

EGR 353 Green Architectural Engineering

LEED Project 2

LEED Platinum Building Design & Construction ("BD&C") of a new College for Elizabethtown University

Dylan Keck, Gavin Emigh, Ryder Meinhardt, Jacob Hooftallen

J Wunderlich PhD

05/06/2026

Part A) Site Plan

1) Campus Map



Image (1) AutoCAD Campus Map

Part B) Complete Building Visuals

1) Barn

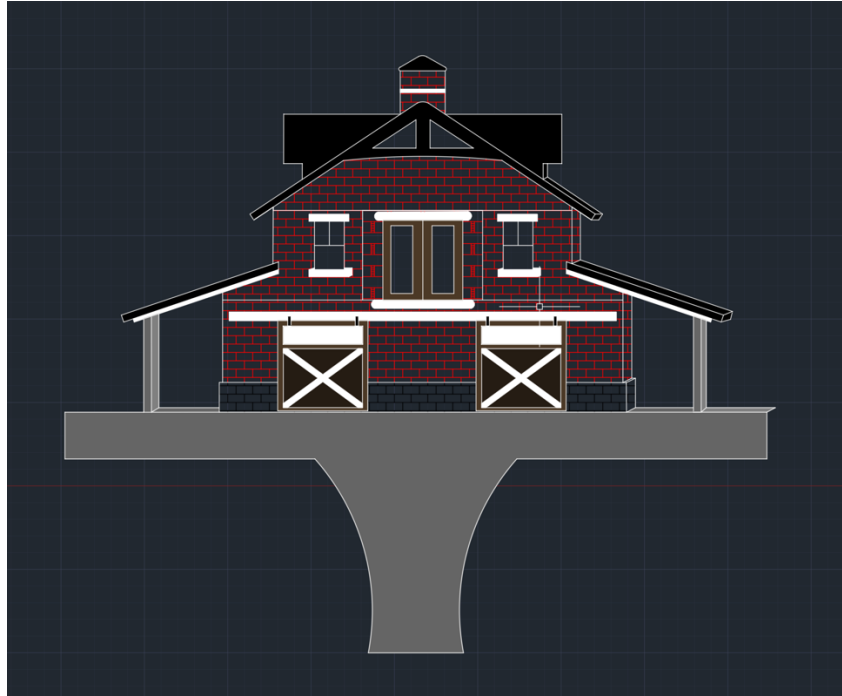


Image (2) AutoCAD Barn



Image (3) AI Rendered Barn

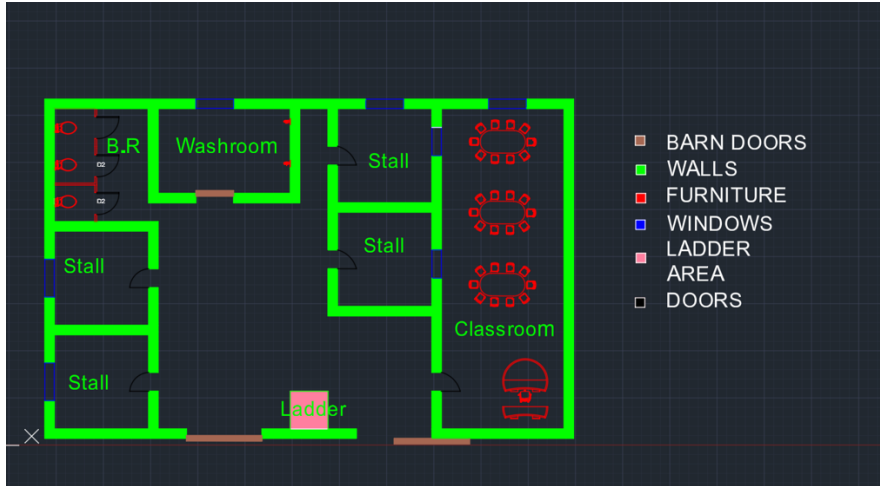


Image (4) AutoCAD Barn 1st Floor



Image (5) AI Rendered Barn 1st Floor

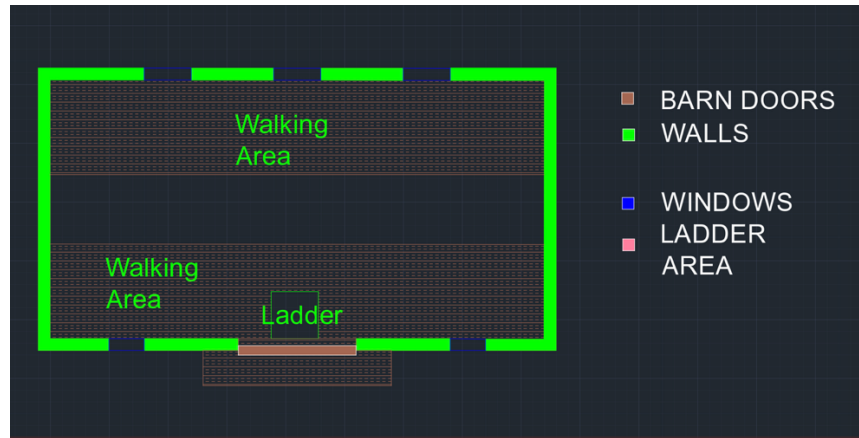


Image (6) AutoCAD Barn 2nd Floor



Image (7) AI Rendered Barn 2nd Floor

2)Lab

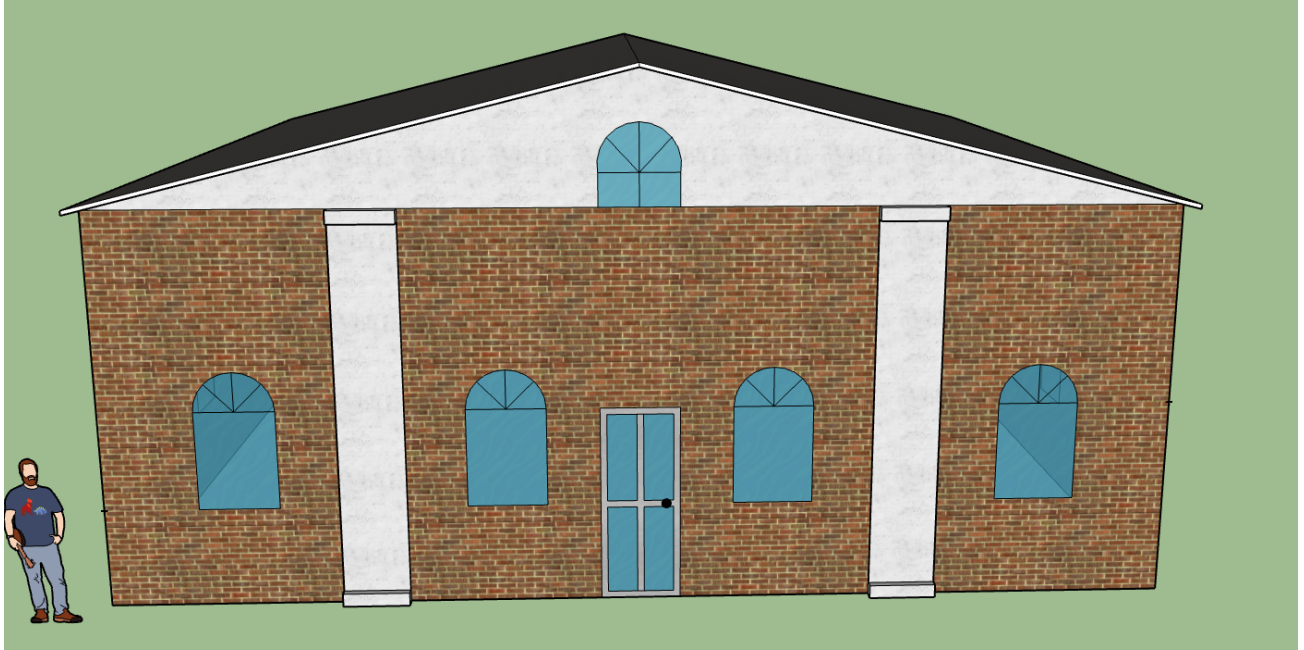


Image (8) Barn Front Image



Image (9) Barn Side Image

3)Dorm Building

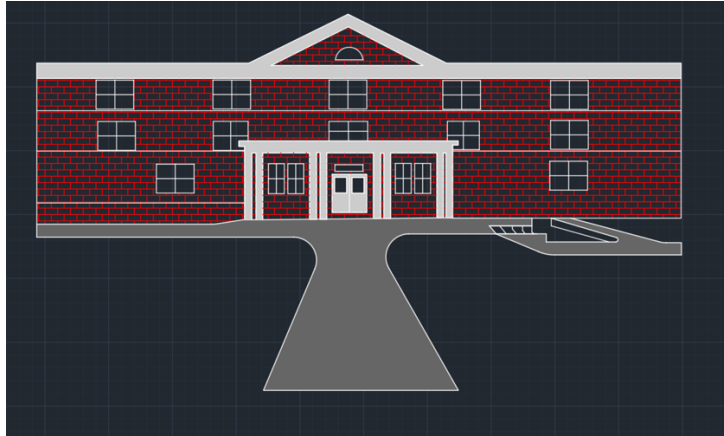


Image (10) AutoCAD Dorm



Image (11) AI Rendered Dorm



