GreenWall Connect

SUSTAINABLE SOLUTION FOR VERTICAL GARDENING

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Project Brief

As urban environments grow denser and hotter, sustainability has shifted from a niche interest to a mainstream aspiration. Homeowners increasingly care about biodiversity, insulation efficiency, and reducing their environmental footprint. Yet adoption of green infrastructure remains limited.

The barrier is not awareness. It is integration.

Most vertical gardening and sustainable design solutions require significant space, feel visually intrusive, or introduce maintenance concerns such as drainage, weight, and irrigation complexity. As a result, environmentally motivated consumers hesitate to implement solutions that disrupt the aesthetic or functional harmony of their homes.

The strategic opportunity lies in bridging this gap: creating a sustainable system that integrates seamlessly into existing architecture, balances ecological benefit with visual credibility, and reduces perceived maintenance friction.

Audience Persona



JESSE

Design oriented student who likes to explore new projects. He prefers solutions that integrate seamlessly into existing structures.



NOELLE

Scientist who is updating home on the weekend. Value sustainability and aesthetics equally.



ELLA

Owns design practice. She worries about weight, irrigation, and maintenance complexity.

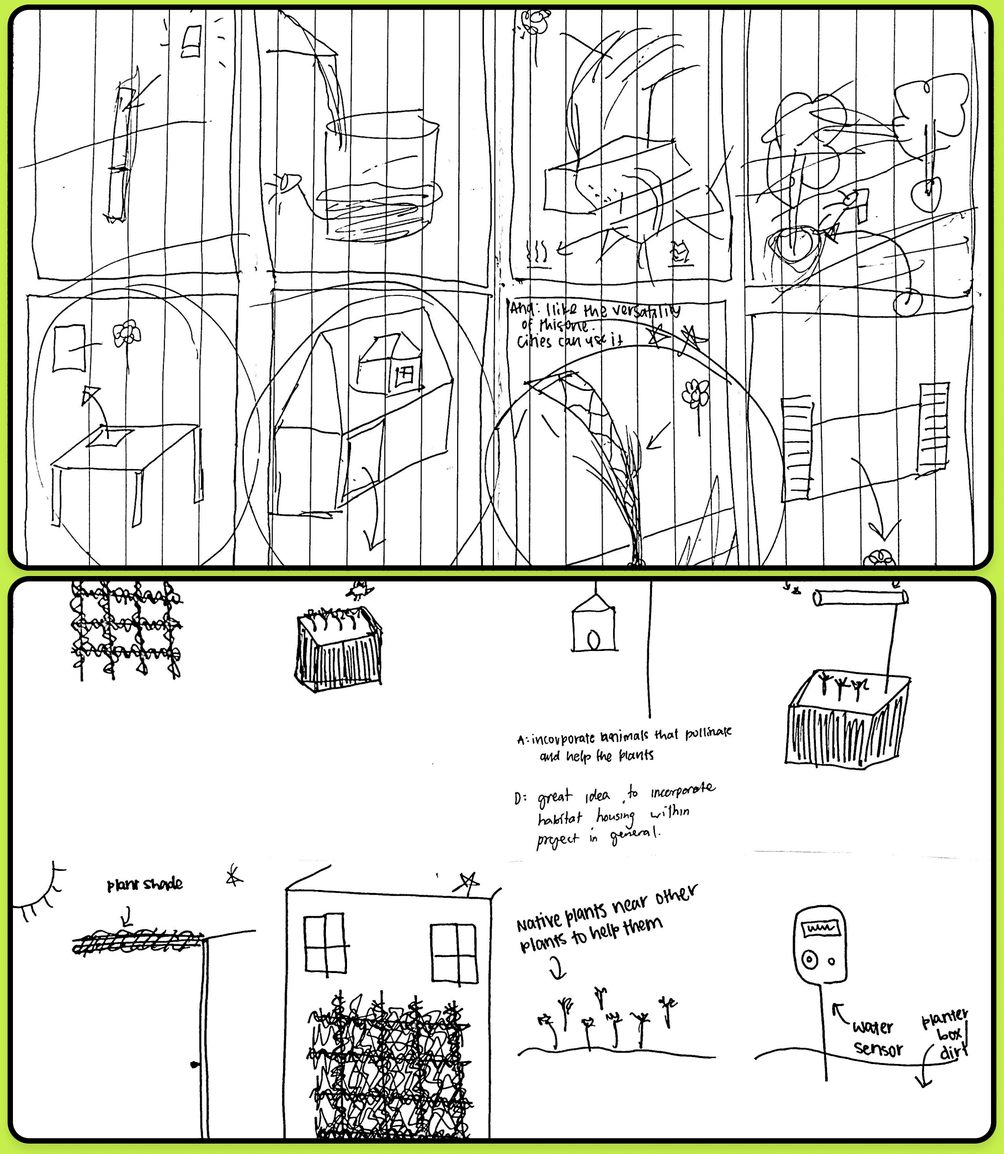
Crazy8s

Top 3 ideas:

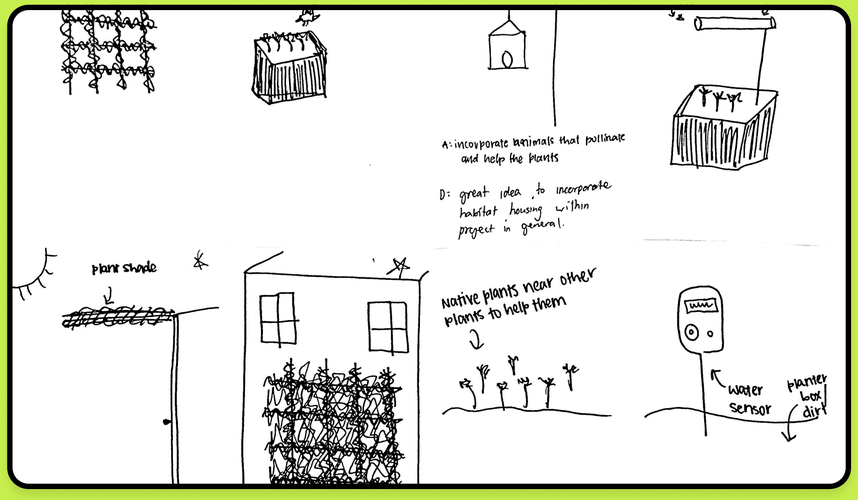
· Plant shade
o Change/add: make is moveable, add color and texture
o Best part: provide shade for the inhabitants while giving back to the native animals and insects
o Improved: design aesthetics, materials, durability, structure
o Feasibility: this is definitely feasible – we would like to incorporate this idea into a product
o We would use this idea for our product and enhance it. We like the idea of using plants as shade, since this gives multi use. However, this has been done so we are looking for ways to do more

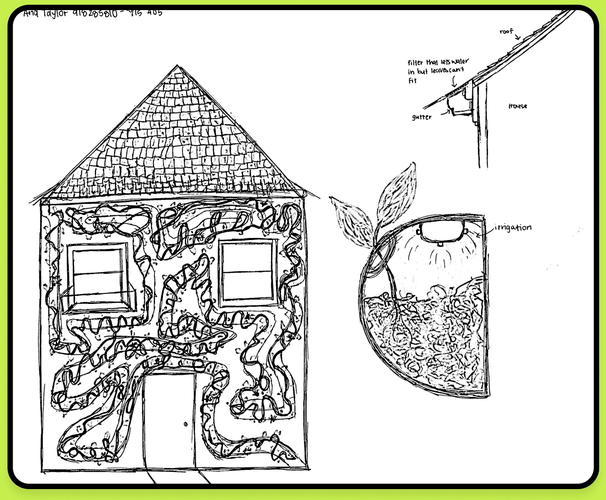
· Wall plants
o Change/add: make it more creative than just a rectangle, add some features to include water from the gutter
o Best part: beautifies the area/house, provides insulation, gives back to native animals and insects
o Improved: drainage, use of materials, diversify the types of plants, durability
o Feasibility: this is definitely feasible – we would like to incorporate this idea into a product
o We would use this idea for our product and enhance it. We like the idea of wall plants, but we want to make it more interesting and more sustainable by potentially connecting our product to the gutter. This would allow irrigation and potentially help homeowners with gutter issues.

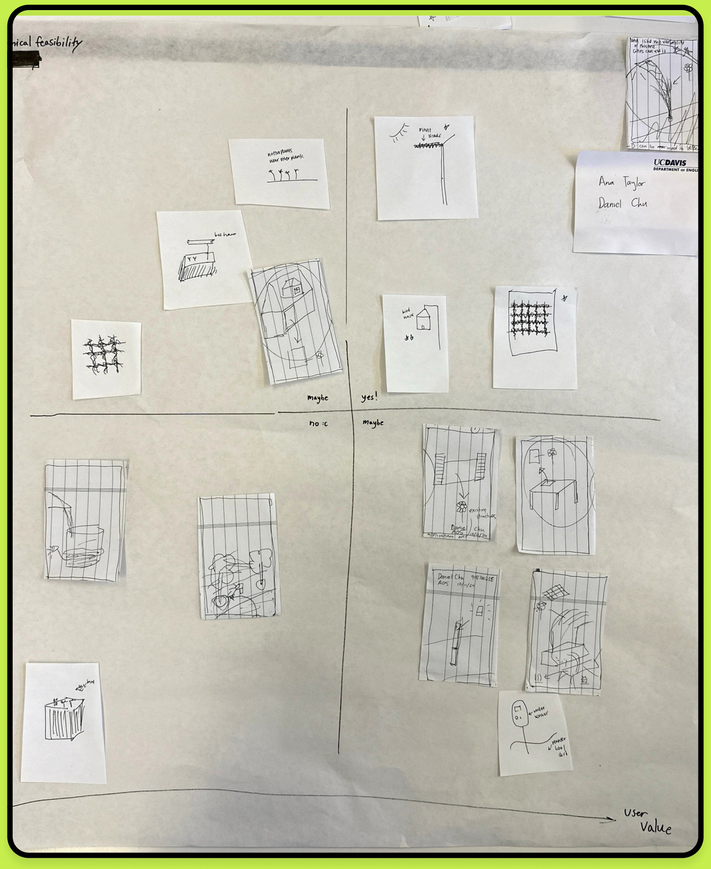
· Light pole with plants
o Change/add: add different designs, add a way to incorporate irrigation
o Best part: provide shade and environmental benefits to the sidewalk, adds color and beautifies the sidewalk
o Improved: needs to be able to be taken off so people can do maintenance, make design so it doesn't cover the lights
o Feasibility: this is definitely feasible – we would like to incorporate this idea into a product
o We would like our product to be used in multiple ways and this is one of the ways. Davis has an issue with the lack of light, so incorporating plants and aestheticism as well as environmental benefits would make street lighting a better option.

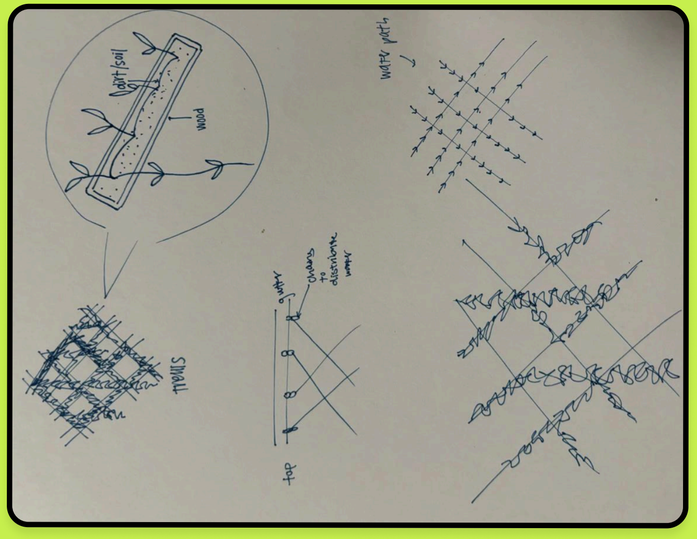


Sketch Solutions





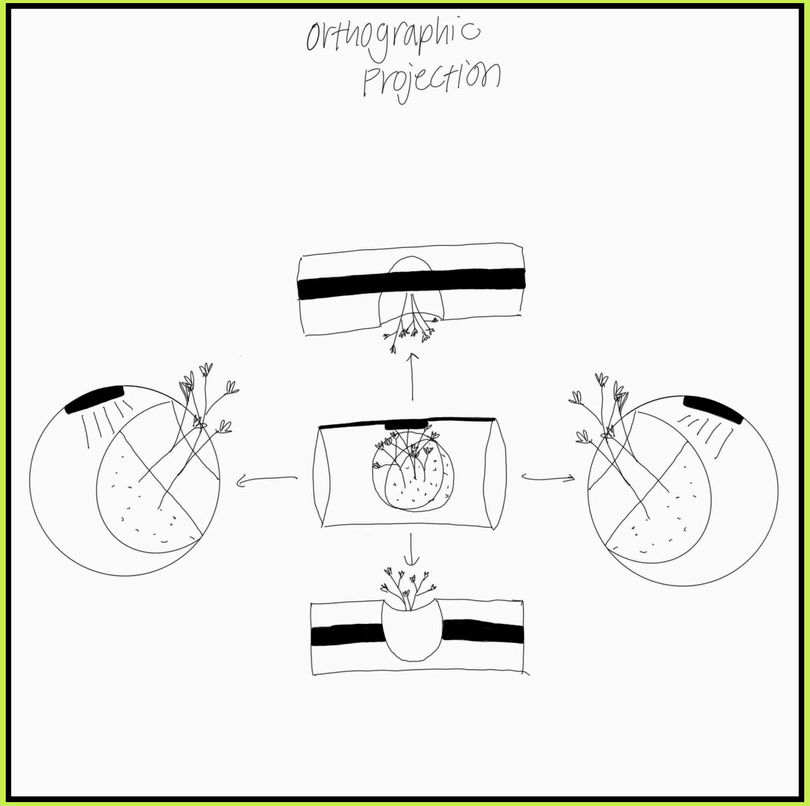


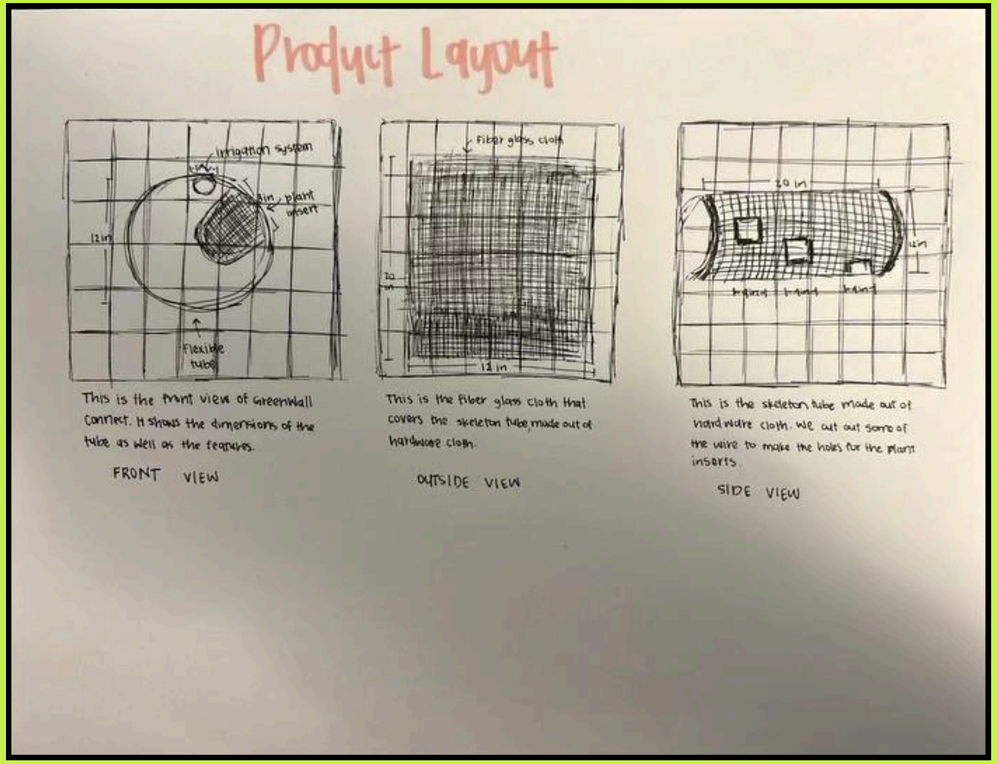


After careful consideration, we have decided green wall. It includes:

- irrigation from gutter
- attaches to wall

Product Layout and Orthographic Projection





We chose a product layout design approach to effectively illustrate the various components of our design. This style highlights the dimensions and individual elements, providing a clear and detailed understanding of how the design comes together.

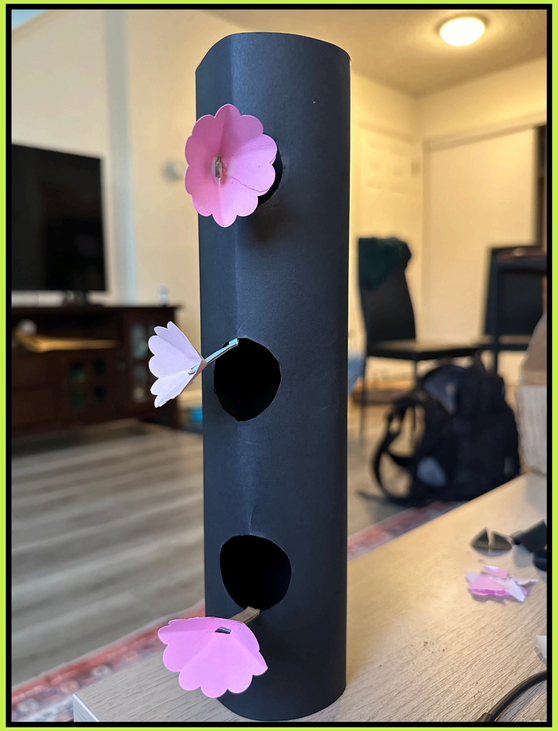
Protyping



PROTOTYPE 1



PROTOTYPE 2



PROTOTYPE 3

Final Design Sketch and User Study Report

Most Common Positive Feedback:

- Aesthetic
- Improve quality of cities
- Giving back to the environment/sustainable

Most Common Constructive Suggestions:

Too Heavy:

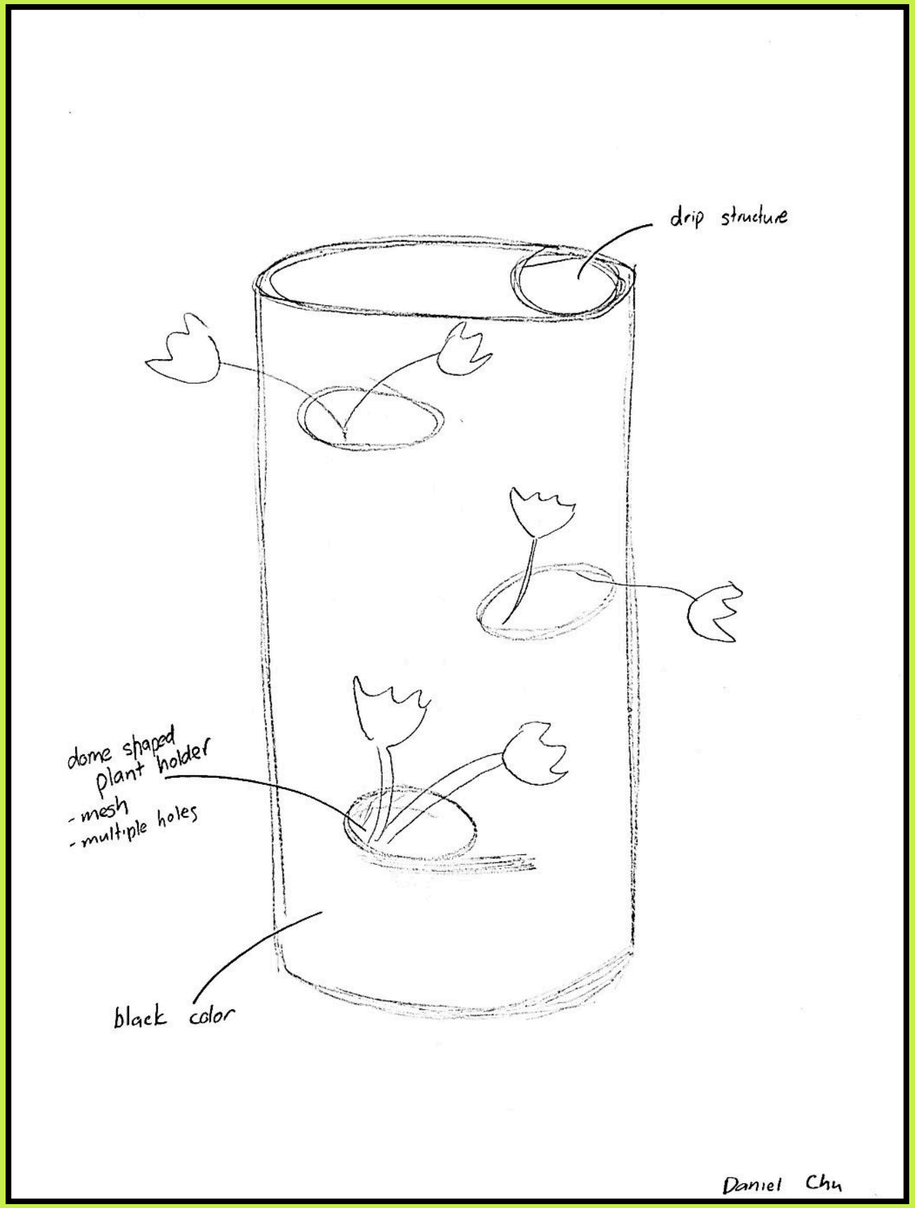
- Stronger attachments to wall like how nails and command strips have different weights they can hold
- Use lighter weight but sturdy materials that doesn't compromise structure but still not too heavy

Clogging:

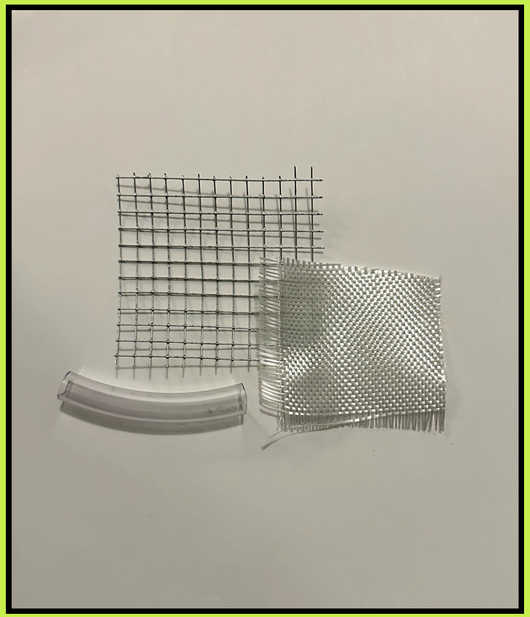
- Gutter guard prevents gutter clogging
- Removable cups made so that dirt doesn't fall out (acts like filter)

Over watering:

- Pressurized irrigation system inside that evenly distributes water like the sprinkler system in a yard
- Gravity and the mesh insert for drainage, so water doesn't trap and will just drip down the tube



Implementation Process



Glue Edges



Add Plants





Photo Credit: Daniel Chu and Ana Taylor

To finish up the prototype, we got together and glued the edges around the chicken wire and the fiber glass cloth to give it a cleaner look. We added in our plants to show how it works. We love how it turned out!

Final Showcase: Chaos in the Courtyard






Photo Credit: Daniel Chu and Ana Taylor

Chaos in the Courtyard was an inspiring showcase of creativity and innovation, bringing together 350 students to present their design prototypes and visionary ideas. The event offered a dynamic platform for networking and collaboration, as participants explored how design can drive meaningful change. Centered around three impactful project goals—environmental sustainability, social justice, and public health—students shared bold concepts that demonstrated the transformative power of creativity in shaping a better world.

Outcome and Learning

User feedback reinforced the importance of weight reduction and drainage clarity.

Iterative prototyping helped balance sustainability goals with functional feasibility.

Key takeaway: Aesthetic credibility drives sustainability adoption.



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