Concrete Boat

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Brian O’Connell

Test boat in the East River,
New York City, February 2009.

The process used to produce a concrete boat using beach sand as both a form and a material is described in the 1971 edition of the The Whole Earth Catalog.

The Last Whole Earth Catalog

access to tools

$5

Test boat after testing
in the East River, New
York City, February 2009.

Chicken wire mesh tied in
five ply reenforcing mats
made ahead of time at
Malibu Canyon State Park.

This 1969 book is an exhaustive history and guide to concrete boat building. It is the original source of the beach boat concept. The use of concrete in boat building is traced back to Joseph Lambot who first patented *fericement* in 1855. Fericement or ferrocement is cement combined with significant amounts of flexible steel.


Concrete
Boatbuilding
ITS TECHNIQUE AND ITS FUTURE
By
GAINOR W. JACKSON
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Once at the beach we began
by measuring out a grid on
which to map out the shape
of the hull.

The grid measures 6 by 13
feet and is divided into
1 foot increments.

Stakes are put on the grid to measure the height of the hull at given points.

Sand is then piled until
we reach the top of the
stakes.

The boat’s form begins to take shape.

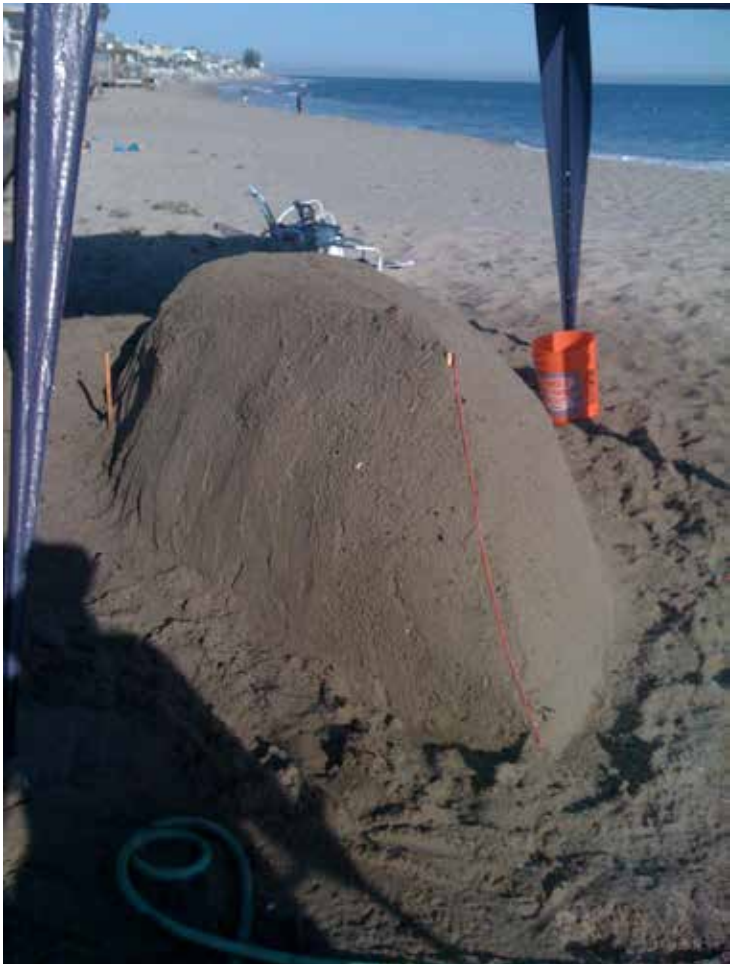
As the sand is piled
higher we start to form
it into an appoximatation
of the final form.

Keeping the sand wet be-
comes a crucial concern.

We use a garden hose and
sprinkler to keep the
parts not being worked on
from drying out.

Only wet sand remains wet. Any dry sand within the pile will remain dry as the water follows the path of the already wet sand.

Having reached the top of the stakes the sand pile is ready to be formed into the intended shape. The shape is derived from the Guppy 13 produced in Chatsworth California in the early 1970's by Melen Marine Ltd. Chatsworth is about 25 miles from this beach.



Having finished the
basic form it is im-
portant that it not
dry out. We protect it
under plastic sheeting
until we are ready to
apply a mixture of sand
and cement which will
hold the form together.

Now we are ready to begin coating the form with a final mixture of cement and sand.

Once the cement and sand mixture is applied the form is essentially complete.

A protective layer of
plastic is applied to the
completed form.

The first layers of chicken wire which will reinforce the concrete hull can now be applied.

As the chicken wire layers
build the ultimate shape
of the hull begins to take
form.

The layers of chicken wire are held together with wire to make a single tight layer of mesh about 3/4-inch thick.

The final form including the keel is now ready for the external layer of concrete.

The boat sailed by Bas Jan Ader when he disappeared somewhere between the United States and Europe was a Guppy 13.


"In Search of the Miraculous"

For the concrete hull
to achieve the required
flexability the metal
content is important as
well as the strength
of the concrete. The
concrete must be very
‘rich’ and the sand must
be clean and fine. We
sifted the sand before
mixing it in a 2:1 ratio
with white portland
cement.

We begin applying the
cement mortar beginning
at the bow.

We mix a total of 9
batches of concrete and
sand mortar over the
course of the day.

The mortar must be applied in one day to ensure that the hull cures as a continuous surface.

The hull was completed in
the late evening.

The concrete must remain wet to continue curing. Ideally it will not be allowed to dry out for at least 28 days.

The external skin and
form is now complete.

We continue to wet down
the hull as we prepare to
flip it over.

The sand is dug out from
under the shell of the
hull.

A first glance of the
internal surface is now
possible.

Flipping a boat estimated to weigh about 1000 pounds poses a significant challenge.

A solution was found.

The hull is turned onto a
mound of sand.

The sand mound is dug
out from under the hull
allowing it to slowly
right itself.

The boat finally rests
righted on a mound of
sand.

The top edge of the form
can now be removed and
the inside finished with
more mortar.

The inside and top edge are now complete and the hull is braced for transport.