

YOU'RE WELCOME



AT THE BROOKLYN BOTANIC GARDEN, AN ENLIGHTENING NEW WAY INSIDE.

BY LINDA MCINTYRE

OPPOSITE AND BELOW
Plants such as *Koeleria macrantha* (prairie Junegrass) were chosen to look great both in bloom and afterward, with later-emerging species such as *Asclepias*.





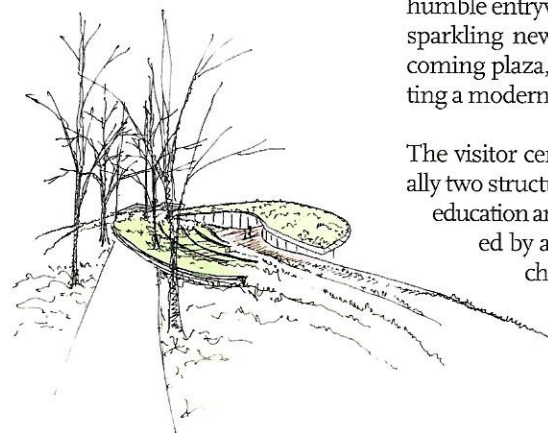
LIKE MOST ASLA award winners, the new visitor center and landscape at the Brooklyn Botanic Garden (BBG) are gorgeous. But it's the landscape architects' careful attention to the unglamorous details—making the stormwater management component as ambitious as possible, getting complicated soil specifications right before planting, tracking down niche growers to supply the carefully chosen plant palette—that makes the project even more worthy of recognition.

The BBG, designed by the Olmsted Brothers firm on a site once used as a coal ash dump, has been a public institution for more than a century. It sits on 52 acres in central Brooklyn, across Flatbush Avenue from Prospect Park. More than 725,000 people wander in every year to enjoy its vast plant collections and special events such as the annual cherry blossom festival.

The garden has made history in ways that resonate today. It is home to one of the earliest native plant gardens in the country, the 1911 Native Flora Garden, as well as the first garden designed specifically for children (1914), the first public gardens based on Japanese design (1915), and the first garden for visually impaired people (1955). The visitor center is one of a slew of new projects planned as part of a capital

campaign that aims to build on this legacy with revamped and expanded gardens and greater ecological management of the whole institution.

The biggest transformation so far is at the entrance on Washington Avenue, along the northeastern edge of the garden. Sitting on a busy urban street, next to an ugly surface parking lot that separates the entrance from the grand but hulking Brooklyn Museum next door, this formerly humble entryway is now home to the sparkling new visitor center, a welcoming plaza, and a landscape befitting a modern mecca of horticulture.



The visitor center complex (it's actually two structures, a gift shop and an education and event space, connected by a breezeway), by the architects Weiss/Manfredi, made a big splash when it opened in



May 2012. Its curvy shape, energy-efficient features, generous glass walls, and lush green roof captured the attention of the design world. But the landscape that surrounds the building and, in the case of the green roof, covers it, designed by HMWhite Site Architecture (HMW), is just as remarkable. It honors the garden's horticultural, educational, and aesthetic mission, but it also reflects contemporary landscape design principles and shows how beautiful and varied native plant species and cultivars can be.

When HMW joined the project, already "the garden had committed to a design that was pushing boundaries," says Aaron Booher, ASLA, the associate principal at HMW. Weiss/Manfredi had successfully lobbied the BBG to situate the new building along the garden's

northeastern edge instead of at the top of a ginkgo-lined berm as had been proposed in a 1980s master plan. That direct interface with the urban neighborhood, Booher says, helped to drive the meandering, gardenesque landscape design that leads you gradually into the heart of the BBG.

The new building site is at a low point in the garden, nestled into the



terraced berm that rises up 25 feet above grade in some places. This more sheltered location increased the building's energy efficiency and, along with its thoughtful design and the landscape architects' sculpting of the complicated grade changes, helped it to meld spatially with the landscape.

