Movable Bulkhead Systems

Information and Technical Data

Rigid and stable, Movable Bulkheads are one-piece, self-supporting, stainless steel construction that meets all FINA, U.S. Swimming and NCAA requirements.

Natare Corporation

Swimming Pools, Aquatic Facilities and Water Features

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www.natare.com

Natare Corporation is one of the most respected suppliers of equipment, systems and services for commercial and public swimming pools, water features and aquatic recreation in the United States and around the world.

Natare offers a comprehensive selection of equipment and systems, in combination with consulting, engineering and technical services. Whether it's design, construction, renovation or operation, Natare is the key to state-of-the-art aquatic facilities around the globe.

The following information is a collection of topics pertaining to MicroFlo® Vacuum Sand Filtration Systems. These documents include product support information as well as typical specifications and drawings.

We invite all inquiries concerning aquatic or water feature development, planning, construction or renovation. Additional information can be found on-line at **www.natare.com** or you may contact us at **(800) 336-8828.**

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Natare moving bulkhead systems for recreation and competition

Natare's Movable Bulkheads are the world's finest movable bulkhead system designed specifically for competition, recreational and leisure aquatic facilities. Precisely engineered to fit your aquatic facility, Uniwall Movable Bulkheads quickly convert your facility from a single-use facility to a multi-structured, multi-tasking, multi-use facility.

Imagine being able to simultaneously host swim lessons and aqua aerobic classes in the morning; dual competition swim meets (imperial or metric) in the afternoon; and scuba diving classes and diving practices in the evening. Natare's Uniwall Movable Bulkheads give you the flexibility and freedom that you have only dreamed about up to this point.

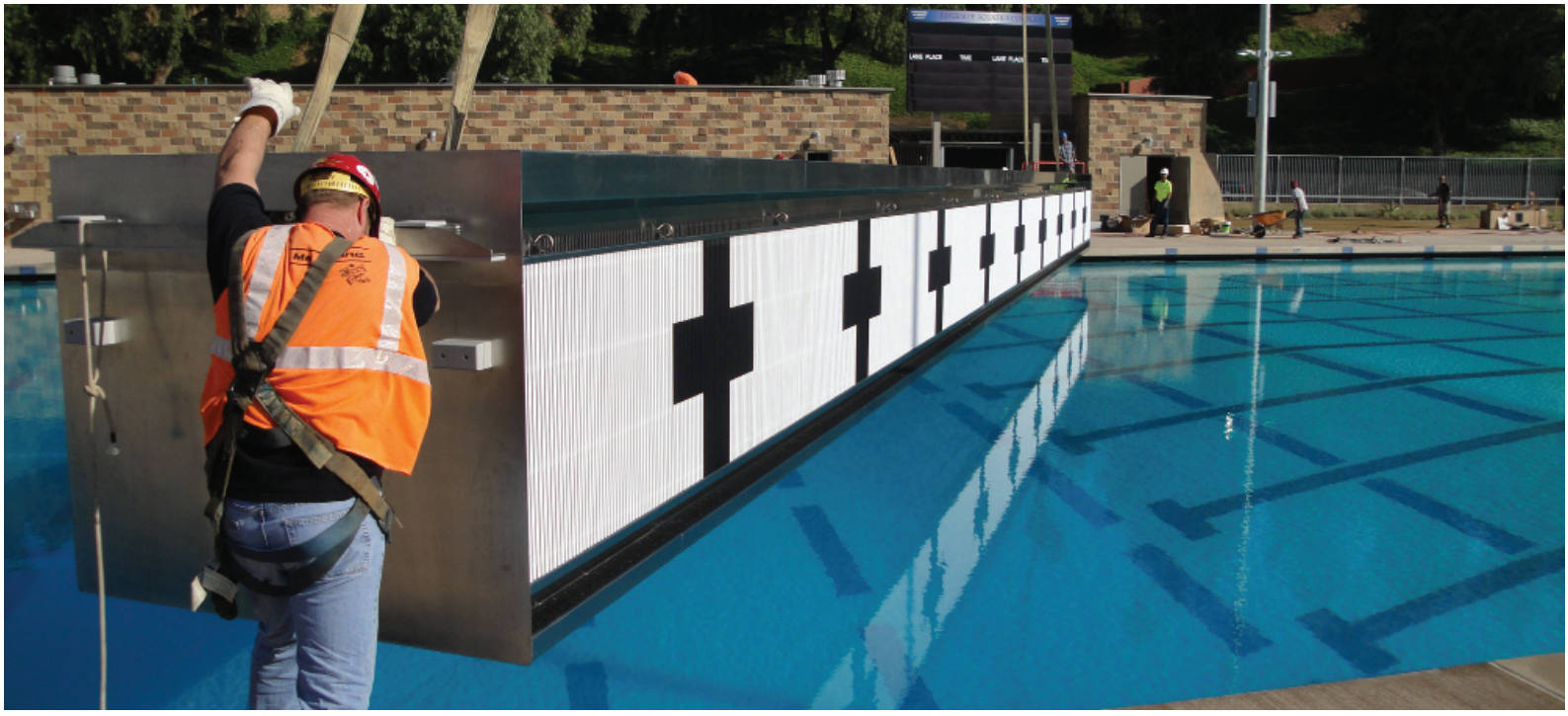
Natare bulkheads can be moved horizontally along the length of the pool to change the pool length from meters to yards and can even be moved vertically to store the bulkhead in a pool bottom access.

Natare Movable Bulkheads can also be installed as a fixed wall to permanently divide a pool into different areas or lengths, or designed to be removed from the pool to accommodate seasonal pool needs.

Rigid and stable, Movable Bulkheads are one-piece, self-supporting, stainless steel construction that meets all FINA, U.S. Swimming and NCAA requirements. The box truss construction minimizes vertical and horizontal deflection and results in a bulkhead capable of supporting over 100 pounds per square foot.

The top and sides of the bulkhead are covered with ASTM certified slip-resistant GPM grating that provides complete flow-through for wave absorption which dissipates rebounding, maintains proper water circulation and provides a safe and secure walking and turning surface.

Installation of Natare Movable Bulkhead System at Riverside Aquatics Center, California.



There are significant benefits to selecting a Natare Moving Bulkhead for your facility. Natare Corporation has constructed and installed some of the largest and most sophisticated bulkheads in the world, and these bulkheads have proven capabilities for international swimming competition. Natare Moving Bulkheads have been part of more world records than all other manufacturers combined. More importantly, Natare Moving Bulkheads are economical and cost effective. Our years of experience and efficient manufacturing allow Natare to offer high-quality moving bulkheads at significant savings over other manufacturers and suppliers of similar products.

- Natare Moving Bulkheads provide complete flow-through capability to reduce the rebound and wave effect of swimming competition. No closed sides to create rebound. The fastest times are achieved in pools with bulkheads having flow-through sides rather than closed or solid walls.

- A Natare Moving Bulkhead is perfectly safe. Our stainless steel truss system can withstand many times the working load of the system. No bracing or additional supports are required, even when the pool is empty. There are no dangerous openings at water level, and no fiberglass to deteriorate or cause skin irritations

- The surfaces of a Natare Moving Bulkhead are permanently slip resistant. No paint, coatings or gel coat to deteriorate; no replacement treatments are required to maintain the slip-resistance. The slip resistance is permanently built-in!

- A Natare Moving Bulkhead is rated for competition and will not deflect under the loads imposed by swimmers or by racing lanes. We do not require that the bulkhead be secured to the opposite end wall for competition, as do many fiberglass or lightweight, stainless steel bulkheads.

- Natare Moving Bulkheads are durable and almost maintenance-free. A 15-year warranty, extended service life and maintenance-free construction are standard. The exterior does not require coating or painting. Our bulkheads are easily maintained and repaired in the field.

