

Building Science Suggested Reading / Bibliography (*rough draft*)

Building Principles, Practise, Detailing

- Allen, Edward, *Architectural Detailing*. Wiley and Sons, 1993. ISBN 0-471-54792-1. A great book of practical simple rules for detailing buildings. Aimed at architects.
- Allen, Edward & Iano, Joseph, *Fundamentals of Building Construction : Materials and Methods*, sixth ed. Wiley, 2013. An excellent comprehensive view of how buildings are built. Explains the basics - excellent for those learning or moving into new types of building. Warning: although it shows mostly good things, it is not limited to best practise nor does it warn of some of the performance pitfalls.
- Allen, Edward & Iano, Joseph, *The Architects Studio Companion*, 3rd edition, Wiley and Sons, 2001. Very good handbook with some of the best rules of practise I have seen or architects.
- Exterior Wall Construction in High-Rise Buildings*, CMHC, Ottawa, 1991. ISBN 0-660-13759-3. An aging, former must-have guide for Canadian practioners. \$20 cheap from CMHC.
- All CMHC Best Practise Guides*. Get them from CMHC when you enter practise -- drawings and specs provided on CD-ROM, and lots of good ideas that will help avoid getting sued. Constantly improving and expanding.
- Baker, Max. *Roofs*. Multi-Science Publications Ltd., Montreal, 1980 . ISBN 0-921317-03-4. This hard to get book is the best one I know of on roofs. Getting dated.
- Brand, R., *Architectural Details for Insulated Buildings*. Van Nostrand Reinhold, New York, 1990. ISBN-0-442-23674-3. A very Canadian book of good building details, each of which is referenced to the physical principles laid out in the relevant CBD's.
- Lstiburek, J., and Carmody, J. *Moisture Control Handbook*. Van Nostrand Reinhold, New York, 1993. ISBN 0-442-01432-5. An excellent, practical reference, esp for small commerical.
- Lstiburek, J. *Builder's Guide for Cold Climates*, Building Science Corp, Westford, MA, 1997, www.buildingsciencepress.com.. Outstanding drawings for durable, healthy, energy-efficient practise for housing in cold climates. Simply the best for this purpose. Available for 5 climates zones.
- Straube, J.F., *High Performance Enclosures: Design Guide for Institutional Commercial and Industrial Buildings in Cold Climates*. Building Science Press, Somerville, Massachusetts, 2011. 320 pp.
- Watson, D., and Labs, K., *Climatic Building Design: Energy-Efficient Building Principles and Practise*. McGraw-Hill, Toronto, 1983, ISBN 0-07-068488-X. A useful combination of physics and practical know-how. Good hot and humid climate sections.
- Canadian Wood-Frame Housing*. 3rd Metric Edition, CMHC, Ottawa, 1988. ISBN 0-660-16723-9 The definitive \$25 guide to low-rise wood framed construction.
- Giffith low-slope roofing manual. Up-to-date info on common roofing systems: lots of technology but not much science
- NRCA *Membrane Roofing and Steep-Slope Manual*. Great detailed resource of roof technology, but very little science—beware lack of thermal and air control in excellent rain control details but fantastic

General informative reading about buildings

Allen, Edward, *How Buildings Work*. Oxford University Press, New York, 1995. ISBN 0-19-509100-0. A comprehensive general book with an appropriate title. Includes all aspects.

Banham, Reyner, *The Architecture of the Well-tempered Environment*, The Architectural Press, London, ISBN 0-85139-074-91969. A very informative look back at the changes in architecture, the rise of mechanical systems, and critiques, still valid today, for many famous buildings.

Brand, Stewart. *How Buildings Learn*. A very influential book that thoroughly describes the life cycle of buildings in a case study approach. Excellent review of how building professions are not doing their jobs.

Fitch, James Marston, *American Building*. Oxford University Press, New York, 1999. ISBN 0-19-509100-0 A reprint of 1972 classic, North American book which heralded the awakening of the difference between the art of designing buildings and the building of art.

Reid, E., *Understanding Buildings*. MIT Press, Cambridge, Mass., 1984. ISBN 0-262-68054-8. Nice general overview of how buildings work, incl. structure, sound, fire, services, etc.

