INTEGRATIVE DESIGN
The Center for Sustainable Landscapes (CSL) at Phipps Conservatory and Botanical Gardens advances a new design paradigm in which building and landscape systems are functionally interdependent.
LIVING IN HARMONY
By sensitively orchestrating development within a steeply-sloped environment, this former brownfield site demonstrates restorative landscape strategies and net-positive water and energy. It is the only project to attain the highest certification level of LEED, SITES, Living Building Challenge, and WELL.
BEFORE

The CSL site was previously a dilapidated brownfield site, once used by the City of Pittsburgh Public Works department as a fueling station, and had suffered through decades of slope destabilization and environmental degradation.
The design team created a completely new landscape, comprised of indigenous plants and supported by stabilized slopes with engineered soils, which together express the CSL’s mission of demonstrating the benefits of humanity living in harmony with nature.
RAIN WATER MANAGEMENT
The CSL manages a 10-year storm event—which includes a half-acre of rooftop runoff from adjacent buildings—within the site boundaries through soil- and vegetation-based systems. Collected rain water, rather than potable water, was used during landscape establishment.
WASTEWATER MANAGEMENT

All wastewater is treated on site using a series of landscape-integrated systems prior to reuse as flush water for restrooms. Excess, treated sanitary water is used for site landscape irrigation, maximizing the reuse of water and reestablishing the hydrological cycle.
PREPARING GROUND
A steep terrain is made navigable and ADA-compliant through a gently meandering pathway providing access from lush green roof to the lower entry area. Four distinct soil profiles promote rain water infiltration, ground water recharge, and moisture retention for plant growth.
VISITOR EXPLORATION

A visitor to the CSL can learn first-hand about ecosystem services, the beauty and benefits of native plant habitats, green infrastructure and its role in improving local water quality, and also appreciate the biodiversity that the site is designed to sustain and protect.
URBAN CONTEXT
Designed to invite public exploration and inquiry, the CSL is uniquely positioned to showcase restorative landscape strategies and ecologically-based water treatment systems that use indigenous plant communities as a solution to relieve our aging, urban infrastructure.
VISITOR EXPERIENCE

The core functions of the CSL are to increase public awareness about: 1) The interconnection between the natural and built environments; and 2) The efficacy and synergy of integrated, sustainable building and landscape systems.
VISITOR EDUCATION
The CSL is home to a SEED (Sustainable Education Every Day) Classroom, which supports the outdoor learning spaces that connect people to nature and foster broad support for environmental stewardship.
HABITAT DIVERSITY

CSL visitors can observe over 150 species of ecoregionally-appropriate native plants that showcase a range of distinct plant communities, which are strategically placed within the topography reflecting a variety of environmental adaptations.
MULTIVALENT DESIGN
A series of waterfalls provides a tranquil setting and encourages visitors and birds to interact with the water, while continuously oxygenating the rain water runoff before it returns to the lagoon.
ONGOING MONITORING

Irises grow on a constructed wetland shelf that constantly filters the rain water collected in the lagoon. Ongoing monitoring and research at the CSL on systems such as this will help show why the landscape must be an integral part of regional stormwater management plans.
CERTIFIED PERFORMANCE
An integrative design approach, where client, architect, landscape architect, engineers, and construction professionals collaborated as equal partners, was key to the CSL being the first and only project to attain the world’s four highest sustainable building certifications.
## LANDSCAPE PLANT LIST

### Deciduous Trees:
- Red Maple, multistem
- Whitespire Gray Birch
- American Yellowwood
- Skyline Honeylocust
- Black Gum
- American Hop Hornbeam
- Quaking Aspen
- White Oak
- Shingle Oak
- Chinkapin (Yellow) Oak
- Sassafras

### Evergreen Trees:
- Rotunda American Holly
- Emerald Sentinel Eastern Red Cedar
- White Pine

### Understory Trees:
- Shadblow Serviceberry
- American Hornbeam
- Redbud
- Winter King Hawthorn
- Sweet Bay Magnolia, multistem

### Shrubs and Vines:
- Bearberry
- Black Chokeberry
- New Jersey Tea
- Ceanothus
- Hummingbird
- Summersweet
- Dwarf Redosier Dogwood
- Dwarf Inkberry
- Red Sprite Winterberry
- Little Henry Virginia
- Sweetspire
- Effusa Juniper
- Mountain Laurel
- Spicebush
- Virginia Creeper
- Primrose Beauty
- Cinquefoil
- Gro-Low Sumac
- Carolina Rose
- Elderberry
- Blueray/Bluecrop
- Highbush Blueberry

