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LANDSCAPING OF S.V.S.M.D'S POLYTECHNIC CAMPUS

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ABSTRACT

A landscape is the visible features of an area of land, its landforms, and how they integrate with natural or man-made features. A landscape includes the physical elements of geophysical defined landforms such as (ice-capped) mountains, hills, water bodies such as rivers, lakes, ponds and the sea, living elements of land cover including indigenous vegetation, human elements including different forms of land use, buildings, and structures, and transitory elements such as lighting and weather conditions. Combining both their physical origins and the cultural overlay of human presence, often created over millennia, landscapes reflect a living synthesis of people and place that is vital to local and national identity. The character of a landscape helps define the self-image of the people who inhabit it and a sense of place that differentiates one region from other regions. It is the dynamic backdrop to people's lives. Landscape can be as varied as farmland, a landscape park or wilderness. The Earth has a vast range of landscapes, including the icy landscapes of polar regions, mountainous landscapes, vast arid desert landscapes, islands, and coastal landscapes, densely forested or wooded landscapes including past boreal forests and tropical rainforests, and agricultural landscapes of temperate and tropical regions. The activity of modifying the visible features of an area of land is referred to as landscaping.

INTRODUCTION

Landscape design focuses on both the integrated master landscape planning of a property and the specific garden design of landscape elements and plants within it. The practical, aesthetic, horticultural, and environmental sustainability are also components of landscape design, which is often divided into hardscape design and softscape design. Landscape designers often collaborate with related disciplines such as architecture, civil engineering, surveying, landscape contracting, and artisan specialties. Construction requires study and observation. It is not the same in different parts of the world. Landscaping varies according to different regions. Therefore, normally local natural experts are recommended if it is done for the first time. Understanding of the site is one of the chief essentials for successful landscaping. Different natural features and phenomena, like the position of the Sun, terrain, topography, soil qualities, prevailing winds, depth of the frost line, and the system of native flora and fauna must be taken into account. Sometimes the land is not fit for landscaping. In order to landscape it, the land must be reshaped to direct water for appropriate drainage. This reshaping of land is called grading.

Landscape gardening is a very fascinating and interesting subject. It is a money spinner business and people who are involved in designing and preparing landscape gardens are earning handsome money. It is an aesthetic branch of horticulture which deals with application of garden forms, different styles, methods and materials with a view to improve the landscape. Frescos of flowers of old times reveal the association of human with flowering

plants which they used in making gardens and planting on road side. In India, the landscape gardening is a developing subject and as such offers much scope for improvement. A beautiful landscape is a vital part of your home and community. A well-planned landscape can save your money by reducing energy consumption. Landscape designer work on the canvas that is distinctly different from other art forms. The "art" is always changing as the plants grow environmental conditions change and people use the space. For this reason, landscape designers use a design process that systematically considers all aspects of the land, environment, growing plants needs of the user to ensure a visually pleasing, functional and ecologically healthy design. The fundamental concept of landscape design is problem solving through the use of horticultural science, artful composition and spatial organization to create attractive and functional outdoor "rooms" for different uses. The elements (visual qualities)—line, form, texture and colour principles (guidelines) — rhythm, balance, proportion, unity, focal point, mass effect and level of design are used to create spaces, connect them and make them visually pleasing to the eye.

1.1 PROBLEM STATEMENT

Landscape design problems can be the cause for a lot of lost time and money if not solved correctly. Expectations and reality rarely ever seem to align and unfortunately when it comes to projects around the home, reality can be a heavy-hitter. Many of the most common landscaping problems that present themselves as causing the most depreciation to the land include landscape slope problems, water drainage, and erosion control. Assessing your landscape for problem areas and creating solutions begins with understanding how specific terrains should be utilized and protected.

