

Heifer International Headquarters

Location: Little Rock, AR Architect: Polk Stanley Rowland Curzon Porter Architects, Ltd.

OVERVIEW

An organization dedicated to alleviating world hunger, Heifer International begins its interaction with communities by delivering one animal to one family. Like a drop of water generates ripples flowing outward from the impact point, the animal creates concentric rings of influence through a village, allowing knowledge and opportunity to be passed to others as the animal's offspring are gifted.

Part of a four-phase master plan, the Headquarters building was conceived as a series of concentric rings expanding from a central commons. The architecture was designed to expand environmental stewardship into the public realm while serving as a beacon of hope.



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LAND USE & SITE ECOLOGY

BIOCLIMATIC DESIGN

LIGHT & AIR

WATER CYCLE

ENERGY FLOWS & ENERGY FUTURE

MATERIALS & CONSTRUCTION

LONG LIFE, LOOSE FIT

WISDOM & FEEDBACK LOOPS

JURY COMMENTS

Full project profile:

www.aiatopten.org/hpb/overview.cfm?ProjectID=781

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The building's curved shape, along with the angled roof, creates a distinctive form that gives Heifer a readily identifiable profile in downtown Little Rock.

Photo: Timothy Hursley

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Sustainable Design Intent & Innovation

Located next to the Clinton Presidential Library, the Heifer International Headquarters is in walking distance of busses, a new light-rail system, and a pedestrian entertainment district.

A restored wetland that wraps around three sides of the building collects stormwater for reuse as irrigation water. Rainwater collected from the roof is stored in a five-story water tower wrapped with a fire stair. Graywater collected from sinks and drinking fountains, condensate from outside air units, and rainwater from the water tower are reused in the toilets and cooling tower. Moisture removed from the building as condensate is reused to cool the building. Waterless urinals and low-flow toilets and lavatories further reduce potable water use.

The narrow, semicircular floor plan provides daylight and views for all employees. The majority of open offices in the building offer river views and northern light, and all major gathering spaces access the exterior: five balconies on each floor, designed as outdoor conference rooms, hang over the wetland and act as sunscreens.

The building was designed to use up to 55% less energy than a conventional office building and to last for at least 100 years. Materials were selected for their durability, maintainability, low toxicity, recycled content, and regional availability.

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This drawing of the site plan shows the site layout and master plan. An inset photo shows the site before construction.

Rendering: Polk Stanley Rowland Curzon Porter Architects, Ltd.

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Regional/Community Design & Connectivity

Among the potential project sites, the one selected posed the greatest environmental challenge as well as the greatest opportunity to communicate Heifer's mission to the public.

The site is located directly adjacent to the Clinton Presidential Library, at the terminus of a major avenue. This prominent location allows access to busses, a new light-rail system, and a pedestrian entertainment district. Employees bike, walk, carpool, and even canoe to work. The site also takes advantage of the neighboring building's 30-acre park setting by blurring the property edges, allowing both projects to sit in a combined 60-acre greenbelt.

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JURY COMMENTS

Use other transport
options:

Parking spaces per
person: 0.42



Pedestrian paths, like those shown in these two photos, connect the building to the constructed wetland that surrounds it.

Photo: Timothy Hursley

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Land Use & Site Ecology

As an extension of a riverfront park, the Heifer grounds work in harmony with the natural ecology, while paths connect the river environment to the building. Splayed parking areas paved with a permeable surface radiate out from the building with bioswales between the rows, allowing native trees and vegetation to dominate the parking area. The building's arced shape, wrapped on three sides by the constructed wetland, shields the main pedestrian commons from the cars.

The project sits on a former brownfield site—a railroad switching yard previously bisected the site. Originally, 60% of the 22-acre site was paved. The site is now a thriving ecosystem, however; ducks and other wildlife appeared in the wetland within months of the project's completion.



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Showing the rear side of the building, this photo highlights the redeveloped brownfield site.

Photo: Timothy Hursley

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Bioclimatic Design

The site provided excellent opportunities to take advantage of climatic conditions. From a solar standpoint, a building that stretches from east to west was easily attained; however, further study of the building's position within the concentric ringed master plan offered the opportunity to arc and articulate a layered footprint, allowing more light into the building later in the day. Light modeling confirmed the best arrangement of vertical fins to redirect light, even in late afternoon. The southern facade of the arc is longer, tracking the sun. The northern facade cups the commons, offering a shaded wetland area.

