

# DR. JOHN F. STRAUBE

## Assistant Professor, Civil Engineering and School of Architecture

Dr Straube is a faculty member in the Department of Civil Engineering and the School of Architecture at the University of Waterloo where he teaches courses in material science, structural design, and building science to both disciplines. He has been deeply involved in the areas of building enclosure design, moisture physics, and whole building performance as a consultant, researcher, and educator. Energy-efficient, healthy, durable and sustainable building designs are a general goal of his research which is often supported by advanced computer simulation or full-scale natural exposure performance monitoring. Past projects have included driving rain measurement and control, pressure moderation, ventilation drying, insulation strategies, alternative building materials, vapor barriers, mold growth, and crawlspace performance.

He has broad experience in the building industry, having been involved in the design, construction, repair and restoration of buildings in Europe, Asia, the Caribbean, United States and Canada. As a structural engineer he has designed with wood, hot-rolled and cold-formed steel, concrete, masonry (brick, concrete, aerated autoclaved concrete, natural stone), aluminum, polymer concrete, carbon and glass FRP, fibre-reinforced concrete and structural plastics (PVC, nylon).

He has consulted to many building product manufacturers and several government agencies (NRCC/IRC, NRCan, CMHC, DOE, ORNL, PHRC) and is familiar with building-related codes (e.g. NBCC, CSA, NECB, ACI, DIN, etc.) and standards (e.g. CSA, CGSB, ASTM, AAMA, ASHRAE) as well as the measurement and testing procedures of the performance of buildings and their components.

### EDUCATION

- 1995 - 1998    **Ph.D. (Civil Engineering) University of Waterloo**, Waterloo, Ontario, Canada  
Thesis topic: Moisture Control in Enclosure Walls.
- 1992 - 1993    **M.A.Sc. (Civil Engineering) University of Waterloo**, Waterloo, Ontario, Canada  
Thesis topic: Pressure-equalized rainscreen and brick veneer wall systems.
- 1987 - 1991    **B.A.Sc. University of Waterloo**, Waterloo, Ontario  
First Class Honours Specialisation: Structural Design, Building Science, and Project Management

### WORK EXPERIENCE

- 09.99 - present    **University of Waterloo, Civil Engineering Department**  
Assistant Professor, Dept of Civil Engineering and School of Architecture
- 01.95 - 09.98    **University of Waterloo, Civil Engineering Department**  
Part-time lecturer
- 06.94 to present    **J. Straube Building Envelope Engineering**, Waterloo, Ontario  
Principal
- 02.94 to 04.99    **Trow Consulting Engineers**, Brampton Ontario  
Building Science and Structural Rehabilitation Consultant
- 04.92 to 04.98    **Building Engineering Group, University of Waterloo**, Waterloo, Ontario  
Research Engineer
- 05.91 to 11.91    **Kortmann GmbH**, Nordkirchen, Germany  
Junior Engineer

09 89 to 12 89 and 01 89 to 04 89	<b>Gistex Inc., Gistex Construction Management</b> , Toronto, Ontario Project Manager
05 88 to 08 88 and 05 90 to 08 90	<b>J. Straube Construction</b> , Waterloo, Ontario Proprietor
01 87 to 04 87 and 09 87 to 12 87	<b>Texaco Canada Inc.</b> , Willowdale, Ontario Engineer Trainee

## JOURNAL PAPERS (6)

1. Chahrour, Ali H., Soudki, Khaled A., Straube, J.F., "RBS Polymer Encased Concrete Walls Part 1: Experimental Study and Provisions for Flexure and Shear", *Construction and Building Materials*, submitted for review April 2004.
2. Straube, J.F., "Technical Note On Foam Plastic Thermal Insulation in Low-Sloped Roofing Systems", *J. Of Thermal Insulation and Building Envelopes*, April 2003.
3. Straube, J.F. , Onysko, D., and Schumacher, C. " Methodology and Design of Field Experiments for Monitoring the Hygrothermal Performance of Wood Frame Enclosures" *J. Of Thermal Insulation and Building Envelopes*. Vol 26, No. 2, October, 2002, pp. 123-151.
4. Straube, J.F., "Moisture in Buildings". *ASHRAE Journal*, January 2002, pp. 15-19.
5. Straube, J.F., and deGraauw, J.P., "Indoor Air Quality and Hygroscopically Active Materials". *ASHRAE Transactions*, Vol 107, Pt 1., 2001.
6. Straube, J.F. and Burnett, E.F.P., "Rain Control and Design Strategies". *J. Of Thermal Insulation and Building Envelopes*, July 1999, pp. 41-56.

