

PROJECT RESUME

Marco D. Boscardin, Ph.D., D.GE, F. ASCE
Registered Professional Engineer as listed below

Boscardin Consulting Engineers, Inc. / Marco Boscardin – Consulting Engineer
53 Rolling Ridge Road
Amherst, MA 01002-1420

October 2021
413-549-3804 Office
413-237-4852 Mobile

EDUCATION

Ph.D., Geotechnical Engineering, University of Illinois at Urbana - 1975-1980
M.S., Geotechnical Engineering, University of Illinois at Urbana - 1974-1975
B.S., Civil Engineering, Massachusetts Institute of Technology - 1969-1973

PROFESSIONAL REGISTRATION

Registered Professional Engineer, State of Illinois (062-039449) – 1981 to date
Registered Professional Engineer, Commonwealth of Massachusetts (34186-C) – 1988 to date
Also, a PE in New York, New Jersey, Connecticut, Pennsylvania, New Hampshire, Vermont, and Virginia

PROFESSIONAL SOCIETIES

Academy of GeoProfessionals – Diplomate, Geotechnical Engineer
American Society of Civil Engineers – Fellow
American Concrete Institute
American Society for Testing and Materials
ASFE – The Geoprofessional Business Association
Association of Engineering Geologists - Affiliate Member
Deep Foundations Institute
Disputes Review Board Foundation – Professional Member
Geo-Institute
International Society of Soil Mechanics and Foundation Engineering
International Tunneling and Underground Space Association
North American Trenchless Technology Society
The International Association of Foundation Drilling - Technical Affiliate
The Underground Construction Association of SME
The Moles

CONTINUING EDUCATION

Disputes Review Board Administration and Practice Workshop, May 2002
Disputes Review Board Chairing Workshop, May 2002
DRBF Administration & Practice/Chairing Workshop, April/July 2020
DRBF Caltrans DRB/DRA Candidate Workshop 19-21 October 2021

GENERAL BACKGROUND

Dr. Boscardin has over 40 years of experience which includes geotechnical and geo-structural engineering industry and academic experience with emphasis on underground construction, excavation support, instrumentation and building response to construction, shallow and deep foundations, and contaminant site evaluation, management and remediation. His background includes soil and rock tunneling, trenchless construction, excavation support, foundations, building and utility response to nearby construction, soil and rock laboratory testing, slope stability, dams, blasting, dewatering, grouting and other ground improvement, contaminated site assessment and remediation, geotechnical/structural instrumentation, structural design, and forensic and claims-related services.

RECENT PROFESSIONAL EXPERIENCE

12/02 to Date Principal, Boscardin Consulting Engineers, Inc., 53 Rolling Ridge Road, Amherst, MA 01002-1420. Boscardin Consulting Engineers, Inc. focused on geotechnical and structural engineering design and consultation for underground construction projects.

5/89 to 12/02 - GEI Consultants, Inc., Winchester, MA rose from project manager to MA and NH Branch Manager and member

of the Board of Directors. Project work included construction phase design of head walls and thrust pits for tunnel jacking through frozen ground for the Big Dig, geotechnical design for rock tunnels and rock slopes, litigation projects, construction support services for the MBTA Transitway Project (Boston), and excavation support design for Capitol Visitor's Center, Washington, D.C.

- 9/84 to 5/89** - Asst. Professor, Dept. of Civil Engineering, Univ. of Massachusetts at Amherst. Taught geotechnical courses with research activities on rock engineering, tunneling, foundations, excavations, and railroad ballast performance.
- 6/82 to 9/84** - Visiting Faculty, Dept. of Civil Engineering, Univ. of Illinois at Urbana. Co-Investigator of subsidence above abandoned coal mines and associated effects on structures and utilities, also taught introductory geotechnical courses.
- 6/80 to 5/89** - Consulting Civil/Geotechnical Engineer. Activities included: Design, analysis, evaluation, and remediation of problems associated with foundations for structures, open cuts, braced excavations, slopes, and walls in soil and rock; Tunnels in soil and rock; mines; Prebid studies and designs for contractors; Forensic engineering and litigation support.
- 1/75 to 6/80** - Teaching and Research Assistant, Dept. of Civil Engineering, Univ. of Illinois at Urbana. Investigated excavation-induced ground movements and associated effects on nearby structures.
- 3/76 to 6/80** - Various consulting geotechnical engineering jobs for Drs. Cording and Davisson, Univ. of Illinois at Urbana,
- 3/74 to 8/74** - Field Engineer, GEI Consultants, Inc., Winchester, MA. Performed construction over sight, instrumentation, and monitoring during installation of large diameter fiberglass outfall pipes (9-ft) on land and in a marine environment.
- 6/73 to 3/74** - Structural Designer, Charles T. Main, Inc., Boston, MA. Duties included structural design of steel and concrete structures for industrial structures and electric power generating facilities.
- 6/68 to 6/73** - Construction Laborer and Crew Leader, Marco Boscardin and Sons, Inc. Dover Plains, NY. Worked on concrete and masonry construction for residential, commercial, industrial, farm, and educational structures.

