

NRDC



NATURAL RESOURCES DEFENSE COUNCIL
SAN FRANCISCO

SUSTAINABLE WORKPLACE PRACTICES IN SAN FRANCISCO



CONTENT

3.

5.

7.

9.

11.

15.

17.

19.

21.

23.

25.

27.

HISTORY

The Natural Resources Defense Council has a long history in the Bay Area of California. A New York based not-for-profit, NRDC became bi-coastal in 1972, just 2 years after its founding.

Almost four decades later, NRDC's northern California office is located in the financial district area of San Francisco in the Hunter-Dulin building. Completed in 1927, the building stood as the fourth highest building in the city at the time. The famous Schultze and Weaver, known for design of New York's Grand Central Terminal and many major hotels of the 1920s, were hired to design the prestigious office building. Complete with Romanesque and French Chateau ornamentation, such as the 38-foot high mansard roof sporting both dormers and gables, the iconic building was first known as the west coast headquarters of the National Broadcasting Company between 1927 and 1942. It also housed the fictional offices of Sam Spade, the private detective and protagonist of Dashiell Hammett's 1930 novel, *The Maltese Falcon*.

As a registered historic building, the Hunter-Dulin is symbolic of reuse, subject to the frequent reimagining of space by a wide range of tenants. Recognizing the value in the space NRDC occupied since 2004, the concept of reuse was embraced eleven years later in retrofitting the office on the 20th and 21st floors. Through careful planning and consideration, the project team was able to reuse a significant amount of material that was already in the office, totaling in value to be more than 10% of the materials construction budget. By designing the space with these in situ items, other salvaged materials and new, Red List free products, the project team gave the San Francisco office a fresh look while continuing to appreciate the building's historic beauty.



*An early 20th Century photo of the Hunter-Dulin Building.
Photo courtesy of Gladding, McBean & Co.*



MISSION

The Natural Resources Defense Council's purpose is to safeguard the Earth: its people, its plants and animals and the natural systems on which all life depends.

We work to restore the integrity of the elements that sustain life -- air, land and water -- and to defend endangered natural places.

We seek to establish sustainability and good stewardship of the Earth as central ethical imperatives of human society. NRDC affirms the integral place of human beings in the environment.

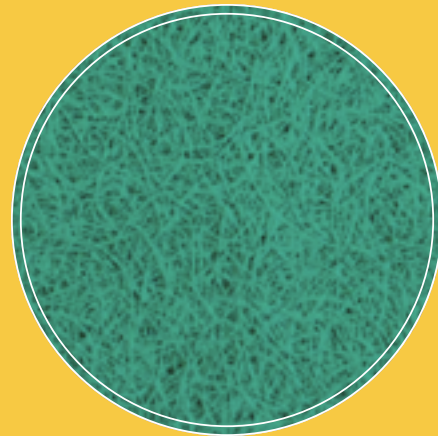
We strive to protect nature in ways that advance the long-term welfare of present and future generations.

We work to foster the fundamental right of all people to have a voice in decisions that affect their environment. We seek to break down the pattern of disproportionate environmental burdens borne by people of color and others who face social or economic inequities. Ultimately, NRDC strives to help create a new way of life for humankind, one that can be sustained indefinitely without fouling or depleting the resources that support all life on Earth.

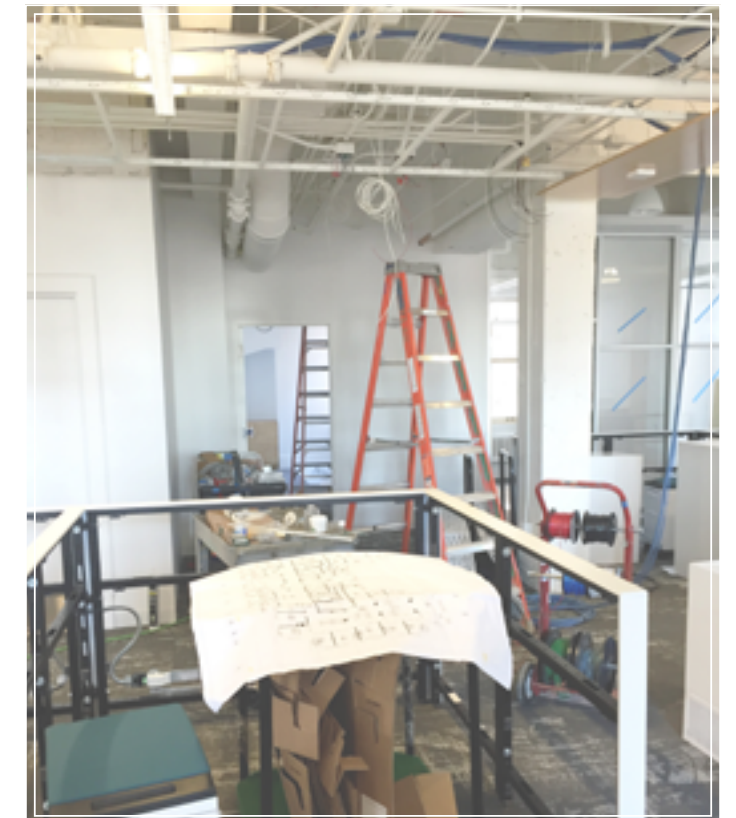
VISION

In 2015, after 11 years of occupying the Hunter-Dulin building, it came time to renovate the San Francisco office. With the aid of architect Gensler, we at NRDC created a space that embraces our mission, a space that is not only healthy and beautiful for employees, but considerate of the environment. Under the guidance of Living Building Challenge consultant, Closed Loop Advisors, and LEED consultant, stok, and along with general contracting services by GCI General Contractors, the space meets aggressive environmental goals without compromising functionality or aesthetics.

