

DIVISION 2 – SITEWORK

A. CONCEPT

- I. The term *Exterior Environment* is defined as all site improvements, plantings, lighting, irrigation systems, structures, amenities, land grading and drainage to be developed as a part of the building or site development on campus.
- II. The design of the Exterior Environment should reflect the Louisiana regional context, showing consideration and sensitivity to indigenous plant and hardscape materials. The design should integrate with the campus environment and reflect the historical nature of the campus. The selection of materials should consider reasonable maintenance burden and material availability for future repairs and replacement.

B. DESIGN TEAM

- I. The Exterior Environment conceptual design is to be developed concurrent with the overall project plan, and the project team shall include a landscape architect and a civil engineer for all projects which affect the exterior environment. This process will allow site design considerations and cost estimate formulations to begin at the earliest stage of planning.

The landscape architect and civil engineer shall participate in the building siting and placement process and shall play a vital role in all exterior plazas and pedestrian corridors.

- II. Projected cost estimates submitted at each phase of the design process shall clearly identify and include all exterior site elements.
- III. A presentation package shall consist of an illustrative landscape/hardscape plan consistent with the project design theme and Owner's objectives for the project. The plan shall address and delineate a general concept for all site amenities and improvements.
- IV. Plans shall be of sufficient construction detail and labeling to clearly communicate landscape/hardscape intent and accuracy of scale in order to provide credible pricing for owner's approval prior to commencement of construction documents.
- V. Plans listed below shall be provided beginning at the design development phase for preliminary pricing:
 - a. Construction and Staking Plans
 - b. Grading Plans

- c. Lighting Plans
- d. Planting Plans
- e. General Landscape Plans
- f. Irrigation, Electrical and Sleeving Plans
- g. Drainage Plans (if applicable, Surface and Subsurface, tie into Civil)
- h. Erosion Control Plans (if applicable)
- i. Waterscape/Pottery/Exterior Furniture Plans
- j. Tree Protection Plan
- k. Details

VI. Submittals of samples, cut sheets or on-site product selection and approval at supplier warehouse or nursery shall be necessary to obtain designer's approval.

Approval of samples will be necessary for all materials, including concrete finishes, natural stone paving, finish surface for walls, caps, pilasters, fence (refer to campus fence, walls, and barriers guidelines), drainage materials and devices, light fixtures, turf, pottery and fixtures, etc.

C. GENERAL CONSTRUCTION REQUIREMENTS AND SCHEDULE

- I. The General Contractor shall provide a detailed Landscape, Hardscape, Irrigation and Lighting Schedule for review and approval by the designer that will assure adequate coordination of the installation of all landscape and other construction tasks prior to the planting of turf grass.
- II. Turf grass establishment prior to building opening as outlined in Section E, Contractor Turnover; 4f, Lawn Installation, is a contract requisite. Therefore, all other construction tasks must be properly scheduled to accommodate the time required for turf grass establishment.

Solid sod turf planting requires a minimum time period of 30 days to establish. Sprig or seed planting requires a minimum of 84 days (12 weeks) in optimum climatic growing conditions to establish. Fine grading and debris removal for turf establishment are the contractor's responsibility.

- III. Construction staging should be planned in the Design Development phase of the project and included in the Design Development submittal. Construction staging plans should be developed in consultation with the Office of Parking and Transportation Services regarding traffic circulation, pedestrian walkways and construction parking.

Measures should be incorporated to ensure safe travel of pedestrians and vehicles during construction. These measures should be indicated on the Pedestrian Safety Plan that will become part of the final construction documents for the project. If construction staging is located on an existing parking lot, the

project shall pay for the temporary use of these spaces and restoration after construction. Staging areas will not be allowed so as to create potential conflicts with fire lanes. The Contractor shall coordinate with the Facility Services-Landscape Services department regarding maintaining trash/recycling services to ALL buildings in or around the construction area throughout the construction process and in conjunction with the University Landscape Architect regarding tree protection.

D. EXTERIOR ENVIRONMENT

I. SITE SURVEY, CIVIL, GRADING AND DRAINAGE, GREEN INFRASTRUCTURE, SITE DISTURBANCE, HEAT ISLAND

a. Site Survey

The design team shall define for the owner (if required) the specific requirements for a current certified land survey operator. This survey shall include: topographic contours, spot grades, lines of streets, alleys, pavements, and adjoining property; deed restrictions, boundaries, easements and contours of the Project site, locations, dimensions and complete data pertaining to existing buildings, other improvements and existing trees, and information concerning available services and utility lines both public and private, above and below grade, including inverts and depths.

b. Civil

The Landscape Architect and Civil Engineer shall produce final construction documents on the same base sheets to assure coordination of plans.

c. Grading

The grades for all exterior areas shall be set to adequately accommodate surface site drainage.

Earthwork shall be accomplished in accordance with the project's Soil Report (if required) that has been accepted by the Owner.

Earthwork shall be consistent with the design requirements of the Structural and Civil Engineer's design.

The final site grading plan shall assure there will be no standing water on any surface of the Exterior Environment, including but not limited to all landscape/softscape areas, hardscape surface areas, etc. The maximum approved slope grade shall not exceed 3:1 unless approved. Additionally, the Landscape Architect shall coordinate with the Architect to assure there are no areas of conflict concerning surface runoff water.

Finish grades and land contours shall be incorporated in to the Civil Engineering plans. The contractor shall be held responsible for providing earth surfaces finished to give positive gravity drainage away from the buildings and walks in areas of new construction.

