

LANDSCAPE ARCHITECTURE

Vth Semester B.Arch
Teaching Notes

Prepared by,
Ar. Vineetha.P.S
¹
IES College of Architecture

SYLLABUS

Module II

Principles of Landscape design – Unity, Line, Form, Texture, Colour, Scale, Balance, Simplicity & Variety, Emphasis, Sequence.

Plant materials, classification, characteristics, use and application in landscape design; Role of plants in landscape design, avenue planting, Local & Scientific names of plants.

Landscape components: Hard & soft-scape in landscape, landscape lighting, street furniture

Water resources

Sea, River, Pond, Lake, Canal, Waterfall etc



Vegetation

Trees, Foliage, Herbs, Creepers, Climbers, Grass, Moss, Bush etc



Land & Landform

Hills, Mountain, Valleys, Plains etc

Mountain

Rock, Stone, Shingle, Gravel, Pebble etc.



Atmosphere

Sky, Clouds, Air etc

Climate

Rain, Day light ,Heat, etc

Green track

Meadow, Wood, Forest etc

The elements that are designed and built to fulfill the functions of landscape as well as enhancing it. The effect is spontaneous and quick.

It includes elements such as:

- Seating
- Pavements
- Planter box/flower pots
- Steps
- Carving/sculptures
- Shelter/kiosk
- Fence, wall/retaining wall
- Paving
- Dustbin
- Signage
- Lighting
- Bridge

These intangible values of meaning, memory, lived experience and attachment, in relation to people's connection to locality and landscape.

Intangibles: Place, Tradition & Memory

It is possible to have varying color schemes in one area of the landscape as the seasons change.

- The landscape designer should consider the color changes throughout the year when developing a landscape plan.



Colors can be used to visually change distance perspective.

Warm colors and light tints like red, orange, yellow and white advance an object or area toward the observer. These colors and tints placed near the foundation of a house would make the house appear closer to the street.

Cool colors and deep shades like blue, green and black recede and can be used to make the house appear farther from the street.

Cool colors are restful while warm colors express action and are best used in filtered light or against a green or dark background.



Color can be used to direct attention in the landscape.

Due to this strong characteristic, color should be used carefully. When color is used for this purpose, consideration must be given to year-round color not just to seasonal color.

Consideration may also be given to the time of day when this color will be enjoyed. White or light tints could be used to create interest on a patio.

Dark colors would add little to family enjoyment of this area as the daylight hours passed.

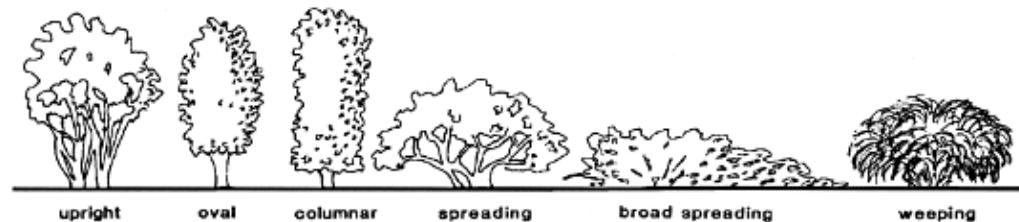


- Line is related to eye movement or flow.
- The concept and creation of line depends upon the purpose of the design and existing patterns.
- Line is inferred by bed arrangement and the way these beds fit or flow together.
- Line is also created vertically by changes in plant height and the height of tree and shrub canopies.
- Line in a small area such as an entrance or privacy garden is created by branching habits of plants, arrangement of leaves and/or sequence of plant materials.



- Straight lines tend to be forceful, structural and stable and direct the observer's eye to a point faster than curved lines.
- Curved or free-flowing lines are sometimes described as smooth, graceful or gentle and create a relaxing, progressive, moving and natural feeling.



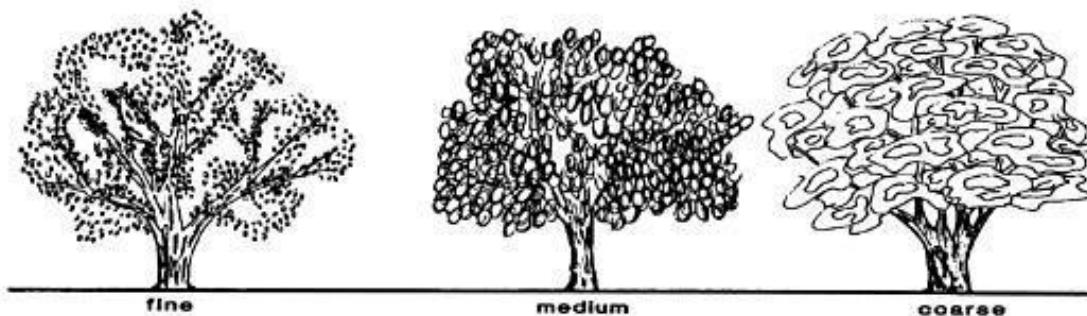


- Form, is established by a series of lines that create and enclose a shape.
- The result is the total mass that is created by the height, width, and depth of an object, giving it three dimensional qualities.
- Form and line are closely related. Line is considered usually in terms of the outline or edge of objects, whereas form is more encompassing.
- The concept of form is related also to the size of an object or area.
- Form can be discussed in terms of individual plant growth habits or as the planting arrangement in a landscape.
- Plant forms include upright, oval, columnar, spreading, broad spreading, weeping, etc. Form is basically the shape and structure of a plant or mass of plants. Structures also have form and should be considered as such when designing the area around them.

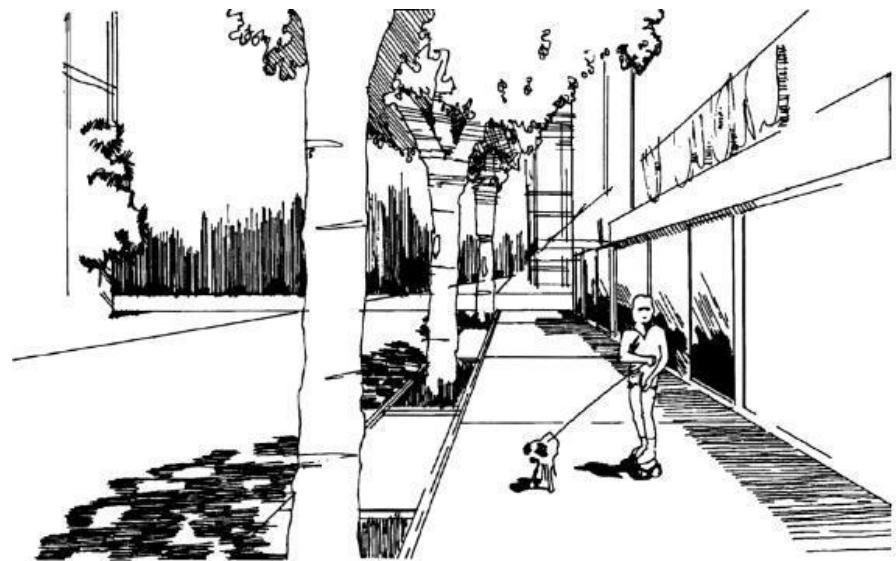


Texture describes the surface quality of an object than can be seen or felt. Surfaces in the landscape includes buildings, walks, patios, groundcovers and plants.

The texture of plants differs as the relationships between the leaves, twigs and branches differ . Coarse, medium or fine could be used to describe texture but so could smooth, rough, glossy or dull.



- Scale refers to the size of an object or objects in relation to the surroundings.
- Size refers to definite measurements while scale describes the size relationship between adjacent objects.
- The size of plantings and buildings compared on the human scale must be considered



- The smells of the landscape are very evocative; the fragrance of plants, flowers; the saltiness of the sea or the smell of grass after rain.
- The sense of *smell* is familiar to all of us in the garden, and is an easy sense to include when designing.
- Make sure the planting design has some fragrant blooms located in ideal spots for people to experience. Placement is critical, next to front doors, open windows, porches and patios are the best places; not at the back side of the large shrub border yards away from where anyone will go.
- Beyond plants with fragrant blooms consider plants, especially herbs, with strong fragrant foliage. Entice people to touch and pick herbs like lavender, chives and oregano from their garden.
- The sense with the most direct link to our memory is smell; including fragrances and pleasant odors in the garden can evoke wonderful memories as part of a garden experience.

- Beyond fragrant plants, other opportunities to include this sense in the design exist. A simple fire ring or small wood burning fire pit creates a strong smell in an outdoor space that might bring back memories of campfires or times around a hearth.
- Outdoor kitchen spaces can permeate the garden with wonderful savory food smells. Vegetable gardens have an array of great smells from tomato foliage to that earthy odor of tilled soil, not to mention the fragrant smells of vegetables and fruits being harvested.
- Closely related to the sense of smell is the sense of *taste*.
- It is an extension of smell and requires a more active role by our clients.
- Taste is all about having edibles like herbs, flowers, fruits and vegetables planted in the landscape or garden.
- By considering the sense of taste in the garden design, we're asking our clients to move beyond a passive to an active relationship with their gardens.

- This does not necessarily mean designers must include a separate herb or vegetable spaces in the landscape; herbs and edibles can be included into perennial and shrub beds and patio planters. Keep in mind the open invitation to taste in a garden environment includes an extra responsibility as a designer.
- Many ornamental and landscape plants are toxic or have toxic parts. Either do not include toxic plants in edible spaces or clearly define which plants are to be tasted and which are not.
- Developing spaces that include edibles and both of these senses heightens the garden experience by creating another layer of involvement for clients.

- Touch is a form of communication through blades of grass, twigs, soil and rocks about their shape, form and texture.
- Other elements of the landscape such as the driving rain, the chill of a cold day or the heat of the sun can also be felt.
- *Touch* is a tougher sense to design into a garden or landscape. Success comes by enticing people to touch or “feel” something in the garden, either directly or indirectly.
- Including plants like the herbs mentioned before or a small water feature easily reached provides a great way to entice someone to reach out and touch.
- Provide plants with interesting large leaves, soft looking leaves, fine textured leaves and coarse even spiny leaves to create an indirect sense of touch in the landscape.
- Someone may not actually touch the leaves, but the foliage combinations provide a visual cue to consider how each might feel.

- Our perception of building materials like wood, concrete, and stone promote the sense of touch; each evokes a tactile anticipation and reaction of how it will feel even if it is not physically touched.
- By thinking beyond just touching objects with our fingers, designing towards a sense of touch can be easier.
- Sun and shade are strong elements to be considered in our garden design. The warmth of sun or the coolness of shade is very much a sensation to be felt, especially on your face. Directing and inviting people in and out of shade and sun in the landscape can heighten this experience.
- Don't forget how surfaces feel to bare feet, smooth, soft, cool, hot, or too coarse and harsh.
- When designing, we can consider how someone can use their entire body to feel the garden and not just their fingertips.

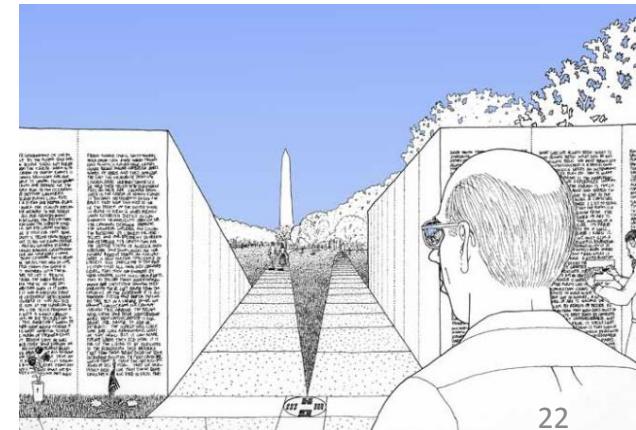
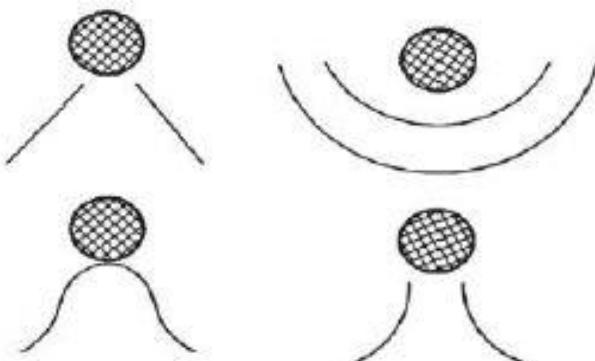
- The movement of trees, plants etc. in the wind
- Sound of the whistling wind
- *Sound* is another of the senses to consider in our landscapes and gardens.
- Considering sound is best by thinking about it in both direct and indirect terms. Including plants that create sounds when there is a small breeze in the garden introduces sound.
- Other direct ways to create sound in the garden is by including a wind chime, a sculpture with an element of sound or even a pathway that crunches underfoot.
- The sound of animals and birds
- An indirect way to incorporate sound is with plants or elements that attract birds and buzzing insects which provide natural sounds in your garden.
- Water provides both an indirect and direct way to create sound. Moving water can create the best sound for a garden and water attracts animals and insects that can create pleasant background sounds.