Image (12) AutoCAD Dorm 1st Floor



Image (13) AI Rendered 1st Floor



Image (14) AutoCAD Dorm 2nd Floor



Image (15) AI Rendered 2nd Floor

4) Academic Center

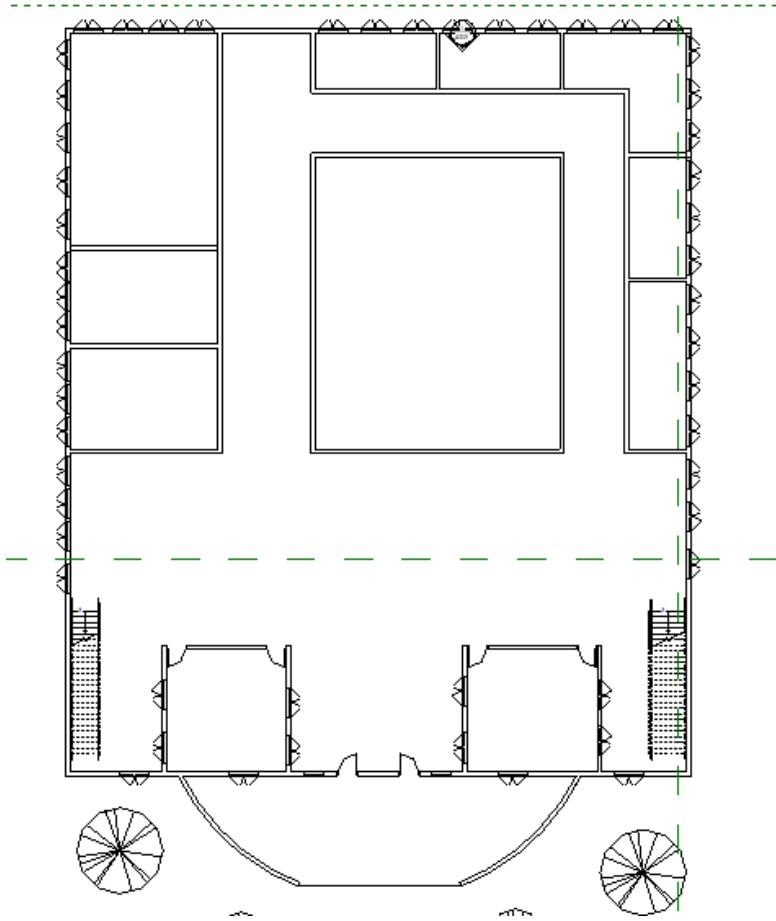


Image (16): Academic Center Floorplan in Revit

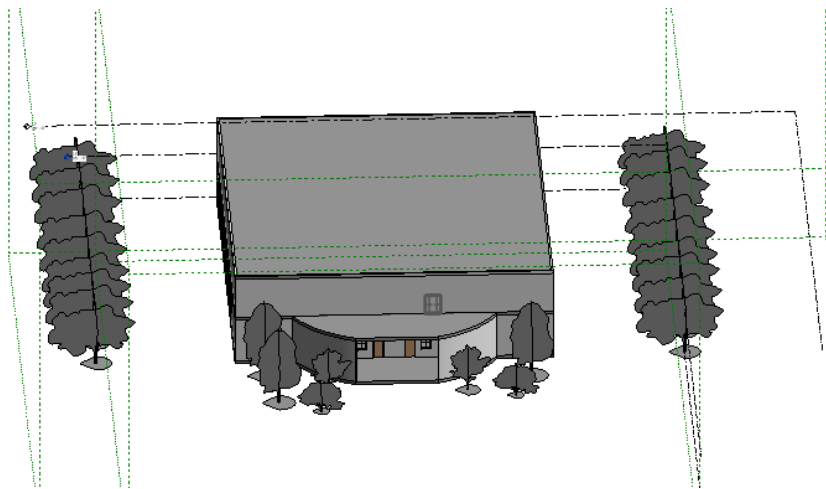


Image (17): Academic Center in Revit

5) Greenhouse

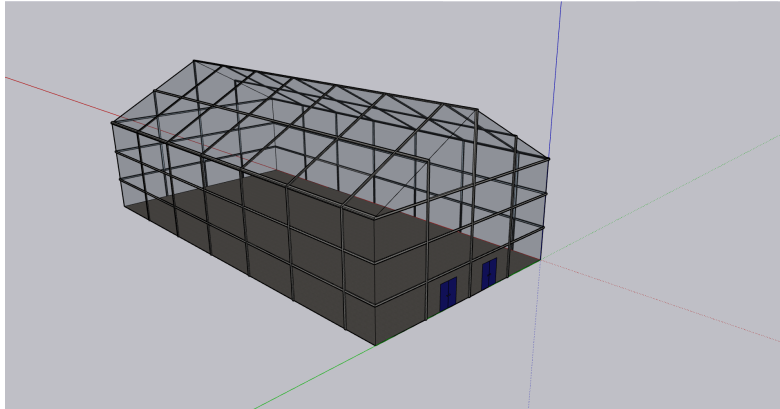


Image (18): Greenhouse in SketchUp

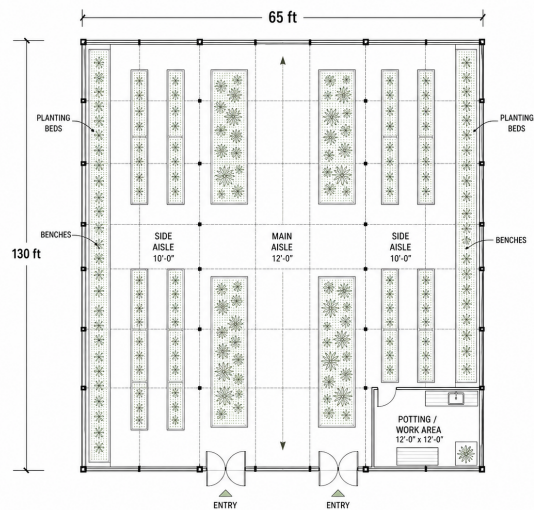


Image (19): Floor plan of Greenhouse

Part C) Psychometric Charts

1) Barn

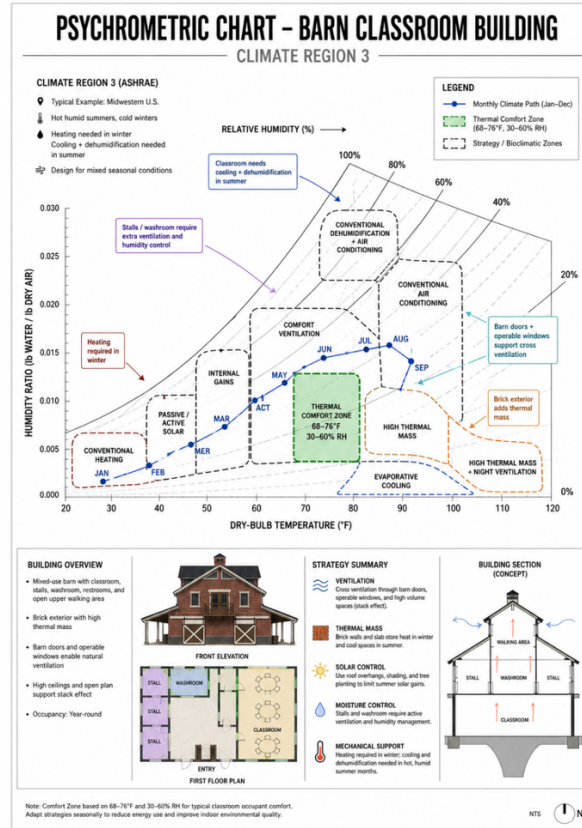


Image (20): Barn Psychrometric Chart

2)Lab

BUILDING 1: HEAVY BRICK MASS

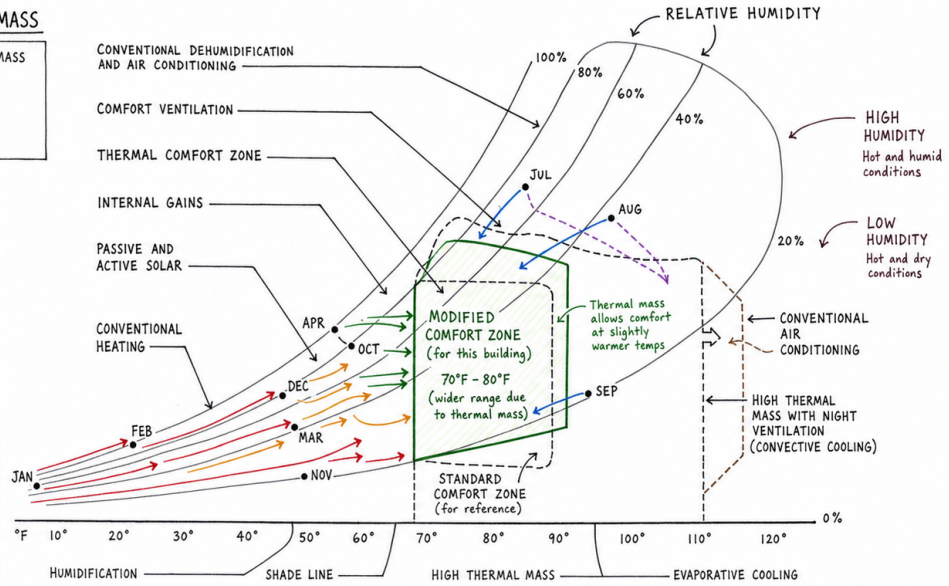
- Thick brick walls = HIGH THERMAL MASS
- Medium window area (arched)
- Natural ventilation possible
- No mechanical cooling assumed
- Good solar access in winter

DESIGN STRATEGIES (APPLIED)

- **CONVENTIONAL HEATING**
Active system needed in cold months
- **PASSIVE SOLAR HEATING**
Use winter sun through windows to warm interior
- **COMFORT VENTILATION**
Natural ventilation brings outdoor conditions into comfort zone
- **HIGH THERMAL MASS + NIGHT VENTILATION**
Mass stores heat during day; purge with cool night air
- **SHADE**
Limit solar gains in summer
- **EVAPORATIVE COOLING (POTENTIAL)**
Could be used in very hot, dry conditions

HOW TO READ THIS CHART

- Each month (●) shows the outdoor climate condition.
- Arrows show how strategies move conditions into the comfort zone.
- This building uses passive solar in winter and thermal mass + night ventilation in summer to maintain comfort.



DESIGN CONCLUSION FOR BUILDING 1
The heavy brick mass building can maintain comfort for much of the year using passive strategies. Heating is needed in winter. In summer, thermal mass and night ventilation keep conditions within the comfort zone without mechanical cooling.

