

Accessible Map



ART:448
GRAPHIC DESIGN FOR ACCESSIBILITY

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WAY FINDING, DESIGN THINKING,
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01 Research



Research	Design	Production	Analysis
<p>What it means—Tactile:</p> <p>Wayfinding explored in the context of vision impairment.</p>	<p>Sight & Touch:</p> <p>How can we accommodate more of the senses?</p>	<p>.OBJ converted to PLA:</p> <p>Modeling, then printing using Bambu Lab X-1 Carbon</p>	<p>Feedback and reflection.</p> <p>Repeating previous steps to arrive at a better outcome.</p>

Identifying a point of interest on UW–Madison campus.

Bakke Recreation & Well Being Center	Onsite Inquiry	Personal Experience
	<p>Entering the building there didn't seem to be any signage, permanent or paper maps to direct people.</p> <p>When looking around for where to go there were at least five distinct directions, making the first interaction you have with the building possibly disorienting and overwhelming.</p> <p>When asked, the help desk was not able to provide any physical, printed, or digital maps of the facility. Verbal communication was needed to quickly locate different parts of the building.</p>	<p>During the summer, while taking classes at UW–Madison, I used the Bakke Center frequently. Seeing that the building was just constructed through great efforts by the university I was hoping to encounter a facility that could support my physical health goals.</p> <p>Personally, when I first arrived at the building I wasn't sure where anything was and didn't have a clue to where a map or help might be. Just exploring the building seemed to be my only option at the time. Saying it's a large facility is an understatement.</p>

User	Emotions	Motivations
<p>Name: Caroline DELANEY Occupation: Graduate Student</p> <p>Age: 23 Sex: Female Height: 5'9"</p> <p>Disability: Congential Glaucoma Vision Score: 30/200</p> <p>Lifestyle: Mostly setinary, full time law student who loves to voulteer at her music therapy association.</p>	<p>Frequently confronted with the chal- lenge of navigating unfamiliar buildings and relying on others for guidance, Caroline often finds herself frustrated by the loss of time and dependence on external assistance.</p> <p>The prospect of taking advantage of a nearby gym and rediscovering the joy of swimming, which provides an easily accessible avenue for exercise where she can push herself while being safe, brings Caroline happiness.</p>	<p>To live a healthy lifestyle aided by UW–Madison facilities, Caroline often goes out of her way to advocate for vision-impaired accessible signage and physical maps for students, faculty, and members of the public.</p> <p>Other than going to the Pool at Bakke, Caroline would like to know where she can access a coach's support to ensure she can fully take advantage of the Bakke facility while being safe.</p>
Backstory	Context & Obstacles	Scenario
<p>Caroline is a graduate student at UW–Madison studying law who has congenital glaucoma and a vision score of 30/200. Born with congenital glauco- ma, Caroline has had to live a healthy life, be apart of and participate in clubs, and excel at school while dealing with being near legally blind.</p>	<p>After studying at UW–Madison for a year and living in Eagle Heights on the west side of campus, Caroline was looking forward to the completion of the Bakke Recreation and Wellbeing Center so close by.</p> <p>Upon entering the building, Caroline felt confused about where to find the new swimming pool, as there was a lack of wayfinding near the entrance, let alone accessible sinage.</p>	<p>Upon entering, Caroline was over- whelmed with choices of where to walk to and got lost trying to find a map of the building that was absent near the entrance.</p> <p>Looking for the pool, Caroline eventual- ly had to go up to a staff member at the front desk and ask for their help walk- ing her to the pool.</p> <p>Caroline asking the staff member whether they had a printed or physical map of the building for future use; they replied, "...sorry, we don't have any physical materials that can help you."</p>

Questioning

Would this map be doing an overcomplicated service?
How large of an audience should this map accommodate?
Where would the map be located, and how large should it be?
In what ways can we simplify the scope?
Who would most frequently use/benefit from this map?

Answers

Possibly. An accessible map will provide benefits not just to people with vision impairments but also to everyone if appropriately and subtly designed.

The main goal is accommodating Caroline, who can't read things without being close. Thinking of how color-blindness, complete lack of vision, and myopic and diabetic optical conditions will affect the readability of a map will also be partially addressed.

The map, located near the entrance of the building in the airlock, will be designed to fit above the automatic door sensor. The optimal width should be 1.5'–2.5' long.

Identifying a destination, the pool, in Caroline's case, will be the driving factor for this prototype.

Anybody who hasn't been to Bakke before, which is a large majority of students and faculty, will most likely check on their phone for a map before arriving or stop at the physical map while entering the building. If someone has trouble reading and/or accessing the map online, the physical map will be available.

Journy

Imaging the pathway Caroline would take to reach the pool was identified and experienced onsite. Things like the points of decision, potential obstacles, and different parts of the first floor where captured.

Getting to the pool requires roughly seven actions to get to. Making sure that Caroline can anticipate these actions without relying on vision is the goal.



Physicality

What sort of textures do people with vision impairments associate things with? Researching how raised or embossed elements can change the perception of something was noted. Thinking about how the dimensionality of the map will most accommodate the site was ideated through.

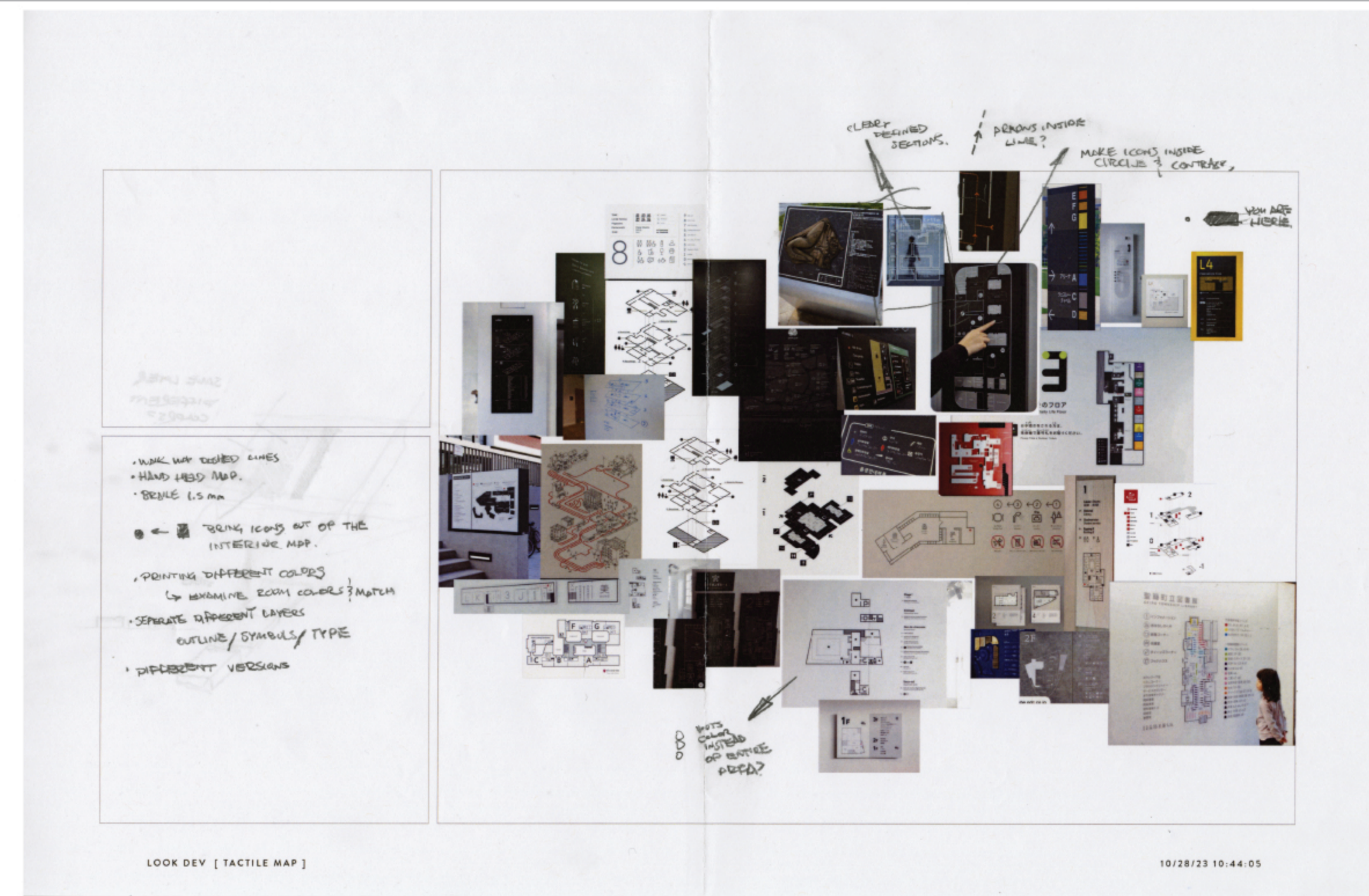
Being constrained to a 3D printer will naturally construct barriers to producing finer textures.



Layout

Native english speakers will generally read things top to bottom, left to right. Keeping this in mind elements like the map key and point identifiers were noted as priorities. Should the map be horizontal or vertical? This was thought through initially.

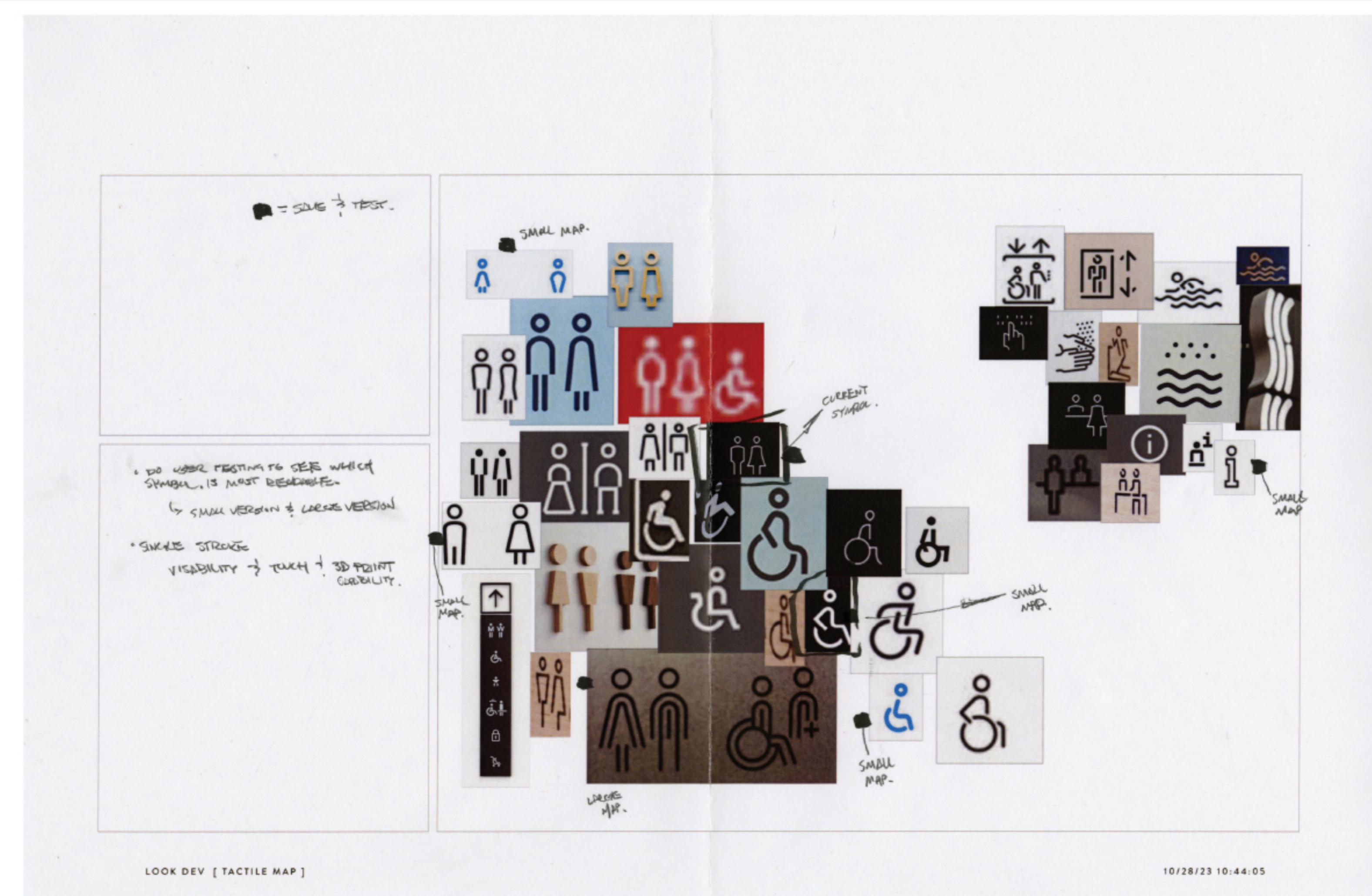
Simplyfing areas, pathways, and the space between points of interest were taken into account. The general of shape of things related to one another should be easily readable.



Iconography

Recognizing the importance of legibility at a smaller scale, efforts were dedicated to exploring icons that minimized complexity while effectively conveying their intended meanings. Subsequently, other design elements were harmonized within this design language to create a map and its components which are characterized by simplified shapes.

This approach aimed to prevent confusion and enhance readability by avoiding intricate forms that might impede comprehension with different levels of vision.



Look Development

Contextualize, project, and pinpoint.

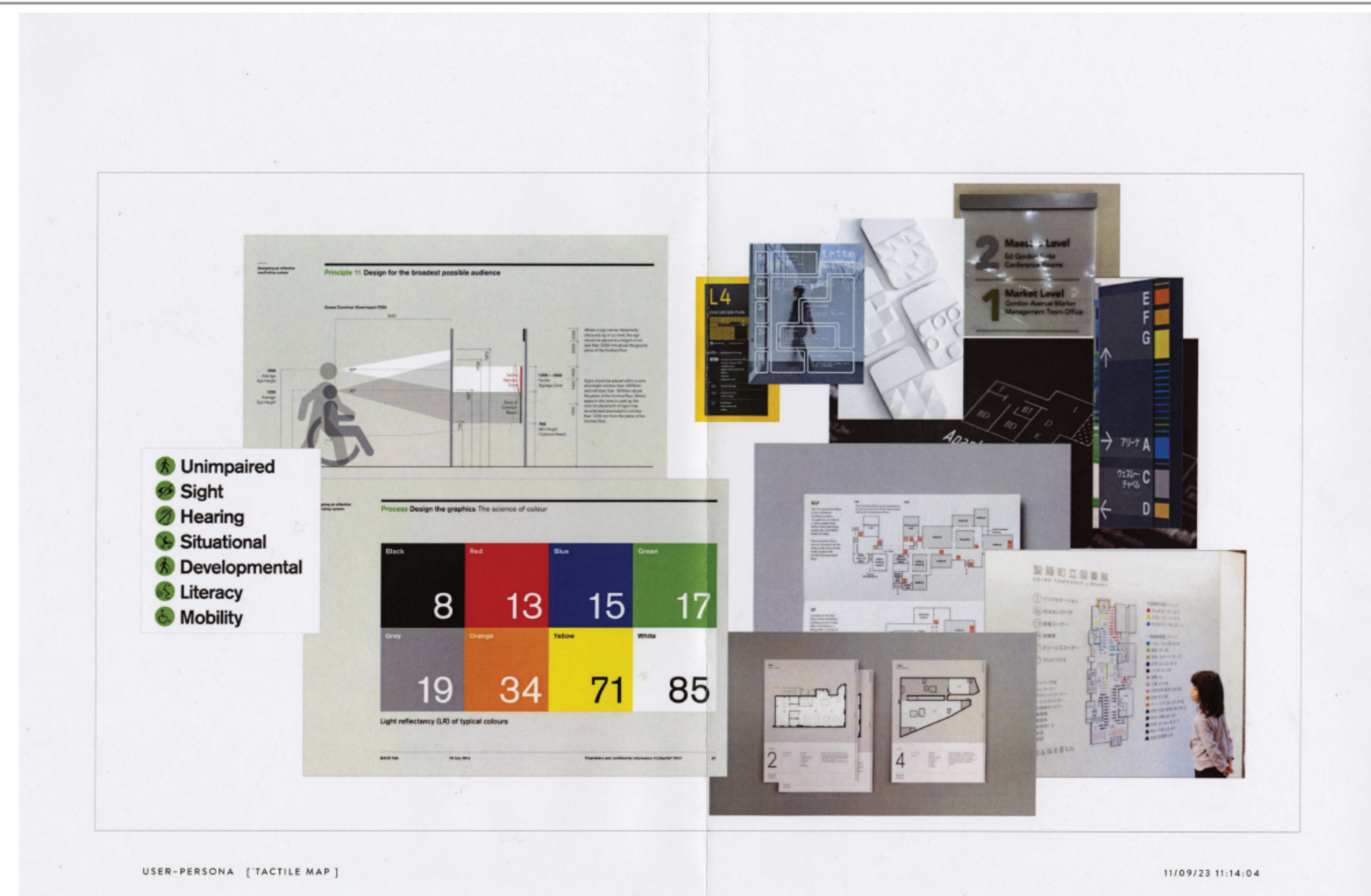
Bakke

For the sake of time and efficiency the area in which the map would focus on was chosen to consist of the: main lobby, elevator, main hallway, changing rooms, and pool on the first floor.



Narrowing

Identifying key art and designs that would meet not just the needs of the site but also the aesthetics of a recreation facility on UW-Madison's campus were identified, and referenced throughout the illustration process.



02 Design



Research	Design	Production	Analysis
<p>What it means—Tactile:</p> <p>Wayfinding explored in the context of vision impairment.</p>	<p>Sight & Touch:</p> <p>How can we accommodate more of the senses?</p>	<p>.OBJ converted to PLA:</p> <p>Modeling, then printing using Bambu Lab X-1 Carbon</p>	<p>Feedback and reflection.</p> <p>Repeating previous steps to arrive at a better outcome.</p>

Legibility over style, more or less.

Typography (Parameters)

Typefaces that could meet the demands of small-scale applications were chosen for this project. Anatomical features like a small x-height, mono-width stroke size, and high contrast between similar capitalized letters were prioritized.

Selecting fonts that are also easily readable with the touch of a finger was prioritized over more humanist sans-serif and serif typefaces. Roughly 10% of people without sight can read braille, while the other ~90% opt to read raised lettering instead.

For context—in reading, we typically don't process each letter; instead, we recognize the overall form and silhouette of the word, with capital letters generally being read more quickly at a smaller scale.

Iconography (Context)

Icons were designed within a mono-stroke width constraint, simplifying existing icons down to rudimentary shapes for legibility at a broader range of vision capabilities.

Research was done on whether icons are readable with the touch of the finger, but in most cases, and especially at smaller sizes, they are not. Nonetheless, icons were simplified so that they could potentially be visualized with only a finger if they were to be traced.

Most icons are bespoke, but the accessibility and rental icons were the starting point for the rest of the set, which were pulled from an open-source library.

H1 01

80pt. 100% size
-40 Tracking
100% Leading

Avenir Black

Avenir is a modern and versatile sans-serif typeface designed by Adrian Frutiger, known for its clean lines, balanced proportions, and readability across various applications.

Note. Considering aesthetic harmony and tactility, a deliberate choice was made to include the typeface Moon 2.0 which harmonizes with rounded and simplified forms, aligning with the map's iconography set.

H2

Ground

21 pt. 100% size
-10 Tracking
100% Leading

Avenir Black

C1

Aquatics Center

10 pt. 100% size
0 Tracking
100% Leading

Atkinson Hyperlegible
Regular

Atkinson Hyperlegible, named after the founder of the Braille Institute, has been developed specifically to increase legibility for readers with low vision, and to improve comprehension.

C2

**ACCESSIBLE
RESTROOM**

10 pt. 100% size
100 Tracking
90% Leading

Moon 2.0 Bold

Moon 2.0 is a contemporary sans-serif typeface, featuring rounded geometric shapes, designed for a modern aesthetic and ease of readability in diverse design contexts.










C3

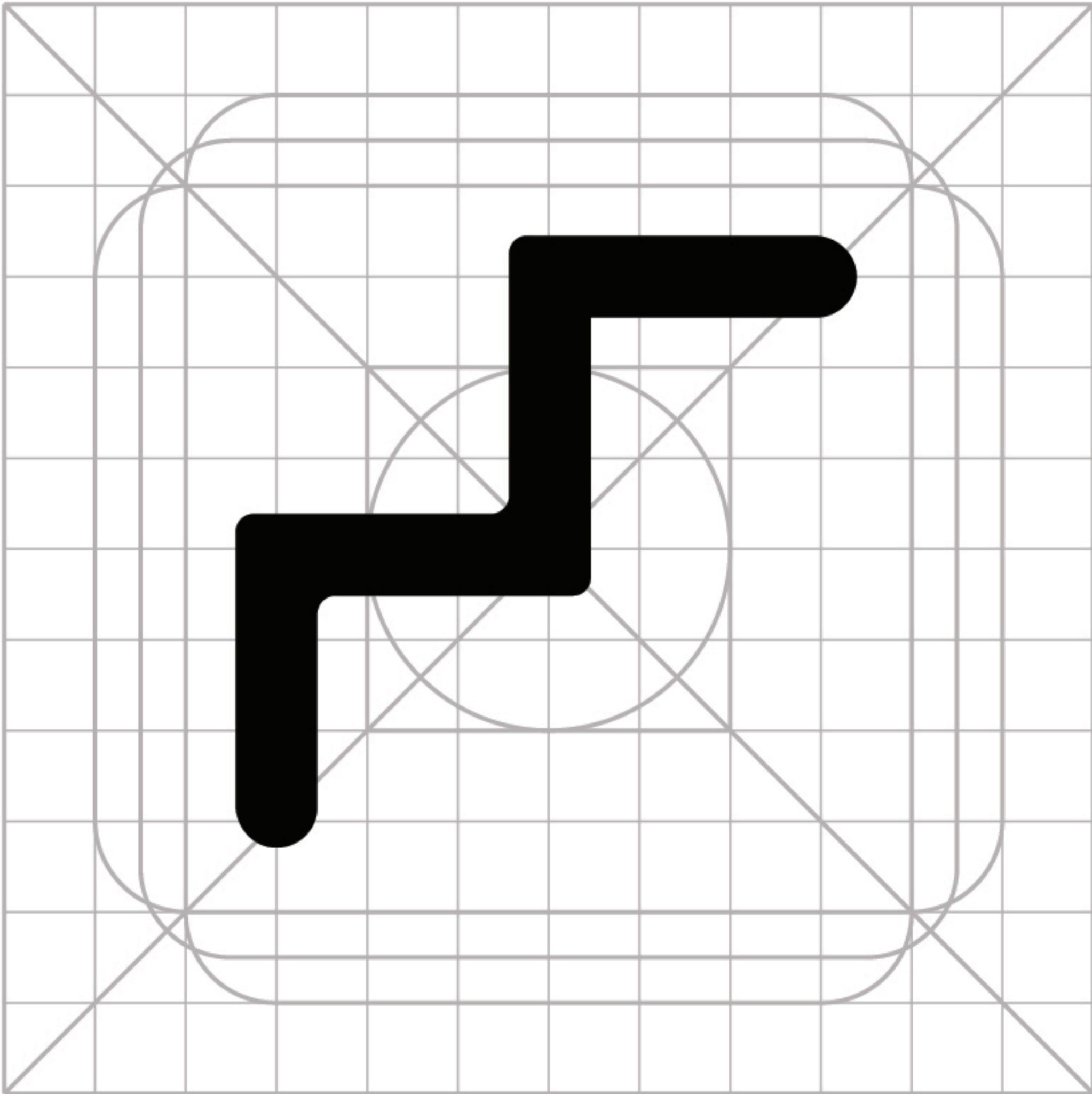
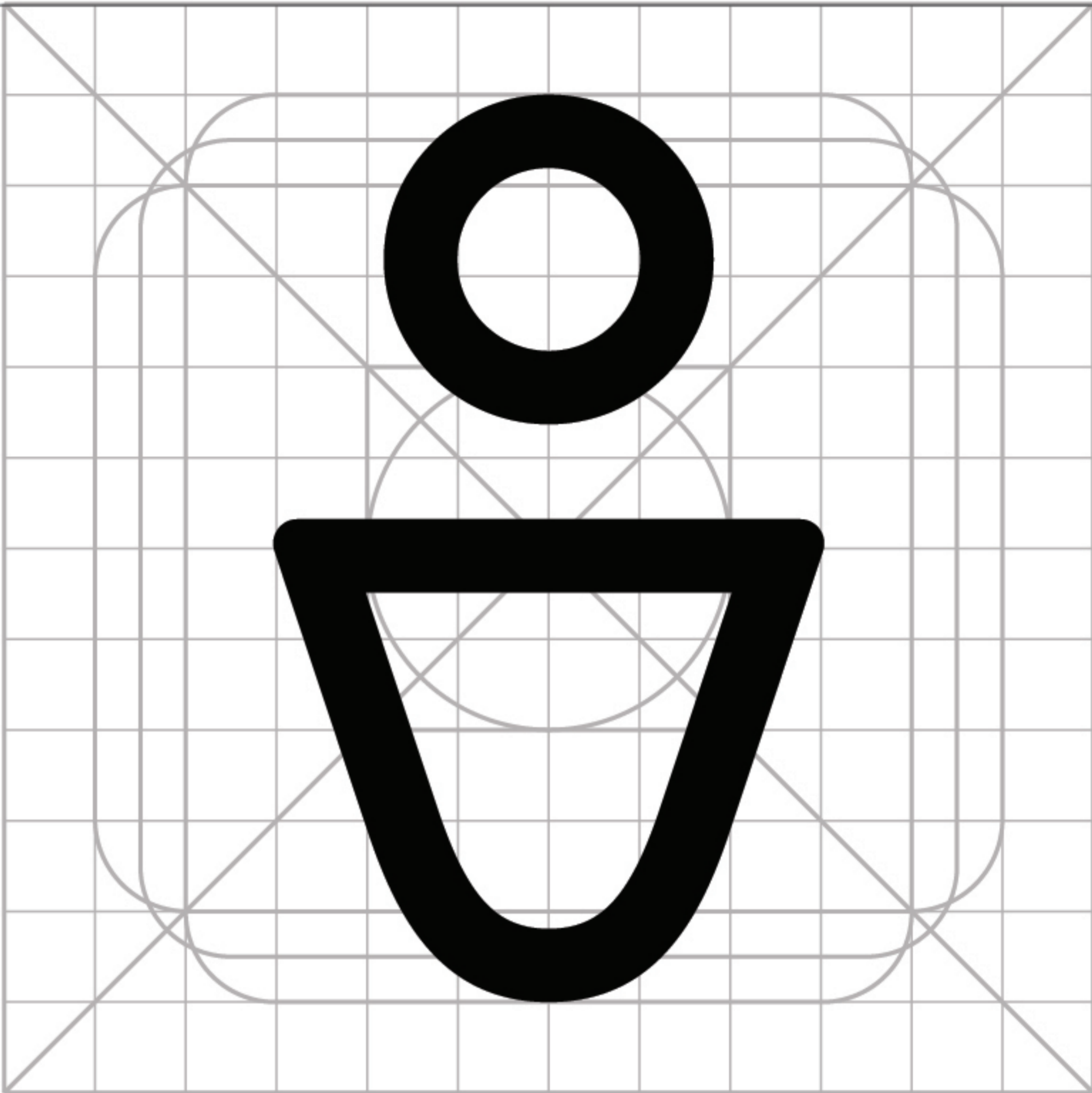
14 pt. 100% size
0 Tracking
120% Leading

Braile CC0

The Braille CC0 typeface is specifically designed for visually impaired individuals, offering clear and accessible Braille representation to enhance readability and inclusivity in written communication.

Legend

	Current Location	A fill was added to emphasis this symbol over others. First read.
	Information Desk	Spurs were added to a lowercase (i) for legability at small scales.
	Elevator	Simplifying arrows to more accomdating solid triangular shapes
	Rentals	Circular keychain enlarged for legability at small scales.
	Stairs	Minimal amount of steps.
	Accesibility	A netural, simplistic take on the ISA icon.
	Male	Shoulders of a human form empahsised to distuignish from female counterpart.
	Female	Waist of a human form emphasised to distuignish from male counterpart.
	Ladder	Handles and rungs simplified within one unifying stroke.



