CV

Aleksandar Spasojevic, PhD, MSc, BSc, P Eng

Principal Geotechnical Engineer

Profile

Dr Spasojevic is Geotechnical Engineer with more than 25 years of experience in geotechnical and civil engineering. He has worked in a wide range of sectors incl. railway, highway water and energy infrastructure, mining, port and specialist analysis of civil structure designs. Dr Spasojevic has worked on geotechnical aspects of various projects such as dams, cut and cover and bored tunnels, marine structures, prestigious/tall buildings with major basements, foundations for offshore and onshore wind turbines, machine foundations, integral and articulated bridges, railway and highway embankments, ground improvement schemes, subgrade improvement schemes and reinforced earth.

Key experience

- Computational modelling of geotechnical processes in Plaxis 2D/3D, FLAC 2D/3D, Abaqus, Phase, Geostudio suite. Modelling of cyclic soil behaviour.
- Geotechnical earthquake engineering, multistep (impedance) and one-step methods of SSI, site response analysis.
- Foundation engineering. Piling engineering, pile load testing, driveability studies.
- Marine nearshore and offshore geotechnics.
- Design and analysis of earthworks, dam design.
- Soft ground tunnel and pipeline engineering.
- Slope engineering, design and analyses of retaining structures.
- Site investigation, field testing including SCPT, DMT, PMT, SBPMT.
- Physical and centrifuge modelling of geotechnical processes.

Profession

Principal Geotechnical Engineer

Qualifications

P. Eng., Professional Engineers of Ontario

Postdoctoral Studies, University of Cambridge, Cambridge (2005)

PhD, Civil Engineering, Faculty of Civil Engineering, Belgrade (1999)

MSc, Civil Engineering, Faculty of Civil Engineering, Belgrade (1994)

BSc, Civil Engineering, Faculty of Civil Engineering, Belgrade (1989)

March 2016- now, WSP Group, Principal

February 2015- March 2016, Atkins Global, Principal

November 2010- November 2014- Coffey Canada, Principal

June 2005-October 2010- Gifford UK (now Ramboll), Principal/Associate

November 2000- May 2005, University of Cambridge, UK, Research Associate

May 1998- October 2000- Institute for Water Resources Jaroslav Cerni, Belgrade Serbia, Geotechnical Engineer

May 1991- April 1998- Institute for Testing of Materials of Republic of Serbia, Belgrade, Serbia, Geotechnical Engineer

December 1989-April 1991- Construction Company Rad, Belgrade, Serbia, Civil Engineer

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Experience

RAILWAY AND HIGHWAY INFRASTRUCTURE

EVERGREEN LIGHT RAPID TRANSIT PROJECT, VANCOUVER, BC, CANADA

Time domain effective stress based seismic deformation analysis of seismic liquefaction and cyclic mobility of the ground (pore water pressure build-up and softening/degradation of gravels/sands/silts/clays). The analyses comprised generation of the design accelerograms for a range of time histories corresponding to 1 in 100, 500, 1000, 2500 year events. Estimation of liquefaction risk and calculation of the load and deformation demands on piled bents.

TRACKBED DESIGN TRILLIUM LINE EXTENSION, OTTAWA, CANADA

Trackbed design for the Trillium Line Extension Light rail system in Ottawa, Canada.

GEOTECHNICAL INVESTIGATION AND FOUNDATION DESIGN FOR THE TRANSMISSION TOWERS FOR METROLINX GO TRANSIT TRAIN CONTROL SYSTEM, TORONTO, CANADA

Site investigation and foundation design for the transmission towers for the Metrolonx GTCS. Engineering analysis of geotechnical conditions and foundation options. Review of the foundation options and construction methods.

EASIER ACCESS PHASE III TO TTC DUPONT STATION, TORONTO, ONTARIO, CANADA

Finite element analyses and Geotechnical Report for the Class 2 Damage Assessment for the Easier Access Phase III to TTC's Dupont Station on the Yonge University line. The Report also included the analyses of geotechnical risks associated with construction ground water lowering in glacial tills.

166 WALLACE STREET, SITE INVESTIGATION AND THE ANALYSIS OF GEOTECHNICAL CONDITIONS; VAUGHAN; ONTARIO, CANADA

The assessment of 6m deep toe excavation induced displacements on the existing and running CPR Railway Line.

