Site Development Report: Anthony, Florida
Agri-Business Project

Prepared by: Zachary D. Hinkel
Course: EGR495 / ART495 – Architecture Studio I
Date: December 4, 2025

---

1. Introduction

This report documents the conceptual planning and site design for a multiuse, 50-acre agri-business property in Anthony, Florida (Marion County). The development vision provided by the owners (Masakani LLC), is to preserve agriculture as the primary use while enabling new agri-business opportunities: a 2,500-square-foot barndominium, greenhouse/dining room, vineyard, small-crop gardens, horse facilities, short-term rental cottages, and event functionality for retreats, weddings, conferences, and camps. The project will be phased, beginning with the

barndominium and core amenities (airstream, hot tub, outdoor meditation space, and trails), and expanding to hosted events and seasonal programming. All planning is guided by the A-1 (General Agriculture) zoning classification and the environmental assets emphasized in the brief: forest conservation, wildlife management, old growth tree retention, and buffer protection near property lines.

2. Site Analysis

2.1 Location and Context

The site's primary access is at 12474 NE 36th Ave, Anthony, FL 32617. It sits roughly 20 minutes north of Ocala and 38 minutes south of Gainesville, positioning it within a regional network of rural communities and university resources. Two thirds of the parcel is cleared, with the remainder containing mature trees suitable for conservation and habitat value. The entrance at 12474 NE 36th Ave provides electrical access; however, there is no public sewer, so engineered septic systems are required.

The surrounding context is predominantly rural agriculture, with local draws such as pet resorts, animal sanctuaries, campgrounds, and the notable Jumbolair Aviation Estates in Anthony. The nearby town of Sparr (≈3 minutes) offers community linkage, and the broader region benefits from proximity to University of Florida (UF) in Gainesville (≈38 minutes), a potential partner for vineyard research and ag-tech collaboration.

2.2 Climate, Biome, and Hazards

Anthony, Florida sits in a humid subtropical climate: hot summers, mild winters, and significant precipitation. Design responses include shaded outdoor areas, cross ventilation, resilient plant palettes, and stormwater management to handle frequent rains. Although the brief notes "no worry about rock blasting," soils, drainage, and septic suitability must be validated in later geotechnical review. Preliminary planning presumes well drained areas for drain fields and avoids low lying pockets for critical infrastructure.

2.3 Existing Assets and Constraints

- Assets: cleared acreage for agriculture and horse uses; wooded tracts for conservation; access to electricity; main road frontage (northeast).

- Constraints: septic engineering; setbacks and development standards under A-1 zoning; protection of old growth trees; 25 foot buffer of undisturbed natural growth along property lines.

3. Design Concept

3.1 Vernacular and Cultural Fit

The architectural language seamlessly blends barn style utility with contemporary, hospitality ready finishes. Agrarian materials as metal roofing, board and batten or corrugated siding, exposed timber, and deep overhangs convey authenticity and durability. The greenhouse/dining room celebrates farm to table culture and educational programming (cooking classes, tasting dinners), while horse facilities reflect regional equestrian traditions near Ocala. Landscape elements (windbreaks, hedgerows, live oak groves) echo local agrarian patterns.

3.2 Sustainability and LEED Aligned Principles

While not pursuing formal LEED certification at this stage, the concept borrows from LEED charrette best practices: site selection, habitat conservation, stormwater control, energy efficiency, and healthy materials. Photovoltaics (PV) supplement grid electricity, placed on suitable roof planes (barndominium, greenhouse/dining), carport canopies near parking, and select ground mounted arrays in cleared, non-habitat areas. Trails and planting beds minimize soil compaction; native/Florida friendly vegetation reduces irrigation demand. Construction phasing limits disturbance, and erosion control is planned during grading.

3.3 Programmatic Integration

The plan balances working farm operations, guest circulation, and event logistics:

Farm operations are centralized near greenhouse/dining, gardens, vineyard, and open air barn (≈500 sf).

Guest amenities (cottages, meditation lawn, Japanese garden with koi pond) are distributed along trails for privacy and immersion.

Event flow (arrival, parking, ceremony spaces, lawn tents) is separated from farm machinery paths to avoid conflicts.

The petting zoo and farmers market sit at the northeast frontage, leveraging visibility and easy loading.

4. Site Layout and Circulation

Scale reference: The physical site model is at 1" = 90'–0" on Autodesk Revit, with visuals of all buildings and aspects to the plans.

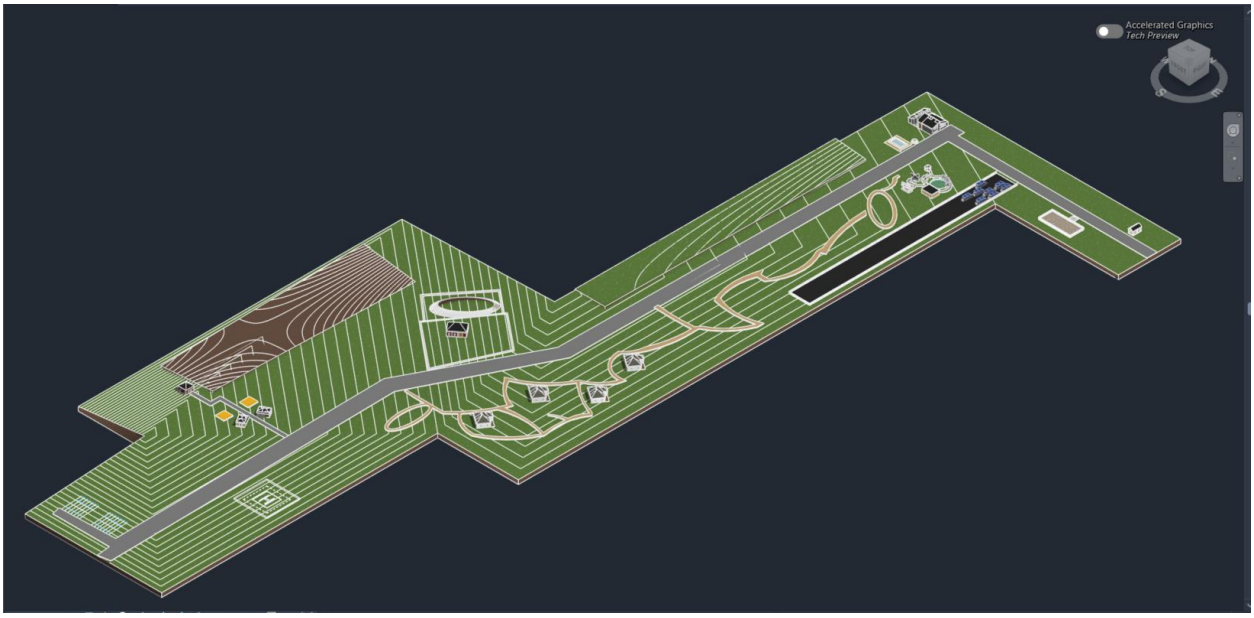

Figure 1: Full Layout of 50-acre Project

4.1 Major Elements (Locations and Rationale)

Barndominium (2,500 sf): Located with front facing the cow pasture and set exactly 25 feet from the property line, matching the stated constraint. This orientation offers pastoral views, prevailing breeze capture, and adjacency to guest arrival for the first phase.

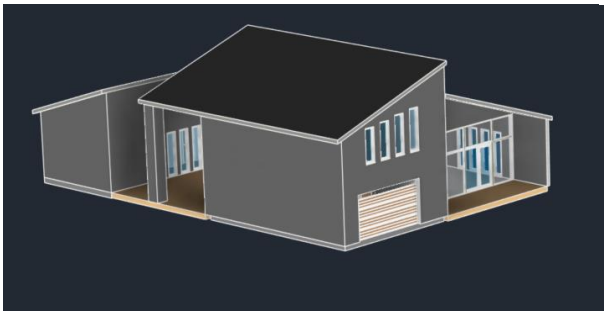

Figure 2: Barndominium Front View

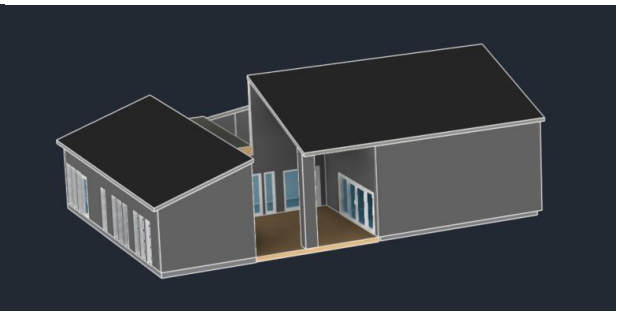

Figure 3: Barndominium Back View

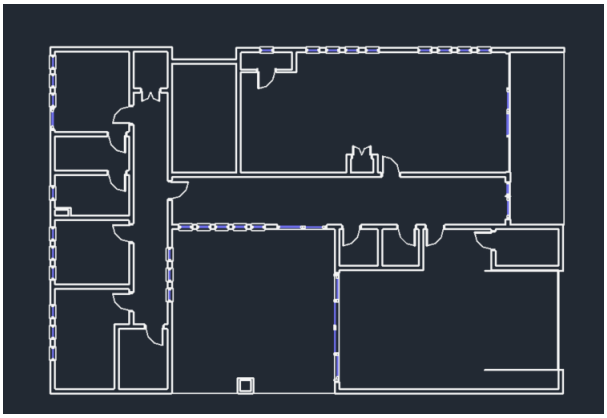

Figure 4: Barndominium Floorplan Level 1

Greenhouse / Dining Room: Situated adjacent to crop gardens and vineyard, forming the agri-culinary core. Short supply chain distances (field → prep → plate) reduce handling and support educational tours.

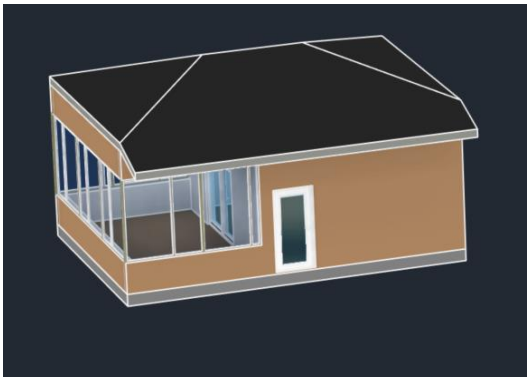

Figure 5: Greenhouse / Dining Room Exterior View

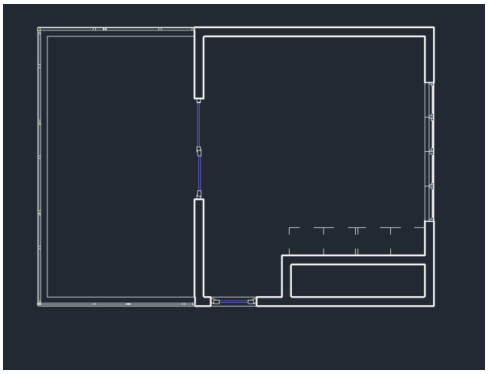

Figure 6: Floorplan

Japanese Garden & Koi Pond (with Yoga Tent and Small Boathouse): Placed within a quieter, wooded portion near trails, with separation from farm machinery routes. Meditation pads and an outdoor aerobics area (≈30-person capacity) use shade canopy and permeable surfaces.

Figure 7: Japanese Garden Top View

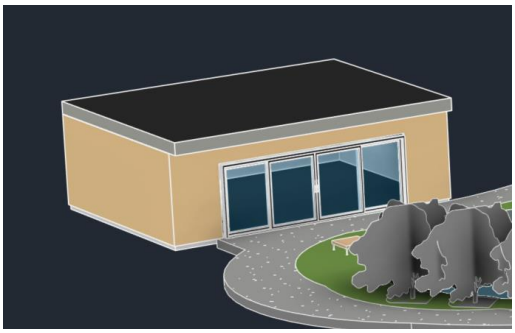

Figure 8: Outdoor Aerobics Exterior

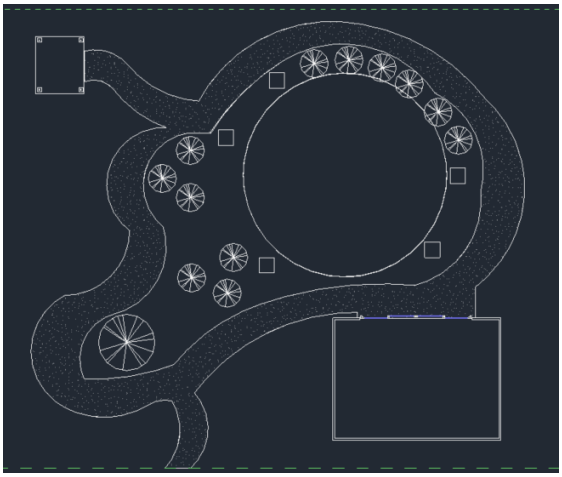

Figure 9: Japanese Garden Floorplan

Hiking Trails with Exercise Nodes: A looped network linking the cottages, garden, koi pond, and conservation area. Exercise nodes host simple apparatus (balance beams, step platforms) and interpretive signage (flora/fauna, farm processes).

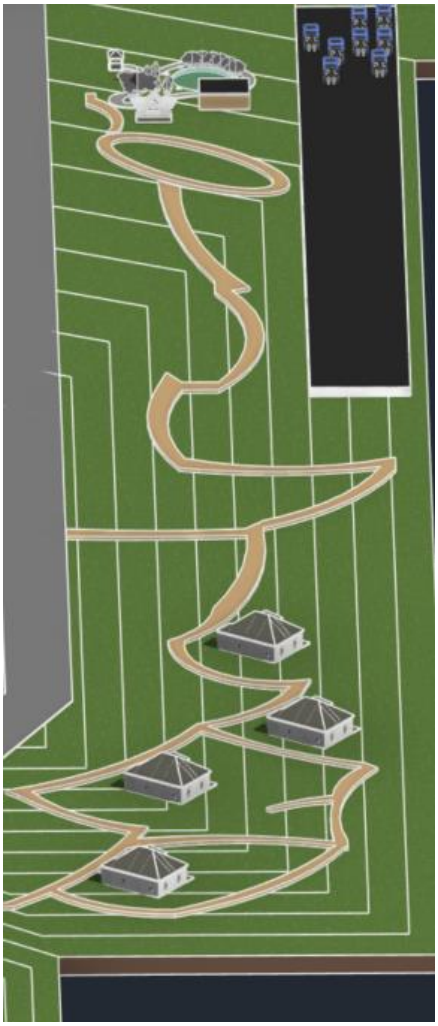

Figure 10: Hiking Trails

Figure 11: Hiking Trials Connected to Cottages

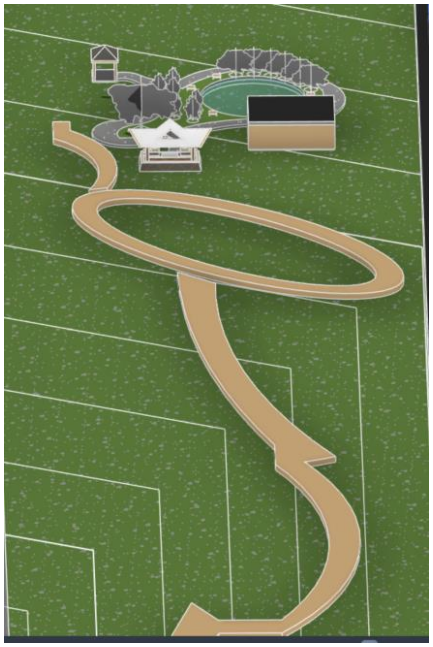

Figure 12: Hiking Trails Connected to Japanese Garden

Four Cottages: Distributed along trails to achieve acoustical privacy, each a 2-bed/2-bath + kitchen module. Orientation considers solar gain and porch shading, with ADA friendly access at two units to broaden audience.

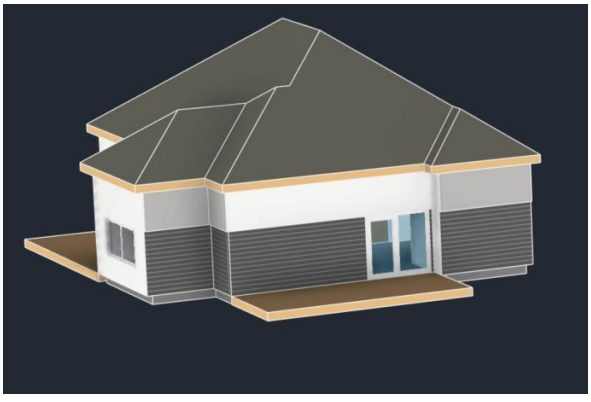

Figure 13: Cottage Exterior

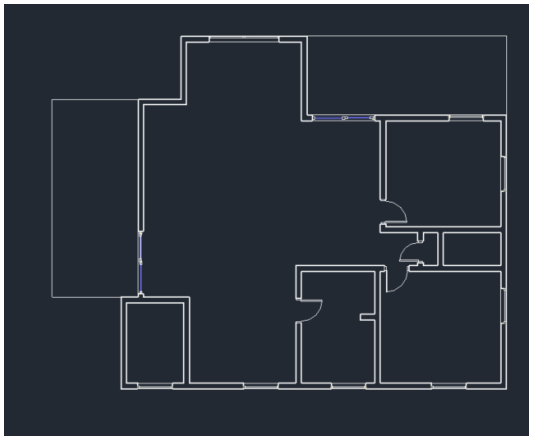

Figure 14: Cottage Floorplan

Petting Zoo & Farmers Market (Northeast Parcel, Road Frontage): Positioned for visibility, easy parking, and delivery access. The petting zoo is buffered with vegetation for odor and noise management, and its structures observe livestock housing setbacks.

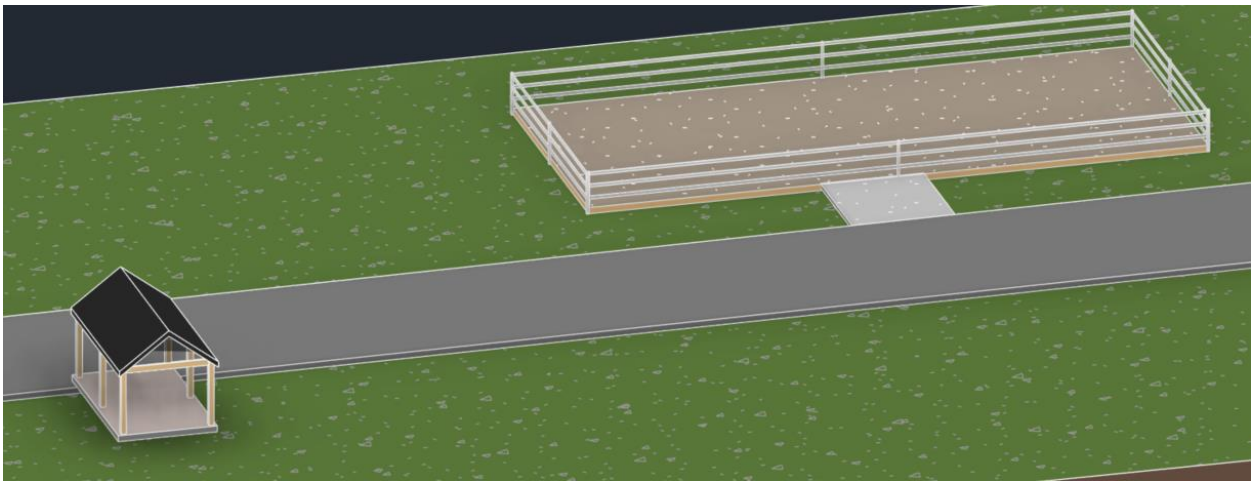

Figure 15: Farmers Market and Small Petting Zoo

Horse Rink and 4-Stall Upscale Barn: Near the vineyard/greenhouse cluster but separated by windbreaks to limit dust. The barn respects livestock setbacks and situates manure storage per rules.

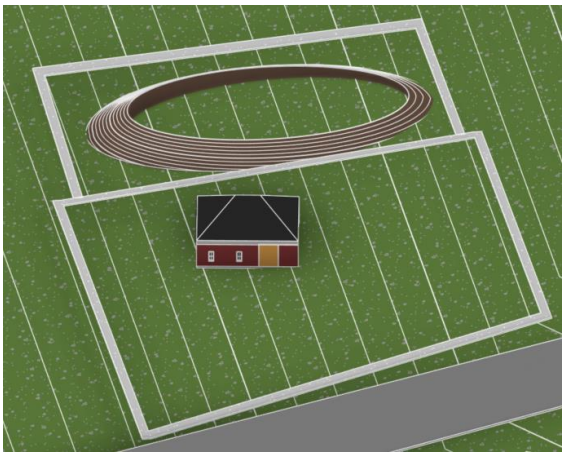

Figure 16: Horse Rink and 4-Stall Barn with Fenced Area

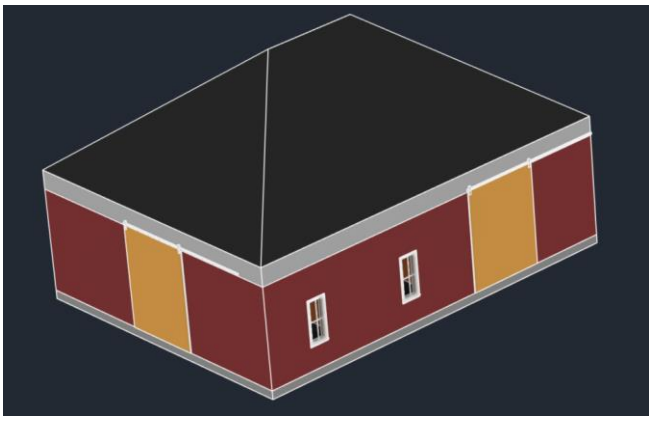

Figure 17: 4-Stall Barn Exterior

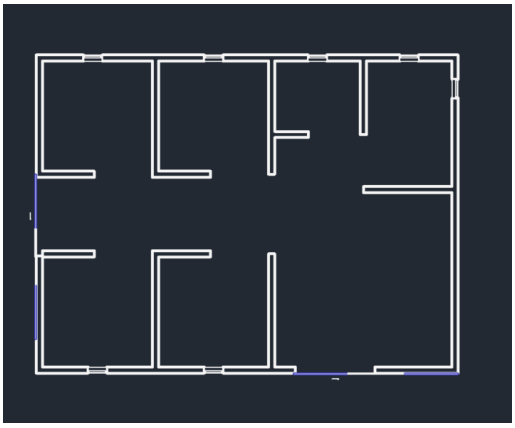

Figure 18: 4-Stall Barn Floorplan

Gardens (Crops) and Vineyard: Located in well drained, sun exposed areas with service drive access. The vineyard area includes trials for UF collaboration.

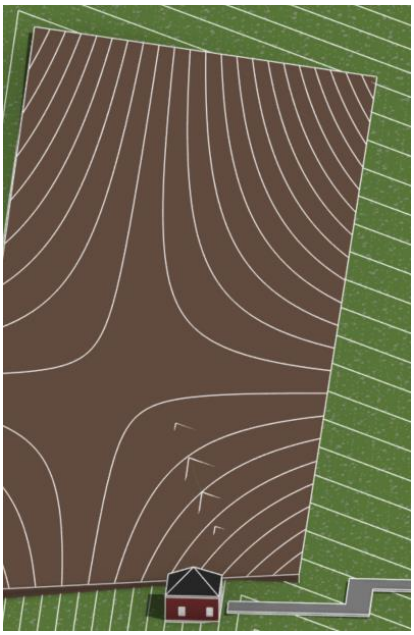

Figure 19: Vineyard

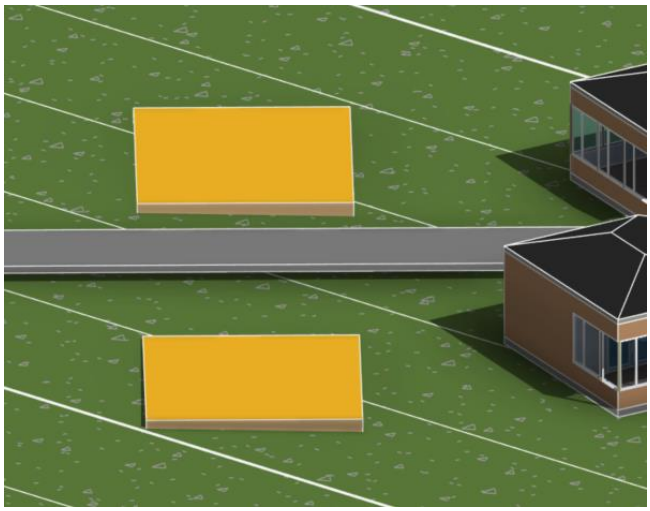

Figure 20: Crops / Garden

500 sf Open-Air Barn: Near the vineyard/greenhouse/dining to support equipment storage and demonstration activities; the open air design promotes ventilation and flexible use.

Figure 21: 500sqft Barn

4.2 Access, Drives, and Parking

Primary ingress at 12474 NE 36th Ave feeds a central spine road with gravel or stabilized aggregate surfaces to limit impervious coverage. Secondary drives branch to:

Barndominium and early phase amenities,

Agri-culinary core (greenhouse/dining/gardens),

Horse facilities,

Farmers market/petting zoo frontage,

Cottage clusters via low-impact lanes.

Guest and event parking are provided through pervious lots (e.g., turf-pave or gravel) near the market and a flex lawn for overflow during large events. Service drives are separated from pedestrian trails.

4.3 Buffers, Tree Preservation, and Conservation Areas

Per the brief's environmental assets, the plan:

Establishes a Forest Conservation Area in the most intact woodland stand.

Designates a Wildlife Management Area (meadow edge habitat, bird boxes, pollinator corridors).

Identifies old-growth trees for avoidance, adjusting trail alignment and cottage placement accordingly.

Leaves ≥25 feet of undisturbed natural growth along property lines (assignment PDF: Environmental Assets B–C).

5. Environmental & Infrastructure Planning

5.1 Septic Systems and Drain Fields

With no public sewers, each program cluster (barndominium, cottages, market/petting zoo) will use engineered septic solutions sized to expected occupancy. Separation from wells, waterways (koi pond), and flood prone zones is maintained. Soil percolation tests and groundwater checks will refine locations; preliminary siting prioritizes higher, well drained terrain per best practice.

5.2 Stormwater and Flooding

The plan integrates swales, rain gardens, and permeable paving to manage stormwater and reduce runoff velocity. The koi pond is hydrologically separated from septic influence, with biofiltration edges (rushes, pickerelweed) to improve water quality. While the report acknowledges the need to verify hurricane flooding maps and floodplains, the conceptual layout avoids low basins for habitable structures and routes runoff to vegetated retention.

5.3 Energy and Photovoltaics (PV)

PV arrays are proposed:

On barndominium roof (south/southwest pitch),

On greenhouse/dining (where compatible; potentially adjacent carport canopy),

As ground mounted arrays in non habitat, cleared areas near the agri-culinary cluster.

This distributed strategy reduces transmission losses and scales with phased growth. Future battery storage can stabilize event power needs.

5.4 Materials and Planting

Materials emphasize durability and low maintenance (galvanized metal, rot resistant wood, fiber cement). Planting palettes favor native/Florida friendly species to minimize irrigation and support pollinators (live oaks, longleaf pines, yaupon holly, muhly grass, beautyberry). Crop areas use drip irrigation and mulch to conserve water.

6. Zoning & Compliance (A-1 – General Agriculture)

The site lies within A-1 (General Agriculture). From the Marion County Land Development Code excerpts provided in the assignment:

Intent: Preserve agriculture as the primary use (4.2.3.A).

Permitted Uses include single family dwellings, greenhouses, agricultural production (livestock/crops), ornamental horticulture, public park/recreation, veterinary clinics (no outside kennels), etc. (4.2.3.B).

Special Uses (permit required) include bed and breakfast inns, churches, kennels, certain motorized racetracks, nursery schools, sewage treatment plants >5,000 gpd, outside kennel veterinary, etc. (4.2.3.C).

Development Standards:
Max Density: 1 dwelling unit / 10 acres; Minimum Lot Area: 10 acres; Min Lot Width: 150 ft; Max Height: 50 ft (4.2.3.D).
Setbacks (primary structures): Front 25 ft, Side 25 ft, Rear 25 ft (4.2.3.E).
Accessory Buildings (general): Same 25-ft setbacks (4.2.3.F).
Accessory Livestock Housing: Front 75 ft, Side 25 ft, Rear 25 ft (4.2.3.G).
Accessory Poultry Housing: Front 100 ft, Side 25 ft, Rear 25 ft (4.2.3.H).
Pool Enclosures: Front 25 ft, Side 25 ft, Rear 10 ft (4.2.3.I).

Design compliance measures:

The barndominium respects the 25 ft setback at the pasture property line.

Livestock facilities (horse barn/rink) meet 75 ft front setbacks and general side/rear setbacks.

Petting zoo structures follow livestock/poultry setback rules depending on species housed.

Outdoor lighting will avoid casting direct light onto adjacent properties (4.2.2.C(3) in the excerpts).

Manure storage is planned to avoid pile placement within 100 ft of any lot line/residence, and nuisance accumulation is prohibited (4.2.2.C(7)).

7. Excavation, Grading, and Sitework

7.1 Grading Strategy

Grading is selective and minimal, focusing on:

Level pads for barndominium, greenhouse/dining, horse barn, market building, and cottages,

Trail shaping to achieve ≤5% walking slopes where feasible,

Swales and micro basins for stormwater capture near paved or compacted areas.

Using the model scale (1" = 90'), I modeled gentle grade changes across the site to illustrate drainage flow toward planted retention zones rather than hard-piped conveyance.

7.2 Cut/Fill Estimates (Conceptual)

Without formal survey or topo data, I prepared conceptual quantities based on typical pad creation (sf -> Square Feet, cf -> Cubic Feet, cy -> Cubic Yards):

Barndominium pad (≈2,500 sf):
Assume ±2 ft average vertical adjustment over pad + apron (≈5,000 sf).
Volume ≈ 5,000 sf × 2 ft = 10,000 cf ≈ 370 cy.

Greenhouse/dining pad (≈4,000–5,000 sf):
±1.5 ft average adjustment over ≈6,000 sf.
Volume ≈ 6,000 sf × 1.5 ft = 9,000 cf ≈ 333 cy.

Horse barn + rink area (barn ≈2,000 sf; rink ≈15,000 sf):
Barn pad ±1.5 ft over 3,000 sf = 4,500 cf ≈ 167 cy.
Rink grading ±1 ft over 15,000 sf = 15,000 cf ≈ 556 cy.

Farmers market + petting zoo cluster (≈6,000 sf hardstand):
±1 ft average = 6,000 cf ≈ 222 cy.

Four cottage pads (each ≈1,200 sf + apron; 4,800 sf total):
±1 ft average = 4,800 cf ≈ 178 cy.

Trails (selective regrading over ≈2 acres of paths and nodes):
Light shaping ±0.5 ft average = 2 ac × 43,560 sf/ac × 0.5 ft
= 43,560 cf ≈ 1,614 cy.

Conceptual total (rounded): 3,440–3,600 cubic yards of combined cut/fill.
Final balancing will depend on detailed survey/topo, soil borings, and pad elevations; the aim is to balance on site (use cut material as fill) to reduce trucking.

7.3 Equipment

Excavator (pad excavation, swales, utility trenches)

Bulldozer / track loader (rough grading, trail formation)

Motor grader (drive shaping)

Compactor / roller (pad and drive compaction)

Skid steer (fine grading, materials handling)

Dump trucks (if off-site import/export needed)

Erosion control will include silt fence, straw wattles, temporary basins, and construction entrance stabilization.

8. Flooding, Hurricane Risk, and Environmental Maps (Planning Approach)

I plan to review hurricane risk maps, floodplain data for Marion County, and EPA environmental datasets to identify any potential constraints such as contamination sites. At this conceptual stage, the site layout is designed to avoid low-lying areas for habitable structures and to maintain adequate separation between septic drain fields and water features like ponds. Stormwater management will rely on vegetated swales and retention areas that follow natural contours, promoting infiltration and reducing runoff. Detailed verification will be completed during the final design phase using county and state resources.

9. Academic and Community Collaboration

Given the site's proximity to University of Florida (UF) (≈38 minutes) and the established vineyard partnership referenced in the brief, this project will engage academia in:

Vineyard trials: varietal selection, trellising systems, integrated pest management.

Sustainable ag: soil health, composting, water efficiency, and pollinator corridors.

Hospitality and event management: short-term rental operations, farm-to-table programming.

Design/build studios: prototyping farmers market stalls, exercise nodes, and interpretive signage.

Elizabethtown College collaboration opportunities include interdisciplinary capstones in architecture, engineering, agriculture, and business, as well as media support for storytelling about regenerative agriculture.

10. Demographics and Market Positioning

Regional population growth and the tourism draw of north central Florida suggest demand for agri-tourism, equestrian experiences, and boutique events. The site's combination of working farm authenticity and amenity-rich hospitality positions it to attract:

Weekend visitors from Ocala, Gainesville, and Orlando,

Families seeking nature based experiences,

University affiliated guests attending workshops or vineyard trials,

Retreat and wedding groups drawn by the garden, lawn, and tranquil cottages.

The northeast frontage farmers market connects the project to local residents and provides a regular revenue stream complementary to seasonal events.

11. Conclusion

This site development plan delivers a cohesive, phased, and compliance aware approach to agri-business growth in Anthony, Florida. The layout respects A-1 agricultural intent, setbacks, and environmental assets, while building a guest experience that is both authentic and economically viable. By integrating vernacular architecture, habitat conservation, low-impact circulation, and distributed PV, the project demonstrates how rural lands can host events and rentals without compromising their agricultural heart. Continuing work will refine topography, septic engineering, and floodplain verification, and will deepen the University of Florida.

12. Appendices

- Marion County Board of County Commissioners. (2017). *Land development code: Article 4 zoning, division 2 zoning classification*. Retrieved from https://library.municode.com/fl/marion_county/codes/land_development_code
- U.S. Geological Survey. (n.d.). *The National Map downloader*. Retrieved from https://apps.nationalmap.gov/downloader/#/maps
- U.S. Environmental Protection Agency. (n.d.). *Superfund sites and environmental data*. Retrieved from https://www.epa.gov/superfund
- Wunderlich, J. (2025). *Architecture Studio I: Site design assignment for Anthony, Florida agri-business development*. Elizabethtown College. Retrieved from https://users.etown.edu/w/wunderjt/Weblab_archive.htm
- Site Design In Autodesk Revit Video