

## Pontoon construction project overview

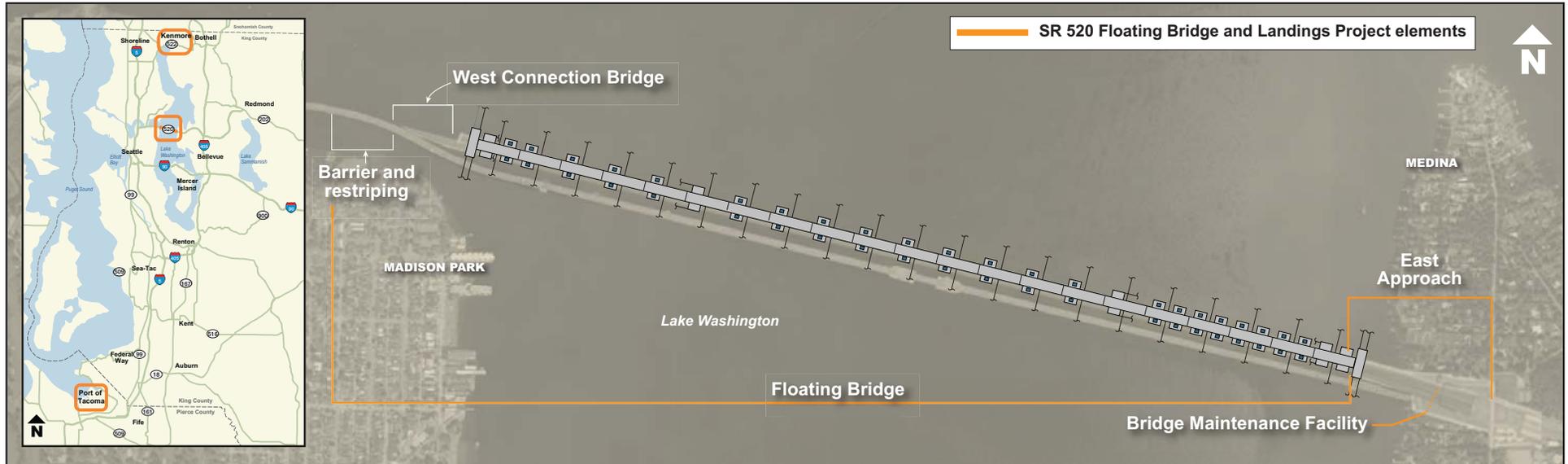
- WSDOT is moving forward with pontoon construction to replace the aging and vulnerable SR 520 floating bridge on Lake Washington
- The \$367.3 million Pontoon Construction Project broke ground in February 2011 at a 55-acre site in Aberdeen.
- As part of this project, contractor Kiewit-General Joint Venture (K-G) has built a new casting basin facility and is constructing 33 concrete pontoons that will be used to replace the SR 520 floating bridge.



An aerial photograph of the pontoon casting basin and Grays Harbor in May 2012. Photo courtesy of Soundview Aerial Photography.



## Floating bridge and landings project area



### Project elements include:

- Design and construction of:
  - New six-lane floating bridge superstructure and roadway, including HOV lanes and a bicycle/pedestrian path.
  - 44 supplemental stability pontoons.
  - Anchors and anchor cables.
  - Permanent East Approach.
  - Final connection to Evergreen Point Road vicinity.
  - Transition structures between East and West Approaches and floating bridge.
  - New maintenance facility and dock in Medina.
- Towing pontoons to Lake Washington.
- Assembly of the new floating bridge.
- Removal of existing floating bridge and landings.





## SR 520 floating bridge pontoons

The new SR 520 floating bridge will be supported by three types of concrete pontoons:

**Longitudinal pontoons (21)** – These are the largest pontoons at approximately 360 feet long. They form the backbone of the bridge and support the roadway superstructure.