Finished slopes shall be free from irregularities, hollows, or depressions. Soil shall be fine graded and free from construction debris. Provide sod or seed to all areas damaged by construction.

Fill and backfill material beneath building and paving limits shall be a clean, select material or silty clay with a plasticity index of 15 to 20. Use a maximum of 8" compacted thick lifts. Compaction shall be to a minimum dry density of 95% Standard Proctor or 92% Modified Proctor Test unless otherwise noted.

Topsoil and planting medium for turf, trees, shrubs, and groundcover will form the final finish grade for earthwork and shall be a minimum depth of 6"–12" for turf and shrub bed areas respectively. Pit planting shall be utilized under existing Live Oak trees.

d. Drainage

Ground floor slab elevations shall be above adjacent streets, parking lots and above the 100 year flood plain. Confirm final finish floor elevation with University personnel prior to completion of Construction Document phase.

Site drainage shall provide satisfactory runoff of storm water during normal rainfall conditions and prevent any pockets of standing casual water creating detriment of nuisance to horizontal paved surfaces and planted landscape and lawn areas. The inlet structures should be designed with consideration for seasonal heavy leaf accumulation and catch basins located for ease of regular maintenance.

Site drainage considerations shall include subsurface drainage in areas of poor internal soil moisture percolation which results in saturated soil conditions causing detriment to plant growth in landscape areas, nuisance seepage onto horizontal paved surfaces and continuous seepage through retaining walls leaving unacceptable stains.

Surface drainage infill structures shall be located and grades set to accommodate surface runoff. Size of drain lines, drainage inlets

and points of connection are to be established and connected to the main site storm drainage lines. Locate drainage apparatus away from entrances.

Subsurface drainage for over structure planters, planting beds, and tight soil areas where poor internal water percolation exists shall be designed and coordinated with Facility Services for points of connection into the site main drainage system and for inclusion of subsurface drainage lines with civil plans.

II. GREEN INFRASTRUCTURE

a. Low Impact Development

Designer shall identify green infrastructure/low impact development practices that could help avoid water quality degradation. See www.epa.gov/npdes/greeninfrastructure.

In accordance with Louisiana Department of Environmental Quality's Storm Water Management Program requirements for East Baton Rouge under rule LAS000101/AI 90427/PER 20090001, the plan must describe measures implemented to accomplish the following objectives:

- a) Keep rain out of the sewer system
- b) Allow storm water to be absorbed and cleansed by soil and vegetation and either re-used or allowed to flow back into groundwater or surface water resources.

Measures can include, but are not limited to, alternative surfaces (vegetated roofs, sediment filters, pervious pavement or grid pavers) and nonstructural techniques (rain gardens, trees and tree boxes, vegetated swales, disconnection of imperviousness, rainwater recycling and rainwater harvesting for non-potable uses such as toilet flushing and landscape irrigation) to reduce imperviousness and promote infiltration, thereby reducing pollutant loadings.

All measures and monitoring shall be documented in the project's Waste Water Management Plan and shall be capable of removing 80% of the average annual post development total suspended solids (TSS) load based on monitoring reports.

b. Site Disturbance

For sites not previously developed ("greenfield sites"), consider providing vegetated open space equal to 20% of the total project

site area. Include pedestrian oriented hardscape in open space calculation and consider using pervious paving for these surfaces.

Vegetation shall be native/adaptive to the area (require minimal maintenance, no irrigation and no fertilizing). Limit site disturbance to the following parameters.

Note these site protection requirements in the construction documents and verify locations before construction begins.

- a) 40 feet maximum around building perimeter
- b) 25 feet maximum around permeable surfaces (including turf areas)
- c) 15 feet maximum around primary roadway curbs
- d) 10 feet maximum around sidewalks and surface parking

For previously developed sites, consider restoring or protecting a minimum of 75% of the project site area (excluding building footprint) with native or adaptive vegetation.

c. Heat Island (non-roof)

For 75% of the site hardscape, design project site to use any combination of the following strategies:

- a) Provide shade from a tree canopy within 5 years of project completion.
- b) Specify a hardscape material with a solar reflectance index of 29 or greater.

3. TERMITE TREATMENT

Termite treatment shall be provided on sub-grade fill under concrete slab. Provide 2 year bonded guarantee for material and installation with an optional renewal warranty.

4. TREE PRESERVATION

A tree protection and pruning plan is required for all projects. The plan shall be developed in consultation with LSU's Landscape Architect (LA) and the University's Project Manager during the schematic or design development phase, and it becomes part of the design and construction documents.

Placement of tree and landscape protection measures, such as fences, protective mulch, protective fabric, and logging mats, should be indicated, as detailed below. The plan is a separate drawing, at an appropriate scale, labeled "Tree Protection Plan," and it should:

1. Identify size, species and location of all trees affected by the project.

2. Indicate which trees and shrubs are to be removed from the site.

Note: When trees and shrubs are removed, care must be taken to protect trees and other landscape elements that are to remain. (Indicate which trees and shrubs are to remain).

All trees determined to be preserved by the LSU Landscape Architect shall be fenced at the drip line of the branches. There shall be no break in the continuity of the fencing. If the lawn has to be maintained within this area, then an adequate lockable gate shall be provided.

