

Philippe Bourdeau
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RESEARCH AND SCHOLARSHIP

Professor Bourdeau's research interests, as reflected in his publications, are very broad but they can be divided into three main subject areas: probabilistic modeling, the mechanics of particulate media, and the use of geosynthetics.

PUBLISHED WORK

Books

None

Book Editorships

1. Bourdeau, P. L. (1986), *Proceedings, Seminar on Reliability-based Design in Civil Engineering*, Lausanne, June 9-10, 1986, Swiss Federal Institute of Technology, Lausanne, 138 p.
2. Bourdeau, P. L. (1988), *Proceedings, Symposium on Reliability-based Design in Civil Engineering*, Lausanne, July 7-9, 1988, Swiss Federal Institute of Technology, Lausanne, Vol. 1, 350 p., Vol. 2, 198 p.
3. Bourdeau, P. L. and Breysse, D. (1994), "*PROBAMAT - Probability on Materials. Tests, Models and Applications*", Synthesis Document in French, NATO-ARW 950521 Workshop Proceedings, University Paris 6, 92 p.

Book Chapters and Invited Contributions to Books

1. Agrawal, G., Chameau, J. L. and Bourdeau, P. L., "Assessing the Liquefaction Susceptibility at a Site - Based on Information from Penetration Testing", Chapter in *Monograph on Artificial Neural Networks for Civil Engineers: Fundamentals and Applications* (N. Kartam, I. Flood and J.H. Garrett Jr., Editors), American Society of Civil Engineers, 1997.
2. Bourdeau, P. L., "Unpaved Roads", Chapter 6 in *Geosynthetics and Their Applications* (Kumar Shukla and S. Chandra, Editors, Thomas Telford Publishers, London, 2002.

Articles in Refereed Archival Journals

1. Bourdeau, P.L., Recordon, E. (1983), "Dimensionnement des chaussées souples. Point de vue probabiliste" (Design of Flexible Pavements. Probabilistic Approach) *Annales de*

- l'Institut Technique du Batiment et des Travaux Publics*, Paris, Series 198, No. 420, December, pp. 1-15. [English translation available from the U.S. Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi.]
2. Bourdeau, P.L. (1984), "Dimensionnement des geotextiles utilises comme armatures" (Designing with Geotextiles Used as Reinforcement) *Strasse und Verkehr/Route et Trafic*, Association of Swiss Road and Traffic Engineers, Vol. 79, No. 6, June, pp. 215-221.
 3. Van Cauwelaert, F., Bourdeau, P.L., Perwez, A. (1985), "Approximations ponctuelles des distributions de probabilit e par la methode de Rosenblueth. Application l'estimation du risque de rupture d'un bajoyer d'ecluse" (Approximation of Probability Distributions by Rosenblueth Point Estimates Method. Application to Lock Walls Reliability) *Annales des Travaux Publics de Belgique*, Belgian Ministry of Public Works, No. 5, May, pp. 459-470.
 4. Sinniger, R., Bourdeau, P.L., Mantilleri, R. (1985), "Risk Calculations Relating to Spillway Design" *Wasser-Luft-Energie*, Swiss Association for Hydraulic Energy, Vol. 77, No. 5/6, pp. 98-109.
 5. Bourdeau, P.L., Oboni, F. (1985), "La distribution Beta et son utilisation pratique dans les methodes de calcul probabilistes" (The Beta Distribution and its Practical Use in Probabilistic Design) *Ingenieurs et Architectes Suisses*, Swiss Society of Engineers and Architects, Vol. 111, No. 5, pp. 65-71.
 6. Bourdeau, P.L. (1987), "Analisi probabilistica dei cedimenti in un terreno non coesivo" (Probabilistic Analysis of Settlements in a Cohesionless Soil) *Rivista Italiana di Geotecnica*, Italian Geotechnical Society, Vol. 21, No. 3, pp. 97-102.
 7. Bourdeau, P. L. (1989), "Modeling of Membrane Action in a Two-layer Reinforced Soil System" *Computers and Geotechnics*, Elsevier, Vol. 7, No. 1/2, pp. 19-36.
 8. Bourdeau, P. L. and Harr, M. E. (1989), "Stochastic Theory of Settlement of Loose Cohesionless Soils" *Geotechnique*, Institution of Civil Engineers, Vol. 34, No. 4, December, pp. 641-654.
 9. Bourdeau, P. L. (1990), "Probabilistic Modeling of Flexible Pavements", *Transportation Research Record*, Transportation Research Board, National Research Council, No. 1286, pp. 184-191.
 10. Pardi, L., Bourdeau, P. L. and Recordon, E. (1990), "Application of the X-Ray Technique to the Study of Soil-Reinforcement Interaction", *Rivista Italiana di Geotecnica*, Italian Geotechnical Society, Vol. 24, No. 3, pp. 117-126.
 11. Merry, S. M., Bray, J. D. and Bourdeau, P. L. (1993), "Axisymmetric Tension Testing of Geomembranes", *ASTM Geotechnical Testing Journal*, American Society for Testing of Materials, Vol. 16, No. 3, pp. 384-392.
 12. Espinoza, R. D., Bourdeau, P. L. and Muhunthan, B. (1994), "Unified Formulation for Analysis of Slopes with General Slip Surface", *Journal of Geotechnical Engineering*, American Society of Civil Engineers, Vol. 120, No. 7, pp. 1185-1204.
 13. Ashmawy, A. K. and Bourdeau, P. L. (1995), "Geosynthetic-Reinforced Soils under

