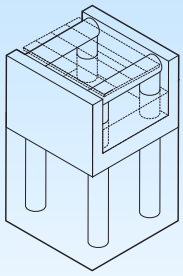
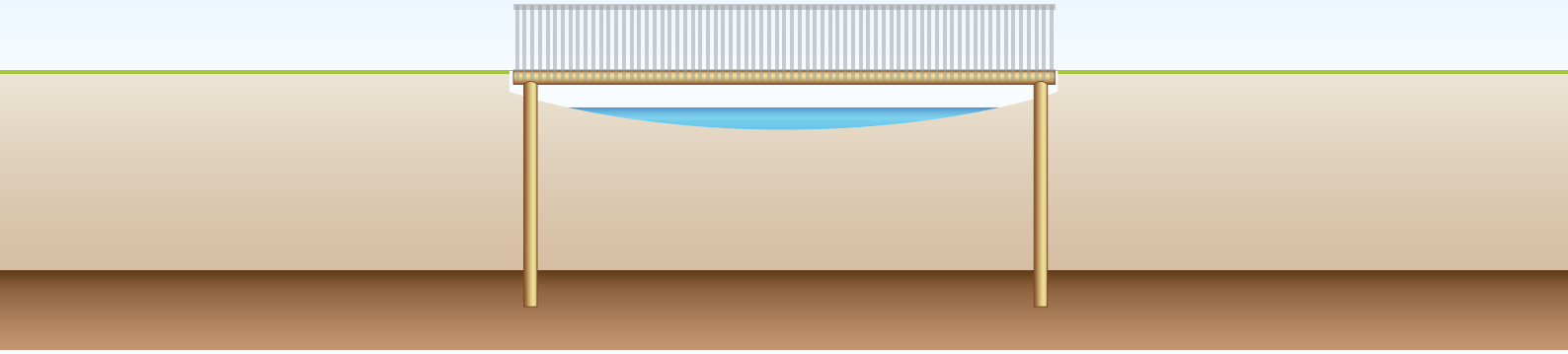
TTT Bridges



TTT Bridges can be specifically designed for many applications, including residential access ways, pedestrian bridges, cycle bridges, highway bridges, and more. The foundations of TTT Bridges are similar to TTT Deep Pile Foundations and likewise use TTT MultiPole SED piles. These are combined with TTT MultiPole UniLog bearers for strength, durability, and easy installation.



The system

The first stage of constructing the bridge involves installing SED piles to a suitable bearing stratum. The pile tops are then cut to the correct height and scalloped to receive TTT MultiPole UniLog bearers. This allows the bearers to be easily located between the piles before being fastened in place. Timber decking is then placed and fixed on top of the bearers.The decking can be supplied in either single planks or nail-laminated panels. Hand rails and kerbing are added as required.

The customer may choose to utilise the hollow core of the TTT MultiPole UniLog bearers to house utilities such as water pipes or fibre optic cables.

Design features

Typical residential bridges are able to be designed so that the only piles needed are installed on either bank, allowing the bridge to span from one side to the other. This minimises the hazards associated with working on or near waterways. It also minimises restrictions on the water flow caused by the bridge structure which could otherwise lead to flooding.

Bridges suitable for highway usage can feature a clear span of up to 20.0m, subject to specific engineering design.

Piles and other timber components used in the construction of the bridge contain treatment chemicals that have been chemically fixed to the wood fibres to prevent leeching of the treatment chemicals into waterways over time.

Installation

A residential bridge typically takes 5 days to construct. Piles are installed using a high frequency vibrator mounted on an excavator. This installation process leaves the piles structurally undamaged, doesn't generate excessive noise, and doesn't transmit excessive vibrations. This results in minimal disturbance to neighbouring properties during piling.

Components for the bridge structure are then lifted into place (using the excavator for heavy components, or by hand for smaller components such as timber) and fixed.

Site Requirements

Access to the bridge construction area is generally required to be a flat, level, straight path that is 3.1m wide with 4.0m vertical clearance for a 25 tonne excavator. Depending on the width of the waterway, access may need to be provided from each side of the waterway. A gravel working platform may be required if the upper soil layers are too soft to support the equipment. Stability of the waterway's banks should also be confirmed with appropriate sediment control measures. The bridge can generally be installed up to 1.0m away from existing structures.

Engineering design, testing and sign off

Our geotechnical and structural engineers will be able to complete site-specific engineering design for the piles and bridge structure based on the geotechnical report for the site and site specific requirements (such as width and span). The design includes calculations, design drawings, Producer Statement PS1 – Design, and an accompanying design report that can be used to support the consent application.

During pile installation, the bearing capacity of the piles is tested to verify that the design loads are being met by measuring pile sets based on the Hiley Formula. Combined with observation of the pile, bearer and timber installation process to the satisfaction of the engineer, and a Producer Statement PS3 – Construction from the pile installer, this will enable the engineer to sign off a Producer Statement PS4 – Construction Review.

Quick reference information

	Technical Category	Type of MultiPole used	Typical pole diameter	Typical pole length	Typical pole spacing	Typical installation method
Foundations	TC2 & TC3	SED	150–300mm	1.0–22.0m Poles can be joined to reach greater depths	To suit bridge dimensions	High frequency vibration
Bearers	TC2 & TC3	UniLog	250-450mm	1.0–12.0m	To suit bridge dimensions	Fastened to scalloped pile tops

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TTT MultiPole