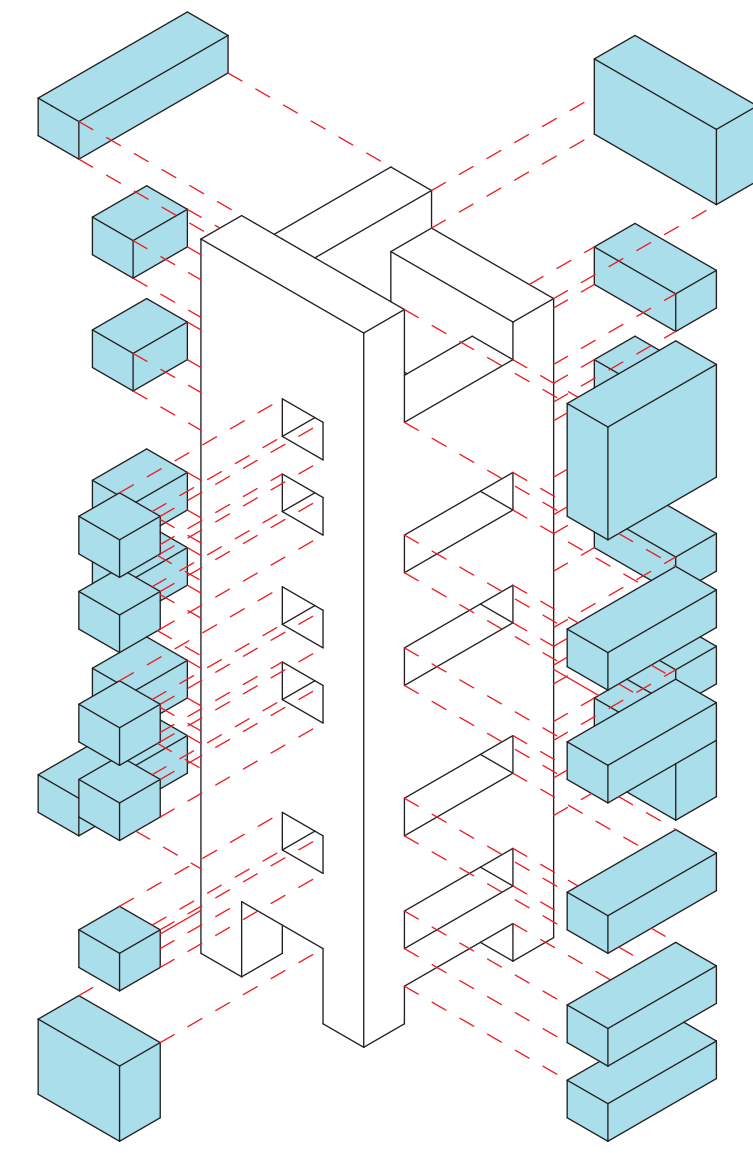
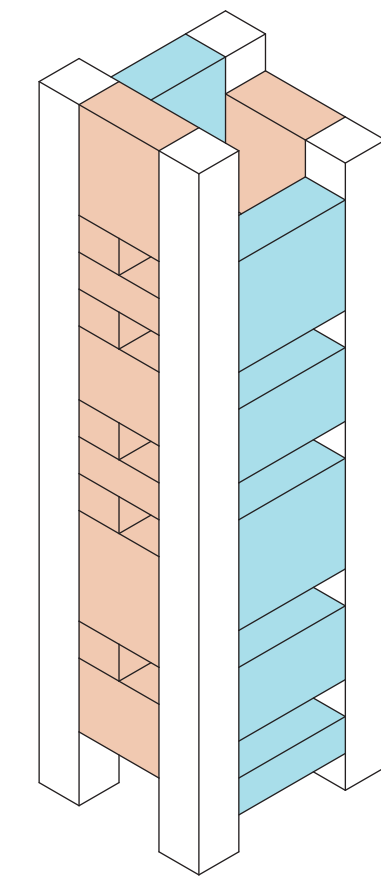


