

BIRD BLIND WETLANDS OBSERVATORY

The Woodlands, Texas

December 2024



Design-Build Agenda

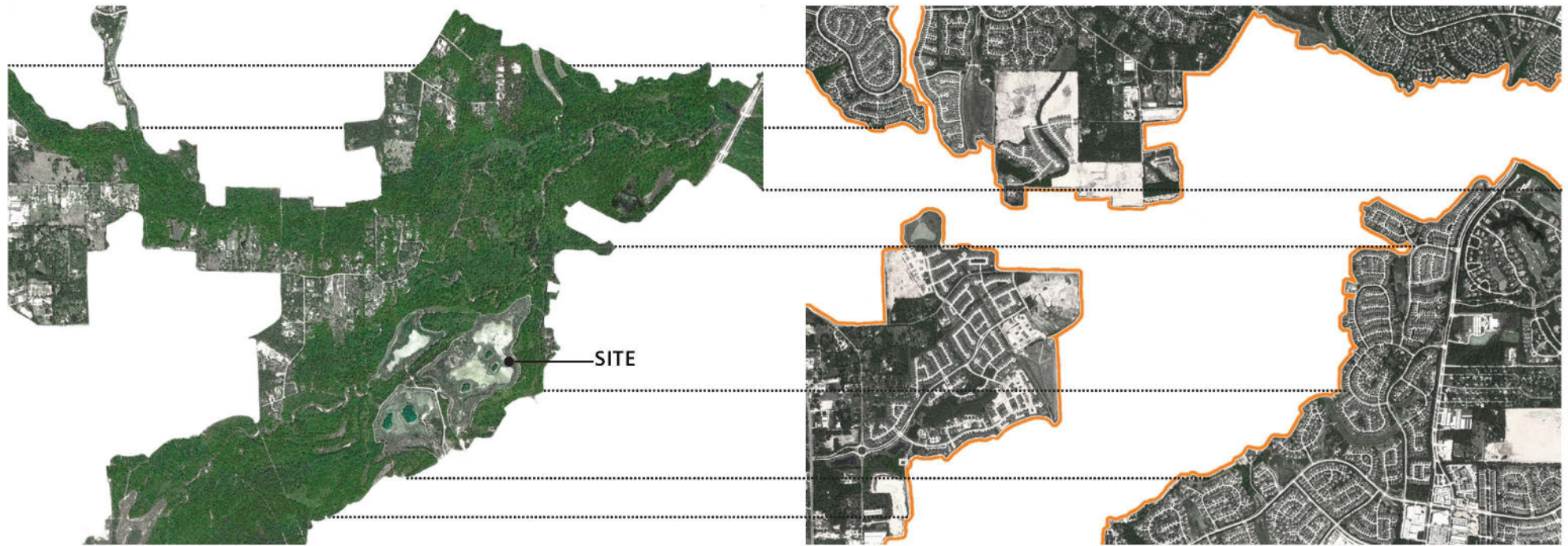
The Bird Blind Wetlands Observatory was designed for the bank of a water retention pond in the George Mitchell Nature Preserve, The Woodlands, Texas.

As the wooded approach gives way to the wetland panorama, a cor-ten roof cantilevers westward past the blind's footprint, maximizing shade and sheltering occupiable space for birdwatchers and passersby. Air is pulled into the structure through the venturi effect and benches outline the open platform, extending into a grove. More than a shade structure, this space supports the preserve's ecological education and stewardship programs, capable of facilitating class trips and extended birdwatching. The stacked rows of cumaru screen make birding accessible to watchers of any height and its operable slats are arrangeable to accommodate various photographers' lenses. Low maintenance galvanized steel and sustainably-harvested cumaru tropical hardwood will endure in the harsh conditions of Texas sun and humidity. The platform floats on helical piles, its light footprint, integrated gutter, and stormwater cistern mitigating flooding.

As the first stop on the 14-mile Spring Creek Nature Trail within 120,000 acres of protected habitat, it draws watchers to migrating monarch butterflies and over 220 bird species. The Bird Blind Wetlands Observatory will be a point of discovery for our native Texas wetland ecosystem.

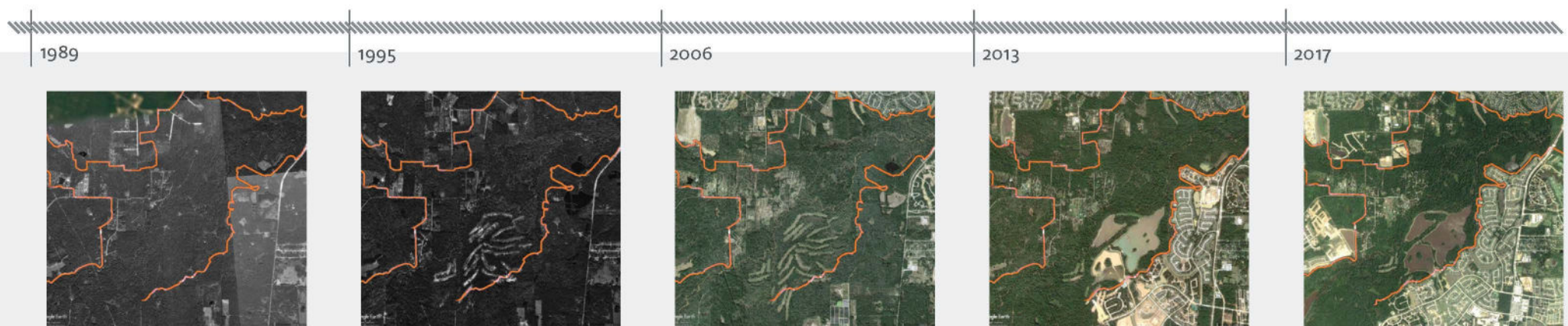


Site Development



The Woodlands, founded in 1974, is a specially designated district in the Houston metropolitan area which includes the Spring Creek watershed. To support expanding development in the proximity of the floodplain and due to a history of significant flooding events, a pair of retention ponds were completed in 2013.

Both retention ponds have become a key habitat for this riparian wetlands biome, with over 220 species of birds recorded over the last year including the endangered red-cocked woodpecker. The Woodlands serves as a certified monarch butterfly migratory haven with 151 urban parks within its boundaries.

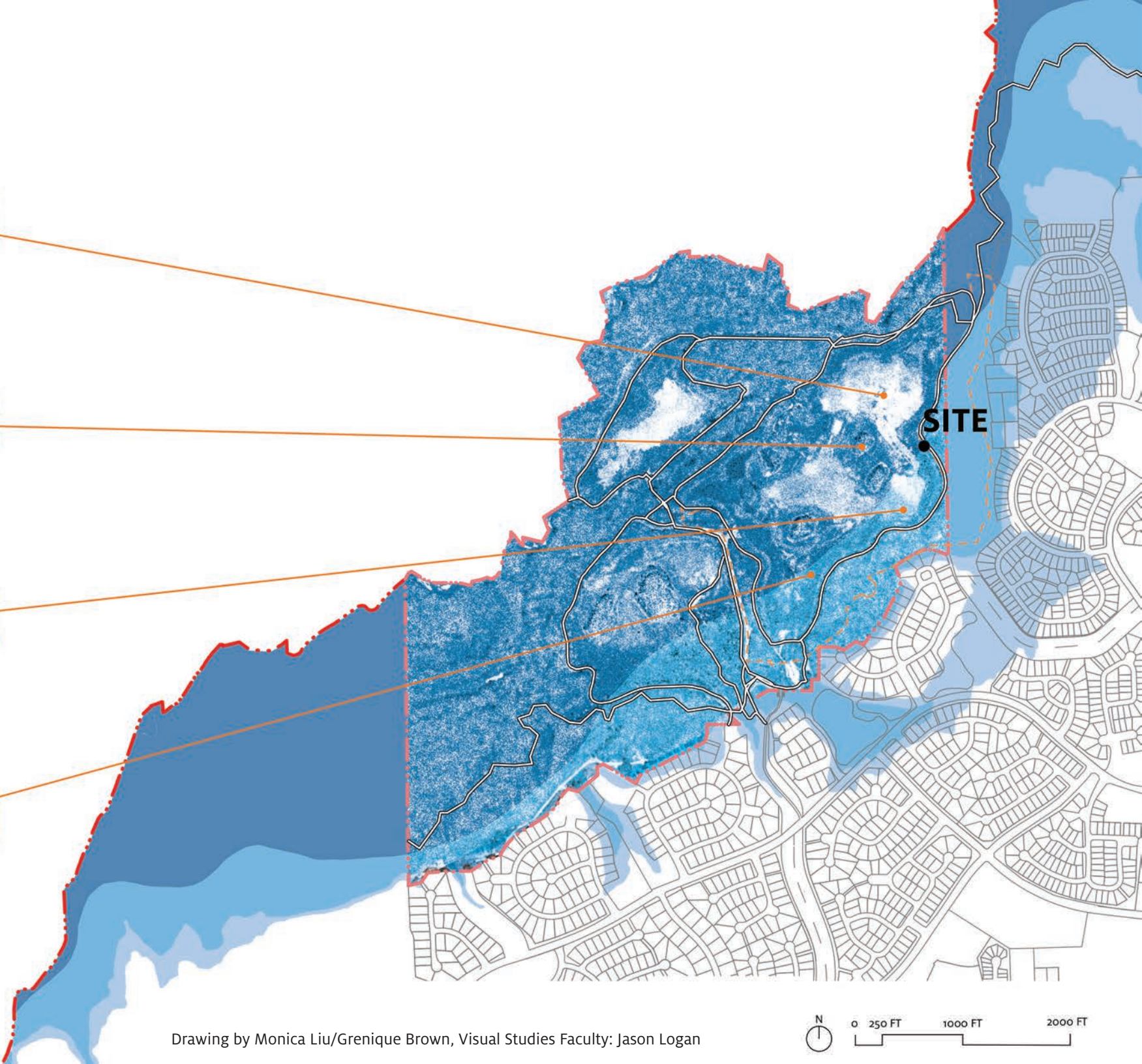


Drawing by Sasha Cea-Loveless, Visual Studies Faculty: Jason Logan

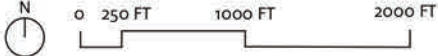
Site Location

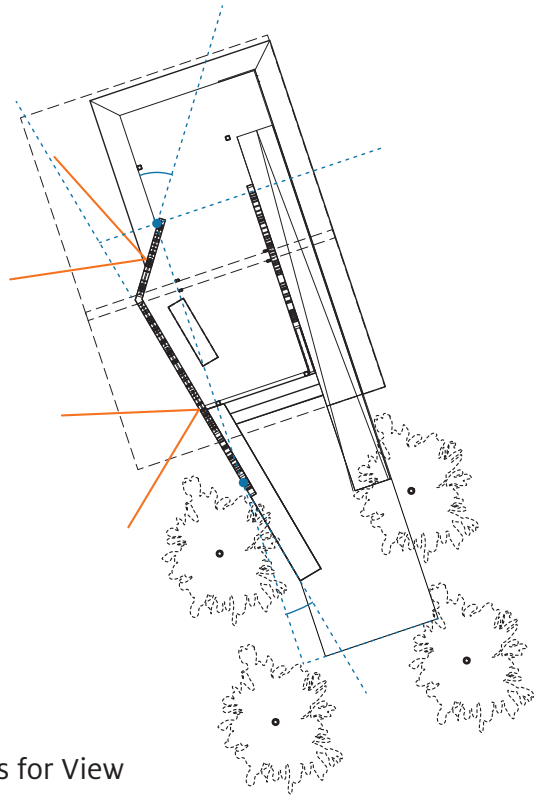


- TRAILS
- HARRIS COUNTY LINE
- FLOODWAY
- 100 YR FLOODPLAIN
- 500 YR FLOODPLAIN
- EASEMENT LINE
- PROPERTY LINE
- SITE LOCATION

