

VEDRANA KRSTIC, Ph.D.
Curriculum Vitae

Education

**Ph.D., Civil Engineering, specialty Geotechnical Engineering
Rutgers, the State University of New Jersey, July 2001**

Department of Civil and Environmental Engineering, Piscataway, New Jersey

Dissertation Title:

Detection of Underground Obstacles by the SASW Test

Dissertation Advisor:

Nenad Gucunski, Associate Professor

**M.S., Civil Engineering, specialty Structural Engineering / Civil Engineering Materials
University of Zagreb, Croatia, July, 1994**

Faculty of Civil Engineering, Zagreb, Croatia

Thesis title:

Numerical Model for Durability Design of Reinforced Concrete Structures

Thesis Advisor:

Dubravka Bjegovic, Professor

**B.S., Civil Engineering, specialty Structural Engineering
University of Zagreb, Croatia, December 1990**

Faculty of Civil Engineering, Zagreb, Croatia

Diploma Project:

Structural Design of the Large-span Arch Bridge

Teaching and Advising Experience

Assistant Professor, The College of New Jersey, School of Engineering, September 2005 to present

- Courses Taught
 - Fundamentals of Engineering Design ENG142 (design hour)
 - Engineering Materials Science ENG152
 - Statics ENG222
 - Advanced Engineering Math I ENG272
 - Soil Mechanics CIV331
 - Soil Mechanics Laboratory CIV333
 - Civil Engineering Materials CIV371
 - Foundation Engineering CIV431
 - Independent Study: Pavement Engineering CIV391
- Senior Project Advisor
 - Cromwell Hall Drainage Rehabilitation: Design of a Stormwater BMP (2006/07)
 - Rt. 36 Highlands Bridge (2007/2008)

Teaching Assistant, Rutgers, the State University of New Jersey, Department of Civil and Environmental Engineering, September 1994 to May 1998

- Developed classroom and laboratory lessons and taught undergraduate level courses
 - Engineering Graphics
 - Computer-aided Design and Drafting (CADD)
- Taught undergraduate level course
 - Soil Mechanics
- Graded homework and exams for undergraduate level courses
 - Soil Mechanics
 - Construction Engineering Management
 - Mechanics of Solids
- Integrated multimedia approaches and used instructional technology to enhance pedagogical technique

- Developed Computer Laboratory and administered PC computer network

Lecturer, University of Zagreb, Faculty of Civil Engineering, September 1991 to August 1994

- Taught undergraduate level courses
 - Reinforced Concrete Design
 - Prestressed Concrete Design
- Supervised diploma projects
- Assisted in maintaining computational facilities

Teaching Assistant, University of Zagreb, Faculty of Civil Engineering, September 1989 to December 1990

- Graded quizzes and projects for undergraduate level courses
 - Elements of Buildings
 - Elements of Structures
 - Statics
 - Theory of Indetermined Structures

Research Experience

Doctoral Student, Rutgers, the State University of New Jersey, Department of Civil and Environmental Engineering, September 1996 to October 2001

- Researched application of SASW for detection of underground obstacles. Research involved laboratory and field experiments and extensive numerical modeling

Research Assistant, Rutgers, the State University of New Jersey, Department of Civil and Environmental Engineering, September 1994 to May 1998

- Conducted field tests with Seismic Pavement Analyzer (SPA) in pavements, and Portable Seismic Pavement Analyzer (PSPA) on bridge decks. Reduced field data and analyzed results.
- Performed FEM parametric analysis and reduced numerical data later used in NJDOT Design Manual for Evaluation of Ultra Thin White (UTW) Topping
- Developed neural network model for backcalculation of pavement profiles from the SASW test results

Research Assistant, University of Zagreb, Faculty of Civil Engineering, September 1991 to August 1994

- Developed several computer applications later used in course material for undergraduate level course Civil Engineering Materials

Graduate Student, University of Zagreb, Faculty of Civil Engineering, January 1993 to August 1994

- Developed innovative design approach for durability design of reinforced concrete structures

Professional Experience

Project Consultant, Hardesty and Hanover, LLP (part-time), June 2006 to present

- Responsible for foundation design, report preparation and quality control on various geotechnical projects

Senior Geotechnical Engineer, Parsons Brinckerhoff Quade and Douglas, Inc., June 1998 to June 2005

- Responsible for geotechnical and foundation design, soil improvement design, pavement design and report preparation
- Supervise field soil explorations, pile driving operations and instrumentation installation
- Conducts pavement visual evaluations
- Serves as client and subcontractor liaison

Structural and Geotechnical Engineer, Soiltek, Inc., Princeton, New Jersey - May 1996 to May 1998

- Designed retaining walls and staircases for Weehawken Stadium, Weehawken, NJ.
- Designed sewer concrete chamber, Long Branch, NJ.
- Designed sewer pipes junction, Rt. 18 & Commercial Av., New Brunswick, NJ.
- Designed abutments, wingwalls, foundations and weir for Maple St. Bridge, Plainsboro, NJ.