- Repeated Loading: A Review and Comparative Design Study", *Geosynthetics International*, Vol. 2, No. 4, pp. 643-678.
14. Ashmawy, A. K. and Bourdeau, P. L. (1996), "Response of a Woven and a Non-Woven Geotextile to Monotonic and Cyclic Sample Tension", *Geosynthetics International*, Vol. 3, No. 4, pp. 493-515.
 15. Ashmawy, A. K., Bourdeau, P. L., Drnevich, V. P. and Dysli, M. (1999), "Cyclic Creep of Geotextile-Reinforced Soil", *Soils and Foundations*, Japanese Society of Soil Mechanics, Vol. 39, No. 1, pp. 43-52.
 16. Bourdeau, P. L. (2001), "Stochastic Model for Time-Dependent Compression of Particulate Media", *Journal of Engineering Mechanics*, American Society of Civil Engineers, Vol. 127, No. 6, pp. 531-543.
 17. Runser, D. J., Fox, P. J. and Bourdeau, P. L. (2001), "Field Performance of a 17m Reinforced Soil Retaining Wall", Accepted for publication in *Geosynthetics International*, Vol. 8, No. 5, pp. 367-391.
 18. Bourdeau, P. L. and Amundaray, J. (2005), "Non-parametric Simulation of Geotechnical Uncertainty", *Geotechnique*, Institution of Civil Engineers, London, Vol. 55, No. 2, pp. 95-108.
 19. Bourdeau, P. L. (2005), "Numerical Modeling of Long-Term Deformation at a Trial Embankment Site", Submitted for publication in *Geotechnical Engineering*, Institution of Civil Engineers, London, 2006.
 20. Bourdeau, P. L., "Stochastic Modeling of Load-Induced Settlement in Loose, Granular Materials", submitted for publication in *Journal of Aerospace Engineering*, ASCE, 2006.

Notes and Discussions in Refereed Archival Journals

1. Oboni, F., Bourdeau, P.L. (1985), "Simplified Use of the Beta Distribution and Sensitivity to the Bound Locations", Short Communication, *Structural Safety*, Elsevier, Vol. 3, pp. 63-66.
2. Bourdeau, P.L., Holtz, R.D., Chapuis, J. (1988), "Effect of Anchorage and Modulus in Geotextile Reinforced Unpaved Roads", Technical Note, *Geotextiles and Geomembranes*, International Geotextile Society, Elsevier, Vol. 7, No. 3, pp. 221-230.
3. Bourdeau, P. L. and Holtz, R. D. (1991), Discussion of "Anchorage and Modulus in Geotextile-Reinforced Unpaved Roads" by R. A. Douglas, *Geotextiles and Geomembranes*, International Geotextile Society, Elsevier, Vol. 11, No. 1, pp. 99-106.
4. Espinoza, R. D., Bourdeau, P. L. and Muhunthan, B. (1996), Discussion Closure on "Unified Formulation for Analysis of Slopes with General Slip Surface", *Journal of Geotechnical Engineering*, American Society of Civil Engineers, Vol. 122, No. 2, pp. 162-163.

