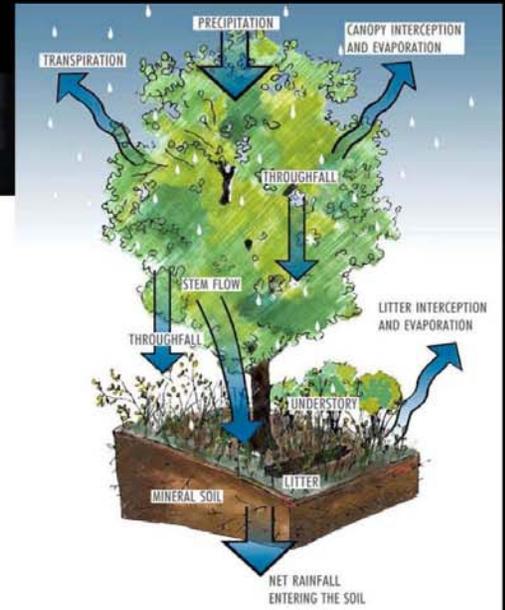


Landscape Management Plans as Required



Urban Green



Landscape Management Plans

- A. Landscape Management Approach
- B. Landscape Management Schedule
- C. Landscape Management Areas

A. Landscape Management Approach

Keep it Green!



B. Landscape Management Schedule

High Point Community Landscape Maintenance Guidelines

Maintenance Schedule

Applies to All Landscaped Areas (Non-NDS and NDS)

	Remove Trash	Remove Leaf and Branch Debris	Mow Lawn	Redefine Lawn Edge	Trim Lawn	Weed Lawn Areas Including Swales	Aerate, Overseed and Topdress Lawn	Trim Planted Areas Along Paved Edges	Weed Planted Areas	Groom Perennials and Grasses	Prune Trees and Shrubs	Irrigation System
January	1 time/week	1 time/month								See grooming schedule, Section 2.4d		
February	1 time/week	1 time/month	1 time					swales 1 time			Late dormant season	
March	1 time/week	1 time/month	2 times	1 time	1 time	1 time		beds 1 time pond 1 time			Late dormant season	
April	1 time/week	1 time/month	3 times		2 times	1 time	1/3 spring and/or fall				Post blum season	
May	1 time/week	1 time/month	3 times	1 time	2 times	1 time		1 time			Post blum season	System Start Up
June	1 time/week	1 time/month	weekly		3 times	1 time		beds, swales and pond 1 time				Manual Walk-thru.
July	1 time/week	1 time/month	weekly	1 time	3 times	1 time					Prune suckers in summer	Manual Walk-thru.
August	1 time/week	1 time/month	weekly		3 times	1 time		beds 1 time				Manual Walk-thru.
September	1 time/week	1 time/week	weekly	1 time late Sept. OR...	3 times	1 time		swales 1 time pond 1 time				Manual Walk-thru.
October	1 time/week	1 time/week	3 times	... early Oct.	2 times	1 time	1/3 spring and/or fall				Bleeding sap pruning season	
November	1 time/week	1 time/week	2 times		1 time							
December	1 time/week	1 time/month										

C. Landscape Management Areas

- Grounds Maintenance (Exhibit 'A')
- Plant Care (Exhibit 'B')
- Lawn Care (Exhibit 'C')
- Irrigation (Exhibit 'D')
- Special Landscape Types (Exhibit 'E')

Grounds Maintenance (Exhibit 'A')

CLEAN-UP:

- Weekly removal of paper, cans, bottles, sticks, trash and other debris.

FALL LEAF REMOVAL

- Remove leaves from turf areas
- Leaves may be raked into shrub beds for mulch

WATER

- Monitor the moisture levels around all plants

Plant Care (Exhibit 'B')

- Trees, Shrubs, Vines, Groundcovers
- Fertilizer
- Weed Control
- Mulch and/or Rock Layer





PLANT LIST

Tree sizes (large, medium/large, medium/small, and small) are determined per Green Factor Street Tree list

http://www.seattle.gov/dpd/stellent/groups/pan/@pan/@permits/documents/web_informational/dpd_s_009402.pdf

Shrubs under 3' height: (*indicates drought tolerant species)

