

Pre-Cast Tectonics: A Material Approach to “Integrated Building Design Studio”

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Arguably the goal of a ‘comprehensive’ studio is for students to develop and prove the capacity to integrate different technical and possibly legal and financial considerations into their architectural projects. In this context it is most important for the students to learn how to maintain a clear conceptual strategy that can serve as a ‘*pièce de résistance*’ against the multitude of different pressures, providing a larger framework for decisions. In the case of the here presented studio work this ‘*pièce de résistance*’ was based on the design potentials of pre-cast concrete construction. Tectonic concerns with a focus on structure, construction and materiality were foregrounded. Meanwhile, other aspects such as program and building form were intentionally pushed to the background.

To pedagogically enforce this strategy, the students were given very specific parameters for the typology of the building as well as the methods of construction, focusing on speculations on the potential of concrete prefabrication.

Concrete is one of the most used materials in today’s construction around the globe. Although the use of this material dates back to ancient Rome, it is also a material that has time and time again been adopted and transformed by new technological innovations. Over the last decades, there were massive improvements in many aspects of concrete technology. New mixtures and improvements in reinforcement allow among other advancements for concrete that is stronger, more durable, highly insulating or even ductile. Ultra high performance (UHPC) allows for applications that are thinner and span further than “traditional” concrete mixtures. Highly insulating concrete allows for one with walls, where otherwise a multitude of constructive layers would be needed and the reduction of the cement content through the replacement of cement with industrial by-products, such as fly-ash allow for a sizable reduction of the embodied energy. The development of new concrete technology has, therefore, been an important aspect of the advancements in the construction and material industry.

As a point of departure, the studio explored, in an initial exercise, the relationship between positive and negative, form and form-work, as well as part to whole relationships through the development of a fragment of a possible larger system. The exercise forms an initial spatial and constructive study that encompasses abstract principles, while introducing the students through the act of making to the basic fabrication

questions that arise when working with (pre)-cast systems; exploring the concrete as both, a material that can take on nearly any form, as well as its potential to be cast into building components that aggregate into a larger system.

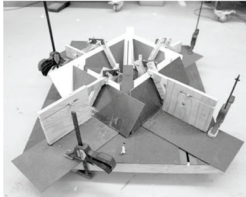
The results of the exercise were then used by the students to develop a building strategy that is constructed ‘from the inside out’, contextualizing the program and the site through the constructive system and formal language that emerged from the translation of their initial studies into a more robust architectural project.

PRE - CAST Tectonics
A Material Approach to 'Integrated Building Design Studio'

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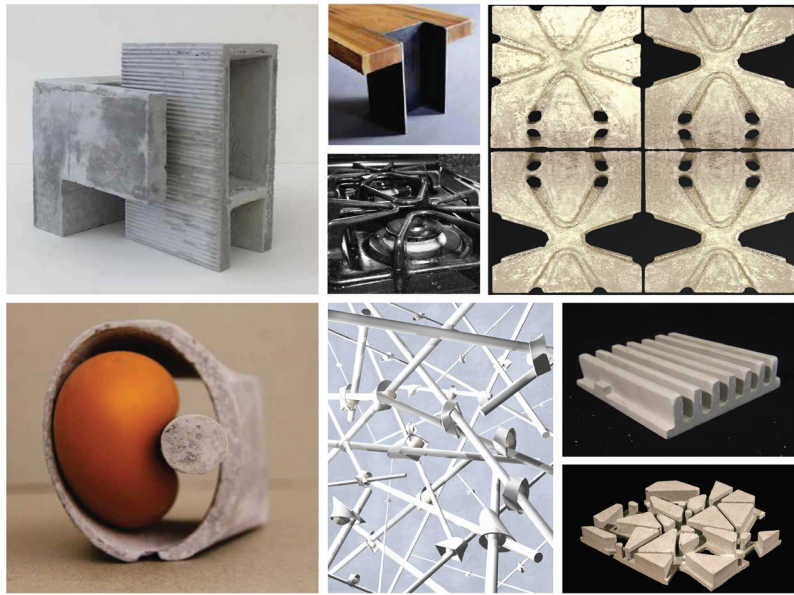


form work exploration

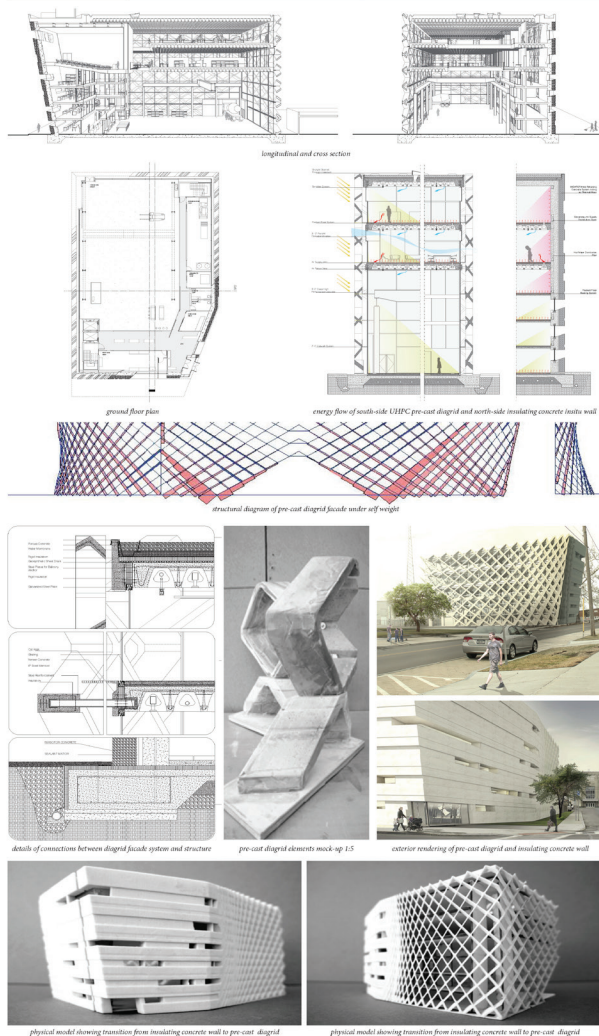
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INITIAL EXERCISE - STUDENT WORK SAMPLES



FINAL PROJECT - STUDENT WORK SAMPLE I, CONCRETE RESEARCH FACILITY



FINAL PROJECT - STUDENT WORK SAMPLE II, DANCE SCHOOL GARAGE ADDITION

