Reconstruction, Recyclability & Memory

Resilient Schools

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In the list of historical precedents that deal with post-disaster scenarios, it is common to find projects that propose an immediate solution to the problems at hand. Those projects generally tackle the pressing demand for housing that people require, a basic-needs infrastructure, and secure the well-being of the citizens of the affected regions.

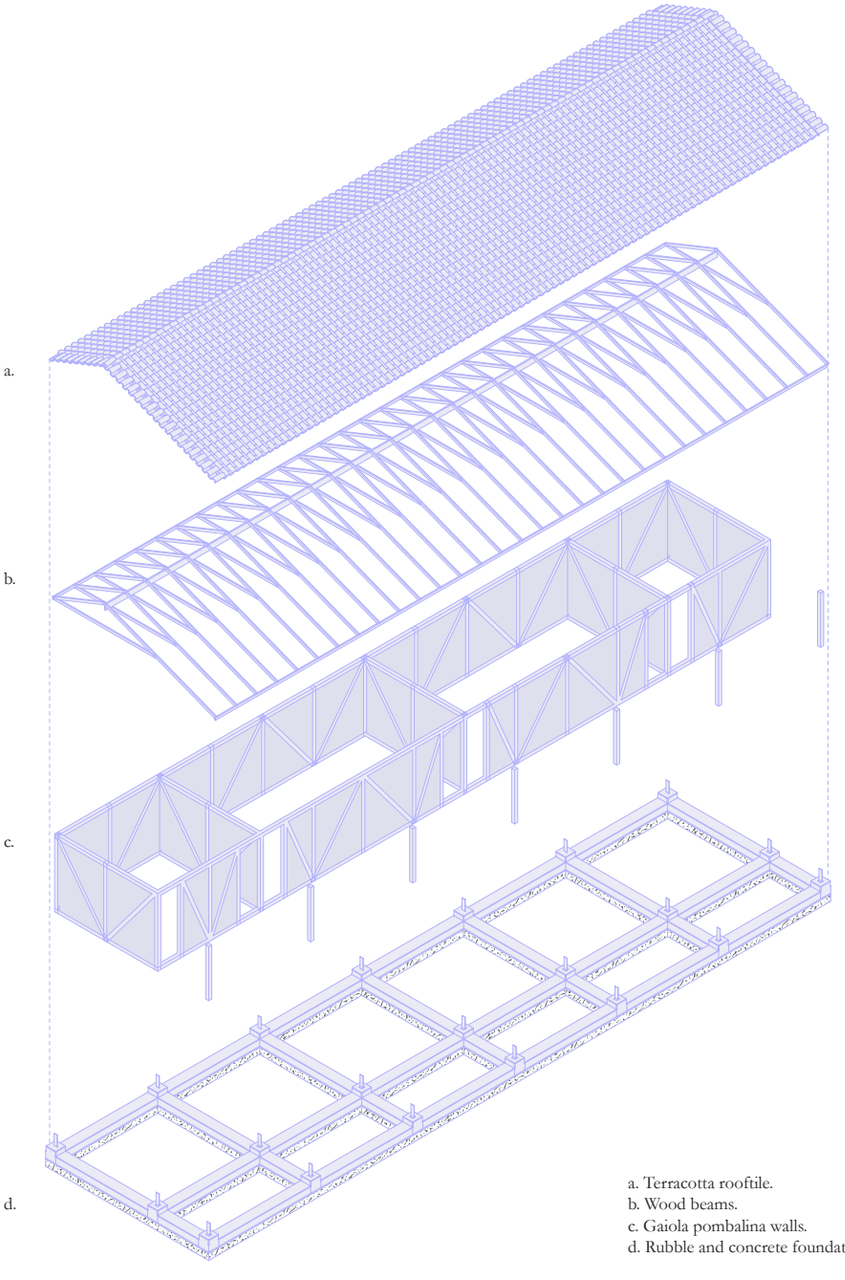
These solutions, while well intentioned, often require external forms of knowledge. This input of external capital, resources and intelligence diminishes with time, and the external agents that can operate and are responsible for securing a degree of normalcy become increasingly less pressed to act. For a project to be successful in truly securing the needs of affected people it has to address all the possible capacities that it can react to.

Since the last series of devastating earthquakes that impacted the region of the Isthmus in Oaxaca, Mexico, back in 2017, many of the affected buildings have started their process of reconstruction, however the solutions offered are often times one-dimensional. One example of this is the reconstruction of the elementary school "Margarita Maza de Juárez" in Asunción Ixtaltepec.

For our project we have proposed an alternative intervention in the premises of the school. The project would have to comply with the following potentials in order to address the multidimensional necessities that the region is facing. The first of these potentials is the need for public infrastructure. This reconstruction has to provide the standardized spaces that a public school has to comply with and, at the same time, imagine new ways of building in the region with unconventional materials.

The material chosen for the reconstruction project is now ubiquitous in the aftermath of the 2017 earthquakes. The use of rubble as a reconstruction material is interesting in the context of the Isthmus because of its abundance and is inexpensive considering the only real cost it poses is in its processing. By using the remnants of former buildings and vernacular materials, the architecture attempts to preserve the memory and identity of the place.

The second potential that we outline is the building's capacity to teach to the present



a. Terracotta rooftile.
b. Wood beams.
c. Gaiola pombalina walls.
d. Rubble and concrete foundations

Axonometric view of gaiola pombalina construction system

Margarita Maza de Juárez school before the 2017 earthquakes Source: Google maps

Margarita Maza de Juárez school post-eartquake reconstruction

public new ways of construction. Using public infrastructure to demonstrate the potential applications of reusing rubble as a building material helps to erase the stigmas around it and expands the building knowledge of local agents.

