

### Personal details

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| Nationality      | British  |
| Profession       | Civil engineer                                     |
| Specialisation   | Concrete technology, coatings and asset management |
| Position in Firm | Director   |
| Year of Birth    | 1955   |
| Years with Firm  | 2  |

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### Legal Case Expertise

Over 38 years of industry experience in the field of concrete construction technology, inspection, testing, maintenance and repair. A Chartered Engineer recognised at the highest level by the Engineering Institutions and founder-director of Robery Forensic Engineering Limited. Formerly a Technical Director with CH2M HILL and Director with AECOM.

Accredited expert in failure investigation & forensic engineering, serving as an expert witness on concrete and construction issues, experienced in Technology and Construction Court, Arbitration, Mediation, Adjudication & Public Inquiry. Author of over 80 papers in the field of deterioration and repair. Fields of expertise include:

- appearance of structures and visual assessment
  - basement concrete construction and waterproofing
  - brickwork, stonework, masonry, cast stone and mortar
  - car park specification, construction and maintenance
  - coatings for the protection and repair of concrete
  - concrete compliance, specification and quality control
  - concrete placing, bleed and shrinkage cracking
  - diaphragm wall construction
  - disaster investigations, including fire, bomb and water damage
  - external hardstandings and freeze/thaw resistance
  - general forensic examination of construction failures
  - industrial warehouse flooring, screeds and toppings
  - liquid-retaining structures, water stops and leak sealing
  - no-fines and other concrete housing
  - paints, coatings and membranes for concrete
  - performance of air entraining and workability admixtures
  - piled concrete construction
  - sprayed concrete and concrete repair systems
  - steel, carbon and synthetic fibre-reinforcement
  - test methods for concrete and data interpretation
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### Appearances as an Expert in Court/ADR

1983 – Arbitration, Barnstable - relating to defective concrete repair works carried out to a reinforced concrete coastal pier containing high chloride ion levels.

1997 - OR Court, London - dispute involving design and subsequent collapse of ceiling sub-frame assembly (settled at the door of the Court).

1997 – Arbitration, London - relating to the surface finish of cast insitu concrete linings to a road tunnel and adequacy of paint systems applied to the walls.

1997 - OR Court, London - cause and extent of surface spalling of concrete ground floor slabs in a cold store, caused by blistering of the concrete surface.

1999 – Mediation, London - structural assessment of an eleven-storey hotel, including interpretation of NDT test data and repair options, and usability of the hotel during the works.

2003 – Mediation, London - origin and extent of defects in a car park, caused by the presence of chloride salts cast into the concrete.

2003 – Public Inquiry, Northampton – defence to an appeal against the Council's refusal to demolish a concrete lift testing tower on the grounds of the concrete being badly deteriorated.

2006 – Mediation, London – concrete build and quality issues relating to the construction of a new national sports stadium, involving large pour foundations, slipformed concrete and the regularity of suspended floor slabs.

2007 – Mediation, London – quality and consistency in the appearance of cast stone concrete blocks and acceptable levels of damage.

2007 – Mediation, London – selection, design and construction of an industrial ground floor slab to a warehouse that used roller-compacted concrete with a high strength wearing screed.

2007 – Adjudication, London – payment dispute arising from defective floor construction laid in a sports stadium and associated remedial works.

2009 – Mediation, Dublin – standard of design and construction for a concrete domestic property that is subject to rain and seawater penetration.

2010 – Mediation, London – standard of construction used to build deep man access chambers at a holiday site.

2010 – International Arbitration, Geneva – standard of concrete construction (floors, walls) used in a new multi-functional development in Moscow.

2011 – International Arbitration, London – alleged defects in the quality of concrete construction (diaphragm walls, floor slabs, screeds and cracking) in a basement car park in Moscow.

2012 – Dubai International Arbitration Centre, Dubai – claim for non-payment set against defective construction works relating to 23 car park basements in Dubai.

2012 – Mediation, London – design and construction of a steel fibre reinforced concrete industrial ground floor.

2013 – TCC, Birmingham – appearance and standard of stonework construction in a Cotswold development.

2015 – International Arbitration, London – extent of defects in coatings applied to concrete tanks in a sewage treatment plant in Qatar.

2015 – Mediation, Dublin – specification and performance of concrete for wind turbine bases.

2015 – Mediation, London – design and construction of concrete warehouse floors at dock levellers.

2016 – Mediation, Birmingham – construction of waterproof basements to a new resort development.

2016 – Mediation, Reading – strength of concrete supplied for a basement project.

2016 – Arbitrations, Oman – construction of concrete works to a new airport.

2016 – Adjudication, Edinburgh – construction standards for a new-build warehouse facility, using steel-fibre reinforced floors and external hardstandings.

2017 – Mediation, London – design and construction of pile-supported concrete warehouse floors and external hardstandings.

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**Education and professional status**

BSc (Hons), Civil Engineering, The University of Leeds (1977)  
 PhD, Concrete Technology, The University of Leeds (1981)  
 Chartered Engineer, (1987)  
 Fellow, Royal Academy of Engineering (2012)  
 Fellow, Institution of Civil Engineers (2011)  
 Fellow, The Concrete Society (2011)  
 Member, American Concrete Institute (1988)  
 Member, UK Register of Expert Witnesses  
 Member, Institute of Concrete Technology  
 Member, Institute of Asset Management  
 Member, RILEM

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**Employment record**

2015 – present                      Founder-director, Robery Forensic Engineering Ltd  
 2004 – 2015                          Technical Director, CH2M HILL (formerly Halcrow Group Limited)  
 1995 – 2004                          Director, AECOM (formerly Guy Maunsell & Partners)  
 1990 – 1995                          Technical Director, Harry Stanger Limited (latterly Tarmac Group)  
 1982 – 1990                          Senior Engineer, Taylor Woodrow Construction

**Current appointments**

2016 – present                      ICE Publishing, Editorial Panel, Forensic Engineering Journal  
 Appointed to the Panel, responsible for acceptance/rejection decisions on papers submitted for peer review, commenting on recent issues of the journal, recommending subjects for technical papers and providing general advice to the Chair of the Panel.

2015 – present                      Robery Forensic Engineering Limited, Director  
 Director and founder of a bespoke consultancy practice offering expert advice to the construction sector on troubleshooting construction defects and investigations of failures in service, including advice on remediation.

2011 – to date                      University of Birmingham, Visiting Professor  
 Appointed as Royal Academy of Engineering Visiting Professor in Forensic Engineering to the School of Civil Engineering (2015-2018). Chair of the Industrial Advisory Board, reporting to the Head of School. Teaching responsibilities include 4<sup>th</sup> year MEng and MSc modules on concrete durability, specification, deterioration and maintenance of concrete buildings and bridges.

2010 – present                      Institution of Civil Engineers, Structures Expert Panel  
 Member and deputy chair to the ICE's Standing Panel on building structures

1995 - present                      University of Leeds, Visiting Professor  
 Member and former chair of the School of Civil Engineering Industrial Advisory Committee. Teaching on the MEng 4<sup>th</sup> year civil engineering

course on Deterioration, maintenance and repair of concrete structures.

1989 – present

British Standards Institution, Committee Delegate  
Served on BSI committees for concrete protection and repair, sprayed concrete, geopolymer concrete and epoxy powder coated reinforcement. Currently chairman elect for B/517/8, mirror committee to CEN TC104/SC8 on concrete repair and protection.

#### Current Major Expert Witness Cases

2016 – present

UK: Deterioration of external façade  
Investigation of rain penetration into a large multi-use development, resulting in saturation of screeds in retail areas, along with cracking and deterioration of rendered and painted façade. Work includes the planning of investigations and testing, inspection of the construction and recommended approaches to repair.  
Solicitors: Eversheds Sutherland LLP

2015 – present

Oman: Build quality of reinforced concrete construction  
Investigation of the standards of construction for a new airport terminal and enabling works, including drains and culverts. Work includes attending site to inspect the quality, reviewing the construction records and NCRs and advising on the methods of reinstating the works.  
Solicitors: White & Case LLP

2015 – present

UK: Deterioration of concrete hardstandings  
Investigation into surface scaling of an external concrete hardstanding in Scotland, built using structural synthetic fibre reinforcement. Following an inspection, coring programme and a testing regime to quantify fibre distribution, established the cause of the surface deterioration.  
Solicitors: CMS-Cameron McKenna LLP

2015 – present

UK: Failure of waterproofing systems  
Advice on the causes of basement waterproofing failures during construction at a major hotel complex. Work entailed reviewing construction specification and correspondence, inspecting the issues and identifying the principal causes.  
Solicitors: CMS-Cameron McKenna LLP

2014 – present

UK: Defects in warehouse floor  
Investigation into the causes of cracking and curling around dock levellers in a ground-supported supported fabric reinforced concrete industrial ground floor. Scope includes a review of construction standards and identifying causation.  
Solicitor: Mills & Reeve LLP

PROJECT EXPERIENCE RECORD

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|--------------------------------|--|
| <p>2004-2015<br/>2008-2012</p> | <p>HALCROW GROUP LTD/CH2M HILL<br/>UK: A184 White Mare Pool interchange, project director<br/>Project to use impressed current cathodic protection system and patch repairs to provide a 50 year life extension to the bridge piers of the west and east bridges of the interchange. Project for the Area 14 MAC team in Darlington. Value £50k.<br/>Client: A-One</p>   |
| <p>2007-2010</p>               | <p>UK: Coating Protection of Rail Assets, project director<br/>Project to revise and update Client specifications to current standards for the use of protective treatments for railway trackside infrastructure, including steel and concrete assets.<br/>Client: Network Rail</p>  |
| <p>1995-2004</p>               | <p>Australia: Durability specifications for tunnels, expert<br/>Carried out a durability assessment review (third party check), including a review of materials suitability and specification, for two new-build concrete structures:<br/>- Perth Deep Tunnel Sewer System<br/>- Gold Coast Desalination plant<br/>Client: BRC</p>   |
| <p>2005-2006</p>               | <p>UK: Road Asset Management Plan, expert advisor<br/>Assisted client in preparing a brief for the preparation of an asset management plan that encompassed bridge, pavement and other highway assets. Scope included data collection, asset valuation and bridge management systems advice.<br/>Client: City of Edinburgh Council</p>   |
| <p>2004-2006</p>               | <p>UK: Investigation of blast effects, project director<br/>Technical assessment of the condition of structures exposed to blast containment effects, including assessment of the structural capacity of the units, investigating the extent of defects and advising on monitoring and remedial works.<br/>Client: AWE</p>   |
| <p>1995-2004<br/>1997-2004</p> | <p>MAUNSELL GROUP/AECOM/FABERMAUNSELL<br/>UK: Birmingham Office, business unit director<br/>Director for Engineering Services in the South Region of the Transportation Division, responsible for the full technical and commercial business function of a £2.5m pa turnover business, formerly Board Director of Maunsell Europe (1997-2000).<br/>Also Board Director of a joint venture company, Remco Systems Ltd developing cathodic protection control and monitoring systems for concrete bridges and other structures, including bridge strike systems (1997-2002).</p> |
| <p>2002-2004</p>               | <p>UK: BCV Asset Inspections, project director<br/>Led two annual programmes of asset inspections to record the location and general condition on the Bakerloo, Central and Victoria Lines, for both above and below ground assets. Teams worked during possession times using hand-held data capture devices to record assets and log photographs, producing an automated one-page report to the client's specification.<br/>Value £250k.</p>   |

Client: MetroNet BCV

- 2002-2004  
Greece: Rion - AntiRion Crossing, technical specialist  
As part of its role as independent supervision engineer, commissioned to undertake a durability assessment of the concrete specification for the new bridge to ensure durable construction in the harsh marine environment. Scope also included advice on inspection and quality control.  
Client: Greek State General Secretariat of Public Works
- 2000-2004  
UK: MAC & MA Tenders, bid director & technical specialist  
Researched, priced and tendered bids to the Highways Agency for several Managing Agent (MA) and Managing Agent Contractor (MAC) commissions, with various partners, including Owen Williams and Scetauroute (trading as Northlink). Led FaberMaunsell's tender support as part of the Integrated Highway Services (IHS) bid team for the Enhanced MAC for Area 2.  
Client: Highways Agency / IHS
- 1999-2001  
UK: Bridge Strike Detection System, project director  
Led the negotiation with the client to deliver experimental bridge strike detection systems on two bridges on the Central and East London lines. The system specification included force impact and displacement detection, coupled to real-time video recording to identify the type of road vehicle that had caused the impact.  
Client: London Underground Ltd
- 1998-2002  
Singapore: Durability specifications, specialist advisor  
Provided durability assessment reports and technical advice for D&B contractor client, relating to new-build concrete structures. Work included the assessment of ground conditions, in particular the effects of sulphur oxidising bacteria in the clay soils and modelling chloride diffusion into the concrete and the specification of systems to protect the concrete from external and internal attack. Specifications were developed for the concrete and surface protection systems. Projects included:  
- Mass Rapid Transit extension, Design & Build Contract 708, passing underneath the Singapore River  
- Deep Tunnel Sewer System (tender design)  
Client: Nishimatsu Corporation Joint Venture – value £100k
- 1997-1999  
Hong Kong: Durability specifications, specialist advisor  
Provided durability assessment reports and technical advice for new-build bridges and other concrete structures forming the Kowloon-Canton Railway (KCR) extension. Work included a period of data-gathering in Hong Kong to assess environmental exposure, including ground conditions and salt deposition in the coastal areas.  
Client: KCR Corporation / various
- 1997  
Hong Kong: Kap Shui Mun Bridge, Specialist advice  
Invited to assist with the troubleshooting of construction problems on the Kap Shui Mun bridge, designed by Maunsell. Problems included areas of low cover and poor grout flow under the high ambient temperatures and high winds in Hong Kong.  
Client: MCAL
- 1997-1998  
Hong Kong: Specialist Advice  
Various projects carried out in Hong Kong include: durability audit for the Route 10 highways contract; maintenance strategy for the concrete

catchwaters; and drafting the "*Model Specification for Protective Coatings for Concrete*" for the Civil Engineering Department of the Hong Kong Government.  
Client: Various

- 1997-1999  
Hong Kong: Durability assessments, specialist advisor  
Provided technical support on tender submissions in Hong Kong including:
- tender support in Hong Kong for the Tsing Ma Control area, supporting Kvaerner Cleveland Bridge (KCB), involving an assessment of the durability and inspection requirements of the Tsing Ma and Kap Shui Mun bridges, the latter designed by Maunsell;
  - tender for the inspection of the Cross Harbour tunnel;
  - tender for the inspection of bridges and tunnels in Guangzhou.
- Client: KCB / MCAL
- 1998-2004  
UK: Superagency Area Commissions, project director  
Developed supply chain relationships with MA & MAC operators to deliver bridge assessment and repair services to Highway Agency Trunk Road Areas 5, 9, 12 and 13. Advised on the technical aspects of the repair and maintenance of the concrete bridges and other concrete assets. Work included advice on the risk and reliability analysis of the Midland Links viaducts and the application of cathodic protection systems to the structures. Turnover typically £0.2-£0.5m per year.  
Client: Mouchel and AmeyMouchel
- 1997-2003  
UK: Client Representative - A19 DBFO, project director  
Provided technical advice on the effect of electrochemical chloride extraction systems on the A19 Tees Viaduct bridge structures. Work included planning & executing a test programme to sample a test block to assess the risk of alkali-silica reaction to the concrete.  
Client: Highways Agency
- 1997-2002  
UK: Highways Agency Strategy Support, project director  
Responsible for pricing, technical overview and client liaison on the following HA strategic projects won by Maunsell in relation to bridge performance:
- Optimum Maintenance Strategies for Highway Structures.
  - Whole Life Costing Standard.
  - Bridge Maintenance Cost Review.
  - Serviceable Life of Highway Structures.
  - Bridge Inspection Manual.
  - Bid Assessment and Prioritisation System (BAPS).
  - Bridge Reliability Framework Study.
  - Half-joint reliability.
- Client: Highways Agency
- 1997-2002  
UK: Area 12 MA Commission Support, project director  
Overlooked the technical support provided to the HA as checker of Atkins work on the risk and reliability strategy for the Midland Links viaducts. As well as reliability analysis and deterioration modelling support, the scope of work also included structural analysis and finite element checking of the critical steel box girders and deteriorated concrete cross-beams. Turnover typically £0.2 – £0.5m  
Client: Atkins/Highways Agency

- 1995-1999  
Denmark: Durability specification, specialist advisor  
Provided tender stage durability assessment proposals to meet Client specifications for the Copenhagen Metro, to address specifically the ingress of chloride ions into the concrete over the 120 year design life of the system, sourced from brackish groundwater. Advice also included measures to combat thermal cracking on the concrete station walls. Following award of the project, continued to advise the client on meeting the specification, including the installation of ground anodes to protect the reinforcement in the structure from corrosion.  
Client: Comet Construction Group
- 1990-1995  
1990-1995  
HARRY STANGER/TBV STANGER  
UK: Various Investigations, project manager  
Head of Engineering Services, responsible for Investigations and Components Testing business at the Elstree Head Office, specialising in concrete related problems including:
- extent and effect of deleterious materials HAC & CaCl<sub>2</sub>
  - defects in concrete beams, floors and slabs
  - bridge deck and building waterproof membrane failures
  - failure of paint systems for steel and concrete
  - discolouration of precast concrete panels and cast stone
  - defects in masonry and brick arches
  - failures in GRC formwork
  - collapse of ceiling support sub-grid systems
  - failure of glazing systems due to sulphide inclusions
  - testing and approvals of concrete repair products
- Client: Various
- 1981-1990  
1988-1990  
TAYLOR WOODROW GROUP/TAYWOOD ENGINEERING  
UK: Technical Service Group, senior engineer  
Responsible for finding practical solutions to construction-related problems for Taylor Woodrow. Investigations covered a wide range of construction defects, commonly relating to concrete mix design, strength and performance, covering screeds, toppings, cast stone, GRC and ground-bearing floor slabs in particular.
- 1989  
Hong Kong: CED Lecture, Technical Specialist  
Gave the Civil Engineering Department (CED) Annual Concrete Lecture in 1989, covering the topics of investigation, diagnosis, maintenance, repair and protection of concrete bridges, tunnels and other assets in Hong Kong.  
Client: CED, Hong Kong
- 1987-1990  
Malaysia: Hospital Refurbishment, technical specialist  
Technically responsible for investigation work on a hospital in Johor Bahru, to assess the extent of carbonation and reinforcement corrosion. The project required investigation and testing of the structure to establish the causes and rates of deterioration in the Malaysian climate. From the survey results, options for repair were developed.  
Client: Johor Ministry of Public Works
- 1986-1988  
Singapore: MRT Construction, technical specialist  
Appointed to assist the Mass Rapid Transit Corporation in Singapore to evaluate the aggressiveness of bacterially-active soils and chloride-containing groundwater towards precast concrete lining segments for bored tunnels. Based in Singapore, work included:
- preparing technical specifications for protective paint systems;



- laboratory tests to assess suitability of short listed tar-epoxy resin coating systems;
- supervision of paint application trials.

Recommendations were also given on general concrete durability and methods to control thermal cracking in large insitu concrete pours used in the stations.

Client: Mass Rapid Transit Corporation

1986-1988

Hong Kong: Low Cost Housing, technical specialist

During visits to Hong Kong, met with the HK Housing Authority (HKHA) to discuss durability issues, in particular the prevention of chloride-induced reinforcement corrosion in the low cost housing blocks and their effective repair.

Client: HKHA

#### RECENTLY COMPLETED LEGAL CASES

2015 – present

UK: Ready-mixed concrete supply

Dispute about the quality of ready-mixed concrete supplied to a bridge construction project in Scotland. Following an investigation of the allegations that the concrete mix was deficient, alternative explanations have been tabled to explain the variable strength test results.

Solicitors: Thorntons LLP

2015 – 2016

Ireland: Cracking of wind turbine bases

Investigation to Irish Law into allegations that low strength concrete was causative of cracking to concrete turbine bases, including review of over 200 core strength test measurements and analysis.

Solicitors: Tughans LLP

2013 – 2016

UK: Airfield runway construction using PQ concrete

Investigation into the causes of low strength concrete in external concrete paving. Concrete mixes containing entrained air produced low strength results from cube and core samples, despite having satisfactory entrained air contents measured at site.

Solicitor: Thrings Solicitors LLP

2015

UK: Damage to water conveyance pipes

Investigation into allegations that deterioration of asbestos cement water pressure pipes was causative of pipe bursts in the network. Testing included petrographic examination for deterioration.

Solicitors: Internal Water Company Legal Dept.

2015

UK: Surface blemishes to precast concrete panels

Advice on the causes, extent and significance of surface blemishes to precast concrete panels, where the aggregate had been contaminated with small quantities of deleterious materials.

Solicitors: Taylor Wessing LLP

- 2014 – 2015  
Qatar: Performance of linings to treatment works  
Investigation into the preparation and application of liquid-applied protective coating systems to the tanks of a new sewage treatment works in Qatar. Scope includes site visits to inspect and test the different coating systems used at the plant, to comment on deterioration processes and to recommend methods for repair.  
Solicitors: Bond Dickinson LLP & Mayer Brown International LLP
- 2014 – 2015  
UK: Pile supported warehouse floor  
Investigation into the causes of settlement or heave beneath a pile-supported steel-fibre reinforced concrete industrial ground floor. Scope includes a review of geotechnical matters as well as specification of the concrete used in the piles and slabs and the method of connecting same.  
Solicitor: Browne Jacobson LLP
- 2014  
UK: Cover requirements in marine exposure  
Advice on the durability requirements for concrete steps specified for a harbour project, where marine exposure conditions exist. Instructions include offering a defence to an adjudication claim being brought by the main contractor for the project.  
Solicitor: BLM LLP
- 2012 - 2014  
UK: Port construction using diaphragm walling  
Investigation of the causes, extent and suitable methods of repairing surface features in diaphragm walling cast under bentonite slurry. Scope includes assessing the design principles and evaluating the significance of low cover areas caused by bleed of retarded concrete, matting and poor concrete flow.  
Solicitor: DLA Piper LLP
- 2012 – 2013  
UK: Slipformed concrete building core  
Advice on the causes of defects in a slipformed concrete building core, where wall alignment, verticality and concrete compaction issues were detected. Work included an overview of the construction process, including slipform assembly and operation, and identifying the possible causes of the defects in the construction. The case settled on exchange of expert reports identifying workmanship and supervision issues were causative.  
Solicitor: Hannah and Mould LLP
- 2012 – 2013  
UK: Stonework build standards  
Advice on the standards of workmanship relating to stone masonry, in response to allegations of defective works at a domestic property complex. Work included an assessment of the standards to be used for examining stonework and the natural variations in appearance caused by the use of natural and irregularly-shaped materials. Case heard in the Birmingham Technology and Construction Court.  
Solicitor: V. Pack Solicitors
- 2012  
UK: Precast concrete and flooring issues  
Advice on the causes of defects in an external processing works, including spalling and deterioration in precast concrete wall units and cracking and deterioration of joints to the concrete hardstanding.  
Solicitor: Flint Bishop LLP

- 2011 – 2013  
UK: Review of engineering advice  
Opinion on the adequacy of advice given by a structural engineer on the causes of defects in a concrete warehouse floor. Work included a review of the information made available to the expert and review of the opinions reached in connection with the defects in the slab and the remedial works proposed.  
Solicitor: RPC LLP
- 2011 – 2014  
Dubai: Advice on concrete construction  
Investigation of mixed use commercial development, including basement car parks built by “cut and cover” method. Work included site visits to examine and record defects, where cracking of the concrete and failure of the waterproofing had occurred. The investigations were followed by preparation of expert evidence and joint expert agreements.  
Solicitors: Clyde & Co LLP
- 2010 - 2014  
UK: Failure Investigation of ground floor slabs  
Investigation and advice on ground-bearing slabs, both internal floors and external hardstanding. Advice includes identifying the cause of structural cracking adjacent to movement joints in the steel-fibre reinforced concrete warehouse floor and methods for repairing the defects in the floor, including works specifications.  
Solicitor: DAC Beachcroft LLP
- 2010 – 2012  
UK: Quality of concrete industrial floor  
Investigation of the cause and extent of cracking in the aisles of a ground-supported industrial warehouse slab of 72,000m<sup>2</sup> plan area, built to TR34 standard using steel fibre reinforced concrete. The investigation included core sampling, crack surveys and the testing of cracks and joints to assess load transfer capacity using falling weight deflectometer, followed by preparation of an expert report and providing technical opinion at the Mediation.  
Solicitors: Mills & Reeve LLP
- 2006 – 2012  
UK: Cracking to ground floor slab  
Advice on the cause of severe cracking in the floor of a conventional warehouse floor, designed and built to TR34. Work included sampling and testing of the concrete, review of design drawings, specification of remedial works and producing an expert report. The case settled following expert meetings and Mediation.  
Solicitor: Slade Legal LLP
- 2010 – 2011  
Russia: Advice on concrete construction  
Investigation of a basement car park with concrete screed finish built by semi top down method and including a diaphragm wall perimeter. Work included site visits to Moscow to carry out testing, exposures and recording of alleged defects, followed by preparation of expert evidence and joint agreements. The investigation concerned screeds, diaphragm wall leakage, fire damaged concrete and through-slab water leaks in the car park. Matters were heard before an International Arbitration Tribunal in London.  
Solicitors: Dechert LLP

- 2010 – 2011  
UK: Defects in concrete hardstanding  
Investigation to Scottish Law of the standards of design, construction and workmanship to a 37,000m<sup>2</sup> area of concrete hardstanding. Scope included inspection and assessment of construction and test records and planning additional investigations to identify the quality and thickness of the concrete slab construction and testing of the load transfer capacity of the cracks and joints using falling weight deflectometer. The case settled successfully following Mediation.  
Solicitors: Maclay Murray & Spens LLP
- 2009 – 2010  
Russia: Advice on concrete workmanship and finish  
Investigation of concrete finishes in the basement of a part-built multi-functional development. The basement was built using “top down” construction with a diaphragm wall perimeter and tied-in slabs. The contract included Russian, BS, EN & ASTM standards. Work included a review of contract and specification and examining contemporaneous photograph and video records to show diaphragm wall construction quality and assess water and frost damage. Matters were heard before an International Arbitration Tribunal sitting in Geneva.  
Solicitors: Shearman & Sterling LLP
- 2009 – 2010  
UK: Defects in concrete sewerage system  
Investigation into alleged defects in a foul sewer system, arising from the use of porous or weak concrete for construction of manholes and other components. Scope included a review of the specification and client requirements, inspection of the system, recommendations for further testing and production of an expert report into the findings. The case settled at a Mediation hearing where the experts were integral in setting out and agreeing the technical matters.  
Solicitors: DJM Law LLP
- 2009 – 2011  
Ireland: Advice on concrete workmanship issues  
Investigation into the quality of concrete poured to construct wind turbine bases at a wind farm. Scope included assessing 2m long core samples through the wind turbine bases to inspect the concrete for voidage and compaction problems and identify if local crushing of the concrete was occurring. The work also required a review of the concrete batching, delivery, cube testing and core strength test data for compliance with the specification.  
Solicitors: HBJ Gateley Wareing LLP
- 2009 – 2010  
UK: Advice on cracking in a ground-bearing floor slab  
Initial inspection and assessment of a concrete industrial ground floor slab built to TR34, which had cracked and allegedly required replacement. Scope included review of existing reports, inspection of the works and advising the client as to the substance of the owner’s claim. The case settled successfully following Mediation.  
Solicitors: Browne Jacobson LLP
- 2009  
UK: Coating system to concrete floor, single joint expert  
Investigation into the cause of premature failure of a concrete floor paint in a steel treatment works, applied following a fire and water damage. The investigation reviewed the selection process for the paint protection system, including its acid and abrasion resistance. Work included the investigation of the problem and producing a single joint expert report to resolve the dispute.

Solicitors: Edwin Coe/Lane & Co LLP

2009 – 2010

Ireland: Investigation of basement leakage  
Investigation into the causes of water leakage into the basements of 17 newly constructed dwellings, built using a precast panel construction system. The scope included a review of the original design and works specifications and checks on compliance with current design recommendations for basements and jointing. An Expert Report was produced, though no proceedings started.  
Solicitor: Matheson Ormsby Prentice LLP

2008

Qatar: Failure Investigation of collapsed roof  
Investigation on behalf of Loss Adjusters to determine the causes of failure to a warehouse roof above a steel melt shop. Work included the planning of investigations and the selection of samples for testing and advising on causation.  
Client: Cunningham Lindsay Loss Adjusters

2008 - 2010

Ireland: Failure of waterproofing works  
Investigation into the causes of water penetration through basement retaining walls to a coastal domestic property. Work includes selection and testing of concrete to determine the effectiveness of waterproofing materials, production of expert reports for trial to Irish law, recommending remedial measures and attending Mediation.  
Solicitor: Matheson Ormsby Prentice LLP