AREAS OF EXPERIENCE

- **Bridge Related Experience**
- **Grouting, Ground Improvement, Ground Modification Experience**
- **Tunneling Related Experience**
- **Excavation and Building Response, Instrumentation Experience**
- **Forensic and Claims Related Experience**
- **Pipeline and Other Trenchless Experience**
- **Foundation Experience**
- **Soil and Rock Slope, Dam, Dike Experience**
- **Cutoff Walls Experience**
- **Contaminated Site Experience**
- **Miscellaneous, Underground Chambers, Open Pit and Underground Mine Stability and Subsidence, Railroad Ballast and Road Beds, Prebid Evaluations and Constructability Reviews**

PUBLICATIONS

M.D. Boscardin, D.A. Pidgeon, A.G. Boscardin, Design, Installation, and Testing of Hollow Bar Tiebacks Used as Excavation Support: Proceedings, DFI International Conference on Deep Foundations, Seepage Control and Remediation, New York, NY, USA, October 2016.

K.A. Pidgeon, M. D. Boscardin, W.S. Riehl, Burlington Tunnel Emergency Repairs: A Case History, Proceedings, 2011 Rapid Excavation and Tunneling Conference, SME, June 2011, pp. 1438-1446.

M.C. Ensign, D. Pottle, M. Radville, and M. D. Boscardin, **Managing Existing Contamination Impacts on Design and Construction of an Urban Microtunneling Project**, Proceedings No-Dig 2010, North American Society for Trenchless Technology, Chicago, IL, May 2010.

P. A. Roy, M. D. Boscardin and A. J. Miller, **Pittsburgh North Shore Connector Tunneling Project – Overview and Update**, Hong Kong Tunnelling Conference, The Institution of Materials, Minerals, and Mining, Hong Kong Branch, November 2009.

A. Miller, P. Roy, and M. Boscardin, **Making the North Shore Connection**, Tunnels and Tunneling North America, Vol. 33, Conway, NH, May 2009, pp. 13-15.

K. A. Wargo, P. A. Roy, M. D. Boscardin, A. J. Miller, and K. DiRocco, **Tight Fit Tunneling**, Civil Engineering, Vol. 79, Issue No. 3, ASCE, Reston, VA, March 2009, pp. 58-65.

P. A. Roy, M. D. Boscardin and A. J. Miller, **Allegheny River Tunnel Crossing Project**, Proceedings of North American Tunneling 2008, Editors: M. Roach, M. Kritzer, D. Ofiara, and B. Townsend, SME, June 2008, pp. 587-593.

A. J. Miller, M. D. Boscardin and P. A. Roy, **North Shore Connector Tunnel Project, Pittsburgh, USA**, Proceedings The 13th Australian Tunnelling Conference, Melbourne, Australia, Australian Institute of Mining and Metallurgy, Pub. Series No. 3/2008, Carleton Victoria, Australia, May 2008, pp 247-252.

M. D. Boscardin, **What Will Happen Next Door?**, Geo-Strata. Volume 9, Issue 1, ASCE, Reston, VA, January/February 2008, pp. 20-25.

M. D. Boscardin, P. A. Roy, A. J. Miller and K. J. DiRocco, **Designing to Protect Adjacent Structures during Tunneling in an Urban Environment**, Proceedings, 2007 Rapid Excavation and Tunneling Conference, Ed. M.T. Traylor and J.W. Townsend, SME, June 2007.

M.D. Boscardin, C. Patterson, M. Landis, J-C. Younan, and D. Aghjayan, **Evaluation of Permeability of Containment Slurry Walls**, Proc. GeoCongress 2006, ASCE, Atlanta, February 2006.

