Queens Botanical Garden Field Trip Report

Fall 2025 – ARC 486 Architectural Design V
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Index

Building Information

Queens Botanical Garden Visitor & Administration Building

Sustainable / Contemporary Ecological Design

Location: 43-50 Main Street, Flushing, Queens, NY 11355

Architect: BKSK Architects LLP

Date Completed: 2007

Area: 16,000 SF

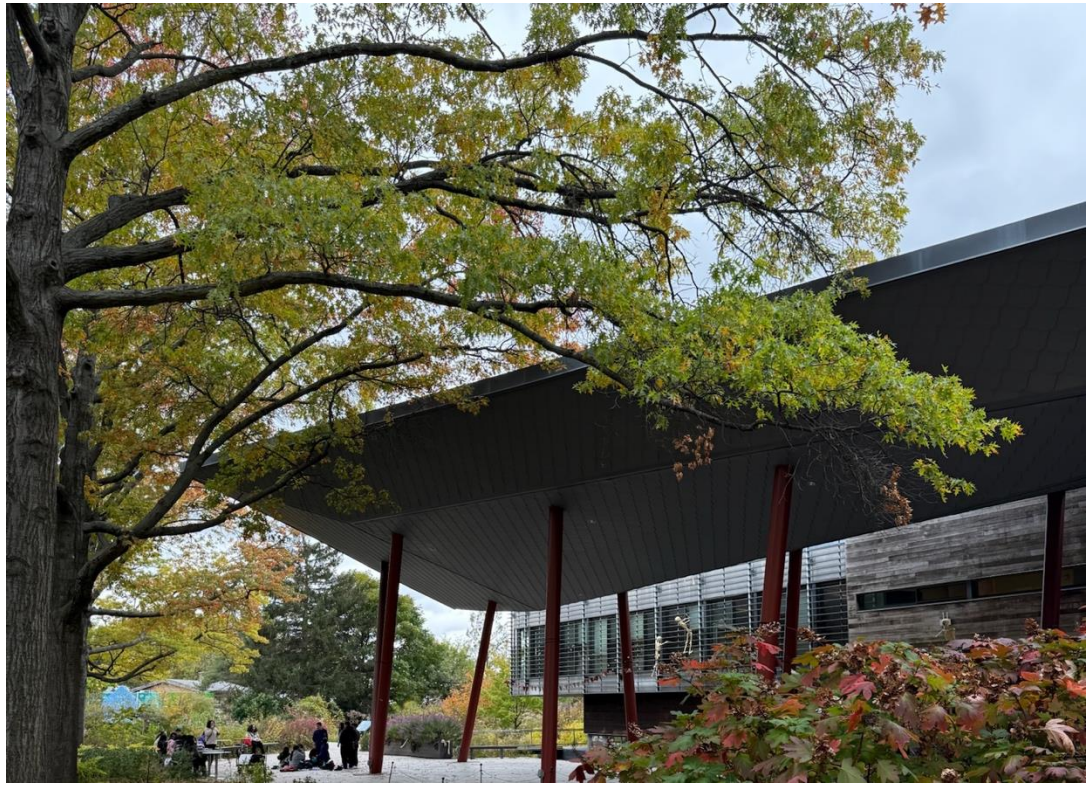
Total Cost: Approx. $12 million

Cost per sq ft: Approx. $750 / SF

Site Map: queensbotanical.org

Interesting Facts

1. First public building in NYC to achieve LEED Platinum certification in 2008.
2. Site was once a municipal ash dump, later transformed into an ecological showcase.
3. The building is aligned to face south for optimal solar gain and daylighting at about 90% daylight penetration.
4. Originally used a geothermal heating/cooling system that relied on the constant ground temperature for energy efficiency.
5. Features semi-permeable pavers and rain gardens that divert and filter stormwater.

