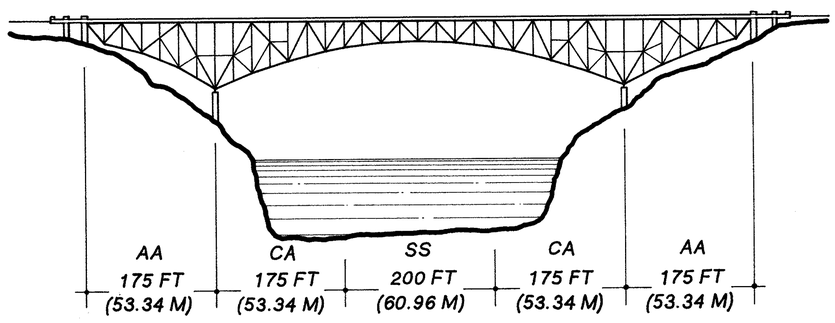
WASHINGTON CANTILEVER BRIDGES



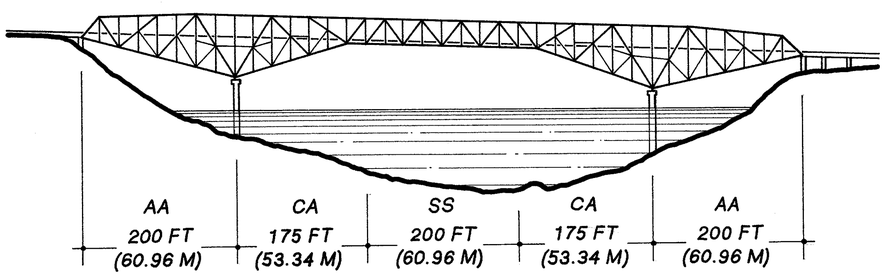
Spokane River Bridge at Fort Spokane

1941 *Through Truss*
Bridge - 756 FT (230.43 M)
Bridge and Approaches - 953 FT (290.47 M)
Bridge Number: 25/6
[HAER Number: WA-113]



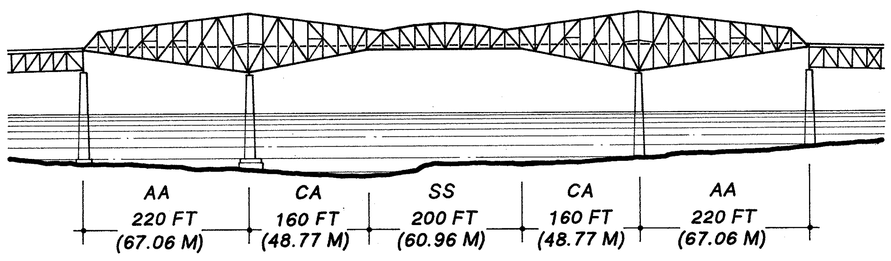
Deception Pass Bridge

1935 *Deck Truss*
Bridge - 900 FT (274.32 M)
Bridge and Approaches - 976 FT (297.48 M)
Bridge Number: 20/204
[HAER Number: WA-103]



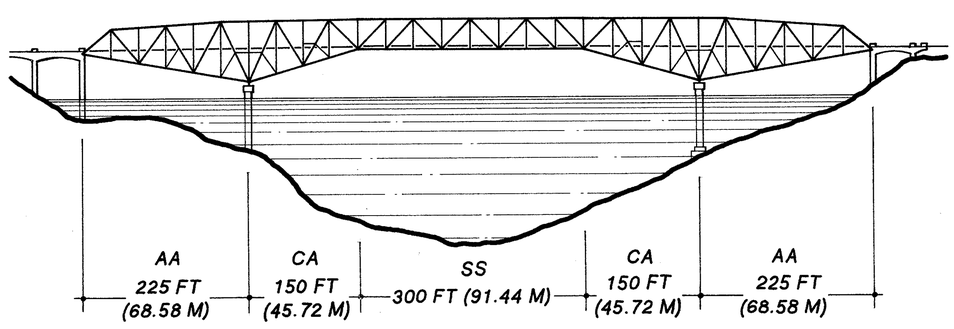
Columbia River Bridge at Grand Coulee Dam

1935 *Half-Through and Through Truss*
Bridge - 950 FT (289.53 M)
Bridge and Approaches - 1066 FT (324.92 M)
Bridge Number: 155/101
[HAER Number: WA-102]



