

## **PERSONAL DETAILS**

Nationality	British
Profession	Chartered Civil engineer
Specialisation	Cement and concrete technology
Position in Firm	Director
Year of Birth	1955
Years with Firm	10

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## **LEGAL CASE EXPERTISE**

Over 40 years of industry experience in the field of concrete construction technology, inspection, testing, maintenance and repair. A chartered civil engineer recognised at the highest level by the Engineering Institutions and founder-director of Robery Forensic Engineering Limited. Formerly with contractor Taylor Woodrow, Stangers, and consulting engineers Maunsell/AECOM & Halcrow/CH2M.

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. 90 publications/presentations in the field of concrete performance. 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 to EN206/BS8500
  - concrete placing, bleed and shrinkage cracking
  - diaphragm wall construction
  - disaster investigations, including fire, bomb and water damage
  - external concrete pavement 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 floor construction
  - PQ concrete and requirements for air entrainment
  - repair products and systems, including sprayed concrete/mortar
  - slip-resistance of concrete flooring
  - steel, carbon and synthetic fibre-reinforcement
  - test methods for concrete and data interpretation
  - metro and service tunnel performance
  - tramways and light rail in concrete surrounds
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## APPEARANCES AS AN EXPERT IN COURT/ADR

1. 2024 – International Arbitration, London – cracking of an offshore concrete structure
  2. 2024 – Mediation, Belfast – failure of pile-supported concrete warehouse floor
  3. 2023 – Adjudication, Nottingham – performance of watertight concrete
  4. 2022 – International Arbitration (virtual) – supply of cement
  5. 2022 – International Arbitration, London – design of concrete airport structures
  6. 2021 – Adjudication, Teesside – design and construction of a port pavement
  7. 2021 – Mediation (virtual) – failure of pile-supported concrete warehouse floor
  8. 2021 – Court of Session, Scotland (virtual) – condition of a car park and waterproofing systems
  9. 2020 – Mediation (virtual) – quality of concrete delivered to a warehouse floor
  10. 2019 – International Arbitration, London – quality of works for a water supply project
  11. 2019 – Adjudication meeting – standard of construction for a concrete-framed building
  12. 2018 – TCC, London – slip resistance of concrete floors in a sports stadium.
  13. 2017 – Mediation, London – construction of pile-supported warehouse floors and hardstandings.
  14. 2017 – Arbitration, London – causes of concrete spalling to tramway arrises.
  15. 2016 – Mediation, Reading – strength of concrete supplied for a basement project.
  16. 2016 – Mediation, Birmingham – construction of waterproof basements to a new resort development.
  17. 2016 – International Arbitration, Oman – standard of concrete enabling works to a new airport.
  18. 2016 – International Arbitration, Oman – standard of concrete building works to a new airport terminal.
  19. 2016 – Adjudication, Edinburgh – construction of a new-build warehouse facility, using steel-fibre reinforced floors and external hardstandings.
  20. 2015 – Mediation, London – design and construction of concrete warehouse floors at dock levellers.
  21. 2015 – Mediation, Dublin – specification and performance of concrete for wind turbine bases.
  22. 2015 – International Arbitration, London – defects in coatings applied to concrete tanks in a sewage treatment plant in Qatar.
  23. 2013 – TCC, Birmingham – Quality of stonework construction in the Cotswolds.
  24. 2012 – Mediation, London – construction of steel fibre reinforced concrete warehouse floor.
  25. 2012 – International Arbitration, Dubai – defective construction works in 23 reinforced concrete car park basements.
  26. 2011 – International Arbitration, London – quality of concrete construction (diaphragm walls, floor slabs, screeds and cracking) in a basement car park in Moscow.
  27. 2010 – Mediation, London – construction of deep man-access chambers.
  28. 2010 – International Arbitration, Geneva – standard of concrete construction for a new multi-functional development in Moscow.
  29. 2009 – Mediation, Dublin – design and construction defects in a reinforced concrete property.
  30. 2007 – Mediation, London – use of roller-compacted concrete for an industrial ground floor.
  31. 2007 – Mediation, London – appearance of cast stone concrete blocks.
  32. 2007 – Adjudication, London – floor construction in a sports stadium and remedial works.
  33. 2006 – Mediation, London – concrete build issues in a new national sports stadium, including large pour foundations, slipformed concrete and the regularity of suspended floor slabs.
  34. 2003 – Public Inquiry, Northampton – defence to appeal against the Council's refusal to demolish a concrete lift testing tower.
  35. 2003 – Mediation, London – use of marine aggregates in a reinforced concrete car park.
  36. 1999 – Mediation, London – NDT assessment of an eleven-storey hotel and repair options.
  37. 1997 - OR Court, London – causes of collapse to a ceiling sub-frame assembly.
  38. 1997 - OR Court, London - cause of spalling of concrete ground floor slabs in a cold store.
  39. 1997 – Arbitration, London - surface finish of concrete linings and paint to a road tunnel.
  40. 1983 – Arbitration, Barnstable - relating to defective concrete repair works to a coastal pier.
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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 (2010)  
 Fellow, The Concrete Society (2010)  
 Fellow, Institute of Concrete Technology (2017)  
 Member, American Concrete Institute (1988)  
 Member, UK Register of Expert Witnesses  
 Member, Institute of Asset Management  
 Member, RILEM

## FORMAL EMPLOYMENT RECORD

<b>2015 – present</b>	<b>Founder-director, Robery Forensic Engineering Ltd</b>
<b>2015 – present</b>	<b>Visiting Professor, University of Birmingham (part time)</b>
<b>2004 – 2015</b>	<b>Technology Fellow, CH2M HILL (formerly Halcrow Group Limited)</b>
<b>2003 – 2009</b>	<b>Director, the Concrete Society, President 2006-2008</b>
<b>2000 – 2002</b>	<b>Director, QSRMC, ICE Representative</b>
<b>1999 – 2002</b>	<b>Director, Remco Systems Ltd</b>
<b>1995 – 2004</b>	<b>Director, AECOM (formerly Guy Maunsell &amp; Partners)</b>
<b>1990 – 1995</b>	<b>Technical Director, Harry Stanger Limited</b>
<b>1982 – 1990</b>	<b>Senior Engineer, Taylor Woodrow Construction</b>

## CONSTRUCTION SECTOR APPOINTMENTS

<b>2024 – present</b>	<b>Academician and Visiting Professor, CBMA</b> Appointed to the China Building Materials Academy in Beijing as a visiting professor to promote closer cooperation in the field of concrete technology.
<b>2015 – present</b>	<b>ICE Publishing, Editorial Panel, Forensic Engineering Journal</b> Appointed to the Editorial 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.
<b>2015 – present</b>	<b>Robery Forensic Engineering Limited, Director</b> Director and founder of a bespoke consultancy practice offering expert advice on troubleshooting construction defects and investigations of failures in service, including maintenance and remediation, and as required producing evidence in resolution of legal disputes.
<b>2015 – present</b>	<b>University of Birmingham, Visiting Professor</b> Royal Academy of Engineering Visiting Professor in Forensic Engineering: Member (former Chair) of the Industrial Advisory Board; Teaching to 2 <sup>nd</sup> , 3 <sup>rd</sup> & 4 <sup>th</sup> year MEng and MSc modules on concrete durability, specification, deterioration and maintenance and legal cases.

