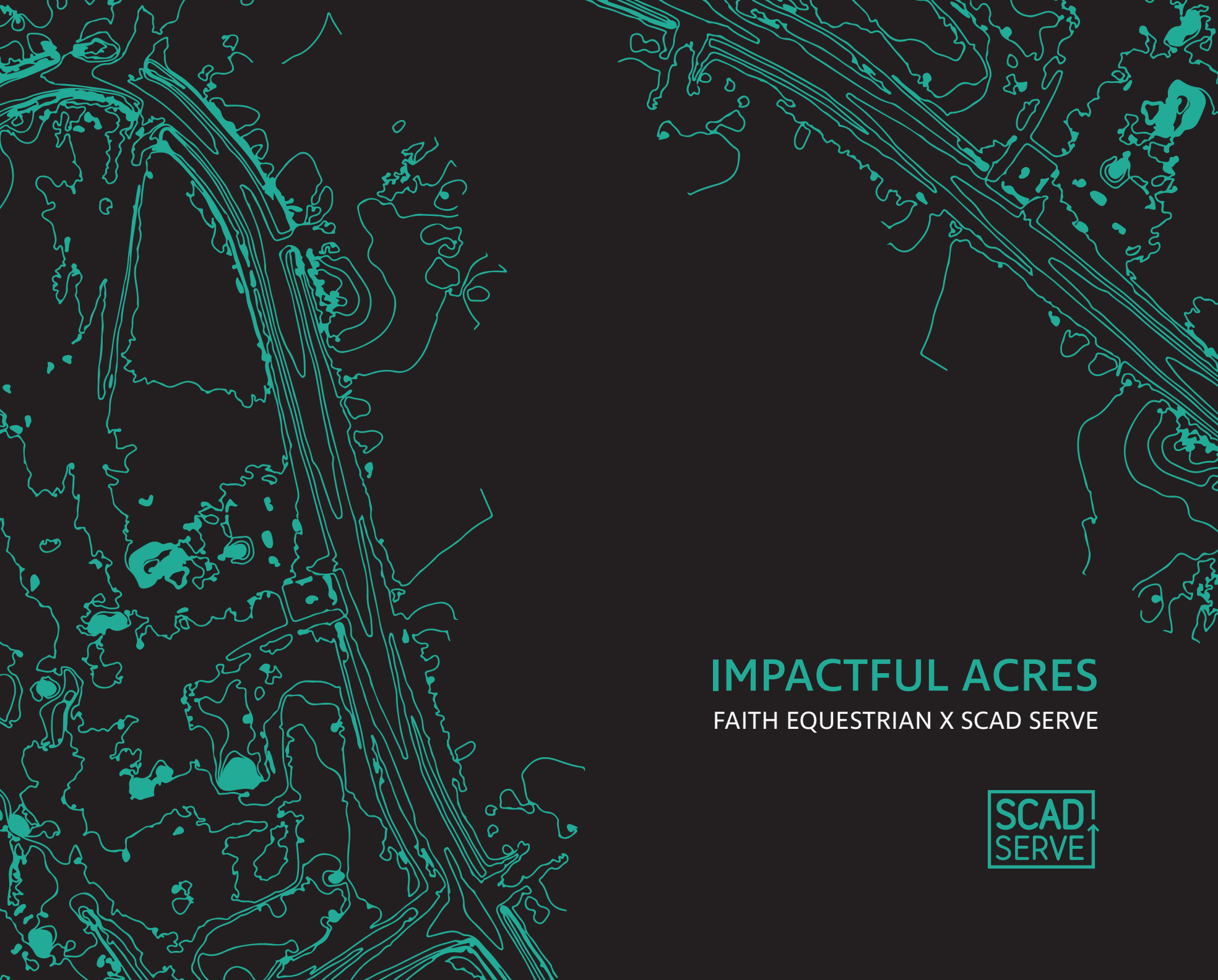

IMPACTFUL ACRES

FAITH EQUESTRIAN X SCAD SERVE

SCAD SERVE

DISCOVER YOURSELF

through transformative equine therapy

Team

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Overview

SCAD SERVE empowers the SCAD community, listening to the needs of its neighbors and local leaders. The mission is to create meaningful design solutions that improve quality of life.

Design for Good is a multidisciplinary studio experience, launched in 2021 as 10-week SCAD SERVE initiatives, employing students' ingenuity to generate elevated, community-centered solutions.

Students from the Design for Good class worked with Faith Equestrian Therapeutic Center, a local nonprofit, to develop an environmentally sensitive site plan and architectural design. Creating safe spaces to engage in equine-assisted healing and learning programs.

Our Client

Faith Equestrian Therapy Center is a multifaceted organization dedicated to enriching lives through the power of equine therapy and education. Founded with a strong belief in the transformative potential of equine therapy, Faith Equestrian offers a range of innovative programs designed to meet the diverse needs of its participants.

Using satellite and GIS data, students generated an existing site plan which considers the built environment of Faith Equestrian Therapeutic Center. Working closely with the local nonprofit, students established a buildable area for the new scope.

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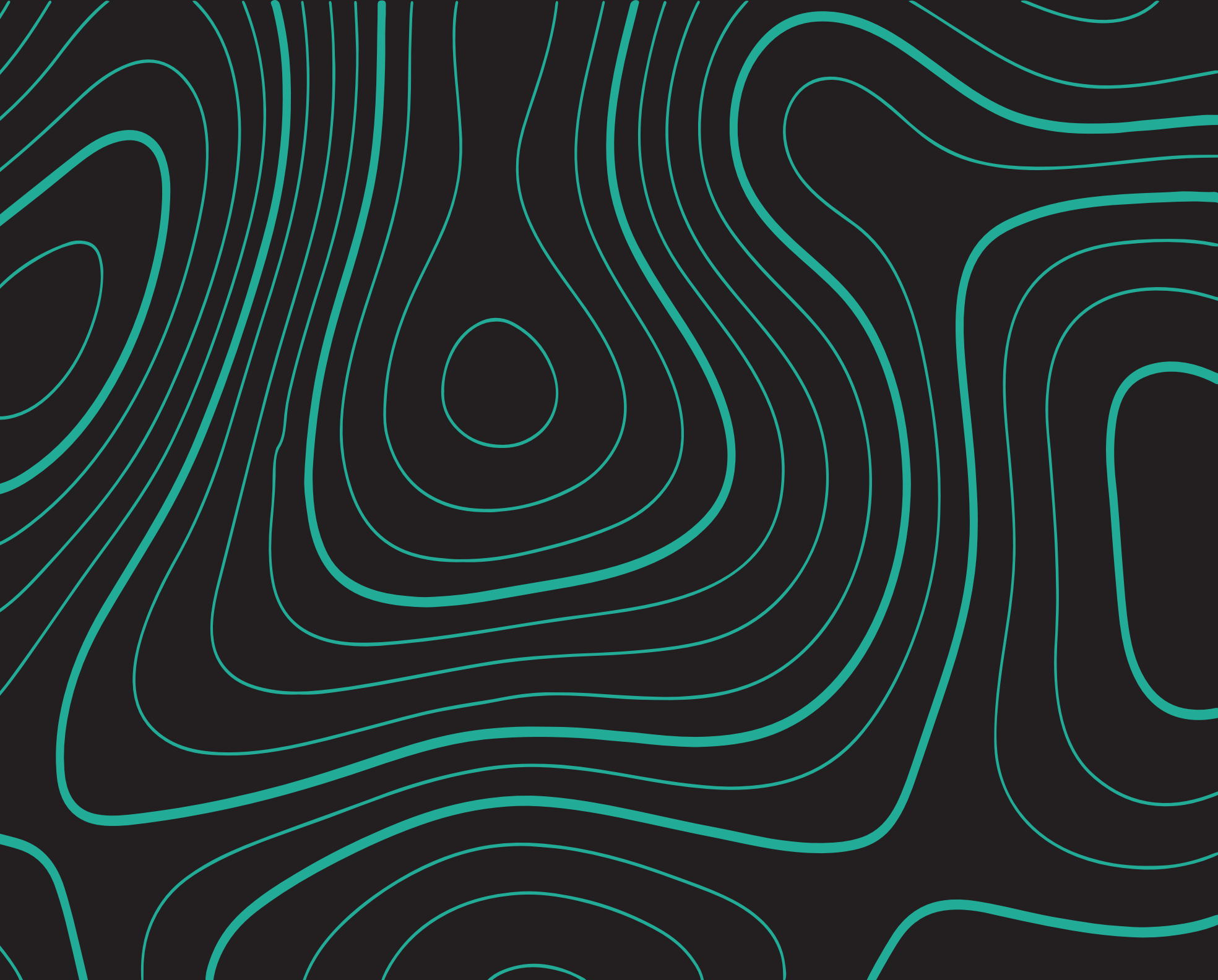


01 Project Introduction

A comprehensive overview of the project, setting a clear foundation and direction for the team to work towards.

The Process

DISCOVER

Client Meetings
Secondary Research
Primary Research

ANALYZE

Stakeholders
Target Audience
User Journey
Challenges
Opportunities

CONCEPT

Schematic Design
Program

DEVELOP

Plans & Sections
Renderings
Site Model

DELIVER

Final Scheme

Kickoff

During the kick-off meeting, the designers met with Faith Equestrian, introducing themselves and communicate key topics to be considered for the project. These discussions helped shape the design drivers and provided essential insights for the project's direction.

COMMUNITY IMPACT

- Non-profit equine therapy for those with special needs, emphasizing inclusivity
- Supported by a mix of full-time staff, equines, and diverse volunteers

EXPANSION

- Emphasis on safety, accessibility, and adaptable spaces with must-haves like 14' aisles, multi-use rooms, and on-site manager accommodations

FINANCIAL STRUCTURE

- Partnerships with educational and coaching entities, reliant on a mix of fundraising avenues
- 501(c)(3) non-profit, funds operations through grants, fundraisers, CSR initiatives, with most donations going to horse care

Design Ask

DESIGN ASK

· Site location needs to be next to covered arena
· Offices, classrooms on arena side with view into arena
· Stalls on opposite side
· Dimensions are 216 feet long 50 feet wide (not including overhangs)

INTERIOR

· ADA compliant
· Horses come first Care and Safety
· Easy for volunteers to work in
· Easy to clean and maintain
· All rooms should be multi-purpose with ability to expand or close off as needed
· Every stall should have removable dividers
· Every stall should be easy to feed grain without opening stall door
· Sliding stall doors
· Air flow and dust control are a priority
· Fly control is a priority
· No wasted space-more horse friendly design features
· Tack room close to the arena
· At minimum 3-4 grooming bays

UPSTAIRS

· TWO living areas
· Barn manager apartment with views over farm
· Studio apartment for guests or Assistant Barn Manager
· ADA compatible
· Mindful placement of sinks/hoses/etc.to reduce plumbing costs
· The overall design should be easy to add space or combine spaces for multi-purpose use
· Mindfully plan for expansion if more stalls or office space is needed
· Material should be easily sourced for Savannah area and durable in high heat and humidity
· Overall design should be financially realistic to fundraise for
· Overall design should also keep in mind PATH Intl's facility standards and rules/regulation

EXTERIOR FRAME

· Easy care and maintenance in high temperatures, humidity and wind
· Steel support
· Roof line compatible with arena for drainage
· Concrete block or poured concrete ⅓ way up for walls
· Drainage and ventilation are MUST HAVE
· Solar panels on roof to conserve energy costs
· Recyclable rain water to lower water usage
· Air flow is a PRIORITY
· ADA compliant
· Easy access for tractor/equipment
· Aesthetically compatible with the existing arena
· Concrete flooring with drains

Square Footage

Stables - 12'x12'= 144 sqft
14 Stalls - 2,016 sqft
Alley way - 15' wide
Office - 130 sqft
Classroom - 1,100 sqft
2 Bedroom 2 bathroom
apartment -1,000 sqft
Studio apartment - 600 sqft
Bathrooms - 56.25 Sqft

14 Stalls - 2,016 SQFT

Office - 130 SQFT

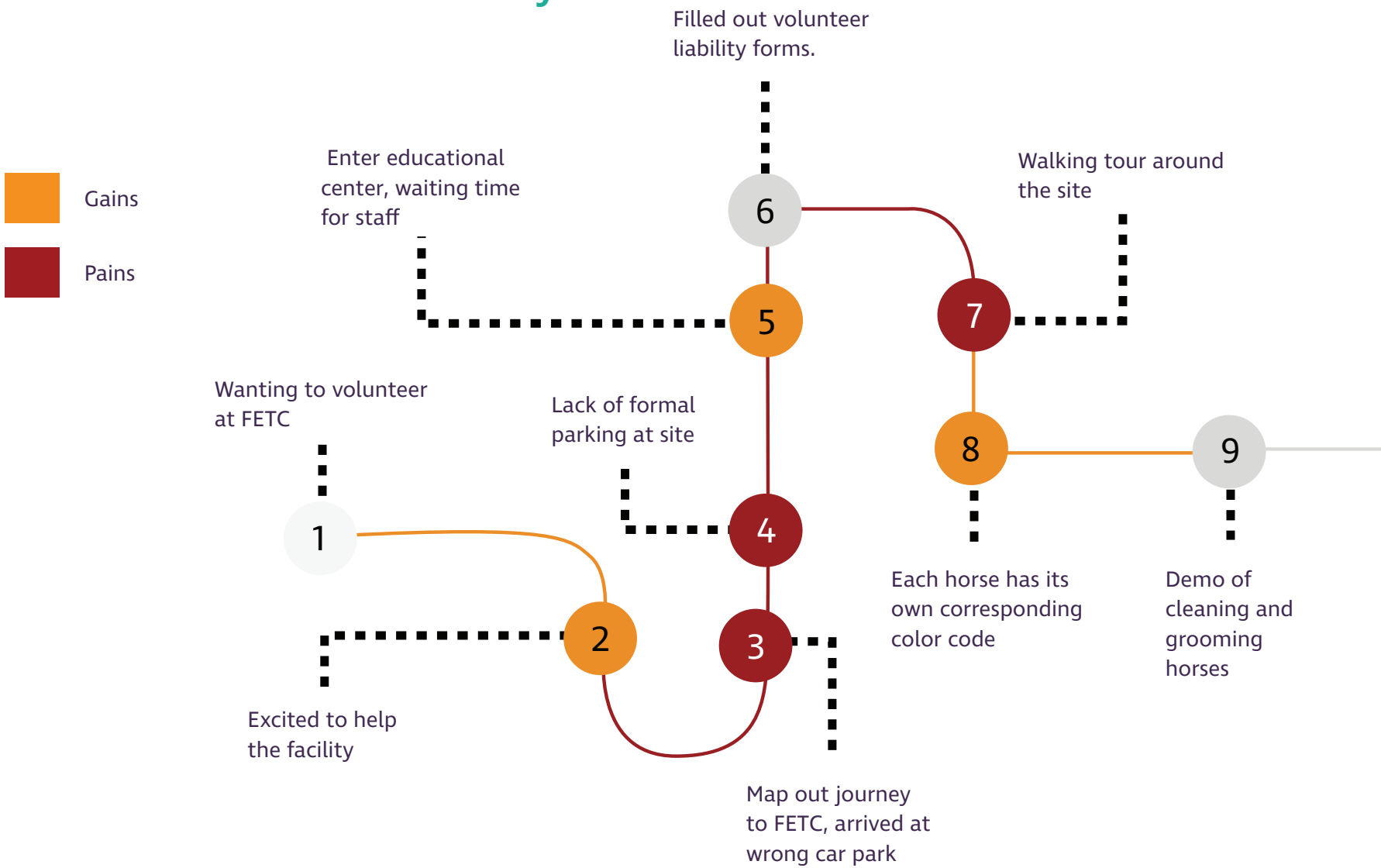
Bathrooms - 56.25 SQFT

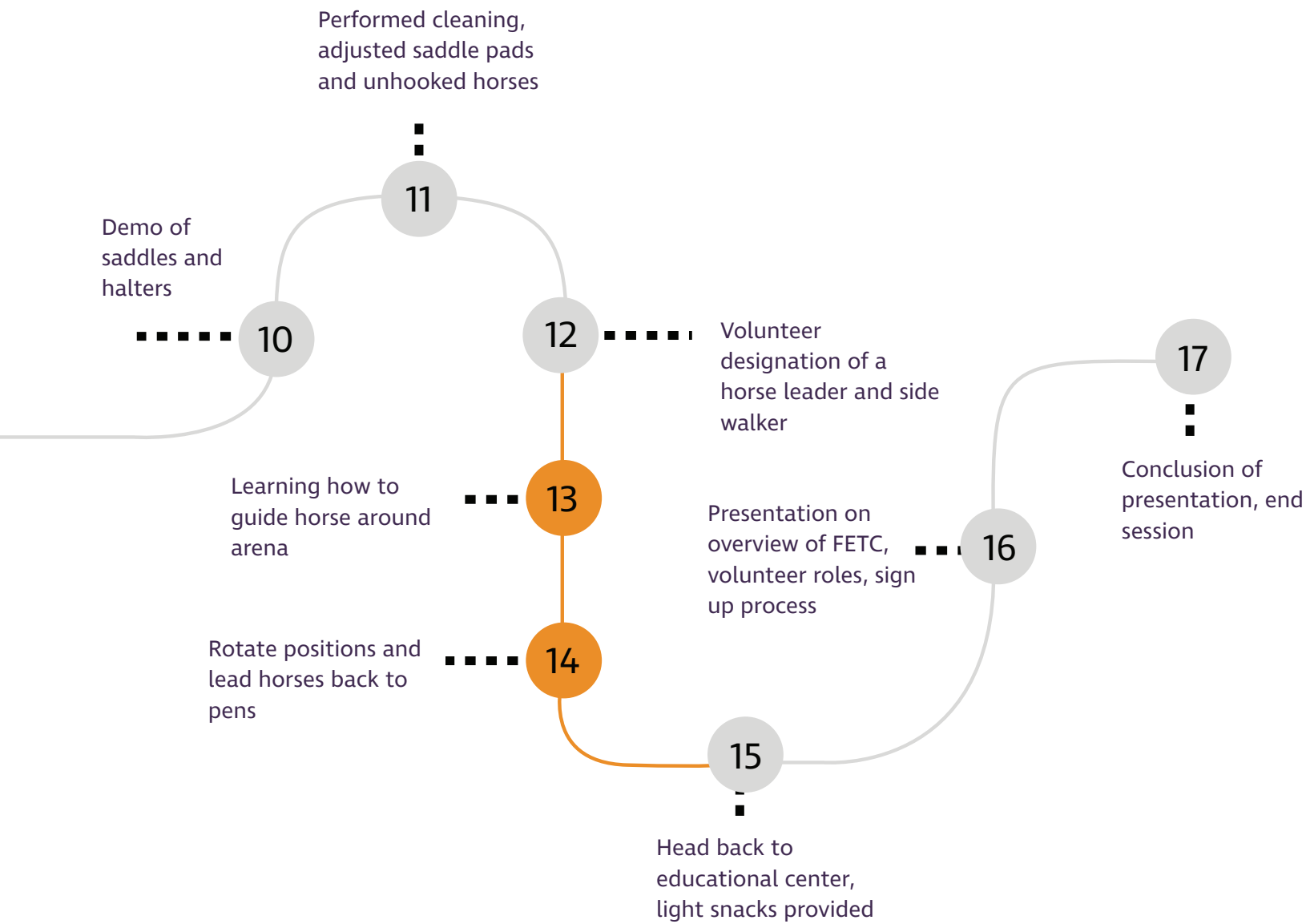
Classroom - 1,100 SQFT

2 bed 2 bath
- 1,000 SQFT

Studio apartment
- 600 SQFT

Current State Customer Journey




Performed cleaning, adjusted saddle pads and unhooked horses
11
Demo of saddles and halters
10
12
Volunteer designation of a horse leader and side walker
17
Conclusion of presentation, end session
Learning how to guide horse around arena
13
Presentation on overview of FETC, volunteer roles, sign up process
16
Rotate positions and lead horses back to pens
14
15
Head back to educational center, light snacks provided

Resource Constraints & Opportunities

Visual tool used to identify, analyze, and manage project limitations related to issues the organization is having. After analyzing the limitations, our team came up with different solutions that could resolve the limitations. To effectively design concepts, it is imperative to understand the constraints of the site, resources, and overall needs of the staff and participants.

Each path shows the problem and its corresponding solution. The solutions to the different resource constraints can be observed by the different paths seen on the right.

Constraints

RESOURCE LIMITATIONS

- Financial constraints
- Lack of ability to expand facility
- Lack of ability to enhance service

INFRASTRUCTURE NEEDS

- Costly dual requirements for horse-friendly and disability-accessible designs
- Lack of adequate parking impairs accessibility

STAFFING CHALLENGES

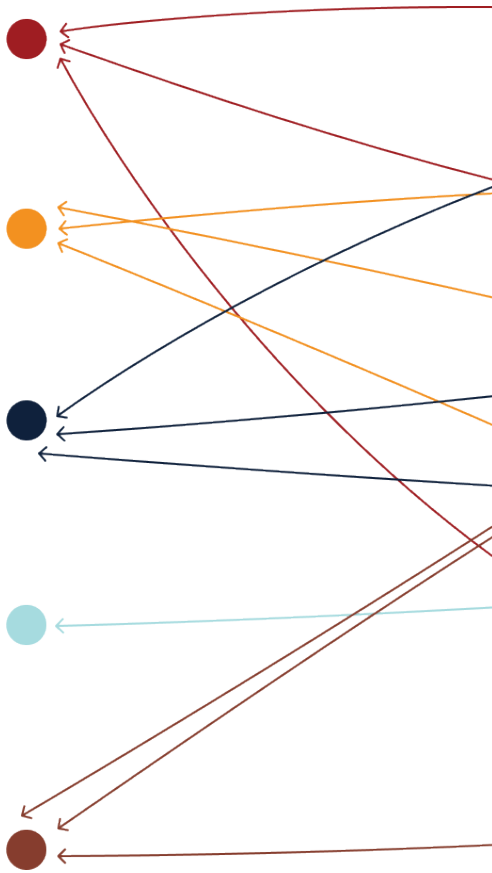
- High turnover from reliance on volunteers
- Underpaid staff disrupts service continuity and quality

HEALTH & SAFETY RISKS

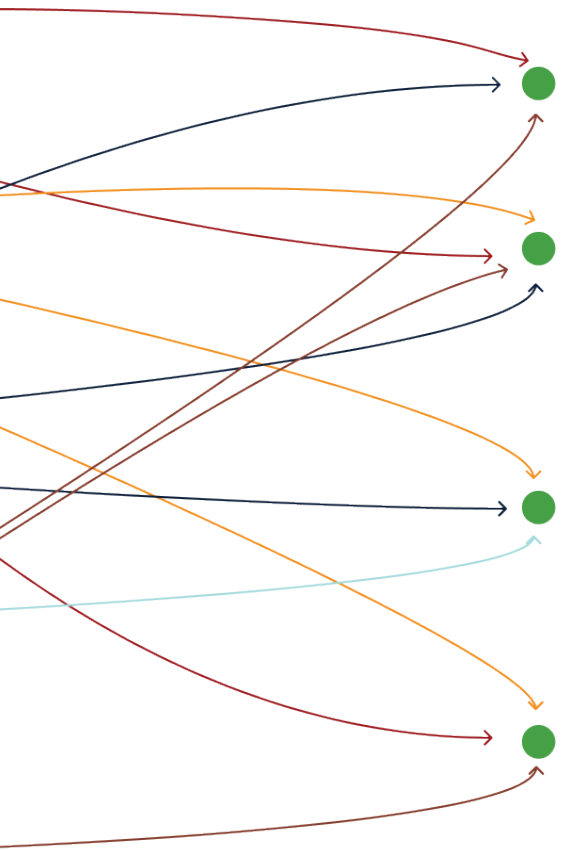
- Potential liabilities from accidents involving animals
- Vulnerable clients threaten reputation and stability.

LIMITED PUBLIC AWARENESS

- Predominantly local knowledge of FETC's services limits broader client and donor engagement.



Solutions



EXPANSION OF SERVICES

Potential to extend therapeutic offerings and client demographics, such as veterans and the elderly

MARKETING & AWARENESS

Opportunities for new collaborations and funding avenues through grants and sponsorships

Increased visibility and donor support through strategic marketing and public relations efforts

Enhanced local engagement and volunteer support through expanded community outreach initiatives.

COMMUNITY - FOCUSED DESIGN

additions aim to enhance local engagement, volunteer participation, and overall community support, making the facility a local landmark

multi-functional spaces that facilitate new partnerships and community involvement.

ARCHITECTURAL BRANDING & VISIBILITY

Redesign the facility's public-facing elements to reflect its mission and therapeutic benefits, potentially attracting media attention and public interest.

Improved architectural branding including signage, visitor centers, and an iconic design can significantly boost donor and sponsor interest.

Design Belief

What?

NEW BARN

An architectural project that encompasses a multifunctional space tailored to accommodate various needs, featuring stables for livestock housing, comfortable living quarters, a dedicated classroom area for educational purposes, ample storage facilities, and well-equipped offices for administrative tasks.

Why?

PURPOSE

The project aims to enhance operational efficiency, support comprehensive educational and therapeutic activities, and foster a collaborative, inclusive community environment through integrated, multi-use facilities.

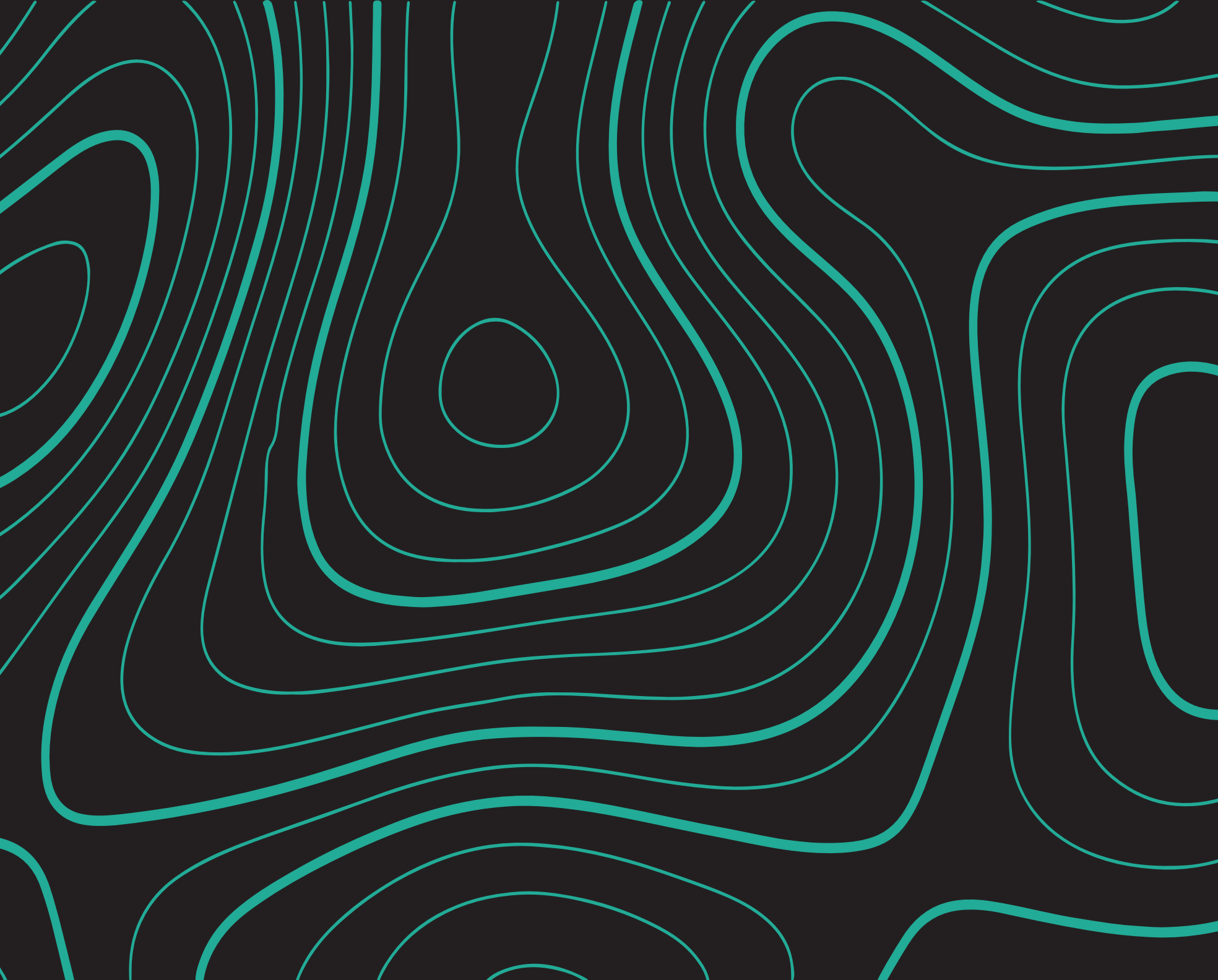
How?

APPROACH

By employing adaptive design principles, advanced construction methods, and smart technologies, alongside engaging stakeholders and securing diverse funding sources, the project ensures functionality, sustainability, and community alignment.

Goal Statement

Empowering individuals with special needs through transformative equine therapy, fostering **growth** and **healing** in an **accessible, sustainable, and community-integrated** environment.

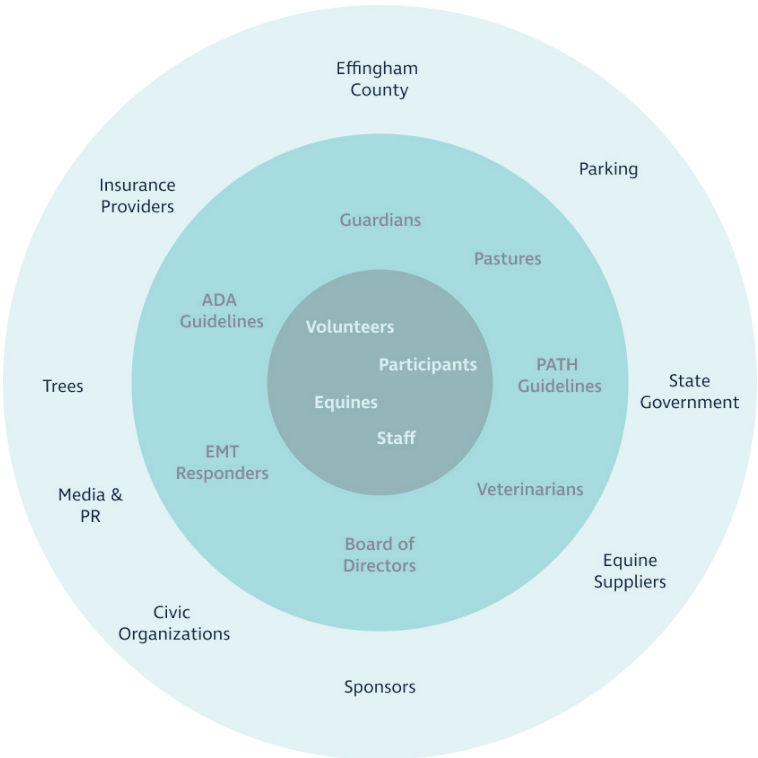


02 Primary Research

Collecting original data through interviews, site visits, and surveys with stakeholders to gain firsthand insights and understand their needs. This method uncovers unique perspectives and operational challenges.