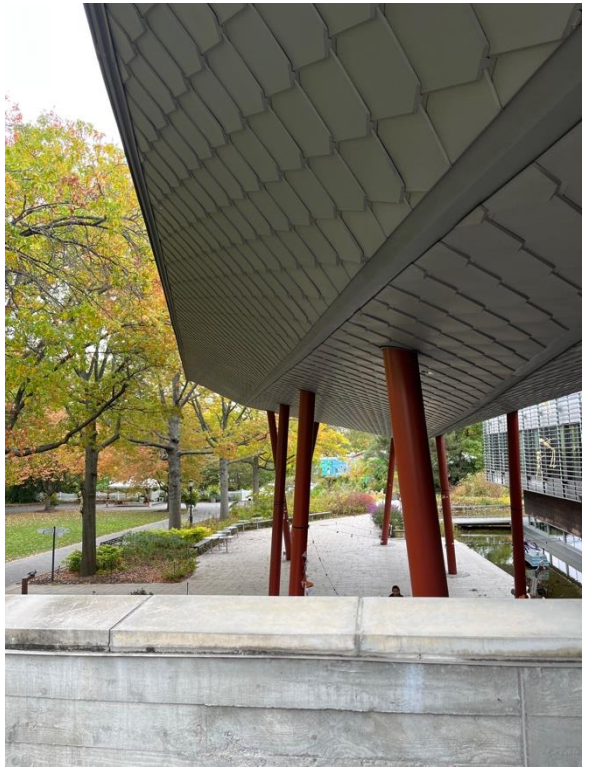


Brief History

The Queens Botanical Garden originated from the “Gardens on Parade” exhibit at the 1939 World’s Fair in Flushing Meadows. In 1963, it was officially relocated and expanded to its current site. The Visitor and Administration Building completed in 2007, was designed as an environmental education center and public gateway that reflects QBG’s mission of sustainability. Over time, the garden’s land has expanded and evolved to restore wetlands, promote biodiversity, and demonstrate ecological design practices in an urban setting.

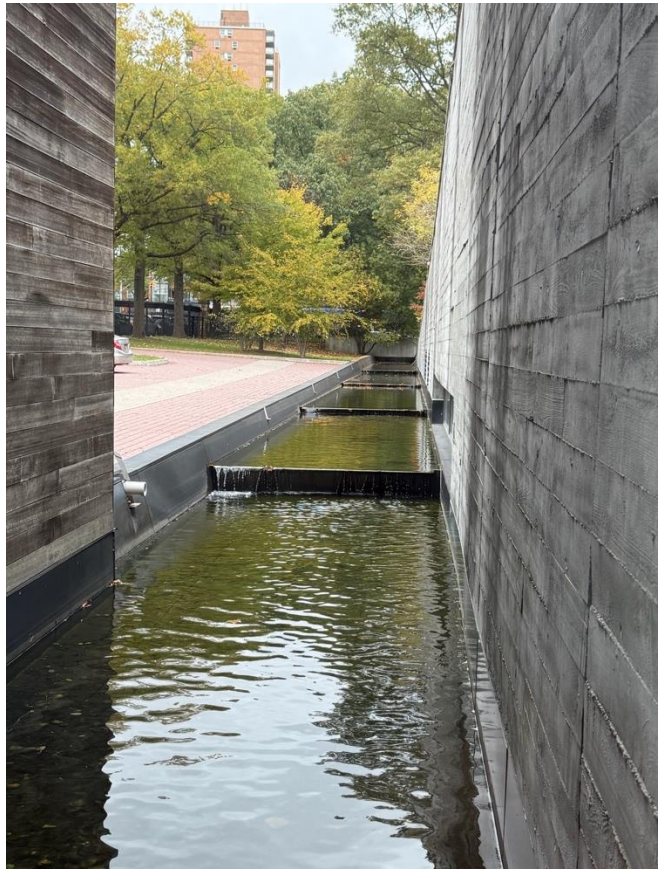
Type of Construction

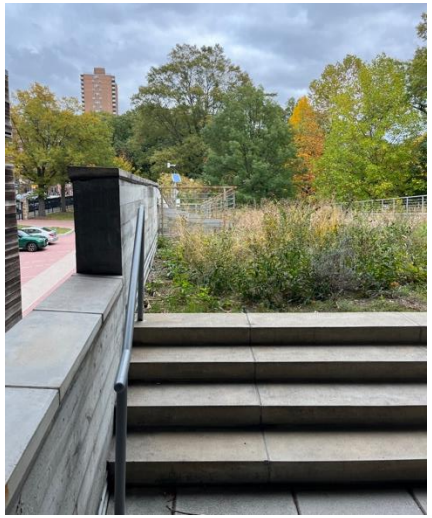
- The structure uses a steel and concrete frame system.
- Fly ash concrete flooring, replaces up to 1/3 of cement content to reduce environmental impact.
- Exterior cladding incorporates locally sourced stone and wood.
- The building envelope includes glazing systems for daylight and insulated panels to enhance energy efficiency.
- A shear joint system supports lateral stability.



