



R. D. Hooton
B.A.Sc., M.A.Sc., Ph.D. (McMaster), P.Eng.

Summary

R.D. Hooton is a Professor of Civil Engineering at the University of Toronto.

Before joining the University in 1986, he was a research Engineer at Ontario Hydro's Research Division in Toronto. He is a Fellow of ACI, ASTM, and ACerS as well as being an honorary member of both ASTM Committees C01 on Cements and ASTM C09 on Concrete. He has also received the Award of Merit from both CSA (1998) and ASTM (2003).

His research is focused on the properties and performance of cements and supplementary cementing materials such as fly ash, slag, and silica fume, as well as on fluid transport (permeability) properties of concrete, and the durability, service life, and performance testing of concrete to various aggressive environments, such as chlorides, sulphates, freezing, and alkali-aggregate attack.

He is, or has recently been, Chair of several standards committees including ASTM C09 on Concrete and Concrete Aggregates, ASTM C09.66 on Resistance to Fluid Penetration, ASTM C01.31 on Volume Change of Cements, CSA Committee A3000 on Hydraulic Cements, CSA A23.5 on Supplementary Cementing Materials, and ACI C201C on Sulfate Resistance. He also chairs a newly formed joint ASTM subcommittee C01.48/C09.48, 'Paste System Performance', dealing with cement-admixture compatibility issues.

He recently completed a report, together with John Bickley and Ken Hover, for the RMC Research Foundation on Performance-Based Specifications.

Publications

Book Chapters or Book Editor

- Hearn, N., Hooton, R.D. and Nokken, M.R., "Pore Structure and Permeability", Chapter in Significance of Tests and Properties of Concrete and Concrete Making Materials, ASTM STP169D, May 2006
- Hooton, R.D., Co-Editor with M.D.A. Thomas, J. Marchard, J.A. Beaudoin and J.P. Skalny, "Ion and Mass Transport in Cement-Based Materials", Materials Science of Concrete Special Volume, American Ceramic Society, 2001, 300 pp.
- Hooton, R.D., Editor, "Advances in Cement and Concrete", Engineering Foundation, New York, 1999.
- Hearn, N., Hooton, R.D. and Mills, R. H., "Pore Structure and Permeability", Chapter 25 in Significance of Tests and Properties of Concrete and Concrete Making Materials,

ASTM STP169C, 1994 (pp. 240-262). (Received the ASTM Sanford E. Thomson Award in 1998).

- Hooton, R.D., Co-Editor (with P. Klieger), Carbonate Additions to Cement, ASTM STP 1064, 1990.
- Hooton, R.D., "The Reactivity and Hydration Products of Blast-Furnace Slag", Chapter in Supplementary Cementing Materials, editor, V.M. Malhotra, CANMET 1987, pp. 247-288 (also translated into French, 1991)

Other Journal Articles

- Stanish, K. Hooton, R.D., and Thomas, M.D.A., "The Rapid Migration Test for HPC", HPC Bridge Views, No.37, Jan./Feb. 2005, p.3.
- Stanish, K. Hooton, R.D., and Thomas, M.D.A., "The Rapid Migration Test-An Alternative to AASHTO T277", HPC Bridge Views, No.13, Jan./Feb. 2001, pp.2-3.
- Hooton, R.D., Nagi, M.A., Ozyildirim, H.C., "The Rapid Chloride Permeability Test", HPC Bridge Views, No.12, Nov./Dec. 2000, pp.2-4.