Berberis thunbergii*	Japanese Barberry
Ceanothus gloriosus*	Point Reyes Ceanothus
Cotoneaster dammeri*	Bearberry Cotoneaster
Cornus stolonifera 'Kelseyi'	'Kelseyi' Redtwig Dogwood
Escallonia 'Newport Dwarf'	'Newport Dwarf' Escallonia
Euonymus fortunei	Euonymus
Lavendula angustifolia*	English Lavender
Lonicera pileata	Privet Honeysuckle
Mahonia nervosa*	Cascade Oregon Grape
Nandina domestica 'Moon Bay'	'Moon Bay' Heavenly-bamboo
Pieris japonica 'Cavatine'	'Cavatine' Andromeda
Rhododendron 'Hino-crimson'	'Hino-crimson' Azalea
Sarcococca hookerana humilis*	Sweet box
Vaccinium ovatum	Evergreen Huckleberry

Shrubs over 3' height: (*indicates drought tolerant species)

Abelia x grandiflora 'Edward Goucher'	'Edward Goucher' Glossy Abelia
Arbutus unedo 'Compacta'	'Compacta' Strawberry Tree
Camellia sasanqua 'Yuletide'	'Yuletide' Camellia
Choisya ternata*	Mexican Mock Orange
Cistus x hybridus*	White Rockrose
Hydrangea serrata	Lacecap hydrangea
Ilex crenata 'Convexa'	'Convexa' Japanese Holly
Myrica californica*	Pacific Wax Myrtle
Nandina domestica 'Gulf Stream'	'Gulf Stream' Heavenly-bamboo
Ribes sanguineum*	Red Flowering Currant
Taxus baccata 'Fastigiata'	Irish Yew
Viburnum davidii*	David's Viburnum

Ground Covers: (*indicates drought tolerant species)

Arctostaphylos uva-ursi*	Kinnikinnick
Fragaria chiloensis*	Beach Strawberry
Liriope spicata	Creeping Lilyturf
Polystichum munitum*	Sword fern
Vinca minor 'Gertrude Jekyll'	White periwinkle
Rubus calcynoides 'Emerald Carpet'	'Emerald Carpet' Bramble

Plant Care (Exhibit 'B')

TREES

- Prune trees only to remove dead, diseased, broken, dangerous, or crossing branches, or to maintain clearances.

SHRUBS

- Except for hedges, allow the shrubs to grow unpruned to their natural sizes!
- Replace dead or missing shrubs

VINES

- Maintain vines as per shrubs – keep under control where critical - buildings, etc.

GROUNDCOVER

- Keep groundcover trimmed back from walks.

Plant Care: Weed Control

- Remove weeds in planted areas, sidewalks, curbs, gutters, or pavement weekly as the weeds emerge.
- Regular maintenance of the mulch will help minimize weeds in shrub and groundcover areas.

Plant Care - Mulching

WHEN Once every year :

- Spring to prevent weeds.
- Fall to prevent erosion and winter weeds.

WHERE Whole beds, paths, 3 ft. or larger ring around trees & shrubs in lawns.

HOW Remove weeds & grass before mulching.
Keep mulch away from plant stems.



Mulching

WHAT

Woody mulches (wood chips, bark) for woody plants (trees & shrubs).

Non woody mulches (compost, leaves grass clippings, composted manure or biosolids) for non-woody plants (annuals, perennials, berries, roses).

HOW MUCH

Compost, leaves, sawdust, fine bark, grass clippings: 1-2" deep.
Wood chips or coarse bark: 2-4" deep.

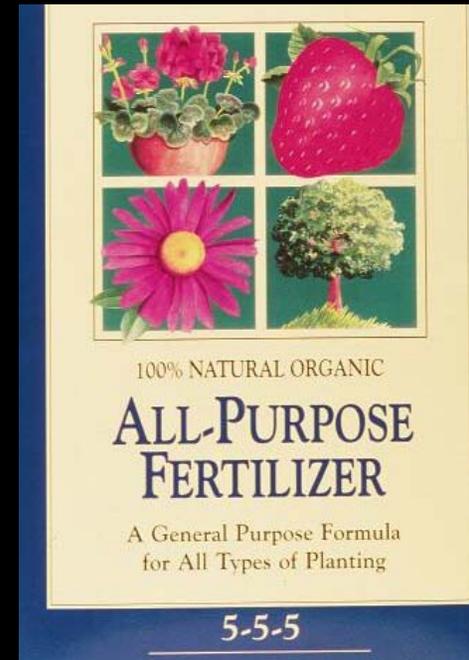


Plant Care – Fertilizing

“natural organic” or “slow-release” fertilizers

FERTILIZE MODERATELY

- Too much fertilizer produces excess growth.
- Sets plants up for pest and drought damage.
- Overuse damages essential soil life.



