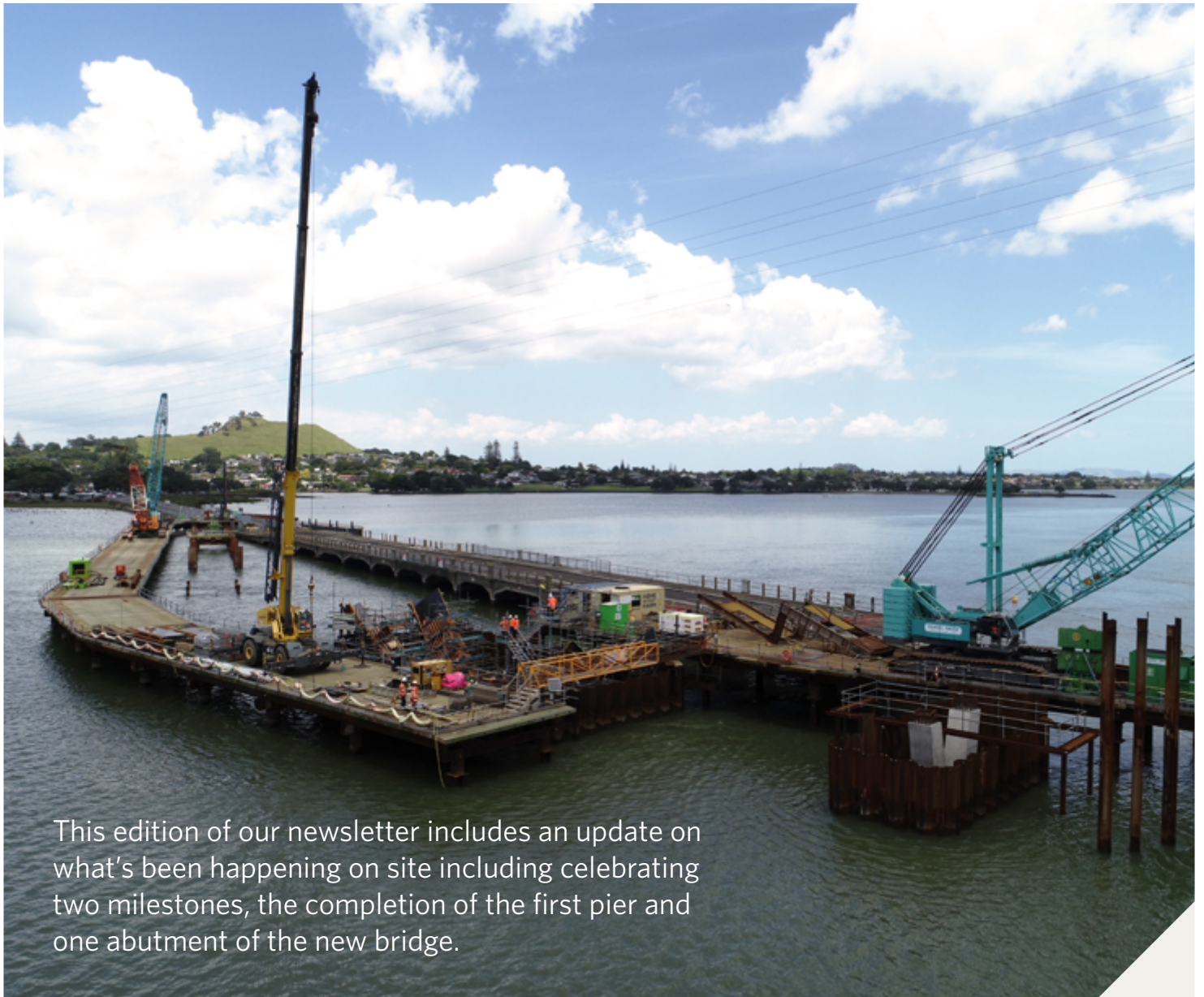


OLD MĀNGERE BRIDGE REPLACEMENT PROJECT



This edition of our newsletter includes an update on what's been happening on site including celebrating two milestones, the completion of the first pier and one abutment of the new bridge.

Happy new year from the project team and we hope you had a lovely summer break.

Despite the challenges of 2020, we made some great progress and our key achievements include:

February: Work within the harbour began

July: The temporary staging was completed and work on building the first cofferdam began

October: Construction of the first bridge pier began

December: Construction of the first bridge pier was completed

January 2021: Completion of one bridge abutment

A timelapse video of all the work that took place on site is available online so you can see the progress too. To view this, visit to our project page (website information on the back page) and click on the 'video' section.

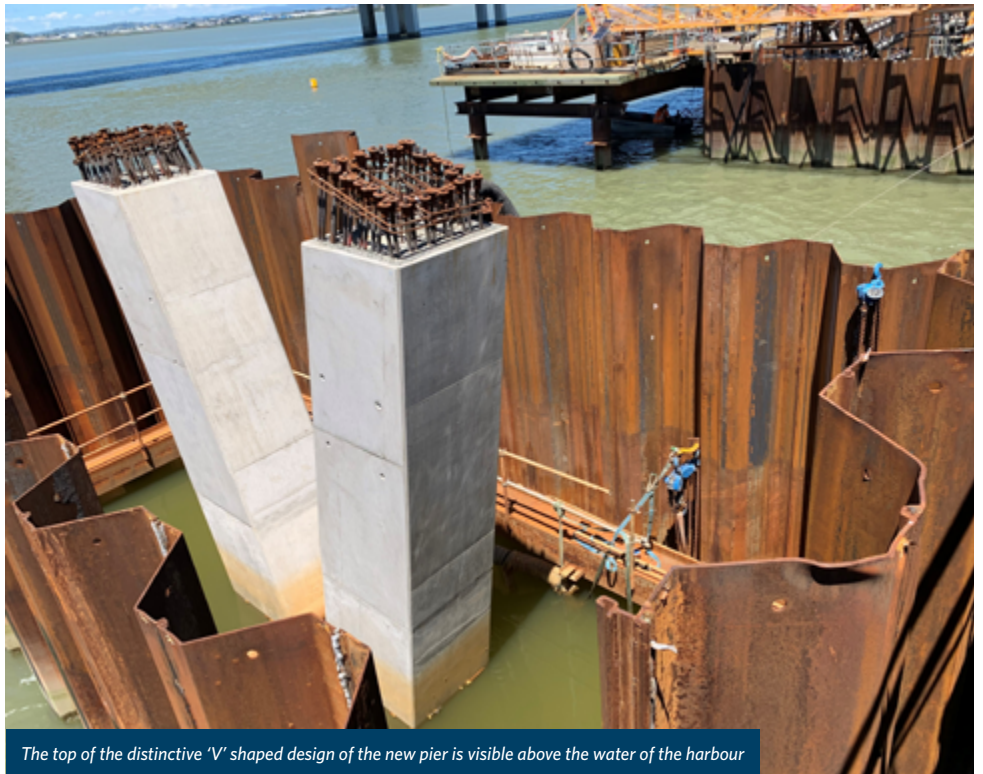
The first pier and one abutment have been completed!

At the end of 2020, the team completed construction of one of the bridge’s seven piers. And more recently, the completion of the northern abutment.

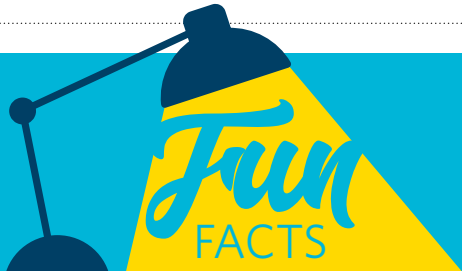
Of the seven piers built in total, there will be two large piers and five small piers to support the new bridge.

This pier and abutment are the first part of the new bridge to be completed. The pier can be seen by the public above the high tide water line. If you are walking or cycling through the Manukau Harbour Crossing underpass, you can stop at the lookout and get a good view of the pier standing proud out of the harbour.

The northern abutment is still surrounded by the cofferdam which will be removed in the next few weeks.



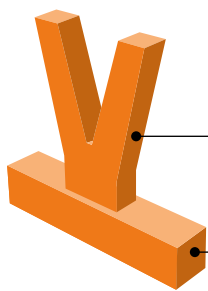
The top of the distinctive 'V' shaped design of the new pier is visible above the water of the harbour



Learn about some key facts of the piers

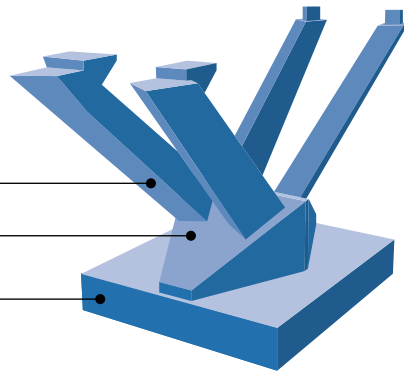
To build the columns of the piers the team use 'formwork' which is a plywood box to shape the concrete. A reinforced steel cage is placed inside the box to strengthen the columns and concrete is poured inside. The formwork acts like a cake tin to create the 'V' shape for the pier and once the concrete is set, the wooden formwork is removed to reveal the final product.

SMALL PIER



COLUMNS
PLINTH
PILE CAP OR BASE

LARGE PIER

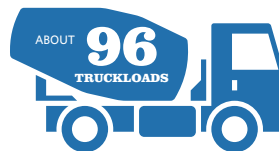


OF CONCRETE WERE Poured AROUND THE **13 TONNE OF REINFORCING STEEL** THAT HOLDS THE PIER TOGETHER.

ONCE SET, THE PIER WEIGHS AS MUCH AS



MEDIUM SIZED CARS



OF CONCRETE WERE Poured AROUND THE **108 TONNE OF REINFORCING STEEL** THAT HOLDS THE PIER TOGETHER.

ONCE SET, THE PIER WEIGHS AS MUCH AS



MEDIUM SIZED CARS

IT TOOK SEVEN DAYS FOR THE CONCRETE TO SET. DURING THIS TIME, WE CONTROL THE TEMPERATURE OF THE CONCRETE WHICH CAN REACH UP TO



Onsite update

The team have made great progress on pier two which is one of the large piers.