The fencing shall be 4 foot tall vandal resistant, chain link. The area inside the fence shall not be used for any construction activity such as storage, lay down, etc. This includes protection from construction contamination from paint tool washing, diesel, and silt etc. The fenced area must be maintained in good physical and visual condition throughout the project.

- d. Soil mitigation work shall be completed in the root zones of all live oak trees affected by the construction project. This work shall consist of injecting, according to manufacturer's recommendations, Plant Health Care, Inc. MycorTree, Pt Injectable (Ectomycorrhizal Inoculants) and PHC BioPak, or approved equal, into the soil under the drip line of all affected live oak trees.
- e. Mulch shall be placed under the drip lines of the live oak trees affected by the project as determined by the LSU LA. Mulch shall be a minimum of 4 inches of fresh or aged hardwood chips or grindings. Mulch shall not be placed on the root flares of the trees.
- f. Any deadwood and/or limited crown reduction pruning of trees affected by the construction project shall be included as part of the project. The work shall conform to ANSI standards A300 and be performed by an arborist licensed by the ISA (International Society of Arboriculture) and/or LAA (Louisiana Arborist Association). All work shall proceed under the direction and observation of the LSU Arborist or the LSU LA.
- g. If the trees affected by the construction project are infected with Ball Moss, the Contractor shall treat with a solution of 5% sodium bicarbonate in water by spraying until drenching on all visible ball moss.
- h. Plans must indicate all trees to be pruned and treated prior to the start of the project.
- i. In some locations a visible barrier shall be attached to the chain link fencing located around affected trees, as required by the Owner. These locations

shall be identified on the tree protection plan and shall be maintained by the Contractor on a regular basis.

E. CONTRACTOR TURNOVER

I. SEQUENCING

- a. The Design Team is to develop a sequence of how the site is to be developed, nursery organized and secured, and final landscaping developed. The General Contractor is to incorporate this plan and sequence into his scheduling for turnover of the area of the site to be landscaped. The sequence of landscape installation and site inspection prior to commencement of landscaping shall be approved by the Owner.
- b. Accessibility to the main water supply for the building shall be made available to the Landscape Contractor for irrigation system main tie-in at the time of commencement of landscape activity in any given area. The Contractor is to make provisions for watering of trees that are installed early or existing landscaped areas that are to be maintained through construction.

II. UTILITIES

- a. The Design Team shall exercise sensitivity to site aesthetics in selecting the location of all infrastructure surface devices such as drain inlets, electric load centers and transformers, backflow devices, utility vaults cleanouts, water meters, etc., with the approval of the Owner.
- b. The location of all utility valves and appurtenances shall receive the input of the Campus' Landscape Architect with the intent being to prevent obtrusion for the exterior aesthetics of the site with subsequent approval of the Owner. Finish surfaces of all utility appurtenances shall be equal to, and compatible with, surrounding hardscape finishes.
- c. Water meter and backflow prevention devices will be located in vaults concealed from public view with finish surfaces compatible with surrounding hardscape. Provide freeze protection as required.
- d. Sleeving:
 - (1) All horizontal paving shall be sleeved at designated locations per sleeving plans for site lighting, irrigation, and other utilities not installed prior to paving.
 - (2) Sleeves shall be buried below paving a minimum of 4" and a maximum of 15" and be Schedule 40 PVC, 100mm (4") diameter. Provide 3/8" X 3" brass stove bolt in paving at sleeve locations.

- (3) The General Contractor is responsible to provide an ongoing as-built sleeve plan designating accurate locations and depth.

III. PAVING AND HARDSCAPE

- a. Locate drains to the edges or terraces; slop terraces so that furniture remains level.
- b. The Landscape Architect shall show on the landscape plans all above grade terraces exterior to the building along with details of paving material selection and paving pattern. The Landscape Architect is responsible for assuring full coordination of all project terraces with the Architect and Interior Designer.
- c. Exterior horizontal paved surfaces minimum standards are as stated below. Color and sample of each material and finished surface shall be approved by Owner. Minimum 6' X 6' field samples shall be provided by the General Contractor for site review and approval of the Owner, as deemed necessary.
- d. Entry Drives are to have a barrier curb along both outside edges. The finish of the curb shall match that of the Entry Drive.
- e. Porte-Cochere and associated circular driveway are to receive barrier curbs of the same finish as the adjacent drive. All adjacent walkways shall be distinguished from the drive in color and texture.
- f. An expansion joint shall be placed between the exterior entry and the Entry Drive and adjacent walkways. Expansion joints are to be kept away from the building entry. Any expansion joints are to be caulked with on approved material and color.
- g. Grout colors to be approved as part of standard sample mock-up review.
- h. Minimum acceptable standards for hardscape surfaces are as listed below:
 - (1) Concrete Walks
 - (a) Minimum width of concrete walks shall be 8' unless specifically approved by Planning, Design & Construction Site Review Team.
 - (b) All concrete walks shall have a minimum depth of 5" and have a non-slip surface finish.

- (c) Provide 3" PVC sleeves under all sidewalks at 100' maximum intervals.
- (d) Drill and pin, in both directions, 24" O.C. with #4 steel re-bar all existing concrete that abuts new concrete walks or drives. #4 steel re-bar shall be installed 24" O.C. at all construction joints for new concrete walks.
- (e) Provide truncated domes in sidewalk ramps which abut vehicular areas. The truncated domes shall be installed within the final 2' of paved surface prior to the vehicular use area, and shall be installed across the entire width of the walk. Individual truncated dome paver units shall be used and shall be terra cotta color.