WHERE Most trees and shrubs get all the nutrients they need from regular mulching. Lawns and gardens often need additional nutrients - fertilizer.

Lawn Care (Exhibit 'C')

- Organic and low chemical options for entire landscapes
- Use grasscycling, aeration, overseeding and topdressing to improve turf/soil health
- Organic and part organic fertilizers



Seattle Public Utilities



Irrigation (Exhibit 'D')

- Spring Start up: Open the main valve(s), inspect and adjust all sprinkler heads, re-program controller
- Regular Inspections: check valves, breaks, heads, coverage, drip system checks
- Winterization: Blow out system to prevent freeze damage



Special Landscape Types (Exhibit 'E')

- Street Trees and other R.O.W. plantings
- Landscapes on Structure
- Vertical Green
- Green Roofs
- Water Features
- Rain Gardens
- Permeable Paving



Street Trees and R.O.W. Plantings

Sorted by Greenfactor Group

Group	Botanical Name	Common	Height	Spread	Shape	Volume	Strip Width	Wires	Fall Color	Comments
Large										
	Acer freemanii 'Autumn Blaze'	Autumn Blaze M	50	40		37700	6	<input type="checkbox"/>	Orange	
	Acer platanoides 'Emerald Que	Emerald Queen	50	40		50300	6	<input type="checkbox"/>	Yellow	
	Acer saccharum 'Bonfire'	Bonfire Sugar Ma	50	40	Oval	50300	6	<input type="checkbox"/>	Bright orange red	Fastest growing sugar maple.
	Acer saccharum 'Commemorat	Commemoration	50	35		38500	6	<input type="checkbox"/>	Orange to orange-red	Resistant to leaf tatter.
	Acer saccharum 'Legacy'	Legacy Sugar Ma	50	35		38500	5	<input type="checkbox"/>	Yellow or orange/red	Limited use - where sugar maple is desired in standard planting strips
	Cercidiphyllum japonicum	Katsura Tree	40	40	Oval	37700	6	<input type="checkbox"/>	Yellow to orange	Needs lots of water when young
	Fagus sylvatica	Green Beech	50	40	Oval	50300	6	<input type="checkbox"/>	Bronze	Silvery-grey bark.
	Fraxinus pennsylvanica 'Urbani	Urbanite Ash	50	40	Pyramidal	50300	6	<input type="checkbox"/>	Deep bronze	Tolerant of city conditions
	Liriodendron tulipifera	Tulip Tree	60	30	Oval	35400	8	<input type="checkbox"/>	Yellow	Fast-growing tree.
	Nothofagus antarctica	Antarctic Beech	50	35		38500	6	<input type="checkbox"/>	None	Rugged twisted branching and petite foliage.
	Platanus x acerifolia 'Bloodgoo	Bloodgood Londo	50	40	Pyramidal	63700	8	<input type="checkbox"/>	Red	More anthracnose resistant - needs space
	Platanus x acerifolia 'Yarwood'	Yarwood London	50	40		50300	8	<input type="checkbox"/>	Yellow-brown	High resistance to powdery mildew.
	Quercus bicolor	Swamp White Oa	45	45		55700	8	<input type="checkbox"/>	Varies.	Shaggy peeling bark
	Quercus coccinea	Scarlet Oak	50	40	Upright	50300	6	<input type="checkbox"/>	Red	Best oak for fall color

Street Trees and R.O.W. Plantings

- Require summer water to establish
- Additional stress of vehicular, pedestrian (and dog) traffic



Sound Transit – Structured Soils at the Pine Street Stub Tunnel



Landscapes on Structure



Landscapes on Structure: Green Roofs - Intensive

Intensive Green Roofs (Rooftop Gardens)

(Extends flexibility of Green Roof for other uses, aesthetics)

- Minimum (6") of growing medium:
 - Grass – 6" -12"
 - Shrubs – 12"-16"
 - Small Trees – 16" – 24"
 - Large Trees – 24" – 36"
- Irrigation necessary – drip works with winds
- Excellent drainage necessary
- Maintenance required, esp. at start.
- Protect waterproofing!

Garden of Remembrance, Benaroya Hall



Vertical Green

GREENSCREEN TRELLISING SYSTEM



1.



2.

Greenscreen is a three-dimensional, welded wire trellising system.

Photos by
GREENSCREEN.com

1. Rockville, MD,
2. Tempe, AZ,
3. Orange Co, CA



3.

