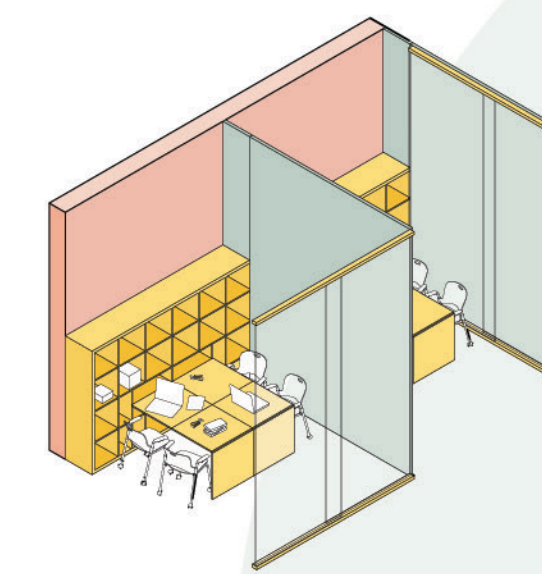


CATALOGUE



Beginning at the scale of furniture, ____ is a highly customizable pre-fabricated modular school extension.

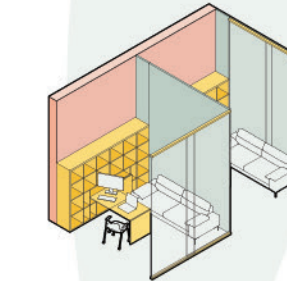
wall type catalogue



privacy
words: foldable partitions,
sliding glass door, storage,
table, furniture, group,
separation, connection

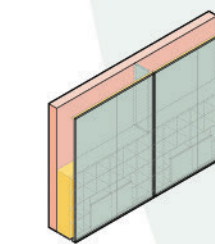
group configuration

can be used as:
- group work cubicles
- examination spaces
- conference/meeting

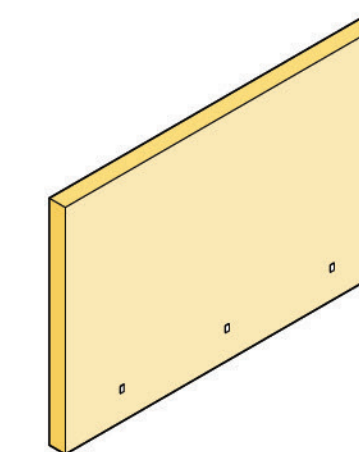


office configuration

can be used as:
- admin
- counselling

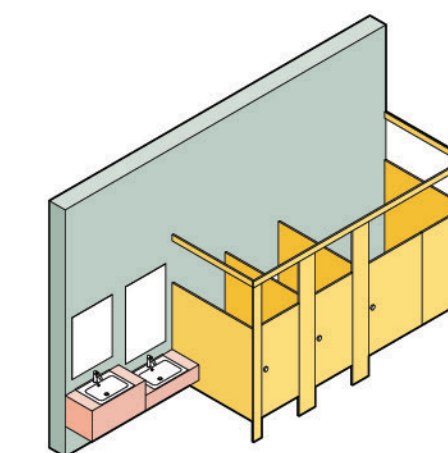


closed configuration

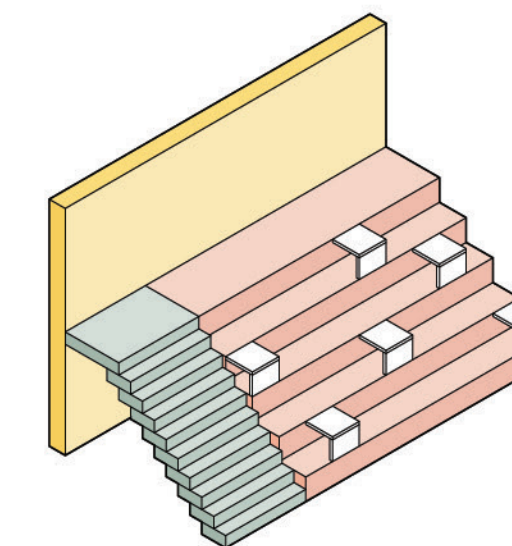


presentation
words: blank, multi-use,
display, teach, learn,
practice, open, creative

can be used to:
- host learning boards
- display graphic work
- display student work



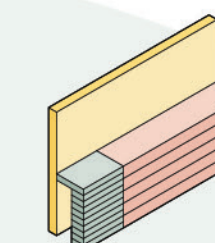
washroom
words: hygiene, private,
barrier-free, plumbing, stall,
sink, mirror



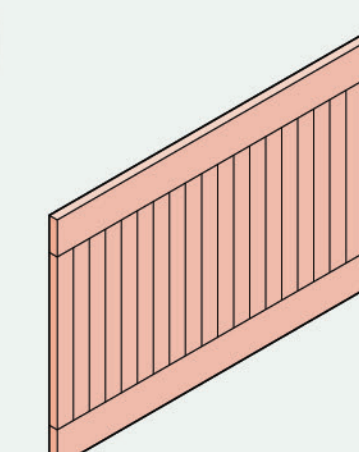
group
words: common, collaborate,
loud, joining, friction, listen,
speak, discover, table, seat,
stair

seating configuration

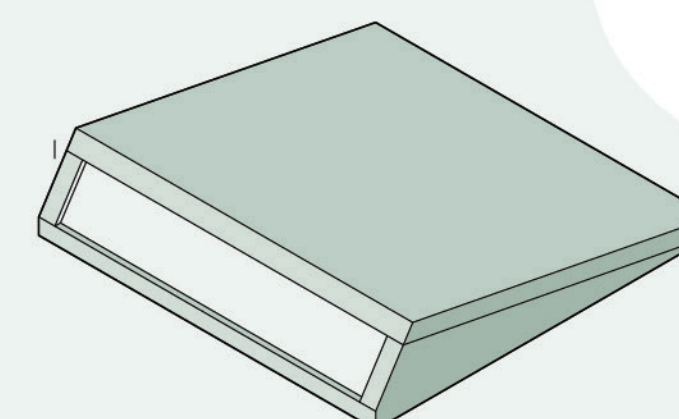
can be used in:
- library
- stairway
- indoor/outdoor
gathering space



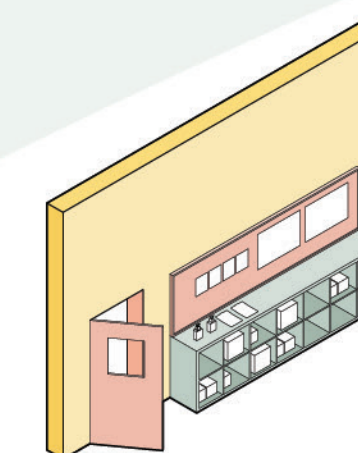
closed configuration



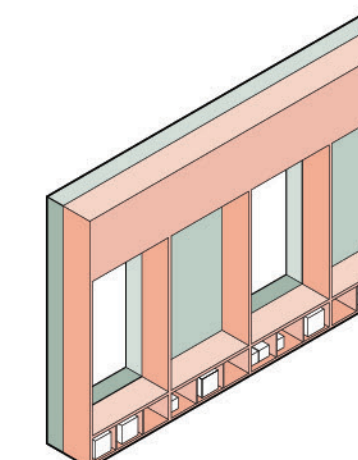
facade
words: enclose, protect, view,
wood siding



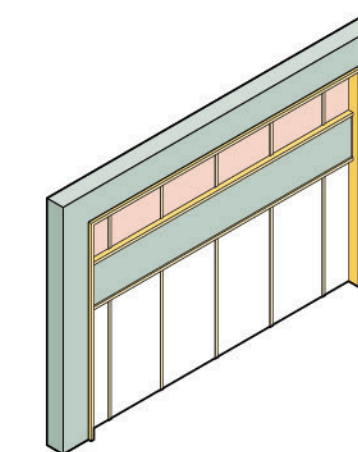
roof
words: light, sawtooth,
clerestory, diffuse, unify,
attach



entrance
words: open, closed, access,
announcement, storage,
station, base, forward, back

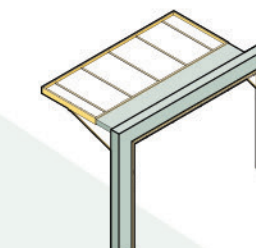


sit + store
words: rest, occupy, storage,
view, space, pass



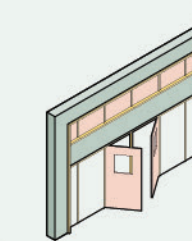
canopy garage
words: in/out, ventilation,
environment, discover, light,
shade, enter/exit,

closed configuration

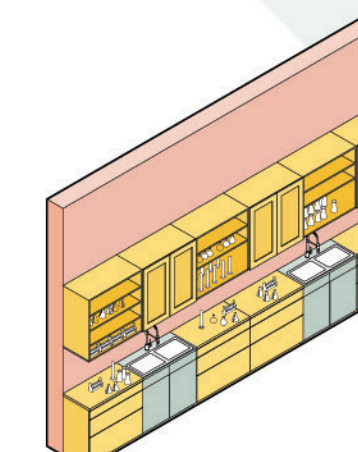


open configuration

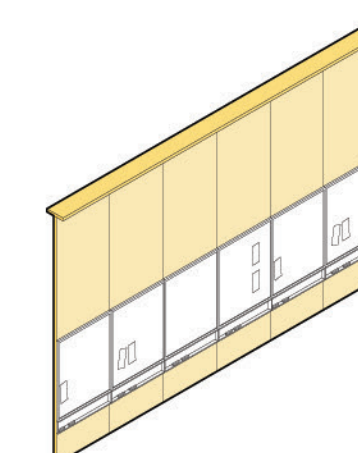
can be used for:
- outdoor classes
- natural ventilation



main entrance configuration



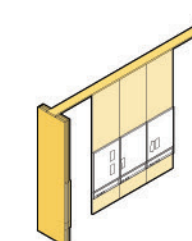
lab
words: equipment, science,
art, exploration, storage, sink



