

Forth Replacement Crossing – Bridge ITS Transport Scotland, UK

Overview

The Transport Scotland Forth Replacement Crossing (FRC) consists of three major infrastructure projects: 'The Principal Contract', including the new Queensferry Crossing, and the adjoining ITS and road schemes to the north and south: 'Fife ITS' and 'M9 J1A'. This is a vital strategic and economic route for both the east, and Scotland nationally; and this project marks the first implementation of a Managed Motorway in Scotland. Completion of the Queensferry Crossing is the final stage, with partial opening of the bridge scheduled for summer 2017.



*Queensferry Crossing (centre) and Forth Road Bridge (foreground)
Image courtesy of the Forth Crossing Bridge Contractors © Forth Bridges Forum 2017*

Objectives

General background

The project consists of a 2.7 km long cable-stayed bridge; associated connecting roads and junction improvements; and 22 km ITS scheme to manage traffic through the corridor. ITS has been a key element of the design that will: improve safety, facilitate travel time reliability and enhance capacity. All of these features are essential to maintaining the strategically vital road link across the Forth.

Project description

ITS will support the operational management of the traffic on the FRC corridor to deliver optimum capacity within a safe, efficient and reliable environment, and provide local information to road and public transport users during normal and abnormal conditions.

Bridge ITS equipment and systems

- Above ground vehicle detection for AID
 - Weather monitoring
 - Cantilever gantries
 - CCTV (including thermal imaging CCTV)
 - Travel time monitoring
 - Weigh in motion detection
 - Structural Health Monitoring Systems
- On the bridge, specific ITS technologies have been deployed:
 - Where traditional equipment installation is not possible (for example above ground detectors in place of loop detectors),
 - To meet bridge asset protection requirements, and
 - To meet the additional security and surveillance needs.
 - Automatic variable speed limit systems
 - Mandatory Speed Signalling compliance system
 - Intelligent Lighting Control System (linked to traffic flow)
 - Provision for bus hard shoulder running
 - Emergency roadside telephones
 - IP communications

Operational regimes

The ITS equipment is connected to other roadside equipment within the project via an IP based communications system and monitored and controlled through the Traffic Scotland Control Centre. The operational management regimes that ITS will support are:

- Normal Operation – traffic monitoring and surveillance, providing driver information and maintaining travel time reliability
- Corridor Management and Incident Control – LCS, automatic incident detection and management, queue protection and slip road management
- Travel Time Reliability – monitoring and automatic implementation of variable speed limits
- Bridge Management – Managed Crossing Strategy: the existing Forth road crossing will provide a dedicated public transport corridor (including provision for cyclists and pedestrians), coordinated actions across both bridges will be implemented during operational restrictions (for example during high winds)
- Bus Travel Time Reliability – dedicated bus lanes, supported by CCTV, VMS and LCS, have been included in the connecting schemes to support public transport services

Implementation schedule

The tasks included in the Arc Atlantique 2 project consists of the final phase of ITS integration works taking place in 2016 and 2017.

Results expected

- Travel time reliability
- Improved traffic management and incident control
- Improved local public transport

Budget

The budget included in the Arc Atlantique 2 project consists of the final phase of ITS integration works taking place in 2016 and 2017.

- Action promoter: Transport Scotland
- Total project cost covered by this Decision: €720k
- EU contribution: €144k
- Percentage of EU support: 20%

Location

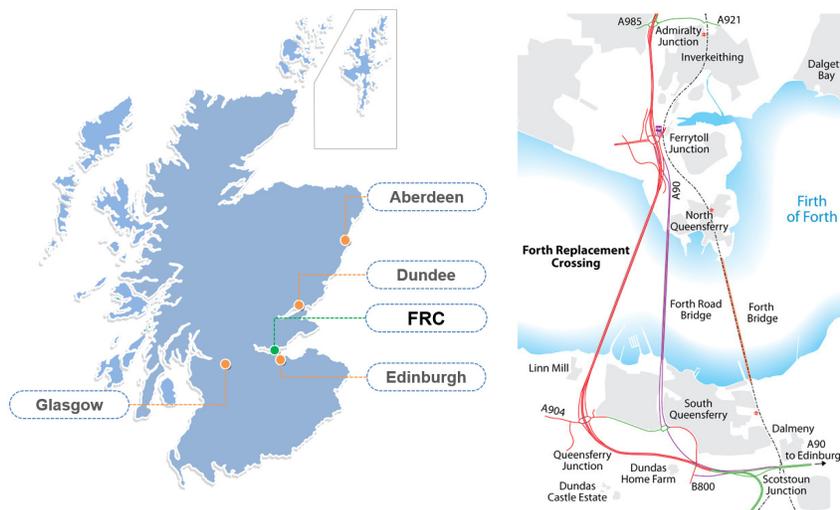


Image courtesy of the Queensferry Crossing
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