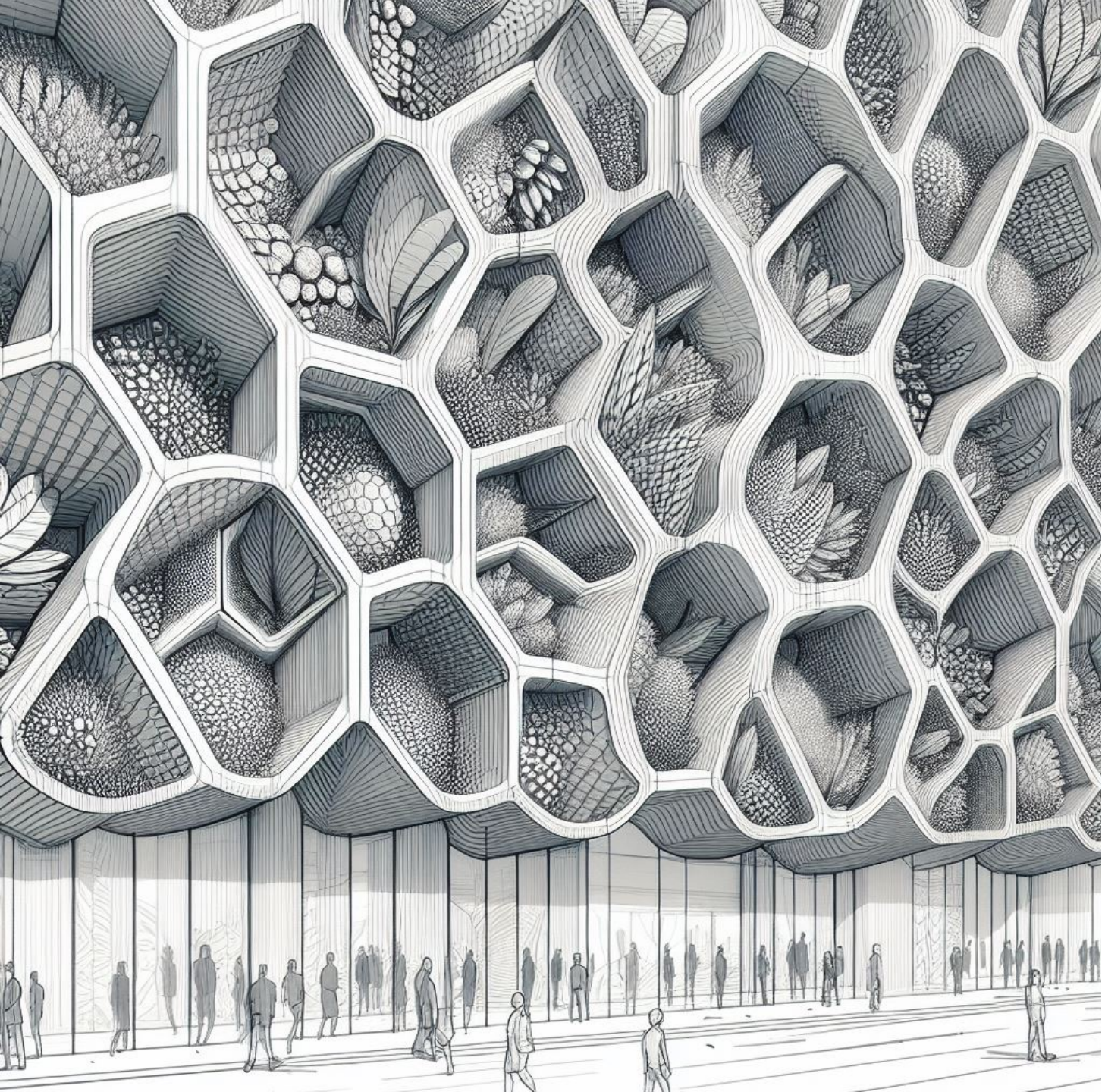
Back to my design Journal!

For this last assignment, I would like to re-propose the PowerPoint format that I used in the first modules of this course and give a beautiful end to my design journal and journey!

