

Sustainability: From the Ground Up in an Urban Setting

Wednesday, November 2nd, 2011
South Seattle Community College
Bernie Alonzo, RLA, ASLA, LEED AP BD+C

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

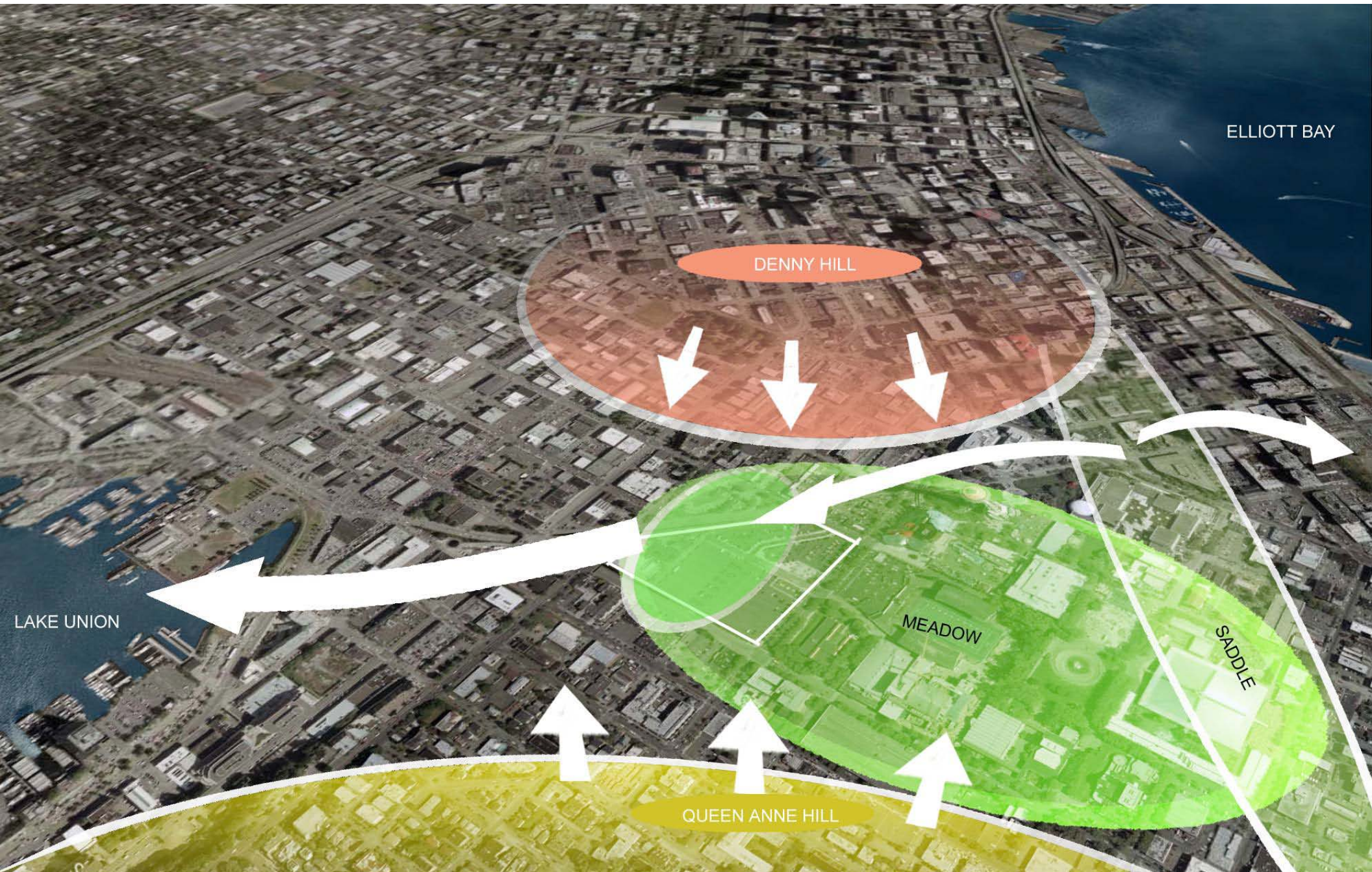
Other Consultants:

City of Seattle
Engineering Economics, Inc.
GeoEngineers
Integrated Real Estate Services
JVG 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



Physical and Historical Context



ELLIOTT BAY

DENNY HILL

MEADOW

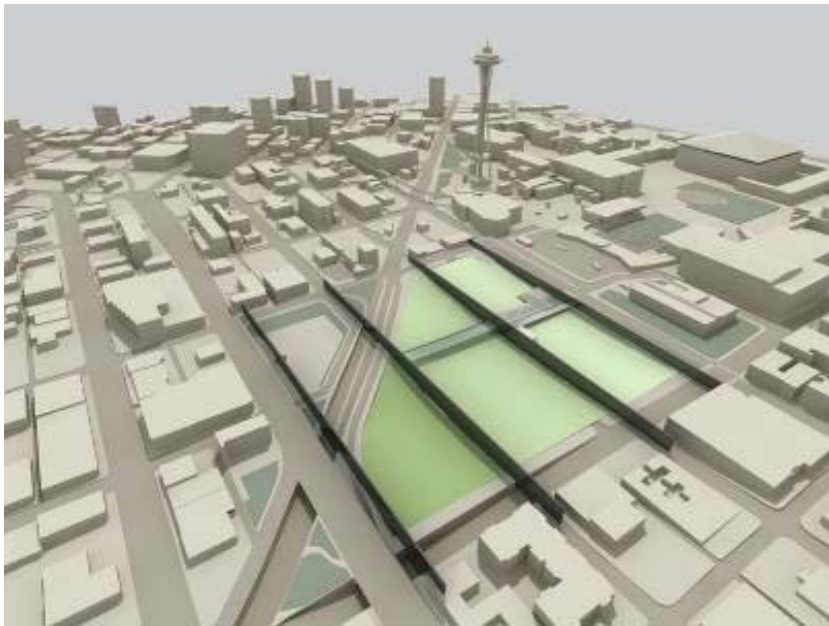
SADDLE

QUEEN ANNE HILL

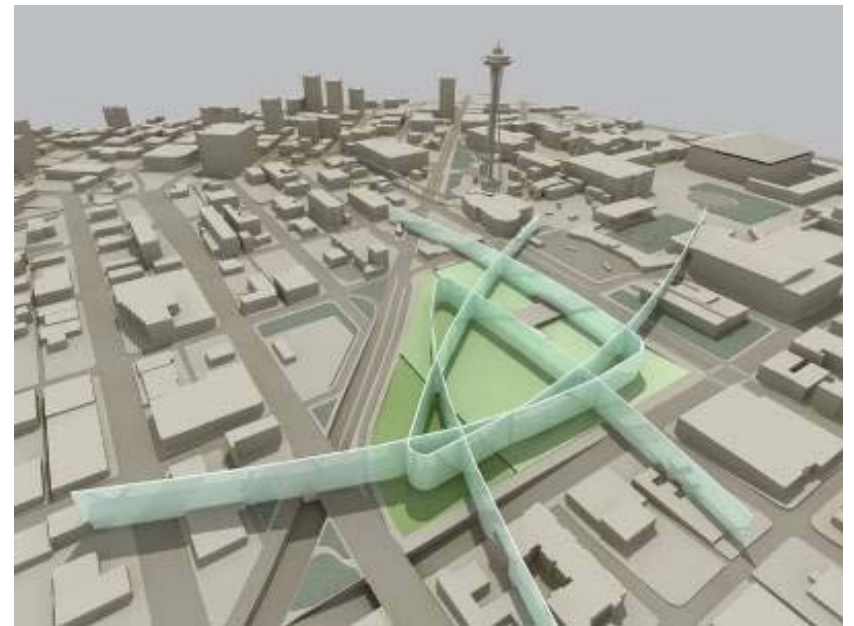
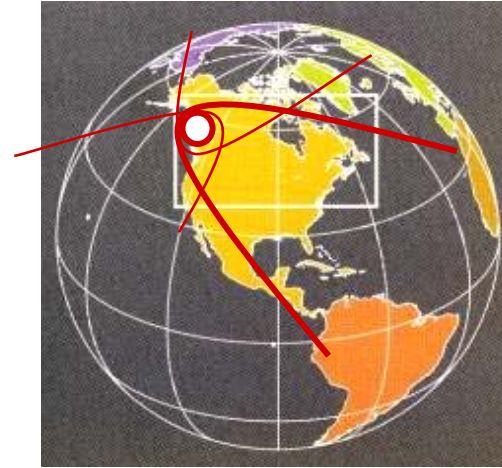
LAKE UNION

Concept

Local Roots



Global Mission



Form

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-line buildings "float" in forest tree canopy.

