JAN ANDRIES WIUM

Professor in Civil Engineering

PERSONAL

Birth date	:	15 September 1957
Marital Status	:	Married, 2 children

EDUCATION

BSc (Eng) Civ (with distinction), 1979, University of Pretoria, South Africa;
BEng (Hons) Structures, 1982, University of Pretoria, South Africa;
MEng (Structures) (with distinction), 1985, University of Pretoria, South Africa;
Docteur es Science Technique, 1992, EPFL, Lausanne, Switzerland.

PROFESSIONAL AFFILIATIONS

Corporate Member, S.A. Institute of Civil Engineering
Member, Engineering Council of South Africa
Member, Ingénieurs et Architects Suisses
Chair of the South African group of IABSE (International Association for Bridge and Structural Engineering)
Vice president on the executive board of IABSE (International Association for Bridge and Structural Engineering)

CARREER SUMMARY

January 2010 to present :	Murray & Roberts Chair in Construction Engineering and Management, Department of Civil Engineering University of Stellenbosch, South Africa
November 2005 to December 2009 :	Professor in Civil Engineering, Department of Civil Engineering University of Stellenbosch, South Africa. C&CI Chair in Structural Concrete
June 2003 to October 2005 :	Senior Lecturer Department of Civil Engineering University of Stellenbosch, South Africa
June 2000 to May 2003 :	Director, Structural Division, Africon Engineering International (Consulting Engineers), Pretoria, South Africa
February 1998 to May 2000 :	Project leader, Africon Engineering International (Consulting Engineers), Pretoria, South Africa
April 1995 to January 1998 :	Structural Manager, PLRT, Kinta Kellas - Kuala Lumpur, Malaysia : Project management company
June 1992 to March 1995 :	Associate, design engineer and team leader, Africon Engineering International (Consulting Engineers), Durban, South Africa
August 1988 to May 1992 :	Doctoral candidate, Swiss Federal Institute of Technology, Lausanne, Switzerland.
January 1985 to July 1988 :	Structural Design Engineer, Africon Engineering International (Consulting Engineers), Pretoria, South Africa
April 1984 to December 1984 :	University of Pretoria, South Africa : MScEng Candidate
January 1982 to March 1984 :	Bridge design engineer, Africon Engineering International (Consulting Engineers), Pretoria, South Africa

CURRENT SYNERGETIC ACTIVITIES :

- Teaching at the Department of Civil Engineering, University of Stellenbosch
- Consultant to industry as structural engineering specialist on project by project basis
- Journal reviewer : Journal of the South African Institute of Civil Engineers
  Structural Engineering International (IABSE)
  Bridge Engineering (ICE)
  Construction engineering and Management (ASCE)
- Chairman of the working group for the revision of SABS 0100 Part 1 (Design of Concrete Structures)
- Chairman of the organizing committee : Second Concrete Code Symposium held in Stellenbosch on 28 and 29 November 2006.
- Vice President IABSE since November 2007
- Member of the SAICE sub committee for the revision of the South African Loading Code (SABS 0160) : member responsible for earthquake loading
- Director of the Institute of Structural Engineering (2006-2009), Department of Civil Engineering, University of Stellenbosch (Institute through which industry research and consultation appointments are performed)
- Member of the Editorial Board 2002-2009: Structural Engineering International (IABSE quarterly journal)

SCIENTIFIC COMMITTEES

- Member of the Scientific Committee for the IABSE conference in Egypt May 2012
- Member of the Scientific Committee for the IABSE conference in Dubrovnic May 2010
- Chairman of the Technical Committee : 4th CIDB Post Graduate Conference, October 2006
- Member of the Scientific Committee for the IABSE Symposium in Shanghai, China 2004
- Member of the Technical Committee for the Conference on Public Transportation Structures by IABSE in Lucerne, Switzerland, September 2000.

CURRENT RESEARCH ACTIVITIES :

- Design management and knowledge capturing
- Construction risk management
- Investigation into housing projects and solutions in South Africa
- Study of hybrid construction for the South African construction industry : Study of the optimal use of the combination of in-situ concrete and prefabricated concrete/steel elements, including project management, technical and contractual matters.
- Completed 2010 : Research project : Establishment of design code for water retaining structures in South Africa (grant by Water Research Commission as from April 2007)

- Completed 2010 : Drafting of Part 4 of SANS 10160 Seismic loads of the General Procedures for Loading in Buildings and Industrial Structures and related research (published 2010).

- Verification of behaviour factor used in seismic design of concrete shear wall structures.

ABREVIATED EXPERIENCE RECORD

6/01/2003 to Present : Professor in Civil Engineering since November 2005.

Since 2003 : Senior Lecturer Department of Civil Engineering University of Stellenbosch :

- Compilation of curriculum of post graduate program in Construction Engineering and Management (2010)
- Teach undergraduate course in Engineering Management (2010 - 2012)
- Construction Management Programme (CMP) : Stellenbosch University. Director since 2012.
- Teach undergraduate course in design of reinforced and pre-stressed concrete elements (2003-2009)
- Post graduate course MT11 (Structural dynamics) (2003-2010)
- Post graduate course MT13 : (Advanced Concete design) (2005-2010)
- Co-ordinate course in seismic design of buildings by international lecturer (2006, 2007, 2009).
- Construction Management Program University of Stellenbosch : Presented lectures on diagnostics of structures : 2005, 2007 - 2012
- Specialist services provided to industry : A variety of structural analysis appointments including

02/01/1998 to MAY 2003 Director (2000), Project leader in Africon (Consulting Engineers) Pretoria Structural Division on a variety of structural projects and project management appointments.

04/01/1995 to 01/01/1998 Kinta Kellas - Kuala Lumpur, Malaysia : Project and engineering management for the Kuala Lumpur Light Rail Transit System 2

- (US $2 000 million, comprising 23 km of elevated post tensioned viaduct, 23 elevated stations, 5 underground stations, 4 km tunnel, administration block, depot).

  Designation as Structural Manager. Specific tasks include co-ordination, design management, review of all structural designs for the project in order to monitor the quality, cost and schedule. Co-ordination and interface problems related to structural designs produced by the Consultant Engineer and six local structural engineering consultants, two design-and-build station contractors, two design-and-build tunnel contractors. Co-ordination and structural management to resolve design issues and to improve progress during the fast track construction program. Facilitating close liaison between consultants and contractor. Structural designs consisted of reinforced concrete, structural steelwork, post tensioning and pre cast elements.

06/01/1992 to 03/31/1995 Associate, Design engineer and team leader Africon Pinetown (South Africa):

A variety of structural projects including bridge inspections for Department of Transport on route N2 north of Durban, Secondary School (750 pupils), Pine Town magistrate's offices.

08/01/1988 to 06/01/1992	Swiss Federal Institute of Technology, Lausanne). Doctoral thesis on composite steel and concrete comprising the investigation of force introduction into composite columns.
01/01/1985 to 07/31/1988	Structural Design Engineer (Africon Pretoria): A variety of structural projects including extensive finite element modeling in projects for the Atomic Energy Corporation.
04/01/1984 to 12/31/1984	University of Pretoria : Presented post-graduate lectures (steel design).
04/01/1984 to 12/31/1984	University of Pretoria : Involved in research on vibration of machine bases (M Eng thesis).
01/01/1982 to 03/31/1984	Bridge design engineer (Africon Pretoria):
01/04/1982 to 31/03/1983	Planning Engineer, LTA earthworks, Uncle Charlie's Interchange.

JOURNAL PUBLICATIONS :

1. Wium, J. A.; Lebet, J. P. Simplified Calculation Method for Force Transfer in Composite Columns. Journal of Structural Engineering, ASCE, 120(3), 728-746.
2. Wium, J. A.; Badoux, J. C. Experimentelle Untersuchungen zur Kraftübertragung in Verbundstützen. Paper presented at the occasion of the 60 th birthday of Professor Dr-Ing Udo Vogel, University of Karlsruhe Nov. 1992.
3. Wium, J. A.; Lebet, J. P. Colonnes Mixtes: Transfert des Forces du Profilé Métallique au Béton d'Enrobage. Published: Construction métallique, Saint-Rémy-les-Chevreuse, Vol. 29 (1992) no. 4.
4. Wium, J. A. Force Transfer in Composite Columns (Part 1: Experimental Investigation). Publication : Steel Construction SAISC, Johannesburg, Vol. 16 (1992) No 4.
5. Wium, J. A. Force Transfer in Composite Columns (Part 2: Transfer Mechanism and Design Equation). Publication : Steel Construction SAISC, Johannesburg, Vol. 16 (1992) No 5.
6. Wium, J. A.; Meyor, G,; Meili, A. Des Colonnes Resolument Modernes: Les Colonnes Mixtes. Publication: Ingénieur et architectes suisses, Lausanne Vol 115 (1989) No 20.
7. Pienaar, M; Wium, J. A.; Wuite, R. Monitoring Construction Vibrations. Construction World, February 2005.
8. Wium, J. A. Seismic loading research at the University of Stellenbosch. Civil Engineering, Vol. 13 No. 3, March 2006, SAICE.
9. Wium JA, Van Zijl GPAG, Boshoff WP. Research programme on concrete materials and structures. Civil Engineering Magazine 2009; 17(2) : 18-22.
10. Wium, J A. Background to Draft SANS 10160(2009): Part 4 Seismic Loading. Journal of the South African Institution of Civil Engineering, Vol. 52 No 1, April 2010, pp. 20-27.
11. Holický, M, Retief, J, Wium J. Partial factors for selected reinforced concrete members: Background to a revision of SANS 10100-1. Journal of the South African Institution of Civil Engineering, Vol. 52 No 1, April 2010, pp. 36-44.
12. Le Roux, RC, Wium JA. Assessment of the behaviour factor for the seismic design of reinforced concrete structural walls according to SANS 10160 – Part 4. Journal of the South African Institution of Civil Engineering, Vol. 54 No 1, April 2012, pp. 69-81.
13. Retief, JV and Wium, JA. Principles and Application of Structural Design Code Development in South Africa. Structural Engineering International, Volume 22, Number 2, May 2012, pp. 182-189

CONFERENCE PROCEEDINGS :

1. Wium, J. A. Equivalent Foundation Stiffness for Vibrating Machine Bases. Proceedings of the Conference on Finite Element Methods in South Africa, Johannesburg, South Africa, FEMSA/86, February 1986.
2. Wium, J. A.; Lebet, J. P. Force Transfer in Composite Columns. Paper presented at the Engineering foundation Conference: Composite Construction II, June 14-19, 1992, Potosi, Missouri

3. Wium, J. A.; Lebet, J. P.; Crisinel, M. Slab and Beam Load Introduction in Composite Columns. Paper presented at the "Second International Workshop on Connections in Steel Structures: Behaviour, Strength and Design". University of Pittsburgh, Pennsylvania, USA, April 10-12, 1991.
4. Wium, J. A. Paper presented at the Conference on Public Transportation Structures by IABSE in Lucerne, Switzerland : Light Rail Transit System Two for Kuala Lumpur, September 2000.
5. Wium J.A., Rautenbach J. *A South African perspective on bridge maintenance management*. The 23rd Annual Southern African Transport Conference, CSIR International Convention Centre, Pretoria, South Africa, July 2004.
6. Wium JA, Retief JV. *The South African loading code and detailing of reinforced concrete elements for seismic loading*. Developing concrete to serve practical needs conference, Eskom Convention Centre, Midrand, South Africa, C&CI, 127-139, October 2004.
7. Van Zijl GPAG, Wium J.A. *Engineered cement-based composites for seismic ductility*. Developing concrete to serve practical needs conference, Eskom Convention Centre, Midrand, South Africa, C&CI : 101-112, October 2004.
8. Huber U.A, Retief J.V, Wium J.A. *Structural concrete shear resistance*. Developing concrete to serve practical needs conference, Eskom Convention Centre, Midrand, South Africa, C&CI: 113-126, October 2004.
9. Wium JA. *Rationalizing Reinforced Concrete for Economy and Quality*, 3rd National Post-graduate Conference, Johannesburg, South Africa, October 2005.
10. Wium JA, Van Zijl GPAG, The South African Loading Code Revision of Provisions for Seismic Loading, First African Concrete Code Symposium, Tripoli, 28 to 29 November 2005.
11. Wium JA. Steel *Construction and Seismic Provisions for the Proposed SANS 10160 Loading Code*, Construct in Steel – Steel 50 Conference, Southern African Institute of Steel Construction, Johannesburg, 8-9 November 2006.
12. Retief J.V, Dunaiski P.E, Dymond J.S, Wium J.A.; *Considerations to establish a basis for structural concrete design for application in the development of an African Concrete Code*. Second African Concrete Code Symposium, Stellenbosch, 29 to 30 November 2006.
13. Jurgens C.J, Wium J.A. Investigation into the feasibility of Hybrid Concrete Construction (HCC) in South Africa. CIB World Building Congress, Cape Town, May 2007.
14. Wium, J. A. and Ngab, A. A Concrete Code for Africa. IABSE Symposium, Weimar, 2007.
15. Wium, J.A. and Van der Merwe J. Rocking shear wall foundations in regions of moderate seismicity. Paper submitted (accepted) for the IABSE Symposium in Bangkok, September 2009.
16. Holický M, Retief J, Wium J. Probabilistic Design for Cracking of Concrete Structures. 7th International Probabilistic Workshop, Delft, 25-26 November 2009, pp. 87-98.
17. Wium J A, Bakhoum M M. Code development in Africa. Joint IABSE –fib Conference, Dubrovnic, 3-5 May 2010. ISBN 978-953-7621-06-, pp. 51-61.
18. Retief J, Wium J A. Principles for Development of Standards for Structural Design. Joint IABSE – fib Conference, Dubrovnic, 3-5 May 2010. ISBN 978-953-7621-06-, pp. 181-188.
19. Wium J A, Eigelaar E M. An Evaluation of the Prediction of Flat Slab Deflections. IABSE Symposium, Venice, 22-24 September 2010. ISBN 978-3-85748-122-2, pp. 276-277.
20. Wium J A, Retief J. Managing Risk in Construction Projects – An overview. Annual Construction Risk Management Conference, 3 - 4 August 2010, Cape Town.
21. Wium J A, Eigelaar E M. An Evaluation of the Prediction of Flat Slab Deflections. IABSE Symposium, Venice, 22-24 September 2010. ISBN 978-3-85748-122-2, pp. 276-277.
22. Wium, J. A. and Lombard, A. Evaluation model for choosing hybrid concrete construction. IABSE-IASS Symposium, London, 20-23 September 2011.
23. Wium, J. A. Structural Engineering and the Tubular Track Rail Support System. IABSE Conference Sharm El Sheikh, 7-9 May 2012.
24. Storey, P and Wium, JA. Managing Risk for Concrete Repair to Multi-Storey Buildings, International Conference on Concrete Repair, Rehabilitation and Retrofitting Cape Town, 02-05 September 2012.
25. Nel, CJ and Wium, JA. A Formal Program to Deliver Experience Civil Engineering Professionals. A possible solution towards Skill Shortage and Infrastructure Development Skills needs in South Africa, Africa and other Developing Countries. 8th Asia Pacific Structural Engineering and Construction Conference (APSEC) and 1st International Conference on Civil Engineering Research (ICCER), 2nd-4th October 2012.
26. McLeod, CH, Wium, JA and Retief, JV. Reliability model for cracking in South African reinforced concrete water retaining structures, 10Th International Probabilistic Workshop, Stuttgart, November 2012.

POST GRADUATE STUDENTS SUPERVISED (completed) :

A Goosen :	Structural capacity of freestanding glass balustrades. MScEng. April 2007
J R Meiring :	Rationalisation of flat slab reinforcement. MEng. December 2007.
C J Jurgens :	An investigation into the feasibility of hybrid concrete construction in South Africa. MScEng. April 2008
C Spathelf :	Assessment of the Behaviour Factor for the Seismic Design of Reinforced Concrete Structural Walls according to SANS 10160: Part 4. MScEng. December 2008.
J E van der Merwe :	Rocking shear wall foundations in regions of moderate seismicity. MScEng. December 2009.
E M Eigelaar :	Deflections of Reinforced Concrete Flat Slabs. MScEng. March 2010.
J A Fourie :	Effect of Seismic Loads on Water-Retaining Structures in Areas of Moderate Seismicity. MScEng. March 2010.
J Zang :	Investigation into a beam-column connection in pre-cast concrete. MScEng, March 2010.
R C le Roux :	Assessment of seismic drift of structural walls designed according to SANS 10160 - Part 4. December 2010.
A Lombard :	Decision making between Hybrid and In-situ Concrete Construction in South Africa. December 2011.
R Hanekom :	Increasing the utilization of hybrid concrete construction in South Africa. December 2011.
R N Vosloo:	The role of Civil Engineering professionals within the housing environment in South Africa. March 2012.
V. Kuo:	The role of Knowledge Management in Improving Constructability. MScEng, December 2012.
D de Klerk:	Precast Modular Construction of Schools in South Africa. MScEng, March 2013.
E le Roux:	Creating a sustainable environment for infrastructure delivery. MScEng, March 2013