- Location is critical when including water features, even a soft sounding water feature placed adjacent to a patio is effective, but a water feature in a remote area does little to introduce sound to outdoor spaces.
- Splattering of rain drops
- The noise thunder and lightning
- Keep in mind sound travels directionally, a water feature needs to be oriented so that sound is “aimed” towards places where people will congregate.
- By adding sound, yet another layer of experience is added to an outdoor space.

Landscaping combines elements of art and science to create a functional, aesthetically pleasing extension of indoor living to the outdoors. One initial purpose of landscape design is to blend man's technology (house or building) into the natural surroundings. To work toward a desirable landscape design, the landscape horticulturist must have a working knowledge of art elements and **design principles**

- **The principles of design** serve as guidelines that govern the organization of the design elements and materials in accordance with the laws of nature.
- Landscape designers use these principles of design to create landscape designs that are both functional and aesthetically pleasing.

- Focalization is created as a **visual break in the sequence** and **flow** of the landscape.
- The focal point is the point or area of the landscape that **attracts the viewer's eyes**.
- The visual break captures the attention of the viewer and draws it to the focal point.
- **Without a point or area on which to focus, the viewer's eyes become lost and confused throughout the landscape.**

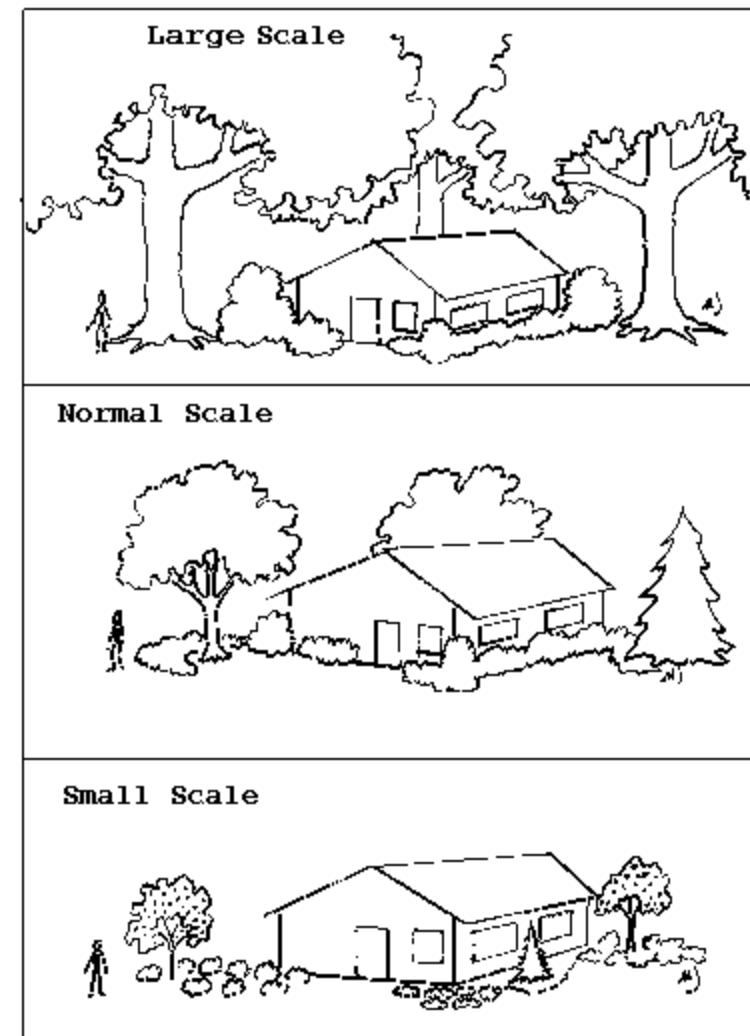


- Proportion is the **relationship** that exists among the **components** of a landscape.
- Proportion involves the **size relationships** between and among the components making up the landscape.
- Proportion describes the **mathematical relationships** among the **dimensions of space** and **site components** making up an area. These mathematical relationships are totally separate from human perception dimensions.

One large towering oak may compliment an office building but would probably dwarf a single story residence

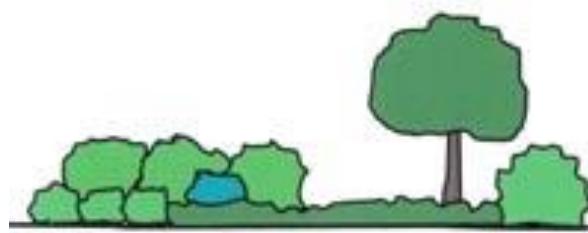


- Scale is the **human perception** of the **size of space and form** related to the **human dimension**.
- Scale is the **relative size** of one part of a landscape to another in the **perception of the viewer**.



- Drawing attention to important features of landscape
- Emphasis can be achieved through different sizes, bold shapes, groupings, and the unusual or unexpected.

Emphasis is achieved with the tree being dominant and the shrub grouping being subordinate.



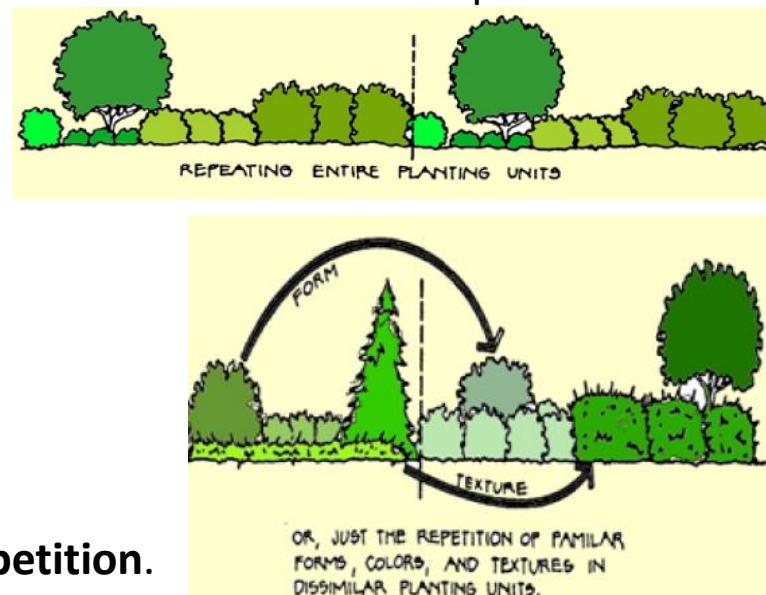
Ornamental grass often adds emphasis to a garden spot



In this private garden, emphasis is added with the blooming Astelbe.

- Unity is obtained by the effective use of components in a design to **express a main idea through consistent style**.
- Unity is emphasized by consistency of character between units in the landscape.

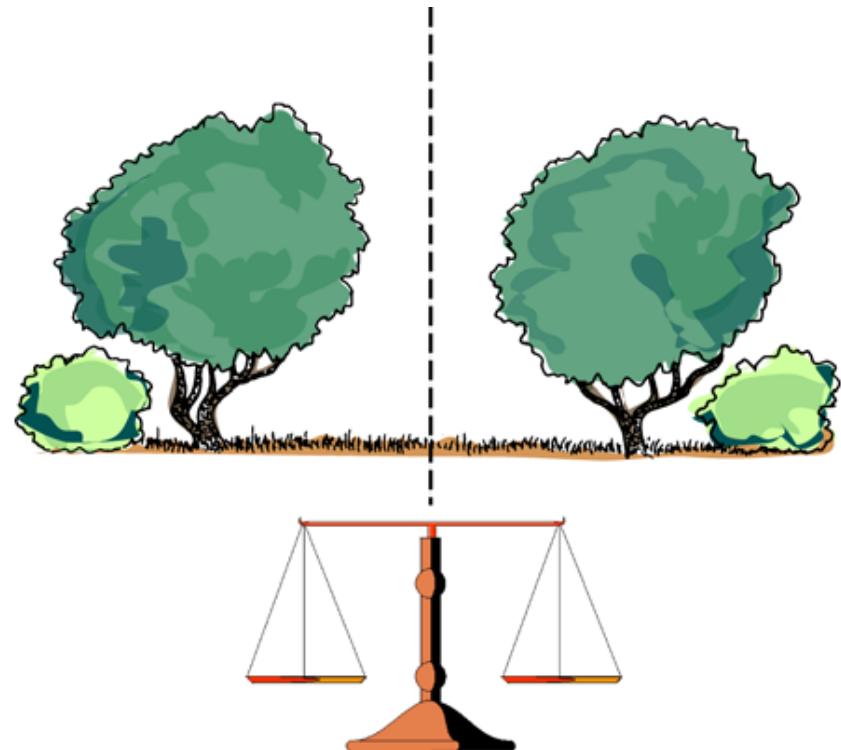
- Use of elements to express a specific theme within units creates **harmony**.



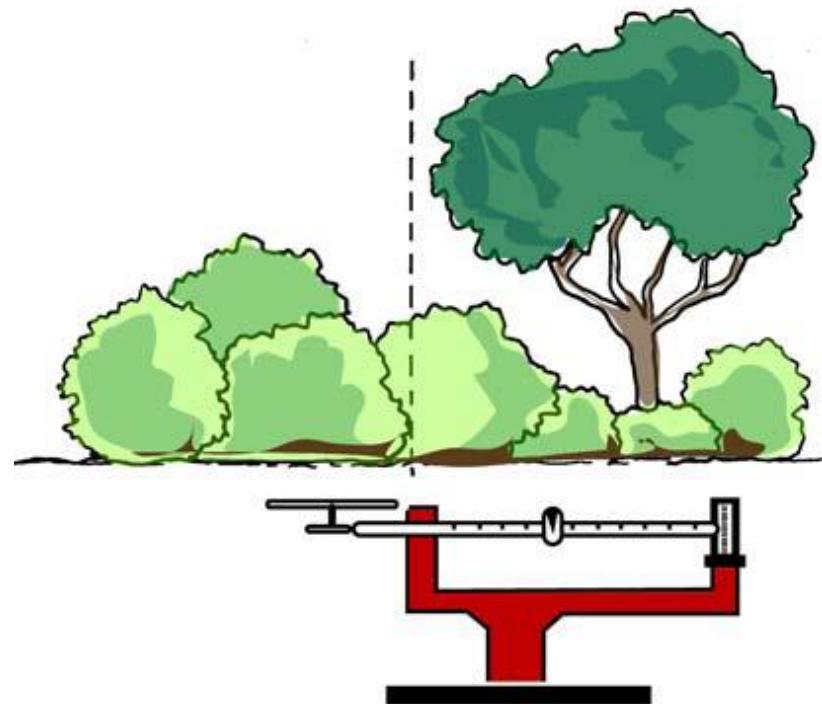
- Unity can be **achieved by using mass planting and repetition**.
- Unity means that **all parts of the composition or landscape go together**; they fit.
- A natural feeling evolves when each activity area belongs to and blends with the entire landscape.
- Everything selected for a landscape must **complement the central scheme** and must, above all, serve some functional purpose.

Balance in design refers to the **equilibrium** or **equality of visual attraction**. Balance is a design principle **defined** in terms of **weight**. It is the **equalization of visual weight** from one area of a landscape composition to another.

- **Symmetrical** balance is achieved when one side of the design is a **mirror image** of the other side.
- There is a **distinct dividing line** between the two sides.
- Equal lines, forms, textures or colors are on each side of a symmetrical design.



- While viewing an **asymmetrically balanced** landscape, the viewer feels a **sense of stability**.
- If one side of a landscape does not equally offset the other, an imbalance results.
- Such an imbalance is similar to an unbalanced scale.
- Imbalance in a landscape is not desirable



Proximal/Distal

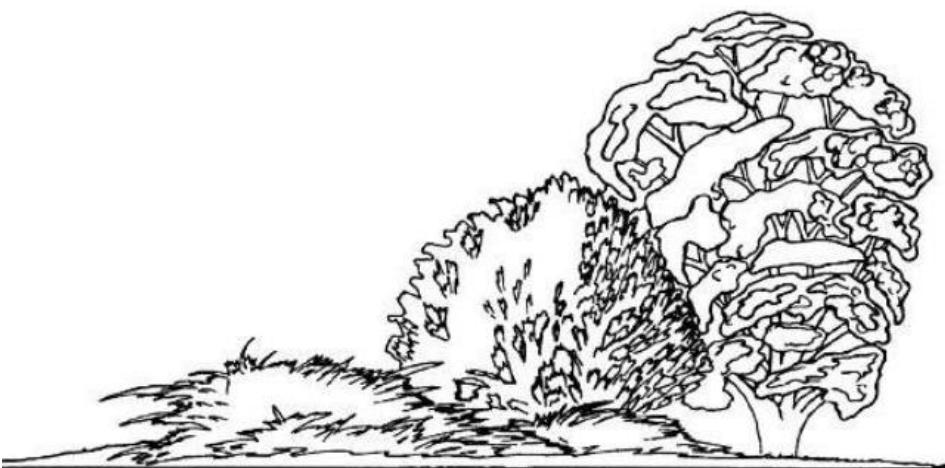
- Balances right and left as well as near and far.



