

P. F. Silva



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Academic Interests

Development of performance-based procedures for the seismic design and retrofit of civil structures; blast resistance of structures; use of fiber-reinforced polymers for the structural rehabilitation of civil structures,

Education

Ph.D in Structural Engineering, 1998, University of California at San Diego

MS in Civil Engineering, 1992, University of California at Irvine

BS in Civil Engineering, 1991, University of California at Irvine

Current Research

"NEESR-SG Seismic Simulation and Design of Bridge Columns under Combined Actions, and Implications on System Response," National Science Foundation – NEES.

"Experimental Study on Seismic Retrofit Techniques for Cap Beams, Columns and their Connections of Highway Bridges," Alaska Department of Transportation and University Transportation Center (UMR-UTC).

Selected Publications

Proceedings Editor:

Co-Editor of the Proceedings for the "1st NSF US-Portugal International Workshop Grand Challenges in Earthquake Engineering 250 Years after the 1755 Lisbon Earthquake", Lamego, Portugal, July 2005, NSF Grant CMS-0410598.

Journal Articles:

Liu, X., Nanni, A., and Silva, P. F., "Rehabilitation of Compression Steel Members Using FRP Pipes Filled with Expansive Light-Weight Concrete", Journal of Advances in Structural Engineering, Vol. 8, No. 2, April 2005, pp. 129-142.

Yu, P., Silva, P.F., and Nanni, A., "Innovative Mechanical Device for the Post-Tensioning of GFRP Bars for Masonry Type Retrofit Applications" SME Experimental Techniques Journal, Vol.44, No. 4, June 2004.

Silva, P. F., Megally, S., and Seible, F., "Seismic Performance of Sacrificial Interior Shear Keys," ACI Structural Journal, Vol. 100, No. 2, March 2003, pp. 177-187.

Silva, P.F., and Seible, F., Priestley, M.J.N., "Development Length of Prestressing Strands in Plastic Hinge Regions," PCI Journal, Vol. 46, No. 3, June 2001, pp. 76-89.

Silva, P.F., and Seible, F., "Experimental Procedure for Testing of Piles Under Varying Axial and Lateral Loads," SME Experimental Techniques Journal, Vol. 25, No. 1, February 2001, pp. 25-30.

Silva, P.F., and Seible, F., "Seismic Performance Evaluation of CISS Piles," ACI Structural Journal, Vol. 98, No. 1, January 2001, pp. 36-49.

Hose, Y.D., Silva, P.F., and Seible, F., "Performance Evaluation of Concrete Bridge Components and Systems

under Simulated Seismic Loads," EERI Earthquake Spectra, Vol. 16, No. 2, May 2000, pp. 413-442.

Refereed Special Publications:

Lu, B., Silva, P., Nanni, A., and Baird, J., "Retrofit of Blast-Resistant Slabs with Composite Materials", FRP-7RCS Proceedings, Fall 2005 ACI Convention; New Orleans, LA, October 2005.

Yu, P., Silva, P.F., and Nanni, A., "In-plane Capacity of Unreinforced Masonry Walls Strengthened with GFRP Grid Reinforced Polyurea", FRP-7RCS Proceedings, Fall 2005 ACI Convention; New Orleans, LA, October 2005.

Silva, P.F., Megally, S.H., and Seible, F., "Performance of Sacrificial Exterior Shear Keys Under Simulated Seismic Loading," Special Publication SP209-37 Proceedings of the ACI Fifth International Conference, Cancun, Mexico, December 2002, pp. 681-700.

Conference Proceedings:

NSF Sponsored Workshops:

Silva, P.F., and Belarbi, A., "Performance Based Design of Multiple Span Bridges," Proceedings of the 1st NSF US-Portugal International Workshop, "Grand Challenges in Earthquake Engineering 250 years after the 1755 Lisbon Earthquake", Lamego, Portugal, July 2005.