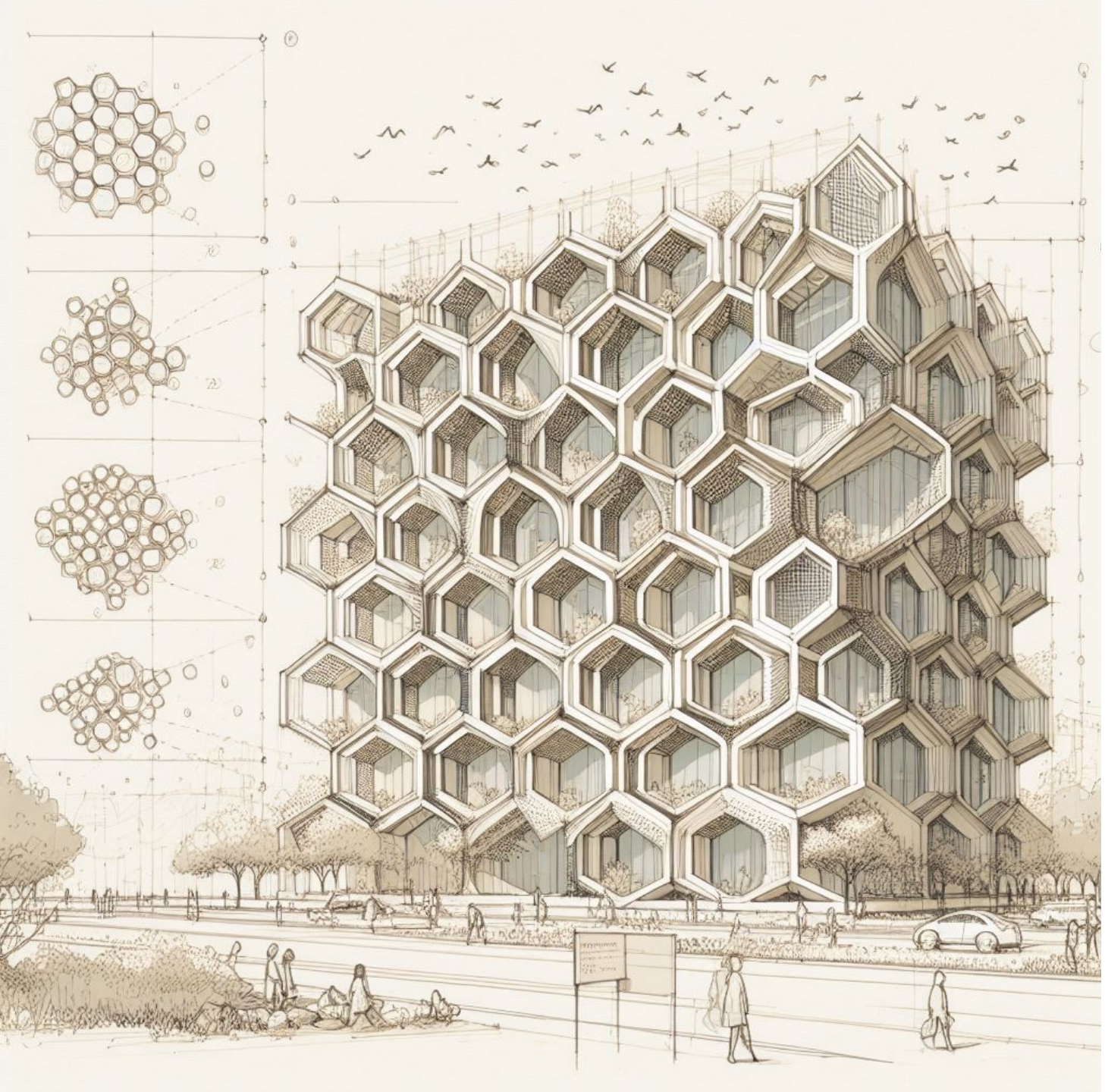
- I have copied the two intro slides from the previous journal, to remind you how my design journal started
- Following those two slides, I have explained the unique design features explored in the project, my big successes and challenges, as well as lessons learned



My Design Journal!

CEE 120B/220B
ADVANCED BUILDING
MODELING WORKSHOP |
WINTER 2024

LAVINIA PEDROLLO



With this design journal, I aim to weave a narrative that not only chronicles the evolution of how I designed the **Sustainable Built Environment Learning and Exhibition Center** but also serves as an inspiring testament to the transformative power of sustainable design thinking, inviting readers to embark on a captivating journey through innovation, adaptation, and the limitless possibilities of green architecture!

Lavinia

Final Week!