1.2 PROBLEM MOTIVATION

A landscaper performs three main functions: design, installation, and maintenance. To be a professional landscaper, you practice all these skills. In this section, you'll learn how to do exactly that. You'll learn how to put together a design, from the approach through the layout and on to the final landscape plan. You'll also learn about such landscaping installations as edging, ground cover, and retaining walls. We'll explain how to carry out all kinds of maintenance duties, including mowing and trimming, bed tending, and pruning. You'll need to have some knowledge of each of these areas, no matter what kind of landscaping you may get into as a professional specialty

II. LITERATURE SURVEY

2.1 Landscaping Architecture and Design

2.1.1 Introduction

The living components of the landscape are the plants (and perhaps the animals which inhabit it). A landscape is made good or bad by the way in which these components are both selected and are arranged together. The landscape is constantly changing, and a good designer must foresee and account for changes which are likely to occur. Plants grow, flower and die. Wooden structures rot and metal ones rust. Earth can erode. The garden continually changes through the cycle of the season. A skilled landscape designer will not only be aware of, but will use these changes. Generally, landscape architecture covers a huge spectrum, perhaps best understood by the profession's mantra: as achieving a balance between the built and natural environments. It requires a multidisciplinary approach involving environmental science, art, ecology and much more, sometimes leading to extraordinary results such as restoring endangered wetlands, securing government and other buildings and

removing toxins from rainwater. These are not pie in the sky. They are what landscape architects are designing right now.

Landscape architecture is a formal process of study, design, and construction by which new landscapes are created to meet the aspirations of the people concerned. It involves framing proper planning projects, more particularly those affected by changes and the badly damaged areas, like for example suburbs, peri-urban, industrial and coastal areas. The purpose of such planning projects to radically re-shape the damaged landscapes.

2.1.2. Landscape Architecture and Landscape Architects

Landscape architecture is a discipline that focuses on intervention through the activities of planning, design, and management. Also, it is concerned with the art and science that underpins all activities. All these activities are united in the concept of landscape, which is defined in various ways. However, it is generally understood to mean the outdoor environments and relationships between people and places. Landscape architecture is concerned with landscapes of all types both urban and rural, and at all scales from the smallest open space to the whole region.

As a result, people enjoy attractively designed gardens, public parks, playgrounds, residential areas, college campuses, shopping centers, golf courses and parkways. Landscape architects design these areas so that they are not only functional but also beautiful and harmonious with the natural environment. They plan the location of buildings, roads, and walkways, as well as the arrangement of flowers, shrubs and trees. Some landscape architects work on a variety of types of projects. Others specialize in a particular area, such as street and highway beautification, waterfront improvement projects, parks and so on. Others work in regional and resource management, feasibility, environmental impact and cost studies or site construction. Increasingly, landscape architects work in environmental remediation such as preservation and restoration of wetlands or abatement of storm water runoff in new developments. Historic landscape preservation and restoration is another area where landscape architects increasingly play a role.

2.1.3. Role of Landscape Architects

It is observed that landscape architects create the landscape around us. They plan, design and manage open spaces including both natural and built environments. They work to provide innovative and aesthetically pleasing environments for people to enjoy. Their work covers diverse projects that range from designing the layout of parks, gardens and housing estates to city-center design, sporting sites and improving the land. This means that the role of landscape architects is not just beautification, but it is about creating the space itself, creating the ambiance of a development and creating the quality of the built environment.

2.1.4 Elements of Landscape Design

The elements of composition are the visual qualities that people see and respond to when viewing a space. Visual qualities can illicit many different emotions and feelings, and the more positive those feelings, the more likely people are to enjoy and use a space.

Line

Line creates all forms and patterns can be used in a variety of ways in the landscape. Line in the landscape is created by the edge between two materials, the outline or silhouette of a form or a long linear feature. Lines are

a powerful tool for the designer because they can be used to create an infinite variety of shapes and forms; they control movement of the eye and the body. Landscape designers use lines to create patterns, develop spaces, create forms, control movement, establish dominance and create a cohesive theme in a landscape. Lines are a powerful design element that define rooms and connect people to the landscape. For a professional touch, use sweeping bold lines and curves rather than small zig zags and wavy curves. The properties of lines determine how people respond to the landscape, both emotionally and physically. Straight lines are structural and forceful; they create a formal character, are usually associated with a symmetrical design and lead the eye directly to a focal point. Straight lines are most often found in landscape edges and material. Curved lines create an informal, natural, relaxed character that is associated more with nature and asymmetrical balance. Curved lines move the eye at a slower pace and add mystery to the space by creating hidden views. Vertical lines move the eye up, making a space feel larger. Vertical lines in the landscape include tall, narrow plant material such as trees or tall structures, an arbor or a bird house on a pole. Horizontal lines move the eye along the ground plane and can make a space feel larger. Low lines are created by low garden walls, walkways and short hedges