2001 – present	<p><b>The Concrete Society, Midlands Committee member</b></p> <p>Appointed as director of the Society, member of the Technical Executive Committee and then as President (2006-2008), responsible for the operation of the technical and support functions. Continuing as a committee member of the Midlands Region and a former chair.</p>
1995 – present	<p><b>University of Leeds, Visiting Lecturer</b></p> <p>Formerly Visiting Professor, now Visiting Lecturer on the MSc civil engineering course on “Deterioration, maintenance and repair of concrete structures” and ACT module assessor. Former Visiting Professor (2000 to 2018). Member and former chair of the School of Civil Engineering Industrial Advisory Committee.</p>
1989 – present	<p><b>British Standards Institution, Committee Chair</b></p> <p>Current chair of B/517/8, mirror committee to CEN TC104/SC8 on concrete repair and protection, responsible for EN 1504. Also served on BSI committees for concrete protection and repair, sprayed concrete, geopolymers concrete and epoxy-powder-coated reinforcement.</p>
2011 – 2014	<p><b>CIRIA, Committee Chair</b></p> <p>Project CON195 on the design of containment systems for the prevention of water pollution from industrial incidents, upgrading Reports 163 &amp; 164 on bund containment, and leading to new guidance in CIRIA Report C736.</p>
2000 – 2022	<p><b>Institution of Structural Engineers, Task Group Member</b></p> <p>Project to update the design recommendations for multi-storey and underground car parks, contributing to sections on coating systems, durability design and repair of concrete exposed to de-icing salts in car parks the 2002 (3<sup>rd</sup>), 2011 (4<sup>th</sup>) &amp; 2021 (5<sup>th</sup>) editions.</p>
2010 – 2018	<p><b>Institution of Civil Engineers, Structures Expert Panel</b></p> <p>Member and deputy chair of ICE’s Standing Panel on building structures, responsible for advice on structures policy advice.</p>
2000 – 2018	<p><b>Institution of Civil Engineers, joint Chair, National Steering Committee</b></p> <p>Following the Pipers Row car park collapse, preparing recommendations for the inspection, maintenance and management of car park structures, 1<sup>st</sup> and 2<sup>nd</sup> editions.</p>
1999 – 2002	<p><b>QSRMC, ICE Representative</b></p> <p>Appointed as ICE representative and board director for the Quality Scheme for Ready Mixed Concrete, involving oversight of the introduction of updated procedures following introduction of EN 206-1 and BS 8500 for concrete production, replacing BS 5328.</p>
1998 – 2000	<p><b>DETR, Thaumasite Expert Group</b></p> <p>Following discovery of the softening of concrete bridge foundations due to the thaumasite form of sulfate attack, appointed to the Expert Group to develop recommendations for inspection, testing and repair.</p>

1990 – 1992      **Steel Construction Industry Forum, Broadgate Phase 8**  
 Appointed to the Fire Engineering Group to record the lessons learned from the construction-stage fire in the Broadgate Phase 8 development, by Liverpool Street Station, leading to the production of the Steel Construction Institute report “Investigation of Broadgate Phase 8 Fire”.

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## CURRENT MAJOR EXPERT WITNESS CASES

2025 – present      **UK: Investigation of sand pockets**  
 Following construction of a large warehouse, the reinforced concrete floor developed small surface failures. Investigation identified pockets of sand in the concrete beneath the failures, up to 200mm size. Investigation into the source of the sand and the best remedial measures.  
 Solicitors: Greenberg Traurig LLP

2024 – present      **UK: Investigation of weak concrete**  
 Following discovery of a weak concrete column that led to localised crushing, investigations began as to the quality of the concrete generally and whether there was evidence of low strength concrete in the structure generally.  
 Solicitors: Tughans LLP

2024 – present      **UAE: Defects in a new concrete desalination plant**  
 Following completion, remedial works that included the sealing of cracks and lining of seawater channels, have begun to fail. Investigations are underway to establish the causes and extent of potentially defective works.  
 Solicitors: DLA Piper (ME)

2024 - present      **UK: Defects in a multi-storey car park**  
 Following the worsening of defects, including cracking, leakage and spalling of concrete in the 1960s car park, instructions include inspecting the asset, establishing the causes of the defects and producing an expert report on the condition.  
 Solicitors: Gowling WLG

2023 – present      **UK: Defects in Shopping Centre complex and car park**  
 Following leakage issues through joints in the car park, penetrating down to the shopping mall, instructions received to investigate the leakage paths and identify the parties responsible. Also investigate the splitting and detachment of the car park roof deck membrane and peeling of intumescent paint to steelwork.  
 Solicitors: DLA Piper LLP

2023 – present      **Ireland: Quality of concrete supplied to a commercial complex**  
 Investigation of the quality and composition of concrete supplied to a commercial development, to establish whether it was under-strength at the time of batching and supply.  
 Solicitors: Maples (Ireland) LLP

2021 – present      **UK: quality of external HGV hardstanding**  
 Investigations and interpretation of the causes of cracking and other defects in external concrete paving designed and laid to TR66.  
 Solicitors: CMS CMNO LLP

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## RFEL PAST PROJECTS/LEGAL CASES

2024 – 2025	<p><b>UK: Application of AACM in Highway Structures</b></p> <p>State of art study into the potential for using alkali-activated cementitious materials in concrete bridge structures, as part of client requirements to achieve carbon reduction targets.</p> <p>Client: National Highways/University of Birmingham</p>
2021 – 2025	<p><b>UK: Collapse of stone balcony</b></p> <p>Investigation into the unexplained collapse of a stone balcony to a traditional solid wall Victorian building and subsequent remedial works.</p> <p>Solicitors: Fenchurch Law LLP</p>
2020 – 2025	<p><b>UK: Performance of internal warehouse floor</b></p> <p>Over the 12 years since construction, a VNA racked warehouse serviced by rail-mounted stacker crane has developed cracking and slight settlement in the floor. A dispute has developed as to whether the original design and construction was adequate for the intended use.</p> <p>Solicitors: Fenwick Elliott LLP</p>
2022 – 2024	<p><b>Botswana: Bridge Construction Dispute</b></p> <p>Initial instruction to advise on various concrete matters relating to the specification and performance of concrete on a new bridge. Dispute is part of an arbitration process and a settlement has been reached.</p> <p>Solicitors: Pinsent Masons LLP</p>
2023	<p><b>KSA: Cracking to light rail track bed</b></p> <p>Inspection to identify the causes and significance to reinforced concrete track beds that developed plastic and drying shrinkage cracking, and assessment of the standard of repair.</p> <p>Solicitors: Herbert Smith Freehills LLP</p>
2022 – 2024	<p><b>Bahrain: Construction of Offloading Jetty</b></p> <p>During the construction of a concrete offloading jetty, cracking defects developed in the reinforced concrete that the contractor has not rectified. Instructed to investigate the causes and significance of the cracking.</p> <p>Solicitors: Ashurst LLP</p>
2021 – 2024	<p><b>Ireland: Aggregate Inclusions in Runway Concrete</b></p> <p>A new airport runway has organic inclusions in the ready-mixed concrete, which has undergone weathering and formed small holes. Instructions are to investigate the cause, the permissible limits within the specification and to advise in relation to a potential arbitration.</p> <p>Solicitors: Arthur Cox LLP</p>
2021 – 2023	<p><b>KSA: Quality of Cement</b></p> <p>Instructed to provide technical advice in an international arbitration to be heard in London, concerning supply of manufactured cement to EN 197-1, the conformance testing, and the expectation for the actual strength from samples.</p> <p>Solicitors: Watson Farley &amp; Williams LLP</p>
2021 – 2022	<p><b>UK: Construction of a new car park</b></p> <p>Owing to an existing car park being deteriorated, a new structure was built re-using the foundations and columns. A dispute then developed between the owner and the designer and constructor as to whether the new-build car park met the ERs and other specifications.</p> <p>Solicitors: Anthony Collins LLP</p>

2021	<p><b>UK: Concrete pop-outs in warehouse floor</b></p> <p>Dispute about the causes of surface pop-outs in a power-trowelled warehouse floor and methods of repair, concluding in Mediation.</p> <p>Solicitors: TLT LLP</p>
2020 – 2022	<p><b>UK: Finishes to hospital flooring</b></p> <p>Investigation of the mismatch between specified structural finishes and final finished floor level in a hospital environment, including review of contract packages and design coordination &amp; site visit.</p> <p>Solicitors: Simmons &amp; Simmons LLP</p>
2020 - 2021	<p><b>UK: Condition of concrete car park</b></p> <p>Dispute over the construction standard used to build the upper car park levels to a shopping complex, with waterproofing at roof level. Dispute was heard in the Court of Session, with expert evidence provided.</p> <p>Solicitors: Pinsent Masons LLP</p>
2019 – 2023	<p><b>UK: Deterioration in stone flooring</b></p> <p>Investigation into the causes of cracking and rocking in a limestone tiled floor to a shopping complex that has been repaired and re-repaired and continues to deteriorate. Work includes planning of investigation works to establish the cause(s) of the deterioration before action</p> <p>Solicitors: Eversheds Sutherland LLP</p>
2019 – 2022	<p><b>UK: Cracking and curling to concrete warehouse floor</b></p> <p>Investigation of cracking and hole formation in a reinforced concrete overslab laid on an existing uneven reinforced concrete warehouse floor and settlement of external hardstanding. Advising on methods for remediating the deterioration.</p> <p>Solicitors: Squire Patton Boggs (UK) LLP</p>
2019 – 2021	<p><b>UK: Blistering failure to car park deck membrane</b></p> <p>Investigation into the failure of a car park waterproofing system applied to the roof of a multi-storey car park, that exhibited blistering and detachment and repairs that failed. Instructed to review the technical investigations carried out and provide a reasoned expert report into the possible causes.</p> <p>Solicitors: DAC Beachcroft LLP</p>
2019	<p><b>UK: Assessment and repair of spalling to concrete tunnel surface</b></p> <p>Investigation into the causes of deterioration to an underground concrete vehicle track bed, supporting rubber-tyred people movers. Recommendations made for strengthening the surface.</p> <p>Client: Heathrow Airports Limited</p>
2018 – 2019	<p><b>UK: Assessment of risk from HAC bridge beams</b></p> <p>Following discovery of bridges with precast prestressed beams made using high alumina cement (HAC) concrete, commission was to review the state of knowledge on HAC concrete beams, built over 50 years ago.</p> <p>Client: Network Rail</p>
2018 – 2019	<p><b>Oman: Deterioration to water supply assets</b></p> <p>Investigation to premature deterioration of reinforced concrete structures to a new water supply network of water-retaining tanks and ancillary structures, including site investigations to log the defects.</p> <p>Solicitors: White &amp; Case LLP</p>



2018 – 2019	<p><b>UK: Accuracy and tolerances in student accommodation</b></p> <p>Review of survey and documentation relating to the construction of a new reinforced concrete framed building where floors and walls were alleged not to meet tolerances of the NSCS and BS 5606.</p> <p>Solicitor: Womble Bond Dickinson (UK) LLP</p>
2018 – 2023	<p><b>UK: Regularity in suspended concrete floors</b></p> <p>Dispute concerning the standard of build to warehouse suspended mezzanine floors, comprising steel framing with composite concrete and steel decking, that exhibits mid-span sagging deflection. Includes an assessment of specification requirements against design and installation procedures and recommendations for remedial works.</p> <p>Solicitors: Taylor Wessing LLP</p>
2018	<p><b>Ireland: Cracking to walls of waste receiving bunker</b></p> <p>Inspection of concrete walls to a new waste-to-energy plant that exhibited cracking and leakage in what was designed as water-retaining concrete construction. Report identified the causes as shrinkage cracking and gave recommendations on methods for repair.</p> <p>Client: Sedgwick</p>
2018	<p><b>UK: Failure of car park deck coating system</b></p> <p>Investigation into the causes of failure in a proprietary coating system applied to a multi-storey car storage facility, that caused blistering over joints between prestressed concrete planks supported on steel framing.</p> <p>Client: Cemplas Waterproofing and Concrete Repairs</p>
2017 – 2024	<p><b>UK: Cracking and settlement in pile-supported warehouse floor</b></p> <p>Dispute concerning the floor failure in a grain feed warehouse, where part of the slab cracked and sank, and in other areas the floor has deflected between the supporting piles.</p> <p>Solicitors: Carson McDowell LLP</p>
2017 – 2022	<p><b>Oman: Design and construction of Airport</b></p> <p>Investigation of the design and construction standards used to build a new airport terminal. Work included site visits and inspections of new build reinforced concrete structures and repair works to those structures, and then opining on appropriate standards of construction and presenting evidence.</p> <p>Solicitors: White &amp; Case LLP</p>
2017 – 2022	<p><b>Finland: Performance of air entrained concrete</b></p> <p>Dispute concerning variable strengths of insitu ready-mixed air entrained concrete supplied to a hospital project, involving site inspections, test analysis and expert reporting.</p> <p>Solicitors: Avance/HPP Solicitors</p>
2017 – 2022	<p><b>UK: Erosion of brick mortar</b></p> <p>Investigation of erosion in mortar used for domestic housing, including analysis of the types of cement used, mix designation and strength class to current standards.</p> <p>Solicitors: Dentons LLP</p>
2017 – 2020	<p><b>UK: Cracking and paint failure to retained façade</b></p> <p>Dispute between residents of a façade retention development of GII-listed masonry façade, built in the 1850s. Following completion, cracking was found in the original stucco, along with peeling of the new paint system and failure of a car park membrane. Concluded following Mediation.</p> <p>Solicitors: Fenchurch Law LLP</p>