Image (21): Lab Psychrometric Chart

3) Dorm

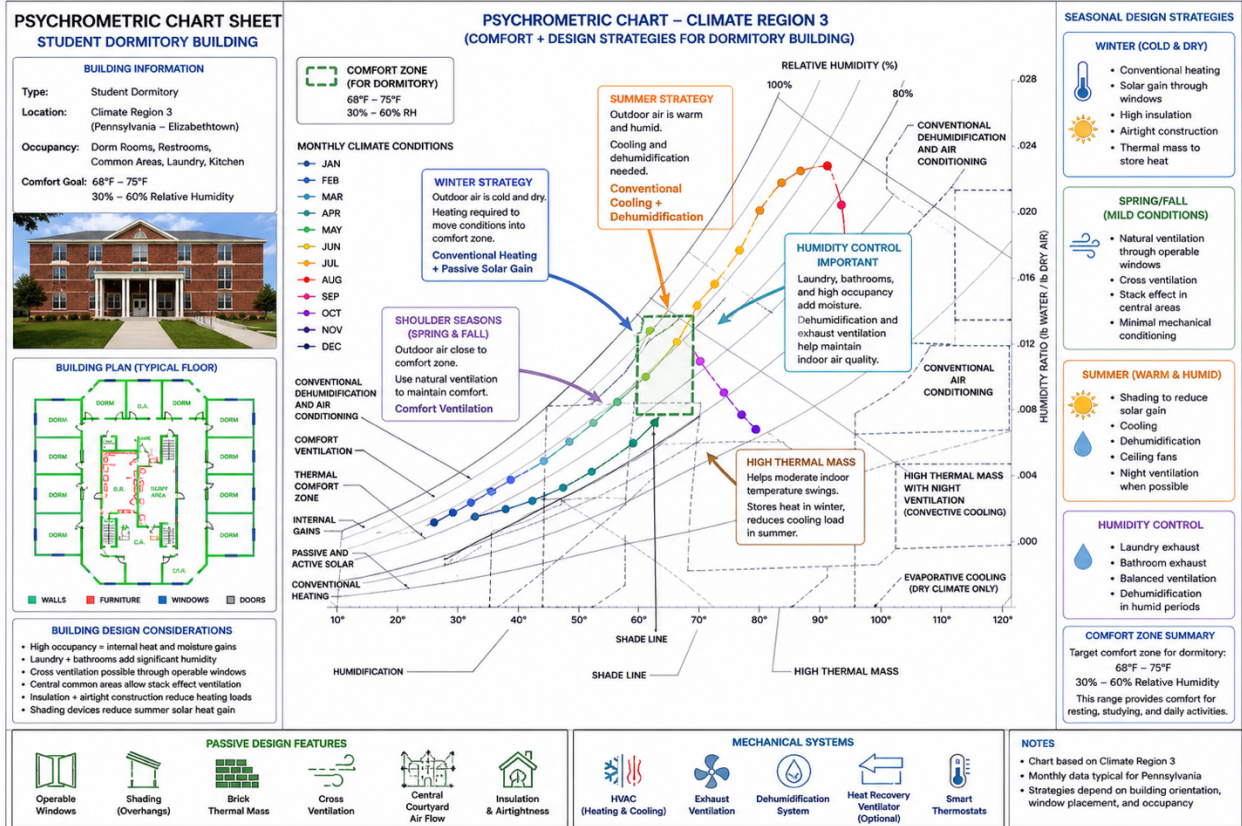


Image (22): Dorm Psychrometric Chart

4) Greenhouse

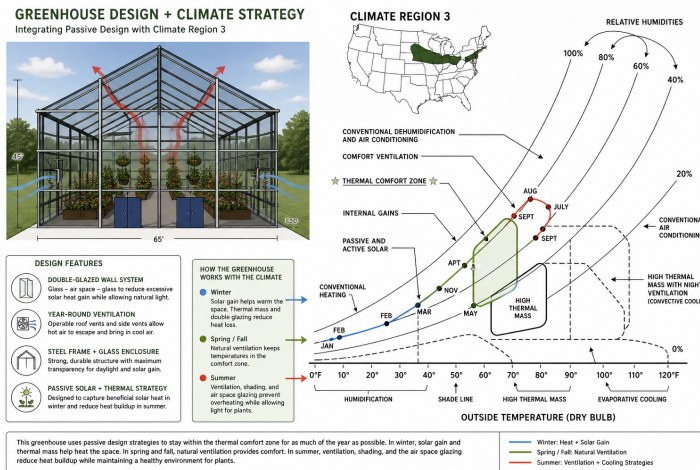


Image (23): Greenhouse Psychrometric Chart

5) Academic Center

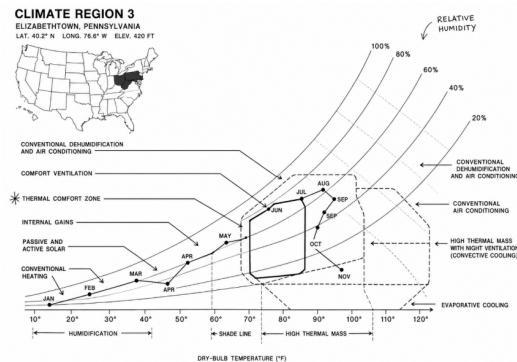


Image (24): Academic Center Psychrometric Chart

Part D) Narrative

1) Barn

The barn classroom building responds to sunlight differently because it combines classroom space, stalls, washroom areas, and upper walking areas. According to the PowerPoints winter, low-angle sunlight can help warm the classroom and make the interior spaces feel open. The brick exterior provides thermal mass, storing heat during the day and helping stabilize indoor temperatures. This follows the passive solar design lecture, which explains the importance of orientation, solar gain, and heat storing materials.

For daylighting, the barn benefits from its larger open spaces, windows, and barn doors. Natural light can reach deep into the building, especially in the classroom and walking areas. The daylighting lecture explains that daylight should be used whenever possible but controlled so it improves visibility without causing glare or overheating.

In spring and fall, the barn can rely heavily on natural ventilation. Operable windows and large barn doors allow cross ventilation, while the taller interior can support stack airflow. This is especially important because the stalls and washroom can add moisture and odors. The passive cooling lecture emphasizes ventilation and shading as low energy ways to improve comfort.

In summer, strong sunlight creates the risk of overheating. Shading, roof overhangs, and controlled window openings help reduce unwanted solar heat while still allowing daylight. However, because Climate Region 3 has warm and humid summers, the barn may still need cooling and dehumidification, especially for the classroom and washroom areas. The brick exterior helps moderate temperature changes, but mechanical support is still useful during hot, humid conditions.

Active solar design could also fit the barn well because the roof could support photovoltaic panels. These panels could help power classroom lighting, ventilation fans, and mechanical systems. This connects to the active solar lecture's discussion of PV systems as a practical way to generate electricity.

Overall, the barn uses winter sun for warmth, spring and fall conditions for natural ventilation, and summer shading and humidity control to maintain comfort. Its design depends strongly on daylight, airflow, brick thermal mass, and optional active solar support.

2) Lab

The building is constructed of brick with moderate-sized arched windows, providing high thermal mass and access to natural daylighting and ventilation. Based on the psychrometric chart for Climate Region 3, the building can maintain comfort for much of the year using passive strategies. The comfort zone is slightly expanded due to thermal mass, allowing the building to remain comfortable at higher temperatures. In winter, conditions fall below the comfort zone, requiring heating supplemented by passive solar gain. In spring and fall, natural ventilation is often sufficient to maintain comfort. In summer, high thermal mass and night ventilation help reduce overheating and limit the need for mechanical cooling.

Daylighting is primarily provided through perimeter windows, with light penetration limited to a few times the window height, meaning interior zones may require artificial lighting. Seasonal solar angles affect performance, with deeper light penetration and beneficial heat gain in winter, and more diffuse light in summer.

Thermally, the brick structure absorbs and stores heat during the day and releases it slowly, reducing temperature fluctuations. This supports passive solar heating in winter and helps delay heat gain in summer, especially when combined with ventilation. However, limited shading may lead to overheating during peak summer conditions.

Architecturally, the exposed brick provides both structural expression and thermal function. The arched windows create a consistent façade while influencing how light enters the space. The lack of shading devices limits solar control, but the building's proportions and window layout support balanced daylighting. Overall, the design effectively integrates passive strategies, though it could be improved with better shading and light distribution.

3) Dormitory

The student dormitory is designed for year-round use, so changing sunlight throughout the year affects both comfort and energy use. In winter, the sun is lower in the sky, allowing sunlight to enter through the properly placed windows and help warm interior spaces. This supports passive solar heating, especially in common areas where students gather. The brick exterior also acts as thermal mass, absorbing heat during the day and slowly releasing it later to reduce temperature swings. This connects to the passive solar lecture, which emphasizes orientation, solar gain, and thermal mass as key heating strategies.

In spring and fall, outdoor conditions are closer to the comfort zone, so the dorm can rely more on natural ventilation and daylighting. Operable windows and cross ventilation help maintain comfort with less mechanical conditioning. Daylight from the perimeter windows also reduces the need for electric lighting in dorm rooms, common spaces, and circulation areas. The lighting lecture emphasizes using sunlight as much as possible while distributing it carefully through window placement and reflective interior surfaces.

