

landscape DESIGN standards



University of California, Davis
GROUNDS DIVISION
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IMPORTANT

Those responsible for designing landscape improvements at UC Davis shall follow these steps:

- Consult with campus landscape architect in Grounds Division prior to beginning work.
- Submit a conceptual landscape plan to campus landscape architect in Grounds Division for operational cost audit before proceeding to design development.
- Submit plans, details, and specifications to campus landscape architect in Grounds Division for review and approval prior to installation of landscape improvements.

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Design principles

With a century behind it, UC Davis' landscape is a physical embodiment of the university's history and stability. Through the years the campus appearance has remained park-like and relatively simple, although many landscape styles have emerged over the course of many decades

In recent years, the university has found it difficult to maintain the variety of landscapes that have been developed on campus. The installation of landscapes with high maintenance needs and inappropriate plant selection have contributed to the problem.

As a result, the university has found it necessary to develop landscape design standards to provide better guidance to planners, designers, contractors, maintenance staff and administrators involved with landscape improvements on the campus. The university hopes that these standards will be as useful as the existing campus standards relating to building design (*UC Davis Campus Standards and Design Guide*). The landscape design standards should be used as supplement to the *Design Guide*.

In developing these standards, UC Davis examined successful landscape design and maintenance practices at UC Los Angeles, UC San Diego and Stanford University. These best practices are:

- **Design based on what the university can afford to maintain.** Landscape designs, with some limited exceptions, shall have maintenance requirements that can be performed at the lowest possible frequency. Most of the campus landscape should be park-like and simple, with a limited number of low-maintenance plants. Special areas of campus such as entry ways or high-profile buildings may have more elaborate landscapes, but these exceptions must also have a dedicated maintenance fund as a condition of design approval.
- **Simplify the plant list.** Most of the campus should have a simple planting palette or proven performers that are uniform in appearance. Limiting plant varieties reduces maintenance costs and helps ensure plant survival. Select plant materials that have a long life-cycle (50 years and up) and can thrive under existing environmental conditions and population pressure.
- **Simplify landscape components.** Using a limited range of landscape components such as furnishings and paving materials helps to reduce maintenance costs. Repairs and replacements of landscape components will benefit from economies of scale.

Favor the use of pavers over poured-in-place concrete or asphalt to minimize the cut-up look should trenching or repairs occur later.

- **Control undesirable circulation.** Use plant massing, landscape walls, bollards and fencing to keep pedestrians and vehicles out of planting areas, thereby preventing costly damage from soil compaction, soil erosion, broken irrigation systems and trampling.
- **Create a unified landscape that respects the historic core.** Landscape designs shall integrate the campus' diverse building styles into one continuous park-like landscape. Designs shall respect the integrity of historic landscapes in the core campus through use of paving patterns, materials and site furnishings and will restore historic landscapes and incorporate promotional signage where appropriate. See Appendix I to learn more about the history of the campus landscape.
- **Design for sustainability.** To the maximum extent possible, landscape designs shall use recycled materials, comply with standards of Leadership for Energy and Environmental Design (LEED) standards, use plant materials appropriate to the region (long-lived, drought-tolerant, low maintenance and minimal fertilization) and incorporate open storm-water drainage. To prevent soil erosion, all plantable surfaces shall be stabilized with mulches and binders to minimize soil movement.



UC Davis landscape generally is park-like and simple.

The campus welcomes feedback from those who use this document so that it can be revised for maximum clarity in the future. The sections that follow provide standards for site planning, landscape components and specific campus landscape areas.