Rybczynski, W., *Home*. Penguin, New York, 1986. ISBN 0 - 14-01.0231-0. A best seller by a McGill professor of Architecture about the history of home, and houses, with lots of information about the influence of technology on housing through the ages.

Rybczynski, W., *The Most Beautiful House in the World*. Penguin, New York, 1989. ISBN 0 - 14-01.0566-2. Another book about houses, architecture, history, the design process, etc. Less scholarly than *Home*.

Other books, of special interest

Olgyay, Victor. *Design with Climate :Bioclimatic Approach to Architectural Regionalism*. Van Nostrand Reinhold, New York, 1992. ISBN 0-442-01110-5. A reprint of the 1963 classic of the "bioclimatic" approach to architecture.

Carmody, J., Selkowitz, S., Lee, E. S., Arasteh, D., Willmert, T. *Window Systems for High-Performance Building*, W. W. Norton & Company, New York, 2004. Great study of commercial windows and their impact on building energy and daylighting.

Daniels, Klaus, *The Technology of Ecological Building*, Birkhauser, Boston, 1997, ISBN 3-7643-5461-5. Excellent introductory book whose detailed information can be applied to all buildings.

Schittich, C. In *Detail Building Skins*. Birkhauser Architecture; New enlarged ed. Edition. 2002. ISBN 3764376406. Attractive book with nice drawings but not a lot of science actually..

Jones, David L., *Architecture and the Environment - contemporary green buildings*, The Overlook Press, 1998 ISBN 0-87951-819-7. Some good case studies of low energy buildings with real numbers.

Lerum, Vidar. *High Performance Building*. Wiley, New York, 2007. Great look at a number of buildings with some measured data and modelled data. True attempt to measure performance

Moore, F., *Environmental Control Systems*. McGraw-Hill, New York, 1993. ISBN 0-07-042889-1. Directed at architect, it provides useful HVAC, daylighting, and human comfort information in the context of environmentally sound building.

Harriman, L. and Lstiburek, J. *The ASHRAE Guide for Buildings in Hot & Humid Climates*.. ASHRAE, Atlanta, Ga., 2009. [ISBN 978-1-933742-43-4](https://doi.org/10.1890/1081-0665(2009)001[0978:1-933742-43-4]1.0.CO;2)

Givoni, B., *Passive and Low Energy Cooling of Buildings*, John Wiley & Sons, 1994. ISBN: 0-471284734 and *Climate Considerations in Building and Urban Design*, Van Nostrand

Reinhold, 1998 ISBN: 0-471291773. Not bad books for general climatically sensitive design info and ideas.

Dictionary of Building Preservation. Ed. Ward Bucher. John Wiley & Sons, New York, 1995. ISBN 0-471-14413-4. For those who need to know detailed terminology for historical preservation.

Weaver, M., *Conserving Buildings*. John Wiley & Sons, New York, 1997. ISBN 0-471-50944-2. Revised version of a practical book for assessing and repairing deterioration, especially of historically significant structures.

Structural Building Information

Gordon, J.E., *Structures or Why Things Don't Fall Down*, Penguin Books, 1978. An interesting, informative, and still remarkably technical read. A must for structural engineers but almost all an architect needs to know.

Salvadori, M., *Why Buildings Stand Up*. W W Norton & Co, 1994 ISBN: 0393306763 A less technical, more basic book than above with some very relevant building information.

Levy, M. and Salvadori, M., *Why Buildings Fall Down*. W.W. Norton & Company, New York, 1992. ISBN 0-393-31152-X. Great fun, very educational disaster story telling.

True Building Physics - for the hardcocre addict

Straube, J.F., and Burnett, E.F.P. *Building Science for Building Enclosure Design*. Building Science Press, Westford, MA, 2005.

Hutcheon, N. B., and G. O. P. Handegord. *Building Science for a Cold Climate*. NRC/IRC, 1983, Order no. NRCC-39017.

All of the 200+ legendary CBD's: Canadian Building Digests, available from NRCC/IRC website.

2013 ASHRAE Book of Fundamentals. ASHRAE, Atlanta, Ga., 2009. ISBN 1-883413-45-1. The practitioners reference, especially HVAC. Must have, but expensive.

