

# TIMOTHY D. STARK

Consulting Civil Engineer, Stark Consultants, Inc.

Professor of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign

## Education

Ph.D., Virginia Polytechnic Institute & State University, Geotechnical Engineering, July, 1987

Thesis Title: "Mechanisms of Strength Loss in Stiff Clays," advisor J. Michael Duncan

M. Engineering, University of California at Berkeley, Geotechnical Engineering, June, 1984

Thesis Title: "Methods of Regressive Analysis of Slope Stability," advisor J. Michael Duncan

B.S., University of Delaware, Civil Engineering, June, 1981

## Selected Recent Awards and Recognitions

Selected Editor, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, 2013-2015

Associate Editor Award, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, 2012

Journal of Legal Affairs and Dispute Resolution in Engineering and Construction Best Scholarly Paper, ASCE, 2011

R.S. Ladd D18 Standards Development Award, D7608m American Society for Testing and Materials, 2011

Nominee, 2009 U.S. Army Corps of Engrs. Dam Safety Award, Seismic Retrofit of Tuttle Creek Dam, NW Division.

Elected Diplomat, Geotechnical Engineering, Academy of Geo-Professionals, ASCE, 2010

Classic Paper in Geosynthetics, Geo-Americas Conference, 2008

Elected Fellow, American Society of Civil Engineers (ASCE), 2005

R.M. Quigley Award, Canadian Geotechnical Society, 2003

Standards Development Award, American Society for Testing and Materials, 2002

Walter L. Huber Civil Engineering Research Prize, ASCE, 1999

University Scholar, University Scholars Program, University of Illinois at Urbana-Champaign, 1998-2001

Thomas A. Middlebrooks Award, ASCE, 1998

News Correspondent Award, ASCE, 1995

## Employment Record

*Professor of Civil Engineering:* University of Illinois at Urbana-Champaign (UIUC), 8/99 - date.

*Director,* Fabricated Geomembrane Institute-Technology Program, UIUC, 1/98 - date.

*Program Coordinator,* Transportation Networks Program, Mid-America Earthquake Center at UIUC, 10/97 – 8/00.

*Associate Professor of Civil Engineering:* UIUC, 8/94 – 8/99.

*Assistant Professor of Civil Engineering:* UIUC, 1/91 - 8/94.

*Assistant Professor of Civil Engineering:* San Diego State University, 1/87-1/91.

*Staff Engineer:* Woodward-Clyde Consultants, Walnut Creek, CA, 6/83-9/83.

*Staff Engineer:* Woodward-Clyde Consultants, San Francisco, CA, 6/81-9/82.

## Selected Recent Consulting Experience

U.S. Department of Justice

U.S. Army Corps of Engineers, Engineering Research and Development Center (ERDC), Vicksburg, MS

CH2M-Hill, Virginia

HNTB, Texas

McConaughy and Sakissian, PC

HNTB, Baton Rouge, LA

Terracon, Des Moines, IA

U.S. Bureau of Reclamation, Denver, CO

Los Angeles Department of Water and Power, Los Angeles, CA

American Electric Power, Columbus, OH

Allied Waste Services, St.. Louis, MO

U.S. Army Corps of Engineers, Kansas City, MO, Norfolk, VA

Ohio Department of Transportation, Columbus, OH

Ohio Environmental Protection Agency, Columbus, OH

Waste Management, Chicago, IL

Camp, Dresser, and McKee, Raleigh, NC

de la Pena & McDonald, LLP, San Francisco, CA

Godfrey and Kahn, P.C., Milwaukee, WI

### **Selected Short Course Instruction**

Illinois and Ohio Environmental Protection Agencies, Springfield, IL and Columbus, OH  
Missouri Department of Natural Resources  
University of Wisconsin, Madison, WI  
Stark Consultants, Inc.  
PVC and Fabricated Geomembrane Institutes  
University of Illinois at Urbana-Champaign, IL  
U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS

### **Selected Recent Research Grants and Contracts**

*Guidelines for Geofoam Applications in Embankment Projects*, National Cooperative Highway Research Program, Transportation Research Board, Washington, D.C., 10/07 – 2/11, \$300,000.

*Development of Procedures for Determining the Axial Capacity of Drilled Shafts Founded in Illinois Shales*, with Dr. J.H. Long of U. of Illinois, Illinois Center for Transportation; 12/10-12/12; \$150,000.

*Geosynthetic Materials for Applications at ORD*, O'Hare Airport Modernization Project, Chicago, IL, 2/11 - 3/11, \$15,000.

*Mitigation of Differential Movement at US High Speed Passenger Rail and Joint Passenger/Freight Railway Transitions*, with Dr. E. Tutumluer of U. of Illinois, Federal Railroad Administration; 9/11-9/14; \$1,630,000.

*Seismic Testing for Track Substructure (Ballast and Subgrade) Assessment*, with E. Tutumluer of U. of Illinois, S. Nazarian of U. of Texas at El-Paso, and C. Ho of U. of Mass. at Amherst, Federal Railroad Administration; 9/12-9/14; \$480,000.