2017 – 2019	<p><b>UK: corrosion-induced spalling to car park</b></p> <p>Extensive corrosion of reinforcement in an insitu concrete car park, built in the 1980s, including establishing the causes and extent of the problem, finding appropriate methods for repair and establishing responsibility for the defects.</p> <p>Solicitors: Shepherd and Wedderburn LLP</p>
2017 – 2018	<p><b>UK: Slip resistance of power-floated concrete surface</b></p> <p>Dispute about slipperiness of power-floated concrete in a sports stadium following trafficking and spillages. Evidence presented to the TCC, London.</p> <p>Solicitors: RPC LLP</p>
2017 – 2018	<p><b>UK: Warehouse floor discolouration</b></p> <p>Investigation of discolouration in one bay of steel-fibre reinforced concrete that appeared darker and “damp” compared with adjacent bays.</p> <p>Client: New Look</p>
2017	<p><b>Central America: Thermal cracking in bridge segments</b></p> <p>Advice to insurers on the causes and extent of thermal cracking in insitu-cast post-tensioned box section bridge components and review the justification to demolish.</p> <p>Client: Evakin Consulting</p>
2017	<p><b>UK: Cracking in new-build concrete roads</b></p> <p>Troubleshooting the causes of occasional severe carriageway cracking on a new concrete road project, where concrete was laid using a paving machine and then textured and cured.</p> <p>Client: AWPR JV</p>
2016 – 2020	<p><b>UK: Deterioration of external façade</b></p> <p>Investigation of rain penetration through the façade and into a retail development, causing saturation of screed. Cracking in an insulated grc shell was identified as causative of leakage and recommendations made to renovate the painted façade.</p> <p>Solicitors: Eversheds Sutherland LLP</p>
2016 – 2019	<p><b>UK: Deterioration and gross settlement in warehouse floor</b></p> <p>Investigation as to the condition of industrial warehouse floors supported on stabilised ground, exhibiting extreme settlement across parts of the floor. Settlement has resulted in cracking and racking moving out of plumb.</p> <p>Solicitors: Shoosmiths LLP</p>
2016 – 2018	<p><b>UK: Attack of dense concrete blockwork</b></p> <p>Investigation of the causes of collapse of walls in wastewater treatment tanks, including a review of construction methods, testing, interpretation of the results and damage prediction.</p> <p>Solicitors: DLA Piper LLP</p>
2016 – 2018	<p><b>UK: Cracking defects in guided busway</b></p> <p>Site visits and document review to establish the causes of grouped cracking defects in a new guided busway, laid by concrete paving machine. Also, to develop recommended remedial work to rectify cracking and erosion of the concrete.</p> <p>Client: TfGM</p>
2016 – 2017	<p><b>UK: Lifting of foamed concrete cable trenches</b></p> <p>Narrow trench technology was used to install new fibre optic cables, backfilled with a foamed mortar. In some areas the mortar was lifting as if residual expansion was occurring.</p> <p>Client: McNicholas</p>

2016 – 2017	<p><b>UK: Blistering of Hospital Vinyl Flooring</b></p> <p>Investigation into the cause of blistering and loss of adhesion of welded sheet vinyl flooring, and local crushing of the underlying screed. Issue was associated with residual construction moisture in the screeds that attacked the sheet vinyl adhesive.</p> <p>Solicitors: Trowers &amp; Hamlins LLP</p>
2016 – 2017	<p><b>UK: Defects in concrete floors and hardstandings</b></p> <p>Dispute concerning differential settlement in pile-supported industrial ground warehouse floors and hardstandings and the cracking and movement of mezzanine floors and methods of repair.</p> <p>Solicitors: Shoosmiths LLP</p>
2016 – 2017	<p><b>UK: Failure of waterproofing membrane</b></p> <p>Dispute about the causes of splitting and leakage to a car park waterproofing system applied to prestressed hollow concrete planks supported on a steel frame.</p> <p>Solicitors: DAC Beachcroft LLP</p>
2016	<p><b>UK: Use of Insulation without separation layers</b></p> <p>Research, testing and reporting on the risks arising from using aluminium-faced insulation material beneath an insitu concrete floor.</p> <p>Client: Bell Building Projects Ltd</p>
2016	<p><b>UK: Basement leakage and “floating” concrete</b></p> <p>Site visit to investigate the cause of water ingress to a new basement where the concrete was alleged to be lifting. Investigations showed the cause of the leakage to be defective waterproofing installation.</p> <p>Client: Liverpool Victoria Insurance</p>
2015 – 2018	<p><b>Oman: Construction of drainage culverts</b></p> <p>Investigation of the construction standards used to build drainage culverts and other structures beneath a new airport runway and taxiway complex. Work involved site visits and inspections and presentation of evidence in an arbitration in Oman</p> <p>Solicitors: White &amp; Case LLP</p>
2015 – 2018	<p><b>UK: Bund design and construction training</b></p> <p>Providing training courses to clients on containment system design and maintenance, following publication of lessons learned from the Buncefield Incident in 2005.</p> <p>Client: various, including Environment Agency</p>
2015 – 2018	<p><b>UK: Deterioration of concrete hardstandings</b></p> <p>Investigation into surface scaling of an external concrete hardstanding in Scotland, built using structural synthetic fibre reinforcement.</p> <p>Solicitors: CMS-Cameron McKenna LLP</p>
2015 – 2017	<p><b>UK: Causes of concrete pop-outs</b></p> <p>Site visits and investigations of the causes of pop-outs in finished concrete surfaces caused by calcined dolomite inclusions in new concrete safety barriers. Research identified the causes and significance of the pop-outs.</p> <p>Client: Costain</p>
2015 – 2017	<p><b>UK: Delayed concrete delivery</b></p> <p>Investigation of the causes of severe honeycombing to concrete walls to a swimming pool at a domestic property, where delays in the discharge led to significant quantities of water being added to offset the stiffening concrete.</p> <p>Client: Mr Naderi</p>