Stakeholder Map

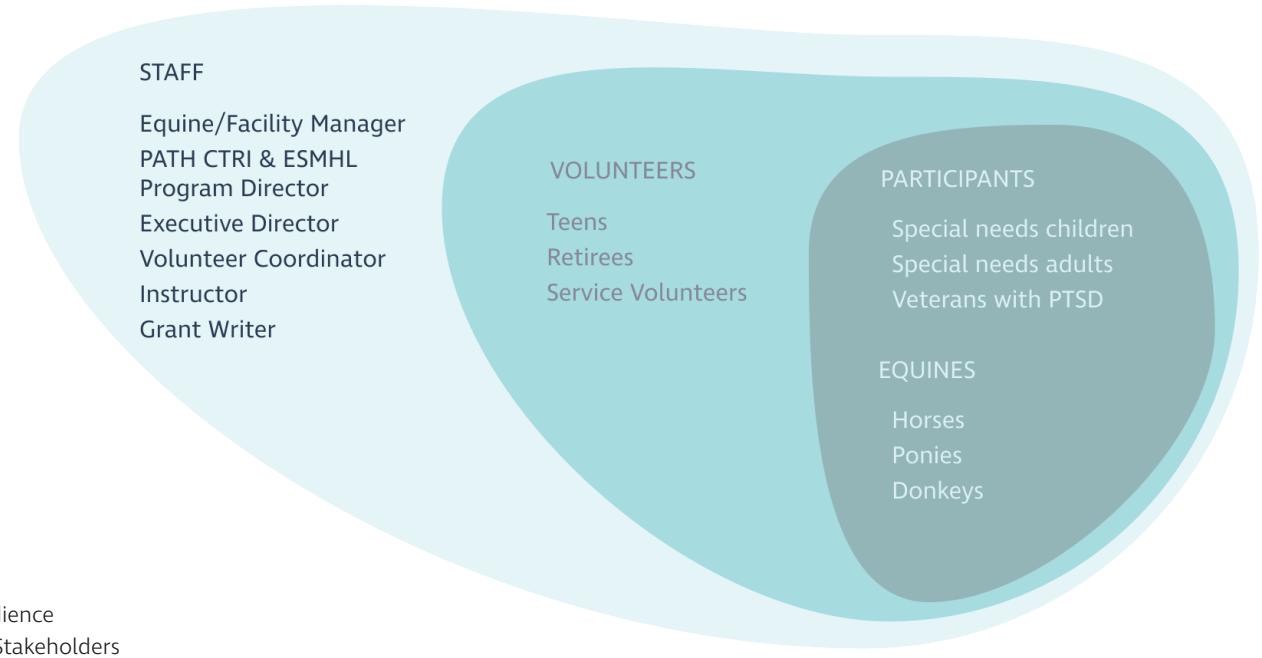
A stakeholder map categorizes individuals, groups, or organizations involved in a project based on their level of influence and interest. Stakeholders are plotted as key players requiring active engagement. Those with high influence but low interest may need occasional updates, while those with low influence and high interest offer valuable perspectives but lack decision-making power. Stakeholders with minimal influence and interest require minimal communication. This visual tool helps organizations understand relationships, prioritize engagement, and manage stakeholders effectively.



- Core Audience
- Primary Stakeholders
- Secondary Stakeholders

Core Breakdown

Further breaking down the core stakeholders, this diagram shows who exactly we are referencing and designing for.



Core Audience
Primary Stakeholders
Secondary Stakeholders

Volunteers: Retirees

Background

Looking for opportunities to fill their time with purposeful activities that also offer social interactions

Characteristics

Experienced and Skilled
Varied Mobility Levels
Seeking Social Interaction
Desire for Flexibility

Goals

Stay Active and Engaged
Contribute Meaningfully
Connect Socially
Pass on Knowledge and Skills

Why “FETC”?

Aligns with Values of Care and Support
Opportunity for Varied Involvement
Safe and Accessible Environment
Community and Belonging

Volunteers: Teens

Background

Looking for opportunities that are not only educational but also allow them to make a tangible impact.

Characteristics

Aligns with Values of Care and Support
Opportunity for Varied Involvement
Safe and Accessible Environment
Community and Belonging

Goals

Fulfill Educational Requirements
Explore Career and Personal Interests
Develop New Skills
Build Their Resumes

Why “FETC”?

Variety of Volunteer Opportunities
Educational Environment
Community and Networking
Mentorship and Guidance

Members: Special Participants

Background

Requires tailored environments that accommodate their varying levels of sensory processing, mobility, and cognitive abilities.

Characteristics

Diverse Abilities
Sensory Sensitivities
Communication Variances
Requirement for Predictability

Goals

Participate Fully and Safely
Experience Therapeutic Benefits
Feel Comfortable and Supported
Foster Independence

Why “FETC”?

Specialized Programs
Inclusive Design
Trained Staff
Community and Belonging

Permanent Staff - Elizabeth Todd

Background

I began riding at 8, moved from veterinary work to teaching, and I found my calling in equine therapy, leading me to FETC in Georgia.

Characteristics

Passionate, self-motivated, dedicated. Faith-driven, Purposeful

Goals

Develop future instructors, ensure horse well-being, and achieve financial stability for FETC.

Why “FETC”?

I chose FETC for its mission and growth potential, combining horse care, teaching, and witnessing participants’ progress.

Permanent Staff - Dana Starr

Background

I earned a Bachelor's degree in Communication from Columbus State University, and I have experience with the U.S. Army and school PTA/PTO programs.

Characteristics

Passionate, dedicated, community-focused, and driven by a desire to help others.

Goals

I aim to grow FETC by raising awareness, attracting volunteers, sponsors, and donors, ensuring horse well-being, and moving towards a new barn.

Why "FETC"?

I joined FETC in March 2021, motivated by love for the organization, participants, and horses, and I'm committed to advancing the center's mission.

Permanent Staff - Ansley Schweiger

Background

I grew up in Savannah and graduated from Georgia Southern University, focusing on Business, Non-profit Management, and Psychology. I've worked with horses for over 10 years and individuals with special needs for over 8 years

Characteristics

Passionate, dedicated, and deeply committed to my work with horses and individuals with special needs.

Goals

I aim to help Faith Equestrian reach its full potential, allowing programs to flourish and raising community awareness.

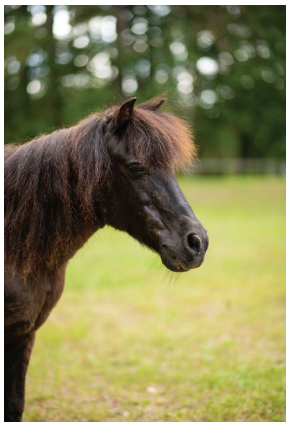
Why "FETC"?

I began instructing at Faith in fall 2021 and I am pursuing certification as a Therapeutic Riding Instructor. My passion for the work and the impact of Faith made joining an easy decision.

Equine Staff

Name: Apache
Serving FETC Since: 2019
Breed: American Paint Horse
Gender: Gelding
Color: Paint
Date of Birth: 1998

Name: Cody
Serving FETC Since: 2006
Breed: Pony
Gender: Gelding
Color: Bay and White
Date of Birth: 2002



Name: Higbee
Serving FETC Since: 2015
Breed: United Kingdom Shetland Pony
Gender: Gelding
Color: Black

Name: Jetta Cooke
Serving FETC Since: 2009
Breed: Paint
Gender: Mare
Color: Bay and Tobiano
Date of Birth: 1997

Name: Primrose
Serving FETC Since: 2024
Breed: Welsh Pony
Gender: Mare
Color: Gray
Date of Birth: 2011

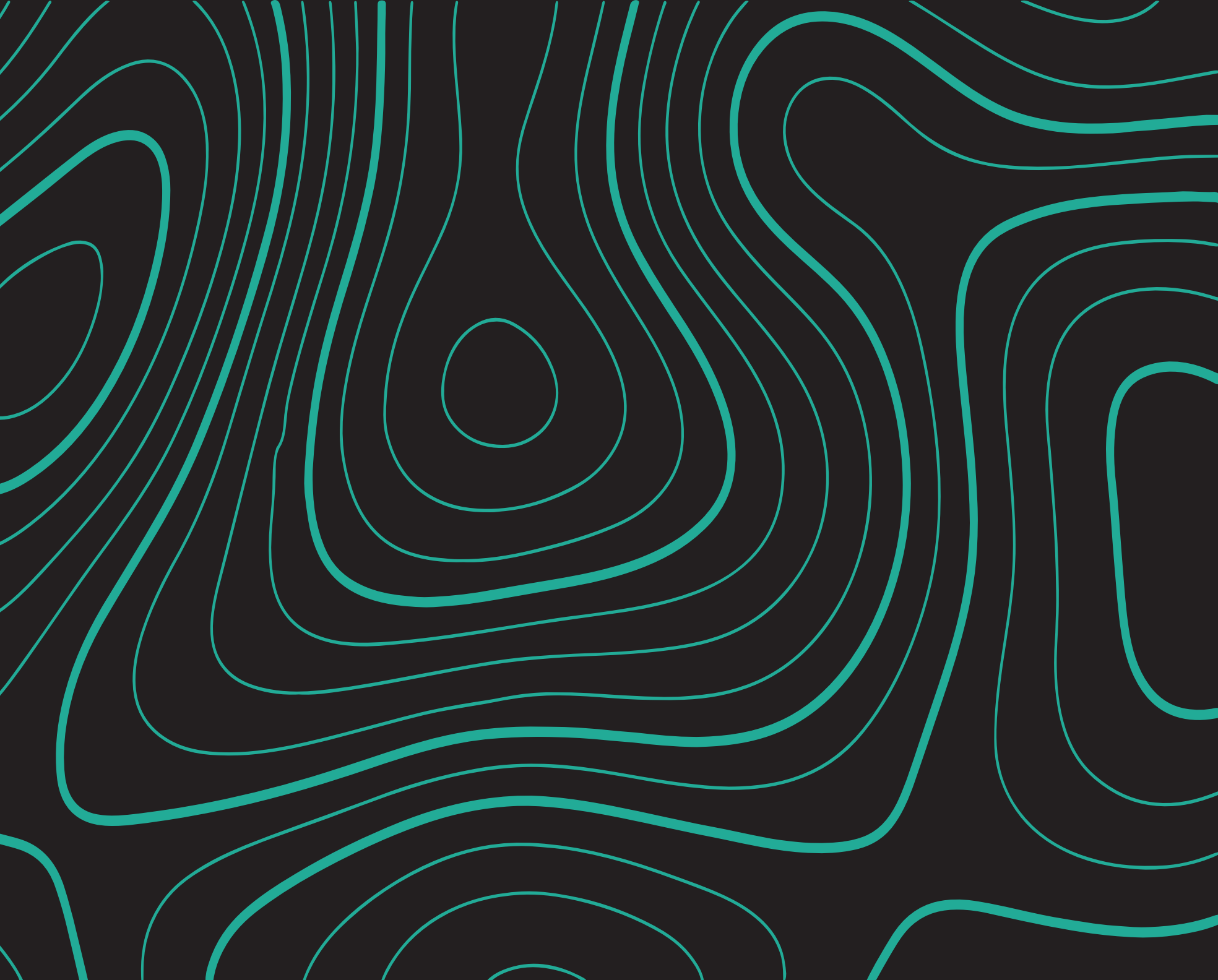
Name: Chloe
Serving FETC Since: November, 2023
Breed: Solid Color Paint
Gender: Mare
Color: Gray
Date of Birth: 2003

Name: Jasmine (Jazzy)
Serving FETC Since: 2015
Gender: Mare
Color: Palomino
Date of Birth: 1999

Name: Nala
Serving FETC Since: 2023
Breed: Dutch Warmblood
Gender: Mare
Color: Bay
Date of Birth: 2007

Name: Platinum Playgun
Serving FETC Since: 2022
Breed: AQHA
Gender: Gelding
Color: Grey
Date of Birth: 2011

Name: Teddy
Serving FETC Since:
Breed: Haflinger
Gender: Gelding
Color: Sorrel



03 Secondary Research

Analyzing existing data to understand best practices and relevant information. This method provides broader context and supports the development of informed concepts and solutions.

Current Site

Elevation change of NW 61' to 74' SE
Flooding occurs on the south & east side

This map delineates the current site boundary and building zones, indicating which structures are to be retained and which are scheduled for removal.

Using both satellite and GIS date, students generated an existing site plan that considers the built environment of Faith Equestrian Therapeutic Center. Working closely with the local nonprofit, students established the areas in which are buildable.

REMOVE

OPTIONAL

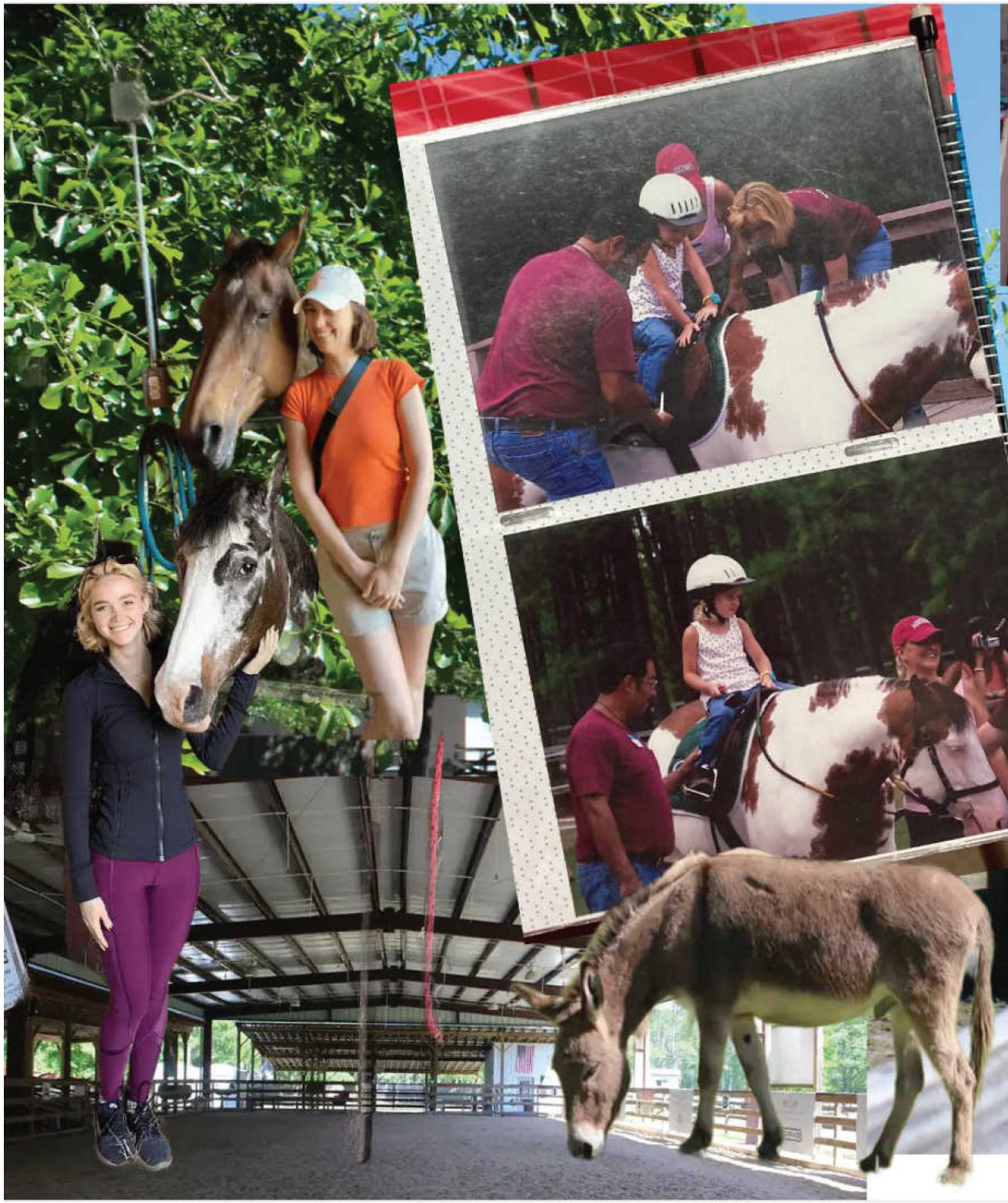
KEEP

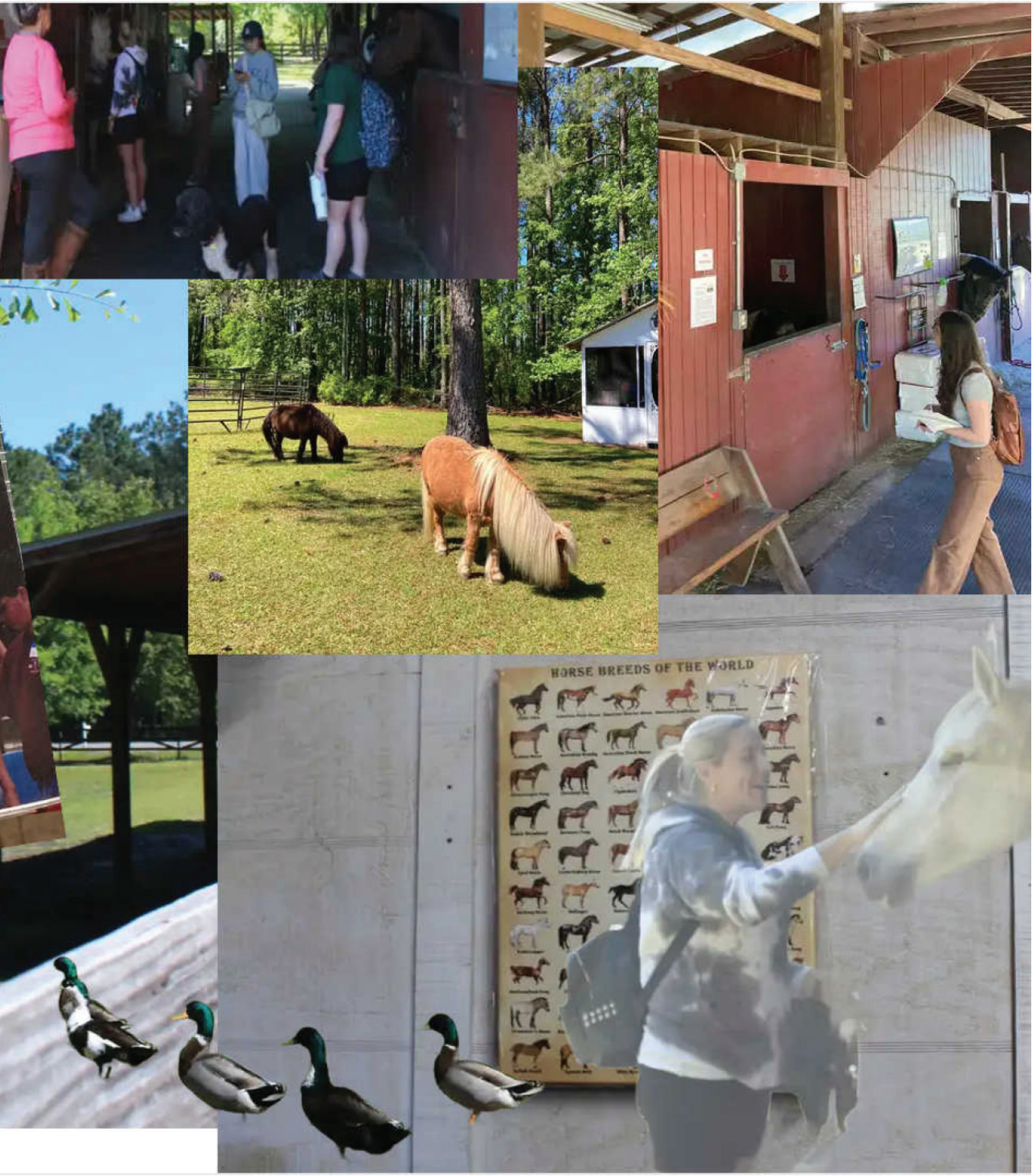
CANNOT BUILD ON

OKAY TO BUILD ON

PREFFERED BUILD AREA

Site Visit



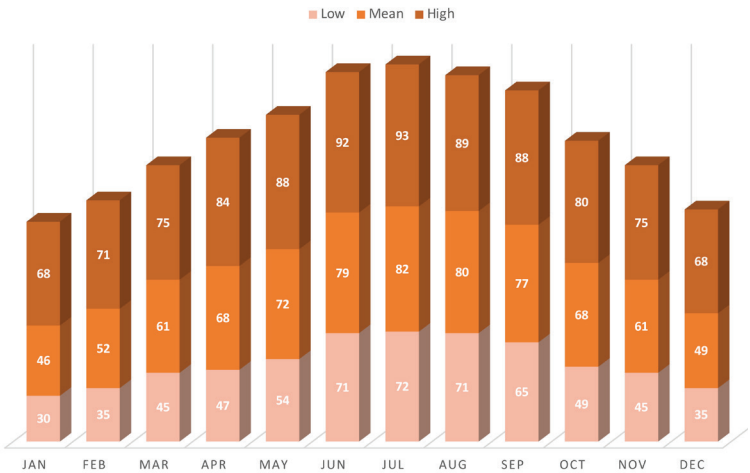

HORSE BREEDS OF THE WORLD

Climate

Temperature

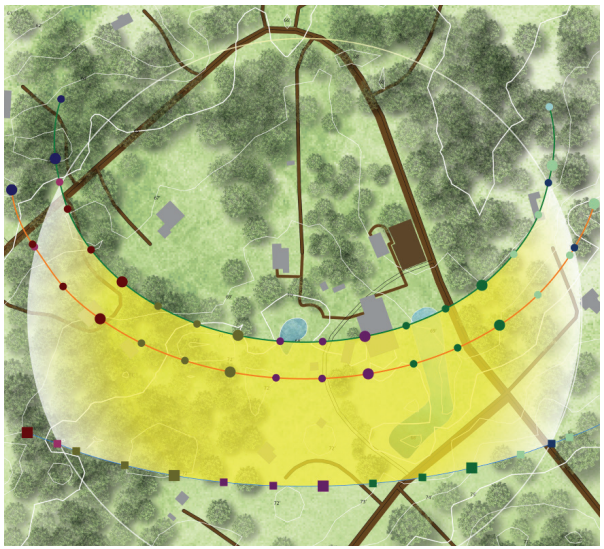
Guyton experiences hot, humid summers with average daytime temperatures exceeding 90°F (32°C). Winters are mild, with temperatures ranging from 40°F to 60°F (4°C to 15°C), but occasional cold snaps can occur.

Building designs should prioritize insulation, ventilation, and efficient cooling systems to mitigate heat gain during summers and retain heat in winters.



Temperature Range

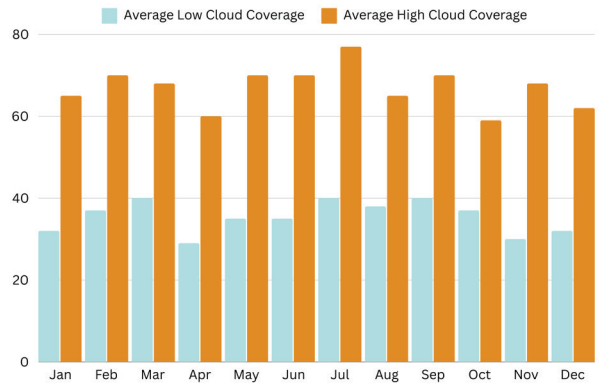
Sunpath



Sunpath- Sunshade elements such as overhangs, awnings, and louvers play a crucial role in reducing solar heat gain in buildings.

Designed sunshade strategies can help minimize the need for mechanical cooling systems and improve energy efficiency.

Sky Cover & Illumination

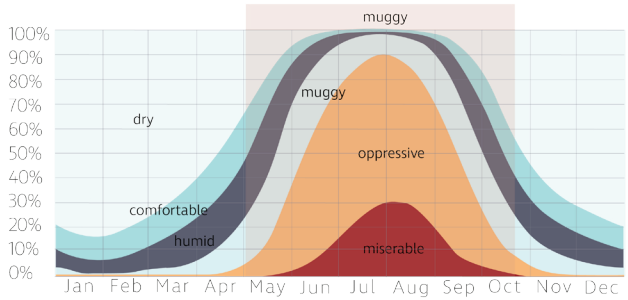


Sky Coverage- This graphical representation shows that in Guyton, it's rare to see complete cloud coverage meaning the area experiences lots of sun. Such information is imperative to consider in terms of sun shading techniques.

Humidity

High humidity levels during summers can impact indoor air quality and promote mold growth.

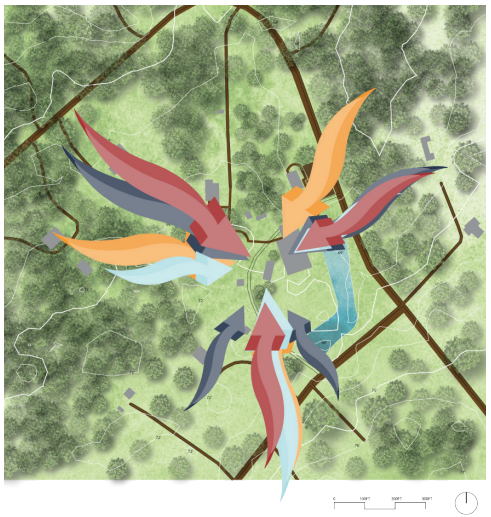
Building designs should incorporate ventilation and moisture control strategies to maintain comfortable and healthy indoor environments.



Humidity

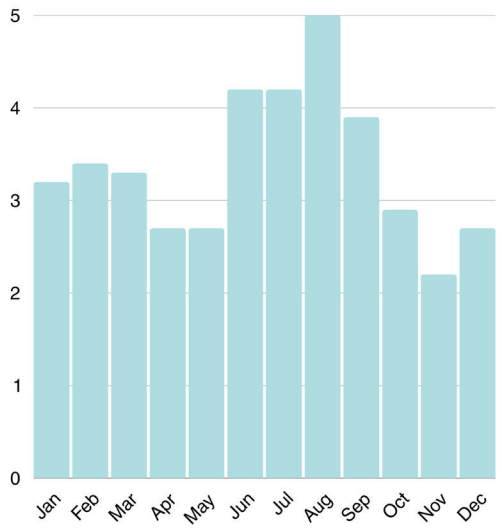
Wind

Guyton experiences varying wind patterns throughout the year. Building designs should optimize natural while minimizing wind-induced discomfort and structural stress.



Seasonal Wind

Precipitation & Flooding



Flooding Precipitation

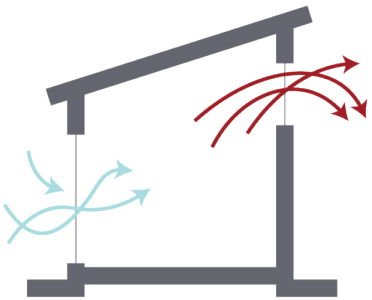
Guyton receives significant precipitation throughout the year, increasing the risk of flooding. Effective drainage systems and proper site grading are essential for managing stormwater runoff and preventing water damage to buildings.

Flooding Map

The site is susceptible to flooding from the southern and eastern directions, leading towards the pond. To mitigate flooding damage and address drainage issues, it is advisable to avoid these areas.

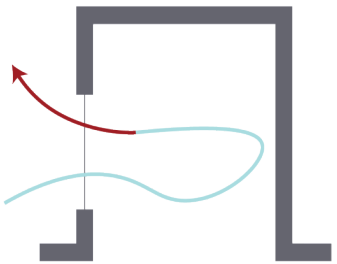
Basic Design Strategies

Ventilation



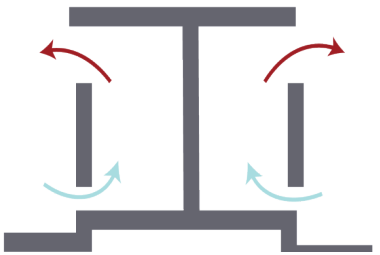
CROSS VENTILATION

Wind or natural convection causes air to enter through one window and exit through the other. It create a pressure imbalance between the two openings. Air moves from the area of higher pressure (outside) to the area of lower pressure (inside), and vice versa.



SINGLE-SIDED VENTILATION

Air enters and exits a room through only one opening, typically a window or a vent. Fresh air comes into the room through the open window or vent. This could be due to wind or temperature differences causing air to move towards the opening. It creates a pressure difference between the inside and outside of the room. This pressure difference causes air to flow from the area of higher pressure (outside) to the area of lower pressure (inside).

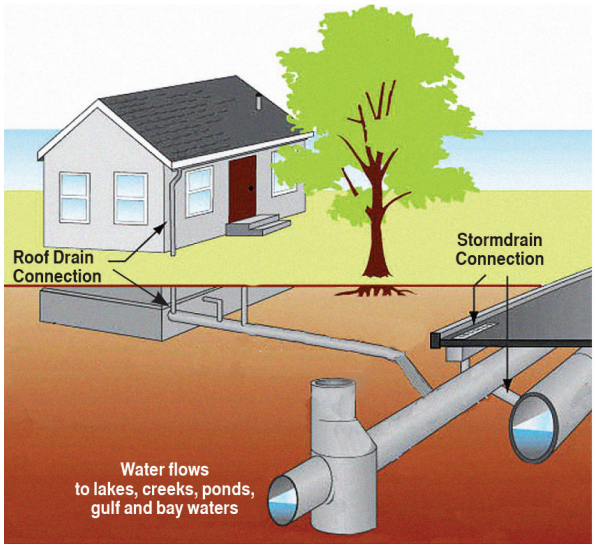


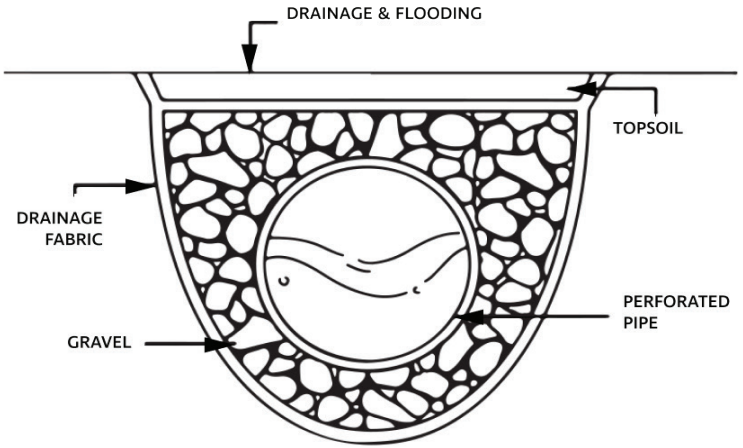
STACK VENTILATION

As the warm air rises and exits through the openings at the top, it creates a kind of vacuum effect. This vacuum pulls in cooler air from outside through openings at lower levels, such as doors or windows on lower floors.

Drainage & Flooding

Such drain types collect water from the topsoil to help redirect it away from the building. These drains are less visible, efficient, and cost-effective.

