Dr Mark Richards

Director

Professional Registrations and Affiliations

- Fellow of the Institution of Structural Engineers
- Associate Member of the Academy of Experts
- Professional Conduct Committee, The Institution of Structural Engineers - Member
- Member of the Institution of Engineering Designers
- Chartered Structural Engineer
- Member of Engineers Ireland
- Expert Peer Reviewer – Council for Tall Buildings and Urban Habitat
- UK Expert – CEN (Comité Européen de Normalisation)
- Committee Member – BSi (British Standards Institution)

Academic Qualifications

- BEng Honours Degree, Civil Engineering 1st Class.
- PhD Structural Engineering

Publications

Delpak, R., Howson, P. and Richards, V. M. (1997) "Comparisons of measured and calculated natural frequencies using a simplified analytical approach". Proceedings of the 5th International Conference on Modern Building Materials, Structures and Techniques, Vilnius, Lithuania, (6 pages).

Ellis, B. R., Moore, D. B., Delpak, R., Richards, V. M. and Luke, S. (1997) "The dynamic characteristics of a multi-storey steel-framed building". Proceedings of the 4th International Kerensky Conference on Structures in the New Millennium, Hong-Kong, 3-5 September 1997, pp.235 – 240.

Richards, V. M. (1998) "Identifying the potential failure of composite floor slabs from measured vibration response". Journal of the South Wales Institute of Engineers, Volume 16, December 1998, pp.38 – 53.

Richards, V. M. and Gillespie, N. (2010) "Heron Tower – The strategy for construction". The Proceedings of the Institution of Civil Engineers, Volume 163, Special Issue on Tall Buildings, November 2010, pp.48 – 55.

Richards, V. M. and Gillespie, N. "Heron Tower – Designing for Construction Efficiency". Evening lecture at the Institution of Structural Engineers, 11 Upper Belgrave Street, London. 21 October 2010. (Event recorded by the Institution of Structural Engineers).

Awards

1994 –Young Structural Engineer Award Winner, National, and sponsored by the SCI, ICE, the IStructE and British Steel.

1999 – Miller Prize winner, National, ICE.

2000 – Young International Structural Engineer, runner up, sponsored by ICE, IStructE.

2000 – James Forrest Medal winner, National, ICE.

2000 – The Institution of Structural Engineers branch prize (Wales), winner.

2000 – The South Wales Institute of Engineers Prize, winner.

2010 – Commendation: The Institution of Structural Engineers Awards 2010 – Heron Tower

Expert Witness Courses:
Excellence in report writing (Bond Solon)
Excellence in Written Evidence (Bond Solon)
Courtroom skills (Bond Solon)

Compliance and Expert Work

(Brackets indicate appointing party)

Streatham Ice Rink, Lambeth Council – Employed by Lambeth Council to assess compliance of contractor design with employer's requirements in light of a dispute. Dispute on design matters of ice rink building design. Streatham, London. (Claimant)

Queen Mary University, East London – Employed by Queen Mary University to assess the design of a new teaching building against employer's requirements – special conditions associated with construction over LUL buried assets. (Employer).

Lloyds Banking Group – Expert review of a case of design for extreme events / security design, for the Lloyds Banking Group, Peterborough. Details confidential. (Bank).

London Bridge Place – Appointed on behalf of Sellar Properties to assess the design of London Bridge Place building design ('baby Shard). Dispute concerning the design for major forces distributed through the building frame. (Developer).

Relay Building, London. Instruction from MemeryCrystal LLP – Review, recommend and guide the contractual agreement for the purchase of the Relay Building, Aldgate, London. Dr Richards was instructed to review the original design and to provide guidance on provisions to be included within the sale agreement taking account of the unfinished nature of the building. (Purchaser).

High Rise Buildings in Wales (2 No), Cladding dispute. Instruction from Beale & Co. – Expert: This instruction sought independent opinion on the interpretation of the Building Regulations Approved Document B relative to the recladding of two high-rise buildings in Wales. (Defendant).

Jewel Court, Birmingham – Dispute between residential development owner and a neighbouring new development concerning retaining wall design (high value works) and claims of instability to property. (Claimant).

Private Land Cricket Pavilion – High value dispute between the owners of a large well-known technology products company and a large consulting engineering practice and contractor for partial collapse of a newly constructed cricket pavilion. (Claimant).

