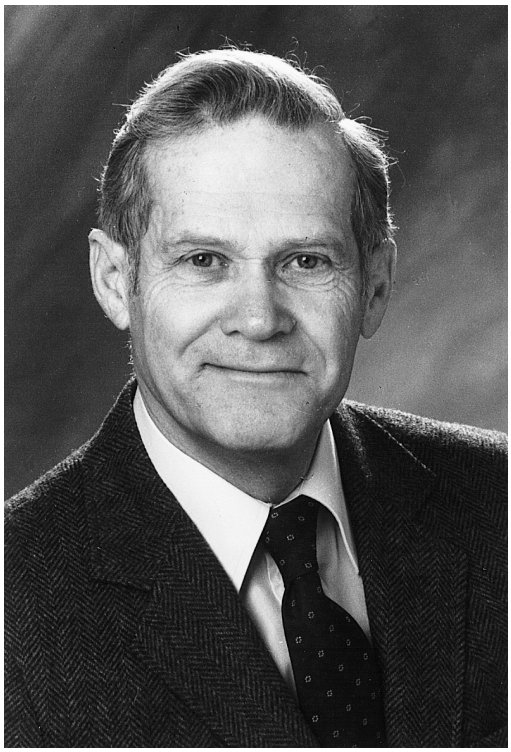
OBITUARY

Gerald A. Leonards
1921–97



Gerald A. Leonards

Gerald A. Leonards, Professor Emeritus of Civil Engineering at Purdue University, died while playing tennis on Saturday 1 February, 1997.

Jerry, as he preferred to be called, was born on 29 April 1921 in Montreal, Quebec, Canada, and became a US citizen in 1961. Jerry obtained a BSCE at McGill University in 1943. Upon graduation, he worked as a structural designer with G. L. Wiggs & Co. in Montreal, as a lecturer at McGill University and as a soils engineer for the Canadian Department of Transport. In the winter of 1944 he gave the first formal instruction in soil mechanics at McGill University.

Jerry joined the staff of Purdue University in 1946 and began work on his graduate degrees. He received an MSCE in 1948, and a PhD degree in 1952. He studied under Professor Ralph Fadum, and his doctoral thesis was entitled 'Strength characteristics of compacted clays'. After completing his degree, he was appointed as an assistant professor at Purdue University. His promotions followed rapidly: associate professor in 1955 and full professor in 1958. From 1965 to 1968 he served as Head of the School of Civil Engineering.

Jerry's research interests were very broad. He made pioneering contributions in the areas of strength and compressibility of compacted clay soils, strength and consolidation of natural deposits of soft clays, the cracking of earth dams, flexible and rigid pavement design, analysis of buried conduits, pile foundations, stability of slopes and embankments on soft clays, stress deformation and liquefaction of sand, and methodologies for investigating geotechnical failures.

Throughout his career he served as a consultant on earthwork and foundation projects all over the world. He was also a consultant to NASA for the lunar module. Many of his research interests were motivated by his consulting activities wherein the state of the art fell short of explaining performance. He published extensively nationally and internationally, and presented numerous invited lectures at conferences and institutions in the USA and abroad. The book titled *Foundation Engineering* which he edited was published by McGraw-Hill in 1962 and quickly became, and still is, a standard world-wide reference.

He was appointed as the only non-European to sit on the official government commission in Italy to investigate the stabilization of the Tower of Pisa. He was an active participant in ASCE (Life Fellow) and the Transportation Research Board. In 1980 he was honoured by the American Society of Civil Engineers by presenting the Terzaghi Lecture. In 1988 he was elected a member of the National Academy of Engineering, and in 1989 he was honoured by McGill University as a Doctor of Science, Honoris Causa. He received numerous awards from professional and technical societies; among them, the Norman Medal in 1965, and the Terzaghi Award in 1989.

