Creating a Tactile Map for a More Accessible Brandeis

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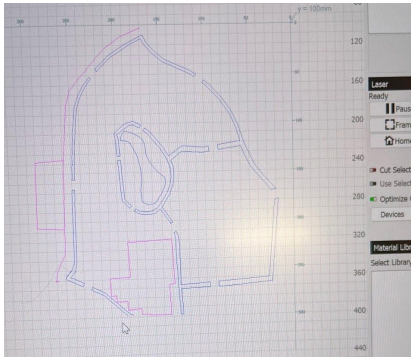
The Problem

- Campus navigation and accessibility issues
  - Stairs
  - Guard blocks
  - Hills
  - Entrances
- Lack of university resources

How Can We Fix This?

Prototyping the Map

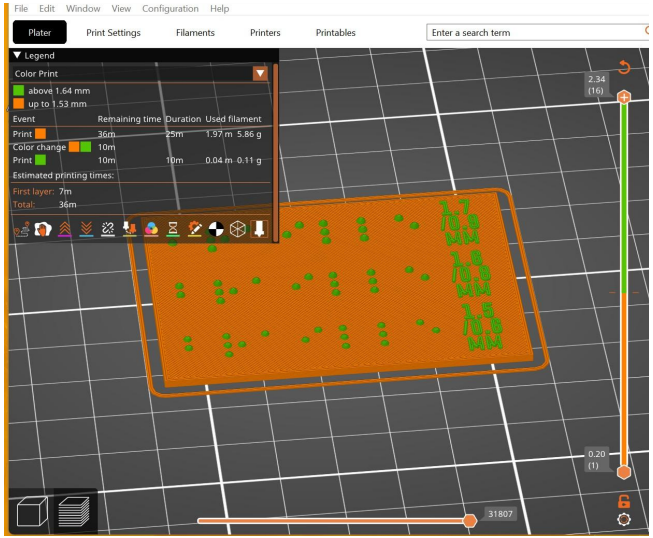
- Used TouchMapper to 3D print and create an SVG



- Edited SVG in LightBurn and cut a prototype

Prototyping Braille

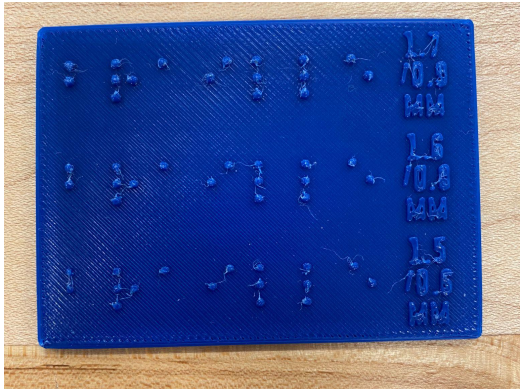
- Researched braille Standards
- 3D printed parametric braille in Fusion 360
- Created Key with large text and braille



https://www.instructables.com/Easy-3D-Printed-Braille-to-Add-to-Everything/

Prototype Feedback

- Met again with Elana and presented our 2 prototypes
- **Tactile map**
  - Recognized Massell Quad
  - **Liked path width**
  - Need **diversity of textures** to differentiate map features
- **Braille calibration test - Measuring Part 1**
  - **Preferred 1.7mm Braille** ✅
  - 1.6mm Braille - 🆗
  - Struggled with 1.5mm Braille (too spread out) ❌



Textures and Labeling

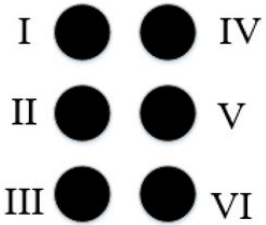
- High contrast textures and colors
  - Felt- grass
  - Sandpaper- roads/parking lots
  - Cellophane- residence quads
  - 3d printed- water

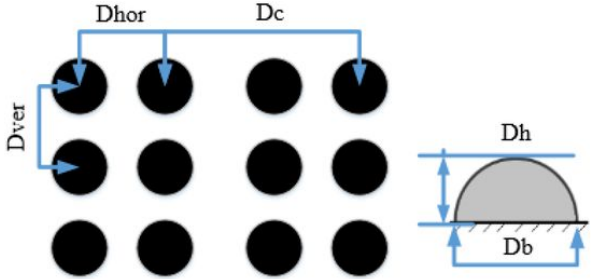
- Reduce labeling
  - Academic buildings
  - Student services

