BUILDING AMERICA TOP INNOVATIONS HALL OF FAME PROFILE

INNOVATIONS CATEGORY:

3. Effective Guidance and Tools Solutions
3.1 High-Performance Home Solutions

EEBA Builder's Guides

Climate-specific guides help builders across the country implement specific measures that achieve high performance in energy savings, comfort, health, and durability.

The DOE-sponsored Builder's Guides have, and continue to, meet a great need for clear guidance on the latest technologies and best practices for high-performance homes. Over 12,000 copies have been sold to date including second and third editions for many of the guides. Their impact extends further by inspiring content in other publications and building science training courses that have educated thousands of builders and contractors across the country.

BUILDING AMERICA TOP INNOVATIONS

Recognizing Top Innovations in Building Science – The U.S. Department of Energy's Building America program was started in 1995 to provide research and development to the residential new construction and remodeling industry. As a national center for world-class research, Building America funds integrated research in market-ready technology solutions through collaborative partnerships between building and remodeling industry leaders, nationally recognized building scientists, and the national laboratories. Building America Top Innovation Awards recognize those projects that have had a profound or transforming impact on the new and retrofit housing industries on the road to high-performance homes.

As a reference widely used throughout the housing industry, the EEBA Builder's Guides have been uniquely transformational, disseminating building science best practices. Moreover, the influence of the guides extends beyond the publications themselves with content continually influencing building science presentations, training, courses, and journal articles all over the United States and Canada.

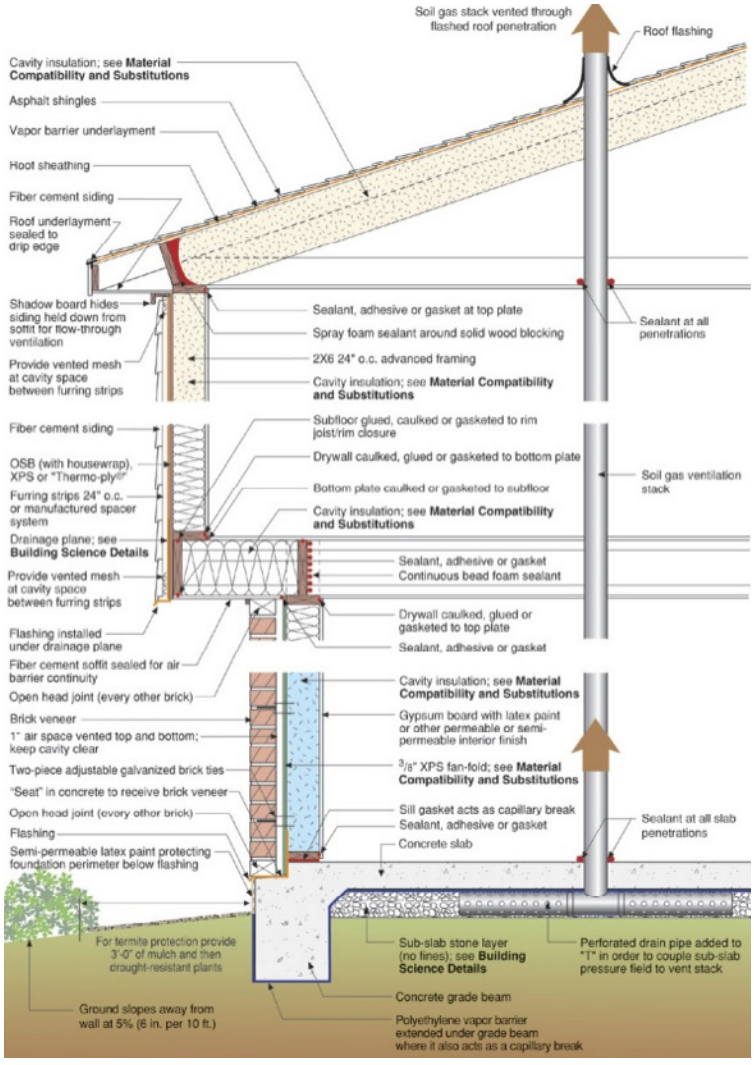
The U.S. Department of Energy's Building America program sponsored the development of a series of climate-specific guides for builders. The guides were authored by Joe Lstiburek, a building scientist and principal with Building Science Corporation, a Building America research partner. They are printed by Building Science Press and are also available from the Energy & Environmental Building Alliance (EEBA), www.eeba.org/bookstore/cat-Builders_Guides-4.aspx.

