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NUEVA SCHOOL: SCIENCE AND ENVIRONMENTAL CENTER

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Categories: Energy and sustainability, Middle Density, Project, Territory and mobility, Urban Paradigms

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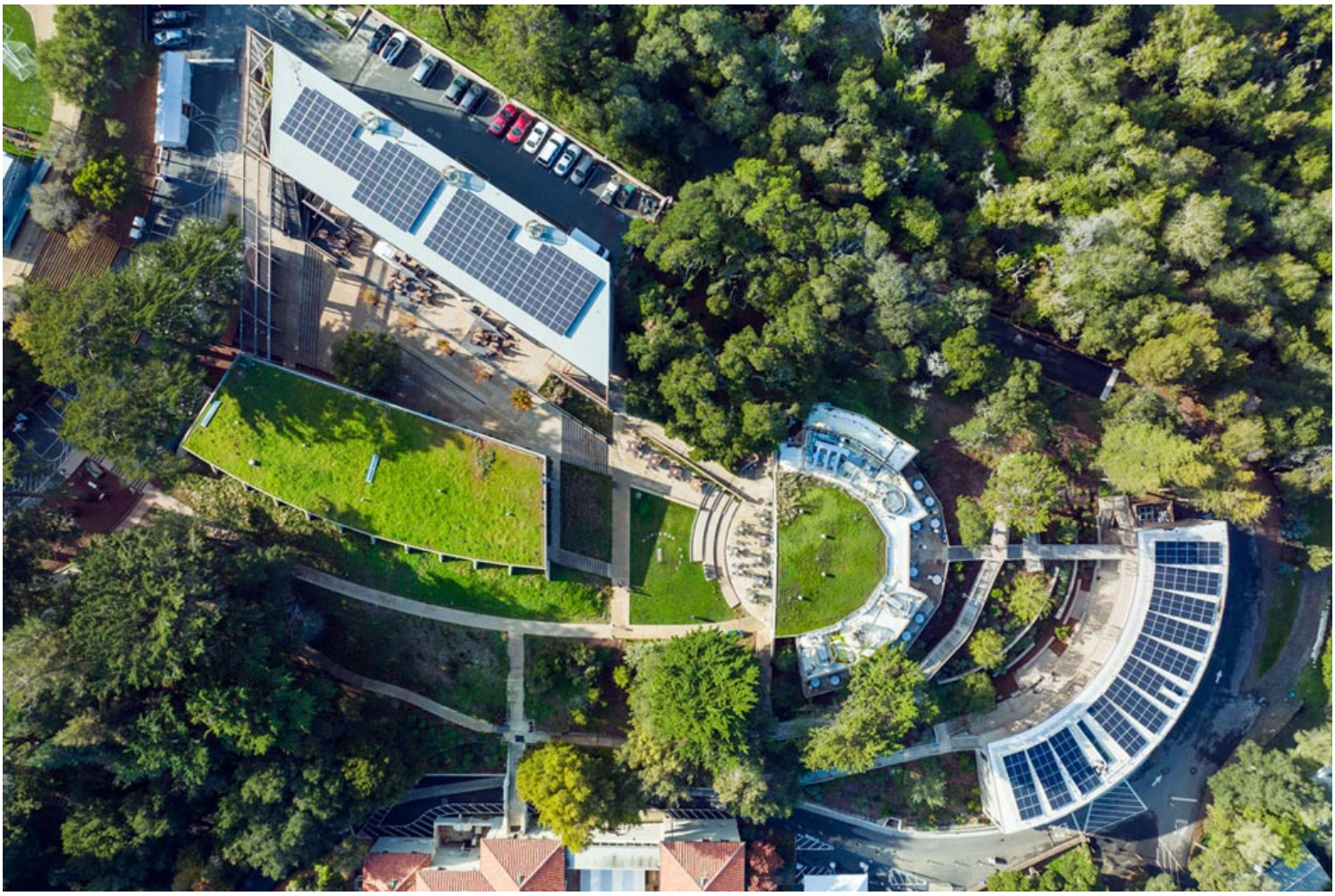
The Science and Environmental Center project teaches environmental stewardship, demonstrating how human interventions can be sensitive to the local environment and support regional ecologies. The project carefully weaves multiple sustainable strategies together, connecting school culture to place, creating education spaces that inspire lifelong learners while showing reverence for the natural world. The building is 100% electric and designed to be net zero operational energy/carbon, producing on-site all the energy it consumes annually. Its narrow floor plate allows for ample daylighting, views and natural ventilation, demonstrating how passive natural systems can reduce our need for energy.



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In an era of more frequent and severe droughts, the building promotes advanced water conservation by harvesting rainwater in a 10,000-gallon storage tank for reuse in the building's toilets, reducing potable water use by 89% compared to the baseline.

The Science and Environmental Center is a threshold building, visually and physically connecting the built campus with the forested regional open space beyond. A "Canopy Walk" links the existing Student Center at the heart of the campus to the new Environmental Center with a universally accessible educational path across the steep site. By using the Canopy Walk, all students—regardless of physical ability—may experience and explore the seasonal rhythms of the restored oak woodland ecology.

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Design Intent

A series of workshops were held with various stakeholder groups including students, staff, faculty, parents, alumni, and residential neighbors. The discussions and outcomes of the workshops were documented in written form and shared at subsequent meetings. As the design for the project developed, the school continued its outreach to various stakeholder groups with specific meetings targeting adjacent neighbors to build consensus for the project. When the town held public

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meetings to review and approve the project design, there was no opposition to the project, and it was unanimously approved.

A central goal of the project was to preserve and enhance access to open space on the campus. The benefits of preservation extend beyond the project site to the greater community which benefits from the preservation of native flora and fauna that support migratory birds and other wildlife. Enhanced universal access to the open space allows for all community members regardless of their ability to experience the seasonal rhythms of the native ecology.

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Design for Ecosystems

The project is located on the San Francisco Peninsula, an area defined by a Mediterranean climate with vegetation zones that include Chaparral, Coastal Scrub, Coastal Oak Forest and Grassland. The project touches the land lightly and pursues a landscaping strategy that promotes biodiversity, incorporates carbon sequestration, and reinforces an immersive, visceral experience of the rhythms of the natural world.

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Design for Well-Being

The design promotes a healthy learning community and individual well-being, emphasizing simple solutions that maximize user comfort, social engagement, and connections to nature, while reducing first cost and long-term maintenance. 100% of the regularly occupied spaces have access to operable windows, natural daylighting, and views out to nature. Material selection, including no-VOC paints and adhesives, formaldehyde free materials, and linoleum flooring, combined with 100% fresh air mechanical ventilation ensures healthy indoor air quality. All classrooms incorporate high NRC rated acoustical ceiling materials to absorb sound and cushioned linoleum flooring to reduce footfall reverberation. Exterior stairs and ramps are centrally located to encourage active vertical circulation around the building and adjacent site. Due to the open-air circulation and excellent access to natural ventilation, the building has proven to be easily adapted to the health requirements of the COVID pandemic, however the pandemic has also delayed post occupancy evaluation.

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Building Resources

Building materials were selected for economy, durability, and resource efficiency. The overall shape of the building models resource efficiency through simple building forms that rely on an efficient structural steel system to provide long term durability. Acknowledging that ecological conservation and social responsibility extend beyond the project site, 100% of the interior and exterior wood is FSC certified from responsibly managed forests on the west coast. 15% of building materials are made from recycled materials, including steel, concrete, cotton insulation, and aluminum. During construction, 89% of site and construction debris was recycled and diverted from landfills.

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Design for Change

The building was designed to provide flexibility and adaptability in both short and long terms. In the short term, teaching spaces are easily adaptable to evolving curricula and technologies. Overhead electrical cord reels in each classroom accommodate a variety of desk configurations. The simple building plan was generalized to the greatest extent possible, allowing for future adaptation to alternative uses in the long term, including housing if needed.