Selected Refereed Journal Articles (of more than 70 articles)

- Hooton, R.D., Hover, K.C., and Bickley, J.A., "Performance Standards and Specifications for Concrete: Recent Canadian Developments", Indian Concrete Journal, Vol.79, No.12, Dec. 2005, pp. 31-37.
- Hooton, R.D., Mindess, S, Roumain, J.C., and Boyd, A.J., "Materials Selection, Proportioning, Testing and Standards for Concrete Durability", Concrete International, August 2006 (being edited by CI staff).
- Rebel, W., Detwiler, R.J., Gebler, S.H. and Hooton, R.D., "The Right Sulfate Test Makes a Difference",
- Lee, S.T., Hooton, R.D., Kim S.S., and Kim, E.K., "Effect of Fineness of High-Alumina Ground Granulated Blast-Furnace Slag on Magnesium Sulfate Attack", Magazine of Concrete Research, Vol 58, No. 5, 2006, pp. 301-311.
- Ramlochan, T., Hooton, R.D and. Thomas, M.D.A., "The Effect of Pozzolans and Slag on the Expansion of Mortars Cured at Elevated Temperature, Part II: Microstructural and Microchemical Investigations", Cement and Concrete Research, Vol.34, No.8, 2004, pp.1341-1356.
- Titherington, M.P. and Hooton, R.D., "Chloride Resistance of High Performance Concretes Subjected to Accelerated Curing", Cement and Concrete Research ,Vol. 34, No. 9. 2004, pp.1561-1567.
- Brown, P.W., Hooton, R.D., and Clark B.A., "Microstructural Changes in Concretes With Sulfate Exposure", Cement and Concrete Composites, Vol.26, 2004, pp. 993-999.
- Boddy, A., Hooton, R.D. and Thomas, M.D.A., "The Effect of Silica Content of Silica Fume on its Ability to Control Alkali-Silica Reaction", Cement and Concrete Research, Vol. 33, 2003, pp. 1263-1268.

- Ramlochan, T., Zacarias, P., Thomas, M.D.A. and Hooton, R.D., "The Effect of Pozzolans and Slag on the Expansion of Mortars Cured at Elevated Temperature, Part I: Expansive Behaviour", *Cement and Concrete Research*, Vol. 33, No. 6, 2003, pp. 807-814.
- Garces Rodriguez, O. and Hooton, R.D., "Influence of Cracks on Chloride Resistance of Concrete", *ACI Materials Journal*, Vol. 100, No. 2, March-April 2003, pp. 120-126.
- Bleszynski, R.F., Hooton, R.D., Thomas, M.D.A. and Rogers, C.A., "Durability of Ternary Blend Concretes with Silica Fume and Blastfurnace Slag: Laboratory and Outdoor Exposure Site Studies", *ACI Materials Journal*, Vol. 99, No. 5, Sept-Oct 2002, pp. 499-508.
- Brown, P.W. and Hooton, R.D., "Ettringite and Thaumasite Formation in Laboratory Concretes Prepared Using Sulfate-Resisting Cements" *Cement and Concrete Composites*, Vol. 24, 2002, pp. 361-370.
- Hooton, R.D., Geiker, M.R. and Bentz, E.C., "Effects of Curing on Chloride Ingress and Implications of Service Life", *ACI Materials Journal*, Vol. 99, No. 2, 2002, pp. 201-206.
- Boddy, A., Hooton, R.D. and Gruber, K.A., "Long-Term Testing of the Chloride Penetration Resistance of Concrete Containing High-Reactivity Metakaolin", *Cement and Concrete Research*, Vol. 31, No. 5, 2001, pp. 759-765.
- Gruber, K., Ramlochan, T., Boddy, A., Hooton, R.D. and Thomas, M.D.A., "Increasing Concrete Durability with High Reactivity Metakaolin", *Cement and Concrete Composites*, Vol. 23, 2001, pp. 479-484.
- Boddy, A., Hooton, R.D. and Thomas, M.D.A., "The Effect of Silica Fume Product Form on its Ability to Control Alkali-Silica Reaction", *Cement and Concrete Research*, Vol. 30, 2000, pp. 1139-1150.
- Hooton, R.D., "Canadian Use of Ground Granulated Blast-Furnace Slag as a Supplementary Cementing Material for Enhanced Performance of Concrete", *Canadian Journal of Civil Engineering*, Vol. 27, 2000, pp. 754-760.
- Martin-Perez, B., Zibara, H., Hooton, R.D. and Thomas, M.D.A., "A Study of the Effect of Chloride Binding on Service Life Predictions", *Cement and Concrete Research*, Vol. 30, 2000, pp. 1215-1223.
- Stanish, D., Hooton, R.D. and Pantazopoulou, S.J., "Corrosion Effects on Bond Strength in Reinforced Concrete", *ACI Structures Journal*, Vol. 96, No. 6, 1999, pp. 915-921.
- McGrath, P.F. and Hooton, R.D., "A Re-Evaluation of the AASHTO T259-90 day Salt Ponding Test", *Cement and Concrete Research*, Vol. 29, 1999, pp. 1239-1248.
- Hong, K. And Hooton, R.D., "Effects of Cyclic Exposure on Penetration of Concrete Cover", *Cement and Concrete Research* Vol. 29, 1999, pp. 1379-1386.
- DeSouza, S.J., Hooton, R.D. and Bickley, J.A., "A Field Test for Evaluating High Performance Concrete Covercrete Quality", *Canadian Journal of Civil Engineering*, Vol. 25, Dec. 1998, pp. 551-556.
- Thomas, M.D.A., Cail, K. and Hooton, R.D., "Development and Applications of Silica Fume Concrete in Canada: a Retrospective" *Canadian Journal of Civil Engineering*, Vol. 25, No. 3, 1998, pp. 391-400.

- Khayat, K.H., Bickley, J.A. and Hooton, R.D., "High Strength Concrete Properties Derived from Compressive Strength Values", *Cement, Concrete and Aggregates*, Vol. 17, No. 2, 1995, pp. 126-133.
- El-Dieb, A.S. and Hooton, R.D., "Water Permeability Measurement of High Performance Concrete Using a High Pressure Triaxial Cell", *Cement and Concrete Research*, Vol. 25, No. 6, 1995, pp. 1199-1208.
- Hooton, R.D. and Rogers, C.A., "Determination of Slag Content in Hardened Concrete", *ASTM, Cement, Concrete and Aggregates*, Vol. 17, No. 1, 1995 pp. 56-61.
- Ohga, H. and Hooton R.D., "Evaluation of Chloride Permeability in Cementitious Materials by the Rapid Chloride Permeability Test", *Seison-Kenkyo, Tokyo*, Vol. 46, No. 7, pp. 29-32. (In Japanese)
- Bickley, J.A., Ryell, J., Rogers, C. and Hooton, R.D., "Some Characteristics of High Strength Structural Concrete: Part 2", *Canadian Journal of Civil Engineering*, Vol. 21, 1994, 1084-1087.
- Hooton, R.D. and Rogers, C.A., "Development of the NBRI Rapid Mortar Bar Test Leading to its Use in North America", *Construction and Building Materials*, Vol. 7, 1993, pp. 145-148.
- Hooton, R.D. "Influence of Silica Fume Replacement of Cement on Physical Properties and Resistance to Sulfate Attack, Freezing and Thawing, and Alkali-Silica Reactivity", *ACI Materials Journal*, Vol. 90, No. 2, March/April 1993, pp. 143-151.
- Bickley, J.A., Ryell, J., Rogers, C. and Hooton, R.D., "Some Characteristics of High Strength Structural Concrete", *Canadian Journal of Civil Engineering*, Vol. 18, October 1991, pp. 885-889.
- Hooton, R.D. and Emery, J.J., "Sulphate Resistance of a Canadian Slag Cement", *ACI Materials Journal*, Vol. 87, No. 6, Nov/Dec, 1990, pp. 547-555.
- Emery, J.J., Hooton, R.D. and Gupta, R.P., "Utilization of Blast Furnace, Non-Ferrous and Boiler Slags", *Silicates Industrials*, Vol. 42, pp.111-120, 1977.

