

Building a Foundation for the Renewal of Haiti: Recommendations for a Long-Term Building Strategy



Facilitated by the
National Institute of Building Sciences
with participation from across the
U.S. Building Community

Endorsing Organizations:

National Institute of Building Sciences
ASTM International
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AEC Science & Technology
Ecobuild America
The Design Partnership
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De.AI & Associates International
National Low Voltage Contractors
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Introduction

On January 12, 2010, a devastating earthquake struck Haiti. The damage and destruction caused by the earthquake was exacerbated by Haiti's dense population and lack of adequate construction codes. The devastation and loss of life has been unimaginable but the rebuilding period offers the profound opportunity to protect lives and communities from future disasters. The global outreach and the strength of the Haitian people provide an opportunity for renewal and rebirth of the nation.

Currently, a number of disaster relief organizations are supplying for the nation's short-term needs including provisions for food, healthcare and temporary shelter. However, it is important to recognize that many of these provisions supplied in a time of crisis, are meant to be temporary

solutions until a proper response can be implemented. While meeting the urgent needs of today, these short-term solutions will not provide the safe and secure buildings the Haitian people need to avoid future widespread destruction in the event of similar natural disasters. Unless a strong message, and the supporting programs to back it up, is delivered by the Haitian government, these temporary solutions will likely be in place for a period far longer than intended.

This white paper serves as the first step in identifying what is needed to assure a safe, secure, and prosperous long-term building program within Haiti. The organizations endorsing this document are prepared to provide the Haitian people with the necessary tools to achieve this prosperity.

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Transitioning to Permanent Solutions

During this transitional period, when the initial response to the disaster is underway, the Haitian government has an opportunity to develop and implement a robust strategy for the reconstruction or possible retrofit of the nation's buildings and infrastructure. Such a strategy requires the government to swiftly adopt building requirements to ensure that construction is safe and will withstand future disasters, establish a plan to regulate how reconstruction is to proceed, and identify which entities are responsible for enforcing newly established requirements. A strategy for reinforcing and retrofitting suitable surviving structures will assist in providing safe housing and will be critical to providing safe structures throughout the country (even in areas unaffected by the earthquake).

A clear timeline of implementation with appropriate milestones reassure the Haitian people as well as the organizations and entities providing construction services within the country. In the meantime donor organizations, relief organizations, the Haitian government, and the Interim Haiti Recovery Commission must coordinate to assure adequate codes and standards are being followed in the short-term. The plan also should identify the existing resources (including labor, expertise, materials, and funding) available within the country and where support from other countries and organizations will be necessary.

To ensure accountability and consistency, the government must identify a primary Ministry to oversee the rebuilding effort. This Ministry would be responsible for developing the necessary long-range plan for reconstruction, identifying and enforcing the requirements for construction of both public and private structures, and training

those involved in future construction. Consultation with other related Ministries will be necessary to assure that all expertise and resources are utilized in this crucial mission.

Once the Haitian government has identified the appropriate Ministry and supporting Ministries, representatives from the private sector including the construction trades, citizen groups, relief organizations, and academia should be engaged to support development of a construction program with strong citizen buy-in. The government also should establish a Haitian standards body to provide resident expertise in the development and adoption of applicable standards and to serve as a liaison point for identification and engagement in relevant standards activities in the region and internationally.

Immediately following the earthquake, temporary camps sprung up anywhere suitable land was available. While these camps met an immediate need, no comprehensive plan was in place to assure the safety of temporary housing in the face of the upcoming rain and hurricane season. Now, significant resources are going into either shoring up the at-risk camps or moving the residents to more suitable locations. As part of the long-term rebuilding strategy, the choices of where to develop are just as important as how the structures are constructed.

In identifying appropriate locations for development, numerous factors must be considered including the topography of the land and potential for impact of future hazards including flooding and hurricanes. The availability or future access to necessary infrastructure including electricity, water, transportation, healthcare, safety personnel, and education will assure that such areas have the

potential to thrive into the future. Access to jobs will strengthen the interest in settlement in these areas. Other values also must be considered in formulating future development patterns including whether such areas should be protected for environmental, cultural, or tourism reasons.

Overcoming questions of land ownership will be vital to implementation of a viable resettlement plan and long-term acceptance of building requirements.