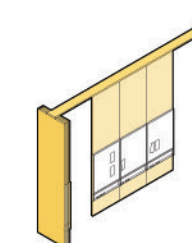
operable
words: flexible, separate,
unify, present, threshold,
autonomy, care, community

closed configuration

can be used for
- temporarily separating
large spaces

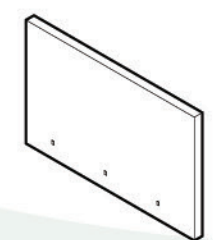


semi-open configuration
*more configurations
available

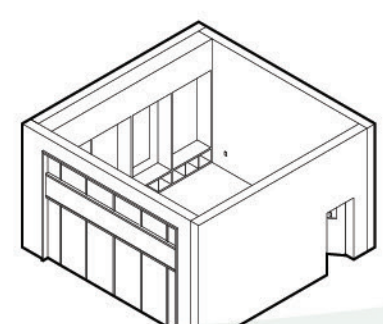


open configuration

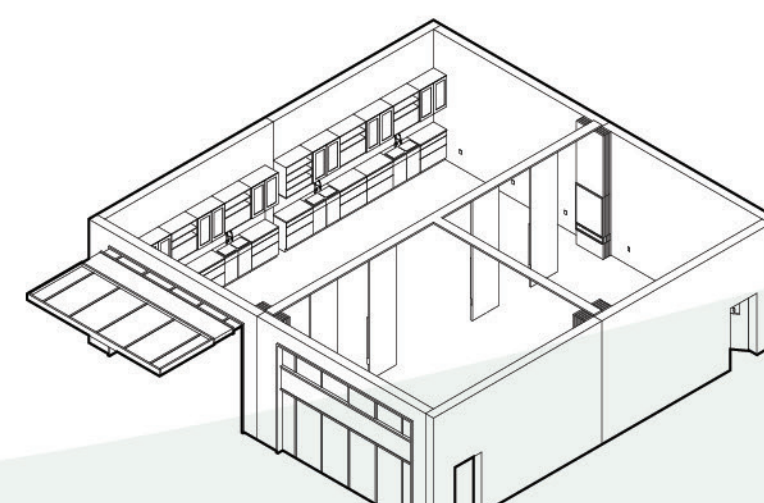
concept



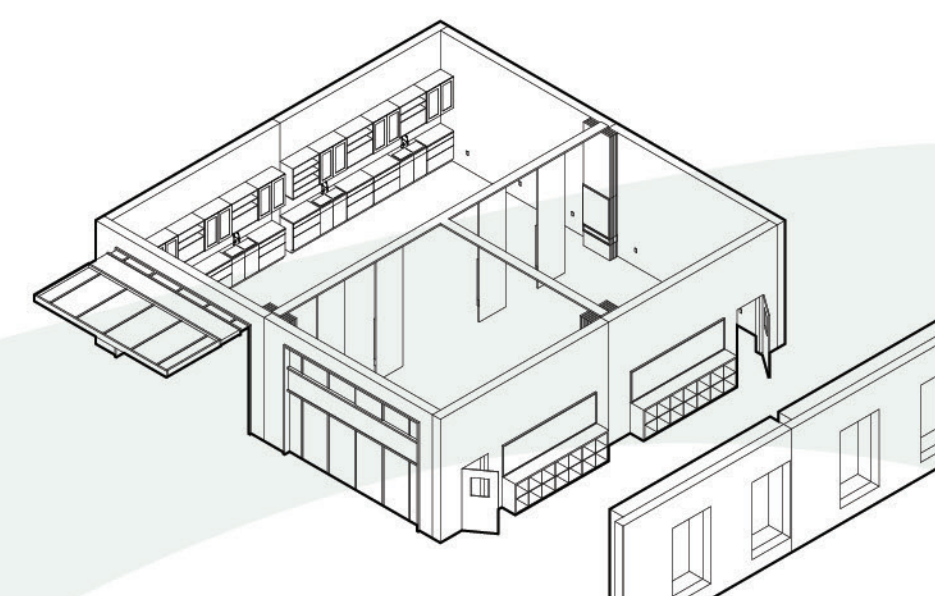
wall



unit

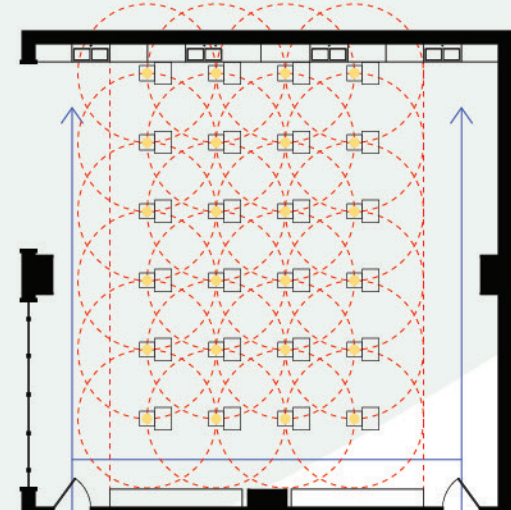
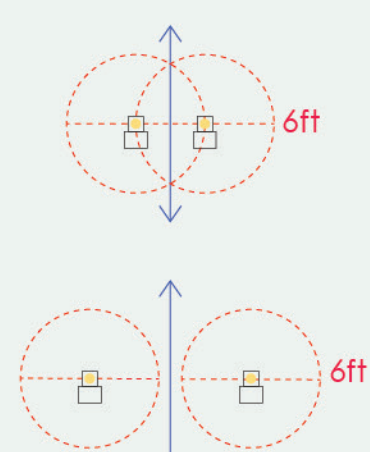