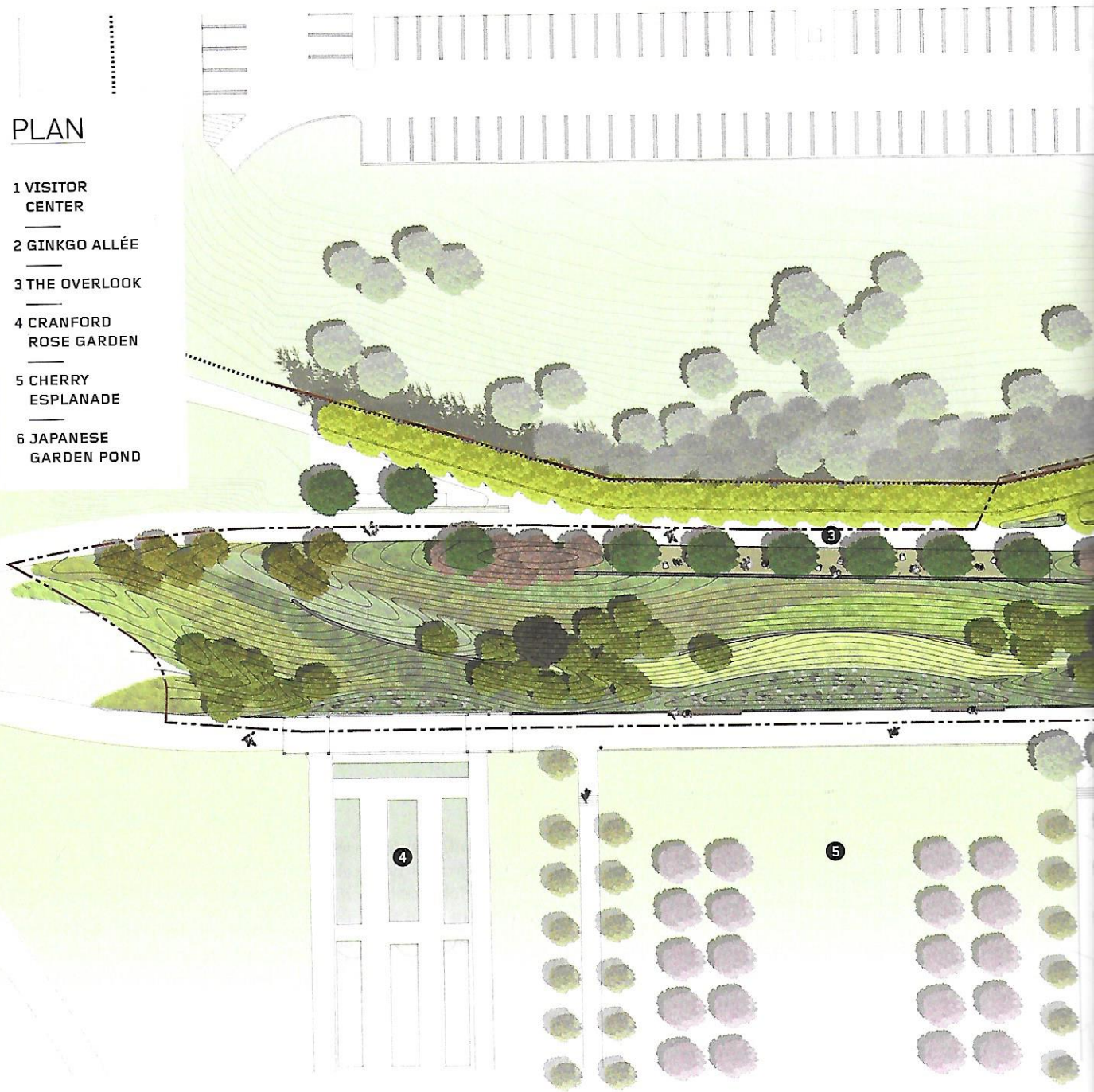
The topography of the site also made stormwater management an early priority for the landscape architects in the design process. Moving away from an earlier plan for expensive underground detention tanks that would have sent overflow into the sewers, the team set a goal of keeping all stormwater on site—there's no connection to the city's sewer system—in line with the BBG's long-term plans to overhaul its water management for the whole garden.

TOP
The landscape provides outdoor gathering spaces and helps manage stormwater runoff.

OPPOSITE
The new design preserved the garden's ginkgo allée, which dates back to the 1920s.

PLAN

- 1 VISITOR CENTER
- 2 GINKGO ALLÉE
- 3 THE OVERLOOK
- 4 CRANFORD ROSE GARDEN
- 5 CHERRY ESPLANADE
- 6 JAPANESE GARDEN POND



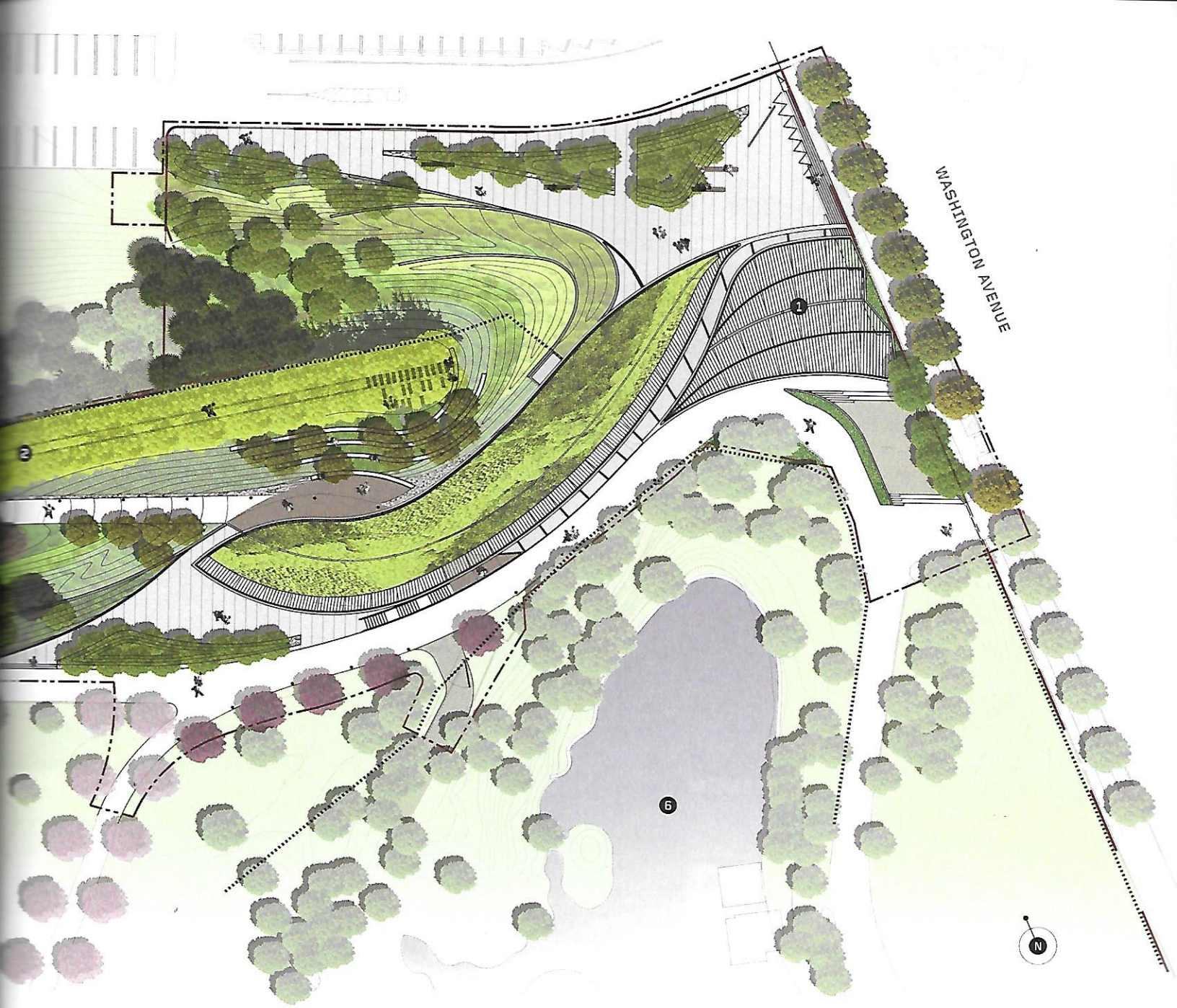
Three planted infiltration basins accept runoff from the paved plaza and the copper roof of the garden's gift shop building as well as water that exceeds the holding capacity of the green roof on the events building. The entrance plaza on the north side of the buildings has two basins, and the event plaza has one. The basins also receive water from a swale that runs along the bottom of the berm

