



Building the future Rehabilitating the past

Wagners Composite Fibre Technologies (CFT)

WAGNERS



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Introducing Wagners

Composite Fibre Technologies (CFT)

Wagners Composite Fibre Technologies (CFT) started in 2002 using a unique pull-winding process for manufacturing Fibre Reinforced Polymer (FRP) structural profiles. Wagners' pioneering use of composite materials quickly led to supplying infrastructure projects throughout Australia and today CFT boasts global delivery capabilities with exports regularly to the United States of America, Malaysia, New Zealand, United Kingdom, Scotland, Fiji and United Arab Emirates.

Wagners CFT has been a leader in the pultruded FRP industry for more than twenty years having been the first in the world to build a road bridge using pultruded FRP structural profiles; first to design and install clip-on pedestrian walk and cycleways to existing bridge structures and first to design and build the longest riveted FRP truss bridge in Australia possibly the world.

Wagners CFT is also amongst the leaders driving decarbonisation in construction with the launch of its new Environmental Product Declaration (EPD), which is the first of its kind for pultruded FRP in Australia and only the second of its kind in the world.

Wagners CFT is proud to be an Australian manufacturer employing some 150+ people at its Wellcamp manufacturing plant near Toowoomba in Queensland.



Scan the QR code to visit our website.

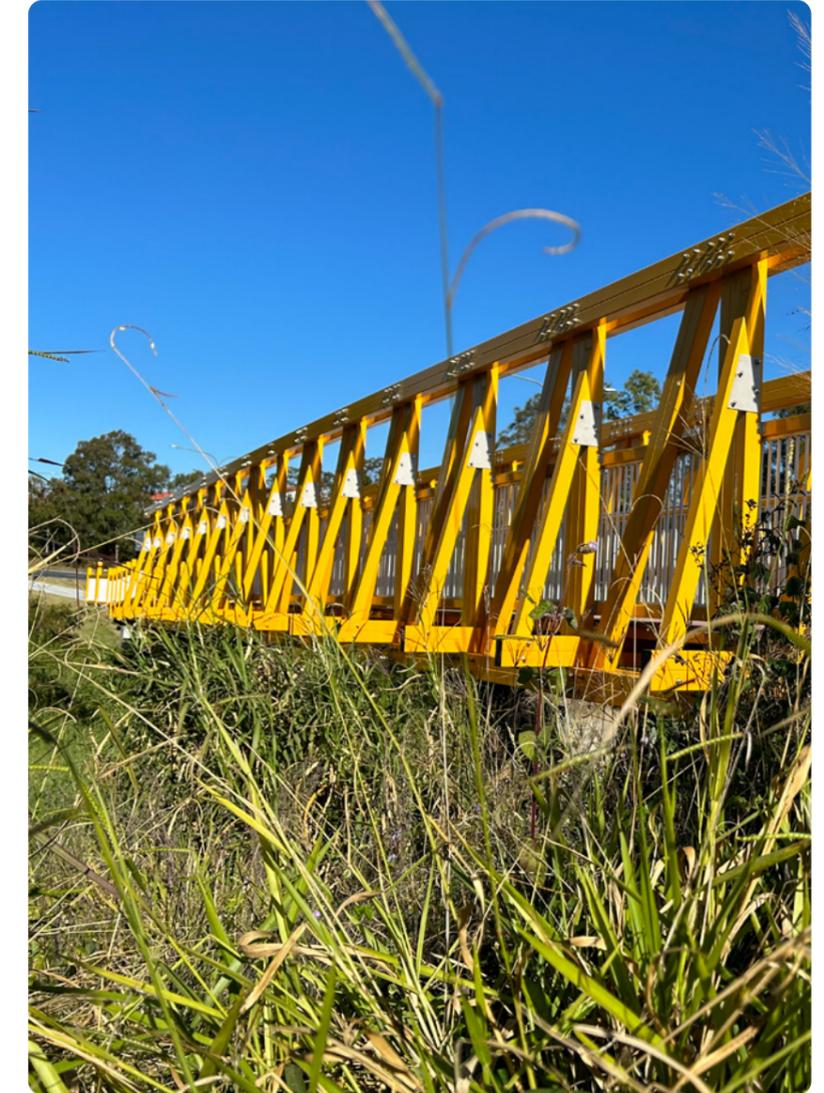
Performance Advantages

Fibre Reinforced Polymer (FRP) profiles offer extensive performance advantages, making them a versatile material suitable for a wide range of applications, including construction, infrastructure, automotive, and aerospace industries.