2015 – 2017	<p><b>UK: Failure of waterproofing systems</b></p> <p>Advice on 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.</p> <p>Solicitors: CMS-Cameron McKenna LLP</p>
2015 – 2016	<p><b>UK: Ready-mixed concrete supply</b></p> <p>Dispute about the quality of ready-mixed concrete supplied to a bridge construction project in Scotland.</p> <p>Solicitors: Thorntons LLP</p>
2015 – 2016	<p><b>Ireland: Cracking of wind turbine bases</b></p> <p>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.</p> <p>Solicitors: Tughans LLP</p>
2015 – 2017	<p><b>UK: Surface blemishes to precast concrete panels</b></p> <p>Advice on the causes, extent and significance of pop-outs to precast concrete wall and ceiling panels, caused by aggregate contaminated with expansive material intended for the steelmaking industry.</p> <p>Solicitors: Taylor Wessing LLP</p>
2015	<p><b>UK: Damage to water conveyance pipes</b></p> <p>Investigation into allegations that deterioration of asbestos cement water pressure pipes was causative of pipe bursts in the network.</p> <p>Solicitors: Internal Water Company Legal Dept.</p>
2014 – 2015	<p><b>Qatar: Performance of linings to treatment works</b></p> <p>Investigation into the preparation and application of liquid-applied protective coating systems to the tanks of a new sewage treatment works in Qatar.</p> <p>Solicitors: Bond Dickinson LLP &amp; Mayer Brown International LLP</p>
2014 – 2015	<p><b>UK: Pile supported warehouse floor</b></p> <p>Investigation into the causes of settlement or heave beneath a pile-supported steel-fibre reinforced concrete industrial ground floor. Scope includes a review of the specification for the concrete used in the piles and slabs and the tolerances expected.</p> <p>Solicitor: Browne Jacobson LLP</p>
2014 – 2017	<p><b>UK: Defects in warehouse floor</b></p> <p>Investigation into the causes of cracking and curling around dock levellers in a ground-supported steel fabric-reinforced concrete industrial ground floor. Solicitor: Mills &amp; Reeve LLP</p>
2013 – 2016	<p><b>UK: Airfield runway construction using PQ concrete</b></p> <p>Investigation into the causes of low strength concrete in external paving.</p> <p>Solicitor: Thrings Solicitors LLP</p>

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## PREVIOUS APPOINTMENTS AND EXPERIENCE (1974-2015)

<b>2004-2015</b>	<p><b>HALCROW GROUP LTD/CH2M HILL</b></p> <p><b>Technology Director, Europe Transportation</b></p>
2013 – 2015	Responsible for technology and innovation across Transportation BU.
2012 – 2015	Various: Durability Assessment Specialist
2011 – 2015	Lead Technologist, Europe Transportation

2011 – 2015	Asset Management Team Leader, Midlands
2004 – 2011	Halcrow Group Limited, Regional Director
2008 – 2010	Area Resource Director, Midlands
<b>2008 - 2015</b>	<b>Queens University Belfast, Visiting Professor</b>
<b>2003-2011</b>	<b>The Concrete Society - Head Office</b> Held positions on the Technical Executive Committee and chair of the Regional and Clubs Association; appointed for two consecutive terms as President of the Concrete Society (2006-2008).
<b>1995-2004</b> 1997-2004	<b>MAUNSELL GROUP/AECOM/FABERMAUNSELL</b> <b>UK: Birmingham Office, business unit director</b> Director for Engineering Services in the South Region of the Transportation Division, responsible for the £2.5m pa turnover business. Board Director of Maunsell Europe (1997-2000). Board Director of JV company, Remco Systems Ltd developing cathodic protection control and monitoring systems (1997-2002).
<b>1990-1995</b> 1990-1995	<b>HARRY STANGER/TBV STANGER</b> <b>UK: Various Investigations, project manager</b> Head of Engineering Services at Harry Stanger, responsible for the Investigations and Components Testing at the Elstree Head Office.
<b>1981-1990</b> 1988-1990	<b>TAYLOR WOODROW GROUP/TAYWOOD ENGINEERING</b> <b>UK: Technical Service Group, senior engineer</b> Investigating a wide range of concrete construction problems including, strength performance, screeds, concrete toppings/granolithic, cast stone, GRC, GRP and ground-bearing floor slabs
<b>1974-1981</b> <b>1977-1981</b>	<b>THE UNIVERSITY OF LEEDS</b> <b>Civil Engineering Department, PhD research</b> 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".
<b>1974-1977</b>	<b>Civil Engineering Department, BSc</b> Honours degree course in civil engineering.

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## PROJECT EXPERIENCE (1981-2015)

2009 – 2010	<b>UK: Defects in concrete sewerage system</b> Investigation into alleged defects in a foul sewer system. Solicitors: DJM Law LLP
2009 – 2011	<b>Ireland: Advice on concrete workmanship issues</b> Investigation into the quality of concrete poured to construct wind turbine bases at a wind farm. Solicitors: HBJ Gateley Wareing LLP
2009 – 2010	<b>UK: Advice on cracking in a ground-bearing floor slab</b> Initial inspection and assessment of a concrete industrial ground floor slab built to TR34. Solicitors: Browne Jacobson LLP
2009 – 2010	<b>Ireland: Investigation of basement leakage</b> Investigation into water leakage into the basements of 17 newly constructed dwellings, built using a precast panel construction system.

Solicitor: Matheson Ormsby Prentice LLP

- 2009 **UK: Coating system to concrete floor, single joint expert**  
Investigation into causes of premature failure of a concrete floor paint in a steel treatment works, following a fire and water damage.  
Solicitors: Edwin Coe/Lane & Co LLP
- 2008-2012 **UK: A184 White Mare Pool interchange, project director**  
Design of impressed current cathodic protection system and patch repairs to bridge piers on Area 14 MAC.  
Client: A-One
- 2008 - 2010 **Ireland: Failure of waterproofing works**  
Investigation into the causes of water penetration through basement retaining walls to a coastal domestic property.  
Solicitor: Matheson Ormsby Prentice LLP
- 2008 **Qatar: Failure Investigation of collapsed roof**  
Investigation of the causes of failure to a warehouse roof above a steel melt shop.  
Client: Cunningham Lindsay Loss Adjusters
- 2007 - 2010 **UK: Performance of concrete bund walls**  
Investigation of the causes of contamination of ground and groundwater and the performance of concrete bund walls.  
Solicitor: Bond Pearce LLP
- 2007-2010 **UK: Coating Protection of Rail Assets, project director**  
Revise and update Client specifications to current standards for the use of protective treatments for rail infrastructure.  
Client: Network Rail
- 2007 – 2010 **UK: Investigation of No-fines Concrete Housing**  
Advice on the life expectancy of 1960s multi-storey housing blocks built using no fines concrete.  
Solicitor: Dickinson Dees LLP
- 2007-2009 **UK: Severe Cracking to Ground Floor Slabs**  
Investigation of severe cracking in an unbonded concrete overslab for a warehouse.  
Solicitor: Taylor Wessing 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.  
Solicitor: Hugh James 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.  
Solicitor: Slade Legal 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.  
Solicitor: SLS LLP

