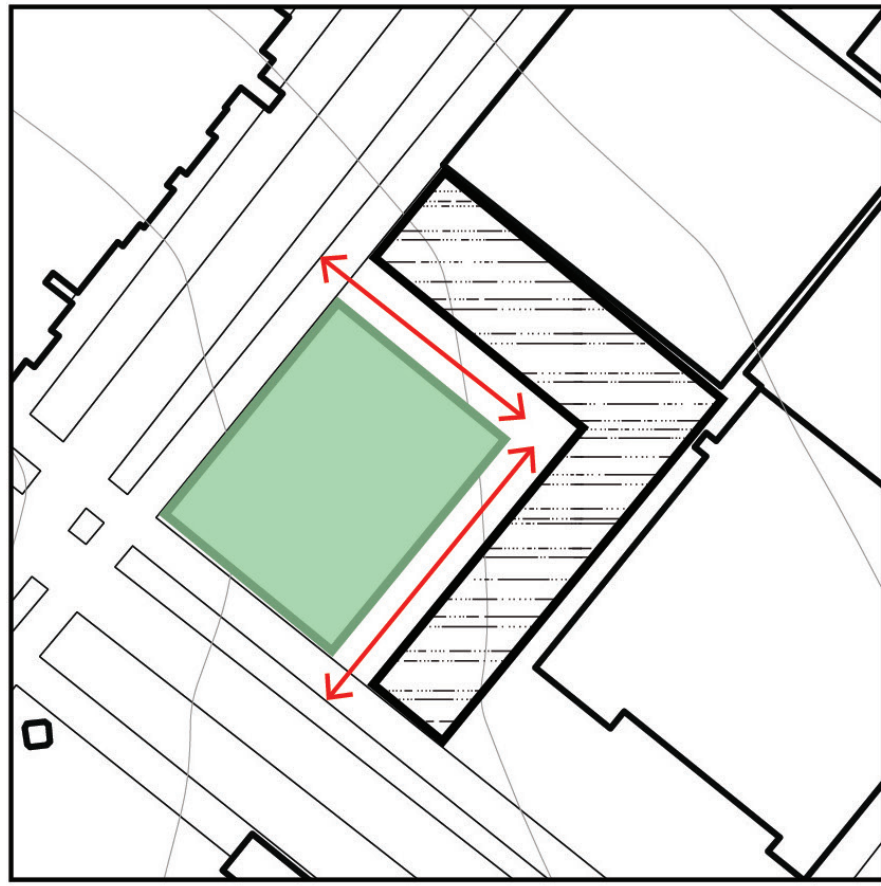
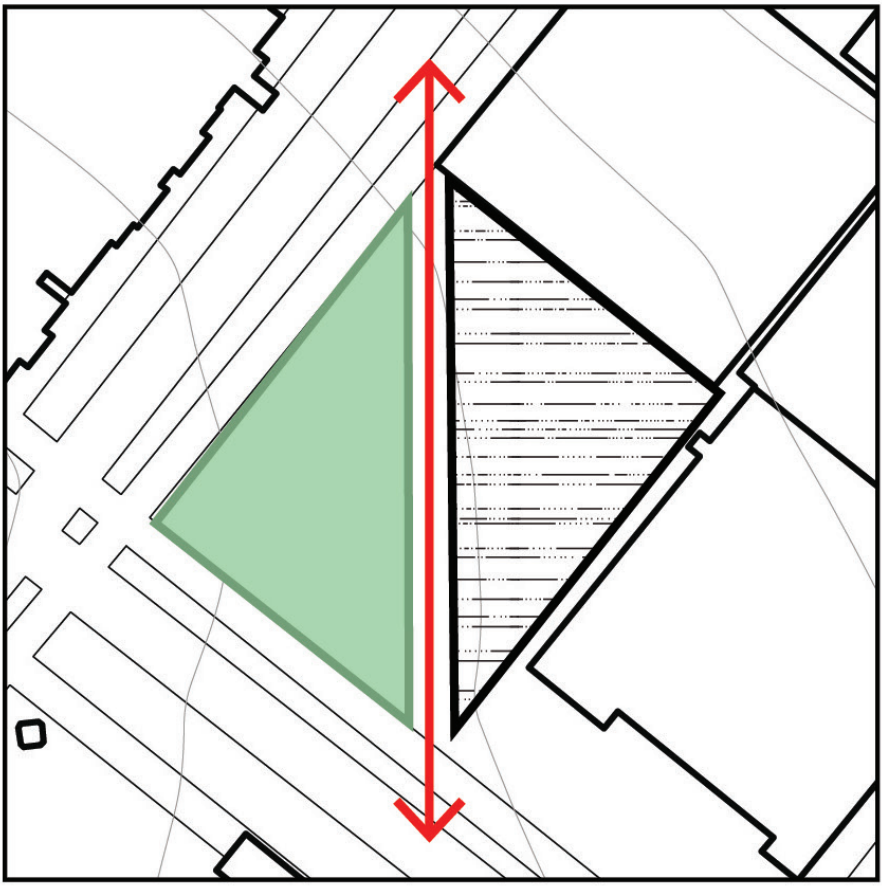
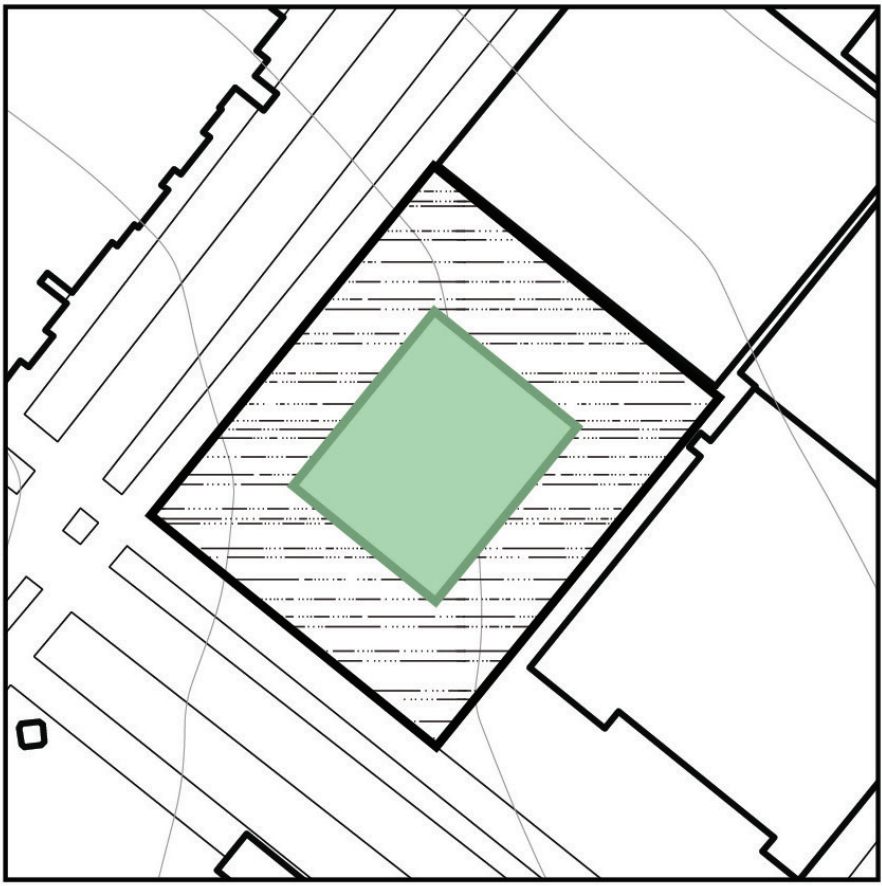


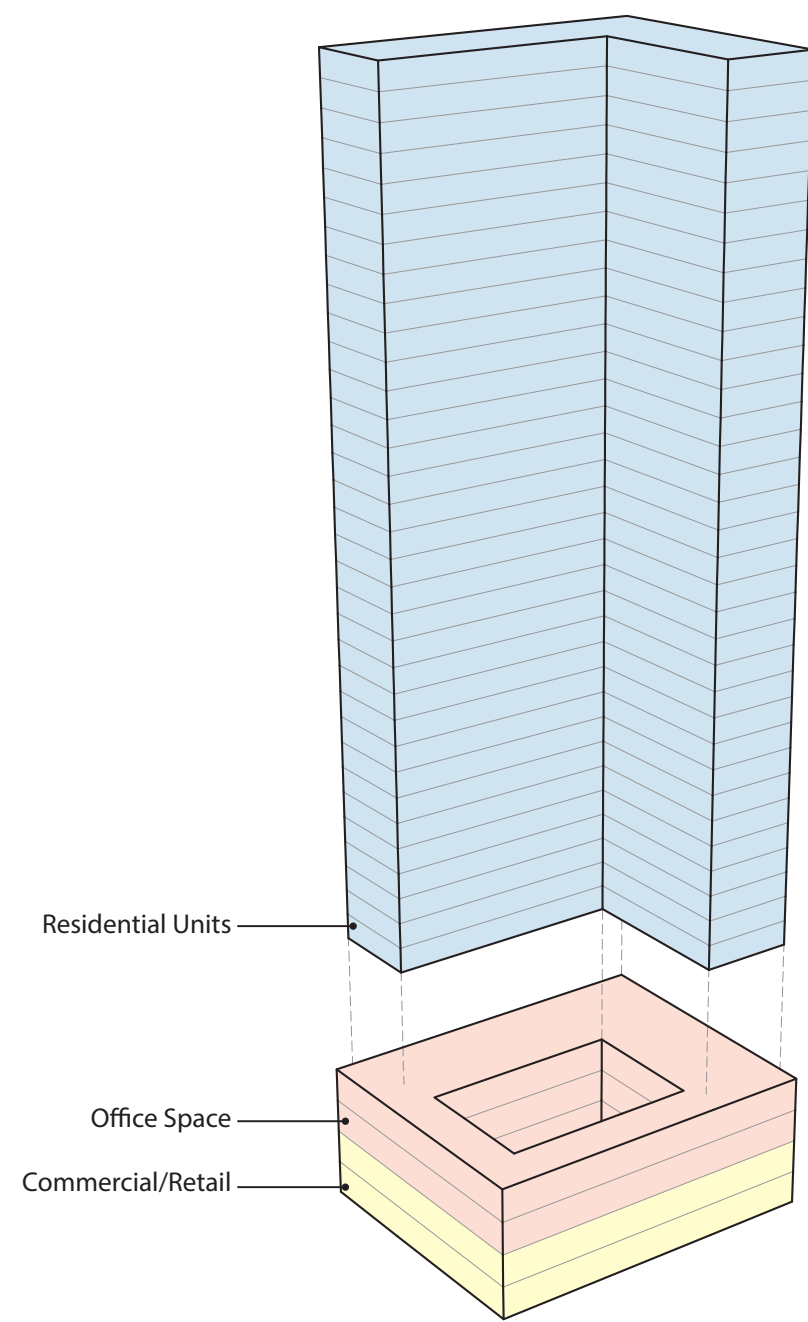
SOUTH HOPE STREET

WEST 9TH STREET

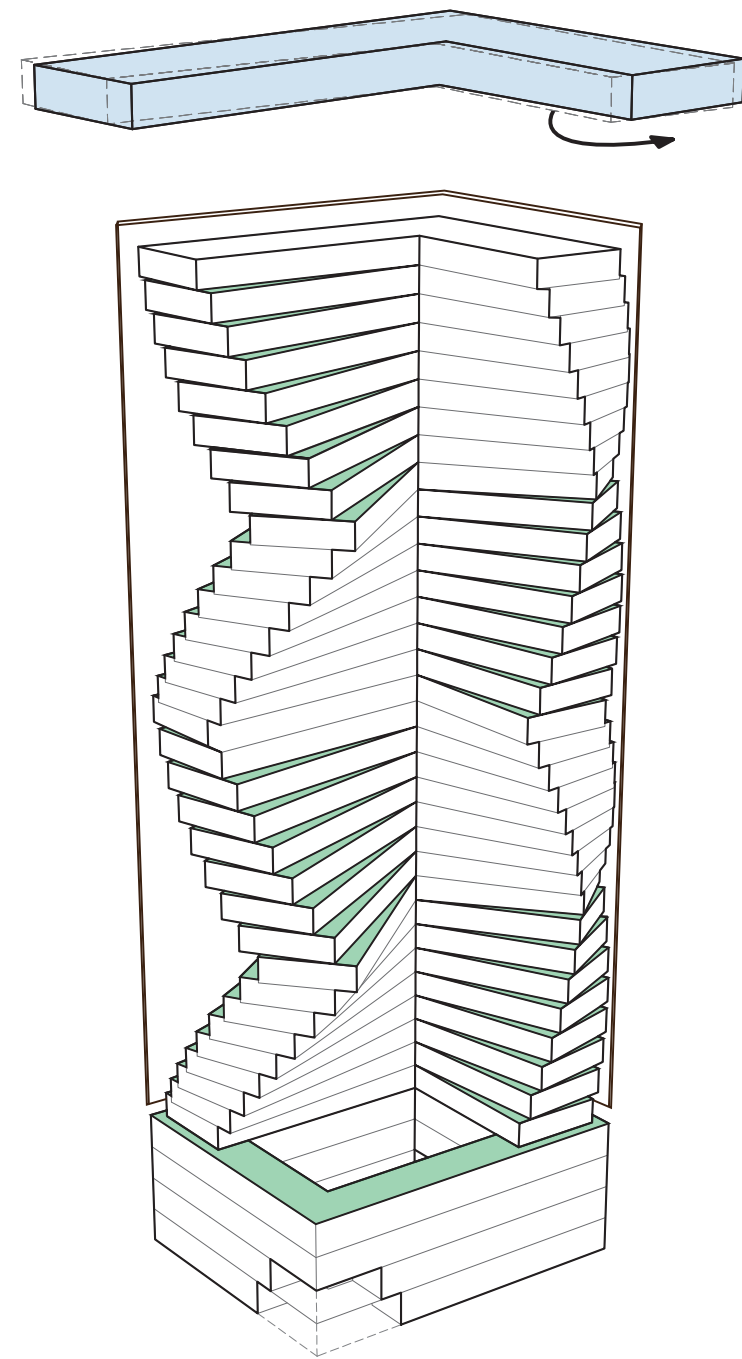
GRAND HOPE PARK



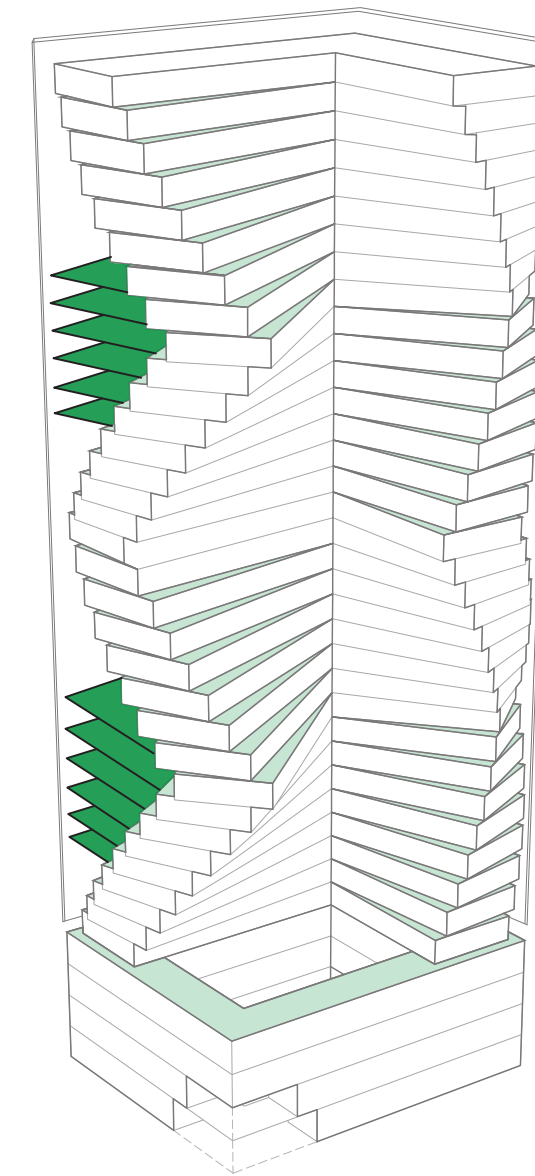
# Massing Diagram



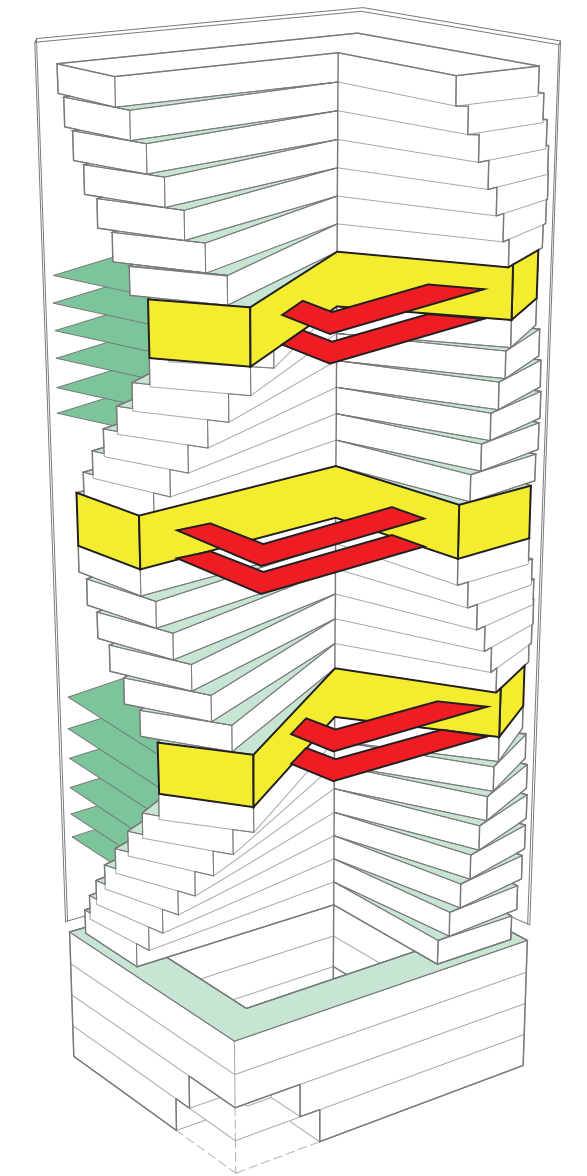
**1** The basic form is made of a courtyard setting on the first four floors, then the courtyard setting is broken into L-shaped plates to provide view for all units in all sides, hence utilize the site's strategic position.



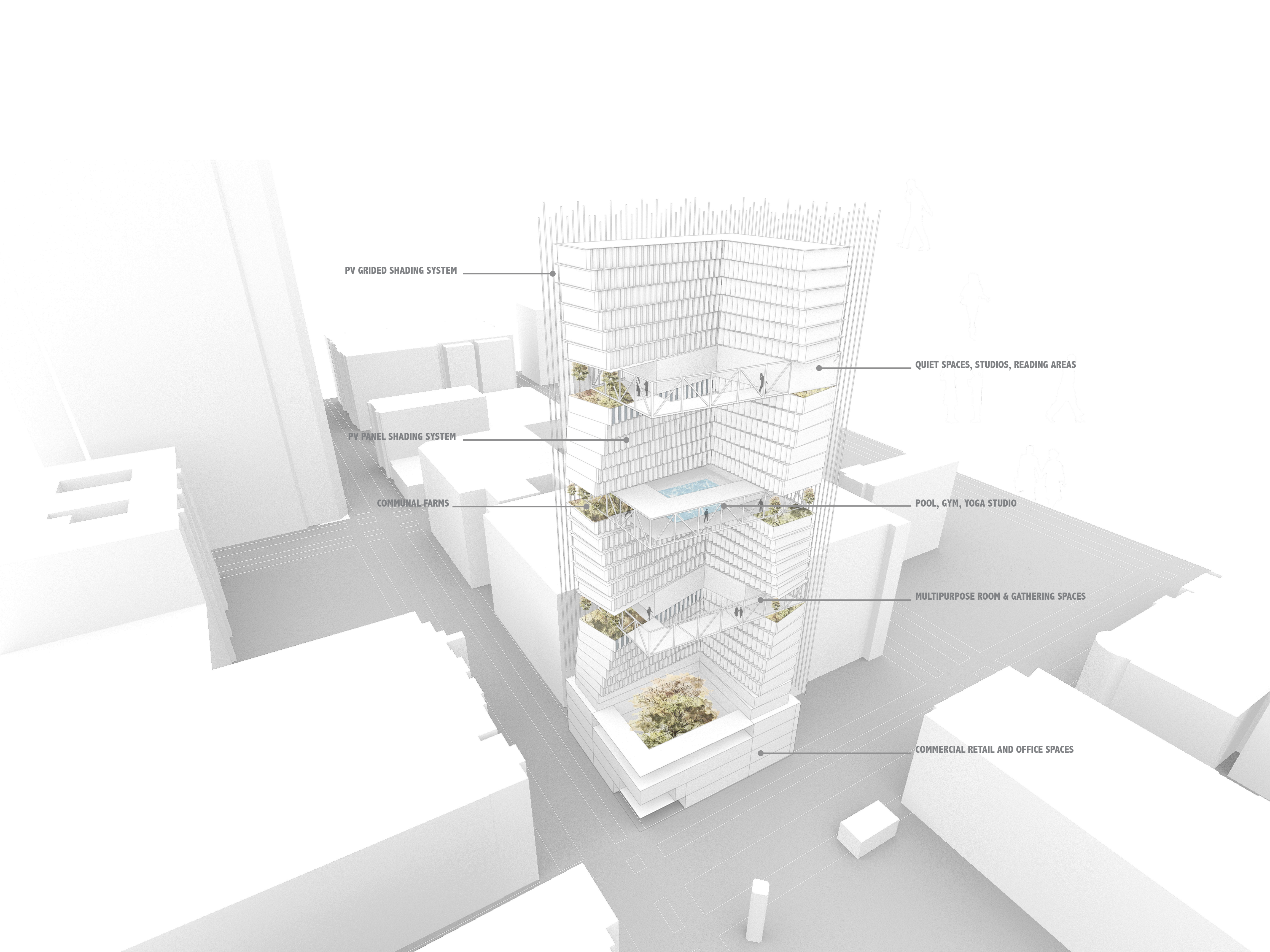
**2** The L-shaped Residential floors are then being rotated 3 degrees each till they reach true south north orientation and then they rotate back again.



**3** The original orthogonal skin is maintained in position to become a shading skin on the south east facade and set a visual boundary between the vertical farming garden and the adjacent buildings.



**4** Following the original orthogonal, communal activity spaces are added for adding to the social sustainability aspect of the project, set into three separate zones each with a specific theme or function



PV GRIDED SHADING SYSTEM

PV PANEL SHADING SYSTEM

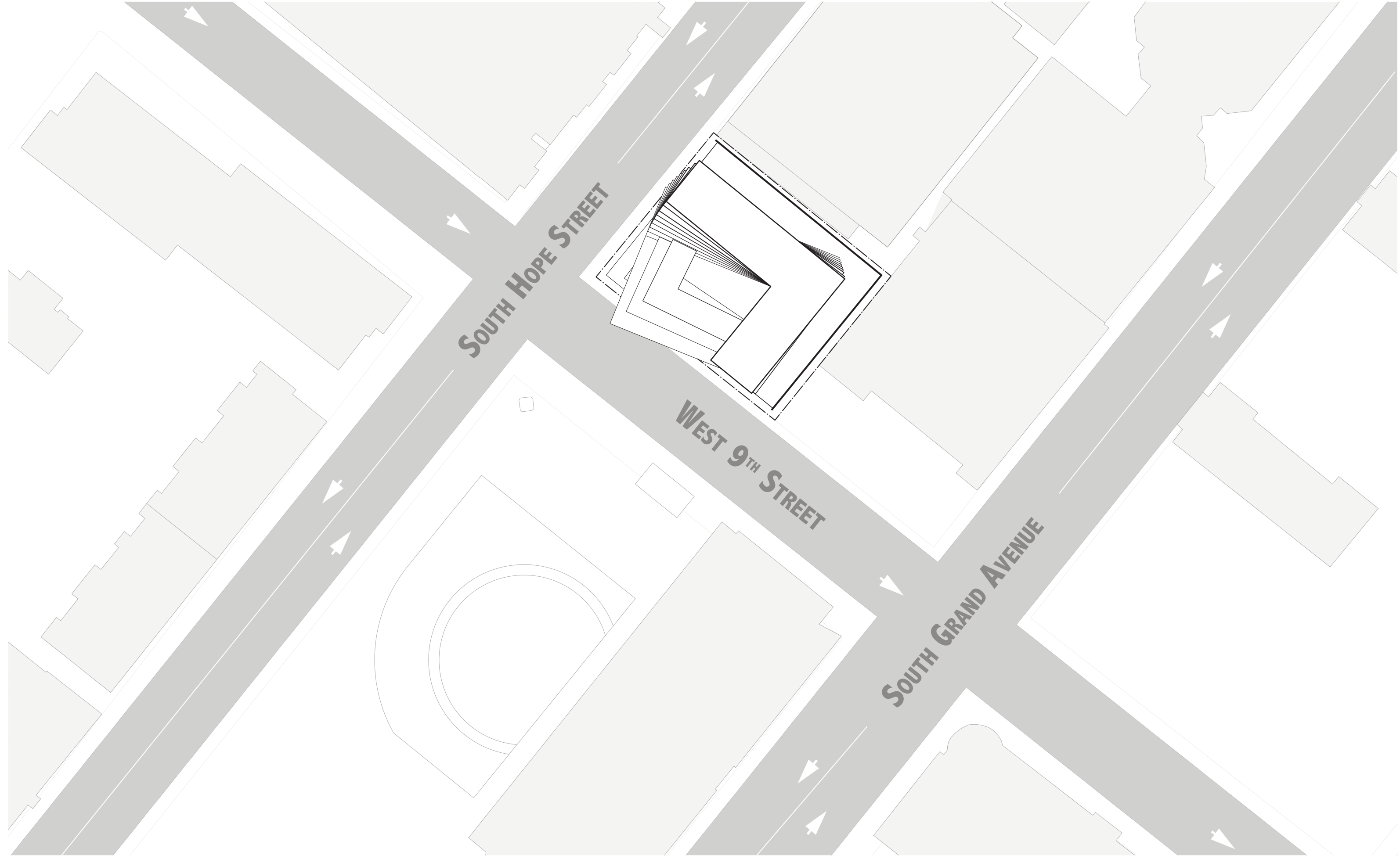
COMMUNAL FARMS

QUIET SPACES, STUDIOS, READING AREAS

POOL, GYM, YOGA STUDIO

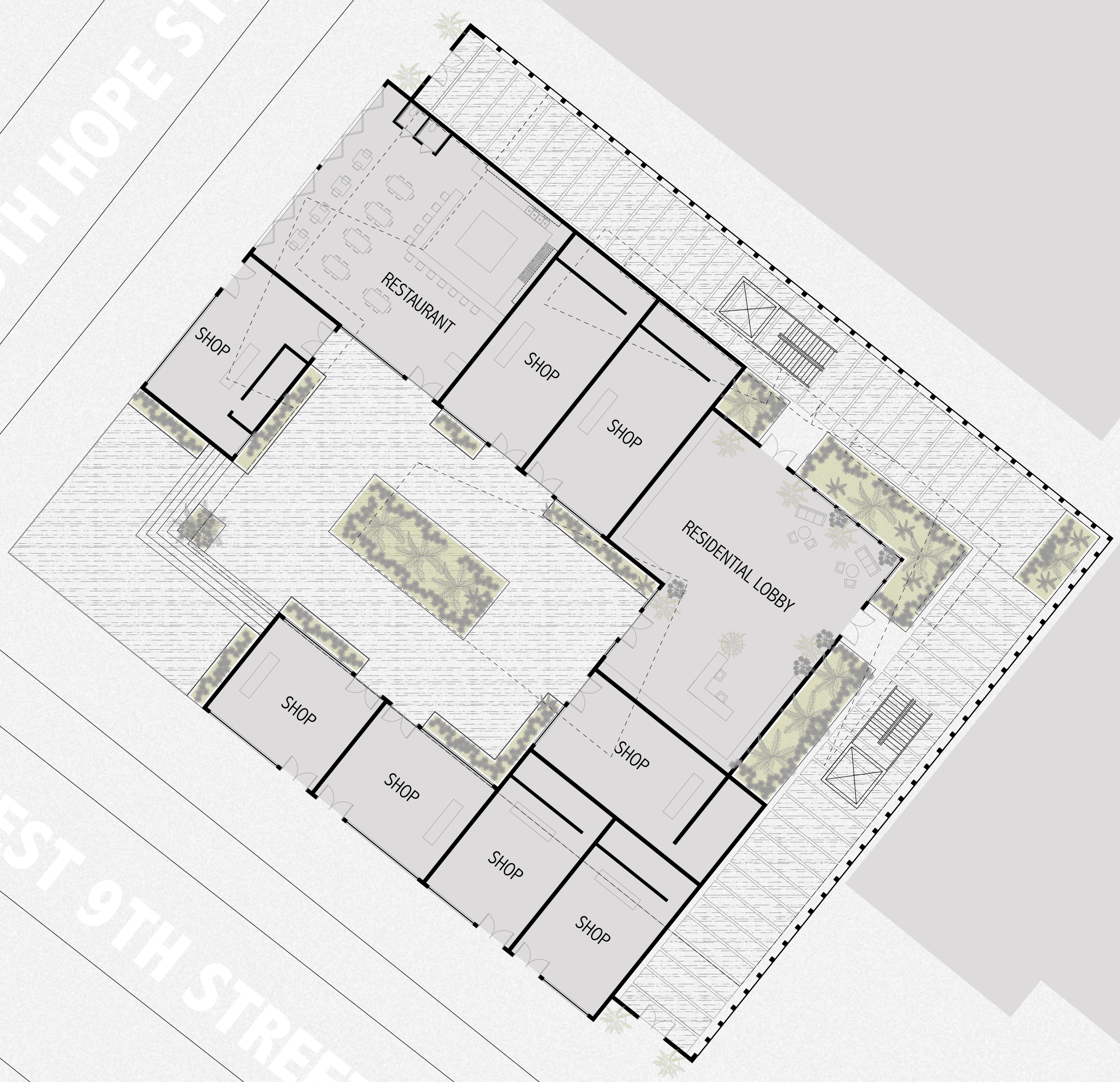
MULTIPURPOSE ROOM & GATHERING SPACES

