Kiss + Cathcart, Architects

44 COURT ST. TOWER C, BROOKLYN, NY 11201 t +1 718 237 2786 f +1 718 237 2025
www.kisscathcart.com

Bushwick Inlet Park, 2014
WILLIAMSBURG, BROOKLYN. 2014 AIA COTE TOP TEN AWARD, LEED PLATINUM. ONE OF ARCHDAILY'S TOP 100 US PROJECTS, 2016

photo: Paul Warchol

productive architecture

Selected Projects 2016

STILLWELL AVENUE TERMINAL TRAIN SHED, NY CITY TRANSIT, 2006
AIA COTE TOP TEN AWARD, 2006

BUSHWICK INLET PARK, PHASE 1 COMPLETE 2009, PHASE 2 COMPLETE 2014
AIA COTE TOP TEN 2014 - NYC PUBLIC DESIGN COMMISSION AWARD 2008. LEED PLATINUM

BRONX RIVER GREENWAY RIVERHOUSE, CONSTRUCTION 2014
NYC PUBLIC DESIGN COMMISSION AWARD 2007. LEED PLATINUM EXPECTED

SMITHSONIAN TROPICAL RESEARCH FACILITY, BOCAS DEL TORO, PANAMA, 2005
DESIGNED AS A ZERO ENERGY/ZERO WATER BUILDING, IN A DEMANDING TROPICAL CLIMATE

IJSSELSTEIN SOLAR HOUSING, NETHERLANDS, 2002
FIRST THIN FILM BIPV HOUSING PROJECT

22 CATON PLACE, BROOKLYN, NY. 2015
HIGH PERFORMANCE RESIDENTIAL

productive architecture

Productive architecture creates positive benefits on every level – human, environmental, and economic.

In environmental terms, this means buildings that produce a surplus of renewable energy, use no groundwater, and generate no waste.

In human terms, this means making places that promote health, happiness, and inspiration.

In economic terms, this means creating functional, profitable buildings.

In architectural terms, productivity is essential to good design.

Kiss + Cathcart offices
Brooklyn, NY

ecology + economy

Derived from the classical Greek word for house, "oikos," the words ecology and economy refer to the relationship between the household and its external context, whether natural or societal. At Kiss + Cathcart, we believe the two words are linked functionally and not just linguistically — that architecture which is ecological must also be economical.

about our office

Kiss + Cathcart is a versatile and progressive architectural practice that has designed a wide range of project types while maintaining high standards of design, economy, and ecological soundness. Our work explores the potential of sustainable materials and technologies to satisfy the perennial needs of function, value, and comfort.

Since founding the office in 1983, we have completed projects types from high–technology manufacturing facilities and public institutions to homes, retail stores, and restaurants, both as new construction and renovation. We have pioneered a number of integrated technologies which add productive value to buildings, including Building Integrated Photovoltaics (BIPV), Building Integrated Vegetation and Agriculture.

We are skilled at getting the most value out of any budget, be it challenging or generous. The practice has been consistently honored by international awards, invited lectures and competitions, and extensive publication in venues such as Architectural Record, The New York Times, Wired, Dwell, and Metropolis.

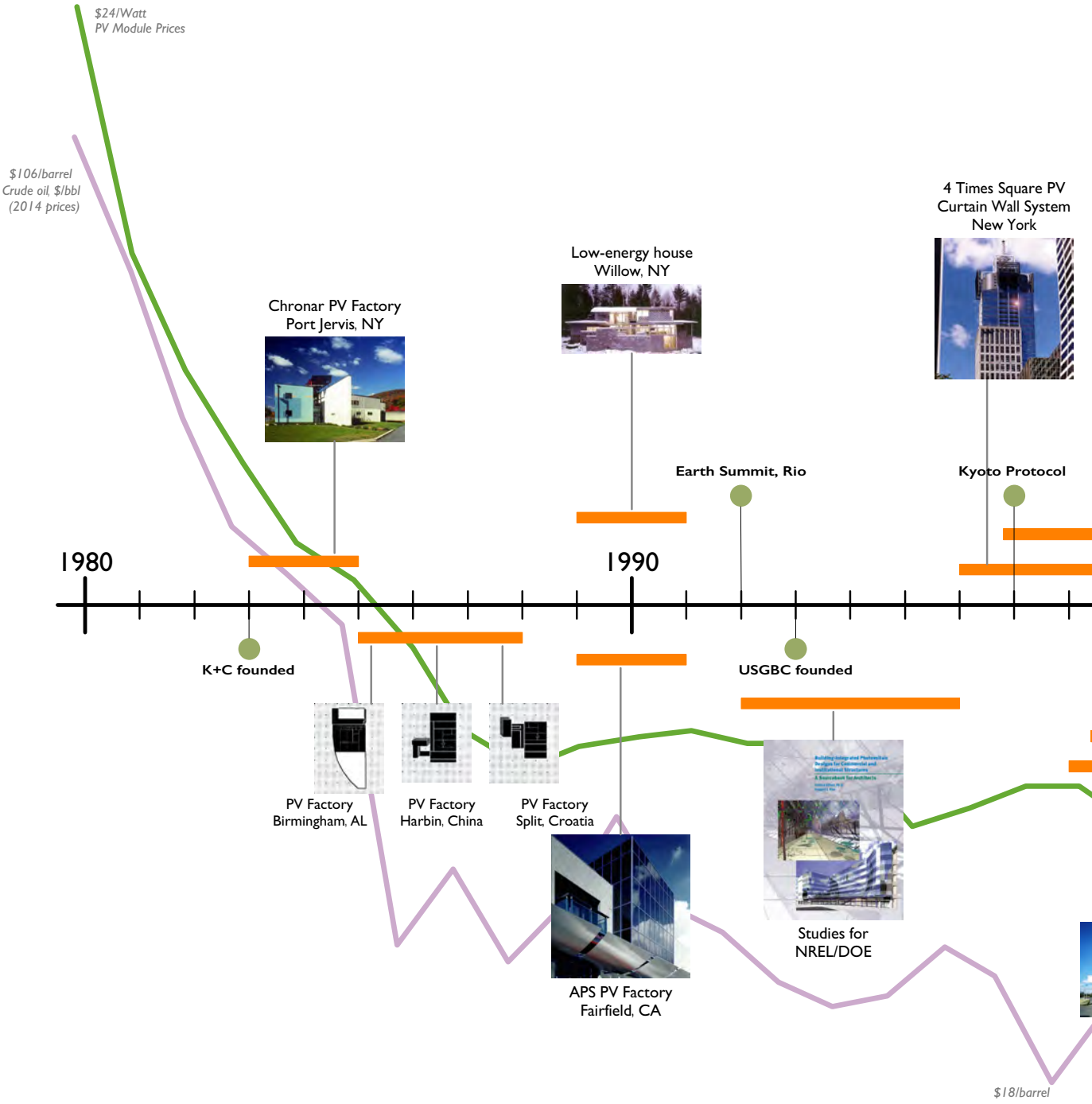
how we work

Our projects integrate environmental performance, sustainability and function without compromising aesthetics. We employ well–qualified individuals who work closely together to ensure quality at all stages of the project. The staff's uniformly high level of capability allows us to take a non–hierarchical approach to project assignments and responsibilities.

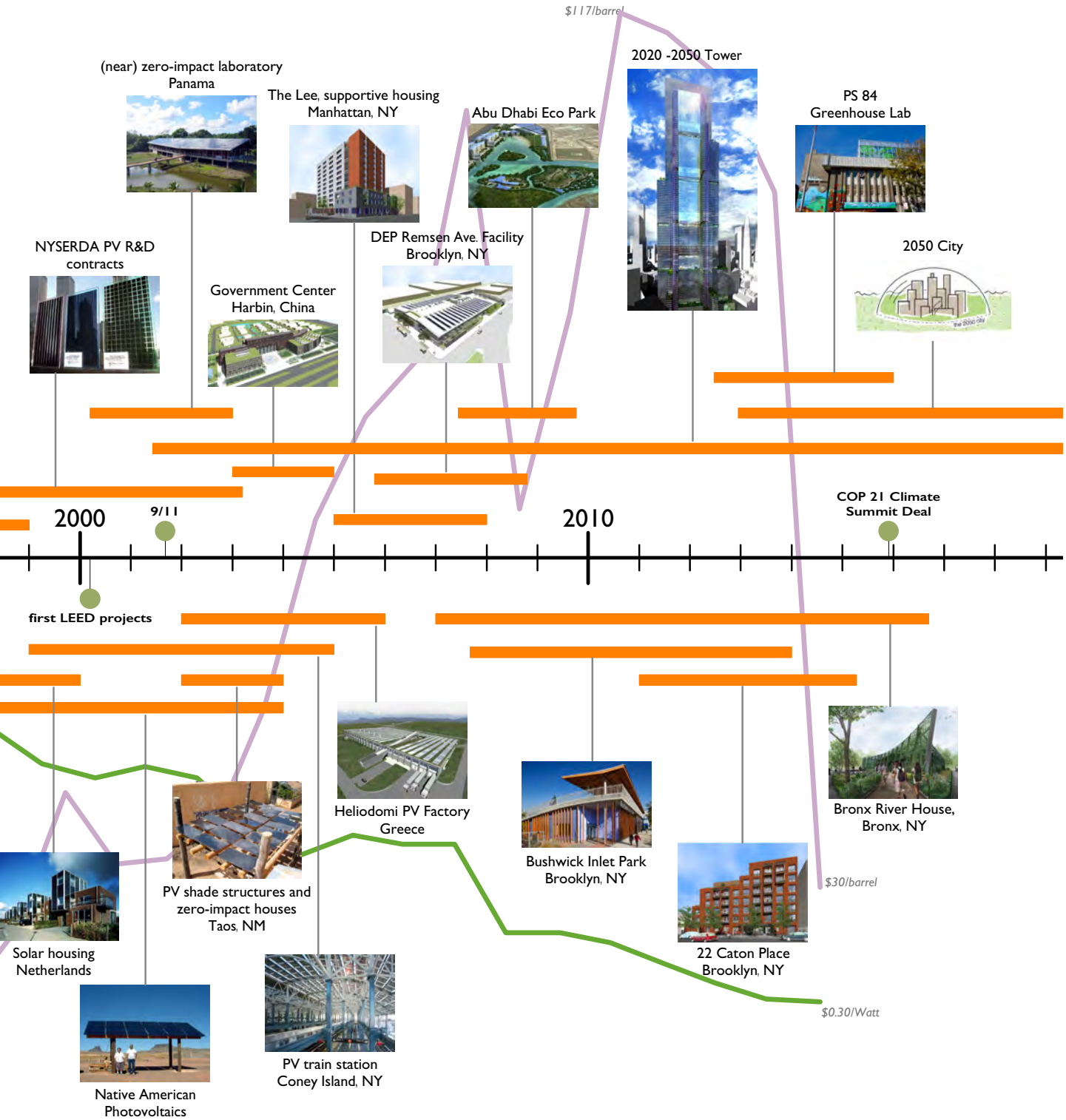
The studio environment allows for the most effective use of the talents of our staff, through interactive design, communication of ideas, and cooperation. We rely as well on close collaboration with our clients and professional colleagues – we try to think like them, and encourage them to think like us.

Each project is developed as an integrated digital model. To achieve a higher level of iteration than is typical, we model aspects of building performance in–house, often analyzing PV, thermal and daylighting performance as a routine part of the design process. We research local climate, culture and history, and learn from vernacular precedent whenever possible. We like low–tech as much or more than high–tech, and find unexpected combinations of the two can be effective and delightful.

selected projects timeline



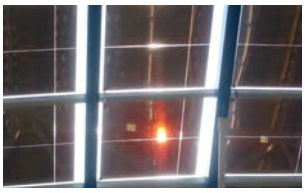
Sustainable and high-performance projects
*by **Kiss + Cathcart,** 1983 - 2020*

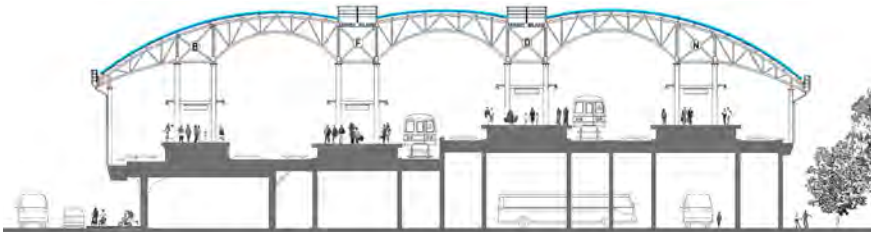
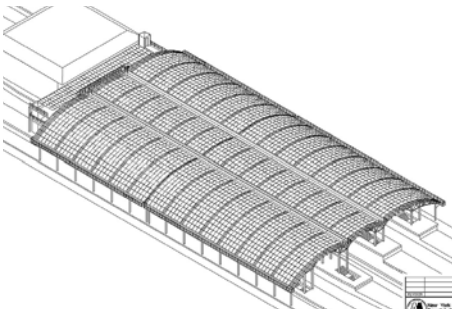

$117/barrel
(near) zero-impact laboratory
Panama
The Lee, supportive housing
Manhattan, NY
Abu Dhabi Eco Park
2020 -2050 Tower
PS 84
Greenhouse Lab
NYSERDA PV R&D
contracts
DEP Remsen Ave. Facility
Brooklyn, NY
2050 City
Government Center
Harbin, China
2000
9/11
2010
COP 21 Climate
Summit Deal
first LEED projects
Heliodomi PV Factory
Greece
Bushwick Inlet Park
Brooklyn, NY
Bronx River House,
Bronx, NY
$30/barrel
PV shade structures and
zero-impact houses
Taos, NM
Solar housing
Netherlands
22 Caton Place
Brooklyn, NY
$0.30/Watt
PV train station
Coney Island, NY
Native American
Photovoltaics

individual projects

stillwell avenue terminal train shed





Coney Island's Stillwell Avenue Terminal is the largest above–ground station in the New York City subway system. For the reconstruction of this major intermodal terminal, Kiss + Cathcart designed a 76,000 square foot glass and steel structure using an innovative, panelized construction system of semi-transparent photovoltaic modules. These solar modules function both as enclosure and a source of approximately 200,000 kilowatt hours per year of renewable electricity.

The train shed was designed to meet the demanding maintenance and operations requirements of New York City Transit. It stands as a major civic gesture by New York City Transit, promoting the use of renewable energy, acting as a catalyst for the revitalization of Coney Island, and providing the public with a beautiful and convenient transit facility.

The Client:
MTA, NYC Transit

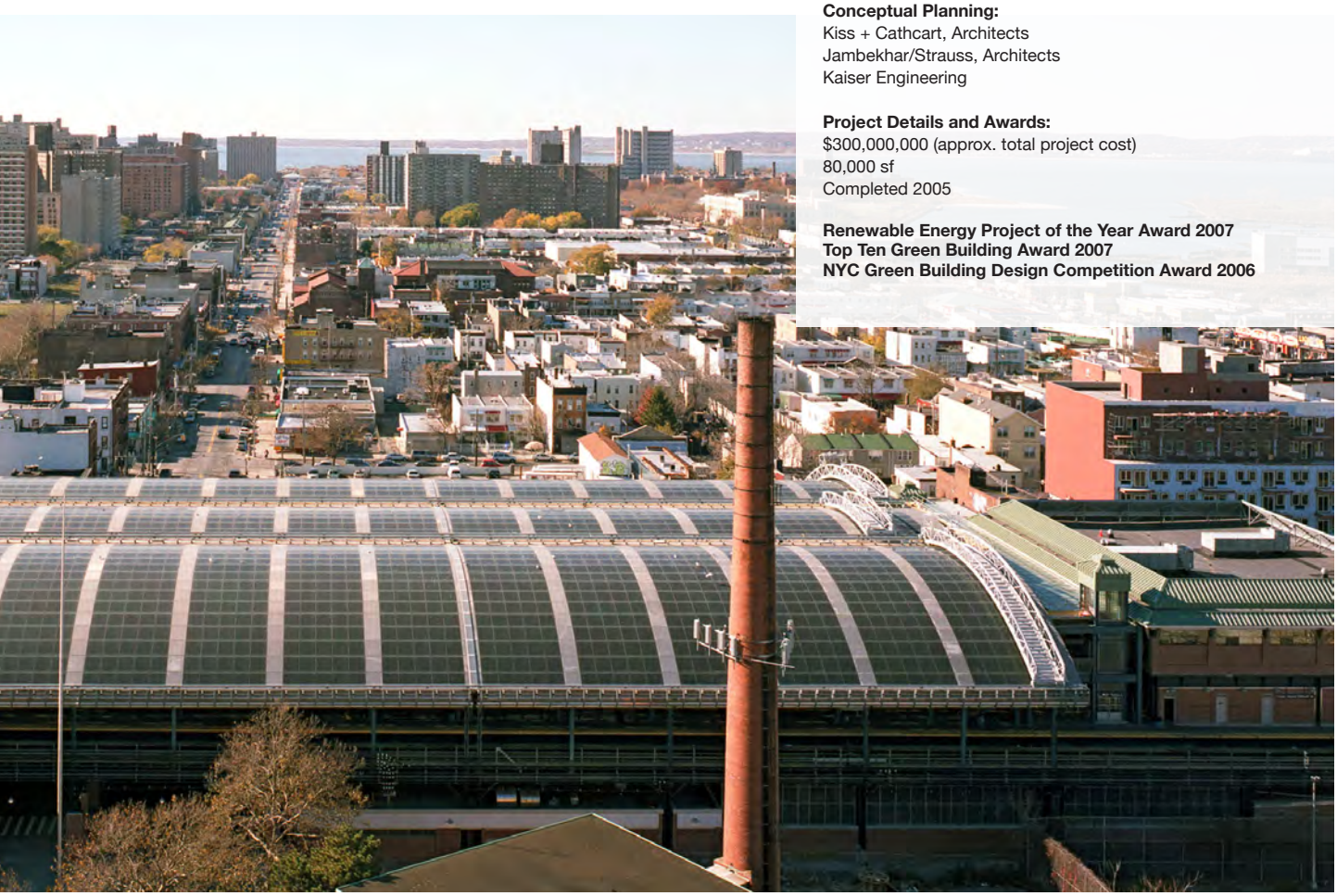
The Team:
Kiss + Cathcart, Architects:
Gregory Kiss, Partner In Charge/Project Designer, Tony Daniels, Project Manager

Jacobs Engineering
Domingo Gonzales Associates

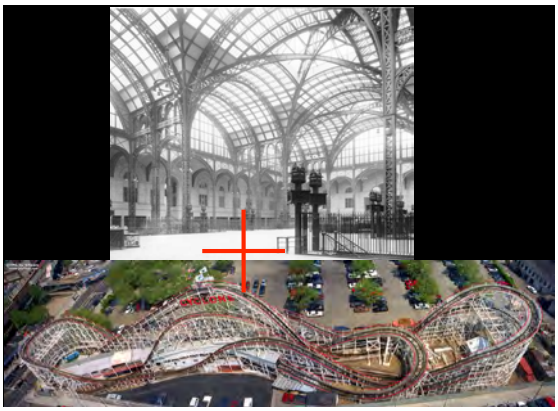
Conceptual Planning:
Kiss + Cathcart, Architects
Jambekhar/Strauss, Architects
Kaiser Engineering

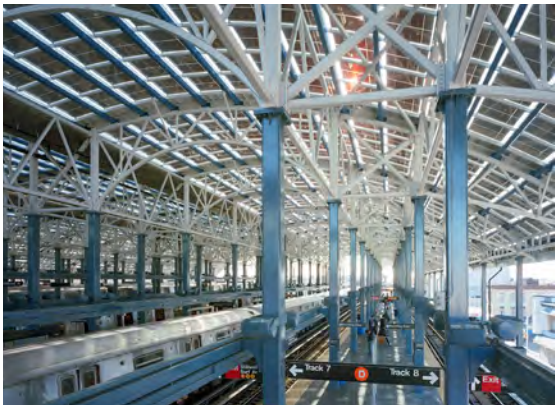
Project Details and Awards:
$300,000,000 (approx. total project cost)
80,000 sf
Completed 2005

Renewable Energy Project of the Year Award 2007
Top Ten Green Building Award 2007
NYC Green Building Design Competition Award 2006



stillwell avenue terminal train shed





Site

Stillwell Avenue Terminal sits one block from the Coney Island beach, at the corner of Stillwell and Surf Avenues. The project references grand urban stations, as well as the honky-tonk of the midway. The details of the structure recall the 19th century amusement district, while rendering the 21st century technology of the energy-producing skin in the simplest cleanest way possible. The terminal is a multimodal station, accommodating eight tracks on four platforms as well as a bus loop below.

History

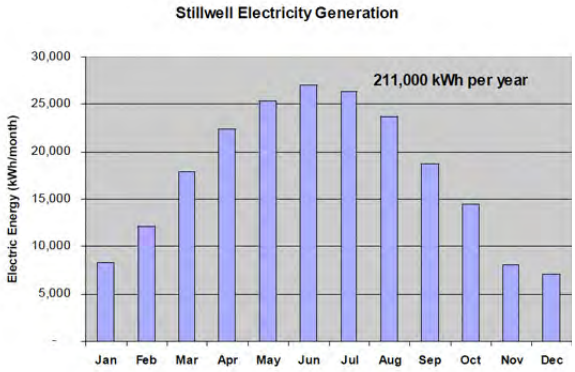
In the 19th Century, Coney Island was connected to New York City by four steam train lines, creating the infrastructure for it's development as a major urban resort. The Island developed around parks with fantastic themes like Dreamland, Luna Park, and Steeplechase Park. These were the first modern, high-tech, urban fantasy resorts for the masses, dependent on modern technologies, including railway access. The lines were consolidated and brought to a terminus at Stillwell Avenue in 1919. The station is across from Nathan's, since 1916 the center of the hot dog universe. Today, the new station is playing a role in the revitalization of the community.

Materials

As a first of its kind project, the design team was instructed to find the strictest possible codes and standards to design to, such as the Miami-Dade County hurricane protocols for the solar glazing.

Energy

The output of the BIPV system at Stillwell Avenue Terminal is enough to provide all the electricity to 33 typical single family houses in the Northeast US, 211,000kWh per year. The custom BIPV units, approximately five feet square, contain semitransparent amorphous silicon plates in the center, approximately 5% transparent, with a band of clear glass around the edge. The modules are triple laminated for durability. The system was designed to provide approximately 10% transparency, including the glazed roof, opaque structure, etc. in order to avoid needing artificial light during the day.



Awards

2007 Renewable Energy Project of the Year Award, NY Association of Energy Engineers
2007 Top Ten Green Building Award, AIA Committee on the Environment
2006 New York City Green Building Design Competition Award

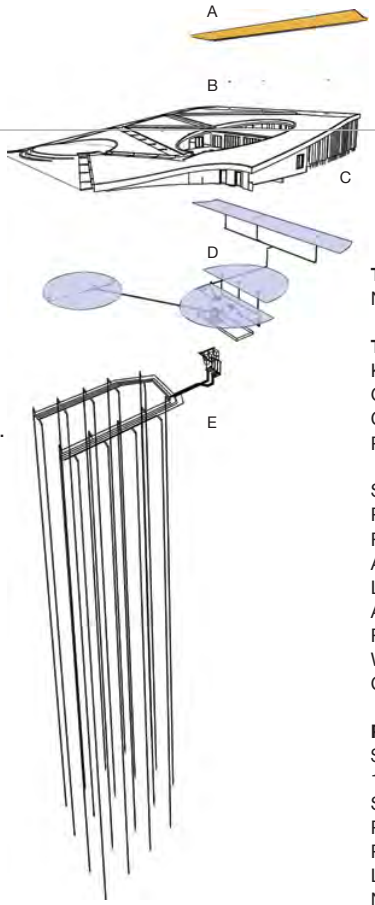
bushwick inlet park

This project is the first phase of the transformation of the Greenpoint–Williamsburg waterfront from a decaying industrial strip to a multifaceted public park.

K+C's team integrated a program of playfields, public meeting rooms, classrooms, and Park maintenance facilities, into a city-block sized site. The Park building becomes a green hill on the west side, making 100% of the site usable to the public, and offering views to Manhattan.

Below the green roof is a complex of building systems – ground source heat pump loops for efficient heating and cooling, radiant slabs, and rainwater harvest and storage, and drip irrigation systems. A solar trellis produces more than half the energy used in the building.

Rainwater is collected from paved surfaces on the hill to irrigate the green roof slope. All other rainwater infiltrates into the ground or passes through a tidal wetland landscape at the river's edge – no stormwater is sent to New York's combined sewer system.



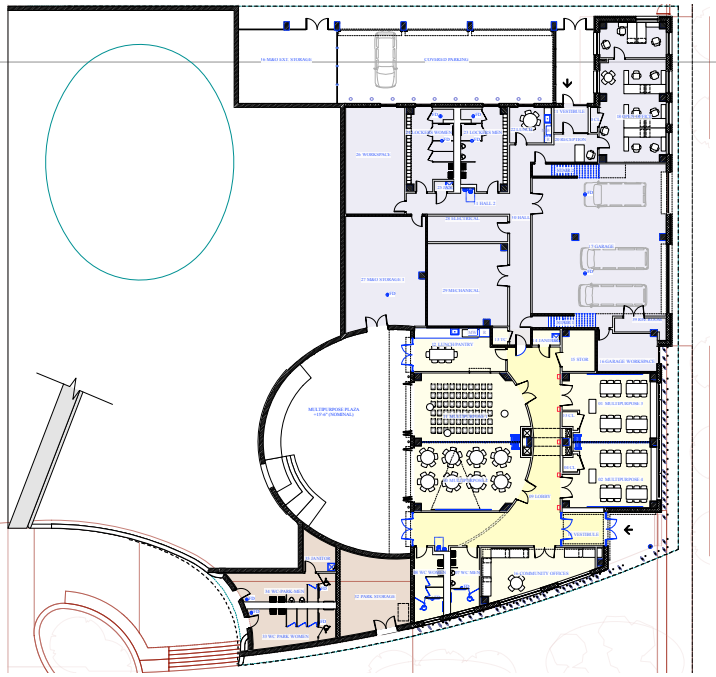
A. PV array
B. Green roof
C. Building
D. Rainwater catchment
E. Wells for ground source heat pump

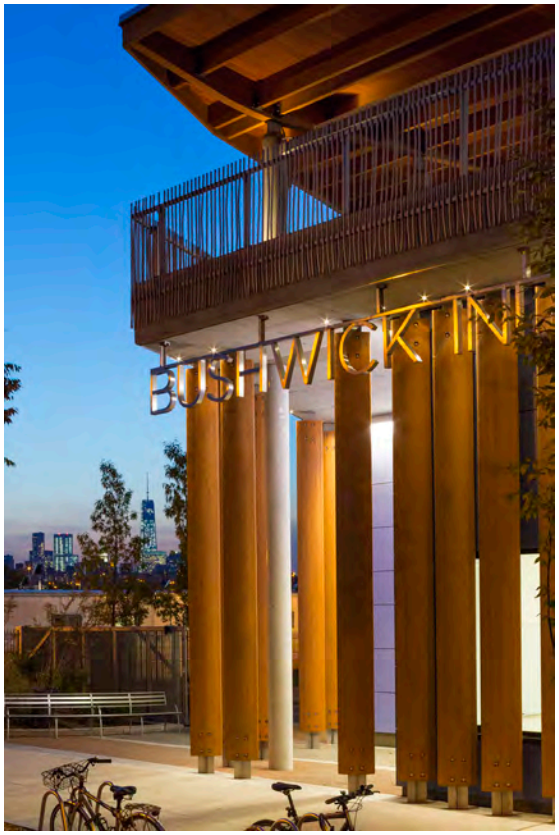
The Client:
NYC Department of Parks and Recreation

The Team:
Kiss + Cathcart, Architects:
Gregory Kiss, Partner In Charge/Project Designer, Clare Miflin, Project Manager; Heather McKinstry, Project Architect

Starr Whitehouse, Landscape Architects and Planners
Robert Silman Associates, Structural Engineers
AG Consulting Engineering, MEP Engineers
Langan Engineering & Environmental Services
AWA Lighting Designers
Roofmeadow Associates, Green Roof Design
Wesler Cohen, Site Engineering
Community Environment Center

Project Details and Awards:
$30,000,000
15,000 sf building; 6.1 acre park
Schedule: Design 2007-2009
Phase 1 6/09 - 3/10
Phase 2: 8/10 - fall 2013
LEED Platinum
NYC Public Design Commission Award 2008
AIA COTE Top Ten Green Building 2014
AIA New York COTE 2015
ALSA NY Award 2013 (Starr Whitehouse)




BUSHWICK IN

bushwick inlet park

Site

Originally salt marshes, then developed for farmland, the waterfront was transformed by shipping and industry in the mid 19th century. Since the Brooklyn Eastern District Terminal left the site in the 1980s, the waterfront has been neglected and underused. Prior to our development the site was a parking lot, above ground contaminated by a manufactured gas plant to the north.

The local neighborhoods are cut off from the decaying waterfront, and underserved by parks. The 2005 Greenpoint - Williamsburg Master Plan, by Edaw / Aecom and Weisz + Yoes Architecture, aimed to reconnect the waterfront to the surrounding communities, at the same time as restoring the ecological waterfront edge and providing parkland to the community.

Landscape

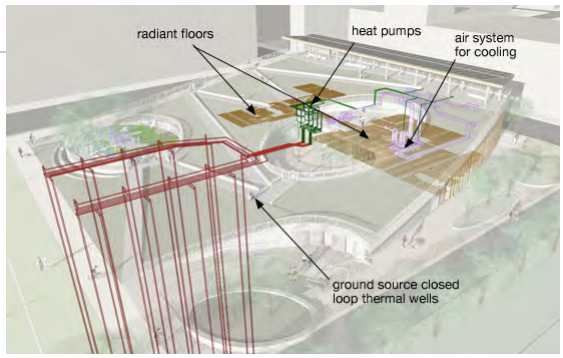
Pre-development the site was almost 100% impervious, with stormwater discharging directly to the river. Our design eliminates direct stormwater discharge to the river. Most of the site is now pervious, allowing water to recharge into the watershed, and storm water from impervious areas either gets used for irrigation, or is collected, filtered and discharged slowly to a freshwater pool. The landscape design uses native plants to restore ecological productivity and provide habitat.

Materials

The building structure is high fly ash concrete. The wall back up is AAC block, for its insulating properties and light weight. The façade materials are brick and a recycled paper/resin rainscreen.

Energy

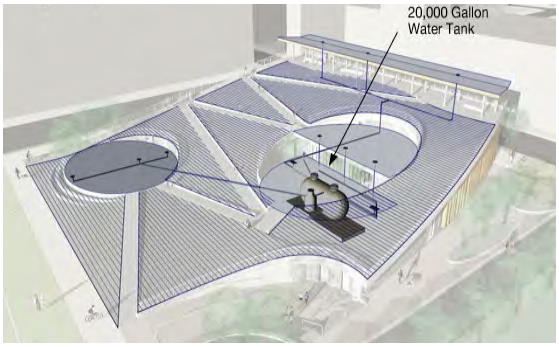
Bushwick Inlet Park has a high performance building envelope and systems, including ground source heat pumps, and radiant floor heating. Energy modeling calculates it will save 34% of energy compared to Ashrae 90/1-2004 baseline. A photovoltaic array on the hilltop trellis will generate more than half the energy used in the building. Although the building is conceptually underground below the green roof, every occupied space is day lit.



Geothermal heating and cooling systems

Water

Rainwater is collected from plazas and the roof canopy, stored in a 20,000 gallon below ground tank and used for irrigation of the green roof. No city water will be used to irrigate the hill.



Rainwater collection and irrigation system

Awards

Since 1898, the Art Commission (now the Public Design Commission) has reviewed and recognized works of public art and architecture in New York City. Bushwick Inlet Park won the 2008 Design Award.


NYC Public Design Commission Award presented by Mayor Bloomberg, 2008

smithsonian tropical research institute research station

The Smithsonian Institution's research campus in Panama is located on a sensitive coastal site between mangroves and a sandy beach. Kiss + Cathcart was asked to prepare a design for the main laboratory/classroom building that minimizes its environmental impact while providing an exemplary scientific facility.

The building's distinct programs—laboratories, classrooms, conference rooms, and support spaces—occupy a string of volumes on a raised platform shaded by an overhanging pitched roof. These volumes can be individually air conditioned, but the linear plan also allows for natural ventilation and daylighting. The building is raised on concrete piers to provide flood protection and ventilation.

The roof is covered with photovoltaic panels, interspersed with clear glass, allowing light through the semi–transparent ceilings to daylight the interior spaces. The angled roof geometry directs rainwater to collection tanks at a central point.

This project comes close to the ideal of "zero–impact", despite heavy energy loads from almost constant air–conditioning. The building produces the majority of its own energy, and harvests all of its water from the rain.

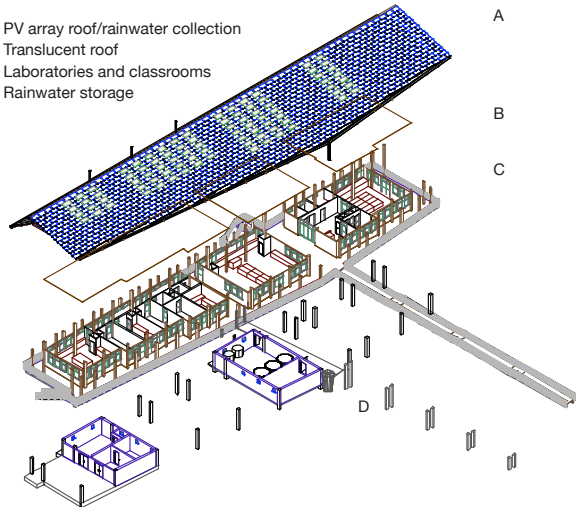
The Client:
The Smithsonian Tropical Research Institute

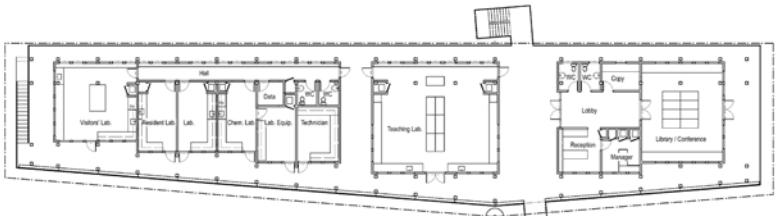
The Team:
Kiss + Cathcart, Architects:
Gregory Kiss, Partner In Charge/Project Designer, Clare Miflin, Project Manager

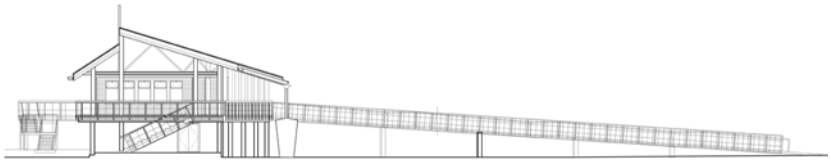
Ove Arup + Partners

Project Details and Awards:
$1,800,000
10,000 sf
Completed 2003

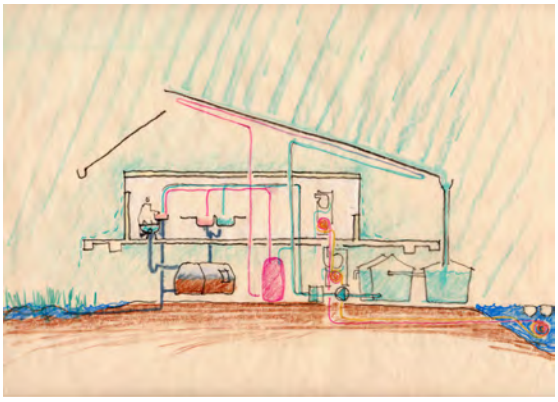
A. PV array roof/rainwater collection
B. Translucent roof
C. Laboratories and classrooms
D. Rainwater storage



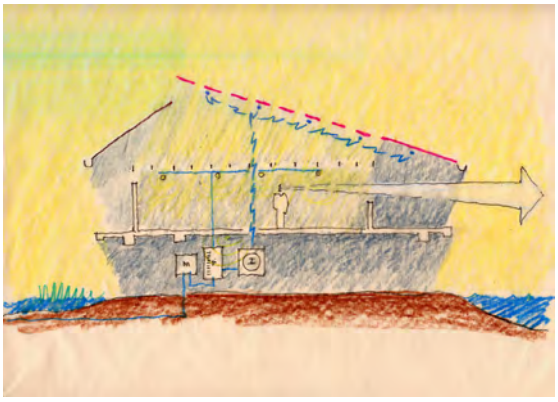




smithsonian tropical research institute research station



water and waste schematic diagrams



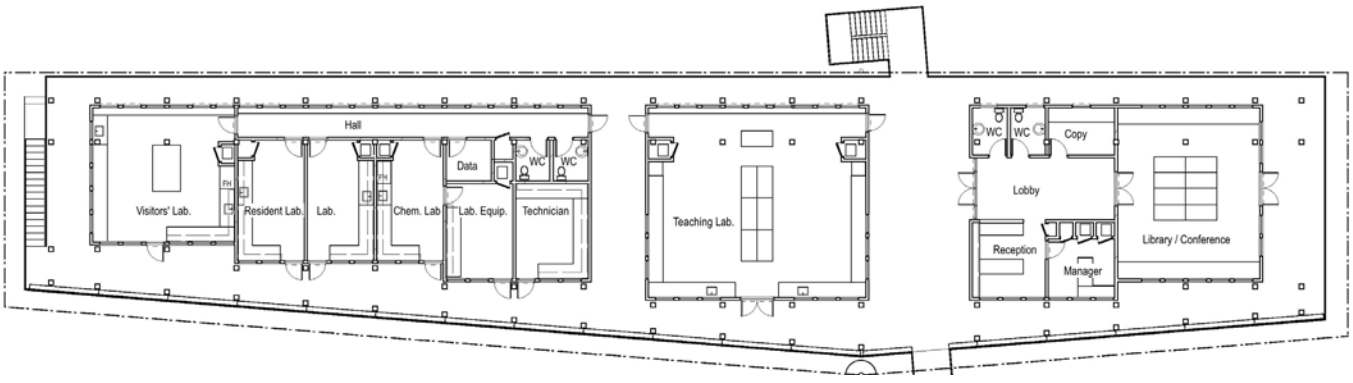
light and electricity schematic diagrams

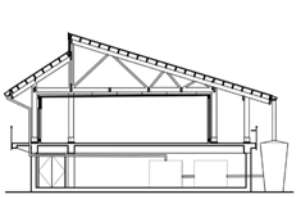
Site

The site had previously been a sawmill. The pond area, which had been filled with saw mill waste, was restored to provide a habitat for local species. In a later phase the pond will be a constructed wetland to provide the final stages of black water treatment. Six crocodiles now reside there.

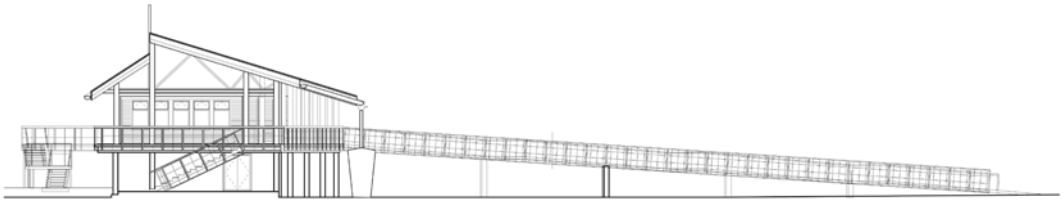
Energy

The form of the building was guided by passive solar concerns. The conditioned spaces are lifted up above the ground, keeping them above insects and floods, and encouraging natural ventilation. The double roof shades interior volumes, reducing solar heat gain. The building integrated PV roof faces south and has a shallow pitch, an optimal position for maximum electricity generation at this tropical latitude. The PV upper roof, which has an average transparency of less then 5%, becomes more transparent where needed by the insertion of clear glass panels. The lower roof, which is the roof of the conditioned spaces, is an insulated translucent material. The system is designed to allow enough daylight to pass through both layers to provide 100% of the lighting during daylight hours. The building features a dual stage heat pump system with individual units for each space to allow flexibility and efficiency in usage. A separate makeup system provides cooled and dehumidified air to

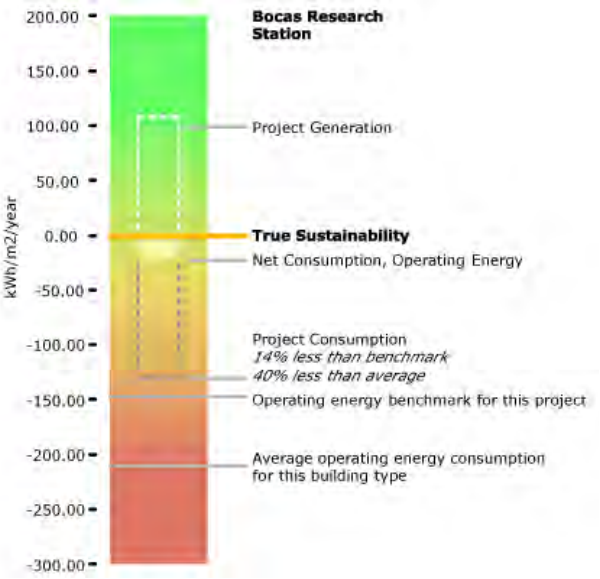




Transverse Section



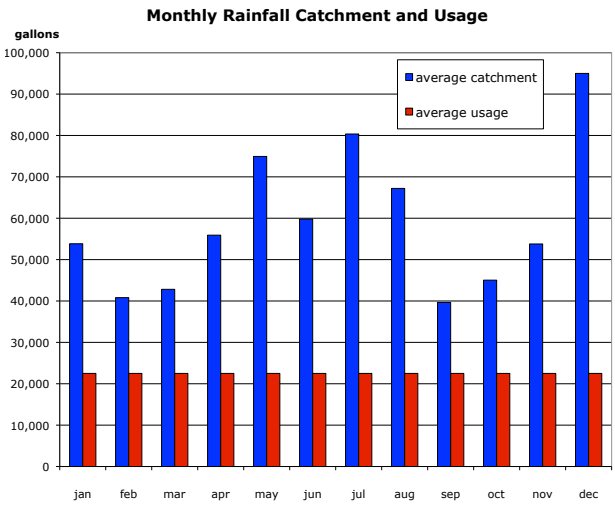
West Elevation



all spaces. Ceiling fans are provided in each room to allow occupants to be comfortable at higher temperatures. Measurements have shown the photovoltaic system providing approximately 30kW of instantaneous output, at a yearly rate of close to 70,000 kWh. The BIPV roof will supply approximately 75% of the base building energy use. Since the grid power on the island is diesel generated, a very dirty and unreliable source of power, the benefits of the BIPV system are significantly greater then they would be in mainland US.

Water

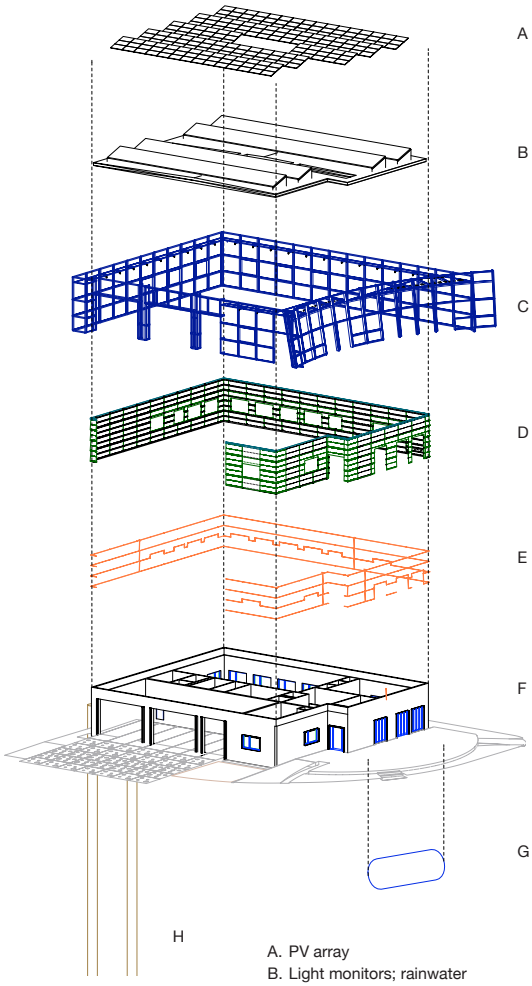
In an area with abundant rainfall and a non-potable municipal supply, the decision to collect rainwater was an easy one. The form of the roof directs rainfall into centrally located tanks on the lower level, where it is stored in 4,000 gallon storage containers, filtered, and treated with ultraviolet light before being used as the building's water supply. Since the site is already connected to the municipal water supply, emergency back-up is easily provided. Fixtures are of the lowest water consumption locally available. Potable water is supplied via bottled water coolers. No water is used for landscaping purposes. The available rainfall exceeds the water requirements for this building so the surplus water is available for use by other building in the campus.



Awards

2005 Federal Energy and Water Management Award

bronx river house



A. PV array
B. Light monitors; rainwater collection
C. Vine Screen
D. Moss-Experimental wall
E. Wall irrigation
F. Autoclaved Aerated Concrete (AAC) shell
G. Rainwater storage tank
H. Geothermal wells

The Bronx River House is the base of operations for the restoration and operation of the Bronx River Greenway and the adjacent portion of the Bronx River. The Bronx River Alliance will occupy the building and manage it on behalf of the park and public and community groups.

The approximately 7,000 square foot structure includes a boat house capable of storing approximately 30 canoes and 9 kayaks, and other boats. An administrative and office area will accommodate 20 Bronx River Alliance staff. Spaces for use by the public and schools include a nature classroom and a multipurpose community room.

