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### **Education:**

Ph.D. Civil Engineering The University of Michigan, Ann Arbor, Michigan Advisor: Robert D. Hanson	1972-1977
M.S. Civil Engineering Middle East Technical University, Ankara, Turkey	1969-1970
B.S. Civil Engineering Middle East Technical University, Ankara, Turkey	1965-1969

### **Employment:**

1/2007	Professor and Chair Department of Civil and Construction Engineering, Western Michigan University
8/1991 -12/2006	Professor, Department of Civil and Environmental Engineering, Wayne State University
8/1986-8/1991	Associate Professor of Civil Engineering, Wayne State University
8/1988-8/1989	Visiting Professor, University of California-Berkeley
8/1980-8/1986	Assistant Professor, Department of Civil and Environmental Engineering, Wayne State University

### **Articles:**

1. Attanayake, U., Abudayyeh, O., Aktan, H., Abdel-Qader, I., and Almaita, E. "Sensor Based Framework for Assessing Full-Depth Deck Panel Joint Durability," 90<sup>th</sup> *TRB Annual Meeting, No. 11-2533, (Under review)*.
2. Romkema, M., Attanayake, U., Aktan, H. M., and Ulku, E. "Incorporating Link Slabs in High Skew Bridges during Repair Activities - Design Recommendations," 90<sup>th</sup> *TRB Annual Meeting, No. 11-1393, (Under review)*.
3. Ulku, E., Attanayake, U., and Aktan, H. M. "Guidelines for Spacing of Posttension Ducts in Full-Depth Deck Panels," 90<sup>th</sup> *TRB Annual Meeting, No. 11-2666, January 23-27, 2011*.
4. Attanayake, U., Akbay, Z., and Aktan, H. "Macromechanical modeling for load analysis of side-by-side box-beam bridge superstructure," *ASCE Practice Periodical on Structural Design and Construction, (Under review)*.
5. Attanayake, U. and Aktan, H. "Capacity Evaluation of A Severely Distressed And Deteriorated 50-Year Old Box-Beam With Limited Data," *ASCE Journal of Performance for Constructed Facilities, (In Press)*.
6. Ulku, E., Attanayake, U., and Aktan, H. M. "Rationally Designed Staged Post-tensioning Abates Reflective Cracking on Side-by-Side Box-Beam Bridge Decks," *TRR Structures, 2011*.
7. Attanayake, U. and Aktan, H. "Precast Component Joint Durability, Grout Properties, and Material Specifications" 8th International Conference on Short and Medium Span Bridge, Niagara Falls, Canada, August 3 - 6, 2010.
8. Ulku, E., Attanayake, U., and Aktan, H. M. "Durable Connections Between Precast Bridge Components: Fundamental Approach," The Fifth International Conference on Bridge Maintenance, Safety and Management, *IABMAS 2010*, Philadelphia, Pennsylvania, July 11-15, 2010.
9. Attanayake, U., Ulku, E., Aktan, H. and Abudayyeh, O. "Improving Durability Performance of Prefabricated Bridge Deck Joints: What Do We Need To Know?" 2010 FHWA Bridge Engineering Conference: Highways for LIFE and Accelerated Bridge Construction, Orlando, Florida, April 8 - 9, 2010.

10. Attanayake, U., Ulku, E., and Aktan, H. M. "Capacity Evaluation of a Severely Distressed and Deteriorated 50-Year Old Box-Beam," 89<sup>th</sup> *TRB Annual Meeting, No. 10-1151*, January 10-14, 2010.
11. Ulku, E., Attanayake, U., and Aktan, H. M. "Jointless Bridge Deck with Link Slabs: Design for Durability," *TRR Structures* 2010.
12. Attanayake, U. and Aktan, H. M. "Side-by-side Box-beam Bridge Superstructure: Rational Transverse Posttension Design," 88<sup>th</sup> *TRB Annual Meeting, No. 09-3420*, January 11-15, 2009.
13. Ulku, E., Attanayake, U., and Aktan, H. M. "Retrofit Design Details for Deck Joint Elimination over Abutments," 88<sup>th</sup> *TRB Annual Meeting, No. 09-2716*, January 11-15, 2009.
14. Attanayake, U. B., Ulku, A. E., and Aktan, H. M. "Structural System Durability Through Jointless Bridge Decks", *Fourth International Conference on Bridge Maintenance, Safety and Management, IABMAS 2008*, Seoul, Korea, July 13 – 17, 2008.
15. Attanayake, U. and Aktan, H. "Issues with Reflective Deck Cracks in Side-by-Side Box-Beam Bridges," *The 4<sup>th</sup> Concrete Bridge Conference*, St. Louis, Missouri, May 4 – 7, 2008.
16. Attanayake, U. and Aktan, H. M. "Macromechanical Modeling of Precast Orthotropic Bridge Deck Superstructure Systems," 86<sup>th</sup> *TRB Annual Meeting, No: 07-3209*, January 21-25, 2007.
17. Attanayake, U., Liang, X., Ng, S., and Aktan, H. "Penetrating Sealants for Bridge Decks – Selection Procedure," *Journal of Bridge Engineering*, Vol. 11, No. 5, pp. 533-540, 2006.
18. Attanayake, U. and Aktan, H. M. "Side-by-Side Box-Beam Bridge - Performance and Design Issues," 7<sup>th</sup> *International Conference on Short & Medium Span Bridges*, Montreal, Quebec, Canada, August 23 – 25, 2006.
19. Ulku, A. E., Attanayake, U., and Aktan, H. M. "Remaining Service Life Estimation of Bridge Components by Knowledge Discovery Techniques," 2006 *NDE Conference on Civil Engineering*, St. Louis, Missouri, 14 – 18 August, 2006.
20. Attanayake, U. and Aktan, H. M. "Side-By-Side Box-Beam Bridges – Design for Durability", *Third International Conference on Bridge Maintenance, Safety and Management, IABMAS 2006*, Porto, Portugal, July 16 – 19, 2006.
21. Attanayake, U. and Aktan, H. M. "Durability Performance of Concrete Bridge Components," *The Second fib Congress*, Naples, Italy, June 5 – 8, 2006.
22. Gilbertson, C. G., Attanayake, U., Ahlborn, T. M., and Aktan, H. "Prestressed Concrete Box-Beam Performance: Condition Assessment and Design Analysis," 85<sup>th</sup> *TRB Annual Meeting, No: 06-2432*, January 22-26, 2006.
23. Yaman, I.O., Akbay, Z. and Aktan, H.M. "Numerical Modeling and Finite Element Analysis of Stress Wave Propagation for Ultrasonic Pulse Velocity Testing of Concrete," *Computers and Concrete*, Vol.3 No.6, December 2006, pp. 423 – 437.
24. Attanayake, U. and Aktan, H. M. "Inspection based condition assessment for health monitoring of highway bridges," *BINDT Condition Monitoring 2005*, The British Institute of Non-Destructive Testing, Northampton, UK, July 18 – 22, 2005.
25. Attanayake, U., Chowdhury, R., Yu, B., and Aktan, H. M. "Performance Evaluation of Side-by-Side Box-Beam Bridges in Michigan," 84<sup>th</sup> *TRB Annual Meeting, No: 05-0970*, January 09-13, 2005.
26. Chowdhury, R., Attanayake, A. M. U. B., and Aktan, H. M. "Non-Destructive Evaluation of Concrete Using Infrared (IR) Thermography for Void Detection and Moisture Evaluation by Numerical, Experimental, and Field Investigation," 84<sup>th</sup> *TRB Annual Meeting, No: 05-0710*, January 09-13, 2005.
27. Aktan, H.M. "Performance Based Bridge Design by Infusion," *Proc. 2nd International Conference on Structural Health Monitoring of Intelligent Infrastructure*, Shenzhen, P.R. of China, November 16-18, 2005.
28. Birgul, R., Al-shammari, F. M. W., Yaman, I. O. and Aktan, H. M. "Acoustic Emission Evaluation Of Concrete Culverts," *Research in Nondestructive Evaluation*, Volume 15, No.:4. February 2005, pp. 41-58.
29. Attanayake, U., and Aktan, H. M. "Condition and durability assessment of concrete bridge superstructure components," *Second International Conference on Bridge Maintenance, Safety and Management, IABMAS 2004*, Kyoto, Japan, October 19 – 22, 2004.
30. Attanayake, U., Duyar, O., and Aktan, H. M. "Early-Age Cracking Potential of Slip-formed Concrete Bridge Barriers," 83<sup>rd</sup> *TRB Annual Meeting, No: 04-2381*, January 11-15, 2004.
31. Yaman, I.O., Aktan, H., "Ultrasonic Testing on an Imperfect Medium: Analysis and Simulation of Intrinsic Parameters on Concrete," *Proc. TRB Annual Meeting*, No: 04-2381, January 11-15, 2004.