M. D. Boscardin, P.A. Roy, L.A. Becker, K.J. DiRocco, and K.E. Wood, **Movements Due to Freezing, Thawing and Tunneling Beneath Two Buildings**, Proceedings, 2005 Rapid Excavation and Tunneling Conference, Ed. J.D. Hutton and W. D. Rogstad, SME, June 2005.

H.S. Lacy, M.D. Boscardin, and L. A. Becker, **Performance of Russia Wharf Buildings During Tunneling**, Proceedings of North American Tunneling 2004, Editor: L. Ozdemir, AUA, Atlanta, GA, April 2004, Balkema, pp. 121 – 128.

S. L. Pearlman, M. P. Walker, and M. D. Boscardin, **Deep Underground Basements for Major Urban Building Construction**, Proceedings GeoSupport 2004 Drilled Shafts, Micropiling, Deep Mixing, Remedial Methods, and Specialty Foundations, GSP No. 124, Ed. J. P. Turner and P. W. Mayne, ASCE, Orlando, FL, January 2004, pp. 545 – 560.

T. W. Kahl, L.J. Welch, Jr., M.D. Boscardin, S. Morrow, **Design and Construction of a Slurry Wall to Contain a Low-pH Dense Aqueous Phase Brine**, Proceedings Soil Rock America, Boston 2003.

M. D. Boscardin, **Building Response to Construction Activities**, Proceedings of Earth Retention Systems 2003: A Joint Conference, Presented by ASCE Metropolitan Section Geotechnical Group, The Deep Foundations Institute, and ADSC: The International Association of Foundation Drilling May 6 and 7, 2003, New York City pp. 171-185.

M.D. Boscardin and M.P. Walker, **Design of Large Thrust Pits for Tunnel Jacking on Boston's Central Artery Project**, World Tunnelling, November, 2000.

M.D. Boscardin, M.P. Walker, W.P. Konicki, and H. van den Elsen, **Design of Large Thrust Pit for Jacked Box Tunnels**, Proceedings of the North American Tunneling 2000, Underground Construction: "The Revolution Continues," Boston, Massachusetts, June 6-11, 2000, pp. 333-341.

L.W. Abramson and M.D. Boscardin, **Tunnel Rehabilitation**, Proceedings of the Third National Conference on Geo-Engineering for Underground Facilities, Editors: G. Fernandez and R. A. Bauer Sponsored by the Geo-Institute of the ASCE, University of Illinois at Urbana-Champaign, June 1999, pp. 912 - 924.

M.D. Boscardin, and M.P. Walker, **Ground Movement, Building Response, and Protective Measures**, Effects of Construction on Structures, GSP No. 84, Proceedings of sessions of GeoCongress 98, sponsored by the Geo-Institute of the ASCE, Boston, Massachusetts, October 1998.

N.A. Campagna, M.D. Boscardin, and G.R. Iglesia, **Tension Element Testing in South Bay and Downtown Boston for CA/T Project**, Special Geotechnical Testing: Central Artery/Tunnel Project in Boston, Massachusetts, GSP No. 91, Editor: J.R. Lambrecht, Proceedings of sessions of GeoCongress 98, sponsored by the Geo-Institute of the ASCE, Boston, Massachusetts, October 1998.

M.D. Boscardin, Editor, **Jacked Tunnel Design and Construction, GSP No. 87**, Proceedings of a session on tunnel jacking at GeoCongress 98, sponsored by the Geo-Institute of the ASCE, Boston, Massachusetts, October 1998, pp. 63.

M.D. Boscardin, M.P. Walker, M.Y. Mahoney, M.L. Jones, and J.M. Callanan, **Design and Construction of a Barrier Wall and Reaction Window Treatment System for MGP**, Proceedings of the 10th Annual IGT Symposium on Gas, Oil, and Environmental Biotechnology and Site Remediation Technologies, Orlando, Florida, December, 1997.

M.D. Boscardin, R.L. Wooten and J.M. Taylor, **Pressure Balance Shield Pipe Jacking to Avoid Contamination**, Trenchless Pipeline Projects, Practical Applications, Editor: L. Osborn, ASCE, Boston, Massachusetts, June 1997, pp.135-142.

M.D. Boscardin, R.L. Wooten, and J. M. Taylor, **Pipe Jacking to Avoid Contaminated Groundwater Conditions**, Proceedings, 13th Rapid Excavation and Tunneling Conference, SME, June, 1997.

M.D. Boscardin, M.T. Mahoney, M.L. Jones, M.P. Walker, and J.M. Callanan, **Reaction Wall Treatment of Ground Water at a Former MGP Site**, Proceedings of the 11th Annual Conference on Contaminated Soils, Editors: Calabrese and Kostecki, Lewis Publishers, Chelsea, Michigan, October 1996.

