

# Project Growroom

March 9, 2021  
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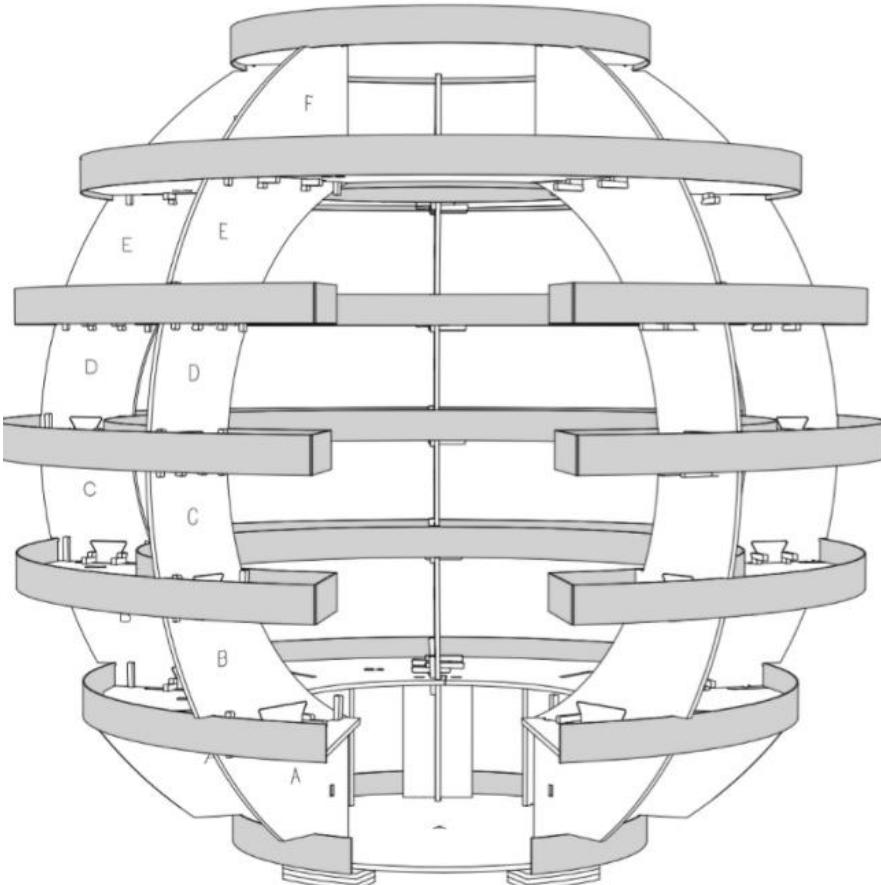
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# Background

- Community Partner
  - African American Community Service Agency
  - Goal is to support the wellbeing of the African American community through multi-focused pillars.
- Community Focus Issues
  - AA community have low land ownership due to systematic issues thus no land for gardening.
  - Lack of diversity in urban gardening/agricultural world.
  - On a larger scale, issues of food deserts and food insecurity.





# Problem Solution

- The Growroom
  - Open source design from IKEA that features a 8x8 ft. wooden globe for multilayer vertical farming.
  - Innovates on the challenge of lack of space for urban gardening.
- How it addresses our issues
  - Empowers community to take ownership of the food they eat.
  - Open the door into urban agricultural world where it can be used as form of self care.
  - As an art piece, it can be symbolic of the importance to be in touch with gardening and their food.

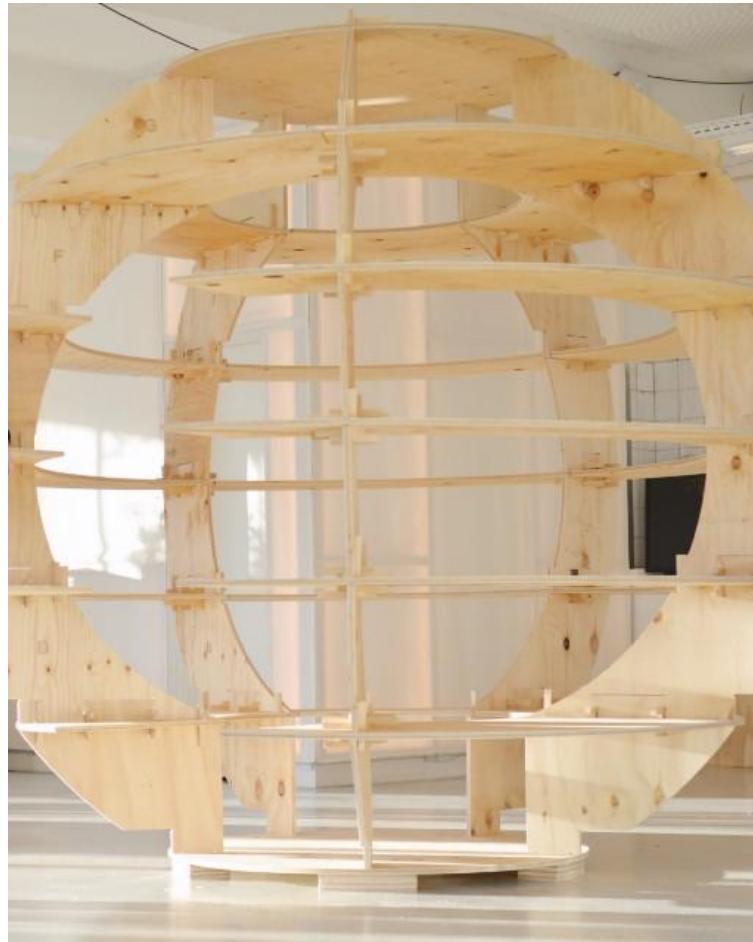
# Design Process

- Customer Requirements
  - Structure needs to be cut and built
  - Placed outdoors - waterproofed
  - Last several years
- Design decisions
  - Materials
    - Birch Plywood
    - Stainless Steel screws
    - Spar Urethane
  - Structure is elevated from soil
  - Drainage holes



# Design Process (cont.)

- Prep for CNC machine use
  - Learning VCarve software and having training class
- CNC Machine Limitations
  - 4x4 cut space, 4x8 needed
  - Reposition small piece cut vectors to fit on 4x4 board
  - Long piece workarounds
    - Prep two 4x4 cut files for one 4x8 board
    - Cut 4x4 area then slide sheet over to cut other 4x4 area
    - Alignment pegs



# Cut Results





# Cut Results

- 22 total hours of cutting over 4 days.
- Cut pieces breakdown:
  - 67 small pieces
  - 21 long pieces
  - 250 pegs
- Used 15 1220mmx2440mm plywood boards



# Cut Analysis

- Overall, despite some hiccups, it went smoothly and on schedule
- Major issues
  - Plywood splintering
    - Edge roughness due to machine cut depth
    - Need for post-cut sanding
  - Cut file design errors
    - Some defective pieces due to cut file prep mistakes
    - Issues with longer pieces
    - Need for defective piece re-cuts

# Site Prep

- To prepare the site for building
  - Remove existing garden bed
  - Remove plants
  - Level soil
  - Install protective planks



# Build Results





# Build Results

- Two day build
  - First day assembling structure
  - Second day sealing
- Went mostly as expected, but a few issues
  - Pieces weren't cut exactly right, some didn't fit properly so we had to trim
  - At the end these errors added up and the last two pieces didn't fit
  - Had to pull structure together with ratchet straps in order to make it fit





# Build Analysis

- Some things took longer than expected
  - Edging strips took longer than expected so we had to finish them on the second day, but we were still able to finish sealing this day
  - We were planning on painting two coats of spar urethane, but after seeing how long the first one took we realized we didn't have the time
- Overall successful build





## Conclusion

- This project didn't go exactly as initially planned as we ran into several issues in both the cutting and building processes, but we were able to work through all issues
- We had a big volunteer turnout which was great for the community and helped tremendously with the build
- Overall a great experience building this and we are happy we could provide a way for people to come together while also providing a healthy food source



# Recommendations

- Cutting Process
  - Placing sacrificial board for all pieces to prevent splintering.
  - Check that the pieces of each layer fit together.
- Building Process
  - Find better solution for gaps between edging strips.
  - Reserve more time for painting.
- Future Additions
  - LED light strips for night illumination
  - Automated irrigation system

# THANK YOU

Any questions?

