

Tacoma Narrows Bridge Project

Means and Methods of Superstructure Erection

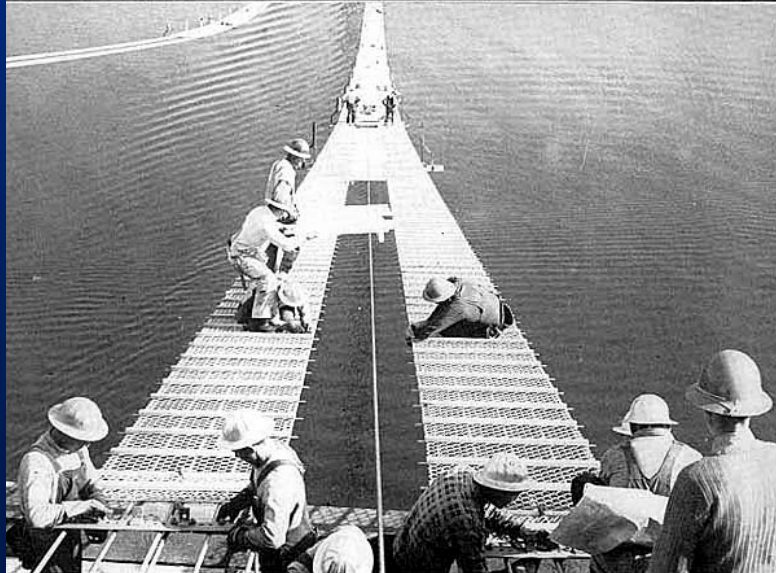
Western Bridge Engineers' Seminar

September 26th, 2007

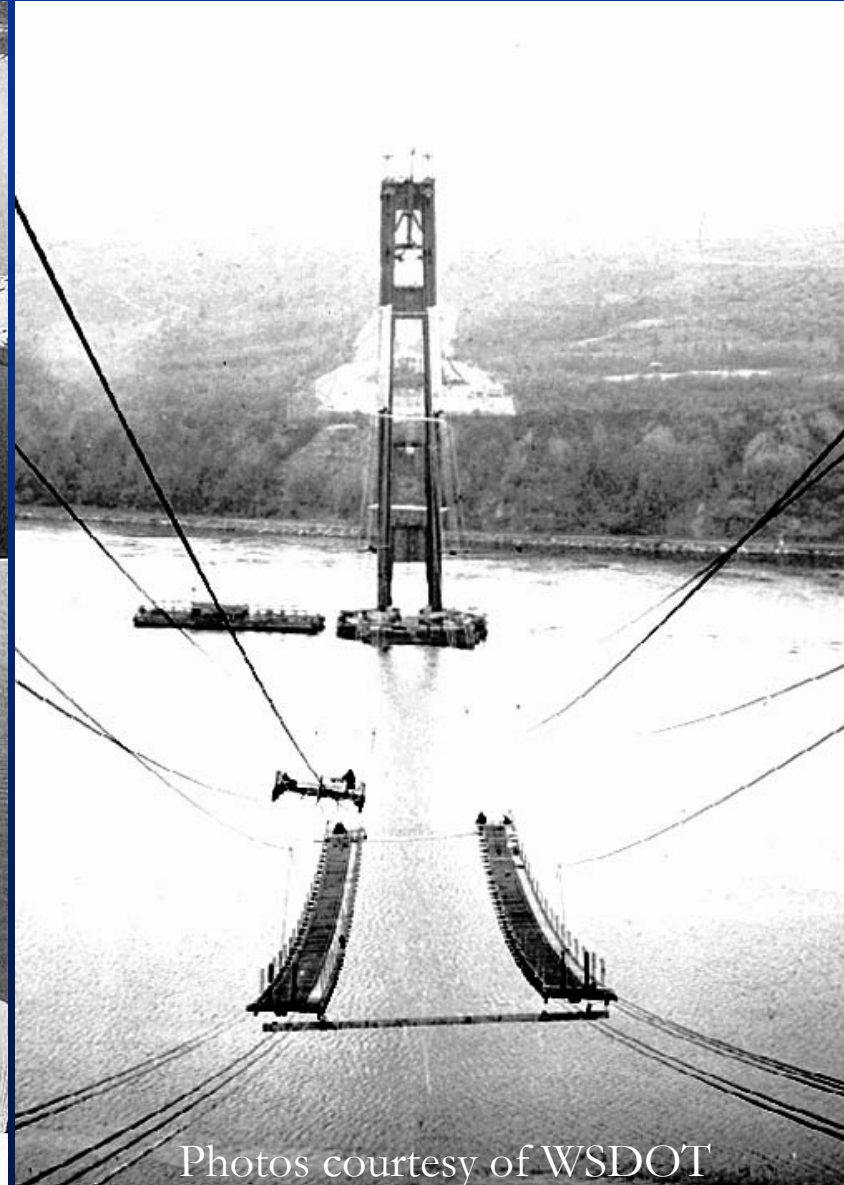
Jeff Lavinder, PE



1940 Catwalk Erection



Above: It's 500 feet to the water. Below: Nimble men work on catwalk. [11]