Their lightweight nature, durability, and corrosion-resistant properties, combined with design flexibility and modularity, position FRP profiles as a compelling choice for addressing various engineering and structural challenges.

Key performance advantages of FRP profiles include:

- High strength-to-weight ratio
- Extraordinary durability, particularly under corrosion
- Chemically inert, resistant to rot, rust, or corrosion from moisture, chemicals (including salt), and ultraviolet light
- Low maintenance, leading to reduced life cycle costs
- Electrically insulating and non-conductive
- Ease of transportation and installation
- Modular design for enhanced versatility
- Thermal stability
- Increased fire resistance
- Dimensional stability, minimising expansion and contraction
- Environmentally transparent and conscious
- Reduced tooling and labour costs



Environmental Product Declaration (EPD)

Wagners Composite Fibre Technologies (CFT) is pleased to introduce its Environmental Product Declaration (EPD). This independently verified document provides credible environmental information about our product's entire life cycle, enabling customers to make informed decisions and choose products with reduced environmental impact.

Embodied carbon, stemming from harvesting, transporting, and manufacturing building materials, accounts for up to 39% of global carbon emissions. To assess embodied carbon, Life Cycle Assessments (LCAs) are crucial. LCAs examine each material's lifespan phases, summing up all carbon emissions. Accessing and comparing LCAs has traditionally been challenging, leading to the development of Environmental Product Declarations (EPDs).

EPDs offer reliable environmental information in a standardised format, based on internationally recognised rules called Product Category Rules. The embodied carbon in an EPD is expressed as the Total Global Warming Potential (TGWP) factor for a specific material. This figure, when multiplied by the material quantity, helps determine the carbon emissions for each component in a building. This valuable information aids in selecting environmentally friendly products, comparing their performance, and minimising the overall environmental impact of a project.



Scan the QR code to download a copy of Wagners EPD



Total Cost of Ownership (TCO)

The Total Cost of Ownership (TCO) serves as an estimation encompassing expenses related to the purchase, installation, operation, and retirement of an infrastructure asset.

TCO, as opposed to just the initial purchase cost, provides a comprehensive assessment of the total expenditure throughout the structure's entire lifecycle. This approach offers a more accurate basis for evaluating the cost versus return on investment (ROI) of an asset. The TCO equation involves the cost of acquisition, operation, and maintenance over the asset's lifetime, subtracting any salvage value gained at the end of its operational use.

Fibre Reinforced Polymer (FRP) structures excel under TCO scrutiny due to:

- A long design life, typically around 100 years
- Reduced maintenance and replacement needs
- The recyclability of Fibre Reinforced Polymer (FRP), with the commercialisation of recycling likely occurring before these structures reach the end of their useful life.

This robust TCO performance makes FRP structures a compelling choice, not just based on initial cost but for the entirety of their life cycle.

CATTANA WETLANDS BOARDWALK PROJECT*

Boardwalk Construction	Capital Costs	Maintenance Costs	50 year Whole of Life Costs	Maintenance Costs 0-10 years	Maintenance Costs 11-30 years	Maintenance Costs 31-50 years
Steel superstructure with recycled plastic deck	\$696,900	\$1,078,078	\$1,774,979	\$45,677	\$456,802	\$575,600
Hardwood superstructure with recycled plastic deck	\$656,117	\$1,501,886	\$2,158,003	\$285,648	\$556,486	\$659,751
FRP superstructure with recycled plastic deck	\$883,542	\$324,585	\$1,208,127	\$13,329	\$26,659	\$284,597

" The initial purchase cost for the Composite Fibre Beams, compared to Hardwood Treated Timber and Steel is higher, however, the 'Whole of Life' cost benefits associated with this product far outweigh this consideration.