classroom

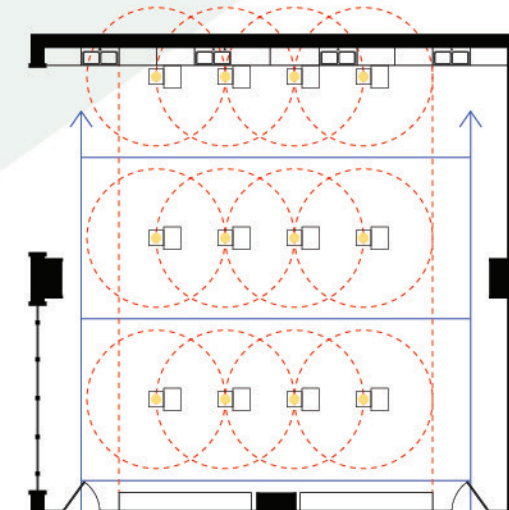


classroom+

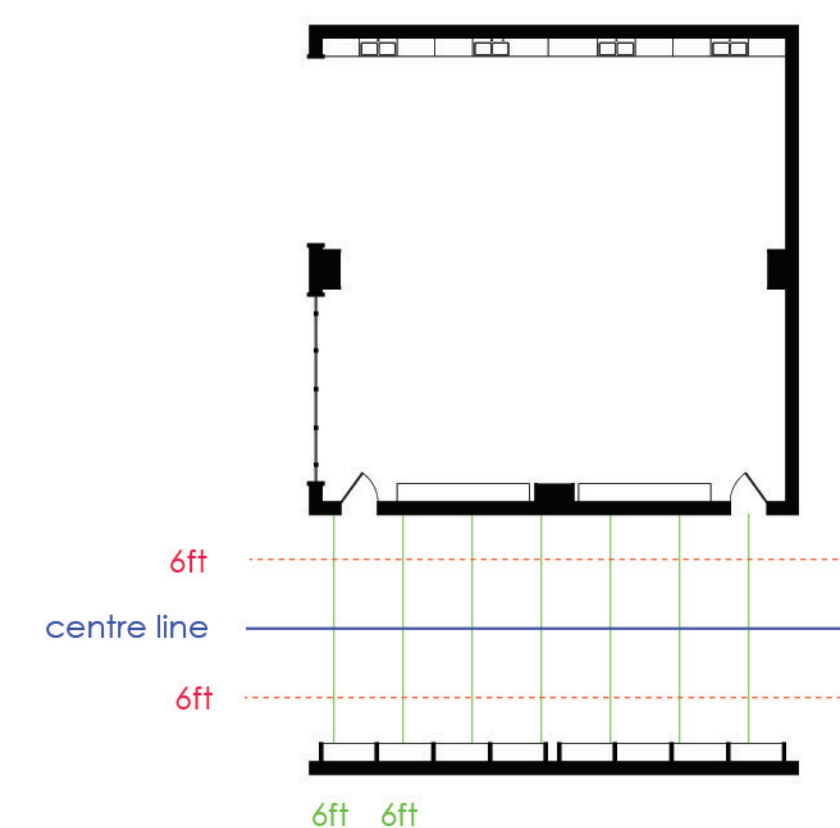
social distancing guidelines



minimum distancing
not accounting for circulation
50% capacity



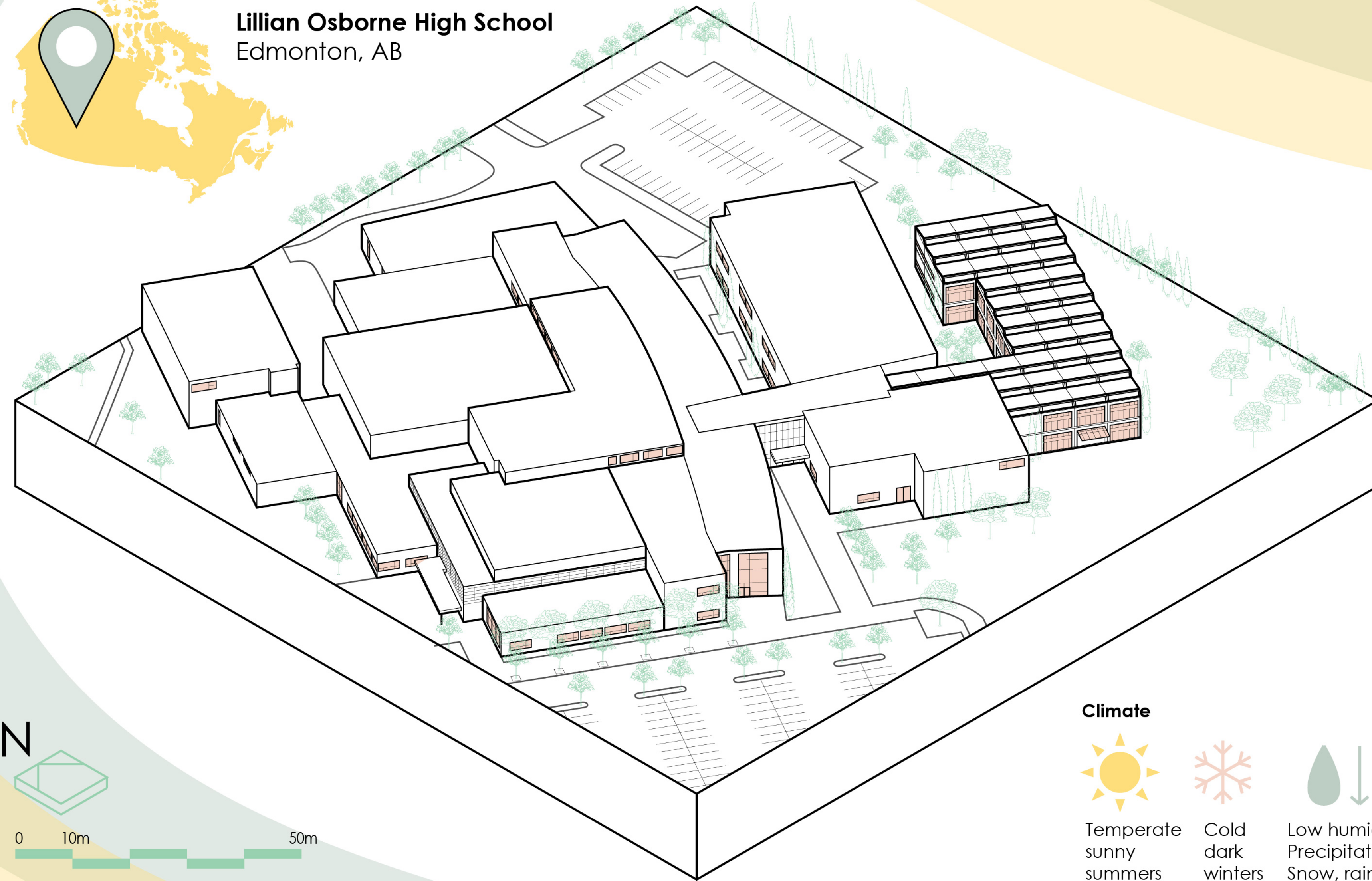
minimum distancing
not accounting for circulation
25% capacity



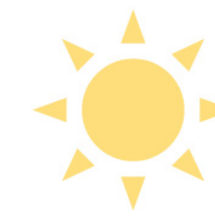
Schools all over Canada and the world do not have the space to create healthy learning environments for children. Over-capacity school coupled with COVID social distancing requirement means schools need quick, efficient, and healthy classrooms.



Lillian Osborne High School
Edmonton, AB



Climate



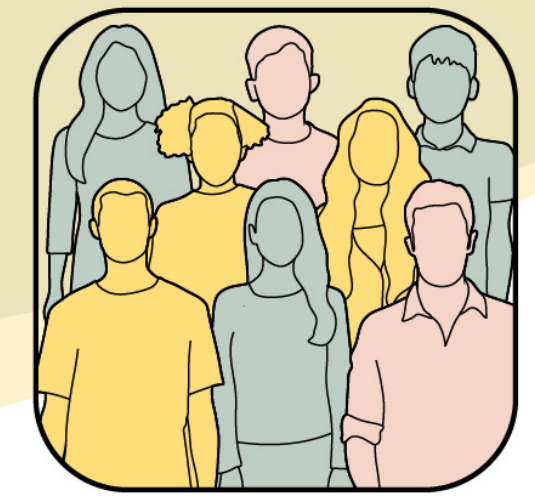
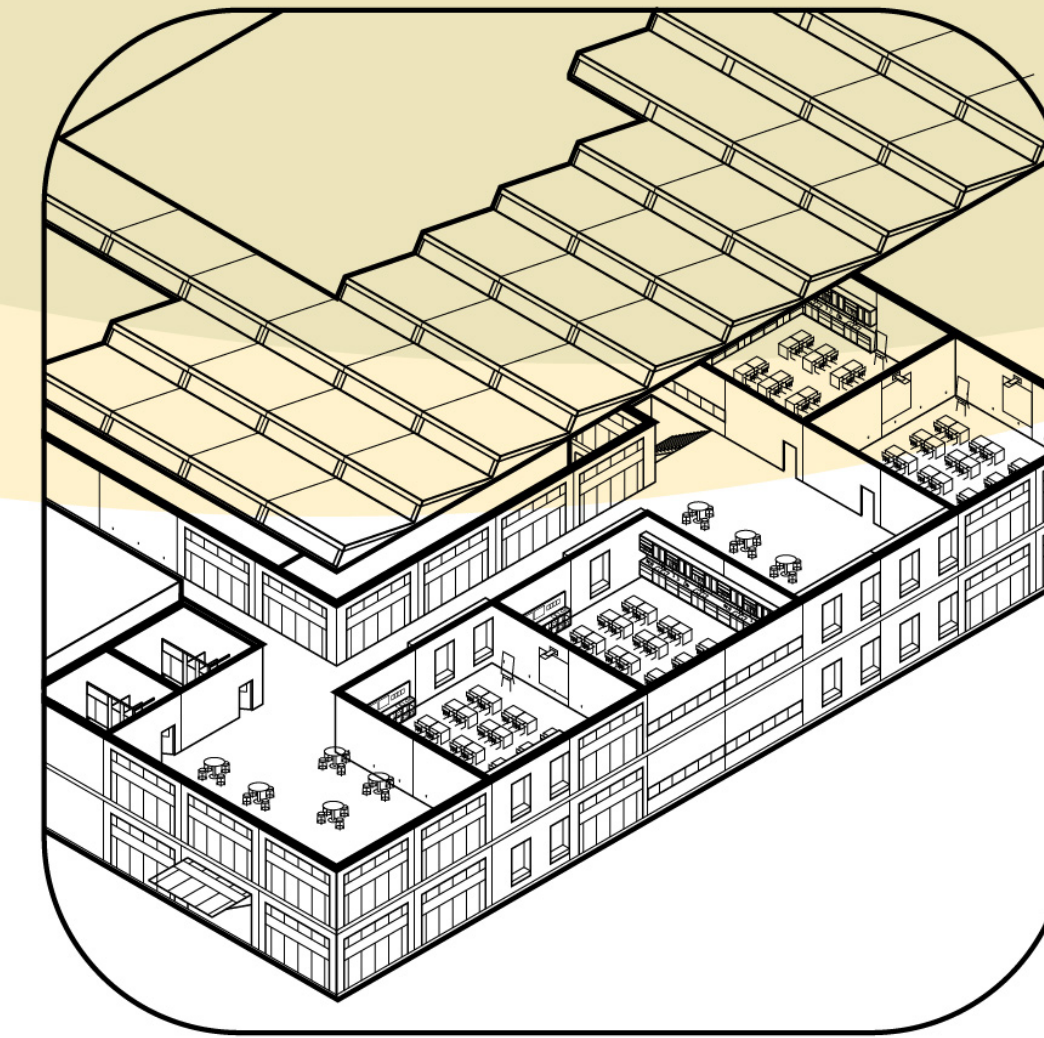
Temperate
sunny
summers



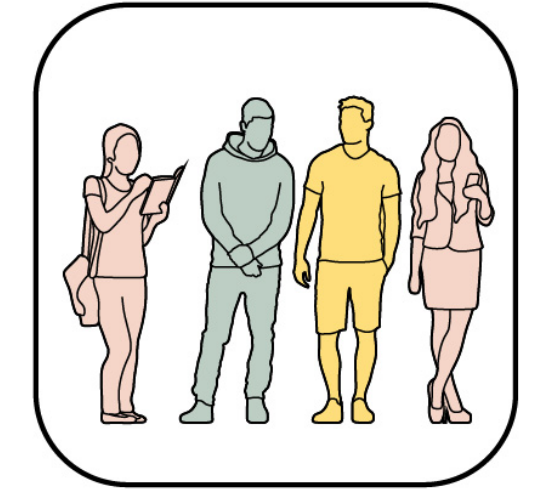
Cold
dark
winters



Low humidity
Precipitation:
Snow, rain

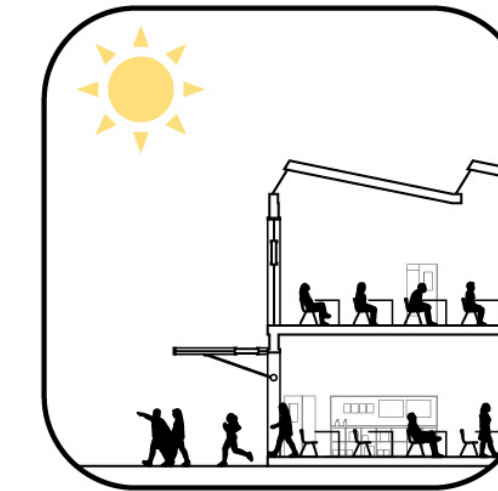


Objective
Alleviate
crowded
schools



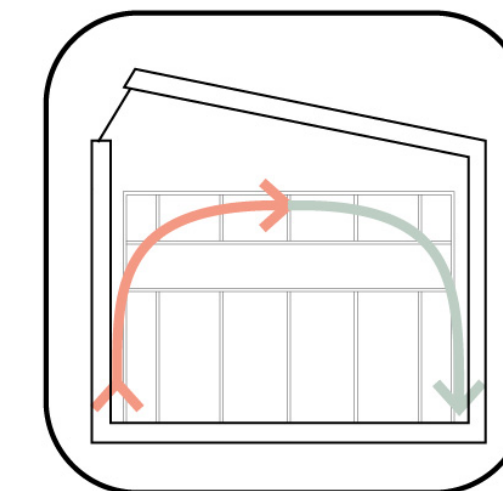
**Level of
Education**
High school
(gr. 10-12)

Massing Large expansion- Courtyard organization- invasive to existing school



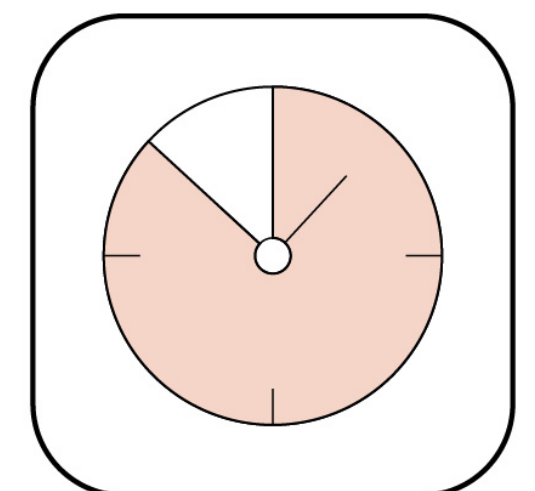
**Healthy Schools and
Passive Design**

- South facing sky lights for daylighting
- Canopy walls allow for natural ventilation and connection to outdoors
- Visual comfort through use of warm materials, high ceilings and inviting colours
- Adaptable programming



Assembly and Systems

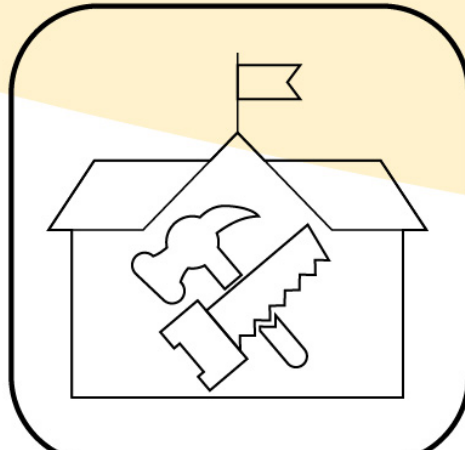
- Sensors to monitor air quality
- Low flow fixtures, automatic lighting and high efficiency HVAC systems contribute to a more sustainable school and reduce energy costs
- Prefabricated walls allow for thorough wall assemblies for continuous control layers
- Extra insulation to combat cold weather
- Use of low-e glass saves energy and helps preserve thermal comfort



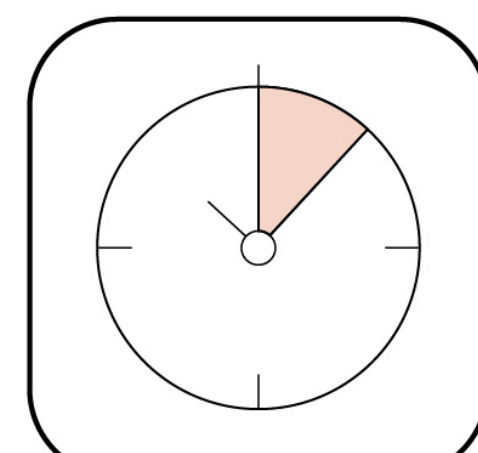
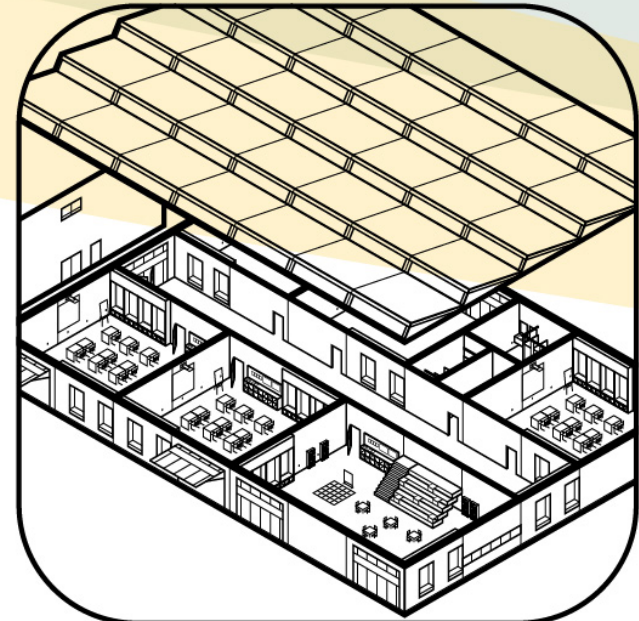
**Projected
service life**
Long term
(>5 yrs)

Other site applications

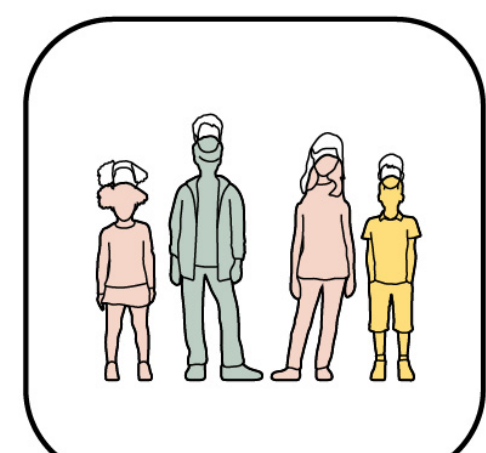
Objective
Provide
provisional
learning
spaces while
existing school
undergoes
renovation



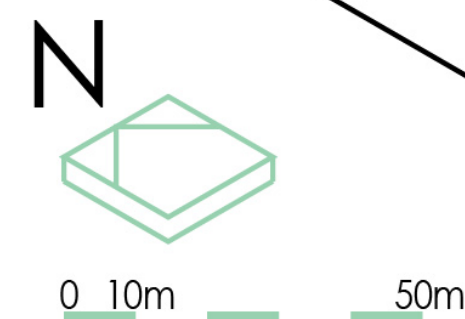
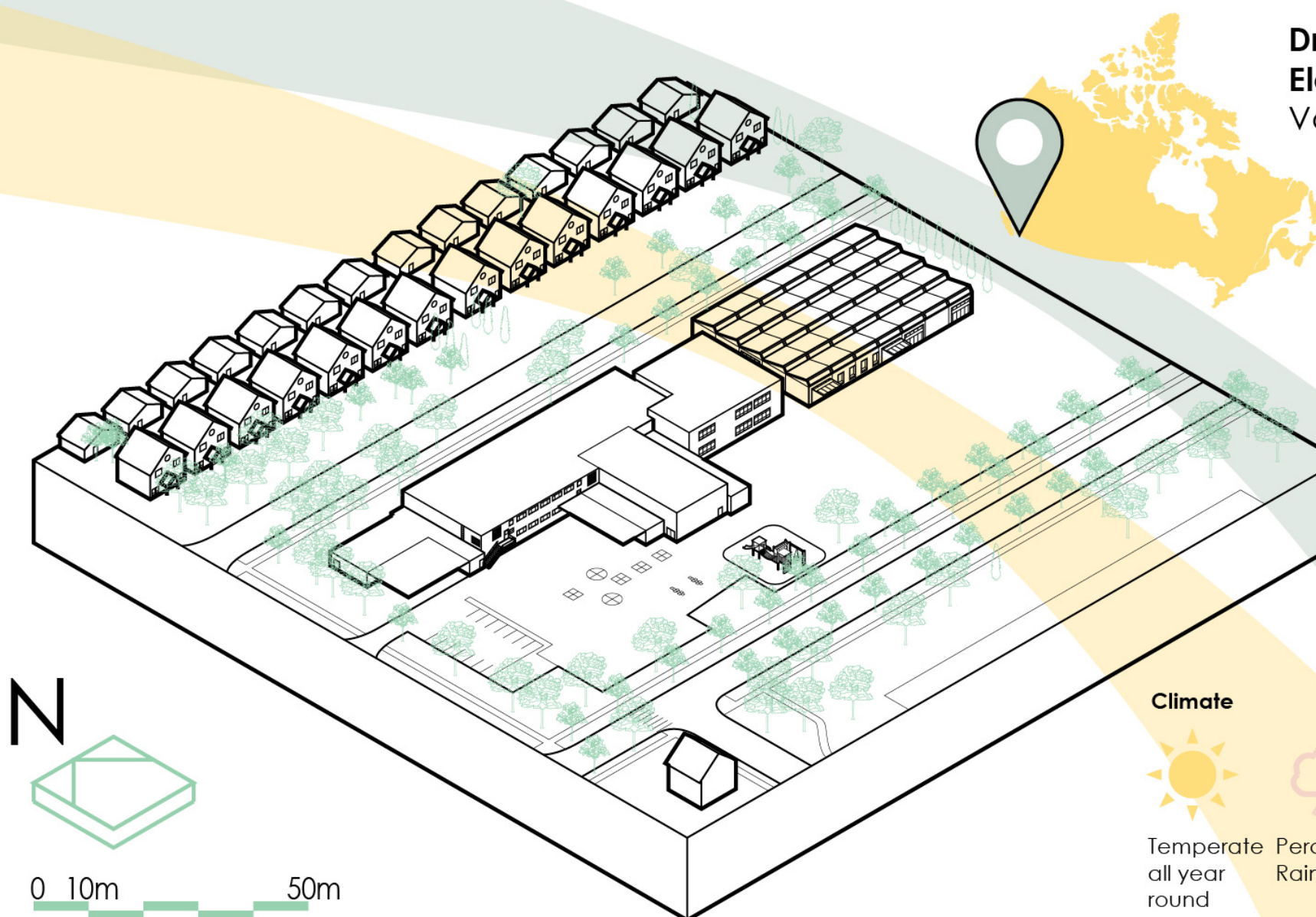
Massing
-Medium expansion
-Linear organization
-Non-invasive



Projected service life
Short term (<5 yrs)



Level of Education
Elementary School (K-7)



Climate



Temperate
all year
round



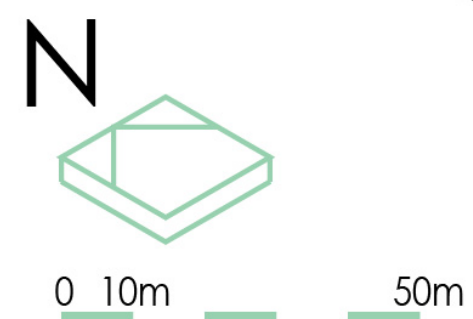
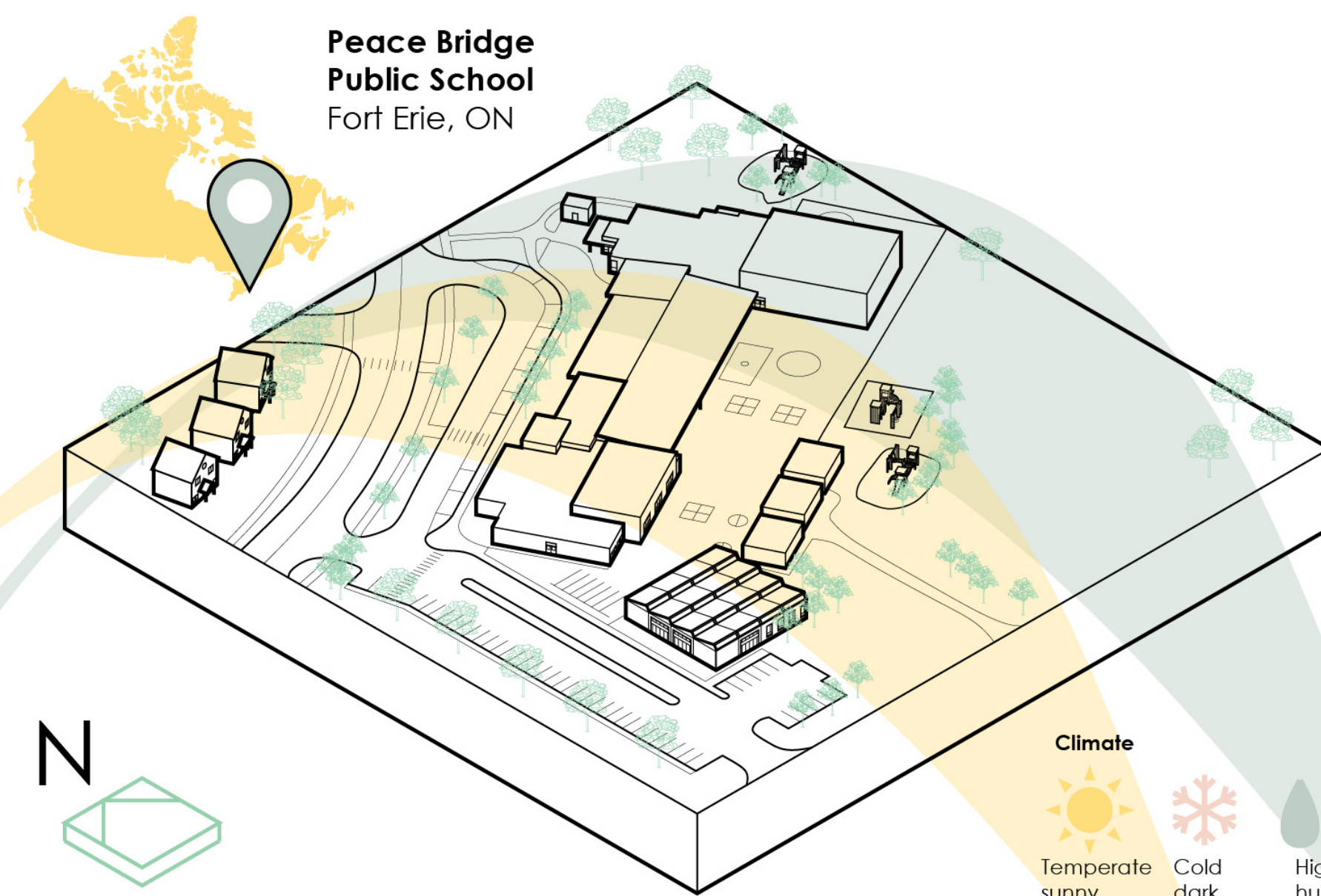
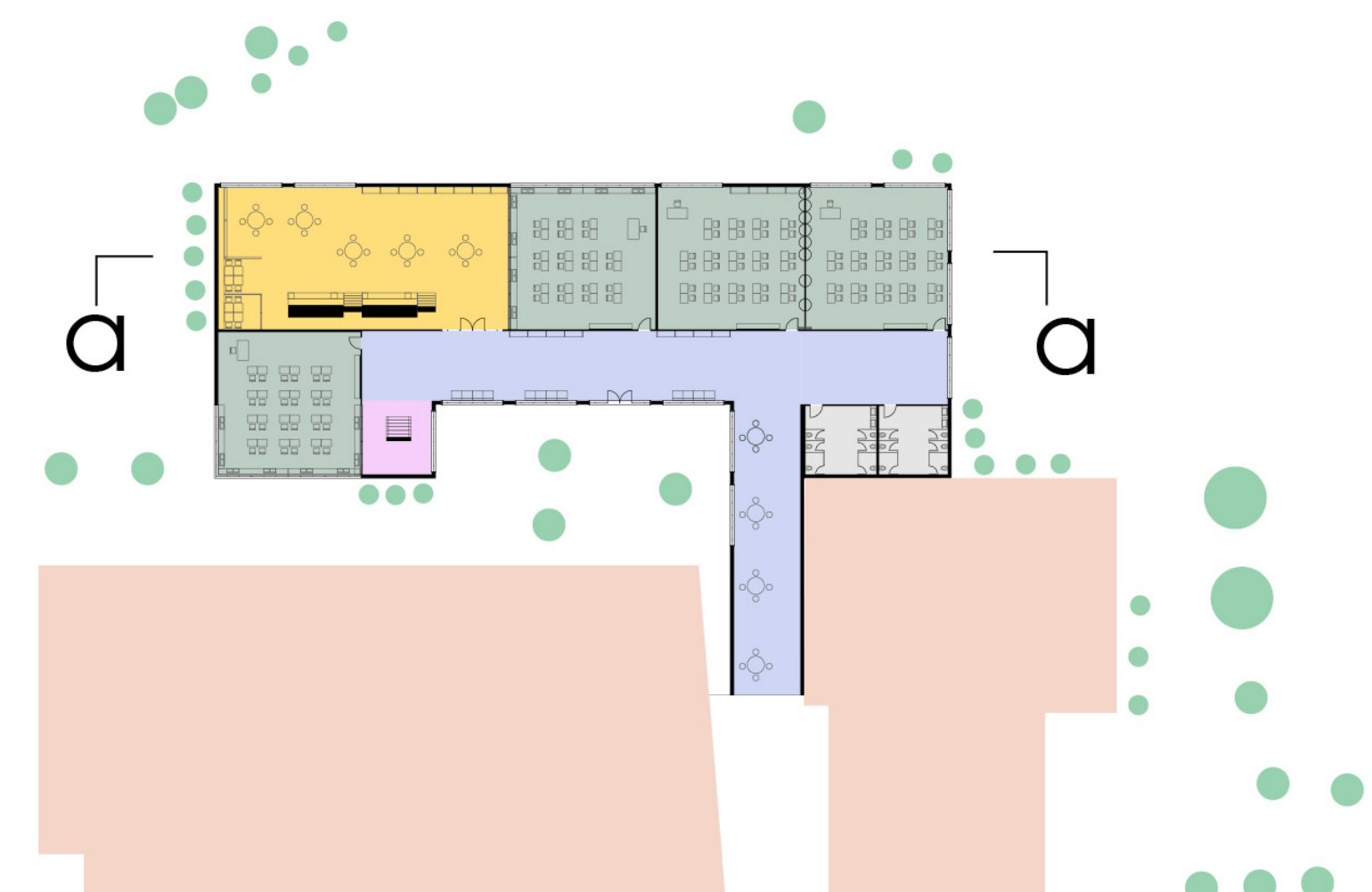
Precipitation:
Rain



High
humidity

**Dr. George M. Weir
Elementary School**
Vancouver, BC

Lillian Osborne plans and section



**Peace Bridge
Public School**
Fort Erie, ON

Climate



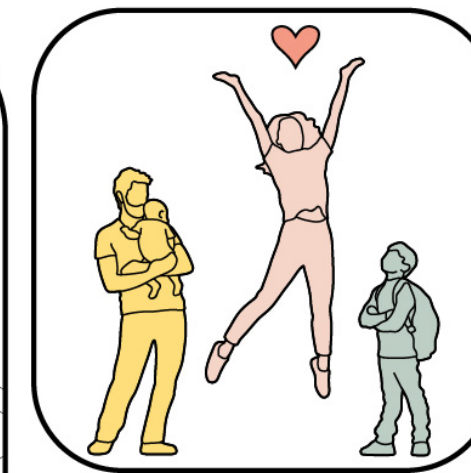
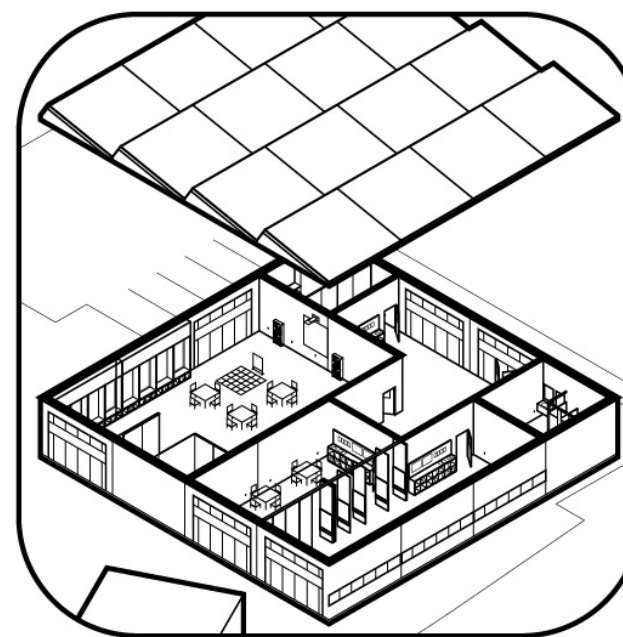
Temperate
sunny
summers



Cold
dark
winters

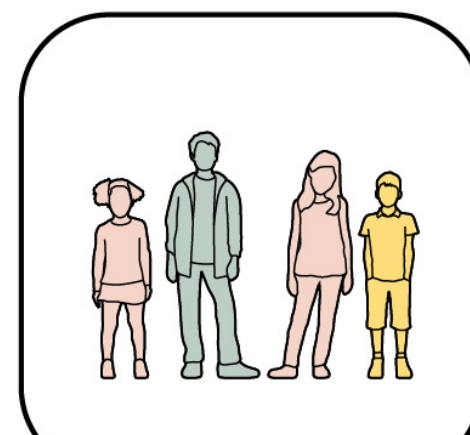


High
humidity
Precipitation:
Snow, rain

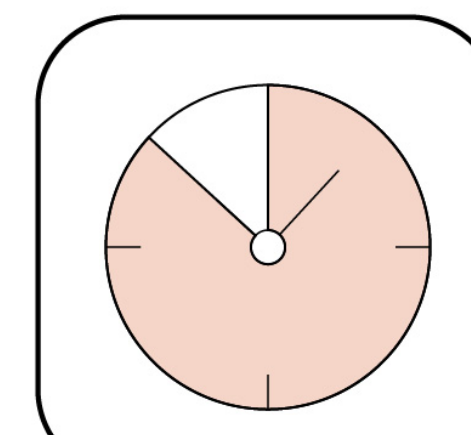


Objective
Accommodate
for
extracurricular
program
expansions
(Multi-use
wellness Center)

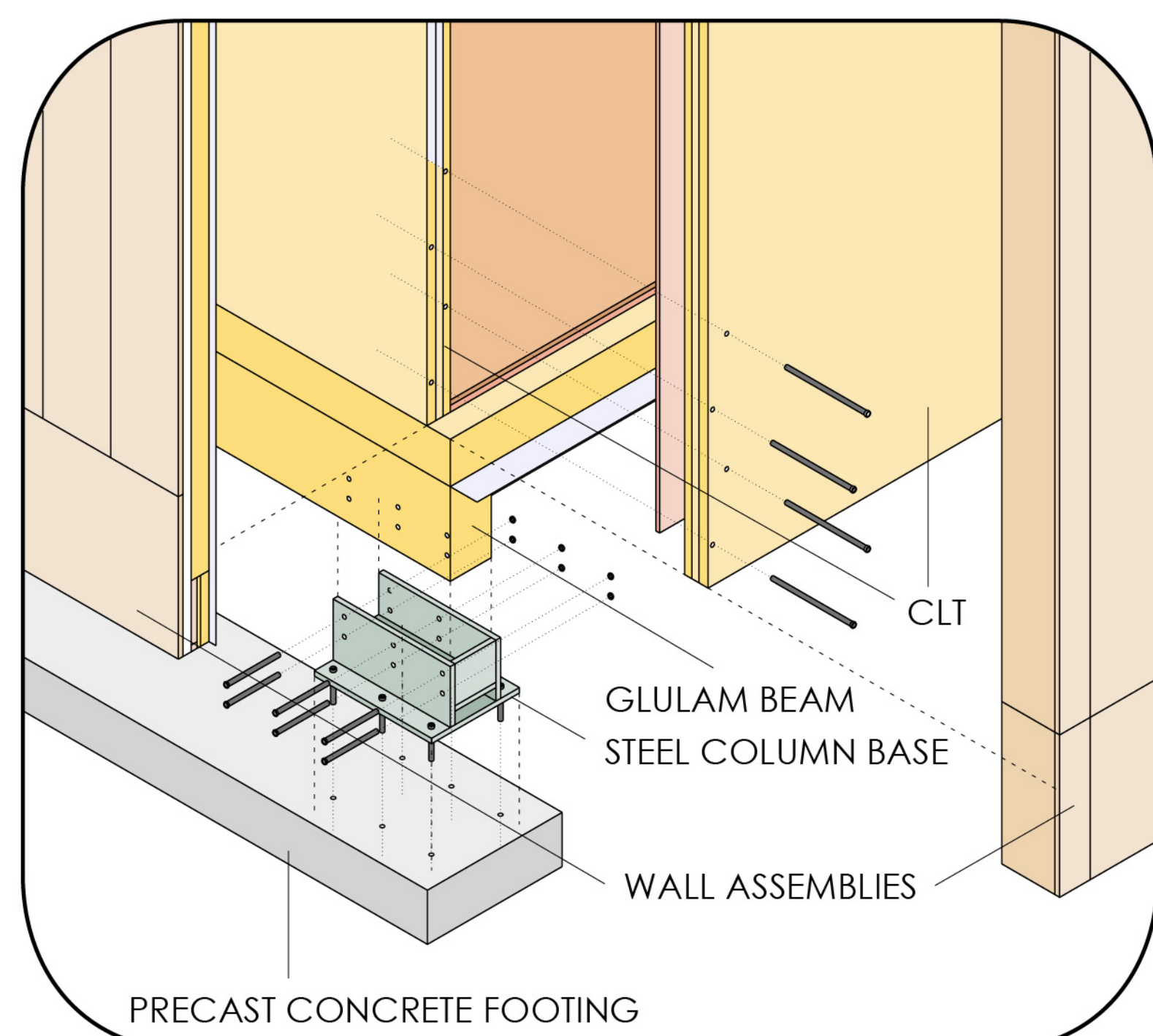
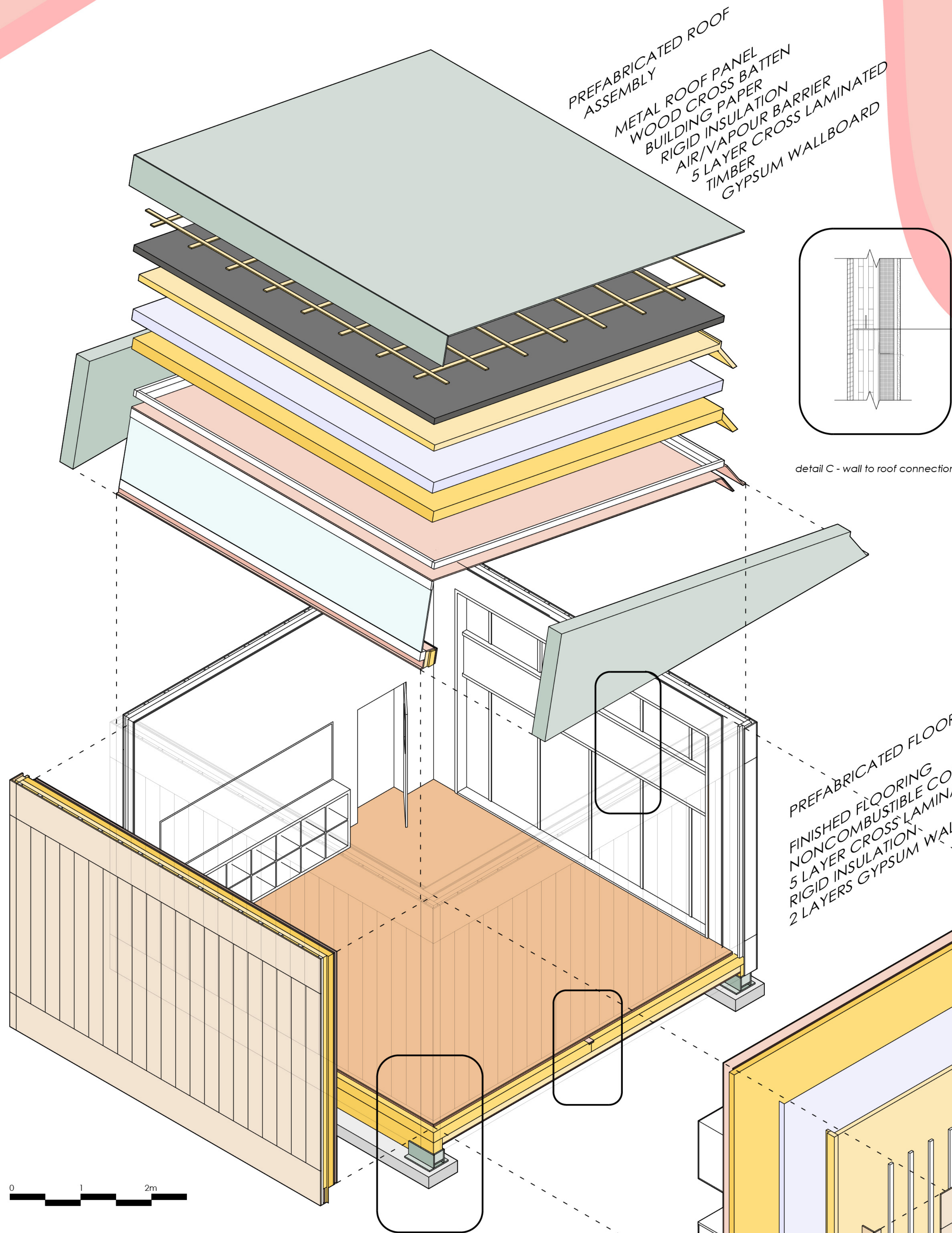
Massing
-Small expansion
-Cube with central lobby
-Non-invasive



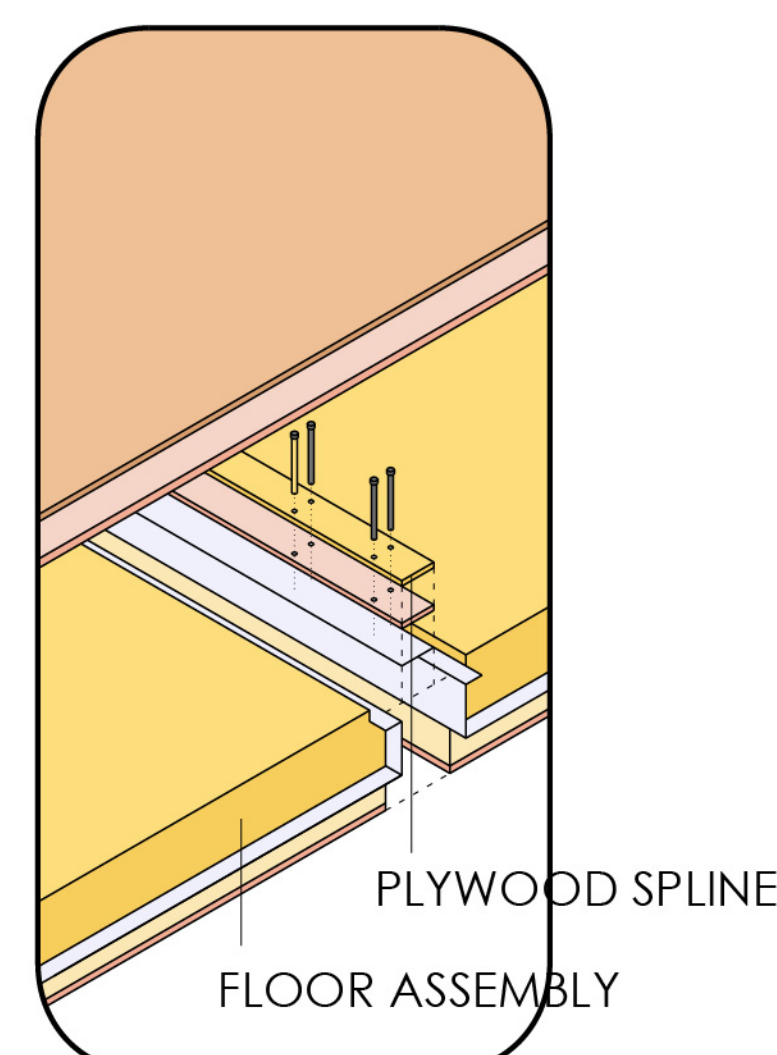
Level of Education
Elementary School (K-8)



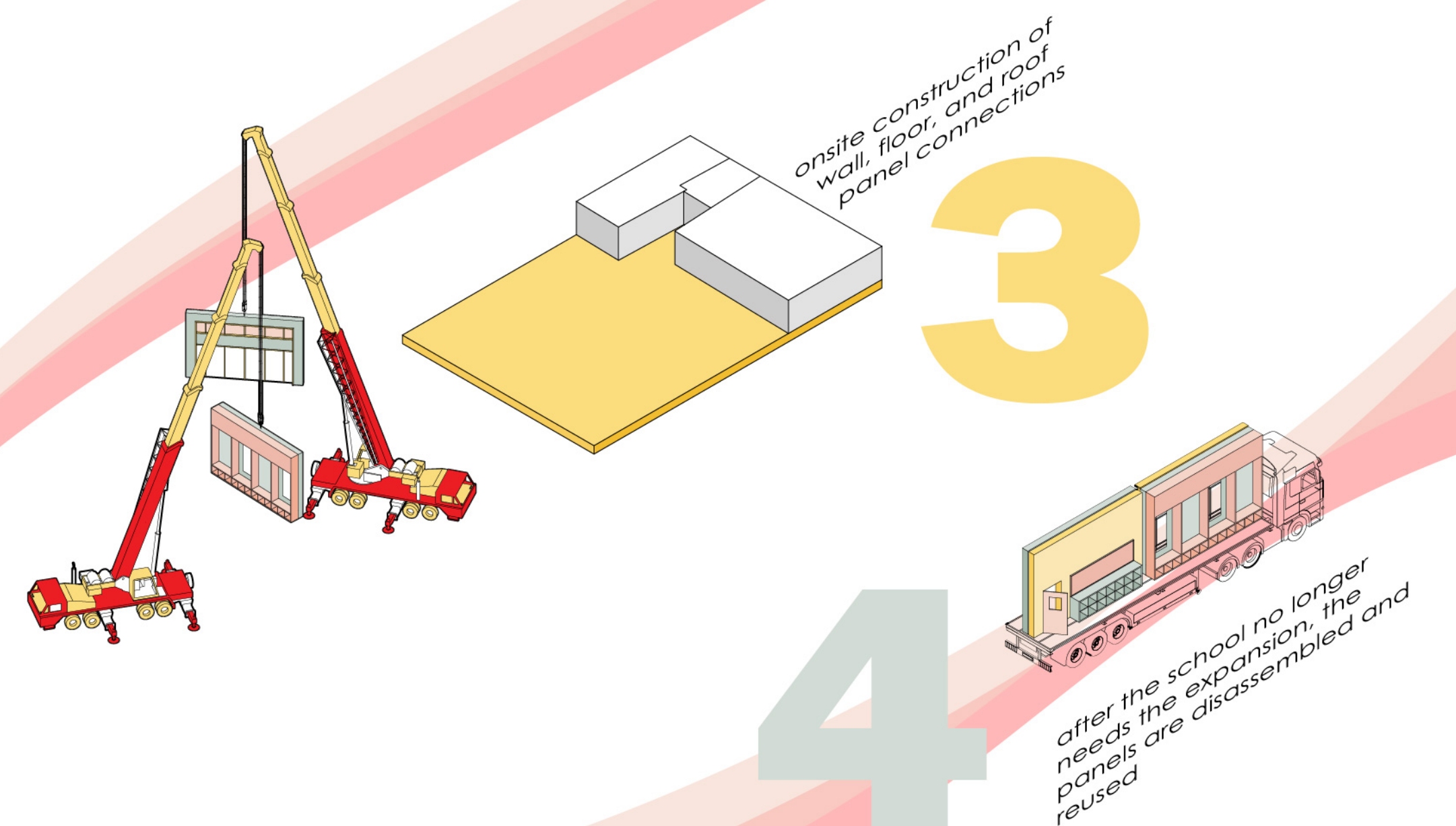
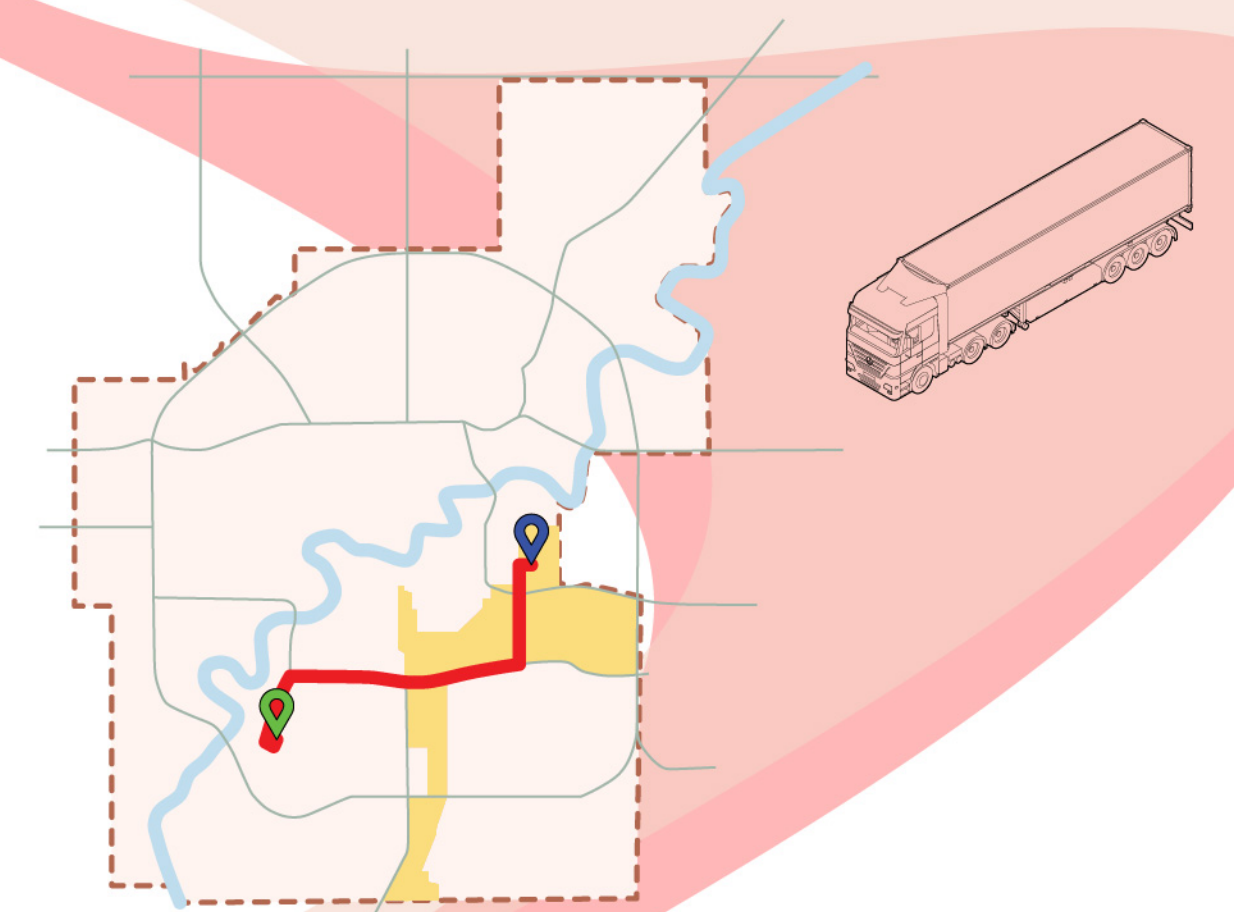
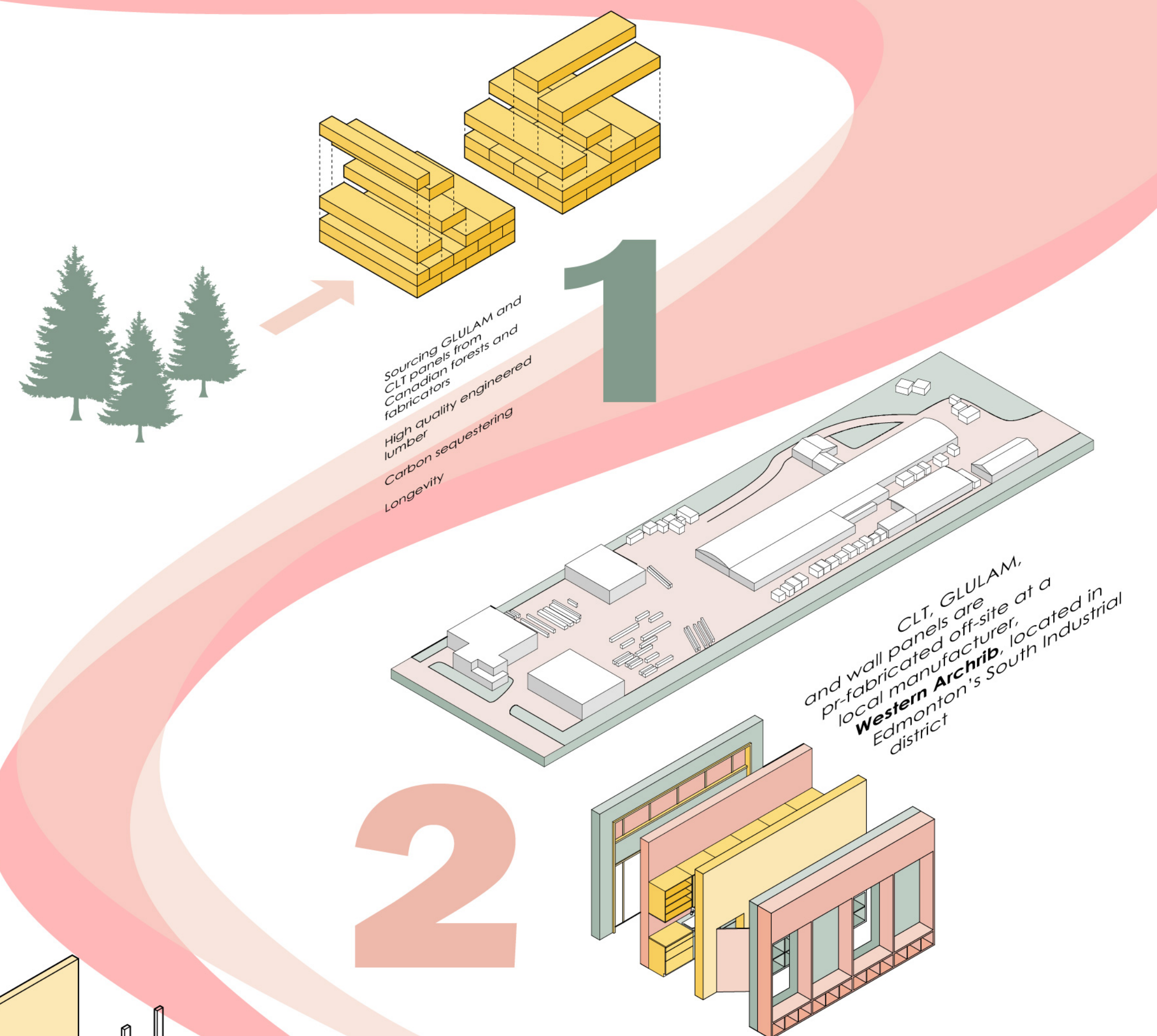
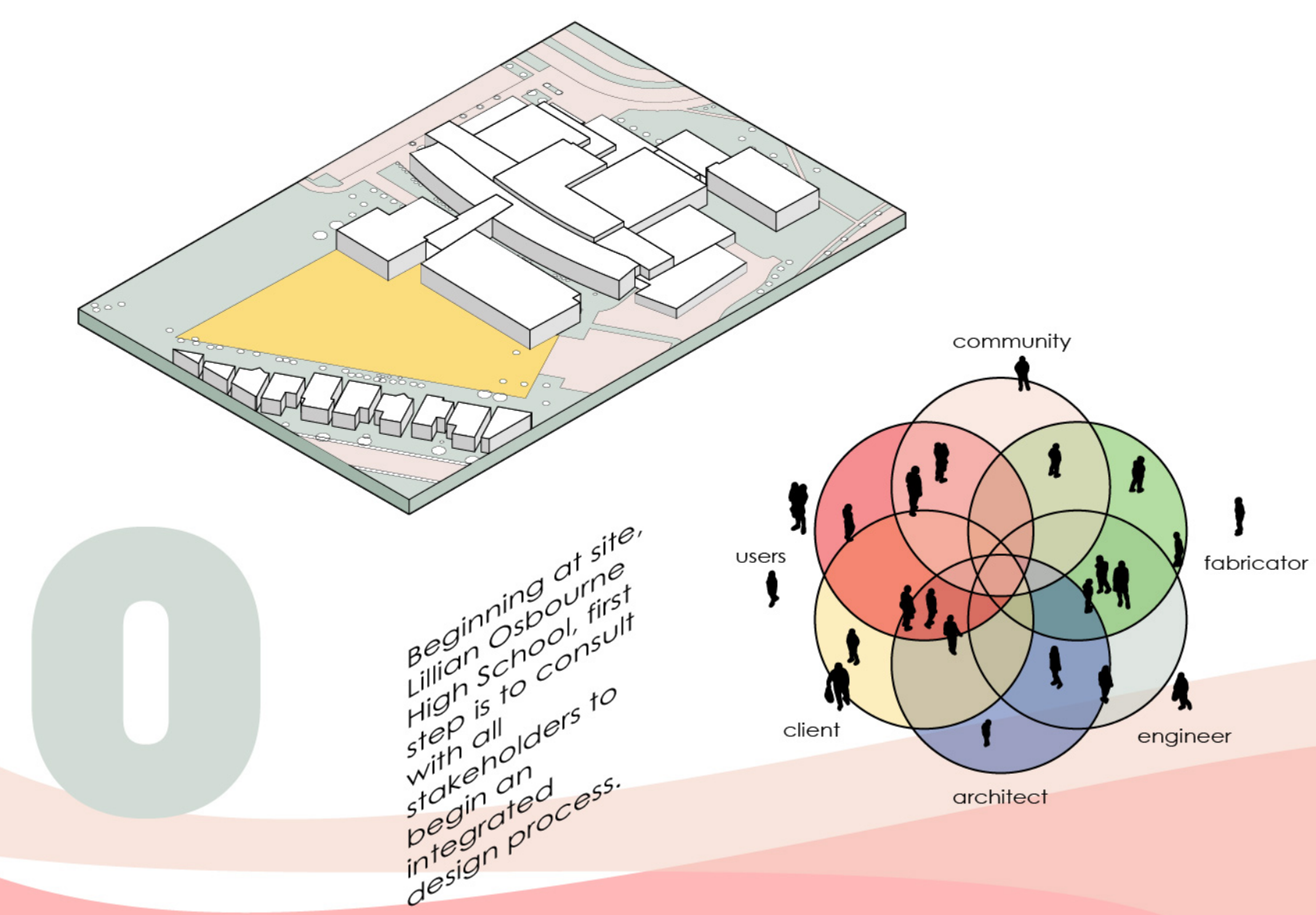
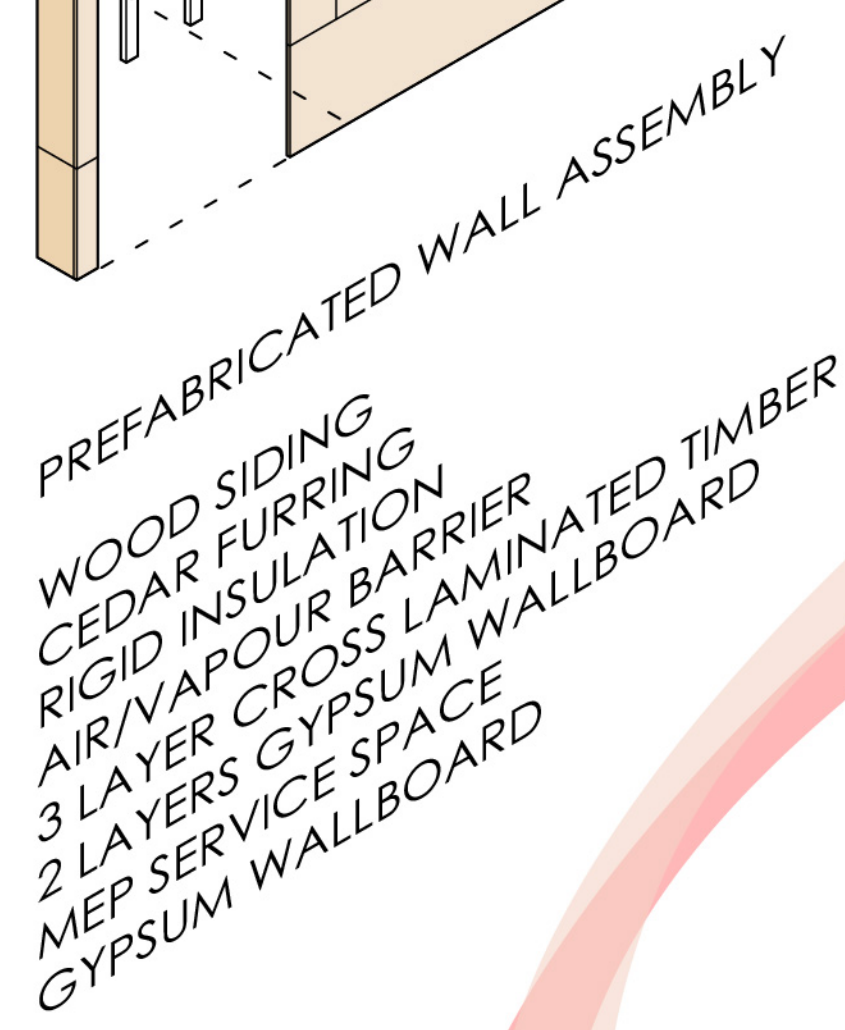
Projected service life
Long term (>5 yrs)



detail A - wall to wall to ground connection



detail B - floor to floor connection



This design project explores innovation in prefabrication techniques to construct modular classrooms for short-term and long-term school expansions. Prefabrication involves conducting the majority of construction off-site, in a controlled environment, where higher quality can be achieved while reducing risk, cost, and material waste. The rapid on-site assembly process is especially important for schools as disruption caused by construction can negatively impact students' learning. With the many problems facing Canada's school systems such as overpopulated classrooms, unhealthy portable environments and limited budgets to renovate and expand existing schools, modular classrooms are in need more than ever.

Our design begins with a selection of different prefabricated wall panels each uniquely suited for a particular program. These walls can be assembled onto a prefabricated unit to form a 6m x 6m room, functioning as a hallway, bathrooms, administrative offices and more. Multi-unit rooms can be assembled to form larger areas such as classrooms, gathering areas, and libraries. The layout of these unit rooms is entirely adaptable to serve the particular needs and geometries of the existing school. We chose a saw-tooth roof with angled glazing to allow natural light to penetrate the building, enhancing student learning and reducing energy costs. The prefabricated roof can be easily assembled via bolted connections to the wall panels. Additionally, all the prefabricated components are primarily constructed out of CLT panels which acts as the main structural components and removes the need for dedicated

load-bearing columns. Finally, simple connections between prefabricated components allow for easy assembly and disassembly.

Three schools across Canada were chosen to demonstrate the adaptability of the modular classrooms. The first site is Lillian Osborne High School, a public high school located in southwest Edmonton with a major overcrowding problem. To tackle this issue, we proposed a long-term and invasive expansion. In total, the two-storey expansion will include eight classrooms, three lounge/ study areas, bathrooms, an outdoor courtyard, and a hallway that connects the expansion to the high school's existing hallway system. The second location is Dr. George M. Weir Elementary School located in Fort Erie, with a need for renovations. The proposed short-term and non-invasive expansion will provide provisional learning spaces for students while the existing school undergoes upgrading. The final location is Peace Bridge Public School located in Fort Erie. The proposed expansion will be long-term, non-invasive to the existing school, and equip it with a multi-purpose wellness centre to accommodate extracurricular programming.

Word Count: 400