These guides respond to a real need that builders have to see how the pieces fit together. The guides provide hundreds of drawings detailing every aspect of home construction from the foundation to the roof as well as all of the major components including insulation, heating, ventilation, air conditioning, plumbing, electrical, air sealing, wall assemblies, and vapor barriers. Overview chapters introduce builders to concepts such as the house as a system, site planning, and the roles of the designer and contractor. Useful appendices cover climate-specific data, research data on building components, air leakage, environmental considerations, combustion safety, and a glossary of terms.

EEBA has published Builder's Guides for the cold, mixed-humid, hot-humid, and hot-dry/mixed-dry climates. Nearly all of the guides have gone through a second edition and in some cases a third. Seen by some as the most successful tool for guiding builders, designers, trade contractors, and product manufacturers to climate-specific systems thinking in the design and construction of homes, the guides contain both the language and the graphics required to move building science theory into application by both design and field professionals. In fact, each guide contains over 150 detailed illustrations showing the latest techniques to effectively implement energy and resource-efficient residential construction. Details from the guides can be found throughout the major trade publications, laminated and posted at job sites, and even translated into Spanish for field use.

Building Science Corporation, with support from Building America, also developed "Enclosures that Work," a series of detailed drawings showing elevation views of 18 sample houses in six U.S. climate zones. The drawings show roof, wall, and foundation assembly details that work together in the designated climate to provide a high-performance building enclosure. Building Science Corporation also did a series of 14 climate-specific house designs called Designs that Work. Both series are available on the Building Science Corporation website, along with the guides, and helped provide the inspiration for the EEBA "Houses that Work" training course, which has educated thousands of builders and contractors across the country on building science principles.

The Builder's Guides were also the inspiration for two series of climate-specific best practice guides developed by Building America with input from the research teams. The first series, published 2004-2006, helped builders achieve ENERGY STAR 2.0. The second round of guides (Baechler et al. 2009-12) aimed at HERS scores <70, with guidance for meeting the 2009 and 2012 International Energy Conservation Codes.



Building Science Corporation developed detailed schematics for enclosures that work in each climate zone.

"In 1997, we gave a pretty hearty thumbs-up to Joe Lstiburek's Builder's Guide: Cold Climates. It just gets better—that book has been updated and included in this new series from EEBA for the four climate zones covering North (and Central) America. Few building scientists are more qualified or more willing than Lstiburek to put into print the text and detailed illustrations needed for merging the worlds of building and science... Just about every builder and architect will appreciate the quality and number of schematics—for everything from wall assemblies to flashing, from foundation drainage to duct sealing."

Environmental Building News review of the 2000 edition of the ***Builder's Guide to Cold Climates***

"The new guide embodies much of what is now known about building homes that are affordable, durable, energy efficient, healthy, safe, comfortable and environmentally responsible." **EEBA**

EEBA GUIDE PUBLICATION DATES:

- Cold Climate: 1997, 2000, 2006
- Mixed Climate: 1997, 2000, 2005
- Hot-Humid Climates: 2005, 2010
- Hot-Dry/Mixed-Dry: 2004

REFERENCES

Lstiburek, J. 2000-10. *Builders Guide to Cold, Hot-Dry/Mixed-Dry, Hot-Humid, and Mixed Climate Climates*, the Energy & Environmental Building Alliance, www.eeba.org/bookstore/cat-Builders_Guides-4.aspx

Baechler, MB et al. 2009-12. *Builders Challenge Guide to 40% Whole-House Energy Savings in the Hot-Dry and Mixed Dry, Cold, Marine, Marine, Hot-Humid, and Mixed Humid Climates*, Volumes 9, 11, 12, 15, and 16, Prepared by Pacific Northwest National Laboratory for the U.S. Department of Energy, www.buildingamerica.gov.

EBN. 2001. "EEBA Builder's Guides: A 4-Volume Series for Cold, Mixed-Humid, Hot-Humid, and Hot-Dry & Mixed-Dry Climates," *Environmental Building News*, March 1, 2001. www.buildinggreen.com/auth/article.cfm/2001/3/1/EEBA-Builder-s-Guides-A-4-Volume-Series-for-Cold-Mixed-Humid-Hot-Humid-and-Hot-Dry-Mixed-Dry-Climates/