GREEN WALLS and GREEN TOWERS



SHARP & DIAMOND

Landscape Architecture & Planning

STAINLESS STEEL CABLES and WEBNETS



Jakob Inox: cable and webnet systems,
www.jakobstainlesssteel.com



Carl Stahl
Decorcable: cables
and webnets,
www.decorcable.com



LIVING WALL in PARIS by Patrick Blanc, Botanist



Photos by Nick Page

- Le Musée du Quai Branly features plant diversity and good coverage.
- The living wall is external to the structure of the building. PVC membrane behind.
- A felt blanket is attached to a steel face, with constant irrigation and nutrient supply.

Vertical Green



Vertical Green

Vines need special attention as to their cultural requirements and growth habits

Capitol Hill Library
Cutler Architects
w Johnston Architects,
Nakano Associates



Vertical Green



RECOMMENDED VINE SPECIES	Advantages	Disadvantages
Actinidia kolomikta Kiwi Overall Projected Success Rating: 2 	<ul style="list-style-type: none"> Growth rate: 10'/yr to 40' 80-90% opacity Deciduous vine Very frost hardy. Fragrant flowers. Foliage: Medium texture, multi-colored in green, white, pink, rose or red variegation. Female plants have an excellent allergen rating, males have an acceptable allergen rating. Exposure: sun to light shade. 	<ul style="list-style-type: none"> Roots are sensitive to fertilizer burn; do not over fertilize. Be sure that soil does not become dry in hot weather. 1 1/2"-2" egg-shaped fruits if pollination occurs. Excessive fertilizer and shade reduce leaf color Males have better leaf color
Akebia pentaphylla Evergreen Akebia Overall Projected Success Rating: 2 	<ul style="list-style-type: none"> Height: 15-30' Deciduous vine; evergreen in mild climates Seasonal color; burgundy blooms in early spring Notably resistant to honey fungus. Plants are not normally pruned. Frost hardy to 5°F 	<ul style="list-style-type: none"> Moderately high allergen rating. Seed pods Invasive, especially on the east coast.
Ampelopsis megalophylla Pepper Vine Overall Projected Success Rating: 1 	<ul style="list-style-type: none"> Growth rate: to 15' ea. yr. 60% opacity Very frost hardy. Seasonal color; small greenish flowers in late summer turn to dark purple berries then black in fall. Interesting foliage; bluish green young leaves. Excellent allergen rating. 	<ul style="list-style-type: none"> Partial die back in winter
Aristolochia acrophylla Dutchman's Pipe Overall Projected Success Rating: 3 	<ul style="list-style-type: none"> Growth rate: 4' to 6'/yr. Tolerates city pollution. Excellent allergen rating. Kidney shaped, dark green leaves hang in a shingle like pattern that forms a dense cloak. Flowers in early summer. Very frost hardy 	<ul style="list-style-type: none"> Will not stand strong winds. 2" long seed pods Prefers shade
Clematis armandii Evergreen Clematis Overall Projected Success Rating: 2 	<ul style="list-style-type: none"> Growth rate: 10'/yr to 30' 70-80% opacity Evergreen Seasonal color; white, fragrant star-like flowers in early spring Excellent allergen rating. 	<ul style="list-style-type: none"> Frost hardy to 20°F Requires cool shade over roots. blooms on old wood, so prune after flowering
Clematis Montana Anemone Clematis Overall Projected Success Rating: 3 	<ul style="list-style-type: none"> Growth rate: 10'/yr to 30' 70-80% opacity Evergreen Very frost hardy. Seasonal interest; flowers late spring to early summer Excellent allergen rating. 	<ul style="list-style-type: none"> Cool shade over roots