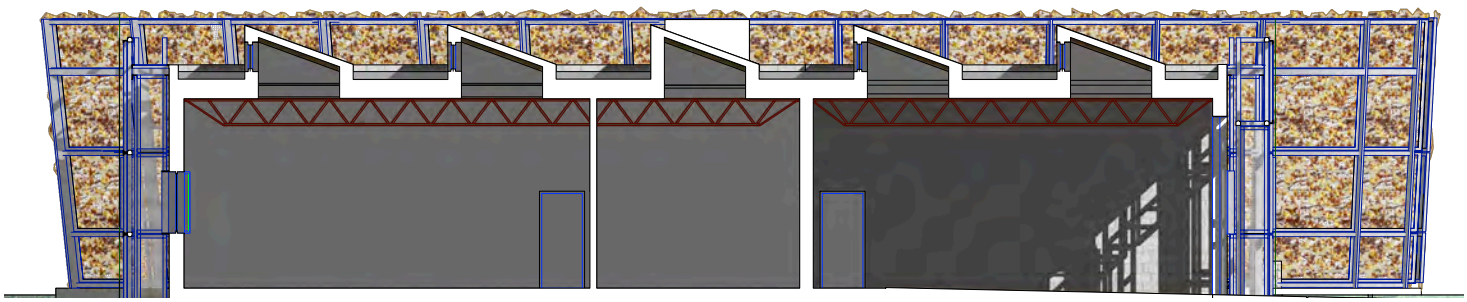
The project is a living part of the park. A screen wall made of galvanized steel and mesh wraps the entire building, providing a secure perimeter, and a surface for vines to grow. The seasonal vines create a favorable microclimate, transpiring water collected from the roof during hot months to significantly lower the air temperature around the building envelope. The vegetated area of the green screens is greater than the footprint of the building, providing as much vegetation as the site would have had in an undeveloped state.

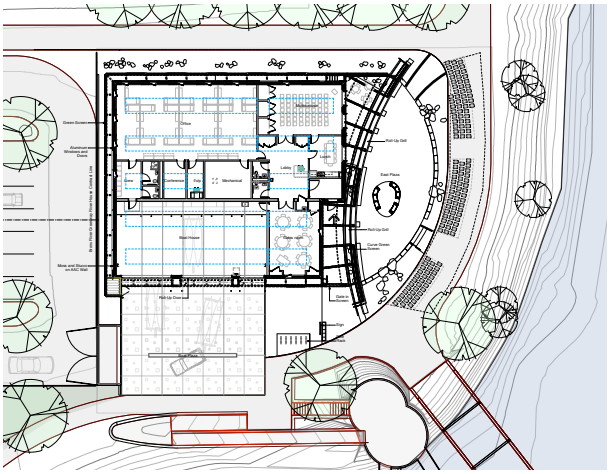
The Client:
NYC Department of Parks and Recreation

The Team:
Kiss + Cathcart, Architects
AG Consulting Engineering
Robert Silman Associates
Starr Whitehouse
Langan Engineering & Environmental Services
Community Environmental Center
The Gaia Institute
Stan Deutsch Associates

Project Details and Awards:
$9.000,000
7,000 sf
Construction 2010

LEED Platinum expected
NYC Public Design Commission Award 2007





bronx river house

Site

Starlight Park lies at the center of the lower stretch of the Bronx River, between the green of the Bronx Botanical Gardens and Bronx Zoo, and the river's discharge into the East River..This stretch of the Bronx River, long neglected, is being restored by a number of interested groups, including the Bronx River Alliance, who will use River House as a base for environmental programming and educational operations. The river around the project is being turned into a park and Greenway by the New York State Department of Transportation.

Landscape

This building is literally a part of the park. It is clad with a double skin of vines and possibly mosses, a dynamic, vertical extension of the landscape. The green skin changes with the seasons and provides habitat for birds and insects. Because of the high Leaf Area Index of the mosses and vines, the river house site potentially will have as much leaf area (and biological productivity) as the site would have had as a temperate forest.

Materials

The building structure is AAC (Aerated Autoclaved Concrete) block - a lightweight, insulating material, topped with wood trusses and a wood roof. On the outside, the AAC is finished with stucco, and a shingled cement board rain screen to accommodate the moss wall and integrated irrigation system.

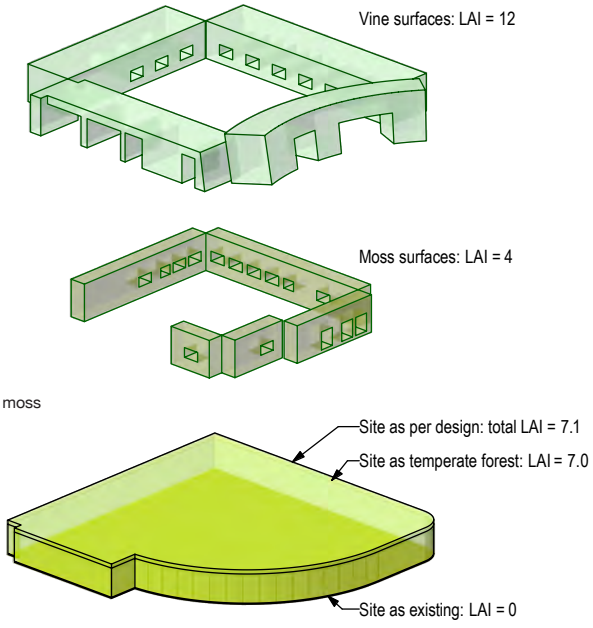
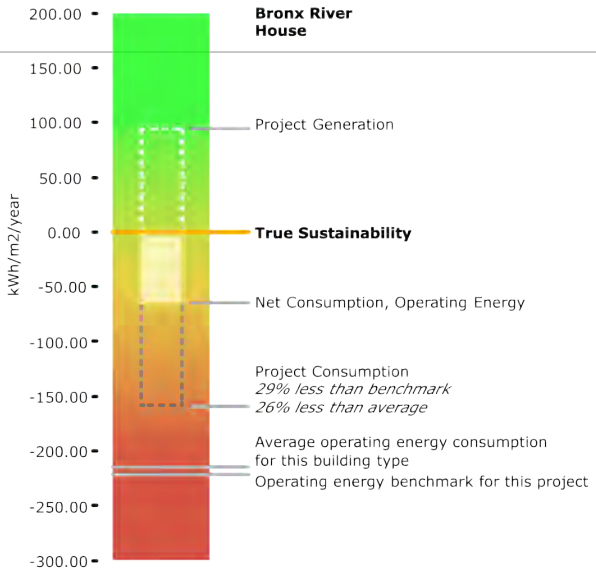


Diagram of the Leaf Area Index (LAI) of the Riverhouse, compared to the LAI of the site in its present state, and if it had been left a natural forest.



Energy

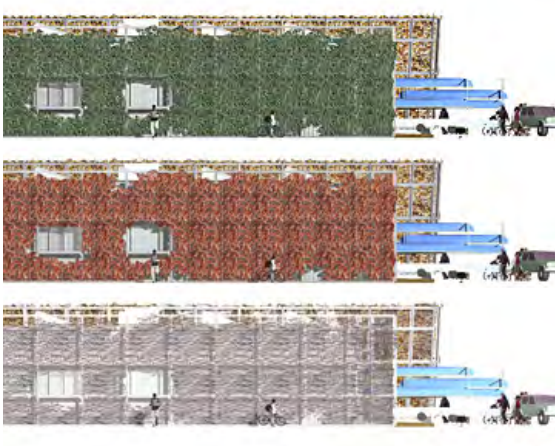
River House uses a number of energy efficiency strategies, including a highly insulating envelope, extensive daylighting, with indirect overhead light and windows seasonally shaded by the vine screen, and a ground source heat pump with radiant floor heating. A 48 kW PV system is mounted on the daylight roof monitors.

Water

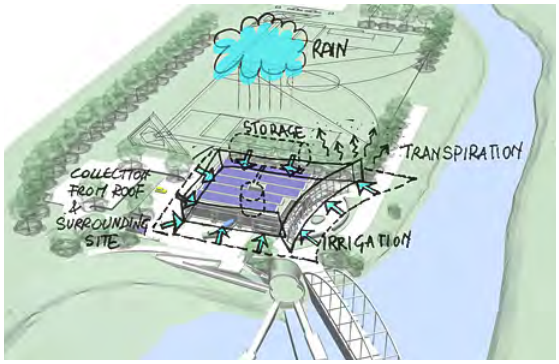
All the rainwater will be captured from the roof and used to flush toilets, wash canoes, and irrigate the green screen. This will total over 190,000 gallons of water per year. There will be no portable water use, except for lavatories, showers, and drinking fountains. While most of the surface landscape will not be irrigated, the vertical green screen will be.

Awards

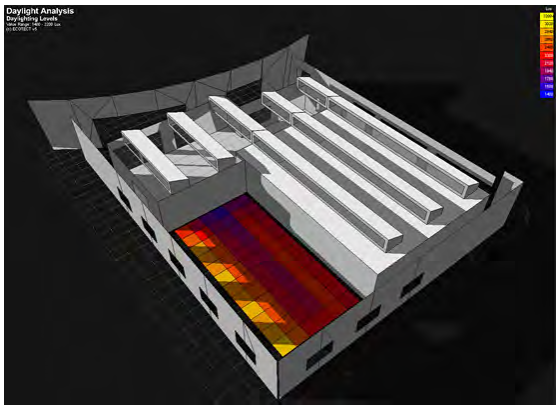
Bronx River House won the 2007 New York City Public Design Commission Design Award.



To the north of the site, the Bronx River is naturalistic, to the south it is industrial



Rainwater is used on site for a variety of purposes; in normal conditions, none is discharged to the river.



All spaces are daylit from overhead light and seasonally shaded windows.

NYC Public Design Commission Award presented by Mayor Bloomberg, 2007

manhattan school for children greenhouse

The Manhattan School for Children - PS 333 - has built the Sun Works Center - a rooftop environmental education greenhouse on the Upper West Side.

A group of parents and educators discovered that environmental science education is lacking within the NYC public school system, and that many schools have vacant roof-tops which could serve as ideal spaces for hands-on learning facilities. With New York Sunworks they founded The Greenhouse Project, an initiative to construct environmental science laboratories on the rooftops of 100 NYC public schools. This is their pilot project.

The program for the 1600 sf greenhouse includes sustainable food production systems with differentiated planting zones for individual and grade projects, a composting center, insect growing areas, a weather station and a classroom. A rainwater collection system harvests water for use in the greenhouse. The greenhouse will produce 8000 lbs of produce annually using hydroponic growing systems, aquaculture, a vertical farming system and some soil based beds.

Energy requirements of the greenhouse have been minimized by good air sealing, a retractable heat blanket and a twinwall polycarbonate roof. Set back temperatures at night and weekends reduce energy demands. Heating is provided by an electrical heat pump with the condenser unit in the main building to make use of the stored heat within.

Kiss and Cathcart worked closely with the School Construction Authority and the DOE's Division of School Facilities to ensure that their standards were met. The project also required approval from the State Historic Preservation Office and NYC's Department of Buildings, where K+C had to work through unique code interpretation challenges. We needed to go to NY State DOE to revise their energy code to include a specific interpretation for agricultural and educational greenhouses pioneering the way for urban agricultural movement.

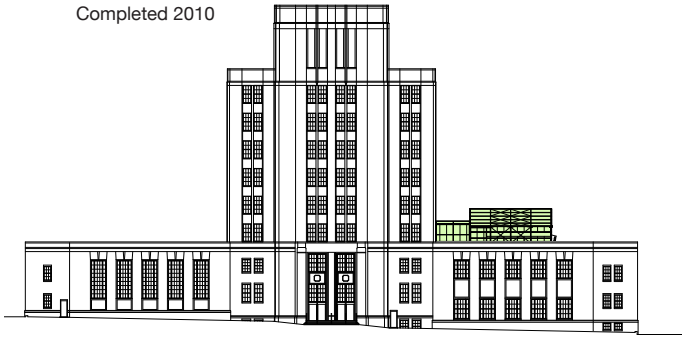
The SCA have said that this project has been one of the smoothest, fastest projects built on a NYC public school with private funding.

The Client:
Friends of Manhattan School for Children

The Team:
Kiss + Cathcart, Architects
New York Sunworks
Robert Silman Associates, Structural Engineers
Goldman Copeland Associates, MEP Engineers

Project Details:
$ 550,000
1,600 sf

Completed 2010




MSC

PS 84 greenhouse classroom

PS 84 in Williamsburg, Brooklyn, is constructing a greenhouse classroom on the roof of their building on Berry Street.

Working with New York Sunworks, Kiss + Cathcart designed a double glazed custom greenhouse above the school's main entry. the highly visible location will showcase the environmental science focus of the school, and will be a visible amenity for the community. The greenhouse is designed to be accessible for after school events.

The program for the 1500 sf greenhouse includes sustainable food production systems with differentiated planting zones for individual and grade projects, a composting center, insect growing areas, a weather station and a classroom. A rainwater collection system harvests water for use in the greenhouse. The greenhouse will produce 8000 lbs of produce annually using hydroponic growing systems, aquaculture, a vertical farming system and some soil based beds.

Energy requirements of the greenhouse have been minimized by good air sealing, a retractable heat blanket and double glazed walls. Set back temperatures at night and weekends reduce energy demands.

From PS 84's mission statement, students will:

Learn where food comes from and about the resources required to produce it

Meet and exceed NYC Science Standards

Make connections between their science and social studies classes

Gain in-depth knowledge about ecology, natural resource management and foodsheds

See first hand the connection between food production and nutrition

Discover how to think creatively about food systems and horticulture

Understand the global context of agriculture and sustainability

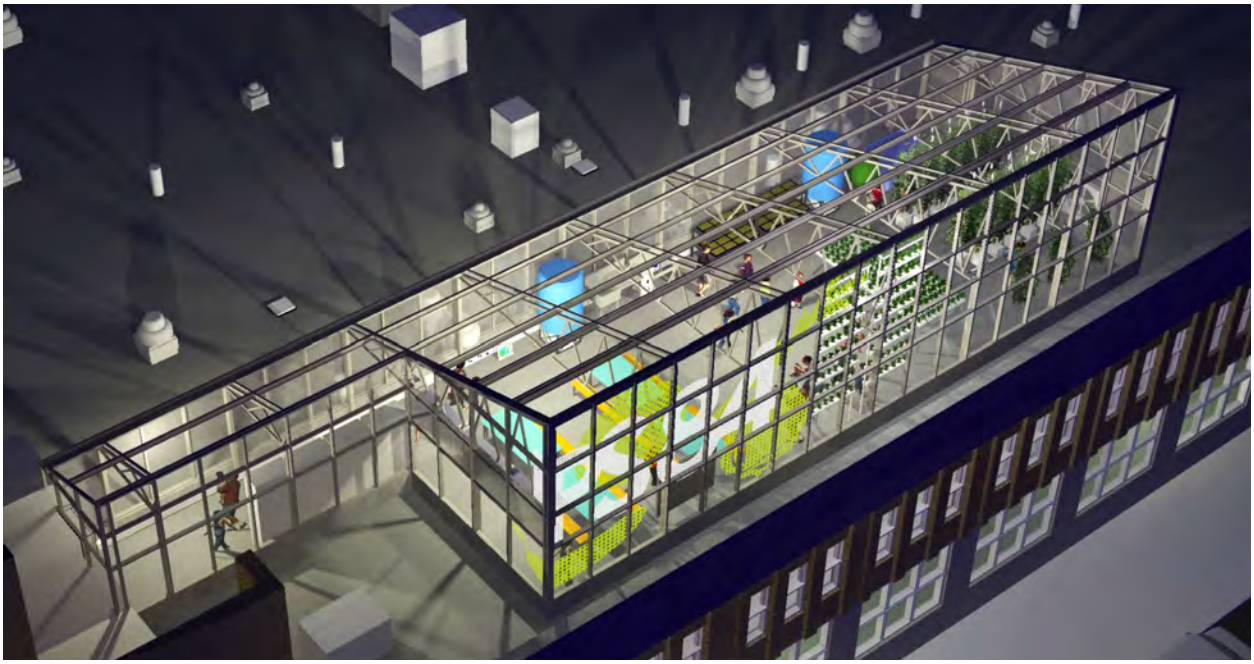
Are empowered to make their own choices about their impact on the environment and the world

The Client:
PS 84

The Team:
Kiss + Cathcart, Architects
New York Sunworks
Robert Silman Associates, Structural Engineers
Dagher Engineering, MEP Engineers

Project Details:
$ 1,200,000
1,500 sf

Completion 2015




JOSE DE DIEGO
SCHOOL
JOSÉ DE DIEGO
P.S.84
MAGNET SCHOOL FOR THE VISUAL ARTS & SCIENCE

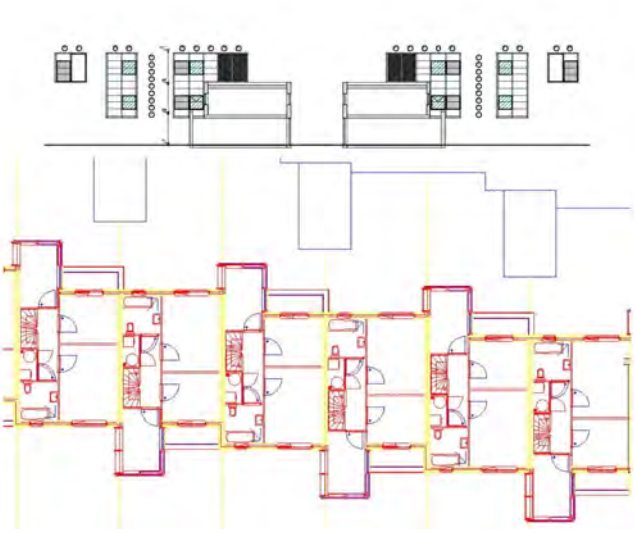

NSF

ijsselstein rowhouses

These 14 row house units were built as part of a “new town” development in Ijsselstein, the Netherlands. They were designated by the master planners to be among the lowest cot units in the development, yet were built to extremely high environmental performance standards.

Each unit includes a “Solarium”, a two level element that is clad be three types of solar material: standard thin-film photovoltaic panels, custom patterned semi-transparent PVs, and solar thermal panels for hot water generation. The photovoltaic (PV) panels are integrated into raised two–level sunrooms, and take advantage of the fact that, at high latitudes, vertically–oriented PV panels are efficient. The panels are interspersed with glass, wood, and translucent materials in a wood frame.

PV use in the Netherlands is among the most advanced in the world, and it is a special honor to have Kiss + Cathcart’s expertise in design and solar technology recognized there.



The Client:
Thomasson Dura

The Team:
Kiss + Cathcart, Architects
Han Van Zwieten, Architect

Project Details:
$12,000,000
20,000 sf
Completed 2002

nyc dep remsen maintenance facility

Remsen Yard Reconstruction is a 2.5 acre New York City Department of Environmental Protection maintenance facility, combining both water and sewer operations. The project exemplifies New York City's commitment to design excellence and environmental sustainability.

Equipment and material storage, machine shops and tempered vehicle garages are located on the first floor, and administrative and support functions located on the second.

The two–story storage/administrative building is integrated into a large skylit roof over the vehicle parking, fueling operations and material piles. This scheme was developed from early consensus workshops with all user groups, to solve DEP operational issues as well as integrate the projects' high performance goals. Deemed "the productive roof", the roof shelters the yard operations and piles, and also collects rainwater for reuse and produces up to 50kw of electricity from integrated photovoltaic panels.

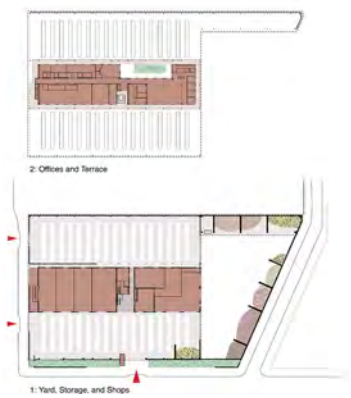
The Client:
NYC Department of Environmental Protection
NYC Department of Design and Construction

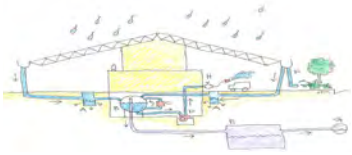
The Team:
Kiss + Cathcart, Architects:
Colin Cathcart, Partner In Charge; Jeff Miles, Project Designer/Project Manager; Laurie Cheung, Project Architect

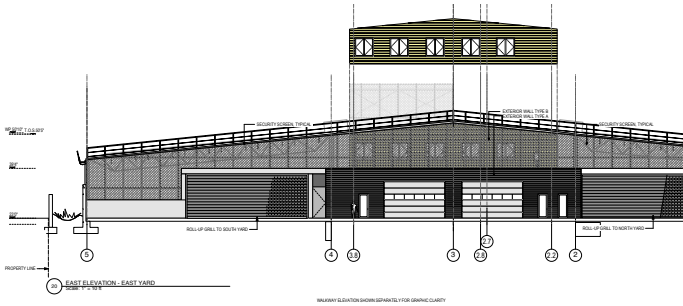
Buro Happold
Saratoga Associates
Langan Engineering & Environmental Services
John G. Waite & Associates
Domingo Gonzalez Associates
AG Consulting Engineers
Chrisner Group
Construction Specifications, Inc

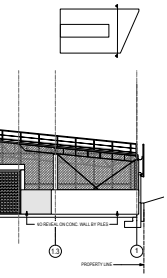
Project Details:
$39,000,000
98,000 s.f.

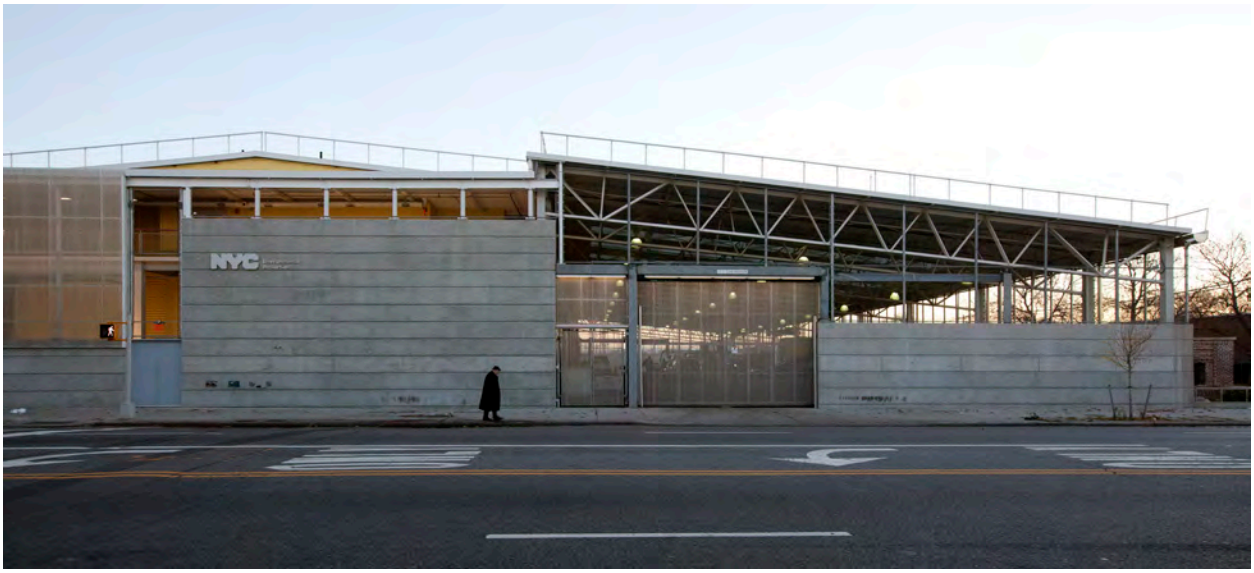
LEED Gold Expected
Construction, Completion 2011 (TCO)










NYC

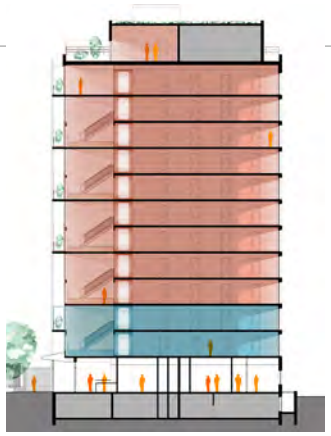
the lee residence for common ground

Common Ground's the Lee is the first truly sustainable affordable housing project in New York City.

Common Ground has successfully completed several similar projects in New York City, and has always provided an attractive well-designed environment for its tenants. For this project they approached K+C to design an efficient, healthy and low-energy building.

The 100,000sf building houses 264 residents on 12 stories with on-site social services, a gym, computer room, laundry room, roof gardens, and multipurpose room opening out onto a landscaped back garden. The entry courtyard is a community garden. The residents are a mix of homeless adults with special needs (HIV/AIDS/mental illness), young adults aging out of foster care and at risk of homelessness, and working low income single adults from the community. There are 9 floors of 220sf single efficiency units and 2 floors of shared suites.

The project is supported with funds from NY State Homeless Housing and Assistance Corporation, and the NY City Department of Housing Preservation and Development, but exceeds their standards, setting new benchmarks for sustainable social housing in America.



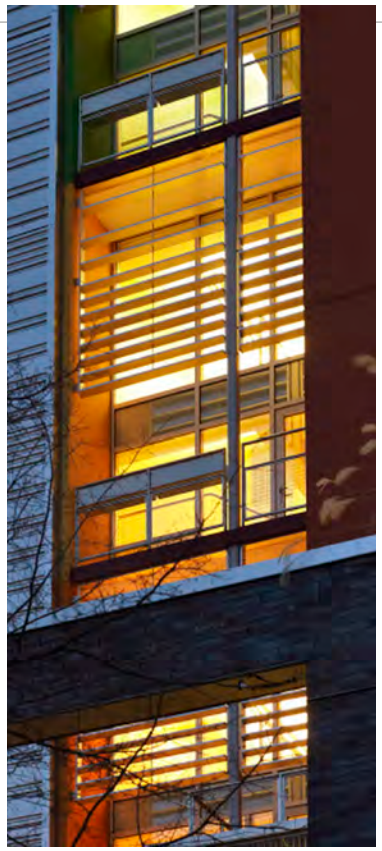
The Client:
Common Ground Community, Inc.

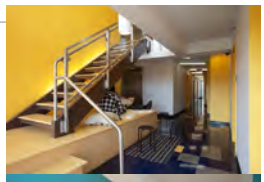
The Team:
Kiss + Cathcart, Architects:
Colin Cathcart, Partner In Charge; Clare Miflin, Project Designer, Project Manager; Sayaka Akiyama, Project Architect

Goldman Copeland Associates
Robert Silman Associates, Engineers
Donna Walcavage Landscape Architecture + Urban Design
AWA Architectural Lighting Designers

Project Details:
$42,000,000
100,000 sf

LEED Silver
Completed 2010





22 caton place

22 Caton Place is a new 7-story, 73 unit residential building in Kensington, Brooklyn, NY. The building is located close to historic Prospect Park, schools, subways, and shopping, and has achieved LEED-Gold and NYSERDA ENERGY STAR certifications. The highly energy efficient building has a well-insulated envelope and high-performing windows while many of the building forms and materials were selected for their recycled and/or regional content, energy and water-saving capabilities, and durable finishes. The articulated brick façade is enhanced with galvanized balconies and is contextual within the neighborhood.

The building is also designed to meet NYC's Quality Housing zoning requirements, including sunlit elevator lobbies and to address the intent of the NYC Active Design Guidelines, such as common stairs located in a place of prominence. Natural daylighting and private balconies, terraces, or gardens for most units reinforce the relationship with the outdoor environment.

The 86,000 s.f. project includes amenities such as bike storage, lounge, gym and stretch/yoga room, kids' playroom, and both interior and exterior areas for pet washing. Below-grade vehicular parking creates a large, south-facing landscaped courtyard with a boule court.

The accessible common rooftop is equipped with gas grills, outdoor furniture, and a custom-built pergola to encourage outdoor activities. The roof terrace also promotes urban agriculture with composting facilities, rainwater harvesting, and raised garden plots so residents can grow their own vegetation. Light colored roofing and pavers and a partially vegetated green roof help to reduce cooling costs, cut energy usage and lower greenhouse gas emissions.

The Client:
The Hudson Companies Incorporated

The Team:
Kiss + Cathcart, Architects:
Greg Kiss, Partner In Charge; Laurie Cheung, Project Designer;
Jeff Miles, Project Manager; Clare Miflin, Project Architect

Abraham Joselow P.C., P.E.
Severud Associates
Starr Whitehouse Landscape Architects and Planners PLLC
Steven Winters Associates
Lettire Construction

Project Details:
$17,000,000
86,081 gsf

Completion 2015

heliodomi photovoltaic production facility

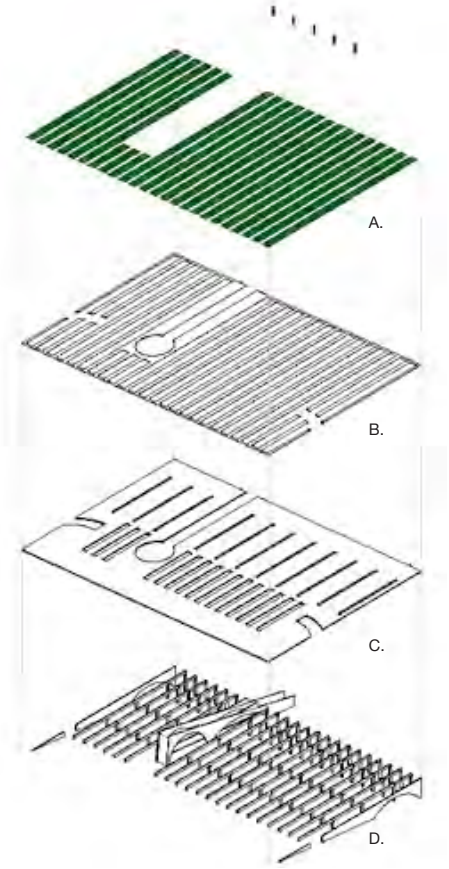
Located on the edge of an industrial park in northern Greece, this solar module production facility challenges the ecological shortcomings of the typical factories that surround it. Both the building and the main parking lot are covered by a planted roof that emerges directly from the ground.

Translucent photovoltaic (PV) skylights cut into this terrain to provide power and daylight for the production areas. Heat gain from the skylight is more than offset by the high insulation value of the earth roof. The structural system and the building layout are clearly and simply planned to minimize material usage. By covering the parking area with a planted roof, the environmental consequences of its paving – stormwater runoff and thermal pollution – are eliminated.

The Client:
Heliodomi, S.A.

The Team:
Kiss+Cathcart, Design Architects
Panos Panetzos, Architect of Record

Project Details:
$24,000,000
120,000 sf
Project unifnished due to Greek financial crisis



A. BIPV stripes
B. Green roof
C. Roof slab
D. Structural frames

aps fairfield photovoltaic manufacturing facility

This 70,000 square foot concrete and stainless steel structure housed the largest solar module manufacturing line in the United States. The facility was designed as a prototype both for the emerging photovoltaic (PV) industry and for integration of PV technology in architecture.

The heart of the project is a glass cube containing the factory's control center. The cube's PV cladding, in combination with a solar panel entrance canopy and a translucent PV skylight, produces all the power necessary for the control center's lighting and air conditioning.

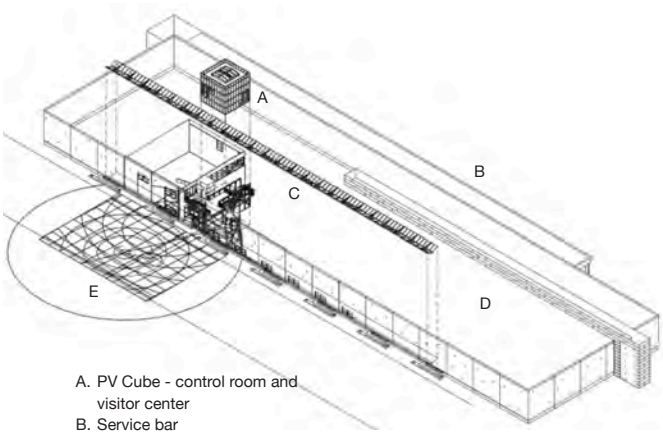
A diagram of the principles of photovoltaic energy at the atomic level is cast into the pavement at the entrance, further announcing the building's relationship to the renewable energy of the sun.

Completed in 1990, this was the first true building-integrated PV (BIPV) commercial building in the USA.

The Client:
APS Fairfield

The Team:
Kiss + Cathcart, Architects

Project Details:
$32.000,000
72.000 sf
Completed 1991



A. PV Cube - control room and visitor center
B. Service bar
C. PV awning
D. Production area
E. Entry plaza/didactic pattern

chronar photovoltaics – port jervis

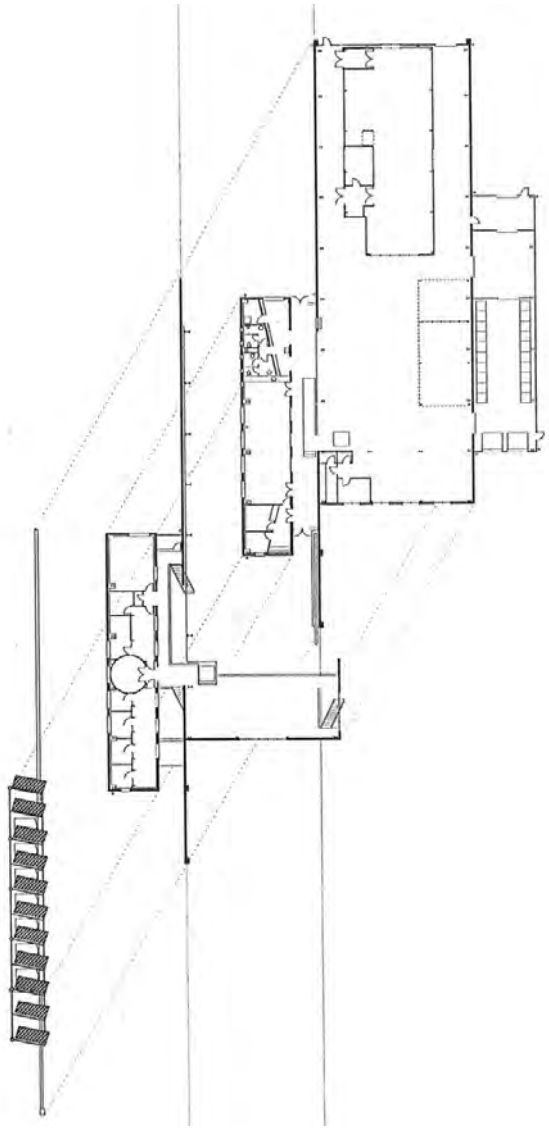
This facility is the world's first thin–film photovoltaic factory, designed to accommodate new production technologies capable of producing one megawatt of solar modules per year. Kiss + Cathcart worked closely with Chronar PV to develop both the building design and the production line layout.

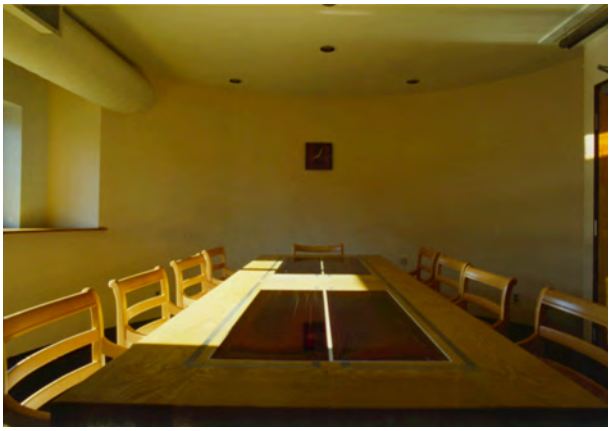
The facility's public face is a two–story office block clad in patterned glazed block. Set behind this is a long whitewashed wall that screens the manufacturing and mechanical areas from view. The complex centers on a skylit entry hall topped by an army of photovoltaic panels, giving the building a memorable and appropriate image both inside and out.

The Client:
Chronar Corporation

The Team:
Kiss + Cathcart, Architects
Ambrosino , Depinto + Schmieder, MEP
Butler Mfg. Co.,Structural

Project Details:
$3,600,000
2,200 sf
Completed 1984





the 2020 tower

The 2020 Tower is a mixed-use, 150 story, **productive** building, that produces all its own energy, treats and reuses its water and waste.

In 2001, the National Building Museum commissioned Kiss + Cathcart to design a speculative building for "Big + Green," an exhibition originally shown at the National Building Museum in Washington DC. In collaboration with Arup Engineers, we targeted new ecological, urbanistic, and quality of life standards for tall buildings. While technologically advanced, this design is not a utopian vision but a building that has been carefully engineered to be practical and economical by the year 2020.

The 2020 Tower inspired two research programs funded by the National Science Foundation from 2005 to 2014. The research, entitled *Self-Sustaining Urban Buildings*, was carried out by an international, multidisciplinary team headed by Rutgers University. As part of the conclusion of the study, Kiss + Cathcart and Arup updated the technical and performance parameters of the 2020 Tower to the year 2050 - The 2050 Tower.

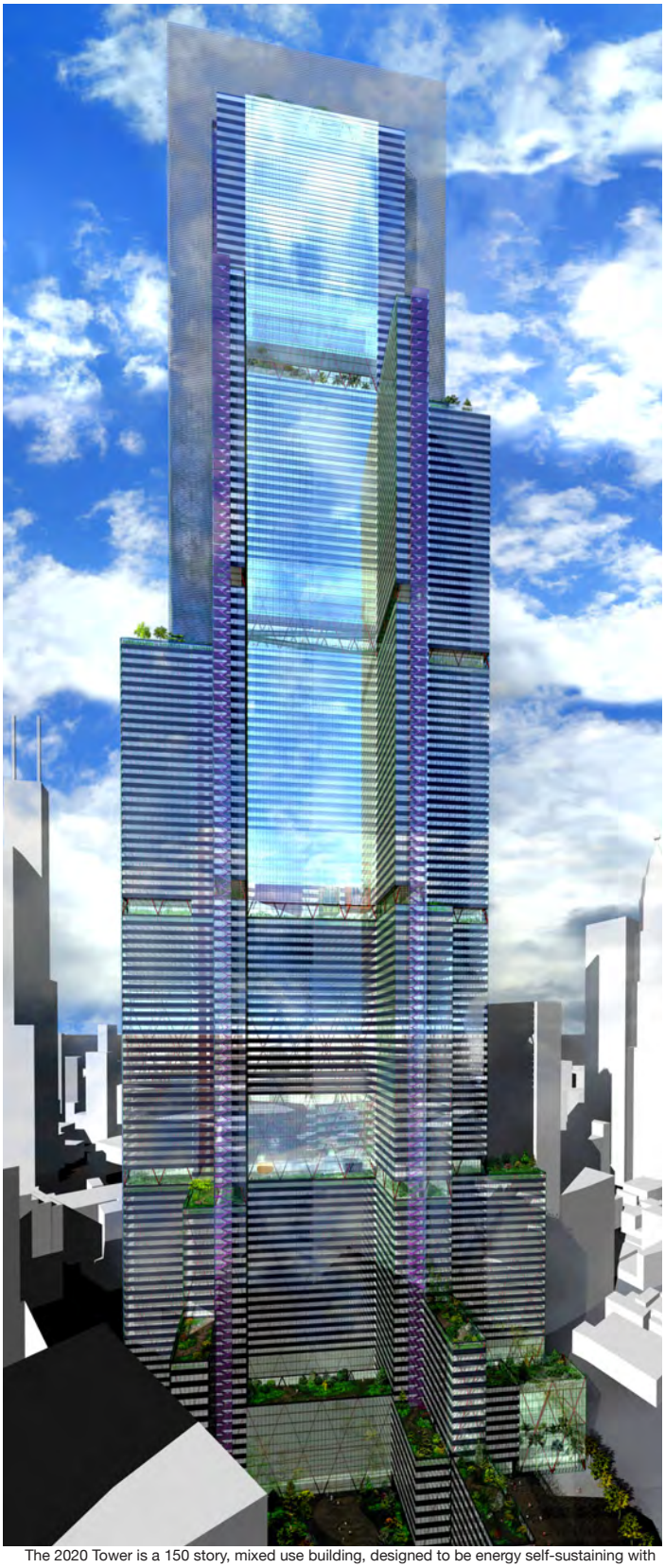
The Client:
The National Building Museum
National Science Foundation

The Team:
Kiss + Cathcart, Architects
Ove Arup + Partners

Project Details:
6,690,000 sf
Ongoing research

National Building Museum, 1/03
Yale University Art Gallery, 6/03
Museum of the City of NY, 1/04
National Science Foundation
Grants 2005, 2007–2014

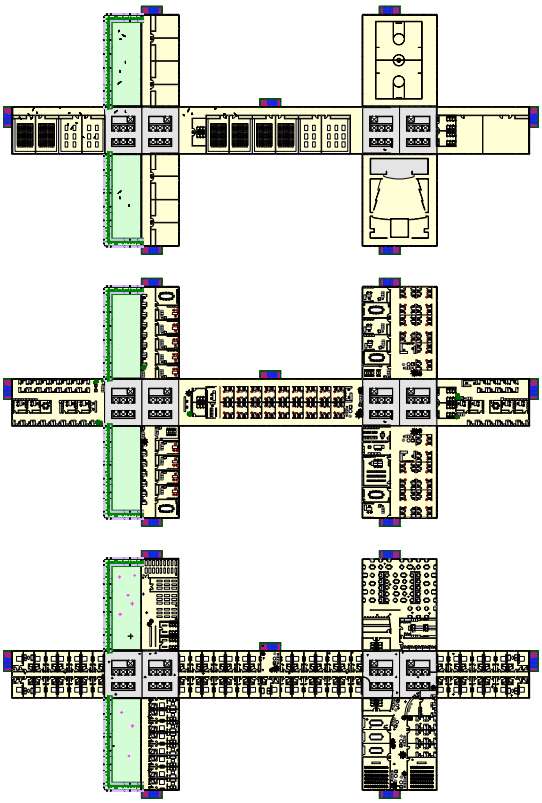
Originally commissioned by the National Building Museum for Big & Green, 2001


The 2020 Tower is a 150 story, mixed use building, designed to be energy self-sustaining with technology available by the year 2020

The 2020 Tower

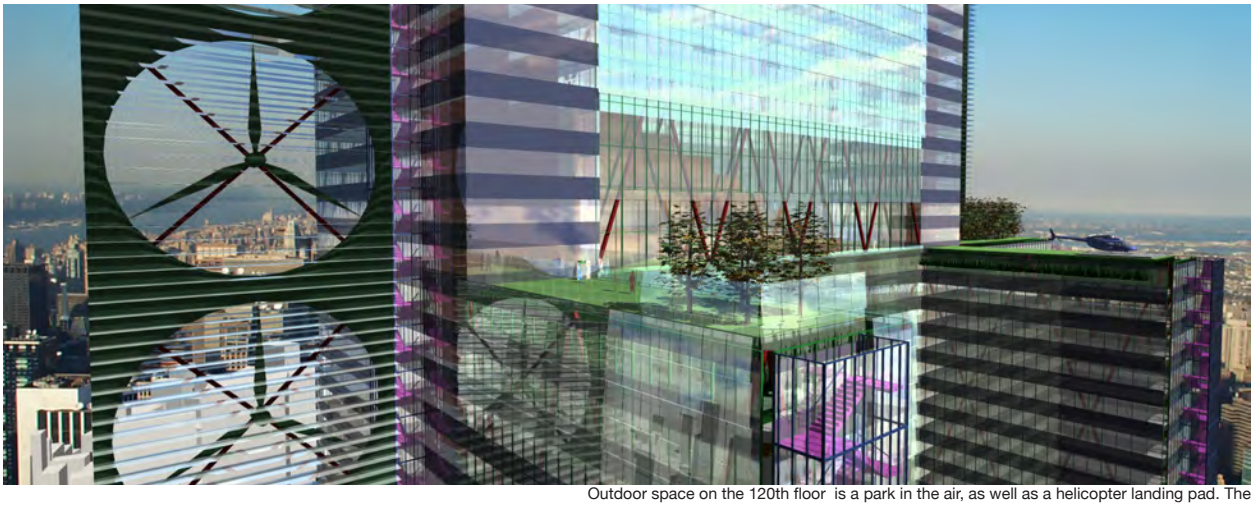
The 2020 Tower is conceived as a vertical city, with the same mix of residential, commercial and cultural activities as the city around it. With a peak population of 20,000, this building is the size of a small town. Compared to a single-use office or residential building, it will function more efficiently in human terms - with a variety of round-the-clock activities - and in terms of building services - energy, water, and waste - by spreading peak demands throughout the day. Solar and wind power meet 100% of this building's energy needs.

The project was designed for New York City conditions, but the design is adaptable to a range of climates. For locations other than New York, we have assumed a large urban center, with sufficient public transportation available to serve it. There is a subway transit hub integrated into the base of the building.



The building plan is thin - typically no deeper than 15 meters - which is and is adaptable to many functions.: top, a school, middle, an office, bottom, a hotel.

The skin of the building is a mixture of photovoltaics, rainwater capture, biological screens, and even integrated food production.



Outdoor space on the 120th floor is a park in the air, as well as a helicopter landing pad. The solar skin generates a third of the building's energy; wind turbines generate the remaining third.

The Rutgers/NSF project website

Rendering of the 2050 Tower. Note the wind turbines have been replaced with floor space.

The 2050 Tower

Since more than ten years had based since the original 2020 Tower design, in 2014 the team updated the project to 2050 technologies, and also updated the performance criteria to reflect the greater ambitions we developed in the intervening years.

While the 2020 Tower was designed to be self-sufficient in terms of operating energy only (the energy required to heat, cool, light and power accessories within the building on a daily basis), the 2050 Tower was designed to provide additional energy to pay back the embodied energy of construction and maintenance over a 75 year lifespan. We also included waste to energy systems in the building. This reflects a more realistic assessment of the energy-related environmental impact of the project.

We also provided vertical greenhouse space to grow specifically the amount of fresh produce consumed on site by the building's inhabitants (i.e., meals consumed at home by residents, and lunches on work days by commercial occupants).

To summarize the changes from 2020 to 2050:

- Projections for technological improvement were updated to 2050 from 2020
- Energy demand increased to include operating plus embodied energy
- Waste to energy systems added based on site organic waste streams
- The wind turbines were removed based on the belief that they would not function reliably
- Integrated agriculture systems revised

ENERGY SUMMARY SHEET

-Operating Energy Consumed:

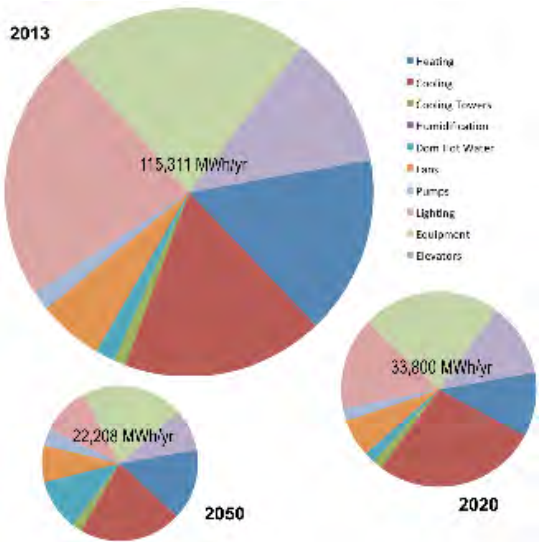
- 2013: -189.0 kWh/m2
- 2020: -55.4 kWh/m2/year
- 2050: -36.4 kWh/m2/year

-Energy Production Achieved:

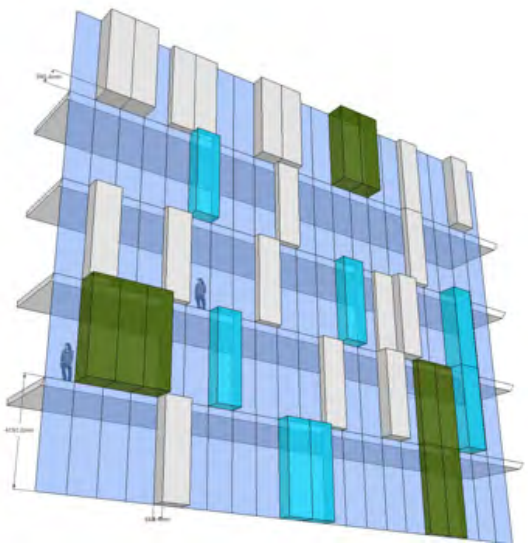
- 2020: +41.2 kWh/m2/year
- 2050: +60.5 kWh/m2/year

-Energy Balance

- 2020: -14.10 kWh/m2/year
- **2050: +24.1 kWh/m2/year**

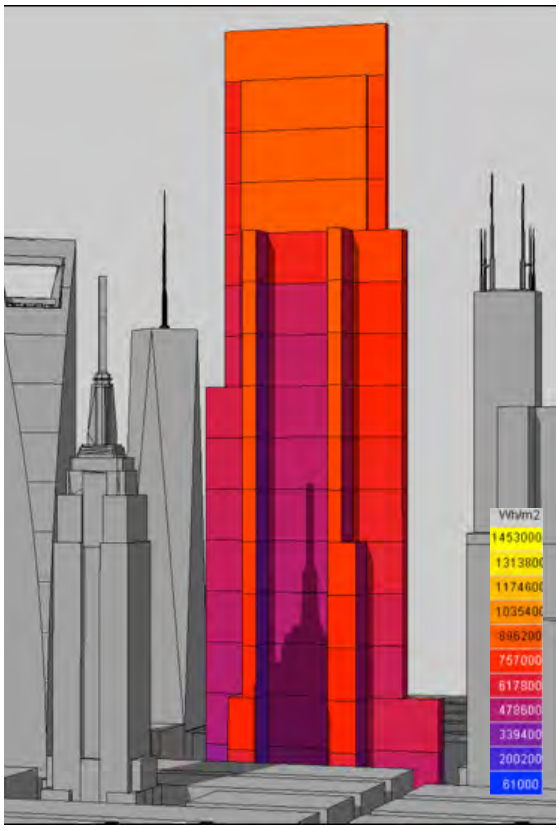


Energy consumption in 2013, 2020 and 2050



Modular facade components including individual vertical greenhouse units.

BREAKDOWN	2020	2050	
Energy production			
% PV	60.0%	*60.0%*	
System efficiency	20.0%	30.0%	
Unshaded context	25,876	38,813	MWh/year
Urban context	23,546	35,319	MWh/year
Urban context + greenhouses	20,906	31,359	MWh/year
Waste to energy	3,661	5,491	MWh/year
Total energy production	**24,567**	**36,850**	MWh/year
Operating Energy			
Basic operating	55.4	36.4	kWh/m2/year
	33,800	22,208	MWh/year
Water-desalination	1,264	326	MWh/year
Greenhouses	5,041	1,260	MWh/year
Other			
Total operating energy	**40,105**	**23,794**	MWh/year
Embodied energy	4,521,593	834,156	MWh
Life span	75	*75*	
Embodied energy/year	**60,288**	**11,122**	MWh/year
Operating + embodied	**100,393**	**34,916**	MWh/year
Energy production/consumption			
Operating only	**61.3%**	**154.9%**	
Operating + embodied	**24.5%**	**105.5%**	



Insolation model in NYC climate conditions, hypothetical site.

brooklyn queens expressway enhancement study

The New York City Economic Development Corporation commissioned Starr Whitehouse and Kiss + Cathcart to perform this study to repair the social and environmental damage done by Robert Moses' sunken portion of the Brooklyn Queens Expressway.

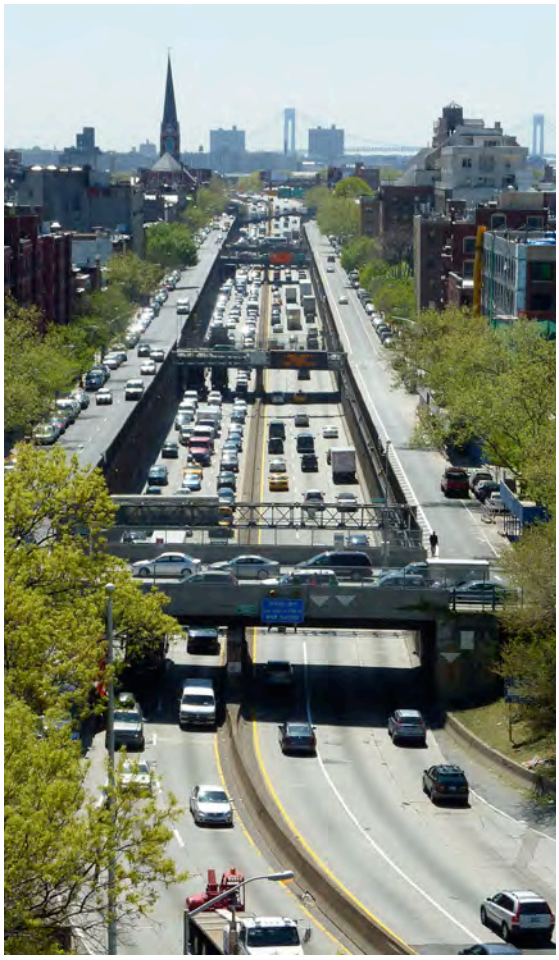
The study targets pedestrian quality of life, connections between communities that have been separated for a generation, and quality of the environment, including air quality, noise. Although guided by the City of New York, considerable community involvement has taken place through a series of public workshops.

A solution proposed by Kiss + Cathcart covers the trench with a lightweight lattice structure which supports sound-absorbing panels, vines and other plantings, and photovoltaic panels. Although from the pedestrian point of view, this productive virtual landscape will look like undulating green hills, it will be more than 50% open area to provide ventilation and daylighting to the highway below.

The Client:
The New York City Economic Development Corporation

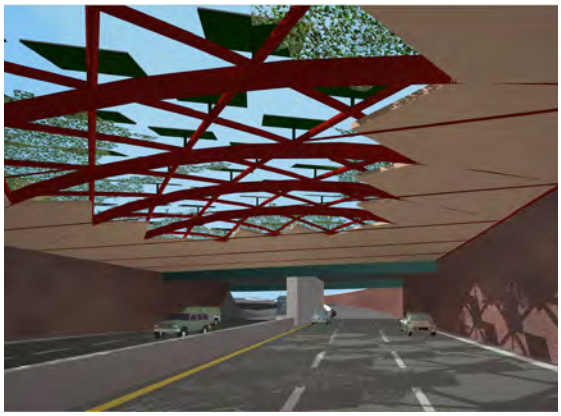
The Team:
Starr Whitehouse Landscape Architects
Kiss + Cathcart, Architects
Buro Happold Consulting Engineers
Sam Schwartz Engineering

Project Details:
1,000,000 m2
Ongoing, study complete late 2010



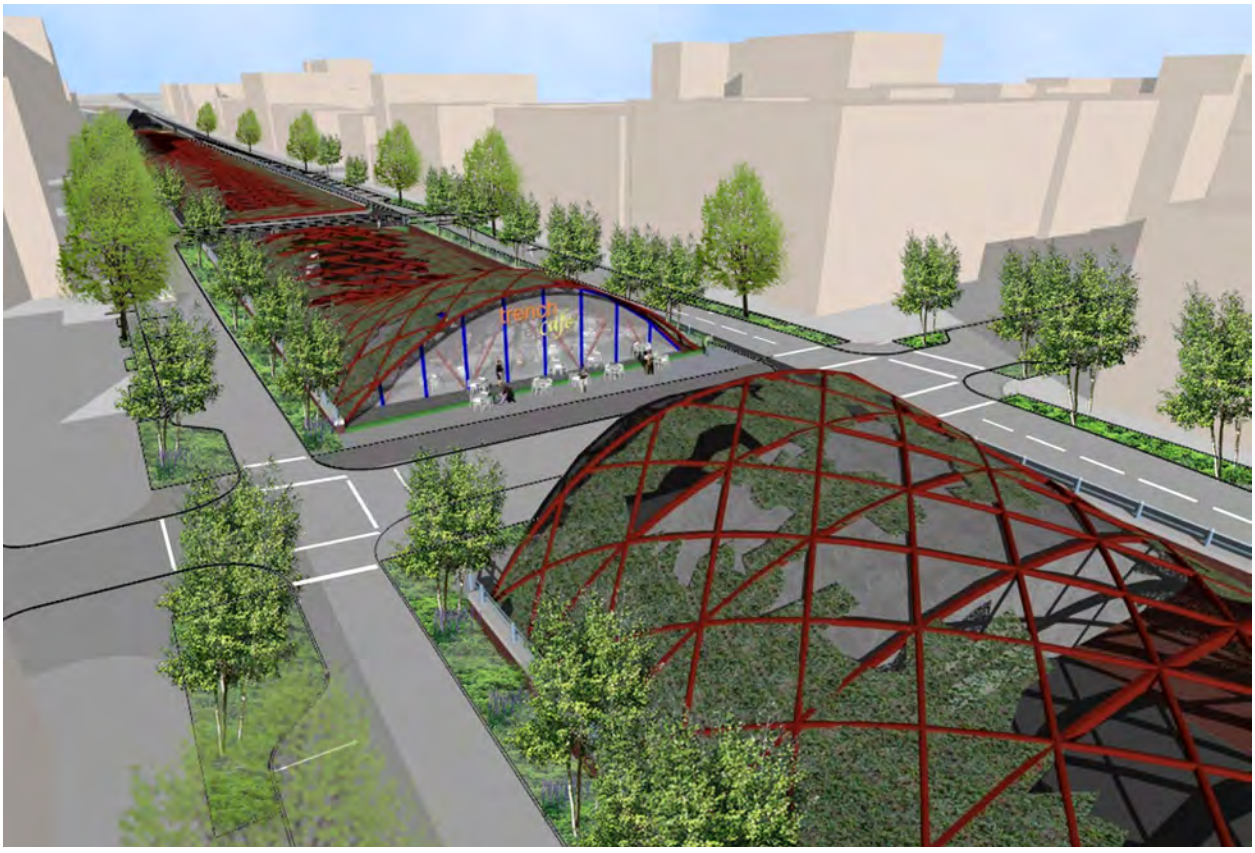
The Brooklyn Queens Expressway trench looking south. Thriving neighborhoods to the east and west were separated in the 1950s.

Community workshop.



Trellis structure from the highway.

Trellis structure looking south from Congress Street



Trellis structure looking north from Union Street showing cafe/retail space spanning the highway..

under the sun: an outdoor exhibition of light

Commissioned by The Cooper Hewitt / National Design Museum, a branch of the Smithsonian Institution, Kiss + Cathcart designed this exhibition on solar technologies and the built environment. Staged in the museum's gardens on Fifth Avenue in Manhattan, Under the Sun was a forward-looking investigation into the design implications of the solar future.

Photovoltaic (PV) pavilions and kiosks are the focus of the plan. These structures demonstrate integration of PV systems into temporary and permanent shelter, and incorporate the major solar module technologies: glass, metal and flexible film.

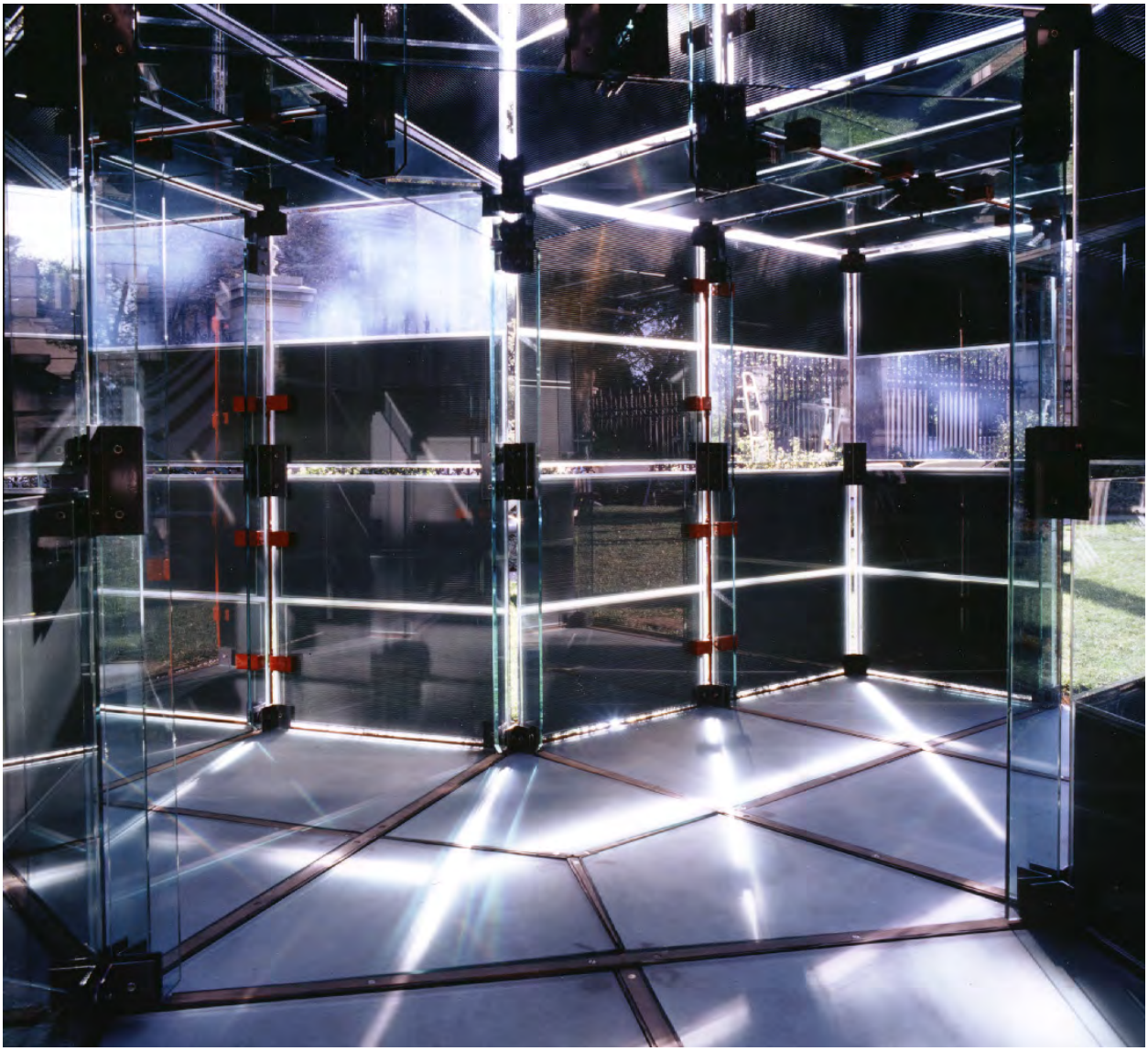
The pavilions provide shade, display surfaces for images and text, and projection screens for lights and film. The glass pavilion incorporates a thin-film PV medium laminated between glass sheets. These composite modules are simultaneously structure, enclosure, and power source. Energy from the modules powers the pavilion's fan by day and lights under the glass floor at night. The tensile structure pavilion incorporates flexible, thin-film photovoltaic material.

The Client:
The Cooper Hewitt / National Design Museum

The Team:
Kiss+Cathcart, Architects
F.T.L, Architect
FTL/Happold, Engineering

Project Details:
Exhibited 1998-1999
subsequently at the Smithsonian, Washington

AN OUTDOOR EXHIBITION OF LIGHT
UNDER THE SUN
AN EXHIBITION AT Cooper-Hewitt National Design Museum Smithsonian Institution



native american photovoltaics

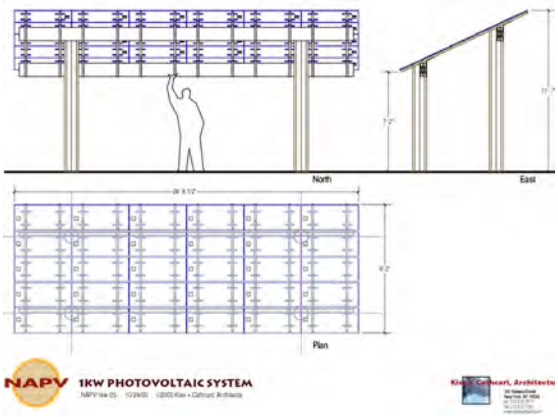
The Monroe Family, Dilkon, Arizona.

The Barnett Family, Dilkon, Arizona.

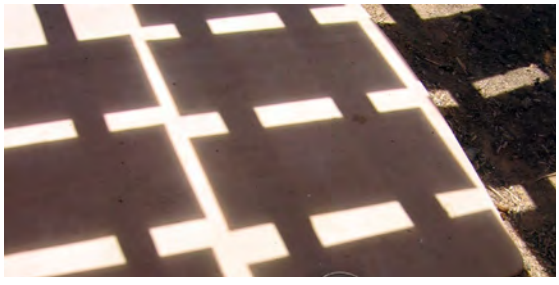
Kiss + Cathcart has collaborated on a series of projects for Native American Photovoltaics (NAPV), a not for profit company cofounded by Gregory Kiss. NAPV's mission is to install, maintain, and finance PV electrical systems for remote sites in Native American lands. To date the installations have been primarily on the Navajo Reservation. NAPV has also installed PV systems for commercial ventures in California and Taos, New Mexico. The goal of the enterprise is to bring economic and environmental sustainability to Indian lands.

NAPV projects designed by Kiss + Cathcart include multifunctional PV Ramada shade structures for remote homes; a 5kW array for Seba Dalkai School, which doubles as an outdoor classroom; a 100kW power station in Boron, California, and a series of PV shade structures at El Monte Sagrado, an eco-resort in Taos, New Mexico.

Seba Dalkai School, Seba Salkai, AZ. A K-12 school developed a solar curriculum to teach in this outdoor solar classroom..



1.2kW remote home systems, Navajo Reservation



El Monte Sagrado, Taos, NM

abu dhabi eco park

Abu Dhabi Eco Park (ADEP) is a mixed use community of residential, hotel, retail, recreational, and environmental uses, consisting of over 640,000 square meters of construction.

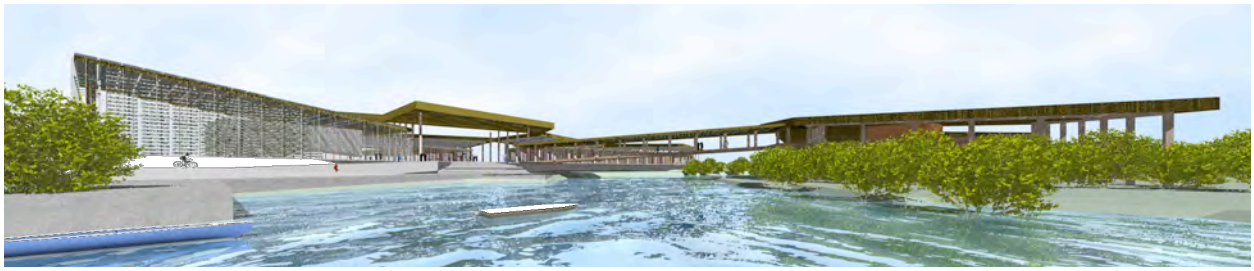
Although a financially-driven commercial development, Eco Park aimed at the highest possible standards of environmental performance. Within a viable budget, the project approaches net zero energy from a combination of passive design strategies, highly efficient building systems, solar energy generation, and organic and on-site hydroponic farming.

Kiss + Cathcart is primarily responsible for the planning and design of the Mangrove Area and Eco Agriculture

The Client:
Aldar

The Team:
Kiss + Cathcart, Architects
Kling Stubbins
Ardalan Associates
Andropogon Associates
Ove Arup + Partners

Project Details:
640,000m2 total; 8,100m2
K + C primary design
Conceptual Design Completed
2008



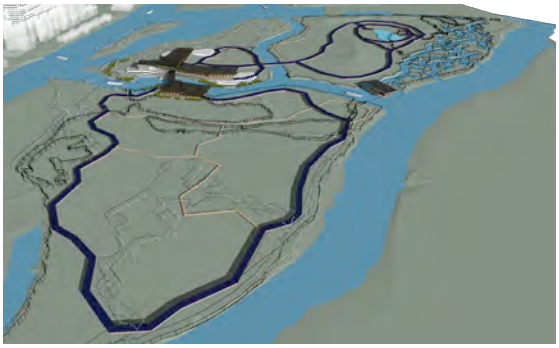
Environmental Awareness Training Center and Marine and Mangrove Visitors Center from the west.

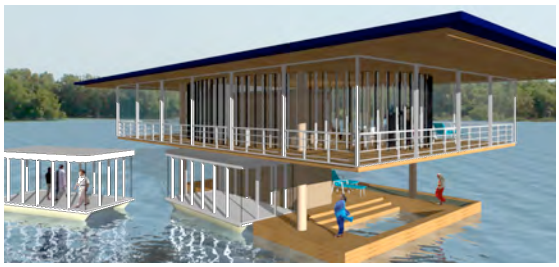
Environmental Awareness Training Center and Marine and Mangrove Visitors Center from the east.

