

Curriculum Vitae ANIRBAN DE, Ph.D., P.E.

EDUCATION:

- Ph.D. Civil Engineering, Rensselaer Polytechnic Institute, Troy, NY (1996)
Thesis: **Study of Interfacial Friction of Landfill Geosynthetics: Static and Dynamic**
- M.S. Civil Engineering, Illinois Institute of Technology, Chicago, IL (1991)
Thesis: **Applications of Common Utility Placement Systems**
- B.C.E.(Hons.) Civil Engineering, Jadavpur University, Calcutta, India (1989)

REGISTRATION:

Registered Professional Civil Engineer (P.E.)

California: License Number C58889

Connecticut: License Number 23613

New York: License Number 080871

EMPLOYMENT:

Manhattan College, Bronx, New York: Assistant Professor of Civil Engineering since August 2002

Rensselaer Polytechnic Institute, Troy, New York: Visiting Assistant Professor of Civil & Environmental Engineering: June 2004 through August 2004

GeoSyntec Consultants, Walnut Creek, California: Senior Staff Engineer: 1996-1999, Assistant Project Engineer: 1999-2001, Project Engineer: 2001-2002

PROFESSIONAL EXPERIENCE:

Dr. Anirban De has over ten years of experience performing geotechnical engineering analyses and design. His professional specialty is the design of geotechnical and geosynthetic components for municipal solid waste and hazardous waste landfills. He has performed siting and feasibility studies, stability analyses, design of new facilities and expansion and closure of existing landfills in the states of Alaska, Arizona, California, Hawaii, Massachusetts, New York, Oregon, and Washington.

Representative project experience:

- *Closure of a 252-acre federal Superfund hazardous waste facility:* Responsibilities included project management, directing field and laboratory investigations, site characterization, static and seismic stability analyses, liaison with federal and state regulatory agencies (USEPA and California State EPA) and supervising construction quality assurance program. Works completed include design of cap and buttress for four hazardous waste landfills, including construction of an expanded toe buttress and stability analyses for dikes.
Client: A group of Potentially Responsible Parties (PRPs).
- *Design of landfill expansions and closures:* Various sites in several states. Responsibilities included performing static and seismic stability analyses, seismic response analyses, design of geosynthetic components, hydrologic evaluation, including alternatives to regulatory double containment system design, preparation of permit-level and construction-level documents, liaison with regulatory agencies, and assisting client in preparation of bid documents and construction management.
Client: Various public and private agencies.

- *Construction documents and construction management:* Various sites in several states. Responsibilities included preparation of permit-level and construction-level documents, including construction drawings and specifications, construction quality assurance manuals, preparation of bid documents, directing construction quality assurance, and construction management.
Client: Various public and private agencies.
- *Review of environmental impact of landfills, solid waste regulations, and practice in California:* Multi-year project to evaluate the impact of landfills across media (air, water, soil), the current state of solid waste landfill practice in California and to provide recommendations to the Board for improving standards. Responsibilities included managing statewide data collection on most municipal solid waste landfills in California, review and analyses of data to observe trends, review of landfill regulations in other states and countries, review of emerging technologies to recommend improvements in California regulations.
Client: California Integrated Waste Management Board (an agency of the California State EPA).
- *Design of geosynthetically-reinforced retaining wall*
Client: Public agency.

Research experience:

- Doctoral research focused on the static and dynamic frictional properties of geosynthetic components commonly used in landfill liner and cover systems.
- Study of effects of surface blasts on earth dams and underground structures by means of centrifuge experiments
- Research on modeling transport of contaminants, including radioactive contaminants, through soil utilizing a geotechnical centrifuge
- Study of long term performance of landfill cover
- Experimental modeling of geosynthetic anchor trench
- Optimization of underground utilities such that they can be placed in common utility tunnels

PEER REVIEWER:

Served as reviewer for the following:

Journal of Geotechnical and Geoenvironmental Engineering (ASCE)
Journal of Testing and Evaluation (ASTM)
Geotechnical Testing Journal (ASTM)
Geosynthetics International (Special Issue on Earthquake Engineering)
Geoenvironment 2000 (ASCE)

PROFESSIONAL AFFILIATIONS:

American Society of Civil Engineers / Geo-Institute
American Society for Engineering Education
American Society for Testing and Materials
International Society of Soil Mechanics and Geotechnical Engineering
International Geosynthetics Society
North American Geosynthetics Society

PUBLICATIONS:On Landfill Covers and Liners:

1. "Site Characterization, Design, and Construction for Closure of Four Hazardous Waste Landfills at a Superfund Site", *Proceedings of the Fifth International Conference on Case Histories in Geotechnical Engineering*, New York, New York, April 2004. (with R. J. Dunn and N. Matasovic)
2. "A New MSW Landfill Well Below Groundwater in a Highly Seismic Region", Sardinia Landfill Symposium 2003. (with R. J. Dunn)
3. "Optimization of a Geocomposite Drainage Layer for Closure of Four Hazardous Waste Landfills", *Proceedings of the Seventh International Conference on Geosynthetics*, Nice, France, pp. 545-548. 2002. (with R. J. Dunn)
4. "An Innovative Geosynthetic Cover for a Deep Hazardous Waste Landfill in a Seismic Environment", *Proceedings of Geosynthetics 2001*, Portland, Oregon, Volume 1, pp. 77-90, 2001 (with R. J. Dunn).
5. "Estimation of Dynamic Frictional Properties of Geonet Interfaces", *Proceedings of Geosynthetics 99*, Boston, Massachusetts, Volume 1, pp. 545-558, 1999 (with T. F. Zimmie).
6. "A Study of Slip Displacements Caused by Dynamic Loading at Geosynthetic Interfaces", *Geotechnical Earthquake Engineering and Soil Dynamics III*, Geotechnical Special Publication No. 75, Panos Dakoulas, Mishac Yegian and Robert Holtz (editors), American Society of Civil Engineers, Vol. 2, pp. 997-1007 (with T. F. Zimmie).
7. "Frictional Behavior of Landfill Liner Interfaces with Geonets", *Proceedings of the Sixth International Conference on Geosynthetics*, Atlanta, Georgia, Vol. 1, pp. 443-446 (with T. F. Zimmie).
8. "Estimation of Dynamic Interfacial Properties of Geosynthetics", *Geosynthetics International*, Earthquake Engineering Special Issue, 1998, Vol. 5, Nos. 1-2, pp. 17-39 (with T. F. Zimmie).
9. "Landfill Stability: Static and Dynamic Geosynthetic Interface Friction Values", *Proceedings of Geosynthetics Asia '97*, Bangalore, India 1997, (with T. F. Zimmie).
10. "Estimation of Slip Displacement Caused by Dynamic Loading at Geosynthetic Interfaces", *Proceedings of the Eighth International Conference on Soil Dynamics and Earthquake Engineering*, Istanbul, Turkey, 1997, (with T. F. Zimmie).
11. "Dynamic Shear Behavior of Geosynthetic Interfaces", *Proceedings of International Conference on Soil Mechanics and Foundation Engineering*, Hamburg, Germany, 1997, Vol. 3, pp. 1737-1740, (with T. F. Zimmie).
12. "Factors Influencing Dynamic Frictional Behavior of Geosynthetic Interfaces", *Proceedings of Geosynthetics 97*, Long Beach, CA, Volume 2, pp. 837-849, 1997 (with T. F. Zimmie).
13. "*Study of Interfacial Friction of Landfill Geosynthetics: Static and Dynamic*", Ph. D. Thesis, Rensselaer Polytechnic Institute, Troy, NY, 1996.
14. "Seismic Analysis of Landfills", *Environmental Geotechnology with Geosynthetics*, (Rao and Banerjee, editors), pp. 266-274, 1996 (with R. Gunturi).
15. "Geosynthetic Research Using the Centrifuge", *Geotechnical News*, September 1995, Vol. 13, No. 3, pp. 30-33, (with T. F. Zimmie).
16. "Study of Geosynthetic Interface Friction", *Centrifuge '94 Conference*, Singapore, August 1994, pp. 301-306, (with T. F. Zimmie and M. B. Mahmud).
17. "Centrifuge Modelling to Study Dynamic Friction at Geosynthetic Interfaces", *Proceedings of the Fifth International Conference on Geotextiles, Geomembranes and Related Products*, Singapore, September 1994, pp. 415-418, (with T. F. Zimmie and M. B. Mahmud).

On Infiltration & Landfills:

1. "Accelerated Groundwater Transport Studies Using a Geotechnical Centrifuge", *Transportation Research Record*, No. 1434, Washington, D.C. 1994, pp. 47-54, (with T. F. Zimmie and M. B. Mahmud).
2. "Use of a Geotechnical Centrifuge to Simulate Long Term Landfill Cover Performance", Proceedings of the *Eighth International Conference on Computer Methods and Advances in Geomechanics*, Morgantown, WV, May 1994, pp. 1809-1814, (with T. F. Zimmie and M. B. Mahmud).
3. "Simulation of long term performance of landfill covers", *Centrifuge '94 Conference*, Singapore, August, 1994. pp. 375-380, (with T. F. Zimmie and M. B. Mahmud).

On Radioactive Waste Migration:

1. "Application of Centrifuge Modeling to Contaminant Migration in Seabed Waste Disposal", Proceedings of the *Fourth Canadian Conference on Marine Geotechnical Engineering*, St. John's, Newfoundland, June, 1993, Vol. II, pp. 610-624, (with T. F. Zimmie and M. B. Mahmud).
2. "Accelerated Physical Modelling of Radioactive Waste Migration in Soil", *Canadian Geotechnical Journal*, October 1994, Vol. 31, No. 5, pp. 683-691, (with T. F. Zimmie and M. B. Mahmud).

On Site Characterization:

1. "Site Characterization of Five Hazardous Waste Landfills", *Proceedings of the International Site Characterization Conference, ISC'2*, Porto, Portugal, September, 2004, accepted for publication, (with N. Matasovic and R. J. Dunn).
2. "Slope Stability at a Hazardous Waste Site – Evaluation of the CPT Cone Factor N_k Using Dynamic Property Correlations", *Proceedings of the 11th International Conference on Soil Dynamics and Earthquake Engineering*, Berkeley, California, January 2004, Vol. 2, pp. 478-484. (with N. Matasovic, R. J. Dunn, and E. Kavazanjian, Jr.)

On Common Utility Systems:

1. "*Engineering Applications to Common Utility Systems*", M.S. Thesis, Illinois Institute of Technology, Chicago, 1991.
2. "*Common Utility Placement Systems (CUPS)*", Geotechnical Engineering Series, IIT-CE 91-02, Illinois Institute of Technology, Chicago, 1991, (with S. K. Saxena).

Other Geotechnical:

1. "Application of Geotechnical Centrifuge Testing to Evaluate Unconventional Highway Materials", *Transportation Research Record*, National Research Council, Washington D.C., No. 1577, pp. 96-100, 1997 (with T. F. Zimmie).
2. "Centrifuge Modeling to Study Stability of Dams", *Proceedings of the Annual Conference of the Association of State Dam Safety Officials*, Seattle, WA, 1996 (with T. F. Zimmie).