to capture runoff and relieve hydrostatic pressure against the back of the events building, which is built into the side of the berm.

All of the basins have modern, sinuous, trapezoidal shapes that relate to the sleek lines of the buildings. When they fill up after a heavy rain, a network of underground pipes carries water to a pond in the nearby Japanese

Hill-and-Pond Garden. The stormwater design reduces dependence on the potable city water that had been the water source for the pond.

The basins also host riparian trees such as black gum (*Nyssa sylvatica*) and birch (*Betula lenta* and *B. populifolia*), shrubs such as fothergilla (*Fothergilla major* 'Mt. Airy') and spirea (*Spiraea tomentosa* and *S. alba* var. *latifolia*),

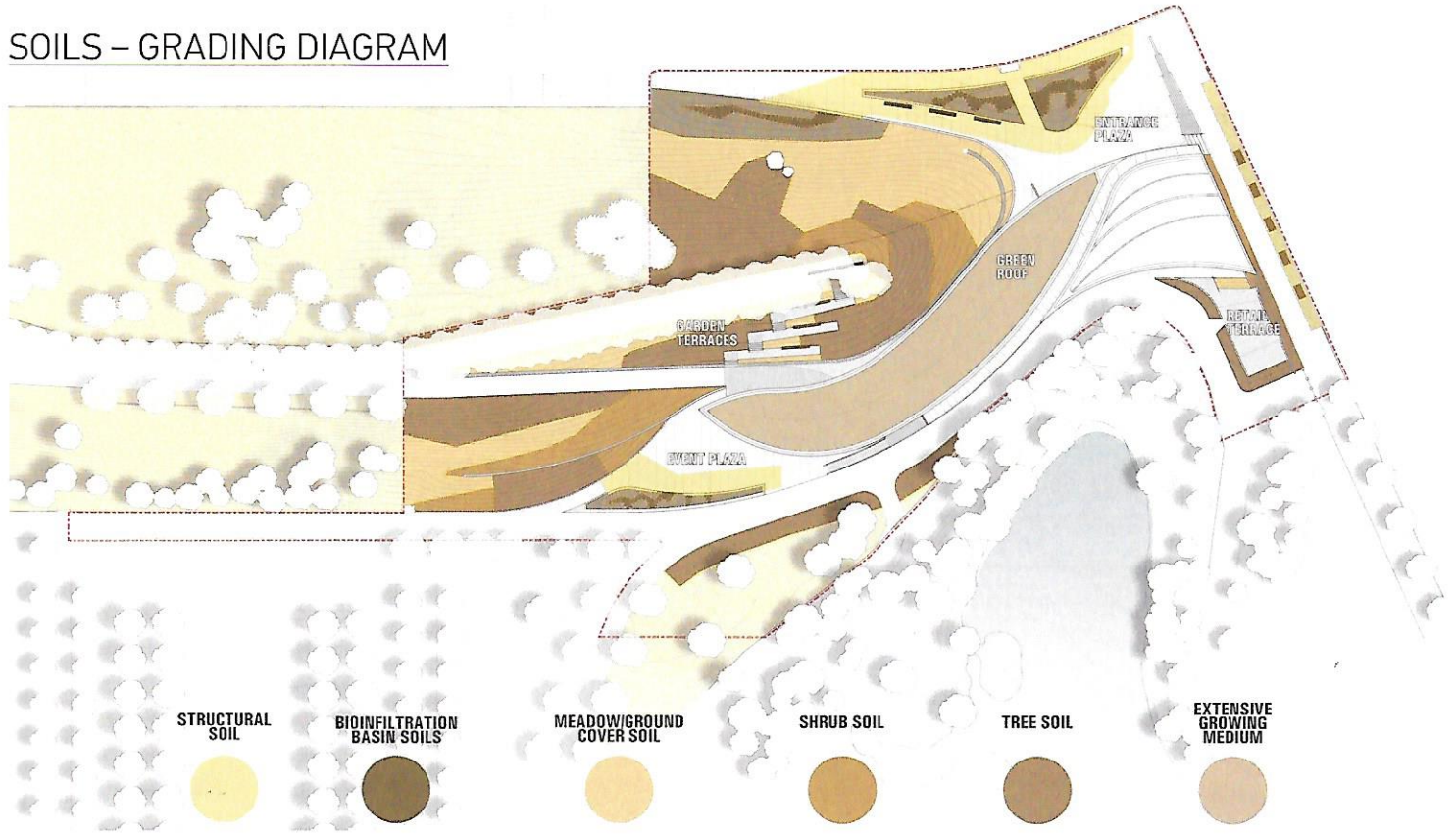


and grasses, perennials, and bulbs. In addition to their ability to tolerate inundation, these plants were chosen to put on a colorful display against the concrete paving. In the fall, the black gums' red and the birches' yellow foliage stand out. But working with growers, Booher also located unusual cultivars like black gum (*N. sylvatica* 'Wildfire' and 'Red Rage') that have a tinge of red on new spring leaves.