Everything from floor to ceiling, and all that's in between, has been carefully selected in order to make sure that materials and resources place an emphasis on environmental stewardship. Through strategic research, design, and implementation, the San Francisco office now serves as a progressive space that pushes the boundaries of planet-conscious standards for commercial rehabilitation projects.



Eco-friendly products used in the construction for the office update.



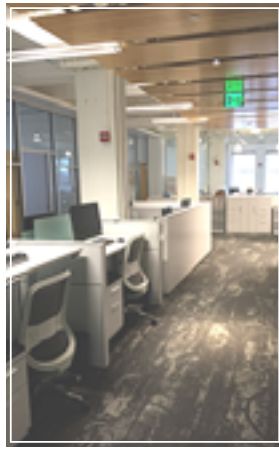
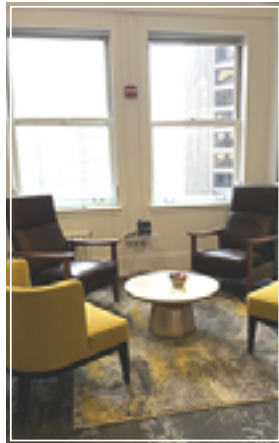
In process photos of the San Francisco office during the construction phase.

APPROACH

The office is a mix of open floor plan and enclosed spaces. All of the private offices have glass fronts, providing an even distribution of light and views of the outside throughout the space.

With early planning, our team was able to reuse many parts of the pre-existing office and enhance elements of the original building. This helped to greatly reduce construction materials compared to conventional offices retrofits and kept costs down.

Additionally, the project targeted aggressive green building standards. The design and construction is targeting Gold level certification under the LEED v4 Interior Design and Construction for Commercial Interiors Rating System and Living Building Challenge 3.0 Petal Certification.



The updated office space is a mix between an open floor plan and enclosed spaces.

PLACE

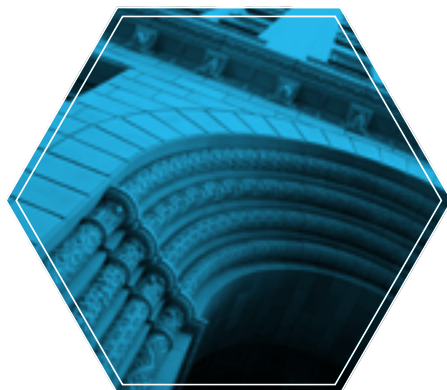
We intentionally locate all of our offices in urban areas. They are well connected by all forms of transportation and in proximity to our many stakeholders. The cities where NRDC offices are located are inherently well established with infrastructure and buildings that were constructed decades, if not over a century ago.

- While the Hunter-Dulin building is almost a century old, it is certified LEED Gold under LEED for Existing Buildings 2009.
- The office is within walking distance to the Bart train, bus, and Muni metro stops as well as the Bay Area bike share program.
- 13 secure bike storage racks are located within the building, providing short term bicycle storage for at least 2.5% of all peak visitors and long-term bicycle storage for at least 5% of regular building occupants. Within the office, there is a shower, changing facilities and lockers.

Ongoing Impact: Employees can bike to work or take advantage of the easily accessible public transportation instead of driving their own vehicles. This reduces contribution to San Francisco's pollution and lessens the office's carbon footprint.



The SF office is easily accessible by the Montgomery stop via the BART train.
BELOW: Public transportation options in San Francisco.



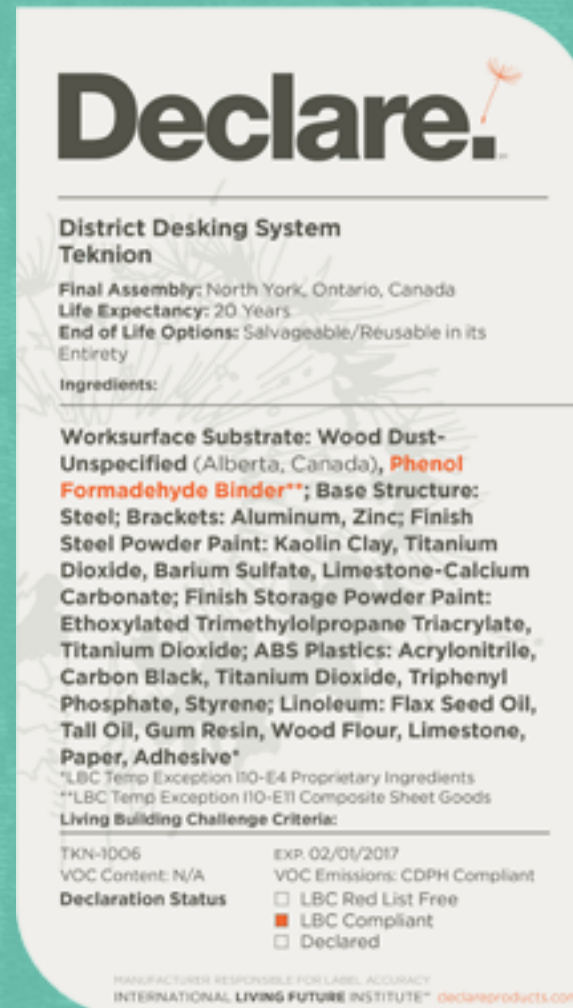
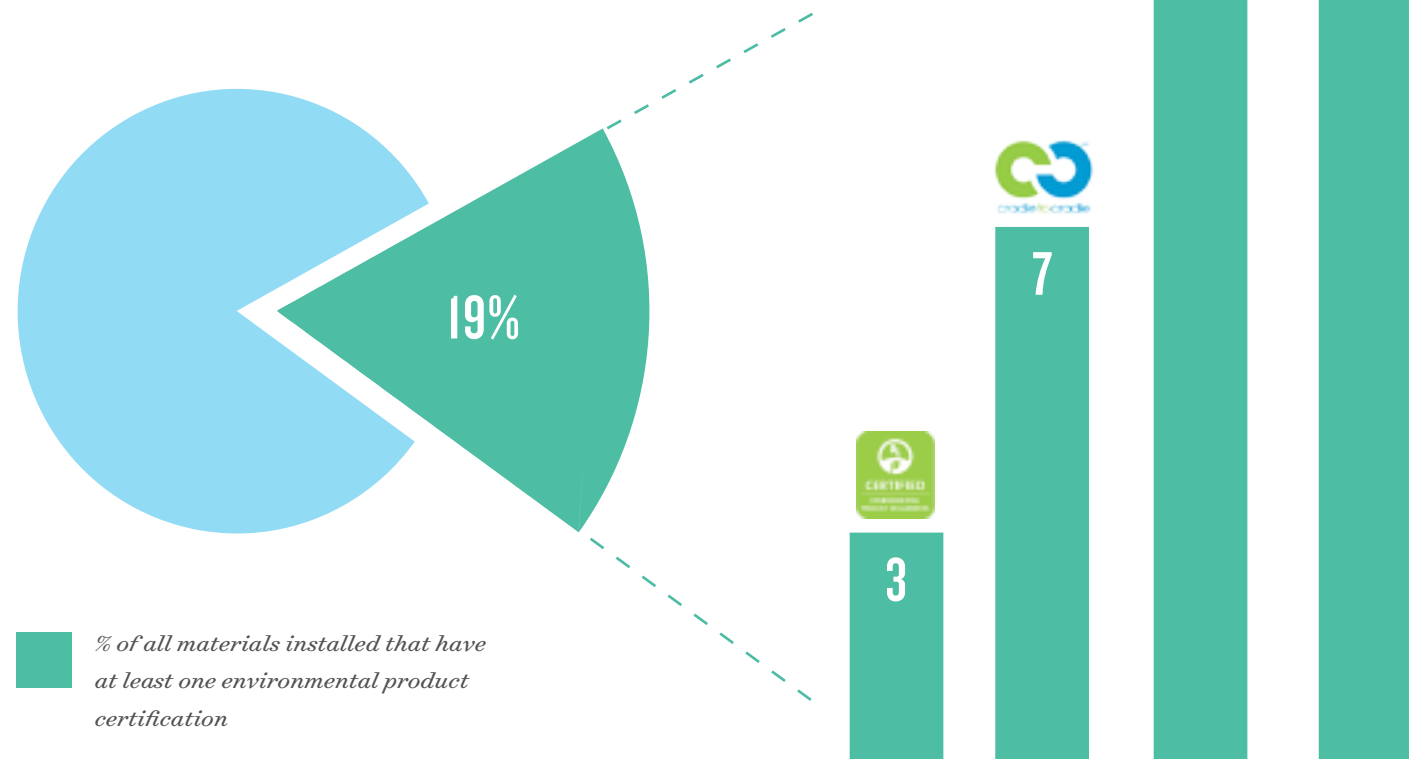
A few examples of the several ways employees can commute to work.

MATERIALS

Every effort was made to maintain as many materials from the pre-existing office as possible. Many of the elements, such as the bamboo ceiling panels and all of the doors, have remained in place or have been refinished and reinstalled.

Product health: New construction materials meet the stringent Living Building Challenge Red List requirements (see side box). Compared with traditional building materials, the ones we've installed minimize pollutants added to the air and entering into our bodies. Through conscious purchasing decision, we encourage manufacturers to change their materials to be healthier for people and the environment.

Ongoing Impact: When replacing materials, employees will use the same set of rules as used during construction such as making sure materials are Red List-free and locally sourced. Products with Declare labels will be given preference. NRDC will continue to advocate for the change in the market for healthier and safer materials.



A sample Declare logo.

15 OUT OF 163

products installed have a Declare label, which provides a full list of product ingredients, manufacturing location and any exceptions to the Red List that were taken. The relatively high number of labels is a critical indication that the building industry and manufacturers are trending towards full transparency. Declare is a program created by the International Living Future Institute.

What ^{IS} THE Red List?

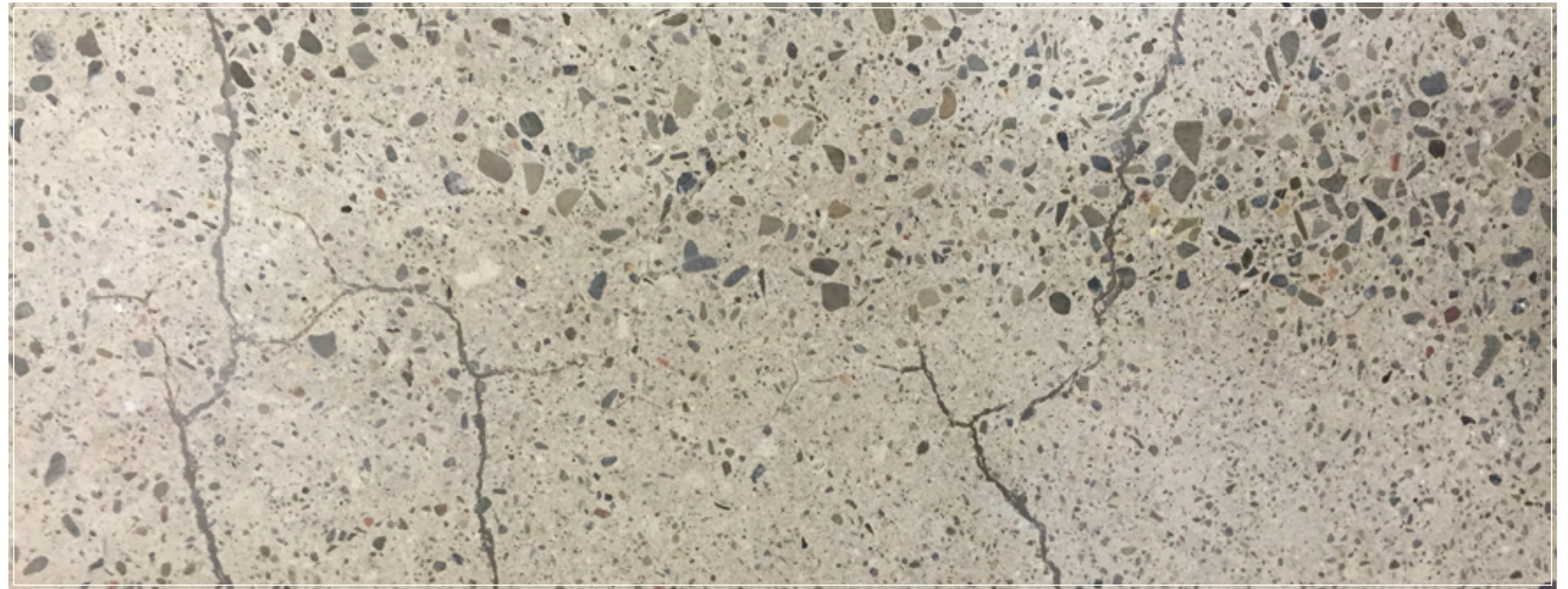
The Red List is a list of worst in class ingredients. Many common building materials contain chemicals that can have deleterious human and environmental effects. However, if a building product is Red List-free, it is unlikely to have known toxic chemicals in it. The Living Building Challenge operates under the precautionary principle: if there is any possibility that there might be an adverse human health effect, we have to assume it does.

RED LIST MATERIALS

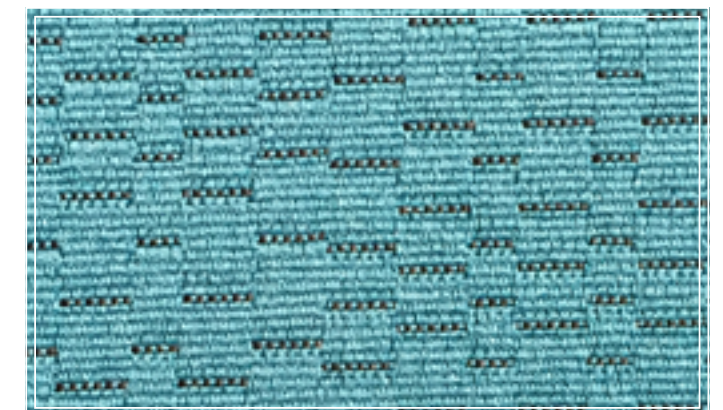
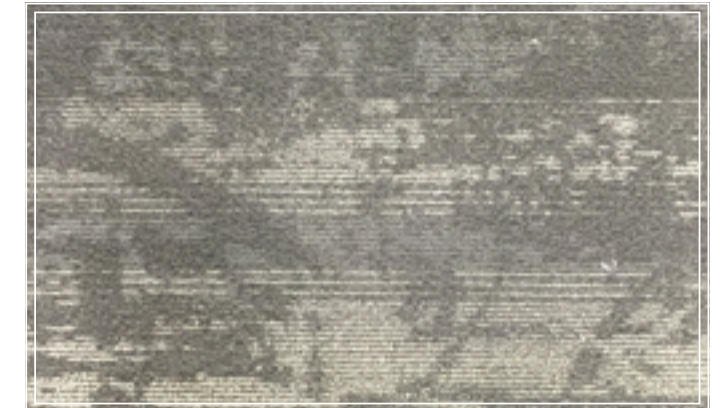
- Alkylphenols
- Asbestos
- Bisphenol A (BPA)
- Cadmium
- Chlorinated Polyethylene or Chlorosulfonated Polyethylene
- Chlorinated Polyvinyl Chloride (CPVC)
- Chlorobenzenes
- Chlorofluorocarbons (CFCs)
- Chloroprene (neoprene)
- Chromium VI
- Formaldehyde (added)
- Halogenated Flame Retardants (HFRs)
- Hydrochlorofluorocarbons (HCFCs)
- Lead (added)
- Mercury
- Perfluorinated Compounds (PFCs)
- Phthalates
- Polychlorinated Biphenyls (PCBs)
- Polyvinyl Chloride (PVC)
- Polyvinylidene Chloride (PVDC)
- Short Chain Chlorinated Paraffins
- VOCs in Wet Applied Process
- Wood treatments containing Creosote, Arsenic and Pentachlorophenol

SPECIFIC PRODUCTS

- Nearly all the furniture also meets the requirements of the LBC Materials Petal. Systems furniture and much of the ancillary furniture have Declare labels, or is preowned by NRDC. Some furniture was salvaged from other projects or used furniture websites, then reupholstered to maintain a new, fresh look.
- Casework in the new pantry, community hall, reception and elsewhere around the office is made from panels of reclaimed sorghum straw bound together with a formaldehyde-free binder. It is also low VOC.
- Acoustic ceiling tiles in common spaces are made from FSC certified wood fibers, emitting no VOCs while helping to absorb sound pollution.
- Countertops are made from a natural quartz material.
- Electric and data cabling have low smoke zero halogen jacketing, signifying that the wires and associated casings are PVC- and halogen-free and are less toxic when they burn, such as in the case of a building fire.
- All of the paint has VOC levels below the South Coast Air Quality Management District (SCAQMD) Rule 1168 for Adhesives and Sealants or the CARB 2007 Suggested Control Measure (SCM) for Architectural Coatings, meaning it does not emit dangerous chemicals that would otherwise pose health risks for tenants. The brand used specifically has a different formulation than any other paint making it as toxic free as possible.
- While most carpet in the US is manufactured in South Carolina and Georgia, the team chose a carpet made by a California based company. This reduces the amount of carbon emissions that result from shipping products across the country. The carpet has a PVC-free backing and all adhesives are non-toxic and low VOC.
- The team made a significant effort to eliminate hexavalent chromium – a chemical commonly found in the galvanizing process of steel – by avoiding conduit and other steel parts that are made with it. When they couldn't, the team advocated to manufacturers to remove this chemical from their processes.
- The sliding glass wall around the large conference room allows for flexible use of the space and also lets light into and out of the conference room. For video-conferencing, curtains can be drawn around the room to guarantee only the right amount of light enters into the space.



Clockwise from top to bottom: A) Re-sealed original concrete floor. B) Carpet Tiles. C) Task chair cushion. D) Sorghum straw board.



ENERGY

Reducing the amount of energy needed to build and keep the office running has the greatest impact on carbon footprint. The architect and engineer, with guidance from our Energy program staff, designed the most aggressive possible energy efficiency measures into the space.

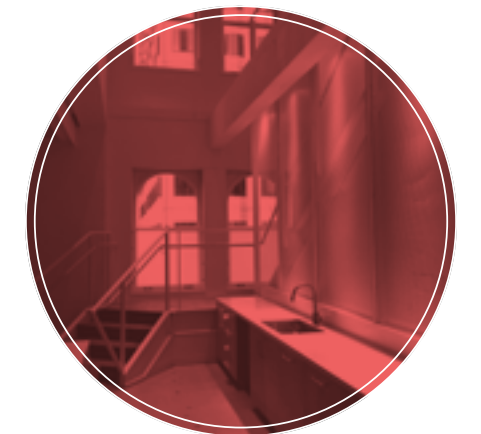
- The space includes both pre-existing and new lighting fixtures in an effort to save well working fixtures and to have the most energy efficient lighting system. All new fixtures are LEDs and were strategically placed to minimize the number. In compliance with California's Title 24 from the building code, the system has dimming, daylight and occupancy sensor capability. As a result, the lighting power density is a very efficient 0.36 watts/sf. This makes the project 55% more efficient than code requires.
- Windows border the narrow floorplate, and interior walls parallel to the windows are made of glass. This allows natural light to penetrate deep into the office, reducing the need for energy use from lighting.
- The space is naturally ventilated and has minimal HVAC equipment. Operable windows offer occupant control over temperature regulation and allow for less mechanical heating and cooling.
- All office electronics are Energy Star certified, exceeding government energy efficiency standards.
- We offset the embodied carbon from the renovation and two years of operating electricity by purchasing 38.7 tons CO₂e in Verified Carbon Standard (VCS) credits, supporting landfill gas capture programs across the United States.

Ongoing sustainability: Employees can take advantage of the natural light and only turn on additional lights when they are needed. All future electronics purchases will be reviewed for maximum energy efficiency.



All new lighting in the SF office is 55% more efficient than code requires.

BOTTOM: *Three examples of energy efficient practices in the new office.*



WATER

At the time of design, California was in a drought. The office design addresses the issue of water scarcity in every way it can.

- All sinks, in the pantries and restrooms, have aerators installed to reduce water flow.
- Dishwashers are Energy Star certified and are high water efficiency to minimize the amount of water needed to clean dishes.
- While restrooms were not in the scope of the project, we worked with building management to swap out the toilets and urinals for more water efficient options.
- By installing water efficient fixtures and fittings, the project was able to reduce indoor water use by 41.26%.

Ongoing sustainability: Reducing water waste is largely behavioral. Employees can help conserve water by making sure they don't leave sinks running and waiting until the dishwasher is full before running it, saving both water and energy.



Sinks with aerators were installed to conserve water.

MONITORING

Human behavior is a central part of ensuring that the space operates at its peak environmental performance. Specific features are designed to notice when occupants use the space and turn off when energy consuming activities aren't necessary.

DATA COLLECTION

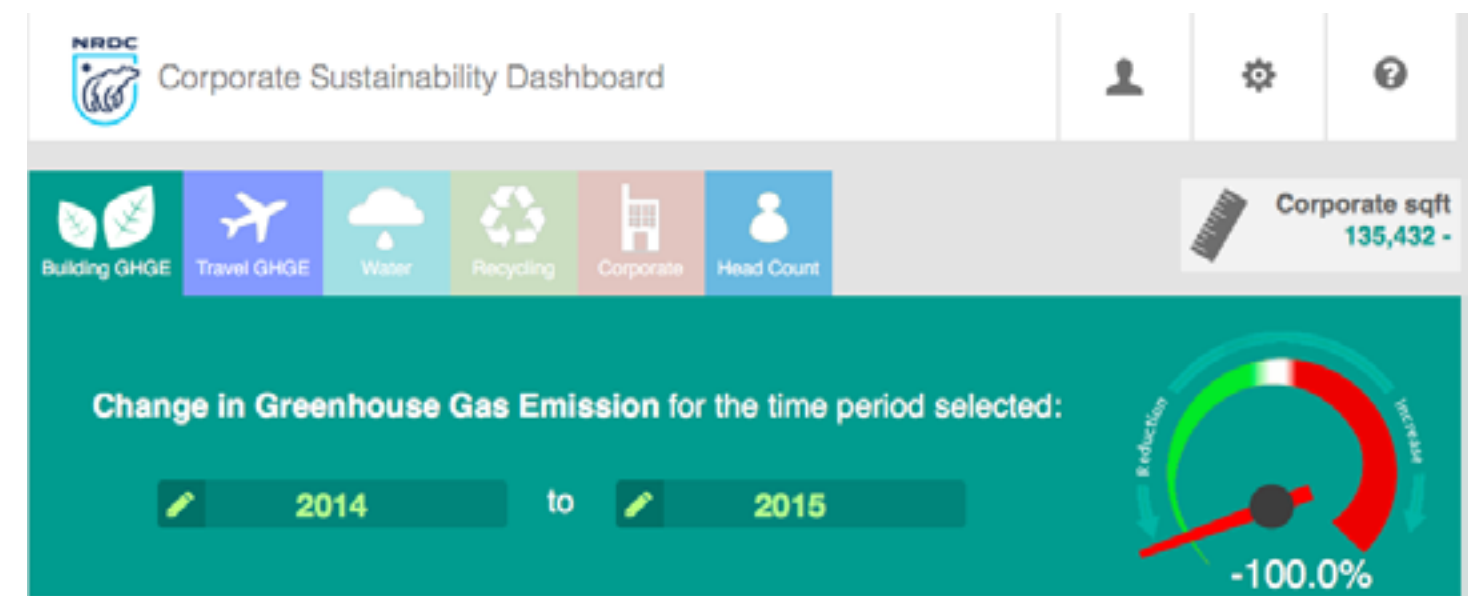
- Noveda Smart Monitoring allows for collection of real time water and energy usage. The data is stored in an online database, providing in-depth reports of energy and water use over periods of time.
- Noveda data can help NRDC to record inefficiencies in water and energy use, identify where to make adjustments, and help to reduce wasted resources.

