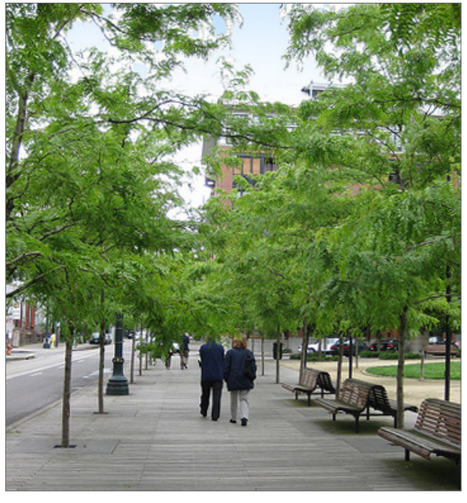
◀ Pedestrian streetscape with adjacent plaza.

◀ Examples of raised streetscape planter strips.



◀ Examples of different pedestrian streetscape treatments.

- Visual screening of unsightly views and noise buffering with shrubs should be sought.
- Screening and / or fencing with shrubs can add to safe circulation around or away from portals.
- The portal may present opportunities to integrate 'green street' applications.

▶STREETSCAPES

The streetscape is the composition of elements in and adjacent to a street that defines the urban form and includes elements such as building forms and styles, landscape materials, street furniture, paving etc. The streetscape along the Regional Connector and the adjacent streetscapes are the unifying element of the project that integrates all other urban design components.

LAYOUT

Streetscapes may include adjacent plazas and pocket parks and include the following recommended zones:

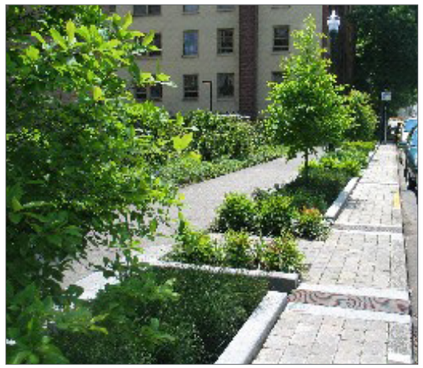
- An 'access zone' immediately adjacent to the curb;
- A 'parkway zone';
- A continuous 'walkway zone'; and
- Depending on adjacent uses, may include a 'transitional or amenity zone'.

The access zone is a minimum 18" – 24" from the face of the curb including a 6" curb and a masonry, often granite or brick band. The parkway zone is adjacent to the access zone and is, ideally, a continuous 'green street' stormwater treatment system designed to collect, retain or treat stormwater runoff. The parkway zone may however integrate and include site furnishings. The transition or amenity zone may include landscape planting and site furnishing depending on the adjacent land uses.

PLANTING MATERIAL GUIDELINES

The following are guidelines unique to streetscapes. Otherwise, please see the General Planting Material Guidelines for further direction.

- Trees should have the same characteristics on both sides of the streets.
- A planting strip may be appropriate in a streetscape taking the form of a large area between the sidewalk and the curb and where pedestrian circulation volumes are low and a 'green street' planter is not applicable.
- In addition to trees, the streetscape planting strip may include shrubs, groundcovers and turf (turf is recommended to be used sparingly or in a very unique design solution).
- Planting strips should be at least 5' wide to accommodate irrigation systems and to provide adequate room for healthy tree root systems.
- For planter strips that are less than 5' wide and where 'green street' planters are not an option, groundcovers or paving may be considered. Preferred groundcover widths are between 2' to 4'. Pervious paving is recommended where widths are less than 2' and where pedestrian traffic occurs.
- Streetscape planter strips should not be elevated above curbs except to provide positive drainage.



◀ Raingardens collect water from impervious surfaces to support landscaped planters.

◀ Green roofs absorb energy from the sun and cool the building below.

◀ Green walls give character to otherwise blank surfaces.

2.3.2.2 ECO FEATURES

▶'GREEN STREET' INFILTRATION PLANTERS OR RAINGARDENS

A raingarden is a planted depression or swale that allows rainwater runoff to be absorbed from impervious urban surfaces like roofs, driveways, walkways and compacted lawn areas. Runoff is reduced by allowing stormwater to soak into the ground 'on-site' instead of flowing into storm drains and surface waters which promote erosion, water pollution, flooding and diminished groundwater.

Native plants are recommended for raingardens primarily for maintenance purposes as they generally don't require fertilizer and are more tolerant of the local climate, soil and water conditions. A selection of wetland edge vegetation, such as wildflowers, sedges, rushes, ferns, shrubs and small trees, absorb excess water flowing into the raingarden. Water filters through soil layers before entering the groundwater system. Root systems enhance infiltration, moisture redistribution, and diverse microbial populations involved in biofiltration. Also, through the process of transpiration, raingarden plants return water vapor into the atmosphere.

Ferns, grasses – especially 'native' grasses – and sedges are excellent plant materials for a raingarden. These plants love the sun and can exist in a variety of shapes, sizes and shades of green. Ferns require specific consideration as they require shade from a street tree, structure or building.

▶ECOROOF – GREEN ROOF

A green roof is a roof of a building or structure that is partially or completely covered with a vegetation system. The system is typically composed of sedum, herbs, grasses and / or bulbs. The plants grow in a layer of engineered growing medium or soil. The vegetation and medium are contained by a waterproofing membrane and may also include additional layers such as a root barrier and drainage and may include an irrigation system.

▶GREEN WALL

There are two major categories of green walls: (1) green façades; and (2) living walls.

Green façades are wall systems where climbing plants or cascading groundcovers are trained to cover specially designed supporting structures. Plant materials can be rooted at the base of the structures, in intermediate planters or on rooftops. Green façades can be attached to existing walls or built as freestanding structures. Living walls (also called biowalls, 'mur' vegetal or vertical gardens) are composed of pre-vegetated panels or integrated fabric systems that are affixed to a structural wall or frame. Modular panels can be comprised of polypropylene plastic containers, geotextiles, irrigation and growing medium and vegetation. This system supports a great diversity of plant species, including a mixture of groundcovers, ferns, low shrubs, perennial flowers and edible plants. Living walls perform well in full sun, shade and interior applications, and can be used in both tropical and temperate locations.

Based on current applications and data from the experience of green roofs, green walls can offer considerable cost savings to both the public and private sectors. For example, the reintroduction of vegetation into cities has been correlated with the reduction of the urban heat island effect, and therefore will reduce energy consumption. Cities are cooler and quieter through shading, evaporative transpiration and the absorption of sound by green walls *(Source: Things You Need to Know About Green Walls, By Randy Sharp, MBCSLA, MCSLA, ASLA, LEED AP, July 1, 2007, Building Design and Construction)*.

▶BIOSWALES

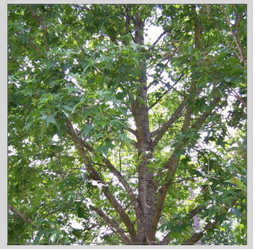
'Urban' bioswales are landscape elements designed to remove silt and pollution from surface runoff water. They consist of a swaled drainage course with gently sloped sides (less than 6%) and filled with vegetation, compost and / or riprap. The waters flow path, along with a wide and shoulder ditch, is designed to maximize the time water spends in the swale, which aids the trapping of pollutants and silt. Depending upon the geometry of land available, a bioswale may have a meandering or almost straight channel alignment. Runoff from a bioswale is typically conveyed to a stormwater system.