HS2 PHASE 1 (AREA CENTRAL), ASSESSMENT OF CUTTING HEAVE AND MITIGATION METHODS, OXFORDSHIRE, UK

The advanced assessment of the short and long term slope stability and ballast-less trackbed heave for a 30 m deep cutting in Oxford Clay. The review included advanced constitutive modelling and finite element analyses of consolidation and slope stability conditions. The review also included the survey and technical analysis of possible mitigation methods to limit the impact of excessive trackbed heave.

MILTON KEYNES - BLETCHLEY WEST COAST MAIN LINE, UK

Cat 3 Check of pile design for signal post supporting structures and gantries.

DESIGN OF RAILWAY SIDINGS FOR FELIXSTOWE, UK

Geotechnical tender design of the ground improvement scheme for the subgrade.

EAST DIDSBURY AND GATLEY RAILWAY STATIONS, UK

Design of platform foundations and the remedial measures for slope stabilization.

DOCKLINE LIGHT RAILWAY CAR STRENGTHENING, CANARY WHARF, LONDON

3D numerical analysis of the interaction of the mono-piled bent foundations and multi-level basement for the North Quay Development in Canary Wharf, London. Detailed sensitivity analysis of monopile and earth supporting system deformations.

MATTAR STATION FOR SINGAPORE MASS RAPID TRANSIT LINE, SINGAPORE

Tender design for 30m deep cut-and-cover station box on the Singapore MRT line.

PILE- TUNNEL INTERACTION FOR THE TALLY HO! PUB, KENTISH TOWN, LONDON, UK

Pile-soil-tunnel interaction analysis and the clearance assessment of the running tunnels of the London Underground Northern line.

TengizChevroOil KAZAKHSTAN, INFIELD AND HEAVY HAUL ROAD REDESIGN, KAZAKHSTAN

Advanced numerical modelling of the effects of cyclic loading on the Infield Haul Road Structure. Unified model aimed to predict the cyclic stiffness and shear strength degradation of subgrade, cyclic loading induced build-up of excess pore pressures, as well as the overall behaviour of the road structure under the effect of 1800 tonne heavy modules.

CUNNINGHAM GAP, QLD, AUSTRALIA

Rockfall analysis and the design of rockfall protection for Cuts 17 and 18 on Cunningham Highway.

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N7 CASTLETOWN-NENAGH, IRELAND

Geotechnical interpretation, earthwork design and Structures Design for the Design & Build Tender for the 36 km long N7 Castletown to Nenagh (Derrinsallagh to Ballintotty) Scheme.

M1 J25 – 28 WIDENING PHASE 1B, UK

Geotechnical design of Retaining Walls on banks. Outline design for target cost. Re-quantification of widening works to CDM design.

M1 J6A – 10 WIDENING, UK

Geotechnical design and soil-structure analysis of the foundations for integral bridges on Junction 10.

ESSEX ROAD BRIDGE, HODDESDON, UK

Cat 3 pile design.

M25 DBFO J27-30 DETAILED DESIGN, UK

Design and optimisation of embedded retaining structures for the Emergency Access Routes for M25 widening.

UPPER FORTH CROSSING AT KINCARDINE, UK

Cat 3 check of the design of Structure S03 Main Pier Foundations and the design of piled embankments for Structure 02.

NOVI SAD- SUBOTICA HIGHWAY ON CORRIDOR 10, SERBIA

Geotechnical appraisal and investigation for 25 overbridges. Client Public Enterprise Serbian Roads

LANDSLIDE DUBOKO-RAZANJ ON BELGRADE-NIS HIGHWAY, CORRIDOR 10, SERBIA

Site investigation and geotechnical design of remedial measures.

STRUCTURAL FOUNDATIONS AND URBAN INFRASTRUCTURE GEOTECHNICS

AIRPORT LINK, BRISBANE, AUSTRALIA

Geotechnical support for the design and construction of temporary works for Airport Link in Brisbane.

IKEA RETAIL STORE, "BLUE BOX", BELGRADE, SERBIA

Geotechnical interpretive reporting and foundation design for IKEA's "blue box" in Belgrade, Serbia.

DESIGN OF CIPP LINERS FOR GRAVITY SEWER PIPES.

Centrifuge modelling and the development of design guidelines for geotechnical design of CIPP liners for the rehabilitation of gravity sewer pipes.

GLADSTONE LNG TANK ON CURTIS ISLAND, QLD AUSTRALIA

Earthworks design and suitability assessment of the residual soils and laterites. Advice on other aspects of the earthworks, including topsoil strip depth, clay cover liner design and blastable rock quantities.

