History in the making: the last of 122 deck segments is lifted up into position on 3rd February, achieving the final and historic “closure” of the Queensferry Crossing, the tallest bridge in the UK and the longest, three-towered, cable-stayed bridge in the world.
Welcome to the first edition of the Queensferry Crossing’s “Project Update” newsletter for 2017. It’s going to be an unforgettable year for everyone involved in this once-in-a-lifetime construction project – the culmination of all our hard work over the past six years and more with the completion of the new bridge and its much anticipated opening to traffic.

2017 got off to an exciting start with the preparations for the installation of the very last deck section, known to us as SS25. Earlier this month, this “last piece of the jigsaw” was successfully lifted into place, completing a pioneering deck installation process which began in September 2015. On any bridge project, the closure of the final gap represents a major milestone – perhaps the most significant of all. In civil engineering terms, the creation of the Queensferry Crossing’s 2.7km road deck (with a total of 122 sections, weighing an average of 750 tonnes each, lifted up into position 60 metres above the Forth estuary and weighing an incredible combined total of approximately 85,000 tonnes) has been a massive undertaking. It is 21st century, leading edge civil engineering at its best and it is a pleasure to congratulate everybody in the team on this outstanding achievement.

The Project is now 95% complete and we are fully focussed on tackling the wide range of complex, technical “finishing works” which make up the remaining 5%. These all have to be completed before the first vehicles are allowed to make the crossing later this year. With the completion of the bridge structure itself, we now find we can open up a number of work fronts where activities can proceed simultaneously. Some things, like laying the road surface and installing the vehicle restraint system (“crash barriers”) and windscreening panels, are obvious but the team is also facing a great variety of other, behind-the-scenes tasks, often inside the deck structure, which are no less critical to the completion, maintenance and long term viability of the Queensferry Crossing. Turn to “Technical Focus” on the Centre Pages for more details.

Good progress continues to be made right across the construction works. On the south approach viaduct, the casting of the north and southbound carriageways onto a ramp to allow the completion of the permanent southbound carriageway. Beneath, the re-positioned Ferrytoll roundabout continues to function well. Traffic management regulations have worked effectively and, once again, we thank all passing motorists for their continuing understanding and patience.

Finally, a word on landscaping. Last year, we planted 40,000 trees and shrubs across the site. This year, we will be planting a further 50,000. This is part of an on-going operation which started a few years ago and will see an impressive total of over 400,000 trees, shrubs and hedgerow plants planted as part of the Queensferry Crossing Project.

As ever, the weather continues to play a significant role in the job with many of the remaining tasks to a greater or lesser extent dependent on favourable weather conditions. While we have a credible timetable in place to achieve traffic opening by the end of May, it would be foolish to guarantee it. What we can guarantee is that we will spare absolutely no effort to finish the bridge on-time, safely and to the extremely high quality standards set out in the contract so that the end result is a bridge worthy of our pride and worthy, too, of its place next to its illustrious neighbours.

Michael Martin & David Climie.

David Climie
Transport Scotland Project Director

Michael Martin
FCBC Project Director
Centenary Celebrations

North Queensferry Primary School’s Centenary Tile Project has moved a step closer to completion thanks to funding from FCBC. Working with a local company, Ceramic Café, pupils were tasked with designing individual tiles to celebrate the school’s 100th birthday.

Caroline Gardiner, Headteacher, commented: “The children put a great deal of thought and effort into their designs. We are very grateful to FCBC for their kind donation which will allow us to display the tiles within the school grounds for everyone to enjoy. This is a fitting and lasting commemoration of the school’s significant birthday!”

Building Bridges

A community-based project set up by local writer and performer, Gowan Calder, and supported by FCBC is seeking to “build bridges” between the people of North and South Queensferry. School children from North Queensferry Primary School and St Margaret’s Primary School in South Queensferry will participate in a series of creative workshops run by local artists.