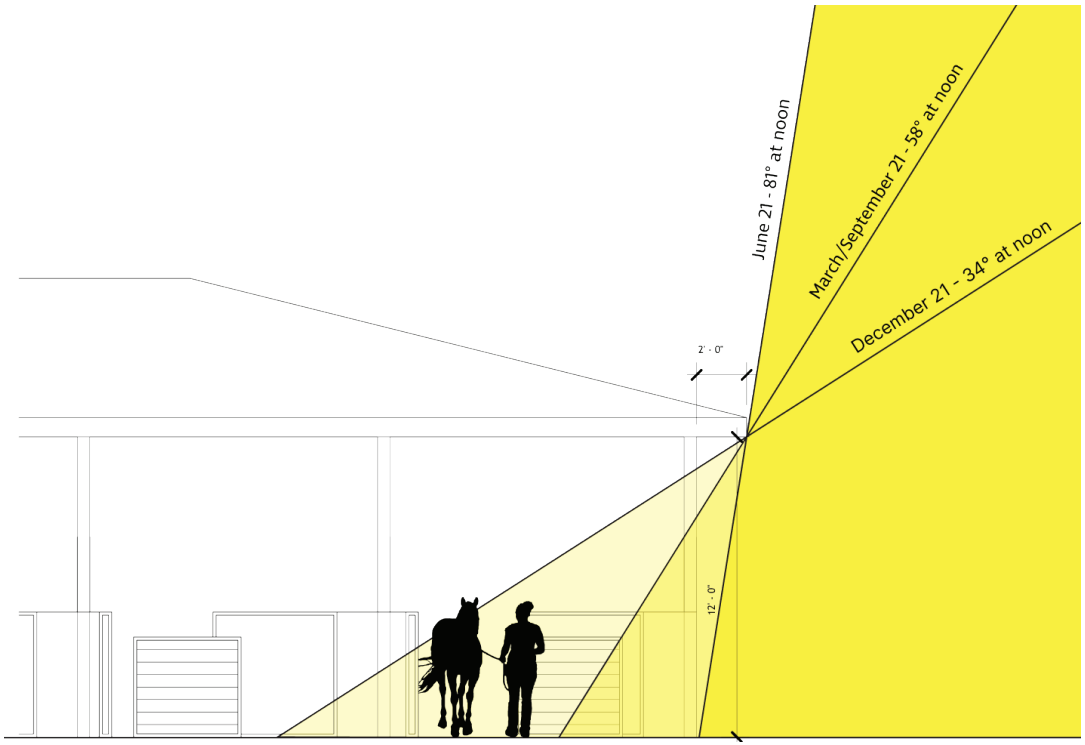




Standard French Drain

Overhang

The ideal overhang for the roof would be 2'. This allows the low angle of the winter sun to naturally light up and warm the space, while keeping the area shaded during the hot summer months.

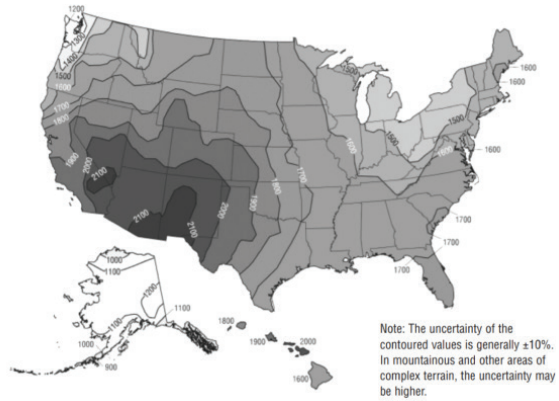


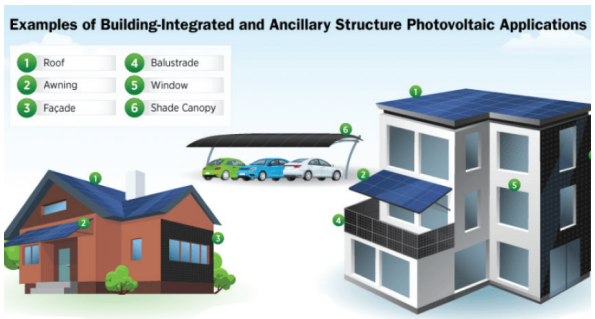
Sun Angle Diagram

Solar Power

To assist in our sustainability goals, the integration of solar power into the design is considered. Shown here are diagrams of typical integration of such solar power systems and how geographic elevations may affect their efficiency.

·6kW solar system typically costs around $12,700 after incentives
·30% tax credit on installation costs until 2033
·Annual output of an 8 kW system produces 10,608 kWh (based on a score of 1700 kWh/m²/year and system efficiency)

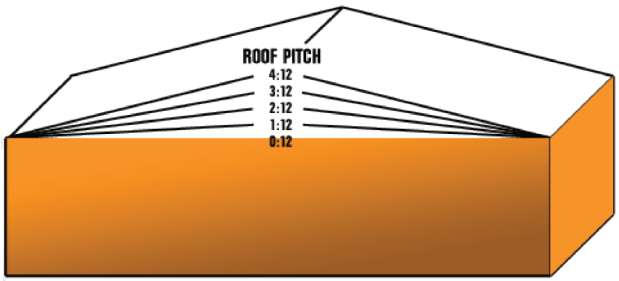




Roofing

To best serve our intended design, roofing solutions must be considered with respect to cost and efficiency. Low slope roofs have a maximum pitch of 3:12. Because of the low slope, there is less room for accumulation of heat. Low sloped roofs are considered more efficient in terms of heating and cooling, low maintenance, and compatible with solar panel installation.

Advantages
· More efficient heating and cooling
· Easier maintenance
· Compatible for solar panels



Roof Pitch

Membrane Roof

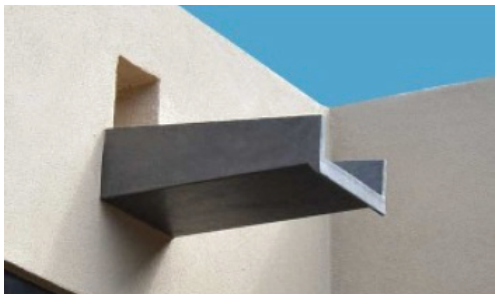
Sheets from 5 to 20 feet wide
Made of synthetic membrane which repels water and prevents moisture
Materials: PVC & TPO are white and reflective

Metal Roof

Consists of interlocking panels which expand when metal heats
Screw-down roofs screwed onto decking creating less room for expansion and contraction
Recommended: standing seam offers better water control

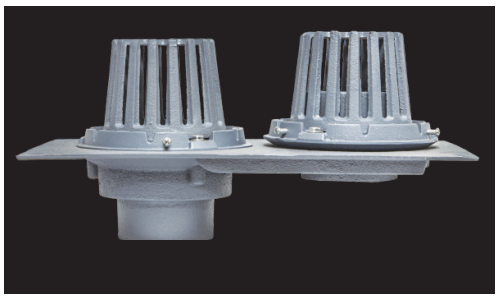
Drainage Solutions

Scupper



Openings or channels located at low points of a flat roof
Allows water to drain into downspouts and gutters
Paired with overflow drains

Roof Overflow Drain



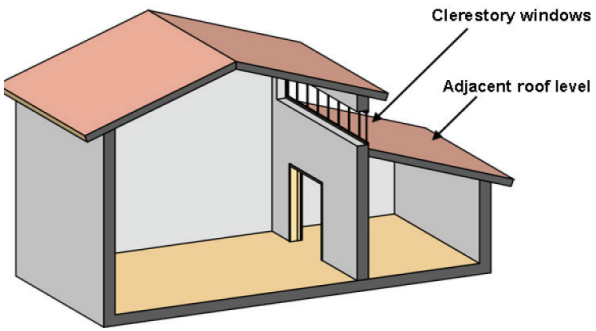
Serve as secondary drainage systems, typically installed alongside scuppers

Gutters

Installed along roof's edges
Collects water and directs to downspouts

Windows

Clerestory windows



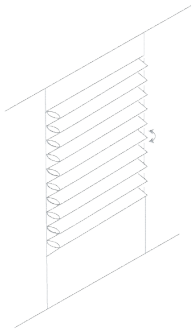
Provide ventilation and are effective in passive energy design
As heat rises it is beneficial to use clerestory windows near the ceiling to vent hot air

Directional

For hot climates with lots of sun, north, west, or east-facing windows may be better
South-facing clerestory windows may bring too much heat or direct light

Enclosure Solutions

Fixed Louvers



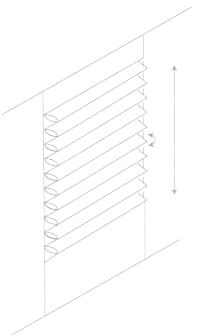
PROS

- Cost-effective and durable with fewer maintenance needs
- Simpler and quicker installation

CONS

- No adjustability for light, air, or privacy
- Fixed angle may limit ventilation and privacy control

Movable Louvers



PROS

- Adjustable to control light, air, and privacy, enhancing energy efficiency
- Better adaptability to changing weather conditions

CONS

- More expensive with higher maintenance due to moving parts
- Complex installation process

COST: Louvers

Fixed Louvered Systems

Material: Fixed louvered systems are often made of aluminum, steel, or wood. Aluminum tends to be the most cost-effective, followed by steel and then wood which can be more expensive.

Size: Larger sizes will generally cost more.

Customization: Some manufacturers offer custom designs which can increase the cost.

Average Cost: For a standard aluminum fixed louvered system, you can expect to pay anywhere from $20 to $50 per square foot for materials. Installation costs can vary, but typically range from $30 to $70 per hour for labor.

Operable Louvered Systems

Material: Operable louvers are usually more expensive than fixed ones due to the added mechanism.

Size: Similar to fixed louvers, larger sizes will increase the cost.

Customization: Custom designs or special features can drive up costs.

Mechanism: The type and quality of the operating mechanism will affect the price. Manual systems are generally cheaper than automated ones.

Average Cost: For operable louvers, the cost can range from $30 to $100 per square foot for materials, depending on the material and mechanism. Installation costs can range from $40 to $100 per hour for labor.

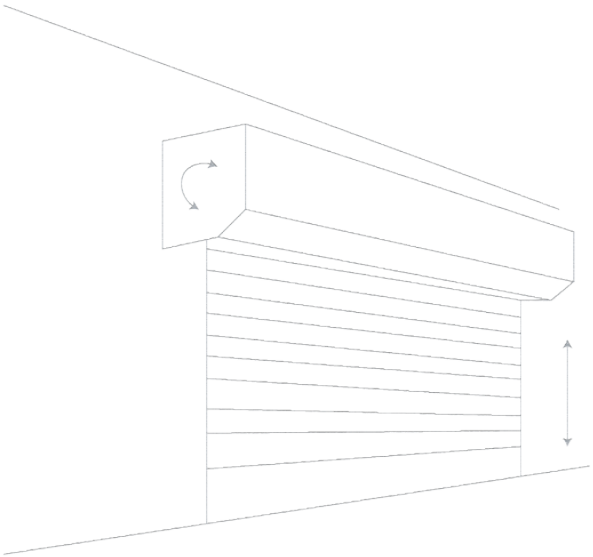
Garage Doors

PROS

- Compact: Roll up into a box above the opening, ideal for garages with limited headroom.
- Durable: Typically made of steel or aluminum, providing good security and resistance to wear.

CONS

- Limited design: Less variety in appearance, usually offering a more utilitarian look.



Roller Garage Doors

COST: Garage Door

Steel: Steel garage doors are the most common and affordable option. Prices range from $400 to $1,500 for a basic single door and $800 to $3,500 for a double door.
Wood: Wooden garage doors offer a traditional and elegant look but are more expensive and require more maintenance. Prices range from $1,000 to $4,000 or more.

Aluminum: Aluminum garage doors are lightweight and low maintenance. Prices range from $700 to $2,000.

Size: Single garage doors are typically 8 to 10 feet wide and 7 to 8 feet high. Double garage doors are usually 16 to 18 feet wide. Larger doors will naturally cost more than smaller ones.

Style: Different styles such as traditional raised panel, carriage house, or contemporary designs can affect the cost.

Insulation: Insulated garage doors offer better energy efficiency and can range from $600 to $4,000 or more depending on the material and thickness of insulation.

Additional Features:
Windows, decorative hardware, and smart features can add to the cost.

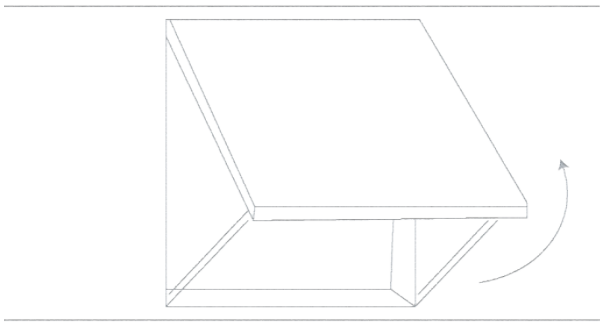
Hinged Windows

PROS

- Simple design with minimal mechanics, leading to lower maintenance.
- Provide full opening for unobstructed views and maximum ventilation.

CONS

- Space-consuming: Require space around the window to swing open, potentially obstructing walkways.
- Less weather-tight compared to other types due to the swing-out mechanism.



Vertical Hinged Windows

COST: Hinged Windows

Aluminum: Aluminum awnings are durable, lightweight, and require minimal maintenance. They are often one of the most affordable options. Prices typically range from $300 to $800 for a hinged aluminum awning.

Wood: Wooden awnings provide a classic, natural look but tend to be more expensive due to material costs and maintenance requirements. Prices can range from $800 to $2,000 or more for a hinged wooden awning.

Size: Larger awnings will naturally cost more than smaller ones. The size of the awning will depend on the area you want to cover.

Quality: Higher-quality materials and craftsmanship will generally result in a higher price. This includes factors like the thickness of the aluminum or quality of the fabric.

Customization: Custom designs, colors, or patterns will increase the cost. Additional features like motorized operation or remote control may also add to the price.

Installation: Installation costs can vary depending on factors like the complexity of the installation, location, and whether any modifications are needed to your home's structure.Installation costs typically range from $200 to $500 but can be higher for more complex installations.

Total cost of a hinged awning can range from $300 to $2,000 or more, including both materials and installation.

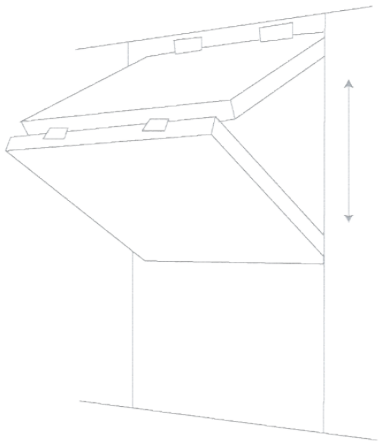
Bi-Folding Windows

PROS

- Wide opening: Can open up an entire wall for seamless transition between indoor and outdoor spaces.
- Modern aesthetic: Offers a stylish and contemporary look.

CONS

- Cost: Generally more expensive due to the complexity of the design.
- Maintenance: More moving parts can increase the maintenance demands.



BI-Folding Windows

COST: Bi-Folding Windows

Aluminum: Aluminum frames are common due to their strength, durability, and resistance to corrosion. Prices for aluminum bifold glass doors/windows typically range from $800 to $1,500 per linear foot.

Vinyl: Vinyl frames are a more affordable option but may not be as durable as aluminum. Prices for vinyl bifold glass doors/windows can range from $600 to $1,200 per linear foot.

Wood: Wooden frames offer a luxurious and warm aesthetic but are usually the most expensive option. Prices for wooden bifold glass doors/windows can range from $1,000 to $2,500 per linear foot.

Size: The size of the opening will significantly impact the cost. Bigger openings require more material and are generally more expensive.
Prices typically range from $1,500 to $3,000 per panel, depending on the size.

Number of Panels: ranging from 2 to 8 panels.
More panels mean more complexity and material, which increases the cost.

Glazing Options:Different glazing options are available, including single, double, or triple glazing, as well as Low-E coatings for improved energy efficiency.
Enhanced glazing options will increase the cost but can improve insulation and reduce noise.
Prices for glazing can range from $30 to $100 per square foot.

Hardware and Accessories: Prices for hardware typically range from $100 to $500 per set.

Installation: Installation costs can vary depending on the complexity of the installation, location, and whether any structural modifications are needed.
Installation prices can range from $500 to $1,500 per opening.

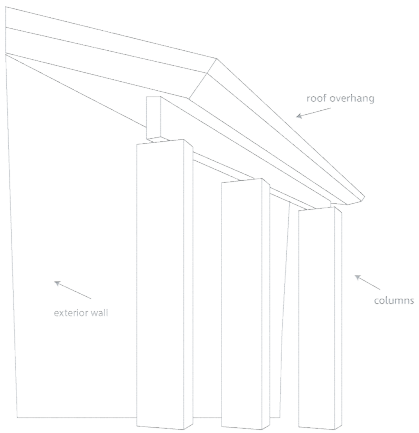
The total cost of bifold glass doors/windows can range from $3,000 to $20,000 or more per opening, including both materials and installation.

Overhang

Note that any overhang more than 2' need exterior support
corbel size depends on how far the overhang is

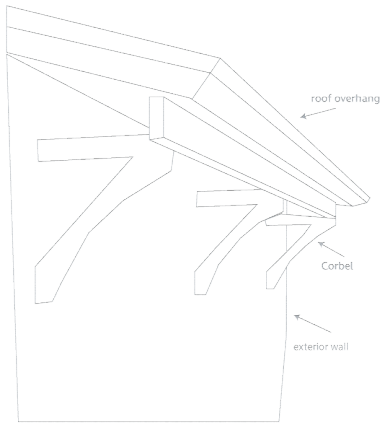
Wood Corbels: $10 - $200 each
Polyurethane Corbels: $10 - $100 each
Metal Corbels: $20 - $300+ each
Prices vary based on material, size, and design complexity.

Column



Provide ventilation and are effective in passive energy design
As heat rises it is beneficial to use clerestory windows near the ceiling to vent hot air

Corbel

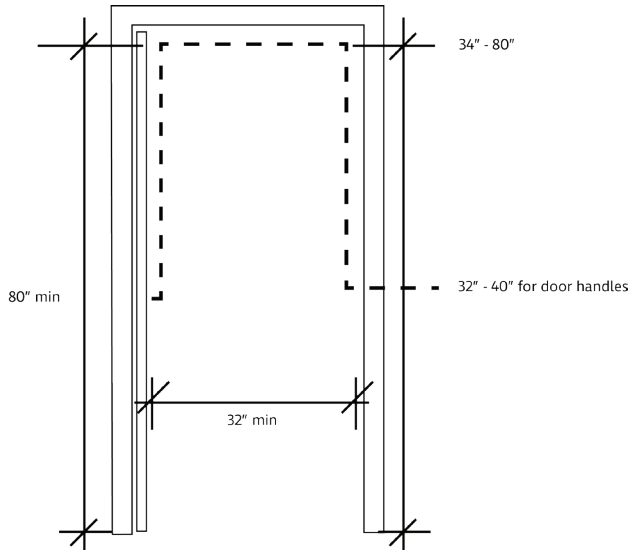


For hot climates with lots of sun, north, west, or east-facing windows may be better
South-facing clerestory windows may bring too much heat or direct light

ADA Regulations

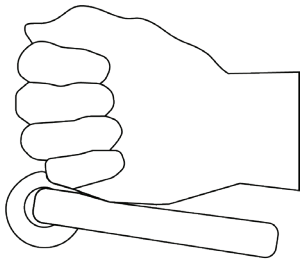
ADA compliance in an equine barn is crucial, ensuring accessibility, safety, and inclusivity for individuals with disabilities. By adhering to ADA regulations, barns provide equal access to all areas, promoting participation in equestrian activities without barriers. Compliance enhances safety through accessible design, reducing accidents for those with mobility impairments. Meeting ADA standards is a legal obligation for public facilities, averting legal consequences and fines. Moreover, compliance boosts the reputation of equine barns, attracting diverse visitors and clients. Prioritizing ADA compliance ensures long-term viability, avoiding costly retrofits and maintaining adherence to evolving regulations, fostering a welcoming environment for all involved in equestrian activities.

Doors



Closing speed 5 sec
Opening force 5 lbs max
Hardware should be easily operable
Smooth surfaces on the bottom of doors

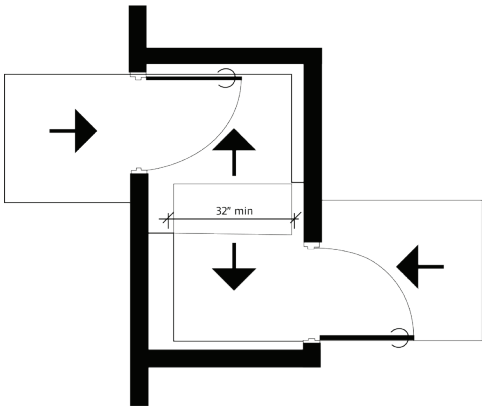
Door hardware



handles you don't have to grip

People need to be able to easily open and close doors. Doors with handles that need to be twisted can be difficult while having simple push or pull handles are easier for those with accommodations to open doors.

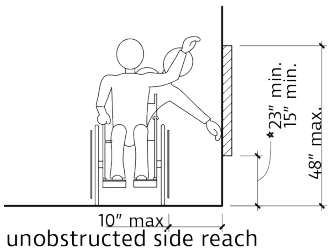
Door clearance



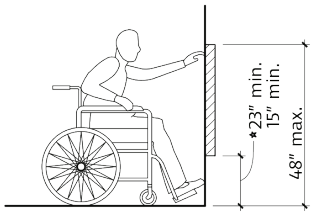
Doors should have at least a 36" minimum doorway entry to accommodate those in wheelchairs. Within the hallway there should be at least a 60" x 60" passing space for comfortable circulation. Door maneuvering clearances can overlap as long as doors don't interfere with movement.

Reach Range

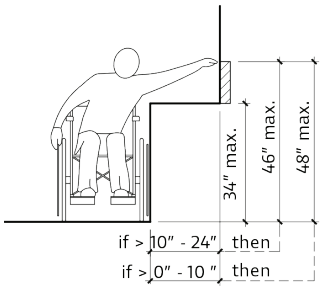
If someone needs to grab or reach for something we need to keep in mind a 16″ minimum and 40″ maximum reach area. If in a wheelchair, people might not have the same mobility to bend down or reach up. Staying in that range provides all people to have easy flow of movement.



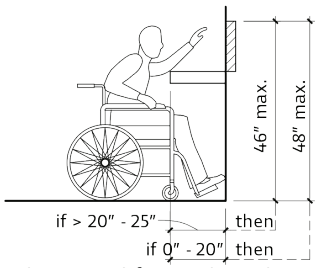
unobstructed side reach



unobstructed forward reach

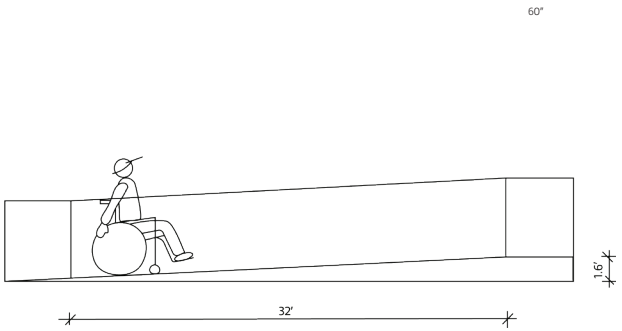


obstructed side reach



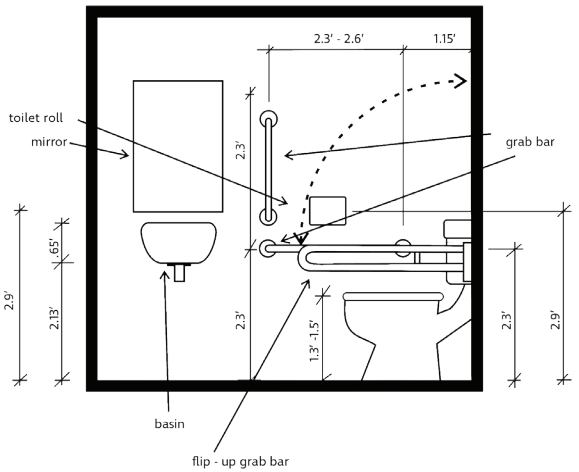
obstructed forward reach

Ramps



Ramps are required anywhere there is a level change of more than ½". There is a 60" min for platformed grade breaks. Ramps shouldn't be angled any higher than 30 degrees or raise 1' for every 12' of ramp.

Bathrooms



Clustered single user toilet rooms (2 minimum) are those that are next to, or close to, one another. No more than 50% for each use within a cluster must comply. Compliant toilet rooms and portable units must be labeled by the International Symbol of Accessibility unless all are accessible.

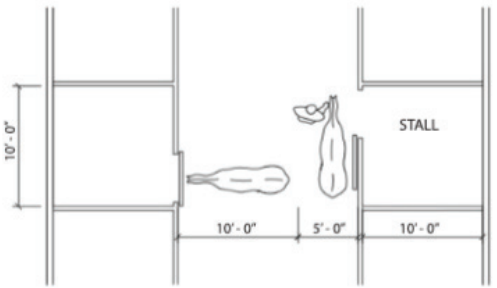
Equine Welfare and Design Needs

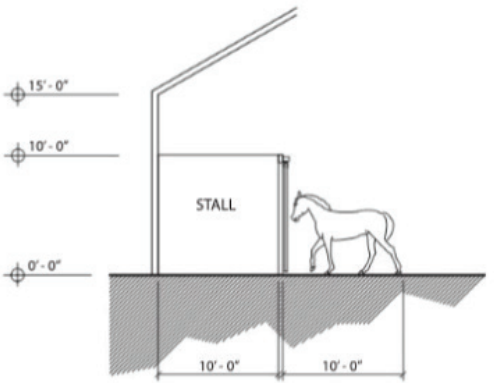
Stalls should be large enough for a horse to turn around comfortably (10′ x 12′ or 12′ x 12′ is considered standard) and well bedded with good drainage, so the horse isn't standing on wet bedding which can lead to diseases.
Doorways should be wide enough for a horse to pass through comfortably with room to spare (4′ wide is common).

Ceilings should be high enough to allow plenty of clearance for a horse to stand on their hind legs without hitting their head (10′ to 11′ is standard), and aisles should be free of clutter. Their heights can range from 30″ to 68″

In warm and sunny weather, at a minimum, you should have a well-constructed, three-sided shed in which your horse can retreat at all times.

Lots of equipment is needed for horses: equine feeding equipment, equine emergency service equipment, barn and pasture maintenance equipment, horse riding equipment, and horse grooming equipment. Storage in various areas to accommodate these needs will be important.

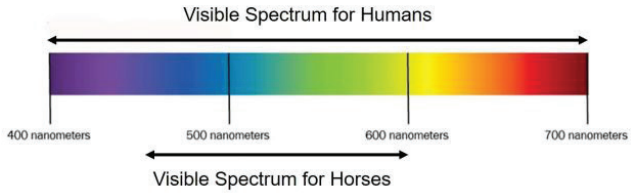


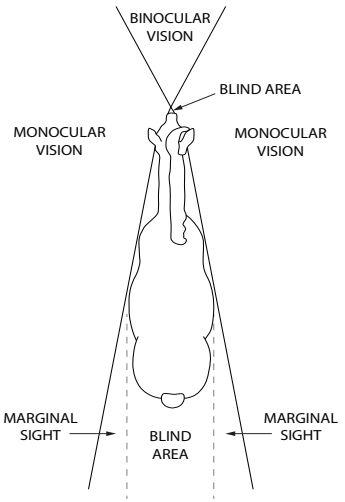


Horses Visual Experience

Horses can only see two of the visible wavelengths in the light spectrum because they have only blue-sensitive cone cells and yellow-sensitive cone cells. Thus, they see blue, green, and variations of the two colors, but do not see red or shades of red.

Horses use two forms of vision, monocular and binocular. Monocular vision allows the horse to see on both sides of their head, meaning the left eye and the right eye work independently and see different views. Each eye sees across an arc of approximately 200–210 degrees around the body at one time. The monocular fields straight in front of the horse's face overlap slightly resulting in a binocular field between 65 and 80 degrees. The binocular field is responsible for depth perception.





Existing Materials

Current Materials:
The current materials used are wood, metal roofing (most likely aluminium), and rubber padding.

Rubber

Rubber mats in equestrian barns are a practical and comfy flooring solution for horses. These durable mats, often made of high-quality rubber, create a cushioned surface for horses to walk, stand, and rest on. Designed to withstand daily wear and tear, they offer resilience against the weight and movement of horses, with a textured surface providing traction to prevent slips, especially in moist areas.

Wood

Wood is a fundamental element in equestrian barns, offering both functionality and rustic charm. From sturdy timber beams supporting the structure to partitions delineating stalls, wood creates a sense of stability and privacy while allowing for ventilation and light. Beneath horses' hooves, wooden flooring provides traction and comfort, emitting a subtle scent of pine or cedar. In communal areas, wooden cabinets organize equipment, with polished surfaces inviting tactile exploration. Beyond its aesthetic appeal, wood embodies craftsmanship and enhances the well-being of both horses and handlers in this sanctuary of equine activity.

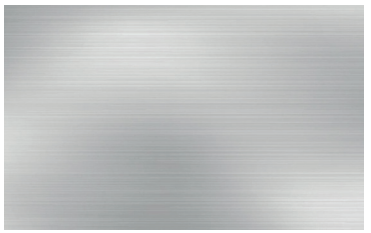
Aluminium

The aluminum roof in an equestrian barn is a durable and practical choice, symbolizing resilience against the elements. Crafted from lightweight yet sturdy panels, it offers reliable protection from harsh weather conditions while reflecting sunlight to create a bright, airy atmosphere inside. Efficient drainage prevents water pooling, maintaining a dry and comfortable environment for the horses. The roof's reflective properties enhance natural lighting, reducing the need for artificial illumination and improving visibility for tasks. Its modern appearance complements the barn's rustic charm, while low maintenance requirements make it ideal for busy owners. Overall, the aluminum roof provides essential protection, lighting, and aesthetic appeal, enhancing the experience for horses, handlers, and visitors.

Material Options

Typical Materials For Barns

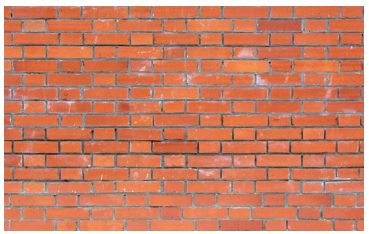
Wood: Traditional and versatile, wood is often used for framing, siding, and roofing in barn construction.



Metal: Metal roofs and siding are popular due to their durability and resistance to fire, pests, and rot.

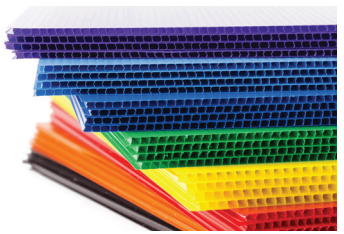
Concrete: Concrete floors and foundations provide stability and durability, especially in high-traffic areas of the barn.

Steel: Steel beams and trusses offer strength and support for large barn structures, especially for wide- span designs.



Brick: These materials are used for constructing walls in more permanent or upscale barns, providing additional insulation and aesthetic appeal.

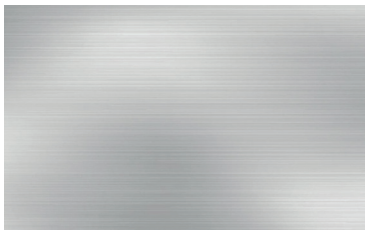
Asphalt Shingles: Commonly used for roofing, asphalt shingles are affordable and relatively easy to install.



Corrugated Plastic: Sometimes used for roofing, corrugated plastic panels are lightweight, durable, and provide natural light to the interior of the barn.

Preferred Equine Materials

Wood: Wood is a popular choice for stalls and partitions due to its natural insulation properties and aesthetic appeal. However, it should be properly treated to prevent splintering and rot.



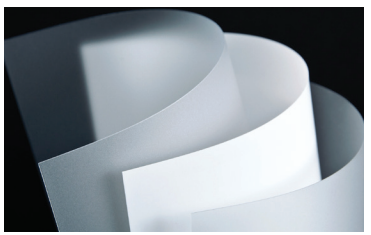
Metal: Galvanized steel or aluminum are often used for framing, gates, and dividers due to their durability and ease of maintenance.

Concrete: Concrete is commonly used for stall floors and aisleways, as it's durable and easy to clean. However, it should be textured or covered with rubber mats to prevent slipping.

Rubber: Rubber mats or flooring can provide traction and cushioning, reducing the risk of injury to horses and making cleanup easier.

Natural Stone: Some upscale facilities may incorporate natural stone for walls or flooring, providing a rustic and durable option.

PVC: PVC or vinyl fencing and partitions are low maintenance and resistant to weathering, making them suitable for outdoor paddocks and arenas.



Polycarbonate: Polycarbonate panels can be used for roofing or walls to provide natural light while protecting horses from the elements.

Proposed Materials

Recycled metal

Pros	Cons
Aesthetics	Cost
Durability	Variability
Sustainability	

Glass

Pros	Cons
Light transmission	Scratching
Clear outdoor views	Semi Expensive
Lightweight	Thermal Transmission

Concrete

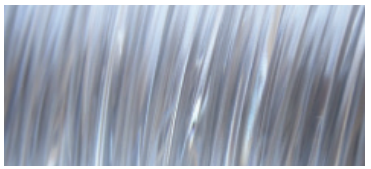
Pros	Cons
Durability	Weight
Low Maintenance	Cracking
Fire Resistance	

Southern Yellow Pine

Pros	Cons
Affordability	Maintenance
Durability	Weathering
Treatability	Softness

Natural Stone

Pros	Cons
Aesthetics	Weight
Durability	Variability

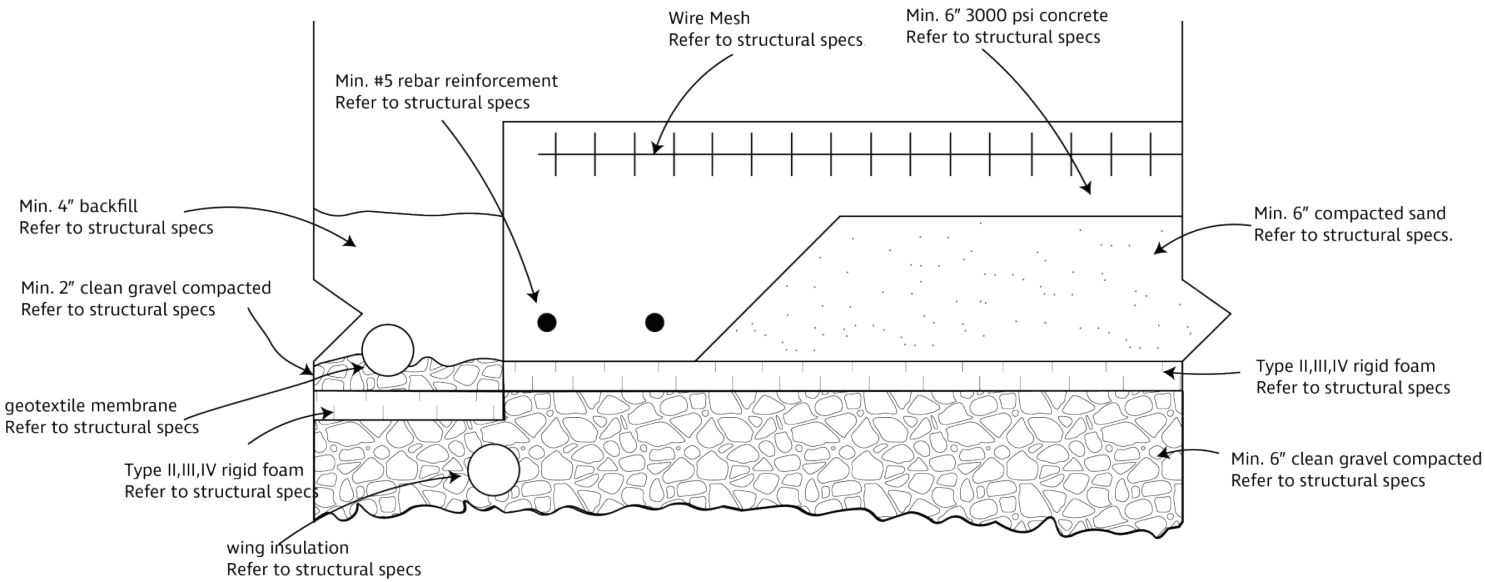


Polycarbonate

Pros	Cons
Light/ Heat Transmission	Scratching
Impact Resistance	UV Degradation
Lightweight	Thermal Expansion

Structure: Foundation

Concrete-slab on grade



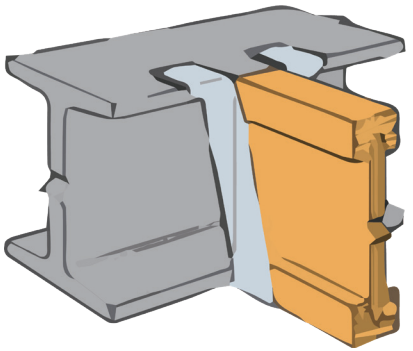
Slab-on-grade with rebar and wire mesh reinforcements
Cost effective: compared to traditional raised foundation
Energy efficiency: act as thermal mass, absorbing heat during day and releasing at night

Structure

Steel main frame with wood infill

Using steel as the main structural component while incorporating wood as the secondary structure can significantly reduce costs without compromising the integrity of the overall structure. Steel wide flanges, available in standard lengths of 20 ft, 24 ft, 30 ft, and 40 ft, provide robust support and maintain structural stability.

Prefabricating these elements to standard measurements further reduces expenses by minimizing material waste and labor costs. Wood, on the other hand, is easy to manipulate, making it an ideal material for secondary structures. With wood joist depths around 12.5 Inches and steel girder depths around 24 inches, this combination of materials leverages the strengths of both steel and wood, offering an economical and efficient solution for construction projects.



Material Cost Breakdown

Structure Steel Frame

Price Range Per Square Foot:

· Basic: $12.00 - $16.00
· Mid-Range: $16.00 - $20.00
· High-End: $20.00 - $24.00+

Wood Frame

Price Range Per Square Foot:

· Basic: $8.00 - $12.00
· Mid-Range: $12.00 - $16.00
· High-End: $16.00 - $20.00+

PEMB

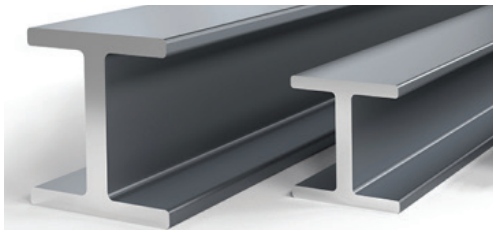
Price Range Per Square Foot:

· Basic: $16.00 - $20.00
· Mid-Range: $20.00 - $24.00
· High-End: $24.00 - $28.00+

Shipping Containers

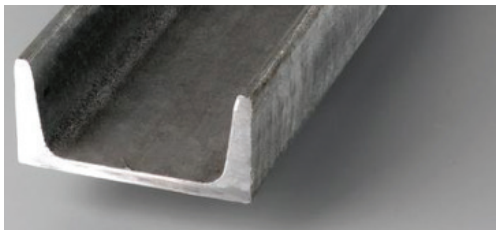
Price Range:
$2,000 - $6,000+

Structural Steel Frame



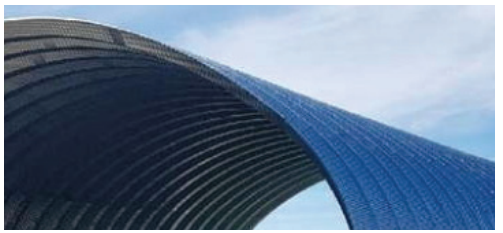
I-Beams

Material Cost (Per Sq Ft): $18.00 - $24.00
Estimated Material Cost (Per Sq Ft): $20.00
Labor Cost (Per Sq Ft): 30% Of Material Cost



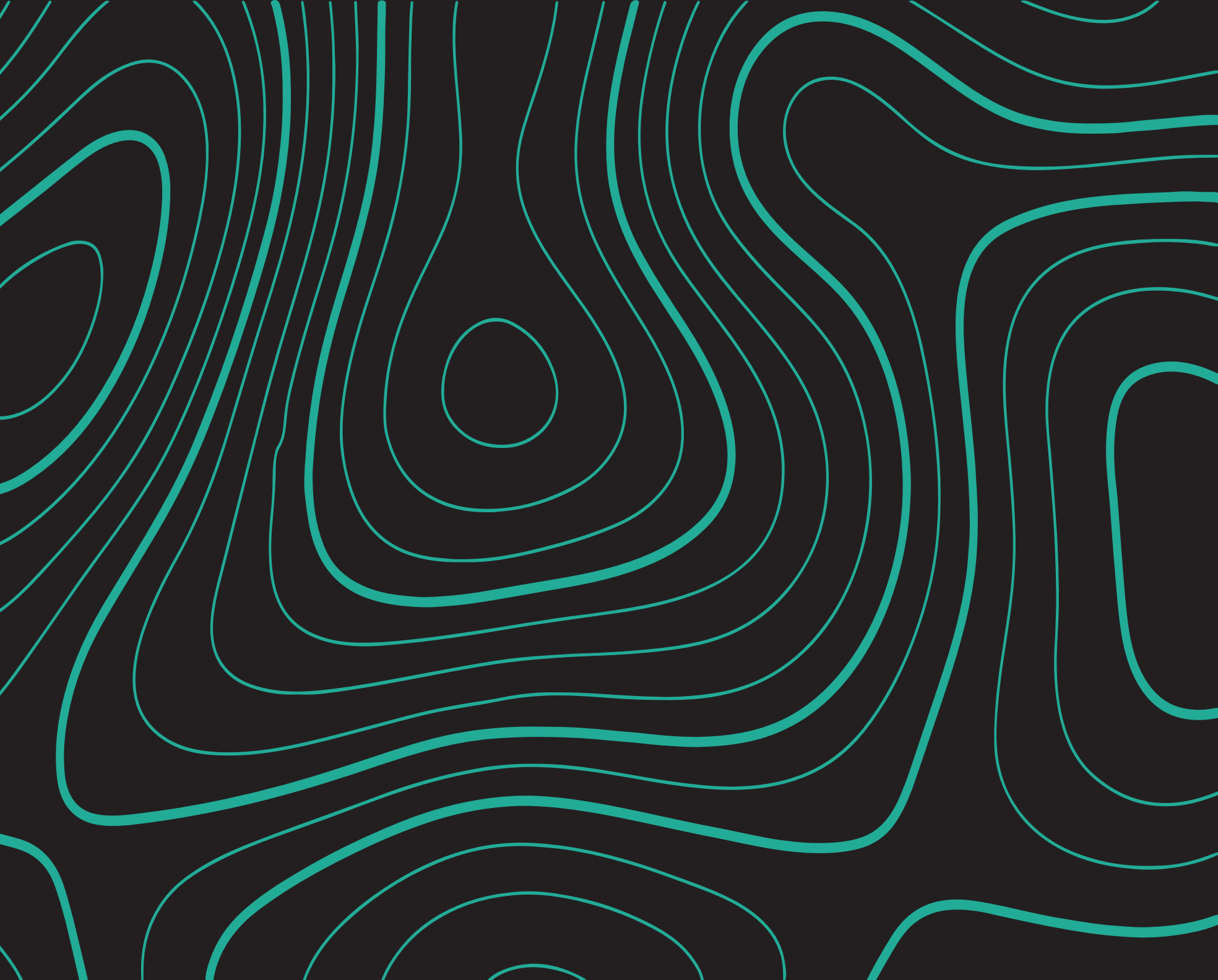
C-Channel

Material Cost (Per Sq Ft): $16.00 - $20.00
Estimated Material Cost (Per Sq Ft): $18.00
Labor Cost (Per Sq Ft): 30% Of Material Cost



Quonset Hut

Material Cost (Per Sq Ft): $14.00 - $18.00
Estimated Material Cost (Per Sq Ft): $16.00
Labor Cost (Per Sq Ft): 30% Of Material Cost

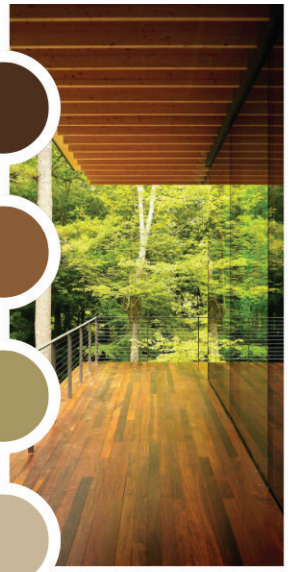


04 Concept

To delve deeper into the significance of this project, our team created three mood boards that align with the priorities of our mission statement. These mood boards are centered around themes of positivity and growth.

Moodboard 1: **Peace, Quiet, Mindfulness**

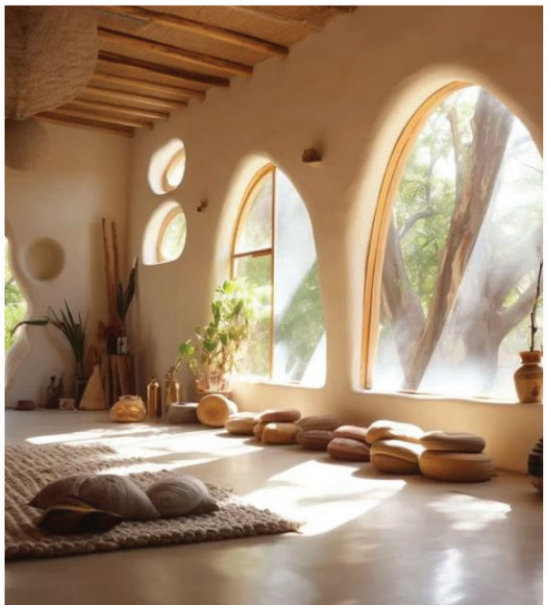
Created to convey peace, quiet, and mindfulness through color, aesthetics, and symbolism.



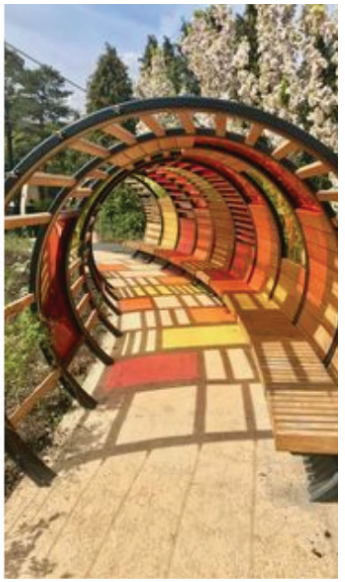






Moodboard 2: **Play, Learn, Grow**

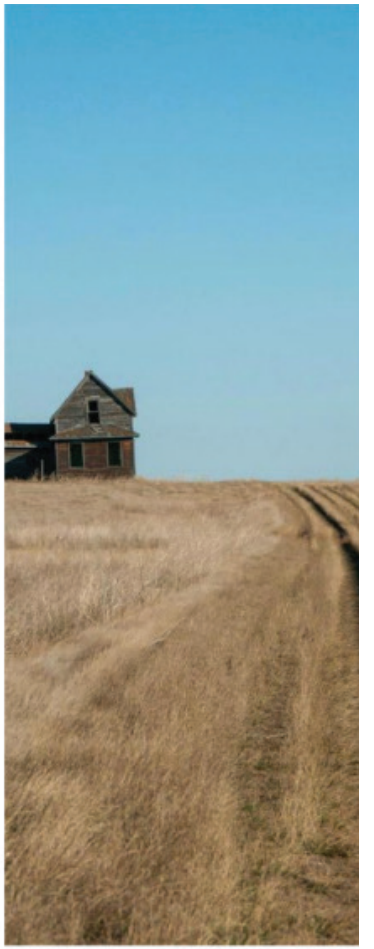
The terms Play, Learn, and Grow were used to create this mood board, as they directly reflect the intended experience of the site.

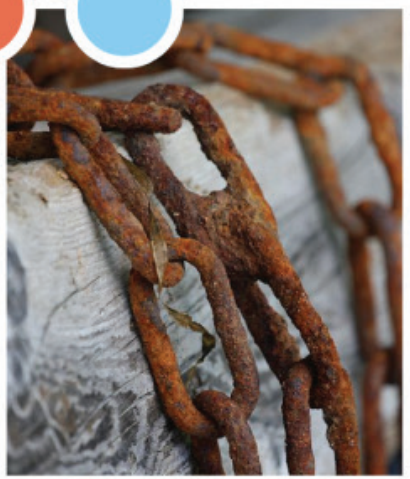


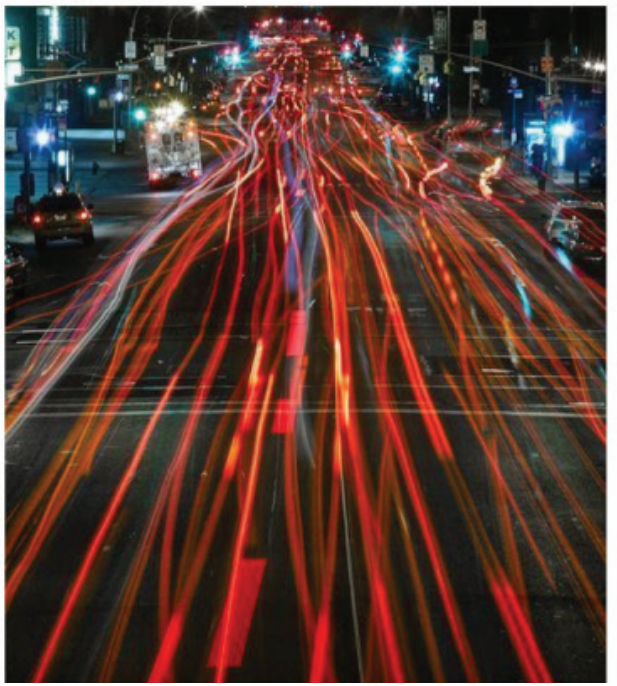
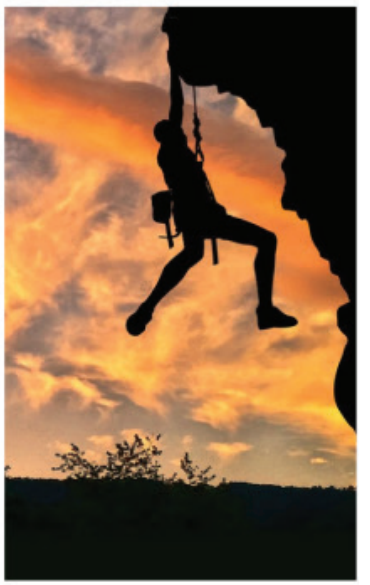
Moodboard 3: **Growth, Self-Discovery, Impact**

A third mood board was created to capture the site's experience and the emotions users feel while on the grounds.



Color Palatte

3777BC 402950 B72033 DE6D4D FFC54A 2EAA96 4E4034

Energizing

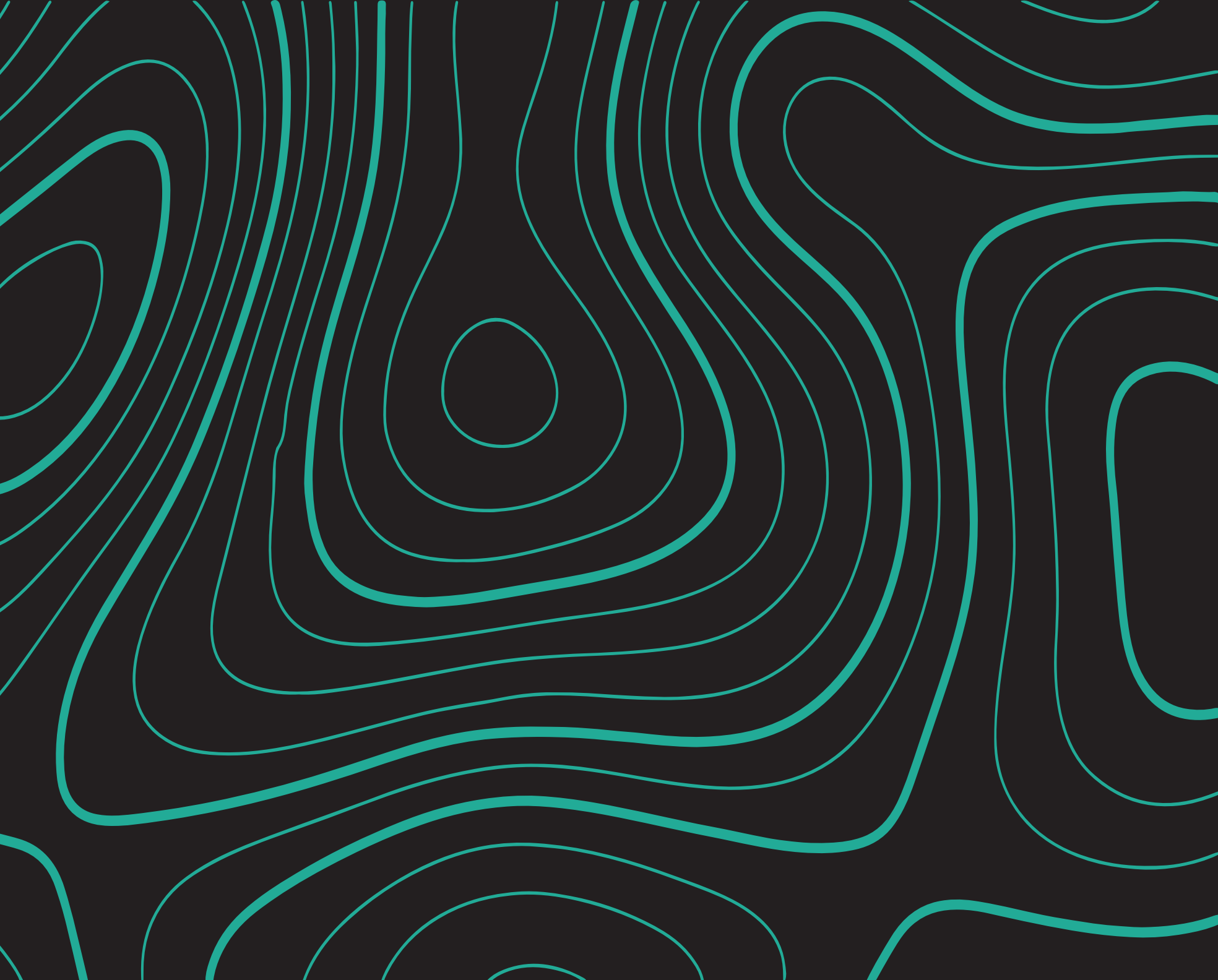
Combining the light blue with yellow and a deep dark red, feels energetic due to the differences in color values. The color saturation is comparatively high, and the colors afford for a high contrast. The three colors form a fairly even triangle on the color wheel, and therefore complement each other.

Growth

The notion of growth is carried through a dark blue which is complemented by the deep red and an orange. The red and the blue carry depth, they feel rich and motivate reflective mindsets. The orange adds an element of energy indicating active growth, commitment, and action learning.

Calming

The calming palette consists of orange and yellow, and a dark warm grey. All colors reflect warmth and positivity. The yellow and orange are colors one might appreciate in sunset, and the dark grey adds contrast, intensifying the comforting effect of the light warm yellow and orange.



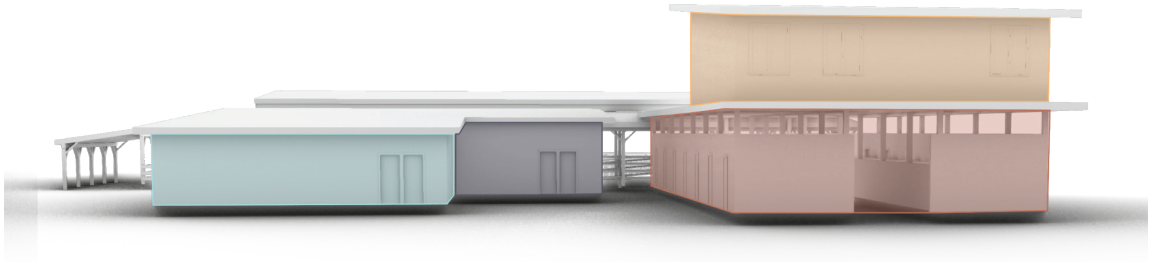
05 Schematic Design

During the Schematic Design phase, our team created circulation diagrams and minimalist 3D models to visualize these diagrams in three dimensions. Students developed three options, each offering a unique journey based on user flow.

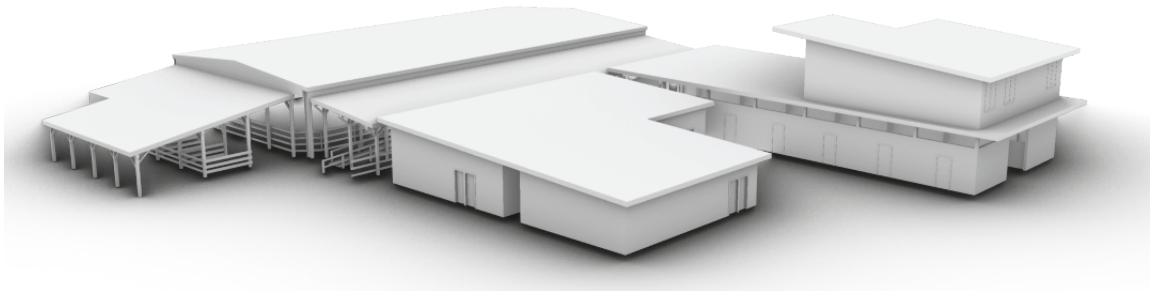
Design Direction 1

Design based on simplicity and functionality
4 main points of access with a lofted living space
Optimal views from lofted living space to look into the barn and surrounding landscape
Direct access to arena, opportunity for closer bathroom facilities and learning areas.

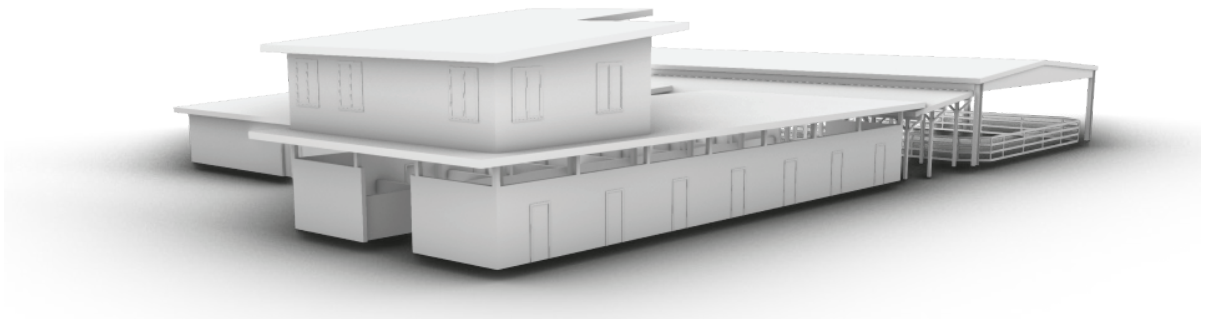
Meant to convey simplicity in design, this concept creates critically defined circulation for the staff and equines. With a lofted living space, optimal views of the surrounding landscape is given as well as direct access to the area. Taking into consideration the need for more direct access to facilites, this concepts considered travel distance as well as functionality



Front View
West Facing

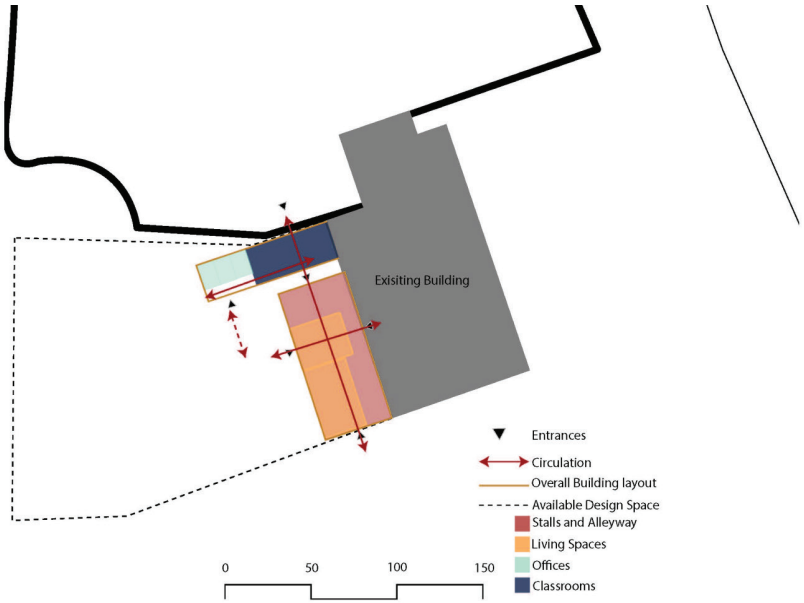


Side Birds-Eye View
North-West Facing

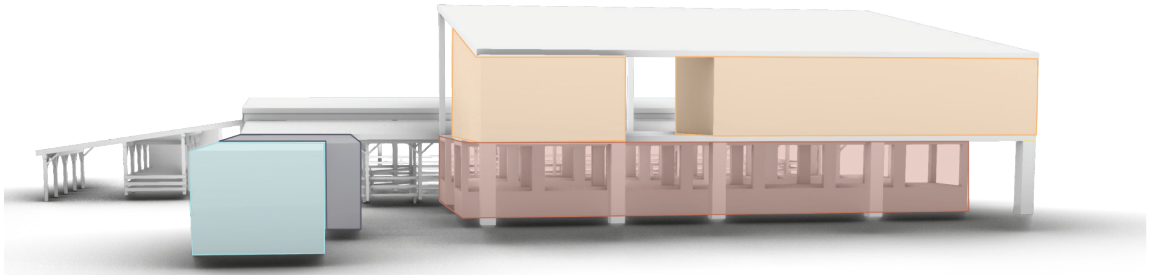


Side Birds-Eye View
North-West Facing

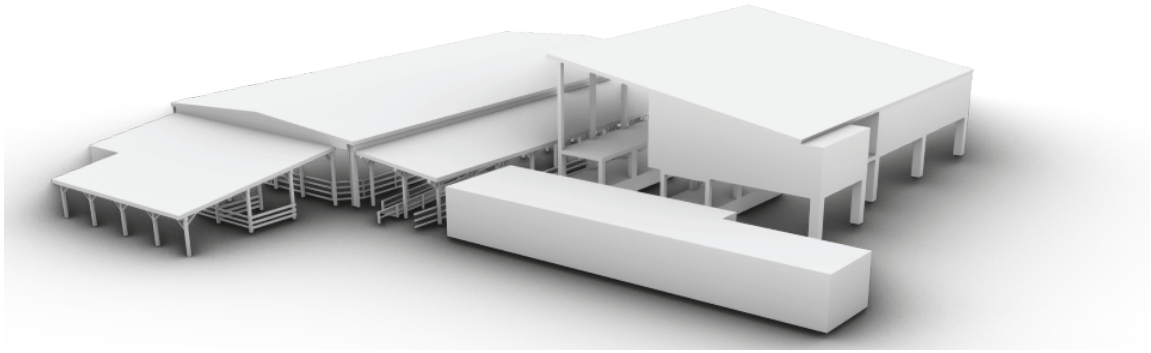
Design Direction 2



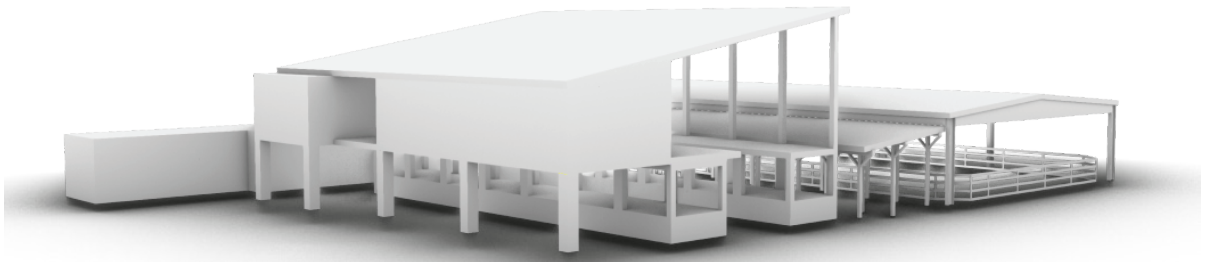
The circulation encouraged fluidity and establishes a visual relationship between all the elements of the program presented. The openings and the arrangement of the space encourages open ventilation creating a welcoming nature to the new site. Allowing a fluid flow between the stables, living quarter, offices and classrooms this design is unique, yet cohesive.



