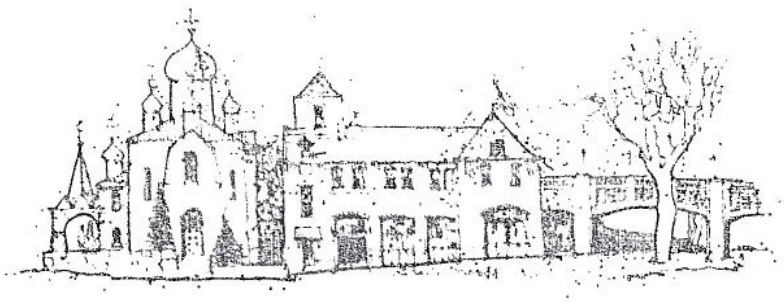

The City of Seattle

Landmarks Preservation Board

400 Yesler Building Seattle, Washington 98104 · (206) 625-4501

LPB-285/80

REPORT ON DESIGNATION

&

BOARD RECOMMENDATIONS ON CONTROLS

I. DESIGNATION REPORT

Name of Properties: A.) The Duwamish Waterway Burlington Northern Bridge; and
B.) The Salmon Bay Burlington Northern Bridge-Bridge #2

Location: A.) Burlington Northern Lines south of Spokane Street Bridge over the Duwamish Waterway; and
B.) Burlington Northern Lines over Lake Washington Ship Canal between Magnolia & Ballard.

At their Public Hearing held Wednesday June 18, 1980 the City of Seattle Landmarks Preservation Board voted to approve the designations of the two subject bridges as Seattle Landmarks upon determination that both bridges merit designation based upon satisfaction of ordinance 106348, Section 3.01, criteria #4.

It embodies the destinctive visible characteristics of an architectural style, or period, or method of construction -

Now owned and operated by Burlington-Northern, these two railraod bridges are the City's only examples of the Strauss heel-trunion single-leaf bascule bridge, or the "jackknife" bridge, type. The Duwamish Waterway bridge was built in 1912 by the Northern Pacific Railway. According to an article written for Engineering News, May 02, 1912 by Paul Kaufman, the Duwamish bridge was one of the first four of its kind built in this country. This type of bridge, developed by the Strauss Bascule Bridge Company of Chicago, was a modification of earlier designs by the same company to shorten the opening time, from 5-6 minutes of earlier designs, to a mere 20 seconds.

The Salmon Bay bridge was built in 1914 by the Great Northern Railway Company. The North span is a jackknife bridge and includes a Warren truss simple span on the south.

Also, that the Salmon Bay Railroad Bridge satisfies criteria #(6):

Because of its prominence of spacial location, contrasts of siting, age, or scale, it is an easily identifiable visual feature of its neighborhood or the city and contributes to the distinctive quality or identy of such neighborhood or the city.

The Salmon Bay Railroad bridge crossing the Lake Washington ship canal is a major visual, and integral feature of the ship canal between Magnolia and Ballard, prominently visible from many public vantage points in that area.

All elements of both bridges were identified as significant features.

II. RECOMMENDATIONS TO CITY COUNCIL ON CONTROLS:

Due to the unique and peculiar nature of the operations of working railroad lines, and of the established procedures for affecting physical changes to these structures, the City of Seattle Landmarks Preservation Board, recommends that no City controls be included as part of the designation action on these structures.

Issued - July 02, 1980

Earl D. Layman, City Historic Preservation Officer

by:

Roberta Deering

Roberta Deering

cc: James Daly, Chairman
Burlington Northern - VIA CERTIFIED MAIL
William Justen, D.C.L.U.