It is anticipated that this product will provide an almost zero cost maintenance period of twenty years and achieve an operational life exceeding seventy-five (75) years. This far exceeds that which may be expected from either Hardwood Treated Timber or Steel materials."

Cairns* Regional Council Works & Services Committee report 16 September 2009



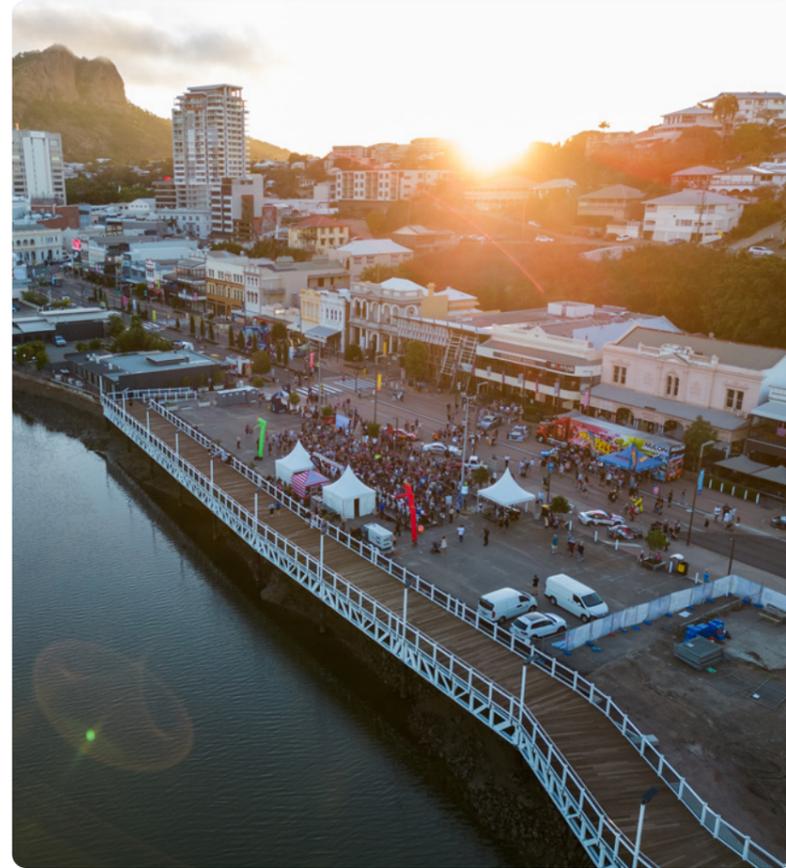
Scan the QR code to find out more on TCO.

Pedestrian Boardwalks

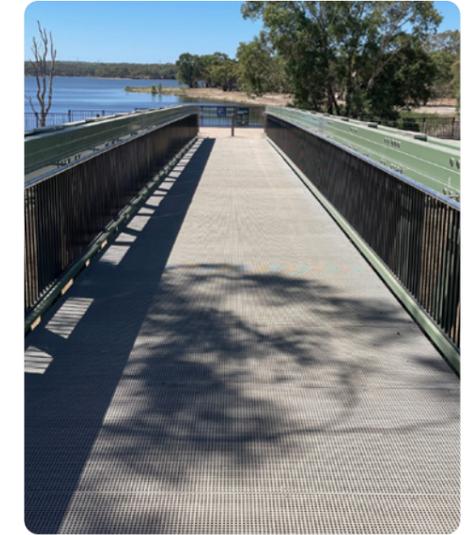
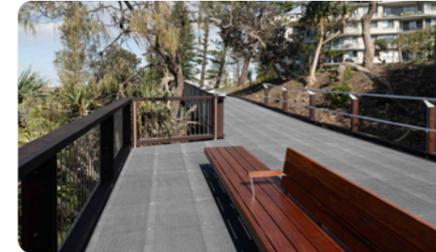
Wagners Fibre Reinforced Polymer (FRP) structural profiles have been utilised globally in constructing pedestrian bridges and boardwalks; from the Jan Juc Stairs along the cliff face of Torquay Beach in Victoria, Australia, to the Jubail Island Mangrove Boardwalk in Abu Dhabi, United Arab Emirates, and the Ocala Boardwalk through Pine Oaks Wetland in Florida, United States of America.

Customers choose Wagners FRP for its:

- Durability, boasting a 100-year design life
- Lightweight and modular design, facilitating off-site prefabrication and efficient on-site installation, saving both time and money
- Chemical inertness, preventing rust, rot, and corrosion, resulting in substantial savings on maintenance and replacement costs. Additionally, it's resistant to termites and acid sulfate soils
- Non-leaching properties, making it ideal for areas of high conservation value
- Significant reduction in Total Cost of Ownership due to extended maintenance and replacement cycles
- Wagners CFT's Environmental Product Declaration (EPD), allowing the calculation of reduced embodied carbon, contributing towards 2030 targets



Scan the QR code to watch a webinar on Townsville's East End Boardwalk.



Pedestrian Bridges

LIFESPAN AND WARRANTY

 10 years system warranty

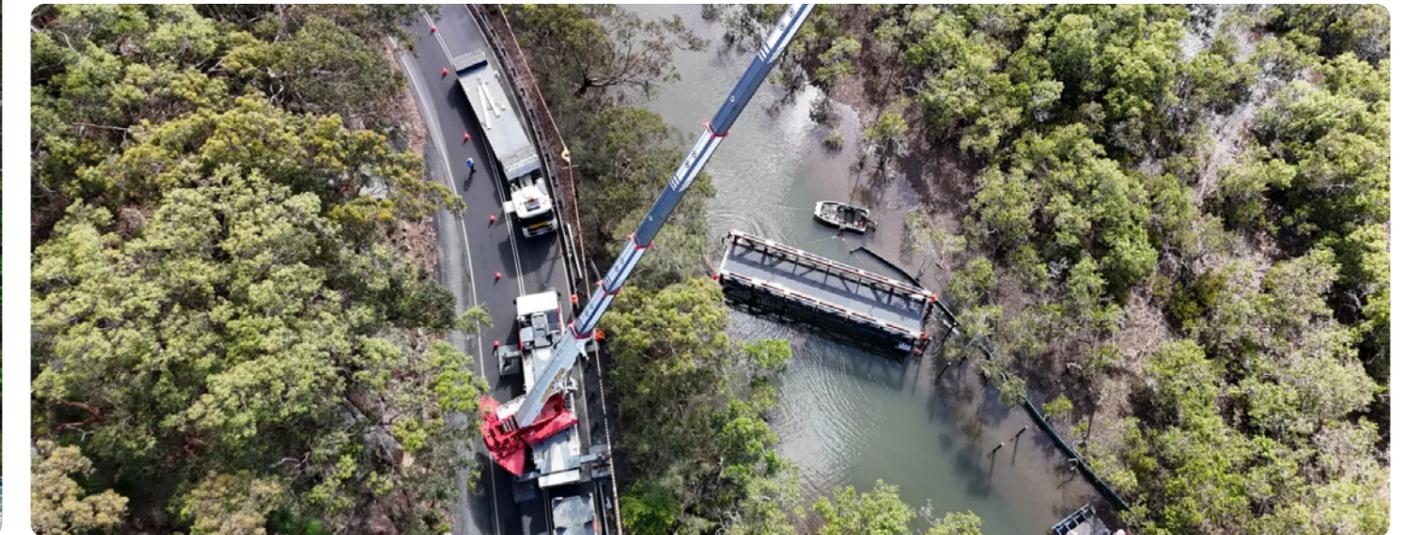
 100 year design life*

*Provided the structure has been maintained in accordance with Wagners' Maintenance and Care Manual

SUPPLY AND INSTALLATION

- Technical construction support available
- Designed in accordance with local, state and federal regulatory requirements
- Compliant with mobility and inclusion requirements
- Can be pre-fabricated off-site and dropped in or predrilled for assembly onsite
- Girder bridge: 6-11 metre span*
- Light (riveted) truss bridge: 10-18 metre span*
- Heavy (bolted) truss bridge: 10-40 metre span*

*Style and design may vary based on individual site requirements.



Street & Park Viewing Platforms

Street and Park Viewing Platforms are structures designed to provide elevated vantage points for observing urban and natural landscapes. These platforms are typically built in strategic locations to offer visitors panoramic views of cityscapes, parks, landmarks or other points of interest. They serve as recreational amenities, tourist attractions and sometimes even as spaces for public gatherings or events.

Wagners CFT has extensive experience in the planning, design and construction of Street and Park Viewing Platforms and consider the following key aspects of each project including location, design, accessibility, safety, proximity to amenities, integration with surroundings, environmental impact, ongoing maintenance, community engagement and sustainability.

Wagners Fibre Reinforced Polymer (FRP) structural profiles are the perfect material to construct Street and Park Viewing Platforms from because they are:

-  Durable with an expected 100-year design life
-  Resistant to acid sulfate soils and termites
-  Cost competitive owing to reduced maintenance and replacement requirements
-  Chemically inert so won't rot, rust or corrode in even the harshest environments
-  Stronger than steel



Scan the QR code to read this article for more information on Cameron Rocks and FRP high performance in volatile marine environments.

Street & Park Shelters

There's nothing like spending time in the great outdoors but when there isn't appropriate shade or shelter the experience can be less than enjoyable. Street and Park Shelters play a significant role in enhancing public spaces and contributing to the overall wellbeing of communities in a range of ways including protection from the elements, promotion of outdoor activities and a centralised meeting point for social gatherings and community engagement.

Wagners Composite Fibre Technologies (CFT) has planned, designed and constructed Street and Park Shelters for customers around the globe; tailoring each solution to individual location needs and local compliance. Constructed from Wagners Fibre Reinforced Polymer (FRP) these shelters have proven to withstand the harshest of environments while providing a low maintenance, long-life asset for the local community.

Wagners FRP Street and Park Shelters can be predrilled to client specifications, available in kit form or custom designed and fully constructed and installed.



Marine Infrastructure

Wagners Composite Fibre Technologies (CFT) marine structures provide quality, durable structural solutions for projects around the world from large jetty repairs to beach access stairs and floating docks.

Wagners CFT can provide flexible design options, ease of installation and maximum durability in the harshest marine environments with minimal maintenance requirements.

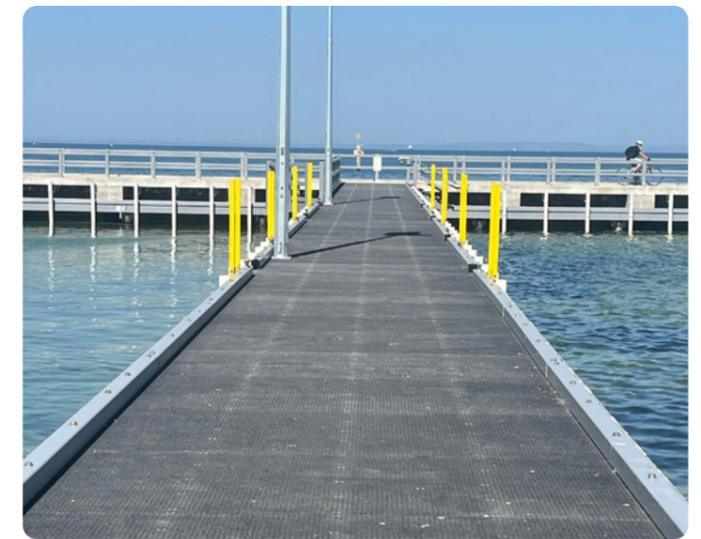
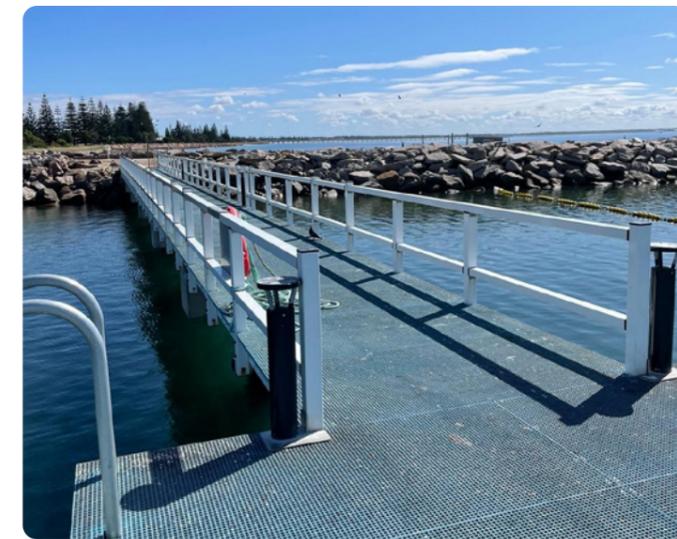
Our innovative marine assets are:

-  Built-to-spec ensuring your marine structure meets all codes and standards
-  Designed for quick and simple installation
-  Created with lightweight, environmentally stable materials
-  Termite and marine borer resistant
-  And are chemically inert so will not rot, rust or corrode

Wagners CFT is a one stop shop for all your jetty, wharf and pontoon solutions.



Scan the QR code for more on Wagners Trident Marine Piles.



Trident Marine Piles

Waterfront moorings are set to be revolutionised with the new Trident Marine Pile, designed to perform for 50-years and reduce impact to berthing vessels.

Manufactured in Australia from Fibre Reinforced Polymer (FRP) with an integrated HDPE sleeve, the dynamic properties of the Trident Marine Pile allows it to yield before returning to its original state, which significantly reduces the risk of impact damage to berthing craft.

Twice as strong as steel, Trident Marine Piles are also inert and will not rot, rust or corrode. And with no-electrolysis, boat and marine hardware is safe from damage.

Acid sulfate soils, UV rays and marine borers are no match for the Trident Marine Pile which is non-toxic and non-leaching so safe for marine ecosystems.

Technical Data

Property	Notation	UOM	WGN - C5000	WGN - C8000
Outer Dimension	D _o	mm	301	356
Wall Thickness	t	mm	13.5	13.5
Cross Sectional Areas	A	mm ²	12193	14526
Surface Area	SA	m ² /m	0.95	1.12
Moment of Inertia	I	mm ⁴	126.26x10 ⁶	213.33x10 ⁶
Weight	W	kg/m	24.64	29.49
Moment Capacity	M _u	kN.m	250	384
Full Section Flexural Modulus	E	GPa	40	40
Tensile Strength (L)	F _{Lt}	MPa	635	635
Tensile Modulus (L)	E _{Lt}	MPa	35405	35405
Compressive Strength (L)	F _{Lc}	MPa	395	395
Compressive Modulus (L)	E _{Lc}	MPa	41178	41178
In Plane Shear Stress (L)	F _{Lv}	MPa	93	93



Performance Advantages of Trident Marine Piles include:

- Durable - 50 year design life
- Strong - twice as tough as steel
- Inert - will not rot, rust or corrode
- No-electrolysis - no damage to marine hardware
- Resistant - acid sulfate soils, UV rays & marine borers
- Yield technology - reduced risk of impact damage
- Non-leaching & non-toxic - safe for marine ecosystems
- Reduced embodied carbon - fight global warming
- Low maintenance - reduced inspection/replacement requirements
- Australian manufactured
- Integrated HDPE sleeve - one installation
- Easy Installation - hammer or vibro-driven



Scan the QR code to download the Trident Marine Pile Brochure for more information.

Traffic Road Bridges

Wagners Composite Fibre Technologies (CFT) Traffic Road Bridges are designed and tested to relevant local standards and offer customers two types of Fibre Reinforced Polymer (FRP) road bridges; 1) the concrete hybrid road bridge, which has a slim concrete deck on top of a Wagners FRP girder and super structure system and 2) the full FRP road bridge, which showcases an FRP deck for a full lightweight experience.

The structural design of a Wagners FRP Road Bridge differs from that of bridges constructed from traditional materials, whereby the serviceability criteria generally dominates the design process. Typically, traditional materials are designed for strength, and serviceability checks are performed. Whereas owing to the comparatively low modulus of elasticity - FRP, in comparison to traditional materials like steel, are generally designed to, FRP structures are generally designed to meet the stiffness criteria and as a result usually contain large strength reserves.

Wagners CFT has supplied Traffic Road Bridges across the globe from the sweltering tropics and burning deserts to sub-zero temperatures. Our full in-house design team will work closely with clients to ensure a robust, fit for purpose and aesthetically pleasing road transport asset featuring a 100-year design life.



Traffic - Timber Bridge Renewal

Wagners Composite Fibre Technologies (CFT) has successfully developed a comprehensive timber bridge replacement system for use in road and pedestrian bridge rehabilitation. The system can either replace damaged and deteriorated timber bridge components or provide a complete overhaul of the whole structure including replacement of girders, corbels, headstocks, whalers, bracing and handrails.

Wagners Fibre Reinforced Polymer (FRP) structural profiles are not susceptible to durability issues that traditional materials such as timber and steel suffer from such as termite attack, borers, decay and corrosion. Wagners FRP structural profiles are UV-stabilised with a coat of UVresistant paint which ensures long-lasting durability and the girders have been fatigue tested to 1.2 million cycles, exhibiting no loss in strength or stiffness.

Our team of in-house experienced engineers can tailor the timber bridge replacement system to suit specific needs (spans, loading, conditions etc) and timber bridge replacement can be done quickly with minimal disruption to traffic.

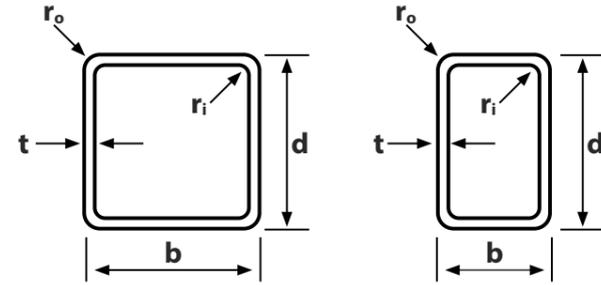


Electrical Crossarms

More than a million Wagners Fibre Reinforced Polymer (FRP) Electrical Crossarms have been manufactured for network operators over the past 20 years thereby helping enhance and maximise network security and resilience for asset owners and customers into the future.

Performance Advantages include:

-  Non-conductive - significantly reduced risk of shock or electrocution
-  Light-weight - safer to handle, transport and install
-  Durable - expected 80-year design life
-  Inert - will not rot, rust or corrode
-  Resistant to termites, acid sulfate soils and non-leaching
-  Compatible with existing installation equipment & process
-  Maximise network security & resilience



FORM AND PROFILE SIZING

Product code	Dimensions Section Properties								
	Designation	Depth d	Width b	Thick t	Outside Corner Radius r _o	Inside Corner Radius r _i	Mass per m	External Surface Area per m	Gross Section Area A _g
STR-RH 5-1 00x75x5	WCFT	100	75	5.0	10.0	4.75	3.21	0.333	1580
STR-VSHS-100x100x5.2	WCFT	100	100	5.2	10.0	4.75	3.87	0.383	1910
STR-VSHS-125x125x6.4	WCFT	125	125	6.4	10.0	4.75	6.03	0.483	2970



Electrical Light poles

Improve safety and optimise budgets with Wagners Fibre Reinforced Polymer (FRP) Electrical Light Poles designed for Councils, property developers and landscape architects.

Design choices include:

- ✓ Fully compliant with AS/NZS design standards
- ✓ Range of height from 3 - 12 metres
- ✓ Wide range of tenon sizes to suit all luminaires
- ✓ 316 stainless steel connection hardware available for marine environments
- ✓ Industry standard sizing for access harch
- ✓ 4% minimum deflection
- ✓ Range of colours to choose from
- ✓ Additional drilled holes upon request
- ✓ Work with Wagners CFT in house design team to create your own custom light pole lighting solution



Scan the QR code to download the Light Pole brochure.

“When it comes to light pole selection, we were looking for a greener alternative and found that using light poles built from composite fibre technology could help us minimise our carbon footprint. The life of composite fibre makes it an excellent choice, even when compared to recycled aluminium.

It offers longevity and is impervious to almost any soil type. It is resistant to sea spray and the harshness of our ever-changing climate, making it the ‘superhero’ of the light pole market. The products are competitively priced yet are far superior when it comes to useful life and are far safer because of their inert nature.”

Michael Pavlovich
Energy & Lighting Coordinator,
Local Government, South Australia



Electrical Utility Poles

Wagners Composite Fibre Technologies (CFT) produces the most durable, safe and environmentally friendly Electrical Utility Poles for energy infrastructure asset owners around the world.

Performance Advantages include:

- Non-conductive - significantly reduced risk of shock or electrocution
- Light-weight - safer to handle, transport and install
- Durable - expected 80-year design life
- Inert - will not rot, rust or corrode
- Improved ROI - through reduced ongoing maintenance and inspection requirements
- 39% less total Global Warming Potential compared to galvanized steel poles over 100 year service life*
- Resistant to termites, acid sulfate soils and nonleaching
- Compatible with existing installation equipment & process
- Maximise network security & resilience



*These are the results of a Life Cycle Analysis comparing Wagners SH5 301 to a galvanized steel utility pole which has been third party reviewed and verified. Results could vary depending on the specific design of poles being compared. Please note, no comparison to hardwood timber provided as a suitable Life Cycle Analysis is not currently available.



Wagners CFT Fibre Reinforced Polymer (FRP) utility pole sizes and specifications						
Length (m)	Typical Burial Depth (m)	Load* @ 5% Deflection (kN)	Characteristic Load Capacity (kN)	Outer Diameter (mm)	Wall Thickness (mm)	Mass (kg)
9.5	1.75	11.1	43.4	301	13.5	235.1
9.5	1.75	18.7	51.8	356	13.5	280.1
11	1.9	8.1	36.8	301	13.5	272.3
11	1.9	12.8	43.9	356	13.5	324.4
12.5	2.05	6.2	32	301	13.5	309.4
12.5	2.05	10.4	38.1	356	13.5	368.6
14	2.2	4.9	28.2	301	13.5	346.5
14	2.2	8.2	33.7	356	13.5	412.8
15.5	2.35	3.9	25.3	301	13.5	383.7
15.5	2.35	6.6	30.2	356	13.5	457.1

*Load assumed to be acting 200mm below the tip.

Water & Sewage

Wagners Composite Fibre Technologies (CFT) design and manufacture tank columns for Water and Sewage infrastructure projects around the globe.

Wagners Fibre Reinforced Polymer (FRP) tank columns are the choice of material for Water and Sewage infrastructure projects because they are:

-  Resistant to rust, rot, carbonation, chlorides, corrosion and chemicals
-  Environmentally stable and inert
-  Lightweight and structural
-  Potable water tested and approved to AS/NZ 4020

In addition, these structures boast a design life expectancy of 100-years, and their installation is not only safe for workers, but also requires minimal craneage.



Partner with Wagners CFT

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-  Wagners CFT's Environmental Product Declaration (EPD), allowing the calculation of reduced embodied carbon, contributing towards 2030 targets



Scan the QR code to discover more about becoming a Wagners CFT Installation or Design Partner.

Wagners has pioneered the use of composite materials both in Australia and internationally, exporting products all around the world.





Scan the QR code to visit
Wagners CFT website



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