

# “Building Momentum in Post-Recovery Haiti”

Jen Weaver, from TEDx Great Hills Women in Austin, Texas  
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*Haiti's 2010 earthquake caused the loss of life of 300,000 people, many of them crushed to death by buildings. An additional three million were rendered homeless. This was a complete failure of building design. Like many others, I watched the news with hapless frustration wondering how I could change the conversation.*

*Five years later, Haiti happened to enter back into my world. Friends in New York volunteered with the English in Mind Institute – a grassroots not-for-profit adult-education school and when they purchased a plot of land, I inquired would they like assistance planning, hoping that my own architectural journey could help support the journey the Haitians had set upon for themselves. My friends said yes, which is a dream come true for me – the opportunity to provide a well-conceived architecture to free the mind and community to produce new futures – the ability to facilitate momentum for a cause I believe in – hard-working students who are actively redefining their boundaries and their exchanges with the world.*



*I arrived in Haiti with a list of construction sites to visit, program requirements I had developed with the client via email, a long list of questions about material availability, labor force skills, and a thirst to see the vernacular architecture and site conditions.*



*I visited the classes of the current school. The rooms are 100 to 200 sf, the rooms are loud and there is no electricity. During the late afternoon, students cannot see the chalkboard as the sun angle lowers on the horizon. Brown masonite dangles on the masonry walls as a chalkboard. I was inspired by these ambitious students endurance to study.*



*We surveyed the vernacular – the architecture of Haitians. Haiti loves concrete block! There are historical reasons for this: A ferocious earthquake in 1770 left only wood buildings standing and French imperialists ordered all buildings to be constructed of wood, creating the tropical gingerbread style exhibited areas like Petionville and exemplified in the Hotel Oloffson.*



*The wood construction left the city vulnerable to a series of fires and a wild blaze in 1925 burned down most of Port-au-Prince culminating in a ban on wood construction. Rampant deforestation and depleted soil leave concrete block as the popular choice for construction, however problems existed in this system.*



*To my surprise, concrete, standard steel, formal general contractors and contemporary building materials are available! The importing process is difficult and there is only one steel manufacturer in Haiti. Why, if Haiti can build, did the earthquake have such devastating results?*



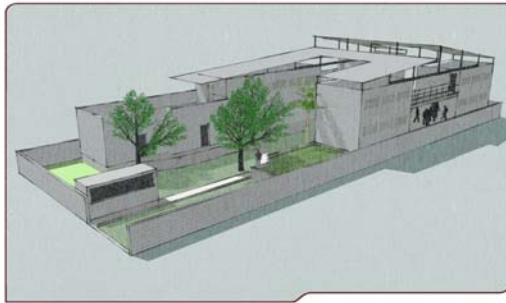
*Architects and engineers from around the world visited in the aftermath and determined the massive building failure was due to lack of building code, lack of any form of construction inspection process, non-standard and untested concrete block, non-standard steel reinforcement – rebar without ridges or standard strength, and multi-story construction without structural engineering.*

*Additionally, a tax exemption for unfinished buildings normalizes exposed steel reinforcement. This leads to corrosion and expansion up to seven times the initial volume of the steel at the interior of the masonry system, creating cracking and masonry fall-off at the exterior. The culmination was a failure of life-safety design.*



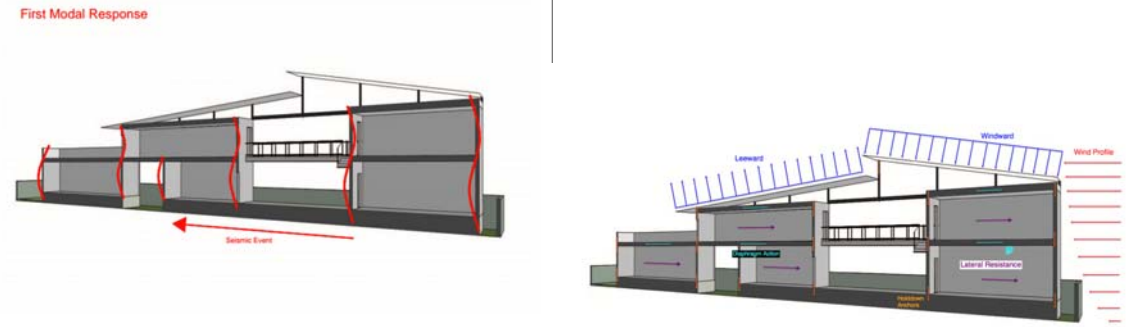
*With this in mind, I built a design team to address the question of re-building in Haiti. I have nine years of experience in building design, working on restoration and renovations ranging from brownstones to mid-rise buildings in New York and new construction residences in Texas. Dante Angelini, a partner at a local structural engineering firm agreed to visit the site with me to assess the soil conditions and perform a site analysis. Our core team grew to include Tom Quintero, another structural engineer and Loren Muirhead, a building environment designer with a background in public health.*

