



## Continuing Education Course Description

March 19, 2010

10:00 a.m. – 5:00 p.m.

(Lunch on Own)

### Part I: Resilient Site Planning and Foundations

**Instructor:** David Perkes, Gulf Coast Community Design Studio; American Institute of Architects

**Overview:** Resilient house design starts with an understanding of the site. Every site has natural forces of sun, wind and rain. Many Gulf Coast sites are in flood zones. A site should be planned to make the best use of natural forces for energy conservation and comfort and be planned to mitigate for the destructive forces of flood water, high winds and falling trees.

Resilient foundations should be designed to withstand hurricane wind loads and the force from flood water and debris and protect the house from flood water. The appropriate foundation type should be selected and designing for hurricane loads.

#### Major Topics:

- Site factors for any Gulf Coast site:
  - sun orientation, wind loads, storm water management, trees
- Erosion considerations for coastal sites
- Site factors for sites in flood zones
- Resilient landscape planning
- Foundation types and resilience considerations:
  - Slab on grade
  - Footings and stem walls – concrete and masonry
  - Piers
  - Deep foundations – piles and piers

**Learning Objectives:** At the completion of the course the participants should be able to locate and orient a house on a typical site and understand the requirements for building in flood zones. The participants should understand how to grade and landscape a site to mitigate storm water damage and storm debris. The participants should understand different foundation types, their relative costs and application, and be able to communicate with engineers, code officials, and builders about foundation performance.

## **Part II: Resilient Floor, Wall and Roof Framing**

**Instructor:** James Wheeler, Gulf Coast Community Design Studio

**Overview:** Resilient house design depends upon a strong structure. Even though wood frame construction is a very familiar building technique, there are many critical details that must be understood and used for the house to resist hurricane-force winds.

Wood framed floors, walls and roofs must be designed and built to withstand uplift and lateral loads that in many cases exceed the downward loads from gravity. Strapping, anchoring, and sheathing must work together to resist these wind forces.

### **Major Topics:**

- Anchoring to foundations.
- Floor, wall, and roof framing spans
- Uplift load path.
- Lateral resistance
- Bracing
- Sheer walls and blocking
- Roof and floor diaphragms
- Typical weak spots – gable ends, porches and overhangs

**Learning Objectives:** At the completion of the course the participants should be able to identify the components of an uplift load path and lateral structure for a typical wood framed house. The participants should understand the structural performance of sheer walls and be able to communicate installation and nailing specifications to builders and code officials. The participants should be aware of typical weak spots in wood frame construction and understand ways to strengthen the house framing.

## **Part III: Resilient Walls, Roofs and Fenestration**

**Instructor:** Michael Grote, Gulf Coast Community Design Studio

**Overview:** Resilient house design requires a strong and tight enclosure. The walls, roof, doors and windows must resist hurricane force winds, wind driven rain, and moisture that can enter the assembly and affect its durability and performance.

Because there are many suppliers and manufactures of the component parts of a house enclosure, all in the business of selling their products, it can be confusing to determine the relative strength, durability and energy performance of various products. A general understanding of the physics of enclosures and the performance requirements of resilient assemblies is useful to sort through the many choices.

### **Major Topics:**

- Physics of enclosures – moisture and heat
- Strength of wall component parts
- Installation of wall component parts
- Strength of roof component parts
- Installation of roof component parts
- Door and windows
- Hurricane shutters

**Learning Objectives:** At the completion of the course the participants should understand the basic physics of enclosures and be able to identify the component parts. The participants should understand the performance specifications for resilient wall and roof assemblies. The participants should understand the performance specifications and building code requirements for hurricane resistant doors and windows and be aware of the cost and installation requirements. The participants should understand the use and building code requirements of hurricane shutters.

## **Instructor Bios**

**David Perkes** is an Architect and Associate Professor for Mississippi State University. He is the founding director of the Gulf Coast Community Design Studio (GCCDS), a professional outreach program of the College of Architecture, Art + Design. The Design Studio was established soon after Hurricane Katrina and is providing planning and architectural design support to many Mississippi Gulf Coast communities and non-profit organizations. The Design Studio works in close partnership with the East Biloxi Coordination and Relief Center and has assisted in the renovation of hundreds of damaged homes and over sixty new house projects in East Biloxi and other low-income communities. The Biloxi house projects were awarded an Honor Citation from the Gulf States Region AIA in 2007. Before creating the Gulf Coast Community Design Studio, David was the director of the Jackson Community Design Center and taught in the School of Architecture's fifth year program in Jackson, Mississippi for seven years. Under his leadership the Jackson Community Design Center assisted many community organizations and received numerous national and local awards, including a Mississippi AIA Honor Award for the Boys and Girls Club Camp Pavilion. A sustainable Habitat for Humanity house built in Jackson was selected by the "Show Your Green" recognition program and featured on the AIA Design Advisor. David was selected as the designer from Mississippi in January 2004 issue of International Design in which a designer is featured from each state. David has a Master of Environmental Design degree from Yale School of Architecture, a Master of Architecture degree from the University of Utah, and a Bachelor of Science degree in Civil and Environmental Engineering from Utah State University. In 2004 David was awarded a Loeb Fellowship from the Harvard Graduate School of Design.

**James Wheeler** is an Intern Architect at the Gulf Coast Community Design Studio. He has a Masters of Architecture and Bachelors of Science in Architecture from the University of Minnesota's College of Design. He completed his thesis work regarding the re-use of abandoned commercial structures to engage the rebuilding process while studying in East Biloxi in association with the GCCDS. After completion of his thesis in June of 2007 he began working for the Design Studio in both Harrison and Hancock Counties with a focus on residential design and education.

**Mike Grote** is an Intern Architect at the Gulf Coast Community Design Studio. He has a Master of Building Construction, Summa Cum Laude, from Auburn University and a Bachelor of Architecture, Magna Cum Laude, from the University of Houston. In addition to his position at in the GCCDS, Mike is a consultant to Unabridged Architecture in Bay St Louis for construction administration. Before working in the GCCDS Mike was the program manager for Architecture for Humanity Biloxi Model Home program. From 2000 to 2005 Mike worked in Houston, Texas with several architectural firms including Patio Studio Design-Build.