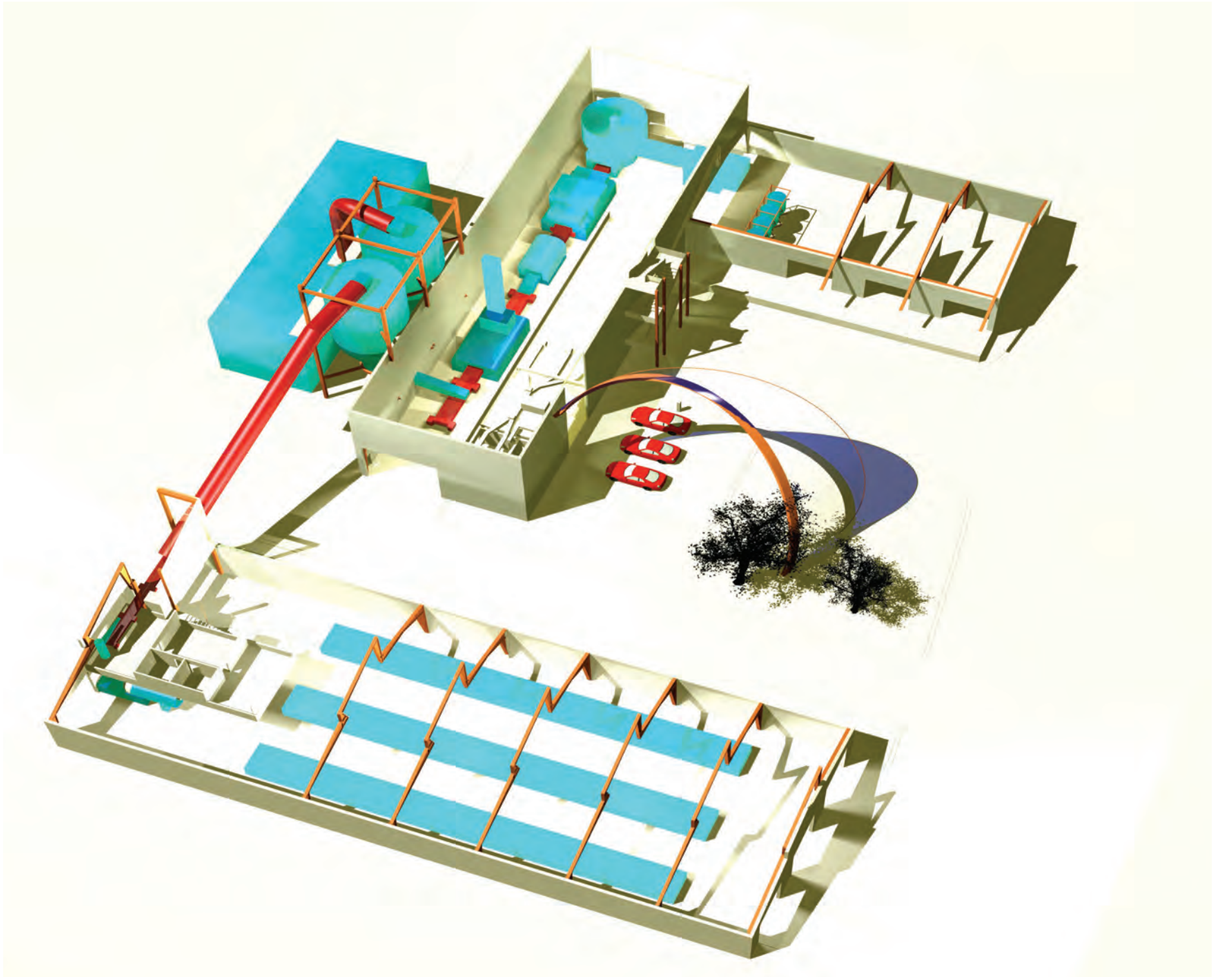


*The Southern Illinois*

# Vermicompost Production Research Facility

*Joshua James Rucinski*  *ARC 550 Regional Studio*

**Problem**
The site is a 40 acre plot on the outskirts of Alto Pass and between Carbondale and Cobden.

Cobden, the largest town nearby has a distinguishing agricultural achievement by introducing the first refrigerated railcars to transport product. Why not continue its argicultural innovation by offering up a Vermicomposting Producion Research Facility?

There are two very large scale Orchards nearby, Rendleman Orchard and Flamm Orchard, both primarily sell wholesale. They would be hard to compete with, but they offer cheap worm food, so why not increase the value of the area by reclaiming waste as a resource? Essentially, do not compete, cooperate!

The architecture around the area is Germanic and Anglo. I intend on tapping into Shaker architecture from Pennsylvania and Gambrel roof barns from early settlers. I think that the attention to detail and the community living examples set forth by the Shakers was tantamount to living life as egalitarian as it ever was in the United States. The emphasis was large living areas that promoted community activity whether it was cooking, carpentry or needlework; people worked together. In Shaker architecture two doors were cut into each main space, one for women and one for men. Cynical minds today might cluck in disgust, inaccurately trying to fit this fact into pop culture, but these separate passages were to the Shaker mind the epitome of equality. The Shakers abstained from sex completely and lived to honor God in their daily lives. Each member was encouraged to improve the skill they were best at to hone an excellence. They took in orphans and disillusioned men and women that needed a new beginning. They gave generously and without expectation of repayment, even to those whom they had given to many times.

The farmhouse will be based on this template, but not nailed to it. My vision is not as Spartan nor as utilitarian. The volume above the suites on the living floor creates an atmosphere of shared space. People will get their privacy in a visually, but sounds and ambient light can leak above the ten foot walls. Unlike a partition wall floor to ceiling, there is actually greater mutual respect for others, since there is a far smaller emotive barrier. Instead of individuals living for themselves that do not even know the names of their neighbors, the farmhouse walls are like semipermeable Shoji screens. It creates an environment of hospitality and manners. Here is possibility for corporate growth that can build morale and self-sufficiency by breaking down overconfidence and narcissism,

two common pratfalls and social illnesses caused by modern lifestyles that chose to live insulated lives.

During the year, the lighting will be programmed to Summer Solstice year round, this means that around 9:00 PM, the main lights (embedded in the tops of the ten foot walls) will dim to darkness. People can continue to watch television or surf the web or even turn on their task light in the dormer office, but the main lighting will not be turned back on until the next day. During the night hours, an LED star field is dimly illuminated in the ceiling. The chair rail in the hallways are also dimly illuminated at night for wayfinding in the dark. It is expected that most times the clerestory windows will be able to help during the night as well.

By contrast, the modern production facility takes it's inspiration from German Bauhaus. This type of architecture was a response driven by the act of production gone wrong, a return to craftmanship, a resetting of capitalism to a higher standard. Other modern notions of capitalism like be able to exceed hard currency wealth is often thought to have stemmed from the Protestant notion of frugality, the idea of saving money with other like minded over the long term to reach corporate goals. This lead to the creation of modern banking and stock exchange. Interestingly, Protestantism drove both ideals, the Shaker homestead and the Bauhaus processing plant despite their visual differences.

The building's designs are to streamline the production of compost at every angle with clean functional architecture like chrome hand rails and translucent tinted polycarbonate guard rails. Trusses replaced colonnades in the Vermicomposting building because over time, you save money. It is impossible to hit columns with a tractor by accident if they don't exist. The spaces are utilitarian. In the processing building only one-eighth of the building is used as air conditioned workspace, so air handlers are inside the building's outer envelope. This keeps the weather from HVAC handlers. The ceiling is fenestrated by two banks of skylights that run the entire length of the building. The storage warehouse section of the building is designed slightly different to maximize usable volume. Unlike the processing section, there is no need for large volumes for machinery, a simple shed roof with north facing clerestory windows is fine. In the Vermiculture building, the offices are wire hung from the ceiling so that they do not interfere with tractors driving through the building laying down foodstock for the continuous flow reactors. Finally the dispatch perch is atop the building and has maximum visibility over the site.

# SITE PLAN

NORTH

THE PURPOSE OF A VERMICOMPOSTING FACILITY IN SOUTHERN ILLINOIS IS TO REDUCE SOIL DEGRADATION, PROVIDE SKILLED JOB OPPORTUNITY, & PROMOTE VERMICOMPOST GLOBALLY THRU RESEARCH & RESORT-LIKE ACCOMMODATION.

# Fishin' Pond Perspective

If you build it, they will come.
Frankly to get high level bureaucrats from around the world interested in vermiculture, you need to break bread by offering something beyond a shed with worms.

My design already proposes to elevate the treeline from the backdrop to the foreground by using it as a fence line between living and working, but what if you could make that fence something even more special?

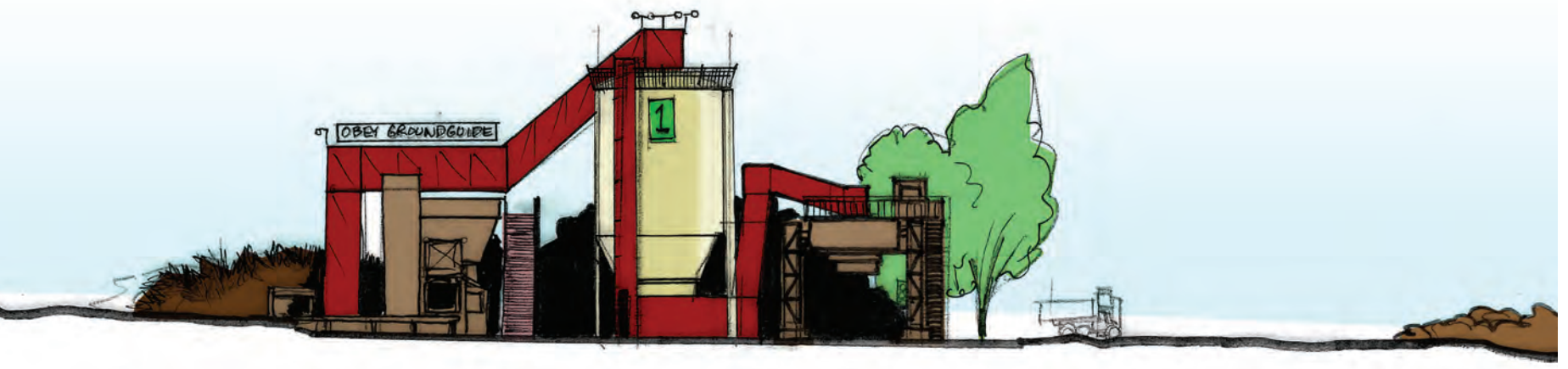
Southern Illinois is famed for fishing, so making the retention pond a fishing hole is practically a no brainer. But there can be some value added improvements. The wayfinding ribbon becomes a bridge, taking passengers to the pumphouse, which is more like a chapel then a machine shed. The reclaimed wood is joined to form large pieces that look haphazard in the distance, but as you focus...

...the joins split the pieces into separate entities, a myriad of pieces interacting a create an 'unfinished' form, but isn't it finished? Below your feet fish swim up to your toes separated only by crystalline glass. Does the light refract back up to you?

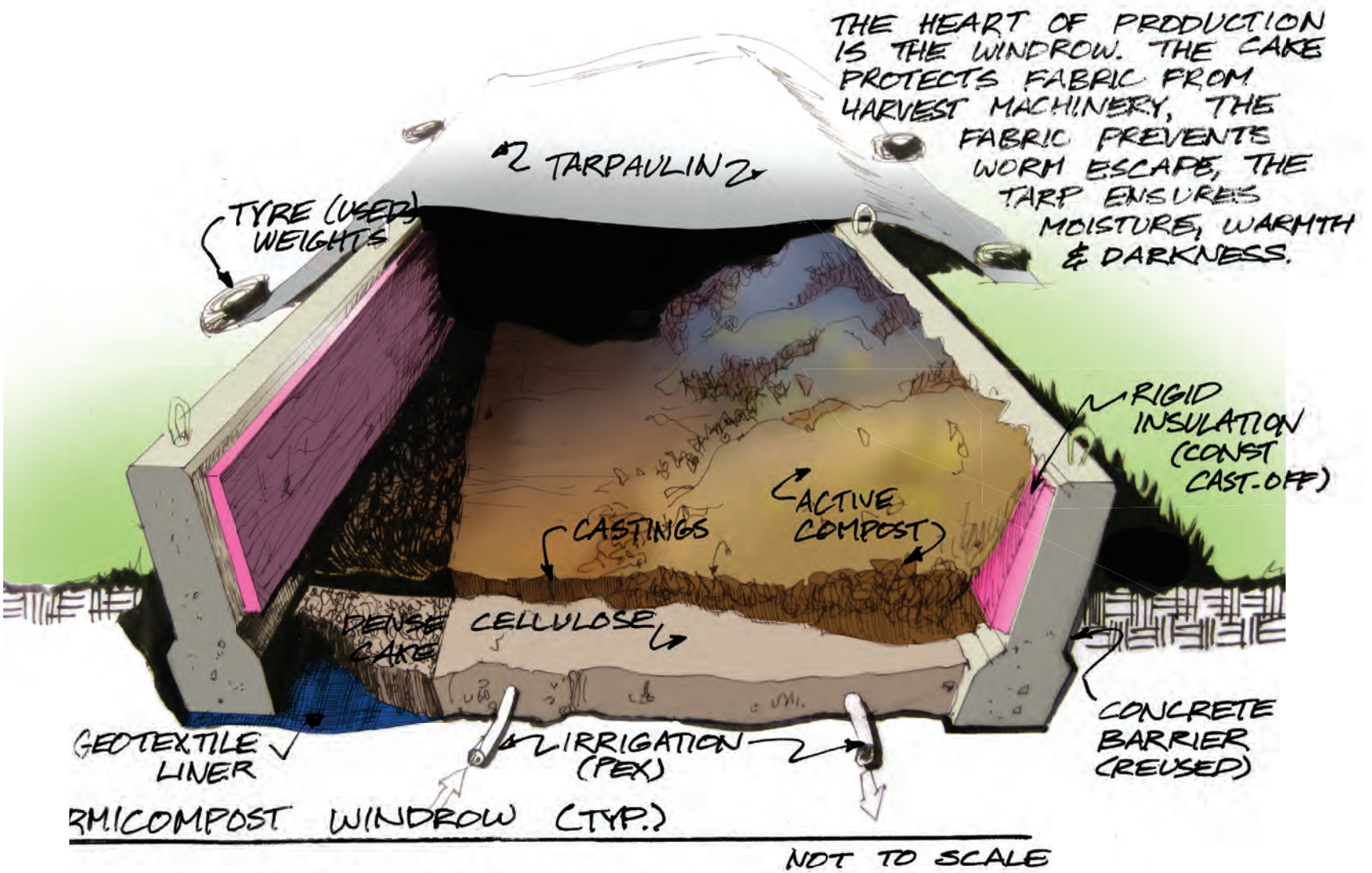
What kind of feelings are found here? Are they profound?

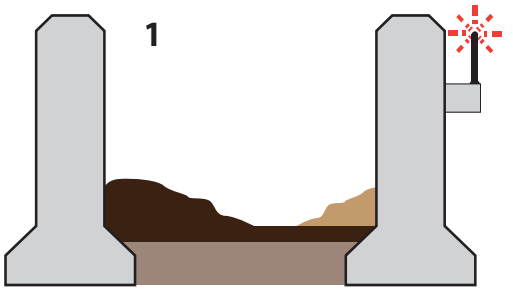
**Highlights:**
**Reclaimed Wood Planking**
**Corten Steel**
**Stainless Steel Screen**
**Precision cuts**
**Glass Deck**
**Warm Composite Railing**
**Spiritual Chapel**
**Fish Estuaries**

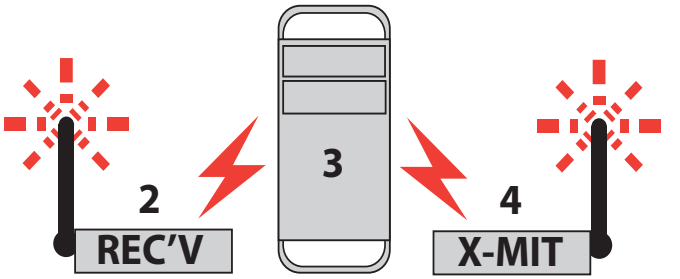
# Production Cycle



# Stage Four: Harvest





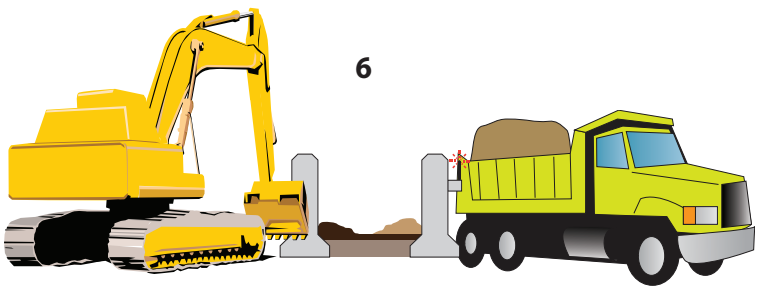



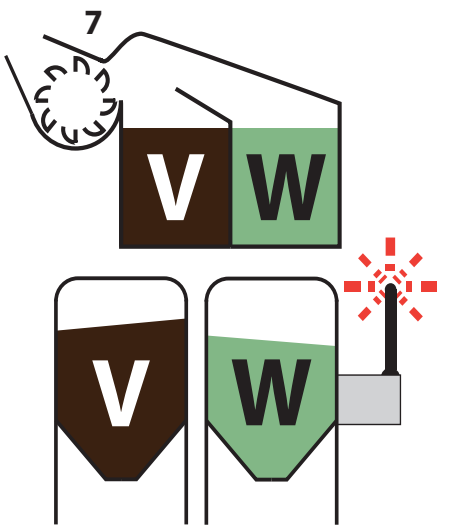


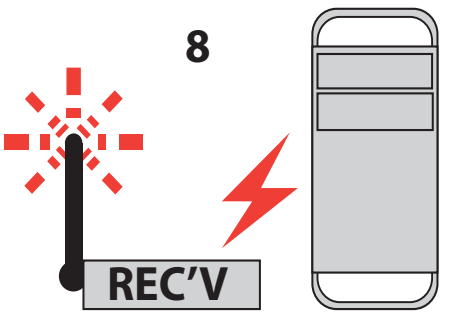
# 4

**Harvest**

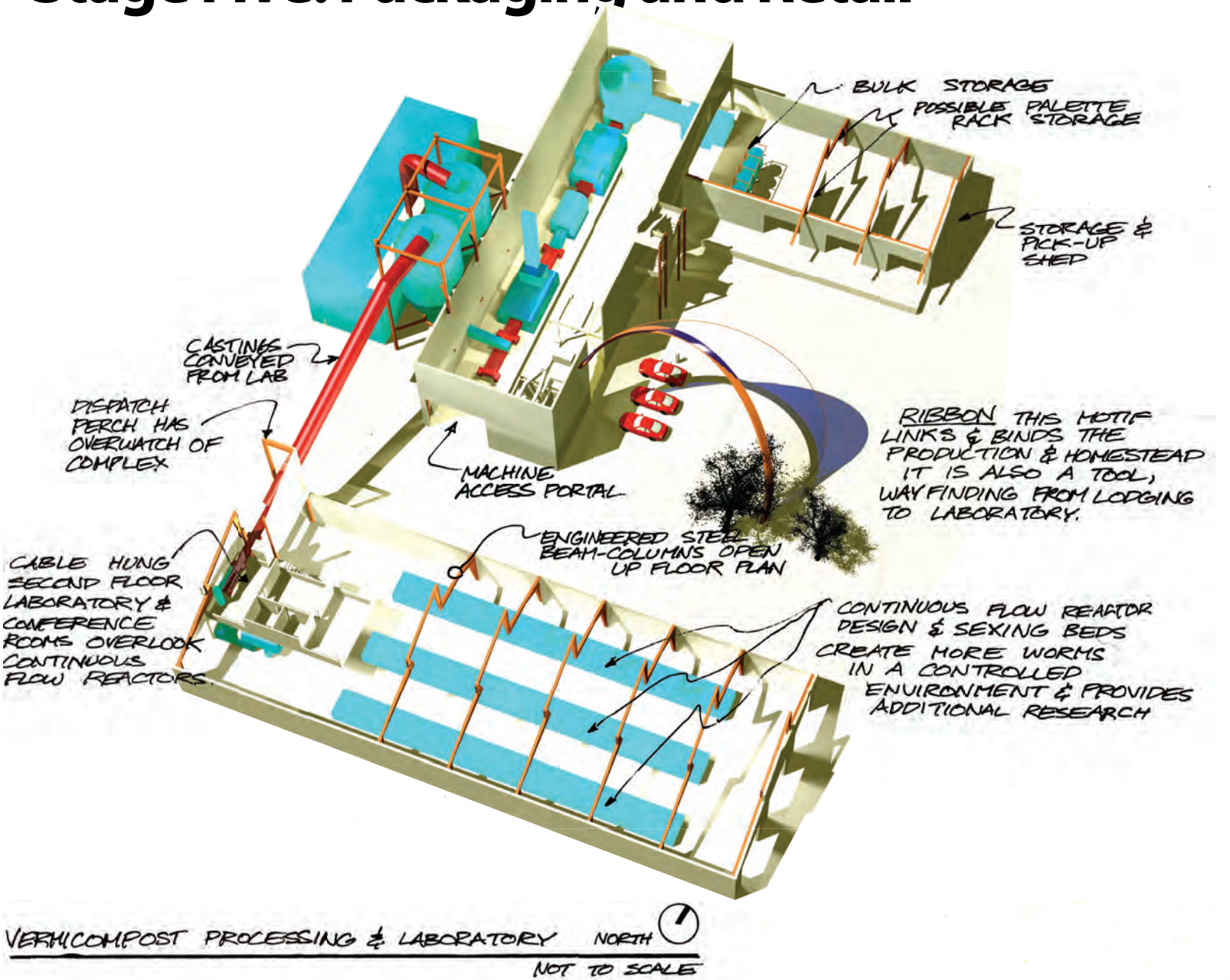
1. Vermicompost sensor or field test sends low activity indicator
2. Receiver transmits geographic position to computer
3. Computer assesses data and suggests harvest based on time in production
4. Transmitter sends harvest information to Ground Guide
5. Guide Guide field assesses Vermicompost windrow and calls for harvest
6. Harvest processing begins
7. Harvest is ballistically seperated, vermicastings are light, waste is heavy
8. Vermicasting volume is logged into computer

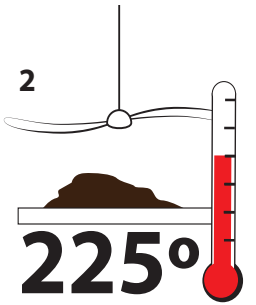


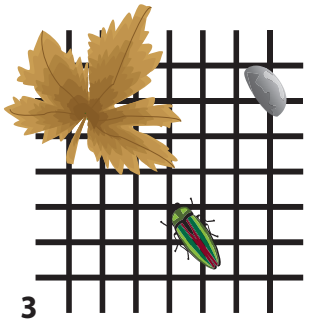



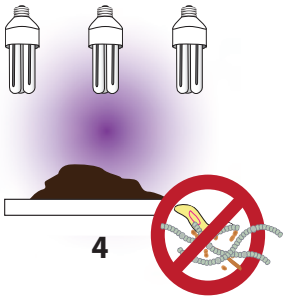



# Stage Five: Packaging and Retail




# 5

**Packaging and retail**

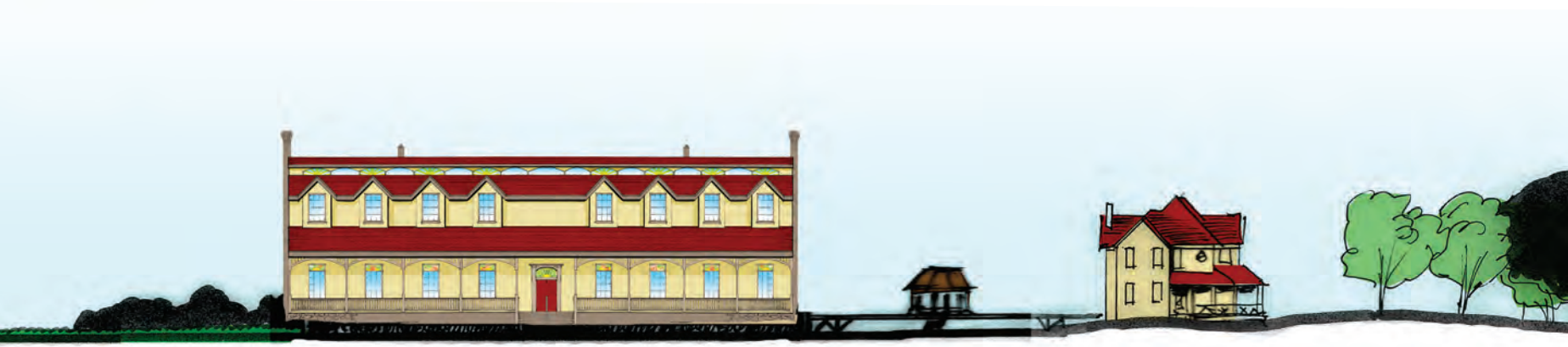
1. Vermicasting base is dosed for the production line
2. Vermicasting base is heated to dry the product
3. Vermicasting base is screened, the result is castings
4. Castings are UV treated to destroy pathogenic material
5. Castings are bagged for retail sale, either in Farmer's Market or online distribution
6. High Grade Castings are binned for wholesale
7. Product is trucked away, either by company van to farmer's market, picked up by online distribution, or sold by volume to arriving wholesaler.

5


"Tomorrow is the most important thing in life. Comes into us at midnight very clean. It's perfect when it arrives and it puts itself in our hands. It hopes we've learned something from yesterday."
*-John Wayne*

"Pa did not like a country so old and worn out that the hunting was poor. He wanted to go west. For two years he had wanted to go west and take a homestead, but Ma did not want to leave the settled country."
*-Laura Ingalls Wilder*

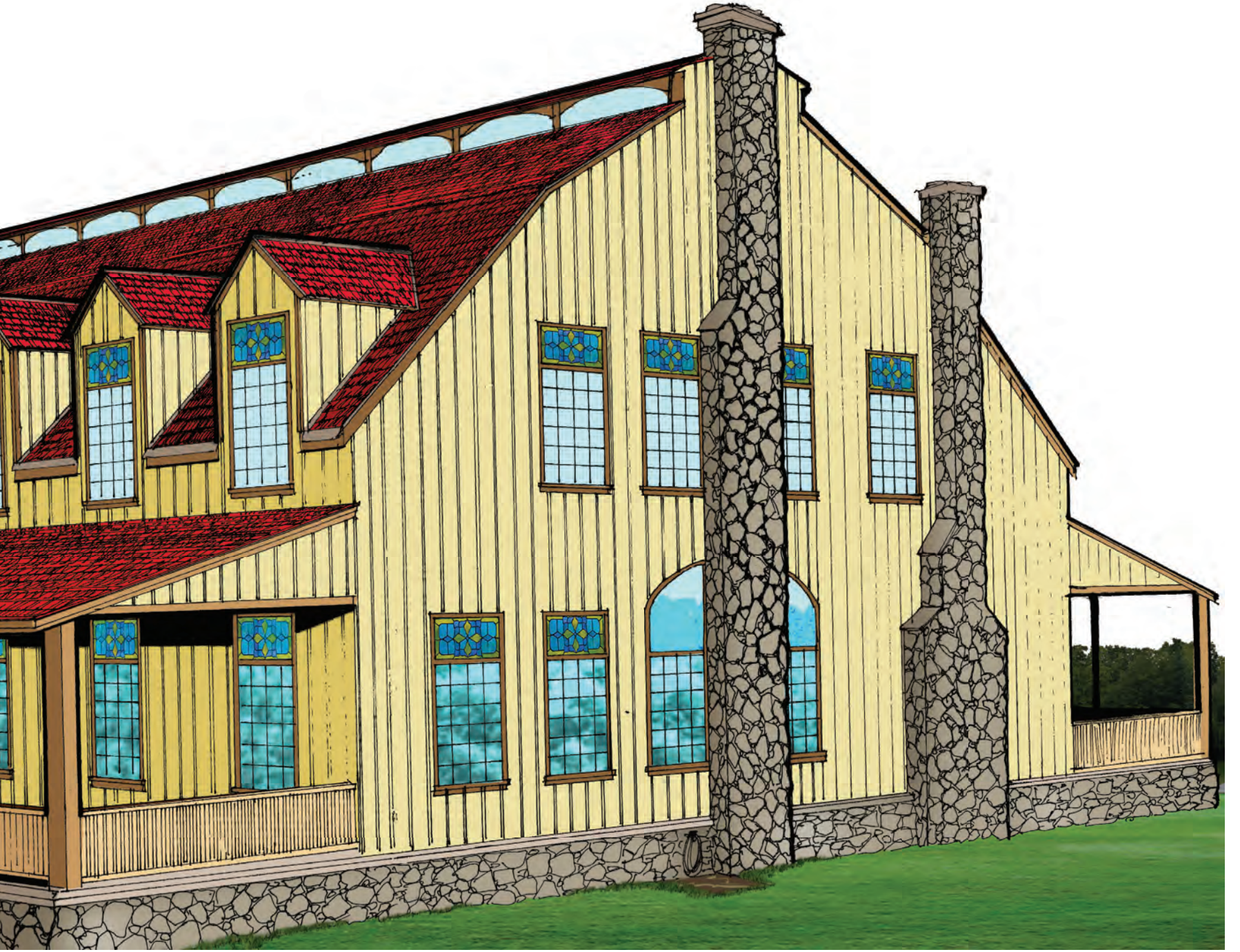
# Homestead



# THE FARMHOUSE
## PERSPECTIVE (FROM NORTHWEST)

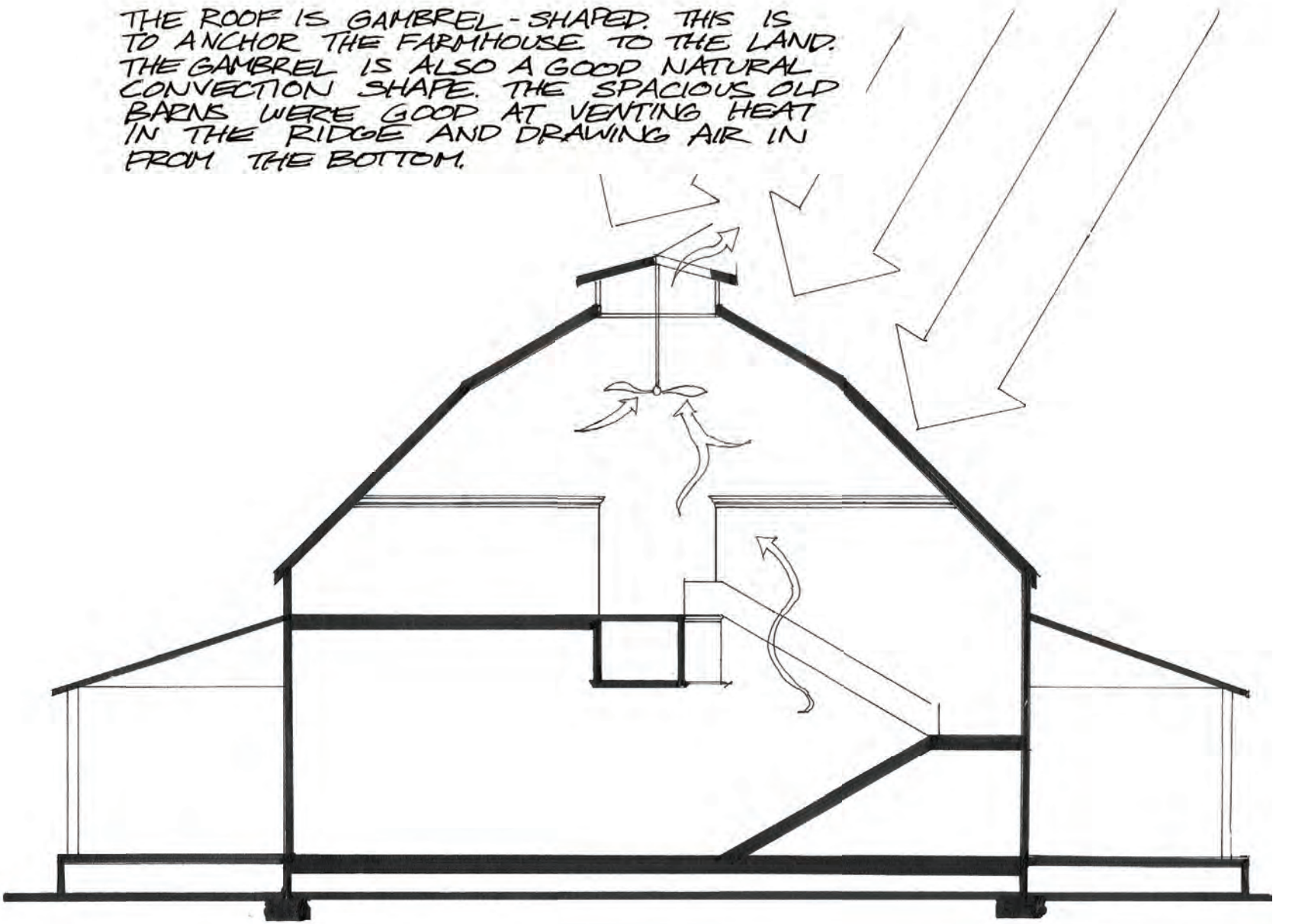
NOT TO SCALE

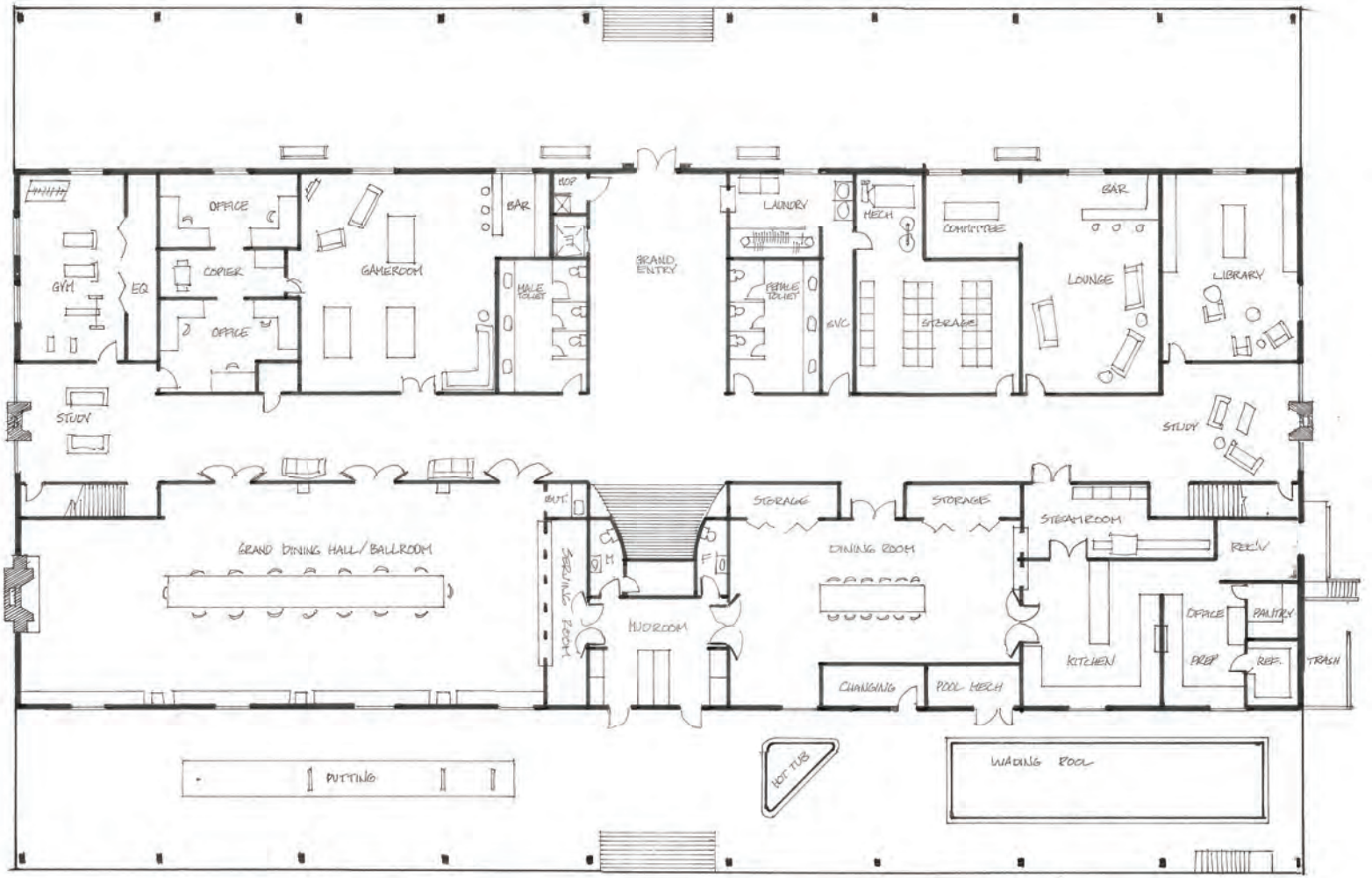
THE FARMHOUSE IS FOR LIVE-IN INTERN GRAD STUDENTS, WORKER & VISITING VIPS.



# Roof

THE ROOF IS GAMBREL-SHAPED. THIS IS TO ANCHOR THE FARMHOUSE TO THE LAND. THE GAMBREL IS ALSO A GOOD NATURAL CONVECTION SHAPE. THE SPACIOUS OLD BARNS WERE GOOD AT VENTING HEAT IN THE RIDGE AND DRAWING AIR IN FROM THE BOTTOM.






# LIVING FLOOR PLAN

NORTH

**Conclusion**

Topsoil management continues to be an issue in modern farming. Despite horticultural advancements, the vast majority of crops are grown in soil and must be treated with pesticides or herbicides to yield healthy crops. There are some real advantages in Vermicomposting that when used to amend soil can give the soils a strong chance to rebound the next year and the next year. Worm castings cannot burn the soil with too much nitrogen like animal manure. They are safer than even humus compost material because worms detoxify soils by bio accumulation. They can even make accumulate pesticides thereby 'washing' the soils.

Although they are undoubtably a great garden friend, worms have some mystery as well and merit further research. We do not always know why some batches of worms die off, or why some do not reproduce. There are still risks and challenges that need to be taken to fully utilize this valuable resource.

A Vermiculture research facility in Southern Illinois can revitalize the region by offering solutions to the global problem of soil loss and subsequent desert. Right now the earth is in flux, the Greenland ice sheet warmed up as it does every one hundred and fifty years. The Sahara desert is shinking and the Gobi desert is growing. There is constant flux in the nature world, but when humanity tops out at either 9B, 11B or 14B people, the land is something that they don't make more off as Roy Rogers would say. I'm a populist and I believe in market price economics, I think it's certain we will reach the ultimate human carrying capacity number where the death rate begins to equal the birthrate and have enough food to feed everyone, but to do that demands an array of strategies, Vermicomposting will be an important player. Right now, China and India are looking to the United States, Finland and Australia for answers and everyone in those countries seem to point towards Ohio State professor Clive Edwards as the man with the plan.

Norman Borland was credited with saving close to 1B lives with advancing modern farming to India, Brazil, Mexico and vicariously China, all countries who quietly became self-sufficient in food production while nobody was

really paying attention. How many lives will Vermiculture save by saving soil? It is perhaps as impossible to answer as how many lives will governments murder by callously subsidizing the act of growing food for ethanol? Some figures stand at 600M people's survival is now jeopardized by ethanol production. Price control.

The point is Vermicomposting is a win-win solution. It cannot be easily perverted into a win-lose solution because worm foodstock is waste that is often so valueless that cities will gladly pay the people they give it to. That is a tipping fee. What is given back is the earth itself and will pay out dividends year after year. Every person I've talked to about vermicompost since this project's inception has been very evangelical about its value over time. It is currently undervalued which is a liability, but this is what will drive producers such as my hypothetical clients to research. The research will invigorate the global policy makers to take note of it's value and then price will increase as education begins to spin up demand. Already there is a decent and loyal subculture of hobby gardeners and composters which can support this venue now, but real change will happen when big companies start investing in their land with vermicompost.

In short, right now Vermicomposting is in a unique economic crux, where it is possible to give a valuable output while intaking a valueless input. This profitability will not last forever, after all, one day people will mine old landfills. In a way we already are by casting hard-to-recycles to China, where economic pressures allow children to die toxicity deaths to get those esoteric metals back into the mainstream. I doubt that we will all be dead or whatever the prevailing moral paranoia and mass hallucination is saying this time. I think however it will last the test of time as long term business, and to ride the crest of the coming tide could be an incredible experience for a 40 acre plot South of Carbondale and North of Cobden, Illinois.

Vermicomposting is a viable option for growth and wellbeing in the Southern Illinois region, and to me that defines a regional solution.