Each elevation is distinct to its orientation. Significant overhangs reduce solar heat gain. Balconies large enough for meetings act as sun control on the east and west ends of the building. A first floor area, completely outdoors, mimics the conference rooms above, offering meetings in the wetland.

To capture prevailing southwestern breezes, each floor's cafe-like open break areas have large sliding doors. Fire stairs are outside the building envelope, floating over the wetland in glass. Open grates with insect screens allow natural convection to pull cooled air off the water to exhaust at the stair top as it heats.

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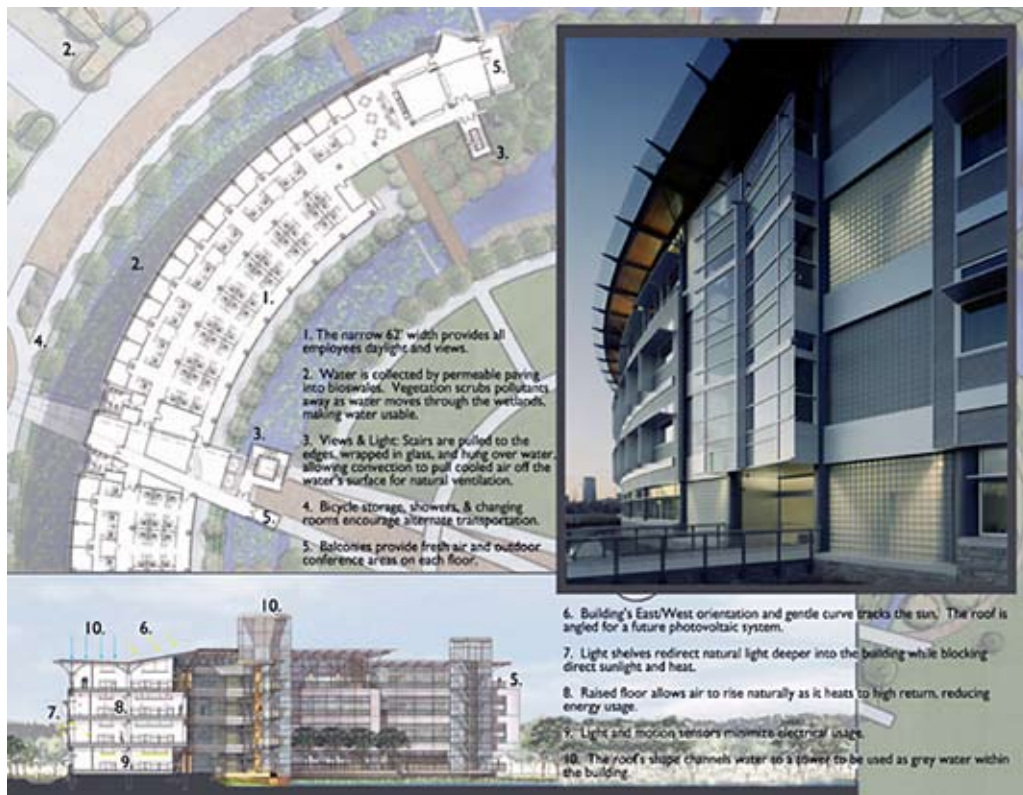
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This drawing shows the floor plan and a section view of the project as well as a photo demonstrating the vertical fins and lightshelves used to control daylighting. A list of green features is included.

Photo and Rendering: Polk Stanley Rowland Curzon Porter Architects, Ltd.

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Light & Air

The majority of open offices in the building are positioned to take advantage of river views and northern light. A 62-foot building width and east-west orientation enable natural light to penetrate to each floor's center, giving all 474 employees access to light and views. Conference rooms anchor the building's ends, offering views of downtown Little Rock and Heifer's global village exhibits. All major gathering spaces access the exterior: five balconies on each floor, designed as outdoor conference rooms, hang over the wetland and act as sunscreens. Lightshelves, vertical fins, and deep overhangs minimize glare while increasing diffuse light.

To promote indoor air quality, the project team selected materials with low levels of volatile organic compounds (VOCs). Air distribution through a raised access floor offers individual control over thermal conditions. As an alternative to break rooms, each floor's open café areas offer light, views, community, and exterior access.

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JURY COMMENTS

Percent of building area that is daylight:

Percent of building that can be ventilated or cooled with operable windows:



This photo shows the low-walled work spaces and demonstrates how the narrow floor plate enables daylight to penetrate to the center of the floor.