Measuring

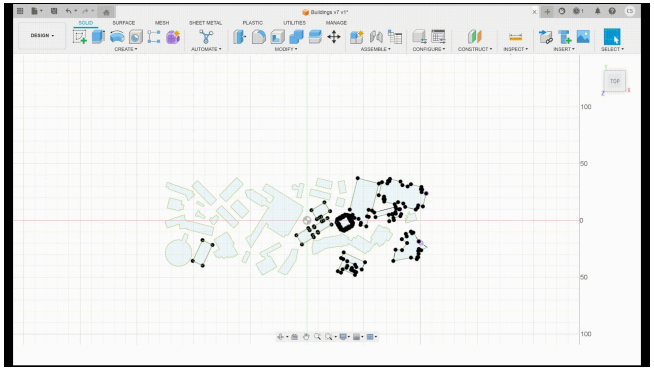
Cellophane Felt 220 80 120

- Braille 0.9/1.7
  - Height, diameter, spacing
- Tactile differentiation 2mm

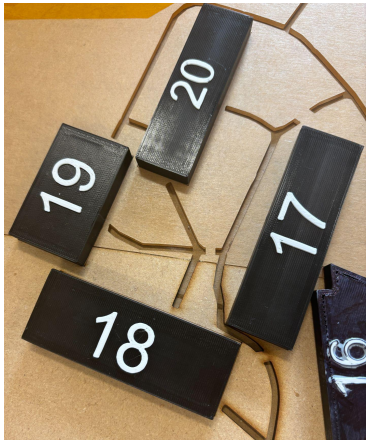




Phase 4: Printing Buildings

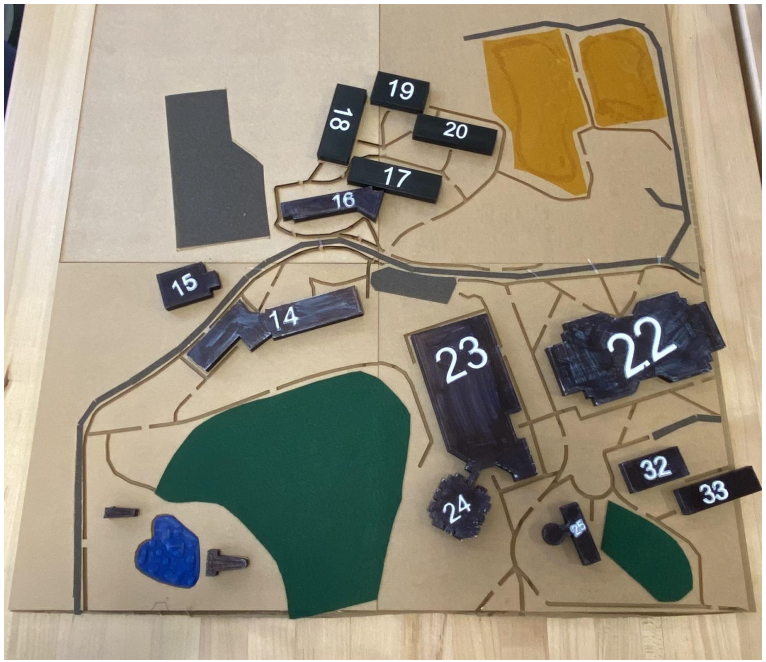


- Taking the SVG files from LightBurn
- Extruding the buildings to **11 mm tall**
- Adding numbers on top of the buildings (1mm recommended)
- Be sure to add a filament change instruction at the point when the number starts printing.
    - **Building height + 0.2mm**
    - I.e.: 10mm + 0.2mm = 10.2mm recommended filament change



Putting Together and Current Design

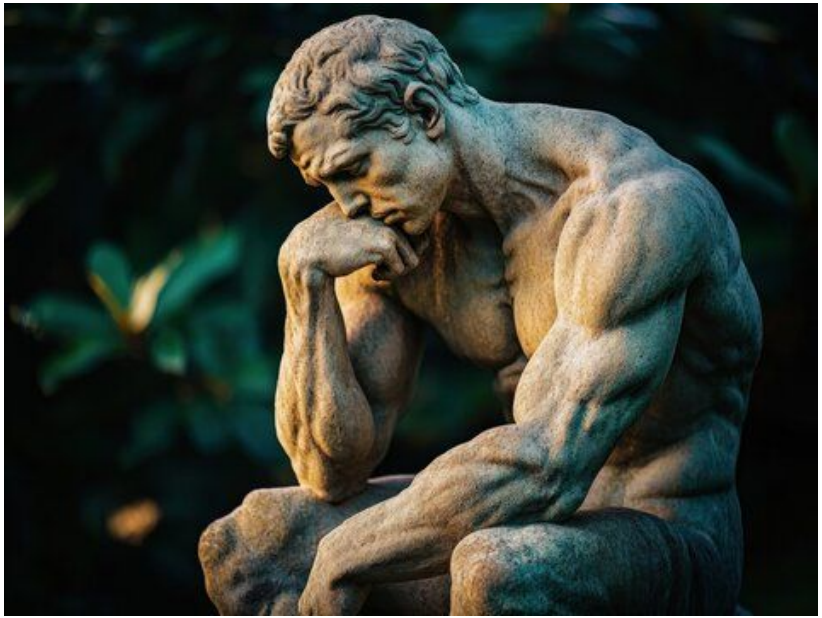
- Current design depicts **Mandel Quad, Library & Chapels Field, Usdan Student Center, Heller, & Shapiro Academic Center**
- There are 8 additional panels containing the **rough laser cut outline of paths, roads and buildings**, but no added textures



Looking into the Future

- Adding more features: indicating **stairs** & **entrances/exits** of buildings
- Extending the map: constructing the **entire map of campus**
- **Indicating elevation**: added layers or flat textural differences
- **Increasing user feedback**

Questions?



Dozuki Guide