## CONFERENCE PAPERS – Full Paper Review (21)

1. Straube, J.F., VanStraaten, R., Burnett, E., "Field Studies of Ventilation Drying", Accepted for *Proc. of Performance of Exterior Envelopes of Whole Building IX*, Clearwater Beach Florida, December , 2004.
2. Straube, J.F., Schumacher, C.J., "Hygrothermal Enclosure Models: A Comparison with Field Data", *Proc. of 2<sup>nd</sup> Int. Conf. on Building Physics*, Leuven, Belgium, Sept. 14-18, 2003, pp. .319-326.
3. Schumacher, C.J, Shi, X., Davidovic, D., Burnett, E., Straube, J.F., "Ventilation Drying in Wall Systems", *Proc. of 2<sup>nd</sup> Int. Conf. on Building Physics*, Leuven, Belgium, Sept. 14-18, 2003, pp. 479-486.
4. Straube, J.F., Jeong, J., "Analytical Means of Assessing Ventilation on Crawlspace Performance", *Proc. Of 9<sup>th</sup> Canadian Building Science and Technology Conference*, Vancouver, B.C., February 28, 2003.
5. Straube, J.F., Schumacher, C.J., "The Role of Hygrothermal Modeling in Practical Building Design: Case Studies", *Proc. Of e-Sim 2002*, Montreal, Quebec, Canada, Sept 11-13, pp. 185-192.
6. Straube, J.F., "The Influence of Low-Permeance Vapor Barriers on Roof and Wall Performance", *Proc. of Performance of Exterior Envelopes of Whole Building VIII*, Clearwater Beach Florida, December 2-7, 2001.
7. Straube, J.F., "Air Flow Control in Building Enclosures: More than Just Air Barriers", *Proc. Of 8<sup>th</sup> Bldg Sci. & Tech. Conf.*, Toronto, Feb. 22-23, 2001, pp. 282-302.
8. Straube, J.F. and Burnett, E.F.P., "Simplified Prediction of Driving Rain Deposition". *Proc of International Building Physics Conference*, Eindhoven, September 18-21 2000, pp. 375-382.

9. Straube, J.F. and Burnett, E.F.P., "Pressure Moderation and Rain Control for Multi-Wythe Masonry Walls". *Proc of International Building Physics Conference*, Eindhoven, September 18-21 2000, pp. 179-186.
10. Straube, J.F. and Burnett, E.F.P., "Drainage, Ventilation Drying, and Enclosure Performance", *Proceedings of Thermal Performance of Building Envelopes VII*, Clearwater Beach Florida, December 4-7, 1998, pp. 189-198.
11. Straube, J.F. and Burnett, E.F.P., "Vents, Ventilation and Masonry Veneer Wall Systems", *Proc of the Eighth Canadian Masonry Symposium*, Jasper, Alta., Canada, May 31-June 3, 1998, pp.194-207.
12. Straube, J.F. and Burnett, E.F.P., "Field Measurements of Masonry Veneer Exposure Conditions", *Proc of the Eighth Canadian Masonry Symposium*, Jasper, Alta., Canada, May 31-June 3, 1998, pp. 208-221.
13. Straube, J.F. and Burnett, E.F.P., "Driving Rain and Building Facades", *Proc of Clima 2000*, Brussels, August 30 - September 2, 1997.
14. Straube, J.F. Burnett, E.F.P., Gamble, M. Crowne, R., "Polymer Concrete Beams Reinforced with GFRP Rods", *Proceedings of CSCE/JSCE Int. Conf. on Eng. Materials*, Ottawa, June 8 -12, 1997, pp. 579-592.
15. Straube, J.F. and Burnett, E.F.P., "Field Testing of Filled-Cavity Wall Systems", *Proc. of Int. Conf. Building Envelope Science and Tech.* '97, Bath, UK, April 15-17, 1997, pp. 429-434.
16. Straube, J.F. and Burnett, E.F.P., "Rain Control and Screened Wall Systems", *Proc. of the Seventh Building Science and Technology Conference*, Toronto, March 20-21, 1997, pp. 17-37.
17. Straube, J.F. and Burnett, E.F.P., "Masonry Veneers and Driving Rain", presented at ASTM Symposium on Water Leakage Through Building Facades, Orlando, March 17, 1996. Published as *Special Technical Publication: Water Leakage Through Building Facades*, ASTM STP 1314, R.J. Kudder and J.L. Erdly, Eds., ASTM, Philadelphia, 1997, pp. 73-87.
18. Straube, J.F. and Burnett, E.F.P., "Moisture Movement in Building Enclosure Wall Systems", *Proceedings of the Thermal Performance of Building Envelopes VI*, Clearwater Beach Florida, December 4-7, 1995, pp. 177 - 188.
19. Burnett, E.F.P. and Straube, J.F., "The Brick Veneer Screened Wall", *Proceedings of the Seventh Canadian Masonry Symposium*, Hamilton, Ont., Canada, June 5-7, 1995, pp. 651-662.
20. Straube, J.F. and Burnett, E.F.P., "Performance Measurement of Pressure-Moderated Screened Walls", *Proc. of Int. Conference on Building Envelope Systems and Technology*, Singapore, Dec 7-8, 1994, pp. 479-484.
21. Burnett, E.F.P., Straube, J.F., Sloof, P., "The Relative Merits of Zero-Cavity Brick Veneer Walls", *Proc. of the 10th International Brick and Block Masonry Conference*, Calgary, Alta., Canada, 5-7 July, 1994, pp. 369-381.

