

# Chesapeake Bay Foundation, Brock Environmental Center

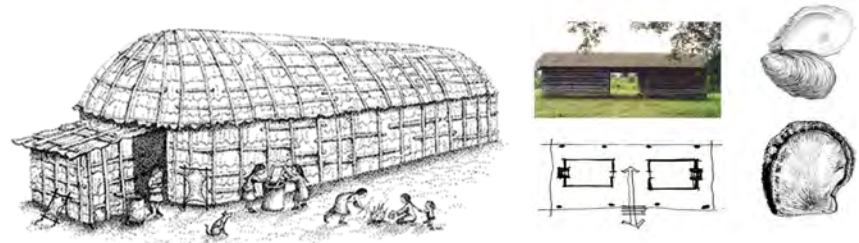
Virginia Beach, Virginia

## Category: Commercial

A model for true sustainability, transcending LEED Platinum, the Center is the first in the Delaware/Maryland/Virginia region to earn Living Building certification, achieving net-zero energy, water, and waste.

**Site** - Chesapeake Bay Foundation's (CBF) newest environmental center houses their expanding Hampton Road's ecological education, advocacy, restoration and community programs. It is located on and preserves the last undeveloped 122-acre parcel at Pleasure House Point in Virginia Beach. The design showcases technologies that contribute to its net-positive energy goal while simultaneously expressing the spirit of the unique site. Resiliency principles informed the design, siting the building 200 feet minimum from the shore while resting atop pylons 14 feet above sea level anticipating sea-level rise and hurricanes. The curved building form responds to the nearby shoreline, maximizes daylight, and embraces passive solar principles.

**Program** - The facility includes offices for CBF staff and their partners, an 80-seat conference room, meeting rooms, and exhibit display areas. Outdoor spaces allow for a reduction in built area while connecting occupants to the site. A prominent outdoor classroom hosts thousands of K-12 students each year.



**Solution** - The Center is truly net-zero water, the first in the US to receive a commercial permit for drinking rainwater treated to federal standards. Daylight simulation tools used during design informed glazing configurations, allowing for a 97% reduction in lighting energy. The long floor plate is interrupted by a “dog trot”, an open-air pass-through that recalls regional, vernacular precedents. The building form intensifies breezes, promoting natural ventilation and reducing horizontal stratification. During the center's first operating year, its two wind turbines and 45 kW photovoltaic array produced 83% more energy than the center consumed. Prominent, curving roofs recall forms of the site's wind-swept live oaks, the wings of a gull, and the protective shell of an oyster, while also enabling rainwater collection. The material palette references the colors and textures of the setting; zinc shingles recall marine life, cypress cladding accentuates the site's natural vegetation and horizontality, and bright metals mimic the glistening waters of the Bay.



View of the center from the southwest.



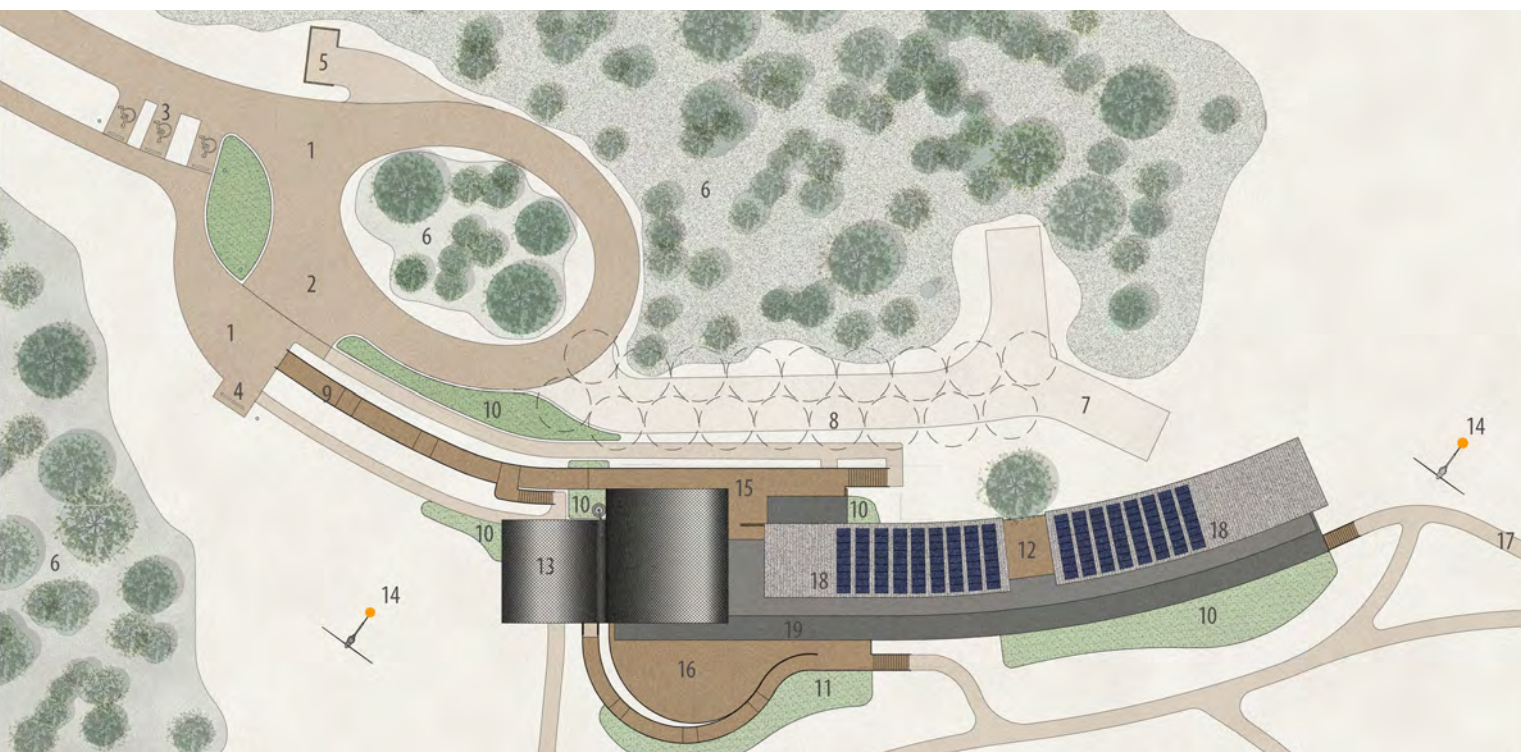
The exterior palette of zinc shingles, sinker-cypress, and galvanized steel reflect the color and forms of the site.



CHARLOTTE-LEWIS FOUNDATION  
SOUTH & NORTHERN PLANTATION

LEWIS ENVIRONMENTAL CENTER

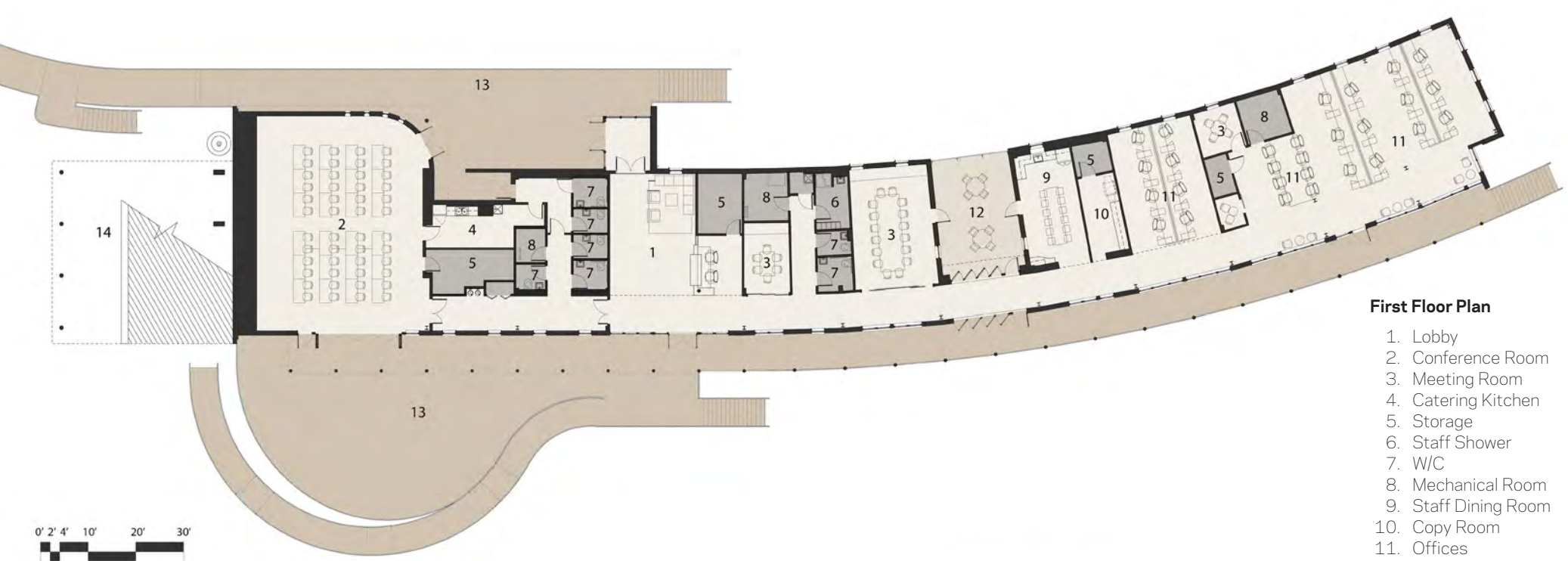
View from the north showing entry ramp, outdoor education pavilion, and large conference room.



**Site Plan**

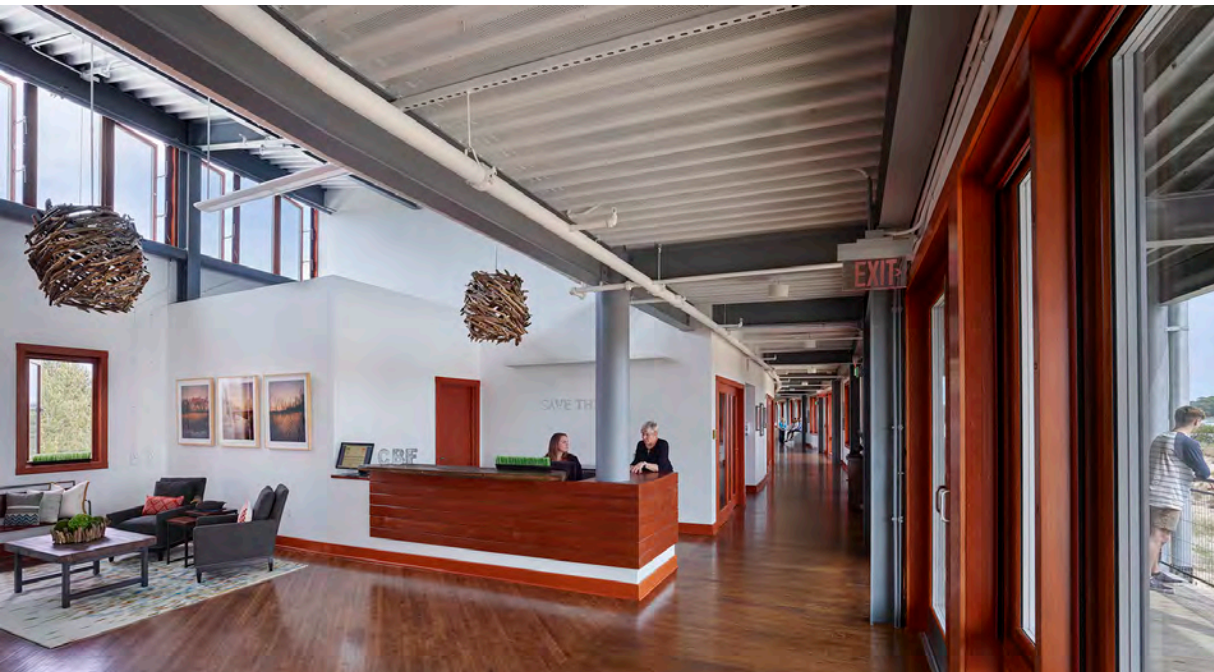
- 1. Permeable Pavers
- 2. Drop Off
- 3. ADA Parking
- 4. Bicycle Racks
- 5. Dumpster
- 6. Remnant Maritime Forest
- 7. Stabilized Sand Fire Lane
- 8. Geothermal Well Field
- 9. Entry Ramp
- 10. Rain Garden
- 11. Greywater Infiltration Garden
- 12. Dog Trot
- 13. Education Pavilion
- 14. Wind Turbine
- 15. North Deck
- 16. South Deck
- 17. Path to Dock
- 18. Photovoltaic Array
- 19. Covered Porch

Aerial view of the site and detailed site plan.



**First Floor Plan**

- 1. Lobby
- 2. Conference Room
- 3. Meeting Room
- 4. Catering Kitchen
- 5. Storage
- 6. Staff Shower
- 7. W/C
- 8. Mechanical Room
- 9. Staff Dining Room
- 10. Copy Room
- 11. Offices
- 12. "Dog Trot"
- 13. Deck/Porch
- 14. Education Pavilion



View of lobby looking east.

The Dog-Trot.

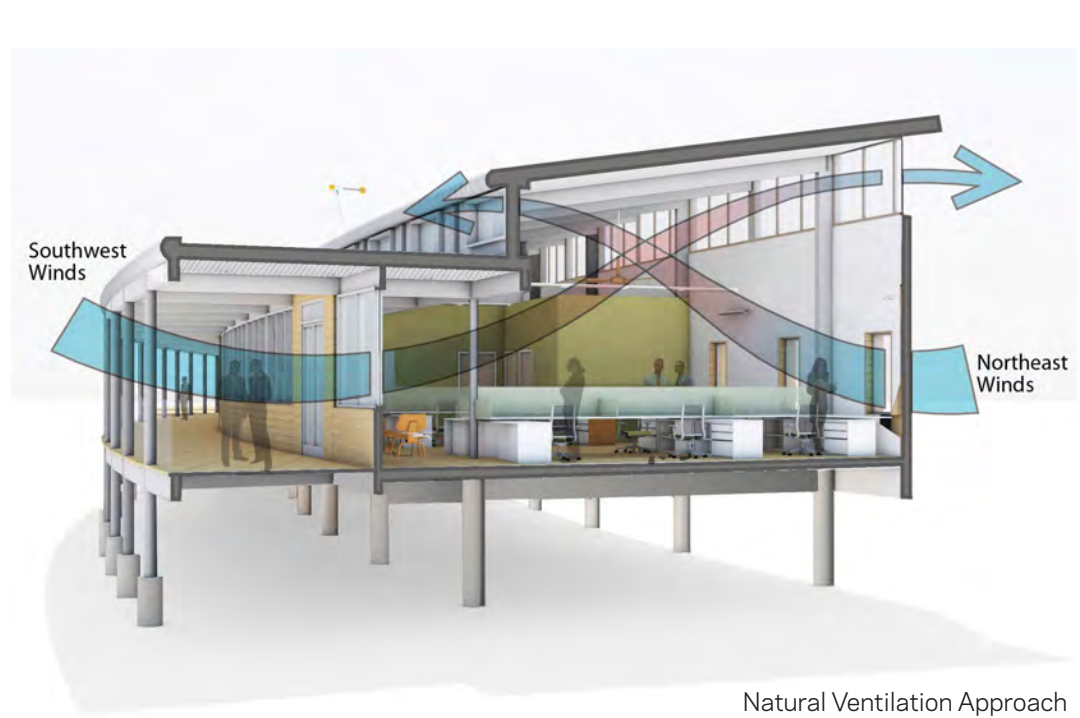


View of open office showing daylighting, natural ventilation, and view of the marshes and shore beyond.

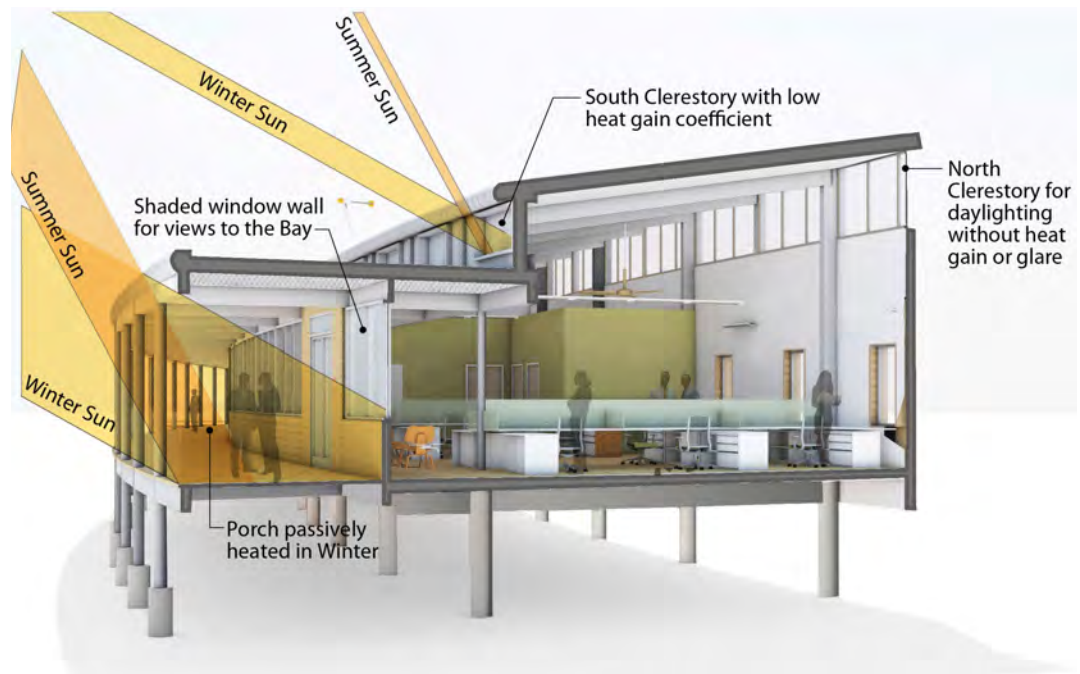


Exterior and interior of the conference room, whose form was inspired by biophilic principles.





Natural Ventilation Approach



Daylighting/External Shading Approach

View of the South Porch and building sections that illustrate natural ventilation and external sun-shading approaches.



View from the dock looking to the northwest.