

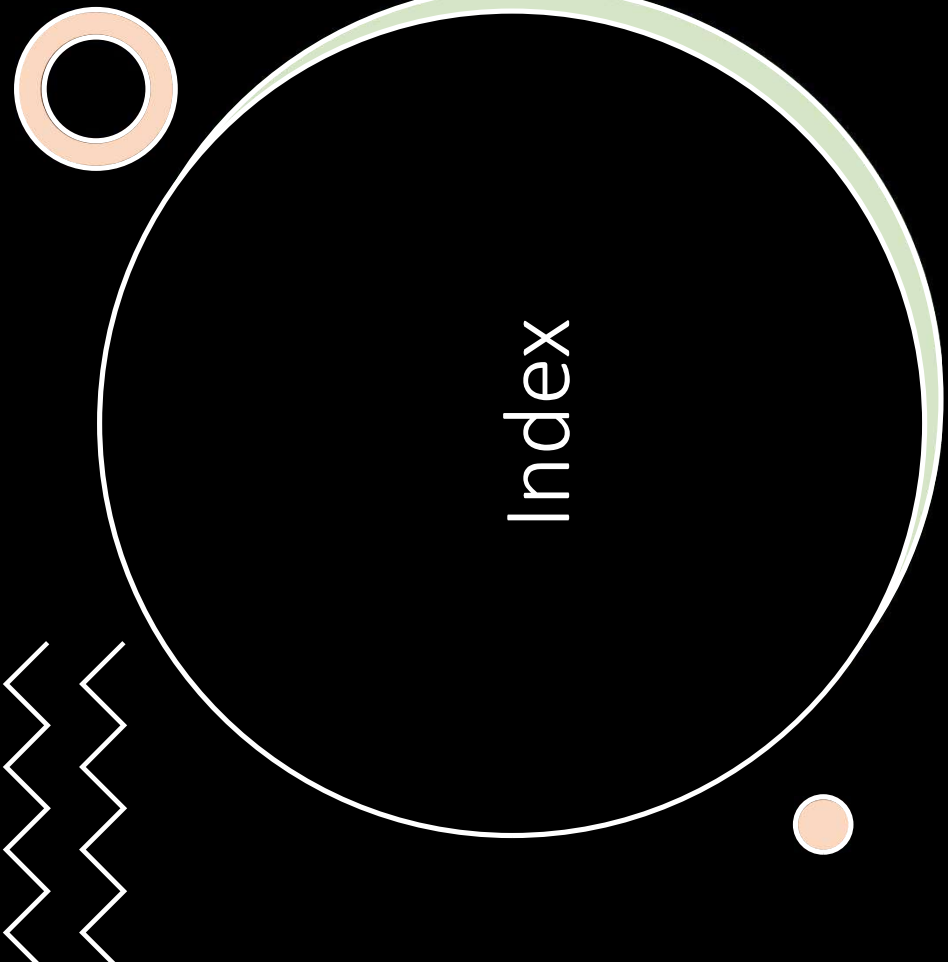
Jones Beach Energy and Nature Center Field Trip