PRODUCTS MONITORING LIGHTS & ELECTRICITY

An advanced lighting and dimming system automatically adjusts to the surrounding light conditions (sunny conditions will dim lights automatically to reduce unnecessary waste).

- After 8 minutes of inactivity, motion sensors shut lights off to save on energy usage; lights in work areas automatically turn on 50% brightness.
- These efforts have resulted in over a 55% reduction in designed lighting power density as compared to baseline requirements.
- Special occupancy outlets have sensors that turn off after detecting no movement in the area. No sensitive electronics get plugged into these outlets, but for other less critical electronics, energy is saved when they are not needed.

Ongoing sustainability: Based on robust data gathering and ongoing analysis, employees can work toward reducing the office's energy and water footprints.



Clockwise from top to bottom: A) Monitoring electrical work. B) Exhaust fan. C) Noveda Smart Monitoring screen shot.

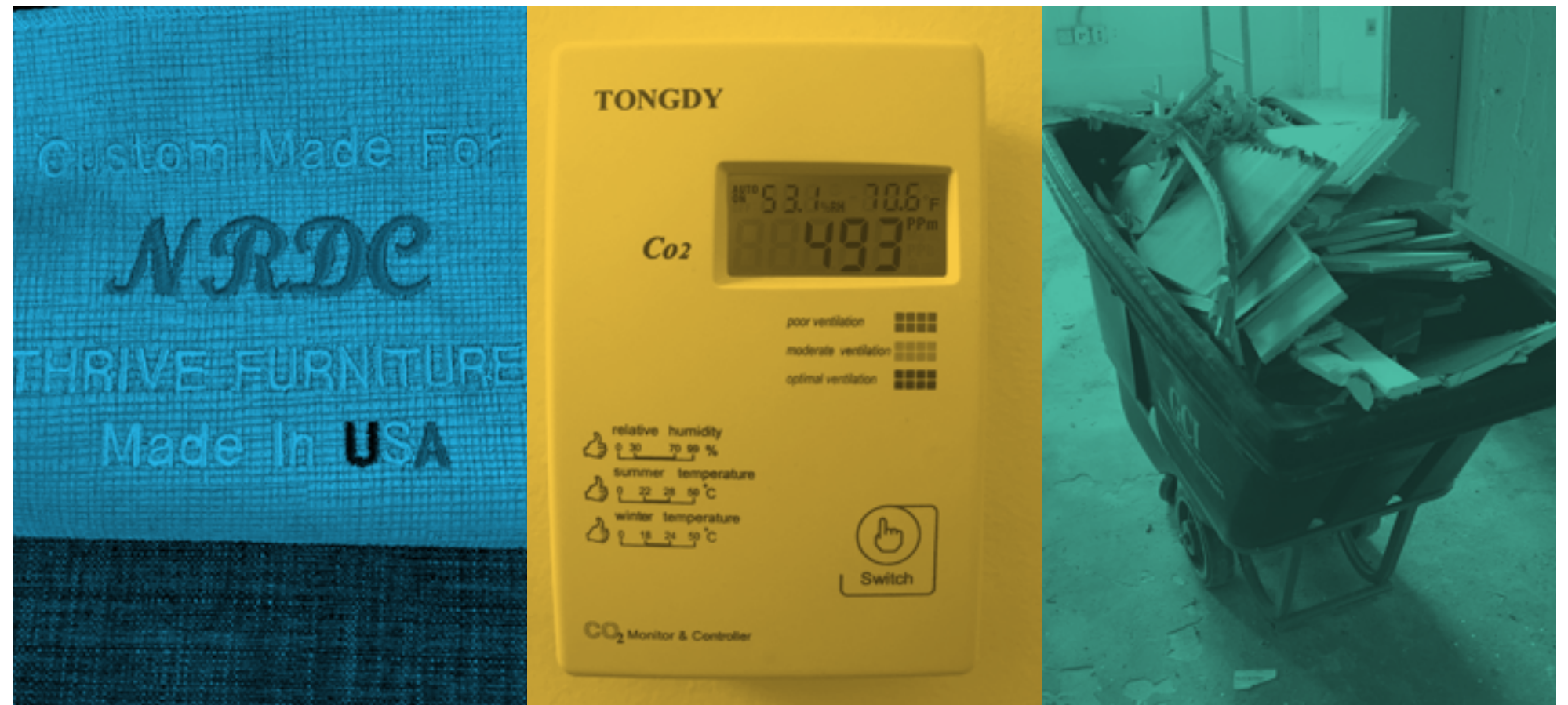
HEALTH

Human health is not the most obvious environmental feature of an office but it's one that we prioritize. It is not only central to the productivity of staff and the organization they work for; the benefits can extend to the manufacturers that we vet for any presence of toxics.