#### **REFEREED BOOK CHAPTERS (1)**

1. Straube, J.F. and Burnett, E.F.P., Chpt 5: Overview of Hygrothermal Analysis Methods, ASTM Manual 40- Moisture Analysis and Condensation Control in Building Envelopes, American Society of Testing and Materials, Philadelphia, 2001.

#### **CONFERENCE PROCEEDINGS– Full Papers, Abstract Review (1):**

1. Lawrence, A., Soudki, K., Straube, J.F., "Behaviour of Polymer Encased Concrete Wall System", *Proc. Of 3rd CSCE Structural Specialty Conference*, London, Canada, 7-10 June, 2000, pp. 427-433.

## CONFERENCE PROCEEDINGS– Full Papers, no review (8)

2. Onysko, D., Bomberg, M., Straube, J.F., Schumacher, C.J., “Heat, Air, and Moisture Control in Walls of Canadian Houses: Lessons Learned from field experience and monitoring studies”, *Proceedings of Canada-Japan Building Envelope Expert Meeting*, April 8-10, 2002.
3. Straube, J.F., Schumacher, C.J., Onysko, D. “Methodology and Design of Field Experiments for Monitoring Environmental Performance of Wood Frame Enclosures”, *Proceedings of Canada-Japan Building Envelope Expert Meeting*, April 8-10, 2002.
4. Schumacher, C.J., Straube, J.F., “Review of Field Monitoring Studies Involving Field Exposure”, *Proceedings of Canada-Japan Building Envelope Expert Meeting*, April 8-10, 2002.
5. Straube, J.F., “Alternative Building Materials and Systems - Understanding Technical Risk and Uncertainty”, *Proceedings of the First International Conf. on Ecological Building Structures*, San Rafael, CA, July 5-9, 2001.
6. Straube, J.F., "A Sustainable Cement-Bonded Wood Fiber Insulated Concrete Form", *Proceedings of BETEC Symposium on Sustainable Buildings*, Washington, July 7, 2000, pp. 41-48.
7. Vegh P., Straube J.F., "Primary and Secondary Structural Parts - Their Relationship and Function" IASS, *Proceedings of the 1. International Seminar on ECS*, 4 -5 May, 2000, Prague, Czech Republic.
8. Straube, J.F., "Quantifying Driving Rain Deposition on Buildings", *Proceedings of Bugs Mold and Rot III*, DOE, Washington DC, Wednesday, June 9, 1999.
9. Straube, J.F., and Acharya, V., "Indoor Air Quality, Healthy Buildings and Breathing Walls", *Proc. Of 1998 Excellence in Building Conference*, Washington D.C., October 28-31, 1998.

## INVITED PRESENTATIONS, WORKSHOPS, AND NON-REFEREED ARTICLES

I have made a deliberate attempt to communicate (by speaking and writing) directly to practitioners. The intent is both to improve the dissemination of state-of-the-art knowledge and to learn what the current needs and challenges of industry are. I estimate that over 2000 people heard my presentations and seminars last year, and my trade articles reached an audience of well over 10 000 readers.

1. “Durability Research in Canada”, *Woodframe Housing Durability and Disaster Issues Conference*, Las Vegas, NV, October, 4, 2004.
2. “Moisture Physics for Cold Climate Buildings”, two half-day courses for Alaskan Building Science Network, Seward, Alaska, June 18-19, 2004.
3. “Advanced Building Science – Applications”, Two day short course for Assoc. of Prof. Eng. And Geophysicists of British Columbia, Richmond, B.C., June 16-17, 2004.
4. “Multiple Functions of Membranes”, Building Environment & Thermal Envelope Council Membranes in Wall System Seminar, Arlington, VA, June 11, 2004.
5. “Development of New Prescriptive Vapor Barrier Guidelines”, presented to DOE Building America, Boston, June 14, 2004.
6. “The Myth of the Fabled Vapour Barrier”, Construction Specifiers Canada Annual Conference, Toronto, May 28, 2004.
7. “Advanced Building Science – Theory”, Two day short course for Assoc. of Prof. Eng. And Geophysicists of British Columbia, April 2004.
8. “Air Pressure and Thermal Boundaries”, Affordable Comfort Conference, Minneapolis, April 28, 2004.

9. "Moisture Sources and Moisture Transport", Affordable Comfort Conference, Minneapolis, April 29, 2004.
10. w/ Wagdy Anis, Bruce Coldham "Durable Enclosures — Exemplary Detailing of Commercial Steel Stud / Brick Veneer Wall Systems" NESEA, Boston University, Boston, March 2004.
11. "Metal Building Systems", Better Buildings by Design Conference, Feb 12, Burlington, Vermont, 2004.
12. w/ Andy Shapiro, "High-performance Windows and Glazing", Better Buildings by Design Conference, Feb 11, Burlington, Vermont, 2004.
13. "Windows & Curtainwalls" OBEC Monthly Meeting, Nov 13, 2003.
14. "Walls Treated with Water-repellents", Sealant and Waterproofing Association, Toronto, Nov. 6, 2003.
15. "Building Enclosure Principles", University of Toronto Professional Development Center - Building Science Certificate Program, Oct 3, 2003.
16. "Building Science for Insulators", Two-day course for US Greenfiber, with Dr. J. Lstiburek, Boston, MA., August 7-8, 2003.
17. "Wood Frame Housing Construction in Canada", Bundeswehr Universitat, Munich, Germany, June 16, 2003.
18. "Crawlspace Design", Canada-Japan Building Envelope Expert Meeting. Tokyo, Japan, June 5, 2003.
19. "Diagnostic Tools for Enclosure Assessment", Canada-Japan Building Envelope Expert Meeting., Tokyo, Japan, June 5, 2003.
20. "Rain Penetration Control", Half-day course for Quebec Building Envelope Council, Concordia University, May 16, 2003.
21. "Building Details", and "Flashing", OAA Annual Conference, Toronto, May 10, 2003.
22. "Good Design / Green Design", Full-day short Course, Grand Valley Society of Architects, April 26, 2003.
23. "The Physics of Building Science", Seminar, Ont Home Builders Association / NRCan / EnerQuality Corp. Conference, Hockley Valley, April 7, 2003.
24. "Moisture Design", Full-day Short Course, Affordable Comfort Conference, Kansas City, MO, March 31, 2003.
25. "OAA Exclusions and Rain Control for EIFS", OBEC Seminar, March 20, 2003.
26. "Moisture Dynamics", North East Sustainable Energy Association Conference, Building Energy 2003, MIT/ Park Plaza Hotel, March 13, 2003.
27. "Moisture Control Workshop", Full day Workshop for Pennsylvannia Houring Research Center, Monroeville, PA, February 19, 2003.
28. w/ Andy Shapiro, "Windows – What a Difference Details Make", Better Buildings by Design Conference 2003, Feb 13, Burlington, Vermont, 2003.
29. "Ice Dams – Causes and Solutions", Better Buildings by Design Conference 2003, Feb 12, Burlington, Vermont, 2003.
30. "Vapour Barriers – Myths, Codes and Facts", OBEC Monthly Meeting, Feb 6, 2003.
31. "The Physics of Building Science", ENERhouse 2003, Westin Hotel, Halifax, Jan 30, 2003.

32. "Building Enclosure Principles", Professional Development Center - Building Science Certificate Program, University of Toronto, Jan 24, 2003.
33. "Building Sustainably" for Wall Fedy and Associates, Engineers and Architects, Waterloo, Jan. 16, 2003.
34. "Hygrothermal Computer Building Enclosure Modeling with WUFI and Therm", for Quebec Building Envelope Council, Montreal, Dec 10, 2002.
35. "Test house studies at the University of Waterloo", Mitigating Losses to Housing due to Extreme Natural Hazards Workshop, Toronto, Dec 3-4, 2002.
36. "Beyond political correctness - green architecture", Grand Valley Association of Architects, Walper Terrace, Kitchener, Canada, Oct. 22, 2002.
37. With E.F. Burnett, "Moisture Control for Buildings" Full day Workshop for Pennsylvania Housing Research Center, Harrisburg, PA. Oct 15, 2002.
38. With E.F. Burnett, "Moisture Control for Buildings" Full day Workshop for Pennsylvania Housing Research Center, Pittsburgh, Oct 17, 2002.
39. "Moisture, Energy and Buildings", Portland Association of Architects, Portland Zoo, June 20, 2002.
40. "The Physics of Moisture in Buildings" Full-Day Seminar for American Plywood Association, Tacoma Washington, June 14, 2002.
41. Ontario Architects Association Annual Conference "Ecology, Energy, and Excess: Green Buildings", Niagara Falls, May 4, 2002.
42. Ontario Architects Association Annual Conference "God is in the Details", Niagara Falls, May 3, 2002.
43. "Mold and Strawbale Buildings", Seminar for Ecological Building Network, June 1, 2002.
44. "Double Skinned Walls", OBEC Sustainability Seminar, Tuesday, May 28, 2002.
45. "Air Barriers Role In Preserving IAQ", *IAQ Applications*, ASHRAE, Spring 2002, pp. 6-8.
46. "Moisture, Materials, and Buildings", *Heating/Piping/Air-Conditioning Magazine*, April 2002.
47. "Canada's Advanced Houses", North East Sustainable Energy Association Conference, Building Energy 2002, Tufts University, March 22, 2002.
48. "Moisture Dynamics", North East Sustainable Energy Association Conference, Building Energy 2002, Tufts University, March 21, 2002.
49. "High Performance Wall Systems for Commercial Buildings", Presented at 5<sup>th</sup> Annual Building Solutions Conference, Burlington, Vermont, Feb 13 2002,.
50. "Roofs, Snow, and Ice", Presented at 5<sup>th</sup> Annual Building Solutions Conference, Burlington, Vermont, Feb 13 2002.
51. "Windows", Presented at 5<sup>th</sup> Annual Building Solutions Conference, Burlington, Vermont, Feb 14, 2002.
52. "Demystifying Vapor Barriers", *Energy Design Update*, Building Science All-Star Issue, January 2002.
53. "Practical Hygrothermal Modeling for Building Enclosure Design", Lead Presenter, ASHRAE Workshop, Clearwater Beach, FL, Dec 6, 2001.

