Facility Design Standards & Specifications

Louisiana State University

Issued by:
Office of Facility Services
May 2014

The Design Standards and Specifications presented herein are intended to assist architects, engineers, design professionals, contractors and LSU staff in understanding the preferences of the University in the development, construction, maintenance and repair of facilities. These standards are to be used in the design and construction of new and remodeled buildings, site enhancements and infrastructure on the LSU-Baton Rouge Campus.

These standards are intended to be used as guidelines and **NOT SPECIFICATIONS;** therefore, the legal responsibility for project document preparation shall continue to reside with the Design Professional.

LSU's intent is to build cost effective buildings and infrastructure without restricting the Design Professional's latitude for innovation. Architects and other designers are encouraged to propose innovative and cost-effective variations that meet or exceed the Design Standards. However, any deviation must be brought to the attention of the Planning, Design & Construction department for review prior to incorporation into the project

CONDITIONS TO THE CONTRACT:
The designer is responsible for using the most up-to-date information required by LSU for the following front end documents: This information is to be obtained through the LSU Office of Procurement Services:

Instructions to Bidders
Bid Form
General Conditions
Special Conditions, with Insurance
Supplements
Contractor's Affidavit
EEOC Clause and Assurance
Affirmative Action Compliance

A. Introduction

1. This text comes from the Louisiana State University Design Guidelines. The original document can be located on the Facility Services website at www.lsu.edu/ofs

B. Preface

1. A beautiful campus is appreciated for its architectural cohesiveness, careful attention to exterior space, and the pleasing environment it affords. It engenders pride and respect, it fosters social interaction. It is perhaps the single most important element in creating the image of the institution. A beautiful campus develops incrementally and is the result of consistent and sensitive use of building and plant materials, the control of building mass and scale, the careful development of open spaces, and the attention given to detail in both buildings and landscapes.

   To ensure the development of an aesthetically pleasing campus, design professionals working for Louisiana State University must be sensitive to the campus environment in which their projects are built. This document establishes principles of architecture and landscape architecture as design vocabularies and sets forth requirements and policies that must be adhered to by design professionals working for the University.

C. Architecture Vocabulary

1. Context and Character

   The architectural appearance and overall aesthetic quality of the Baton Rouge campus are important university and community resources that should be highly valued. The sense of unity found in the textures and colors, the roof forms and arcades of the Quadrangle—elements derived from the Italian Renaissance—are distinctively LSU and must be maintained and continued in future development. The intent is to provide a unified visual identity for the campus, which is home to three autonomous institutions: LSU A&M, the LSU Agricultural Center, and the Hebert Law Center.

   New buildings and spaces must provide a variety of experience and yet reflect the existing heritage and graciousness of the older architecture. Building elements must exhibit permanence, a human scale, visual richness, and pleasing proportion. In order to maintain an architectural connection with the Quadrangle, building materials must have finishes and colors that are compatible with those already on campus.

   The massing of new buildings must have a scale and an articulation of form that establishes ties to the older campus, reflecting an understanding of the architectural tradition. This coordination will be enhanced through a series of courtyards and the careful linking and progression of spaces. Courtyard

landscaping, trees, planting, and paving materials also assist in providing the tie between the old and the new and serve as key unifying elements. Arcades are to be used to connect buildings, not only to protect people from the elements but also to provide a symbolic and functional connection to the other parts of the campus. The resulting combination of buildings and open spaces will create settings that are friendly and useful for all who experience them.

2. Building Massing and Scale

   The design of original campus buildings was influenced by the dictates of natural ventilation. The resulting narrow building forms and courtyards are just as useful today in creating pleasing buildings and spaces in which to learn and work as they were when the campus was dedicated in 1926. New technology should be an equally positive design influence.

   A consistent scale of new development will be obtained by controlling the heights of the buildings. In general, buildings must range between thirty and sixty-five feet in overall height, depending on their function and location. Large scaled elements that give the appearance of undifferentiated massiveness and great bulk detract from the character of the campus and will not be approved. Ostentatious or overly prominent building forms and designs that are out of harmony with their environment will not be accepted. Building forms must reflect their use, site, and surrounding environment, as well as their place in time.

   Buildings have a strong influence on the quality and character of the visual environment. Therefore, the building shape and scale should be of a human dimension. Large, flat, unarticulated building facades look imposing to the pedestrian, are the result of inherently bad building design, and are unacceptable additions to the campus.

3. Architectural Character

   The architectural character of the buildings and the building materials used must respect the Italian Renaissance heritage of the Quadrangle and should evoke the previously mentioned qualities of permanence, shelter, solidity, rhythm, connection, human scale, unity, and variety, without resorting to clichés. The following criteria apply:

   a. Walls: In most cases, walls should have load-bearing masonry structural expression of materials that embody solidity, texture, and a sense of human scale and proportion. To further enhance the human scale and articulation of some buildings, the thickness of exterior walls should be emphasized to create shadows on the façade. Wall materials designated for use include: stone, concrete, stucco, or brick and must conform to the Design Standards for Louisiana State University.

b. Roofs: Special attention must be paid to the arrangements and design of the roof and its various elements. Roofs must be organized and designed as carefully as the other primary elements of the building. Equipment must be integrated into the building form or placed within enclosures well integrated with the roofscape. Roof materials designated for use are Spanish-style clay tile blend for sloped roofs and weathering copper for rooftop appetencies, both as specified in the Design Standards for Louisiana State University.

   In most cases, the major roof from should be sloped on a 7 in 12 pitch and must have overhangs proportional to the building's size and height. Secondary proportions of buildings with pitched roofs may have flat-roofed areas (with positive drainage) to accommodate mechanical equipment, but such must be visually unobtrusive. Stacks exhaust hoods, and vents must be grouped and incorporated into the architectural composition of the buildings or buildings they serve. Since they are visible from a considerable distance, it is important that they be designed with a high degree of uniformity so that distant image is harmonious and composed.

c. Openings: In most cases, windows and doors in exterior walls should be recessed to represent a "punched" or "cut-out" expression reminiscent of the Quadrangle or grouped as counterpoint to unbroken wall segments. The placement and proportion of windows must respect solar orientation, views, and day lighting potentials, as well as the historical precedent of the Quadrangle.

   Glazing must be clear or bronze-tinted (non-reflective) glass. Operable windows must be used when feasible. Aluminum frame and hollow metal units must be dark bronze. Reflective or shiny materials are usually not permitted. The use of oversized windows, common in older buildings on campus, is encouraged on north facades and in locations that are protected against extreme solar heat gain. Larger openings should be used to signal principal entries, gateways, or atrium features.

d. Arcades: Arcade must be similar in size and proportion to those surrounding the Quadrangle. They must express the rhythm, proportion, and scale of the Quadrangle arcades and should be approximately 10 to 15 feet in arch width. Articulation or a minor break in rhythm to accommodate entry or end points is acceptable and could be desirable. For example, wider openings may be necessary to allow emergency vehicle passage. Colonnades, pergolas, and arbors can also be used to provide shaded connection.

e. Color: In most cases, the color palette should be within the range of warm earth tones established in the Quadrangle. Walls should be light in color, i.e., sandstone or buff, and roofs should be the LSU red terra-cotta. Over the past decades, materials and finishes have been used to the extent that they have become standard LSU colors. These colors are specified in the Design Standards for Louisiana State University.

f. Climate Orientation: Buildings must be designed to take maximum advantage of micro-climate factors, including sunlight and natural ventilation, to enhance user comfort and energy conservation. When possible, the following must be observed: locate outdoor activity in areas with exposures to optimize available sunshine, incorporate the use of shade devices such as sunscreens, louvers, or façade articulation, and use landscape screening, such as deciduous trees or trellises, to allow control of the sun at various times of the year. During the design review process, a shade/shadow analysis must be submitted; the impact of this analysis must be reflected in landscaping, surrounding activity areas, and building design. The placement and configuration of buildings, exhaust hoods, and stacks must recognize prevailing local winds as well as the fact that wind direction is variable throughout the year. New construction must create open airflow paths and eliminate stagnant air pockets.

g. Historic Buildings and Places: Some buildings and places of historic importance and, as such, require special attention. In work involving these buildings and places, design professionals must satisfy the Secretary of Interior standards and the State of Louisiana standards as well as the requirements of Louisiana State University.

h. Architectural Specifications: See Design Standards for Louisiana State University.

D. Landscape Architecture Vocabulary

1. Context and Character

The mature and stately landscape of the LSU campus is an essential component of its image. This landscape has developed over the course of the campus' history and represents a process of growth, maturation, and decline that makes the management and maintenance of landscape a complex endeavor.

The pre-development landscape of the campus was predominantly cropland that had been farmed for sugar cane and other crops since the late eighteenth century. The site was desirable for development because of the high ridge of the Pleistocene Terrace, providing good drainage and a flood-free location, and because of the availability of land for future expansion. Some trees and natural features interrupted the flat landscape, and wetland areas existed on the

perimeter of the early campus, distinguished by wetland tree species such as bald cypress. Several live oaks, already quite mature, dotted the site, as well as stands of upland hardwoods, such as American elms and southern magnolias. The Indian Mounds were also prominent landmarks.

From the early development of the campus until the 1960s, the landscape was designed and maintained under the direction of Steele Burden. Hallmarks of Burden's plan were regular planting of live oaks along major campus roads and in major campus open spaces (Quadrangle); supplementary planting of major open spaces with large evergreen and deciduous trees (southern magnolias, American elms, other species of oaks); planting of medium-size flowering trees (crape myrtle, Japanese magnolia, redbud, dogwood) as landscape accents; and planting of small courtyards, pedestrian corridors and building entrances with shrubs, herbaceous perennials, and semi-tropicals providing detail interest and seasonal color.

The plant palette used by Burden included plants associated with the Lower Mississippi Valley cultural region and early south Louisiana plantation landscape gardens-live oaks, crape myrtles, camellias, azaleas, sweet olive, dogwood, pines, palms, tree ligustrum, nandina, pittosporum, and flowering quince. Most of these plants are still mainstays of residential landscapes in the area.

In order to provide a unified visual identity for the campus, each new construction or major renovation project must have a landscape development plan that reinforces the historical character and current campus landscape development plan. Those plans must be designed by a licensed landscape architect and must relate to the landscape context in terms of the scale, materials used, and historical character of the specific site.

2. Planting

   The planting design criteria for site improvements on campus are intended to achieve, avoid monotony, and complement the spatial structure established by campus architecture and circulation patterns. Elements include major outdoor plantings, informal plantings that reflect LSU's character, formal allées, and the preservation of significant existing trees. The plant materials used must reflect the climatic conditions that prevail in the region, with emphasis on low-maintenance plants.

3. Existing Tree Preservation

   Large and/or significant trees contribute to LSU's special character and add interest to the campus. Such trees take thirty years or more to develop and cannot be easily replaced. Therefore, all significant trees, such as live oaks and magnolias, should be preserved.

Maintenance and construction projects may cause damage or require the removal of existing vegetation. However, these instances should be thoroughly evaluated and only permitted when absolutely necessary. When trees must be removed under these conditions, three trees of the same species with a 4" minimum caliper shall be provided as replacement.

Live oaks that are in a severe state of decline should not have ground cover of any species planted within the drip line. A mix of hardwood chips and lime should be placed under these trees until a substantial level of recovery is established. Asian jasmine should not be used under live oaks. The aggressive root system of the jasmine retains moisture and eventually causes' rotting of the tree's exposed roots and trunk base.

a. Trees

   A variety of trees is encouraged. However, because of growth habit and maintenance problems, the following species should be limited, and planting locations should be thoughtfully chosen: black willow, cottonwood, hackberry, sweet gum, and Chinese elm. Native trees and shrubs have proven to be more resistant to extremes of climate and disease and more maintenance-free than most introduced species although introduced plants, such as the crape myrtle, Japanese magnolia, and Taiwan cherry, have been relatively successful.

   Deciduous or semi-deciduous trees of light density and texture must be used to allow the penetration of sunlight throughout the winter and to create filtered light in summer. Evergreens are to be used as a backdrop for such deciduous trees where protection is desired and where they can hide unsightly elements, such as service yards.

   Large- to medium-sized trees that fulfill the function of scale transition from the building to the pedestrian are to be used id allées and plazas. Smaller, low-growing trees will fulfill such functions as screening, providing shelter for intimate seating areas, and adding texture and seasonal color.

b. Shrubs

   Although a variety of shrubs is encouraged on campus, low maintenance is extremely important. When construction projects or maintenance require the removal or low of shrubs, replacement should follow with similar species in as large a size as practical. In areas of high visibility, some perennial planting may be required. However, these areas should be kept to a minimum.

c. Courtyards

Courtyards and small gathering areas offer the opportunity for selecting attractive specimen plants and for a variety of planting character. The designer should respond to the sun/shade requirements of individual courtyards with emphasis on low plantings and deciduous trees in north-facing courtyards. Plant materials and planting patterns should complement the spatial character of the courtyard and not dominate the space or the architecture.

d. Planting for Shallow Soil Conditions
In plant selection, drainage design, walk/plaza layouts, the extension of basement space, utility tunnels, existing tree systems, and other conditions that make for shallow soil must be taken into account.

e. Slopes
Normally, grasses should be planted on a maximum slope of 4:1; however, 3:1 slopes may be grassed in special situations. Plants with horizontally branching roots must be used on 3:1 or steeper slopes. In situations where slopes are shaded, ground cover with a vigorous root system is often needed.

f. Parking Area Landscaping
Orchard-type tree planting must be used by arranging tree planting pockets at regular intervals to soften the appearance of parking areas. Trees of a clean habit should be plated within the lots to provide shade and visual relief. A single species of tree is to be sued for each primary compound, but the tree species may be different in separated parking compounds. Tree plantings must offer forty percent coverage (mature canopy) of parking area. When possible, screening should be used to lessen the visual impact of parking lots. Low shrubs or mounding with trees are suggested screening techniques. Shrubs that do not grow high enough to create a safety or security hazard should be selected. Light stand locations should be coordinated with tree patterns in order to alleviate unsafe dark zones in parking lots.

g. Planting at Intersections
Trees and shrubs planted at intersections must allow adequate visibility for safety and security. At a four-way intersection, the sight distance for a turning vehicle must be at least seventy-five feet. Such clearance can be obtained by ensuring that tree planting begins fifteen feet from the edges of curbs and shrub hedges begin beyond that line. Sight clearance from service loops into a two-way street should be fifty feet, obtained by starting tree and hedge planning seven feet or more from the edges of the curbs.

h. Irrigation

In most cases, the malls, plazas, quadrangles, and landscaped areas should rely on minimal irrigation. Higher maintenance should occur only in the courtyards and small-scale spaces. An investigation of the cost effectiveness of using irrigation must be presented before irrigation plans will be approved.

4. Site Features

a. Furniture

Seating, signs, kiosks, trash containers, and bicycle racks are just a few of the outdoor elements necessary for furnishing the campus environment. If carefully placed, there is sufficient variety of space and locale to accommodate standards elements while avoiding monotony. The prevailing criteria is that the elements be built of durable and appropriate materials, and be consistent in scale and style.

Trash receptacles must meet operations and maintenance standards, but the most important design criteria are how and where these individual elements are placed. The must encourage use yet be unobtrusive. Whenever feasible, landscape furniture elements should be developed that coordinate several functions into a consolidated furniture system.

b. Signage

All exterior campus signage shall conform to the LSU A&M signage ordinance and policies.

c. Water

The campus is blessed with several lakes and a close proximity to the Mississippi River. Special attention should be given to the visual impact of water features, but extensive use of fountains and other small-scale water features is not encouraged because of high maintenance requirements. When such features are appropriate, they must be attractive both with water is and is not present.

5. Outdoor Art

LSU does not have a legacy of outstanding public sculpture, but advantage should be taken of opportunities that might allow the building of such a legacy for future generations. New building projects offer potential for a collaboration involving architects, artists, landscape architects, and University staff in determining both the character of the setting and the pieces that are to be sited. The ability of the public to view the art and experience the space is an important consideration in the selection of sites for works of art.

Major works should be accessible at all times. Issues such as the backdrop, the play of sun and shadow, circulation patterns, and related scale of adjacent

elements must be evaluated carefully when selecting locations for the display of art. The following goals are consistent with the desired relationship of art to the LSU campus:

- Build a distinguished collection of art that has national stature bit also supports and features Louisiana artists;
- Accommodate permanent new works purchased and/or commissioned as well as loans of sculpture installed for specified periods of time; Use art as a catalyst for activating outdoor spaces.

6. Lighting
    a. Safety
    Due to the high level of nighttime pedestrian, bicycle, and motor vehicle traffic, a clear separation between pedestrian and vehicular circulation is necessary. This can be accomplished by consistent differentiation in the scale, the pattern, the color and the intensity of lighting layouts. Consequently, pedestrian traffic can be channeled to safe paths, and drivers can be given optimum visual guidance at locations of potential conflict and danger.

    b. Security
    Security along major routes is primarily a matter of concern for pedestrians and bicyclists because of their relative vulnerability. Lighting should reduce danger by removing shadows and providing good visibility. This will be achieved by close spacing of the light sources, mounting of light sources below shadow-casting tree branches, and coordinating the spacing of trees and lights.

    c. General Lighting
    General lighting will provide an appropriate response to the illumination needs of multi-directional pedestrian and bicycle traffic and gathering places on the campus.

    d. Corridor Lighting
    Corridor lighting along secondary routes will reinforce the landscape pattern and contrast in both color and intensity with the lighting along major arteries.

    e. Special Lighting
    Exterior building lighting shall supplement the general lighting in areas where there are entries, and it shall serve as security lighting at loading areas and along service corridors. Special attention shall be given to properly illuminating building names for orientation. Arcade lighting shall add additional illumination where shadows are a problem. Focal point

lighting for outdoor sculpture, fountains, special signage, and significant landscape features shall be provided as required.

f. Fixtures
All luminaries and fixtures shall be as specified in the *Design Standards for Louisiana State University*.

7. Paving
Paving must be integrated into the design of all new construction. It must be durable and consistent in order to unify and enhance the overall character of the campus. Paving elements are the walking and driving surfaces that include walks, paths, drives, plazas, steps, and ramps.

The preferred paving material is concrete, and it is recommended as the material of choice for all steps, walkways, and ramps.

Special paving material may be used in order to differentiate pedestrian axes from drives and service walks, to identify major entrances and stopping points, and to designate pedestrian and bicycle routes. Exposed aggregate concrete, scored concrete, and unit pavers are commonly used as special paving materials.
Landscape Specifications
See *Design Standards for Louisiana State University*.

8. LSU Design Review
Any project affecting the exterior environment of the campus shall be presented to the Facility Development and Design Committee (FD& DC). All agenda items for this committee shall be submitted to Roger Husser, Planning, Design & Construction a minimum of 7 working days prior to the scheduled committee meeting.