Moments

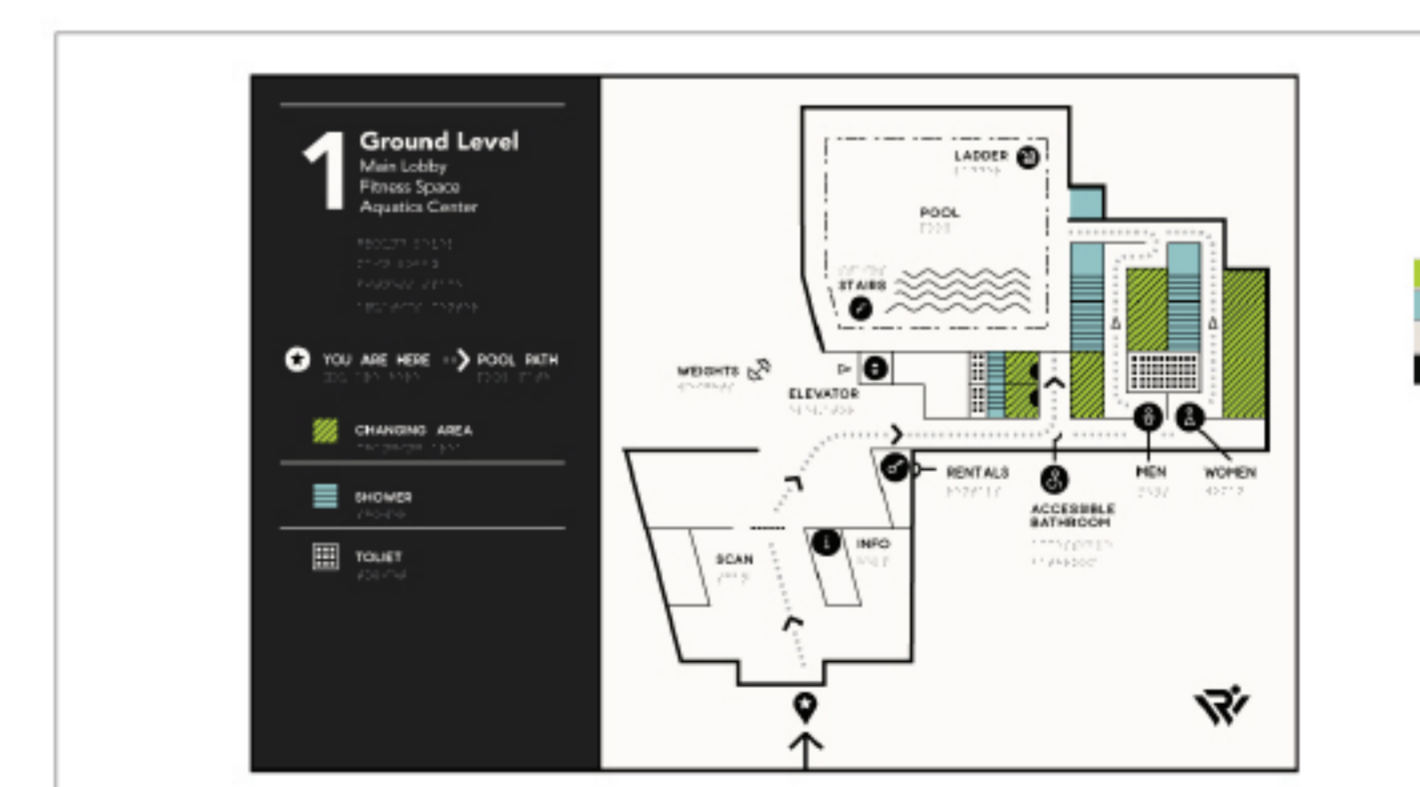
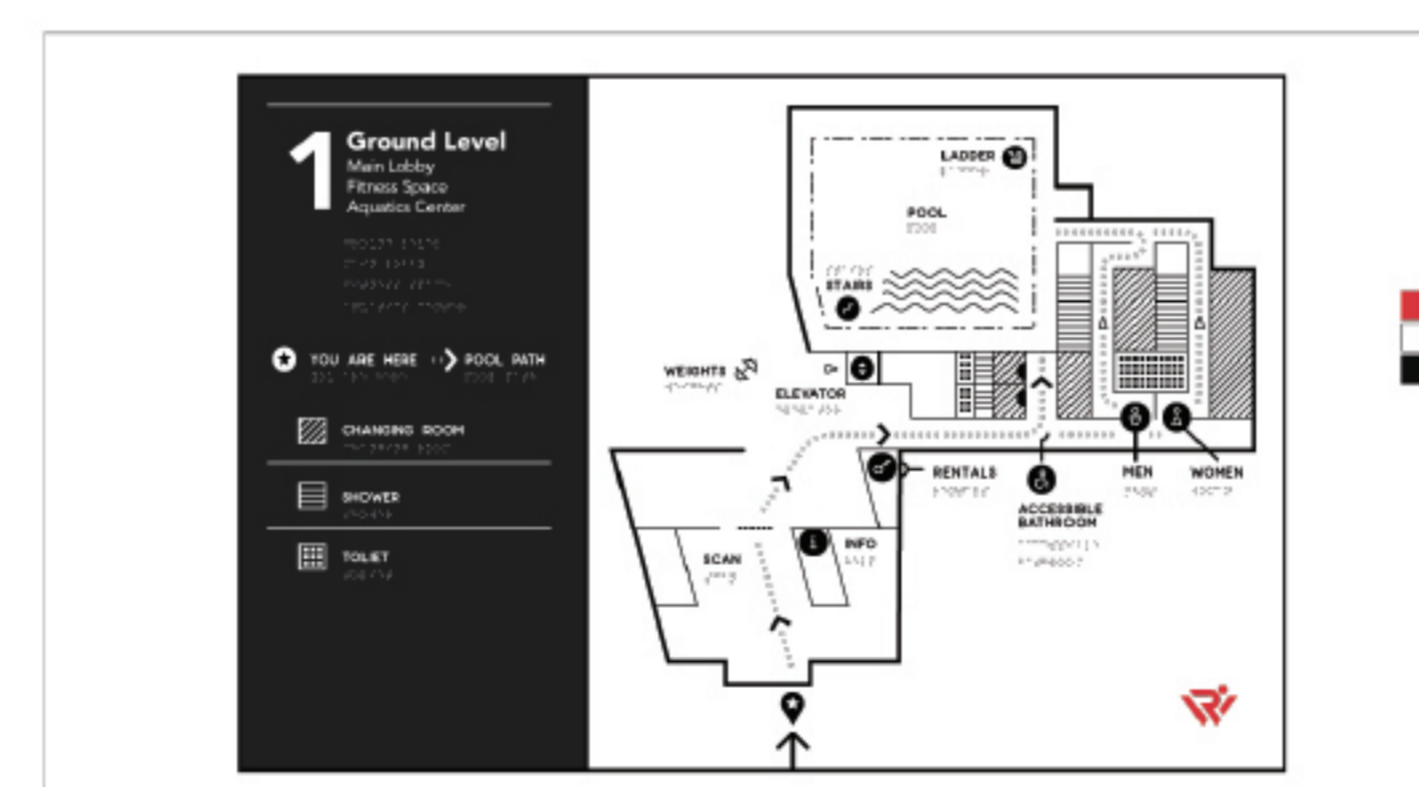
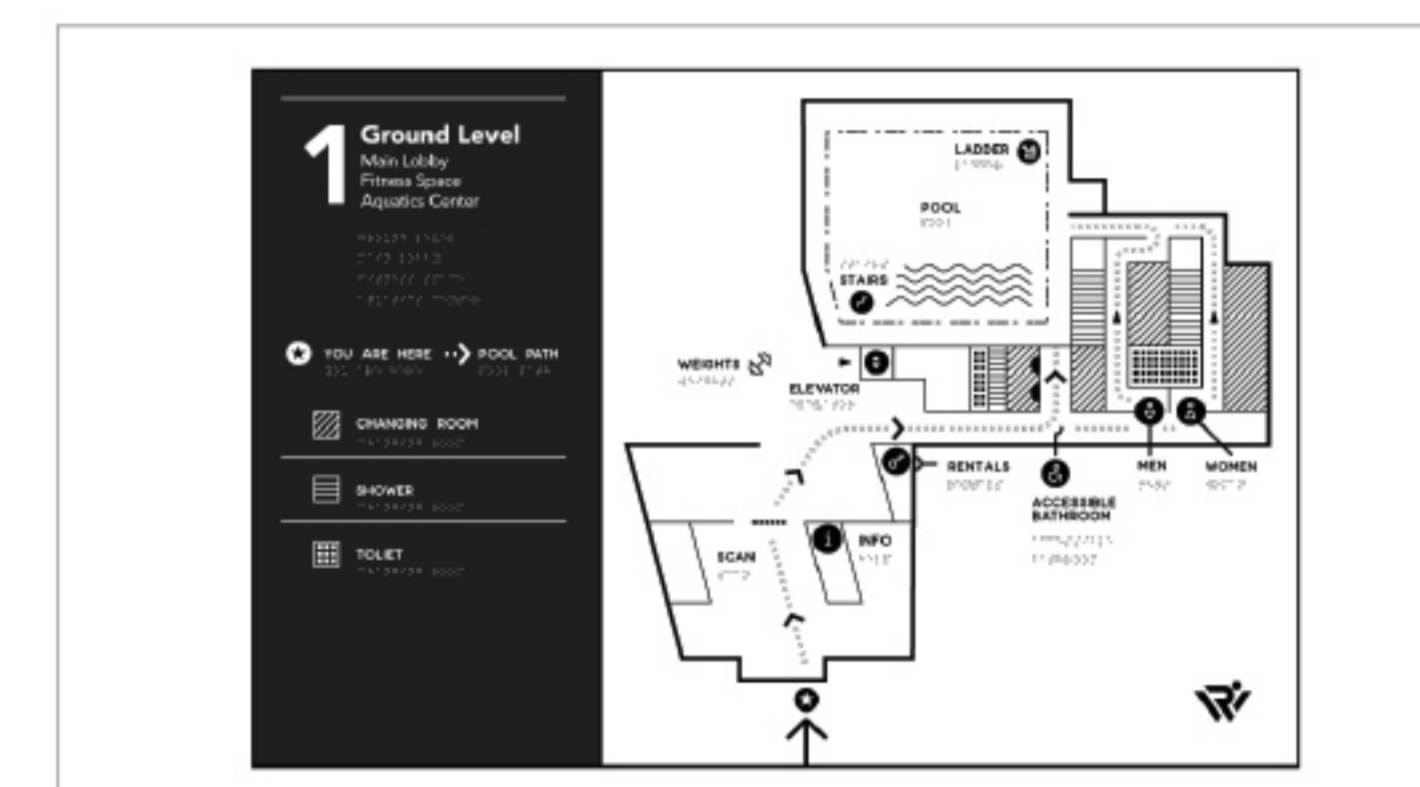
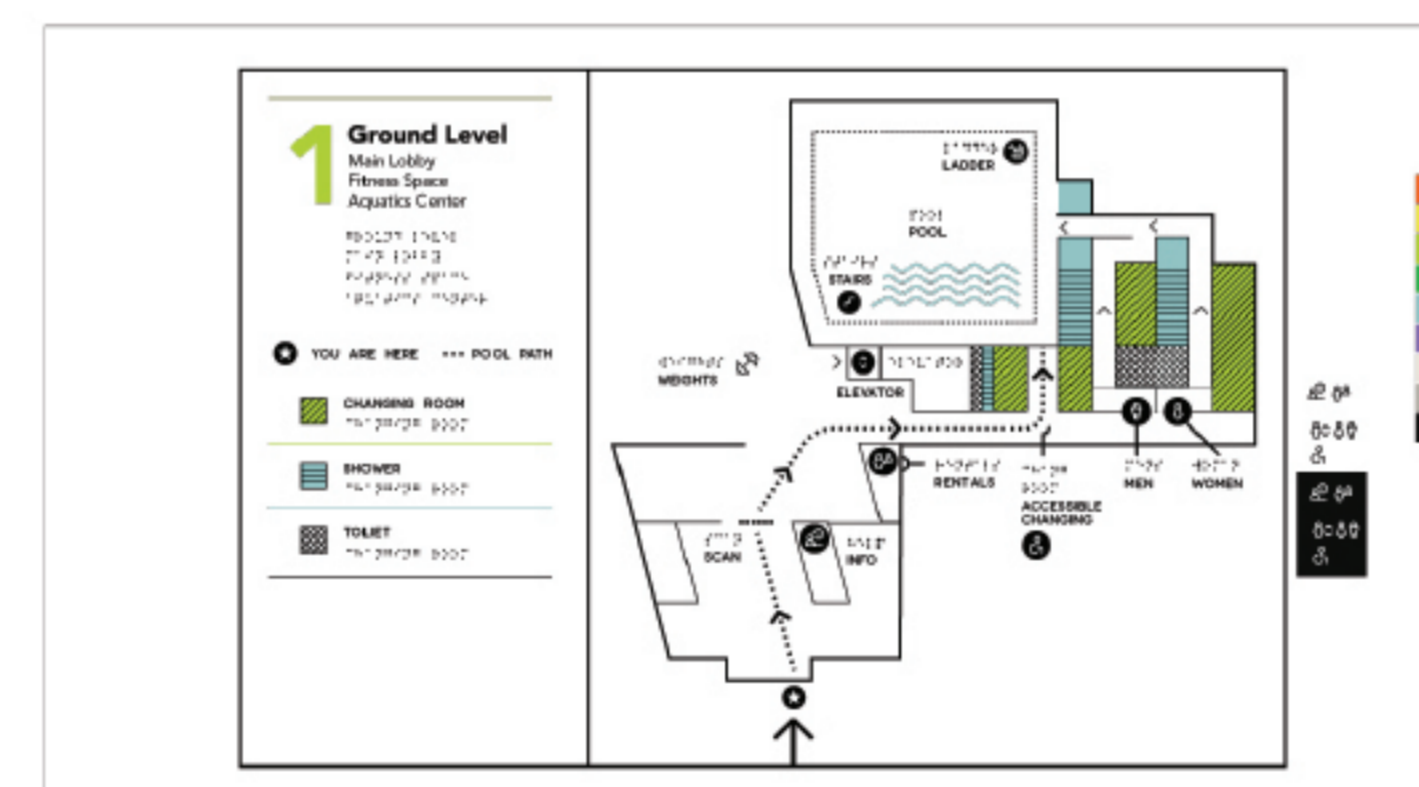
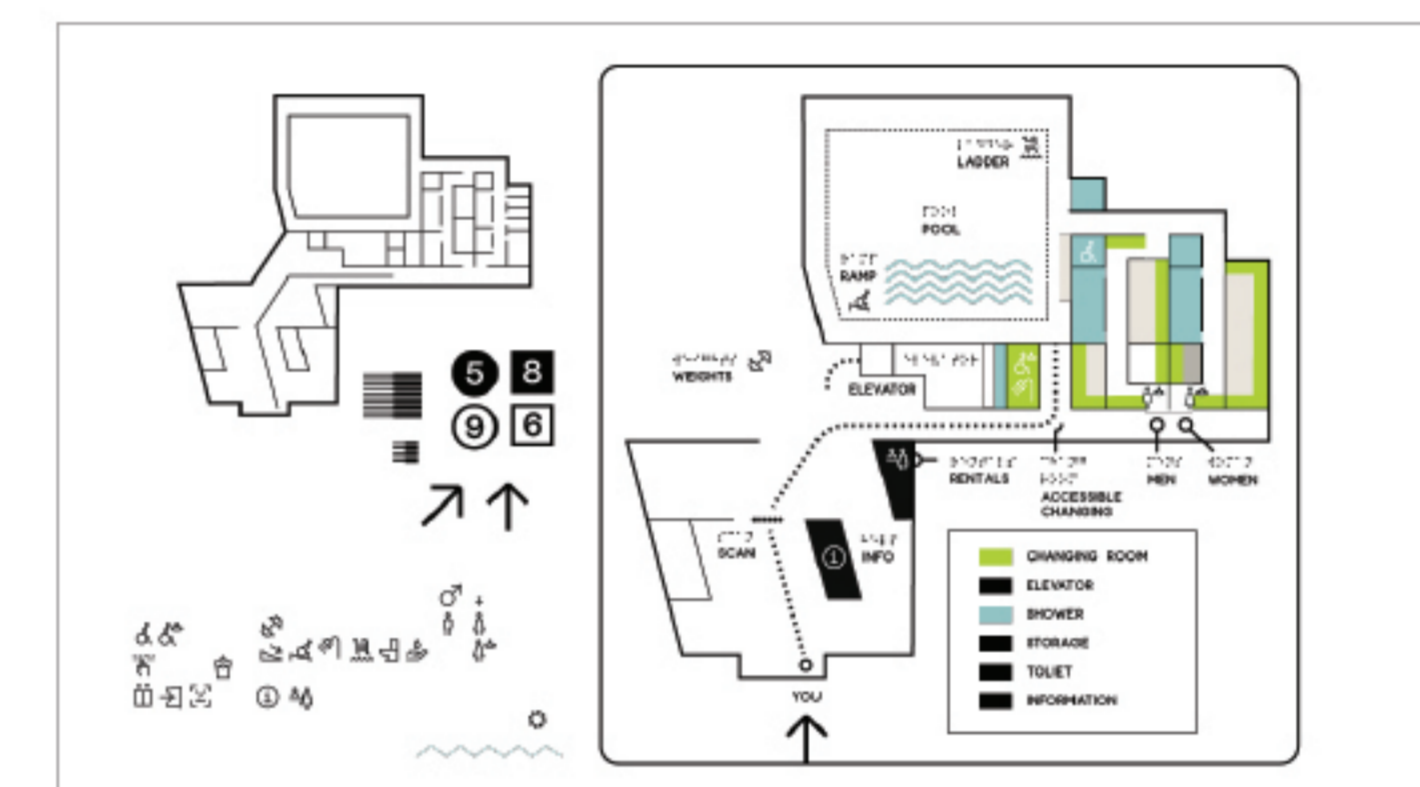
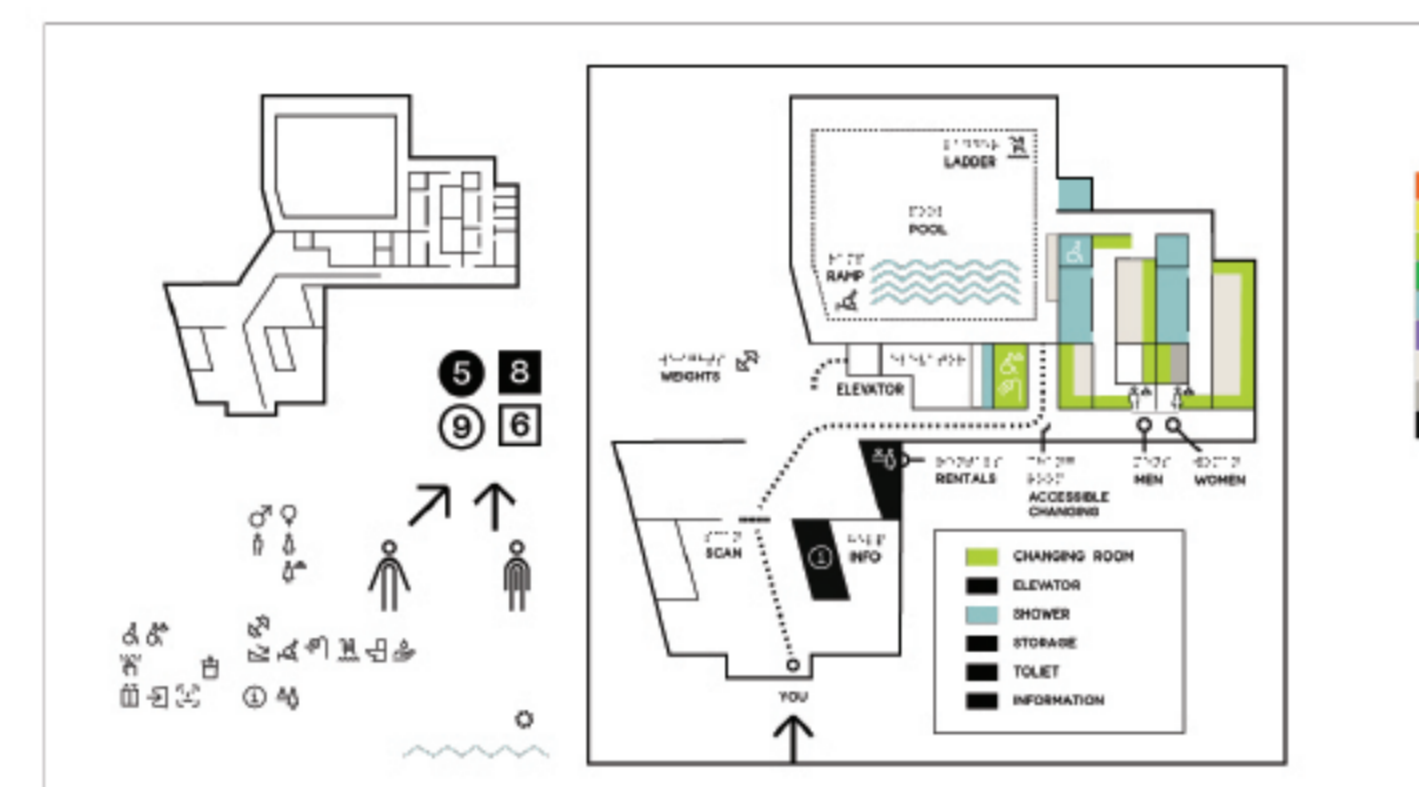
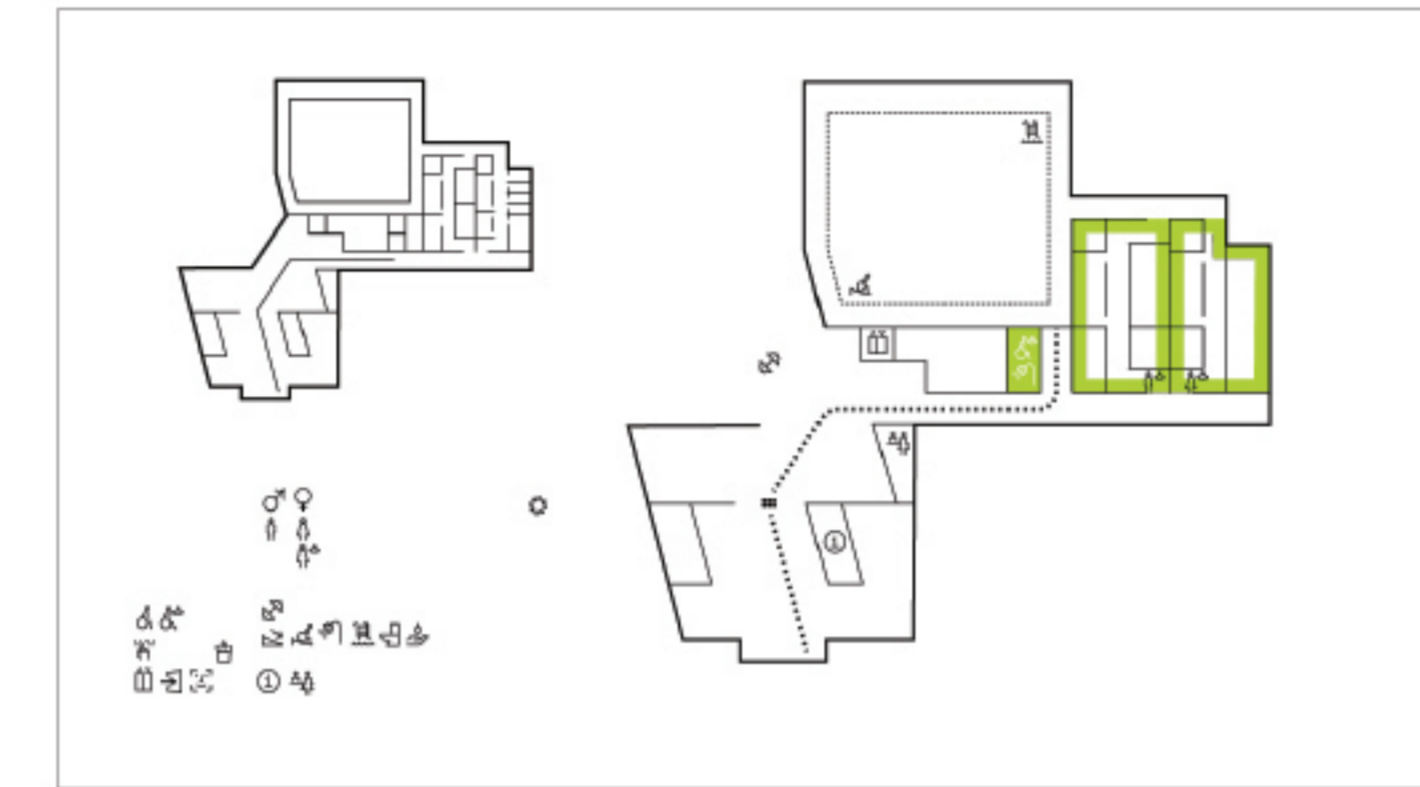
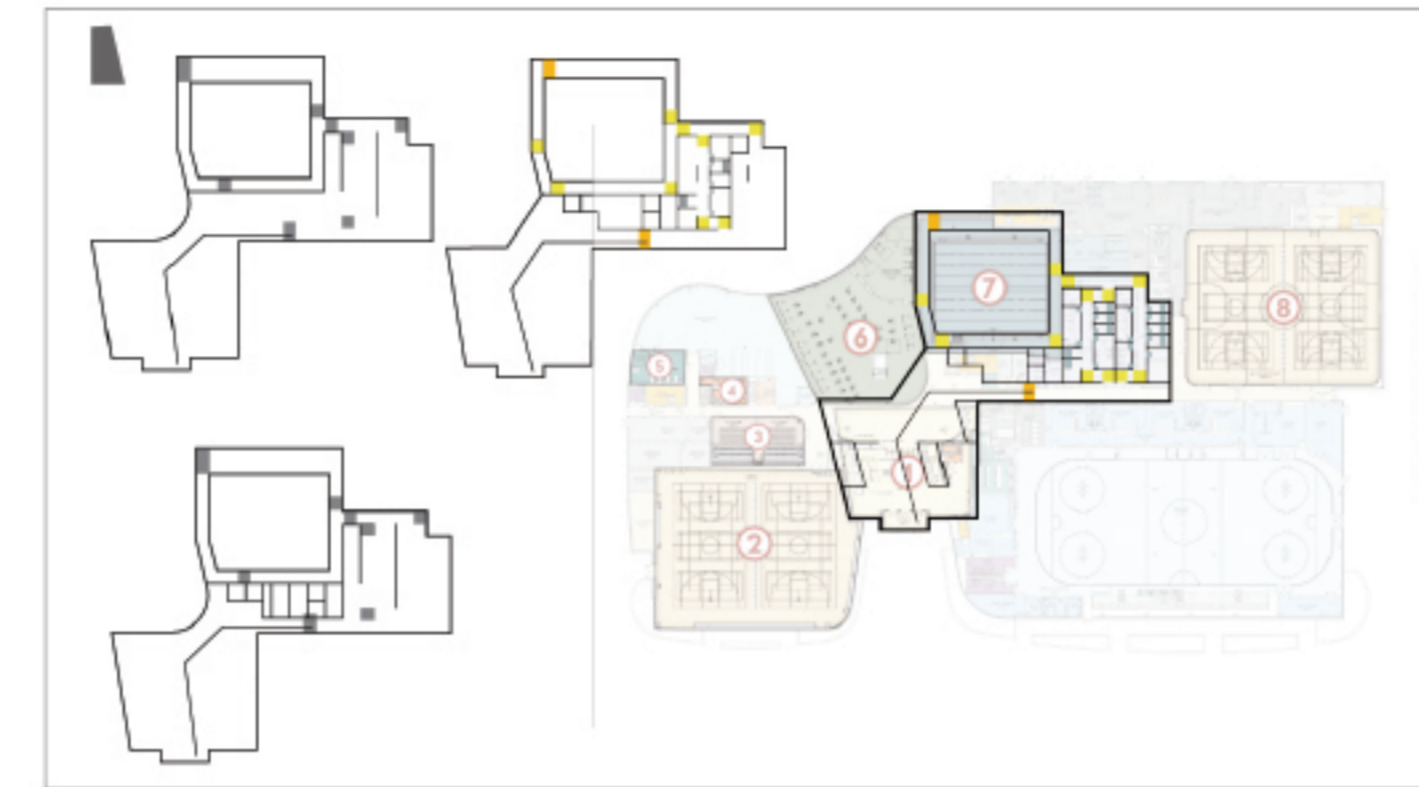
Initial concepts were ideated and expanded upon through continued analysis, critique, and refinement. Concepts like color identifiers, high contrast segmentation, and fast reading times associated with black fill were important discoveries.