- Every material installed in the office was vetted to confirm that there were no toxic Red List ingredients (see Materials section) present.
- Any wet applied products or other products that are likely to emit VOCs over the course of their lives were vetted to ensure that they met stringent indoor air quality standards.
- Modern furnishings are sourced from local companies, using either sustainable or recycled materials, and meeting GREENGUARD Certification or an equivalent certification.
- Accessible and operable windows allow occupants to ventilate the office.
- To prevent the accumulation of contaminants caused by construction activities, measures were taken such as pathway interruption, heating, ventilation and air conditioning protection, regular cleaning during construction, and proper planning of the construction schedule.
- Every room has a sensor that will indicate to occupants when the amount of CO₂ in the room is uncomfortably high. At 1000 ppm the screen turns yellow, and at 1800 ppm the screen will turn red and an alarm will start to beep until fresh air is delivered to the room, most easily by opening a window or door.
- The office passed a rigorous air quality test proving that any pollutants are below acceptable thresholds

Ongoing impact: Employees can use the operable windows and make sure cleaning products comply with low-VOC standards.

Left to Right: A) Custom made furniture, made in California, containing no halogenated flame retardents. B) CO₂ sensor. C) An example of regular cleaning during construction to reduce contaminants on the job.

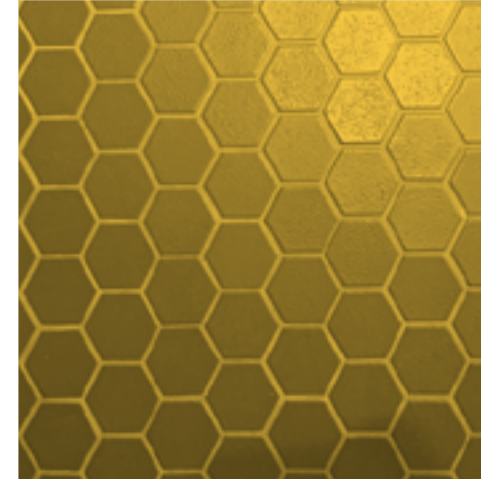
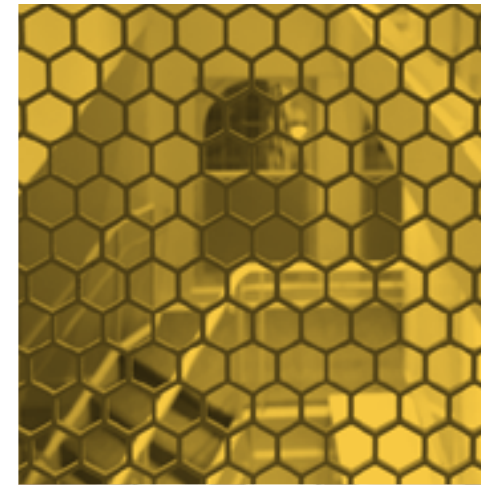


BEAUTY & SPIRIT

- Biophilia is humankind's innate biological connection with nature and the principle we used to guide beauty.
- Features of biophilia, such as the cabinetry, glass office fronts, and hexagonal patterns create a connection with nature, dynamic and diffuse light, and biomorphic patterns & mystery, capturing the spirit of the office.
- Plants are incorporated throughout to bring nature inside. We worked with a local artist to design specific plant features that would complement the architectural design elements.

Ongoing sustainability: The beauty and spirit of the office can be shared with others. Visitors and occupants can be educated either through the guided tours or signs around the office that provide information for self-touring.

Top to Bottom: A) Hexagonal metal screen. B) Reclaimed sorghum board. C) Hexagonal tile D) Open internal staircase.



14 PATTERNS OF BIOPHILIC DESIGN

Biophilic design can reduce stress, enhance creativity and clarity of thought, improve our well-being and expedite healing. The following patterns explain relationships between nature, human biology, and the design of the built environment. As many of these as possible were incorporated into the San Francisco office design:

NATURE IN THE SPACE

- 1. Visual Connection with Nature.** A view to elements of nature, living systems and natural processes.
- 2. Non-Visual Connection with Nature.** Auditory, haptic, olfactory, or gustatory stimuli that engender a deliberate and positive reference to nature, living systems or natural processes.
- 3. Non-Rhythmic Sensory Stimuli.** Stochastic and ephemeral connections with nature that may be analyzed statistically but may not be predicted precisely.
- 4. Thermal & Airflow Variability.** Subtle changes in air temperature, relative humidity, airflow across the skin, and surface temperatures that mimic natural environments.
- 5. Presense of Water.** A condition that enhances the experience of a place through seeing, hearing or touching water.
- 6. Dynamic & Diffuse Light.** Leverages varying intensities of light and shadow that change over time to create conditions that occur in nature.
- 7. Connection with Natural Systems.** Awareness of natural processes, especially seasonal and temporal changes characteristic of a healthy ecosystem.

