



- 21 years' experience
- MEng Civil Engineering (1st) Imperial College, London
- ACGI Associate of the City and Guilds Institute, London
- MICE Member of the Institution of Civil Engineers
- CEng Chartered Engineer

Synopsis

Mark is an engineer responsible for the geotechnical design and independent checking of temporary and permanent works including deep excavations and foundations for buildings, bridges and civil engineering structures for the construction industry.

He is used to working alongside contractors and with consultants in a multidisciplinary environment, interfacing with other professionals in a flexible and responsive manner to ensure the development of safe, cost effective and fully coordinated designs.

Mark has particular experience in the design of spread and piled foundations for bridges, viaducts and buildings; the design of embedded retaining walls to form deep excavations and cut and cover tunnels with propped and anchored support; and the design of slopes and embankments incorporating soil nailing / reinforcement solutions.

He is a pragmatic engineer with a sound knowledge of the relevant design codes who always seeks to identify practical solutions to engineering problems. Mark is highly skilled in the use of numerical analyses to model soil-structure interaction using a variety of software tools and has been responsible for leading and training others in their use.

Career History

2014-Present • Grant & Brown

Director | Geotechnical Engineer

2013-2014 • URS (UK) [now AECOM]

Associate (Geotechnics)

2011-2013 • URS (Australia) [now AECOM]

Associate (Geotechnics)

2008-2011 • Scott Wilson | Benaim then URS

Principal Engineer (Geotechnics)

2005-2008 • Benaim

Geotechnical Engineering

2002-2005 • Black & Veatch

Water Engineering

1998-2002 • Imperial College, London

Civil Engineering degree

Key Skills

- Piled and spread foundations for buildings, bridges & other structures subject to complex loading conditions
- Soil-structure interaction and numerical modelling of geotechnical problems
- Mixed temporary and permanent works design
- Embedded retaining walls for deep excavations, basements and underground construction
- Settlement and ground movement assessments
- Design of slopes & embankments
- Design and Construct experience
- Reinforced earth / soil nailing
- Investigation of construction failures / problems

Selected Professional History

2023-ongoing • Haydon End, UK

Ground movement assessment relating to rising main renewal, including 650m constructed with TBM and 300m constructed using horizontal directional drilling.

2023-ongoing • Crouch Lane Railway Bridge, UK

Lead Geotechnical Engineer for design of railway bridge strengthening works by underpinning and anchoring.

2023-ongoing • Industrial storage facility, India

Design assessment of over 900no. 800mm diameter bored piles for expansion of industrial storage facility.

2023 • Ground-bearing slab, Avonmouth Docks

Geotechnical consultant for assessment of 30,000m² ground-bearing slab at Avonmouth Docks to temporarily support large loads.

2022-2023 • HS2 Attleboro Flyover, UK

Geotechnical consultant for independent check of new secant piled excavation / flyover for High Speed 2 (HS2).

2022-ongoing • Bristol Airport multi-storey carpark

Geotechnical consultant for design of new multi-storey carpark at Bristol Airport.

2022-2023 • Reinforced earth failure, UK

Retrospective stability checks of 1500m of reinforced earth wall and bund up to approx. 15m height following large-scale movement failure during construction.

Selected Professional History

2022-2023 • Clyde Waterfront & Renfrew Riverside, Glasgow

Independent check of new 130m cable-stayed swing bridge across the River Clyde and associated marine layby berth.

2021-2022 • HS2 viaducts, UK

Geotechnical consultant for independent check of new viaducts at Water Orton and over the Birmingham & Fazeley Canal for High Speed 2 (HS2).

2022-2023 • New LNG Facility, Persian Gulf

Lead Geotechnical Engineer for design of two new 90m diameter LNG storage tanks.

2022 • M58 Link Road, Pemberton

Geotechnical consultant for independent check of new highly skewed bridge.

2021-2022 • Crane rail foundations, Avonmouth Docks

Geotechnical consultant for design of extensions to rails for gantry crane.

2021-2022 • Walton-on-Trent Bypass, UK

Geotechnical consultant for design of new approx. 1.5km long bypass across the floodplain of the River Trent, including 150m long bridge.

2021-2022 • New LNG Facility, India

Lead Geotechnical Engineer for design of two new 170,000m³ LNG storage tanks in India.

2021 • Lidl distribution centre, Luton

Geotechnical consultant for design of piled basement slab.

2020-2021 • Devon Place Bridge, Newport

Lead Geotechnical Engineer for temporary and permanent works design of new bridge over Newport railway station; complex interfaces with railway infrastructure and existing subway.

2018-ongoing • Utility crossings, UK

Designer's Geotechnical Advisor [DGA] for design of numerous utility crossings of trunk roads & motorways.

2016-2022 • Bearing pile & embedded retaining wall designs

Numerous tender and detailed designs for piling contractor for D&C schemes for buildings and bridges.

2019-2020 • HS2 Rail Bridge Replacement, Birmingham

Geotechnical consultant for independent check of large caisson foundations for new 90m span rail bridge associated with High Speed 2 (HS2).