2006-2007	<p><b>UK: Cracking to Ground Floor Slabs, technical specialist</b> Investigation of the cause of significant cracking to a new concrete floor to TR34 incorporating steel-fibre reinforcement. Client: Chalcroft Construction Ltd</p>
2006	<p><b>UK: Advice on Cement Burn claim</b> Single joint expert instruction relating to supply of concrete to a project that caused alkali burns to an operative. Solicitors: Awdry, Bailey &amp; Douglas LLP</p>
2005-2008	<p><b>UK: Investigation of Stadium Construction Defects</b> Advice about placing of self-compacting concrete, adequacy of slipforming works, flatness and level of suspended floors, concrete durability &amp; fire resistance &amp; remedial works specifications for a national stadium. Solicitor: Nabarro LLP</p>
2005-2006	<p><b>UK: Road Asset Management Plan, expert advisor</b> Preparing an asset management plan that encompassed bridge, pavement and other highway assets. Client: City of Edinburgh Council</p>
2005	<p><b>UK: Failure Investigation of Floor Topping, technical specialist</b> Cracking of a topping to an existing industrial ground floor. Client: UK Maintenance Services (UK) Ltd</p>
2004-2008	<p><b>UK: Failure Investigation of Ground Floor Slabs</b> Investigation and advice on ground-bearing slabs, both internal floors and external hardstanding. Solicitor: Olswang LLP</p>
2004-2008	<p><b>UK: Failure Investigation of Ground Floor Slab</b> Appointment to advise on the cause of cracking and break-up of an industrial ground floor, built using steel fibre reinforced concrete to TR34. Solicitor: Shoosmiths LLP</p>
2004 - 2005	<p><b>UK: Adequacy of Asbestos Survey</b> Advice on the structural aspects of building construction as related to the risk of residual asbestos following pre-demolition strip-out. Solicitor: S J Berwin LLP</p>
2004-2006	<p><b>UK: Investigation of blast effects, project director</b> Assessment of structures exposed to blast containment effects, including structural capacity and extent of defects. Client: AWE</p>
2002-2004	<p><b>UK: BCV Asset Inspections, project director</b> Asset inspections to record the location and general condition on the Bakerloo, Central and Victoria Lines, for both above and below ground assets. Client: MetroNet BCV</p>
2002-2004	<p><b>Greece: Rion - AntiRion Crossing, technical specialist</b> Undertook a durability assessment of the concrete specification for the new bridge to ensure durable construction in the harsh marine environment. Client: Greek State General Secretariat of Public Works</p>

1999-2001	<p><b>UK: Bridge Strike Detection System, project director</b>  Led the negotiation with the client to deliver experimental bridge strike detection systems on two bridges on the Central and East London lines.  Client: London Underground Ltd</p>
1998-2004	<p><b>UK: Superagency Area Commissions, project director</b>  Supply chain relationships with MA &amp; MAC operators to deliver bridge assessment and repair services to Trunk Road Areas 5, 9, 12 and 13.  Client: Mouchel and AmeyMouchel</p>
1998-2002	<p><b>Singapore: Durability specifications, specialist advisor</b>  Provided durability assessment reports and technical advice for D&amp;B contractor client, relating to new-build concrete structures.  Client: Nishimatsu Corporation Joint Venture</p>
1997-1999	<p><b>Hong Kong: Durability specifications, specialist advisor</b>  Durability assessment reports and technical advice for new-build bridges and other structures forming the Kowloon-Canton Railway (KCR) extension.  Client: KCR Corporation / various</p>
1997	<p><b>Hong Kong: Kap Shui Mun Bridge, Specialist advice</b>  Invited to assist with the troubleshooting of construction problems on the Kap Shui Mun bridge, designed by Maunsell.  Client: MCAL</p>
1997-1998	<p><b>Hong Kong: Specialist Advice</b>  Durability audit for the Route 10 highways contract; maintenance strategy for the concrete catchwaters; and drafting the "<i>Model Specification for Protective Coatings for Concrete</i>" for the Hong Kong Government.  Client: Various</p>
1997-1999	<p><b>Hong Kong: Durability assessments, specialist advisor</b>  Technical support on tender submissions in Hong Kong including the Tsing Ma Control area, inspection of the Cross-Harbour tunnel and inspection of bridges and tunnels in Guangzhou.  Client: KCB / MCAL</p>
1997-2003	<p><b>UK: Client Representative - A19 DBFO, project director</b>  Provided technical advice on the effect of electrochemical chloride extraction systems on the A19 Tees Viaduct bridge structures.  Client: Highways Agency</p>
1997-2002	<p><b>UK: Highways Agency Strategy Support, project director</b>  Responsible for pricing, technical overview and client liaison on the following HA strategic projects won by Maunsell in relation to bridge performance.  Client: Highways Agency</p>
1997-2002	<p><b>UK: Area 12 MA Commission Support, project director</b>  Technical support on the risk and reliability strategy for the Midland Links viaducts.  Client: Atkins/Highways Agency</p>
1995-2004	<p><b>Australia: Durability specifications for tunnels, expert</b>  Durability assessment review of materials suitability and specification, for two new-build concrete structures.  Client: BRC</p>



1995-1999	<p><b>Denmark: Durability specification, specialist advisor</b></p> <p>Provided tender stage durability assessment proposals to meet Client specifications for the Copenhagen Metro.</p> <p>Client: Comet Construction Group</p>
1993-1995	<p><b>UK: Broadgate Phase 8 Fire, project manager</b></p> <p>Planned managed and supervised investigations into the effects of a severe fire during construction of Phase 8 of the Broadgate complex.</p> <p>Client: Stanhope Properties / Bovis-Schal</p>
1991-1994	<p><b>UK: Swan Theatre Car Park, expert</b></p> <p>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.</p> <p>Solicitor: Wycombe District Council Legal Dept</p>
1993-1994	<p><b>UK: Bomb Damage - James Capel House, project manager</b></p> <p>Following terrorist explosions in the City of London, negotiated, priced and managed the testing and investigation works to verify the extent of damage.</p> <p>Client: Various insurance firms</p>
1994	<p><b>UK: Minster Court Fire Investigations, project manager</b></p> <p>Planned managed and supervised investigations into the effects of a severe fire during construction of Minster Court, London.</p> <p>Client: Arup</p>
1993	<p><b>UK: Ceiling Subframe Assembly Collapse, expert</b></p> <p>Investigated the cause of a sub-frame ceiling grid collapse.</p> <p>Client: Robbins Loss Adjusters</p>
1989	<p><b>Hong Kong: CED Lecture, Technical Specialist</b></p> <p>Presentations to the Civil Engineering Department (CED) in 1989, on investigation, maintenance, repair and protection of bridges &amp; tunnels.</p> <p>Client: CED, Hong Kong</p>
1987-1990	<p><b>Malaysia: Hospital Refurbishment, technical specialist</b></p> <p>Technically responsible for investigation work on a hospital in Johor Bahru, to assess the extent of carbonation and reinforcement corrosion.</p> <p>Client: Johor Ministry of Public Works</p>
1986-1988	<p><b>Singapore: MRT Construction, technical specialist</b></p> <p>Appointed to assist the Mass Rapid Transit Corporation to evaluate the aggressiveness of bacterially active soils and chloride-containing groundwater towards precast concrete lining segments for bored tunnels.</p> <p>Client: Mass Rapid Transit Corporation</p>
1986-1988	<p><b>Hong Kong: Low-Cost Housing, technical specialist</b></p> <p>Advising HK Housing Authority (HKHA) on durability issues, including prevention of chloride-induced reinforcement corrosion in housing blocks.</p> <p>Client: HKHA</p>
1982-1985	<p><b>UK: Expert Witness on Repair System Failure, engineer</b></p> <p>Responsible for the planning of test programmes in support of Arbitration proceedings concerning bleed-related defects in concrete repair works.</p> <p>Solicitor: NDDC Legal Department</p>

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, including City Centre Tower, Perth, Das Island Telford Gardens

Client: Various solicitors

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### Publications & Presentations (90)

1. Robery, PC, "Role of Forensic Engineering in Understanding Concrete Durability", 2<sup>nd</sup> Int. Conf. on Cement and Concrete Technology, Yichang, China, 18-22 May 2024
2. Robery, PC, "Best Practice in the Management and Protection of Concrete Assets", *Proc ICE Forensic Engineering*, V174, n1, Feb 2021, pp10-14 (<https://doi.org/10.1680/jfoen.20.00023>) - Awarded ICE Telford Premium Prize 2022
3. Robery, PC (joint author), "Potential use of small-diameter concrete cores for in situ compressive strength assessment", *Magazine of Concrete Research*, 2019 <https://doi.org/10.1680/jmacr.19.00053>
4. Robery, PC, "Best Practice in the Management and Protection of Concrete Assets", presented at UKIERI Concrete Congress, Jalandhar, India, 5-8 March 2019
5. Robery, PC, et al, "Recognising severe environments", Ch 2, *Concrete in Extreme Environments*, Ed Bull, JW & Xiangming, Z, Whittles Publishing, 2018
6. Robery, PC, "Concrete Specification, Construction and Problem Avoidance", presented at 2018 Neville Symposium on Advances in Concrete Technology, Leeds, 18 July 2018
7. Robery, PC & Segers, PM, "Effective corrosion management of reinforced concrete assets", *Proc Corrosion & Prevention* 2017, 12-15 November 2017, ICC Sydney, Australia
8. Robery, PC, Kaewunruen, S & Li, D, "Early-age responses of railway prestressed concrete sleepers to creep and shrinkage", 2nd International RILEM/COST Conference on Early Age Cracking and Serviceability in Cement-based Materials and Structures - EAC2 12-14 September 2017, ULB-VUB, Brussels, Belgium
9. Robery, PC, "The Ability of Concrete to Resist Hostile Environments", *Proc. 45th Institute of Concrete Technology Convention / Symposium* 6th April 2017, Queens Hotel, Leeds
10. Robery, PC, "The Durability of Concrete Car Parks", presented at Institution of Structural Engineers (Midlands)/Concrete Society seminar, 28 February 2017
11. Robery, PC, "Alkali-activated cementitious material and concrete – Specification", presented at Special Seminar on geopolymer concrete, King Mongkut's University of Technology Thonburi, Bangkok, Thailand, 18th February 2017
12. 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
13. 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.
14. 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
15. Robery PC (joint author), "Containment for petroleum products – lessons learnt from Buncefield, UK", *Proc ICE Civil Engineering*, Volume 167, Issue 4, 1 November 2014, pages 167 –175 – Awarded ICE Safety in Construction prize 2015
16. 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*, Zhuhai, China, 15-17 October, 2014
17. 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
18. Robery PC (joint author), "Building information modelling and its effect on off-site construction in UK civil engineering", *ICE Proceedings of Management, Procurement and Law*, V167, Issue MP3, June 2014
19. Robery PC (joint author), "Site pull-off adhesion testing and EN1504", *Concrete*, Oct & Dec 2013
20. Robery PC (joint author), "Implementing an Offsite Construction Strategy: A UK Contracting Organisation Case Study", *ARCOM Conference*, 3 October 2013
21. Robery PC (joint author), "Analysing 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
22. 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>
23. 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
24. Robery PC (joint author) "Briefing: Microscopic study into biodeterioration of joint sealant", *Proc ICE Construction Materials*, 2013
25. Robery PC (joint author), "Microscopic study into biodeterioration of marine concrete", *International Biodeterioration & Biodegradation*, vol. 79, 2013
26. Robery PC (joint author), "Realising offsite construction and standardisation within a leading UK infrastructure consultancy", *Proc AEC Conference*, 17 August 2012