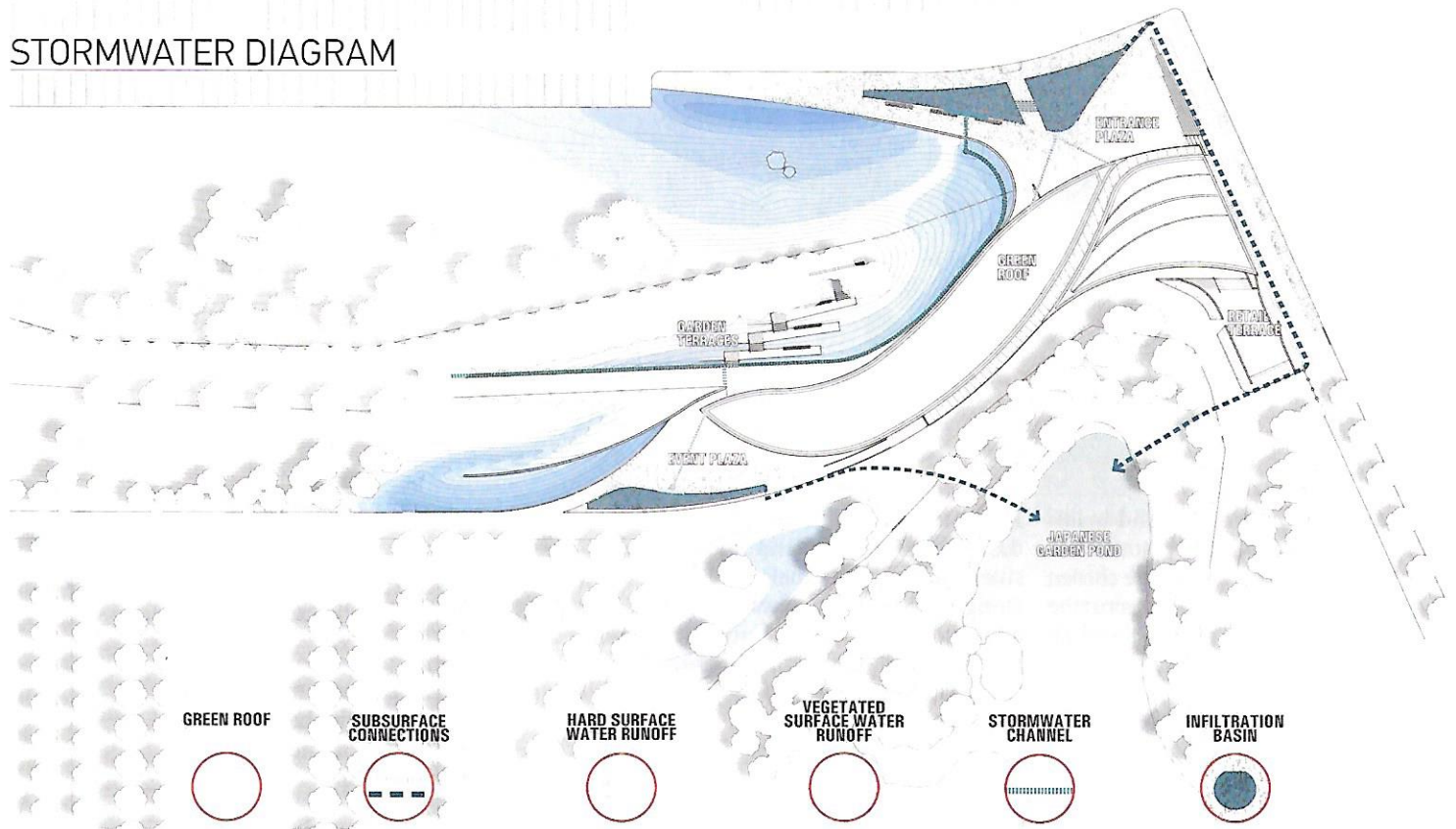
River stones underscore the watery theme in the basins, and unobtrusive but attractive panels by Thinc Design show visitors how rain gardens work. A couple of my visits to the site followed big rainstorms, and the basins looked as if they were doing their jobs well—you could see that water had moved through, but none was standing the next day, even at their lowest points.

The green roof was part of the schematic design, but the landscape architects designed the 9,600-square-foot roof to work as an important part of the stormwater management system. Its six inches of growing medium (including a shallow course of granular drainage material) hold a lot of rain and slow its movement into the site's systems of pipes and cisterns.

SOILS – GRADING DIAGRAM



STORMWATER DIAGRAM





That six-inch depth also opened up a wider range of plant possibilities, allowing the designers to go beyond the sedums and other succulents used in shallower green roof systems. To make sure the planting design would work after installation, trials

started before ground was broken for the building. Booher worked with then-BBG vice president for horticulture Patrick Cullina and Charlie Miller of Roofscapes (now Roofmeadow) to test different species on raised platforms as the planting design evolved.

All of the plants were grown to order. The team ultimately chose a meadowy palette for the roof to tie in with plant selections for the rest of the site and to make the most of the roof's visibility. Swaths of grasses such as little bluestem (*Schizachyrium scoparium* 'The Blues') and prairie dropseed (*Sporobolus heterolepis*) connect visually with different grasses planted at grade. Snowdrops (*Galanthus nivalis*) and petticoat daffodils (*Narcissus bulbocodium*) add early-spring color, and flowering perennials such as butterfly milkweed (*Asclepias tuberosa*) and purple prairie clover (*Dalea purpurea*) add some summer bloom. The flowers of prairie Junegrass (*Koeleria macrantha*) emerge in spring as charreuse but quickly turn russet, adding another layer of color.

TOP
The site includes several steep planted slopes.

INSET
Careful soil and plant selection held off erosion on the slopes, even during heavy storms.



A decent show in winter was also a consideration; the selected plants stay rigid enough to look good even while dormant. The roof only looks “bald,” as Booher describes it, when everything is cut back in late winter.

A below-the-surface irrigation system keeps the plants, many of which are unusual choices for a green roof, healthy while using little water and minimizing evaporation. A capillary mat at the base of the system also makes a big difference, says Booher. “It helps keep a little bit of coolness in the soil and promotes a more even distribution of water and less runoff,” he told me. “The plants have to soak it up from the bottom of the profile, and that forces the roots to knit together with all of the green roof layers.”