Establishing the training necessary to ensure development of a capable workforce and a proficient enforcement team will be a necessary step in achieving national goals for reconstruction and can be an early opportunity to engage citizens. Training should be focused on three critical sectors – the labor force, the design community, and the government enforcement and administration personnel. Specific focus should be given to construction foremen who provide initial internal inspections and should understand the materials to be used.

Emphasis should be placed on creating sustainable, affordable education and training programs to foster independence within the Haiti building community and create long-term stability in the industry. A single national system of requirements will provide the Haitian people with consistent examples of how to properly construct buildings. Current donor requirements based on numerous codes and standards will lead to a myriad of practices and potential confusion in education, training, and enforcement.

The development of a 'compliance culture' is essential and can begin with children and schools. Schools can serve as a focal point for communities and they should be available for inspection by all construction personnel to demonstrate best practices. Children also can learn about the consequences of poor design and construction and how to improve buildings.

The availability and acceptability of materials should be identified in advance to assure that proposed solutions meet the needs of the Haitian people and satisfy the requirements established

by the government. If possible, particular focus should be given to the use of locally available materials and the potential to establish local industry to provide such materials and the resulting jobs. However, such materials must be durable to meet the rigors of new building requirements. Materials also must be culturally desirable and affordable. Training must be provided to assure that the selected materials are properly installed and maintained.

Establishing a Sustainable Building Program

A sustainable buildings program in Haiti will provide for the certainty and consistency necessary to stimulate rebuilding while assuring adequate control over the quality and safety of the structures. The establishment of codes and standards will be necessary to assure this certainty and consistency. Such codes and standards must be sufficiently thorough to account for the specific needs of the country and to recognize the diversity of structures to be built. Criteria should include focus on the following:

- Land use including access to necessary infrastructure and protection of environmental or cultural sites;
- Structural soundness in particular tailored to the hazards present in Haiti;
- Site development including necessary grading, soil type, and set backs from wetlands, floodplains, and potential rock and mudslides;
- Climate and hazards;
- Accessibility for all members of the population, particularly those with disabilities or injuries as a result of the earthquake;
- Materials used with consideration of local availability, durability, desirability, affordability, maintainability, and environmental impact;
- Maintainability of the building following construction, particularly if constructed by international organizations without a long-term presence in the area;
- Safety and health including proper sanitation, safe drinking water, protec-

tion of persons and goods, ventilation of cooking areas, mitigation of fire hazards, and protection from the elements;

- Efficient use of energy and water, which will become increasingly important in the future; and
- Resilience in the event of future disasters.

These criteria should be considered in the context of the building types and personnel constructing these buildings within the country. Initially, structures can be separated into three categories—residential, commercial, and critical.

- Residential – Structures providing shelter intended for the occupancy of a single family and extended families, including eating, cooking, and sanitation and sleeping facilities. This definition is not intended to include occupancies intended as hotels, motels, rooming houses, other occupancies containing facilities for multiple families or individuals, or facilities providing personal care for multiple individuals.
- Commercial – This category includes any enterprise that is engaged in the sale or offering of goods or services.
- Critical Structures – This category includes all buildings and structures used for healthcare, education, refuge or sanctuary following a hazardous event. Critical structures are also defined as any facility housing government operations, emergency response operations or equipment.

While identification and adoption of requirements is a necessary first step, it is not sufficient to ensure that buildings meet such requirements. A strong enforcement mechanism with sufficient penalties also is necessary. As indicated above, a Ministry must be clearly charged with establishing and then enforcing such requirements.

A transparent and professional system of enforcement requires a diversity of approaches including adequate oversight, incentives, reporting requirements, training, and penalties. The system can be administered at the Department level with technical sup-

port, centralized training, coordination, and oversight at the Ministry level. This locally administered process will allow a greater connection between the community and the regulating entity and tie the regulatory actions to improvement of the local area.

A system must be in place to engage the building owner and constructor from the beginning of the process. This will establish the precedent of government oversight throughout the project. Submission of plans for construction along with the need to obtain permits can provide this initial contact and assure compliance with provisions related to land use, site development, safety, and structural stability. Administrative fees associated with obtaining the necessary building permits can defray some of the costs associated with development and maintenance of the new government functions.