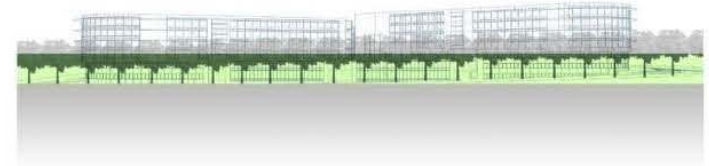


Local Context Layer

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

10:00



12:00

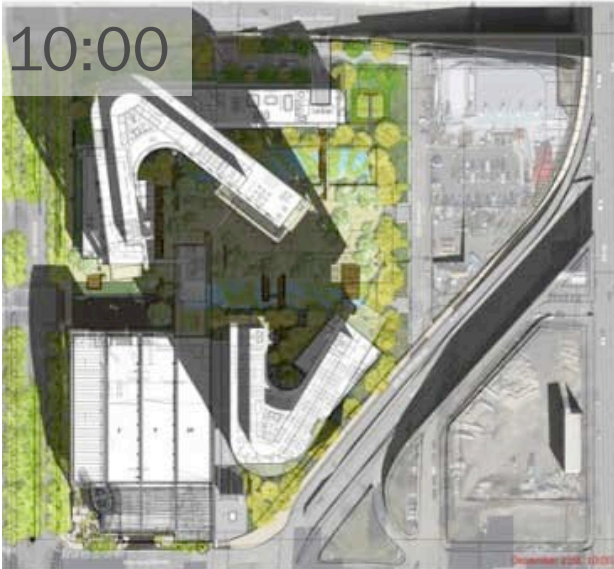


14:00



Winter Solstice

10:00



12:00



14:00



Planting - Sun

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

Planting - Shade



Luminous drifts of ferns and shrubs: rustic, textured

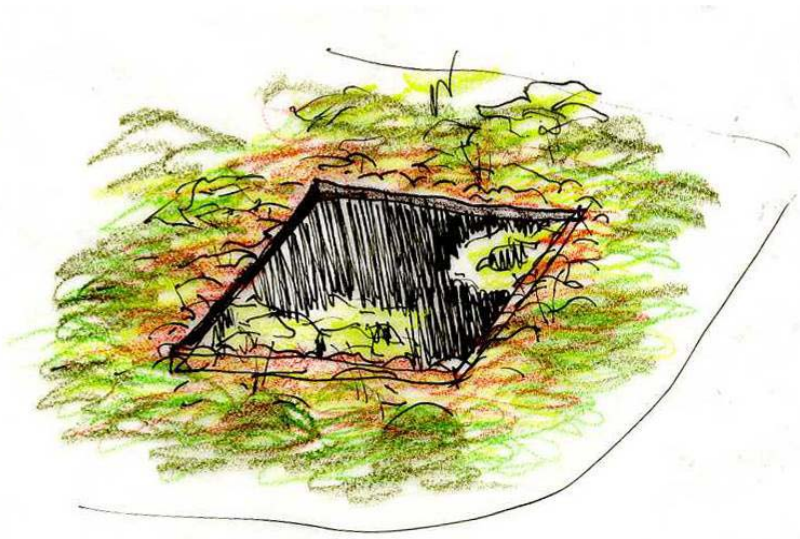


Planting Reference: Shade

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



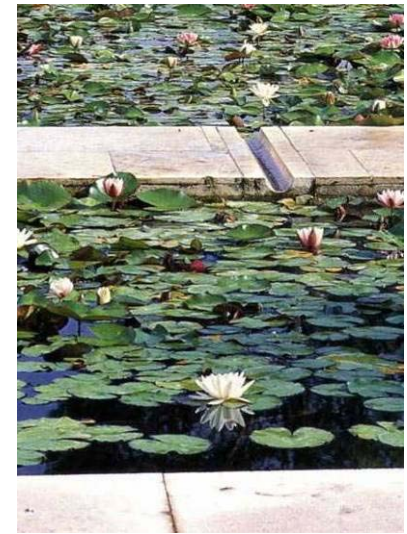
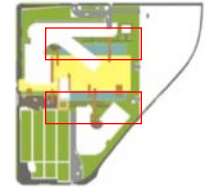
- Concept: deep, serene basin of reflected sky, light and foliage
- Precise, “cut ” edges
- Still, peaceful water
- Drifts of floating and reed-like plants in water
- Luminous textured plantings around the edge

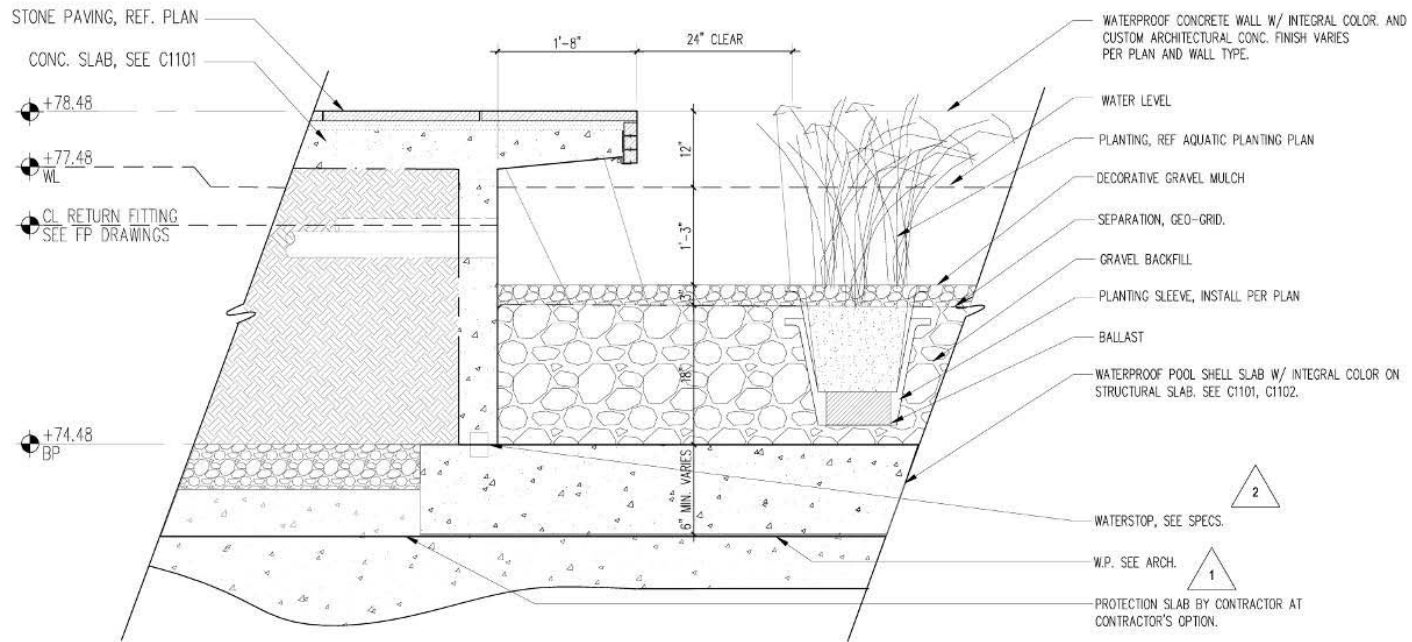
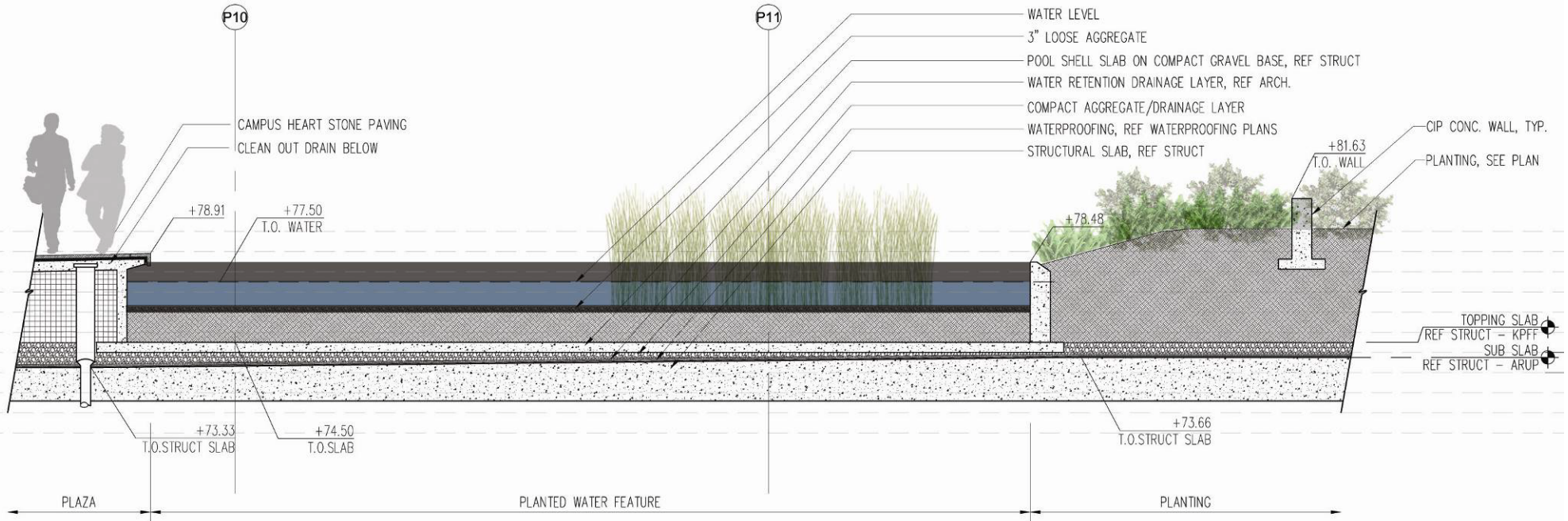


