STRUCTURAL MONITORING

CLIENT: NETWORK RAIL | BALFOUR BEATTY | GLASGOW QUEEN ST STATION

Senceive
Wireless condition monitoring

THE CHALLENGE

In 2017 Network Rail announced a £120 million contract to redevelop Glasgow Queen Street station. Delivered by contractor Balfour Beatty, the project will prepare the station for the continued growth in passenger numbers and to accommodate longer electric trains being rolled out as part of the Edinburgh-Glasgow Improvement Program (EGIP).

As part of this large-scale redevelopment two redundant buildings are being demolished at the front of the station to make room for the new contemporary facade, larger concourse, new entrances and longer station platforms. During the local demolition, a structural monitoring system was required around the station to ensure that any movement could be quickly and accurately measured. Based upon several successful deployments elsewhere for Network Rail, Balfour Beatty Ground Engineering approached Senceive to provide their high precision wireless tilt sensors as a monitoring solution.

OUR SOLUTION

Senceive proposed monitoring the facade using wireless tilt nodes mounted on one meter beams to allow deferential lateral movements. Nodes were also to be directly attached to the column at positions expected to show the maximum rotation.

In total 25 sensors were installed at six locations around the station by Balfour Beatty Ground Engineering. The data from these six wireless networks was transmitted to their own 3G gateways, four of which were solar powered. The gateways then use the mobile GSM network to transmit data to a secure cloud server, which can be viewed by registered users of Senceive's WebMonitor software.

THE OUTCOME

Due to the restrictive surroundings of the station and various obstructions, which might otherwise disrupt a wireless mesh network, Senceive provided a repeater node and special extender antennae in conjunction with patented magnetic mountings and other bracketry to ensure maximum coverage was achieved.

Senceive's FlatMesh tilt nodes were the ideal choice, as they could be installed with ease and efficiency using a wide array of bracketry to suit any surface and position. This reduced man-power, time and saved on costs. Senceive were also able to offer training and comprehensive support throughout the project. The reliable and robust system also eliminates the need for any further maintenance or visual checks.

Senceive is proud to be part of the redevelopment of Scotland's third largest station, which is due to complete in 2020.

Network Rail Balfour Beatty

FlatMesh™
reliable | robust | precise