General Massing

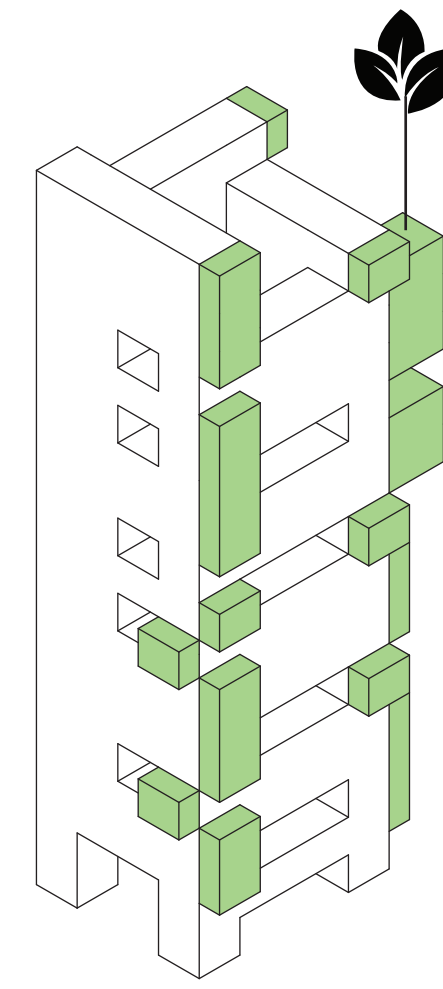


Social/Green Space Subtraction

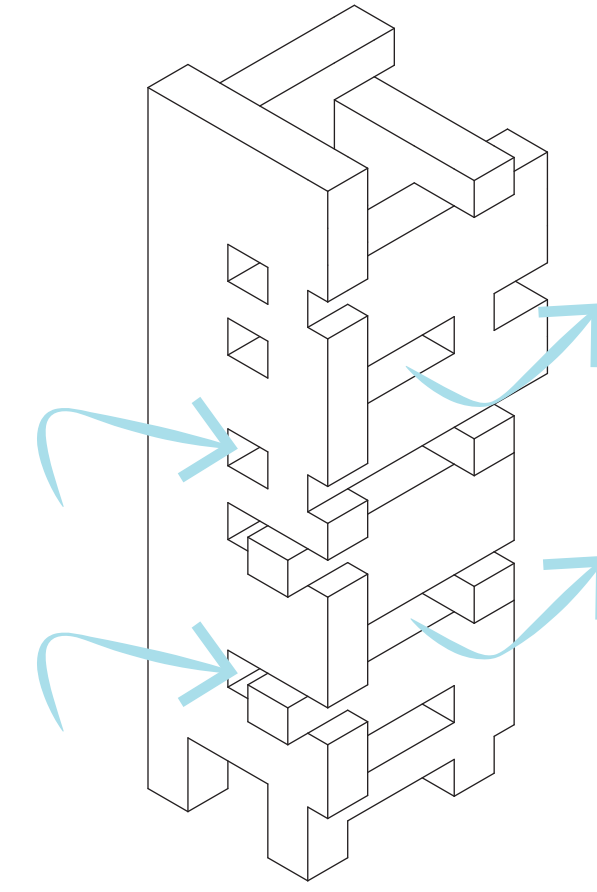


Two Bed  
Studios

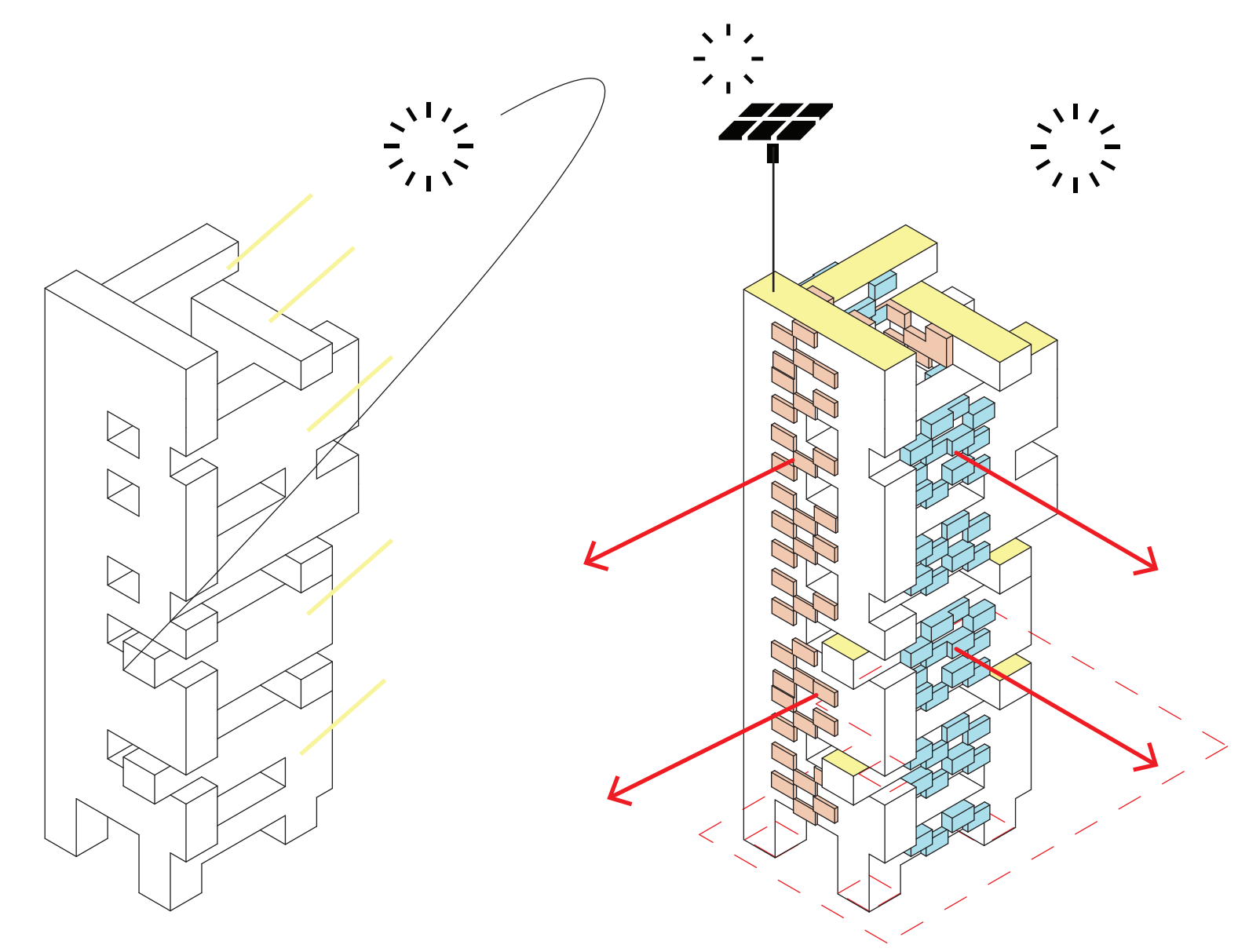
Housing Program



Creation of Green House

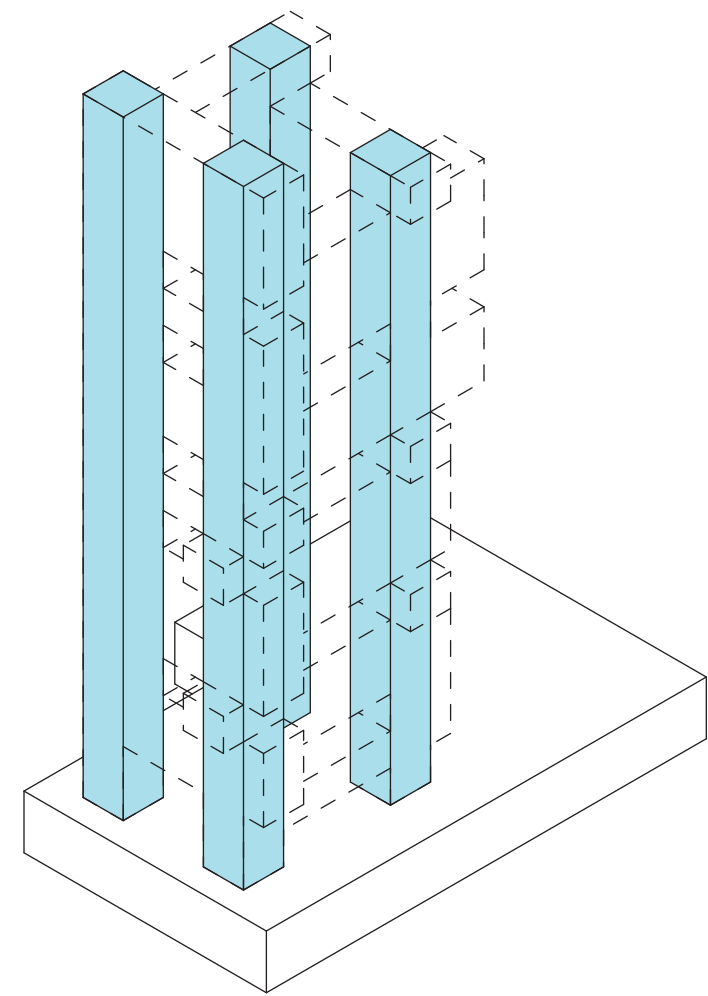


Cross Ventilation

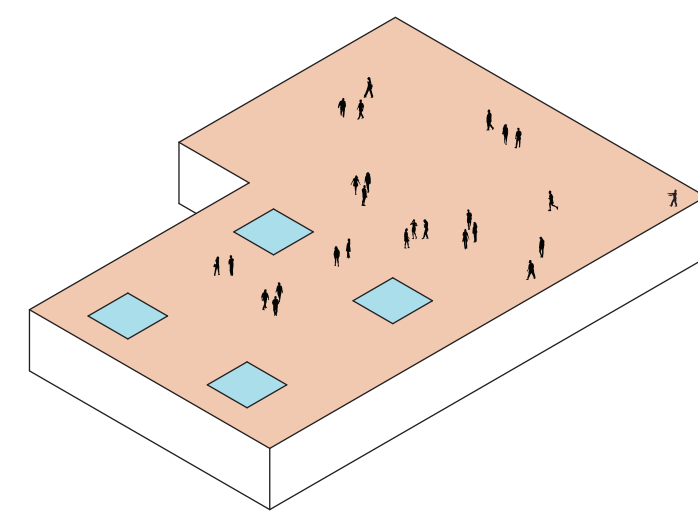


Solar Study

Solar Response  
Solar Energy

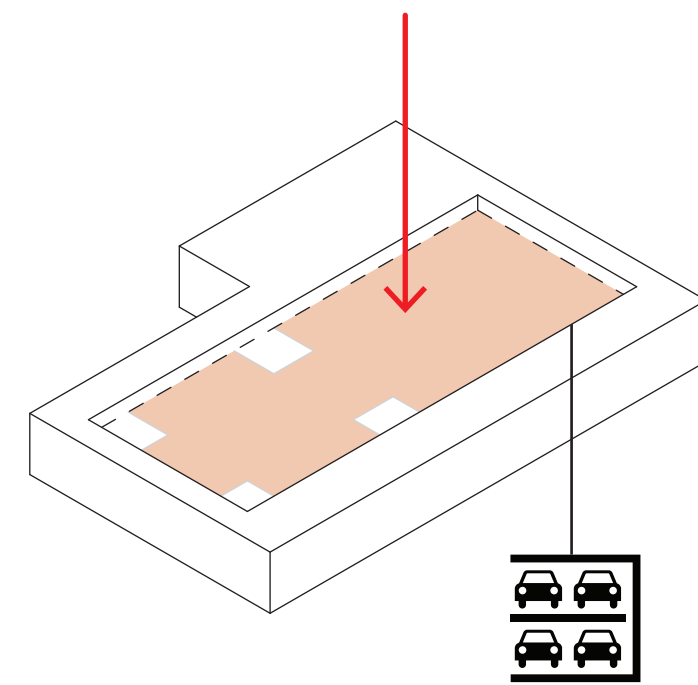


Vertical circulation

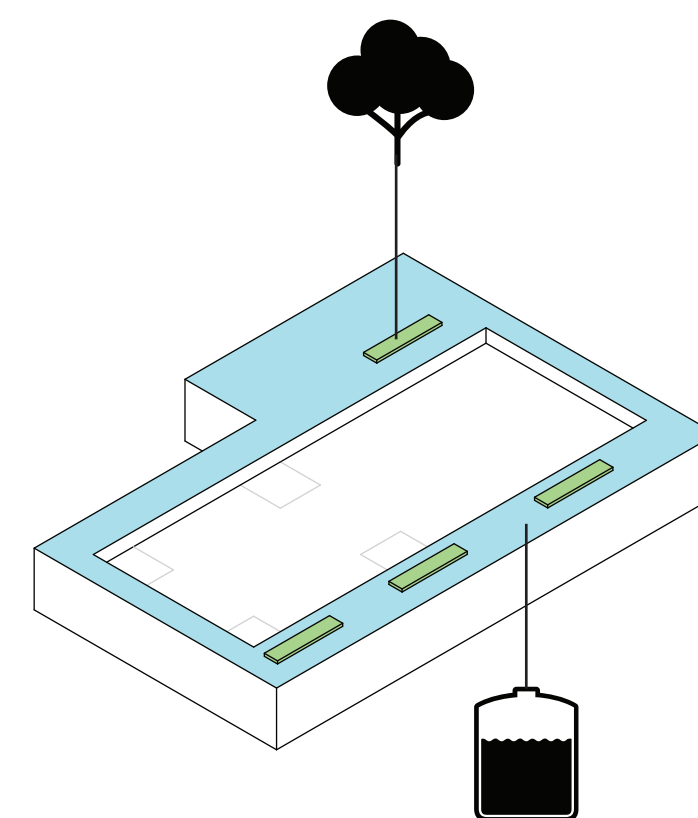