The Central Heart



Plant Selection





4 WATER FEATURE PLANTING ASSEMBLY
 SCALE: 1" = 1'-0"





Photo: Timothy Hursley

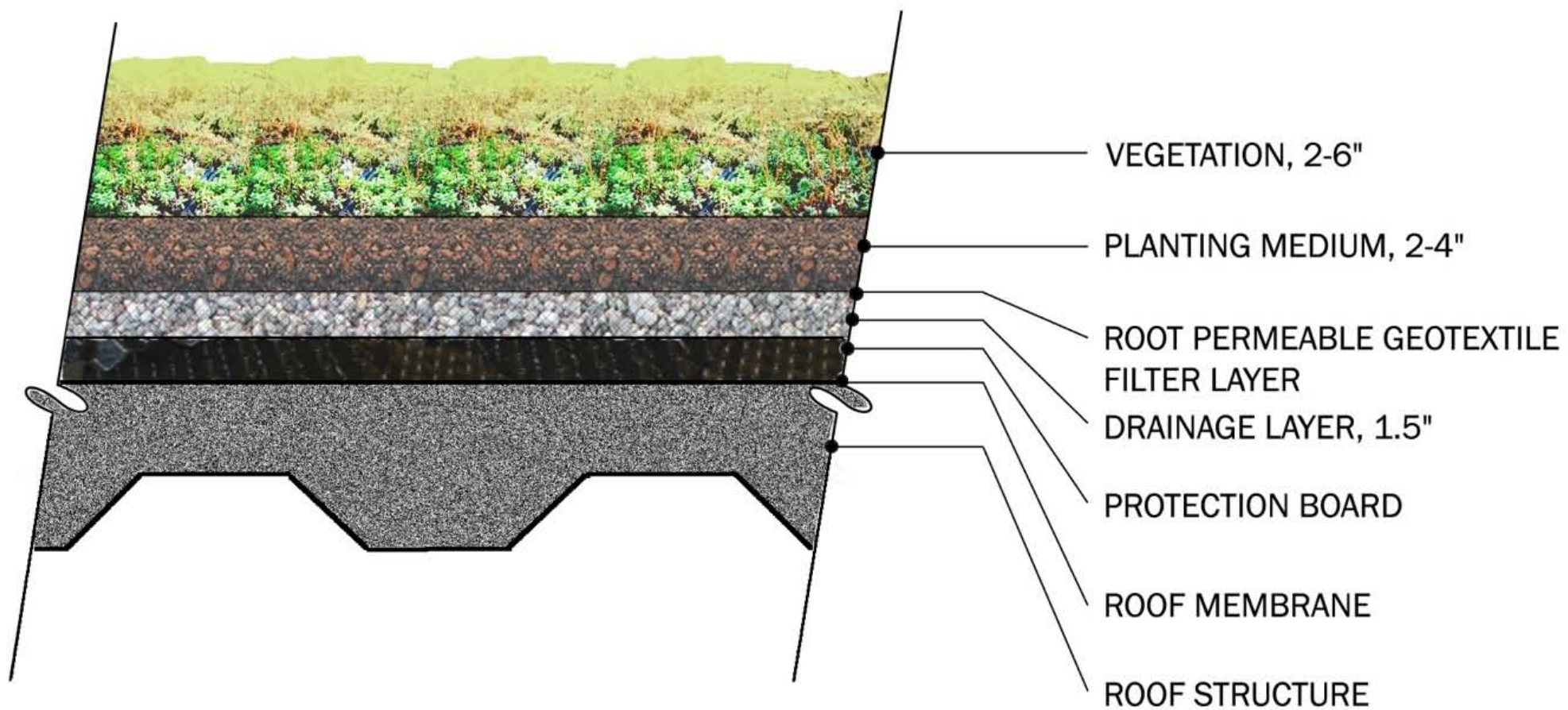
Extensive Greenroofs



Seattle Center Garage Roof



Seattle Center Garage Extensive Roof Assembly

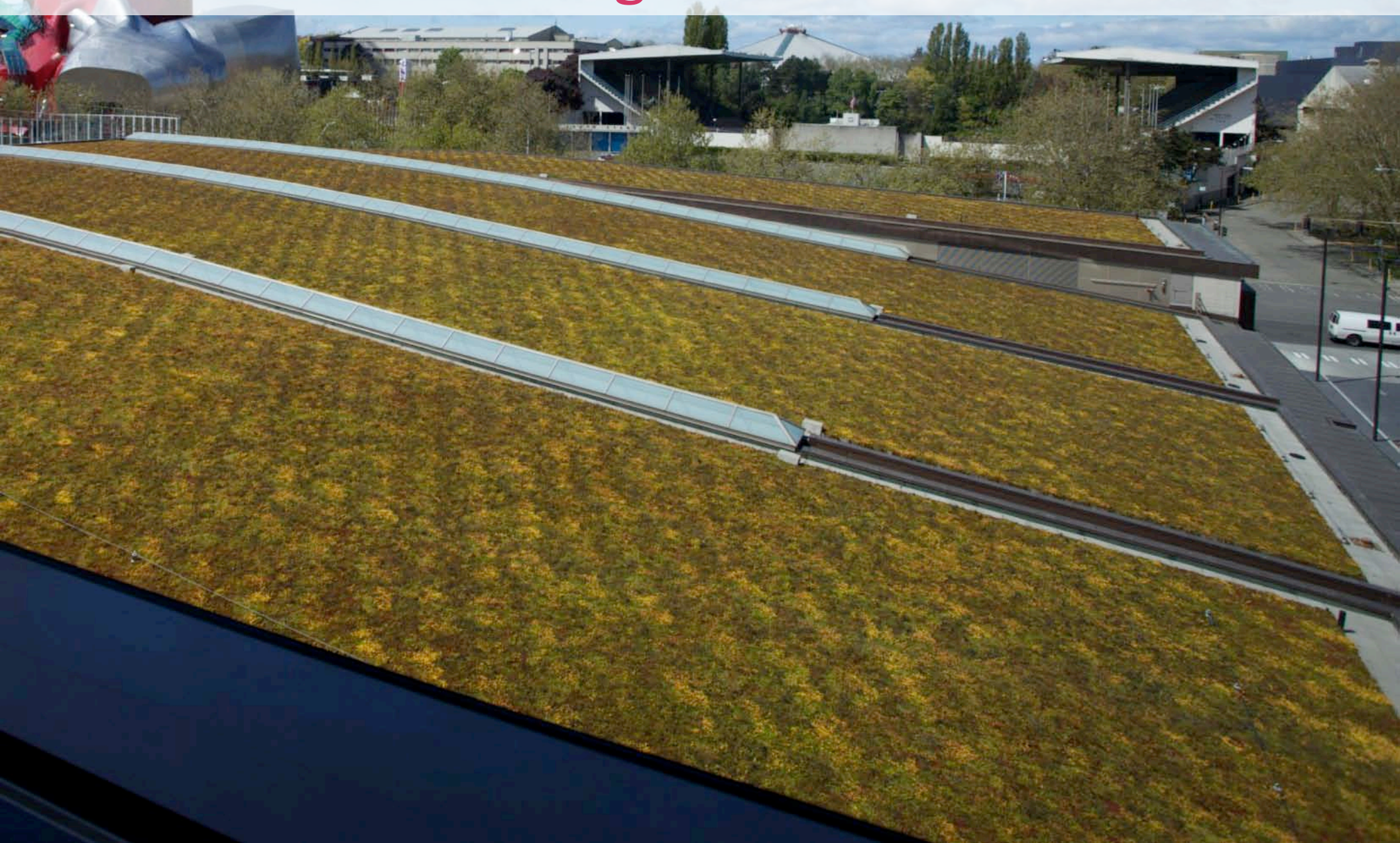


Dense, rapid coverage is essential to extensive Greenroof success to reduce:

- 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

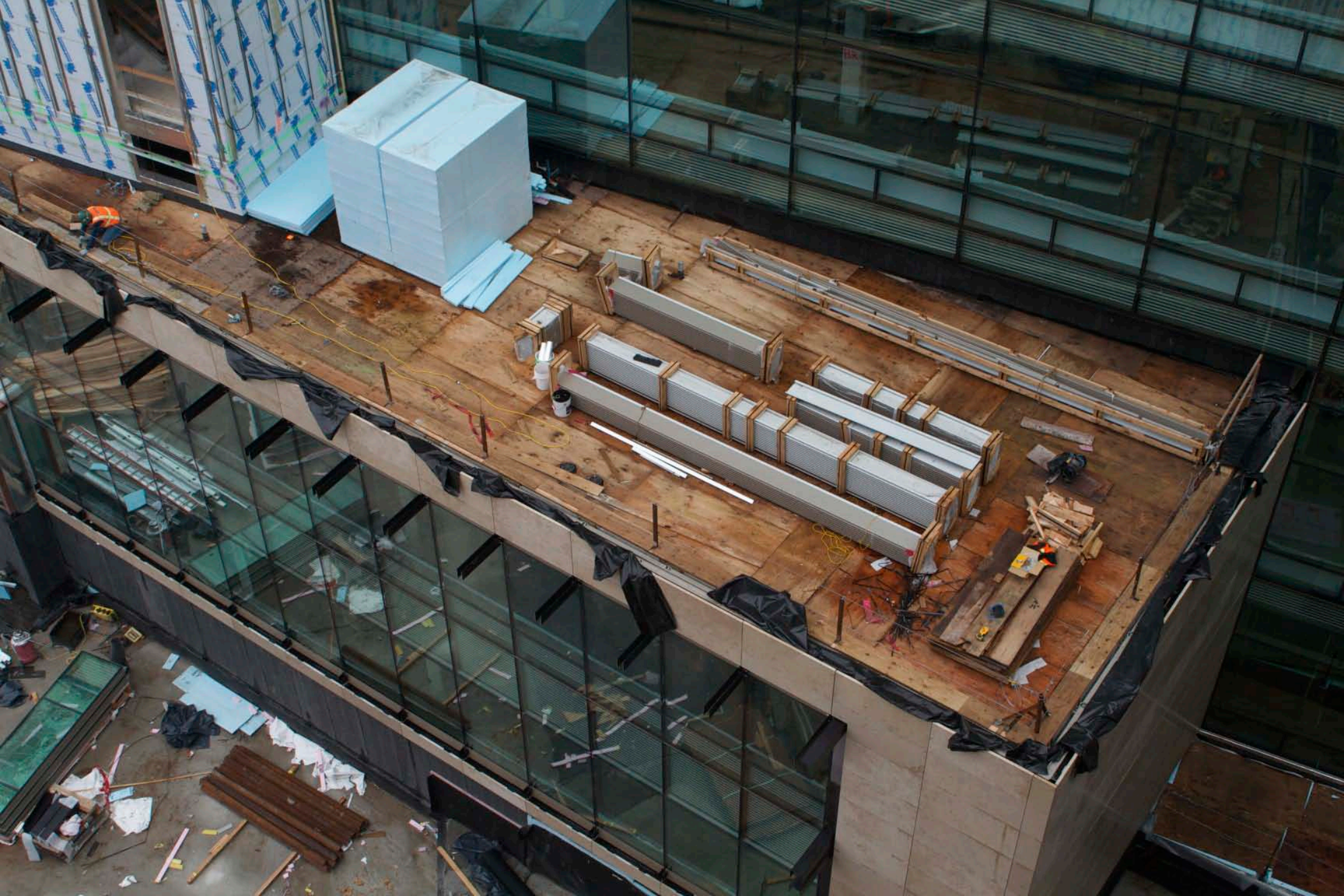
Structural Roof Deck

Extensive Greenroof





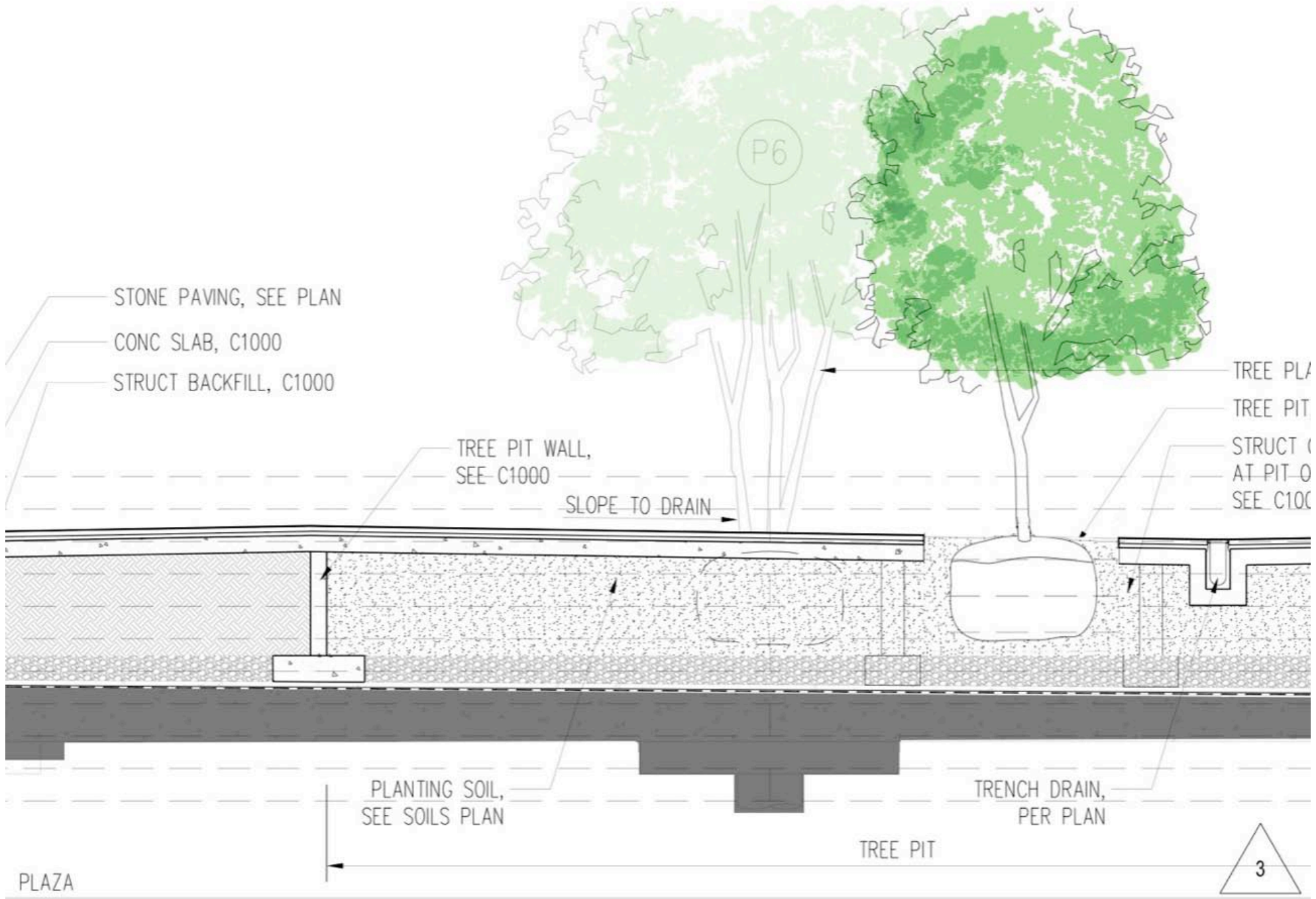








