



SHINE

Sam Houston National Forest
Recreational Hub

“This was the order of human institutions: first the forests, after that the huts, then the villages, next the cities, and finally the academies.” - Giambattista Vico, The New Science¹



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INTRODUCTION

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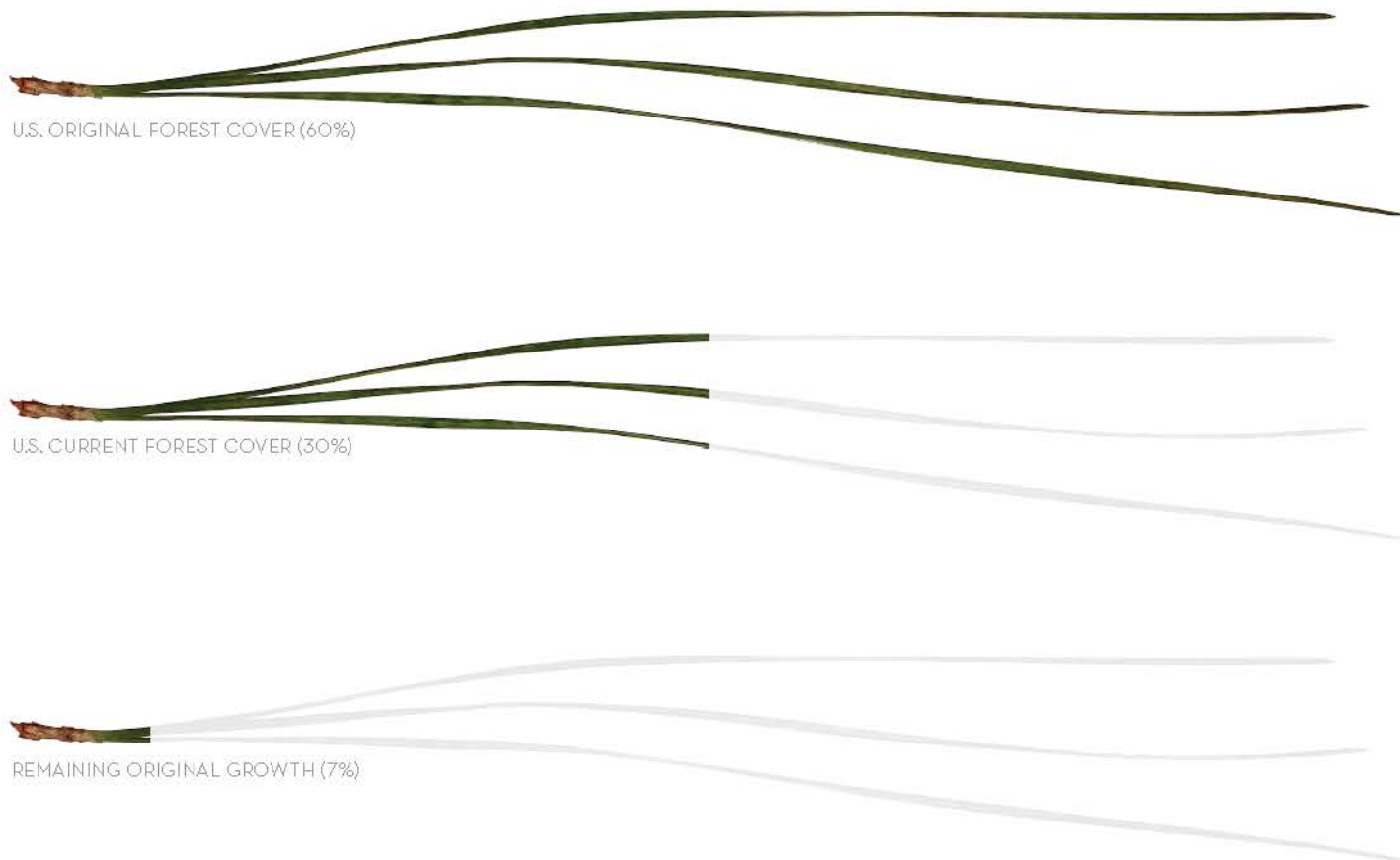
The forested landscape has always been of great fascination to me. The mysterious environment is rich with native flora and fauna and contains a great deal of beauty. Many associate the forest with a dark and dangerous place, but I hold a different view and appreciation for the spaces within. Being surrounded by large, waving trees, natural sounds, and soft light filtering through the canopy instills a sense of calm and allows for a deeper connection with nature. To me, the forest provides an escape from everyday life and opens up a new world to discover and admire. I believe that everyone deserves the right to explore, experience, and value this environment to the highest extent.



The natural environment is a crucial resource that should be preserved and elevated to the highest extent, especially at the junction of the natural and the built. How can architecture uphold the values of environmental integration within design space, as well as aid in the knowledge, understanding, and appreciation of environmental resources? In the current era of environmental and ecological destruction, it is more important than ever to highlight the environment around us and reveal its subtle, natural beauty. Forests were once the building blocks of human society, yet today fall victim to that society's exploitation at an increasingly alarming rate.







Prior to the arrival of Europeans, forests were estimated to cover over one billion acres of land in the present day United States. These landscapes featured lush vegetation with many types of plants and trees and provided habitat to millions of wildlife species. After settlement, forested areas of the country were dramatically decreased to create space for farmland and urban imposition, leading to severe widespread deforestation.² At a regional level, Texas was once home to over 22 million acres of original growth forested land.

With the introduction of sawmills, a majority of the native growth was destroyed through the process of timber production. These production mills worked sunrise to sunset and provided jobs to the early families of East Texas. Often, entire townships emerged around sawmills, complete with homes, churches, and schools where laborers' families carried out normal life. In the letter at right, see a first-person account of life in a sawmill town, written by my relative, Mary Frances Stuckey.³ While the logging process was deeply rooted in the region's economic boom, early lumber companies and sawmills assumed their exploited resource was limitless. This was not the case.

Due to the rapid decline of forested environments, the National Forest Service⁴ was established in 1905 to "sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations." In 1933, Texas' legislature authorized the purchase of select lands to be dedicated to the National Forest Service as new national forests. Of the four national forests located within the state, the Sam Houston National Forest (SHNF) is the largest, covering over 163,000 acres of land. Situated around 40 miles north of Houston, the Sam Houston National Forest has been an area of recreation for this region of the state since its foundation.

² National Atlas Of The United States. (2008, April 29). Forest Resources Of The United States.

³ Mary Frances Stuckey. (1939). Letter - Growing Up In A Sawmill Town.

⁴ U.S. Forest Service. (n.d.). United States Forest Service.

Growing up in a Sawmill Town -

This is the life of Mary Frances Stuckey, born on Oct. 12, 1923 to Oscar Franklin Stuckey and Lula Lorena Taylor Stuckey in New Willard, Texas - a town of a population of 1000 people. All the people who lived in this town worked for The Texas Long Leaf Lumber Company -

