

THE ROBERT REDFORD BUILDING FOR THE NATURAL RESOURCES DEFENSE COUNCIL

SANTA MONICA, CALIFORNIA



THE U.S. GREEN BUILDING COUNCIL, THE GOVERNING BODY OF THE LEED RATING systems, has awarded The Robert Redford Building and the David Family Environmental Action Center a v2 Platinum rating under the LEED 2.1 green building rating system. The building is now the greenest in the U.S., and tied with a building in Hyderabad, India as greenest in the world.

The offices of the NRDC consistently have been built to high environmental design and resource conservation standards; their Southern California office is their most ambitious effort to date. The new offices and David Family Environmental Action Center are located in a 15,000-foot storefront commercial building adapted to accommodate offices; meeting rooms; and the Action Center, which features educational exhibits, the Leonardo DiCaprio e-Activism Zone, and a retail counter specializing in books about green design and the Southern California environment. Large operable windows and a series of internal light wells bring daylight deep into the building. The third-story terrace is designed as a small collection of seaside buildings overlooking the Pacific.

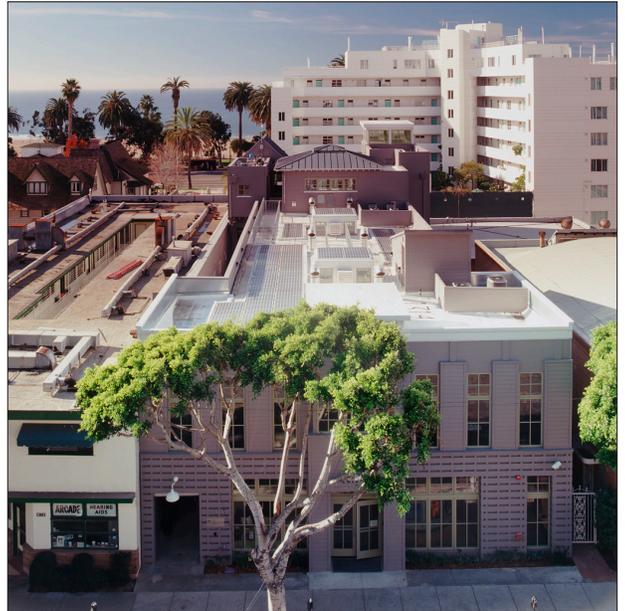
The project won the Congress of the New Urbanism's Charter Award.

ADAPTIVE REUSE

COST: \$3.9 Million

STATUS: Completed

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G. Furniture

a. Tables

The use of wood in the furniture ranges from structure to finish. Pieces throughout the building are constructed of either FSC certified lumber, such as in the receptionist desk or easily renewable material, such as bamboo for construction of side and console tables. The antique tables are all constructed of wood and show their age with distinction. Even some of the newer pieces, like those in the library and Wiatt conference room, have a distinct quality to them. Although bamboo is a grass, it can be made to take on the characteristics of wood as can be seen on the receptionist desk to reflect its use as the floor.

b. Chairs

The new office chairs were purchased because they contained over 50% post-consumer recycled content. Most of the office guest chairs are wood framed and bought from surplus warehouses. Windsor chairs spread throughout the building are also of wooden construction and complement the antique tables in certain public areas. The most interesting chairs in the building are located in the conference rooms on the third floor which are of wood construction with recycled seat belt webbing. Not all the chairs are wooden as seen in the library and Wiatt conference room chairs. These are aluminum frame chairs with a recyclable, toxin-free resin fiber.

c. Office Work Stations

The workstations are constructed of steel, with an average recycled content of more than 20 percent and gypsum, a by-product of coal burning. All materials and components are non-toxic, odorless, non-irritating and contain no-formaldehyde.

d. Cabinetry

Although they seem to be made of wood, the cabinetry throughout the building is constructed of Medite II, a medium-density fiberboard that has characteristics similar to wood. These were primed and painted with non-toxic, low-VOC paints. The base cabinets and countertops were topped with a plastic laminate whose main components are non-toxic resin and layers of paper.

e. Appliances

All the appliances in the kitchen and the mini-refrigerators in the break areas are all Energy Star compliant. This means that these particular appliances exceed the federal energy efficiency standards by 10 to 25 percent.

f. Outdoor furniture

The chairs, table and bench found on the roof terrace of the building are all constructed of plantation grown teak. Teak is a wonderful wood that can withstand the elements, but is usually grown in forests. This particular teak is grown at a plantation in a similar fashion to woods that are FSC certified.