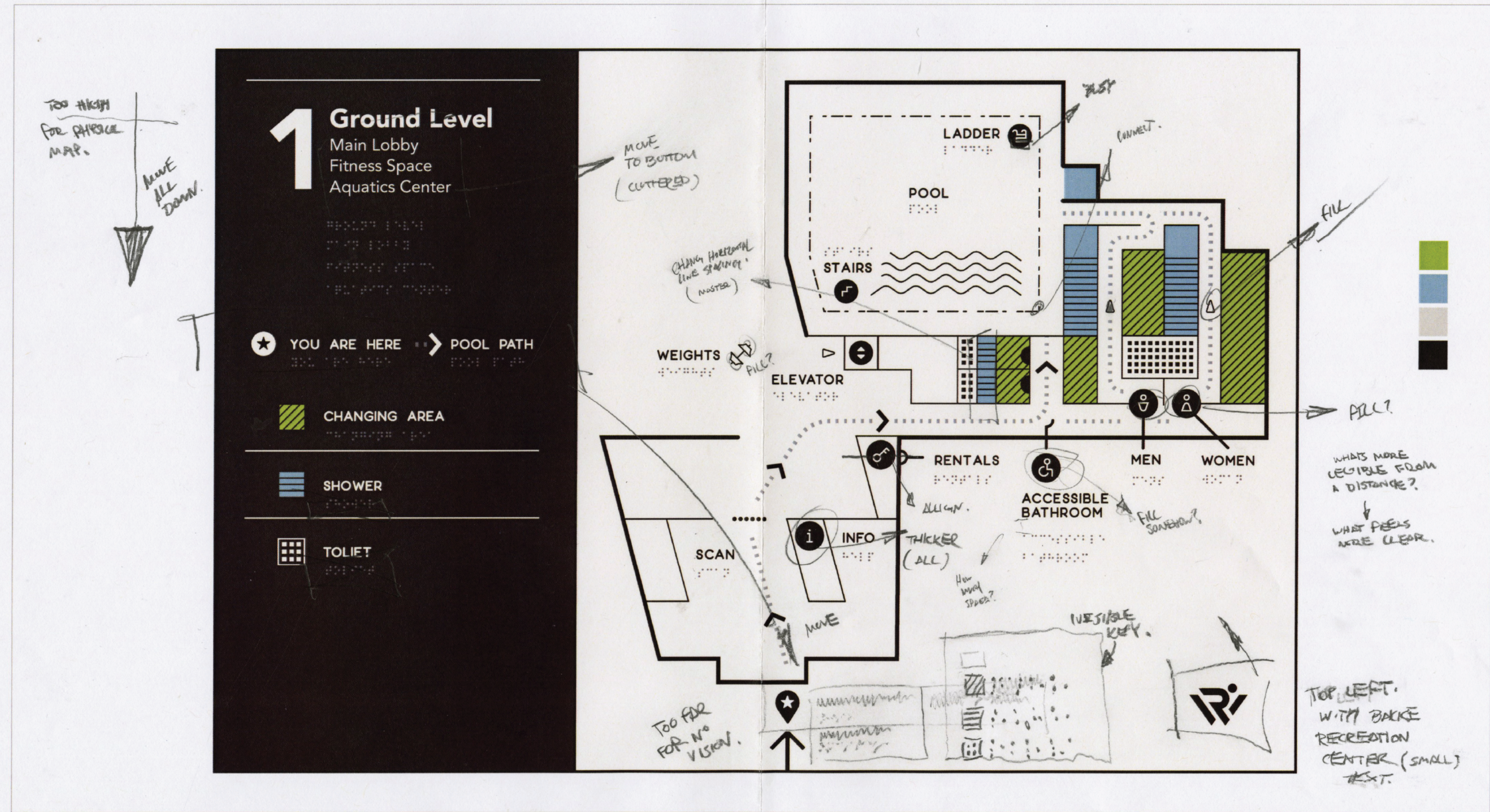
The legend proved to be the most changed element throughout the design process, seeing itself move around the map and eventually being adjusted to accommodate eye-level ADA standards.

Along with regular text, braille was incorporated into the map design, which was inserted to hopefully be invisible to people with sight but easily locatable for people without sight.

Textures along with color were incorporated for people with vision impairments to feel and distinguish between different areas of the map easily.

A pathway consisting of a dotted curved line was implemented so that the pool could be easily locatable with a finger. Decisions on height, beveled edges, and raised text were later finalized through the modeling process.





Questioning

Should there be one universal legend or two that accommodate different needs?

Should the legend be located on another side of the map? Maybe the top?


What is the most important information?


How can we work around the Bambu Lab X-1 Carbon 3D printer?

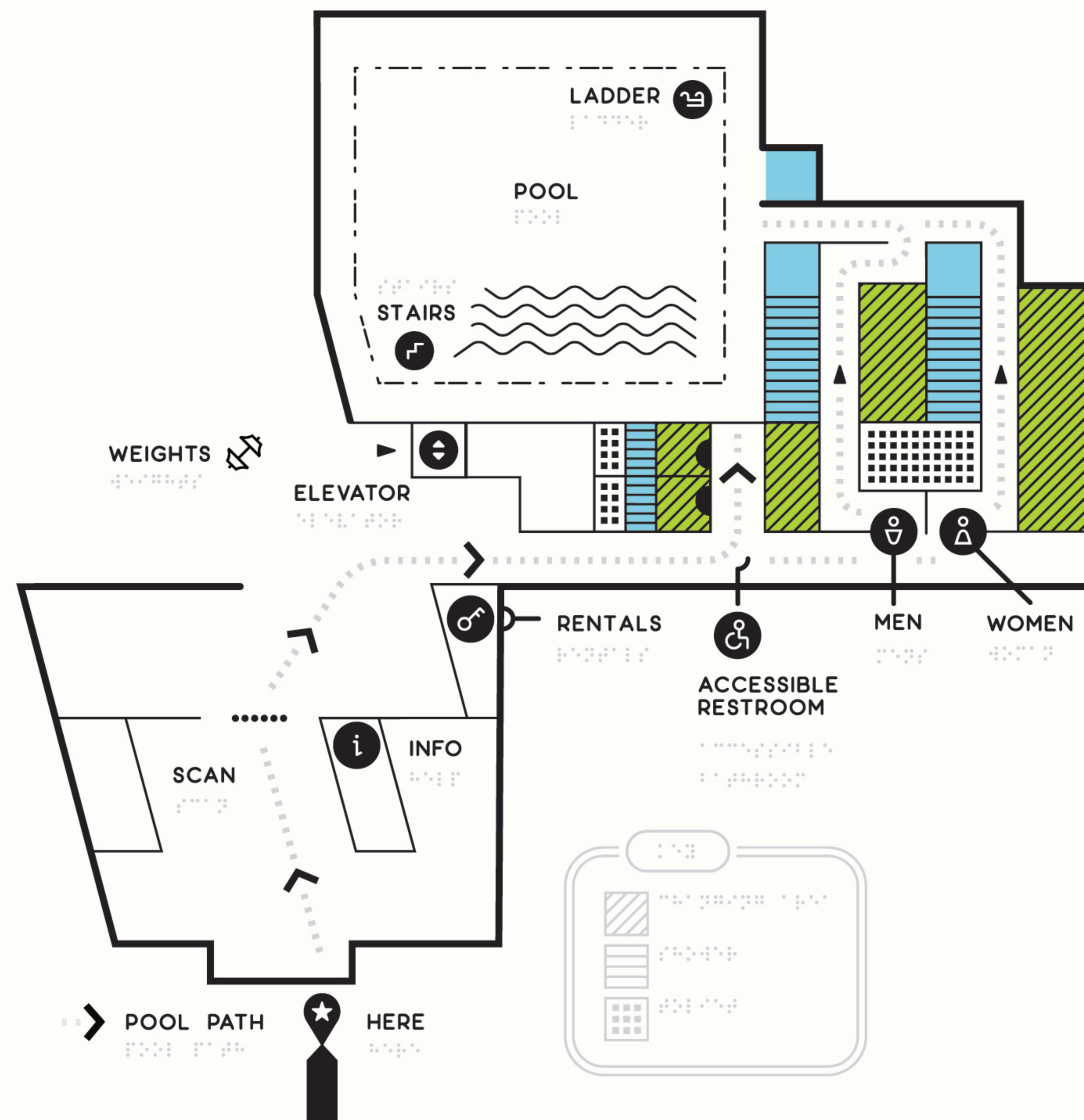
From a distance, what will stand out and be read first, second, third...?

Main Lobby Aquatics Center Fitness Space

1 Ground Level

-  CHANGING AREA
-  SHOWER
-  TOILET

 **Bakke recreation Center**
University of Wisconsin-Madison



Breakdown

What were some of the design decisions made?

1.) Moving the legend down closer toward the middle was employed for eye-level readability.

2.) Lines were used to divide and group information in accordance with different areas of the building.

3.) The horizontal texture for the changing area mimics a barrier to entry, the horizontal lines subtly represent falling water associated with showers, and the grided pattern is similar to a grate for areas where toilets are located.

4.) Constrained by the Bambu Lab X-1 Carbon, we were only able to feed four filaments through it's system at once. (green, light blue, white, and black).

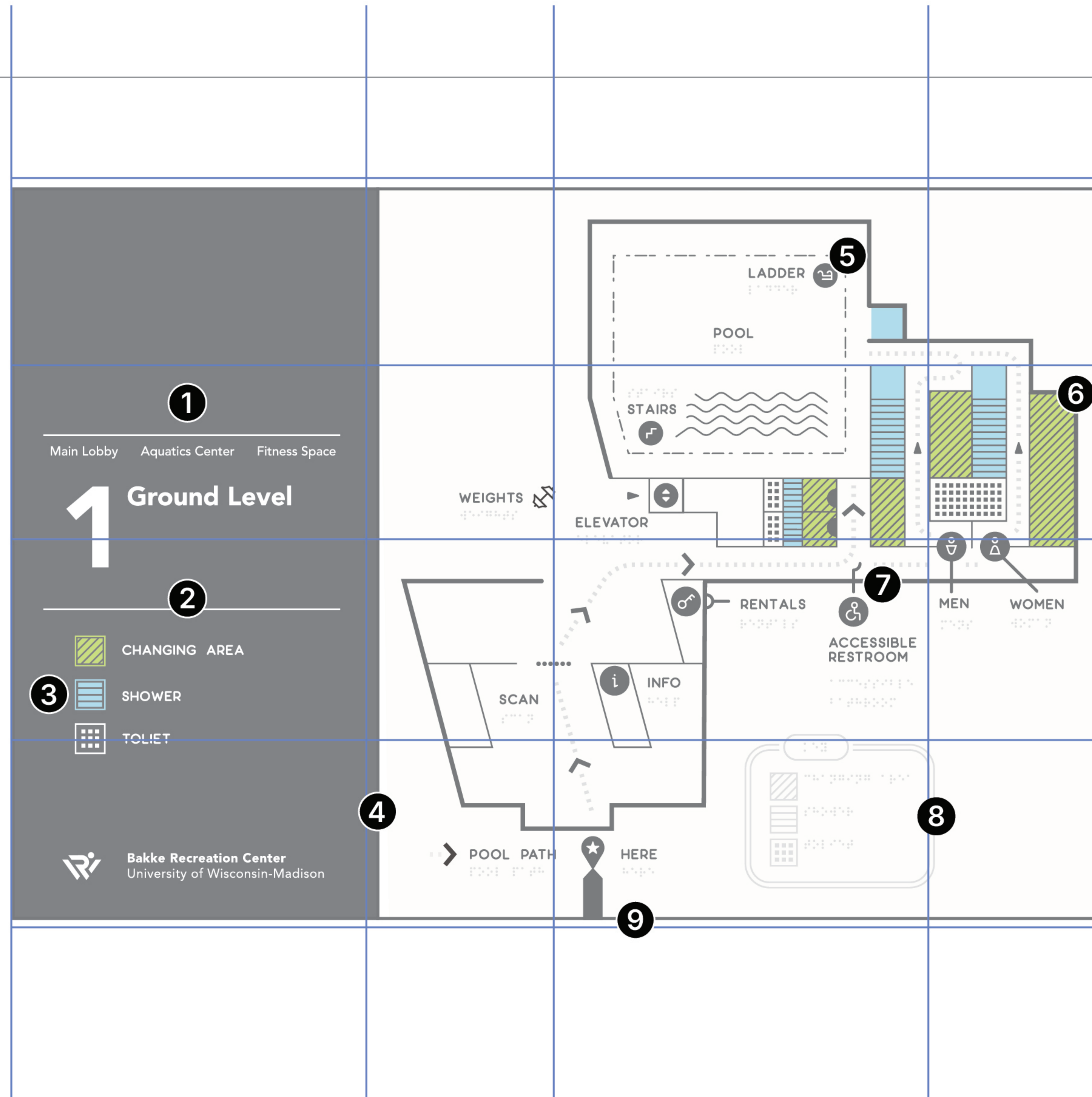
5.) Icons were placed within a larger black circle to increase readability.

6.) Using black lines on top of a color will make the color underneath appear much darker when your vision is blurry. Thus, high value (bright) colors were used to offset this change.

7.) A mixture of rounded and hard corners was employed to differentiate between walls and other features with touch and sight.

8.) Instead of placing braille and regular text side by side, a streamlined braille key was introduced to the right of the entrance.

9.) The ribbon tab was put in place instead of an arrow near the entrance to be able to easily pick out a darker shape.



