

InQuik Integral Headstock

InQuik is proud to launch the Integral Headstock as an exciting addition to our innovative modular bridge range.

An integral bridge has structural continuity between the deck and the structural elements that support it. Integral bridges have a direct connection between the superstructure and substructure at the abutments and piers. This eliminates the need for external connecting elements such as bearings, bolts and tie-downs, which typically require maintenance and replacement over the bridge design life. The integral connection reduces the bending moment in the span, creating a stronger load-carrying structure.

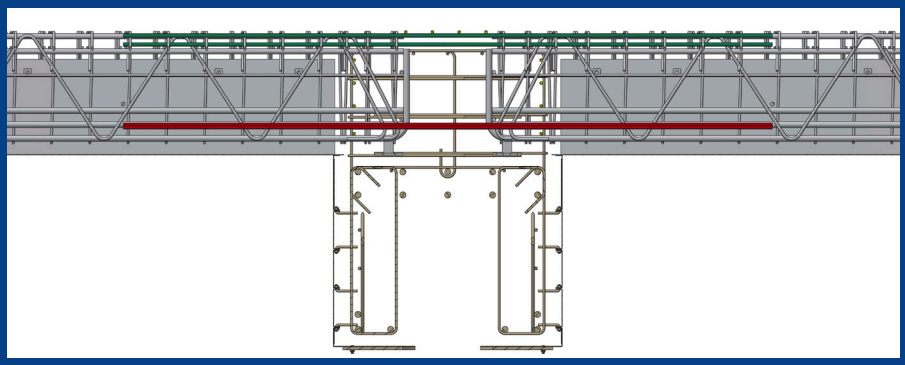
The InQuik Integral Headstock allows multi-span bridges to be fully integral, by directly connecting the deck panels and the headstocks to create a monolithic structure. The resulting bridge is incredibly robust to external loads, and able to withstand high flood loads and impacts, and extreme weather events. However, the major benefit of an integral bridge compared to a simply supported bridge is removing the need to replace bearings, which requires the deck panel units to be lifted up using synchronised hydraulic jacks, which is a costly and risky exercise.

FEATURES	BENEFITS
Pre-engineered, pre-certified, pre-fabricated	Simple and fast on-site installation
No bearings, tie-downs or joints	No long-term structural maintenance over 100-year design life
Pre-fabricated components with concrete poured on-site	Reduced WHS risk, reduced trades, reduced installation time on-site
Lightweight components	Reduced WHS risk, small local cranage, ease of transportation
No joints in structure	No joints to allow salt and water ingress
Self-supporting modular structure	No temporary supports required
Faster, simpler, safer with no maintenance	Reduced project costs & reduced 'whole of life' costs

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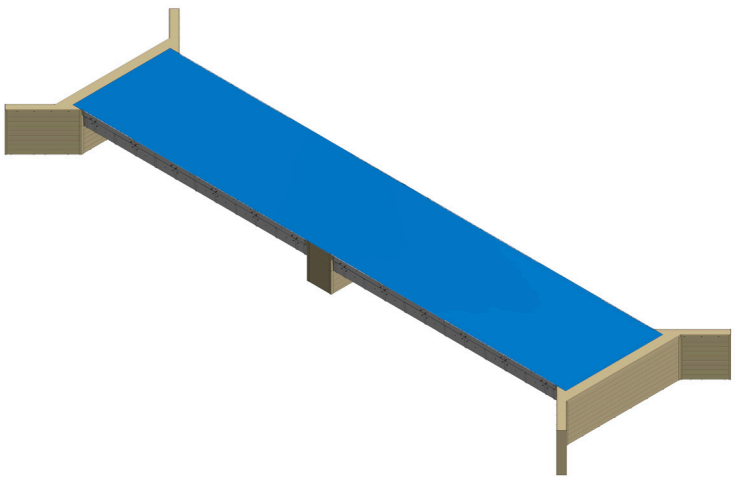
The T4NSW technical direction BPC2007/05 emphasises that integral bridges and piers are beneficial. An integral headstock adds toughness and resilience to all applied forces as the load transfer is immediate, and the stiffness of the connection results in small deformations, and thus minimises potential for damage.

Integration is achieved by lapping reinforcing bars between the headstock and deck panels. This allows the controlled transfer of force between the structural elements. The integration has been designed to create a link slab, so that there is no moment continuity through the pier. Because the link slab acts as a separate component, this reduces the risk of damage or undue strain at the headstock/pier connection. Due to thermal effects, there will be a maximum fully integral bridge length before an expansion joint is required between spans, though this depends on site conditions and foundation design.



SMEC Australia has certified the Integral Pier Headstock design to the AS5100 (2017) bridge code, in accordance with accepted engineering practices and principles.

Of course, it's up to the site designer to ensure that the integral headstock is appropriate considering the site conditions, and in their design would need to consider a number of factors including (but not limited to) ground conditions, pile types and arrangements, span arrangements, soil structure interaction and loadings, creep, shrinkage and differential temperature.





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