Streets and Driveways

- a. All streets and driveways must meet highway standards for construction and maintain an optimum width of 24' for two-way traffic and 12' for one way traffic. If site conditions do not allow the optimum layout, an absolute minimum width of 22' for two-way traffic and 11' for one-way traffic may be allowed.
- b. Islands and any other physical barriers should not be employed to channel traffic. Signage and other traffic control devices should conform to the most current Manual on Uniform Traffic Control Devices.

Parking Lots

- a. The general design to maximize use of parking areas on the LSU campus is to employ a 90 degree parking space 8.5 feet wide and 18 feet long with an optimum bay width of 57 feet to a maximum of 60 feet for a double and 41 feet to a maximum of 43 feet respectively for a single bay.
- b. If the site conditions do not allow for the optimum layout, a minimum bay width of 55 feet for a double bay and 39 feet for single bay is acceptable. Parking quantities shall be designed at a rate of 1:1 for residential areas, .7:1 for commuter lots, and 1:200sf of office space and shall meet all federal requirements for the Americans with Disabilities Act.

- c. The second method to maximize parking is 70 degree parking. The space width is 9 feet by 16 feet. Double loaded bay widths are 49' minimum, 51' optimum, and 53' maximum. Single bays are 19' minimum, 21' optimum, 23' maximum.
- d. Parallel parking standards are 21' long by 8' wide.
- e. Handicapped spaces must comply with ADA standards.
- f. Layout of all parking areas must be approved by the Office of Parking & Transportation Services before implementation. Where existing parking capacity is displaced by the construction of a new facility, those displaced parking spaces must be mitigated on a one-for-one basis. Designers should submit for review a traffic study for vehicular circulation to and around the new facility, including service, delivery and public transportation vehicles.
- g. The University has numerous card access gated parking lots. Any additional card access controllers must be compatible with the existing system. Further information can be obtained from the Office of Parking & Transportation Services.
- h. Lighting is to be included as part of parking lot projects. Light standard locations should be considered relative to tree planting in order to avoid dark areas in parking lots and should be coordinated with the landscape consultant.
- i. Provide 3" (minimum) sleeves under new paving to all green areas. Identify sleeve locations on As-Built drawings and provide 3/8" X 3" brass stove bolt in pavement at the location of each sleeve.
- j. In addition to all other landscaping requirements, all new off-street parking lots with fifty (50) or more spaces shall provide and maintain landscaped planting areas within the interior of, and adjacent to, the parking lot.
- k. Perimeter landscaping shall be provided a rate of one (1) tree for every seventy-five (75) linear feet of paving frontage. Trees shall be spaced so that there is a minimum

of one (1) tree for every one hundred twenty-five (125) linear feet of paving frontage.

- I. Interior tree planting shall be provided at a rate of one (1) tree for every forty (40) parking spaces located in islands at the end of parking bays, island located between parallel rows of cars, driveway medians, intermediate islands or a combination of locations. In addition to the required trees, interior planting areas shall be grassed, landscaped or covered with mulch.

F. LANDSCAPING

I. QUALITY CONTROL

- a. Quality control is the essence for achievement of the finished product for the exterior environment. The Landscape Architect is to recommend standards for landscape material selection and installation to provide the Owner with a final product that is consistent with other LSU facilities. The Owner shall be involved in the decisions that impact the end-product, including but not limited to, a review and approval of:

- (1) All aspects of the technical landscape design and installation
- (2) Design/build shop drawings and mechanical function
- (3) Material selection including plants, stone, aggregate, concrete, furniture, fixtures, lighting, signage, railing, fences, etc...
- (4) Finish grading
- (5) Surface drainage and details and techniques of subsurface drainage
- (6) Irrigation design and equipment
- (7) Soils and plant bed preparation specifications including chemical and physical properties
- (8) Hardscape design pattern and installation details and materials selection
- (9) Water feature design and mechanical engineering
- (10) Interiorscape plans, specifications, and materials selections

- b. The Landscape Architect shall coordinate with the Interior Designer the located and placed on the landscape plan by the Landscape Architect, with submittal cut sheets and physical sample for approval.

II. SOILS AND PLANT BED PREPARATION

- a. The Landscape Architect shall approve soils and plant bed soil preparation and installation for compliance with plans and specifications. Soils and associated amendments have a direct bearing on the performance and ultimate success of plant materials used in the landscape. Selection of soils, amendments and soil preparation mixing ratios shall follow the

recommendation of the Agronomic Soil Test and shall be clearly outlined in the construction documents by the Landscape Architect.

III. PLANTING PLAN DETAILS

- a. Planting beds, pit excavation and backfill for trees, shrubs, groundcover and annuals: Planting plan details and specifications shall clearly address this issue with specific consideration for location conditions regarding diameter of planting pits, depths of planting beds, usability of natural site soil and recommended soil amendments.

IV. SITE LANDSCAPE GRADING AND DRAINAGE

- a. Site Grading in preparation for landscape installation shall be in accordance with the site plans. All soils, subgrade or topsoil, native to the site or imported are to be guaranteed free of noxious weeds.

Additionally, all clods, rocks, roots, and other trash, foreign to good friable soil conditions, greater than 1" diameter size are to be raked and removed from the site.

- (1) The final finish grade for all landscaped areas shall include a 2" layer of topsoil for all turf areas unless otherwise specified.
- (2) The General Contractor shall assure that all areas or phases of the Project that are ready for landscape installation are graded to specifications, but also clear of all obstacles, equipment and material, etc. that will impair complete and open access to the designated area and ultimately risk quality control of the landscape end-product.
- (3) To protect the quality of the landscape, the General Contractor shall control ingress and egress of all subcontractors and trades not directly associated with the landscape installation into all areas designated ready for landscape.
- (4) Subsurface drainage using perforated pipe with filter fabric embedded in gravel aggregate shall be installed per plans and specifications in all areas of underground seepage, wet seepage conditions involving paved surfaces, areas slow to percolate due to impervious or tight soil conditions and other site conditions warranting subsurface drainage.
- (5) All over-structure planter beds and large stationary plant pots shall have subsurface drainage connected directly into the building or

site drainage system or a means of dewatering through siphon tubes (saucers with pots are not acceptable).

V. PLANT MATERIAL STANDARDS AND SPECIFICATIONS (ALL SIZES STATED ARE MINIMUM SIZES)

- (1) The Landscape Architect shall approve all plant material used on the Project, prior to shipment from the nursery. Plant materials that do not meet the standards of the specifications and landscape planting plans as described by the Landscape Architect shall be rejected.
- (2) The American Association of Nurserymen Standards shall serve as the standard of quality in developing guideline standards for specification of plant material regarding size for height, spread, caliper, rootball, etc., for container-grown and B&B trees, shrubs, groundcover and annual flowers.
- (3) Shrub plants shall be planted triangularly and spaced to achieve 100% coverage within a 3-year grow-in period, unless otherwise specifically approved by the Owner.
- (4) Groundcover: Plant material shall be triangularly-spaced to achieve 100% coverage within a 3-year grow-in period, unless otherwise approved by the Owner.
- (5) Annual flowers: Plants shall be 4" pots, bud and bloomed, spaced 6" o.c. at initial planting. Some species of annual color may be 6" pot size in which case the plant spacing will be adjusted accordingly as approved by the Owner.
- (6) Trees: Size and specification will vary based on species and plant availability. Selection shall necessitate a degree of flexibility and reasonableness based on availability and quality. (Trees must be individually hand-selected and approved by the Campus Landscape Architect.) Specifications shall be in accordance with the applicable selection standards and the Landscape Architect shall specify plants by height, spread, caliper size, rootball and box/container size.

All trees shall be tagged with pre-numbered, interlocking tags.

- (7) All plant material delivered to the site shall have tight, firm rootballs. The plant shall not be loose in the rootball at the root crown and the burlap shall be tightly affixed with wire on any rootball greater than 20" diameter. Plants grown in containers shall

be fully and deeply rooted and not recently transplanted in such a manner that the roots have not had sufficient time to develop.

- (8) Contract Growing, Special Procurement and On-Site Nursery: Due to plant availability shortages, contract growing of shrubs, groundcover and annual flowers, early procurement of tree plant materials and on-site nursery arrangements may be necessary to have plant materials available for the project of acceptable quality, size and species to comply with the schedule of installation.

In this case, the Landscape Architect shall approve procedures associated with such an arrangement and the schedule outlines to accomplish the task. Arrangements for this procedure must begin very early in the Project construction process to allow sufficient time for growing plants.

VI. LAWN INSTALLATION

- (1) Grading of site prior to planting grass must alleviate all pockets of standing or puddling casual water.
- (2) Selection of Species: The turf grass species shall be conducive to the Louisiana region and pre-approved by Campus Landscape Architect, capable of vigorous growth and development of a thick turf cover.

The turf species shall be fine-textured, capable of being developed into manicured turf of refined finish.

- (3) The turf quality shall be free of noxious weeds and diseases, true to species as approved by the Owner.
- (4) Turf installation shall be by means of solid sod, laid on the finished graded surface, rolled for smoothness and compaction. Plans shall clearly indicate all areas to receive sod.
- (5) Turf planting methods other than sod, such as hydro-sprigging or hydro-seeding, shall only be considered on an individual project basis in large areas greater than 100' from outer face of the building as approved by the Owner.
- (6) The General Contractor shall be responsible for providing a 100% fully established turf a minimum of 30 days prior to the opening of the building. NOTE: Established turf is defined as 100% ground coverage, matted together sufficiently to support pedestrian foot traffic and growing in a vigorous manner. The turf must be free of

erosion, standing water, wet-slow to drain areas, noxious weeds and disease. Newly planted grass must have been mowed on a weekly basis with the proper type mower for at least 30 days prior to final acceptance to be considered established.

G. IRRIGATION

- a. Landscape Irrigation shall be designed by a licensed landscape irrigator.
- b. The Irrigation System shall be fully automated and controlled by an electrical controller and shall provide 100% coverage of landscaped areas with heads triangularly-spaced with overlapping head-to-head trajectory.
- c. Remote control valves shall be electrically activated.
- d. Turf and planting beds are to be valved separately due to different water requirements.
- e. Turf heads shall be a minimum 4" pop-up spray heads in small cut-up areas of turf and rotary gear-driven heads in large expanse areas of turf.
- f. Shrub and groundcover areas are to receive 12" pop-up spray heads along turf borders, sidewalks and other areas along exterior perimeters where there is no interference from vegetative growth. All interior areas of the bed shall receive shrub sprays on stationary risers with a flex pipe connection to the lateral line. The nozzles on the risers shall be brass.
- g. The automatic controller is to be electromechanical repeat cycle with a master control valve to prevent errant operation. Place in a concealed location (approved by Owner) and all boxes are to be lockable, either by use of a padlock or with an integral lock. Battery operated controllers shall be acceptable on an individual case by case basis.
- h. Irrigation System design is to assure consideration is provided to accommodate prevailing winds and static pressure reading to keep spray off of walks, street and parking areas.
- i. The Irrigation System shall be designed with sufficient quick coupler valves in all areas of the site to be reached with 100' of water hose.
- j. The Irrigation system is to be separated from the domestic water system by a backflow presenter device.
- k. Design shall specify a rain sensor on all campus irrigation systems.