Spring 2023 ARC 310 Construction Design

William Cortez

Professor Lopiccolo





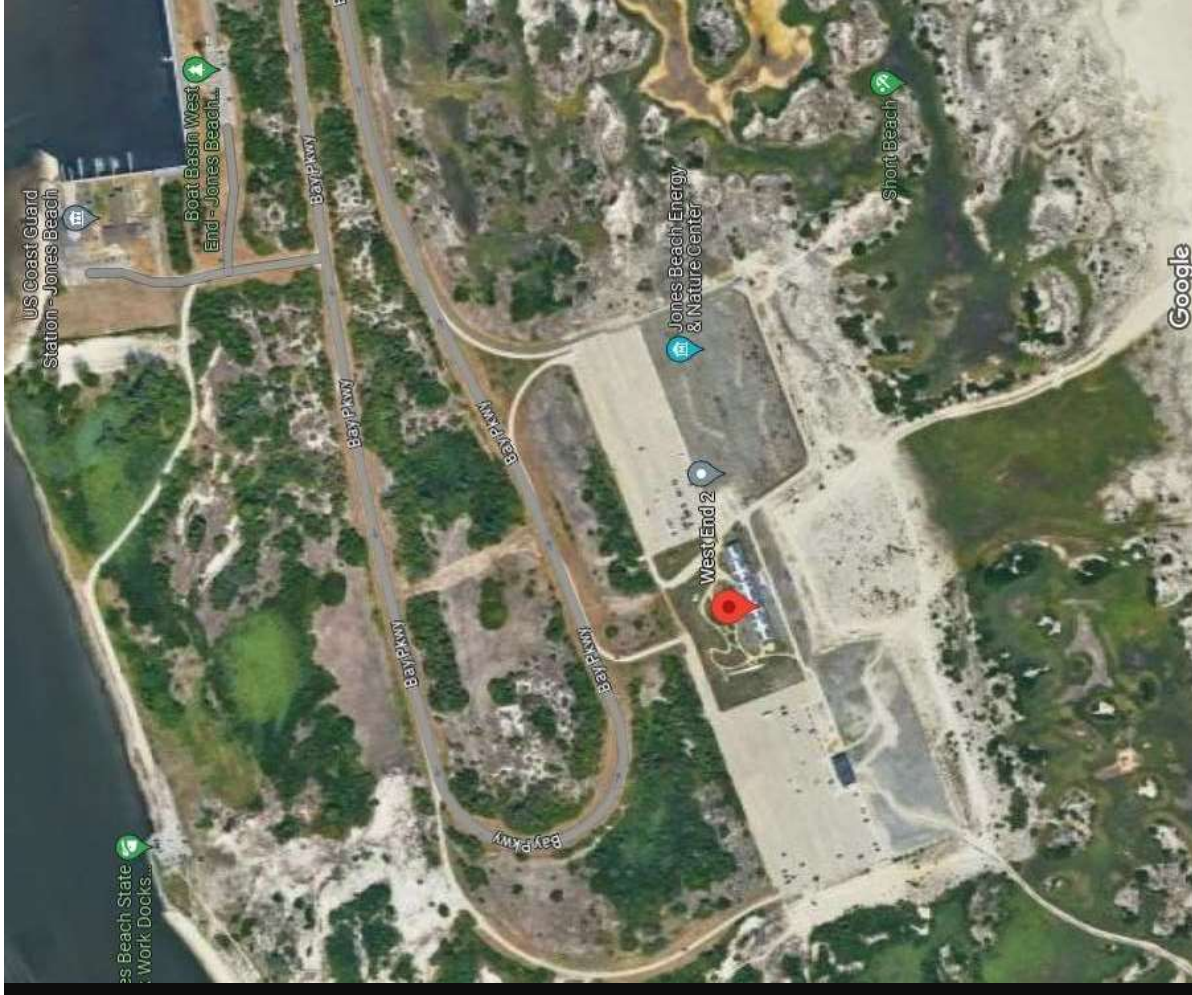
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Building Information

- Jones Beach energy and field center
 - Building style- Sustainable architecture
 - Location- Jones beach state park-west end
2, 150 bay parkway Wantagh, NY 11793
 - Architect- nARCHITECTS
 - Date complete- September 25,2020
 - Area-12,000 SF
 - Cost- 30 million
 - Cost per SF- $\frac{30,000,000\$}{12,000SF} = 2,500\$ \text{ per } SF$
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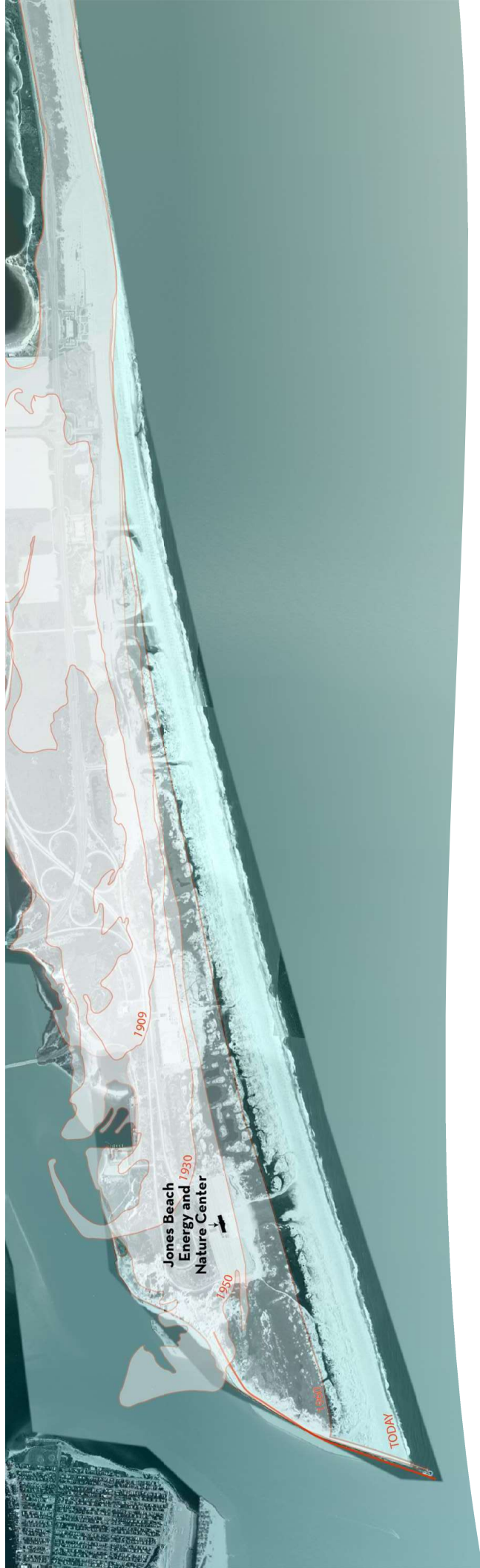