2007 - 2010

UK: Performance of concrete bund walls  
Investigation in a criminal case arising from contamination of ground and groundwater and the performance of concrete bund walls. Work included the selection of areas of concrete for sampling and testing and the interpretation of a petrographic examination to determine concrete performance in a fire, and production of expert reports, leading to successful prosecutions.  
Solicitor: Bond Pearce LLP

2007-2009

UK: Severe Cracking to Ground Floor Slabs  
Investigation of the cause of severe cracking in the aisles to a newly laid concrete floor, built as an unbonded concrete overslab, intended to provide a free movement area warehouse to TR34 standard. Work included planning concrete coring programmes to assess the thickness of the overslab and preparation of an expert report that included recommendations for remedial works. The case settled successfully following Mediation.  
Solicitor: Taylor Wessing LLP

2007 – 2010

UK: Investigation of No-fines Concrete Housing  
Advice in a tenancy dispute relation to the life expectancy of multi-storey housing blocks built using no fines concrete in the 1960s. Work included investigation of the condition of the blocks, estimates of future life, specification for remedial works and supervision of the works to provide assurance of longevity to the tenants and owners. The Expert advice avoided legal proceedings.  
Solicitor: Dickinson Dees LLP

- 2007  
UK: Investigation of the quality of Cast Stone Units  
Advice in a dispute regarding the specification and supply of cast stone units for an office complex, advising on the testing carried out and compliance with the original order. Matters to be addressed included acceptable levels of damage, handling and use on site by sub-contractors. The matter was resolved following Mediation.  
Solicitor: Hugh James LLP
- 2006-2008  
UK: Cracking to Ground Floor Slabs  
Investigation of the cause of significant cracking and break-up to newly laid concrete floor in free and defined movement areas in a warehouse. The floor comprised a roller-compacted base and heavy-duty screed wearing course, which was developing defects in service. Investigations included a review of the methods and materials uses and an examination of the level and flatness compliance. The matter was resolved following Mediation.  
Solicitor: SLS LLP
- 2006-2007  
UK: Cracking to Ground Floor Slabs, technical specialist  
Investigation of the cause of significant cracking to a newly-laid concrete floor to TR34 incorporating steel-fibre reinforcement. I showed that the cracks were normal for this type of floor and should be monitored and rectified once movement had ceased. Recommendations were accepted before action commenced.  
Client: Chalcroft Construction Ltd
- 2006  
UK: Advice on Cement Burn claim  
Single joint expert instruction to assess the claim and defence relating to the supply of concrete to a project that caused alkali burns to an operative, relating to the mix being too strong.  
Solicitors: Awdry, Bailey & Douglas LLP
- 2005-2008  
UK: Investigation of Stadium Construction Defects  
Advice construction-related problems, including the placing of superplasticised and self-compacting concrete, adequacy of slipforming works, flatness and level of suspended floors, concrete durability & fire resistance & remedial works specifications for a national stadium. The case included Mediation and Adjudication procedures before settling.  
Solicitor: Nabarro LLP
- 2005  
UK: Failure Investigation of Floor Topping, technical specialist  
Appointment to identify the cause of cracking of a topping applied to an existing industrial ground floor. Work included planning the test programme, analysing results and preparing revised specifications for materials and methods to rectify the problems. Case settled before action.  
Client: UK Maintenance Services (UK) Ltd
- 2004-2008  
UK: Failure Investigation of Ground Floor Slabs  
Investigation and advice on ground-bearing slabs, both internal floors and external hardstanding. Advice includes identifying the cause of structural cracking adjacent to movement joints in the steel-fibre reinforced concrete warehouse floor and methods for repairing the defects in the floor, including works specifications.  
Solicitor: Olswang LLP

- 2004-2008  
UK: Failure Investigation of Ground Floor Slab  
Appointment to advise on the cause of cracking and break-up of an industrial ground floor, built using steel fibre reinforced concrete to TR34. The floor includes high level (VNA) racking and wire-guided vehicles. Identified the cause of the defects and prepared outline remedial works, adopted and implemented by the original contractor. Audit of the completed works for compliance with the terms of the lease agreement.  
Solicitor: Shoosmiths LLP
- 2004 - 2005  
UK: Adequacy of Asbestos Survey  
Advice on the structural aspects of building construction as related to the risk of residual asbestos following pre-demolition strip-out. The brief included a full review of the Standards and Codes applicable to the work and identifying reasonable actions for a competent firm, considering a building constructed in early 1930s. Following Mediation, the case settled before action.  
Solicitor: S J Berwin LLP

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OTHER INDUSTRY EXPERIENCE

- 2004 – 2015  
2013 – 2015  
CH2M (formerly Halcrow Group Limited)  
Technology Director, Europe Transportation  
Responsible for technology and innovation across the International Transportation business. Specific responsibilities include recruitment and retention of technical talent; technical standards and efficiency of project delivery; establishing market differentiation; capture new technology; and recommend partnerships that shape Halcrow/CH2M strategies. Also Technology Fellow for concrete technology.
- 2011 – 2015  
Lead Technologist, Europe Transportation  
Lead concrete technical specialist for the Europe Region in the field of concrete materials and structures, with linkage to other staff across CH2M's global operation. Specific brief is to develop expert witness capability and delivery across the Region, including training and accreditation advice.
- 2011 – 2015  
Asset Management Team Leader, Midlands  
Responsible for the resource and technical management of a team of 12 staff specialising in asset performance, including concrete and steel structures, pavements and new materials and methods and technology implementation.
- 2004 – 2011  
Halcrow Group Limited, Regional Director  
Responsible for the fiscal management of the Birmingham and Derby offices, including lease, rent and rate issues, and managing a team of nine business support staff, as well as working with the business to promote the company.
- 2008 – 2010  
Area Resource Director, Midlands  
Responsible for a team of 110 Transportation staff, skilled in geotechnics, asset management, highways, bridges and materials technology, operating on projects throughout the UK, Europe and in other parts of the world.

- 2008 - 2015  
Queens University Belfast, Visiting Professor  
Appointed as industrial lecturer and then visiting professor to the School of Planning, Architecture and Civil Engineering, teaching on the MSc in Concrete Durability.
- 2003-2011  
The Concrete Society  
Following election to Council as a Companies House director of the Society in 2003, held positions on the Technical Executive Committee and chair of the Regional and Clubs Association, before being appointed for two consecutive terms as President of the Concrete Society (2006-2008).  
  
Duties included serving on the Concrete Society Awards judging panel, first as a member (2005/6), and then as chairman for the following three years, including the responsibility of presenting the awards at the annual Awards Dinner.
- 1995 - 2004  
1997-2004  
AECOM / Maunsell Group / FaberMaunsell  
UK: Birmingham Office, business unit director  
Director for Engineering Services in the South Region of the Transportation Division, responsible for the full technical and commercial business function, including budgets, profit/loss for the BU, project profitability, invoicing and cash flow, along with recruitment and retention of staff
- 2003  
UK: Public Inquiry, expert  
Appointed as expert to assess a developer's case for demolishing a slipformed concrete lift tower in the centre of a proposed housing development. My investigations showed that while the tower was functionally obsolescent, it was not deteriorating significantly. The developer's appeal against the Council's refusal to permit demolition of the tower was presented to a Public Inquiry.  
Solicitor: Council's in-house Solicitor
- 2001-2003  
UK: Chloride ion contamination of car park, expert  
Appointed as expert following a point of sale survey of a car park, where excessively high chloride ion contents were found in the concrete that was only 6-years old that could only be attributed to chloride added to the concrete at the time of mixing and building the structure. Scope included reviewing current design practices and assessing whether the structure was designed and built to appropriate standards. The case settled following Mediation.  
Solicitor: Barlows LLP
- 1999-2000  
UK: Durability Investigation of Bridge Foundations, expert  
Appointed as independent expert to advise on the design and construction of foundations to a new over-bridge on the M6 Toll Road, built using bored contiguous concrete piles under bentonite slurry. Investigation included examination of defects in the concrete piles, including matting and exposed reinforcing bar, and the effect of the defects on the durability of the structure. Advice also given on suitable repair materials to repair defects and otherwise strengthen the structure to compensate for any expected corrosion losses. Formal legal action was not needed to resolve the matter.  
Client: M6 Toll