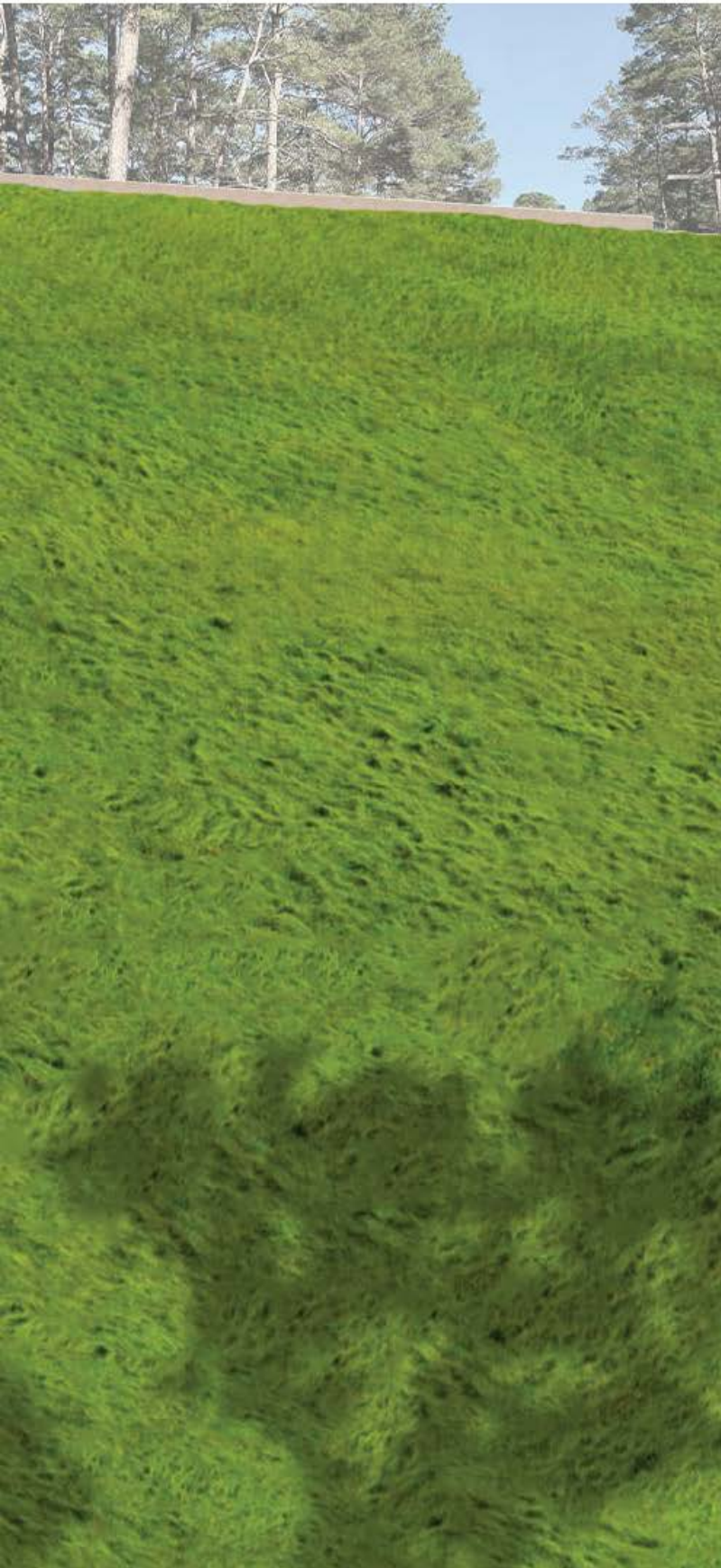
My Dad ran a machine at the mill to make the lumber ~~so~~ smooth and ready to ~~ship~~ ^{ship} to builders for making buildings, houses and whatever lumber was needed for.

I was no. 6 of ~~10~~ 10 children, 8 boys and 2 girls - Lonnie the oldest, Woodrow the ~~2nd~~ 2nd child, "J.C." 3rd child, Lula Mae 4th child, Raymond 5th child, Mary Fran 6th child, James the 7th child, Oscar Franklin, Jr. (we always called him Junior) 8th child, Charles 9th child and Joe no. 10 -

We grew up in a wonderful family all of us loving each other, although we would have our fights & fusses. Our Dad would work at "Plenter mill" from sunrise until sundown.

My Mom would pack a hot ~~lunch~~ lunch for Dad Lula Mae (we always called her sis) Raymond and I would take the lunch to him.





The Sam Houston National Forest Recreational Hub serves to provide an architectural answer to human interaction within the forested landscape. It proposes a visitation and learning center acting as an arrival and departure threshold for the users of the forest; aiming to educate and inspire visitors before they embark on a journey deeper within.



CLIENT

CLIENT



Since its creation, the Sam Houston National Forest (SHNF) has been dedicated to the preservation and proper management of forested land in the area. Featuring miles of hiking and biking trails, campgrounds, and recreational areas, it is an excellent place for people to enjoy the natural environment. However, it is largely unplanned and unregulated. The forest is currently managed remotely from the U.S. Department of Agriculture and Forests office located in Lufkin, Texas - around 80 miles away from SHNF's core. With its recreational focus, SHNF gave rise to many non-profits associated with the forest, covering a wide range of topics and interests related to the resource.



The Sam Houston National Forest Trails Coalition (SHNFTC) is a non-profit organization that focuses not only on the creation and maintenance of sustainable and comprehensive trails throughout SHNF, but on the overall protection of the forest as a whole. The SHNFTC also plays a major role in the education of public individual users and groups to ensure the proper use and protection of the land. While this coalition has been established for some number of years, the non-profit does not currently have a permanent office site. This, in addition to the forest overall being managed remotely, leaves users relatively unchecked and potentially lacking useful knowledge of the environment they are visiting.

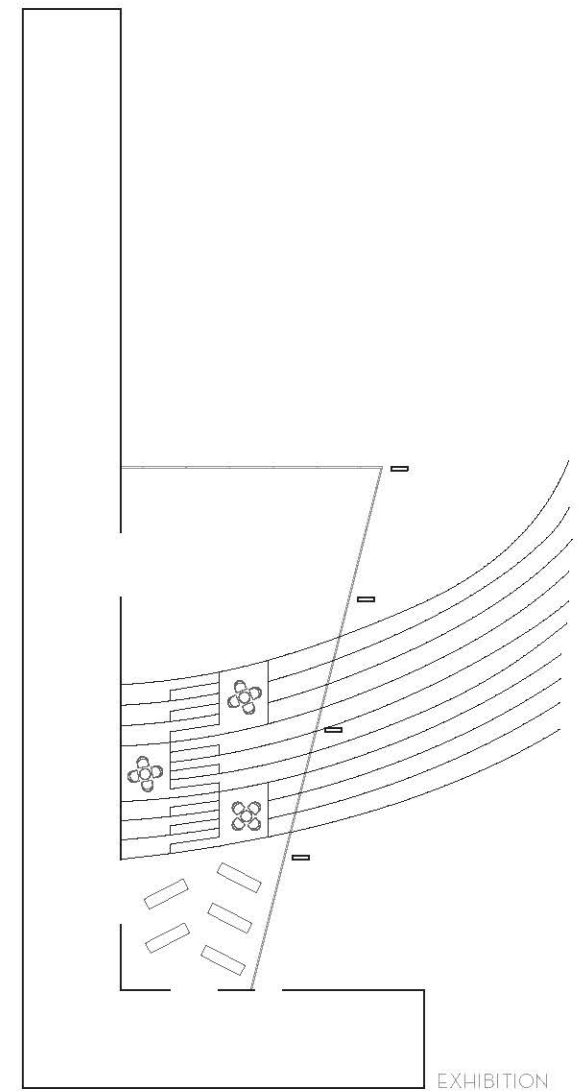
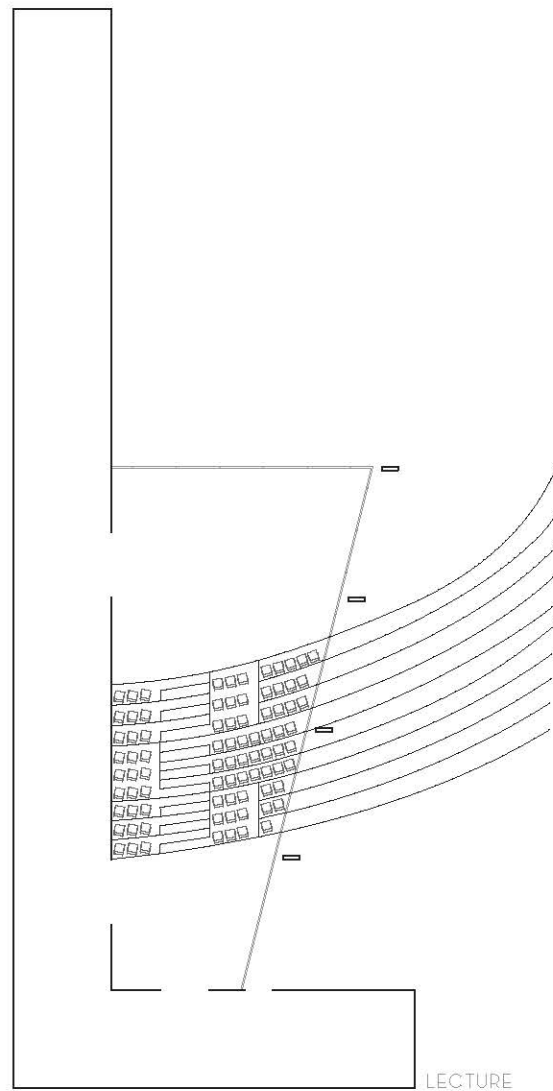
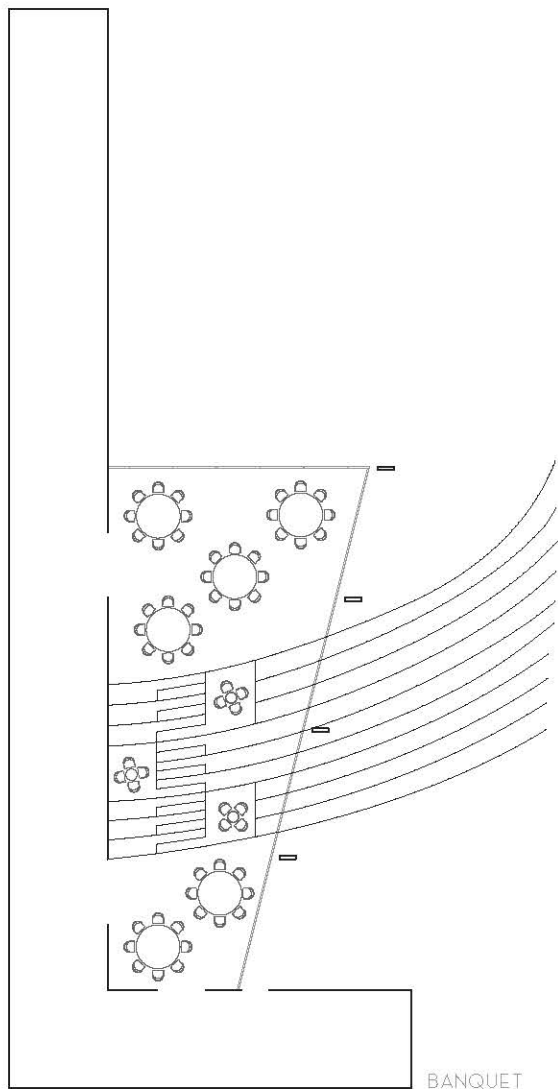


