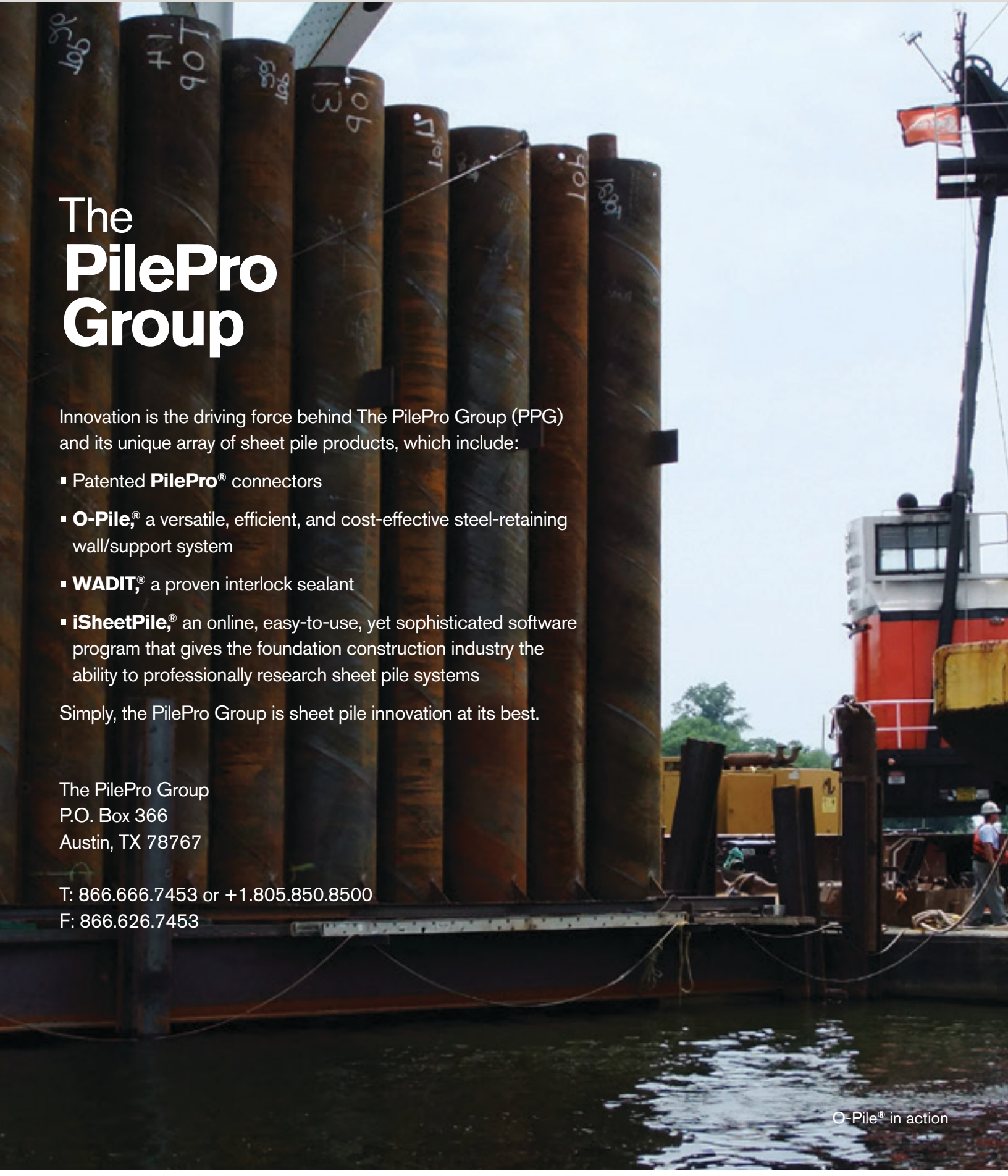
The PilePro Group

Company and Product Line Overview

PilePro.com



The PilePro Group

Innovation is the driving force behind The PilePro Group (PPG) and its unique array of sheet pile products, which include:

- Patented **PilePro®** connectors
- **O-Pile,®** a versatile, efficient, and cost-effective steel-retaining wall/support system
- **WADIT,®** a proven interlock sealant
- **iSheetPile,®** an online, easy-to-use, yet sophisticated software program that gives the foundation construction industry the ability to professionally research sheet pile systems

Simply, the PilePro Group is sheet pile innovation at its best.