Private  
Public

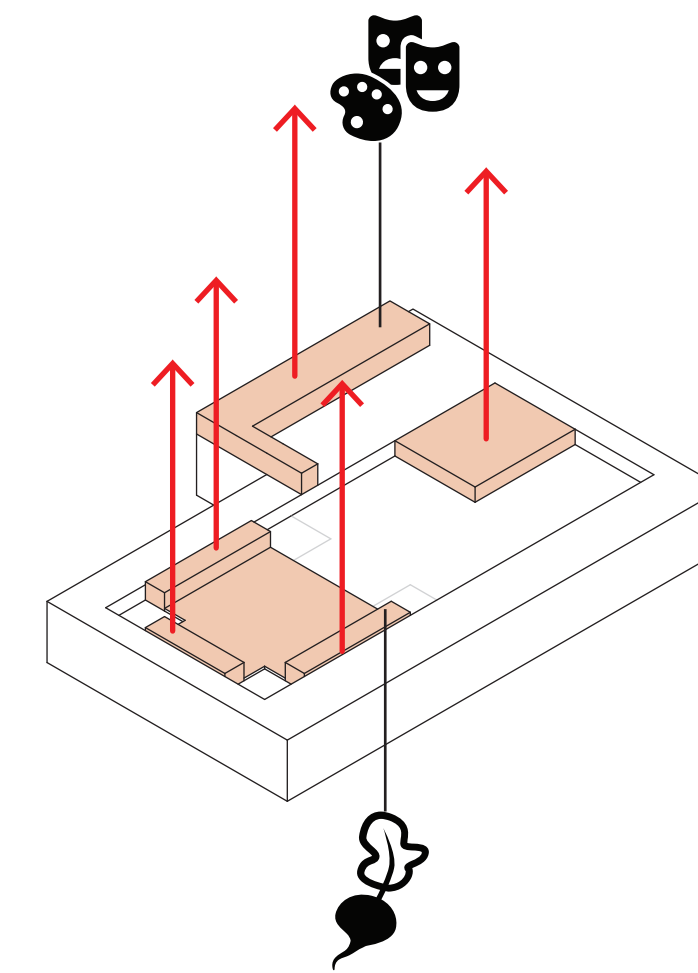
Maximize  
Public Space



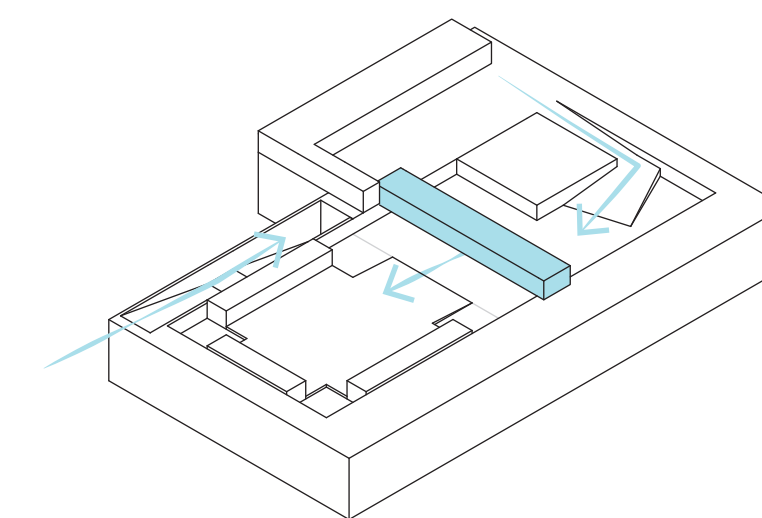
Underground  
Parking Garage  
Perimeter



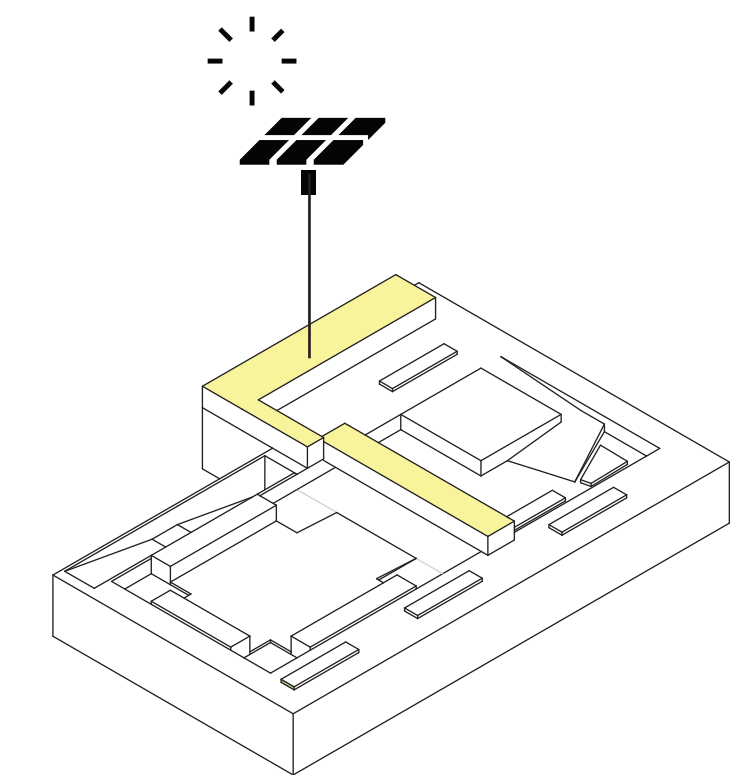
Maximize  
Water to Ground



Space Activation



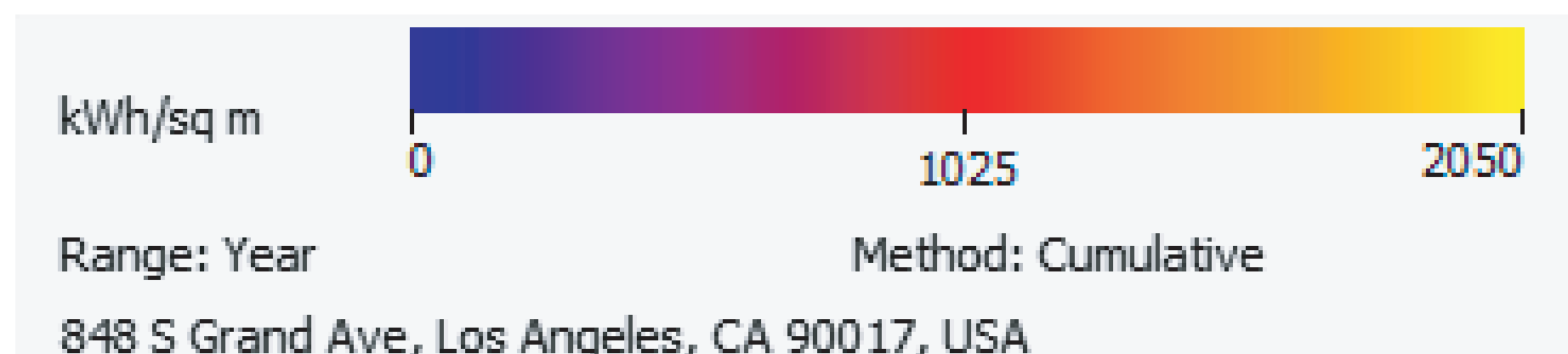
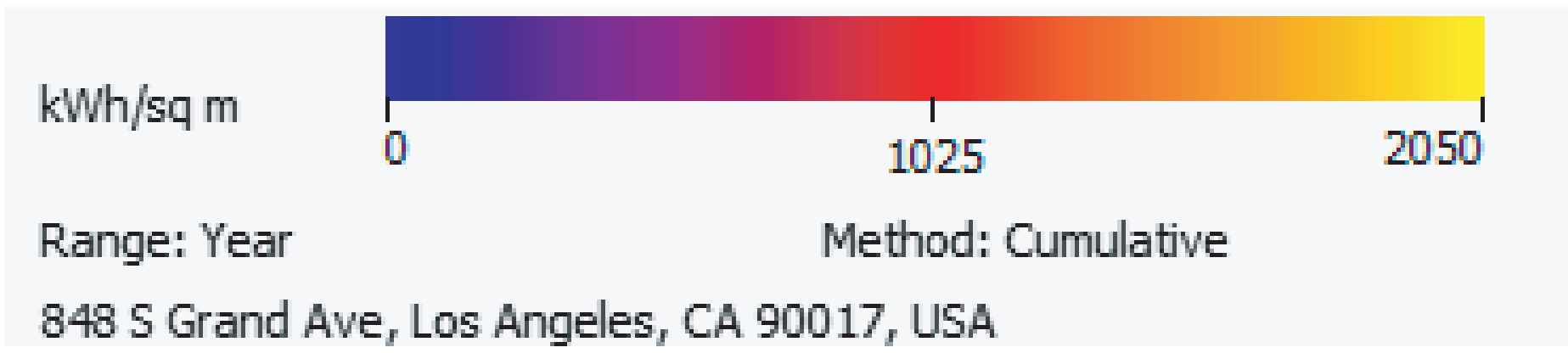
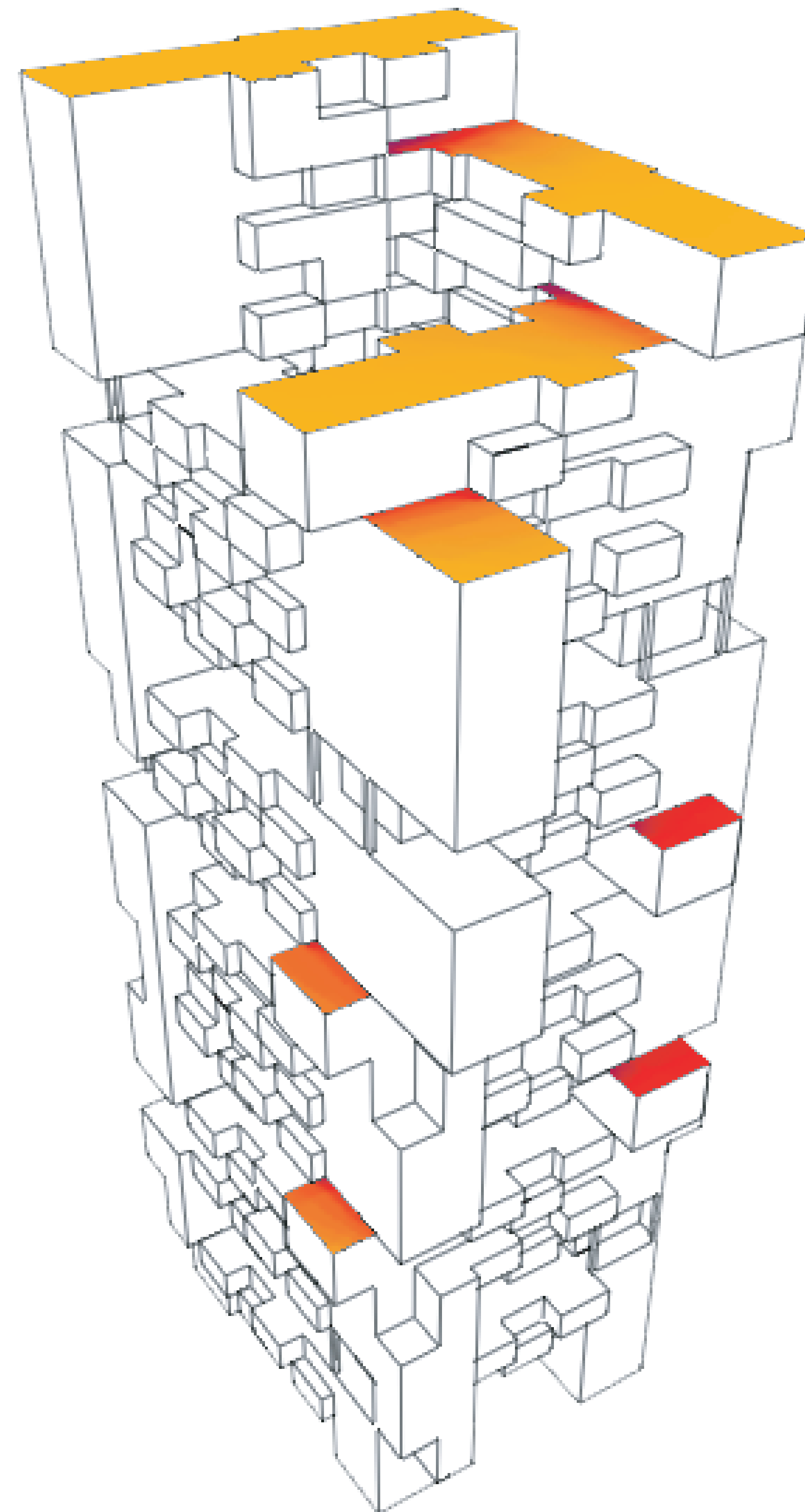
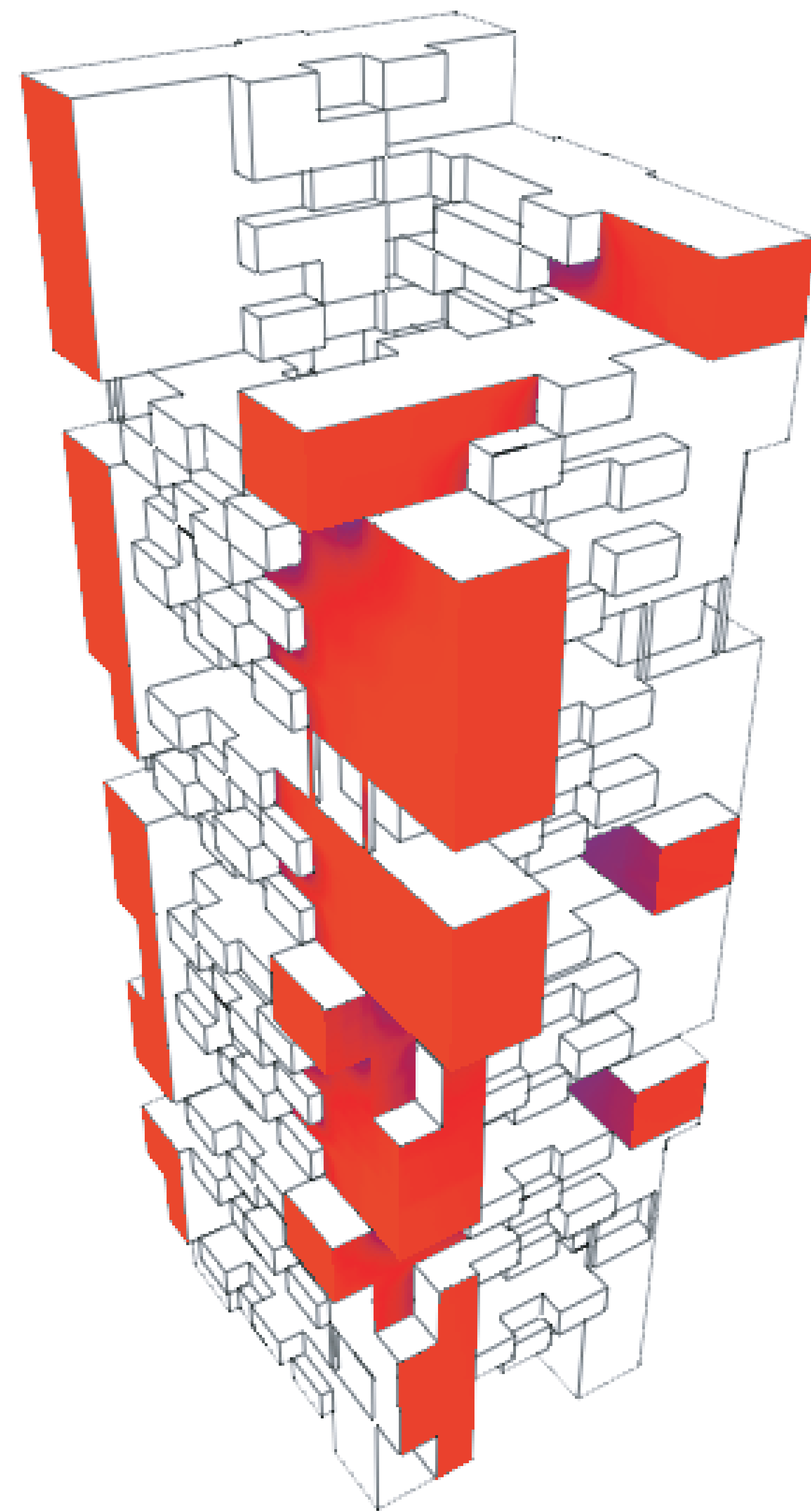
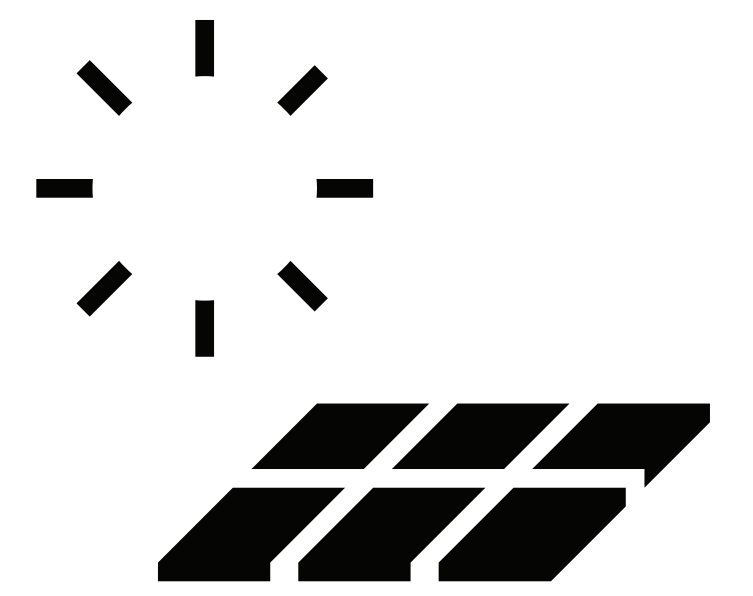
Circulation



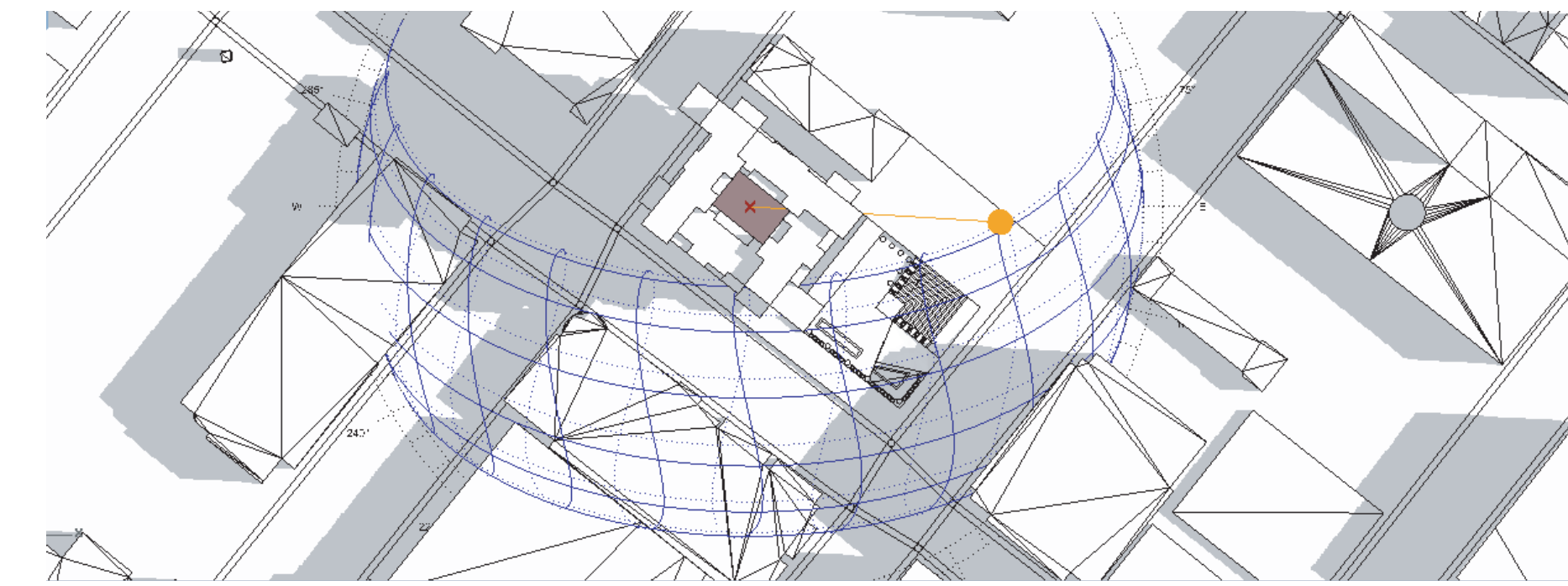
Solar Power

# Process Diagram

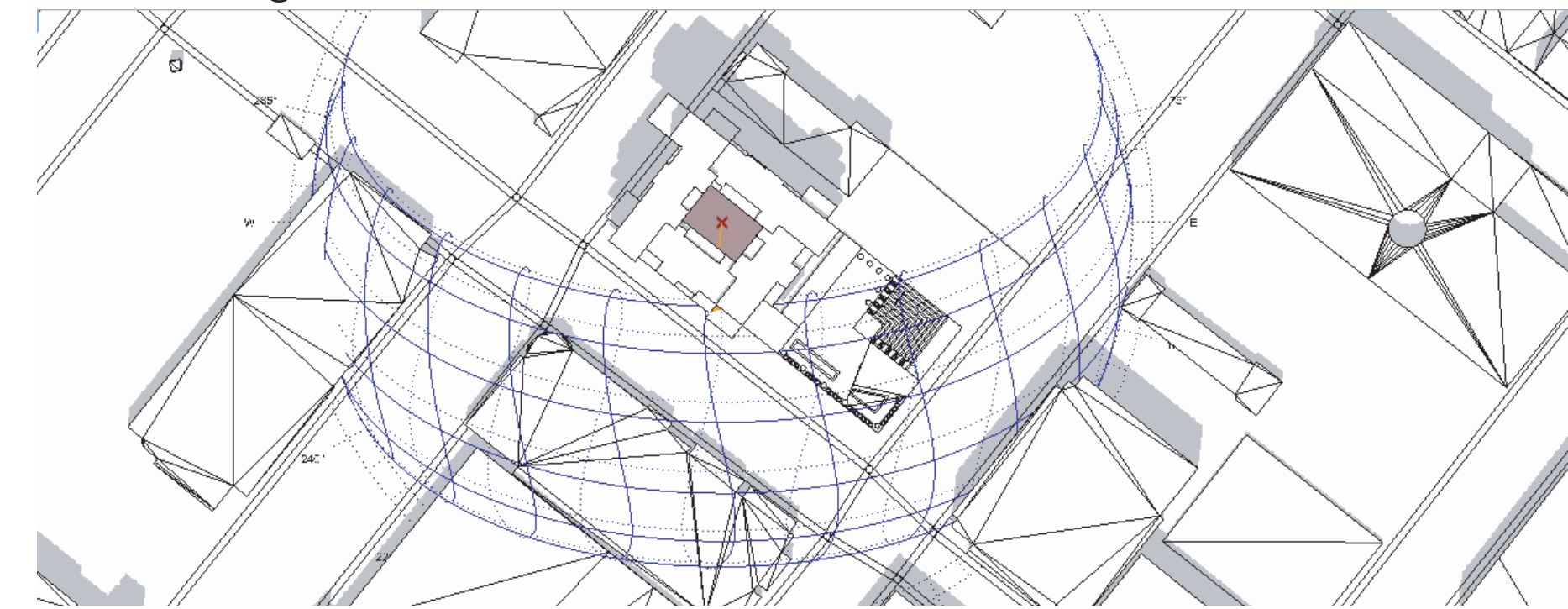
# Solar Radiation & Shadow Studies



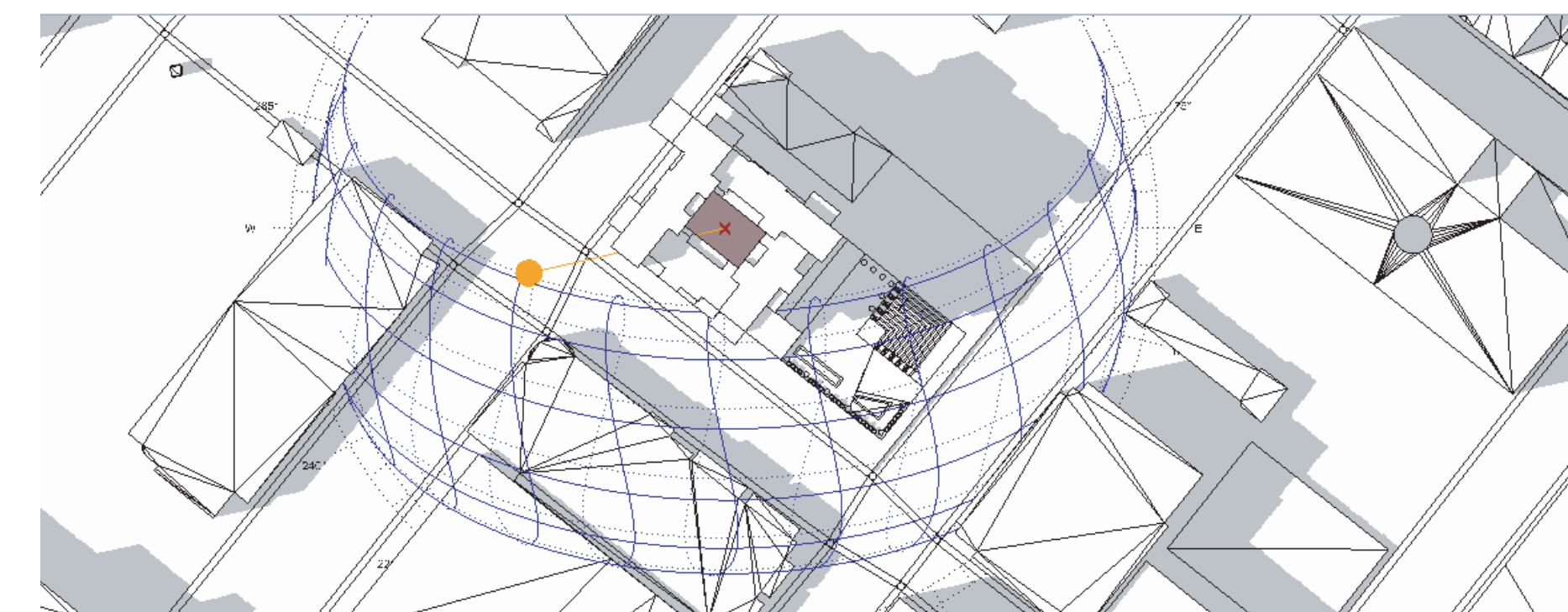
JUNE 21ST @ 9 AM



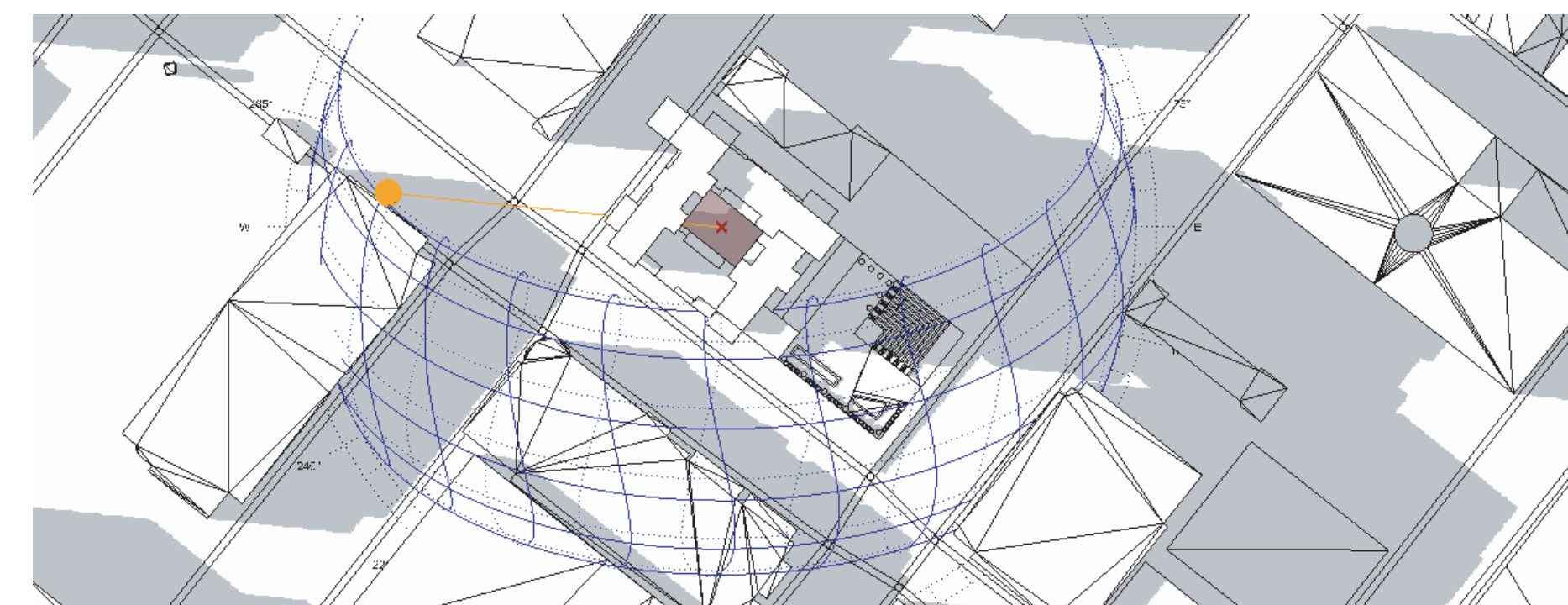
JUNE 21ST @ 12PM



JUNE 21ST @ 2PM



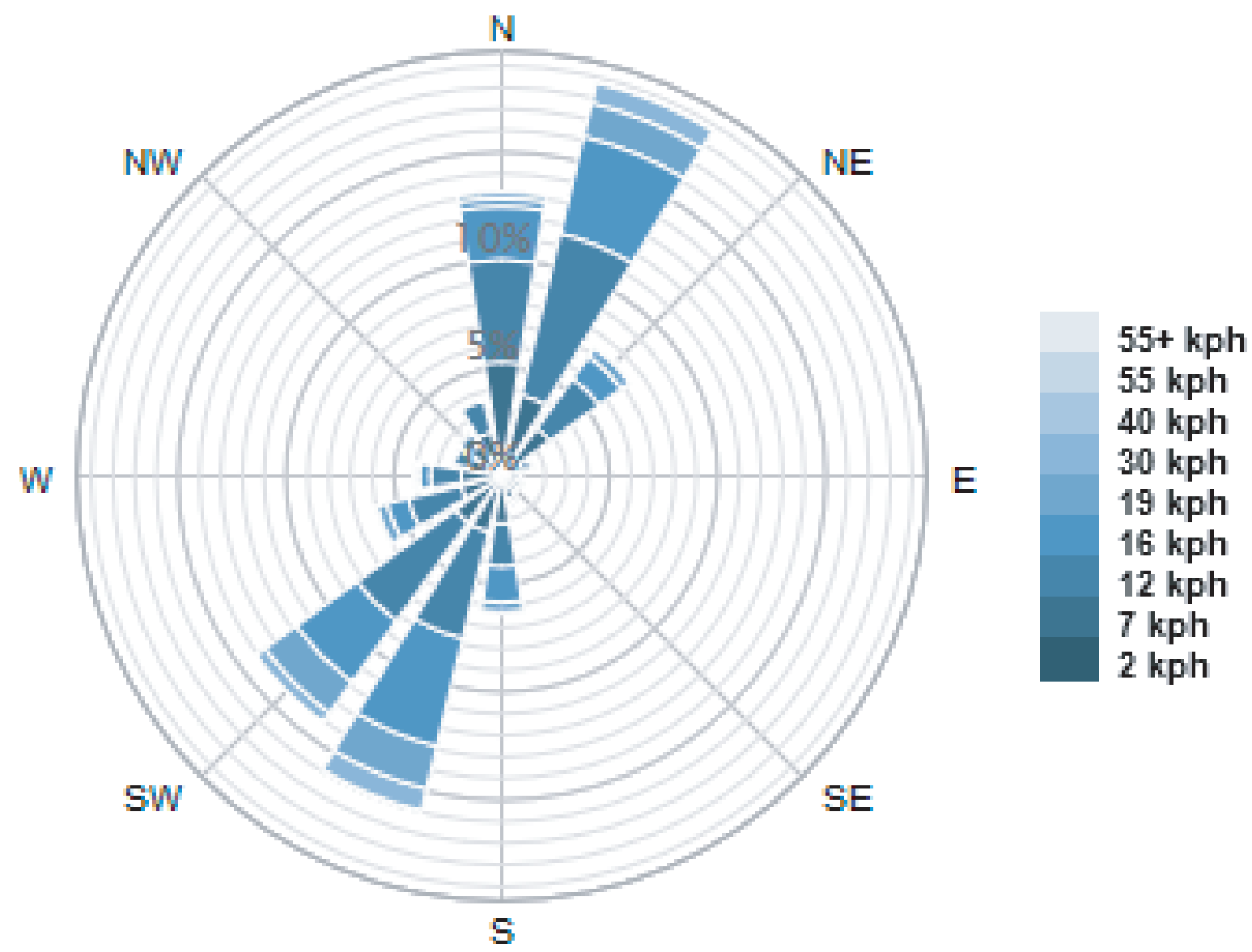
JUNE 21ST @ 4PM



# Wind Studies

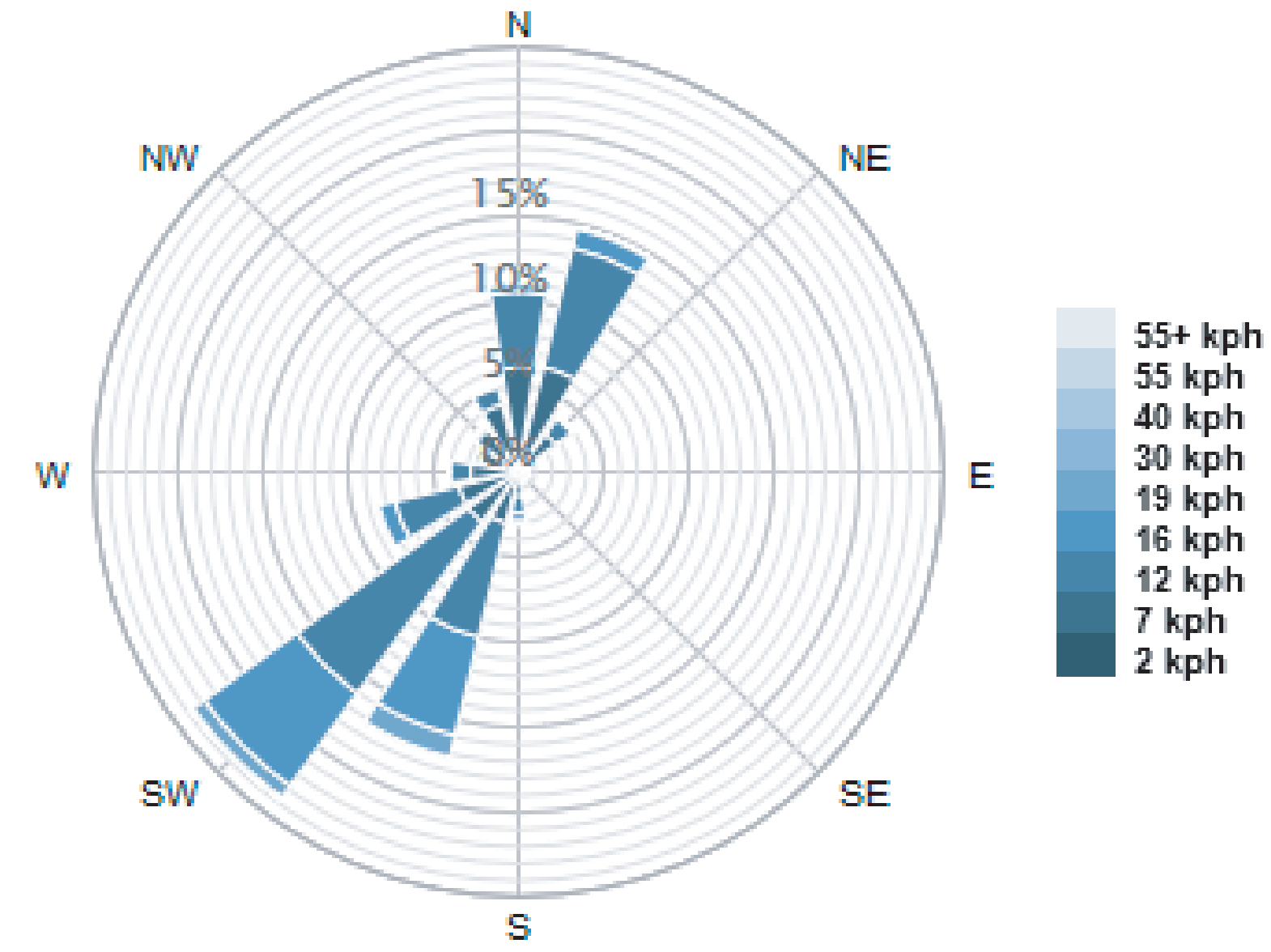


Weather Station ID: 7780  
NE 3.4 miles away



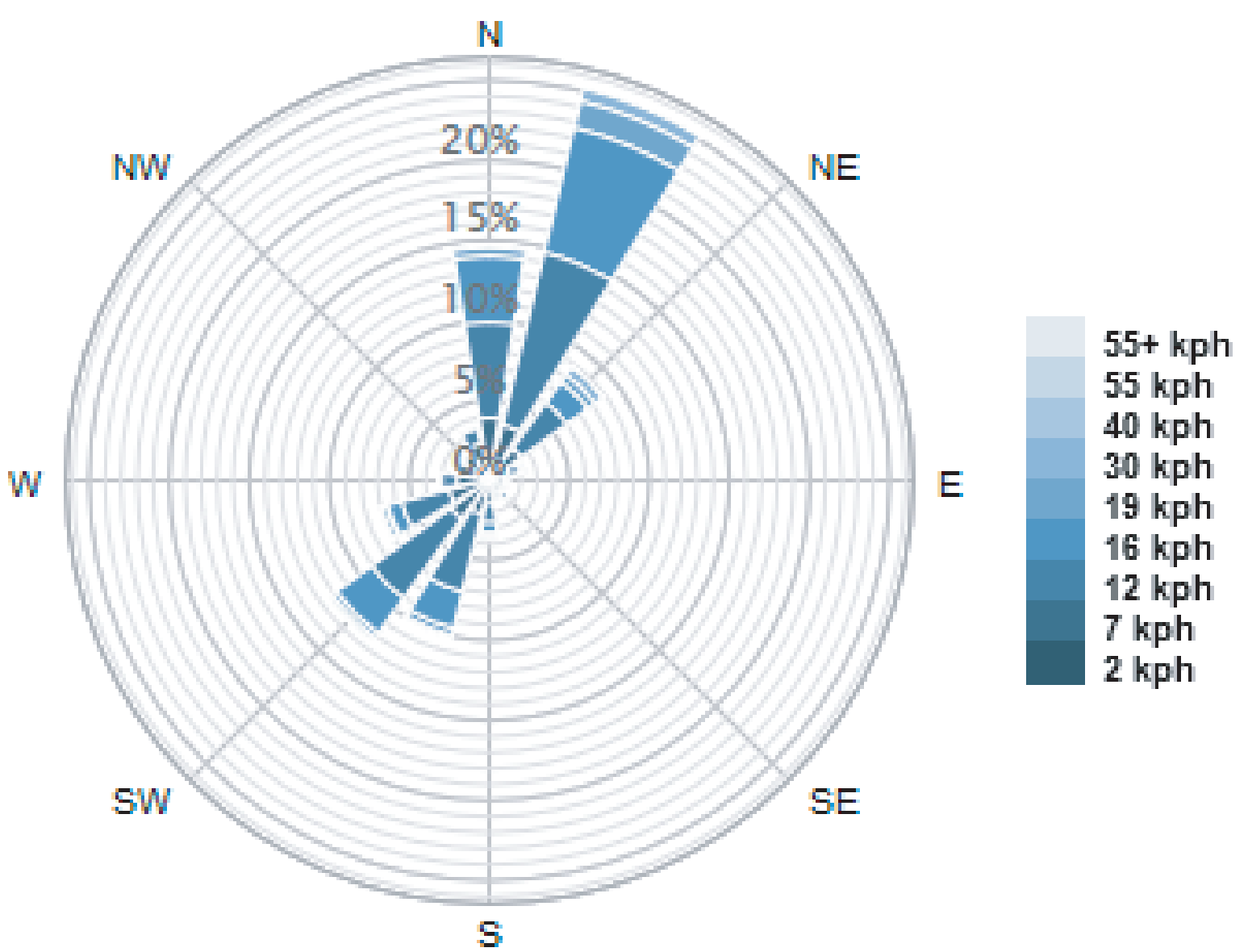
Windrose Speed Mar-May

Weather Station ID: 7780  
NE 3.4 miles away



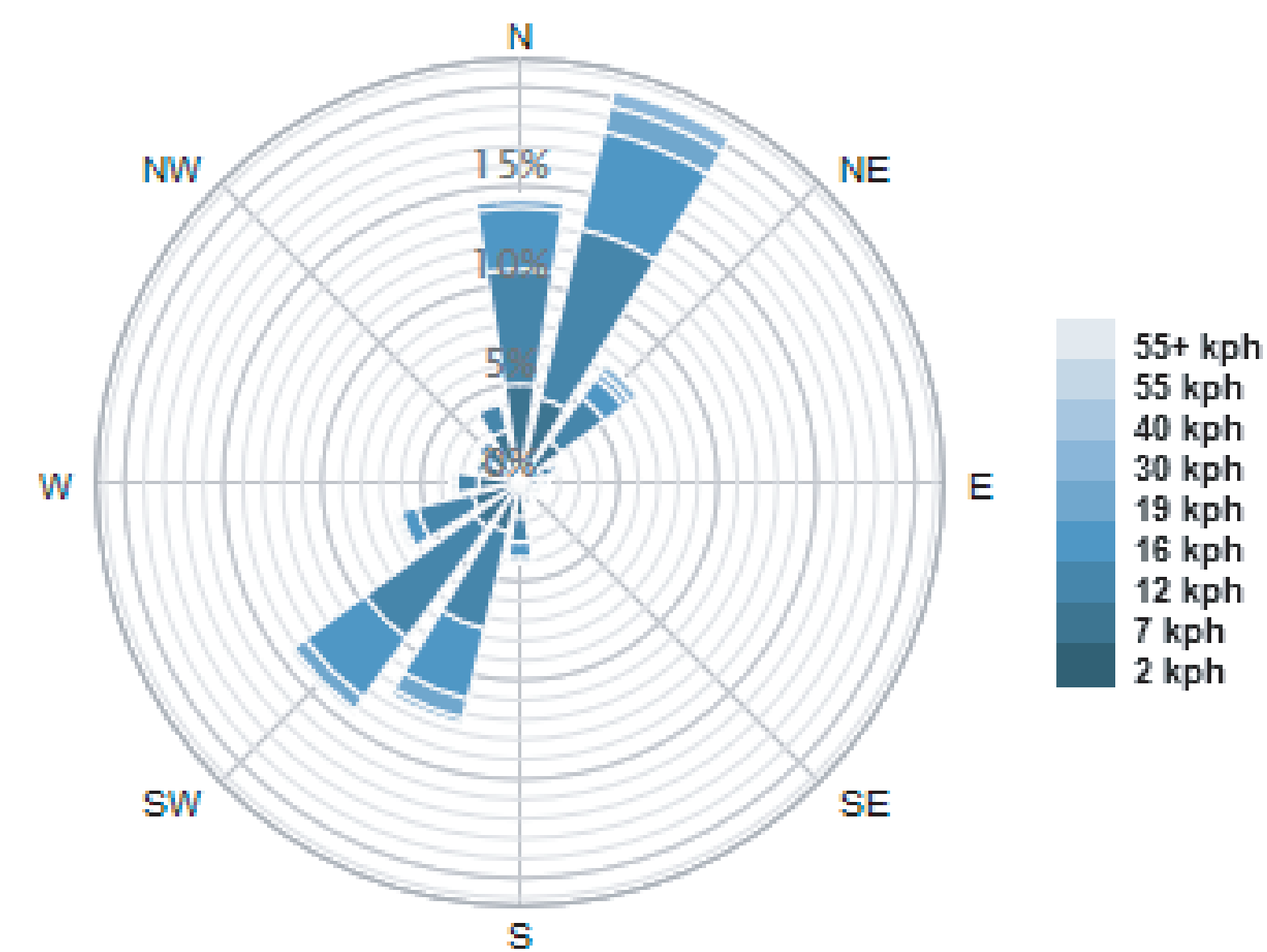
Windrose Speed Jun-Aug

Weather Station ID: 7780  
NE 3.4 miles away

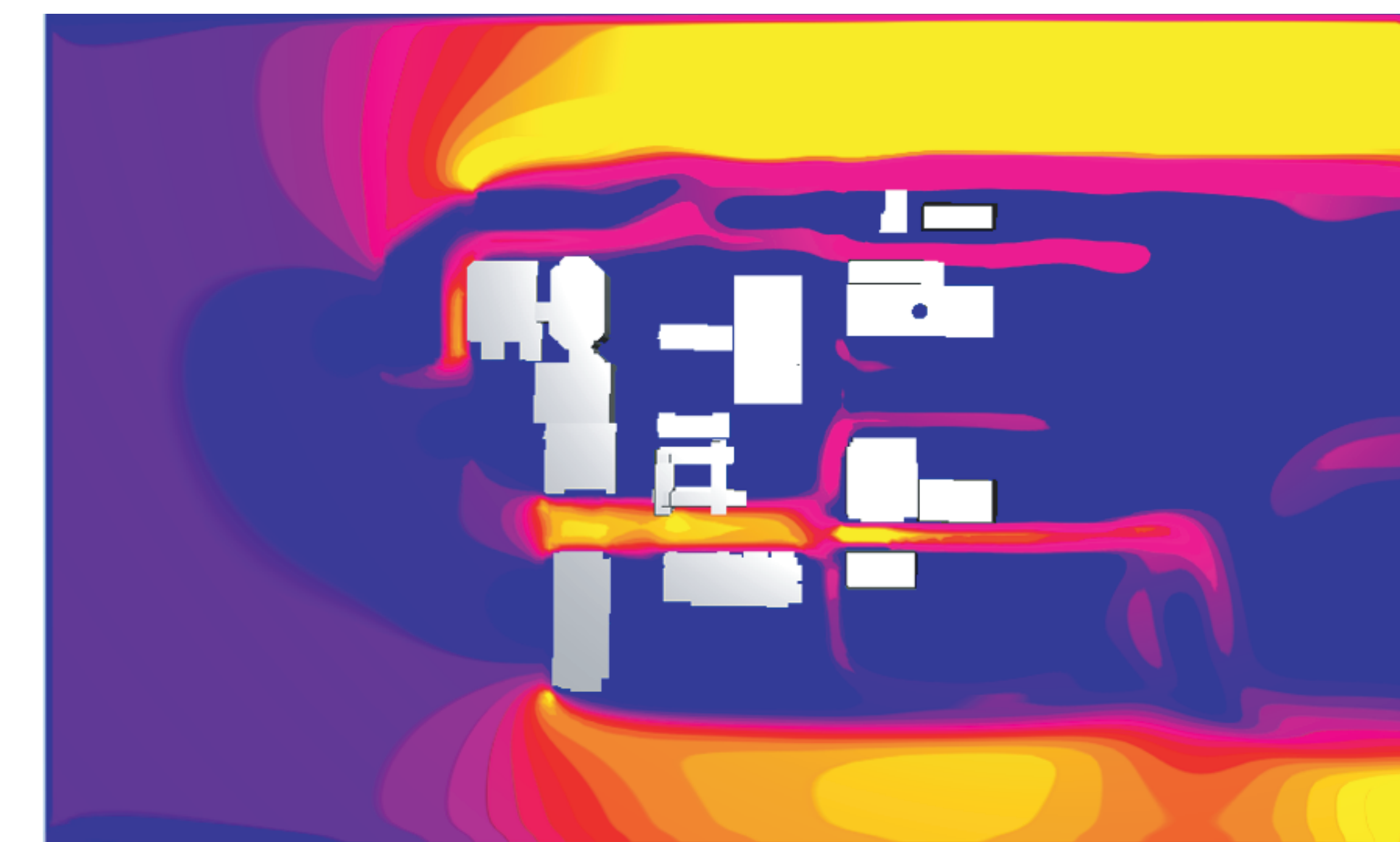
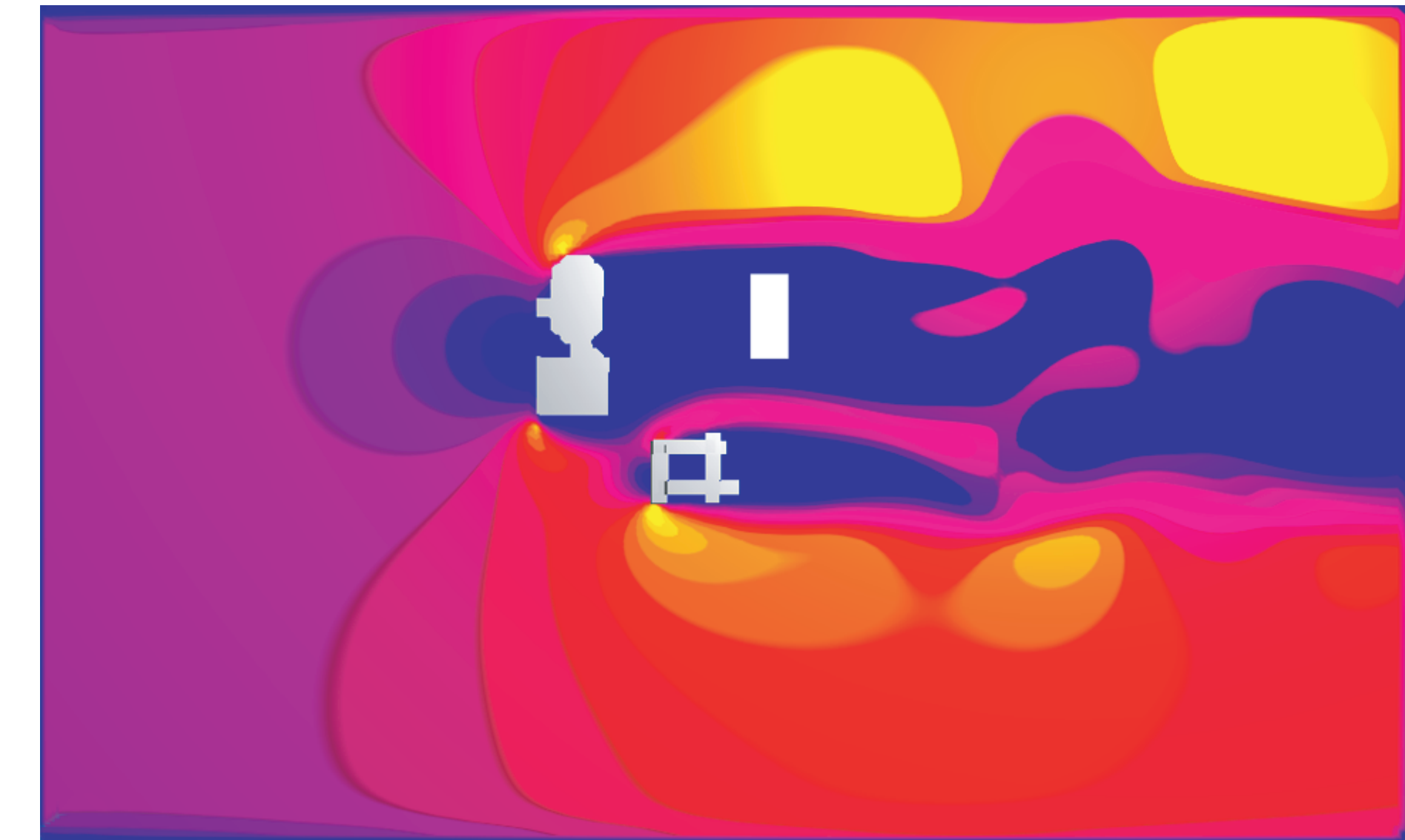


Windrose Speed Sep-Nov

Weather Station ID: 7780  
NE 3.4 miles away

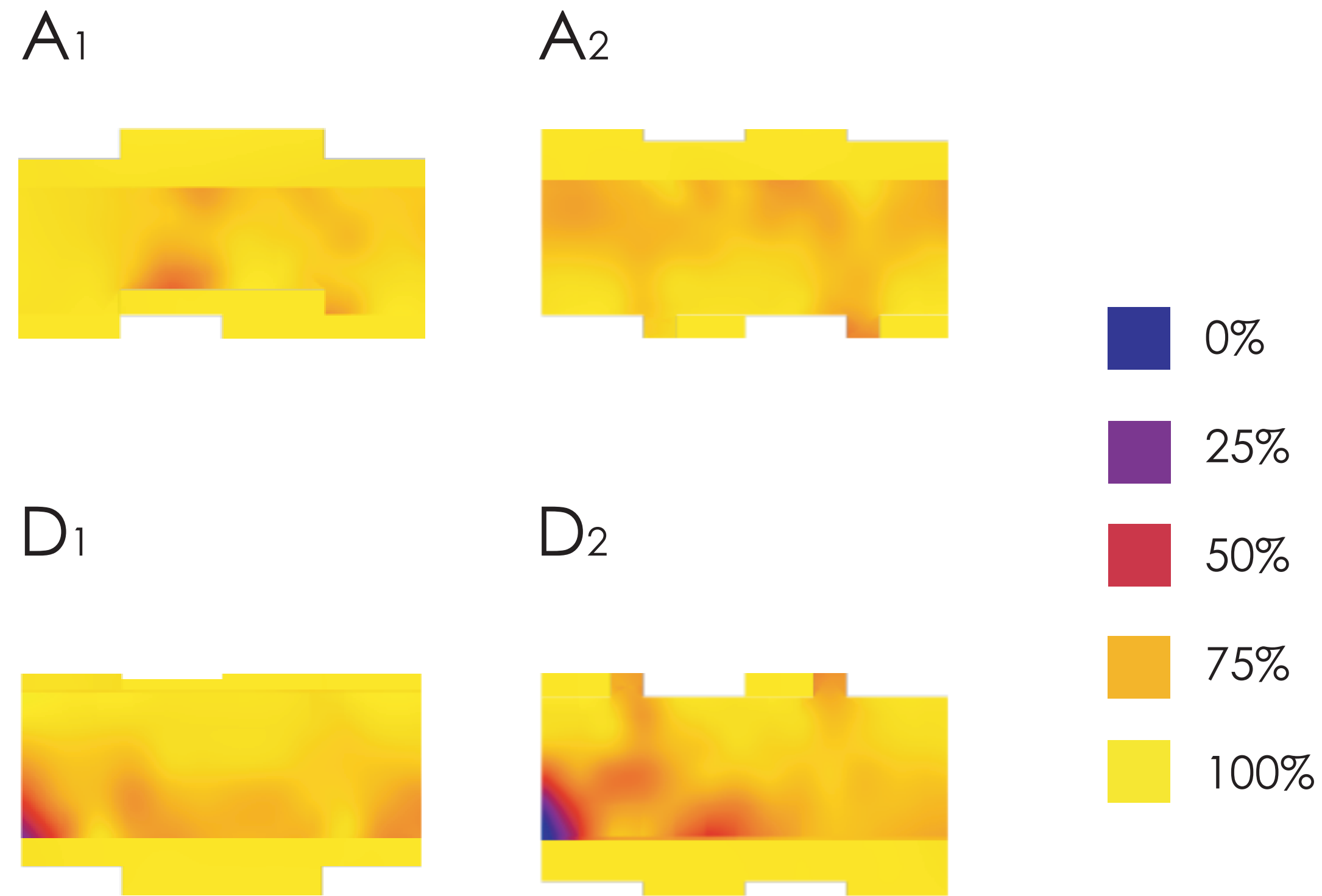


Windrose Annual



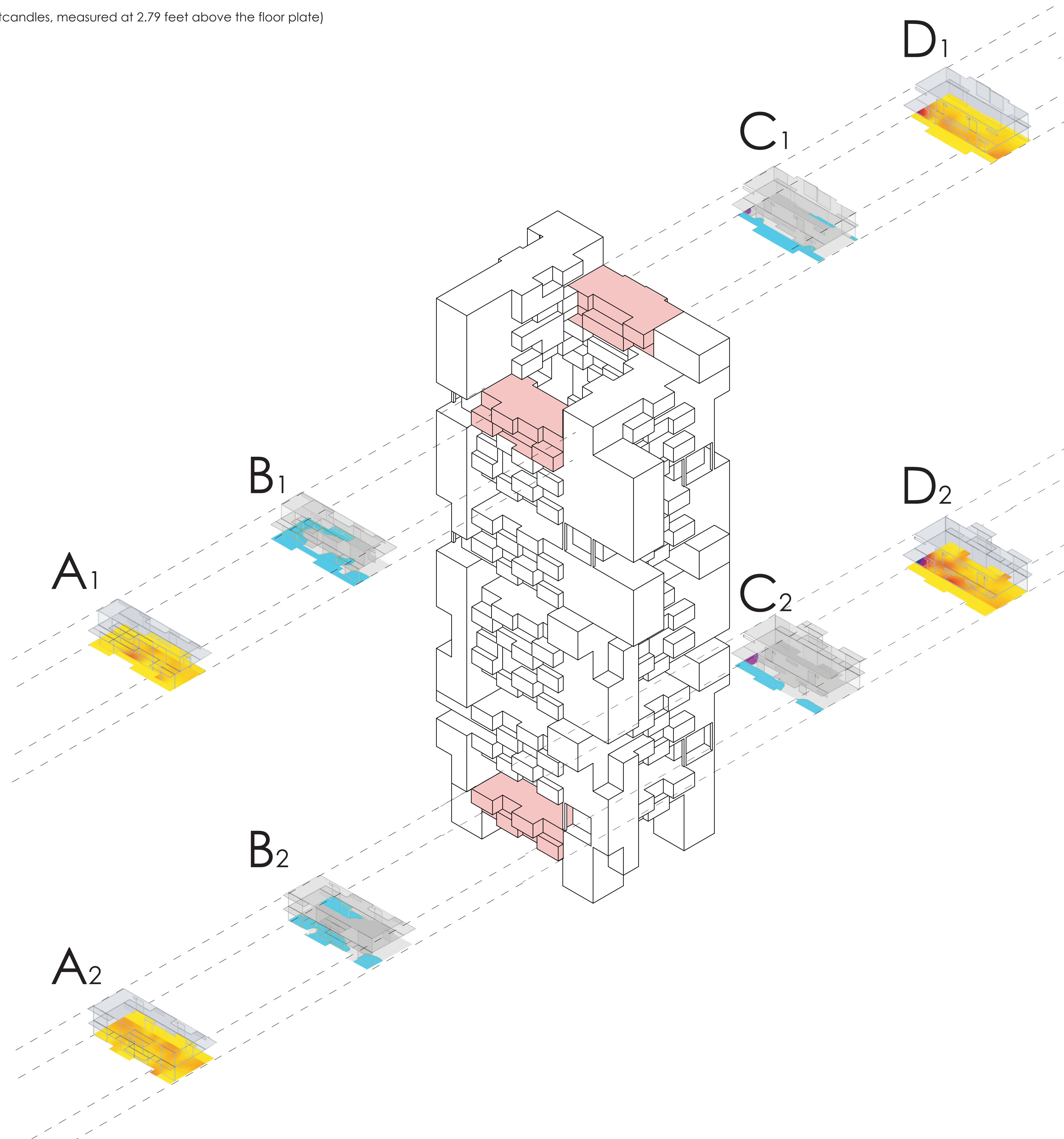
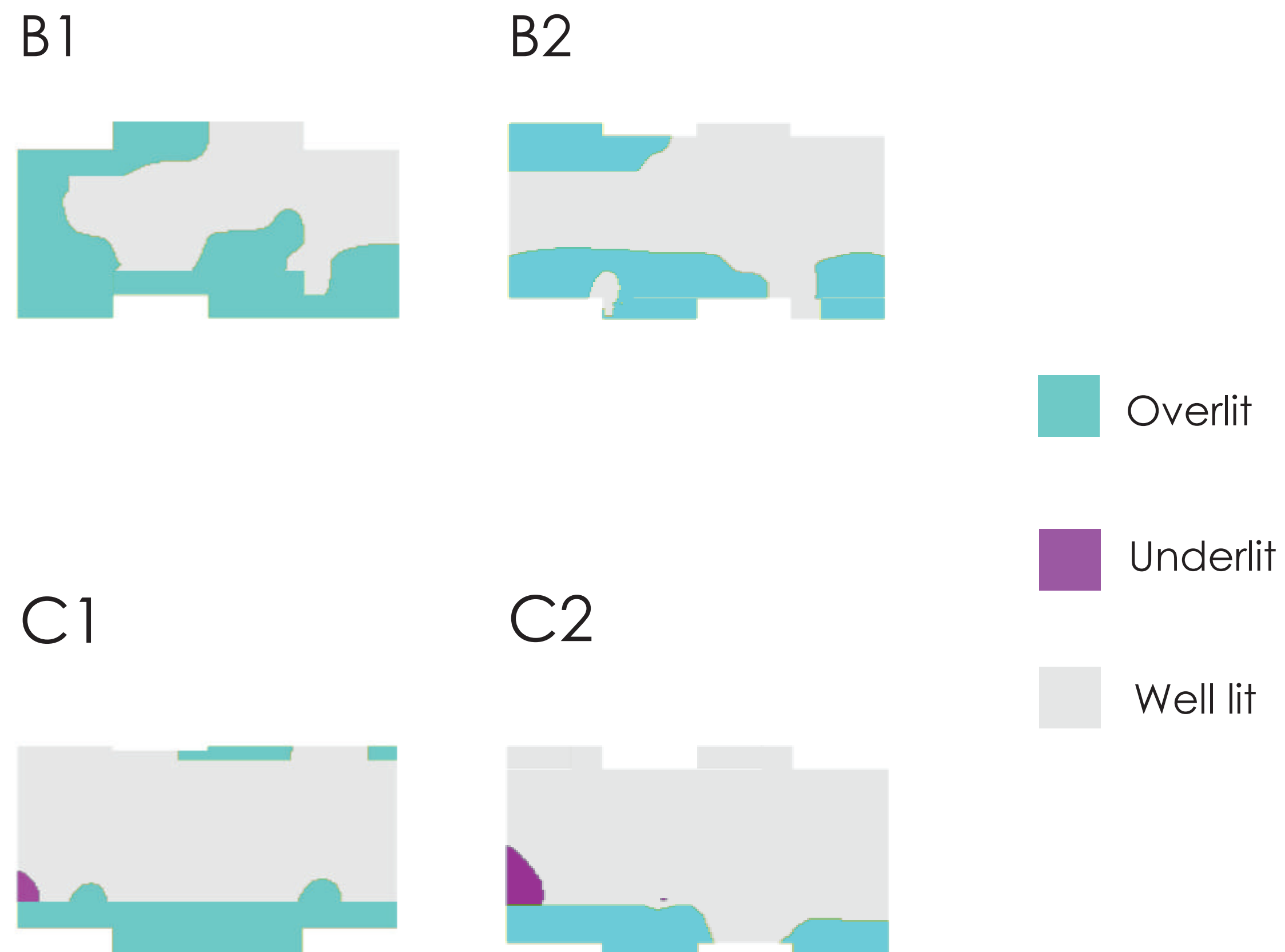
# Annual Illuminance

(Percentage of occupied hours where illuminance is at least 28 footcandles, measured at 2.79 feet above the floor plate)



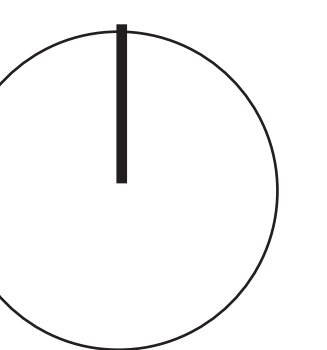
# Overlit & Underlit

underlit: less than 28 footcandles for more than 50% of occupied hours)  
 overlit: over 93 footcandles of direct light for more than 250 occupied hours per year;





Site Plan  
1/32" = 1'



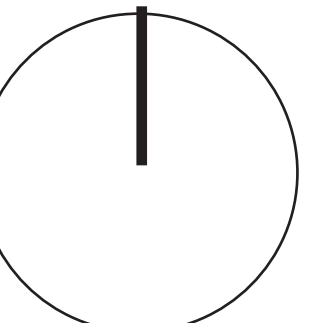


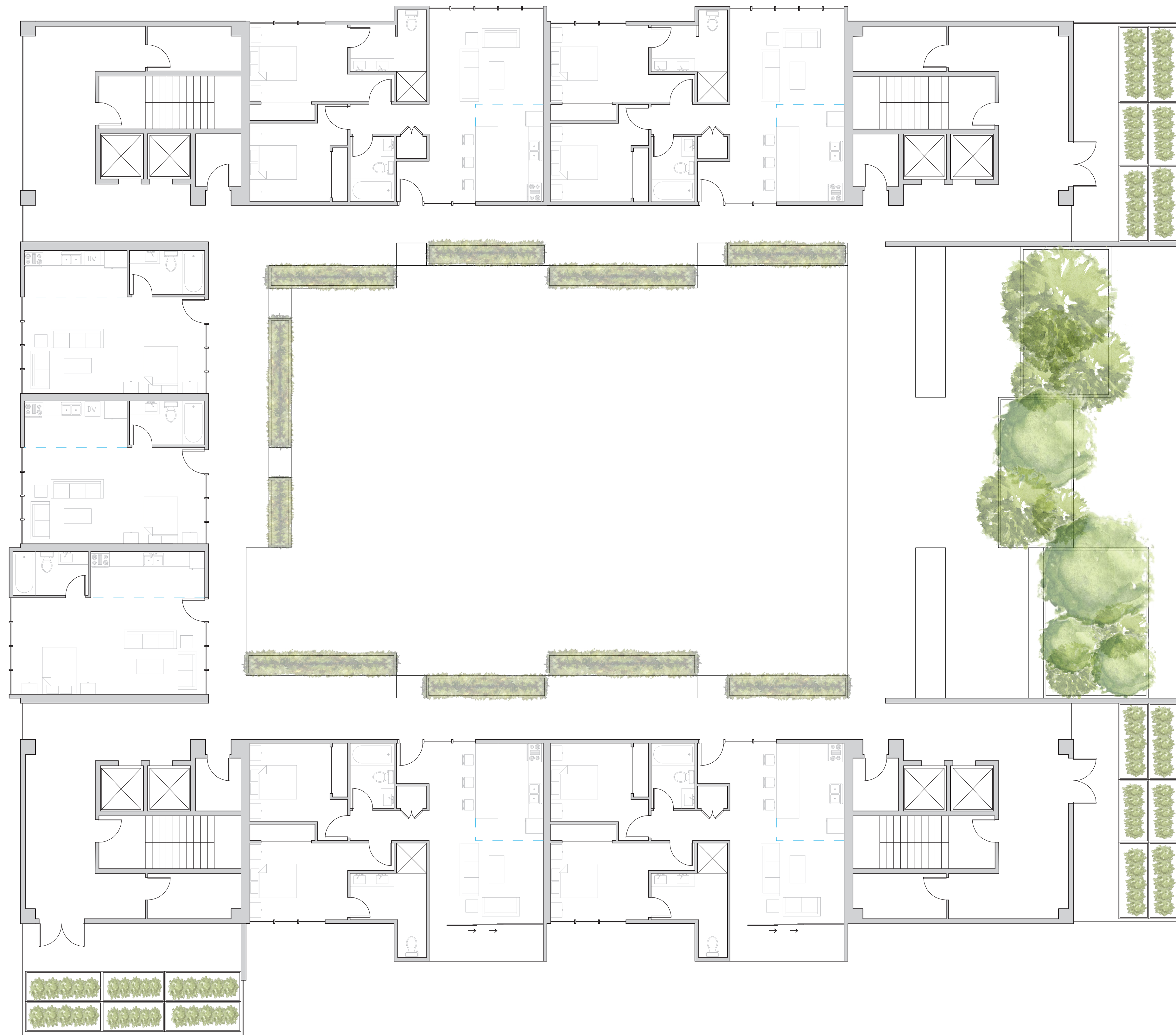
S Grand Ave

9th Street

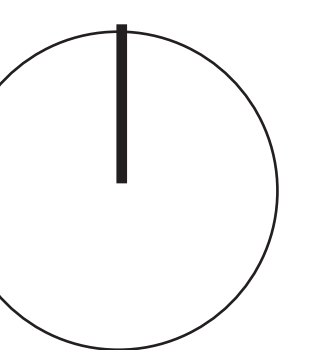
Olive Street

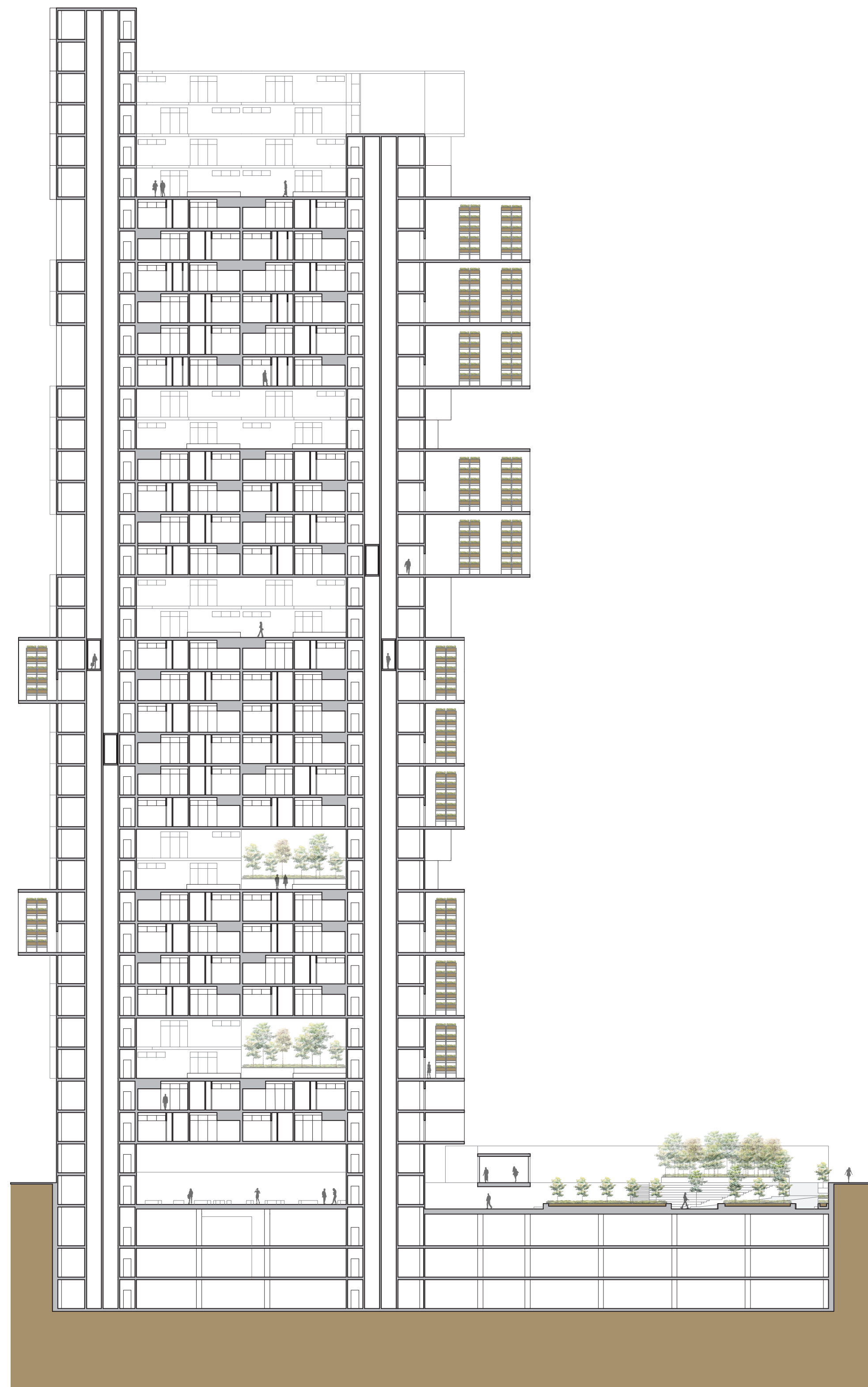
Ground Floor Plan  
1/32" = 1'



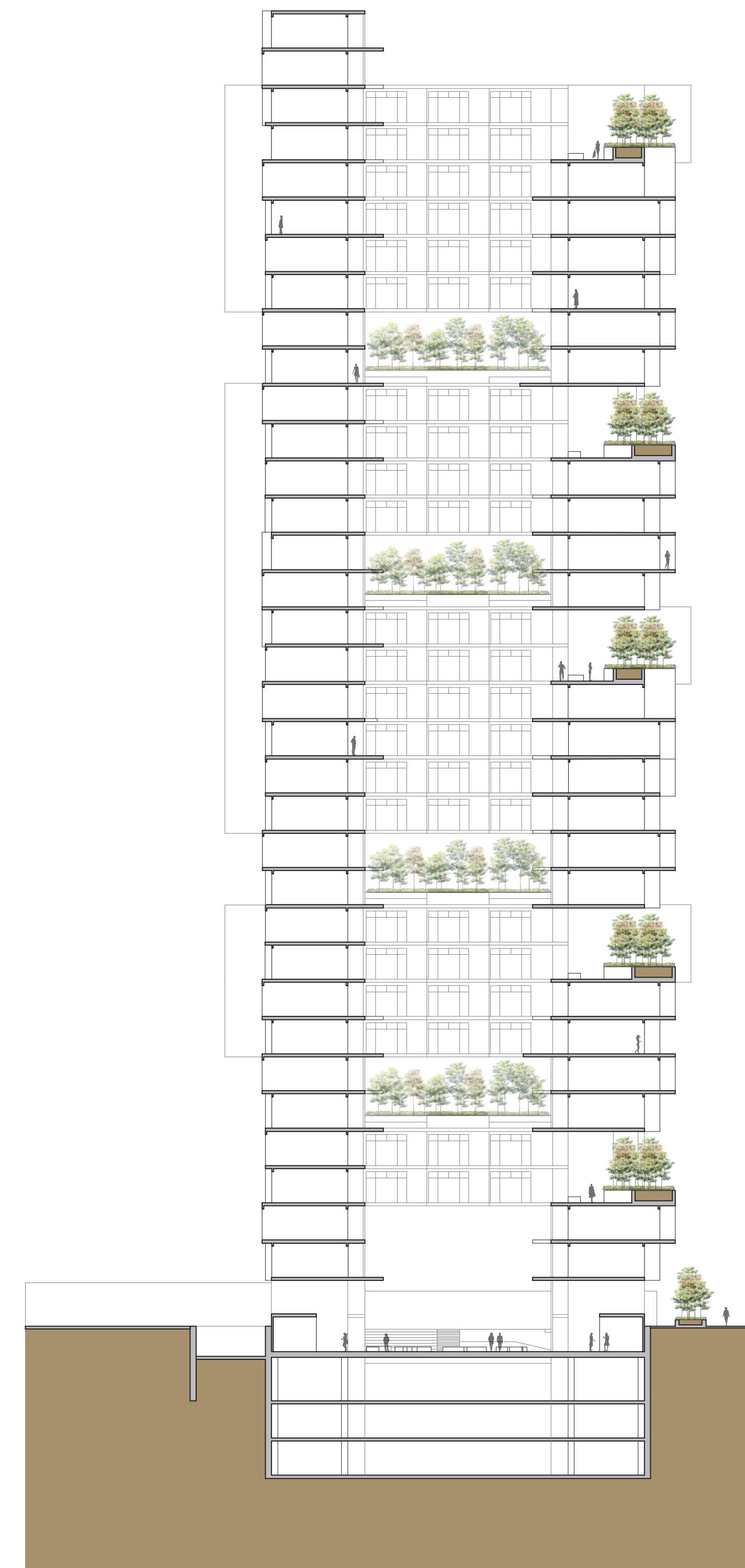


Typical Floor Plan  
1/8" = 1'





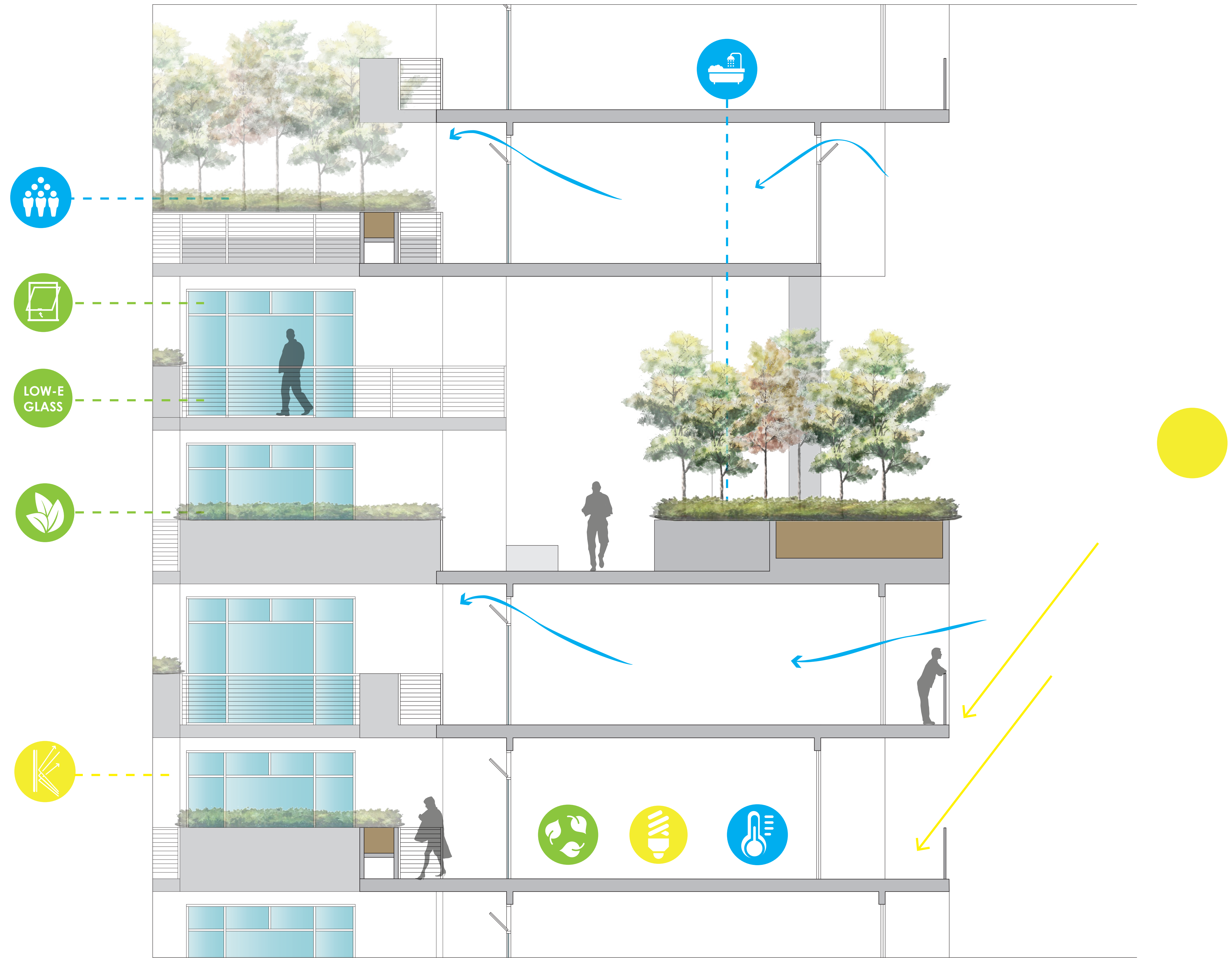
Longitudinal Section



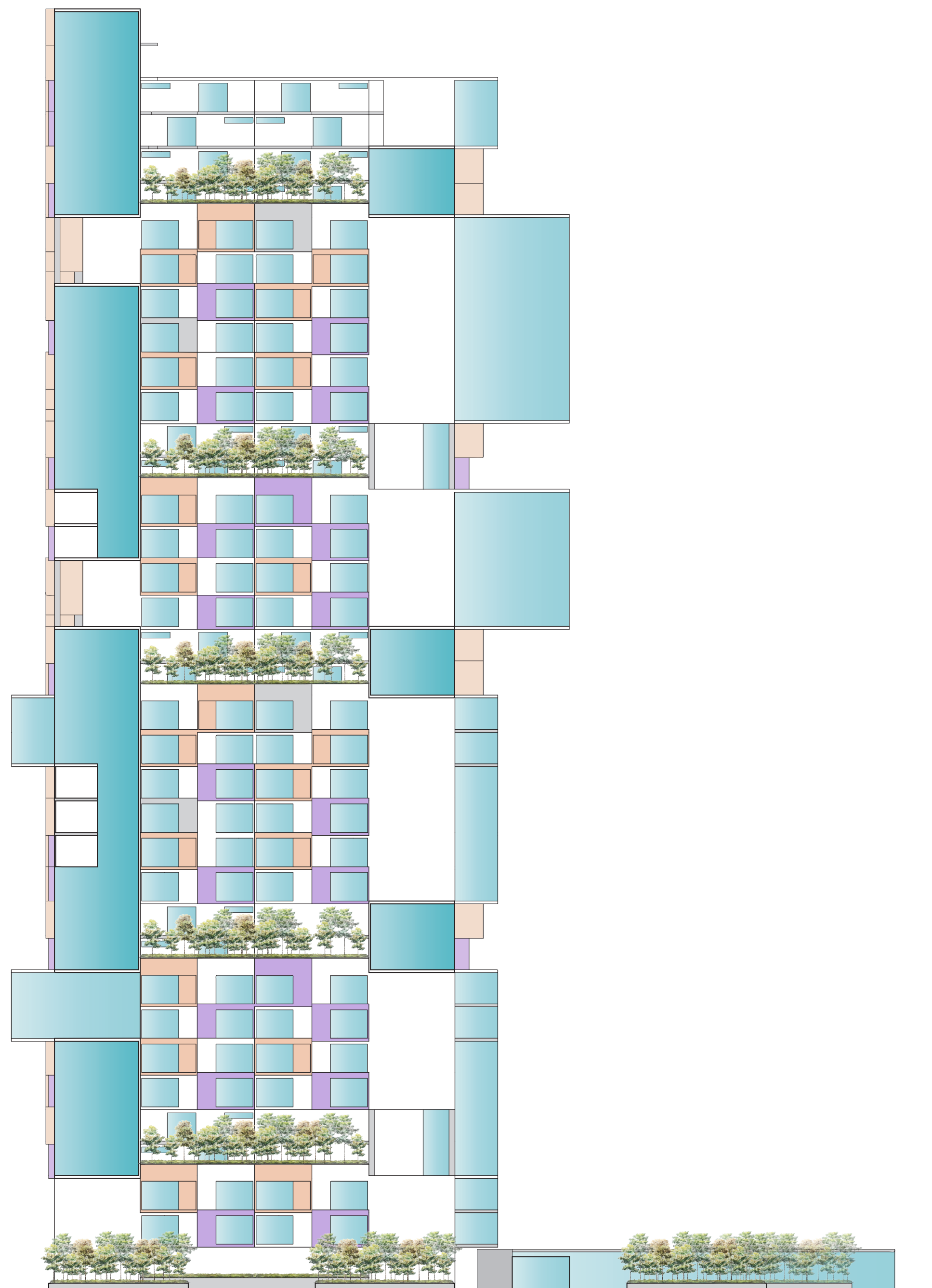
Cross Section

Sections  
1/32" = 1'

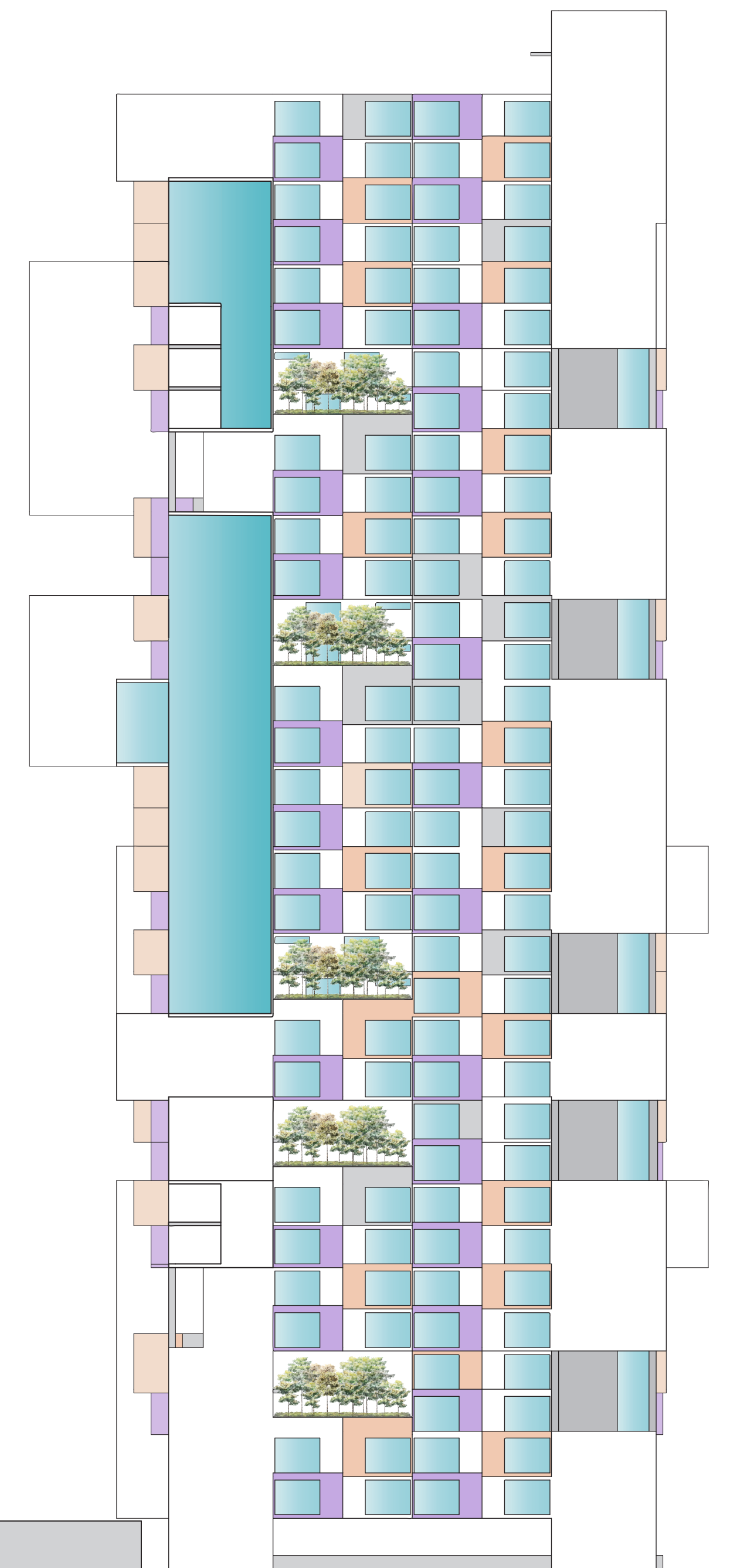




Sustainable Section  
 4" = 1"



SOUTH ELEVATION

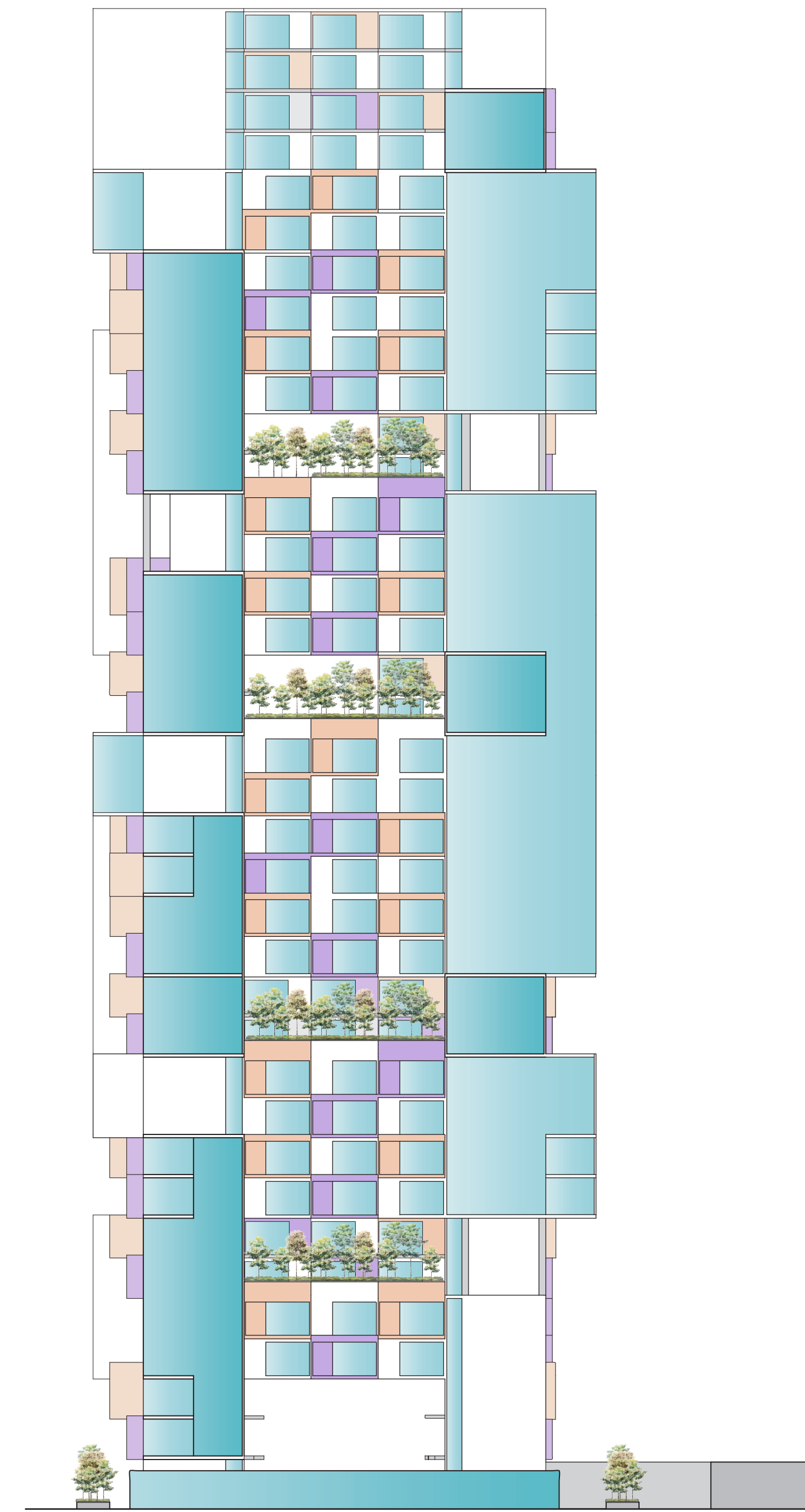


NORTH ELEVATION

Elevations  
1/32" = 1'

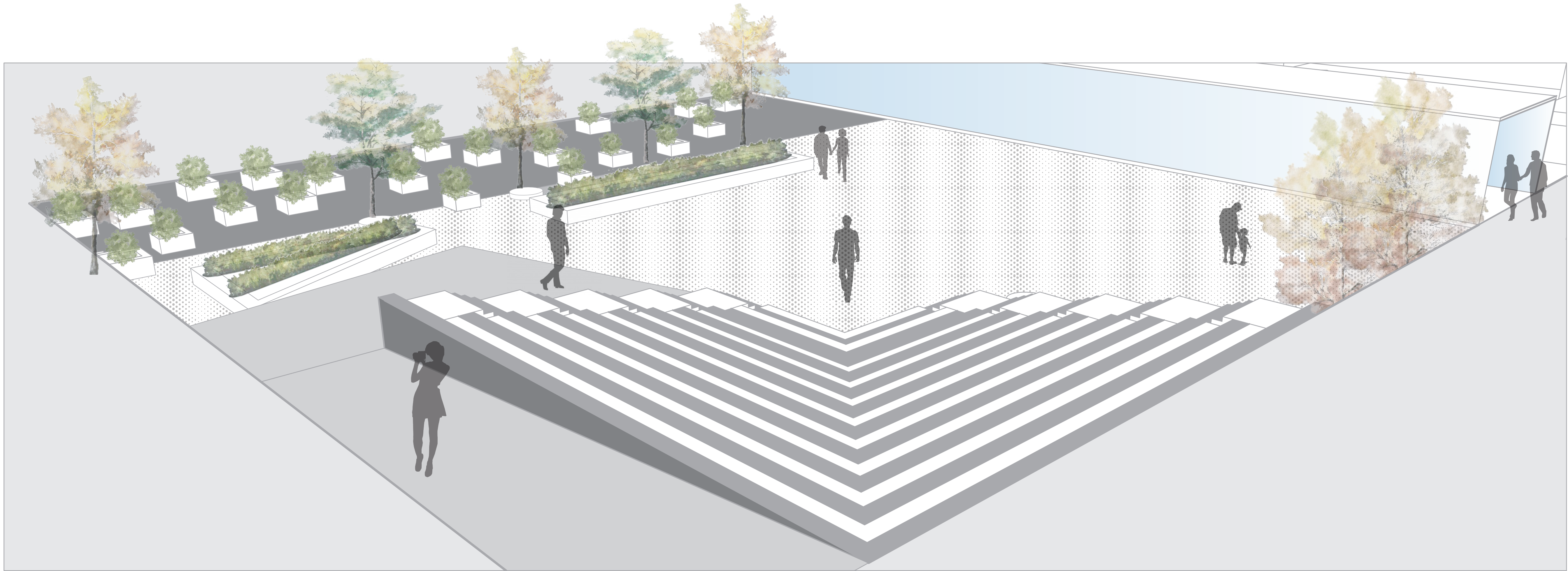


West Elevation



East Elevation

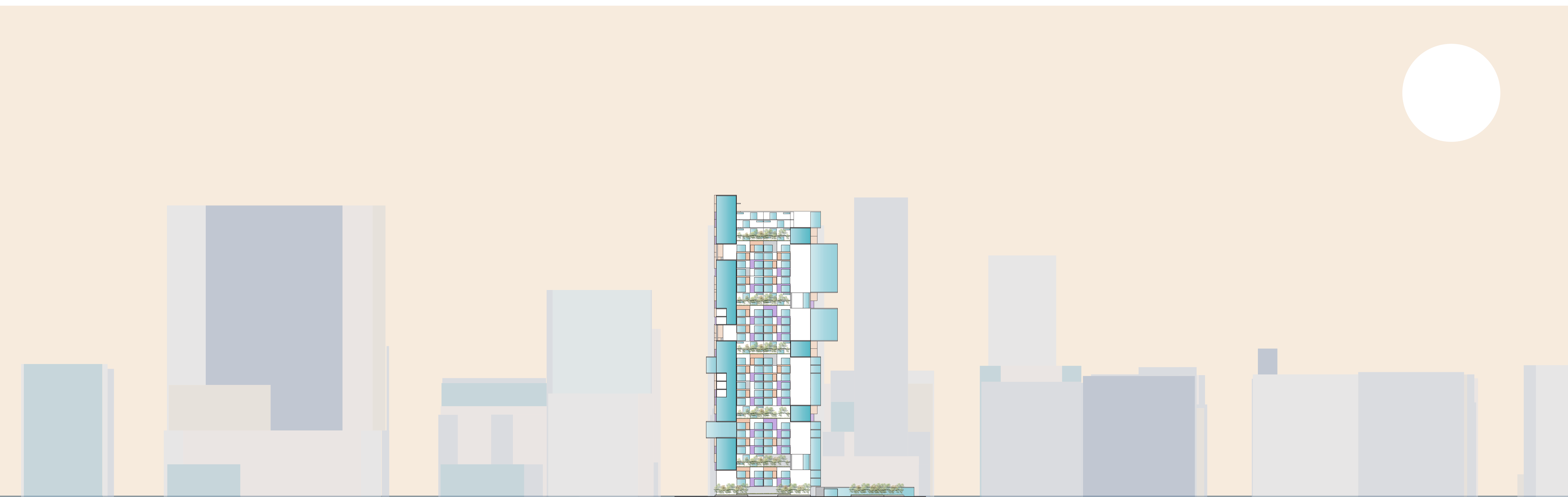
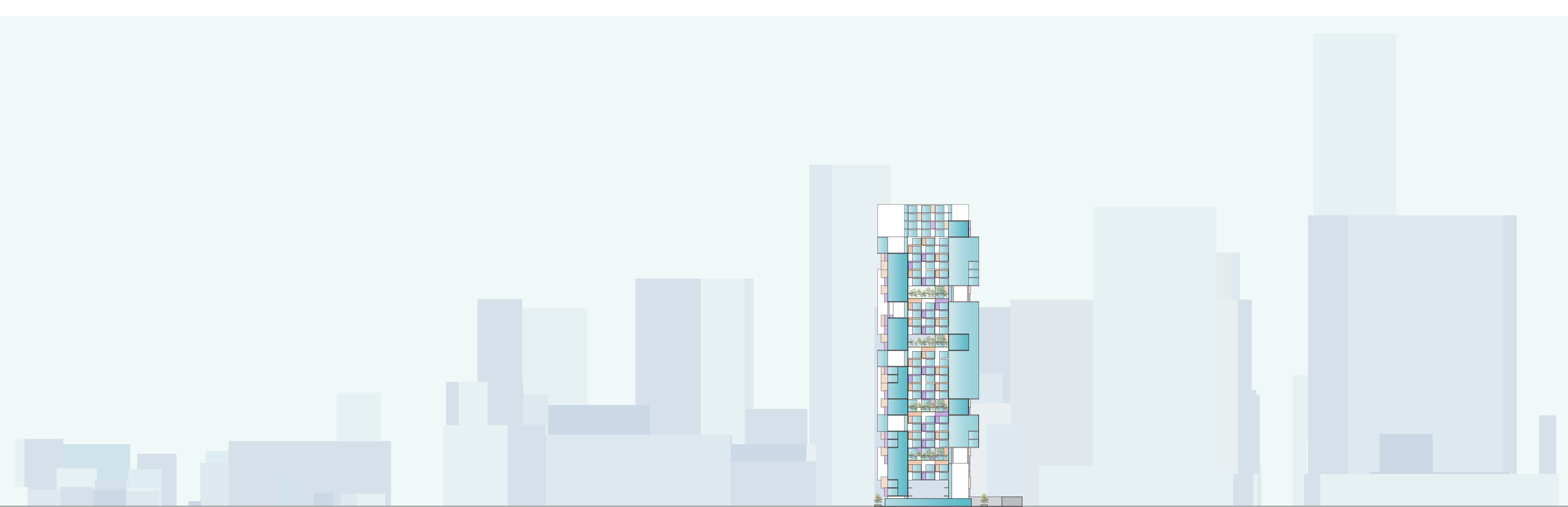
Elevations  
1/32" = 1'



Plaza



Interior Courtyard



## To Calculate the Carbon Footprint of the Building

City For LADWP Territory Data Taken from Power Profiler

Building Area (m2) 47197.8 m2

Yearly Values	Conversion Factor	lbs CO2e/yr
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### 1. Operational Energy:

Use the following values from the energy modeling program

Total Electricity	2,146,927 kWhr	per kWhr	0.62 lbs/kWhr	1,331,095
Total Fuel	49,865 kWhr	per kWhr	0.08349285 lbs/kWhr	4,163
EUI	47 kWhr/m2 year			
EUI	15 kBtus/sq ft year			

Operational Energy 1,335,258 lbs CO2e/yr 605,559.2 kgs CO2e/yr

### 2. Construction:

Build Carbon Neutral <http://buildcarbonneutral.org/> Build Carbon Neutral Provides an Easy way to calculate Embodied Emissions or Athena Eco Calculator for Assemblies <http://www.athenasmi.org/tools/ecoCalculator/index.html>

13,904 metric tonnes	lbs per metric tonne	2205.0	Construction	30,658,320	lbs CO2e	13,904,000.0	kgs CO2e/yr
	life expectancy of the building. Default is average in the USA	73.0	Per Year	419,977	lbs CO2e/yr		

### 3. Water:

CO2e factor per Million Gallons: 1,331 lbs of CO2

3,928,860 gallons of water	per gallon of water	0.001331	Water	5229	lbs CO2e/yr	2,371.6	kgs CO2e/yr
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### 4. Waste:

EPA WARM Model or

147,476			Waste	147476	lbs CO2e/yr	66,882.5	kgs CO2e/yr
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<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

total	1,907,940	lbs CO2e / yr	865,279.1	kgs CO2e/yr
total	865,427	kgs CO2e / yr	392,483.7	kgs CO2e/yr
total	865	metric tonnes CO2e / yr	392.5	kgs CO2e/yr
	18	kgs CO2e / m2 yr		
	3.76	lbs CO2e/sqft-yr		

### Renewable Energy

Total Energy Generated on Site kWhr	444,979	kWhr	per kWhr	0.62	275,887	lbs CO2 sequestered on site by renewable system
Total kWhr/m2/yr:	9	kwhr/m2/yr				

### ZERO NET CARBON

The numbers below are for 2030 Architecture's definition of Zero Net Carbon

total energy used	2,196,792	kWhr
total renewable energy generated	444,979	kWhr
annual energy balance	1,751,813	kWhr
EUI	37	kWhr/m2 year
EUI	12	kBtus/sq ft year
TOTAL CARBON	1,086,124	lbs CO2e / yr
TOTAL CARBON	492,658	kgs CO2e / yr
CUI: CARBON USE INTENSITY	10.4	kgs CO2e/m2-yr
CUI: CARBON USE INTENSITY	2.1	lbs CO2e /sf yr

### CARBON NEUTRAL

The numbers below are for carbon emissions after renewables and should be zero or better to be carbon neutral

	1,632,053	lbs CO2e-yr	740,160.3	kgs CO2e/yr	emissions after renewables
	740,286	kgs CO2e-yr	335,730.8	kgs CO2e/yr	emissions after renewables
	740	metric tonnes CO2e-yr	335.7	kgs CO2e/yr	emissions after renewables
CUI: CARBON USE INTENSITY	34.6	kgs CO2e/m2-yr	15.7	kgs CO2e/yr	emissions after renewables
CUI: CARBON USE INTENSITY	7.1	lbs CO2e /sf yr			

Tbe = Oe + Ce + We + Wa - Rs  
0 >= Tbe

Where

Tbe total building emissions  
Oe operation emissions (energy)

Ce construction emissions  
We water emissions  
Wa waste emissions  
Rs renewable strategies