

Dr Davies Mulenga PhD MSc EUR ING CEng MICE VDI APMG

Birmingham
Mobile: 07540 631 016
Email: dr.dmulenga@btinternet.com

Professional Profile

A dedicated, dynamic and highly motivated Chartered Civil Structural Engineer combining over 23 years' international construction industry experience with a proven track record of delivering complex, multimillion pound projects on time, on budget and to exceptionally high standards. Expertise in structural materials, asset management and the research, design, construction, assessment, inspection and maintenance of buildings, bridges, stadia, highways and rail infrastructure. A natural leader, author and manager with an aptitude for efficiently coordinating resources, identifying and resolving technical and construction issues and generating cost effective solutions. Possesses the interpersonal and communication skills to build positive relationships with clients, contractors and stakeholders, highly adaptable and flourishes in challenging working environments.

Employment Record

- December 2016 **Director**, DMM Enterprise & Engineering Ltd, UK
- April 2005 – Date, **Principal Structures Consultant**, DN Structures Asset Manager, **Highways England**
- Technical Expert, Principal Engineering Manager, Senior Project Engineer, **Halcrow Group Ltd (UK) CH2M**
- January 2004 – March 2005, **Project Manager**, Senior Project Engineer, Lead /Bridge Engineer (Structures Asset Management), **Faber Maunsell AECOM Ltd**. UK, LUL Inspections Supervising Engineer
- April 2003 – Date **Civil Structural Engineer & Research Fellow**, **The University of Birmingham**, School of Engineering, UK, Continued as Honorary Research Fellow
- January 2003 – April 2003, **Structural Engineer and Project Manager**, ZIFW GmbH and Dr Busch Consulting Engineers, Germany
- 1995 – 2002, **Senior Research Fellow & University Lecturer**, F.A. Finger Institute of Structural Materials, **Bauhaus University Weimar**, Germany (includes Secondments to Consulting Companies); worked on Infrastructure and building structures projects fulfilling the requirements of a Junior Professor
- 1994 – 1996, **Structural Engineer**, **Ingenieurbüro Bauen Schmidt GmbH Consultants**, Germany
- 1993 – 1994, Graduate Engineer, **Institute for Mathematics and Project Management & Asset Management**, Weimar, Germany

Career Summary

Dec 16 – Date **DIRECTOR STRUCTURAL ENGINEERING, EXPERT WITNESS & ASSET MANAGEMENT PROJECTS**

Sep 13 – Nov 16 **PRINCIPAL STRUCTURES CONSULTANT / TECHNICAL SPECIALIST**

Clients: UK Highways England (HE) former Highways Agency,

Structures Support TEG Framework: Technical Approval Authority and Expert Advisor

- Leading Area 10 & 13 structures portfolio, WGIS, major projects and smart motorways worth up to £1.15bn
- Overseeing technical governance of structural assets, ensuring best practice on design, construction, management and maintenance whilst providing specialist technical support on expert witness projects

Sep 13 – Oct 16 **TECHNICAL SPECIALIST/EXPERT WITNESS ADVISOR**

Expert Witness Projects: London Gateway Port Project & Woodlands Centre, Cyfartha Park

Clients: LGP & Kennedys

- Providing in depth support and investigation to establish causes of alleged defects and advising on the necessary remedial works and quality control testing to rectify defective areas on structural members.

Jan 13 – Sep 13 **PRINCIPAL ENGINEERING MANAGER & AUTHOR**

- Working on the Area 7 Asset Management Plan providing technical specialist support to develop and deliver a rationalised programme of work over 30 years enabling the Highways Agency to identify the most effective intervention programme for its entire portfolio of assets within Area 7 Trial Phase 2 under AOne+

May 08 – Apr 13 **DN STRUCTURES ASSET MANAGER**

Project: M25 DBFO Project, Department's Nominee Consultancy Support (DNCS)

Client: UK Highways Agency (£6.2bn)

- Widening 440 centre line km from three to four lanes of London's orbital motorway, used by 200k vehicles daily, and associated 'stubs and tails' including refurbishing the Hatfield Tunnel on the A1(M)
- Providing high level specialist, procurement and contractual support to the DN (Secretary of State) with responsibility for leading structural project aspects, specifically asset management of all highways assets

