Indoor – Outdoor
Site-responsive school, Jacmel, Haiti

Image 7: View of the school from the green patio. Image 8: Different moments of the building related to the surroundings in the project.

Image 3: Situation of the school; Diagrams of the sustainable solution used – solutions. The design takes advantage of the rocky technique used in Haiti, improved by a number of anti-seismic structures, with 2-3 cm expansion joints between foundations, which prevent structural damage during an earthquake. To simplify the execution, the design is based on a C-form, repetitious modules, based on a regular grid, but changing the position following the function of the interior space, creating places of different proportions, levels of privacy sunlight or shadow. It allows a local partner company to quickly learn the technique and pursue production fluently to the slope. They are grouped in nine independent, self-sufficient water system designed to reuse rainwater. One of the first sketches of the project.

Further authors
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Acknowledgement
Client Fundacja Polska-Haiti
Project group Architecture, building and civil engineering
Flanned start January 2014

Sustainability concept
Anti-seismic construction and local materials: The building is composed of concrete, the most popular local technique used in Haiti, improvised by a number of anti-seismic techniques. The design takes advantage of the rocky surface of the site and proposes reinforced slabs, divided in smaller parts and situated on different levels, to adapt efficiently to the slope. They are grouped in nine independent, self-sufficient structures, with 2-3 cm expansion joints between foundations, which prevent structural damage during an earthquake. To simplify the execution, the design is based on a C-form, repetitious modules, based on a regular grid, but changing the position following the function of the interior space, creating places of different proportions, levels of privacy sunlight or shadow. It allows a local partner company to quickly learn the technique and pursue construction in subsequent stages.

100% safety and 100% use of the floor. The open floor of the building and wide openings in the façade optimize the escape route and allow evacuation in the shortest possible time from every part of the school. Moreover, the open-plan character allows different classrooms to be connected, so that during class sessions the interior corridor literally disappears. Self-sufficient water system: To benefit from the huge amount of heavy rain during the wet season, there is a self-sufficient water system designed to reuse rainwater. The heights of the roofs are designed in a way so the water is transported from one roof to another, to two big tanks on opposite sides of the building. A second type of tank is situated on the roofs above the toilets and kitchen. To heat the water and run it to the pipes using gravity a low pump system is used to pump filtered water from the big tanks to the small ones. A system of drainage utilizes wastewater from a domestic wastewater treatment plant to irrigate the green path on the eastern side of the school.

Natural lighting and ventilation: The heights of the rooms are from 3.2 to 5.2 m depending on the use to accumulate warm air in the upper voids. At the same time, the open character of the building provides natural lighting, and ventilation 24 hours per day.

Acquisition of solar energy: The project takes advantage of 8 extremely sunny months in the Haitian climate, and solar panels have been fixed on the roof. Also included in the electrical project are generators which provide energy to the building during a power failure.

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The project for a school in Jacmel, Haiti, for 400 students takes advantage of the topography of the site, introducing nontraditional concrete slab-on-different levels that adapt to the slope. Grouped as independent units with three walls forming a C-shaped space, the repetitive modules are based on a regular grid, changing position according to programmatic requirements. This results in places of different proportions, orientation, degrees of privacy and intensity of sunlight or shade. The construction technique is simple and can be pursued in stages, and equipped to enhance the impact of seismic activity. To benefit from the enormous amount of rain during wet seasons, roofs are designed to collect rainwater in tanks, and a drainage system uses weathertex for landscape irrigation. The project creates a child-friendly environment, a place full of mysteries and surprises that stimulates imagination and creativity.

A range of aspects impressed the jury: First, the project’s aim to explore alternative educational models was greatly valued, particularly the provision of indoor as well as outdoor teaching activities and manifold classroom configurations for different teaching methods. Second, the notion of the school as a kind of city with classroom units forming ”neighborhood clusters” was considered an excellent contribution to the design of educational facilities. Third, the jury applauded the type of development cooperation proposed by a foreign actor, Fundacja Polska-Haiti, in a country needing support a collaboration of equal partners. All in all, the project offers an important contribution for discourses on sustainability, going beyond standard formulas.