Holboellia angustifolia (formally H. fargesii) Hosboellia Overall Projected Success Rating: 1 	<ul style="list-style-type: none"> Growth rate: 10'/yr to 30' 60-75% opacity Evergreen Frost hardy to 0°F. Scented; small dusty purple bell-shaped flowers. 	<ul style="list-style-type: none"> Life span of 3 to 10 yrs. Limited info. on success rate in this area.
Humulus lupulus 'Aureus' Golden Hop Overall Projected Success Rating: 2 	<ul style="list-style-type: none"> Growth rate: 12-20'/yr 70-80% opacity Very frost hardy. Drought tolerant. Tolerant of pests. Seasonal color; fragrant flowers mid-summer to fall. Female plants have an excellent allergen rating. Interesting foliage; bright golden yellow most of the season, turning greener late in season. 	<ul style="list-style-type: none"> Dies back completely each year.
Parthenocissus tricuspidata Boston Ivy Overall Projected Success Rating: 1 	<ul style="list-style-type: none"> Growth rate: 10'/yr to 60' 60-70% opacity Very frost hardy Blue-black berries in fall. Withstands adverse conditions Moderate allergen rating. 	<ul style="list-style-type: none"> Uses tendrils with adhesive tips rather than twining.
Passiflora caerulea Passion Flower Overall Projected Success Rating: 2 	<ul style="list-style-type: none"> Growth rate: 10-15'/yr to 30' 50% opacity Seasonal color; white w/purple flowers bloom July to September. Semi-evergreen Roots hardy to 10°F Excellent allergen rating. 	<ul style="list-style-type: none"> Egg sized fruits may drop, but doesn't fruit well in harsh conditions. Partial to full die back in winter
Vitis coignetiae Crimson glory vine. 	<ul style="list-style-type: none"> Growth rate: up to 40'/yr to 60', spreading to 30' Full sun, partial shade Hardy Large rounded leaves can be almost 1' across with a dimpled texture Seasonal interest; leaves turn fiery red, gold and orange in the fall. Light green blooms July-August Medium moisture requirements 	<ul style="list-style-type: none"> Plant is attractive to Japanese beetle Small purplish black berries/grapes
Lonicera sempervirens Trumpet Honeysuckle 	<ul style="list-style-type: none"> Growth rate: 10-15'/yr. to 20' Semi-evergreen, twining vine Seasonal interest; showy 1 1/2"-2" orange-yellow to scarlet trumpet-shaped flowers followed by scarlet fruit. 	
Campsis radicans Trumpet Vine 	<ul style="list-style-type: none"> Growth rate: 10-15'/yr. to 40' or more Semi-evergreen, twining vine 	<ul style="list-style-type: none"> has the potential to be invasive.

	<ul style="list-style-type: none"> Dark green leaves provide a dense cloak of foliage Seasonal interest; showy 3" long tubes with scarlet lobes flaring to 2" orange-yellow to scarlet trumpet-shaped flowers from late spring to early fall, followed by scarlet fruit. Deep freeze will kill to ground but new stems grow quickly Prefers rich moist soil but is adaptable to less than optimal situations. Vines sucker freely from the roots. 	
Vines Species for Planter Walls Bignonia capreolata Cross Vine 	<ul style="list-style-type: none"> Growth rate: 15-20'/yr. to 30'± Hardy to -10°F Evergreen to semi-evergreen, clinging vine Sun to light shade. Seasonal interest; Trumpet shaped flowers are reddish/purplish on the outside and yellow on the inside followed by seed capsules filled with winged seeds. Leaves develop a reddish purple cast in the winter. N. American native 	
Hydrangea seemannii Evergreen Climbing Hydrangea 	<ul style="list-style-type: none"> Growth rate: 10-15'/yr. to 20' Hardy to 10°F. Hardy in the Northwest. Evergreen, clinging vine Partial to full shade. Seasonal interest; glossy, rounded foliage. Flowers in flattened, white corymbs will be produced on a mature 	

	plant mid-summer.	
-------------------------------------------------------------------------------------	-------------------	--

Overall Projected Success Rating:
 1 – High Potential for Success
 2 – Moderate Potential for Success
 3 – Lesser Potential for Success, but embody characteristics worth the risks.



Green Roofs

- exposed to extremes of wind, sun, and temperature, and may be harder to reach and maintain.

Justice Center



Ballard Library



KAREN KIEST | LANDSCAPE ARCHITECTS



KK|LA

Ballard Branch, Seattle Public Libraries (completed Spring 2005)