The roof system was installed in the fall of 2011 by New York Green Roofs, a firm associated with Roofmeadow.

The company’s cofounder, Amy Falder, Affiliate ASLA, worked closely with Booher on the plant selection and sourcing, and New York Green Roofs does maintenance visits and soil tests every year. The design held up well against the extreme weather (including record heat and Hurricane Sandy) that marked its first full growing season. Inspections this spring and summer found good plant cover, soil health, and very little erosion even on areas where some parts of the roof slope 27 degrees.

Because of the site’s history as a coal ash dump, and construction-related compaction, remediation was required for soil throughout the site. To make sure the new soil worked the way it was supposed to—providing good infiltration in the basins and holding fast on slopes—the landscape architects brought in the soil scientist John Swallow, Affiliate ASLA, for advice

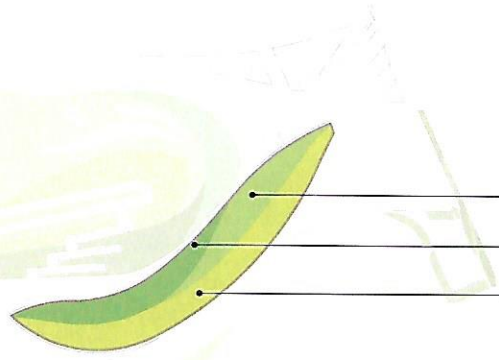
and testing on different soils for the whole site. “For me, it’s hard to know if a bag of soil is what was specified,” says Booher.

Booher says the soil on the site was laid out with a “marbling-type” effect throughout the six-foot-deep soil profile. In the basins, a blend high in nutrients was marbled with a blend containing a lot of sand for good drainage. At the bottom of each basin is about two feet of gravel and large stone, which Booher says creates a kind of capture zone that tree roots can tap into as water percolates through the system.

TOP
Planting basins in the entrance plaza teach visitors about stormwater management and native plant species.

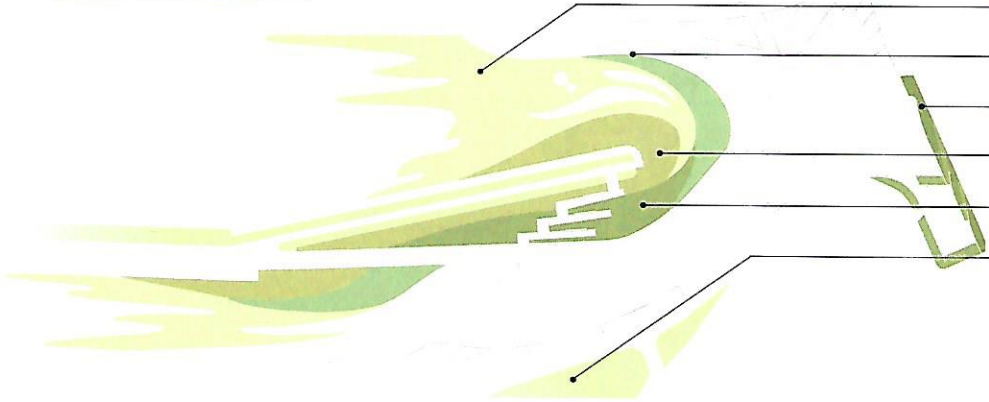
INSET
A duck’s nest atop the green roof.

GREEN ROOF PLANTING



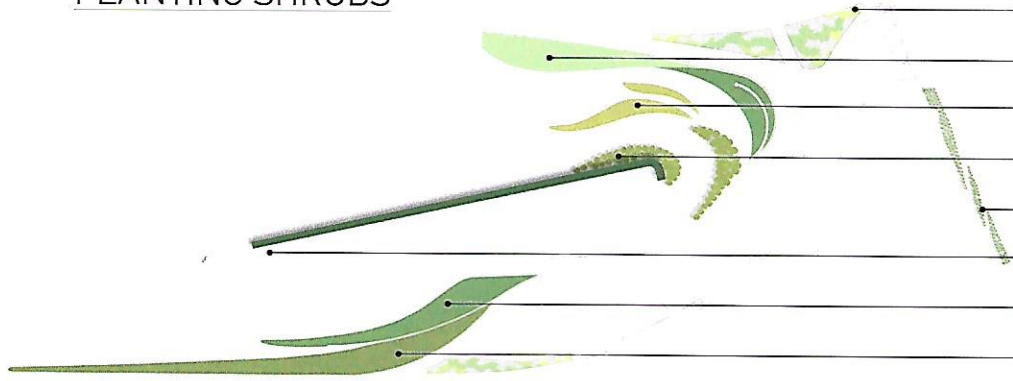
- LOVE GRASS BLEND
- BLUESTEM BLEND
- DROPSEED BLEND

GROUND LEVEL



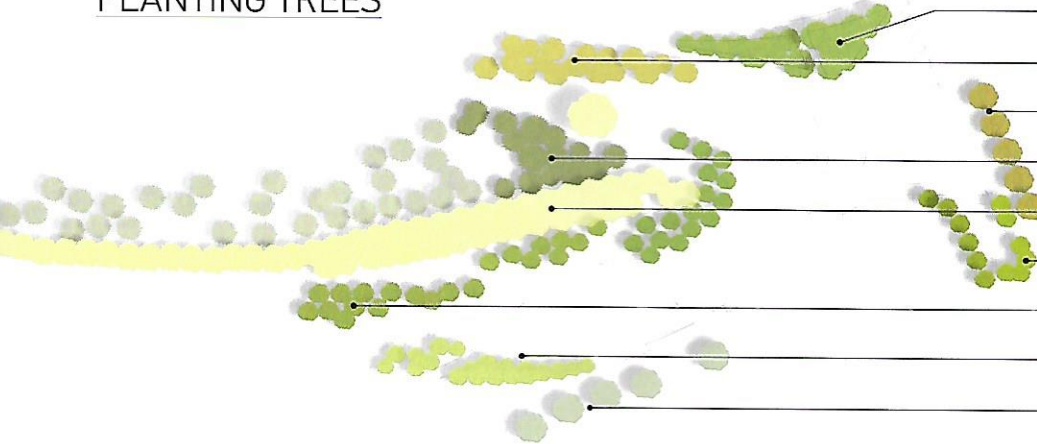
- BLUESTEM MIX
- OATGRASS MIX
- SEDGES & FERNS
- HAIRGRASS MIX
- SEDGES & FERNS
- RESTORED LAWN