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D. Materials and Resources:

- a. Recycled content
Over 90% of the building materials are recycled or recyclable. Among these materials is toilet partitions made out of recycled milk bottles, recycled glass ceramic tiles, carpet made out of 100% recycled nylon, and acoustic ceiling tiles made out of 70% recycled material. All concrete has a minimum 17% content of fly ash. All structural steel is of a minimum of 75% recycled material, which may include old cars and destroyed handguns.
- b. Locally harvested and manufactured materials
More than half of the materials installed in the building were either harvested or manufactured within 500 miles from the jobsite, reducing transportation requirements, and resulting in less pollution.
- c. Rapidly renewable materials
Materials include bamboo flooring, poplar interior stairs, poplar wood doors, biofiber panels made from wheat straw, and linoleum flooring.
- d. Certified wood
All lumber and plywood utilized in this building come from forests that harvest in a sustainable way and are certified by the Forest Council Stewardship.
- e. Construction waste management
Over 92% of deconstruction materials and construction waste were recycled.

E. Indoor Environmental Quality

- a. Carbon dioxide monitoring
Indoor air quality is being monitored 24 hours a day, and when CO₂ levels increase a warning allows building users to flush out the air in the building utilizing the exhaust fans installed at the top of the light wells.
- b. Improved natural ventilation
Operable windows, transom windows over the office entrances, and ventilation grilles at the top of the light wells allow for increased air flow throughout the building, providing a better indoor environmental quality, and reducing the air conditioning needs of the building.
- c. Construction IAQ management
During construction a two-week flush out of all mechanical systems was implemented to prevent indoor air quality problems resulting from the construction/renovation process. MERV-13 filters were used throughout.

d. Low-emitting materials

Low VOC paints and glues were used throughout the building. All materials are urea formaldehyde free to ensure a healthy environment.

e. Indoor chemical and pollutant source control

All rooms that have equipment that produce harmful particles such as copiers are provided with negative pressure and are ventilated utilizing separate fans.

f. Daylight and views

All offices and conference rooms are provided with operable windows and natural daylight. Light wells bring natural light to the heart of the building and transom windows, glass doors and sidelights help to light the interior of the office space.

g. User controllability of systems

All users have control over the temperature settings in their offices. Sensors turn off the HVAC units when the office window is open.

F. Landscape

The landscape scheme is showcasing two approaches to a water conserving environmental approach:

- a. Along the front and rear yards a more traditional xeroscape approach, with native and adaptive planting material, such as Agave and Euphorbia Milii, with low water needs;
- b. Along the sideyards we are showcasing an innovational watering technique, that irrigates the plants from below the root horizon, utilizing water's capillary action. Despite the use of black bamboo, that is a high water use plant, the virtual elimination of any evapotranspiration losses, create a very sustainable end result, that compares to the water needs of a xeroscape scheme.

H. LEED Submittal

The NRDC building has achieved 55 LEED points, which awards it a Platinum rating. Among these points are innovation points for exceptional performance in construction waste management by salvaging or recycling over 90% of the deconstruction materials and construction waste, for exceptional performance for using over 75% of the total lumber used, forest stewardship council certified lumber, and for exceptional performance in reducing water needs by over 40%. In addition we are pursuing innovation points for the Environmental Action Center, and the effort to create educational materials.

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C. Energy and Atmosphere:

a. Building commissioning

In order to verify and ensure that fundamental building elements and systems were designed, installed and calibrated to operate as intended, NRDC engaged a commissioning authority - independent from the design team. The commissioning team (CTG Energetics) analyzed the design intent, worked with the design team and the general contractor to create a commissioning plan, and conducted a series of tests to verify that the design intended for the fundamental building elements and systems was followed through during construction.

b. Increased building envelope insulation

Insulation R value is increased from code prescribed R-11 to R-27 for the roof and R-19 for the exteriors walls providing a 3% annual energy savings.

c. Energy Star rated roof coating

Light-colored roofing, along with shading provided by plants and over hangs, keeps temperatures down in and around our building. This reduces air conditioning needs, which in turn means we generate less heat.

d. Daylight Controls

"Task/ambient" lighting puts light where it's needed, and state-of-the-art fixtures with photo sensors dim light at corridors and common areas when daylight is sufficient. This is anticipated to result in 6% annual savings.

e. Low-E double glazed windows at East and West elevations

Low-E coating is shielding the interior space from heat generating UV rays.

f. Occupancy sensor lighting controls in perimeter offices

Occupancy sensors monitor the offices and turn the lights off when no occupant is detected, to reduce electricity demands.

g. High Efficiency HVAC

HVAC equipment with two-speed compressors and 3-speed interior fans deliver heating and cooling loads in the most efficient manner. The air conditioners use no harmful to the environment CFC gasses.

h. 100% OSA displacement ventilation design

When air conditioning is required, the high-efficiency system uses displacement ventilation to focus cool air where it is needed. The same distribution system is paired with hot water pipes to providing heating during the cool months. Heating and cooling to an individual office shuts off automatically when windows are opened.

i. Photovoltaic panels

A PowerLight 7.5 kW grid-connect solar electric array produces approximately 37.5 kWh of electricity per day, enough for approximately 20 percent of NRDC's needs (www.powerlight.com). When the building's electrical consumption is low, the system puts power back into the grid, running the electricity meter in reverse. For the rest of the building's energy needs, NRDC buys renewable energy generation credits (wind certificates), making it the building 100% powered by renewable sources, that add no carbon dioxide to the atmosphere.



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Sustainability Components of the Building

A. Sustainable Sites:

a. Proximity to transportation

The building was located within a 1/4-mile distance from at least two bus stations.

b. Park once utilization

The project is utilizing Santa Monica's park once parking structures for the employee's automobiles. This is reducing the amount of land that such a development requires, and reduces the amount of trips needed during the workday.

c. Amenities for bicycle and scooter riders

A bicycle rack and shower facilities are provided.

B. Water Efficiency:

a. Irrigation

A combination of low water using plants and highly efficient irrigation system that includes the ECS subsurface irrigation system that relies on capillary action to draw the water from a subterranean water chamber (www.ecsgreen.com). It is calculated that an annual total of 2,450 gallons of water will be needed to irrigate the plantings. This need will be served by 100% recycled water sources.

b. Rain water harvesting

All rainwater that lands on the roof of the building is collected, pretreated using active carbon filters, and store in two large cisterns that hold about 3,000 gallons of water. This water is then delivered to the gray water system, processed and used to flush toilets and irrigate. The non-landscaped areas of the sideyards and backyard are made pervious by utilization a porous surface (GravelPave2). At the sideyards where proximity to the building foundations was a concern the GravelPave2 system is combined with a number of dry wells - 10' feet deep, that direct water to the water table. The drywells are constructed utilizing HDPE pipes, which are perforated at the bottom 5 feet to allow water to percolate to the water table.

c. Low-Water fixtures

Waterless urinals by Falcon Water Technologie (www.falconwaterfree.com), dual flush toilets by Caroma (www.caromausa.com), and high efficiency 1/2 gallon per minute faucets.

d. Gray water recycling

Water is collected from showers and lavatory sinks, mixed with stored rainwater and treated utilizing an Equaris Infinity treatment system (www.equaris.com). The system has a capacity of 800 gallons per day. This system consists of a surge tank for flow control, an aeration tank to produce aerobic conditions and a clarification tank to return the settled solids back to the Surge Tank. An extremely energy efficient air compressor provides an abundant amount of air to continuously circulate the waste water. A disinfection system utilizes ozone, 20 Micron and 1 Micron filters, UV light, ultra filters, and reverse osmosis to clean water to make it available for irrigation and toilet flushing.