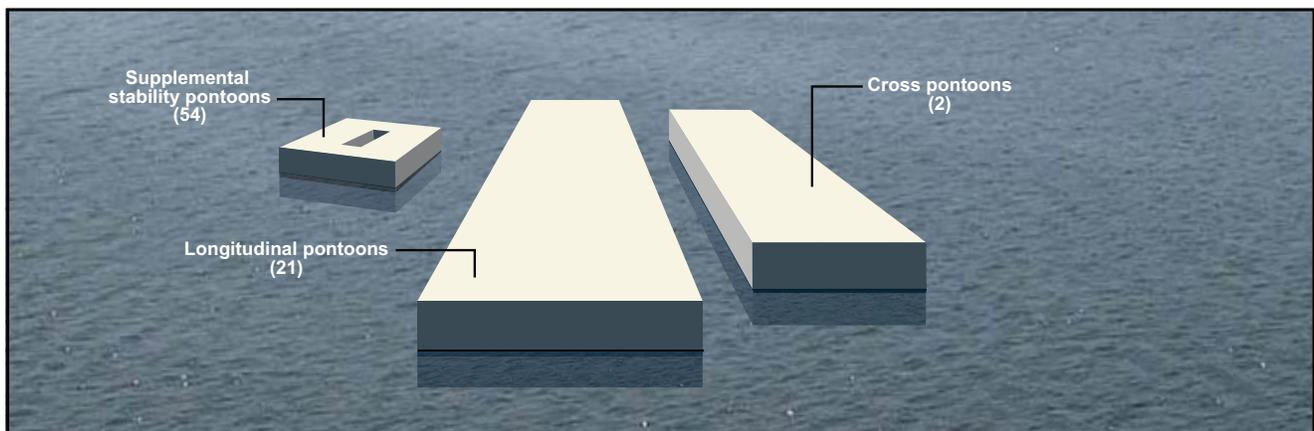
- Constructed in Aberdeen facility
- Weight: 11,100 tons

**Cross pontoons (2)** – These mark the ends of the floating bridge section and the transition to the East and West Approach structures.

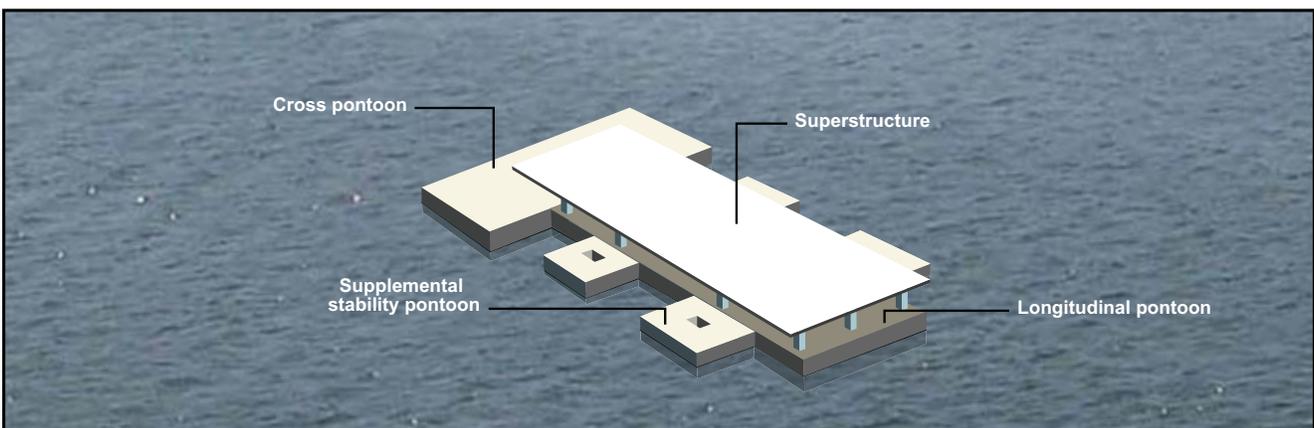
- Constructed in Aberdeen facility
- Weight: 10,100 - 10,550 tons

**Supplemental stability pontoons (54)** – These smaller pontoons help stabilize and support the weight of the new floating bridge.

- Constructed in Aberdeen facility (10) and Tacoma facility (44)
- Weight: 2,500 - 2,820 tons

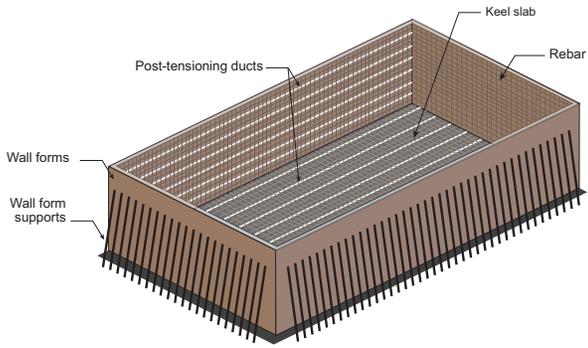


*The three types of pontoons that will support the new SR 520 floating bridge.*

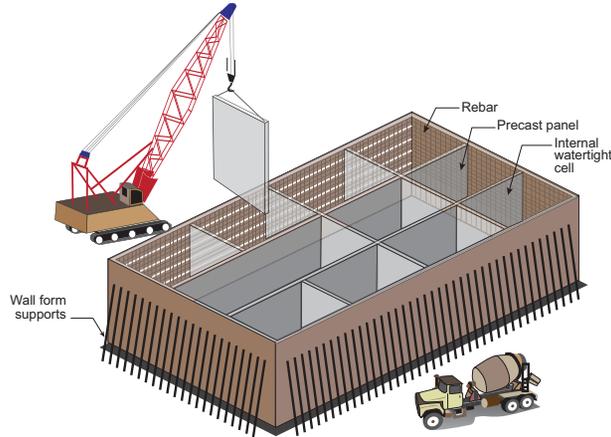


*A representation of pontoons being assembled on Lake Washington.*

## How to build a pontoon

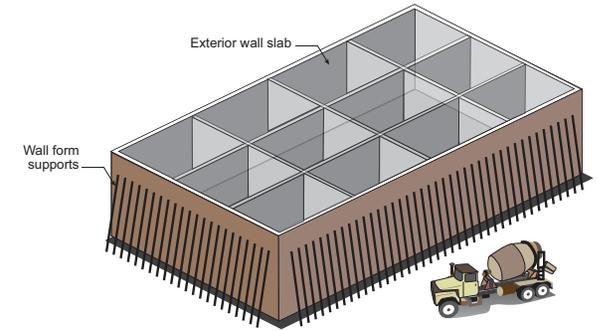


**1** Set wall forms, rebar, and install post-tensioning ducts

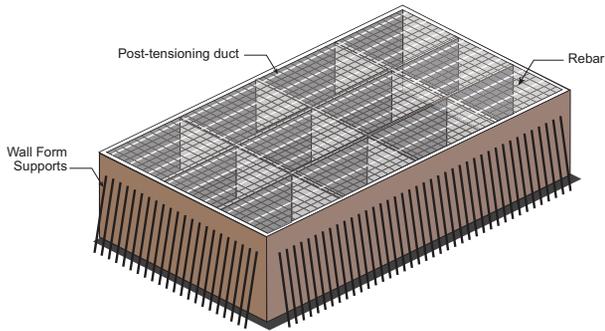


**2** Install interior precast panels and pour concrete in keel slab

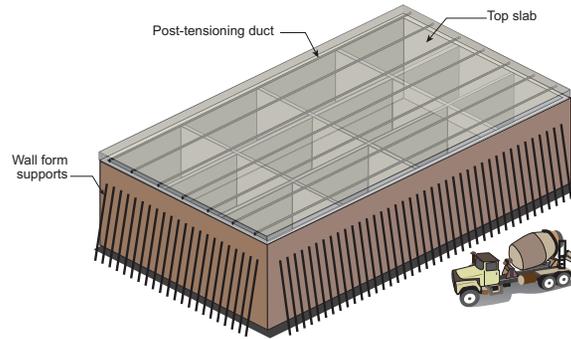
- Longitudinal pontoons: 90 precast panels
- Cross pontoons: 57 precast panels
- Supplemental stability pontoons: 9 precast panels



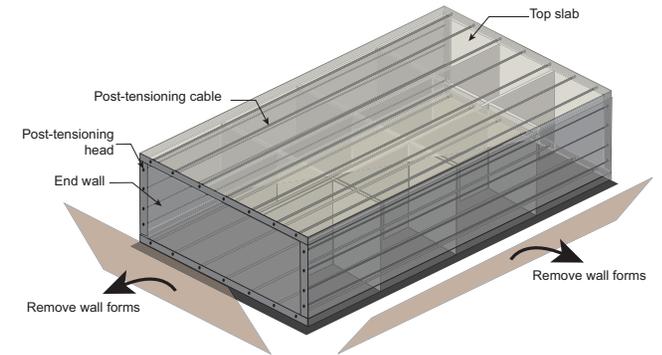
**3** Pour concrete for exterior walls and joints between interior precast panels



**4** Pour top slab rebar and post-tensioning ducts



**5** Pour top slab concrete



**6** Remove wallforms and perform post-tensioning to add strength

FOR ILLUSTRATION PURPOSE ONLY - NOT TO SCALE

## 2012 Aberdeen pontoon issues and repairs



Crews encounter spalling and end-wall cracking after a pontoon is post-tensioned



Repaired pontoons are floated out of the casting basin; crews complete pre-tow inspections



Computer analysis shows rebar in pontoons provides required structural capacity; expert review panel adds two new members who will assist in the panel's review of the design, materials, construction methods, and overall integrity of the pontoons

Floating bridge assembly continues on Lake Washington



May

June

July

Aug

Sept

Oct

Nov

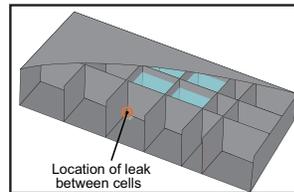
Dec

WSDOT convenes an expert review panel to address causes of spalling and end-wall cracking

Crews completed repairs to the first pontoon and pre-emptive modification in remaining pontoons



Pontoons are towed into Lake Washington  
A leak is found and then repaired between two internal cells where ballast water was placed; Crews find additional moisture and WSDOT begins analysis of additional repair options

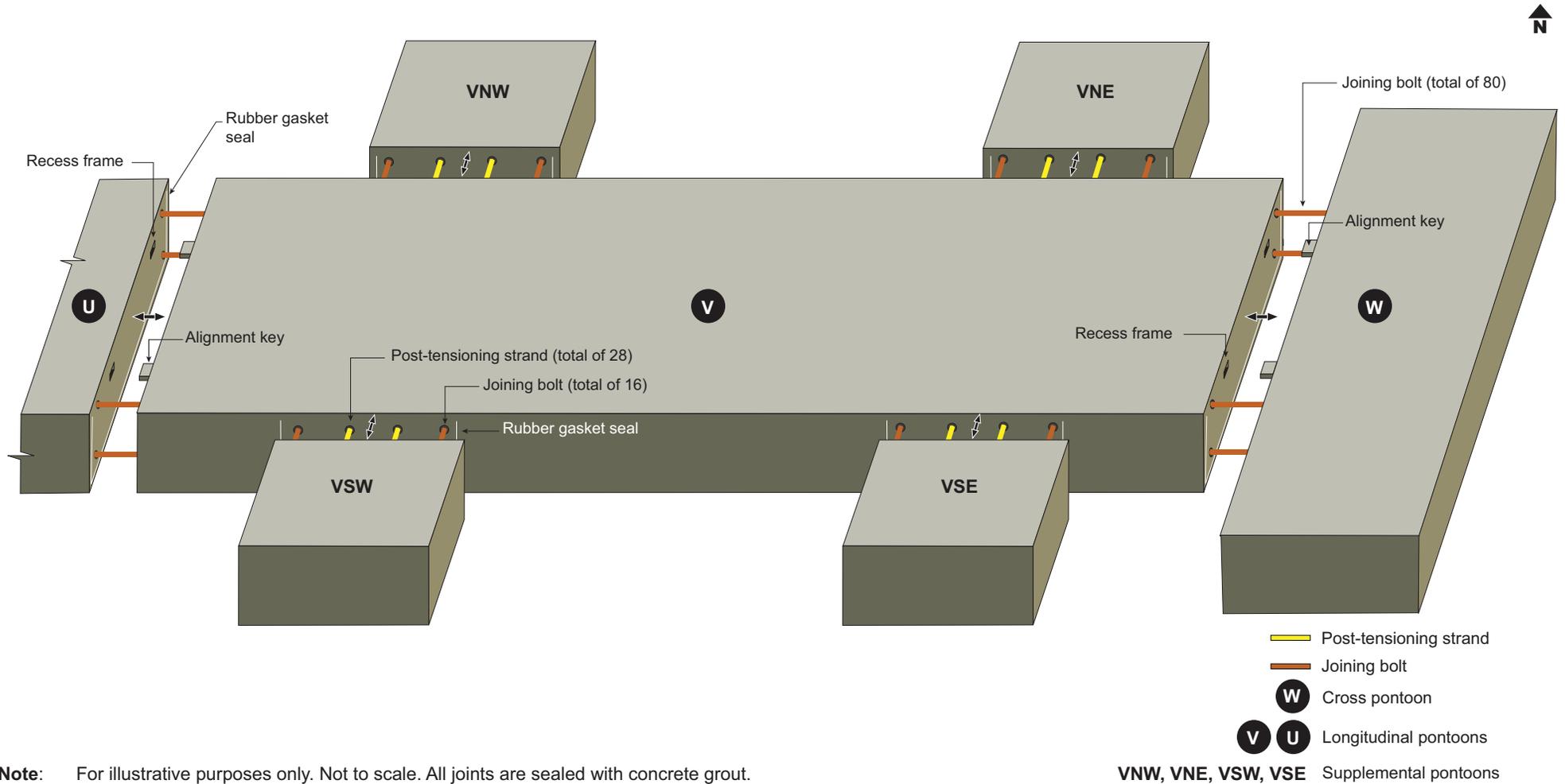


Expert review panel issues its report, and recommends WSDOT revise post-tensioning design and maintain rigorous concrete thermal controls  
WSDOT starts Cycle 2 construction with revised post-tensioning design and other panel recommendations

KG rejects 9 of 345 precast panels for Cycle 2 pontoons in accordance with quality assurance process

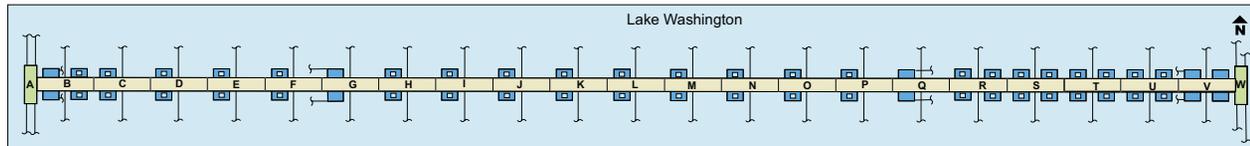


## Pontoon joining on Lake Washington



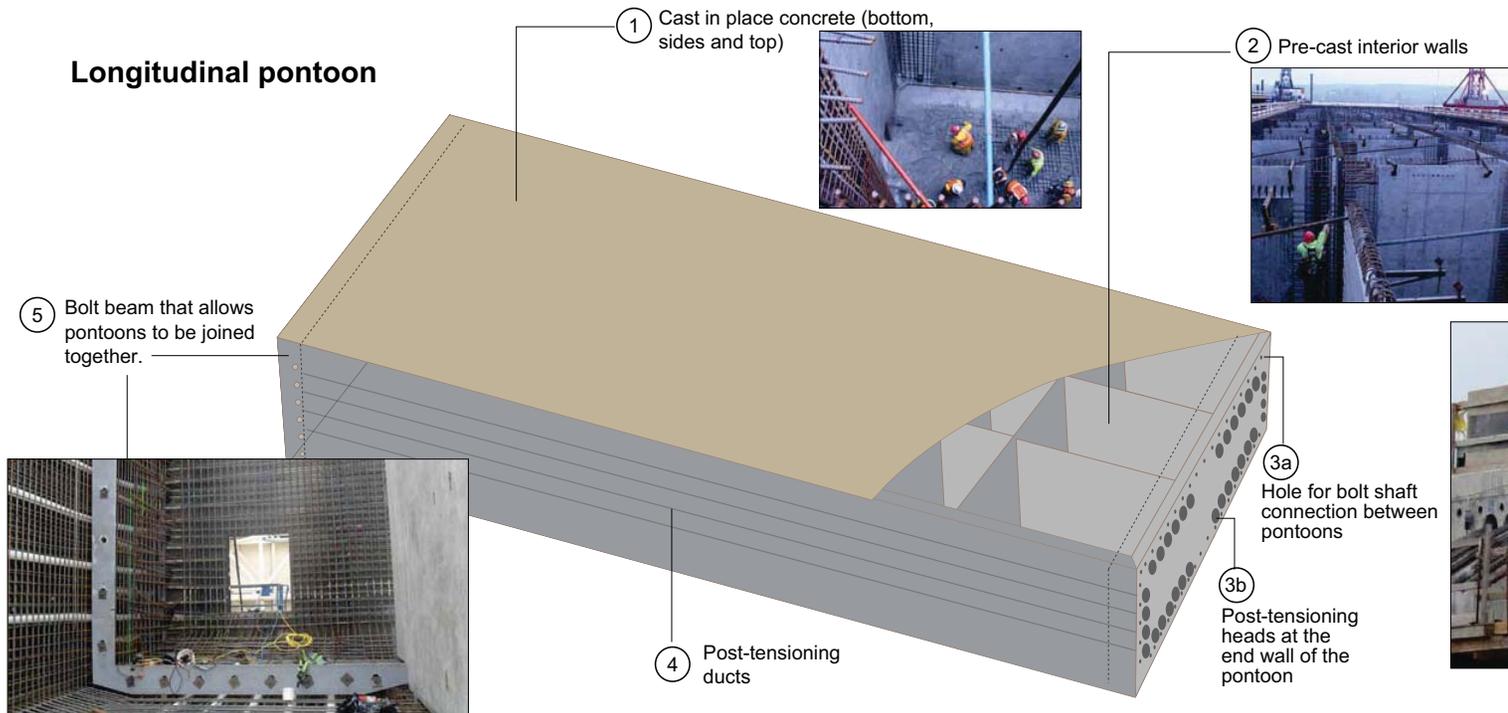
## SR 520 longitudinal pontoons design components

Final six-lane bridge configuration on Lake Washington



- Longitudinal pontoons
- Supplemental stability pontoons
- Cross pontoons

Longitudinal pontoon



- Other components include:**
- Inserts for electrical conduit
  - Walkways and ladders for crew access
  - Maintenance access hatches



*For illustration purposes only - not to scale*