



## PROJECT PROFILE

# Korea High-Speed Rail System

Quality Audit of Constructed Facilities | Seoul, South Korea



### CLIENT

Korea High-speed Rail Construction Authority (KHRC)

### BACKGROUND

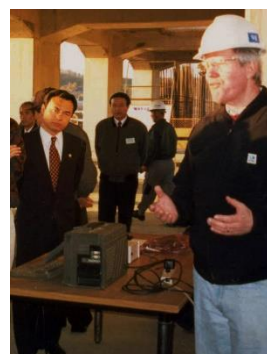
The South Korea high-speed railway is a \$13.4 billion, 260-mile system that connects Seoul to Pusan. The trains travel at more than 180 miles per hour, carry 1,000 passengers, and leave each terminal station at scheduled five-minute intervals.

The South Korean government, in an effort to build a superior rail system, retained WJE to perform a quality audit of its structures. WJE inspected a variety of civil structures, including bridge foundations, bridge piers and spans, tunnels, and earthwork structures. There were two primary objectives of the audit: make sufficient reviews to ensure safety and provide recommendations for long-term reliability.



### SOLUTION

WJE engineers conducted visual evaluation of the constructed civil works and selected locations for sample removal to evaluate the properties of the construction materials. Laboratory tests of the samples included compressive strength testing and petrographic characterization. Nondestructive evaluation (NDE) techniques were utilized to check the reinforcing bar placement and quantities as well as to evaluate the depth of foundations and the integrity of the buried concrete piles. The engineers also used NDE techniques to evaluate embankments for poorly consolidated fill materials. The inspection verified the thickness of the tunnel liners and culvert walls and slabs.



WJE also inspected the slopes of earthwork cuts for soil failures due to inadequate slope or benches and conducted tests at frequencies to provide a database to comment on the quality aspects of the construction. Finally, WJE recommended aspects of the construction that needed improvement based on the quality audit database.