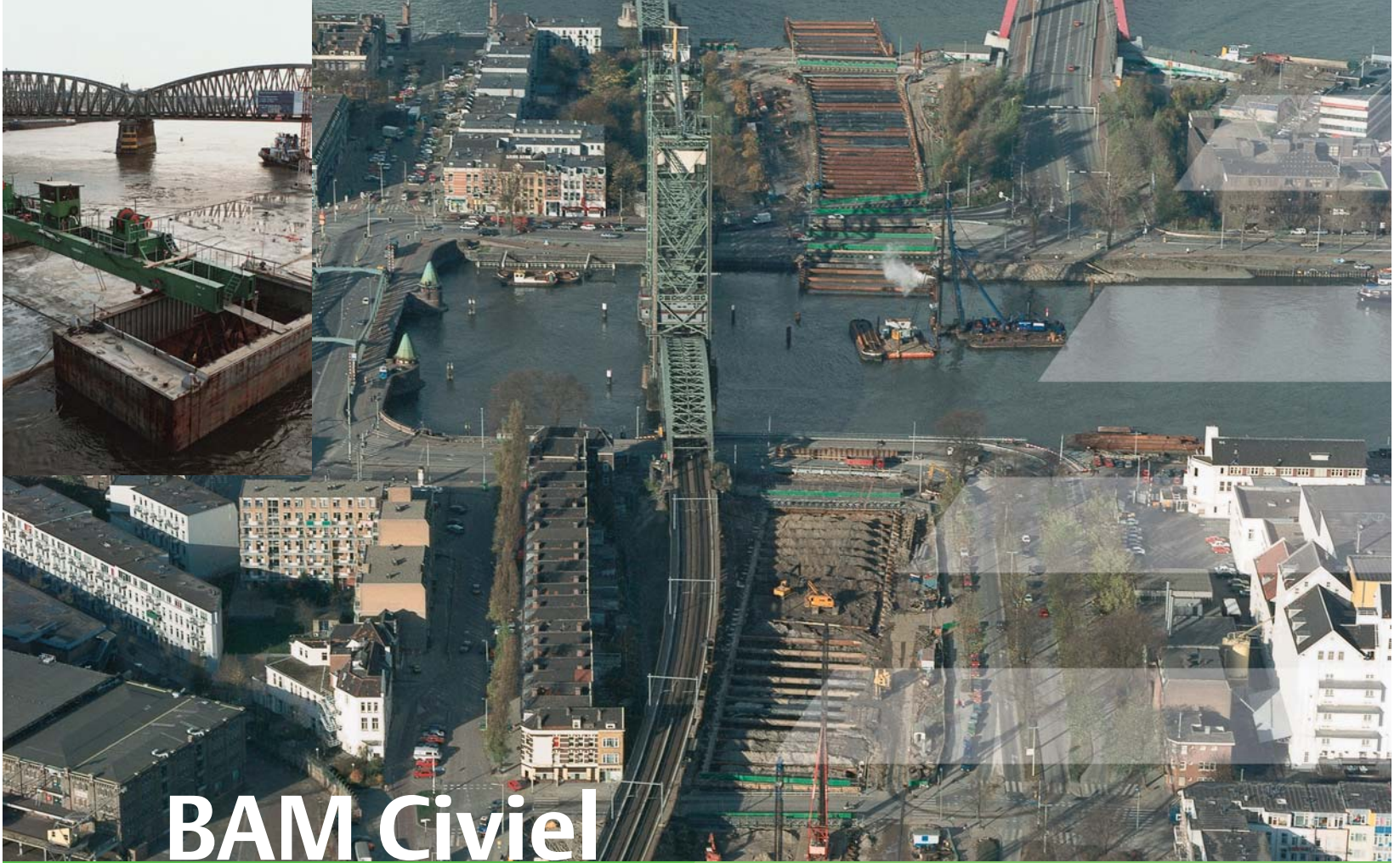


Willemsspoor Tunnel, Rotterdam

Client: Dutch Railways (NS)
Design: Dutch Railways (NS) / Public Works Department Rotterdam / Directorate General for Public Works and Water Management, Building Division / BAM Infraconsult
Construction: BAM Civiel bv (as joint venture partner)
Contract value: € 330.000.000
Contact: (0182) 59 06 00 / info@bamciviel.nl / www.bamciviel.nl



BAM Civiel

When the Willemsspoor Tunnel was being built there was an acute awareness of the limits to freedom of movement in the centre of Rotterdam. Rail and road traffic were both diverted over temporary bridges, and because of the proximity of old foundations and vulnerable buildings, measures restricting vibration, drainage and such were applied to certain parts of the route. The significant influence exerted by adjacent infrastructure and buildings resulted in a strong emphasis on careful planning, ongoing consultation and the provision of clear information to all parties involved. These turned out to be important success factors for progress on the project. The four-track train tunnel runs under the bed of the Nieuwe Maas, passes Noordereiland and Koningshaven, and goes

280 metres into the southern bank of the Maas. Eight 120-metre-long concrete elements for the closed part were cast in a construction dock in Barendrecht, towed to Rotterdam and submerged in a dredged trench. The rest of the tunnel was built using the open construction pit method. The technology used included diaphragm walls, cement-bentonite walls, combi walls and sheet pile walls, fitted with grout anchors on site. The closed section is 2,796 metres in length, has an average width of 27 metres and a structural height of nine metres. The tracks are separated by partition walls. In the deepest part, the trains are running 15,3 metres below Normal Amsterdam Water Level.