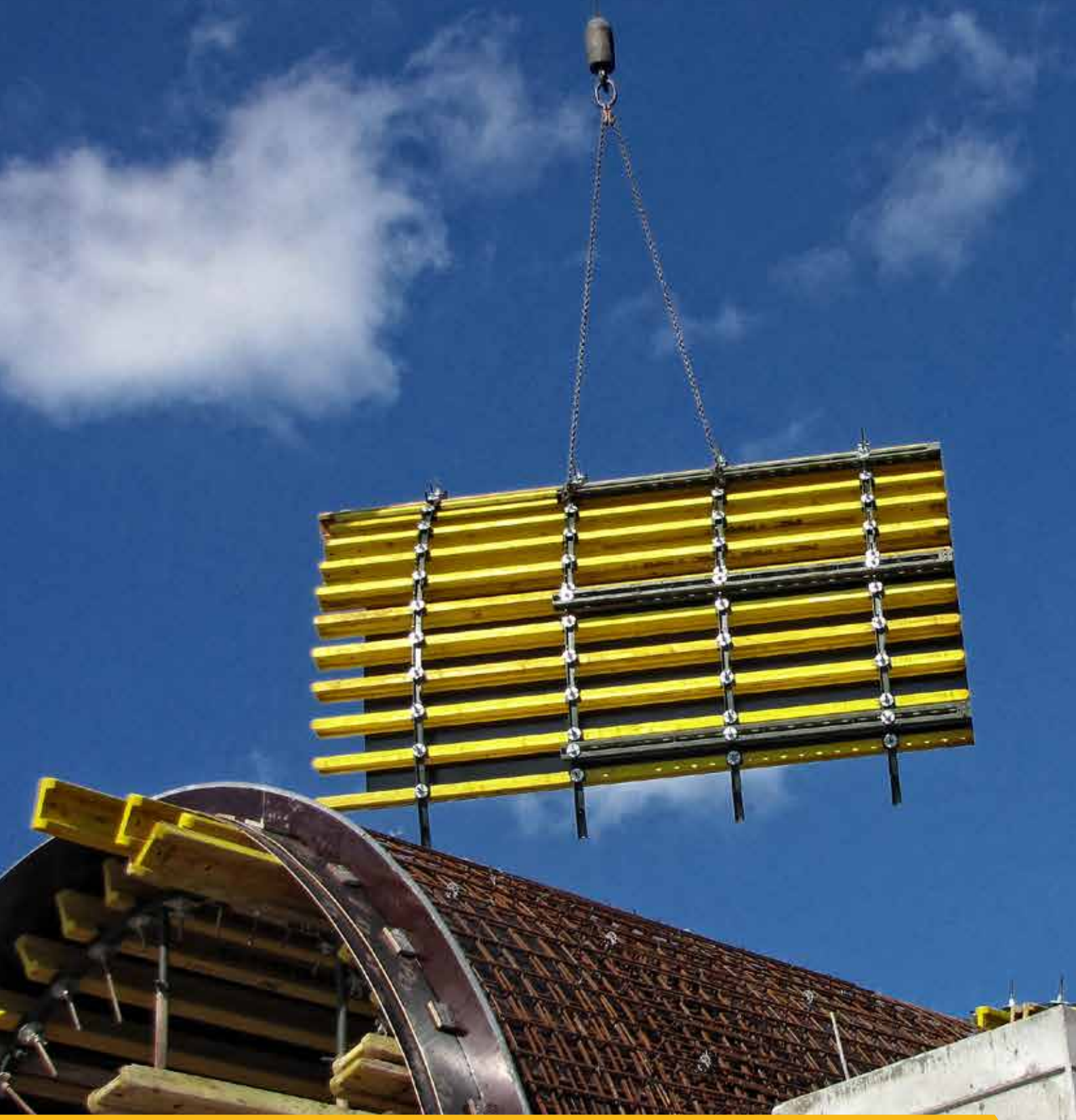


PZ H-BEAM FORMWORK

PAVLOS ZENONOS & SONS LTD CATALOGUE

PZ H-BEAM FORMWORK

PZ H-BEAM FORMWORK SOLUTIONS	4.3.3
PZ H-BEAM FORMWORK SYSTEMS & APPLICATIONS	4.3.4
PZ H-BEAM COLUMN FORMWORK	4.3.5
PZ H-BEAM RETAINING WALL FORMWORK	4.3.8
PZ H-BEAM CIRCULAR RETAINING WALL FORMWORK	4.3.15
PZ H-BEAM SINGLE-SIDED WALL FORMWORK	4.3.18
PZ HEAVY DUTY SINGLE-SIDED WALL SUPPORT SYSTEM	4.3.19
MAIN COMPONENTS	4.3.21
GALLERY	4.3.26

PZ H-BEAM FORMWORK SOLUTIONS

AN EXTREMELY VERSATILE AND COST-EFFECTIVE FORMWORK SOLUTION

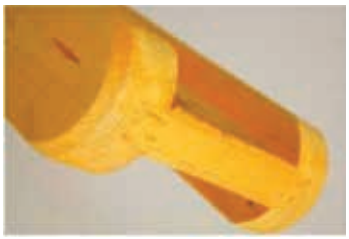
As architects and engineers integrate new concepts in building design, the need for a reliable and flexible formwork system has increased. PZ has developed its H-Beam system over a number of years, and it now stands as a leading solution within the construction industry. Utilising any of PZ's standard shuttering and slab system components and FF ply sheets, construction firms can erect shuttering to create differing size and shape configurations. In this way, any ground plan can be accommodated, not limited by length or height.

Precision-engineered PZ S20 H-Beams are manufactured under stringent quality controls, and are extremely strong, highly durable and easy to manoeuvre, while versatility of use opens the doors to an array of design possibilities. The flexibility and range of component options allows the construction of slabs, columns, retaining and single-sided walls, together with curved walls. The use of film-faced ply shuttering ensures a smooth, almost seam-free surface of superior quality.

A SMALL NUMBER OF COMPONENTS PROVIDES OPTIMUM VERSATILITY

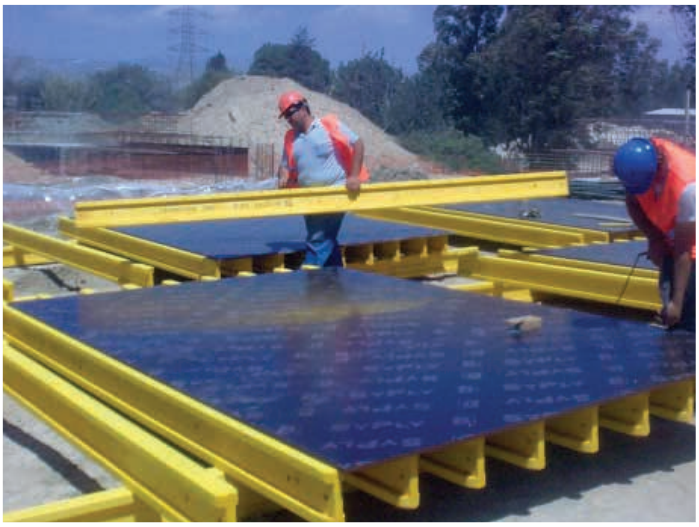
S20 H-Beam characteristics
- Light weight with high load-bearing capacity
- Sealed, rounded ends gives minimal cracking and long life
- Durable and damage resistant three-ply web
- Guaranteed quality and high safety performance
- Waterproof, rot-proof and freeze-proof coating
- Reusable up to 200 times
- Available in a range of lengths up to 5.90 metres

Bracing components
- Heavy-duty dip-coated steel beams 120 x 100 x 3mm
- Available in lengths: 300, 250, 200, 150, 100 and 50cm
- Fixed and adjustable corners, extendable beams, and T-sections



Formwork surfaces
- A range of smooth or imprinted film-faced plywood sheets are available

Support systems for floor and single-sided walls
- Standard components from the PZ ranges
- H-Frame, Cup-Lock, Ring-Lock and Prop solutions
- Custom-made prop and support solutions for curved and complex designs



PZ H-BEAM FORMWORK SYSTEMS & APPLICATIONS

H-Beam with steel bracing used in the construction of a water processing tank.