54. "Light weight concretes and wood concrete ICF technology" Presented at Thermal Mass and Its Effect on The Whole Building Energy Performance, ASHRAE Workshop, Clearwater Beach, FL, Dec 2, 2001.
55. "Building on Masonry", *Canadian Architect*, Nov. 2001, pp. 36-37.
56. "Pressure Moderation and Rain Penetration Control" *Proc. of Pressure Equalized Rainscreens: Design and Performance*, International Plaza Hotel, Nov. 21, 2001.
57. With E.F. Burnett, Moisture Control Workshop for Pennsylvania Housing Research Center, Valley Forge, PA, Nov 8, 2001.
58. "Heat and Moisture Control Issues Related to Light-Gauge Steel Stud Framing", Presented at MetalCon International, Las Vegas, Oct 24, 2001.
59. Straube, J.F., "Curtainwall Fundamentals", *Canadian Architect*, August 2001, p. 29.
60. Full day invited lecture "The Physics of Building Science" at Westford Symposium V, Westford, MA, August 2-4, 2001.
61. Straube, J.F., "Insulated Concrete Forms – A Concrete Revolution", *Canadian Architect*, July 2001, pp. 25-26.
62. "God is in the Details", Half-day Seminar for Ontario Architects Association Annual Conference, Toronto, May 11, 2001.
63. "Wrapping it up: Building Paper and Housewraps", *Canadian Architect*, May 2001, p.39.
64. "Air and Vapour Barriers", Annual General Meeting of the British Columbia Building Envelope Council, Vancouver, May 10, 2001.
65. Straube, J.F., "Understanding and Controlling Air Flow in Enclosures", *Affordable Comfort 2001 Conference Proceedings*, Milwaukee, WI, May, 2001.
66. "To vent or not to vent - roofs, walls, and crawlspaces", Presentation at Affordable Comfort 2001 Conference, Milwaukee, WI, May 2, 2001.
67. "Computer Modelling to Solve Building Science Problems", Presentation for Univ of Toronto Professional Development Centre - Building Science Certificate, April 20, 2001.
68. "Specifying EIFS", *Canadian Architect*, April 2001, pp. 31-32.
69. "Out with the Mould", *Canadian Architect*, March 2001, pp. 33-34.
70. Straube, J.F., "Flashings - Putting Theory into Practice", Presentation for Ontario Association of Architects' Professional Development Program, Toronto, Dec 5, 2000.
71. Straube J.F. "Ventilation of Wall Claddings", Presentation for Ontario Association of Architects' Professional Development Program *Advanced Construction Details*, Toronto, Oct 5, 2000.
72. Straube, J.F., "Insulation and Building Performance", Workshop at *Affordable Comfort 2000* Conference, Columbus, Ohio, April 5, 2000.
73. Straube, J.F., "Moisture Fundamentals and Mould", OBEC Seminar, Etobicoke, Ontario, November 17, 1999.
74. Straube, J.F., "Rain Control for Walls", *Wood Design Focus*, Forest Products Society, Winter 1999, Volume 4, No. 10, pp. 3-12.
75. Straube, J.F., "The Role of Straw-Bale Wall Finishes", *The Last Straw - the journal of straw bale construction*, Issue#29, Spring, 2000.
76. With King, B., "The Science of Green Building" Full-day seminar for Ecological Building Network, San Francisco, February 4, 2000.

77. With Burnett, E.F.P., "Heat, Air and Moisture Control", Short Course for Energy Efficient Building Association Institute of Building Construction Technology at *1999 Excellence in Building Conference*, Baltimore, Maryland, November 4-7, 1999.
78. "Moisture Control for Durable Housing", presented at *Workshop on Durability and Disaster Mitigation in Wood Frame Housing and Durability Protocol*, Madison, Wisconsin, November 1-3, 1999.
79. "Moisture Control, Air & Vapour Barriers, and the OBC", Presentation for the Waterloo-Wellington Chapter of Association of Building Code Officials of Ontario, September 13, 1999.
80. "Moisture Control for Manufactured Housing", Presentation for Council of State Administrative Agencies, Southern Region Technical Exchange, Myrtle Beach, August 24, 1999.
81. "Coupled Heat and Moisture Simulations for Building Enclosures Using WUFI", Presentation to Third Westford Symposium on Building Science, Westford, MA., August 4, 1999.
82. "High-rise Envelope Failures: Do We Have a Problem?", Full-day Seminar for the British Columbia Building Envelope Council, Vancouver, May 20, 1999.
83. Straube, J.F., and Acharya, V., "Indoor Air Quality, Healthy Buildings and Breathing Walls", *Proc. Of 1998 Excellence in Building Conference*, Washington D.C., October 28-31, 1998.
84. "Moisture Control Strategies and Leaky Condos". Presentation to the British Columbia Building Envelope Council, Vancouver, October 22, 1998.
85. "Masonry Rainscreen Seminar", Presentation to the Masonry Institute of BC, Vancouver, October 23, 1998.
86. "Computerized Prediction of Hygrothermal Performance of Building Enclosures", Presentation to Pennsylvania Home Builders Conference, State College, Pa., February 21, 1998.
87. "Solar -Driven Inward Diffusion ... and related topics". Presentation to Annual General Meeting of Technical Research Committee of the Canadian Home Builders Association, Hamilton, Ont., February 6, 1998.
88. "Moisture and Straw -- not a dry topic", *The Last Straw - the journal of straw bale construction*, Spring, 1998.
89. "Vents in Masonry Walls - Necessary or Nuisance". Presentation to Quebec Masonry Institute, Montreal, Oct. 29, 1997.

