Züblin Precast Industries
Malaysia

Company Profile

Our vision and guiding principles

Ed. Züblin AG is a member of STRABAG SE - the European-based technology group for construction services and leader in innovation and financial strength. Together we create added value for our clients by our specialized entities integrating the most diverse services and assuming responsibility for them. We bring together people, materials and machinery at the right place and at the right time in order to realize even complex construction projects – on schedule, of the highest quality and at the best price. In short: We assume a part of the risk, thus relieving our clients.

Thanks to the hard work and dedication of our 86,000 employees, we are one of the few companies capable of offering services along the entire construction value chain – from design to planning, from construction to property and facility services, from operation all the way to demolition. In this way, we generate an annual output volume of about € 19 billion. At the same time, a dense network of numerous subsidiaries in many European countries and, increasingly, on other continents is helping to expand our area of operation far beyond the borders of Austria and Germany. This broad diversification puts us in a position to build cost- and resource effectively.

We keep our mission statement in mind when planning our future and distributing our resources – such as financial means or employee capacities – within the company.
Moreover, we let the following principles guide us in all of our considerations:

Commitment

Innovative spirit

Respect

Reliability

Trust

Sustainability

Modesty

Solidarity

Partnership

For us, sustainability means...

…taking on and sharing responsibility for ourselves, for our company and for our environment – now and tomorrow.
…thinking in the long term.
…seeking lasting successes rather than quick victories.

For us, innovative spirit means...

…creating space for new ideas.
…allowing ourselves to make mistakes and seeing them as valuable learning experiences.
…actively and confidently shaping the future of the construction and real estate industry.

For us, partnership means...

…being appreciative in our interactions with one another.
…meeting each other at eye level.

For us, trust means...

…counting on each other.
…being aware of our responsibility at all times.
…allowing space for independent thinking and acting.

For us, modesty means...

…setting realistic expectations for ourselves and others.
…staying down to earth.

For us, commitment means...

…defining and pursuing common goals.
…getting actively involved.

For us, respect means...

…being open to different views and ideas.
…being appreciative, civil and open in our interactions with one another.

For us, reliability means...

…standing by our word.
…saying what we do and doing what we say.

For us, solidarity means...

…standing by one another.
…living team spirit – also and especially in difficult situations.
…taking responsibility for successes and failures.
…standing together even in troubled times.

Together we care!

The most important prerequisite for a satisfied working day is a healthy and safe life. On the construction site or at the office, the safety and health of all is a central priority and part of our corporate culture. To make sure things stay this way, our guiding principle in daily work applies to the entire group is: ‘1>2>3 Safe!’. This slogan sums up all matters of and necessary measures for work safety under a uniting roof. Our goal is clear: reducing the number of accidents and lost working hours to zero.

1· **Stop!**
Take your time and assess the situation before you act.
The seconds before your next move are decisive!

1·2 **Think!**
Take a good look at the next workstep, prepare it well and stand up for a safe work environment.

1·2·3 **Act!**
Act responsibly and work safely. Choose safety –
for you and your team.

Züblin Precast Industries Sdn. Bhd.

Facts

Located:
Johor, Malaysia
Jalan Besi 4, 81900 Kota Tinggi

Total Area:
90,000 m²

Production Capacity:
200 m³ per day
3 production lines

Production Start:
March 2015

Workforce:
50 employees and up to 250 workers

General information about us

In 1997 the company established Ed. Züblin AG, Singapore Branch.

Recognizing the necessity for pipes and segments in infrastructure projects in the Asia Pacific Region, the company established a factory, in Malaysia in 2015, for the production of precast reinforced concrete elements under the name of Züblin Precast Industries Sdn. Bhd. The factory is located in Kota Tinggi, in the State of Johor only 50 kilometers from Woodlands, Singapore. The state-of-the-art factory can produce elements with a service life of over 100 years.

The company's own design department has the capacity to design all kinds and types of precast concrete products in conformance to all international standards.

Although the business has evolved through several companies and over many years, the ZÜBLIN brand is well established and synonymous with good quality and excellent service whilst developing and establishing new production processes.