The columns of this pier were recently poured and the two steel deck connectors previously fabricated in Napier are now being installed.

The next two deck connectors will be installed on pier three once it is constructed.

The role of the deck connectors is to connect the inner columns of the two large 'V' piers to the steel central deck and arch so that the structure is secure.

A fourth cofferdam is also under construction and will house the new bridge's third pier.

The frame of the cofferdam was placed and welded together, and the team are now installing the sheet piles inside the frame to create a watertight steel plated box or 'cofferdam'. Once the square barrier is complete the team will repeat the same process of pumping out the water inside to

create a safe, dry work site for the team to construct the pier.

Each time we deconstruct a cofferdam, we're recycling the sheet piles so they can be used for the next cofferdam. This helps us to reduce the amount of materials needed on site.

A second temporary work platform is being built on the western side of the Old Māngere Bridge which is needed for the team to be able to deconstruct the old bridge.

To start building this platform, the team had to remove a third span of the old bridge. There are now 14 spans still to be removed. The temporary platform is expected to be completed in mid 2021 and then deconstruction of the old bridge will start again. Construction of the new bridge will continue throughout this period.

Piling on the southern abutment has been completed.

"The angle of the piers makes construction very challenging and requires a lot of planning and attention to detail. The design engineers, digital engineers, site engineers and construction team all need to work closely together."

Thomas Jefferd
McConnell Dowell
Senior Project Engineer



Second temporary work platform on the right of the picture is being built



Installation of sheet piles for the cofferdam where pier three will be built

Construction of the arch and centre of the new bridge is underway

As work continues on the piers in the Manukau Harbour, we are also busy fabricating the new bridge's arch and central deck in Napier.

While the rest of the bridge will be made from concrete, we're using a different material on this middle section. This part of the bridge will be made up from 21 smaller steel sections and when ready, they will be transported to Auckland to be installed.

Once on site, the team will weld the smaller steel sections together to create three large deck sections which will weigh approximately

110 tonnes each. There are also three large arch sections weighing approximately 28 tonnes each. The six steel components will then be taken to the temporary staging by crane where they will be put in place as part of the new bridge.

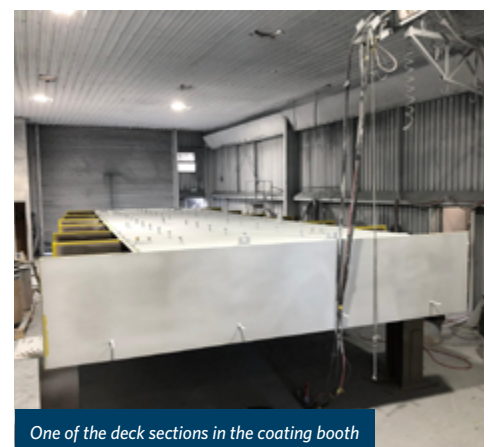
The central deck and arch sections will be coated in an anti-graffiti finish and special zinc sealant which will protect them from rust. This is essential for a bridge that will be exposed to a lot of sea spray, as well as harsh weather conditions when the seasons change throughout the year.



Fabrication of the central deck and arch in progress



One of the four deck connectors on the temporary work platform for installation on pier 2



One of the deck sections in the coating booth

MEET THE PROJECT TEAM



Gabriel Sio
Apprentice Concrete Construction

What is your role and responsibility in this project?

I have been on this project since the start and in October I started my concrete construction apprenticeship so I can study and work on site at the same time.

The work I do now is very diverse. I have recently been helping the team to install the formwork and steel cages in the cofferdams ready for the concrete pours and during the

pour, I use the concrete vibrator. This step is very important as it removes the air pockets and packs the aggregate particles together to increase the density and strength of the concrete, making it a robust structure.

I also help the team wherever it's needed so in one day I could go from driving the safety boat to being the dogman where I help direct the crane operator with lifting material or even some carpentry tasks. Everything I learn on site is very interesting and I am excited to learn more and develop my skills.

My previous building experience was very different and so on this project I am learning about all the aspects of building a bridge over water!

What do you enjoy about working on this project?

This is a very complex project and very interesting. The people I work with are great and I learn a lot from them, especially from my Superintendent, Mike who teaches me a lot and supports me to take on challenges to help me develop my skills.

What is the outcome you'd like to see at the end of construction?

I'm looking forward to seeing the community using the new bridge and enjoying it with their whānau. I hope that at the end of this project, I would have completed most of my apprenticeship and acquired a lot of experience and knowledge.

Keeping the local community updated

We held a great project day in October and were also invited to several community presentation evenings so we could share an update about the project – check out some photos from these events.



OCTOBER: Project community day



OCTOBER: Māngere Bridge Residents & Ratepayers Association



NOVEMBER: Friends of the Farm



For more information on the project or to sign up to newsletter updates, please scan the QR code or visit www.nzta.govt.nz/omb

PH 0508 623 266 | omb@nzta.govt.nz