*Identification of High Speed Rail Ballast Flight Risk Factors and Risk Mitigation*, with R. Saat, T.C. Kao, and E. Tutumluer of U. of Illinois, Federal Railroad Administration; 9/12-2/14; \$262,000.

### **Selected Recent Journal Publications (101 total)**

1. Stark, T.D., E.J. Newman, and R.A. Aust, "Back-Analysis of PVC Geomembrane Lined Pond Failure," *Geosynthetics International Journal*, Vol. 15, No. 4, August, 2008, pp. 258-268.
2. Stark, T.D. and H. Choi, "Slope Inclinerometers for Landslides," *Landslides*, Journal of the International Consortium on Landslides, Vol. 5 No. 3, September, 2008.
3. Axtell, P. and T.D. Stark, "Increase in shear Modulus by Soil Mix and Jet Grout Methods," *DFI Journal*, Deep Foundations Institute, Vol. 2, No. 1, November, 2008, pp. 11-22.
4. Stark, T.D., Axtell, P., Lewis, J.R., Dillon, J.C., Empson, W.B., Topi, J.E., and Walberg, F.C. "Soil Inclusions in Jet Grout Columns," *DFI Journal*, Deep Foundations Institute, 3(1), May, 2009, pp. 44-55.
5. Stark, T.D. and E.J. Newman, "Ten-year PVC Geomembrane Durability," *Geosynthetics International Journal*, Vol. 16, No. 2, 2009, pp. 97-108.
6. Amaya, P., J. Massey-Norton, and T.D. Stark, "Assessment of Leakage from a Fly Ash Tailings Dam," *Journal of Performance of Constructed Facilities*, ASCE, Vol. 23, No. 6, November, 2009, pp. 406-414.
7. Stark, T.D. and E.J. Newman, "Design of a Landfill Final Cover System," *Geosynthetics International Journal*, Vol. 17, No. 3, 2010, pp. 1-8.
8. Stark, T.D. and M. Hussain, "Shear Strength in Preexisting Landslides," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 136(7), July, 2010, pp. 957-962.
9. Axtell, P., T.D. Stark, and J.C. Dillon, "Peak and Post-Peak Shear Strength of Cement-Bentonite," *DFI Journal*, Deep Foundations Institute, Vol. 4, No. 1, August, 2010, pp. 59-65.
10. Calder, G.V. and T.D. Stark, "Aluminum Reactions and Problems in Municipal Solid Waste Landfills," *J. of Hazardous, Toxic, and Radioactive Waste Mgmt.*, ASCE, Vol. 15, No. 1, October, 2010, pp. 258-265.
11. Stark, T.D. and Pazmino, L., "High Temperature Air Channel Testing of Thermally Bonded PVC Geomembrane Seams," *Geosynthetics International Journal*, Vol. 18, No. 2, 2011, pp. 1-4.

12. Arellano, W.D., J.B. Tatum, T.D. Stark, J.S. Horvath, and D. Leshchinsky. "Framework for Design Guideline for EPS-Block Geofoam in Slope Stabilization and Repair," 89<sup>th</sup> *Transportation Research Record 10-2629*, National Research Council, Washington, D.C., 2011, pp. 100-108, <http://pubsindex.trb.org/view.aspx?id=910645>.
13. Stark, T.D., E. J. Newman, G. de la Pena, and D. Hillebrandt, "Fill Placement on Slopes Underlain by Franciscan Mélange," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 137(3), March, 2011, pp. 1-6.
14. Stark, T.D., J.W. Martin, G.T. Gerbasi, and T. Thalhamer, "Aluminum Waste Reaction Indicators in an MSW Landfill," ACCEPTED *J. of Geotechnical and Geoenvironmental Engrg.*, ASCE, August, 2010.
15. Stark, T.D., H. Choi, F. Lee, and B. Queen, "Importance of Compacted Soil Liner Interface Strength," ACCEPTED to *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, August, 2010.
16. Nguyen, T.-B., Lim, J., H. Choi, and T.D. Stark, "Numerical Modeling of Diffusion for Volatile Organic Compounds through Composite Landfill Liner Systems," ACCEPTED *Journal of Geotechnical and Geoenvironmental Engineering*, Korean Society of Civil Engineers, November, 2010.
17. Akhtar, K., T.D. Stark, and O. Hungr, "Use of Digital Elevation Models in Three-Dimensional Slope Stability Analyses," SUBMITTED to *Intl. Journal for Numerical and Analytical Methods in Geomechanics*, J.Wiley, January, 2011.
18. Stark, T.D. and Hussain, M. (2013). "Drained Shear Strength Correlations for Slope Stability Analyses," to be published in *J. of Geotechnical Engineering*, ASCE, June, 2013.