Intensive Greenroofs



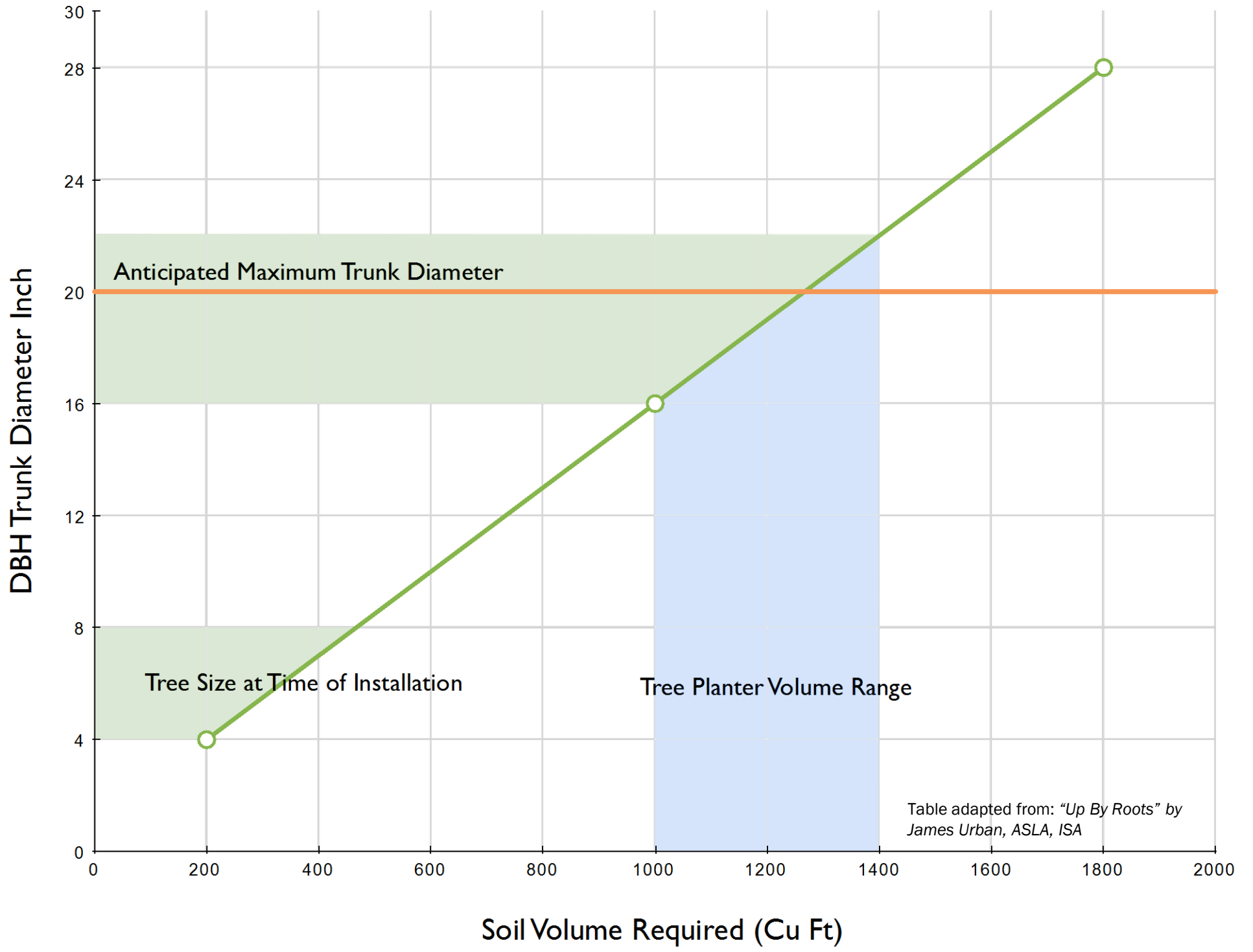
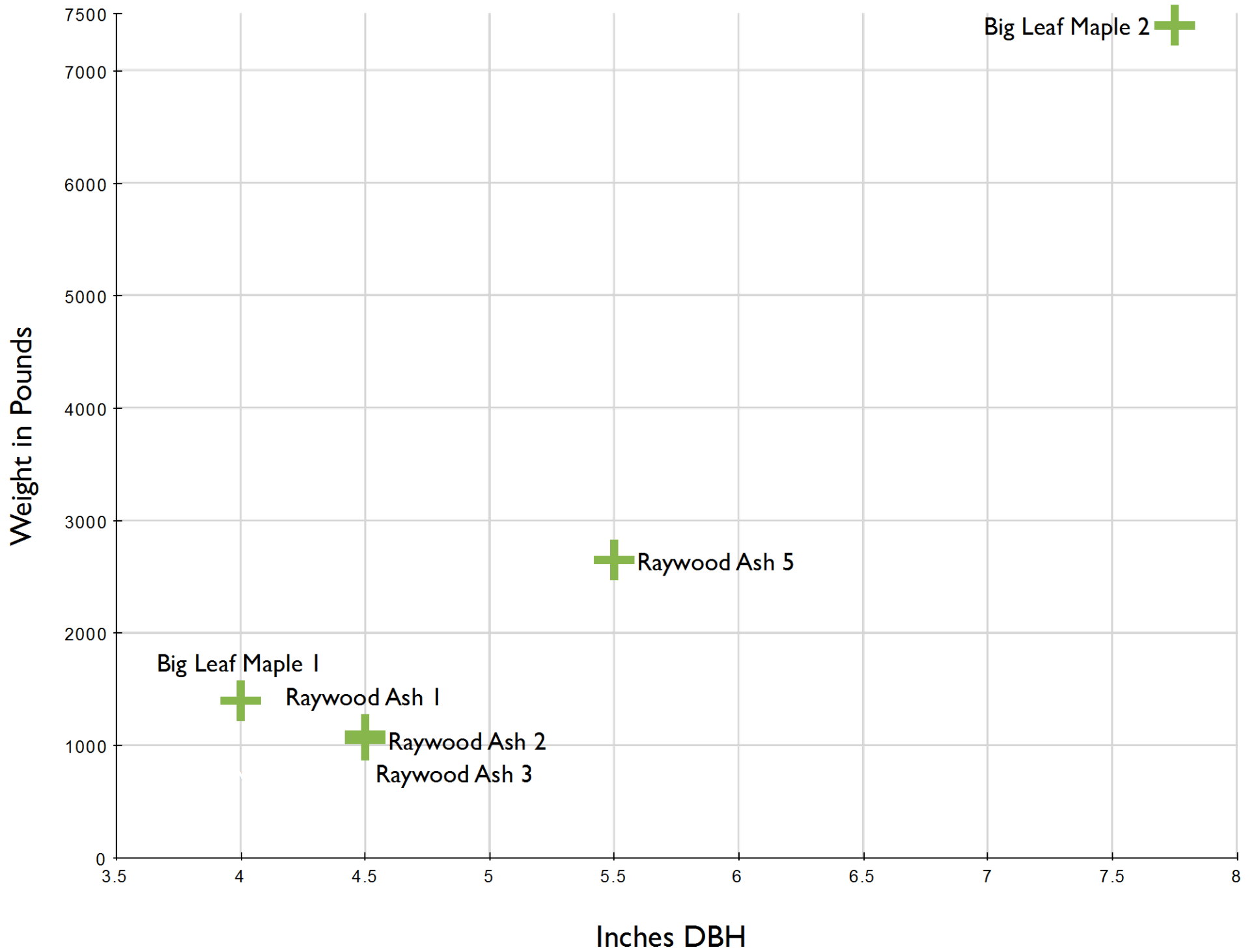
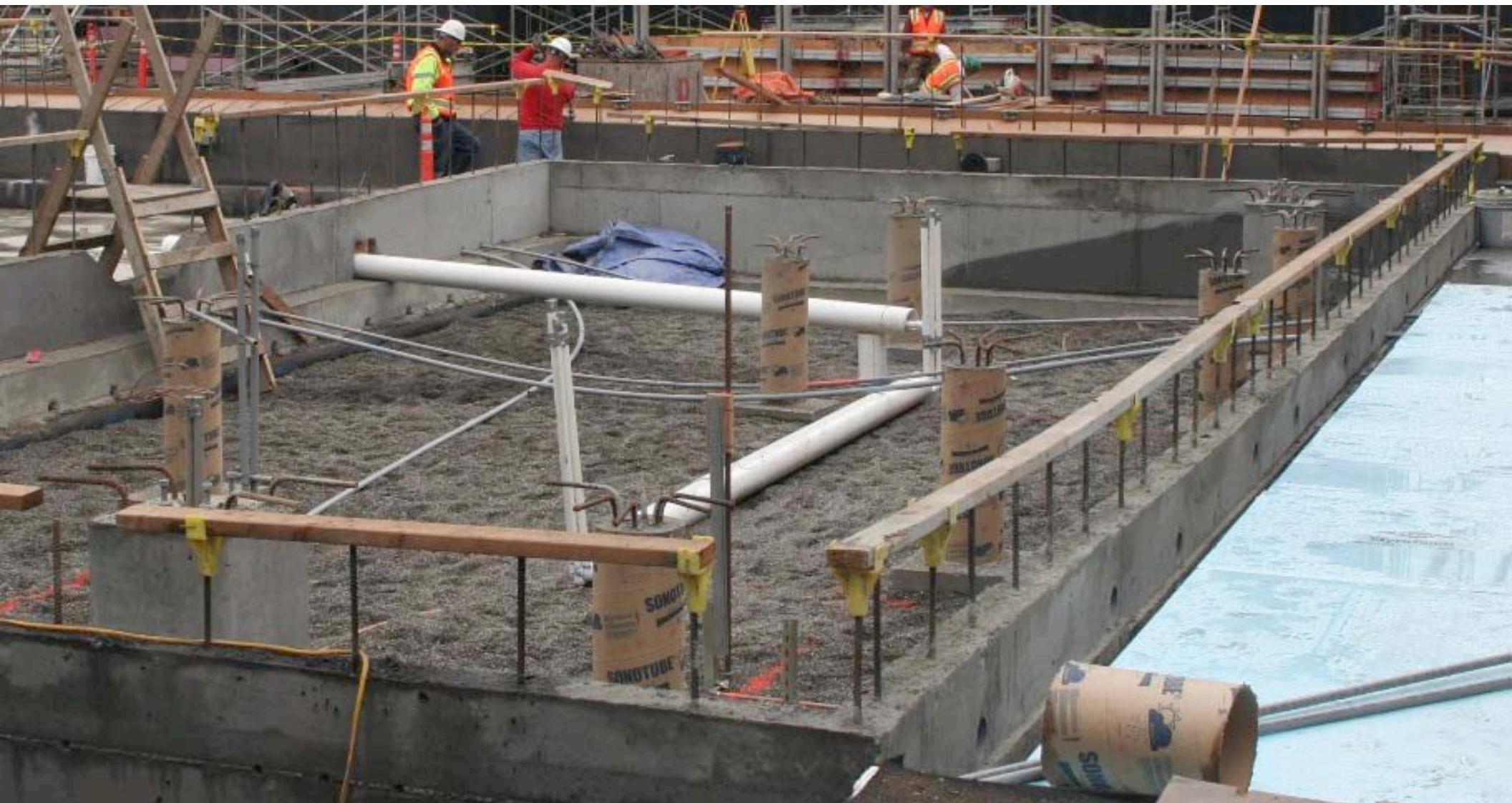