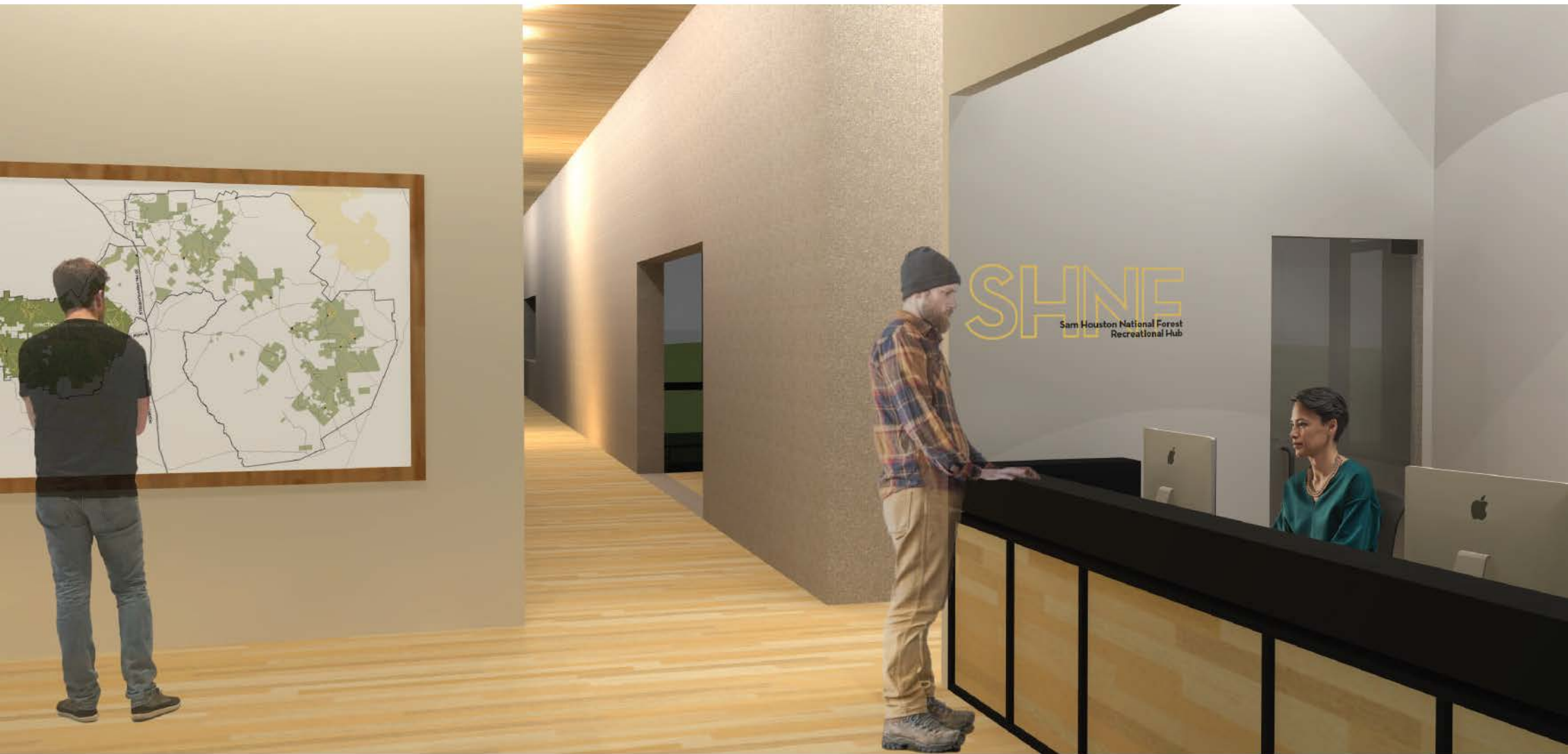
PROGRAM

PROGRAM

Due to the lack of office space and permanent educational facilities on site, this project proposes a multi-use center to serve as the Ranger Headquarters and a public education facility where the SHNFTC can base its operations. It will primarily focus on providing office spaces, a public exhibition hall, and educational areas for demonstrations and events.

The program for the building's main atrium space is flexible, allowing for various uses. The space lends itself to be utilized in different ways depending on the type of event being held.