Inner and outer shuttering of a water tank using H-Beams and steel bracing.

PZ H-BEAM COLUMN FORMWORK

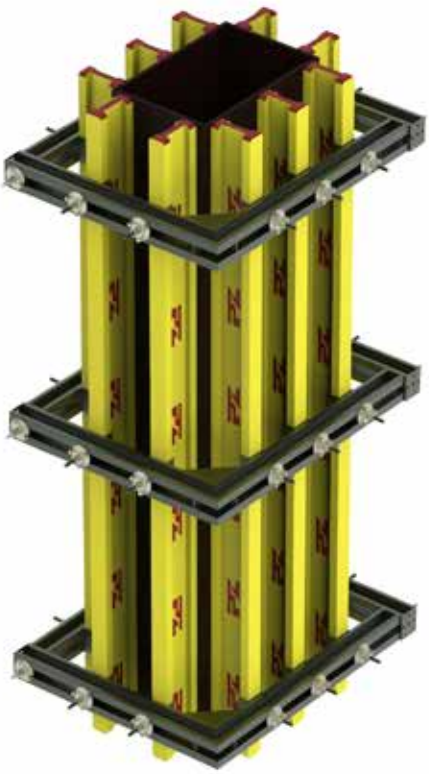
MAXIMUM VERSATILITY AND GREAT ECONOMY

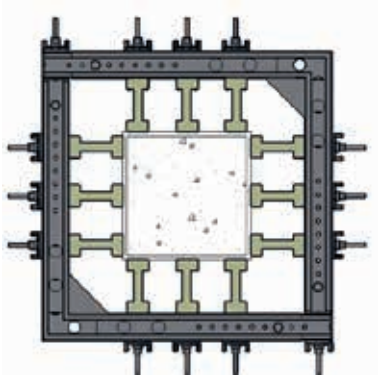
When it comes to constructing columns, PZ has a range of options, all of which deliver outstanding results. By combining H-Beams and standard components, any configuration of column can be constructed. Designers can be confident that whatever requirement — square, rectangular, round or stadium — a solution is available that will deliver outstanding results quickly and easily.

When used with film-faced ply shuttering a superior finished surface can be achieved.

With a range of beam lengths available, the system is ideal for all types of formwork. Sections can be pre-assembled on site and manoeuvred into place by crane.

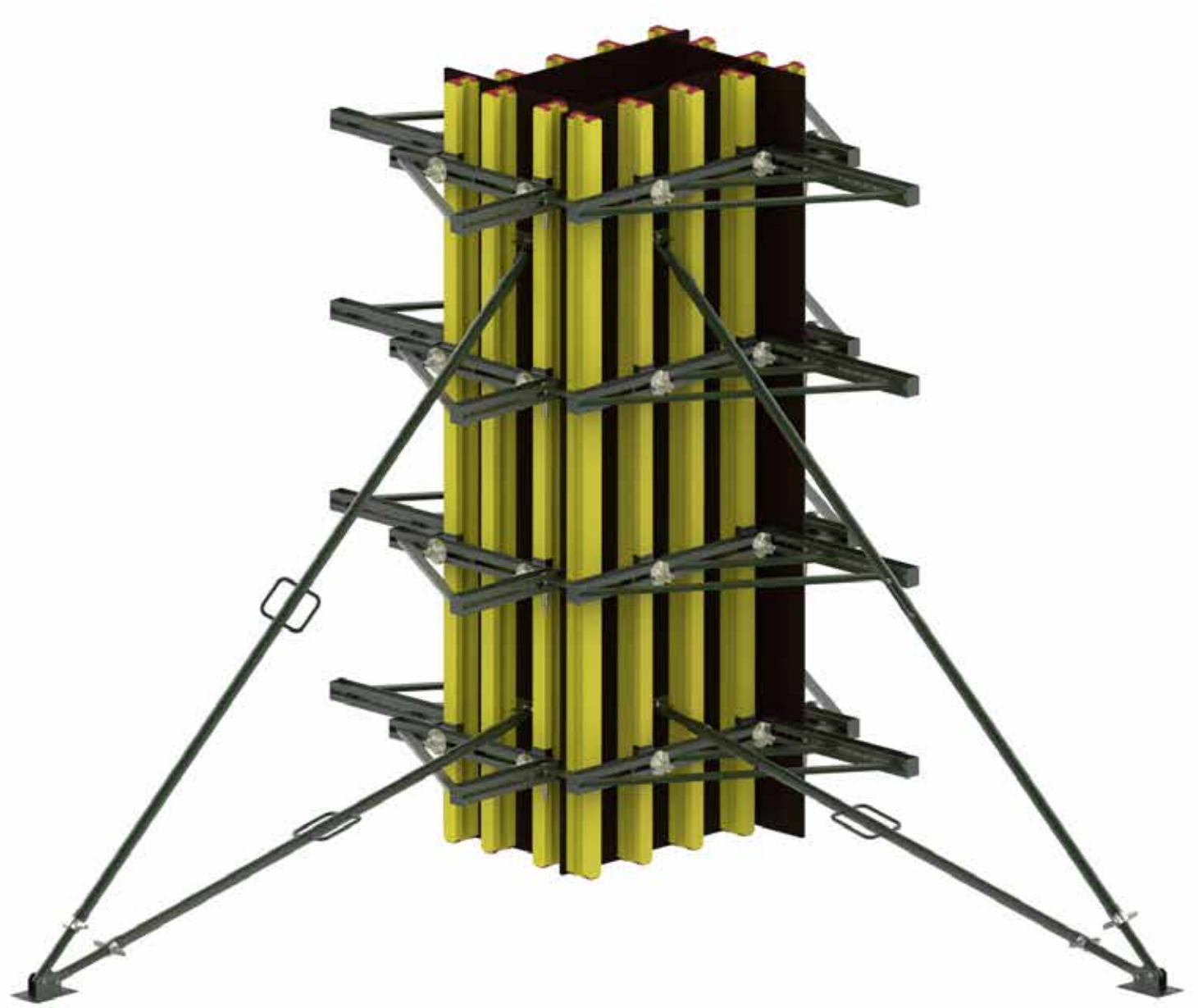
The H-Beam formwork system is so versatile that almost any size and height of column can be constructed, and the film-faced ply shuttering gives an excellent finished surface.





An adjustable external soldier connector provides a practical method of constructing formwork for both square and rectangular columns. The 100 x 100cm right-angle connector can be lengthened by up to 70cm on each side, giving the ability to create various column sizes. FF ply is nailed to H-Beams and the H-Beams are secured through the soldier connector using H-Beam end-flange toe rods and anchor nuts.

COLUMN WITH ADJUSTABLE BRACKET



For the construction of columns up to 120 x 120cm without the need to cut plywood panels, nothing is more effective than the combination of H-Beams and adjustable brackets. When used with push-pull bracing components, the system provides an unbeatable combination of efficiency, simplicity and cost effectiveness. The brackets are easy to release meaning faster turnaround time and higher productivity.

PZ H-BEAM RETAINING WALL FORMWORK

THE IDEAL SOLUTION FOR LARGE SURFACE FORMWORK

The versatility of the PZ H-Beam system means that almost any size of formwork configuration can be created. Height is not a limiting factor, because by using H-Beams, horizontal steel beams and concrete-embedded bracing components a superbly safe and stable structure can be assembled.

