New Jersey School of Architecture– Spring 2025

UNDERGRADUATE OPTIONS STUDIOS

Arch 463/464 – Options Studio

Quarry City

Architecture and Urban Design with Natural Stone

CLASS TIME: **Monday, Thursday, noon to 5:20PM**

INSTRUCTOR: **Earl Jackson**

The earliest form of human shelter was the cave. Since the dawn of time mankind has been working to shape our architecture and cities with natural stone. While the material is one of the most sustainable building materials on earth, the quarrying process leaves the earth changed forever. As quarries reach the end of their productive capacities, policies and plans outline requirements and strategies to see them into their next life. While many are slated to return to nature, this studio proposes that there are opportunities for development at these majestic sites, and that the investment in infrastructure to operate the quarry in power, water, and transportation need not be discarded but rather reinvented and used to continue to fuel the local cultures and economies that the quarries supported.

This studio will work to integrate History, Theory, Technology, Urban Design, Landscape, Architecture, and the principles of Sustainable Development and Preservation. This broad range of issues to be addressed in class will allow students to explore and develop an approach to the design of their projects at a range of scales. The focus of our work will be an environmental restoration and adaptive re-use of a quarry nearing the end of its production capacity. The studio will address issues of post-industrial landscapes, topography, infrastructural capacities for a modern-day hill town, and materiality as it relates to the role of natural stone in art and architecture in the 21st Century.

Students will be expected to plan for the time and expense to travel for class during the last week of January and/or during spring break of 2025 for TISE in Las Vegas. Other trips may be part of the studio.

Arch 463/464 – Options Studio

Placemaking with Performative Canopies and Digital Tools

CLASS TIME: **Monday, Thursday, noon to 5:20PM**

INSTRUCTOR: **Sunny Li**

This course complements "Summer Option Studio: From Concept to Application through Coding" by focusing on placemaking through the design of performative canopies using advanced digital tools like Grasshopper (i.e. Rhino.Inside.Revit, Climate Studio) and Dynamo. Students will address sustainability, urban resilience, and community partnerships while creating a canopy design for the historic train shed at Liberty State Park. The course emphasizes applying digital tools to physical design challenges, incorporating environmental and structural analysis for real-world revitalization projects. The main learning outcomes include gaining proficiency in digital tools that leading practices use, applying performance-drive design, sharpening technical detailing skill, and engaging in community-centered placemaking.

The course offers step-by-step support for students of all digital skill levels, requiring no prior knowledge of Grasshopper, coding, or advanced building assemblies—though a commitment to learning digital tools is beneficial. Organized into four phases, the course guides students through the design and technical detailing of a performative canopy.

In Phase 1, students explore iconic canopy designs like the King's Cross, Moynihan Train hall, Santa Caterina Market and the experimental works of ICD/ITKE in Stuttgart, studying geometric and structural principles as a foundation. Phase 2 focuses on structural design and materiality, where students develop parametric design iterations using tools like Lunchbox and Kangaroo, resulting in physical models that explore structural and spatial configurations. Phase 3 emphasizes environmental performance, with students designing skins that incorporate solar, daylighting, and environmental analysis using tools like Ladybug and Honeybee. In the final phase, students integrate drainage, lighting, ventilation, and safety systems into a cohesive design, producing detailed drawings and models, along with an animation that captures the canopy's evolution through structural and environmental analysis.

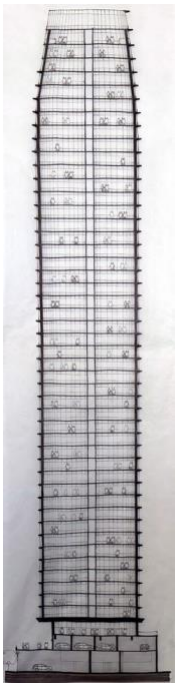
References of the images (the order of the images goes from top to bottom and then left to right)
1. The project site - the abandoned train shed of Central New Jersey Railroad Terminal at Liberty State Park, Location: https://maps.app.goo.gl/u517FXzFbRqvhhZb7
2. The Port of New York Authority, (1935), "Railroad Terminal Map of New York Harbor". Photo taken 16 Jun 2024.
3. Archdaily (2012) "King's Cross Station / John McAslan + Partners, Accessed 30 Oct 2024. https://www.archdaily.com/219082/kings-cross-station-john-mcaslan-partners
4. Archdaily (2021) "Moynihan Train Hall / SOM", Accessed 30 Oct 2024. https://www.archdaily.com/954941/moynihan-train-hall-som
5. Barcelona Architecture Walks (2020) "Who is Enric Miralles", Accessed 30 Oct 2024. https://barcelonarchitecturewalks.com/who-is-enric-miralles/
6. Harlbe (2016) "Biomimetic pavilion", Accessed 30 Oct 2024. https://www.domusweb.it/en/news/2016/05/10/icd_itke_research_pavilion.html

Arch 463/464 – Options Studio

Skyscrapers in Context

CLASS TIME: **Monday, Thursday, noon to 5:20PM**

INSTRUCTOR: **Vincent Marchetto, AIA**



Description:

A constant struggle in urban development is preserving the past while building for the future. This studio will investigate the challenges of creating new high-rise developments in and among sensitive historic buildings. The project will be completed in conversation with Jersey City Planning and the Journal Square Community Association. This will allow students to understand development from the perspective of the architect, the developer, the city, and the community. Sustainable high-rise design will be discussed and be required to be integrated into the final design. Students would learn grasshopper scripting to construct the high-rise curtain wall facades.

Project Sites:

The Jersey Journal Building

The building through which Journal Square gets its name. This site has zoning for a 70+ story tower with requirements to save the façade and sign of the old building.

The 6th Street Embankment

An abandoned elevated freight line is being converted into a High-line style park in downtown Jersey City. The first block has zoning for a 50-story tower with requirements to save the stone block walls at the base.

The Jersey City H&M Powerhouse

An abandoned powerhouse in the heart of downtown Jersey City. This site has zoning for a 60-story tower with an arts and entertainment component in the existing powerhouse. The existing façades are required to be saved.

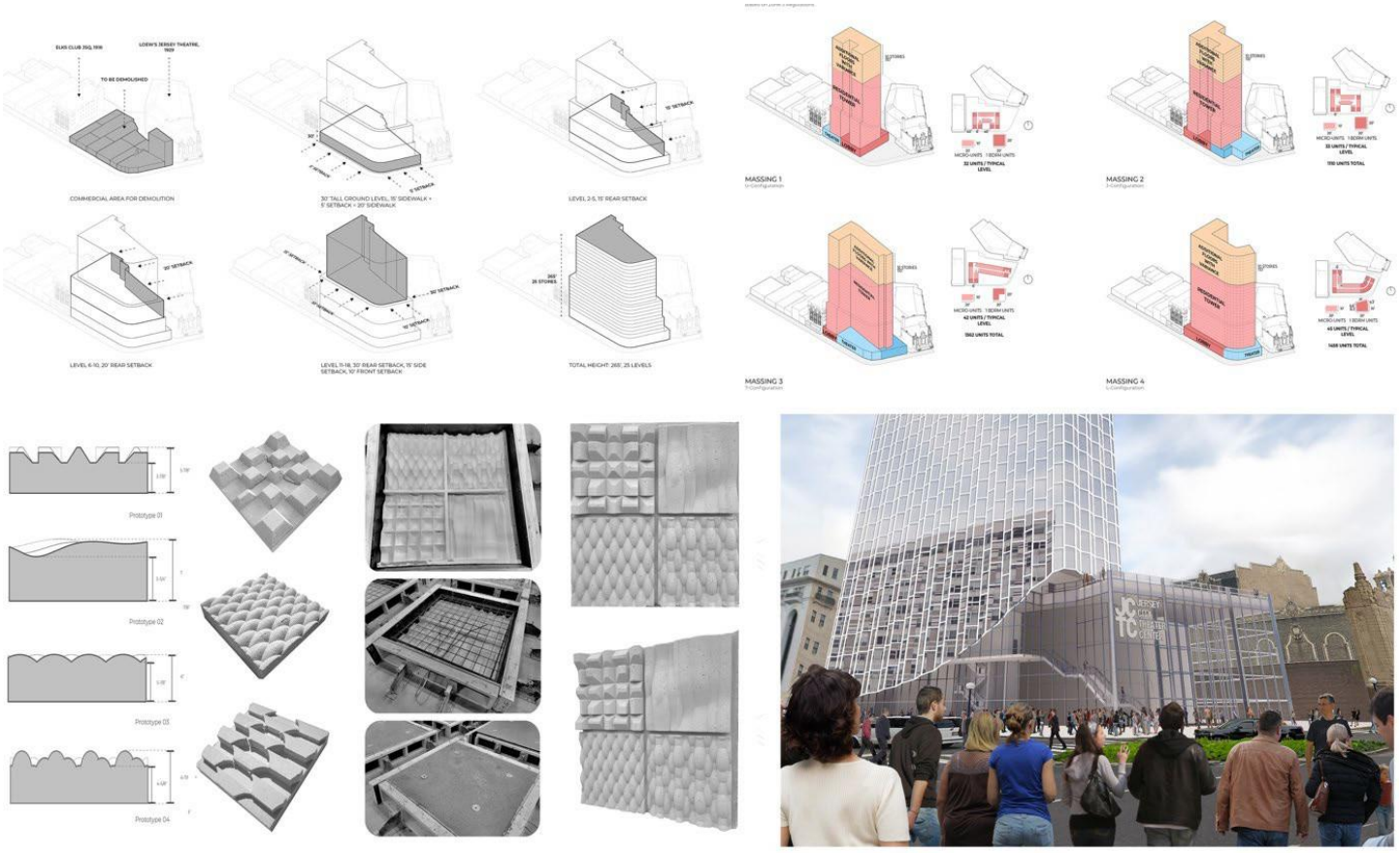
Arch 463/464 – Options Studio

PCI RESEARCH STUDIO

Precast Concrete Construction: Designing for Community and Housing in Urban Density

CLASS TIME: **Monday, Thursday, noon to 5:20PM**

INSTRUCTOR: **Gernot Riether**



With twice as much concrete utilized in global construction as all other materials combined. This studio explores the advantages and challenges of precast concrete construction, investigating innovative strategies for mass customization, as well as improving construction and assembly processes. Partnering with the Precast Concrete Institute (**PCI**) and the Concrete Industry Management (**CIM**) Program, students will gain firsthand knowledge of current practices, identify industry challenges, and propose solutions, particularly in relation to climate action.

The studio explores the use of precast concrete to address the growing housing demand in the New York Metropolitan area. As developers maximize zoning envelopes and compress apartments into micro-units to increase affordability for middle-class residents, new challenges emerge around the concepts of home, belonging, and social connection. In an increasingly nomadic, digital lifestyle, these micro-units redefine living spaces, intensifying the need for communal, cultural, and social spaces to foster a sense of community and shared experiences.

The studio will seek projects that uniquely blend housing with community-oriented spaces, addressing the dual need for identity and connection in dense urban environments. Students will design new rituals that respond to these social challenges and envision future spatial typologies around them. Focusing on sites near the Journal Square PATH station, the studio will collaborate with **BldUP** as a developer and the Jersey City Theater Center (**JCTC**) as a cultural partner. Simultaneously, students will work with High Concrete to develop and **prototype precast systems at scale**, exploring the material's potential for innovative architectural solutions.