Nanni, A., Chen, G., and Silva, P.F., "Open Air Laboratories – a New Challenge in Earthquake Engineering, Potential Research Opportunities at the Rialto Viaduct – Italy" Proceedings of the 1st NSF US-Portugal International Workshop, "Grand Challenges in Earthquake Engineering 250 years after the 1755 Lisbon Earthquake", Lamego, Portugal, July 2005.

Chen, C., Ying, X., Silva, P.F., LaBoube, R., Yen, P.W., "Limit states of Mid-America highway bridges and lightweight steel sheet column wrapping with nail connections for rapid retrofit" Proceedings of the 1st NSF US-Portugal International Workshop, "Grand Challenges in Earthquake Engineering 250 years after the 1755 Lisbon Earthquake", Lamego, Portugal, July 2005.

Silva, P.F., and Chen, G., "Seismic Evaluation of an FRP Retrofit Scheme for Bridge Joints in the New Madrid Seismic Zone," Proceedings of the 2nd NSF US-Turkey Workshop on Seismic Design/Evaluation of Bridges, Ankara, Turkey, September 2004.

Domestic Conference Proceedings:

Wobbe, E., Silva, P.F., Barton, B.L., Dharani, L.R., Birman, V., Nanni, A., Alkhrdaji, T., Thomas, J., and Tunis, T., "Flexural Capacity of RC Beams Externally Bonded with SRP and SRG" Proceedings of Society for the Advancement

of Material and Process Engineering 2004 Symposium, Long Beach, CA, May 2004, 20pp.

Piyong, Yu., Silva, P.F., and Nanni, A., " Flexural Performance of RC Beams Strengthened With Prestressed CFRP Sheets " Proceedings of Society for the Advancement of Material and Process Engineering 2004 Symposium, Long Beach, CA, May 2004, 9pp.

Silva, P.F., Ibell, T.J., "Design of Continuous FRP-Strengthened Concrete Structures Allowing Moment Redistribution," Proceedings of Society for the Advancement of Material and Process Engineering 2004 Symposium, Long Beach, CA, May 2004, 10pp.

Ereckson, N.J., Silva, P.F., Chen, G., "Seismic Evaluation and Retrofit of Bridge Joints," Proceedings of the Fourth National Seismic Conference and Workshop on Bridges and Highways, Memphis, TN., February 2004, 20pp.

Belarbi, A., Silva, P.F., Li, T., "An Experimental Evaluation of In-Plane URM Walls Strengthened with FRP Composites," Proceedings of the Ninth North American Masonry, June 2003.

Meyyappan, L., Jose, M., Dagli, C., Silva, P.F., Pottinger, H., "Vibration Based Neuro-Fuzzy System for Structural Health Monitoring," Proceeding of IEEE International Workshop on Soft Computing Techniques in Instrumentation, Measurement and Related Applications, May 2003.

Silva, P.F., Megally, S., Seible, F., Priestley, M.J.N., "Seismic Performance of Sacrificial Shear Keys," Proceedings of the Sixth Caltrans Seismic Research Workshop, Sacramento, CA, June 2001, Paper No. 03-102.

International Conference Proceedings:

Lubiewski, M., and Silva, P.F., "Seismic Upgrade of CISS Column Shafts-Bent Caps Connections," Proceedings of the Third International Conference on Bridge Maintenance, Safety and Management, IABMS 06, 16-19 July, 2006, Porto, Portugal.

Matana, M., Nanni, A., Dharani, L., Silva, P.F., Tunis, G., "Bond Performance of Steel Reinforced Polymer and Steel Reinforced Grout," Proceedings of International Symposium on Bond Behaviour of FRP in Structures (BBFS 2005), Hong Kong Polytechnic University, Hong Kong, China, December 2005, p. 8.

Silva, P., Lu, B., and Nanni, A., "Prediction of blast loads based on the expected damage level by using displacement based method", SAFE 2005 WIT Conference Proceedings; Rome, Italy, June 2005, pp. 531-540.

Barton, B., Wobbe, E., Dharani, L. R., Silva, P.F., Birman, V., Nanni, A., Alkhrdaji, T., Thomas, J., and Tunis, G. E.,

"Characterization of RC Beams Strengthened by Steel Reinforced Polymer and Grout (SRP & SRG) Composites", Proceeding of International Conference on Recent Advances in Composite Materials, Varanasi, India. December 2004, p.36.

Piyong, Yu., Silva, P.F., Nanni, A., "Flexural Strengthening of Concrete Slab by One Three-stage Prestressing FRP System with Presence of GFRP Anchor Spikes," Proceedings of CCC 2003 - Composites in Construction International Conference, University of Calabria, Rende (CS), Italy, September 2003, 6pp.

Frauenberger, A., Silva, P.F., Nanni, A., "Bond Characterization of FRP Laminates to Steel," Proceedings of CCC 2003 - Composites in Construction International Conference, University of Calabria, Rende (CS), Italy, September 2003.

Megally, S.H., Seible, F., Bozorgzadeh, A., Restrepo, J., and Silva, P.F., "Response of Sacrificial Shear Keys in Bridge Abutments to Seismic Loading", Proceedings of the FIB Symposium on Concrete Structures in Seismic Regions, Athens, Greece, May 2003, 12pp.

Megally, S., Silva, P.F., Seible, F., "Response of Sacrificial Shear Keys in Bridge Abutments to Simulated Seismic Loading," Proceedings of the Sixth International Conference on Short & Medium Span Bridges, Vancouver, BC, Canada, August 2002, pp. 595-602.

Liu, X., Silva, P.F., Nanni, A., "Rehabilitation of Steel Bridge Members with FRP Composite Materials," Proceedings of the First International Conference of Composites in Construction, Porto, Portugal, October 2001, pp. 613-617.

Li, T., Silva, P.F., Belarbi, A., Nanni, A., Myers, J.J., "Retrofit of Un-Reinforced Infill Masonry Walls with FRP," Proceedings of the First International Conference of Composites in Construction, Porto, Portugal, October 2001, pp. 559-563.

Tumialan, J.G., Huang, P-C., Nanni, A., Silva, P.F. "Strengthening of Masonry Walls by FRP Structural Repointing," Proceedings of the Fifth Non-metallic Reinforcement for Concrete Structures - FRPRCS-5 Conference, Cambridge, England, July 2001.

Silva, P.F., El-Domiaty, K., Tumialan, J.G., Belarbi, A., Myers, J.J., Nanni, A., "Performance of Infill URM Wall Systems Retrofitted with FRP Rods and Laminates To Resist In-Plane and Out-of-Plane Loads," Proceedings of the Ninth International Conference, Structural Faults + Repairs, Kensington, England, July 2001.

Research Reports:

Lubiewski, M., Silva, P.F., Chen, G., Seismic Retrofit of

CISS Pile Bent Cap Connections, Report No. CIES 06-64, Center for Infrastructure Engineering Studies, University of Missouri-Rolla, Rolla, MO, August 2006, 149 pp.

Chen, G., Anderson, N., Luna, R., Stephenson, R.W., El-Engebawy, M., Silva, P.F., and Zoughi, R., Earthquake Hazards Assessment and Mitigation: A Pilot Study in the New Madrid Seismic Zone, Report FHWA, Turner-Fairbanks Highway Research Center, Federal Highway Administration, McLean, Virginia, August, 2005.

Li, T., Silva, P.F., Belarbi, A., and Nanni, A., Performance-Assessment of Infill URM Walls Retrofitted with FRP Composites under In-Plane Loads, Report No. CIES 02-31, Center for Infrastructure Engineering Studies, University of Missouri-Rolla, Rolla, MO, April 2002, 109 pp.

Silva, P.F., Daghli, C.H., Pottinger, H.J., Nanni, A., FRP Repair and Health Monitoring of Railroad Steel Bridges, Report No. CIES 02-32, Center for Infrastructure Engineering Studies, University of Missouri Rolla, Rolla, MO, March 2002, 58 pp.

Megally, S.H., Silva, P.F., Seible, F., Seismic Response of External Sacrificial Shear Keys, Report No. SSRP-2001/23, Department of Structural Engineering, University of California San Diego, La Jolla, CA, May 2002, 198 pp.