CURRICULUM VITAE

NAME Jay A. Puckett

POSITION: Charles W. and Margre H. Durham Professor, Durham School for Architectural Engineering and Construction, former founder and president BridgeTech, Inc.

EDUCATION

Degree	Year	University
PhD	1983	Colorado State University
MS	1980	Colorado State University
BS	1978	University of Missouri

EMPLOYMENT

Position	Organization	Dates
Chaired Professor	University of Nebraska	2022 - present
Director	University of Nebraska	2015 - 2022
Associate Dean	University of Wyoming	2011 - 2014
V.O. Smith Professor	University of Wyoming	2007-2015
Professor and Head	University of Wyoming	2002-2007
Professor	University of Wyoming	1992-2002
Associate Professor	University of Wyoming	1987-1992
Assistant Professor	University of Wyoming	1983-1987

HONORS AND AWARDS

Wyoming's Eminent Engineer, College of Engineering, 2018.

Charles W. and Margre H. Durham Professor, Durham School, University of Nebraska, Lincoln, 2015 to present.

V.O. Smith Professor, Department of Civil and Architectural Engineering, University of Wyoming (September 2005 to present)

University of Missouri at Columbia Department of Civil Engineering, ***Academy of Distinguished Alumni***, October 2000.

Outstanding Research and Graduate Teaching Award, College of Engineering, University of Wyoming, 1998.

American Society for Engineering Education ***DOW Outstanding Young Educator Award***, a national award recognizing excellence in teaching and research, 1988.

Most Outstanding Professor by the Chi Epsilon Chapter at Colorado State University, 1981.

Narrative: Dr. Puckett served six years as Director of the School for Architectural Engineering and Construction at the University of Nebraska. Presently he is doing Phased Retirement while doing teaching, research, and service on a limited basis. Founder and former President of BridgeTech, Inc., before joining UNL, he was a professor at the University of Wyoming where he worked through faculty ranks and served as department head and associate dean. At UW, he researched bridge engineering and traffic signal pole behavior. This work involves monitoring in-service poles, fatigue testing, and acoustic emission testing for inspection. Dr. Puckett also serves as a subcontractor on NCHRP[i] 12-38, a project to develop fatigue specifications for incorporation within AASHTO design specifications. He is familiar with the work of others and literature in the area of sign and signal pole testing and failures. Puckett is involved with AASHTO software development and design. He is the author of the book, *Design of Highway Bridges*, with Dr. Barker from VPISU, now in the fourth edition. He served as a consultant on NCHRP 12-33 (initial development of the AASHTO LRFD Bridge Design Specification) and NCHRP 12-42 as a consultant to Modjeski and Masters for the maintenance of the LRFD Specification. He is regularly invited to update the AASHTO COBS technical committees on work associated with software development, software testing, traffic pole research findings, and bridge joints. He was PI of NCHRP 12-50 Validation and Guidelines and Example and was PI of NCHRP 10-80, where the entire Specifications for the design of traffic and ancillary structures were rewritten and calibrated for LRFD. Dr. Puckett is a licensed professional structural engineer. As a structural consultant, he has been an expert witness where traffic signal and luminaire structures have failed due to fatigue. He has also served the Wyoming State board to review cases of potential professional malpractice. He is a technical consultant to AASHTO's T-12 on support structures for signs, signals and luminaires.

Select work is outlined herein. A complete vita is available upon request.

BOOKS

Barker, R.M. and Puckett, J.A., *Design of Highway Bridges – Based on AASHTO LRFD Bridge Design Specification*, John Wiley and Sons, New York, 2022, Fourth Edition, 541 pgs (wide-page format)

Puckett, J.A. and Coletti, D. *National Steel Bridge Alliance Steel Bridge Design Handbook*, Chapter 10: Structural Analysis, 2011.

Barker, R.M. and Puckett, J.A., *Design of Highway Bridges – Based on AASHTO LRFD Bridge Design Specification*, John Wiley and Sons, New York, 2013, Third Edition, 528 pgs (wide-page format)

Barker, R.M. and Puckett, J.A., *Design of Highway Bridges – Based on AASHTO LRFD Bridge Design Specification*, John Wiley and Sons, New York, 2007, Second Edition, 1009 pgs.