He was a true mentor and a dedicated teacher. The clarity and depth of his lectures were testaments to his engineering knowledge and his concern to give the student as much as he could. He never stopped learning; and, when convinced of the validity of a new concept, readily revised his previous belief. However, it had to pass the test of

severe scrutiny before acceptance. He gave freely of his time and himself. His was truly an open-door policy. His courses, 'Advanced foundation engineering' and 'Applied soil mechanics', are considered classics by former graduate students. In tribute, the student body voted him 'Best Civil Engineering Teacher' in 1976. Although he retired from teaching in 1991, when he was named Professor Emeritus, he continued to contribute significantly to the development of graduate students and to the research programme at Purdue University. In the autumn of 1996 he was also appointed an Adjunct Professor at Georgia Tech and Berkeley.

Jerry approached all aspects of life with equal zest and vigour. If he was going to take the time to do something, he was going to give it his very best. This was true of his work as well as his non-academic interests which included archeology, golf, bridge, and tennis. His friends will remember him for his candour, his love of debate, his dedication, his compassion, and his unquenchable thirst for greater understanding.

—Milton Harr

SELECTED PUBLISHED WORK

Leonards, G. A. (1946). *Investigations of the design and evaluation of pavements at Montreal airport*. Montreal: Office of the District Engineer, Department of Transport, Dorval Airport.

Leonards, G. A. (1949). Analysis of building frames with unsymmetrical differential settlements of the foundations. *J. Am. Concr. Inst.*, May.

Leonards, G. A. (1952). Effect of compaction on soil properties. *Proceedings, MIT conference on soil stabilization*, MIT, Cambridge, MA.

Leonards, G. A. (1955). Strength characteristics of compacted clay. *Trans. ASCE*, **120**.

Leonards, G. A. (1956). Stabilization of materials by compaction. *J. Soil Mech. Found. Div., ASCE* **82** (discussion).

Leonards, G. A. (1958). Report on IVth international conference. *Soil Mech. Found. Engng. J. SMFD, ASCE* **84**, No. SM2, Part 2.

Leonards, G. A. (1958). Structure of compacted clay. *J. Soil Mech. Found. Div., ASCE* **84** (discussion).

Leonards, G. A. & Harr, M. E. (1959). Analysis of concrete slabs on ground. *J. Soil Mech. Found. Div., ASCE* **85**.

Harr, M. E. & Leonards, G. A. (1959). Warping stresses and deflections in concrete pavements. *Proc. HRB* **38**.

Leonards, G. A. & Ramiah, B. K. (1960). *Time effects in the consolidation of clay*. STP 254, pp. 116–130. Philadelphia: American Society for Testing and Materials.

Leonards, G. A. & Andersland, O. B. (1960). The clay–water system and the shear strength of clays. *Proceedings, research conference on shear strength of cohesive soils.* American Society of Civil Engineers, Boulder.

Leonards, G. A. & Altschaeffl, A. G. (1960). *Subsurface materials of Marion County, Indiana*, 103. Engineering Extension Series. West Lafayette: Purdue University.

Leonards, G. A., Harr, M. E. & Wiseman, J. F. (1960). Warping stresses and deflections in concrete pavements – part II. *Proc. HRB* **39**.

Leonards, G. A. (1960). Contribution to "Soil & Foundation Engineering in the USSR". *HRB Spec. Report*, No. 60.

Leonards, G. A. (1961). A study of the consolidation characteristics of a clay. *Géotechnique* **11**, No. 1, 56–58 (discussion).

Leonards, G. A. & Girault, P. (1961). A study of the one-dimensional consolidation test. *Proc. 5th Int. Conf. Soil Mech. Found. Engng, Paris* **I**, 213–218.

Leonards, G. A. (1961). *Discussions*. Vol. III. *International conference on soil mechanics and foundation engineering*, Paris, pp. 111, 285–286, 297.

Leonards, G. A. (1962). Limitations to the use of effective stresses in partly saturated soils. *Géotechnique*, **12**, No. 4, 354–355 (discussion).

Harr, M. E. & Leonards, G. A. (1962). *A theory of traffic flow for evaluation of geometric aspects of highways*. *HRB Bull.* **308**.

Leonards, G. A. & Larew, H. G. (1962). A strength criterion for compacted clays subject to repeated loading. *Proc. HRB* **40**.

Leonards, G. A. (ed.) (1962). *Foundation engineering*. New York: McGraw-Hill.