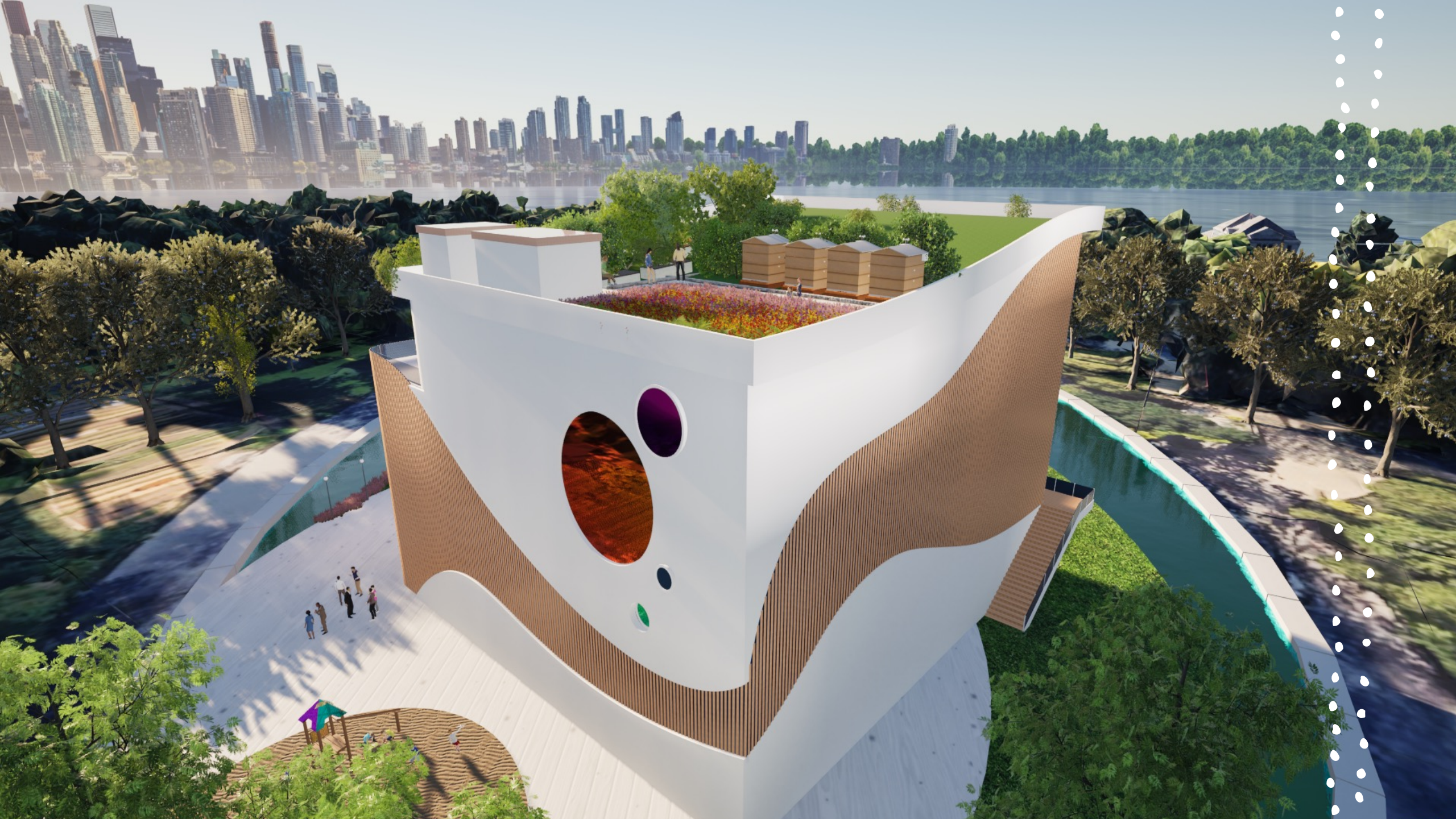
The Design

Let's start with a picture of my final design! Attention was paid to achieving the best level of coordination between architectural, mechanical, electrical, structural, and plumbing models!

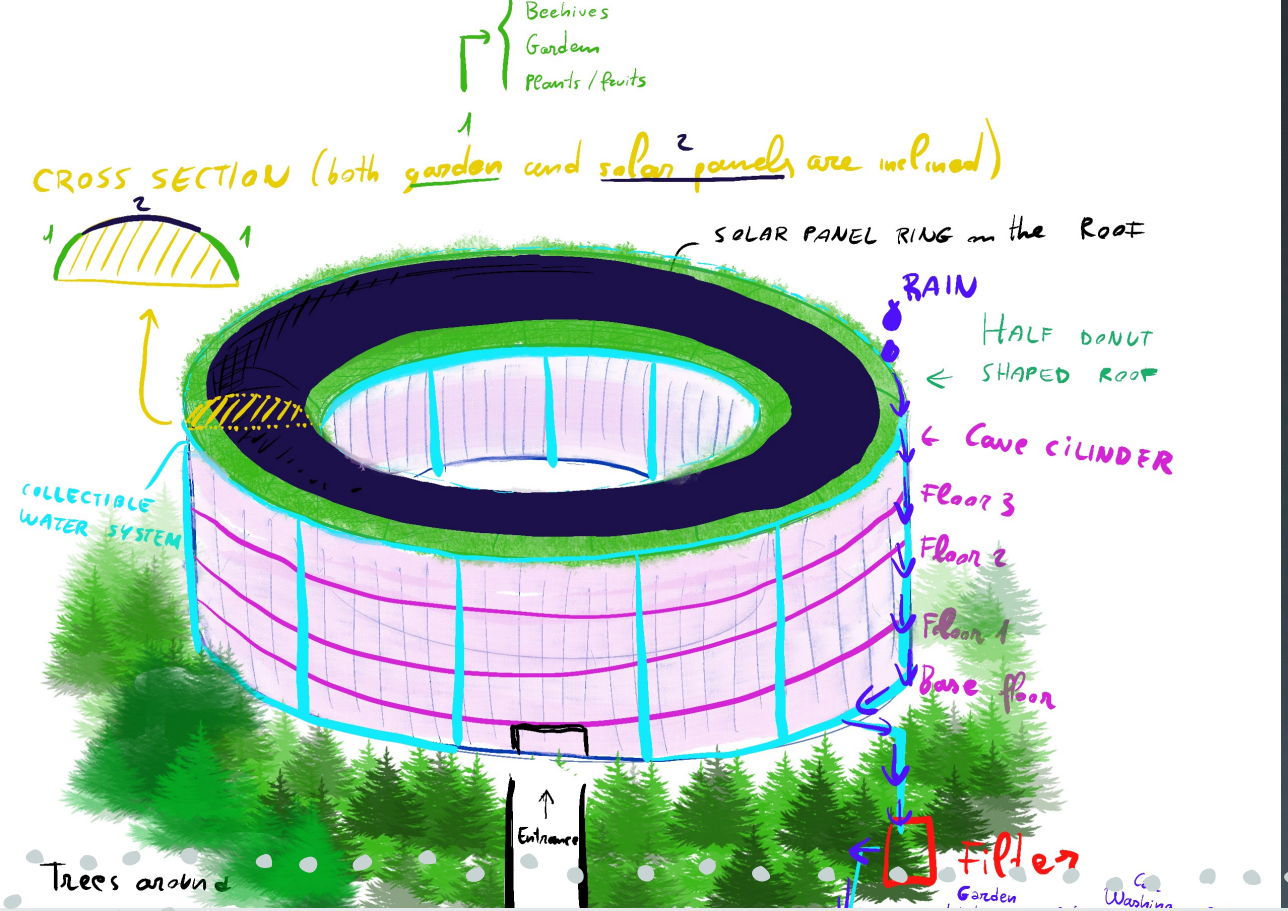
Unique Design Features

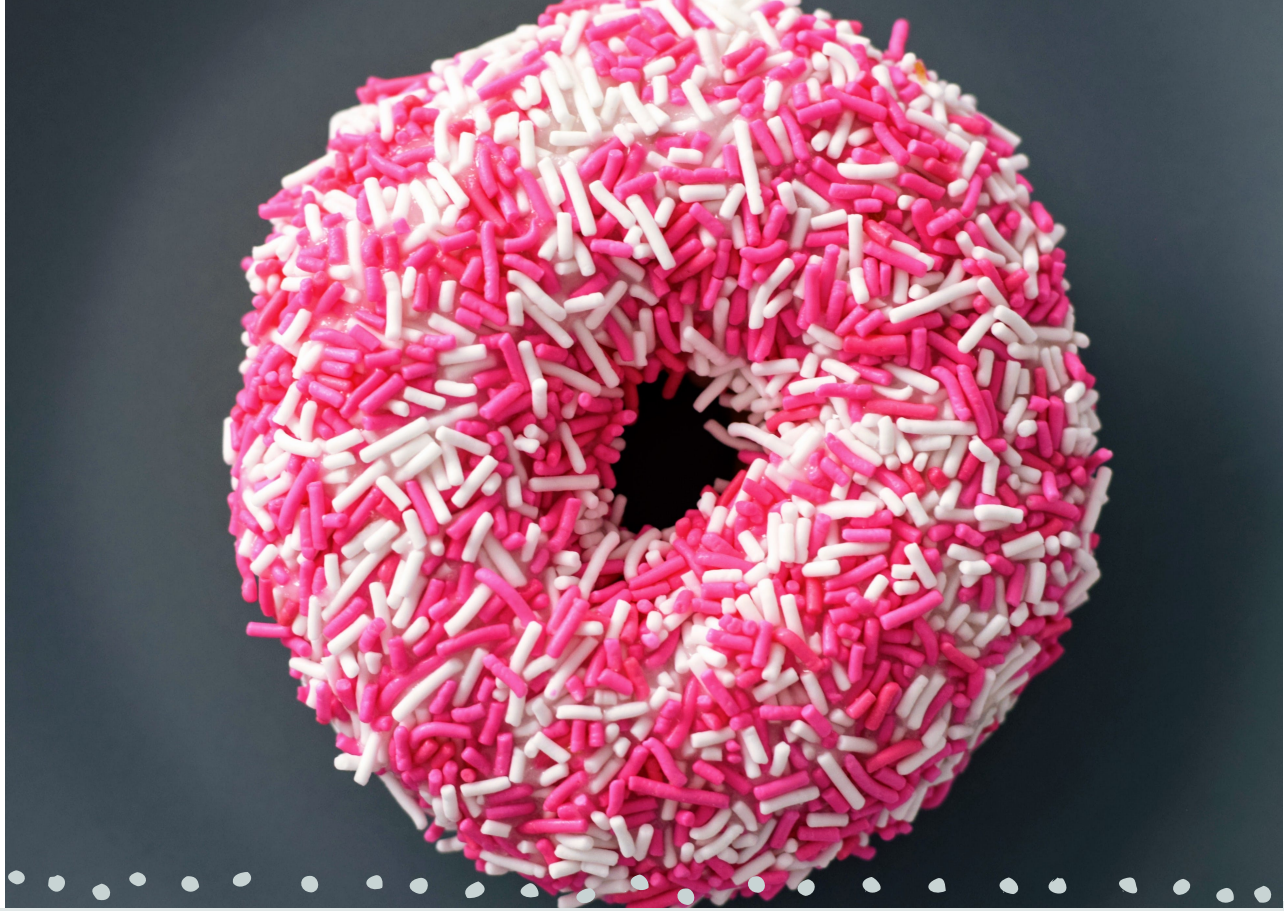
- A **beautiful, eco-inspired, minimal design** that gains elegance through its curved facades, adding a touch of sophistication to its simplicity. This design perfectly blends with the urban skyline
- A **green rooftop** to take a break from the urban landscape! It has beautiful flower gardens and beehives!
- A **well-thought circulation plan** that prioritizes both safety and logical flow. It guides occupants from the ground floor to the top while ensuring a fast way to escape thanks to the emergency stairs accessible from both sides of the building.