- Transition is a term that is quite self-explanatory in that it essentially means **gradual change**.
- This design principle should be applied to **avoid abrupt changes** that may occur in your garden design.
- When using plant height or even plant color, one can achieve natural transition. However one would not limit applying this principle to these two aspects alone. It should also be carried through to all other elements in the garden.

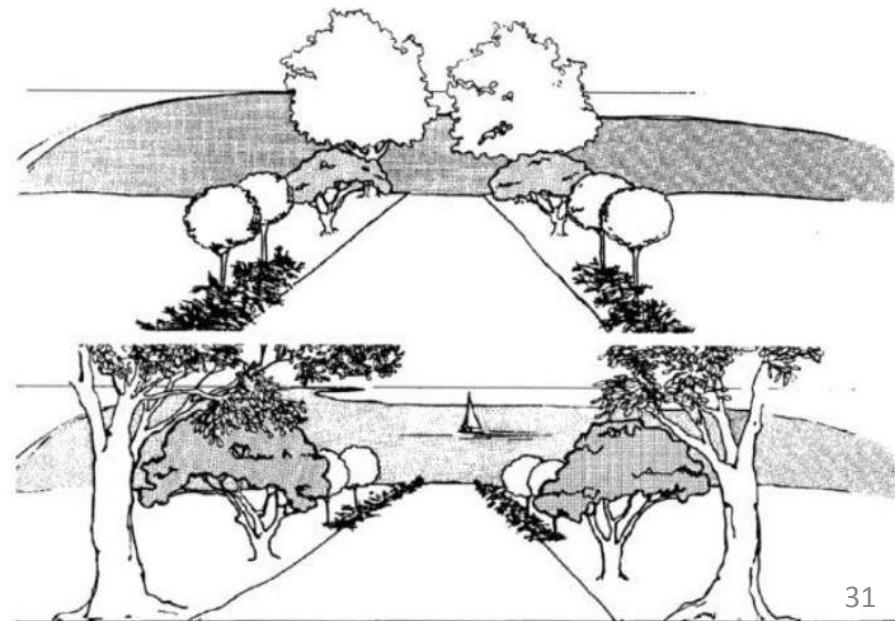
An example of gradual, natural transition being applied in a garden would be the **stair step effect** from large trees to medium trees to shrubs to plants to lawn.





It is possible to use transition to extend visual dimensions beyond actual dimensions. For example, radical lines in the private area of the landscape can be used to enframe and/or focalize a lake scene. Transition of plant materials along these lines can make the scene become a part of the landscape

An unlimited number of schemes exist by combining elements of various size, form, texture and color to create transition



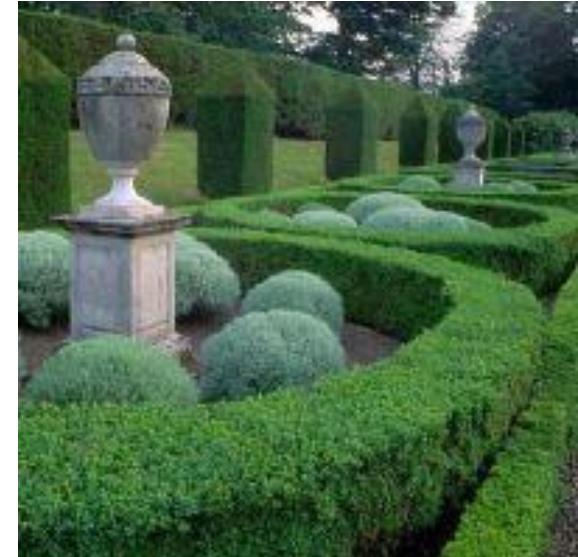
- Flowing lines are always pleasing to the eye, however the bold contrast of a curve combined with a straight line can provide interest in the garden.
- Contrast can be found in many areas of your garden. One such example can be where one side of the garden is mainly planted up with large trees to provide shade and the other side of the garden can be predominantly a flower garden or a vegetable garden.
- Plants with fine foliage versus plants with coarse foliage, round leaves versus spiked, needle-like leaves, even making use of complimentary and contrasting colors.
- However **lines, forms and shapes** should flow together harmoniously to enhance the style of your garden.

- Rhythm gives a landscape design a feeling of **natural movement** through the use of natural elements and **careful repetition**.
- Groups of plants, as well as individual materials, can create rhythm within the environment by patterns of color, form, and other elements.
- Rhythm is expressed through the placement of plants, park furniture, etc., either individually or as group. For example, several benches could be placed at regular indentations along a shrub border. If every other bench was replaced with an attractive piece of sculpture, rhythm would be created that would relieve any monotony from the overuse of one landscape component.

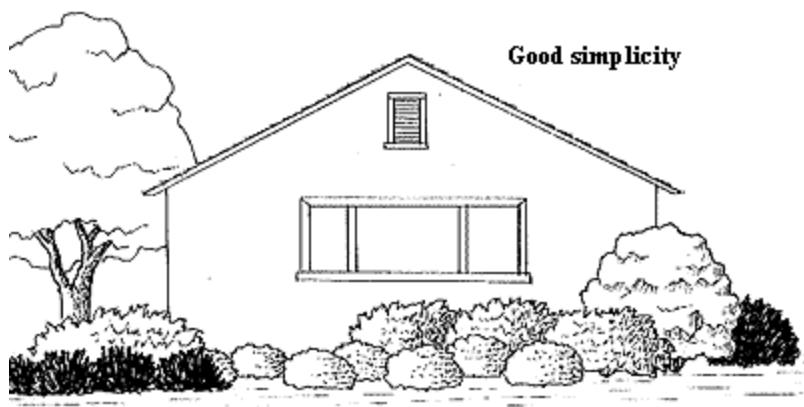


Repetitious use of sculpture in landscape reduces monotony and results in the establishment of rhythm.

- Repetition involves repeating or using an element **more than once throughout a design.**
- Repetition refers to the repeated use of features like plants with identical shape, line, form, texture and/or color.
- Too much repetition creates monotony but when used effectively can lead to rhythm, focalization or emphasis.
- Unity can be achieved better by no other means than repetition. Think of repetition as not having too much variety in the design which creates a cluttered or busy appearance.
- Repetition provides a **common feature** throughout the design that **pulls the design together.**



- Simplicity goes hand-in-hand with repetition and can be achieved by **elimination of unnecessary detail**. Too much variety or detail creates confusion of perception.
- Simplicity is the reduction of a design to its simplest, functional form, which avoids unnecessary cost and maintenance.
- Simplicity means understanding what is, and is not important in a landscape design. Details that will not have a major impact on the landscape are omitted to keep it uncluttered.

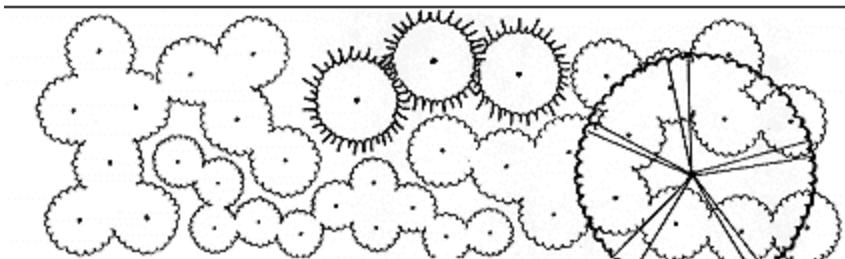


- The effective use of sequence is often employed to create **visual movement** in the landscape, a **gradual transition** from one area to another within a landscape
- A landscape with sequence has **one element changing** at a time rather than several changing at once
- It is an important consideration to take into account in the development of the overall planting pattern
- A landscape with a **coarse-textured** plant **next to a fine-textured** plant is an example of **poor sequence**
- Any plant that breaks gradual progression becomes a point of emphasis

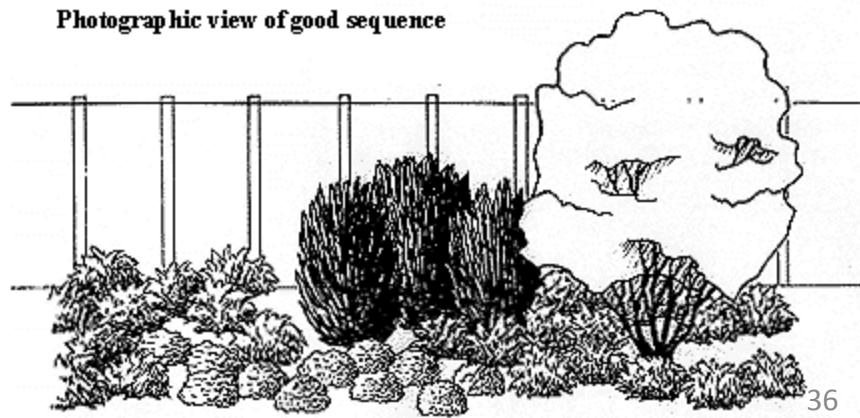


An orderly, sequential arrangement of heights.

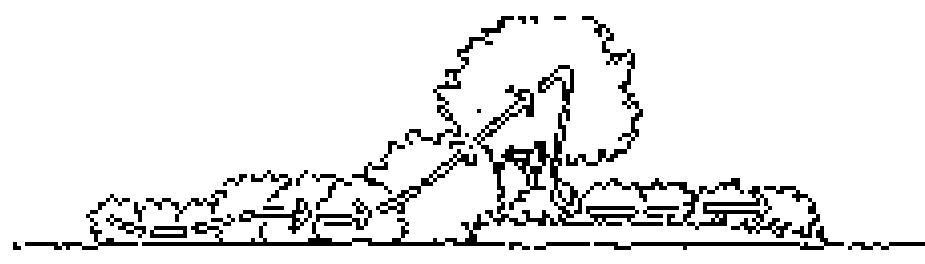
Plan view of good sequence



Photographic view of good sequence



Sequence through gradual progression of form, texture or color



FORM



TEXTURE



COLOUR

Plant materials are a very important component of landscape design, and planting design is integral to the landscape plan. Designing with plants requires awareness and knowledge of a broad range of aspects including

- (a) ecology,
- (b) botany,
- (c) horticulture,
- (d) aesthetic value,
- (e) growth and survival, and
- (f) use of plants to fulfill environmental design functions.

PLANTS & DESIGN

- The major sets of factors that influence the choice of plant material are related to the characteristics, both botanical and physical of plant material and the context in which the plant material is to be used.
- The interrelationship of these sets of factors is the basis for developing a sound approach to the process of designing with plants.

The information on plant material should be available in a systematic format to include definition, significance and design implications of the following aspects:

- a) Nomenclature (botanical and trade-name);
- b) Origin, family and natural habitat;
- c) Growth characteristic and form as a function of habit;
- d) Physical characteristics, for example bark texture, foliage, etc;
- e) Propagation and maintenance; and
- f) Use in landscape design

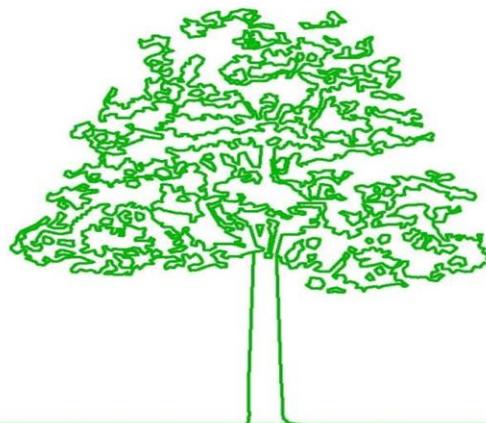
STUDY OF PLANT MATERIAL

- TREES
 - LARGE TREES
 - INTERMEDIATE TREES
 - SMALL AND FLOWERING TREES
- SHRUBS
 - LARGE SHRUBS
 - INTERMEDIATE SHRUBS
 - SMALL SHRUBS
- GROUND COVERS

TREES



LARGE TREE
15 M.



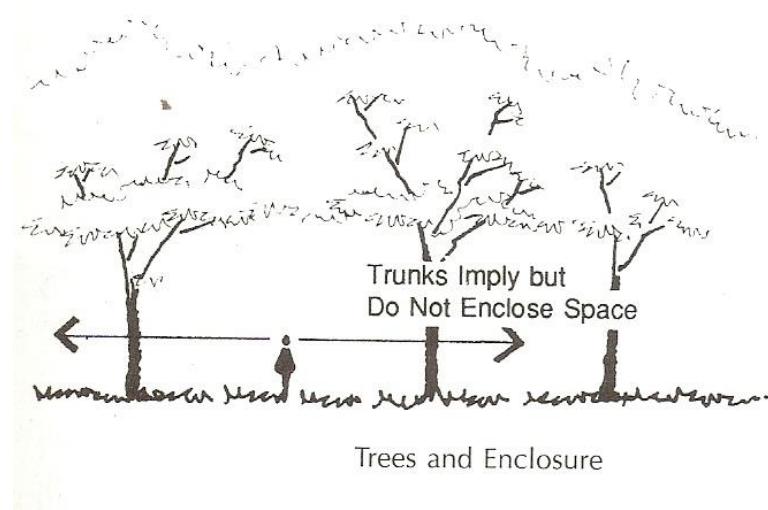
MEDIUM TREE
10-15 M



SMALL TREE
5-10 M

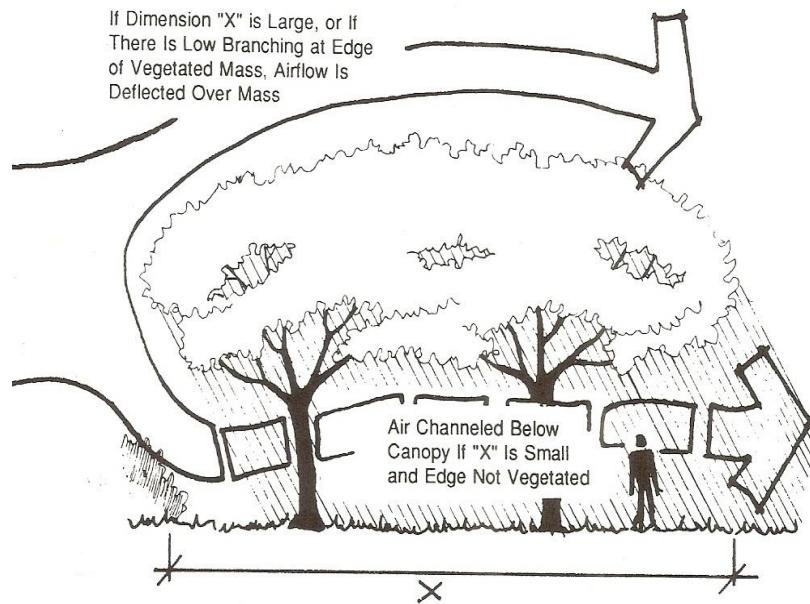
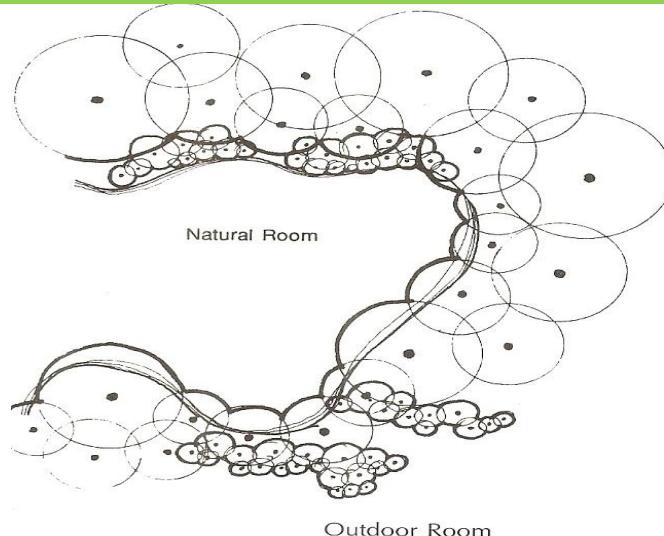
LARGE AND INTERMEDIATE TREES

- LARGE TREES ARE 15 METRES IN HEIGHT, INTERMEDIATE TREES GROW FROM 10 - 15 METRES.
- THEY FORM THE VEGETATED CANOPY.
- FROM OUTSIDE, CREATE MASS, FROM WITHIN THEY FORM CANOPIED SPACE.
- CANOPY CHANGES CHARACTER OF SUNLIGHT FROM HARD AND GLARING TO SOFT AND SPOTTED.



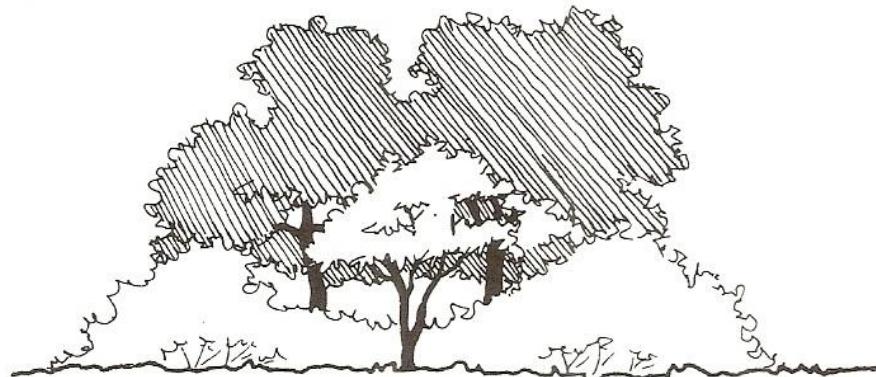
LARGE AND INTERMEDIATE TREES

- WHEN CANOPY OF THESE TREES ARE FAIRLY CONTINUOUS, A BREAK IN THE CANOPY TAKES THE CHARACTER OF AN OUT DOOR ROOM, OPEN TO THE SKY
- EFFECTIVE MICROCLIMATE MODIFIERS.
- PROVIDE SHADE FROM HIGH AND MID-ANGLE SUN.



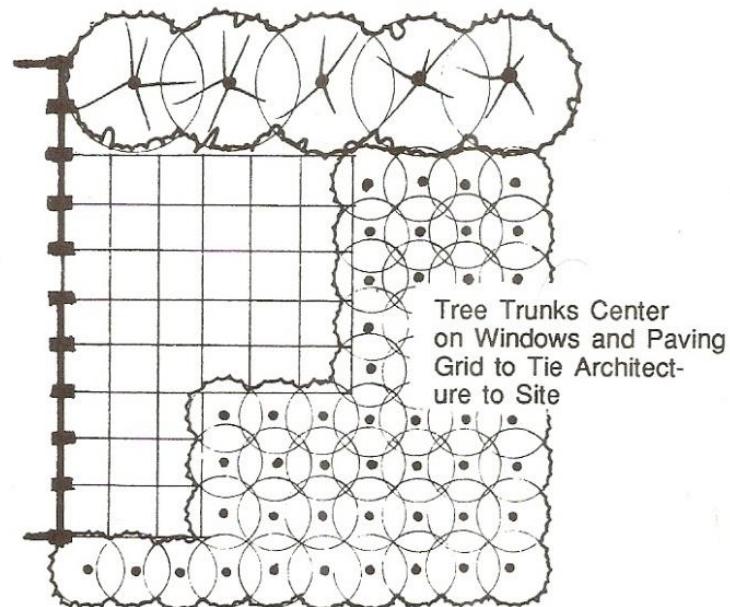
Large Trees and Microclimate

- IN PLANTING DESIGN, THEY CAN PROVIDE MASS AND CONTRIBUTE LARGE SCALE.



Large and Intermediate Trees Provide Bulk to Plant Mass

- IF PLANTED TO EXTEND THE LINES OR RHYTHM OF ARCHITECTURE INTO EXTERIOR SPACE, TREE TRUNKS GIVE ARCHITECTURAL CHARACTER TO SITE

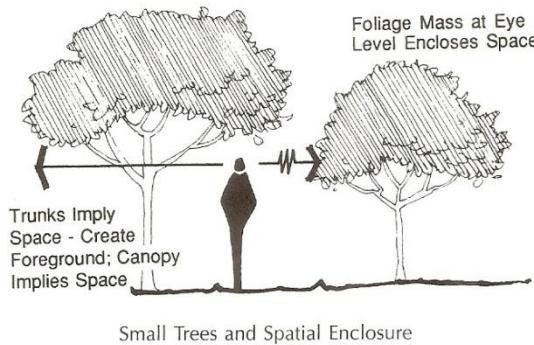


Tree Trunks Center on Windows and Paving Grid to Tie Architecture to Site

Tree Trunks as Landscape "Columns"

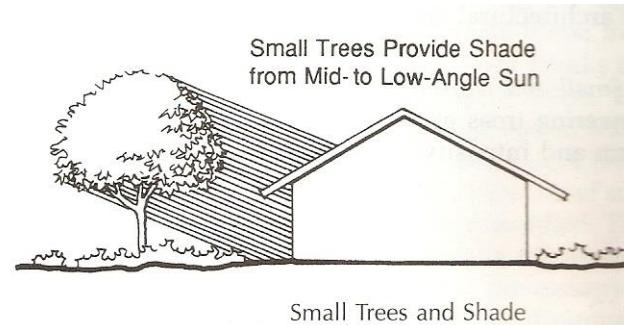
SMALL AND FLOWERING TREES

- SMALL AND FLOWERING TREES GROW 5-10 METRES IN HEIGHT.
- IN OPEN SUN THEIR FORM AND GROWTH IS THICKER AND FLOWERING MORE INTENSE.
- CANOPIES ABOVE HEAD HEIGHT, SMALL AND FLOWERING TREES IMPLY INTIMATE SPACE.

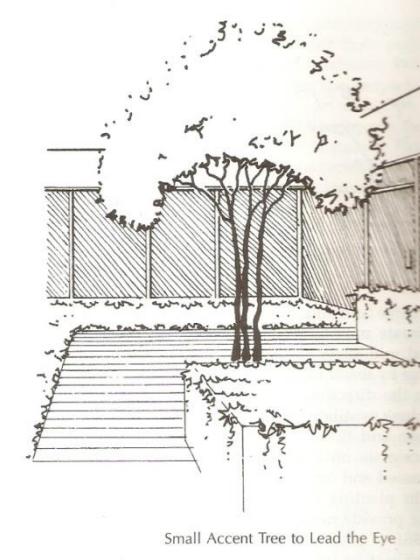


CANOPIES OCCUR AT EYE LEVEL, THEY ENCLOSE THIS SPACE.

USED ON SOUTHWEST SIDES OF BUILDINGS OR WEST AND NORTHWEST, IF AUGMENTED BY LOW BRANCHING SHRUBS.



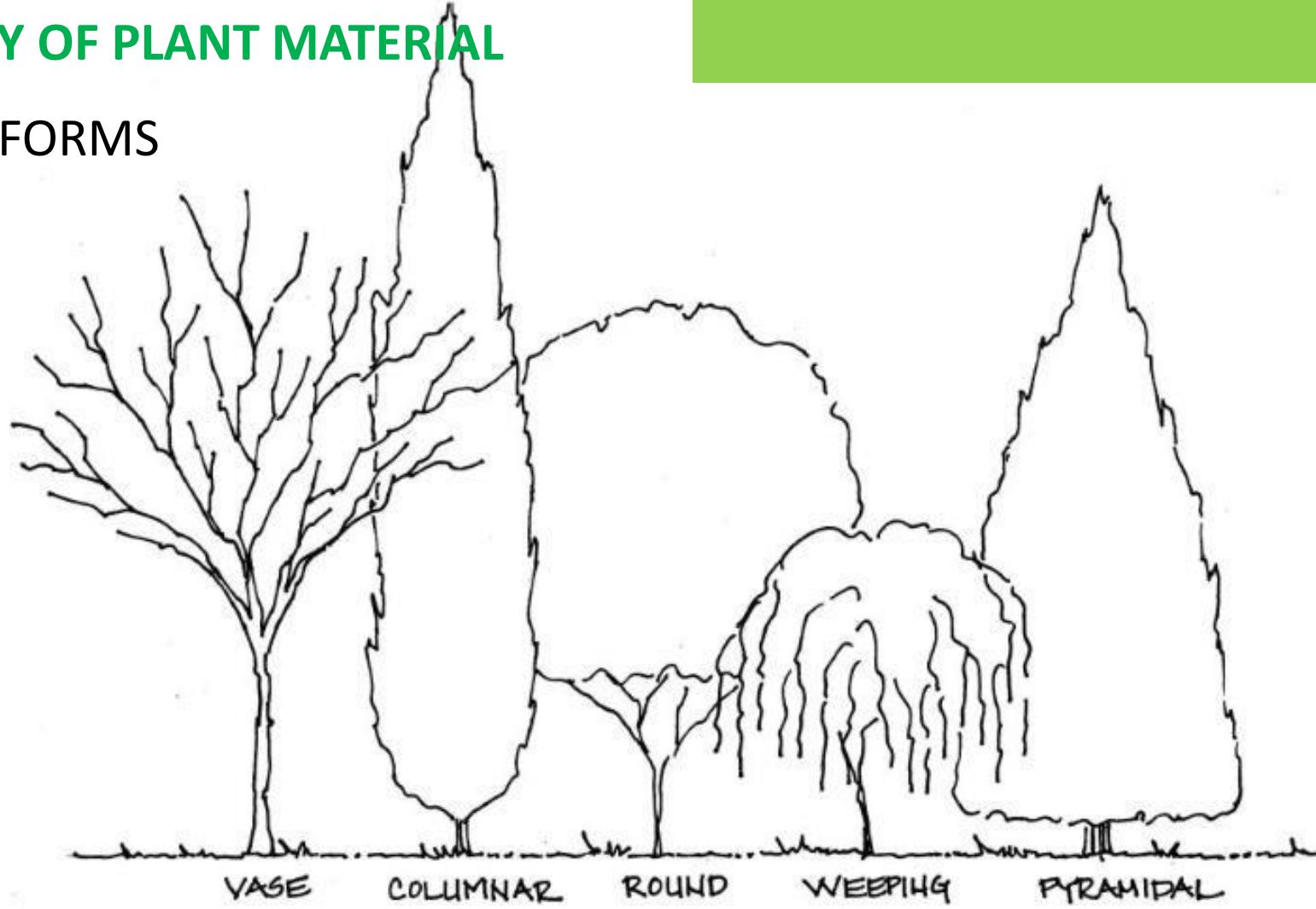
EFFECTIVE IN SMALL OR INTIMATE COURTYARD, PROVIDE COLOUR AND SHADE USED AS ACCENT PLANTS OR FOCAL POINTS.



TREE FORMS

- TREE FORMS ARE OFTEN DOMINANT IN THE GARDEN BECAUSE OF THEIR SIZE.
- TREES ARE ALSO THE MOST FUNCTIONAL PLANTS IN THE LANDSCAPE, PROVIDING SHADE AND BLOCKING VIEWS, SO WHEN CHOOSING A TREE FORM, CONSIDER FUNCTION FIRST.
- CREATING A SHADY AREA IN THE GARDEN REQUIRES A ROUND OR OVAL TREE, WHILE A SCREEN USUALLY REQUIRES A MORE COLUMNAR OR PYRAMIDAL FORM, AND A WEEPING TREE FORM MAKES A GOOD FOCAL POINT.
- IT IS ALSO IMPORTANT TO ENSURE THE TREE WILL NOT OUTGROW THE SPACE AND REQUIRE SEVERE PRUNING.
- CHOOSE THE TREE FOR ITS MATURE SIZE AND SHAPE IN RELATION TO THE SPACE.
- COMMON TREE FORMS INCLUDE VASE, COLUMNAR, ROUND, WEEPING, AND PYRAMIDAL

TREE FORMS



VASE

COLUMNAR

ROUND

WEEPING

PYRAMIDAL

*Lagerstroemia
speciosa*

Plumeria alba

Cassia Fistula

*Polyalthia
longifolia*

*Mangifera
indica*

*Ficus
bengalensis*

*Ficus
benjaminia*

*Callistemon
viminalis*

*Putherfordia
roxburgii*

*Araucaria
columnaris*

*Myristica
fragrans*

Trees perform the following functions:

- a) Protecting soil,
- b) Modifying microclimate,
- c) Shade,
- d) Habitat,
- e) Enclosure,
- f) Direction and framing views,
- g) Screening,
- h) Visual relief, and
- i) Ornamental.

The functions are similar to those of trees. Shrubs may be used together with trees to reinforce the functions, for example, noise barrier, shelter belts, enclosures, etc. Other forms in which shrubs may be used are:

- a) Hedges — These require regular maintenance
- b) Shrubbery — Here plants are allowed to retain their natural shape; they therefore require little maintenance.

Shrubs provide barriers, which may either be visual or physical (hedges). Barriers may be required in a range of situations, for example they may be only for defining space, or they may be required for security and have to be, therefore, necessarily impenetrable.

SHRUBS, GROUND COVERS AND LAWN



LARGE SHRUBS
3-5M



MEDIUM SHRUBS
1-3M

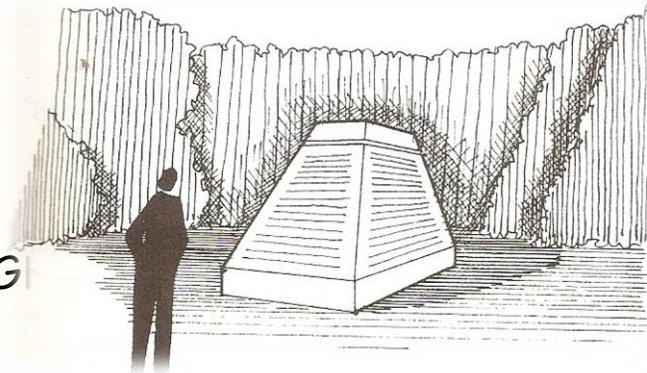


SMALL SHRUBS
1M

SHRUBS

TALL SHRUBS

- 3-5 METRES HEIGHT.
- SHORT AND LACK THE CANOPY OF SMALL TREES.
- PROVIDE STRONG SENSE OF ENCLOSURE AND A HIGH DEGREE OF PRIVACY.
- SERVE AS SCULPTURAL ELEMENTS IN LARGE SPACE.

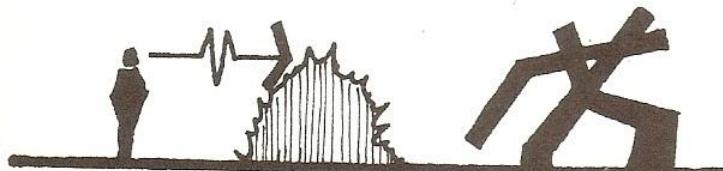


TALL SHRUBS AS SCREENING/ BACKDROP

INTERMEDIATE SHRUBS

- INTERMEDIATE -1-3 METRES
- DEFINE AND PHYSICALLY SEPARATE SPACES WITHOUT BLOCKING VISION.
- STRONG VISUAL SEPARATION.
- DISTURBING IF TOPS OCCUR AT EYE LEVEL, TENSION IS CREATED AS THE OBSERVER TRIES TO SEE OVER THE TOP.

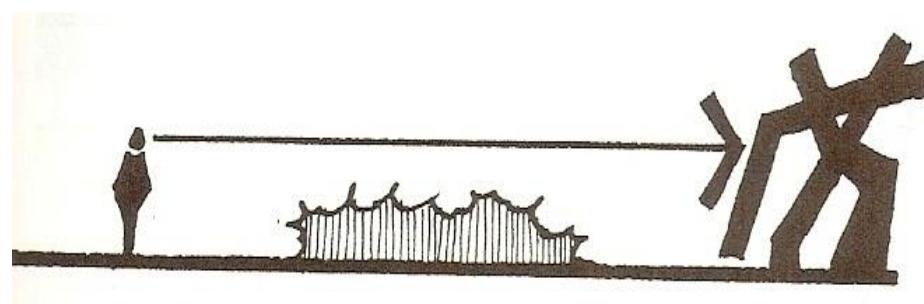
Shrubs Can Cause Tension
If "Topping-out" at Eye Level



INTERMEDIATE SHRUBS AT EYE LEVEL

LOW SHRUBS

- EXTENSIONS OF THE BASE PLANE PHYSICALLY SEPARATE AND IMPLY SPACIAL EDGE.
- LOWSHRUBS – 1 METRE.
- PROVIDE WEAK VISUAL SEPARATION.
- DO NOT ENCLOSE SPACE.
- EFFECTIVELY LINK GROUPS OF LARGER PLANTS WHILE ALLOWING VISION TO PENETRATE BETWEEN GROUPS.
- EFFECTIVELY UNIFY A COMPOSITION.

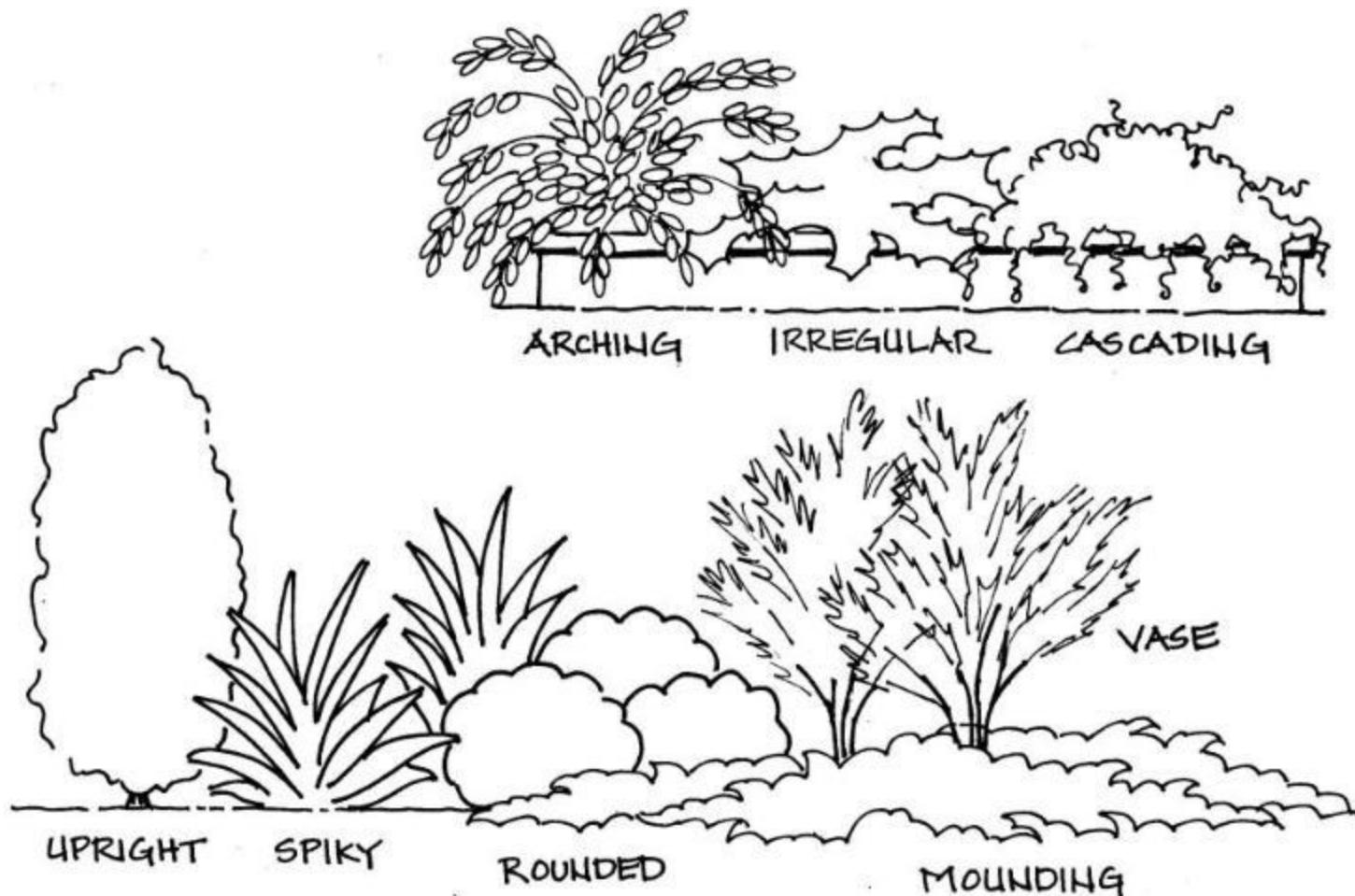


LOW SHRUBS AND
ENCLOSURE

SHRUB FORMS

- SHRUBS HAVE A VARIETY OF FORMS, SO IT IS IMPORTANT TO CONSIDER HOW SHRUBS WILL LOOK WHEN MASSED TOGETHER.
- MOUNDING AND SPREADING SHRUBS LOOK BEST IN A MASS, WHILE CASCADING AND SPIKY FORMS WORK WELL FOR INDIVIDUAL SPECIMEN PLANTS.
- SHRUB FORMS INCLUDE ARCHING, IRREGULAR, CASCADING, UPRIGHT, SPIKY, ROUNDED, MOUNDING, AND VASE SHAPED.
- THE FORM OF THE SHRUB DETERMINES ITS MOST SUITABLE FUNCTION. UPRIGHT, VASE, MOUNDED, AND ROUND FORMS WORK BEST AS TALLER SCREENS AND BUFFERS; IRREGULAR AND SPREADING FORMS WORK WELL AS GROUNDCOVERS; AND ARCHING, CASCADING, PYRAMIDAL, AND SPIKY FORMS WORK BEST AS FOCAL POINTS.

SHRUB FORMS

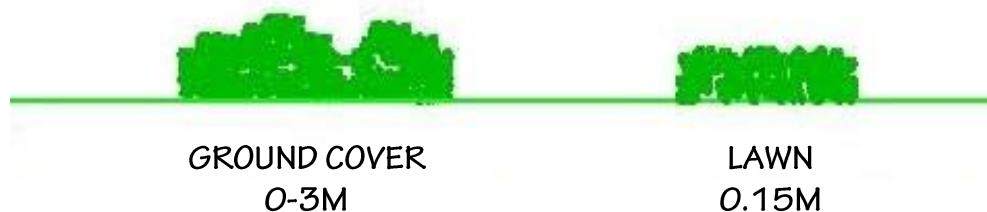


Examples: Schefflera arboricola, Nerium oleander, Hamelia patens

Ground cover plants are those which naturally grow to a very low height. Some of the uses for which they may be used are:

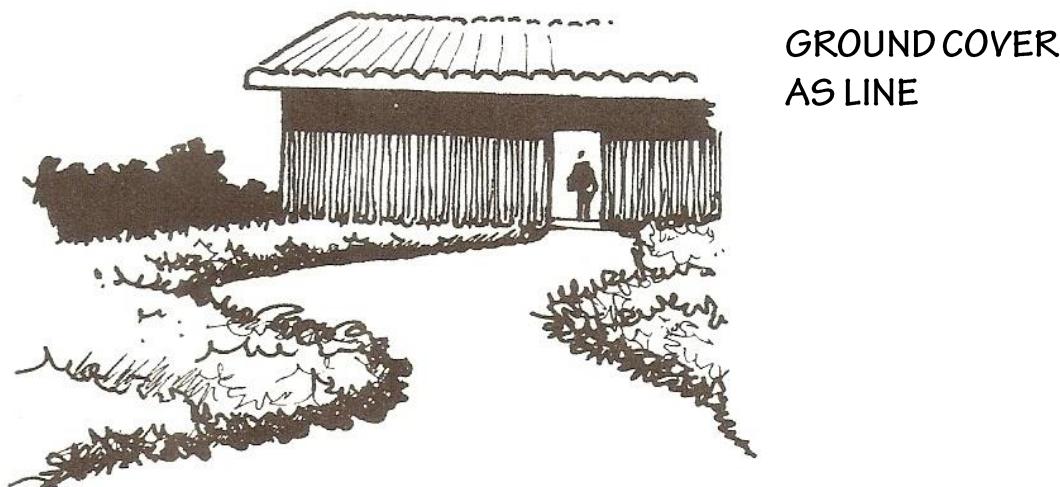
- a) Stabilizing soil on steep slopes such as embankments.
- b) As a low maintenance substitute for grass (where the surface is not to be used).
- c) For providing variety in surface treatment.
- d) Contrast with paving materials, for example to soften rigid lines of paving.
- e) As a subtle means of demarcating space, as for example, in places where tall plants would be visually intrusive.
- f) In combination with other plants to provide contrast or harmony in form.

GROUND COVERS AND LAWN



GROUND COVER

- LOW-GROWING, SURFACE COVERING PLANTS, USED FOR EROSION CONTROL ON SLOPES
- LOW MAINTENANCE
- ABSORB HEAT MOISTURE AND DUST
- UNIFY GROUPS OF LARGER PLANTS INTO ONE COMPOSITION



GROUNDCOVER FORMS

- GROUNDCOVER OR BEDDING PLANTS TEND TO HAVE THE MOST COMPLEX FORMS, BUT THEY TYPICALLY LOOK BETTER IN MASSES BECAUSE THEY ARE OFTEN SMALL AND HAVE LITTLE IMPACT AS INDIVIDUAL PLANTS.
- MASSES OF GROUNDCOVER PLANTS USUALLY LOSE INDIVIDUAL FORM AND LOOK LIKE ONE PLANT, SO IT'S IMPORTANT TO CONSIDER HOW PLANTS WILL LOOK AS A MASS.
- GROUNDCOVER FORMS INCLUDE CLUMPING, MATTING, SPRAWLING, SHORT SPIKES, AND SPREADING.
- MATTING, SPREADING, OR SPRAWLING PLANTS ARE USED TO FORM A SOLID, LOW COVER OVER LARGE AREAS.
- PLANTS THAT GROW IN CLUMPS OR SHORT SPIKES CAN BE USED IN SMALLER MASSES AND WORK WELL IN PLANTERS OR ENCLOSED AREAS.

GROUNDCOVER FORMS



Examples: *Syngonium podophyllum*, *Wedelia trilobata*, *Nephrolepis exaltata*

Certain climbers because of their spreading habits may also be used as ground cover (for example *Asparagus* spp.) Climbers are useful for shading exposed walls from direct sunlight. They may also be used for stabilizing soil on embankments (for example, *Ficus stipulata*, *Ipomea biloba*). On sites where a high degree of security makes fencing necessary, climbers and spreading plants like *Bougainvillea* species, may be trained on boundary wall.

- Climbers provide an inexpensive screen with color and interest.
- They are usually grown on fences, or on arbors and trellises to provide shade.
- Most climbers are deciduous although some are evergreen particularly in milder climates.



Functional role of plants

- Structural Framework
- Screening
- Enclosing
- Framing
- Integration

What is structural framework?

- The way the yard is laid out.
- Dividing larger spaces into smaller spaces.
- Will direct viewer through the design.

How do plants Screen?

- Block unattractive views.
- Consider line of sight to be screened.
- Screens observed from a distance-taller & longer.
- Denser in areas where people walk by at slower speeds.

How do plants enclose?

- Divide larger areas into smaller subspaces.
- Either implied or complete.

Implied:

- Create using small hedges.
- Do not interfere with view.
- Subdivide the landscape.

Complete:

- Use plants that will grow taller than eye level.
- Limit view to only the enclosed area.

How do plants Frame?

- Plant groupings attract viewer's eyes.
- Frame off-site views & incorporate them into the landscape.

How do plants integrate landscape?

- Unify the landscape and “tie it together”.
- Blend the house and other structures into the landscape.

Functional uses of plants

Architectural

Aesthetical

Engineering

Climate Control

Architectural uses

- Form walls, ceilings, and floors
- Privacy
- Progressive Realization

Aesthetic uses

- 2 and 3 dimensional plants
- Complimentor
- Attractors
- Unifiers
- Emphasizers
- Evocators

Engineering uses

- Erosion Control
- Acoustical Control
- Atmospheric Purification
- Glare and Reflection Control

Climatic control uses

- Modify solar radiation
- Modify wind velocity
- Modify wind direction
- Modify levels of participation
- Modifies temperature

PLANT CHARACTERISTIC

Plant type (perennial, shrub, small tree etc)

Plant form

Mature height and spread

Texture

Evergreen or deciduous

FUNCTIONAL CRITERIA

Structural plant

Theme plant

Filler plant

Focal point

Screen

AESTHETIC CRITERIA

Foliage type

Foliage colour

Flower colour

Ornamental bark, twigs, stems

Berries or fruit

Fall colour

Seasonal interest

CULTURAL CRITERIA

Soil pH

Soil type (Clay, sand, loam etc)

Soil quality (drainage, organic matter, nutrient content etc.)

Hardiness zone

Water availability and soil moisture

Sun and wind exposure

Apart from these one has to consider the personal knowledge and information gleamed from reference books that provide table or charts on various conditions, functions and aesthetic qualities.

Plants, whether trees, shrubs, climbers or groundcovers, they have to be placed at suitable location so that the desired purpose is served.

The efficient and successful choice of plants should be made on the basis of their design characteristics. The following criteria can be used for plant selection:

1. Functional & Structural Characteristics :

Plants in combination and individually, create space beneath, between & sometimes within the bulk of their canopies.

Plants create landscape structure, which both defines spaces and serves the required function.

Trees, in the city are living building material used to establish spatial boundaries.

They create spatial rhythms to heighten the experience of moving through the outdoor spaces, its ability to shelter, screen or shade, density of roof growth which will determine its ability to bind the soil and protect against erosion.

Plants also provide a fitting environment for human activities while avoiding damage to ecology of the landscape.

2. Visual & Other Sensory :

Plants offer an enormous wealth of aesthetic characteristics, the appearance of their leaves, twigs, bark, flower & fruit, the fragrance of flower and aromatic foliage, the physical texture of bark & leaves even the sound of leaves when stirred by the wind or beaten by the rain.

3. Plant Growth Habit & Cultural Requirement (ecological):

There is enormous diversity of size, habit foliage & other characteristics among the range of species; that helps to determine the habitat & ecological niche. In the first place, planting design can help us make the best use of our environment.

Secondly, it helps to restore the balance between people, nature and in some extent to the wild life and finally it offers many opportunities for enjoyment of aesthetic delights.

4. Plants and Their Uses :

Plants are positive design elements in any environment and they can enhance the environment, if used with proper understanding

Trees (basic planting) :

This relates to the contemporary requirement in landscape design for mass planting of large groups, woodlands, which with the topography or land form, produce the large scale spatial arrangement of the landscape. The species selected for this group should be hardy, vigorous in growth, indigenous for ecological reasons and exotics which have become established as part of local scene.

e.g.- *Acacia auriculiformis*, *Pterospermum acerifolium* (kanak champa), *Alstonia scholaris*, *Putranjiva roxburghii* (jalpitri), *Azadirachata indica* (neem), *Dalbergia sissoo* (sheesham) etc.



Acacia auriculiformis



Pterospermum acerifolium



Alstonia scholaris



Putranjiva roxburghii



Azadirachata indica

Trees (special effects) :

Trees in this section should include those sufficiently individualistic, spectacular or strong in character to occupy the isolated positions, either because of these qualities or because they do not mix easily in visual sense with other trees.

e.g.- *Ficus bengalensis* (banyan tree), *Cassia fistula* (amaltas), *Bombax malabaricum* (silk cotton tree), *Cassia nodosa* (pink javanica), *Jacaranda mimosaeifolia* (neeli gulmohar). *Chrosia speciosa*, *Mimusops elengi* (mulsari) *Callistemon lanceolatus* (bottle brush) etc.



Ficus bengalensis



Cassia fistula



Bombax malabaricum

Trees (barriers) :

Barriers formed with plants are needed in landscape for screening the unpleasant views, for dividing up the landscape into spaces, for providing shelter from wind, for protection against pollution, for defining boundaries and for assisting in the creation of beautiful landscape.

e.g.- *Casuarina equisetifolia*, *Grevillea robusta* (silver oak), *Ficus benjamina*, *Polyalthia longifolia* (ashok), *Putranjiva roxburghii*, *Schleichera trijuga* (kusum), *Golden bamboo* etc.



Casuarina equisetifolia

Grevillea robusta

Ficus benjamina

Polyalthia longifolia

Shrubs (basic planting) :

The use of shrubs in the mass as a basic constituent of the planting of Landscapes. It should have the qualities of hardiness, vigorous growth with a greater emphasis on evergreen plants.

e.g.- varieties of *Acalypha*, *Bougainvillea*, *Cassia biflora*, *Cassia alata*, *Duranta*, *Ficus panda*, *Euphorbia*, *Thevetia*, *Taberneamontana (chandni)*, Palms such as *areca*, *china*, *phoenix*, *rhaps* etc.



Acalypha



Bougainvillea

Shrubs (special effects) :

Similar principles of selection apply to this as for trees (special effects), but at the same time it should be noted down that a number of shrubs planted together can produce special effects specially at the time of flowering.

e.g. – *Caesalpinia pulcherrima* (peacock flower), *Calliandra haematocephala*, *Poinsettia*, *Mussaenda*, *Justicia*, *Ixora*, Bamboo-buddha valley, *Franciscea latifolia* (yesterday, today and tomorrow), etc.



Caesalpinia pulcherrima



Calliandra haematocephala



Franciscea latifolia
(yesterday, today and
tomorrow)

Shrubs (barriers) :

Impenetrability is essential unless the barrier is for visual purpose, thus the twigs or thorns are considered as an advantage. Other things to consider are the ability of the plant to accept pruning, either to control growth or to produce topiary effects.

e.g. – *Bouganvillea*, *Duranta plumieri*, *Duranta plumieri varigata*, *Duranta goldeana*, *Murraya* etc.



Duranta plumieri



Murraya



Duranta goldeana

Shrubs (edging) :

To outline the flower beds or other kinds of plants and to create line effects.

e.g. – *Duranta goldeana* etc.

5. Microclimatic aspects

- The general climate of the area and the specific microclimate are also important factors to consider. Both affect the water availability, amount of sunlight, and maximum and minimum temperatures each plant will experience. All of these factors will influence the ability of each plant to grow and survive.

Some general climate factors to consider:

maximum and minimum temperatures (daily, monthly, yearly)
seasonality of precipitation (e.g. wet winters, dry summers)
total average yearly precipitation

- A microclimate differs significantly from the general climate of a region. Some microclimate factors to consider:
- Aspect of site (e.g., north-facing or south-facing) & range of topography (e.g., small changes in elevation such as dips in the landscape) (Mountains and valleys create some rather complex microclimate. The bottom of valley is cooler than hillsides due to cool air draining to low spots.)

5. Microclimatic aspects

- Take advantage of the microclimates on different sides of their homes. Sunny south and west sides will be warmer. The east side of a house is typically cooler than south or west, and it may be more protected from wind. Because of this, it is perhaps the most temperate side in which to garden. The north side of houses is the shadiest, coolest, and generally moist. Grow plants that are not heat or drought tolerant here.
- Total pavement area or area of impervious surface nearby (which can increase local temperatures and amounts of surface water runoff).
- Trees, shrubs, vines, and ground covers can also be used to change the microclimate of your yard, providing shade as well as reducing energy demand for heating and cooling.
- Plants also create microclimates that retain the moisture that would normally be lost through evaporation.
- Large trees and shrubs can provide shade and protection from the wind but may compete with smaller plants for available soil moisture.