Structural Engineer, University of Zagreb, Faculty of Civil Engineering, September 1991 to August 1994

- Responsible for structural design, static and dynamic analysis of structures. Projects included: draft and final design of the new Maslenica bridge, condition assessment and reliability evaluation of Krk and Pag bridge, durability design of the new Maslenica bridge, and reconstruction of the International University Center in Dubrovnik.

Informal Professional and Teaching Experience

CAD Drafter, Rutgers, the State University of New Jersey, Department of Civil and Environmental Engineering, September 1994 to May 1998

- Provided AutoCAD drafting support in various University projects

HTML Instructor, Outsource Laboratories, Aberdeen, New Jersey, summer 1996

Private Tutor, Statics, University of Zagreb, Faculty of Civil Engineering, September 1991 to August 1994

Current Research Interests

- Durability of reinforced and prestressed concrete structures
- Non-destructive testing in Civil Engineering
- Application of artificial neural networks, fuzzy sets and expert systems in Civil Engineering
- Application of intelligent materials and structures in Civil Engineering

Computer Skills

- Programming Languages: G (LabView), HiQ, Turbo Pascal
- Expertise in HTML and WWW
- Technical Programs: Finite Element group of programs: SAP90, Ansys, Abaqus
- Expertise in LabView, AutoCAD, and Neuroshell
- Made interactive computer application combining G, HiQ and C programming languages for automatic data acquisition and analysis of surface waves
- Wrote computer program in Turbo Pascal for chlorine ions distribution in reinforced concrete structures (program include interactive input and graphical presentation of the results)

Academic Honors and Awards

- National Dean's List (1997)
- Departmental Service Award, Rutgers, The State University of New Jersey, Department of Civil and Environmental Engineering (1997)
- Chi Epsilon - National Civil Engineering Honor Society (Rutgers, The State University of New Jersey)
- Provost's Award for the best student, Faculty of Civil Engineering, University of Zagreb, Croatia, (1987)
- The best student of the class, Faculty of Civil Engineering, University of Zagreb, Croatia, (1986, 1987, 1988, 1989)
- Among top 1% students ever graduated from the Faculty of Civil Engineering, University of Zagreb, Croatia

Professional Memberships

- American Society of Civil Engineers (ASCE), associate member, current
- International Association for Bridge and Structural Engineering (IABSE), member, 1991-2000
- American Concrete Institute (ACI), member, 1994-2000
- American Society for Nondestructive Testing (ASNT), member, 1994-1998
- National Association of Graduate - Professional Students, member 1995-1998
- Teaching Assistant Project Liaison Committee at Rutgers University, member 1997-1998

Refereed Publications since Joining TCNJ

1. Bjegovic, V. Krstic, D. Mikulic, Design for Durability Including Initiation and Propagation Period Based on the Fuzzy Set Theory, *Materials and Corrosion*, Volume 57, Issue 8, p 636-641, 2006.
2. V. Krstic, N. Gucunski, Detection of Composite Underground Obstacles by the SASW Test, ASCE *Geotechnical Special Publication No. 164*, Innovative Applications of Geophysics in Civil Engineering, 2007.