A limited range of components also means that inventory levels can be kept low, whilst allowing the full scope of design requirements. Components are durable and long-lasting, adding further to the cost-effective characteristics of the overall system.

The components are designed so that a configuration can be quickly adapted to take account of changing architectural requirements and/or concrete load pressures. Combining H-Beams and steel beams – configured at the appropriate spacing – results in a system that can cope with almost any load pressure. Once the concrete has set, the entire formwork can be quickly and easily dismantled for use elsewhere, adding to its excellent low cost performance.

Cantilever platforms can be attached and repositioned to the formwork at any height, which enables supplementary tasks to be undertaken in a safe and stable location.

Walls of enormous mass and dimensions can be formed quickly and safely. The inherent strength permits large areas to be poured, enhancing the ROI.

The rigidity and strength of the system lends itself perfectly to the construction of projects that will have high concrete loads and a requirement for high quality surfaces.

The system is adaptable to the needs for various wall thicknesses, while retaining a top quality finished concrete surface.

Irrespective of structure thickness variations, the system can be used to form all manner of irregular shapes.

In these illustrations H-Beams and plywood shuttering together with H-Frame support components have been used to construct the wall of a dam.

Illustrated here are two desalination plants under construction. The H-Beam system gives great versatility and flexibility allowing for the construction of almost any shape, size and concrete pressure requirement.

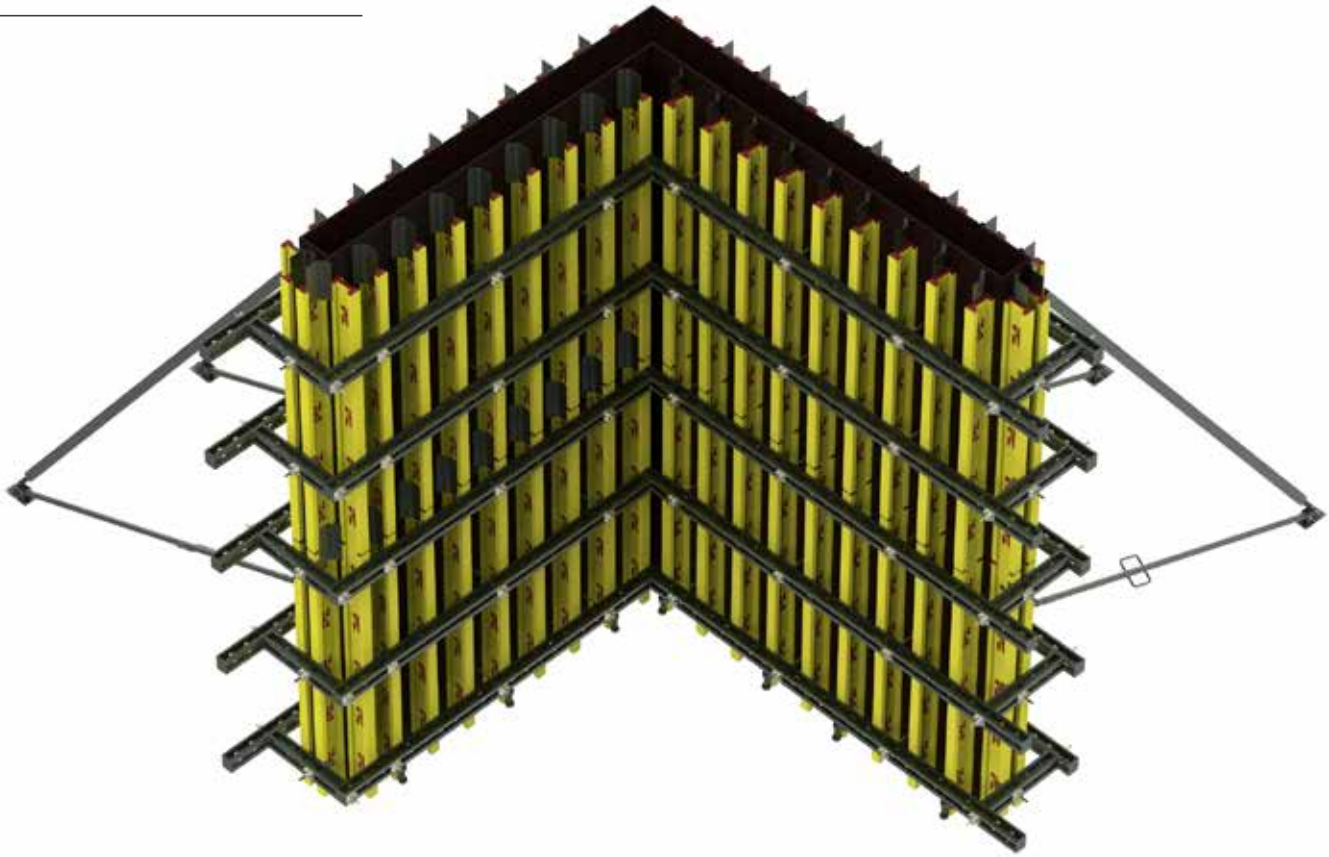
The strength and rigidity offered by combining H-Beams with heavy duty steel beams delivers a reliable form with minimal deflection, and permits wide distances between the beams compared to alternative formwork systems. Special requirements like these pipe openings on a tank wall were no problem for the highly adjustable H-Beam system.

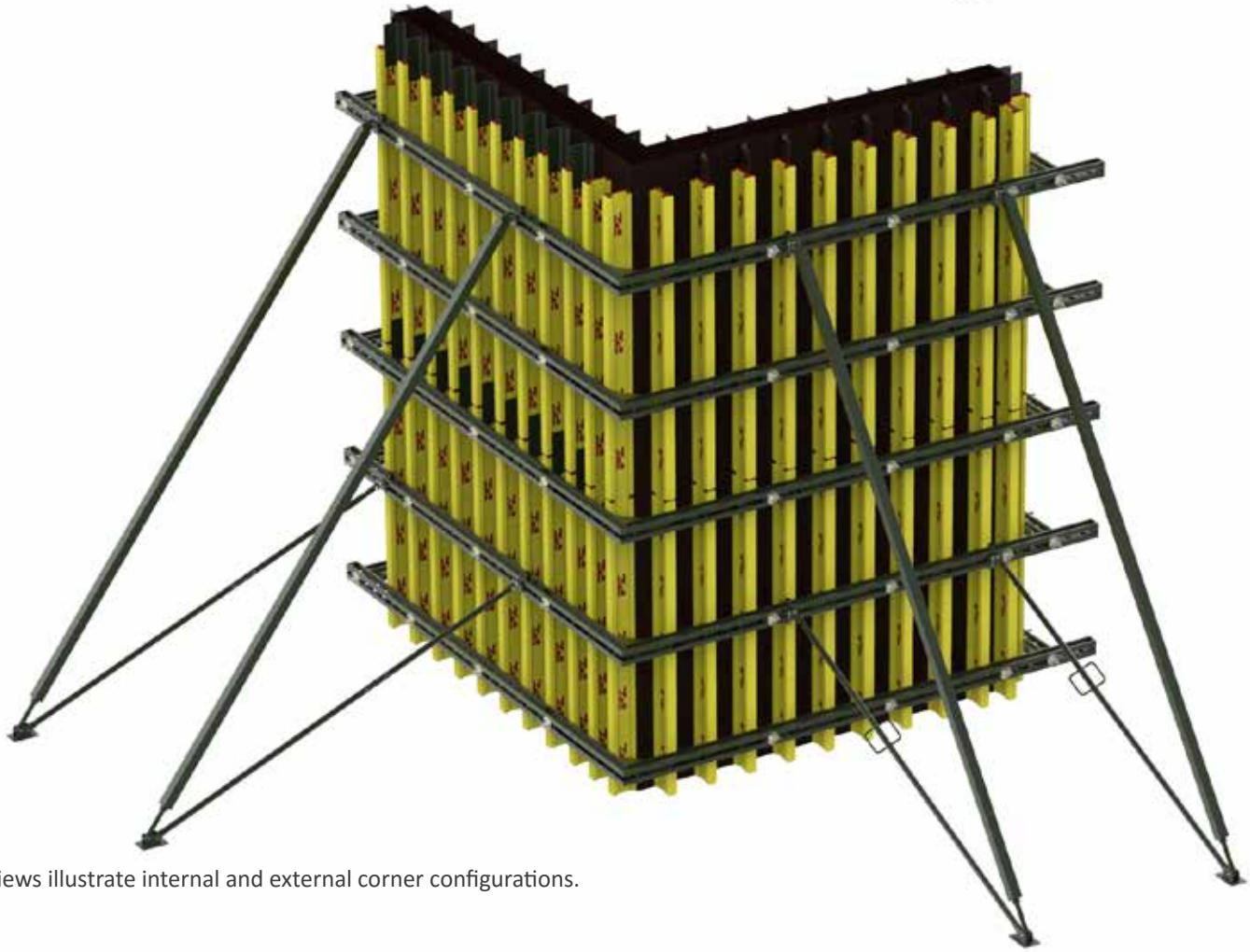
The system's significant advantages achieve rapid shuttering times using modules which are easy to reposition. H-Beam formwork modules are available in a range of surface finishes, and the dimensions and anchor pattern are adjusted to specific requirements.

