



PRODUCT OVERVIEW

SALES AND TECHNICAL ENQUIRIES

 (+61) 0419 167 680
 sales@inquik.com.au

www.inquik.com.au

The following products and descriptions are
PATENT PROTECTED

THE INQUIK BRIDGE

The InQuik® Bridge was developed to make concrete bridge building easier, quicker and safer, and is the product of a collaboration between the Australian companies Lifting Point, SMEC and ARC.

The bridge system design contains two major components: a metal tray, which defines the shape of the bridge deck and girders in a single unit; and a prefabricated steel reinforcing cage, which is connected to the tray and structurally supports it. This results in panels that can be placed on-site before the concrete is poured inside, with no need for external formwork supports. This critical element produces a host of system advantages, maintaining the major benefits of precast (off-site manufacturing, standardisation, quality control, time advantages, etc.) while significantly reducing the transport, installation and maintenance costs inherent to this method.



The InQuik bridge.

Major product advantages:

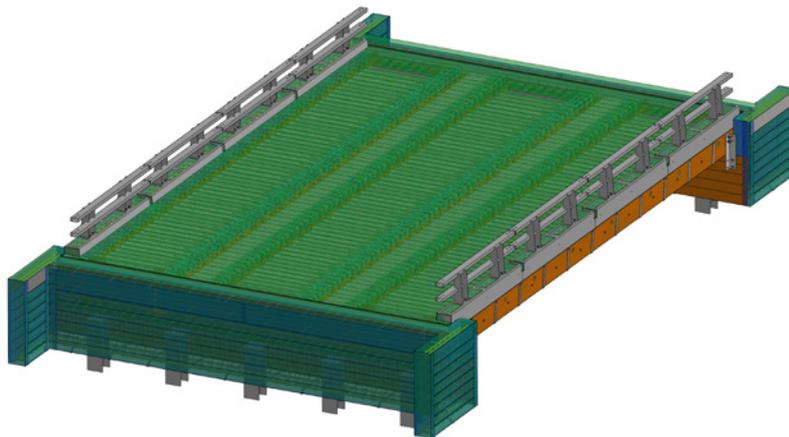
- All the concrete for the deck is completed in one pour, creating a single homogeneous slab. This has important structural advantages, including eliminating longitudinal joints and significantly increasing resistance to braking inertia from large freight trucks, thus reducing the need for inspections and maintenance to counteract joint degradation.
- Off-site fabrication of the bridge deck and abutment panels, with rapid transportation and installation, mean that total on-site construction time is minimal, slashing the impact of weather-related project delays, and all the associated knock-on costs.
- With no need for formwork supports, the bridge can be constructed from above, with very little need to go under the bridge, improving worker safety.

STRUCTURE & DESIGN

Each InQuik bridge panel is designed to be fully self-supporting when concrete is placed in the tray. Multiple panels can be placed next to one another for wider bridge widths. An additional tray piece is attached to the side panels of the bridge, which can also incorporate guttering and/or handrail connections.

InQuik abutments have a similar core design to the bridge panels, so that the abutment panels can be placed using a lightweight crane, and are fully self-supporting when wet concrete is placed within.

The InQuik bridge is standardised, pre-engineered and pre-certified, and can be mass-produced off-site, transported globally in the format of a shipping container, and stored in a depot for rapid deployment.

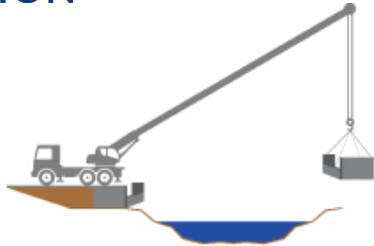


A two-lane bridge is constructed from three deck panels with spacers, and placed on abutments.

- Uses **lightweight cranes** and **readily-available concrete** (N40 strength).
- The designs satisfy the **SM1600** design loading requirements of the Australian Standard for bridges, **AS5100**, for up to a 12m span. We can also provide the deck panels for a lower T44 rating if required. 15m and 18m span designs are currently being finalised.
- Standard connection points between the mesh and tray create a guaranteed concrete cover.
- As an **in situ cast bridge**, fewer inspections are needed compared to precast.
- The **steel tray formwork** can be manufactured from galvanised steel, stainless steel or ZAM® depending on the environment, and acts as a **protective shield** against concrete degradation, further increasing bridge lifespan.
- Versatility of design and ability to be rapidly deployed means the InQuik Bridge can be used for a wide **range of bridge applications**, including road, rail and pedestrian bridges, elevated carriageways and jetties for general infrastructure, disaster relief and military use.

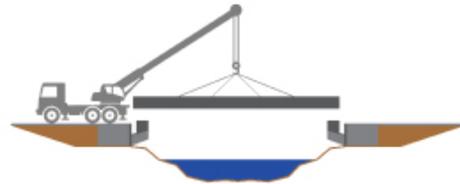
INSTALLATION

1



Place abutments & concrete

2



Place deck panels

3



Install barriers & deck concrete

4



Bridge complete

The installation process is very simple, quick and easy to complete with only a small, semi-skilled crew required on-site.