Front View
West Facing



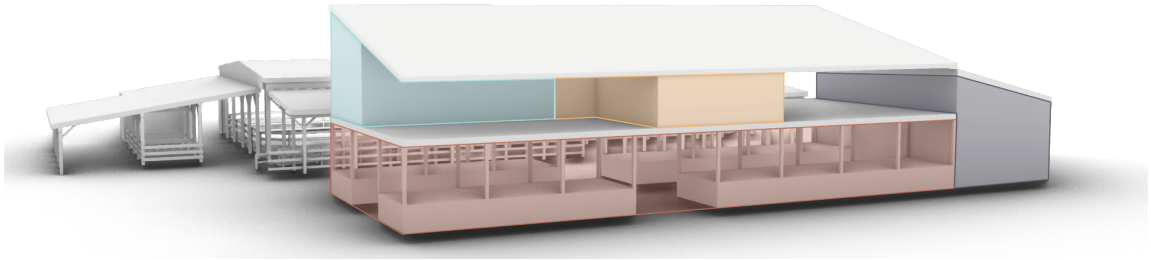
Side Birds-Eye View
North-West Facing



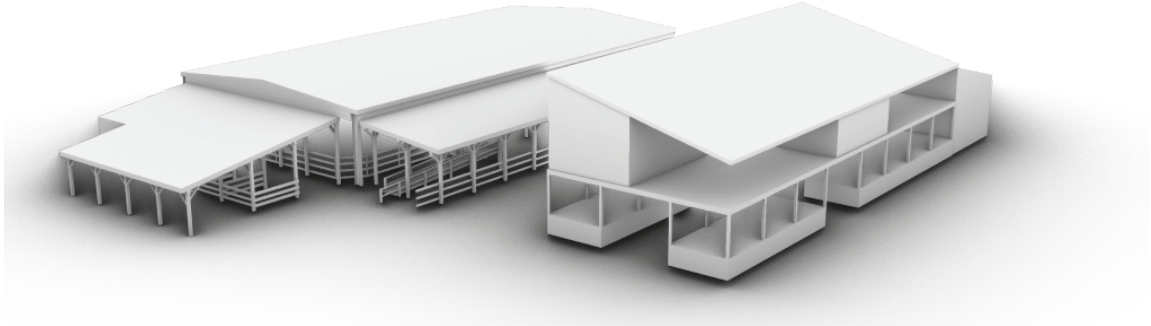
Side Birds-Eye View
North-West Facing

Design Direction 3

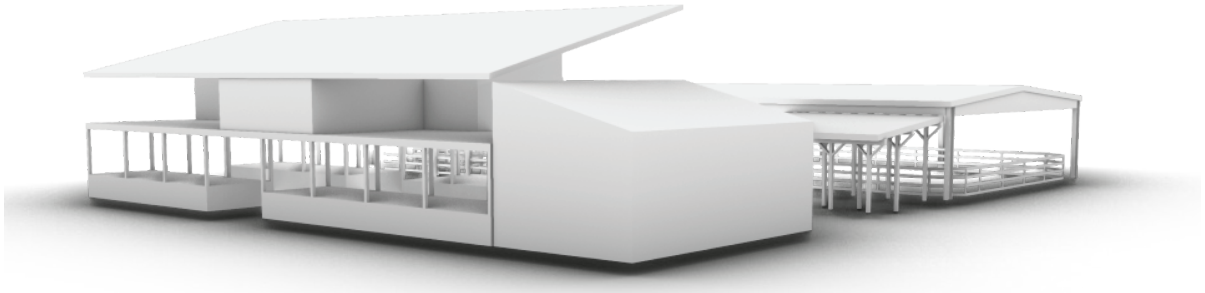
This circulation promotes engagement with the horses by allowing the main circulation to pass through the stalls and into the classroom/breakroom. There is a separation between public and private by having the living spaces and offices on the second floor with balconies to look down into the stalls. The structure as a whole is pulled away from arena to allow a view into the arena from the upper level. This also allows for opportunities for engaging activities in the courtyard space.



Front View
West Facing

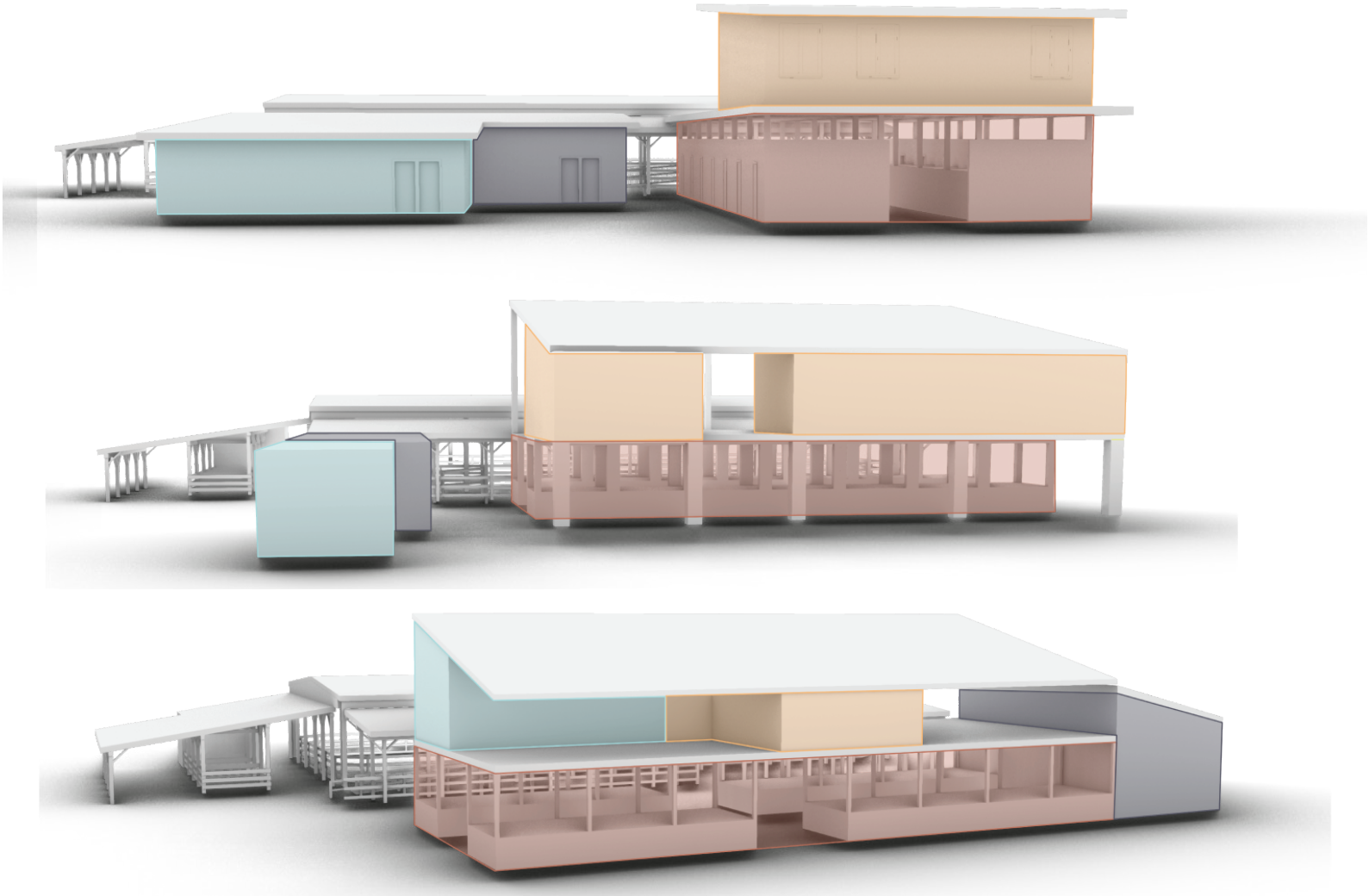


Side Birds-Eye View
North-West Facing

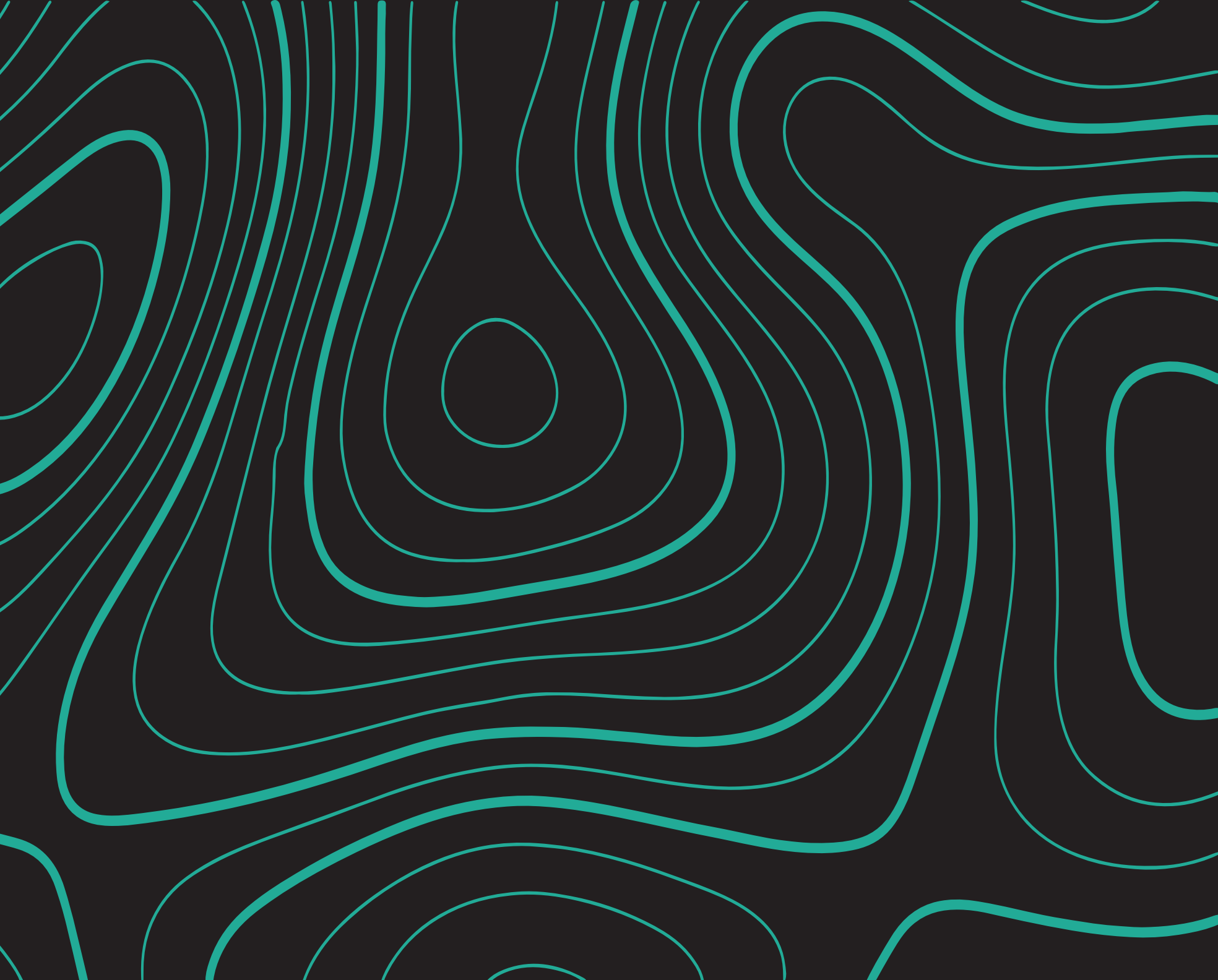


Side Birds-Eye View
North-West Facing

Design Directions in Comparison



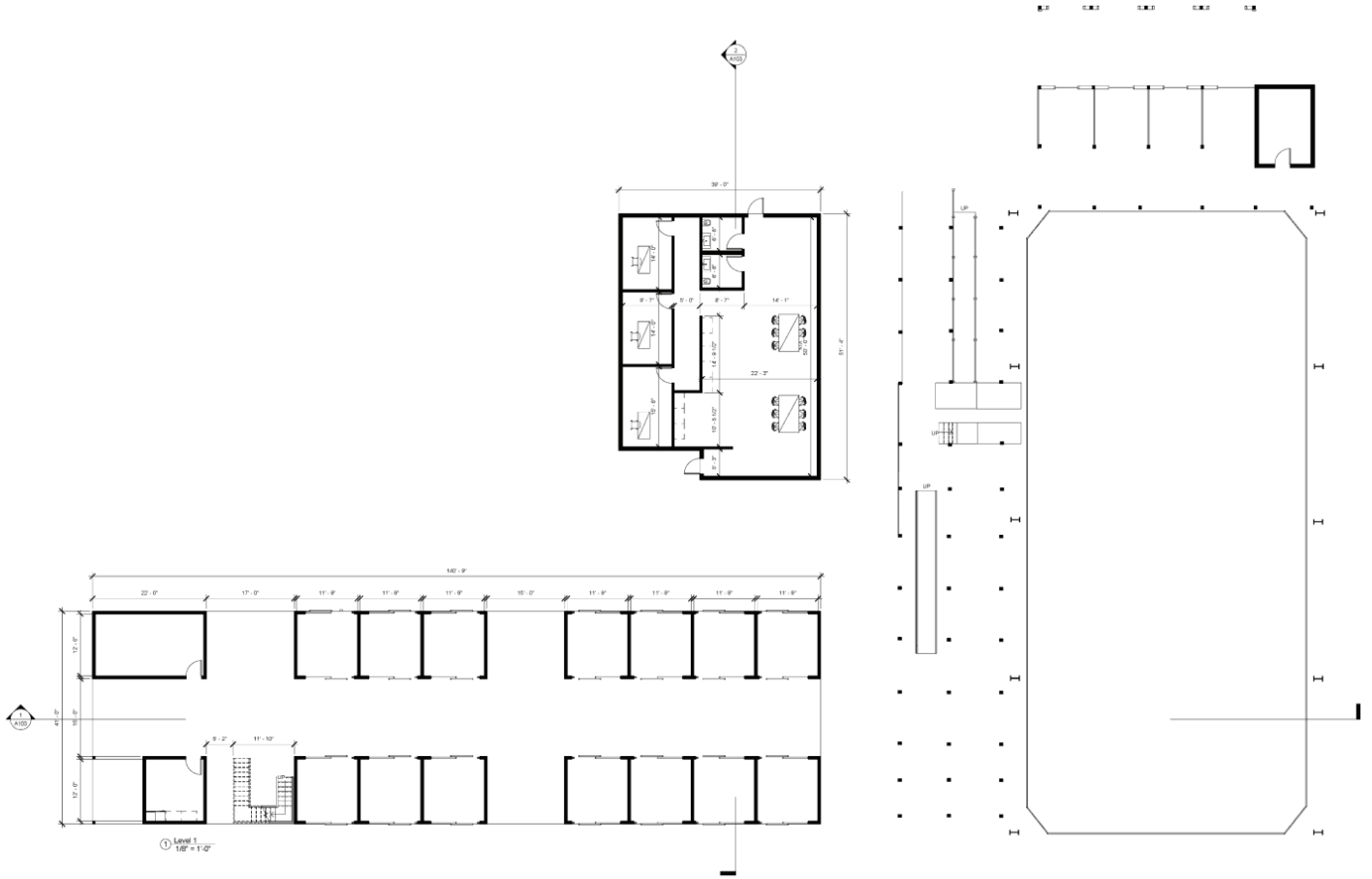
When looking at all three concept designs, it is apparent these circulations take into account the need for direct access to the arena and surrounding path.
Each design gives an east to west entry into the arena as well as a northwest to southeast path out towards the existing path. As requested by the client, all three designs implement a lofted living space with ideal views of the site and equines below.

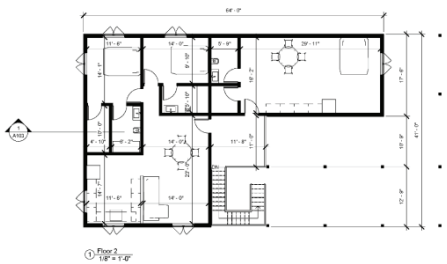


06 Design Development

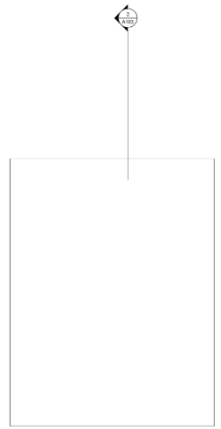
Following our midterm meeting, the team progressed the designs into tangible formats, such as floor plans, sections, and renderings. Students developed three additional options to present to FETC.

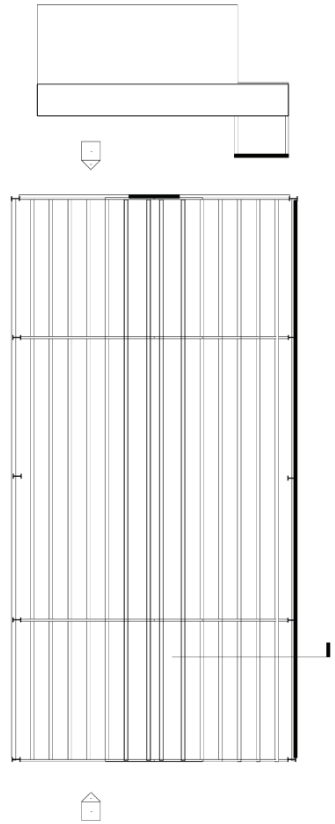
Design Solution 1

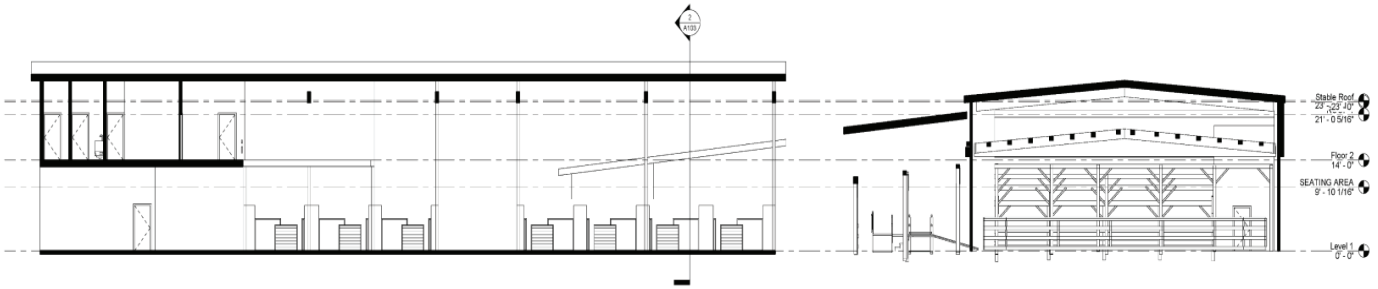




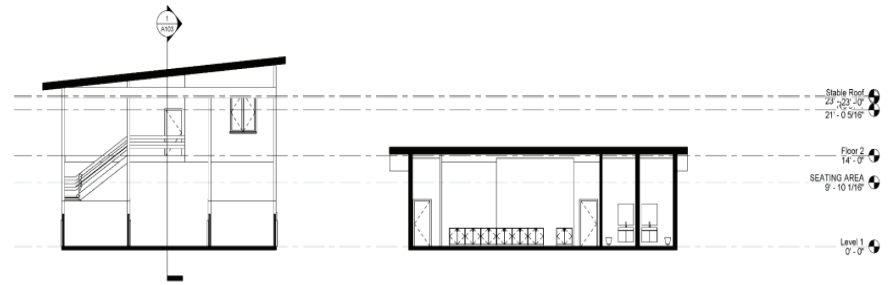
1 Floor 2
1/8" = 1'-0"







1 Section A
1/8" = 1'-0"



2 Section B
1/8" = 1'-0"

COST: Design Solution 1

Given Spaces:
Barn dimensions: 5780SF = 5800SF
Lofted living space dimensions: 1999 SF = 2000 SF
Office/Classroom space dimensions: 1915 SF

Concrete Foundations:
- Barn total cost = 5800 * $6.00 = $34,800
- Office/Classroom Total cost: 1915 * $6.00 = $11,490

Steel Frame:
- Barn Total cost = 5800 * $22.00 = $127,600
- Loft total cost = 2000 * $22.00 = $44,000
. - Office/Classroom Total cost: 1915 * $22.00 = $42,130

PEMB (Pre-Engineered Metal Building):
- Barn Total cost = 5800 * $18.00 = $104,000
- Loft total cost = 2000 * $18.00 = $36,000
- Office/Classroom Total cost: 1915 * $18.00 = $34,470

Wood Frame:
- Barn total cost = 5800 * $10.00 = $58,000
- Loft total cost = 2000 * $10.00 = $20,000
- Office/Classroom total cost = 1915 * $10.00 = $19,150

Dwelling #1 (Barn + Living Quarters):
$34,800 (Barn Foundations) + $127,600 (Steel Frame)
= $162,400
(Living Quarters) + 44,000 (Steel Frame)
= $206,400

$34,800 (Barn Foundations) + $104,000 (PEMB)
= $138,800
(Living Quarters) + 36,000 (PEMB)= $174,800

$34,800 (Barn Foundations) + $58,000 (Wood Frame)
= $92,800
(Living Quarters) + 20,000 (Wood Frame)
= $112,800

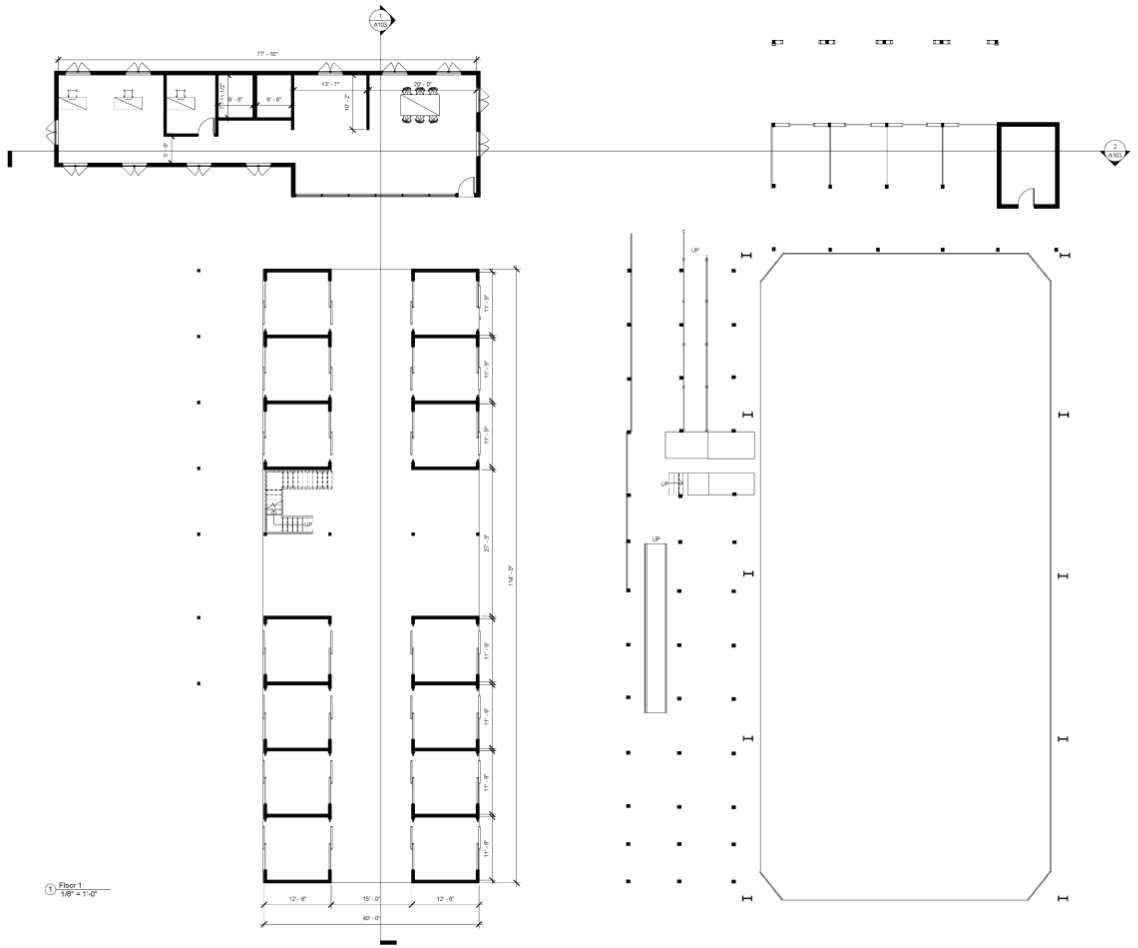
Our Suggestion:
$34,800 (Barn Foundations) + $127,600 (Steel Frame)
= $162,400
(Living Quarters) + 20,000 (Wood Frame)
= $182,400

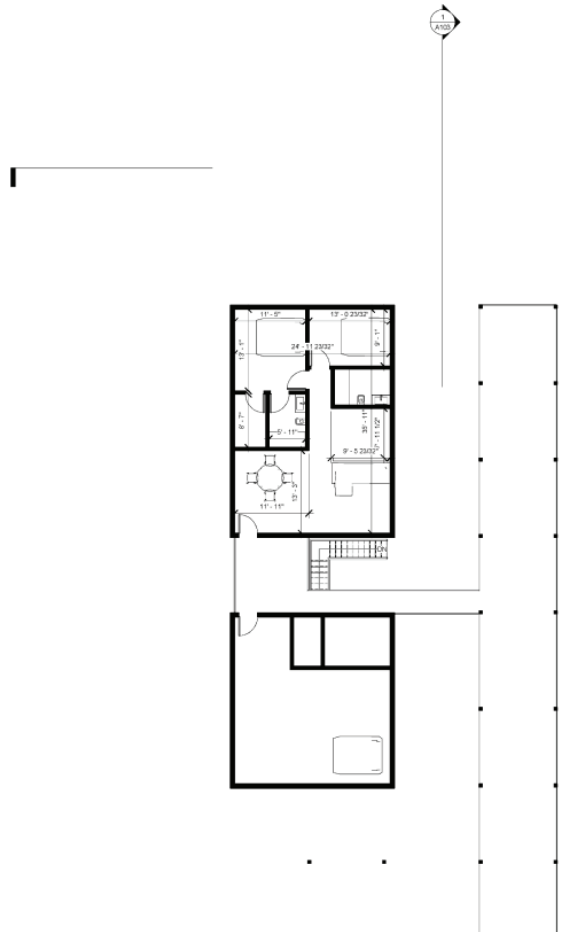
Total Cost = $182,400

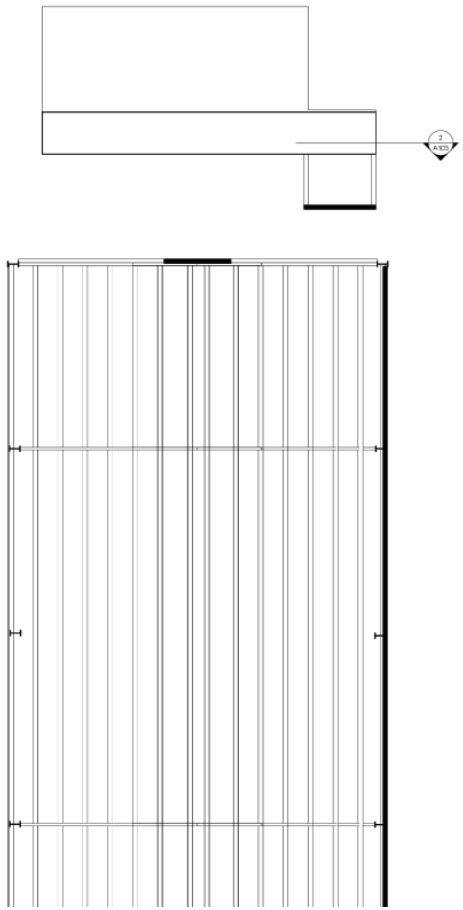
Design Solution 1

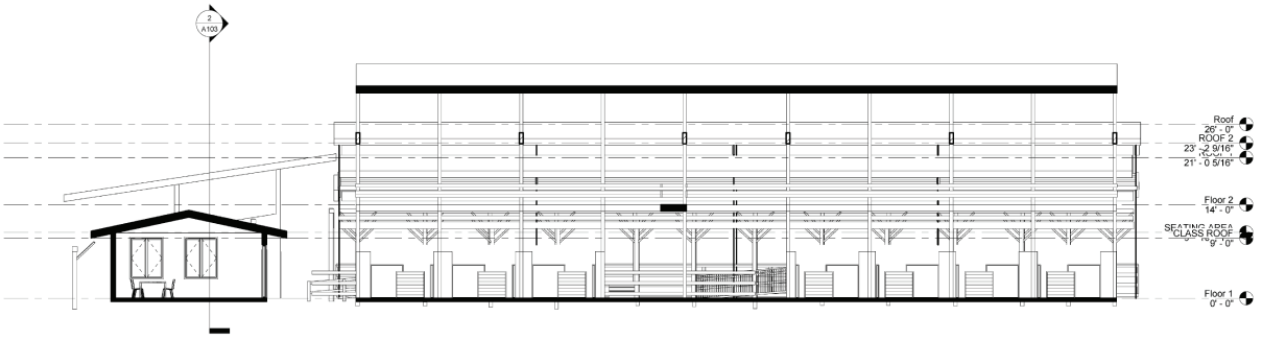
This design solution features a modern, open-concept structure elevated on columns to mitigate flooding risks and enhance airflow. The extensive overhanging roof provides shade and weather protection while integrating seamlessly with the surrounding greenery. Large, open areas with minimal walls foster a welcoming atmosphere and flexible use of space. The design includes specific zones for different functions, such as equine stalls and human activity areas, with accessible pathways and ramps ensuring easy navigation. Emphasizing sustainability, the structure employs eco-friendly materials and practices, creating a functional, aesthetic, and inviting space.