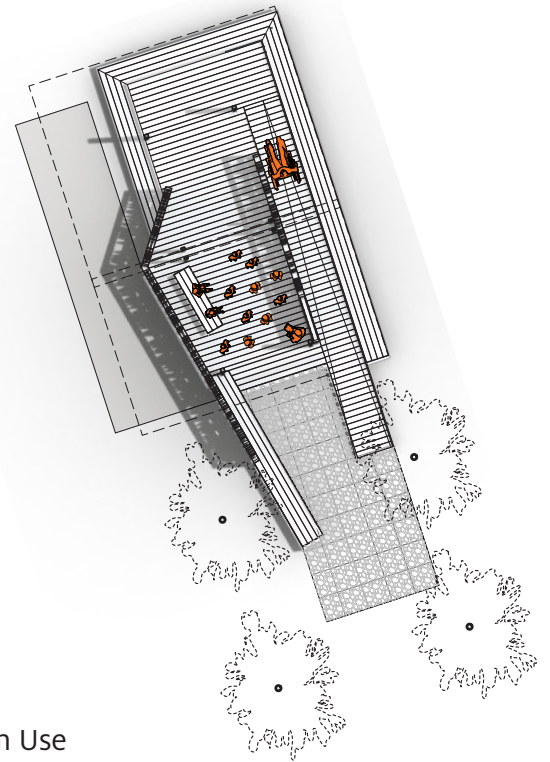


Drawing by Monica Liu/Grenique Brown, Visual Studies Faculty: Jason Logan

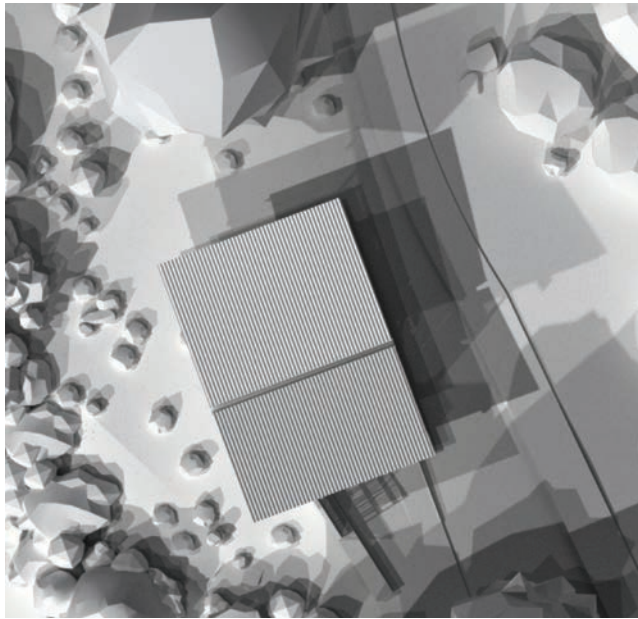




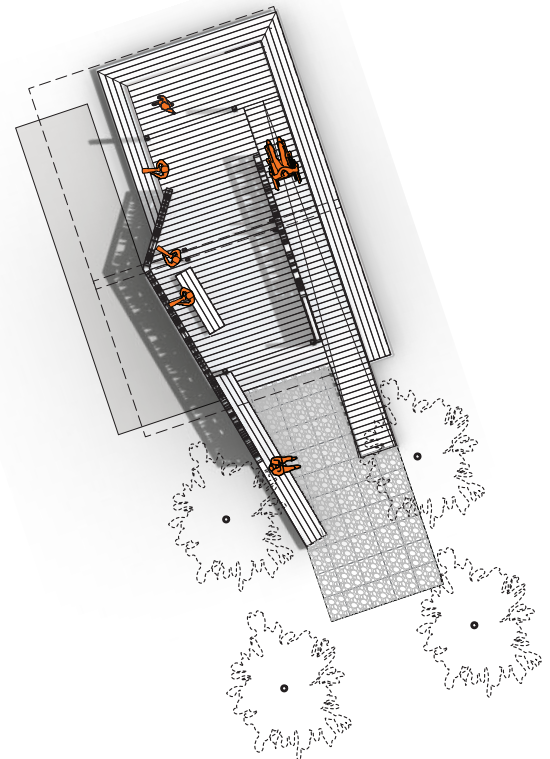
Plan Adjustments for View



Outdoor Classroom Use



Shadow Study



Birding Use

Plan Diagrams



SHADE SUN / CHANNEL AIR

Cantilevered butterfly cor-ten roof shades occupants, contains rainwater, and captures breeze

MANAGE RAIN WATER

Stainless steel center gutter mitigates flooding and harvests rain water

VEIL VISIBILITY

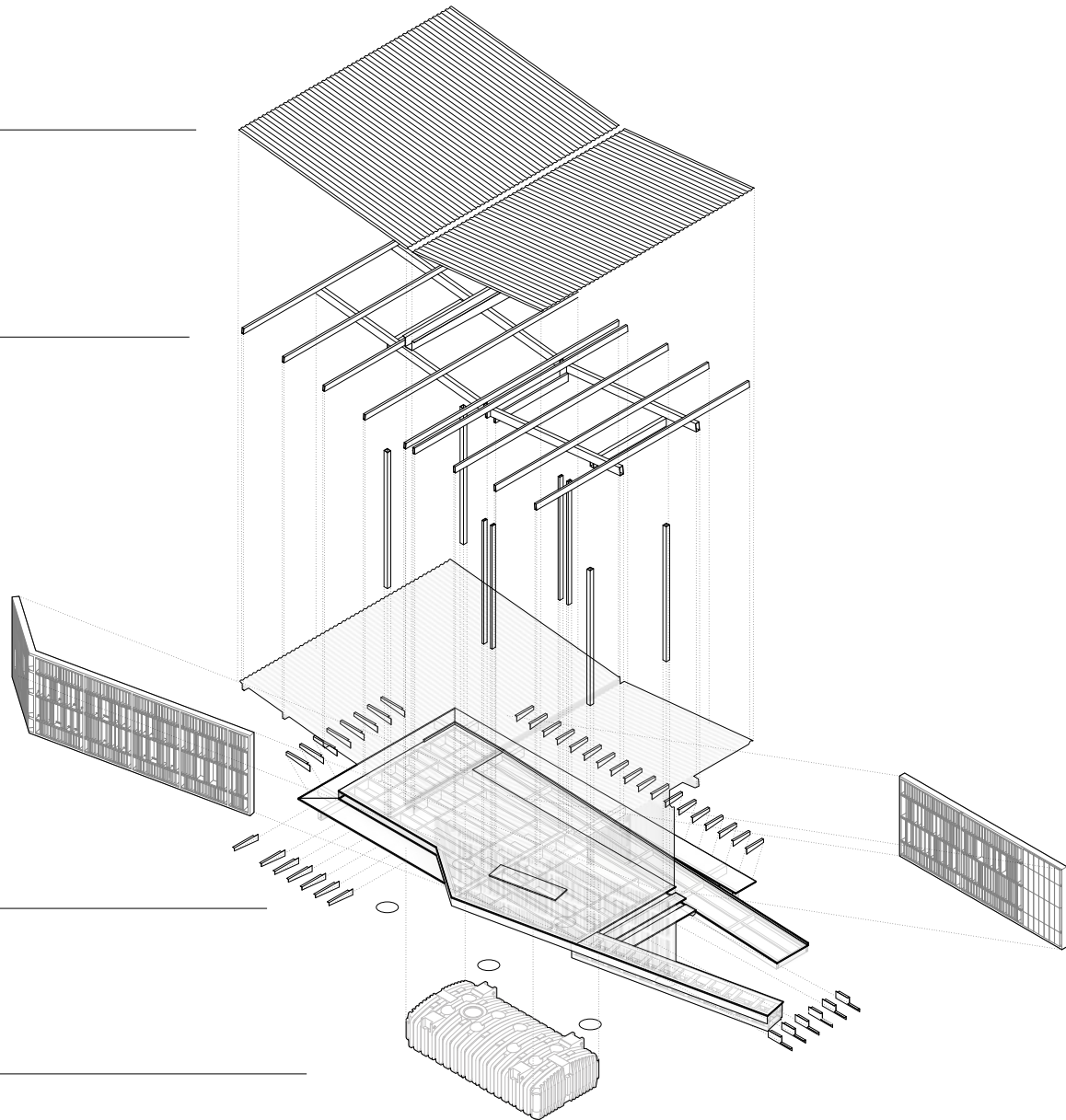
Cumaru wood screen walls veil occupants and filter harsh Texas sun