MAKIS 2 WATER PROCESSING PLANT, BELGRADE, SERBIA

Planning, specification and management of geotechnical site investigations for Makis 2 Water Processing Plant (installed capacity 6m3/s).

WATER PROCESSING PLANT 'PETROVARADINSKA ADA', NOVI SAD, SERBIA

Foundation design for the WPP Petrovaradinska Ada (installed capacity of 0.2m3/s).

WATER PROCESSING PLANT 'OCAGE' IN LAZAREVAC, SERBIA

Foundation design and pile testing for the WPP Ocage.

RESIDENTIAL DEVELOPMENT IN MIHNEVO, RUSSIA

Geotechnical interpretation and foundation design for 25 stories building.

PRIME TOWER IN MANILA, PHILIPPINES

Design of 25m deep basement and foundation raft.

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BLOCK 12 RESIDENTIAL DEVELOPMENT, NEW BELGRADE AND THE UNIVERSITY RESIDENTIAL SITE, BELGRADE

Planning, specification, management and interpretation of static axial load testing.

BELGRADE ARENA, NEW BELGRADE

Static lateral pile load testing, dynamic vertical load tests and sonic Integrity testing of piles.

DAMS, MINING INFRASTRUCTURE AND HYDRO POWER

MINE DE COBRE PANAMA, PANAMA

Design of dams and spillway structures for 37 sedimentation and collection ponds. Stockpile design and the design of embankments and cuttings for the large open-pit copper development project Cobre Panama in Panama. Interpretation of geotechnical conditions, reporting.

WAFI-GOLPU GOLD AND COPPER MINE IN WAFI RIVER VALLEY, MOROBE PROVINCE, PAPUA NEW GUINEA (PNG)

SI and interpretation of geotechnical conditions for the design and construction of the box cut decline: slope design, soil-nail-shortcrete support system and the cut-and-cover corrugated steel tunnels. Design of surface run-off drainage system.

BOCAC DAM, BOSNIA

Geotechnical design of remedial measures for the access road to 60m high Bocac arch dam- part of Vrbas Hydro Power System.

ENERGY INFRASTRUCTURE (ONSHORE AND OFFSHORE) AND HYDRO POWER

EPR HINKLEY POINT C, Civil Engineering Detailed Design of Unclassified Buildings for Hinkley Point NPP, UK

Geotechnical support for multi-step SSI analysis. Kinematical interaction analysis of massless rigid foundation to determine the foundation input motion and impedance functions to account for the effects of foundation embedment, shape and the flexibility of the foundation and corresponding radiation damping.

UNDERGROUND GAS STORAGE INSTALLATION AT ATWICK AND ALDBROUGH GAS STORAGE NEAR GARTON, UK

Geotechnical Modelling of Salt Caverns in Aldbrough, East Yorkshire. Review of previous studies and additional modelling works to determine the suitability of caverns at the Aldbrough site, when subjected to predetermined operational conditions. In particular, investigations focused on the likely impact to the caverns' long term stability and convergence when a minimum pressure at the cavern casing shoe of 120 barg is applied, and the evaluation of the acceptable maximum allowable pressure that will not imperil the integrity of the caverns' last cemented casing shoe.

HORNSEA OFFSHORE WIND FARM

Technical review of the pile design for offshore substations.

FULMAR A PLATFORM, NORTH SEA, UK

Technical review of geotechnical analysis and support for the structural integrity check of the Fulmar A Platform, located in Block 30/16 of the British Sector of the North Sea.

SALTIRE PLATFORM, NORTH SEA, UK (ATKINS)

Technical review of geotechnical analysis and support for the structural reassessment of the Saltire Platform.

DESIGN OF 50 M DEEP, 80M DIAMETER SHAFTS FOR TWO UNDERGROUND LNG TANKS, PORTO EMPEDOCLE, SICILY, ITALY

Feasibility study and conceptual design of 50m deep diaphragm retaining walls. Transient and long term analysis of slurry walls under working and extreme loading conditions, 3D Finite Difference (3D FLAC) analysis of static and pseudo-static seismic analysis.

SEISMIC DESIGN OF THE FOUNDATIONS FOR LNG TANKS IN SINES, PORTUGAL

Geotechnical input for seismic analysis of LNG tanks. Detailed analysis of site specific response and geotechnical support for the impedance method of soil structure interaction analysis (kinematic interaction analysis for the foundation input motion and foundation impedance functions).