### Groundcover-Shade:
- 30% Meadow Anemone
- 30% Woodland Phlox ‘Manita’
- 30% Mayapple
- 10% Golden Groundsel
- 10% Ginger
- Silver Scrolls Heuchera
- Crested Iris
- Blue Flag
- Soft Rush
- Gold Strike Rush
- Variegated Corkscrew Rush
- Blazing Star
- White Gayfeather
- Cardinal Flower
- Ostrich Fern
- Spotted Bee-Balm
- White Water Lily
- Cinnamon Fern
- Dallas Blues Switch Grass
- Heavy Metal Switch Grass
- Husker Red Beardtongue
- Moss Phlox
- Solomon’s Seal

### Warm Season Grass Mix:
- 15% Side Oats Grama
- 30% Prairie Dropseed
- 30% Little Bluestem Prairie Blues
- 25% Whorled Milkweed

### Constructed Wetland Plants:
- Broad Leaved Cattail
- Softstem Bullrush
- Common Threesquare
- Soft Rush
- Lancelea Coropsis
- White Swan Coneflower
- Slender Spike Rush

### Facultative Raingarden Mix:
- 10% Swamp Milkweed
- 80% Oehme Variegated Palm Sedge
- 10% Cardinal Flower Alpine Strawberry

### Alkaline Ornamental Meadow Plants:
- 15% October Skies Aster
- 30% Side Oats Grama
- 15% Thread-Leaved Tickseed
- 15% Black Eyed Susan
- 25% Little Bluestem ‘Prairie Blues’ Nodding Onion
- Ramps
- Columbine
- Butterfly Weed
- Blue False Indigo
- Marsh Marigold
- Tussock Sedge

### Perennials and Grasses:
- Blue Ice Blue Star
- October Skies Aster
CENTER FOR SUSTAINABLE LANDSCAPES: PLANT LIST (2 OF 2)

Seed Mixes:
Alkaline Ornamental Meadow Seeding:
Autumn Bentgrass
Blue Wood Aster
Smooth Aster
Aromatic Aster
Partridge Pea
Virginia Wildrye
Rattlesnake Master
Mistflower
Ox-Eye Sunflower
Round Headed
Bushclover
Spiked Gayfeather
Eastern Gray
Beardtongue
Orange Coneflower
Little Bluestem
Wild Senna
White Goldenrod
Gray Goldenrod
Indiangrass
Ohio Spiderwort
Low Ornamental

Meadow Seeding:
Autumn Bentgrass
Blue Wood Aster
Smooth Aster
Aromatic Aster
Partridge Pea
Virginia Wildrye
Rattlesnake Master
Mistflower
Ox-Eye Sunflower
Round Headed
Bushclover
Spiked Gayfeather
Eastern Gray
Beardtongue
Orange Coneflower
Little Bluestem
Wild Senna
White Goldenrod
Gray Goldenrod
Indiangrass
Ohio Spiderwort

GREEN ROOF PLANT LIST

Shrubs:
Bearberry
Chokeberry
New Jersey Tea
American Hazelnut
Witchazel
Bayberry
Summer Wine Ninebark
Center Glow Ninebark
Tiger Eyes Sumac
Gro-Low Fragrant Sumac
Flowering Raspberry
Elderberry
Lowbush Blueberry
Blackhaw Viburnum
Nannyberry Viburnum

Perennials:
Anise Hyssop
Nodding Onion
Arkansas Blue Star Flower
Red Milkweed
Blue Wood Aster
New England Aster
Twilite Prairieblues
False Indigo
White Cloud Calaminth
Calaminth
Green and Gold
Yellow Coneflower
Purple Coneflower
Wild Strawberry
Wintergreen
Tall Sunflower
Coral Bells
Blue Flag Iris
Dense Blazing Star
Ostrich Fern
Virginia Bluebells
Beebalm
Prickley Pear Cactus
Heavy Metal Switchgrass
Mayapple
Greenheaded Coneflower
Lyre-leaf Sage
Hoary Skullcap
Stonecrop
Blue-Eyed Grass
Wreath Goldenrod
Foamflower
Spiderwort
Sweet White Violet
Common Blue Violet