Leonards, G. A. (1963). *Laboratory experiments on the response of soils to shock loadings*, Technical Document Report. New Mexico AF Special Weapons Center.

Leonards, G. A. & Narain, J. (1963). Flexibility of clay and cracking of earth dams. *J. Soil Mech. Found. Div., ASCE* **89**, SM2.

Bell, J. R., Leonards, G. A. & Dolch, W. L. (1963). Determination of moisture content of hardened concrete by its dielectric properties. *Proc. ASTM* **63**.

Reddy, A. S., Leonards, G. A. & Harr, M. E. (1963). Warping stresses and deflections in concrete pavements – part III. *Highway Res. Record* **44**.

Leonards, G. A. (1963). Moderator's report – phase equilibrium and phase transitions. *Proc. 1st Int. Conf. Permafrost*, NAS-NRC Publication 1287, p. 553. Washington, DC: Building Research Advisory Board.

Leonards, G. A. & Altschaeffl, A. G. (1964). The compressibility of clay. *J. Soil Mech. Found. Div., ASCE* **90**, No. SM5, 133–155.

Oosterbaan, M. & Leonards, G. A. (1965). Use of an insulating layer as a frost barrier in highway pavements. *Highway Res. Record* **101**, 11–27.

Leonards, G. A. (1965). *Experimental study of static and dynamic friction between soil and typical construction materials*, Technical Report AFWL-TR-65-161. New Mexico: Air Force Weapons Laboratory, Kirtland AF Base.

Leonards, G. A. (1966). Settlement of a mat foundation on a thick stratum of sensitive clay. *Can. Geotech. J.* **III**, No. 2, 100–102 (discussion).

Leonards, G. A. & Altschaeffl, A. G. (1966). Consolidation of normally consolidated clay. *J. Soil Mech. Found. Div. ASCE* **92**, No. SM4, 86–90 (discussion).

Leonards, G. A. & Barksdale, R. D. (1967). Predicting performance of bituminous surfaced pavements. *Proc. 2nd Int. Conf. Struct. Design Asphalt Pavements, University of Michigan*, 321–340.

Leonards, G. A., Harr, M. E. & Baron, W. (1967). Response of clay to shock loading. Technical Report AFWL-66-81. New Mexico: Air Force Weapons Laboratory, Kirtland Air Force Base.

Leonards, G. A. (1968). Predicting settlement of buildings on clay soils. *Proceedings of lecture series, SMFD (Illinois Section)*, pp. 41–50. New York: American Society of Civil Engineers.

Leonards, G. A., Harr, M. E. & Ho, D. M. (1969). *Vohersage von Momentanen Temperaturverteilungen in Strassen mit Varumedammschlichten. Strasse & Untergrunde IV*, Heft 74. Bad Godesberg: Kirschbaum Verlag.

Ho, D. M., Harr, M. E. & Leonards, G. A. (1970). Transient temperature distribution in insulated pavements – prediction vs. observations. *Can. Geotech. J.* **7**, No. 3, 275–284.

Leonards, G. A. (1970). Summary and review of part II, symposium on pile foundations. *Highway Res. Record* **333**, 55–59.

Leonards, G. A. & Altschaeffl, A. G. (1971). Review of collapsing soils. *J. Soil Mech. Found. Div., ASCE* **97**, No. SM1, 269–271.

Leonards, G. A. (1971). Contributions to the discussions of sessions C (p. 146) and E (p. 205). *Proceedings, symposium on pile foundations*, Institution of Civil Engineers, London.

Bozozuk, M. & Leonards, G. A. (1972). The Gloucester test fill. *Proceedings, ASCE conference on performance of earth and earth-supported structures*, Vol. I, Part 1, pp. 299–317.

Leonards, G. A. (1972). Settlement of pile foundations in granular soils. *Proceedings, ASCE conference on performance of earth and earth-supported structures*, Part 2, pp. 1169–1184.

Leonards, G. A. (1972). Discussion on shallow foundations. *Proceedings, ASCE conference on performance of earth and earth-supported structures*, Vol. III, pp. 169–173.

Brumund, W. F. & Leonards, G. A. (1972). Subsidence of sand due to surface vibrations. *J. Soil Mech. Found. Div., ASCE* **98**, No. SM1, 27–42.