The use of adjustable and extendable corner soldier connectors allows for great flexibility in meeting specific requirements quickly and efficiently.

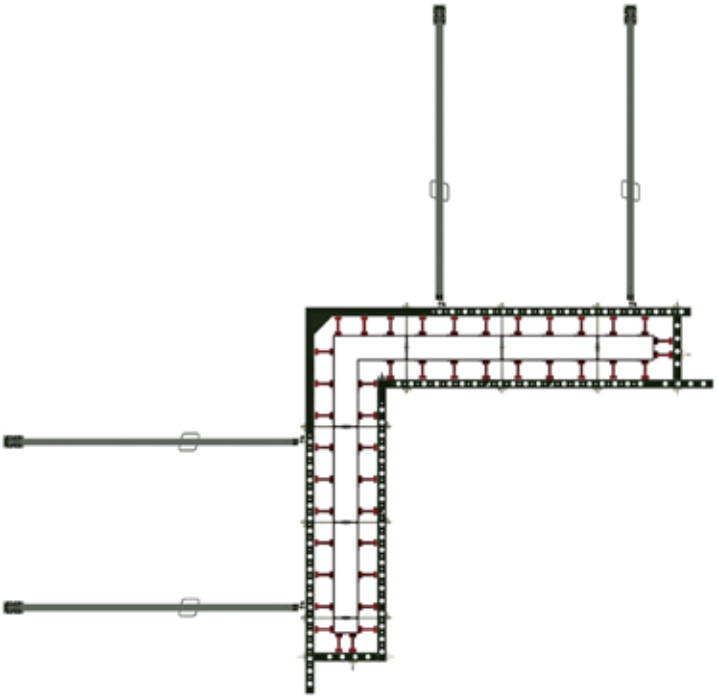
The practical and easy-to-use connection tools facilitate vertical or horizontal placement of modules quickly. Anchors can be positioned as requirements demand, resulting in an especially compact form.

H-BEAM RETAINING WALL DRAWING

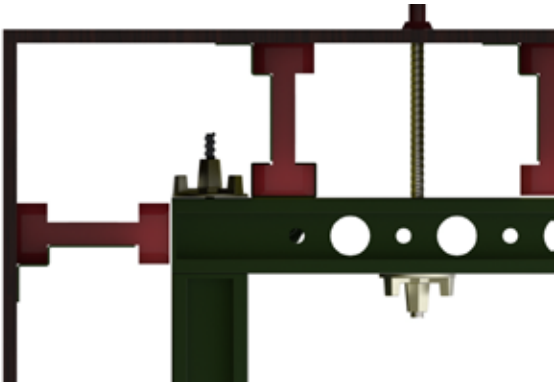




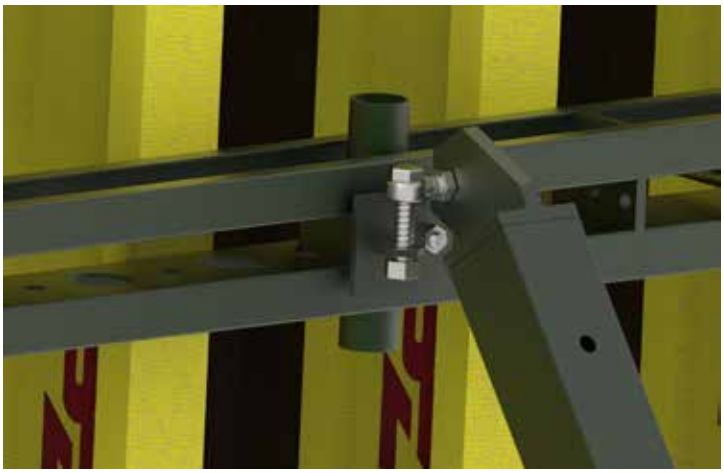
Views illustrate internal and external corner configurations.



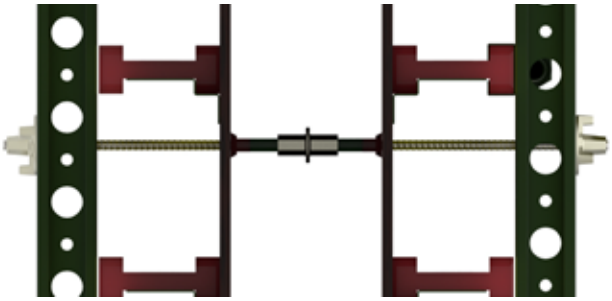
Overhead view of the corner section of a retaining wall form. Spacing between the H-Beams is adjusted according to pressure loads.



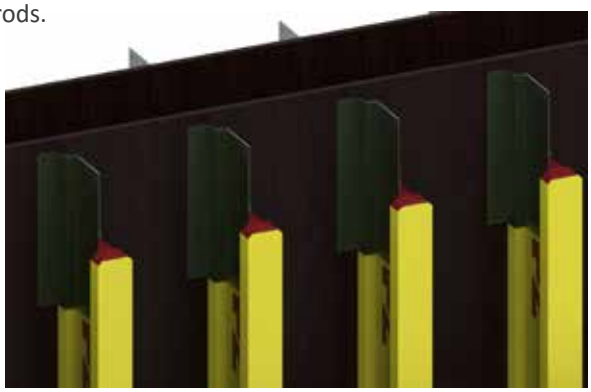
A corner can be created using standard heavy duty steel beams connected by a combination of tie rod and anchor nuts. Alternatively, a 100 x 100cm corner element can be used.



Standard push-pull components are easily attached to the formwork steel beams.



Anchor detail illustrating water stopper and spacers joining the tie rods.



Extension patches are affixed to the plywood to extend the length of an H-Beam.

