

# Floating Docks, Rafts and Boat Wells

## Create Build-It-Yourself Floating Structures with Styrofoam™ Brand Buoyancy Billets

These instructions describe the materials needed and guidelines for building floating docks, rafts and boat wells/docks with DuPont™ Styrofoam™ Brand Buoyancy Billets.

Extremely buoyant and durable, the billet material is composed of millions of tiny non-interconnecting air cells – each serving as an independent buoyancy chamber. These billets won't lose their buoyancy, even if punctured. It takes only 1 cubic foot (0.03 cubic meter) of Styrofoam™ Brand Buoyancy Billets to float 55 pounds (25 kilograms).

Lightweight, the billets are easy to install. And they stay on the job year after year under normal conditions. They resist the attack of destructive marine growths, are unaffected by salt or fresh water, won't become waterlogged and won't corrode.

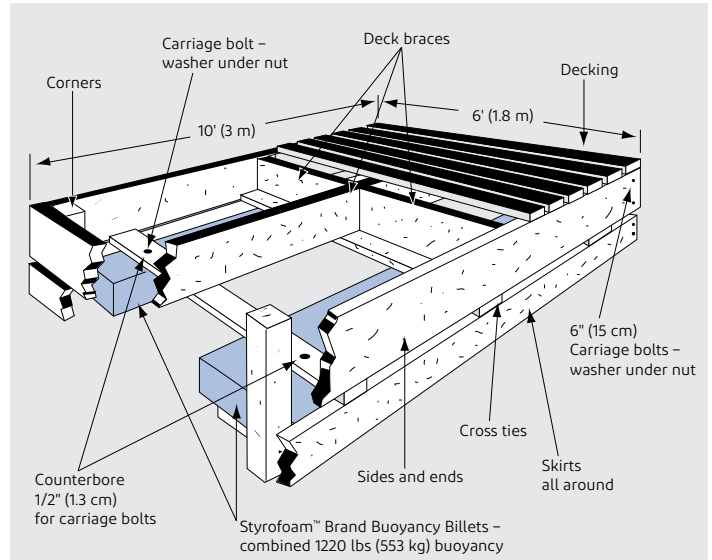


Figure 1: Floating Dock Plan

### Materials Checklist

- Handsaw
- Framing square
- Handheld drill
- Hammer
- Wrench
- Carriage bolts/washers/nuts (see Table 1)
- Treated wood\* (see Table 1)
- Nails (see Table 1)
- Scrap of 1/2" (13 mm) plywood

### Plans for a Floating Dock

These instructions describe the materials needed and guidelines for building a 6' x 10' (1.8 m x 3 m) floating dock. Additional sections can be made to increase the length of the dock. The materials needed for one section are shown in Table 1. The plans for the floating dock are shown in Figure 1.

Table 1: Materials for Dock

Part Name	Size, inch (cm)	Quantity Needed
Deck Braces	2 x 10 x 117 (5 x 25 x 297)	1
Deck Braces	2 x 10 x 33-3/4 (5 x 25 x 85.7)	2
Deck Sides	2 x 10 x 120 (5 x 25 x 305)	2
Deck Ends	2 x 10 x 72 (5 x 25 x 183)	2
Skirts	2 x 6 x 120 (5 x 15 x 305)	2
Skirts	2 x 6 x 72 (5 x 15 x 183)	2
Cross Ties	2 x 6 x 72 (5 x 15 x 183)	3
Decking	2 x 6 x 72 (5 x 15 x 183)	20
Skids	2 x 6 x 108 (5 x 15 x 274)	2
Corners	4 x 4 x 16-1/4 (10 x 10 x 41)	4
Galvanized Carriage Bolts with Nuts (or threaded rod cut to required length)	Diameter: 3/8 (0.95) Length: 16 (41)	6
Galvanized Carriage Bolts with Nuts (or threaded rod cut to required length)	Diameter: 3/8 (0.95) Length: 6 (15)	16
Galvanized Nails	Length: 3-1/2 (9)	6 lbs (2.7 kg)
Galvanized Washers	Diameter: 3/8 (0.95)	22
DuPont™ Styrofoam™ Brand Buoyancy Billets	10 x 20 x 96 (25 x 51 x 244)	2

\*Use treated wood (or wood naturally resistant to decay/insect attack). Wood should be clean, dry and free from oil residue.