Incropera, F.P., and deWitt, D.P., *Fundamentals of Heat and Mass Transfer*. 5th Edition, John Wiley and Sons, Toronto, 2002. ISBN 0-471-38650-2. A highly regarded advanced and expensive text on heat and mass transfer. Go to library if you ever need it.

Duffie, J.A., and Beckman, W.A., *Solar Engineering of Thermal Processes*. John Wiley & Sons, New York, 1980. ISBN 0-471-05066-0. Essentially deals with solar energy engineering, but provides lots of info on solar radiation, heat transfer, etc. New edition now available.

Hagentoft, C., *Introduction to Building Physics*. Studentlitteratur, Lund, Sweden, 2001. Excellent overview of physics applied to building science.

Hens, H., *Building Physics: Fundamentals and Engineering Methods 2ed*. Wiley, 2012. ISBN 3433030278

Rose, W., *Water in Buildings: An Architect's Guide to Moisture and Mold*. Wiley, 2005. ISBN 0471468509.

Bird, R. B., Stewart, W. E., Lightfoot, E. N. *Transport Phenomena*, Wiley & Sons, New York, 1996.

Givoni, B. *Man Climate and Architecture*, 2nd ed., Applied Science Publishers, London, 1976. ISBN 0-853346-78-X. Human-comfort oriented building physics, esp. for hot climates.

Latta, J.K. *Walls, Windows and Roofs for the Canadian Climate*. National Research Council of Canada, Ottawa, 1973. Still a really good science based introduction to cold climate design,

Others Specialist and Detailed Sources

Nashed, Fred, *Time Saver Standards for Exterior Wall Design*, McGraw-Hill, New York, 1996. ISBN 0-07-046082-5. Some good details but some bad -- weak science, good overview.

Markus, T.A., and Morris, E.N., *Buildings Climate and Energy*. Pitman, London, 1980. ISBN 0-273-00266-X.. A British building science textbook, mostly energy/comfort related.

Alcock, A. E. S., and H. M. Richards. *How to Build for Climate*. London: Longman, 1960.
"Architecture and Energy." *Architectural Forum* 134, no. 1 (July-August 1973): 1112.

Aronin, A. J. *Climate and Architecture*. New York: Reinhold Publishing, 1953.

Atkinson, G. A. "Principles of Tropical Design." *Architectural Review* 128, no. 761 (1960).

Bahadori, Mehdi. "Passive Cooling Systems in Iranian Architecture." *Scientific American* 238, no. 2 (February 1978): 144.

Climate and House Design. New York: United Nations, 1971. "Consideration of Houses Adapted to Local Climate-Case Studies of Iranian Houses in Yazd and Isfahan." *Energy and Buildings*, no. 4 (1982).

Fitch, James Marston, and D. P. Branch. "Primitive Architecture and Climate." *Scientific American* 203, no. 6 (December 1960): 134-144.

Fry, Maxwell, and Jane Drew. *Tropical Architecture in the Dry and Humid Zones*. Huntington, N.Y.: Robert E. Krieger, 1964.

Geiger, R. *The Climate Near the Ground*. Cambridge, Mass.: Harvard University Press, 1965.

Givoni, B. *Man, Climate and Architecture*. 2d ed. Essex, England: Applied Science, 1976.

Golany, Gideon. *Architecture in the Arid Zone*. London: Architectural Press, 1979.

Koenigsberger, O. H., T. G. Ingersoll, A. Mayhew, and S. V. Szokolay. *Manual of Tropical Housing and Building Design: Part 1, Climatic Design*. London: Longman, 1973.

Koenigsberger, O. H., and R. Lynn. "Roofs in the Warm Humid Tropics." *Architecture Association Paper no. 1*, Lund Humphries, London, 1965.

Koenigsberger, O. H., J. S. Millar, and J. Costopolous. "Window and Ventilator Openings in Warm and Humid Climates." *Architectural Science Review* 2, no. 2 (1959): 82-96.

Lippsmeier, Georg. *Building in the Tropics*. Munich, Fed. Rep. of Germany: Callwey, 1980.

McHarg, L. L. *Design with Nature*. New York: Doubleday/Natural History Press, 1969.

Rapoport, Amos. *House Form and Culture*. Englewood Cliffs, N.J.: PrenticeHall, 1969.

Wright, David. *Natural Solar Architecture: A Passive Primer*. New York: Van Nostrand Reinhold Co., 1978