Table adapted from: "Up By Roots" by James Urban, ASLA, ISA







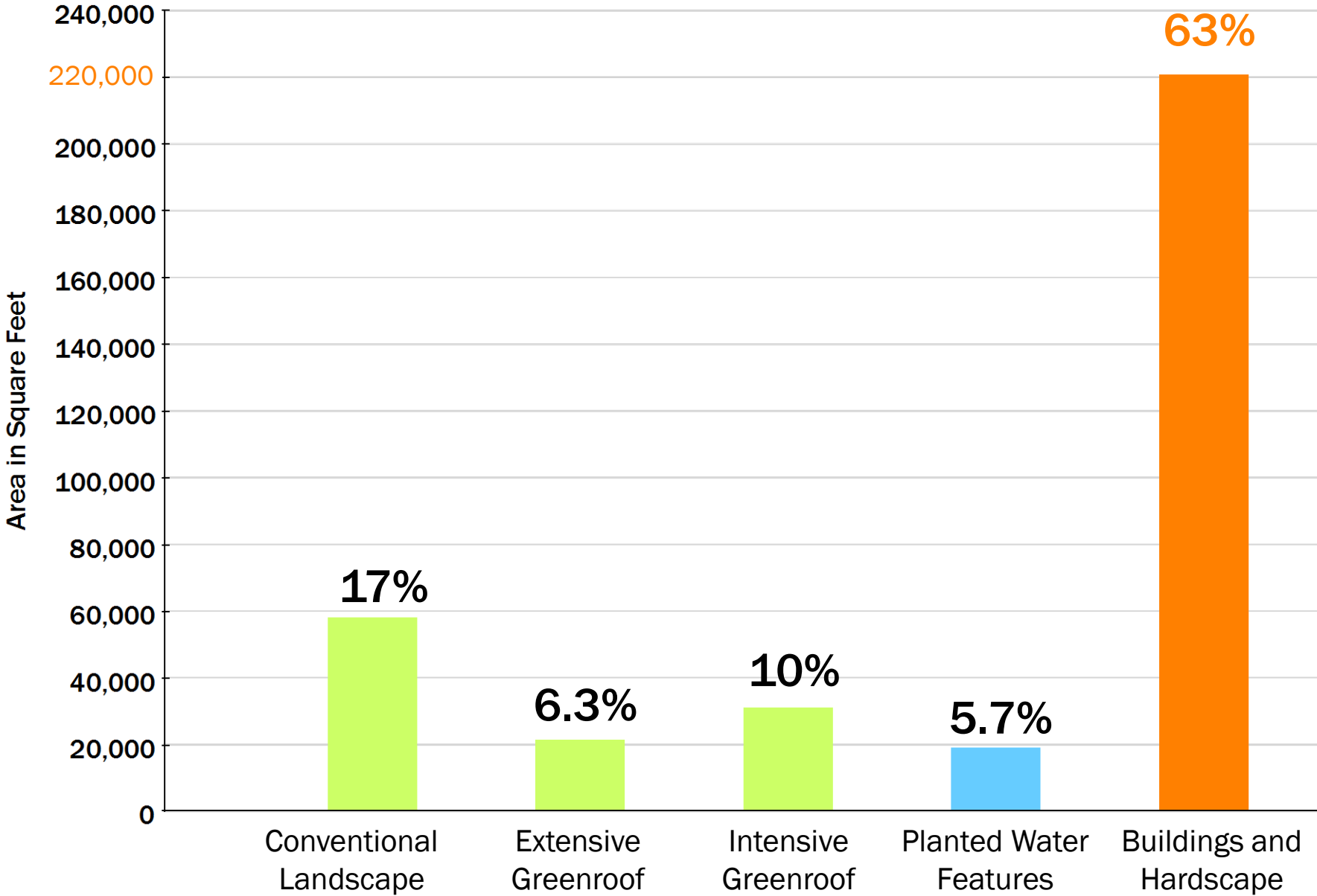


Rainwater Harvesting: Collection



**Total Collected Area:
141,000 Square Feet**

Rainwater Harvesting: Collection



Total Area: 350,000 Square Feet

Rainwater Harvesting: Roofs



Rainwater Harvesting: Paving

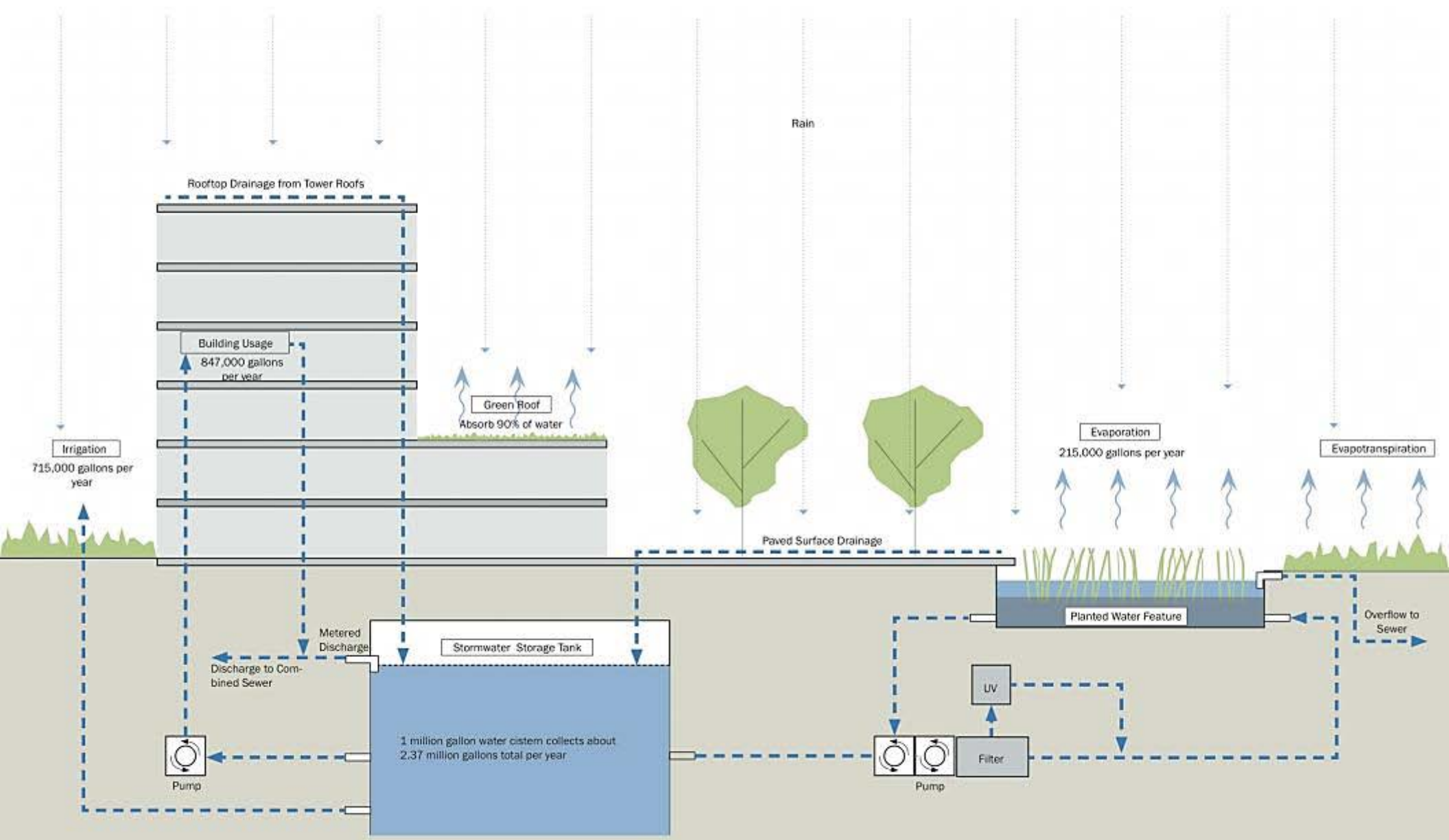