TOUCH EARTH LIGHTLY

Raised composite wood deck floats on steel helical piles

MANAGE RAIN WATER

Rainwater flows to an underground rotomold cistern



LANDSCAPE LEGEND



WILLOW OAK TREE
Quercus phellos



NATIVE WILDFLOWER BED
Blazing Star
Blue Sage
Aquatic Milkweed



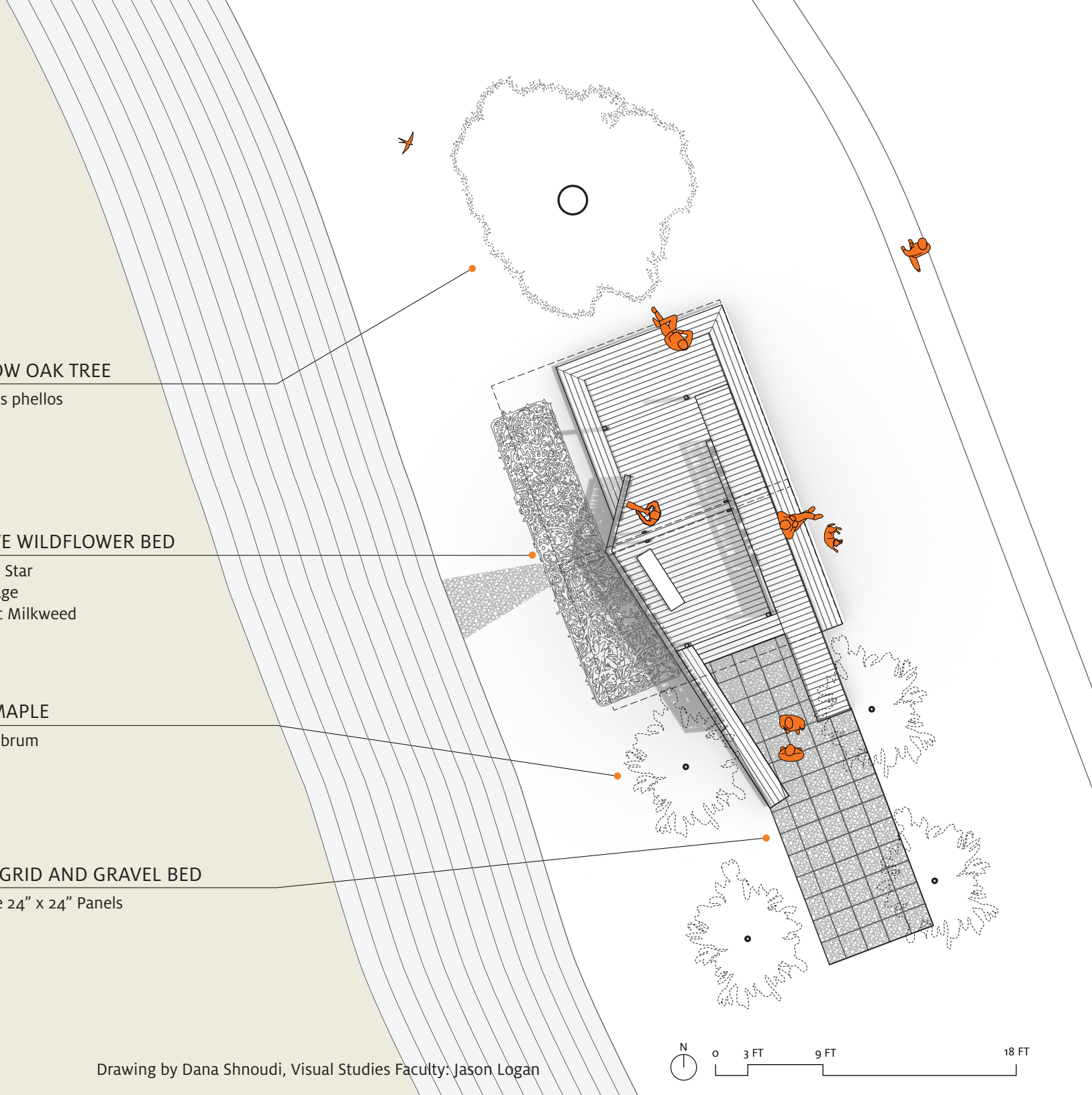
RED MAPLE
Acer rubrum

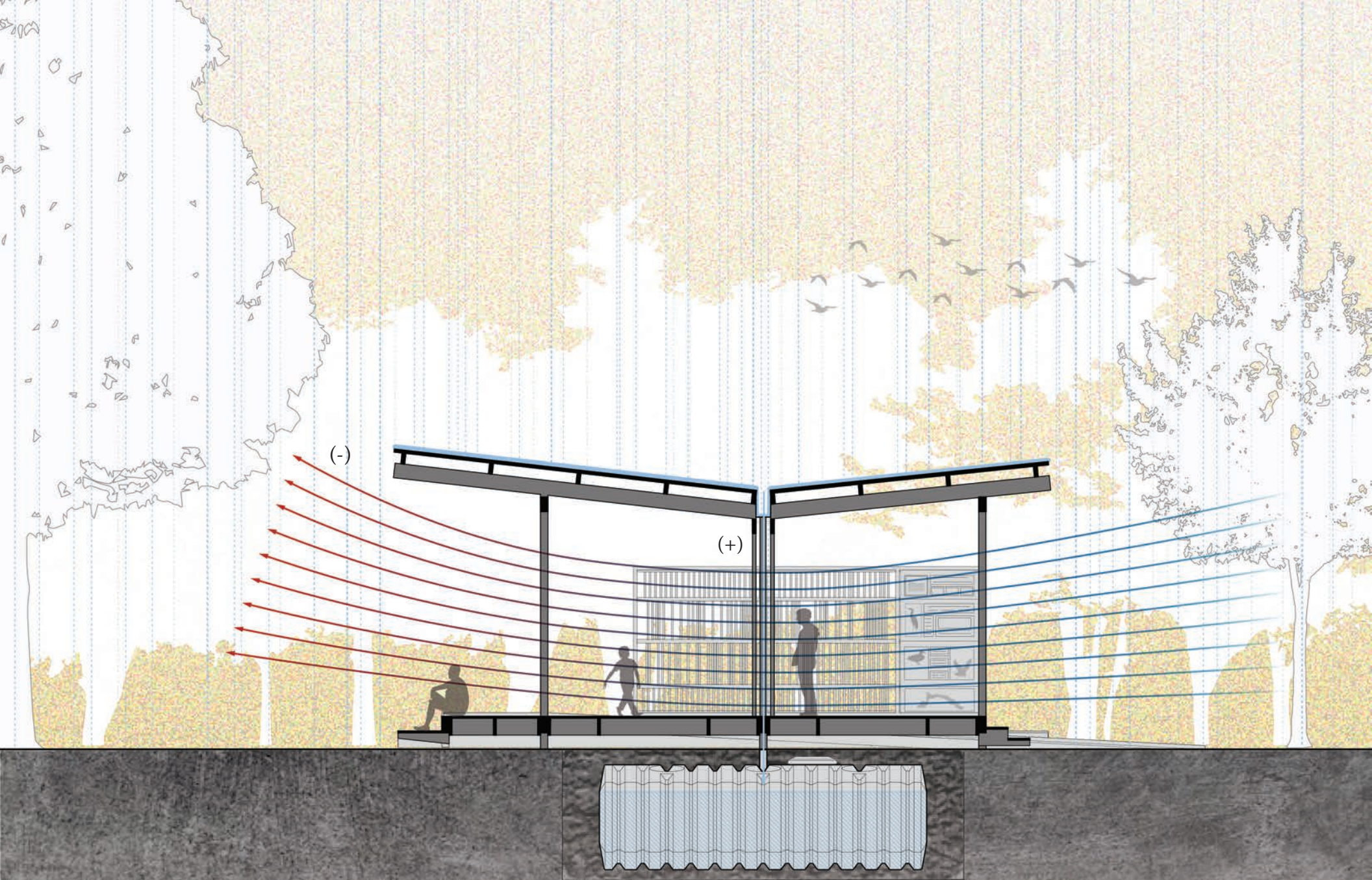


TRUE GRID AND GRAVEL BED
Pro Lite 24" x 24" Panels

Landscape Plan

Drawing by Dana Shnoudi, Visual Studies Faculty: Jason Logan

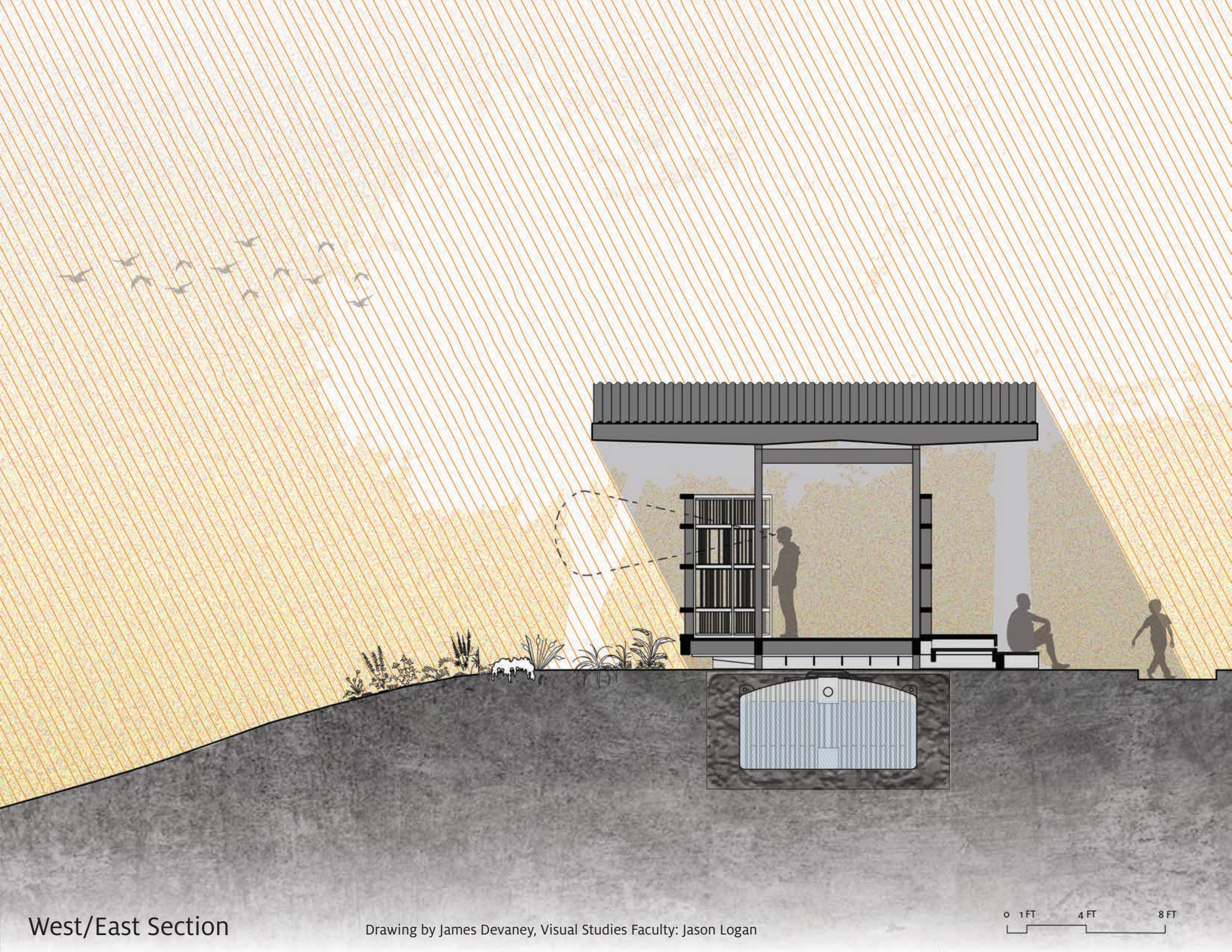




North/South Section

Drawing by Hozeh Chae, Visual Studies Faculty: Jason Logan

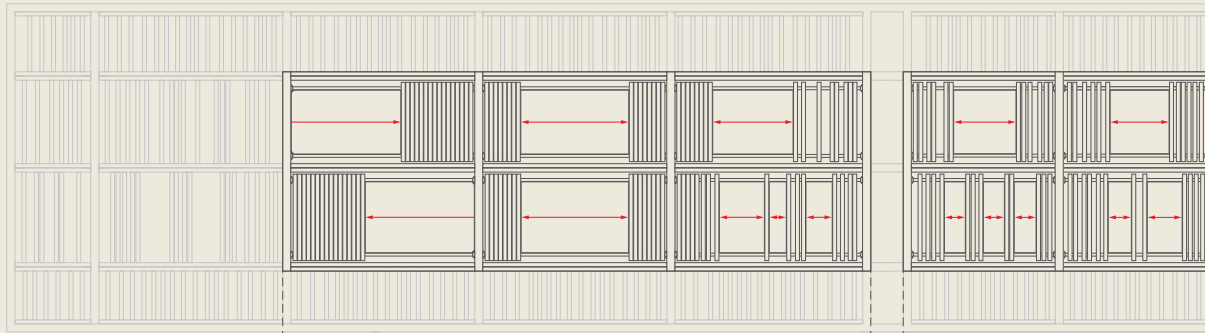
0 1 FT 4 FT 8 FT



West/East Section

Drawing by James Devaney, Visual Studies Faculty: Jason Logan

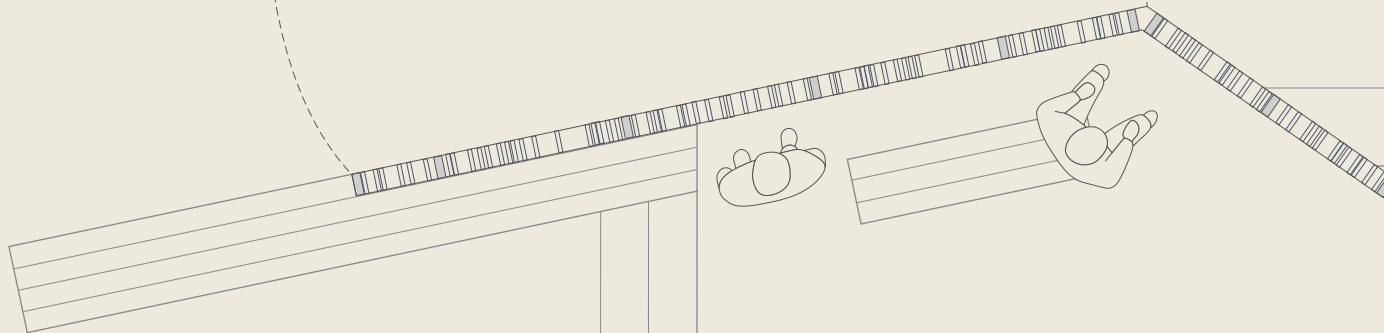
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Operable Cumaru Slats Elevation



Unrolled Elevation Through Slats



Operable Cumaru Slats Plan

Visibility Veil

Drawing by Eric Goldner, Visual Studies Faculty: Jason Logan





Interior View Looking North

Drawing by Eric Goldner, Visual Studies Faculty: Jason Logan

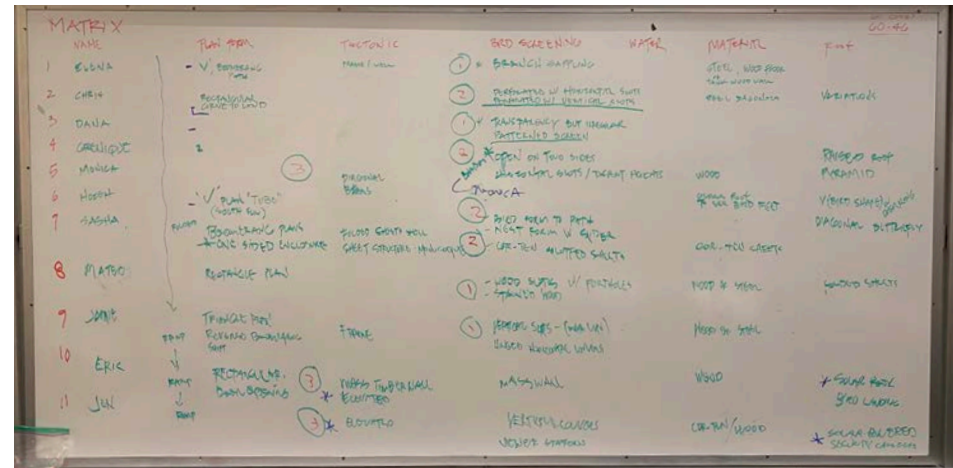
Student Learning Outcomes

from Bird Blind Wetlands Observatory, The Woodlands, Texas

2024 marked 35 years of hands-on learning provided at the University of Houston through its Graduate Design/Build Studio, a teaching initiative that has been refined to **rapidly build professional architectural skills** and **foster student confidence** while also creating lasting community improvements. Grounding site-specific design decisions and construction practices in an understanding of human needs is the basis of this community-building activism. As both teacher and process guide, the faculty leaders **demonstrate for the students the value of design practices conceptually shaped by limits** that provide for the common good. Among these constraints are those imposed by the construction activity itself, which does not fit neatly within academic coursework. Limits are also imposed by emphasis on design decisions informed by specifics such as site and place.

Educating young designers in these implications yields valuable maturity to serve them well and quickly in their careers. They **confront advantages of prefabrication to reduce labor but weigh them against a desire to root a project to its exact location**. Occurring in the first year of the three-year Master of Architecture curriculum, the studio is late enough that the students have acquired skills in basic design and methods but early enough that the experience can benefit them greatly in their remaining two years of graduate education at the university.

Bringing students without familiarity into contact with hand tools, construction practices, and physical labor is a structured encounter for lasting and profound learning. Given that the work is born of its constraints, defining those constraints is a particularly critical act. In preparation, faculty verify the project efficacy but it is the **students who collaboratively establish design intent via creatively listening to stakeholder input**. And the faculty and the community hold expectations that the students' work will be not only useful and durable but inspiring and compelling as well.



Clockwise from Top: students present and discuss individual schemes, themes revealed in individual schemes generate matrix of concerns/issues, final review of spring semester in person with faculty and consultants includes final design presentation and completed construction drawings, students present to owner remotely due to distance to site.



Collaborators and Funding Sources

The Woodlands Township secured a \$65,000 grant from Niagra Cares (in partnership with the National Recreation and Park Association) of which \$50,000 was allocated for project expenses for the design and construction of Bird Blind Wetlands Observatory.

Faculty member Jason Logan taught the allied visual studies course, while faculty member Joseph Colaco, PhD, PE, provided pro-bono structural engineering services through Colaco Engineers.

Zeki Tolunay, PE, of Tolunay Engineering Group provided pro-bono geotechnical engineering services with soil borings provided by Brian Johnson of Soiltech Services.

Joshua Hanson, COO of MSD Building Corp. provided a pro-bono plant tour, fabrication input, donated steel materials, steel fabrication services, shipping of fabricated steel to and from the hot dip galvanizing plant, and on-site steel erection.

Nathan Blacketer, Senior General Manager of Valmont Coatings-United Galvanizing provided a pro-bono plant tour and hot dip galvanizing services.

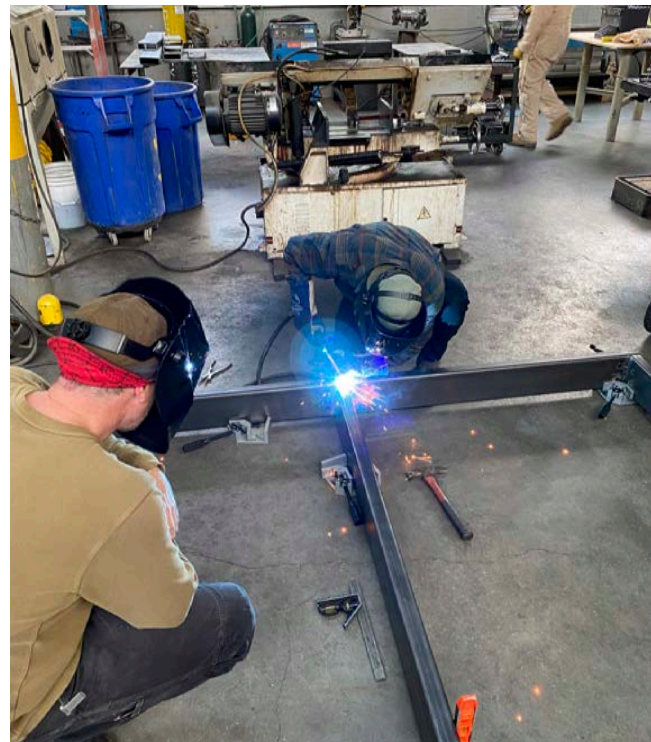
US Helicals installed prefabricated helical pile foundations for \$9,100.

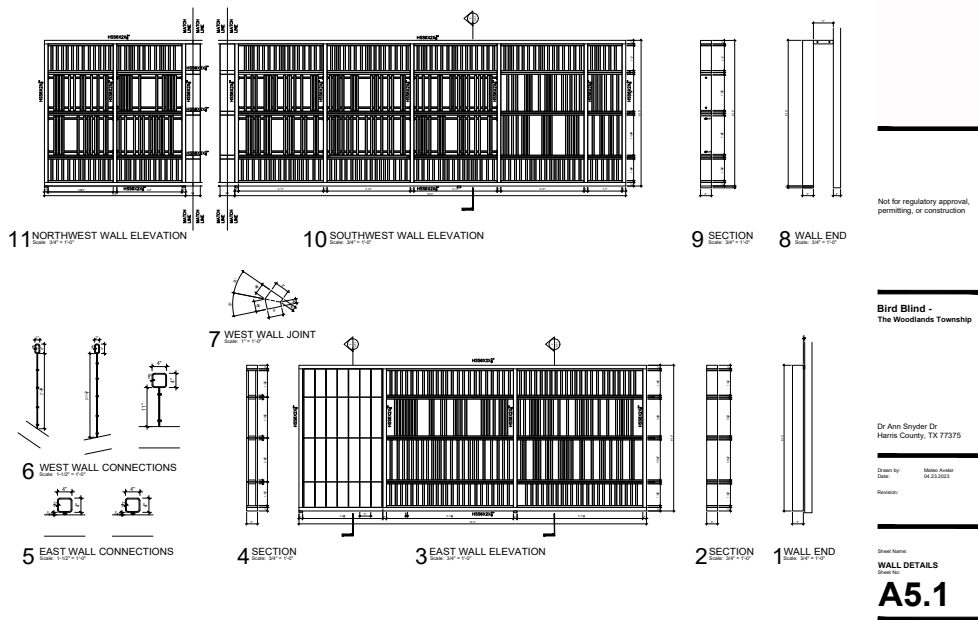
The owner/stakeholder installed composite wood floor surface.