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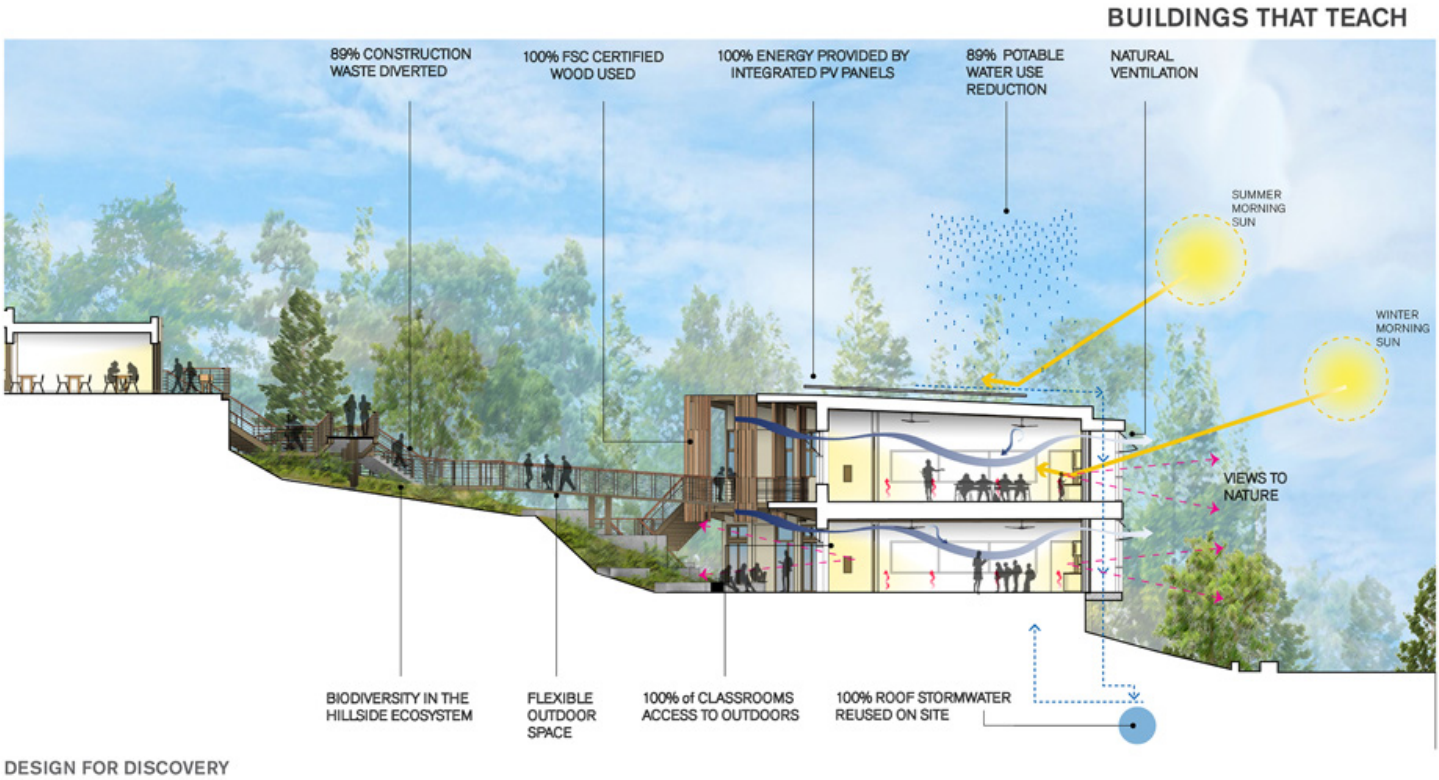

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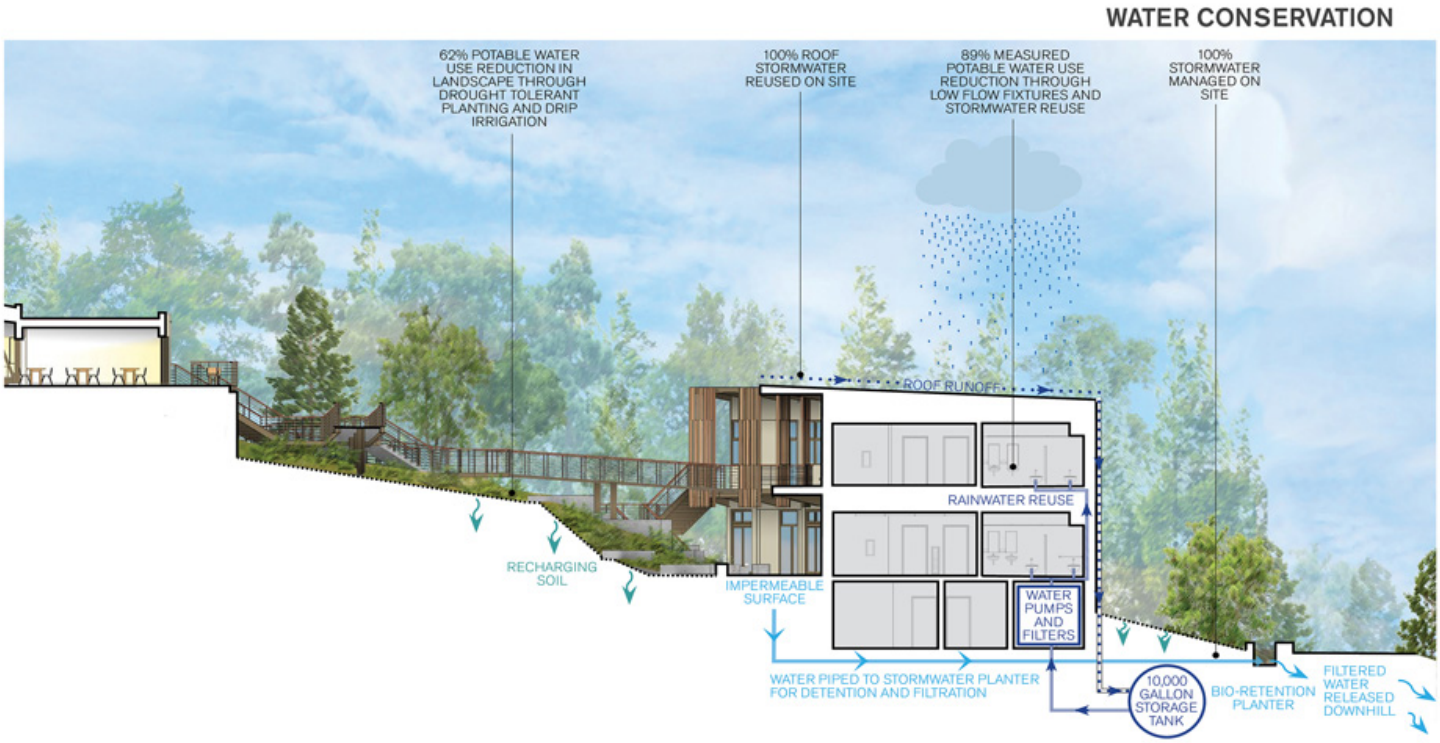