Articles in Refereed Proceedings

1. Recordon, E., Despond, J.M., Bourdeau, P.L. (1981), "Prevision et comportement des ouvrages sur sols mous" (Construction on Soft Ground: Prevision and Behavior) *Proc. 10th International Conference on Soil Mechanics and Foundation Engineering*, Stockholm, Vol. 2, pp. 239-245.
2. Bourdeau, P.L., Harr, M.E., Holtz, R.D. (1982), "Soil-Fabric Interaction. An Analytical Model." *Proc. 2nd International Conference on Geotextiles*, Las Vegas, Vol. 2, pp. 387-391.
3. Oboni, F., Bourdeau, P.L. (1983), "Determination of the Critical Slip Surface in Stability Problems" *Proc. 4th International Conference on Applications of Statistics and Probability in Soil and Structural Engineering*, Florence, Italy, Vol. 2, pp. 1413-1424.
4. Oboni, F., Bourdeau, P.L., Bonnard, C. (1984), "Probabilistic Analysis of Swiss Landslides" *Proc. 4th International Symposium on Landslides*, Toronto, Vol. 2, pp. 473-478.
5. Bourdeau, P.L., Despond, J.M. (1985), "Estimation probabiliste des tassements instantanes" (Probabilistic Assessment of Immediate Settlement) *Proc. 11th International Conference on Soil Mechanics and Foundation Engineering*, San Francisco, Vol. 1, pp. 803-808.
6. Bourdeau, P.L. (1987), "Probabilistic Analysis of Settlements in Loose Particulate Media" *Proc. 5th International Conference on Applications of Statistics and Probability in Soil and Structural Engineering*, Vancouver, Vol. 2, pp. 977-984.
7. Bourdeau, P.L., Recordon, E. (1988), "Application de la radiographie l'etude des deformations en mecanique des sols" (Application of Radiography to the Analysis of Deformation in Soil Mechanics), *Proc. Int. Conf. on Measurements and Testing in Civil Engineering*, Lyon, France, Sept., Vol. 2, pp. 387-395.
8. Bourdeau, P.L. (1988), "Probabilistic Design of Flexible Pavements" *Proc. Specialty Conference on Probabilistic Methods*, Blacksburg, Virginia, American Society of Civil Engineers, pp. 124-127.
9. Bourdeau, P.L., Recordon, E., Vulliet, L., Pouget, P., Pilot, G., Delmas, P. (1988), "La stabilite des versants: Evolutions recentes du calcul" (Stability of Natural Slopes: Recent Evolutions of Computation Methods) *Proc. 5th International Symposium on Landslides*, Lausanne, Vol. 1, pp. 541-548.
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11. Bourdeau, P.L., Recordon, E. (1989), "Experiences sur la deformation des sols non-coherents" (Experiments on the Deformation of Cohesionless Soils), *Proc. 12th International Conference on Soil Mechanics and Foundation Engineering*, Rio de Janeiro, Brazil, Vol. 2, pp. 903-908.
12. Bourdeau, P. L. and Chameau, J. L. (1990), "Applications of X-Ray Imaging in Soil Mechanics", *Proc. Materials Engineering Congress*, Denver, Colorado, American Society

- of Civil Engineers, Vol. 2, pp. 331-340.
13. Bourdeau, P. L., Pardi, L. and Recordon, E. (1990), "Observation of Soil-Reinforcement Interaction by X-Ray Radiography", Invited Paper, in "Performance of Reinforced Soil Structures" (Edited by A. McGown, K. C. Yeo and K. Z. Andrawes), *Proc. International Reinforced Soil Conference*, Glasgow, Institution of Civil Engineers, pp. 347-352.
 14. Bourdeau, P. L. (1991), "Membrane Action in a Two-Layer Soil System Reinforced by Geotextiles", *Proceedings, North American Geosynthetics Society Conference Geosynthetics '91*, Atlanta, Vol. 1, pp. 439-453.
 15. Bourdeau, P. L. (1991), "Stochastic Theory of One-Dimensional Secondary Compression", *Proc. 10th European Conference on Soil Mechanics and Foundation Engineering*, Florence, Italy, Vol. 1, pp. 189-192.
 16. Espinoza, R. D. and Bourdeau, P. L. (1992), "Numerical Modeling of Moisture Infiltration in Pavement Systems", *Proceedings, 45th Canadian Geotechnical Conference*, Toronto, Canadian Geotechnical Society, pp. 46.1-46.8.
 17. Bourdeau, P. L., Ludlow, S. J. and Simpson, B. E. (1993), "Stability of Soil-Covered, Geosynthetic-lined Slopes. A Parametric Study", *Proceedings, North American Geosynthetics Society Conference "Geosynthetics '93"*, Vancouver, Vol. 3, pp. 1511-1521.
 18. Bourdeau, P. L. (1993), "Radiographic Visualization in Experimental Soil Mechanics", *Proceedings, Engineering Foundation - National Science Foundation Conference on "Digital Image Processing: Techniques and Application in Civil Engineering"*, Kona, Hawaii, American Society of Civil Engineers, pp. 125-134.
 19. Bourdeau, P. L. (1993), "Stochastic Model of Transient Compression in Granular Media", *Proceedings, 2nd International Conference on Micromechanics of Granular Media: "Powders and Grains"*, Birmingham, England, pp. 429-434.
 20. Gofar, N. and Bourdeau, P. L. (1994), "Transmission of Applied Surface Load in Geosynthetic-Reinforced Soil Structures", *Proceedings, 5th International Conference on Geotextiles*, Singapore, Vol. 1, pp. 207-210.
 21. Merry, S. M., Bray, J. D. and Bourdeau, P. L. (1995), "Stress-Strain Compatibility of Geomembranes Subjected to Subsidence", *Proceedings, Geosynthetics '95 North American Geosynthetics Society Conference*, Nashville, Vol. 2, pp. 799-811. (This paper received the Awards of Excellence State-of-Practice Technology Award of the North American Geosynthetics Society.)
 22. Landrum, J., Bourdeau, P. L. and Deschamps, R. (1995), "Stability Analysis of Landfill Slopes - A Probabilistic Approach", *Proceedings, American Society of Civil Engineers Specialty Conference "Geoenvironment 2000"*, New Orleans, Vol. 2, pp. 1020-1034.
 23. Bourdeau, P. L. and Ashmawy, A. (1995), "Probabilistic Assessment of Footing Immediate Settlement: Geotechnical Uncertainty versus Model Sophistication", *Proceedings, American Society of Civil Engineering Mechanics Congress*, Boulder, CO, Vol. 1, pp. 163-166.

