

ADAPTABLE ARCHITECTURE

IN A REGENERATIVE MEDICINE FACILITY

COURTNEY THOMPSON

presentation FRAMEWORK



PROBLEM STATEMENT : How does the growth of human knowledge impact the longevity and usefulness of a building?

T Y P O L O G Y : A regenerative medicine research facility. The National Institute of Health defines regenerative medicine as “the process of creating living, functional tissues to repair or replace tissue or organ function lost due to age, disease, damage, or congenital defects” (Hunziker, 2010).

C L A I M : Architecture that responds adaptively to human knowledge growth will increase the usefulness and longevity of a building.

T H E O R E T I C A L P R E M I S E : Architecture must adapt to change. This ability to adapt, to the current context in which it is used, plays a significant role in a building’s lifespan. With an ever-increasing demand for cures to chronic illnesses, adaptable architectural solutions are needed to further medical research.

theoretical FRAMEWORK

HUMAN KNOWLEDGE GROWTH



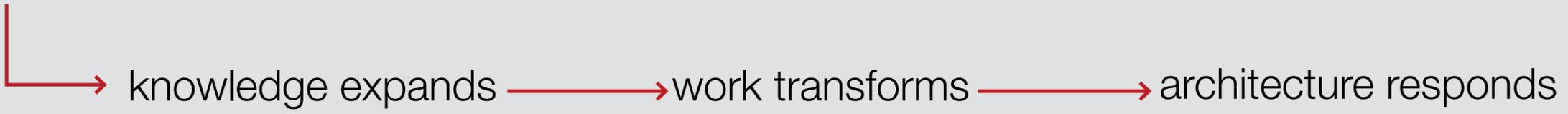
ADAPTABILITY IN ARCHITECTURE



LIFESPAN OF A BUILDING

theoretical FRAMEWORK

HUMAN KNOWLEDGE GROWTH



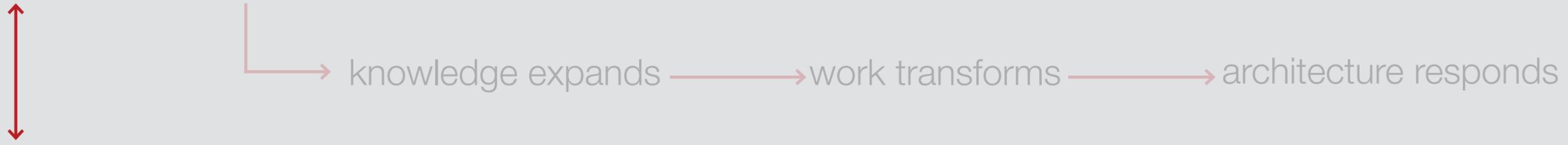
ADAPTABILITY IN ARCHITECTURE



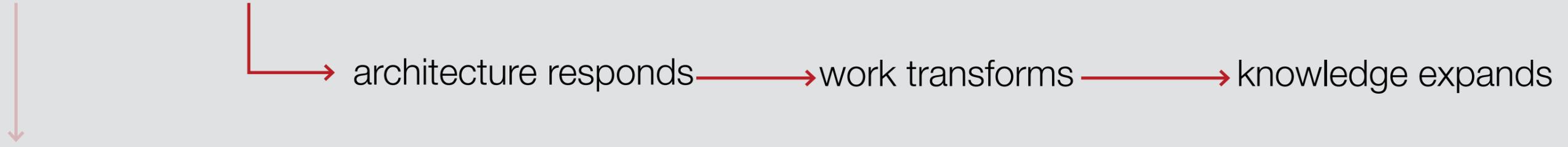
LIFESPAN OF A BUILDING

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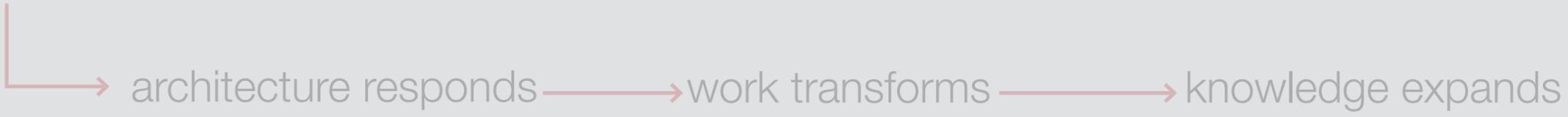
LIFESPAN OF A BUILDING

theoretical FRAMEWORK

HUMAN KNOWLEDGE GROWTH



ADAPTABILITY IN ARCHITECTURE



LIFESPAN OF A BUILDING

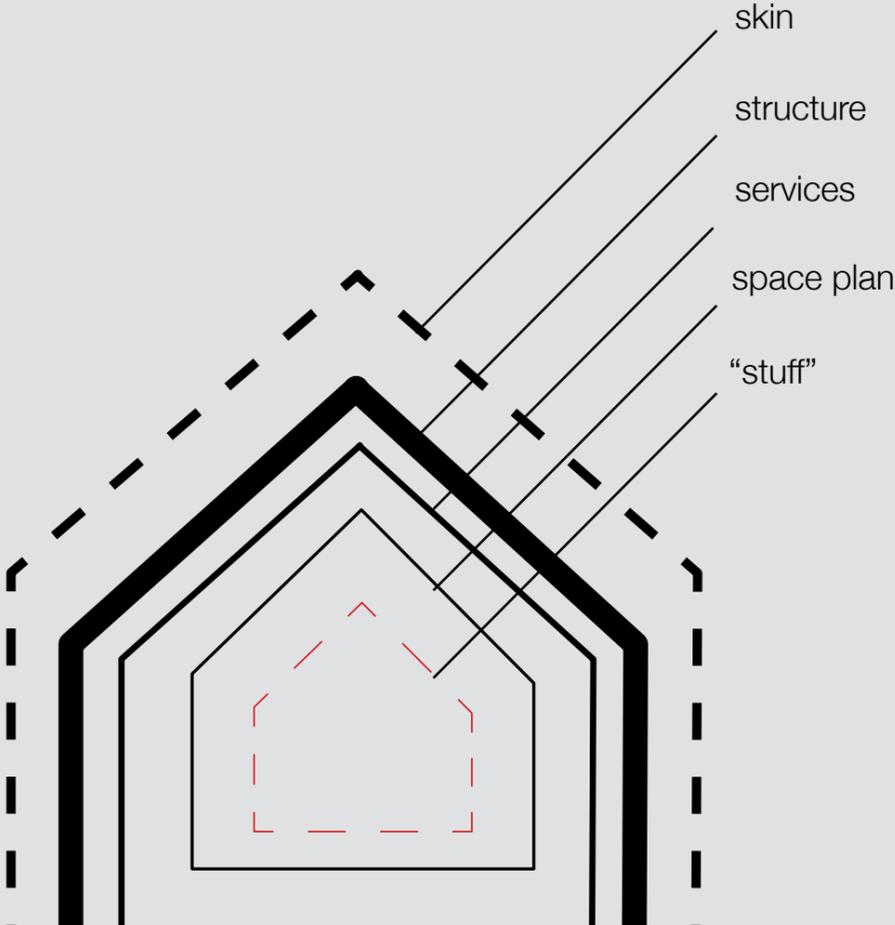
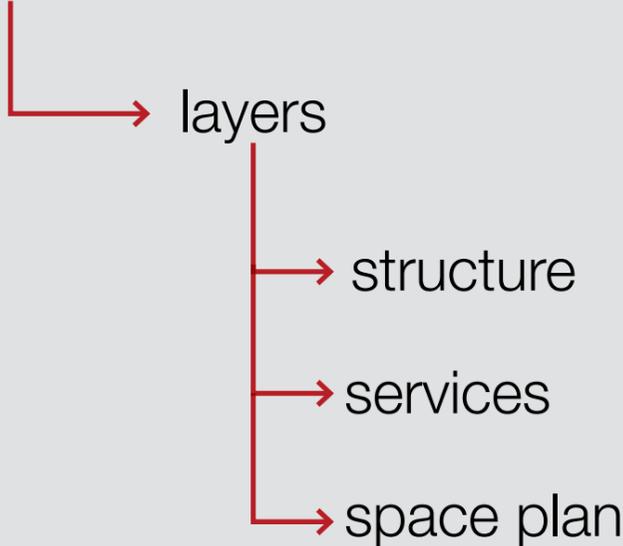


adaptability in architecture

PERMANENCE IN ARCHITECTURE

“Architecture has traditionally been perceived as enduring, permanent structures. For centuries the architect has aspired to permanence...[T]here is little consideration given by the architect or the client to the life of any building other than to assume that it will always stand.” (Zuk, 1970)

ADAPTABLE STRATEGIES



typological FRAMEWORK

REGENERATIVE MEDICINE



REGENERATIVE MEDICINE



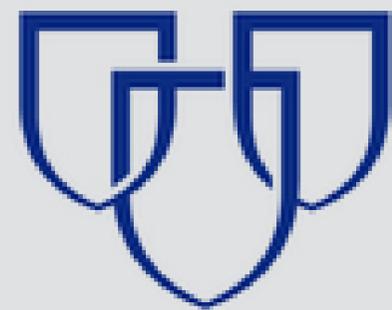
BACKGROUND

500,000 AMERICANS RECEIVE TRANSPLANTS EACH YEAR

117,920 PEOPLE ARE WAITING FOR AN ORGAN TRANSPLANT, WHICH HAS DOUBLED IN THE PAST DECADE, WHILE SUPPLY HAS REMAINED CONSISTANT.