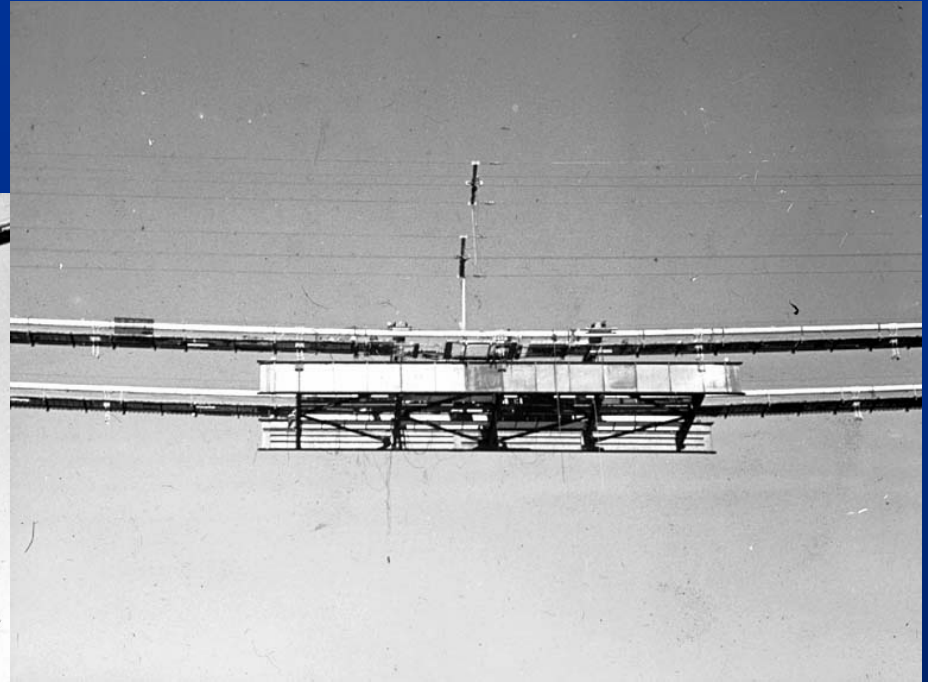
Photos courtesy of WSDOT

1940 Cable Spinning



Photos courtesy of WSDOT

1940 Deck Erection



Photos courtesy of WSDOT

1940 Tacoma Narrows Bridge



Photo courtesy of WSDOT

1950 Cable Spinning

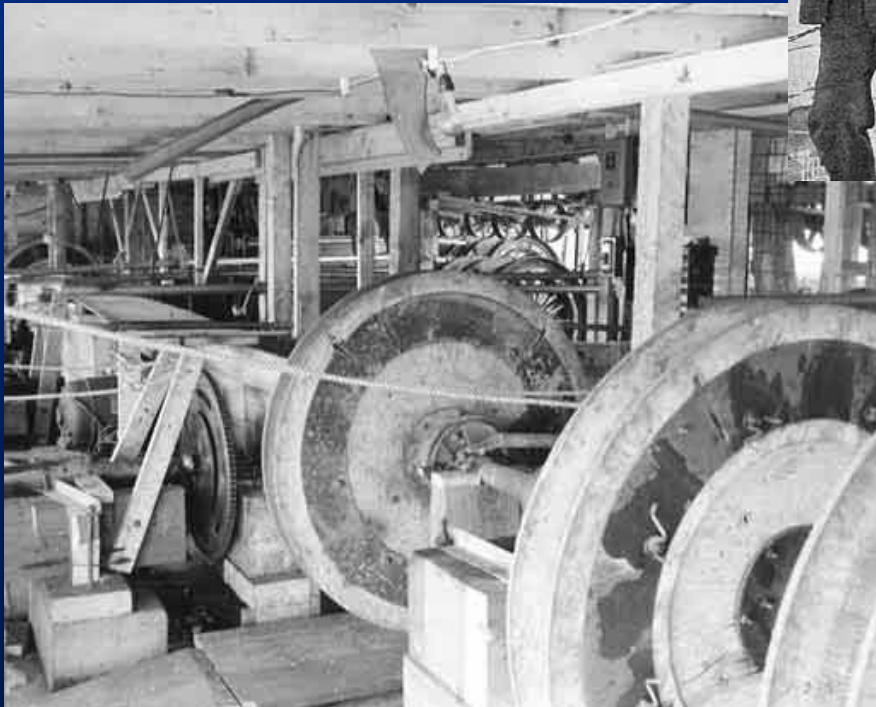
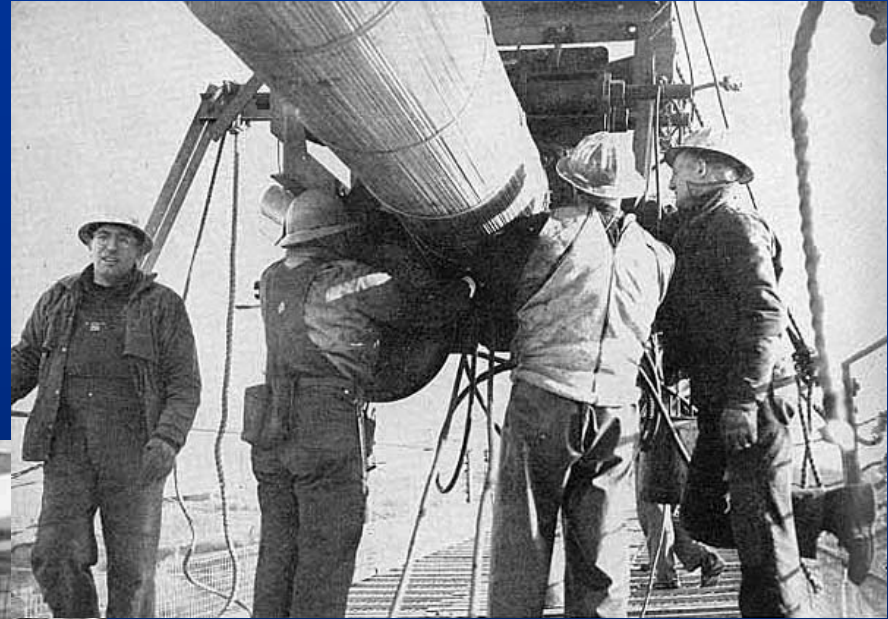


Photo courtesy of WSDOT

1950 Catwalk Erection and Superstructure Erection

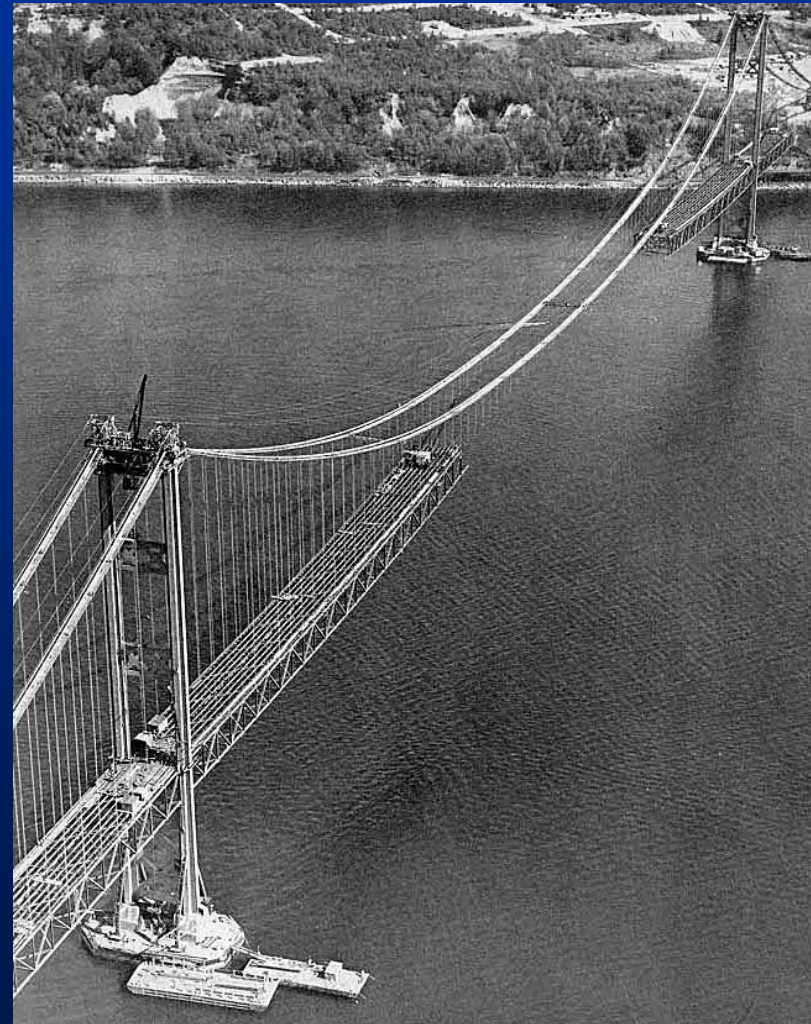


Photo courtesy of WSDOT

1950 Deck Placement



Photo courtesy of WSDOT

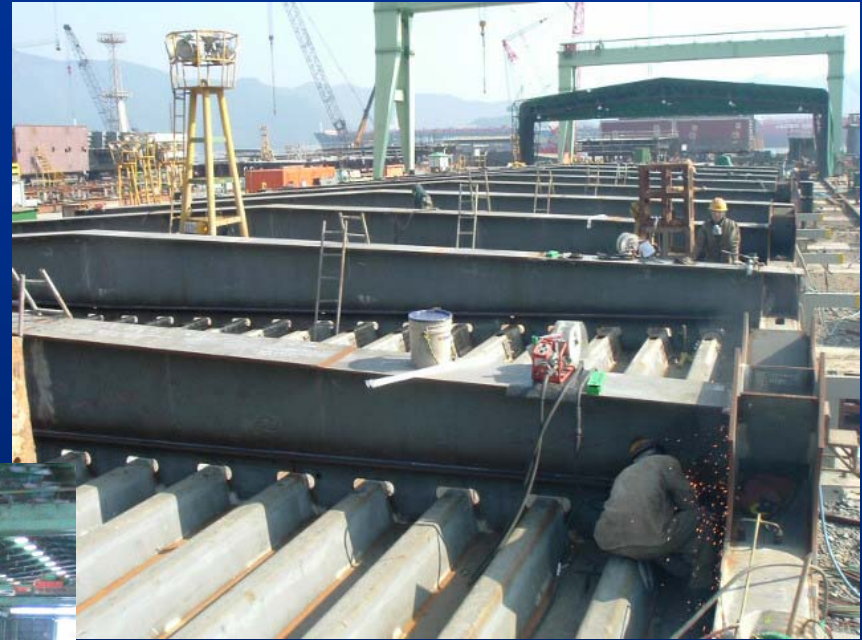
1950 Tacoma Narrows Bridge



Photo courtesy of WSDOT

2007 Tacoma Narrows Bridge

- Fabrication by Nippon Steel Kawada Bridge (NSKB) and Samsung Heavy Industries (SHI) in South Korea