This is done by carrying out applied training programs during the construction of the structures. By employing local labor, the program can teach locals about the processing and classification of the rubble and about the necessary structural parameters that the Isthmus requires. The recycled brick will enter the construction site from the beginning as we propose a rubble and concrete foundation to anchor the building.

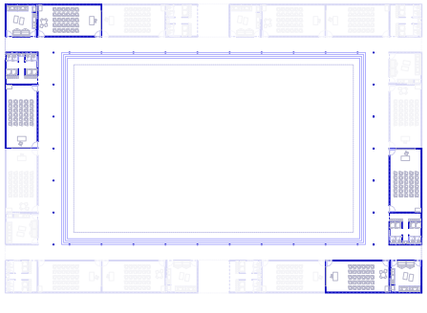
Using Portugal's reconstruction methods as a precedent, this project proposes the "gaiola pombalina" as a way to re-utilize rubble in the reconstruction of infrastructure and homes. This system stabilizes the brick structure allowing for the safe use of rubble in the cavities that it creates. The roof is composed of a wood structure that sits on top of the gaiola pombalina walls, ultimately weather-proofed by terra-cotta tiles which are an important part of vernacular construction in Oaxaca.

The third of these potentials is that the building demonstrate a degree of risk preparedness. We need to design public buildings that are prepared for future disaster scenarios. One of the main problems that post-disaster projects should address is to serve as safe havens during another instance of a natural disaster.

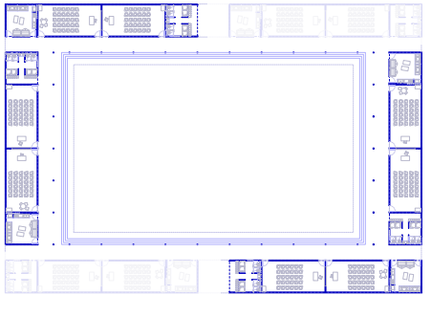
By providing the school with an initial surplus of bathroom and cooking infrastructure, the building can double as a shelter for displaced families in the event of another earthquake. By locating the bathroom and kitchens between two classrooms they can serve two displaced families that can share these amenities while at the same time finding local

support. The classrooms can in such instance be equipped with temporary partitions that can provide a large family with different spaces of accommodation and attempt to provide them with some degree of privacy.

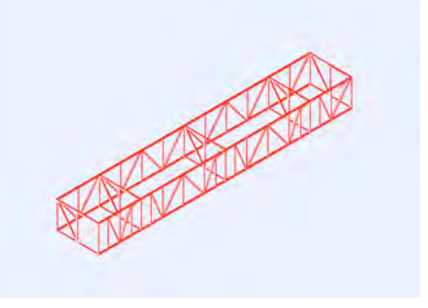
The project was conceived as a three phase construction. These phases can instruct different local laborers on the development of this new system. At the end of the three phases the project constitutes itself in the form of a courtyard building that can provide both the necessary exterior space that the children of the school require and a new space for community organizing and risk response.



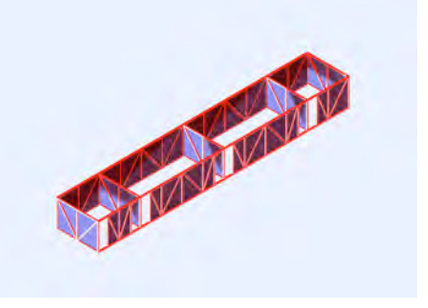
Phase 1 floorplan



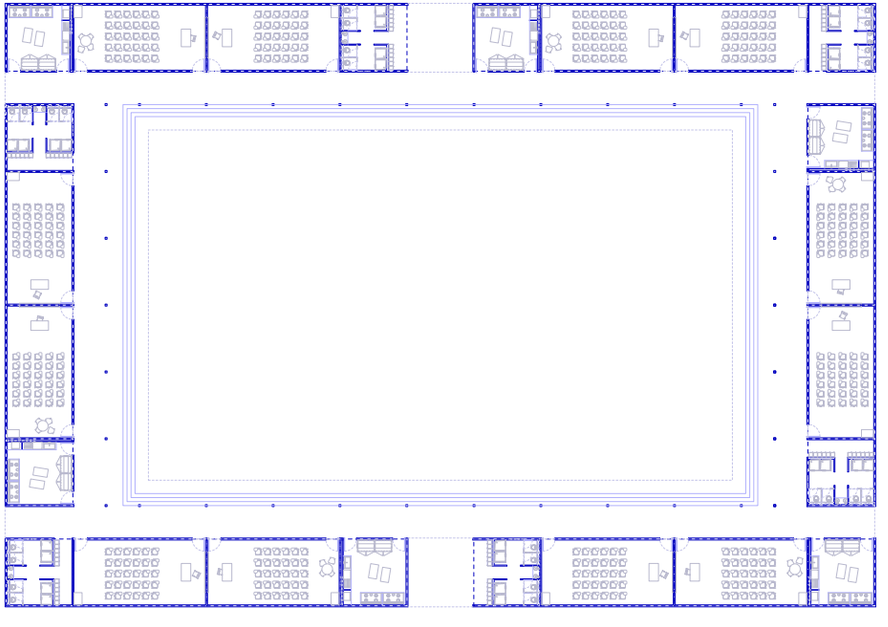
Phase 2 floorplan



Wood frame system



Rubble walls system



Phase 3 floorplan