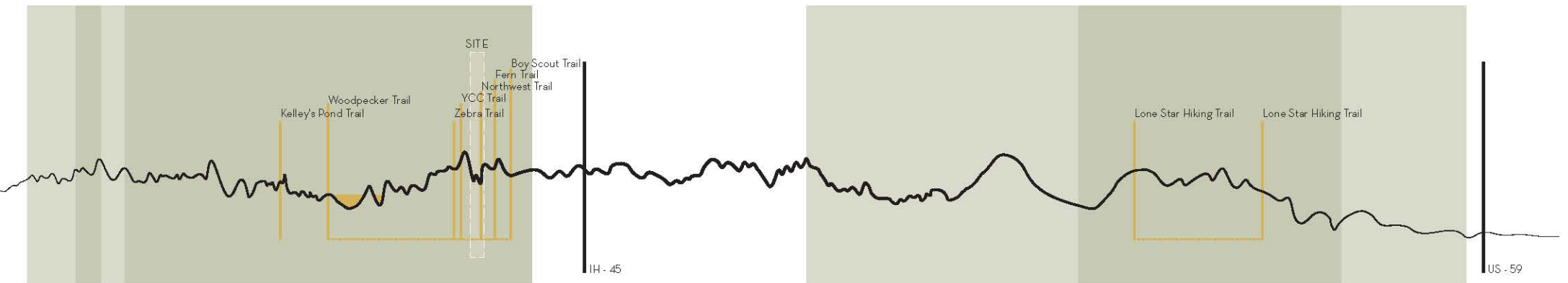






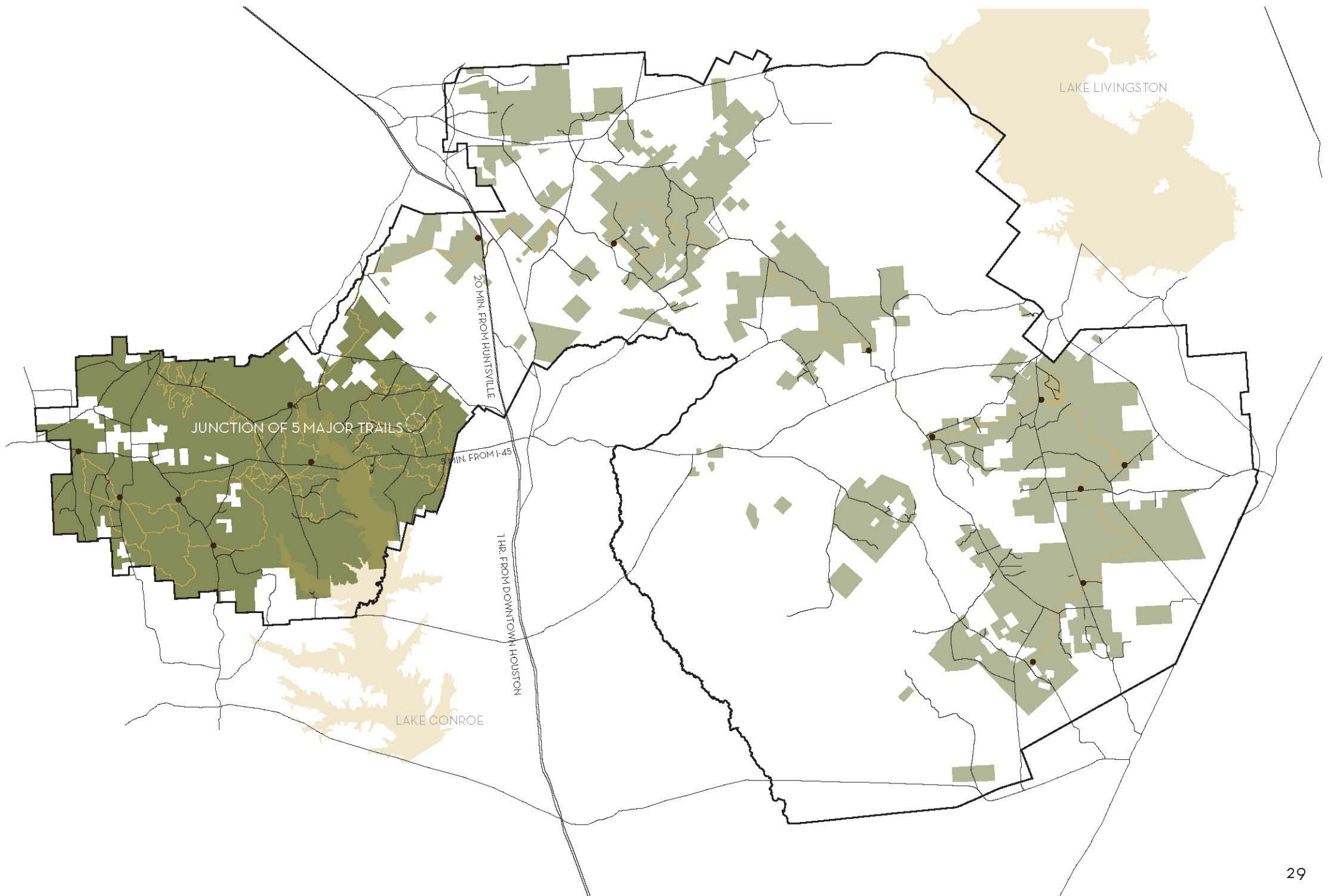
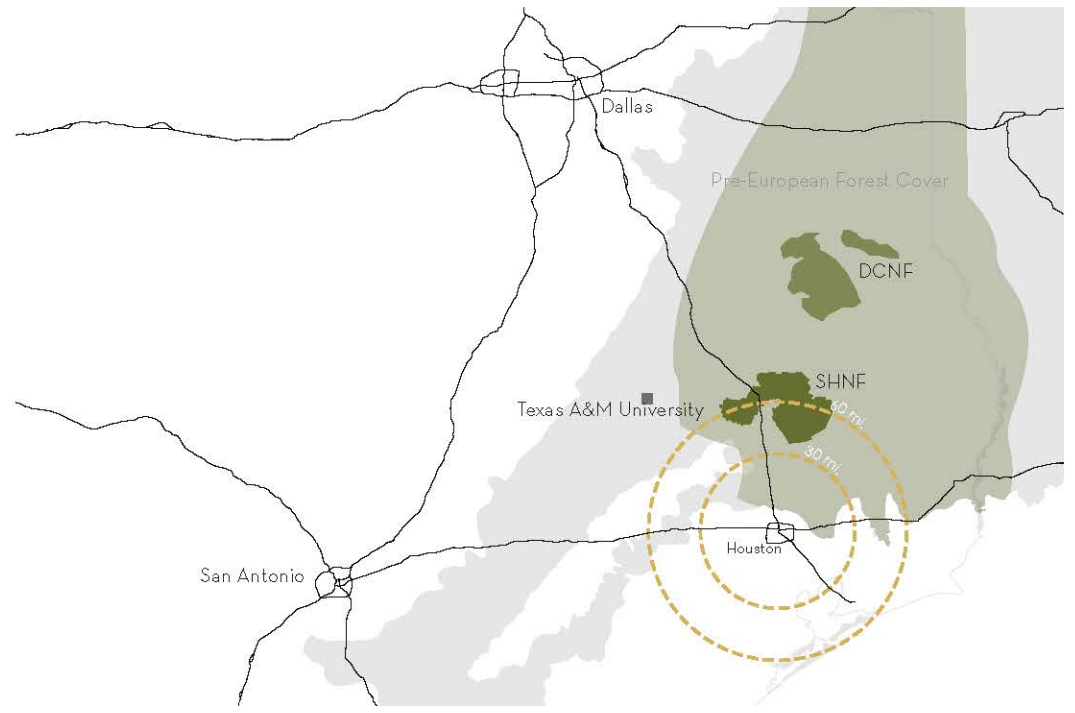
DESIGN CONCEPTUALIZATION