Form

Shape is created by an outline that encloses a space while form is the three-dimensional mass of that shape. Form is found in both hardscape and plants and it is typically the dominant visual element that spatially organizes the landscape and often determines the style of the garden. The form of structures, plant beds and garden ornaments also determines the overall form theme of the garden. Formal geometric forms include circles, squares, and polygons. Informal naturalistic forms include meandering lines, organic edges and fragmented edges. Plants create form in the garden through their outlines or silhouettes but form can also be defined by a void or negative space between plants. Meandering lines often mimic the natural course of rivers or streams and can be described as smooth lines with deeply curved undulations. These lines can add interest and mystery to a garden by leading viewers around corners to discover new views and spaces.

• Horizontal and spreading forms emphasis the lateral extent and breath of space. They are comfortable because it corresponds with the natural direction of eye movement.

• Rounded forms are most common in plant materials. They allow for easy eye movement and create a pleasant undulation that leads itself to plant groupings

. • Vase-shaped trees define a comfortable “people space” beneath the canopy.

• Weeping forms lead the eye back to the ground. Below the weeping form often becomes a focal point.

• Pyramidal forms direct the eyes upward so use sparingly.

Grouping pyramidal will soften the upward influence. They will look more natural in the surroundings with foliage to the ground.

Texture

Texture can be defined as the relationship among the foliage, twig size and mass of the plants. Close up texture comes from the size and shape of the leaves, the size of twigs, spacing of leaves and twigs, the colours and shading, the gloss or dullness of leaves, etc. At a distance, texture comes from the entire mass effect of plants and the qualities of light and shadows. Texture is used to provide variety, interest, and contrast. The plant’s foliage, flowers, bark and overall branching pattern all have texture. The size and shape of the leaves often determine the perceived texture of the plant. A plant can generally be described as having a coarse, medium or fine texture. Plant characteristics that create coarse texture include large leaves; leaves with very irregular edges;

bold, deep veins; variegated colours; thick twigs and branches; leaves and twigs with spines or thorns; and bold, thick, and/or irregular forms. Coarse-textured plants attract the eye and tend to hold it because the light and dark contrasts of the shadows provide more interest. Most plants are medium texture, in that they cannot be described as having either coarse or fine texture. They are characterized by medium-sized leaves with simple shapes and smooth edges. Medium-textured plants act as a background to link and unify the coarse and fine textured plants. Characteristics that create fine texture includes small foliage; thin, strappy leaves (grasses) or tall, thin stems; tiny, dense twigs and small branches; long stems (vines) and small, delicate flowers. Fine texture exaggerates distance and gives the feeling of a larger, more open space. Rough texture minimizes distance—plants appear closer and the space feels smaller or enclosed. Texture is also found in the hardscape, including on buildings, patios, walls and walkways.

Colour

Colour in plant material and hardscape adds interest and variety to the landscape. It is the most conspicuous and temporary element in the landscape, usually lasting only a few weeks to a year for individual plants. The use of colour is guided by colour theory (use of the colour wheel) to create colour schemes. A simple description of the colour wheel includes the three primary colours of red, blue and yellow; the three secondary colours (a mix of two primaries) of green, orange and violet; six tertiary colours (a mix of one adjacent primary and secondary colour) such as red-orange.

Colour theory explains the relationship of colours to each other and how they should be used in a composition. The basic colour schemes are monochromatic, analogous and complementary. Colour is found in the flowers, foliage, bark and fruit of plants. Foliage typically provides the overall background colour for flower. Various shades of green foliage is the dominant colour by quantity, but other colours capture attention more readily because of their high contrast to the colour green.