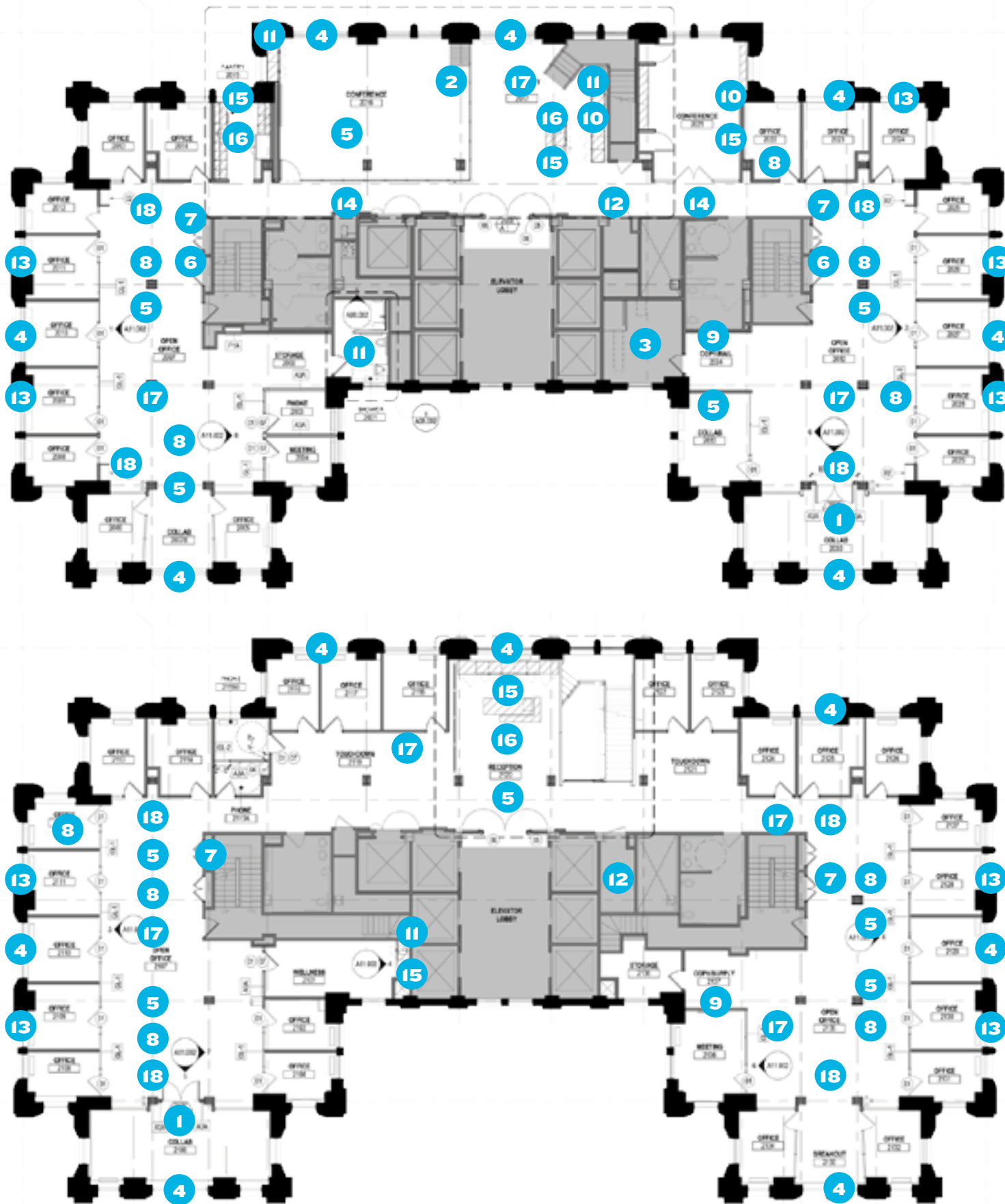
NATURAL ANALOGUES

- 8. Biomorphic Forms & Patterns.** Symbolic references to contoured, patterned, textured or numerical arrangements that persist in nature.
- 9. Material Connection with Nature.** Materials and elements from nature that, through minimal processing, reflect the local ecology or geology and create a distinct sense of place.
- 10. Complexity & Order.** Rich sensory information that adheres to a spatial hierarchy similar to those encountered in nature.

NATURAL ANALOGUES

- 11. Prospect.** An unimpeded view over a distance, for surveillance and planning.
- 12. Refuge.** A place for withdrawal from environmental conditions or the main flow of activity, in which the individual is protected from behind and overhead.
- 13. Mystery.** The promise of more information, achieved through partially obscured views or other sensory devices that entice the individual to travel deeper into the environment.
- 14. Risk/Peril.** An identifiable threat coupled with a reliable safeguard.

SUSTAINABILITY HIGHLIGHTS



1. FSC certified ceiling tiles emit no VOCs while helping to absorb sound pollution.
2. The special glass sliding, stacking wall around the large conference room allows for flexible use of the space and also lets light into the conference room.
3. Low smoke zero halogen cabling eliminates hazardous PVC and halogens in wiring.
4. Accessible and operable windows allow occupants to ventilate the office (throughout entire office).
5. Lighting systems automatically dim to natural light (throughout entire office).
6. Electricity automatically shuts off to some of the outlets when it senses vacancy (throughout entire office).
7. Noveda Smart Monitoring provides real-time energy and water use data.
8. Workstations, office desks, and chairs have Declare labels, demonstrating the manufacturer's willingness to be transparent with the ingredients in their products.
9. All qualifying electronics in the office are Energy Star compliant.
10. Waste is sorted into compost, landfill and recycling for paper, corrugated cardboard, glass, plastic, metal and battery disposal.
11. Low-flow faucets, shower and toilets help keep from wasting water.
12. Lighting system provides a 55% more efficient lighting density than baseline requires (throughout entire office).
13. Meters that measure CO2, temperature and humidity are installed around the office to help tenants to maintain a healthy indoor environment.
14. The bamboo ceiling panels and all of the doors have remained in place or have been refinished and reinstalled.
15. Low VOC and FSC certified casework is made from reclaimed sorghum straw and created with a formaldehyde free binder.
16. Countertops are made from a- Red List free natural quartz material.
17. Paint is low VOC, meaning it does not emit dangerous chemicals that would otherwise pose health risks for tenants (throughout entire office).
18. California-manufactured carpet has a PVC-free backing and adhesives that are non-toxic and low VOC.

ATTRIBUTION

Photo credit to:

- Michael Balint, flickr
- frank farm, flickr bw
- Gladding, McBean & Co.
- stantontcady, flickr
- Trucy Phan, github



SPRING 2016

111 SUTTER STREET, 20TH AND 21ST FLOOR, SAN FRANCISCO, CA 94104 // 415.875.6100

WWW.NRDC.ORG