Brumund, W. F. & Leonards, G. A. (1973). Experimental study of static and dynamic friction. *J. Testing Eval., ASTM* **1**, No. 2, 162–165.

Leonards, G. A. (1973). Discussion of "The Empress Hotel, Victoria, B.C." by Crawford and Sutherland. *Can. Geotech. J.* **10**, No. 1, 120–122.

Leonards, G. A., Gutzwiller, M. J. & Lee, R. H. (1974). A new civil engineering curriculum at purdue. *Proceedings, ASCE conference on civil engineering education*, Ohio State University.

Leonards, G. A. (1975). Keynote address – fundamental misconceptions in modern practice of soil and foundation engineering. *Proc. 5th Asian Regional Conf., Bangalore, India* **2**, p. xvii.

Leonards, G. A. (1975). General report on partly saturated clays. *Proc. 5th Asian Regional Conf., Bangalore, India* **2**, 100–110.

Kovacs, W. D. & Leonards, G. A. (1975). Settlement of building on pile foundation in sand. *J. Geotech. Div., ASCE* **101**, No. GT2, 209–211 (discussion).

Leonards, G. A. (1975). Differential settlement of buildings. *J. Geotech. Engng Div., ASCE* **101**, No. GT7, 700–702 (discussion).

Leonards, G. A. (1975). Glacial till in winter dam construction. *Proceedings, conference on glacial tills*, Ottawa, pp. 388–389 (discussion).

Leonards, G. A. (1975). Discussion in session I – granular materials. *Proceedings of the British Geotechnical Society conference on settlement of structures*. London: Pentech Press.

Leonards, G. A. (1976). Estimating consolidation settlements of shallow foundations on overconsolidated clays. Manual of practice – estimation of consolidation settlement. *TRB Special Report*, No. 163, pp. 13–16.

Leonards, G. A. (1976). Fundamental misconceptions in modern practice of soil engineering. *Tsuchi-to-Kiso* (*J. Jap. Soc. SMFE*), 31–34 (in Japanese).

Leonards, G. A. (1977). Panel discussion in main session 2 – behavior of foundations. *Proc. IXth Int. Conf. Soil Mech. Found. Engng, Tokyo* **3**, 368–369, 384–386.

Lo, K. Y., Leonards, G. A. & Yuen, C. (1977). Interpretation and significance of anisotropic deformation behavior of soft clays. *Laurits Bjerrum Memorial volume*, Publication No. 117, pp. 1–16. Oslo: Norwegian Geotechnical Institute.

Yuen, C., Lo, K. Y., Palmer, J. H. L. & Leonards, G. A. (1978). A new apparatus for measuring the principal strains in anisotropic clays. *Geotech. Testing J., ASTM* **1**, No. 1, 24–33.

Lambrechts, J. R. & Leonards, G. A. (1978). Effects of stress history on deformation of sand. *J. Geotech. Div., ASCE* **104**, 1371–1387.

Leonards, G. A. & Stetkar, R. A. (1978). *Performance of buried flexible conduits*, Joint Highway Research Project 78-24. West Lafayette: Purdue University.

Leonards, G. A. & Lovell, D. W. (1979). Interpretation of load tests on high-capacity driven piles. *Proceedings, ASTM symposium on deep foundations*, Special Technical Publication No. 670, pp. 388–415. Philadelphia: American Society for Testing and Materials.

Leonards, G. A. (1979). Foundation performance of Tower of Pisa. *J. Geotech. Div., ASCE*, **105**, No. GT1, 96–105 (discussion).

Leonards, G. A. (1979). Behavior of partly saturated soils. General report. *Proc. Vth Asian Regional Conf., SMFE, Bangalore, India* **2**, 100-110.

Leonards, G. A. (1979). Stability of slopes in soft clays. Conference special lecture. *Proc. VIth Panamerican Conf. SMFE (Lima)* **I**, 225–274.

Leonards, G. A. (1979). Discussion. *Proceedings, ASCE specialty workshop – site characterization and exploration*, Northwestern University, Evanston, IL, pp. 54, 67, 218, 247, 287.