Monochromatic scheme

A monochromatic colour scheme uses only one colour. In landscaping, this usually means one other colour besides the green colour in the foliage. One colour can has many light and dark variations, which can add interest. An example of a monochromatic scheme is a white garden with white flowers, white variegated foliage and white garden ornaments.

Analogous scheme

Analogous (sometimes called harmonious) colour schemes have any three to five colours that are adjacent on the colour wheel such as red, red-orange, orange, yellow-orange, yellow, blue or blue-violet and violet. The colours are related to each other because they typically include two primary colours mixed to form a secondary and two tertiary colours which mean they share common properties.

Complementary scheme

Complementary colours are those that opposite each other on the colour wheel. They tend to have high contrast between them. The most common sets are violet and yellow, red and green, blue and orange. Complementary colours are often found naturally in flowers and a common pair is yellow and violet.

Principles of Design

Design principles guide designers in organizing elements for a visually pleasing landscape. A harmonious composition can be achieved through the principles of proportion, order, repetition and unity. All of the

principles are related to even other and applying one principle helps achieve the others. Physical and psychological comforts are two important concepts in design that are achieved through use of these principles. People feel more psychologically comfortable in a landscape that has order and repetition. Psychological comfort is also affected by the sense of pleasure that a viewer perceives from a unified or harmonious landscape. Users feel more physically comfortable, function better and feel more secure in a landscape with proportions compatible to human scale.

Rhythm

Repetition of same object at equidistance is called rhythm. Repetition is created by the repeated use of elements or features to create patterns or a sequence in the landscape. Repeating line, form, colour and texture create rhythm in the landscape. Repetition does not always create a pattern; sometimes it is simply the repeated use of the same colour, texture or form throughout the landscape using the same plant. In Mogul gardens, fountains and water canals have also been extensively used to create such effects. Now-a-days other objects like lights are also used to create the effect of rhythm.

Balance

Balance is the concept of equal visual attraction and weight usually around a real or imaginary central axis. Form, colour, size and texture all affect balance. Balance can be symmetrical, asymmetrical or perspective. Order can also be achieved by massing features or elements into distinct groups and arranging them around a central point. • Symmetrical or formal balance is achieved when identical elements are positioned equidistantly from the central axis. For making the balance with the plants, their form, colour and texture are kept in view. • Asymmetrical or informal balance creates the same amount of interest on both sides of the outdoor room, but does not create an exact duplication of elements. A tree on one side is balanced by planting a group of shrubs on another side.

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Proportion or scale

Relative proportion is the size of an object in relation to other objects. Absolute proportion is the scale or size of an object. An important absolute scale in design is the human scale (size of the human body) because the size of other objects is considered relative to humans. Plant material, garden structures and ornaments should be considered relative to human scale. Proportion can be found in plant material relative to people, the surrounding plants and the structure or building. When all three are in proportion, the composition feels balanced and harmonious. A feeling of balance can also be achieved by having equal proportions of open space and planted space. Benches, tables, pathways, arbours, gazebos, etc. work best when people can use them easily and feel comfortable. Human scale is also important for psychological comfort in voids or open spaces.

Unity

Unity is achieved by linking elements and features to create a consistent character in the composition. It is sometimes referred to as harmony—the concept of everything fitting together. By comparison, scattered groupings of plants and unrelated garden ornaments are the opposite of unity. Interconnection, the concept of physical linkage (touching) of various features is present in all designs. Hardscape is important to interconnection because it typically serves to organize and link spaces in the garden. Features that are grouped

in threes, or in other groups of odd numbers, such as in groups of five or seven, feel more balanced to the eye and give a stronger sense of unity. Odd numbers allow for staggered variations in height, such as small, medium and large that provide more interest.

Focal point

Focal point is an object or feature in the garden that draws the eye and leads the visitor towards them. The ability of an object to capture attention usually depends on contrast with adjacent objects. Garden ornaments also work well to attract attention because they are often dramatically different from plant material. Dominant features that capture attention are called focal points. Focal points are used to draw attention to a particular location, move the eye around the space or guide circulation. Emphasis is created through contrast in size, colour, form or texture. Plants that draw attention are with unique form, size or texture often called specimen plants.

