



English Courtyards
for ventilation and
used as a small market

Ramps Accessible To First
Floor. Always Connecting with
Nature

Roof
Outdoor market for
the public

Farming unit

Elevated Cores

Courts

Exhibition Main Entrance

English Courtyards
for ventilation and
used as a small
market

Living Threads

F A R M I N G H U B

Set against the vast expanse of the Egyptian Western Desert, the Farafra Farming hub emerges as a spatial threshold between the untamed landscape and cultivated life. Designed as an immersive educational environment, the architecture translates the vernacular language of the oasis into a dynamic topography of learning. Here, the rigid boundaries between the classroom and the field dissolve; through a choreographed sequence of shaded courtyards, terraced planters, and descending ramps, the building physically anchors the community to the soil, offering a tactile, everyday engagement with the art and science of desert agriculture.

PROBLEM STATEMENT:

AlFarafra Oasis depends entirely on extraction from the non-renewable Nubian Sandstone Aquifer System, where groundwater levels are steadily declining due to agricultural expansion in a hyper-arid climate. Increasing well depths, rising energy demands, and accelerating soil salinization reveal a model of resource mining rather than sustainable development. Yet the region lacks architectural and research infrastructure that demonstrates water-efficient systems, renewable-powered irrigation, and regenerative soil strategies displacing the long-term stability of the oasis at risk.

100% GROUNDWATER DEPENDENCE

No surface Water Enter oasis relies on fossil groundwater

DECLINING WATER TABLE

Water Level Have Dropped Significantly Over the past decades.

Rising Pumping Energy

Deeper wells require more energy increasing costs and carbon emissions

SOIL SALINIZATION RISK

Evaporation and poor drainage accelerates salinization and reduce soil productivity

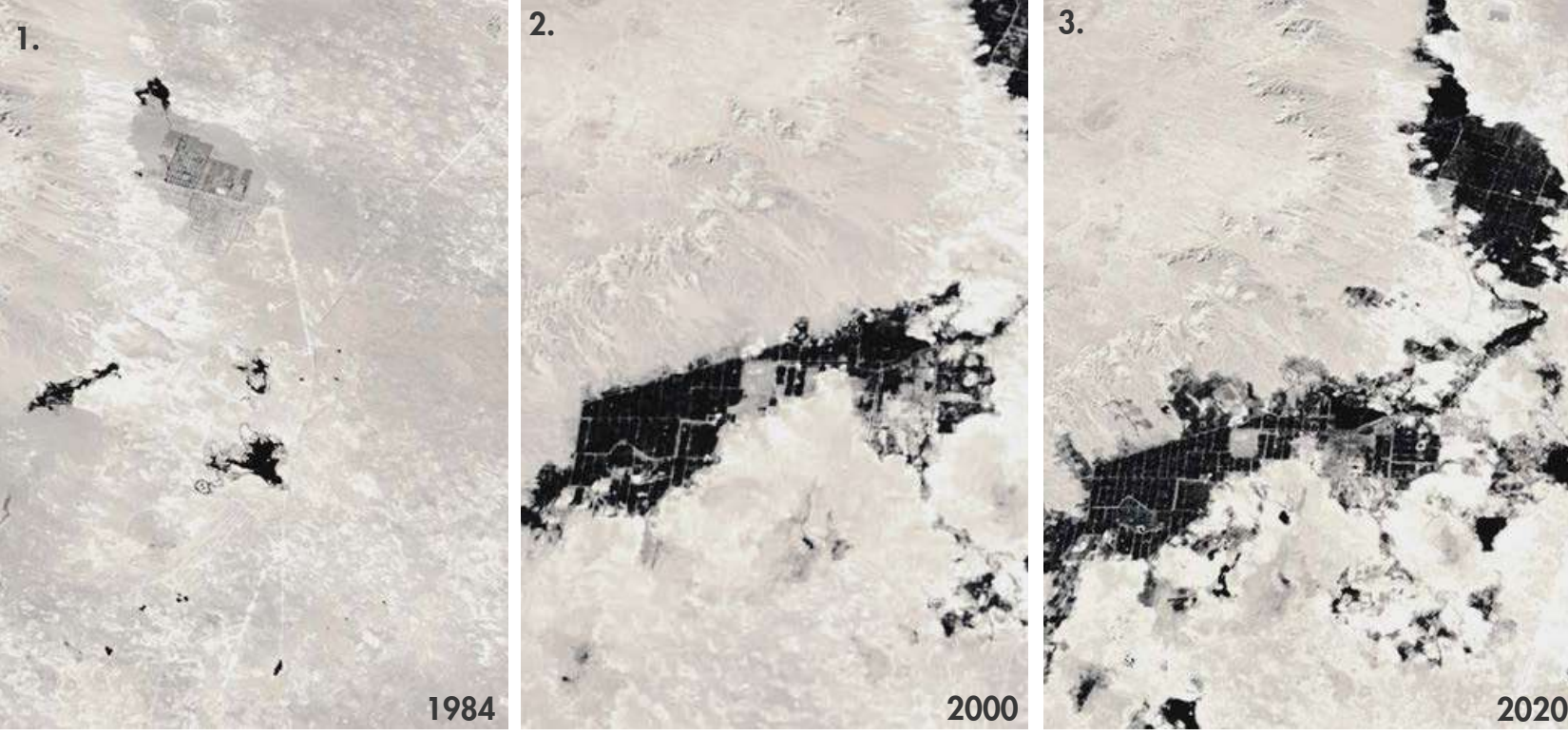
EGYPT

EL-FARAFRA OASIS

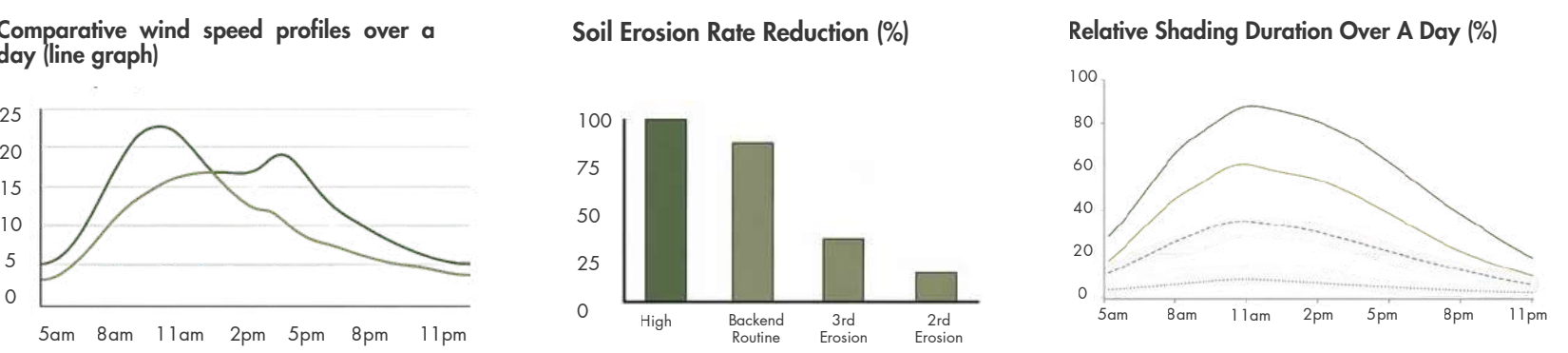


EL-FARAFRA: A MICROCOSM OF EGYPT'S WATER AND AGRICULTURE CRISIS

Satellite images showing the rapid agricultural expansion in El-Farafra (1980-2020). The growth relied on groundwater from the Nubian Sandstone Aquifer, causing water depletion and soil salinity.



SITE CONDITION:



CONCEPT:

The Building reimagines the farming hub as an extension of Farafra's oasis landscape. Rather than placing architecture against nature, the project weaves built form, cultivated land, and movement into one continuous system. The building grows from the geometry of the fields, forming linear threads that become ramps, shaded paths, and planted connectors. These elements draw the landscape into the architecture, allowing users to move between ground, fields, and upper levels while remaining constantly connected to the surrounding environment. Within this woven structure, water is treated as a visible and spatial component of the project. Integrated between the threads, the water intervention responds to Farafra's environmental challenges while remaining part of the architectural language, not an added technical layer. The result is a farming hub that appears rooted in its context: a netted landscape of learning, cultivation, and community, where architecture becomes a continuation of the land.

LIVING THREADS

FARAFRA FARMING HUB

EL-FARAFRA OASIS, EGYPT

WATER WISE

Efficient use of precious resources

RENEWABLE POWER

Clean energy for resilient irrigation

REGENERATIVE SOIL

Healthy Soils for future productivity

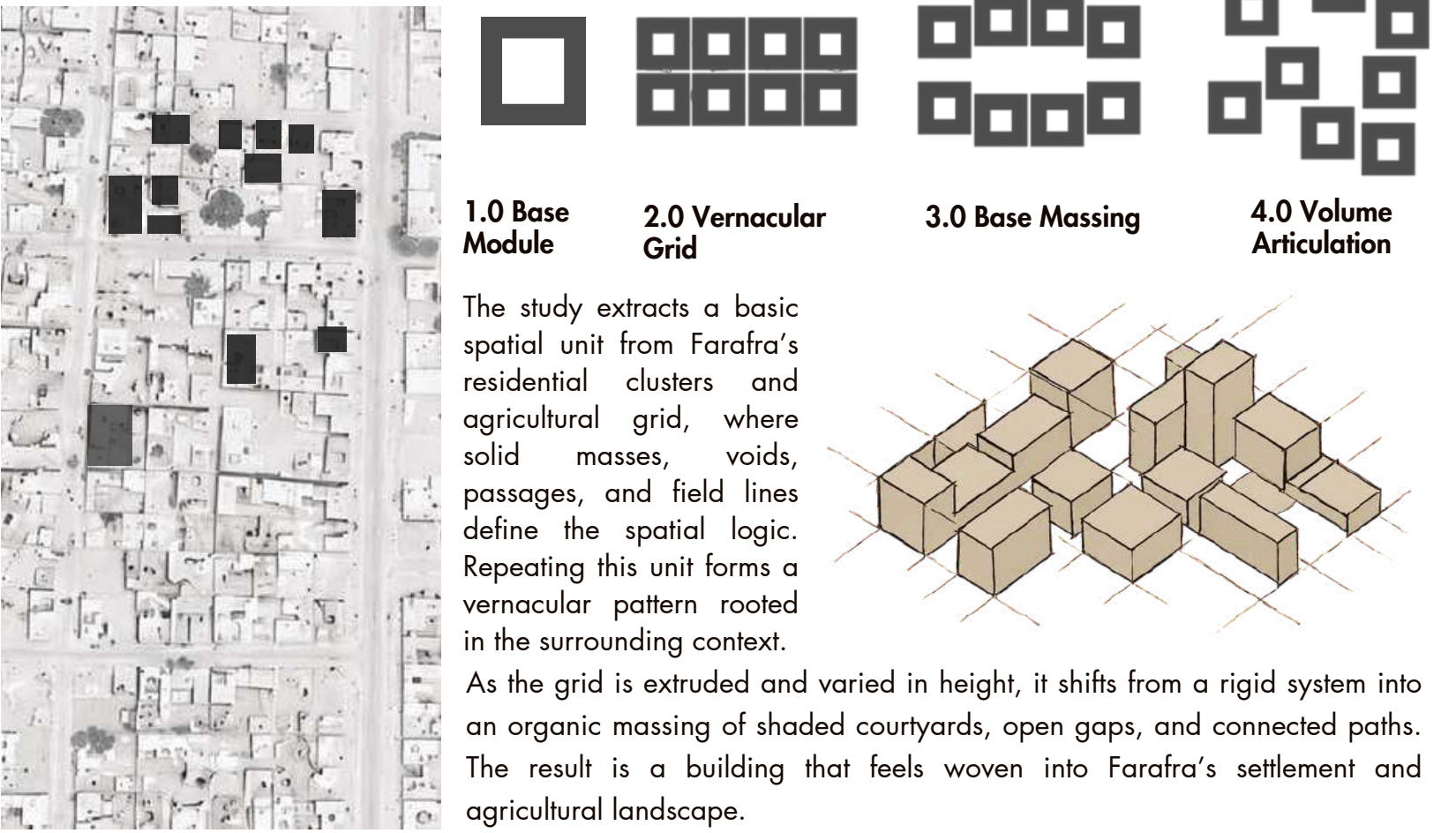
KNOWLEDGE & RESEARCH

Learning, testing, sharing solutions

COMMUNITY ROLES

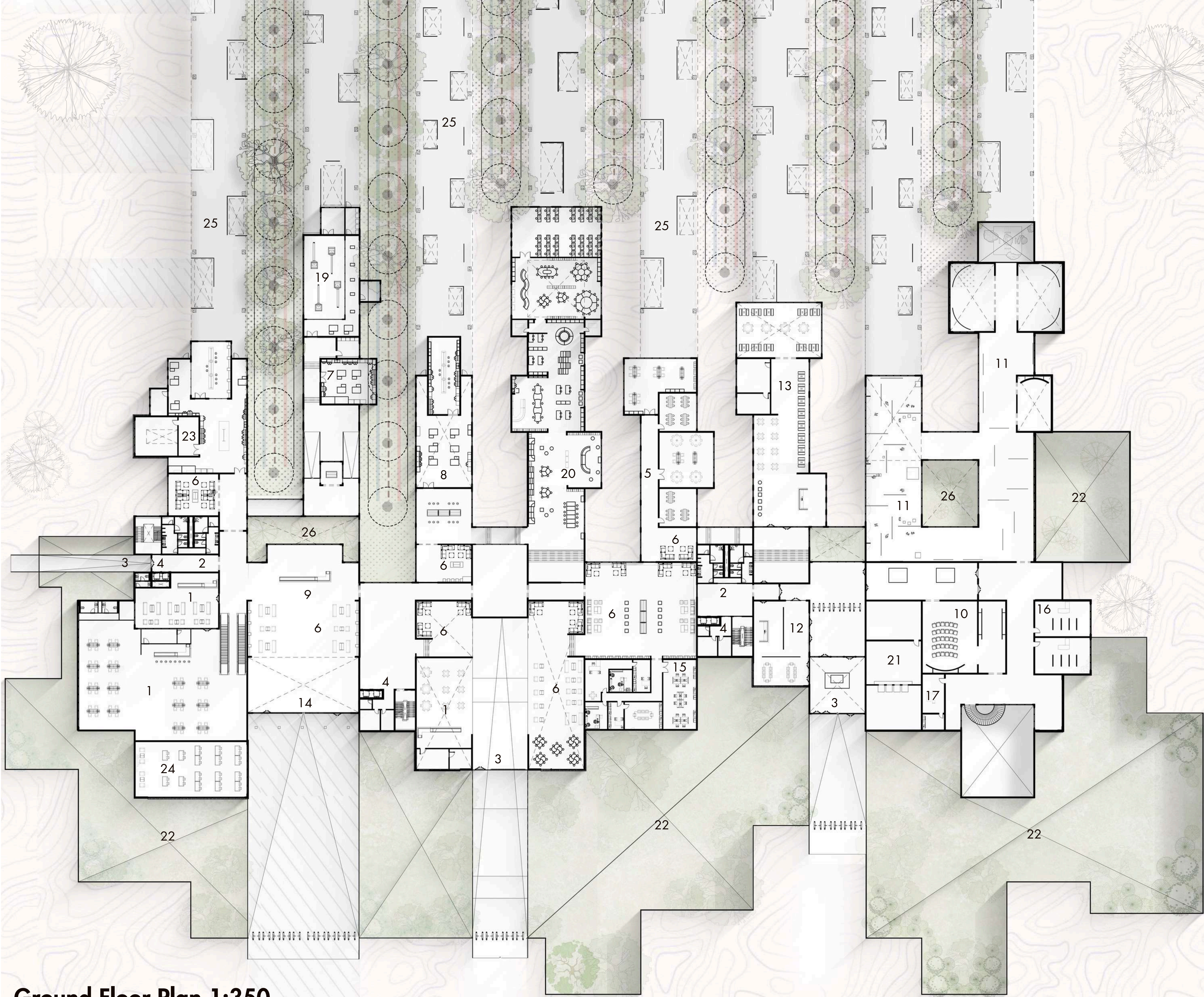
Empowering local resilience and pride

GRID ANALYSIS:

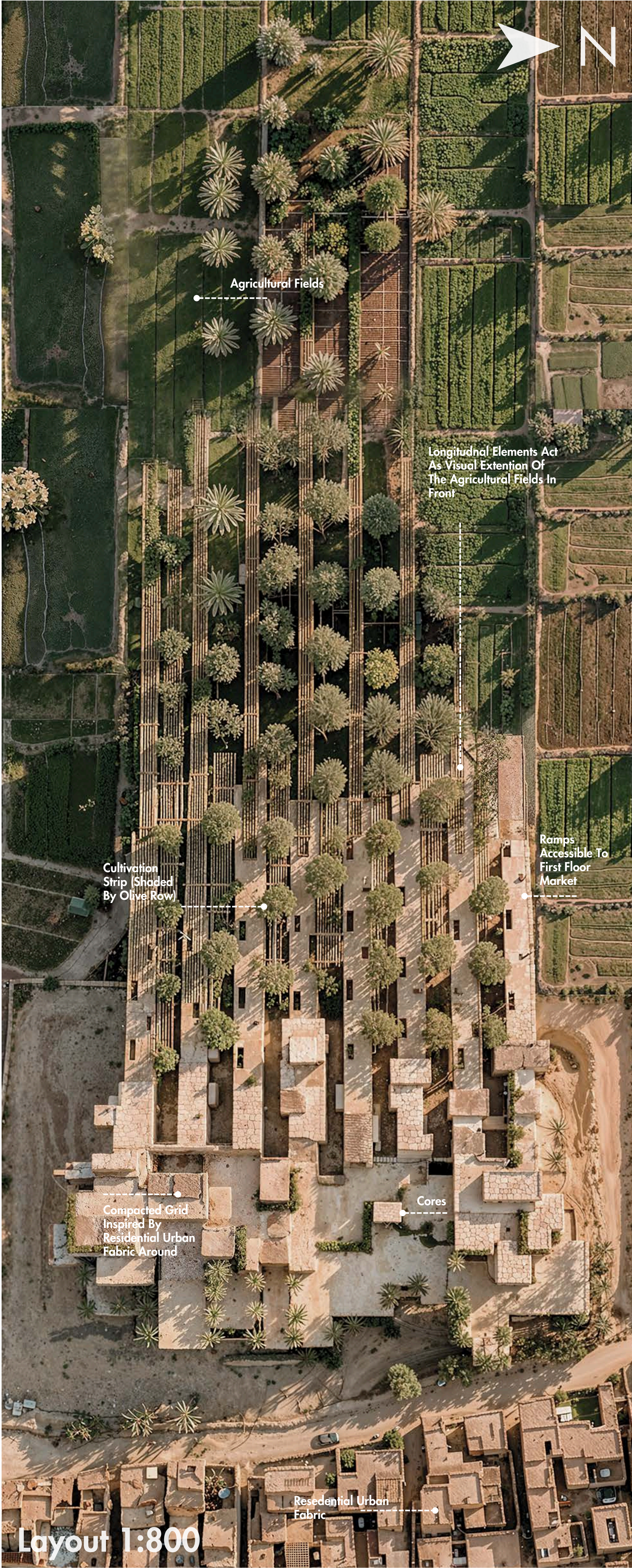


PLAN LEGEND

- 1 Cafeteria
- 2 Toilets
- 3 Secondary Entrance Lobby
- 4 Core
- 5 Workshops
- 6 Lounge
- 7 Soil labs
- 8 Water Efficiency Lab
- 9 Lobby
- 10 Introduction Hall
- 11 Open Exhibition
- 12 Ticketing
- 13 Restaurant
- 14 Main Entrance Lobby
- 15 Administration
- 16 Shops
- 17 Lost & Found
- 18 Computer Lab
- 19 High Tec. Testing Labs
- 20 Library
- 21 ATMS
- 22 English court
- 23 Vertical Farming Testing Lab
- 24 Coworking spaces
- 25 Experimental Fields
- 26 Court Yard

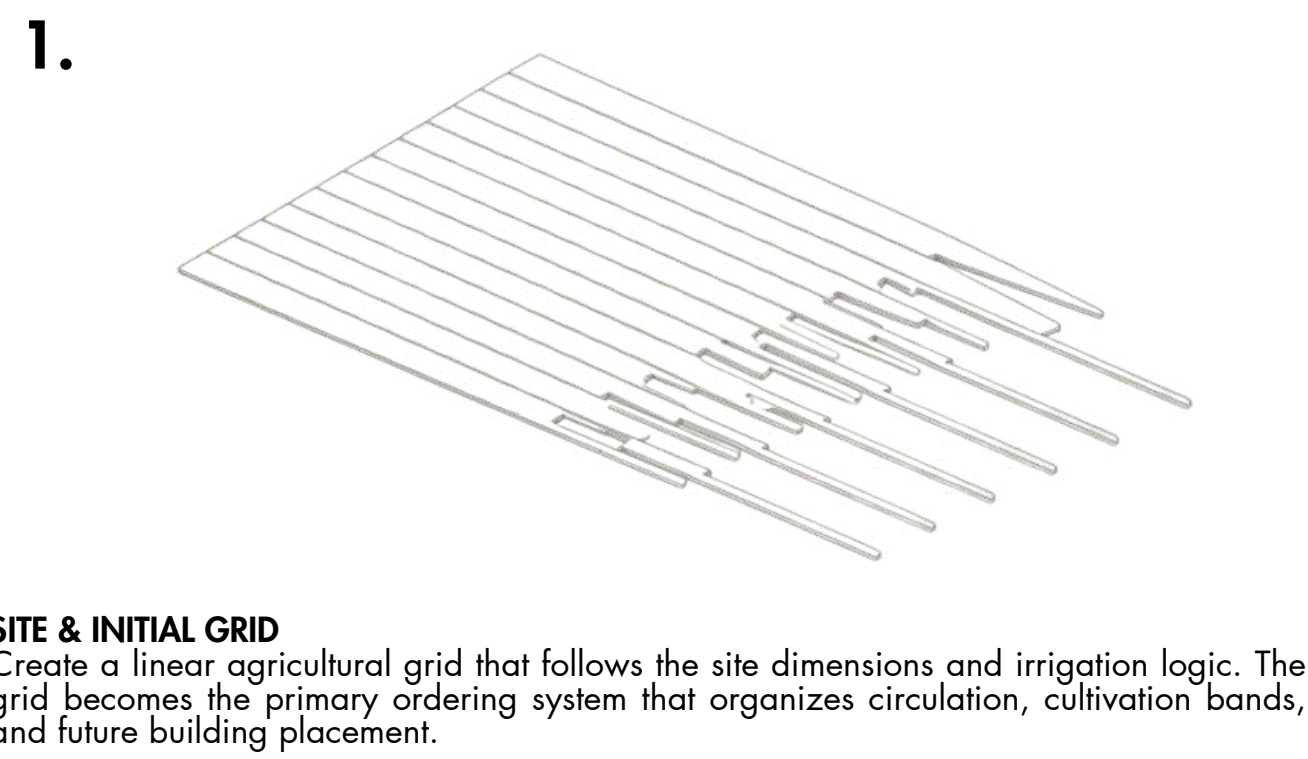


Ground Floor Plan 1:350



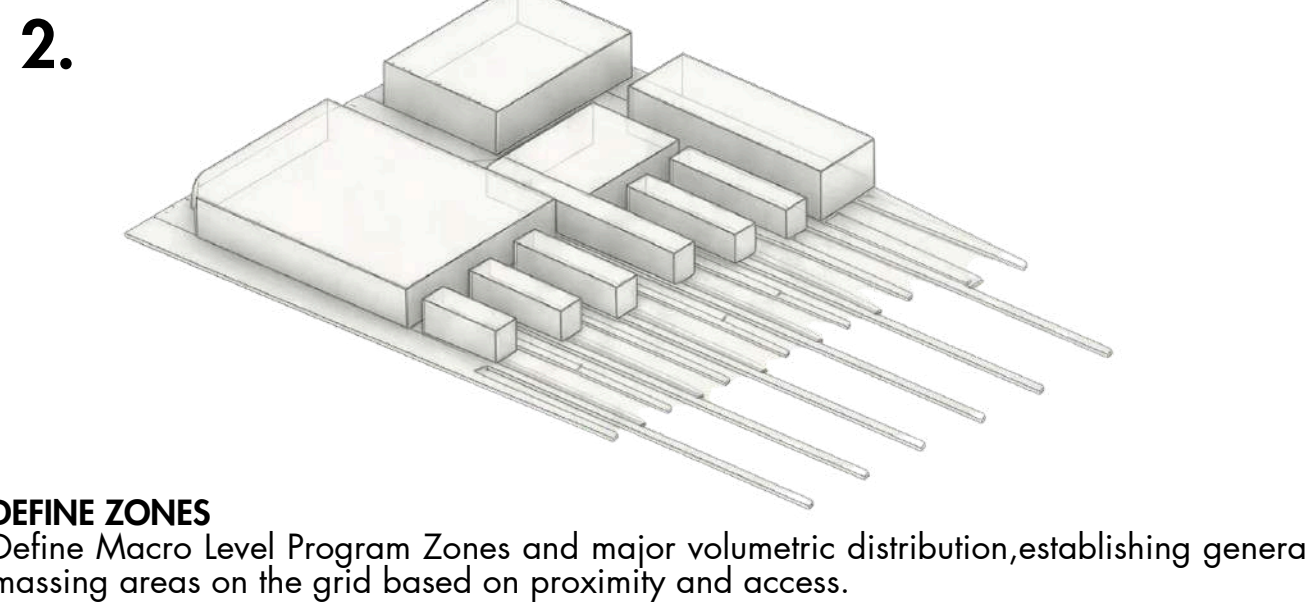
FORM GENERATION

1.



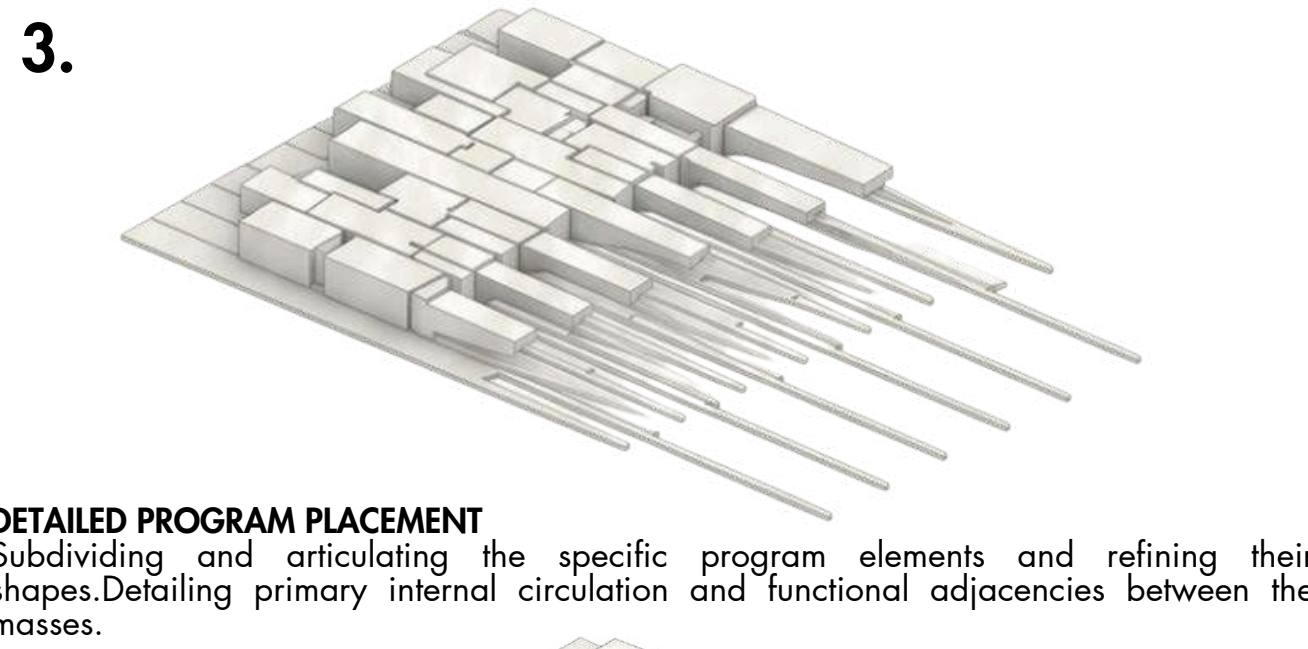
SITE & INITIAL GRID
Create a linear agricultural grid that follows the site dimensions and irrigation logic. The grid becomes the primary ordering system that organizes circulation, cultivation bands, and future building placement.

2.



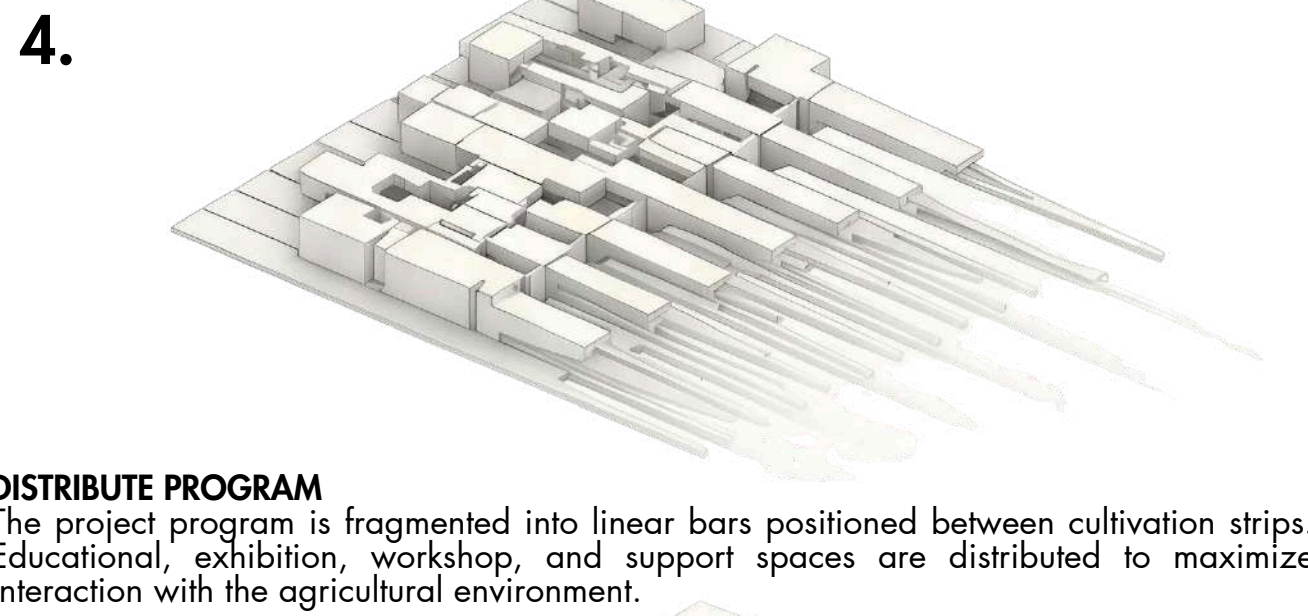
DEFINE ZONES
Define Macro Level Program Zones and major volumetric distribution, establishing general massing areas on the grid based on proximity and access.

3.



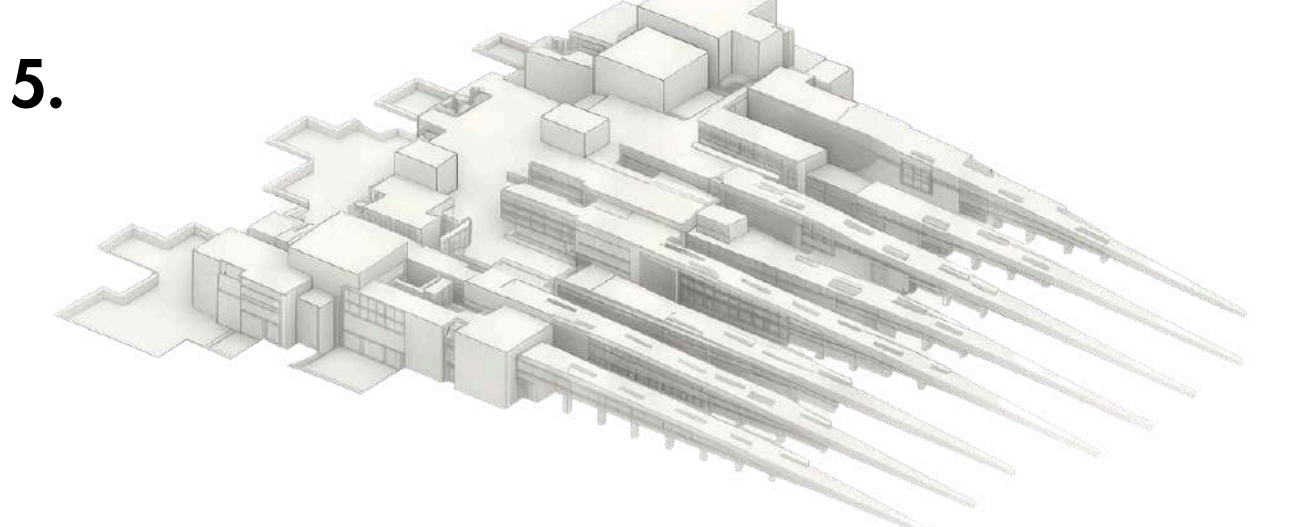
DETAILED PROGRAM PLACEMENT
Subdividing and articulating the specific program elements and refining their shapes. Detailing primary internal circulation and functional adjacencies between the masses.

4.



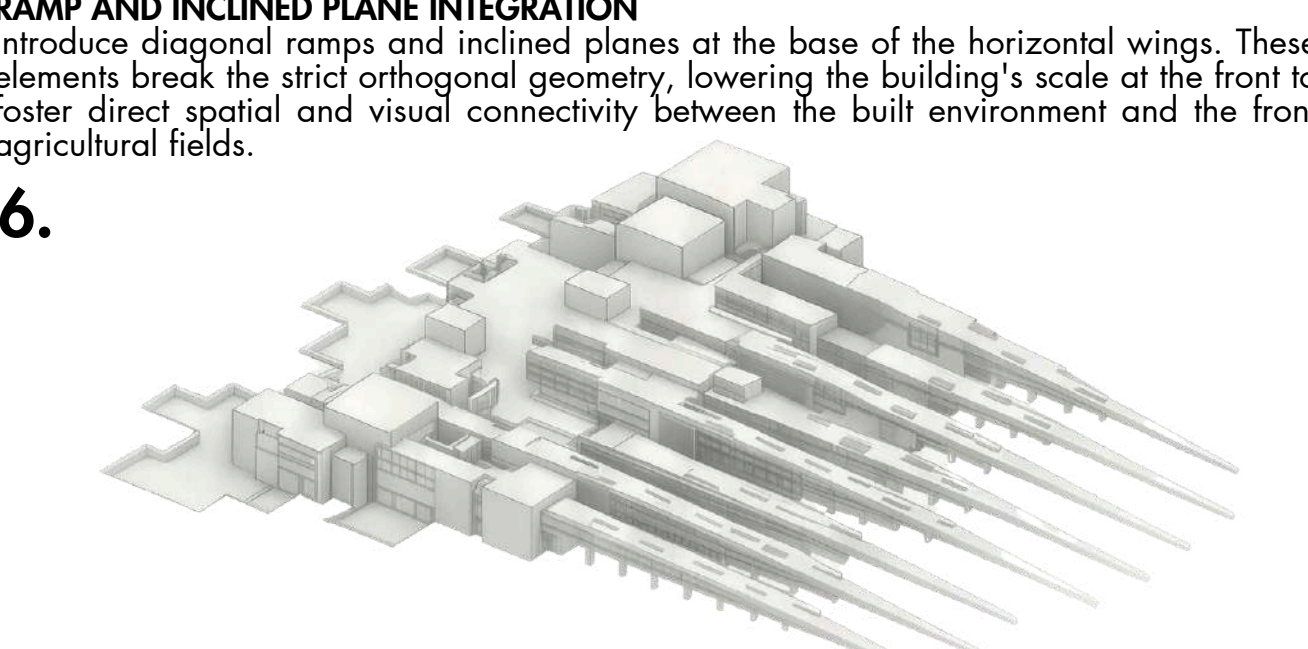
DISTRIBUTE PROGRAM
The project program is fragmented into linear bars positioned between cultivation strips. Educational, exhibition, workshop, and support spaces are distributed to maximize interaction with the agricultural environment.

5.



RAMP AND INCLINED PLANE INTEGRATION
Introduce diagonal ramps and inclined planes at the base of the horizontal wings. These elements break the strict orthogonal geometry, lowering the building's scale at the front to foster direct spatial and visual connectivity between the built environment and the front agricultural fields.

6.



FINAL ARTICULATION
Refine the overarching form with precise subtractions, setbacks, and interlocking blocks. The lower cluster achieves its final residential-inspired density, while the terraced roofs and low-slung front structures complete the transition from a protective built volume to an open, accessible farming school.

STORY TELLING



3D SECTION STUDY

Elevated cores

Elevated Cores
Centralized structural anchors consolidating vertical circulation and MEP infrastructure. Elevating these elements minimizes the ground-level footprint, liberating the "Zero Level" as a highly permeable, flexible public plaza.

Court Yards
Open-air voids incised into the architectural volume to capture and distribute natural daylight and passive cross-ventilation. Acting as localized microclimatic regulators, these open spaces soften the built mass and provide occupants with immediate, private transitions to the outdoor environment.

Library Coworking Spaces
This zone integrates flexible, open-plan workspaces with acoustic buffering to foster collaboration and quiet study. Large structural openings maximize daylight penetration, creating an optimal environment for extended productivity.

Outdoor Partition
Semi-permeable thresholds that mitigate solar gain and microclimatic wind loads while establishing soft spatial boundaries. These modular screens organize public circulation and define flexible gathering zones without disrupting the visual continuity of the open landscape.

Community Spaces
Highly adaptable, open-plan hubs designed to foster social interaction, collaboration, and public programming. Positioned fluidly within the layout, these spaces cultivate a vibrant collective identity while remaining highly responsive to evolving community needs and civic events.

Green Spaces
Integrated landscape zones engineered to regulate localized microclimates through passive evaporative cooling and shading. These biophilic insertions enhance site biodiversity, optimize sustainable stormwater management, and act as vibrant, restorative zones for public interaction.

Rooftop Market Access Ramps
Continuous, universally accessible pedestrian ramps linking the ground plane directly to the rooftop marketplace. This elevated promenade seamlessly integrates public circulation with the commercial upper tier, creating a fluid transition that extends the civic life of the plaza upward into an active economic hub.

Modular Structural Grid
A rationalized, hyper efficient structural matrix that standardizes construction delivery and optimizes spatial flexibility. This rigorous grid layout allows for seamless programmatic reconfigurations over time, establishing an adaptable architectural framework capable of accommodating diverse spatial demands.

Outdoor Experimental Fields
Agro-ecological zones sheltered by microclimatic shading canopies to optimize crop resilience in arid conditions. The integration of shaded cultivation bands reduces evapotranspiration and solar stress, establishing a high-efficiency research landscape for sustainable agricultural practices.

Facade Skin & Deep Apertures
A high-performance envelope featuring deep wall openings integrated into a thick structural skin. This high-mass envelope acts as a thermal buffer to mitigate solar heat gain, while the deeply recessed apertures puncture the skin to provide optimized self-shading, glare control, and framed views.

English Courts
Subterranean lightwells puncturing the lower floor plates to drive natural daylight and passive ventilation deep into below-grade zones. These sunken voids optimize indoor environmental quality while transforming subterranean levels into light-filled, highly habitable spaces.

Sustainability & Temperature Regulation
Active and passive environmental strategies integrated across the building envelope to optimize thermodynamic performance. The system utilizes optimized solar shading, passive cross-ventilation, and thermal massing to minimize mechanical cooling loads and ensure a resilient, low-carbon microclimate.

3D SECTIONAL BLOW-UPS

Integrated planter softens the approach and frames views towards the entry.

Community and gathering spaces. (Local Rooftop Market)

Perforated stone screen provides privacy while allowing filtered light and ventilation.

Timber pergola with adjustable slats for shading and comfort.

Rooftop Plantation pots as a green retreat and thermal buffer, improving insulation and microclimate.

Recessed Glazed Edge.

Recessed service core conceals mechanical equipment and storage from the terrace.

Low parapet walls maintain safety while preserving open views.

Open Lounge terrace with timber pergola shading.

Planter edge buffer

Indoor - outdoor threshold

Roof's Finishing Floor Levels Layered composite roof buildup featuring gravel ballast and insulation to resist direct solar heat induction.

Built In Seating Zone On Roof.

Direct access to roof terrace through outdoor ramps and service cores.

Solid Privacy Wall

Full height glazing with operable panels enables cross ventilation.

Screened Side Facade

The approach is defined by a compressed entry framed by a solid stone volume and a perforated screen wall. The ramp creates a gradual arrival sequence, leading to a shaded threshold and glass entry beyond.

Exposed stone finishes provide thermal mass and a timeless texture.

Arrival Ramp Approach

Corner glazing maximizes views and visually connects interior with exterior landscape.

Gentle ramp (1:20 slope) ensures accessibility while maintaining a monumental arrival. Recessed structure frames the view and reduces the visual bulk of the facade.

English Courts are Palm Dominated.

Cool Shaded Garden

A lush buffer on the edge ensures privacy while softening the architecture. It creates a microclimate and filters dust and heat from the exterior.

Perforated Mass Wall

Strategic planting improves biodiversity and supports sustainable design. (Palm Trees and shrubs)

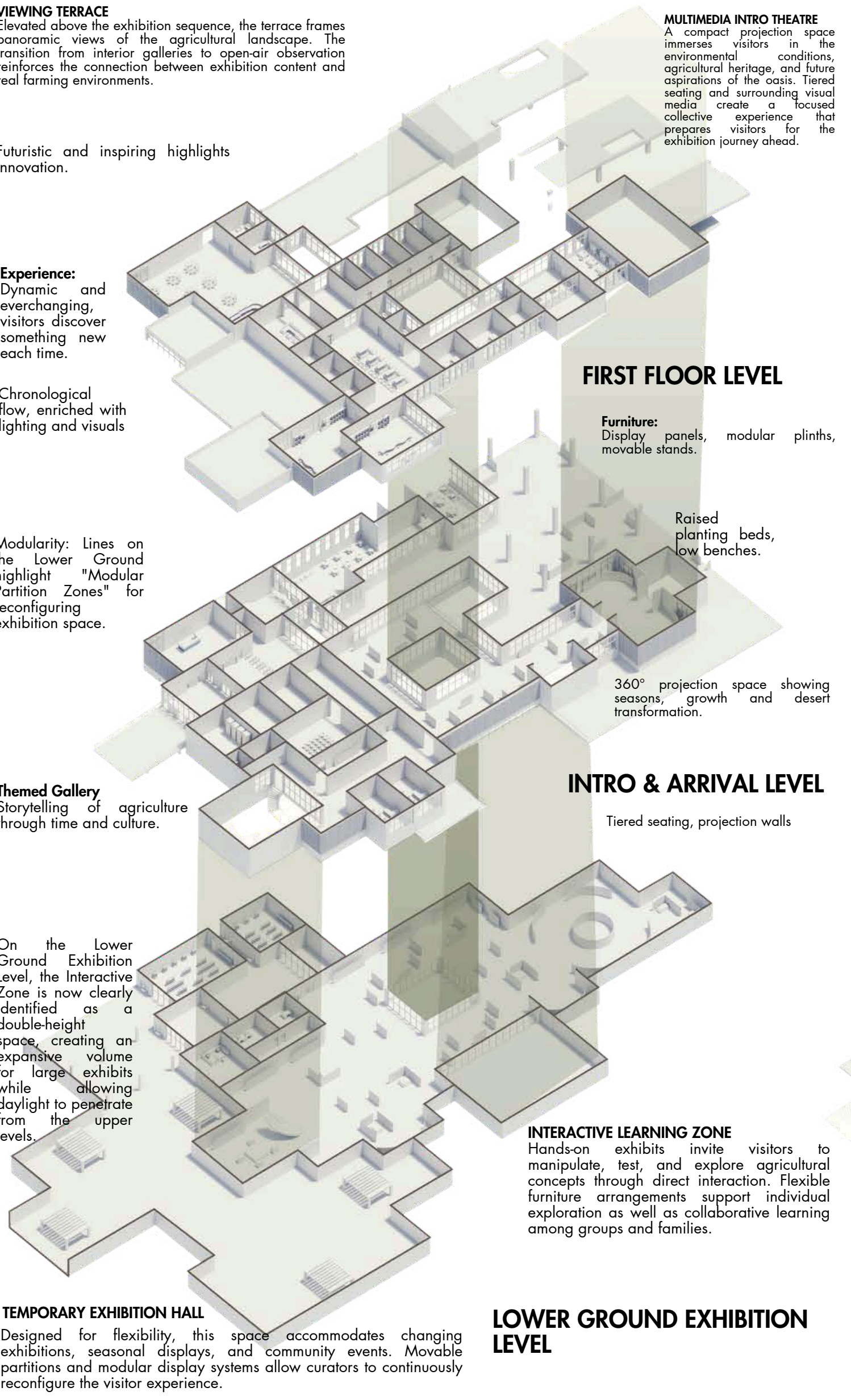
Stone plinth edge

Raised Landscape bed.

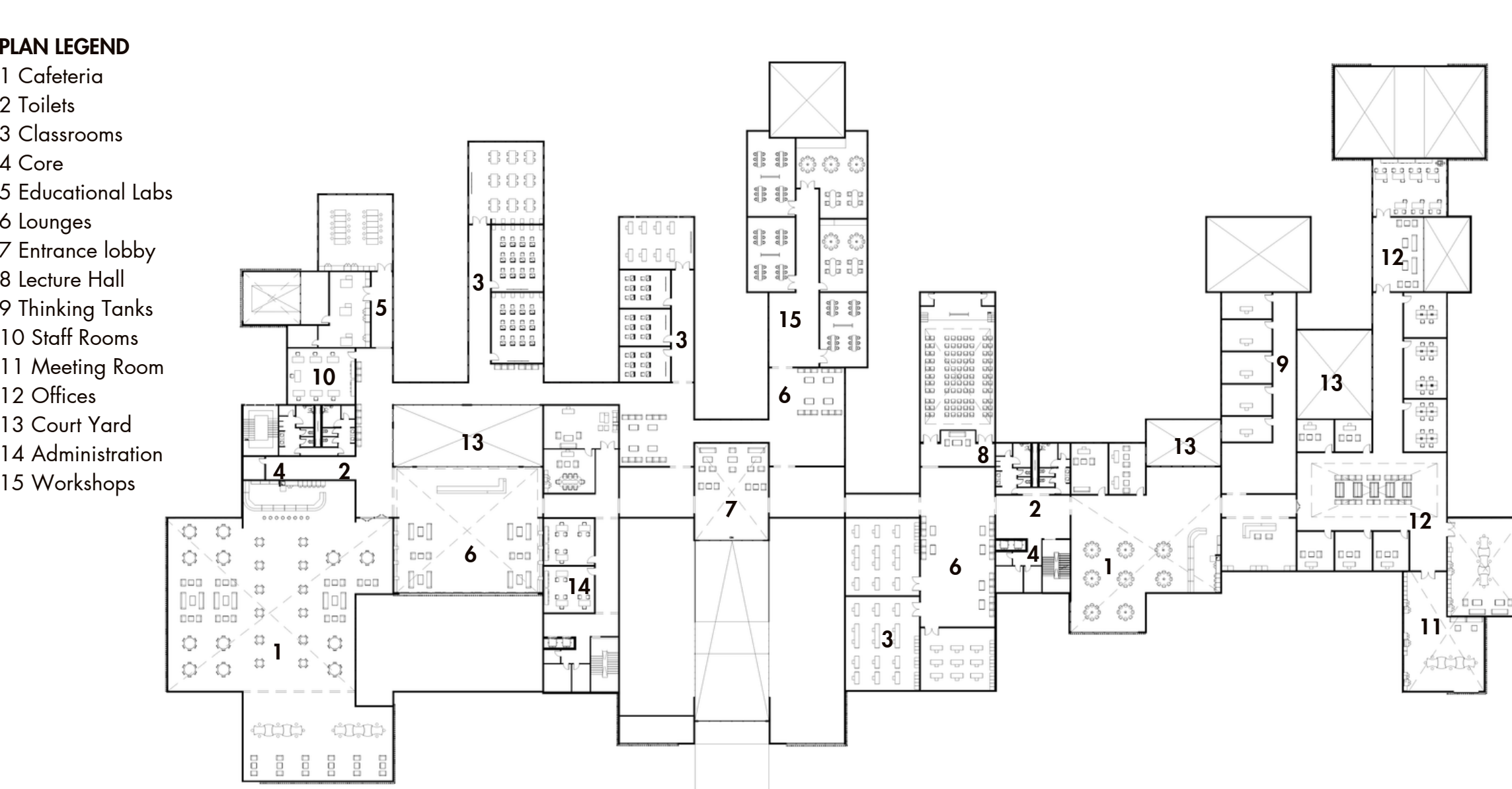
Use local stone -limestone plaster for the main masses because it handles desert heat well and blends with the surroundings. Add perforated stone screens to provide privacy, shade, and natural ventilation. Use timber or corten steel accents for warmth and contrast, especially in pergolas, screens, and planter edges. Large clear glazing should be recessed or shaded to reduce heat gain. Dense native desert planting and palms help cool the microclimate and soften the solid architecture.



Exhibition 3D Exploded Diagram

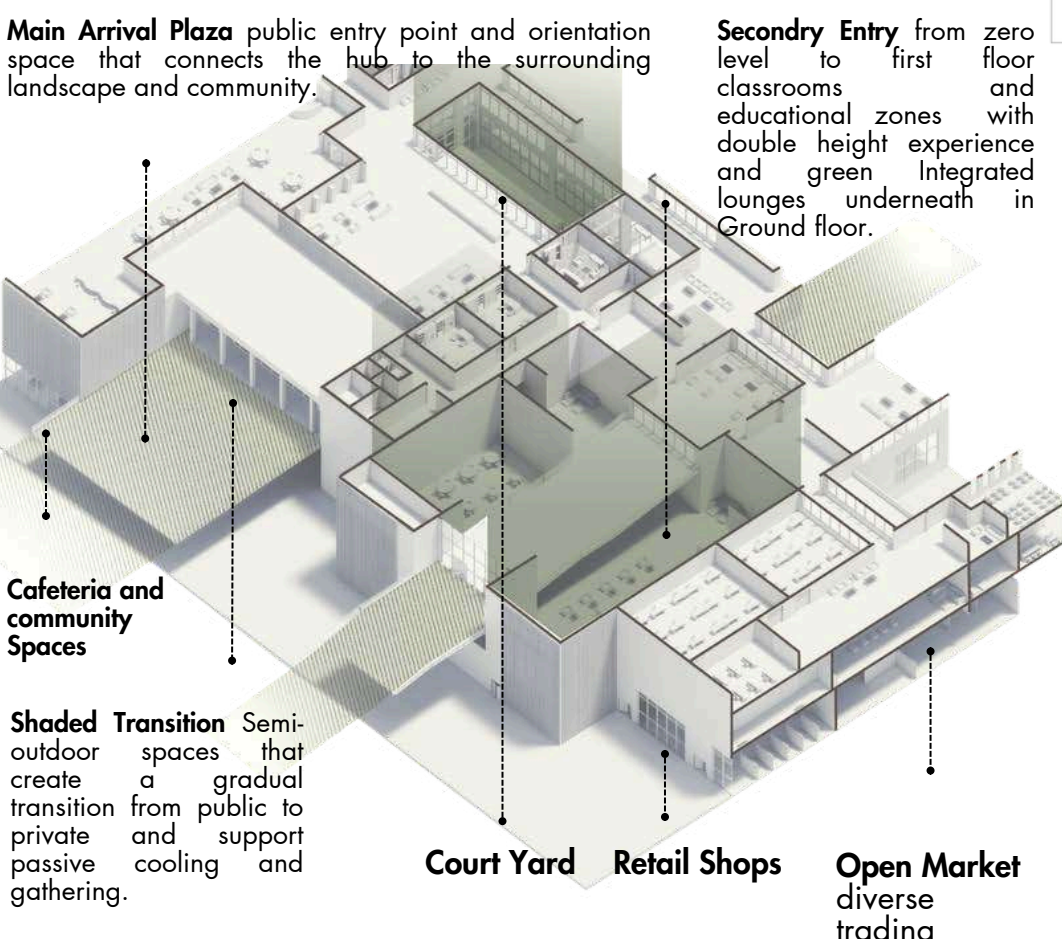


First Floor Plan 1:800

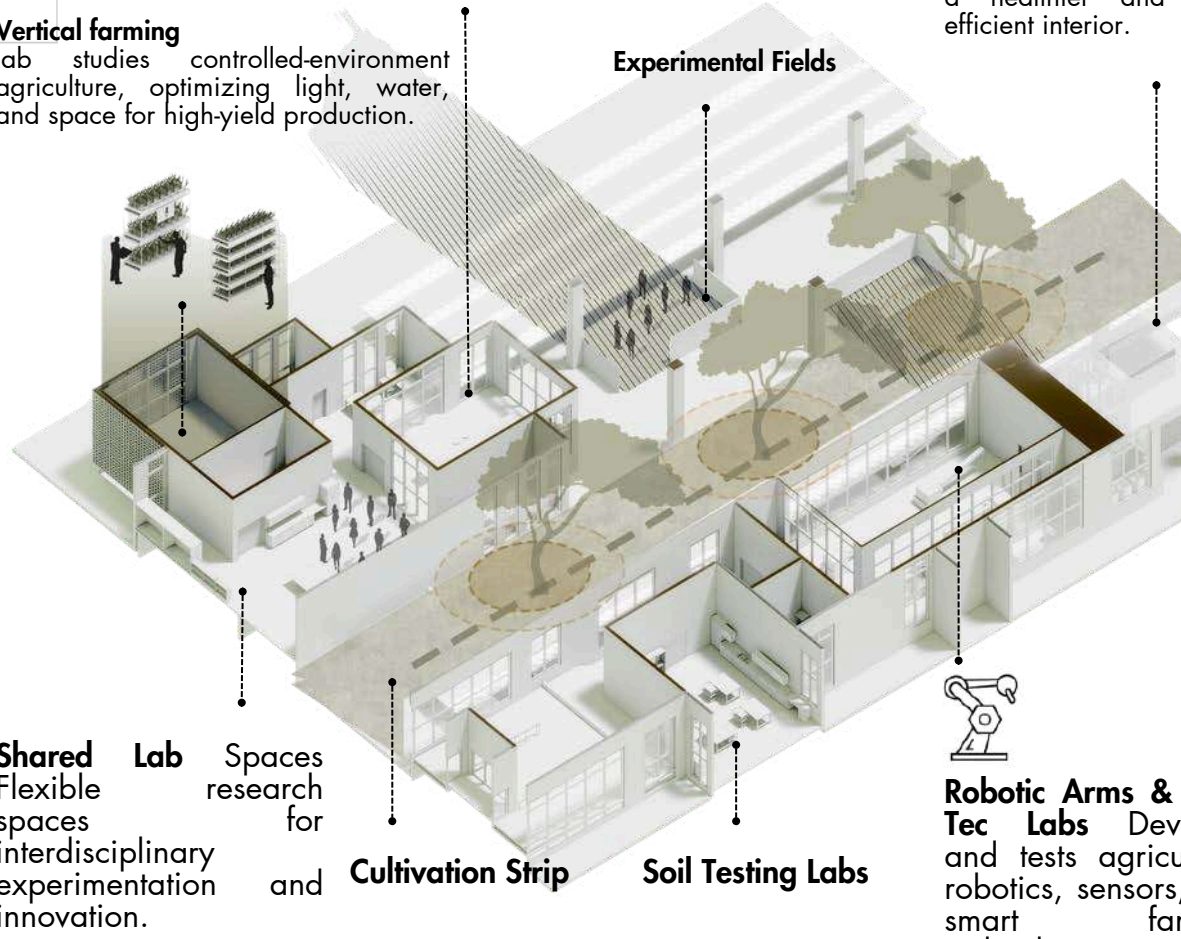


Learning Journey

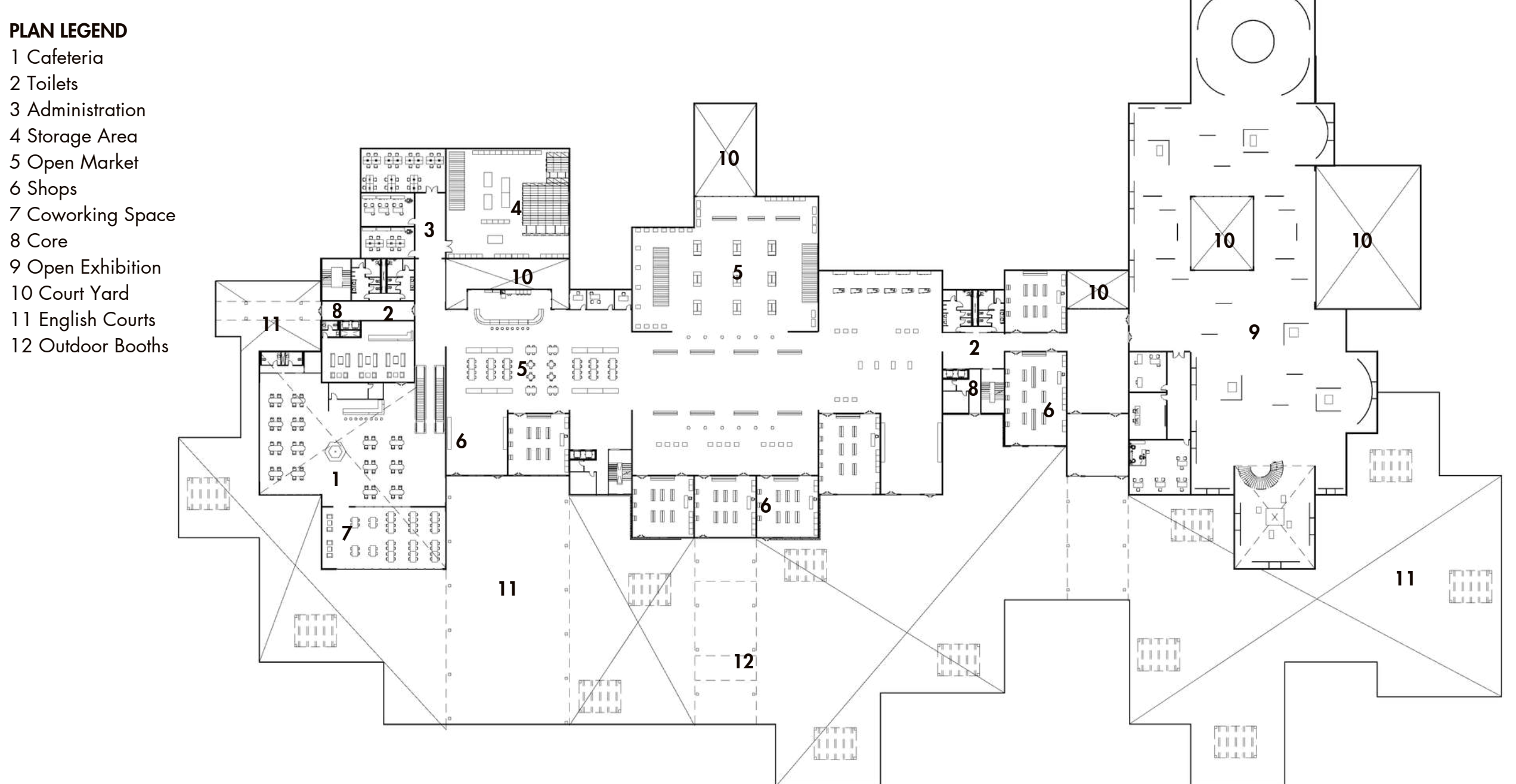
• Entrances And Lounges



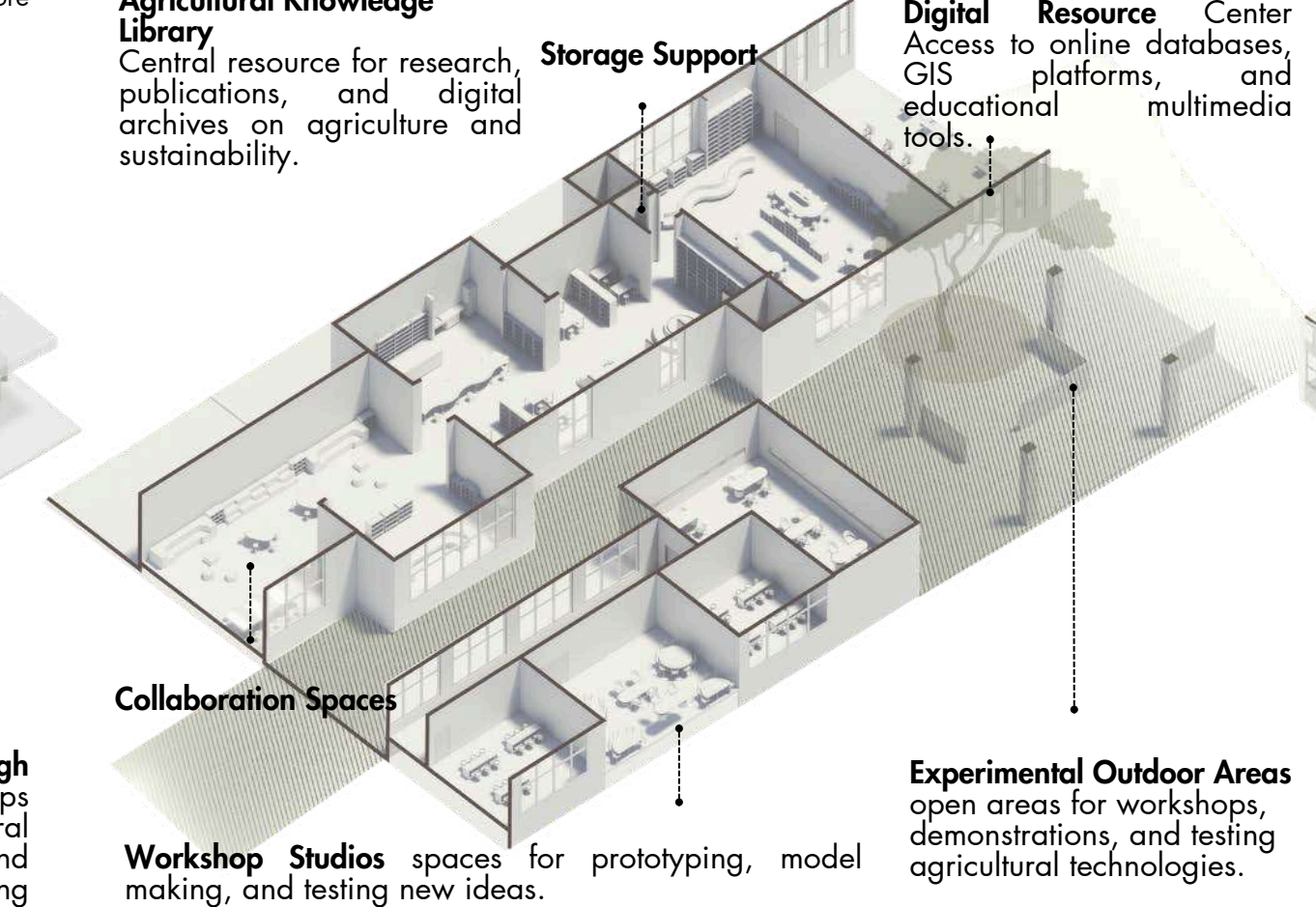
• Labs



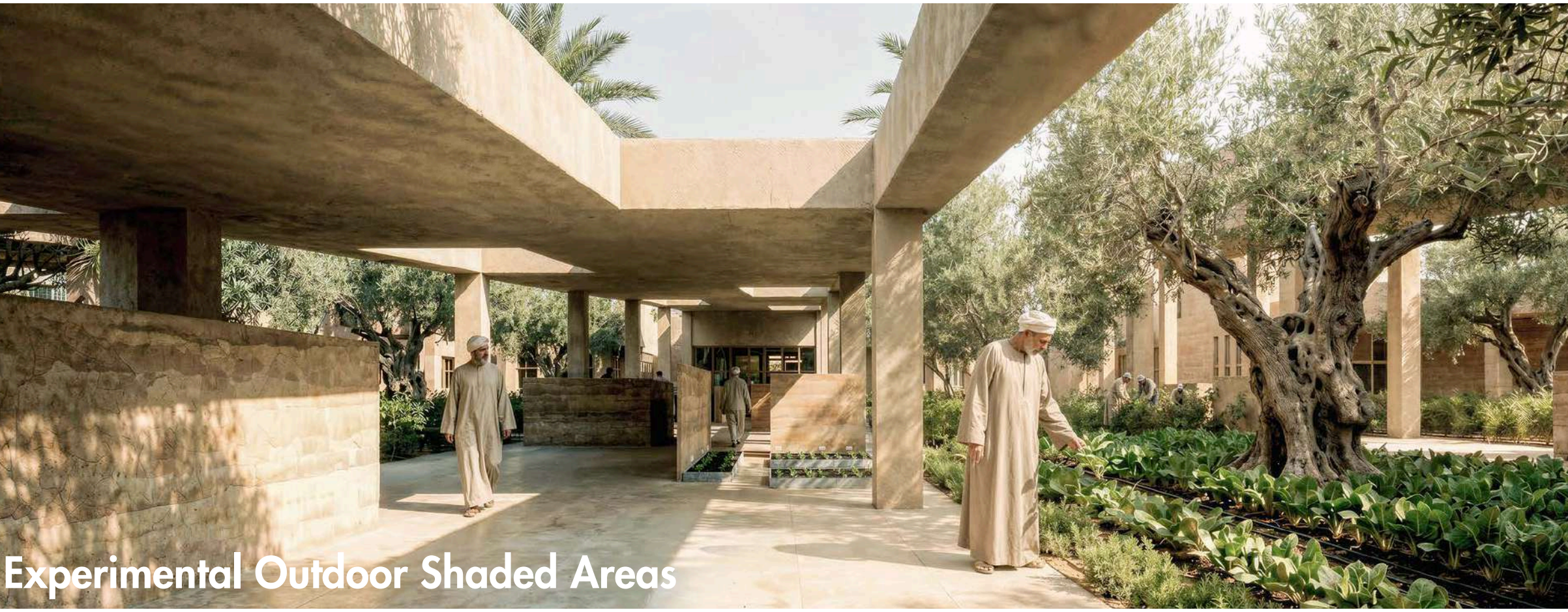
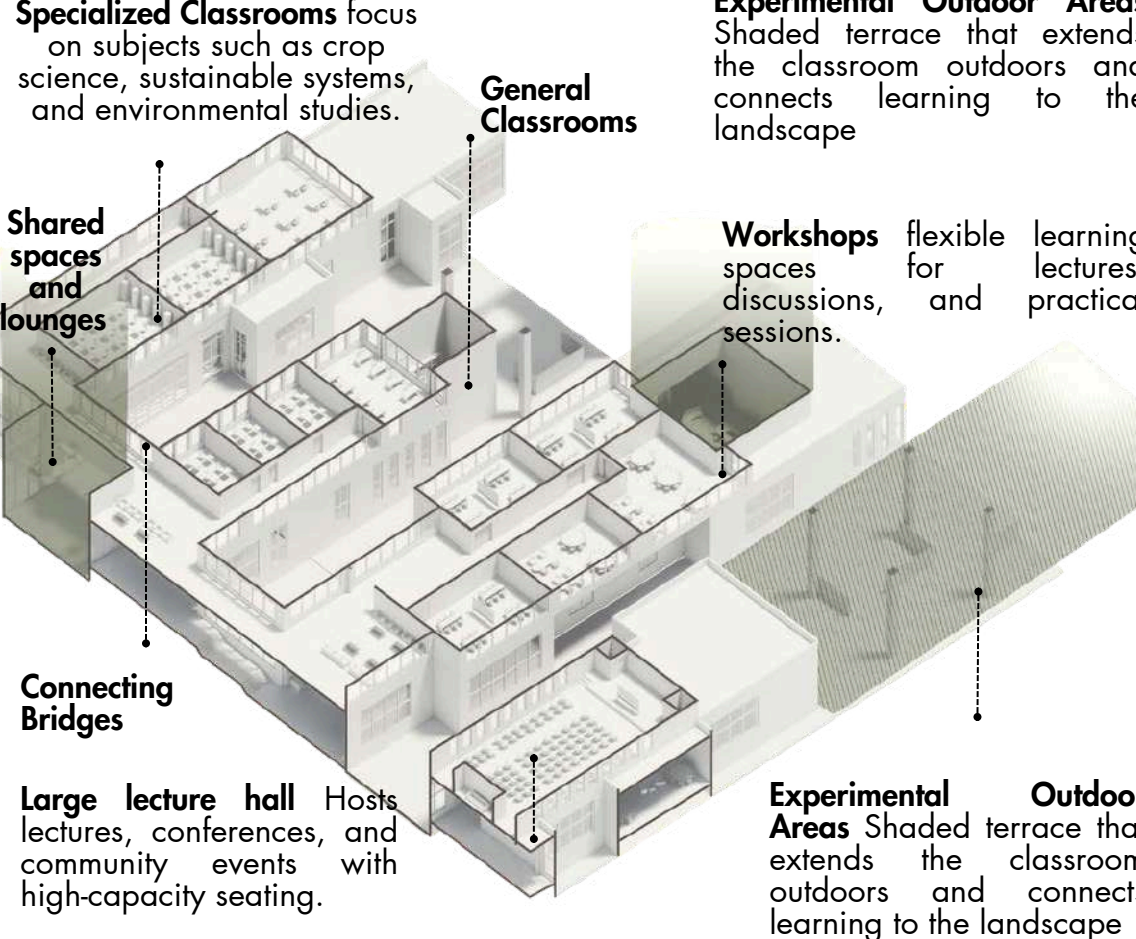
Lower Ground Floor Plan 1:800



• Library And Workshops



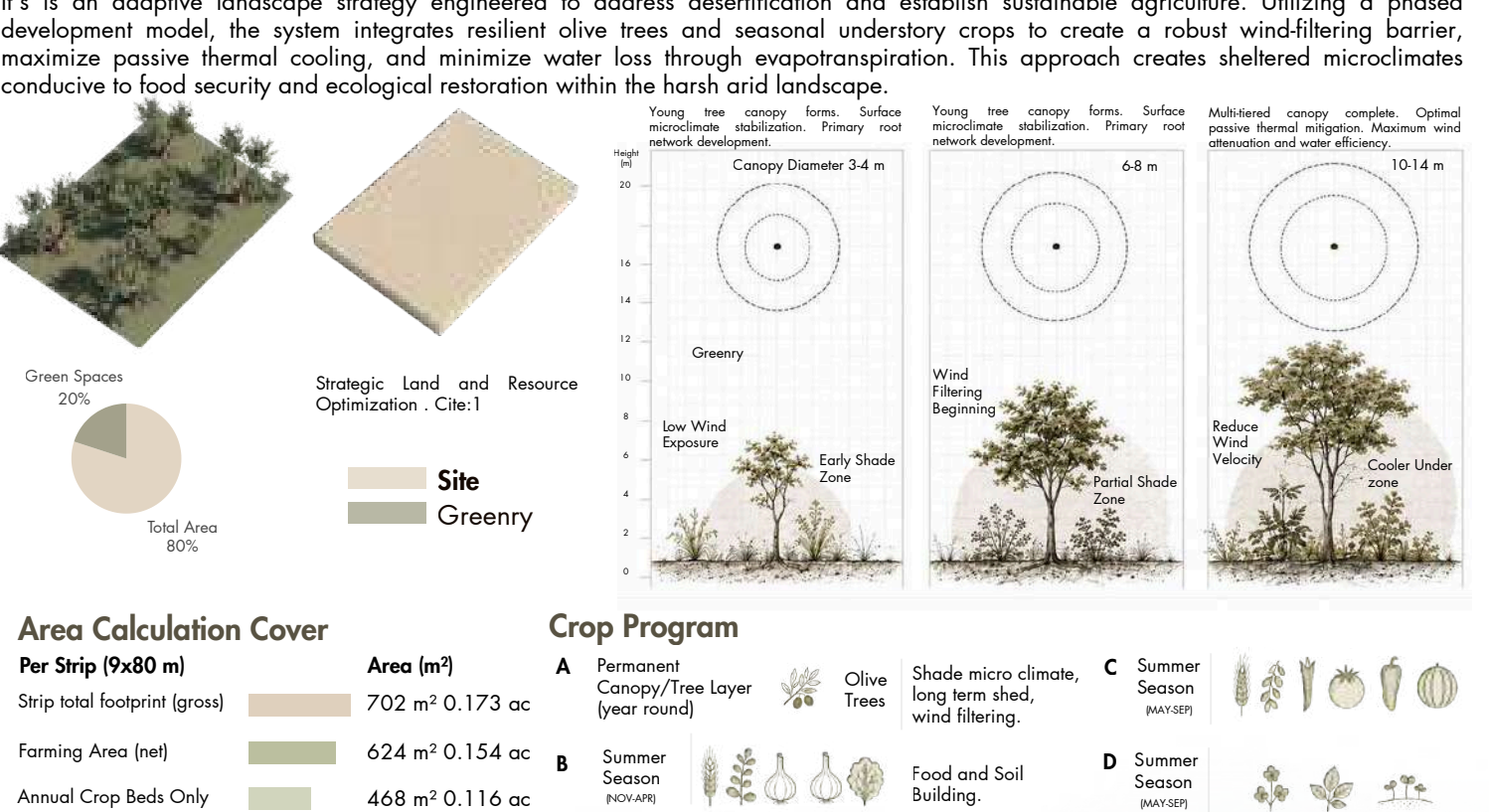
• Classrooms And Lecture Halls



Sectional Prespective Shot



Intervention Production Details



Intervention Growth Timeline