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The David Family Environmental Action Center showcases the mission of the NRDC in a variety of exhibits that describe water, urban, air and green building issues. It has a series of computer programs designed for kids that allow them to communicate directly with decision-makers.

It also has an interactive program describing the performance of this building in its New Urbanist setting. This program has a "real time" monitor of all of the sustainable measures in the building. For instance one can see how much power is generated by the photovoltaic panels, how much water is being recycled, how much fresh air is being brought into the building, and the balance of natural and electrical lighting as the viewer engages the software.



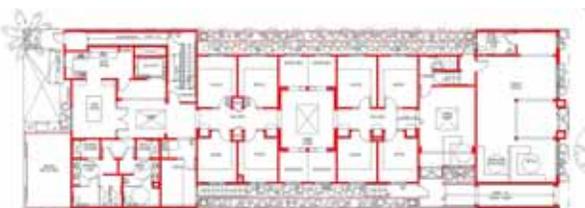
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The interior is organized around a central spine punctuated by the lightwells. In contradistinction to a usual law office where the partners have the best light and views, the most prized positions within the building are given over to the most shared uses: the conference rooms, library, eat-in kitchen and upper story porch.

The generous central corridor is like the public realm of the city: meant to gather people from outside of their offices and, in the Aristotelian tradition, encourage dialogue, the exchange of ideas and team work amongst the staff.

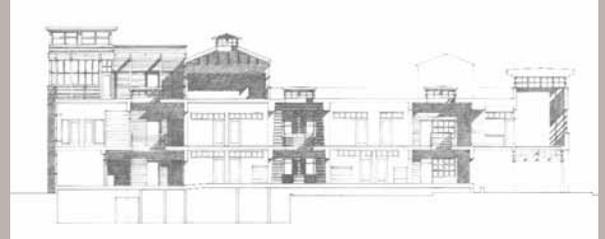
The interiors of the building use the same exterior siding in the lightwells along with a host of highly renewable and recycled materials like bamboo, poplar, partitions mad from recycled water bottles and carpet made from recycled nylon.

The furniture is a mix of antiques, local classics like the Eames chair, custom pieces made from salvaged wood and chairs made from seatbelts.



Ground Floor Plan

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Longitudinal Building Section



The lighthouse was chosen as a metaphorical as well as locational and functional device. It is a powerful reminder of this location at the water's edge, evocative of life lived in the elements. The lighthouse is a beacon, an appropriate symbol for environmental organization. Three lightwells march down the center of the building bringing natural light down to the deepest portions of the building and creating places to sit and congregate. The administrative staff is located here in bays supporting the attorneys in the offices off the central corridor.

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The rear of the building opens up to the Ocean on the 3rd floor while creating a tight urban face to the alley below. A cluster of village-like structures surrounds an open patio that takes in the best views, light and fresh ocean breezes. It takes its cues from the adjacent houses from the teens.