The PilePro Group
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O-Pile® in action

Table of Contents

The Leader in Innovative Sheet Pile Connectors

PilePro offers a line of modular sheet pile connectors that enable distributors to offer the end user an off-the-shelf and ready-to-install component. PilePro connectors effectively render fabricating corners and other connection processes in sheet piling projects a relic of the past.

Predictable, Quantifiable Retaining Wall System for All Soil Conditions

O-Pile is a dynamic, cost-effective contiguous pipe-to-pipe system that allows you to drive predictably into pure rock, if necessary, as well as dial-in your corrosion and bending moment needs separately. O-Pile is versatile and readily available, as you can use your local pipe plant or supply — no need to bring the majority of the steel from Luxembourg, anymore. Go to www.O-Pile.com to configure your system.

The Proven Sheet Pile Interlock Sealant

A purpose-built and globally proven sheet piling interlock sealant, WADIT (short for WASSERDICHT, German for waterproof) is an environmentally friendly sealant that was developed to deliver robust water-stopping protection. WADIT is available for use anywhere with any type of SSP systems, including Z sheet piles, O-Pile, and combined SSP.

The Only Online Comparative Marketplace for Sheet Pile

iSheetPile is a groundbreaking online tool to compare, configure, and readily available SSP systems in a given market via their bending moment capacity in order to get the most efficient use of steel for your application.

PilePro

A PilePro Group Company

PilePro is the world's only full line connector manufacturer for the steel sheet pile industry. PilePro manufactures corners and connectors for all types of sheet pile used around the world. The connectors are made to highly stringent standards that form precise connections between steel sheet pile and other support systems, such as H-Beam, I-Beam and pipes/tubes.

These connectors are often modular in nature and come to the contractor or end user as a "ready-to-install" component. In addition to ready stock in our main markets, PilePro also offers specialty made-to-order connectors that form high value engineering solutions.

PilePro connectors have effectively rendered fabricating corners and other connection processes in steel piling construction projects a relic of the past. For today's foundation and port construction projects, PilePro connectors give the design engineers, contractors and project owners a cost-effective, readily available engineered solution that increases efficiency, ease of installation, and increases the strength of their retaining system.

PilePro engineered connectors replace the antiquated process of cutting and welding sheet pile interlocks into corners or connections between pipes and beams. PilePro connectors are produced with the highest quality control standards.

For updated technical data and current specifications, please see website: pilepro.com.

Reliable

Less corrosion risk than fabrication: PilePro corner connectors offer a one-piece construction that does not rely on a single vertical weld seam. There is never a risk of "unzipping" at the corner or junction pile.

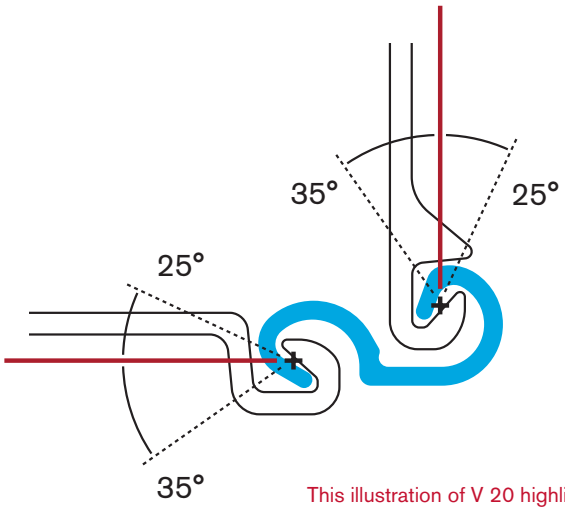
PilePro connectors are interlocked and attached to the sheet piling; thus, single unit integrity of the steel wall unit is always maintained.

Durability: PilePro corner connectors are stronger and more durable than other alternatives

Flexible

Design: Precise engineering and superior design means PilePro connectors have greater flexibility within the interlock – typically a 20° to 30° of swing versus the 2° to 5° of swing found in most sheet pile interlocks.

Less expense: PilePro connectors provide superior cornering and connection solutions on a Customary Quick Delivery (CQD) basis through an efficient logistics network, products maybe delivered directly to the job site.