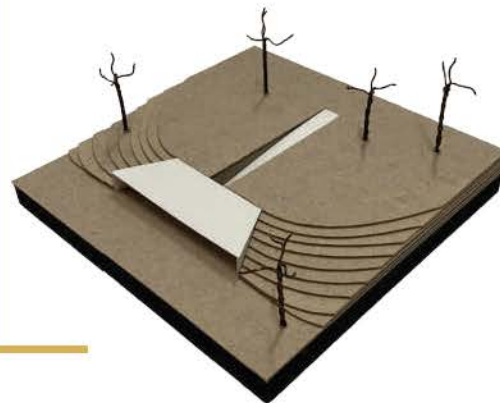
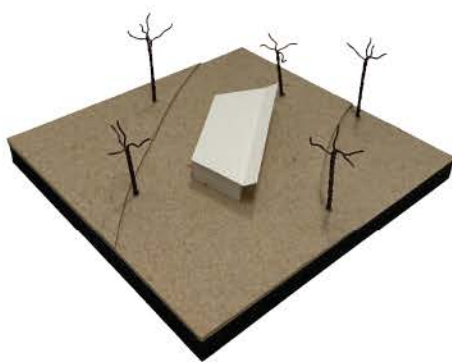
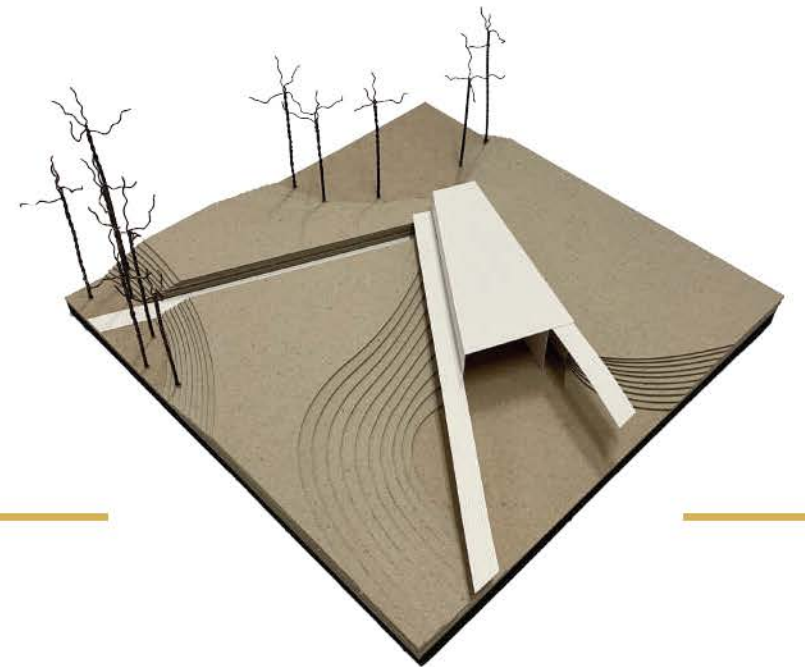
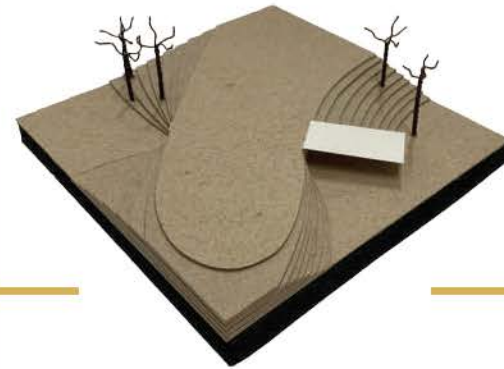
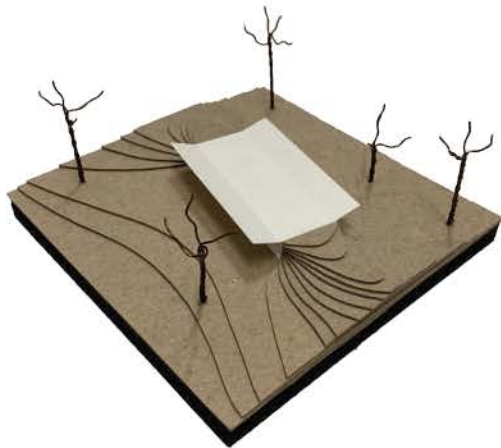
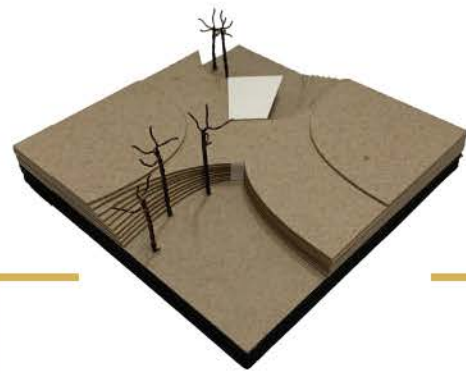
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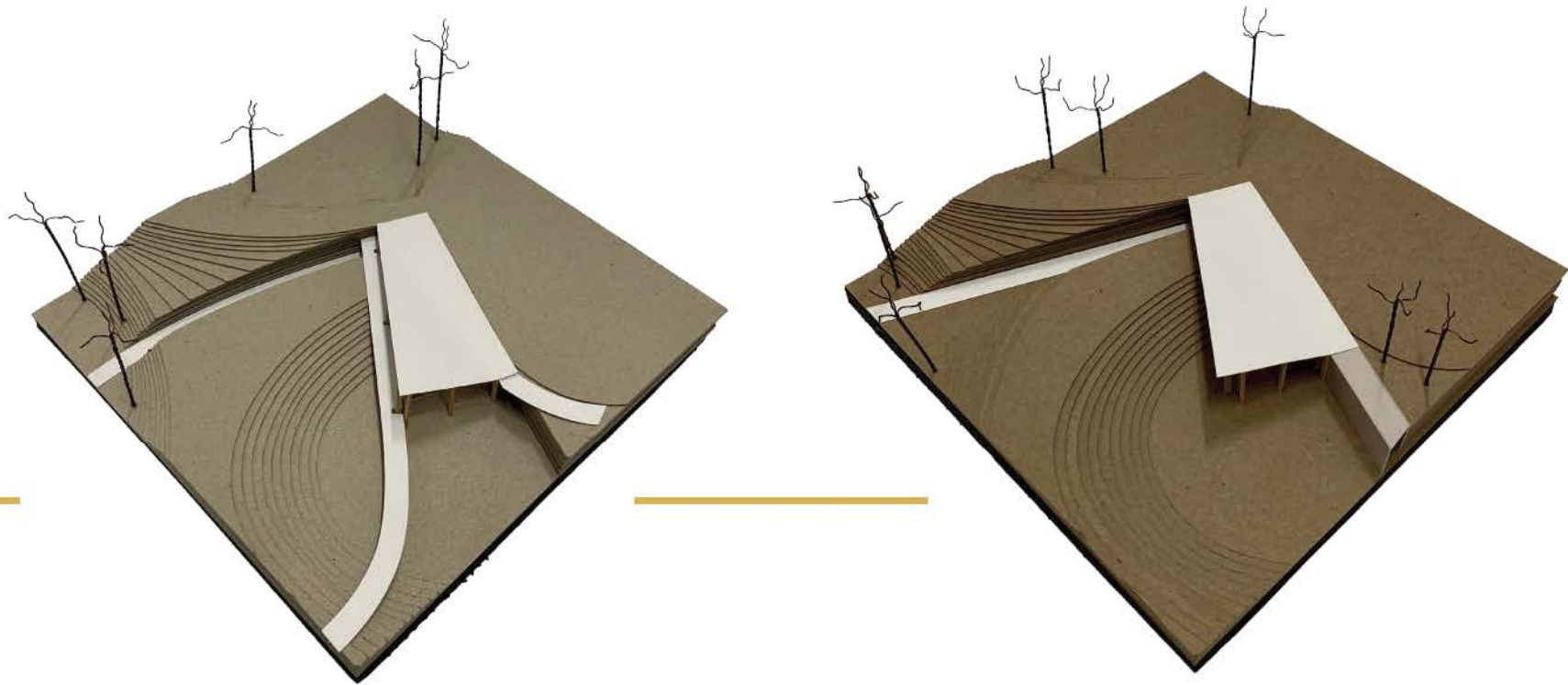


SITE SELECTION

To begin the design process, the overall scope of the Sam Houston National Forest was taken into consideration. The SHNF contains over 163,000 acres of piney woods, lakes, and rivers, broken down into three major areas within its administrative boundary. The project will be located within the westernmost region of the managed forest at the junction of five major trails that are currently managed by the SHNFTC. The site is located about eight miles from Interstate-45 and about one hour from downtown Houston. Being situated at the junction of the major trails, the building will serve as a prism that disperses users into the forest and utilizes the approach and departure trails as a part of the project.