Career Summary Continued

- Delivering technical advice on bridges and highway structure issues and playing a key role in Technical Approval Process as Lead Specialist Reviewer supporting UK Highways Agency TAA
- Ensuring HA avoid risk from the proposed design, procurement, maintenance, asset management and innovative solutions and providing expert support on complex strategic bridge and viaduct structures, including the QEII Cable Stayed Bridge North and South Viaducts, Boston Manor Viaduct among others
- Reviewing and tracking production on Asset Management Forward Plan to properly maintain asset lifespan and contractor use of evidence for asset condition to drive programme forward to meet asset needs
- Overseeing contractor demonstration in the use of asset condition and performance intelligence to ensure undertaking of correct schemes at the right time
- Auditing contractor asset management system to identify the risks and benefits to the Agency

2012 – 2014 TECHNICAL SPECIALIST/EXPERT WITNESS ADVISOR

Project: Construction of Diaphragm Port Walls, London, Gateway Port, Coryton

Client: Bachy Soletanche Ltd

- Constructing a 6-berth port to handle ultra large container ships, using automated container handling systems and controls and two parallel diaphragm walls linked by tie rods and crane rail capping beams
- Noting surface features in the concrete at the top of the DW during tie rod installation with Halcrow subsequently carrying out inspections and advising on testing and repair of exposed walls
- Investigating site photographs and inspection reports of the port to identify the problem and the concrete features as mattressing, voidage and vertical channelling in the concrete surface
- Providing in depth support to establish causes and advising on the necessary remedial works and quality control testing to rectify areas with reduced effectiveness of the cover to the reinforcement

2008 – 2010 AREA SKILL GROUP MANAGER, Halcrow Birmingham, UK

- Responsible for leading the asset management and engineering team, assigning staff to projects and bids and overseeing administration, knowledge management, quality of delivery and training and development

2009 – 2010 SENIOR STRUCTURES PROJECT ENGINEER

Project: Area 10 MAC, Structures Asset Management and Route Maintenance Strategy

Client: UK Highways Agency

- Responsible for developing structures asset management plans for bridges, roads and highways within the Highways Agency (HA) Area 10 network and other associated area 14 tasks
- Reviewing principal, safety, general and special inspection reports, conducting site investigations and testing regimes, preparing reports and prioritising structures for repair, maintenance, repair and monitoring

2009 – 2010 PROJECT MANAGER

Project: Seafeld Waste Water Treatment Works (£149k)

Client: Seafeld WTTW UK

- Providing independent technical expert witness investigation into alleged defects to the reinforced concrete structure in the sludge dryers at Seafeld WTTW
- Managing all project phases, leading the team and providing in depth technical support on investigations

2007 – 2009 PACKAGE MANAGER/LEAD SPECIALIST

Project: Scottish Power Structures Asset Management and Assessment of Civil Structural Assets (~£1.4m)

Client: Scottish Power, UK

- Conducting inspections, design checks, dimension surveys, structural vibration analysis, maintaining power station structures, roads, bridges and developing engineering standard and guidance documents
- Leading and managing project team with responsibility for inspections, structural investigations, risk assessments, developing engineering standard and technical guidance documents for inspection of all Civil Structural Assets owned by Scottish Power
- Developing a robust asset management plan and performing critical checks of technical and structural aspects related to the design and construction of power stations

2008 – 2008 SENIOR PROJECT ENGINEER / TECHNICAL SPECIALIST

Project: KCRC West Rail Hong, Kong Viaduct Project, (Part of the HK\$57.7bn West Rail Project)

Client: KCRC West Rail, Hong Kong

- Delivering expert advice and engineering solutions on the alleged defects to the movement joints of the newly constructed Hong Kong Rail Viaduct for Kowloon-Canton Railway Corporation (KCR)
- Conducting independent structural assessment, design and documental review to identify the cause and process of failure and providing advice movement joint deterioration to pre-cast concrete Parapet and post-tensioned sequential concrete deck segments on the railway viaduct linking Hong Kong to mainland China

Career Summary Continued

2008 – 2008 SENIOR SPECIALIST ENGINEER

Project: Durability Review and Assessment of Steel Fibre Reinforced Ultra High Performance Concrete (SFRUHPC) for Construction Projects in Dubai, UAE

Client: Laing O'Rourke Ltd

- Providing technical expertise to Laing O'Rourke on the use of SFRUHPC and carried out an independent assessment of its durability performance for structural elements on several Dubai building projects