▶PLANT MATERIALS

Landscape plant materials are living, dynamic, sustainable natural systems that define form, space and order in the urban environment. The design intent for the use of plant material is to provide for the health safety and welfare of people and our environment. Plant material also adds interest, ornamentation and when thoughtfully located, can provide aesthetic continuity, reduce noise and reduce pollution. Relief from exposure to the elements and to unsightly elements may be achieved by landscape screens and tree canopies. All planting material should fit the climate, design character and maintenance requirements for which they are planted. Urban environments present unique challenges to the health of vegetation including the effects of pollution, and damage from pedestrians, maintenance and automobiles. Specific site conditions must be fully understood prior to plant selection. Micro-climates and soil conditions are key factors that determine where and which plant material will thrive. Ultimately, plant material should be selected that is safe, maintenance friendly and use / treat water efficiently and effectively.

FIG. 14

RECOMMENDED STREET TREES



▶AMERICAN SWEETGUM
LIQUIDAMBAR STYRACIFLUA

- Medium-sized tree growing 65 to 115' tall, with a trunk up to 6.5' in diameter.
- The leaves look somewhat similar to maples; are a dark green and glossy, and in most cases turn orange, red, and purple colors in autumn.

▶CALIFORNIA FAN PALM
WASHINGTONIA FILIFERA

- Native to Southern California;
- Grows up to 75' in good growing conditions.
- When the leaves die they bend downwards and form a skirt around the trunk.

▶TORREY PINENUT
PINUS TORREYANA

- A broad, open-crowned pine growing 25 to 50' tall with long needles growing in groups of five.
- Grows slowly in dry, sandy soil.

▶INDIAN LAUREL FIG
FICUS NITIDA

- A small to medium-sized evergreen tree with smooth gray bark, aerial roots, upright growing branches and very dense foliage.
- Grows 30 to 60' tall, with a 30' spread; does well in full sun.

▶LONDON PLANE
PLATANUS X HISPANICA

- Large deciduous tree growing from 65 to 115' tall, with a trunk up to 10' or more in circumference.
- Its leaves are thick and stiff-textured and the bark is usually pale grey-green and smooth.

2.3.3 GENERAL LANDSCAPE PLANTING MATERIAL GUIDELINES

2.3.3.1 TREES

Trees are generally the most monumental and enduring of the plant materials and can ultimately determine the success of a landscape design. Significant to trees are their presence, character and role in the landscape. Trees vary in shape, color, texture and scale, and can be a focal point in the form of a specimen or massed to define a space. They can frame and / or screen views, noise and wind, and provide shelter in the form of shade and wildlife habitat. Trees can be a valuable component of stormwater treatment and management and help to clean the air. Specific to urban design, trees can unify districts visually and create continuous pedestrian-scale spaces that link commercial and non-commercial streets and neighborhoods. The urban environment is more comfortable and safe when there are trees to provide shade, beauty and amenity. For recommended street trees, please see Fig. 14 (left).

▶LOCATION

- Protect and preserve existing trees to be saved.
- The placement of street trees should respond to the use of the street as well as adjacent land uses. A variety of species that have similar characteristics are encouraged for continuity and to avoid the challenges of over planting a single species.
- Plant only a single species where the design concept is to unify an area.
- Plant trees for mature growth that will fit a space or define the desired public space.
- Consider mature tree size and maintenance while designing to avoid conflicts with signs, lights, overhead and underground utilities, utility poles and fire hydrants. Ensure that trees have adequate room to grow.
- Plant trees 25' on center for most species. Reduced spacing may be appropriate depending on the space and species.
- When planting or replacing trees adjacent to existing trees, select new trees of similar characteristics to those being replaced including form, scale, texture, and color.
- Maintain minimum sight triangle and corner triangle distances for safe view of oncoming traffic and pedestrians.
- Trees must not interfere with visibility of traffic control devices, especially at intersections.
- Trees adjacent to alleys should be located per code.
- Trees should be located a minimum of 54" from the face of the curb.
- The location of trees should not conflict with the performance of street lights. Individual species and site conditions will vary.
- All trees should be located and adjusted as necessary to ensure the drivers visibility of regulatory signs.

