Obnovit - Renew

Fisher Body Plant #21, Detroit, MI

Emilee Olstad

2019

Why I did this?

- Grandparents Car
- TV show: Abandoned America

Location: Detroit, MI
Status: Abandoned
Photographs Taken: 2019

Fisher Body Plant #21, Detroit, MI

- Research:

History of Site

Case Studies

Connections to Area

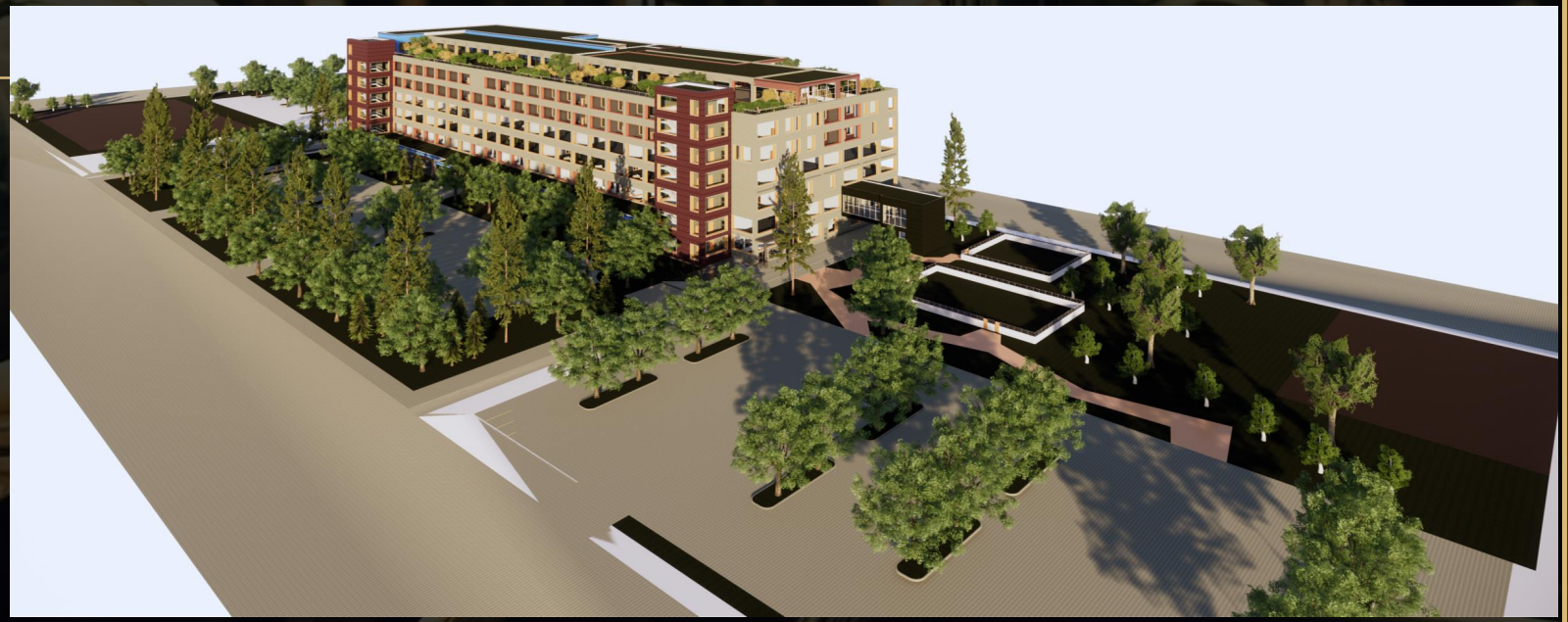
Current Site Conditions

Passive Systems Catalog

Passive Influence on Building

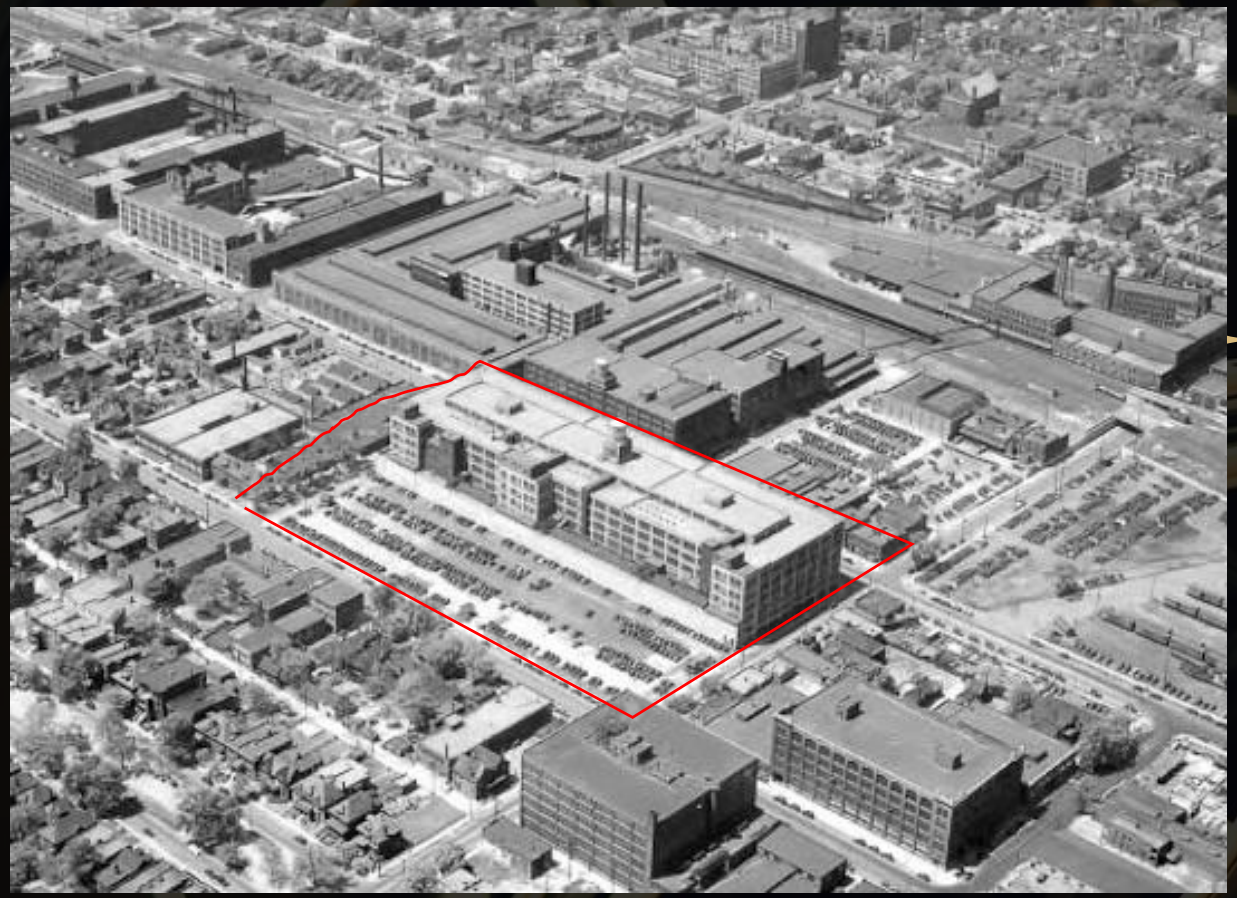
Program

Movement within the building



History of Site:

- Built 1919 by Albert Kahn



Fisher Body History Time-line:

1904-05	Fisher brothers move to Detroit
1908	Fred & Charles Fisher start Fisher Body Company.
1914	Largest auto body manufacturing plant in world
1916	Fisher Body Corporation making 370,000 bodies per year.
1919	Fisher Body Plant #21 building built by Albert Kahn.
1919	GM buys 60% of Fisher Body.
1919-25	Fisher Body 21 was building body's for Buick & Cadillac.
1926	Entirely in-house coachbuilding division of GM.
1929	Fisher Body became engineering facility.
1956	Fisher 21 made Cadillac Limousine bodies.
1974	Fisher Body Plant 21 closed
1984	Fisher Body was dissolved by GM.
1990	The Fisher Body Emblem is no longer used.
1990	Building bought by Carter Color Coat Company
1993	Building abandoned by Carter
2000	Detroit City owns building through default
2004	Michigan Dept. Env. Quality – determines the site. Severely contaminated.
2008	EPA start removing soil & equipment. Wooden brick in floor & sections of concrete removed.
2010	Remove underground storage tanks.
2018	Still contaminated by EPA, police auto impound lot, Floor sections caved in, cement deteriorated

For sale from city for $300,000.

Case Study

Clipper Mill, Baltimore, MD

Abandoned and deteriorating cotton mill.

Created apartments within the shell of the building.

Left the roof trusses.
Thriving mixed use area.

Case Study

Trinity Grove, Houston, TX

Abandoned warehouse in bad neighborhood.

Started as restaurant incubator.

Now a mixed use space that draws people to the area.

Case Study

Altmarkt-Galerie, Dresden, Germany

Built completely inside another building.

Connections to adjacent neighborhoods.

Mall using passive design.

Case Study

ACROS Fukuoka, Japan

Vegetation and building designed together.

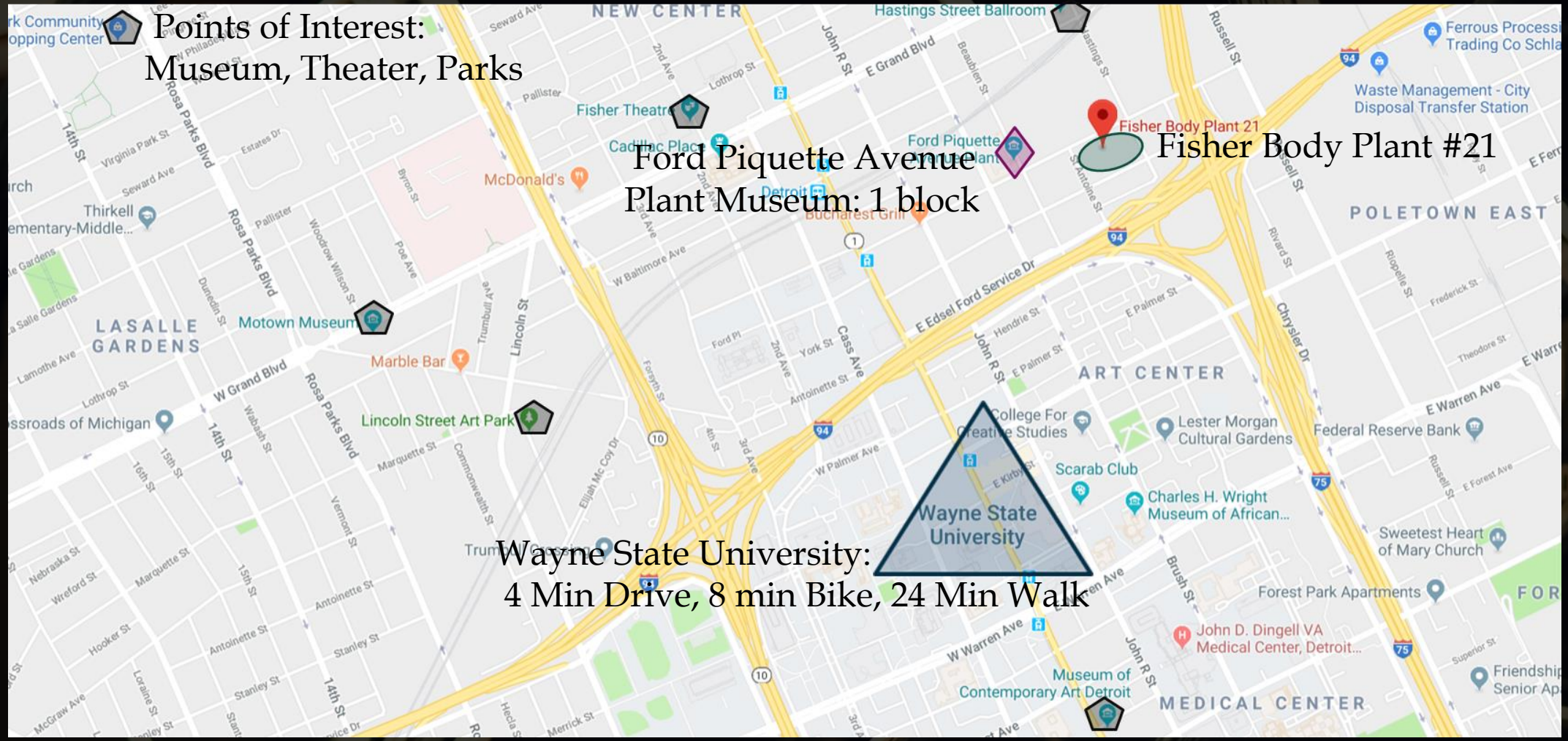
Passive cooling and daylighting from plants and light tower.