Articles in Refereed Conference Proceedings (from more than 75)

- Rogers, C.A., Hooton, R.D., and Ramlochan, T., "The Kingston Outdoor Exposure Site for ASR - After 14 Years What Have We Learned?", *Proceedings, Marc-André Berubé Symposium, Seventh CANMET/ACI International Conference on Durability, Montreal, May31- June 2, 2006*, 22pp.
- Hooton, R.D., "Performance Tests, Performance Specifications, and Service Life Issues", *Concrete'05, Biannual Conference of the Concrete Institute of Australia, Melbourne, October 18, 2005* (Invited Keynote Speaker).
- Nokken, M.R. and Hooton, R.D., "Development of Impermeability in High-Performance Concretes", *Proceedings, 3RD International Symposium on High Performance Concrete, Orlando, Oct. 21, 2003*, (CD-ROM Proceedings), paper 104, 16pp.
- Hooton, R.D., Thomas, M.D.A. and Stanish, K.D., "Prediction of Chloride Penetration in Concrete", *US Dept of Transportation, Federal Highway Administration, Publication No. FHWA-RD-00-142, Oct. 2001*, 412 pp.

- Stanish, K.D., Hooton, R.D. and Thomas, M.D.A., "A Rapid Migration Test for Evaluation of the Chloride Penetration Resistance of High Performance Concrete", Proceedings, PCI/FHWA/FIB International Symposium on High Performance Concrete, Orlando, Sept. 25-27, 2000, pp. 358-367.
- Hooton, R.D., "Are Sulfate Resistance Standards Adequate?" Material Science of Concrete: Sulfate Attack Mechanisms, A. Cer. S. 1999, pp. 357-366.
- Hooton, R.D. and El-Dieb, A.S., "Evaluation of Water Permeability of High Performance Concrete", Proceedings, Concrete Under Severe Conditions, Sapporo, Japan, E. and F.N. Spon, 1995, Vol. 1, pp. 423-432.
- Hooton, R.D., "Improving Concrete Durability", Presentation and Proceedings of the Second Canadian Symposium on Cement and Concrete, Vancouver, July 25-26, 1991, pp. 242-251.
- Sturup, V.R., Hooton, R.D. and Clendenning, T.G., "Durability of Fly Ash Concrete", Proceedings, First International Conference on the use of Fly Ash, Silica Fume, Slag and Other Mineral By-Products in Concrete, Montebello, Quebec, July 31-August 5, 1983 (presented by R.D. Hooton), ACI SP79, Vol. 1, pp. 71-86.
- Emery, J.J., Cotsworth, R.P. and Hooton, R.D., "Pelletized Blast Furnace Slag", Proceedings of a Seminar on Energy Resource Conservation in the Cement and Concrete Industry, Ottawa, Paper 4.1, 1976, pp. 1-23.

Abstract Refereed Conference Proceedings (from more than 15)

- Hooton, R.D., Hover, K., and Bickley, J.A., "Performance Standards and Specifications for Concrete for Promotion of Sustainable Construction", Proceedings, CANMET/ACI/JCI International Symposium on Sustainable Development of Cement, Concrete, and Concrete Structures, Toronto, Oct. 5-7, 2005, pp. 363-375.
- Hooton, R.D., "Recent Developments of Standard Test Methods for Measuring the Fluid Penetration Resistance of Concrete and Use in Performance Standards", Proceedings, Knut Hojgaard Foundation Conference on Advanced Cement Based Materials: Research and Teaching, Danish Technical University, June 13-15, 2005 (CD Proceedings).
- Hooton, R.D., "Issues Related to Recent Developments in Service Life Specifications for Concrete Structures", Supplemental Proceedings, Second CANMET/ACI International Symposium on Advances in Concrete Technology, Las Vegas, June 11-14, 1995, pp. 85-98.
- Hooton, R.D., "Concrete Permeability and the Search for the Holy Grail", Proceedings of the First Canadian Symposium on Cement and Concrete, Quebec City, Aug. 9-11, 1989, 10 pp.