PLANTING SHRUBS



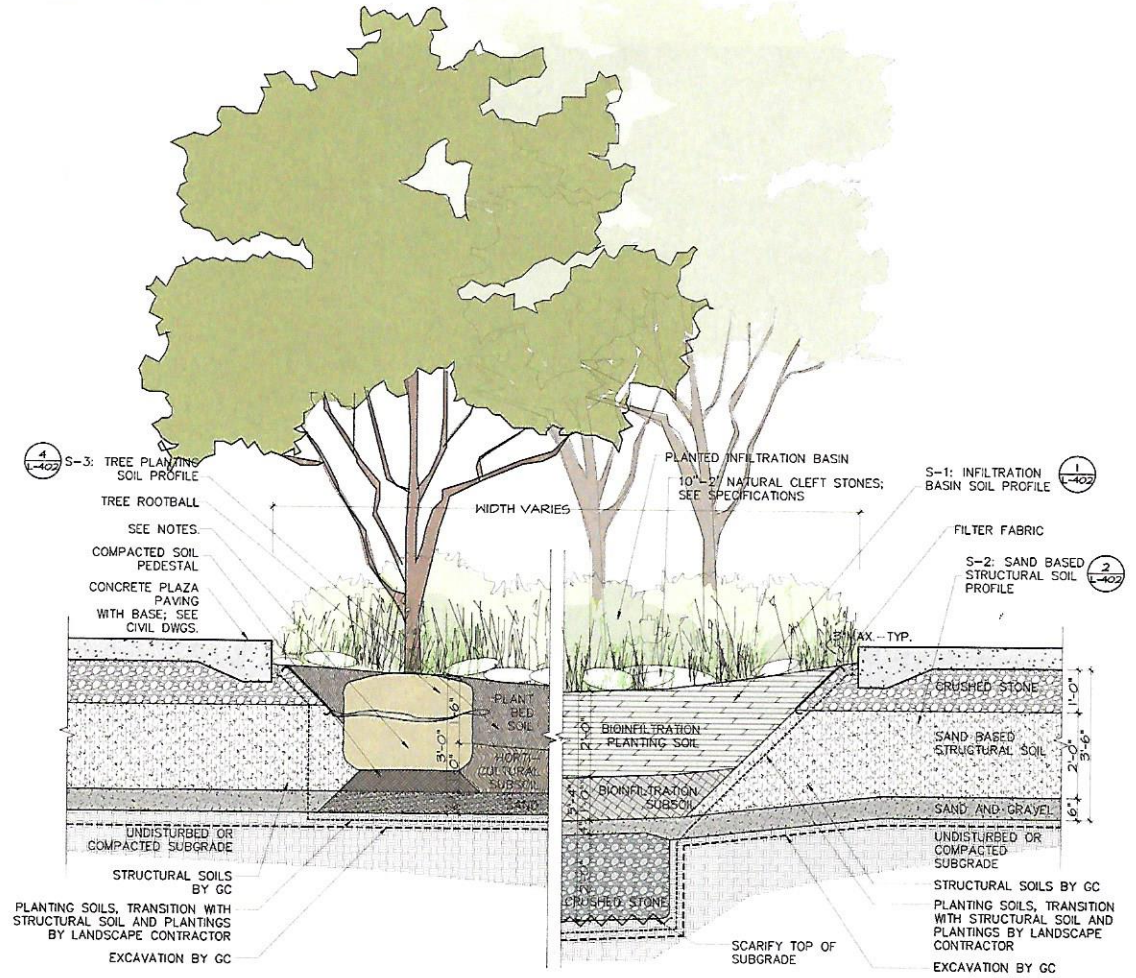
- RIPARIAN COLLECTION
- RIPARIAN COLLECTION
- CHOKEBERRY SWATH
- HOLLY COPSE
- SCULPTED EVERGREEN MASSING
- HORNBEAM HEDGE
- TWIG DOGWOOD COLLECTION
- WILD ROSE

PLANTING TREES

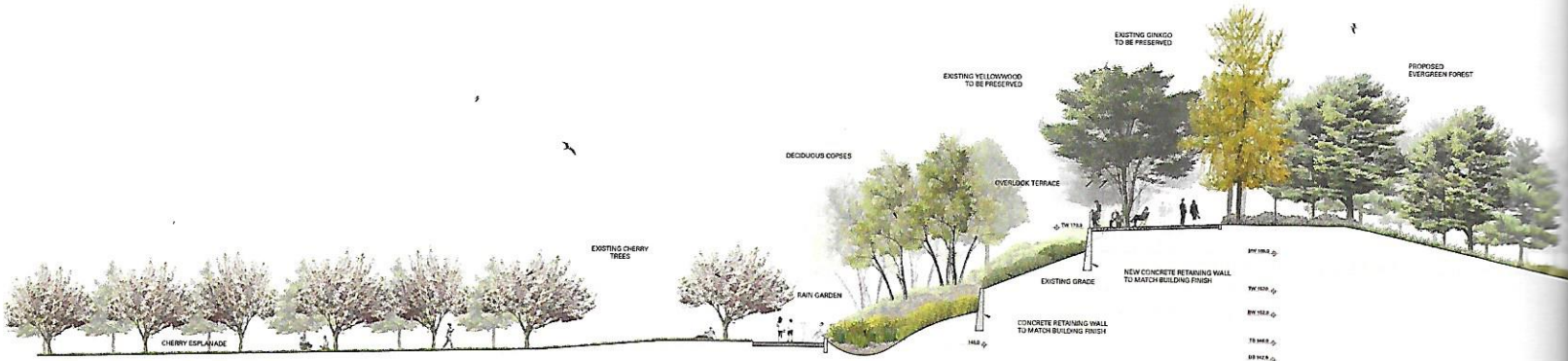


- BLACK GUM GROVE
- SWEET BIRCH GROVE
- STREET TREES
- EVERGREEN BUFFER
- RESTORED GINKGO ALLÉE
- FLOWERING TREES
- HORNBEAM & HOPHORNBEAM COLLECTION
- SWEET BAY MAGNOLIA
- CHERRY ESPLANADE EXTENSION

