Interlocking Road Platforms

Terramat Corporation

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We build the Land Bridge Mat™

MANUFACTURED FROM RECYCLED SCRAP TRUCK TIRES
for crossing streams, wetlands, mud, sand, pasture and snow.

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swamp mats, mud mats, traction mats, truck mats, landing mats, swamp mats, corduroy road mats, timber mats, blasting mats, crash barriers, barricades

mud mats traction mats truck mats landing mats swamp mats logging pipeline oil & gas drilling landfill wetlands construction military blasing coal mining golf course portable road industry

REPORTS FROM THE FIELD

TABLE OF PHOTOGRAPHS

Land Bridge Mats (LBMs) are manufactured from the treads of recycled truck and bus tires, one of the toughest things made by man.

(Please go to the Table of Photographs to see Land Bridge Mats in action)

LBMs are extra-heavy-duty, portable, reusable road building mats designed and built to support heavy equipment, loaded trucks and trailers passing over them as they cross mud, streams, wetlands, peat, sand, muskeg, pasture, snow and landfill cover.

FEATURES

LAND BRIDGE MATS will not rot, float or tear up from heavy traffic. They are virtually indestructible and will last for years. In the words of a Florida clearing contractor, "I built almost a mile of road 12' wide with a material investment of $485.00 by reusing the LBM 1210-2 mats hundreds of times in the space of several months."

CONSTRUCTION

The LBM series of Terramats consist of multiple layers of truck tire treads connected with heavy bolts and nuts Each layer is laid in a direction opposite to the one above or below it. The mutually opposing layers create a laminated mat that multiplies the inherent structural characteristics of the individual components. Handling chains are built in to each mat. LBMs can be made to order up to 10' wide and 20' long, square, circular or odd shape.

HANDLING & PLACING

A truckload of LBMs can be unloaded in about 1 to 1 1/2 hours with backhoes, cranes, forklifts, logging loaders or rubber tire backhoes. A road 11' 6" wide is built by placing 5' wide mats 18" apart. Mat ends abut each other. It is not necessary to connect the mats in the field.

Weight per Square Foot	
2- layer	15 lbs
3-layer	23 lbs
4-layer	30 lbs

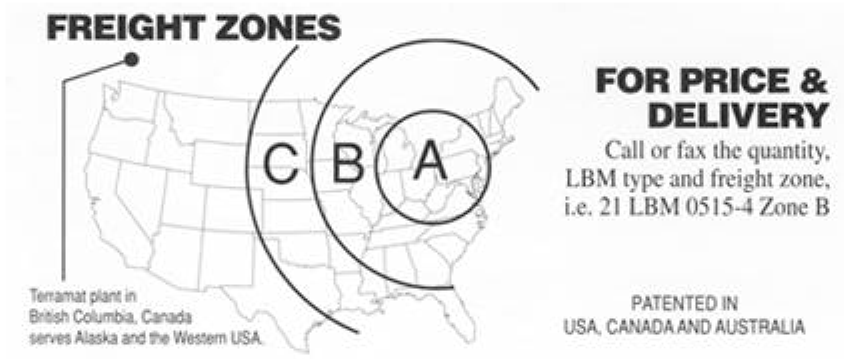
ORDERING INFORMATION

LBMs are indentified by 5-digits. The first four digits specify width and length. The fifth digit (separated by a dash) specifies the number of layers of treads -- from 2 to 4. Thus, an LBM 0515-3 is 5' wide by 15' long and 3 layers of treads thick.

ADDITIONAL USES

LAND BRIDGE MATS may be used for **blasting mats, channel liners in erosion control ditches, stream bank stabilization, temporary floors, skid trails** and **landings**.

SHIPPING



We'd like to hear from you.

Go to our FEEDBACK page or Send mail to info@terramat.com with questions or comments about this web site or Terramat™ products.

Terramat Corporation
462 Arbor Circle
Youngstown, Ohio 44505
330.759.9412
Fax: 330.759.7679

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CAT

Portable Dam

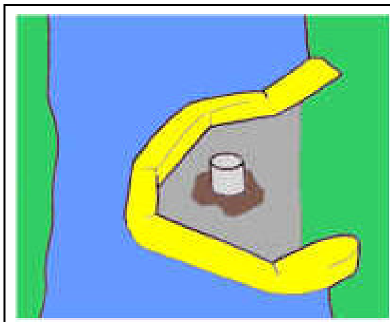
Superior Dam, LLC

Uses

Superior Dam™ is an invention that promises to revolutionize the water-control industry. This new technology is a giant leap forward in the control and mitigation of waterway sediment and turbidity.

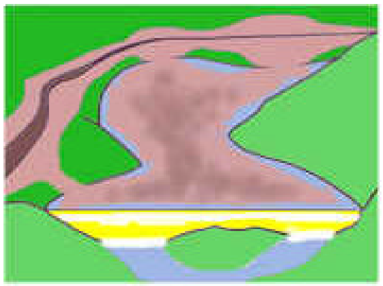
Below are diagrams of some of the uses of **Superior Dam**™. Because water can safely overflow the dam, it has capabilities that were never possible with the old water-filled dam technology.

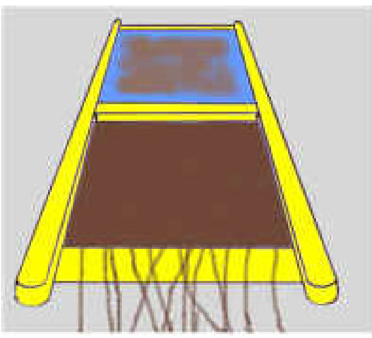
Temporary cofferdam with diversion channel**: Superior Dam™** replaces earthen or rock cofferdams, sheet piling, and sand bags. Route water around in-stream construction projects. Quick to install, easy to remove, and truly reusable many times. No fill is added to the waterway, and should the water level rise and overtop the dam, it will stay in place.



Diversion dam, de-watering dam: Superior Dam™ may be used as a cofferdam to isolate and de-water construction sites.

Overflow dam, check dam, recreational dam, groundwater recharge dam, catchment basin, grade reduction weir, water-flow measurement weir, agricultural pond: Superior Dam™ complies with clean water laws - no fill is introduced into the waterway. May be installed on a pre-built earth or rock base, **Superior Dam™** functions as a variable height ogee crest dam. Spillway skirt prevents scouring of the streambed on the overflow side of the dam.

	**Sediment basin, settlement pond, check dam, turbidity control dam, level spreader: Superior Dam™'s** unique ability to allow water to overflow the dam permits its use as an exceptional in-stream settling pond. A partially inflated **Superior Dam™** has a level crest, regardless of the streambed profile. The wide overflow crest eliminates the high velocity flow that normally prevents the settlement of fine suspended particles. Pollutants settle out in the still water, and the very top clean layer of water is skimmed off as it flows over the crest. Also, installing **Superior Dam™** along contour lines will keep the ogee crest/spillway closer to level, thereby maximizing the overflow width.

	**Dredge tailing basin, dehydration pond:** a containment pond constructed of **Superior Dam™** may be easily accessed from any direction by temporarily deflating one or more dam sections. In the diagram, a front end loader has been driving over top of a deflated **Superior Dam™** to remove sediments. Every **Superior Dam™** section of this containment pond may be lowered individually to skim off clean water and/or gain access to the sediments. If all dam sections are plumbed together, they may be filled and drained as a single unit, from a single point, and the crest around the perimeter of this pond stays level.

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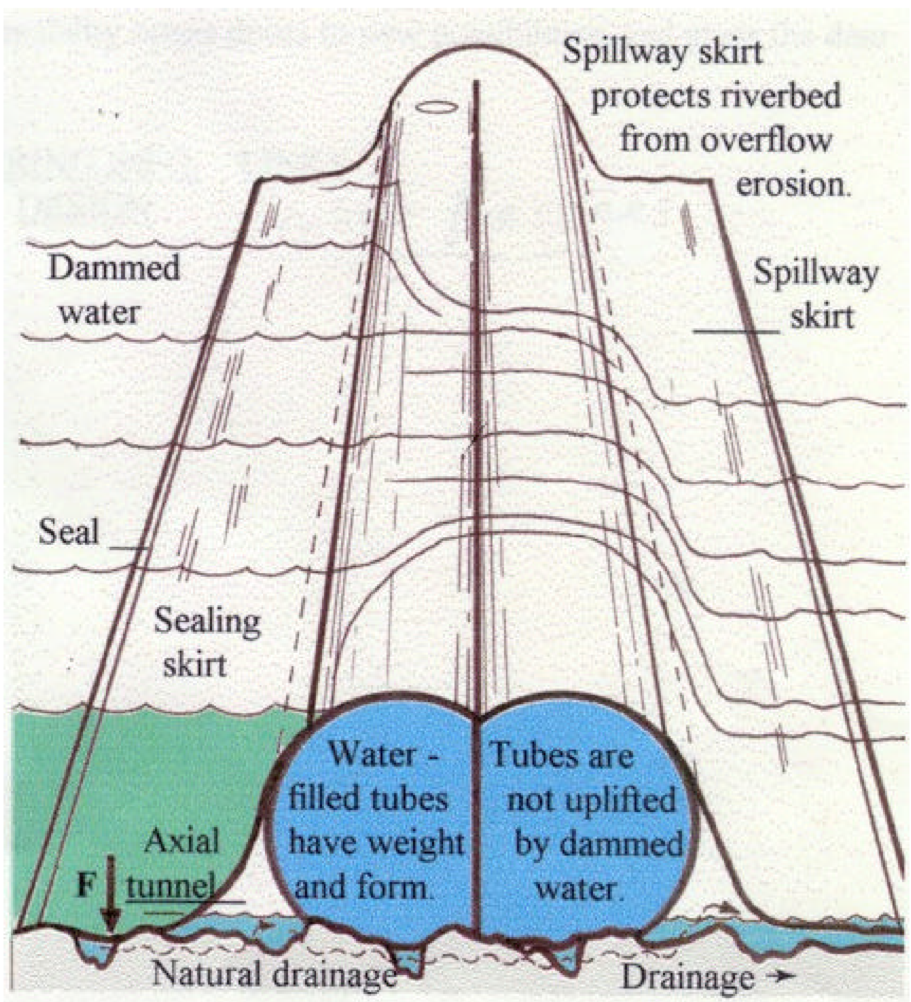
Superior Dam, LLC

Principles

Superior Dam™

A breakthrough in freestanding water-filled dams!



Pressure - Secured

Force **F** is the hydrostatic loading acting to pin the sealing skirt to the riverbed. This force increases as the dammed water level rises. Seal leakage is drained away utilizing natural drainage beneath the water-filled tubes, sometimes augmented by hyperinflation of the tubes with water. Installations over cobble and rock provide excellent drainage. Also, if need be a pipe may be inserted into the axial tunnel for additional drainage.

Superior Dam™ is also secured from rolling by the geometric form of the dam, and the massive **un-buoyed weight** of the water-filled tubes.

Axial tunnel: Seal leakage collects in the axial tunnel and drains through the tunnel and across the riverbed to areas of good drainage under the dam. A pipe placed beneath the dam and into the axial tunnel can also be useful in assuring that hydrostatic pressure does not uplift the dam.

Seal: The sealing edge is normally constructed of non-reinforced PVC and increases in effectiveness as the dammed water level rises. This dam is pressure-secured, and a good seal at the sealing edge is necessary for it to perform as intended. The seal is very accessible and may be improved as desired during and after installation.

Reversible: Superior Dam™ may normally be installed in either direction. The skirts on both sides of the dam are identical and perform as either sealing skirts or spillway skirts depending on the orientation of the dam. In addition, the fill ports and drain ports are duplicated on each end.

