

## Proposed building program summary table

Proposed buildings, including their size, height, and usage distribution, fitting on the two-block (171,200 sf) site:

Building	Footprint Area	Height (stories)	Floor-to-Floor	Primary Uses & Distribution
B1 Office Tower 729,300 sf	21,450 sf	34 stories (482 ft tall)	L1: 20 ft L2–34: 14 ft	Ground Floor: <b>Retail</b> /Lobby <ul style="list-style-type: none"> <li>Levels 2–32: Office space (<b>Commercial</b>) – 707,850 sf total office area.</li> </ul> 65 ft wide, large floor plate for open office; core centered to maximize window perimeter. Height similar to the surrounding towers.
B2 Residential Tower 349,240 sf	16,250 sf	32 stories (382 ft tall)	L1: 20 ft L2–8: 14 ft L9–32: 11 ft	Ground Floor: <b>Retail</b> /Lobby <ul style="list-style-type: none"> <li>Levels 2–8: Office space (<b>Commercial</b>) – 92,750 sf total office area.</li> <li>Levels 9–32: <b>Residential</b> apartments – ~240,240 sf total.</li> </ul> Slender tower footprint, 75 ft wide for ample daylight in units. All apartments have exterior windows; the core is compact to serve 4–6 units per floor.
B3 Mid-Rise Residential 130,000 sf	13,000 sf	10 stories (114 ft tall)	L1: 15 ft L2–10: 11 ft	Ground Floor: <b>Retail</b> /Lobby <ul style="list-style-type: none"> <li>Levels 2–9: <b>Residential</b> apartments – 117,000 sf total.</li> </ul> Slender tower footprint, 65 ft wide for ample daylight in units. All apartments have exterior windows; the core is compact to serve 4–6 units per floor.)
B4 Mid-Rise Residential 149,500 sf	14,950 sf	10 stories (114 ft tall)	L1: 15 ft L2–10: 11 ft	Ground Floor: <b>Retail</b> /Lobby <ul style="list-style-type: none"> <li>Levels 2–9: <b>Residential</b> apartments – 134,550 sq ft total.</li> </ul> Slender tower footprint, 65 ft wide for ample daylight in units. All apartments have exterior windows; the core is compact to serve 4–6 units per floor.)
B5 Pavilion (Restaurant)	7,225 sf	2 stories (30 ft tall)	L1–2: 15 ft	Ground Floor: <b>Restaurant</b> <ul style="list-style-type: none"> <li>Level 2: Restaurant mezzanine or offices* (4,225 sq ft).</li> </ul> Low-rise pavilion for a signature restaurant/café. Surrounded by plaza seating and trees. Adds to retail amenities on site. Second-level indoor and rooftop dining.

## Notes

All buildings include retail on the ground floor to activate street life and serve occupants (e.g., cafés, shops, lobby retail in towers). Total proposed program: Approximately 65,650 sf of retail, 800,600 sf of office, and 491,790 sq ft of residential across the development, leaving significant open space for plazas and green areas.

This massing fits the 4-acre site with an effective FAR (floor area ratio) around 8, which is reasonable for downtown Austin (maximum allowed by local zoning). Note that the FAR is not equally distributed across both properties, which would likely require a variance by the local municipality. The tradeoff is that the block closest to the river/lake would have a park and reduced height buildings for a better pedestrian experience and more equitable views/daylight from/for surrounding buildings.

The footprint sizes are optimized for daylight and comfort. The design provides a balanced, mixed-use development ready for further refinement in this sustainable design course.

## Proposals

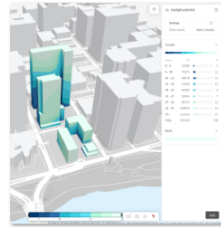
In preparation for this course, ten layouts were considered and analyzed. The lowest and highest performing designs are compared throughout this course, a few of which you will create. It is important to understand that no one design will usually be the best in all areas (wind, views, noise, daylight). And client requirements must also be considered, like the location of a new park relative to the river, and related views. Thus, the art of understanding all the results and requirements to select the best cumulative options is important. It is also possible to adjust the shape, heights, and number of buildings while still keeping to the project program (brief). In this course, you will keep to a fixed set of “puzzle pieces”; however, you are encouraged to explore more solutions.



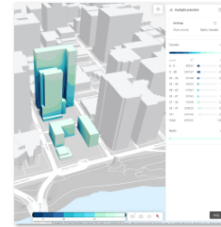
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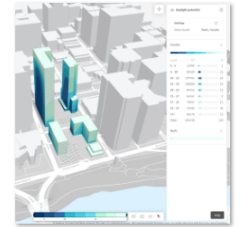
Daylight Potential 02.png



Daylight Potential 03.png



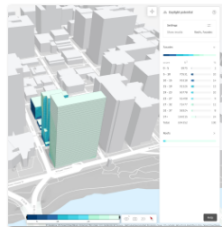
Daylight Potential 04.png



Daylight Potential 05.png



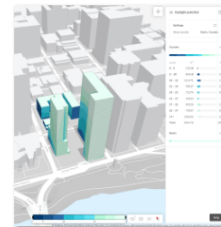
Daylight Potential 06.png



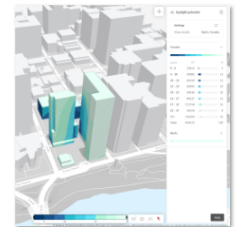
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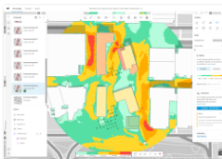
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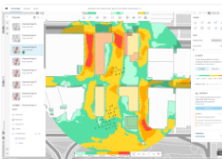
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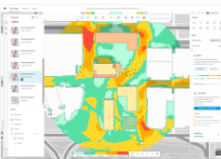
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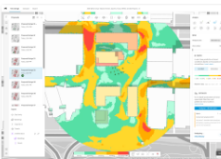
AI Wind 01.png



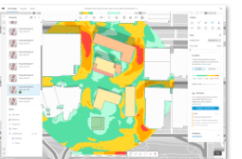
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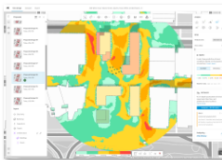
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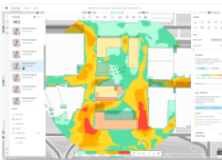
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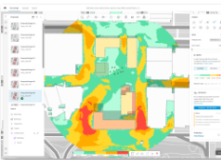
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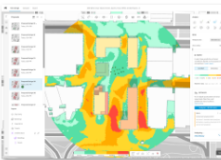
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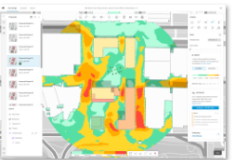
AI Wind 07.png



AI Wind 08.png



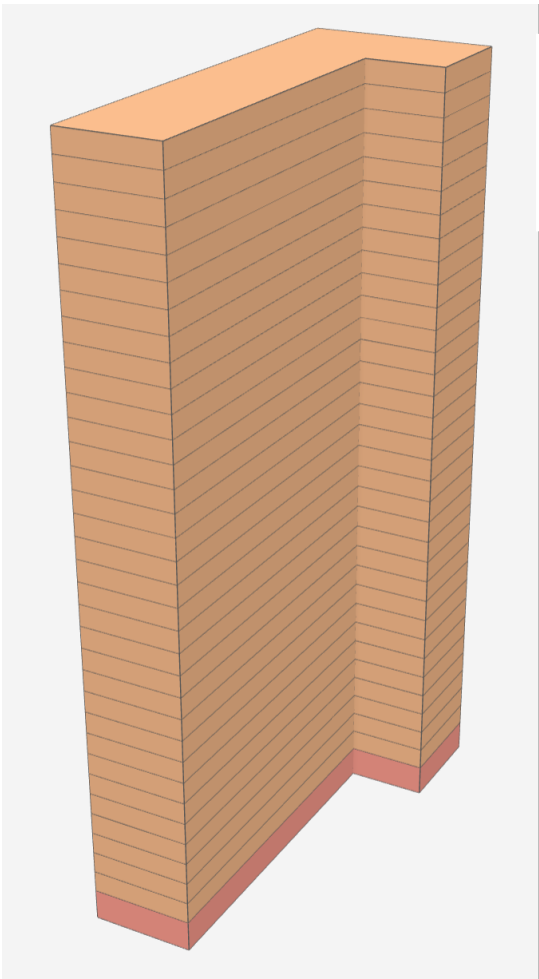
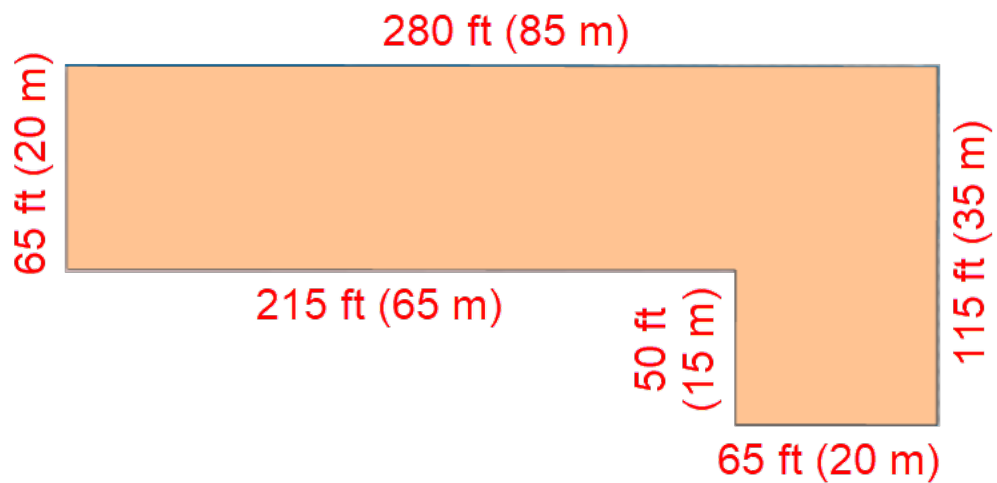
AI Wind 09.png



AI Wind 10.png

# Building 1 (B1) dimensions

This building is a simple L-shaped building extruded to the required number of floors. The ground floor is taller. The shape of the building may affect wind flow. It also creates a self-shading effect, which will impact daylight and solar gains (positively or negatively in various contexts).

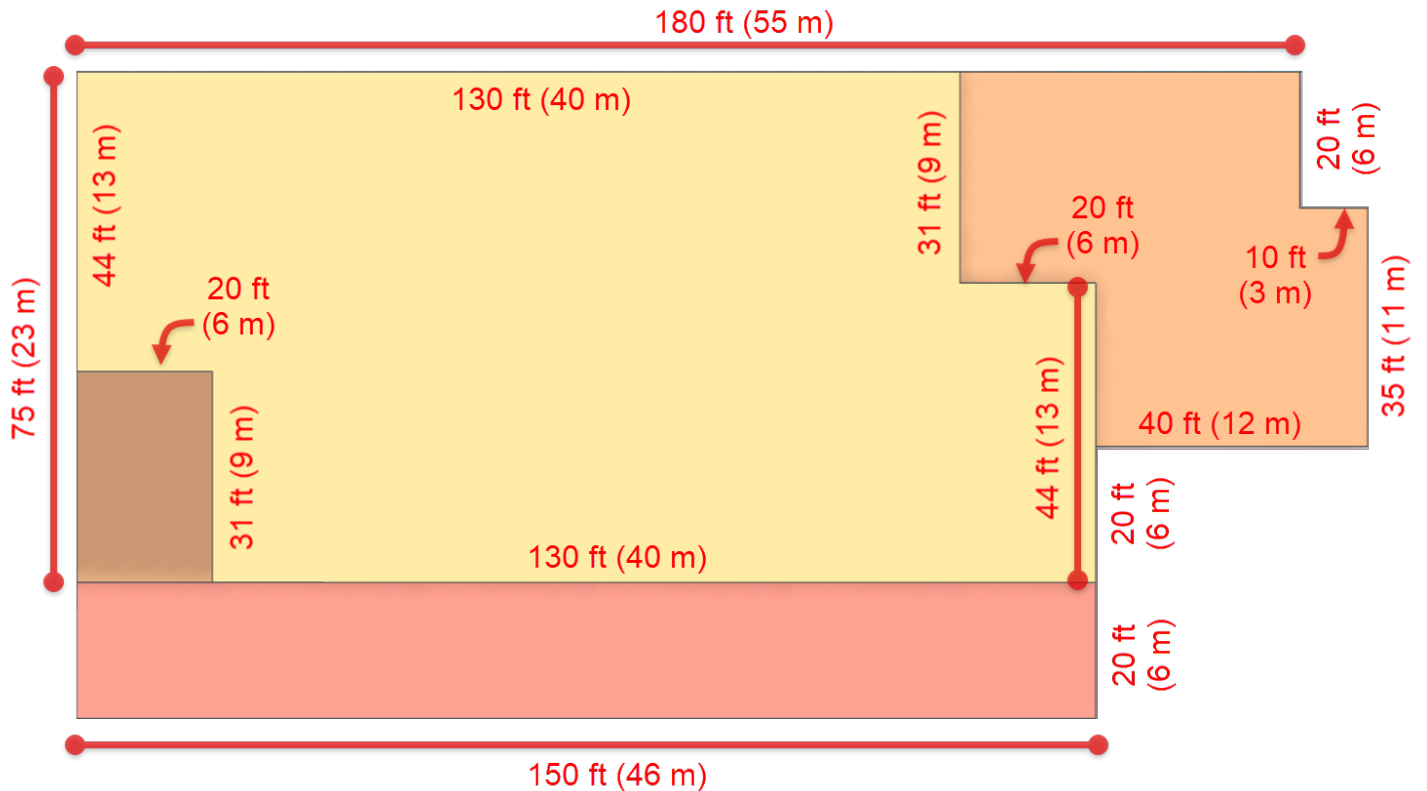


Site area	-	-
BC	-	21,450 ft <sup>2</sup>
▼ GFA	-	729,300 ft <sup>2</sup>
● Residential		0 ft <sup>2</sup>
● Office		707,850 ft <sup>2</sup>
● Retail		21,450 ft <sup>2</sup>

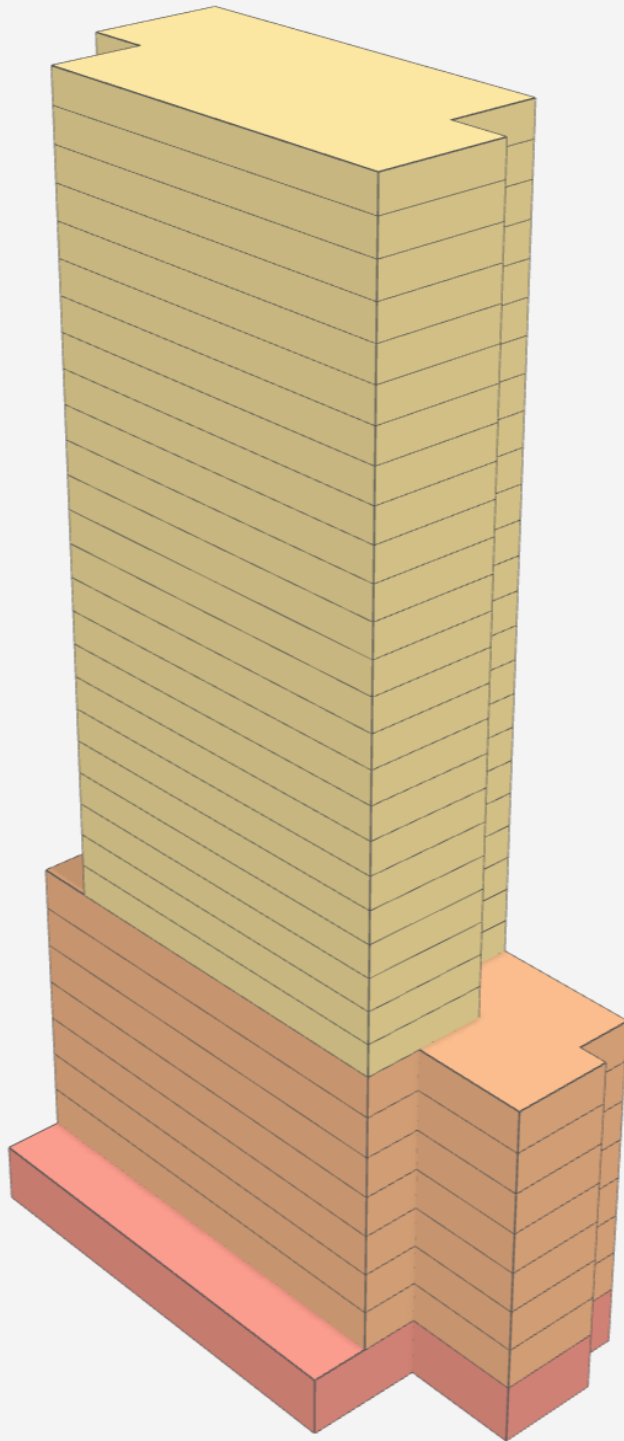
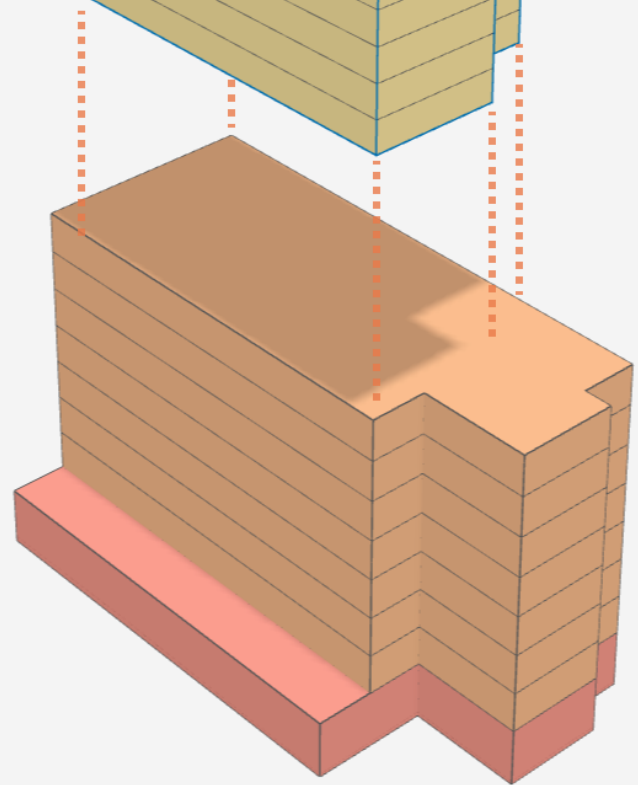
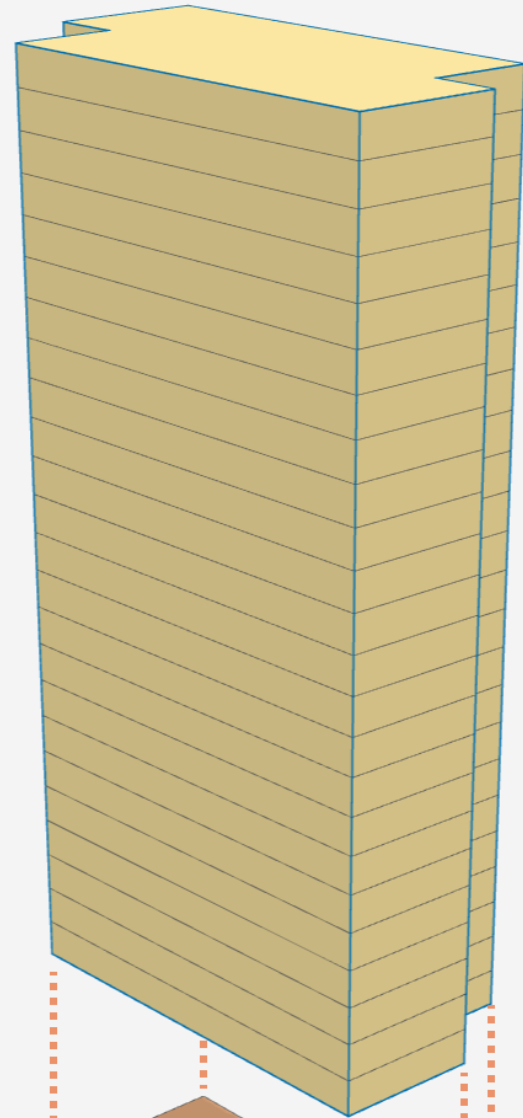
## Building 2 (B2) dimensions

This building matches the SketchUp import example, which is recreated in Forma for maximum functionality. The building is created as two separate elements, as shown on the next page. It is possible to create this building as a single element using more advanced tools, but that is better saved for later in the design process, as the method used in this course will be quicker and allow for more fluid exploration.

**Note** that the **150 x 20 ft** (46 x 6 m) section is only on the ground level and extruded out from the building as a last step.

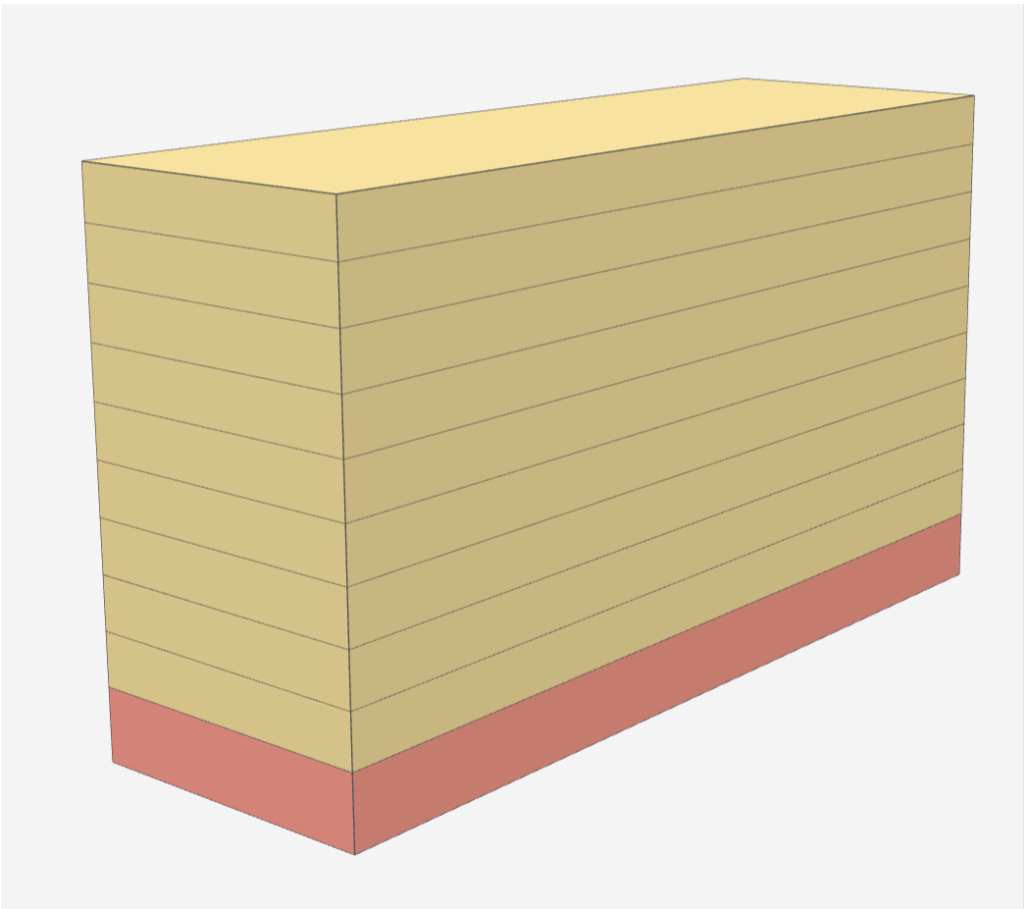
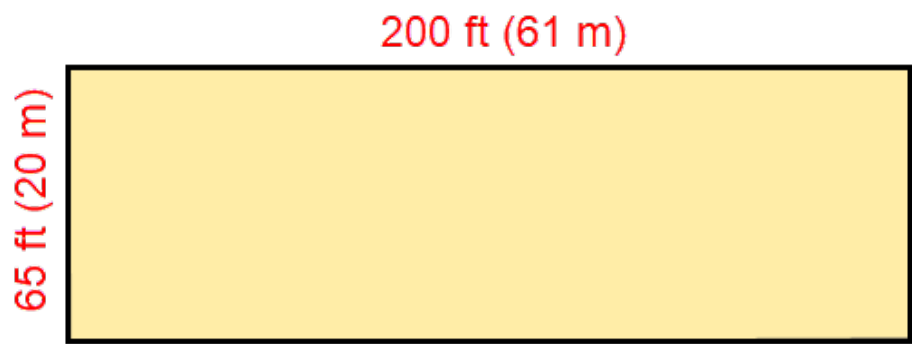


Site area	-	-
BC	-	16,250 ft <sup>2</sup>
✓ GFA	-	349,240 ft <sup>2</sup>
● Residential		240,240 ft <sup>2</sup>
● Office		92,750 ft <sup>2</sup>
● Retail		16,250 ft <sup>2</sup>



# Building 3 (B3) dimensions

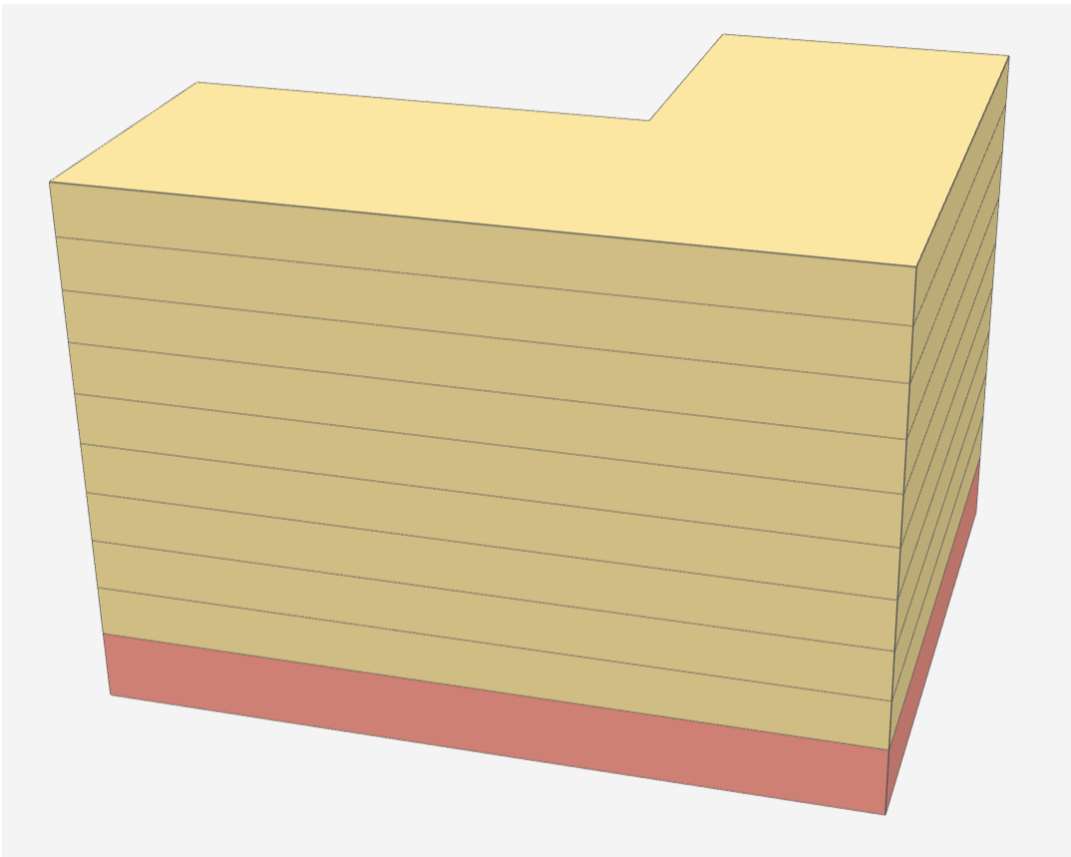
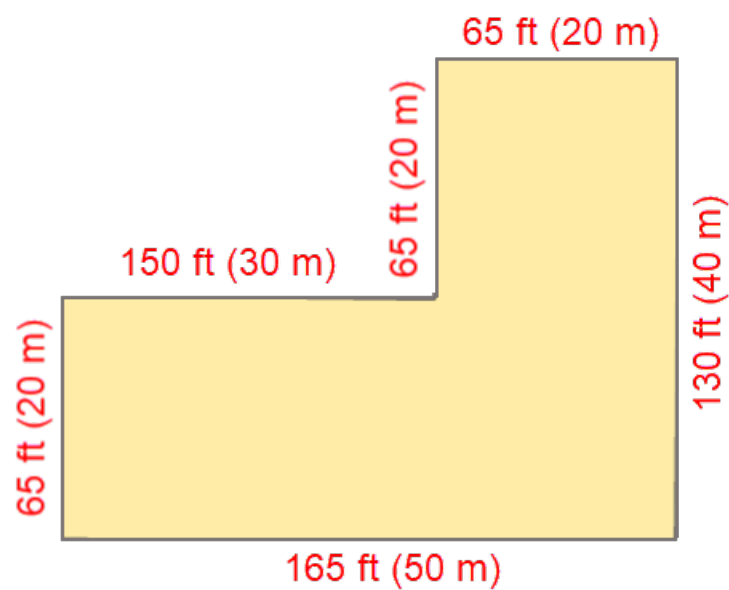
This is a simple rectangular mid-rise building.



Site area	-
BC	- 13,000 ft <sup>2</sup>
✓ GFA	- 130,000 ft <sup>2</sup>
● Residential	117,000 ft <sup>2</sup>
● Commercial	0 ft <sup>2</sup>
○ Unspecified	0 ft <sup>2</sup>
● Office	0 ft <sup>2</sup>
● Retail	13,000 ft <sup>2</sup>

# Building 4 (B4) dimensions

This is a simple L-shaped mid-rise building.

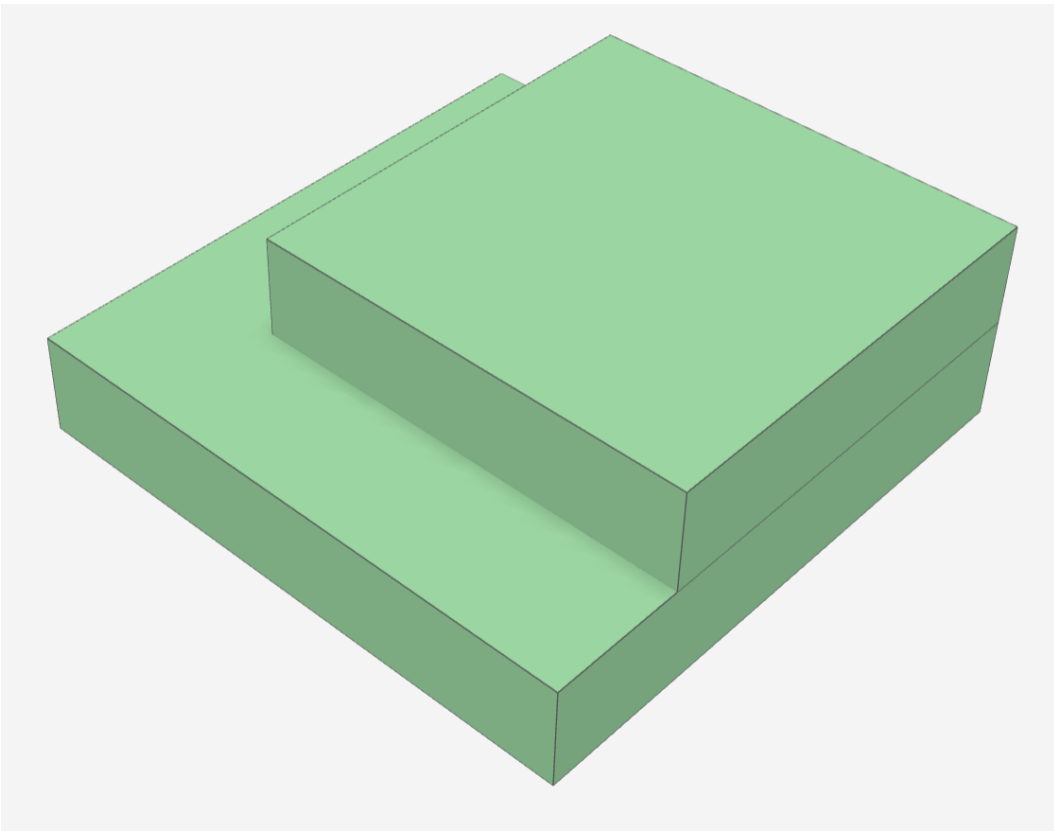
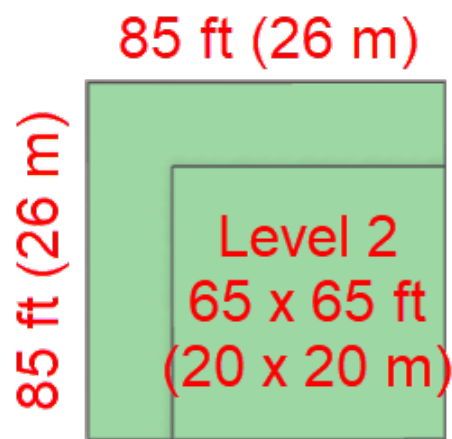


Site area		171,197 ft <sup>2</sup>
BC	9 %	14,950 ft <sup>2</sup>
GFA	87 %	149,500 ft <sup>2</sup>
Residential		134,550 ft <sup>2</sup>
Commercial		0 ft <sup>2</sup>
Unspecified		0 ft <sup>2</sup>
Office		0 ft <sup>2</sup>
Retail		14,950 ft <sup>2</sup>



# Building 5 (B5) dimensions

This is a small restaurant building. The second level is small, making room for year-round outdoor rooftop seating.



Site area		171,197 ft <sup>2</sup>
BC	4 %	7,225 ft <sup>2</sup>
▼ GFA	7 %	11,450 ft <sup>2</sup>
● Residential		0 ft <sup>2</sup>
● Commercial		0 ft <sup>2</sup>
○ Unspecified		0 ft <sup>2</sup>
● Office		0 ft <sup>2</sup>
● Retail		0 ft <sup>2</sup>
● Restaurant		11,450 ft <sup>2</sup>

# What is FAR (Floor Area Ratio)?

**Floor Area Ratio (FAR)** is a **zoning regulation metric** that describes the relationship between a building’s total usable floor area and the size of the plot of land on which it is built.

In formula terms:

$$FAR = \frac{\text{Total Building Floor Area}}{\text{Site Area}}$$

It is **unitless** and used by city planners and architects to control building density and massing within a given urban context.

## Why FAR matters in design and planning

For architecture students working in tools like **Autodesk Forma**, understanding FAR is essential for:

- **Zoning Compliance:** Ensuring a proposed design meets local density regulations.
- **Early-Stage Massing Studies:** Exploring design options for building volume, height, and site coverage.
- **Sustainability and Contextual Fit:** Assessing how your building interacts with its urban or natural surroundings.

## Illustrative examples (with Autodesk Forma Visuals)

The images below help convey how FAR functions. Here’s how each relates:

Image	Description	FAR
1	A one-story building covering the entire site	1
2	A two-story building covering half the site	1
3	A four-story building covering a quarter of the site	1
4	An eight-story building covering the full site	8

These examples demonstrate an important principle:  
**FAR controls total buildable area, but not how it’s distributed vertically or horizontally.** You can reach the same FAR with a tall, narrow building or a low, sprawling one.

## Using FAR in Autodesk Forma

When modeling in Forma, adjusting the number of stories and building footprint allows you to:

- Dynamically **visualize massing options** while tracking FAR in real-time.
- Test **multiple development scenarios** under the same zoning constraints.
- Collaborate on **early-stage site planning** with FAR as a core control metric.

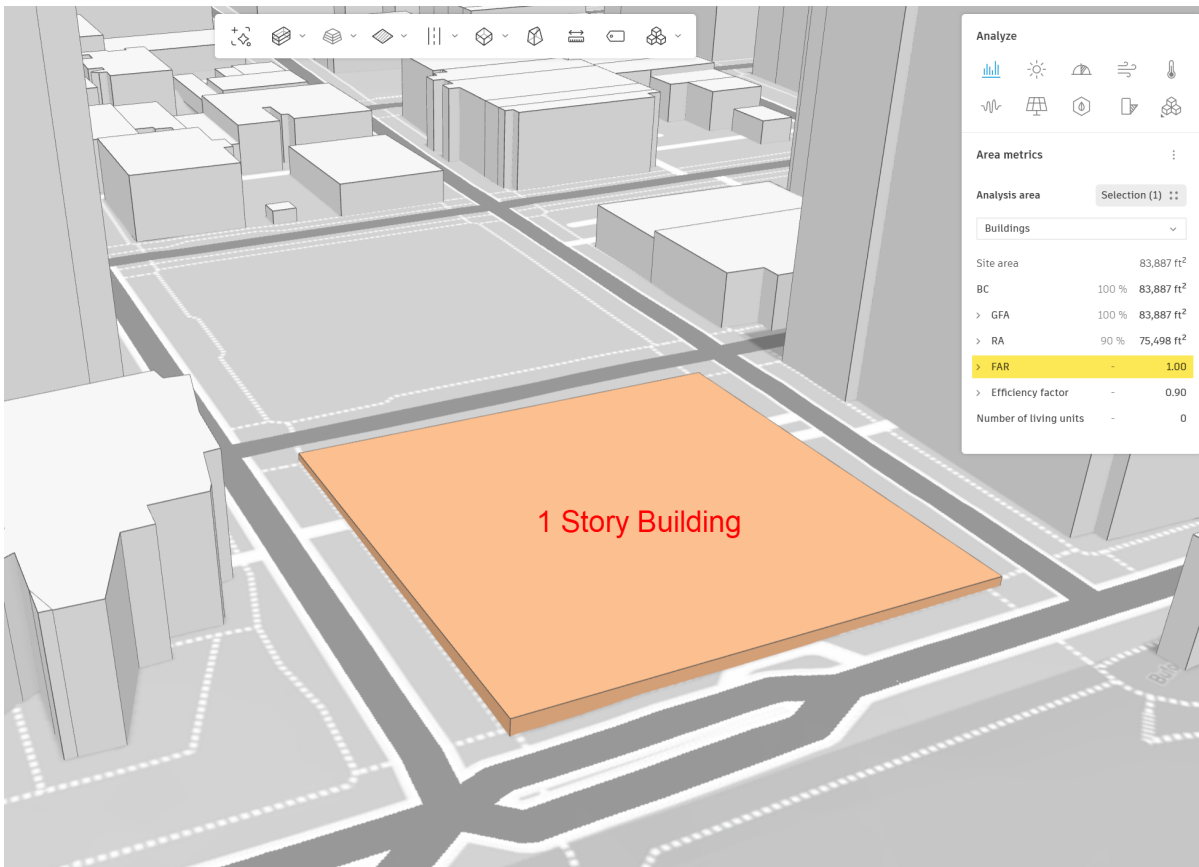


Image 1. A one-story building covering the entire site, **FAR = 1**

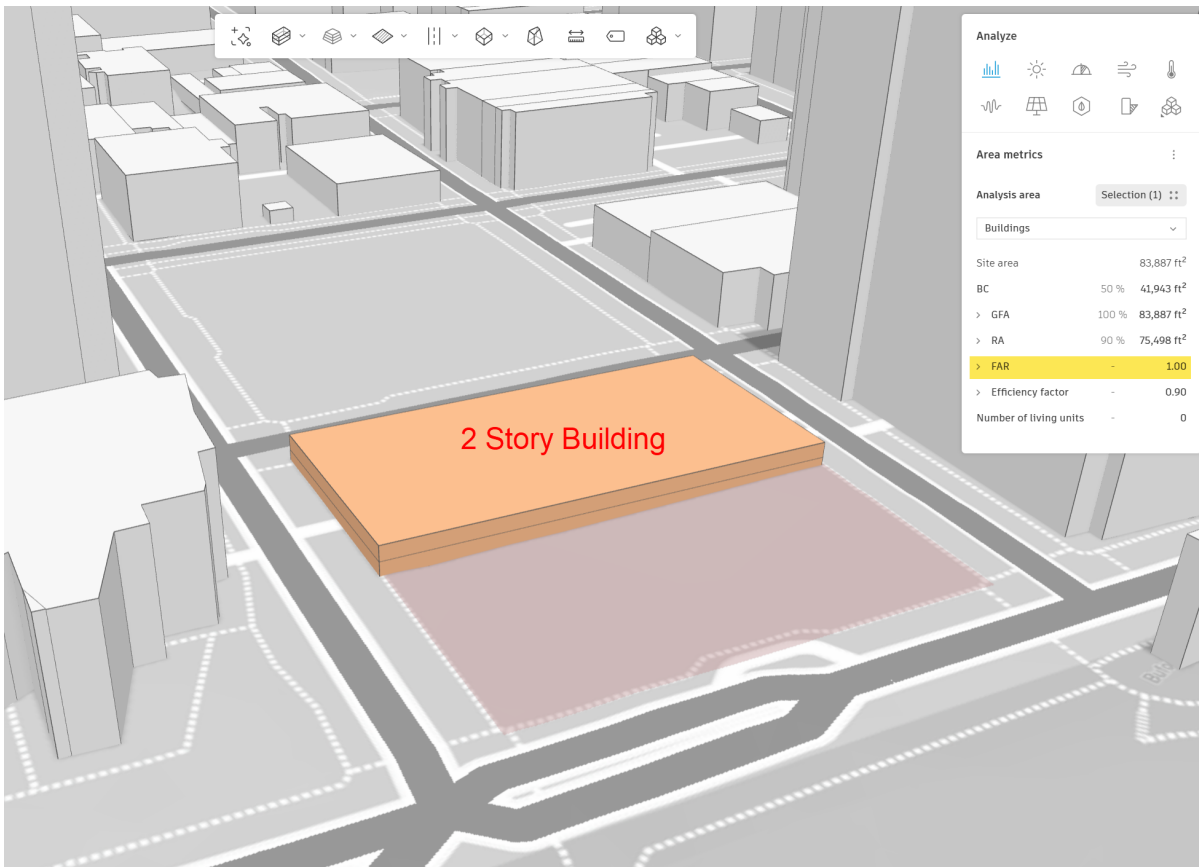


Image 2. A two-story building covering half the site, **FAR = 1**

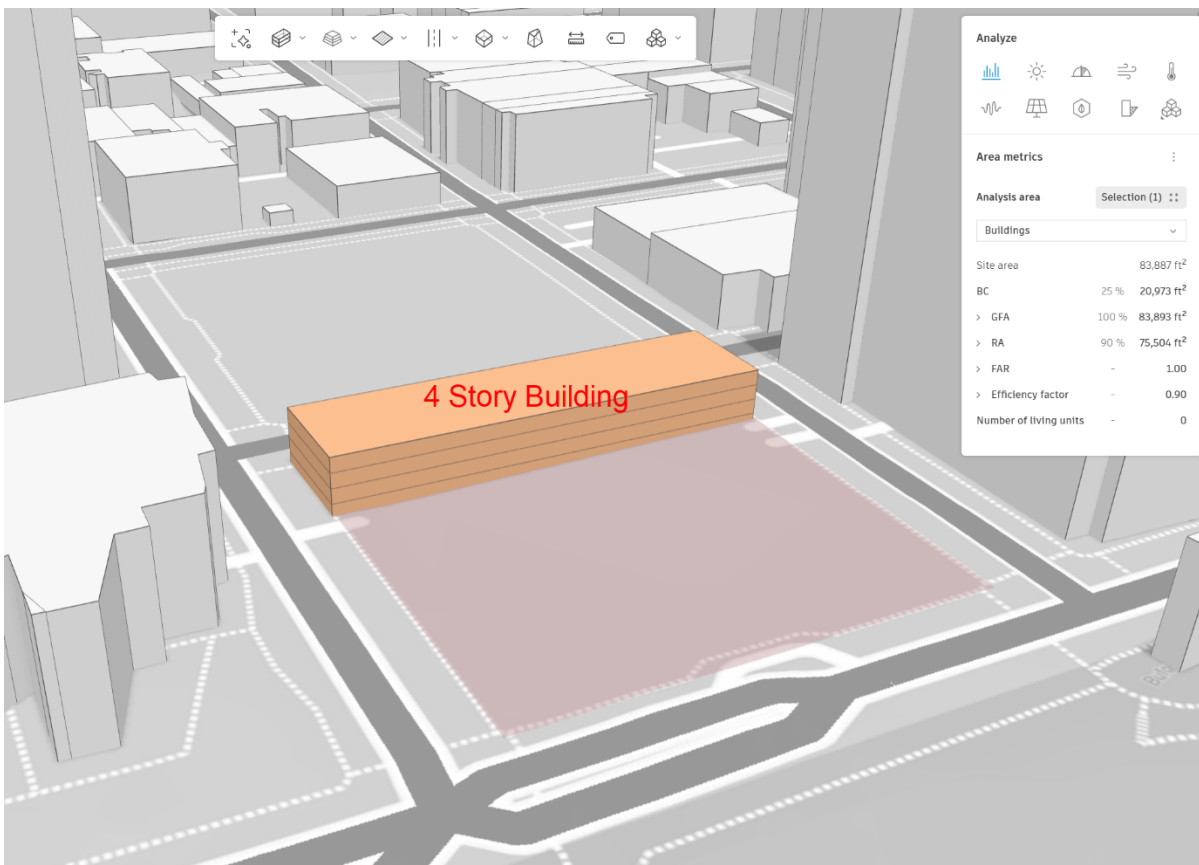


Image 3. A four-story building covering a quarter of the site, **FAR = 1**

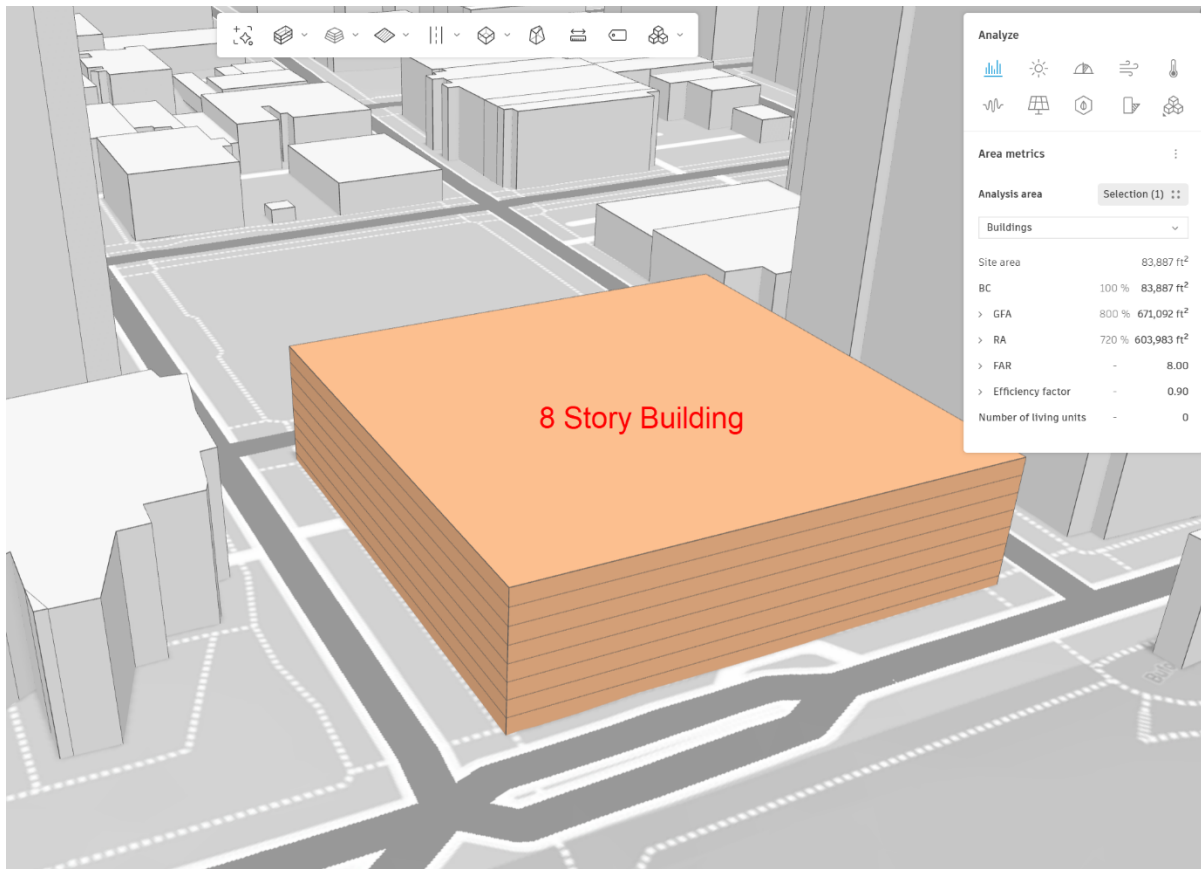
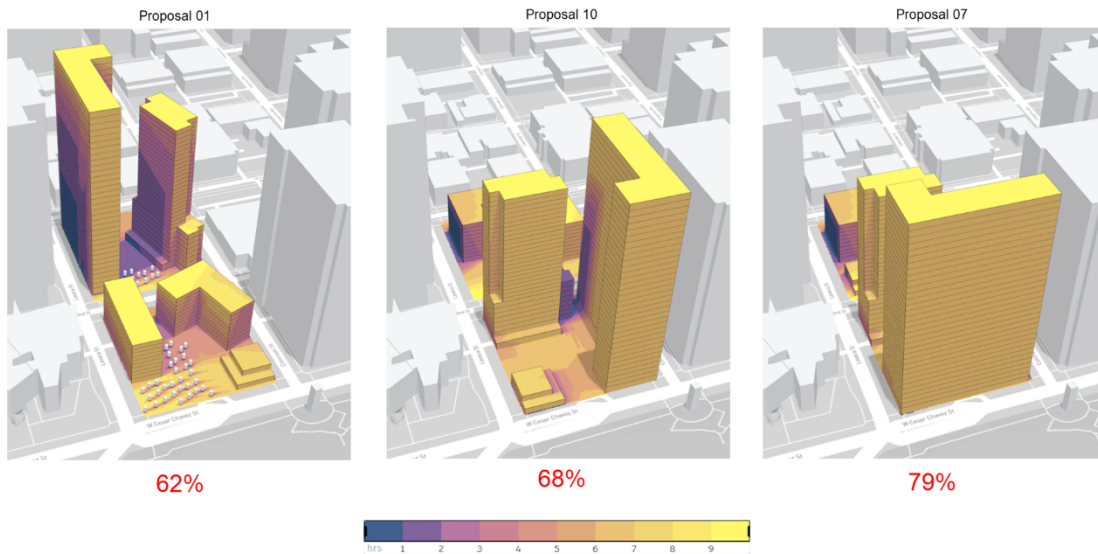


Image 4. An eight-story building covering the full site, **FAR = 8**

The following pages include slides from the various modules within this course for reference. Notice that no single design performs the best in all areas of exploration. Thus, the designer must find the optimal balance between the various results, the client's requirements, and zoning ordinances.

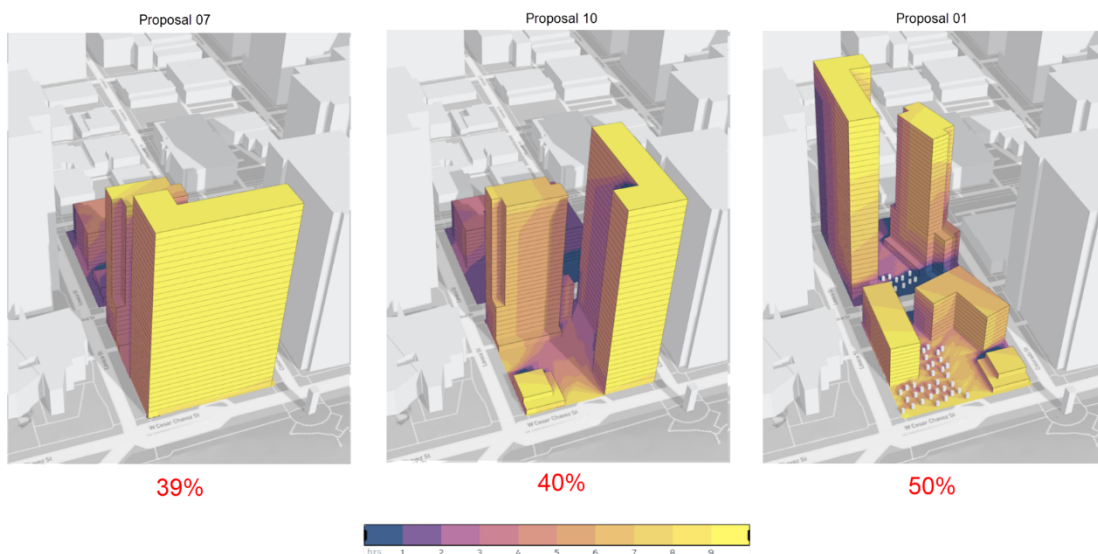
## Sun Hours Analysis – June 21

Time façades receive direct sun for at least three hours.



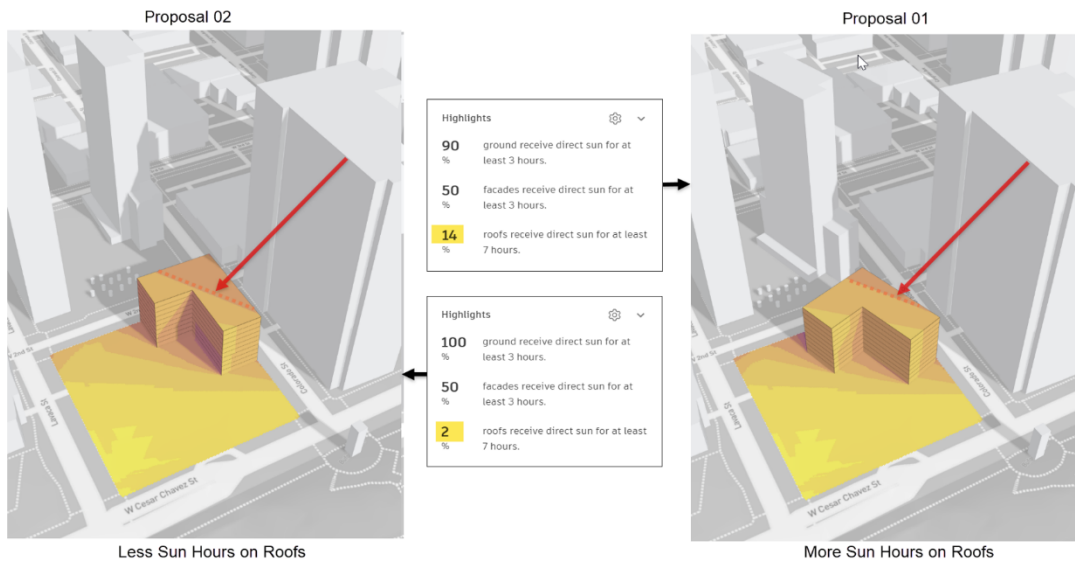
## Sun Hours Analysis – December 21

Time façades receive direct sun for at least three hours.



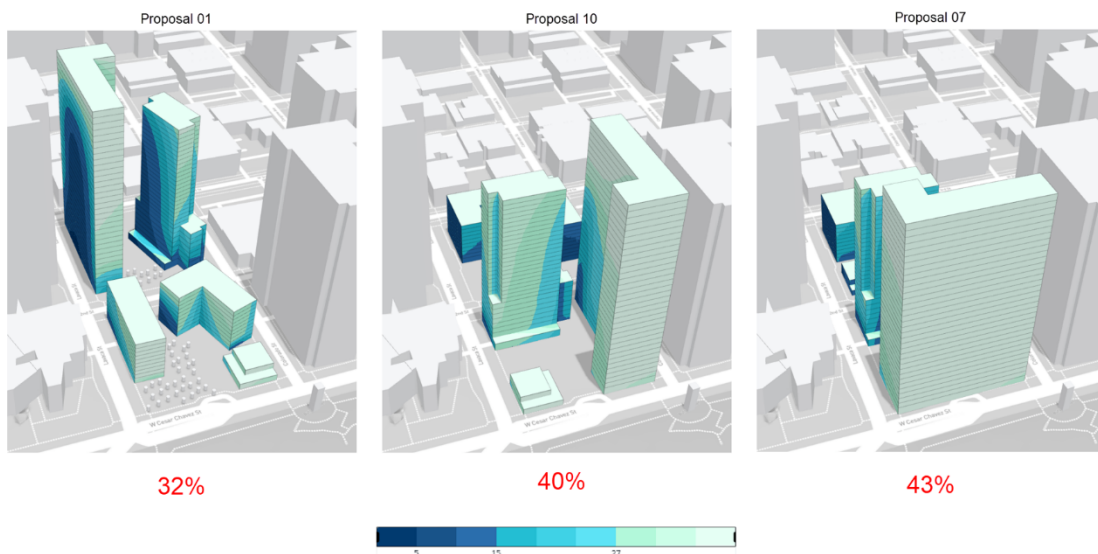
# Sun Hours Analysis on Roofs – June 21

Proposal one is better for PV production, and two is better for a shaded rooftop patio.



## Daylight Potential

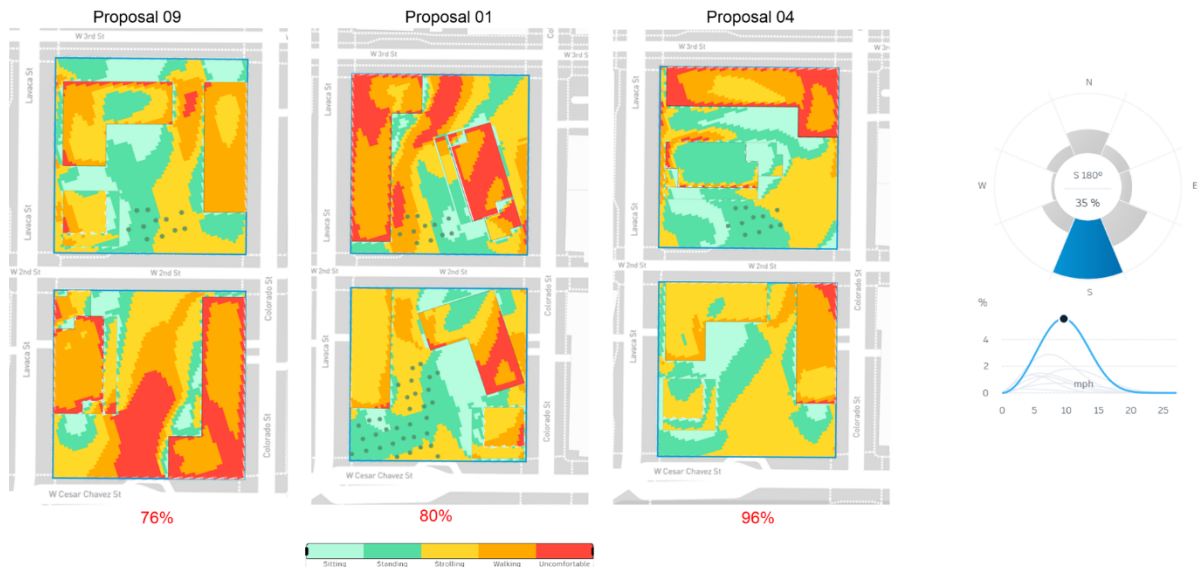
Overall potential for good interior daylight conditions.





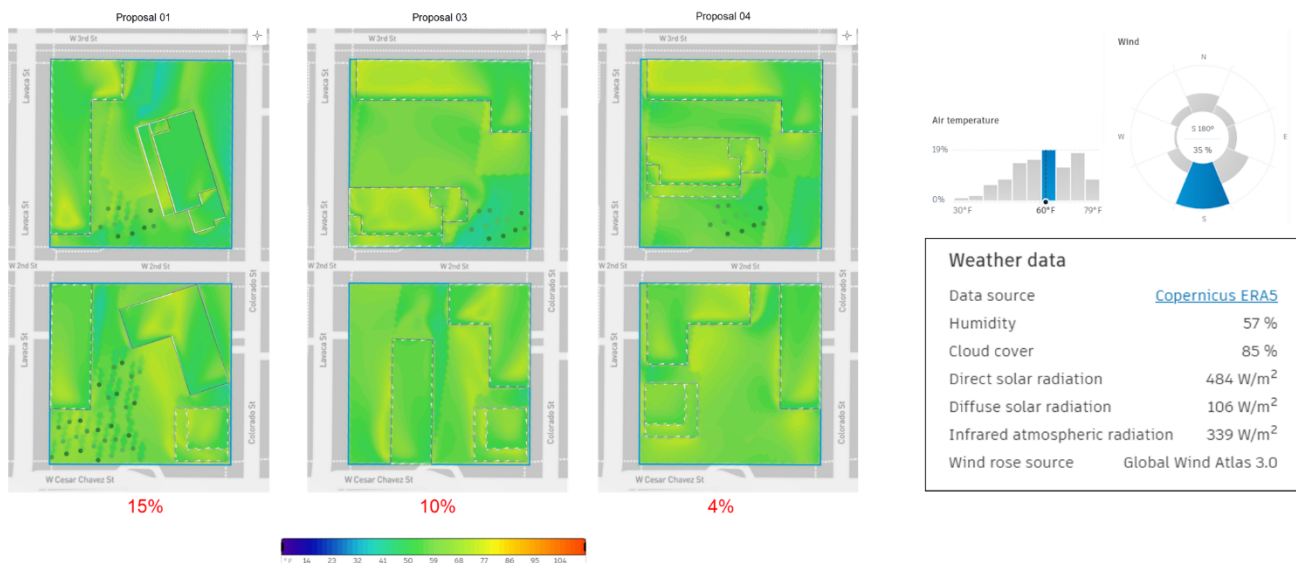
# CFD Wind Comfort

Time in strolling or better comfort zone:



# Microclimate Analysis - December

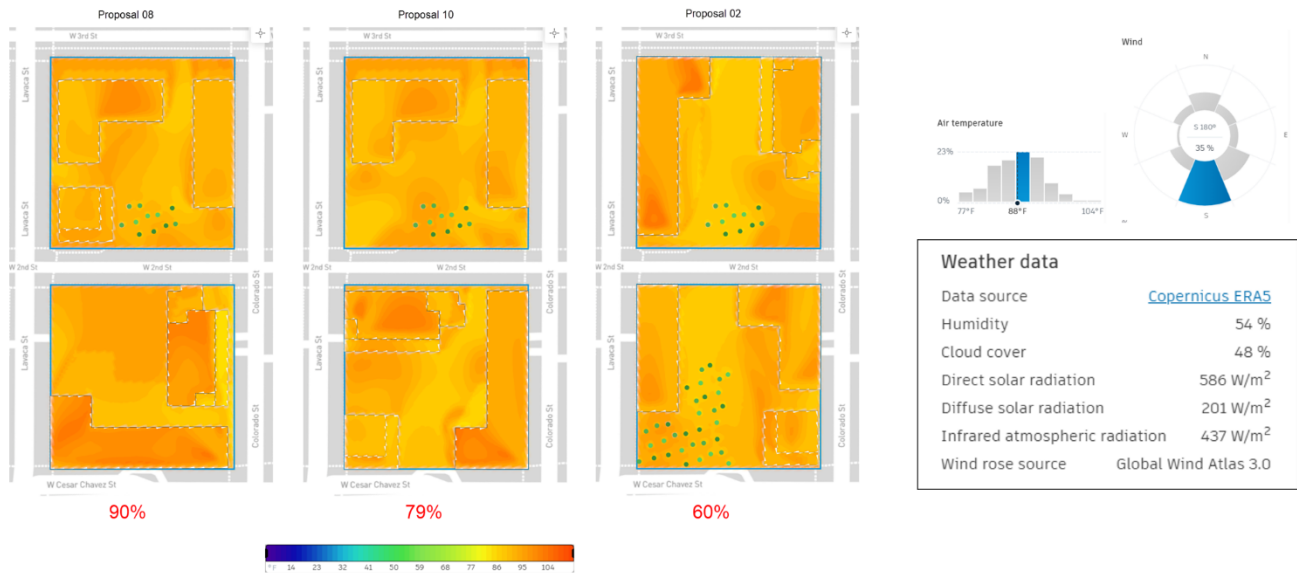
Thermal Comfort (URCI) - Time with “slight cold stress”. Generally, it’s not an issue.





# Microclimate Analysis - June

Thermal Comfort (URCI) - Time with “strong heat stress”. More concerning metric.



# Traffic Noise Analysis

Time spent in the noisiest range (65+ dB) at the ground level:

