

Project Name: **Chesapeake Bay Foundation, Brock Environmental Center**

Project Location: **3663 Marlin Bay Drive, Virginia Beach, Virginia 23455**

Project Category: **Commercial Architecture**

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 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.

The center is a model for truly sustainable design transcending LEED Platinum standards by pursuing the Living Building Challenge, which requires net-zero energy, water, and waste. Design goals include expressing the spirit of the unique site while simultaneously showcasing technologies that contribute to the net-zero goals. 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.

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 embodying rainwater collection. The material palette references the colors and textures of the site; zinc shingles recall fish scales, cypress cladding reinforces the site's colors and horizontality, and bright metals mimic the glistening Bay. The long floor plate is interrupted by a "dog trot", an open air pass-through that intensifies breezes for natural ventilation and also recalls regional, vernacular architecture. This feature uses the building form to intensify breezes, promoting natural ventilation and reducing horizontal stratification.

The Center is truly net-zero water, possibly the first in the US to receive a commercial permit for drinking treated rainwater in accordance with federal requirements. Daylight simulation tools used during design informed glazing configurations allowing for a 97% reduction in lighting energy since the building opened. The Center is net-positive energy since monitoring began in April, producing two-times more energy than it consumes.



View from the dock looking to the north-west



View from the West at the base of the entry ramp, overlooking the zinc-shingle-clad outdoor education pavilion and conference room