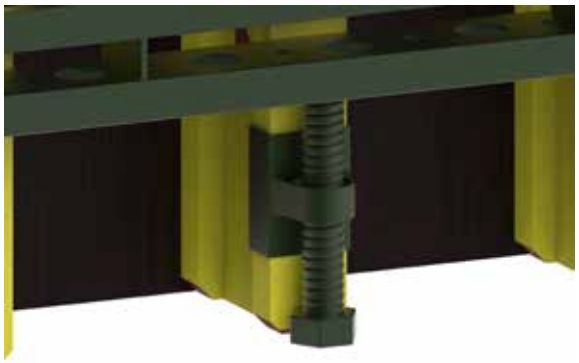
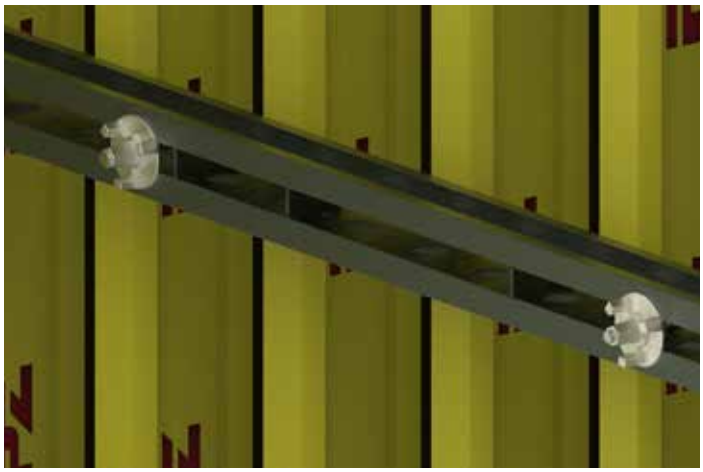


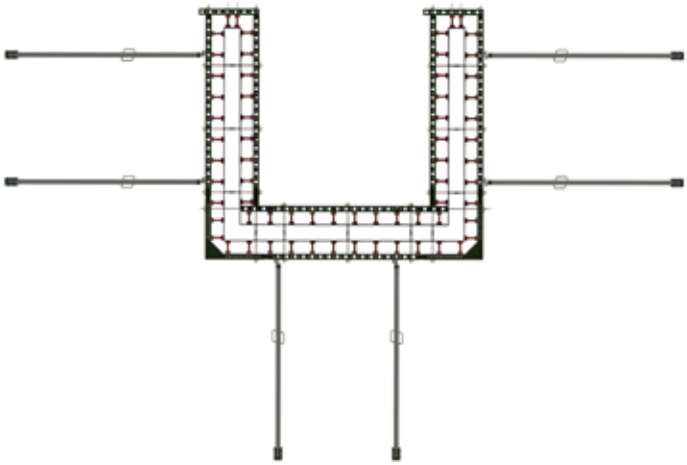
Illustration shows the corner wall section of a water tank with levelling connector. A straight wall section is formed by 6.80 x 3.0 m modules. Straight wall modules are easily attached to the corner module using a crane.

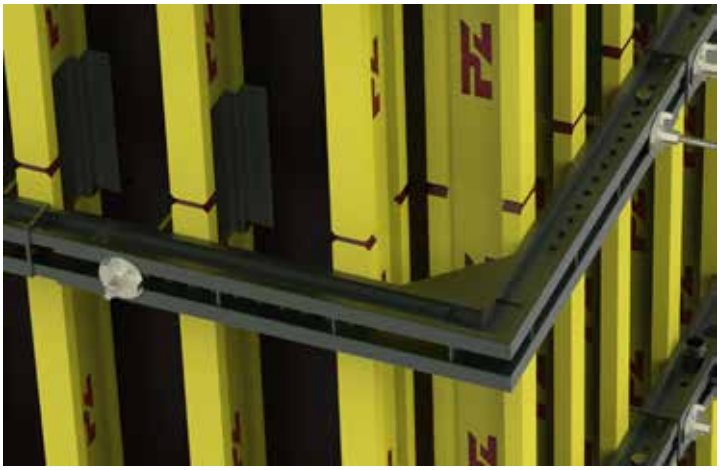


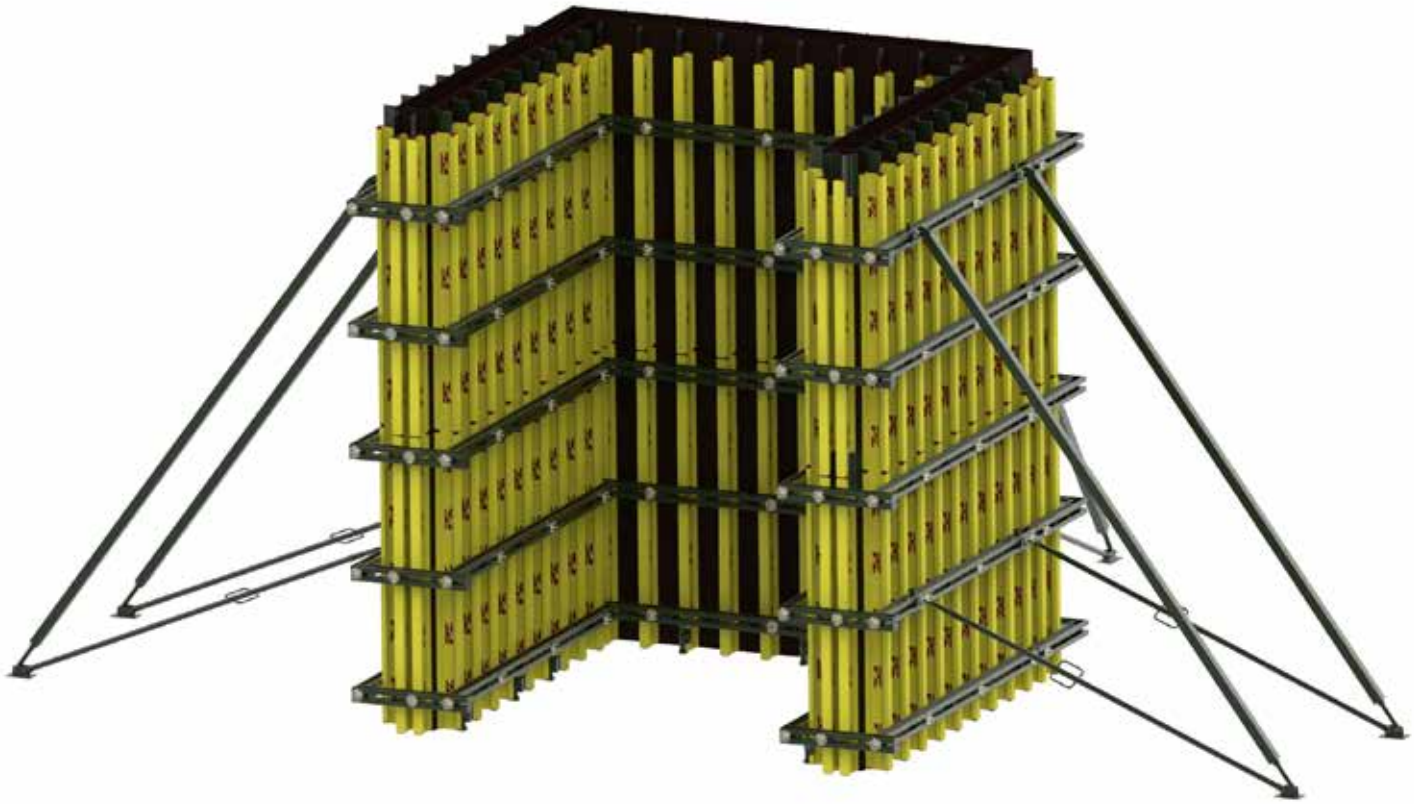
Standard PZ props are attached to steel beams using H-Beam alignment connectors.

Adjustable external soldier connector

Internal soldier connector







PZ H-BEAM CIRCULAR RETAINING WALL FORMWORK

RELIABILITY IN HIGH PERFORMANCE CIRCULAR FORMS

For circular wall formwork, the PZ H-Beam system offers a practical solution that utilises few components, yet delivers high precision. It is an accurate solution for the construction of smooth, circular walls of any arc size, wall height and slope. All components can be assembled quickly in pre-arranged, highly precise walling elements according to specific dimensions, anchor spacing and concrete pressure requirements.