Design Solution 2

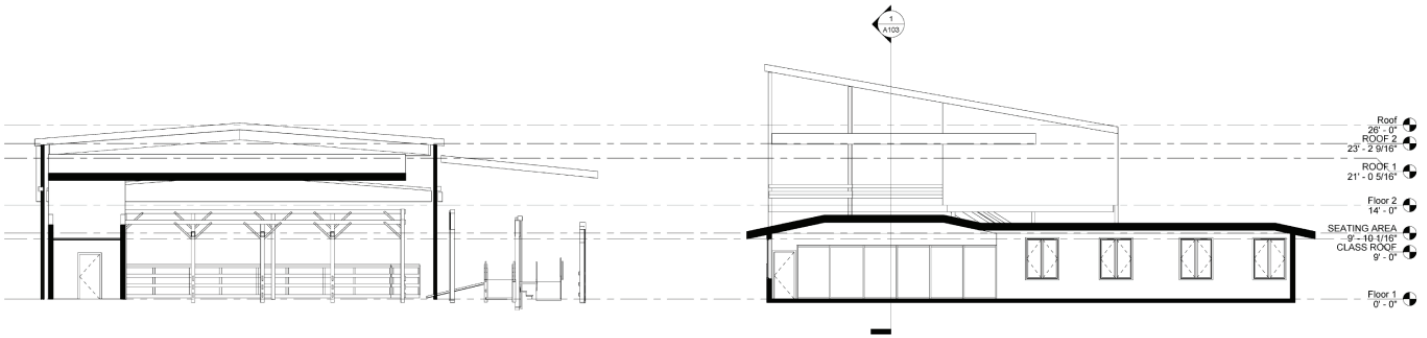



1
A103
11' - 9"
13' - 0 23/32"
24' - 11 23/32"
9' - 1"
9' - 7"
9' - 11"
35' - 11 1/2"
9' - 5 23/32"
11' - 11"


2
A103



1 Section 1
1/8" = 1'-0"



2 Section 2
1/8" = 1'-0"

COST: Design Solution 2

Given Spaces:
Barn dimensions: 4580SF = 4600SF
Lofted living space dimensions: 3400 SF
Office/Classroom space dimensions: 1600 SF

Concrete Foundations:
- Barn total cost = 4600 * $6.00 = $27,600
- Office/Classroom Total cost: 1600 * $6.00 = $9,600

Steel Frame:
- Barn Total cost = 4600 * $22.00 = $101,200
- Loft total cost = 3400 * $22.00 = $74,800
. - Office/Classroom Total cost: 1600 * $22.00 = $35,200

PEMB (Pre-Engineered Metal Building):
- Barn Total cost = 4600 * $18.00 = $82,800
- Loft total cost = 3400 * $18.00 = $61,200
- Office/Classroom Total cost: 1600 * $18.00 = $28,800

Wood Frame:
- Barn total cost = 4600 * $10.00 = $46,000
- Loft total cost = 3400 * $10.00 = $34,000
- Office/Classroom total cost = 1600 * $10.00 = $16,000

Dwelling #1 (Barn + Living Quarters):
$28,800 (Barn Foundations) + $105,600 (Steel Frame)
= $134,400
(Living Quarters) + $50,600 (Steel Frame)
= $185,000
$28,800 (Barn Foundations) + $86,400 (PEMB)
= $115,200
(Living Quarters) + $41,400 (PEMB)= $156,600
$28,800 (Barn Foundations) + $48,000 (Wood Frame)=
$76,800
(Living Quarters) + $23,000 (Wood Frame)
= $99,800

Dwelling #2 (Offices + Classrooms):
$10,200 (Office/Classroom Foundations) + $37,400 (Steel Frame) = $47,600
$10,200 (Office/Classroom Foundations) + $30,600 (PEMB)
= $40,800
$10,200 (Office/Classroom Foundations) + $17,000 (Wood Frame) = $27,200

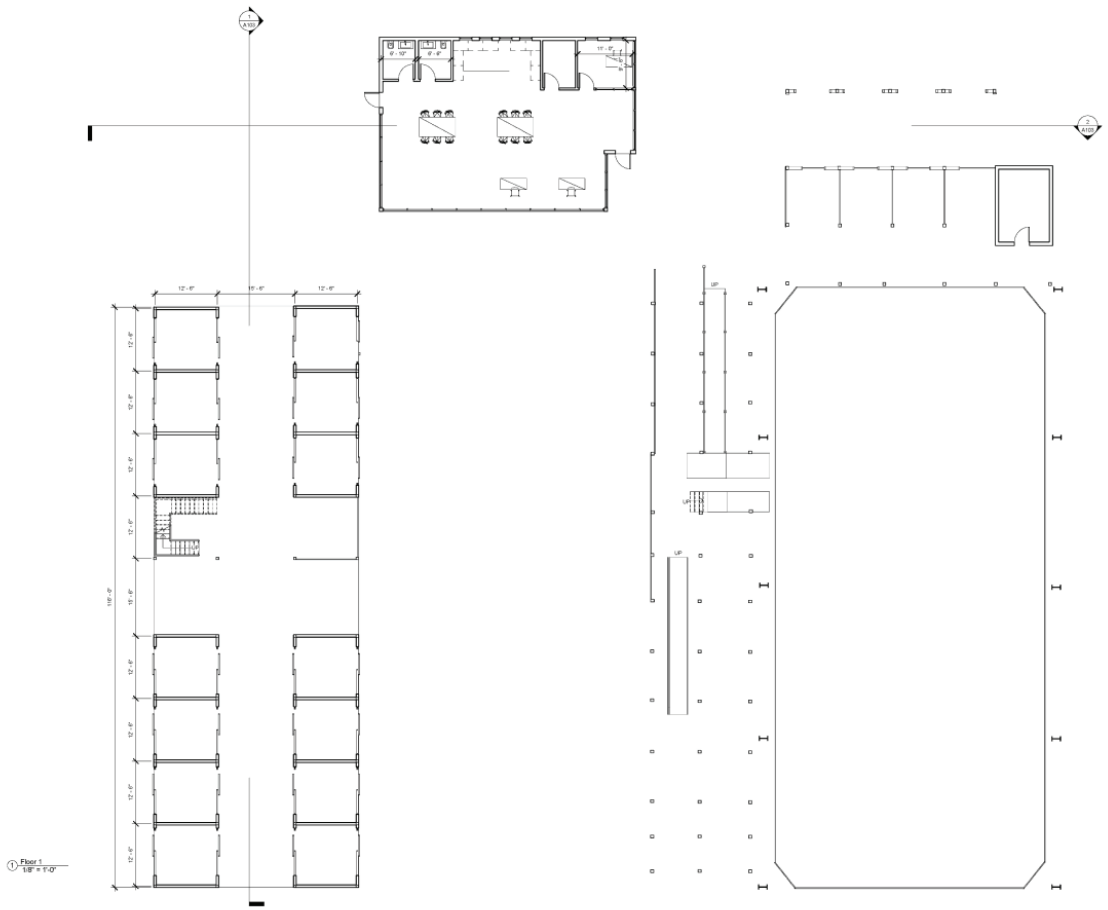
Our Suggestion:
$10,200 (Office/Classroom Foundations) + $17,000 (Wood Frame) = $27,200

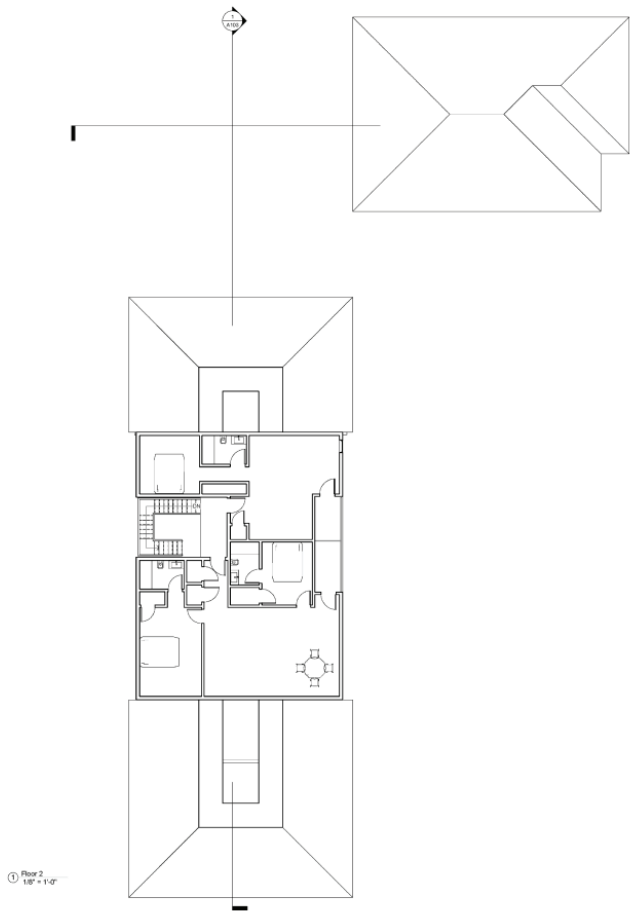
Total Cost = $157,400 + $27,200 = $184,600

Design Solution 2

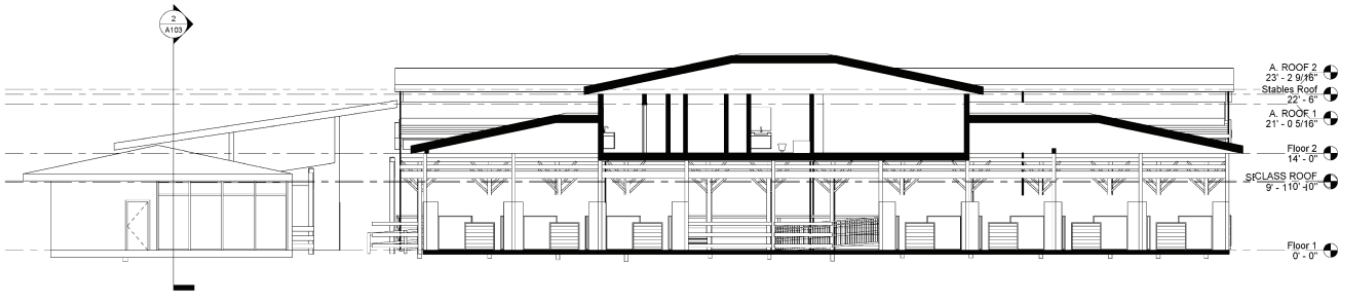
This design features a modern, elevated structure with a large overhanging roof that provides ample shade and weather protection. The building is designed with open, airy spaces that seamlessly blend with the surrounding greenery, promoting natural light and ventilation. Specific zones are designated for different functions, such as livestock stalls and human activity areas, with minimal walls to encourage flexibility and movement. Accessible pathways and ramps ensure easy navigation, emphasizing inclusivity. The use of eco-friendly materials and sustainable practices highlights the focus on reducing environmental impact while creating a functional and inviting space.

Design Solution 3

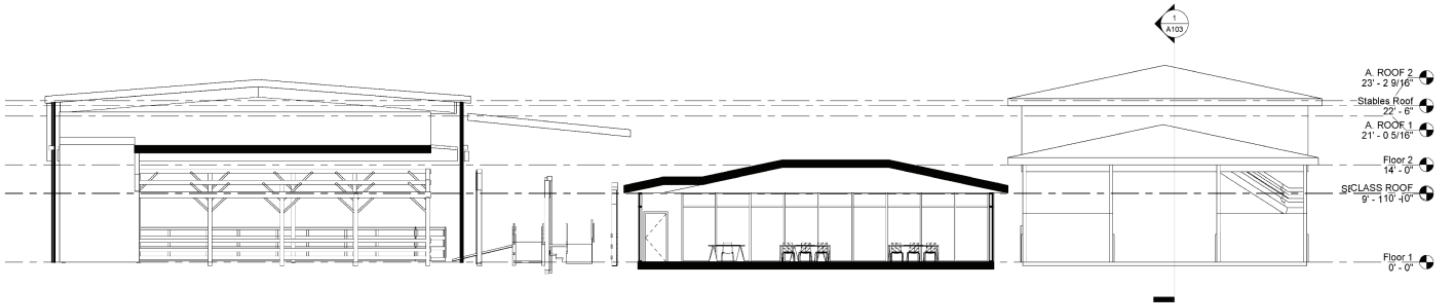




① Floor 2
1/8" = 1'-0"



1 Section 1
1/8" = 1'-0"



2 Section 2
1/8" = 1'-0"

COST: Design Solution 3

Given Spaces:
Barn dimensions: 4780 SF = 4800SF
Lofted living space dimensions: 2240 SF =2300 SF
Office/Classroom space dimensions: 1700 SF

Concrete Foundations:
- Barn total cost = 4800 * $6.00 = $28,800
- Office/Classroom Total cost: 1700 * $6.00 = $10,200

Steel Frame:
- Barn Total cost = 4800 * $22.00 = $105,600
- Loft total cost = 2300 * $22.00 = $50,600
. - Office/Classroom Total cost: 1700 * $22.00 = $37,400

PEMB (Pre-Engineered Metal Building):
- Barn Total cost = 4800 * $18.00 = $86,400
- Loft total cost = 2300 * $18.00 = $41,400
- Office/Classroom Total cost: 1700 * $18.00 = $30,600

Wood Frame:
- Barn total cost = 4800 * $10.00 = $48,000
- Loft total cost = 2300 * $10.00 = $23,000
- Office/Classroom total cost = 1700 * $10.00 = $17,000

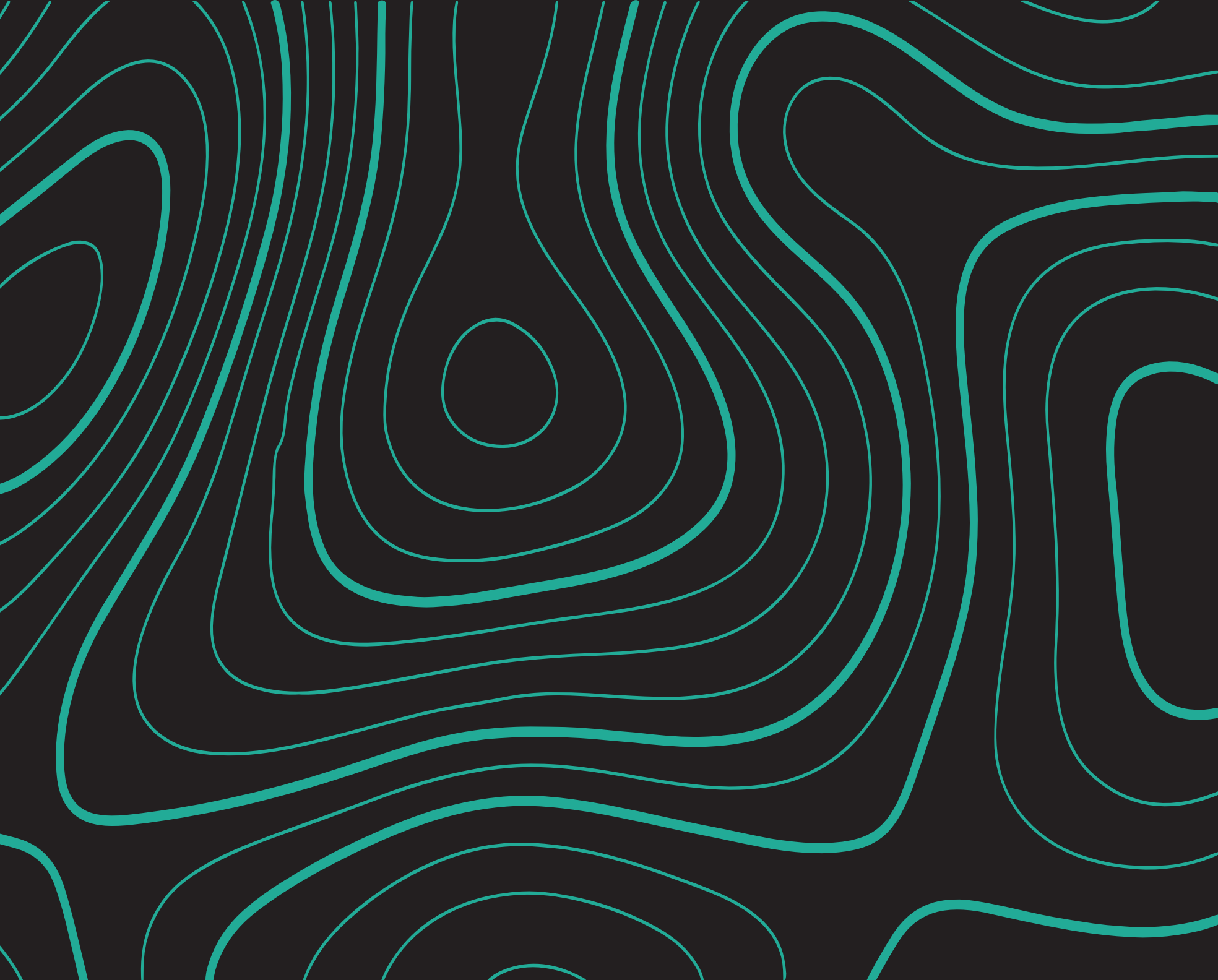
Dwelling #1 (Barn + Living Quarters):
$27,600 (Barn Foundations) + $101,200 (Steel Frame)
= $128,800
(Living Quarters) + $74,800 (Steel Frame)
= $203,600
$27,600 (Barn Foundations) + $82,800 (PEMB)
= $110,400
(Living Quarters) + $61,200 (PEMB)= $171,600
$27,600 (Barn Foundations) + $46,000 (Wood Frame)=
$73,600
(Living Quarters) + $34,000 (Wood Frame)=
= $107,600

Our Suggestion:
$27,600 (Barn Foundations) + $101,200 (Steel Frame)
= $128,800
(Living Quarters) + $34,000 (Wood Frame)
= $162,800
Total Cost = $162,800
Dwelling #2 (Offices + Classrooms):
$9,600 (Office/Classroom Foundations) + $35,200 (Steel
Frame= $44,800
$9,600 (Office/Classroom Foundations) + $28,800 (PEMB)
= $38,400
$9,600 (Office/Classroom Foundations) + $16,000 (Wood
Frame) = $25,600

Total Cost = $162,800 + 25,600 = $188,400

Design Solution 3

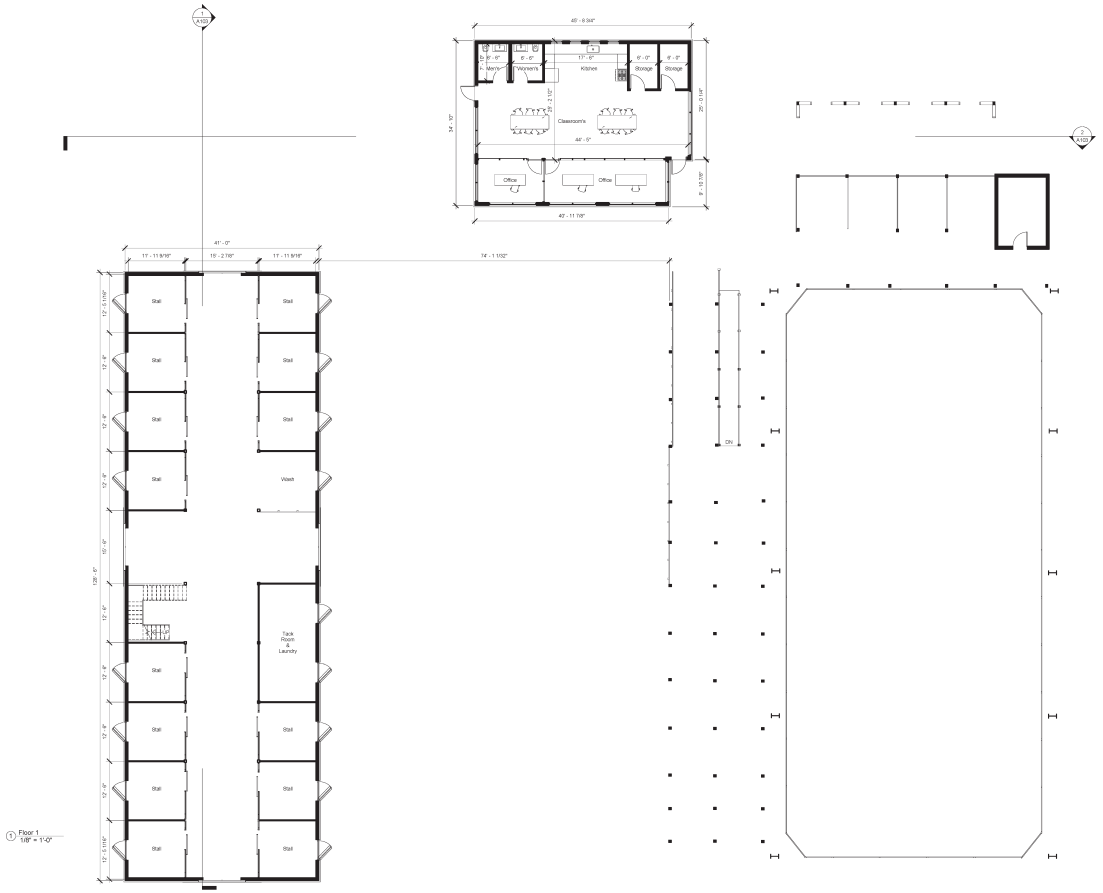
This design features an elevated, modern structure with an extensive overhanging roof for shade and weather protection. The building includes open, airy spaces that blend seamlessly with the surrounding greenery, promoting natural light and ventilation. Specific zones are designated for different functions, such as equine stalls and courtyards, with minimal walls to encourage flexibility and movement. Accessible pathways and ramps ensure easy navigation, emphasizing inclusivity. The use of eco-friendly materials and sustainable practices highlights the focus on reducing environmental impact while creating a functional, inviting space for diverse activities and interactions.

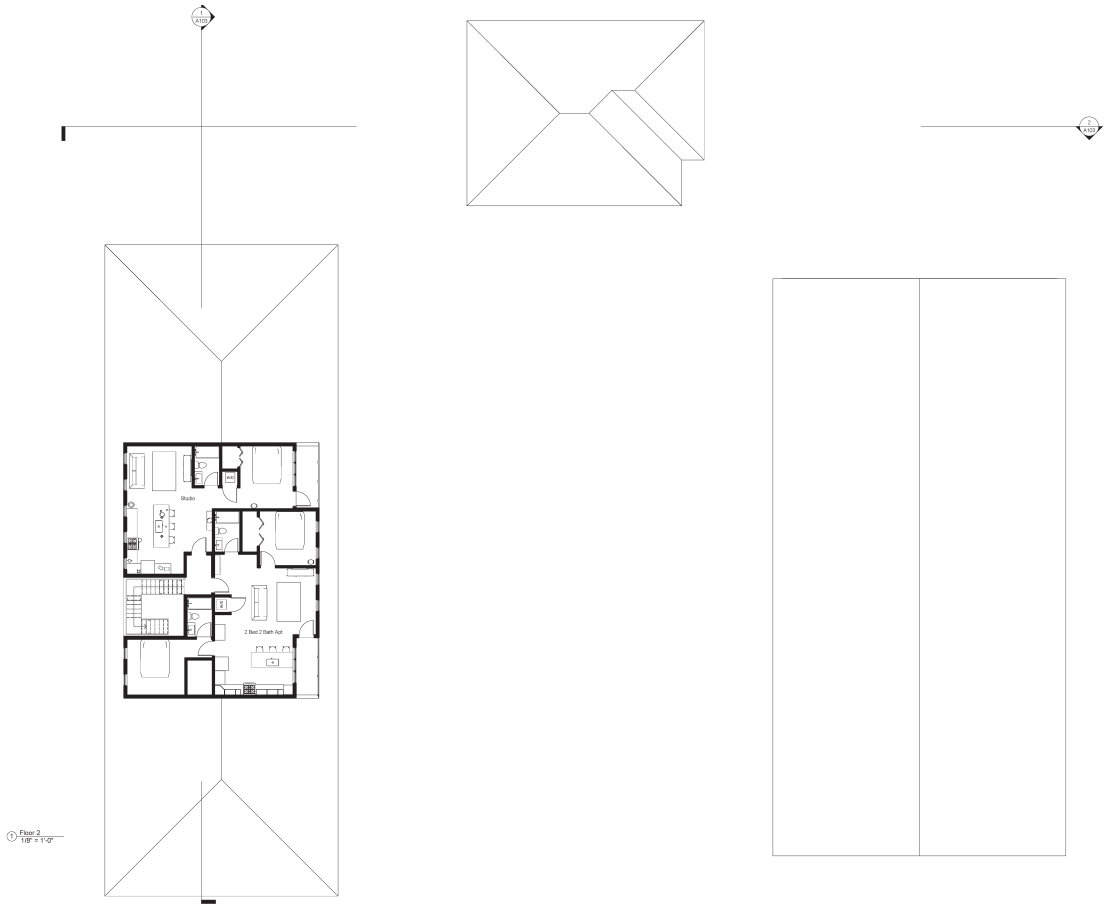


07 Final Design

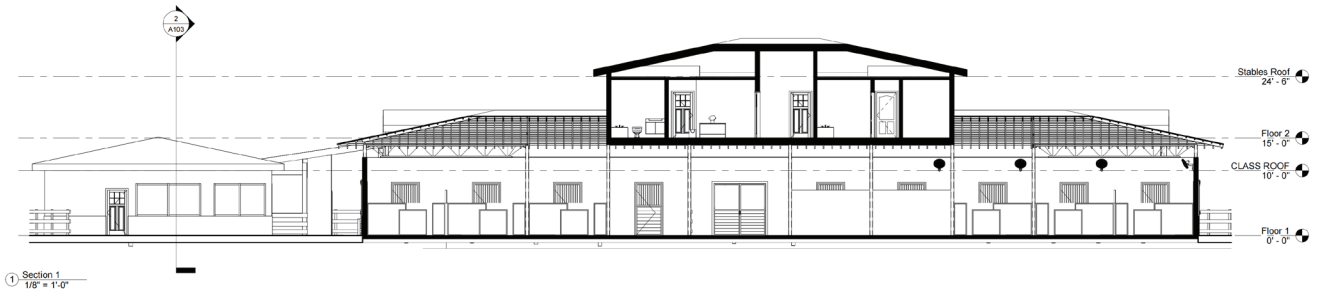
After refining our concepts based on feedback, the team finalized the designs into comprehensive formats, such as detailed floor plans, sections, and high-quality renderings. We prepared a final design to present to FETC for their approval.

Final Solution

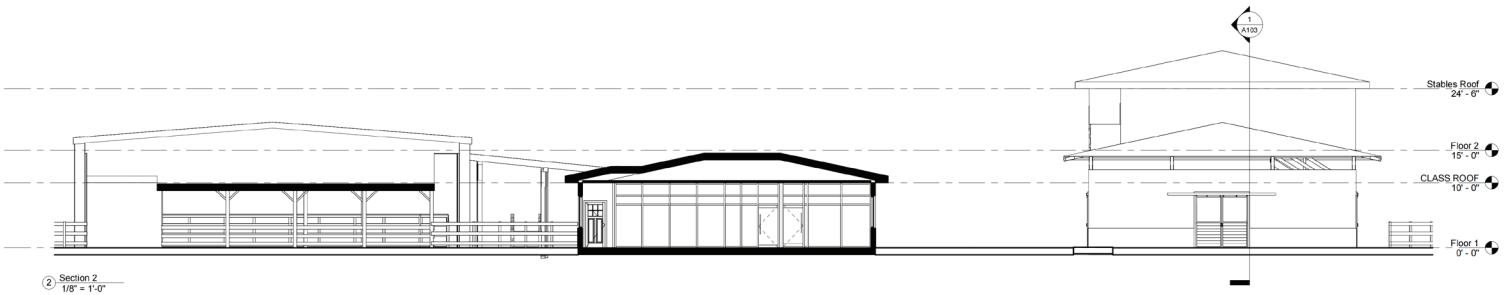




1 Floor 2
1/8" = 1'-0"



1 Section 1
1/8" = 1'-0"



2 Section 2
1/8" = 1'-0"

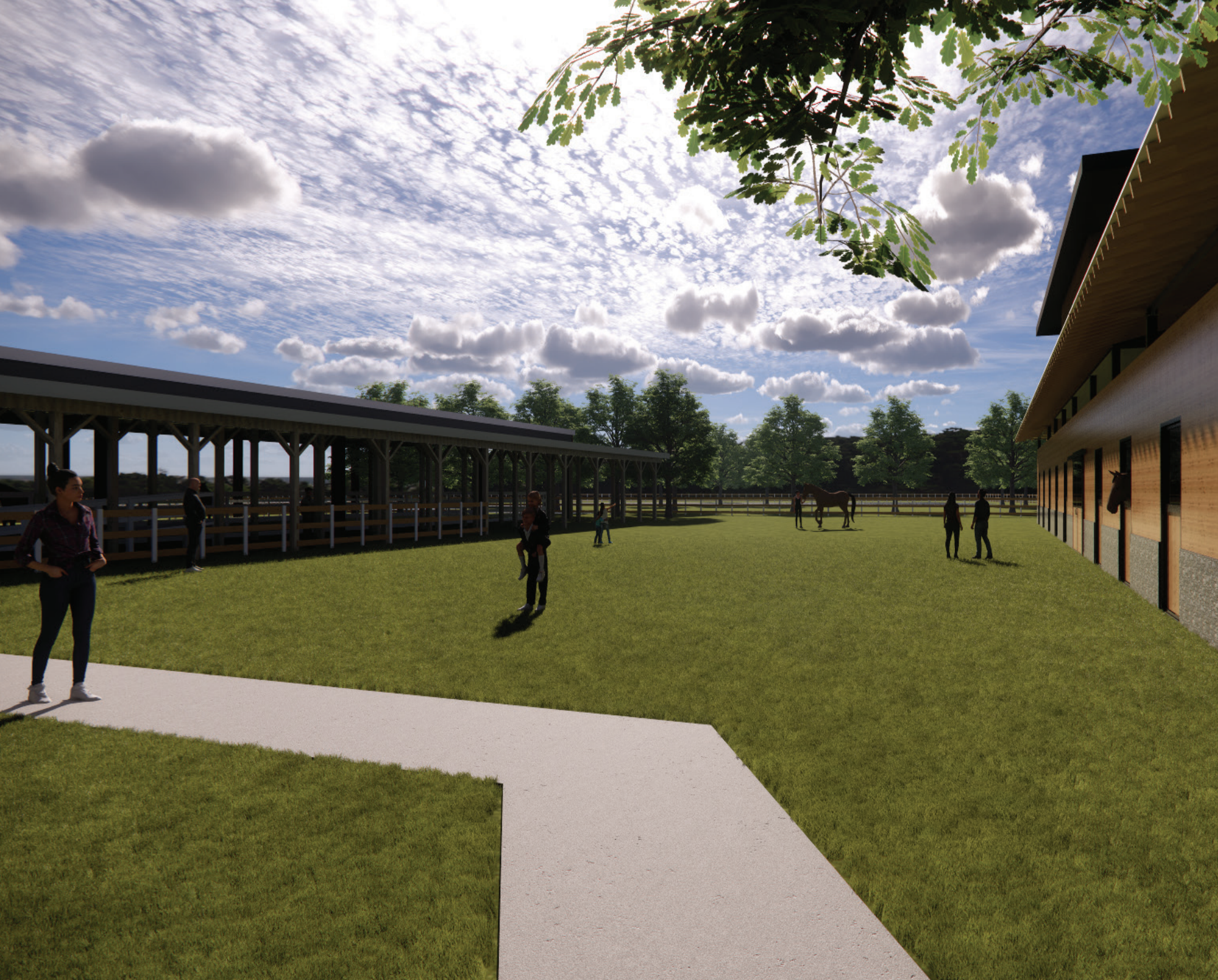
COST: Final Solution

Given Spaces:
Barn dimensions: 4780 SF = 4800SF
Lofted living space dimensions: 2240 SF =2300 SF
Office/Classroom space dimensions: 1700 SF

$28,800 (Barn Foundations) + $105,600 (Steel Frame)
= $134,400
(Living Quarters) + $23,000 (Wood Frame)
= $157,400
Total Cost = $157,400

$10,200 (Office/Classroom Foundations) + $17,000 (Wood Frame) = $27,200

Total Cost = $157,400 + $27,200 = $184,600



Exterior Material Cost: Barn

Material Name: SmartSide 38 Series 8 in. Application as 4 ft. x 8 ft. Cedar Texture OC Panel Engineered Treated Wood Siding
Model #: 27874
Pride: $39.98/per panel
Product Source:
https://www.homedepot.com/p/LP-SmartSide-SmartSide-38-Series-8-in-Application-as-4-ft-x-8-ft-Cedar-Texture-OC-Panel-Engineered-Treated-Wood-Siding-27874/100055901#overlay

Calculations:

Barn

E+W Walls 9′ x 128′ = 1,152 x 2 = 2,304sq ft - 511 sq ft (19 doors x 21sqft)+ (2 doors x 56 sqft) = 1792 -> 1792 = 56 panels x $39.98/per panel = $2,238.88
N+S Walls 9′ H x 41′ = 738 sq ft - 112 sq ft (2 doors x 56sq ft) = 626 = 20 panels
20 panels x $39.98/per panel = $799.60

Living Quarters

E+W Walls 10′ x 40′ = 400 x 2 = 800 sq -> 25 panels x $39.98/ per panel = $999.50
N+S Walls 10′ H x 54′ = 540 x 2 = 1080 sq -> 34 Panels x $39.98/ per panel = $1359.32

Total Cost = $5,397.30

Material Name: 23.5 in. x 6 in. Colorado Gray Stone Veneer Siding (Flats)
Model #: CGFLAT
Price: $53.34/box
Product Source: Home depot
https://www.homedepot.com/p/ADORN-23-5-in-x-6-in-Colorado-Gray-Stone-Veneer-Siding-Flats-CGFLAT/206194815#overlay

Calculations:

Barn

E+W Walls 3′ x 128′ = 384 x 2 = 768 sq ft - 511 sq ft (19 doors x 21sqft)+ (2 doors x 56 sqft)
511 sq ft / 4 = 128 boxes x $53.34 = $6,827.52
N+S Walls 3′ x 41′ = 123 x 2 = 246sq ft - 112 sq ft (2 doors x 56sq ft)
134 sq ft / 4 = 34 boxes x $53.34 = $1,813.56

Total Cost = $8,641.08

Exterior Material Cost: Office

Material Name: SmartSide 38 Series 8 in. Application as 4 ft. x 8 ft. Cedar Texture OC Panel Engineered Treated Wood Siding
Model #: 27874
Pride: $39.98/per panel
Product Source:
https://www.homedepot.com/p/LP-SmartSide-SmartSide-38-Series-8-in-Application-as-4-ft-x-8-ft-Cedar-Texture-OC-Panel-Engineered-Treated-Wood-Siding-27874/100055901#overlay

Calculations:

Office

E+W Walls 9′ H x 34′ = 315 x 2 = 612 sq ft - 21 sqft (1 doors x 21sq ft)
= 591 sq ft -> 600sq ft = 19 panels x $39.98/per panel = $759.62
N+S Walls 9′ H x 46′ = 414 x 2 =828sq ft - 42 sqft (2 doors x 21 sq ft)
= 786 -> 800sq ft = 25 panels x $39.98/per panel
= $999.50

Total Cost = $1,759.12

Material Name: 23.5 in. x 6 in. Colorado Gray Stone Veneer Siding (Flats)
Model #: CGFLAT
Price: $53.34/box
Product Source: Home depot
https://www.homedepot.com/p/ADORN-23-5-in-x-6-in-Colorado-Gray-Stone-Veneer-Siding-Flats-CGFLAT/206194815#overlay

Calculations:

Office

E+W Walls 3′ x 34′ = 102 x 2 = 204 sq ft - 21 sq ft (1 doors x 21sqft)
= 183 sq ft / 4 = 46 boxes x $53.34 = $2,453.64
N+S Walls 3′ x 46′ = 138 x 2 = 276sq ft - 42 sq ft (2 doors x 21 sq ft)
234 sq ft / 4 = 59 boxes x $53.34 = $3,147.06

Total Cost = $5,600.70

Interior Stables

This image depicts the interior of a modern, spacious stable with a minimalist design. Natural light enters through windows and ceiling openings, illuminating the light-colored wood walls. Wide walkways and neatly arranged stalls provide ample space, while the durable dark flooring ensures easy maintenance. A simple wooden staircase leads to an upper level, blending functionality with the natural, rustic aesthetic.

