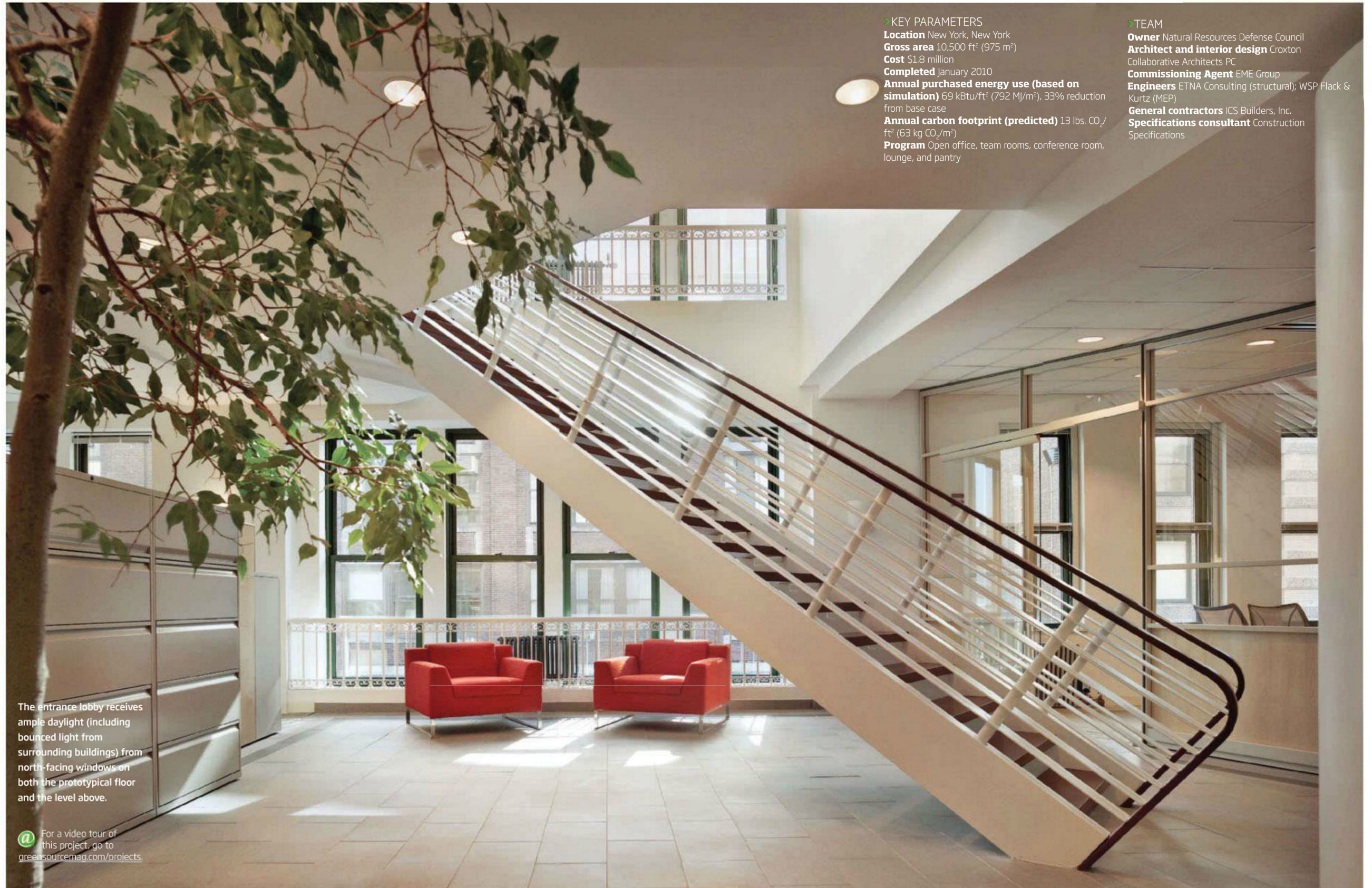


# Let There Be Daylight

Croxtan Collaborative has designed LEED Platinum offices in New York City for the NRDC, a leader in environmental advocacy.

**New York architect Randolph Croxtan**, a pioneer in developing sustainable design, knows the value of like-minded clients. When his firm Croxtan Collaborative designed two and a half floors for the National Resources Defense Council (NRDC) offices in New York City in 1988, the project was commended for helping to define “green architecture” in America: Its design not only saved energy, but placed an emphasis on clean air and nontoxic materials. The firm’s environmentally oriented renovation in 1992 of a 19th-century commercial structure for the National Audubon Society—also in New York City—secured the architect’s reputation for straightforward, functional, comfortable, and sustainable design.

The clients come back: Following the initial 1988 interior, NRDC returned twice to Croxtan for the design for one and a half additional floors of offices. Then in 2009 it acquired three more floors in its headquarters building in the Flatiron District and asked Croxtan to devise an updated prototype for one of them. As Antonio Guerrero, director of facilities and administration at NRDC, explains, the project “embodies all the work NRDC does in terms of sustainability.” The prototype floor would be part of a master plan guiding



The entrance lobby receives ample daylight (including bounced light from surrounding buildings) from north-facing windows on both the prototypical floor and the level above.

For a video tour of this project, go to [greensourcemaq.com/projects](http://greensourcemaq.com/projects).

BARRY HALKIN • HALKIN PHOTOGRAPHY LLC

## CASE STUDY 4

## NRDC HIGH-PERFORMANCE EXPANSION PROTOTYPE

New York, New York

By SUZANNE STEPHENS

### KEY PARAMETERS

**Location** New York, New York

**Gross area** 10,500 ft<sup>2</sup> (975 m<sup>2</sup>)

**Cost** \$1.8 million

**Completed** January 2010

**Annual purchased energy use (based on simulation)** 69 kBtu/ft<sup>2</sup> (792 MJ/m<sup>2</sup>), 33% reduction from base case

**Annual carbon footprint (predicted)** 13 lbs. CO<sub>2</sub>/ft<sup>2</sup> (63 kg CO<sub>2</sub>/m<sup>2</sup>)

**Program** Open office, team rooms, conference room, lounge, and pantry

### TEAM

**Owner** Natural Resources Defense Council

**Architect and interior design** Croxtan Collaborative Architects PC

**Commissioning Agent** EME Group

**Engineers** ETNA Consulting (structural); WSP Flack & Kurtz (MEP)

**General contractors** ICS Builders, Inc.

**Specifications consultant** Construction Specifications

the design of the remaining new spaces in the building and the eventual updating of the original offices, as well as offices elsewhere. Already the high-powered environmental advocacy group has placed 166 employees in its New York City quarters, and counts a total of 400 employees in offices in Washington, D.C., San Francisco, Chicago, Los Angeles, and Beijing, as well as New York City.

With regard to the new prototype, Croxton notes that when his firm first began to work for NRDC, its lawyers, scientists, and environmental activists had individual offices, and computers were large and stationary. “Fast-forward 25 years, and we have the Internet, Wi-Fi, and total mobility,” he says. “With this new floor we introduced open workstations to increase functionality and density, and added team rooms for group meetings.” The prototype’s open-office plan increases density of the occupants from 38 (on the average) to 45. “The open-office plan was controversial,” says Guerrero. “But once employees were in place after moving in last fall, they liked the environment.”

Working with a 7,900-square-foot conditioned area (10,500 gross square feet), the team introduced measures to create an office environment that scores 51 of the 57 potential points under LEED-CI v2.0, putting it in the top-tier LEED Platinum category. According to the architects, this is

>SOURCES

- Glass** PPG Solarban 70XL Starphire
- Insulated panel/plastic** Green Fiber Cocoon
- Doors** VT Industries
- Roof coating** GAF Topcoat Fireshield MB
- Cabinetwork/custom woodwork** Columbia Forest Products Purebond
- Paints and stains** Benjamin Moore Eco Spec
- Paneling** Knoll fabric panels
- Flooring** Expanko (cork); Hoover Plywood (subfloor)
- Carpet** InterfaceFLOR
- Ceiling tile** Armstrong Ultima
- Furniture** Humanscale Liberty (task chairs); Knoll Autostrada (workstations); DIRTT (dismountable partitions); Nevins Dakota Burl (loose tables)
- Countertop** IceStone
- Backsplash** 3Form
- Downlights** Lightolier Energos
- Lighting controls** Lutron Ecosystem
- Urinals** Zurn Ecovantage Pint
- Lavatory faucet** Sloan
- HVAC unit** United CoolAir
- VAV boxes** Titus
- Carbon dioxide sensors** Telaire



1 In addition to replacing individual corner offices with meeting areas, Croxton pulled the work stations away from the windows, leaving perimeter areas for circulation and informal gatherings.



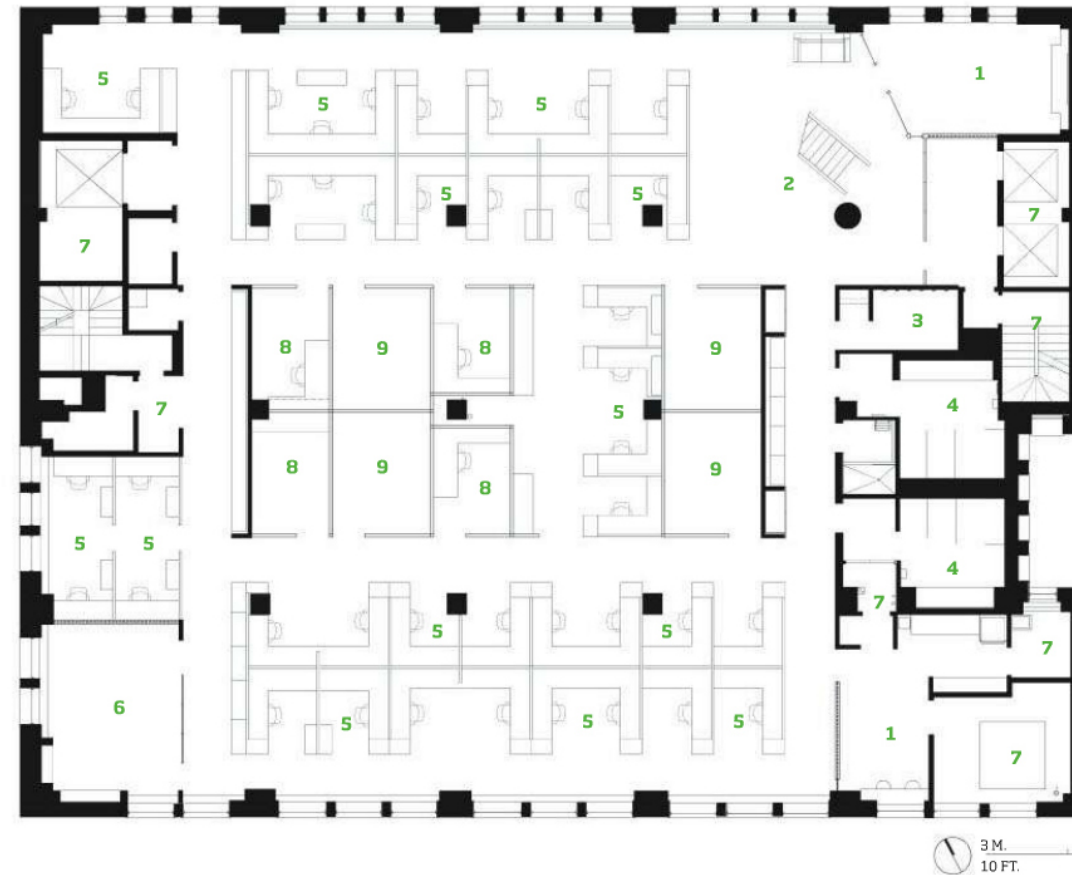
2 High-performance glazing and special upper and lower shades cut down on solar gain on the south facade. As part of its construction process, the team diverted 96.6 percent of the demolition waste into recycling and reuse.

the highest percentage of any LEED-CI project in the world and the highest LEED rating for one in New York.

Due to exposures on the north, south, and west, the architects relied on windows to provide maximum natural light, including bounced light from surrounding buildings. In addition to fitting windows with high-performance glazing, the firm installed two types of blinds at the windows that further mitigate solar load: On the upper portion, fixed solid aluminum slats are angled to direct daylight toward the ceiling, while the perforated lower portions of the blinds can be adjusted by employees. In addition, the architects sloped the ceiling up toward the windows, and chose surfaces with a high reflectivity, along with a white and light

green color scheme devised by the firm’s interior design director Kirsten Childs. The workstations’ low partitions allow light to permeate the offices, with extra daylight admitted from the upper-level windows on the north wall next to an interior stair. Suspended fluorescent fixtures, controlled by sensors, plus task lighting supplement daylight. The result: Energy usage for the lighting is 31 percent more efficient than ASHRAE 90.1-2004 standards.

The architects took the familiar green measures to improve indoor air quality by using low- or no-VOC materials in paints and other finishes. And the easy-to-replace carpet tiles have a non-PVC backing with no formaldehyde added. Behind the Sheetrock, blown-in cellulose insulation is packed into



- FLOOR PLAN/SECTION
- 1 Conference room
  - 2 Reception area
  - 3 Bike storage
  - 4 Bathroom
  - 5 Open workstations
  - 6 Lounge
  - 7 Utility
  - 8 Office
  - 9 Team room

the wall cavities. Many of the interior materials derive from recycled content, including gypsum board walls, ceilings, and chairs, along with FSC-certified wood for demountable partitions, and panels made from sunflower husks for loose tables.

Air-conditioning is supplied by a water-cooled chiller with a water-side economizer that project manager Jean Hahn reports has turned out to be 40 percent more efficient than that mandated by ASHRAE’s 90.1 code, based on cost. In the winter thermostatically actuated control valves on steam radiators modulate heating. Since this floor contains more office appliances than the others, its energy consumption would be expected to be high, yet the higher density of office workers brings consumption down to 11 million BTUs per person per year.

Integrated project delivery among architects, the owner, and the contractor resulted in major cost savings. By the terms of AIA’s A195-2008 contract, the process calls

for the three parties to continually exchange up-to-date market information. Another feature, open books—that is, full disclosure of all costs and charges—does away with adversarial relationships that often arise among the stakeholders. As a result, the \$1,841,211 construction cost came in 7.5 percent less (\$148,000) than the original estimated budget. However, Matt Wickware of ICS, the general contractor, warns that “those involved in the building process need to be compensated, not just for time but for expertise, which may be hard to quantify.”

Nevertheless, the process demonstrated it was possible to save energy and money. “We consider it an extremely successful prototype—with a feeling of openness, fresh air, and general comfort, and one that allows us to learn from new best practices,” notes Guerrero.

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