During the initial design development phase, a series of parti models were created that focused on the building's siting within the natural form of the landscape. The region is largely characterized by rolling hills that range from relatively flat areas to fairly steep inclines and drops. The various models that were created each focused on a different method in which the building could interact with the landscape. The first model placed the building amongst the trees on a relatively flat site, leaving all sides fully exposed and visible to the user from any angle of approach. The second model integrated the building slightly more within the terrain as it was embedded on two opposing sides, but remained visible from most vantage points. The third model almost fully enveloped the structure within the landscape, only becoming visible upon entry to the building. The access point is largely hidden within the terrain and the opposing end of the building becomes exposed after passing through the hillside. Through this iterative process of model making, it was decided that the project would have the lowest negative impact if it were nestled into the hillside, utilizing the topography as a generator for a large portion of the form of the building and surrounding site.



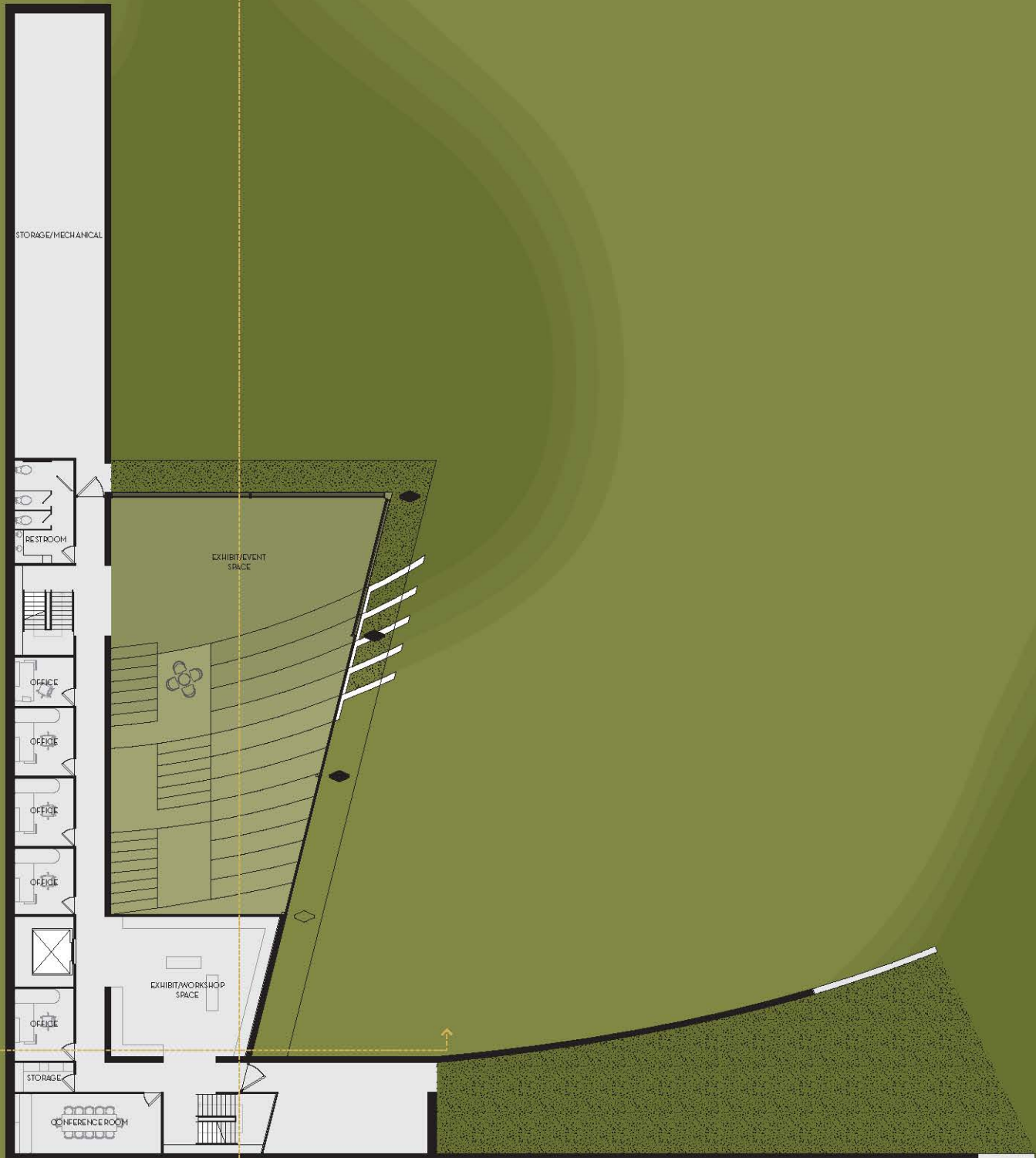
DESIGN DEVELOPMENT

DESIGN DEVELOPMENT

SITE PLAN

The site plan illustrates how the design continued to develop as a structure nestled within the topography, utilizing a concrete core to form a hard corner within the ground from which the building could emerge. The project is largely characterized by this core which holds the main structure, circulation, and utilitarian programs for the building. As shown, the topography of the immediate region was manipulated in order to create the landing pad for the project within the site. Gentle sweeps paired with shear cuts form intriguing spaces from which the building emerges to cast users to the trail-heads that connect to the project site.