5 interesting Facts

- The lights within the building have sensor for sunlight so they know when to turn on or stay off in order to save energy
- The center itself is more informational than I believe it was. It not only provide info on how is runs but also the history of jones beach and even the wildlife around the center.
- It has a wind turbine arm on display, the small on- land version. Which is still huge even though it is the small one.
- That the lower part of the structure, the ground level, has break away panels. So, in case of a storm hit the building those panels would come off, allowing water to pass through the ground level and leaving the building intact.
- The old parking lot of the area was recycled to build the topography in the area during the construction of the center



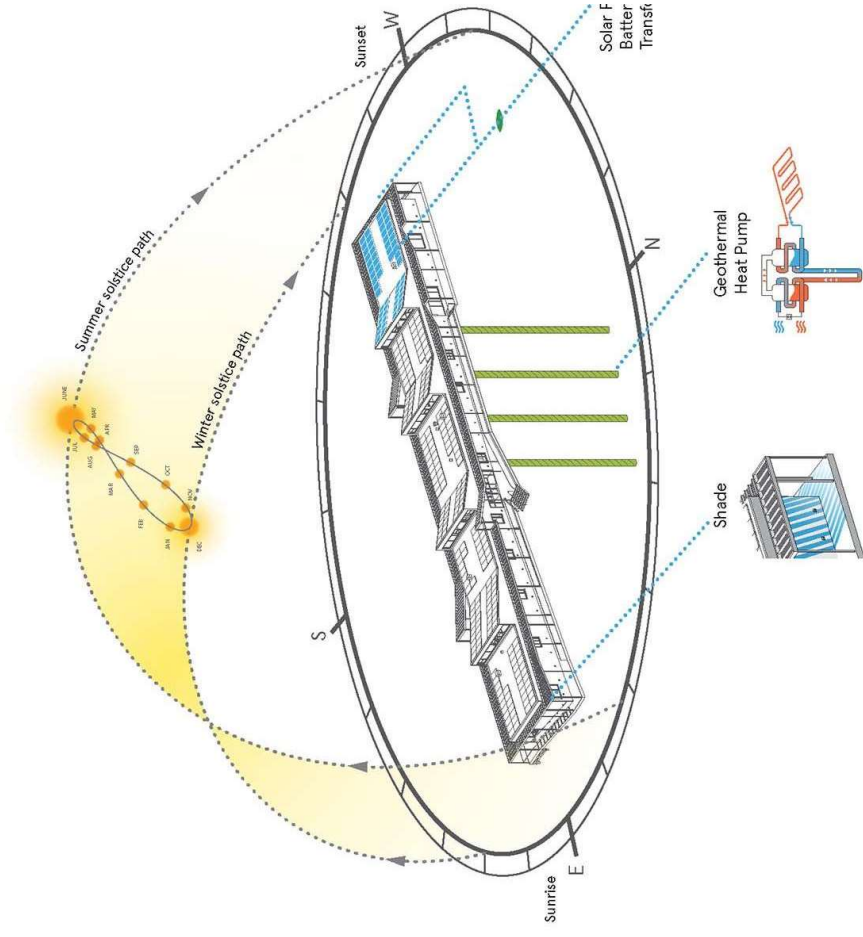


History of Jones Beach

Jones beach was original constructed in the 1920s by Robert Moses for his first major project. He wanted a project for the publics access, away from housing development and private clubs, for the general public. The island was original only two feet above sea level and swampy, in order to make the island more habitable, he pump huge amounts of sand from the bay. Worker work days and late nights to make this happen, up until the island was around 12 feet above sea level. Another issue with the island were the strong oceans with moved the sand around. In order to fix this, Moses sent out landscape architects to check out other long island beaches to see how thy survive. They concluded that it was beach grass that keep the sand from being blown around by the high wind, and so he planted these vegetations around the new island. Over the years, more and more sand was pump up from the bay in order to make it larger to what it is today. As you can see from the figure about what date the island was increase and by how much.

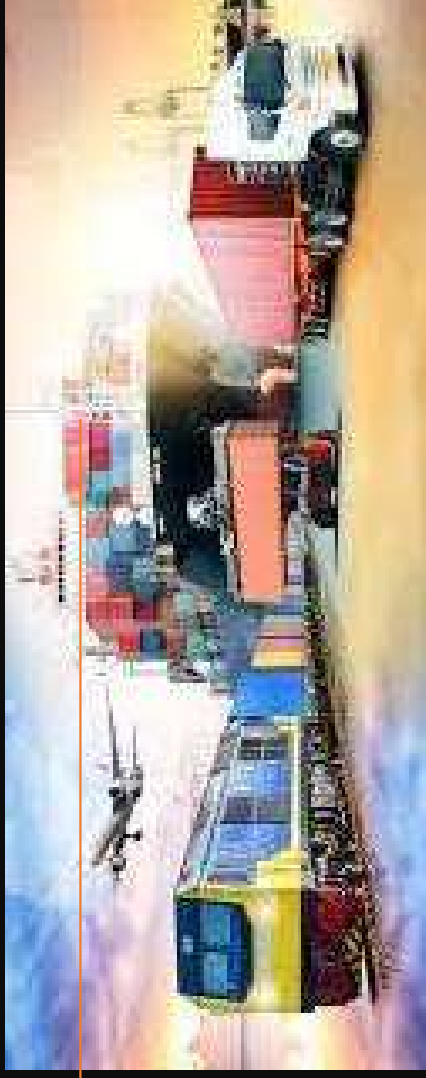
Net-Zero Building

A net-zero building is a building with zero net energy consumption. Meaning that it produces as much as it uses, with no or little emissions. The center does fall into this category because of the way it uses and collect sun light to help provide energy to the building. As seen in the figure. Uses the sun in the mornings to warm up the building via the openings on the roof face the east side. For the rest of the day, it collects sunlight through its solar panel and stores the energy or uses it. Its also has shades around the exterior of the building, depending on the time of day, will shade the building from too much sunlight on the inside, thus using less energy to maintain the temperature.



Embodied Energy

Embodied energy is the energy used by all the processes associated with the construction of a building. One example of this the transportations of the material. Another example is gathering of the material, like cutting down trees for wood and mining rocks for granite.



Terms

The terms given to use are at different life stage of product used by us in everyday life.

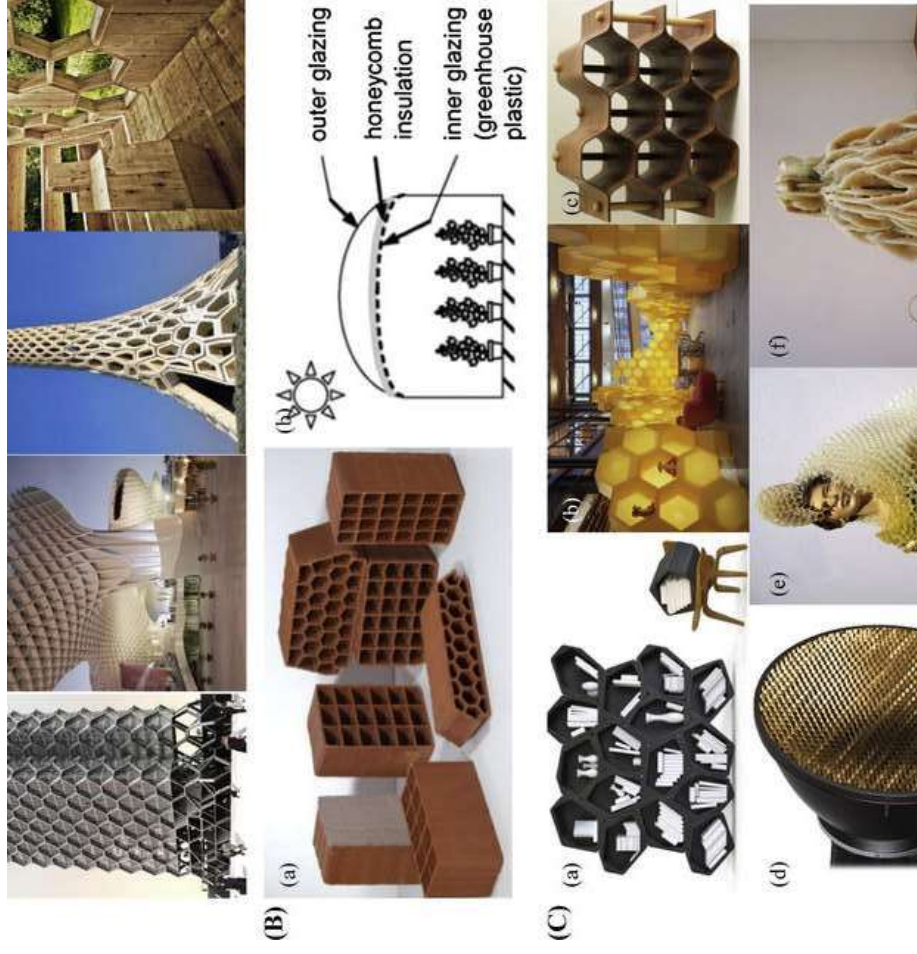
Cradle-to-grave is when we use a product until we waste it to the end of its life. For example, a water bottle, when we finish drinking the water out of the bottle, we throw the bottle out afterwards.

Cradle-to-cradle is when at the end of the product life cycle we just don't throw it out, but we recycle it and repropose the raw material into something else and so on. For example, instead of throwing out the water bottle, we recycle the plastic and make it into other products made of plastic.



Biomimicry

Biomimicry is when we mimic designs of materials, structures and systems after things in nature. For example, the honeycomb designs. We wanted a shape that was strong for our buildings and when we 3D printed things and lead use to look at the honeycomb design for the answer.





Shinnecock Indian Nation

In order to combat storm waves along their shoreline, the Shinnecock implanted various techniques. One such example is that they planted various grass, marsh grass, dune grass and water grass in order to help sand eroding away from the shoreline and help reduce the impact of a wave. They also place huge rock in the water, not continuous but enough where if a wave would come, the rock can disrupt it. They also place oyster reefs along the shore in order to disrupt waves as well as filter water and create a new reef for fish life.

The Shinnecock spend a majority of their life on the coastline. Be it by crab or clam hunting, or just being on the shore and pray. So, when they realize globing warming was creating some difficulties, they did not want to take the hardline approach and want to take a more natural approach. In order to preserve the look of the coastline in their area.

Geothermal



The way geothermal works is by using the underground as a way to transfer temperature into the house. In the summer, the system draws heat from the air and transfer it in the ground. While in the winter it draws the heat from the ground and circulates it in the house.