24. Amundaray, J. I. and Bourdeau, P. L. (1995), "Bootstrap Resampling in Geotechnical Engineering", *Proceedings, 7th International Conference on Applications of Statistics and Probability in Civil Engineering*, Paris, France, Vol. 2, pp. 1259-1265.
25. Ashmawy, A. K. and Bourdeau, P. L. (1997), "Testing and Analysis of Geotextile-Reinforced Soil Under Cyclic Loading", *Proceedings, North American Geosynthetics Conference, Geosynthetics '97*, Long Beach, CA, pp. 163-167.
26. Ashmawy, A. K. and Bourdeau, P. L. (1998), "Effect of Geotextile Reinforcement on the Stress-Strain and Volumetric Behavior of Sands", *Proceedings, 6th International Conference on Geosynthetics*, Atlanta, GA, Vol. 2, pp. 1079-1082.
27. Ashmawy, A. K., Frost, J. D. and Bourdeau, P. L. (1998), "Numerical Modeling of Wrapped-around Geosynthetic-Reinforced Wall", *Proceedings, 12th ASCE Engineering Mechanics Conference*, La Jolla, CA, pp. 550-553.
28. Loukidis, D., Lee, S.-H., Yi, Q. and Bourdeau, P. L. (2001), "Analytical Study of the Nikawa Landslide", *Proceedings, 4th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*, San Diego, CA, March 2001, CD-ROM, Paper No. 5-31, 6 p.
29. Bourdeau, P. L. and Ashmawy, A. K. (2002), "Fatigue Limit Load in Triaxial Tests of Geotextile-Reinforced Soil", *Proceedings, 7th International Conference on Geosynthetics*, Nice, France, Vol. 4, pp. 1233-1236.
30. Lee, S.-H. and Bourdeau, P. L. (2003), "Finite Element Analysis of Inorganic Sludge Consolidation in a Waste Disposal Facility with Drainage", *Proceedings, 2nd International Symposium on Contaminated Sediments*, Quebec City, May 2003, pp. 158-162.
31. Bourdeau, P. L. (2004), "Long-term Deformation of Soft Ground at a Trial Embankment Site and Its Simplified Numerical Modeling", *Proceedings, Geo-Trans 2004 ASCE Conference*, Los Angeles, July 2004, in *GSP No. 126, "Geotechnical Engineering for Transportation Projects"*, Vol. 1, pp. 420-427.
32. Bourdeau, P. L. (2004), "Probabilistic Modeling of Landslide Reactivation by Embankment Load", *Proceedings, ASCE Specialty Conference on Probabilistic Mechanics*, Albuquerque, NM, July 2004. Publication on CD-ROM.
33. Bourdeau, P. L. and Zevgolis, I. E. (2005), "Corrélations entre modes de ruine dans l'analyse de fiabilité de système des murs de soutènement (Correlations between failure modes in system reliability analysis of retaining walls)", *Proceedings, 4th Conference on Materials and Structures Reliability, JNF '05*, Clermont-Ferrand, France, Oct. 25-26, 2005, Paper No. 2.6, 8 p. (in French).
34. Zevgolis, I. E. and Bourdeau, P. L. (2006), "System Reliability of Cantilver Retaining Walls with Correlated Failure Modes", *Proceedings, ASCE, Geo-Institute Geocongress*, Atlanta, Feb. 26-March 1, 2006. Publication in CD Rom.

Other Proceedings Articles

1. Oboni, F., Bourdeau, P.L., "Recherche de la surface de glissement la plus probable dans un massif stratifié" (Investigation on the Most Probable Slip Surface in Stratified Slopes) *Proc. 2nd Workshop on Probabilistic Methods in Geotechnical Engineering*, Lausanne, 1983, 16 pp.
2. Bourdeau, P.L., Recordon, E., "Dimensionnement des superstructures de chaussées souples" (Design of Flexible Pavements) *Proc. 2nd Workshop on Probabilistic Methods in Geotechnical Engineering*, Lausanne, 1983, 32 pp.
3. Oboni, F., Bourdeau, P.L., Russo, F., "Utilisation des processus Markoviens dans les analyses de stabilité des pentes" (Stochastic Modeling of Slope Failure by Markov Processes) *Proc. 3rd Workshop on Probabilistic Methods in Geotechnical Engineering*, Lausanne, 1984, 17 pp.
4. Despond, J.M., Bourdeau, P.L., "Evaluation probabiliste des tassements instantanés" (Probabilistic Assessment of Immediate Settlement) *Proc. 3rd Workshop on Probabilistic Methods in Geotechnical Engineering*, Lausanne, 1984, 23 pp.
5. Bourdeau, P.L., "Application des processus de diffusion au tassement des sols non cohérents" (Application of Diffusion Processes to the Modeling of Settlements in Cohesionless Soils) *Proc. 4th French-Polish Conference on Applied Soil Mechanics*, Grenoble, 1987, Vol. 2, pp. 1-13.
6. Bourdeau, P.L., Gutierrez, A., "Influence de la corrélation entre modes de défaillance sur le dimensionnement des soutènements massifs" (Influence of Correlations Between Failure Modes on the Design of Gravity Retaining Walls), *Proc. Symposium on Reliability-Based Design in Civil Engineering*, Lausanne, July 1988, Vol. 1, pp. 343-350.
7. Espinoza, R. D., Muhunthan, B. and Bourdeau, P. L., "General Purpose Program for Computerized Slope Stability Analysis", *Proceedings, 28th Engineering Geology and Geotechnical Engineering Symposium*, Boise, Idaho, April 1-3, 1992, pp.
8. Bourdeau, P. L. (1994), "Probability and Materials: Data Subjective and Objective Modeling. A Synthesis Paper". *Proc. NATO International Workshop on Probability and Materials*, Paris, November 1993, pp. 9-16.
9. Bourdeau, P. L. (1999), "Soil Reinforcing Using Geosynthetics" (in French), *Proceedings, C.E.R.E.S. Lecture Series*, Bulletin No. 98/1, Center for Scientific Studies, Research and Testing in Civil Engineering, Belgium, 36 p.

Proceedings Papers Presented Based on Abstracts Only

1. Bourdeau, P. L. (1988), "Experimental and Theoretical Study of a Two-Layer Soil System Reinforced by Geotextiles", *European Mechanics Colloquium EUROMECH 232 on Mechanical Aspects of Soil Reinforcements*, Grenoble.
2. Bourdeau, P. L., Miskin, K. K. and Fuller, J. M. (1990), Short Communication on "Behavior

of Geotextile-Reinforced Soil under Cyclic Loading", *Proc. 4th International Conference on Geotextiles*, The Hague, The Netherlands, International Geotextile Society, Vol. 2, p. 251.

Reports

1. Dysli, M., Bourdeau, P.L., "Glissement de Villarbeney" (The Landslide in Villarbeney) *Final Report, Part I, GX59*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1979.
2. Dysli, M., Bourdeau, P.L., "Glissement de Villarbeney" (The Landslide in Villarbeney) *Final Report, Part II, GX59*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1979.
3. Bourdeau, P.L., "Methodes d'exploitation numerique des radiographies d'un massif de sol bidimensionnel en deformations planes" (Numerical Methods for Processing X-ray Images of a 2D Plane Strain Soil Body) *GX75*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1980.
4. Bourdeau, P. L., Oboni, F., "Recherche de la surface de glissement la plus probable dans un massif stratifie" (Determination of the Most Probable Slip Surface in Stratified Earth Slopes) in "Detection et utilisation des terrains instables" (Detection and Use of Landslide-prone Areas) *DUTI Joint Research Project, Research Report*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1982.
5. Bourdeau, P.L., "BISPRO bibliotheque de sous-programmes pour le calcul des probabilites" (A Subroutine Package for Probability Computations) *User Manual, Version 1.1, GX82*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1982.
6. Oboni, F., Bourdeau, P. L., "Recherche de la surface de glissement fiabilite minimale dans un massif stratifie" (Investigation on the Minimal Reliability Surface in Stratified Slopes) *Internal Report*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1982.
7. Bourdeau, P.L., "Le concept d'epaisseur equivalente dans les methodes empiriques de dimensionnement des chaussees souples" (The Concept of Equivalent Thickness in Flexible Pavement Empirical Design Methods) *GX75*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1982.
8. Bourdeau, P.L., Oboni, F., Vulliet, L., Walpen, R., "BIBLIO maintenance et consultation d'un fichier bibliographique" (A Software for the Management of Bibliographic Database) *User Manual, Revised Version 2.1*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1983.
9. Dysli, M., Bourdeau, P.L., "Influence du milieu ambiant sur la force portante d'une chaussee" (Influence of Microclimatic Effects on the Bearing Capacity of Flexible Pavements) *3rd Final Report to the Swiss Federal Highways Administration, No. 79 (11/81), GY13*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1984.
10. Bourdeau, P.L., "TRIANIS tricouche isotrope elastique a couche intermediaire anisotrope"

- (A Software for Trilayer Elastic Systems with Anisotropic Intermediate Layer, authored by F. Van Cauwelaert) *User Manual, Revised Version 4.1*, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1985.
11. Bourdeau, P.L., "Analyse probabiliste des tassements d'un massif de sol granulaire" (Probabilistic Analysis of Settlements in Granular Soils) Dissertation presented in fulfillment of the requirements for the degree of Docteur es Sciences Techniques to the Department of Civil Engineering, Swiss Federal Institute of Technology, Lausanne, 231 pp., No. 628, Accepted July 1986.
 12. Bourdeau, P.L., "Note sur le glissement du Day" (Keynotes on the Landslide in Le Day) Joint Research Project on "Slope Stability Analysis and Landslide Comformation" LCPC/EPFL, GX81, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1987.
 13. Bourdeau, P.L., "Programme BETA. Calculs interactifs avec distributions de probabilité Beta" (An Interactive Software for Computing with Beta Distributions) *User Manual, Revised Version 2.1*, GX82, Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1987.
 14. Bourdeau, P. L., Chapuis, J., "Geotextiles utilisés en tant qu'armatures: Etat des connaissances" (Application of Geosynthetics in Soil Reinforcement: State-of-the-art Report), GY23, Report to the Swiss Federal Department of the Transportation, Communication and Energy, Division of Highways. Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1988.
 15. Stojanovic, M., Bourdeau, P. L. and Recordon, E., "Application of Probabilistic Methods in Analysis and Design of Earth Slopes", CO/EPFL Joint Research Report ISRF-LMS-SX83, Swiss Federal Institute of Technology, Lausanne, 1988.
 16. Bourdeau, P. L., Pardi, L., "Geotextiles utilisés en tant qu'armatures: Experimentation sur massif bicouche renforce l'interface" (Application of Geosynthetics in Soil Reinforcement: Experimental Investigation of Two-Layer Systems Reinforced at the Interface), SY23, Report to the Swiss Federal Department of Transportation, Communication and Energy, Division of Highways. Soil Mechanics Laboratory, Swiss Federal Institute of Technology, Lausanne, 1989.
 17. Ludlow, S. J., Chen, W.-F., Bourdeau, P. L. and Lovell, C. W., "Embankment Widening and Grade Raising on Soft Foundation Soils", Joint Highway Research Project, *Interim Report FHWA/JHRP/IN-91/18*, School of Civil Engineering, Purdue University, 1991.
 18. Ludlow, S. J., Chen, W.-F., Bourdeau, P. L. and Lovell, C. W., "A Sensitivity Analysis of the Parameters for a Cap Plasticity Model", Joint Highway Research Project, *Interim Report FHWA/JHRP/IN-92/1*, School of Civil Engineering, Purdue University, 1992.
 19. Ludlow, S. J., Chen, W.-F., Bourdeau, P. L. and Lovell, C. W., "Embankment Widening and Grade Raising on Soft Foundation Soils", Joint Highway Research Project, *Final Report FHWA/JHRP/IN-92/19*, School of Civil Engineering, Purdue University, April 1992.
 20. Zubair, A., White, T. D. and Bourdeau, P. L., "Pavement Drainage and Pavement-Shoulder Joint Evaluation and Rehabilitation", Joint Highway Research Project, *Final Report*

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21. Espinoza, R. D., Bourdeau, P. L. and White, T. D., "Pavement Drainage and Pavement-Shoulder Joint Evaluation and Rehabilitation. Numerical Modeling of Infiltration and Drainage in Pavements", Joint Highway Research Report, *Draft Final Report FHWA/JHRP/IN-93/2*, Purdue University, 1994.
 22. Ashmawy, A. K., Bourdeau, P. L. and Dysli, M., "Behavior of Geotextile-Reinforced Soils Under Cyclic Loading", *Research Report No. 362 (2/92)*, Swiss Federal Department of Transportation, Communication and energy, 189 pp., March 1996.
 23. Calderon, A. and Bourdeau, P. L., "Study of Side Ditch Liners for Highway Applications", *Final Report, JHRP-INDOT/FHWA*, Dec. 1998.
 24. Bourdeau, P. L., Fox, P. J., Runser, D. J. and Lee, J. P., "Development of Low Cost Retaining Walls for Indiana Highways", *Final Report, JTRP-INDOT/FHWA*, August 2001, 165 p.
 25. Lee, S. H. and Bourdeau, P. L., "Filter Performance and Design for Highway Drains", *Final Report, FHWA/IN/JTRP-2005/1*, May 2006, 204 p.

Invited Presentations

1. "Probabilistic Analysis of Reinforced Earth", Geotechnical Engineering Seminar, School of Civil Engineering, Purdue University, West Lafayette, IN, USA, April 23, 1981.
2. "Determination of the Critical Slip Surface in Stability Problems", 4th International Conference on Applications of Probability and Statistics in Soil and Structural Engineering, Session H1, University of Florence, Italy, (jointly with F. Oboni), June 17, 1983.
3. "Dimensionnement des geotextiles utilises comme armatures" (Dimensioning of Geotextiles in Soil Reinforcement), Workshop on Gravel, Compaction Control, and Geotextiles, Association of Swiss Road and Traffic Engineers, Lausanne, October 5, 1983.
4. "Analyse probabiliste des tassements d'un massif de sol granulaire" (Probabilistic Analysis of Settlements in Granular Soils), Public Presentation of Doctoral Thesis, Swiss Federal Institute of Technology, Lausanne, July 2, 1986.
5. "Probabilistic Methods in Geotechnical Engineering", Polytechnic University of Gdansk, Poland, Institute for Hydrotechnics, September 2, 1986.
6. "Probabilistic Analysis of Settlements in Loose Particulate Media", Polytechnic University of Gdansk, Poland, Institute for Hydrotechnics, September 4, 1986.
7. "Probabilistic Methods in Geotechnical Engineering", University of Rome "La Sapienza", Department of Structural and Geotechnical Engineering, March 24, 1987.
8. "Probabilistic Analysis of Settlements of Cohesionless Soils", University of Rome "La Sapienza", Department of Structural and Geotechnical Engineering, March 25, 1987.