18 PEOPLE ON AVERAGE DIE EACH DAY WAITING

MAYO CLINIC



“Mayo will provide the best care to every patient every day through integrated clinical practice, education and research”



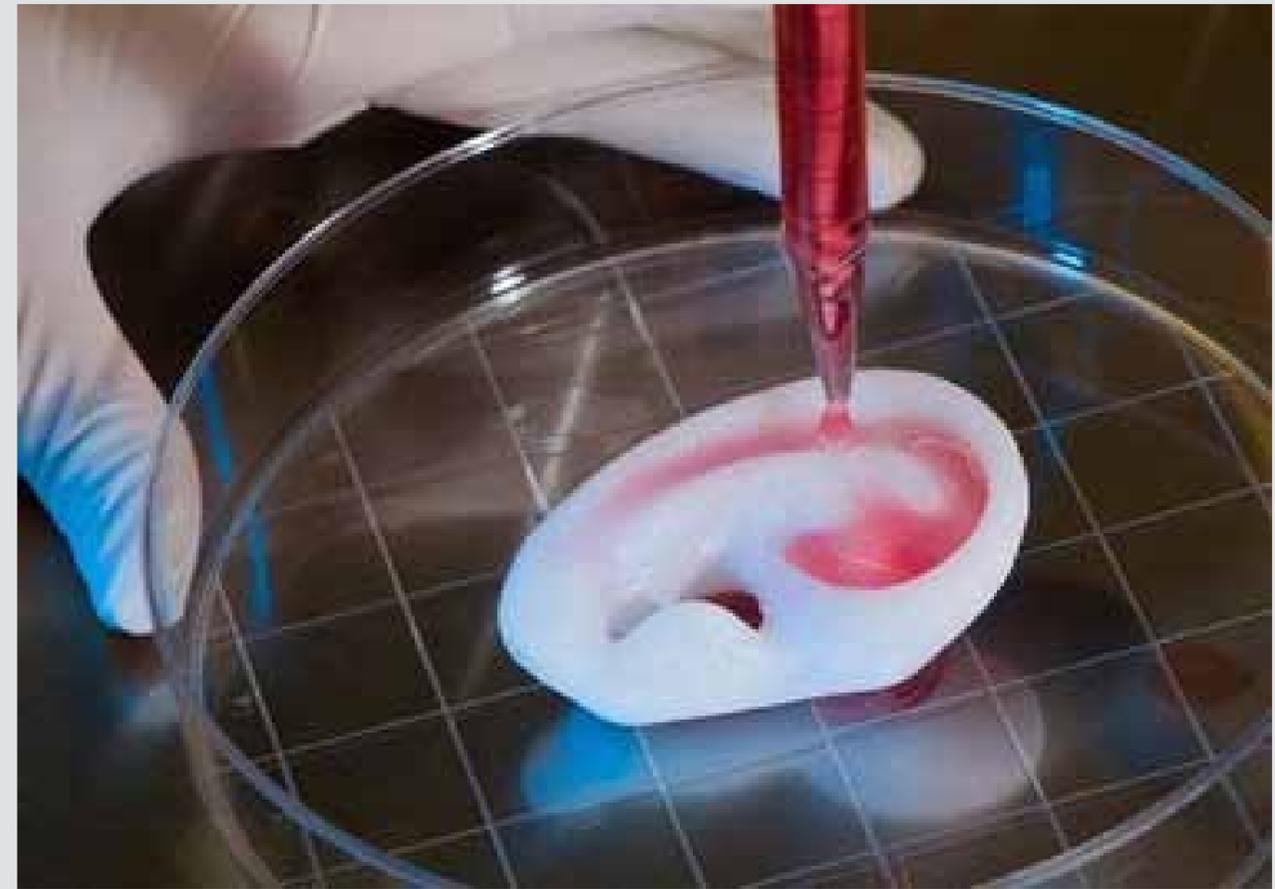
SUCCESSFUL CELL AND TISSUE TYPES

bone
blood vessel
bladder
cartilage
connective tissue
cornea
diaphragm
ear
fat
heart
heart valve
intestine
kidney
liver
nerve
neurons
pancreas
salivary glands
muscle
skin
tendons
trachea