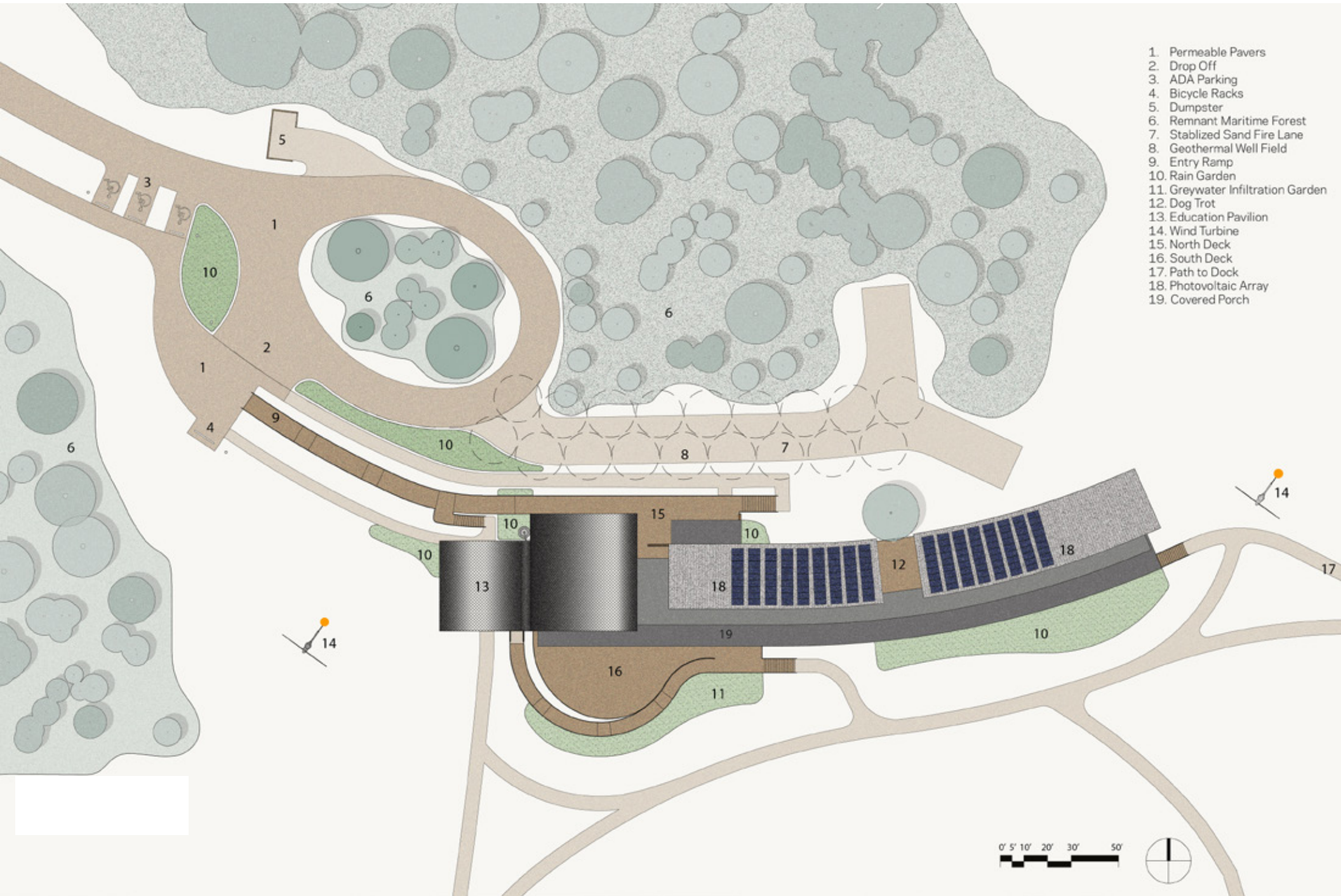


The exterior palette of zinc shingles, sinker-cypress, and galvanized steel reflect the color and forms of the site

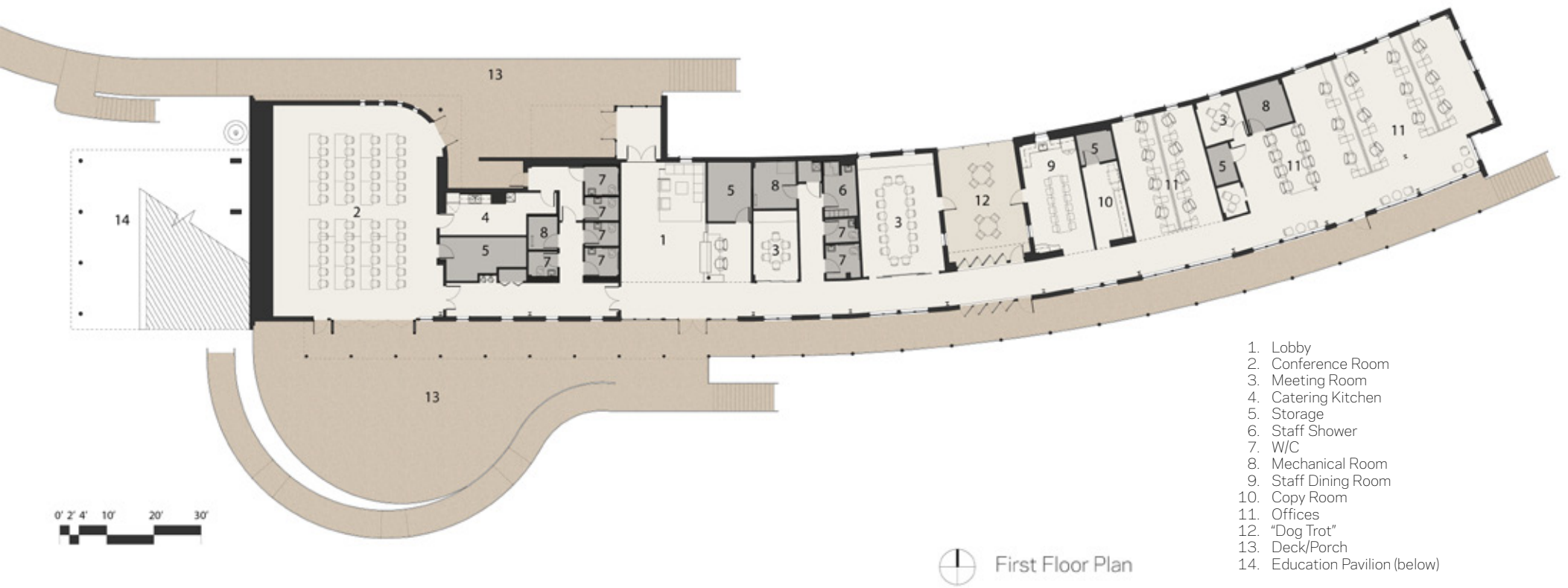
# Pleasure House Point Site Plan (Current and in 2100)