Barker, R.M. and Puckett, J.A., *Design of Highway Bridges – Based on AASHTO LRFD Bridge Design Specification*, John Wiley and Sons, New York, 1997, 1169 pgs.

NATIONAL ACADEMY OF SCIENCES PUBLICATIONS:

Puckett, J., Garlich, M. *New Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, Report 796, Transportation Research Board, NAS, Washington, DC, 2016.

Puckett, J.A., Huo, X.S., Jablin, M., and Mertz, D ., Simplified Live Load Distribution Factor Equations, Report 592, National Cooperative Highway Research Program, Transportation Research Board, NAS, Washington, DC, 2007.

Mlynarski, M and Puckett, J. and Thompson, P., *Bridge Software – Validation and Guideline and Examples*, Report 485, National Cooperative Highway Research Program, Transportation Research Board, NAS, Washington, DC, 2003.

SOFTWARE DEVELOPMENT (selected work):

AASHTOWare BrR and BrD – database for the nation's bridges that houses detailed geometry, material, and other engineering data for refining finite element analysis, bridge rating, and other uses

BRASS Applications:
GIRDER: engineering applications for LRFD, LFD, ASD bridge analysis, design, and ratings
CULVERT: same as above for reinforced box culverts
PIER: engineering for reinforced concrete piers for LRFD
ROUTE: refined automated analysis of an inventory of bridges for permit and super loads
Other: Bearing pads, sign and luminaire structure, geometric layout

AASHTO Finite Element Analysis Engine: Non-linear finite element engine for AASHTO use within the Virtis/Opis (BrR/BrD) software package.

National Bridge Inventory (NBI) Report Generation: Importing of NBI data and corresponding error checking is handled for any year. Data query for report generation is based on material type, construction year, bridge adequacy (structurally deficient and functionally obsolete), length, state, etc. Graphs are generated for specific use cases based on query criteria.

NCHRP 12-62 national academies: developing a simplified method for computing live load distribution factors for the *AASHTO LRFD Bridge Design Specifications*. Parametrically generated bridge descriptions are analyzed using the AASHTO structural analysis engine to determine a series of influence surfaces. The influence surfaces are loaded with simulated truck loads (combinations of AASHTO trucks) to determine maximum actions. Equivalent distribution factors

based on this rigorous analysis method are used to calibrate a simplified distribution factor method. The automated manner of bridge generation, analysis, and live loading allows the investigation of thousands of bridges.

NCHRP 12-50 national academies: formalized a schema for tagging virtually all analysis and computational design data for LRFD bridge design for beam bridges, formalized comparing computational results from different numerical engines.

AASHTO LRFD Bridge Design SpecML Research Project: Developed an XML schema and working prototype to present the AASHTO LRFD Bridge Design specification in an electronic format (XML / browser). The XML schema was designed to provide maximum "intelligent" functionality, such as multiple views, hyper-linking within and external to the specification, user-defined margin notes, etc.

NBI On-line: A dynamic website that queries a database containing the National Bridge Inventory (NBI) data. It enabled users to perform a custom query and presented data laid over a Google Map. The public can query this database to graphically illustrate the national bridge inventory, structurally deficient, and functionally obsolete bridges.

Rapid Bridge Classification: Application to assist with the rapid classification of bridges for structural soundness based on limited information. The application allows the selection of user-defined truck convoys and individual truck loads, and route selection is implemented via an embedded browser. Use for DoD national defense in operational theatres.

Monty Carlo Rally: Application to demonstrate the Monte Carlo (MC) method applied to structural bridge analysis. The application allows users to set MC parameters for variables used within bridge analyses. Each iteration runs a series of analyses with the MC variables being randomly perturbated. Bounding values for various interest results are recorded and displayed to the user in graphical and tabular form. Although for bridges, this software generally applies to most computational engines.

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[i] National Cooperative Highway Research Program (transportation research arm of the National Academies)