2019-2020 • New LNG Facility, Southeast Asia

Lead Geotechnical Engineer for design of new 85m diameter, 180,000m³ LNG storage tank involving over

1500 piles with assistance to D&C contractor during construction.

2019-2020 • Chobham Link Bridge, Woking

Temporary works design for construction of new cycling bridge on constrained site at town-centre location.

2019-2020 • Park Grounds Energy from Waste, UK

Geotechnical consultant for design of below-ground structure and rafts for new Energy from Waste facility.

2019 • M11 Junction 7a, Essex

Value engineering of extent of ground treatment for contractor during tender stage contributing to successful project win.

2019 • Elephant & Castle Redevelopment, London

Independent check of ground movements associated with demolition phase of redevelopment in relation to adjacent Network Rail brick arch viaduct and London Underground Ltd tunnels and shafts.

2018-2019 • Gasworks Tunnel, Kings Cross

Independent check of tunnel movements associated with reopening of east bore to rail traffic.

2018 • Durleigh Water Treatment Works

Geotechnical consultant for design of buried structure involving temporarily propped secant piled embedded retaining walls.

2017-2018 • Water Utilities Damage Assessment

Geotechnical consultant for assessment of impact of proposed construction works at Brent Cross, London, on Thames Water utilities.

2017 • Google HQ, Kings Cross

Geotechnical consultant for temporary works design of re-propping scheme for below-ground shared service yard immediately adjacent to Kings Cross station.

2017 • Thames Tideway | Kirtling Street Jetty, London - Temporary Works

Lead Geotechnical Engineer for independent check of jetty and ancillary structures associated with the Thames Tideway Tunnel project.

2015-2017 • Major Basement, Belfast - D & C

Geotechnical consultant for main contractor on a large, 8m deep urban basement, including secant pile basement walls, temporary works and bearing piles. Expert Opinion reporting for dispute resolution.

2014-2017 • Hinkley Point C, Enabling Works - D & C

Geotechnical aspects associated with the design of large, deep excavations (up to 35m deep cuts) supported by ground nails for new nuclear power station.

Selected Professional History

2015-2016 • Battersea Power Station Dev., London
Geotechnical design of piled foundations and basement structures.

2014-2016 • Embedded retaining wall and bearing pile design, Various
Numerous tender and detailed designs for contractors for D&C schemes for buildings, bridges and underground structures.

2014-2016 • Brent Cross Redevelopment, London - Detailed Design
Geotechnical design of over 1000m of piled retaining wall for realignment of River Brent.

2013-2014 • Bank Station Capacity Upgrade, London - D & C
Geotechnical lead for concept design of the new ticket hall, which is to comprise an excavation over 30m deep between contiguous bored pile walls and using a combination of top down and bottom up techniques.

2012-2013 • Blackwater Railway Duplications, Australia - Design
Lead Geotechnical Engineer for design of approx. 40km of rail duplication works, including six rail bridges up to 135m long. Works involved ground treatment, earthworks design for cut / fill balance, and bridge foundation design.

2012-2013 • Grosvenor Mine Project, Australia - D & C / Temporary Works
Lead Geotechnical Engineer for design of assembly areas and thrust pits for launch of tunnel boring machines associated with the construction of access tunnels at mine site.

2012-2013 • Rail Bridges (various), Australia - Temporary Works
Lead Geotechnical Engineer responsible for temporary works design and pile certification associated with the construction of various rail bridges in Queensland.

2012-2013 • Sydney North West Rail Link, Australia - D & C
Geotechnical Engineer for tender design of seven major excavations up to 25m deep in the heart of Sydney. Combinations of cantilever and embedded retaining walls, and soil nailing and rock bolting techniques.

2011-2012 • Gateway Upgrade South Bus Underpass, Australia - Tender
Lead Geotechnical Engineer for the detailed tender design of a 50m long combined road / rail underpass beneath the Gateway Motorway in Brisbane. Underpass installation using box jacking / shield tunnelling techniques.

2011-2012 • Confidential Rail Project, Australia - Design
Lead Geotechnical Engineer responsible for the preliminary geotechnical design of earthworks and foundations for a number of large rail facilities in Queensland.

2011-2012 • Surat Basin Rail Bridges, Australia - D & C (dECI Phase)
Geotechnical Engineer responsible for the design and optioneering of spread and piled foundations for numerous rail bridges for a new railway through the Surat Basin in Queensland, including a 400m long 50m high river crossing.

2010-2011 • 3rd Bosphorus Suspension Bridge, Istanbul, Turkey - D & C
Lead Geotechnical Engineer for the preliminary foundation design of 1200m span combined road and rail suspension bridge across the Bosphorus in Turkey. Site survey at tower / anchorage locations and determination of foundation form and size.

2011-2012 • Woolwich Underground Station, Crossrail, London – Independent Check
Lead Geotechnical Engineer for the independent check of new underground station. The station is formed 'bottom-up' in a 20m deep excavation between diaphragm walls and comprises part of the basement of a substantial over site development.