STORAGE/MECHANICAL

RESTROOM

EXHIBIT/EVENT SPACE

OFFICE

OFFICE

OFFICE

OFFICE

OFFICE

EXHIBIT/WORKSHOP SPACE

OFFICE

STORAGE

CONFERENCE ROOM

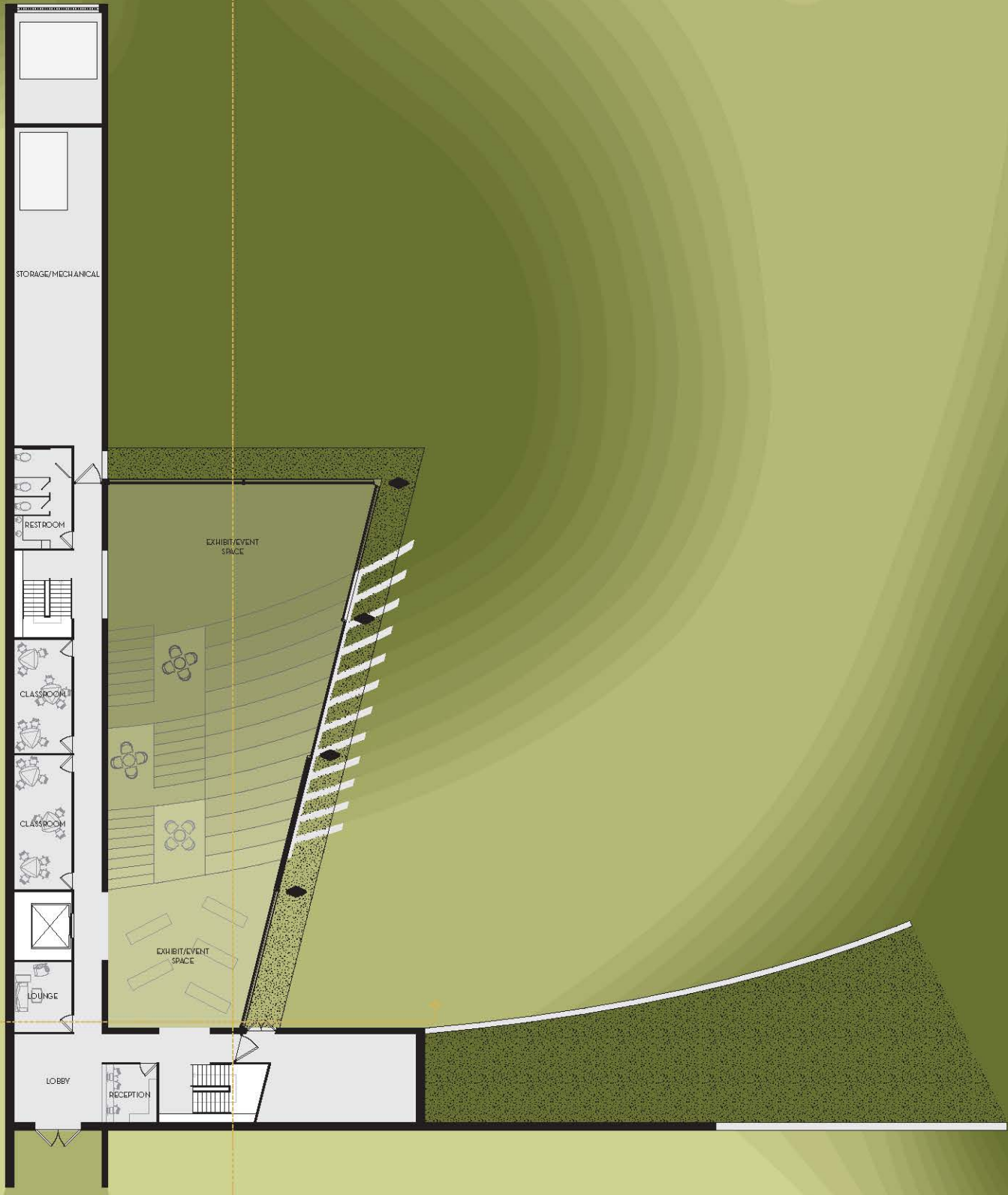
B

A

FIRST FLOOR PLAN

The first floor of the Sam Houston National Forest Recreational Hub hosts many of the utilitarian functions for the project. Since the public entry point is on the second level, the ground floor serves to provide a place for the administrative and operational needs of the building. This includes offices, restrooms, storage, mechanical spaces, and a conference room, all within the concrete core that defines the form. Between the two legs of the core, the lower levels of the interior topography steps are programmed as flexible areas that can be used for a variety of situations.

This level also serves as the departure point for many of the trails connected to the project as users move downward from the second floor entry through the building. The main area outside of the interior event space on the north facade of the building is comprised of a largely flat lawn. This area gently slopes upward to bring users back to the natural grade level of the trails throughout the forest that connect to the project.



B

A

SECOND FLOOR PLAN

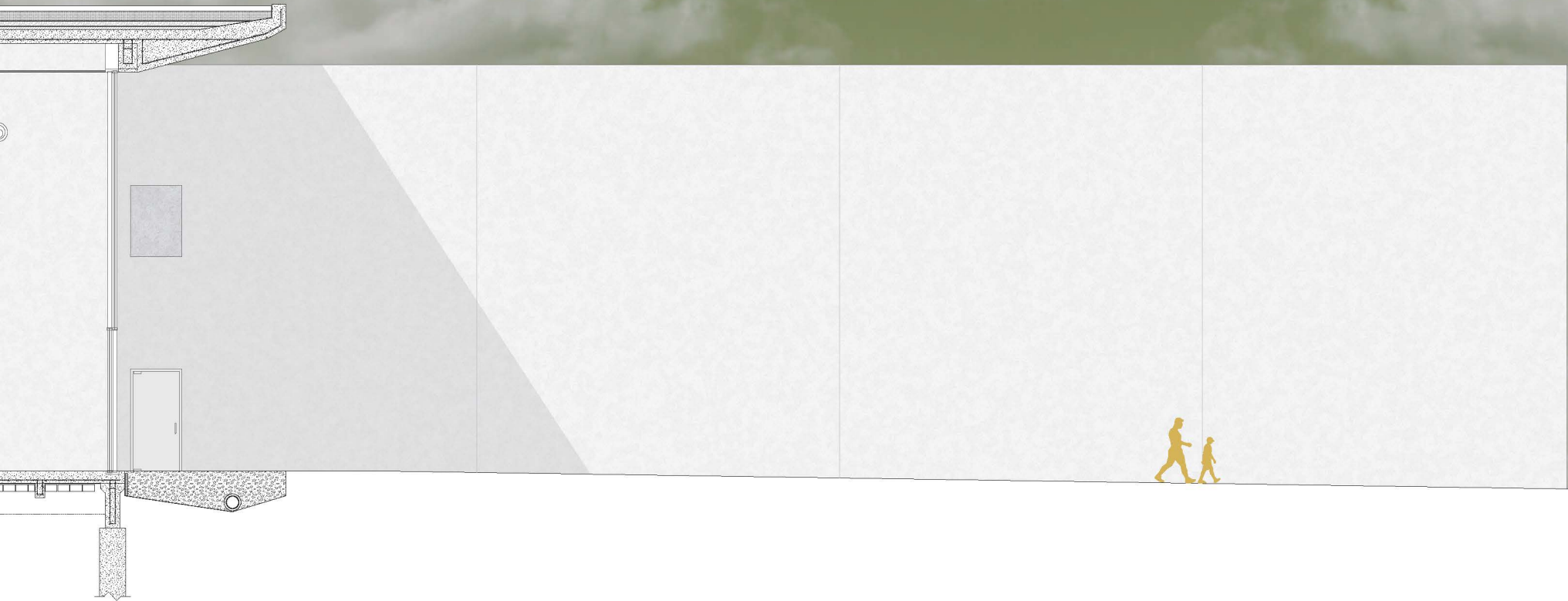
The second floor of the Sam Houston National Forest Recreational Hub differs from the lower level of the project. Since the public entry point is on this level, the main floor becomes more activate as users disperse throughout the building from the lobby. Similar to the first floor, the concrete core on this level also houses restrooms, storage, mechanical spaces, and vertical circulation. This floor also contains more public spaces including reception, demonstration rooms, and the upper levels of the topography steps outside of the concrete core. From this level, users experience an unhindered view of the forest beyond from the top of the large steps and see glimpses of what is to come as they descend.

While most of the trail connections occur on the lower level of the project, some trails can be accessed from the second level, providing a different experience depending on the user's inclination.



SECTION A $\frac{1}{4}'' = 5'$

The north-south section cut illustrates the change of grade between the first and second levels and the experience of the users as one moves through the building. The concrete core in this section holds the secondary form of vertical circulation in the building. The main area outside of the core can be seen in a different view, showing the long tread of the interior topography stair and the functions that can be present there.





- Vegetation Support
- Root Barrier
- Waterproof Sheathing
- Rigid Insulation
- Vapor Barrier
- Draining Slope
- Concrete Corbel
- Anchor Plate
- Beam Connector Plate
- Metal HVAC Duct Flashing
- HVAC Diffuser Nozzle

