

Design

Design of FRP thickness and stiffener is usually carried out by using hydrostatic head of concrete and assuming that concrete behaves as a fluid (with a density of 2.5 g/cm³) while providing for resistance to cracking and rupture when the poured concrete is vibrated. A finite element analysis may be required if formwork shape is complicated.

Versatile

FRP formwork is an economical solution for specialist designs and applications. They fulfill the most demanding architectural requirements that include design for larger span construction as well as those with a particular requirement for finish or shape. FRP column formwork can be manufactured in a variety of shapes and sizes (circular, square, rectangular, oval, elliptical) with or without splayed heads. The smooth durable surface finish of the formwork ensures a high class non-porous concrete finish with a high reuse factor.

Production

Typically, FRP formwork panel can be made using glass fibre fabric sheet, while stiffeners can be made using chop roving along with chopped strand mat and woven roving with balsa core to provide reinforcement to sustain concrete pour loading and avoid shape irregularities (due to deformation / lack of formwork stiffness).

Company Profile

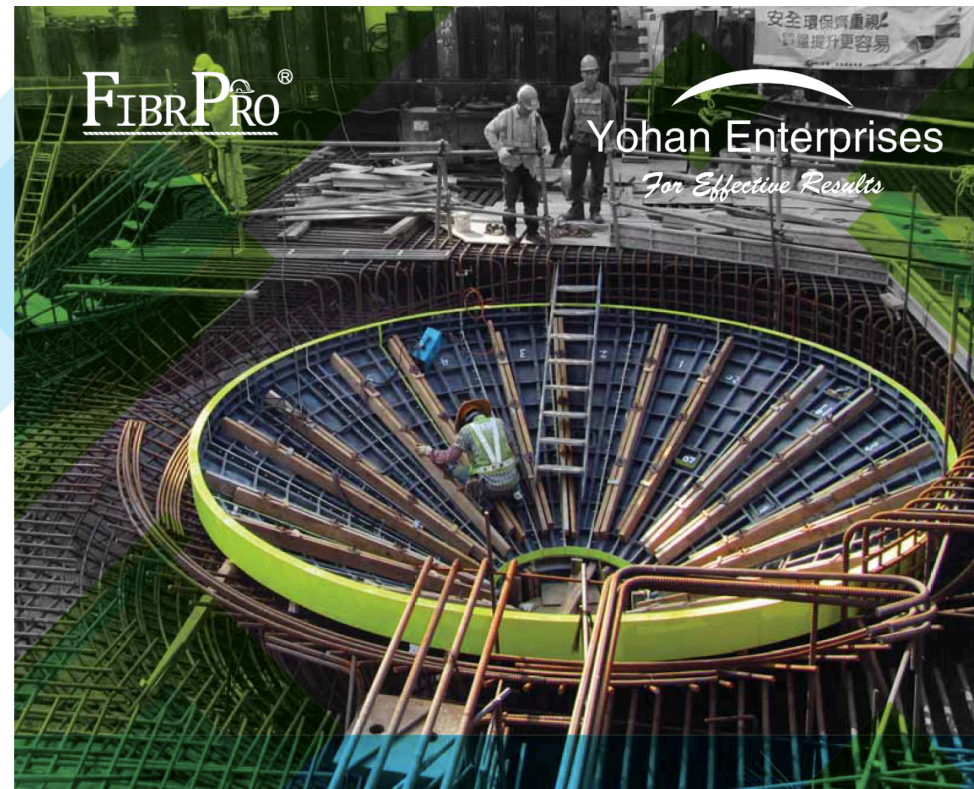
- A specialist contractor headquartered at Hong Kong
- Provide one-stop service of design, manufacturing, delivery and installation of a comprehensive range of high quality FRP products

Fibrpro® International Ltd. provides design, supply and installation services for all FRP related works, our products includes (but not limiting to)

- FRP profiles,
- Signage and cladding
- Ladders
- Staircases
- Railings
- Gratings/platform
- Rebars
- Formwork
- Combinable House
- Indoor Decorative Features
- Outdoor Decorative & Landscape Features
- Covers (gas-sealed or non-gas-sealed)



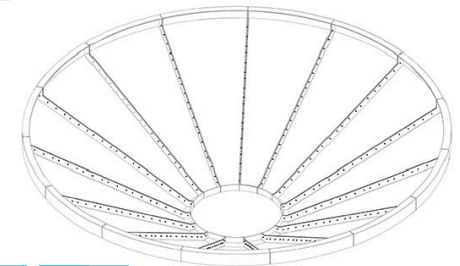
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Fibre Reinforced Polymer (FRP) Formwork

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YOHAN Enterprises Pty Ltd, Australia proudly collaborates with FibrPro Hong Kong for FRP Form Work Products



Light Weight

No Cranage

Minimizing Labour

Speed Up

Object Shape

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Benefits of Fibrpro® FRP Formwork

Time Saving = Cost Saving Benefits:

- Formworks are manufactured to suit standard, skewed or tapered objects - minimising cutting.
- All formwork panels are pre-assembly at factory and numbering for re-assembly - minimising site adjusting and reducing site labour time.
- The propagation of duplicate formwork sets is relatively short - no lamination on site manpower - allowing large volume concrete casting at one shoot.
- The laying time of the panels is extremely rapid - to 5 times faster than steel panel and 10 times faster than timber panel.
- The lightweight formwork allows panels to be fixed to braced pairs prior to lifting into place - cutting down on handling time and providing for a safer working environment whilst placing intermediate panels.
- Details are shown on the drawings black-and-white - no waste time for reporting and arguing.
- Shorter possession periods.



Rapid laying: one semi-skilful labour can assemble 50m² formwork per day



Light in weight: one labour can easily handle an average 2m² panel

Labour Saving = Cost Saving Benefits:

- Minimum craning required - 2 men can handle panels up to 2m.
- Minimum skilful labour required
- No other treatments necessary before object cast.
- No further treatments necessary after object cast.



New Age FRP Curved Formwork



Traditional Timber Curved Formwork



Perfect finishing: no further treatment necessary

	Timber Formwork	Steel Formwork	FRP Formwork
Self-weight	Manual handling	Crane required	Manual handling
Labour required	Carpenter	Skilful	Trained
Rib formation	Addition required	embedded	Embedded
Versatility	Limited and costly for irregular shape	Numerous variations	Numerous variations
Aesthetic features	Not possible	Not possible	Possible
Site formation	In-situ	Ready-to-use	Ready-to-use
Precision	Low	High	High
Initial cost	low	high	Medium
Cycles	3-5	15-25	15-25
Application	Temporary	Temporary	Temporary and permanent
Possession time	Long	Short	Short
Laying time	Long	Medium	Short
Appearance of concrete surface	Depends	high	high
Site modification	free	difficult	possible
Water absorption	high	zero	zero
Fire retardant	No	Yes	Yes
Climate variation influence	High	Rusty	No
Release	Easy	Difficult for internal formwork	Easy

Additional Cost Saving and Risk Reduction Benefits:

- Extremely high strength to weight ratio, to safe the potential hazard at site.
- Formwork has a life more than 25 cycles is possible, with proper care on erection, release, transportation and storage.
- Zero water absorption - impermeable FRP acts as an excellent protection layer to the concrete and rebar.
- Capable of withstanding high amplitude vibrations (shaking), abrasion and impact without cracking.
- Unaffected by climate variation and minimum affected by temperature variation.
- Fire retardant.
- Panels are extremely versatile and no limitation on object shapes.
- Capable of be considering as cast-in and permanent formwork.



Precise Form: the resulted tolerance is only 3mm for a ring in 6.1m diameter, < 0.05%



Case Study - Flow Chart

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1. Agreement with Customer and PO

2. Construction Drawing

3. Formwork Design & Drawing

5. Pre-assembly & Numbering

4. Production

6. Delivery

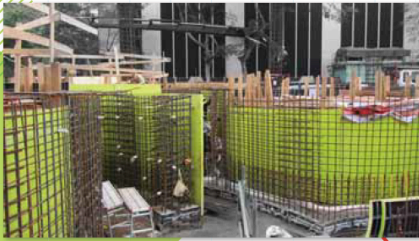
7. Site Assembly & Installation

8. Concreting

9. Release

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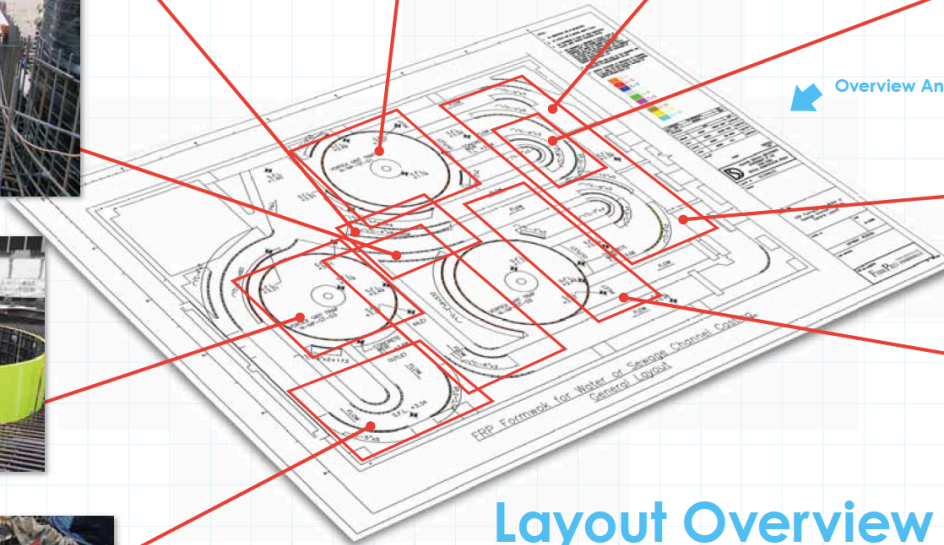
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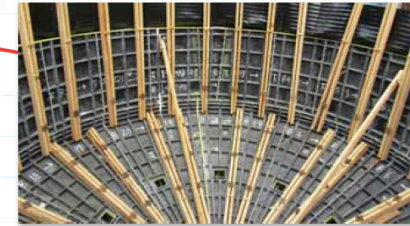
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Overview Angle



Layout Overview