SCAFFOLDING



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PRINTING



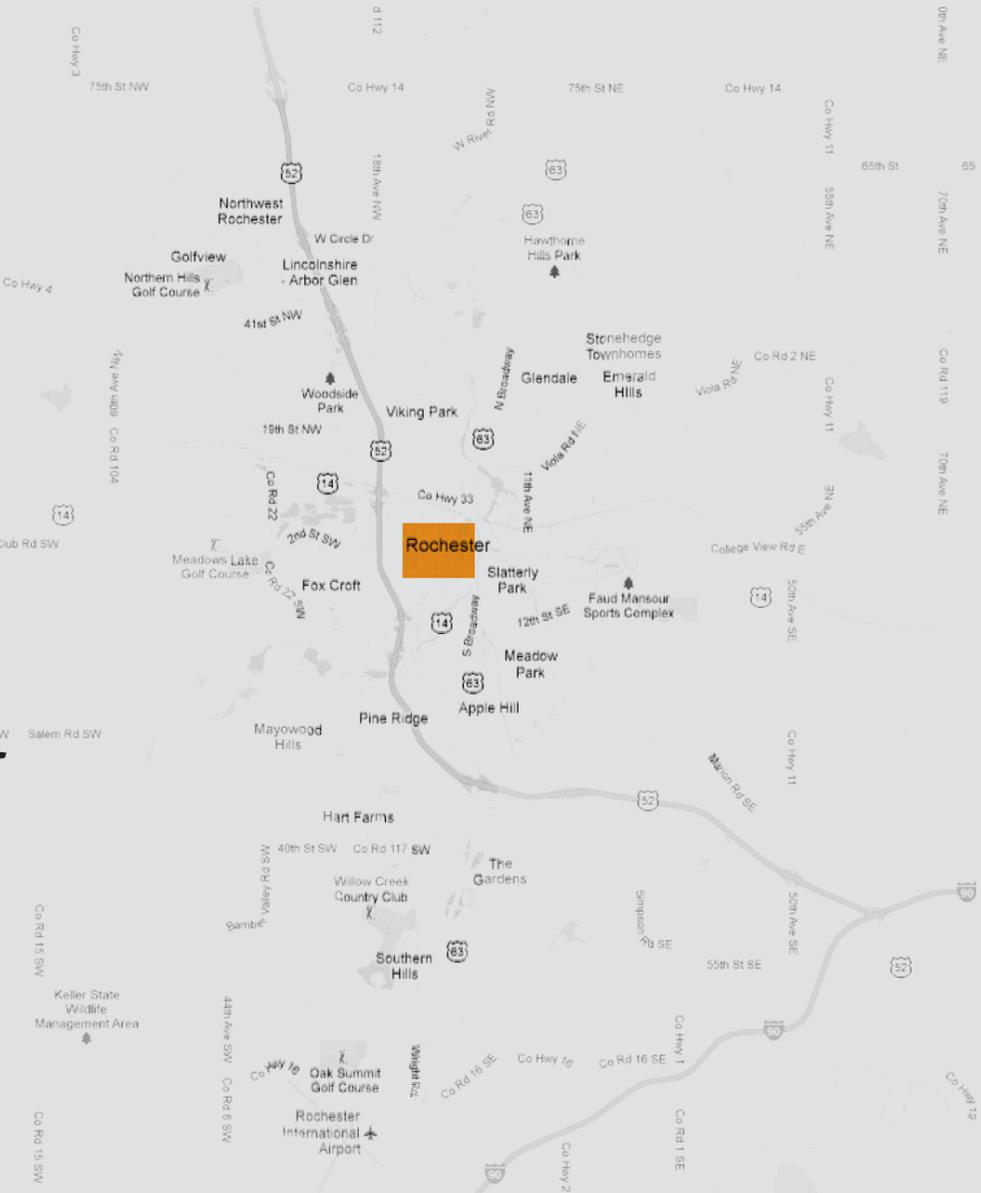
<http://www.gizmag.com/>



design FRAMEWORK



site selection



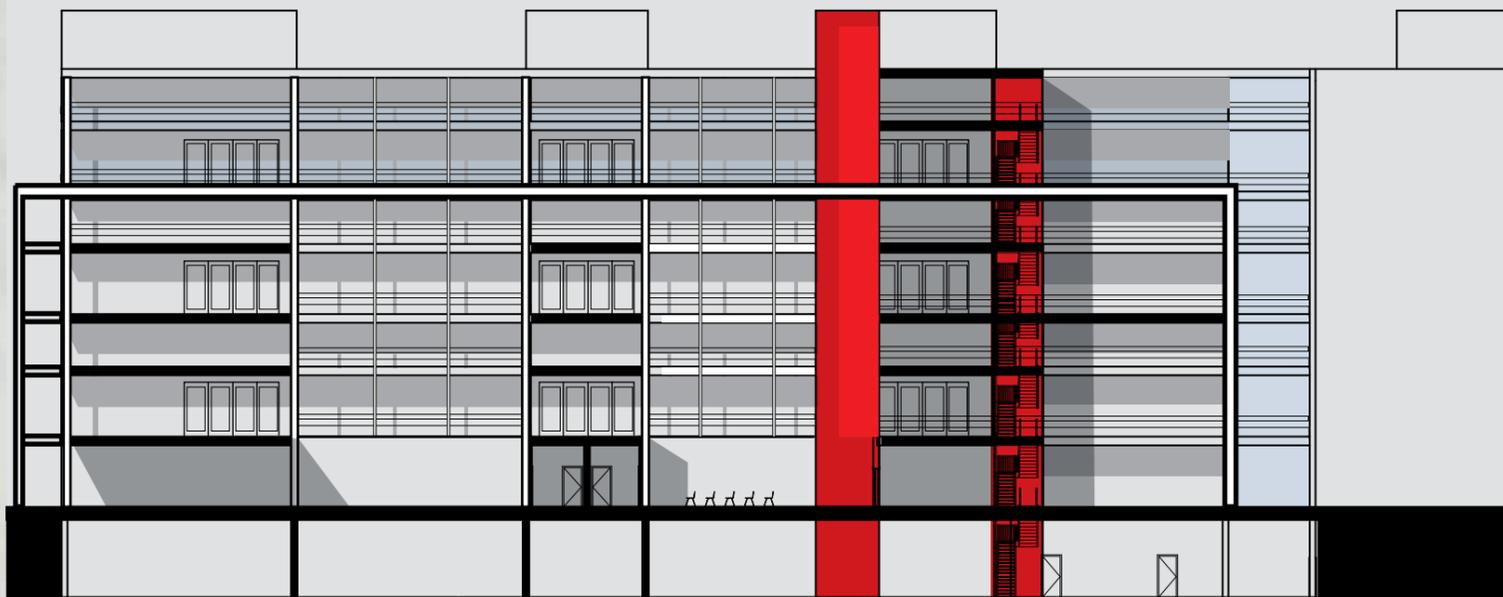
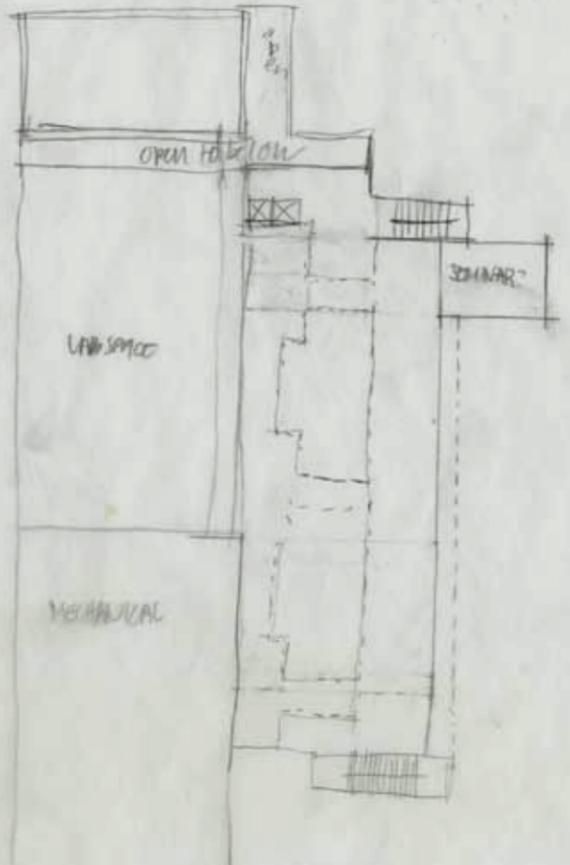