Rainwater Harvesting: Cistern

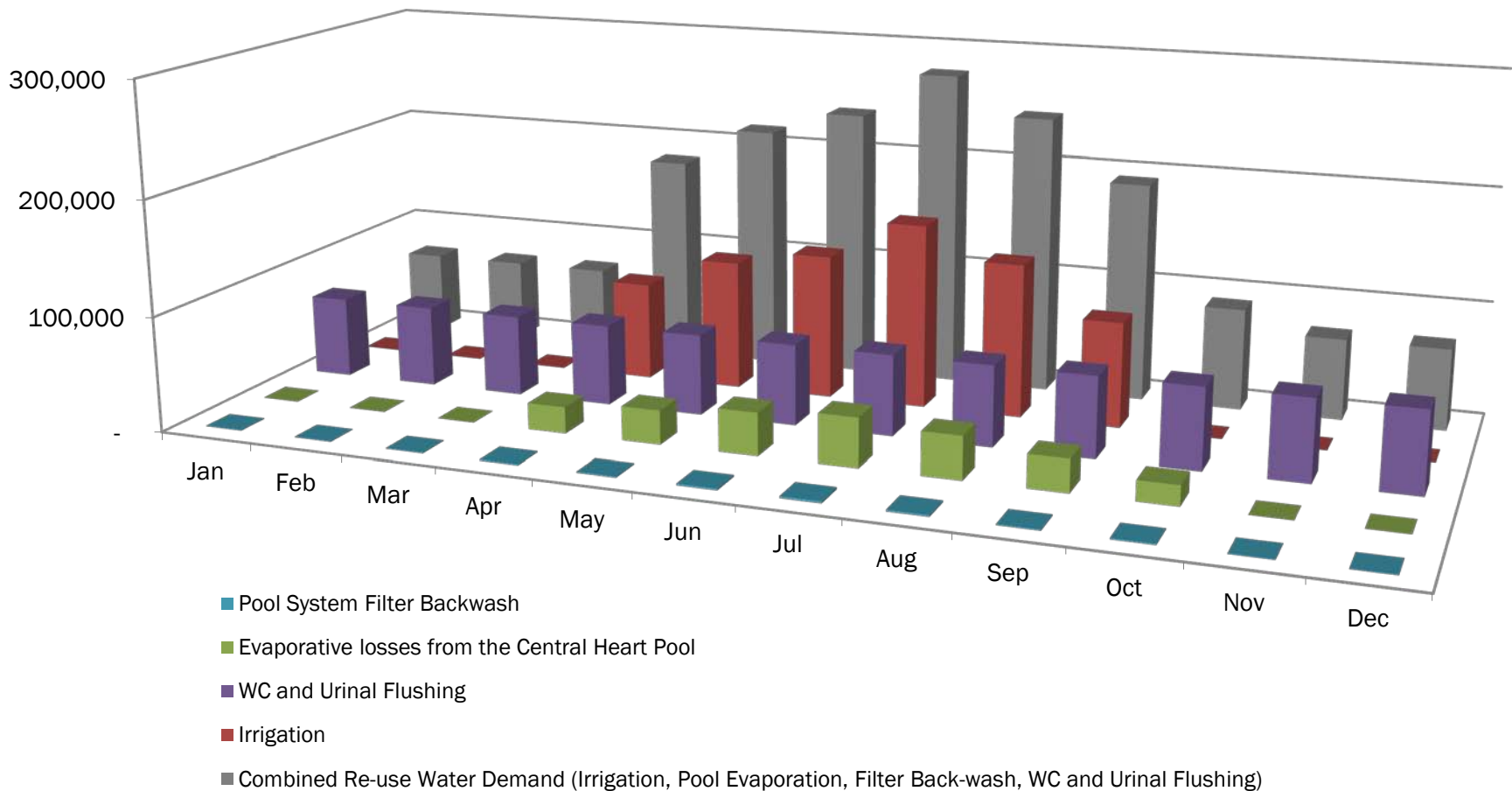


**Storage Tank Total Capacity:
979,880 Gallons**

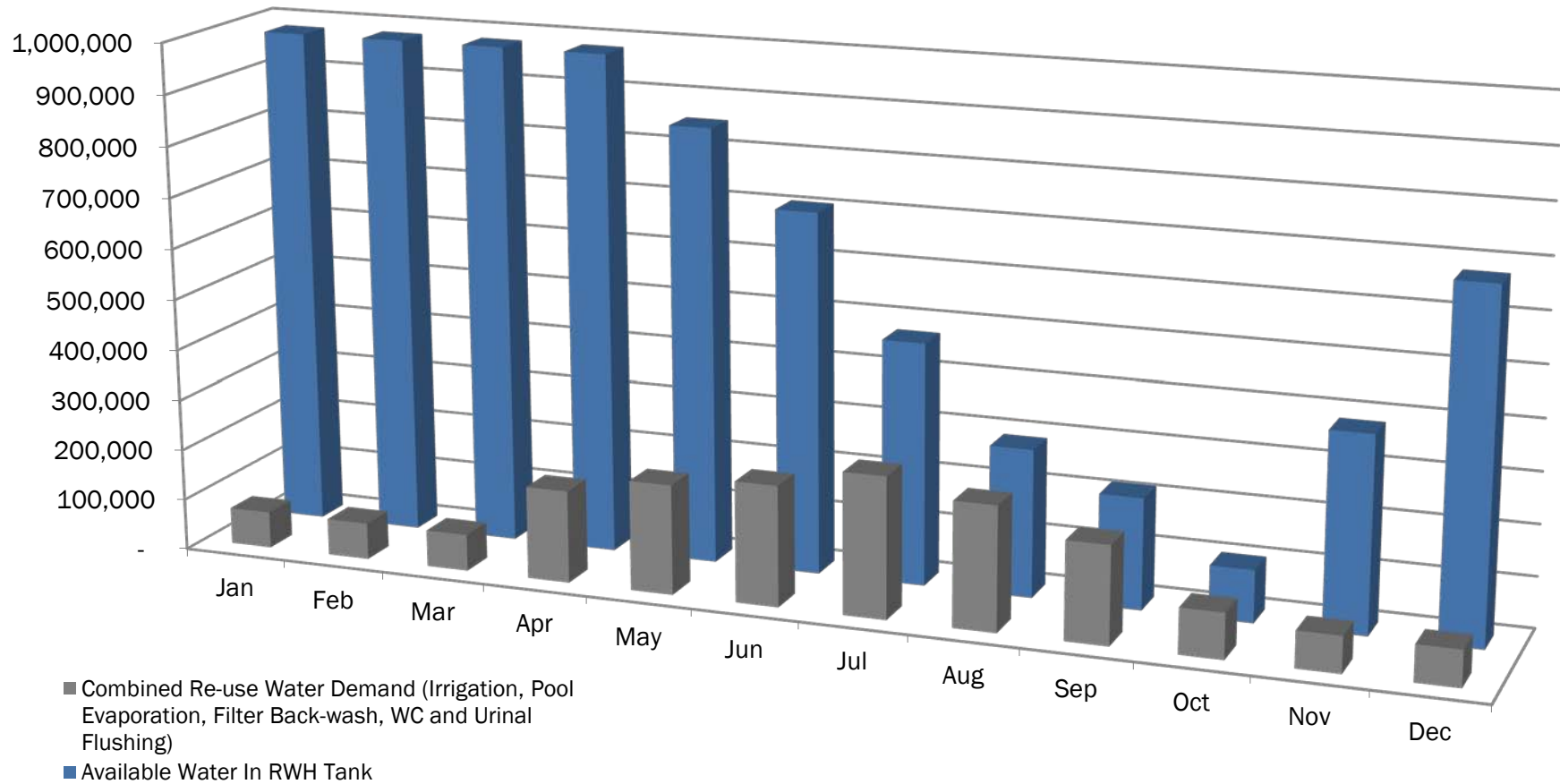
Rainwater Harvesting: Process



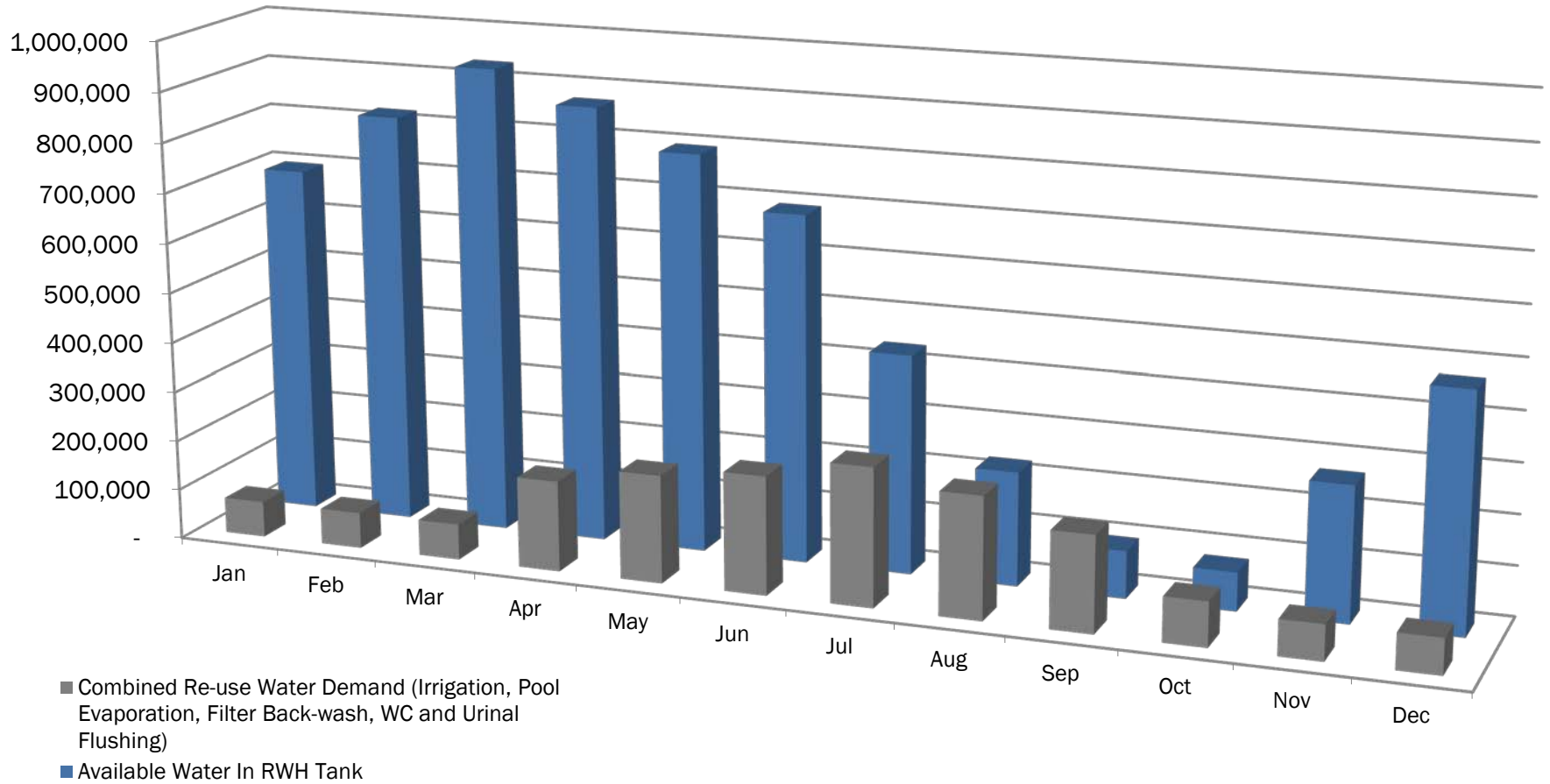
Aggregate Annual Demand: Re-Use Water Utilization By System



Average Rainfall Year: Available Water versus Combined Re-use Water Demand



Low Rainfall Year: Available Water versus Combined Re-use Water Demand



March 2008



000100

SKY-PI

March 2009



March 2010



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March 2011



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April 2011





Photo: Timothy Hursley