27. Robery PC, "Carrying out inspection work and planned maintenance – UK Practice", Proc 2nd IQPC Bridges Conference, Riyadh, Kingdom of Saudi Arabia, 19-20 March 2012
28. Robery PC (joint author), "Offsite Innovation in UK infrastructure: The role of the approvals process in Box-Jacking projects", Proc ARCOM Conference, 5 September 2011
29. Robery PC, "European Standards for Concrete Repair", Chapter 11, *Concrete Repair*, ed M Grantham, Taylor & Francis, 2011.
30. Robery PC, "Effective management of concrete assets - Concrete durability: achievement and enhancement", Proc 5th IABMAS Conference, Philadelphia, USA, 11 – 15 July 2010
31. Robery PC (joint author), "Can Nanotechnology Address Today's Civil Engineering Challenges?", Proc 5th IABMAS Conference, Philadelphia, USA, 11 – 15 July 2010
32. Robery PC, "In situ monitoring and assessment of concrete structures", presented at Queens University Belfast Science Bridge workshop, 18-19 June 2010, Belfast
33. Robery PC (joint author), "Can Nanotechnology Address Today's Civil Engineering Challenges?", Proc SEI 2010 Structures Congress, 13-15 May 2010, Orlando, Florida, USA
34. Robery PC, "Chapter 16, Repair and Rehabilitation of Concrete", ICE Manual of Construction Materials, Vol 1, Thomas Telford, London, 2009
35. Robery PC (joint author): "Nanotechnology – fact or fiction for practising Engineers", presented at the Nanocem Open meeting April 28, 2009, University of Leeds
36. Robery PC (joint author): "European Standards for the repair and protection of concrete", Proc SEI 2009 Structures Congress, 30 April 30- 2 May 2009, Austin, Texas, USA
37. Robery PC: "Keynote Paper: Effective Management of Concrete Assets", Proc Intl. Conf, Concrete: Construction's Sustainable Option, Dundee, Scotland, 8-10 July 2008
38. 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
39. Robery PC: "Managing bridges and other highway assets: looking at the impact of whole of government accounts", IAM Assets, April 2007
40. 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
41. Robery PC: "Examining the practical aspects of asset valuation", Proc Conf, Managing the Highway Network - Implementing and Evaluating Asset Management and Traffic Management, ICE, London 11 October 2006
42. Robery PC (joint author): "Multi-storey car parks – have we parked the issue of effective maintenance?", *Concrete Engineering International*, Autumn 2006
43. Robery PC: "Keynote paper: Enhanced Concrete performance: learning lessons from the past", Proc Concrete Communication Conference, UCL, London, 5-6 September 2006
44. Robery PC (joint author): "European Standards for the Repair and Protection of Concrete", Proc Concrete Solutions – 2nd International Conference on Concrete Repair, St-Malo, Brittany, 27-29 June 2006
45. Robery PC: "Applying whole life principles to deteriorating concrete assets", Keynote Paper, Proc Concrete Solutions – 2nd International Conference on Concrete Repair, St-Malo, Brittany, 27-29 June 2006
46. Robery PC (joint author): "Design, construction and maintenance of car parks - bridging the gap between bridge and building technology", Proc Structural Faults and Repair '06, Edinburgh, 13-15 June 2006
47. Robery PC (joint author): "European standards for concrete repair - Update on progress", Proc Structural Faults and Repair '06, Edinburgh, 13-15 June 2006
48. Robery PC (joint author): "Valuation and whole life costing of concrete bridges and other infrastructure assets in the UK", Proc Structural Faults and Repair '06, Edinburgh, 13-15 June 2006
49. 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
50. Robery PC: "Getting it right – from testing, through diagnosis to lasting repair", Proc Conf, Global Construction: Ultimate Concrete Opportunities, Dundee, Scotland, 5th –7th July 2005
51. Robery PC (joint author): "Impressing the current in Birmingham", *Concrete*, No 4, Vol 38, pp 35 -36, April 2004
52. Robery PC: "The Repair of Reinforced Concrete Structures", Keynote Paper, Proc Concrete Solutions - 1st Int'l Conf on Concrete Repair, 15-17 July 2003, St-Malo, Brittany
53. Robery PC (joint author): "Application of High-Performance Concrete on Contract C708 of Singapore's North-East MRT Line", Proc Challenges of Concrete Construction, 5-11 September 2002, Dundee, Scotland
54. Robery PC: "Concrete Maintenance and Repair: the lessons and the future", Closing Address, Proc Challenges of Concrete Construction, 5-11 September 2002, Dundee, Scotland
55. Robery PC (joint author): "Role of Consulting Engineers in the Management of Highway Structures", Proc 1<sup>st</sup> Int'l Conf on Bridge Maintenance, Safety and Management, IABMAS 2002, Barcelona, 14 - 17 July, 2002
56. Robery PC (joint author): "Assessment of Degradation in Concrete Bridges and the Effectiveness of FRP Strengthening", Proc 1st Intl Conf on Bridge Maintenance, Safety and Management, IABMAS-2002, Barcelona, 14 - 17 July, 2002
57. Robery PC (joint author): "The Role of Ongoing Structural Assessment in Reducing Infrastructure Risk", Proc IABSE Conf on Risk and Reliability of structures, Malta, 2001

58. Robery PC (joint author): "Application of High-Performance Concrete in Singapore's North-East and Changi International Airport MRT Lines", Proc 5th CANMET / ACI Int'l Conf on Recent Advances in Concrete Technology, Singapore, 2001
59. Robery PC: "Remote Inspection, Monitoring and Control Systems for Reinforced Concrete Structures", Proc Monosys Guide to Monitoring, Summer 2000, pp 17-21
60. 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
61. Robery PC: "Concrete repair and maintenance - Part 1 - Investigation, Testing and Diagnosis; Part 2 - Maintenance and Repair Options", Presented at World of Concrete 1997, NEC, Birmingham, November 1997
62. Robery PC: "Maintenance strategies for highway structures", *IHT Highways*, October 1997, pp 14-16
63. Robery PC (joint author): "Performance of concrete strengthened with carbon fibre fabric", Proc Structural Faults and Repair '97, Edinburgh, July 1997
64. Robery PC (joint author): "Comparison between cathodic protection and other electrochemical repair techniques", Proc Structural Faults and Repair '97, Edinburgh, July 1997
65. Robery PC (joint author), "Structural performance of reinforced concrete made with sintered ash aggregate", *Studies in Environmental Science*, V 71, 1997, pp. 411-419
66. Robery PC (joint author): "Material for the Repair and Protection of Concrete", *Construction and Building Materials*, V11, n 5-6, 1997
67. Robery PC: "Remote monitoring and control systems for steel reinforced concrete structures", presented at ICRI Spring Convention, Seattle, April 1997
68. Robery PC (joint author): "Material for the Repair and Protection of Concrete", Proc International ECSN Symposium, European Concrete Standards in Practice, 22-24 May 1996
69. Robery PC: "European Standards for structural and non-structural repair of concrete", *Concrete Repair Bulletin*, ICRI, May/June 1996
70. Robery PC (joint author): "Material for the Repair and Protection of Concrete", Proc Structural Faults '95, July 1995
71. Robery PC (joint author): "Methods of Investigation using combined NDT Techniques", Proc Structural Faults '95, July 1995
72. Robery PC joint author: "Development of Repair Standards for Europe", *Int. J. Construction Maintenance and Repair*, Mar 1995
73. Robery PC (joint author): "Advances in Survey Techniques for Contaminated Land", Proc ICE Conf. Advances in Site Investigation Practice, 31-31 March 1995
74. Robery PC (joint author): "Planning Investigations of Sports Stadia", *Int. J. Construction Maintenance and Repair*, May/June 1994
75. Robery PC (joint author): "Repair and Maintenance of Reinforced Concrete", Building Research Establishment, Report BR 254, Apr 1994, 34p
76. Robery PC: "The Efficacy of Silane on Concrete Treated with Curing Compounds", Proc. Structural Faults '93, June 1993, Vol 1, pp 181-186
77. Robery PC: "Refurbishment", *Int. J. Construction Maintenance and Repair*, May/June 1992
78. 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
79. Robery PC: "After the fire - testing to minimise refurbishment costs", *Int. J. Construction Maintenance and Repair*, May/June 1991, pp 17-22
80. 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
81. Robery PC: "Requirements of Coatings", *JOCCA*, V71, n12, Dec 1988, pp 403-406
82. 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
83. 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
84. Robery PC: "Protection of Structural Concrete from Aggressive Soils", *Chemistry and Industry*, No 13, 4 Jul 1988, pp 421-26
85. Robery PC (joint author): "Underwater Repairs", Chapter 11, *Repair of Concrete Structures*, Publ. Blackie and Sons Limited, 1987
86. Robery PC (joint author): "Diagnosis and Repair of Marine Structures: Towards a Unified Approach", Proc. Marine Concrete '86, London, 22 Sept 1986
87. Robery PC (joint author): "Repair of Concrete Structures Subject to Environmental Attack", Proc Structural Faults '85, London 1985
88. Robery PC (joint author): "The Sorptivity of Concrete", Proc. Symp. Our World in Concrete and Structures, Singapore, 27-28 Aug 1985
89. 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
90. Robery PC: "Structural Repairs using Concrete and Cementitious Materials", *Concrete*, V17, n 2, Feb 1983