Photos courtesy of TNC

Fabrication and Assembly



Photos courtesy of TNC

Fabrication and Assembly



Photo courtesy of TNC

Fabrication and Assembly



Photo courtesy of TNC

Fabrication and Assembly



Photo courtesy of TNC

Moving Decks around SHI Plant



Storage of Decks at Mokpo

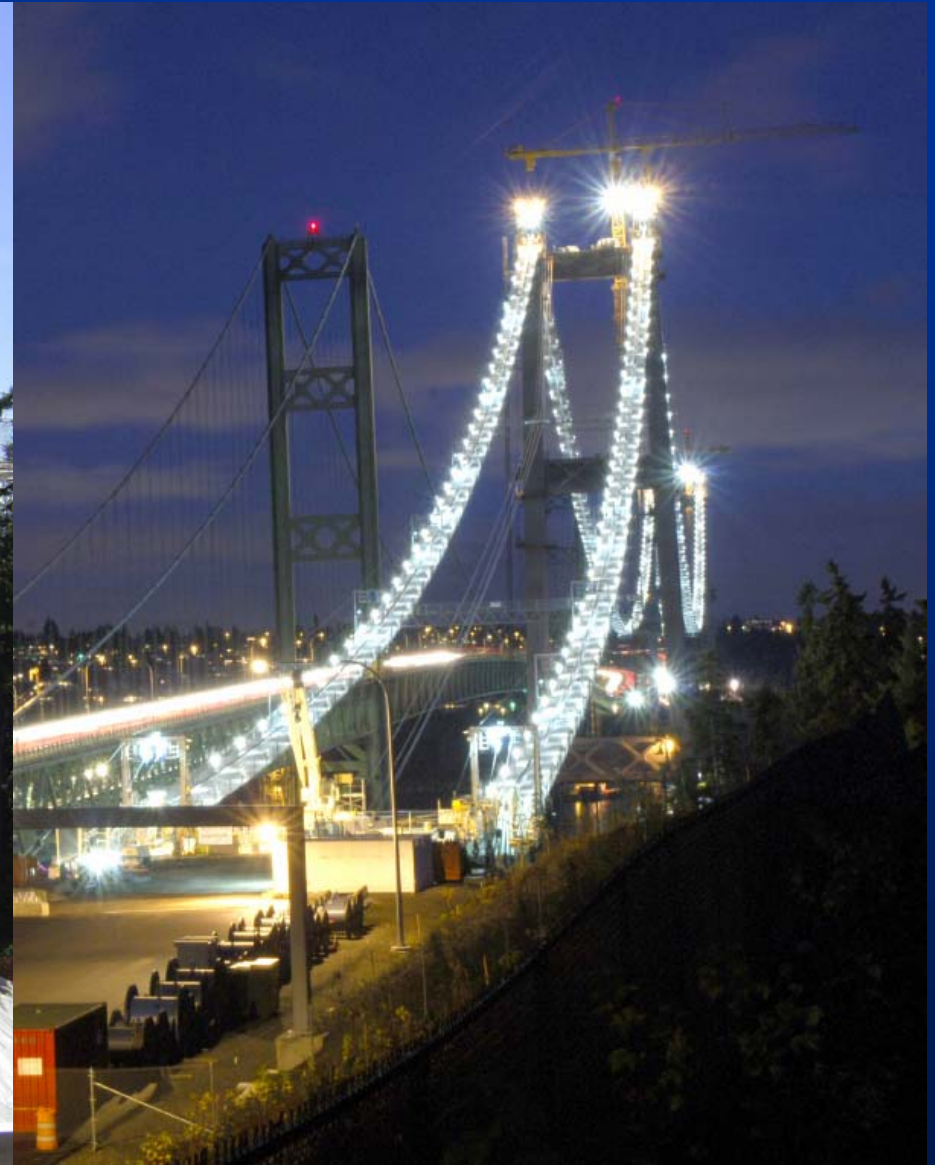


Loading of Deck Sections

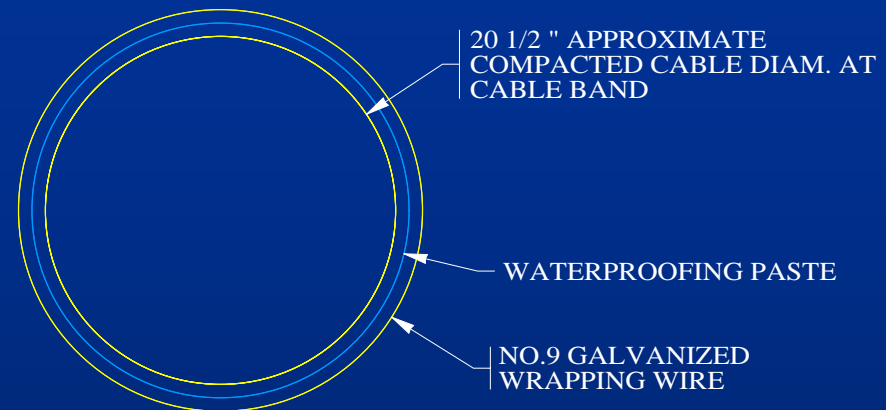
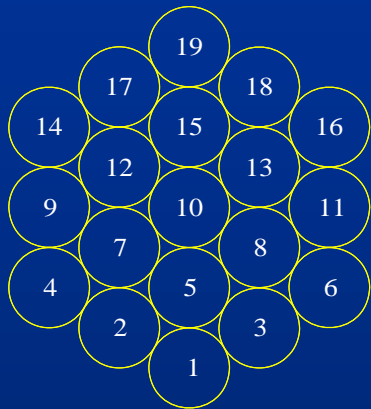


Photo courtesy of TNC

Catwalk Erection



Spinning



- Main Cable is 20 1/2" (0.5 m) in Diameter
- Each Individual Wire is 0.196" (5 mm) in Diameter