Student Compensation

11 Master of Architecture students earned 1/2 semester of 6 credit hour spring studio (for design and construction documents) and 1 whole semester of 6 credit hour summer studio (for fabrication drawings, and prefabrication of: steel wall frames, treated wood floor framing, and cumaru wood screen wall assemblies). They earned an addition 3 credit hours for the summer visual studies course.

Clockwise from Top Right: students tour robotic steel fabrication plant, students tour hot dip galvanizing plant, students prefabricate treated wood floor framing assemblies, students fabricate steel screen wall frame.





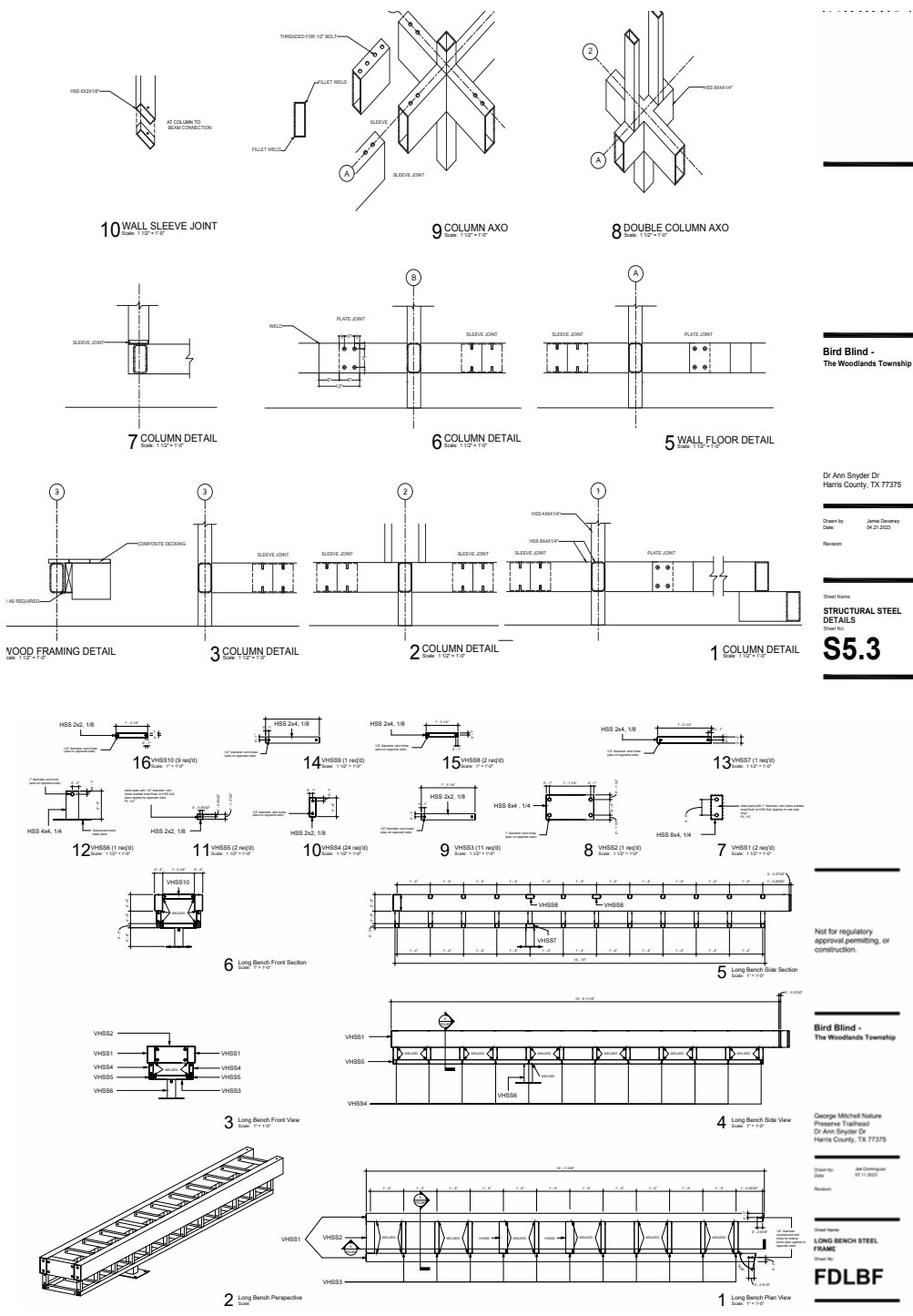
Master of Architecture Students

- Matthew Avelar
- Chris Banda
- Grenique Brown
- Sasha Cea-Loveless
- Hozeh Chae
- James Devaney
- Jonathan Dominguez
- Eric Goldner
- Monica Liu
- Dana Shnoudi
- Elena Wolf

Faculty

- Patrick Peters, Professor, Design-Build Coordinator and Instructor
- Jason Logan, Associate Professor, Visual Studies Instructor
- Joseph Colaco, PhD, PE, Professor, Structural Engineering Design, Pro-bono

Clockwise from Right: students fabricate cumaru wood screen wall assemblies, fabrication drawing for cumaru wood screen wall assemblies within steel screen wall frame.



Bird Blind -
The Woodlands Township

Dr Ann Snyder Dr
Harris County, TX 77375

Drawn by: James Dearyng
Date: 04-21-2023

Revision:

Sheet Name:
**STRUCTURAL STEEL
DETAILS**

S5.3

Not for regulatory
approval, permitting, or
construction.

Bird Blind -
The Woodlands Township

George Mitchell Nature
Preserve Trailhead
Dr Ann Snyder Dr
Harris County, TX 77375

Drawn by: James Dearyng
Date: 07-11-2023

Sheet Name:
**LONG BENCH STEEL
FRAME**

FDLBF



Clockwise from Top Right: students fabricated steel frame for screen wall, fabrication drawing for long steel bench frame, fabrication drawing for main steel structural frame.