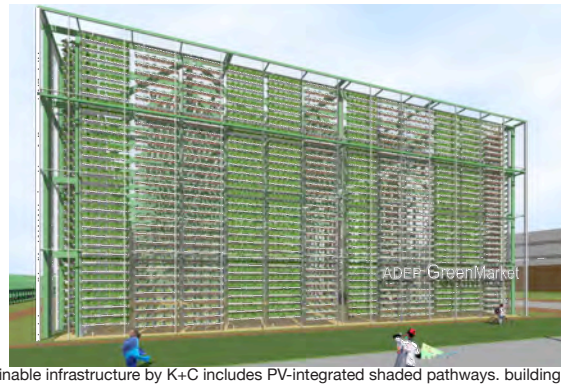
Abu Dhabi Eco Park from the south

areas, with Andropogon Associates - the most environmentally sensitive parts of the project site. Within the master planning of the balance of the site by Kling Stubbins and Ardalan Associates, Kiss + Cathcart has driven the high-level planning for renewable energy strategies and technologies.

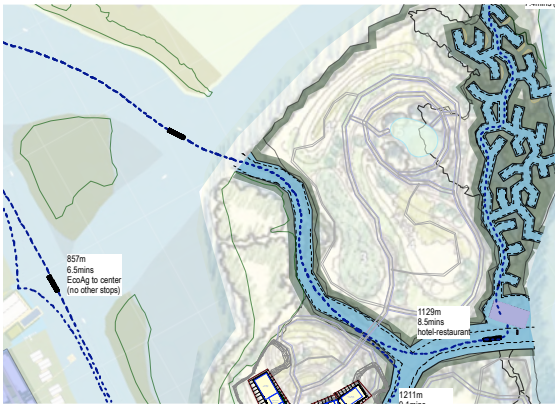
The Mangrove Islands, containing the Hotel Eco Lodges, and Environmental Awareness Training Center, are completely off–grid and self-sustaining in terms of energy, water, and waste. The Eco Agriculture area produces enough fresh produce to feed 50% of the annual consumption of the total 7,500 residents of the project, in a first–of–its–kind building integrated agricultural Green Market.







Sustainable infrastructure by K+C includes PV-integrated shaded pathways. building integrated hydroponic food market, and floating zero-impact hotel cabanas.



The Mangrove Area is designed to be totally zero impact, including transportation via solar-electric boats.

The Mangrove Islands are almost the only naturally green areas in Abu Dhabi city, and an important refuge for marine and terrestrial wildlife.

greenmarket: building integrated agriculture for abu dhabi

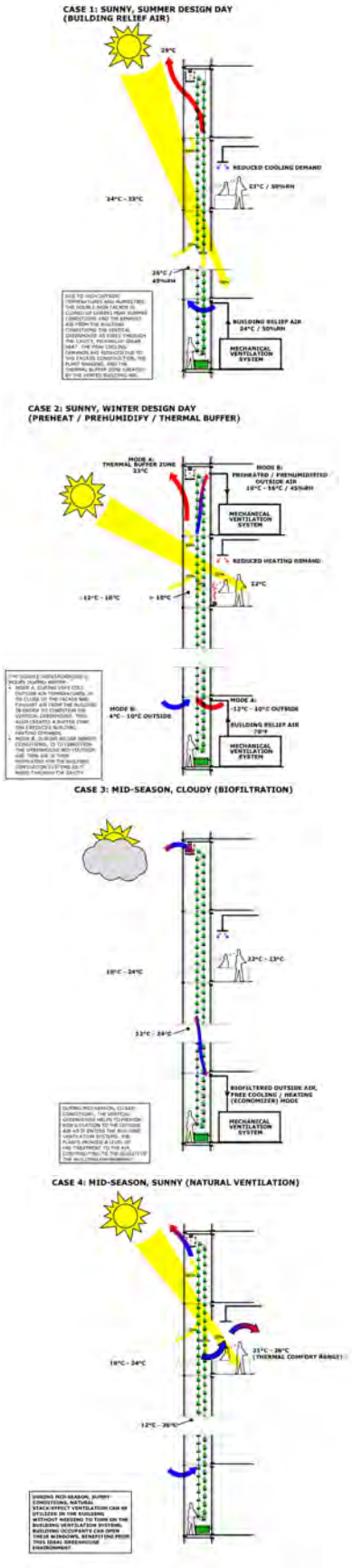
GreenMarket is a food market hall that grows its own food. The concept of the structure is to utilize solar energy as efficiently and completely as possible to grow crops, while providing shade, shelter, lighting, ventilation, and cooling to an enclosed space that is dedicated to other uses. Hydroponic growing trays can be configured horizontally (as in traditional greenhouses), vertically, or at other orientations, and can be stacked in one or two layers. In our building-integrated approach, the growing assembly forms a double skin enclosure for a space.

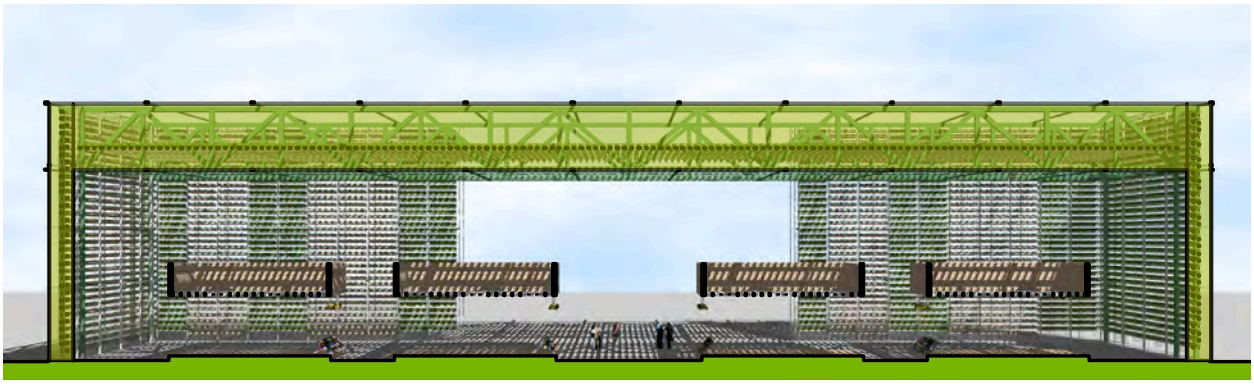
Normally, a glass greenhouse is an inappropriate construction type for occupied space for hot climates. In this application, however, the combination of shading and evaporative cooling provided within the greenhouse layer will provide a reasonable thermal envelope for a conditioned space, and a enough daylight will penetrate through the plants to provide abundant natural light within.

This project synthesizes the potential of passive and active technologies - evaporative and absorption cooling, PV, daylighting with active control via moving growing trays, convective and stack ventilation, large openable areas for seasonal cooling - to create a dynamic, exciting, and comfortable environment.

The Team:
Kiss + Cathcart, Architects
BrightFarm Systems
Ove Arup + Partners

Project Details:
Ongoing research





new york power authority PV canopy competition

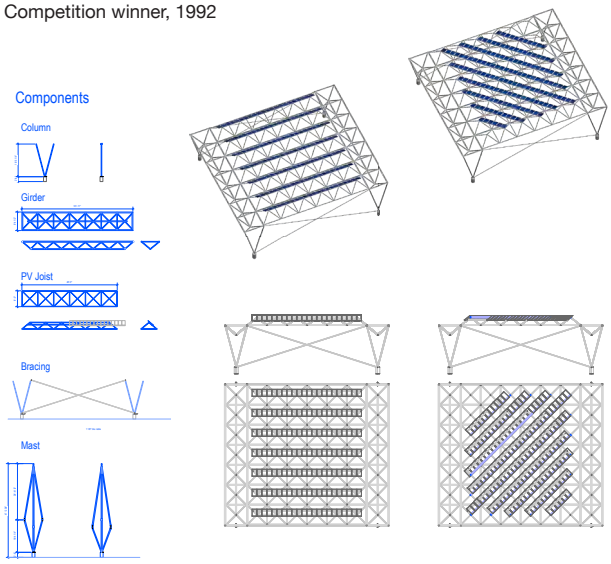
Kiss + Cathcart won the 1992 Solar Design Competition, sponsored by the New York Power Authority and the American Institute of Architects. NYPA/AIA were interested in synergies between the emerging photovoltaic industry, and new air quality regulations which pointed the way to electric vehicles. By parking electric commuter vehicles beneath a PV-electricity generating power station, they would become truly emission-free. The site is an existing 20 acre lot at the State University of New York - Stony Brook campus on Long Island.

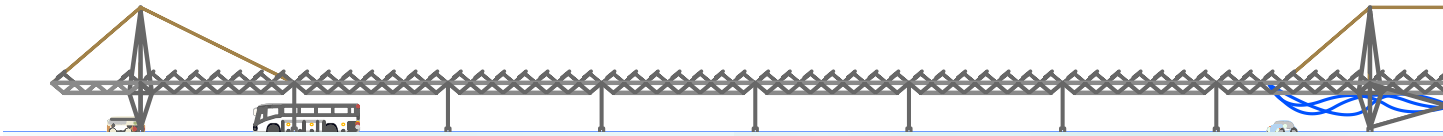
Collaborating with Arup engineers, we developed a modular structure designed to span double-row parking bays. The system accommodates a wide range of site conditions and orientations, including long-span and cantilevered components, fabric shelters for bus stops, and the ability to orient the PVs within the structure so that they would never be more than 22.5° off south, regardless of the orientation of the parking lot.

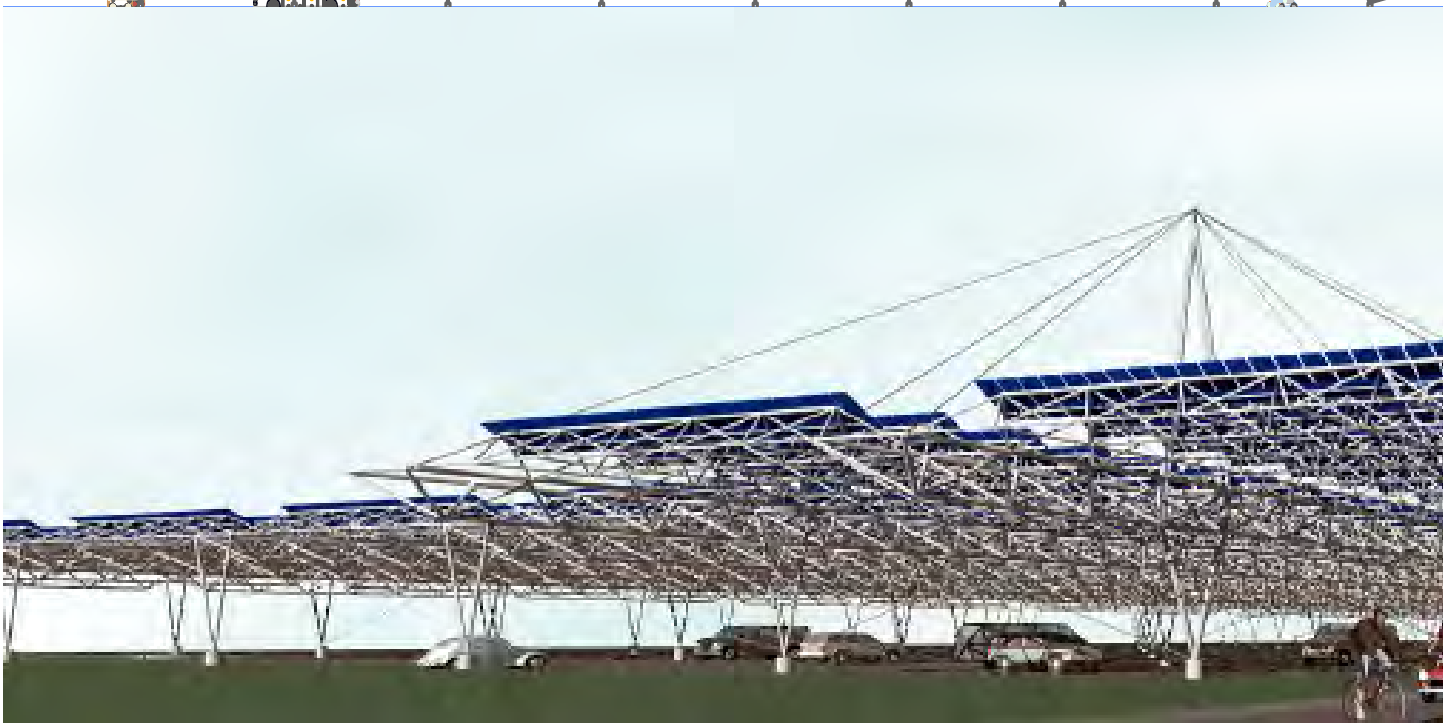
The Client:
The New York Power Authority
American Institute of Architects

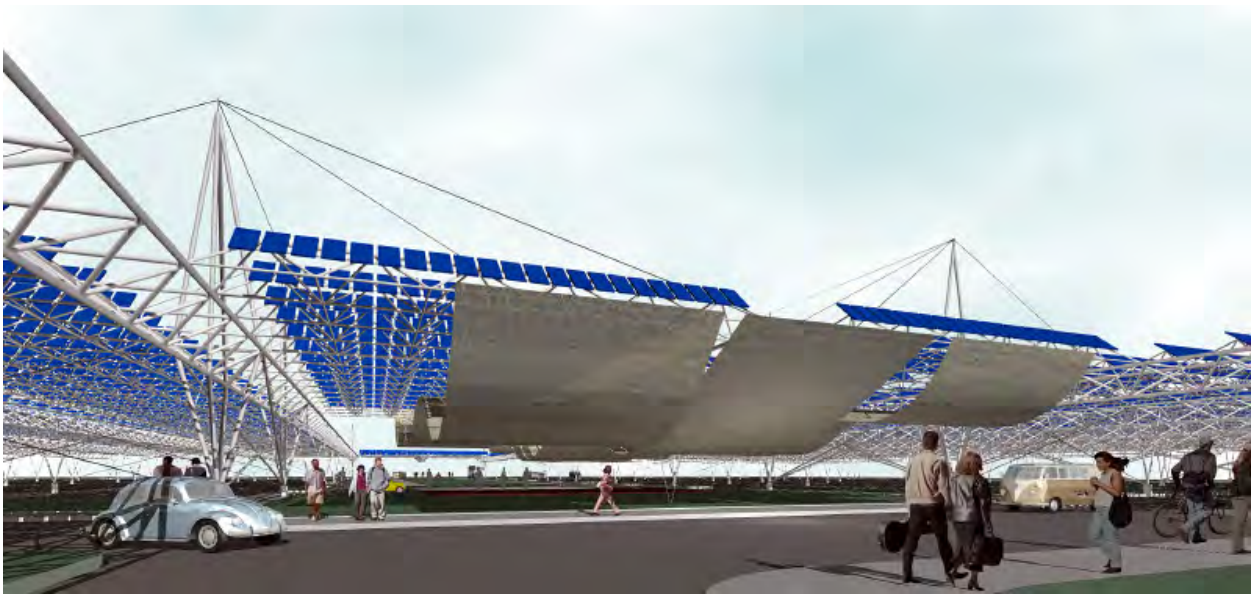
The Team:
Kiss + Cathcart, Architects
Ove Arup + Partners

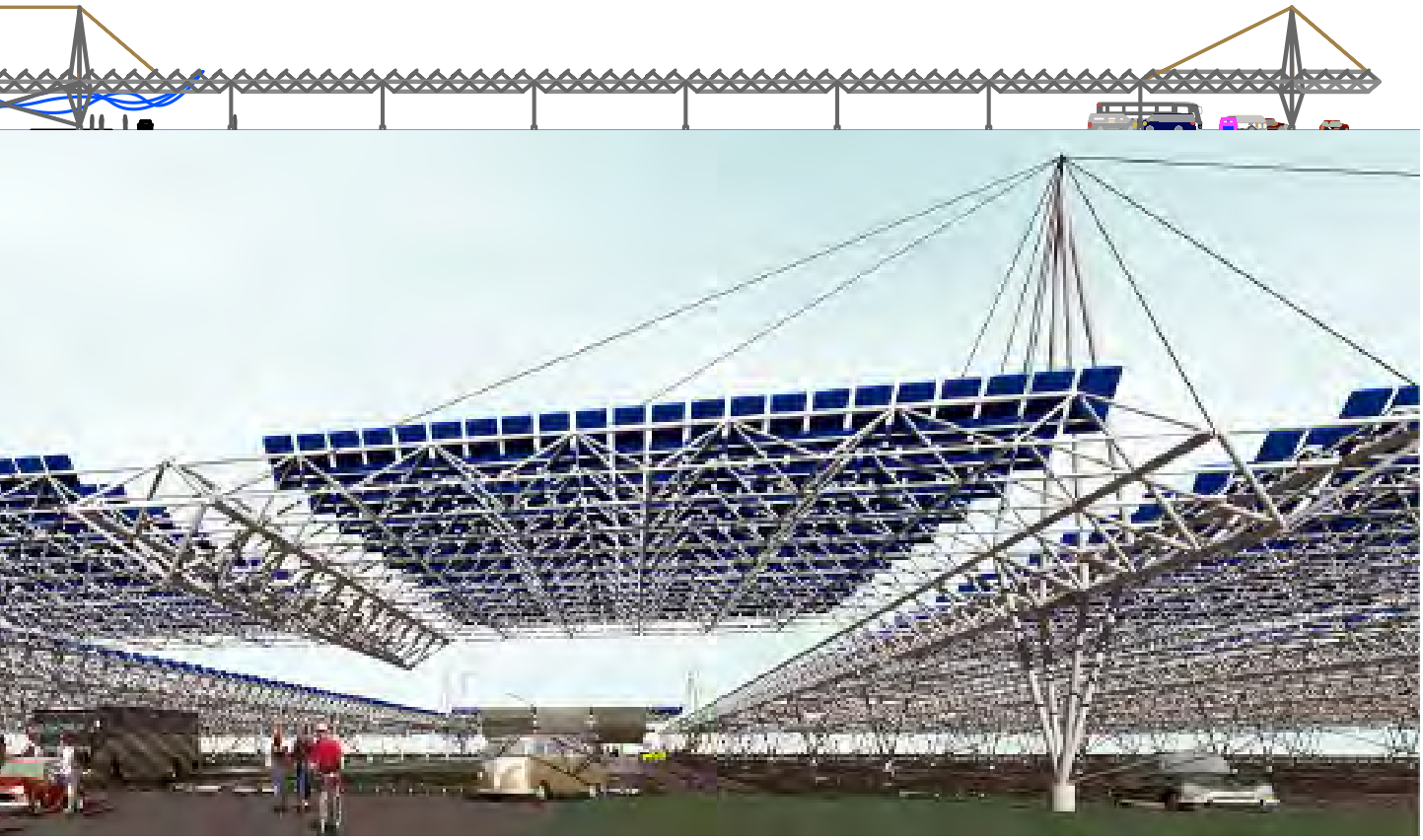
Project Details:
Competition winner, 1992











4 times square building – integrated photovoltaic system

The first consciously “green” skyscraper in New York, 4 Times Square at Broadway and 42nd Street was a big first step in raising the standard for commercial real estate in the United States.

Kiss + Cathcart acted as consultants for the building’s most advanced feature: thin–film photovoltaic (PV) panels that replace glass spandrels from the 37th to 43rd floors on the south and east faces of the tower. While the surface area available for PV panels is relatively small, the system still provides enough output to power the equivalent of five to seven houses.

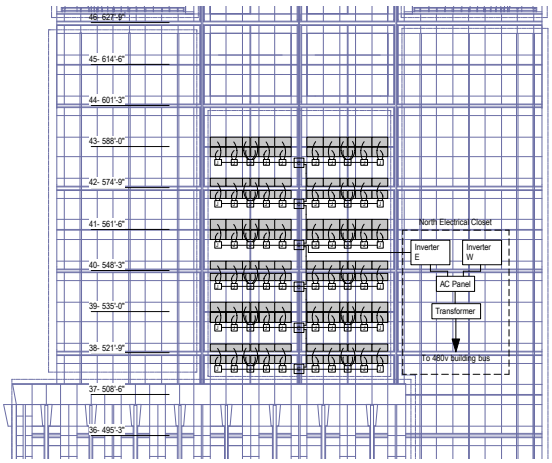
Working in collaboration with the base building architects, Kiss + Cathcart designed the PV system to function as an integral part of the tower’s curtain wall. Custom PV modules fit the building’s rigorous aesthetic, structural and electrical criteria.

As the first major commercial application of building–integrated PVs in the United States, 4 Times Square points the way to large–scale production of clean, silent and cost effective solar electricity where it is needed most, at the point of greatest use.

The Client:
The Durst Organization

The Team:
Kiss + Cathcart, Architects
PV system design
Fox & Fowle, Architects
TerraSolar Energy Photovoltaics,
PV system
The Durst Organization

Project Details:
Completed 1998



willow house

Built for a book maker, a poet and their son in a clearing in the Catskill forest, this house provides space in which each family member can work or play, alone or together. Writing, music listening, homework, film developing, conversation and printing can occur simultaneously in each of many “far corners” in this house. In addition to meeting the program needs of this family, the design takes advantage of the geographical benefits of the site. Buried into the corner of a south–facing slope, the house opens onto views of a nearby meadow with mountains valley in the distance.

During the winter the house is protected from northerly winds by twelve feet of earth and a highly insulated curving metal roof, and opens to the passive solar heat of the sun through a window–wall facing south. Flagstone floors provide constant heat from embedded warm water tubing, and a ducted heat recovery system recycles the heat. Furthermore, great internal mass keeps the house warm on winter nights but cool on summer days when fabric awning, roof overhangs and a “Trombe” wall block the heat of the summer sun. Thirty-three windows sashes can be opened to the mountain breezes.

The Client:
Name withheld at client’s request

The Team:
Kiss + Cathcart, Architects
Goldstein Associates, Structural
Drew Gillette, Mechanical

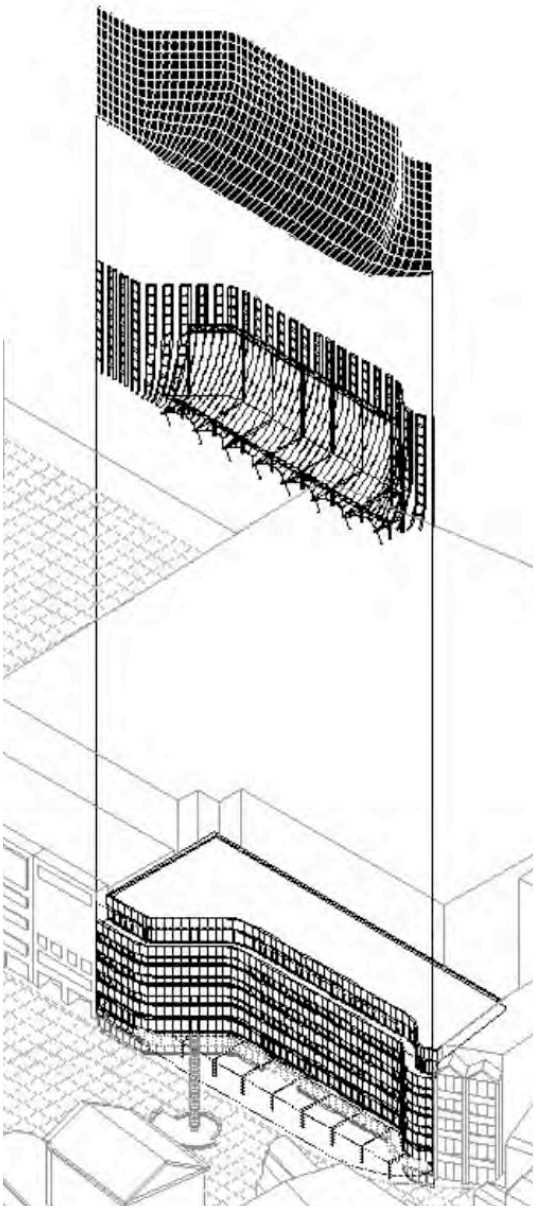
Project Details:
$420,000
4,000 sf
Completed 1994

hew customer center

Hamburg's electrical utility, HEW, is one of Europe's strongest proponents of solar energy. When the aging and poorly–insulated facade of the company's customer center in Hamburg's prestigious central shopping district needed replacement, HEW chose Kiss + Cathcart to provide an energy- and resource–efficient solution.