Leonards, G. A., Cutter, W. A. & Holtz, R. D. (1980). Dynamic compaction of granular soils. *J. Geotech. Div., ASCE* **106**, No. GT1, 35–44.

Leonards, G. A. (1980). Strain rate behavior of Saint-Jean-Vianney clay. *Can. Geotech. J.* **17**, No. 3, 461–462 (discussion).

Leonards, G. A. *et al*. (1981). Yielding of weathered Bangkok clay. *Soils Found. (Japan)* **21**, No. 2, 129–131 (discussion).

Leonards, G. A. (1981). Discussion in session 11 – slope stability. *Proc. 10th Int. Conf., SMFE, Stockholm* **IV**, 895–896.

Leonards, G. A. (1982). Investigation of failures. 16th Terzaghi Lecture. *J. Geotech. Engng Div., ASCE* **108**, No. GT2, p. 185–246 (discussion and closure: (1984). *J. Geotech. Engng Div., ASCE* **110**, No. GT1, 81–118).

Leonards, G. A. & Bailey, G. (1982). Pulverized coal ash as structural fill. *J. Geotech. Engng Div., ASCE* **108**, No. GT4, 517–531.

Leonards, G. A., Wu, T. H. & Juang, C. H. (1982). *Predicting performance of buried conduits*, Purdue University Joint Highway Research Project, Report FHWA/IN/JHRP-81/3. West Lafayette: Purdue University.

Leonards, G. A. & Juang, C. H. (1983). *Comparison between predicted response of soil–steel structures with design requirements of the new Ontario Highway Bridge Design Code*. Special Report. West Lafayette: School of Civil Engineering, Purdue University.

Leonards, G. A. (1983). Collapse of Hyatt–Regency walkways – implications. *Civ. Engng*, March, 6.

Leonards, G. A. & Juang, C. H. (1984). Field test of long-span aluminum culvert. *J. Geotech. Div., ASCE* **110**, No. GT1, 119–125 (discussion).

Leonards, G. A. & Davidson, L. W. (1984). Reconsideration of failure initiating mechanisms for Teton dam. *Proceedings, international conference on case histories in geotechnical engineering*, St Louis, MO, Vol. III, pp. 1103–1113 (also published in: (1985). *Proc. 6th German National Conf. Rock Mech.* Special issue of *Geotechnik*, 1–12).

Leonards, G. A., Adams, F. T., Alarcon, A., Mishu, F., Prapaharan, S., Romig, G. & Suter, K. (1984). Undrained shear strength anisotropy of normally consolidated cohesive soils. *Soils Found. (Japan)* **24**, No. 2, 126–131 (discussion).

Leonards, G. A. (1985). The Baldwin Hills reservoir failure. *Proceedings, international conference on case histories in geotechnical engineering*, St Louis, MO, Vol. IV, pp. 1581–1588.

Humphrey, D. N. & Leonards, G. A. (1986). Slide in upstream slope of Lake Shelbyville Dam. *J. Geotech. Engng* **112**, No. 5, 564–577.

Leonards, G. A., Schmednecht, F., Chameau, J. L. & Diamond, S. (1985). Thin slurry cutoff walls installed by the vibrated beam method. *ASTM STP* **874**, 34–43.

Leonards, G. A. & Yao, J. T. P. (1985). On teaching evaluation. *Proceedings, ASCE conference on challenges to civil engineering educators and practitioners*. Ohio State University, Columbus, pp. 320–376.

Leonards, G. A., Juang, C. H., Wu, T. H. & Stetkar, R. E. (1985). *Predicting performance of buried metal conduits*, Transportation Research Record, No. 1008, pp. 42–52. Washington, DC: Transportation Research Board, National Research Council.

Leonards, G. A. & Juang, C. H. (1985). *Predicting performance of buried metal pipe arches*, Transportation Research Record, No 1008, pp. 53–57. Washington, DC: Transportation Research Board, National Research Council.

Leonards, G. A. (1985). Time dependence of lateral earth pressure. *J. Geotech. Engng Div., ASCE* **111**, No. 10, 1244–1246.

Leonards, G. A. (1985). Discussion of theme lecture No. 2, 'Strain rate effects on the consolidation of clay' and 'In situ measurement of sand compressibility'. *Proc. XIth Int. Conf. Soil Mech. Found. Engng* **5**, 2659, 2674–2675.

Leonards, G. A., Alarcon, A., Frost, J. D., Mohamedzein, Y. E., Santamarina, C., Thevanayagam, S., Tomaz, J. E. and Tyree, J. L. (1986). Dynamic penetration resistance and the prediction of the compressibility of sand. *Géotechnique* **36**, No. 2, 275–279 (discussion).

Alarcon, A., Chameau, J. L. & Leonards, G. A. (1986). A new apparatus for investigating the stress–strain and liquefaction characteristics of saturated sand. *ASTM Geotech. Testing J.* **9**, No. 4, 204–212.

Wu, T. H. & Leonards, G. A. (1986). Characterization of soil arching above buried conduits. *Proceedings, international conference on advances in pipeline engineering*, Madison, WI, pp. 396–407.

Humphrey, D. N. & Leonards, G. A. (1986). A slide in the upstream slope of Lake Shelbyville dam. *J. Geotech. Engng Div., ASCE* **112**, No. 5, 564–577 (discussion and closure: (1988). *J. Geotech. Engng Div., ASCE* **114**, No. 4, 506–513).

Brumund, W. F. & Leonards, G. A. (1987). Influential factors of friction between steel and dry sands. *Soils Found. (Japan)* **27**, No. 2, 66–68 (discussion).

Wittke, W. & Leonards, G. A. (1987). Modified hypothesis for failure of Malpasset dam. *Proceedings, international workshop on dam failures*. Special Issue of *Engng Geol*. **24**, Nos. 1–4, 367–394 (retrospective comments, 407–421).

Leonards, G. A. (1987). International workshop on dam failures – overview and personal commentary. *Proceedings, international workshop on dam failures*. Special issue of *Engng Geol*. **24**, Nos. 1–4, 577–612.

Alarcon, A. & Leonards, G. A. (1988). Liquefaction evaluation procedure. *J. Geotech. Engng Div., ASCE* **114**, No. 2, 232–236 (discussion).

Leonards, G. A. & Frost, J. D. (1988). Settlement of footings on granular soils. *J. Geotech. Engng Div., ASCE*, **114**, No. 7, 791–809.

Alarcon, A., Leonards, G. A. & Chameau, J. L. (1988). Undrained monotonic and cyclic strength relationships for sands. *J. Geotech. Engng Div., ASCE* **114**, No. 10, 1089–1109.

Leonards, G. A., Sotiropoulos, E. S. & Kavvadas, M. J. (1988). Helice: a lost town of ancient Greece. *The engineering geology of ancient works, monuments and historical sites: preservation and protection* (eds P. G. Marinos & G. C. Koukis), pp. 1307–1313. Rotterdam: Balkema.

Leonards, G. A. & Darrag, A. (1989). Analysis of residual stress effects in piles. *J. Geotech. Engng Div., ASCE* **115**, No. 4, 589–596 (discussion).

Schneider, H. R., Chameau, J. L. & Leonards, G. A. (1989). Chemical impregnation of cohesionless soils. *ASTM Geotech. Testing J.* **12**, No. 3, 204–210.

Santamarina, C. & Leonards, G. A. (1989). Stability analysis with nonrigid wedges. *Proc. 1st Southamerican Symp. Landslides, Paipa, Colombia* **I**, 382–389.

Alarcon, A., Chameau, J. L. & Leonards, G. A. (1989). Shear modulus and cyclic undrained behavior of sands. *Soils Found., Jap. J. Soil Mech. Found. Engng* **29**, No. 4, 105–119.

Leonards, G. A. & Baladi, G. Y. (1990). FEM analysis of elastic stress distributions in embankments. *J. Geotech. Engng Div., ASCE* **116**, No. 8, 1266–1269.

Leonards, G. A. (1990). Failure of two bridges in the 1989 California (Loma Prieta) earthquake. Special conference lecture. *4th Indonesian Natl Geotech. Conf., Bandung, Indonesia* (issued as an addendum to the *Proceedings*).