Photo: Timothy Hursley

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Water Cycle

Stormwater is filtered by indigenous plants in bioswales that feed a constructed wetland before being reused for irrigation. Brick preexisting on the site and new gravel paving systems cover 51% of the parking area.

A 30,000 ft² inverted roof directs rainwater to a five-story, 42,000-gallon water tower wrapped with a glass-enclosed fire stair. Waterless urinals, a city first after much negotiation, and low-flow toilets and lavatories minimize potable water use. Graywater collected from sinks and drinking fountains, condensate from outside air units, and rainwater from the water tower are reused in the toilets and cooling tower. Moisture removed from the building as condensate is reused to cool the building.



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JURY COMMENTS

Precipitation managed
on site: 80%

Total water used indoors:
722,973 gal/yr

Total water used
outdoors: 750,000 gal/yr

Percent of total water from
reclaimed sources: 50%

Percent wastewater
reused on-site: 20%

Calculated annual potable
water use: 15.7 gal/sf/yr

This photo shows the stormwater pond and the view of the building from the west.

Photo: Timothy Hursley

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Energy Flows & Energy Future

The fundamental goal of the design team was to create integrated building systems that maximized both energy savings and educational potential. Exposing the systems offered an excellent educational opportunity by connecting how the air and water moves with how we move and work.

The building achieved 55% energy savings over a comparable base case, due in large part to the use of daylight as the primary source of ambient light during work hours. The building's east-west axis allows for minimal electric lighting. Dimming systems adjust lighting according to natural light levels, while occupancy sensors manage light for only spaces in use.

Vertical fins and horizontal sunshades limit unwanted solar heat gain while redirecting daylight into the building's interior. Glazing on the building has a U-value of 0.29, and the R-value of the envelope is 25.

Raised floors offer air distribution that naturally rises to high return ducts, minimizing horsepower for fan units, while allowing for higher ceilings and windows.

To maximize and plan for a future photovoltaic system, the roof is angled to receive the most sunlight for the Little Rock solar orientation.

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ENERGY PERFORMANCE

Ratings

EPA:

HERS:

Percent total energy savings: 41

	Base Case	Design Case
Total energy (Btu/sf/yr)		38,002
Electricity (Btu/sf/yr)	4,052 mmbtu	1,662 mmbtu
Natural gas (Btu/sf/yr)	2,407 mmbtu	1,104 mmbtu
Other: (Btu/sf/yr)		

Heating (Btu/sf/yr)	2,407 mmbtu	1,104 mmbtu
Cooling (Btu/sf/yr)	1,494 mmbtu	482 mmbtu

Cooling capacity (sf/ton)	278	261
Lighting load connected (W/sf)	1.350	1.180
Lighting load after controls (W/sf)		.5
Plug load (W/sf)		

Peak electricity demand (W/sf)	433 kw	241 kw
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Percent on-site renewable energy: 0

Percent grid-supplied renewable energy: 100

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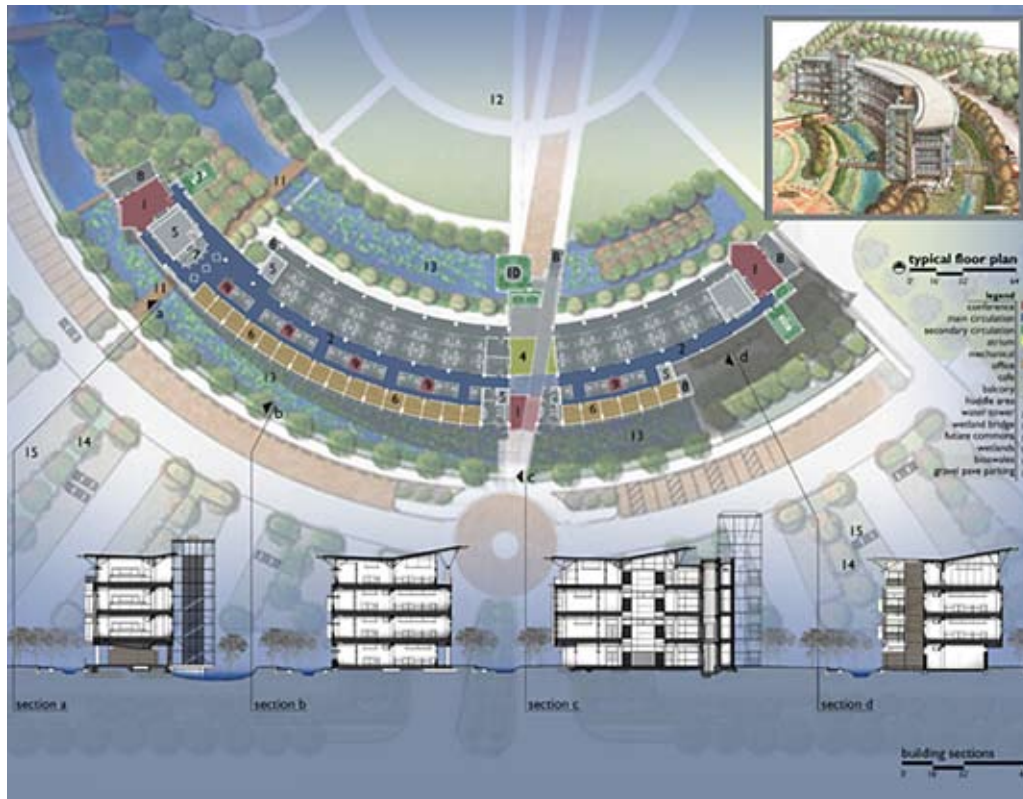
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Materials & Construction