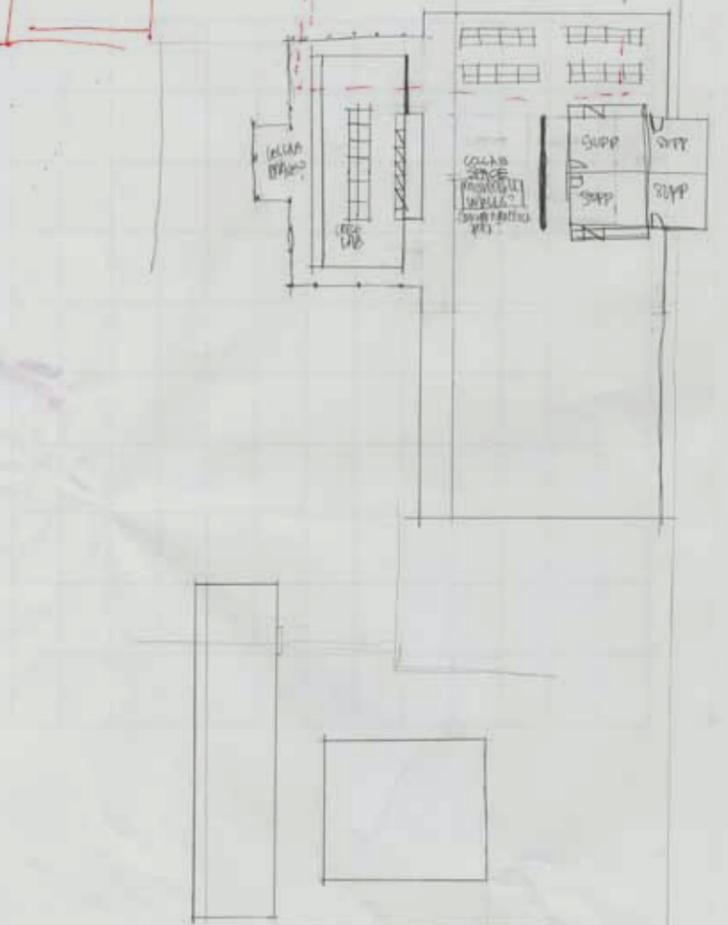
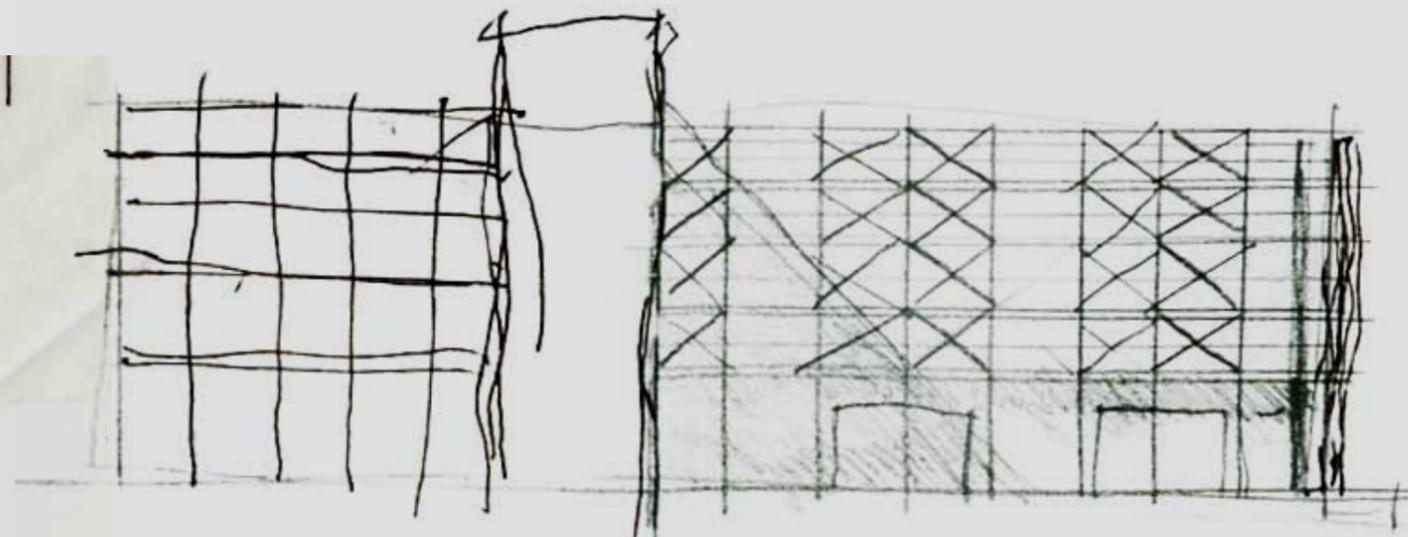
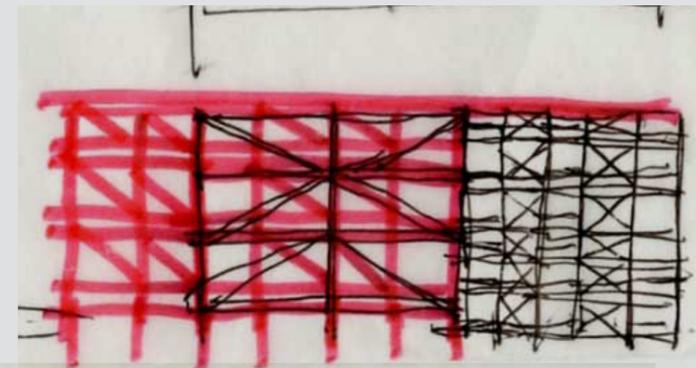
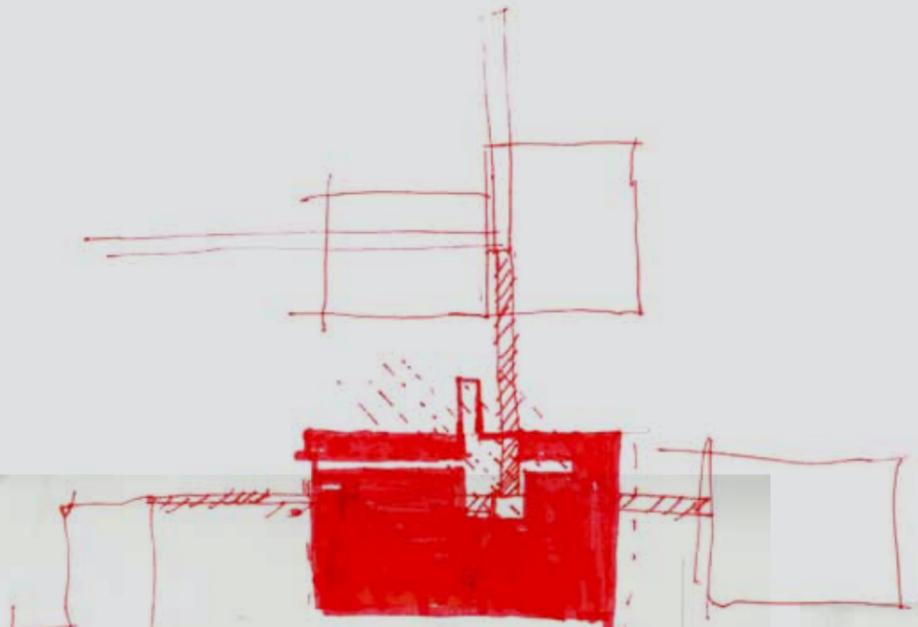
- Mayo Clinic
- Mayo Clinic existing research facilities
- site selection