03 Production



Research	Design	Production	Analysis
<p>What it means—Tactile:</p> <p>Wayfinding explored in the context of vision impairment.</p>	<p>Sight & Touch:</p> <p>How can we accommodate more of the senses?</p>	<p>.OBJ converted to PLA:</p> <p>Modeling, then printing using Bambu Lab X-1 Carbon</p>	<p>Feedback and reflection.</p> <p>Repeating previous steps to arrive at a better outcome.</p>

Moments

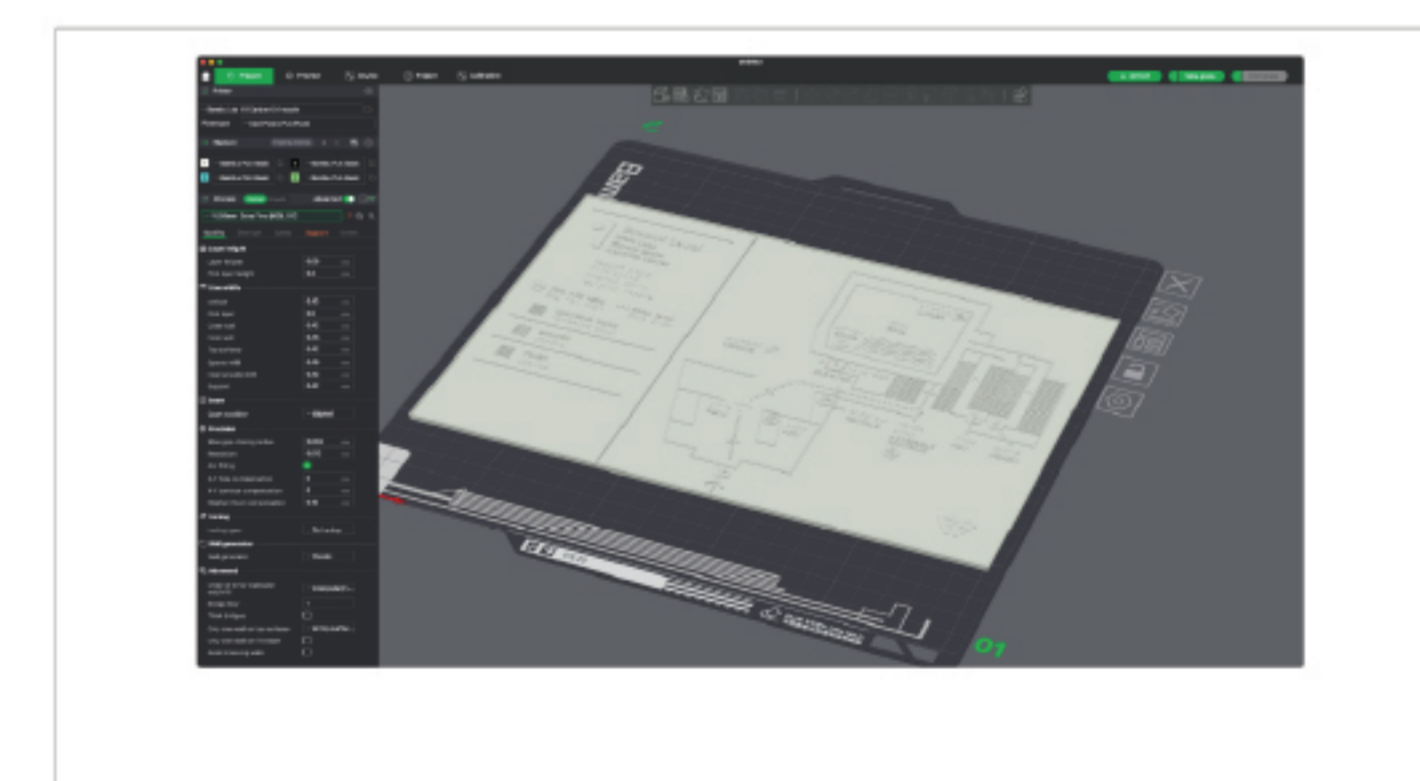
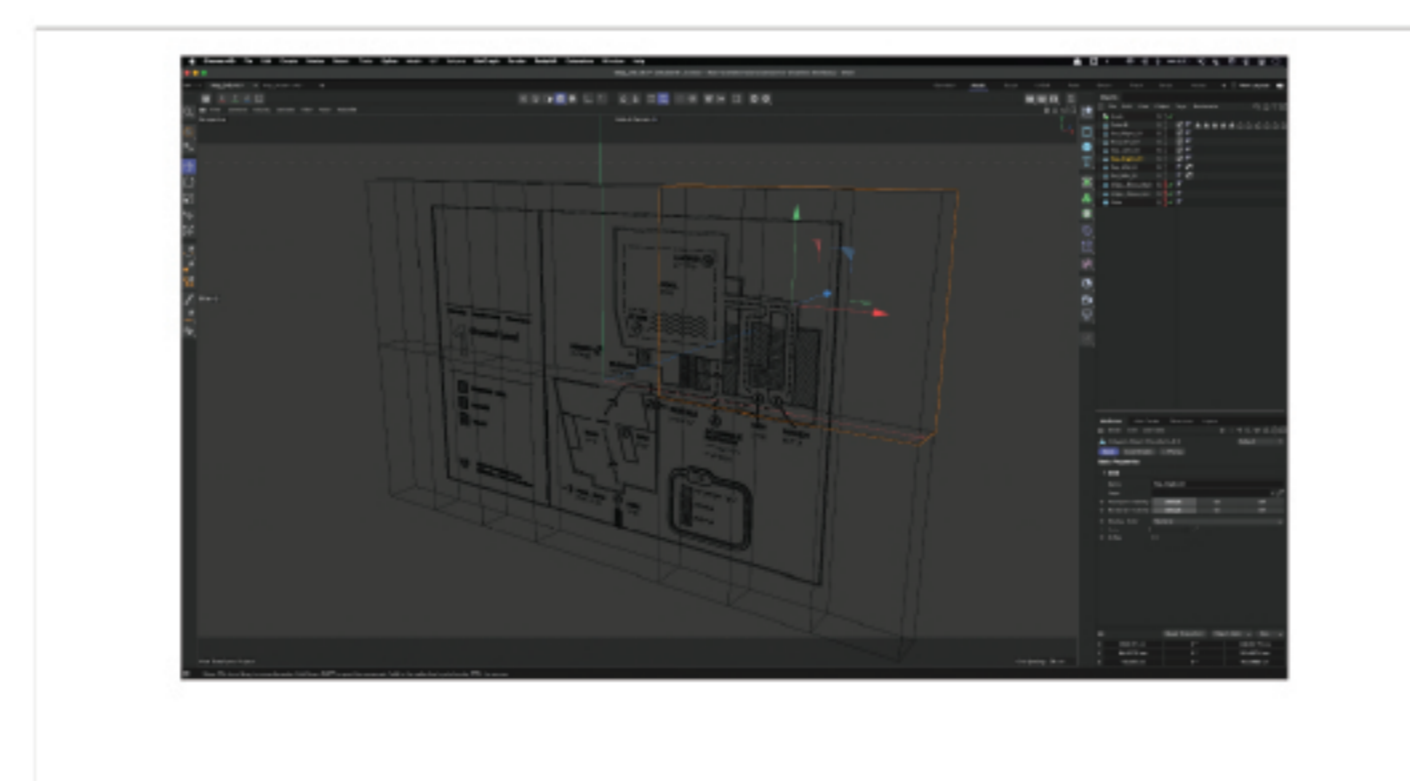
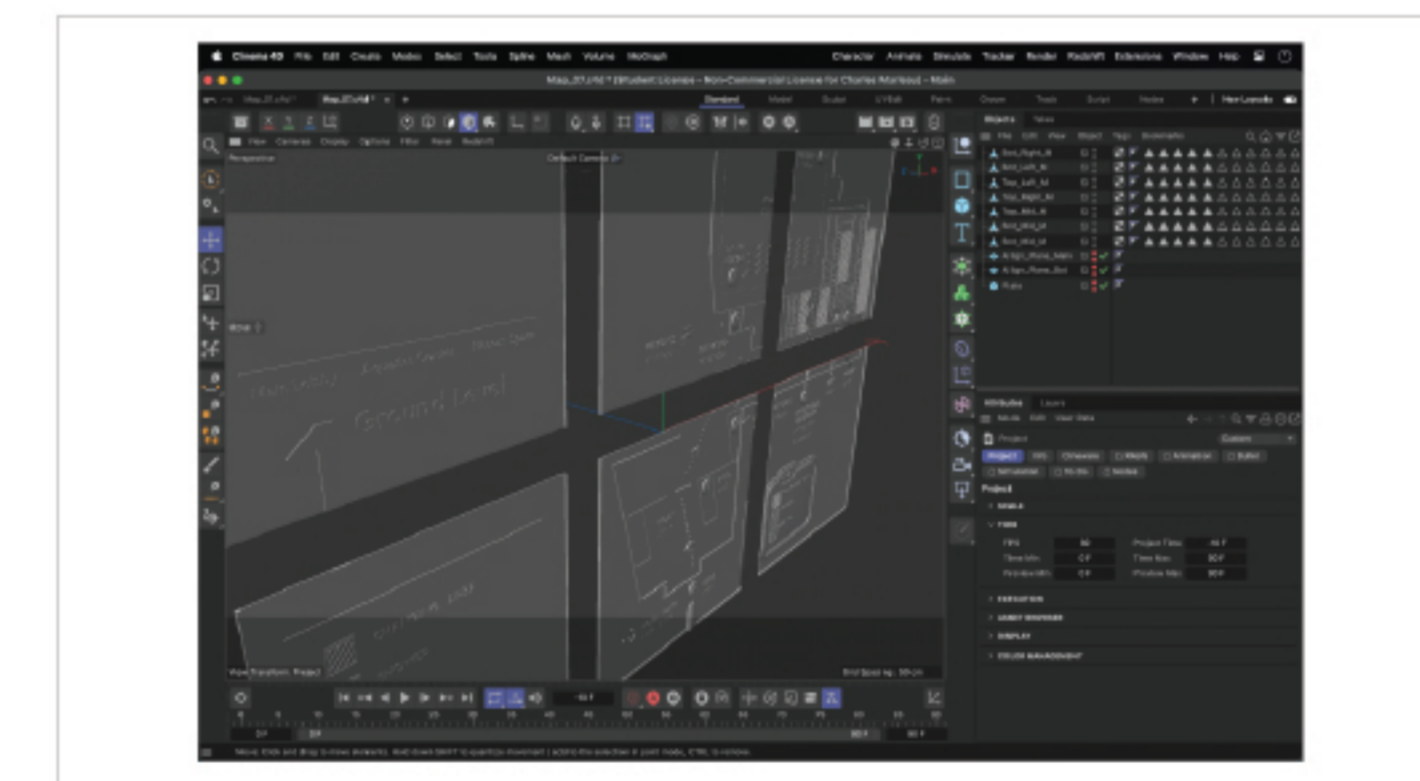
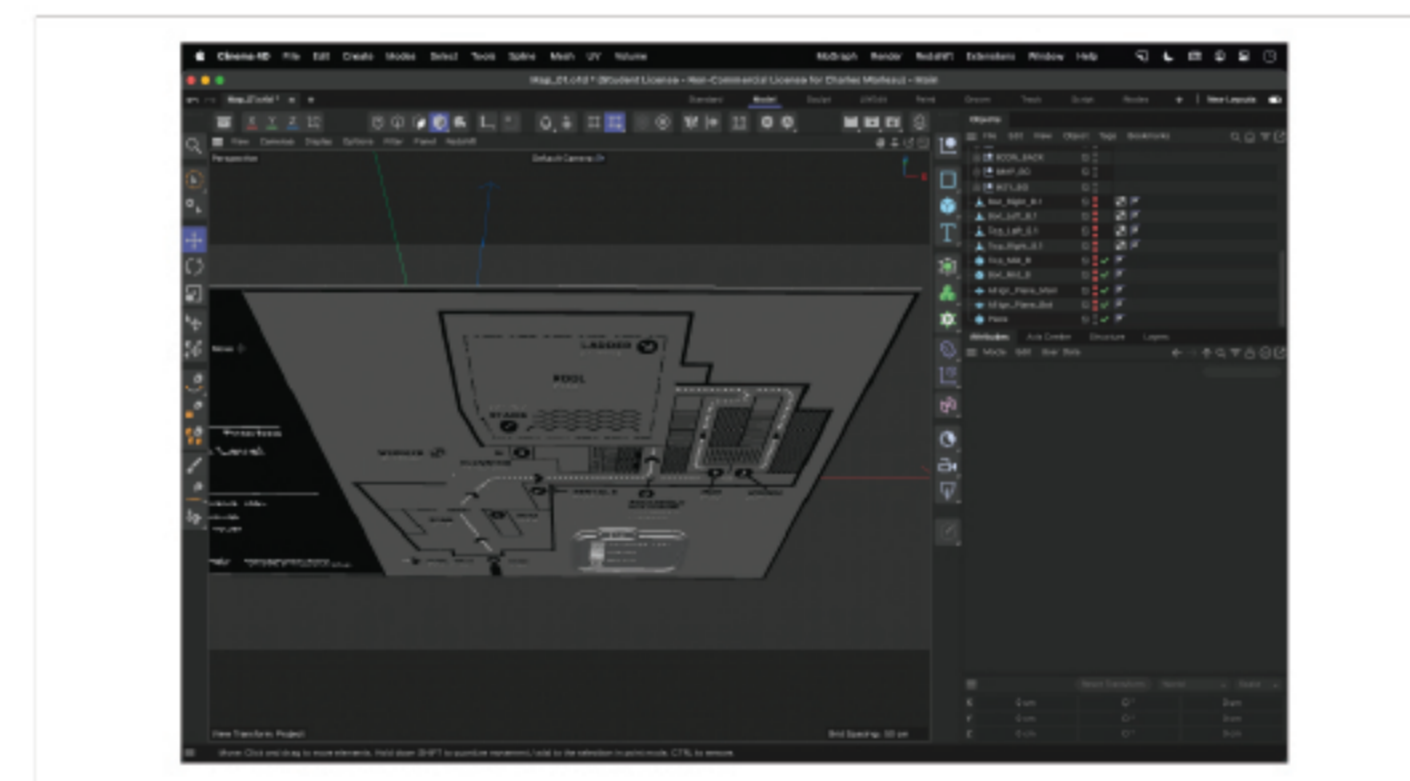
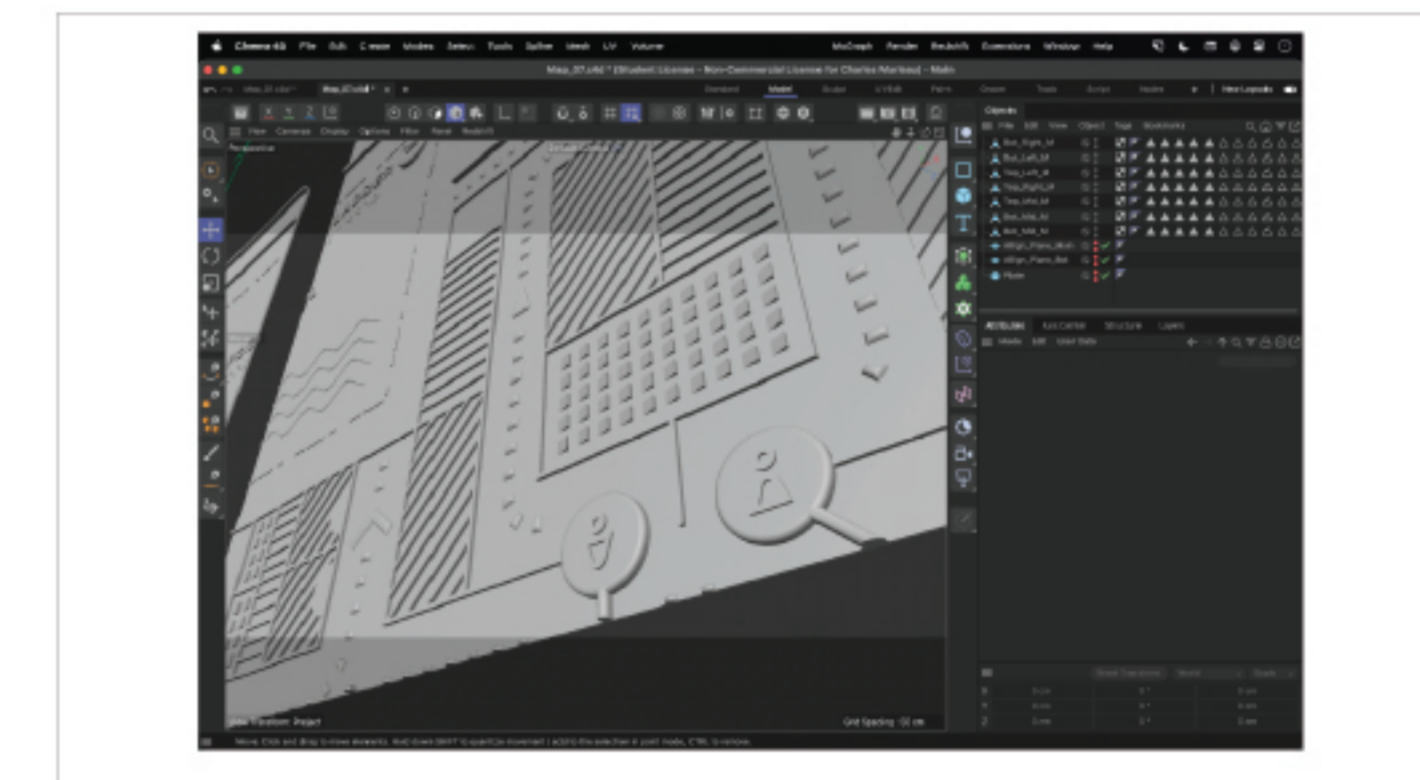
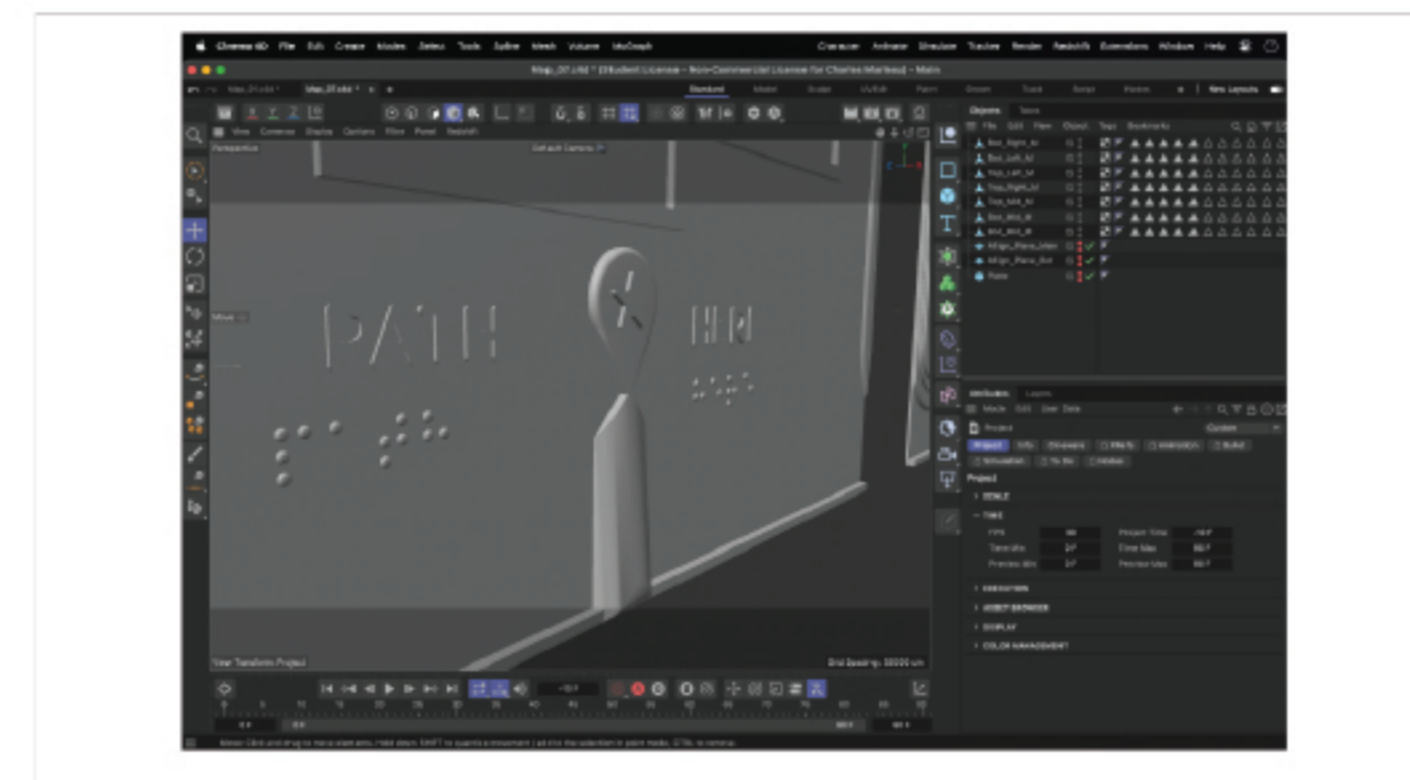
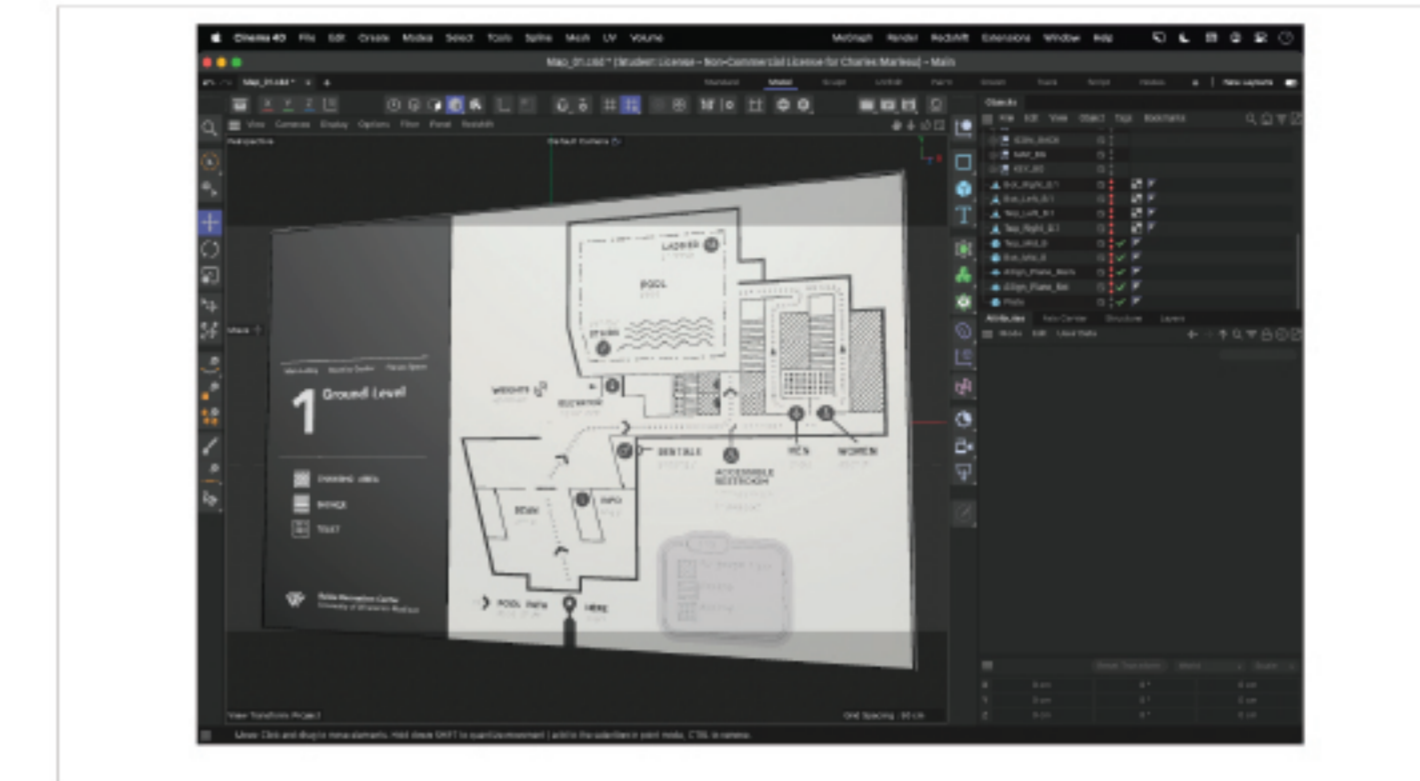
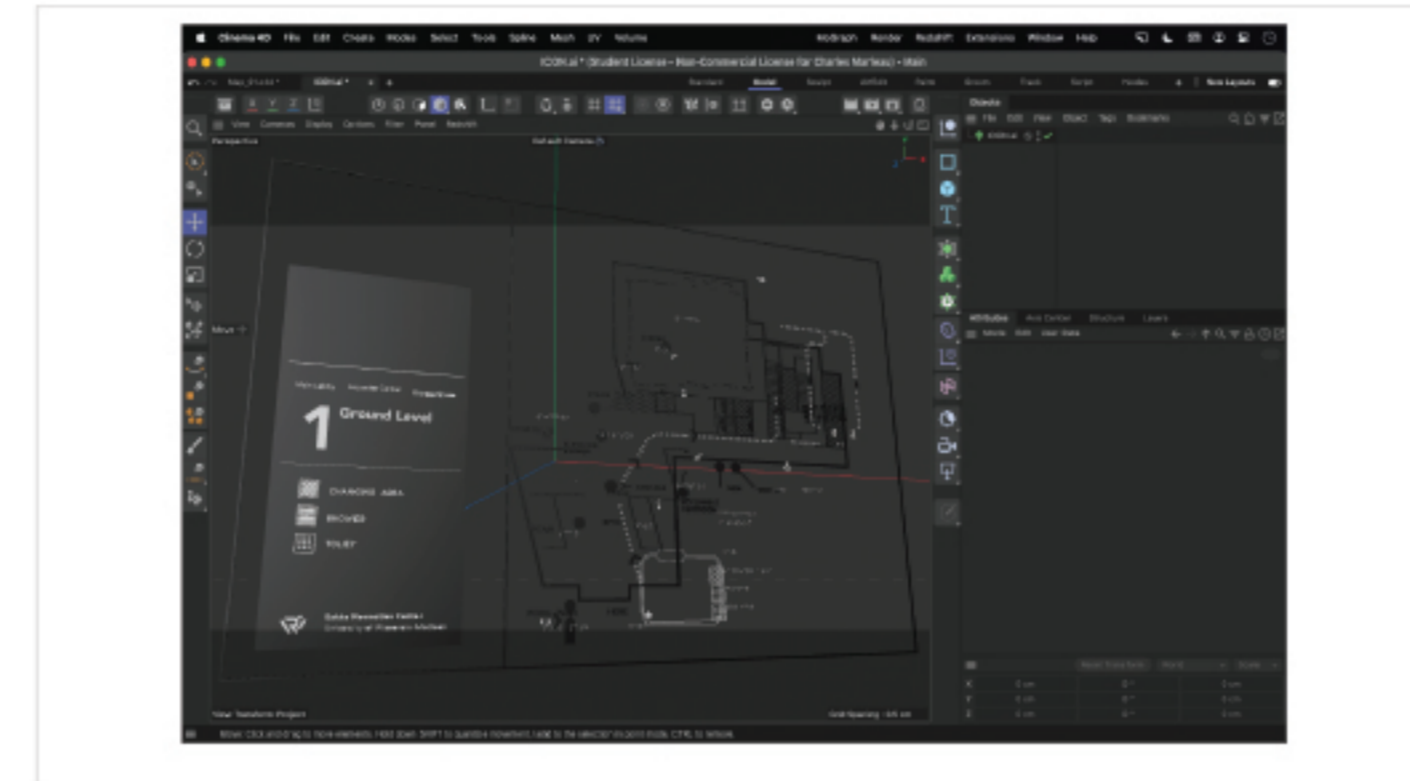
After finalizing the design of the map the file was broken down by layers and imported into Cinema 4D to be modeled and turned into a .STL file for printing.

