

Chesapeake Bay Foundation Brock Environmental Center

Virginia Beach, Virginia

Category: Commercial Architecture



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

Site: The Chesapeake Bay Foundation's (CBF) newest environmental center houses their expanding Hampton Roads' 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 from the shore atop 14 feet pylons to mitigate risks posed by sea-level rise and hurricanes. The curved building form responds to the nearby shoreline, maximizes daylight, and embraces passive solar principles.

Program: The 10,500 sf facility includes offices for CBF staff and their partners, an 80-seat conference room, meeting rooms, and exhibit display areas. Outdoor spaces, including a prominent outdoor classroom that hosts thousands of K-12 students each year, allow for a reduction in built area and connect occupants to the site.

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 strategy, allowing for a **97% reduction in lighting energy**. The long floor plate is interrupted by a "dog trot", an open-air pass-through and historically significant vernacular typology. The building form is optimized for natural ventilation and carries breezes throughout the interior, 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 integrates 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, during a field trip. The Center's low profile and curving forms integrate with its sensitive site.



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



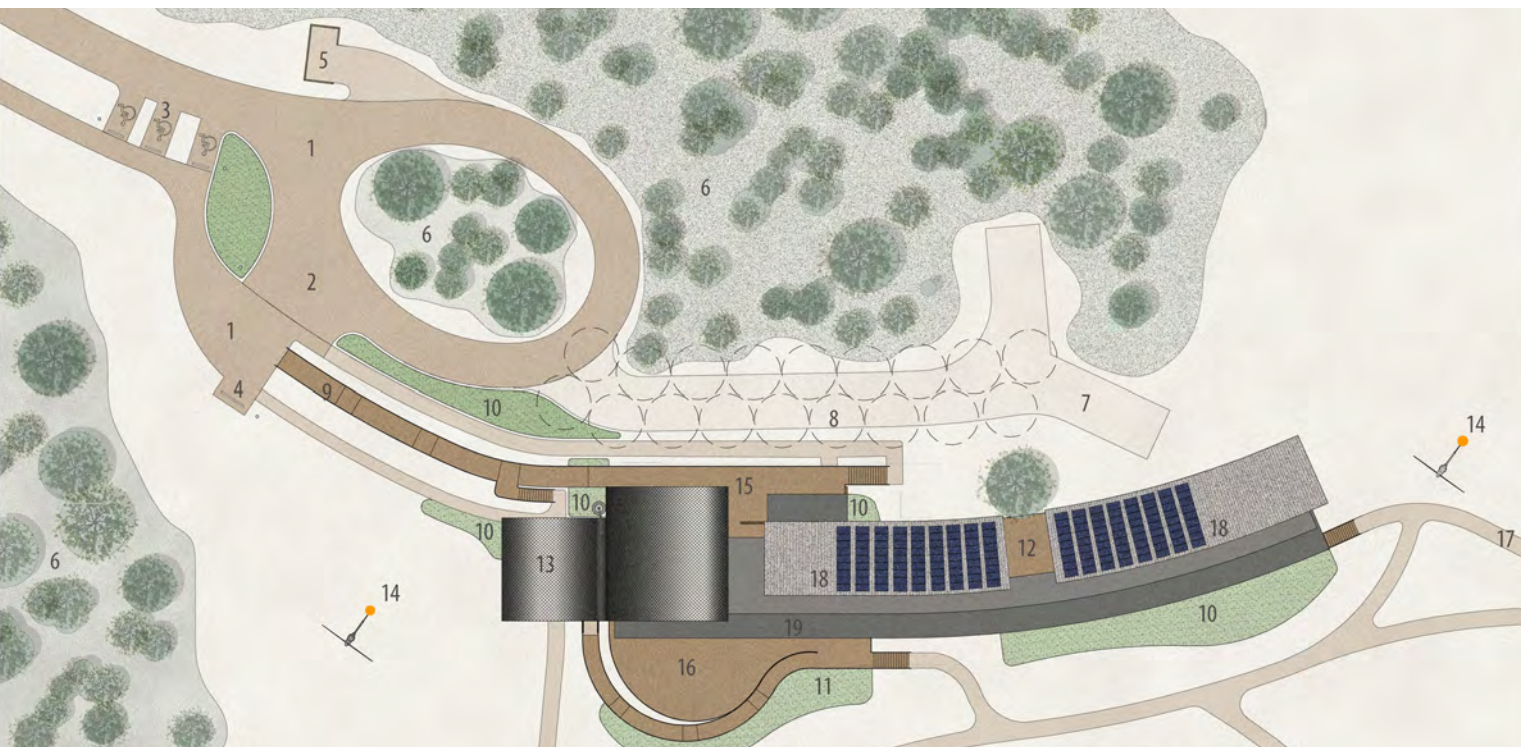
CAROLINA WETLANDS ENVIRONMENTAL CENTER
South of North Carolina

CAROLINA WETLANDS ENVIRONMENTAL CENTER

View from the north showing entry ramp, outdoor education pavilion, and large conference room whose forms recall the wings of a gull.



The Center's long, single story form references regional Powhatan Longhouses.



Site Plan

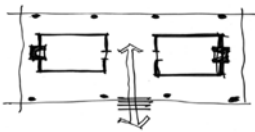
- 1. Permeable Pavers
- 2. Drop Off
- 3. ADA Parking
- 4. Bicycle Racks
- 5. Dumpster
- 6. Remnant Maritime Forest
- 7. Stabilized Sand Fire Lane
- 8. Geothermal Well Field
- 9. Entry Ramp
- 10. Rain Garden
- 11. Greywater Infiltration Garden
- 12. Dog Trot
- 13. Education Pavilion
- 14. Wind Turbine
- 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.

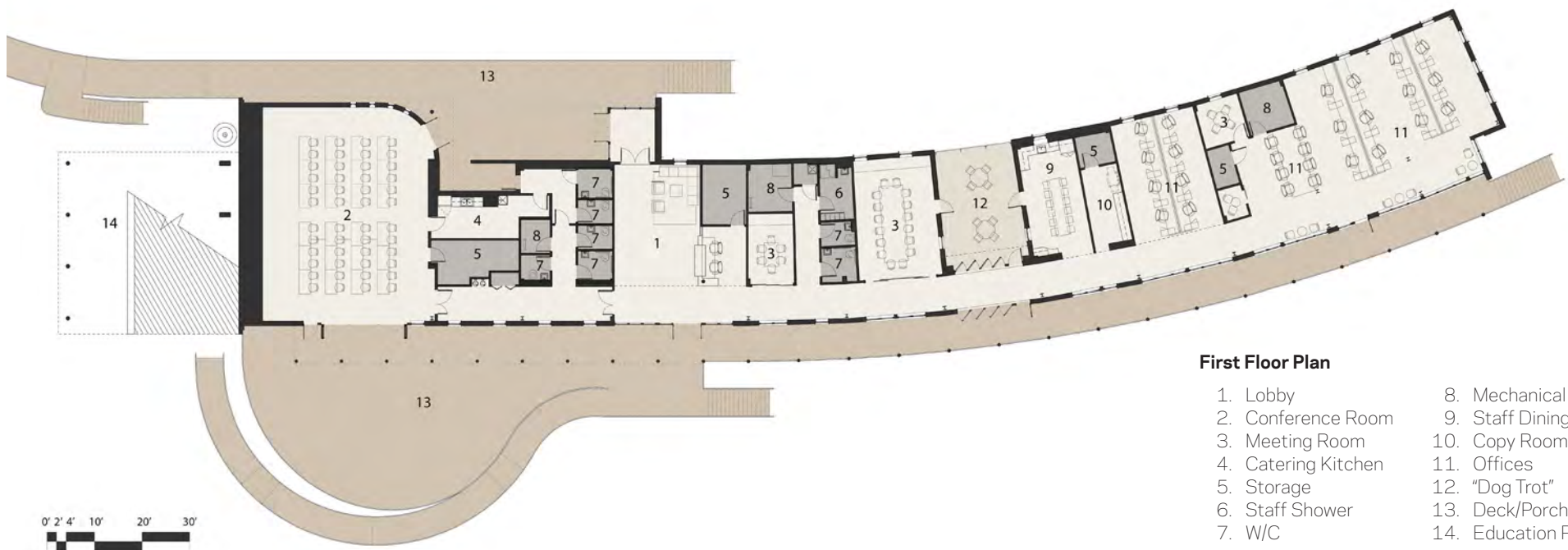


The "Dog-Trot"—an open-air pass-through.

View of lobby looking east down the curving enfilade.



"Dog Trot" vernacular typology.



- 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





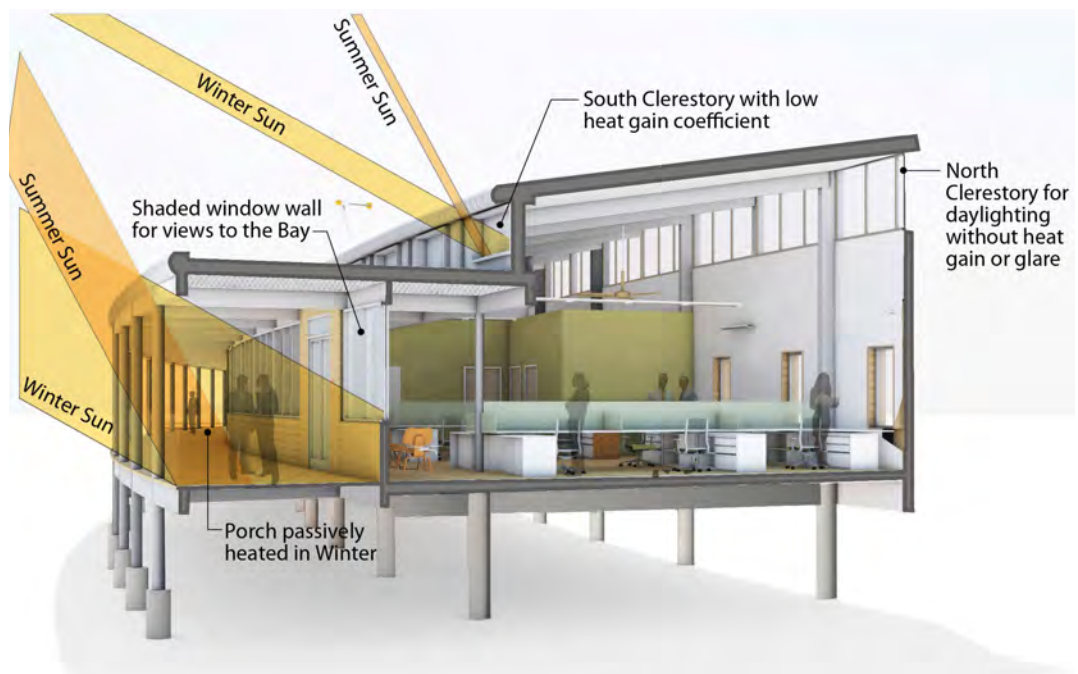
View of open office showing daylighting, natural ventilation, and the view of the marshes and shore beyond.



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, wind turbines punctuate the building massing.