

# Case Study

**Project Name** Royal Opera House,  
London

**Type of Work** Handrail Load Test

The Royal Opera House is a prestigious building in the heart of London, overlooking Covent Garden. Swantest were asked to undertake load tests on the existing handrail supports that are fixed to the balcony of the roof terrace. The purpose of this test was to apply a predetermined load to the handrail supports and record any displacement.

As the building is live and in constant use one of our main constraints was to ensure we did not disrupt any scheduled shows. In order to carry out the required test in a limited time frame, we designed a bespoke test rig that was lightweight and easily moved from one location to the next. This test rig was designed to transfer the load applied to the handrail back into the main structure. We designed it with no need for any damaging fixings into the decorative balcony.

Using a series of hydraulic cylinders to apply the load and digital displacement gauges to record movement we were able to carry out the required load tests in 12 locations around the building. As these works were being carried out in a public place, high above Covent Garden we ensured that all equipment and tools were safely tethered and set up an exclusion zone below the test areas.

This type of test can be altered to suit any type of handrail or balustrade in both existing and new build structures. We can test for both point loads and a UDL line load.