### **Selected Recent Conference Publications (112 total)**

1. Arellano, W. D. and T.D. Stark, "Load bearing analysis of EPS-block geofoam embankments," Proceedings of 8<sup>th</sup> International Conference on Bearing Capacity of Road, Railways, and Airfields, University of Illinois, Urbana, Illinois, June 29 – July 2, 2009, pp. 981-990.
2. T.D. Stark, E.J. Newman, S. Baig, P. Amaya, "Evaluating Ground Settlement above a Mined Area," *Proceedings of Spec. Conference GeoFlorida 2010: Advances in Analysis, Modeling and Design*, ASCE, Orlando, March, 2010, 8 pp.
3. Hussain, M. and Stark, T.D. "Back-analysis of Preexisting Landslides". *Proceedings of Specialty Conf. GEO-FRONTIERS 2011*, ASCE, Dallas, TX, March, 2011, pp. 3659-3668.
4. Somasundaram, S., Shenthana, T., Stark, T.D., and Wright, T.D., "Shear Strength Characterization and Back Analysis for a Progressive Landslide Complex". *Proceedings of Specialty Conf. GEO-Congress 2012*, ASCE, Oakland, CA, March, 2012, pp. 673-682.
5. Stark, T.D., Queen, B., and Choi, H. (2013). "Surprising Slope Stability," *GeoStrata Magazine*, January, 2013, pp. 91-105.

### **Standard Test Methods Published**

1. *Standard Test Method for Torsional Ring Shear Test to Determine Drained Residual Shear Strength of Cohesive Soils*, ASTM, Pennsylvania, 2000, Vol. 04.09, Designation: D6467, pp. 832-836.
2. *Standard Test Method for Torsional Ring Shear Test to Determine Drained Fully Softened Shear Strength of Cohesive Soils*, American Society for Testing and Materials, West Conshohocken, Pennsylvania, 2010, Vol. 04.09, Designation: D7608-10.

### **Patents Granted**

1. *Stabilized Fluid Barrier Member: Method for Making*, Patent No. 5,501,753, U.S. Government, March, 1996.
2. *Stabilized Fluid Barrier Member: In-Situ Method of Forming Same*, Patent No. 5,662,983, U.S. Gov., September, 1997.
3. *Stabilized Fluid Barrier Member: Method of Forming Same*, Patent No. 5,882,453, U.S. Government, March, 1999.
4. *Stabilized Fluid Barrier Member: Method of Forming Same*, Patent No. 6,095,720, U.S. Government, August, 2000.
5. *Stabilized Fluid Barrier Member: Method of Using*, Patent No. 2,198,850, Canadian Government, November, 2007.

## **Selected Recent Research Reports (47 total)**

1. Stark, T.D., "PSDDF-Computer Model to Evaluate the Primary Consolidation, Secondary Compression, and Desiccation of Dredged Fill and in Non-Homogeneous Cohesive Soils," Instruction Report, COE ERDC, Vicksburg, MS, 2012, 176 pp.

## **Research Supervision**

Undergraduate Research Advisees: 34  
Masters Research Advisees: 42  
Doctoral Research Advisees: 12

## **Selected Keynote and Distinguished Lecture Presentations**

- "Three-Dimensional Slope Stability Analyses,"* Distinguished Practitioners in the Field of Geotechnical Engineering Lecture, Distinguished Lecture, Kentucky Geotechnical Engrg. Group, Louisville, April 8, 1999.
- "Landslides: Shear Strengths and Stability Analyses,"* Keynote Lecture, ASCE Geotechnical Engineering Group, Los Angeles, CA, January 16, 2001.
- "Three-Dimensional Slope Stability Analyses in Practice,"* University of Minnesota 51<sup>st</sup> Annual Geotechnical engineering Conference, Minnesota Geotechnical Engineering Group, Minneapolis, MN, February 21, 2003.
- "Impact of Cut and Fill Operation on Hillside Development,"* Keynote Lecture, ASCE Geotechnical Engineering Group, 28<sup>th</sup> Spring Seminar & Eighth Geo-Expo, Queen Mary, Los Angeles, CA, April 27, 2005.
- "Stability of Waste Containment Facilities: Emerging Issues,"* Keynote Speaker, American Public Works Association, Annual Conference, Kansas City, MO, September 13, 2006.
- "Landslides in an Urban Environment,"* Keynote Speaker, Ohio River Valley Society Seminar (ORVSS) XXXII, Annual Conference of ASCE Kentucky Geotechnical Engineering Group, Lexington, KY, October 17, 2008.
- "Current Research on Drained Residual Strength in Landslides,"* Keynote Speaker, Geo-San Antonio 2010, ASCE Geo Institute, February 5, 2010.
- "Elevated Temperatures in Landfills,"* Keynote Speaker, Chicago ASCE Lecture Series, April 30, 2010.
- "Current Research on Drained Residual Strength in Landslides,"* Keynote Speaker, Geo-Omaha 2011, ASCE Geo Institute, February 18, 2011.

## **Geotechnical Engineering Research Areas**

1. Foundation Engineering
2. Drained and Undrained Shear Strength of Soils
3. Static and Seismic Stability of Natural and Man-Made Slopes
4. Design of Earth Dams and Levees
5. Behavior of Geosynthetics
6. Earthquake- Induced Liquefaction and Post-Liquefaction Strength of Cohesionless Soils