“The aim of the project is to utilise both our environment and members of our community to engage children in their local heritage,” says Gowan.

The project began in October when North Queensferry based artist Karen Trotter spent two days with children exploring the local Ferry Glen (see photo), creating organic art works both in situ and back in the classroom. Other workshops will include the history of the Forth Bridges, developing themes around bridge building, music, drama and film.
Below is a brief description of the principal tasks still to be carried out or completed. Many of them – the laying of the road surface, for example – could not begin until the bridge structure itself was complete. Others, such as the installation of the various mechanical and electrical systems, started earlier but their completion surely had to await the completion of the main structure.

**Working through a big “to-do” list**

With the last of 122 deck segments now installed, the Queensferry Crossing’s structure is essentially complete. But a huge amount of work remains to be done before the bridge is finished and traffic can start flowing across what is one of the world’s great bridges. Here Alastair Fyfe, FCQC Construction Director, summarises the finishing works to be completed this winter and spring to allow the bridge to open.

Before the bridge is finished and traffic can start flowing across what is one of the world’s great bridges.

**External Works: the most visible**

**Stay-cables:** at the time of writing, there are still a pair of stay-cables to be installed. These are the longest on the whole Project (up to 420m in length). In total, 288 cables will be installed. Each of the 288 cables is individually load tested to ensure the correct geometry of the road deck below and to make sure they will perform their function to the optimum for many years to come.

**Road surface:** from slought to asphalt, the laying of a specialist waterproof membrane on top of the reinforced concrete deck in full-swing. This membrane protects the concrete from the potential harmful condensing effects of rainwater sitting on top. Next, we will place a layer of hot rolled asphalt over the waterproof membrane on top of the abutment, the laying of a specialist road surface is individually load checked to ensure the road deck can move – as it is designed to – vertically, sagittally and laterally according to current traffic load, ambient temperature and wind load. These are some of the largest expansion parts ever manufactured and installed, accumulating an impressive range of 2.3 metres of movement.

**Wind & noise barrier:** unlike the Forth Road Bridge, the Queensferry Crossing features a modern wind barrier system designed to reduce the impact of the wind on traffic, therefore keeping the bridge open to traffic in all but the rarest and most extreme conditions of weather. In total, we will be installing 7.5km of 54 metre high, open-sided wind shielding panels along the east and west edges of the entire structure and on the Forth Valley viaduct just north of the new bridge. At the southern end of the bridge, the wind barrier will be further enhanced to help mitigate the impact of traffic noise on nearby residents.

**Vehicle restraint system:** more commonly known as “false barriers”, these will also be installed along the entire length of the road deck on both sides of the carriageways.

**Lighting:** various types of lighting systems have to be installed on the structure. The road lighting on the bridge is limited to the ends of the structure at the approaches to the road junctions. This lighting is provided by modern, low-level street lights which illuminate the carriageways whilst reducing light pollution. There is also architectural lighting built into the wind barrier as well as along and down the towers which will ensure the distinctive shape and structure of the bridge is highlighted at night. Finally, for safety there are marine navigation and aircraft warning lighting systems to be installed across the structure.

**Inspection gantries & cradles:** in order to allow regular inspections and maintenance of the steel underpinnings of the deck, four mobile gantries will be installed, between them capable of covering the full length of the road deck. Two further gantries carry out the same function on the approach viaducts. Tower inspection cradles will also be provided.

**Tower cranes:** the beginning of the year saw the start of the decommissioning and dismantling of the three enormous yellow cranes, each approximately 205 meters in height, the highest structures in the UK which have stood next to the Queensferry Crossing towers for the past three years and more. Work on this will continue for a few more months.

**Falsework:** the six temporary steel “trestles” (known as falsework) either side of each tower deck level will be removed in the next few weeks including the temporary work platforms they support have to be removed. Indeed, the first came down in late January. Weighing several hundred tonnes each, these temporary structures will be jetted at the base of the towers and lowered onto a barge before being removed for re-cycling.