9. "Probabilistic Analysis of Settlements in Loose Particulate Media", 5th International Conference on Applications of Probability and Statistics in Soil and Structural Engineering, Session WM5, University of British Columbia, Vancouver, BC, Canada, May 27, 1987.
10. "Probabilistic Analysis of Settlements in Loose Particulate Media", Geotechnical-Structural-Water Resources Seminar, University of Colorado at Boulder, USA, Department of Civil, Environmental, and Architectural Engineering, June 2, 1987.
11. "Probabilistic Analysis of Settlements in Loose Particulate Media", Engineering and Computational Mechanics Seminar, University of Arizona, Tucson, USA, College of Engineering and Mines, June 4, 1987.
12. "Application des processus de diffusion au tassement des sols non cohérents" (Application of Diffusion Processes to the Modeling of Settlements in Cohesionless Soils), 4th French-Polish Conference on Applied Soil Mechanics, University of Grenoble, France, Institute for Engineering Mechanics, September 15, 1987.
13. "Propagation Models in Particulate Media", Geotechnical Engineer Seminar, School of Civil Engineering, Purdue University, West Lafayette, IN, USA, April 6, 1988. This seminar was given as part of interview process for a faculty position.
14. "Geotextiles utilisées en tant qu'armature" (Use of Geotextiles for Earth Reinforcement), VSS Committee 272, Association of Swiss Road and Traffic Engineers, Bern, Switzerland, April 14, 1988.
15. "Experimental and Theoretical Study of a Two-layers Soil System Reinforced by Geotextiles", European Mechanics Colloquium EUROMECH 232 on Mechanical Aspects of Soil Reinforcement, Grenoble-Chamrousse, France, April 19, 1988.
16. "Application of X-Ray Imaging to Soil Mechanics Research", Geomechanics Seminar, Department of Earth and Atmospheric Sciences, Purdue University, November 29, 1989.
17. "Probabilistic Modeling of Flexible Pavements", 69th Annual Transportation Research Board Meeting, Washington, D.C., January 9, 1990.
18. "Modeling of Landslide Reactivation During Embankment Construction", Geotechnical Engineering Seminar, University of Washington, Seattle, August 9, 1990.
19. "Application of X-Ray Imaging in Soil Mechanics", American Society of Civil Engineers Materials Congress, Denver, CO, August 1990.
20. "Observation of Soil-Reinforcement Interaction by X-Ray Radiography", International Reinforced Soil Conference, Glasgow, Scotland, September 1990.
21. "Soil Reinforcing Techniques", Construction Seminar, School of Construction, Purdue University, November 19, 1990.
22. "Membrane Action in a Two-Layer Soil System Reinforced by Geotextiles", Geosynthetics '91 Conference, Atlanta, February 1991.

23. "Excavation Support Techniques", Construction Seminar, School of Construction, Purdue University, November 18, 1991.
24. "Numerical Modeling of Moisture Infiltration in Pavement Systems", 45th Canadian Geotechnical Conference, Toronto, October 27, 1992.
25. "Propagation Models in Geotechnical and Geoenvironmental Engineering", Civil Engineering Seminar, Carnegie-Mellon University, Pittsburgh, PA, February 9, 1993.
26. "Stability of Soil-covered, Geosynthetic-lined Slopes. A Parametric Study", Geosynthetics '93 Conference, Vancouver, B.C., April 1, 1993.
27. "Stochastic Models in Mechanics of Particulate Media", Civil Engineering Seminar, University of California, Berkeley, April 27, 1993.
28. "Numerical and Physical Modeling of Geosynthetic-Reinforced Soil", Civil Engineering Seminar, University of California, Los Angeles, November 19, 1994.
29. "Investigation of Soil Reinforcing Using Physical and Numerical Models", Civil Engineering and Engineering Mechanics Seminar, Columbia University, New York, January 18, 1996.
30. CERES Series Lecturer on "Soil Reinforcing Using Geosynthetics", University of Liege, Belgium, March 2, 1998.
31. "Landslides in the Swiss Prealps – Case Histories and Probabilistic Models", Geomechanics Seminar, Joseph Fourier University, Grenoble, France, December 21, 1999.
32. "Research Directions in Environmental Geotechnics", Civil Engineering Seminar, National Institute for Applied Sciences, Lyon, France, May 3rd, 2002.
33. "Reliability of Geotechnical and Geo-environmental Systems", Civil Engineering Seminar, National Institute for Applied Sciences, Lyon, France, May 7, 2003.
34. "Probabilistic Modeling of Landslide Reactivation by Embankment Load", ASCE Specialty Conference on Probabilistic Mechanics, Albuquerque, NM, July 26, 2004.
35. "Non-Parametric Simulation of Geotechnical Variability", Institution of Civil Engineers, London, May 9, 2005.
36. "Correlations Between Failure Modes in System Reliability Analysis of Retaining Walls", University Blaise Pascal, Clermont-Ferrand, France, October 25, 2005.
37. "Stochastic Modeling of Load-Induced Settlement in Loose Granular Materials", 2nd NASA/ASCE Workshop on Granular Materials in Lunar and Martian Exploration, League City, Houston, TX, March 8, 2006.