This illustration of V 20 highlights the greater flexibility of PilePro connectors; V 20 offers contractors a 2-way connection with angles up to 20° to 160°.

PilePro

Fast

Easy transport: PilePro connectors are easily and efficiently transported with minimal risk of damage. Contrast that, with fabricated corners that cost more, weight more and are prone to handling damage.

No delay: PilePro connectors enable the user to immediately build sheet wall configurations without the cutting and welding of SSP interlocks.

Less inventory: Modular corners and connectors allow distributors and contractors to greatly lower their inventory, PilePro maintains a large stock of connectors that can be ordered on a CDQ basis in a wide range of angles and lengths, thus eliminating the need for large standing inventories.

PilePro connectors are easier to drive and extract so that construction time is reduced.

Most PilePro products are available for quick turn-around delivery to your project site.

Some restrictions apply.

AK: 5-15 days
HI: 14-28 days

Some restrictions apply.

Order must be received by 9am on previous day and delivery is next business day.

Application Examples

Joker

SWC 90 & SWC 120

V 20

O-Pile

CF Tee

PZ 90

PilePro Quick Connector Guide

For Z Sheet Pile

For AZ/Hoesch

- ANY-Z®
- V 20™
- V 20 T™
- V 20 TS™

For Cold Formed

- ANY-Z®
- CF 90™
- CF Tee™

For PZ/PZC

- ANY-Z®
- PZ 90®
- PZ Tee®
- PZT-S
- Colt
- Cobra
- Joker®
- Bullhead®

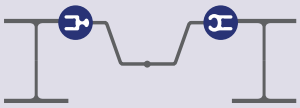
For Combined Sheet Pile

For AZ/Hoesch

- V 20 weld-on™

For PZ/PZC

- BBS-M/F



- WOM®/WOF®

- WOM-XL®/WOF-XL®

- WOM-XXL®/WOF-XXL®

For O-Pile

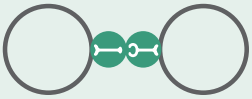
O-Pile: DTH

- WOM-S®/WOF-S®

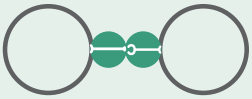
For Pipe to Pipe

- WOM®/WOF®

- WOM-XL®/WOF-XL®



- WOM-XXL®/WOF-XXL®



For Flat Sheet Pile

For PS31 & PS27.5

Long Lasting Connection

SWC 30A™

SWC 30B™

SWC 60A™

SWC 60B™

SWC 90A™

SWC 90B™

SWC 120™

Less Expensive Weld-On

SWC 30™

SWC 60™

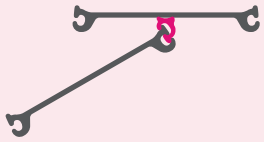
SWC 90™

Flat Sheet Pile

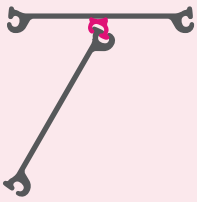
120 Flat Sheet Pile

Less Expensive Weld On

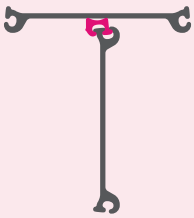
SWC 30™



SWC 60™



SWC 90™



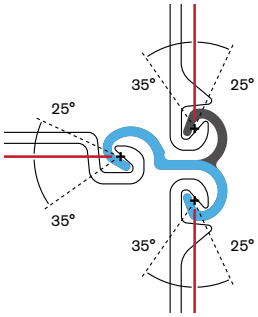
Connector Spotlight

ANY-Z

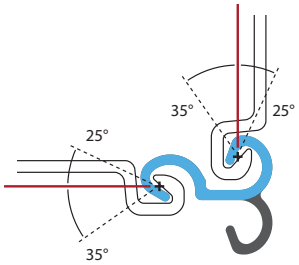
Truly a universal connector, ANY-Z is ideal for contractors who work with all types of sheet pile, including: AZ/ Hoesch, PZ and PZC, and cold formed. ANY-Z offers most 2 way corner connections needed and creates endless corner, junction and transition pile configurations between different types of sheet pile.

V 20 T

Perfect connector for the contractor who uses both AZ/ Hoesch type sheet pile, for reuse or permanent applications. Likely the only corner connector you'll ever need, as it can do all types of two way corners and three way tee's as well.

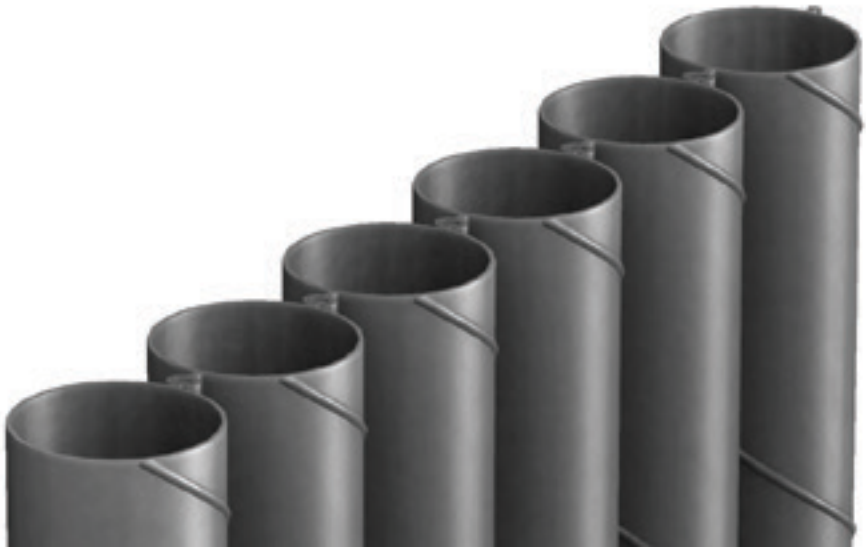


V 20 T being used as an Omega connector.



V 20 T being used as a V 20 connector.

A PilePro Group Company



Overview

O-Pile® is a leader in predictable, quantifiable retaining wall systems that can be driven in all soil conditions. 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 you meet your specific project needs.

O-Pile Attributes

O-Pile is the most versatile, efficient and cost-effective steel retaining wall/support system that can replace standard Z sheet pile, combined pipe/beam SSP, slurry, secant, contiguous concrete walls and other conventional concrete constructions. O-Piles are patented systems with a series of important attributes:

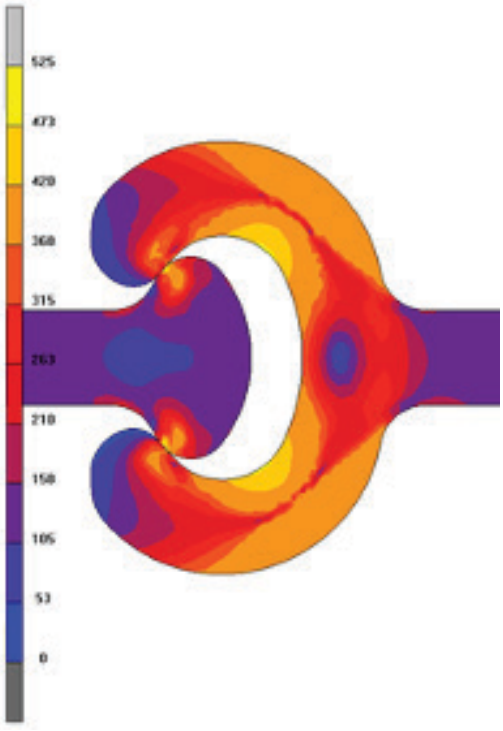
1. Bending Moment Capacity (BMC) – O-Pile systems are stronger than Z, U or combined sheet pile walls as they can be made using high strength hot rolled coil that exceeds the capabilities of hot rolling, allowing for a much larger Bending Moment Capacity. For example O-Pile is available in X80 to provide 80,000 yield strength, where by hot rolling sheet piling is limited to less than 65,000 and typically uses steel with a yield strength of 36,000 or 50,000 psi. 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. To configure an O-Pile please go to www.O-Pile.com.

2. Strong Connection – the WOM/WOF connector has an interlock strength of 19.5 kips/inch (3418 kN/m); Figure 1 on the right clearly shows the high pull-out resistance of this connection.

"Greater interlock strength improves integrity during driving and allows forces to be redistributed laterally along the wall."

USACE: 2.1 Metal Sheet Piling UFGS -31 41 16 Page 13 (August 2009)

FIGURE 1



A WOM/WOF has a high pull out capacity of 19.5 kips/inch (3418 kN/m)

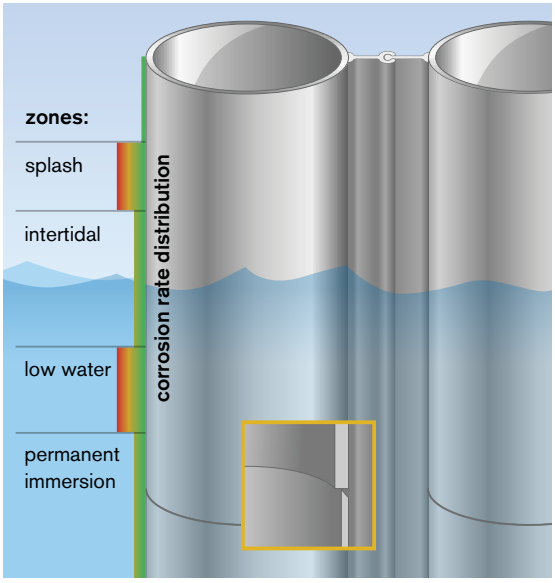
3. Double Pipe Thickness – With O-Pile: Mariner, you can "dial in" thickness to meet specific structural load/durability needs to ensure overall safety. For increased durability, thickness can be increased in the upper 15' (4.5m) of the pipe, specifically at the splash- and low-water zones, while the lower majority of the pipe remains at a thickness to meet load-bearing requirements. Additional costly measures, such as coatings, special steel grades or cathodic protection, become unnecessary. This gives the most efficient use of steel and the most cost-effective solution for durability. See Figure 2.

4. DTH (Down the Hole) Drilling – O-Pile: DTH utilizes state-of-the-art DTH drilling techniques that allows its systems to be driven into any ground or rock strata at levels of productivity not achieved before. DTH drilling has been used in these challenging environments: post glacial soils of Norway, boulders of Sweden, granite of Finland, deep bed rock of Hong Kong, through heavy structure in Macau, etc. The O-Pile: DTH Pile is installed with the centric drilling method using ring bits of a larger diameter than standard bits. The ring bit drills a hole larger than the pile to accommodate the WOF/WOM connectors. Sized from 6" (150mm) to 40" (1016mm) pipe can be installed using O-Pile: DTH. Pipes with diameters above 40" (1016mm) utilize a driving method that is more a kin to driving Z-sheet pile. See Figure 3.

5. Superior Sealant – WADIT, the globally proven sheet pile interlock sealant, comes pre-applied in the WOF interlock chamber before delivery to the job site. For more information on WADIT, visit page 11.

6. Increased Savings – The increased Bending moment capabilities of O-Pile, allow the user to construct a stronger wall using much less steel, and hence at a much lower cost. O-Pile works with our customers to ensure we meet your specific project needs. We don't just sell you a product, we enter into a partnership that starts at the design stage and extends through implementation. Simply put, we deliver the most technically advanced and highly economical. Since, we locally source pipes, we can always help you find the correct pile size in a broad range of steel grades, which allows you to implement a retaining wall or foundation structure with the best overall economy for all soil conditions and loading situations. O-Pile offers a truly unmatched proven solution.

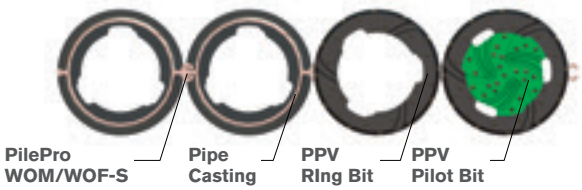
FIGURE 2



Call out box shows how thickness can be "dialed in" to meet safety needs (e.g. structural load and durability).

FIGURE 3

DTH-O-Pile
The Only SSP System that Can Be Driven Through Solid Rock.



General Installation and Applications for O-Pile

O-Pile Installation Methods:

1). Like Z-Sheet Pile: Typically, O-Pile is installed using a drive or vibration method that requires less equipment because there is no need for a template. O-Pile are driven similar to Z-sheet piles, which are easier to install than combined systems. Each pipe is supported by adjacent pipes with a small lead ahead of the rest, ensuring accurate wall alignment.

2). O-Pile – DTH systems: Predictable, quantifiable installation is possible even with difficult driving conditions, such as bedrock or jobsites with heavy debris, consider O-Pile: DTH. Using specialized centric drill bits O-Pile can be driven through solid rock and other difficult environments. Compared to driving a conventional combined sheet piles with beams or pipes, the installation using a O-Pile: DTH system is much less challenging due to one single fact: O-Piles are supported throughout their installation, whereas King pile combi-wall systems with pipes and beams are not. Installation using flexible strong WOM/WOF connections are simplified by the use of a template and panel installation method. The installation of O-Pile: DTH Piles is similar to driving sheet pile pairs in a basic two frame template. At no stage is there a pipe pile entirely unsupported throughout its length as it is driven to grade. Each pipe is supported by adjacent pipes with a small lead ahead of the rest, ensuring accurate wall alignment.

Structures Well-Suited for O-Pile®

Permanent Structures – O-Pile systems can also be installed reliably under challenging conditions, whereby the solution brings considerable savings in construction time and produces an end result of good overall economy. O-Pile Systems may even completely eliminate the need to build temporary retaining walls, because you can leave the systems in place, fill it in with concrete and build on top of it.

Temporary Structures – As a temporary retaining wall structure O-Pile systems are particularly suitable for challenging soil conditions where the implementation of conventional retaining wall structures is difficult or impossible. The tried and true ball and socket interlock is renowned for it's reuse capabilities.

Horizontally loaded structures – O-Pile systems are an excellent solution for projects that require a higher bending stiffness and resistance than conventional Z- or U-sheet pile walls. An O-Pile system built using large diameter piles provide high bending stiffness and resistance pound for pound, for the same amount of weight.

Vertically loaded structures – If the piles are extended to bedrock, the vertical load bearing capacity of the O-Pile: DTH wall is very high. Thus the structure can act as a horizontally loaded wall subject to earth pressure and a foundation structure able to bear high vertical loads at the same time.

Application Examples for O-Pile

Building with a basement – O-Pile may be used to good advantage in buildings with one or more basement stories. At these projects the O-Pile walls serves as a permanent joint structure for vertical and horizontal loads. The solution is cost-effective because separate retaining wall structures are not needed. The O-Pile walls can be surface treated and allowed to remain an exposed wall structure, for example, in a parking garage in a basement without internal cladding.

Building with a column frame – The O-Pile walls may consist of piles of variable length. Part of the piles of the O-Pile walls can be extended to bedrock to ensure horizontal support for the lower end of the wall structure and to act as foundation piles that transmit column loads. The O-Pile walls may also be built as a combi-wall (OZ system) whose sheet piles are installed between the pipe piles by driving them by percussion or vibration after the installation of the pipe piles.

Construction-period retaining wall – The O-DTH wall is an effective solution for construction period retaining wall structures if the soil contains layers that are difficult to penetrate, high water tightness is required of the retaining wall, it is desired to minimize the number of support levels, or the retaining wall should be extended to rock. Installation of O-DTH walls usually using the down-the-hole drilling method causes less vibration in the penetration of compact soil layers than the installation of sheet pile walls, which makes the O-Pile walls very suitable for installation close to vibration- sensitive structures.

Bridge abutments – O-Piles walls can be used as a bridge abutment. With the O-Pile walls the vertical and lateral loads of the bridge and the horizontal loads of the embankment can be transmitted reliably to bedrock and soil. Use of the O-Pile walls as an abutment allows building the bridge deck before excavation. Combined, for instance, with a method for moving the deck it minimizes the traffic interruption during construction. See Figure 1.

Retaining walls of varying shapes – O-Pile walls may be used for building wall entities of different geometric shapes. For instance, the walls can be circular or make angles of various degrees. If necessary, different pile sizes can be combined in the O pile wall. Thus the structure can be optimized according to actual loads.

Excavations and structures extended into bedrock – If the support of the bottom of the retaining wall, the excavation level or water tightness requires extending the retaining wall securely into bedrock or several meters in to moraine containing stones and boulders, sheet pile walls can't be used without special measures such as pre-drilling, blastings, etc. A construction-period or permanent O-DTH walls can be drilled to the desired level in bed rock. The rock bounded by the wall may be excavated up to the wall, whereby construction work requires less space because a "rock shelf" on which the retaining wall rests is not needed.

