Getting the foundations right

Christian Niemietz, FCBC Senior Engineer-Caissons, gives an update on the on-going works to install the new bridge’s vitally important steel foundation caissons.

Since our last edition, there has been significant progress on the positioning and installation of the three enormous steel caissons which will help form the foundations for the new bridge. The caissons are 35 metres in diameter and weigh a massive 1,200 metric tons before the bridge’s towers can start to rise.

So, what types of rock is the new bridge being built on?

The bedrock beneath the waters of the Forth is made up of a series of strata – or ‘layers’ – which have been deposited over geological timescales. These geological layers are made up of sedimentary rock (formed from the deposition of sand, silt and clay), igneous rock (formed from molten rock that cooled or solidified below the Earth’s surface), and metamorphic rock (formed when sedimentary rock is altered as it is buried under increasing pressure).

The bedrock beneath the Forth Replacement Crossing consists of several sedimentary and metamorphic rock types, with the sedimentary rock layers being the thickest.

What is your role on the Forth Replacement Crossing project?

My role is to ensure we have the correct information on the ground before any major construction works begin. The ground investigations we carry out on land, underwater and on the seabed are essential to ensure we get the design right from the very start.

What gives you most satisfaction?

When we complete the ground investigations, we can then start to design the foundations for the new bridge. I am proud of the way our team worked together to ensure the results were of the highest quality.

What are the main challenges on a job like this?

One of the biggest challenges is the amount of water in the Forth estuary. We have to work in a very tight 250 mm tolerance. Water was visible in some areas, which means we had to work with great care to ensure we didn’t cause any harm to the environment.

What are the major challenges on a job like this?

There are a number of challenges on a job like this. We have to work with a number of different materials, including steel and concrete, which require careful handling and precise placement.

The bedrock currently being constructed will be the weight of the new bridge. But it is the rock structure beneath the waters of the Forth which will support the foundations. The New Forth Crossing Design Joint Venture, FCBC’s design partners.

Contacting the JRC team

Call the dedicated 24 hour Project Hotline 0800 076 6910
Email us at enquiries@forthreplacementcrossing.info
See more on our website at www.forthreplacementcrossing.info
Or drop into the Contact & Information Centre at South Queensferry Administration, South Queensferry, West Lothian, EH39 5HF

M9 Junction 1a and File MS

The operation to position the foundation caissons is in full swing. Find out more about what’s involved. Page 5

Technical Focus

The focus is on the position of the foundation caissons in all four sections. Find out more about what’s involved. Page 5

Q&A

What is your role in the Forth Replacement Crossing project?

I am the project manager for the technical design of the bridge. I ensure the concept design for the bridge is technically robust and can be built safely and efficiently.

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One of the temporary caissons being lifted ready to advance on top of the tower. Tower permeable caisson.

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One of the temporary caissons being lifted ready to advance on top of the tower. Tower permeable caisson.
Famous cyclist, Mark Beaumont, carrying
helped us meet this aim.

and road users will have seen
remain firmly on schedule.

We have made good progress during the past quarter and we
become one of the most famous and significant bridges in the
We are already over 20% of the way through building what will
move ahead on schedule
Foundations and road connections
position all three foundation caissons
immediate connecting roads continue
construction of the new bridge and the
Tower can be constructed. All this
the foundations of the bridge's Central
keenly aware of how globally important
Carlo Germani
FCBC

The Smithfield Bridge (SRB) works involve the creation of
a new and widened bridge to create the new
• The new bridge's approach roadway
will be widened to allow optional cycling/pedestrian
tracks
• The Charing Cross Road bridge which will provide
the new bridge's access for both the north and south
ends of the M9 from the PR
With its impact on the travelling public at the front of SRB's approach to the works, the contractors have opted to
work on the main road approaches to keep disruption to a
minimum and to maintain traffic flow on the many sister
bridges as opposed to constructing continuous, new
replacements. At the various 'sit down' design meetings to
determine, the temporary steel piles supporting the existing road
construction will be extracted and SRB will then use these
piles as the basis for the new bridge's foundations work (as the new
bridge in the entire central reserve can be competed.
The new bridge's approach + new roads + works, bridge abutments and jetties

Progress on the construction of the M9 can be measured over the past few months with a number of major structures being erected on schedule right across the site. The alignment of the new slip road and the road widening is now clearly visible on the ground, with associated earthworks, drainage, barriers and road construction progressing rapidly.

M9 Junction 1a takes shape

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Major elements associated with the ITS works, Traffic Management (TM) components were completed in July, six weeks ahead of
As the works ramp up from now on, the need to keep the
ypi’s and Echline Primary School, Rosyth.

Keeping the community informed

As the works ramp up from now on, we need to keep the
Community Liaison team is marking its
two years of delivering interesting events for
These events are attended by a variety of communities, including
those affected by the works, as well as many members of the public who
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