Other Evidence of Excellence in Research

1. Co-Organizer, Workshop on Probabilistic Methods in Geotechnical Engineering, Swiss Federal Institute of Technology, Lausanne, (50 participants), January 1982.
2. Organizer, 2nd Seminar on Probabilistic Methods in Geotechnical Engineering, Swiss Federal Institute of Technology, Lausanne, March 1983.
3. Organizer, Workshop on Probabilistic Methods in Geotechnical Engineering, Swiss Federal Institute of Technology, Lausanne, (48 participants), July 1984.
4. Organizer, Seminar on Reliability-Based Design in Civil Engineering, Swiss Federal Institute of Technology, Lausanne, (27 participants), June 1986.
5. Invited Scientist at Polytechnic University of Gdansk, Poland, Institute for Hydrotechnics (Professor E. Dembicki) for one week, September 1986.
6. Invited Scientist at University of Roma "La Sapienza", Italy, Department of Structural and Geotechnical Engineering (Professor G. Calabresi) for one week, March 1987.
7. Secretary, Steering Committee, and Coordinator of the Scientific Advisory Board, Symposium on Reliability-Based Design in Civil Engineering, Swiss Federal Institute of Technology, Lausanne, July 1988.
8. Member, Scientific Committee for the International Conference on Micromechanics of Granular Media "Powders and Grain", Clermont-Ferrand, France, September 1989.
9. Organizer, jointly with Prof. J. L. Chameau, of the Session on "Probabilistic Mechanics of Geomaterials", for the ASCE/EMD Conference, held at Texas A&M University, College Station, Texas, May 24-27, 1992.
10. Member of the Organizing Committee of the Engineering Foundation - National Science Foundation Conference on "Digital Image Processing Techniques and Applications in Civil Engineering", held March 1993, Kona, Hawaii.
11. Organizer, jointly with Profs. Breyse, Chameau and Pijaudier-Cabot, of a session on "Probabilistic Methods for Geomaterials", for the ASCE/ASME/SES Joint Conference, held in Charlottesville, VA, June 1993.
12. Member of the Steering Committee and Chairman of a technical paper session of the PROBAMAT NATO International Workshop on "Probabilistics and Materials: Tests, Models and Applications", held in Ecole Normale Supérieure de Cachan, Paris, France, November 1993.
13. Reviewer for the following journals: International Journal for Numerical and Analytical Methods in Geomechanics, Geotextiles and Geomembranes, ASCE Journal of Geotechnical Engineering, ASCE Journal of Engineering Mechanics, ASCE Journal of Irrigation and Drainage, Geosynthetics International, Construction Automation.
14. Reviewer, since 1990, of various textbook proposals for Harper and Rowe, Publishers, N.Y., Elsevier Science Publishers, Amsterdam, PWS Publishing.

15. Research Proposal Referee for the NATO Scientific Affairs Division, since 1990.
16. Corresponding member of the international committee for the 8th International Conference on Application of Statistics and Probability in Civil Engineering, held in Paris, France, July 1995.
17. Member of the organizing committee and Proceedings Co-Editor, Second International Conference on "Imaging Technologies: Technique and Civil Engineering Applications", to be held in Davos, Switzerland, May 1997.
18. Research Proposal Referee for the National Science Foundation Geomechanics Program, 1996.
19. Editorial Board Member for the journal Geotextiles and Geomembranes, an official journal of the International Geosynthetics Society published by Elsevier Science Ltd., since December 1996.
20. Scientific Committee Member for "Rencontres Geosynthetic 99", Conference of the French Geosynthetics Society, Bordeaux, France, October 1999.
21. Referee for research proposals submitted to the Canadian National Research Council, Ottawa, 2000.
22. International Review Board Member for the 7th International Conference on Geosynthetics, Nice, France, September 2002.
23. Scientific Steering Committee Member for the 7th International Conference on Geosynthetics, Nice, France, September 2002.
24. Organizer of Technical Session on "Reliability and Risk in Geo-environmental Engineering" the International Conference on Application of Statistics and Probability in Civil Engineering, San Francisco, CA, July 2003.
25. Member, Scientific Advisory Board of GEORISK International Symposium, Bangalore, India, November 2004.