Mixed use building.

Connection:

- City

Connection:
• Neighborhood



Connection:

Milwaukee Junction

Nodes

Current Condition

• Site

The building has been left to deteriorate from the weather.

Scrappers have stolen anything worth value, metal, bricks.

Vandals have broken the blue glass windows and left the surrounding sidewalk covered with glass.

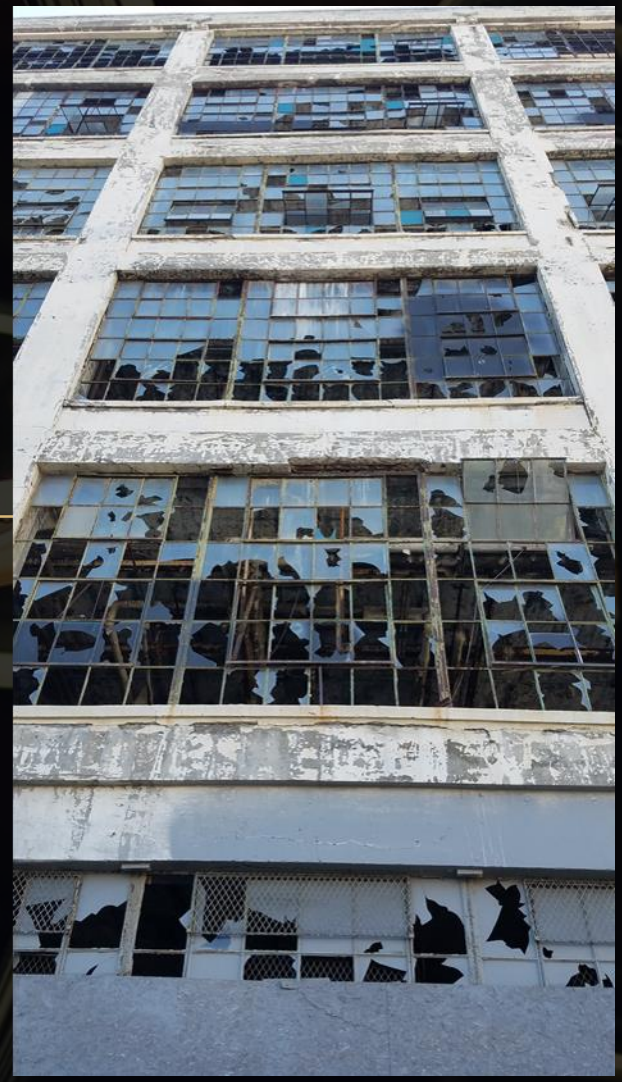
Spray paint artists have tagged and displayed their images on the walls of the building.

The interior is damp and dark, the exterior is broken.

Southwest Exterior

West Exterior

Damaged exterior windows



Interior

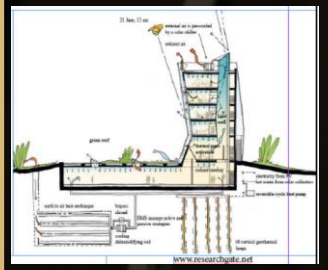
Catalog of Passive Systems

Passive design is the use of the earths natural elements to heat, cool, provide energy to your building. The five main principles are Sun, Wind, Water, Noise and Plants but also include Thermal Mass and Thermal Comfort. A passive building designs goals are to save money, energy, and water, reduce material cost, minimize construction waste, enhance the site, and community and improve aesthetics of area.

Advantages: Efficient, design is free, interior air temp is constant, better overall health because no dust particles from vent, lower energy bills

Disadvantages: construction cost is higher, better design standard, must have airtight envelope, maintenance and cleaning of systems, well constructed

SUN:



Provides:
Heat
Light
Energy

WATER:

Provides:
Cooling
Supports life
Plants

WIND:

Provides:
Ventilation
Cooling
Less humidity

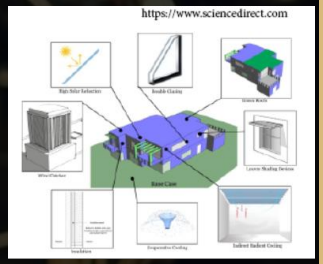
VEGETATION:

Provides:
Cooling
Shade
Protection
Supports life
Ventilation

NOISE:

Provides:
Quiet
Air flow

BUILDING MASS:



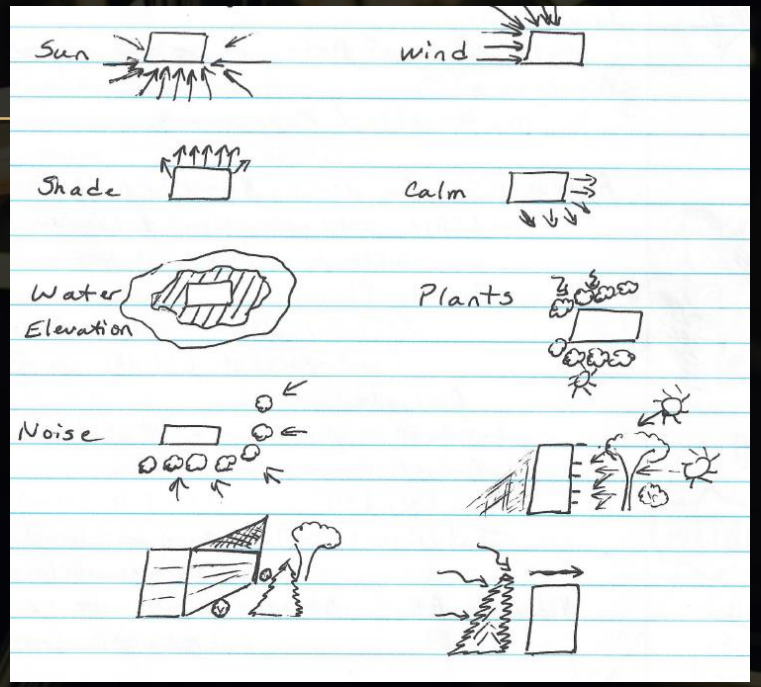
Provides:
Constant
Temperature
Comfort

Matrix of Passive Systems

How the systems could work or not work together using the strengths of one could eliminate the weakness of another.

Main Aspects	Shade	Light	Heat	Cool	Snow	Water	Humidity	Noise	Ventilation	Air Filtration/Plants	Thermal Mass
Skylight		x	x		x	x	x		x	x	
Monitor/Roof Lantern		x	x		x	x	x		x	x	
Light Scoop		x	x		x	x	x		x	x	
Saw Tooth	x	x	x				x		x	x	x
Clerestory	x	x	x				x		x	x	
Trombe Wall	x	x	x				x	x	x	x	x
Translucent Surfaces	x	x	x				x				x
Sun-Space		x	x				x	x	x	x	x
Photo-Voltaics		x	x						x	x	
Window Orientation	x	x	x	x	x	x	x	x	x	x	x
Fixed Devices	x	x	x	x			x	x			x
Movable Devices	x	x	x	x			x	x			x
Internal Devices	x	x	x	x			x	x			x
Glazing	x	x	x	x			x	x	x		x
Reflective Surfaces	x	x	x	x			x	x			x
Evaporative Cooling				x	x	x	x		x	x	x
Cooling Towers				x			x		x	x	
Convection				x			x		x	x	x
Conduction			x				x		x	x	x
Radiant			x	x	x	x	x		x	x	x
Night Flush				x			x	x	x	x	x
Geo-Thermal			x	x	x	x	x		x	x	x
Wind Turbine			x	x				x	x	x	
Gray Water			x		x	x					
Solar Hot Water			x		x	x					
Bioswale			x	x	x	x	x	x	x	x	
Rain Runoff			x	x	x	x	x		x	x	
Noise Berms				x	x	x	x	x	x	x	x
Vegetation Barrier	x	x	x	x	x	x	x	x	x	x	x
Green Roof	x		x	x	x	x	x	x	x	x	x
Vertical Greenery	x	x	x	x	x	x	x	x	x	x	
Shade/Light	x	x	x	x	x	x	x	x	x	x	
Ventilation			x	x	x	x	x	x	x	x	
Parking Islands	x			x	x	x	x	x	x	x	
Garden/Market	x	x		x	x	x	x	x	x	x	
Thermal/Heat Bridge				x			x	x	x	x	x
Insulation			x	x			x	x	x		x
Windows/Glass	x	x	x	x			x	x	x	x	x
Moisture Control			x	x	x	x	x		x	x	x

Sketches of Building with natural elements

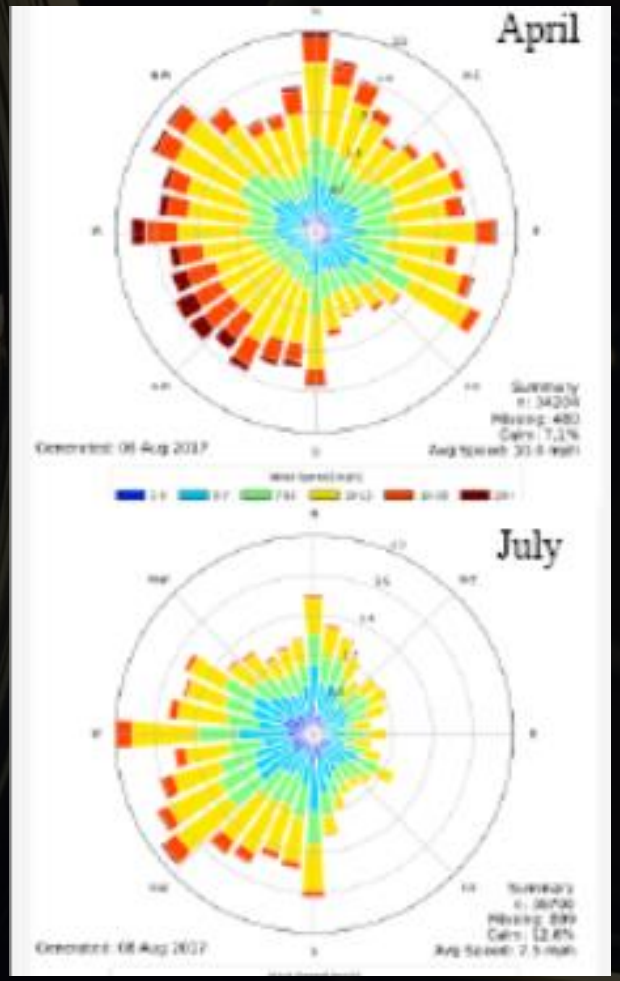


• Sun & Wind Paths:

Summer Solstice - 8am

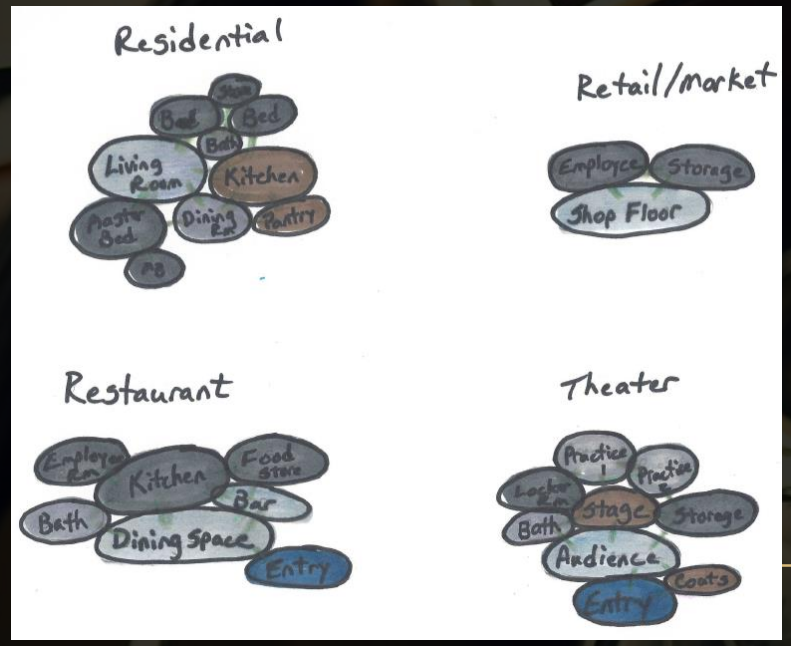
Winter Solstice - 8am

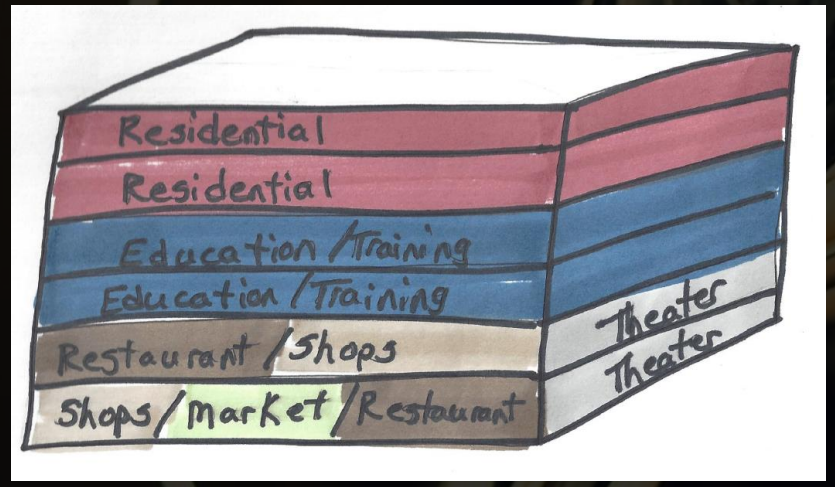
Wind Roses



Circulation & Program

Bubble Diagrams





HORIZONTAL SPACE:
VERTICAL SPACE:

1st-2nd: shops, restaurants, farmers market, daycare and pet boarding
3rd-4th: offices, meeting spaces, theater and education
5th-6th: Residential 1,2,3 bedroom & 2 story apartments
Roof: pool, exercise space, pet area, lounge, and park
Parking: underground & off-street

Passive systems wanted: daylighting, ventilation, green roof, rainwater collection & recycling, vegetation for shade, solar panels, shading devices

Two adjacent sites: included in design as future expansion provide green space, parking and community gardens for the farmers market.

Southeast Exterior

Passive Design and a Building:

This thesis program has taken a deteriorating industrial building, the Fisher Body Plant #21 in Detroit, MI built in 1919 by Albert Kahn and has created an adaptive reuse space using passive design.

Passive systems include a light tower cut through the center of the building to provide daylighting and ventilation to the lower floors.

A green roof was designed to collect rainwater and melting snow into storage tanks located under the parking lot, which will collect and filter both rain water and gray water for use throughout the building for flushing toilets and watering vegetation.

Other passive systems include vegetation around the site for shade and filtered air, solar panels on the exterior and shading devices on the south and west sides.

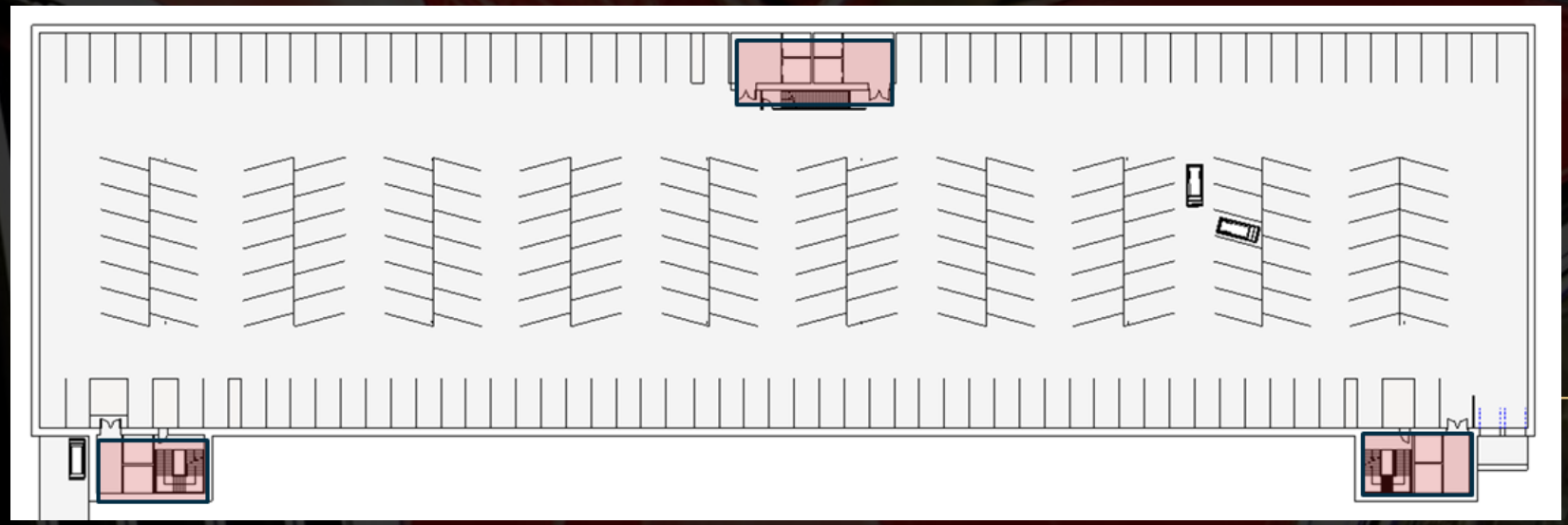
The exterior windows on the 5th and 6th floors were taken out and a new exterior wall was set in to the building to create balconies for the residences providing shade and garden spaces for the building users.

Parking was added below grade and on vacant lots adjacent to the site along with transit lines.

The two adjacent sites provide green space, parking and community gardens for the farmers market.

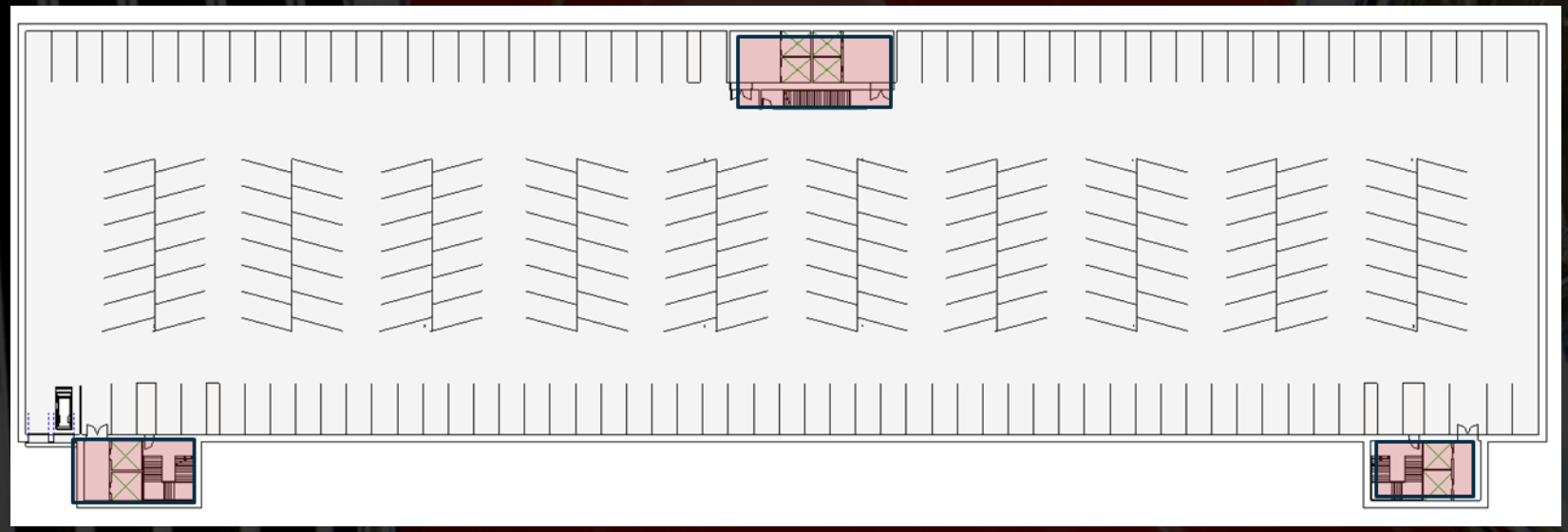
Design Idea:
South Perspective: Autumn

Underground parking garage



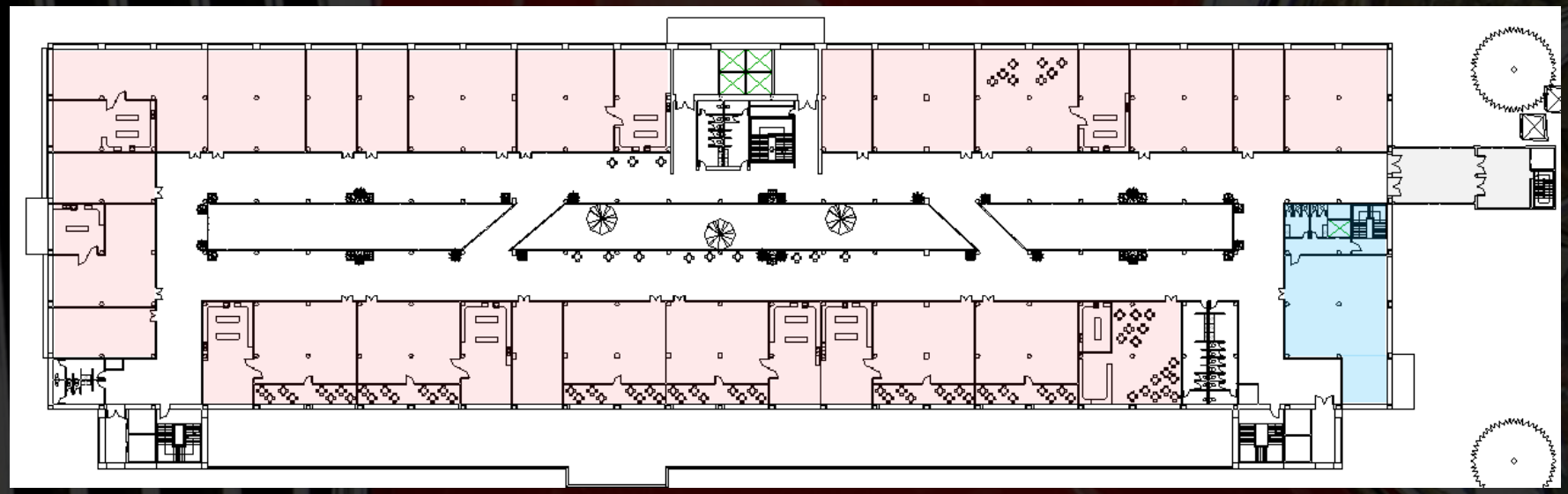
Parking for people residing in the building, attending school, working within the building and owners of the commercial spaces.