- 464 Wires per Strand, Laid in Parallel
- 19 Strands per Cable
- 8816 Total Wires per Cable, One Continuous Wire
- Suspenders at 40 ft (12.2 m) Spacing

Wire Storage On-site



Tower Pullback



Controlled Tension Cable Spinning



Cable Spinning



Cable Compaction



Main Cable Compacted



Cable Band Installation



Suspender Installation



Suspender Ropes Installed



1st Boat in Tacoma



NOTICE TO MARINERS & GENERAL PUBLIC TACOMA NARROWS BRIDGE



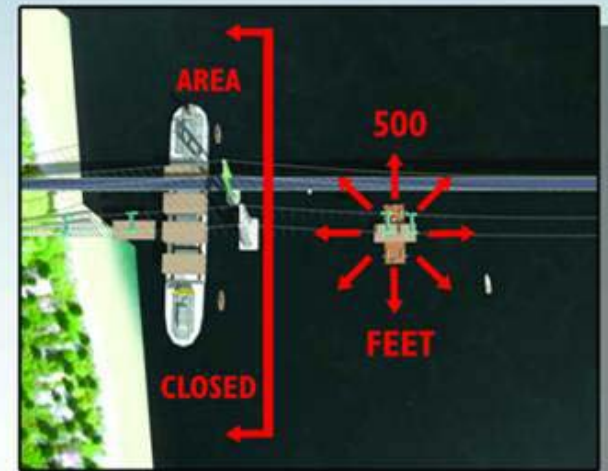
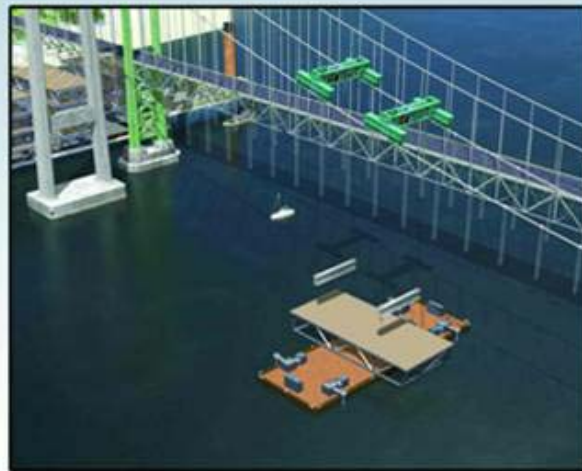
BOAT THE SAFE WAY, STAY 500 FEET AWAY FROM ANY MARINE BRIDGE CONSTRUCTION