- 1) *Abutments are placed*
- 2) *The deck panels are placed in position.*
- 3) *The deck panels are connected together and additional features attached, such as crash barriers, service ducts, handrails, lighting etc. Concrete is then poured.*
- 4) *After the concrete is levelled off, finished and cured, the bridge is ready for traffic.*

- The deck panels are fully self-supporting, and with **no temporary timber formwork** required, the time, materials and labour costs are significantly reduced, with a safer installation method.
- The bridge deck **installation is faster and simpler** than conventional methods, leading to cost and time savings and less disruption to the road network.
- Deck panels can be placed using **lightweight, truck-mounted cranes**, with minimal site preparation.
- Existing historical structures (eg: structurally sound convict head walls) can be preserved by installing the new bridge over the top.
- We are currently working on an integrated abutment design, where the deck can be poured continuously into the abutment, securing a robust ground connection for the bridge.



Installation of the bridge panels onto standard InQuik modular abutments.

OTHER ADVANTAGES

GENERAL

The ability of the bridge panels to be pre-engineered, pre-certified and pre-fabricated lends itself to many advantages including:

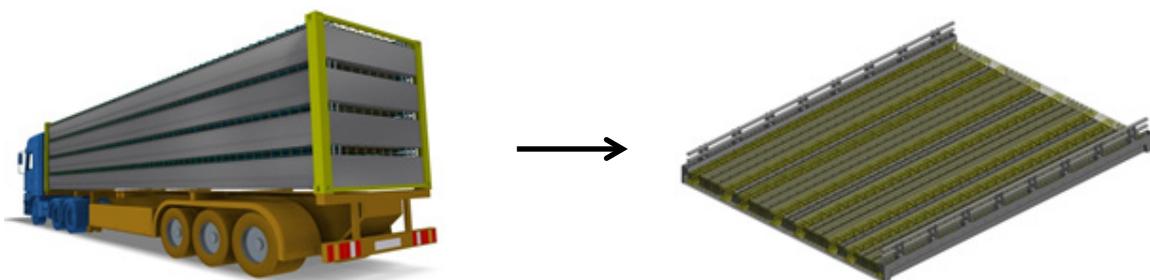
- **Mass-production** → high quality control, lower assembly costs, better workplace safety, and engineering pre-certification (less need for on-site engineers).
- Councils can use **local contractors** & resources to install the bridge if desired.
- The bridge panels can be pre-made and **stockpiled for on-demand deployment** locally or for export, reducing project lead-times.



View of beneath the InQuik deck panels, showing the integrated girders and deck.

TRANSPORTATION

- Stackable in a **shipping container format** → on-demand, efficient transport & storage.
- **No concrete during transport** → much lighter, easier & cheaper to handle & install than precast. A 12m InQuik bridge panel weighs ~4.1–4.6t depending on load rating, compared to a ~26t precast panel.
- The ease of transport and construction makes this system particularly attractive for **remote areas**.

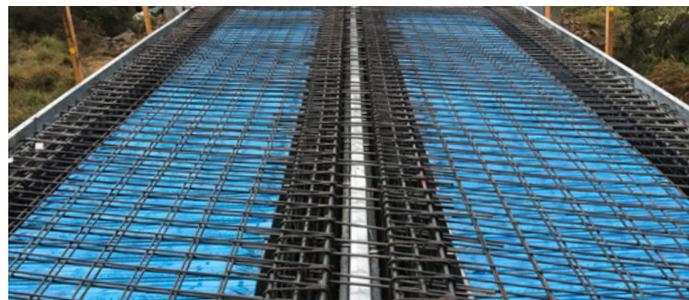


The InQuik bridge panels can be delivered in the format of a shipping container, then assembled on-site.

