Nader Panahshahi, Ph.D.

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Southern Illinois University Edwardsville
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EDUCATION

Doctor of Philosophy in Structural Engineering (January 1982 – May 1987)
Cornell University, Ithaca, NY.
Dissertation: Compression and Tension Lap splices in Reinforced Concrete Members Subjected to Inelastic Cyclic Loading.

Master of Science in Civil Engineering (September 1980 - December 1981)
Oklahoma State University, Stillwater, OK.
Project: Finite Element Analysis of Plates Subjected to Transverse and Temperature Loading.

Bachelor of Science in Civil Engineering (January 1977 - July 1980)
Oklahoma State University, Stillwater, OK.

ACADEMIC EXPERIENCE

Chairperson (August 2023 – present) and **Professor** (July 2004 - present)
Department of Civil Engineering, Southern Illinois University Edwardsville.

Chairperson (2001-2004) and **Associate Professor** (July1996- June 2004)
Department of Civil Engineering, Southern Illinois University Edwardsville.

Assistant Professor (September 1990 - June 1996)
Department of Civil Engineering, Southern Illinois University Edwardsville.

Graduate Research Assistant (August1982 - December 1986)
Department of Structural Engineering, Cornell University.

Graduate Teaching Assistant (August1985 - December 1986)
Department of Structural Engineering, Cornell University.

Graduate Teaching Assistant (August 1980 -December 1981)
School of Civil Engineering, Oklahoma State University.

Student Assistant (January 1980 - May 1980)
School of Civil Engineering, Oklahoma State University.

PROFESSIONAL EXPERIENCE

Structural Engineer (July 1998 – June 2000, part-time)
Horner & Shifrin, Inc., St. Louis, Missouri.

Post-Doctoral Associate (April 1987 - August 1990)
Multidisciplinary Center for Earthquake Engineering Research (MCEER formally known as NCEER), State University of New York at Buffalo.

COURSES TAUGHT AND DEVELOPED

Mechanics of Solids (CE 242)
Structural Analysis I & II (former CE 340 and CE 445)
Structural Engineering II (CE 343)
Concrete Structures (former CE 442)
Advanced Concrete Design (CE 446)
Prestressed Concrete Structures (former CE 447)
Matrix Analysis of Structures (former CE 541)
Vibrations and Structural Dynamics (former CE 542)
Earthquake Engineering (CE 549)
Advanced Structural Analysis (CE 445)

PUBLICATIONS AND PRESENTATIONS

Plocher, A., and **Panahshahi, N.,** "Life Cycle Cost Analysis Comparison of Concrete Bridge Decks with Stainless Steel and Epoxy Coated Reinforcements in Illinois," Testing and Evaluation of Transportation Structures Committee (AKB40) presentation, *The 102nd Transportation Research Board (TRB) Annual Meeting*, Washington DC, January 8-12, 2023.

Gauchan, Y., **Panahshahi, N**., and Huynh, T., "Evaluation of Seismic Response of transfer Story Concrete Buildings with Different types of Column Discontinuity," The 12th US National Conference on Earthquake Engineering, Earthquake Engineering Research Institute (EERI), Salt Lake City, Utah, , June 27-July 1, 2022.

Ashiquzzaman, Md., Hui, L., Ibrahim, A., Lindquist, W., **Panahshahi, N.**, and Hindi, R., "Exterior Girder Rotation of Skew and Non-skew Bridges during Construction," *Advances in Structural Engineering*, Sage, July, 2020.

Huynh, T., and **Panahshahi, N.,** "Seismic Performance of Transfer story Reinforced Concrete Buildings," Proceeding, *The 17th Word Conference on Earthquake Engineering*, Sendai, Japan, September 13 – 18, 2020.

Khajehdehi, R., Ghaffari, M., and **Panahshahi, N.**, "Seismic Retrofit of RC Slab Panels with Cut-out Openings Using CFRP Sheets," *The 11th US National Conference on Earthquake Engineering*, Earthquake Engineering Research Institute (EERI), Los Angeles, CA, June 25-29, 2018.

