Senses Through Space

Committee

COMMITTEE CHAIR | **ALEJANDRO BORGES**

COMMITTEE MEMBER | **LILIANA BELTRAN**

COMMITTEE MEMBER | **J. MICHAEL MOORE**

STUDIO PROFESSOR | **MARCEL ERMINY**

DAVID ALEJANDRO CANO
TEXAS A&M UNIVERSITY
final study

Dedication

This project is dedicated to the people that struggle with visual impairment issues that affect their everyday lives. May this project be a vision to the future generation to tackle the impairments that create obstacles for people to not fully understand the beauty of Architecture.

Acknowledgments

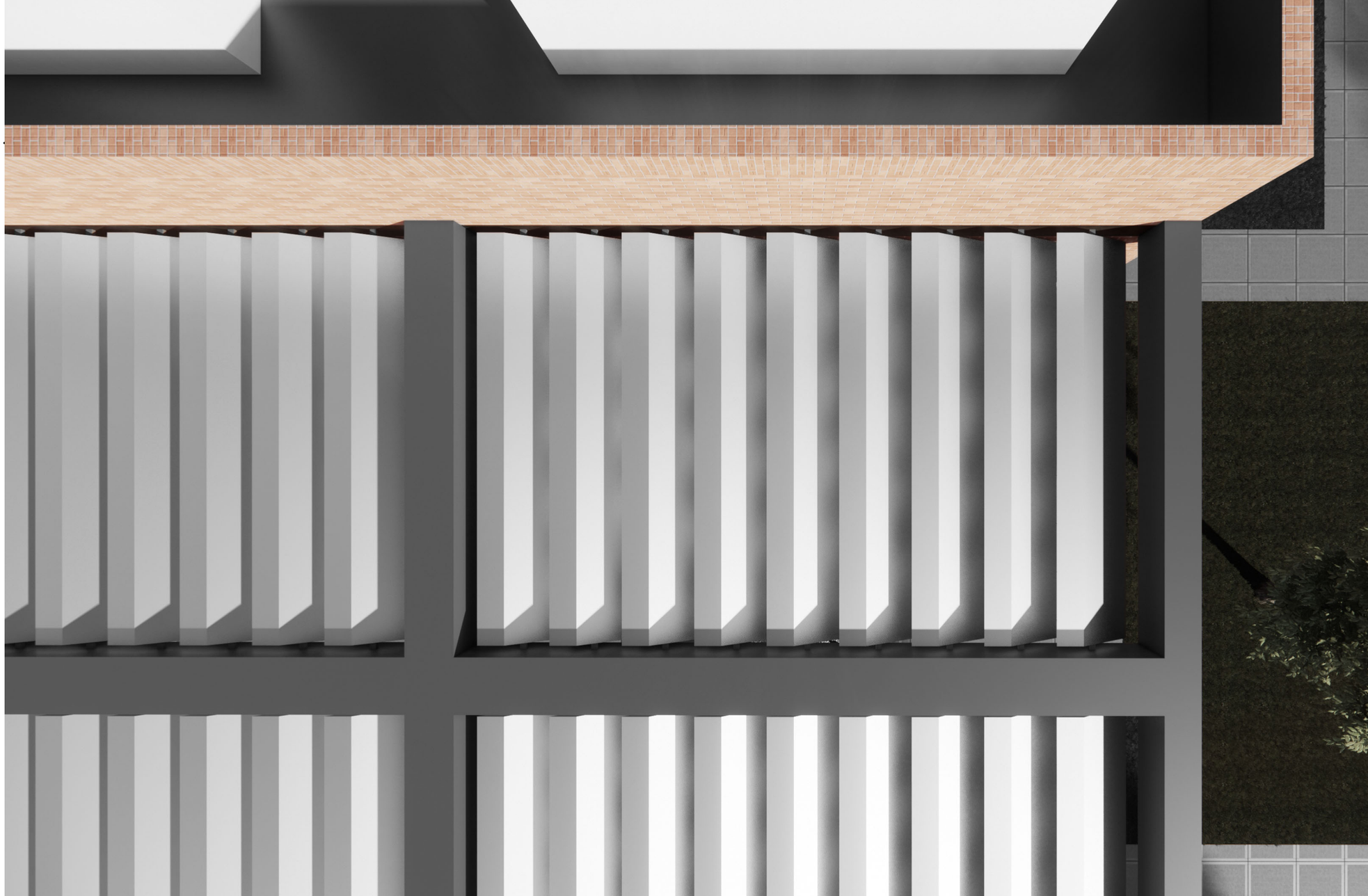
I would like to greatly express my sincerest thanks to my committee chair and members **Alejandro Borges**, **Liliana Beltran**, **J. Michael Moore** and studio professor **Marcel Erminy** for all the dear advice, knowledge, and support throughout this project. I would like to also thank **Alex Arguello** and **Mary Faith Cowart** for taking the time to meet with me and giving me historical context and inforation on the existing site of "The Texas School for the Blind and Visually Impaired".

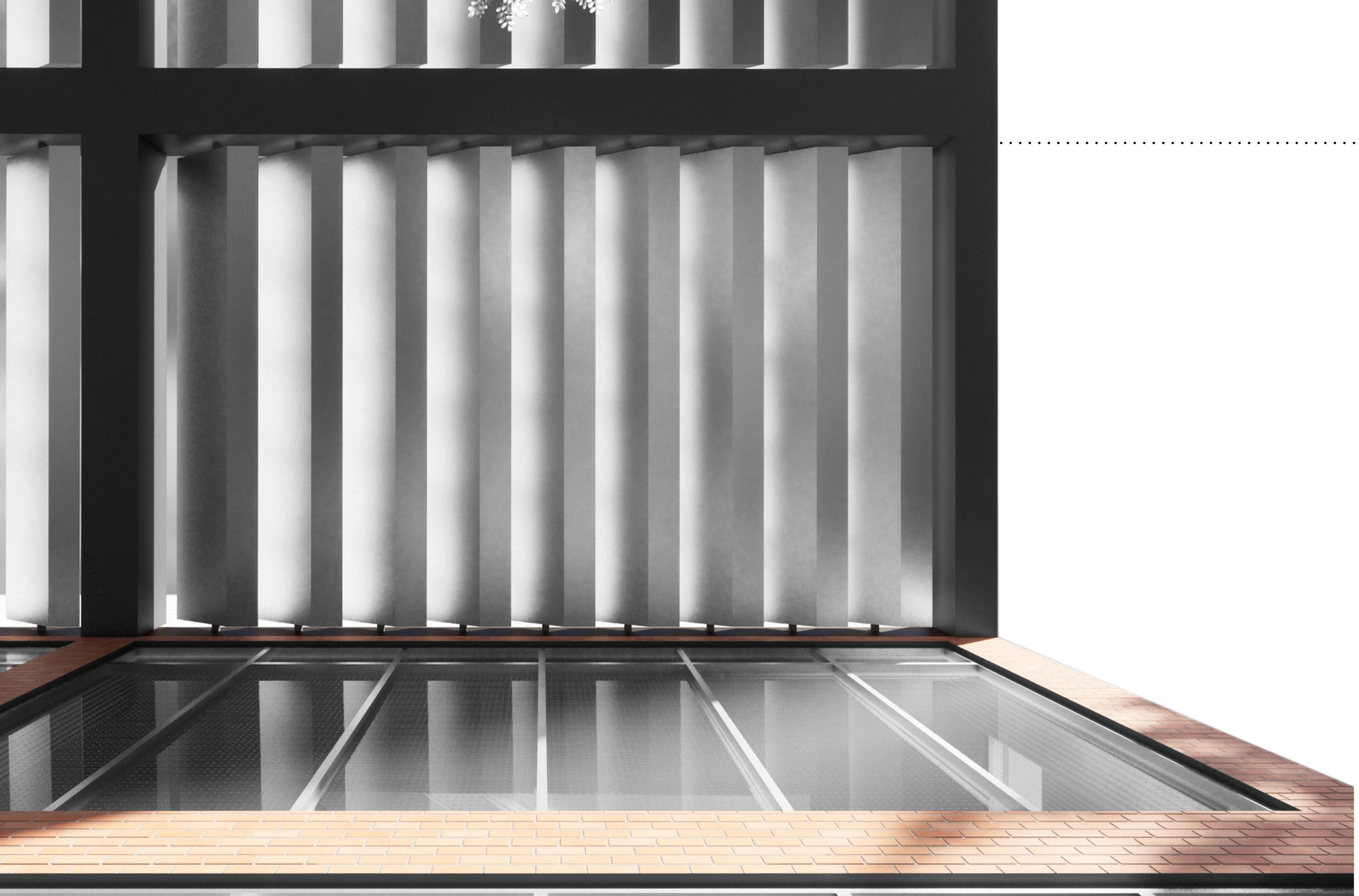
Contents

Part I

Part II

Part III





Project Brief

The Title **<Senses Through Space>** originates from a question that came to me when I was on an operating table about to have Lasik eye surgery. As I laid there, I began to worry and ask myself, "what if I lose my sight, what if I can't finish my Masters' and can't pursue my lifelong dream of becoming an Architect?". These questions made me think about how important the sight is for an Architect. How without it, we couldn' t fully design our projects with the same approach. The sense of sight, has such an important role to the Architect, that the majority of the time we tend to underestimate the power and importance that our eyes have. So, this created the questions. "How are we, Architects, designing for people that don't have this sense? How are our projects being designed for the people that can't see the beauty of our designs?"

If you were to ask an Architect what their goal is when they're designing a new building. The majority would say to create a space that users can connect with both physically and emotionally. There are several monuments around the world that have been known for their beauty and connection to the surrounding context. For instance, some well-known structures known are the Burj Khalifa in Dubai designed by Adrian Smith of Chicago, the Sagrada Familia in Barcelona designed by Antoni Gaudi, or even a private residence like Villa Savoye in Possy, France designed by Le Corbusier. Because of their beauty and their connection with the surrounding culture and topology, people have come to know and recognize these architectural icons. Some could describe these building as "breathtaking" due to how stunning the area is. But, the overarching question, "how can we describe these pieces of art to the people that can't see them", or rather, "how can they be involved and experience the same connection as people that CAN see them".

A connection to the Architecture begins the moment someone enters the designed space. Unfortunately, those who have a visual impairment might never have this experience or may find it more challenging. My task is to create a space for those who are blind or visually impaired with the intention of putting their condition at the forefront of the design rather than as an afterthought. Why not design an environment that can create connections to the visually impaired the same as it does to a sighted individual.

The Problem

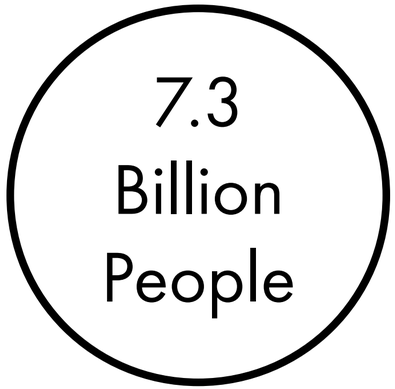
This project investigates and tackles the problem of the visually impaired being thought of as an afterthought in design, and bringing them into the light and having their impairment be the primary focus of the design. By focusing on the senses, this project allows the user to create a strong psychological and physical connection to the architecture.

In order to design without sight, we would have to concentrate on our other senses and use them as our main points of reference for both design and spaces. to create environments that appeal to the senses of hearing, scent, and touch. People with visual impairments have more senses and rely heavily on them. To navigate through their house, place of employment, and any other commonly visited locations, they need to touch and feel objects, hear ambient noises, and smell familiar odors.

Architecture is renowned for its exquisitely planned landscapes and buildings. Through stunning sights, landmarks, locations, spaces, and works of art, we have visually experienced architecture. But what if we took away the most significant and commonly used sense a person possesses? The sight.

The human body consists of 5 senses. The sense of touch, hearing, smelling, tasting, and sight. Important memories and experiences are created through these senses. Whether it be the smell of a significant flower, space, or food. Even the texture of an item can bring back core memories in a person's life. I've decided to focus on 3 of the 5 senses to highlight for this project. The sense of touch, the sense of hearing, and the sense of smell.

As Juhani Pallasmaa states in The Eyes of the Skin, "The senses define the interface between the skin and the world, the interface between the opaque interiority of the body and the exteriority of the world.". He also references JJ Gibson when he categorizes the senses in five sensory systems: visual systems, auditory system, the taste-smell system, the basic-orienting system, and the haptic system. Explaining how each system can relate to the sense of touch. Giving me a great reason to believe that by designing with the sense of touch I will be able to design a successful building. According to Pallasmaa, "sight is the sense of the solitary observer, whereas hearing creates a sense of connection and solidarity..." giving me the chance to plan and build rooms with more sound so that there is a stronger and more personal connection between people and the environment. Finally, the ability to smell profoundly influences how we recall the past. This sense and the sense of taste are connected. A certain scent might evoke recollections of a particular flavor or perhaps a particular time in one's life.



World Population

Approximately 3% of the world struggles with a visual impairement. 3% who cannot connect fully with Architecture.

36

Million People are completly blind

+

217

Million People have MSVI

=

253

Million People are visually impaired

MSVI = Moderate to Severe Visual Impairment (Macular Degeneration, Diabetic Retinopathy, Glaucoma, and Cataracts)

The Problem

4 Types of Visual Impairments

Images are dramatized for educational purposes.

Macular Degeneration

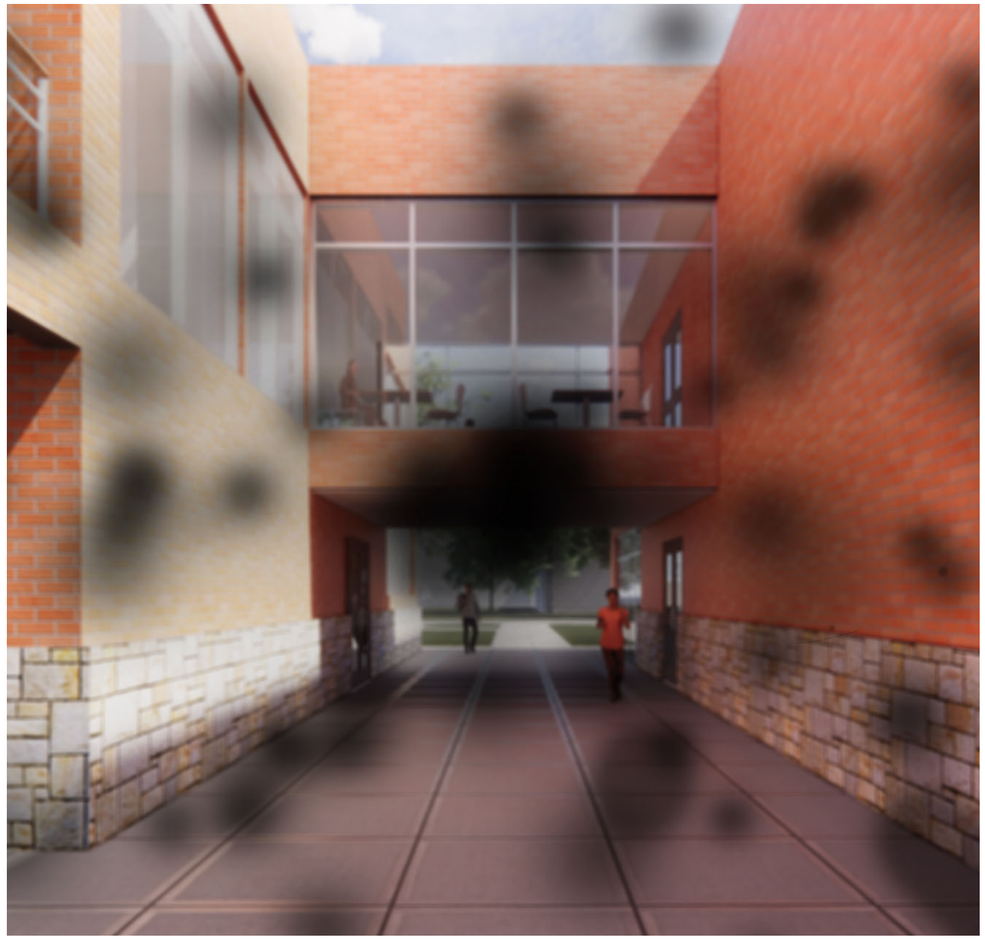
Lose your central vision
Cannot see fine details
Peripheral vision will be normal

Images are dramatized for educational purposes.

Cataracts

Blurriness in your vision
Cloudy area in the lends of your eye.
Common as you get older

4 Types of Visual Impairments



Images are dramatized for educational purposes.

Diabetic Retinopathy

Dark floating spots, or streaks that look like cobwebs
may not have symptoms at first
important to get examed at least once a year to catch it before it gets worse

Images are dramatized for educational purposes.

Glaucoma

"Tunnel Vision"
Often caused by abnormally high pressure in the eye
One of the leading causes of blindness for people over the age of 60.
Even with treatment, 15% of people with calusoma become blind in at least one eye within 20 years.

How Does Sound Work?

Sound Absorption

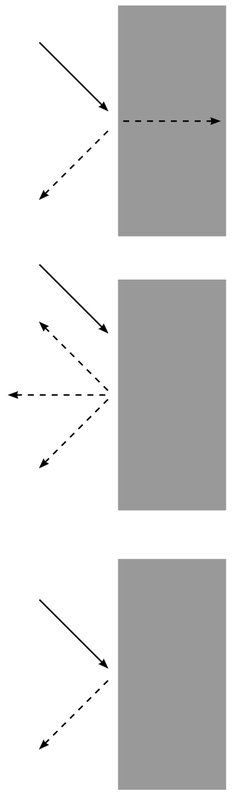
Absorption refers to the process by which sound absorbing material takes in the energy of a sound wave, rather than reflecting the energy. This effectively reduces the level of echo and sound waves that travel within your space.

Sound Diffusion

Diffusion is the act of evenly spreading sound waves throughout a space. This is typically achieved by using sound diffusers, acoustic diffusers, wood sound diffusers, audio diffusers, or sound diffuser panels.

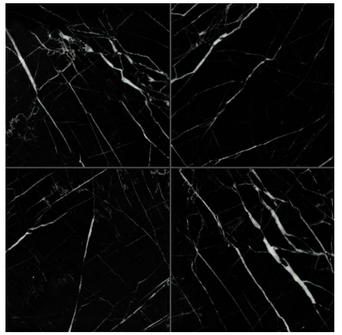
Sound Relection

Reflection is a reaction that occurs when sound is not absorbed or transmitted when it hits a surface. Sound reflection increases the echo and reveberation of the sound.



Materials Used

Oak Hardwood Flooring - Sizing Varies.
Sound Absorption: Low
Sound Diffusion: Medium
Sound Relfection: High

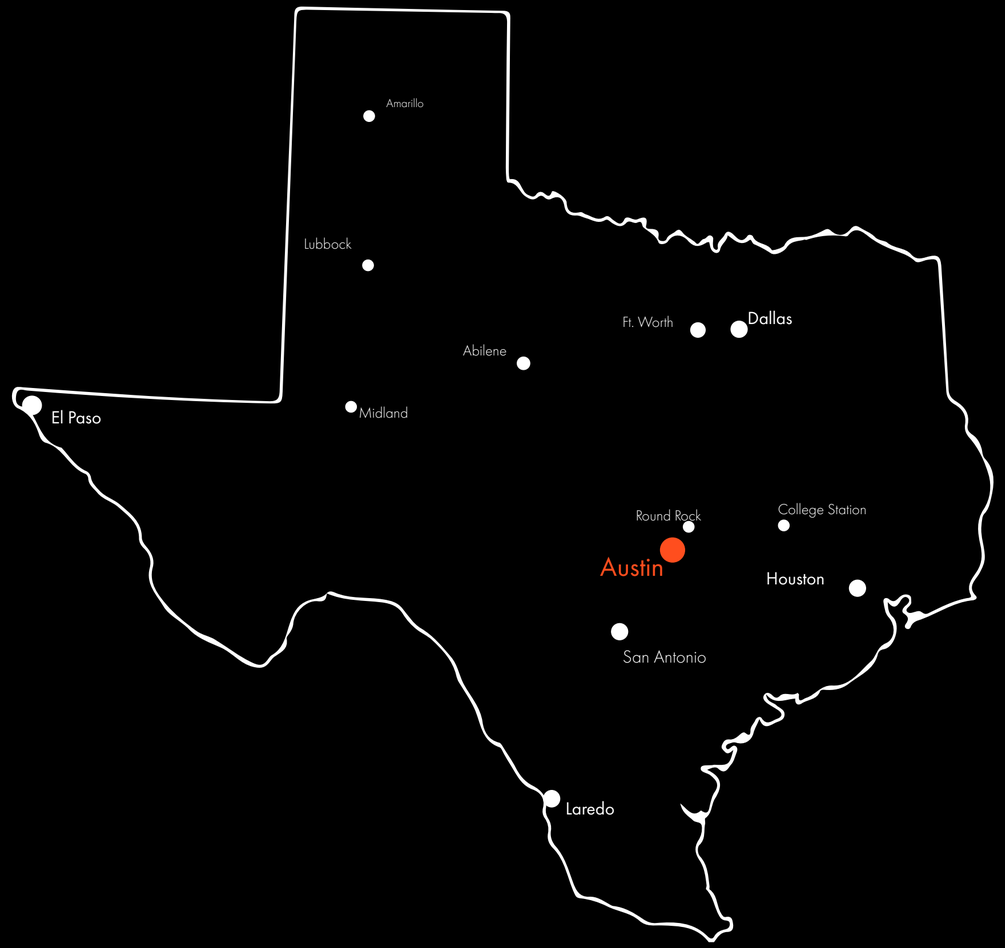


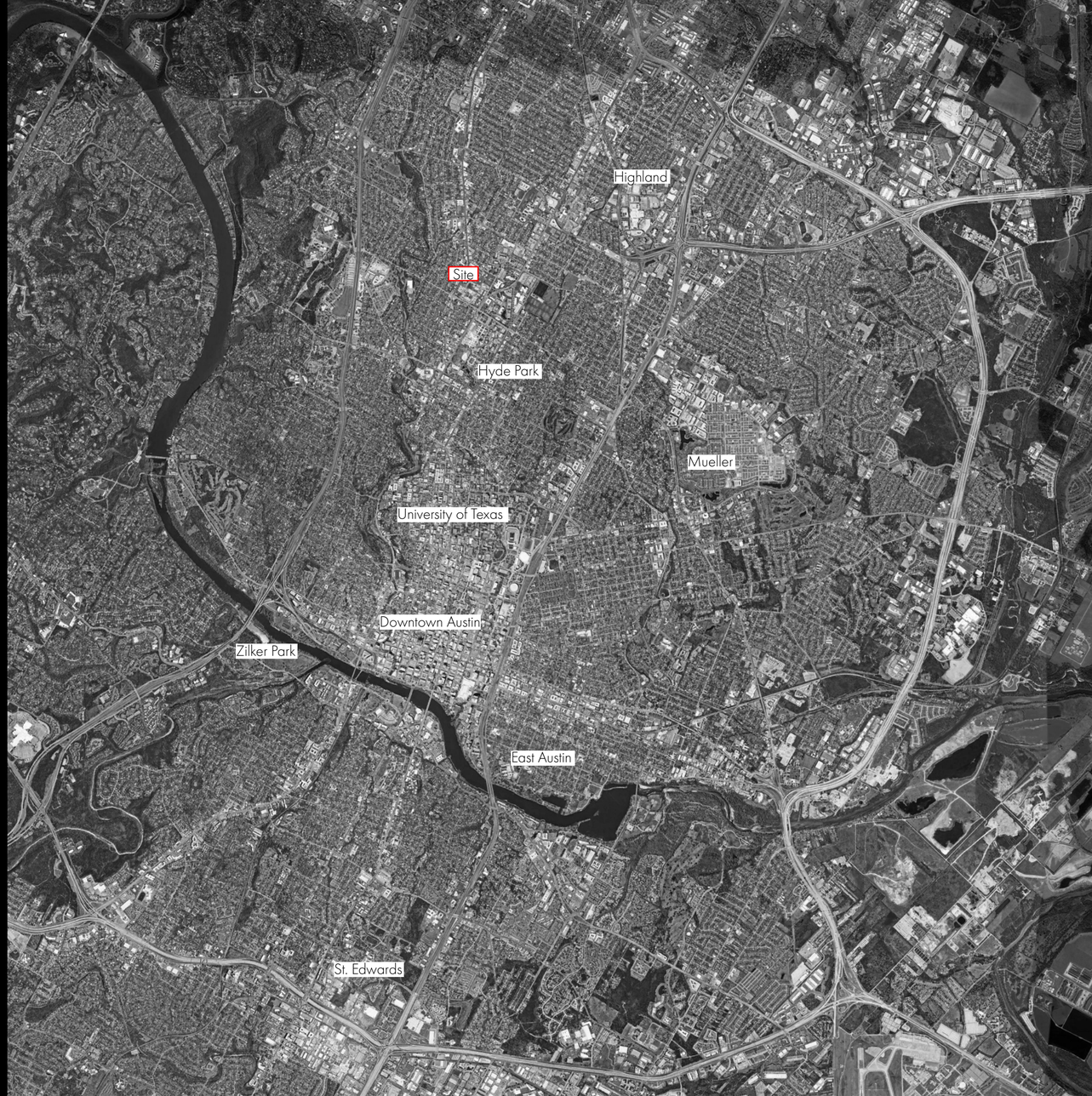
Black Polished Marble Tile - 12" x 12" x 3/8"
Sound Absorption: Low
Sound Diffusion: Medium
Sound Relfection: Medium

Ancona Terrazo Bacco 12"x12" Honed
Sound Absorption: Low
Sound Diffusion: Medium
Sound Relfection: Medium

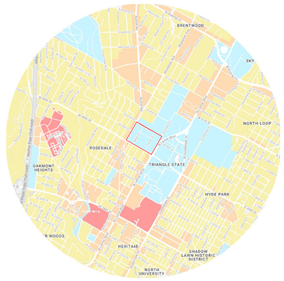
Next Floor Carpet 12"x12" Tile - Pacific
Sound Absorption: High
Sound Diffusion: Medium
Sound Relfection: Low

Site Location





Zoning Diagram



Medical
Unzoned
Commercial
Residential

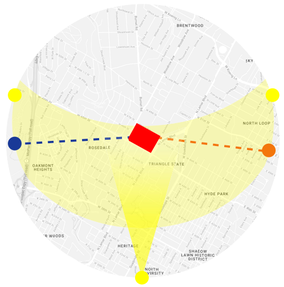
Left:
The zoning diagram indicates the amount of homes, both residential and commercial. Allowing the visually impaired to have an ease of access and a short commute to this library. Also having multiple sources of medical facilities nearby creates a safer, more comfortable environment. Knowing they are close to emergency services.

Right:
The bus route diagram allows the visually impaired to have multiple options on commute. With metro stops surrounding the campus with both local and high frequency routes that run every 30 minutes gives the user greater comfort knowing they can travel with ease to their local grocery store or any other surrounding spots in Austin, Texas.

Bus Route Diagram

High Frequency Routes
Local Routes

Spring Solstice Diagram

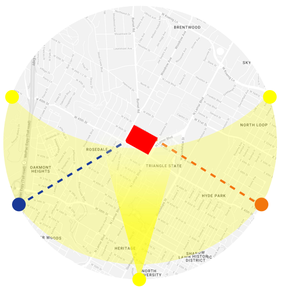


Sunrise
Sunset

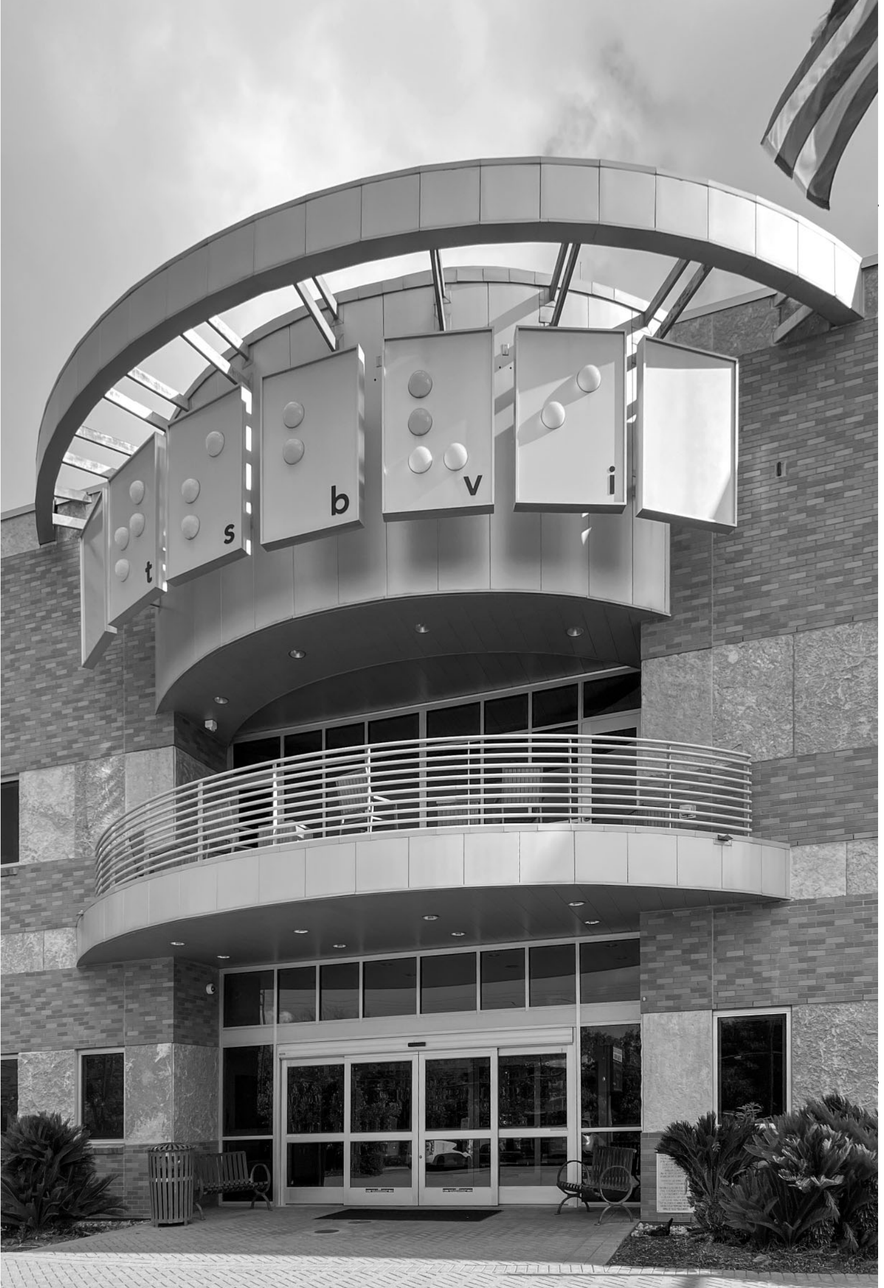
Left:
The spring solstice diagram allows us to understand the amount of sun and shadows the library would be receiving during the times roughly from March - June.

Right:
The fall solstice diagram allows us to understand the amount of sun and shadows the library would be receiving during the times roughly from December - February.

Fall Solstice Diagram



Sunrise
Sunset



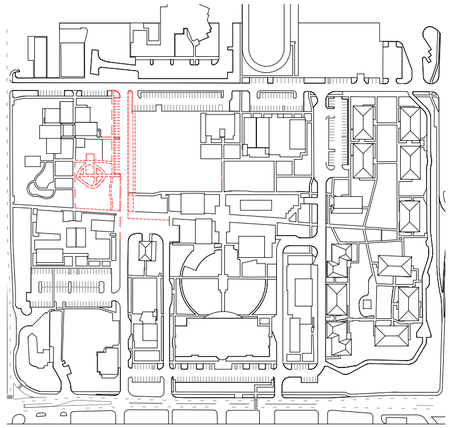
Texas School for the Blind and Visually Impaired

Sitting 10 minutes North of the University of Texas, the site for this projects is situated at the Texas School for the Blind and Visually Impaired campus. With roughly 75 acres, the campus has dormitories, an elementary school, an outreach/conference center, an administration, gymnasium, pool cafeteria, a health and recreation center, fine arts and auditorium.

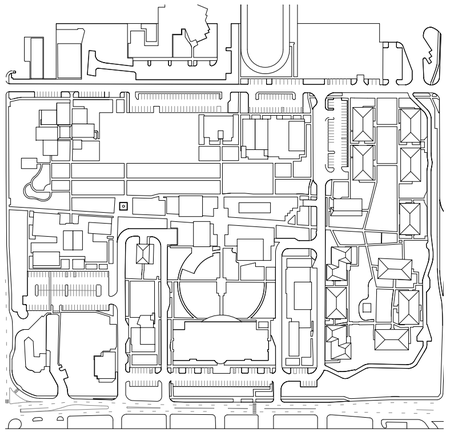
Existing Structure

Site Selection

There is a piece of land at TSBVI that is situated farther north of the campus. The location of the proposed project is at the intersection betweeen Miller Drive and Wildcat Run. After looking over the site, I realized it was lacking a park where students could relax, go for walks, and engage in recreational activities without being confined to a building. Because there are so many potential hazards outside that could result in an accident, people who are blind or visually impaired have learned to avoid going outside. They can venture outside without taking that chance thanks to the new site layout.



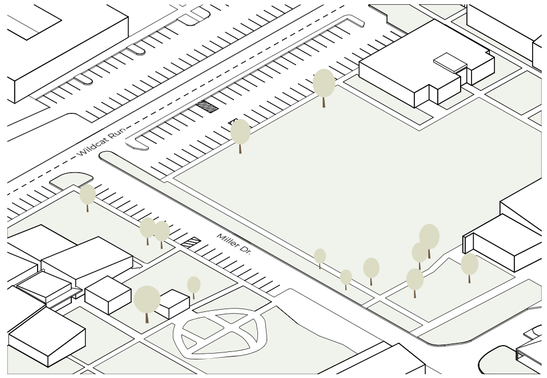
Existing Campus Plan

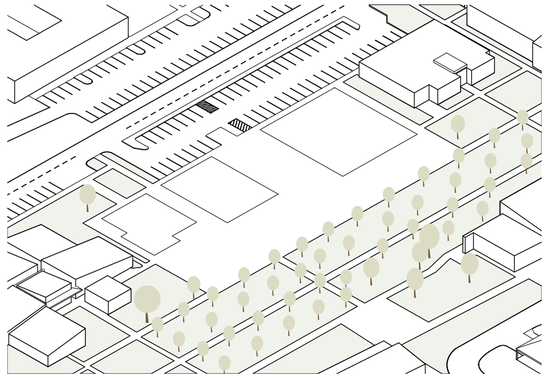


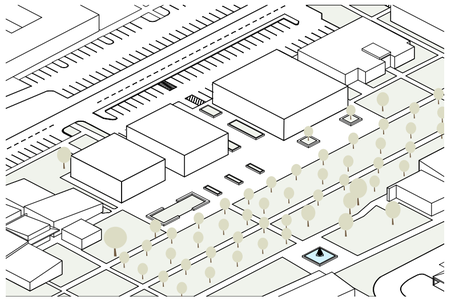
Proposed Campus Plan

Site Development

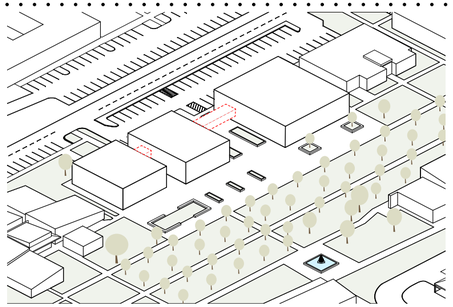
By removing the intersection of Miller Drive and Wildcat Run, space can be made available for the construction of a park that would be accessible to people with visual impairments. By demolishing Miller Drive to make way for more green space. The scene is introduced with a park. By creating new checkpoints along the campus's rectilinear grid, the park enables those who are blind or visually impaired to take advantage of the great outdoors without having to redo their route after making a mistake.



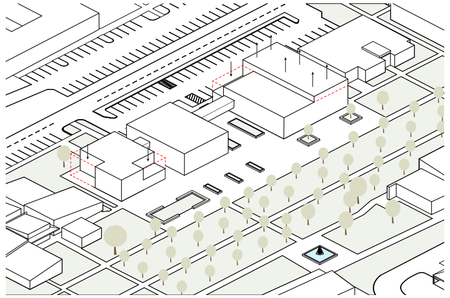




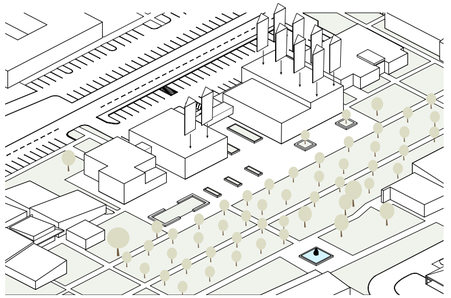
3 volumes are created



Bridging the volumes to create unity and connection



Pushing and Pulling to create hierarchy between the volumes

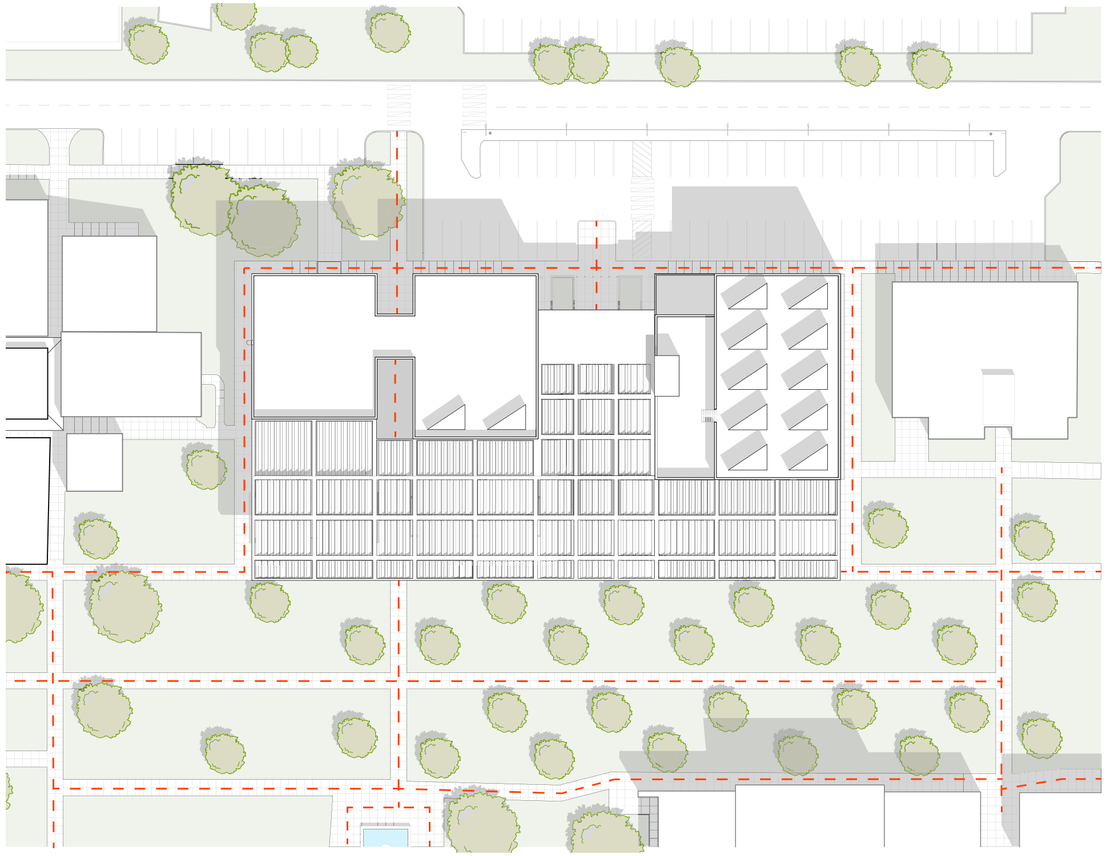


Inserting skylights to bring in natural ambient daylighting

Building Development

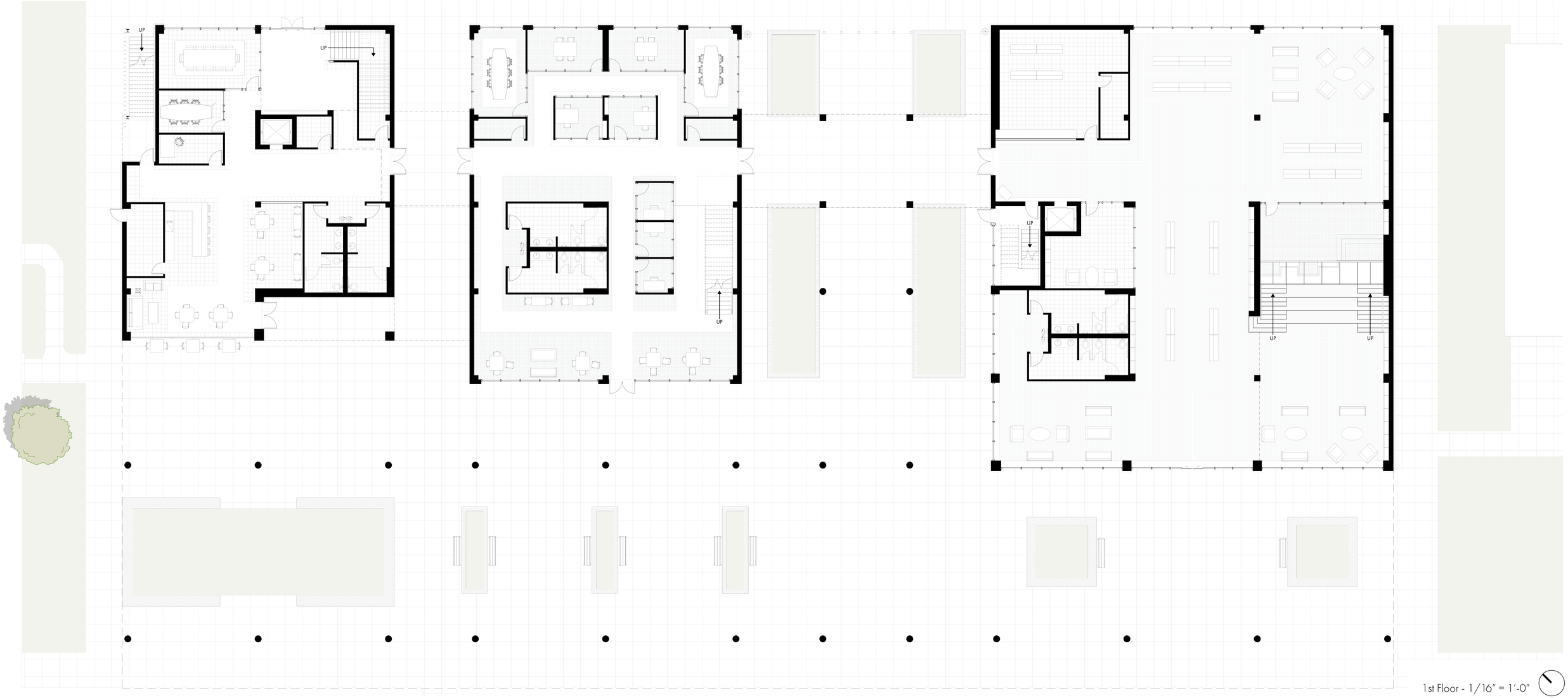
Site Plan

The visually impaired will be able to use landmarks as checkpoints. The use of chimes, bells, flowers, and sometimes water elements will let the blind know when they have arrived at a particular spot.
By removing the stress of failure or the fear of becoming lost, the proposed design opens up new possibilities for more convenient routes and landmarks that the blind can evaluate and fully grasp their location.
The grid system is shown by the red dashed lines as being simple to follow. The visually impaired students and staff won't get lost with a straightforward rectilinear system since any kind of bend in a path can cause confusion and distortion in their wayfinding.

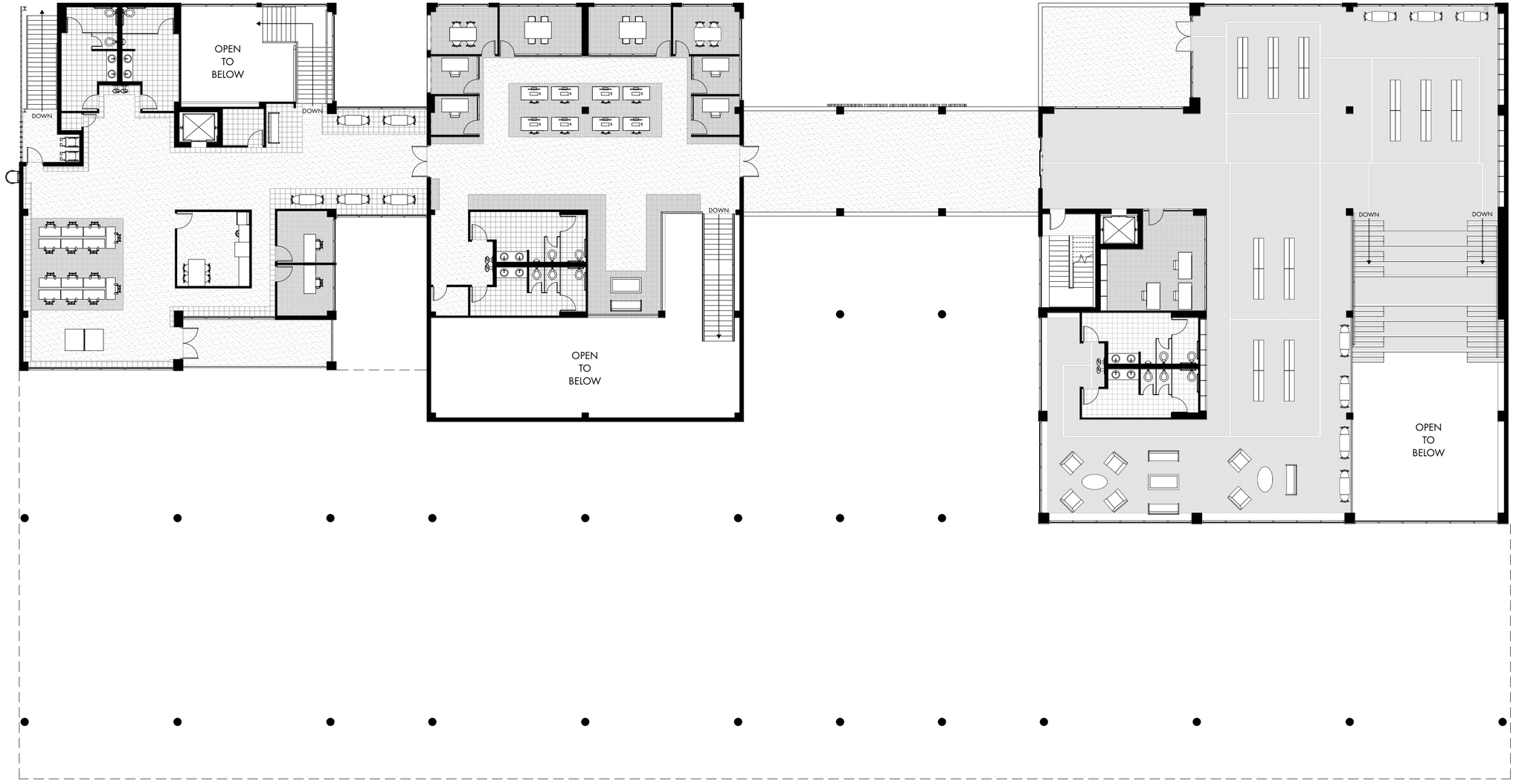


"Sight is the sense of the solitary observer, hereas hearing creates a sense of connection and solidarity."

- Juhani Pallasmaa

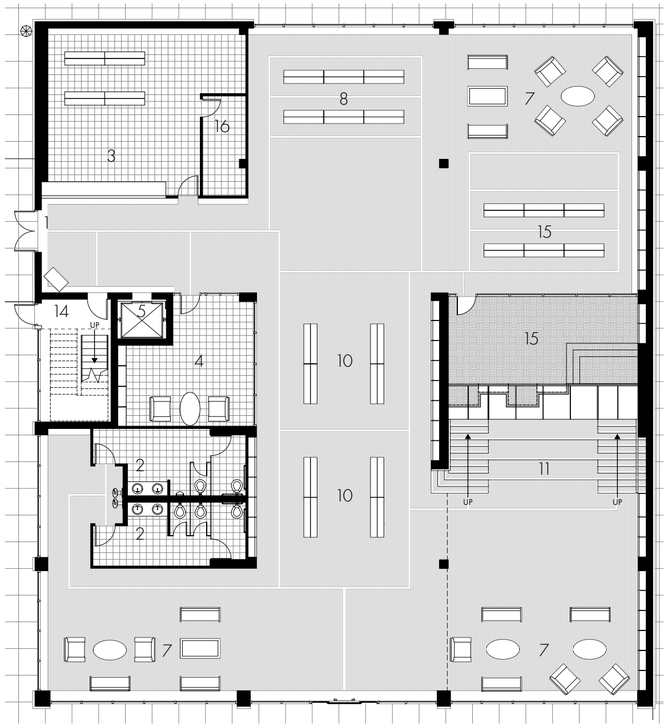


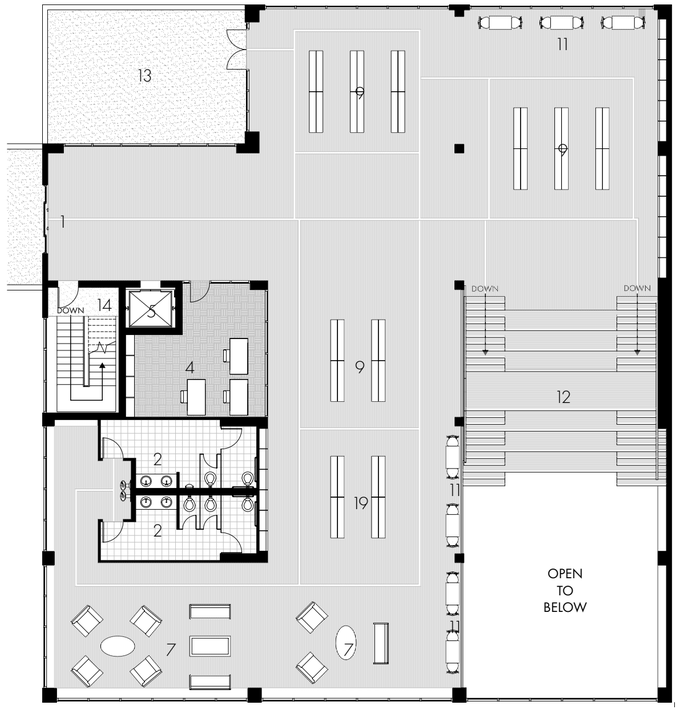
1st Floor - 1/16" = 1'-0"



2nd Floor - 1/16" = 1'-0"

Library: 1st Floor - 1/4" = 1'-0"





1. Entry
2. Bathroom
3. Reception
4. Private Teaching
5. Elevator
6. Bathroom
7. Lounging
8. Periodicals
9. Adult Section
10. Teen Section
11. Reading Area
12. Reading Stairs
13. Outdoor Area
14. Egress Stairs
15. Children Section
16. Storage

Library: 2nd Floor - 1/4" = 1'-0"

Reading Stairs

The reading stairs are designed with the intention of creating a space known for the sighted person. They are designed with a specific change of material on the edge of the runs to create a sense of change in topography. This allows the visually impaired to understand and bring comfort on their location as they move on the stairs.

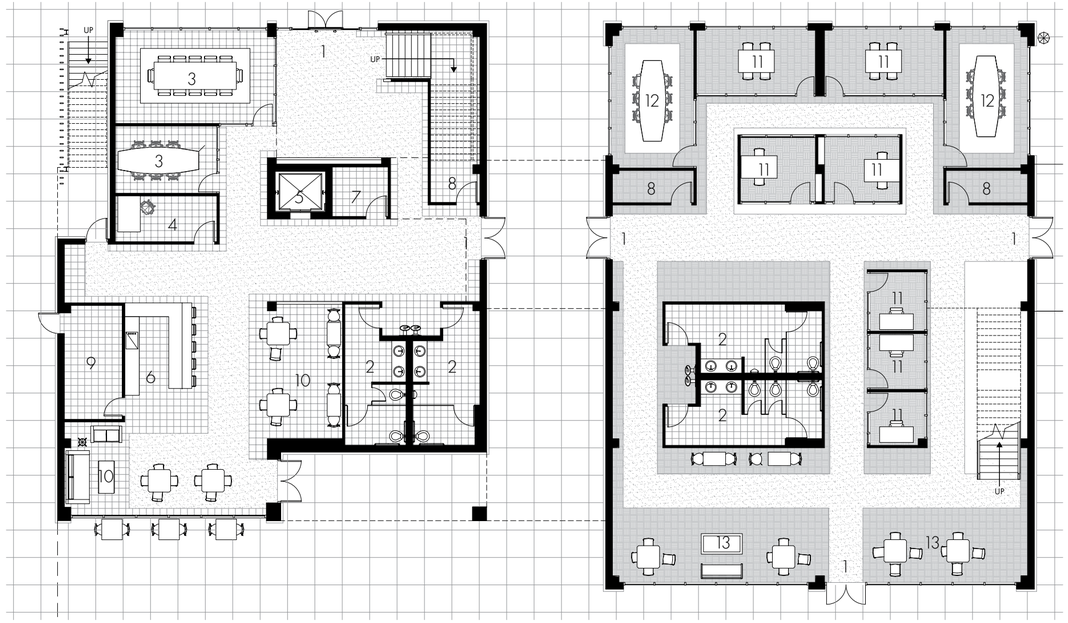
The Use of Wood

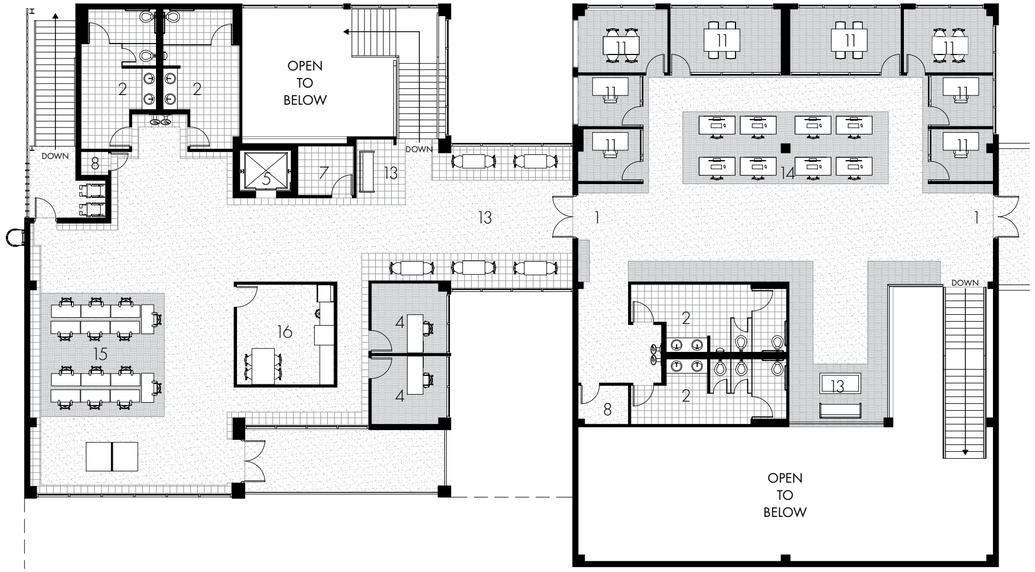
Normally in a library, one uses this space to come to a quiet environment where there is minimum amount of noise. These places are highly used by students, people that work remotely, or people that just want to read. By using wood as the primary material in this library, it allows the user to understand the space around them due to the amount of echo the wood produces. Since the hard wood used in this project has a smooth surface, sound would reflect and bounce back to where it came from. The sound wave is usually bounced back in the same path it traveled from, distorting the original sound or causing an echo. The wood paneling on the walls would help absorb some of the sound in order to balance the amound of sound bouncing off the walls.

Library - Second Floor

The spaces in the library's upstairs have a good deal of ambient lighting throughout. With the bookcases strategically positioned to carry the building's provided rectilinear walkways. In the meantime, custom-designed bookcases mounted on the walls provide more room for storing a wide range of books.

Study & Administrative: 1st Floor - 1/4" = 1'-0"





1. Entry
2. Bathroom
3. Conference Room
4. Office
5. Elevator
6. Cafe
7. Mechanical
8. Storage
9. Back of House
10. Seating
11. Private Study
12. Large Private Study
13. Lounging
14. Computer Area
15. Staff
16. Break Room

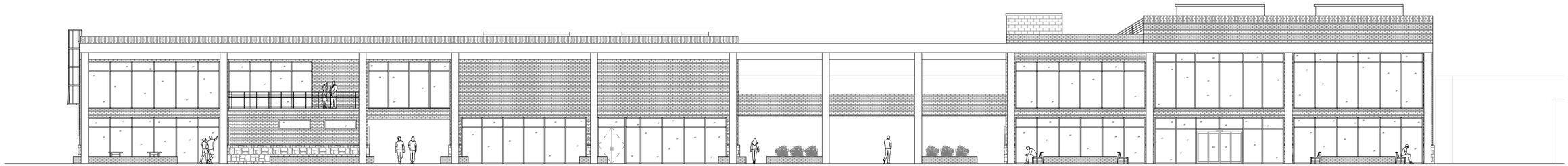
Study & Administrative: 2nd Floor - 1/4" = 1'-0"

Administration Building Entry

When you enter the administration building, a large waterfall feature welcomes you and establishes a connection between the architecture and the sense of touch. Enabling those who are visually impaired to not only hear the waterfall as they enter but also to engage with it. To prevent the possibility of running into the wall, the waterfall has a 16" rough tile that forms a distinct edge.

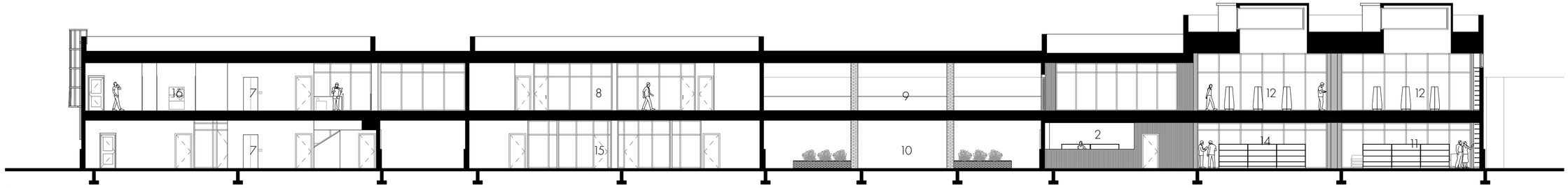
Cafe

The Cafe can be used to attack two senses. The sense of taste, and the sense of smell. The smell of coffee and food can create distinct location for the visually impaired. Guiding themselves with the smell.

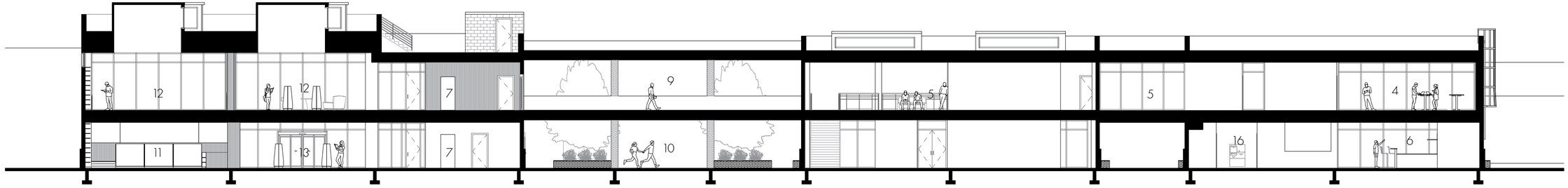


South Elevation: 1/16" = 1'-0"

North Elevation: 1/16" = 1'-0"

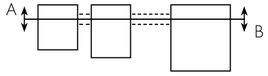


Sections A-A

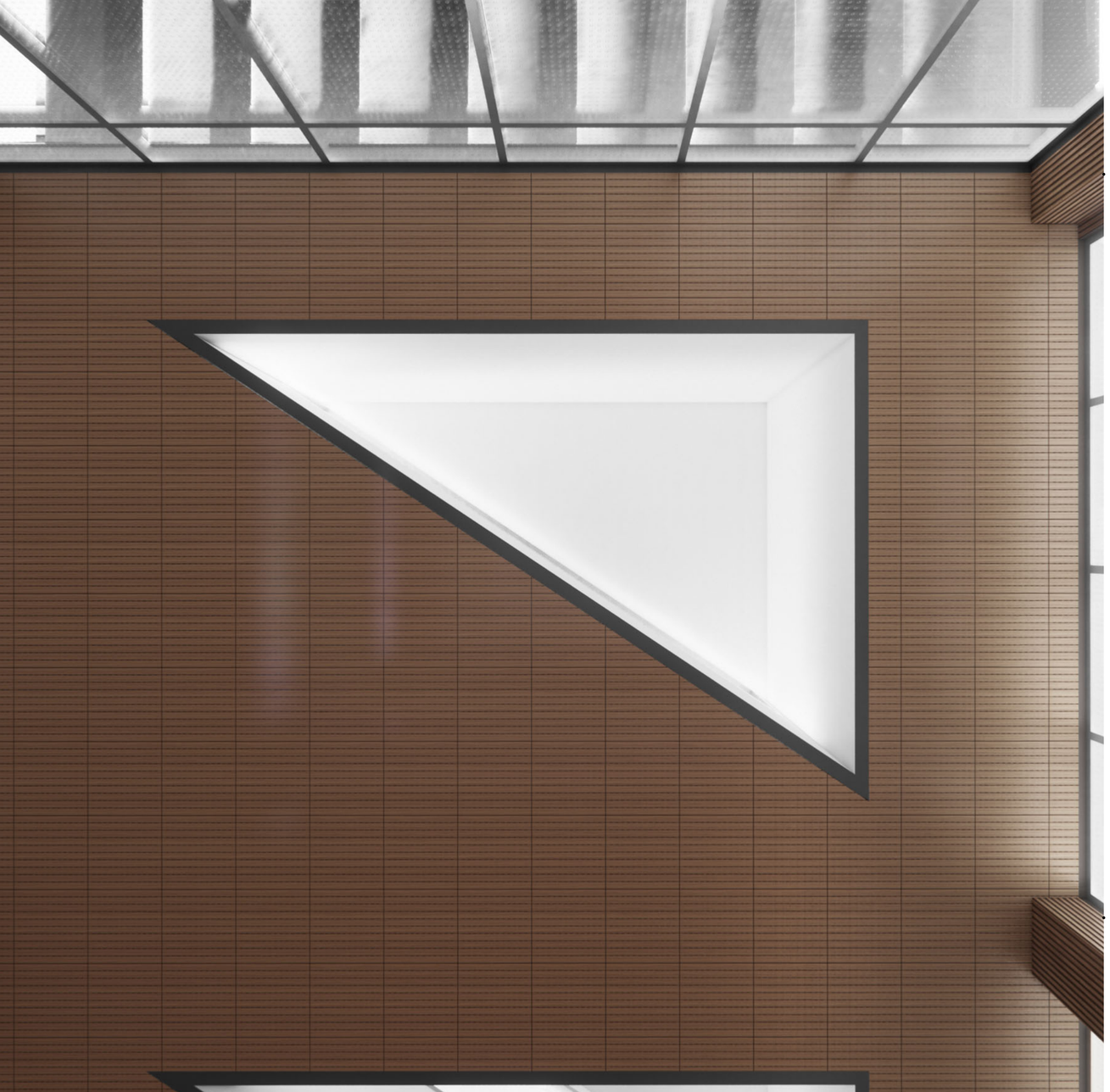


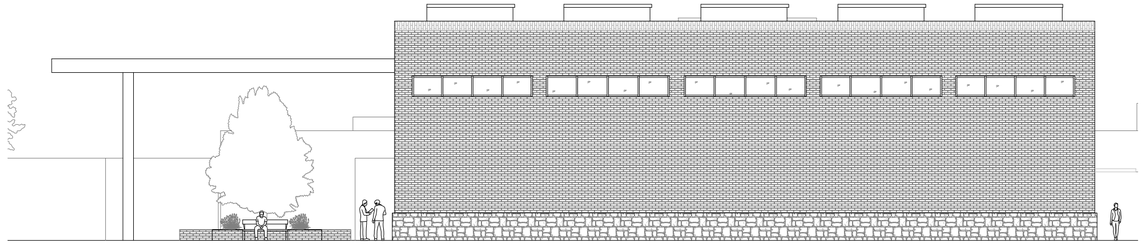
Sections B-B

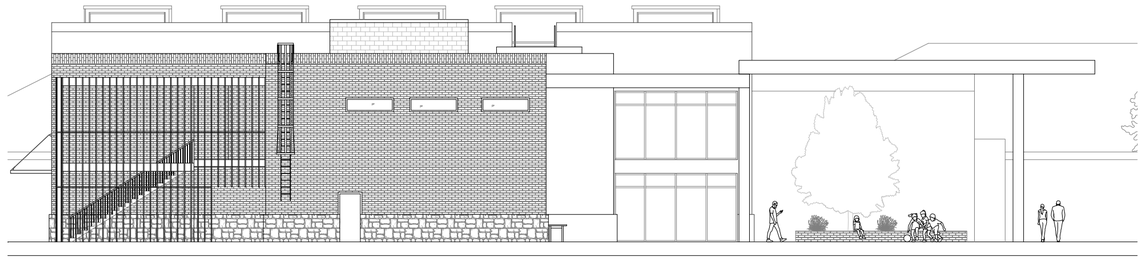
Sections - 1/16" = 1'-0"



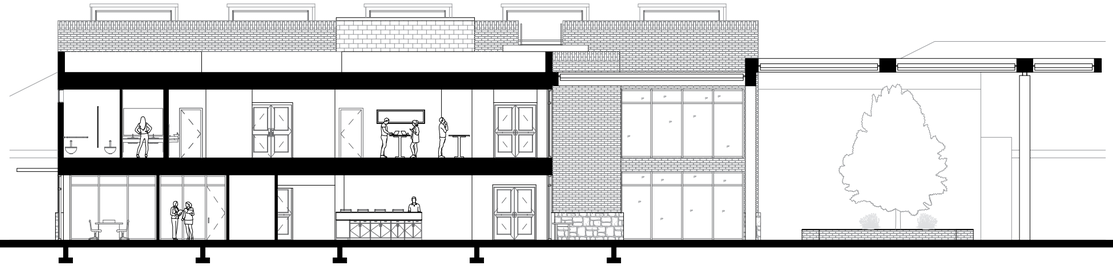
1. Entry
2. Reception
3. Teen Section
4. Staff Area
5. Lounge
6. Cafe
7. Elevator
8. Computer Area
9. Bridge
10. Garden
11. Children Section
12. Adult Section
13. Teen Section
14. Periodicals
15. Private Study
16. Restroom



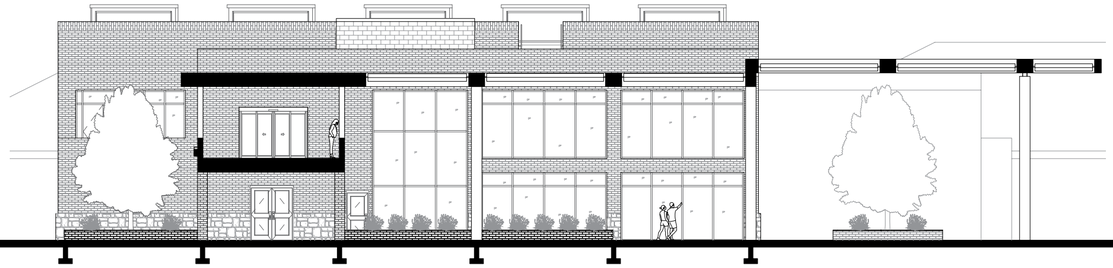




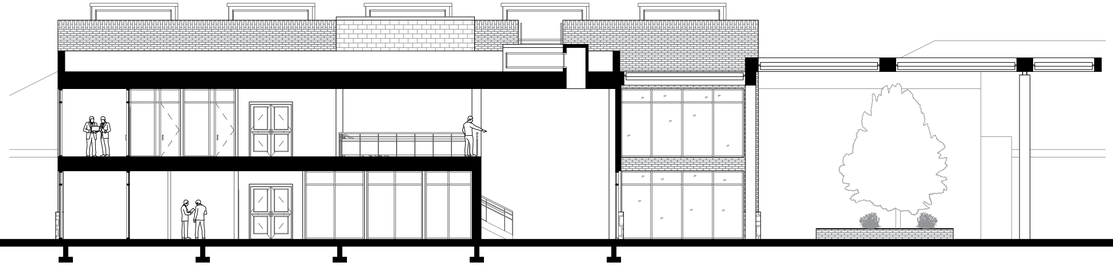
Sections - 1/16" = 1'-0"



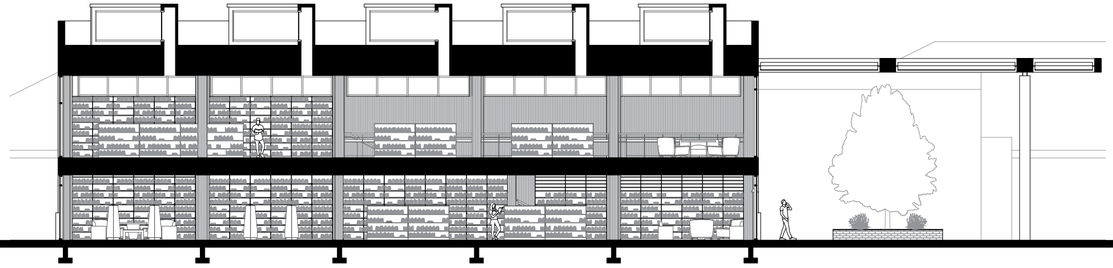
Sections A-A



Sections C-C

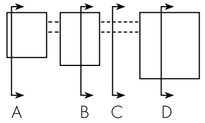


Sections B-B



Sections D-D

Sections - 1/16" = 1'-0"



1. Entry
2. Bathroom
3. Reading Area
4. Staff Area
5. Meeting Room
6. Cafe
7. Group Study
8. Private Study
9. Computer Area
10. Atrium
11. Bridge
12. Garden
13. Children Section
14. Periodicals
15. Adult Section
16. Reading Area

Group/Computer Areas

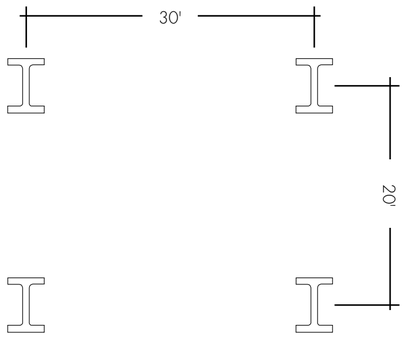
The students have access to a large number of study rooms in the academic building where they can work together. By designing a muted building with carpet that runs on the edges of the main walkways and in the occupied areas, it allows some students with specific visual impairment to understand color differences withing the floor spaces.
This building also addresses the sense of hearing. Sound does not travel or bounce off the walls as much when carpet and brushed concrete finish are used, as opposed to wood. Meaning that these areas will be more connected to the personal and interpersonal feelings that one would want to experience while studying or working.

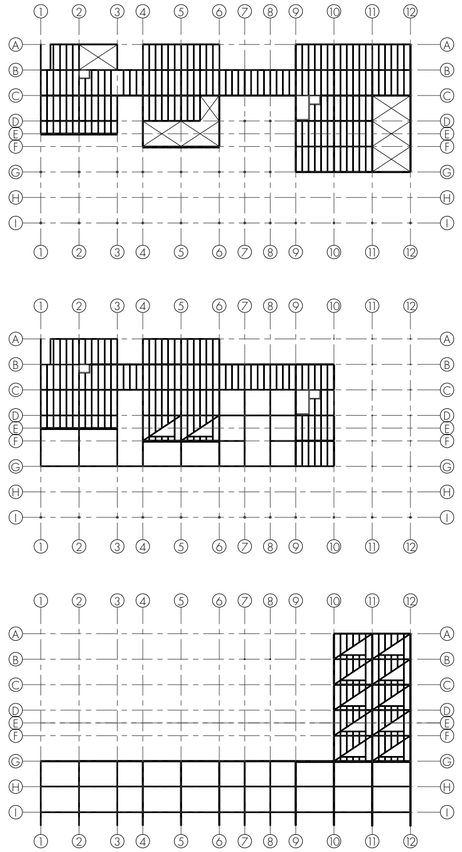
Bridge Underpass

This underpass is a strong connection to the project due to it's continuous enclosed connection between the study and the staff buildings. Having this underpass also allows there to be clear walkways that follow the grid of the site and creates an easy straight path for the visually impaired to not get lost in their route.