MULTI CARGO FACILITY AT PORT ABBOT, QLD, AUSTRALIA

Technical Review of geoseismic design of earthworks. Evaluation of liquefaction potential and seismic slope analysis of 14m high rockfill bunds, revetments, armoured and non-armoured slopes for the offshore MCF off the coast of Port Abbot in North Queensland.

DESIGN OF GRAVITY BASES FOR THE OFFSHORE WINDFARM PLATFORMS.

Feasibility study and conceptual design of gravity bases for offshore wind turbines. Analysis of the effects of cyclic loading, analysis of scouring and seabed stability, simplified dynamic analysis of the foundations and 3D Finite Difference (3D FLAC) pseudo-static analysis.

WERN DDU WINDFARM, WALES, UK

Interpretation of ground conditions and approval of the wind turbine generator and wind monitoring mast foundations

SHERINGHAM SHOAL AND GREAT GABBARD OFFSHORE WIND FARMS, UK

Due diligence review of the foundation design and the assessment of suitability of seabed conditions.

FENLAND SITES WIND FARMS, UK

Interpretation of ground conditions and Design of wind turbine generator and wind monitoring mast foundations.

PERHAM AIRFIELD WIND FARMS, UK

Geotechnical design for the onshore wind farms.

ARROW LNG TANK ON CURTIS ISLAND, GLADSTONE, QLD, AUSTRALIA

Geotechnical Interpretive Report for the design of pipeline and tunnel for the Arrow LNG tank on Curtis Island, Gladstone.

GEOTECHNICAL EARTHQUAKE ENGINEERING

EVERGREEN LIGHT RAPID TRANSIT PROJECT, VANCOUVER, BC, CANADA

Time domain effective stress based seismic deformation analysis of seismic liquefaction and cyclic mobility (pore water pressure build-up and softening/degradation of gravels/sands/silts/clays). The analyses comprised generation of the design accelerograms for a range of time histories corresponding to 1 in 100, 500, 1000, 2500 year events.

MATTAGAMI WATER POLLUTION CONTROL PLANT IN TIMMINS, ONTARIO, CANADA

Assessment of the liquefaction potential and the risk of lateral spreading for the proposed extension of the existing Water treatment Plant.

AL SOWWAH ISLAND SHORE WORKS, ABU DHABI

Geoseismic design of the seawall bordering Al Sowwah island. The seismic design of diaphragm walls and drawing up specifications for the hydraulic fill for the Sowwah Island, the core of Abu Dhabi's newly developed Central Business District.

DEEP EXCAVATION AND TUNNELS

EASIER ACCESS PHASE III TO THE DUPONT STATION, TORONTO, ONTARIO, CANADA

Finite element analyses and Geotechnical Report for the Class 2 Damage Assessment for the Easier Access Phase III to the Dupont Station on the Bloor-Yonge line. The Report also included the analyses of geotechnical risks associated with construction ground water lowering in glacial tills.

YORK TRUNK SEWER AND PAISLEY-CLYTHE FEEDERMAIN, GUELPH, ONTARIO, CANADA

Geotechnical services for the design and construction of the 1200mm York Sanitary Trunk Sewer and 600mm Paisley Clythe Feedermain for the City of Guelph. Geotechnical interpretation, recommendations and technical evaluation of river crossing alternatives: microtunneling, horizontal directional drilling and open cut construction. Detailed analyses of suitability of the native material for backfilling, pipe bedding and cover for rigid and flexible pipes, and geotechnical input for thrust blocking and joint restraint design.

NORTH SECTION OF THE HANLAN WATER PROJECT, PEEL REGION, ONTARIO, CANADA

Geotechnical consulting and advice for GBR for the tunnel section North Hanlam Feedermain and Mississauga City Centre Subtransmission Watermain.

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1500MM DIA WATERMAIN UNDER KENNEDY ROAD IN TORONTO, ONTARIO, CANADA

Geotechnical advice regarding ground treatment (soil lubrication and the application of anti-clogging agents) for the EPBM tunnelling in mixed soil conditions.

CAT 3 CHECK OF THE EARTH SUPPORTING STRUCTURES FOR ONE HYDE PARK, LONDON, UK

Cat 3 check of highway retaining structures component for the One Hyde Park project.

SHARD OF GLASS, LONDON, UK

Geotechnical advice related to the analysis of the interaction between the basement of the super-tall landmark skyscraper Shard of Glass and listed buildings comprising the historic London Bridge Station.

GOLDSMITH COLLEGE, LONDON, UK

Geotechnical Advice for the design and construction of 5m deep basement in London Clay.