## Construction Steps

1. Following the illustrations, create the framework shown in Figure 2. With the frame structure upside down, nail on the three cross ties and the four skirt boards.
2. Consulting Figure 3, lay the **DuPont™ Styrofoam™ Brand Buoyancy Billets** across the cross ties. Place skids on the foam as shown. To connect the foam, drill six holes through the skids, foam, and the cross ties. Insert the long bolts and reach under the cross ties to apply washers and nuts.
3. Turn the structure over and tighten the nuts to a snug fit.
4. Install lengthwise brace. Then install cross bracing.
5. Nail on deck boards using a piece of 1/2" (13 mm) plywood to space boards 1/2" apart (Figure 4).

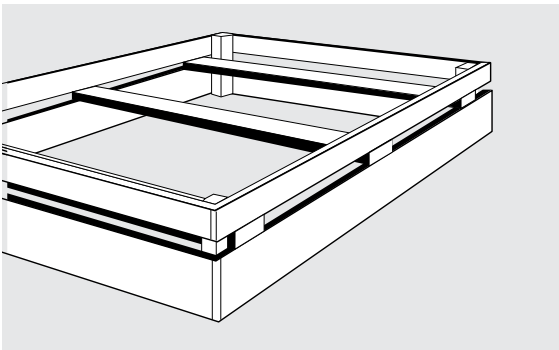


Figure 2: Bottom view of dock

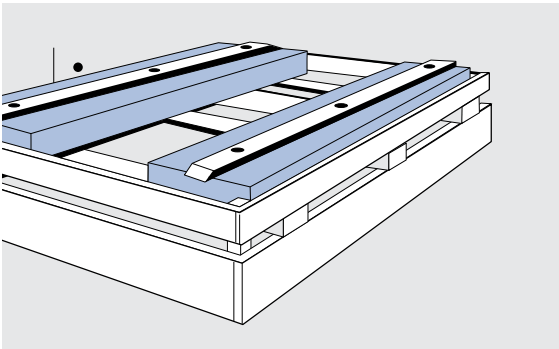


Figure 3: Attaching billets to bottom of dock

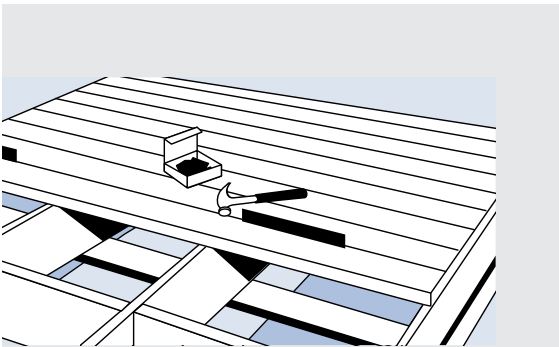


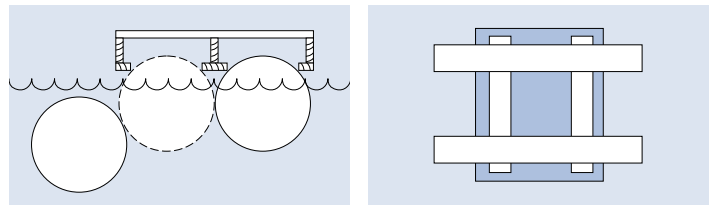
Figure 4: Attaching decking to top of raft or dock

## Replacing Existing Drums

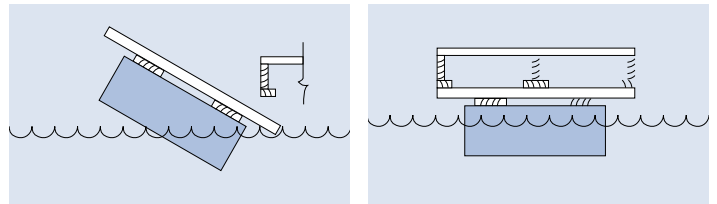
Easily replace drums on a boat well/wharf with buoyancy billets while the floating structure is still in the water. The rocking that is usually experienced in drum-floated structures is greatly reduced by using **Styrofoam™ Brand Buoyancy Billets**.

Plus, there are no hollow drumming noises to listen to at night. One 10" x 20" x 96" (25 x 51 x 244 cm) Styrofoam™ Brand Buoyancy Billet has an average buoyancy that is approximately 150 percent greater than a 55-gallon (208-liter) drum (Table 2).

## Drum Replacement Steps



1. Replace small sections one at a time. Sink and remove only two side-by-side drums at a time.
2. Build a crib from lumber – 2" x 8" (5 x 20 cm) boards are suggested. Fasten the crib to the Styrofoam™ Brand Buoyancy Billet. Cross members should be longer than the wharf is wide.