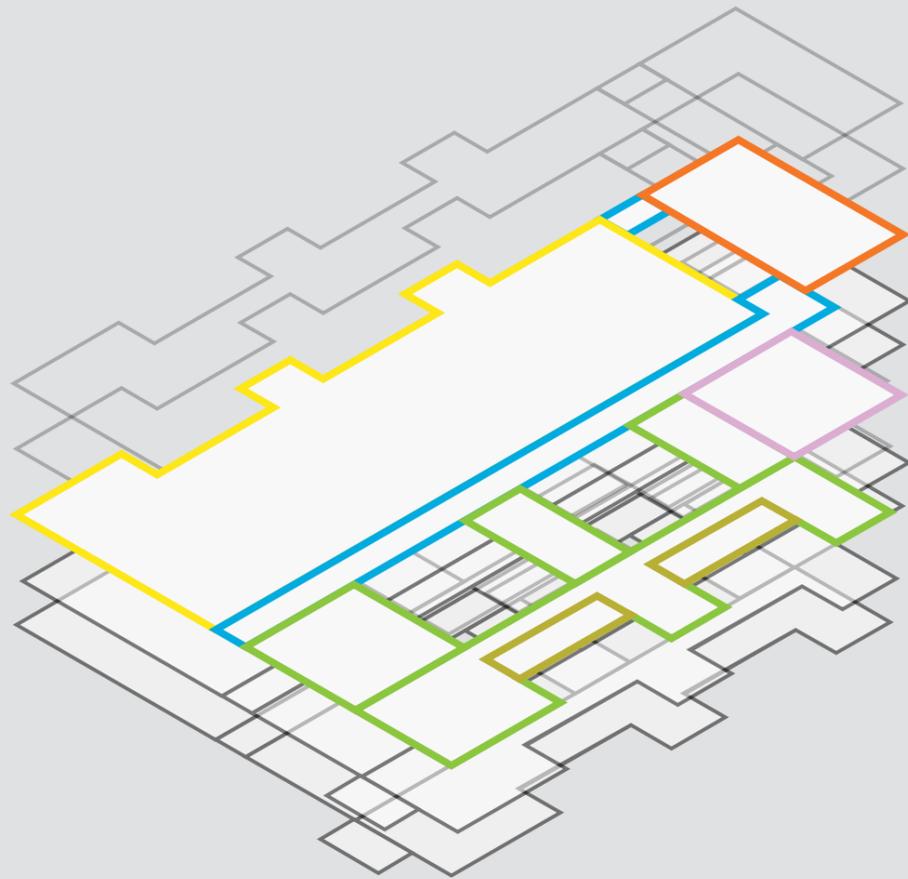


Roger Thiemann. Retrieved from city-data.com

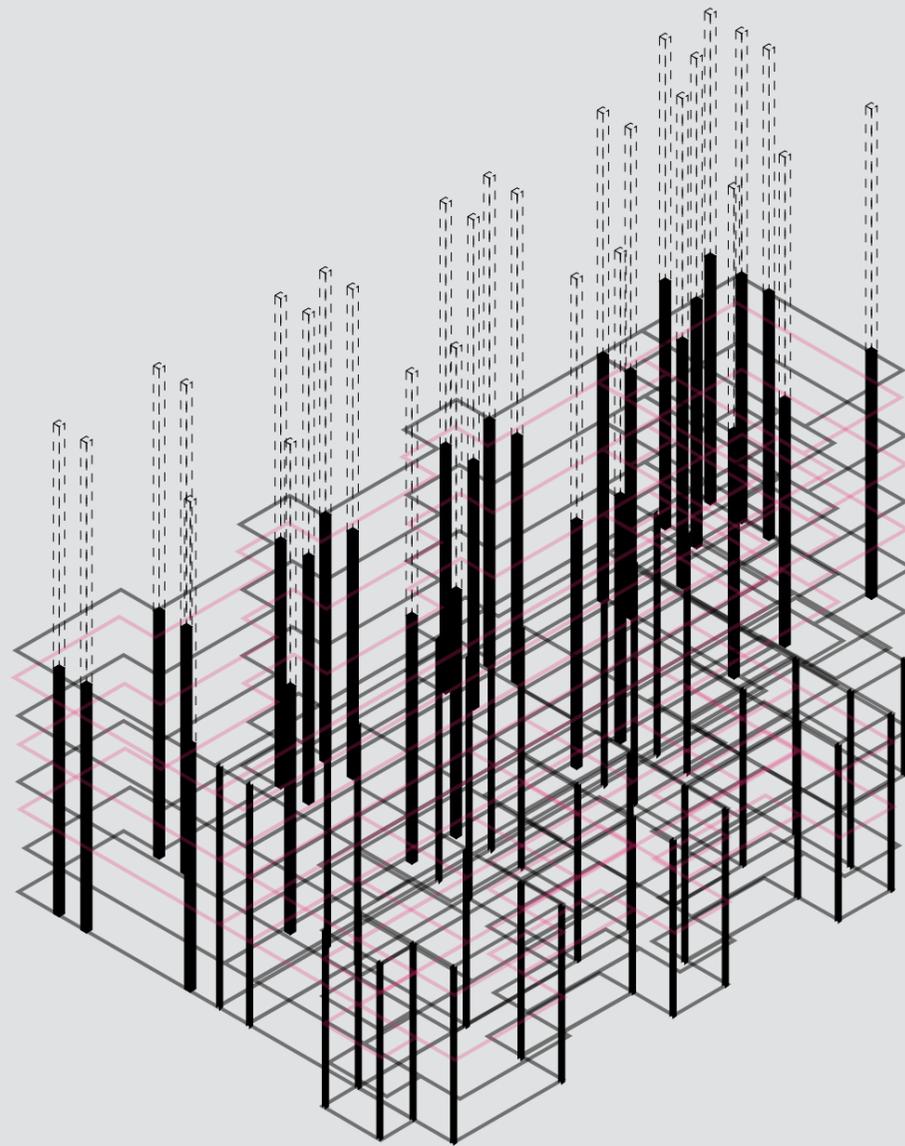


process

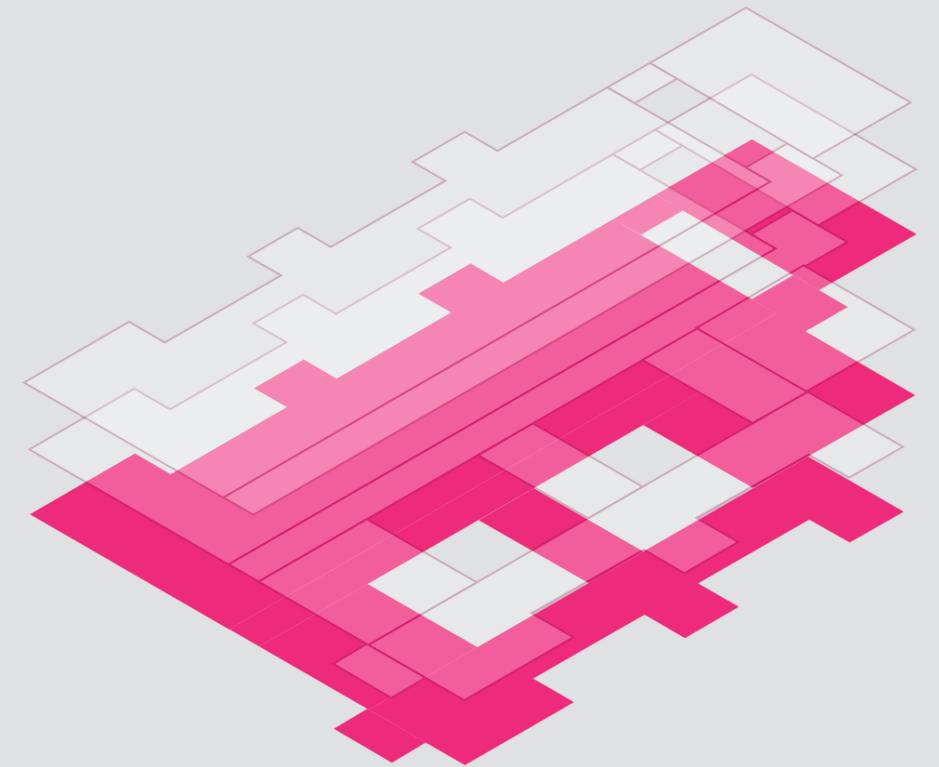




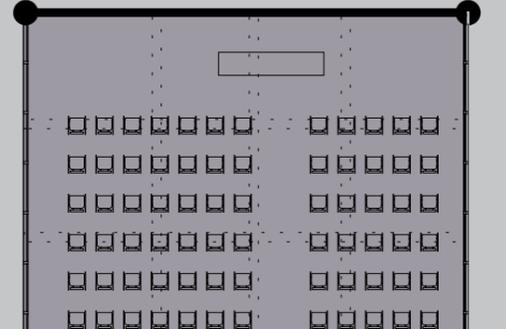
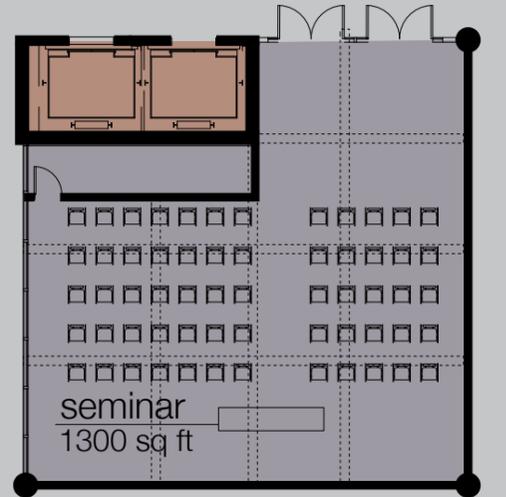
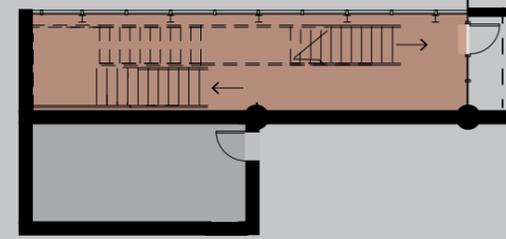
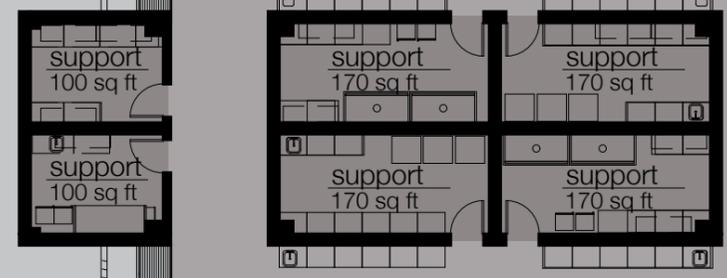
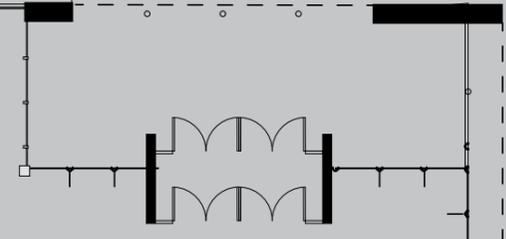
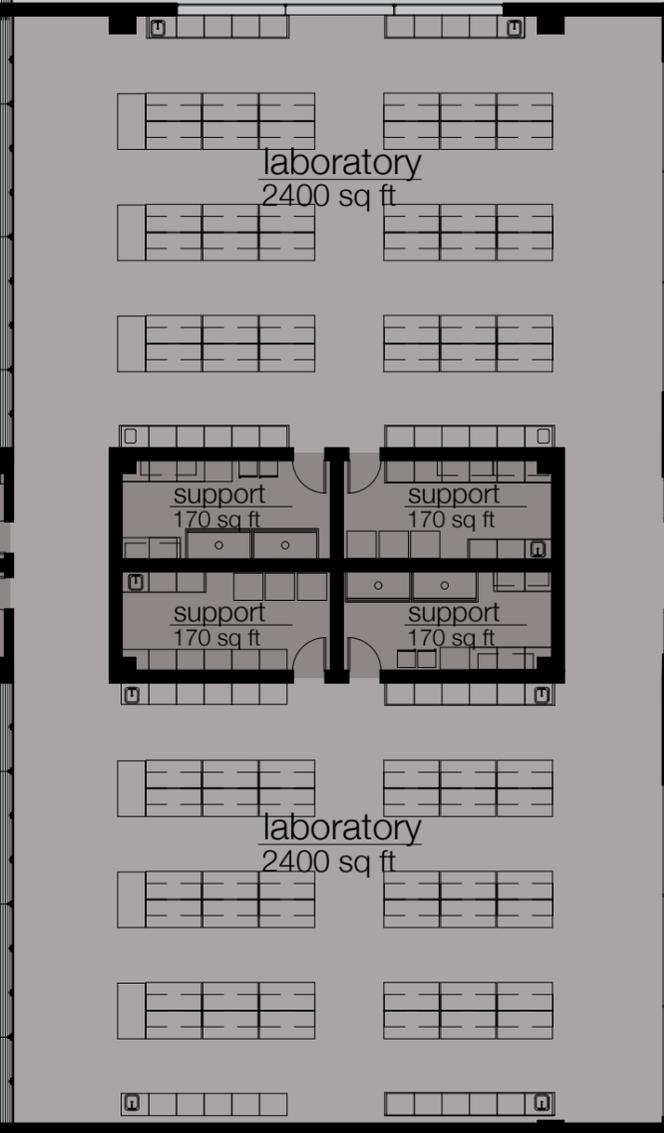
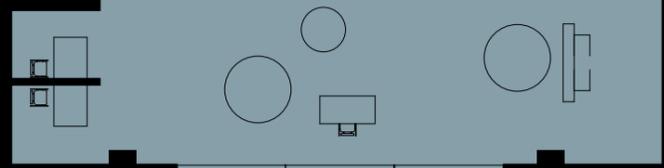
SPACE PLAN