Mass effect

The use of one general form of plant material in large numbers in one place is done to have mass effect. Mass effect is the grouping of features based on similarities and then arranging the groups around a central space or feature. A good example is the organization of plant material in masses around an open circular lawn area or an open gravel seating area. To see that mass arrangements do not become monotonous, the sizes of masses should be varied.

Level

The landscaping of a sloping garden will be far more expensive than that of a flat site if it involves building and levelling. On the other hand, a sloping garden has far greater inherent interest than a flat one, and slopes can act as host to many exciting garden features: steps, ramps and dynamic water projects in the form of streams, pools, cascades, waterfalls, even water staircase etc. In a flat garden, it is possible to introduce artificial changes in level, either by importing soil or by the 'cut and fill' technique- which involve digging out soil and mounding it up beside the excavation. The classic result is a mound or rock garden alongside a sunken garden.

Applying the Principles and Elements of Design

While it is useful to know the elements and principles of design, it is sometimes difficult to understand how to apply them to your ideas for garden development. Each site presents challenges and opportunities for individual design, expression, requires unique application of the elements and principles. Studying how the elements and principles have been applied in an existing design that appeals to you is a good place to start.

Personal style and knowledge

To discover and identify your personal style, think about other landscapes you enjoy. Observe the landscapes and study those that appeal to you and note the features and types of plant material. Also try to identify the elements of design, such as colour, texture, form and determine how line is used in the landscape. Study the view and try to determine how balance and rhythm are created. Also, look for dominance and try to figure out how unity is produced. Visit demonstration gardens and botanical gardens to look for interesting and appealing plant groupings. The landscape designer should have sufficient knowledge regarding the plants and their cultivation requirements. Note the type of micro climate for each group to determine if it will work in your garden.

Site conditions

It is an important factor and according to site, suitable design is made. Topography of the site also affects the design. Second, look at the shape and size of the footprint (outline) of your house in relation to your lot size and shape. For this, you will need an official boundary survey that shows the exact footprint with dimensions and its location within the property boundaries. This will tell you if you have room for the features, you desire where those features can be located. Third, thoroughly understand your site and how do you want to use the space. Begin with a site inventory and analysis. Note all the conditions of the space and analyze how the conditions might affect your design. Each condition can be seen as an opportunity— a positive condition that will help achieve your design or a constraint—a negative condition that might impact your design, but could possibly be turned into an opportunity. Examples of opportunities and/or constraints include land forms, such as slopes and flat areas, and natural features such as trees and rocks, or built features such as swimming pools and fences. Depending on the desired design, each could present an opportunity or a constraint.

Locating features and defining outdoor rooms

Once you have determined the architectural style, the shape of the garden spaces and the opportunities of your site, you can begin to locate the features and give them form. Most features will have a logical location based on the use or type of feature and the site opportunities. The elements and principles of design are particularly useful when creating rooms because they help to define spaces, add interest, and create a unified, functional, and aesthetically pleasing landscape. Colour and texture can also be used to differentiate spaces by making each area visually unique or distinct. Spaces can be connected through the use of lines, such as pathways, or they can be visually connected through the use of emphasis (focal points) that captures attention and leads the eye or through repetition of elements that connects spaces through similar objects.

Climate

The climate of particular space affects the selection of plant material accordingly. Ideally suited plant material according to climate should be selected.

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Soil

According to characteristics of soil type, suitable plants should be selected. So, the detail analysis of the existing soil and soil require to be filled from outside should be carried out in advance

CONCLUSION

The fundamental concept of landscape design is problem solving through the use of horticultural science, artful composition, and spatial organization to create attractive and functional outdoor “rooms” for different uses. The elements (visual qualities)—line, form, texture, color, and visual weight, and principles (guidelines) — proportion, order, repetition, and unity of design are used to create spaces, connect them, and make them visually pleasing to the eye.

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