3. Tilt crib and push under wharf using the 2" x 8" (25 x 20 cm) boards as handles.
4. Center under the wharf. Secure with 16 pennyweight (16d) nails. Saw off protruding 2" x 8" handles.

**Table 2: Comparative Size and Buoyancy Data**

Product	Cubic Feet (Cubic Meters)	Approximate Weight, lbs (kg)	Approximate Buoyancy, lbs (kg)
<b>Billet Size, inch (cm)</b>			
7 x 20 x 96 (18 x 51 x 244)	7.7 (0.22)	14 (6.4)	425 (192.8)
10 x 20 x 96 (25 x 51 x 244)	11.1 (0.31)	20 (9.1)	610 (276.7)
7 x 20 x 108 <sup>(1)</sup>	8.6 (0.24)	16 (7.3)	480 (217.7)
10 x 20 x 108 <sup>(1)</sup>	12.5 (0.35)	23 (10.4)	690 (313.0)
10 x 24 x 96 <sup>(1)</sup>	13.3 (0.38)	24 (10.9)	730 (331.1)
<b>Drum Size</b>			
55-gallon (208-liter), 18-gauge	7.8 (0.22)	48.5 (22.0)	440 (199.6)

<sup>(1)</sup> Available in the U.S. only

## Plans for a Swimming Raft

These instructions describe the materials needed and guidelines for building an 8' x 12' (2.4 m x 3.7 m) swimming raft. The materials needed are shown in Table 3. The plans for the raft are shown in Figure 5.

### Construction Steps

- Following the illustrations, create the framework shown in Figure 6. With the frame structure upside down, nail on the four cross ties and the four skirt boards.
- Cut the three DuPont™ Styrofoam™ Brand Buoyancy Billets in half for the six shorter pieces shown in Figure 7.
- Consulting Figure 7, lay the sections of the Styrofoam™ Brand Buoyancy Billets across the cross ties. Place skids on the foam as shown. To connect the foam, drill six holes through the skids, foam and the cross ties. Insert the long bolts and reach under the cross ties to apply washers and nuts.
- Turn the structure over and tighten the nuts to a snug fit.
- Install lengthwise bracing first, then install cross bracing.
- Consulting Figure 4, nail on deck boards using a piece of 1/2" (13 mm) plywood to space boards 1/2" apart.

**Table 3: Materials for Swimming Raft**

Part Name	Size, inch (cm)	Quantity Needed
Sides	2 x 10 x 144 (5 x 25 x 366)	2
Ends	2 x 10 x 93 (5 x 25 x 236)	2
Deck Braces	2 x 10 x 141 (5 x 25 x 358)	2
Deck Braces	2 x 10 x 330 (5 x 25 x 76)	3
Skirts	2 x 6 x 144 (5 x 15 x 366)	2
Skirts	2 x 6 x 93 (5 x 15 x 236)	2
Cross Ties	2 x 6 x 96 (5 x 15 x 244)	4
Decking	2 x 6 x 96 (5 x 15 x 244)	24
Skids	2 x 6 x 134 (5 x 15 x 340)	3
Corners	4 x 4 x 16-1/4 (10 x 10 x 41)	4
Galvanized Carriage Bolts with Nuts (or threaded rod cut to required length)	Diameter: 3/8 (0.95) Length: 16 (41)	12
Galvanized Carriage Bolts with Nuts (or threaded rod cut to required length)	Diameter: 3/8 (0.95) Length: 6 (15)	16
Galvanized Nails	Length: 3-1/2 (9)	6 lbs (2.7 kg)
Galvanized Washers	Diameter: 3/8 (0.95)	28
Styrofoam™ Brand Buoyancy Billets	10 x 20 x 96 (25 x 51 x 244)	3