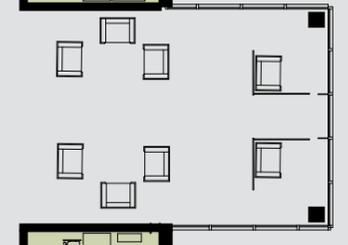
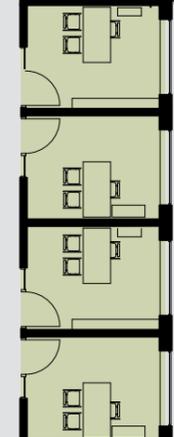
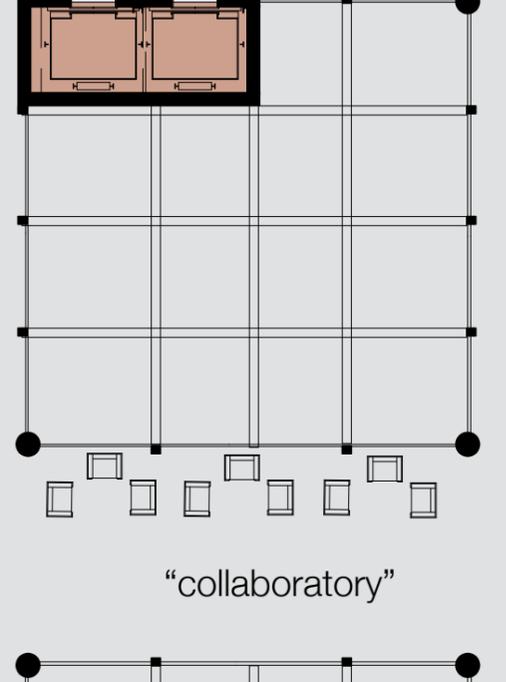
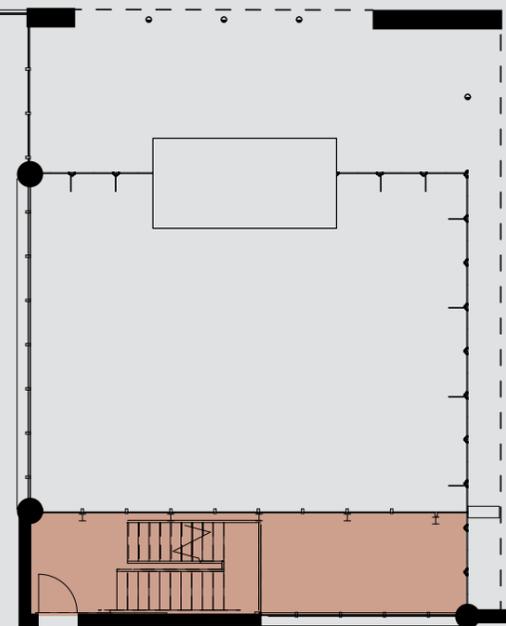
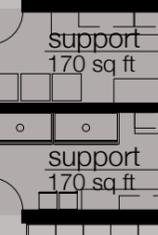
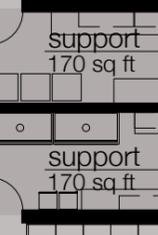
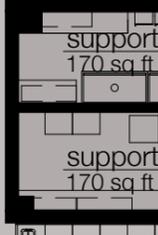
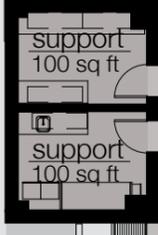
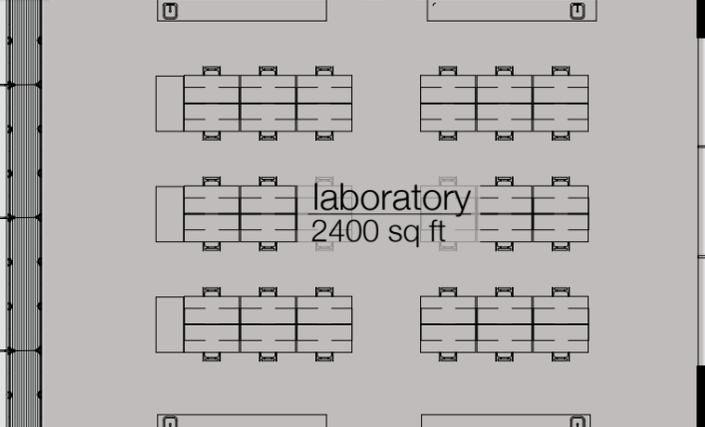
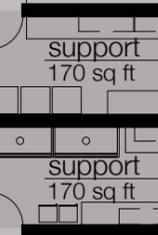
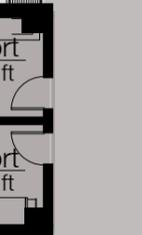
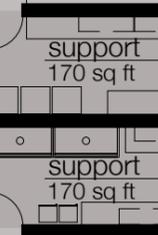
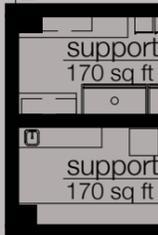
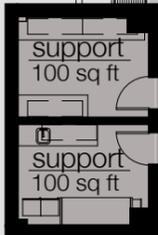
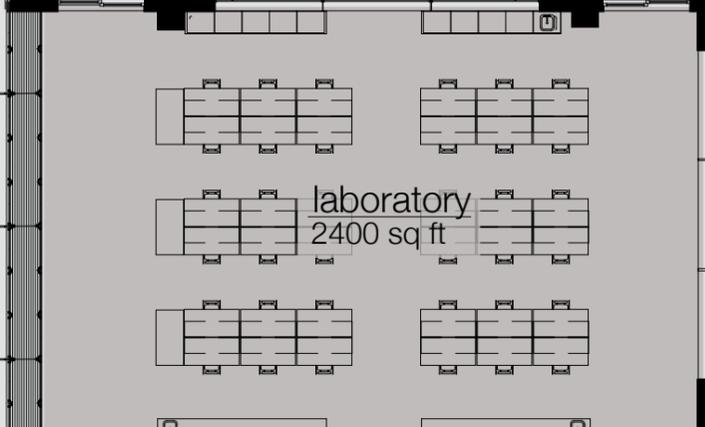
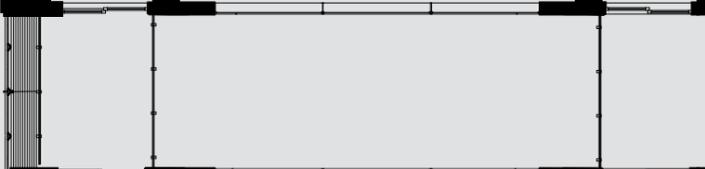
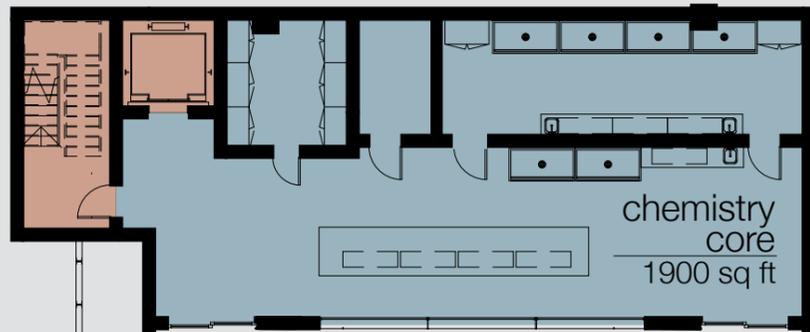


