

WHY MASONRY?

CASE
STUDY



ECOLE NATIONAL JACOB MARTIN HENRIQUEZ – JACMEL, HAITI



Miyamoto – Teaming to Rebuild
Miyamoto, a Structural Engineering firm based in Sacramento, was on site in Haiti immediately after the earthquake and collaborated with other local architects and engineers to provide a new school design for the Ecole National Jacob Martin Henriquez, pro-bono. Here, Bill Schraner, a mason from San Diego, shares his expertise in Jacmel.

On January 12, 2010 the island nation of Haiti was rocked by a massive earthquake that will forever change the way they build. More than 100,000 buildings were severely damaged and another 100,000 collapsed. The new Ecole National Jacob Martin Henriquez school that was nearing completion in Jacmel, Haiti was one of the buildings destroyed by the earthquake. This northern coastal town had a dilapidated school facility in the downtown area which was in the process of being replaced by a new facility along the coast. The earthquake that day brought an end to this replacement school as all three buildings completely collapsed.

A process started shortly after the earthquake to find a replacement for this facility. An Architectural company from Los Angeles and Miyamoto, an Earthquake and Structural Engineering firm based in Sacramento, two firms already working to rebuild after the earthquake, collaborated to provide a new school design, pro-bono. The new facilities would be built with local labor, materials and support and would be designed and built to withstand the hurricane and earthquake forces necessary. As Haiti has limited resources, concrete masonry and concrete are currently the main building materials on the island. The vulnerabilities of these materials were evident following the earthquake, as building codes and construction quality control were seriously lacking in the construction industry. In order



to meet a more rigorous standard for school construction, similar to building standards in California, it was determined that many changes would need to occur with the construction materials and practices in Haiti.

PROJECT GOALS

The project goals were to provide a school facility which would have the strength and ductility of reinforced concrete masonry. In order for this to occur, the normal three-cell blocks made in Haiti would need to be changed to two-cell blocks so that the reinforcing and grout could be placed in the walls. This construction practice would be new to Haiti. “The school was designed to be a school before it opened” said Michael King, Structural Engineer of Miyamoto International. “In the coming months of construction, Operation USA will bring an American Mason to Haiti to spend over a month on site training all available Haitian construction workers on Reinforced Masonry Construction techniques.” This would prove to be one of the greatest assets for the beginning of the facility as it changed the face of construction projects in the area. It was noted that reinforced masonry techniques could be found in adjacent construction projects and many of these tradesmen came to the site to seek advice and knowledge.



ASPECTS OF THE NEW DESIGN

Larger size – The school destroyed by the earthquake was 3 classrooms, administration and restrooms. The new facility would include 15 classrooms, a library, computer center, administration and restroom/shower facilities.

Construction cost – In order to keep costs down it was decided to use construction materials locally available, without the need for many imports. The locally available materials would also be manufactured to new specifications and delivered locally.



Aerial View of Completed School



Community use –

Designed use of the site with playgrounds, soccer pitch, library, computer rooms and other facilities that could be used by the community as a whole.

Engineered for longevity –

High strength and ductility necessary to meet the

rigorous standards for essential facilities per the 2010 California Building Code. The structural design was meant to maintain the facility for known earthquake and hurricane force loading.

Building by example – Provide a community facility that would be known as the benchmark for design and construction for others in the area to follow.

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*Michael King, Structural Engineer
Miyamoto International*

FEATURES / BENEFITS / ENHANCEMENTS

- A larger size that will incorporate many more students.
- This facility is a training platform for Haitian masons and contractors on better construction practices.
- As an essential facility, this school can be used as an emergency shelter during severe weather or post disaster.

Additional Photos