In landscaping, an **avenue** is traditionally a straight with a line of trees or large shrubs running along each side, indicates, to emphasize the "coming to," or *arrival* at a landscape or architectural feature. In most cases, the trees planted in an avenue will be all of the same species or cultivar, so as to give uniform appearance along the full length of the avenue.

Scientific Name	Local Name
<i>Polyalthia Longifolia</i>	False Ashoka
<i>Ficus benjamina</i>	Weeping fig
<i>Cassia fistula</i>	Golden shower
<i>Acacia auriculiformis</i>	
<i>Peltophorum Pterocarpum</i>	Yellow flame tree
<i>Delonix regia</i>	Gulmohar
<i>Spathodea campanulata</i>	African tulip tree

- Tree-lined avenues seem to have made their first appearance on the European continent in the **Italian Renaissance gardens** of the first half of the 16th century
- They were “imported” to **France**, where they were soon described using the term “*allée*” which had been used for passageways in buildings in previous centuries and now came to designate a passageway in a virtual edifice, the garden
- These “*allées*” - linked with the formal, “French” style of garden design, which used them to **emphasize the main lines of the composition and to guide the eye towards a chosen focal point**
- Initially **this focal point was located within the garden**, but designers soon came to prefer vistas which led into the distance – towards the summit of a nearby mountain or a far-off castle
- Alternatively they resorted to create **an illusion of space – by placing a painting at the far end of the “*allée*”**. This practice was evident in France in the first half of the 17th century and also in the baroque gardens of southern Germany and Austria
- With **Le Nôtre’s influence** in France and in gardens following the formal French style elsewhere, the preference was for **perspectives opening onto infinity**

- **Linear nature** avenues are an **effective and economical means of defining territorial and spatial boundaries and of articulating circulation**
- Important role in **guiding travelers** and **troops** during snowy or foggy weather, in times of flooding and by night, as well as functioning as a **protective barrier**
- Their **scale and proportion** can vary from an **intimate path under small flowering trees** to a **grand parade flanked by majestic trees**
- The **degree of enclosure** can also be controlled. Avenues of mature trees do not give full separation at lower levels, rather they create raised structures such as a green 'arcade' with foliage 'roof', a 'colonnade' with 'windows' between the trunks, or an implied boundary along a line defined by widely spaced specimens
- Tree planting also fulfill a **technical function**: they **drain** and **stabilized the roads**, which is especially important in marshy areas
- They also **sheltered travelers** from the **wind** or **provided shade** in unsheltered sunny areas
- **Prevents soil erosion** caused by **wind**

The eternal quest for beauty

Avenues are traditionally **associated** with **fine buildings, monuments and ceremonial routes**. The vista created by a straight, two-row avenue is often focused on a building **façade or monument** for which it **creates an impressive approach**.

Planted to give **character, identity and distinction** to **vehicle or pedestrian routes**

The **scale, style** and **choice of plants** will dictate the long-term effect that is created whether formal with one species, or a mixture of shapes, forms and species. Informal avenues use groups of plants clumped together at irregular intervals, permitting views from the avenue into the surrounding landscape.

The use of a building, water feature, gate or seat at the end of the avenue draws the eye onwards and invites exploration



Planting distances are determined by the **space available** in an urban environment; facades and utility networks (over ground and underground) restrict the possible locations and crown development

Linked to aesthetic effect desired: achieving a **partial or total “arch” effect** over the longer term is **impossible when rows of trees are planted too far apart**

The regular spacing between the trees in a single row should be appropriate to the avenue as a whole: by their nature, tree-lined roads are not a succession of solitary trees but a structure in which each individual tree contributes to the overall effect.

For avenues of **large trees** with canopies that are close together, but not continuous, a planting distance of **20–25 meters** apart is ideal. This will allow the largest trees to develop into broad, spreading specimens.

The smaller the canopy spread the closer we need to plant to achieve the same degree of continuity. **Medium-sized** avenue trees **5–6 meters** apart is the recommended spacing.

The **smallest trees** should be planted no more than **5 meters** apart.

In practice, the **location of trees** will be **affected** by numerous **site constraints** such as **road junctions, side paths, the windows and entrances of buildings** and **underground and overhead services**. It is rare to achieve identical spacing throughout the length of an avenue.

Choice of species - the **tree's environment** and **biology**, its **physiognomy (shape, texture, color)**, the **impacts of climate change, history** and **specific regional circumstances** (urban, outskirts of a village, agricultural landscape, or in a key area for environmental protection)

To **prevent** the risk of **monospecies heritage** decimated by disease or pests, it is wise to opt for some **diversity**, without overdoing it.

Local species and **crops** should be **preferred** – including fruit trees.

A **formal avenue** needs to be consistent in canopy habit and foliage- demands a single species of tree that must be reliable and consistent in its growth. It should not show undue response to variations in soil and microclimate on the site; it should not be over-susceptible to diseases and disorders; and it should not need frequent arboricultural work to maintain a safe and well-shaped crown. It is a further advantage if the species is available as a cultivar, which will be genetically consistent. Trees propagated by seed often show too much variation to make a good formal avenue.

If regularity of form is unimportant, the choice of avenue trees broadens to include virtually any species suited to the local conditions.

If **pedestrian** or **vehicular circulation** is required beneath the avenue we should choose trees that can be pruned to give a **raised crown above head height** and are **not prone to dropping branches**, or **wind damage**.

Small avenues (less than 10 meters high) can be effective and attractive structural elements in the human scale landscape of courtyards and gardens.

LAWN PREPARATIONS, MOWING, MAINTENANCE ETC

Preparation

- During the period prior to planting the ground shall be maintained free from weeds.
- Grading and final leveling of the lawn shall be completed at least three weeks prior to the actual sowing.
- Regular watering shall be continued until sowing by dividing the lawn area into portions of approximately 5m² by constructing small bunds to retain water.
- These bunds shall be levelled just prior to sowing of grass plants. At the time of actual planting of grass, it shall be ensured that the soil has completely settled.



LAWN PREPARATIONS, MOWING, MAINTENANCE ETC

Soil

The soil itself shall be ensured to the satisfaction of the landscape architect to be a good fibrous loam, rich in humus.

Sowing

Grass roots shall be obtained from a grass patch, seen and approved beforehand. The grass roots stock received at site shall be manually cleared of all weeds and water sprayed over the same after keeping the stock in a place protected from sun and dry winds. Grass stock received at site may be stored for a maximum of three days. In case grassing for some areas is scheduled for a later date fresh stock of grass roots shall be ordered and obtained. Small roots shall be dibbled about 75 mm apart into the prepared grounds. Grass areas will only be accepted as reaching practical completion when germination has proved satisfactory and all weeds have been removed.

LAWN PREPARATIONS, MOWING, MAINTENANCE ETC

Maintenance

- As soon as the grass is approximately 30 mm high it shall be rolled with a light wooden roller in fine, dry weather — and when it has grown to 50 mm to 80 mm above ground, weeds shall be removed and regular cutting with the scythe and rolling shall be begun.
- A top-dressing of farm yard manure, bone meal at the rate of 50 g/m² and NPK at the rate of 10 g/m² shall be applied when the grass is sufficiently secure in the ground to bear the mowing machine, the blades shall be raised 25 mm above the normal level for the first two or three cuttings.
- That is to say, the grass should be cut so that it is from 40 mm to 50 mm in length, instead of the 30 mm necessary for mature grass. In the absence of rain, in the monsoon the lawn shall be watered with sprinklers every, three days soaking the soil to a depth of at least 200 mm.
- Damage, failure or dying back of grass due to neglect of watering specially for seeding out of normal season shall be the responsibility of the contractor.
- Any shrinkage below the specified levels during the contract or defects liability period shall be rectified at the contractor's expense.
- The contractor shall exercise care in the use of rotary cultivator and mowing machines to reduce to a minimum the hazards of flying stones and brickbats. All rotary mowing machines are to be fitted with safety guards.

LAWN PREPARATIONS, MOWING, MAINTENANCE ETC

Rolling

Lawn mower with roller shall be used periodically, taking care that the lawn is not too wet and sodden.

Edgings

These shall be kept neat and shall be cut regularly with the edging shears.

Watering

Water shall be applied at least once in three days during dry weather. Water whenever done should be thorough and should wet the soil at least up to a depth of 200 mm.

Weeding

Prior to regular mowing the contractor shall carefully remove rank and unsightly weeds.

PLANT MATERIAL

SHRUBS & GROUND COVER

SL NO	SCIENTIFIC NAME	COMMON NAME	SL NO	SCIENTIFIC NAME	COMMON NAME
1	Vinca Rosea		21	Duranta Golden	
2	Ixora stricta		22	Wedelia Trilobata	
3	Hydrangea		23	Strelitzia reginae	
4	Celosia		24	Euphorbia mili	
5	Dianthus		25	Acalypha hispida	
6	Zinnia		26	Chlorophytum	
7	Marigold		27	Asparagus sprengerii	
8	Salvia Red/Blue		28	Nephrolepis exaltata	
9	Syngonium		29	Alternanthera red	
10	Poinsettia		30	Areca Palm	
11	Impatiens		31	Adenium white	
12	Syzygium wilsonii	Powder puff lily	32	Areca Palm	
13	Heliconia psittacorum		33	Raphis excelsa	
14	Lantana sellowium		34	Bambusa ventricosa	Budha belly bamboo
15	Ixora chinensis		35	Philodendron selloum	
16	Anthurium		36	Spathiphyllum wallisii	
17	Alpinia		37	Aglaonema silver queen	
18	Zephyranthes		38	Draceana fragrans	
19	Hamelia patens	Fire bush	39	Draceana marginata	
20	Nerium oleander dwarf		40	Schefflera Arboricola	92

HARD AND SOFTSCPE IN LANDSCAPE

- To better understand how to design for a landscape, the two main elements that make up outdoor living spaces are known as hardscape and softscape. The easiest ways to remember the differences: Hardscape and softscape are the complete opposites of each other, yet both are necessary to make a landscape fully functional. Both terms are often used to emphasize the distinction between the two.
- Hardscape is the hard stuff in your yard: concrete, bricks and stone . Softscape is the soft, growing stuff, like perennial flowers, shrubs, succulents, and trees. Softscape is living; hardscape is not.

Hardscape Elements

Once you know the distinction, the characteristics of hardscape make sense. Among them:

Hardscape can be thought of as "hard," yet movable, parts of the landscape, like gravel, [paving](#), and stones.

They are inanimate objects.

Hardscape is solid and unchanging.

Other examples of hardscape include retaining walls, pavers for paths or patios, [outdoor kitchens](#), [water features](#), [gazebos](#), decks, and driveways.

It can be natural, like stone, or manmade, like an outdoor structure or a planter.

Hardscape materials have different effects on the environment. Pavement, which is hardscape, prevents water from soaking into the soil, thus increasing runoff, which can carry contaminants into streams. Porous materials allow water to soak into the soil.

Softscape Features

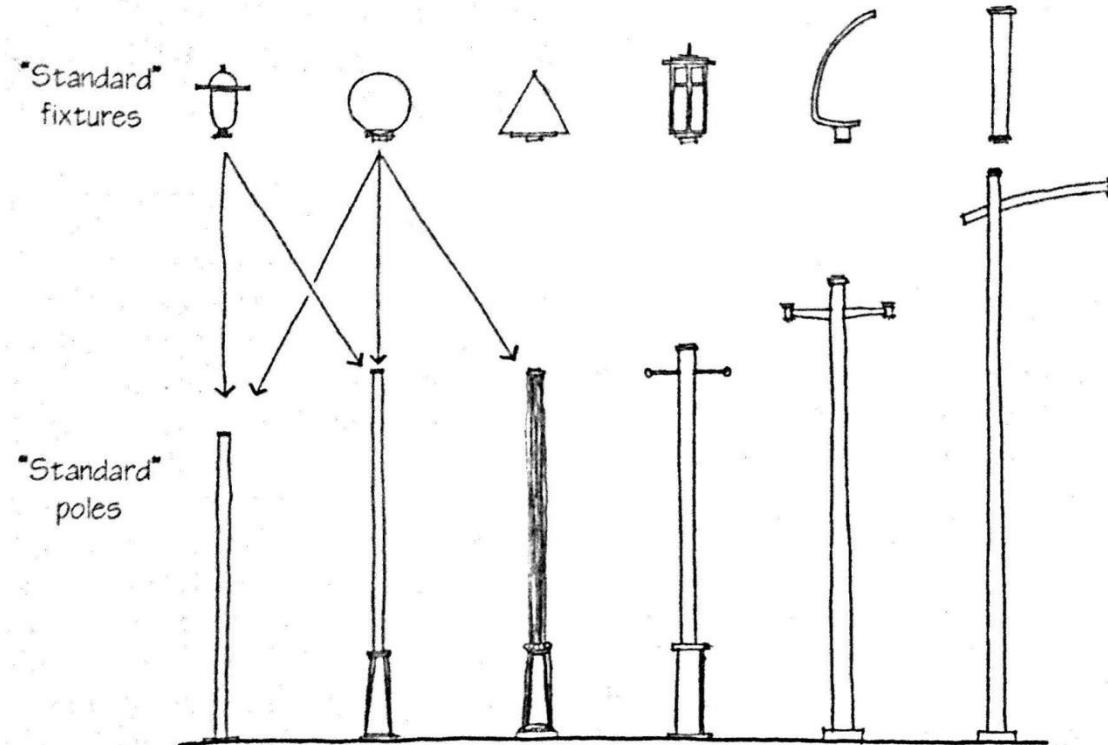
Plants are available in a variety of colors, shapes, textures, and sizes. When selecting softscape:

Consider these the "soft" horticultural (living, growing) components of the landscape. These might include flowers, trees, shrubs, [ground covers](#), etc.