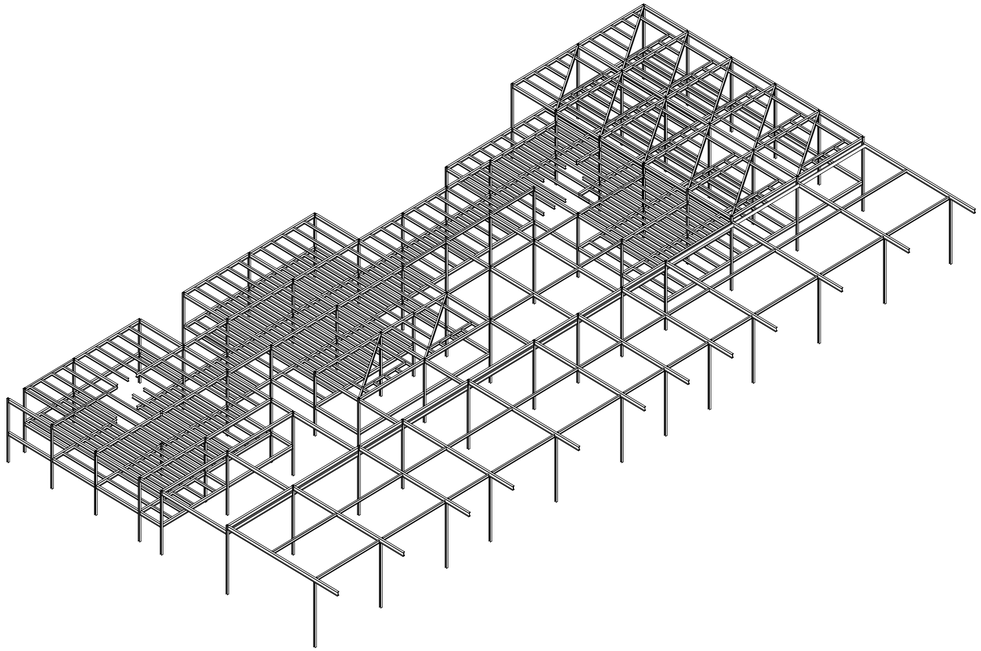
Structure

The structure of the building consists of three types of steel members; 12"-16" Wide Flange Beams, and Hollow Structural Sections (HSS) members. The Wide Flange Beams is mainly used throughout the structure of the building, while the HSS members are used on occasions where the building connects with the pergola. Using a 3:2 ratio, the span between all of the interior structure runs on a 30'x20' grid. This grid system comes with symbolism connecting to the same ratio as the braille system.

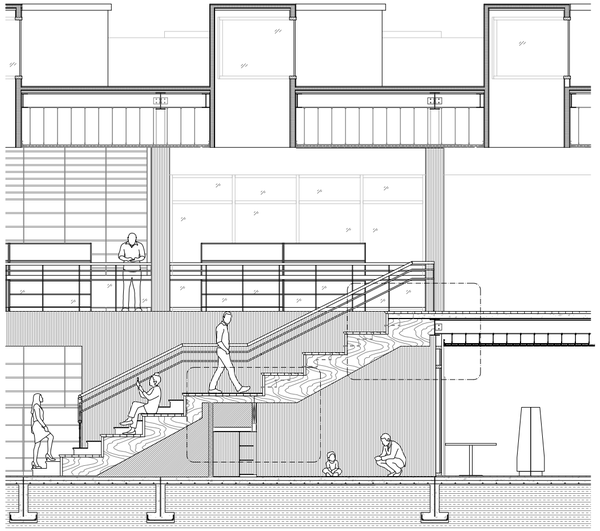


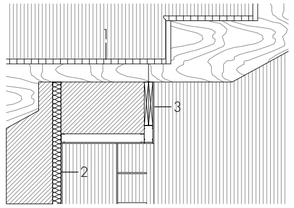


Span: 30' x 20'
Height of Structure: 24'
Height of Pergola: 26'-6"



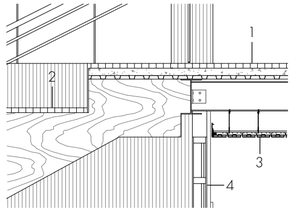
Reading Stairs - 1" = 1'-0"





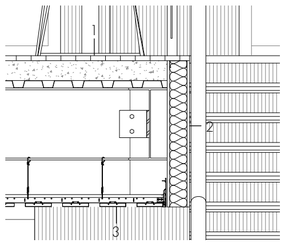
Reading Stairs/Bookshelf Detail - 1/4" = 1'-0"

1. Finished hardwood flooring on1/2" plywood sitting on 2x6x12 pine lumber cut to form the reading stairs.
2. 1/2" Non-batten mounted wood panels fastened on typ. 3-1/2" metal stud wall
3. 18" LVL beam sitting on posts at the ends of the reading stairs



Reading Stairs/2nd Floor Detail - 1/4" = 1'-0"

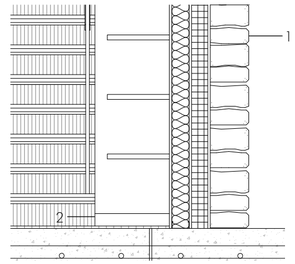
1. Finished hardwood flooring on 4" of composite slab on 1-1/2" metal decking sitting on 12" steel girders and beams.
2. Finished hardwood flooring on1/2" plywood sitting on 2x6x12 pine lumber cut to form the reading stairs
3. WOODWORKS Linear Veneered Planks from Armstrong hung tied from beams above.
4. Typ. Storefront wall



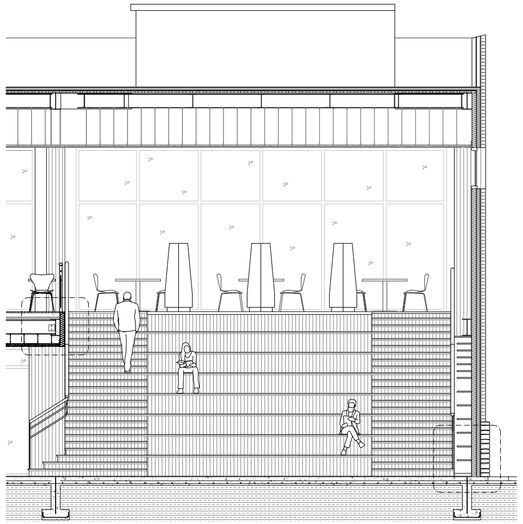
Wall/Ceiling Detail - 1/2" = 1'-0"

1. Finished hardwood flooring on 4" of composite slab on 1-1/2" metal decking sitting on 12" steel girders and beams.
2. Non-batten mounted wood panels fastened on typ. metal stud wall at 16" o.c
3. WOODWORKS Linear Veneered Planks from Armstrong hung tied from beams above.

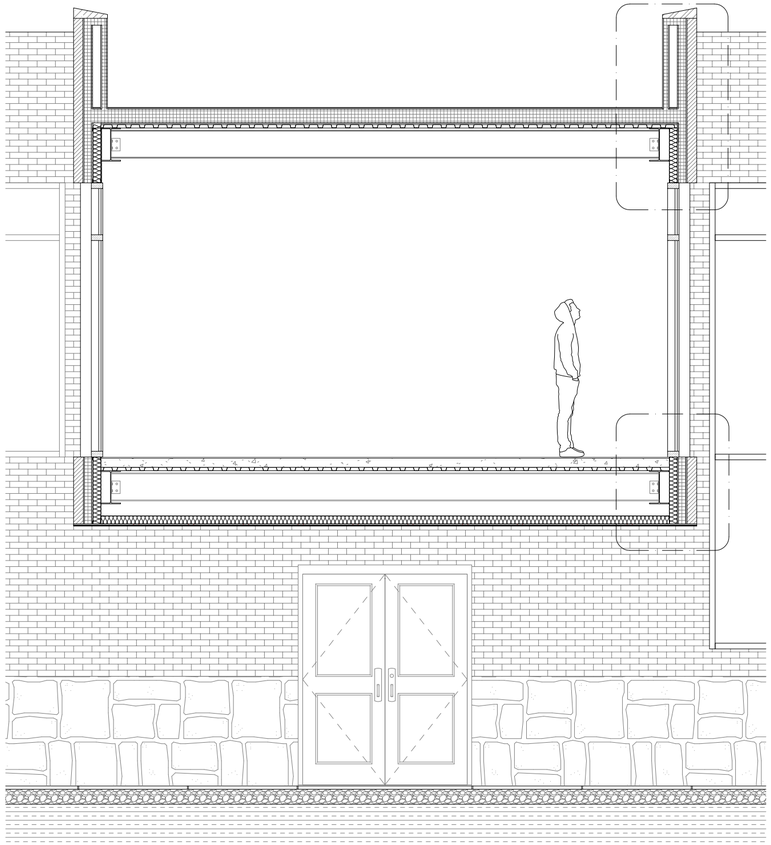
1. Limestone wainscoting rock finish with an 1/4" air gap on 3" of rigid insulation with an R-Value of 18 fastened on 1/2" plywood sheating on typ. metal stud wall at 16" o.c. on 1/2" non-batten mounted wood panel finish.
2. Custom embedded bookshelf designed to fit cavity between enclosed columns



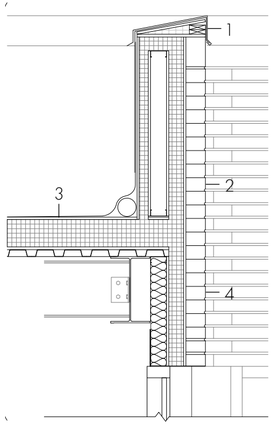
Bookshelf/Floor Detail - 1/2" = 1'-0"



Bookcase Wall Section - 1" = 1'-0"



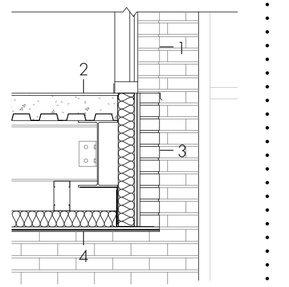
Bridge Section: 1/4" = 1'-0"



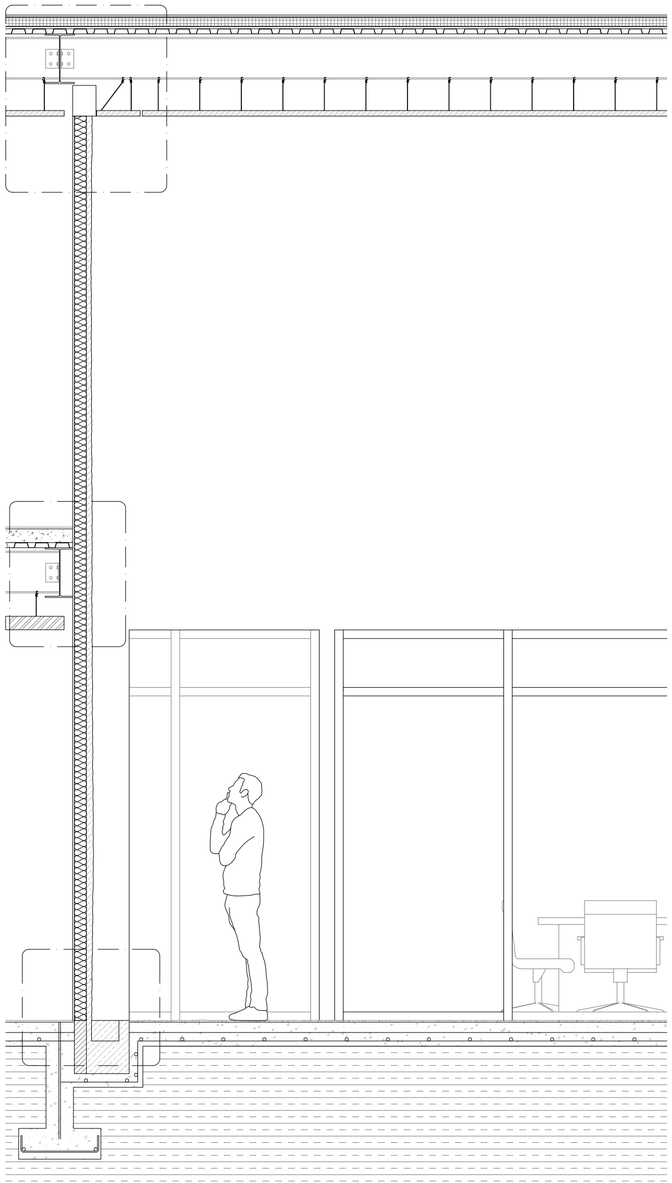
Bridge Roof Parapet Detail: 1/2" = 1'-0"

1. Parapet flashing on Fully-adhered water membrane on Tapered rigid insulation with wood blocking.
2. 4" brick exterior on air gap on 3" rigid insulation on 1/2" plywood sheathing on typ. 3-1/2" metal stud wall 16" o.c on Roof Vapor retarder base flashing - extended up and over stud wall.
3. 3. Fully adhered singly ply membrane on coverboard set in full coverage urethane foam adhesive on 6" tapered rigid polyisocyanurate insulation substrate board mechanically fastened on a new steel roof deck.
4. 4" brick exterior on air gap on 3" rigid insulation on 1/2" plywood sheathing on typ. 3-1/2" metal stud wall 16" o.c.

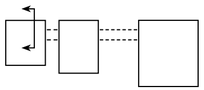
1. Typ. Storefront Wall
2. Finished brushed concrete on 4" composite slab on 1-1/2" metal decking sitting on 16" steel girders
3. Brick finish on an air gap on plywood sheathing, on typ. metal stud at 16" o.c. all supported and sat on 2 metal angles welded to the 16" girder.
4. Stucco finish on a metal lath on vapor barrier on plywood sheathing on a horizontal metal stud wall that's fastened on a typ. metal stud wall 24" o.c.

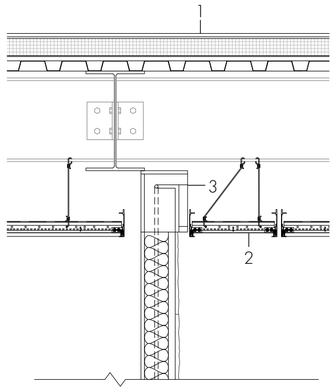


Bridge Floor Detail: 1/2" = 1'-0"



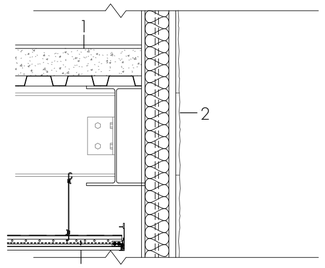
Waterfall Section: 3/8" = 1'-0"





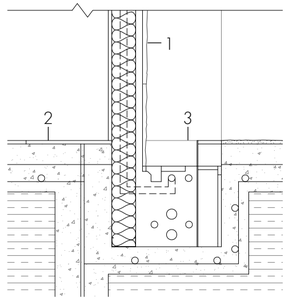
Upper Basin Waterfall Detail: 3/4" = 1'-0"

1. Fully adhered singly ply membrane on coverboard set in full coverage urethane foam adhesive on 6" tapered rigid polyisocyanurate insulation substrate board mechanically fastened on a new steel roof deck.
2. Optima PB Conceled panels by Armstrong hung from 12" steel beams.
3. Reveal 7 Pro Waterfall Upper Basin installed above typ. metal stud wall at 16" o.c. with batt. insulation to fill cavity with 4x8 rough granite slabs.



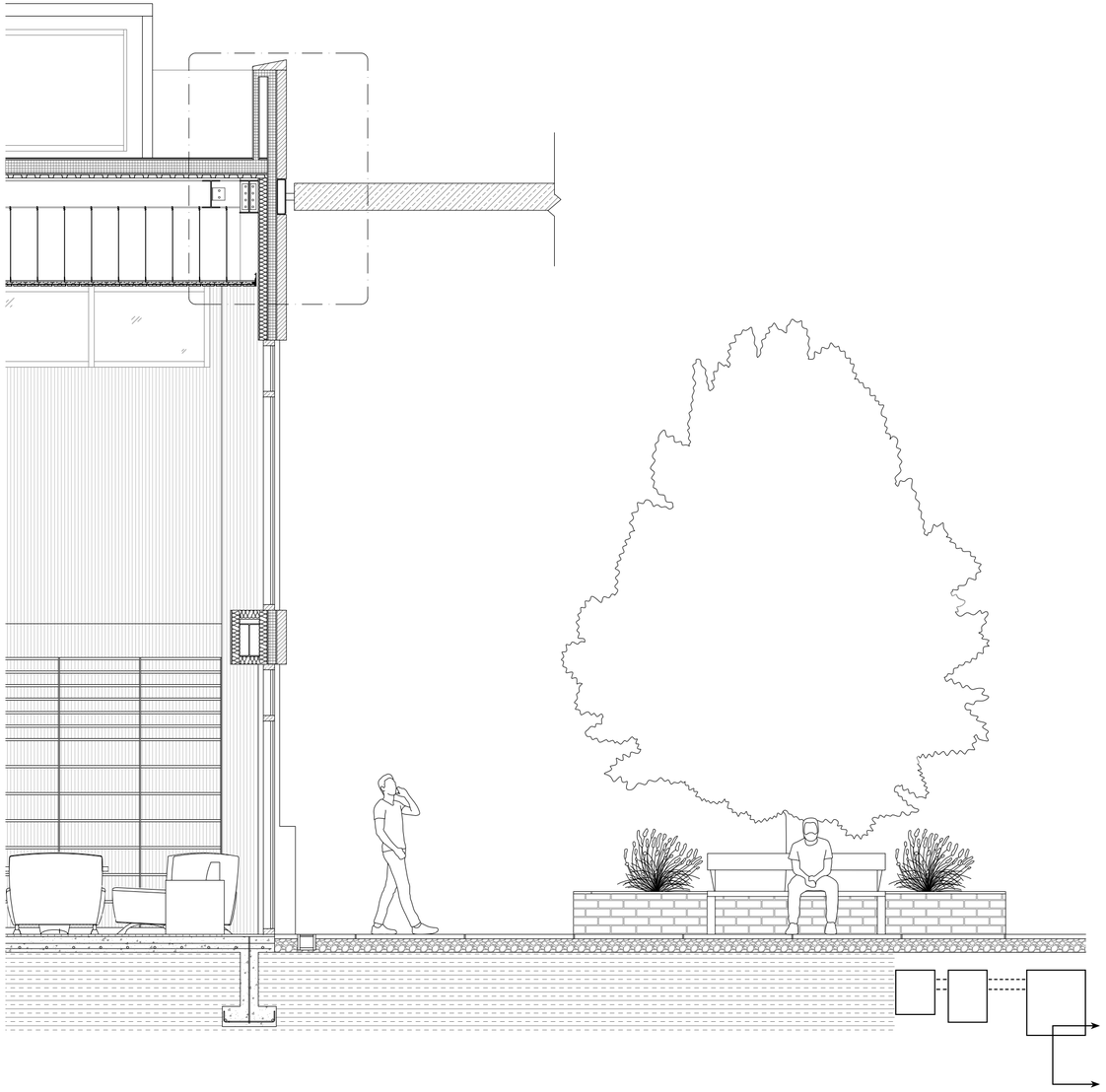
Waterfall Wall Detail: 3/4" = 1'-0"

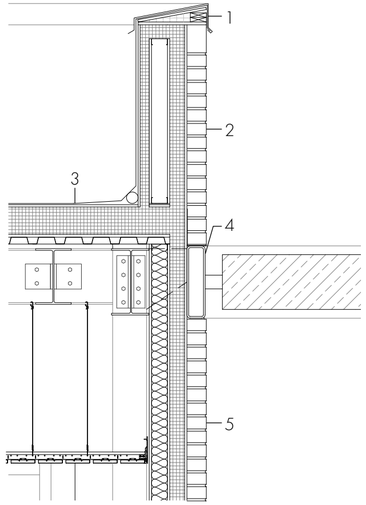
1. Refin Ceramiche 12"x12" Tile finish on 4" Composite slab on 1-1/2" metal decking running on 12" steel beams.
2. Rough granite slab finish for Reveal 7 Pro Waterfall feature on typ 3-1/2" metal stud wall at 16" o.c.
3. Optima PB Conceled panels by Armstrong hung from 12" steel beams.



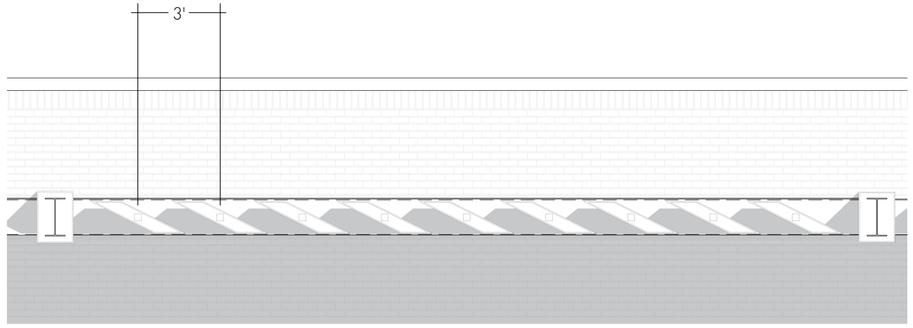
Lower Basin Waterfall Detail: 3/4" = 1'-0"

1. Rough granite slab finish for Reveal 7 Pro Waterfall feature on typ. 3-1/2" metal stud wall at 16" o.c.
2. Refin Ceramiche 12"x12" tile finish on 4" Composite slab on 1-1/2" metal decking running on 12" steel beams.
3. Reveal 7 Pro Waterfall Lower Basin installed in a pre-cast concrete curb to create a flushed level to the Refin Ceramiche 12x12" tile





1. Parapet flashing on Fully-adhered water membrane on Tapered rigid insulation with wood blocking.
2. 4" brick exterior on air gap on 3" rigid insulation on 1/2" plywood sheathing on typ. 6" metal stud wall 16" o.c on Roof Vapor retaroded base flashing extended up and over stud wall.
3. Fully adhered singly ply membrane on coverboard set in full coverage urethane foam adhesive on tapered rigid polyisocyanurate insulation substrate board mechanically fastened on a new steel roof deck.
4. Metal plate angle on a hollow steel tube welded to interior column by a metal plate.
5. 4" brick exterior on air gap on 3" rigid insulation on 1/2" plywood sheathing on typ. 3-1/2" metal stud wall 16" o.c on 2" non-batten mounted wooden slat panel



Conclusion

This project allowed me to understand many aspects when it comes to designing for people with impairments. Specifically people with visual impairments. I was able to focus on the senses and the connection that a person makes with Architecture. We can connect psychologically and physically by closing our eyes and letting our other four senses (hearing, touch, smell, and taste) take over. This enables us to create stronger connections with the building itself. It allows us to create memories of scents, touch, or even taste. I believe this project allows the users to understand the importance designing for the people that cannot use the one and primary sense we, sighted people, use. The sense of vision.

Resources

1. Zumthor, P. (2006). Peter Zumthor: Atmospheres: Architectural environments, surrounding objects. Basel: Birkhauser.
2. Pallasmaa, J. (1996) Juhani Pallasmaa: The Eyes of the Skin: Architecture and the Senses. Great Britain: Academy Group Ltd.
3. Boyd, K. (2023, April 6). *What is macular degeneration?* American Academy of Ophthalmology. Retrieved April 14, 2023, from https://www.aao.org/eye-health/diseases/amd-macular-degeneration.
4. U.S. Department of Health and Human Services. (n.d.). *Diabetic retinopathy.* National Eye Institute. Retrieved April 14, 2023, from https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/diabetic-retinopathy#:~:text=Diabetic%20retinopathy%20is%20an%20eye,at%20least%20once%20a%20year.
5. Mayo Foundation for Medical Education and Research. (2022, September 30). *Glaucoma.* Mayo Clinic. Retrieved April 14, 2023, from https://www.mayoclinic.org/diseases-conditions/glaucoma/symptoms-causes/syc-20372839#:~:text=Glaucoma%20is%20a%20group%20of,over%20the%20age%20of%2060.
6. U.S. Department of Health and Human Services. (n.d.). *Cataracts.* National Eye Institute. Retrieved April 14, 2023, from https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/cataracts#:~:text=What%20are%20cataracts%3F,that%20you%20have%20a%20cataract.
7. *Soundproofing vs. sound absorption: What's the difference.* Soundproof Cow. (2023, January 26). Retrieved April 14, 2023, from https://www.soundproofcow.com/soundproofing-101/soundproofing-vs-sound-absorption/#:~:text=Absorption%20refers%20to%20the%20process,that%20travel%20within%20your%20space.
8. Snider, S. (2022, March 30). *What is sound diffusion?* Acoustical Solutions. Retrieved April 14, 2023, from https://acousticalsolutions.com/what-is-sound-diffusion/
9. *Reflection.* (n.d.). Retrieved April 14, 2023, from https://www.sfu.ca/sonic-studio-webdav/handbook/Reflection.html
10. World Health Organization. (n.d.). *Vision Impairment and blindness.* World Health Organization. Retrieved April 14, 2023, from https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment#:~:text=Globally%2C%20at%20least%202.2%20billion,uncorrected%20refractive%20errors%20and%20cataracts.

Senses Through Space

David Cano

Education

Master of Architecture
Texas A&M University
2023

Undergraduate Degree - Global Arts Plan Design & Construction
Texas A&M University
2018

Experience

Architectural Intern
Jacobs
2022

Project Manager
Cano Construction, LLC.
2013-2023

Architect in Training
Hoover & Associates
2019-2020

Construction Intern
Marek & Brothers
2017