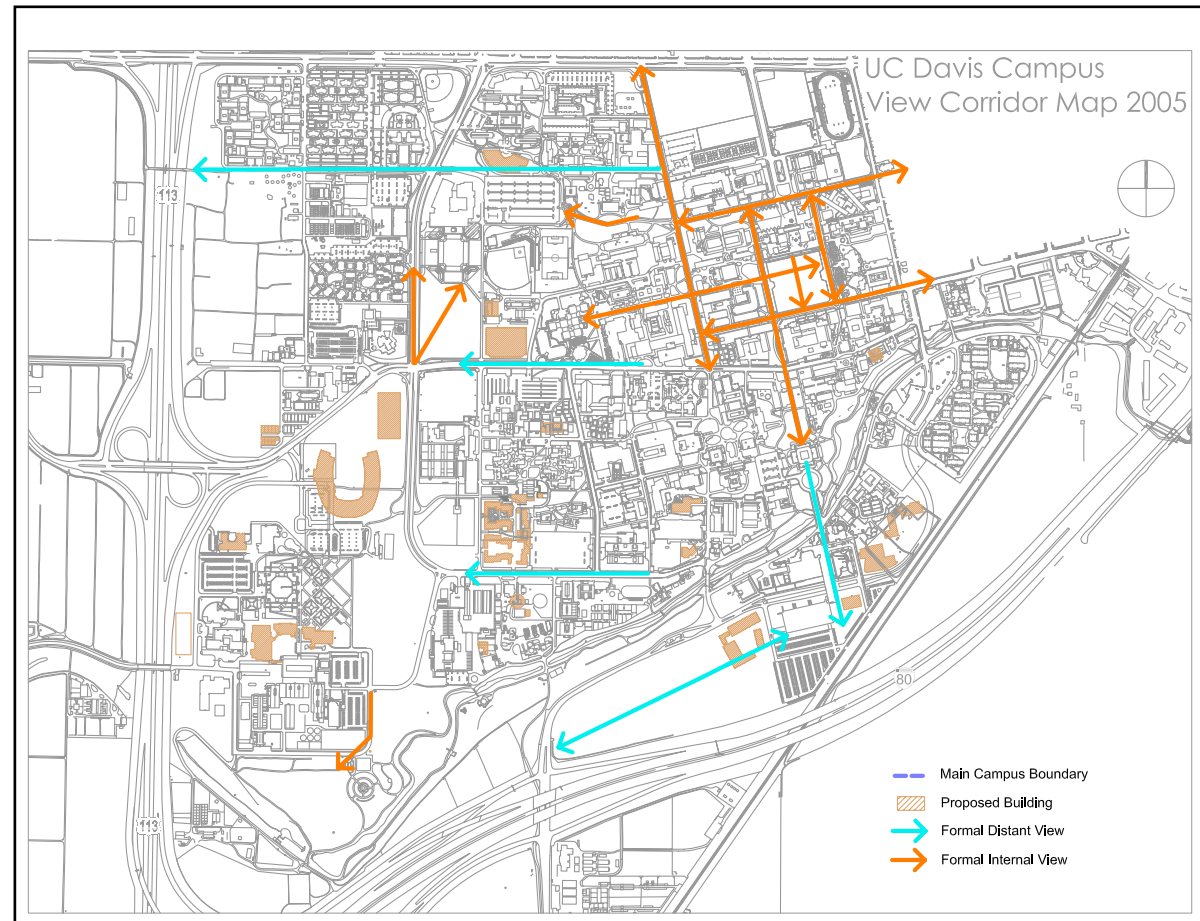
I. Standards for site planning

Site planning includes recognizing existing contextual elements, such as views, circulation systems, grading and drainage, service areas and utilities. *Special instructions are listed in italics.*

Views

Views provide a much needed sense of direction and orientation to the viewer. The flat landscape of UC Davis combined with the linear, tree-lined streets allow for long, unobstructed views both within and external to the campus. Notable views include south from Mrak Hall towards I-80 and west on Hutchinson Drive towards the Coast Range, as well as the old street grid of the core campus.

Conduct site-specific spatial analysis prior to beginning design work to properly identify, preserve and, if possible, enhance notable views.



Circulation Systems

Circulation systems in the core campus are a network of vehicular, bike and pedestrian routes that provide access to buildings, courtyards, sports fields and the downtown. The components of the circulation system are roads, walks, paths, courtyards and building entrances

Strive for maximum separation of pedestrian, bicycle and vehicle traffic.

Maintain or enhance a smooth transportation flow.