- A **rainwater collection system** that efficiently captures and stores rainwater, minimizing water wastage and promoting sustainable water usage practices
- A **greywater reuse system** that effectively recycles wastewater from sinks, repurposing it for non-potable uses like irrigation and toilet flushing, thus conserving water resources and reducing overall consumption.
- The **integration of offsite solar panels** to maximize energy savings and hence achieve the goal of net-zero sustainability


And now... some
renderings to visualize
these features!



My biggest successes





It all started like this...

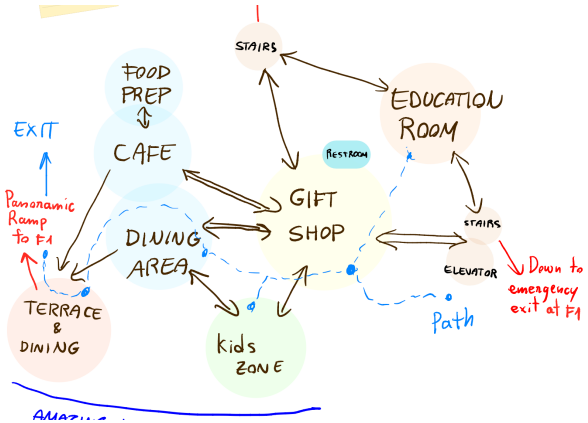
... and it turned out like this!

