



Mississippi State University



Flood-Proof Commercial and Fortified Residential Construction for Neighborhood-scale, Mixed Used Buildings

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Prevent, Protect, Respond, Recover

Homeland Security Challenge:

In most coastal communities, the requirements for flood-proof construction are unfamiliar to property owners and building officials. In addition, the construction requires exceptional attention to materials and details and will likely be more expensive than typical commercial construction. Research in advanced materials for commercial construction has the potential to bring new capabilities. However, the research will have limited relevance if it only investigates materials alone and does not study the entire wall assembly.

Research Project Solution:

The objective of the proposed research is to bring together the performance requirements, the technical requirements and the regulatory requirements of flood-proof construction for ground floor commercial space and fortified construction for residential space on upper levels. The performance requirements for flood-proof construction are that the building is water-tight with walls substantially impermeable to the passage of water and have the structural capacity of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. The performance requirements for fortified residential construction are that the structure, the building envelope and its windows and doors can resist wind loads 20 mph above that required by code and that the building construction resist impact loads from flying debris. In addition, the entire building must perform to resist mold formation.

National Implications:

The research on flood-proof commercial construction has relevance throughout the nation to provide tools and technical information to enable architects, developers and building/city officials to understand the requirements and to build buildings that will survive future floods and be able to quickly reopen following a disaster. The research and the resulting mixed-use building will lead the way for other projects and set a positive standard for more resilient buildings.



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