Khajehdehi, R., **Panahshahi, N.**, and Ghaffari, M., "In-Plane Flexibility of Reinforced Concrete Floor diaphragms with Openings," *ASCE/SEI 2018 Structures Congress*, American Society of Civil Engineers, Fort Worth, TX, April 19-21, 2018.

Montazeri, E., **Panahshahi, N.**, and Cross, W. B., "Nonlinear Finite Element Analysis of Reinforced Concrete Shear Walls with Staggered Openings under Seismic Loads," *ASCE/SEI 2018 Structures Congress*, American Society of Civil Engineers, Fort Worth, TX, April 19-21, 2018.

Khajehdehi, R., Ghaffari, M., and **Panahshahi, N.**, "Seismic Strengthening/ Retrofitting of RC Floor Diaphragms with Openings Using CFRP and GFRP Sheets", *ACI Fall Convention*, American Concrete Institute, Philadelphia, PA, October 23-27, 2016.

Khajehdehi, R., and **Panahshahi, N.**, "Effect of Openings on In-plane Structural Behavior of Reinforced Concrete Floor Slabs", *Journal of Building Engineering*, Elsevier, 7 (1-11), 2016.

Moradi Bajestani, B., Farahbakhsh, P., Raoof, M., and **Panahshahi, N.**, "Seismic Design of Rocking Shallow Foundations for Ordinary Bridges Located in Midwest," *ASCE Geotechnical & Structural Engineering Congress*, American Society of Civil Engineers, Phoenix, AZ, February 14-17, 2016.

Khajehdehi, R., and **Panahshahi, N.**, "A Non-Linear Finite Element Study of Effect of Openings on In-Plane Trilinear Moment Curvature Characteristics of Reinforced Concrete Slab Elements Subjected to In-Plane and Out-of-Plane Loads," *ACI Spring Convention*, American Concrete Institute, Kansas City, MO, April 12-16, 2015.

Khajehdehi, R., and **Panahshahi, N.**, "Nonlinear FE Analysis of RC Buildings Floor Diaphragms with Openings Subjected to In-plane and Out-of-plane Loads," Proceedings, *The Tenth U.S. National Conference on Earthquake Engineering*, Earthquake Engineering Research Institute (EERI), Anchorage, AK, July 21-25, 2014.

Al Harash, M.T., and **Panahshahi, N**., "Inelastic Seismic Response of Hysteretic-Parametric In-plane Analysis of Concrete Floor Diaphragms," Proceedings, *ASCE/SEI 2013 Structures Congress*, American Society of Civil Engineers, Pittsburgh, PA, May 2-4, 2013.

Al Harash, M.T., and **Panahshahi, N**., "Inelastic Seismic Response of Reinforced Concrete Buildings with Symmetric and Unsymmetric Floor Diaphragm Openings," Proceedings, *Fifteenth World Conference on Earthquake Engineering*, Lisbon, Portugal, Sept. 24-28, 2012.

Al Harash, M.T., Rathore, A., and **Panahshahi, N.**, "Inelastic Seismic Response of RC Buildings with Plan Aspect Ratio of 3:1 with Floor Diaphragm Openings," Proceedings, *ASCE/SEI 2010 Structures Congress*, American Society of Civil Engineers, Orlando, Florida, May 12-15, 2010.

Cross, W.B., Vaughn, B., **Panahshahi, N**., Petermeier, P., Siow, Y., and Domagalski, T., "Analytical and Experimental Investigation of Bridge Girder Shear Distribution Factors," *ASCE Bridge Engineering Journal*, 14 (3), 2009.

Rathore, A., **Panahshahi, N.**, and Al Harash, M.T., "Seismic Response of RC Buildings with Floor Diaphragm Openings," *ACI Fall Convention*, American Concrete Institute, St. Louis, MO, November 2-6, 2008.

Al Harash, M.T., **Panahshahi, N.**, and Truman, K., "Seismic Response of Reinforced Concrete Buildings with Floor Diaphragm Openings," Proceedings, *The Fourteenth World Conference on Earthquake Engineering*, Beijing, China, Oct. 12-17, 2008.

