Transport for NSW

LH Ford Bridge

Community Update | July 2020

Two new strengthening piers on the LH Ford Bridge, Dubbo

The NSW Government provided $10 million to strengthen the LH Ford Bridge, with construction of two new support piers in the Macquarie River now completed.

We have changed the way the bridge supports traffic loads:

Constructed two new piers approx. 13 metres above water level using 215 cubic meters of concrete.

Constructed piles 21 metres deep into the ground.

Removed seven tonnes of bird poo from the bridge.

Installed 16 new bearings.

Used eight tonnes of steel in the new piers.

Installed 600 metres of post tensioned steel strands.

Community Ties

Holding the Newspaper from Friday 26 September 1969, price 7c

Ian and Donald Graham were 21 and 16 when the LH Ford Bridge opened.

Don Graham opened the Hydraulic shop in Macquarie Street in 1955. Ian and Donald started operating the business in 1979, after their father's passing. The business is still operating in the same site, near the bridge, as D. Graham and sons. Ian recalls driving an old F100 across the old timber bridge before LH Ford was opened to traffic. At the time of the bridge opening, the footpath out the front of the shop was dirt.

"My memories of the time the LH Ford Bridge was built – (Donald Graham), The Engineer Don Graham was my father and I recall him doing regular work for the company Hornibrook, who built the bridge. Pile drivers were in use then and I remember dad working on a large and thick block of shock absorbent material. It consisted of multiple criss cross layers of resin like strips and allowed the piles to be driven in without damage."

"Good to see such an important part of Dubbo history refurbished to provide another 50 years of service to the Dubbo regions and communities far and wide which use this bride."

Donald Graham.

Meet some of the team

Tim Wells, Freyssinet Australia Quality, Safety and Environment Manager: I really enjoyed the culture and team environment working between Freyssinet and TfNSW. I learnt a lot about traffic management.

Corey Walker, Transport for NSW Surveillance Officer: I really enjoyed working on a very technical and challenging project in my home town. It was such an honour to be involved in this strengthening project making this bridge safer for my family and the public for many years to come. I learnt how important quality control is and how accurate the Works As Executed drawings need to be.

Rob Baker, Freyssinet Australia Labourer: I really enjoyed working on a project this size local to my town where I live. I also enjoyed the team environment and communication on site between TfNSW and Freyssinet. I was given the opportunity to learn so much and was put through training for the exemption 38 boat licence, to be able to operate the boat to move the barges around.

Kieren Tomalin, Transport for NSW Project Engineer: What I enjoyed most about the project was an open and collaborative approach that our team took in overcoming the rare complexities involved with building new piers to meet up with an existing, and quite a dynamic, structure. The project was a great success.

Khaza Shaik, Freyssinet Australia Quality Representative: I have enjoyed working in the team environment between Freyssinet and TfNSW and working on an existing structure 50 years old has had some challenges with it. I have learnt so much about bridges and quality assurance on TfNSW Projects.

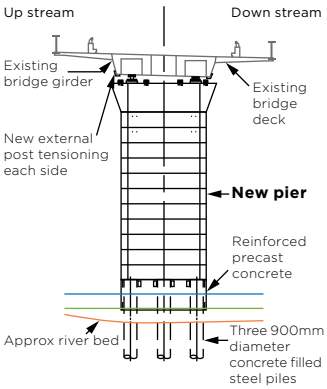
Cassandra Hodges, Transport for NSW Project Manager: Most enjoyable thing was how technically challenging the project was. The new piers now mean the bridge does not move at all from traffic driving over it – it's amazing.

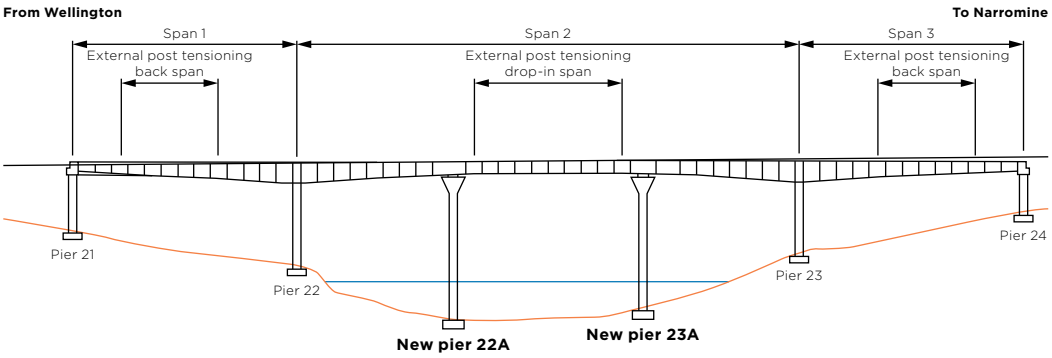
What did we do?

Transport for NSW has strengthened the LH Ford Bridge to extend the working life of the bridge for at least another 50 years. The Bridge strengthening work included:

1. Constructing two new piers approx. 13 metres above water level

2. Installing 600 metres of steel strands to the underside of the deck in three locations.





Work completed under the bridge

Strengthening Strands

Why did we do it?

The LH Ford Bridge was first opened to traffic in 1969 and was one of the first pre-stressed bridges in NSW. Shortly after the bridge was opened to traffic, the middle section of the bridge sagged. The cause of the sag has also reduced the lifespan of the bridge.

The bridge in 1969

FAQ's

Q. Why did the bridge sag when it first opened?

A. The LH Ford bridge was one of the first pre-stressed concrete bridges built in NSW. This early design did not adequately account for the effects of concrete sag.

Q. Are the original piers sinking?

A. We are often asked about the old piers and are happy to confirm they are definitely not sinking.

Q. Will the "sag" remain in the bridge?

A. Yes the well-known "sag" will remain in the bridge structure as permanent damage to the bridge would occur if the sag was attempted to be taken out.

Q. Does the sag impact the performance of the bridge?

A. Not at all – LH Ford Bridge is now stronger than ever.

Piling:

Bored cast in situ piles were adopted for the project. This involved first driving the hollow steel pile casing down into the riverbed and socketing it into the bedrock. The numbers on the side of the pile casing indicate the depth of the pile below water level. Next, a large piling drill situated on the barge was used to bore down the inside of the pile casing, and continued down into the bedrock until the required depth of approximately 21 metres below water level was reached. This process was challenging as the drill often encountered tough foreign materials and objects that had been buried for centuries beneath the river. Once the pile holes were drilled, a steel reinforcement cage was inserted into the hole. Concrete was then poured into the hole through the use of a long pipe which ensures that the concrete consistently fills the pile hole from the bottom up without mixing with water. The completed piles were then capped with a concrete block, which forms the base of the pier construction.

Unlike standard bridge construction which involves building the piers first and then the road on top, this project involved building the piers up to meet the underside of the existing road. This method of construction required millimetre accuracy in both the height and location of the piers to ensure the new bearings were positioned directly under the bridge joint. In order to achieve this, the transfer of the bridge on to the new bearings was performed during night works under a bridge closure to eliminate the movement in the bridge caused by passing traffic. This allowed the team to join the new piers to the exising road with great accuracy.

Connecting the new piers to the bridge

8–200 tonne jacks were used to lift the bridge and lower it onto the new bearings. The bridge lift in progress can be seen in the photo below (bottom left).

The total load lifted by the jacks was approx. 60 tonnes. The bridge was lifted approx. 20mm (the bridge is now 20mm higher than its position before the project started).

Driving in casings for the piles, part of pier construction

Connecting the new piers to the bridge

Contact us

If you have any questions or would like more information please contact the project team on:

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July 2020
20.247

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