#### **MAJOR RESEARCH REPORTS (A SAMPLE)**

1. Straube, J.F., and Schumacher, C., *Rain Control Design and Construction Guidelines for Canadian Wood-Framed Housing in Japan*. Building Engineering Group report for Natural Resources Canada, Sept, 2000, 18 pages + appendices.
2. Straube, J.F., Schumacher, C., and Burnett, E.F.P., *Good Crawlspace Construction Practises for Canadian Wood-Framed Housing in Japan*. Building Engineering Group report for Natural Resources Canada, December, 1998, 26 pages + appendices.
3. Straube, J.F., and Burnett, E.F.P., *In-Service Performance of Enclosure Walls: Summary Final Report*. Building Engineering Group report for URIF corporate partners, December, 1997, 125 pages + appendices.
4. Straube, J.F., J.P. DeGraauw, Burnett, E.F.P., *Design and Testing of GFRP-Reinforced Polymer Concrete Beams*. Building Engineering Group report for Canadian Construction Controls Ltd., March 1996, 33 pages + appendices.



5. Straube, J.F. and Burnett, E.F.P., *The Zero-Cavity and DPV Wall Project*. Final Report for Canada Mortgage and Housing Corporation by the Building Engineering Group, University of Waterloo, December, 1995, 130 pages + appendices.
6. Straube, J.F., Schumacher, C., and Burnett, E.F.P., *In-Service Performance of Enclosure Walls: Construction and Instrumentation Report*. Building Engineering Group report for URIF corporate partners, November, 1995, 114 pages + appendices.
7. Straube, J.F. and Burnett, E.F.P., *Vents, Ventilation, and Pressure Moderation*. Building Engineering Group Final Report for Canada Mortgage and Housing, December, 1995, 102 pages + appendices.

## **SOME PUBLIC REPORTS**

1. Straube, J.F., *Mould Control Practise Guide*, Report for Ontario Architects Association, September, 2003.
2. Straube, J.F., *Rain Penetration Control Practise Guide*, Report for Ontario Architects Association, June, 2002.
3. Straube, J.F. and Schumacher, C.J. *Hygrothermal Simulations for Pacific Towers, Portland Oregon*. Report for Walsh Construction, Feb 2002.
4. Straube, J.F. and Schumacher, C.J. *Interim Results of Monitoring Temperatures below Radiant Heat Slab over Different Insulations*, Report for Coverttech, April, 2001.
5. Straube, J.F., *Technical Review of Possible Test House for Vancouver*, Report for Forintek, October, 2000.
6. Straube, J.F., Report on the Roof Design of the Coast Paper and Cooper Lighting Buildings. Report for Teplitsky-Colson, August 2000.
7. Straube, J.F. *Moisture Properties of Plaster and Stucco for Strawbale Buildings*, Report for Canada Mortgage and Housing Corporation, June 2000.
8. Straube, J.F., *Driving Rain Measurements on Buildings in Waterloo and Vancouver*, Report for National Research Council of Canada / Institute for Research in Construction, April 2000.
9. Straube, J.F., Schumacher, C.J., Effectiveness of Beaver Plastics' INSULWORKS insulation system used below radiant floor slabs, Report for Beaver Plastics, April 2000.
10. Straube, J.F., Timusk, J., *Thermographic Monitoring of a Test Building*. Trow Consulting Engineers report for Royal Plastics Ltd., Sept, 1998.
11. De Rose, D., Straube, J.F., Vegh, P., *Axial Load Testing of Royal Walls(Unfilled)*. Trow Consulting Engineers report for Royal Plastics Ltd., Feb, 1998.
12. Straube, J.F., Timusk, J., *Thermal Performance of the Royal Housing System*. Trow Consulting Engineers report for Royal Plastics Ltd., Jan, 1998.
13. Straube, J.F., Vegh, P., Timusk, J., *Royal Housing System: Roof Surface Temperature Analysis*. Trow Consulting Engineers report for Royal Plastics Ltd., March, 1997.
14. Straube, J.F., Arenja, A., *Royal Building Systems: Static Cyclic Testing of Single-Storey Building Using 150 mm Wall System*. Trow Consulting Engineers report for Royal Plastics Ltd., November, 1996.
15. Arenja, A., Straube, J.F., *Royal Housing System: Shear Testing of Cold Formed Steel Joists and Beams*. Trow Consulting Engineers report for Royal Plastics Ltd., September, 1996.
16. Straube, J.F., *A Summary Review of the Technical and Regulatory Framework Affecting the Roxul™ Cavity Batt*. Report for Roxul Ltd., April 1996.