- 1996-2004  
UK: Failure Investigation of Repair System, expert  
Appointed as expert to identify the issues in a claim against a repair materials supplier by a contractor. Scope included reviewing the quality of the repair work and identifying the causes of the defects in the works, along with alternative works practices and materials that would have produced a satisfactory repair. The case settled before reaching Court.  
Solicitor: Beachcroft LLP
- 1998-1999  
UK: Condition of concrete-framed hotel, expert  
Appointed as materials expert to advise on the standard of concrete in an eleven-storey hotel. Scope of instruction included an assessment of the materials used and the extent of any deterioration in service, including interpretation of NDT test data, examining repair options and assessing the usability of the hotel during the works. The case settled following Mediation.  
Solicitor: Wragge & Co LLP
- 1997  
UK: Defects in Diaphragm Wall, expert advisor  
Appointed as materials expert to advise on the methods for making good to defects in diaphragm wall construction used to construct a top-down deep station basement. The design incorporated screw-in fixings for starter bars to form intermediate slabs that were mis-aligned. The remedial works had to be certified for the 120 design life of the structure, using proprietary materials. Scope of instruction included sampling, testing and assurance of the works that addressed deterioration in service.  
Solicitor: Contractor's Legal department
- 1995-2004  
Asia Pacific: Durability specifications for major projects, as specialist technical advisor  
Provided a focus for durability issues for the Maunsell Group companies relating to new-build concrete structures. Projects included the Copenhagen Metro scheme, KCR extension in Hong Kong, the Design and Construct tender and construction of Contract 708 in Singapore and the Perth Metro, Australia  
Client: Various
- 1994-1997  
UK: Surface Appearance of Road Tunnel Walls, expert  
Investigation into the standard of concrete surface achieved in a new twin-bore road tunnel forming the A27, constructed using steel formwork liners. Defects in the steel surface caused minor blemishes in the surface, which were accentuated by the final paint finish. The Case was presented to the Arbitration Tribunal as part of the Contract between the contractor and the Highways Agency.  
Solicitor: Masons
- 1993-1997  
UK: Cold Store Floor Failure, expert  
Investigation into the cause of surface deterioration in a cold store concrete floor operating at -28°C. The failure was shown to be a rare case of concrete "blistering", where a thin layer of concrete detaches from the bulk of the floor. The case was resolved in the Technology and Construction Court.  
Solicitor: Greenwoods

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| <p>1990-1995<br/>1990-1995</p> | <p>Harry Stanger/TBV Stanger<br/>UK: Various Investigations, Expert and Project Manager<br/>Head of Engineering Services at Harry Stanger, responsible for the Investigations and Components Testing at the Elstree Head Office. Specialised in concrete related problems covering in-situ testing and investigations well as other construction materials including masonry, steelwork and timber, including the following projects:</p> <ul style="list-style-type: none"> <li>- defects in concrete beams, floors and slabs</li> <li>- non-destructive testing surveys, including impulse radar, infra-red thermography and sonic echo techniques</li> <li>- failures in bridge deck and flat roof waterproofing</li> <li>- failure investigation of paint systems applied to steel and concrete surfaces and specification of remedial works</li> <li>- point of sale surveys of industrial, commercial and residential buildings, including latent defect identification and presence of deleterious materials including asbestos HAC, chloride salts and radioactive contamination</li> <li>- investigating the effects of heat and smoke from fire on steel and concrete framed buildings, bridges and tunnels</li> <li>- investigation of bomb blast waves on buildings in London</li> <li>- discolouration of precast concrete panels and cast stone units during storage and delivery</li> <li>- defects in masonry and brick arch structures</li> <li>- failures in GRC formwork and cladding systems</li> <li>- testing and approvals of concrete repair products</li> </ul> <p>Client: Various</p> |
| <p>1991-1994</p>               | <p>UK: Swan Theatre Car Park, expert<br/>Legal dispute concerning the design and specification of a car park, the grade of concrete and omission of waterproof membranes to the decks and ramps. Case included an assessment as to whether the concrete decks and ramps would be exposed to wetting and freeze-thaw conditions. The case settled before Court action.<br/>Solicitor: Wycombe District Council Legal Dept</p>  |
| <p>1994</p>                    | <p>UK: Minster Court Fire Investigations, project manager<br/>Planned managed and supervised investigations into the effects of a severe fire during construction of Minster Court, London. The fire caused extensive smoke damage to the building, requiring the careful planning of an investigation to quantify the extent and effect of smoke contamination to the structure.<br/>Client: Arup</p>  |
| <p>1993-1995</p>               | <p>UK: Broadgate Phase 8 Fire, project manager<br/>Planned managed and supervised investigations into the effects of a severe fire during construction of Phase 8 of the Broadgate complex. The fire caused axial shortening of the columns, leading to reductions in the floor levels above.<br/>Client: Stanhope Properties / Bovis-Schal</p>   |
| <p>1993-1994</p>               | <p>UK: Bomb Damage - James Capel House, project manager<br/>Following terrorist explosions in the City of London, negotiated, priced and managed the testing and investigation works to verify the extent of damage caused by the blast wave on commercial buildings. Scope included recommending tests to determine the age of cracks in concrete floor slabs to prove conclusively they were not caused by the blasts.</p>  |

Client: Various insurance firms

1993

UK: Ceiling Sub-frame Assembly Collapse, expert  
Instructed to investigate the cause of a sub-frame ceiling grid collapse, where steel G-clamps attached to structural steel members failed suddenly. Work included an expert report for the main contractor's Insurer with the Case positioned to be heard in the TCC, but settled at the door of the Court.  
Client: Robbins Loss Adjusters

1981-1990  
1988-1990

Taylor Woodrow Construction/Taywood Engineering  
UK: Technical Service Group, senior engineer  
Technical troubleshooting for Taylor Woodrow, investigating a wide range of concrete construction problems including, strength performance, screeds, concrete toppings/grano, cast stone, GRC, GRP and ground-bearing floor slabs. Experience included concrete paints, silanes, waterproofing and tanking, bridge deck membranes and leak sealing materials. Also investigated steelwork corrosion protection systems and brickwork/ masonry problems. Major Projects included:  
- Singapore Mass Rapid Transit – assessing the aggressiveness of soils towards concrete and specifying coatings for protecting the concrete including prequalification testing of pitch-epoxy coatings,  
- Great Man-made River Project – assessing the aggressiveness of well waters to concrete and prequalification tests for exterior coatings,  
- ACES structures – testing ice release coatings for concrete conical oil exploration platforms used in the Barents Sea, Arctic.

Client: Various

1982-1985

UK: Expert Witness to Repair System Failure, engineer  
Responsible for the planning of test programmes in support of Arbitration proceedings concerning bleed-related defects in concrete repair works. After developing the case for the client, a Local Authority, based on laboratory trials that replicated the defects, a series of expert reports were produced and evidence presented to a Court of Arbitration.  
Solicitor: NDDC Legal Department

1982-1984

Various Overseas: Failure Investigations, senior engineer  
Technical research in support of several major overseas litigation contracts involving assessment of the strength and durability of reinforced concrete structures. Work included planning, execution and interpretation of NDT results and helping in the preparation of expert reports and legal argument:  
- City Centre Tower, Perth - cause of spalling to precast concrete cladding units,  
- Das Island – cause of corrosion to reinforced concrete oil and gas production facilities,  
- Telford Gardens, HK, performance of protective paint systems applied to concrete buildings to extend their useful life.

Client: Various solicitors

1977-1981

The University of Leeds, PhD study  
Postgraduate research in the field of concrete technology under the supervision of Professor Adam Neville and Dr Peter Wainwright, thesis "Use of Domestic Incinerator Ash as an Aggregate in Concrete". The research work included NDT testing of concrete and full-scale load testing of structural beams.

## Publications & Presentations (82)

- Robery, PC, "The Ability of Concrete to Resist Hostile Environments", Proc. 45th Institute of Concrete Technology Convention / Symposium 6th April 2017, Queens Hotel, Leeds
- Robery, PC, "The Durability of Concrete Car Parks", Institution of Structural Engineers (Midlands)/Concrete Society seminar, 28 February 2017
- Robery, PC, "Alkali-activated cementitious material and concrete – Specification", Special Seminar on geopolymer concrete, King Mongkut's University of Technology Thonburi, Bangkok, Thailand, 18th February 2017
- Robery PC, "Using the power of low carbon binders to drive enhanced durability", Proc 12th Annual Concrete Conference, Cha-Am, Thailand, 15-17 February 2017
- Robery PC, "Preserving the life of infrastructure through effective monitoring and intervention", Proc 2<sup>nd</sup> R.N.Raikar Intl Conf on Advances in Science and Technology of Concrete, Mumbai, India, 18-19 December 2015.
- Robery PC (joint author), "Sustainable life extension of M1 Motorway half joints using impressed current cathodic protection", Proc. 16<sup>th</sup> European Bridge Conference, Edinburgh, 23-25 June 2015
- Robery PC (joint author), "Containment for petroleum products – lessons learnt from Buncefield, UK", Proceedings of ICE - Civil Engineering, Volume 167, Issue 4, 1 November 2014, pages 167 –175
- Robery PC, Keynote Paper: "Role of asset management in monitoring durability changes to minimise safety risks to Infrastructure", Proc. 3rd international Conference of Service Life Design for Infrastructure, Zuhai, China, 15-17 October, 2014
- Robery PC (joint author), "Interpreting field data for adhesion strength of bonded overlays", Proc Structural Faults and Repair 2014, Imperial College, London, 8-10 July 2014
- Robery PC (joint author), "Building information modelling and its effect on off-site construction in UK civil engineering", ICE Journal, June 1, 2014
- Robery PC (joint author), "Site pull-off adhesion testing and EN1504", Concrete, Oct & Dec 2013
- Robery PC (joint author), "Implementing an Offsite Construction Strategy: A UK Contracting Organisation Case Study", "ARCOM Conference, 3 October 2013
- Robery PC (joint author), "Analyzing the need for offsite construction and standardization in the UK water and environmental management sectors", International Conference on Sustainable Built Environment for Now and the Future, Hanoi, Vietnam, 26-27 March 2013
- Robery PC (joint author), "Microbial degradation of synthetic fibre-reinforced marine concrete", Journal of International Biodeterioration & Biodegradation, Feb 2013, <http://dx.doi.org/10.1016/j.ibiod.2013.02.015>
- Robery PC (joint author), "Microscopic examination of a new mechanism for accelerated degradation of synthetic fibre reinforced marine concrete", Construction and Building Materials, vol. 41, 2013
- Robery PC (joint author) "Briefing: Microscopic study into biodeterioration of joint sealant", Proceedings of the ICE - Construction Materials, 2013
- Robery PC (joint author), "Microscopic study into biodeterioration of marine concrete", International Biodeterioration & Biodegradation, vol. 79, 2013
- Robery PC (joint author), "Realising offsite construction and standardisation within a leading UK infrastructure consultancy", AEC Conference, 17 August 2012
- Robery PC, "Carrying out inspection work and planned maintenance – UK Practice", 2nd IQPC Bridges Conference, Riyadh, Kingdom of Saudi Arabia, 19-20 March 2012
- Robery PC (joint author), "Offsite Innovation in UK infrastructure: The role of the approvals process in Box-Jacking projects", ARCOM Conference, 5 September 2011
- Robery PC, "European Standards for Concrete Repair", Chapter 11 in the book "Concrete Repair", ed M Grantham, Taylor & Francis, 2011.
- Robery PC, "Effective management of concrete assets - Concrete durability: achievement and enhancement", 5th IABMAS Conference, Philadelphia, USA, 11 – 15 July 2010
- Robery PC (joint author), "Can Nanotechnology Address Today's Civil Engineering Challenges?", 5th IABMAS Conference, Philadelphia, USA, 11 – 15 July 2010
- Robery PC, "In situ monitoring and assessment of concrete structures", Queens University Belfast Science Bridge workshop, 18-19 June 2010, Belfast
- Robery PC (joint author), "Can Nanotechnology Address Today's Civil Engineering Challenges?", SEI 2010 Structures Congress, 13-15 May 2010, Orlando, Florida, USA
- Robery PC, "Chapter 16, Repair and Rehabilitation of Concrete", ICE Manual of Construction Materials, section 2, Thomas Telford, London, 2009
- Robery PC (joint author): "Nanotechnology – fact or fiction for practising Engineers", presented at the Nanocem Open meeting April 28, 2009, University of Leeds
- Robery PC (joint author): "European Standards for the repair and protection of concrete", Proceedings of the SEI 2009 Structures Congress, 30 April 30- 2 May 2009, Austin, Texas, USA
- Robery PC: "Keynote Paper: Effective Management of Concrete Assets", Intl. Conf. Concrete: Construction's Sustainable Option, Dundee, Scotland, 8-10 July 2008

Robery PC (joint author): "Nanotechnology in repair, maintenance and asset management of bridges and structures", Proc Structural Faults and Repair 2008, Edinburgh, 10-12 June 2008

Robery PC: "Managing bridges and other highway assets: looking at the impact of whole of government accounts", Assets Journal, April 2007

Robery PC: "Keynote Paper: Non-destructive testing (including tests for structural strength)", Proc 8<sup>th</sup> Int'l Conference on Concrete in Hot and Aggressive Environments, Kingdom of Bahrain, 27 – 29 November 2006

Robery PC: "Examining the practical aspects of asset valuation", Managing the Highway Network - Implementing and Evaluating Asset Management and Traffic Management, ICE, London 11 October 2006

Robery PC (joint author): "Multi-storey car parks – have we parked the issue of effective maintenance?", Concrete Engineering International, Autumn 2006

Robery PC: "Keynote paper: Enhanced Concrete performance: learning lessons from the past", Concrete Communication Conference, UCL, London, 5-6 September 2006

Robery PC (joint author): "European Standards for the Repair and Protection of Concrete", Concrete Solutions – 2nd International Conference on Concrete Repair, St-Malo, Brittany, 27-29 June 2006

Robery PC: "Applying whole life principles to deteriorating concrete assets", Keynote Paper at Concrete Solutions – 2nd International Conference on Concrete Repair, St-Malo, Brittany, 27-29 June 2006

Robery PC (joint author): "Design, construction and maintenance of car parks - bridging the gap between bridge and building technology", Structural Faults and Repair '06, Edinburgh, 13-15 June 2006

Robery PC (joint author): "European standards for concrete repair - Update on progress", Structural Faults and Repair '06, Edinburgh, 13-15 June 2006

Robery PC (joint author): "Valuation and whole life costing of concrete bridges and other infrastructure assets in the UK", Structural Faults and Repair '06, Edinburgh, 13-15 June 2006

Robery PC (joint author): "Managing North London's River Flood Defences: Part 1 Focus on Asset Management; Part 2: Focus on Asset Engineering", Concrete, April/May 2006

Robery PC: "Getting it right – from testing, through diagnosis to lasting repair", Conference on Global Construction: Ultimate Concrete Opportunities, Dundee, Scotland, 5th –7th July 2005

Robery PC (joint author): "Impressing the current in Birmingham", Concrete, No 4, Vol 38, pp 35 -36, April 2004

Robery PC: "The Repair of Reinforced Concrete Structures", Keynote Paper at Concrete Solutions - 1st Int'l Conf on Concrete Repair, 15-17 July 2003, St-Malo, Brittany

Robery PC (joint author): "Application of High-Performance Concrete on Contract C708 of Singapore's North-East MRT Line" presented at Challenges of Concrete Construction, 5-11 September 2002, Dundee, Scotland

Robery PC: "Concrete Maintenance and Repair: the lessons and the future", Closing Address presented at Challenges of Concrete Construction, 5-11 September 2002, Dundee, Scotland

Robery PC (joint author): "Role Of Consulting Engineers in the Management of Highway Structures", First Int'l Conf on Bridge Maintenance, Safety and Management, IABMAS 2002, Barcelona, 14 - 17 July, 2002

Robery PC (joint author): "Assessment of Degradation in Concrete Bridges and the Effectiveness of FRP Strengthening", 1st Intl Conf on Bridge Maintenance, Safety and Management, IABMAS-2002, Barcelona, 14 - 17 July, 2002

Robery PC (joint author): "The Role of Ongoing Structural Assessment in Reducing Infrastructure Risk", IABSE Conf on risk and Reliability of structures, Malta, 2001

Robery PC (joint author): "Application of High-Performance Concrete in Singapore's North-East and Changi International Airport MRT Lines", 5th CANMET / ACI Int'l Conf on Recent Advances in Concrete Technology, Singapore, 2001

Robery PC: "Remote Inspection, Monitoring and Control Systems for Reinforced Concrete Structures", Monosys Guide to Monitoring, Summer 2000, pp 17-21

Robery PC (joint author): "Effect of hot-dry curing environment on the intrinsic properties of repair materials", Cement and Concrete Composites, V 22, n 6, 2000, pp 453-458

Robery PC: "Concrete repair and maintenance - Part 1 - Investigation, Testing and Diagnosis; Part ii - Maintenance and Repair Options", World of Concrete 1997, NEC, Birmingham, November 1997

Robery PC: "Maintenance strategies for highway structures", Highways Journal, October 1997, pp 14-16

Robery PC (joint author): "Performance of concrete strengthened with carbon fibre fabric", Structural Faults and Repair '97, Edinburgh, July 1997

Robery PC (joint author): "Comparison between cathodic protection and other electrochemical repair techniques", Structural Faults and Repair '97, Edinburgh, July 1997

Robery PC (joint author), "Structural performance of reinforced concrete made with sintered ash aggregate", Studies in Environmental Science, V 71, 1997, pp. 411-419

Robery PC (joint author): "Material for the Repair and Protection of Concrete", Construction and Building Materials, V11, n 5-6, 1997

Robery PC: "Remote monitoring and control systems for steel reinforced concrete structures", ICRI Spring Convention, Seattle, April 1997

Robery PC (joint author): "Material for the Repair and Protection of Concrete", International ECSN Symposium European Concrete Standards in Practice, 22-24 May 1996

Robery PC: "European Standards for structural and non-structural repair of concrete", Concrete Repair Bulletin, ICRI, May/June 1996

- Robery PC (joint author): "Material for the Repair and Protection of Concrete", Structural Faults '95, July 1995
- Robery PC (joint author): "Methods of Investigation using combined NDT Techniques", Structural Faults '95, July 1995
- Robery PC joint author: "Development of Repair Standards for Europe", Int. J. Construction Maintenance and Repair, Mar 1995
- Robery PC (joint author): "Advances in Survey Techniques for Contaminated Land", Proc ICE Conf. Advances in Site Investigation Practice, 31-31 March 1995
- Robery PC (joint author): "Planning Investigations of Sports Stadia", Int. J. Construction Maintenance and Repair, May/June 1994
- Robery PC (joint author): "Repair and Maintenance of Reinforced Concrete", Building Research Establishment Report No BR 254, Apr 1994, 34p
- Robery PC: "The Efficacy of Silane on Concrete Treated with Curing Compounds", Proc. Structural Faults '93, June 1993, Vol 1, pp 181-186
- Robery PC: "Refurbishment", Int. J. Construction Maintenance and Repair, May/June 1992
- Robery PC (joint author): "Production and Properties of Sintered Incinerator Residues as Aggregate for Concrete", Proc. WASCON, Maastricht, 1991, reproduced in; Studies in Environmental Science, V48, 1991, pp425-432
- Robery PC: "After the fire - testing to minimise refurbishment costs", Int. J. Construction Maintenance and Repair, May/June 1991, pp 17-22
- Robery PC: "Now you see it - radar, vibration and thermography as investigative tools for structures", Construction Maintenance and Repair, May/June 1990, pp 120-124
- Robery PC: "Requirements of Coatings", JOCCA, V71, n12, Dec 1988, pp 403-406
- Robery PC (joint author): "Practical Experience in the Testing of Surface Coatings for Reinforced Concretes", Proc. 4th Int. Conf. Durability of Building Materials and Components, Singapore, 5 Nov 1987
- Robery PC (joint author): "Corrosion Protection to Buried Structures", Proc. Singapore Mass Rapid Transit Conference '87, 6-9 Apr 1987, reprinted in Construction and Building Materials, Vol 1, n 2, 1987
- Robery PC: "Protection of Structural Concrete from Aggressive Soils", Chemistry and Industry, No 13, 4 Jul 1988, pp 421-26
- Robery PC (joint author): "Underwater Repairs", Chapter 11 of Book, Repair of Concrete Structures, Publ. Blackie and Sons Limited, 1987
- Robery PC (joint author): "Diagnosis and Repair of Marine Structures: Towards a Unified Approach", Proc. Marine Concrete '86, London, 22 Sept 1986
- Robery PC (joint author): "Repair of Concrete Structures Subject to Environmental Attack", Conf. Structural Faults '85, London 1985
- Robery PC (joint author): "The Sorptivity of Concrete", Proc. Symp. on Our World in Concrete and Structures, Singapore, 27-28 Aug 1985
- Robery PC (joint author): "A Review of the Methods of Utilisation of Incinerator Residues as a Construction Material", Int. Conf. on Development of Low-Cost and Energy Saving Construction Materials and Applications, Brazil, 9-12 July 1984
- Robery PC: "Structural Repairs using Concrete and Cementitious Materials", Concrete V17, n 2, Feb 1983