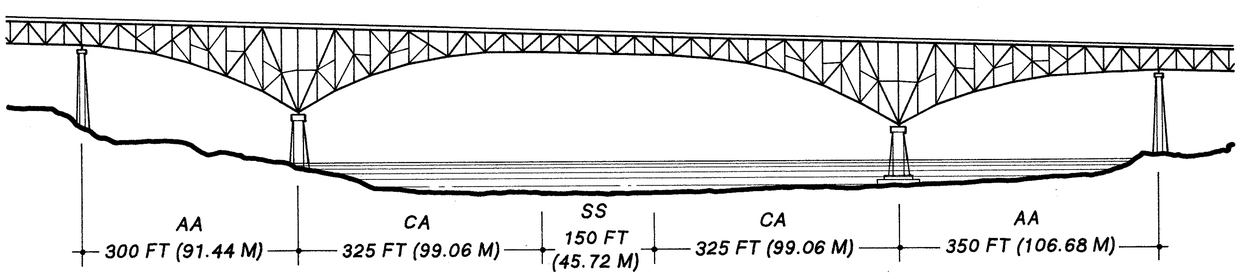
Snake River Bridge at Lyons Ferry

1927 *Through Truss*
Bridge - 960 FT (292.61 M)
Bridge and Approaches - 2040 FT (621.79 M)
Bridge Number: 261/125
[HAER Number: WA-88]



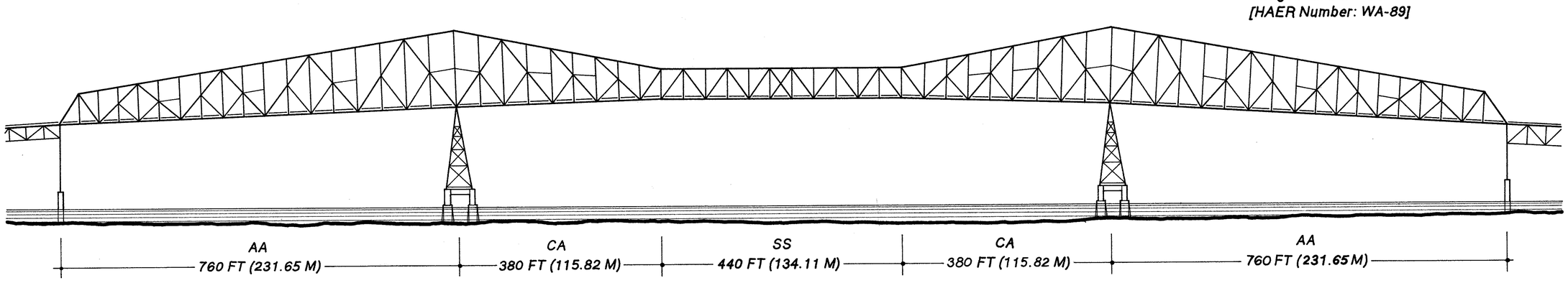
Columbia River Bridge at Kettle Falls

1941 *Half-Through and Through Truss*
Bridge - 1050 FT (320.04 M)
Bridge and Approaches - 1267 FT (386.18 M)
Bridge Number: 395/545
[HAER Number: WA-91]



Aurora Avenue Bridge

1931 *Deck Truss*
Bridge - 1450 FT (441.96 M)
Bridge and Approaches - 2955 FT (900.68 M)
Bridge Number: 99/560
[HAER Number: WA-107]



Longview Bridge

1929 *Through Truss*
Bridge - 2720 FT (829.06 M)
Bridge and Approaches - 5478 FT (1669.69 M)
Bridge Number: 433/1
[HAER Number: WA-89]

These seven bridges represent the variety in form seen in Washington's cantilever structures. A cantilever is a structural system which distributes loads through a projecting member to supports at one end. A cantilever truss overhangs its support at one end and is anchored at the other. This bridge type was chosen over arch and suspension bridge types for these wide and deep crossings for lower cost and ease of erection.

All but two, the Aurora Avenue and the Deception Pass bridges, span the Columbia River or its tributaries. Of these, all but the Longview Bridge were built or relocated in conjunction with U.S. Bureau of Reclamation or U.S. Army Corps of Engineers dam projects on the Columbia River system between the 1930s and the 1960s.