Benefit of Precast

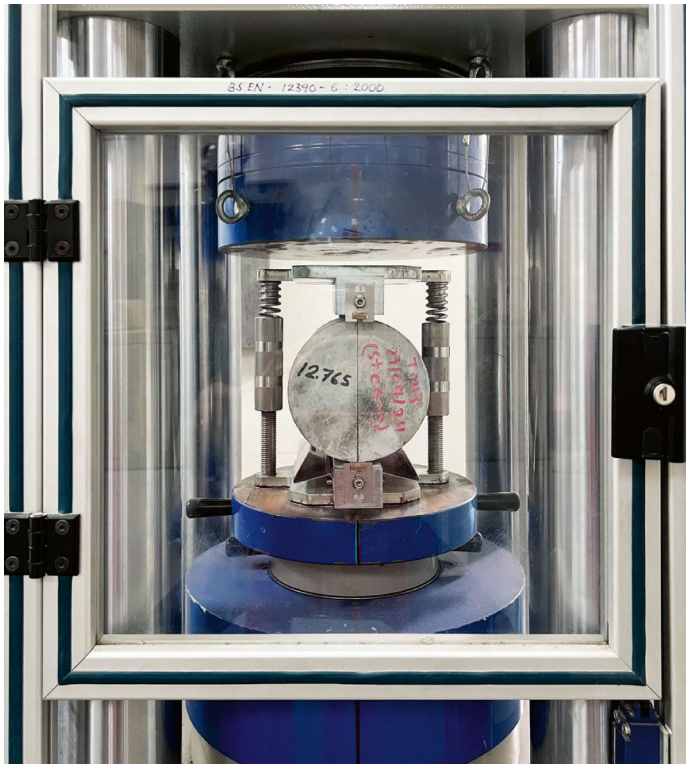
- **Design Flexibility:**
  - Moulds adaptable to unique design requirements.
- **High Strength:**
  - Long life cycles, high loading capacities, and long spans.
- **Durability and Low Maintenance:**
  - Longer lifecycle service for high-use applications.
- **Improved Aesthetics:**
  - Offers a range of architectural finishes.
- **Faster Construction:**
  - About 75 percent less construction time compared to traditional methods.
- **Lower Costs:**
  - Time-saving on-site, reduced propping/scaffolding costs, lower site labor costs, and materials storage costs.
- **Better Site Management:**
  - Reduced clutter, timed product deliveries.
- **High-Quality Product:**
  - Controlled, purpose-built factories ensure quality.
- **Reliable Production:**
  - Manufacturing in covered conditions avoids weather delays.
- **Reduced Waste:**
  - No construction wastage on site due to exact element delivery.
- **Reduced Environmental Impact:**
  - Efficient factory environment, less noise, air pollution, and debris on-site.
  - Uses recycled materials in production.
  - Incorporates thermal mass into designs.
  - Low heat cement reduces carbon emissions.
  - Shorter construction periods result in fewer emissions and less equipment required on-site.
  - Reduces concrete waste.
- **Safety:**
  - Reduced use of scaffolding minimizes the risk of working at height.
- **Enhanced Productivity:**
  - Cost savings in manpower and equipment.
- **Public Relations:**
  - Reduced exposure to noise, dust, and waste.
  - Reduced construction duration.
  - Reduced refurbishment needs for concrete structures.
- **Quality Improvement:**
  - Enhances quality and lifespan of structures.

Quality Management

The factory has all the accreditations necessary for international markets, and all products can be tested in accordance with international standards.

Factory Certifications

- ISO 9001: 2015 Quality Management System
- ISO 14001: 2015 Environmental Management System
- ISO 45001: 2018 Occupational Health and Safety Management System
- ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories
  - Compressive Strength Test BS EN 12390-3
  - Sieve Analysis (Coarse & Fine) BS EN 933-1
  - Depth of Penetration Water Under Pressure BS EN 12390-8
  - Tensile Splitting Strength of Test Specimens BS EN 12390-6
  - Measuring the Flexural Tensile Strength BS EN 14651
- Building and Construction Authority (BCA): Licensed as General Builder Class 1 and Specialist Builder (Precast Concrete Work)
- Certificate of Conformity Ready Mixed Concrete Certification



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IQNET CERTIFIED MANAGEMENT SYSTEM

STANDARDS MALAYSIA ACCREDITED

qualityaustria SYSTEM CERTIFIED
ISO 9001:2015 No.21081/0
ISO 14001:2015 No.03693/0
ISO 45001:2018 No.00733/0

Concrete Recycling Plant

With our concrete recycling systems, we are able to separate the concrete waste into its components, such as aggregates, sand, and water, for reuse in production.

Nowadays, the importance of environmental responsibility continues to increase. To create a cleaner world for future generations, specific rules and standards are introduced in our production of concrete precast elements. We are always thinking about sustainable ways and are very sensitive to the environment.

Water Treatment Plant

Excess water which cannot be used directly in the mixing process is treated here, so that clean water is available. This can be used in the production process or discharged into the public system.

The produced sludge during wastewater treatment process is also used as far as possible for special precast elements again in the mixing process to form a closed circuit.

Waste Management

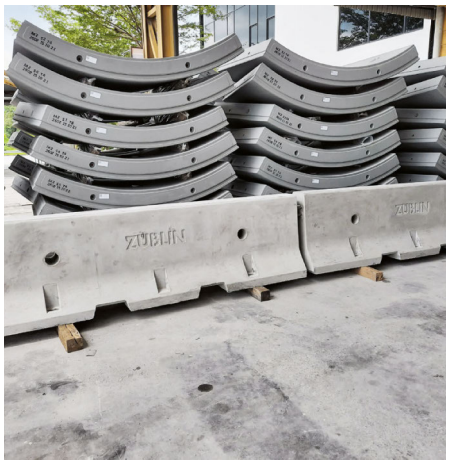
Waste generated from our production operations is kept to a minimum and is managed in accordance with our ISO 14001:2015 policy.

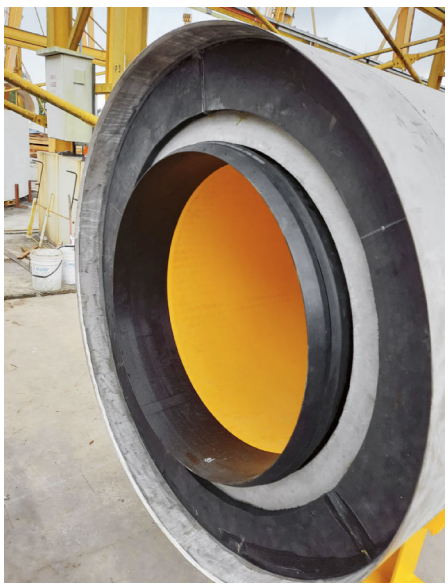
A quarantine area is set up on the factory premises for the purpose of controlling, storing, and recording all hazardous materials that enter and leave the factory.

