

# ROBERT J. PETERMAN, Ph.D., P.E.

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## CREDENTIALS

- Assistant Professor at Kansas State University (KSU) — Department of Civil Engineering.
- Ph.D. from Purdue University — Department of Civil Engineering.
- Secured over \$675,000 in research grants during first 3 ½ years at KSU.
- 2001 “Outstanding Teaching Award” selected by KSU Civil Engineering Faculty
- 2001 “Outstanding Faculty Award” (presented by KSU ASCE Chapter).
- 2000 “Outstanding Faculty Member in the College of Engineering” (presented by KSU Mortar Board Senior Honor Society).
- 2000 “Outstanding Faculty Award” (presented by KSU Department of Civil Engineering).
- 1999 “Civil Engineering Teaching Excellence Award” (presented by KSU Chi Epsilon Chapter).
- Nominated by the KSU Dean of Engineering for the 2001 NSPE Engineering Education Excellence Award
- Nominated for the 2000, 2001, and 2002 James L. Hollis Memorial Award for Excellence in Undergraduate Teaching in the College of Engineering (KSU).
- Teaching experience in Concrete Bridge Design, Prestressed Concrete Design, Reinforced Concrete Design, Structural Analysis, Strength of Materials, and Statics.
- Four years of industry experience in structural engineering design.
- Professional engineering registration in the states of Indiana and Wisconsin.
- Four years structural laboratory experience as a Research Assistant in the evaluation of prestressed concrete bridge panels and as a Post Doctoral Research Associate in the testing of High-Performance Concrete (HPC) beams.
- Secretary of PCI Prestressing Steel Committee, Member of PCI Bridge Committee, TRB Committee on Durability of Concrete (A2E01) and Kansas Composite Bridge Committee; Friend of the TRB Committee on Concrete Bridges (A2C03).
- Recipient of PCI Daniel P. Jenny Research Fellowship (2000), Big 12 Faculty Fellowship (1999),
- GAANN Fellowship (1993) and General Electric Foundation Fellowship (1987).

## EDUCATION

### Purdue University, West Lafayette, IN

- Master of Science; May 1989; GPA: 5.7/6.0
- Doctor of Philosophy; August 1996; GPA. 3.8/4.0
- Thesis Research: “Behavior and Durability of Multi-Span Bridges with Full-Span Prestressed Concrete Form Panels”

### Lafayette College, Easton, PA

- Bachelor of Science with Honors; Civil Engineering
- Graduated 3rd in class of 504; May 1987; GPA: 3.93/4.00
- Undergraduate Honors Thesis: “Investigating the Use of Tubular Steel in Pick-up Truck Frames”

## INSTRUCTIONAL TRAINING

- “*Seventh Annual ACBM/PCA Undergraduate Faculty Enhancement Workshop*,” July 2000.
- “*Engineering LEA/RN*,” Kansas State University, Fall 1999-Spring 2000.
- “*Design of Concrete Bridges by the AASHTO LRFD Specifications*,” Professor’s Seminar by the Portland Cement Association, Aug. 1999.
- “*National Effective Teaching Institute (NETI)*,” American Society of Engineering Education, June 1999.
- “*Engineering and Economics of Reinforced Concrete Buildings*,” Professor’s Seminar by the Portland Cement Association, Aug. 1997.
- “*Educational Methods in Engineering*,” Purdue University Graduate Course, Fall 1996 (participant).

## EXPERIENCE

### Assistant Professor, Kansas State University (KSU) 8/98 - Present

- Secured over \$675,000 in research funding from the Kansas Department of Transportation, the Federal Highway Administration, National Science Foundation, and Industry.
- Received the 2001 “Outstanding Teaching Award” (KSU Department of Civil Engineering).
- Received the 2001 “Outstanding Faculty Award” (KSU ASCE Student Chapter).
- Nominated by the KSU Dean of Engineering for the 2001 NSPE Engineering Education Excellence Award
- Received the 2000 “Outstanding Faculty Award” (KSU Department of Civil Engineering).
- Selected as the 2000 “Outstanding Faculty Member in the College of Engineering” (KSU Mortar Board Senior Honor Society).
- Received the 1999 “Civil Engineering Teaching Excellence Award” (KSU Chi Epsilon Chapter).
- Received Big 12 Faculty Fellowship (1999-2000).
- Received 2000 PCI Daniel P. Jenny Fellowship.
- Taught Concrete Bridge Design, Prestressed Concrete Design, Reinforced Concrete Design Strength of Materials, and Intro to Structural Analysis.
- Established consortium of 25 industry partners to establish a new 500-kip-capacity self-reacting test facility, a 250-kip-capacity strong floor and frame, and MTS dynamic test equipment.
- Served on NSF review panel #1635 for unsolicited research proposals.

### Post-Doctoral Research Associate, Purdue University 8/97-8/98

- Co-Principal Investigator on a federally-funded project to investigate the use of high performance concrete in prestressed concrete bridges.
- Established outdoor testing facility including design and fabrication of test frame, hydraulic system, and data acquisition system.
- Solicited donations of materials from various corporations and obtained over \$7000 in donated materials from various manufacturers.

### Visiting Assistant Professor, Purdue University, 8/96-8/97

- Taught 75+ students in Statics and Strength of Materials courses.
- Supervised grading assistants and prepared tests to evaluate progress.
- Assisted in preparing research proposals for funding new research.

**Research Assistant, Purdue University, 9/93-7/96**

- Designed and fabricated loading frame and test specimens.
- Collaborated with INDOT and Federal Highway Engineers to enhance tests.
- Analyzed and communicated test data results.
- Supervised 5 undergraduate workers.

**Structural Engineer, Precast Concrete Systems, Inc., Indianapolis, IN; 1/89-7/92**

- Promoted after 1 1/2 years to be primary engineering support to Columbus, OH plant.
- Performed wind and seismic analysis of office, warehouse, and parking structures.
- Designed Precast/Prestressed building components and connections.
- Specified field repairs and modifications to existing precast concrete structures.
- Used AutoCAD extensively in layout and design of product.
- Consulted with architects on most efficient means of designing precast structures.
- Supervised and trained draftsman for Ohio plant.
- Created new structural design technique which increased product versatility, improved product appearance, and reduced labor time by 30%.

**Computer Systems Manager, American Consulting Engineers, Inc., Indianapolis, IN, 8/92-12/92**

- Developed and modified engineering software, designed structural steel members, supervised computer personnel, evaluated and purchased new equipment.

**Steel Design Graduate Assistant, Purdue University, W. Lafayette, IN; 8/88-12/88**

- Solved design problems; Evaluated students performance and issued final grades.

**Research Intern, Bethlehem Steel, Bethlehem, PA; 8/86-5/87 (Honors Thesis)**

- Analyzed Ford F-150 pick-up truck; designed, fabricated, instrumented, and tested scale models.

**Instrument Man/Draftsman/Rod Man, Herbert H. Metz Engineers, Lansdale, PA; Summers 1985 & 86, 12/85-1/86**

- Read blueprints for site layout information.
- Operated transit and level and performed construction site layouts.
- Calculated elevations and traverse angles and reduced field data for computer input.

## **PUBLICATIONS**

**Refereed Publications:**

Reed, C. and Peterman, R., "Evaluation of Prestressed Concrete Bridge Girders Strengthened with Carbon FRP Sheets," submitted to *ASCE Bridge Engineering Journal*.

Kalny, O., Peterman, R., Ramirez, G., "Performance Evaluation of a Repair Technique for Damaged FRP Honeycomb Bridge Deck Panels," submitted to *ASCE Bridge Engineering Journal*.

Reed, C. and Peterman, R., "Repair and Strengthening of Severely Damaged 32-Year-Old Prestressed Concrete Bridge Girders with Externally Bonded FRP Reinforcement," *TRB 81<sup>st</sup> Annual Meeting CD-ROM*, January 2002.

### **Refereed Publications Continued:**

Cai, C., Shahawy, M., Peterman, R., "Effect of Diaphragms on Load Distribution in Prestressed Concrete Bridges," *TRB 81<sup>st</sup> Annual Meeting CD-ROM*, January 2002.

Peterman, R. and Ramirez, J., "Performance Evaluation of Composite Prestressed Concrete Slab Bridges" *Transportation Research Record 1740*, January 2001, pp. 12-18.

Peterman, R., Ramirez, J., Olek, J., "Influence of Flexure-Shear Cracking on Strand Development Length in Prestressed Concrete Members" *PCI Journal*, September/October 2000, pp. 76-94.

Peterman, R., Ramirez, J., Olek, J., "Design of Semi-Lightweight Bridge Girders – Development Length Considerations" *Journal of the Transportation Research Board*, No. 1696, Vol. 1, Fifth International Bridge Engineering Conference, April 2000, pp. 41-47.

Peterman, R. and Ramirez, J., "Long-Term Performance Evaluation of Bridges Constructed with Composite Prestressed Concrete Panels" *TRB 79<sup>th</sup> Annual Meeting Preprint CD-ROM*, January 2000.

Peterman, R., Ramirez, J., and Poston, R., "Durability Assessment of Bridges with Full-Span Prestressed Concrete Form Panels" *ACI Materials Journal*, January-February 1999, pp. 11-19.

Peterman, R. and Ramirez, J. "Behavior and Strength of Bridges with Full-Span Prestressed Concrete Form Panels" *PCI Journal*, March-April 1998, pp. 80-91.

Peterman, R. and Ramirez, J. "Restraint Moments in Bridges with Full-Span Prestressed Concrete Form Panels" *PCI Journal*, January-February 1998, pp. 54-73.

### **Conference Papers:**

Ambare, S. and Peterman, R., "Rapid Replacement of Bridges Using Prestressed Concrete Inverted Tees: Live-Load Distribution Concerns," *Proceedings of the 5<sup>th</sup> NSF Workshop on Bridge Research in Progress*, Minneapolis, MN, October 2001.

Peterman, R. and Ramirez J. "Investigation of a Bridge Deck Replacement System for Short-Span Bridges" *Proceedings of the Second Symposium on Practical Solutions for Bridge Strengthening and Rehabilitation*, Kansas City, MO, March 1997, pp. 209-218.

Peterman, R., Ramirez, J., Poston, R., "Durability of Bridges with Full Span Prestressed Concrete Panels" *Proceedings of the Fourth National Workshop on Bridge Research in Progress*, Buffalo, NY, June 1996, pp. 133-138.

### **Other Publications:**

Peterman, R., Ramirez J., and Olek, J. "Evaluation of Strand Transfer and Development Lengths in Pretensioned Girders with Semi-Lightweight Concrete" *Joint Highway Research Project FHWA/IN/JTRP-99/3, Final Report*, July 1999.

Peterman, R. and Ramirez J. "Testing of Multi-Span Bridges with Full-Span Precast Prestressed Concrete Panels (Phase 1)" *Joint Highway Research Project Final Report*, West Lafayette, IN, May 1997.

Peterman, R. "Behavior and Durability of Multi-Span Bridges with Full-Span Prestressed Concrete Form Panels" *Ph.D. Thesis, Purdue University*, West Lafayette, IN, August 1996.

## **Other Publications (Continued):**

Peterman, R. "Investigating the Use of Tubular Steel in Pick-up Truck Frames" *Undergraduate Honors Thesis, Lafayette College, Easton, PA, May 1987.*

## **PRESENTATIONS**

### **Conference Presentations:**

"Post-Tensioning the Inverted-Tee (IT) Bridge System for Increased Span-to-Depth Ratio and Improved Durability," Research and Development Session, *47<sup>th</sup> Annual PCI Convention*, Reno, NV, October 2001.

"Design of Semi-Lightweight Bridge Girders – Development Length Considerations" *Fifth International Bridge Engineering Conference*, Tampa, FL, April 2000.

"Long-Term Performance Evaluation of Bridges Constructed with Composite Prestressed Concrete Panels" *TRB 79<sup>th</sup> Annual Meeting*, Washington, D.C., January 2000.

"Development of High Performance Concrete for Bridge Applications in Indiana" *PCI National Convention*, Atlanta, GA, October 1998.

"Durability Assessment of Bridges with Full-Span Prestressed Concrete Panels" *ACI Spring Convention*, Houston, TX, March 1998.

"Investigation of a Bridge Deck Replacement System for Short-Span Bridges" *Second Symposium on Practical Solutions for Bridge Strengthening and Rehabilitation*, Kansas City, MO, March 1997.

"Behavior and Durability of Bridges with Full-Span Prestressed Concrete Form Panels" *HERPICC County Bridge Conference*, W. Lafayette, IN, January 1997.

"Durability of Bridges with Full-Span Prestressed Concrete Panels" *Fourth National Workshop on Bridge Research in Progress*, Buffalo, NY, June 1996.

"Behavior of Multi-Span Bridges with Full-Span Precast Concrete Panels" *TRB 75<sup>th</sup> Annual Meeting*, Washington, D.C., January 1996.

### **Invited Lectures and Other Presentations**

"Full Scale Structural Component Evaluation," *Midwest States Accelerated Testing Pooled Fund Briefing and Discussion of Future Testing Opportunities*, Marysville, MO, November, 2001.

"Influence of Flexure-Shear Cracking on Strand Development Length in Prestressed Concrete Members" University of Delaware, October 2000.

"Strand Bond In Semi-Lightweight Concrete: The Influence of Flexure-Shear Cracking on Development Length" University of Oklahoma, February 2000.

"Durability Assessment of Bridges with Full-Span Prestressed Concrete Panels" University of Tennessee (Martin), March 1998.

## FUNDED RESEARCH

### Grants Received:

Peterman, R. “*Performance Assessment of a Damaged FRP Bridge Beam Before and After Repair*” \$11,865, funded by Kansas Department of Transportation, 8/1/01-6/30/02.

Devore, J., Peterman, R., and Beck, T. “*Non-Contact Inspection of Prestressed Concrete Beams Phase II – Prototype Development*” \$43,637, funded by Advanced Manufacturing Institute, 5/18/01-5/17/02.

Peterman, R. and Cai, C.S. “*Performance Investigation of a Fiber-Reinforced Composite Honeycomb Deck for Bridge Applications*” \$120,612, funded by United States Department of Transportation, 3/15/01-12/31/02.

Peterman, R. “*Restraint Moment Elimination Strategies For Improved Durability of Continuous Prestressed Concrete Bridges*”, \$63,110, funded by National Science Foundation and Kansas Technology Corporation, 2/1/01-1/31/02.

Peterman, R. “*Data Reduction and Analysis of FRP Bridge Deck Validation Tests*” \$2,332, funded by Kansas Department of Transportation, 1/15/01-5/31/01.

Peterman, R. “*Evaluating FRP Repair Method For Cracked Prestressed Concrete Bridge Members Subjected to Repeated Loadings, Phase I*” \$117,163, funded by Kansas Department of Transportation, University Transportation Center (University of Missouri, Rolla), and Kansas Prestressed Concrete Association, 9/1/00-8/31/00.

Devore, J., Peterman, R., and Beck, T. “*Non-Contact Inspection of Pre-Stressed Concrete Beams*” \$22,054, funded by Advanced Manufacturing Institute, 5/18/00-5/17/01.

Peterman, R., and Melhem, H. “*Evaluation of the Strand Development Length in Cracked Prestressed Concrete Members Under Cyclic Loading*” \$71,230, funded by Stresscon Corporation, 4/1/00-3/31/00.

Peterman, R. “*Post-Tensioning the Inverted-Tee Bridge System For Increased Span/Depth Ratio and Improved Durability*” \$10,000, Prestressed Concrete Institute for Daniel P. Jenny Fellowship, April 2000. Peterman, R.

“*Establishing a State-of-the-art full-Scale structural research facility at Kansas State University*” \$75,000, funded by Havens Steel Company, 1/1/00-12/31/00.

Peterman, R. “*Evaluation of High-Performance Structural Materials Under Static and Dynamic Loading*” \$31,800, funded by Cessna Aircraft Company, 1/1/00-12/31/00.

Peterman, R. “*Integrating Classroom Learning and Industrial Practice Through Hands-On Experiences in the Civil Engineering Undergraduate Design Curriculum*” \$23,650, funded by PKM Steel Service, Inc., 1/1/00-12/31/00.

Peterman, R. “*Behavior of High-Performance Concrete Members at Service Load and Incipient Failure*” \$4,018, funded by Sturgis Equipment Company of Kansas City. 1/1/00-12/31/00.

Peterman, R. “*Behavior of High-Performance Concrete Members at Service Load and Incipient Failure*” \$3,000, funded by Great Bend Industries, 1/1/00-12/31/00.

Peterman, R. “*Establishing a State-of-the-art Full-Scale Structural Research Facility at Kansas State University*” \$1,510, funded by Vulcraft, A Division of Nucor Corporation, 1/1/00-12/31/00.

## **Grants Received (Continued):**

Peterman, R. “*Integrating Classroom Learning and Industrial Practice Through Hands-On Experiences in the Civil Engineering Undergraduate Design Curriculum*” \$500, funded by Central Steel, Inc., 1/1/00-12/31/00.

Peterman, R. “*Evaluation of the Inverted-Tee Shallow Bridge System for use in Kansas*” \$125,519, funded by Kansas Department of Transportation and Kansas Prestressed Concrete Association, 9/1/99-3/1/01.

## **PROFESSIONAL SERVICE**

- Secretary of PCI Prestressing Steel Committee
- Member of PCI Bridge Committee
- Member of TRB Committee on Durability of Concrete (A2E01)
- Member of Kansas Composite Bridge Committee
- Friend of the TRB Committee on Concrete Bridges (A2C03)
- Proposal Reviewer for NSF
- Manuscript Reviewer for PCI Journal and ASCE Structural Engineering Journal

## **HONORS**

- 2001 “Outstanding Teaching Award” selected by KSU Civil Engineering Faculty
- 2001 “Outstanding Faculty Award” (presented by KSU ASCE Chapter).
- 2000 “Outstanding Faculty Member in the College of Engineering” (Kansas State University Mortar Board Senior Honor Society)
- 2000 “Outstanding Faculty Award” (Kansas State University Department of Civil Engineering)
- 1999 Chi Epsilon Teaching Award of Excellence (Kansas State University Chapter)
- Nominated by the KSU Dean of Engineering for the 2001 NSPE Engineering Education Excellence Award
- Nominated for the 2000, 2001, and 2002 James L. Hollis Memorial Award for Excellence in Undergraduate
- Teaching in the College of Engineering (Kansas State University)
- PCI Daniel P. Jenny Research Fellowship
- Big 12 Faculty Fellowship
- General Electric Foundation Fellowship
- GAANN Fellowship
- Russel C. Brinker Prize in Civil Engineering
- Carol Basset Phillips Prize in Civil Engineering
- Chi Epsilon Member
- Tau Beta Pi Member