Jay H. Crandell, P.E.
ARES Consulting

Experience

Mr. Crandell has over 19 years of research, engineering, and construction experience. He has conducted and managed innovative building technology research efforts resulting in a number of advancements in building codes, design standards, and construction methods and materials. Mr. Crandell's consulting services have benefited U.S. Government agencies, local/state governments, trade and manufacturer associations, technical committees, builders, manufacturers, and owners. He has extensive knowledge and experience in the use and performance of a variety of materials, methods, and innovative technologies for construction and design (see examples below).

Research

- Scientific Building Performance Assessments (Hurricanes Katrina, Charley, Andrew, & Opal, Northridge Earthquake, and an F4 Tornado)
- Durability of Structures (scientific condition assessments)
- Weather- and Moisture-Resistance of Buildings (best practices)
- Testing and Design of Innovative and Conventional Building Systems
- Frost-Protected Shallow Foundations (validation research and standardization in the U.S.)
- Innovative Shear Wall Design and Construction Methods (wood, concrete, and steel)
- Structural Building Loads (wind, earthquake, gravity, and improved guidelines)
- Panelized Wall Systems (value engineering, testing, case studies, model design guidelines)
- Hazard and Risk/Safety Assessment (Probabilistic Analysis)
- Policy Development and Analysis (Natural Disasters)

Building Codes & Standards Development

- Residential Steel Framing Provisions, 1998 International Code Council
- Insulating Concrete Form Provisions, 2000 International Code Council
- Frost-Protected Shallow Foundation (FPSF) Provisions, CABO and ICC Codes
- Design and Construction Guide for FPSF, ASCE Standard 32-01 (secretary)
- Residential Wall Bracing & Related Provisions, 2000 International Code Council
- Evaluation of various structural and durability building code issues

Engineering & Expert Witness

- Design and Construction of Residential and Commercial Low-Rise Buildings
- Value Engineering of Framing and Foundations
- Residential Site and Storm Water Management Plans, including Low-Impact Development
- Timber Frames, Steel, Masonry, and Concrete Structures
- Retaining Walls, Bridges, Bulkheads, and Temporary Construction Supports
- Expert Witness & Mediator (Structural/Material/Installation/Building Science)
- Inspection and Assessment of EIFS-related Water Damage to Buildings
- Resolution of Drywall & Lumber Shrink-Swell Problems
- Building Condition and Performance Assessments (over 1,500 assessments)

Guides, Seminars, & Presentations

- IRC Wall Bracing Short Course (2hr to 8hr CEU)
- Wind/Seismic Design of Wood Frame Buildings (up to 2-day CEU Short Course)
- Conventional and Alternative Materials & Methods of Construction/Design
- Efficient Residential Structural Design, Shear Walls, and Building Loads
- Durability & Moisture Resistant Construction Practices
- Construction site work inspector training
- Frost Protected Shallow Foundation Design & Construction
- Building Performance, Disasters and Solutions

Professional Memberships & Activities

- Registered Professional Engineer (Maryland, Virginia, and Nebraska)
- International Code Council and ICC Ad Hoc Committee on Wall Bracing, Member
- American Society of Civil Engineers, Member
- American Wood Council, Wood Design Professional
- Steel Framing Alliance – Cold-Formed Steel Engineers Institute, Member
- ASCE 7 Standard Committee, Minimum Design Loads for Buildings and Other Structures
- ASCE 32 Standard, Design and Construction of Frost-Protected Shallow Foundations
- ASCE Special Project on Residential Building Loads 2001-2005, secretary
- National Earthquake Hazard Reduction Program, Wood Design Technical Subcommittee 1998-2003
- ASTM D07 Committee on Wood

Publications & Papers

A representative selection of publications and technical papers authored or co-authored by Mr. Crandell for government and private sector clients and for personal interest is as follows:

- *IRC Wall Bracing: A Guide for Builders, Designers, and Plan Reviewers (FSC, 2006)*
- *The Story Behind IRC Wall Bracing Provisions (WDF Journal, 2007)*
- *Moisture-Resistant Homes: A Best Practice Guide (HUD, 2006)*
- *Durability by Design: A Guide for Residential Builders and Designers (HUD, 2001)*
- *Residential Structural Design Guide, 2000 Edition (HUD, 2000)*
- *Assessment of Damage to Manufactured Homes Caused by Hurricane Charley (HUD, 2004)*
- *Assessment of Damage to Single Family Homes Caused by Hurricanes Andrew and Iniki (HUD, 1993)*
- *Assessment of Damage to Homes Caused by Hurricane Opal (NAHB-RC, 1996)*
- *Assessment of Damage to Homes Caused by the Northridge Earthquake (HUD, 1994)*
- *Housing Performance Assessment: La Plata, MD F4 Tornado (NAHB-RC, 2002)*
- *Policy Development in View of Uncertainty in Earthquake Hazard in New Madrid Region (GSA, 2007)*
- *A Methodology for Identifying, Discussing, and Analyzing the Costs and Benefits of Code Changes that Impact Housing (contributing author; HUD, 2007)*
- *Residential Building Loads: Review and Roadmap for Future Progress (ASCE, 2006)*
- *System-Based Design Principles for Affordable, Durable, and Disaster-Resistant Housing (FPS, 2004)*
- *Ice Dams: Traditional and Improved Practices for Roof Ventilation and Prevention of Ice Dams (IBHS, 2004)*
- *Housing Durability Assessment: A Pilot Study (HUD, 2002)*
- *Lessons from EIFS: Past, Present, and Future Challenges for Exterior Envelope Design (FPS, 2004)*
- *Structural Loads for One- and Two-Family Dwellings (HUD, 2001)*
- *Model Guidelines for Design, Fabrication, and Installation of Engineered Panelized Walls (HUD, 2001)*
- *Design Guide for Frost-Protected Shallow Foundations (HUD, 1996)*
- *Scientific Damage Assessment Methodology and Practical Applications (ASCE, 2005)*
- *Review of Structural Materials and Methods for Home Building in the United States: 1900 to 2000 (HUD,2000)*
- *Prescriptive Method for Residential Cold-Formed Steel Framing – 2nd Edition, 1997*
- *Prescriptive Method for Insulating Concrete Forms in Residential Construction – 2nd Edition, 2002*
- *Common Engineering Issues in Conventional Construction (FPS, 2003)*
- *New Madrid Seismic Zone: Overview of Earthquake Hazard and Magnitude Assessment (HUD, 2003)*
- *Proposed Model Land Development Standards, 1993 (technical assistance, NAHB-RC))*
- *The Practice of Low Impact Development, 2003 (technical reviewer, NAHB-RC)*

Employment History

Applied Science Associates, Fairfield, VA (Research Engineer) – 2 years
E.A. & J.O. Crandell, Inc. (Project Manager, Engineer, Estimator) – 2 years
NAHB Research Center, Inc. (Director, Structures & Materials Division) – 10 years
Applied Residential Engineering Services (Owner/Consulting Engineer) – 5 years

Education

Virginia Polytechnic Institute & State University
B.S. Agricultural Engineering, 1988 (Magna cum Laude)