The state-of-the-art factory can produce elements with service life of over 100 years

Product Portfolio

- Tunnel Lining Segments
- Jacking Pipes
- Caisson Segments
- Manhole Chamber Rings
- Pipe Cladding
- Customized Precast Elements





1 Steel Fibre Reinforced Concrete (SFRC) /
2 Reinforced Concrete (RC)

Precast Tunnel Lining Segments

Steel Reinforced and Fibre-Reinforced Tunnel Segments

Precast concrete segmental linings have been produced traditionally as reinforced concrete (RC), steel fibre reinforced concrete (SFRC) and a combination of this as Hybrid Segment concrete.

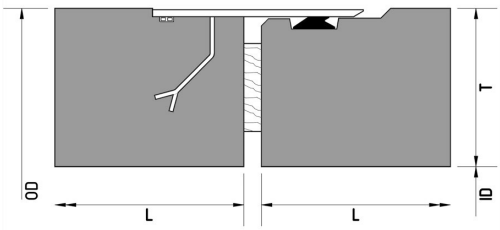
The application of steel fiber reinforced concrete is becoming increasingly common due to numerous improvements, primarily related to durability and sustainability. The production process is simplified, minimizing edge cracks during handling, and reducing crack width and depth significantly. With higher resistance against corrosion and greater impact toughness, the segments exhibit enhanced durability.

Standard Jacking Pipes

Notes

- Lubrication ports and one-way valves are included.
- Concrete Grade is C45/55 but other grades are available.
- Steel collars are steel grade S316 or S275JR other collar materials are available.
- HDPE lining is available.
- HDPE welding rod, capping strip and patch are available.
- Pressure transfer rings are available.
- Gaskets and seals are included.
- Intermediate jacking stations (IJS) are available.

Our concrete jacking pipes are durable, highly resistant to abrasions and designed to withstand heavy loads, ZÜBLIN's state of the art Precast factory, produces elements with a service life of over 100 years. The jacking pipes can be produced with or without HDPE liner.



DN	ID	OD	T	L	Weight		Jacking Force
	mm	mm	mm	m	kg/m	kg/pipe	kN
600	600	860	130	2.00	735	1,470	1,385
700	700	960	130	2.00	850	1,700	2,534
800	800	1280	240	3.00	1,958	5,875	3,401
1000	1000	1280	140	3.00	1,250	3,750	1,969
1000	1000	1400	200	3.00	1,880	5,640	3,200
1200	1200	1490	145	3.00	1,533	4,600	3,089
1200	1200	1580	190	3.00	2,080	6,240	3,313
1500	1500	1820	160	3.00	2,080	6,240	4,527
1700	1700	2100	200	3.00	2,983	8,950	7,080
1800	1800	2120	160	3.00	2,467	7,400	8,122
1800	1800	2200	200	3.00	3,140	9,420	6,945
2000	2000	2380	190	3.00	3,267	9,800	7,750
2000	2000	2450	225	3.00	3,930	11,790	9,445
2100	2100	2500	200	3.00	3,617	10,850	8,516
2100	2100	2550	275	3.00	4,108	12,325	10,127
2400	2400	2860	230	3.00	4,750	14,250	9,591
2500	2500	2980	240	3.00	5,170	15,590	11,027
2800	2800	3370	285	3.00	6,910	20,730	16,415
3000	3000	3600	300	3.00	7,770	23,310	21,822
3100	3100	3600	250	3.00	6,575	19,725	20,251
3100	3100	3720	310	3.00	8,300	24,900	27,619

All weights and jacking forces are approximate and subject to change.

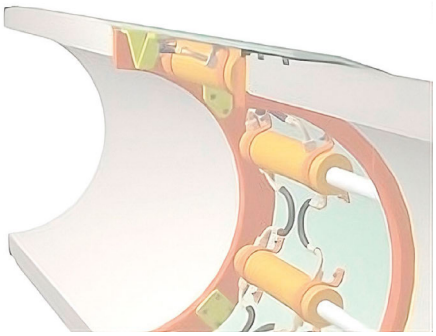
Standards:

- BS EN 1916
- BS 5911-1
- AS/ NZS 4058
- SS EN 206-1
- BS EN 197-1
- SS 544-1 and -2
- BS 4449
- SS 560
- AS/ NZS 4671
- SS 183
- EN 681-1
- EN 934-2
- AS 1478-1
- DIN V 1201

Jacking Pipes and IJS

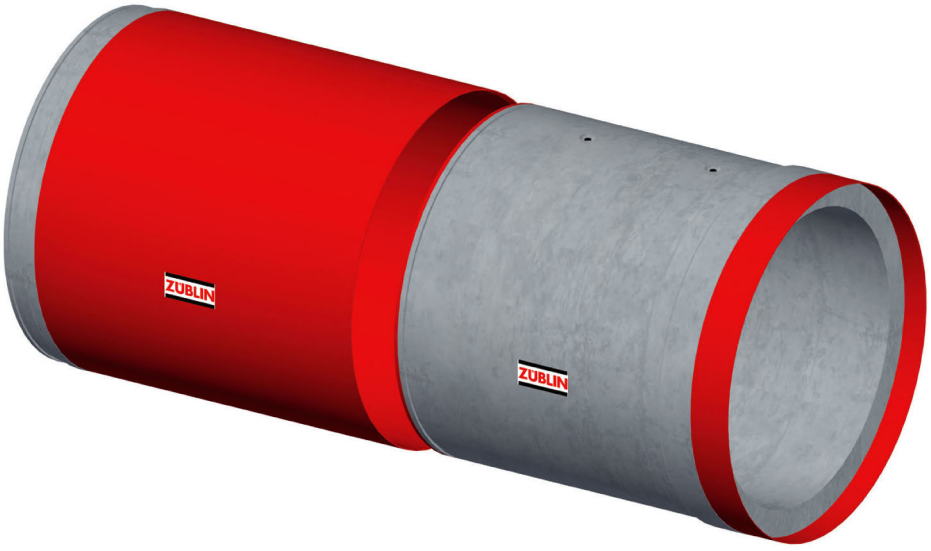
Precast Concrete Jacking Pipes

Jacking concrete pipes are specialized tunnelling pipes used in underground construction. The jacking pipe is lowered into a shaft behind a TBM (tunnel boring machine) and then pushed underground by hydraulic jacks, creating a pipeline without the need to dig a trench. Reinforced concrete pressure pipes are designed to withstand the combined effects of external loads and internal pressure during service.



Intermediate Jacking Station (IJS)

An Intermediate Jacking Station (IJS) comprises two pipes: a Lead pipe and a Trail pipe, with an Interjack system positioned between them, as illustrated in the image below. IJS setups are frequently employed in long drives where jacking forces surpass the maximum capacity of the pipes or main jacks. Installed during a drive, IJS units diminish the forces on the main jacks by advancing the pipes in front of the inter jacks first, allowing the main jacks to solely push the rear section of pipes.

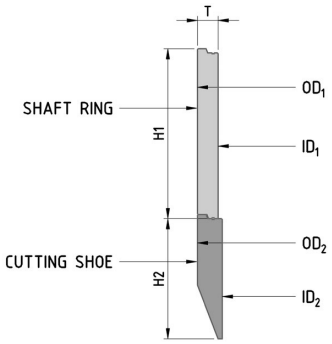


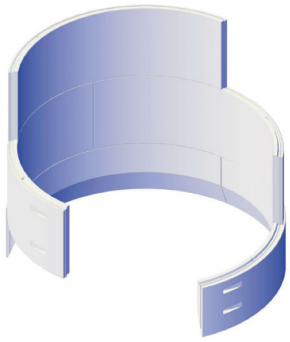
Caisson Shaft Rings

Notes

- Concrete Grade is C35/45 but other grades are available.
- The vertical and horizontal tie rods are available.
- Grout ports and one-way valves are available.
- Shaft Rings with soft eyes are available.
- Steel jackets for the cutting shoe is available.

The reinforced precast concrete manhole units are specifically engineered for installation using the caisson method. This is accomplished by utilizing shaft ring elements designed for various diameters and depths, commonly employed in the construction of temporary manholes, wet wells, and pumping stations.





Type	ID	OD	T	Height	Pcs/Ring	Weight
	mm	mm	mm	m	set	to/pcs
Segment	2500	2860	180	2.00	1	7.7
Cutting Shoe	2500	2960	230	1.50		7.5
Cutting Shoe	3000	3400	200	2.00	1	10.5
Segment	3000	3500	250	1.65		10.7
Cutting Shoe	3200	3600	200	2.00	1	10.8
Segment	3200	3700	250	1.50		10.3
Cutting Shoe	3900	4300	200	2.00	2	13.1
Segment	3900	4400	250	1.65		13.7
Cutting Shoe Segment (steel)	4080	4530	225	1.30	6	1.65
Cutting Shoe	4400	4900	250	2.00	2	18.6
Segment	4400	5000	300	1.50		16.9
Cutting Shoe	5000	5500	250	2.00	2	21.0
Segment	5000	5600	300	1.65		21.0
Cutting Shoe	6000	6500	250	2.00	2	25.0
Segment	6000	6600	300	1.65		24.9
Cutting Shoe	6300	6800	250	2.00	3	26.2
Segment	6300	6900	300	1.50		23.8
Cutting Shoe Segment (steel)	6580	7180	300	1.60	7	3.70
Cutting Shoe	7200	7800	350	2.00	3	36.0
Segment	7200	7900	350	1.50		31.7
Cutting Shoe	8800	9500	350	2.00	4	51.3
Segment	8800	9600	400	1.50		44.2

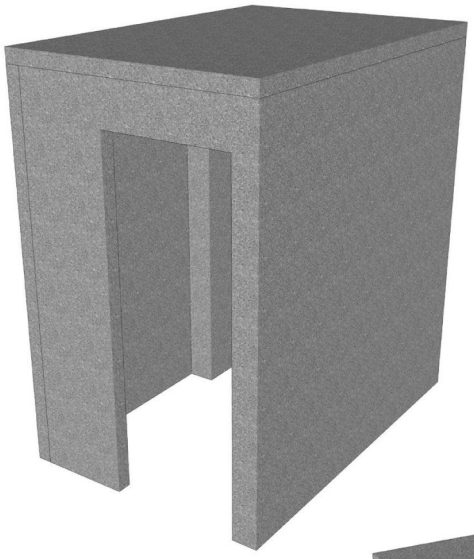
All weights shown are approximate and subject to change.

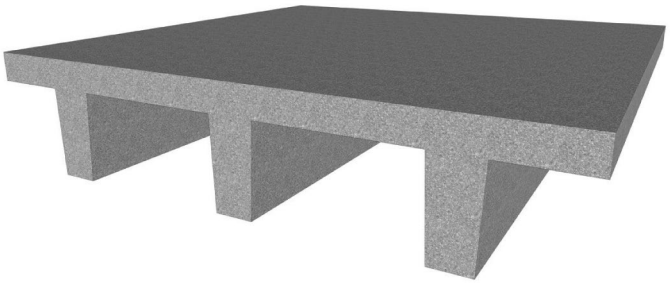
Products Range or any Customized Products designed by clients

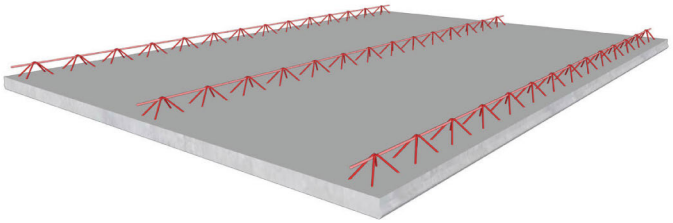
We specialize in producing and supplying a comprehensive range of high-quality precast concrete products tailored to meet diverse project requirements. Our offerings include:

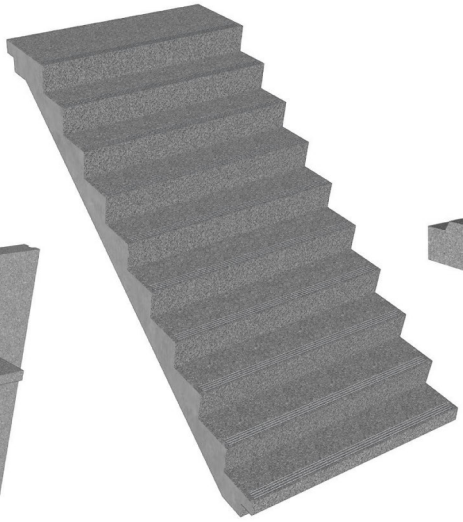
- **Precast Beams:** Both conventional and prestressed options available.
- **Precast Concrete Wall or Façade Panel:** Versatile panels suitable for various architectural applications.
- **Prestressed Planks or Half Slab:** Engineered for strength and durability in flooring systems.
- **Prestressed Precast Concrete Railway Sleepers:** Robust sleepers for railway track systems.
- **Precast Marine Products:** Designed for coastal and marine infrastructure projects, our range includes versatile solutions such as tetrapods, which offer effective shoreline protection and erosion control.
- **Precast Earth Retention Solutions:** Includes L-Wall and retaining wall systems for soil stabilization.
- **Precast Concrete Box Culverts:** Efficient drainage solutions for infrastructure projects.
- **Precast Concrete Boundary Walls:** Durable and aesthetically pleasing perimeter solutions.
- **Precast Concrete Stairs:** Customizable stair systems for residential and commercial buildings.
- **Precast Concrete Paving Stones and Kerbstones:** Enhance outdoor spaces with durable paving and edging solutions.
- **Precast Concrete Water & Septic Tanks:** Reliable storage solutions for water and sewage management.
- **Precast Prestressed Concrete Trenches & Covers:** Ideal for utility trenching and access covers.
- **Precast Prestressed Double Tee System/Slab:** Provides efficient structural support for flooring systems.
- **Precast Concrete Electrical Pits or Manholes:** Secure enclosures for electrical infrastructure.
- **Precast Container Houses:** Innovative housing solutions offering durability and affordability.
- **Precast Crash Barriers:** Engineered for optimal safety and efficiency, they provide robust protection against collisions and impacts, ensuring secure work environments in construction and industrial settings.

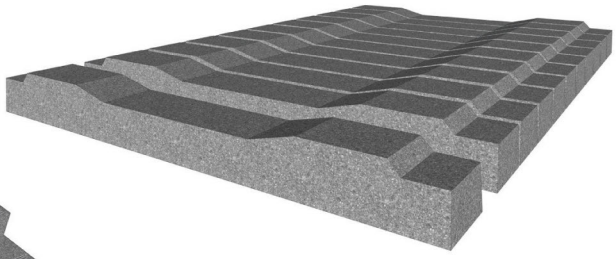
Each product is manufactured with precision and quality assurance to meet industry standards and exceed client expectations.