Provide appropriate barriers (raised planters, shrub massing, bollards, or moveable fences) to keep vehicles out of pedestrian and landscape areas, and bicyclists and pedestrians out of landscape planters.

Grading and Drainage

UC Davis' relatively flat landscape drains into a storm pipe system that empties into the Arboretum Waterway. The Arboretum Waterway functions as a storm-water retention basin for the campus, holding runoff during storm periods of high water until it is pumped to the south fork of Putah Creek.

Design surface-drainage systems to minimize concentration of surface runoff and avoid soil erosion.

Promote natural infiltration (such as grass-lined swails) whenever possible to retain surface flows, filter water, and reduce peak flow storm-water drainage into the Arboretum Waterway and Putah Creek.

Service Areas

Service areas include loading docks, enclosed trash-containment areas and enclosed building-utility areas.

Screen off enclosed trash and utility areas with trees, shrubs and/or vines to improve appearance and integrate enclosures with neighboring buildings.

Consolidate and screen large utilities and trash containers from entries and pedestrian paths.

Integrate external enclosures into their surroundings with the appropriate lighting, materials, and finishes.

See Campus Standards, Architectural Design Guidelines, published by Architects and Engineers (www.ae.ucdavis.edu/projectsindesign/campus_standards.htm#, p.87) on how to locate service areas.

Underground Utilities

Due to the rapid growth in campus building, coordination of utility placement is essential in preserving existing landscapes and allowing space for future landscapes to grow.

Align utilities under the streets, walks and paved courtyards to minimize conflict with landscaping and to ensure maximum landscaping longevity.

Consolidate new underground utilities into "tunnels," in multiple, parallel installations.

Locate surface hatches, utility covers, ventilation and access elements within paved areas.

If planted areas are the only option, coordinate with existing tree locations and integrate into plantings to conceal appearance and avoid root zones.

Conceal vault covers in modular paving areas, utilizing a pan-like cover to accept the finish paving material.

Above-Grade Utilities

Most above-grade utilities require maintenance access and clearances. These utilities including backflow preventors, emergency generators, and other large industrial elements.

Integrate above-grade elements into the site or building design to minimize visual impact on landscape.

Consolidate utilities with adjacent facilities where possible when landscape is part of new building construction.

Locate air intake units for buildings away from outdoor sitting areas to minimize the intake of smoke and exhaust fumes.

If utilities occur in the landscape, locate away from primary entries and walks and screen with enclosures or plant materials.

Integrate external enclosures into the surrounding environment by using appropriate scale, materials and finishes.

Avoid installation of visible utilities in view corridors or similar locations where the utilities would have a negative aesthetic impact.

II. Standards for landscape components

Landscape components includes plant materials, paving materials, lighting, pedestrian barriers/traffic control and furnishings.

Plant Materials

The character of the campus landscape has developed its own style over a century of planting, design and maintenance. The open nature of the campus allows most of landscape to be accessible a great variety of vehicles and activities. The landscape has survived decades of student activities, severe summer and winter temperatures, heavy clay soils and hard-mineral irrigation. The landscape is also used as an outdoor teaching laboratory which requires a diversity of plants. With all of these demands, it is the overall goal of the campus is to remain park-like and simple with selective areas of distinctive landscapes.

Select plants that are long-lived and require low-maintenance (minimal pruning, minimal fertilization and maximal disease resistance). See Appendix II for a list of plant materials that may be used in the campus landscape.

Identify areas with historic plantings and retain that landscape character by adding plants to complement the historic plantings and/or replacing historic plant material that has declined.

Keep the majority of the campus park-like and simple, limiting the variety of plantings used in each landscape and matching the plantings in the surrounding landscapes.

Retain enough plant diversity to satisfy educational needs, such as plant identification classes.



Park-like and simple, with shaded pathways and limited plant varieties, is the standard campus landscape style.

Identify and save existing historical specimen plants (see tree and plant evaluation reports for most projects) and chose new plantings to complement the existing landscape features.

Provide shade along all paths, walkways and roads.

Paving Materials

Consistent use of selected paving materials unifies the campus environment, improves its functional and aesthetic qualities, and furthers the campus sustainability goals. Pavement types include modular pavers as well as poured-in-place concrete, asphaltic concrete and decomposed granite

Modular concrete or brick pavers are used for walks and plazas to add visual texture. Modular pavers have the advantage being reusable after trenching or repairs (if installed without mortar), thereby reducing long-term maintenance costs. Select a method of installation base on site-specific conditions, anticipated uses, and the demands of vehicle weight loads. Use simple edge restraints where modular paving meets adjacent soil.

Concrete Pavers. Concrete pavers are the appropriate materials for courtyards and pedestrian walks.

Summary of paving materials			
MATERIALS	SIZE	COLOR	FINISH
Concrete Pavers	Varies	Varies	slip resistant
Brick Pavers	varies	red tones	meet applicable codes
Poured-in-place Concrete	N/A	neutral tones	broom, sandblast, exposed aggregate
Asphaltic Concrete	N /A	natural black	rolled
Decomposed Granite	1/4" and less	gold/brown	stabilized

Install concrete pavers over a pervious material where possible.

Incorporate concrete interlocking pavers in monochromatic colors, rectangular forms, and with slip-resistant surfaces.

Incorporate pavers with sizes appropriate in scale based on landscape context and project goals.

Determine thickness of pavers based on functional requirements and material strength.

Brick Pavers. Brick pavers come in a variety of sizes, colors, patterns, and configurations.

Incorporate brick pavers in red clay tones, with a slip resistant surface, and size to accommodate specific functional requirements.

In general, use red brick pavers for borders, building entrances, Quad street crossings and accents in courtyards.

Poured-in place concrete. Use for pedestrian walks, plazas and bicycle parking areas.

Use concrete instead of asphalt for service areas that need to withstand heavy loads.

Use neutral tones for concrete paving, either carbon additives or an integral pavement color.

At a minimum, include carbon-black additives in natural gray concrete paving to reduce glare and reflection.

Base the thickness of the concrete slab on a soils report and functional requirements.

For walks use a broom finish or exposed aggregate finish, or a combination of the two as per direction of the campus landscape architect.

Asphaltic Concrete. Asphalt is to be used for roadways, bicycle paths, and some bicycle parking areas.

Use concrete curbs, mow bands and gutters where a vertical separation from pedestrians is needed (extruded asphalt curbs shall not be used).

Decomposed Granite. Decomposed granite is to be used for minor pedestrian pathways, traffic areas under large trees and bicycle parking areas. Decomposed granite paving is to be used far enough away from doorways and asphalt pedestrian paths so that the materials are not tracked onto these surfaces.

Summary of paving material applications					
CIRCULATION CATEGORIES	PAVING MATERIALS				
	Concrete Pavers	Brick Pavers	Poured in place concrete	Asphaltic Concrete	Decomposed Granite
Roads				x	
Pedestrian Walks	x	x	x		
Bicycle Paths				x	
Minor Paths			x	x	x
Courtyards	x	x	x		
Building Entrances	x	x	x		
Bicycle Parking				x	x

Use gold/brown color quarry materials that comply with Section 02511 of UC Davis Campus Standards and Design Guide.

Ensure paving is polymer-stabilized with a minimum finished thickness of three inches.

Use wood or steel header as specified in UC Davis Campus Standards and Design Guide.

Do not use decomposed granite on paths/trails with slopes that exceed four percent.

Do not place decomposed granite at the base of newly planted trees. Create watering basin at base of newly planted trees and keep decomposed granite back three feet from tree trunk.

Lighting

UC Davis landscape and grounds uses three types of lighting: Round globe type (preferred aesthetic), shoe box (safety), and cobra head (streets). An ideal lighting design provides sufficient lighting for public safety while maintaining a uniform aesthetic throughout. See Section 16550 of *UC Davis Campus Standards and Design Guide* for more information on exterior lighting standards

Pedestrian Barriers and Traffic Control

Plant Massing Fences Landscape Walls Bollards

The UC Davis campus suffers major losses due to inappropriate circulation of pedestrians and vehicles. Vehicles and pedestrians traveling off designated routes damage irrigation systems, cause soil compaction, and trample plant materials. Pedestrian barriers direct people to preferred circulation routes and define landscape spaces. Traffic controls typically restrict vehicular circulation to roads and service areas.

Design with and use materials that are compatible with the landscape type, other site furnishings and the architecture in the area.

Construct at a height and scale appropriate for context and function.

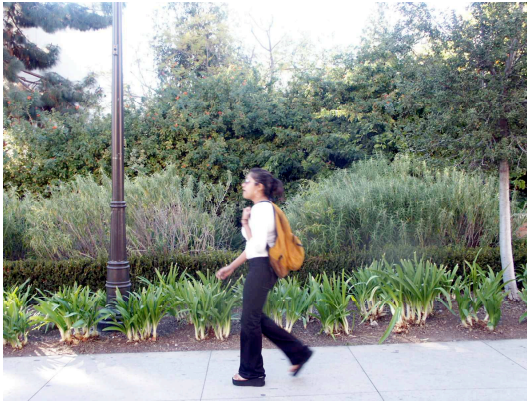
Use shrubs, trees and landscape planters to control traffic where possible and appropriate.

The following pages examine four types of pedestrian barriers and traffic control: plant massing, fences, landscape walls and bollards.

Pedestrian Barriers and Traffic Control

Plant massing Fences Landscape Walls Bollards

Plant massing can be one of the most aesthetically pleasing options for controlling unwanted traffic in landscape areas.



Simple layers of planting materials provide an attractive pedestrian barrier (left), succulents keep pedestrians on the walkway (center), and low-growing shrubs in the road median discourage jaywalking (right).

Pedestrian Barriers and Traffic Control

Plant Massing Fences Landscape Walls Bollards

Types of fencing used on the UCD campus includes wrought iron (usually at higher-profile campus buildings such as Young Hall and the Mondavi Center), chain link (used at athletic fields and service areas, usually planted with vines), and wood post (such as at the Arboretum).



Wrought iron fence planted with vines is appropriate at higher-profile campus buildings (left) while a wood post fence is the choice in natural areas of campus (right)._

Pedestrian Barriers and Traffic Control

Plant Massing Fences Landscape Walls Bollards

Landscape walls can be used for seating, traffic control, retaining slopes, raised planters, historic markers, memorials or freestanding elements used to define a space. Materials for landscape walls include formed concrete, either poured-in-place or pre-cast (such as at Segundo Infill Housing), stucco (usually as a complement to historic buildings found on campus, such as Hunt Hall and Hart Hall), or brick (to complement historic surroundings, such as North Hall and South Hall).

Construct formed concrete walls with a natural gray concrete or integral color. Concrete color should complement color that exists at the site.

Install notches or straps to deter skateboarders where necessary.



Landscape walls provide seating at Physical Sciences Building (left) and notches deter skateboarders (right).

Pedestrian Barriers and Traffic Control

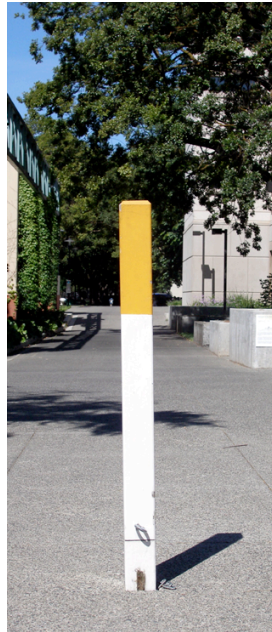
Summary of Pedestrian Barriers/Traffic Control Options			
ITEM	LANDSCAPE TYPE	COLOR	FINISH
FENCES			
Wrought Iron	academic/administrative, activity building, formal open space, housing	white	powder coat
Chain Link	PE/ICA, teaching and research fields, community gardens	silver	use plants to soften
Wood Pier	Arboretum, open space reserve, garden walks	stained, wood preservative	with cable
LANDSCAPE WALLS			
Formed Concrete	academic/administrative, activity building, housing	gray or integral color	sand blast or trowel
Stucco	academic/administrative	work with site	stucco
Brick	garden walks, formal open space	red	wire cut
BOLLARDS			
Wood	emergency lanes	white/yellow	painted
Pipe	permanent	white/red	painted
Metal	special	varies	painted
Decorative Concrete	in development		
Ornate Metal	in development		