2007 – 2008 PROJECT MANAGER/TECHNICAL SPECIALIST

Project: £75k Network Rail PC, Protective Coatings for Railway Infrastructure

Client: Network Rail, UK

- Leading project team to provide specialist technical support on Civil Engineering Standards Development (4) for Network Rail within the Technical Consultancy Support Framework TSERV008
- Revising Standard Documents on the use of protective treatments for rail infrastructure

2007 – 2008 PROJECT MANAGER

Project: Multi-storey residential tower blocks

Client: Places for People Preston, UK

- Leading the refurbishment of "No-Fines" concrete residential building, including design checking structural appraisal of eight multi-storey residential blocks in Phase 1 and a further seven structures in Phase 2
- Benchmarking No-Fines Concrete condition of high rise structures of various ages and construction form, designing inspection and testing regimes and analysing historic and new test data
- Evaluating current and future durability, managing rehabilitation and cost, and leading engineers team on the structural condition survey and assessment, inspection works and repair schemes recommendations

2007 – 2008 PROJECT MANAGER

Project: Michelin Site Office Premises

Client: Michelin Ltd, UK

- Providing technical and specialist advice on structural investigation and testing towards future maintenance strategies on preliminary study of the feasibility to refurbish the office building

2006 – 2008 SENIOR STRUCTURAL DESIGN SPECIALIST

Project: Dispute on the construction of the £783m national football stadium at Wembley, London

Client: Multiplex Ltd, Australia

- An experienced Expert Witness, Davies gave technical advice and a presentation at a Mediation on the £783m project to build Europe's second largest stadium.
- Providing expert support to investigate various construction issues occurring during construction, including reviewing structural design calculations and critical checks of technical and structural aspects concerning the concreting works, design and construction of arch bases, cores, beams, slabs and half joints
- Producing expert witness design checks, including finite element analysis models, hand design calculations used for the bases and the embedded cast-in "cans", assessing validity of original design and various revised designs necessitated by construction defects in the arch bases and structural members.
- Reviewing reports and producing critique reports on aspects of the arch bases and related core structures

2006 – 2008 PROJECT MANAGER / EXPERT WITNESS ADVISOR

Project: Failure of Industrial Floor at Lung Wah House

Client: Lung Wah Chong Ltd

- Investigating the deterioration of a concrete industrial ground floor to a warehouse with responsibility for leading the team and providing technical advice as part of a developing expert witness case into the causes of failure of the slab and necessary remedial works
- Conducting design checks and planning and executing site testing to determine causes of floor cracking

2007 – 2007 SPECIALIST SENIOR ENGINEER

Project: North Middlesbrough Accessibility Highway Improvement Scheme

Client: UK Highways Agency

- Assessing the construction suitability of Incinerator Bottom Ash Aggregate (IBAA) as an alternative starter layer material on the Scheme incorporating PFA Embankments
- Providing expert advice on durability and suitability of alternative starter layer for use on the scheme and commenting on suitability from a geotechnical, environmental and chemical viewpoint

Career Summary Continued

2007 – 2007 SENIOR STRUCTURAL SPECIALIST

Project: UK/Australia: Bogong Hydro-Electricity Power Station & the ITI Energy and Power Barge

Client: Bogong Hydro-Electricity Power

- Conducting a durability review and assessment for structural concrete for the power station, producing a Technical Note on Durable Concrete, and reviewing modern structural materials and new concrete technologies for the construction of the ITI Energy and Power Generating Barges

Earlier Career – Full Details Available on Request

2006 PROJECT MANAGER, City of Lincoln Multi-storey Car Parks

Client: City of Lincoln Borough Council, UK

2006 PROJECT MANAGER, Wellcome Building

Client: Wellcome Trust, UK

2006 PROJECT MANAGER, Multi-Storey Residential Tower Blocks

Client: Sandwell MBC, UK

2006 – 2008 PROJECT MANAGER, Failure of Industrial Floor at Lung Wah House

Client: Lung Wah Chong Ltd

2006 SR. PROJECT ENGINEER, Structural Appraisal of Dudley Zoo Tecton Structures

Client: Dudley Zoo Management, UK

2006 SR. PROJECT ENGINEER, Council Road Asset Management Plan

Client: City of Edinburgh Council

2005 – 2006 SPECIALIST SENIOR ENGINEER, Car Park Structures, Castle Point, Bournemouth