Sustainable Exterior Finishes

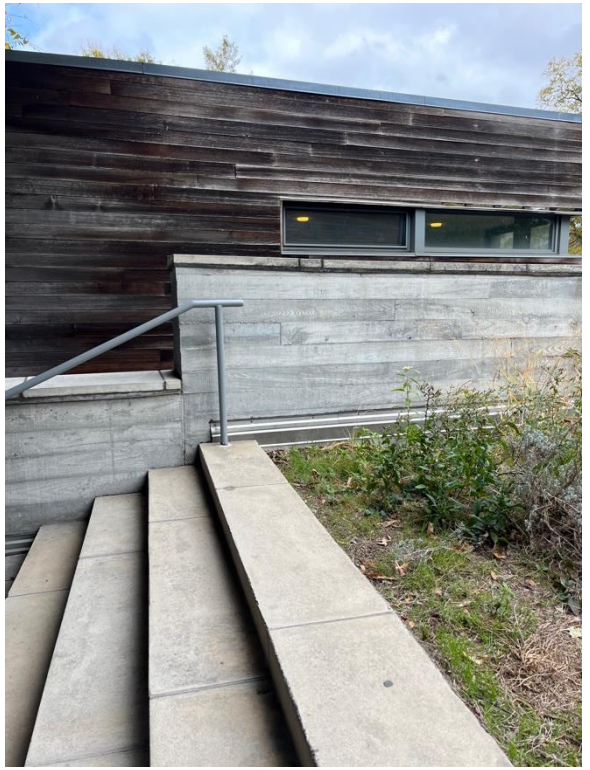
- Locally quarried stone facade to minimize transportation pollution.
- Semi-permeable pavers for parking and pathways to allow rainwater infiltration.
- Low VOC and recycled materials used throughout exterior surfaces.
- Solar panels on the roof provide 17–21% of building's electricity.
- Panzer mesh installed on glass to prevent bird collisions.