*Plant Massing Fences Landscape Walls **Bollards***

Bollards are used to limit vehicular access to selected roads, walks and service areas. The bollards used on campus include metal (pipe style, and decorative), and wood. The campus landscape architect is currently in the research and design phase of providing standards for ornate metal or concrete bollards in high visibility areas such as the Quad.

Use metal bollards only when emergency vehicles do not need access. Metal bollards can be manufactured by UC Davis shops.

Use wood bollards only when emergency vehicles need access.



Use of metal and wood bollards (two photos at left) relate to emergency vehicle access. Ornate bollards (two photos at right) are used in high profile areas such as the Quad and the Mondavi Center.

Furnishings

Seating Waste/Recycling Containers Bicycle Racks

The relationship of landscape furnishings to buildings, walks, paths, and courtyard areas is important in defining the character of the campus. Signage is discussed separately in the *Campus Standards, UC Davis Sign Program* published by Architects and Engineers (see www.ae.ucdavis.edu/projectsindesign/campus_standards.htm#). This section will examine three types of furnishings: seating, waste/recycling containers and bicycle racks.

Furnishings

Seating *Waste/Recycling Containers Bicycle Racks*

The primary furniture types used for seating are benches and picnic tables. Benches are an important part of the campus landscape, providing seating along the major pedestrian walks, paths and plazas and at buildings.

Use wood benches in remote areas (such as the Arboretum) and white metal (either round or flat-topped) benches in the more developed areas.

Use rubber-coated steel picnic tables in most areas, although a standard wood table is acceptable in more rural areas if approved by the campus landscape architect.

Integrate seating opportunities with the pedestrian circulation systems and plazas.

Incorporate adequate space for companion wheelchair parking as an integral part of bench layout.

Anchor benches to concrete with hidden dowels.



Metal benches (left) are the campus standard, while wood benches (center) are reserved for dedications and remote locations. The campus standard picnic table is rubber-coated steel (right).

Furnishings

Seating Waste/Recycling Containers Bicycle Racks

Waste and recycling containers are a necessity for public safety. All new landscapes shall have at least one waste and recycling container for every 4000 square feet of developed area. The standard containers acceptable for the campus are concrete waste and recycling receptacles as well as the three-bin recycling containers. Exceptions must be authorized by the campus landscape architect.



Concrete bins manufactured by Quick Crete Productions Corp., approximate dimensions 25x25x32.5"(left); three-bin waste/recycling containers manufactured by Windsor Barrel Works, "Outdoor Windsor Set", approximate base dimensions 55x55" **other manufacturer info for set on right?**).

Furnishings

Seating Waste/Recycling Containers **Bicycle Racks**

Bicycle racks are an important part of the campus circulation system. Several designs are used to insure ease of use and protection of bikes.

Locate as close to the building entrance as possible without degrading the building's aesthetics.

Locate to minimize circulation conflicts between pedestrians and bicycles.

Locate bike parking so it is highly visible and highly accessible.

Integrate the placement of bicycle racks so access to greater circulation systems is easy.

Consult with Transportation and Parking Services to determine how much bicycle parking is needed for the project.

Soften bike parking with low hedges and ground covers, but do not obscure visibility.

Bike parking surfaces should be decomposed granite or asphalt paving. Avoid using decomposed granite close to high-speed bike paths (where slipping and hazards may occur) and at building entrances.

Consider ideal placement for both double- and single-sided racks



Summary of furnishings				
ITEM	LOCATION	MATERIAL	COLOR	FINISH
SEATING				
White Metal Benches	urban	recycled steel tube	white	powder coat
Wood Benches	rural	varies	natural	smooth
Picnic Tables				
WASTE/RECYCLING CONTAINERS				
Standard Waste Container	buildings	pre-cast concrete	gray with blue logo	sandblast
Standard Recycling Container	open areas	recycled Trex or metal	gray/blue	smooth
BICYCLE RACKS				
Standard Racks	all	steel	galvanized or black	galvanized or paint

III. Standards for specific landscape types

Academic/administrative areas

Academic/administrative areas of campus are designated for instructional, research, and/or business purposes. Academic/administrative low-density landscapes are to be designed similarly as the as the high-density landscapes but may have slightly more diversity in the planting palate.

- **Plant Materials.** *Academic/administrative areas may include foundation plantings of shrubs, and ground covers. Plants that require more care are to be placed closer to building entrances. Shrubs should be placed so that a clear line of sight is maintained from the building to all pedestrian paths. Non-foundation shrubs shall not require frequent pruning.*
- **Paving Materials.** *The large amount of traffic and social interaction in front of academic/administrative buildings requires that the area around the building be paved with concrete, interlocking pavers or bricks. Pedestrian walks are to be paved with concrete or modular unit pavers. Bike paths are to be paved with asphalt. Minor paths are to be paved with concrete, modular unit pavers or decomposed granite.*
- **Furnishings.** *Formal seating should be placed close to building entrances or in courtyards. Formal seating may consist of benches, picnic tables, or seat walls.*



Hart Hall, located within the campus' historic core

Housing

Apartment complexes. Apartment complexes are lower-density living areas than residence halls and are primarily for graduate students or students with children. These grounds are used specifically for children playing, strolling and picnicking. These grounds should have a park-like setting and be comfortable, safe living environments.

- **Plant Materials.** *The majority of the plantings should be lawn foundation plantings and shade trees. Some shrubs and ground covers should be used because of the lower activity level.*
- **Paving Materials.** *Pedestrian paths are to be concrete, either poured-in-place or pavers. All bike paths should be asphalt and bike parking is to be paved with concrete, asphalt, or decomposed granite depending on closeness to a building entrance. Square corners should be avoided - round sweeping corners or direct paths are best. Walls should be skateboard proof.*
- **Furnishings.** *One bench per 2,500 square feet of outdoor area shall be provided.*

Cooperative housing. Cooperative Housing is an alternative living situation having the lowest density living area of all three housing options. These grounds are used specifically for community gardening, outdoor dining, studying and relaxing. These grounds should be more residential looking and provide areas for smaller scale gardening and socializing. The composition of these landscapes will be a mix of paving, lawn, shrubs, garden areas and bike parking. Seating and shade trees are important landscape elements. Benches and other seating options in these areas may vary to the campus standard. A wide variety of shrubs and ground covers can be used in these areas. Consult with the residents of cooperative housing on design issues.

- **Paving Materials.** *Pedestrian paths are to be concrete, all bicycle paths should be asphalt and bike parking is to be paved with asphalt, or decomposed granite depending on closeness to a building entrance. Square corners should be avoided - round sweeping corners or direct paths are best. Walls should be skateboard proof.*

Residence halls. The landscape of residence halls is used for bike parking, sunbathing, event barbecues, picnicking, impromptu sports, horse play, and a place to study. The landscape should be able to withstand high traffic and accommodate large gatherings. Due to the high amount of wear and tear on the landscape, the majority of landscape features should be lawn, large shade trees and pavement. Seating and defined patio spaces are also important to include



Segundo residence hall complex.

- **Plant Materials.** *Minimal shrubs and ground covers are to be used and only where protected from activity.*
- **Paving Materials.** *Pedestrian paths are to be concrete, all bike paths should be asphalt and bike parking is to be paved with concrete, asphalt, or decomposed granite depending on closeness to a building. Square corners should be avoided - round sweeping corners or direct paths are best. Walls should be skateboard proof.*
- **Pedestrian Barriers/Traffic Controls.** *Structures such as raised planter beds and low walls should be used to control circulation.*
- **Furnishings.** *Standard benches and seat walls should be used.*
- **Circulation Systems.** *Paths should be a minimum width of 12' and provide access to and from multiple directions to accommodate heavy traffic.*

Recreation

Activity buildings. Activity buildings are areas of campus that are designated for student activity that is non-academic and non-administrative. Activities include concerts, ceremonies, theater, food vending, book/merchandise sales, presentations and game playing. Activity buildings should have courtyards due to the large amount of social interaction that goes on outside the building.