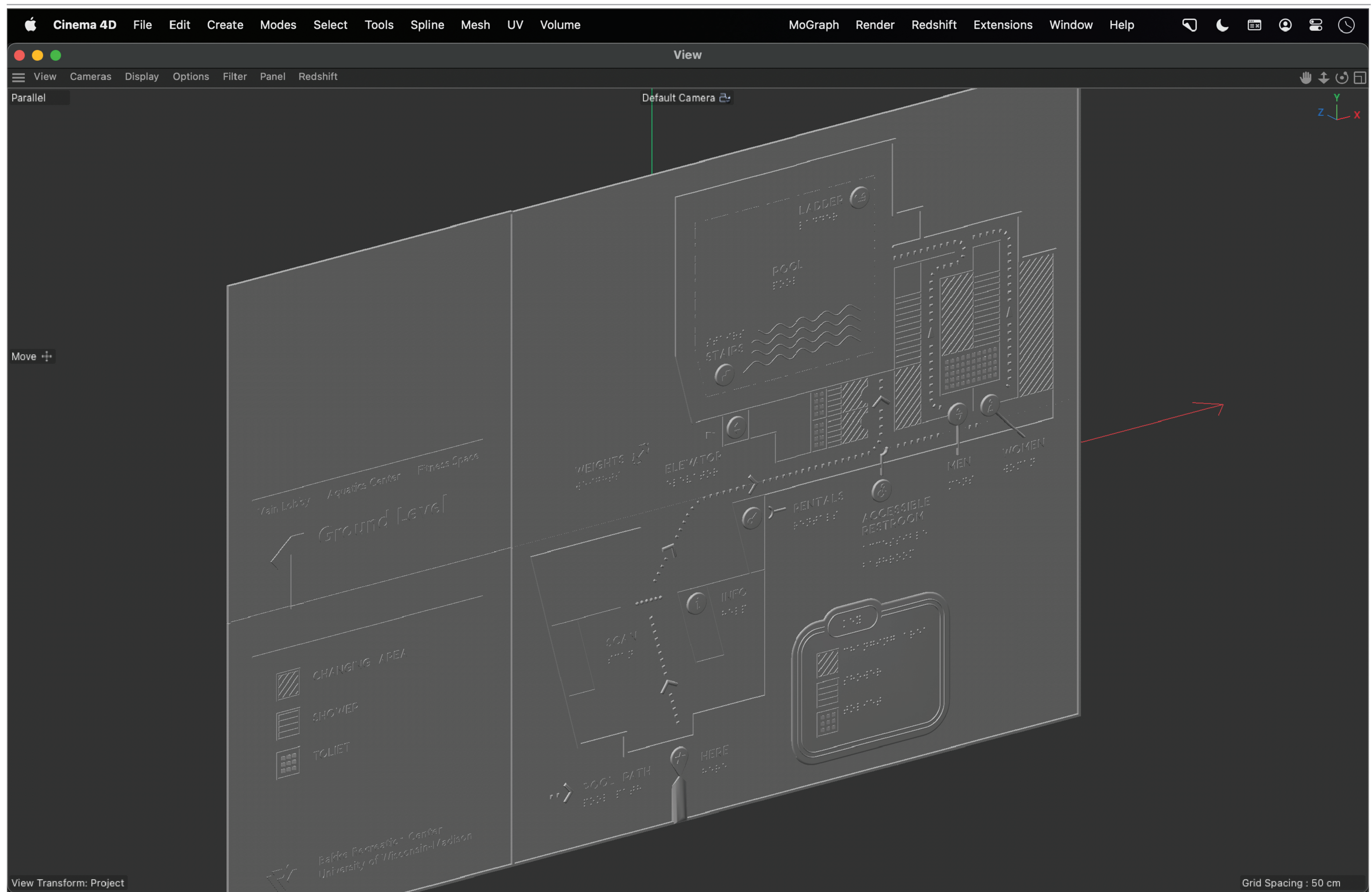
Throughout the modeling process, decisions were made regarding the height hierarchy of map elements, contemplating factors such as the wall height in relation to the text and determining whether the interior or exterior walls should be read first.

