

**MD. Sahadat Hossain, Ph.D., P.E.**

Associate Professor

Department of Civil Engineering

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## **Education**

- Ph.D. Civil & Environmental Engineering, August 2002  
North Carolina State University, Raleigh, NC  
Major: Geotechnical and Geoenvironmental Engineering
- M. Engg. Civil Engineering April 1997  
Asian Institute of Technology (AIT), Bangkok, Thailand  
Major: Geotechnical Engineering
- B.Tech. Civil Engineering, July 1994,  
Indian Institute of Technology (IIT), Bombay, India

## **Appointments**

The University of Texas at Arlington, Arlington, TX  
Associate Professor, 09/10 – Present  
Assistant Professor, 08/04 – 08/10

Schnabel Engineering, Maryland  
Senior Engineer, 09/03 – 08/04

URS Corporations, Maryland  
Geotechnical Engineer, 09/02 – 08/03

L&M Foundation Specialist, Singapore  
Design Engineer, 10/97 - 08/99

Penta-Ocean Construction Company, Thailand  
Project Engineer, 04/97 – 10/97

Development Design Consultants, Dhaka, Bangladesh  
Design Engineer, 05/94 – 08/95

## **Professional Engineer**

Maryland, Ohio, Texas

## **Awards**

Outstanding Civil Engineering Instructor Award for 2009 – 2010 (UTA)  
Outstanding Civil Engineering Instructor Award for 2006 – 2007 (UTA)  
Japan Government Scholarship for Master of Engineering at AIT (September 94 to April 97) (Asian Institute of Technology, Bangkok, Thailand)  
Research Assistantship for Ph.D. at North Carolina State University at Raleigh, NC (August 1999 to July 2002)

## **PI and Co-PI Research Grants**

1. Texas Department of Transportation. **Award : \$538,304** Title: "Slope Stability Analyses and Implementation of New Slope Stabilization Methods for Dallas Distrcits". PI: MD Sahadat Hossain. Project Duration: September 2011 – August 2013.
2. City of Denton, Texas. **Budget: \$344,414**. Title: "Performance Monitoring of Landfill Gas Collection System and Estimation of Landfill Gas Emission". PI: MD Sahadat Hossain, Co-PI: Melanie Sattler. Project Duration: 05/01/12 – 04/30/15. (Project Approved, Partially Executed and waiting for fully executed contract)
3. National Science Foundation: **Award \$120,000**. RAPID: Collaborative Research: Gulf of Mexico Oil Spill Impact on Beach Soil: Radar and Radar Sensor Network-Based Approaches. PI: Qilian Liang, Co-PI: MD Sahadat Hossain, Jian Ren, Mario Di Francesco. Project Duration: September 2010- August 2012
4. City of Corpus Christi, Texas. **Award: \$48,378..** Title: "Effects of Saline Water on the Degradation of Solid Waste in ELR Landfill" PI: MD Sahadat Hossain, Co-PI: Melanie Sattler. Project Duration: Jan 2011- December 2011
5. City of Denton, Texas. **Award: \$54,472**. Title: "Monitoring of Settlement and Temperature of Solid Waste in ELR Landfill" PI: MD Sahadat Hossain, Co-PI: Melanie Sattler. Project Duration: Jan 2011- April 2012
6. Texas Department of Transportation. **Award: \$714,625**. Title: "Interagency Cooperation Contract: Slope Stability Analyses and other Tasks". PI: MD Sahadat Hossain. Co-PIs: Laureano Hoyos and Anand Puppala. Project Duration: September 2009 – August 2011.
7. City of Denton, Texas. **Award: \$182,787**. Title: "Performance Monitoring of Leachate Recirculation Systems in ELR Landfill" PI: MD Sahadat Hossain. Project Duration: May 2009- April 2012.
8. Environmental Protection Agency (EPA)
  - (a) : Award to City: \$200,000. Title: "City of Arlington – Community-wide Petroleum Assessment Grant Proposal". PI: MD Sahadat Hossain. Proposed Duration: 2 years (10/01/07 – 09/30/09) – In collaboration with City of Arlington.
  - (b) Award to City: \$200,000. Title: "City of Arlington – Community-wide Hazardous Waste Assessment Grant Proposal". PI: MD Sahadat Hossain. Proposed Duration: 2 years (10/01/07 – 09/30/09) – In collaboration with City of Arlington.(UTA Share: \$50,000).
9. City of Duncanville, Texas. Award: \$12,001. Title: "Assessment of Geo-hazard Potentials for Duncanville Development Centers using High Resolution Resistivity Equipment" PI: MD Sahadat Hossain. Project Duration: October 2007 to November 2007.

10. University Research Grants - UTA. Award: \$32,775. "Acquisition of Mercury Analyzer for Environmental Research" PI: Melanie Sattler, and Co-PI: MD Sahadat Hossain.
11. University Research Grants - UTA. Award: \$46,826. "Acquisition of High Resolution Resistivity Equipment for Geotechnical and Geoenvironmental Research" PI: MD Sahadat Hossain and Co-PI: Mohammed Najafi.
12. American Concrete Pipe Association. Award: \$25,220. Title: "Finite Element-Based Investigations of the Effects of Bedding Thickness and Bedding Irregularities on the Underground Pipes". PI: Ali Abolmaali, Co-PIs: MD Sahadat Hossain and Jiwon Jung, Project Duration: (06/01/05 – 05/31/06).
13. Texas Industries Inc. (TXI). Award: \$102,895. Title: "Engineering properties of cemented, fiber-reinforced recycled aggregate materials for base/sub-base applications in pavement engineering". PI: Laureano Hoyos. Co-PIs: Anand Puppala and MD Sahadat Hossain. Project Duration: 1.25 years (06/01/05 – 08/31/06).
14. Texas Department of Transportation. Award: \$428,060. Contract # 02-6XXIA003. Title: "Interagency Cooperation Contract: Compost applications for mitigation of pavement cracking". PI: Anand Puppala. Co-PIs: Sayed Qasim, Laureano Hoyos, and MD Sahadat Hossain. Project Duration: 1.6 yrs (02/14/06 – 08/31/07).

## **Publications**

### **Recently Submitted Journal Papers (Under Review)**

1. Kibria, G. and Hossain, M.S. (2011) "Investigation of Geotechnical Parameters affecting Electrical Resistivity of Compacted Clays" Submitted to ASCE Journal of Geotechnical and Geoenvironmental Engineering – under review
2. Hossain, M.S., Haque, M.A., and Hoyos, L. (2011). "Shear Strength Parameters of Municipal Solid Waste with Degradation in Bioreactor Landfills", Submitted to ASCE Journal of Materials in Civil Engineering – under review.
3. Hossain, M.S., and Penmethsa, K. (2011). "The Effects of Daily Cover Soils on Hydraulic Conductivity of Municipal Solid Waste (MSW) in Bioreactor Landfills", Revised Version Submitted to ASCE Journal of Materials in Civil Engineering – under review.
4. Yazdani, N., Hossain, M.S., and Shumac, W. (2011) "Geo-Hazard and Concrete Deterioration Assessment of Plantation East Culverts, City of Benbrook, Texas." Submitted to ASCE Journal of Performance of Constructed Facilities – under review.
5. Taufiq, T., Hossain, M.S., Kemler, V., Dugger, D., Sonia, S., (2011). "Effects of Seasonal Variation on the Physical and Hydraulic Characteristics of Fresh Municipal Solid Waste". Canadian Geotechnical Journal. (under review)

### **Recently Submitted/Accepted Conference Paper**

1. Kibria, G., Hossain, M.S., Hossain, J., Khan, M.S., (2011) "Determination of Geotechnical Properties of Clayey Soils from Resistivity Imaging (RI)" Abstract accepted for the GeoCongress 2012, to be held in Oakland, California, March 25-29, 2012.
2. Hossain, M.S., Kibria, G., Hossain, J., Khan, M.S., (2011) "Investigation of Moisture Variation of Backfill Soil in MSE wall." Abstract accepted for the GeoCongress 2012, to be held in Oakland, California, March 25-29, 2012.
3. Khan, M.S., Hossain M.S., Lozano, N., Hossain, J., Kibria, G., (2011) "Effect of Remoulding on shear strength of Highly Plastic Clay." Abstract accepted for the GeoCongress 2012, to be held in Oakland, California, March 25-29, 2012.
4. Hossain, M.S., Hossain, J., Khan, M.S., Kibria, G., (2011)"Determining Unknown Bridge Foundation depth by resistivity imaging method." Abstract accepted for the GeoCongress 2012, to be held in Oakland, California, March 25-29, 2012.
5. Hossain, M.S., Hossain, J., Lozano, N., Khan, M.S., and Kibria, G. (2011). "Investigation of Geohazard Potential of Highway Embankment Slopes on Expansive Clay by using Geophysical Method." Abstract accepted for the GeoCongress 2012, to be held in Oakland, California, March 25-29, 2012.
6. Hossain, J., Hossain, M.S., Lozano, N., Khan, M.S., and Kibria, G. (2011). "Numerical Modeling for Remedial Measures of Shallow Slope Failure using Recycled Plastic Pins." Abstract accepted for the GeoCongress 2012, to be held in Oakland, California, March 25-29, 2012.
7. Hossain, M.S., Manzur, S.R., Kemler, V., and Dugger, D. (2011). "Field Evaluation of Permeable Blanket for Leachate Recirculation in an ELR Landfills." Abstract accepted for the GeoCongress 2012, to be held in Oakland, California, March 25-29, 2012.
8. Manzur, S.R., Hossain, M.S., Kemler, V., and Dugger, D. (2011). "The Performance Evaluation of Horizontal Gas Collection System in an ELR Landfill." Abstract accepted for the GeoCongress 2012, to be held in Oakland, California, March 25-29, 2012.

### **Journal Papers (Accepted and Published)**

1. Hossain, M.S., Khan, M.S., Hossain, J., Kibria, G.(2011) "Evaluation of Resistivity Imaging Method for Determining Unknown Deep Foundation Depth" Accepted for Publication to Deep Foundation Institute Journal.
2. Hossain, M.S., Khan, M.S., Hossain, J., Kibria, G.(2011) "Evaluation of Unknown Foundation Depth using Different NDT Method." Accepted for publication to ASCE Journal of Performance of Constructed Facilities.

3. Hossain, M.S., Kibria, G., Khan, M.S. (2011) "Stability Analysis of the MSE Wall on State Highway 342 (Dallas Avenue) at Lancaster, Texas" Accepted for Publication to ASCE Journal of Performance of Constructed Facilities.
4. Hossain, M.S., Kemler, V., Dugger, D., and Penmethsa, K., (2011). "Monitoring Moisture Movement within Municipal Solid Waste in Enhanced Leachate Recirculation Landfill using Resistivity Imaging". Accepted for Publication to Journal of Environmental Engineering and Management (JEEM).
5. Hossain, M.S. and Penmethsa, K. (2011), "Changes in Geotechnical Properties of Municipal Solid Waste (MSW) In Bioreactor Landfill with Degradation" International Journal of Environmental Engineering, Vol 3, Nos 3 /4 , 2011 (pp. 349-370) .
6. Hossain, M.S., Haque, M.A., and Hoyos, L. (2010). "Dynamic Characteristic of Municipal Solid Waste with Degradation in Bioreactor Landfills", Journal of Geotechnical and Geological Engineering.
7. Hossain, M.S., Dharmateja, M., and Hossain, J. (2009). "Assessment of Geo-Hazard Potential and Site Investigations using Resistivity Imaging", International Journal of Environmental Technology and Management (IJETM).
8. Hossain, M.S. and Haque, M.A. (2009). "Stability of Bioreactor Landfill with Decomposition – A Numerical Modeling", Journal of Geotechnical and Geological Engineering, Springer, Published Online First, August 06, 2009: DOI 10.1007/s10706-009-9265-0.
9. Hossain, M.S. and Gabr, M.A. (2009), "Effects of Shredding and Equipment Size on the Compressibility and Strength Parameters of Municipal Solid Waste", Waste Management Journal, Elsevier, Volume 29, Issue (9), pg. 2417-2424.
10. Hossain, M.S., and Haque, M.A. (2009). "The Effect of Daily Cover Soils on Shear Strength Parameters of Municipal Solid Waste with Degradation in Bioreactor Landfills", Waste Management Journal, Elsevier, Volume 29, Issue (5), pg. 1568-1576.
11. Hossain, M.S., Hoyos, L.R. and Penmethsa, K. (2009), "Changes in Permeability of Municipal Solid Waste in Bioreactor Landfill with Degradation and Time" Journal of Geotechnical and Geological Engineering, Springer, Volume 27, Issue 1, Page 43-51.
12. Hossain, M.S., Omelchenko, V., Mahmood, T. (2009), "Case History of Geosynthetic Reinforced Segmental Retaining Wall Failure". Electronic Journal of Geotechnical Engineering (EJGE), Volume 14C.
13. Hossain, M.S., Omelchenko, V., Haque, M.A. and Hossain, J. (2009), "Capacity of a Drilled Shaft in Mid-Atlantic Region" Electronic Journal of Geotechnical Engineering (EJGE), Volume 14E.
14. Gabr, M.A., Hossain, M.S., and Barlaz, M.A. (2007), "Shear Strength Parameters and Model of Municipal Solid Waste with Leachate Recirculation", Technical Note: ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vol. 133, No. 4, April 1, 2007, pg. 478 – 474.
15. Hossain, M.S., and Rao, K.N. (2006), "Performance Evaluation and Numerical Modeling of Embankment over Soft Clayey Soil Improved with Chemico Pile" Journal of Transportation Research Board, No. 1952, Geomaterials 2006, pg. 80 - 89.

16. Hossain, M.S., Gabr, M.A., and Barlaz, M.A. (2003), "Relationship of Compressibility Parameters to Municipal Solid Waste Decomposition", ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vol. 129, No. 12, December 1, 2003, pg. 1151 –1158.
17. Gabr, M.A., Hossain, M.S., and Barlaz, M.A. (2000), "Solid Waste Settlement with Leachate Recirculation", Geotechnical News, Volume 18, Number 2, pg. 50-55.

### **Peer Reviewed Geotechnical Special Publications**

1. Hoyos, L.R., Velosa, C., Puppala, A.J., and Hossain, S. (2010) "A Novel Suction-Controlled Ring Shear Apparatus for Modeling Unsaturated Soil Response Under Large Deformations," GeoShanghai 2010 International Conference, June 3-5, 2010, Shanghai, China.
2. Hoyos, L.R., Velosa, C., Puppala, A.J., and Hossain, S. (2010) "Modeling Unsaturated Soil Response Under Large Deformations Using A Novel Suction-Controlled Ring Shear Device," UNSAT 2010: Fifth International Conference on Unsaturated Soils, September 6-8, 2010, Barcelona, Spain.
3. Hossain, M.S., Gabr, M.A. and Haque, M.A. (2008), "Deformation and Stability of MSW Bioreactor Landfills: Properties and Analysis Approach" Geotechnical Special Conference, GeoCongress 2008, March 9 – 12, 2008, New Orleans, Louisiana.
4. Hossain, M.S., Hoyos, L.R. and Penmethsa, K. (2008), "Permeability of Municipal Solid Waste in Bioreactor Landfill with Degradation" Geotechnical Special Conference, GeoCongress 2008, March 9 – 12, 2008, New Orleans, Louisiana.
5. Hoyos, L.R., Puppala, A and Hossain, M.S. (2008), "Engineering Characterization of Cement-Fiber Treated RAP Aggregates" Geotechnical Special Conference, GeoCongress 2008, March 9 – 12, 2008, New Orleans, Louisiana.
6. Hoyos, L.R., Takkabutr, P., Puppala, A.J., and Hossain, M.S. (2008). "Dynamic response of unsaturated soils using resonant column and bender element techniques". GEESD IV: 4th Geotechnical Earthquake Engineering and Soil Dynamics Conference, May 18-22, 2008, Sacramento, California.
7. Hossain, M.S., Omelchenko, V. and Haque, M.A. (2007), "Capacity of Rock Socketed Drilled Shafts in Mid-Atlantic Region" Geotechnical Special Conference, GeoDenver, February 18-21, 2007, Denver, Colorado.
8. Branch, A. and Hossain, M.S. (2007), "Seepage Analyses of Soil-Bentonite Slurry Cutoff Wall through Landfill" Geotechnical Special Conference, GeoDenver, February 18-21, 2007, Denver, Colorado.
9. Hossain, M.S., Rao, K.N., and Haque, M.A. (2006), "Embankment over Soft Soil Improved with Chemico Pile – A Numerical Study" Geo Shanghai, in Shanghai, China, June 2-4, 2006.

10. Hossain, M.S., and Gabr, M.A (2005), "Prediction of Municipal Solid Waste Landfill Settlement with Leachate Recirculation", Geotechnical Special Publication - 142, Waste Containment and Remediation, Geo-frontiers 2005 at Austin, Texas, January 24-26, 2005.
11. Kim, K.J., Rahman, M.S., Gabr, M.A., Sarica, R.Z. and Hossain, M.S. (2005), "Reliability Based Calibration of Resistance Factors for Axial Capacity of Driven Piles", Geotechnical Special Publication - 132, Advances in Deep Foundations, Geo-frontiers 2005 at Austin, Texas, January 24-26, 2005.

### **Peer Reviewed Conference Publications**

1. Hossain, M.S., Lozano, N., Hossain, J., Khan, S., (2011) "Investigation of Geo-hazard Potential of Highway Embankment Slopes on Expansive Clay." 3<sup>rd</sup> International Conference on Geotechnical Engineering for Disaster Mitigation and Rehabilitation, 17-20 May 2011, Semarang, Central Java, Indonesia,
2. Hossain, J., Hossain, M.S., Lozano, N., Khan, S., (2011) "Numerical Modeling for Remedial Measures of Shallow Slope Failure using Recycled Plastic Pins." 3<sup>rd</sup> International Conference on Geotechnical Engineering for Disaster Mitigation and Rehabilitation, 17-20 May 2011, Semarang, Central Java, Indonesia.
3. Hossain, M.S., Kemler, V., Dugger, D., and Manzur, S.R., (2011). Application of Resistivity Imaging for Bioreactor Landfill Operation. In proceedings: *Waste Safe, 2<sup>nd</sup> International Conference on Solid Waste Management in Developing Countries*, February 13-15, Khulna, Bangladesh.
4. Manzur, S.R., Hossain, M.S., Kemler, V., and Dugger, D. (2011). Application of Shredder Tires as Drainage Material in Enhanced Leachate Recirculation (ELR) Landfill. In proceedings: *26th International Conference on Solid Waste technology & Management*, March 27-30, Philadelphia, PA, USA.
5. Hossain, M.S., Kemler, V , Dugger, D. , and. Penmethsa, K.K. (2010). "Monitoring Moisture Movement within Municipal Solid Waste in Enhanced Leachate Recirculation Landfill using Resistivity Imaging" WASTECON 2010, Aug. 16-18, in Boston.
6. Hossain, M.S., Kemler, V , Dugger, D., and. Taufiq, T. (2010). "Changes in Moisture Content with Depth in Enhanced Leachate Recirculation Landfill" Global Waste Management Symposium, October 3-6, 2010, San Antonio, Texas.
7. Hossain, S., Kemler, V., Dugger, D., and Shihada, H. (2010), "Characteristics of Municipal Solid Waste using Electrical Resistivity Imaging", 1<sup>st</sup> International Conference on Final Sinks (From Sanitary to Sustainable Landfilling), 23<sup>rd</sup> – 25<sup>th</sup> September 2010, Vienna.
8. Hossain, S., Kemler, V., Dugger, D., and Penmethsa, K. (2010), "Monitoring Moisture Movement within Municipal Solid Waste in Enhanced Leachate Recirculation Landfill using Resistivity Imaging", 1<sup>st</sup> International Conference on Final Sinks (From Sanitary to Sustainable Landfilling), 23<sup>rd</sup> – 25<sup>th</sup> September 2010, Vienna.

9. Hossain, M.S., and Omelchenko, V. (2007), "Failure Analysis of a Mechanically Stabilized Earth (MSE) wall in Maryland" Transportation Research Board, TRB 86<sup>th</sup> Annual Meeting, January 21-25, 2007, Washington, D.C.
10. Hossain, M.S., Mydlinski, J., Rao, K.N., and Haque, M.A. (2006), "Temporary Support System – A Case Study in Virginia" Geo Congress 2006 in Atlanta, February 26 – March 1, 2006.
11. Madhyannapu, R.S., Puppala, A.J., Hossain, M.S., Han, J., and Porbha, A. (2006), "Analysis of Geotextile Reinforced Embankment Over Deep Mixed Soil Columns Using Numerical and Analytical Tools" Geo Congress 2006 in Atlanta, February 26 – March 1, 2006.
12. Hossain, M.S., and Khouri, B. (2005), "Comparative Study of Different In-Situ Tests for Site Investigation" Second International Conference on the Flat Dilatometer to be held in Washington DC, April 2-5, 2006.
13. Hossain, M.S., Gabr, M.A., and Barlaz, M.A. (2003), "Effect of Decomposition and Stress on Creep Compression Index of Municipal Solid Waste in Bioreactor Landfills", The 12<sup>th</sup> Pan-American Conference for Soil Mechanics and Geotechnical Engineering and the 39<sup>th</sup> US Rock Mechanics Symposium, Soil and Rock America 2003, June 22-26, Cambridge, Massachusetts, USA, pg. 1435-1440.
14. Kim, K.J., Sarica, R.Z., Hossain, M.S., Rahman, M.S., and Gabr, M.A. (2003). "Development of Resistance Factors for Axial Capacity of Driven Prestressed Concrete Piles by the Vesic Method in the Coastal Region Of North Carolina", CD-ROM: TRB 82<sup>nd</sup> Annual Meeting, January 12-16, 2003, Washington, D.C.

### **Other Publications**

1. Gabr, M.A., Hossain, M.S., and Barlaz, M.A. (2002), "Review of Shear Strength Parameters of Municipal Solid Waste with Leachate Recirculation", The Second Intercontinental Landfill Research Symposia, October 13-16, 2002 in Asheville, North Carolina.
2. Hossain, M.S., Gabr, M.A., and Barlaz, M.A. (2001), "Compressibility Parameters of Municipal Solid Waste with Leachate Recirculation", Proceedings of Waste Tech 2001, San Diego, California.
3. Barlaz, M.A., Hossain, M.S., Gabr, M.A., Rooker, A., and Kjeldsen, P. (2001), "Closing Gaps in the Regulation of MSW Landfills: Defining the End of Post-Closure Monitoring Period and the Future Stability of Leachate Recirculation Landfills", Proceedings of Waste Tech 2001, San Diego, California

### **Research Reports**

1. Hossain, M.S., (2010) "Slope Stability Analyses of the Failed Slope along South Bound IH 35E and Proposed Remedial Measure" Report Submitted to Texas Department of Transportation (TxDOT), Dallas District. Number of Pages: 40
2. Hossain, M.S., Hossain, J., Kibria, G., Khan, M.S., Samir, S., (2010) "Slope Stability Analysis of the Failed Slope along IH 30 WB and Proposed Remedial Measure" Report Submitted to Texas Department of Transportation (TxDOT), Dallas District. Number of Pages: 116.
3. Hossain, M.S., Hossain, J., Khan, M.S., Kibria, G., Samir, S., (2010) "Stability Analysis of the MSE Wall on State Highway 342 (Dallas Avenue) at Lancaster, Texas" Report Submitted to Texas Department of Transportation (TxDOT), Dallas District. Number of Pages: 56.
4. Hossain, M.S., Taufiq, T., Manzur, S., Sonia, S., and Khan, S. (2010) "Efficiency of Leachate Recirculation System for the City of Denton Landfill, Texas". Summary - Annual Report Submitted to Solid Waste Department, City of Denton, Texas. September 2010. Number of Pages: 11.
5. Hossain, M.S., Taufiq, T., Manzur, S., Sonia, S., and Khan, S. (2010) "Efficiency of Leachate Recirculation System for the City of Denton Landfill, Texas". 5th Quarterly Report Submitted to Solid Waste Department, City of Denton, Texas. September 2010. Number of Pages: 67.
6. Hossain, M.S., Taufiq, T., Manzur, S., Sonia, S., and Khan, S. (2010) "Efficiency of Leachate Recirculation System for the City of Denton Landfill, Texas". 4th Quarterly Report Submitted to Solid Waste Department, City of Denton, Texas. July 2010. Number of Pages: 77.
7. Hossain, M.S., Taufiq, T., Manzur, S., Penmethsa, K. (2010) "Efficiency of Leachate Recirculation System for the City of Denton Landfill, Texas". 3<sup>rd</sup> Quarterly Report Submitted to Solid Waste Department, City of Denton, Texas. February 2010. Number of Pages: 52
8. Hossain, M.S., Taufiq, T., Manzur, S., Penmethsa, K. (2009) "Efficiency of Leachate Recirculation System for the City of Denton Landfill, Texas". 1<sup>st</sup> Quarterly Report Submitted to Solid Waste Department, City of Denton, Texas. August 2009. Number of Pages: 58
9. Hossain, M.S., Taufiq, T., Manzur, S., Penmethsa, K. (2009) "Efficiency of Leachate Recirculation System for the City of Denton Landfill, Texas". 2<sup>nd</sup> Quarterly Report Submitted to Solid Waste Department, City of Denton, Texas. December 2009. Number of Pages: 58
10. Hossain, M.S., Hossain, J., (2009) "Assessment of the Condition of the Existing Pile Foundation for the Bridge over FM 916 using Resistivity Imaging" Report Submitted to Texas Department of Transportation (TxDOT), ForthWorth District. Number of Pages: 19
11. Hossain, M.S., Hossain, J., Khan, M.S., Kibria, G., Samir, S., (2010) "Determination of Unknown Bridge Foundation on Mountain Creek over FM 2738, Fort Worth, Texas" Report Submitted to Texas Department of Transportation (TxDOT), Fort Worth District. Number of Pages: 24.

12. Hossain, M.S., Hossain, J., (2009) "Determination of Depth of Hard Limestone Stratum using Resistivity Imaging" Report Submitted to Texas Department of Transportation (TxDOT), Bridge Section, Dallas District. Number of Pages: 28
13. Hoyos, L.R., Puppala, A.J., and Hossain, M.S. (2005). "Engineering properties of cemented, fiber-reinforced recycled aggregate materials for base/sub-base applications in pavement engineering". Progress Report, Project # 26 7602 91, December 2005, Submitted to: Texas Industries Inc. (TXI), Dallas, Texas, 16 pp.
14. Hossain, M.S. (2007). "Assessment of Geo-hazard Potential and Site Investigations using High Resolution Resistivity (HRR) Equipment". Final Report, Submitted to the City of Duncanville, TX.

## **Current Student**

### **Ph.D. Student**

1. Hossain, Jubair.: "Geohazard Potential of Soil Slopes". Expected Graduation : Summer 2012
2. Manzur, Shahed. "Performance of Leachate Recirculation Systems in ELR Landfills" – Expected Graduation: Fall 2012
3. Richa Karajekar . " Landfill Gas Modeling" Expected Graduation: Summer 2012 – **Co Advisor**
4. Aprpita Ghandhi . "Lechate Characteristics of MSW in Bioreactor Landfill" - Expected Graduation: Fall 2012 – **Co Advisor**
5. Dipak - Starting Fall 2011
6. Hedayati, Mahsa - Starting Fall 2011
7. Samir, Sonia – Starting Fall 2011
8. Kibria, Golam - Starting Fall 2011
9. Khan, Sadik - Starting Fall 2011
10. Hernandez, Jose.: Part Time Ph.D. Student - Expected Graduation: Fall 2012

### **M.S. Student**

11. Shakib, F. – Expected Summer 2012
12. Kibru. MS Thesis, Expected Spring 2012
13. Yogavathani. MS Thesis, Expected Summer 2012
14. Salman Baig. Part Time :MS Thesis, Expected Fall 2011
15. Mark Folden. Part Time: MS Thesis – Starting Fall 2011
16. Hailu Ayalew. Part Time: MS Thesis – Starting Fall 2011

## **Ph.D. Dissertations Advised**

1. Shihada, Huda. (2011). "A Non-Invasive Assessment of Moisture Content of Municipal Solid Waste in a Landfill Using Resistivity Imaging". Ph.D. Dissertation, University of Texas at Arlington, July 2011.
2. Haque, Adil. (2007). "Dynamic Characteristics and Stability Analysis of Municipal Solid Waste in Bioreactor Landfill". Ph.D. Dissertation, University of Texas at Arlington, May 2007.

### **M.S. Theses Advised**

1. Krishna, T. (2006 ). "Numerical Modeling and Analyses of Pile Supported Embankments". M.S. Thesis, University of Texas at Arlington.
2. Penmethsa, K. (2007). "Permeability Of Municipal Solid Waste In Bioreactor Landfill With Degradation". M.S. Thesis, University of Texas at Arlington, Spring 2007.
3. Dharmateja, M. (2008). "Assessment of Geo-hazard Potential and Site Investigations using High Resolution Resistivity (HRR) Equipment" M.S. Thesis, University of Texas at Arlington, Spring 2008.
4. Mahmood, T. (2009). "Failure Analysis of A Mechanically Stabilized Earth (MSE) Wall using Finite Element Program PLAXIS". M.S. Thesis, University of Texas at Arlington, Spring 2009.
5. Hossain, J. (2009). "Development of Brownfield Database using GIS". M.S. Thesis, University of Texas at Arlington, Summer 2009.
6. Fujimoto, K. (2009) . "Application of The Resistivity Imaging Method to Identify Seepage Flow Paths Case Study: Lewisville Dam, Lewisville, TX". M.E. Project. Spring 2009.
7. Hubbard, J. (2009) "Use of Electrical Resistivity and Multichannel Analysis of Surface Wave Geophysical Tomography in Geotechnical Site Characterization of Dam". M.S. Thesis, University of Texas at Arlington, Fall 2009.
8. Taufiq, T. (2010)"Characteristics of Fresh Municipal Solid Waste" M.S. Thesis, University of Texas at Arlington, Spring 2010.
9. Manzur, S. (2010) "Effect of Leachate Recirculation on Methane Generation for Bioreactor Landfill". M.S. Thesis, University of Texas at Arlington, Summer 2010.
10. Khan, Sadik. (2011) "Evaluation of Unknown Foundation Depth by using Resistivity Imaging." MS Thesis, University of Texas at Arlington, Summer 2011.
11. Kibria, Golam. (2011) "Determination of Geotechnical Properties of Clayey Soils from Resitivity Imaging." MS Thesis, University of Texas at Arlington, Summer 2011.

12. Samir, Sonia. (2011) "Characteristics and Evaluation of Gas Potential of Municipal Solid Waste from a Closed Section of a Landfill." MS Thesis, University of Texas at Arlington, Summer 2011.

## **Previous Research Experience**

Research Assistant, *North Carolina State University, Raleigh, NC* (August 1999 to August 2002) - Mechanics of Compressibility and Shear Strength of Municipal Solid Waste for Bioreactor Landfill (EPA Sponsored Project)

- Investigated and characterized changes in waste compressibility and shear strength as waste decomposes in bioreactor landfills
- Measured and defined time dependent waste compressibility as a function of cellulose and hemicellulose-to-lignin ratio as well as gas production rate
- Developed a model for waste settlement considering the effect of time dependent property change of waste materials including biological degradation
- Developed a constitutive model describing refuse shear strength as a function of stress state and gas generation rate taking into account the waste state of waste decomposition

Research Assistant, *North Carolina State University, Raleigh, NC* (October 2000 to July 2002)

North Carolina Department of Transportation (NCDOT) Projects –

(1) Load Resistance Factor Design (LRFD) for Reliability Analysis/Design of Driven Piles Axial Capacity

- Reviewed PDA data record and static load test data for 170 projects
- Compiled analysis and design data for driven pile axial capacity (170 projects)
- Performed reliability analysis and developed resistance factors

(2) Numerical Analysis and Modeling of Embankment on Soft Ground with Pile Foundation

- Synthesized soil properties and embankment profile for analysis and numerical modeling.
- Performed numerical analysis and modeling of embankment (4m high) with reinforcement mattress
- Performed numerical analysis and modeling of actual embankment (2m high) with reinforcement mattress and supporting timber piles by using Finite Difference Program FLAC.

Research Assistant, Asian Institute of Technology (AIT), Bangkok, Thailand (May 1996 to December 1996) - Laboratory Testing of Geosynthetic Materials for Engineering Properties

- Tested different geosynthetic material (geotextile, geomembrane, and geogrid). The tests included pullout test, elongation test, and puncture test.
- Submitted and presented tests report to the client at the end of the project.

Research Assistant, Asian Institute of Technology (AIT), Bangkok, Thailand (August 1996 to April 1997) - Prediction versus Performance of Nong Ngu Hao Site Improved with Chemico Pile Method.

- Observed performance of Chemico Pile improved ground (full-scale field test) for Nong Ngu Hao airport site in Bangkok, Thailand.
- Analyzed and predicted the performance of the improved ground by numerical modeling using FEM program PLAXIS.
- Compared the predicted results with actual field performance.

## **Professional Work Experience**

Senior Engineer, Schnabel Engineering, *Gaithersburg, MD, USA* (September 2003 to August 2004)

*General Responsibilities:* Proposal preparation, project management, geotechnical engineering analysis, design, and report preparation, review of engineering analysis and design, and mentor junior staff engineers.

Completed subsurface investigations, geotechnical analysis, design, and recommendations of shallow and deep foundation for the following projects:

- Parking Garage for Building 10, NIH, Bethesda, Maryland.
- Mid-campus Development (Business Building) of Georgetown University, Washington DC.
- United States Embassy Building in South Africa.
- Office Building, 1015 Half Street, S.E. Washington DC.
- Redevelopment on Landfill for Hunter Property, Fairfax County, Virginia
- Forest Knolls Elementary School Additions, Montgomery County, Maryland
- Sculpture, Glenstone Residence, Maryland
- Georgetown University Alumni House, 3604 O Street, N.W. Washington, DC
- Lake Fairfax Phase I Improvements, Reston, Fairfax County, Virginia
- Joint Strike Fighter and Supplies Facilities, Patuxent River Naval Air Station, Maryland
- Auger Cast Pile Load Testing, Prince George's County Courthouse, Maryland

Slope stability analysis, design and recommendations for:

- Retaining Wall – Northeastern Slope, Washington Estate, S.E. Washington, DC
- Blue Wing Drive, Lot 4 and 5 of Block 3, Mt. Vernon District, Fairfax County, Virginia

Subsurface investigations, damage study, repair design, and recommendations for:

- Naylor Garden, S.E. Washington DC.
- Emergency Generator Pad, Baywoods of Annapolis, Maryland
- MSE Retaining Wall, Tower Oaks Residential Development, Rockville, Maryland

Subsurface investigations for Storm Water Management (SWM) Pond design, and recommendations for:

- Martin Luther King SWM Pond, Silver Spring, Maryland
- Belcrest Center, Hyattsville, Maryland

Temporary excavation support and retaining structure design for:

- George Mason University Project Site, Fairfax, Virginia
- Glenstone Residence, Potomac, Maryland

Geotechnical investigation and recommendations for utilization of existing foundation structures:

- Verizon Bethesda Communication Center, 4533 Stanford Street, Chevy Chase, Maryland

Numerical analysis and modeling of embankment on soft ground with pile foundation for NCDOT:

- Performed numerical analysis and modeling of actual embankment (2m high) with reinforcement mattress and supporting timber piles by using Finite Difference Program FLAC.

Reviewer Federal Emergency Management Agency (FEMA) Levee Design Projects.

Evaluated the levee for reasonableness with respect to generally accepted geotechnical engineering practice and to ensure that the design approval is acceptable and in accordance with 44CFR65.05 of the National Flood Insurance Program Regulations. This evaluation included review of slope stability, settlement and seepage analyses.

Reviewed the following projects:

- Mirehaven Arroyo Levee Project, Cielo Oeste, Albuquerque, New Mexico
- Sny Island Levee and Drainage District, Mississippi River, Adams, Pike and Calhoun Counties, Illinois
- Levee System along Smoky Hill River, Shilling Road Project, Salina, Kansas
- Enhanced Hills Subdivision Master Drainage Plan, Venada Arroyo Improvements Project, City of Rio Rancho and Town of Bernallilo, New Mexico
- Detention Dam at Walnut Creek, Parmer Lane, Austin, Texas
- Fort Bend Levee Improvement, District 15, Texas

Geotechnical Engineer, *URS Corporations, Gaithersburg, MD, USA* (September 2002 to August 2003) *General Responsibilities:* Geotechnical design, analysis and report preparation, proposal preparation, project management and mentor junior staff engineers.

Completed geotechnical analysis, design, and recommendations of shallow and deep foundation for buildings, as a Project Engineer of the following projects:

- Subsurface investigation, geotechnical analysis, design and report of hanger foundation in Elizabeth City, NC for United State Coast Guard.
- Subsurface investigation and geotechnical analysis, design and report of shallow & deep foundation, excavation support system and impact of excavation on the existing tunnel below proposed building structure for the Department of Transportation (DOT) Headquarter in Washington, DC.
- Geotechnical analysis and design of shallow and deep foundation for National Library of Medicine Facility Expansion, NIH, Bethesda, Maryland. Produced engineering analysis, recommendations and specifications for the underpinning.
- Geotechnical design and report of final cover (using geosynthetics) for Days Cove C & D waste landfill in Baltimore, MD
- Subsurface investigation, geotechnical analyses, settlement and side slope stability, of Days Cove C & D waste landfill extension in Baltimore, MD

Design Engineer, L&M Foundation Specialist Pt. Ltd., Singapore. (October 97 to August 99)

*General Responsibilities:* Design of deep foundation, retaining structure, and excavation support system for basement and cut-cover tunnels, project management, and report preparation.

Worked on numerous geotechnical and structural analysis and design of drilled shaft, deep foundation, excavation support system (retaining structure such as diaphragm wall, contiguous bored pile wall, secant pile wall) for basement, cut and cover tunnel, underpass for highway intersections, under ground Mass Rapid Transport (MRT) station.

- Performed numerical analysis and modeling for excavation support system using FEM program PLAXIS.
- Designed and Completed the following “Design and Build” projects:
  - Excavation support system (diaphragm wall) for top down two-storey basement construction and bored pile (Drilled Shaft) for the extension of shopping center “Mustafa”.
  - Diaphragm wall for circular ventilation shaft of Changi Airport MRT - Contact 503 underground tunnel
  - Excavation support system (diaphragm wall) for top down two storey basement construction for the China Square Development Project – Land Parcel G
  - Excavation support system (diaphragm wall) for bottom up two storey basement construction for the China Square Development Project – Land Parcel F
  - Drilled shafts (0.5m to 2.0 m diameter) for China Square Development–Land Parcel G and F
  - Jet grouting for ground improvement for the China Square Development Project – Land Parcel F and G.

Project Engineer, *Penta-Ocean Construction Co. Ltd., Thailand* (April 1997 to October 1997)  
Dredging and Reclamation for the Development of MapTa Phut Industrial Estate, Thailand  
*General Responsibilities:* Dredging channel slope stability analysis, project management, and report preparation.

- Checked design of dredging channel and prepared drawings for the submission and approval from the port authority.
- Attended weekly meeting with client and submitted monthly progress report.
- Coordinated with the port user for the shipping schedule and dredging schedule to avoid any accident.
- Communicated and co-ordinated with the sub-contractors from Singapore, Japan and Norway

Design Engineer, *Development Design Consultants, Dhaka, Bangladesh* (May 1994 to August 1995) - *General Responsibilities:* Geotechnical and structural analysis, and design of building, bridge including superstructure and substructure.

- Completed geotechnical and structural analysis and design of typical bridges (lengths of 100m, 200m, 300m, and 400m).

- Completed foundation and structural design of five storey Lalmatia College building (3 Blocks)
- Designed under ground vault room for Bangladesh Bank, Barisal Branch
- Performed geotechnical and structural analysis by using Finite Element Programme STAAD III and completed design calculation by using in house software.

## Teaching

Soil Mechanics, Foundation Engineering, Theoretical Soil Mechanics, Computational Geotechnics, Geoenvironmental Engineering, Geosynthetics, Design of Earth Dam, In-situ Testing

### *Courses Taught*

Theoretical Soil Mechanics – CE5365 , Fall 2004, Fall 2005, Fall 2008, Fall 2010

Designing with Geosynthetics – CE4322/CE5372, Spring 2005, Fall 2006

Computational Geotechnics – CE5369, Summer 2005, Spring 2006, Spring 2010

Geotechnical Aspects of Landfill Design (CE5373)/Introduction to Geoenvironmental Engineering (CE4323)– Fall 2005, Fall 2007, Spring 2009, Fall 2010

Design of Earth Dam – Summer 2006

Foundation analysis and Design (CE5364/CE4321)– Spring 2006, Spring 2007, Spring 2008, Spring 2009, Spring 2010

Soil Mechanics (CE3343)– Fall 2006, Summer 2007, Fall 2008, Summer 2009

Soil Mechanics Laboratory (CE3143)– Fall 2007

In-Situ Testing (CE6312)– Spring 2007

## New Course Development

**CE 5369 (Computational Geotechnics)** was offered in Summer 2005. The main objective of the course was to provide the student with a fundamental understanding of computational geotechnics, and to improve problem-solving skills by using computer programs in geotechnical, geoenvironmental, and geostructural systems.

**CE4323/C35375 (Introduction to Geoenvironmental Engineering/ Geotechnical Aspects of Landfill Design)** was offered in Fall 2005. This course was introduced as a new senior elective also at the same time. The major objective of the course was to provide the students with an understanding of geotechnical and geo-environmental aspects of landfill design.

**CE6300 (Design of Earth Dam)** was offered in Summer 2006. The major objective of the course was to provide the students with an understanding of analyses and design aspects of earth dam design.

## Conference/Workshop Activities

Brownfields Conference 2004: EPA organized annual national conference, September 20-22, 2004, St.Louis, Missouri.

Brownfields Conference 2005: EPA organized annual national conference, November 02-04, 2005, Denver, Colorado

Brownfields Conference 2006: EPA organized annual national conference, November 13-15, 2006, Boston.

Brownfields Conference 2008: EPA organized annual national conference, May 5 - 7, 2008, Detroit.

82<sup>nd</sup> TRB Annual Meeting, January 12 -16, 2003, Washington, D.C

83<sup>rd</sup> TRB Annual Meeting, January 11 -15, 2004, Washington, D.C

84<sup>th</sup> TRB Annual Meeting, January 9 -13, 2005, Washington, D.C.

85<sup>th</sup> TRB Annual Meeting, January 22 -26, 2006, Washington, D.C

86<sup>th</sup> TRB Annual Meeting, January 21 -25, 2007, Washington, D.C

89<sup>th</sup> TRB Annual Meeting, January 12 -16, 2010, Washington, D.C

The 12<sup>th</sup> Pan-American Conference for Soil Mechanics and Geotechnical Engineering and the 39<sup>th</sup> US Rock Mechanics Symposium, Soil and Rock America 2003, June 22-26, Cambridge, Massachusetts

Geo-frontiers 2005, January 24-26, 2005, at Austin, Texas.

NSF Grant Conferences: April 4-5, 2005, Oakland, California

TxDOT Bridge Conference, August 15-17, 2005, at Dallas, Texas

Second International Conference on the Flat Dilatometer, April 2-5, 2006, Washington DC

GeoCongress , March 9 – 12, 2008, New Orleans, Louisiana.

33<sup>rd</sup> Annual Conference on Deep Foundation, October 15-17, 2008. New York

TXSWANA 2009, Dallas, Texas, March 26-29, 2009.

TXSWANA 2010, Corpus Christi, Texas April 21-25, 2010

WASTECON, Boston, August 2010

Global Waste Management Symposium, October 3-6, 2010, San Antonio, Texas

Geo-Frontiers 2011. March 13-16, 2011, Dallas, Texas

SWANA, Oklahoma 2011, March 8-10, 2011, Catoosa, OK

TXSWANA 2011, Irving, Texas April 17-21, 2011

Waste Expo 2011, Dallas, Texas, May 10-12, 2011

## **Professional Service**

### *Committee Membership – International Level*

- Technical Committee Member, Second International Conference on the Flat Dilatometer, April 2-5, 2006, Washington DC

### *Committee Membership – National Level*

- Member, TRB Committee AFS50, Modeling Techniques in Geomechanics, Transportation Research Board, National Academy of Sciences, Washington D.C., March 2003 – Present.

- Member, TRB Committee AFP40, Physicochemical Phenomena in Soils, Transportation Research Board, National Academy of Sciences, Washington D.C., March 2003 – Present.
- Member, Slurry Wall Committee, DFI, 2008 – Present.
- Member, Geo-Institute, American Society of Civil Engineers, Reston, Virginia, January 2005 – Present.
- Member, U.S. Universities Council on Geotechnical Education & Research, October 2004 – Present.

*Other Service Activities – National Level*

- Invited Panelist, Oak Ridge National Lab Review Panel, Southeast Regional Research Initiative by Department of Homeland Security (DHS), Oak Ridge, Tennessee, June 24 – 25, 2007 . Reviewer of 8 proposals.
- National Science Foundation

## **Review and Editorial Activities**

Peer Reviewer: Journal Papers

- Journal of Geotechnical and Geoenvironmental Engineering, *ASCE*.
- Geotechnical Testing Journal, *ASTM*.
- Canadian Geotechnical Journal, *CGS*.
- Journal of Engineering Mechanics, *ASCE*.
- Journal of the Transportation Research Board, *TRB*.
- International Journal of Waste Management

Peer Reviewer: Conference Proceedings

- GeoCongress2008: Sustainability in the Geoenvironment, New Orleans, LA.
- Geo-Denver 2007: New Peaks in Geotechnics, Denver, Colorado.
- GeoShanghai 2006 International Conference, Shanghai, China.
- 2nd International Conference on the Flat Dilatometer, Washington DC, 2006
- 12<sup>th</sup> Pan-American Conf. on Soil Mechanics, Cambridge, MA.
- North American Geosynthetics Society (NAGS), 2005, Las Vegas

- Geo-Frontiers 2005 Conference, Austin, Texas

## **Computer Skills**

Engineering Software: FLAC, PLAXIS, ct-SHORING, SIGMA-W, Geo-SLOPE, STABL, 1-D RIDO, STAAD III, MODFLOW, PILECAP, DRIVE 1.2, L-PILE, SHAFT 1.0, gINT, HELP MODEL