In summer, the sun is higher and stronger, so the main goal changes from gaining heat to controlling heat gain. Overhangs, shading devices, and careful window placement help block excessive sunlight while still allowing useful daylight inside. Since the dorm has high occupancy, bathrooms, laundry rooms, and a kitchen, humidity and internal heat gains are also major concerns. Therefore, cooling, dehumidification, and exhaust ventilation are needed during hot and humid periods. The passive cooling lecture supports these strategies through shading, ventilation, and solar control.

Active solar design could also support the dormitory. Because the building has steady energy demand, rooftop photovoltaic panels could help offset electricity used for lighting, ventilation, cooling, and dehumidification. The active solar lecture explains that PV systems are increasingly useful because of lower costs and improved efficiency.

Overall, the dormitory uses sunlight differently depending on the season. Winter sun helps heat the building, spring and fall sunlight supports comfort and daylighting, and summer sun must be shaded to reduce cooling loads.

4) Academic Center

The Agricultural Academic Center's main entrance faces south; the building can use sunlight as part of its heating, lighting, and comfort strategy. In the winter, the sun sits lower in the sky, so sunlight can enter the classrooms and study areas more directly. This can help warm the rooms and make the building feel brighter during colder months. The brick exterior also helps since bricks can hold heat from the sun and release it slowly later in the day. This connects to passive solar design because the building uses its orientation and materials to reduce heating demand.

Daylight is also important for this building. The classrooms, offices, and study areas have multiple windows, which allows natural light to enter during the day. This can make the spaces feel more open and reduce the amount of electric lighting needed; however, the windows need to be designed carefully so the light does not cause glare or overheating. Trees, roof overhangs, and shading devices can help control direct sunlight while still allowing useful daylight into the building.

During spring and fall, the building can use natural ventilation more often. Operable windows can bring fresh air into the classrooms, labs, offices, and study spaces. When outdoor temperatures are comfortable, this allows the building to cool itself with less energy. If windows are placed on different sides of the rooms, air can move across the building and create cross-ventilation. This improves comfort and helps keep indoor air fresh.

In the summer, the building needs to block some sunlight instead of bringing it in. Strong summer sun can make classrooms and roof areas too warm, so shading becomes important. Trees around the building, shaded windows, and roof overhangs can reduce heat gain. The roof garden also helps by covering part of the roof surface, which can lower roof temperatures and reduce heat entering the second floor. At the same time, Elizabethtown summers are humid, so the building would still need mechanical cooling and dehumidification for classrooms, labs, and study areas.

The roof could also support active solar systems. Photovoltaic panels could be placed on part of the roof to generate electricity for lights, fans, classroom equipment, irrigation controls, and mechanical systems. This would make the building more energy efficient and support the agricultural purpose of the center.

Overall, the Agricultural Academic Center uses sunlight differently in each season. In winter, sunlight helps heat and brighten the building. In spring and fall, natural ventilation can reduce the need for cooling. In summer, shading, trees, the roof garden, and humidity control help prevent overheating. Together, these strategies make the building more comfortable, energy efficient, and connected to its agricultural learning purpose.

5) Greenhouse

For the greenhouse, sunlight is the most important part of the design. The glass walls and pitched glass roof allow natural light to enter from many directions, which helps support plant growth and keeps the space bright during the day. However, because most of the building is transparent, sunlight also has a major effect on the temperature inside.

In the winter, the sun is lower in the sky, so sunlight can reach deeper into the greenhouse. This is helpful because winter days are shorter and plants need as much natural light as possible. The sunlight also helps warm the interior, reducing the need for extra heating during the day.

The greenhouse can also store some of this winter heat. When sunlight hits the concrete floor, soil, plant beds, or water containers, those materials can absorb heat during the day. Later, when the sun goes down and the air gets colder, they release that heat slowly. This helps keep the greenhouse temperature more steady at night.

In the summer, the greenhouse could become too hot because the sun is higher and stronger. Too much direct sunlight could dry out plants, create glare, and make the space uncomfortable. To prevent this, the design would need shade cloth, roof vents, side vents, or louvers to reduce heat while still letting in enough light for the plants.

My greenhouse uses sunlight differently depending on the season. In the winter, it welcomes sunlight for daylight and warmth. In the summer, it needs to filter sunlight and release extra heat through shading and ventilation. By balancing light, heat, and airflow, the greenhouse can stay useful and comfortable throughout the year.

Part E) Architectural Details

Agricultural Academic Center

1. For the student dormitory building, I chose an exterior wall and operable window section detail with a ventilation component. This detail was selected because it connects directly to the Chapter 3 lecture on thermodynamics, air quality, and health. It shows how the dorm conducts heat through the insulated wall, convection controlled ventilation, and

radiation through the window opening and solar exposure. I chose this detail because it fits the dorm especially well because the building has many occupants, dorm rooms, bathrooms, and common spaces, so it needs both energy efficiency and good indoor air quality. The brick exterior also represents thermal mass as stated before, which helps reduce temperature variation inside the building. Overall, this detail shows how the dormitory can support comfort and improve indoor air quality.

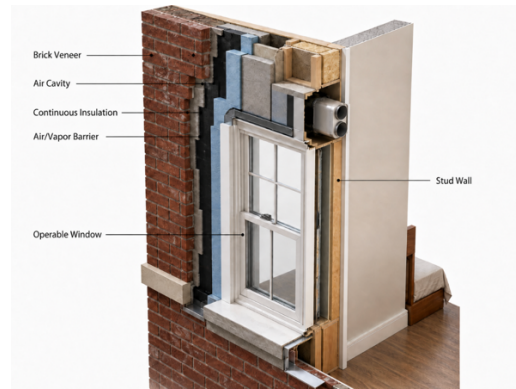


Image (25): Shows Operable Window for Dorm Rooms

2. For the student dormitory building, I chose a bathroom/laundry exhaust and moisture control ceiling detail. This detail relates to the Thermal Comfort and Health lecture because it focuses on controlling indoor humidity, which is an important part of occupant comfort as mold and mildew can build easily. In a dormitory, bathrooms and laundry rooms create extra moisture, and if that moisture is not removed, it can make spaces feel uncomfortable and increase the risk of condensation and mold.

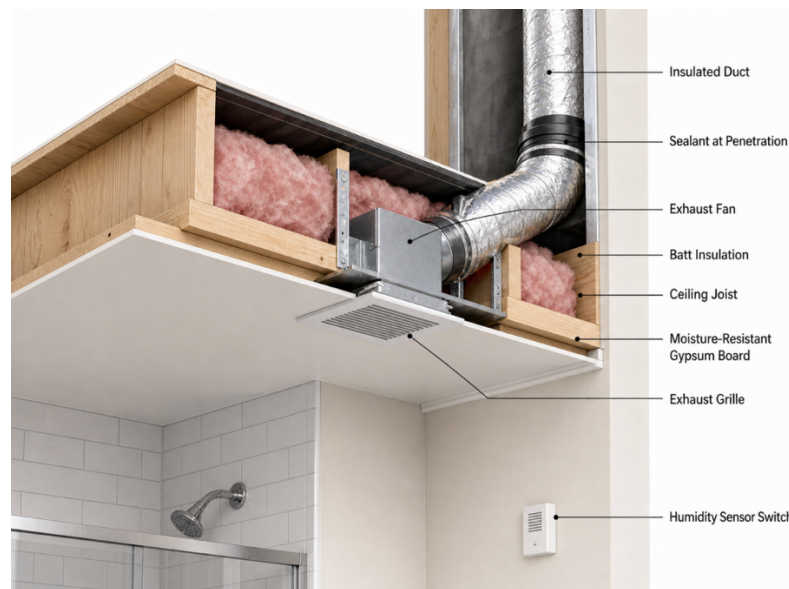


Image (26): Shows Ventilation for Bathroom/Laundry Rooms

- For the Lab, the detail would be that the footings would be 24" into the ground with skirting included on the building. This ensures that the footings would be below the frost line. The footings would be created out of concrete block because there would not be basement for the lab.