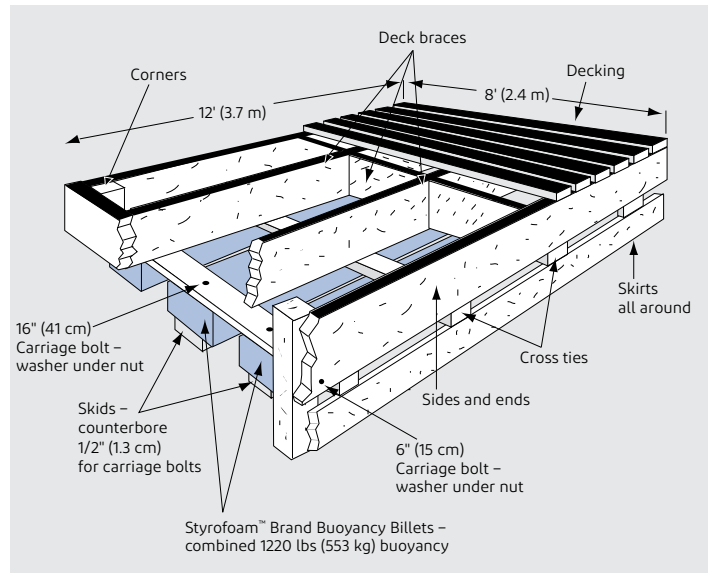


Figure 5: Swimming raft plan

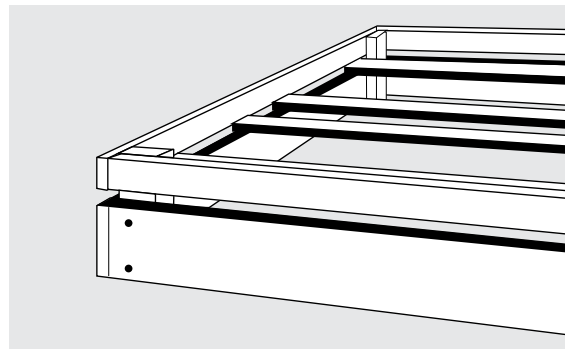


Figure 6: Bottom view of raft

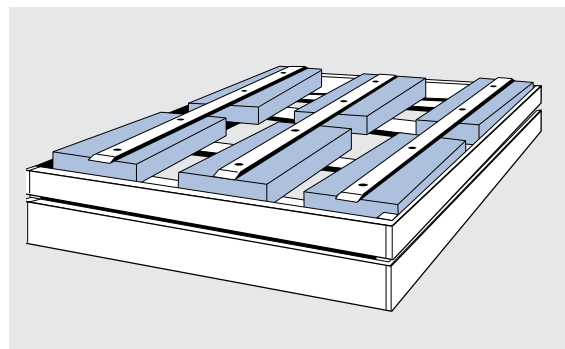
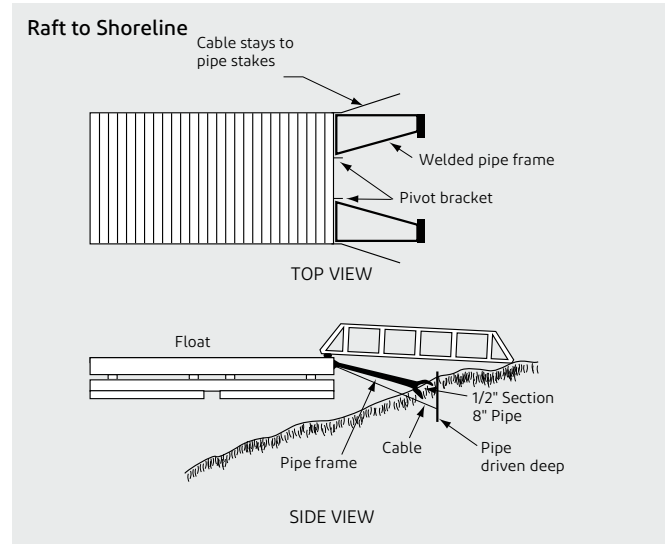
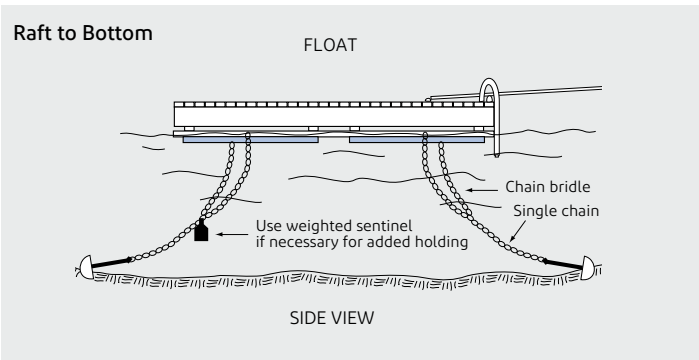
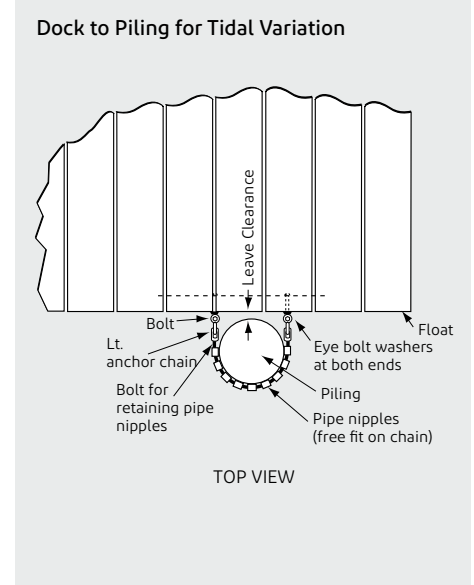
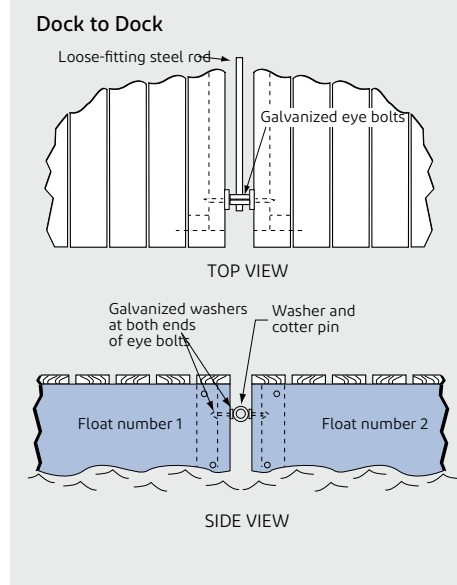
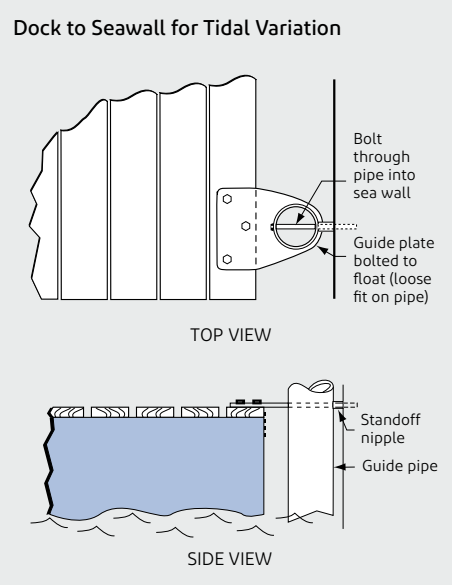


