

**Strength:** The new system is as strong or stronger than any other monolithic system available in the world today. Further assurance of strength is in Bellingham Marine's industry-leading quality assurance programs, which meet or exceed the standards of the Precast Concrete Institute and ISO 9000.

**Monolithic:** The float connection is designed to reduce individual movement of the floats to the point where, in most conditions, the floats act as one. When the system acts as one monolithic unit it achieves ultimate stability, superior wave attenuation, comfort and safety for walking, and durability.

**Superior Load Distribution:** Loads are distributed widely throughout the system. When large wave or live loads are applied, the force is widely shared over the structure, giving the structure no critical part for which a failure would be catastrophic.

**Eliminates Metal Fatigue:** As the system reacts to wave and live loads, it will not fatigue the metal components because they are designed to "articulate" instead of bend. To test this, the Unibolt design was put through both computer modeling and physical testing never before seen in the industry. This connection is considered to have an indefinite life.

**Benign (Non-Catastrophic) Failure:** If a component does give way, it doesn't take the whole system with it. Other systems can have all float units loosen and independently cause destruction when a critical component fails. Not Unibolt. Most importantly, as with all Bellingham Marine products, the Unibolt system is site specifically designed to meet the requirements of your project.

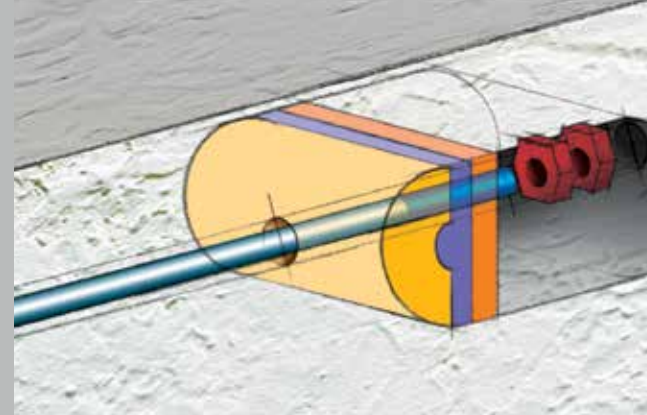
**Corrosion Resistant:** Metal components are made of special alloys and/or coatings that are highly corrosion resistant.

**Revolutionary New Unibolt System Passes Every Test!** Unibolt meets and exceeds all national and international design standards, and has passed some of the most demanding tests ever performed for a marina structural system. These tests were conducted by an industry-renowned structural engineering firm with over 35 years experience in the design of concrete floating dock systems. This firm has designed some of the most prestigious marinas in the world.

	Unibolt®	Cable Connected System	Other Bolt Systems
Ease Of Maintenance Without Separating Floats	Yes	No	No
Initial Cost	Lower	Higher	Higher
Eliminates Metal Fatigue	Yes	No	No
Corrosion Resistant Design	Yes	Less Corrosion Resistant	Sometimes
Redundant Structural Design	Yes	No	Sometimes
Eliminates Need For Special Tooling	Yes	No	Sometimes
Ability To Distribute Sheer Loads During Wave Action	Yes	No	No
Crack Control For Concrete Decking	Yes	No	No
Non-catastrophic Failure Modes	Yes	No	No
Made By Bellingham Marine, The World Leader In Marina Design	Yes	No	No

**Bellingham**  
**MARINE**  
*Innovative harbor and waterfront solutions*

**UNIBOLT**  
*Monolithic flotation system*



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**Engineering the State-of-the-Art  
Monolithic Flotation System**



# Unibolt® Revolutionary New Technology in Structural Engineering

## From The World's Most Comprehensive Marina Builder

In today's demanding market-place, marina developers want more choices than ever before when it comes to selecting a long-lasting, high-quality concrete floating dock system. One option that may provide the optimal solution for some marina sites is a monolithic concrete floating dock system. This type of design utilizes larger concrete modules that rely on the strength of the float module and its connection methodology to provide a stable, low maintenance system for marina owners.

Until now, monolithic systems have faced significant challenges dealing with the potential of metal fatigue and catastrophic failures if overloaded. Marinas in the future would have to overcome those concerns to satisfy today's discriminating owners.

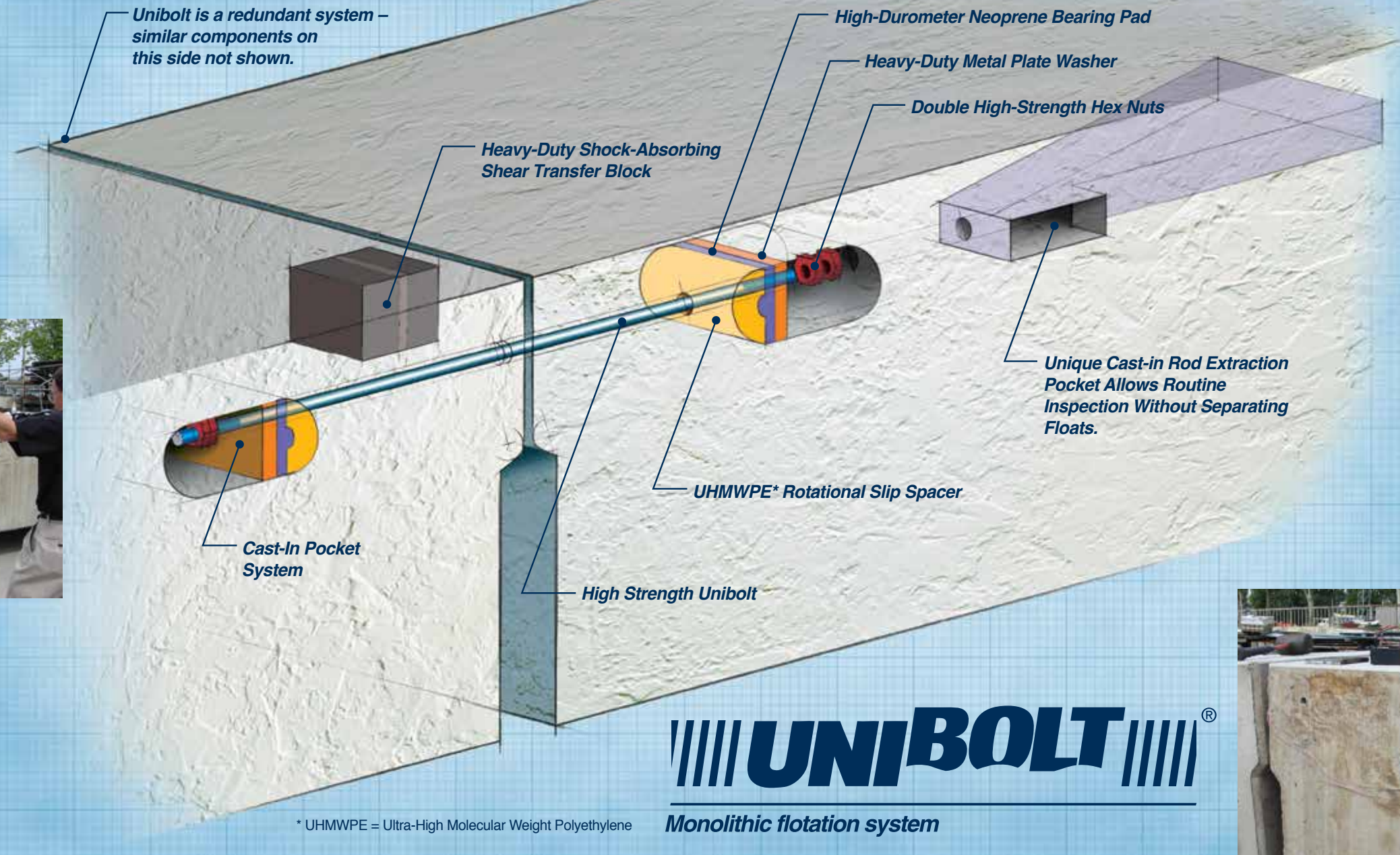
**The Marina of the Future is Available Today.** Bellingham Marine proudly introduces the new Unibolt flotation system. Unibolt from Bellingham Marine is the latest and most advanced of all monolithic systems on the market today. Unibolt is stronger, more resistant to catastrophic failure, and offers easier maintenance than any monolithic system anywhere in the world.

**Finally, a Connection System Without Metal Fatigue.** Unibolt is a significant improvement over cable-linked and other bolt- or plate-linked systems. Utilizing 45 years of design experience, our engineers have created the perfect "positive" linking structural system. With the introduction of Unibolt by Bellingham Marine, all other systems are obsolete.



Our design engineers were asked to start with a clean sheet of paper, and were given simple criteria. It had to be the strongest, most durable and easiest to maintain monolithic system anywhere, or we wouldn't build it. They succeeded in every way. Here's why your next system should be a Unibolt if a monolithic system is specified in your request for proposal.

## The Unibolt® System (Patent Pending)



\* UHMWPE = Ultra-High Molecular Weight Polyethylene

# UNIBOLT®

Monolithic flotation system

## How Unibolt Works

### Eliminates Metal Fatigue:

The Unibolt system utilizes a redundant, high-tensile, ultra-strong steel bolting system. This revolutionary design stabilizes the floats by compressing a set of heavy-duty shock-absorbing shear transfer blocks that join the floats. The termination plates at each end of the Unibolt connection are easily accessible from the sides of the concrete float. These bolted connections are allowed to flex and swivel, creating a system that articulates rather than bends. The result: enormous strength and no metal fatigue.

### Redundant Connections:

Each interface between floats is connected by two separate articulating bolt systems mounted internally within the floats. Failure of either side does not allow the floats to separate as long as either bolt is still intact. In addition, all finger-to-walk connections are achieved with a proven knee-bracket system

that provides redundancy of fasteners. This unique design progressively absorbs vertical and lateral loads as they are induced into the structure.

### Amazingly Easy to Install and Maintain:

This is the entire tool kit to remove the connecting rod from a Unibolt: an ordinary wrench. And most incredibly, you can remove and inspect each bolt without taking apart the system. That's because the floats remain connected by the redundant bolt on the opposite side. Unibolt's unique cast-in pocket system allows the Unibolt to be removed without separating the modules. Nothing could be simpler or easier.

### Built-In Ductility for Durability:

Unibolt has been engineered to provide ductility when under tension because of the alloy and heat-treating of the steel. This provides a built-in "shock absorber" at every connecting point in the system, further improving the durability of the system.



UNIBOLT® Revolutionary New Technology in Structural Engineering