Vaughn, B., Cross, W.B., **Panahshahi, N**., "Experienced Gained and Lessons Learned from an Extensive Bridge Monitoring Research Project," Proceedings, *ASCE/SEI 2008 Structures Congress*, American Society of Civil Engineers, Vancouver, Canada, April 24-26, 2008.

Shrestha, R., Maharjan, L., Cross, W.B., **Panahshahi, N**., Vaughn, B., Petermeier, D., and Siow, Y., "Analytical and Experimental Investigation of Shear Distribution Factors," Proceedings, *ASCE/SEI 2007 Structures Congress*, American Society of Civil Engineers, Long Beach, CA, May 16-19, 2007.

Hanselman., M. , Cross, W.B., **Panahshahi, N**., Vaughn, B., Petermeier, D., and Siow, Y., "Long Term Investigation of Live Load on Illinois Bridges," Proceedings, *ASCE/SEI 2007 Structures Congress*, American Society of Civil Engineers, Long Beach, CA, May 16-19, 2007.

Molki, M., **Panahshahi**, **N.**, Rossow, M., and Gumidelli, S. K., "The Response of Framed Steel Structures to Fire," *Heat Transfer Engineering Journal*, 28(4), 2007.

Cross, B., **Panahshahi, N.,** Vaughn, B., Petermeier, P., and Siow, Y.**,** "Investigation of Select LRFD Design Factors through Instrumentation of Bridge Bearings," *Physical Research Report No. 152*, Illinois Department of Transportation, June 2006.

Panahshahi, N., Molki, M., Rossow, M., Rabiei, K., and Gharib, K, "The Response of Framed Steel Structures to Fire," Proceedings, *ASCE/SEI 2006 Structures Congress*, American Society of Civil Engineers, St. Louis, MO, May 18-21, 2006.

Erschen, B., Cross, W.B., **Panahshahi, N**., Vaughn, B., Petermeier, D., Siow, Y., Domagalaski, T., "Investigation of AASHTO LRFD Shear Distribution Factors through Instrumentation of Bridges," Proceedings, *ASCE/SEI 2006 Structures Congress*, American Society of Civil Engineers, St. Louis, MO, May 18-21, 2006.

Panahshahi, N., Cross, W.B., Marianos, W.N., Ivanov, G.V. and Shrestha, S., "Seismic Design Evaluation of Illinois Highway Bridges Using Proposed NCHRP and AASHTO Standard Specifications," Proceedings, *The Eight U.S. National Conference on Earthquake Engineering*, Earthquake Engineering Research Institute (EERI), San Francisco, CA, April 18 - 22, 2006.

Panahshahi, N., "Building Structural Dynamics - Response to Horizontal Ground Motions," *ASCE Seminar on Seismic Provisions in the IBC 2003*, St. Louis, MO, July, 14, 2004.

Panahshahi, N., Cross, B., Arjomandnia, N., Emami, B., Biller, J., Ivanov, G., Shrestha, S., Arab, A., Kummar, S., Marianos, W.N., and Pezeshk, S., "Evaluation of Comprehensive Seismic Design of Bridges (LRFD) in Illinois," *Report No. ITRC FR 02-3*, Illinois Transportation Research Center, June 2004.

Emami, B., and **Panahshahi, N.,** "A Comparison Study of Different Resisting Systems in Seismic Design of Highway Bridges Using Proposed NCHRP Provisions," Proceedings, *ASCE/SEI 2004 Structures Congress*, American Society of Civil Engineers, Nashville, TN, May 24-26, 2004.

Panahshahi, N., Cross, W.B., Marianos, W.N., Emami, B., Biller, J., and Arjomandnia, N., "A Comparison Study of Seismic Design of Illinois Highway Bridges Using Proposed NCHRP and AASHTO Standard Specifications," Proceedings, *The Fourth National Seismic Conference and Workshop on Bridges and Highways*, Federal Highway Administration, Memphis, TN, February 9 - 11, 2004.

Smith, S., **Panahshahi, N.,** Snell, Luke, "Computer Graphic Tools to Identify Reinforcement Placement Problems," *Concrete International*, American Concrete Institute, December 2003.

Emami, B., Siegfried, D., and **Panahshahi, N.,** "A Comparison Study of Seismic Design of Highway Bridges Using AASHTO Standard Specifications and Proposed NCHRP Provisions," Proceedings, *The Sixth International Conference on Civil Engineering*, Isfahan, Iran, May 5 – 7, 2003.

Westphal, M. and **Panahshahi, N**., "Deflections of Wood Roof Diaphragms in Moderate Seismic Risk Regions," Proceedings, *The Seventh U.S. National Conference on Earthquake Engineering*, Boston, Massachusetts, July 21-25, 2002.

Panahshahi, N., "Building Structural Dynamics - Response to Horizontal Ground Motions," *ASCE Seminar on Seismic Provisions in the IBC 2002*, St. Louis, MO, May, 10, 2002.

Arab, A., **Panahshahi, N.**, Siegfried, D., and Darvish, J., "Rehabilitation of a Mid-America Water Reservoir for Immediate Occupancy for a 2500 year Earthquake Event Using Nonlinear Seismic Dampers," Proceedings, *ASCE/SEI 2001 Structures Congress*, American Society of Civil Engineers, Washington, DC, May 21-23, 2001.

Panahshahi, N. and Lu, J., "Seismic Response of Reinforced Concrete Frames with Setbacks," Proceedings, *The Sixth U.S. National Conference on Earthquake Engineering*, Seattle, Washington, May 31 - June 4, 1998.

Panahshahi, N. and Lu, C., "Inelastic Seismic Response of RC Intermediate and Special Moment Resisting Frames," Proceedings, *ASCE 1997 Structures Congress*, Portland, Oregon, April 13-16, 1997.

Cross, W.B., Romick-Allen, R., **Panahshahi, N**., and Hanna, S., "Analysis of Rules and Regulations for Metal Coil Truck Transport," *Journal of Transportation Engineering*, American Society of Civil Engineers, November - December 1996.

Panahshahi, N., "Basic Seismic Design for Concrete Buildings," New Madrid Zone Regional Seminar on Seismic Engineering Issues," *EERI Regional Seminar Series*, Oakland, California, September 25-26, l996.

Kunnath, S.K., and **Panahshahi, N**., "Implications of In-plane floor Flexibility on Seismic Design of Concrete Buildings*," American Concrete Institute Fall Convention*, Quebec City, Canada, November 5-10, 1995.

Panahshahi, N., Lin, C., and Zhang H., "Interactive Concrete Beam Design (ICBED): An Educational Tool," Proceedings, *The Fourth International Conference on the Application of Artificial intelligence to Civil and Structural Engineering*, Cambridge, England, August: 28-30, 1995.

Cross, W.B., Romick-Allen, R., **Panahshahi, N**., and Hanna, S.J., "Summary Steel Coil Securement Project," *The 44th Annual Illinois traffic Engineering and Safety Conference*, Champaign, IL, 1995.

Cross, W.B., Hanna, S.J., **Panahshahi, N**., and Romick-Allen, R., "Analysis of Rules and Regulations for Steel Coil Truck Transport", *Report VB-HI*, Illinois Transportation Research Center, Edwardsville, Illinois, March 1995.

Panahshahi, N., Reinhorn, A.M., and Kunnath, S.K., "Earthquake Simulation Study of a One-Sixth Scale-Model RC Building with Flexible Floor Diaphragms," Proceedings, *The Fifth U.S. National Conference on Earthquake Engineering*, Chicago, IL, July 10 -14, 1994.

Panahshahi, N., "Seismic Design for Concrete Buildings," Central U.S. Regional Seminar on Seismic Engineering Issues, *EERI Regional Seminar Series*, Oakland, California, January 26-27, 1994 and November 30-December 2, 1994.

Panahshahi, N., and Lu, J., "Influence of In-plane Floor Flexibility on Seismic Strengthening of Reinforced Concrete Buildings," Proceedings, *1993 National Earthquake Conference*, Memphis, TN, May 1993.

Panahshahi, N., White, R.N., and Gergely, P., "Reinforced Concrete Compression Lap Splices under Inelastic Cyclic Loading," *American Concrete Institute Structural Journal*, March-April 1992 (received The ACI Structural Research Award in 1994).

Panahshahi, N., Reinhorn, A.M., Kunnath, S.K., Lu, L.W., Huang, T., and Yu, K., "Seismic Response of a 1:6 R/C Scaled Model Structure with Flexible Floor Diaphragms*," American Concrete Institute Structural Journal*, May-June 1991.

Kunnath, S.K., **Panahshahi, N.**, and Reinhorn, A.M., "Seismic Response of R/C Buildings with Inelastic Floor Diaphragms," *Journal of Structural Engineering*, American Society of Civil Engineers, April 1991.

Kunnath, S.K., Reinhorn. A.M., and **Panahshahi, N**., "Computational Modeling of Inelastic Seismic Response of RC Buildings with In-plane Floor Flexibility*", American Concrete Institute Spring Convention*, Boston, Massachusetts, March 17-22, 1991.

Panahshahi, N., Kunnath, S.K., Reinhorn, A.M., Lu, L.W., and Huang, T., "Inelastic Modeling of R/C Buildings with Flexible Floors," Proceedings, *The Fourth U.S. National Conference on Earthquake Engineering*, Palm Springs, CA, May 1990.

Reinhorn, A.M., Kunnath, S.K., and **Panahshahi, N**., "Modeling of R/C Building Structures with Flexible Floor Diaphragms (IDARC2)," *Technical NCEER Report No. 88-0035*, National Center for Earthquake Engineering Research, Buffalo, NY, Sept.1988.

Panahshahi, N., Reinhorn, A.M., Lu, L.W., and Huang, T., "Seismic Response of Building Structures with Flexible Floor Diaphragms," *American Concrete Institute Annual Convention*, Orlando, Florida, March 20-25, 1988.

Panahshahi, N., White, R.N., and Gergely, P., "Compression and Tension Lap Splices in R/C Members Subjected to Inelastic Cyclic Loading," *Report No. 87-2*, Department of Structural Engineering, Cornell University, Ithaca, NY, April 1987, 376 pp.

Panahshahi, N., White, R.N., and Gergely, P., "Behavior and Design of Reinforced Concrete Compression Lapped Splices Subjected to Inelastic Cyclic Loading," *American Concrete Institute Annual Convention,* San Francisco, CA, March 16-21, 1986.

Panahshahi, N., White, R.N., and Gergely, P., "Behavior of Lap Splices in Wide R/C Sections Under Severe Repeated Loads," *Report No. 84-1*, Department of Structural Engineering, Cornell University, Ithaca, NY, January 1984, 94 pp.

EXTERNAL RESEARCH GRANTS

Panahshahi, **N.,** and Huang, J., "Effectiveness of Exterior Beam Rotation Prevention Systems for Bridge Deck Construction," Saint Louis University/Illinois Center for transportation (ICT), $33,000 (2014-2016).

Panahshahi, N. "Determination of Dynamic Material Properties for SA-517E and SA-612 to be implemented in Crash Analysis of Tanker Trailers," Optimum Engineering Solutions, Inc., $1,987.00 (SIAM 6-24864, 2007).

Cross, B., **Panahshahi, N.**, and Vaughn, B., "Investigation of Selected LRFD Design Factors Though Instrumentation of Bridge Bearings," Illinois Department of Transportation (IDOT), $250,000 (2004-2006).

Panahshahi, **N.,** and Cross, B., "Evaluation of Comprehensive Seismic Design of Bridges (LRFD) in Illinois," Illinois Transportation Research Center (ITRC), $150,000 (2002-2004).

Cross, W.B., **Panahshahi, N**., Romick-Allen, R., and Hanna, S.J., "Analysis of Rules and Regulations for Steel Coil Truck Transport", Illinois Transportation Research Center, (ITRC), $96,000 (1994 -1995).

Panahshahi, N., "Seismic Response of Reinforced Concrete Buildings with Flexible Floor Diaphragm," National Center for Earthquake Engineering Research (NCEER), $22,150.00 (1990-1991).