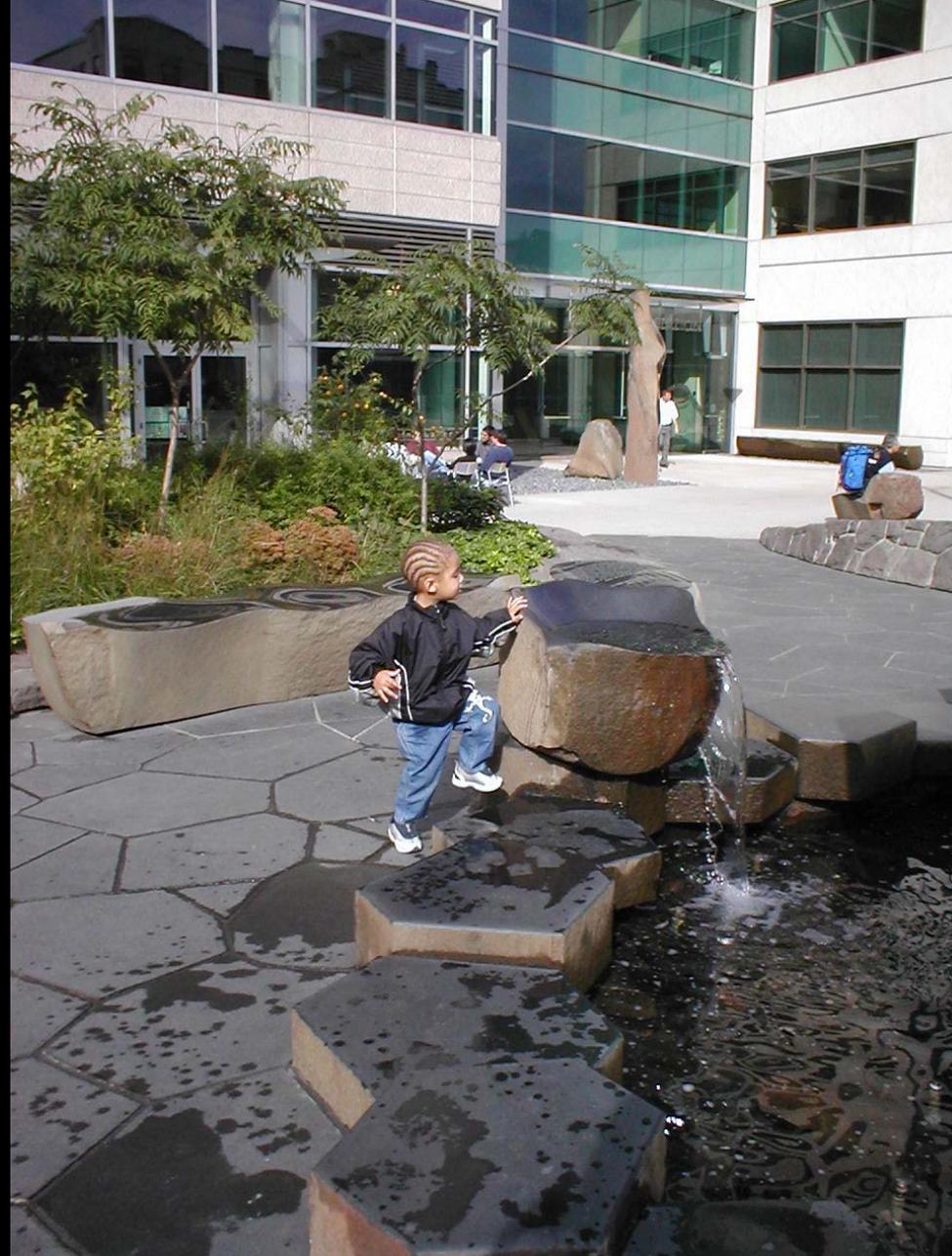
- Date roof planted: Spring, 2005.
- Size, square feet: 18,000 s.f. of planted area.
- Slope: The roof is faceted and varies in pitch from 2.5:12 at the north end, to 1/2:12 at the low point, back up to 1.5:12 at the south end.
- Irrigation: There is drip irrigation at the north end only, for use as the plants establish themselves. Drought tolerant, hardy plant species were chosen for the roof to minimize maintenance and the need for irrigation.
- Growing medium depth: 5"
- Growing medium characteristics: A lightweight roof garden soil mixture was used.
- Generally, types of plants: Sedum's and Fescue's.
- For more on this project, see http://www.spl.org/pdfs/branch/Ballard_environmental_features.pdf%20
- General information, including location (a great site to visit!) at http://www.spl.org/default.asp?pageID=branch_open_pageindex&branchID=3

Plant list:

<i>Achillea tomentosa</i>	Woolly yarrow
<i>Armeria maritima</i>	Sea pink, sea thrift
<i>Carex inops (pensylvanica)</i>	Long-stoloned sedge
<i>Eriophyllum lanatum</i>	Oregon sunshine
<i>Festuca rubra</i>	Red creeping fescue
<i>Festuca idahoensis</i>	Idaho fescue
<i>Phlox subulata</i>	Creeping phlox
<i>Saxifrage cespitosa</i>	Tufted saxifrage
<i>Sedum oreganum</i>	Oregon stonecrop
<i>Sedum album</i>	White stonecrop
<i>Sedum spurium</i>	Two-row stonecrop
<i>Sisyrinchium idahoensis</i>	Blue-eyed grass
<i>Thymus serpyllum</i>	Thyme
<i>Triteleia hyacintha</i>	Fool's onion

Water Features

- Mechanical upkeep.
- Waterproofing concerns similar to landscapes over structure.
- Winterization requirements.