Figure 7: Attaching billets to bottom of raft

## How to secure floating docks and rafts



For more information visit  
[building.dupont.com](http://building.dupont.com)  
 or call 1-866-583-2583

### Precautions

DuPont Styrofoam™ Brand Buoyancy Billets are sold for use in marine applications only. Billets are combustible. Protect from high heat sources. Care should be taken not to expose material to open flame or other ignition sources. For more information, consult MSDS, call Dow at 1-866-583-2583 or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3711 in Canada.

The foam is subject to attack by some chemicals, including concentrated quantities of gasoline and oil. If this, or pollution by industrial waste is suspected, reaction of the foam should be checked prior to construction. In case of extreme pollution, additional protection – such as solvent-free epoxy coatings – may be required. Compatibility of the coating to the billet should be checked prior to applying the coating.

Skirt boards will protect foam from mechanical damage and degradation from ultraviolet light.

**NOTICE:** No freedom from infringement of any patent owned by DuPont or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where DuPont is represented. The claims made may not have been approved for use in all countries. DuPont assumes no obligation or liability for the information in this document. References to "DuPont" or the "Company" mean the DuPont legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. The buyer assumes all risks as to the use of the material. Buyer's exclusive remedy or any claim (including without limitations, negligence, strict liability, or tort) shall be limited to the refund of the purchase price of the material. Failure to strictly adhere to any recommended procedures shall release DuPont of all liability with respect to the materials or the use thereof. The information herein is not intended for use by non-professional designers, applicators or other persons who do not purchase or utilize this product in the normal course of their business.

**WARNING:** Rigid foam insulation does not constitute a working walkable surface or qualify as a fall protection product.

DuPont™, the DuPont Oval Logo, and all trademarks and service marks denoted with™, SM or ® are owned by affiliates of DuPont de Nemours, Inc. unless otherwise noted. © 2019 DuPont

43-D100753-enNA-1219 CDP