A concern in building all of these bridges was the need to maintain vertical clearances for shipping channels. Decisions on weather to use the through-truss, deck-truss, or composite form hinged on grade-line height requirements, stream depth, and economical construction practices.

Taken chronologically, the bridges exhibit a progression in utilizing new materials and streamlining of form. The Snake River Bridge at Lyons Ferry and the Longview Bridge exhibit use of heavily-braced symmetrical anchor and cantilever spans. The adoption of silicon steel, with its greater load capabilities, brought rise to lighter, more airy spans, with fewer intermediate members, and lower material costs.

This is best seen in the Aurora Avenue, Deception Pass, and the Columbia River at Grand Coulee Dam bridges. The Columbia River Bridge at Kettle Falls and the Spokane River Bridge at Fort Spokane furthered the trend by substituting punched plates for lacing in compression members and by using curved portal bracing. These elements made the bridges more cost effective to erect and maintain, and more aesthetically pleasing.

This recording project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. The HAER program is administered by the Historic American Buildings Survey/Historic American Engineering Record Division (HABS/HAER) of the National Park Service, U.S. Department of the Interior. The Washington State Bridges Recording Project was cosponsored during the summer of 1993 by HABS/HAER under the general direction of Dr. Robert J. Kapsch, Chief, and by the Washington State Department of Transportation (WSDOT), Bernie L. Chaplin, Environmental Program Manager.

The field work, measured drawings, historical reports, and photographs were prepared under the direction of Project Leader Eric N. DeLony, Chief of HAER and HAER Historian Dean A. Herrin, Ph.D. The recording team consisted of Supervisory Architect Karl W. Stumpf (University of Illinois at Urbana-Champaign); Supervisory Historian Robert W. Hadlow, Ph.D. (Washington State University); Architects Vivian Chi (University of Maryland), Erin M. Doherty (Miami University), Catherine I. Kudlik (The Catholic University of America) and Wolfgang G. Mayr (US/ICOMOS, Technical University of Vienna, Austria); Historians Jonathan C. Clarke (US/ICOMOS, Ironbridge Institute, England) and Wm. Michael Lawrence (University of Illinois at Urbana-Champaign). Formal photography was done by HAER Photographer Jet Lowe. WSDOT Cultural Resources Specialist Elizabeth A. Robbins served as department liaison.

Note: Drawings were developed from origional microfilm drawings located in WSDOT files. Measurments are accurate to the nearest one foot increment. Bridge numbers are the numbers assigned by WSDOT.

Snake River Bridge at Lyons Ferry-
Origionally constructed over the Columbia River at Vantage Ferry. Dismantled and replaced in 1963 when the Columbia rose behind Wanapum Dam. Re-erected in 1968 across Snake River behind Lower Monumental Dam.

Longview Bridge-
Longest steel cantilever bridge in United States at time of construction. Important early crossing of the Columbia River on the Pacific and Coast highways.

Aurora Avenue Bridge-
Tallest bridge in Seattle. Provided a high-level crossing over Lake Washington Ship Canal for traffic on the Pacific Highway.

Construction of the Grand Coulee Dam

Deception Pass Bridge-
Important link for Whidbey Island, connecting it to the mainland through Fidalgo Island.

Columbia River Bridge at Grand Coulee Dam-
Provided an essential crossing over the river for carrying heavy equipment during the Grand Coulee Dam's construction.

Columbia River Bridge at Kettle Falls-
Erected as a replacement for a span flooded by Lake Roosevelt, the reservoir behind Grand Coulee Dam.

Spokane River Bridge at Fort Spokane-
Erected as a replacement crossing due to Lake Roosevelt's rising waters.

1927
1929
1931
1934
1935
1941

Legend
Anchor Arm - AA
Cantilever Arm - CA
Suspended Span - SS

DRAWN BY: *Karl W. Stumpf, Summer 1993*

WASHINGTON STATE BRIDGES RECORDING PROJECT NATIONAL PARK SERVICE UNITED STATES DEPARTMENT OF THE INTERIOR	WASHINGTON STATE CANTILEVER BRIDGES - 1927 TO 1941 OLYMPIA — THURSTON COUNTY — WASHINGTON	SHEET 1 OF 1 SHEETS	HISTORIC AMERICAN ENGINEERING RECORD WA-106	LIBRARY OF CONGRESS INDEX NUMBER