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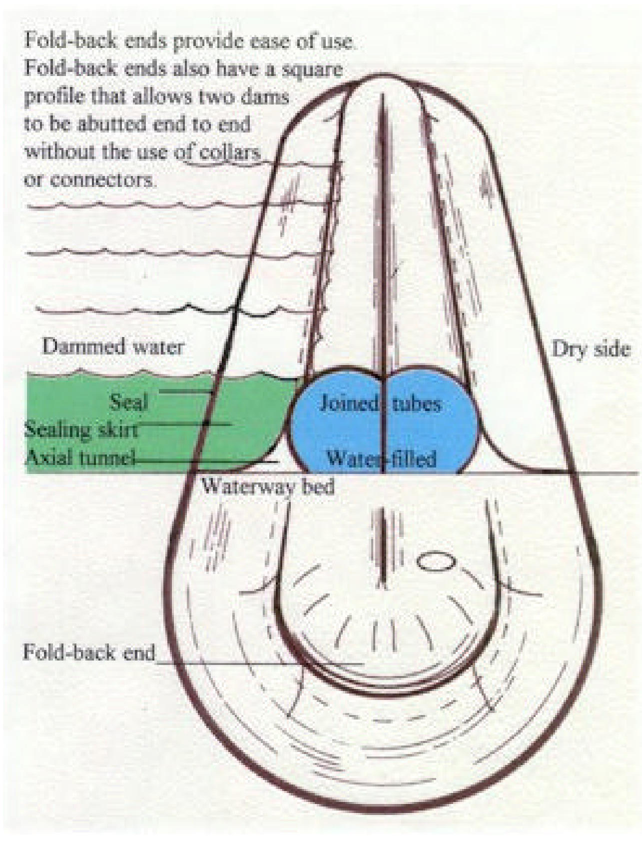
Superior Dam, LLC

Design

The "Fold-back" or Standard Design

A single PVC tube is folded back and the ends of the tubes connected. This results in two equal length, side-by-side parallel tubes which are bonded to each other. The tubes are open to each other at the folded back ends, and the water inside the tubes can flow from one tube to the other.

Very high tensile stresses are placed on the **Superior Dam**™ when it is working. For this reason the highest quality materials are used, and manufacture is done to exacting standards. Reinforced PVC is generally the material of choice. For extreme applications, and higher chemical or ultraviolet resistance, custom manufacture is available.



High Strength: Superior Dam™ is engineered to endure high inflation pressures. The design is such that welded and bonded seams do not have "peel" forces exerted on them.

Custom Designs for special site criteria: Examples are (1) The "two-tube" design. Two equal length PVC tubes are sealed at their ends, and then bonded together side-by-side. The tubes are closed to each other at the ends, and the water inside the tubes is confined to its own tube, and cannot flow from one tube to the other. This could offer redundancy in high risk flood control and de-watering projects such as airports and roads. (2) Although the standard PVC is very good, urethane geomembranes offer even more years of continuous duty UV resistance and higher durability. Please give us a call or e-mail us about your requirements.

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Superior Dam, LLC

Installation

Professionals at **Superior Dam, LLC** offer technical assistance, consultation, and training. Although the basic principles of our pressure-secured dam are simple, its unique features and outstanding capabilities require a clear understanding for these qualities to be fully realized.

Site specific considerations and an overview of installation techniques are outlined below:

Site Criteria

Water depth: How deep is the water along the path where **Superior Dam™** is to be installed? We're not talking about the average depth. What is the depth of the water at the deepest point? Careful measurements are important.

Task to be accomplished: What is the intended purpose of this dam installation?

Dewatering a site in still water, or flowing water where the dam installation will not cause a significant rise in the stream water level: Although freeboard (the distance that the top of the dam extends above the water level) is not required for stability, the dam height needs to be greater than the maximum water depth to assure that water does not flow over the dam and into the dewatered area. Six inches of freeboard should be a safe margin.

Superior Dam™ height required = DEEPEST WATER + 6 INCHES *(15cm)*

Dewatering a site in flowing water where the water level will rise: If stream flow is to be dammed with the intent of diverting a significant amount of the water around the site, or through a diversion channel, it is necessary to use a dam that is large enough to accommodate this rise. The amount of water level increase that will be necessary to accomplish this diversion is commonly underestimated by even experienced hydrologists and engineers.

Superior Dam™ height required = DEEPEST WATER + WATER RISE + 6 INCHES *(15cm)*

Installing Superior Dam™ as an overflow dam where a reservoir is to be backed up and some or all of the water flow will spill over the dam: Examples include recreational and agricultural dams, aquifer recharging dams, check dams and weirs. The height of the dam will determine the depth of water in the reservoir that is created by the dam. If there is a large amount of water overflowing the dam, the actual reservoir depth will be somewhat greater than the dam height. **Superior Dam™** height, and therefore reservoir depth, may be precisely controlled by adding or removing fill water.

Superior Dam™ height required = DESIRED RESERVOIR DEPTH

Installing Superior Dam™ in a confined space: The sealing skirt and spillway skirt may be tucked up close to the water-filled tubes in order to narrow the dam to match specific sites. Although the slack in the sealing skirt does not allow for pressure-securing of the dam through the tension of the skirt, the seal is still effective in reducing the uplift pressure, and the dam is still very stable because of the water-filled tube's massive weight. Said another way, the dammed water does not destabilize the dam as long as the seal is properly made, and the dam is drained beneath.

Please consult with the Superior Dam, LLC specialists about your particular site.

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Silt Control - Bridge Construction
Chase Creek - Chase, B.C.
3' High x 100' Long
B.C. Ministry of Highways

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info@aquadam.com.au

AQUA DAM
Water - controlling water

Flood Control
3' High x 500' Long
Idaho, USA

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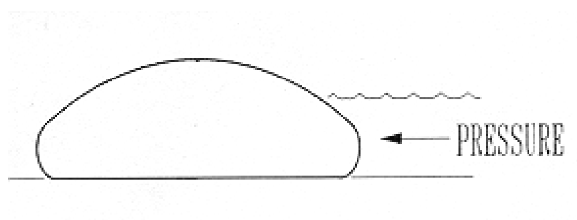
aquadam@shuswap.net

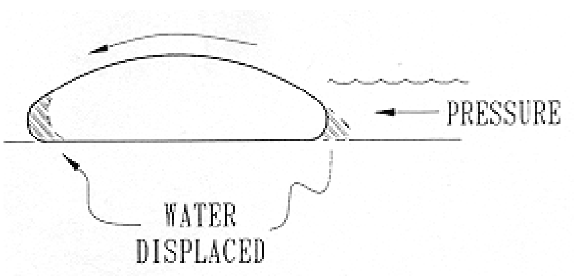
AQUA DAM
Water - controlling water

Specifications

Aquadams are environmentally safe stable water barriers used to contain, divert, and control the flow of water. The design consists of two polyethylene liners contained by a single woven geo-tech outer tube. When the two inner tubes are filled with water, the resulting pressure and mass create a stable, non-rolling wall of water.

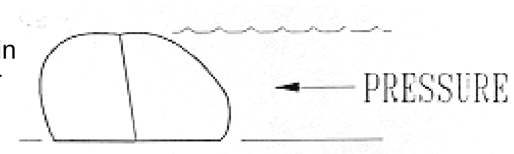
A single tube filled with water will not provide a stable wall or dam As the water builds up on one side of the tube the pressure on the wall of the tube begins to increase.

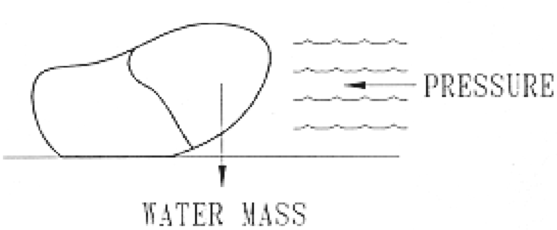




As a result of the building pressure, the water is pushed from one side of the tube to the other side where the pressure remains low. As the water continues to move from one side to the other,the tube begins to roll.

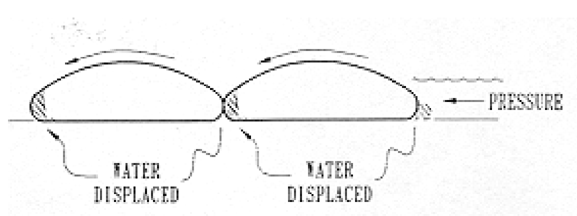
As water builds up on one side of the Aquadam, the pressure displaces the water in the inner tubes. However, because the inner tubes are unable to roll the Aquadam assumes a position of equilibrium and behaves as a solid barrier.

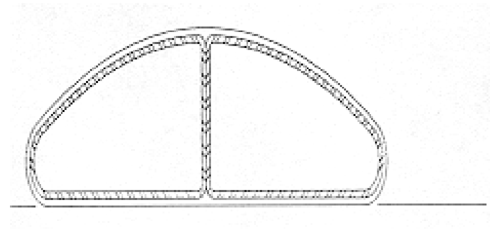




In order to roll a filled Aquadam, it must be tipped end over end. This would require lifting all of the water mass in the first column up and over the second column. Even if the water builds to the top of the Aquadam, the pressure is far too low to provide enough force to lift the water mass and tip the Aquadam. The result is a stable, non-rolling barrier forming a solid dam.

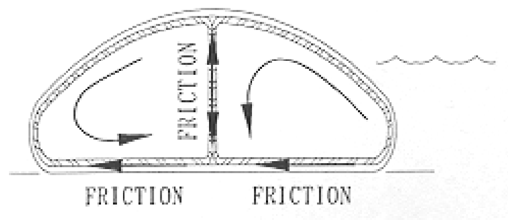
Two water filled tubes or columns placed side by side will assume their natural shapes. If pressure is applied to one side, the water is displaced in the first tube and causes it to roll. As the first tube rolls, it pushes on the second tube moving the water from one side to the other and the two tubes roll together.

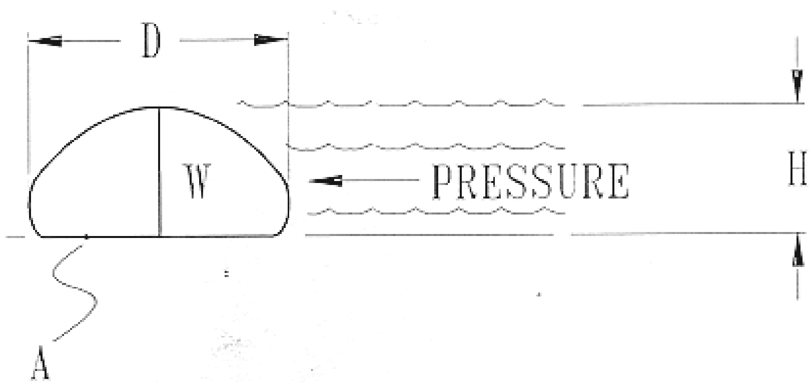




The Aquadam is able to offer a stable wall by containing two water columns in a single outer tube. The contained water columns are unable to assume their natural position and form a vertical wall in the middle as they press against each other. The pressure inside the tubes applies a substantial force to both sides of this vertical wall

As water begins to build on one side of the structure the inner tube naturally tries to roll. However, the friction between the vertical waves and between the inner and outer tubes opposes the rolling tendency and the structure remains fixed.





In order for the Aquadam to move as a result of the pressure exerted on one side, it must either be tipped end over end or slide across the surface on which it rests. In order to tip, the water pressure must lift the first inner tube up and over the second.

The following calculation show the Aquadam's resistance to tip:

Assumptions:
We will assume that the inner tubes are generally rectangular when filled to facilitate the calculations. We will also assume that the water level on one side has reached the top of the Aquadam as a worst case scenario.

P = Pressure
h = water depth
D = width of Aquadam
l = length of Aquadam
Þ = mass density of water
g = gravitational acceleration
y = specific weight of water
F = Force exerted on the face of the Aquadam due to pressure (P)
A = area of the side face of the Aquadam
W = weight of water in the inner tube
V = Volume of the inner tube

P = Þgh = yh
Pavg = y(h/2)
A = hl
F = PA = Pavg A
W = yV

The force exerted on the side of the water structure is then: $F = \gamma \frac{h}{2} hl$

Having determined the force on the side of the Aqua Dam, we can evaluate the tendency of the Aquadam to tip. We assume point A as the pivot point and sum moments about this point. The moment created by each force, is a measure of how much the force contributes to rotating the first column of water around point A.

$$\sum M_A = W \frac{1}{2} D - F \frac{n}{3} = 0$$

or

$$\sum M_A = \rho h \frac{D}{2} l \frac{D}{2} - \rho \frac{h^2}{2} l \frac{h}{3} = 0$$

Simplifying the expression we see that the stability of the Aquadam is dependent on the relationship between its width (D) and the depth of water it must resist.

The relationship above indicates the minimum width of the Aquadam to prevent it from tipping when resisting water with a depth (h) equal to the height of the Aquadam itself. The design height for the water structures to prevent tipping would be described as:

D>(.82)h

In order to quantify the stability of the Aquadam we substitute the actual dimensions of the standard Aquadam for D and h into the equation above. The results are expressed in terms of a safety factor. The safety factor indicates how many times greater the water pressure or water depth must be in order to roll the Aquadam.

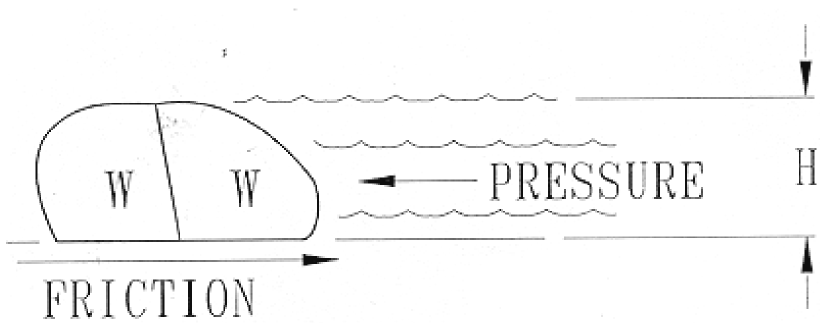
Based on the current Aquadam designs, the safety factor against tipping when water levels are to the top of the structure are as follows:

Inflated Height (in inches)	Inflated Width (in inches)	Safety Factor Against Tipping
12	24	2.44
24	46	2.34
36	68	2.30
48	120	3.48
72	186	3.15
84	282	4.12

If the recommended maximum water depth is maintained, the safety factor against tipping is improved. The following table illustrates the improvement when recommended water depths are observed.

Inflated Height (in inches)	Inflated Width (in inches)	Recommended Maximum Depth (in inches)	Safety Factor Against Tipping
12	24	8	3.65
24	46	18	3.11
36	68	28	2.96
48	120	36	4.06
72	186	54	4.20
84	282	72	4.78

The second method for moving for the Aquadam is to slide the entire structure. The resistance to sliding is provided by the friction between the ground and the structure. Although any type of barrier could slide along the ground if the pushing force were great enough, we will present the calculations for sliding the Aquadam in order to quantify its tendency to slide:



In addition to the variables already defined we add:
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μ = coefficient of friction between the Aquadam and its surface.
f = friction force
N = Normal force (equivalent to weight)
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Assumptions:
We are assuming that the supporting surface is smooth and flat. Any deviation from a smooth surface will add greater opposition to sliding. Again, we assume that the inner tubes are generally rectangular to facilitate the calculations:

$$\sum F_x = \mu W - F = 0$$

or

$$\sum F_x = 2(\rho \frac{D}{2} hl)\mu - \rho \frac{h}{2} hl = 0$$

Deriving a term for the coefficient of friction yields:

$$\mu = \frac{1}{2} hD$$

Inflated Height (in inches)	Inflated Width (in inches)	Coefficient Of Friction for Sliding
12	24	.25
24	46	.26
36	68	.26
48	120	.2
72	186	.19
84	282	.15

The coefficient of friction that will allow sliding if the recommended maximum water depths are observed as follows:

Inflated Height (in inches)	Inflated Width (in inches)	Recommended Max. Depth (in inches)	Coefficient Of Friction For Sliding
12	24	8	.11
24	46	18	.15
36	68	28	.16
48	120	36	.11
72	186	54	.11
84	282	72	.11

Coefficients of friction ranging from. 10-.20 indicate that the surface must be quite slippery. For example, the coefficient of friction between two pieces of greased or folded steel is .10-.20. Again we have assumed that the surface under the Aquadam is smooth. In most cases, surface under the Aquadam will be comparatively rough and with pose even greater opposition to sliding than indicated in the calculations above.

The principles used to create the Aquadam are simple yet effective.The stable non-rolling wall of water conforms to the surface beneath it creating a tight seal. The Aquadam will not tip or move even if the water level rises to the very top of the structure. Aquadam provide a lightweight, reusable, and ecologically safe method of temporary water control

info@aquadam.com.au