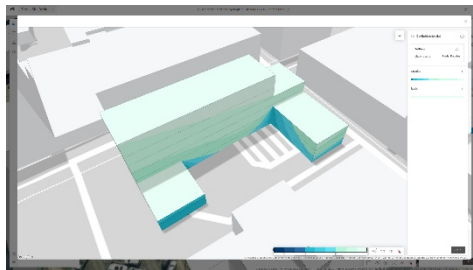


Practice exercise**Develop a range of analyses in multiple Forma Site Design proposals**

Using the 311 E. McDaniel site, develop a series of massing and site layout options to study site simulation variables across a variety of potential formal arrangements to find trends, opportunities, and areas of concern. Note, this is a GREAT exercise to do with a team because the goal will be to have at least three different massing models that you run through all of the simulations inside of Forma Site Design. If working with a team, include 2D sketches to scan in and model, exchange 3D geometry, and share your ideas. Build these into your own proposals to study across different site layouts to observe patterns and potential in the both the design context and simulation data.

Learning objectives:

- Create multiple proposals to observe a range of simulations in Forma Site Design to develop a clearer understanding of how a site layout will function.
- Implement site elements like green space or parks.
- Create 3D site layouts from multiple sources (importing files and sketches)



The completed exercise

1. Create a free hand drawing (either digital or draw/photo/scan) and import the drawing into Forma and set the transparency to 50%. Your sketch should be to scale, but note that it will not come in at the correct scale when imported into Forma; however, it will come in proportionally correct. The sketch should show the building footprint, the exterior spaces, and a portion of the adjacent buildings to make it easy to scale the drawing. Use the edges of the imported drawing to scale the sketch to match the satellite photo.

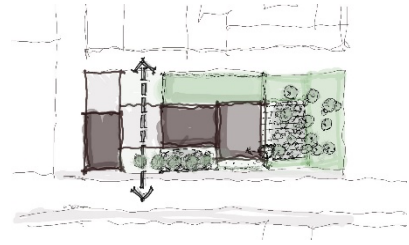


Figure 1. Import Sketch.

2. Leverage two of the provided *.obj files included in the course resources, or build at least two additional options for masses (you need at least three proposals to finish this practice exercise in a meaningful way).

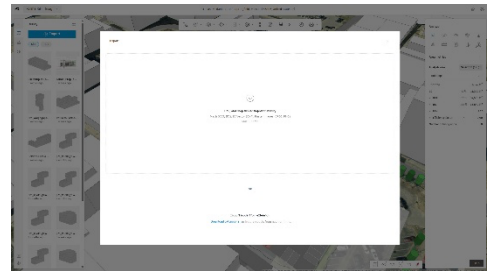


Figure 2. Import *.obj.

3. Use the Generic Surface tool from the design toolbar to define a site area for the outdoor café in each proposal. The target area for the café is 5,000 square feet (465 m²). Set the color, and the function of the surface to “outdoor café” in the area metrics panel.

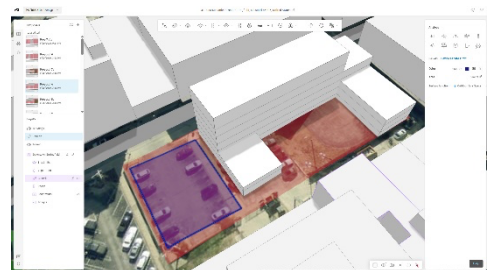


Figure 3. Generic Surface for outdoor space.

4. Add trees at the park and on the site based on the opportunities to create shade as well as to add design quality to the site layout.

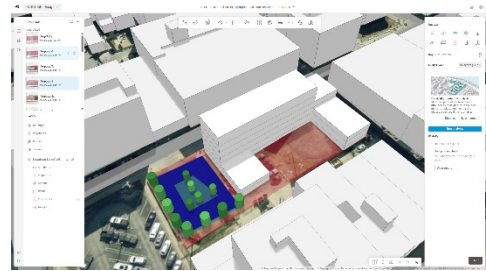


Figure 4. Add trees and site features.

5. With a minimum of three proposals, run the following simulations on each: Sun Hours, Daylight Potential, Wind Analysis, and Microclimate Analysis.

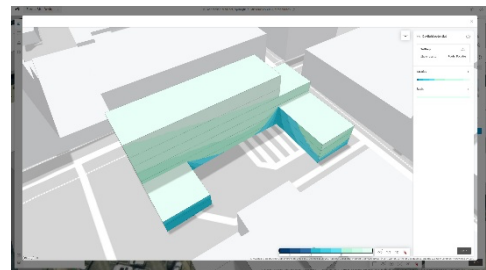


Figure 4. Run simulations

6. Observe the simulation data, answer the following questions, and include a proposed design direction with each response (such as “The proposal I am developing after the analysis will focus on the west side street front to open up the solar envelope to the adjacent buildings”):
 - 1) *Are there areas on the building models, both your proposal and adjacent buildings, in the sun hours analysis that consistently (in each proposal) have less than two hours of daylight per day?*

- 2) *With the daylight potential analysis, are there surfaces in the building proposal that are consistently less than 15%? Name the surfaces by location and elevation (e.g., east side of the site, north elevation), and list what programmatic elements in the building may be best suited for those locations.*
- 3) *Within the rapid wind analysis, look for the areas that are consistently outside of the seated comfort zone. What are the commonalities that create this situation in each site?*
- 4) *Within the detailed wind analysis, what are the common areas or formal arrangements that constantly reduce wind speed, and increase wind speed on the site?*
- 5) *Which site proposal has the best reductions in the perceived summer temperatures in June between 11 am and 2 pm to the site configuration when observing the data generated by the microclimate analysis at the outdoor eating space? Explain why, and what could be modified in the proposals that do not perform as well to match the drop perceived temperature drop.*

Grading Rubric:

	Advanced	Proficient	Basic	Emerging
Solar Analysis	Well considered ideas and observations evaluated across multiple proposals	The responses are quality observations, but may not include ideas on moving the design forward, or do not work across multiple proposals	Incomplete analysis or not connecting observations across proposals	Incorrect analysis that does not make connection across multiple proposals
Wind analysis	The building massing has been given functions and is schematically clear	The responses are quality observations, but may not include ideas on moving the design forward, or do not work across multiple proposals	Incomplete analysis or not connecting observations across proposals	Incorrect analysis that does not make connection across multiple proposals
Microclimate analysis	The design engages the surrounding context in an appropriate and interesting way	The responses are quality observations, but may not include ideas on moving the design forward, or do not work across multiple proposals	Incomplete analysis or not connecting observations across proposals	Incomplete or not within the site parameters
Formal design strategies	The overall massing forms have been thoughtfully designed, or clearly explained if models from the resources have been used	Creative work, but not clear, or not quite enough difference across proposals	Completed, but less compatible with the project goals	Incomplete or not within the site parameters

Voice-over for the answer key video:

If the practice assignments have been followed in order, this particular practice assignment builds on practice 4, but adds the layer of asking the students to respond to multiple simulations across multiple proposals. This skill of evaluating a discrete set of data points is an emerging and necessary skill in the design fields, being amplified by the ability to generate relevant data quickly, AI, and the need for higher performing designs.

The solar analysis portion is looking for trends within the proposals both on the adjacent buildings, and the student design proposals. Complete answers should provide both the observation, validation and a proposed design direction.

Wind analysis should find the common strategies that the student values, balances the opportunities and concerns, and presents a clear design direction.

Microclimate dives directly into one of the key pieces of the site layout, and quality answers will dissect it directly: which proposal does the best job of reducing perceived temperatures, why, and how will you leverage this for a final design.

The students at this point should have done multiple layers of site exploration, their building massing solutions should begin to show some direct understanding and predicted solutions on potential contextual issues.