COMMERCIAL RETAIL AND OFFICE SPACES



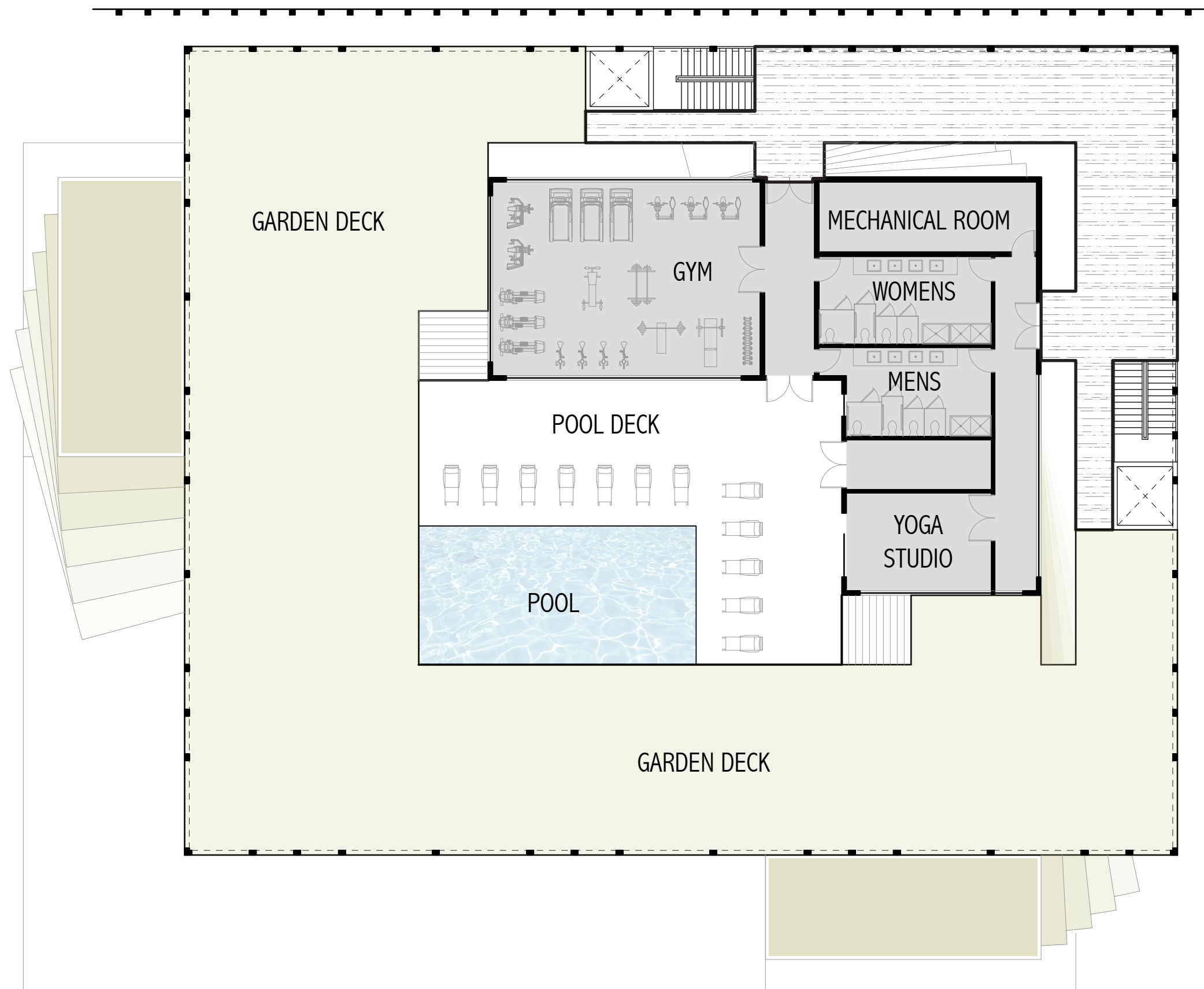
SOUTH HOPE STREET

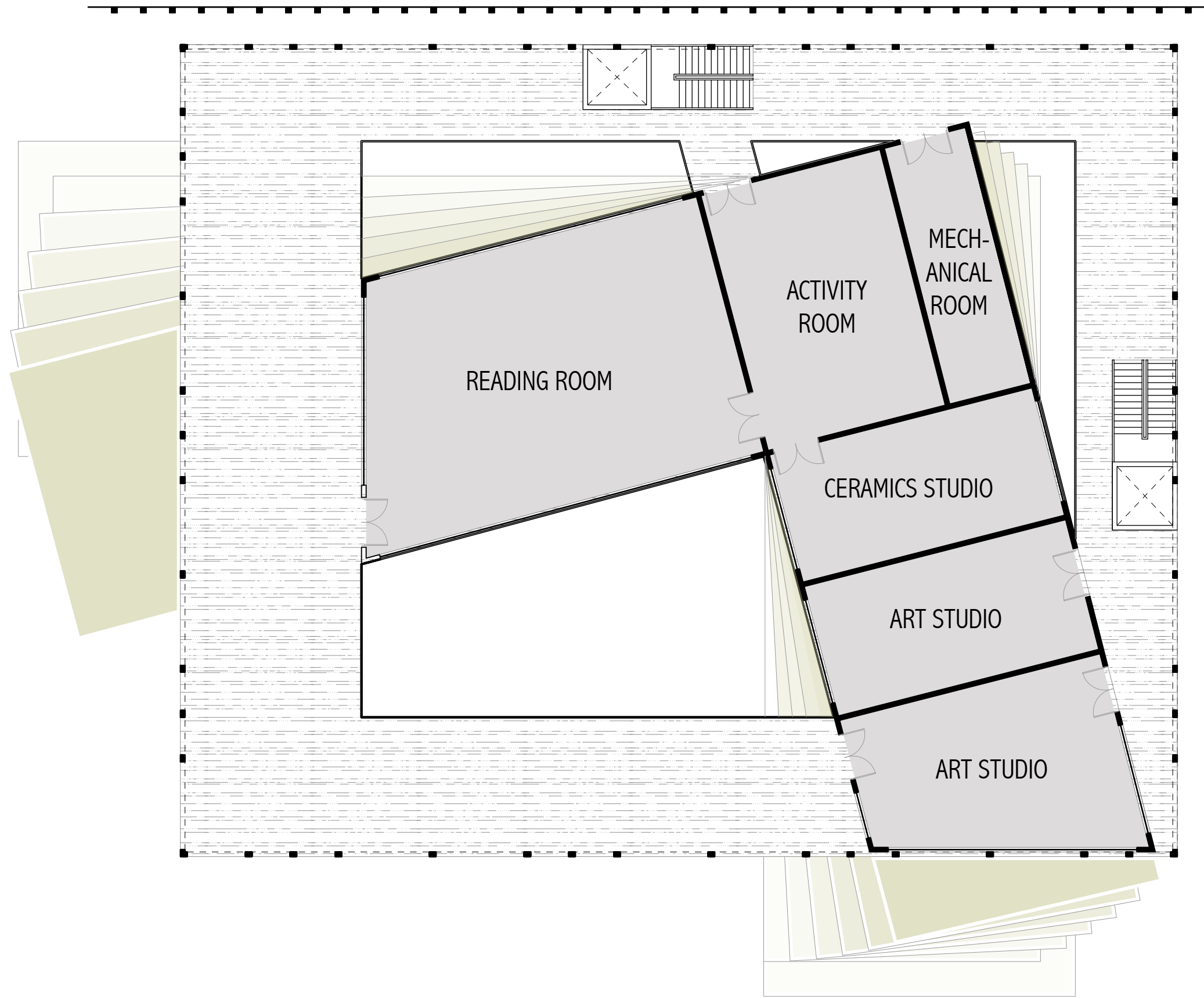
WEST 9TH STREET



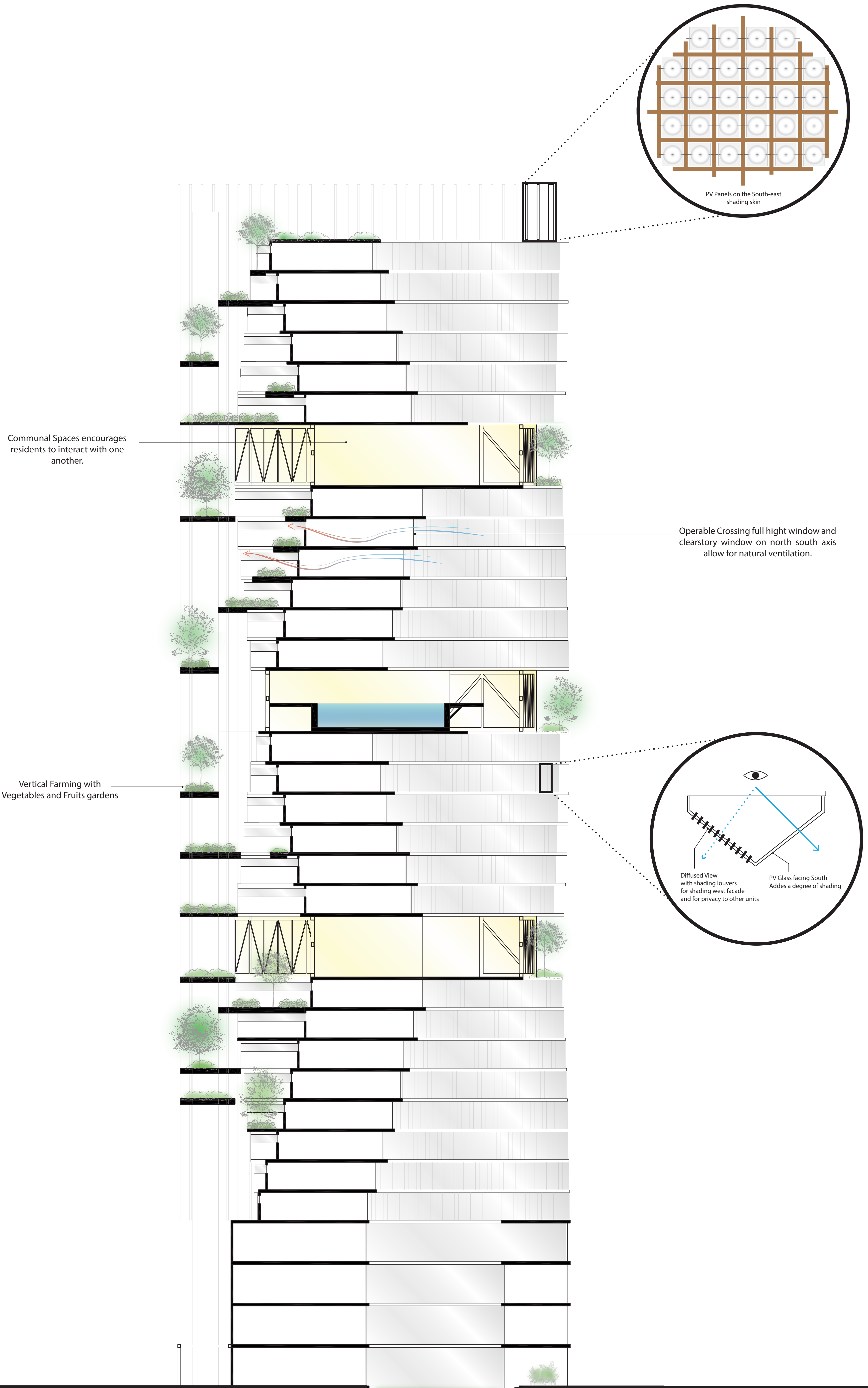




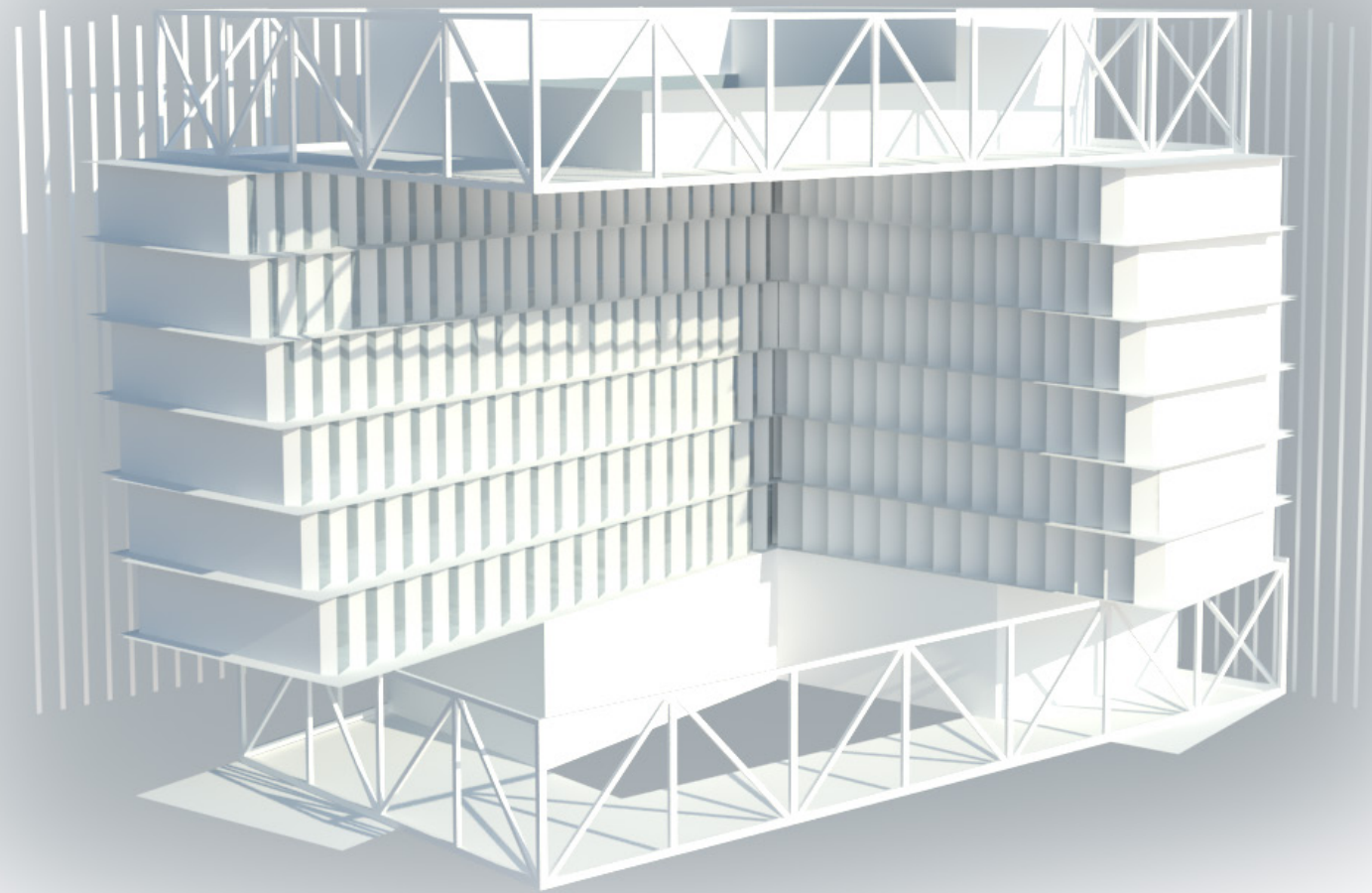




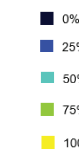
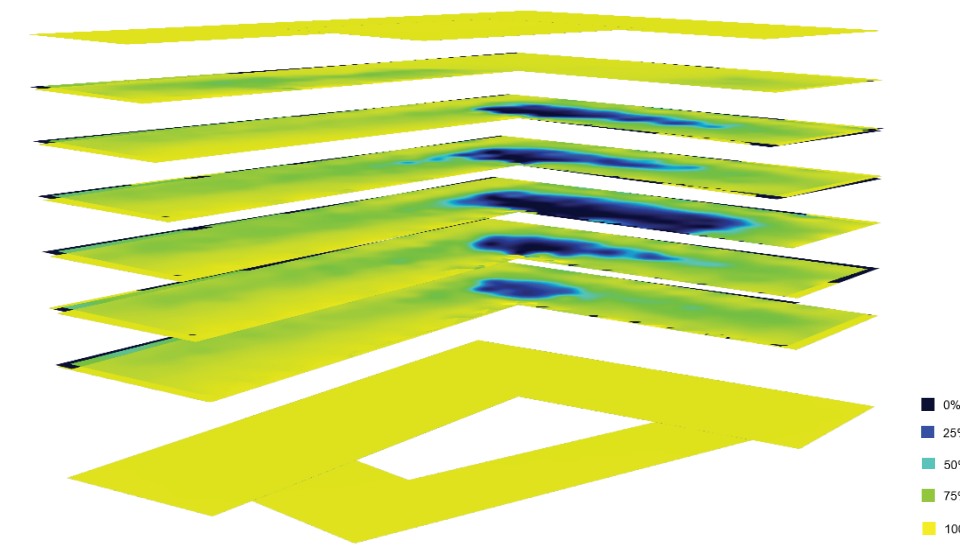
# Section with Sustainable Strategies



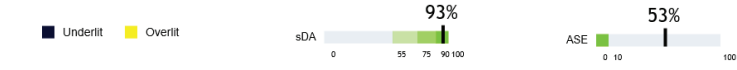
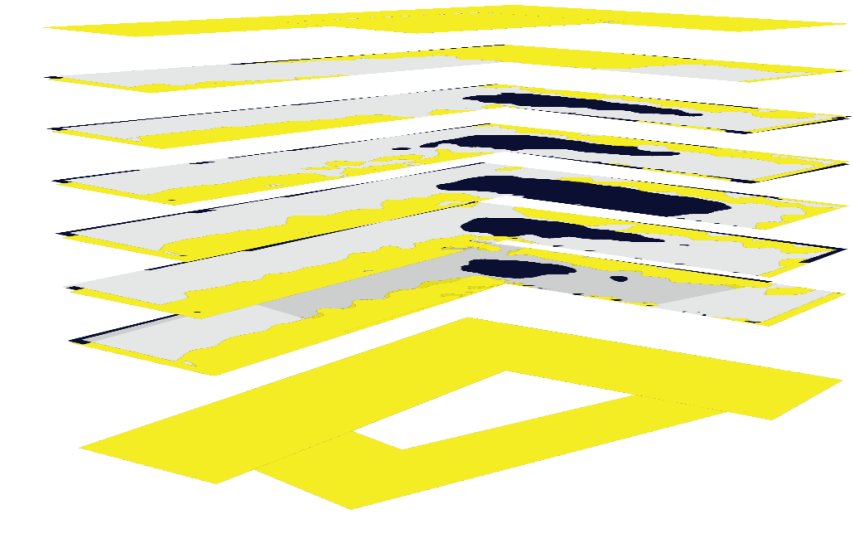
# Sefaira Daylight Analysis