Near the entrance the book mark tab that was designed to draw the eye in was also turned into a small ramp of sorts, leading your finger in when tracing the outside of the map.

Icons representing points of interest were crafted as the tallest elements, featuring distinct beveled edges for easy tactile recognition amidst other rectangular elements.

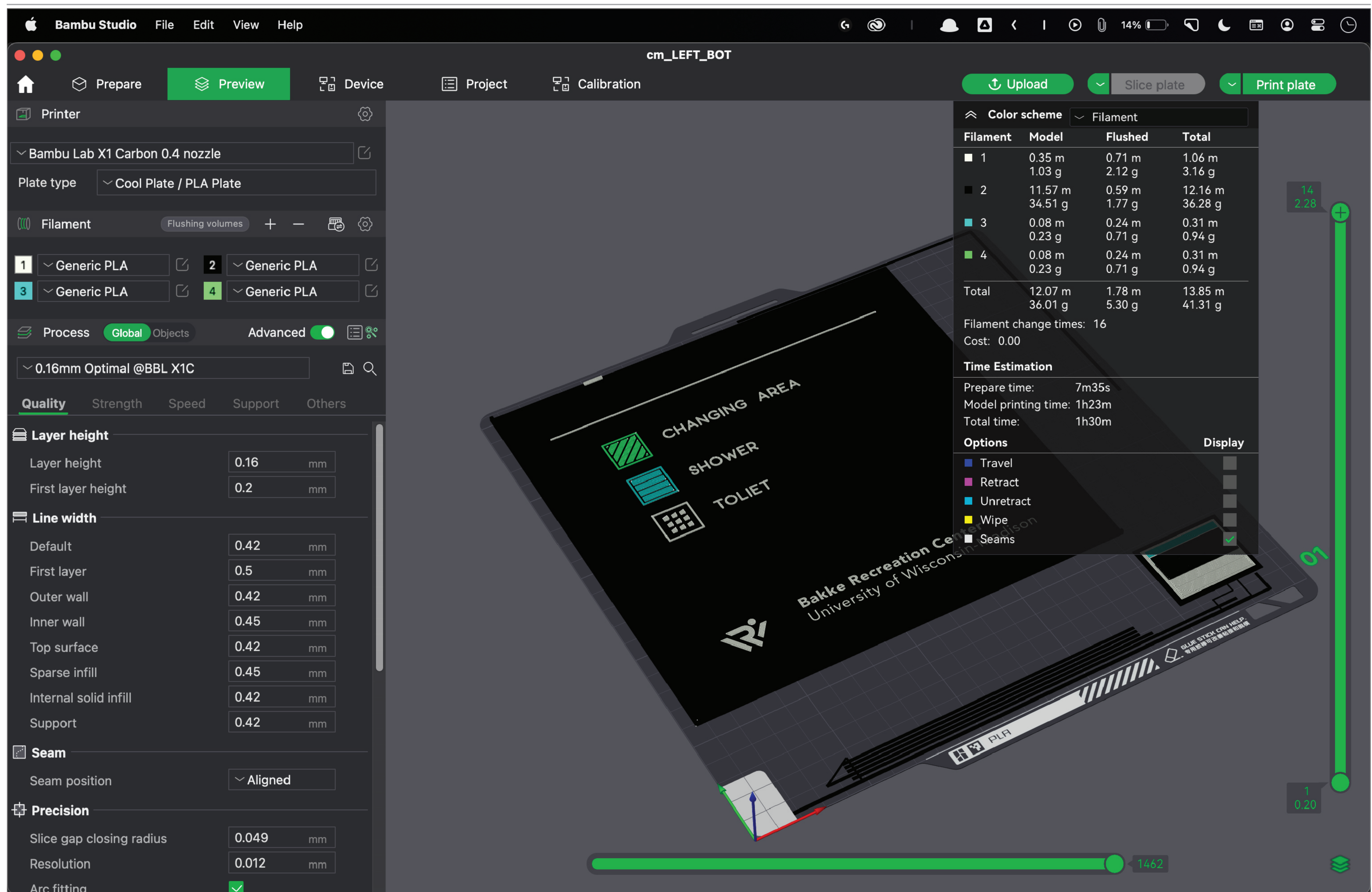
Upon completion of the modeling, the map was divided into six sections for printing and subsequent reassembly.





Questioning

What level of detail can we achieve when printing with the Carbon X-1?
Will the seam between plates be noticeable by touch, possibly causing confusion?
Physically, how will the plates come together and form the overall map?



04 Analysis



Research	Design	Production	Analysis
<p>What it means—Tactile:</p> <p>Wayfinding explored in the context of vision impairment.</p>	<p>Sight & Touch:</p> <p>How can we accommodate more of the senses?</p>	<p>.OBJ converted to PLA:</p> <p>Modeling, then printing using Bambu Lab X-1 Carbon</p>	<p>Feedback and reflection.</p> <p>Repeating previous steps to arrive at a better outcome.</p>

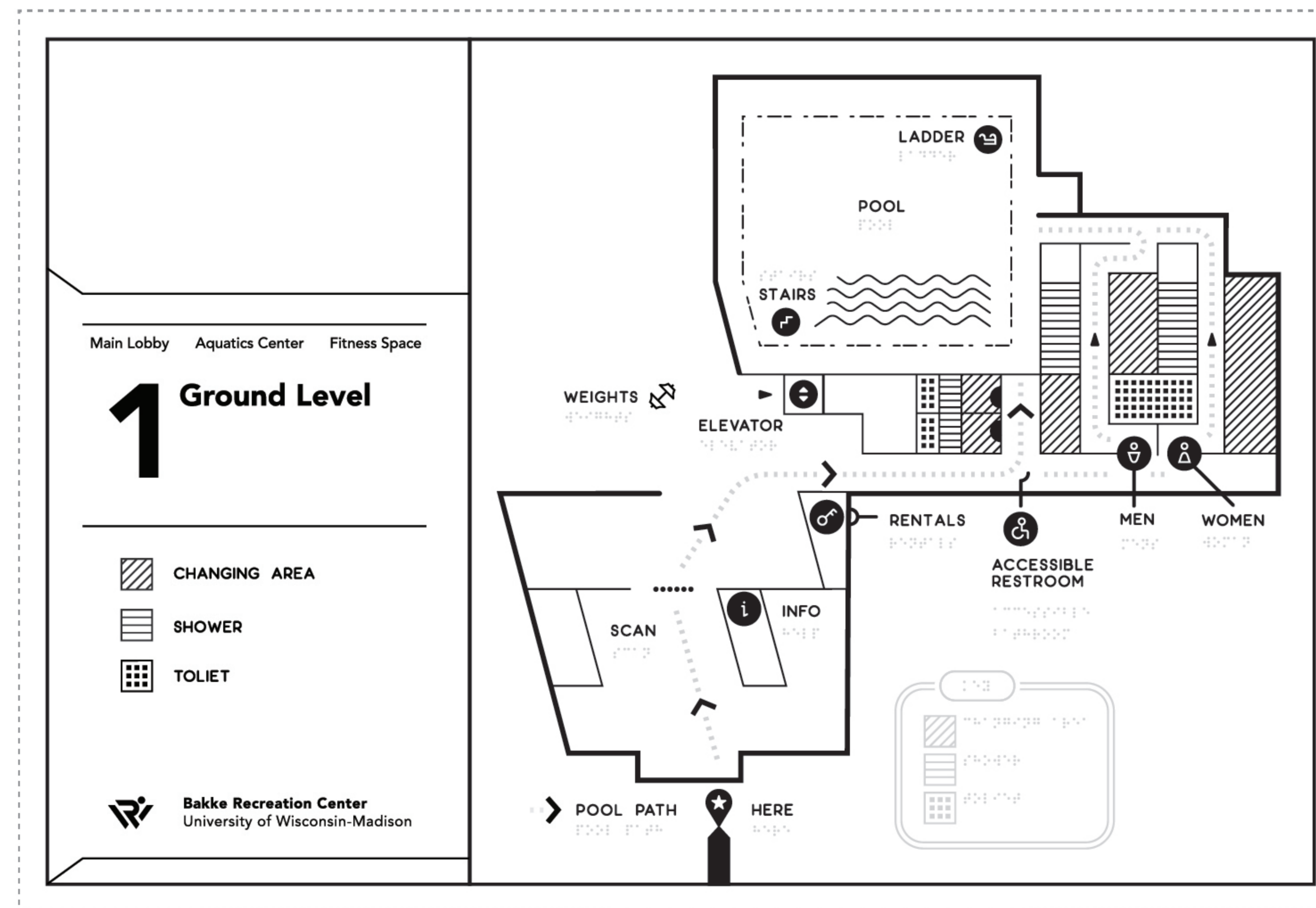
Key Feedback + User Testing

While using just your finger, the path arrows can be confused with a wall.
Keep the arrows consistent instead of using two styles: pointed and rounded.
The accessible restroom location is sort of confusing. Move closer?

There is no indication of where the doors are when entering the pool.

Put a sentence in braille on the primary key with directions to the braille-only key.
The braille key should also include the locality text (ground level, etc.)
Change the wording for stairs in the pool—it could be confused as stairs to another floor.

Make the textures less condensed. They are too close together when touching.
Seperate the mens and womens bathroom with interior wall line.
The doors to the accesible restroom should minus the texture, not fill.



Questioning

What did you learn from the assignment, and how it influences your design practice?
What went well with this assignment, and what did not go well?
Where did your ideas come from and how did they evolve?
What would you do differently if you could do this assignment again?

Answers

Having to juggle multiple roles was daunting at first but as the project went on I became more and more comfortable with designing maps, modeling using a DCC program, and fabricating using the Bambu Lab X-1 Carbon. There was a lot that I put into practice here which has influenced me more to think and design in more physical, and three dimensional terms. Thinking about the user in a deeper way, considering their needs more broadly, and refining a visual/physical language for them was extremely valuable to practice

I felt really lucky to have thought of, and been able to choose, the Bakke Recreation center which ended up being the perfect case study. Designing the map went well and I became more and more confident with my design decisions as the project went on. Help and advice from others molded the final design heavily.

What didn't go well was the production side of the project. Countless boards were reprinted due to malfunctions in the inputted files or machining errors.

My ideas came from all the references I was able to gather, maps and material that Professor Taekyeom Lee brought in from Asia, and other students in the class. I'm constantly capturing reference from the internet and books so even before the project started I had a visual library to work from. Evolving ideas usually come from continued investigation of how things have been done and how they could possibly be reimaged in a different context. Exhausting the possibilities of what graphically can be achieved to better simplify and refine forms for accessibility design was put into practice here.

If I could do this project over again I honestly don't think I would do anything differently. I'm really happy with the final outcome, meeting what I originally set out to do, and what I learned along the way. That's not to say that things were easy though!

THANK YOU
FOR VIEWING

ART 448: GD FOR ACCESABILITY
2023.10.09–12.01
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