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33. Chowdhury, R., Attanayake, A. M. U. B., and Aktan, H.M. "Heat Transfer Fundamentals Applicable to Infrared Thermography of Concrete Structures," *Proceedings of the 2003 Conference on Review of Progress in Quantitative NDE*, Vol. 23, Green Bay, Wisconsin, July 27-31, 2003.
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35. Koyuncu, Y., Birgul, R., Ahlborn T. M., Aktan, H. M. "Identifying Causes for Distress Patterns in Prestressed Concrete (PC) -Girder Bridges," *Proc. TRB Annual Meeting*, No.: 03-2682, January 2003
36. Attanayake, U., Duyar, O., Liang, X., Aktan, H. M. and Ng, K. Y. S. "Fundamentals of Use of Penetrating Sealants for Concrete Bridge Deck Protection," 82<sup>nd</sup> *TRB Annual Meeting*, No: 03-2575, January 12 – 16, 2003.
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39. Birgul, R., Sayed, G.A., and Aktan, H.M., "Durability Evaluation of GFRP Reinforced Concrete Specimens Using Acoustic Emission", *Proc. International Congress on Challenges of Concrete Construction*, Dundee, Scotland, September 5-11, 2002.
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63. Uras, H. M. and Aktan, H. M. "Design and Prototype Manufacture of a Wheelchair Lift for Transit Buses", *Journal of Transportation Engineering*, Vol. 121, No.2, March/April 1995.
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## Reports:

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- [11] Aktan, H. and Nayef, A. "Pseudo-Dynamic Testing Method for Rigid Specimens- Phase II", Report to ATLSS (Advanced Testing of Large Scale Structures) Center, Lehigh University, December 1994.
- [12] Lee, J. H. and Aktan, H. M. "Condition Appraisal of Vacant or Underutilized Buildings in Downtown Detroit," Report to Central Business District Association, Detroit, MI 48226, March 1994.
- [13] Aktan, H., Nayef, A. and Patton, V. "Pseudo-Dynamic Testing Method for Rigid Specimens", Report to ATLSS (Advanced Testing of Large Scale Structures) Center, Lehigh University, June 1993.
- [14] Kagawa, T., Aktan, H. and Celebi, M. "Soil-Pile Foundation-Superstructure Response Analysis using Data from Loma Prieta Earthquake", Report to the National Science Foundation, Earthquake Hazards Mitigation Program, June 1993.

- [15] Khasnabis, S., Aktan, H., Pandya, J. and Khambhatla A. "An Investigation on Design, Maintenance and Operating Procedures of Wheelchair Lifts on Transit Buses", Phase II, Report to the Michigan Department of Transportation, Wayne State University, Detroit, June 1993.
- [16] Khasnabis, S., Aktan, H., Lin, Q. and Khambhatla A. "An Investigation on Design, Maintenance and Operating Procedures of Wheelchair Lifts on Transit Buses", Phase I, Report to the Michigan Department of Transportation, Wayne State University, Detroit, September 1991.
- [17] Elzayat, M. H. and Aktan, H. M. "Shear Stress Distribution in RC Structural Walls", Report to the National Science Foundation, Structures, Mechanics and Materials Program, Wayne State University, Detroit, June 1989.
- [18] Arciszewski, T. and Aktan H.M. "Innovative Design Method", Report to the National Science Foundation, Design Methodology Program, Civil Engineering Department, Wayne State University, Detroit, March 1989.
- [19] Aktan, H.M. "Further Experiments on Load Capacities of Storage Rack Beams", Alta Rack Company, Detroit, February 1985.
- [20] Aktan, H.M., and Owusu, Y.A. "Testing and Safe Load Capacities of Industrial Storage Racks", Alta Rack Company, Detroit, 1981.
- [21] Aktan, H.M. "A Method to Analyze the Cyclic Behavior of Reinforced Concrete Slender Shear Walls", UMEE77R2, University of Michigan, Ann Arbor, MI, 1977.
- [22] Aktan, H.M. "Damage Evaluation of Structures", Bingol Earthquake Report, Tabban, A., and Ergunay, O. (Eds.), Earthquake Research Institute, Ministry of Reconstruction, Ankara, Turkey, 1971 .
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### **Other Papers and Abstracts:**