*We sat at the new plot of land and drew with our client. We provided a platform for the client to exercise their own agency and learned about their vision: their priorities, wishes for program adjacencies, how they would like their building to work. Together, we created a solution. The design features 6 classrooms, a 250-person assembly space, library, computer lab, administrative office, vegetable garden, restroom, dual guard shack and snack bar, two parking spaces and a security gate.*



*Compare a pre-manufactured, one-size-fits-all garment to a well-tailored suit based on detailed measurements and several fittings. The well-tailored suit celebrates the user, accentuates their attributes, functions as the user wishes and then becomes their favorite garment. That's why we are involving the client in every step of the design process, from the beginning, just like we would interact with our regular clients in the US.*

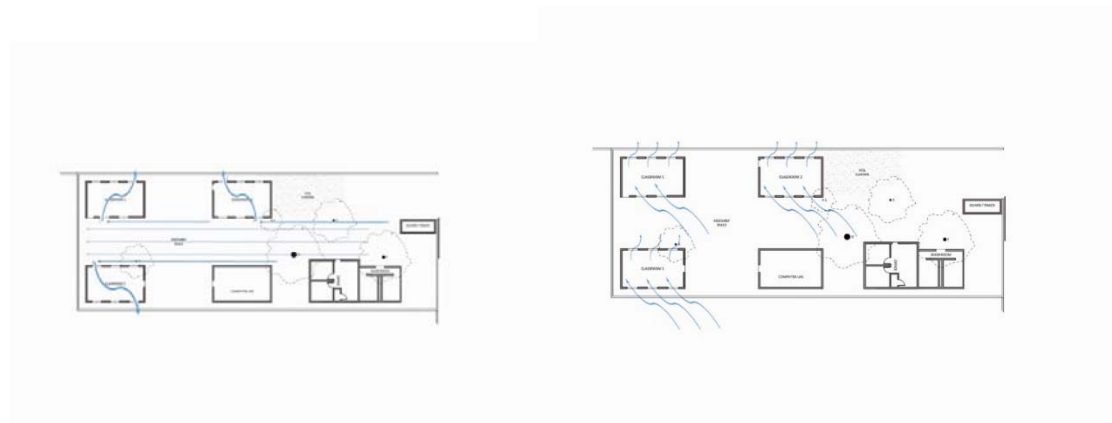
*Besides the standard school functions, our school must procure its own water, ventilate itself, treat and return its waste to the earth, cultivate its own energy and store power for future use, endure both seismic movement and hurricane-force winds, utilize locally available materials and provide a model garden to enable food to be grown in depleted earth. Basically, this building can withstand any event to act as a durable community center so that time can be focused on education and thereby freedom.*



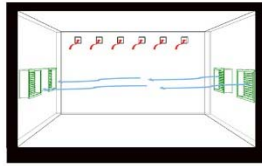
*Structurally, we designed the school to perform to a level of life-safety following a seismic event. The concrete block walls are designed to withstand the inertial forces generated from peak ground accelerations and ample vertical rebar will give the perimeter walls flexural strength. Anchorage elements such as roof fasteners are designed to withstand the uplift forces generated by hurricane or windstorm events.*



*We utilized our structural resources twice by using the classroom walls to support the roof of the assembly space. This second roof acts a shield for heat gain on the building while moving air through the building. The large second roof acts as the perfect home to PV panels; we are storing power to run the school for up to one week. Port-au-Prince still has rolling blackouts daily, and we have a computer lab and night classes that require power. Rainwater collects in tanks on top of the bathroom, a filter and pump system process the water before use by students in the restroom below.*



*The site plan was designed to facilitate natural ventilation. Each class has six openings, designed to equal 20% of the floor area. Adjustable wooden louvered opening that can adapt for wind direction changes – north or south strong to move air through the building. Smaller openings allow rising heat to escape. Microclimates between classroom blocks absorb sound travel from class to class and create cool vegetated spaces.*



*Although the school is primarily supported by foreign aid, a public assembly space used by the school and that the community may rent allows the school's self-sustaining ideas to reach beyond design and into business practice. This building can withstand any event to act as a durable community center so that time can be focused on education and thereby freedom.*



*On my last day in Haiti for site assessment, I visited a public beach and a soccer play-off for a league that celebrates the recovery of mobility impairment. Although many folks had lost limbs in the earthquake, they played soccer before me with tenacity and strength. Haiti has been crushed by centuries of imperialism and devastating natural disasters like the earthquake responsible for bringing us there. But Haitians desire to build a new future. With their desire for freedom and our knowledge of safe building practices, we are working together to bring about a brighter future, building a sustainable place to learn that will enhance, not replace, the strength of their community.*



*By working with a specific client, creating a site-specific, situation-specific solution, and discussing safe design methods we have acquired from our professional practices, we can change the dialog in approaching the reconstruction process. Bringing momentum through design isn't about initiating a new agenda for change, but it's about sharing safe building practices to propel projects for freedom.*

*Thank you.*