

Olmsted Dam Major Equipment Catamaran Barge

Operational functions and details

The catamaran barge has a maximum capacity of 4,500 tons, and is required for this project to lift and carry the large precast concrete shells with attached lifting frames on the river from the lower marine skidway to the shell's final set-down location. During this process the precast concrete shell will remain approximately 15' submerged.

The catamaran barge consists of two barge hulls, torsion beam connection at the forward end, aft tension beam (removable), vertical support towers, longitudinal box girders, cross beams, and gantry beams (moveable). The catamaran barge will also be used to lift and carry various lifting frames back to the lower marine skidway after a shell is set in its final location.

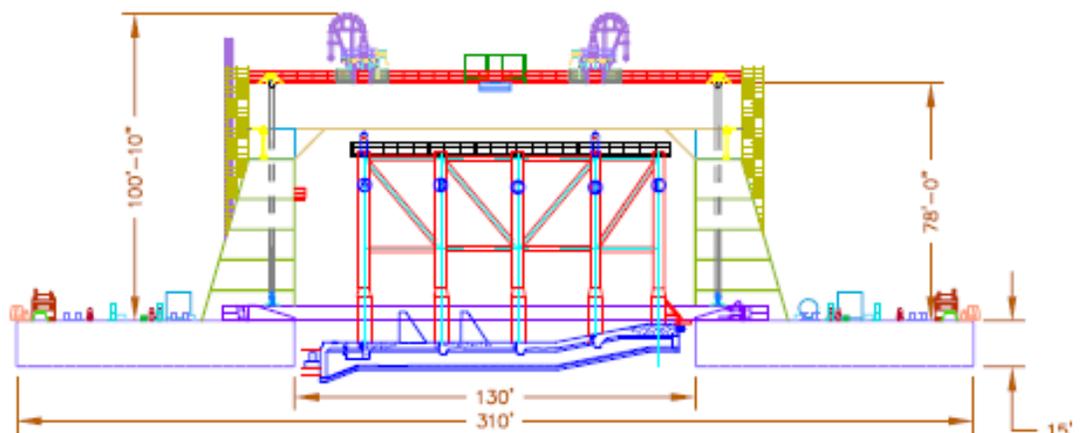
The catamaran barge will be moored in position to perform lifting operations. Design operating conditions include 30 mile per hour winds and 6 foot per second river current. The concrete shells will be lowered up to 30' below the water surface at the dam site.



Partially Erected Cat Barge at VT Halter in Pascagoula, MS

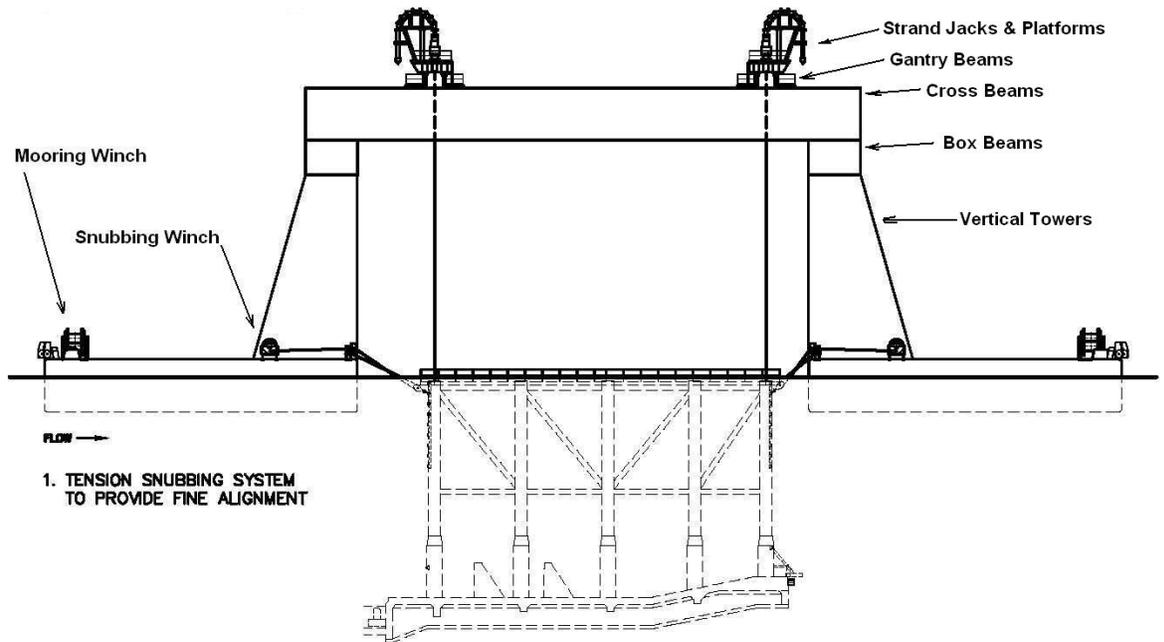
Facts & Figures

- **Cost:** \$19 million (for Cat Barge alone, does not include assembly or lifting equipment)
- **Propulsion Source:** The catamaran barge will be moved with two 4,500 HP push boats
- **Lifting Capacity:** The crane is designed to lift 4,500 tons. It is noted that by itself the cat barge can lift nothing without the separate system described in the following section.



- **Catamaran Barge Dimensions:** Overall dimensions of the crane are 310' wide from outside of barge hull to outside of opposite barge hull, 200' long from bow to stern, and 115' high from bottom of barge to top of strand jack.
- **Clearance Dimensions:** 130' between barge hulls, and 63' between barge deck and underside of beams
- **Major Components:**
 - Two box barge hulls – 90' wide by 200' long and 15' deep
 - Twelve vertical support towers (six per barge) – Extend 53' off deck
 - Two box beams tie support towers together – 15' wide by 168' long and 10' tall
 - Two deck mounted torsion/tension beams
 - Fifteen cross beams – 4' wide by 160' long and 15' tall
 - Two gantry beams.
- **Maximum Draft:** 11' in a loaded condition
- **Travel Speed:** Combined river current and travel speed will not exceed 6 ft/sec.
- **Ballasting System:** The catamaran barge contains a fully automated live ballasting system designed to achieve level trim throughout all lifts which will be utilized in conjunction with a fixed ballast system attached to the barge hulls
- **Strand Jacks:** The twelve each, 900+ ton strand jacks are capable of lifting at a rate of 20 feet per hour.

• **Mooring System:** A system of eight mooring winches will be utilized to hold and adjust the position of the catamaran barge above the set down position for the concrete dam shells. The mooring winches will connect to pre-positioned anchor plates on the river bottom.



- **Snubbing System:** A system of eight snubbing winches will be mounted on the barge deck and connect to the lifting frames to align the shell in the X and Y coordinates for final set down.
- **Designer / Vendor:** The gantry crane was designed by The Glosten Associates, and built by VT Halter Marine of Pascagoula, MS
- **Erection of the Catamaran Barge:** Washington Group/Alberici is responsible for the erection of the catamaran barge. This work is scheduled to be completed in advance of setting the first concrete shell.

Lift System Facts & Figures

The catamaran barge is a self-contained piece of machinery, operating off generator power. On top of the catamaran barge will be support stands for twelve strand jacks which will be the primary lifting mechanism to raise and lower concrete shells beneath the cross beams. The barge is designed such that the two upper most beams, known as gantry beams, can be hydraulically adjusted to conform to various lifting frame configurations. The lift system is the same for both the super gantry crane and catamaran barge. See separate flyer on this topic.

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