Key Features

- Ability to construct any height and wall arc dimensions
- Cost-effective use of components
- Highly precise forms: the custom-made walling modules are made to exact measurements.
- Quick assembly ensures low labour costs and reduces site-time costs.
- Ability to adjust the shuttering surface and anchor pattern according to architectural requirements
- Easy to handle, safe and dependable
- Practical and easy-to-use connection tools
- Combines easily with other PZ systems

Illustration shows the inner wall formwork of a circular water tank formed by H-Beam circular modules.

On-site assembly of circular wall sections being prepared for positioning. A thorough and careful planning process guarantees a precise and error-free form.

The H-Beam system combined with film-faced birch plywood is a highly effective solution able to effectively deal with heavy concrete pressure loads and deliver consistently high quality shuttering surfaces.

PZ H-Beam formwork supports any kind of form sheet. This illustration shows timber beams on a curved wall section.

H-Beam supported form sections can be easily combined with metal-frame formwork.

After striking, a high quality concrete surface is visible on this smooth curving structure at a desalination plant.

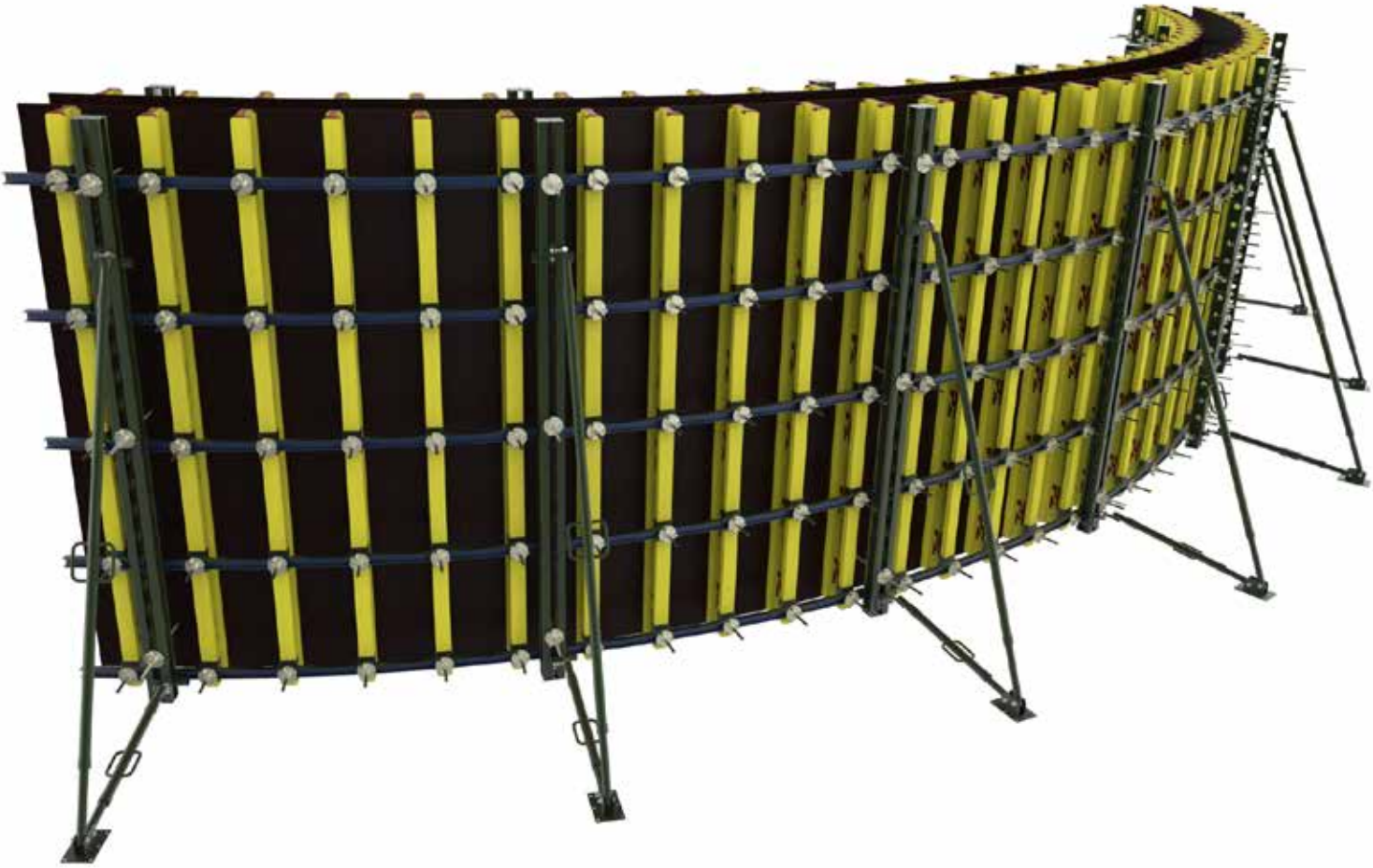
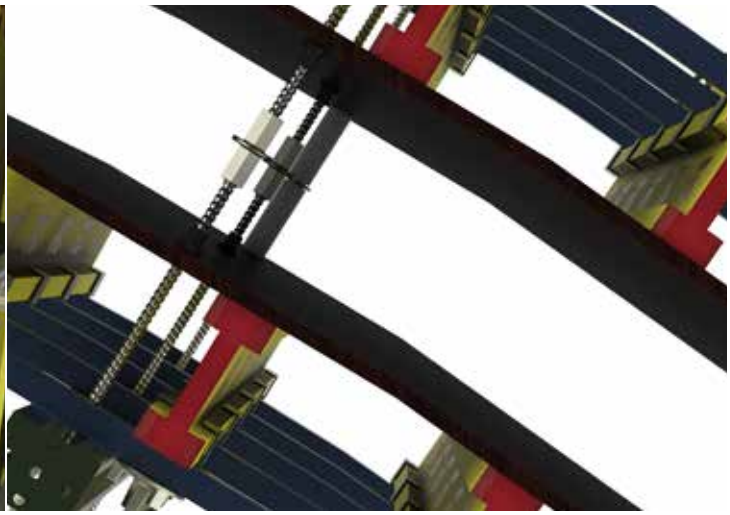


Illustration shows a 3.0m high quarter circle wall section with a 5.0m radius supported by push-pull alignment props.

A high level of precision is achieved throughout the entire inner and outer curved wall sections. Heavy duty steel beams provide the necessary support for the anchor ties in a pre-calculated pattern. Tie placement depends on a number of factors, including the concrete pressures involved and the preferred tie pattern.

H-Beam and steel beams with push-pull connector.



Retaining wall plan showing water stopper and plastic spacers.

PZ H-BEAM SINGLE-SIDED WALL FORMWORK

AN EFFECTIVE AND PRACTICAL SOLUTION FOR
ANY SINGLE-SIDED WALL FORMWORK

Extremely flexible, highly precise and very economical
Suitable for any size of single-sided wall formwork because the height, anchor spacing and the shuttering surface can be adapted and adjusted as required.

- An adaptable system that can be used to construct any size of single-sided wall
- Economical due to the high re-use ability of components
- Flexibility to adjust and adapt to architectural requirements
- Offers a safe working environment
- Practical and easy-to-use connection tools

Pre-assembled single-sided wall modules are easy to set up in any required dimensions. This permits faster operating times and minimises labour costs. Modules can be easily positioned and repositioned using a crane.

The stability of the system and the ability to select the plywood facing style ensures a superior quality result and an attractive finish.