- Natare Bulkheads are constructed from premium materials, including stainless steel and PVC, two of the most common and corrosion resistant materials found in commercial and public swimming pools. Natare bulkhead materials are proven in well over 250,000 installations around the world. With a Natare bulkhead, there are no problems with crazing, cracking, blistering or loss of rigidity.

- Natare Moving Bulkheads comply with all current FINA, U.S. Swimming, and NCAA requirements.

- Natare Moving Bulkheads are quickly and easily moved from position-to-position by no more than two persons.

- Complete installation requires only one day and can be completed at any time—even when the pool is full of water. No interruptions to schedule construction, and easy installation in existing facilities.

- The exterior cladding of the bulkhead is an especially compounded exterior grade PVC composite with an integrally machined surfacing that is ASTM 1028C slip-resistant certified. The permanent white color is incorporated in the bulkhead cladding, and will not wear off or require re-coating. The exterior surface is easy to clean and maintain.

- Natare Moving Bulkheads provide a dimensionally uniform vertical pool wall. A convenient, continuous and hold is provided at the water line with flow through openings to the rear. A toe ledge can be provided at the bottom of the bulkhead.

Designing Mechanical Systems

- An integral cable tray can be included for quick and easy installation of timing system cables.
- A complete selection of starting platforms, railings, posts and anchors can be provided with a Natare Bulkhead.
- Natare Bulkheads can be delivered anywhere in the world.
- Natare Bulkheads can be motorized for easy, automatic positioning.
- Natare Bulkheads can move vertically as well as horizontally to allow storage in a pool bottom niche or recess.
- Our Bulkheads can be configured for deck-level, semi-recessed or fully-recessed gutter configurations (pool surrounds). The deck-to-water dimensions, configuration of the upper trim sections and even the shape of the bulkhead can be tailored to the design requirements of an existing facility or the requirements for new construction.

Bulkhead weight is distributed uniformly across the proprietary carriage system, thus extreme point load on a pool deck or gutter is eliminated. A Natare Moving Bulkhead can be installed into virtually any existing pool facility or easily incorporated into the design of a new facility.

When you specify and purchase a Natare bulkhead, you get a complete bulkhead system, backed by a team of professionals who know swimming and aquatics. Natare understands the needs and requirements of multipurpose aquatic facilities and provides bulkhead solutions that are designed right, work right and are delivered on-time and on-budget. We have been building bulkheads since 1980!

- Natare furnishes all material, equipment, supervision, insurance, and other items necessary to provide a complete working bulkhead system.
- Design drawings and specifications are submitted under the seal of a registered professional engineer for approval by the architect and consultants.
- Natare coordinates all phases of the design and installation with the architect, pool consultants, general contractor and other contractors on the site.
- Natare provides a ten (10) year Manufacturers Warranty against defects in materials or workmanship for all components of the bulkheads. The stainless steel truss will be warranted for a period of fifteen (15) years. These warranties will include parts, labor and materials to repair or replace any defective items during the term of the warranty.
- We provide a five (5) year Maintenance, Service and Inspection Agreement for the sum of twenty-five hundred dollars ($2,500.00) per year. This Maintenance, Service and Inspection Agreement will include required parts, equipment, and labor for the proper maintenance and operation of the bulkheads for a period of five (5) years after acceptance by the owner and may be renewed for additional periods of five (5) years at the end of each five-year period.

Natare Moving Bulkheads are custom designed and configured to meet the needs of your program and facility. Each Bulkhead is unique and handcrafted for your pool. Budget estimates, conceptual details and a range of services are available to assist you in selecting your Natare Moving Bulkhead.

University of Florida Aquatic Center Project:

The University of Florida Gators are well aware of the critical role bulkheads play in their O'Connell Center aquatic complex programming, so when it became time to replace their old, obsolete bulkheads they looked to Natare Corporation for advice and assistance.

Widespread and readily apparent deterioration to the bulkheads was easily observable; their condition detracted from the overall appearance of the facility. Over the past several years, the bulkheads had become progressively harder to move or position, raising concerns with the structural capacity of the units. Serious questions had been raised as to whether the bulkheads continued to be suitable for training or competitive swimming. Clearly, the bulkheads needed to be replaced.

At time of inspection, review of the building access and site conditions were completed so that a preliminary program for removing and reinstalling bulkhead structures could be developed. Limited access to the facility presented a significant logistics challenge. Natare typically builds, transports, and installs movable bulkheads in one piece. Gaining access to this facility was a monumental undertaking. The roof at the O'Connell Center is air supported, and as such a revolving door was the only access. The challenge was to install the moving bulkheads without compromising the air pressure that supported the roof of this massive complex.

The project timetable presented yet another obstacle. The complete program for preparation of bulkhead design documentation, program approval, fabrication, and installation along with the removal of their existing units would require 120 to 150 days. The University has a busy programming schedule, and needed the facility to operate as normally as possible with little disruption to daily operations. The bulkheads were scheduled for installation over the December 1997 holiday break–110 days after project approval.

Accessibility was addressed by removing the existing doors and constructing a temporary airlock through which the new bulkheads and appropriate equipment could move. The new bulkheads were completely assembled into three sections and delivered to the job site. The sections were then lifted with a crane and placed into position to be inserted into the building through the airlock. Fork trucks, floating dollies and rigging equipment were used to move the bulkheads from the staging area through the airlock and onto the natatorium deck where they were reassembled, cleaned and adjusted, then placed into the pool.

The two 65 foot long moving bulkheads were furnished with certified slip resistant gratings, starting platforms and anchors, guard rails and targets, and bulkhead anchorage systems. Natare finished the project by providing the University staff instruction and training in the operation, maintenance and movement of the bulkheads. The O'Connell Center project was successfully completed ahead of schedule.

Bulkhead Strength and Rigidity

The strength and rigidity of a bulkhead determines how well it can sustain the anticipated loads encountered in competition and recreational use. In designing a bulkhead or evaluating the performance of a bulkhead, two weights or "loads" are generally considered. While all Natare bulkheads are designed and constructed to safely sustain a load of 100 pounds per square foot (488.2 kg/m^2) and will actually support even a greater load, due to the inherent safety factor in the design of our systems, this design criteria does not fully predict the performance of a bulkhead in use. Understanding the performance of a bulkhead requires a more in-depth discussion of these concepts.

- The "dead load" is the total weight of the structure. This weight includes all parts and pieces of the structure as well as any items subsequently mounted to or placed in the bulkhead, such as starting platforms, goals, benches and similar items..
- The "live load" is an arbitrary weight selected as the design load to be encountered by the bulkhead in use, generally expected to be people. This weight is expected to be reasonably uniform across the structure and is referred to as a "uniformly applied live load".
- The combination of dead load and live load is the "total load" which the structure must safely carry. "Deflection" or the downward sag of the bulkhead structure at the center is the criteria which measures strength and performance at a particular total load.

Natare bulkheads are designed to safely support a load of 100 pounds per square foot (488.2 kg/m^2) of uniformly applied live load on the top surface, in addition to the dead load of the bulkhead. This weight carrying capability can be compared to a normal office building floor which is designed for only 40 pounds per square foot live load. Under a 50 pound per square foot live load, the structure of a Natare bulkhead is designed to deflect no more than 3/4" (19.05 mm) or the span divided by 1000, whichever is less. In water, with the accompanying benefit of buoyancy, the bulkhead provides a deflection of 1/2" under a 100 pound per square foot load (488.2 kg/m^2) or a value equal to the span divided by 1800, whichever is less.

While other bulkheads may claim to provide equal deflection, often such bulkheads are built with camber or upward bow in the bulkhead of one inch (25.4 mm) or more. These bulkheads will represent the deflection from the point at which the bulkhead has already bent or bowed an inch or more to meet the horizontal plane. The true deflection of such a bulkhead may easily exceed two inches (50.8 mm). Natare Uniwall™ bulkheads begin as perfectly flat bulkheads with a true deflection under maximum loading conditions load of no more than 3/4 inch (19.05 mm).

Span length divided by a value or L/X is commonly referred to as the vertical deflection ratio. Standard building design generally calls for a vertical deflection ratio of L/240 under the full or total load and a ratio of L/360 when just live load is considered. Tower cranes or other heavy lifting structures are generally built to a deflection ratio of L/600 to a high as L/1000. The vertical deflection ratio is important when considering a bulkhead structure as it provides a clearer understanding of the strength and rigidity of our systems. The following examples may be useful in evaluating the performance of a Natare System when compared to others.

For example:

A bulkhead for a 75 foot wide pool is to be designed to the criteria of a 3/4" deflection or the span divided by 1000, whichever is less. (The smaller the value, the stronger or stiffer the bulkhead structure.)

Thus: The span of length is 75 feet — 75 feet = 75 x 12 or 900 inches — 900 inches/1000 = .90 inches

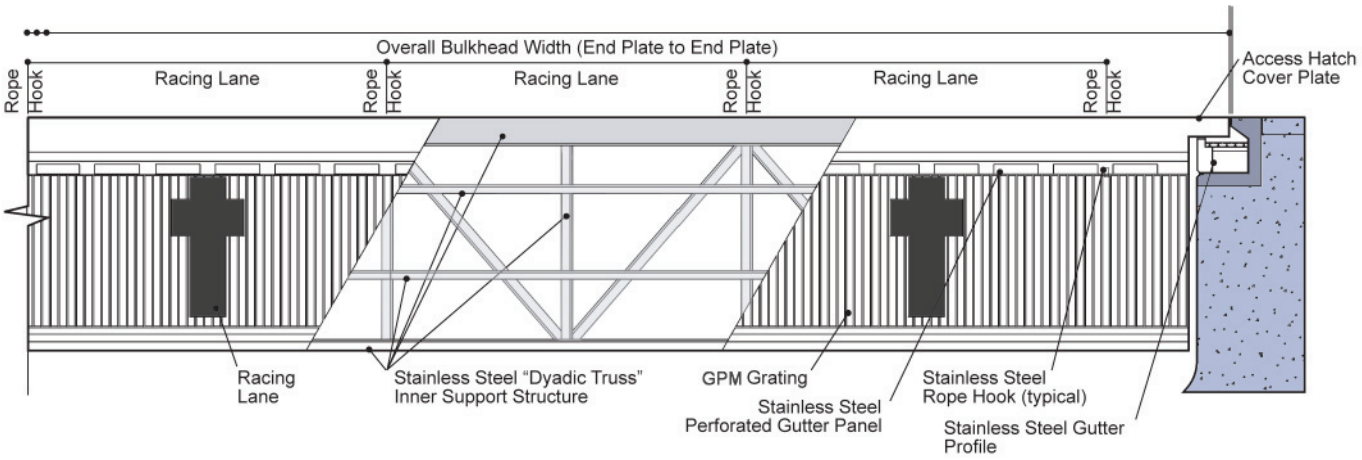
For a 3/4 inch deflection at this span; — 75 feet (900 inches)/X = .75 or 3/4 inch

X = 900/.75 — X = 1200

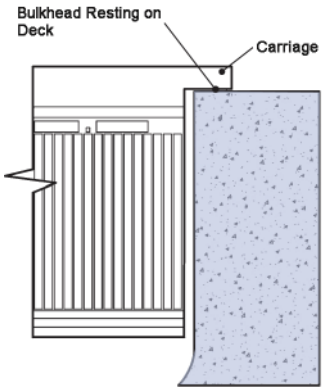
The deflection ratio for a Natare Bulkhead is then L/1200.

When evaluating the design and performance of a bulkhead, it is critical to know the actual design load rather than "normal loading conditions".

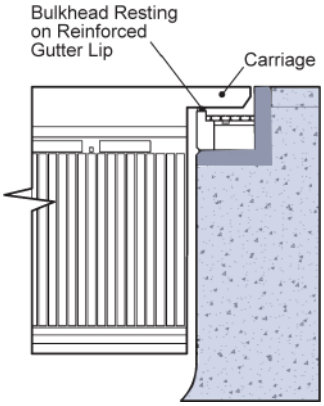
Typical Partial Bulkhead Elevation



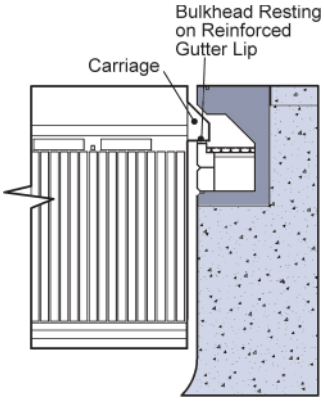
Typical Bulkhead and Perimeter Configurations



Bulkhead resting on deck



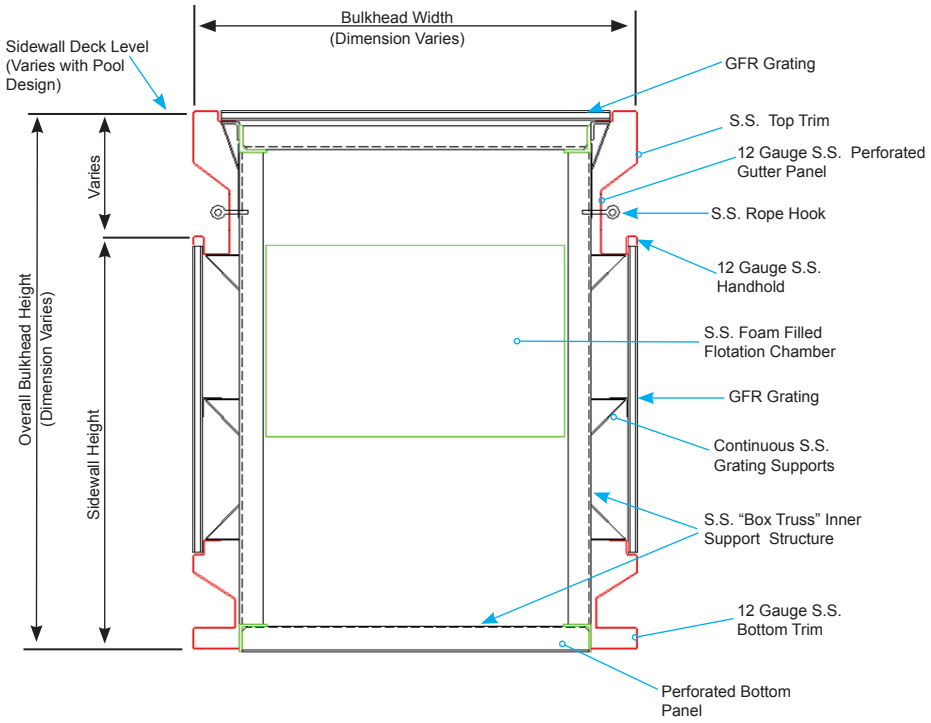
Bulkhead on a Semi-Recessed Gutter



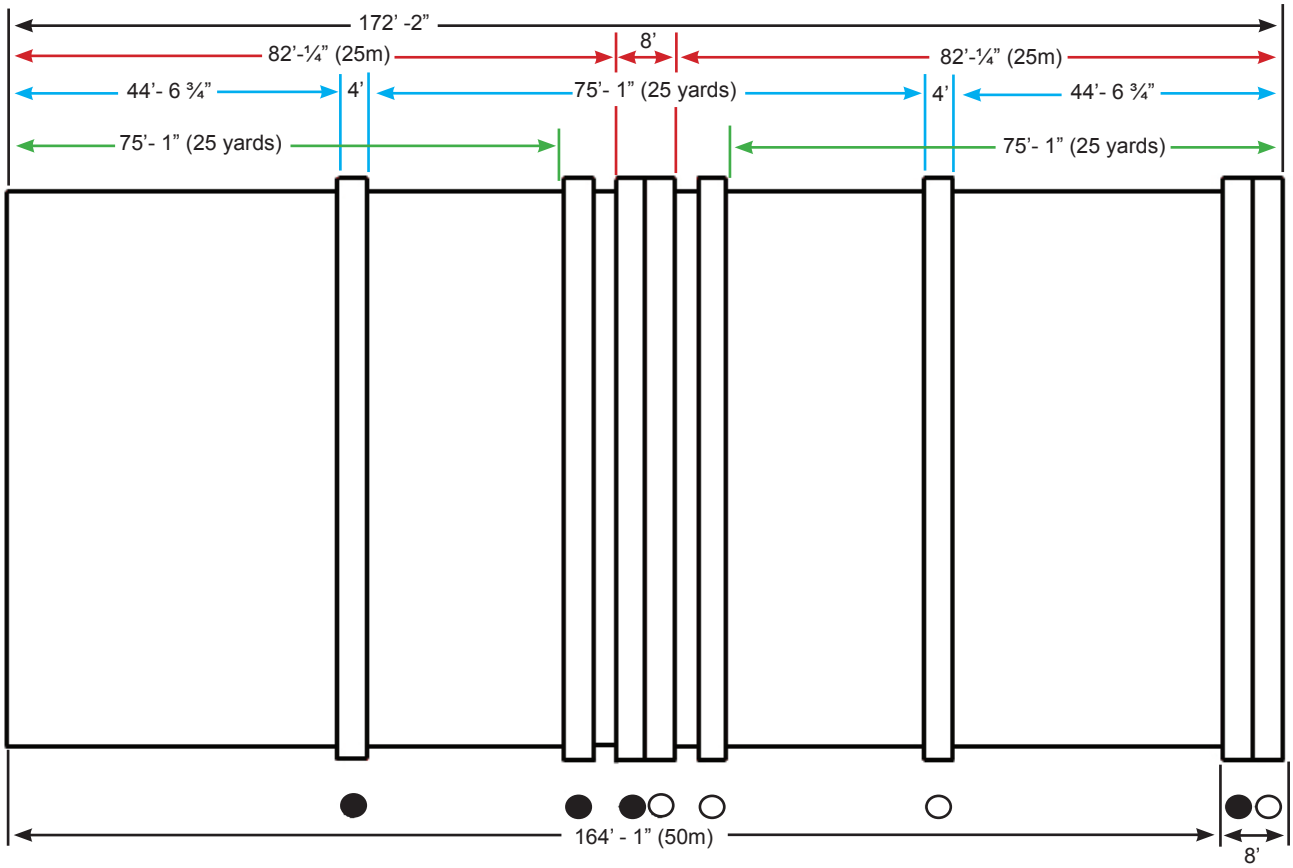
Bulkhead on a Fully-Recessed Gutter

Notes:

1. There shall be no protrusions or obstacles in or on the walls which might interfere with the bulkhead's movement (i.e., lights, speakers, supply inlets, etc.).
2. The Pool Contractor shall insure that the pool side walls are dimensionally correct, straight, true and parallel. Without this exactness, the bulkhead will not function as desired.
3. The pool shall be filled with water at the time of installation.
4. The bulkhead is not designed to be used as a work platform.
5. Every bulkhead shall be custom designed for each individual installation.
6. The bulkhead's locked locations are determined by the standards of FINA, USS, NCAA and/or NFSHSA and their governing body.
7. Bulkhead anchors shall be provided as required.
8. Anchor locations shall be coordinated with depth markings.

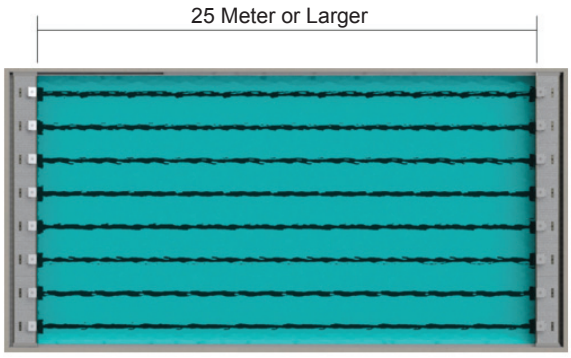


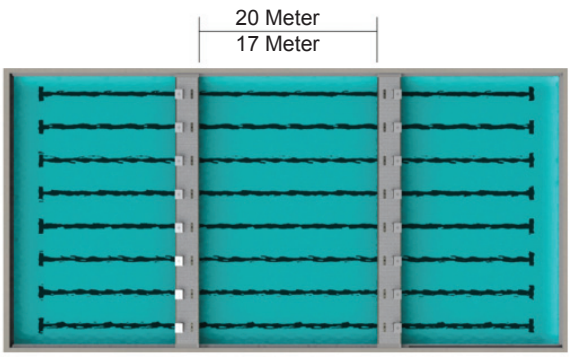
Bulkhead Cross Section

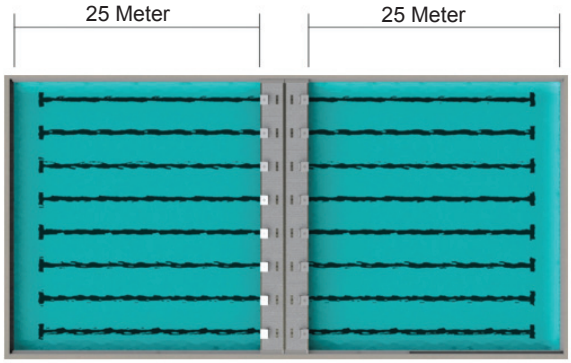


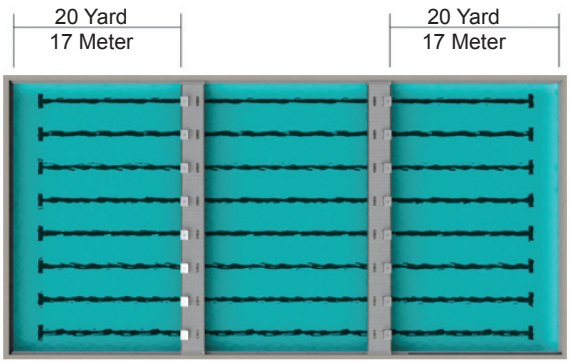
Dual Bulkhead Positions

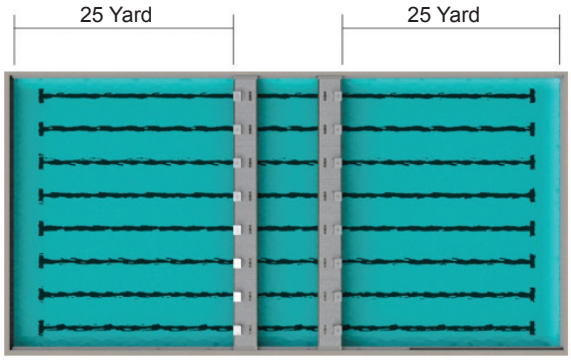
Typical Locations of Double Movable Bulkheads

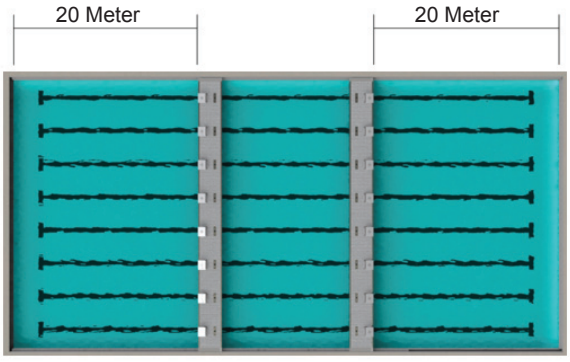






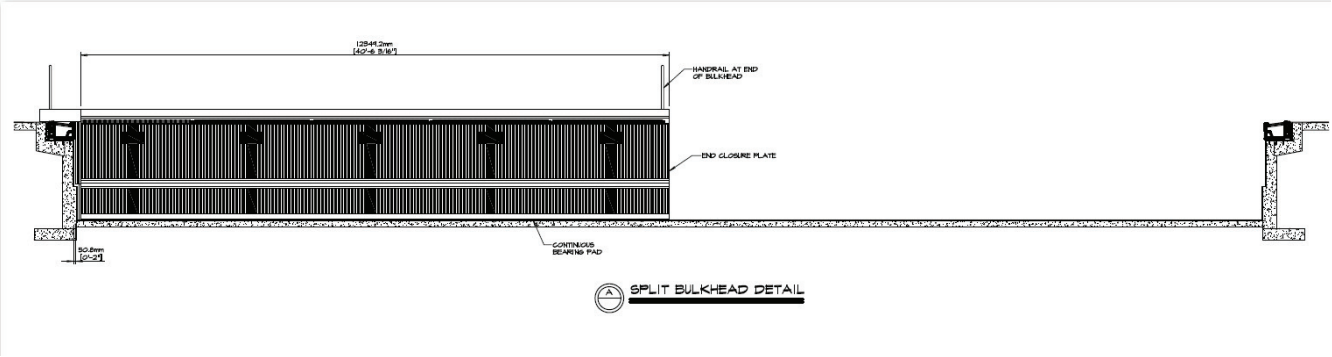




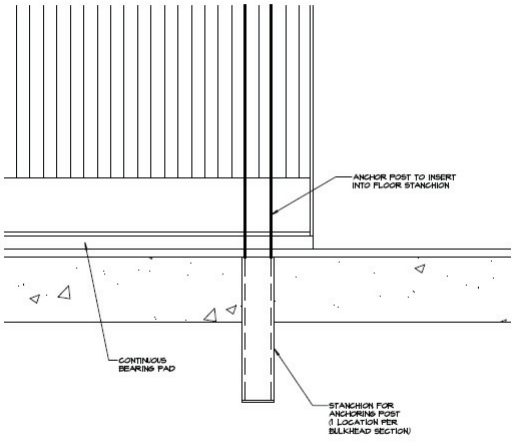


Split Movable Bulkhead System

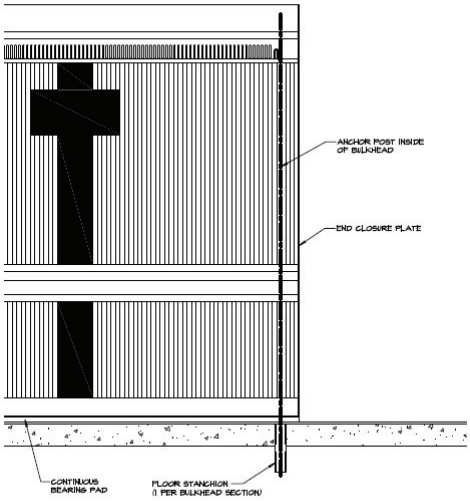
Now offering more options for your programming needs. Natare is proud to also offer a Split Movable Bulkhead System. Imagine the possibilities when you take your typical single full course bulkhead and split it into two. Our system has a special anchoring system that will allow it to be placed in a variety of pre-determined locations along the pool lanes. It is now possible to offer a 50 meter course and 25 yard course at the same time!



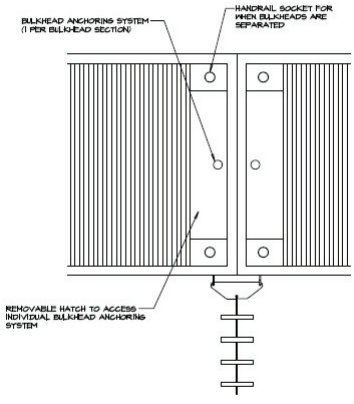
A SPLIT BULKHEAD DETAIL



C FLOOR ANCHORING DETAIL

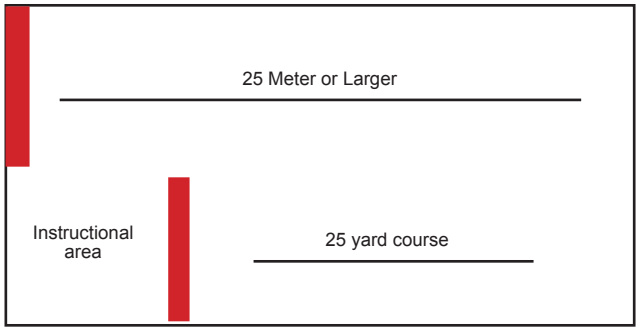


B ELEVATION ANCHOR DETAIL

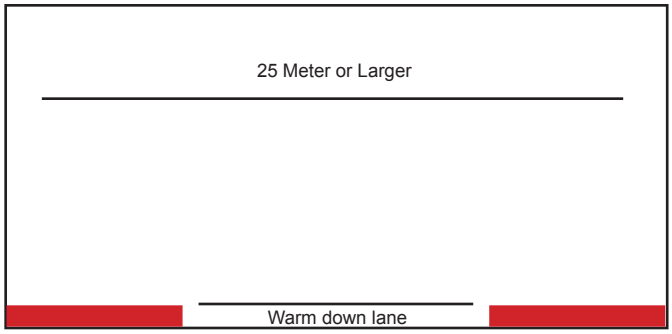


D PLAN VIEW REMOVABLE HATCH

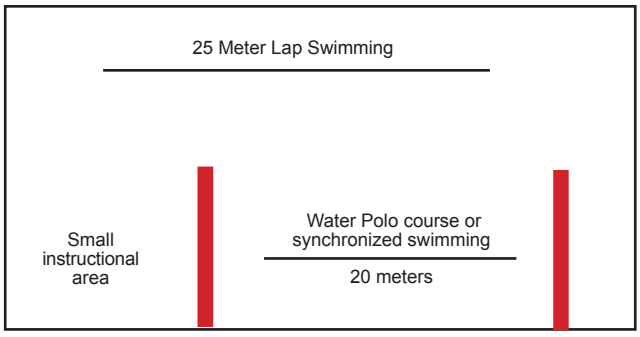
Typical Locations of a Split Movable Bulkhead



Practice or Competition



Practice or Competition



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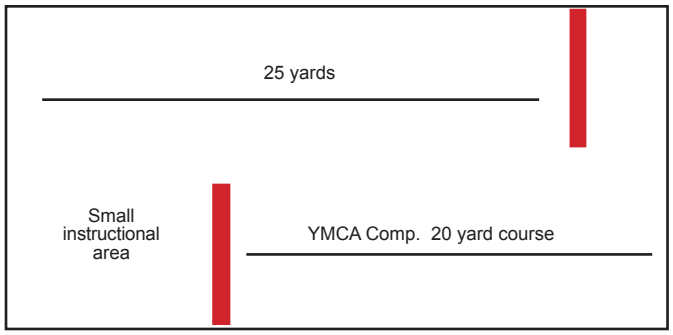
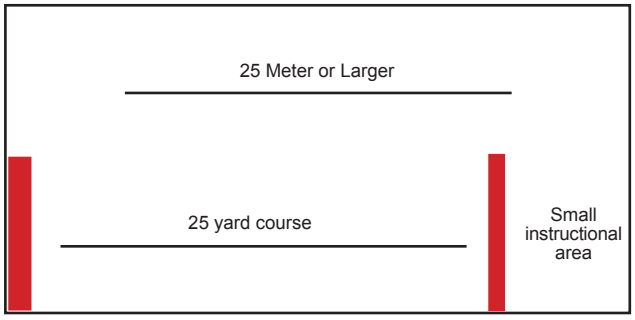
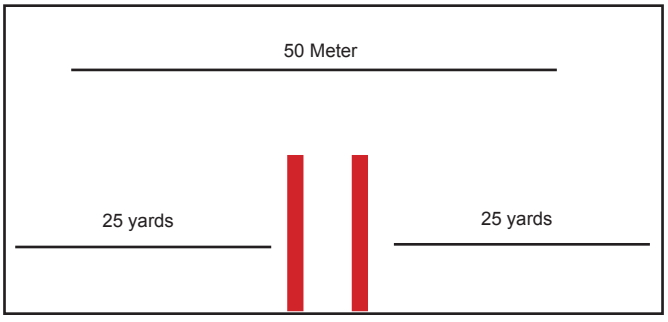


Practice or Competition



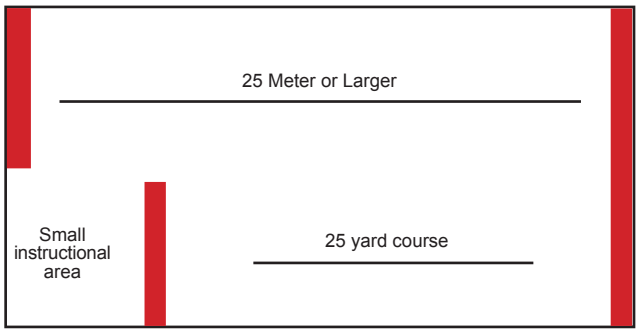
Practice and Lap swimming



Competition

Typical Locations of Double Split Movable Bulkheads

For 25 Meter or Larger Pool Lengths



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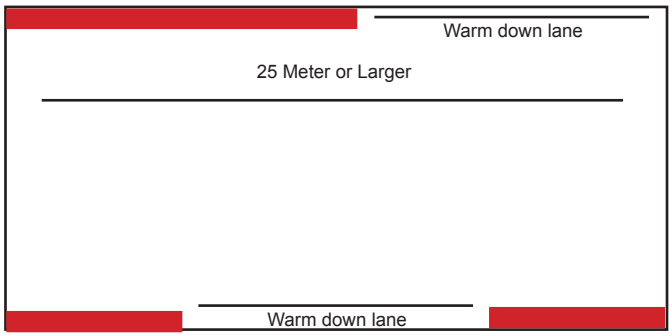
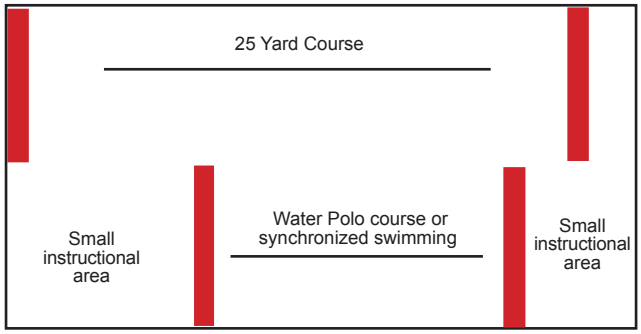


Practice or Competition



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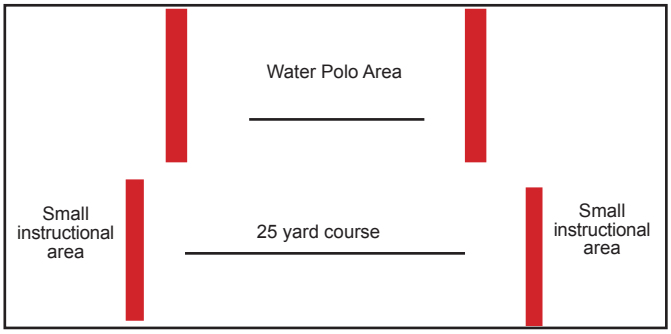

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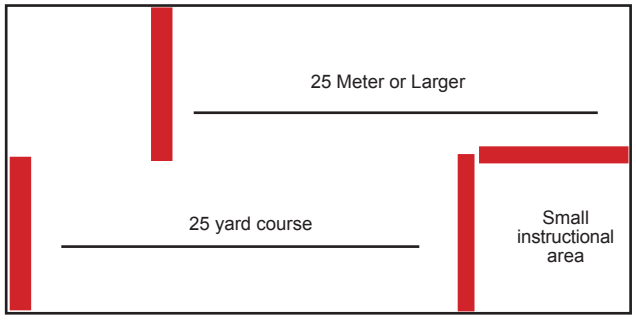
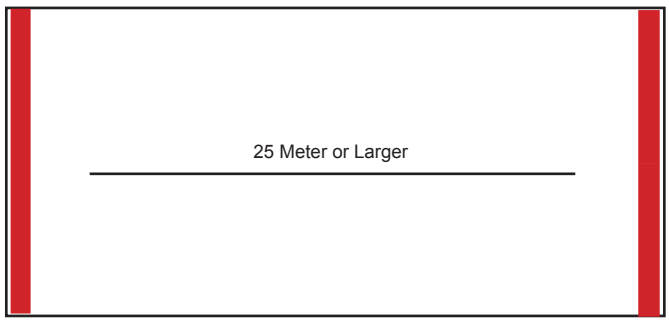


Practice and Lap swimming



Competition

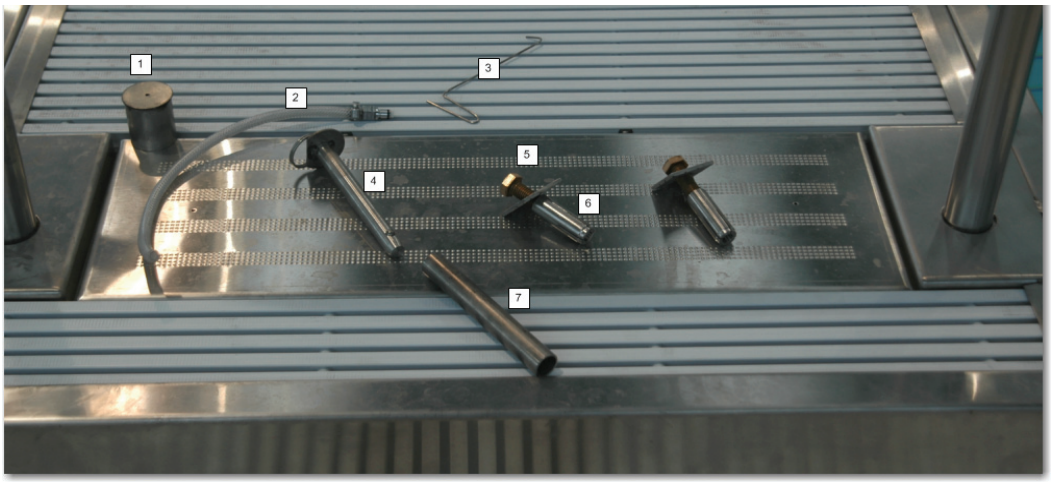
Moving and Ancohoring A Bulkhead

Natare's Movable Bulkheads should only be used or move when the water is at the proper water level for the pool's design. Operating your pool at higher or lower water levels can interfere with proper operation and cause damage to the bulkhead or injury to swimmers.

When the bulkhead is moved to a different anchoring position, the following steps should be followed:

1) All swimmers should be asked to leave the pool area.
2) No persons should be on or around the bulkhead, other than personnel involved in moving or positioning the bulkhead. No one should stand or walk on the bulkhead while it is being moved.
3) Detach all racing lanes, safety lanes, and other devices attached to the structure's sides.
4) Remove any anchor covers from the desired relocation position.
5) Remove any obstacle in the path of the bulkhead between the present location and new anchoring positions. This may include ladders, stanchions or starting blocks.

Detach bulkhead from the current anchoring position. Never force the anchoring bolts or day-pins. Use only approved tools and socket wrenches.

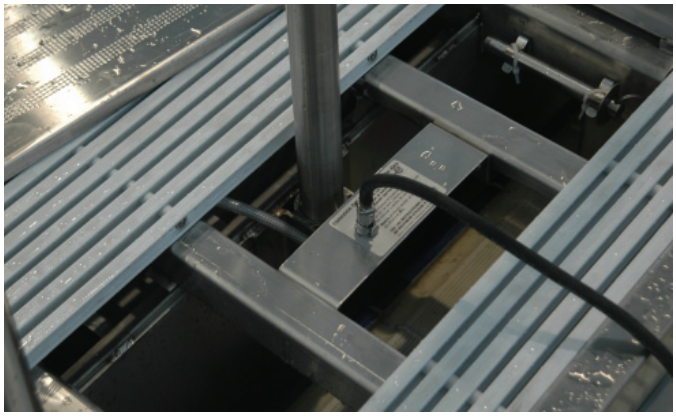


Your bulkhead uses the Natare variable buoyancy inflation system, and you must observe the following steps.

1. Remove the anchor socket cover.

2. Remove the anchor bolts or day-pins first!!

3. Once the anchor bolts or day-pins are removed, attach the compressor hose quick connect to the inflation port and slowly add air until the bulkhead rises to the desired level indicating that the weight is off the bearing pads. Only when these steps are accomplished proceed to SLOWLY move the bulkhead forward towards the new anchoring position as follows:



4. Insert the push bar into the anchor socket at each end of the bulkhead.

Moving and Ancohoring A Bulkhead (Continued)

5. One person should be positioned at each end of the bulkhead. Gently push forward on the push bar towards the direction the bulkhead is to be moved. Steady uniform force should be applied. If the bulkhead rotates forward, you are pushing to forcefully. Move the bulkhead SLOWLY.

6. Keep the bulkhead perpendicular to the pool wall at all times.

7. Be prepared to stop the bulkhead at any time in the event a problem or obstacle should arise.

8. Once you have moved the bulkhead to the desired anchoring position, open the bulkhead buoyancy chamber air release by inserting the air release tube and allow air to escape. The bulkhead will settle into place on the gutter or pool surround.

9. Once the bulkhead is firmly settled, anchor the bulkhead in the new position using the anchor bolts or day-pins.

10. Install the anchor socket covers in the old anchoring position.

11. Reinstall all items removed during bulkhead relocation.

12. Attach all racing lane lines and safety lines in the necessary configuration.

NOTE: The bulkhead is designed for positioning at the anchoring points only. Do not attempt to use it at any other locations. Damage or injury may result. Position the bulkhead only at anchoring points.

Sample Warranty

STATEMENT OF WARRANTY

Natare® Movable Bulkhead

NATARE CORPORATION ("Natare") hereby provides to _____ ("Owner") the warranties contained herein, or on exhibit on hereto, regarding the **Natare® Movable Bulkhead** manufactured by Natare and installed _____ ("project"):

Natare WARRANTS that the **Natare® Movable Bulkhead(s)** are comprised of new materials, was constructed in a workmanlike manner, and was constructed in accordance with Natare' drawings, submittals, and technical details.

Natare further WARRANTS that, commencing upon the completion of the installation, the **Natare Movable Bulkhead** be free from defects in materials and workmanship and shall perform in a proper and workmanlike manner under normal use and service for a period of **ten (10)** years. The truss structure shall perform in a proper and workmanlike manner for a period of **fifteen (15)** years.

In the event that during the warranty period the **Natare® Movable Bulkhead** fails to perform as stated herein, Natare agrees that it shall, as soon as practical after receipt of written notice from the owner, and at its option, either **repair or replace the defective part or parts of the system, or refund to the Owner the portion of the purchase price attributable to the defective part or parts of the system.**

Specifically exempted form these warranties are claims arising from: **abuse or other conditions exceeding normal use; improper or incorrect operation, or maintenance; or any use of the product other than the particular use for which the product was intended; and structural or earth movements; or acts of God.**

In no event shall Natare be liable for any consequential damage, loss, or expense arising in connection with the use or inability to use the **Natare® Movable Bulkhead** for any purpose whatsoever. The warranty described herein is provided solely with regard to the **Natare® Movable Bulkhead** from Natare that is undamaged prior to installation and has been paid for in full.

Should any repair be required within the warranty period for deficiencies in workmanship, components or materials, by Natare, Natare will undertake the required repair, and such repair or the cost thereof, shall be exclusive entitlement of the owner for any defective workmanship. Any claims against Natare must be made promptly in detail and in writing. All Natare' warranties and other duties with respect to material, equipment, systems, or services furnished by Natare shall be conclusively presumed to have been satisfied one day after the expiration of the warranty period as set forth herein:

In no event shall Natare Corporation be liable for any consequential or other damages whatsoever, direct or indirect, except as expressly agreed to by Natare in writing. There are no other warranties or guaranties, expressed or implied, given by Natare or its agents except those provided herein

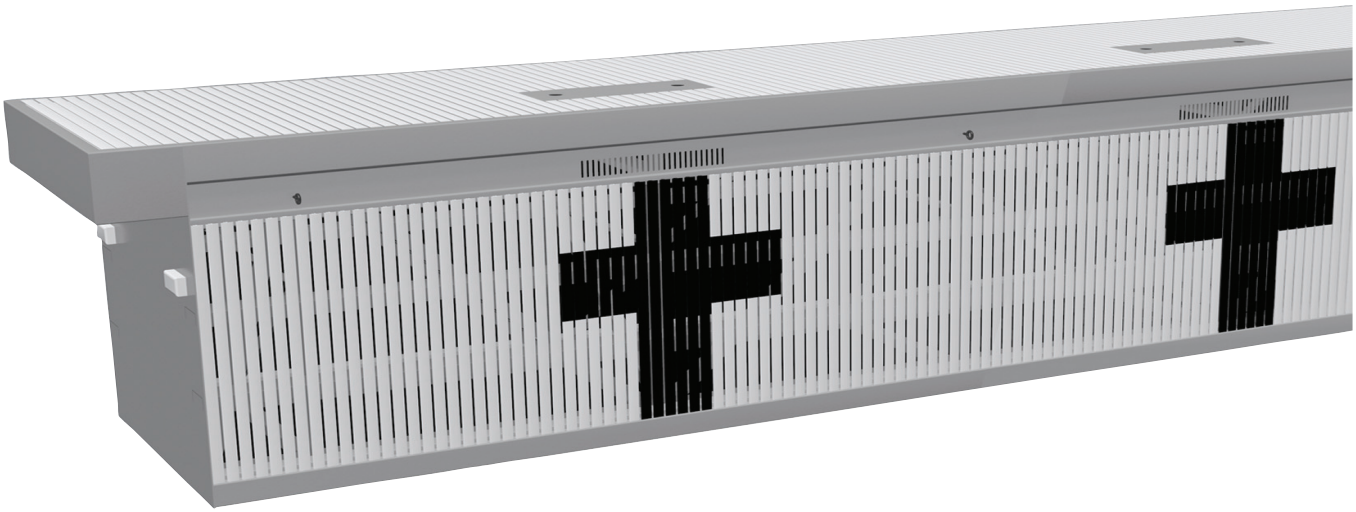
NATARE CORPORATION

5905 West 74th Street
Indianapolis, IN 46278
(317) 290-8828

EFFECTIVE DATE OF WARRANTY

_____

Design Checklist



Planning and Designing Bulkhead Projects

The selection, specification and installation of a bulkhead require careful planning and a complete understanding of the various aspects of moving bulkheads. Specific program requirements, facility constraints and project requirements can drastically affect the cost of a bulkhead and project success.

This survey is intended to assist those interested in specifying, purchasing or installing a moving or fixed position bulkhead and provides an understanding of fundamental issues and concerns in the design, fabrication and installation of a moving or stationary bulkhead.

Bulkhead Project Planning Criteria

Project Name: _____

Address: _____

_____

Telephone: _____

Owner's Representative: _____

DIMENSIONAL AND FACILITY DATA	
Nominal Pool Data	
Pool Length	*Required course lengths include 25 yard (75 feet), 25 meter (82.020 feet) and 50 meter (164,041 feet)*
Pool Width	
Pool Depths (shallow to deep)	
Pool Depths at each desired anchor points	*Competitive swimming generally requires a below water depth of 42 inches or 1,200 mm for FINA standards*
Pool deck to gutter lip dimensions	*Typically 5 inches to 12 inches. FINA standard configuration required 300 mm freeboard at the turning end*
Nominal Desired Bulkhead Dimensions	
Length	*Typically the pool width*
Width	*Typically a minimum of 36 inches; starting platforms usually require 48 inches*
Height Above Water Surface	*Determine by pool end wall configuration. Typically 300 mm for FINA standard pools.*
Depth Below Water Surface	*Typically 48 inches*
Overall Height	
Required Cantilever extension	*Determined by the configuration of the gutter and the point at which the bulkhead will rest*
What is the configuration of the gutter?	*Width, construction materials*
What is the configuration of the end walls?	*Gutter configuration, parapet end walls or other configuration*

CONSTRUCTION/FABRICATION REQUIREMENTS	*Natare Bulkheads are highly engineered structures designed and constructed to exacting standards for strength, durability and deflection*
Truss	
304, 304L or 316 stainless steel	*Typically 304 or 304L stainless steel*
TIG welding required	*TIG welding is the only appropriate system for truss construction to ensure adequate weld strength*
One piece construction or multi-sectional	*Determined by pool access or shipping requirements*
X-ray testing of welds required	*Generally required. The only way to certify the quality and capacity of the joining welds in the structure.*
Structural sections required of cords?	*In an effort to cut costs, some manufacturers will form the top and bottom cords (main bearing members) from plates rather than purchasing structural profiles, which results in weaker and less sturdy construction.*
Trim and exposed stainless sections	
304, 304L, or 316 stainless steel	*Materials exposed to pool water splash above the water line should be 316*
Finish (polish)	
Standard no. 3	
Mirror no. 7	*Higher corrosion resistance, but more difficult to maintain*
Which areas?	
Exposed visible welds?	*No welds should be visible*
Special welding requirements	*Welders must be certified*
Waterline Handhold?	*Required for proper competitive performance*
Floe-through at rear	*A must to quell the bow waves created by swimmers. Required for competition.*
Special Configuration	
FINA / USS / NCAA Compliant?	*Bulkheads must be configured to meet all current competition standards.*
304, 304L, or 316 stainless steel	
Foot Ledge at bottom	*Excellent for higher level competition and for safety in a recreational swimming program.*
Special configuration	
FINA / USS/ NCAA complaint?	
304, 304L, or 316 stainless steel	
Bottom Closure System	*Required for Safety*
Stainless steel	*Generally bottom closures are stainless steel*
FINA / USS/ NCAA complaint?	
304, 304L, or 316 stainless steel	
Other special construction requirements	

ACCESSORY EQUIPMENT OR SPECIAL REQUIREMENTS	*Natare bulkheads can accommodate virtually any pool configuration, program requirement or local health and safety authority standards.*
Self adjusting skirt	*Required at accommodate varying pool depths when the openings at the pool bottom are less than 12 inched. Sometimes required by local health codes.*
Closure at bottom	
Special anchorage requirements	
Lifting Frames or Removal system Required?	*Will the bulkhead be removed from the pool on a regular basis?*
Other special requirements?	

BULKHEAD SUPPORT	*Typical bulkheads weigh thousands of pounds. This weight along with live load imposed by swimmers and others using the bulkhead is transferred to the pool surround, gutter or deck and exerts a substantial force. These must be properly transferred into the pool structure.*
Where will the bulkhead rest (pool wall, gutter, deck, etc)?	*Determines the design of the bulkhead and is essential to determine if adequate support is available.*
Where will the bulkhead anchor (pool wall, gutter, deck, etc)?	*Determines the design of the bulkhead and is essential to determine if adequate support is available*
Gutter reinforcement required?	
Gutter/deck anchoring plates required?	

LOADING CHARACTERISTICS & DEFLECTION	*Bulkhead performance is a function of the stiffness and strength of the structure. Swimming performance is measured in thousands of a second and the bulkhead must not move, deflect or twist when in use.*
See Natare technical bulletins for further information on loading on deflection.	

ANCHORING POSITIONS AND COMPETITION	*Anchoring positions are determined by the programs anticipated to occur in the pool.*
Swimming Competition	
FINA, US Swimming, NCAA other?	
Course Lengths	
Water Polo	
Sanctioning Body	
Course Length	
Recreation	
Program Requirements	
Anchors to be installed by?	
Course Survey (surveys) required?	

Deck markings installed?	
LANE AND TARGET REQUIREMENTS	*Natare bulkheads are provided with permanent black target markings (not coating or paint) and reinforced lane divider anchors installed at water level.*
Number of Lanes	
Lane widths	
Racing lane anchors	
Boundary lane anchors	
Other lane/line anchors	
Safety rope anchors	
Typical Details	
Configuration (FINA, USS, NCAA, etc.)	
Targets identical on both sides?	

EQUIPMENT	*A wide range of equipment and accessories is available for Natare bulkheads to accommodate virtually any program requirements*
Who will furnish the anchors required for the various equipment on the bulkhead?	
Who will install the anchors required for the various equipment on the bulkhead?	
Stanchion posts	
Starting platforms	
Number	
Location	
Anchorage type	
Water polo goals	
Guard railings	

Officials' benches	
TIMING SYSTEM & ACCESSORIES	*Natare bulkheads are pre-configured to allow easy installation of timing systems and equipment from all major manufactures*
Timing system to be used?	
Timing system type	
Timing system connections	
Junction boxed	
Furnished by?	*Generally furnished by timing system manufacturer*
Installed by?	*Generally installed by timing system manufacturer*
Cable Tray	
Access Panels in Bulkhead	

Location(s)?	
Hinged?	
MOVEMENT	*All Natare Bulkheads are variably and adjustably buoyant and allow easy movement by two people.*
Variable Buoyancy	
Manual	
Compressor or plant air	*Typically, Natare Bulkheads are provided with a compressor inflation system. If available, plant or building air supply may also be used.*
Provided By?	
Automatic (Powered)	
Wheels	*Wheels are NOT required for Natare Bulkheads, and wheels can damage the pool surround or pool walls.*
Push Bars	

GRATING SYSTEMS	*Natare Bulkheads are standard with a tough UV-stabilized PVC profile grating with integral slip-resistance. No coatings or paints are used; no fiberglass to deteriorate or fray.*
Grating type	
Color	
Grating openings	*8 mm (.31 in) DIN standard is the accepted safety standard for bulkhead grating*
Grating orientation	
Top	
Sides	
Special marking requirements	
Target markings	*Natare Bulkheads use permanent colorfast black PVC profiles that match the bulkhead grating system. No Paints or coatings to wear off or require recoating.*
Continuous grating?	*Grating on the vertical and horizontal surfaces of the bulkhead is continuous.*
INSTALLATION	*Natare has installed some of the largest and most complex bulkheads in the world. We can assist in the installation process or take responsibility for the complete installation. Whether indoors or outdoors, Natare can install a moving bulkhead in virtually any facility.*
Special constraints? (describe)	
Required delivery date	
Straight access to pool area	
Exterior door or other opening size	
Parking and staging at access point?	
Crane access and bearing surface	
Tractor-trailer access?	
Special access requirements	
Deck shoring/support required?	
Pool filled at installation	
Floor surface protection by?	
AUTHORITY, AGENCY OR APPROVAL REQUIREMENTS	*FINA, USA Swimming and NCAA all have requirements for pool courses. Natare Bulkheads meet all such requirements. Local health authorities generally do not regulate the installation of a moving bulkhead or provide any criteria for bulkhead design or construction.*
Board of Health	
Current Code is dated:	
Building department	
Fire Marshall and Fire Codes	
Sports or Athletic Code, Sanctioning Body	
Accessibility Codes	
OSHA, Local and Federal	
Other	

Special Conditions

Describe any special conditions, restrictions, requirements or other considerations known at this time:

_____

_____

_____

Our Movable Bulkheads are the finest movable bulkhead systems in the world.

Natare Corporation

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