ENVIRONMENT

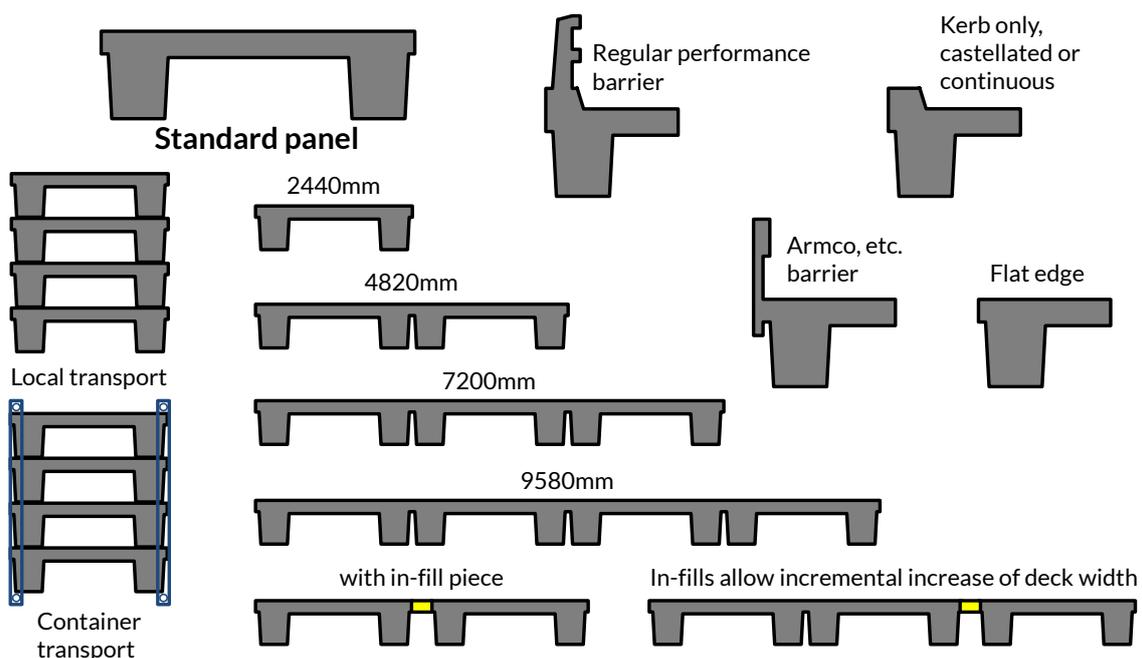
This system has major environmental advantages over box culvert and precast alternatives for short-span bridges including:

- Minimal impact on the bridge environment due to off-site construction, and a reduced need for site preparation and working beneath the bridge.
- No requirement to enter the waterway to erect scaffolds or formwork, thus minimising contamination & disturbance of the natural water flow, fish habitats and flora underneath the bridge.



MODULARITY OF DESIGN

Though the InQuik panels are not regarded as bridge modules in the conventional sense (as they lack the principle component, concrete), they can be combined to create a vast range of installation formats depending on design requirements. Different side attachments are used for different barrier strengths and purposes, and multiple panels and/or infill sections are used to create variable widths.



The modularity of the InQuik bridge system allows many different configurations.

ABUTMENTS

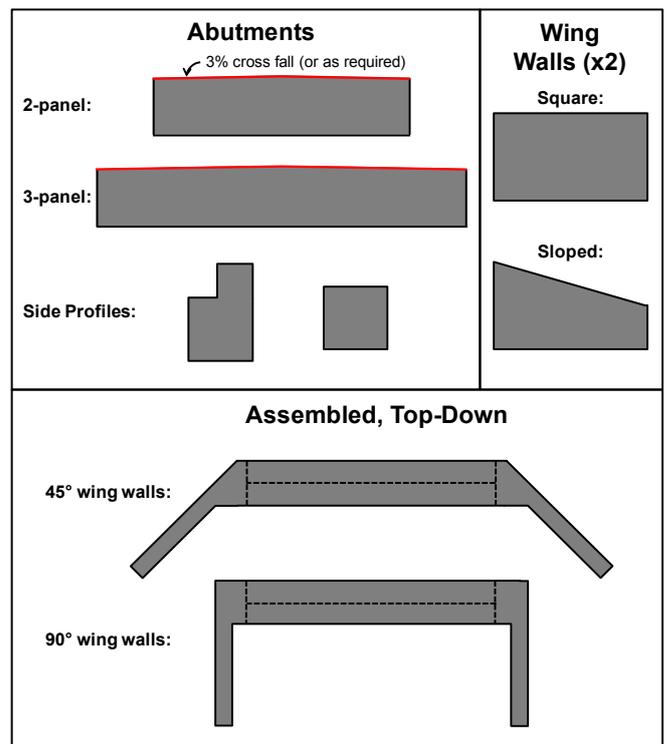


An InQuik abutment in construction, showing the formwork and reinforcing components

We have designed an InQuik abutment & wing wall system which, like the deck panels, uses an integrated reinforcing-formwork design, enabling on-site pouring of the abutment concrete. The abutment panels can be easily modified according to design requirements.

The standard abutment piece is 1000mm high, with 1700mm wing walls level to the height of the bridge deck, though greater heights can be provided if required. They are delivered in three parts, which are easily connected on-site, and sit on a mass footing or pier cap footing with starter bar connections. A 3% fall in the abutment shelf provides the appropriate camber for roadway water runoff, removing the need for additional concrete on the deck to form the slope.

Depending on requirements, the abutment & wing walls can be provided with the tray made of stainless steel, ZAM® or hot-dipped galvanised sheeting, and the reinforcing made of black steel or hot-dipped galvanised steel (eg: for long-term storage/high exposure zones).



The configurable components of the InQuik bridge abutments: two wing walls connected on-site to a central piece. The abutment includes a camber slope which can fall from the centre, or in one direction.