Rain Gardens

need to be able to handle wet and dry conditions.

Bioretention

Bioswales

Stormwater Planter



Seattle Sea Streets

Bioretention Facility Design

Primary Components:

-Vegetation

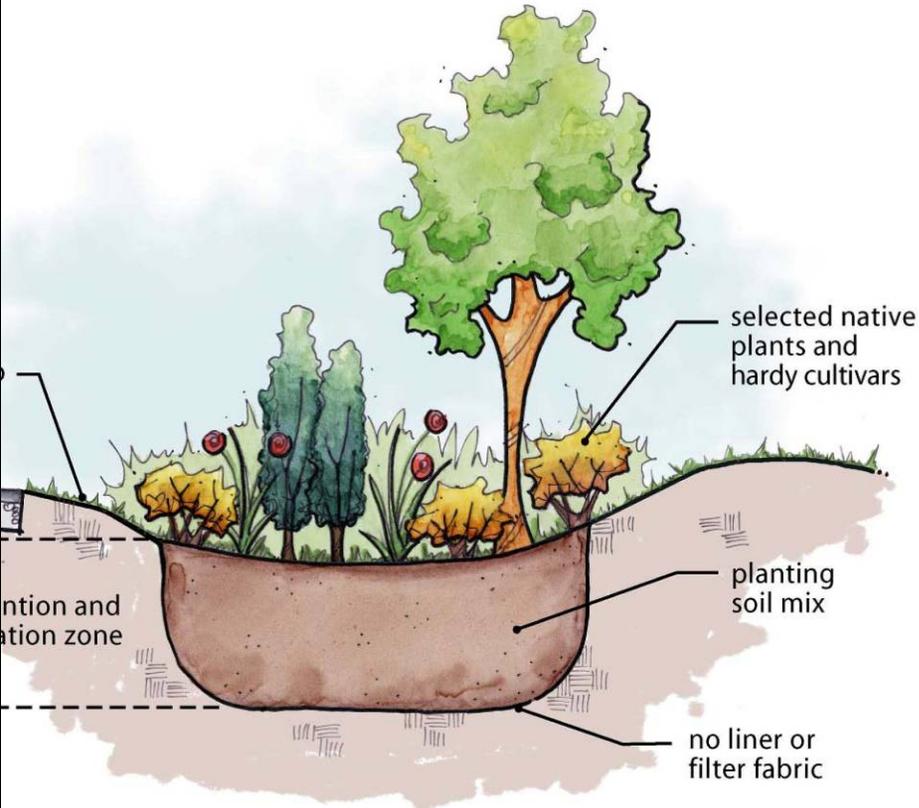
-Mulch/compost

-Surface Storage and Infiltration area

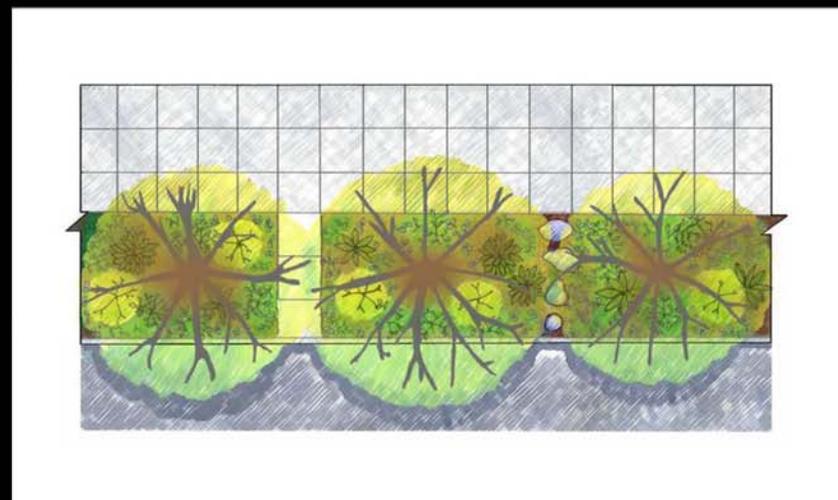
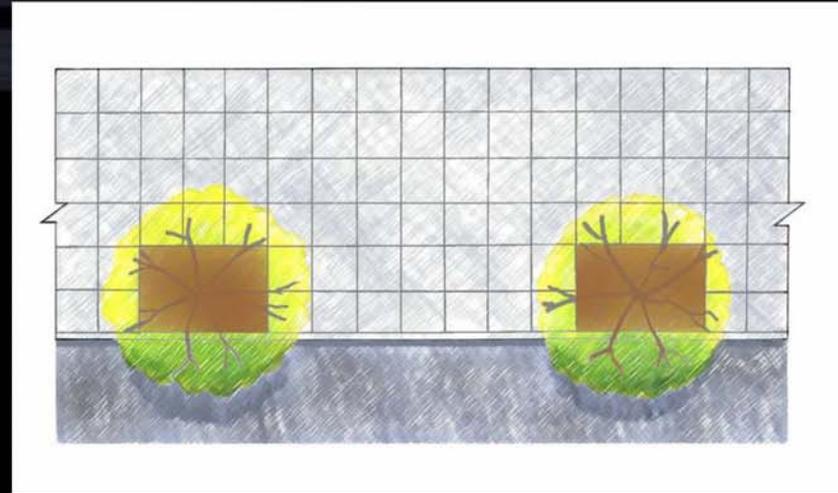
-Soil Storage