Site Plan showing parking, paths, and the projected shoreline in year 2100



Detailed site plan



View of the entrance lobby looking east down the curved corridor that leads visitors inside the center.

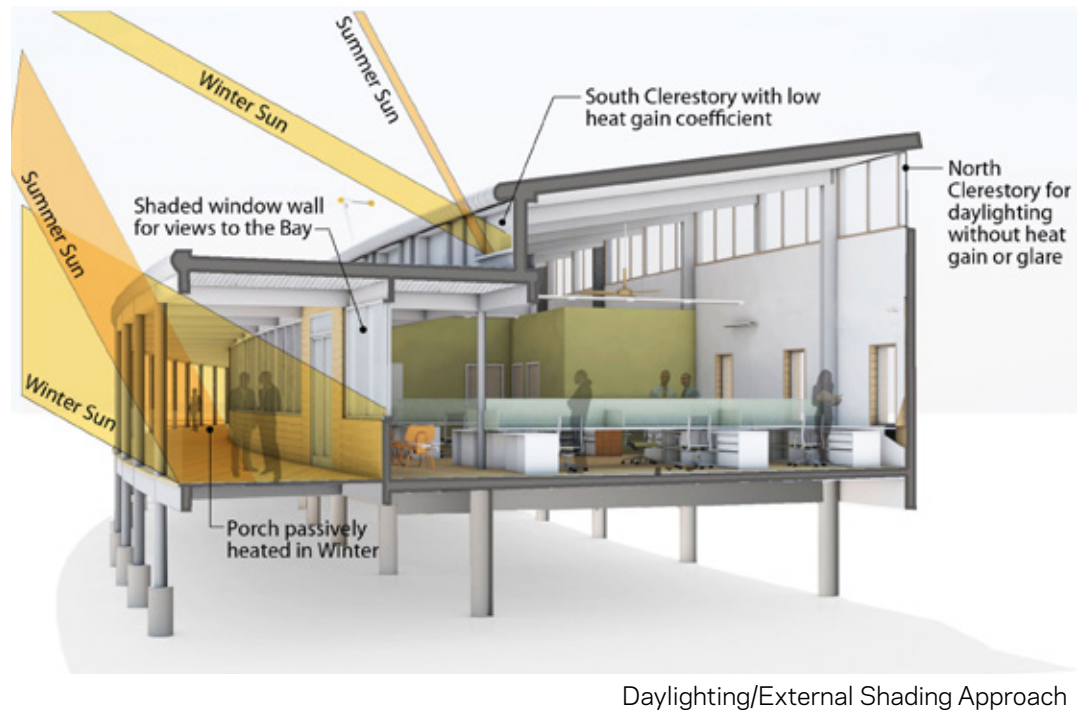


Interior of the conference room with flexible furniture arranged to accommodate a seminar.



View of open office areas showing northern clerestories that provide ample daylight. The south facing corridor is dappled with light while buffering the office area from glare. Ceiling fans promote airflow during the natural ventilation season.





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



An operable wall in the Conference Room connects to the south deck, blurring the lines between interior and exterior.



View of the south hallway and the "dog-trot" which enhances natural ventilation.



View from the south showing roof-mounted photovoltaics and 2 wind turbines "book-ending" the design.