One of the goals for the project was to use locally sourced materials whenever feasible. A steel structure was chosen because the steel factory was three blocks from the site and the material included 97% recycled content; the heavy timber roof was also sourced locally. An aluminum curtainwall and skin, making up more than 90% of the exterior, was fabricated at a major glass company located directly across the street.

The project team selected durable, low-toxicity materials for the project interior. These included toilet partitions made largely of sawdust, reception and toilet countertops made of recycled glass, and easily reconfigurable, locally manufactured storefront systems. Exposed-steel floor decks were left unpainted, which saved money while maintaining their reflectivity.



This drawing shows the floor plan of the office, which is laid out in a semicircular pattern to take advantage of daylight and views.

Rendering: Polk Stanley Rowland Curzon Porter Architects, Ltd.

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Long Life, Loose Fit

The building was designed to be easily maintained and to last for at least 100 years. A raised floor offers individual control of air distribution, and the office systems can be easily reconfigured. Of the building's 62-foot width, 50 feet consists of flexible, demountable systems, open to northern light. Conference rooms and mechanical rooms are located at each end of the building, allowing open and flexible arrangements on the entire floor in between. This approach allowed the break areas to become open café areas that have become popular for meetings. Huddle spaces for small interactions—designed as demountable wood and glass boxes that reference the design of Heifer's zero-grazing livestock pens—are located along the circulation path.

Because Heifer is a nonprofit organization that relies on community connections and outreach for funding, the facility and site are open to the public. During the planning process, the project team identified opportunities within the design to educate the public about environmental issues. The light-filled atrium doubles as a vertical gallery where Heifer displays information about both its work and the building's environmental attributes.



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The majority of each floor is taken up by flexible, open office modules, as shown in this photo. Low walls allow daylight into the interior of the building.

Photo: Timothy Hursley

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Collective Wisdom & Feedback Loops

This design process began with sharing knowledge and goals. It was important that the building speak of its environmental responsibility as well as Heifer's story. The strongest shared statement came from the founder's daughter, who remembered her father speaking of village visits where a community would make decisions sitting in a circle, all facing each other as equals. During the Headquarters design process, members of the project team, the community, and the client made collaborative decisions in that same arrangement: all ideas were considered equally worthy of consideration.

The integrated design approach focused on actual, not perceived, measures of environmental responsibility, meaning that the anticipated environmental results drove the design and that beauty was found in those features.

This design approach did offer challenges. The process required additional time and effort from a design standpoint. In construction, early site and steel packages hindered efforts to fully integrate the design. The project was very successful, however, in its introduction of new thinking into the construction industry, opening the door for future local projects to take advantage of the lessons learned here.



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The former railroad switching yard, part of the brownfield redevelopment effort, is visible in the foreground of this photo.

Photo: Timothy Hursley

Jury Comments

"This deals with water in a very demonstrable way. It takes condensation, stores it, and uses that for cooling towers and wetlands during dry periods. Energy performance is about 54% below ASHRAE 99. The sustainable features are visible, but not 'in your face.'" – **Alisdair McGregor, Arup / San Francisco, CA**

"This is oriented very effectively. Private offices on south side; north side are open spaces ... conference rooms at the end. This was a brownfield. This would be a beautiful place to work. The stairs wrap around the water tower. This move could have been trite but it's quite beautiful." – **Anne Schopf, FAIA / Mahlum Architects / Seattle, WA**

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The design team also included:

- Facility manager

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