DETAILED DESIGN OF EMBEDDED RETAINING WALLS FOR THE BASEMENTS OF RIVERSIDE PLACE, KENDAL, UK

Design and optimisation of the temporary ground support system for the basements of a mixed (retail/residential) use development located on the bank of the river Kent in South Lake District.

GLASGOW HARBOUR, UK

Cat 3 check of the Assessment of the Development Effects on the Strathclyde Passenger Transport Infrastructure. The work involved Cat III check of the effects on the existing tunnels.

ST DAVIDS 2, CARDIFF, UK

3D Finite Element analysis of sheet pile slab foundation interaction. Technical expert advice

WEMBLEY NATIONAL STADIUM, UK

FE analysis of the soil-structure analysis of the Contiguous Bored Pile Walls. Technical expert advice.

60-62 SOUTH EDWARDS SQUARE, LONDON, UK

Analysis and the assessment of short-term and long-term heave of 9m deep basement excavation

WHARVES, MARINE AND PORT STRUCTURES

PORT OF OSHAWA GEOTECHNICAL SERVICES, ONTARIO, CANADA

Geotechnical Investigation and Finite Element Study to determine the capacity and the remaining life of Steel Sheet Pile wall for the East Wharf Extension at the Port of Oshawa.

ABLE SEATON PORT, QUAY 6, UK

FE Analysis of Pile driving on the existing quay wall. Assessment of Lateral Capacity compliance with EC7 of existing quay wall retaining structure.

PORT OF KARACHI, PAKISTAN

Technical review of the seismic design of a tie-back quay wall with damage assessment and the effect on adjacent structures.

LIVERPOOL CRUISE TERMINAL, LIVERPOOL, UK

Design of mooring and piles for the Vehicular Linkspan and Pedestrian Emergency Bankseat. Static lateral pile load testing.

FELIXSTOWE PORT TRINITY III TERMINAL EXTENSION- BACKLANDS DEVELOPMENT, UK

Tender Design of the ground improvement scheme for the proposed development (17 ha of storage space).

GARDEN REACH SHIPYARD ENTERPRISE MODERNISATION, KALKOTA, INDIA

Design of permanent and temporary cofferdam. Design of loading bearing and heave reducing piles and barrette diaphragms for the dry dock and inclined berth. Design of piled foundations for the Module Hall and Paint Shop Cell.

MULTI CARGO FACILITY AT PORT ABBOT, QLD, AUSTRALIA

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Technical Review of geoseismic design of nearshore earthworks. Evaluation of liquefaction potential and seismic slope analysis of 14m high rockfill bunds, revetments, armoured and non- armoured slopes for the offshore MCF off the coast of Port Abbot in North Queensland.

Publications and Presentations

1. Spasojevic, A., Cabarkapa Z. (2012). Extended stress field analysis of surface strip footing on sand. Geotechnique 62, No 8, 733-740

2. Spasojevic, A., Cooper M. (2010). The Estimation of Heave Effects on the Settlement Reducing Basement Piles in Stiff Clay Soils. Geotechnical Challenges in Urban Regeneration, The DFI and EFFC 11th International Conference, May 2010, Excel London, UK

3. Spasojevic, A.D., Mair, R.J. & Gumbel, J.E. (2007). Centrifuge modelling of the effects of soil loading on flexible sewer liners. Geotechnique 57, No 4, 331-341

4. Spasojevic, A., Mair R. (2005) 'Centrifuge modelling of soil load transfer to CIPP liners.' Conference proceedings of The 5th International Symposium of TC28 of ISMMFE, Amsterdam 15- 17 June 2005.

5. Spasojevic, R Mair, J Gumbel. (2004) 'Experimental studies of soil load transfer to flexible sewer liners: latest results and implications for design'. ASCE 2004 Pipeline Conference, San Diego, California 01-04 August, 2004

6. Šušić N., Spasojević A., Polić. P. (1997) The influence of high pressures on structural changes of some minerals, Engineering Geology, 46, pp 33-40

7. Spasojević A., Šušić N., Kordić-Diković N., Stojkov K. (1997). 'Trilinear model of uniaxial stress-strain behaviour of natural clays', 14 International Conference on Soil Mechanics and Foundation Engineering, Hamburg

8. Šušić N., Spasojević A. (1995) 'Relations between cone resistance and mechanical properties of the loess soils', International Symposium CPT'95, Linkoping, Sweden, Volume 2, pp 313-316