LPB-41/80

City of Seattle
Department of Community Development/Office of Urban Conservation

Landmark Nomination Form

Name Duwamish Railroad Bridge **Year Built** 1912
(Common, present or historic)

Street and Number Burlington Northern Lines South of Spokane St Bridge over Duwamish Waterway

Assessor's File No. Burlington Northern

Legal Description **Plat Name** _____ **Block** _____ **Lot** _____

Present Owner Burlington Northern **Present Use** Railroad Bridge

Address _____

Original Owner Northern Pacific Railway **Original Use** Railroad Bridge

Architect Wm Galbraith, erecting superintendent
Frederick Bergbon, N.P. chief draftsman
H. E. Stevens, N.P. bridge engineer

Builder Meacham & Babcock, electrical inst.
American Bridge Company

Description: Present and original (if known) physical appearance and characteristics

Typically folded in upon itself, the West Duwamish Waterway Railroad Bridge is only a bridge for minutes at a time when signals inform its tender that a train is approaching on the one-track line. Somewhat ungainly in appearance either extended or retracted, this Strauss heel-trunnion single-leaf bascule bridge, nick-named a "jackknife bridge," is best appreciated in motion, when it takes on the aspect of a large creature, part machine, part monster, tucking its head deep into its chest to allow passage to navigation and stretching out its tail to permit trains to pass through its skeletal body. The "head" of the monster is a 500-ton reinforced concrete weight counterbalancing that of the steel moveable span Warren truss. Two concrete piers share the load equally throughout the operation of the draw as the balance shifts around the two fixed trunnion joints, one at the heel of the moveable truss, the other at the apex of the triangular tower. So that the bridge will remain in equilibrium in all positions about the main trunnion, certain members must be always parallel, hence the parallelogram, of which the only fixed member is the hypotenuse of the triangular tower, moves from a nearly flattened position to an open rectangle as the bridge opens itself to close the waterway.

As the electric current (originally from a 25 hp engine, later augmented) lowers the 160-foot span to a certain angle and shuts off automatically, solenoid brakes are automatically set on the motors and the bridge gradually comes to rest on the opposite pier, forming a simple span through truss, the most effective under heavy moving loads. Safeguards are built in, so that train danger signals are activated by the opening of the bridge, and so that the bridge will not unlock and open while being traversed. Provisions are made for lowering the bridge by hand in the event of power failure and the mechanism on the Duwamish Bridge differed from that of its contemporaries in that the same

Description: Present and original (if known) physical appearance and characteristics

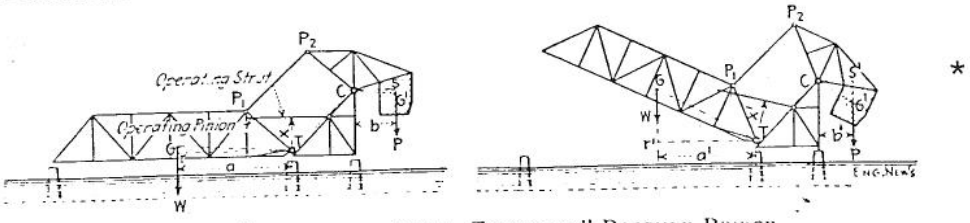

FIG. 1. DIAGRAMS OF "HEEL TRUNNION" BASCULE BRIDGE

CLOSED POSITION PARTLY OPENED

gears could be activated by hand or machine operation by engaging certain small pinions and disengaging them when not in use.

Aesthetically, this type of bridge is not overwhelmingly compelling, so manifest is its absolute adherence to functional requirements; but the marvel of its delicately balanced operations, in continuing use after 69 years, has an appeal of its own which could be said to expand the category of the aesthetic to include the beauty of purely expressed functionality.

*From article by Philip L. Kaufman, "The 'Heel Trunnion' Bascule Bridge", Engineering News, 5/2/12, p. 830.

Statement of significance

According to an article written for the Engineering News , May 2, 1912 by Paul Kaufman, the Duwamish Northern Pacific Railroad Bridge (now owned by Burlington Northern) was one of the first four of its kind built in this country; and a Seattle Post-Intelligencer article printed July 2, 1911, the day after the bridge's opening, state that it was the only one of its type west of Chicago.

This type of bridge, developed by the Strauss Bascule Bridge Company of CHicago was a modification of earlier designs of the same company. It shortened the 5-6 minute opening time of earlier drawbridges to a mere 20 seconds. The mechanism is so delicate that, at least in its early days, one man alone could operate it without current by pulling a wire rope.

The role of the railroads in developing the human, commercial and industrial resources of Seattle cannot be overestimated. The steady operation of this bridge, connecting downtown Seattle with the industrial areas in the southwest portion of the city as well as the incoming lines from the south and east has been a continuing factor in maintaining Seattle's stature as the principal trade center of the Pacific Northwest.