-Subsurface pipe (optional)

-Native Soil and design infiltration rates



Self Mitigating Sidewalks



Bioretention

SEA Streets



Bioswales

South Lake Union Discovery Center



Bioswales

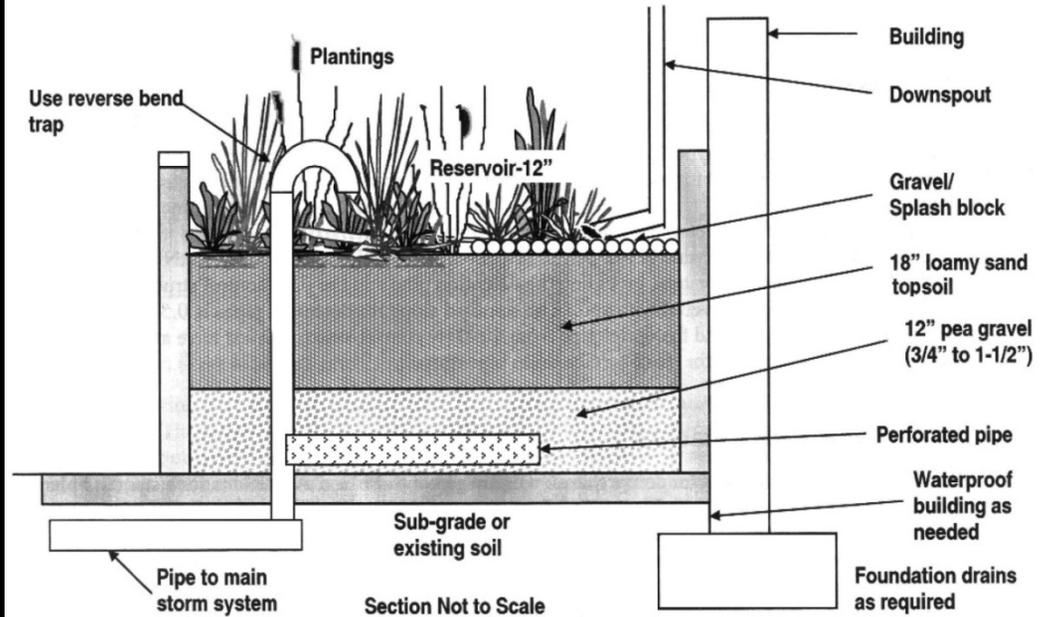
Stormwater Planters

Denny Park Apartments



2.3 Stormwater Planter

Figure 2. Stormwater Planter



Permeable Paving



- Carefully maintain paving surfaces to prevent clogging with debris over time.

Pavement Culture



South Lake Union Discovery Center



DRAFT LANDSCAPE MANAGEMENT PLAN

A. Landscape Management Approach

B. Landscape Management Schedule

C. Landscape Management Areas

Grounds Maintenance (Exhibit 'A')

Plant Care (Exhibit 'B')

- Trees
- Shrubs
- Vines
- Groundcovers
- Fertilizer
- Weed Control
- Mulch and/or Rock Layer

Lawn Care (Exhibit 'C')

Irrigation (Exhibit 'D')

Special Landscape Types (Exhibit 'E')

- Street Trees and R.O.W. Improvements
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Keep it Green!



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