Domestic Dwelling Expert Work (Samples)

1 Knowles Hill Crescent, London, SE13 – Dispute relating to the vertical movement and damages caused by foundation subsidence as a result of shrinkage in underlaying clay soils. (Single Joint Expert)

Flat 22, Barnbrough, Camden Street, NW11 – Dispute relating to the damages within the property caused by ground movement. (Claimant)

6 Litchborough Park, Little Baddow, Chelmsford, CM3 – Dispute relating to the cracking and damages suffered by the property as a result of building movement caused by subsidence. (Claimant)

Tomenos House, Rookery Lane, Swallowcliffe, SP3 – Dispute relating to the cracking and suspected damages of a ground bearing concrete slab. (Claimant)

38 Westmead, Windsor, SL4 – Dispute relating to the cracking of the internal and external wall as a result of suspected foundation movement. (Claimant)

33 Fuller Street, London, NW4 – Dispute over the internal and external cracking of the property as a result of suspected foundation settlement. (Claimant)

22B Lower Boston Road, Hanwell, London, W7 – Dispute relating to the external and internal cracking of the gable wall caused by foundation movement. (Single Joint Expert)

24B Benson Road, Forrest Hill, SE23 – Disputes in relation to the damages caused by vertical movement of the house due to suspected movement of the foundations. (Single Joint Expert)

16 Hampton Street, Merthyr Tydfil, CF47 – Dispute relating to the damages to the property as a result of the installation of ground anchors and a reinforced concrete base on foundations. (Allianz Insurance Plc)

241C Tufnell Park Road, London, N19 5EP – Dispute in relation to the damages caused by the movement of the rear wall. (Single Joint Expert)

38 Rotherwood Road, London SW15 – Dispute relating to building movement caused by neighbouring building work. (Claimant)

188 Markhouse Road, London, E17 – Dispute between tenant and landlord concerning building dilapidations. (Single Joint Expert)

193 Norbury Avenue, London, CR7 – Dispute between property owner and building contractor. (Claimant)

40 Stravodale Road, London, N5 – Dispute between tenant and landlord concerning dilapidations. (Single Joint Expert)

19 Wiberforce Road, London NW9 – Dispute between tenant and landlord concerning dilapidations. (Claimant)

17 Becklow Mews, London, W12 - – Dispute between tenant and landlord concerning dilapidations. (Claimant)

226 Albyn Road, London, SE8 - Dispute between tenant and landlord concerning dilapidations. (Claimant)

2 St Martins Close, London, NW1 - Dispute between tenant and landlord concerning dilapidations. (Claimant)

2A Probyn Road, SW2 - Dispute between tenant and landlord concerning dilapidations. (Claimant)

95C Woodwide, SE23 - Dispute between tenant and landlord concerning dilapidations. (Claimant)

12 Ashchurch Court, Ashchurch Road, W12 - Dispute between tenant and landlord concerning dilapidations. (Single Joint Expert)

53 Crescent Road, N22 - Dispute between tenant and landlord concerning dilapidations. (Claimant)

41 St Johns Vale, SE8 - Dispute between tenant and landlord concerning dilapidations. (Claimant)

Flat 6 Sunray Court, NW4 - Dispute between tenant and landlord concerning dilapidations. (Claimant)

Alma Court Management Ltd – Dispute concerning alleged foundation failure of a domestic dwelling-house. (Single Joint Expert)

(Numerous representations also made for domestic properties not submitted as evidence in court, or as inspections of properties subject to sale or purchase – please request a list as needed).

Domestic Dwelling Structural Engineering Work (Samples)

2 South Parade, W4 – suspected structural movement due to overloading. (Inspection and Reporting)

68 Marylands Road, London, W9 – structural movement of the front and rear elevations as a result of movement of the foundations. (Inspection and Reporting)

151 Sumatra Road, London, NW6 – wall cracking, deformation of the floor, wall and window aperture as a result of the alleged movement of the newly installed foundations. (Inspection and Reporting)

29 Victory Avenue, Waterlooville, PO8 – Foundations design. (Analysis and Reporting)

82 Chestnut Avenue, London, E7 – cracking of internal wall and ceiling surfaces as a result of suspected building movement. (Inspection and Reporting)

Project Delivery Summary (General)

PadelTech Indoor Tennis Facility – Canary Wharf

Employed by Canary Wharf Management Ltd and Canary Wharf Contractors Ltd to provide strategic and technical advice and a lead consulting role for a new indoor multi-tennis court facility at Bank Street Park, Canary Wharf. Advising on roof resign and the solutions for the engineering of the whole facility being constructed on a temporary / artificial ground plane made from scaffold. (NESTA CE).