- [1] Attanayake, U., and Aktan, H. M. "Condition Evaluation of Side-By-Side Precast Prestressed Concrete Box-Beam Bridges in Michigan," *ACI Convention Fall 2004*, San Francisco, California, October 24-28, 2004.
- [2] Udegbunam, O., Yaman, I.O., Aktan, H. "Concrete Durability Assessment by Ultrasonic Methods" Invited Presentation, Research in Progress, ACI, October 20-22, Los Angeles, 1998.
- [3] Aktan, H. M. And Kagawa, T. "Soil-Pile-Structure Interaction Response Correlations using Data Measured during Loma Prieta", EERI Annual Meeting, Loma Prieta: Transmitting Research to Practice, February 14-16, Salt Lake City, 1991.
- [4] Aktan, H.M., Whittaker, A.S., And Bertero, V.V. "Non-Buckling Slip Braces for Seismic Rehabilitation", presented at the 2nd US-Japan Workshop on Urban Earthquake Hazard Reduction, July 26-29, 1988, Shimizu City, Japan.
- [5] Elzayat, M. H. and Aktan, H. M. "Shear Distribution Along RC Wall Sections, Ninth World Conference on Earthquake Engineering, Tokyo-Kyoto, Japan 1988, Abstract Vol.1, p. 517.
- [6] Aktan, H.M., Karaesmen, E., and Bayulke, N. "Analysis of Two Reinforced Concrete Structures Damaged During the Gediz Earthquake", Gediz Earthquake Symposium, Ankara, Turkey, 1970.
- [7] Aktan, H.M., and Hanson, R.D. "A Method to Analyze the Cyclic Behavior of Reinforced Concrete Slender Shear Walls", Abstract, Proc 6th World Conference on Earthquake Engineering, India, January 1976.

### **Professional Organizational Memberships:**

Member, National Science Foundation, CMMI Program 2005-2008 Review Committee of Visitors 2009  
 Structural Engineering Association of Michigan (SEAMi)  
*Chair, Publications Committee, 1998-2001*  
*Member, Professional Issues SE Registration Committee*  
 American Society of Civil Engineers (ASCE)  
*Faculty Advisor, Student Chapter at Wayne State University*  
*Member of Performance of Structures 2002-To date*  
*Member of Analysis & Computation, Structural Control Subcommittee*

*Member, ASCE, Materials Committee on Structural Composites and Plastics*  
*Session co-chair and organizer, ASCE Structures Congress, Atlanta 1994*  
*Session co-chair, ASCE-EMD Conference 1989*  
*Member of Editorial Board, Journal of Computing 1986-1988*  
*ASCE Michigan Chapter*  
*Transportation Research Board*  
*Member, Committee on Durability of Concrete, August 2000-2007*  
*Member, Committee on Basic Research and Emerging Technologies on Concrete, March 2000-to date*  
*Session Organizer and Chair No.:573 and 602, January 2002*  
*American Concrete Institute (ACI)*  
*Associate Member Committee on Nondestructive Testing*  
*Earthquake Engineering Research Institute (EERI), 1986-1999*  
*Member, 5th National Conference Finance Committee, 1993-94*  
*Member, US team 2nd US-Japan Urban Hazards Reduction Workshop 1988, Japan*  
*Member, Experimental Research Committee*

**Professional Registration:**

State of Michigan PE No. 29256

**Honorary Society Membership:**

Chi Epsilon - Civil Engineering Honor Society  
Sigma Xi - Scientific Research Honor Society

**Ph.D. Dissertations Directed:**

- [1] **Attanayake, Upul** "Macromechanical Modeling of Precast Orthotropic Bridge Superstructure Systems, July 2006 - Assistant Professor, Western Michigan University
- [2] **Birgul, Recep** "Durability Investigation of Concrete Culverts Reinforced with Steel and GFRP by Acoustic Emission", July 2001 – Assistant Professor, Mugla University, Turkey.
- [3] **Al-Shammari, Fallah** "Monitoring Concrete structures using Fiber Optic and Laser Sensors", March 2001
- [4] **Yaman, Ozgur** "Numerical Simulation Models for the Verification of NDT Procedures based on Ultrasonic Pulse Propagation in Reinforced Concrete Structure", August, 2000, Associate Professor and assistant chair, Middle East technical University, Ankara, Turkey
- [5] **Udegbunam, Oge** "Durability Assessment of Concrete Decks using Ultrasonic Measurements", March 2000, Principal Tyme Engineering, Southfield, MI, USA.
- [6] **Nayef, Ayad** "Pseudo-Dynamic Testing for Rigid Structural Specimens", April 1996, Manager, TRW Inc. Tokyo, Japan.
- [7] **Ho, Jin Lee** "Statistical Deterioration Models for Condition Assessment of Older Buildings", February 1996 Professor and chair, Dong-Seo University, Busan, Korea.
- [8] **Mhaimed, Khaldoun** "Upgrade Design Methodology for Buildings with Seismic Deficiencies", May 1993 Consultant, Jeddah, Saudi Arabia.
- [9] **Akbay, Zekai** "Actively Regulated Energy Dissipation Devices for Improving Seismic Performance of Buildings", November 1991, Program Director, Dassault Systems, Rhode Island, USA.
- [10] **Elzayat, M. Hany** "Shear Stress Distribution in RC Structural Walls", June 1989, Professor, Helwan University, Cairo, Egypt.
- [11] **Ahmed A. M. Hashish** (deceased) "Nonlinear Modeling of RC Frame-Wall Buildings under Static Lateral Loads and/or Seismic Motion", January 1988 Formerly professor, Helwan University, Cairo, Egypt.