Client: Castle Point, UK

2005 – 2006 SENIOR STRUCTURAL SPECIALIST: Update of Concrete Standard Specification

Client: Kingdom of Bahrain's Ministry of Works and Housing

2005 SPECIALIST SENIOR ENGINEER, Mogden STW Odour Control: Duct Materials

Client: Mogden STW, UK

2005 SPECIALIST SENIOR ENGINEER, Claygate and Thames Ditton Shaft, Early-age thermal Cracking of Concrete

Client: Claygate

2005 SPECIALIST SENIOR ENGINEER, Hastings Harbour Arm-Deterioration of Concrete, Structure in Seawater

Client: Hastings Harbour, UK

2005 SPECIALIST PROJECT ENGINEER, AWE Aldermaston

Client: AWE Aldermaston

2005 SPECIALIST INVESTIGATOR, ASR Investigation

Client: Larfarge

2004 – 2005 FaberMaunsell-AECOM Ltd

2004 – 2005 PROJECT MANAGER, MAC Area 9 Thaumaside Investigations

Client: UK Highways Agency

2004 – 2005 SENIOR PROJECT ENGINEER, Risk Based Maintenance Strategy for the Midland Links Motorway Viaducts Area 9

Client: UK Highways Agency

Earlier Career Continued – Full Details Available on Request

2004 – 2005 **SENIOR PROJECT ENGINEER, Urea Monitoring, Midland Links Motorway Viaducts Area 9**

Client: UK Highways Agency

2004 – 2005 **SENIOR PROJECT ENGINEER, M4/M5 Improvement and Widening Schemes**

Client: UK Highways Agency

2004 – 2005 **LEAD PROJECT ENGINEER, Review of Comments on BD36**

Client: UK Highways Agency

2004 **TEAM LEADER AND SENIOR PROJECT ENGINEER, Prioritisations of Bridge Piers and Supports Structures Area 9**

2004 **LEAD INSPECTOR, SSL Inspections of Bridges and Structures**

Client: London Underground Ltd

2004 **LEAD INVESTIGATOR & INSPECTOR, Site Development, Acocks Green Station Park and Ride and Two Local Community Maintenance Projects**

Clients: Acocks Green Council and Wallsall Centro

2003 **The University of Birmingham, Department of Civil Engineering**

2003 **CIVIL STRUCTURAL ENGINEER AND RESEARCH FELLOW, Durability of Concrete Structures under Conventional and Thaumasite Form of Sulfate Attack (TSA)**

Client: The University of Birmingham

2003 **STRUCTURAL ENGINEER AND PROJECT MANAGER, Germany ZIFW GmbH and Dr Busch Consulting Engineers**

Awards

- CH2M HILL Performance Beyond Boundaries Award 2013 for M25 DCNS as Structures Asset Manager
- Gold Award 2011 for Best Scored Halcrow Expert Witness Project & Best Project on HIMS (Team Award)
- German Academic Exchange Service – Deutscher Akademischer Austauschdienst Award 2000 for Best International & Overseas Bauhaus University Member of Academic Staff & Community Support 2000

Education and Qualifications

- PhD in Concrete Technology / Civil Engineering, Bauhaus University, Weimar, Germany
- MSc in Civil / Structural Engineering, Bauhaus University, Weimar, Germany
- BEng in Civil / Structural Engineering, Bauhaus University, Weimar, Germany
- Cert. in Civil Engineering Law and Contract Procedure, University of Birmingham, UK

Professional Development

- PRINCE2 Foundation and Practitioner (APMG)
- Project Management Studies, “Managing Projects”, ESI International, Worcester
- Various other courses on Civil Structural Engineering, Materials and Asset Management disciplines

Professional Affiliations

- Chartered engineer (CEng), Civil engineering, Engineering Council, 62274970, UK
- European Engineer, EUR ING, FEANI – European Federation of National Engineering Associations
- Professional Manager, CITB CSCS
- Member of Institution of Civil Engineers, (MICE) and Germany Institution of Engineers (VDI)

Publications

- Over 19 papers on the durability of concrete structures including deterioration, structural faults and repairs

Key IT Skills

- Proficient in MS Office, CAD software, Business Collaborator, BIW & HA Databases SMIS, HAMIS, Brunel