



HOW TO USE THIS PAMPHLET

The secret to successfully earning a merit badge is for you to use both the pamphlet and the suggestions of your counselor.

Your counselor can be as important to you as a coach is to an athlete. Use all of the resources your counselor can make available to you. This may be the best chance you will have to learn about this particular subject. Make it count.

If you or your counselor feels that any information in this pamphlet is incorrect, please let us know. Please state your source of information.

Merit badge pamphlets are reprinted annually and requirements updated regularly. Your suggestions for improvement are welcome.

Send comments along with a brief statement about yourself to Youth Development, S209 • Boy Scouts of America • 1325 West Walnut Hill Lane • P.O. Box 152079 • Irving, TX 75015-2079.

WHO PAYS FOR THIS PAMPHLET?

This merit badge pamphlet is one in a series of more than 100 covering all kinds of hobby and career subjects. It is made available for you to buy as a service of the national and local councils, Boy Scouts of America. The costs of the development, writing, and editing of the merit badge pamphlets are paid for by the Boy Scouts of America in order to bring you the best book at a reasonable price.



BOY SCOUTS OF AMERICA
MERIT BADGE SERIES

ARCHITECTURE AND LANDSCAPE ARCHITECTURE



BOY SCOUTS OF AMERICA.

Webb Bridge Park Master Plan

SOCCER FIELDS

Construct 3 (220' x 300') sodded, irrigated fields with a restroom/concession building (1000sf). Parking east and west of the fields will provide 60 spaces/field. The lower field will feature a sand profile drainage system. An optional feature includes construction of embankment seating and lighting at the lower field.

EAST VALLEY NATURAL AREA

Complete the restoration of the creek banks. Develop interpretive signage and benches. Complete aquatic plantings at pond and restoration of upper valley.

UTILITIES

Extend fire protection and portable water to serve new facilities. Add parking and parkway lighting in concert with local electrical provider. Develop septic fields in sports fields to support restrooms.

WEST VALLEY TRAIL LOOP

Selectively clear for the gravel trail alignment and minimize ground disturbance by using a special aggregate base technique.

WEST VALLEY NATURAL AREA

Restore the deeply incised watercourse. Develop interpretive wood chip trail with signage and benches.

MULTIUSE TRAIL

Develop 12' wide, 7500' length, ADA-accessible trail for pedestrians, cyclists, and wheelchair users. Provide grade-separated crossings of the park drive. Rest benches and emergency telephone to be included.

WHITE OAK PAVILION

Construct a rustic themed pavilion (approx. 1800sf) overlooking the valley from a promontory in a grove of live oaks. Develop several outdoor picnic stations in this vicinity. Include reforestation planting and arboricultural treatment as appropriate.

POST OAK PAVILION

Construct a rustic themed picnic pavilion (approx. 1600sf) situated in the post oak grove. Develop additional picnic stations and restore upland mesophytic forest community.

PARK ENTRANCE

Construct paved driveway and decel lane with sidewalk. Entry sign and associated landscape development to include shrub layer and low-maintenance groundcover plantings. Ensure development of dense screen buffer.

POND

Permanent water feature to provide for all irrigation needs. Safety shelves with aquatic plantings are included.

TENNIS FACILITY

Construct four lighted courts in sets of 2. Develop previous concrete access drive and a 30-car gravel parking area, walkways and a rustic pavilion (900sf) overlooking the East Valley and Pond. Construct a masonry restroom/proshop (900sf).

CHILDREN'S PLAY AREA

Construct 12,000sf play area to include static equipment and swings for a variety of age groups. Include ADA compliant features. Construct an adjacent rustic pavilion (900sf) together with picnic stations. Restore upland mesophytic forest community.

BASEBALL QUADPLEX

Construct four fields (2 @ 200', 2 @ 285') to include lighting, irrigation, sports turf, fences and backstops, masonry restroom/concession (1000sf), 60 parking spaces/field, sidewalks and spectator furnishings (bleachers, benches, picnic tables). Complete landscape development.

MAINTENANCE FACILITY

Construct a masonry storage/office building (2300sf) and gravel yard suitable for storage of maintenance vehicles and supplies. Complete screen planting as appropriate.

PREVIOUS CONCRETE DRIVEWAY

One-way, 18' wide, 4300' length, previous concrete driveway. Also open to cyclists.



Note: This master plan is referenced in the chapter "Landscape Architecture and Design."

Landscape Architecture Requirements

1. Go to a completed landscape project that a landscape architect has designed. Before you visit the site, obtain a plan of the design from the landscape architect if one is available.
2. After completing requirement 1, discuss the following with your merit badge counselor:
 - a. Tell whether the design had separate spaces, a clear path system, and sun and shade variety.
 - b. Discuss how the designated seating, eating, or parking areas suited the overall design.
 - c. Explain how the design reflected consideration for the comfort, shelter, and security of the users.
 - d. Discuss how the choice of trees, shrubs, and ground covers used in the project contributed to its appeal and function.
3. Identify five shrubs, five trees, and one ground cover, being sure that you select examples of different shapes, sizes, and textures. With the help of your counselor or a local nursery, choose plants that will grow in your area. Bring pictures of the different planting materials or, if possible, examples of their branches, leaves, or flowers to a group such as your troop or class at school. Be prepared to tell how you might use each in the design of a landscape.

4. Look at and study a place of worship or school grounds to find the place where most people arrive by bus or car. Show you can do the following:
 - a. Using a measuring tape, measure and draw the entry and its nearby area using a scale of $\frac{1}{8}$ inch equals 1 foot on an 11-by-17-inch piece of paper. Be sure to include the driveway and the wall and door where people enter the school or place of worship. Indicate any sidewalks, structures, trees, and plants within the study area. Make two copies of this plan to save the original, then do 4b and 4c using the copies.
 - b. On one copy, use directional arrows to indicate where the water drains across the site, where ditches occur, and where water stands for a longer period of time.
 - c. Decide how you can make the place safer and more comfortable for those using it. Redesign the area on another copy of the plan. You may want to include new walks, covered waiting areas, benches, space-defining plantings of trees and shrubs, and drainage structures.
5. Find out about three career opportunities in architecture. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.



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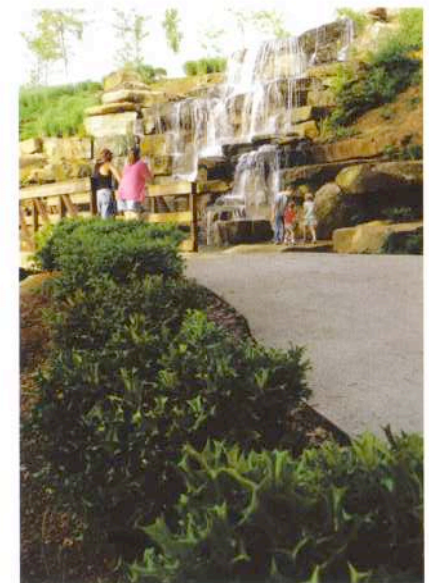
Introduction to Landscape Architecture

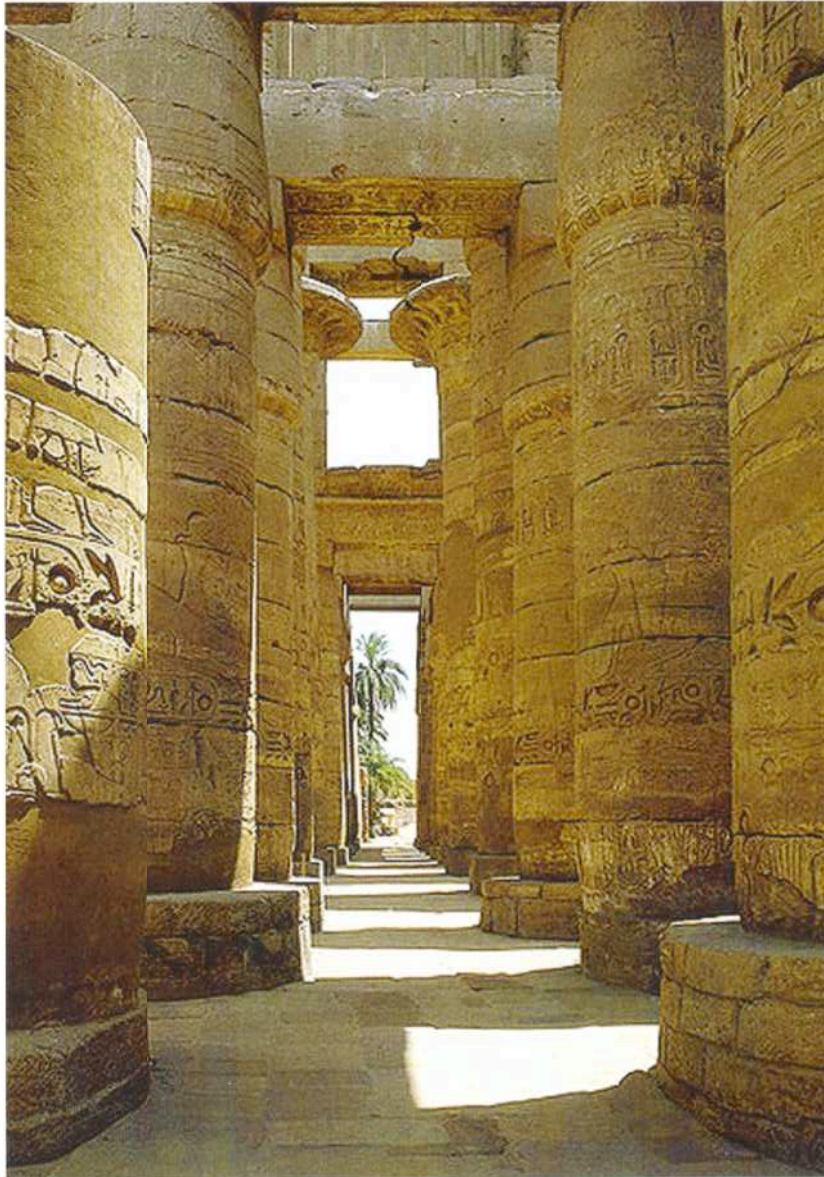
Your earliest experience as a landscape architect was probably in a sandbox, where you poured water into a moat around a castle you built using an overturned flowerpot. Then you jammed a few dandelions into the sand to create a garden near the castle. A few years later you did some site planning, choosing to build your snow fort on the north side of your house so the sun would not melt it too fast. After a season or so, you and a friend framed a tree house in an oak because the leaves would give plenty of privacy for most of the year.

What you have known since you were a toddler is that a landscape architect creates places that people care about and want to visit.

These outdoor places are “living rooms.” The sky or leafy branches overhead make a ceiling, the ground or a body of water makes a floor, and hedges or fences make walls. Benches, light fixtures, and sculptures make the furnishings. Steps, paths, and trails link separate rooms such as gardens, golf course holes, and sports fields.

Look around at the outdoor rooms of your community. Notice neighborhood parks, soccer fields, school grounds, places of worship, office parks, shopping malls, cemeteries, and lakes. Who designs these places? Chances are that landscape architects were involved in the planning and design of all these outdoor spaces.





The Deep Roots of Landscape Architecture

The practice of landscape architecture is as old as the practice of architecture because the two fields originally were one. It was not until the middle of the 19th century, when city planners and architects recognized the need for public spaces designed specifically for public enjoyment, that landscape architecture became a separate vocation. As a profession, landscape architecture dates only to the 1850s, but as an art, it dates back thousands of years.

1400 B.C.—A.D. 1850: Gardens

Ancient Egyptians arranged their homes and grounds in a structured symmetrical design that kept out desert winds and wild animals, and provided shade, food, and pleasure. The walled gardens featured trees planted in rows to look like columns and reflecting pools that helped to balance the height of the trees. Straight paths or irrigation canals were laid along an axis, a line that divides space and connects two or more points. This linear plan shows up today in the layout of major cities.

During the fifth century B.C., the Greeks erected buildings and created outdoor spaces based on specific design principles that are still used today. The Greeks planned their cities in relation to the shape of the land. Rather than shaping the land and dividing it into linear spaces like the ancient Egyptians, the Greeks incorporated natural land contours and features into their city designs. They designated certain sites as sacred and made public places for parks and markets, and they laid out athletic fields for events such as the Olympic Games.



Cloister garden

During the first century B.C., the Romans put Greek knowledge and organizational ideas to use in their landscapes. They made beautiful cities that were functional. Homes had piped water, interior courtyards open to the sky, and covered walkways or vine-covered arbors that connected the house to the garden. Trees and shrubs were clipped into fanciful shapes, or topiaries.

The Middle Ages followed the fall of the Roman Empire in the fifth century. Within fortified walls, monasteries served as self-sufficient centers of intellectual and agricultural activities. Here, monks cultivated separate gardens for medicinal plants, vegetables and cooking herbs, and flowers grown for decoration in cathedrals and for festivals. These *cloister gardens* provided a quiet, secluded place for meditation. From a well or fountain at the center of the courtyard, four paths branched out to the north, east, south, and west, symbolizing the four rivers of Paradise radiating from the “living water,” or spiritual center.

As the Middle Ages came to a close, Marco Polo of Venice returned in 1295 from a lengthy stay in China. Through his writings, the Western world learned about Oriental gardens. These asymmetrical planting arrangements had two visually balanced sides, but they did not mirror each other.

Chinese gardens focused on small parts of a larger composition and small moments, like the first plum blossom of the new season. Japanese gardens, strongly influenced by Chinese garden art, reflected a miniature version of nature. Strict rules of design required a symbolic meaning to be attached to every element in the garden. For example, a moss-covered rock surrounded by raked sand might represent an island in the sea.

As the threat of invasion declined, people in Europe extended their gardens beyond the walls of monasteries and castles. During the Renaissance in Italy, where the landscape was steep, designers created gardens as a series of outdoor rooms connected by terraces, staircases, and ramps. Skillful engineering produced spectacular fountains and waterfalls. These *villa gardens* combined formal shapes with the natural setting and panoramic views.

French garden designer André Le Nôtre turned classical garden design into a high art. He adapted the terraces and staircases of the Italian villa garden to the flat French landscape and allowed the long axis and distant view of the setting to add to the dramatic effect. At the world-renown Versailles, Le Nôtre worked with architect Louis Le Vau to unify the buildings, gardens, and site.



Gardens on the Versailles grounds

For centuries, English gardens contained borrowed elements from medieval and Renaissance gardens. In the 1700s, Lancelot “Capability” Brown and other “place makers” influenced people to turn the formal gardens of country manors into natural landscapes. Deliberately staged winding paths, irregular lakes, and sweeping lawns replaced the straight axis, rectangular pools, and geometric gardens. In the next century, these changes led to the development of enormous parklike estates.



English country gardens



1850–1950: Cemeteries, Public Parks, and Suburbs

As American towns grew into cities, people feared that overcrowded graveyards threatened their health, and they waged campaigns to relocate burial grounds to rural areas. Mount Auburn, located in a suburb of Boston, was the first landscaped cemetery in the United States. The English natural landscape style influenced the design to create a hilly, wooded setting. When the cemetery opened to the public in 1831, city dwellers and tourists flocked to it. Rural cemeteries provided green sanctuaries away from bustling urban areas.