NHS Gossom's End, Berhamsted
(Key aspects: Remodeling and structural modifications)

Structural engineering (NESTA CE) for refurbishment and remodeling of the NHS clinic at Gossom's End, Berkhamsted. Modifications to the building frame to accommodate remodeling of the internal spatial layout. Assessment of the building stability and re-definition as part of the planned changed to the internal wall layout.

Mecure Hotel, Oxford
(Key aspect: Hotel accommodation, modular construction)

Structural engineer (NESTA CE)for the design of a new hotel at Eastgate, Oxford. The hotel comprises 20 rooms and constructed within a confined site with limited access. Modular construction adopted for the hotel, using timber frame systems. Modular foundations were also derived, allowing installation of pre-fabricated elements of a scale that could be transported through the confined site entrance.

Tyndale House, Oxford
(Key aspect: Major refurbishment of office building)

Project Director (TOBIN UK) and Civil / Structural Engineer for the refurbishment of an existing 6 storey office building in Oxford. The refurbishment involved modification to the existing structure to accommodate new internal spatial requirements, the addition of a new structural steel storey at roof level and the addition of a rear facing extension at the ground floor.

The ground floor of the building was occupied as retail space throughout the construction works requiring all works to be derived with this in mind.

Shannon A380 Paint Hangar
(Key aspect: Long span structures)

Project Director (TOBIN UK) of a new aircraft hangar building for the painting of civilian aircraft up to and including the Airbus A380 'superjumbo'. The scale of the hangar to accommodate the variety of aircraft is impressive, with the engineering required accommodating height, width and operational requirements complex. TOBIN are providing all engineering disciplines for the hangar, with Mark leading the structural engineering making use of his personal experience in this field.

Construction is complete and comprises a hangar with office accommodation, large provisions for mechanical ventilation with underground air management facilitating aircraft painting operations. The hangar provides a 90m by 90, clear space, with large air ducting accommodated within the ground floor construction. There is approximately 1400 tonnes of structural steelwork forming the superstructure, requiring a high degree of expertise within the design of steel structure.

Mildenhall Hub
(Key aspect: sports and leisure facilities, blue light services)

Project Director (TOBIN UK) for the civil and structural engineering of the Mildenhall Hub development. The design is currently at the transition between RIBA stage 2 and 3 design, with TOBIN working with the Concertus led team to develop the rainwater drainage strategy and to establish base-line principles for the design of the built aspects of the project.

The project comprises a mixture of public services, combined to achieve great efficiencies and quality agencies benefiting the public. Sports facilities are also included, which combined with schools, library, police and day-care uses, amongst the whole composition, requires a diverse range of engineering solutions.

GAA Ruislip Sports Ground (2016-2017)

Project Director (TOBIN UK) of a new facility for the Gaelic Athletics Association at Ruislip, London. The facility comprises a new playing field, all associated drainage and site-wide infrastructure, and a 2000 all seated spectator stand. Mark lead all aspects of the structural engineering.

The new spectator stand has a design that offers covered seating, with changing facilities, public amenities and physiotherapy suites located within the stand.

Cardiff University – Innovation System (2015-2016)
(Key aspects: laboratories, anti-vibration performance, clean-rooms)

Programme Director (CH2M) of a new series of high performance buildings for Cardiff University. The Innovation system comprised of 4 new research-based buildings, including a new compound semi-conductor research facility. The latter comprised class 100 clean rooms, microscopy, Molecular Beam Epitaxy and shall house the Cardiff Catalyst Institute and the Institute for Compound Semi-Conductors. Mark led the engineering through qualifications and tender, winning the civil and structural engineering consultancy commission for CH2M. This commission included vibration engineering, acoustics sustainability, bridge engineering and site-wide infrastructure. The Mechanical and Electrical engineering for the compound semi-conductor research facility was also awarded to CH2M. The delivery of these services was also part of Mark's Programme Management role overseeing the technical team and assembling the engineering strategies. A key aspect of the design is the need to deliver the structural engineering accommodating extremely strict vibration requirements (VC-G), clean room environments, low-frequency noise treatment and a BREEAM excellent rating. Mark's vibration engineering knowledge was a central theme in the delivery of this project.