Kiss + Cathcart's solution drapes a photovoltaic (PV) glass skin over the existing building. This skin insulates against moisture and temperature extremes, and also pulls away from the front of the existing building to enclose a first floor wintergarden and shade a street side cafe. Most importantly, the PV facade actively generates electricity and heat year–round. The "second skin" approach has the further environmental benefit of eliminating the need for demolition and disposal of the existing facade.

The new skin is a complex curving form comprised of over 1,200 custom glass and PV modules. One of the most complicated curtain walls ever constructed, this project will demonstrate that PVs can perform in the most demanding architectural applications.



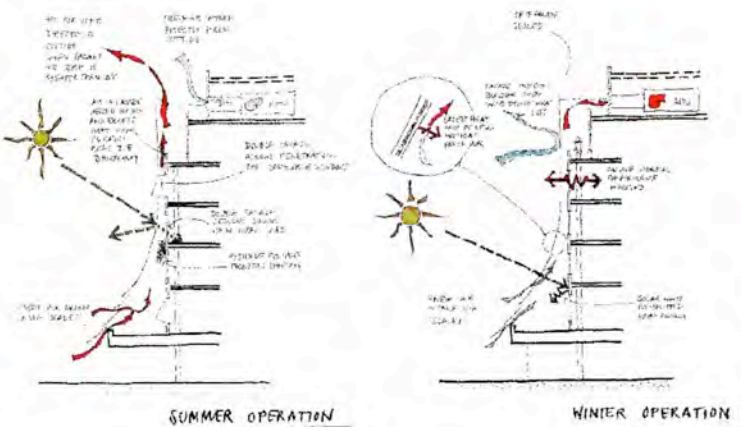
The Client:
Hamburgische Electricitäts–Werke

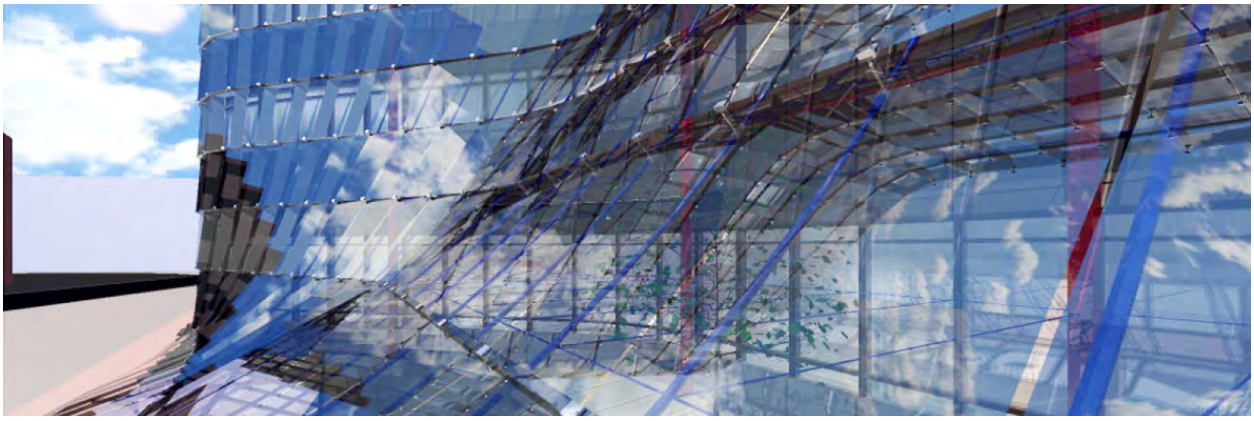
The Team:
Kiss + Cathcart, Architects
Weisser–Partner, Architect

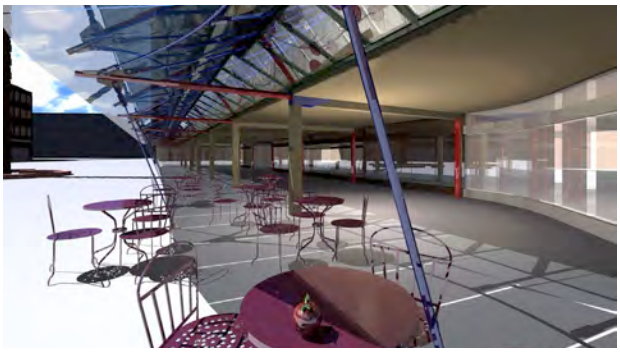
Project Details and Awards:
Design Completed 2006

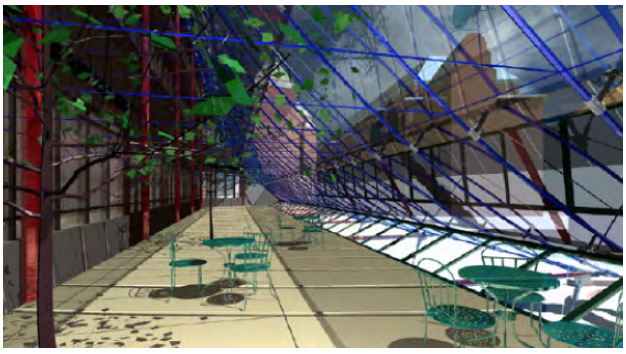
First Prize, AIA/DOE (American Institute of Architects and US Department of Energy), 1996 competition

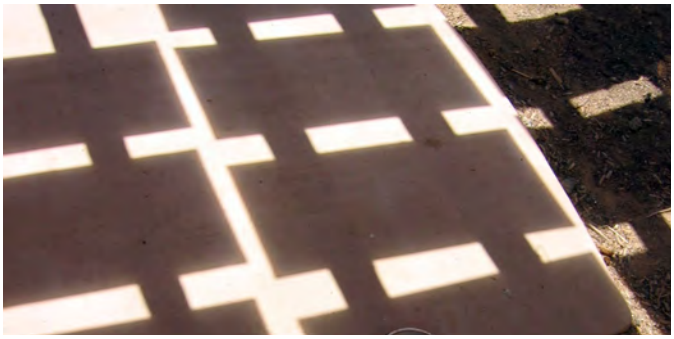
First Prize, Association of German Architects and German Federal Ministry of Science and Technology competition, 1997.











taos projects - three sisters houses and El Monte Sagrado solar shade structures

In 2002 and 2003, K+C designed a series of projects for Dharma Properties, an ecologically positive developer in Taos, New Mexico. The Three Sisters houses were designed to be zero impact, with on site passive and active energy generation, rainwater collections, and Living Machines - biological waste treatment systems.

Several photovoltaic shade structures were built at properties in Taos, including at the El Monte Sagrado resort. Built on traditional wooden *viga - latilla* frames, the PVs were supported on custom designed fixtures that accommodated the varying shape do the supporting logs, while providing enough strength for the extraordinary local snow loadings. The PVs were designed to have an organic quality compatible with the local vernacular - a relationship between low-tech and high-tech that we often pursue.

The Client:
Dharma Properties

The Team:
Kiss + Cathcart, Architects

Project Details:
Design-construction 2002-2003

awards and publications

recent awards

Bronx River House
K+C were honored at the Bronx River Alliance 2015 Upstream Soiree Gala

Bushwick Inlet Park
2008 New York City Public Design Commission of the City of New York Award

Solar2
2008 Holcim Gold Award

Bronx River House
2007 New York City Public Design Commission of the City of New York Award

Bronx River Alliance
Honors Kiss + Cathcart at the annual Upstream Soiree at the Bronx Zoo, September 2015.

Bushwick Inlet Park
2014 AIA Committee on the Environment Top Ten Green Buildings Award, April 2014, **and** AIA New York COTE award, December 2014.

Bushwick Inlet Park
2008 New York City Public Design Commission of the City of New York Award.

Bronx River House
2007 New York City Public Design Commission of the City of New York Award.

Stillwell Avenue Terminal
2007 AIA Committee on the Environment: Top Ten Green Building Awards. Stillwell Avenue Terminal.

Stillwell Avenue Terminal
Common Ground Pitt Street
Solar2
2006 New York City Green Building Design Competition: Awards to Stillwell Avenue Terminal, Common Ground Pitt Street Housing, and Stuyvesant Cove Environmental Center.

Smithsonian Tropical Research Institute Station
2005 Smithsonian Tropical Research Institute, Bocas del Toro Research Station, Panama Federal Energy and Water Management Award Winner.

Stillwell Avenue Terminal
2005 The Stillwell Avenue Subway Terminal is a winner of the Building Brooklyn Awards in the Public Works category.

Under the Sun
2000 The DuPont Benedictus Award for Innovation in Architectural Laminated Glass recognizes outstanding or significant architecture incorporating laminated glass for both commercial and residential projects. DuPont initiated the award to create more awareness of the versatility and aesthetic qualities of laminated glass in architectural design. The DuPont Benedictus Award was given for Kiss + Cathcart's work for Under the Sun.

Homes for Habitat
1999 In an open competition, Kiss + Cathcart won an honorable mention in the 'Homes for Habitat' competition, sponsored by Residential Architect magazine and Habitat for Humanity.

Hamburg HEW
1996–97 The Hamburg HEW Kundenzentrum project won First Prize in the 1996 American Institute of Architects Building–Integrated PV Competition. This project was also awarded First Prize in the "1996–97 PhotoVoltaics in Buildings" competition.

40 UNDER 40
1996 Gregory Kiss was named a member of the 40 UNDER 40 group for his innovative work in solar technologies design.

Manufacturing Communities
1995 "Manufacturing Communities", a study of the integration of light industry into urban communities, won the Progressive Architecture Awards for Urban Design for John Loomis and Kiss + Cathcart.

The New Museum
1995 In an invited competition, Kiss + Cathcart won the commission to renovate and expand the New Museum of Contemporary Art in SoHo, New York City.

Photovoltaics
1994 A projected design for a mixed use complex in Vallejo, California received Second Prize (highest prize awarded) in the IEA/NOVEM Architectural Ideas Competition: Photovoltaics in the Built Environment, sponsored by the International and Netherlands Energy Agencies.

Solar Parking Structure
1992 Kiss + Cathcart was awarded First Prize in the Solar Parking Structure Competition, sponsored by the New York Power Authority and the New York Association of Architects/American Institute of Architects, for a modular system that optimally supports PVs over a wide variety of site conditions.

publications

Dwell Magazine
July 2004

"Windows should be part of the energy strategy for any building ... or you are missing a tremendous opportunity. Its free energy, free heat, and free enjoyment."

New York Times
May 25th 2005

The Metro Section

The New York Times

Mrs. Clinton's Former Top Fund-Raiser Is Acquitted of False-Filing Charges

And Now for the Good News From the Subway System

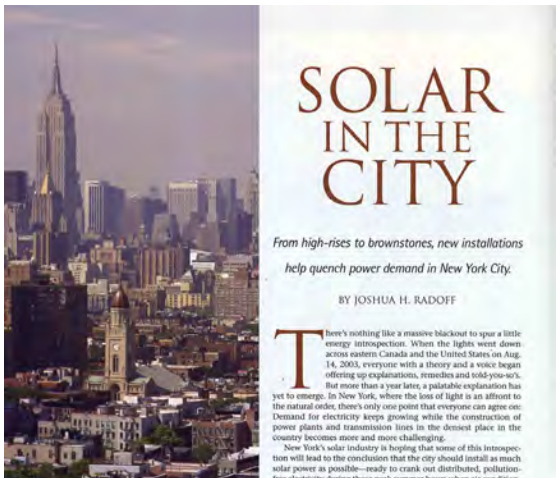
New Terminal in Coney Island Rivals the Great Train Sheds of Europe

"The new Terminal In Coney Island rival the great train sheds of Europe... It doesn't look like what you think of the New York City Subway"

Design like you Give a Damn
Metropolis Books, 2006

"Education is one avenue for helping to overcome these obstacles (of poor health, education, and unemployment)... The solar-powered pavilion Kiss + Cathcart designed for the school creates a shady space for use as a classroom or a performance stage, while the four-kilowatt photovoltaic system creates auxiliary power for computers.."

Solar Today
Sept 2004



SOLAR IN THE CITY

From high-rises to brownstones, new installations help quench power demand in New York City.

BY JOSHUA H. RADOFF

"The result is a structure befitting a beach side terminal—full of natural light and still the largest PV installation in the city. "

BIG & GREEN
January 2002

Projects featured:
HEW Customer Center
Experimental Solar Tower

News from Art Commission
May 25th 2005

THE REMSEN AVENUE YARD

A DESIGN AND CONSTRUCTION EXCELLENCE INITIATIVE PROJECT

The Remsen Avenue Repair Facility is an existing facility of the NYC Department of Environmental Protection (DEP), Bureau of Water and Sewer Operations. This division maintains and repairs the city's water distribution lines as well as sewers and street catch basins. Remsen Avenue is Brooklyn's central base of operations for this work. When it became necessary to enlarge and renovate the facility, Rosemarie Subasic, Director of the Division of Facilities Management and Construction (DEP) sent the Department of Design and Construction (DDC) a scope of work. Subasic was delighted when DDC Commissioner David Burney suggested the project be part of the "Design and Construction Excellence Initiative (DCEI)."

A selection committee was duly formed with representatives from DDC and DEP. It chose the firm of Kiss & Cathcart, Architects as consultant to the project. Kiss & Cathcart is a small firm of ten, with expertise in industrial architecture and sustainable materials and technologies. Remsen Avenue is its first city project.

DDC and DEP met regularly with Kiss & Cathcart to critique the design and make suggestions. Subasic hoped the firm would bring fresh ideas. She has not been disappointed. The design must meet

"The commission commended the innovative approach, including infusing the building with natural light, creating a grand interior space, and incorporating elements of sustainable design such as recycled rainwater and photovoltaic panels."

Green Architecture
1994

Projects featured:
Photovoltaic Manufacturing Facility
Conference/Cultural Center and Hotel

Architecture for Science
2004

Project featured:
Bocas Del Toro Laboratory

key staff

GREGORY KISS

Principal

Education:
Yale University
New Haven, CT,
BA, 1979

Columbia Graduate School of
Architecture and Planning
Columbia University
New York, NY,
M. Arch, 1983

Registered Architect
State of New York

Awards:
AIA COTE Top Ten Green Buildings in the US,
2014, 2005
NYC Public Design Commission: 2007, 2008
40 UNDER 40, 1996
National Science Foundation Research Grants
NYSERDA Grants
First Prize, 1996 American
Institute of Architects BIPV
Competition

Gregory Kiss has been working to advance the art and technology of environmentally responsible architecture for over 20 years. After receiving a Bachelor of Arts from Yale University and a Master of Architecture from Columbia University, he founded Kiss + Cathcart Architects in 1983.

Mr. Kiss has designed and consulted on many ground–breaking high-performance building projects in the Americas, Europe and Asia. His ongoing research into the function and aesthetics of photovoltaics for buildings has led to several new products and systems. He has authored a number of technical manuals for the Department of Energy, and lectures frequently on recent advances in environmental technologies and their potential for integration into architectural design.

Mr. Kiss co–founded Native American Photovoltaics, a non–profit corporation providing renewable energy systems to families without power.

COLIN CATHCART

Principal

Education:
University of Waterloo
Waterloo, Ontario
BA, 1978

Columbia Graduate School
of Architecture and Planning
Columbia University
New York, NY
M. Arch,1983

Professional Affiliations:
American Institute of
Architects, Member
Regional Plan Association, Member
Registered Architect:
State of New York
New Jersey
Pennsylvania
California
New Mexico
Arizona

Born in Frontier, Saskatchewan in 1955, Colin Cathcart received a Bachelor of Environmental Studies from the University of Waterloo in 1978 and was awarded the AIA Medal upon receiving his Master of Architecture from Columbia University in 1983.

Mr. Cathcart joined with Gregory Kiss in 1983 to form Kiss + Cathcart, Architects based on high standards of design, economy, ecology. Colin
Cathcart has successfully completed green projects around the country, including: Stuyvesant Cove Environmental Learning Center, Aljira Art Gallery , Glassroots Glass-blowing Studio in Newark, NJ, New Museum of Contemporary Art in New York, feasibility and urban planning studies for the Regional Plan Association, photovoltaic production facilities for Chronar Corporation in New York and Alabama, and numerous private residences in New York and Canada.

Mr. Cathcart is an associate professor at Fordham University, where he has developed a Pre–Architecture program within the Department of Visual Arts and a university-wide architectural studies major.

CLARE MIFLIN

Architect

Education:

University of Edinburgh
Edinburgh, Scotland, UK
BSc (Architecture), 1990

Bartlett School of Architecture
University College London
London, UK,
Postgraduate Diploma in
Architecture, 1994

Registered Architect
State of New York
Leed AP BD+C
Certified Passive House Designer

Clare Miflin is a registered architect with over 18 years of experience who has been a key part of Kiss + Cathcart since 2000. She has a deep understanding of environmentally sound building practices, techniques, codes and standards that she applies to all her projects. These include a research station in Panama that approaches net zero in energy and water; an arts and education center that will be energy positive and apply for Living Building certification; a mixed use Passive House certified project; several rooftop hydroponic greenhouses – both commercial and on schools; and sustainable research projects for various national agencies.

She has presented at many lectures and conferences; was an instructor for the “Cracking the Energy Code” course at NY Center for Architecture; is a member of Urban Green’s monthly program committee and the NY chapter of the Living Building Collaborative.

special expertise: integrated architectural systems

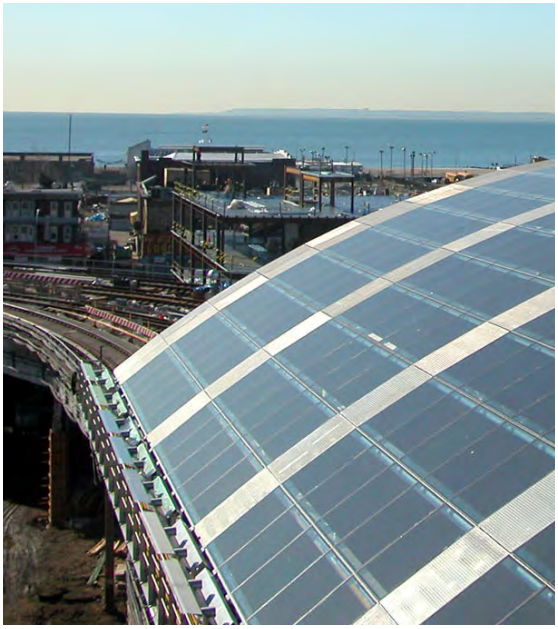
building integrated photovoltaics (BIPV)

Kiss + Cathcart are world-leading experts in Building Integrated Photovoltaics. We are pioneers of BIPV technology and practice, having designed some of the world's first BIPV projects. We have developed BIPV products and systems, authored technical studies and research projects, and created visionary BIPV applications.

BIPV are photovoltaic materials that have two or more functions: they are part of a building envelope (facade or roof), or serve another architectural function (such as sun shades, entry canopies, etc.). Because BIPV replaces conventional building materials, the net cost of a BIPV system is significantly reduced.

BIPV has the potential to be the most economical source of renewable energy. In the best cases, the net cost can be much lower than the cost of conventional PV installations, and can even approach zero. Unfortunately, the cost of most BIPV systems built to date has been extremely expensive, due to a combination of factors - the cost of customizing PV products, complying with building regulations, and others.

At Kiss + Cathcart we are among the few designers who understand all the potential of BIPV - environmental, aesthetic, and economic. For more than 20 years, we have designed our BIPV projects to be functional and economical. The potential for BIPV - optimally designed - has never been better than it is today.



2006: Stillwell Avenue Terminal, Coney Island, New York, 2006
World's largest thin-film BIPV project when built

1990: APS PV Production Facility, Fairfield, CA
First BIPV Commercial building in the US

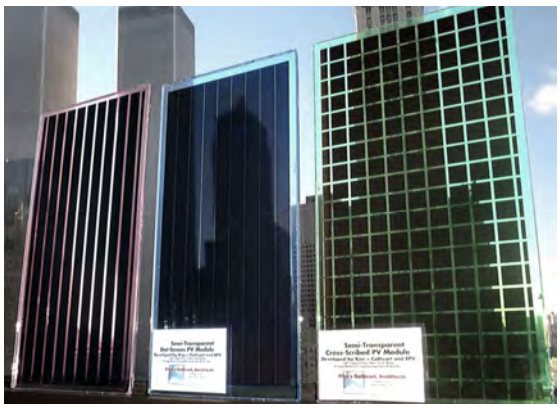
selected BIPV projects

1984: **Chronar Port Jervis** was the world's first thin-film PV factory. Completed in 1984, the building included a multifunctional BIPV array that served three main functions: as part of a daylighting system that controlled direct sunlight, keeping it from reaching the production floor; as a test rack for production panels; and as a sign displaying the factory's product.

1995: Technical studies for the **National Renewable Energy Laboratory**. Five studies between 1993 and 2002, covering technical, design, regulatory, and economic issues from the point of view of the industry - building designers, contractors, owners and operators. The studies are available from: http://www.nrel.gov/publications/ or http://www.kisscathcart.com/research_studies.html

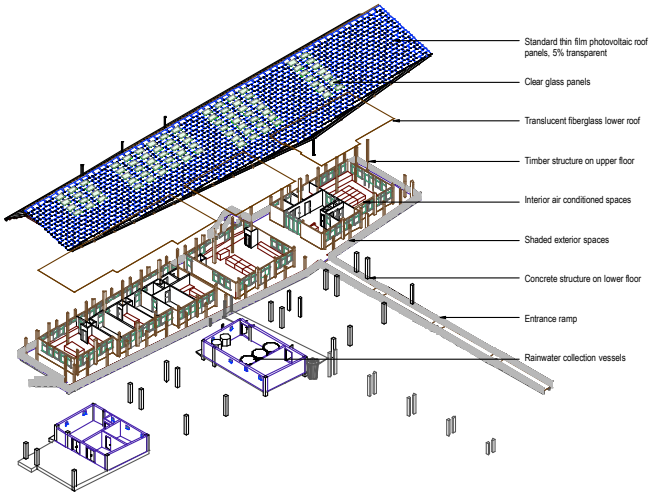
1998: **Four Times Square**. The world's first green skyscraper, and the first with a BIPV system. Kiss + Cathcart developed the BIPV system from concept study through approvals, manufacturing, and consulted on installation and commissioning. The custom area thin film PVs - the first BIPV project in New York City - were preinstalled in prefabricated curtain wall units.