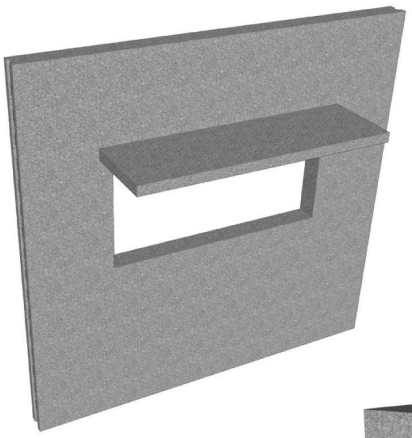


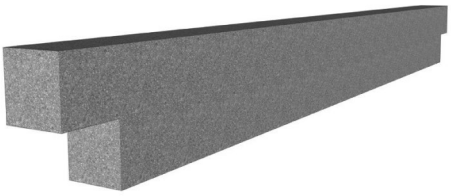


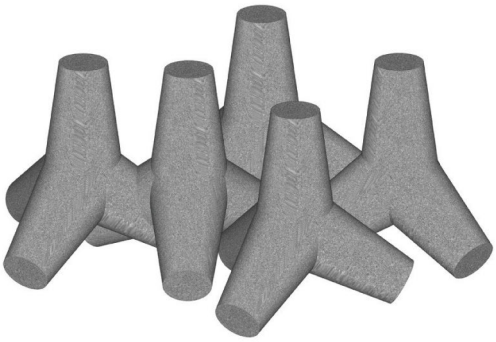


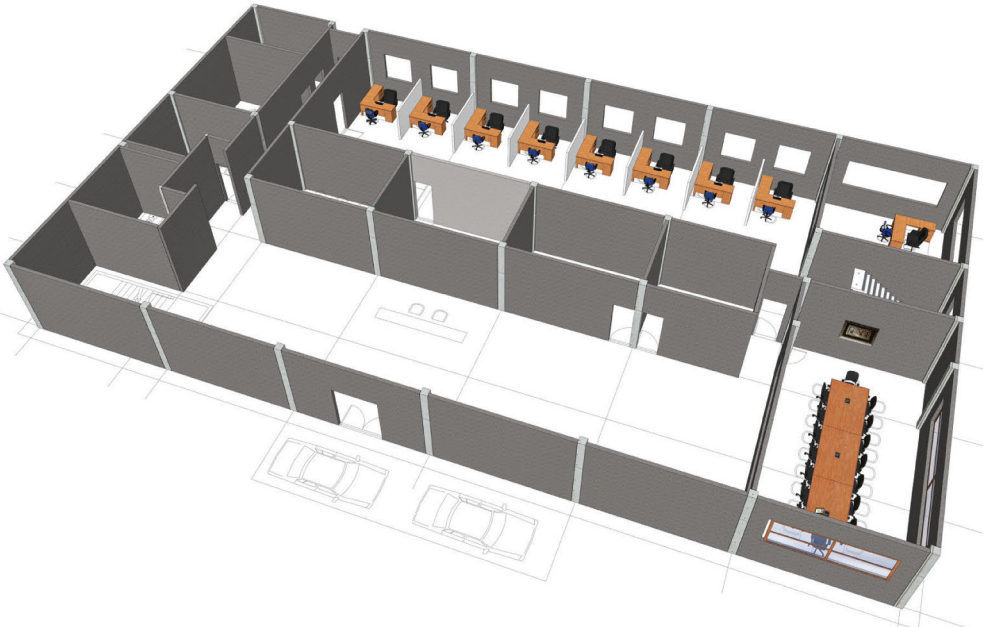


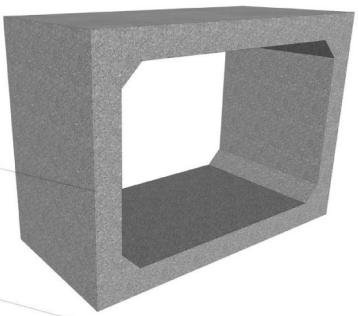




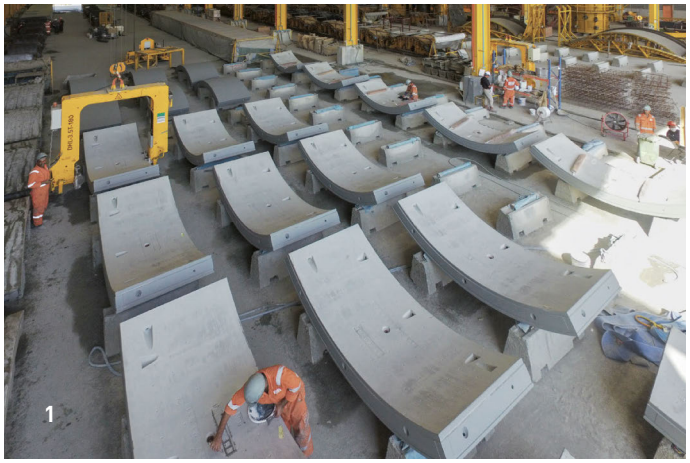


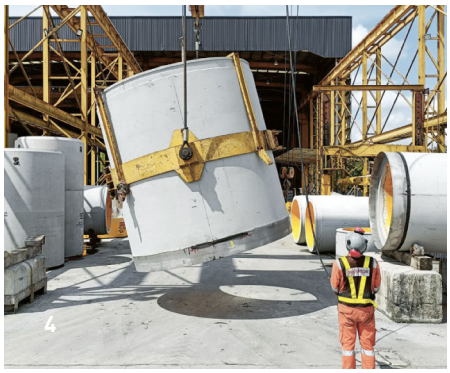


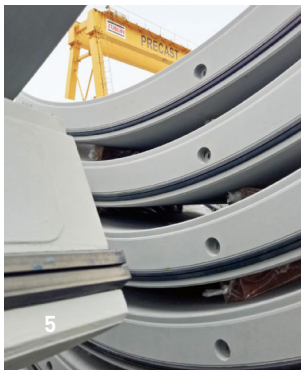




1 Storage Yard / **2** Batching Plant / **3** Production Hall / **4** Office Building / **5** Workers Canteen / **6** Workers Accommodation / **7** Laboratory / **8** Entrance Gate







1 Finishing Area / **2** Production Hall / **3** Pipe Storage / **4** Pipe Turning / **5** Tunnel Lining Segment / **6** Factory Storage Yard / **7** Jacking Pipe Moulds / **8** Cut and bend area **9** Segment Reinforcement / **10** Segment demoulding

Concrete Mix Design

TPA – Organization

The “Gesellschaft für Qualitätssicherung und Innovation GmbH” (TPA) is our global materials technology competence center for asphalt, concrete, earthwork and geotechnical engineering.

