

# The Houseboat Design Contest

February 14, 2016 – Steven D. Benner

## 1. Statement of How, Where and Why

### a) HOW it will be used:

The Tiny Houseboat (THB) will be moored in various locations and environments in the Northwestern United States, and will function as a moveable vacation home for family and friends. It will be as self-sufficient as possible, including electricity generation and storage, water collection and conservation, composting toilet and efficient thermal envelope (walls, windows, roof and deck) and appliances for heating, water heating and cooking. Photovoltaic panels will be mounted horizontally on the roof for simplicity, but can be tilted as the position of the THB is adjusted to allow for efficient collection at any orientation or latitude. An electric outboard motor will be used to move THB on water at slow cruising speed. The motor can be charged with shore power or batteries that store energy from the PV panels.

My inspiration for this project includes

*The pedal-powerd ESCARGOT Mark I and II were a series of small boat designs using pedal-powered screw propulsion. The ESCARGOT Mark I and II were developed for cruising on the sheltered waters of inland canals, and to fill the gap between canoes or kayaks and motor-driven cabin cruisers. They provided simple live-aboard facilities for two plus one, in association with quiet, non-polluting aerobic human-power propulsion. Philip Thiel, Designer*

*Tiny Houses*

*Campers*

### b) WHERE it will be located (and moved between)

The Tiny Houseboat (THB) will not have a permanent mooring, but will be moored or anchored in various locations and environments in the Northwestern United States. It will be trailerable and meet federal and state requirements for size and weight, to be towed by a light truck or full size SUV. When moored at commercial marinas, it will utilize shore power and water as necessary. When anchored in remote locations it will be self-sufficient for several weeks or longer.

### c) WHY you want it to do these things.

I have been around boats most of my life and have always been fascinated by their design and construction, especially of sail and human powered wooden boats. This passion combines with my professional skills as an architect, experience in sustainable building

design and an interest in small, efficient houses, to motivate me to design a project with which I can share and enjoy with friends and family.

## 2. Drawings, Specs & Requirements that match my Statement of How, Where and Why.

### Specifications:

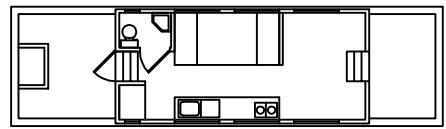
The TBH is 27' long and 8' wide. It provides 6'- 4" of headroom in the cabin. Materials and construction details are designed to be simple and inexpensive, more like a tiny house than a true boat. No boat building experience is necessary to build this boat.

The TBH has a 45-gal fresh water tank, 12-volt pressurized water system, and tankless, on-demand hot water. The water system as a four-season design and will be easily drained for trailering and winterizing. The built-in cassette toilet consists of two parts: a permanently installed toilet and a removable waste holding tank.

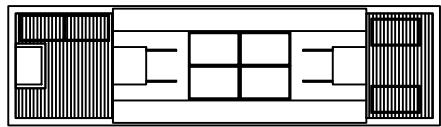
The electrical system has four (4) 100 watt solar panels, an inverter and charge controller, and deep-cycle batteries, and interior 120-volt outlets as well as low voltage outlets for use with low voltage appliances. Direct current (DC) electrical devices will be used over the usual AC powered devices whenever possible. There are always energy losses when converting from one form to another. By using energy directly from the solar panels or battery bank there are no conversion losses. And because energy efficiency is a higher design priority in DC devices, they offer the most electrically efficient options.

The well insulated cabin with its thermal-pane, tinted, low-e glass significantly reduces the cabin's heating and cooling requirements. The resulting moderate cabin temperatures during winter and summer allows the THB to be used in all but the coldest months. Extensive use of glass not only enhances views from inside the house, but also reduces the need for artificial lighting.

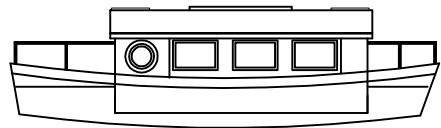
The shade cloth over the aft deck reflects most of the heat during the summer while keeping the deck and adjacent interior living spaces brighter with diffused light.



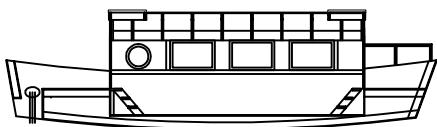
CABIN PLAN



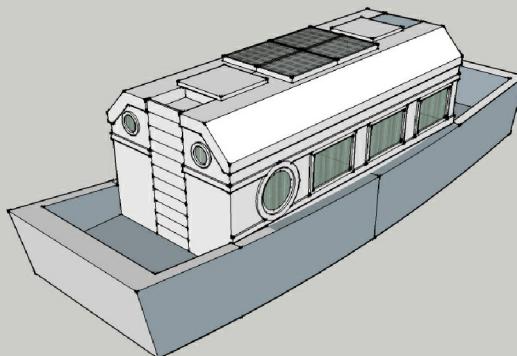
DECK PLAN



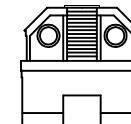
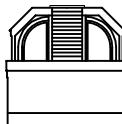
ELEVATION



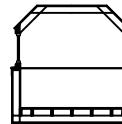
SECTION



PERSPECTIVE



ELEVATIONS



SECTION

A - 1

DATE: 2/14/2016

TINY HOUSE BOAT DESIGN  
STEVEN D. BENNER, ARCHITECT