17. Straube, J.F., *The Shear Capacity of the HRT100 Tie Across Large Cavities*. Report for Blok-lok Ltd., April 1996.
18. Straube, J.F., Arenja, A., Burnett, E.F.P., *Preliminary Feasibility Study of Royal Wall System as Roadway Noise Barrier*. Trow Consulting Engineers report for Royal Plastics Ltd., Oct. 1995.
19. Straube, J.F., Arenja, A., Burnett, E.F.P., *Royal Housing System: Beam Column Tests for Reinforced Walls*. Trow Consulting Engineers report for Royal Plastics Ltd., July, 1995.
20. Straube, J.F., Arenja, A., Burnett, E.F.P., *Royal Housing System: Seismic Performance of Shear Walls - Series 2*. Trow Consulting Engineers report for Royal Plastics Ltd., January, 1995.
21. Straube, J.F., Arenja, A., Burnett, E.F.P., *University of Waterloo Campus Center Guardrail Tests*. Trow Consulting Engineers report for Mometal Inc., February, 1995.
22. Straube, J.F., Arenja, A., Burnett, E.F.P., *Royal Housing System: Seismic Performance of Shear Walls*. Trow Consulting Engineers report for Royal Plastics Ltd., December, 1994.
23. Straube, J.F. and Burnett, E.F.P., *The Performance of Helix Ties*. Building Engineering Group report for Blok-Lok Ltd., University of Waterloo, October, 1994.
24. Straube, J.F. and Burnett, E.F.P., *The Performance of Helifix HRT80 Tie Dry-Installed in Concrete Block*. Building Engineering Group report for Blok-Lok Ltd., University of Waterloo, October, 1994.
25. Dozens of site reviews of building enclosure performance problems, forensic investigations, building product reviews and evaluations, computerised hygrothermal analysis, and field monitoring projects have not been listed here to maintain client confidentiality.

## THESES

Straube, J.F., *Moisture Control and Enclosure Wall Systems*. Ph.D. Thesis, Civil Engineering Department, University of Waterloo, April, 1998, 318 pages + appendices.

Straube, J.F., *The Performance of Wall Systems Screened With Brick Veneer*. M.A.Sc. Thesis, Civil Engineering Department, University of Waterloo, December, 1993, 383 pages + appendices.

## OTHER ACTIVITIES

- Member, Canada-Japan Housing R&D Building Envelope Experts Working Group, Natural Resources Canada.
- Member CSA A371 Masonry Construction, Standards Committee
- Member, Scientific Committee, eSim2002 Conference, Montreal, and eSim 2004 Vancouver, Canada.
- Advisor to New Zealand Building Industry Association (BIA) for development of performance based codes
- Member, US EPA Expert Panel -- Radon Moisture Study Design, Washington June 26, 2003.
- Deputy Chairman of the Thematic Group 6 of the International Association of Shell and Space Structures, Working Group 18 on Environmentally Compatible Structures, 1999 -
- Chair of OBEC *Pressure Equalized Rainscreens: Design and Performance*, International Plaza Hotel, Nov. 21, 2001.
- Chair, and Proceedings Editor, 8th Canadian Building Science and Technology Conference, Toronto, February, 2001.
- Member of the Board of Directors for the Ontario Building Envelope Council, 1999 - .
- Member, National Institute Of Building Sciences Building Environment and Thermal Council (BETEC)
- Member, International Building Performance Simulation Association (IBPSA) Canada

- Member, American Society of Refrigeration and Air-Conditioning Engineers
- Advisory Board Member, Ecological Building Network (EBNet) 1999-
- Technical consultant to National Research Council/Institute for Research in Construction (NRC/IRC) Moisture Engineering Wall Study (MEWS) 2000.
- Member of US Department of Energy *Building Envelope Technology Roadmap 2020*, 2000-.
- Consultant and analyst for the BC Building Envelope Research Consortium's Enclosure Drying Rates (EDRA) study (1999 – 2001)
- Chair of *OBEC Gazing Seminar*, University of Waterloo, Feb. 2000.
- Testified to Barrett Commission on "Leaky Condos" in BC, Jan. 2000.
- Academic consultant for the development of the Open University of British Columbia's Building Science course (2000)
- Member of Technical Review Committee for Oak Ridge National Labs "Walls, Roofs, and Foundations" research program (1999)
- Member of Organising Committee and Chair, Review Subcommittee, for the 7th Canadian Building Science and Technology Conference (1997)
- Reviewer of technical reports for several government agencies (Canada Mortgage and Housing Corporation, US Department of Energy) and papers for several technical journals (American Society of Heating, Air-conditioning and Refrigeration Engineers Transactions, Journal of Thermal Envelope and Building Science) and conferences (BETEC Thermal VI and VII, BSTC 1997,2001).