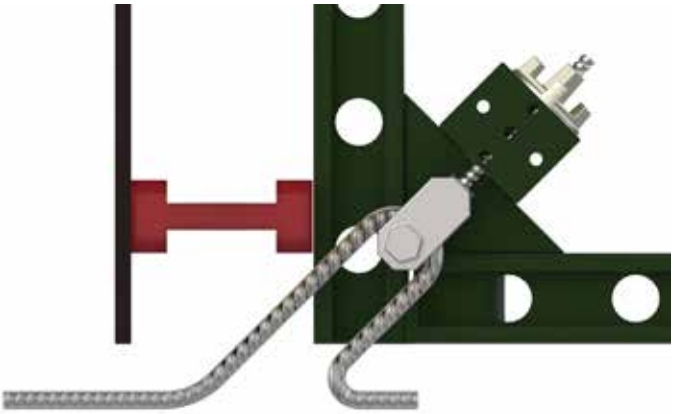
PZ H-Beams can support any film-faced or textured plywood in a stable, fixed position, yet with a high degree of flexibility.

PZ HEAVY DUTY SINGLE-SIDED WALL SUPPORT SYSTEM

This single-sided support system comprises of a series of heavy duty support components with an integrated push and pull bracing mechanism. Support bracing elements are placed at regular intervals in order to provide maximum support according to the form's height. Each support bracing element is secured on either side by special anchors embedded or bolted into the floor surface.

The system is extremely flexible as pre-assembled modules can be easily manoeuvred by crane and individually adjusted to match the form's height and length. The height can be adjusted by using support elements with the appropriate dimension. Correspondingly, the spacing of the H-Beams is adjusted according to the dimensional requirements and the expected pressure load of the concrete. Base anchors are available in three configurations to suit the location.

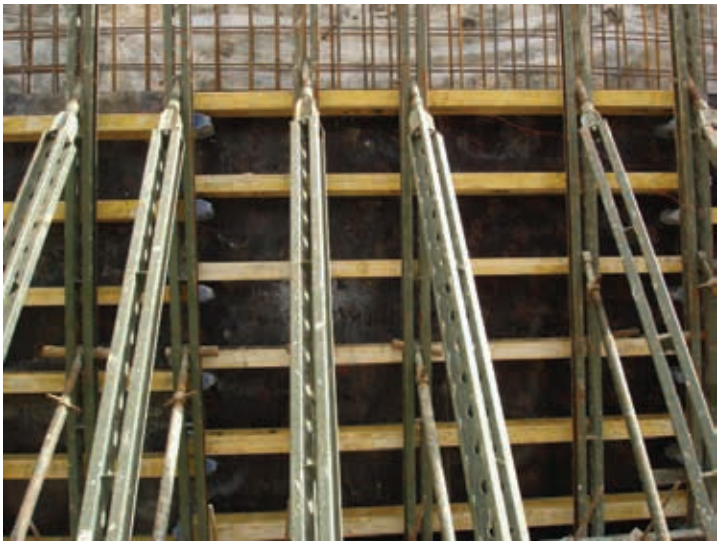
Illustration shows the anchoring detail. Two anchors are placed on either side of each horizontal heavy duty steel beam. Hook-shaped steel bars are embedded at a minimum depth of 25cm in the concrete floor when it is cast. Tie rods are placed at 45º through the beam and are retracted along with the entire anchor system for use in the next section. The hook-shaped bars are expendable and remain embedded.



Base anchor detail showing the embedded curved bar.

Illustration shows a 3.0 x 2.0m wall module of H-Beams and plywood held in place by three heavy duty support units.

A large pre-assembled wall module ready for repositioning.



Detail of carefully-aligned support units.

The quality of the final concrete surface depends on the type of plywood shuttering used, as shown in the above two illustrations.

PZ H-BEAM - MAIN COMPONENTS

PZ S20 H-BEAM

Code	Description	Size	Kgs
-	S20 H-Beam	x 190cm	8.74
-	S20 H-Beam	x 250cm	11.50
-	S20 H-Beam	x 290cm	13.34
-	S20 H-Beam	x 330cm	15.18
-	S20 H-Beam	x 360cm	16.56
-	S20 H-Beam	x 390cm	17.94
-	S20 H-Beam	x 420cm	
-	S20 H-Beam	x 450cm	20.70
-	S20 H-Beam	x 490cm	22.54
-	S20 H-Beam	x 590cm	27.14

Any other size upon request.

H-BEAM PUSH & PULL CONNECTOR

Code	Description	Size	Kgs
-	H-Beam push & pull connector	-	-.--

H-BEAM EXTENSION PATCHES

Code	Description	Size	Kgs
-	H-Beam extension patches	-	-.--

H-BEAM ADJUSTMENT CONNECTOR

Code	Description	Size	Kgs
-	H-Beam adjustment connector	-	-.--

TIE ROD

Code	Description	Size	Kgs
405	Tie rod	Ø 10mm per meter	-.--
406	Tie rod	Ø 16mm per meter	-.--
407	Tie rod	Ø 20mm per meter	-.--

END-FLANGE TIE ROD

Code	Description	Size	Kgs
-	End-flange tie rod	Ø 16mm x 100mm	-
-	End-flange tie rod	Ø 16mm x 205mm	-

H-BEAM FLANGE

Code	Description	Size	Kgs
-	H-Beam flange	-	-.--

L-BOLT

Code	Description	Size	Kgs
-	L-bolt	Ø 16mm 105 x 180mm	-

H-BEAM END-FLANGE TIE ROD

Code	Description	Size	Kgs
-	H-Beam end-flange tie rod	-	-.--

I-BOLT

Code	Description	Size	Kgs
-	I-bolt	Ø 16mm	-

H-BEAM LEVELLING CONNECTOR

Code	Description	Size	Kgs
-	H-Beam levelling connector	-	-.--

SPEED-BOLT

Code	Description	Size	Kgs
-	Speed-bolt	Ø 16mm	-

PZ SPEED BOLT

Code	Description	Size	Kgs
-	PZ Speed bolt	Ø 16mm	-.--

HEAVY DUTY PIN

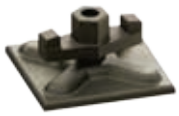
Code	Description	Size	Kgs
-	Heavy duty pin	-	-.--

ROUND COUNTER PLATE WING NUT

Code	Description	Kgs
409	Round wing nut for Φ15/17mm tie rod	0.80
-	Round wing nut for Φ19/21mm tie rod	0.90

ROUND PIVOT COUNTER PLATE WING NUT

Code	Description	Kgs
409A	Round pivot wing nut for Φ15/17mm tie rod	1.60



SQUARE COUNTER PLATE WING NUT

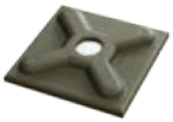
Code	Description	Kgs
409B	Square wing nut for Φ15/17mm tie rod	1.20

SQUARE PIVOT COUNTER PLATE WING NUT

Code	Description	Kgs
409C	Square pivot wing nut for Φ15/17mm tie rod	1.70

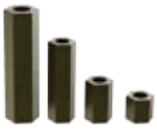
WING NUT

Code	Description	Kgs
	Wing nut Φ15/17mm	0.40



COUNTER PLATE

Code	Description	Kgs
418	Counter plate	0.80



HEXAGON NUT

Code	Description	Size	Kgs
-	Hexagon nut	Ø 16 x 30mm	-.--
-	Hexagon nut	Ø 16 x 50mm	-.--
-	Hexagon nut	Ø 16 x 100mm	-.--
-	Hexagon nut	Ø 20 x 140mm	-.--

WATER STOPPER

Code	Description	Size	Kgs
-	Water stopper nut	Ø 10mm	-.--
-	Water stopper nut	Ø 16mm	-.--
-	Water stopper nut	Ø 20mm	-.--

CONE NUT

Code	Description	Size	Kgs
-	Cone nut	Ø 10mm	-.--
-	Cone nut	Ø 16mm	-.--
-	Cone nut	Ø 20mm	-.--