Deck #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
Span #	1	1	1	2	2	1	2	2	3	3	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	3	3	3	3	2	2	1	1	1	1
Deck Length	118	120	120	120	120	120	120	120	120	125	155.9	120	120	125	120	120	120	120	80	80	120	120	120	116	120	120	120	120	80	120	120	120	120	125	120	120	155.9	124	120	120	120	120	120	80	78	
Lift Seq. #	6	10	13	18	21	4	28	31	35	45	39	36	41	43	33	29	27	24	19	17	14	9	5	1	2	8	12	15	20	23	25	30	34	44	42	37	40	46	38	32	26	22	16	11	7	3

JUNE 2006

BOATING AND DECK LIFTING OPERATIONS

DECEMBER 2006



**Subject to Change*

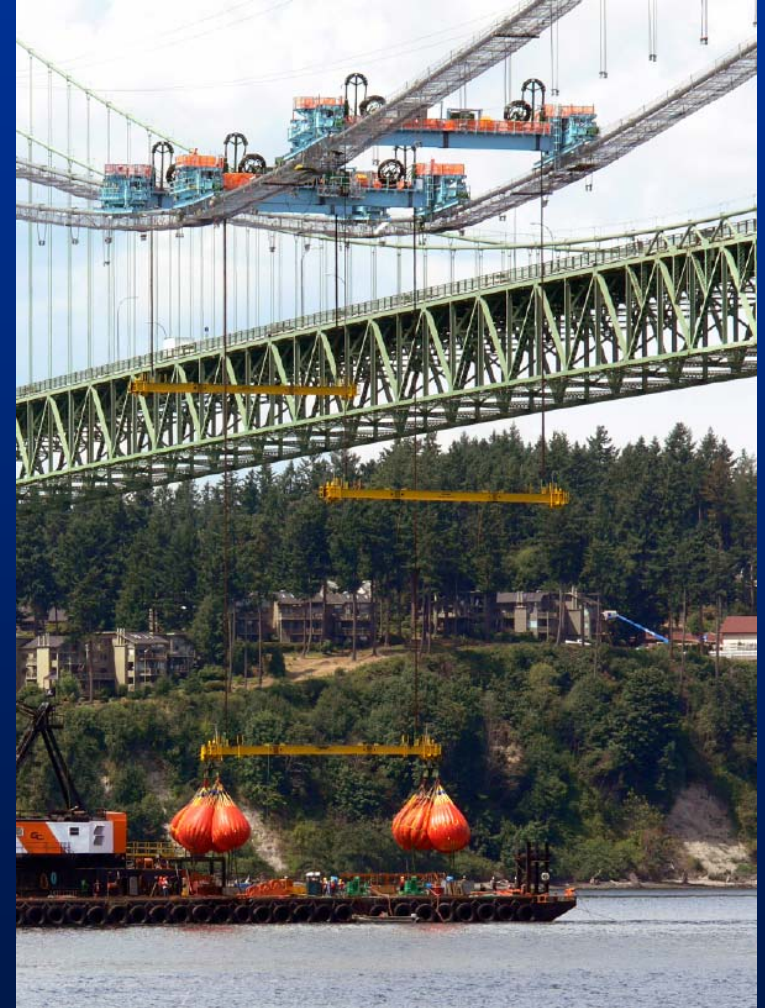
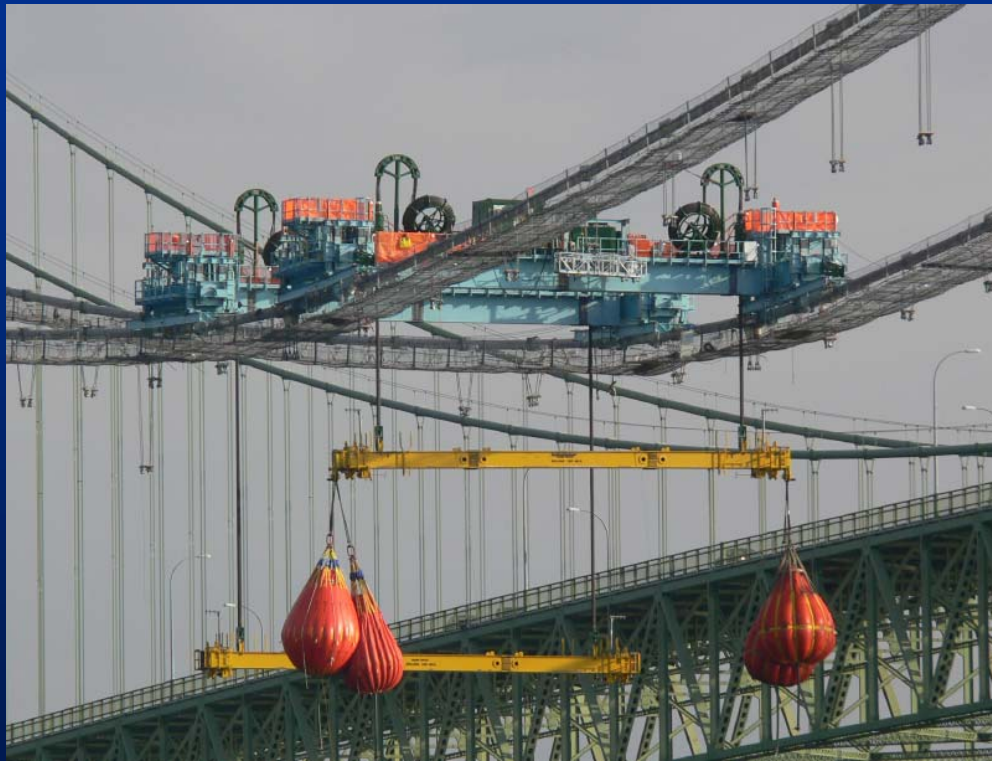
1st Ship On-site