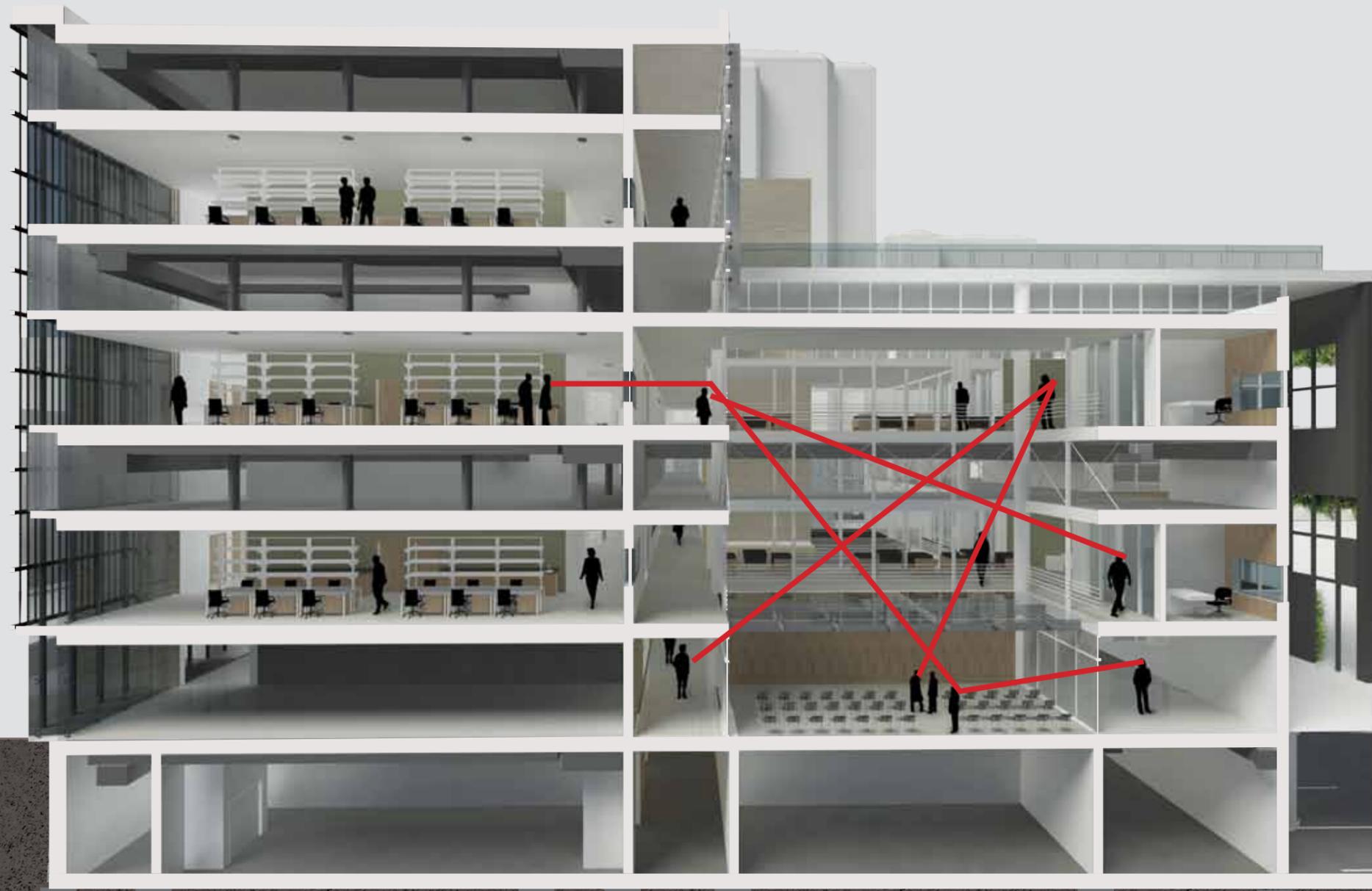
STRUCTURE



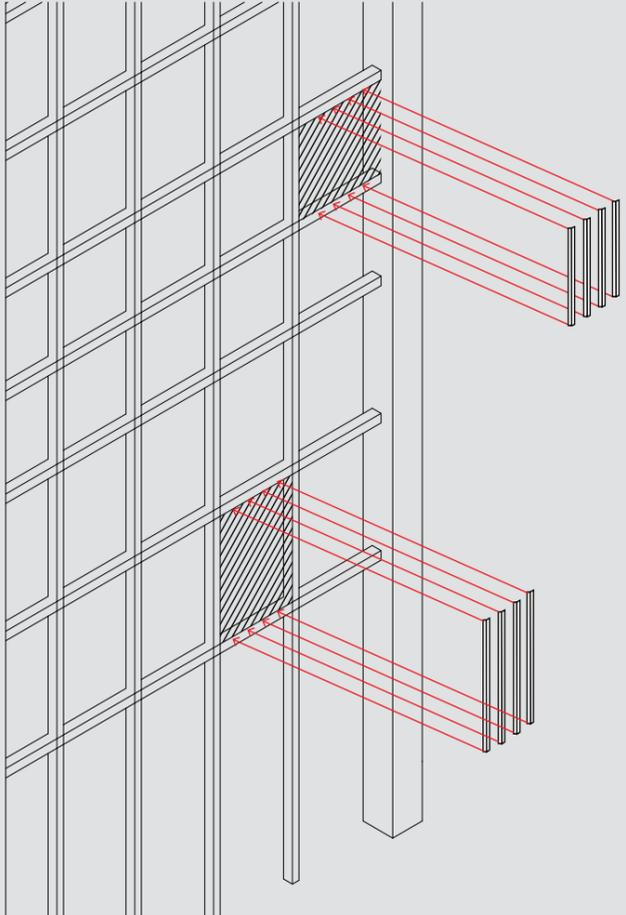
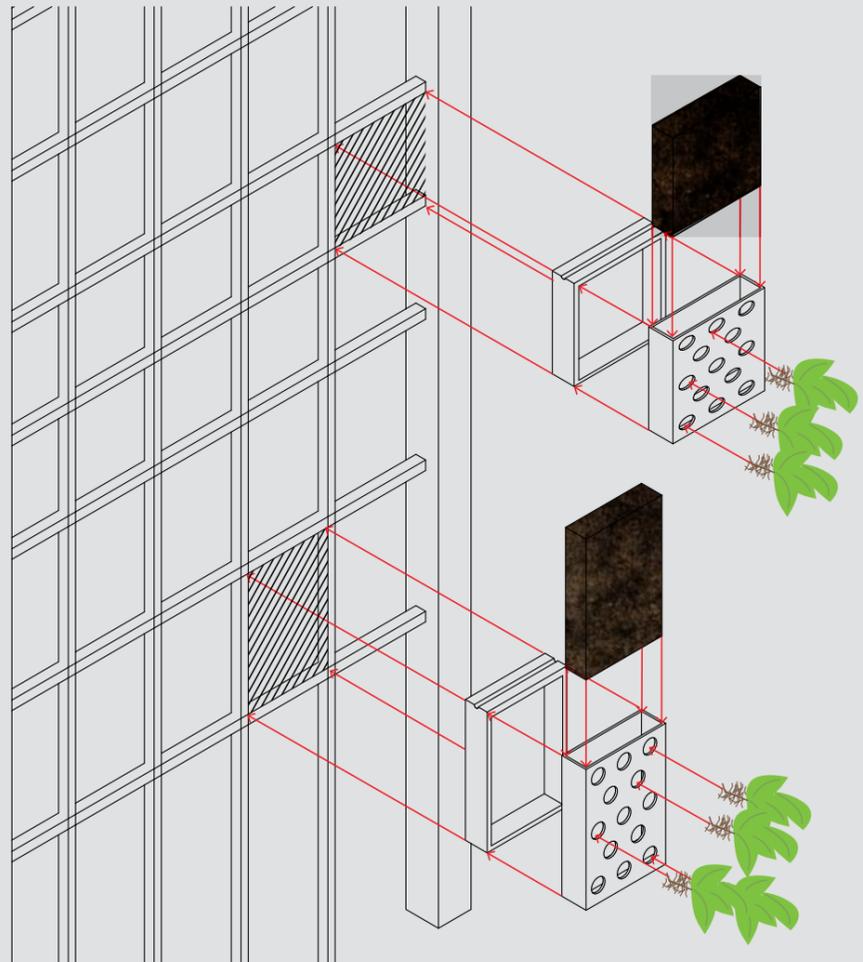
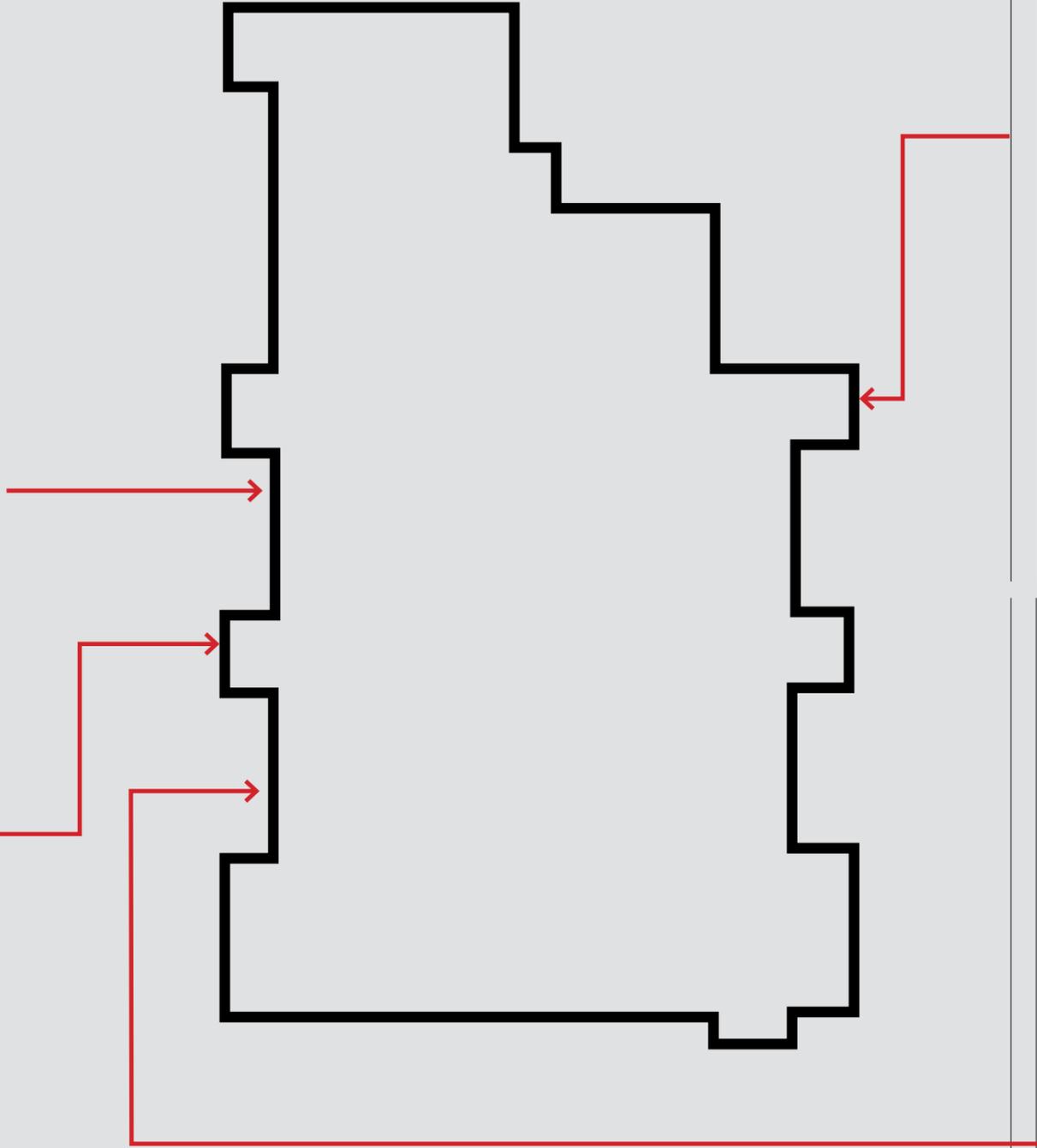
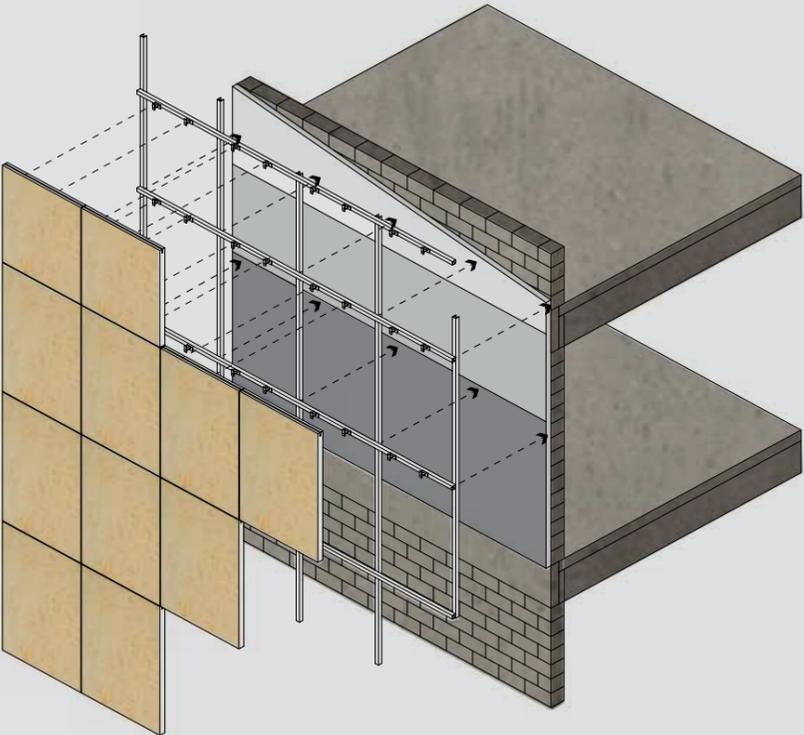
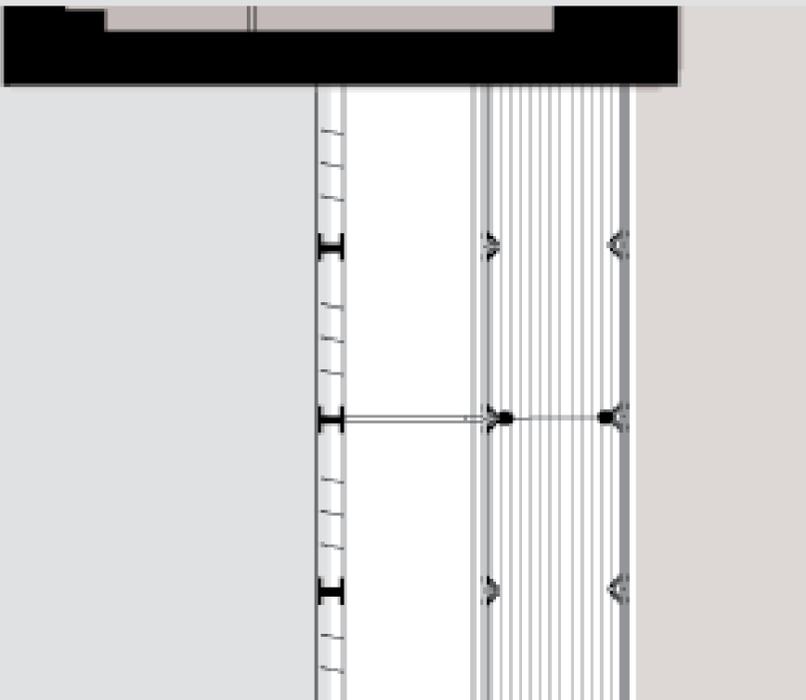
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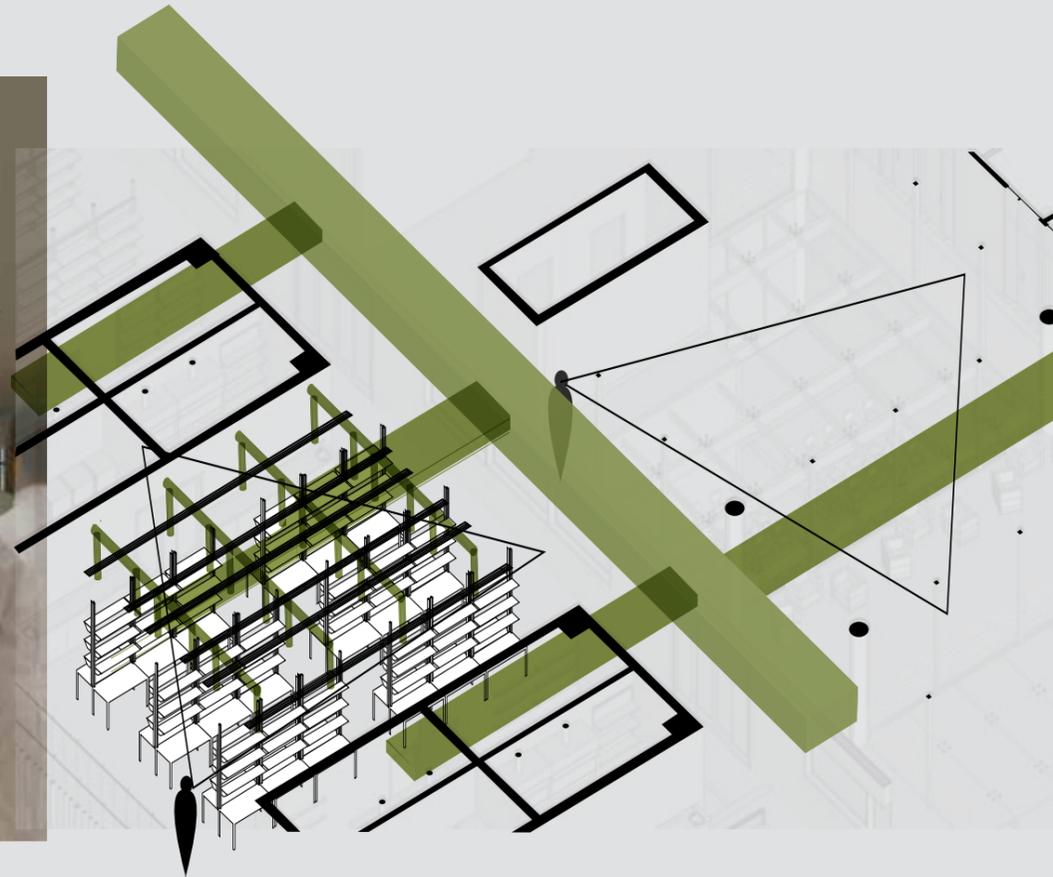




materials







↑ "collaboratory" to office space ↓

↑ open transformed to team-based ↓