2010-2013 • Europe - High Court (England & Wales) Hearing
Technical support to Expert Witness regarding the design and construction of embedded retaining walls for a major new underground construction project.

2010-2011 • London Cable Car, London - D & C
Lead Geotechnical Engineer for the design of the stations and compression towers of this award winning iconic structure in central London. The design includes piled foundations in close proximity to substantial tunnelling works, formed over water and subject to complex loading conditions from the cable car system.

2010-2011 • Tottenham Court Road & Bond St. Underground Stations, Crossrail
Lead Geotechnical Engineer for the independent check of these new underground station structures in the heart of central London. 25-30m deep boxes, formed within a mix of secant, contiguous and diaphragm walls, and constructed using a variety of top down and bottom up techniques.

2009-2010 • Paddington Station, Crossrail, London - Design Review
Responsible for reviewing the soil structure interaction analysis undertaken for design of this multi propped

Selected Professional History

25m deep diaphragm walled flagship box structure to be excavated around two pre-bored tunnels.

2009-2010 • Royal Oak Tunnel Portal, Crossrail, London - Independent Check

Lead Geotechnical Engineer for the independent check of this 200m long propped diaphragm wall structure that will form a launch pit for tunnel boring machines and the transition from the over ground to the underground section of Crossrail in west London.

2008-2009 • Water Treatment Works, Abu Dhabi, UAE - D & C

Lead Geotechnical Engineer for the design of two 200,000m² waste water treatment plants in desert conditions. A key element of the role was the design of earthworks including compaction trials and on-site assessment to justify the re-use of site won material as fill in load bearing applications.

2008-2009 • Module Bridge, Sellafield - D & C

Lead Geotechnical Engineer for the design of the approach embankments and foundations for this 30m span temporary bridge, designed to carry 800t module units across the River Ehen adjacent to the Sellafield Nuclear Power Plant.

2007-2008 • Railway improvement works, Milton Keynes - Design

Lead Geotechnical Engineer for design of 600m of anchored sheet piled retaining walls to facilitate widening of the railway corridor at Bletchley, Milton Keynes.

2007-2008 • Tunnel Collapse Mediation, Gerrards Cross - Mediation

Technical support to Expert Witness during mediation following the collapse of a partially complete buried 3-pin arch tunnel onto a live railway line at Gerrards Cross. Responsible for extensive soil-structure interaction analysis to assess factors relevant to the collapse and the adequacy of the original design.

2007-2008 • Grange Rail Bridge, Dublin, Ireland - D & C

Lead Geotechnical Engineer for design of a three span, 40m long, road bridge over the Dublin to Belfast main railway line. Role included specification and interpretation of site investigation works; design of the foundation elements; ground movement assessment.

2006-2008 • Dubai Metro Bridges, UAE - D & C

Geotechnical Engineer responsible for the design of piled foundations for numerous stations and viaducts for two new metro lines in Dubai. The role included an independent check of a deep excavation for construction of an underground station.

2005-2008 • Belfast Sewer Tunnel Project, Belfast - D & C

Geotechnical Engineer responsible for the provision of a Geotechnical Baseline Report for approximately 9km of tunnels and associated shafts. The role included regular attendance at site to provide advice/support to our contractor client during construction.

2006-2007 • Ashford Road Bridge, Kent - D & C

Geotechnical Engineer responsible for the design of the bridge foundations and 200m approaches in reinforced earth with anchored sheet piled walls. Temporary works designs for crane and piling platforms.

2005-2007 • Clackmannanshire Bridge, Firth of Forth - D & C

Geotechnical Engineer responsible for the foundation design for this 1.2km incrementally launched bridge over the River Forth. Piers supported on single 3m diameter piles. Designer's Site Representative role.

2005-2007 • Broadway Underpass, M1/Westlink, Belfast - D & C

Engineer responsible for the geotechnical design of this 400m long DBFO motorway cut and cover tunnel and propped approach retaining walls. Curved, asymmetric structure in difficult ground conditions in a heavily congested urban area.

Selected Other Projects Include:

- Congleton Link Road - temporary work design for D&C contractor
- C21 Building, Barrow - substructure design review
- A406 Bridge Replacements, London - Independent Check
- Stratford Olympic Bridge 17, London - Independent Check

Presentations & Awards

Key technical challenges faced in design of the underground stations for Crossrail; *Transport Infrastructure and Engineering Conference, Brisbane, October 2012*

Paddington & Farringdon Crossrail Underground Stations - A Comparative Study; *CORE 2012 Conference on Railway Engineering, Brisbane, September 2012*

Young Geotechnical Engineer - Highly Commended; *Ground Engineering, 2008*

A876 Upper Forth Crossing (Kincardine Bridge) Foundation Overview; *Construction Processes in Geotechnical Engineering, London, April 2007*

Sir Bruce White Prize - Winner; *Imperial College, 2002*