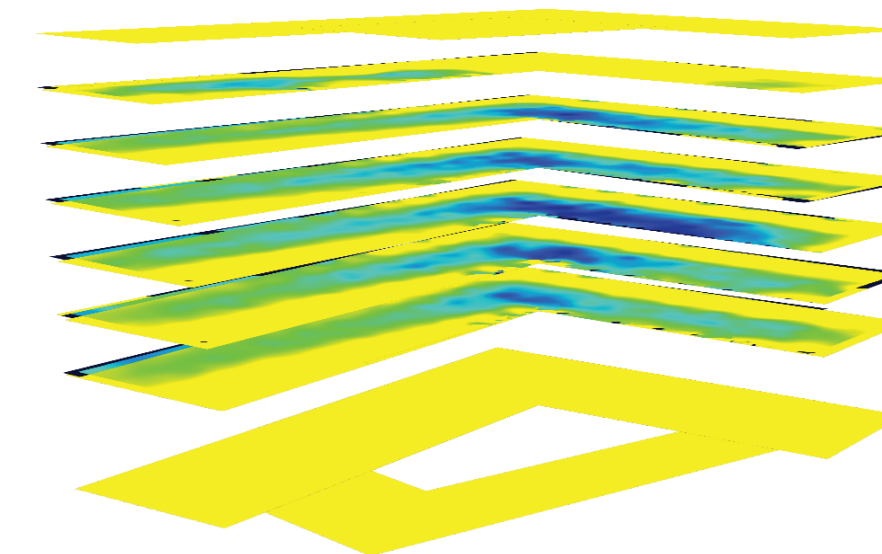
Annual Illuminance of at least 28 FC



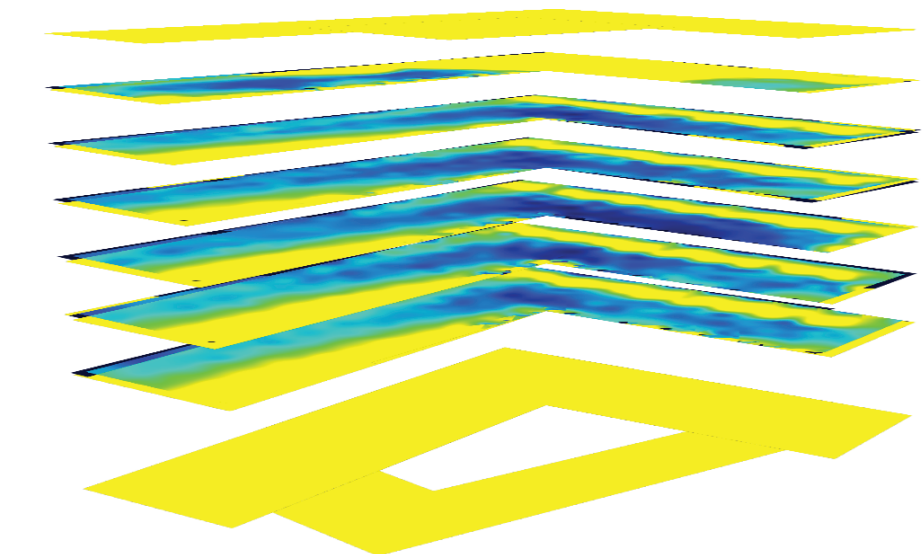
Overlit - Underlit Spaces



Footcandle Levels at 9 am at 2.79 feet from floor

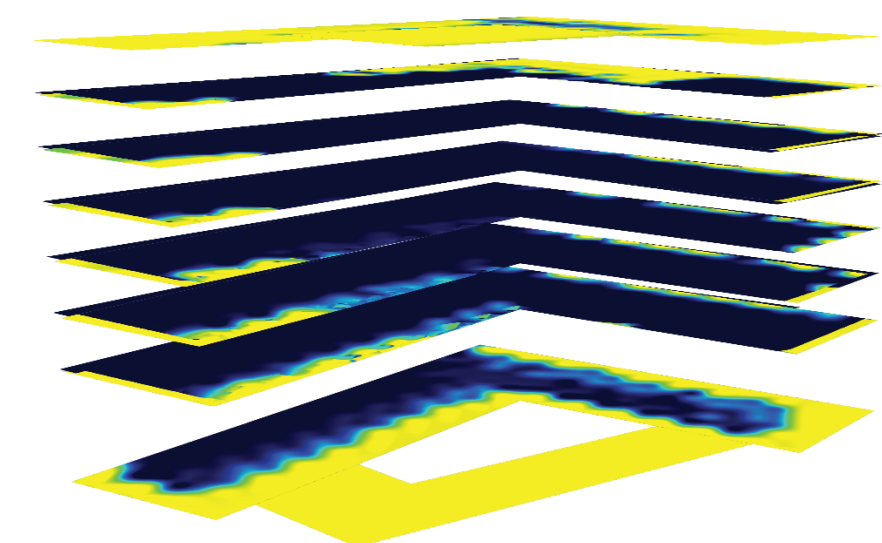


March 21

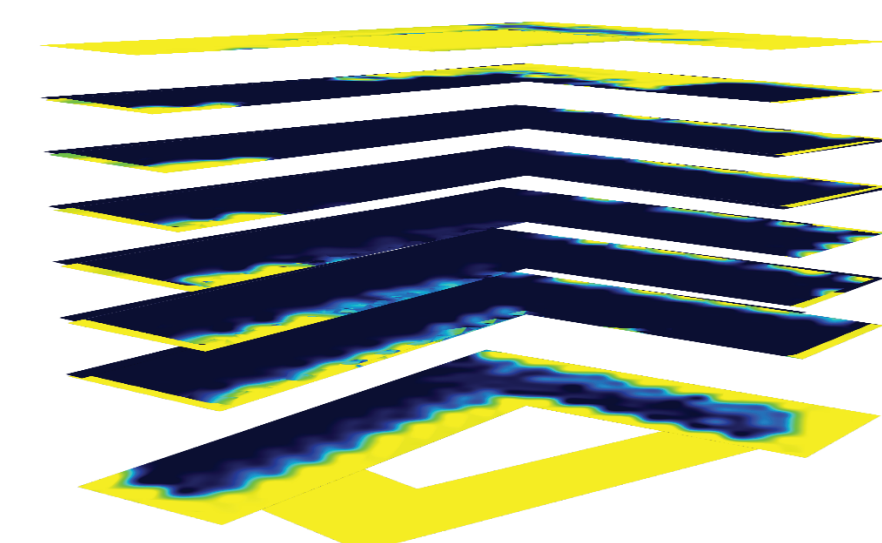


December 21

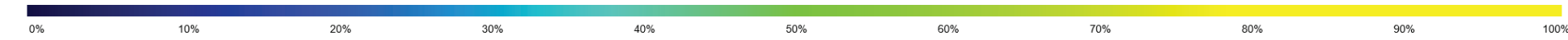
Percent of Direct Sunlight for more that 3 hours within spaces (between 9 am and 3 pm)



Summer (June to September)



Winter (October to May)



# Carbon Calculation + Sefaira Energy Analysis

## To Calculate the Carbon Footprint of the Building

City For LADWP Territory Data Taken from Power Profiler

Building Area (m2) **47180.0** m2

Yearly Values	Conversion Factor	lbs CO2e/yr
<b>1. Operational Energy:</b>		
Use the following values from the energy modeling program		
<b>Total Electricity</b>	960,650 kWhr	per kWhr 0.62 lbs/kWhr
<b>Total Fuel</b>	22,723 kWhr	per kWhr 0.083492847 lbs/kWhr
EUI	21 kWhr/m2 year	
EUI	7 kBtus/sq ft year	
<b>Operational Energy</b>		<b>597,500</b> lbs CO2e/yr