Journal and Book Publications

1. Bjegovic D., Krstic V., Mikulic D. (1998), "Mathematical Model for Durability Design of Reinforced Concrete Structures", *International Journal for Engineering Modeling*, Vol. 11, No. 1-2, pp. 35-40.
2. Gucunski N., Krstic V., Maher M. H. (1998), "Application of Neural Networks in the Inversion Process of the SASW Test", Chapter in *Second ASCE Monograph Artificial Neural Networks for Civil Engineers: Advanced Features and Applications*, ASCE, pp. 191-222.
3. Krstic V., Dekanovic D., Balic M., Candrlic V. (1998), "Externally Prestressed Reinforced Concrete Structures", Chapter in *Civil Engineering Manual*; Croatian Society of Civil Engineers, pp. 271-328 (in Croatian).
4. Krstic V. (1998), "Application of Intelligent Materials in Civil Engineering", *Gradevinar*, Vol. 50, No. 1, pp. 29-36 (in Croatian).
5. Gucunski N., Krstic V. (1996), "Backcalculation of Pavement Profiles from Spectral-Analysis-of-Surface-Waves Test by Neural Networks Using Individual Receiver Spacing Approach", *Transportation Research Record*, No. 1526, pp. 6-13.
6. Bjegovic D., Krstic V., Mikulic D., Ukrainczyk V. (1995), "C-D-c-t Diagrams for Practical Design of Concrete Durability Parameters", *Cement and Concrete Research*, Vol. 25, No.1, pp. 187-196.
7. Krstic V., Bjegovic D., Mikulic D., Radic J., Candrlic V. (1995), "A Model for Durability Design of Reinforced-Concrete Structures", *Gradevinar*, Vol. 47, No. 1, pp. 19-25 (in Croatian).
8. Candrlic V., Krstic V., Novkovic Z. (1992), "Complex Assembly of Concrete Arch Bridge", *Gradevinar*, Vol. 44, No. 5, pp. 325-332 (in Croatian).

Conference Papers

1. Mankbadi R., Fahmy R., Mansfield J., Krstic V., Hanna S. (2004), "Design and Testing of Large Diameter Concrete Cylindrical Piles: A Case History", *Proceedings of Sessions of the Conference: Geotechnical Engineering for Transportation Projects*, Geotechnical Special Publication No. 126, ASCE, Los Angeles, California, pp. 1219-1228.
2. Mankbadi R., Mansfield J., Fahmy R., Hanna S., Krstic V. (2004), "Ground Improvement Utilizing Vibro-Concrete Columns", *Proceedings of Sessions of the Geosupport Conference: Innovation and Cooperation in the Geo-Industry*, GeoSupport 2004, Geotechnical Special Publication No. 124, ASCE, Orlando, Florida, pp. 473-484.
3. Bjegovic D., Balabanic G., Mikulic D., Krstic V., Bicanic N. (2003), "Models for Durability Design of Reinforced Concrete Structures", *Proceedings of the First Symposium: Computer Science in Civil Engineering*, Zagreb, Croatia, pp. 155-165 (in Croatian).
4. Gucunski N., Krstic V., Maher A. (2000), "Field Implementation of the Surface Waves for Obstacle Detection (SWOD) Method", *Proceedings of the 15th World Conference on Nondestructive Testing*, Roma, Italy, <http://www.ndt.net/article/wcndt00/index.htm>.
5. Bjegovic D., Radic J., Puz G., Mikulic D., Krstic V. (1999), "Corrosion Limit State Design for Concrete Bridges", *Proceedings of the FIB symposium "Structural Concrete – The Bridge Between People"*, Vol. 2, Prague, Czech Republic, pp. 583-654.