Apartment: Living Room

A modern, open-concept living space featuring a cozy seating area and a sleek kitchen. The room is bright with natural light entering through the door and windows. The seating area includes a comfortable gray sofa and a patterned rug, creating a welcoming atmosphere. The kitchen area, in the background, has a clean design with green lower cabinets and white upper cabinets. A central island with bar stools provides additional seating and workspace. Pendant lights above the island add a stylish touch. The wooden floors throughout enhance the warm, inviting feel of the space.

Studio Bedroom

This image shows a modern bedroom with a minimalist design. The room features a cozy bed with a striped duvet and multiple pillows, positioned against a wooden accent wall that adds warmth and texture. The flooring is a light wood, enhancing the room's airy and spacious feel. A simple ceiling light fixture provides illumination. In the background, you can see a glimpse of the adjoining living space, connecting the bedroom seamlessly with the rest of the home. A person is seen in the kitchen area, highlighting the open and connected layout of the residence. The overall atmosphere is calm and inviting, perfect for relaxation.

Studio Living Room

This image depicts a modern studio living room with a seamless integration of the kitchen area. The living room features a comfortable gray sofa and a patterned rug, creating a cozy seating area. A wall-mounted TV is positioned above a sleek console table with a wood slat accent wall, adding texture and warmth to the space. The kitchen, visible in the background, has green lower cabinets and white upper cabinets with a central island that includes bar stools and pendant lighting, providing both functionality and style. Large windows allow natural light to fill the space, enhancing the open and airy feel. The overall design is contemporary and inviting, perfect for a compact living environment.

Office Classrooms

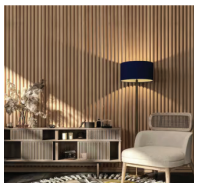
This image shows a modern office classroom with a spacious, open layout. The room is well-lit with large windows allowing natural light to fill the space, providing a bright and airy atmosphere. The floor is made of light wood, enhancing the warm and inviting feel.

There are multiple tables and chairs arranged for collaborative work and discussions. The back wall features large glass panels, creating a transparent and connected environment with views of the surrounding greenery. Several people are present, engaging in various activities, which highlights the room's functional and interactive design.

The overall design emphasizes openness, natural light, and a conducive environment for learning and collaboration. The modern furnishings and minimalist aesthetic contribute to a professional yet welcoming atmosphere.

Interior Material Cost

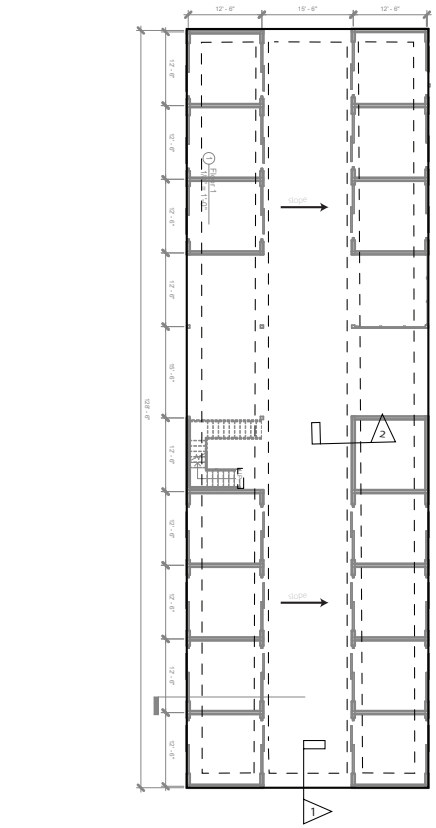
Material Name: Wood Laminate Flooring
Model #: LF000854
Price: $2.82 /sq. Ft.
Product Source: Home Depot
Pergo Outlast+ Marigold Oak 12 mm T x 7.4 in. W Waterproof Laminate Wood Flooring (19.6 sqft/case) LF000854 - The Home Depot
Cost:
Barn (living quarters) - 2300 sq. ft. x $2.82 = $6,486.00
Office - 1700 sq. ft. x $2.82 = $4,794.00

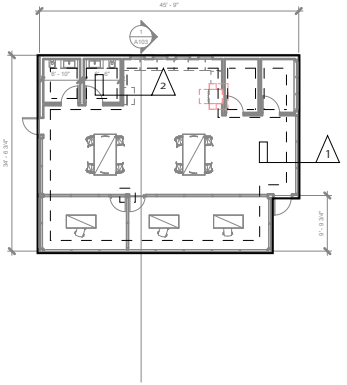


Material Name: Ejoy SAMPLE 10 in. x 6 in x 0.8 in. 5 Grid Semi Circle Finished Wood Wall Siding Board in Light Oak Color
Model #: WoodCladding_SC_020_SAMPLE
Price: $9.97
Product Source: Home depot
https://www.homedepot.com/p/Ejoy-SAMPLE-10-in-x-6-in-x-0-8-in-5-Grid-Semi-Circle-Finished-Wood-Wall-Siding-Board-in-Light-Oak-Color-WoodCladding-SC-020-SAMPLE/327908120

Material Name: Green Ridge Texture Green Wallpaper Sample
Model #: 3097-21SAM
Price: $4.95
Product Source: Home depot
https://www.homedepot.com/p/Brewster-Green-Ridge-Texture-Green-Wallpaper-Sample-3097-21SAM/206762731

Foundation Plan

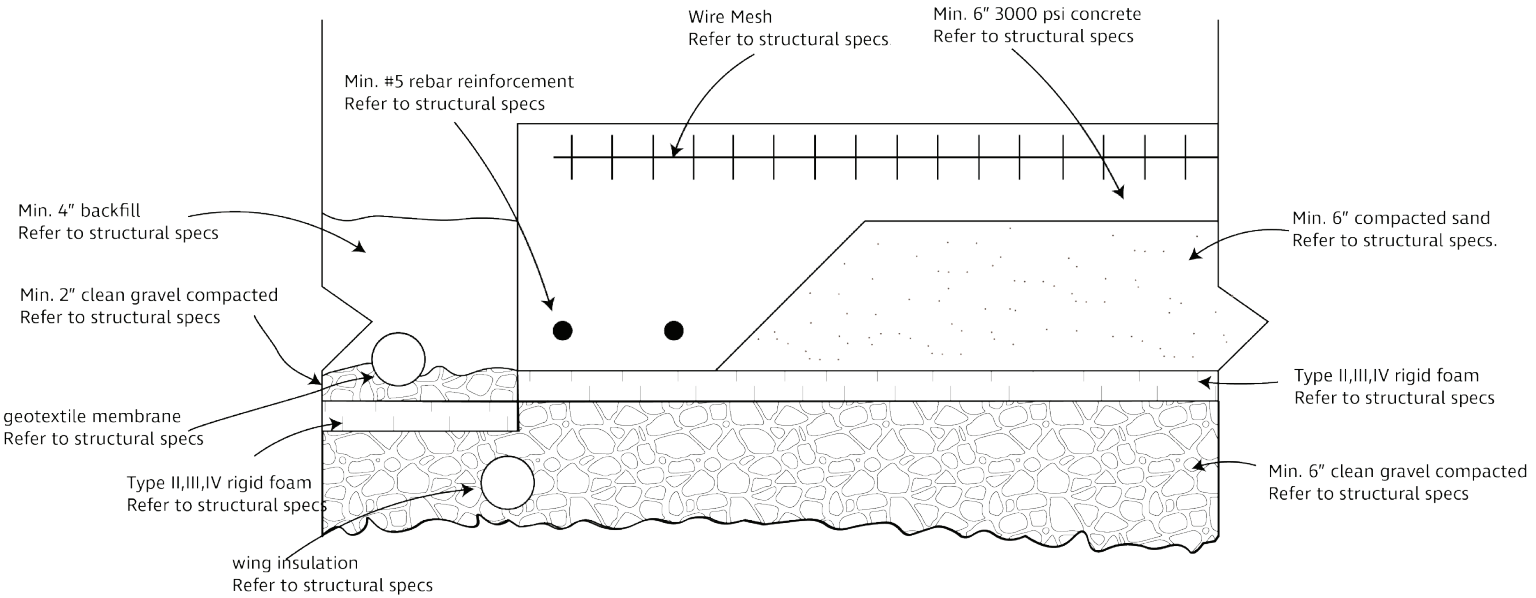




The foundation plan displays the layout and dimensions of a building's foundational structure, divided into two main sections: a larger rectangular section measuring approximately 107′-0″ by 40′-0″ and a smaller section at the top right corner measuring approximately 40′-0″ by 40′-0″. The larger section features a grid of columns and walls indicating the foundational support system, with various rooms or sections separated by dashed lines representing load-bearing walls. The smaller section includes detailed rooms and fixtures, likely for utilities or office spaces.

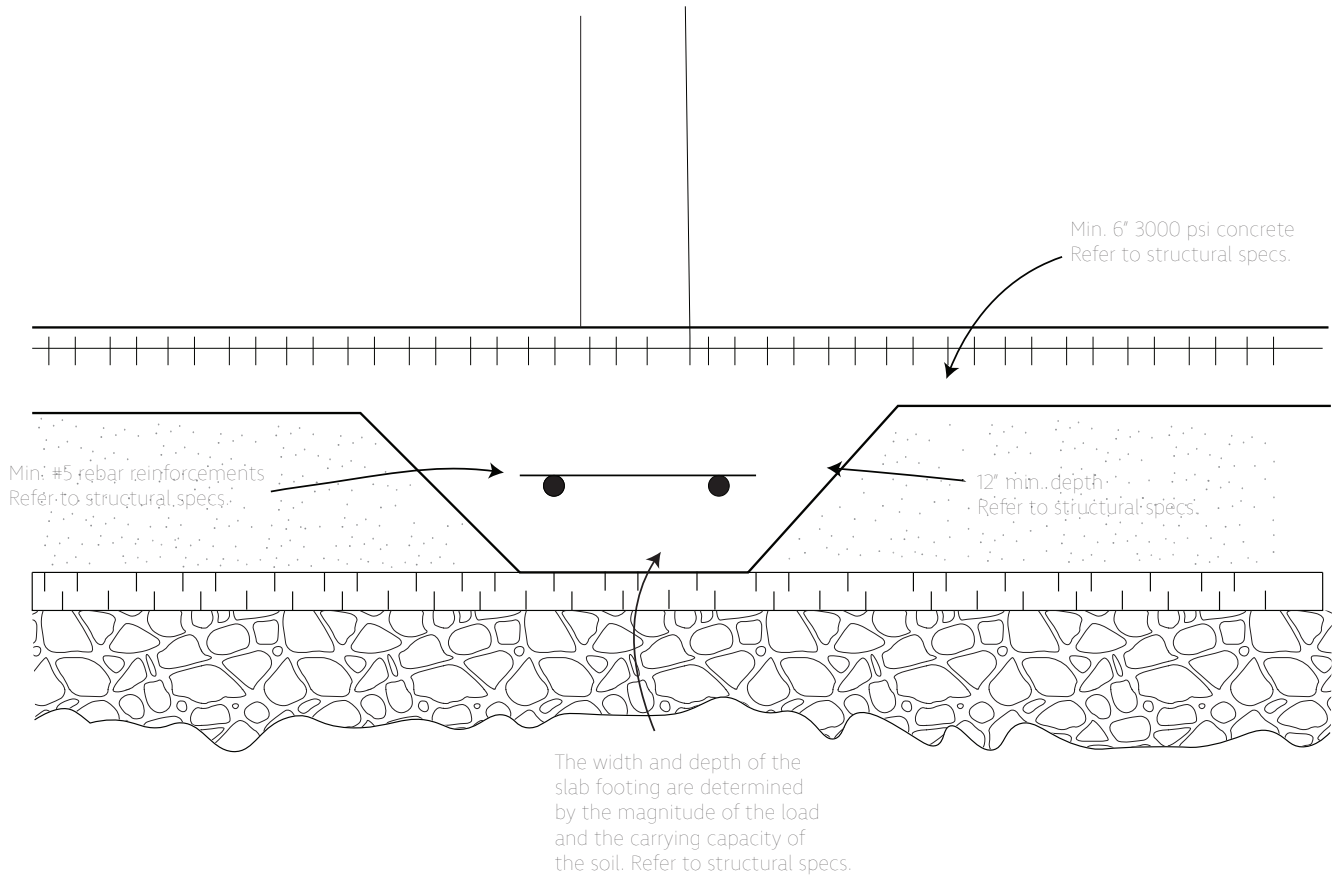
Symbols such as triangles and circles denote specific structural or utility features, and annotations provide exact dimensions and notes on structural elements. The plan offers a comprehensive view of the foundation, detailing support columns, load-bearing walls, and utility systems, with orientation and measurements clearly indicated.

Foundation Detail 1: Typical slab on grade



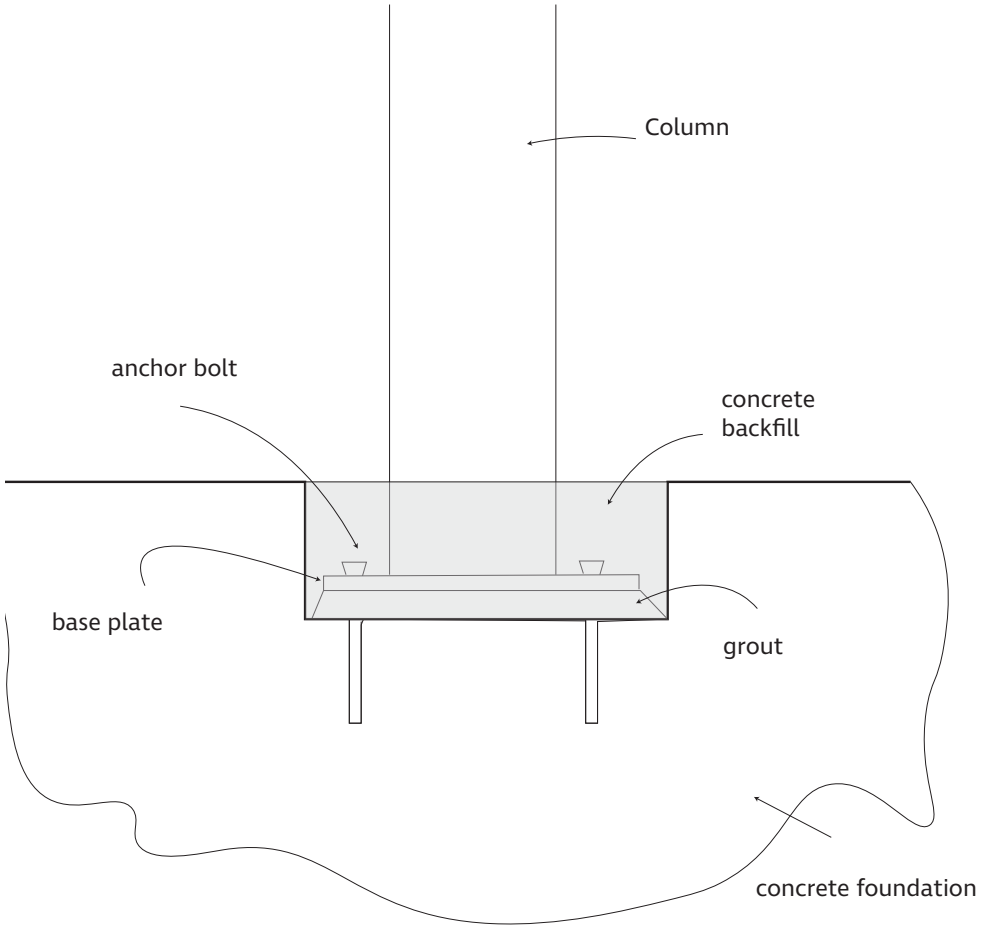
The typical slab on grade foundation detail plan shows a cross-sectional view of a standard slab-on-grade foundation. It features a minimum 6-inch thick concrete slab with 3000 psi strength, reinforced with wire mesh and #5 rebar for durability. The slab rests on a 6-inch layer of compacted sand and a 6-inch layer of clean, compacted gravel for stability and drainage. Type II, III, or IV rigid foam insulation and a geotextile membrane are included for thermal efficiency and soil separation. The foundation is stabilized with a 4-inch backfill and wing insulation as per structural specifications, ensuring a stable, durable, and energy-efficient foundation.

Foundation Detail 2: Thickened Interior



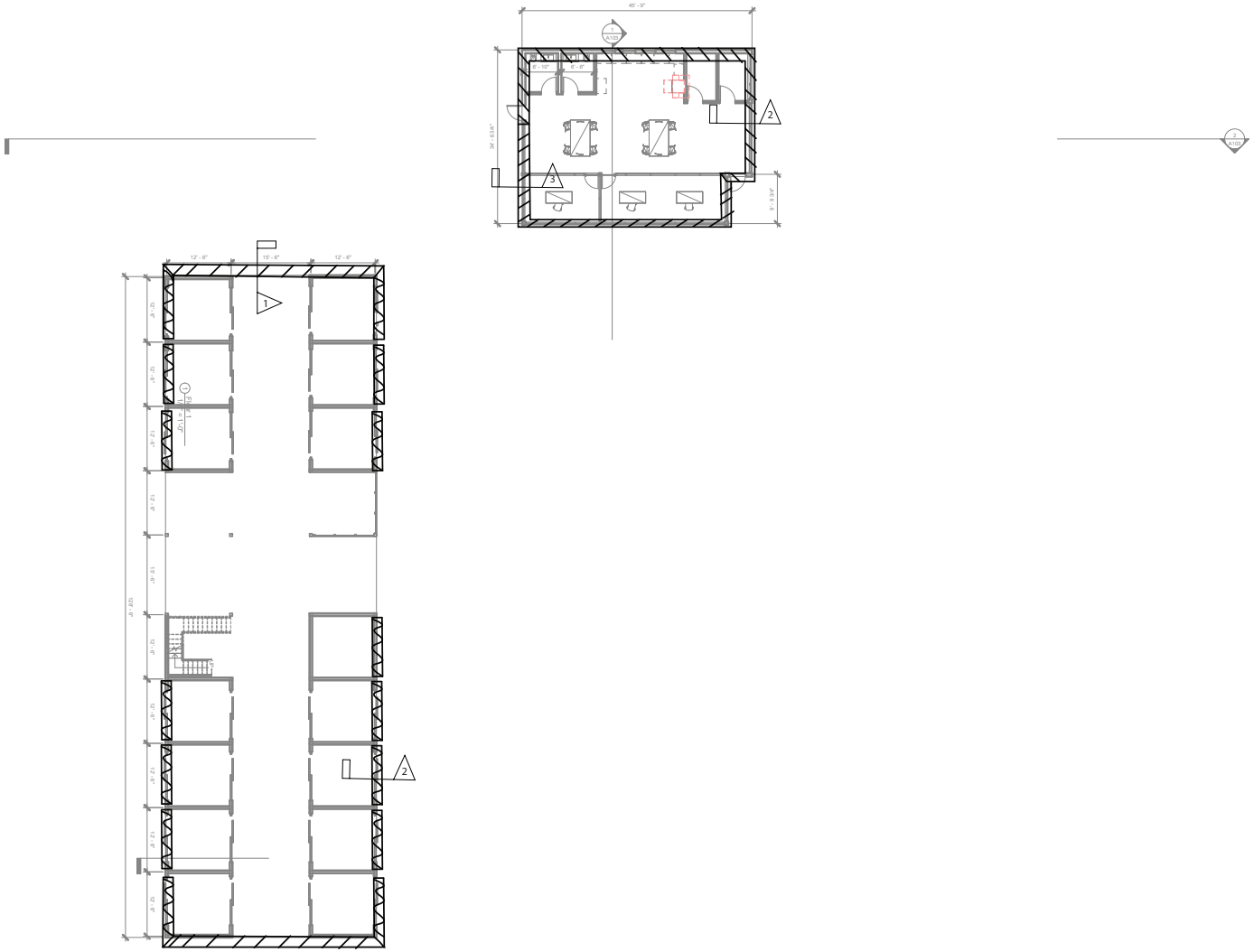
The thickened interior detail shows a cross-sectional view of a thickened slab-on-grade foundation. It features a minimum 6-inch thick concrete slab with 3000 psi strength, reinforced with wire mesh. The interior section is thickened to a minimum depth of 12 inches at specific locations to support higher loads, reinforced with #5 rebar. The slab rests on a compacted gravel base for stability and proper load distribution. The width and depth of the thickened footing are determined by the load magnitude and soil carrying capacity, ensuring adequate support for the structure.

Foundation Detail 3: Column to Foundation Connection



The column to foundation connection illustrates the secure connection between a structural column and its concrete foundation. The column sits on a flat steel base plate, which is anchored to the foundation using anchor bolts. High-strength grout is placed between the base plate and the foundation to ensure even load transfer and fill gaps. Concrete backfill surrounds the base plate and anchor bolts for additional stability. This setup ensures a strong, stable connection, effectively transferring loads from the column to the concrete foundation and enhancing the overall structural integrity.

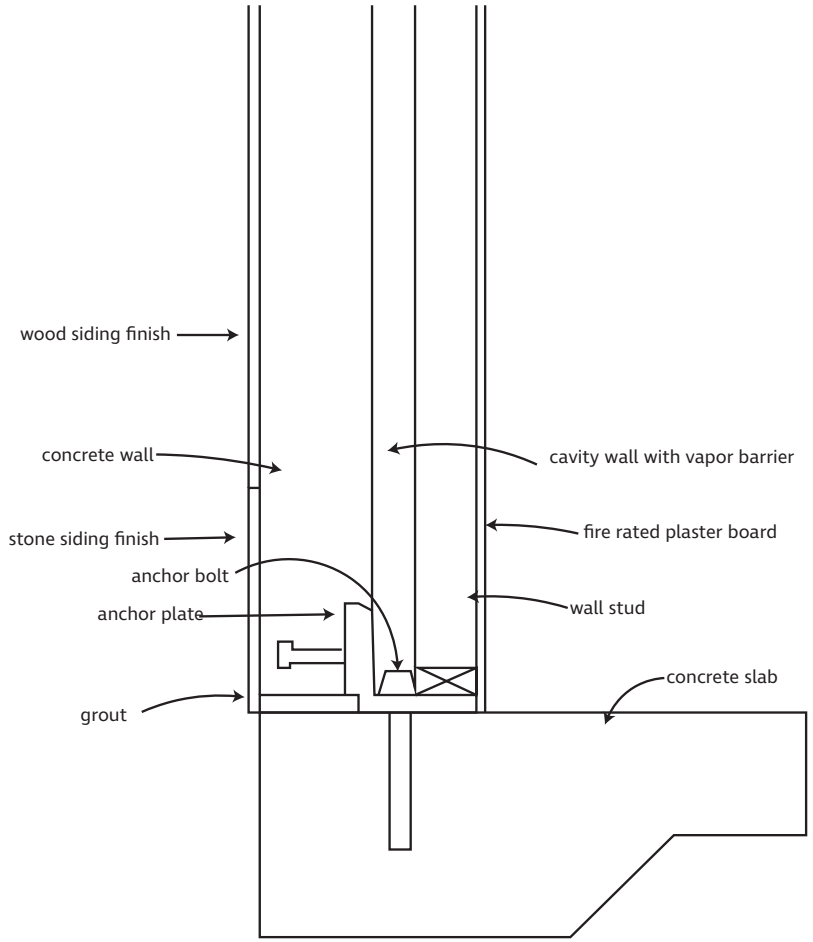
Shear Wall



The shear wall plan depicts the layout and positioning of shear walls within a building structure, divided into two main sections: a larger rectangular section on the left and a smaller section on the top right. The shear walls are indicated by thicker lines or shaded areas along the periphery and internal divisions of these sections, designed to resist lateral forces and enhance structural stability.

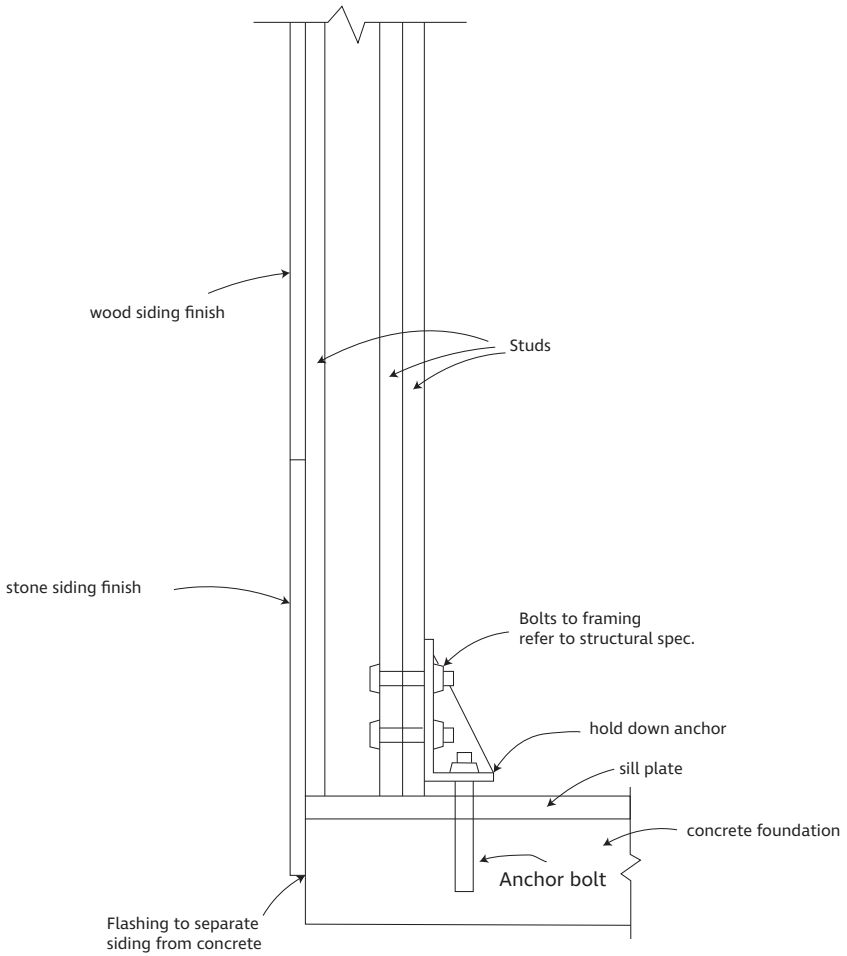
In the larger section, shear walls are strategically placed along the outer edges and some interior walls, while the smaller section features shear walls along its boundaries and select internal partitions. The plan includes dimensions and annotations to ensure precise construction and alignment with the overall design, integrating shear walls with other structural and utility elements for comprehensive stability.

Wall Detail 1: Typical exterior concrete wall



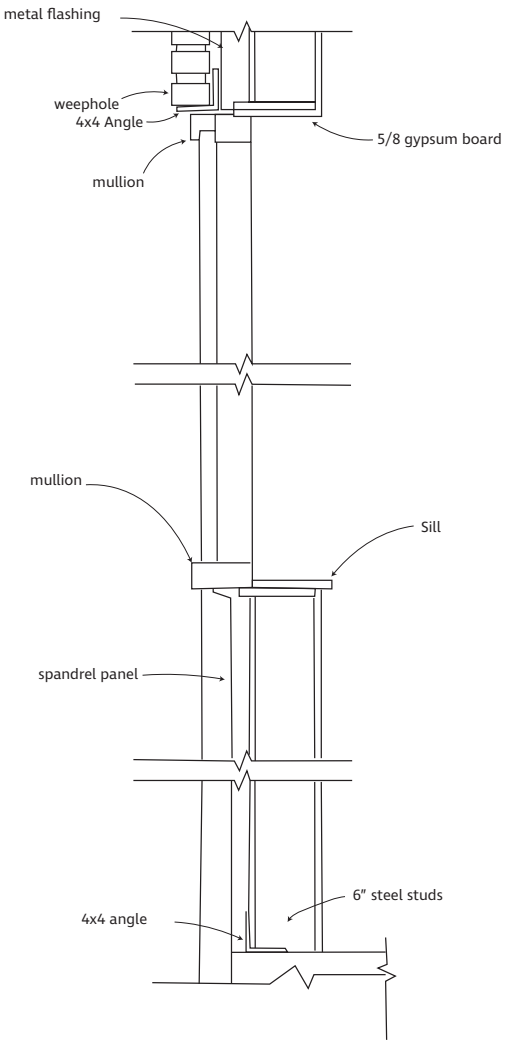
The typical exterior concrete wall detail shows a cross-section of a standard exterior wall. It features a concrete wall as the main structural element, with wood and stone siding finishes for aesthetics and protection. Inside, a cavity wall with a vapor barrier prevents moisture infiltration and improves insulation, while a fire-rated plasterboard provides fire resistance. Wall studs support the plasterboard and add structural integrity. The wall is anchored to a concrete slab foundation with an anchor plate and bolts, secured with grout to ensure stability and resistance to lateral forces. This design ensures durability, insulation, moisture protection, and fire resistance.

Wall Detail 2: Typical exterior shear wall



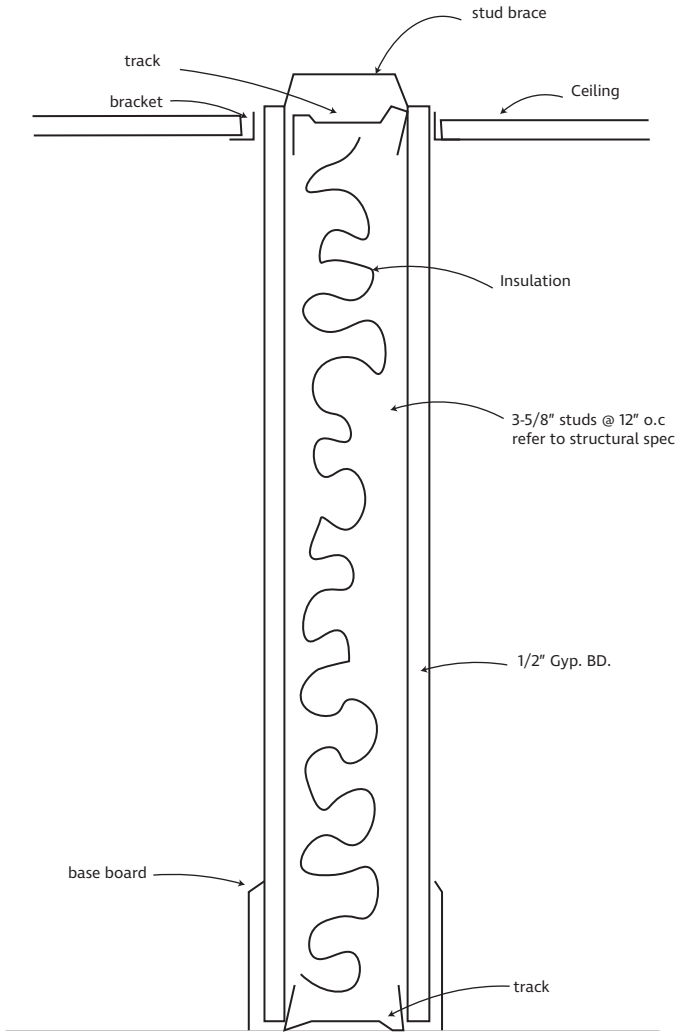
The typical exterior shear wall shows a cross-section of a shear wall designed to resist lateral forces. It includes a concrete foundation supporting a sill plate secured with anchor bolts. Wall studs are attached to the sill plate with hold-down anchors and framing bolts for stability. The wall features wood and stone siding finishes for protection and aesthetics, with racking to separate siding from concrete to prevent moisture transfer. This detail ensures the wall's structural integrity, stability, and resistance to lateral forces, enhancing the building's overall strength and resilience.

Wall Detail 3: Typical curtain wall



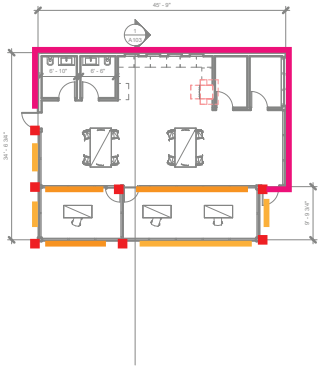
The typical curtain wall shows a cross-sectional view of a non-structural outer wall system. It includes metal flashing at the top to prevent water infiltration and weep holes to allow moisture escape. Mullions support the glass panels and transfer loads to the building structure, while spandrel panels conceal structural elements between floors. Sills support and secure the glass panels, and steel studs provide additional support. Sealant ensures airtight and watertight joints, and clip angles secure the mullions and panels to the building. This curtain wall system offers a lightweight, weather-resistant, and aesthetically pleasing exterior.

Wall Detail 4: Typical interior wall



The typical interior wall shows a cross-section of a standard interior wall. It features horizontal tracks at the top and bottom, 3-5/8" vertical studs spaced 12 inches on center, and insulation between the studs for thermal and acoustic benefits. The wall is finished with 1/2-inch gypsum board panels. A stud brace at the top and brackets connecting the track to the ceiling ensure structural stability. The ceiling is attached at the top, and a baseboard is at the bottom for a finished look. This detail provides a robust, insulated, and smooth interior wall structure.

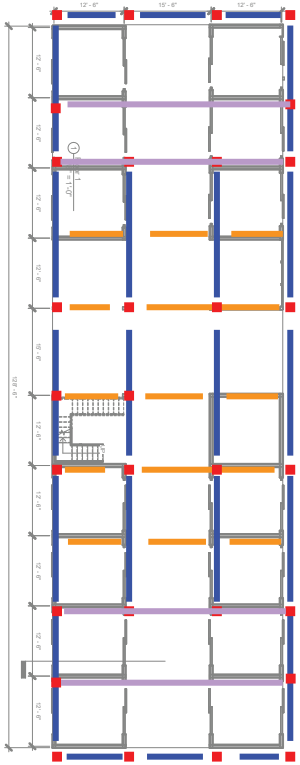
Grid Structure Plan - First Floor



load bearing wall

wood girder

Columns



wood truss

Steel girder

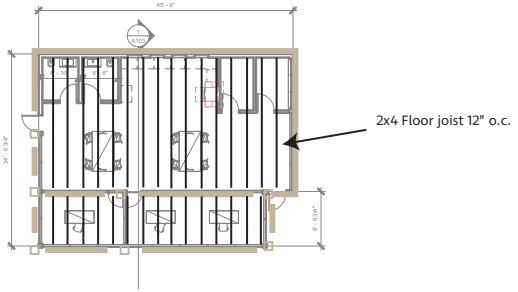
wood joist

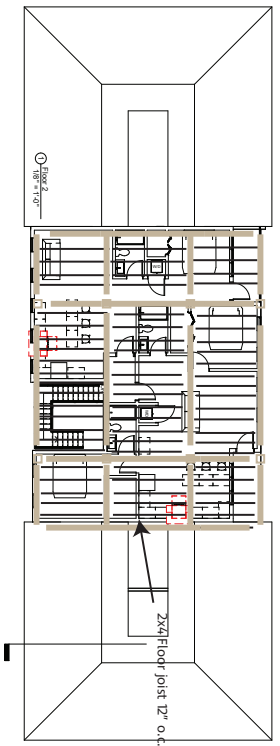
steel column

Grid Structure Plan - Second Floor

The grid structure plan outlines the building's framework with a larger rectangular section on the left and a smaller section on the top right. Color-coded elements include load-bearing walls (red), steel girders (purple), beams (orange), and columns (red squares). The larger section shows a systematic arrangement of these components, ensuring load distribution and stability. Load-bearing walls form the boundaries and key internal divisions, while girders and beams span across for support. The smaller section mirrors this pattern, ensuring structural integrity. Dimensions and annotations guide precise construction and alignment of these elements within the overall design.

Floor Joist Plan



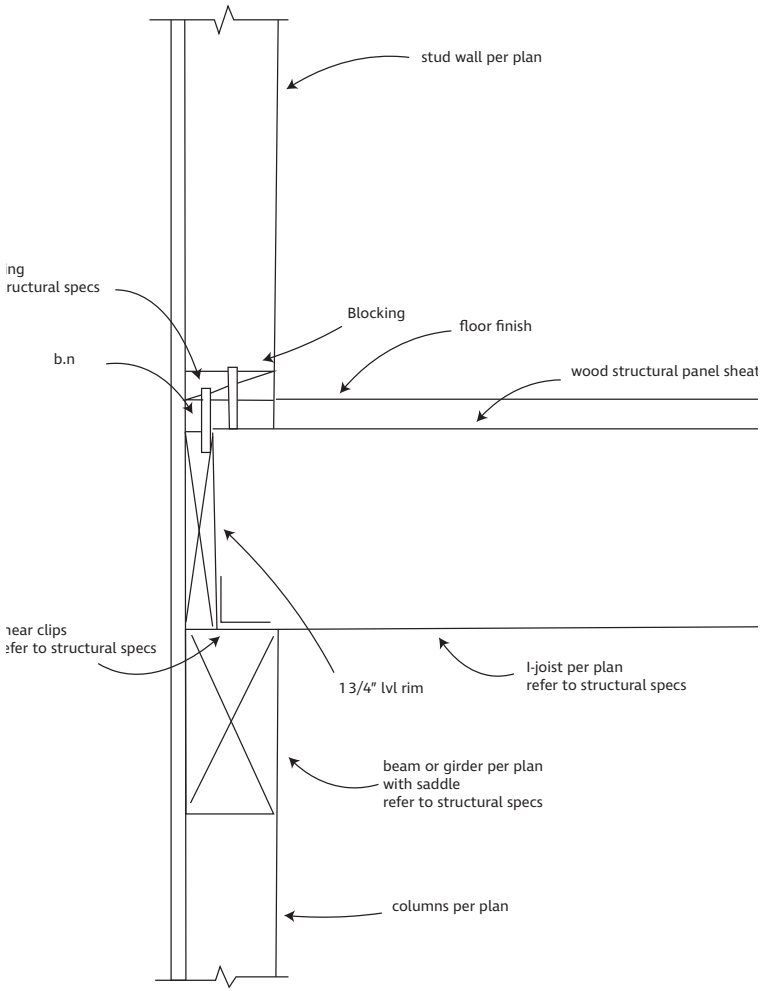


The floor joist plan illustrates the layout and spacing of floor joists within a building, divided into two main sections: a larger rectangular section on the left and a smaller section on the top right. The plan specifies the use of 2x6 floor joists spaced 12 inches on center (o.c.).

In the larger section, the joists are arranged in parallel lines running across the width of the structure, providing support for the floor above. This section also shows additional details such as openings for stairwells or other architectural features, with annotations indicating specific measurements and positioning.

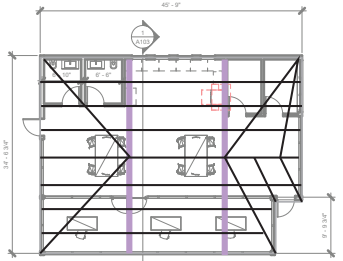
The smaller section mirrors the joist layout, ensuring consistent support and load distribution throughout the building. Annotations and dimensions guide the precise installation of the floor joists, ensuring structural integrity and alignment with the overall building design. The plan integrates the joist layout seamlessly into the architectural framework, ensuring a stable and reliable floor structure.

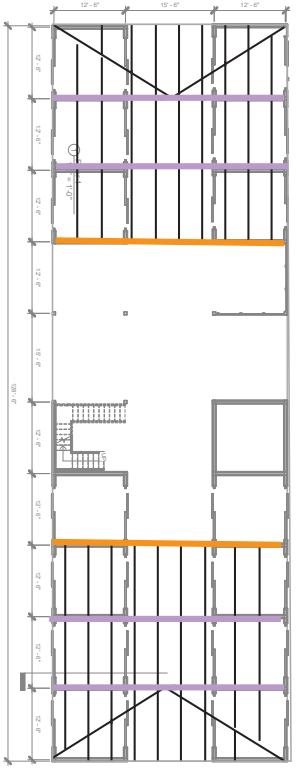
Flooring Detail: Joist Flooring



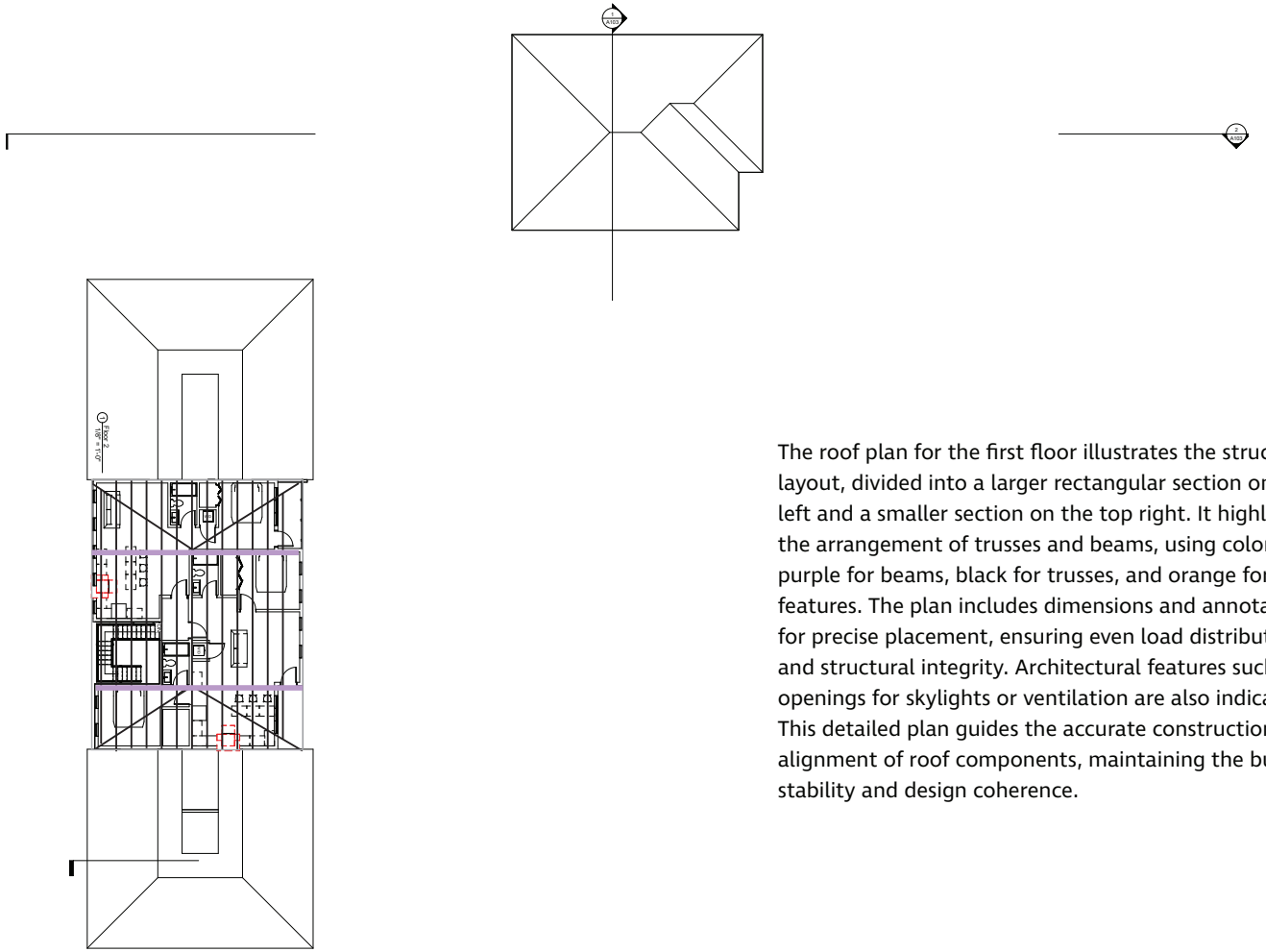
The flooring detail for joist flooring shows a cross-sectional view of the construction, highlighting key components: stud walls, floor joists, wood structural panel sheathing, floor finish, blocking, shear clips, beams or girders, columns, and a 1 3/4″ LVL rim. Stud walls provide vertical support, while floor joists, installed per plan, span between walls or beams to support the floor. The wood structural panel sheathing sits atop the joists, distributing loads and supporting the floor finish. Blocking provides lateral stability, and shear clips secure joists to beams or girders as per structural specs. Beams or girders, detailed with saddles, carry loads to columns, which transfer them to the foundation. The 1 3/4″ LVL rim provides edge support for the joists and sheathing, ensuring a stable and secure flooring system.

Roof Plan - First Floor



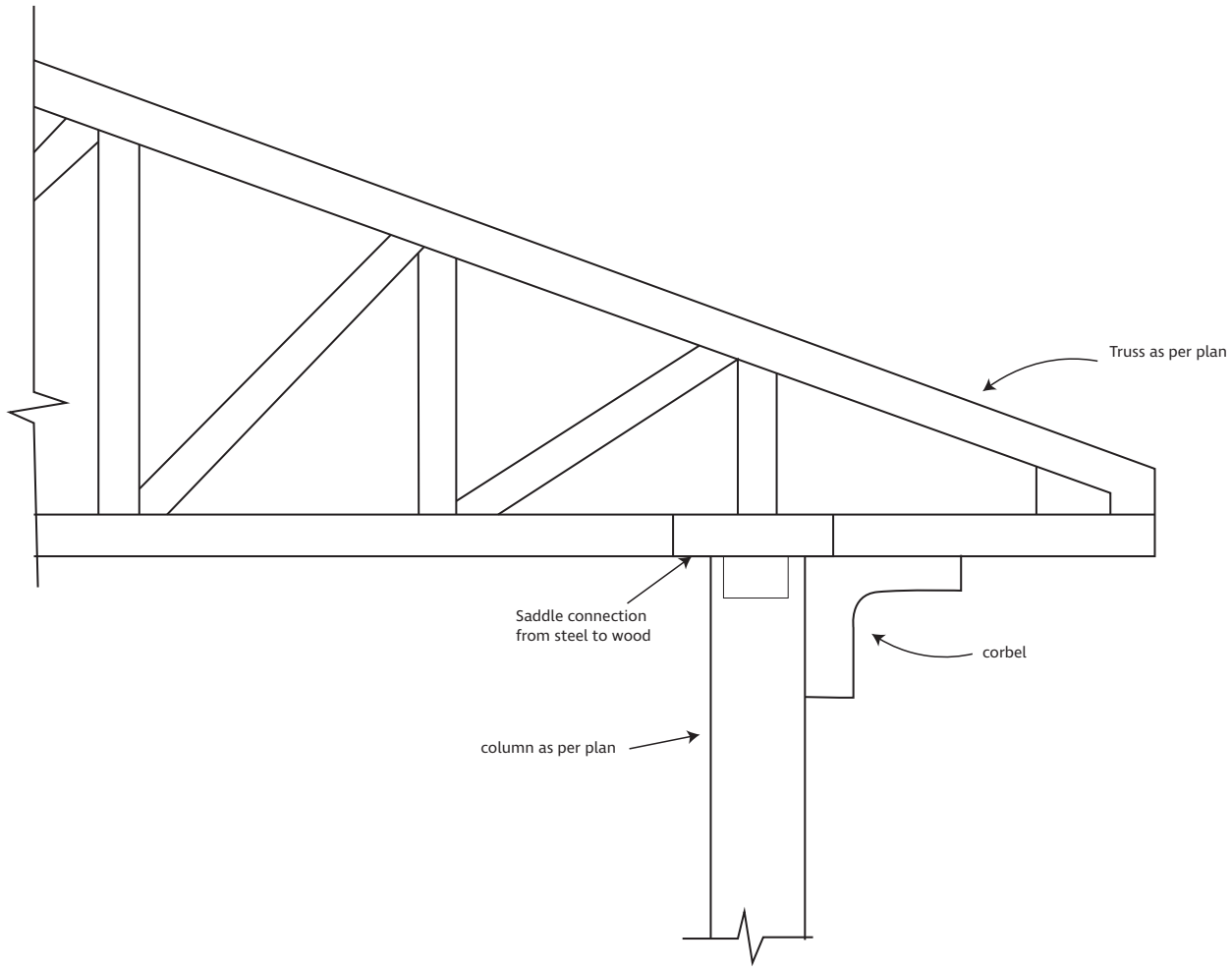


Roof Plan - Second Floor



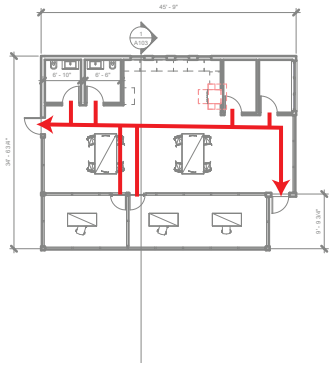
The roof plan for the first floor illustrates the structural layout, divided into a larger rectangular section on the left and a smaller section on the top right. It highlights the arrangement of trusses and beams, using color-coding: purple for beams, black for trusses, and orange for special features. The plan includes dimensions and annotations for precise placement, ensuring even load distribution and structural integrity. Architectural features such as openings for skylights or ventilation are also indicated. This detailed plan guides the accurate construction and alignment of roof components, maintaining the building's stability and design coherence.

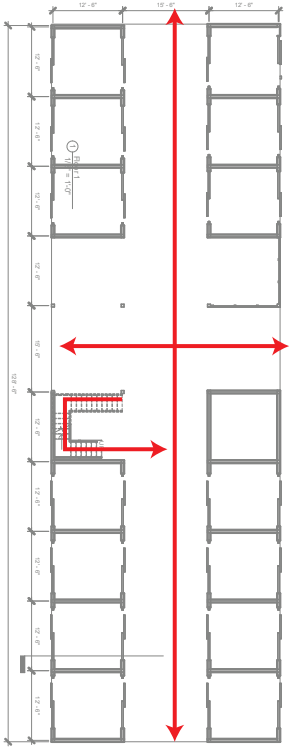
Roofing Detail: Truss and rafter detail



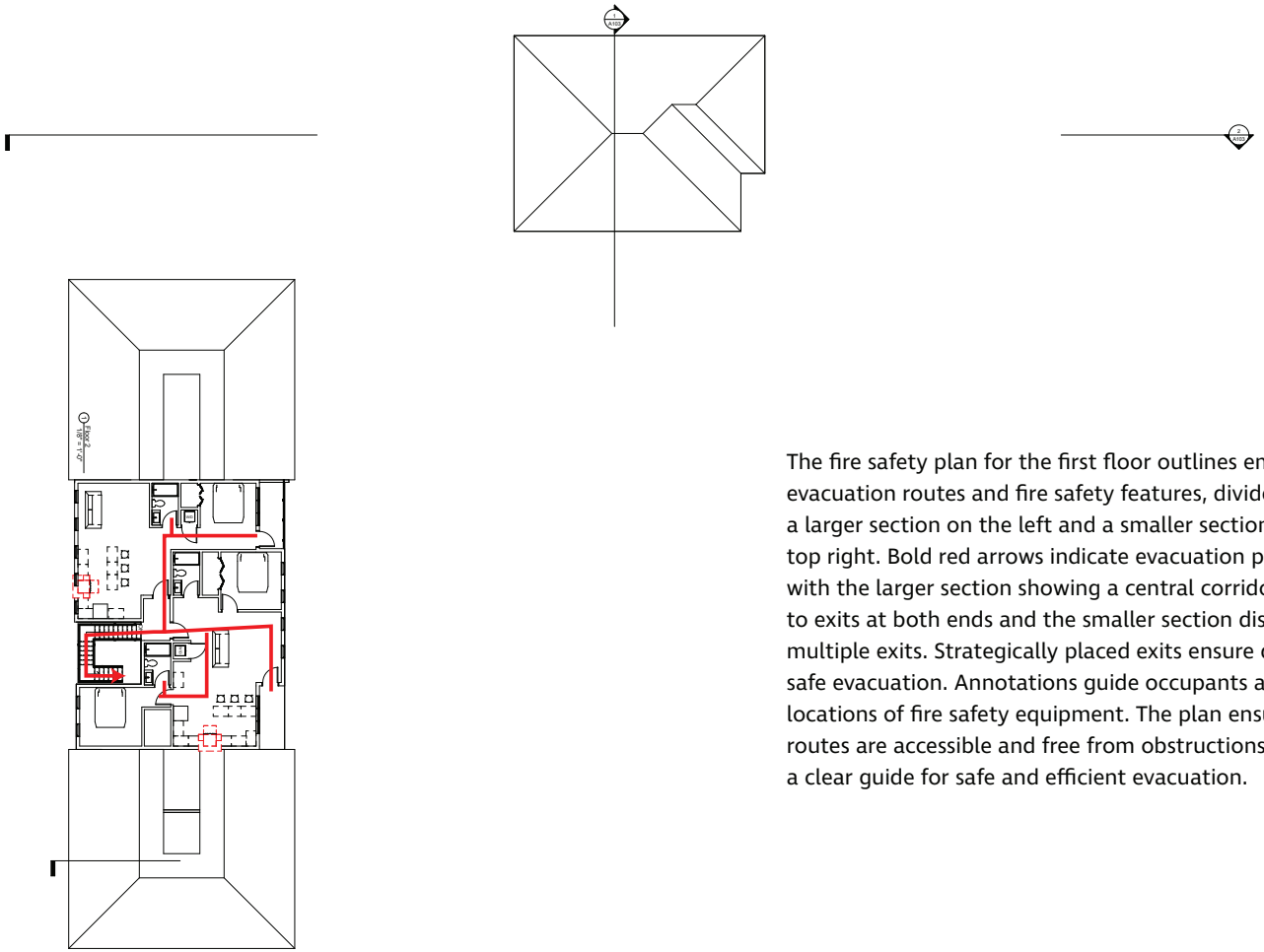
The truss and rafter detail shows a cross-sectional view of the roof structure, focusing on the connection between the truss and rafter. The truss is a prefabricated triangular framework installed as per plan specifications, providing support and stability. Rafters are sloping beams extending from the ridge to the wall plate, supporting the roof deck. A saddle connection secures the steel truss to the wood rafter, while a corbel extends from the wall to enhance load-bearing capacity. Vertical columns support the roof trusses and rafters, transferring the load to the foundation. This detail ensures a secure and stable roof structure.

Fire Safety Plan - First Floor

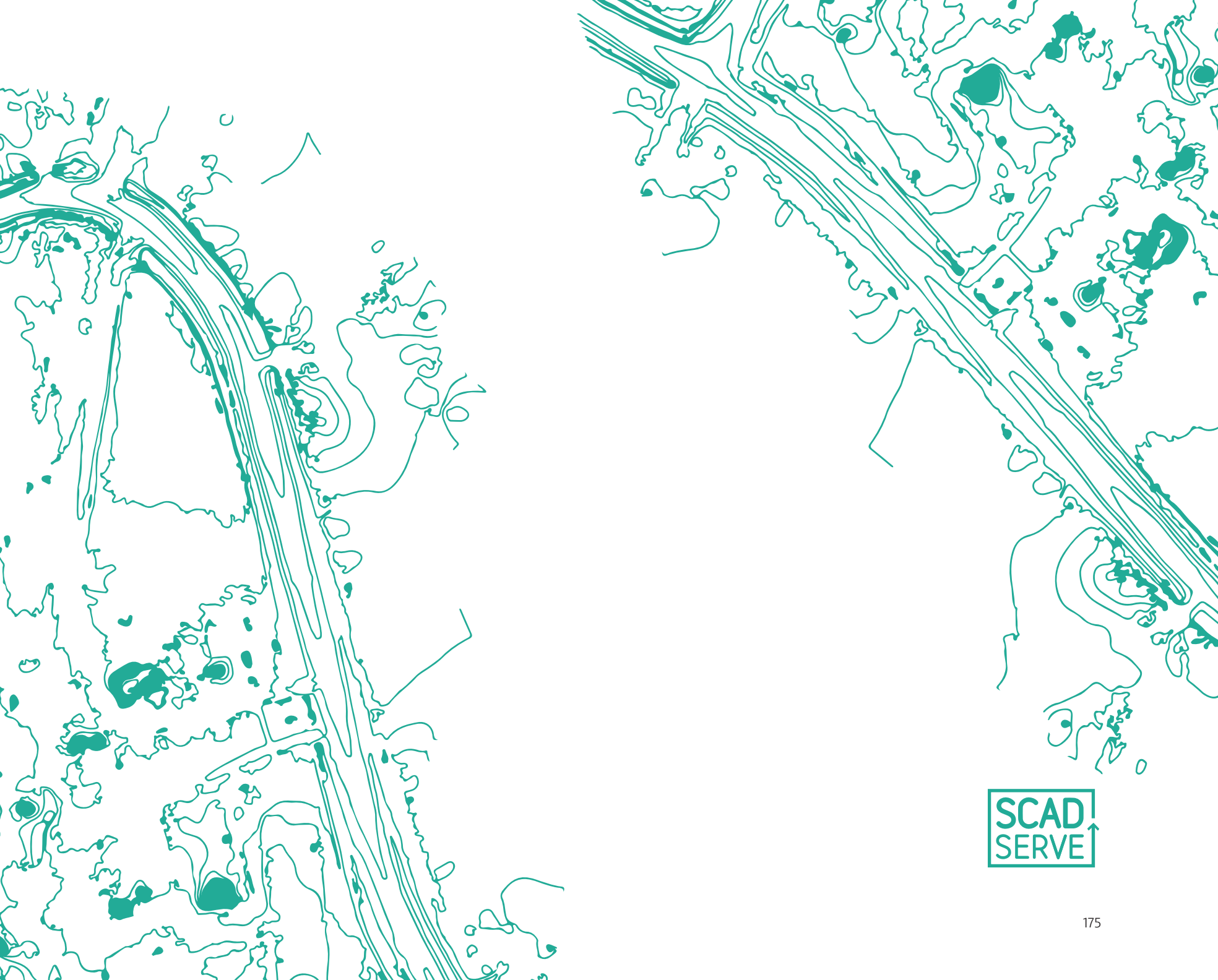




Fire Safety Plan - Second Floor



The fire safety plan for the first floor outlines emergency evacuation routes and fire safety features, divided into a larger section on the left and a smaller section on the top right. Bold red arrows indicate evacuation paths, with the larger section showing a central corridor leading to exits at both ends and the smaller section displaying multiple exits. Strategically placed exits ensure quick and safe evacuation. Annotations guide occupants and mark locations of fire safety equipment. The plan ensures all routes are accessible and free from obstructions, providing a clear guide for safe and efficient evacuation.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