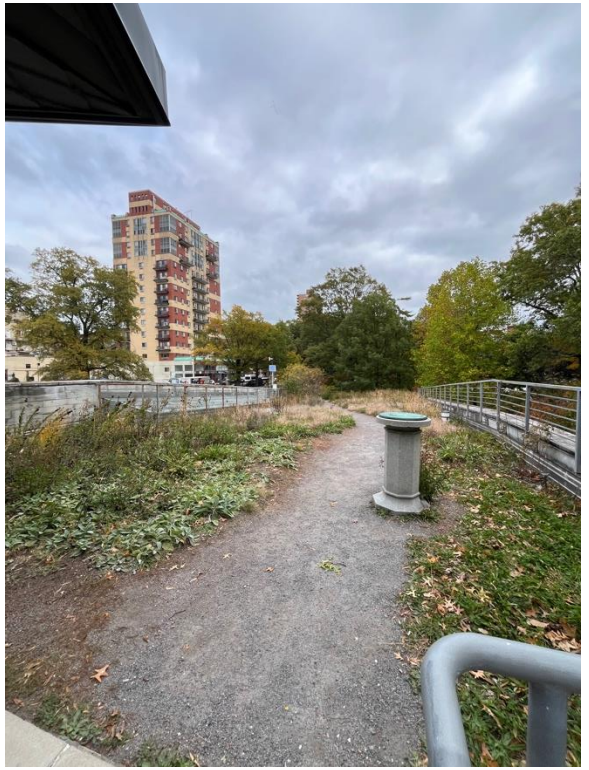




Green Roof & Forest Stewardship Council

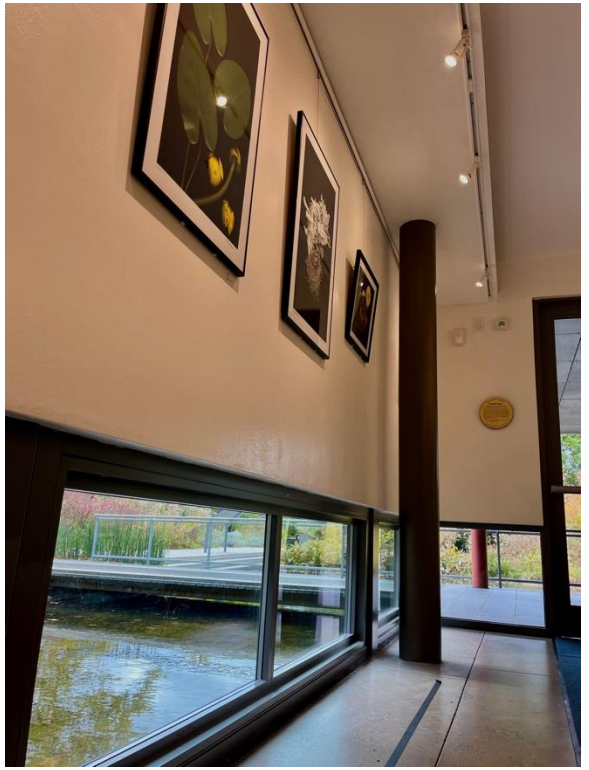
- The green roof includes drought tolerant and native plant species, reducing heat island effect and retaining stormwater.
- Parapet walls slope inward, directing water into the roof's drainage and cistern system.
- The FSC certifies that wood materials used in the project come from responsibly managed forests that provide environmental, social, and economic benefits.





Sustainable Interior Finishes

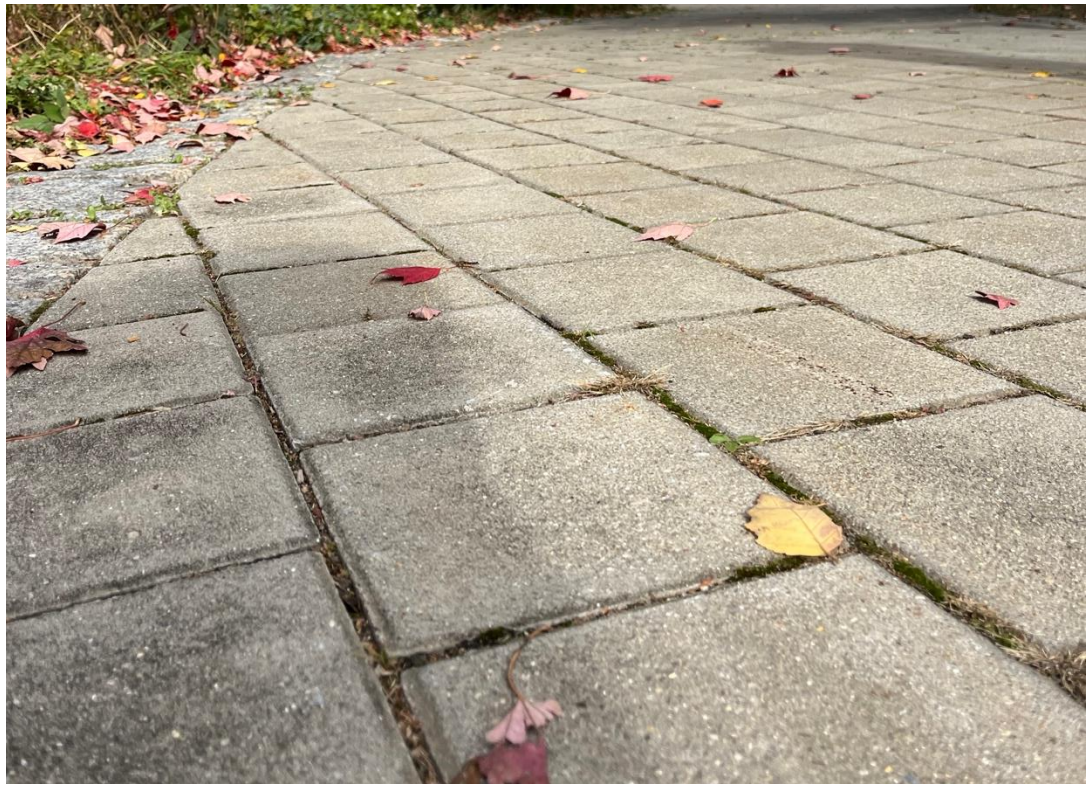
- Fly ash concrete flooring reduces carbon emissions and prevents landfill waste.
- Low VOC paints improve indoor air quality and reduce harmful off gassing.
- Intumescent paint or fire-resistant coating that expands when heated, eliminating need for chemical fireproofing.
- Recycled and regionally sourced interior materials to reduce embodied energy.



Site & Landscape Features

Parking Garden

The parking garden integrates rain gardens between each bay, acting as natural filters for stormwater. Semi permeable pavers allow water to seep into the ground rather than flowing to city sewers. The design channels water toward bioswales and catchment systems, demonstrating how urban hardscapes can coexist with natural geology.