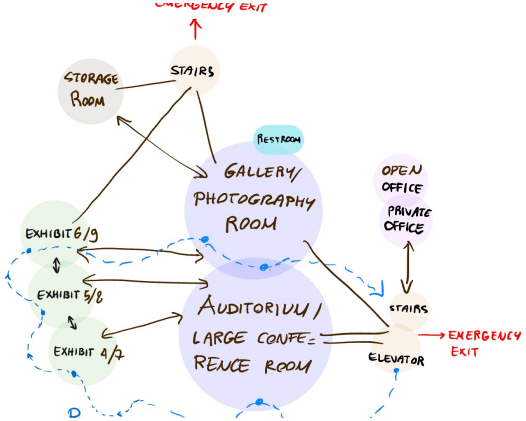
I am really satisfied with the overall final design. I love how it blends so well with the surrounding urban landscape while maintaining a unique identity (none of the NYC buildings look like this!). Additionally, it fulfills the net-zero energy sustainability goal, thanks to the careful planning that was made during each design step!

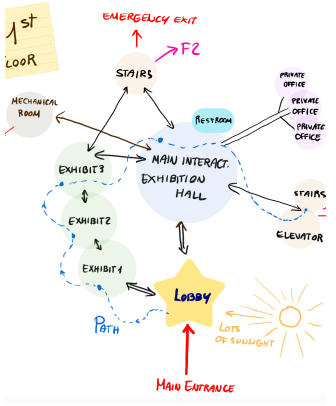
Wood and glass, curves, wood, and glass...

I am also very happy with how the curved wood-and-glass façade turned out. It took me days of modeling to learn how to design and refine to the detail a façade like this (I also crafted a custom type for the wood slats to ensure they matched my vision and could perfectly merge at the wall intersections). Additionally, I designed the concrete structural wall to support the weight and scale of the expansive glass façade. Its robust design serves as a strong foundation, ensuring the stability and durability of the entire structure. Finally, the juxtaposition of the organic warmth of birch wood and the solidity of concrete not only enhances the aesthetic appeal but also underscores the thoughtful engineering behind the project!

My biggest challenges

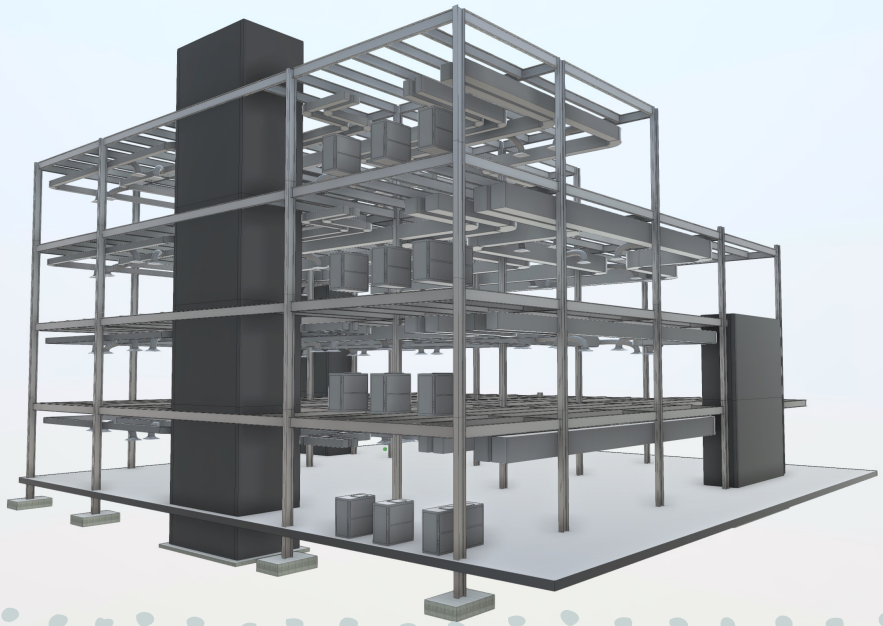


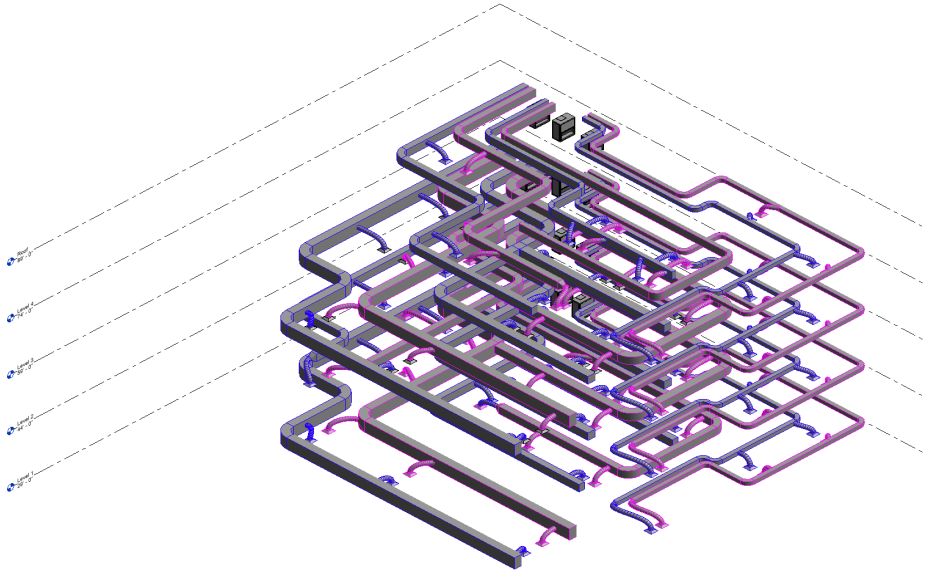


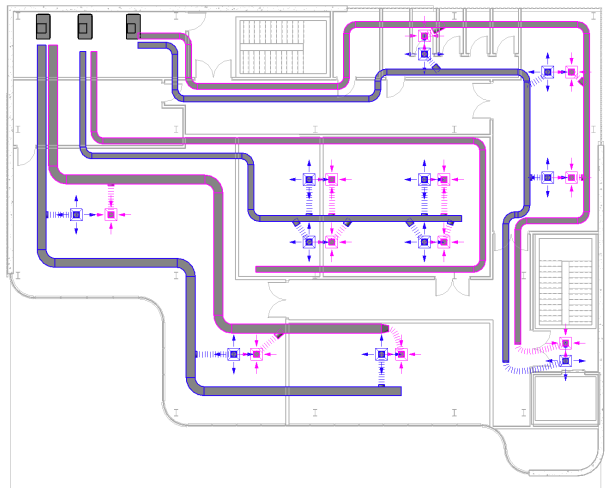


Designing the circulation plan

Designing the circulation plan presented a significant challenge for me because it required careful consideration of traffic flow, functionality, and spatial efficiency! Additionally, I aimed to create a layout that facilitated easy movement for visitors, guiding them to progress through the numbered exhibition spaces in an orderly fashion, from floor 1 to 4, ultimately leading to the terrace housing the gift shop and restoration area.







Designing the HVAC system

Space constraints for HVAC equipment necessitated careful consideration of size and placement. Initially, I attempted positioning return ducts beneath supply air ducts, but this would have reduced ceiling height to less than 8 feet, proving unfeasible. To address this, I strategically aligned both duct types at the same height, ensuring they didn't intersect. Additionally, I meticulously adjusted duct positions in Revit to avoid clashes with structural elements, crucial for conflict-free construction, and verified with the ACC model coordination tool.

Overall, this was a real struggle and required a lot of coordination reviews and time!!

Lessons Learned

Some insights and thoughts...

- First of all. TAKE this course. You can learn so much in just a quarter! Before starting this course, I did not know what an MEP was, and now I can model it from scratch!
- Also, as someone who has been there, I have learned not to stick stubbornly to my initial ideas without exploring other options first. For example, I was dead set on making a glass donut just because it looked cool in my mind. Thankfully, the teaching team nudged me in a different direction, and it turned out to be the right move. So, my advice? Stay open-minded and be willing to pivot when needed - it can lead to better outcomes in the end!!
- Finally, before diving into each assignment, ensure you have a clear understanding of what you aim to achieve. Define your goals, objectives, and desired outcomes. This clarity will guide your efforts and help you stay focused throughout the project. Consistency is the key!

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