



Predictable, Quantifiable Retaining Wall Systems for All Soil Types

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## An Overview

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DTH



MARINER



AMBULANCE

# WHAT is O-Pile?

## Overview

O-Pile is a leader in predictable, quantifiable retaining wall systems that can be driven in all soil conditions.

Comprised of locally sourced, readily available steel pipes with superior welded-on connectors, O-Pile systems are a stronger, more efficient, durable, faster and cost-effective alternative to standard Z-sheet pile, combined pipe or beam SSP, slurry, secant, continuous concrete walls and other conventional concrete constructions.

Whether you're driving into pure rock or building a port or both, as your engineering partner, we will help you pick from O-Pile and/or our branded systems (O-Pile: DTH and O-Pile Mariner) and services (O-Pile: Ambulance) to ensure your specific project needs are met.



DTH

For Difficult Driving Conditions



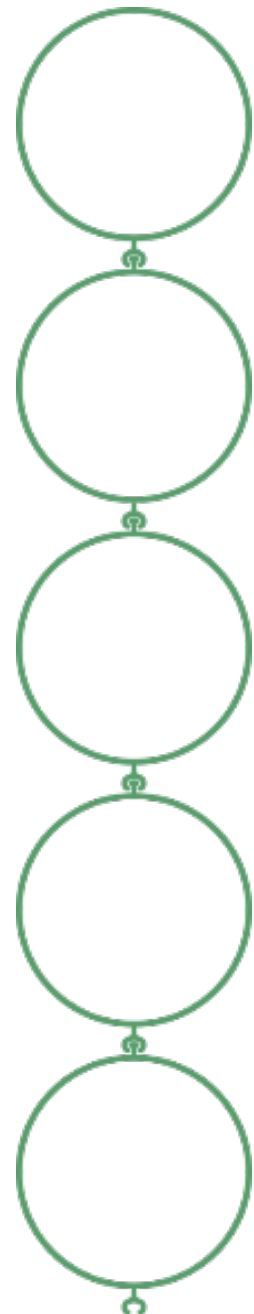
MARINER

For Marine & High Corrosive Environments



AMBULANCE

For Sheet Pile Emergencies



# WHAT Makes Up an O-Pile System?

## 3 Components

O-Piles are patented retaining wall systems comprised of 2 major components with the option of adding a pre-applied sealant that acts as a corrosion inhibitor:

### 1). LOCALLY SOURCED PIPES, AVAILABLE FOR IMMEDIATE DELIVERY

Pipes used in O-Pile systems are readily available in a wide range of outside diameters, thicknesses and high grades of steel. This gives engineers and contractors the ability to customize their O-Pile system by dialing in the outside diameter and thickness, as well as choosing the grade of steel, without a long wait.

+

### 2). STRONG WOM/WOF CONNECTORS

Part of what makes O-Pile systems so superior are the welded-on WOM/WOF connectors. WOM/WOF features a ball & socket connection that has proven to have a superior interlock strength of 132.9 kips/foot (1,940 kN/m) as compared to AZ interlock (801 kN/m). Plus, the combined connector width and connector thickness can be dialed in too.

+ (optional)

### 3). SUPERIOR SEALANT

An all-natural hydrophobic sealant, WADIT can come pre-applied in the WOF interlock chamber before delivery to the jobsite by a crew of professional WADIT installers. With an unmatched success rate in real-world applications, WADIT acts as a corrosion inhibitor by sealing the middle interlock, while also acting as a lubricant by reducing friction and preventing interlocks from "heating up." This allows for the contractor to choose to drive the socket first, if needed.



# Finding the Right O-Pile System

On [iSheetPile.com](http://iSheetPile.com)

O-Pile systems are labeled by their Bending Moment Capacity (in metric units).

BMC incorporates the section modulus (or shape) of a given steel sheet pile with the yield strength derived from the steel grade to give you an accurate measure of load bearing capacity.

So the number following the word O-Pile is BMC of the sheet pile section.

Following the O-Pile name is a list of the following system components:

- Interlock Strength
- **Pipe Outside Diameter**
- **Pipe Thickness**
- **Connector Type**
- **Combined Connector Width**
- **Connector Thickness**

Each element highlighted in red can be dialed-in to customize your O-Pile system, along with steel grade can be chosen.

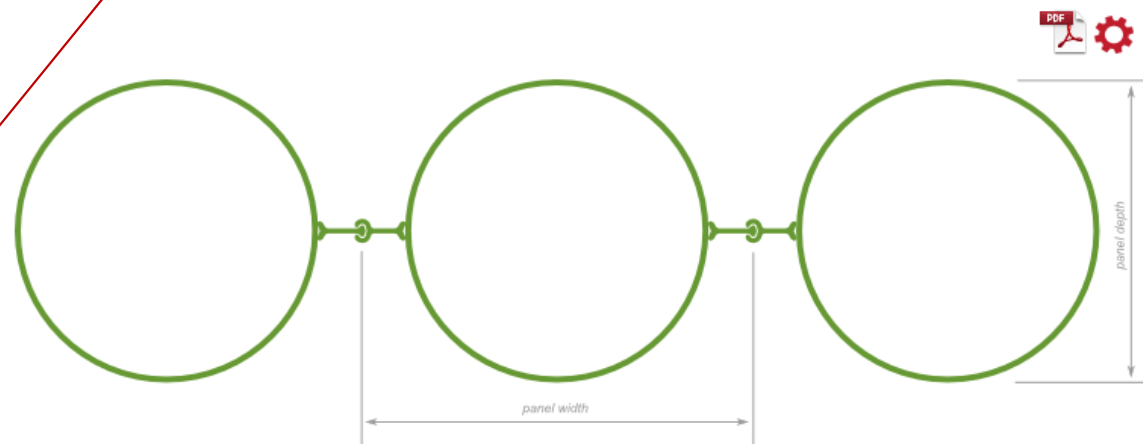
On [iSheetPile.com](http://iSheetPile.com), all the relevant components and specifications per O-Pile system are listed. As seen on the right.

O-Pile 


Product ID

**O-Pile 3846 (480N/mm<sup>2</sup> 635mm 23mm WOM-XL/WOF-XL/180mm@12mm)**

Steel grade options: **x70 (default)** | A 252 Grade 1 | A 252 Grade 2 | A 252 Grade 3 | A 572 Grade 50 | A 572 Grade 55 | A 572 Grade 60 | A 572 Grade 65 | x80



steel grade	x70 (default)
interlock strength	1,940.0 kN/m
weight	463.3 kg/m <sup>2</sup> *
panel weight	377.6 kg/m *
section modulus	8,012.2 cm <sup>3</sup> /m *
moment of inertia	254,388.4 cm <sup>4</sup> /m *
connector ratio	100 % <input checked="" type="radio"/>
	Custom <input type="text" value="95"/> %
panel width	815.0 mm
profile depth	635.0 mm

Components 	
king pile	<b>635mm x 23.00mm</b>
intermediate pile	<b>635mm x 23.00mm</b>
connectors	<b>WOM/F-XL</b>

Manufacturer

**O-Pile**

Distributors

**O-Pile**



# Finding the Right O-Pile System

On *iSheetPile.com*

With seemingly endless O-Pile systems to choose from or, more specifically, because you can custom build an O-system, it would be overwhelming to show all the available systems.

## O-Piles listed on Sheet Pile Section page

O-Pile

O-O O-Pile DTH (WOM-S/WOF-S, 62mm@12mm)

Below is a small sampling of the possible O-Pile DTH systems that area available; if you're looking for a particular O-Pile DTH system, [CLICK HERE](#) to use the O-Pile Tool.

O-Pile 419 (480N/mm&sup2_178mm_10mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 784 (480N/mm&sup2_241mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 462 (480N/mm&sup2_191mm_10mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 819 (480N/mm&sup2_292mm_10mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 506 (480N/mm&sup2_203mm_10mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 840 (480N/mm&sup2_254mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 508 (480N/mm&sup2_178mm_12.7mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 865 (480N/mm&sup2_305mm_10mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 550 (480N/mm&sup2_216mm_10mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 897 (480N/mm&sup2_267mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 562 (480N/mm&sup2_191mm_12.7mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 911 (480N/mm&sup2_318mm_10mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 594 (480N/mm&sup2_229mm_10mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 954 (480N/mm&sup2_279mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 617 (480N/mm&sup2_203mm_12.7mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 1012 (480N/mm&sup2_292mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 639 (480N/mm&sup2_241mm_10mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 1059 (480N/mm&sup2_305mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 672 (480N/mm&sup2_216mm_12.7mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 1127 (480N/mm&sup2_318mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 683 (480N/mm&sup2_254mm_10mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 1185 (480N/mm&sup2_330mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 728 (480N/mm&sup2_229mm_12.7mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 1243 (480N/mm&sup2_343mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 729 (480N/mm&sup2_267mm_10mm_WOM-S/WOF-S/62mm@12mm)	O-Pile 1302 (480N/mm&sup2_356mm_12.7mm_WOM-S/WOF-S/62mm@12mm)
O-Pile 774 (480N/mm&sup2_279mm_10mm_WOM-S/WOF-S/62mm@12mm)	266 more...

O-O O-Pile

Below is a small sampling of the possible O-Pile systems that area available; if you're looking for a particular O-Pile system, [CLICK HERE](#) to use the O-Pile Tool.

O-Pile 1207 (480N/mm&sup2_508mm_9mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2196 (480N/mm&sup2_546mm_12.7mm_WOM/WOF/60mm@12mm)
O-Pile 1333 (480N/mm&sup2_508mm_10mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2223 (480N/mm&sup2_660mm_12mm_WOM-XL/WOF-XL/180mm@12mm)
O-Pile 1462 (480N/mm&sup2_508mm_9mm_WOM/WOF/60mm@12mm)	O-Pile 2288 (480N/mm&sup2_648mm_12.7mm_WOM-XL/WOF-XL/180mm@12mm)
O-Pile 1614 (480N/mm&sup2_508mm_10mm_WOM/WOF/60mm@12mm)	O-Pile 2316 (480N/mm&sup2_572mm_12.7mm_WOM/WOF/60mm@12mm)
O-Pile 1689 (480N/mm&sup2_610mm_10mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2345 (480N/mm&sup2_660mm_12.7mm_WOM-XL/WOF-XL/180mm@12mm)
O-Pile 1721 (480N/mm&sup2_521mm_12.7mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2366 (480N/mm&sup2_610mm_12mm_WOM/WOF/60mm@12mm)
O-Pile 1784 (480N/mm&sup2_660mm_9.53mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2381 (480N/mm&sup2_622mm_14mm_WOM-XL/WOF-XL/180mm@12mm)
O-Pile 1833 (480N/mm&sup2_546mm_12.7mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2402 (480N/mm&sup2_673mm_12.7mm_WOM-XL/WOF-XL/180mm@12mm)
O-Pile 1869 (480N/mm&sup2_660mm_10mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2436 (480N/mm&sup2_597mm_12.7mm_WOM/WOF/60mm@12mm)
O-Pile 1946 (480N/mm&sup2_572mm_12.7mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2507 (480N/mm&sup2_648mm_14mm_WOM-XL/WOF-XL/180mm@12mm)
O-Pile 2007 (480N/mm&sup2_610mm_12mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2517 (480N/mm&sup2_699mm_12.7mm_WOM-XL/WOF-XL/180mm@12mm)
O-Pile 2059 (480N/mm&sup2_597mm_12.7mm_WOM-XL/WOF-XL/180mm@12mm)	O-Pile 2556 (480N/mm&sup2_622mm_12.7mm_WOM/WOF/60mm@12mm)
O-Pile 2077 (480N/mm&sup2_521mm_12.7mm_WOM/WOF/60mm@12mm)	O-Pile 2533 (480N/mm&sup2_673mm_14mm_WOM-XL/WOF-XL/180mm@12mm)
O-Pile 2173 (480N/mm&sup2_622mm_12.7mm_WOM-XL/WOF-XL/180mm@12mm)	637 more...

Instead, we encourage designers, contractors and engineers to visit *iSheetPile.com*, where they can search by different parameters, such as:

- Bending Moment Capacity
- Sheet Pile Section Name
- Section Modulus

Or you can use the O-Pile tool...

Welcome to the PilePro Group. To learn about our other innovative sheet pile brands [CLICK HERE](#)

**iSheetPile**  
A PilePro Group Company

+1.805.850.8500 | info@isheetpile.com  
units: metric | US  
Select a product:  
(product series) [dropdown]  
iSheetPile Glossary: [dropdown]

SHEET PILE SECTIONS | DOCUMENTS | O-PILE TOOL | ABOUT

partner section | articles | glossary terms | availabilities | reports | ads | partners | partner contact forms | download contact forms | offers | log out (Karin Maake)

Search by the **bending moment capacity** :

SEARCH

**parameters »**

or find a **sheet pile section**

~ FZ 22	~ AZ 50
~ FZC 13	~ FZC-B 50
~ FZ 27	~ FZC-P 33-W5 (FZC 14 + 1219mm x 12.70mm)
~ FZC 18	~ HZM 1180M D-12 / AZ 19-700
~ H1807	~ HZM 1180M D-14 / AZ 14-770
~ AZ 26	~ HZM 1180M D-24 / AZ 19-700
~ FZC 26	~ HZM 1180M D-26 / AZ 26-700
~ XZ 93	~ AZ 46
~ FZ 40	~ O-Pile 4783
~ AZ 36-700N	~ O-Pile 9335
~ O-Pile 3846	~ O-Pile 3887

Search by the **section modulus** or by the **sheet pile section name**

SEARCH

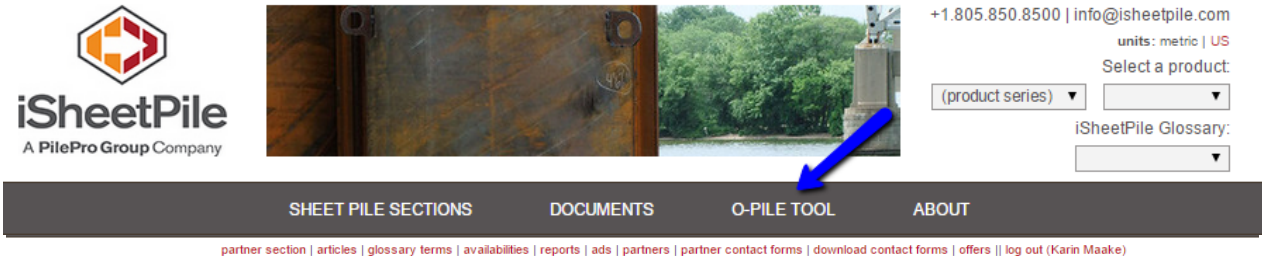
and input the steel grade here:

A 572 Grade 50 (default) [dropdown] SEARCH

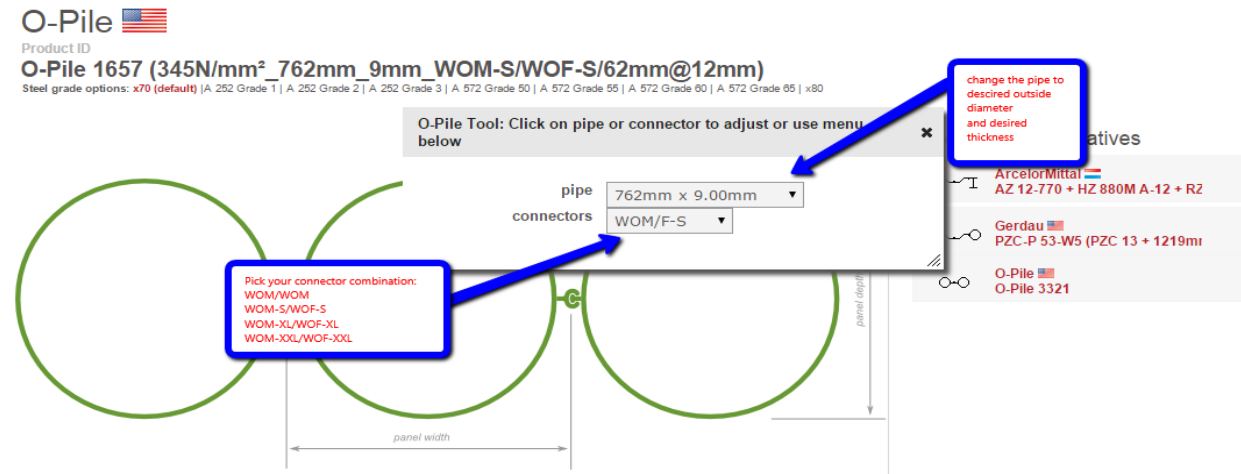


# Finding the Right O-Pile System

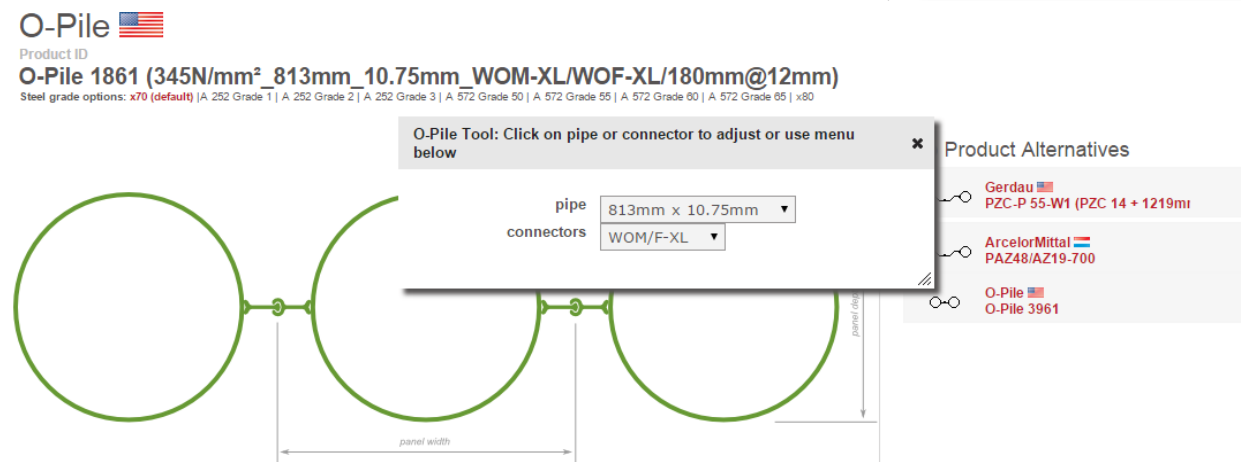
On isheetpile.com using the Opile Tool



Step 1 - Click on the O-Pile Tool button



Step 2 - The O-Pile takes you to a standard O-Pile System, where you can choose your desired pipe outside diameter and connector combination from drop down menus.



Step 3 - Once you've changed the parameters, the desired system will be displayed.

# WHY should I use O-Pile?

## *Benefits*

If you're still not convinced that O-Pile systems are superior to other sheet pile or concrete options, here are six additional reasons engineers, designers and contractors should consider before designing their next project:

**1). STRONGER** - Steel grade identifies the strength value for a type of steel. "Grade 50" steel has a value of 50,000 ksi (Kips per square inch). Engineers may also choose a higher steel grade to replace a heavier section with a smaller one if necessary or to fulfill other requests (for example: corrosion resistance through higher stress reserves).

Steel grade plays a critical factor in calculating bending moment capacity. A higher grade of steel results in a stronger wall for less weight; thus, the best measure of strength to compare SSP systems is bending moment capacity, which incorporates section modulus and steel grade into one number independent of lifespan or safety factor.

O-Pile systems can be made using high strength hot rolled coil available, like x70 and x80, which gives O-Pile walls a higher bending moment capacity as compared to Z, U, or combined-sheet pile walls made with Grade 50.



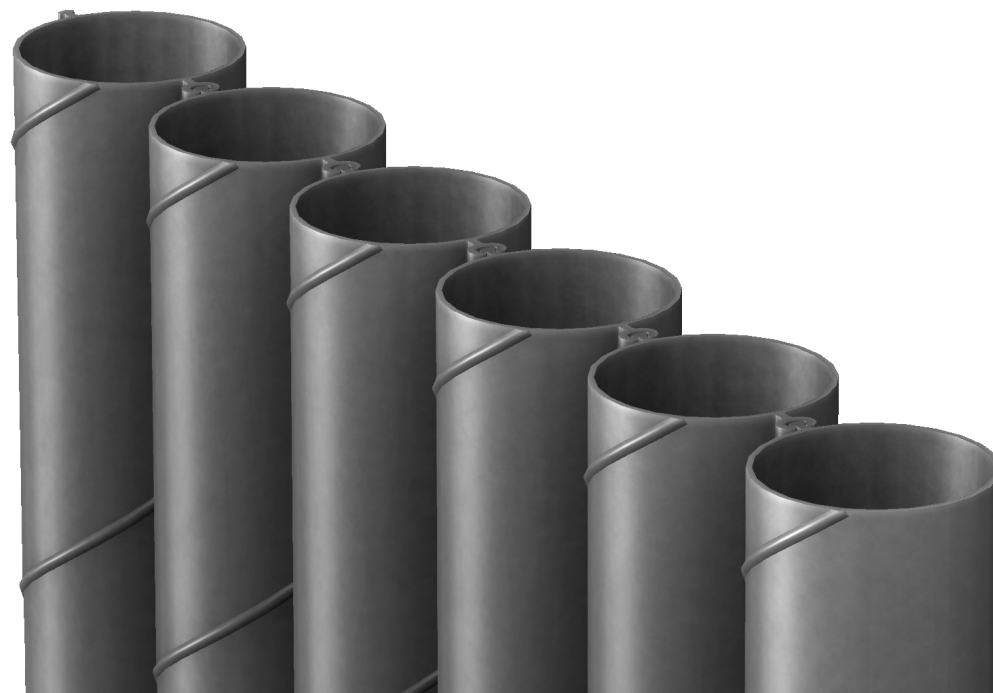
# WHY should I use O-Pile?

## Benefits

2). **MORE EFFICIENT** - O-Pile's contiguous pipe-to-pipe systems have unmatched efficiency. King pile systems using products like HZM or PSP increase in weight linearly as strength is increased, mainly because there is little change in panel width across the product range.

However, an O-Pile system of a given wall thickness has almost negligible weight increase as pipe diameter increases; but strength does increase, leading to a power-curve efficiency ratio. For example, for a hot rolled Z-pile to increase strength 3x, you'd also have to increase the weight 3x; however, for O-Pile to increase the strength 3x, the weight only increase by 10%.

Name of panel	Panel Weight (kg/m <sup>3</sup> )	Bending Moment Capacity (kN/m/m)
Comparison 1		
AZ 50	252.9	1728.1
O-Pile: 1772	208.6	1771.8
Comparison 2		
HZM 1180m D-14 + AZ 14-770	327.4	4366.4
O-Pile: 4441	276.4	4,440.90
Comparison 3		
HZM 1180m D-26/AZ 26-700	502.6	7230.5
O-Pile: 7341	345.1	7341.5





# WHY should I use O-Pile?

## *Benefits*

3). **HIGHLY DURABLE** - Steel has been unfairly demonized for corrosion issues and maintenance costs. However, unlike concrete, you can build an O-Pile system to meet a desired lifespan by using the sacrificial steel method. Sacrificial steel is the preferred method over coating or cathodic protection, especially when O-Pile: Mariner's double pipe thickness is utilized with projects that have zones of high attack or are in highly corrosive environments. Plus, O-Piles come with WADIT, an interlock sealant that acts as a corrosion inhibitor inside the interlock as well as an interlock lubricant.

4). **FASTER, PREDICTABLE INSTALLATION** - Contiguous O-Pile can be installed just like Z sheet pile with conventional vibro hammer or impact hammer (want more info go to NAASPA info guide). No complex template or additional materials needed as in the case of combined sheet pile walls. In the case of difficult driving conditions of 100 - 120 megapascal., O-Pile: DTH and its state-of-the-art Down-the-Hole (DTH) drilling is the recommended route.





# WHY should I use O-Pile?

## *Benefits*

5). **COST-EFFECTIVE** - Since locally sourced pipes are available in higher steel grades and a broader range of sizes, this means the increased bending moment capabilities coupled with the natural power-curve efficiency of O-Pile systems allows a contractor to build a stronger wall, using much less steel, hence allowing for cost savings on not one, but two fronts.



6). **DRIVE THROUGH SOLID ROCK & DIFFICULT SOIL ENVIRONMENTS** - if there is one certainty in life is that the unexpected is bound to happen, which is why we offer O-Pile: Ambulance featuring O-Pile: DTH systems. For the contractor that hits a brick wall in driving, O-Pile: Ambulance comes in assess the situation, makes recommendations and can begin quickly driving again. For more information, please contact: [info@o-pile.com](mailto:info@o-pile.com) or 866-666-7453.



# WHEN do you use O-Pile or its branded systems?

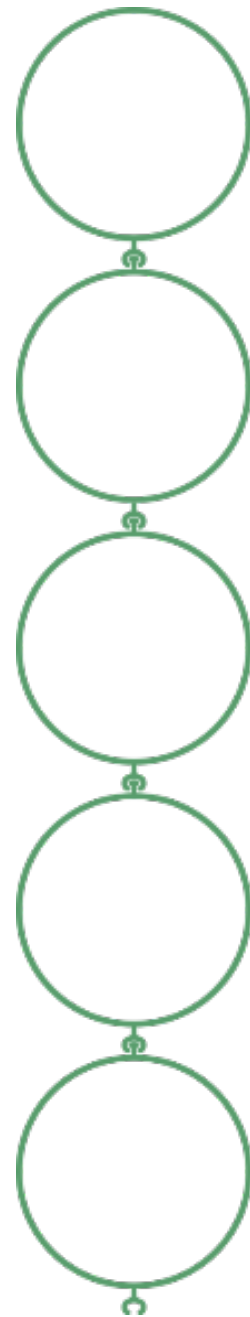
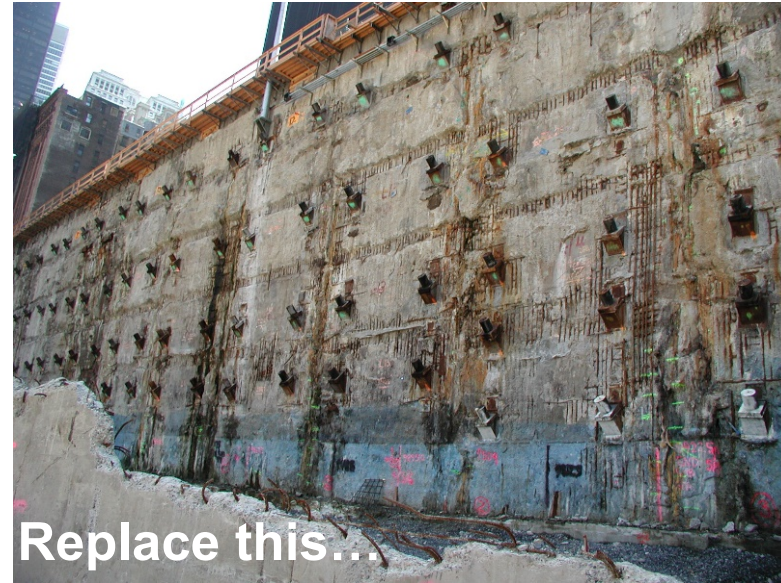
## Overview

O-Pile systems replace:

- Standard Z-sheet pile
- Combined pipe or combined beam SSP
- Slurry, secant, contiguous concrete walls, and other conventional concrete constructions.

O-Pile Systems can be utilized in a broad range of environments and uses.

O-Pile: DTH and O-Pile: Mariner are best utilized under difficult driving conditions and in water and highly corrosive environments, respectively.



# WHEN do you use O-Pile?

## *Environments and Uses*

### **MARINE AND WATER ENVIRONMENTS**

#### **Ports**

- Quay Walls
- Dock Constructions
- Roll-on / Roll-off Facilities
- Dolphins

#### **Waterways**

- Waterway Supports
- Retaining Walls
- Erosion Control
- Berth Facilities
- Scour Protection

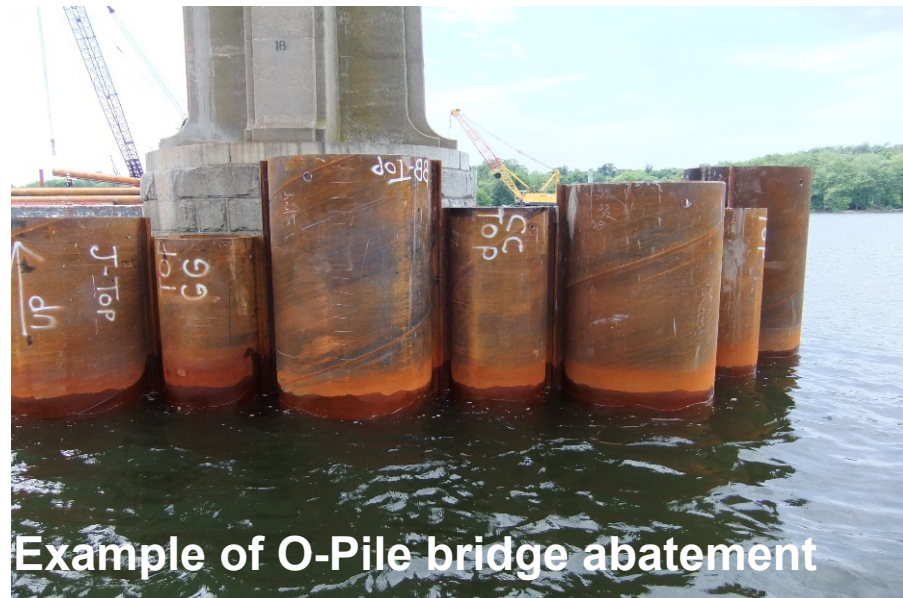
#### **Water Engineering Structures**

- Locks
- Weirs
- Bridge Abutment
- Culverts
- Safety Gates
- Flood Protection Walls
- Pier Foundations

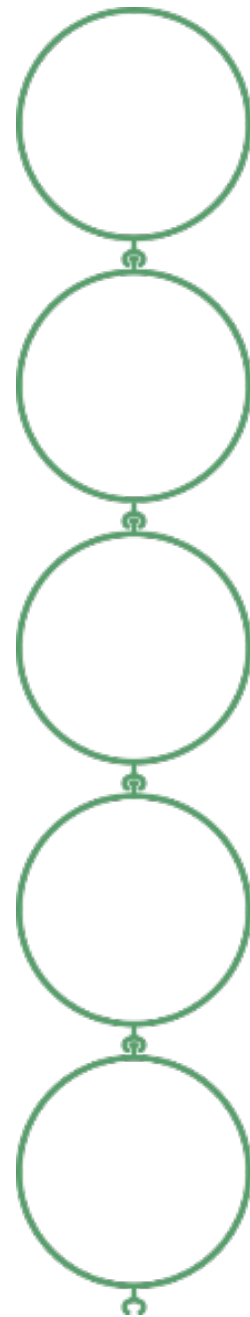
### **ENVIRONMENTAL**

#### **Pollution Control**

- Landfills
- Enclosures
- Contaminated Sites
- Vertical-sealed Enclosure Walls
- Excavations for Soil Replacement
- Tank Enclosures
- Refuse Tipping Ramps



**Example of O-Pile bridge abatement**





# WHEN do you use O-Pile?

## *Environments and Uses*

### **ENVIRONMENTAL cont.**

#### **Water Protection**

- Pumping Stations
- Sewage Works
- Storm Water Retention Basins

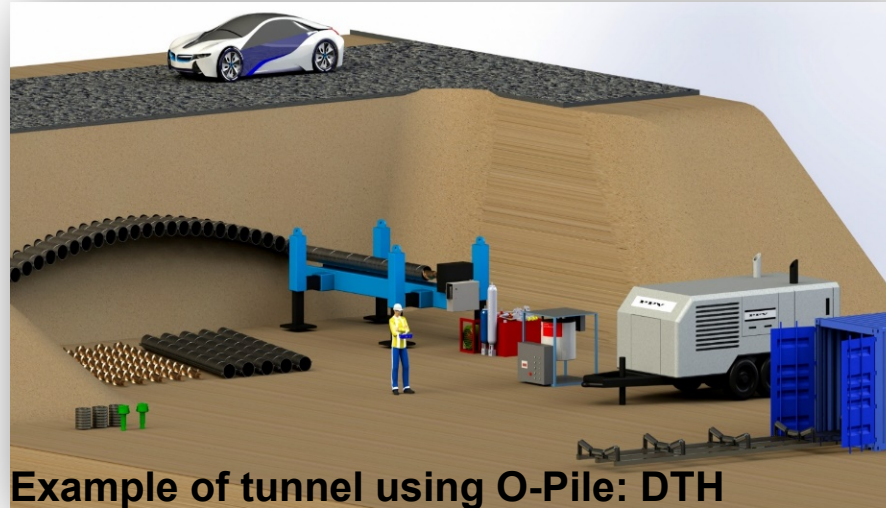
#### **Noise Abatement**

- Noise Protection Walls

### **CIVIL**

#### **Civil Engineering**

- Site Excavations
- Foundations
- Trench Piling
- Underground Parking
- Erosion Control



**Example of tunnel using O-Pile: DTH**

### **TRANSPORTATION**

#### **Road and Rail**

- Support Walls
- Bridge Abutments Ramps
- Sunken Roads
- Groundwater Retention
- Tunnels

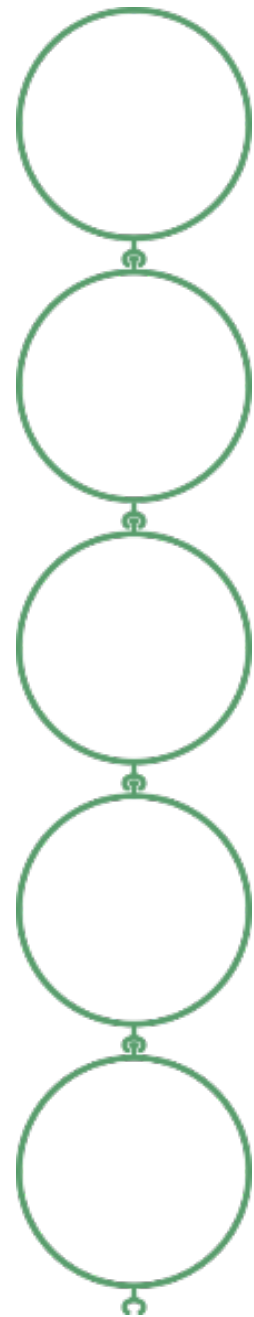


**Example of O-Pile: DTH in hard rock strata**

### **HARD ROCK STRATA (only O-Pile: DTH)**

Any structure in:

- Granite
- Boulders
- Glacial strata
- Caustic limestone
- And other strata above 125 megapascal

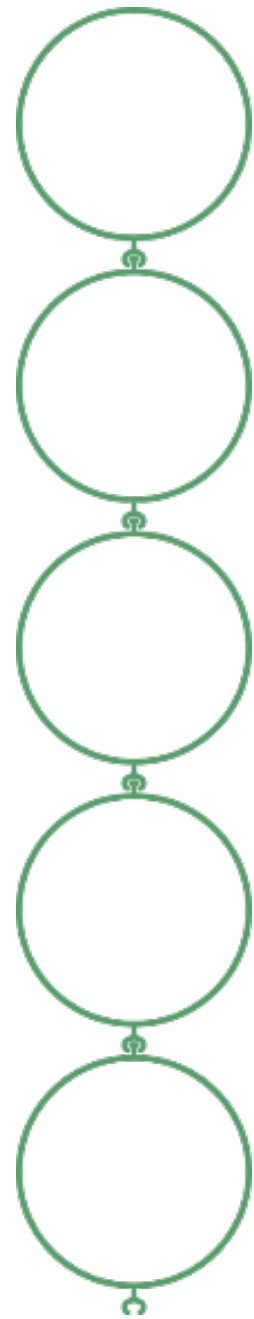


# WHEN do you use O-Pile: Mariner?

## *Environments & Uses*

O-Pile: Mariner systems allow engineers/contractors building projects to separately dial-in the upper- and lower-portion of the pipe, which is critical in water environments with a zone of high attack or highly corrosive environments.

For increased durability, thickness is increased in the upper 10' of the pipe, specifically at splash- and low-water zones, while the lower majority of the pipe remains at a thickness to meet load-bearing requirements.

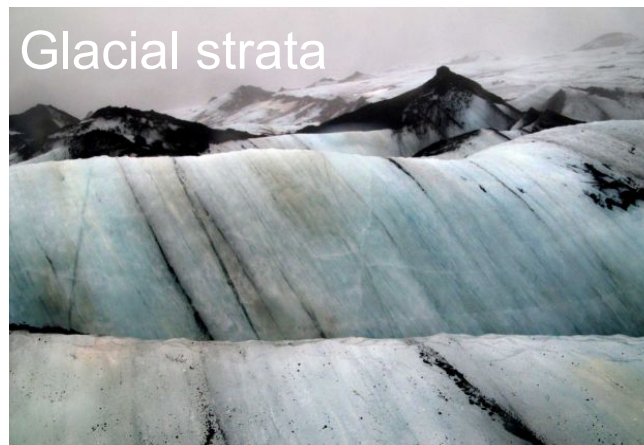
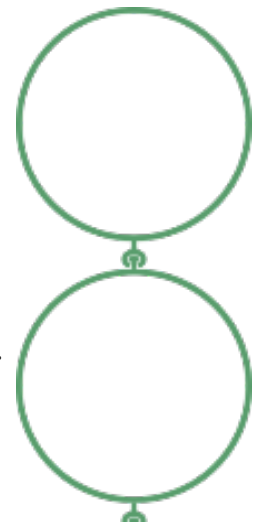




# WHEN do you use O-Pile: DTH?

## Environments & Uses

O-Pile: DTH systems can be driven into environments where the rock strata exceeds 120 megapascal or other difficult environments at levels of productivity not achieved before by using the state-of-the-art Down-the-Hole (DTH) drilling technique.

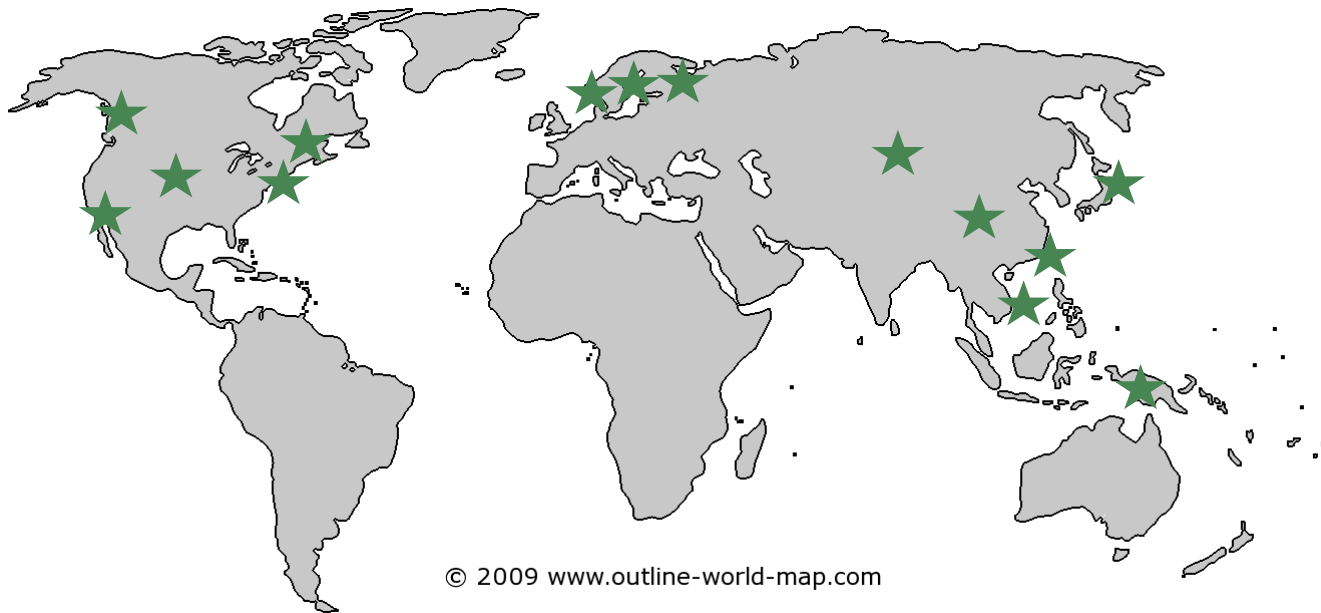




# WHERE can I find O-Pile?

## Market Availability

O-Pile's domestic and foreign markets include all of the United States, Germany, Japan and the Pacific rim, and because we source pipes locally, we are able to deliver highly dynamic and customizable systems, anywhere in the world.



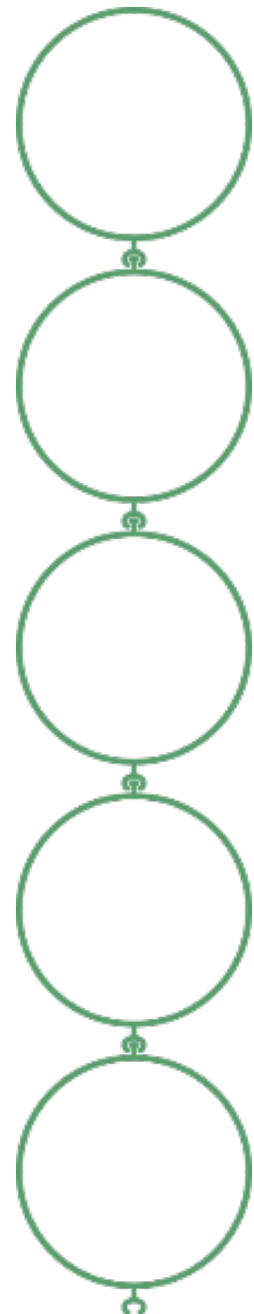
### A short list of recent/pending jobs:

#### US Jobs

- Maryland
- NY
- NJ
- USACE/NAVY-Point Loma, Ca.
- Texas

#### International Jobs

- Norway (many)
- Russia (many)
- Finland
- Sweden
- Canada
- Hong Kong
- Singapore
- Philippines
- East Timor
- Malaysia
- Brunei
- Japan (many)





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## A Closer Look at...

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DTH



MARINER



AMBULANCE

# A Closer Look at Steel Grade & Bending Moment Capacity

The selection of the steel grade has a marked impact on the structural resistance of the pile wall. Selecting a stronger steel grade such as X70 or X80 often allows using piles of smaller diameter or wall thickness.

With grades x70 and x80 this means O-Pile provides 70,000 psi (482mPA) and 80,000 psi (552mPA) yield strength, where by hot rolling sheet piling is limited to less than 65,000 psi and typically uses steel with a yield strength of 36,000 or 50,000 psi.

Following is a list of available steel grades for O-Pile: A 252 Grade 1, A 252 Grade 2, A 252 Grade 3, A 572 Grade 50, A 572 Grade 55, A 572 Grade 60, A 572 Grade 65, x70 and x80.

To configure an O-Pile visit [www.O-Pile.com](http://www.O-Pile.com).

**O-Pile**

Product ID  
**O-Pile 3846** (480N/mm<sup>2</sup> 635mm 23mm WOM-XL/WOF-XL/180mm@12mm)  
 Steel grade options: x70 (default) | A 252 Grade 1 | A 252 Grade 2 | A 252 Grade 3 | A 572 Grade 50 | A 572 Grade 55 | A 572 Grade 60 | A 572 Grade 65 | x80

Build a wall using O-Pile 3846 (480N/mm<sup>2</sup> 635mm 23mm WOM-XL/WOF-XL/180mm@12mm):

Enter Parameters:  
 Wall Length m  Wall Height m  Connector Ratio  % **COMPUTE**

**CORROSION TOOL: Please input your parameters**

I'm building a  with a lifespan of  years in an environment of

Note: Corrosion Tool tool uses recommendations as stated in the [NASSPA: Guidance on Corrosion](#).

TYPE	NAME	WEIGHT kg/m <sup>2</sup>	BEND. MOM. CAPACITY kN-m/m	AVAILABLE
	O-Pile O-Pile 5408	299.3	5,408.5	4 weeks
	ArcelorMittal HZM 1180M B-14 / AZ 14-770	301.4	3,918.6	16 weeks
	O-Pile O-Pile 5429	302.6	5,429.0	4 weeks
	O-Pile O-Pile 5446	304.2	5,384.8	4 weeks

**Top Product Alternatives**

- O-Pile   
O-Pile 5429
- Gerdau   
PZC-P 81-W1 (PZC 14 + 1372m)
- ArcelorMittal   
HZM 1180M B-14 / AZ 14-770

**Request a Quote**

**Primary SSP Specifications**

bending moment capacity	3,845.9 kN-m/m
steel grade	x70 (default)
interlock strength	1,940.0 kN/m
weight	463.3 kg/m <sup>2</sup> *
panel weight	377.6 kg/m *
section modulus	8,012.2 cm <sup>3</sup> /m *
moment of inertia	254,388.4 cm <sup>4</sup> /m *
connector ratio	100 %
	Custom <input type="text" value="95"/> %
panel width	815.0 mm
profile depth	635.0 mm

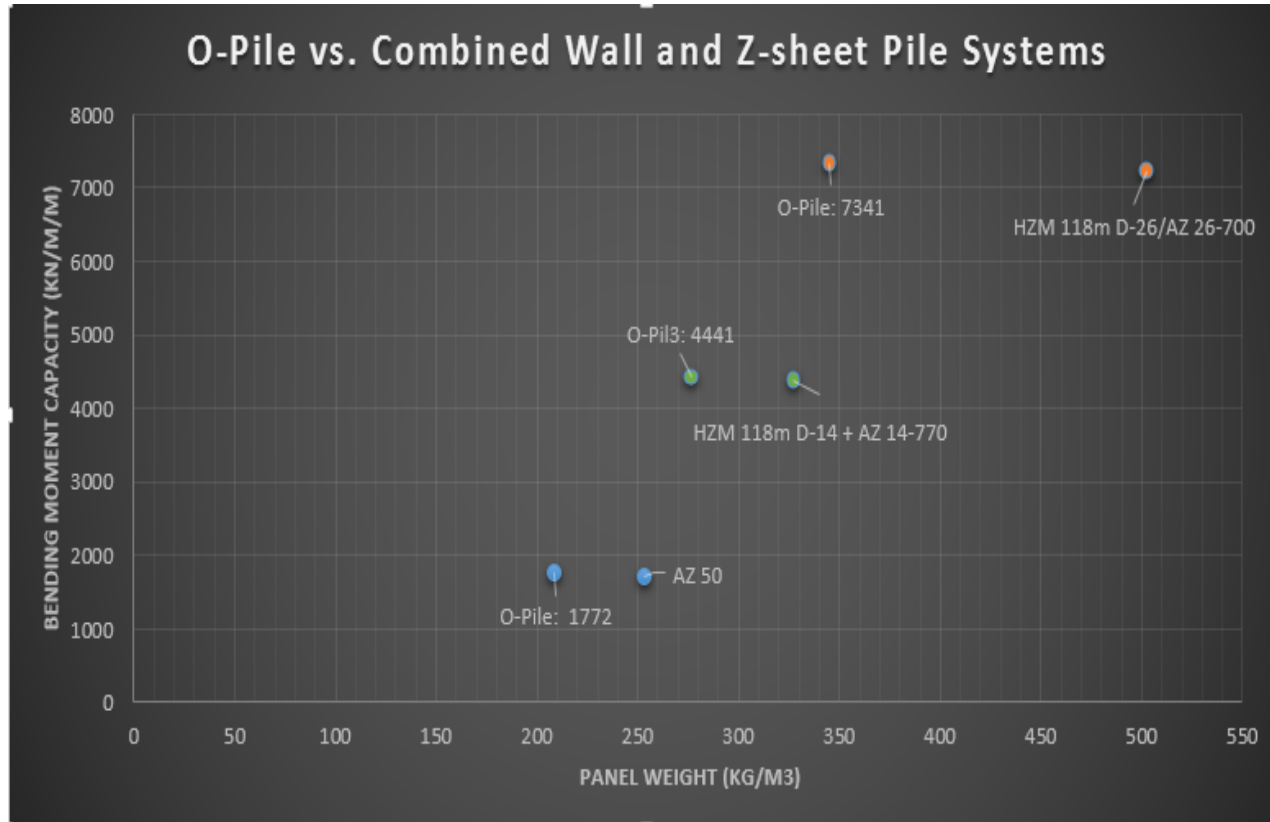
**Components**

king pile	635mm x 23.00mm
intermediate pile	635mm x 23.00mm
connectors	WOM/F-XL

# A Closer Look at the Power Curve Efficiency Ratio

Following is a plotter graph that visually shows the power curve efficiency of O-Pile when up against a combined wall or z-sheet pile system with a similar bending moment capacity.

As you can see there is a huge weight differential, in O-Pile's favor, which equates to costs savings when O-Pile systems are pitted against comparable sheet pile sections.



Name of panel	Panel Weight (kg/m <sup>3</sup> )	Bending Moment Capacity (kN/m/m)
<b>Comparison 1</b>		
AZ 50	252.9	1728.1
O-Pile: 1772	208.6	1771.8
<b>Comparison 2</b>		
HZM 1180m D-14 + AZ 14-770	327.4	4366.4
O-Pile: 4441	276.4	4,440.90
<b>Comparison 3</b>		
HZM 1180m D-26/AZ 26-700	502.6	7230.5
O-Pile: 7341	345.1	7341.5

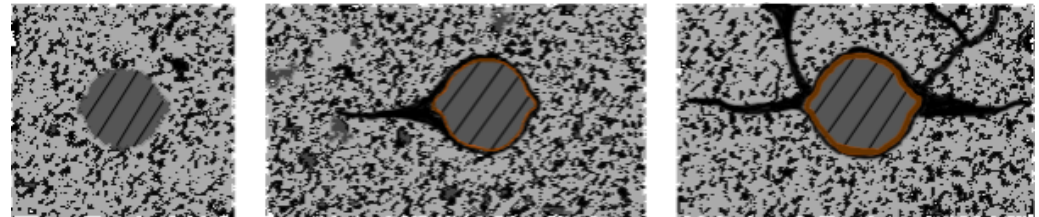
# A Closer Look at Corrosion Allowance

## Concrete vs. Steel and the myths

There is a pervasive myth that concrete has a higher durability than steel?

The real answer is that steel can go toe to toe with concrete, the only difference is how corrosion presents itself in each material.

Concrete breaks down due to its porosity and penetration by Carbon Dioxide in the atmosphere getting in through the pores changing the cement paste from Calcium to Calcium Carbonate (carbonation). When corrosion does finally visually present itself, by then little if nothing can be done.



# A Closer Look at Corrosion Allowance

## Corrosion Protection Methods

The irony is the best method to reinforce concrete structures to withstand building loads is to add more steel rebar where the structure in the end has more rebar than concrete.

However, in the case of O-Pile, corrosion can be met head on with the following 4 methods, with sacrificial steel being the best option:

- 1). Sacrificial steel
- 2). Double pipe thickness as offered in O-Pile: Mariner
- 3). Coatings
- 4). Cathodic protection



Example of concrete structure exposed to elements; deterioration starts from within



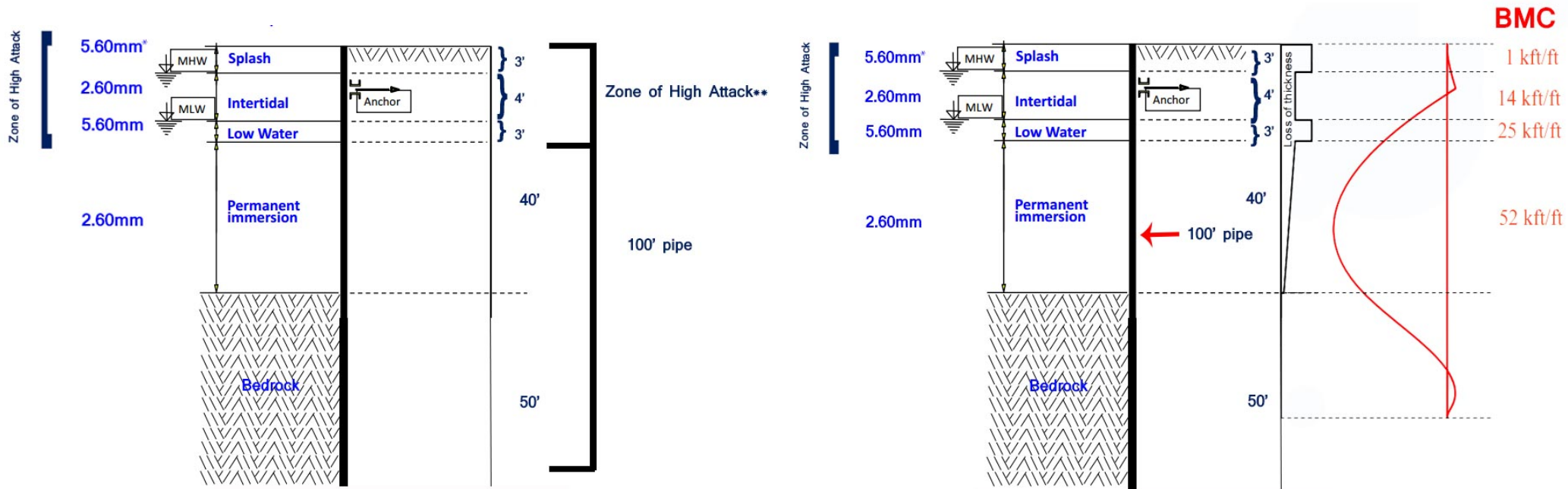
Example of O-Pile structure in extreme weather elements



# A Closer Look at Corrosion Allowance

## Sacrificial Steel

Sacrificial thickness is the number one choice for designers who need to meet design life criteria. Usually, one needs to apply additional steel to the entire exposed structure when it is actually only required on the most corrosion-vulnerable surfaces: the splash and low-water zones (a.k.a. the Zone of High Attack).



\*mm unit is the loss of thickness due to corrosion for steel sheet piling according to the Eurocode and the NASSPA Guidance on Corrosion document. The values seen above are for a design life of 75 years, the NASSPA document also gives values for 5, 25, 50 and 100 years.

\*\* The highest corrosion rate is usually found in the Zone of High Attack in marine environments or at the low water level in tidal waters.

# A Closer Look at Corrosion Allowance

The Corrosion Allowance Tool on iSheetPile.com

To get a better sense how the sacrificial steel method works, visit [www.isheetpile.com](http://www.isheetpile.com) and use the Corrosion Allowance tool, which allows you to dial-in desired lifespan and environment for a chosen sheet pile section.

The results show Corrosion Resistance and Projected Bending Moment Capacity, which gives the designer a true sense of the lifespan of a chosen section.

O-Pile 3846 (480N/mm<sup>2</sup> 635mm 23mm WOM-XL/WOF-XL/180mm@12mm)  
 Available steel grade options: A 252 Grade 1 | A 252 Grade 2 | A 252 Grade 3 | A 572 Grade 50 | A 572 Grade 55 | A 572 Grade 60 | A 572 Grade 65 | x70 | x80

**Build a wall using O-Pile 3846 (480N/mm<sup>2</sup> 635mm 23mm WOM-XL/WOF-XL/180mm@12mm):**

Enter Parameters:  
 Wall Length m:   
 Wall Height m:   
 Connector Ratio:  % **COMPUTE**

**CORROSION ALLOWANCE TOOL: click here to activate**

I'm building a  with a lifespan of  in an environment of

Note: Corrosion Tool uses recommendations as stated in the **NAASPA: Guidance on Corrosion**

**Pick an environment**

**Dial-in the lifespan of project**

**When the Corrosion Allowance Tool is activated the results will show the projected BMC, which is an estimation of the actual bending moment capacity of a given steel component after time and corrosion effects due to inputted environmental conditions. And the results will also show Corrosion Resistance, which is the percentage of the bending moment capacity remaining in a steel section after a given period of time, according to corrosion data from the NAASPA Corrosion Guide and Eurocode.**

TYPE	NAME	STEEL GRADE	WEIGHT kg/m <sup>2</sup>	BEND. MOM. CAPACITY kN-m/m	CORROSION RESISTANCE	PROJECTED BEND. MOM. CAPACITY kN-m/m	AVAILAB
I	ArcelorMittal HZM 1180M C-14 / AZ 19-700	A 572 Grade 50	341.7	4,597.3	85.9%	3,913.4	16 weeks
II	ArcelorMittal HZM 1080M B-26 / AZ 14-770	A 572 Grade 50	341.9	4,826.4	93.3%	4,517.4	16 weeks
O-O	O-Pile O-Pile 7200	x70	344.7	7,200.0	74.4%	5,355.4	4 weeks
O-O	O-Pile O-Pile 7341	x70	345.1	7,341.5	74.4%	5,461.4	4 weeks
O-O	O-Pile O-Pile 7172	x70	349.7	7,172.5	74.8%	5,363.3	4 weeks
O-O	O-Pile O-Pile 7374	x70	349.8	7,374.0	73.5%	5,420.8	4 weeks
O-O	O-Pile O-Pile 7316	x70	350.1	7,316.3	74.8%	5,471.6	4 weeks

**Top Product Alternatives**

- O-Pile O-Pile 5429
- Gerdau PZC-P 81-W1 (PZC 14 + 1372mm x 15)
- ArcelorMittal HZM 1180M B-14 / AZ 14-770

**Request a Quote**

**Primary SSP Specifications**

- bending moment capacity: 3,845.9 kN-m/m
- steel grade: x70
- 3,413.3 kN/m
- 463.3 kg/m<sup>2</sup>
- 377.6 kg/m<sup>3</sup>
- 8,012.2 cm<sup>3</sup>/m<sup>3</sup>
- 54,388.4 cm<sup>4</sup>/m<sup>3</sup>
- 100% stom
- 95%
- 815.0 mm
- 635.0 mm
- 35mm x 23.00mm
- 35mm x 23.00mm
- WOM/F-XL

**Manufacturer**  
O-Pile

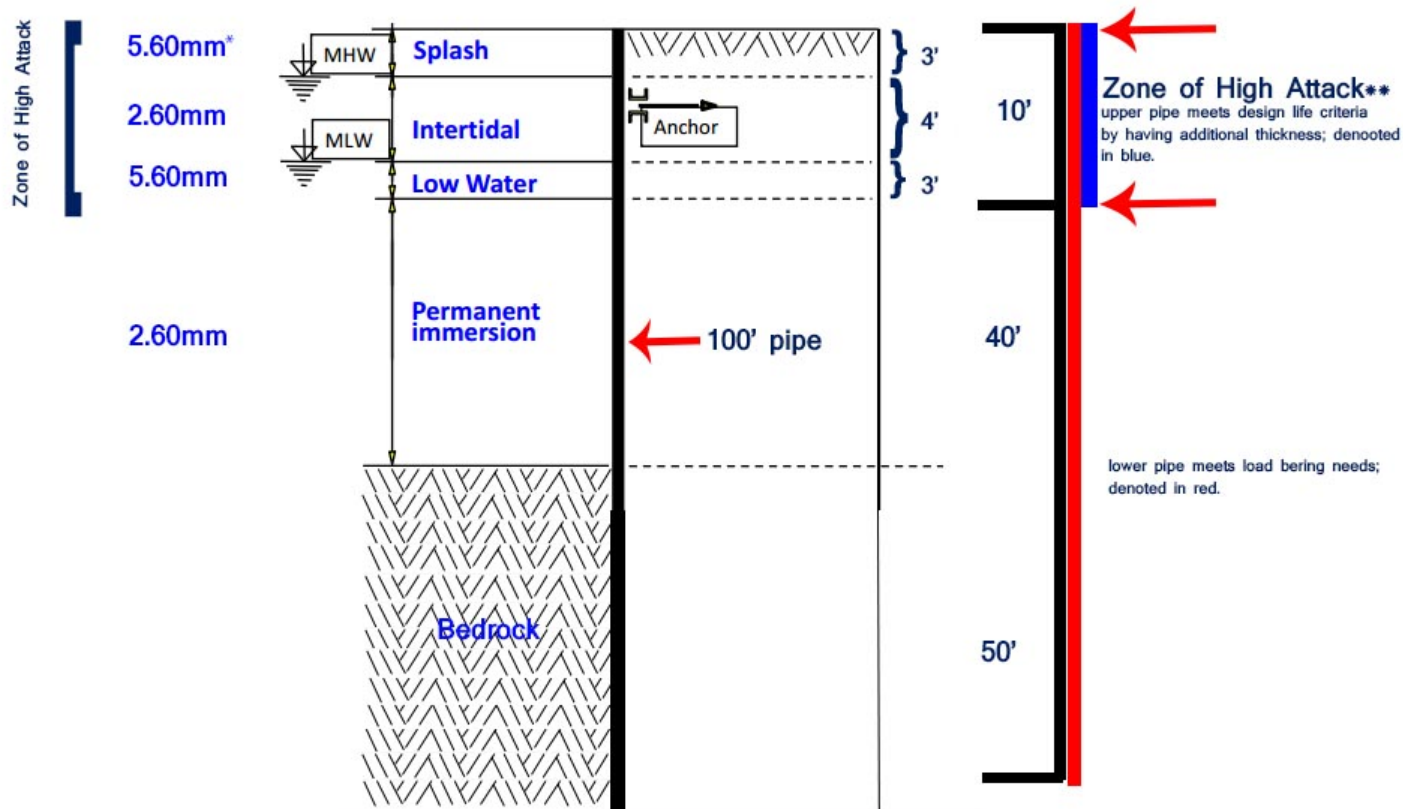
**Distributors**  
O-Pile



# A Closer Look at Corrosion Allowance

## Double Pipe Thickness used in O-Pile:Mariner

O-Pile Mariner's double pipe thickness targets design life and the use of sacrificial thickness, exactly where you need it – the Zone of High Attack. With a 100' pipe, the thickness of the upper 10' of pipe (denoted by arrows) meets the corrosion allowance, while the bottom 90' of the pipe is dialed-in to meet load bearing needs. By utilizing double butte joints, the double pipe gives the most efficient use of steel and the most cost-effective solution for durability.



\*mm unit is the loss of thickness due to corrosion for steel sheet piling according to the Eurocode and the NASSPA Guidance on Corrosion document. The values seen above are for a design life of 75 years, the NASSPA document also gives values for 5, 25, 50 and 100 years.

\*\* The highest corrosion rate is usually found in the Zone of High Attack in marine environments or at the low water level in tidal waters.



# A Closer Look at Predictable Driving

O-Pile systems can be installed just like Z sheet pile with a conventional vibro hammer or impact hammer (want more info go to NAASPA "Best Practices Sheet Pile Installation Guide [www.isheetpile.com/documents](http://www.isheetpile.com/documents)).

No complex template or additional materials needed as in the case of combined sheet pile walls.



Impact hammer driving an O-Pile



O-Pile's template is simple, akin to a Z sheet pile template

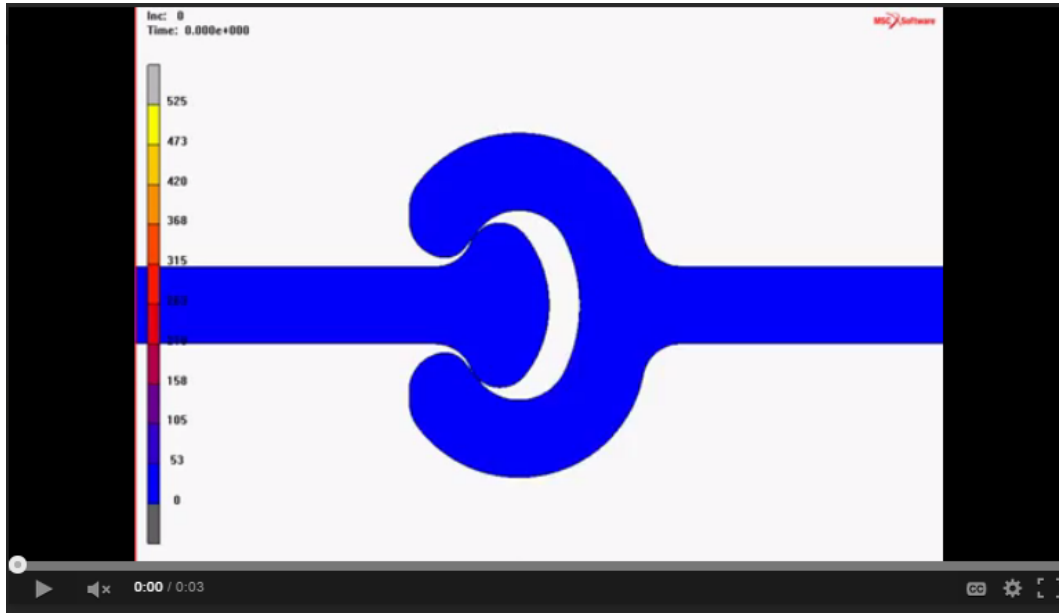


O-Pile template in marine environment



Another angle of O-Pile template in marine environment

# A Closer Look at Interlock Strength of WOM/OF vs. Larssen



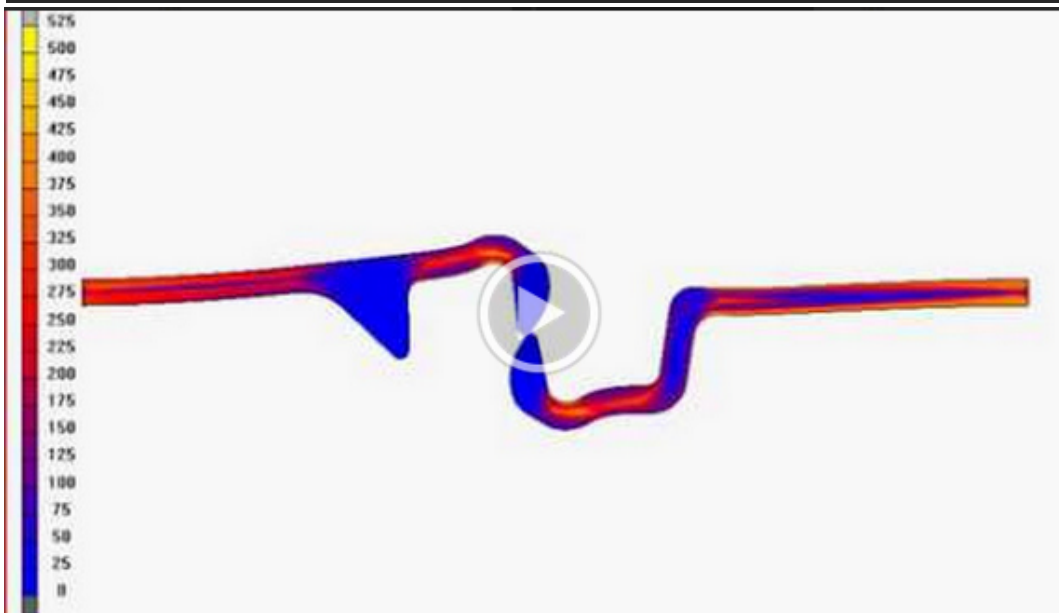
## WOM/WOF pull test results

Interlock strength =

3418 kN/m

19.5 kips/inch

234.21 kips/foot



## Larssen pull test results

Interlock strength =

801 kN/m

4.57 kips/inch

54.88 kips/foot

# A Closer Look at WADIT

## Benefits

For projects where water leakage presents a problem, from dewatering cofferdams to barrier and cutoff walls for site remediation, WADIT is the sealant and corrosion inhibitor of choice of O-Pile.

### BENEFITS

**Tested & Certified** - WADIT fortifies O-Pile projects. This real-world and lab-tested sealant keeps water out, protects against hazardous substances and can withstand give bars (70 psi) of differential water pressure.

**Highly Durable** - WADIT performs in every environment, from the tropics to the arctic, where high pressure sealing is required with extreme temperature ranges. The longevity of your O-Pile system is guaranteed with this durable sealant

**Extremely Flexible** - WADIT has exceptional memory rebound properties. Conventional materials may harden like glass in temperatures of just 50 F (10 C). WADIT, on the other hand, remains extremely flexible even in groundwater.

## Internationally Lab-Tested and Certified

WADIT® has been repeatedly proven as a safe material for use in potable water projects. The Bavaria State Trade Department (LGA), the German equivalent of the EPA, has certified WADIT® for use in areas with potable water.



"The reports by the LGA come to the conclusion that WADIT® sealant can be used without any restrictions in sheet pile wall interlocks in ground and surface water areas. There are no fears of harmful effects if it is used in the area of drinking water extraction systems."





# A Closer Look at WADIT *cont.*

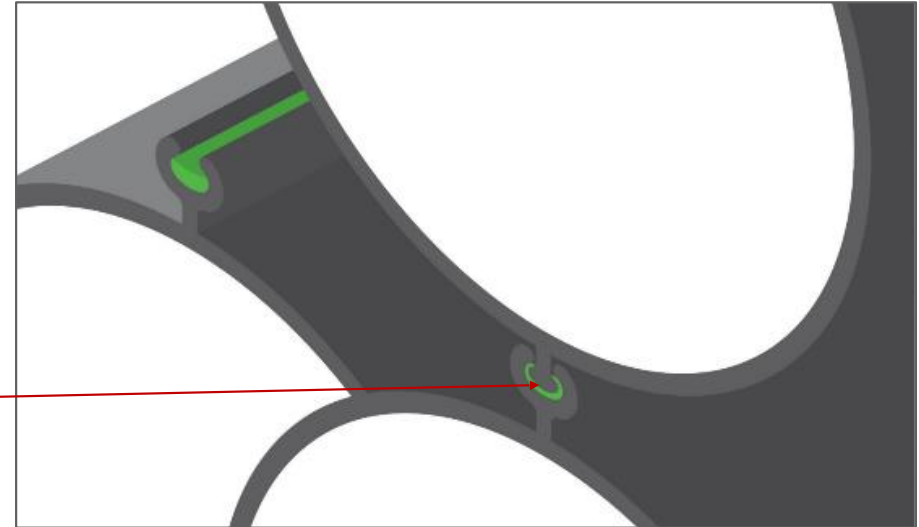
## Benefits

Environmentally Friendly - WADIT is non-toxic and made from sustainable, natural raw materials. Internationally lab-tested and certified, WADIT is safe and can be used without any restriction in O-Pile wall interlocks for ground and surface water use.

Interlock Lubricant - WADIT acts as a pile lubricant by reducing friction and preventing interlocks from “heating up”; this allows for the contractor to choose to drive socket first, if needed.

Corrosion Inhibitor - WADIT is applied in the WOF chamber and acts as a corrosion inhibitor by sealing the middle interlock, elimination corrosion from within the interlock.

Impervious to Weather - No matter the climate, WADIT can be applied, transported and stored in any weather condition, ensuring a fast and problem-free sealant application.



# HOW can I learn more about O-Pile?

## Overview

To learn more about O-Pile visit [www.o-pile.com](http://www.o-pile.com).

Or visit [www.sheetpile.com](http://www.sheetpile.com) or configure an O-Pile system by using the O-Pile tool on [www.iSheetPile.com](http://www.iSheetPile.com); you can pick and choose the OD and thickness of the pipe as well as pick a desired WOM/WOF connector.

Welcome to the PilePro Group. To learn about our other innovative sheet pile brands [CLICK HERE](#)

**iSheetPile**  
A PilePro Group Company

+1.512.243.1445 | [info@isheetpile.com](mailto:info@isheetpile.com)  
units: metric | US  
Select a different product:  
(product series) [dropdown]  
iSheetPile Glossary: [dropdown]

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**O-Pile**   
Product ID  
**O-Pile 1700 (345N/mm<sup>2</sup>\_762mm\_9m)**  
Steel grade options: [x70 \(default\)](#) | [A 252 Grade 1](#) | [A 252 Grade 2](#) | [A 252](#)

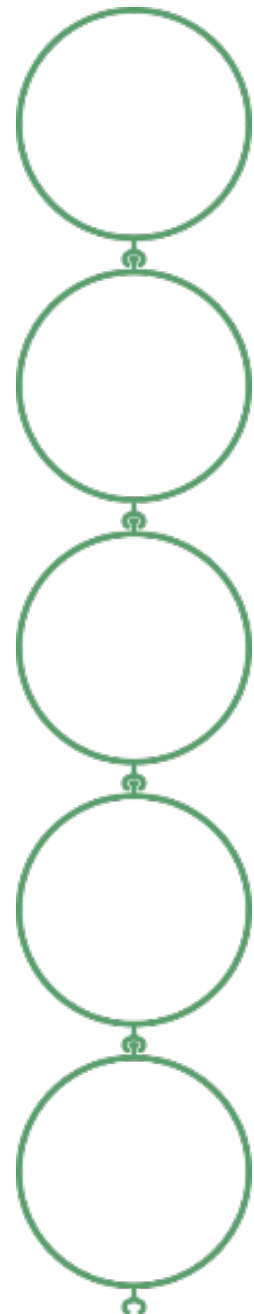
O-Pile Tool: Click on pipe or connector to adjust or use menu below

pipe: 762mm x 9.00mm [dropdown]  
connectors: WOM/F-S [dropdown]

Product Alternatives

- ArcelorMittal AZ 12-770 + HZ 880M A-12 + R2
- Gerdau PZC-P 53-W5 (PZC 13 + 1219m)
- O-Pile O-Pile 3300

panel width  
panel depth





O-Pile



O-Pile  
DTH



O-Pile  
MARINER



O-Pile  
AMBULANCE

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Thank You

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