6. Krstic V., Gucunski N., Maher M. H. (1998), "In Situ Application of Spectral-Analysis-of-Surface-Waves (SASW) Method for Detection of Underground Obstacles", Proceeding of the International Conference MATEST, Brijuni, Croatia, pp. 247-253.
7. Bjegovic D., Krstic V., Mikulic D. (1998), "Classification of the Environmental Loads Based on Reinforced Concrete Performance and Testing Methods", Proceedings of the International Conference MATEST, Brijuni, Croatia, pp. 229-234.
8. Bjegovic D., Mikulic D., Krstic V. (1998), "Calculation of Diffusion Rate of Migrating Corrosion Inhibitors (MCI) Through Concrete", Second International Conference on Concrete under Severe Conditions, Vol. II, Tromso, Norway, pp. 930-938.
9. Gucunski N., Krstic V., Maher M. H. (1998), "Experimental Procedures for Detection of Underground Objects by the SASW Test", Proceedings of the First International Conference on Site Characterization (ISC '98), Vol. I, Atlanta, USA, pp. 469-472.
10. Mikulic D., Krstic V., Pause Z., Bjegovic D. (1996), "Application of Fuzzy Set Theory for Calculation of Safety Factor in the Limited Corrosion State of Reinforced Concrete Structures", Proceedings of the Fourth International Colloquium: Materials Science and Restoration, Vol. II Masonry, Half-Timbering, and Structural Behaviour, Esslingen, Germany, pp. 1201-1209.
11. Mikulic D., Pause Z., Krstic V., Bjegovic D. (1996), "Reinforced Concrete Structures Safety Factor Calculated by Application of Fuzzy Set Theory", Proceedings of the 4th congress DHGK, Cavtat, Croatia, pp. 379-386 (in Croatian).
12. Bjegovic D., Krstic V., Mikulic D., Radic J., Candrljic V. (1995), "New Approach in the Ultimate Life Calculation for Cracked Concrete", Proceedings of the IABSE Symposium: Extending the Lifespan of Structures, Vol. 73/2, San Francisco, CA, pp. 1259-1264.
13. Mikulic D., Krstic V. (1995), "Knowledge Supported Mix Design of Concrete", Proceedings of the 17th International Conference: Information Technology Interfaces ITI '95, Pula, Croatia, pp. 95-99.
14. Gucunski N., Williams T., Krstic V. (1995), "Surface Wave Testing by Neural Networks", Computing in Civil Engineering, Proceedings of the Second Congress, Vol. 1, ASCE, Atlanta, GA, pp. 574-581.
15. Krstic V., Bjegovic D., Mikulic D., Radic J., Candrljic V. (1994), "A Proposal for the Ultimate Life Calculation of Cracked Concrete", Proceedings of the Third DHGK Congress: Civil Engineers in Rebuilding of Croatia, Brijuni Islands, pp. 439-446 (in Croatian).
16. Simunic Z., Radic J., Puz G., Krstic V. (1994), "Inspection and Testing of the Mainland - Pag Island Bridge 1993-1994", Proceedings of the Third DHGK Congress: Civil Engineers in Rebuilding of Croatia, Brijuni Islands, pp. 137-147 (in Croatian).
17. Simunic Z., Radic J., Candrljic V., Candrljic T., Krstic V., Puz G., Antoljak S. (1993), "Inspection and Maintenance of Bridges on the Example of Mainland- Krk Island Bridge", Proceedings of the Second DHGK Congress: Civil Engineers in Rebuilding of Croatia, Brijuni Islands, pp. 515-522 (in Croatian).
18. Krstic V., Vujovic B. (1993), "Expert System for Bridge Bearing Design", Proceedings of the Second DHGK Congress: Civil Engineers in Rebuilding of Croatia, Brijuni Islands, pp. 481-486 (in Croatian).
19. Bjegovic D., Krstic V., Ukrainczyk V. (1993), "A Part of the Durability Project for the new Maslenica Bridge", Proceedings of the Second DHGK Congress: Civil Engineers in Rebuilding of Croatia, Brijuni Islands, pp. 389-394 (in Croatian).
20. Candrljic V., Radic J., Poloski D., Krstic V. (1992), "Traffic and Structural Aspect of the new Double-Deck Maslenica Bridge", Proceedings of the First DHGK Congress: Civil Engineers in Rebuilding of Croatia, Brijuni Islands, pp. 155-164 (in Croatian).
21. Candrljic V., Krstic V. (1991), "Large Arch Bridges for the Adriatic Highway", Proceedings of the First Scientific Seminar: Bridges, Brijuni Islands, pp. 41-47 (in Croatian).

Presentations

1. "Application of Spectral-Analysis-of-Surface-Waves for Nondestructive Evaluation of Infrastructure", presentation given at Wayne State University, Detroit, 1998.
2. "Durability Design of Reinforced Concrete Structures", presentation given at Cortec Corporation, St. Paul, 1998.
3. "Calculation of Diffusion Rate of Corrosion Mobile Inhibitors Through Concrete", European Congress EUROCORR'96, Nice, France, September 25, 1996 (contributed).
4. "Application of Seismic Methods for Non-destructive Evaluation of Pavements", presentation given at NY State Department of Transportation, July 17, 1996.

5. "Smart Materials in Civil Engineering Applications - Emphasis on Piezoelectric Ceramics", presentation given in Department of Ceramic Engineering, Rutgers, The State University of New Jersey, November 20, 1995.
6. "Application of Neural Networks for Surface Wave Testing of Pavements", presentation given in Department of Civil and Environmental Engineering, Rutgers, The State University of New Jersey, March 3, 1995.
7. "Computer Aided Durability Design Under Chloride Environmental Load", Third International Conference on Durability of Concrete, Nice, France, Poster presentation, May 15, 1994, (contributed).