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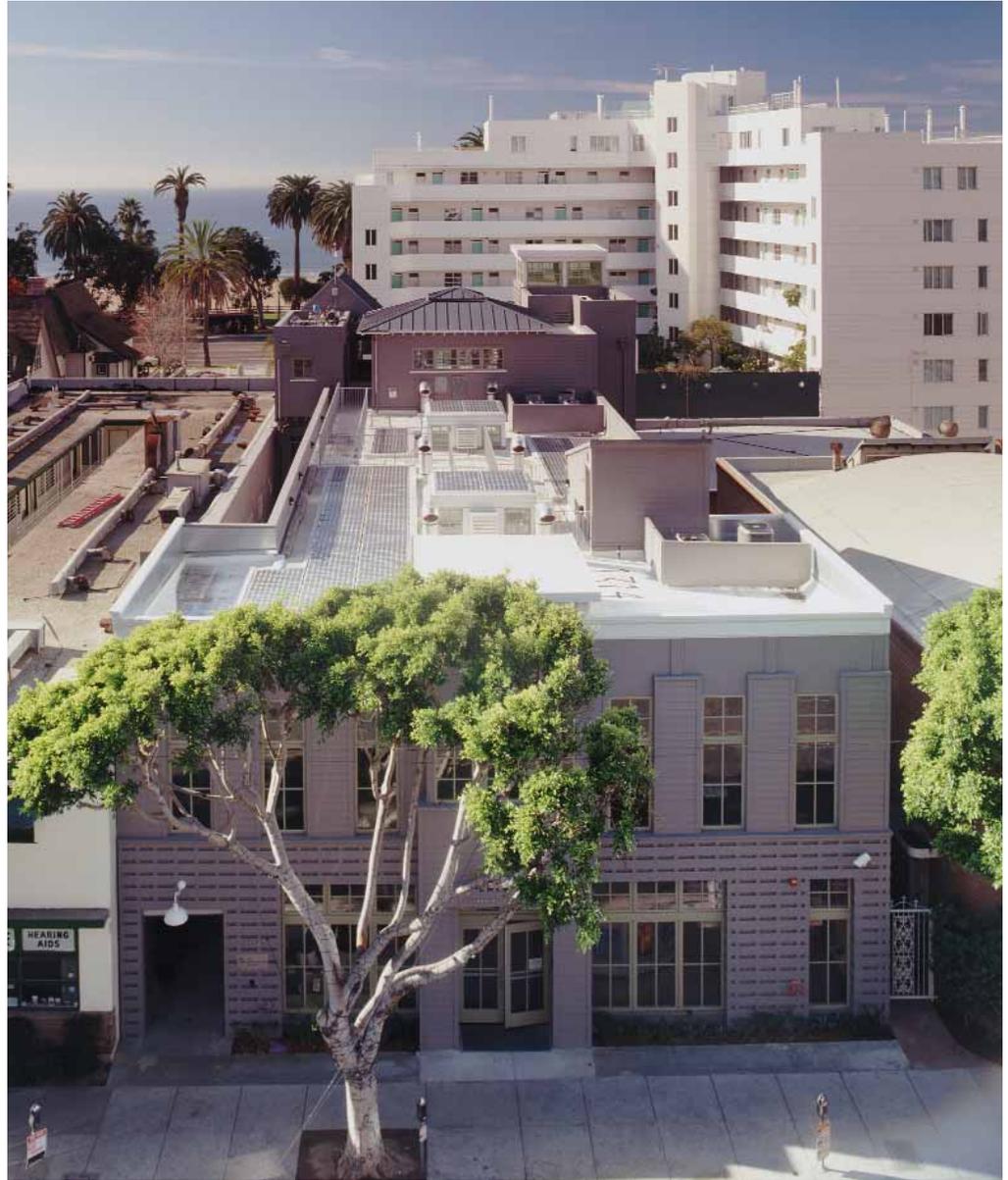


The project is an adaptive reuse of building from the 20's with a heavy remodel from the 70's that gave it the image pictured below. Sadly the columns and detailing of the previous façade were poorly constructed from plastic and foam and therefore not serviceable building fabric.

The building's frontage is along Second Street with an entrance to the offices at the side and an entrance to the David Family Environmental Action Center with its windows at the base of the building. The buildings retail and exhibit space amplify the street activity that is already quite busy (by Los Angeles standards)- helped along by a bi-weekly thriving Farmer's Market which extends down Second Street. The second story piano nobile houses a conference room in the center bay with offices on its flanks. This center conference room is lit by high clerestory lights and is the first of the "lighthouses" that march down the center of the building.

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The location of the NRDC headquarters is situated in the Bayside District of Santa Monica, an active mixed-use pedestrian neighborhood. It fronts on Second Street with protected views of the Pacific Ocean to the south and west. The building sits on a bus line, is parked in a parking garage across the street in a "Park Once" district and is within walking distance to shops, hotels, housing, other organizations and offices, Palisades Park and the beach.



context

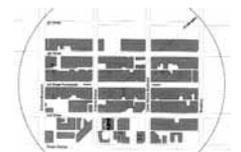


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