Level 1: Private 222 spaces



Level 2: Private 224 spaces

1st & 2nd Floors: Retail, Restaurants, Market, Daycare, Pets



Program:

- Retail - 60,615sf
- Restaurants - 20,200sf
- Farmers Market:
  - Indoor booths
  - Gardens

1st Floor

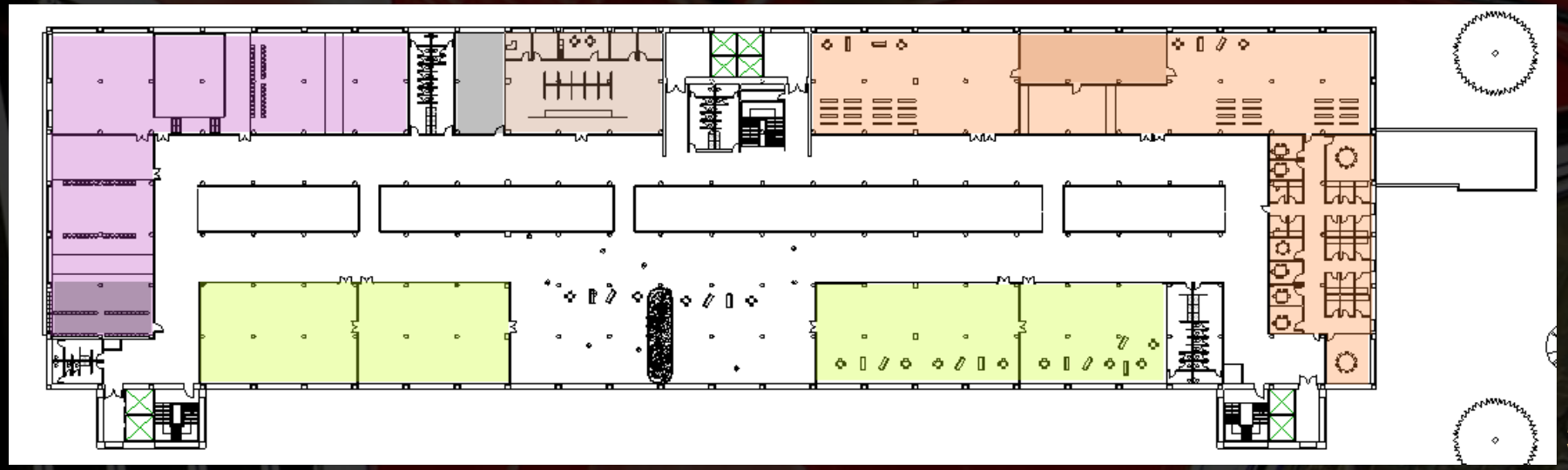
2nd Floor

- Daycare: 100 kids
  - Classroom space
  - Indoor and Outdoor space
- Pet Area:
  - 1st floor Boarding
  - Roof top Exercise space
  - Outdoor park

1st Floor:

1st Floor Patio:

3rd & 4th Floors: Education, Community Space



Education Space:
- Library
  - Computer rooms
  - Meeting rooms
  - Study spaces
- Classrooms
- After school program
- Faculty/Employee Offices
- Theater

Utility space
Restrooms

3rd Floor

4th Floor

3rd Floor:
Theater – Movie & plays (224 seats each)
Offices
Library
Computer & meeting rooms
Miscellaneous rooms
Boys & Girls club with lounge area.

4th Floor:
Classrooms & Teacher offices

3rd Floor Lounge:

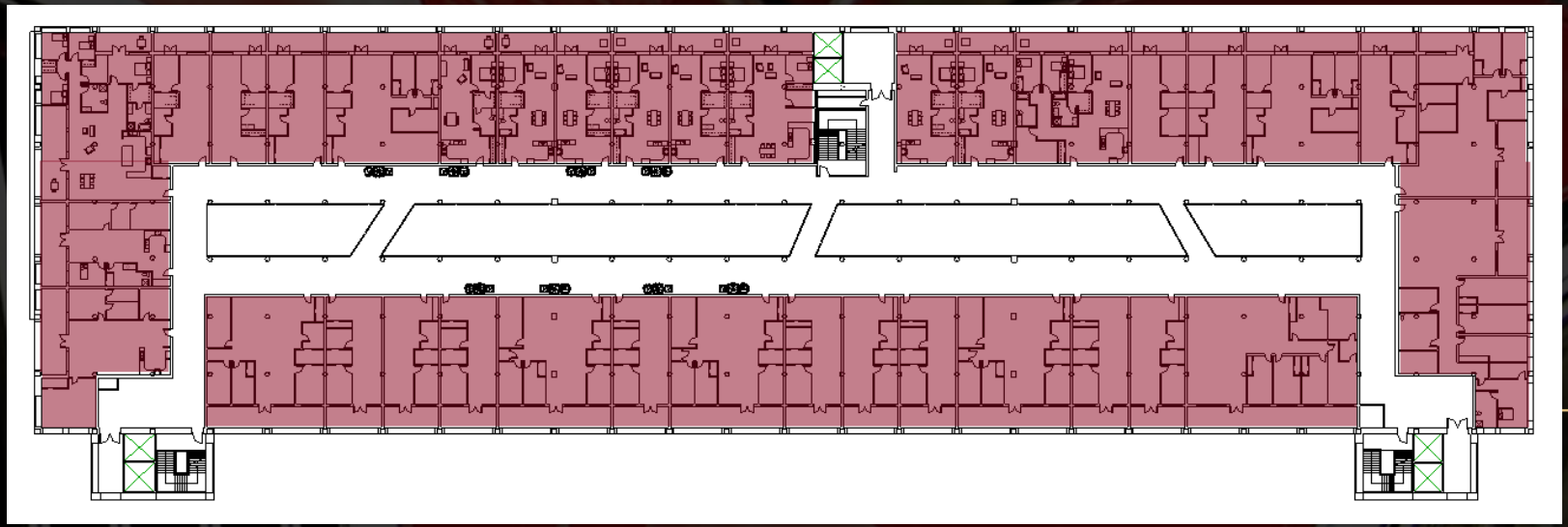
Views:

Floors view up

2nd Floor

3rd Floor

5th & 6th Floors: Residential

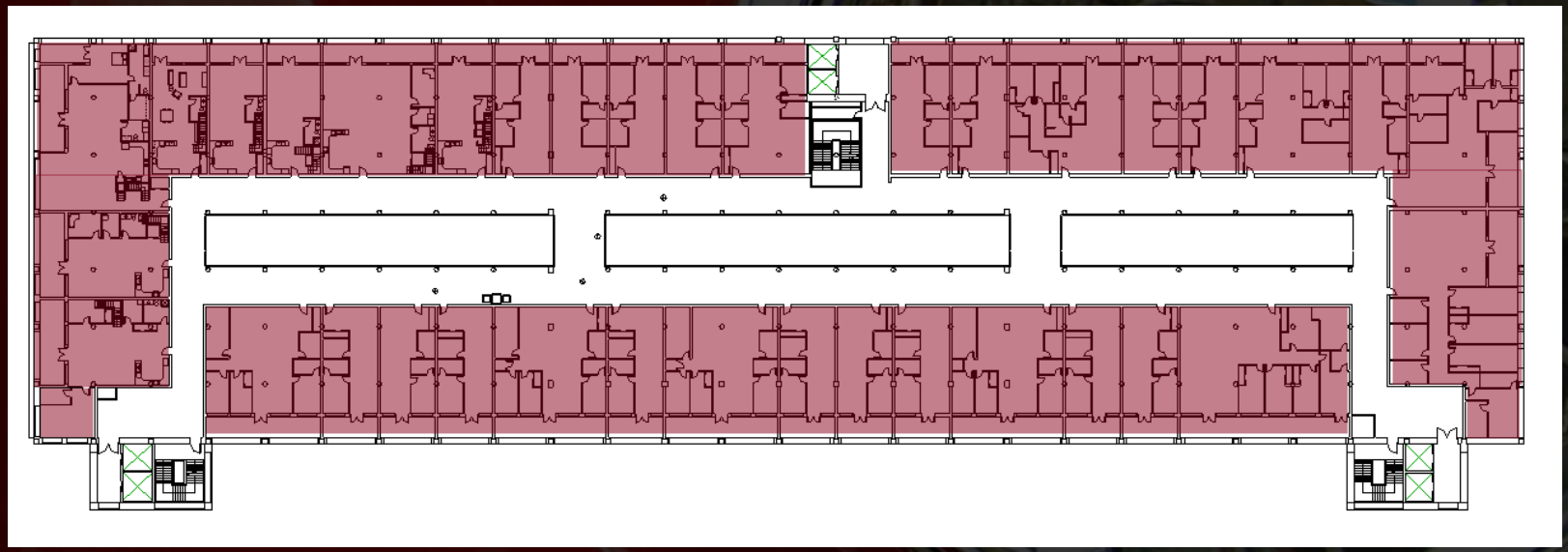


Residential:
1,2,3,4 bedroom apartments

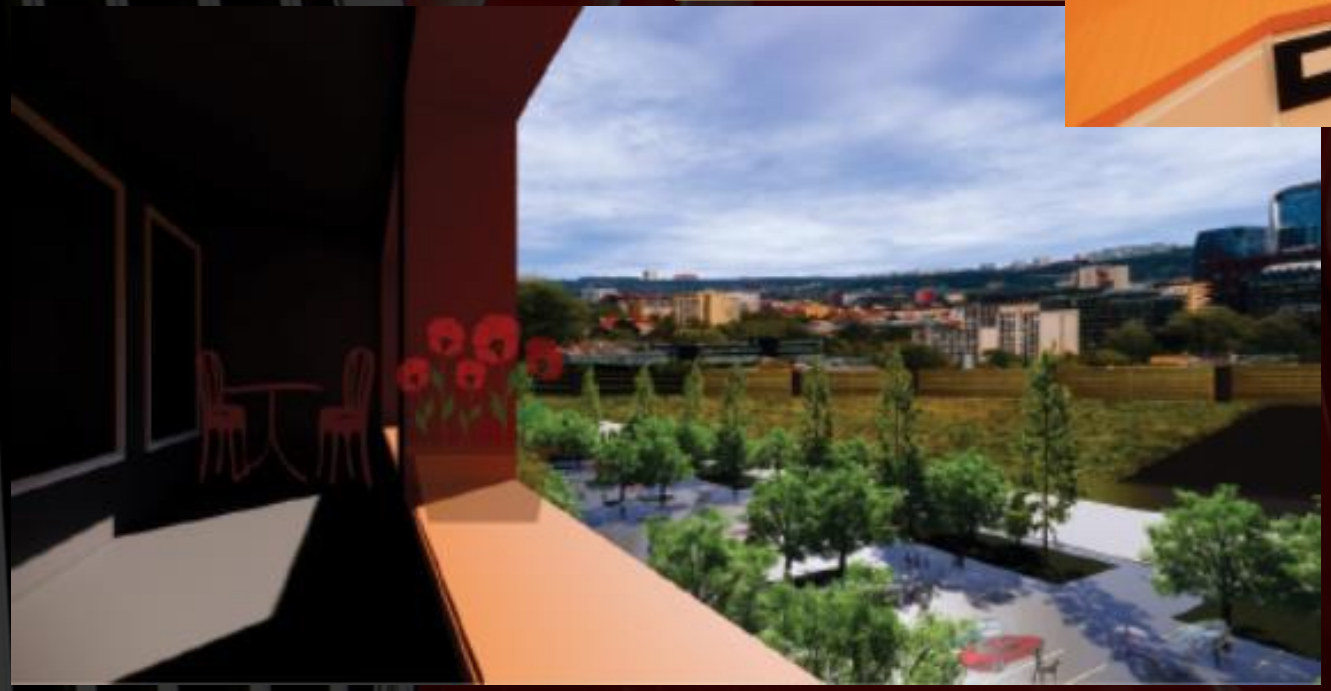
5th Floor

6th Floor

6th Floor - 2 story apartments



6th Floor, 2 story Apartment:



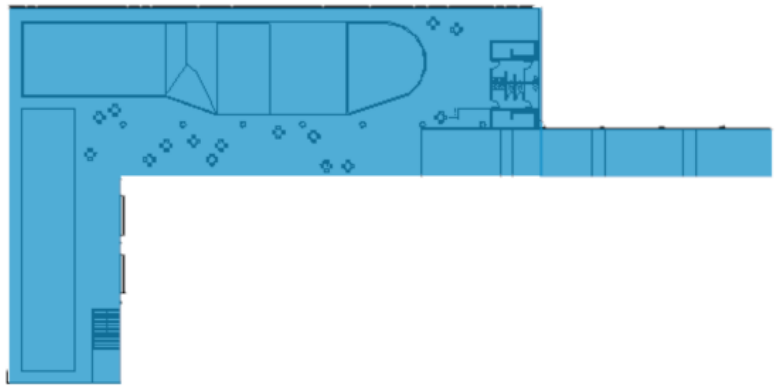
5th Floor Balcony:

Roof:

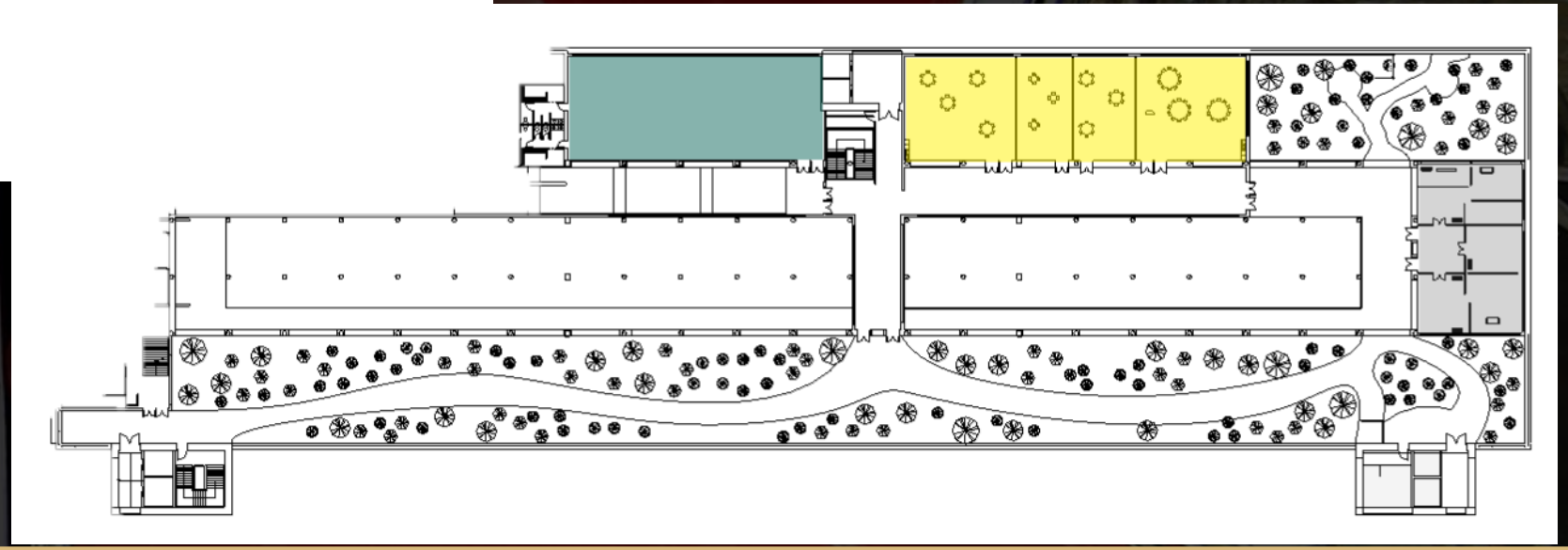
Pool – lap, games, diving, kids
Workout space – machines & aerobics
Lounge/kitchen areas
Pet exercise area – cats & dogs
Green roof spaces

Roof Area:
- Pool
- Exercise space
- Roof top lounge
- Roof top garden/park

Pet Area:
- 1st floor Boarding
- Roof top Exercise space
- Outdoor park



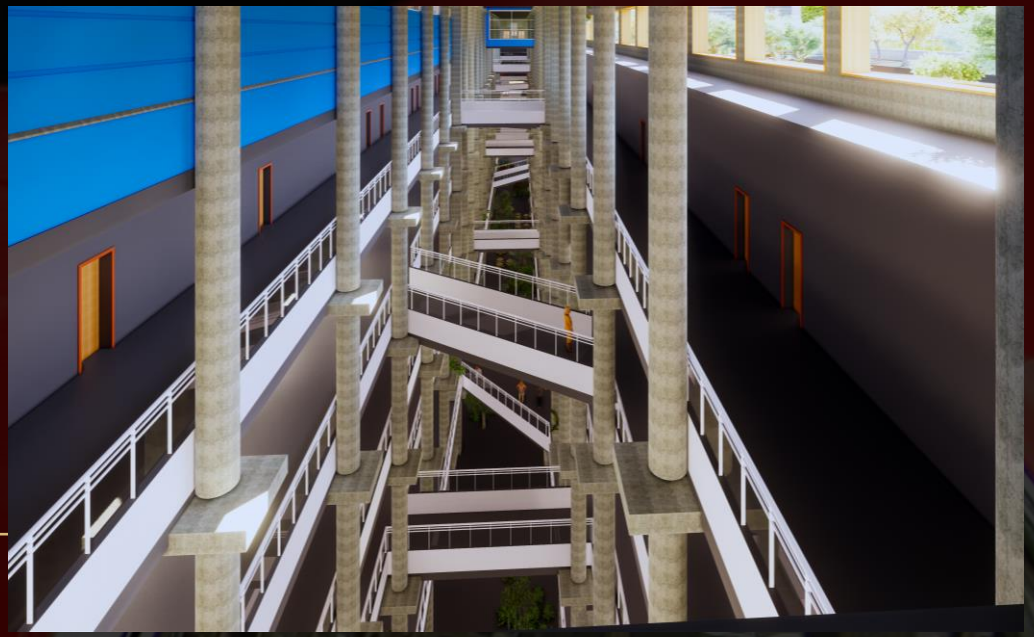
Pool



Roof

Roof:

View West



View East

Interior Evening

Roof:

Pool

Interior

Roof:

View East

Mid- Roof View East

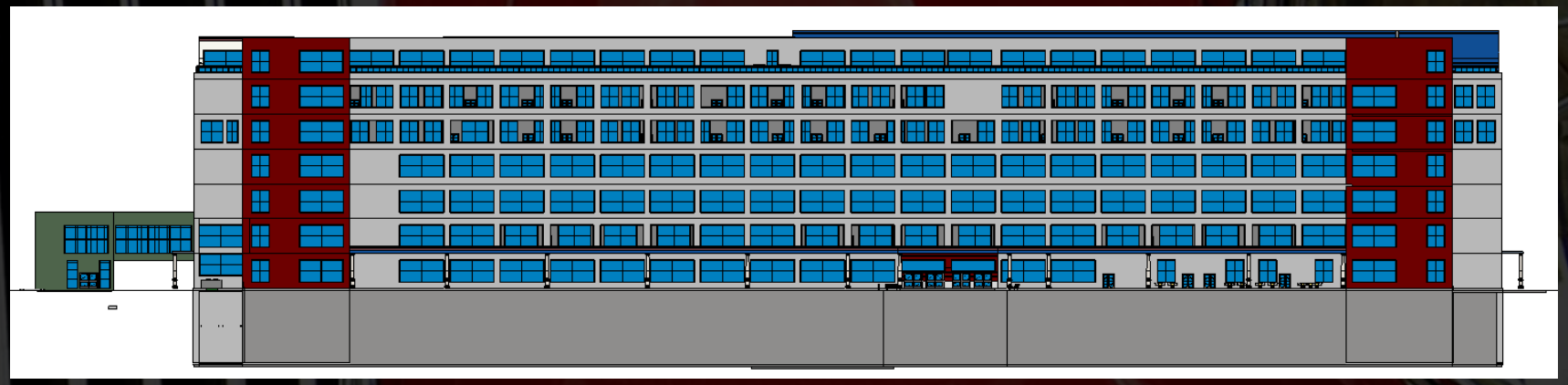
East End

Elevations:

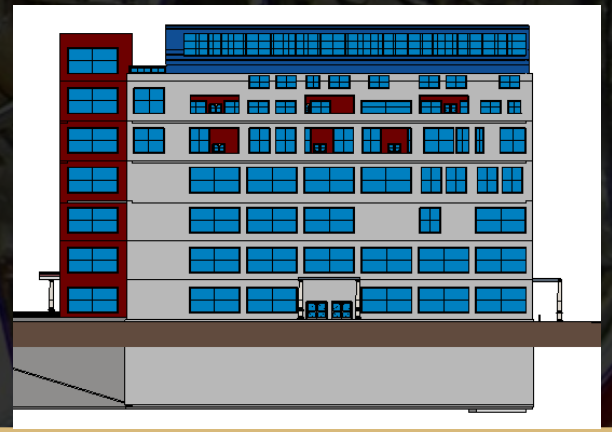
South

East

North



West



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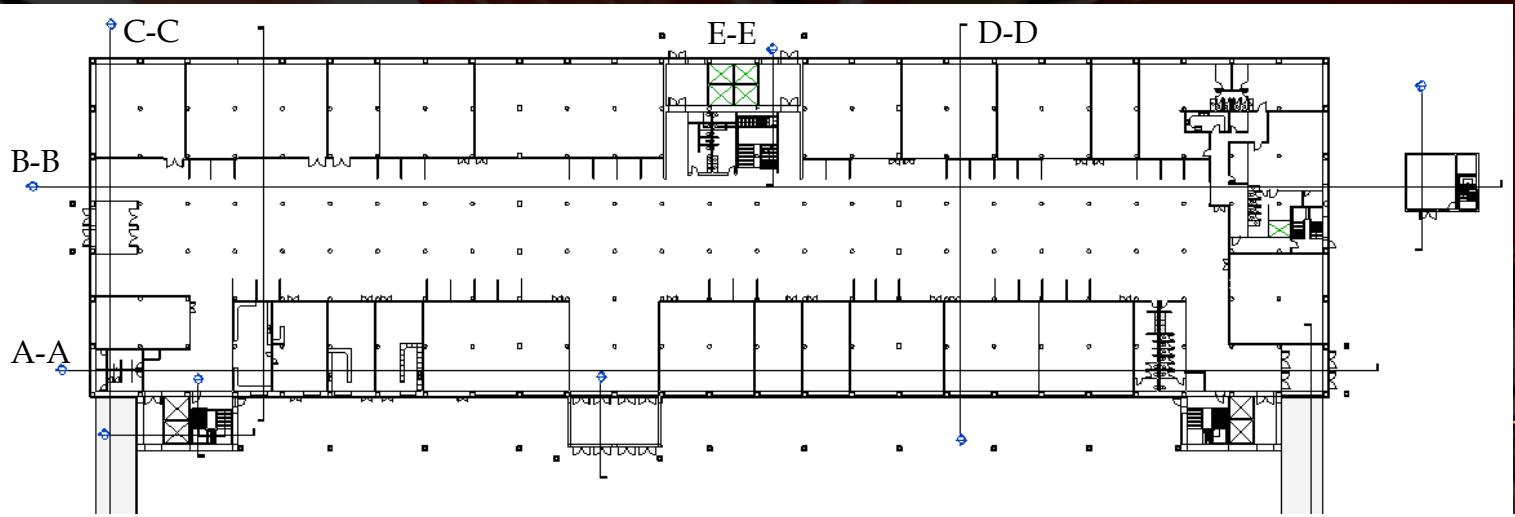
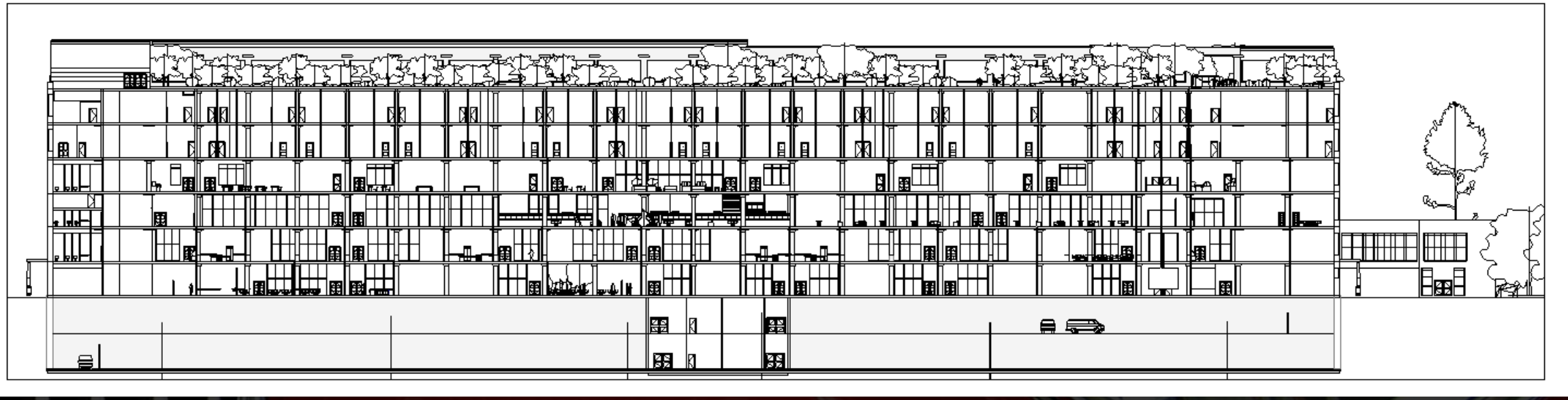
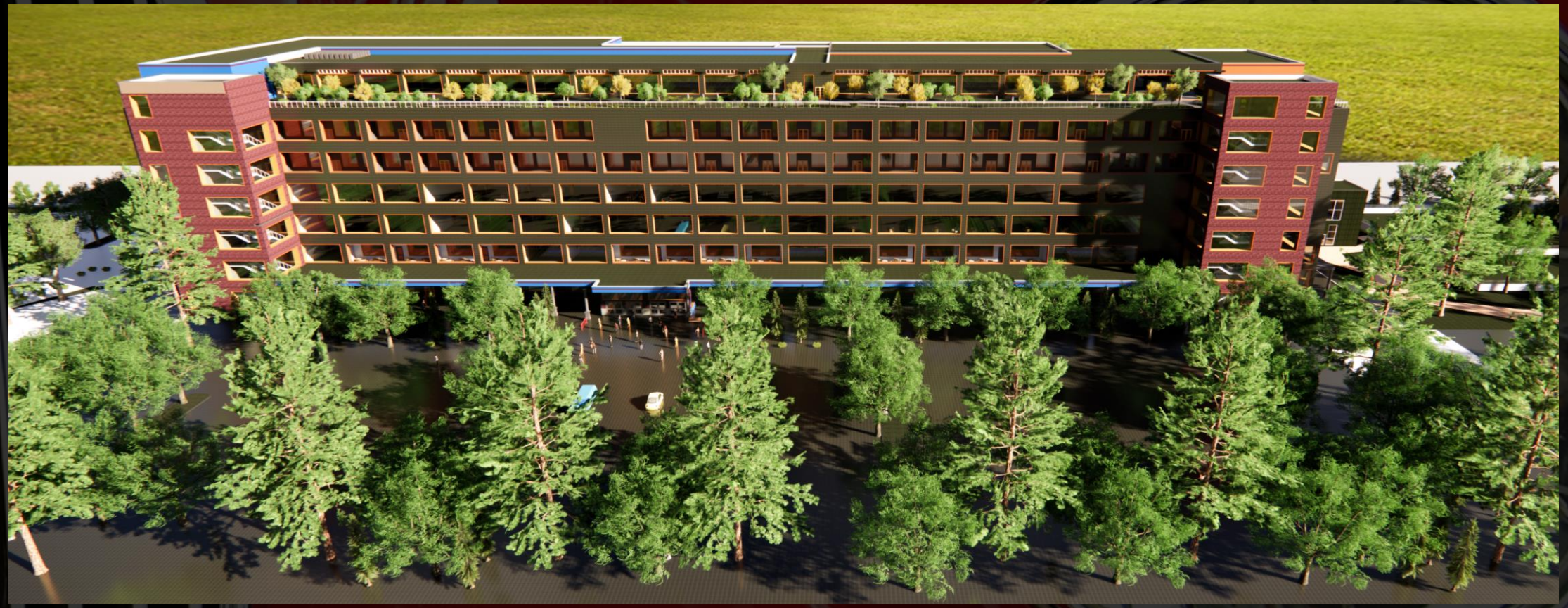


Section A-A



South Facade:



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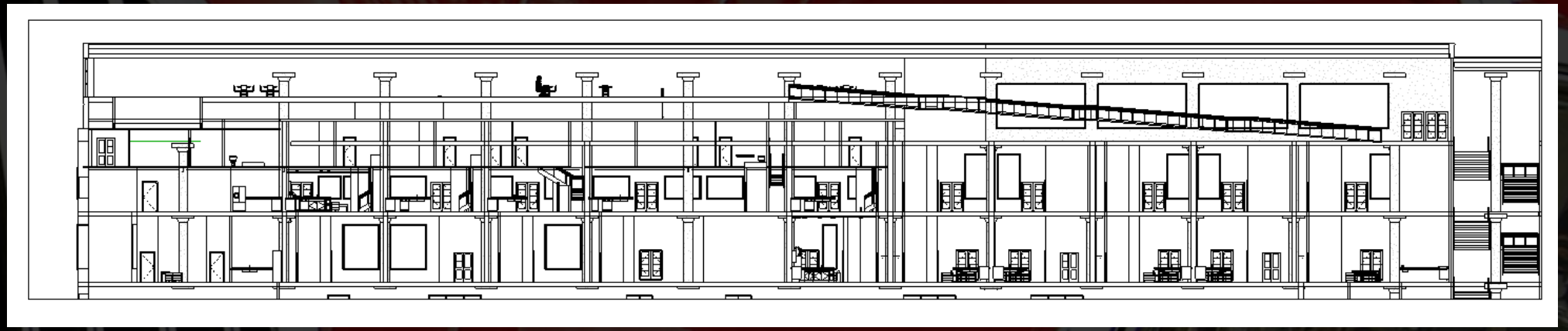
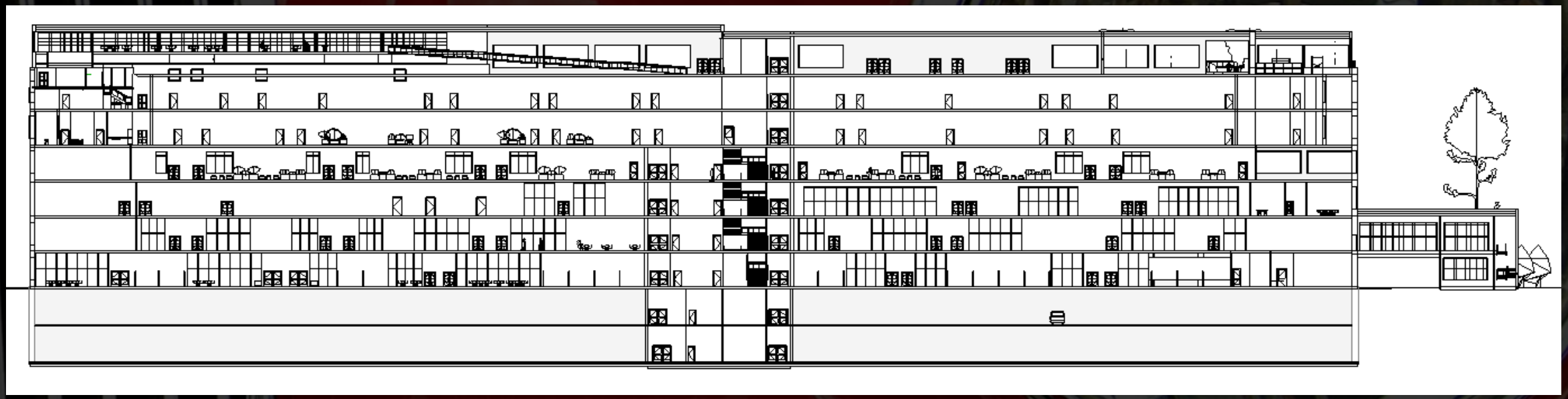
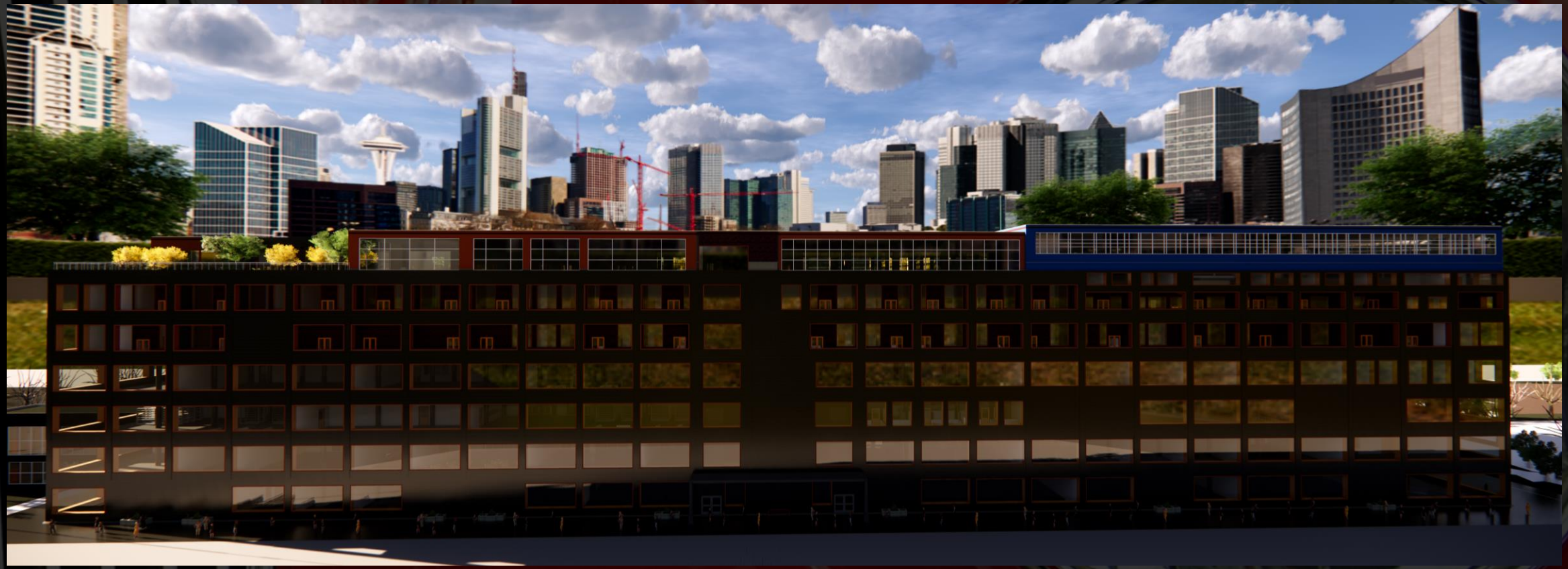