<b>2. Construction:</b>		
Build Carbon Neutral <a href="http://buildcarbonneutral.org/">http://buildcarbonneutral.org/</a> Build Carbon Neutral Provides an Easy way to calculate Embodied Emissions or Athena Eco Calculator for Assemblies <a href="http://www.athenasmi.org/tools/ecoCalculator/index.html">http://www.athenasmi.org/tools/ecoCalculator/index.html</a>		
	1,402 metric tonnes	lbs per metric tonne 2205.0
		life expectancy of the building. Default is average in the USA 73.0
<b>Construction</b>		<b>3,091,410</b> lbs CO2e
<b>Per Year</b>		<b>42,348</b> lbs CO2e/yr

<b>3. Water:</b>		
CO2e factor per Million Gallons: 1,331 lbs of CO2		
	896,420 gallons of water	per gallon of water 0.001331
<b>Water</b>		<b>1193</b> lbs CO2e/yr

Unit Type	# of Units	Waste per unit type
Studio	401.0	40.0
1 bedroom	801.0	25.0
2 bedroom	1602.0	20.0
3 bedroom	2003.0	15.0
4 bedroom	2804.0	10.0
<b>Total Waste</b>		<b>126190</b> lbs CO2e/yr

<https://www.epa.gov/warm/documentation-chapters-greenhouse-gas-emission-and-energy-factors-used-waste-reduction-model>  
 EPA Personal Emissions Calculator [http://www.epa.gov/climatechange/emissions/ind\\_calculator.html](http://www.epa.gov/climatechange/emissions/ind_calculator.html)  
<https://www3.epa.gov/carbon-footprint-calculator/>  
 Warm Model <https://www.epa.gov/warm/versions-waste-reduction-model-warm#WARM Tool V14>

for a family of five that does not use the carbon footprint calculator

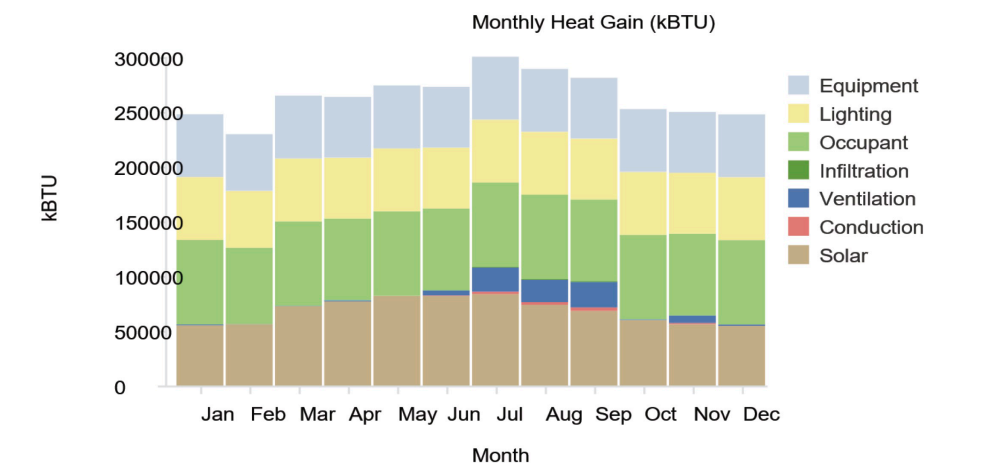
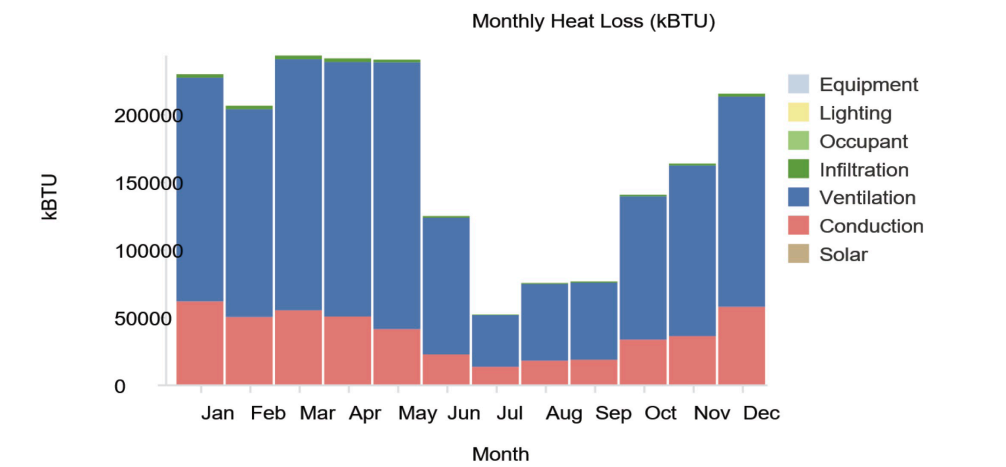
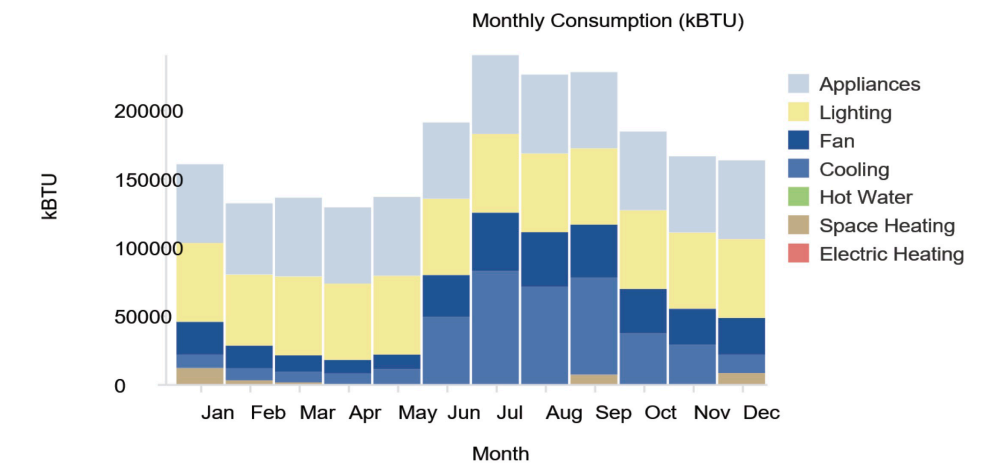
<b>total</b>	<b>657,081</b>	lbs CO2e / yr
<b>total</b>	<b>298,047</b>	kgs CO2e / yr
<b>total</b>	<b>298</b>	metric tonnes CO2e / yr
	<b>6</b>	kgs CO2e / m2 yr
	<b>1.29</b>	lbs CO2e/sqft-yr

<b>Renewable Energy</b>		
Total Energy Generated on Site kw/hr	12,000,000 kWhr	per kWhr 0.62
Total kWhr/m2/yr:	254 kWhr/m2/yr	
		<b>7,440,000</b> lbs CO2 sequestered on site by renewable system

<b>ZERO NET CARBON</b>		
The numbers below are for 2030 Architecture's definition of Zero Net Carbon		
	total energy used	983,373 kWhr
	total renewable energy generated	12,000,000 kWhr
	annual energy balance	-11,016,628 kWhr
	EUI	-234 kWhr/m2 year
	<b>EUI</b>	<b>-74</b> kBtus/sq ft year
	TOTAL CARBON	-6,830,309 lbs CO2e / yr
	TOTAL CARBON	-3,098,180 kgs CO2e / yr
	<b>CUI: CARBON USE INTENSITY</b>	<b>-65.7</b> kgs CO2e/m2-yr
	<b>CUI: CARBON USE INTENSITY</b>	<b>-13.4</b> lbs CO2e /sf yr

<b>CARBON NEUTRAL</b>		
The numbers below are for carbon emissions after renewables and should be zero or better to be carbon neutral		
		<b>-6,782,919</b> lbs CO2e-yr
		<b>-3,076,678</b> kgs CO2e-yr
		<b>-3,077</b> metric tonnes CO2e-yr
	<b>CUI: CARBON USE INTENSITY</b>	<b>-143.8</b> kgs CO2e/m2-yr
	<b>CUI: CARBON USE INTENSITY</b>	<b>-29.4</b> lbs CO2e /sf yr

## Energy Use:



## Techniques for reducing Energy Use:

