



Plastic Sheet Piling & Hybrid Kingposts for retention, exclusion & erosion control applications



JET FILTER
Europe



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Thank you for taking the time to view our range of plastic sheet piling.

If you have an active scheme that may benefit from plastic piling or simply seeking to extending your knowledge on what is available, you have come to the right place!

THE Plastic Piling Company in one form or another has been involved with plastic piling in the UK for over 17 years. With a background and expertise in pile driving equipment, the focus of the range, is on products that can be installed efficiently; using regular pile driving equipment. Our range now provides a wide choice of Z, U and advanced plastic piling, sourced from wide range of suppliers throughout the world.

The statement "Plastic sheet pilingwhat a clever idea!" is often followed by an incredulity that it is one, structural and two, capable of being driven into the ground - in other words a real sheet pile. In fairness this impression was based very much on the early budget Z piles; these are not strong nor easy to install. We are pleased to state this has very much improved and perhaps the greatest development in recent years has been the increase in choice of piles. I am extremely proud of our range of sheet piling, particularly the versatility of the advanced range blurring boundaries of sheet piling with king post and formwork products. The ability to combine plastic with steel or timber products provides more options, and in turn more solutions.

The Plastic Piling Company have changed the perception of plastic piling, with products that do install efficiently, fulfilling the true potential of plastic piling.

David Coley

Managing Director The Hammerman Equipment Plastic Piling Company Limited



Uses of Plastic Piling

The products are extremely versatile, particularly the hybrids, as such these products are used in a whole host of applications that involve exclusion and retention:

- Riverbank, stream, pond, lake and reservoir bank retention and restoration
- Fishing lakes, streams and farms tanks
- Inland waterways asset erosion control and scour protection
- Creating and lining drainage channels
- Root barriers
- Blocking ditches on peat bogs, or raising water levels for wildlife
- Flood barriers and management
- Weirs, sluice and outflow structures
- Permanent shuttering and formwork
- Highways embankment stabilisation
- Soil, compost or railway ballast containers
- Landscaping features and planters

Why Plastic Sheet Piling?

Sheet piling is structural profiled sections that typically interlock and are driven into the ground to create a vertical wall to retain soil; to form a barrier excluding or containing water or contaminants; or to provide a hard edge to eliminate erosion or scour. The benefits of sheet piling made of recycled PVC plastic, rather than traditional materials such as steel, timber or concrete is quite easily appreciated. One thinks plastic, and instantly “long lasting” springs to mind, plus additional kudos points for recycling.

So what else does plastic as a material offer sheet piling?

- ◇ Longevity and no maintenance as it does not rust or rot. Looks great and stays looking great.
- ◇ Environmentally responsible made from recycled PVC
- ◇ Spark proof
- ◇ Not affected by saltwater
- ◇ Resistant to rodent and marine borer attack
- ◇ Easy to cut manually - requires no “hot work”
- ◇ Light, better for manual handling, MultiLock, our biggest seller weighs 6.2kgs per metre less than half that of its closest steel counterpart (L8 14.4 kgs/m)
- ◇ Can be universally used due to its great water and chemical resistance (acids etc)





Can Plastic Piling really be driven?

With many different pile types, pile drivers and soil conditions, this generic question can yield many answers, often the question is made in comparison the steel sheet piling. The first answer, is always a question, which steel pile vs which plastic pile? It is an unrealistic comparison to compare hot rolled steel piling to cold form trench sheeting; and they are both steel! So comparisons of steel and plastic piling can be hard to make.

Some generic statements that hold true (most of the time) are:

- Tubular plastic piling, such as the advanced range, will install more efficiently than U or Z plastic piles as they are the most rigid.
- If there are no access or equipment restrictions, the more heavy duty plastic sheet piles will install better than cheaper alternatives (excludes advanced range). This is simply due to the fact that they provide greater rigidity and can handle a larger more powerful pile driver.
- If installing by hand (rubber maul, sledge hammer or even post drivers) narrower sheets are easier to install as there is less skin friction. Again with the available choice, thick, narrow sections provide a good balance between rigidity and friction.
- Plastic Piling is mostly installed either by hand or using some form of vibrator. These vibrators can be simple compactor plates, excavator mounted vibrators, Movax Lite ML15, leader mounted vertical stack vibrators or suspended piling vibrators (standard or high frequency fixed or variable moment).
- Piling vibrators (not compactors) enable the use of steel strengtheners called mandrels, these enable plastic piling to be driven faster by increasing the rigidity, clearing obstructions and allowing more down crowd.
- Vibratory driving tends to cause less sheet damage than impact driving. This is especially the case of air hammer pile drivers, as the high blow rate can generate heat and melt the plastic pile.
- PVC is a thermoplastic and so as it warms up, it softens - at relatively low temperatures compared to steel (the is the reason why it can be recycled) so efficiently. Therefore refusal driving with rapid blow air hammers can cause a lot of top damage.



In terms of cold weather installation, PVC is quite resilient, but as the temperature drop below minus 5°C, care needs to be taken to prevent damage to the piling. A temperature of around minus 10°C is often stated as the limiting temperature for installation. It is advisable to consider thicker plastic piling, such as the Ultra Z11 in very cold working conditions.

In addition to sheet pile installation using a vibrator, impact driving is well established for hard driving conditions, such as dense ground or clay based ground. Impact driving is most commonly used to “back” or finish drive the piles once the vibrator has reached refusal.

There are few impact hammers available for plastic piling, those available includes post drivers and small air hammers.

Those that are available, tend to be small air hammers the size limited to the ability of the plastic piles to support the hammer. The smaller the hammer, the smaller the drive force and so these tend only to be used when installing short lengths of plastic piling.

Steel sheet piling in contrast, has a wide array of hydraulic and air powered impact hammers available, as it has the rigidity and strength to support that range of hammers. The recent development of the BSP BH120 hydraulic impact hammer opens up new possibilities for plastic piling.

Please note it is not always possible to drive sheet piles at a specific location, in a specific soil type (this holds true as much for steel as for plastic piling). More often the main limiting factor to successful installation is the use of equipment (or method) not powerful enough for the task.

When driving sheet piling into the ground, different soils present different resistances and therefore what works on one site may not necessarily work on another.

With the introduction of the advanced range, particularly the hybrids and kingpost designs, it is now often possible to install a plastic piled solution in areas previously limited to hand installation or very small equipment. The hybrid and king post system is installed easiest as there is less skin friction and hence ground resistance, it also does not form a continuous underground wall and so can be used in areas with tree roots etc.

The best installing product we offer is MultiLock, and this is for a variety of reasons, the pile is exceptionally rigid, and at 500mm wide less prone to twist and deflection as the sheet length increases.

Whilst we do sell a lot of MultiLock on its own in long lengths, as a hybrid with timber and steel; this combination (rigid post and short sheet) makes for a very efficient installation, even in difficult ground conditions or limited pile driving equipment.





THE Advanced range, THE Kingposts and THE Hybrids

“designed for performance and versatility”

The advanced range of piling from THE Plastic Piling Co, currently consists of three products: MultiLock, ProLock and Truline. These are the most versatile and best installing plastic piling we offer. These plastic sheet piles were the first that used pile designs that better suit plastic. Traditional U and Z piles have been optimised over the last 100 years for steel, the material, the production method and means of installation., and so it is not surprising that early plastic piling that replicated steel pile designs were not as effective.

Sheet piling should be design for the task at hand and not to emulate “real” sheet piling. The extrusion process and plastic materials should be used to extend the possibilities of sheet piling, not be limited by what works for steel. Breaking free from “convention” these sheet piles are design on a tubular concept that provides greater rigidity, this in turn improves installation as the sheet installs more efficiently and will withstand greater driving forces.