Gantry Crane Erection



Gantry Crane Testing



Transshipping



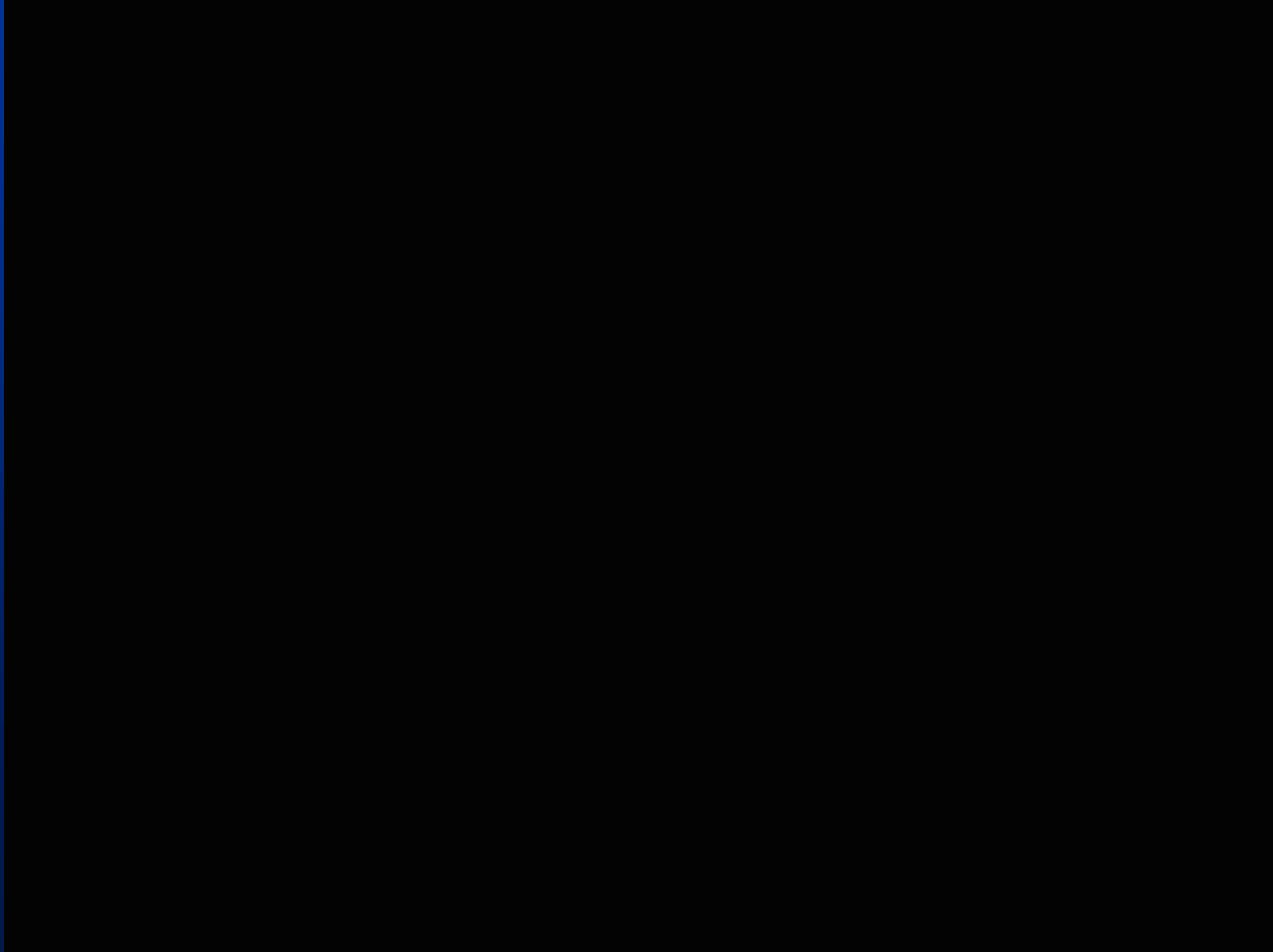
Transshipping of Deck Section



1st Deck Section Lifted



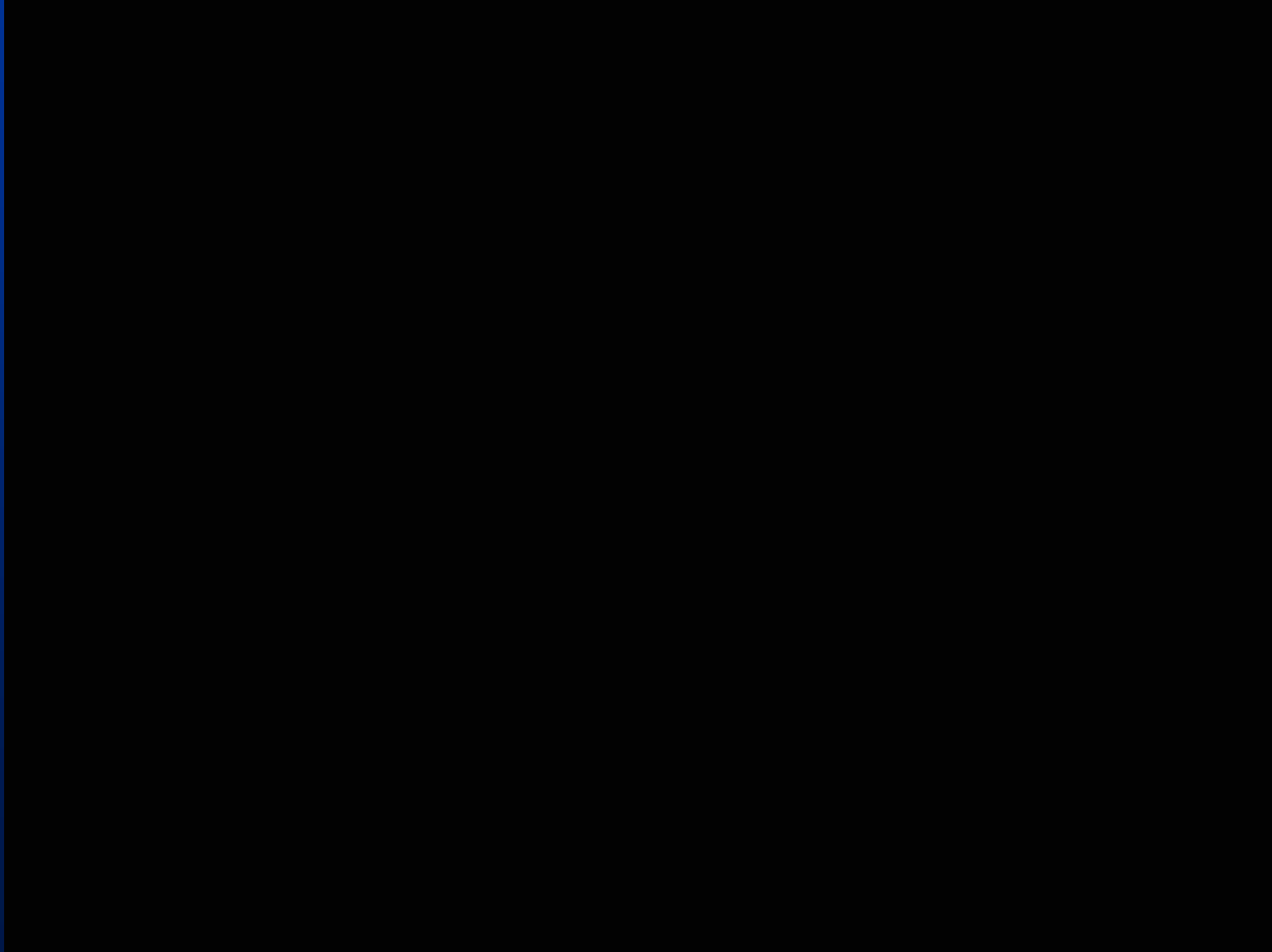
Moving Gantry Cranes



Trapezing Decks to Shore



Trapezing Decks to Shore



Deck Lifting Progress



Deck Lifting Complete



Wrapping the Main Cable



Deck Waterproofing



Deck Paving



Deck Paving Completed



Dedication Day



Open to Traffic



Questions?