Establishing a permit requirement will serve as a method for identification of the construction going on within the country and inform the long-term development process. Once a permit is issued for the building, a schedule for inspection during the construction process is needed to assure that the actual construction of the building complies with the established requirements. Outside of the inspection process, a mechanism for citizen reporting of concerns should be established.

Beyond a quality control function for completed buildings, procedures must be in place to assure the materials used to construct the buildings are appropriate. Both importers and domestic manufacturers must be held accountable for the performance of their products. Such accountability can be established through a third-party certification system based on attributes identified by the Haitian government or credible systems from other countries. An inspection and certification of domestic facilities that produce building materials will be important to assure quality control.

Financing for all construction projects also must be predicated on following the established requirements. Such requirements should be included in any agreements with non-governmental organi-

zations and international corporations engaged in construction in the country. These agreements should include provisions ensuring construction techniques can be duplicated by the local community should repairs or modifications be necessary. This will provide an additional layer of oversight and accountability; however, the established permitting and inspection process must still be followed.

Government officers engaged in the approval of plans, issuance of permits, and inspections will need tools and training to be able to identify instances of noncompliance and other areas of potential concern. Sufficient safeguards to avoid corruption must be in place—establishment of enforcement as a respected career as identified below can be an initial step.

In support of the permitting and inspection process, sufficient penalties should be in place for non-compliance.

Ultimately, the goal of such penalties should be to assure buildings are constructed to meet the established requirements. Therefore, remedies should range from requiring mitigation to achieve compliance for minor violations to severe fines or jail time for willful or chronic violations. If licensure requirements are put in place, repeat offenders could lose their license and be barred from engagement in further construction.

Establishment of a professional construction workforce through licensure and certification can provide numerous benefits to the citizens of Haiti. A certain degree of self-policing will occur within the professions if recognition is given to individuals or companies that have accepted the relevant requirements and have undergone the necessary training. This also will provide a mechanism for citizens to identify qualified builders and designers. A society of professional designers and constructors will likely

form and support the development of training courses and identify curricula for vocational and university programs. Such a society also will work to protect the integrity of the professions it covers.

Because of the recent earthquake, citizens are looking for a credible solution to avoid future destruction and are concerned about the safety of buildings. If in this time of caution and concern, the population is made aware of and embraces the establishment of a professional building industry subject to government requirements, such requirements are likely to become part of the culture. Establishing both construction and enforcement as respected careers will attract the best and brightest Haitians to the industry and provide the homegrown talent and expertise to allow a resilient Haiti to prosper with a sustainable compliance culture.

Support from the U.S. Building Community

With a diversity of climates and myriad potential natural hazards, the United States' building community has had the opportunity to develop standards and codes and conduct research and development activities necessary to support a robust building industry. Given this strong history of advancement in the building sciences and the desire to share this knowledge with others, the United States is poised to assist the people of Haiti to assure that the loss of life and destruction of property in the recent earthquake is not repeated.

As part of this assistance, the U.S. building community in collaboration with further global expertise is developing a toolkit of best practices and resources through an open solicitation to all its members. The National Institute of Building Sciences is coordinating development of the toolkit. Participants

in the effort are identifying resources and best practices for review and potential adoption by the Haitian government. Such guidelines need to be simplified to ensure that residential structures are properly constructed. Education and training will also need to be made available to ensure newly established building requirements are properly implemented and enforced.

In recognition of the immediate opportunity and need to implement robust requirements and the training, enforcement, and processes that go along with such a program, the Haitian government should not be hampered by the need to gather and/or develop possible solutions. The toolkit will provide a single outlet to the knowledge developed by the diversity of participants in the U.S. and international construction community.

The National Institute of Building Sciences and participants in the toolkit effort are working with key representatives from the disaster relief non-governmental organization (NGO) community and the U.S. government to assure that the toolkit is being presented to appropriate officials and entities engaged in the long-term redevelopment of Haiti. Beyond access to the resources provided in the toolkit, numerous organizations have indicated an interest in providing further technical assistance, training and other actions.

While current efforts within Haiti can meet the immediate needs of today, a long-term strategy is necessary to assure that these current efforts do not become the permanent strategy in the face of future hazards.