Sustainability: From the Ground Up in an Urban Setting

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South Seattle Community College
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The Bill & Melinda Gates Foundation

Seattle Center Garage – Opened July 2008

• Extensive Greenroof over a garage and visitor center

Bill & Melinda Gates Foundation: Phase One Occupancy May 2011

• Two Buildings
• Rain Water Harvesting
• Extensive Greenroofs
• Intensive Greenroofs
• Planted water features
• LEED Platinum – 2011
The Team

NBBJ    Architecture & Design
Arup    SMEP/IT
GGN     Landscape Design
KPFF    Civil Engineers
Sellen  Construction
Seneca  Real Estate Group

Sellen Subcontractors:
Cochran Electric Co., Inc.
McKinstry Company
Enclos Corp.

Design Consultants:
Alexi Marmot Associates
CMS Foundation Consultants
Hammer Design Associates
HKA Elevator Consulting
Morrison Hershfield
Walker Parking Consultants

Other Consultants:
City of Seattle
Engineering Economics, Inc.
GeoEngineers
Integrated Real Estate Services
JPG International
K&L Gates
Kinzer Real Estate Services
Mayes Testing Engineers
Pacific Construction Consultants
Peterson Consulting Engineers
Shannon & Wilson
TechPM Group
The Transpo Group
TPN (The Production Network)
URS Corporation
Zbeta Consulting
Site Location

- Queen Anne
- Bill & Melinda Gates Foundation
- Seattle Center
- South Lake Union
- Downtown Seattle
- Capitol Hill
- Lake Union
- Elliott Bay
Physical and Historical Context
Concept

Local Roots

Global Mission
The overall design concept features upper office buildings with outward “world-reaching” curves, an open, airy environment with views into and through the campus and a series of exterior spaces with extensive landscape that knits the campus into the “local ground” and surrounding neighborhood.

**World Reach Layer**

**Building Levels 3 - 6**

*Organic Forms and Global/World Scale*

- The Foundation's work has global aspirations.
- World-level buildings “float” in forest tree canopy.

**Local Context Layer**

*Ground Level and Building Levels 1 - 2*

*Orthogonal Forms and Local/City Scale*

- Campus is grounded in its local context.
- Landscape and base buildings under tree canopy create a green base layer.
Summer Solstice

Winter Solstice
Glowing drifts of grasses: rustic, diverse, soft, with consistent presence and seasonal character

Plants with high sun requirements are generally located in areas where the sun exposure is from the south or west, like 5th Avenue and Entry Court

Planting Reference: Sun
Luminous drifts of ferns and shrubs: rustic, textured

Planting Reference: Shade

Plants with a tolerance for shade are generally located in areas where the sun exposure varies from part sun to full shade. The north side of the building along Mercer Street provides shade for these plants.
Central Heart Water Feature

- Concept: deep, serene basin of reflected sky, light and foliage
- Precise, “cut” edges
- Still, peaceful water
- Drifts of floating and reed-like plants in water
- Luminous textured plantings around the edge
The Central Heart
Plant Selection
Extensive Greenroofs
Seattle Center Garage Roof
Seattle Center Garage Extensive Roof Assembly

VEGETATION, 2-6"

PLANTING MEDIUM, 2-4"

ROOT PERMEABLE GEOTEXTILE FILTER LAYER

DRAINAGE LAYER, 1.5"

PROTECTION BOARD

ROOF MEMBRANE

ROOF STRUCTURE
Dense, rapid coverage is essential to extensive Greenroof success to reduce:

- Maintenance
- Irrigation
Three Years After Planting
Gates Foundation Extensive Greenroof Assembly

Low Water-use, Native or Adapted Plants
Light Weight Planting Soil
Filter Fabric
Drainage Board (Egg Crate)
Filter fabric
Insulation
Root Barrier
Liquid Applied Monolithic Membrane
Structural Roof Deck
Extensive Greenroof
Intensive Greenroofs

STONE PAVING, SEE PLAN
CONC SLAB, C1000
STRUCT BACKFILL, C1000

TREE PIT WALL,
SEE C1000
SLOPE TO DRAIN

TREE PAVING,
SEE PLAN

PLANTING SOIL,
SEE SOILS PLAN

TRENCH DRAIN,
PER PLAN

PLAZA

Gustafson Guthrie Nichol
Rainwater Harvesting: Collection

Total Collected Area:
141,000 Square Feet
Rainwater Harvesting: Collection

Total Area: 350,000 Square Feet
Rainwater Harvesting: Paving
Rainwater Harvesting: Cistern

Storage Tank Total Capacity: 979,880 Gallons
Rainwater Harvesting: Process
Aggregate Annual Demand:
Re-Use Water Utilization By System

Pool System Filter Backwash
Evaporative losses from the Central Heart Pool
WC and Urinal Flushing
Irrigation
Combined Re-use Water Demand (Irrigation, Pool Evaporation, Filter Back-wash, WC and Urinal Flushing)
Average Rainfall Year:
Available Water versus Combined Re-use Water Demand

- Combined Re-use Water Demand (Irrigation, Pool Evaporation, Filter Back-wash, WC and Urinal Flushing)
- Available Water In RWH Tank
Low Rainfall Year:
Available Water versus Combined Re-use Water Demand

- Combined Re-use Water Demand (Irrigation, Pool Evaporation, Filter Back-wash, WC and Urinal Flushing)
- Available Water In RWH Tank