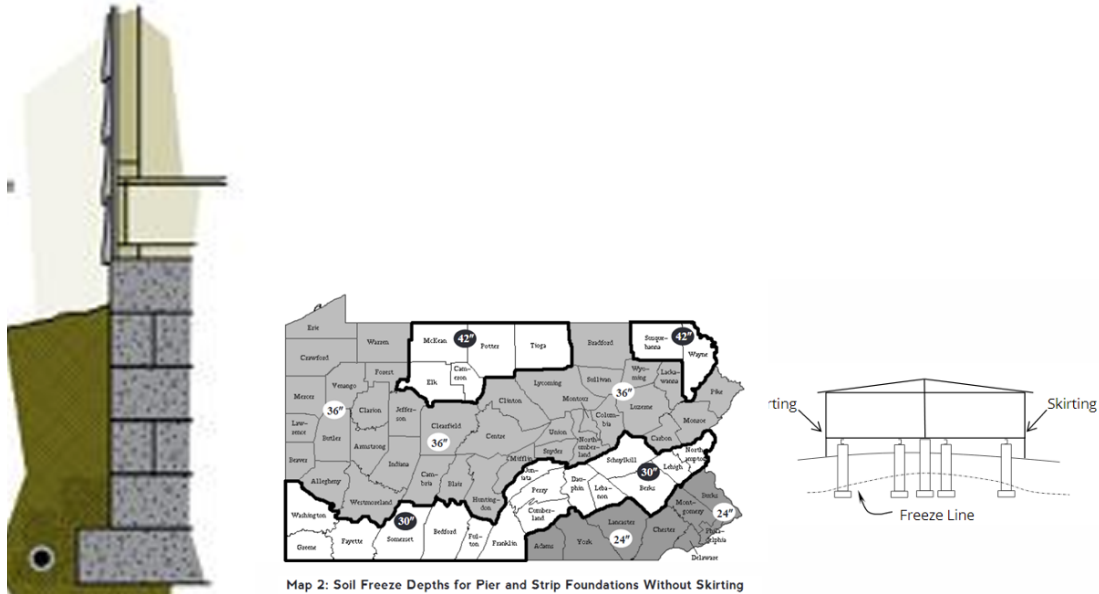


Image (27): Wall Footings

- For the Greenhouse, the first detail would be to have it face true south, so it gives the maximum sunlight for the summer months and winter months. This would give us a window of roughly 9:00 AM to 3:00 PM for sunlight to always be hitting the greenhouse. The greenhouse will hold the main planting beds and heat-storing materials on the south side so they are always in direct sunlight during that 9 AM-3 PM window.

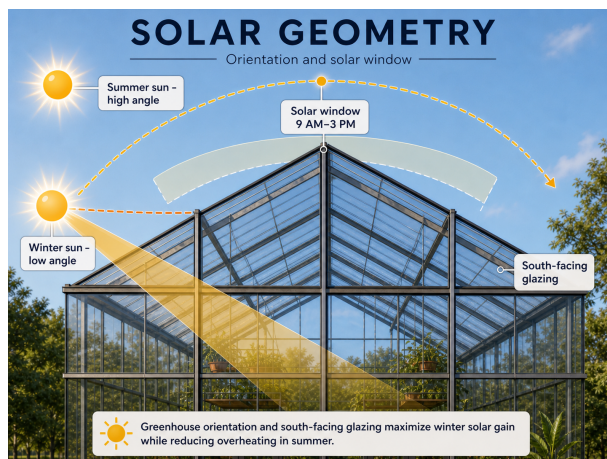


Image (28): Solar Geometry

- For the Greenhouse, the second detail would be having the ground be concrete, and we would implement a water barrel area. These thermal masses would be used to collect and store heat during the day. The colors would be darker, which makes them absorb more solar energy.

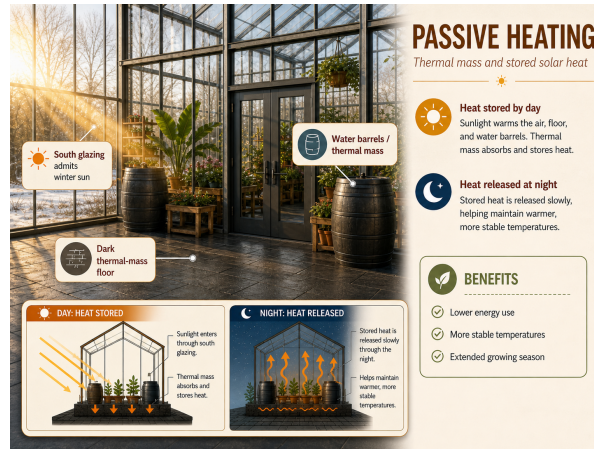


Image (29): Passive Heating

- For the Greenhouse, the third detail would be having solar-powered systems that come from the solar field on campus. Instead of putting solar panels on top of the greenhouse roof or somewhere else that is inconvenient, we will use the campus solar field to help the greenhouse with its electrical needs. Having circulation and exhaust fans is very important for the plants and people who are in the greenhouse. Having this be solar-powered will help our greenhouse immensely.



Image (30): Active Heating

7. For the barn classroom building, I chose a roof overhang, operable window, and ridge ventilation detail. I chose this detail because it directly connects to the Passive Cooling and Shading section. The overhang helps shade the window and wall from strong summer sun, which reduces heat gain inside the barn. The operable window supports natural ventilation, and the ridge and soffit vents help hot air rise and escape through the roof.

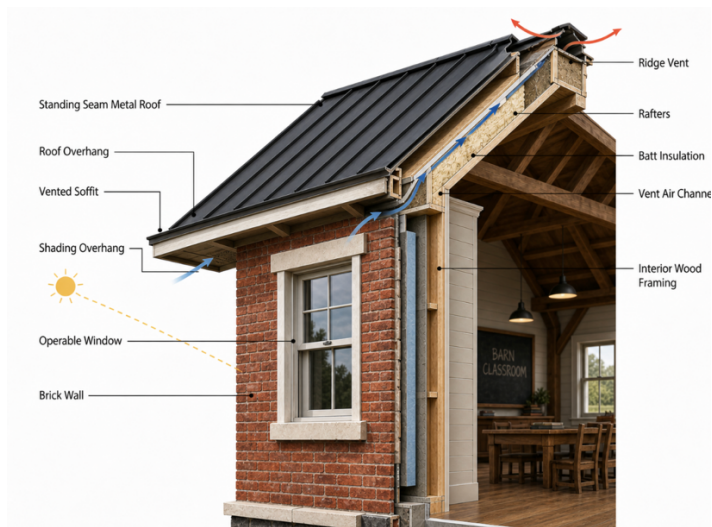


Image (31): Shows Ventilation, Shading, and Window

8. The third detail would be a south-facing window overhanging and shading section as spoken about in lecture 8; this would be placed at the front of the building where the classrooms face south. The drawing could show a horizontal roof overhang or shading fin, a south-facing window, a deciduous shade tree, and arrows showing summer sun being blocked while lower winter sun enters the room. This connects to the shading and passive cooling lecture because it uses window orientation, shading, and passive cooling to reduce overheating while still allowing daylight.

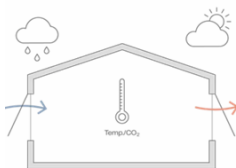
DETAIL 3: SHADING & PASSIVE COOLING

South-Facing Window with Overhang and Tree Shade
 This detail shows how the building uses shading, daylight, and natural ventilation for year-round comfort.



Image (32): Passive Cooling

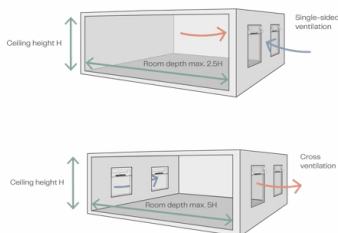
- For the lab, since both sides have windows that can be opened, cross ventilation can be achieved. To make this more accessible, the windows should be automated in case of an emergency spill of some kind of chemical to ensure that the place is able to be aired out quickly.



CROSS VENTILATION

- ▶ Openings on **two or more facades** can create cross-ventilation in a room.
- ▶ The ventilation is powered by **differences in wind pressure** on the façade in which the window openings are located.
- ▶ Transom vent from zone to zone

Image (33): Cross Ventilation



GEOMETRY OF SPACE

- ▶ **Good room height** – at least 8 ft or more.
- ▶ **Single sided ventilation** – the room depth should not exceed **2.5 times** the room height, and never more than 33 ft.
- ▶ **Cross ventilation** – the room depth should not exceed **5 times** the room height.
- ▶ **Stack ventilation** – the distance from the facade to the skylights should not exceed **5 times** the room height.

Image (34): Space Geometry

10. The second detail would be a brick exterior wall and window section as spoken about in lecture 10; this would be located on all walls of the Academic Center. The drawing could show brick veneer, air space, weather barrier, continuous insulation, wall framing, interior gypsum board, and a double-pane window with flashing and air sealing. This connects to the thermal envelope lecture because the building envelope controls heat gain, heat loss, and air leakage through walls, roofs, and windows.



Image (35): Thermal Envelope

11. For the HVAC techniques, it should have a central air system that combines heat and air conditioning. It should also have a UV light to kill any bacteria in the air from testing on animals or any other bad things that could be in the air.

**HOT-AIR HVAC systems
HEATING & COOLING
Together!**

- Often Humidification
- Often Dehumidification
- Often **FILTRATION**, like for COVID:
- Recall Lectures:
 - [A&E Thermodynamics](#)
 - SLIDES 23 to 28

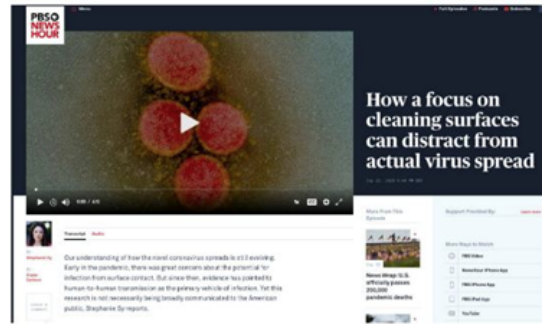
HOWEVER, don't forget that the more you prevent air flow in and out of your building, the more you are reducing FRESH AIR EXCHANGES with the outside air !!

So, you will want to simultaneously make sure you have a means of naturally or artificially letting outside air flow into building, and letting inside air out.

- Typically **3 AIR EXCHANGES PER HOUR in modern times** in building codes (and therefore considered ok regardless of viruses, mold, and asbestos if not disturbed)
- HOWEVER, with Covid-19 in **AERISOL FORM**, newer recommendations (sept 22, 2020) are for

6 TO 9 AIR EXCHANGES PER HOUR

Watch: <https://www.pbs.org/newshour/show/how-a-focus-on-cleaning-surfaces-can-distract-from-actual-virus-spread>



- [A&E Comfort & Health](#)
 - SLIDES 2 to 5



<https://www.enr.com/story/2020/09/24/uv-c-light-technology-19-covid-19-cases-the-importance-of-uv-c-in-health-industry/20200924>

UV-C lights kill many viruses

Joseph Wunderlich PhD

Image (36): HVAC

12. The first detail would be the classroom's acoustic ceiling and wall section as spoken about in lecture 12; this would be shown inside a typical classroom or study room. There will be acoustic ceiling tiles, an insulated wall cavity, gypsum board, sealed joints, and possibly an acoustic wall panel. This is connected to the acoustics lecture because classrooms need clear speech, low distraction, and good concentration. The lecture

explains acoustic design through absorption, blocking, and covering, with terms like NRC for sound absorption and STC/CAC for blocking sound between spaces.

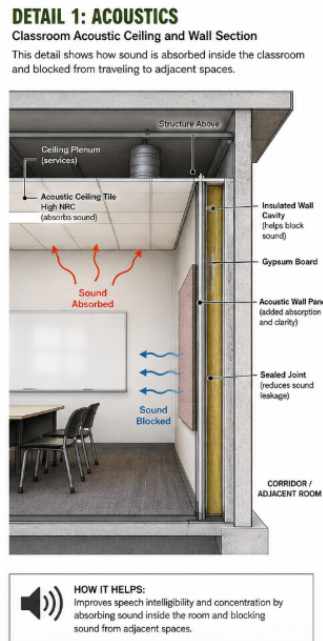


Image (37): Acoustics

Part F) Leed Check-Sheet

The Agricultural Academic Center is designed as a LEED Platinum building that supports education, sustainability, and hands-on agricultural learning. The building includes classrooms, study spaces, faculty offices, agricultural lab areas, and a roof garden. For the Integrative Process, the design considers energy, water, daylighting, ventilation, materials, and site planning together. The south-facing orientation, brick exterior, shaded windows, roof garden, and efficient HVAC system all work together to improve comfort and reduce environmental impact.

For Location and Transportation, the Academic Center benefits from being located on a walkable college campus where students, faculty, and visitors can reach it by sidewalks, bike routes, and nearby campus circulation paths. The project can support this category by including bike racks, pedestrian-friendly entrances, reduced parking areas, and possible electric vehicle charging spaces. This reduces dependence on cars and supports a campus design that is safer, more accessible, and more sustainable.

For Sustainable Sites, the building uses landscape and site design to reduce negative impacts on the surrounding environment. Trees around the building provide shade, reduce heat island effects, and improve outdoor comfort. The roof garden adds usable green space while helping slow stormwater runoff during rain events. Open outdoor areas around the building can also be used for student gatherings, agricultural demonstrations, or outdoor learning. During construction, erosion controls, dust control, and sediment barriers would help prevent pollution from leaving the site.

For Water Efficiency, the building can reduce indoor water use through low-flow sinks, toilets, and other plumbing fixtures. Since the building includes a roof garden, irrigation should be designed carefully using drought-tolerant plants, drip irrigation, and possibly collected rainwater. Water meters would help track total building water use and garden irrigation use so the college can monitor performance and reduce waste over time.