Frederick Law Olmsted, the first to call himself a landscape architect, understood the public’s need for scenic open spaces. He traveled to Europe and England to study the great public grounds and gardens, and returned with the desire to create “people’s parks” for all social classes. In the 1850s, Olmsted and Calvert Vaux, his architectural partner, designed Central Park in New York City. They composed a rural landscape that became the model for naturalistic parks throughout the United States. Olmsted also promoted a national forest park system and the preservation of natural wonders such as Niagara Falls.

In the late 1860s, Olmsted designed one of the nation’s first residential subdivisions in a suburb outside Chicago. He planned curving streets, paved sidewalks, street-side tree plantings, and natural public spaces. Railroads and tree-lined parkways connected the suburb to the city. With the success of his projects, Olmsted pioneered city planning and beautification efforts, as well as landscape design intended more for the modern public than the affluent.

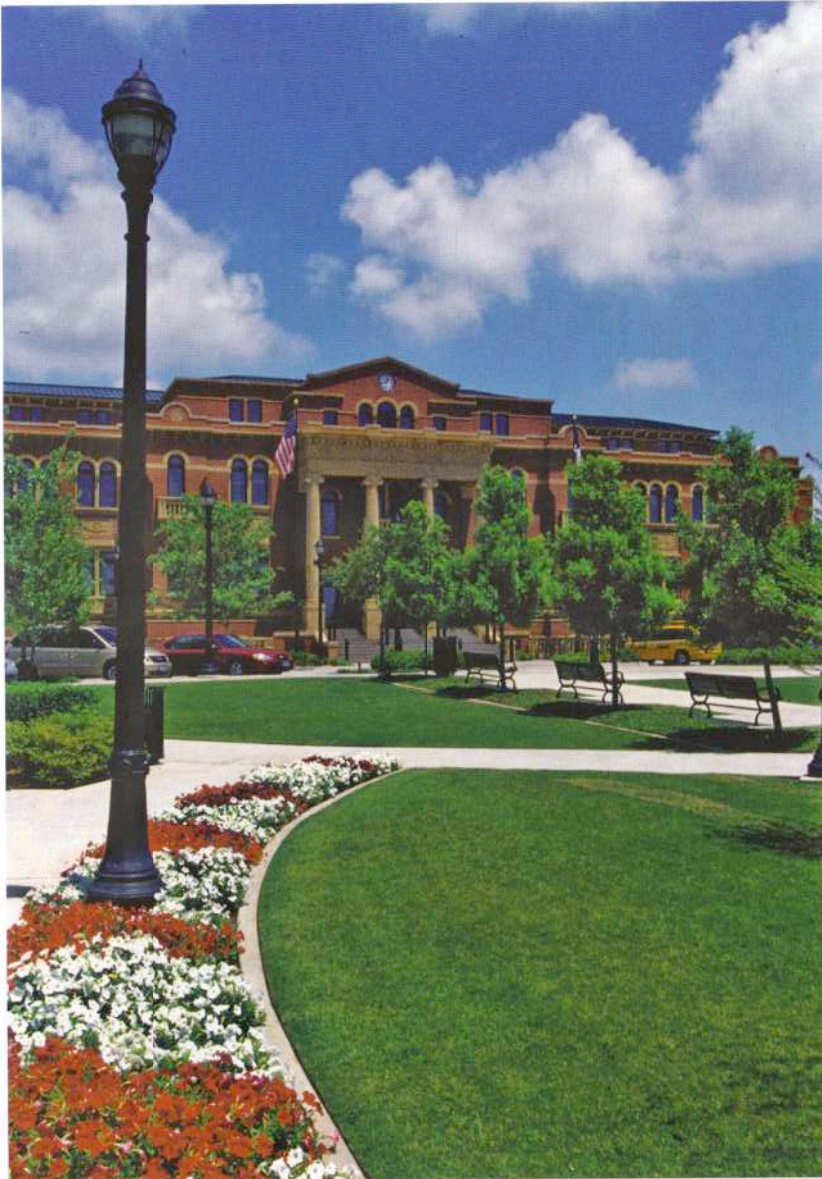
1950–21st Century: Land-Use Planning and Environmental Work

In the prosperous years after World War II, millions of Americans bought new cars and settled into new homes in new suburbs. The population boomed, and cities and towns sprawled farther into the countryside. In the '60s and '70s, malls sprang up to provide convenient shopping. In the '80s, multiuse complexes such as office parks began to appear. The suburbs became not only places to live and shop, but also places to work. Landscape architects planned circulation routes for new roads and recreational trails, designed mega-mall and office park campuses, and created common outdoor spaces for planned residential communities.



People began to worry about using up our natural resources and polluting the environment. Landscape architects developed comprehensive plans to make the best use of large land areas while protecting or restoring resources. They also determined ways to redesign urban centers and preserve historic areas.

As visionaries, landscape architects have the opportunity to take a leading role in shaping our future. Their challenge is to balance the growth, health, and natural beauty of our communities with environmentally friendly design, technological advancements, and diminished resources. These are exciting times to be a landscape architect!



The Field of Landscape Architecture

Landscape architecture addresses the complicated relationships between constructed and natural environments. It deals with the planning, design, and management of land not covered by buildings. Landscape architects create outdoor spaces that are more safe, healthy, environmentally resilient, pleasing, and workable than they would be without a design plan. The ultimate goal is to design a site that unifies the buildings, the beauty of the natural setting, and the site's intended use.

People often confuse landscape architecture with garden design. Garden design is concerned with private spaces, such as cultivated areas around a home. In general, landscape architecture is concerned with private developments and public spaces, such as parks, urban plazas, parkways, retail areas, and school campuses. However, because landscape architects know how to design irrigation systems, solve drainage problems, and construct retaining walls and decks, some choose to design residential projects.

Landscape architecture covers a broad field of land development projects. The range of work includes land closely related to a single building, such as a front yard, and land around and between groups of buildings, such as the grounds of assisted-living communities, industrial complexes, and zoos. The work also includes land bordering transportation and utility corridors, such as areas along freeways, waterways, and power easements, as well as open-space land, such as parks and recreation areas.



Landscape architecture is an interdisciplinary profession. Training includes design, engineering, technical analysis, urban planning, historical preservation, natural resources, and the study of human behavior. Because of this diverse education, the landscape architect is a natural candidate to lead a team of design professionals, including architects and civil engineers, through a land development project.

Landscape architects participate at all levels of land-use decision making, from site-specific to comprehensive regional planning. One of the main goals of the profession is to guide changes in land use.



Site planning concentrates on an area that has already been designated for a specific use, such as a 26-acre office park. The plan brings natural features, pedestrian and auto circulation, building and facility locations, and landscaping into a cohesive design.



Land-use planning focuses on large-scale developments that are subdivided into several sites for different uses. For example, a 7,400-acre development for a new town would be subdivided into areas for single-family and multifamily housing, health care and educational facilities, commercial and industrial centers, and recreation.

Land-use planning deals with even larger land areas. It involves the comprehensive evaluation of land use, conservation, and restoration for a large area, such as a county or region. This level of planning considers economic, social, and environmental issues.

The profession of landscape architecture is committed to finding a balance between meeting the community's need for development and protecting the natural environment. The landscape architect stands between the client's interest and the public's interest, and has a responsibility to serve both.



The Branches of Landscape Architecture

As you know from reading about the history of landscape architecture, garden design and plant selection have long been the basis of this profession. Today, however, most of the business has shifted to the more complex issues of mixed-use developments, water quality, and regional planning and design. Projects range from private gardens to public recreation areas, planned communities, transportation systems, forest parks, and storm water management.

The field of landscape architecture offers opportunities to work on a variety of planning and design programs. Landscape architects can choose a broad practice or focus on specific areas. Below are descriptions of the most popular specialties.

Residential Landscape Design

Residential landscape design involves the preparation of the landscape and *hardscape*—anything that is not soil or plant material, such as rock or water—features for a private home. This specialty deals with the pleasing arrangement of intimate outdoor spaces for specific uses such as arrival, outdoor living, and service areas. Trees, shrubs, and flower beds, as well as decks, paved walkways, and fences, often divide the property into separate spaces. Much of the work focuses on the selection, placement, and maintenance of plant materials.

Commercial Planning and Design

Commercial planning and design encompasses all the ways land is used by the public in suburban areas. Examples include office and business parks, retail areas, government offices, sports fields, and places of worship. The landscape architect

determines the best sites for buildings, parking lots, walkways, and green spaces. Then he or she designs the landscape and hardscape features.

Community Planning and Design

The community planning and design specialty focuses on developing comprehensive plans for single-family and multi-family residential neighborhoods. The master plan includes street arrangements, open spaces, sidewalks, and recreation areas. The landscape architect also designs entry features, such as entry walls or gates, signage, lighting, and landscape, for these community developments.

Park and Recreation Planning and Design

Park and recreation design has evolved in the past two centuries. Activity parks used to be large open spaces with playground equipment and a ball field. Today's parks provide areas for various recreational activities such as skateboarding, cycling, and soccer. Landscape architects take care to separate pedestrian and vehicular traffic.

Landscape architects plan and design not only parks as small as a city block, but also huge natural areas to create national forest parks and wildlife refuges. Designing something as large as a national park is quite a feat compared to remodeling a lawn; the landscape architect must be careful to protect the environment that already exists, including endangered species' habitats; wetland areas; natural light and sound sources; and trailheads, camping, and visitor facilities. All plans must follow specific National Park Service and governmental guidelines, such as the National Environmental Policy Act that stresses a "balance between use and preservation of natural and cultural resources."



Campus Planning and Design

Any site with two or more buildings accessible to the public is considered a campus. However, campus planning and design is most often associated with the grounds of universities and other educational institutions. The landscape architect creates a master plan based on the various functions of the campus. The plan includes outdoor living, learning, and recreational spaces; pedestrian and vehicular routes; and building sites for future expansion.

Urban Planning and Design

Urban planning and design focuses on city centers. Projects usually involve downtown redevelopment and often include historic restoration. The landscape architect must balance densely populated areas with the need for open space. Much of the design deals with hardscapes such as plazas, parks, and promenades. *Streetscaping* plans concern the improvement of the street environment. These plans include designs for paved surfaces, benches, light fixtures, trash receptacles, signs, and plant materials.

Resort Planning and Design

Resort planning and design specializes in vacation and resort facilities such as hotels, theme parks, golf courses, and beach resorts. The landscape architect works with the owner to create the desired effect of the resort. Whether for an amusement park, a links-style golf course, or a Caribbean development, ultimately, the project creates a place of pleasure, escape, and relaxation.



Environmental Planning and Design

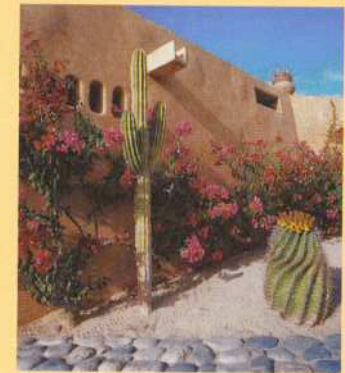
Environmental planning and design promotes the wise use and management of our natural resources. Plans might preserve woodland wildlife habitats and redwood forests, conserve water and solar energy, or reclaim wetlands. Because of today's concerns for balancing the care of the environment with the needs of the community, this is one of the fastest growing specialties of landscape architecture.

The Sinking City

Mexico City sits atop water, but the city must pump the water it uses across mountain ranges at outrageous costs. The water below the city is not from rivers, but from aquifers. Pumping water out of these underground lakes causes the land to subside, or sink. Today the center of Mexico City is 34 feet lower than when Montezuma II ruled the Aztecs in the 1500s.

Smart Landscape

There are arid regions throughout the United States that don't receive the rainfall necessary to sustain bountiful landscaping. Therefore, architects use a type of landscaping called **xeriscaping** in which every effort is made to use water-conserving methods and avoid losing water to evaporation or run-off. Naturally, cactus is one of the plants used.





Landscape Architecture Basics

A good design plan does not just happen. It depends on the combination of artistic principles, appropriate materials, and scientific analysis. Yet, a dash of imagination guarantees that no two landscape architects or Scouts will develop the same plan for the same project.

Design Basics

The Greeks figured out more than 2,000 years ago that great design is based on certain principles and values. The application of the following design basics creates a cohesive and harmonious composition.

In landscape design planning, *scale* is the relationship of the design to the people who will use it. A person senses when the setting feels too large, too small, or just right.



The plan on the *left* looks too cluttered for the area and is out of proportion. The plan on the *right* is well-balanced; the elements in the plan are in proportion.



Sculpture serves as an accent to the landscape.

Proportion refers to the proper relationship of one part of the composition to another, and to the whole. The important question is, *does that element look correctly placed?*

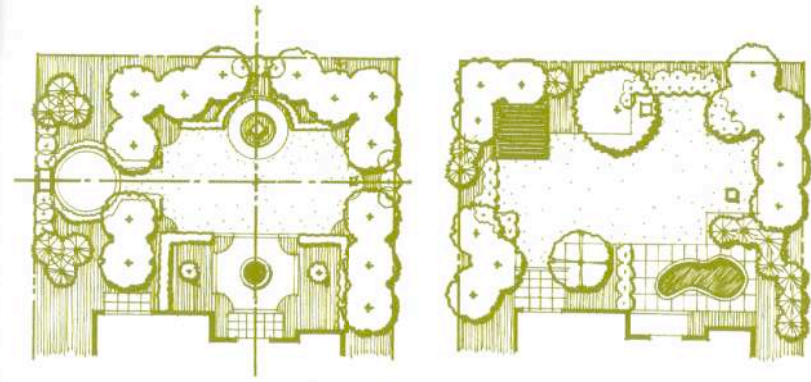
Emphasis, often called *accent*, is anything in the design that creates a spot of interest. The effect could be a contrast in color, like a tall green cypress tree against a vivid blue sky. It could also be a contrast in form or texture.

Repetition is the duplication of the same element several or many times.

Rhythm, often called *sequence*, breaks the monotony of repetition. It changes the routine by introducing, at regular intervals, one or two new elements into the series.



This plan for a parking lot shows how ornamental planters and flower beds use *rhythm* to help break up the monotony of the parking spaces.



The symmetrical plan, *left*, gives the area a more formal feeling. The asymmetrical design, *right*, gives the area a more relaxed feeling.

Balance is the visual stability of a composition. A symmetrical arrangement, with mirrored images on each side of an axis, gives a sense of formality. An asymmetrical design, with an irregular yet balanced arrangement of objects, gives a sense of informality.

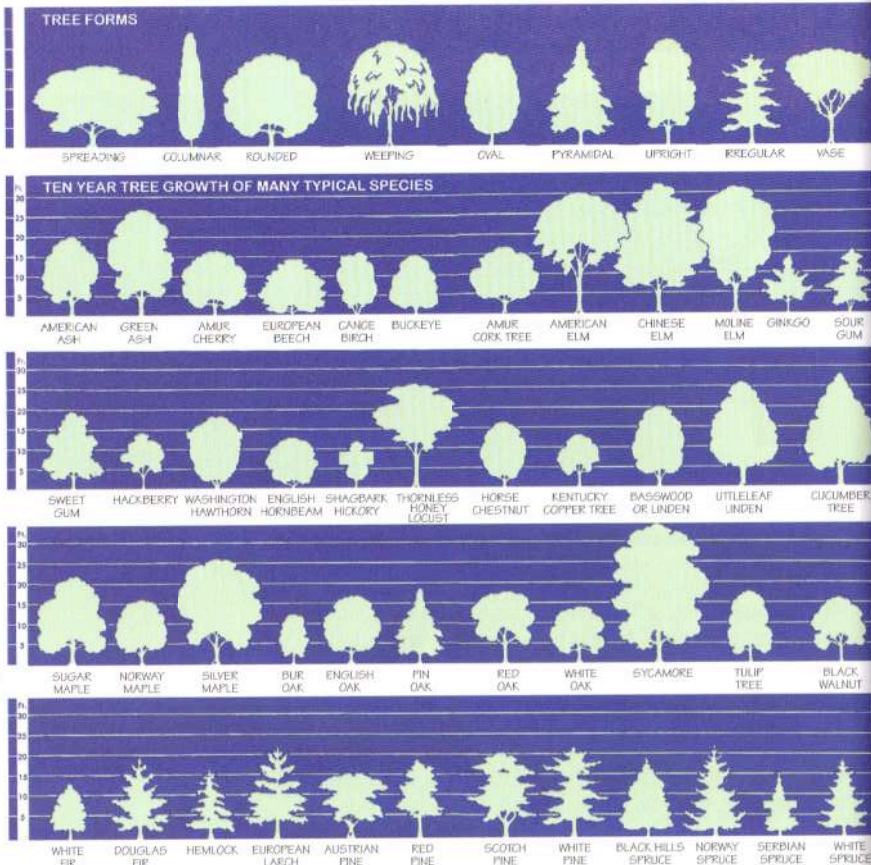
Unity is the quality of being complete—when the separate elements serve the whole and nothing seems out of place or added for decoration. When all elements come together convincingly, the goal of the overall design has been met.

Materials

A landscape design changes daily as the plants and trees grow, flower, and eventually die. The landscape architect must keep in mind not only what the plants will look like after installation, but also what they will look like at full growth. The design professional selects trees, shrubs, and ground covers that will thrive in the particular soil and climatic conditions.

Landscape architects choose plant materials for their unique characteristics and contributions to the design plan.

Deciduous trees and shrubs lose their leaves during fall and winter. They are important in the landscape because they block the sun's rays in the summer and allow light through in the winter.



This chart shows the shapes and sizes of trees, many of which you have probably seen at parks and other landscaped areas.

Evergreen trees and shrubs keep their leaves year-round. They stay “ever” green and provide a visual barrier, or screen, in landscape design. Within the evergreen category are two subcategories:

- *Coniferous* trees and shrubs, which bear cones and have narrow, needlelike leaves
- *Broad-leaved* evergreen trees and shrubs, which do not bear cones and have broad leaves that stay green year-round

Ground covers are low, wide-spreading plants that hug the earth. Like lawns, they form the floors of outdoor “living rooms.” Landscape architects use ground covers where it is

too shady for grass to grow well or too steep to mow, or where the color and texture adds more to the design than grass would.

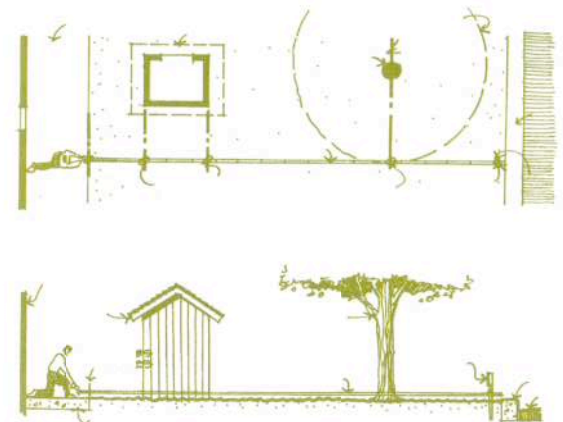
When choosing plant materials, the landscape architect considers size, form, texture, and color, and applies the basic design principles to the planting arrangement.

Although many people think of landscapes as planted green spaces on natural ground, landscapes also include hard surfaces such as playgrounds, urban plazas, covered malls, roof gardens, arbors, and decks.

A *hardscape* is anything that is not soil or plant material. In terms of landscape design, that includes the materials for paved surfaces, steps, walls, fences, terraces, and water features. The landscape architect uses hardscape materials much like plant materials to create design effects. For example, pea gravel contrasts with flagstones just as delicate ferns contrast with large-leaved lilies. Most plans include both hardscape and landscape materials to give the design structure and distinction, or *relief*.

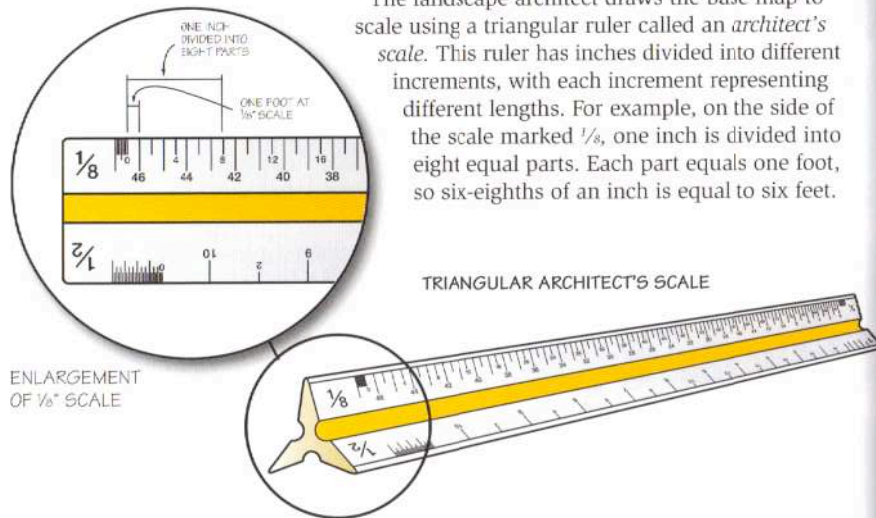
Tools

In the early stages of the design process, the landscape architect draws maps and diagrams by hand. Existing site elements, such as structures, sidewalks, and trees, must be accurately indicated on the drawing, which is also called a *base map*. To locate an object, such as a tree, measure in two directions from fixed points on the base map.



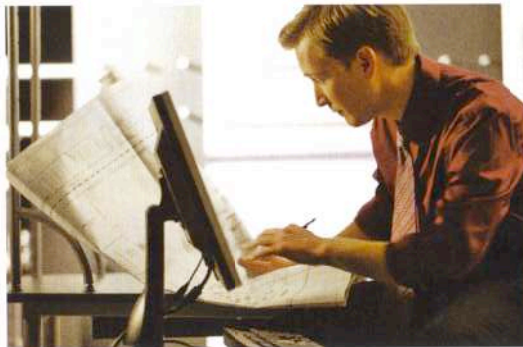
These two viewpoints show how to position and measure fixed and existing elements on the diagram.

The landscape architect draws the base map to scale using a triangular ruler called an *architect's scale*. This ruler has inches divided into different increments, with each increment representing different lengths. For example, on the side of the scale marked $\frac{1}{8}$, one inch is divided into eight equal parts. Each part equals one foot, so six-eighths of an inch is equal to six feet.



The *architect's scale* makes the designer's task of drawing elements in a design plan to scale much simpler.

In the past, landscape architects drew their own design plans based on information gathered from land surveys and topographic maps. Today they must know how to use computer-aided design and drafting (CADD) programs. The computer generates three-dimensional information, which can be analyzed in various ways, including applying animation to simulate possible future changes.



While hand-drawn sketches are still used in landscape architecture, the profession is turning more and more to computer-aided and digital design. The two most common tools used in this type of landscape planning are computer-aided design and drafting (CADD) and geographic information system (GIS) programs. The centerfold spread shows how effective a CADD-based drawing can be for landscape architects as they share their proposal with others.

CADD software has been widely used by architects and engineers for years. Now, it also enables the landscape architect to “draw” a three-dimensional plan on a computer screen with lines, shapes, and points that represent anything from a row of trees or shrubs to water pipelines running underground. This image can be saved and edited and updated with image-editing software, if the landscape architect’s—or the client’s—ideas change.

While CADD programs can be used alone, they are often used along with GIS technology. GIS is a method of technology that links a map to a database of information, and it has become a very important tool for businesses, government agencies, and the military. With GIS, a large city can create a Web site that shows a street map complete with bus and subway stops. It is more a part of everyday life than you might think; for example, if you use the Internet to find the locations of the movie theaters nearest your house or hotels in a city where you are planning a vacation, you are using GIS technology.



This master plan is shown in greater detail in the center of this book.



Landscape Architecture and Design

Design is the process of developing a physical solution to a planning decision. The landscape architect must understand the plan, its goals, and its limitations. Once the client signs a contract to hire the landscape architect, the design process begins. Below are the six progressive stages of design development, from determining the client's priorities and budget to constructing the project.

Program

In the first stage of the design process, the landscape architect and the client discuss what items make up the project. These items, as a whole, are called the *program*. For example, the client is a local city that wants to develop a park. This park, or program, should contain a certain number of baseball fields, parking areas, a skate park, a refreshment stand, and a trail system, and it has a specific budget for construction. The landscape architect must know all the program elements so that nothing is left out of the design.

At this stage, the landscape architect requests fundamental information to make a base map of the property. These facts include property boundaries, site topography, location of major trees and shrubs, and current zoning conditions for the property.



Site Inventory and Analysis

The site inventory provides a record of the project site's physical characteristics on one or more overlay sheets of the base map. Notes and ideas made on copies of the base map produce the foundation for future design. The landscape architect visits the site and identifies the key positive and negative features, such as the following:

- Soil conditions
- Sun and shade variety at different times of the day and year
- Wind direction in summer and winter
- Streams and drainage areas
- Views to and from the property
- Existing conditions
- Prominently positioned trees, called *specimen trees*
- Unique landforms

During the visit, the landscape architect takes photographs of the site to use as visual reminders back at the office.

The site analysis uses the inventory information to determine positive and negative issues concerning the development of the project. For example, in the park project, the view from the baseball bleachers is a sewage treatment facility. The landscape architect would note on the site analysis that there is a negative view that requires screening.

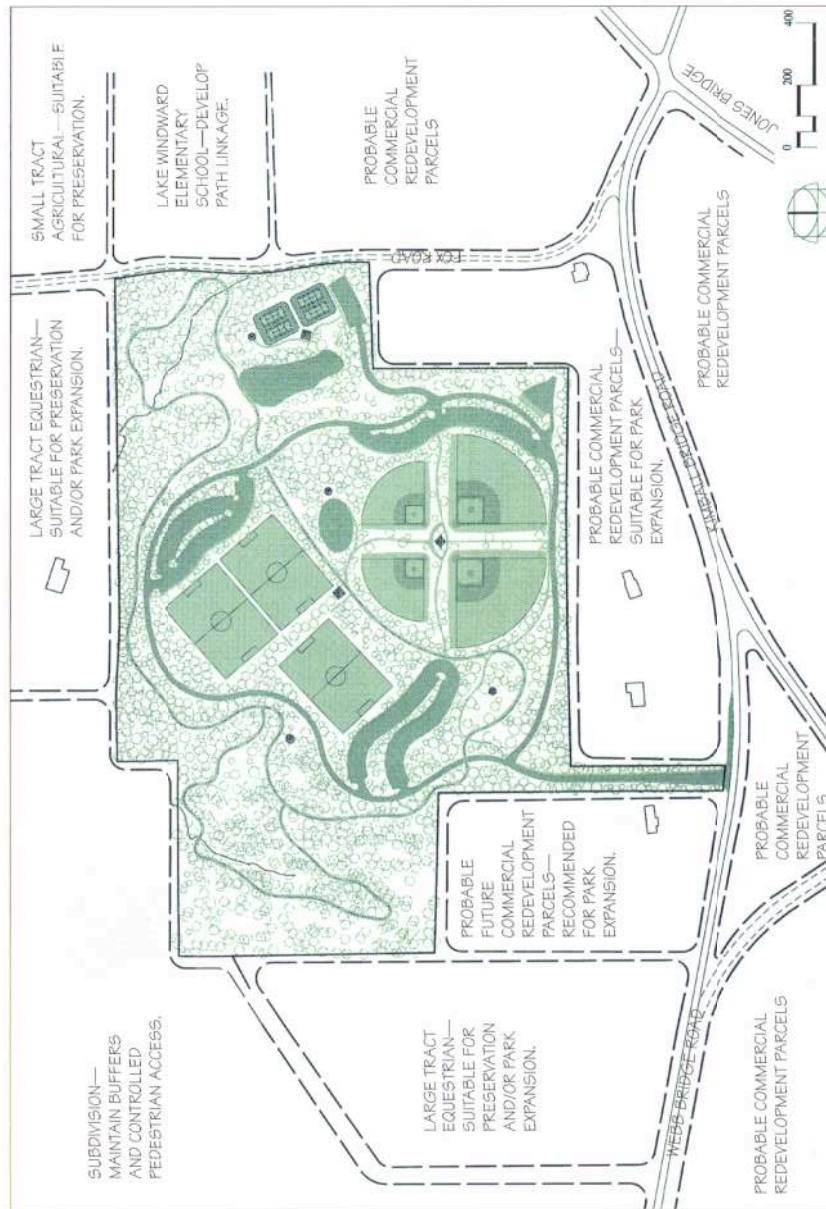
The landscape architect uses graphic illustrations to indicate the directions of slopes, drainage, wind, and sight lines. North orientation and the drawing scale are always noted on maps and designs. Drawings and documents are produced by hand and computer for presentation purposes.

The site inventory and analysis, as well as the program information gathered from the client, become the basis for the project design.



Schematic Design

Early designs explore the program elements and their functional relationships. These loose drawings, or *schematics*, are based on the information collected in the previous stage. They allow the landscape architect to play with different arrangements to create the most desirable design.



Site analysis for a park

Design Development

During the design development stage, the landscape architect extends and tests design ideas. Program elements such as buildings, parking, roads, sidewalks, and open spaces are drawn to scale. The landscape architect examines the topography of the site to make sure that the design will work on the land. Design elements such as sheltered seating and water features are detailed. The landscape architect selects hardscape materials like brick, stone, or asphalt paving, and plant materials like large shade trees or evergreen shrubs.

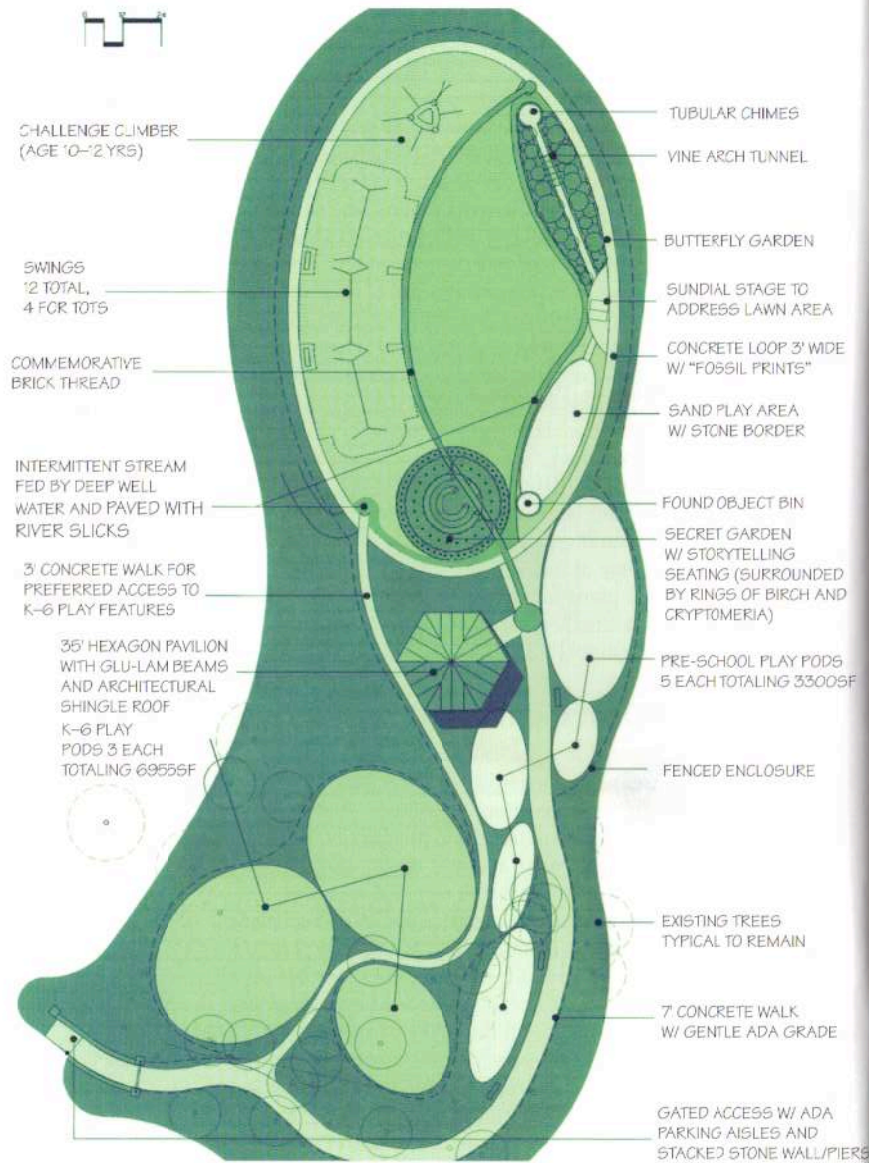
Specific plants and trees usually are not selected until the construction documents are prepared. It is important to remember in this stage that plant materials, unlike construction materials, will continue to grow. The plants' future size will affect the ultimate success of the design.

The design development drawings usually provide sufficient information for the client to obtain or confirm the cost of the project. If this were a major land-planning project, the landscape architect would create a comprehensive design and implementation strategy at this stage. This strategy, called the *master plan*, includes plans for individual projects that will be built in phases on the site. See the master plan featured on the center spread of this pamphlet.

Construction Documents

Once the design development drawings or master plan is approved, the landscape architect prepares the final construction documents. Today, construction, or contract, documents are almost always produced on the computer using CADD programs. The general contractor will use these documents to prepare a bid and build the design.

A set of contract documents usually consists of four plans and several sheets of construction details. The layout plan indicates the location, size, shape, dimensions, and materials of hardscape elements. A grading plan shows the new elevations of the proposed improvement and how they connect to the existing grades. This plan also tells the contractor how much dirt to move. The planting plan names all plants in the design, as well as their sizes, quantities, and exact locations. Finally, an irrigation plan shows all areas to be irrigated and the types and quantities of sprinkler heads to be used.



Plans for Webb Bridge Park community playground. The master plan for this park appears on the center spread of this pamphlet.

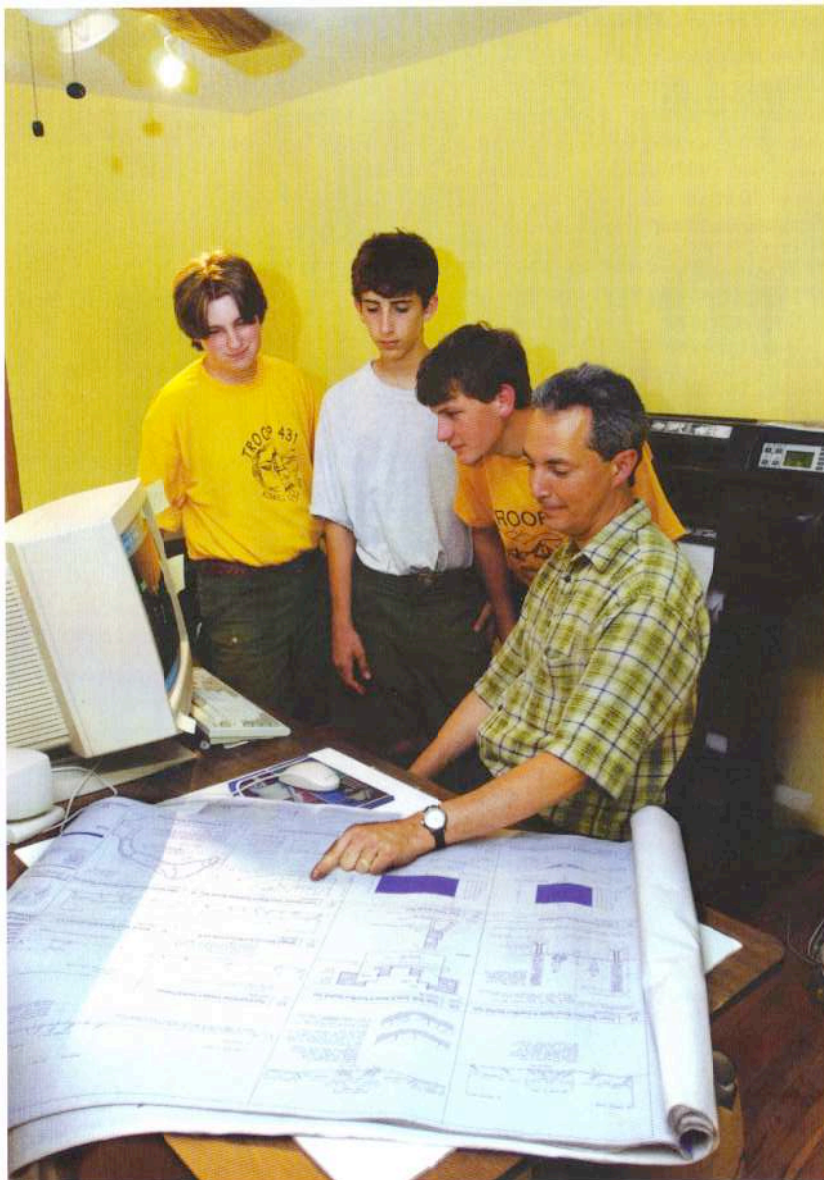
Contract Administration

When the contract documents are completed, either the landscape architect or the client puts the project out to bid to qualified contractors. If the client is a government agency, then that agency usually bids the documents and chooses the winner.

Once construction begins, the landscape architect visits the site periodically to make sure the project is being built as designed and to specifications.



Periodic visits by the landscape architect help ensure the construction is going as planned.



Landscape Architecture Education and Career Development

Education

If you are interested in pursuing a degree in landscape architecture, find out which colleges and universities offer accredited programs in this field. Landscape architecture may be a department under the umbrella of the colleges of architecture, agriculture, or environmental design. Because landscape architecture is an interdisciplinary field, course requirements cover a range of subjects from design and drafting to art and history, planning and economics, construction techniques, and social and natural sciences. Five years of study lead to one of two undergraduate degrees: bachelor of landscape architecture (BLA) or bachelor of science in landscape architecture (BSLA).

There are three types of graduate degrees. A first-professional master of landscape architecture (MLA) is for people who hold an undergraduate degree in a different field and wish to practice as a landscape architect. This degree requires three years of full-time study. A second-professional master of landscape architecture (MLA) is for those who hold an undergraduate degree in landscape architecture. This degree requires two years of study. A master's of art, master's of science, or doctorate degree in landscape architecture is for people who want to do research in the discipline but do not wish to be a licensed, practicing landscape architect.

Their knowledge of a variety of related fields gives landscape architects the expertise necessary to collaborate with professionals such as the ones below to help ensure the design of the outdoor space meets its intended function.

Architects are licensed professionals who have studied the art and science of building design in order to construct buildings that are safe, economical, functional, and aesthetically pleasing. Their work involves a variety of skills, from mathematics and engineering to communication and supervision. They may design a simple structure such as a home or place of worship, or they may work with others to plan and coordinate large-scale structures such as a college campus or an airport terminal.

Civil engineers are trained in the design and construction of public works structures such as roads, tunnels, bridges, and water supply and sewage systems. Often, civil engineers work at construction sites and may hold an administrative or supervisory position there. Civil engineers who offer their services directly to the public must be licensed.

Horticulturists study the science and art of growing flowers, fruits, plants, and vegetables. They use their knowledge of genetics, biology, engineering, economics, and sociology to produce crops with better human nutritional value and to enhance the physical beauty of our environment. Horticulturists may work in greenhouses or with farm agencies as producers, marketers, or inspectors, or in research or landscape design at a zoo or park.

Landscape contractors assist in landscape design, installation, and maintenance. With knowledge of carpentry, masonry, gardening, plumbing, and electricity, they prepare a plot of land for its landscape design. Some landscape contractors work only with the hardscape aspects of a project, while others may collaborate with horticulturists and landscape architects in the placement of shrubs, flowers, etc.

Urban planners work with local governments to formulate plans for the short- and long-term growth and renewal of urban and suburban communities. They study economic, environmental, and social trends and problems to determine the best use of land and resources. In developing their plan for a community, such as schools and retail areas, urban planners must consider issues such as air pollution, traffic congestion, legislation, and zoning codes.

Licensure

Most states require landscape architects to have a license. In states that have a licensing provision called a *title act*, you cannot call yourself a "landscape architect" unless you have a license. However, you can do some of the same work a landscape architect does by using another title, such as landscape designer.

Under another provision called a *practice act*, you must have a license to practice before you can do the work of a landscape architect. This is an important difference because landscape architects have formal training in critical areas such as structural construction, drainage, and irrigation, which many landscape designers lack. Each state sets its own requirements for licensure, but in most states practice acts are the standard.

All candidates for licensure must pass a national test called the Landscape Architect Registration Examination (LARE). Often, landscape architects in-training must work for a certain period of time under the supervision of a licensed landscape architect before taking this exam.

Career Opportunities

As a landscape architect, you will find work that interests you in the private or public sectors, or in the academic world. Many people choose to work for themselves as residential landscape architects. Others join private landscape architecture firms or companies that employ teams of design professionals from different fields. Government agencies involved with land planning, development, and resource management employ landscape architects. At colleges and universities, you can conduct research or educate the next wave of landscape architects.

Because they have a working knowledge of architecture, civil engineering, urban planning, and environmental impact design, landscape architects can take advantage of many career opportunities. Consider this exciting field for your own career!

Log on to the American Society of Landscape Architects' Web site at <http://www.ASLA.org> to find out more about the landscape architecture profession and schools that educate landscape architects.

Landscape Architecture Resources

Scouting Literature

Environmental Science, Forestry, Plant Science, and Soil and Water Conservation merit badge pamphlets

Visit the Boy Scouts of America's official retail Web site (with your parent's permission) at <http://www.scoutstuff.org> for a complete listing of all merit badge pamphlets and other helpful Scouting materials and supplies.

Books

Blake, Peter. *God's Own Junkyard: The Planned Deterioration of America's Landscape*. Holt, Rinehart and Winston, 1979.

Booth, Norman K. *Basic Elements of Landscape Architecture Design*. Waveland Press, 1990.

Booth, Norman K., and James E. Hiss. *Residential Landscape Architecture: Design Process for the Private Residence*. 3rd ed. Prentice Hall, 2002.

Church, Thomas D., Grace Hall, and Michael Laurie. *Gardens Are for People*. 2nd ed. McGraw-Hill, 1983.

Dee, Catherine. *Form and Fabric in Landscape Architecture: A Visual Introduction*. Spon Press, 2001.

Douglas, William Lake, et al. *Garden Design: History, Principles, Elements, Practice*. Simon and Schuster, 1984.

Marsh, William M. *Landscape Planning: Environmental Applications*. Addison-Wesley, 1983.

McHarg, Ian L. *Design with Nature*. John Wiley and Sons, 1995.

Rybczynski, Witold. *A Clearing in the Distance: Frederick Law Olmsted and America in the Nineteenth Century*. Scribner, 1999.

Simonds, John Ormsbee. *Landscape Architecture: A Manual of Site Planning and Design*. McGraw-Hill, 1983.

Whitaker, Ben, and Kenneth Browne. *Parks for People*. Seeley, 1971.

Magazines

Garden Design

460 North Orlando Ave., Suite 200
Winter Park, FL 32789
Telephone: 407-628-4802
Web site:
<http://www.gardendesign.com>

Landscape Architecture

636 Eye St., NW
Washington, DC 20001-3736
Telephone: 202-898-2444
Web site: <http://www.asla.org/nonmembers/lam.cfm>

Organizations and Web Sites

American Society of Landscape Architects (ASLA)

636 Eye St., NW
Washington, DC 20001-3736
Telephone: 202-898-2444
Web site: <http://www.asla.org>

The ASLA is a national organization of landscape architects. Its goal is to promote the profession, educational programs, and the careful planning of natural environments.

Council of Educators in Landscape Architecture (CELA)

P.O. Box 7506
Edmond, OK 73083-7506
Telephone: 405-330-4150
Web site: <http://www.thecela.org>

An organization of educational programs in the United States and Canada, the CELA promotes quality and professionalism in landscape architecture education and publishes new research in the field.

Council of Landscape Architectural Registration Boards (CLARB)

144 Church St., NW, Suite 201
Vienna, VA 22180
Telephone: 703-319-8380
Web site: <http://www.clarb.org>

CLARB prepares and scores the exams for students and professionals seeking licensure in landscape architecture. The organization provides services to landscape architects and students to help them obtain certification.

Landscape Architecture Foundation (LAF)

818 18th St. NW, Suite 810
Washington, DC 20006
Telephone: 202-331-7070
Web sites: <http://www.lafoundation.org>

The foundation offers scholarships and internships to students who wish to study landscape architecture.

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Notes