Change and evolve constantly, as they grow and adapt to climate and other conditions.

Are softer to the touch, quite literally. Think about touching the leaves of a tree or perennial, or blades of grass. They are *soft*, not hard.

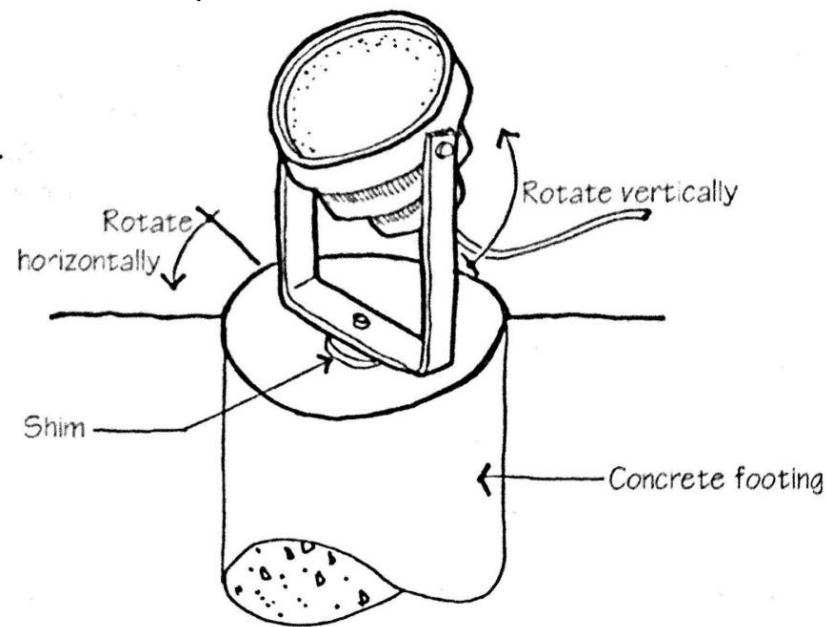
LANDSCAPE LIGHTING



B. Customizing from Standard Components

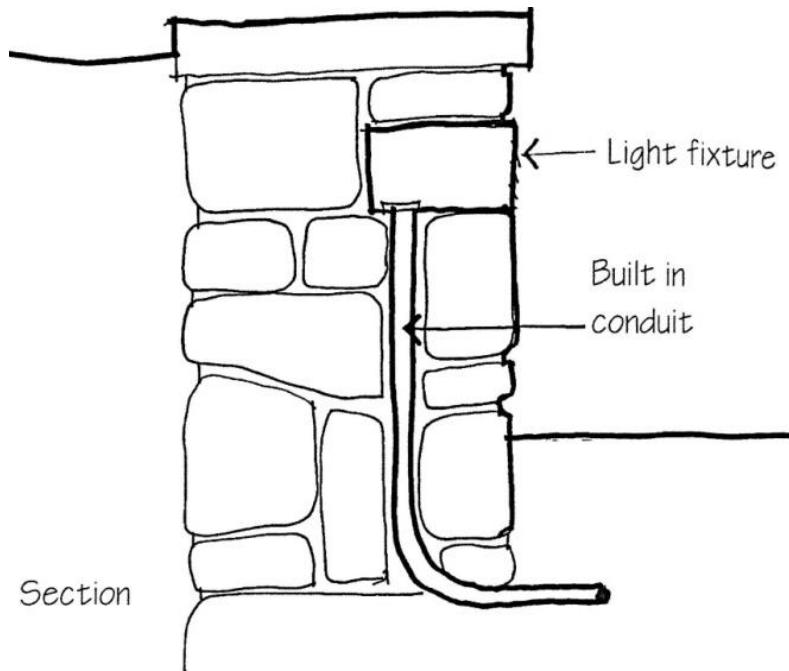
LIGHT FIXTURES CAN BE MODIFIED WITH ALTERNATE BASES, POLES, FIXTURES AND LAMPS TO CREATE A NUMBER OF VARIATIONS IN FORM

LIGHT FIXTURE ADJUSTABLE IN THREE DIRECTIONS. THE BASE PLATE IS SHIMMED TO LEVEL THE PLATE AND BRING IT TO THE REQUIRED ELEVATION

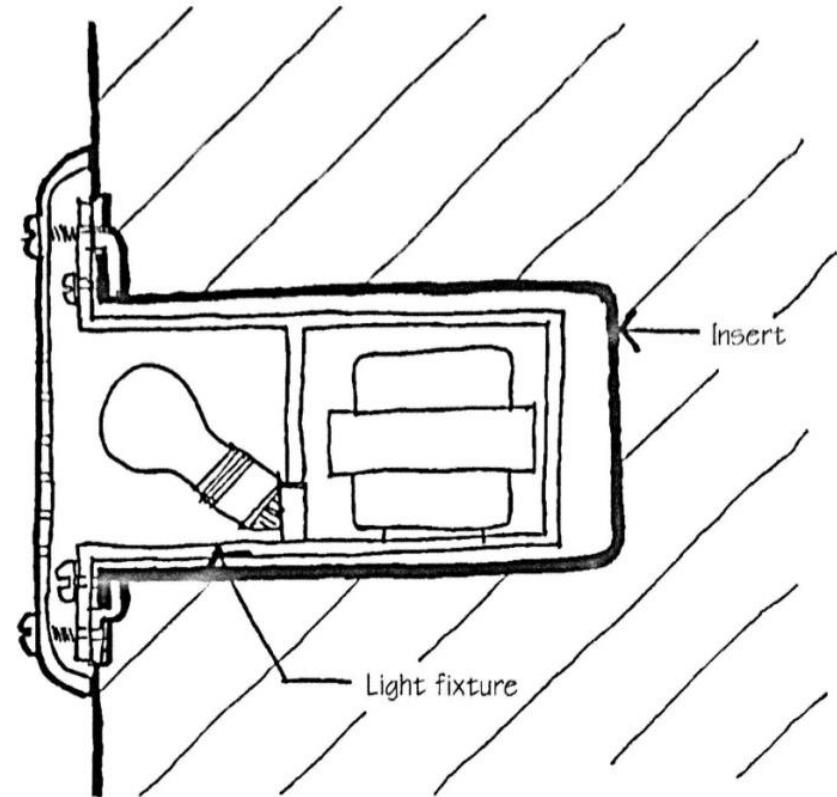


Light Fixture Adjustability

CONDUITS CAN BE BUILT INTO
WALLS OR COLUMNS TO
ACCOMMODATE WIRING/ DRIP
IRRIGATION LINES

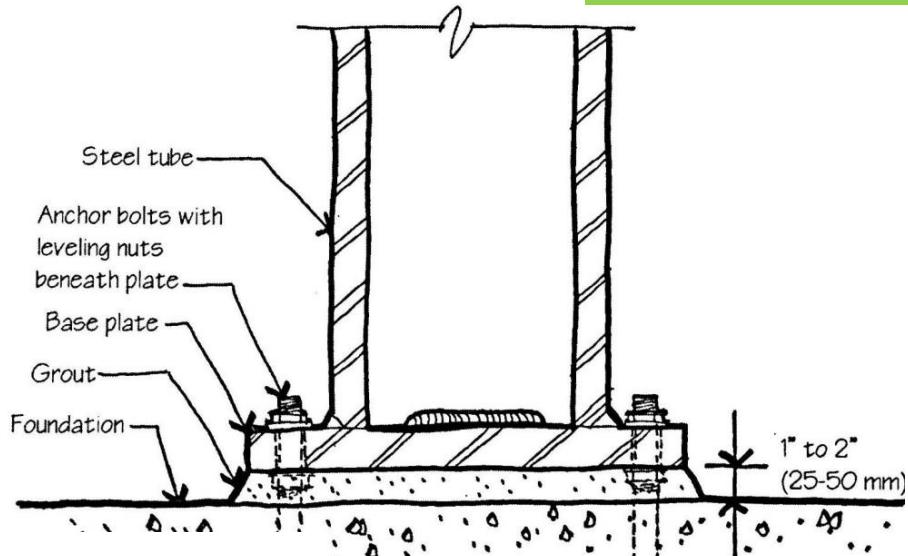


Conduit in Solid Walls



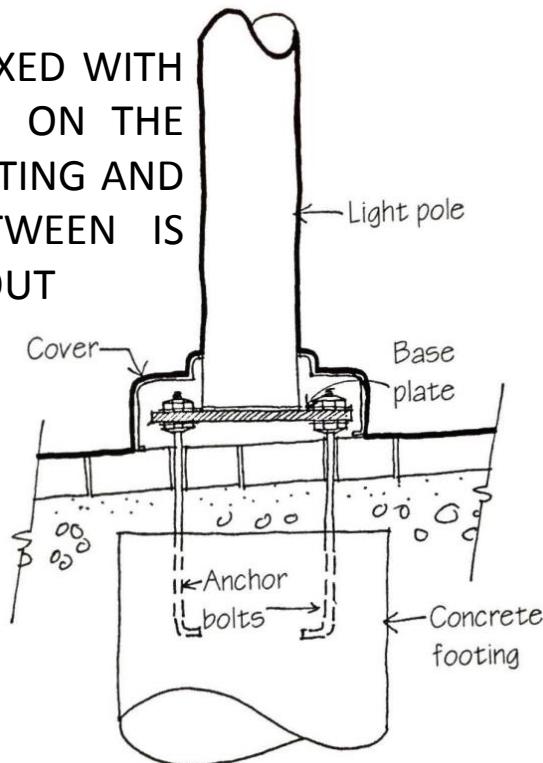
Light Fixture

LIGHT FIXTURE HOUSING CAN BE BUILT OR CAST INTO THE WALL STRUCTURE & THE LIGHT FIXTURE CAN THEN BE ADJUSTED WITHIN THE HOUSING TO LAY FLUSH AGAINST THE FINISHED WALL SURFACE

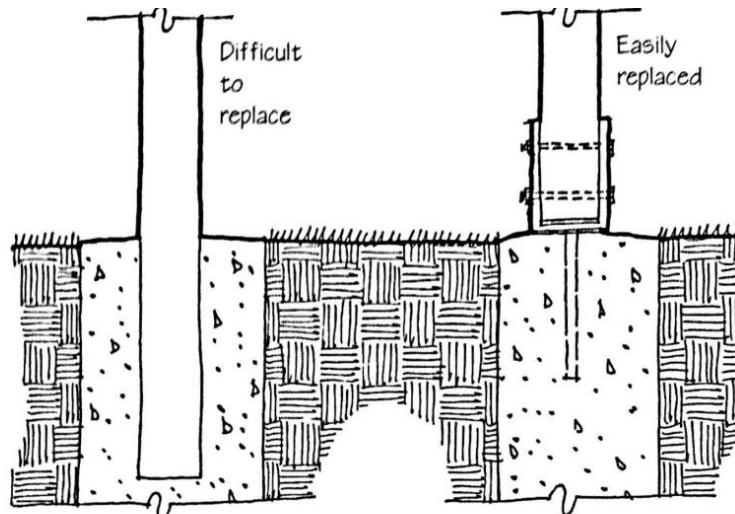


Light Pole Base Plate

BASE PLATE IS FIXED WITH LEVELLING NUTS ON THE TOP OF THE FOOTING AND THE SPACE BETWEEN IS FILLED WITH GROUT

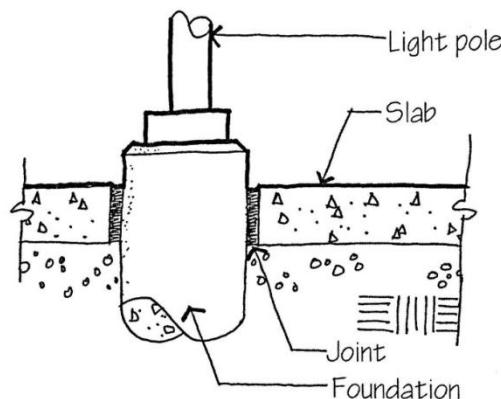


COMPONENTS THAT MUST BE REPLACED OVER TIME MUST HAVE ACCESSIBLE FASTNERS TO FACILITATE REMOVAL AND REPLACEMENT



Replacement Consideration

ISOLATION JOINT AROUND LIGHT POLE FOUNDATION & RIGID PAVEMENT



Concrete Slab at Light Pole Base