For Energy and Atmosphere, the building uses both passive and active strategies to lower energy demand. The south-facing front allows winter sunlight to help warm classrooms and study spaces, while roof overhangs, trees, and shading devices reduce overheating in summer. The brick exterior and insulated wall system improve the thermal envelope by reducing heat loss in winter and heat gain in summer. Efficient HVAC equipment, an energy recovery ventilator, LED lighting, daylight sensors, and building-level energy meters would help the building operate more efficiently. Solar panels on part of the roof could also produce renewable electricity for lighting, ventilation, classroom technology, irrigation controls, and other building systems.

For Materials and Resources, the Academic Center can use durable and responsible materials that support long-term sustainability. Brick is a strong choice because it is durable, low-maintenance, and visually connected to many campus buildings. The project can also include recycled-content materials, responsibly sourced wood or metal, low-impact interior finishes, and products with environmental product declarations. Recycling collection areas should be placed inside the building for daily use, and construction waste should be sorted and recycled, when possible, instead of being sent directly to a landfill.

For Indoor Environmental Quality, the building focuses on creating healthy and comfortable learning spaces. Classrooms, offices, and study rooms should have fresh outdoor air, good daylight, outside views, comfortable temperature and humidity, and low-emitting materials that reduce indoor pollutants. Operable windows can provide natural ventilation during mild spring and fall weather, while mechanical cooling and dehumidification are needed during humid summer conditions. Acoustic ceiling tiles, insulated walls, and sealed joints can improve speech clarity and reduce noise transfer between classrooms and study areas. These strategies are especially important because the building is used for learning, concentration, and group collaboration.

For Innovation, the roof garden can make the building more than a normal academic space. It can be used as a teaching tool for agriculture, stormwater management, plant science, food production, and sustainable building design. The building could also include displays that show real-time energy use, solar power production, water use, indoor air quality, and roof garden performance. This would allow students to learn directly from the building itself.

For Regional Priority, the project responds to issues that are important in Pennsylvania and the Elizabethtown area, including stormwater management, energy efficiency, heat island reduction, and indoor environmental quality. The roof garden, shade trees, strong thermal envelope, efficient HVAC system, and water-saving fixtures all support these regional needs. Overall, the Agricultural Academic Center supports LEED Platinum goals by combining walkable campus design, passive solar strategies, renewable energy, water conservation, sustainable materials, and healthy indoor spaces into one connected academic building.

LEED v4 for BD+C: New Construction and Major Renovation Project Checklist		Project Name: <i>Lead Platinum Building Design and Construction of a New College for Elizabethtown University</i>	
		Date: <i>5/6/26</i>	
<input checked="" type="checkbox"/>	Integrative Process	1	
0 0 0 Location and Transportation 16			
<input checked="" type="checkbox"/>	LEED for Neighborhood Development Location	16	
<input checked="" type="checkbox"/>	Sensitive Land Protection	1	
<input checked="" type="checkbox"/>	High Priority Site	2	
<input checked="" type="checkbox"/>	Surrounding Density and Diverse Uses	5	
<input checked="" type="checkbox"/>	Access to Quality Transit	5	
<input checked="" type="checkbox"/>	Bicycle Facilities	1	
<input checked="" type="checkbox"/>	Reduced Parking Footprint	1	
<input checked="" type="checkbox"/>	Green Vehicles	1	
0 0 0 Sustainable Sites 10			
<input checked="" type="checkbox"/>	Construction Activity Pollution Prevention	Required	
<input checked="" type="checkbox"/>	Site Assessment	1	
<input checked="" type="checkbox"/>	Site Development - Protect or Restore Habitat	2	
<input checked="" type="checkbox"/>	Open Space	1	
<input checked="" type="checkbox"/>	Rainwater Management	3	
<input checked="" type="checkbox"/>	Heat Island Reduction	2	
<input checked="" type="checkbox"/>	Light Pollution Reduction	1	
0 0 0 Water Efficiency 11			
<input checked="" type="checkbox"/>	Outdoor Water Use Reduction	Required	
<input checked="" type="checkbox"/>	Indoor Water Use Reduction	Required	
<input checked="" type="checkbox"/>	Building Level Water Metering	Required	
<input checked="" type="checkbox"/>	Outdoor Water Use Reduction	2	
<input checked="" type="checkbox"/>	Indoor Water Use Reduction	6	
<input checked="" type="checkbox"/>	Cooling Tower Water Use	2	
<input checked="" type="checkbox"/>	Water Metering	1	
0 0 0 Energy and Atmosphere 33			
<input checked="" type="checkbox"/>	Fundamental Commissioning and Verification	Required	
<input checked="" type="checkbox"/>	Minimum Energy Performance	Required	
<input checked="" type="checkbox"/>	Building Level Energy Metering	Required	
<input checked="" type="checkbox"/>	Fundamental Refrigerant Management	Required	
<input checked="" type="checkbox"/>	Enhanced Commissioning	6	
<input checked="" type="checkbox"/>	Optimize Energy Performance	18	
<input checked="" type="checkbox"/>	Advanced Energy Metering	1	
<input checked="" type="checkbox"/>	Demand Response	2	
<input checked="" type="checkbox"/>	Renewable Energy Production	3	
<input checked="" type="checkbox"/>	Enhanced Refrigerant Management	1	
<input checked="" type="checkbox"/>	Green Power and Carbon Offsets	2	
0 0 0 Materials and Resources 13			
<input checked="" type="checkbox"/>	Storage and Collection of Recyclables	Required	
<input checked="" type="checkbox"/>	Construction and Demolition Waste Management Planning	Required	
<input checked="" type="checkbox"/>	Building Life Cycle Impact Reduction	5	
<input checked="" type="checkbox"/>	Building Product Disclosure and Optimization - Environmental Product Declarations	2	
<input checked="" type="checkbox"/>	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2	
<input checked="" type="checkbox"/>	Building Product Disclosure and Optimization - Material Ingredients	2	
<input checked="" type="checkbox"/>	Construction and Demolition Waste Management	2	
0 0 0 Indoor Environmental Quality 16			
<input checked="" type="checkbox"/>	Minimum Indoor Air Quality Performance	Required	
<input checked="" type="checkbox"/>	Environmental Tobacco Smoke Control	Required	
<input checked="" type="checkbox"/>	Enhanced Indoor Air Quality Strategies	2	
<input checked="" type="checkbox"/>	Low-Emitting Materials	3	
<input checked="" type="checkbox"/>	Construction Indoor Air Quality Management Plan	1	
<input checked="" type="checkbox"/>	Indoor Air Quality Assessment	2	
<input checked="" type="checkbox"/>	Thermal Comfort	1	
<input checked="" type="checkbox"/>	Interior Lighting	2	
<input checked="" type="checkbox"/>	Daylight	3	
<input checked="" type="checkbox"/>	Quality Views	1	
<input checked="" type="checkbox"/>	Acoustic Performance	1	
0 0 0 Innovation 6			
<input checked="" type="checkbox"/>	Innovation	5	
<input checked="" type="checkbox"/>	LEED Accredited Professional	1	
0 0 0 Regional Priority 4			
<input checked="" type="checkbox"/>	Regional Priority - Specific Credit	1	
<input checked="" type="checkbox"/>	Regional Priority - Specific Credit	1	
<input checked="" type="checkbox"/>	Regional Priority - Specific Credit	1	
<input checked="" type="checkbox"/>	Regional Priority - Specific Credit	1	
0 0 0 TOTALS		Possible Points: 110	
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110			

104 credits

Image (38): LEED Check sheet