DESIGN FOR WATER

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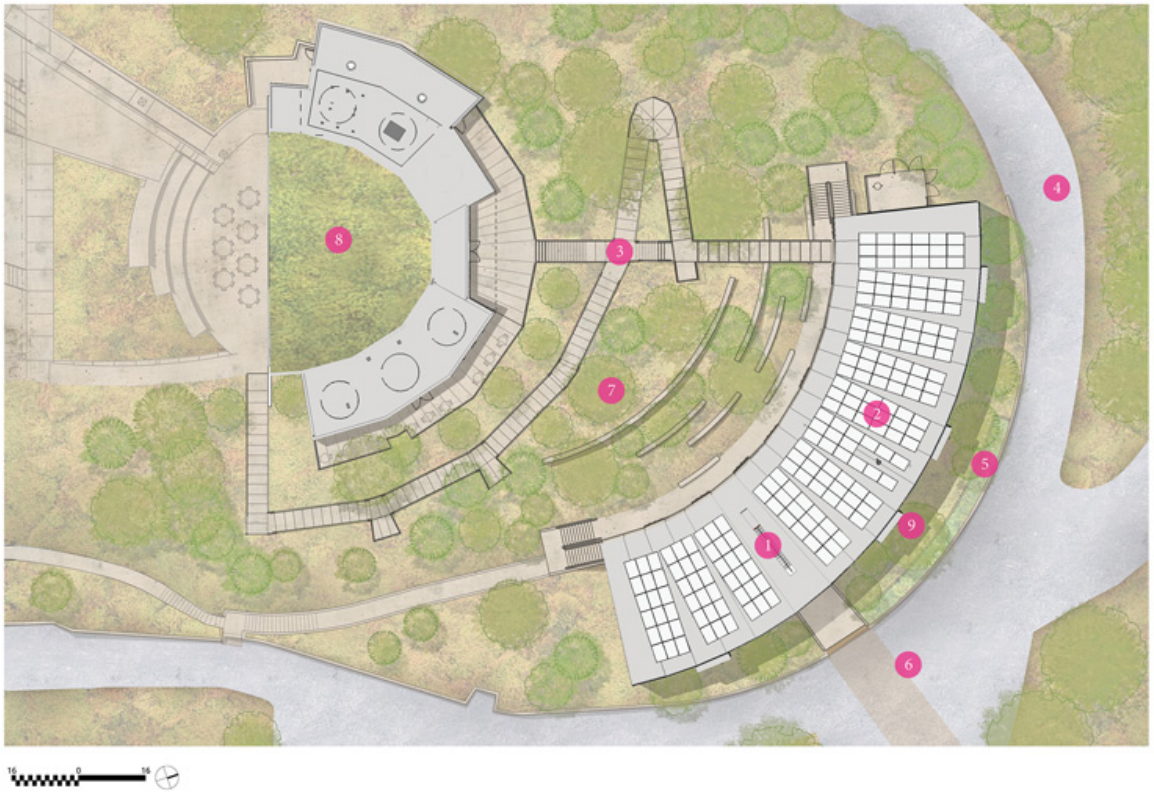

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