



Olmsted Dam Construction

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

Like LEGOs

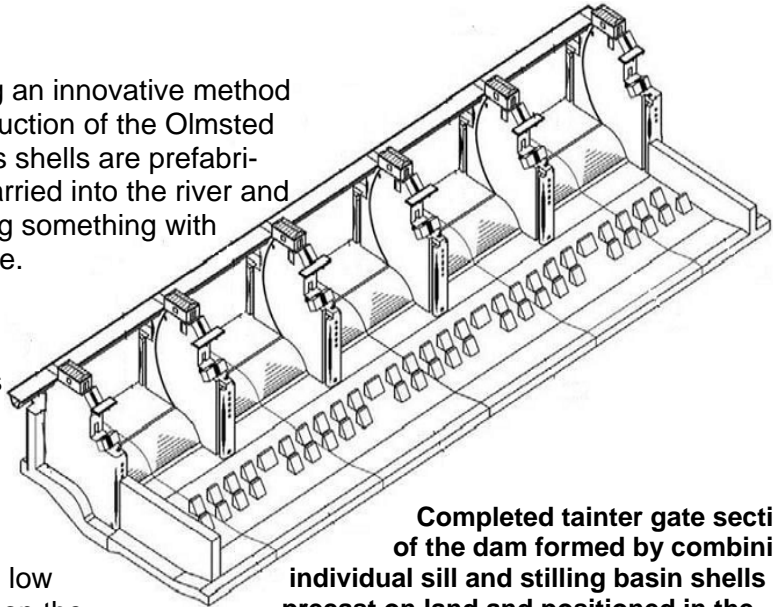
The Corps of Engineers is using an innovative method known as “in-the-wet” for the construction of the Olmsted Dam. Sections of the dam known as shells are prefabricated on shore in a precast yard, carried into the river and set in place similar to a child building something with LEGOs, only on a much bigger scale.

The dam consists of two primary areas: the tainter gate section and the navigable pass section. It is anticipated to take three low water seasons to install the tainter gate portion and another three low water seasons for the navigable pass.

The shells required for the 2010 low water season have been fabricated on the precast yard. The shells for a typical year

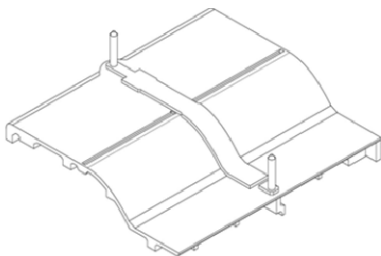
will be constructed in multiple concrete placements. Once a shell is complete a lifting frame is attached and it is moved by the 5,000-ton gantry crane from its casting position to the top of the skid way known as position zero.

At position zero the shell is placed on a wedge-shaped steel cradle with wheels. The cradle's shape keeps the shell horizontal while moving slowly to the water's edge for loading onto the catamaran barge.

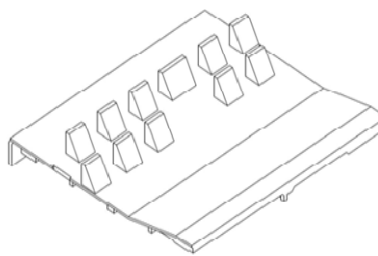


Completed tainter gate section of the dam formed by combining individual sill and stilling basin shells precast on land and positioned in the river with a catamaran barge.

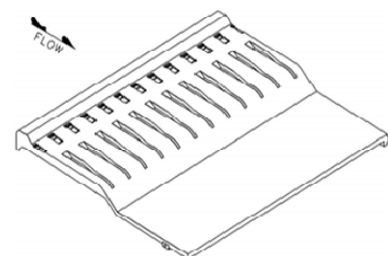
**Sill shell
125'x102'x30' high**



**Stilling basin shell
125'x102'x30' high**



**Navigable pass shell
120'x104'x14' high**



Each shell weighs between 2,600 and 3,700 tons

The lifting frame with the shell is attached to the catamaran barge and lifted off the cradle. Towboats then push the catamaran barge out to the dam and position it so the shell can be set down in its permanent position in the dam.

Prior to placing the shells in the river, the foundation is prepared. The bottom of the river is graded for the shell being placed and stone is placed to protect the river bottom. The hydraulic excavator, known as the "aqua digger" finely grades the river bottom. After the grading, a sheet pile cut-off wall is constructed upstream and downstream, followed by the installation of the foundation piles. Approximately 3,300 twenty-four-inch diameter pipe piles are driven for the entire dam foundation.

A stilling basin shell is placed first, followed by a sill shell, then the second stilling basin shell and another sill shell. Once each shell is in place, the void between the prepared pile foundation and the underside of the shell is filled with concrete. The concrete is placed through pipes, known as tremie pipes, inside the lift frame legs to the bottom. The next shell to be placed is the lower pier shell. This sequence continues until the tainter gate portion of the dam is complete. The upper pier will be cast in place.

The large steel tainter gates are fabricated off site and transported to Olmsted on a barge. The barge is moved into the gate bay, the maintenance bulkheads are installed and the water level adjusted so the gate can be attached.

The navigable pass portion of dam is constructed in a similar fashion. The shells are fabricated in the precast yard, the wicket gates are attached in the dry and the entire structure is picked up and moved to and set on the foundation piles and filled with tremie concrete.

Finally, the left boat abutment is constructed and the dam is complete. The pictures show the completed dam with the wickets raised and the wicket barge. When river conditions provide sufficient flow to maintain a navigable pool the wickets are lowered and traffic passes without locking.