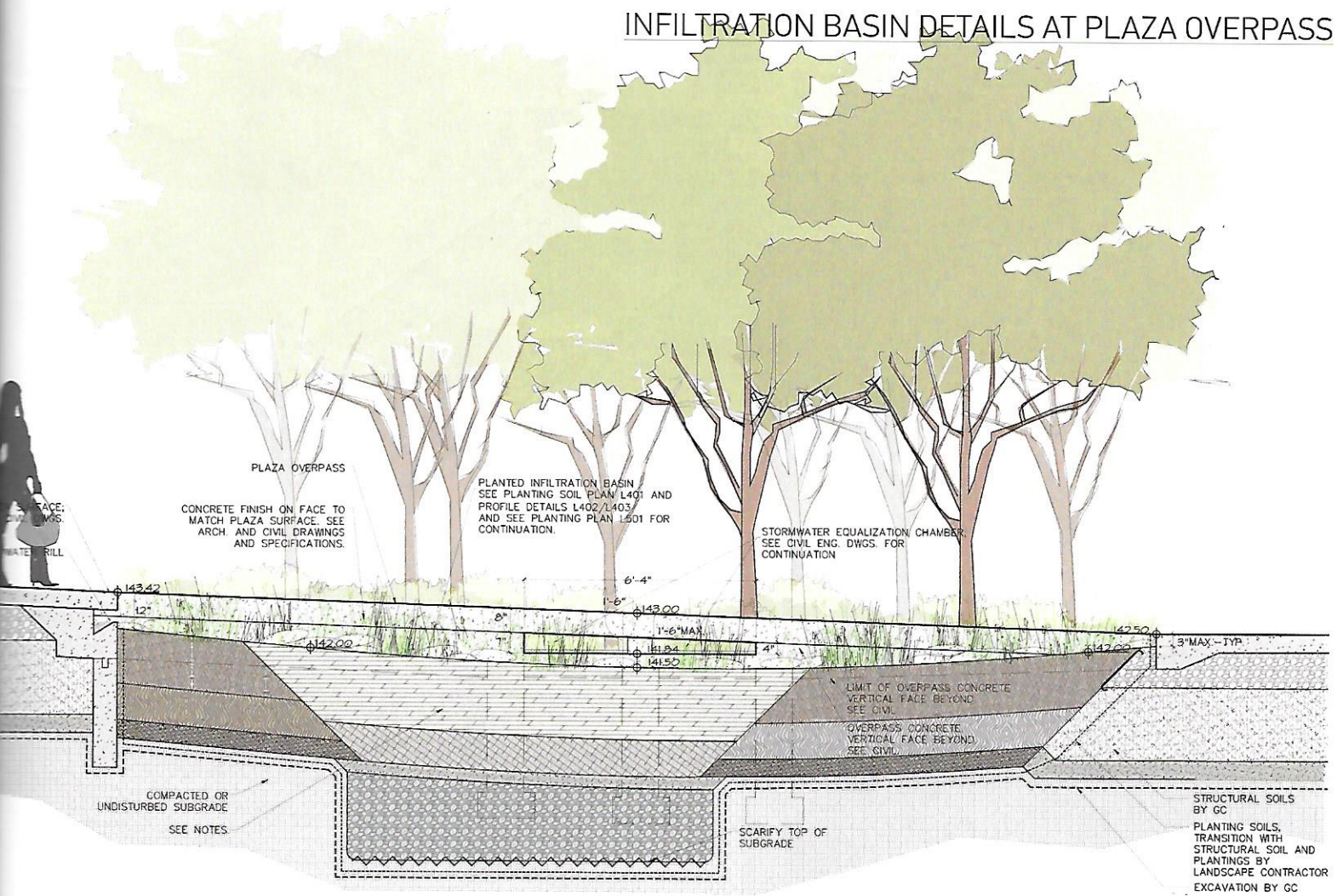
INFILTRATION BASIN DETAILS AT PLAZA



CONCEPT OVERLOOK SECTION

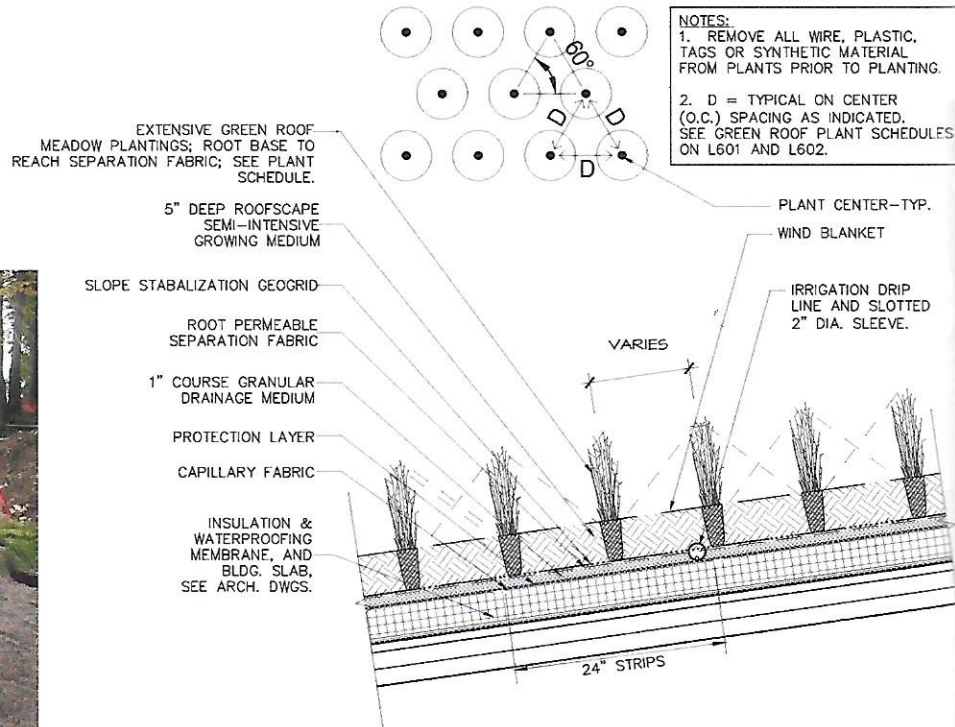
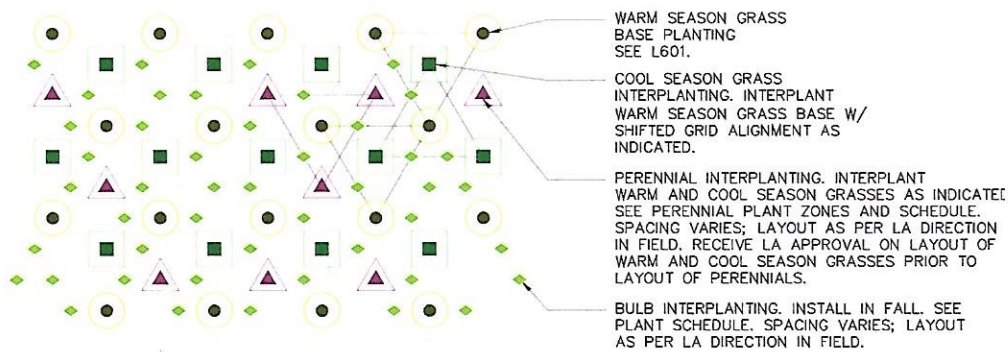


INFILTRATION BASIN DETAILS AT PLAZA OVERPASS



CONCEPT ENTRANCE PLAZA SECTION





→ Surrounding the basins is a different structural soil that supports the plaza itself, which has to endure occasional vehicular traffic. That structural soil also has enough sand to let water migrate under the plaza, but storm-water capture zones are interspersed to let migrating roots take up water.

The attention to soils paid off. In addition to the good infiltration performance, the plants established more quickly than expected and are thriving. There's no visible erosion, either, even in areas where slopes approach 50 degrees and even after heavy rains.

The meadow-style design for the three-acre site was, says Booher, a way to create a landscape that "registers in a bold contiguous way, as opposed to a garden with many different elements." Many of the plant selections are native species, planted alongside cultivars appropriate to the site.

Big drifts of grasses, interspersed with wildflowers, shrubs, and trees, unify the slopes to the north of the berm (going down to the parking lot) and south of it (down to the BBG's cherry tree and rose gardens). The drifts connect these parts of the landscape with

the green roof and provide a backdrop to the gardens beyond this overlook, including the recently expanded Native Flora Garden (page 142).

The woody plants on the slope deserve a close look. On the north face, a spectacular ginkgo specimen, more than 100 years old, was transplanted to ensure its safety during construction. Hollies (*Ilex x attenuata* 'Longwood Gold' and cultivars 'Red Beauty,' 'Centennial Girl,' 'Blue Prince,' and 'China Boy'), BBG favorites that have usually been used in formal designs, look at home in a



more relaxed environment. On the south side, hawthorns (*Crataegus viridis* 'Winter King') and serviceberries (*Amelanchier alnifolia* 'Regent') provide spring blooms and fine-textured foliage in summer.

