FEMA Building Science Training and Workshops for Hurricane Sandy

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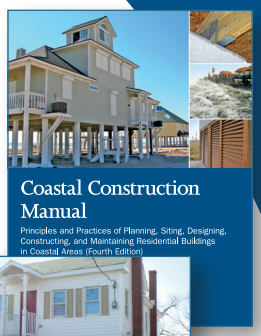
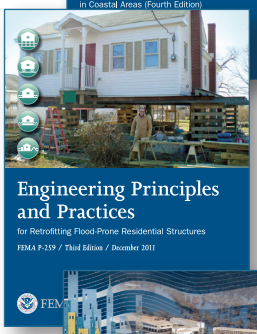
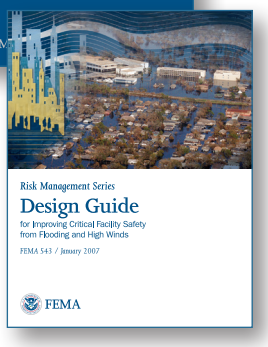
The Federal Emergency Management Agency (FEMA) Building Science Branch has developed numerous training courses and workshops to provide information to communities and homeowners on how to build stronger and minimize damage from natural disasters. A few FEMA training courses and workshops that may be useful as communities begin to rebuild after Hurricane Sandy are described below. Most of these courses use a published manual as their basis. For more information or to inquire about one of these training sessions, please contact us at FEMA-BuildingScienceHelp@fema.dhs.gov or 866-927-2104. The published manuals can be obtained from http://www.fema.gov/building-science.



***Residential Coastal Construction*, FEMA Publication P-55 (2011):** This is offered as both a 2-day and 4-day course. It trains participants on using *Coastal Construction Manual* (FEMA P-55), which is the leading reference for planning, designing, and constructing residential structures in various coastal environments. The target audience is engineers, architects, and building code officials. Floodplain managers, hazard mitigation professionals, planners, and building officials with building science knowledge are also encouraged to attend.



***Retrofitting Flood-Prone Residential Structures*, FEMA Publication P-259 (2012):** This 2-day technical training course on proper methods of retrofitting residential buildings is designed to provide engineering and economic guidance to architects, engineers, and local code enforcement officials on retrofitting existing one- to four-family residential structures situated in floodprone areas. The retrofitting measures presented are creative, practical, compliant with applicable floodplain regulations, and acceptable to most homeowners.

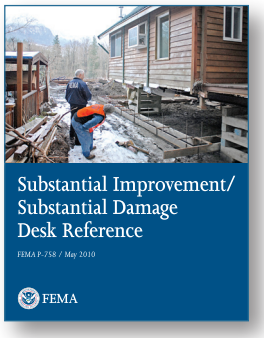


***Design Guide for Improving Critical Facility Safety from Flooding and High Winds: Providing Protection to People and Buildings*, FEMA Publication 543 (2007):** This 2-day course provides training on improving the design, construction, reconstruction, and rehabilitation of critical facilities in areas exposed to flooding and high winds. The target audience is architects and engineers knowledgeable in building science. The performance of critical facilities (e.g., hospitals, fire and police stations, schools, and emergency operations centers) during recent natural disasters has been impaired by storm-related damage, as documented by post-disaster reports. Critical facilities provide vital life-safety services to citizens in affected areas. The course teaches participants to support and implement design techniques and construction practices that will improve building performance and result in critical facilities remaining fully operational during and after flooding and high-wind events. The course includes a case study exercise to analyze the risk of a specific critical facility (elementary school, medical center, or fire station).

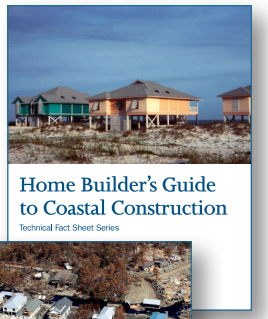
The Flood Provisions of the International Code Series and ASCE 24: This ½-day workshop presents basic information needed to understand the flood provisions of the International Code Series (I-Codes) and American Society of Civil Engineers (ASCE) 24, *Flood Resistant Design and Construction*. The importance of coordinating local floodplain management ordinances with building codes is emphasized. The 2012, 2009, 2006, and 2003 editions of the I-Codes contain provisions for flood resistance; participants will learn how the I-Code provisions are consistent with the National Flood Insurance Program (NFIP) regulations; understand the relationship between the I-Codes and ASCE 24; learn the distinctions between the I-Codes, ASCE 24, and the NFIP regulations; learn the importance of ensuring that local floodplain management ordinances are consistent with the I-Codes; and review a sample "companion" ordinance designed specifically to coordinate with the I-Codes.