Bioswales & Rainwater Catchment System

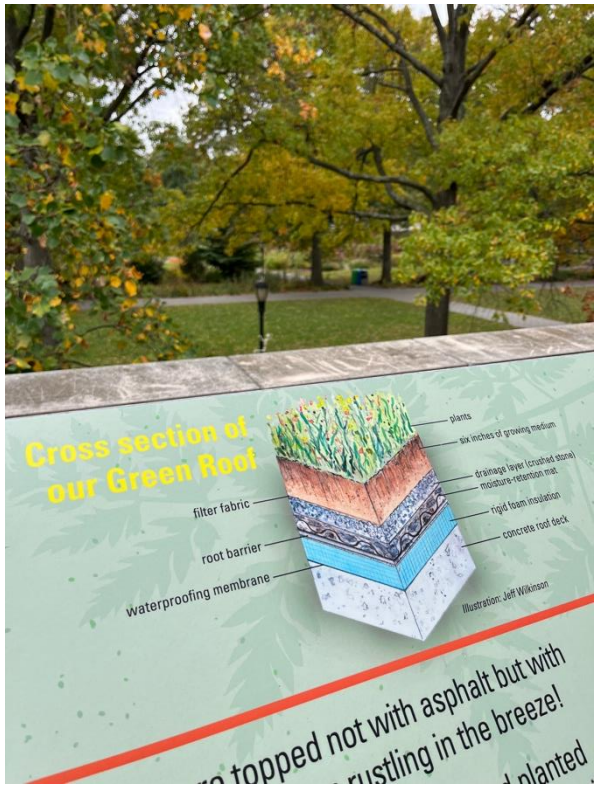
Bioswales throughout the site capture and filter stormwater runoff. These planted channels slow down water flow and allow soil and vegetation to absorb pollutants. Rainwater collected from the roof is directed to a cistern system, where it is stored and reused for irrigation throughout the gardens.

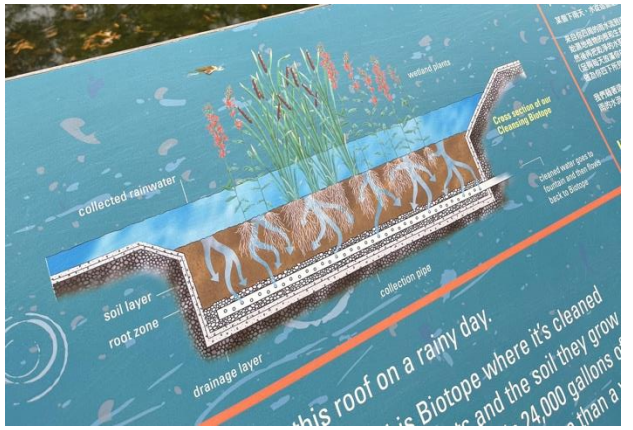
Greywater & Cistern Systems

The building uses a greywater recycling system that cleans water from sinks and showers through natural filtration in planted biotopes before reuse.
The cistern collects rainwater from the roof, reducing reliance on municipal supply. Collectively, these systems save up to 80% of the facility's water use, an especially critical feature given the site's historic wetland conditions.

Biotope & Ecosystem Integration

The QBG site acts as a functioning biotope, supporting local flora, fauna, and pollinators. Integrated pest management avoids pesticides, using neem oil, mulch layers, and hand weeding instead. The Koi pond naturally cleans itself through a closed loop system, bacteria from plant roots break down fish waste, which in turn fertilizes the plants, showcasing ecological interdependence.





Most Interesting Feature

The most fascinating aspect of the Queens Botanical Garden was the compostable toilet system. These toilets use minimal water and rely on aerobic decomposition to break down waste. As waste is composted, the by products are reused as safe fertilizer within the garden ecosystem. I found it interesting how the system's bubbling water process demonstrated a closed loop sustainable cycle, turning human waste into a natural resource and minimizing pollution.

The Hearst Tower, New York

The Hearst Tower - Manhattan NY

Designed by Norman Foster and completed in 2006.
Sustainable Features:

- LEED Gold certification for adaptive reuse of historic base structure.
- Triangular diagrid steel frame uses 20% less steel than conventional design.
- Rainwater harvesting system supplies 50% of building's cooling tower water.
- High-efficiency glazing reduces solar heat gain.
- Recycled construction materials and locally sourced steel minimize embodied carbon.

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