Highway abutments: O-Pile walls can be used as a bridge abutment. With the O-Pile walls the vertical and lateral loads of the bridge and the horizontal loads of the embankment can be transmitted reliably to bedrock and soil. Use of the O-Pile walls as an abutment allows building the bridge deck before excavation. Combined, for instance, with a method for moving the deck it minimizes the traffic

Example of bridge abutment

interruption during construction.
I**ntermediate bridge supports –** All O-Pile walls can be used for intermediate supports of bridges subject to heavy horizontal loads, such as impact loads, under difficult soil and environmental conditions. A closed frame extending into bedrock can be built with an O-Pile walls under an intermediate column and the soil removed from the top part for concreting. The structure requires no separate construction-period retaining structures and the foundation can be implemented in cramped conditions.

Harbor wharves – All O-Pile walls can be used for building wharves in challenging soil conditions. With O-Pile you can build a system using O-Pile's dynamic "dial-in" custom option that allows you to offer a thicker pipe to withstand corrosion rates in a zone of high attack, while maintaining a thinner thickness on the bottom portion to meet load bearing limits.

Trough structures – All O-Pile walls can be used to implement water tight trough structures which allows, for example, building a road below ground water level without lowering the surrounding ground water level. If the pipe piles are extended water tightly into bedrock, there is no need to anchor the foundation slab of the trough structure against buoyancy. In construction-period retaining walls pipe piles can be used as construction-period pump wells to keep the excavation dry.

Tunneling: Train, under a highway for services so as not to disrupt the traffic flow.

Example of highway abutment

Example of tunneling

WADIT

A **PilePro Group** Company

Overview

WADIT® is a purpose-built and globally proven sheet piling interlock sealant and corrosion inhibitor. The creators of WADIT know first-hand the installation and long-term challenges faced when sealing all types of hot rolled or cold formed sheet piling interlocks.

With an unmatched success rate in real-world applications, WADIT provides both water-stopping and corrosion protection. The application of WADIT in the WOF chamber minimizes corrosion by sealing the interlock. WADIT also 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.

For any application where water leakage presents a problem, from dewatering cofferdams to barrier and cutoff walls for site remediation, WADIT is the smart sheet pile sealant of choice.

WADIT® can be installed in the middle interlock so you don't have to un-pair anymore.

Benefits

TESTED AND CERTIFIED
WADIT fortifies your project. This real-world and lab-tested sealant keeps water out, protects against hazardous substances and can withstand five bars (~70 psi) of differential water pressure (Case Studies and Technical Documents at www.WADIT.com).

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 sheet pile project 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.

NON-PROPRIETARY
Made by and for sheet pile professionals, WADIT can be installed in any interlock system or used with U-, Z-, or O-type of walls or combined SSP.

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 sheet pile wall interlocks for ground and surface water use (see sidebar on page 28 for further test results).

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.

PROFESSIONALLY INSTALLED
Certified technicians professionally install the WADIT Sealant System to ensure the perfect seal every time. You can be confident that the quality of your project will never be compromised.

WADIT: A Professionally Installed Sealant System

WADIT's unmatched success rate is the result of professional application. Applied by trained and tested WADIT installation crews, the WADIT Sealant System guarantees an effective, durable, sheet pile interlock seal every time. WADIT is sold pre-installed into any sheet pile type on a per foot or per metre of interlock basis.

We install WADIT anywhere; teams are available globally.

WADIT® is great solution for any project where water leakage through the wall presents a problem.

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.

Landesgewerbeanstalt Bayern
17.04.1997
LGA NÜRNBERG
Prüf-Nr.: UUA 9730105
Institut für Umweltgeologie und Altlasten

"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 Note from Achim Wuensch

"As steel sheet pile professionals, we understand the importance of an effective and durable interlock seal, especially when the safety of a community is at stake.WADIT is the only sealant on the market made specifically for sheet pile interlocks and applied by sheet piling professionals.

So when the **U.S. Army Corp of Engineers specified WADIT** for a project related to the [post-Katrina] flood defenses in New Orleans, it was a big deal for us. Every high-capacity retaining structure project demands accountability, but none more so than in New Orleans."

ACHIM WUENSCH, PILEPRO ENGINEER

WADIT

Recent International WADIT Jobs

IJlst, The Netherlands
PU 2240

Amsterdam, The Netherlands
PZC 18

Leeuward en, The Netherlands
Hoesch 1807/2507/2607

Gouda, The Netherlands
PZC-26

Groningen, The Netherlands
PZC-18

Groningen, The Netherlands
PZC-13

Voorst, The Netherlands
PZC-13 / H1707

Australian Alps
AZ 12 to AZ 50 and HZ 775 and 975

Taranto, Italy
H 1707

Groningen, The Netherlands
L603K

Amsterdam, The Netherlands
H 2607

Bridisi, Italy
H 2607

La Spezia, Italy
H3707

Napoli, Italy
L716

La Spezia, Italy
H2607

Amsterdam, The Netherlands

Amsterdam, The Netherlands

Austrian Alps

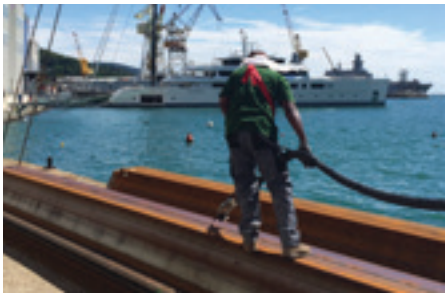
Austrian Alps

Leeuward en, The Netherlands

Brindisi, Italy

Brindisi, Italy

La Spezia, Italy



La Spezia, Italy

WADIT

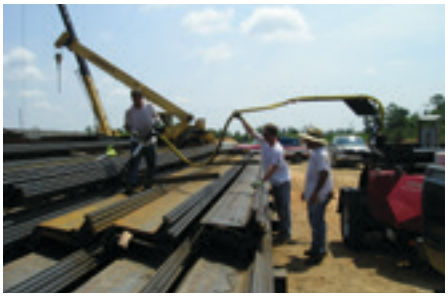
Recent Domestic WADIT Jobs

Mobile, Alabama
Material Spec: PZ-35

Lake Village, Indiana
Material Spec: PZC-18

New Orleans, LA
Material Spec: PZ-22

Houston, TX
Material Spec: H-2607



Mobile, Alabama

Mobile, Alabama

Mobile, Alabama

Lake Village, Indiana

Lake Village, Indiana

New Orleans, LA

New Orleans, LA

New Orleans, LA

Houston, TX

Houston, TX

iSheetPile
A PilePro Group Company

Overview

iSheetPile® is a groundbreaking online tool to compare and configure from hundreds of thousands of sheet pile combinations.

Through its patented sheet piling comparison tools, iSheetPile.com eliminates the confusion created by proprietary terminology and systems designations. Using precise, specific and empirical engineering parameters, iSheetPile allows more accurate, relevant comparisons among steel piling components, regardless the manufacturer. Finally, steel sheet piling projects can be self-configured online, utilizing a number of highly precise comparison tools.

iSheetPile Search Tools

COMPARE SSP SECTIONS USING BENDING MOMENT CAPACITY

The bending moment capacity (formula below) is the best unit to compare SSP sections and find the lightest wall system to meet your project needs. Also find alternatives to particular sheet-pile sections by clicking on the desired section.

Bending Moment Capacity (BMC) = Elastic Section Modulus [m3/m] X Minimum Yield Strength [kN/m2] (without safety factor)

The BMC of a SSP with a section modulus of 4019 cm3/m in a Steel Grade of S 355 is: 1427 (kNm/m) = 4.019 (m3/m) x 355 (N/mm2)

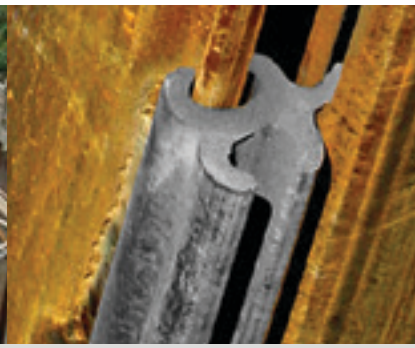
The BMC of a SSP with a section modulus of 2290 cm3/m in a Steel Grade of X70 is: 1111 (kNm/m) = 2.290 (m3/m) x 485 (N/mm2)

CORROSION TOOL

Use the corrrosion tool to map the strength of a given SSP system after a certain time and a given enviroment.

User can search by sheet pile section name or bending moment capacity; each search offers alternative SSP options.



We have the right solution for all of your sheet pile projects.
Call us at 866.666.7453 or +1.805.850.8500 | pileprogroup.com