FEMA Best Practices for Flood and Wind Mitigation: This is offered as either a ½-day or 1-day course. It discusses wind and flood mitigation techniques that equal or exceed I-Code requirements for both riverine and coastal areas. The course provides information on improving hazard resistance for retrofitting projects and new construction of residential buildings. It consolidates information from recently updated FEMA guidance publications, including: *Coastal Construction Manual* (FEMA P-55, 2011), *Engineering Principals and Practices for Retrofitting Flood-Prone Residential Structures* (FEMA P-259, 2012), *Wind Retrofit Guide* (FEMA P-804, 2010), and the *Flood Resistant Design CodeMaster* (S.K. Ghosh & Associates, 2011). The target audience is administrators, architects, code officials, contractors/builders, engineers, inspectors, and plan examiners.

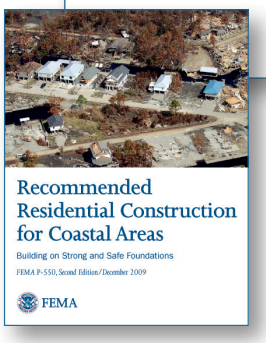
***Substantial Improvement/Substantial Damage Desk Reference*, FEMA Publication P-758 (2010):** This ½-day workshop focuses on using the *SI/SD Desk Reference* to administer the NFIP requirements in local floodplain management regulations and building codes. The workshop covers the basics of making SI/SD determinations. It also illustrates how FEMA P-758 is organized and the level of detail it contains on all aspects of the SI/SD determination requirements. There are many factors that local officials need to consider and several scenarios they may encounter while administering the SI/SD provisions as required by the NFIP and the I-Codes. Emphasis is placed on all aspects of the building that must be brought into compliance, and the flood zone and building occupancy are considered. The target audience for this workshop includes State and local floodplain managers, building officials, and plan reviewers.



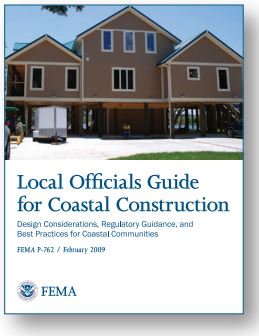
***Coastal Construction Workshop for Home Builders*:** This introductory ½-day training summarizes FEMA's series of 37 technical fact sheets contained in FEMA P-499, *Home Builder's Guide to Coastal Construction* (2010). The fact sheets provide guidance and recommendations concerning the construction of coastal residential buildings and present information aimed at improving the performance of buildings subject to flood and wind forces in coastal environments. The audience for this training is construction professionals in coastal areas.



***Introduction to Coastal Foundation Design and Construction for Design Professionals*, FEMA Publication P-550 (2009):** This is offered as either a ½-day or 1-day course on FEMA P-550 that discusses the unique loads that foundations must resist in coastal and near-coastal areas (flood, debris, breaking waves, etc.), addresses NFIP requirements, and discusses designing for high-wind events and for erosion and scour. The course describes the assumptions used in developing the FEMA P-550 foundation designs and how the designs can be customized by professionals to develop foundations for specific homes. The ½-day course can be combined with the ½-day FEMA P-499 course to create a 1-day course. The audience for this course is construction professionals design professionals in coastal areas.



***Local Officials Guide to Coastal Construction*, FEMA Publication P-762 (2009):** This 1-day course provides local officials with the information they need to effectively conduct their duties in coastal communities. The course is based primarily on FEMA P-762 and covers: (1) design considerations; (2) regulations, codes, and standards; (3) permitting and inspections; (4) load paths, coastal foundations, and structural systems; and (5) roof coverings and building envelopes, including windows, doors, and openings. The course describes the regulatory requirements that coastal officials must understand and enforce, including the connection between NFIP guidelines and applicable building codes and standards, as well as the permitting and inspection processes. In addition to the above-described essential information, this course also presents best practices gathered by FEMA from findings after recent hurricanes and coastal events. This course provides local officials with a thorough understanding of issues unique to coastal environments and will enhance their effectiveness in taking actions to make construction stronger and less vulnerable to coastal storms.



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