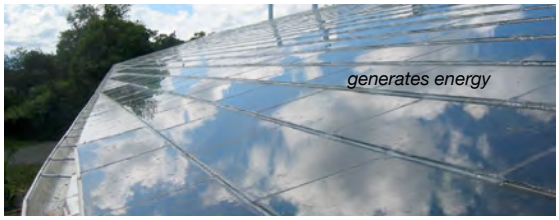
2002: **NYSERDA BIPV** research and development contracts. Kiss + Cathcart has executed five product development contracts with the New York State Research and Development Authority (NYSERDA). These included custom manufacturing processes for large area thin film BIPV; special patterning processes for transparency, and coloration for thin film modules. K+C was prime contractor working with PV manufacturing companies to execute the prototypes.

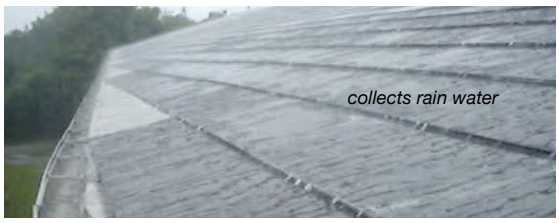


building integrated photovoltaics (BIPV)

2003: For the Smithsonian Tropical Research Institute's **Bocas del Toro Station** we designed a multifunctional BIPV roof which as designed provides all the power for the building, collects enough rain water to supply this building and others on the campus, and passes daylight to the rooms below.



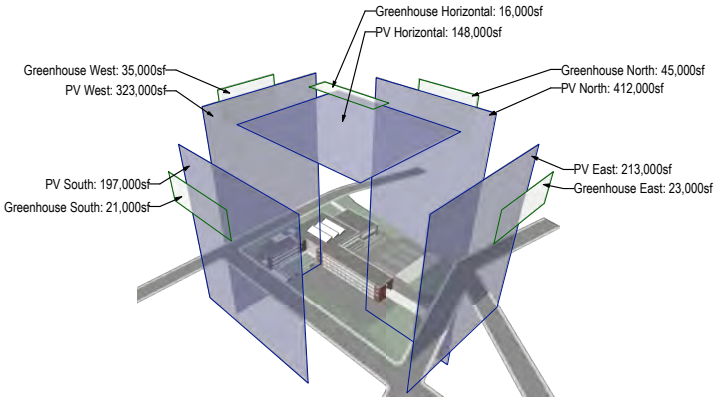


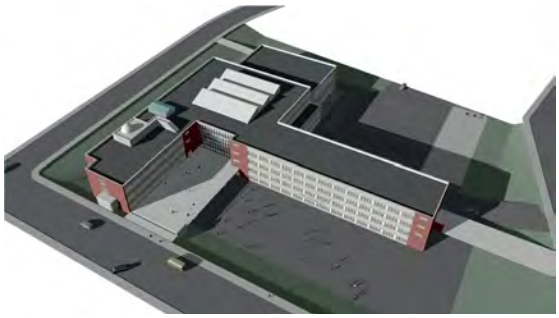


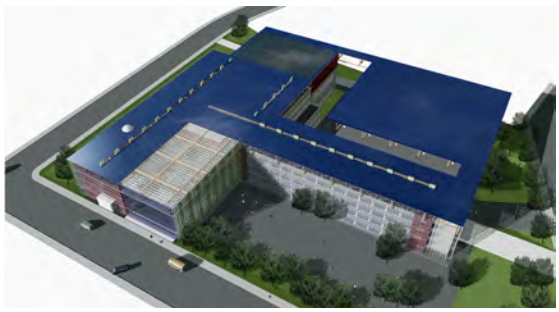
2003: PV shade structures/parking canopies, **El Monte Sagrado** Resort, Taos, New Mexico. PVs were used where other shade and shelter have been traditionally built. In this case the design challenge was to make the high tech PV component compatible with the traditional, low tech materials of the adobe vernacular architecture. We used traditional wooden frame structures and developed an adjustable fitting capable of carrying the very high snow loads, with the ability to adapt to the wooden beam, and to give the PV panels a mix of orientations to appear more organic than industrial.

2006: For New York City Transit's **Stillwell Avenue Terminal**, we designed a BIPV roof to function under the demanding technical requirements of the world's busiest rapid transit terminal, which operates 24 hours per day in a corrosive beach front environment. Custom triple-laminated BIPV roof modules include a clear glass perimeter in order to provide high quality daylight to the platforms below.

2010: **Bronx High School of Science**. A study to transform one of America's premier high schools - a 240,000 square foot building built in 1959 with a population of 3,200 - from a highly inefficient, pre-energy code structure to a productive building which generates all its own energy and grows fresh produce on site to feed the lunchtime population.



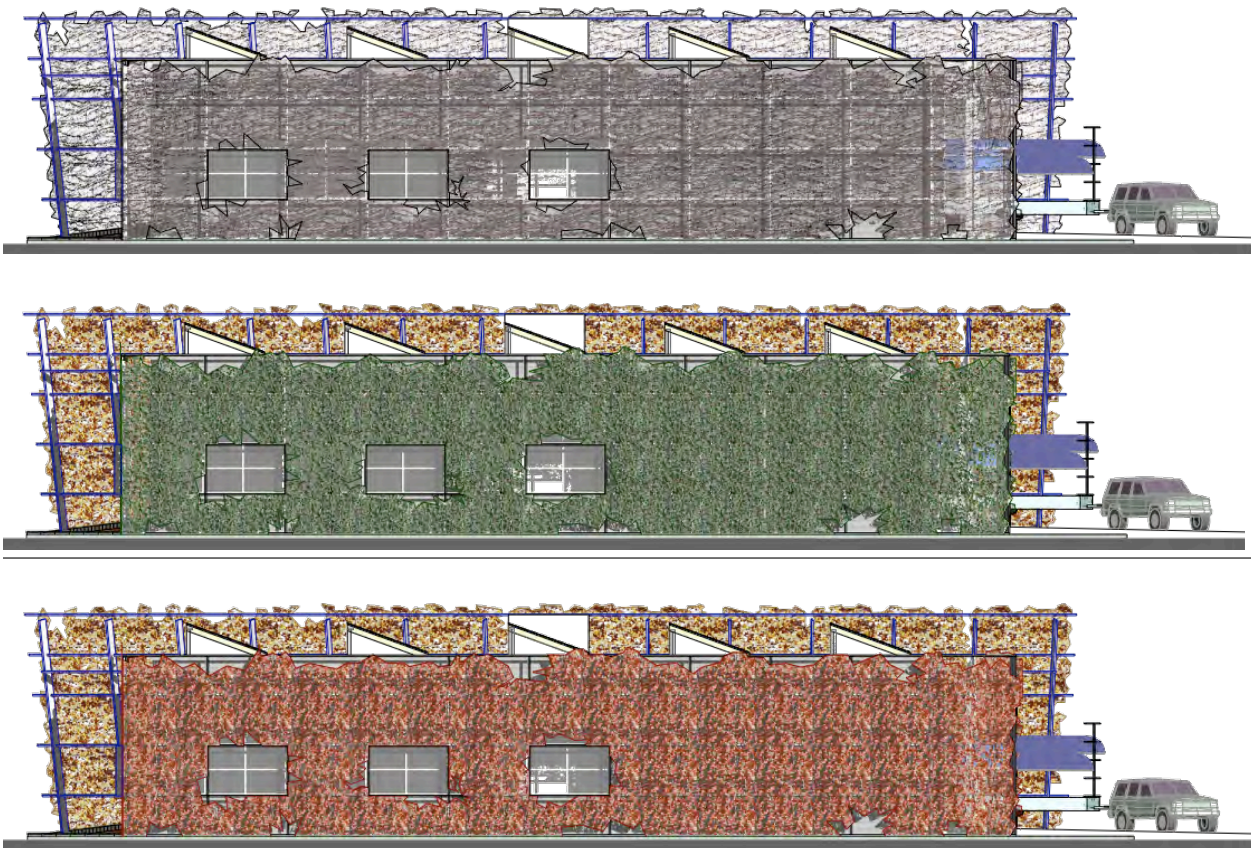




building integrated vegetation

Global population is increasing rapidly, and by 2010 over 50 percent – some 3.3 billion people – will live in urban areas. While cities offer opportunities for living a life with a low ecological footprint, they suffer from pollution, noise and remoteness from nature. Integrating vegetation into the urban fabric is a way to improve the quality of urban life, via innovative architectural systems.

Whether part of a highly engineered wetland waste treatment system, or simply a low-tech way of providing dappled shade, plants can be a source of sustainable design. At the same time, they offer physical and psychological benefits to inhabitants, make buildings more efficient, increase the ecological productivity of the site, and connect buildings with their unique local environment.



building integrated agriculture

Building Integrated Agriculture, the most intensive application of Building Integrated Vegetation, is a solution to another great challenge of modern living – how to get healthy food from farm to table without negative environmental impact.

In dense urban areas, sites for commercial agriculture are few. Integrating greenhouses on rooftops or south facing facades opens up opportunities for synergies between plants and humans. Despite a unique set of design and operational issues, there are many potential benefits. Waste heat exhausted from buildings can be used to heat greenhouses, and the carbon dioxide rich air actually helps those crops grow more quickly. Fresh air can be taken from greenhouses, rich in oxygen, filtered and tempered.

Hydroponic food production can yield high quality fruit and vegetables using 10–20 times less land and 5–10 times less water than soil based systems, and is more easily integrated within buildings. Many buildings can use the produce directly in their cafeterias, thereby cutting storage, travel and packaging and allowing food to go directly from greenhouse to table in the same building. Education opportunities are multifold and in–house vegetable growing encourages healthy eating.

research, product development, and studies

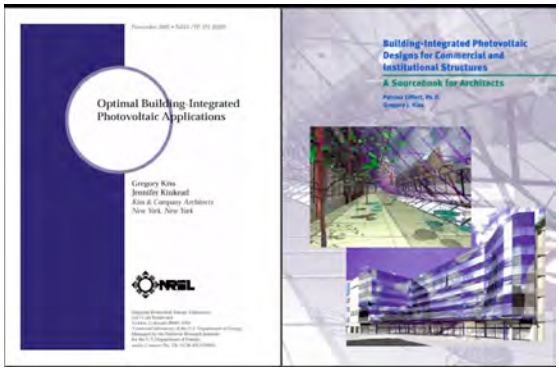
Since 1983, our work has been based on technical innovation and design excellence. Often our building performance goals cannot be met with existing products, so we are forced to develop new ones. Our research focuses on ways to improve the environmental performance of buildings, but always with the overriding objective of solutions that improve the quality of our architecture.

In 1983, we designed the world's first thin-film photovoltaic factory; from this experience we developed an interest in integrating PVs into buildings and infrastructure. As some of the first architects to be involved with PV technology, we were commissioned by the US Department of Energy/National Renewable Energy Lab (NREL), the New York State Energy Research and Development Authority (NYSERDA), and others, to conduct studies on BIPV issues.

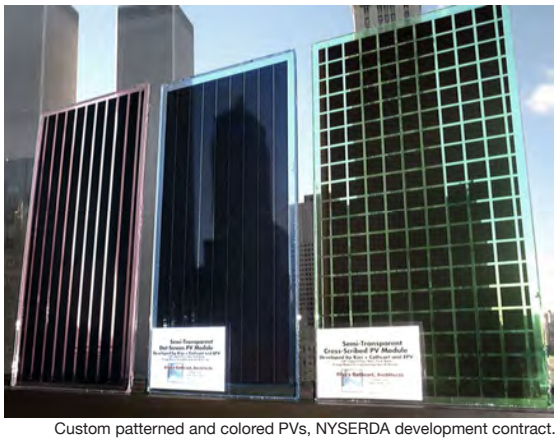
We have worked with the solar industry to customize their products for use in buildings, and designed other stand-alone products as well. We have completed four separate development contracts with NYSERDA to develop custom BIPV products with variable color, transparency, and size.

Based on our work with photovoltaics, we developed in interest in other (related) natural principles, including passive solar, daylighting, natural ventilation and wind energy, rainwater capture, and on site waste treatment. We found that in many cases architectural systems which employ natural resources could be made to have more than one function. For us, multifunction has proved to be an inherently economical and elegant attribute: a marker of good design.

Chronar-Port Jervis, world's first thin film PV factory, Port Jervis, NY, 1894

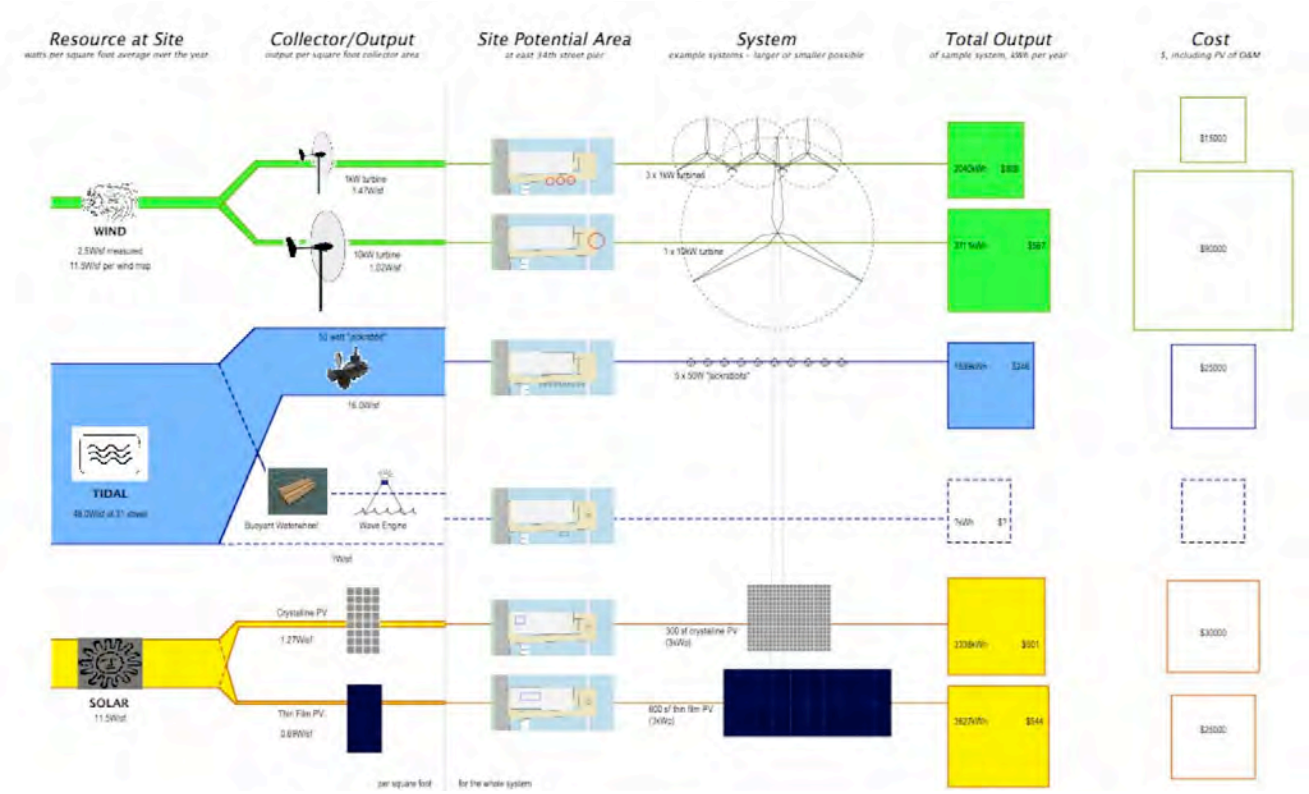


Technical studies for NREL and DOE

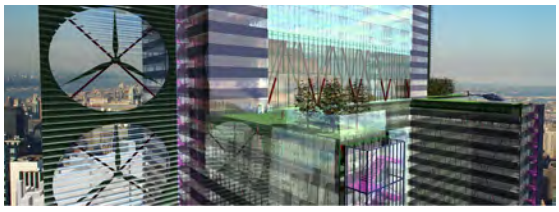


Custom patterned and colored PVs, NYSERDA development contract.

Custom sized BIPV modules developed under a K+C NYSERDA contract were used in Four Times Square



Evaluation of renewable energy options, studies for East River Piers for the NYC Economic Development Corporation.

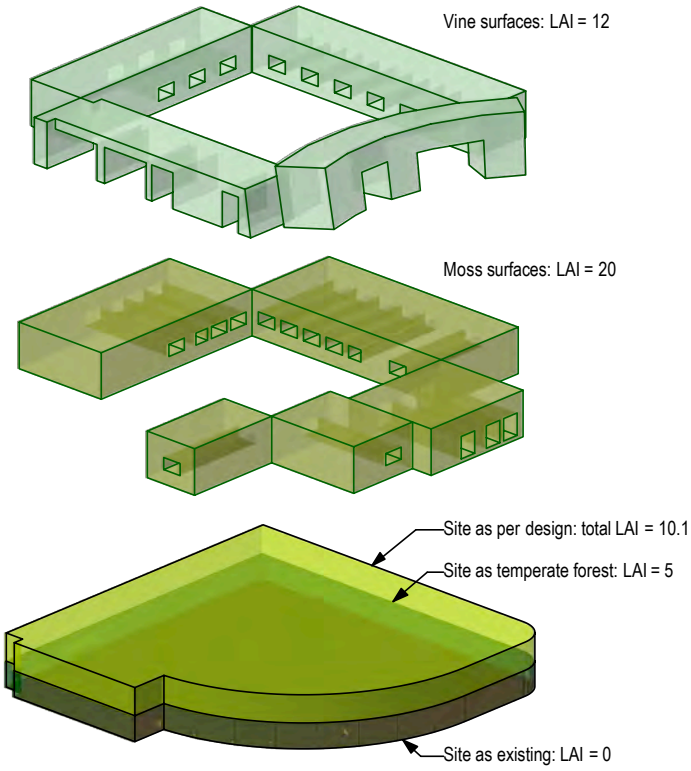


We believe that true sustainability is zero environmental impact, or better. One way to achieve this is for every project to be self-sufficient in terms of energy and water, generating no waste. Increasingly we have set this level of performance as a goal for our projects. We have researched this issue on our own as well as part of teams on research grants, such as two National Science Foundation MUSES grants.

2020 Tower project: starting as a hypothetical design for the National Building Museum's show Big & Green, the project became the basis for two National Science Foundation grants studying the implications of self-sustaining infrastructure.

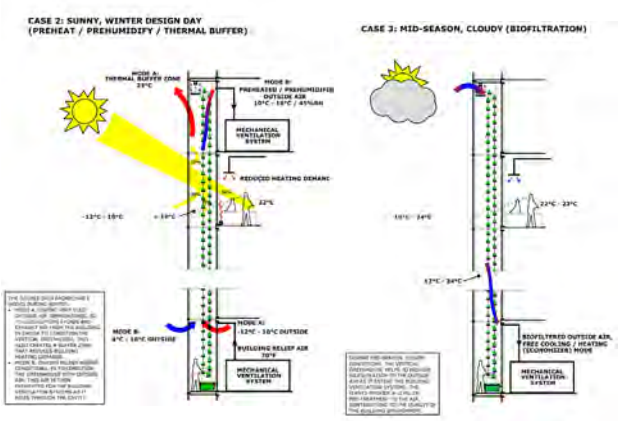
We have also worked at the urban design scale, looking at revitalizing neighborhoods into sustainable communities. Our Manufacturing Communities study on integration of manufacturing and residential uses in a Brooklyn waterfront community won a 1995 Progressive Architecture Award. Colin Cathcart has participated in many Mayor's Institute and Regional Planning Community Design Sessions, most recently for the Hampton Township. The Hampton visioning plan develops a mixed use corridor, including residential uses in variety of building types and densities, office and other service uses, lower reliance on big box commercial balanced by shifting density from single family development elsewhere in the township, conserving open space, farming, views and natural ecologies.

We have always been interested in connections between buildings and landscape, whether a formal blending of the two, or the functional integration of plants with architecture. As climate regulators, seasonal shading devices, or air purifiers, they can contribute to building performance and aesthetics in ways that mechanical systems cannot. We have worked with biologists to quantify the effects on microclimate, habitat creation, and water use and retention.



Study of effective Leaf Area Index (LAI) for Bronx Riverhouse. Given the large biological area of mosses and vines on vertical surfaces, the project as built will have a greater biological area than if the site had been left as a forest.

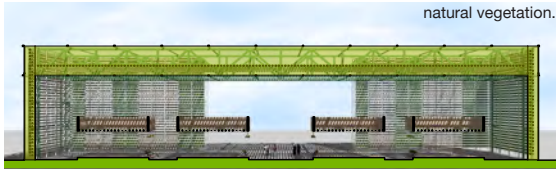
Perhaps the ultimate application of plants in buildings is growing food. We believe there is the potential for many of the building performance synergies of other integrated plants, with the additional benefits of food production. Any low carbon strategy on the urban scale needs to take food into account, which brings food production into the realm of planning and architecture. We have worked with collaborators such as BrightFarm Systems, Arup and others to develop building-integrated vertical greenhouse systems.



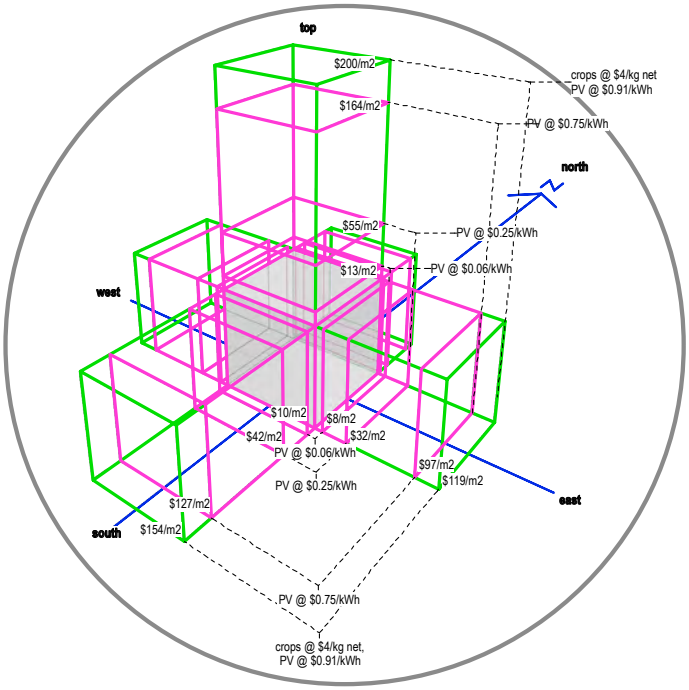
Studies (with Arup)for the interactions between a vertical hydroponic greenhouse in a double wall facade, and the people and building systems within.

Prototype by BrightFarm Systems of a vertical integrated greenhouse.

The largest benefits of integrating plants into buildings may be psychological, particularly in densely developed parts of the world where there is little or no natural vegetation.



Study of effective Leaf Area Index (LAI) for Bronx Riverhouse. Given the large biological area of mosses and vines on vertical surfaces, the project as built will have a greater biological area than if the site had been left as a forest.



Study of the effective economic value of different productive strategies for building surfaces, comparing the value of hydroponic crops to PV electricity.