History and Aesthetics in Suspension Bridges

(Othmar Ammann, NYC Bridges, and 20th century bridge engineering)

Social role of Ammann's bridges in New York
The Hellgate and Bayonne Arches: form and forces
Stiffness in suspension bridges (cont.)
Lindenthal and the RR vs. Amman and the automobile
Form, function, and aesthetics in suspension bridge towers
Locations of Ammann’s New York bridges
Gustav Lindenthal
Hellgate Bridge - Gustav Lindenthal - 1916 - 977 feet
contrast with Sydney Harbor Bridge...

http://en.structurae.de/photos/index.cfm?JS=3089
Katrin Janberg
Amman - Bayonne Bridge - 1675 feet (proposal)
Amman - Bayonne Bridge - 1675 feet (as built)
a brief tour of suspension bridge aesthetics...
returning now to Lindenthal, Amman, and
the design and development of the GWB
(a) Suspension design, by G. Lindenthal for bridge at 23rd Street (1859)

(b) Arch design, by Max Am Ende (1859)

(c) Cantilever design, by Union Bridge Co. for bridge at 70th Street (1893)

Fig. 17.—Early studies for a bridge across the Hudson River.
(a) Suspension design by the Board of Engineers appointed by the Secretary of War (1854)

(b) Suspension design by George S. Morison (1896)

(c) Suspension design by Rollen, Hodge and Baird for bridge at 57th Street (1813)

Fig. 18.—Early studies for a bridge across the Hudson River.
FIG. 19.—RECENT STUDIES FOR A BRIDGE ACROSS THE HUDSON RIVER
How is this bridge stiffened?
George Washington Bridge - Othmar Ammann - 3500 feet - 1931
George Washington Bridge - Othmar Ammann - 3500 feet - 1931
Deer Isle Bridge - David Steinman
First Tacoma Narrows Bridge
SKETCH showing the manner in which the 3rd Span of the CHAIN PIER at BRIGHTON undulated just before it gave way in a STORM on the 29th of November 1836.

1.5 feet

The port (a) represents the under roadway of the road way, and (b) the upper roadway which were both visible at the same time.

SKETCH showing the appearance of the 3rd Span after it gave way.
Fig. 5. Degrees of Freedom for Deck Section
word association
Consider the aesthetics and scientific function of towers particularly Ammann’s vs. Steinman’s towers
Golden Gate Bridge
1937
4200 feet
Othmar Ammann (1879 - 1965)

"For a half-century of distinguished leadership in the design of great bridges which combine beauty and utility with bold engineering concept and method."
Announcements

GWB calculation assignment due Thursday

Extra help available Tonight 7:00 PM Marston 211