INTERNAL (SIUE) GRANTS

Funded University Research (FUR: $20,378)

Panahshahi, **N.,** Molki, M. (Co-PI), and Rossow, R.(Co-PI), "Fire Induced Progressive Collapse Study of Framed Steel Structures," $4,200 (FY 2003).

Panahshahi, **N.,** and Smith, S. (Co-PI), "3D Computer Simulations of Reinforcing Steel in Earthquake Resistant Structure," $8,050 (FY 2002).

Panahshahi, **N.,** "LRFD Bridges Design in Illinois and Missouri," $4,928 (FY 2001).

Cross, B., **Panahshahi, N.,** and Romick-Allen, R., "Evaluation of Earthquake Design Provisions for Wood Buildings," $3,200 (FY 1997).

Excellent in Undergraduate Education (EUE: $20,425)

Cross, B., Lin, C., and **Panahshahi, N.,** "Earthquake Engineering Instructional Software for Civil Engineers," $4,825 (Project # 97-025).

Panahshahi, N., "IBC 2000 Comprehensive Reinforced Concrete Design Project," $3,560 (Project # 01-43).

Panahshahi, N., "Interactive Reinforced Concrete Design: Columns," $4,000 (Project # 96-060).

Panahshahi, N., Cross, B., and Rossow, M., "A Slide of a Structure is Worth a 1000 Words," $1,340 (Project # 95-067).

Panahshahi, N., "Interactive Reinforced Concrete Design," $900 (Project # 94-071).

Panahshahi, N., Cross, B., and Rossow, M., "Earthquake Evaluation of the SlUE Campus Buildings," $5,800 (Project # 93-110).

Excellent in Graduate Education (EGE: $9,600)

Panahshahi, N.and Romick-Allen, R., "Advanced Computer-Aided Structural Engineering Using Workstations," $5,800 (1992).

Panahshahi, N. and Rossow, M.,"Recruiting Materials For Graduate Civil Engineering Students," $3,800 (1994).

Summer Research Fellowship (SRF: $9,000)

Panahshahi, N., "Earthquake Response of Reinforced Concrete Setback Buildings," $2,000.00, 1991.

Panahshahi, N., "Seismic Performance of Concrete Buildings with Shearwalls," $5,000.00, 1991.

Panahshahi, N., "Inelastic Seismic Response of RC Buildings with Inplane Floor Flexibility," $2,000.00, 1990.

Research Equipment and Tool Competition ($18,064)

Romick-Allen, R., **Panahshahi, N**., and Cross, B., "Low Frequency Accelerometer Calibrator," $2,400.00,1995.

Cross, B., Romick-Allen, R., and **Panahshahi, N**., "Digital Data Recorder, Tape Back-up Drive, Printer, and Software," $11,959.00, 1993.

Panahshahi, N. and Eneyo, E. "860 MB Microdisk Hard Drive, Two 16 MB RAM, and Software," $3,705.00, 1992.

AWARD & HONORS

SIUE Teaching Recognition Award, 2017

Outstanding Teacher, Civil Engineering, SIUE, 2017

2003 National Council of Structural Engineers Associations (NCSEA) Excellence in Structural Engineering Award for “Stacy Park Reservoir Seismic Retrofit Project,” Horner and Shifrin, Inc. -- *Project Manager*: D. Siegfried, *Structural Engineers*: N. Panahshahi and A. Arab (2003)

Chi Epsilon, the National Civil Engineering Honor Society (2000-present)

1994 American Concrete Institute Structural Research Award for coauthoring "Reinforced Concrete Compression Lap Splices under Inelastic Cyclic Loading," with Drs. R. N. White and P. Gergely, published in *ACI Structural Journal*, March-April 1992.

Guy James Scholar (1980)

President’s and Dean’s Honor Roll (1978-1980)

AFFILIATIONS

Member:

American Concrete Institute (ACI)
Precast/Prestressed Concrete Institute (PCI)
Earthquake Engineering Research Institute (EERI)
Structural Engineering Institute (SEI) St. Louis Section
ASCE Seismic Effects Committee (1998-2004)

Associate Member:

ACI Committee 444 - Structural Health Monitoring and Instrumentation
American Society of Civil Engineers (ASCE)