Close-up Pool

Section B-B

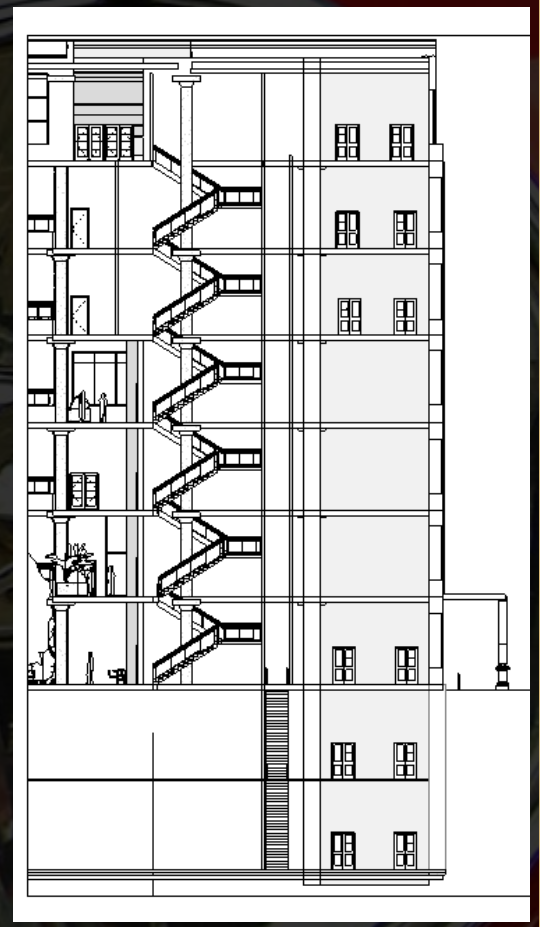


North Facade:



Sections:

Section E-E



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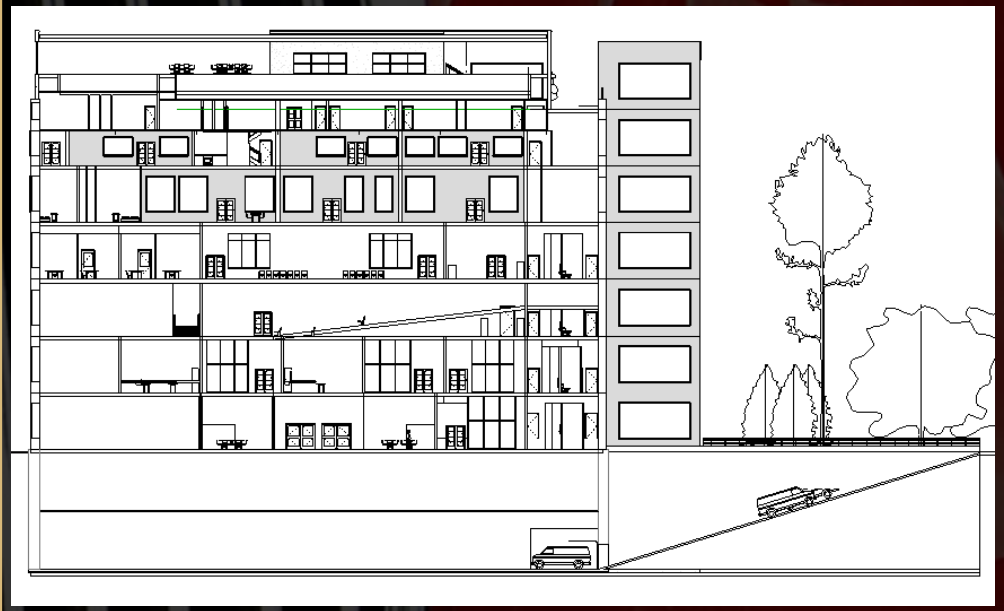

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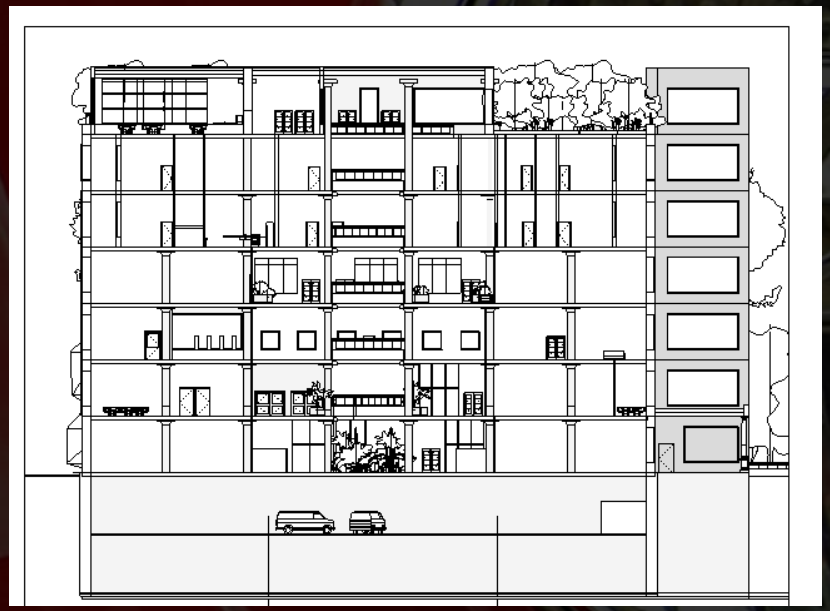
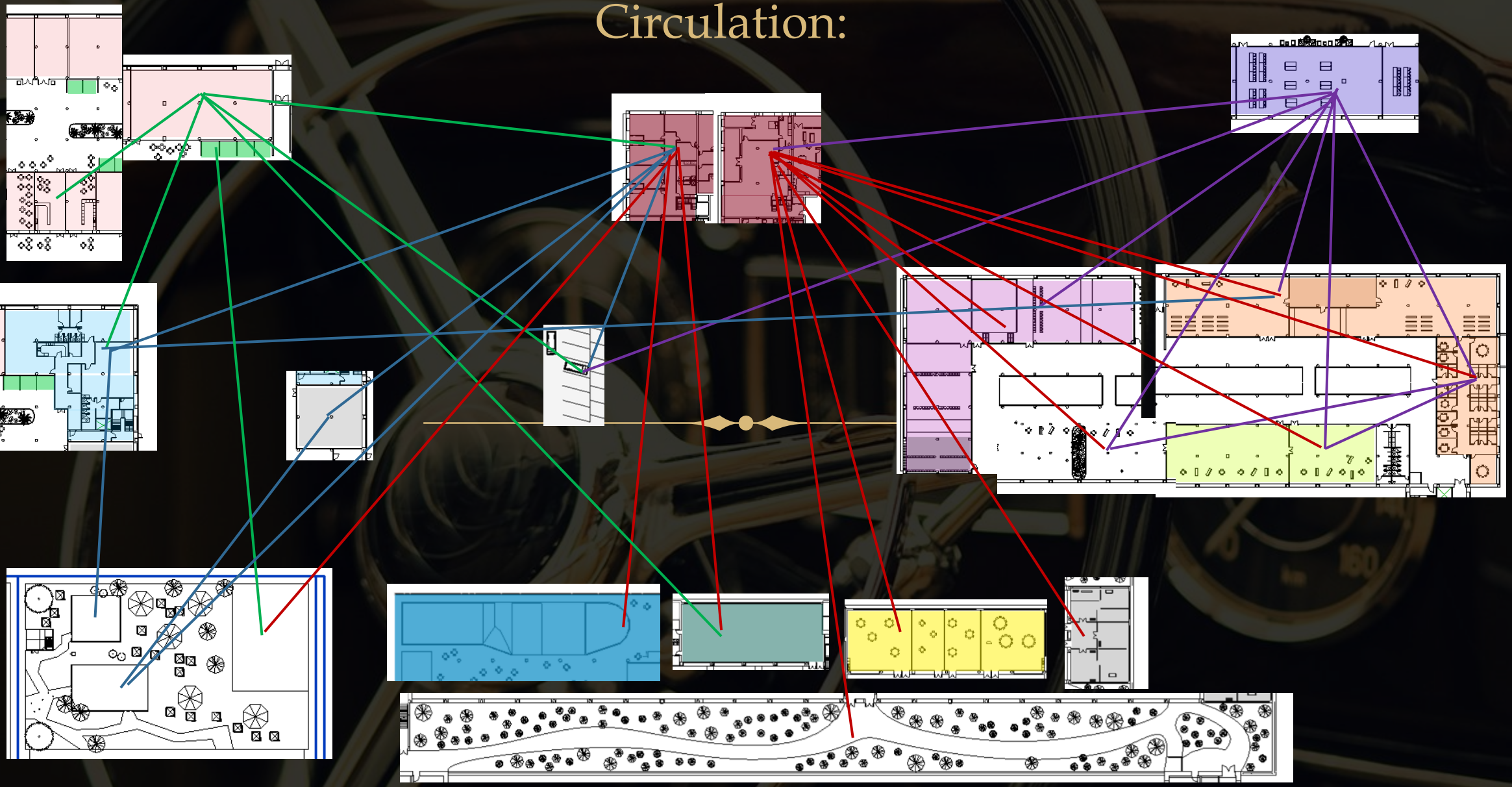


West Facade:

East Facade:

Circulation:



South Entrance Perspective:

Afternoon

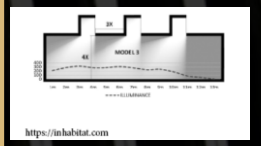
Morning

Building Site:

Passive Systems Implemented in Design

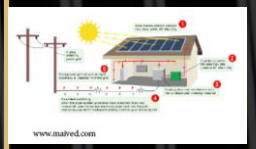
Sun:

Light Scoop

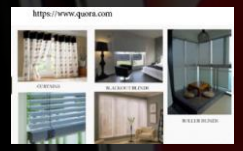
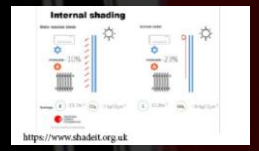



Fixed Devices

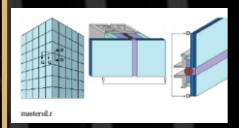

Photo-Voltaic

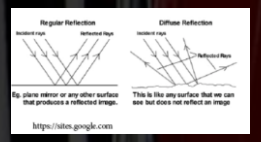
Internal Devices

Glazing

Reflective Surfaces

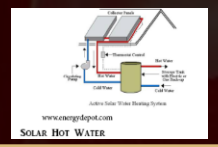



Water:

Rain Runoff

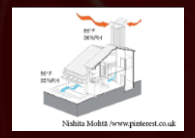

Gray Water


Solar Hot Water

Wind:

Cooling Towers

Radiant


Vegetation:

Ventilation


Shade/Light


Parking Islands

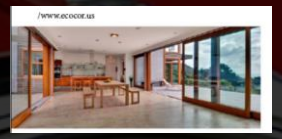
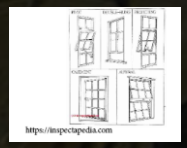

Green Roof


Garden/Market

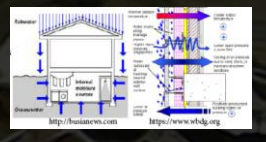

Vertical Greenery


Building Mass:

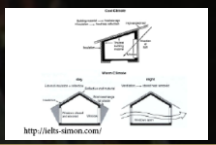
Windows/Glass

Moisture Control

Thermal Bridge

Insulation

Noise:

Vegetation

Supplemental Systems:

HVAC:

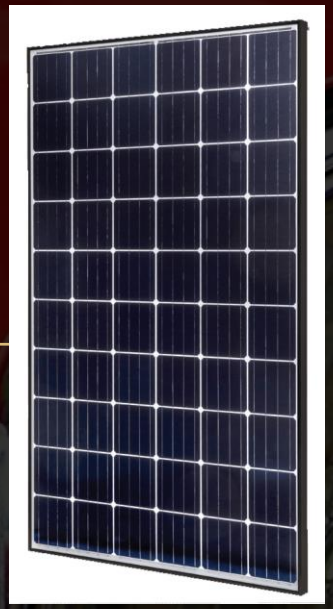
Duct-free Multi-zone split system

Art Cool Gallery - Wall Mounted

Mounts elegantly on a wall with unique customization and frame for easy personalization with artwork or photograph.

The Multi F heat pump compact, outdoor units works with duct-free indoor units. Support multiple zones, up to four and eight zones. LGRED° heat technology offers reliable heating in the most extreme winter temperatures.

Solar:



The Ranch 11.34 kW 36-Panel Mission Solar Off-Grid Solar System

off-grid solar panel system designed to run multiple computers, TVs, refrigerator/freezers, and appliances.

120/240 Volt, AC Power Solar World watt solar panels and a dual MS4448PAE power center

Current Site & Adjacent Lots

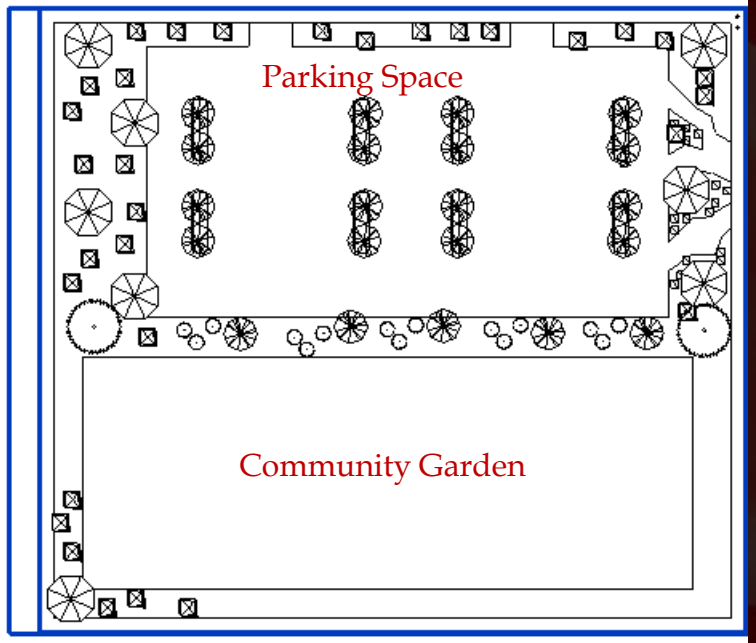
West Site

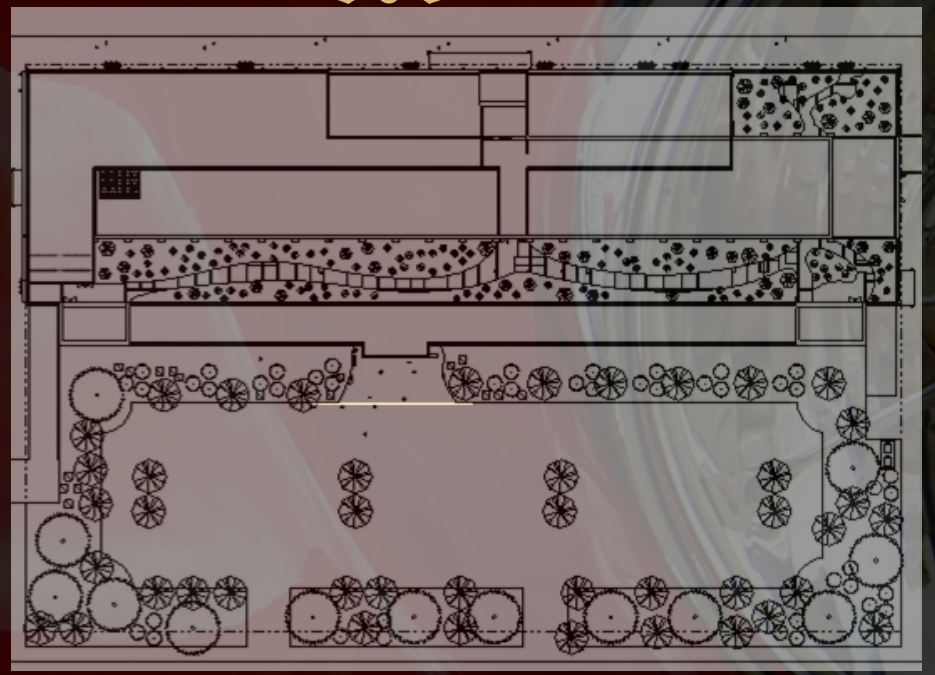
East Site

Site: South Perspective

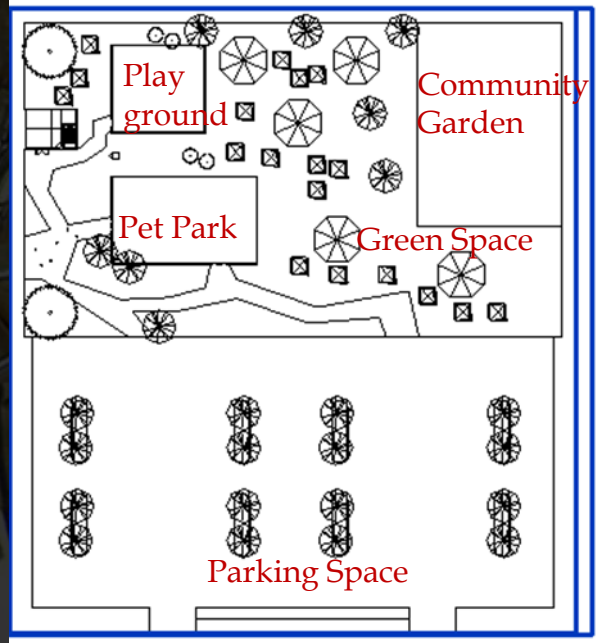
Adjacent Sites:

West Site





East Site



Site: North Perspective

Parking
Green space
Community Garden
Outdoor Daycare Area
Outdoor Pet Park

Adjacent Lots

Parking
Green space
Community Garden
Outdoor Daycare Area
Outdoor Pet Park

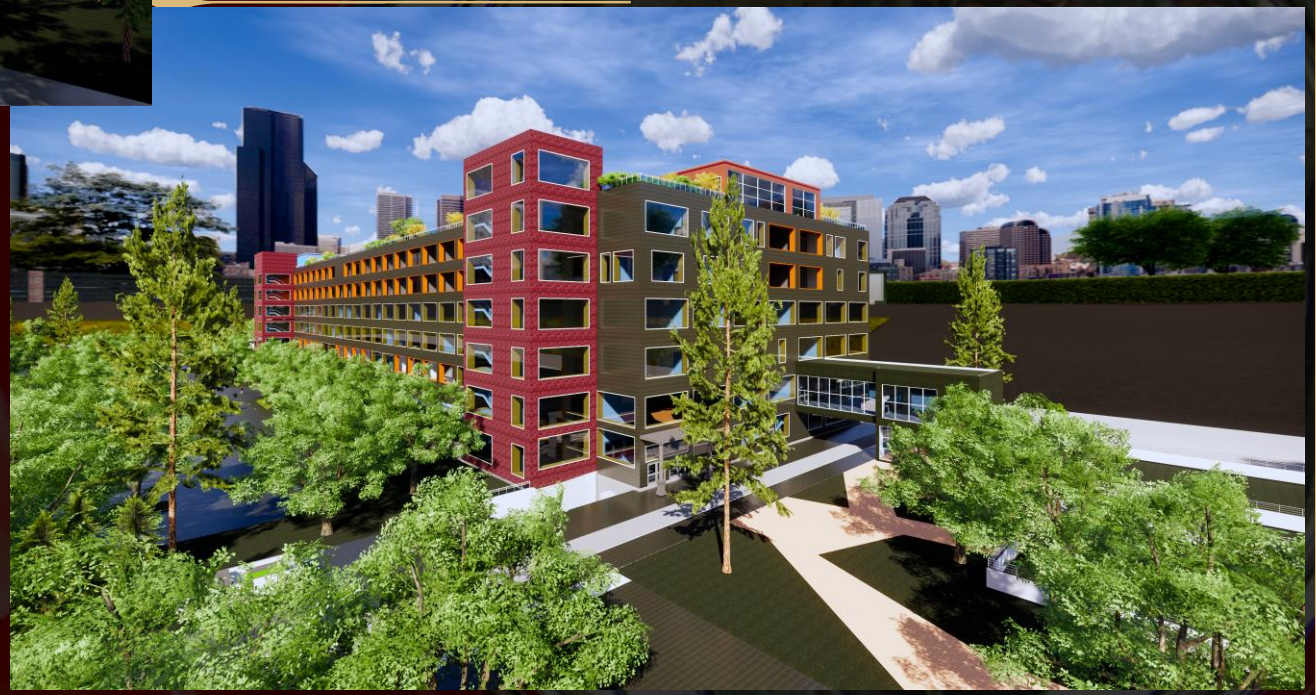
West Site

East Site

Views:

West Site

East Site



Thank You!

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Questions: