



EDUCATION

Universidad Autónoma de Nuevo León, Mexico

- Bachelor of Science, Civil Engineering, 2008

Delft University of Technology, The Netherlands

- Master of Science, Civil Engineering, 2010
- Doctor of Philosophy, Civil Engineering, 2015

PRACTICE AREAS

- Service Life Prediction
- Corrosion Protection Plans
- Concrete Durability & Sustainability
- Construction Troubleshooting
- Litigation Support
- Concrete Materials Evaluation
- Forensic Investigation

REGISTRATIONS

Professional Engineer

- British Columbia, Manitoba, Mexico, Michigan, Ontario, Texas

HONORS AND AWARDS

- VABOR Studieprijis 2010

EXPERIENCE

Dr. Pacheco focuses on the design, monitoring, and protection of concrete and steel infrastructure for service life extension. He specializes in providing solutions for asset owners and contractors on several issues, including selecting and evaluating construction materials, the durability performance of new and existing concrete and steel structures, and selecting repair and mitigation techniques for extending service life.

Dr. Pacheco has over ten years of progressive experience ranging from consultant and associate engineer at the Dutch Institute of Applied Research (TNO) to Principal and manager of a group of up to fifteen technical staff employees at CTLGroup. He has provided litigation support services for various cases focused on premature deterioration and service life predictions.

Dr. Pacheco has co-authored multiple peer-reviewed journal articles on concrete materials and regularly presents at technical conferences.

PROFESSIONAL SERVICE

American Concrete Institute

- 222 Corrosion
- 357 Offshore & Marine
- 357.3 Waterfront Structures (Chair)
- 365 Service Life (Secretary)
- 562-I Code for Repair (Materials),
- 563 Repair Specifications.

Association for Materials Protection and Performance (Formerly NACE)

- Sub-Committee 12: Concrete Infrastructure
- Chair of SP21545 Buried and Submerged Concrete Infrastructure

RILEM

- 285-TMS, Concrete Durability for Sulfate and Chloride Ions
- 289-EBD, Long-term Durability of Marine Concrete
- 235-CTC, Chloride Thresholds

International Federation of Structural Concrete (fib)

- Committee Member – COM 8 (Concrete Durability)

REPRESENTATIVE PROJECTS

Service Life Predictions

- Ras-Laffan Industrial Facility, Qatar – Remaining service life predictions and repair recommendations
- Mile Point Training Wall, FL – Service life prediction and qualification of concrete mixtures.
- Lima Wharf Base, Guam – Service life prediction and qualification of concrete mixtures.
- Pier 6, Naval Base San Diego, CA – Service life prediction and qualification of concrete mixtures.
- Marine Bulkhead and Sheet Piles, TX

– Condition assessment and remaining service life predictions for buried concrete and steel members.

Concrete Durability & Corrosion Protection

- Rondout-West Brach Bypass, NY – Evaluation and prediction of atmospheric steel corrosion rates.
- DeLaval Manufacturing, New Zealand – Consulting Services to enhance rotary milking platform concrete durability.
- OBO Alternative Concrete Technology, VA – Cast-in-Place concrete specification review and development.
- Evaluation of various parking garages for service life extension. Monitoring of active corrosion and development of repair recommendations.

Concrete Materials Consulting

- WisDOT Internal Curing – Principal Investigator for a multi-year study on internal curing for pavement and bridge deck concrete.
- CabonCure – Lead consultant on evaluating the performance of concrete with carbon sequestration.
- Ft Lauderdale-Hollywood Airport, FL – Consulting services related to the water permeability of architectural concrete.
- GLWA Repair Tunnel, MI – Consulting services related to developing a washout-resistant grout for underwater tunnel lining.

Construction Troubleshooting

- CSUN G6 Parking Garage, CA – Evaluation of low compressive strength concrete and corrective action development.
- PDX Terminal, OR – Consulting services related to the construction of mass concrete pile caps.
- Slab-on-Grade Cracking, OK – Consulting services related to the construction of a slab-on-grade with premature distress.

Litigation Support

- Crocker Park Parking Garages, OH – Litigation support related to the estimated service life of three parking garages.
- Broadway Plaza, CA – Litigation support related to premature deterioration of parking garage foundation members.

PUBLICATIONS

1. Wong, H.S., Angst, U.M., Geiker, M.R., Isgor, O.B., Elsener, B., Michel, A., Alonso, M.C., Correia, M.J., **Pacheco, J.**, Gulikers, J. and Zhao, Y., (2022). Methods for characterising the steel–concrete interface to enhance understanding of reinforcement corrosion: a critical review by RILEM TC 262-SCI. *Materials and Structures*, 55(4), pp.1-29.
2. **Pacheco, J.**, & Tepke, D. (2021). Best practices for measurement, sensing, and quantifying corrosion in existing reinforced concrete structures. *Sustainable and Resilient Infrastructure*, 1-8.
3. **Pacheco, J.** (2021). Correlating Service Life Modeling and Corrosion Deterioration in Industrial Marine Structures. In *CORROSION 2021*. OnePetro.
4. **Pacheco, J.** (2021). Design, Evaluation and Specification for Concrete Mixtures with Low Potential for Cracking. In *International RILEM Conference on Early-age and Long-term Cracking in RC Structures* (pp. 51-60). Springer, Cham.
5. **Pacheco, J.** (2019). Incorporating Cracks in Chloride Ingress Modeling and Service Life Predictions. *ACI Materials Journal*, 116(5).
6. Isgor, B., Angst, U., Geiker, M., Halmen, C., Hansson, C., **Pacheco, J.**, Tepke, D., Trejo, D. and Vaddey, P. (2019) "Recommended practice for reporting experimental data produced from studies on corrosion of steel in cementitious systems", *RILEM Technical Letters*, 4, pp. 22-32. doi: 10.21809/rilemtechlett.2019.90.
7. Tang, L., Frederiksen, J. M., Angst, U. M., Polder, R., Alonso, M. C., Elsener, B., Hooton, D. & **Pacheco, J.** (2018). Experiences from RILEM TC 235-CTC in recommending a test method for chloride threshold values in concrete. *RILEM Technical Letters*, 3, 25-31.
8. **Pacheco, J.**, & Polder, R. B. (2016). Critical chloride concentrations in reinforced concrete specimens with ordinary Portland and blast furnace slag cement. *Heron*, 61(2), 99-119.
9. Polder, R. B., Angst, U. M., **Pacheco, J.**, & Peelen, W. H. (2016). Propagation of pitting corrosion of steel in concrete: conceptual models for local cross-section loss. In *Concrete Solutions: Proceedings of Concrete Solutions, 6th International Conference on Concrete Repair, Thessaloniki, Greece, 20-23 June 2016* (p. 417). CRC Press.
10. Šavija, B., Luković, M., Hosseini, S. A. S., **Pacheco, J.**, & Schlangen, E. (2015). Corrosion induced cover cracking studied by X-ray computed tomography, nanoindentation, and energy dispersive X-ray spectrometry (EDS). *Materials and Structures*, 48(7), 2043-2062.
11. **Pacheco, J.**, & Çopuroğlu, O. (2015). Quantitative energy-dispersive X-ray microanalysis of chlorine in cement paste. *Journal of Materials in Civil Engineering*, 28(1), 04015065.
12. Mendonça Filho, F. F., **Pacheco, J.**, & Çopuroğlu, O. (2015). Semi-and full quantitative EDS microanalysis of chlorine in reinforced mortars subjected to chloride ingress and carbonation. *EMABM 2015: Proceedings of the 15th Euroseminar on Microscopy Applied to Building Materials, Delft, The Netherlands, 17-19 June 2015*.
13. **Pacheco, J.**, Šavija, B., Schlangen, E., & Polder, R. B. (2014). Assessment of cracks in reinforced concrete by means of electrical resistance and image analysis. *Construction and Building Materials*, 65, 417-426.
14. **Pacheco, J.**, Šavija, B., Schlangen, E., Polder, R.B. (2014). Corrosion of steel in cracked concrete: A microscale study. In: Grantham, M., Basheer, P.M., Magee, B., Soustos, M., *Concrete Solutions, Belfast, 2014*.
15. **Pacheco, J.**, Šavija, B., Schlangen, E., Polder, R.B. (2014). Performance assessment of cracks in reinforced concrete. *Proceeding of the RILEM International Workshop on Performance- Based Specification and Control of Concrete Durability, 11 -13 June, Zagreb, Croatia, 2014*.
16. Šavija, B., Schlangen, E., **Pacheco, J.**, Millar, S., Eichler, T., & Wilsch, G. (2014). Chloride ingress in cracked concrete: a laser induced breakdown spectroscopy (LIBS) study. *Journal of Advanced Concrete Technology*, 12(10), 425-442.
17. Šavija, B., **Pacheco, J.**, & Schlangen, E. (2013). Lattice modeling of chloride diffusion in sound and cracked concrete. *Cement and Concrete Composites*, 42, 30-40.

18. Šavija, B., Luković, M., **Pacheco, J.**, & Schlangen, E. (2013). Cracking of the concrete cover due to reinforcement corrosion: a two-dimensional lattice model study. *Construction and Building Materials*, 44, 626-638.
19. Šavija, B., **Pacheco, J.**, & Schlangen, H. E. J. G. (2013). Lattice based simulation of chloride ingress in uncracked and cracked concrete: Model validation. In *FraMCoS-8: Proceedings of the 8th International Conference on Fracture Mechanics of Concrete and Concrete Structures*, Toledo, Spain, 10-14 March 2013. International Center for Numerical Methods in Engineering.
20. Šavija, B., **Pacheco, J.**, Lucović, M., & Schlangen, E. (2013). Modelling of Concrete Cover Cracking due to Reinforcement Corrosion. *Construction and Building Materials*, 44, 626-638.
21. Šavija, B., **Pacheco, J.**, & Schlangen, H. E. J. G. (2013). Lattice based simulation of chloride ingress in uncracked and cracked concrete: Model validation. In *FraMCoS-8: Proceedings of the 8th International Conference on Fracture Mechanics of Concrete and Concrete Structures*, Toledo, Spain, 10-14 March 2013. International Center for Numerical Methods in Engineering.
22. **Pacheco, J.**, Šavija, B., Schlangen, E., & Polder, R. (2012). Relationship between cracking and electrical resistance in reinforced and unreinforced concrete. In *2nd Intl. Conf. on Microstructural-related Durability of Cementitious Composites*, Amsterdam, Netherlands.
23. **Pacheco, J.**, Çopuroğlu, O., Šavija, B., Schlangen, E., & Polder, R. B. (2012, January). Assessment of critical chloride content in reinforced concrete by Energy Dispersive Spectrometry (EDS) revisited. In *Concrete Repair, Rehabilitation and Retrofitting III: 3rd International Conference on Concrete Repair, Rehabilitation and Retrofitting, ICCRRR-3*, 3-5 September 2012, Cape Town, South Africa (p. 185). CRC Press.
24. **Pacheco J.**, Polder R. (2012) Corrosion initiation and propagation in cracked concrete – a literature review. In: Andrade C., Gulikers J. (eds) *Advances in Modeling Concrete Service Life*. RILEM Bookseries, vol 3. Springer, Dordrecht.
25. **Pacheco, J.**, Morales-Nápoles, O., & Polder, R. B. (2012, August). Statistical analysis of electrical resistivity as a tool for estimating cement type of 12-year-old concrete specimens. In *Concrete Repair, Rehabilitation and Retrofitting III: 3rd International Conference on Concrete Repair, Rehabilitation and Retrofitting, ICCRRR-3*, 3-5 September 2012, Cape Town, South Africa (p. 256). CRC Press.
26. Šavija, B., **Pacheco, J.**, Schlangen, E., & Polder, R. B. (2012, April). Meso-scale simulation of chloride ingress in cracked concrete. In *The Second International Conference on Microstructural-related Durability of Cementitious Composites*, Amsterdam, The Netherlands.
27. Šavija, B., Schlangen, E., **Pacheco, J.**, & Polder, R. B. (2012, January). Modified Wedge Splitting Test (MWST)-a simple tool for durability investigations of reinforcement corrosion in cracked concrete. In *Concrete Repair, Rehabilitation and Retrofitting III: 3rd International Conference on Concrete Repair, Rehabilitation and Retrofitting, ICCRRR-3*, 3-5 September 2012, Cape Town, South Africa (p. 140). CRC Press.
28. Šavija, B., **Pacheco, J.**, Schlangen, E., & Polder, R. B. (2012, April). Meso-scale simulation of chloride ingress in cracked concrete. In *The Second International Conference on Microstructural-related Durability of Cementitious Composites*, Amsterdam, The Netherlands.
29. **Pacheco, J.**, & Polder, R. B. (2010). Preliminary study of electrochemical lithium migration into cementitious mortar. In *2nd International Symposium on Service Life Design for Infrastructures* (pp. 1093-1100). RILEM Publications SARL.
30. **Pacheco, J.**, Fajardo, G. J., & Valdez, P. L. (2010). Carbonation and chloride corrosion of steel reinforcement in natural pozzolan-based mortars. In *2nd International Symposium on Service Life Design for Infrastructures* (pp. 773-680). RILEM Publications SARL.
31. Fajardo, G., Valdez, P., & **Pacheco, J.** (2009). Corrosion of steel rebar embedded in natural pozzolan based mortars exposed to chlorides. *Construction and Building Materials*, 23(2), 768-774.
32. **Pacheco, J.**, Fajardo, G., & Valdez, P. L. (2008). Accelerated Corrosion due to Chlorides and Carbonation in Natural Pozzolan Based Mortars. In *2008 Concrete Bridge Conference*, Federal Highway Administration, National Concrete Bridge Council, Missouri Department of Transportation, American Concrete Institute (ACI).