- I. Contractor shall submit a schematic diagram of the completed irrigation system to owner showing all operable zones and the corresponding descriptor on the control box. Review operating procedures with a representative of LSU Landscape Services.

1. WATER FEATURES/FOUNTAINS/SPECIAL SITE AMENITIES

- a. Special site amenities such as site fountains, gazebos, pavilions, etc...shall be considered in the design of the Exterior Environment as appropriate to create special spaces, function areas and features of interest. (Approval on a case-by-case basis)
- b. All fountains shall be designed by the Landscape Architect, in conjunction with a sculptor when necessary, with the intent of creating a special theme compatible with the building or function area.
- c. Water feature design is a "hands-on" subjective process with mechanical and hydraulic requirements for water movements and effect and water quality control. Rock boulders, stones and rock outcroppings are not indigenous to the geographic region and should not be used.

The aesthetic character should create a naturalistic environment with lake or pond edges blending naturally into the surrounding setting. Where a water feature edge abuts plazas, walkways or other spaces, the edge treatment shall conform to applicable accessibility codes.

- d. Bicycle Racks: Bicycle riding is encouraged on campus and bicycle racks should be included in the project when appropriate. Bicycle parking sites shall be considered at the schematic design phase and final site locations indicated in the final construction documents. Consider bicycle parking and parking surface as part of the construction costs.

The number and location of bicycle racks is determined in joint consultation with the LSU Office of Parking & Transportation Services and LSU Campus Planning. Follow the guidelines below when determining bicycle parking quantity and location:

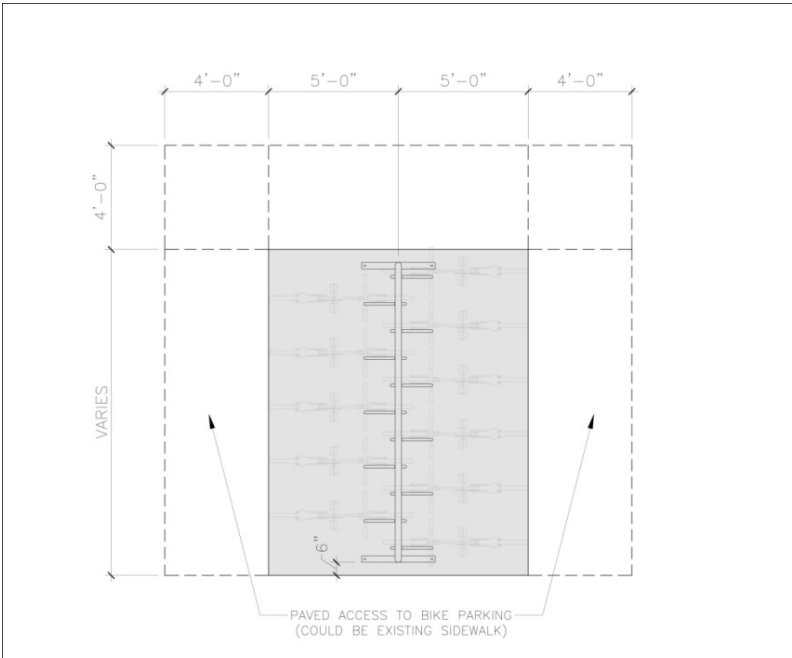
For Residential Facilities:

Provide bike parking spots within **300 feet** of a building entrance for at least **15%** of the building occupants.

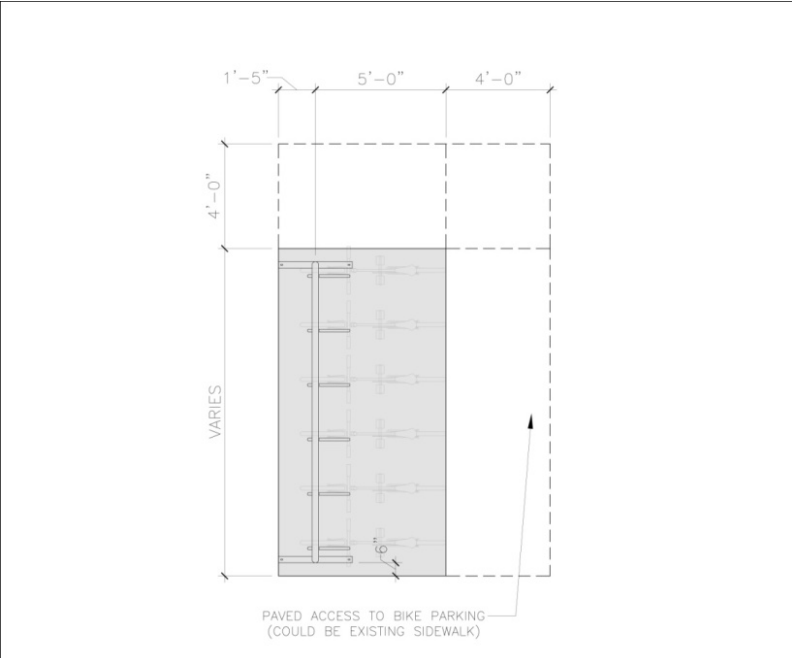
For Non-Residential Facilities:

Provide bike parking spots within **300 feet** of a building entrance for at least **5%** of the building's peak users. Estimate peak building users by applying an efficiency factor of 75% to the building's occupancy.

Bike racks shall be: **Dero-Campus Rack, galvanized finish, surface mounted;** or equal manufacturer.



(Above) Double sided bicycle rack



(Above) Single sided bicycle rack

- e. When locating bicycle racks, choose locations that are accessible by bicycle. Bicycle parking racks should be installed on a paved surface. The dimensional requirements of the paved surface are described in the sketches below. Designer should consider future expansion opportunities.
- f. Bus Stop/ Shelters: The Office of Parking & Transportation Services and the LSU Landscape Architect shall determine where to locate bus stops/shelters when ridership volumes justify use and adequate space is available. The unit used on campus is to be mounted on a brick paved area. It should be appropriately illuminated and adequately transparent to ensure user security and safety.

Provide a suitable clear space around the shelter to allow for visual accessibility and maintenance. Integrate related site furnishings such as waste receptacles, lighting, newspaper machines, public telephones and landscaping features into the space surrounding the shelter.

- g. The University's Facility Design and Development Committee has approved a family of site furniture to be incorporated into the external environment.
- h. Benches are to be Victor Stanley, Inc.: Steelsites RB Series; RB-28 or RB-12, 6-foot length; Black finish or equal manufacturer.
- i. Litter Receptacles are to be Victor Stanley, Inc.: T Series; Model 32 w/S-1 lid; Black finish or equal manufacturer.

2. LANDSCAPE LIGHTING

GENERAL REQUIREMENTS

- a. Landscape lighting design shall be conceptually designed by the Landscape Architect, with particular attention paid to creating a soft, serene and safe nighttime atmosphere. The ambiance afforded by landscape lighting is especially important in transforming the landscaped areas into pleasant, special experience for the students. Walkway lighting shall be very subtle and discreet, utilizing surrounding landscape illumination to serve the purpose of walkway lighting to the extent possible
- b. Lighting of special feature items or special seasonal displays and points of interest will be accomplished through landscape lighting. Provide additional circuit capacity at the building entry Porte Cochere and plazas.
- c. Landscape lighting design will be governed by the light quality more satisfactory to create the desired atmosphere fixture style and equipment

durability and shall consider all governmental agency requirements and regulations affecting exterior lighting.

- d. The Landscape Architect shall employ a qualified Lighting Consultant to ensure the proper execution of the lighting concept. This design is to be carefully coordinated with the exterior building lighting.
- e. Landscape lighting shall be furnished and installed by the Contractor per the plans and specifications. Electrical service and circuiting shall be provided by the General Contractor as part of the Project's electrical contract. Information for electrical service requirements shall be obtained from the landscape lighting plans and specifications.
- f. All site lighting shall be controlled on separate circuits from Landscape Lighting through either time clocks and/or photocells.

INSTALLATION

Exact physical locations of all landscape lighting fixtures shall be determined in the field by lighting consultant in coordination with Landscape Architect after tree pits are dug.

All exterior transformers and junction boxes shall be located in areas concealed from the public, as identified by the Landscape Architect and Owner.

- a. All exterior weather proof J-boxes shall be rated for NEMA 4X. Any above grade boxes shall be painted to match adjacent surface as specified by the Landscape Architect.
- b. Each ballast and junction box shall be specifically located by the Landscape Architect.
- c. All exposed conduit shall be painted out to match the adjacent surface as specified by the Landscape Architect.
- d. Final adjustments of all landscape lighting fixtures shall be approved by the Owner. Adjustments or proper focus of lighting shall be conducted as part of the contract.

FIXTURE REQUIREMENTS

Fixture specifications and quantities shall be per the legend on the lighting plan inclusive of the issues and items stated above.

Durability and corrosion resistance of any substitute fixture shall meet or exceed the original specified fixture as approved by the Owner.

- a. All lamps shall be in 3000K⁹ color temperature range. All light physical color shall be the same or compatible.
- b. Provide all ground mounted fixtures with no manufacturer's logo visible on fixture housings.
- c. All pathway lights shall have a protective lens to prevent intrusion of water that would damage the lamp. The pathway light junction box shall be accessible below finished grade. The junction box will be mounted in a concrete pad for stability.
- d. Underwater fixtures shall conform with the NEC Article #680.
- e. Fixture shielding shall maximize concealment of light source.
 - 1. Uplights shall have attached flat lens, internal louver (if available), and rock guard louver
 - 1. Bullet lights shall have hex louver and eyebrow shield.
 - 2. Niche lights i.e., step lights, garden walls, or bridge rails, shall have flush mount lens, flat bronze down louvered grilles.
 - 3. Path lights shall be architecturally compatible with the building entry and/or wall sconce fixtures, 100% down shielded below the horizontal plane, clean flat lens to protect the lamp from irrigation water spray.
 - 4. Quantum fixtures shall be shrouded to prevent control spillage of light source into areas not intended to be lit.
- f. Parking lot fixtures shall be 100% down shielded.
 - 1. Signage lighting shall be shrouded to prevent spillage of lighting into any area other than the sign.
 - 2. Underwater fountain fixtures shall be permanently affixed to the bottom of the fountain pool or recessed within the pool bottom. All electrical cords and wires shall be 100% concealed under the pool bottom and routed in conduits to the light location.

H. FENCES, WALLS AND BARRIERS

- a. The purpose of this section is to provide a design standard in regards to fences, walls, and barriers on campus that is consistent with the overall goals and intent of the 2003 Campus Master Plan which seeks to create a people-

friendly environment while at the same time promotes the public health, safety, and the general welfare of the user.

To further this goal, the use of fences, walls, and barriers is strongly discouraged and shall only be considered in the following circumstances:

- To contain livestock, maintain animal habitats, and/or to maintain other agricultural needs.
 - To provide a visual buffer of dumpsters, mechanical, and other unsightly structures or equipment.
 - To prevent unauthorized access to high voltage and/or other dangerous areas.
 - For security purposes as required by federal, state, or university safety officials.
 - To enhance the quality of a pedestrian oriented courtyard or space in public and residential areas.
 - To secure athletic and academic functions.
- b. Design of proposed fences, walls, and barriers is encouraged to reflect the existing heritage and gracious quality exemplified in the historical part of campus through the use of similar materials, color, proportion, and scale. If the use of arches and/or arcades is proposed, then consideration should be given to the character of the arcades surrounding the main quadrangle.

The color palette of materials to be used should be within the range of warm earth tones as seen in the historical part of campus which are generally light in color (i.e., colors found in the sandstone, buff, and terra-cotta families).

- c. Any fence, wall, or barrier shall be constructed in a durable fashion with a finished surface of brick, stone, decorative masonry material, cast stone, painted metal, approved synthetic material, landscape material, and/or a combination of said materials.

The use of wood and/or chain link fence shall not be acceptable except in extenuating circumstances which will be reviewed by the Campus Facility Development and Design Committee on a case by case basis. When the use of chain link fences is approved, they shall be 9 gauge vinyl coated heavy gauge material with schedule 40 galvanized steel pipe frame.

Fencing materials shall match surrounding architecture and site character as closely as possible to maintain visual harmony on campus. All designs shall be reviewed by the Planning, Design & Construction department for design integrity prior to presentation to the Facility Development and Design Committee.

- (1) The finished side of all walls or fences shall face the common property line boundary.
- (2) Fences, walls, and barriers shall be designed to be climb resistant, and shall be reviewed by campus security officials.
- (3) All fences, walls, and barriers shall allow access by university maintenance and security officials.
- (4) When gates are required, they shall be lockable only from the outside and shall conform to all fire and safety codes. Fences, walls, and barriers shall not restrict egress from a confined pedestrian area and Campus Police and Facility Services personnel shall be allowed access at all times.
- (5) When landscape material is used as a fence, wall, or barrier this material shall not exceed 5' in height and shall not be used on more than 2 contiguous sides. The use of climbing vines on fences, walls, and barriers is encouraged. All designs which utilize landscape materials shall be reviewed by the Campus Landscape Architect prior to presentation to the Facility Development and Design Committee.
- (6) When a fence is to be constructed directly adjacent to a pedestrian corridor, the fence height shall be proportionate to the width of the space directly adjacent in order to maintain a comfortable pedestrian atmosphere.

d. The following guidelines shall govern the design of fences, walls, and barriers when used in their respective campus zone:

Livestock and Agricultural

- (1) Fences shall be constructed with no more than 25% solid materials and should be mostly transparent in nature.
- (2) Decorative materials shall be utilized when these fences front a main pedestrian or vehicular corridor.

Dumpster and Mechanical Equipment Screening

- (1) The height of the fencing material used shall be relative to the equipment being screened; however, the height of this fence shall not exceed 8’.
- (2) These fences should not be transparent in nature.
- (3) This fence shall remain open on one (1) side, and this opening shall not be visible from a main pedestrian and/or vehicular corridor.

High Voltage and Other Dangerous Areas

- (1) The height of the fencing shall be 8’-12’ in height.
- (2) These fences should not be transparent in nature.
- (3) These fences shall not be constructed of a material that is conductive in nature.

Public and/or Residential Courtyards

- (1) Fence shall not extend more than 5’ in height and shall not extend beyond the building perimeter lines in any direction.
- (2) Fences shall be constructed with no more than 25% solid materials and should be mostly transparent in nature.

Athletic Functions

- (1) Fence shall extend no more than 8’ in height.
- (2) Opacity of fence structure shall be relative to the function of the athletic area being confined.

I. BOLLARDS

Steel pipe bollards a minimum 6" X 48" high are required adjacent to buildings where service vehicles back in to load/unload and in dumpster yards to prevent damage to fences and structures.

Must provide Schedule 40 pipe minimum *with black paint color being approved by the Office of Planning, Design & Construction*. Bollard locations for controlling pedestrian and vehicular movement shall require prior approval before installation.

J. UTILITIES

- a. Street and Roadway Utility Repairs and Replacements: All utility repairs or replacements requiring cuts into roadways, driveways, or parking lots

shall be coordinated with the Office of Parking & Transportation Services in advance of the start of work.

In repairing required cuts to complete utility repairs, contractors shall provide a sub base compaction rate standard of 95%. Testing shall be conducted to ensure that the appropriate compaction rate is met.