▶SIZE

- Trees should be large enough when planted to provide beneficial shade and meet the design criteria for which they are intended (eg. street trees should define the clear route of travel and when appropriate create a sense of separation from automobile circulation).
- Street trees in tree grates (high pedestrian traffic areas) should be 3" caliper minimum with high branching for a variety of reasons, including pedestrian safety.
- The branching height of mature trees on the pedestrian side of the street should be no less than 8' above the sidewalk.
- The branching height of mature trees on the automobile traffic side of the street should be no less than 13' – 6" above the sidewalk. Special consideration should be given to the location and maintenance of trees adjacent to bus stops.

▶SELECTION

- Street trees should be thornless and fruitless to minimize pedestrian hazards and maintenance. The form should ideally be single trunked with upright growth. Trees should be strong wooded, resistant to disease and insects and have a medium to long life expectancy.
- Trees selected to be located adjacent to station area identification signage and retail store fronts should not obstruct signage.
- Trees that require minimal water should be considered. Irrigation must be designed to deliver the appropriate amount of water to each tree with minimal waste until the tree is established (typically two years). Ideally, trees will provide water quality treatment characteristics as a component of a stormwater drainage treatment system.
- Small varieties of thornless and fruitless trees may be used where lower branching habit will not interfere with pedestrians, vehicles or driver visibility.

FIG. 15

RECOMMENDED SHRUBS

▶BUSH POPPY
DENDROMCON RIGIDA / D. HARFORDII

- A native California evergreen shrub growing up to 6' tall.
- Can be maintained at 3'.
- Leaves are blue-gray-green and the bush is covered in yellow blooms.
- Very drought tolerant once established.

▶CLEVELAND SAGE
SALVIA CLEVELANDII

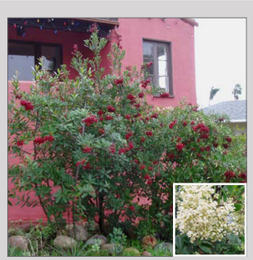
- A California native with graceful silvery-green leaves, arching branches, and whorls of purple flowers in spring and summer.
- Grows up to 4' tall.

▶COFFEEBERRY
RHAMNUS CALIFORNICA

- Attractive native California shrub, 6 to 8' high.
- Bears black berries and tolerates all soil types.
- Ideal as a background or screen plant.

▶REDBERRY
RHAMNUS CROCEA

- Medium evergreen California native shrub.
- Grows 4 to 10' tall, as wide as it is tall.
- Tight clusters of small, waxy, pinkish-white flowers give way to red berries in springtime.



▶CHRISTMAS BERRY, HOLLY BERRY OR TOYON
HETEROMELES ARBUTIFOLIA

- This California native is an evergreen shrub that produces delicate white flowers and large clusters of red berries that birds love.
- Can be pruned into a small tree.

2.3.3.2 SHRUBS – DESIGN PRINCIPLE

Shrubs are the most varied and versatile of planting materials and provide numerous shapes, colors and textures. Shrubs can be ornamental and often massed to define space. They frame and / or screen views, help buffer noise and screen against wind. Shrubs are also elemental in stormwater treatment and stormwater management and help clean the air. Specific to urban design, shrubs must be carefully selected and located so as not to create unsafe conditions (eg. define spaces that are not defensible and feel unsafe). Shrubs can unify districts visually and create continuous pedestrian-scale spaces that link commercial and non-commercial streets and neighborhoods. Shrubs make the urban environment more comfortable and safe by providing beauty and streetscape amenity.
For recommended shrubs, please see Fig. 15 (left).

▶LOCATION

- Locate shrubs to define focal point (eg. specimen planting).
- Massing / grouping: locate masses or groups of shrubs to be a focal for ornament.
- Locate shrubs to screen unsightly views, wind and noise.
- Locate shrubs to provide fencing for safety.
- Locate shrubs to define access and circulation routes.

▶SIZE

Anticipate full growth. However, the installed plant size should be large enough and in quantity to provide the intended effect.