## External Funding:

- [1] "Rapid Bridge Construction and Durability" Principal Investigator, Michigan Department of Transportation, October 1 2010–September 30, 2012 (\$265,000) (Co-PIs Osama Abudayyeh, Upul Attanayake)
- [2] "Development and Validation of Deterioration Models for Concrete Bridge Decks" Co-Principal Investigator, Michigan Department of Transportation, February 1 2010–September 30, 2012 (\$225,000) (PI Osama Abudayyeh, Co-PI Upul Attanayake)
- [3] "Center for Structural Durability Administration" Principal Investigator, Michigan Department of Transportation, February 15, 2001–September 30, 2011 (\$180,500)
- [4] "High Skew Link Slab Bridge System with Deck Sliding over Backwall or Backwall Sliding over Abutment", Michigan Department of Transportation, December 1, 2008– November 30, 2010 (\$265,022)
- [5] "Condition Assessment and Methods of Abatement of Prestressed Concrete Box-Beam Deterioration (Phase II)", Michigan Department of Transportation, October 1, 2006– March 30, 2007 ( \$196,144)
- [6] "Combining Link-slab, Deck Sliding over Back-wall and Revising Bearings," Michigan Department of Transportation, April 16, 2006– April 15, 2008 ( \$225,131)
- [7] "Condition Assessment and Methods of Abatement of Prestressed Concrete Box-Beam Deterioration (Phase I)", Michigan Department of Transportation, October 1, 2003– June 15, 2005 (\$125,890)
- [8] "Investigate Causes and Develop Methods to Minimize Early-Age Deck Cracking on Michigan Bridge Decks," Principal Investigator, Michigan Department of Transportation, January 1, 2002– December 31, 2003 (\$158,313) (Co-PI Gongkang Fu 50%)
- [9] "Causes and Cures of Cracking of Concrete Bridge Barriers," Principal Investigator, Michigan Department of Transportation, March 1, 2002–August 31, 2003 (\$106,766)
- [10] "Forecast and Resolve Deterioration Problems with the Ends of PC Beams," Principal Investigator, Michigan Department of Transportation, February 15, 2000–May 31 2002 (\$99,876)
- [11] "Criteria and Benefits of Penetrating Sealants for Bridge Decks" Principal Investigator, Michigan Department of Transportation, February 15, 2001–July 31 2002 (\$87,059)
- [12] "Field UPV Measurements on Bridge Decks for Paste Efficiency Implementation," Principal Investigator, Michigan Department of Transportation, July 1, 2000–December 31, 2000 (\$61,169)
- [13] "Evaluation of Concrete Permeability by Ultrasonic Testing," Principal Investigator, Michigan Department of Transportation, May 1, 1997–December 31, 2000 (\$303,855)
- [14] "Information Capture for City Wide GIS for Systemic Management", Principal Investigator, City of Detroit, July 1, 1995–December 31, 1999 (\$990,000)
- [15] "Hybrid Pipeline Restraints", Principal Investigator, American Natural Resources, May 1, 1992-August 31, 1996. (\$60,000)
- [16] "Nondestructive Testing Laboratory", Co-Principal Investigator, National Science Foundation, June 1, 1994 - May 31, 1996, (\$37,192)
- [17] "Industrial Site Infrastructure Documentation and Appraisal", Principal Investigator, Gateway Associates, New York, March 1, 1994 - June 15, 1994 (\$14,000)
- [18] "Peace Fellowship Joint Supervision Program", Principal Investigator, Government of Egypt, January 1, 1993-December 31, 1994, (\$20,000)
- [19] "PDT for Rigid Specimens", Principal Investigator, Lehigh University, ATLSS Center, April 30, 1990-December 31, 1999, (\$91,699)
- [20] "Uniaxial and Biaxial Strength of UNISTRUT System-III Space Structure Nodes", Principal Investigator, Unistrut Space Systems Inc., April 1, 1992-May 31,1993, (\$5,000)
- [21] "Experimental Evaluation of Active Wheel Chair Lift's Reliability", Co-Principal Investigator, US Department of Transportation and Michigan Department of Transportation, September 1, 1989-August 31, 1993, (\$161,216)

- [22] "Research Experience for Undergraduates", Co-Principal Investigator, National Science Foundation, supplement to BCS90-05383, June 1,1990-January 31,1992, (\$16,000
- [23] "Soil-Pile Foundation-Structure Response Correlation Using Data from the Loma-Prieta Earthquake", Co-Principal Investigator, National Science Foundation, BCS90-03583, March 15, 1990-January 31, 1992, (\$77,424)
- [24] "Scientific Research Equipment," Equipment Grant, Hewlett-Packard Corporation, Grant#17-70600, July 1987
- [25] "Research Experience for Undergraduates", National Science Foundation, supplement to DMC86-10233, September 1, 1987-May 31,1989 (\$32,000)
- [26] "Innovative Design Method," Co-Principal Investigator, National Science Foundation, DMC86-10233, August 1, 1986 - July 31,1988, (\$163,455)
- [27] "A Computer Laboratory for Freshmen and Sophomore Level Civil Engineering Education," Co-Principal Investigator, National Science Foundation, SDPE-8263032, Jan. 1, 1983-June 30, 1986, (\$55,000)
- [28] "Experimental Investigation of Dowel and Aggregate Interlock Mechanisms of Shear Transfer under Constant Axial Pressure States," Principal Investigator, National Science Foundation, CEE-8203042, June 1982-Nov. 1984, (\$48,000)
- [29] "Enrichment Project for Civil Engineering Material and Geotechnical Engineering Courses at Wayne State University", Faculty Associate, National Science Foundation, SER-8162048, Sept. 1, 1981-Nov. 30,1982, (\$39,000)