Leonards, G. A., Huang, A. B. & Ramos, J. (1991). Piping and erosion tests at Conner Run dam. *J. Geotech. Engng Div., ASCE* **117**, No. 1, 108–117.

Leonards, G. A., Franz, R. J., Sulliven, T. M. and Levergood, J. C. (1991). Influence of placement method on the in situ density of hydraulic sand fills. *Can. Geotech. J.* **28**, No. 2, 316–318 (discussion).

Frost, J. D., Chameau, J. L. & Leonards, G. A. (1991). Structural collapse behavior of sands in undrained shear. *Proc. 2nd Int. Conf. Recent Adv. Geotech Earthquake Engng Soil Dynamics, St Louis, MO* **III**, 1905–1911.

Leonards, G. A. (1991). *Pad 6 Overflow Pond dam failure evaluation. A report to the South Carolina Land Resource and Conservation Commission, and Brewer Gold Company, Jefferson, SC*, Vol. I – final report, Vol. II – photo exhibits.

Leonards, G. A. & Brumund, W. F. (1992). Volume change behavior of vibrated columns. *J. Geotech. Engng Div., ASCE* **117**, No. 3, 534–35 (discussion).

Leonards, G. A. & Frost, J. D. (1992). Necessary redundancy in geotechnical engineering. *J. Geotech. Engng Div., ASCE* **118**, No. 2, 331–333.

Deschamps, R. J. & Leonards, G. A. (1992). A study of slope stability analysis. *Stability and Performance of Slopes and Embankments – II*, ASCE Geotechnical Special Publication No. 31, Vol. I, pp. 267–291. New York: American Society of Civil Engineers.

Leonards, G. A., Sotiropoulos, E. S., Mourtzas, N. D. & Kountouris, P. J. (1993). Two cases of slope instability in soft rock. *Proceedings, international symposium on hard soils – soft rocks*, Athens, Vol. 2, pp. 1125–1136.

Deschamps, R. J. & Leonards, G. A. (1993). Finite element slope stability analysis by shear strength reduction technique. *Soils Found. (Japan)* **33**, No. 2, 192–194 (discussion).

Fassett, J. B., Leonards, G. A. & P. C. Repetto (1994). Geotechnical properties of municipal solid wastes and their use in landfill design. *Proceedings, Waste Tech '94*, Washington, DC.

Leonards, G. A., Frost, J. D. & Bray, J. D. (1994). Collapse of a geogrid reinforced retaining structure. *J. Perform. Constr. Facilities, ASCE* **8**, No. 4, 274–292.

Augello, A. J., Bray, J. D., Leonards, G. A., Repetto, P. C. & Byrne, R. J. (1994). Response of landfills to seismic loading. *ASCE proceedings, Geoenvironment 2000*, New Orleans, pp. 1051–1080.

Bray, J. D., Augello, A. J., Repetto, P. C., Leonards, G. A. & Byrne, R. J. (1995). Seismic analytical procedures for solid waste landfills. *J. Geotech. Engng Div., ASCE* **121**, No. 2, 139–151.

Baxter, C., Fox, P. J. & Leonards, G. A. (1995). Gradient effects on measured hydraulic conductivity. *ASCE proceedings, Geoenvironment 2000*, New Orleans, pp. 746–757.

Leonards, G. A. & Deschamps, R. J. (1995). Origin and significance of the quasi preconsolidation pressure. *Proceedings, IS-Hiroshima '95*, Vol. 1, pp. 341–347.

Sukumaran, B., Leonards, G. A. & Fox, P. J. (1997). Liquefaction and post liquefaction behavior of sand. *J. Geotech. Engng Div., ASCE*, in press.

Leonards, G. A. & Deschamps, R. J. (1997). Defects in soft clays: a challenge to site characterization for stability analysis. *ASCE geotechnical specialty conference, uncertainty in the geological environment: from theory to practice*, Madison, in press.

Jenevein, D. R., Deschamps, R. J., Leonards, G. A. & Byrne, R. J. (1997). The stability of landfills with strain softening liner interfaces. *Proc. 2nd Int. Congr. Environ. Geotech., IS-Osaka '96*, in press.