National Physical Laboratories
(Key aspects: quantum metrology facilities, anti-vibration performance)

Director of structural and civil engineering (CH2M) for new advanced quantum metrology laboratories (AQML) at the National Physical Laboratories (NPL), Teddington, London.

Mark led the multi-disciplinary qualifications and tender process for the AQML project, recognizing the crucial vibration engineering requirements needed to achieve the VC-G performance levels of the new facility. CH2M were successful in the bid to provide multi-discipline consultants to NPL for all disciplines required for the delivery of the facilities. The AQML comprised 2 new laboratories for advanced metrology, and was seen as the fore-runner for a larger facility also planned for the Teddington site (Bushy Park) providing a larger number of advanced metrology laboratories.

Central to the success of the facilities is the need to achieve strict vibration control to the new structures. The quantum metrology laboratories required a VC-G vibration performance environment. Mark also lead the delivery of the vibration engineering, employing Colin Gordon Associates as a sub-consultant employing their extensive experience of their knowledge of laboratory tools and corresponding VC grading. Low frequency noise was also a key matter reliant on the experience of Colin Gordon Associates.

Guys and St Thomas Cancer Research Facility

Structural engineer for the Cancer Treatment Centre at Guy's and St Thomas hospital at London Bridge. Working with Rogers Stirk Harbour and Partners delivering the design accommodating Linear Accelerators (LINACs) for the treatment of cancer. These facilities were located on suspended floors, with the building configured respecting known archeological assets that were to remain insitu. This was a project that Mark was involved with while at Arup.

Trawsfynydd Nuclear Power Station Decommissioning, and Intermediate Level Waste Store, North Wales
(Key aspect: Seismic design, vibration of structures)

Lead Structural Engineer (Arup)

Mark was Lead Structural Engineer for the structural shroud enclosing a nuclear reactor as part decommissioning. The shroud that enclosed the reactor building was carefully detailed architecturally, and required a significant structural system to support it. In addition, Mark prepared all design and analysis of the existing reactor building for the consideration of vibration engineering and seismic demand.

Heathrow Terminal 5 – Transport Interchange

Lead Engineer (Arup) Structural Engineer

Mark was the Lead Structural Engineer for the development of the design of all structures spanning the short-stay car park and the main terminal building at Heathrow Terminal 5. Again, working with RSH&P, Mark was responsible for the design delivery of link bridges, large multi- bank lift structures, escalator support structures and all enclosure structures that interfaced with the main terminal facade. In all cases, the structures were exposed to view, meeting the high requirements of RSH&P.

Mark was also adviser on vibration engineering requirements of the Heathrow Terminal 5 project as a whole. Part of this involved guiding the client group with respect to passenger comfort throughout the airport terminals relative to vibration. Mark successfully demonstrated that the vibration criteria called for within the terminal 5 brief was too onerous considered against typical vibration tolerance levels, producing significant cost savings in the structural engineering provisions.

DARA Military Aircraft Maintenance Facility – Cardiff, Wales
(Key aspect: Long span structures)

Lead Structural Engineer (Arup)

Mark was Lead Structural Engineer for a new facility for the maintenance of military aircraft in Cardiff. At the centre of the facility is a three-bay hanger arrangement, each measuring 200m long and 70 wide (clear span). The facility also included 50,000 sq.m of support buildings as well as paint facilities and ground-run-pen structures.

Siemens Semi-conductor plant, Porto, Portugal
(Key aspect: vibration of structures)

Scheme Design Structural Engineer (Arup)

Structural design of a new semi-conductor plant for Siemens AG, Germany. The project comprised of a series of steel framed buildings enveloping heavy reinforced concrete floors supporting semi-conductor production plant. The design required knowledge of dynamic behaviour to restrict movement of suspended floors within the performance needed by the semi-conductor plant. Role: Lead Structural Engineer and dynamic analysis.

Baku Gymnastics Arena – Azerbaijan
(Key aspect: long span structures)

Project Director (Robert Bird) for structural and civil engineer.

Responsible for the delivery of the structural engineering for a 6000 seat gymnastics arena in Baku, Azerbaijan.