The slope from the ginkgo allée down to the visitor center is terraced, with massive stone steps and bench seats. Hornbeams (*Carpinus caroliniana*) and hophornbeams (*Ostrya virginiana*) shade the quiet area, and Appalachian sedge (*Carex appalachica*) and hairgrass (*Deschampsia flexuosa*) soften the stone slabs.

Right at the entrance, the plant palette along Washington Street has shifted from manicured boxwood and herbs to a more contemporary riff using similar species. Three boxwood cultivars (*Buxus sempervirens* 'Jim's True Spreader,' 'Newport Blue,' and 'Vardar Valley') give a nice, fine-textured, cloud-like effect and contrast with the white walls, as do specimens of snowbell (*Styrax obassia*) and Carolina silverbell (*Halesia tetraptera* 'Arnold Pink'). Ferns (*Polystichum acrostichoides* and *P. polyblepharum*) and sedges (*Carex flaccosperma*, *C. pennsylvanica*, and *C. plantaginea*) add more texture.

Few of these plants are showy, but that's fine with the designers. Booher described the process of designing a naturalistic garden as "incredibly fun." It can be easy to miss the attributes of native plants, he says, until they are seen en masse. "It was interesting to think about that as botanic expression, then try to showcase it through the topography," he told me.

The restrained appearance of the plant palette also belies the effort involved in sourcing the plants. Booher searched nurseries all along the East Coast for the right species,

ABOVE
The green roof helps the Visitor Center almost disappear into the landscape.

OPPOSITE
Green roof in planting phase, with planting details.





LEFT
The ginkgo allée
in the bare season.

and for specimens special enough to stand out at a botanical garden. The process made him realize how important it is that landscape architects communicate with people in the nursery trade, especially when using native species that might not be widely available. Cultivating these relationships, he says, was a big part of the success of this project and will help with future ones too. ●

LINDA MCINTYRE IS A FORMER STAFF WRITER AND FREQUENT CONTRIBUTOR TO *LAM*.

Project Credits

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