M.D. Boscardin, G.R. Iglesia, and M.L.F. Bode, **Full-Scale Tiedown Tests for the Central Artery/Tunnel Project**, Civil Engineering Practice, Jour. of Boston Soc. of Civil Engrs. Section, Spring/Summer, 1996, pp. 51-78.

B.I. Collingwood, M.D. Boscardin, and R.F. Murdock, **Abating Coal Tar Seepage in Surface Water Bodies Using Sheet Piles with Sealed Interlocks**, Symposium on Dredging and Containment of Contaminated Sediments, ASTM STP 1293, K.R. Demars, G.N. Richardson, R.N. Yong, and R.C. Chaney, Eds., American Society for Testing and Materials, Philadelphia, 1995, pp. 220-226.

M.D. Boscardin and D.W. Ostendorf, **Barrier Walls to Contain Contaminated Soils**, Principles and Practices for Petroleum Contaminated Soils, Editors: Calabrese and Kostecki, Lewis Publishers, Chelsea, Michigan, 1993, Ch. 19, pp. 433-449.

M.D. Boscardin and I. Ahmed, **Subsidence Effects on Buildings and Buried Pipelines**, Proceedings: Third Workshop on Surface Subsidence Due to Underground Mining, Editor: S.S. Peng, Dept. of Mining Energy, West Virginia University, Morgantown, pp. 106-112, June 1992.

M.D. Boscardin, E.T. Selig, R.S. Lin and G. W. Yang, **Hyperbolic Parameters for Compacted Soils**, Journal Geotechnical Engineering, ASCE, Vol. 116, No. 1, pp. 88-104, January 1990.

M.D. Boscardin and D. W. Ostendorf, **Cutoff Walls to Contain Petroleum Contaminated Soils**, Petroleum Contaminated Soils, Vol. 2, Editors: Calabrese and Kostecki, Lewis Publishers, Michigan, Ch. 20, pp. 233-250, 1989.

E.J. Cording, G.S. Brierley, J.W. Mahar and M.D. Boscardin, **Controlling Ground Movements During Tunneling**, The Art and Science of Geotechnical Engineering at the Dawn of the Twenty-First Century, A Volume Honoring Ralph B. Peck, Editors: Cording et al., Prentice Hall, Englewood, N.J. 1989, Ch. 25, pp. 477-505.

M.D. Boscardin and E.J. Cording, **Building Response to Excavation-Induced Settlement**, J. Geotech. Engrg., ASCE, Vol. 115, No. 1, January 1989, pp. 1-21.

M.D. Boscardin, **Impact of Tunneling on Two Brick-Bearing-Wall Structures**, Proceedings Second International Conference on Case Histories in Geotechnical Engineering, 1988.

M.D. Boscardin, **Building Response to Excavation-Induced Ground Movements**, Ph.D. Dissertation, University of Illinois, Urbana, Illinois, 1980.

M.D. Boscardin, E.J. Cording and T.D. O'Rourke, **Case Studies of Building Behavior in Response to Adjacent Excavation**, Final Report, UMTA-IL-06-0043-78-1 prepared by the University of Illinois at Urbana-Champaign for the U.S. Dept. of Transportation, Washington, DC, 1978.

M.D. Boscardin and T.D. O'Rourke, **Building Response to Ground Movements Caused by an 18-m-Deep Excavation**, Proceedings of the Conference on Large Ground Movements and Structures, UWIST, Cardiff, Wales, 1977.

E.J. Cording, T.D. O'Rourke and M.D. Boscardin, **Ground Movements and Damage to Structures**, International Conference on Evaluation and Prediction of Subsidence, Pensacola Beach, pp. 516-537, January 1978.

T.D. O'Rourke, E.J. Cording and M.D. Boscardin, **Damage to Brick Bearing Wall Structures Caused by Adjacent Braced Cuts and Tunnels**, Proceedings of the Conference on Large Ground Movements and Structures, UWIST, Cardiff, Wales, 1977.

T.D. O'Rourke, E.J. Cording and M.D. Boscardin, **The Ground Movements Related to Braced Excavation and Their Influence on Adjacent Buildings**, Report UIUC-ENG-76-2023 for the US Dept. of Transportation, Office of the Secretary and Federal Railroad Administration, Washington, DC, DOT-TST-76T-23, August 1976.