ARCHITECTURE

THUY LE

PORTFOLIO

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This study explores the use of modular Cross Laminated Timber (CLT) construction in a 2-story school expansion as an efficient and sustainable alternative to school overflow trailers. The study includes a preliminary investigation of the building code issues related to CLT and educational occupancies, best practices of modular school design, and an architectural investigation of their applications.
CONSTRUCTION TYPES

POST

POST + PLATE

VARIATIONS ON POST + BEAM

GRIDSHELL

PORTAL FRAME

TRUSSES

TREE STRUCTURE

WAFFLE STRUCTURE

FOLDED PLATES

PANELIZED

MODULAR

VARIATIONS ON POST + PLATE
MODULE DESIGN

6 - ROOF PANELS
3 ply CLT

5 - FLOOR PANELS
5 ply CLT

4 - EXTERIOR WALLS
5/8” Type X GWP
6” CLT

3 - DEMISING WALLS
4 - 1/8” CLT
1 - 1/8” Mineral Wool
4 - 1/8” CLT

2 - SLAB ON GRADE
4” Unreinforced (3000 psi)

1 - STRIP FOOTINGS
3’-0” x 1’-0”

STRUCTURAL CONNECTIONS

32 ft

24 ft

33 ft

2 ft

4 ft

12 ft

12 ft

1

2

3

4

1

2

3

4
From a single structural CLT classroom module, there are numerous potential aggregations and variations, arguing for the potential of CLT construction to create diverse and sustainable school expansions. The study explored 4 such schemes: bar, cloister, courtyard, & cluster, of which cluster & cloister schemes are included.
CLUSTER

TOTAL AREA
31,132 ft²

1 - CLASSROOM 9,216 ft²
2 - LAB 6,144 ft²
3 - INFORMAL LEARNING SPACES 10,000 ft²
4 - TOILETS 1,536 ft²
5 - MEP 1,536 ft²

STRUCTURAL GRID
CLOISTER

TOTAL AREA
31,896 ft²

1 - CLASSROOM 12,288 ft²
2 - LAB 3,072 ft²
3 - INFORMAL LEARNING SPACES 1,536 ft²
4 - TOILETS 1,536 ft²
5 - MEP 1,536 ft²
6 - CIRCULATION 9,536 ft²

STRUCTURAL GRID
CLOISTER

TOTAL AREA
31,896 ft²
The library leverages its librarians, partners, & members to create time-limited, themed collections on site and around the city. The library itself is a series of platforms that contains, overlaps, and intersect one another, waiting to be acted upon by inflatables – zones of either sensory relief or sensory immersion.
Utilizing knowledge accrued through the first end effector exercise, we embarked on an investigation of a construction system that would incorporate the robot arm in a meaningful way.

Working with cast rockite, we enlist the robot arm in manipulating the molds that we produced, which are essentially identical cylinders.

Through successive rotations and tilts of the molds, the robot arm helps us cast unique parts that could have rich variations based on design inputs like daylighting or structural

With an array of molds arranged in a radial configuration, we cut down on “waiting time” for the robot arm as it would be manipulating one mold when we are depositing wet rockite into the next mold.

In this fashion, the motion planning aspect also become a scalable problem as the robot would approach each mold in the array from the same baseline.

In future versions of the project, we envisioned the molds do not have to be constrained to a cylinder but practically any base shape could be applied to the same
CONCEPT

DESIGN INPUT → ROBOT + ONE MOLD → UNIQUE PARTS

VARIATIONS

AGGREGATION
MECHANISM

END EFFECTOR EVOLUTION

ROTATE

TILT

ROTATE

TILT
ARTIFACTS
Legend has it that the first hip-hop party in history took place in a small South Bronx apartment with hundreds in attendance—and many more similar bottom-up, informal, DIY music events were to follow in what established a global cultural movement.

Block parties, where a larger crowd could gather, became an essential aspect of social and cultural life and a generator of social relations in the Bronx. Residents would appropriate available urban space at will—be that space in the form of a basketball court or a public park.

We want to further this flexible conception of public space to generate connections and build a stronger community. Our proposal, in the footsteps of the late British architect Cedric Price’s Fun Palace project, envisions a public pool with adjustable program and temporary activities that meet the demands of the public.

At the same time, the pool becomes an environment for spending leisure time productively. However, in contrast to Price’s vision, we want to encourage public participation as opposed to reducing visitors to data points.

Our proposal achieves this by giving visitors, not the management, the freedom to configure and reconfigure the pool and pick and choose floating units and functions.
Long Section with different water levels controlled by system of locks
legend has it...
FROM BBALL TO HIP-HOP
When all three basketball courts at the park were known to be busy, the school decided to create a hip-hop scene next to the pool. A student’s idea of placing a small stage and a loudspeaker turned the park into a musical playground.

FROM POOL TO BEACH AND BACK
Visitors control the amount of water in the pool – or the complete lack thereof. The changing water levels are created by the water jets below, and anyone can access the water locks with permission.

FROM WORKOUT TO CLEAN WATER
Visitors in the People’s Park purify water by standing & can drive, while the water is collected and recycled. A fountain at the entrance provides fresh, clean water for drinking.

FROM MEETING HALL TO FARMERS MARKET
The other week, after a busy day of meetings and tours of the ship, a local farmer approached the park management to start a new farmers’ market. The meeting room will provide enough space for this, as they hope the hall & the park will now be a place where farmers and visitors can interact.

FROM CAFE TO CONCERT HALL
This year’s new hip-hop concert series started at the People’s Pool. People were watching from the floating bar, and some people were even dancing from the outside. After this show, though, the majority concluded that it was time to play & they rearranged the pool to create a floating basketball court!
PLUG & PLAY

Kit of programs & kit of parts work in conjunction to provide participants with agency while thinking about the urban condition in a light-hearted way.
San Patrignano is a rehabilitation community in Italy for those suffering from drug addiction and marginalization and help them rejoin society through vocational training. The fast pace at which the community grows and the lack of a clear masterplan has negatively affected the open spaces that therefore fall short of a recognizable character: a new clear identity should infuse the entirety of the village. Selected sites are intervened with new infrastructure to serve communal living needs as well as the necessity of community amenities like a theater and an art center. The housing project is designed in conjunction with organizational and community leaders as a first step toward a reorganization of the village, envisioned as a self-sustainable campus. With 2,400 sq m and two floors, the building will host more than 200 residents divided into 18 semi-independent residential units that share entrances and facilities. The structure sits on top of a hill and is oriented to take advantage of stunning views surrounding the site, while also providing a protected communal space in the courtyard. The layout reflects the social organization of the community, striving to provide both the privacy and security that residents need, along with encouraging collective and shared social spaces.
1. Buffer scharmante (Alberi ed essenze rampanti lungo il perimetro garantiscono privacy al piano terra)

2. Spazio aggregativo (sedute ombreggiate incoraggiano alla sosta e all’incanto)

3. Vasca d’acqua integrata nel sistema di raccolta e riuso dell’acqua piovana (il bordo estruso offre possibilità di seduta)

4. Pavimentazione permeabile (Elementi modulari in cemento bianco di dimensione variabile)

5. Circuito carrabile (larghezza minima di 3,20 m, per mezzi di servizio/soccorso)

6. Rampa connessa con i percorsi pedonali del villaggio

7. Profilo piantato rivolto verso la vallata (invito alla sosta e alla contemplazione)

8. Tetto Giardino
The Tallhouse is a prototypical housing model that tests massing, structural, and façade studies for a mid-rise multi-family residential building proposed for the Greater Boston Area.

The design integrates ideas of manufacturing and assembly from the conception to facilitate the pre-fabrication aspect of mass timber housing.

Situated on a 60’ x 60’ plot, the building is iteratively set up with different grids and core placements in mind.

The final version is created with 15’ x 20’ post, beam, and plate system in mind and 6 studio units on each floor and co-working space on the ground floor. As illustrated on the following page, however, unit layout can vary depending on demand.

One could also imagine the units being laid out as studios at first and getting combined into larger units as the tenant profiles shift from young professionals to young families.
post, beam & plate system

8 stories

12 stories
Thank you for your consideration!