As an independent laboratory organization TPA aims:
– To constantly improve quality standards in the construction industry
– To provide top-level services
– To continually extend our range of services
– Total customer satisfaction

Fibre Reinforced Concrete (FRC)

Fibre Reinforced Concrete (FRC) utilizes fibres either as a replacement or in combination with standard reinforcement bars. Our testing has demonstrated compressive strengths of up to 60 N/mm². FRC has been successfully used in various projects, including the Katzenberg Tunnel in Germany and the Deep Tunnel Sewage System in Singapore.

Corrosion Resistant Concrete

We produce concrete products which are durable and corrosion resistant under adverse conditions. Our high quality concrete products provide:

– Sulphate resistance
– Chloride resistance
– Micro-biological Influenced resistance (MIC)

Reinforcement Preparation

Automatic Stirrup Bending Machine (ASBM)

Our ASBM is the most innovative stirrup bender, designed to produce stirrups out of coil or stock rebar according to the different production requirements in a fully automatic way, guaranteeing maximum flexibility, productivity and quality of the finished product. Our ASBM is the first equipment in the world to use nearly 100% of the bar's length without generating additional wastage.

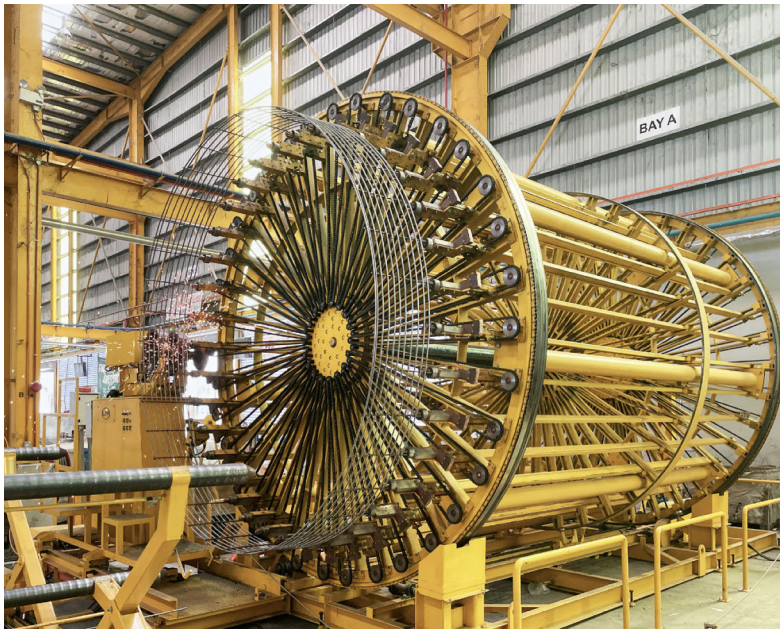
Automatic Cage Welding Machine (Pipe)

Automatic welding machines designed by Zublin for the manufacture of cylindrical cages for reinforced concrete pipes. The machines produce spot welded reinforcement cages with or without bell and/or spigot joint in different lengths for a wide range of pipe diameters. An elliptical and square cage production capability is available as an optional extra. The rigid machine structure ensures extremely straight twist-free and accurate reinforcement cages, essential for the trouble-free production of good quality concrete pipes.

The pre-cut longitudinal wires are fed into the machine manually. All necessary parameters such as cage length, winding wire pitch, welding intensity, bell angle, rotational speed, etc. are infinitely adjustable for each type of reinforcement cage and can be stored in menus.

Only one operator is required to run the pipe cage welding machine.

– Cage Diameter (mm)	350 – 3640
– Number of longitudinal wires	9 / 12 / 18 / 36
– Longitudinal wire diameter (mm)	5 – 16
– Winding wire pitch (mm)	50 – 150
– Winding wire diameter (mm)	5 - 12



Curing

All the beneficial properties of precast concrete, including strength, durability and water tightness are enhanced through proper curing techniques. In some instances, the curing of precast concrete products is one of the last and perhaps most neglected steps in the manufacturing progress, especially in a rapid production environment.

- The primary goal of curing is to keep the concrete saturated.
- Adequate curing is even more important when the water-cement ratio is low. The prevention of water loss is essential to achieve the required concrete strength and, at the same time reduces the permeability of the precast concrete.
- During prolonged hydration, the cement in the mix develops into a gel, which reduces the size of the concrete's internal voids and greatly increases the water tightness of the concrete.

Fully Automatic Steam Curing System

Zublin Precast Industries is using a state of the art fully automated steam curing system which ensures a practical, efficient, environmentally friendly, and cost-effective production of precast concrete elements.

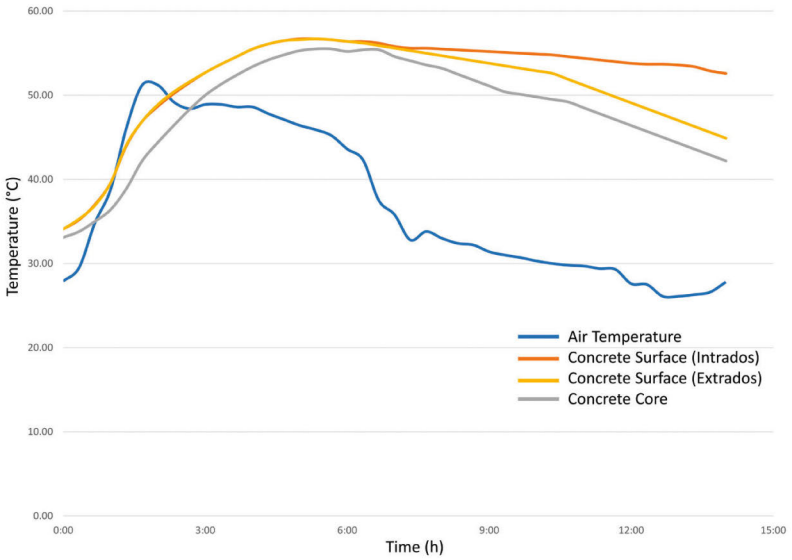
The process of steam curing is carried out until the pre-determined maximum temperature under the steam covers is reached. The temperature rise in any one 15-minute period is programed not to exceed six degrees Celsius. The steam supply will then be reduced so that the maximum temperature is not exceeded. Steaming will continue until the required concrete strength has been achieved. The maximum temperature for steam curing shall not exceed 70 degrees Celsius.