PLASTIC HOLE PLUG

Code	Description	Size	Kgs
-	Plastic hole plug	-	-.--

PLASTIC SPACER CONE

Code	Description	Size	Kgs
-	Plastic spacer cone	-	-.--

SPRING CLAMP

Code	Description	Size	Kgs
-	Spring clamp	-	-.--

WEDGE CLAMP

Code	Description	Size	Kgs
-	Wedge clamp	-	-.--

CLAMP JACK

Code	Description	Size	Kgs
-	Clamp jack	-	-.--

SINGLE PUSH & PULL PROP

Code	Description	Size	Kgs
-	Single push & pull prop 100/160	-	-.--
-	Single push & pull prop 150/210	-	-.--
-	Single push & pull prop 250/310	-	-.--
-	Single push & pull prop 300/360	-	-.--

Each set includes: Main strut, single prop base, 1 set of m12 x 70 bolts, 1 set of connectors, speed bolt, H-Beam push & pull connector

DOUBLE PUSH & PULL PROP

Code	Description	Size	Kgs
-	Double push & pull prop 100/160	-	-.--
-	Double push & pull prop 150/210	-	-.--
-	Double push & pull prop 250/310	-	-.--
-	Double push & pull prop 300/360	-	-.--
-	Double push & pull prop 350/410	-	-.--

Each set includes: Main strut, secondary strut, double push & pull base, 2 sets of m14 x 70 bolts, 2 sets of H-Beam connectors, speed bolt, H-Beam push & pull connector

H-BEAM CANTILEVER ARM

Code	Description	Size	Kgs
-	H-Beam cantilever arm for working platform	-	-.--

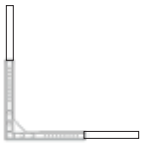
HEAVY DUTY PUSH & PULL PROP

Code	Description	Size	Kgs
-	Heavy duty push & pull prop	-	-.--

Each set includes: Main strut, secondary strut, double push & pull base, 2 sets of m14 x 70 bolts, 2 sets of panel connectors, I-bolt, speed bolt

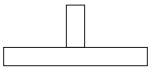
RIGHT ANGLE HEAVY DUTY STEEL BEAM 10012

Code	Description	Kgs
-	Right angle h/d steel beam 10012	-



RIGHT ANGLE EXTENDABLE HEAVY DUTY STEEL BEAM 17012

Code	Description	Kgs
-	Right angle extendable h/d steel beam 17012	-



HEAVY DUTY STEEL T-SECTION

Code	Description	Size	Kgs
-	Heavy duty steel T-section	-	-.--

EXTENDABLE H/D STEEL BEAM

Code	Description	Size	Kgs
-	Extendable h/d steel beam 34812	300/480cm	-.--
-	Extendable h/d steel beam 34815	400/580cm	-.--

LIGHT DUTY STEEL BEAM

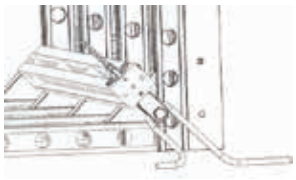
Code	Description	Size	Kgs
-	Light duty steel beam	75 x 50 x 500mm	-.--
-	Light duty steel beam	75 x 50 x 750mm	-.--
-	Light duty steel beam	75 x 50 x 1000mm	-.--
-	Light duty steel beam	75 x 50 x 1500mm	-.--
-	Light duty steel beam	75 x 50 x 2000mm	-.--
-	Light duty steel beam	75 x 50 x 2500mm	-.--
-	Light duty steel beam	75 x 50 x 3000mm	-.--
-	Light duty steel beam	75 x 50 x 3500mm	-.--
-	Light duty steel beam	75 x 50 x 4000mm	-.--

HEAVY DUTY STEEL BEAM

Code	Description	Size	Kgs
-	Heavy duty steel beam	120 x 100 x 500mm	-.--
-	Heavy duty steel beam	120 x 100 x 750mm	-.--
-	Heavy duty steel beam	120 x 100 x 1000mm	-.--
-	Heavy duty steel beam	120 x 100 x 1500mm	-.--
-	Heavy duty steel beam	120 x 100 x 2000mm	-.--
-	Heavy duty steel beam	120 x 100 x 2500mm	-.--
-	Heavy duty steel beam	120 x 100 x 3000mm	-.--
-	Heavy duty steel beam	120 x 100 x 3500mm	-.--
-	Heavy duty steel beam	120 x 100 x 4000mm	-.--

EXTRA HEAVY DUTY STEEL BEAM

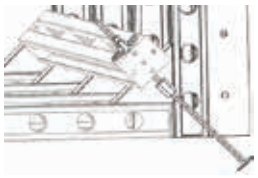
Code	Description	Size	Kgs
-	Extra heavy duty steel beam	150 x 120 x 500mm	-.--
-	Extra heavy duty steel beam	150 x 120 x 750mm	-.--
-	Extra heavy duty steel beam	150 x 120 x 1000mm	-.--
-	Extra heavy duty steel beam	150 x 120 x 1500mm	-.--
-	Extra heavy duty steel beam	150 x 120 x 2000mm	-.--
-	Extra heavy duty steel beam	150 x 120 x 2500mm	-.--
-	Extra heavy duty steel beam	150 x 120 x 3000mm	-.--
-	Extra heavy duty steel beam	150 x 120 x 3500mm	-.--
-	Extra heavy duty steel beam	150 x 120 x 4000mm	-.--



SINGLE-SIDED WALL ANCHOR SYSTEM

Code	Description
?	Single-sided wall anchor A (embedded curved steel bar within concrete floor)

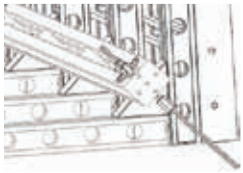
x2 Sets per support element each composed of: single-sided wall anchor connector, anchor nut Ø16mm, tie rod Ø16mm x 50cm, heavy duty pin, curved steel bar (dispensable)



SINGLE-SIDED WALL ANCHOR SYSTEM

Code	Description
?	Single-sided wall anchor B (embedded end-flange tie rod within concrete floor)

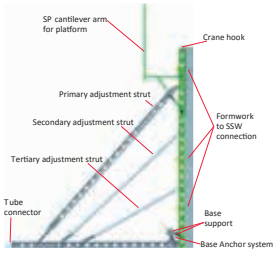
x2 Sets per support element each composed of: anchor nut Ø16mm, hexagon nut Ø16mm, tie rod Ø16mm x 50cm, end-flange tie rod Ø16mm x 30cm (dispensable)



SINGLE-SIDED WALL ANCHOR SYSTEM

Code	Description
?	Single-sided wall anchor C (drilled tie rod in concrete floor)

x2 Sets per support element each composed of: anchor nut Ø16mm, hexagon nut Ø16mm, tie rod Ø16mm x 50cm, tie rod Ø16mm x 50cm (dispensable)



SINGLE-SIDED WALL SUPPORT ELEMENT

Code	Description	Size	Kgs
-	Single-sided wall support element 300	-	-
-	Single-sided wall support element 350	-	-
-	Single-sided wall support element 375	-	-
-	Single-sided wall support element 400	-	-

Each unit is composed of: primary adjustment strut, secondary adjustment strut, tertiary adjustment strut, vertical & horizontal support, base support, panel connection to SSW element, base anchors

CLIMBING SINGLE-SIDED WALL SUPPORT ELEMENT

Code	Description	Size	Kgs
-	Climbing single-sided wall support element	-	-.--

ADJUSTABLE EXTERNAL SOLDIER CONNECTOR

Code	Description	Size	Kgs
-	Adjustable external soldier connector	-	-.--

INTERNAL SOLDIER CONNECTOR

Code	Description	Size	Kgs
-	Internal soldier connector	-	-.--

GALLERY