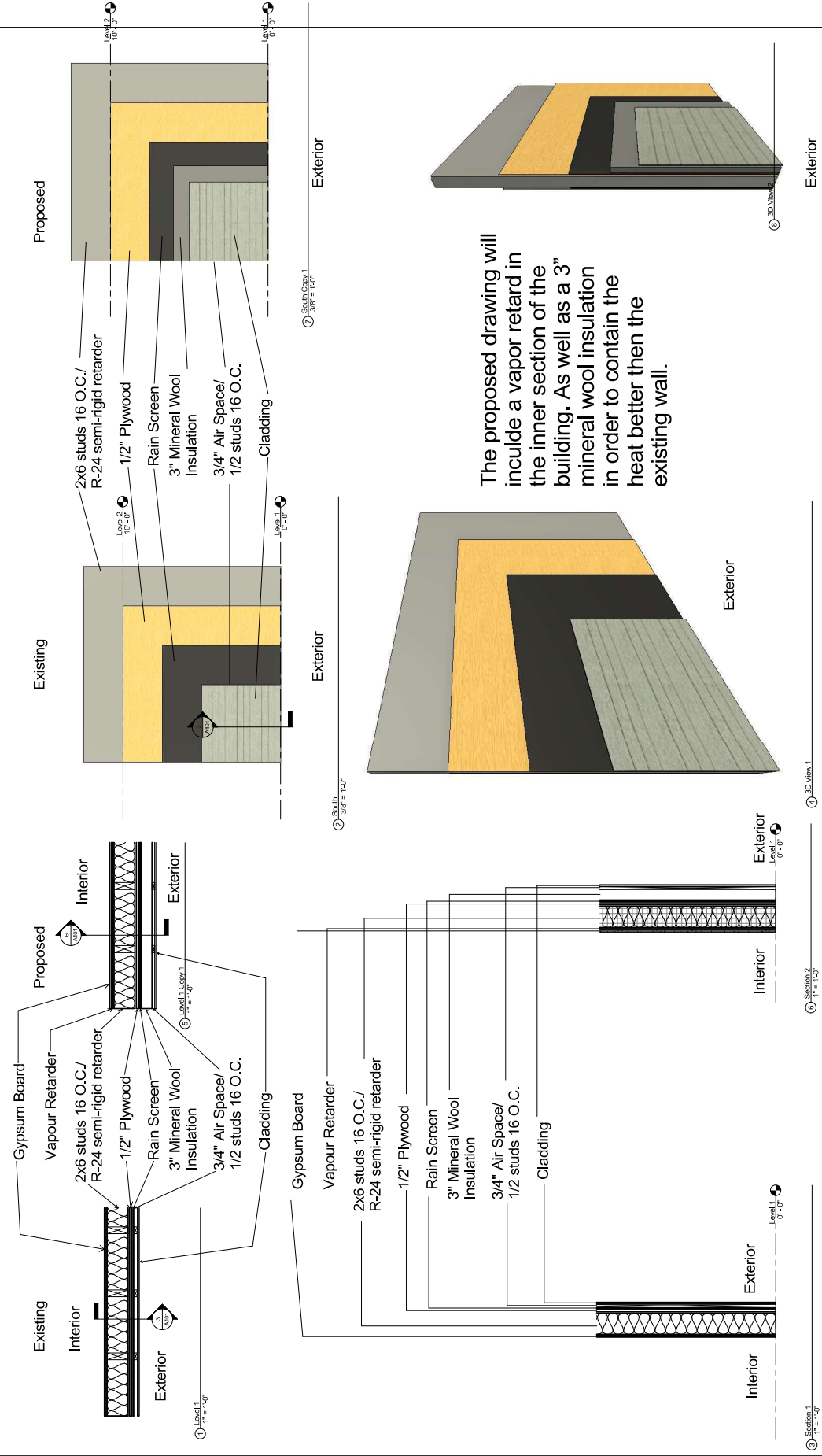
The typical long island underground temperature is around 55 degrees F at 6 feet below year round

Geothermal Systems

- Horizontal system-this system is buried over a wide area of land at shallow depth compared to the others.
- Vertical system- this system is a series of pipes install in one or two boreholes that can be between 200 to 500 feet deep in the ground
- Closed system- a closed system is a continuously loop through buried or submerge pipes, using a mixture of anti-freeze and water
- Open systems- is a pipe that cleans ground water straight from a nearby aquifer to an indoor geothermal system
- Advantages – always available, doesn't require large spaces, silent energy, provides more energy for the same power, requires little maintenance
- Disadvantages- concern about green house gas emissions, high initial cost of installation, possible depletion of geothermal source, requires land to build system

Conclusion

In conclusion, I learn a good amount from the field trip and my research for this project. What I found most interesting is how much we use nature in in order to find solutions to our problems. Geothermal is an idea I just learn, but the impact in can have on our future life is great. As well as using natural barriers like the Shinnecock in order to reduce storm impact on our shoreline while still looking natural and not industrial. Also, how much sunlight can really be helpful to a building and not just used as a source of light. They way it is incorporated into the design of the center really help me figure out how to full unitize sunlight. Before it was just a talk about concept to me, now seeing it firsthand really has help me. They way we use nature as a source of idea instead of just getting rid of it, is the way of architect for the future.



Jones Beach Energy and Nature Center
By William Cortez Scale: Varies

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Farmingdale
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