Benefits of Steam Curing

Curing, particularly within the first few hours after concrete placement, is one of the most important factors in manufacturing top quality precast concrete products. Properly cured precast concrete will achieve both superior early strength and long-term strength.

Properly cured precast concrete products are also less permeable, more durable and display greater surface hardness. The durability of well cured concrete parts will be increased significantly with the result that the concrete service life will be increased.

A well-adjusted curing process ensures sufficient protection of the concrete surface during the heating process and after removing the concrete elements from the formwork.



Quality Control

All production processes of the concrete precast elements are subject to a stringent Quality Control Management System. This system puts an especially high emphasis on the concrete curing procedures. At the beginning of the production and at defined intervals, the effectiveness of the employed curing method is tested using concrete specimens that are produced under conditions equivalent to the precast segments. The testing of those specimens is performed in our accredited laboratory.

ZUBLIN Laboratory

The Laboratory is located within our factory premises and is able and accredited to and certify to international norms and standards.

The laboratory equipment is periodically calibrated and certified by third party.

Standard Tests

- Compressive Strength
- Sieve Analysis of Fine Aggregates
- Sieve Analysis of Coarse Aggregates
- Slump Test
- Pipe Crushing Test
- Water Tightness Test
- Air Content Test
- Flexural Strength Test
- Splitting Test
- Water Penetration Test
- Testing of Cement
- Organic Impunities

UPE & UPV test scan can detect and map the following in concrete

- Voids and Honeycombing
- Steel Reinforcement (Rebar)
- Concrete Thickness
- Evaluating of concrete strength
- Stevedoring and packaging

Ferro Scan

Using the Ferroscan system we can carry out a non-destructive means of locating and measuring reinforcing bars and concrete cover. This system employs the induction principle, with the scanner locating rebar's accurately & reliably within concrete.

Ultrasonic Pulse Velocity (UPV) Scan

An ultrasonic pulse velocity test is an in-situ, non-destructive test to check the quality of concrete. In this test, the strength and quality of concrete is assessed by measuring the velocity of an ultrasonic pulse passing through a concrete structure. This test is conducted by passing a pulse of ultrasonic wave through concrete to be tested and measuring the time taken by pulse to get through the structure. Higher velocities indicate good quality and continuity of the material, while slower velocities may indicate concrete with many cracks or voids.

Ultrasonic Pulse Echo (UPE) Scan

The non-destructive electronic ultrasonic pulse echo (UPE) technology extends ultrasonic pulse velocity (UPV) applications to objects where access is restricted to a single side.

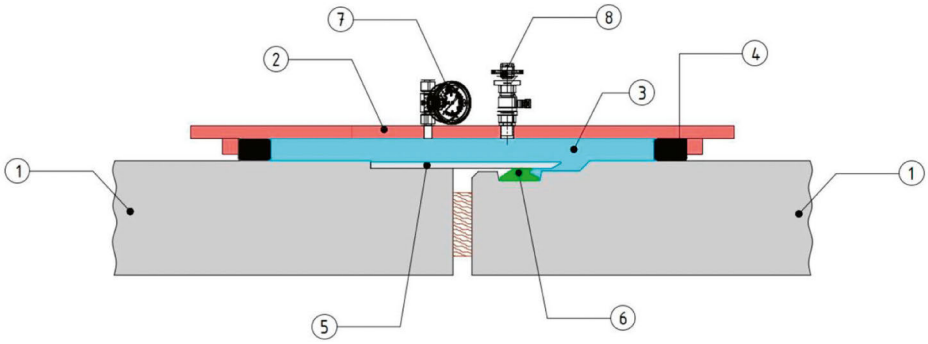
Outer Seal Test

General Information as per Singapore Standard SS 183: 2020

The joint for jacking pipes is subjected to external hydrostatic pressure and the declared maximum draw Dmax, shall not show any visible signs of damage to its components nor leak during jacking and in the permanent condition.

Two units of Precast Concrete Jacking pipes will be assembled with a joint displacement of maximum 0.5 degrees. There is a spacing between the steel ring and the outside surface of the jacking pipe the sides of the ring will be closed with seals (on each side of the steel ring) causing a watertight area.

The resulting compartment between the inner surface of the steel ring and the outer surface of the pipe joint will be filled with water until water flows out of a valve on the top of the steel ring. At which time this valve is closed, and water is continued to be gradually pumped in until a recommended test pressure is reached.



1 Pipe

2 Metal jacket

3 Water under pressure

4 Watertight seal

5 Joint being tested

6 Jacking pipe – Joint gasket

7 Pressure gauge

8 Water valve


UTAMAKAN KESELAMATAN
SAFETY FIRST
安全第一
OPERATOR


ZÜBLIN

9/2024

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