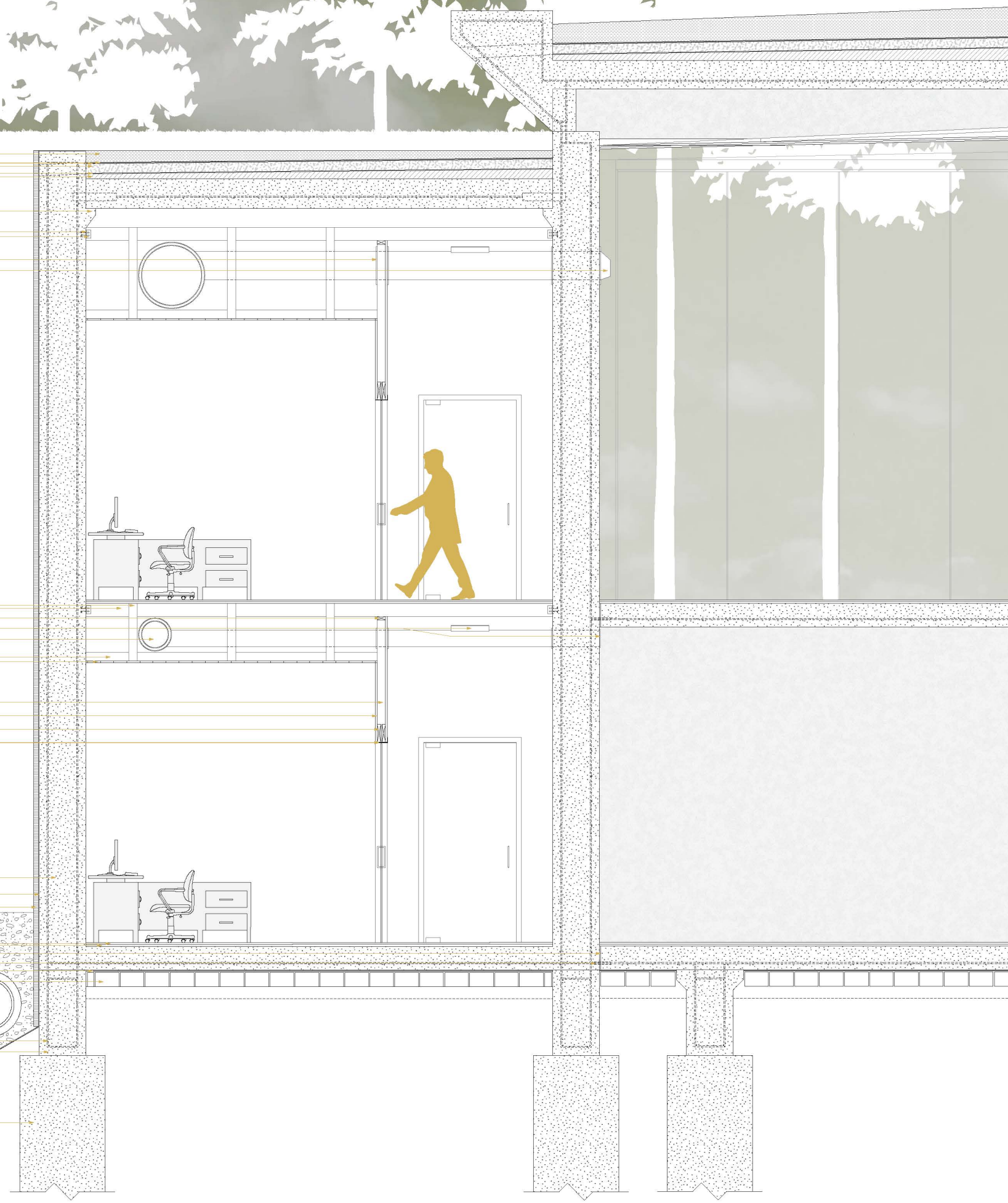
- Timber Ceiling Frame Vertical
- Floor Joist
- Timber Top Plate
- HVAC Diffuser
- HVAC Ductwork
- Timber Ceiling Frame Horizontal
- Wooden Slat Ceiling

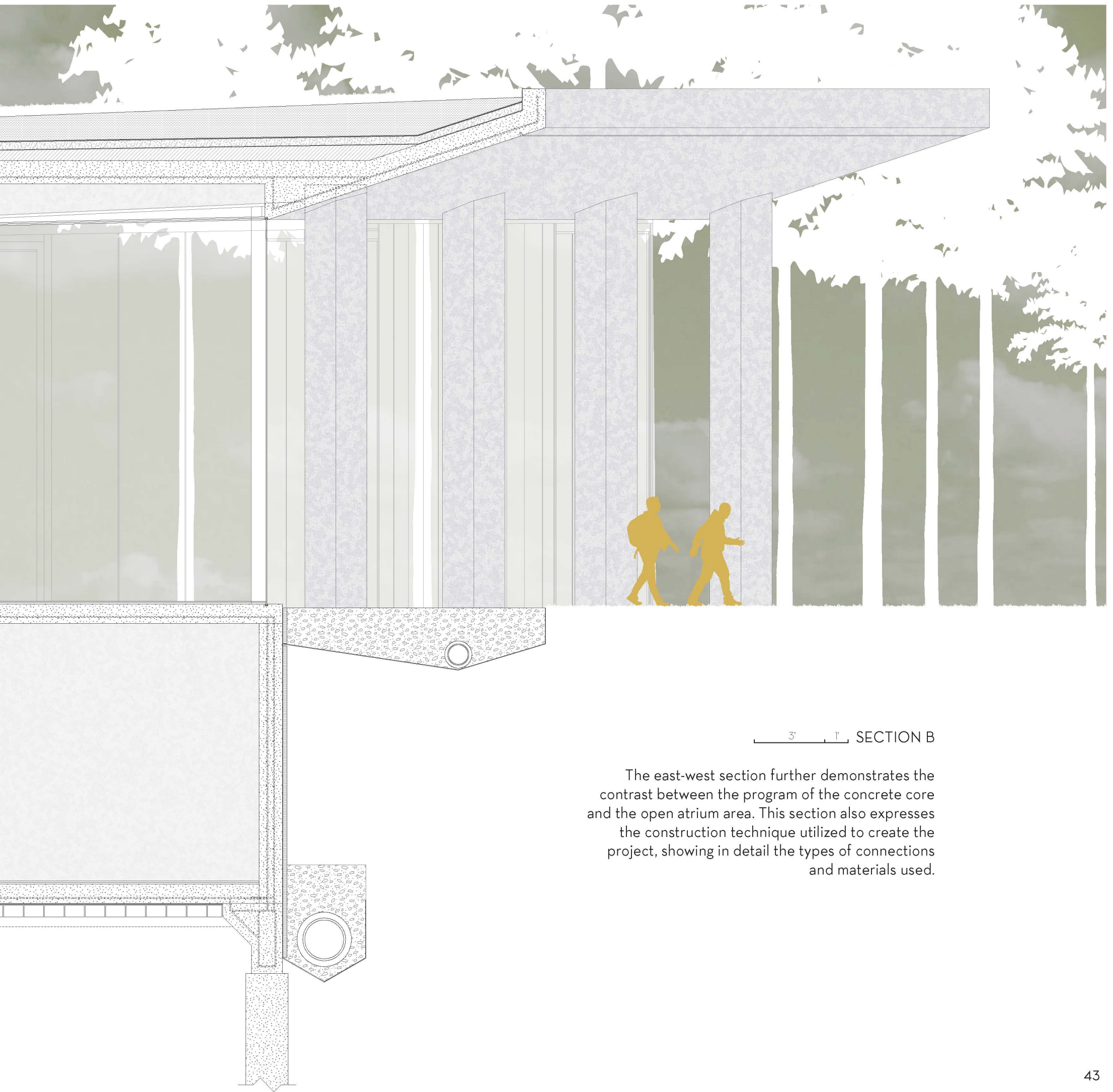
- Timber Wall Stud
- Gypsum Wall Panel
- Timber Header Beam
- Metal Door Framing

- Concrete Retaining Wall
- Waterproof Sheathing
- Drainage Mat
- Drainage Gravel
- Wood Flooring
- Plywood Sub-Floor
- Expansion Joint
- Metal Dowel
- Vapor Barrier
- Void Form
- Poly Rock Filled Mesh Sock
- Corrugated Perforated Drain Pipe

- Reinforcing Bars
- Concrete Grade Beam

- Concrete Pier





3' 1" SECTION B

The east-west section further demonstrates the contrast between the program of the concrete core and the open atrium area. This section also expresses the construction technique utilized to create the project, showing in detail the types of connections and materials used.



CONCLUSION

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This project utilizes the natural landscape and surrounding environment as a generator of form to harmoniously incorporate a built structure without destroying the character of the overall site. Providing necessary office space and educational facilities, the Sam Houston National Forest Recreational Hub seamlessly incorporates its function within the environment it seeks to protect. By providing this structure, the Sam Houston National Forest can increase its usability, educate the public on preserving the forest as a recreational resource, and relocate those who work tirelessly to manage it within the forest itself. This leads to a better understanding of the environment and a heightened working relationship between humans and their natural surroundings.



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³ Stuckey, Mary F. *Letter - Growing Up In A Sawmill Town, 1939*.

⁴ U.S. Forest Service. (n.d.). *United States Forest Service*. Retrieved January 25, 2020, from <https://www.fs.usda.gov/about-agency>

AFTERWORD

Throughout the course of this project, I have solidified my stance on integrating design within the natural landscape. I believe every intervention should respect and honor the space it occupies while simultaneously benefiting the community where it is placed. The architecture, development, and construction industries have a responsibility to develop projects that serve a legitimate function and fit the needs of those who utilize it. The industry also has a responsibility to the environment; designers should seek to protect nature and work with it when creating new infrastructure. As a future architect and developer, I hope to use my abilities that I have gained through my education to influence sustainable projects that put people *and* place at the forefront.