**Coissins & cofferdams:** other temporary steel structural elements to be removed in the next few weeks include the temporary coissins around the North and South Towers and the cofferdams at the base of the Centre Tower on Beacon Rook. Their removal will allow the sea to come in and lift directly against the towers whose concrete is specifically designed to be impervious to the effects of water.

**Central Room:** the long-term operation of the new bridge: the Central Room will be the responsibility of the bridge operators, currently AMEY, based in their Central Room in South Queensferry, a suite of offices overlooking the new bridge. A comprehensive network of electrical cables and fibre optic cables is being laid to connect the bridge’s traffic operating systems to the Central Room where all the systems will be monitored 24 hours a day.

**Structural health monitoring:** this system measures various parameters relating to the structure of the bridge and indicates how, over time, it is coping with the load it is being asked to handle under different conditions such as wind, temperature, movement and deflection. Linked sensors constantly monitor and store a wide range of data which is fed back to the Control Room.

**CCTV and fire detection:** the bridge will feature the latest CCTV technology to allow the bridge operator in their Central Room to monitor traffic movements and any other activities on the bridge. A comprehensive fire detection and alarm system is also due to be installed in the coming weeks. Security across the structure, there are over 300 access ways and doors. Each one is locked and most have active security systems. Working in tandem with the CCTV cameras, to ensure the Central Room should there be an unauthorized access to a particular area.

**So… if anybody tells you that the bridge is nearly finished just as crucial**

**Abutments:** fitting out of the north and south abutments will continue over the next couple of months to provide office, workshop and storage space as well as access to the middle of the road deck. The abutments are also the hubs of all the services that are provided and onto the bridge (for example, power, water, drainage, security and CCTV).

**MEP works:** “MEP” stands for mechanical, electrical and plumbing and covers the installation of a wide range of hardware still to be completed this winter and spring for the successful long term operation of the Queensferry Crossing. Principally this involves the supply and installation of the power supply and an emergency back-up supply. MEP works will also include the power supply and all the various items of electrical apparatus used to operate the bridge.

**Drainage:** a system of drainage pipes and outlets is being installed along the length of the bridge to allow rainwater to drain away easily and efficiently from both the road surface and other areas of the bridge.

**Cleansing water:** passing vehicles (in the case of the Queensferry Crossing likely to be in the region of 25 million vehicles per year) will make a bridge dirty and less than optimum condition. So, a system of water pipes and tanks is being installed in the bridge to enable the various structural elements and all things like the lights and wind barrier panels to be kept clean and in good condition.
Contacting the FRC team

There are a number of ways you can contact us to ask questions, provide comments, make a complaint or find out more about the Forth Replacement Crossing project:

Call the dedicated 24 hour Project Hotline 0800 078 6910
Email the team enquiries@forthreplacementcrossing.info

Look for us online:
- www.forthreplacementcrossing.info
- www.queensferrycrossing.co.uk
- @FRC_Queensferry

Or go to the Queensferry Crossing YouTube channel

Or drop into the Contact & Education Centre
Adjacent Forth Road Bridge Administration Office, South Queensferry, Edinburgh EH30 9SF

Opening times
Mon-Thu: 0900-1700, Fri: 0900-1600, Sat: 1000-1600

ROADS: 1 December 2016, an aerial view of the complex road works underway on and around the M90 just north of the new bridge. 2 On the south side, looking east over the new, completed Queensferry Junction towards South Queensferry. 3 Virtually complete, the new stretch of motorway south of the new bridge has had the final black top road surface laid and the white lines painted. 4 It was a very complex operation to re-position the Ferrytoll roundabout north of the Queensferry Crossing while keeping traffic flowing at all times. The new roundabout was opened to traffic in November 2016. 5 Looking north over the south abutment area and the southern approach viaduct. 6 Looking west along the realigned A90 coming from Edinburgh and M90 Spur heading towards the new bridge.