The ability of the advanced range to work with steel tubes or timber posts, provide greater versatility; improving installation in difficult driving condition by becoming a king post and panel solution. With the added improvement that unlike a conventional king panel, these plastic piles can be driven, preventing undercut and erosion common with traditional king post designs. The combination of MultiLock plastic piling and timber posts also provides the lowest carbon footprint of any plastic pile of our range.

MultiLock



Our biggest seller, 500mm wide and features two hexagonal tubes. The tubes provide greater rigidity, whilst enabling 100mm timber post or steel tubes to be installed inside.

This product is available In two format, standard and the NEW sealfseal, the first plastic pile with inbuilt mechanical seal.



ProLock



ProLock plastic piling has an exceptionally attractive flat front, and so has provide very popular in landscaping and marina basin applications.

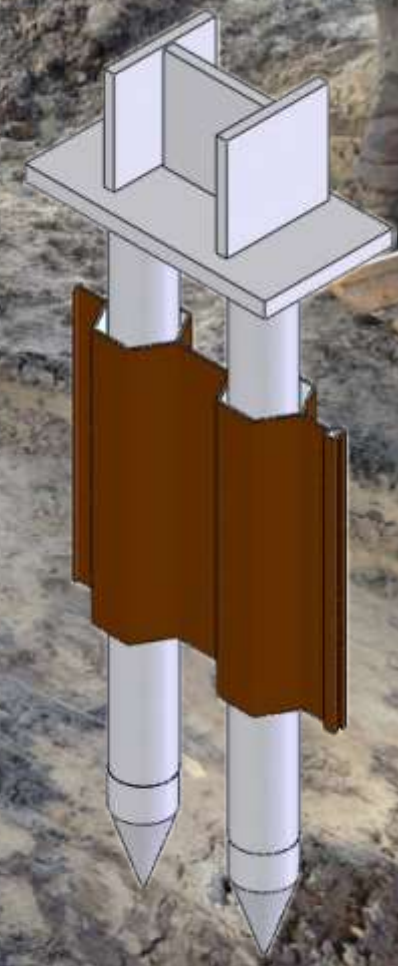
Truline



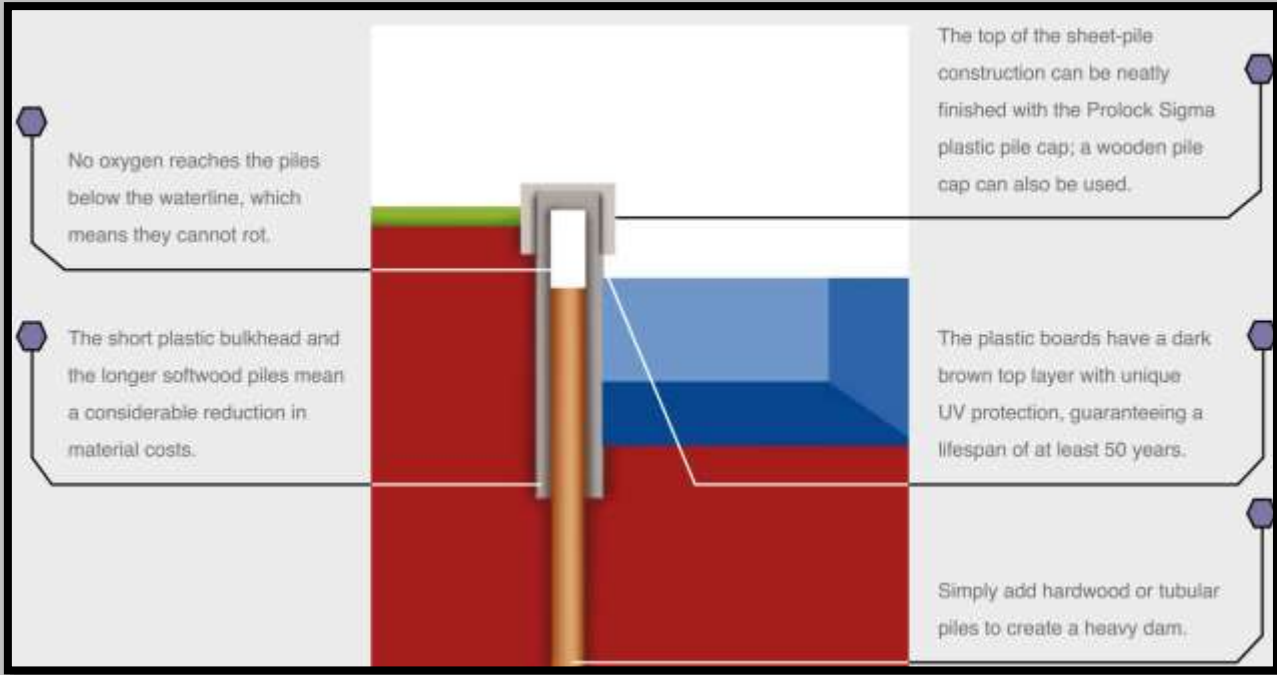
Top of the advanced range is Truline modular hybrid piling. This system is now more commonly used as permanent formwork with its inside filled with steel reinforced concrete.

The flat front also proves extremely useful in sealing applications working with membranes.

This is again a flat fronted product and so extremely attractive, is available with other modules such as male and female ends, cross struts and angle elements for corners and curvature.



How the kingpost hybrid system works



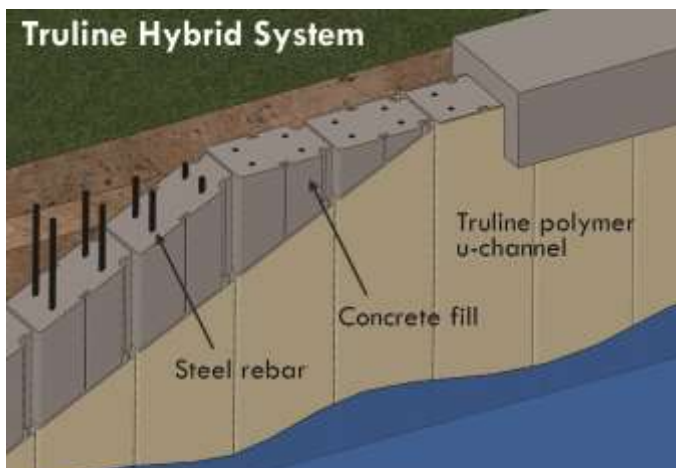
Truline Advanced Hybrid Piling

Truline series 800 hybrid piling represents a major advancement in plastic piling, its designed focusing on application, installation and use; rather than mimicry of steel sheet piling design. Truline Series 800, consists of a number of plastic extrusions, based around the main element - a box pile. Other elements include male and female ends, cross ties and corners.

The product can clearly be used as a conventional sheet pile, the inside later filled with soil or gravel. In this context the product is exceptionally strong and very attractive. The basis for this product was to provide a viable means of replacing old concrete retaining structures and seawalls that were originally placed prior to completion of the neighbouring development.

The design of the pile, with its flat front and rear was done so to provide a common aesthetic with the existing concrete structures, and to facilitate the construction of a concrete cap. The unique u-channel sheet piling shape creates a box shape providing double wall protection and two locking joints providing strength integrity throughout the wall and in corners and radiuses.

Made of 94.6% post-industrial recycled material, Truline is UV-resistant, discourages discoloration and fading caused by sun exposure. It is virtually maintenance free and will not crack, rust, or corrode. Available in three standard colours and a 50-year limited warranty is provided.



Strength Testing Performed by Architectural Testing, Inc. (Premier lab that tests 90 of the top 100 branded building products in the world)

Testing Analysis by Ensoft, Inc. (Leading developer of cutting-edge civil engineering applications such as LPile, Group, APile, PYWall and more)



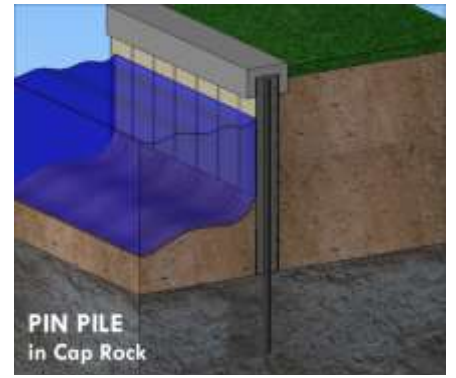
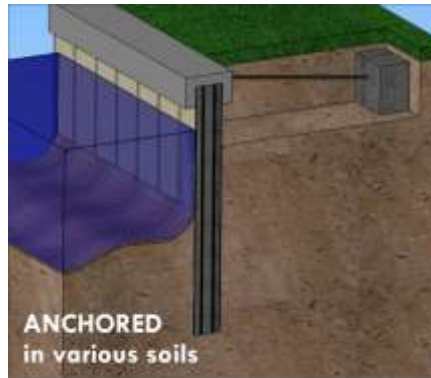
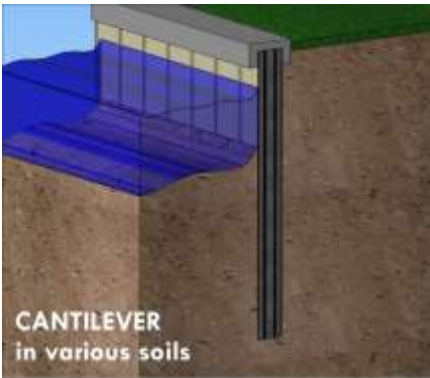
Truline has been tested by an independent third party that validates the superior benefits of Truline's hybrid sheet piling system. We provide engineering specifications based on actual test results, as well as, theoretical data.

More recently there has been a huge growth in the use of Truline with steel reinforced concrete, blurring the lines between sheet piling and formwork.

So create strong and long-lasting walls for commercial marine and land retention projects with Truline - an innovative hybrid sheet piling system comprised of a patented, double-locking, weatherable polymeric form that is easily filled with steel-reinforced concrete.

Accelerated laboratory testing shows that Truline protected concrete significantly outperforms unprotected concrete when exposed to seawater (Salt Fog Exposure Test Report) Proven, durable co-extruded sheet pile material formulated for exterior weatherability and high impact resistance.

Installation options for Truline



PARTS: 800 Series

Part	Part No.	Name	Recycled Content %
	800	U-Channel (12" wide x 8" deep) (304.8mm x 203.2mm)	92.5 %
	801	Female End Cap (Attaches to the last installed u-channel or radius.)	88.7 %
	802	Male End Cap (Attaches to the first u-channel prior to installation.)	89.8 %
	803	22.5° Radius	93.3 %
	804	Cross Tie	98.0 %
	805	5° Radius	93.5 %



CONFIGURATIONS

(top view)

START 1 Attach Male End Cap with screws to 1st U-channel prior to driving

2 Continue adding U-channels or radius parts to create wall

Optional: Add a return wall by attaching a Male End Cap to the wall

END 3 Install Female End Cap onto the last U-channel

COLORS

Three standard colors (below) or a custom color. Colors shown provide only an example and are not exact matches. Sample chips are available upon request.

Light Gray (08-01)	Sand (SA-02)	Beige (BE-03)



The Plastic Piling Company boasts one of the most extensive ranges of traditional Z plastic piling. The range starting with the original standard economy Z piles, through the to 11mm thick Ultra Z.



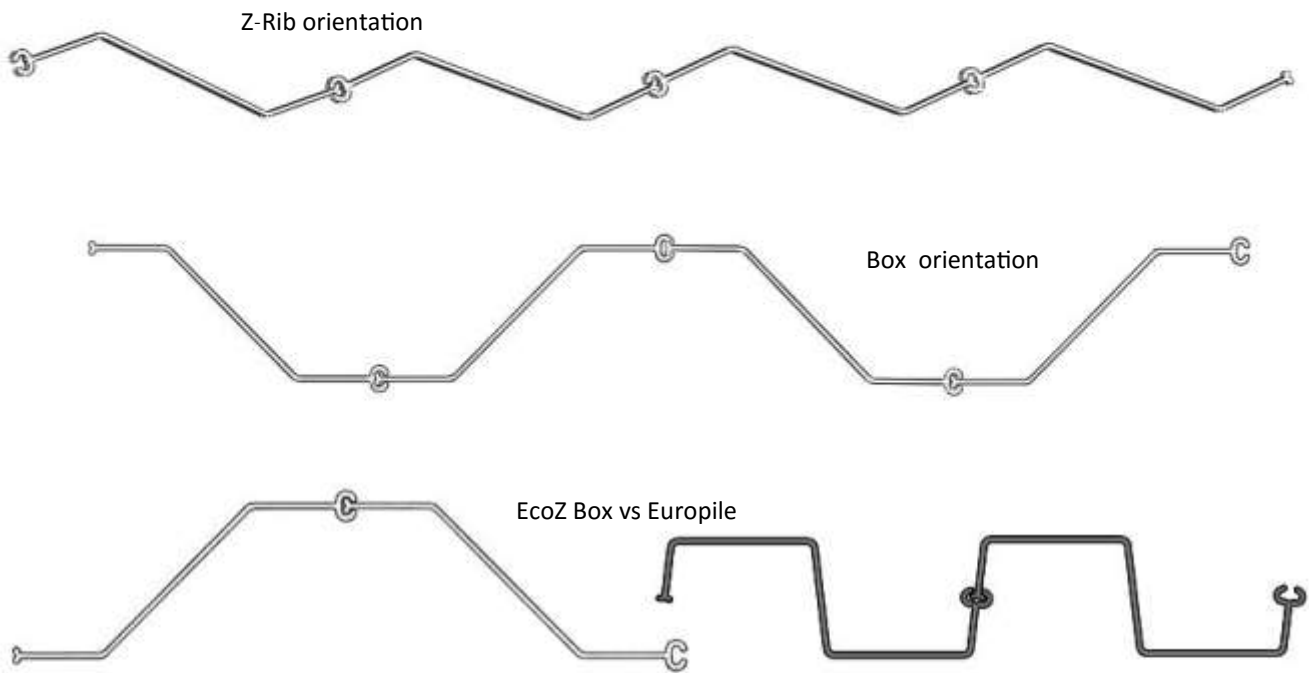
Whilst not strictly a Z piles, this range also include the Europile, itself the first advancement on the standard economy Z pile.



Z Piles can be used in two formats, over time these have been referred to as box or rib; the former is the standard way z piles are used, and so creates a U shape through alternation of the profiles. This box design maximises the strength of the sections, through the provision of a deeper cross section and higher section modulus. The rib configuration in contrast provides maximum coverage and is also a more stable orientation for the thinner budget pilings as there is less change of buckling due to slenderness issues,

The Europile in contrast provides the same coverage and maximum strength, exemplifying why this product has effectively replaced the EcoZ type profiles.





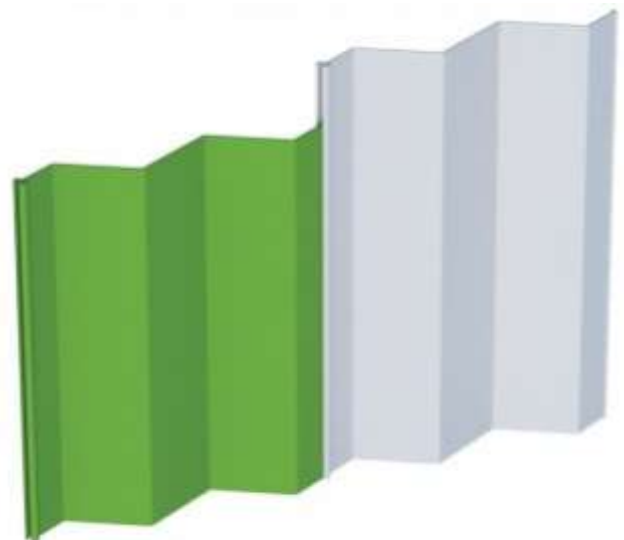
New Duo Rib Plastic Piling Available
 Designed for those application looking for the strength of the EcoZ rib, but want faster installation.
 The Duorib is effectively two EcoZ sheets less one interlock.
 This improves sealing and handling and so ideally suited to cut-off applications

The Ultra Z is currently available in three thicknesses, 7mm, 9mm and the standard (and most popular) 11mm.

Recent applications for the budget range tend to focus around light applications such as ditch blocking, pond linings, where the piles are installed using hand held equipment.

The more substantial Ultra Z range tends now to be used in costal applications where the extract thickness provides greater resistance to physical erosion but sand and wave action.

The Ultra Z is most commonly installed using side mandrels. And excavator mounted vibrators.





The U Piles

The vast majority of cold form steel piling or trench sheeting are U piles, or derivatives of U piles. In comparison with plastic piling, U piles are a relatively late introduction, but valid sheet pile design. Whilst Z piles are often described as the engineers choice, U piles have long been considered the contractors choice, offer better stability and handling during installation. The wider pile designs providing better options for sealing or containment applications—the wider the sheet the fewer the interlocks.

The Plastic Piling company boast a very impressive range starting with profiles from 200mm (Trench Pile) right through to 610mm wide (Ultra U). Unique to the U Pile range is the offering of mono-extruded budget U piles and a premium 460 and 600 wider co-extruded plastic piles, available a range of colours.



The Plastic Piling offers a comprehensive range of accessory products, including corner sections, capping beams, capping plus, fenders and of course JetFilters.

With such a wide range of products supported by many manufacturers there is naturally some cross over, in that capping or corners for one product may well fit another etc.

Likewise, within a range particularly the Ultra U and Ultra Z there will be generic cappings and corners used for all products of a certain size.

Corners

As at the time of this publication, we do not provide straight three way connectors; that allow the line to continue and branch off at 90 degrees. The corner pile for the Premium Ultra U and the MultiPile does offer a choice of 90 degrees or 45 degrees and as such its connector could be used as a three way - but clearly allowing for the 45 degree angle.



	Corner Pile	Capping
Trench Pile	✓	✗
EcoZ Lite	✓	✓
EcoZ	✓	✓
Europile	✓	✓
Ultra U333	✓	✗
Ultra U460	✓	✗
Ultra PU460	✓	✓
Ultra U610	✓	✗
Ultra PU600	✓	✗
Ultra Z	✓	✓
MultiLock	✓	✓
ProLock	✓	✓



Capping

Plastic capping provides an excellent way to complete a sheet pile installation. Improving aesthetics, whilst making it easier for wildlife to cross. The one limitation of plastic piling capping is that it is very rigid and as such is well suited to straight runs, rather than curves. For curved or meandering designs, we offer plugs for our biggest seller MultiLock.



Soft PVC Fenders

These are new to our range and work well with our pile capping and of course, our flat frontage products. The soft PVC provides impact resistance to a sheet piled structure as it help dissipate the energy of the impact.



Weephole Drainage Filters by JETfilter are the ideal companion product. These are available in ABS plastic, Stainless and coated steel. In 2 1/2", 4" and 6" sizes.

Weephole are required to reduce the build up of water behind the sheet pile or control structure. This in turn reduces the loadings on the wall, ensuring the structure is not overloaded.

Without some filtration, however soil can become eroded from behind the wall.

JETFilters solve this problem, but in a maintainable way, as the filter material can be removed and replaced so that the filter material never loses its efficiency.



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