The location of the new steel framed arena structure is within a region of high seismicity. The structural engineering was prepared following principles of ductile behaviour to accommodate the high seismic demand. In addition, the architectural quality requirements were high, exposing the seismic resisting elements as part of the exposed architecture.

This project was carried out with architects Broadway Malyan and Pattern Sports Architects. The contractor for construction was Mace.

Accra Church, Accra, West Africa

Lead Structural Engineer (Arup)

Lead Structural Engineer of a Mormon church located in Accra. The church was constructed from a reinforced concrete frame, heavily clad with high quality stone finishes. Mark was responsible for the delivery of the structural design including the design to seismic conditions.

High-Rise Projects

250 City Road – London

Project Director (CH2M) responsible for the delivery the structural and civil engineering of a £300M residential lead development with Berkeley Homes Plc.

The project comprises two tall towers, several lower level residential blocks, a hotel and data centre all sharing a common basement. The development is within meters of the Northern Line that travels below City Road.

Greenwich Peninsula – London

Project Director (CH2M) responsible for the delivery of structural and civil engineering of two tall tower residential plots at the Greenwich Peninsula development site.

The planned buildings are located on the eastern riverside of the peninsula, within area of known residential ground contaminations.

Nova Victora – London

Project Director (Robert Bird) for structural and civil engineering.

Responsible for the delivery of the structural engineering for the Victoria Circle Project, Victoria, London. Project value estimate £400M, comprising the demolition of 10 existing buildings and the construction of a new 4 level basement (100m by 150m on plan) and two new office buildings for Land Securities. The project has many complex constraints, including LUL, CrossRail and primary Thames Water sewers.

Heron Tower – City of London

Multi-Disciplinary Project Leader, and Lead Structural Engineer (Arup)

Project Manager and Lead Structural Engineer for a 47 storey tall building (three level basement) in the City of London (Arup). Construction of the project started in the latter part of 2007, and was completed in early 2011. Construction involves a 'top-down' methodology for the basement, which takes place coincidentally with the main steel frame and floor assembly. Mark also had overall responsibility for the delivery of Arup specialist services, including Fire Engineering, Wind Engineering, Acoustics, Civil Engineering and IT / Comms. At completion, Heron commissions Arup via Mark to oversee the compliance of tenant fit-out structural designs, fire and security issues against the base build construction for Heron International.

Parc 1 Project – Seoul, Korea

Lead Engineer (Arup) – Stability Systems

Mark was responsible for the design of the stability systems for two tall buildings in Seoul, Korea. The buildings comprised of two similar towers of 350m and 250m in height, stabilized by a combined system of concrete central core and outer perimeter tube in steel. Mark had the responsibility for the stability design carrying it through to the delivery of the Design Development stage (RIBA Stage E equivalent). The stability system derived has a high efficiency, with a strategy that combined the central concrete core and outer steel frame to deliver logic to the building that the architect chose to articulate within the appearance of the buildings. In addition, Mark prepared the analytical work for the design of a 7 level basement, considering aspects associated with the long term properties of concrete. The architect is Rogers Stirk Harbour and Partners (RSH&P), and Mark has had many opportunities to work closely with them over the years.

Lotte Tower – Korea

Lead Engineer (Arup)– Stability Systems

Responsible for the analysis and design (for competition) of the outrigger stability elements for a 550m tall building in Seoul, Korea. The competition entry was in conjunction with Fosters and Partners. The competition entry was not the final winner, but was highly commended by the client.

1988 – 1993 / 1996 South Glamorgan County Council, Highway Structures Department – Bridge inspector: Inspection and maintenance of the highway structures within the ownership of the Council.

Long Term Support – Infrastructure Owners (current)

Canary Wharf Group Plc

Retained by Canary Wharf Group Plc to support all infrastructure works of the existing facilities at Canary Wharf. Services provided are varied and include; highway engineering, foundation design, engineering of public arts and events, mega-crane strategies and engineering substantiations, retail compliance (client side)

National Physical Laboratory

Retained by the National Physical Laboratory, Teddington, to support all infrastructure works of the existing facilities at the site. Services provides are varied and include; laboratory remodeling and structural engineering works resulting from change of laboratory use, load assessment of existing laboratories and facilities, contractor compliance (client side), advising on implications of new specialist equipment against structural engineering provisions.