These areas may also include pedestrian pathways, links to existing bike pathways and parking, water features, formal seating structures, other site furniture, shade trees, shrubs and ground cover.

- **Plant Materials.** *Activity building landscapes should include foundation plantings and larger planting/lawn areas beyond the courtyard. High-maintenance plants are to be placed closer to building entrances. Shrubs should be placed so that a clear line of sight is maintained from the building to all walks and pathways. Non-foundation shrubs must be able to be maintained to a height that is low enough to provide safety without excessive pruning.*
- **Paving Materials.** *Courtyards can be paved with concrete, interlocking pavers or brick. Pedestrian pathways are to be paved with concrete, asphalt, or decomposed granite. Square corners should be avoided in favor of round sweeping corners or direct paths.*
- **Furnishings.** *Academic areas may include formal seating, which should be placed close to building entrances or in courtyards. Formal seating may consist of benches, picnic tables, or seat walls.*

Physical Education/Inter-Collegiate Athletics (PE/ICA). PE/ICA include areas of campus specifically designated for athletic activity. Active recreation areas may include formal and informal turf areas, buildings or other structures designated as recreation facilities. Campus sports fields are to use standard turf planting mix as designated by Grounds Division. Irrigation systems are to follow the campus standards.

Open Space

Arboretum. The Arboretum is located along the southern perimeter of the main campus, a living museum of plants as well as an outdoor classroom and public garden. The Arboretum is a place for active recreation and peaceful contemplation. Work with the Arboretum staff on design issues.

Formal open spaces. Formal open spaces are generally large, open landscaped areas of campus designed for informal gatherings, relaxing and recreating. Formal open spaces are place markers for the campus and invite the general campus population to come together in a relaxing setting. These areas are used specifically for studying, socializing, eating, playing sports, holding demonstrations, sitting on and walking through. These landscapes experience large amounts of through traffic and wear and tear. The Quad is an example of a formal open space.



Formal open space at Dutton Hall.

- **Views.** *Views into and out of formal open spaces must be clear and unobstructed.*
- **Circulation Systems.** *Paths within formal open spaces are to be pedestrian only and bike traffic is to be routed around the outside. Bike parking is to be in close proximity of formal open spaces (either on the perimeter or provided by existing bike parking in surrounding areas). Formal open spaces should be accessible from multiple sides.*
- **Plant Materials.** *Formal open spaces are to be landscaped with mostly turf and shade trees. Due to the variety of activity and the large user group, the general area should be left open and relatively unobstructed with no large screening shrubs and no hidden areas.*
- **Paving Materials.** *Pedestrian pathways should be constructed of concrete, or modular paving units (brick, concrete pavers, etc.). Square corners should be avoided – round sweeping corners or direct paths are best. Bike paths should be constructed out of asphalt.*
- **Lighting.** *Areas must be well lit.*
- **Furnishings.** *Seating should be provided with benches or seat walls.*

Plazas. Plazas are large outdoor gathering spaces adjacent to pedestrian routes. They serve as places for studying, social interaction, contemplation, and eating. Use of plazas can vary between large rallies and concerns to quieter moments of social activity. Plazas are often affiliated with building entries and are typically defined (informed?) by the surrounding architecture. Examples of existing plazas include Dutton Hall Plaza, Memorial Union Plaza, and Silo Plaza.

- **Circulation Systems.** *Provide at least eight foot width access to plazas for motorized sweeper.*
- **Pedestrian Barriers/Traffic Control.** *Planting areas shall be raised when possible.*

Circulation

Garden Walks. Garden walks are areas on campus designated for an elaborate landscape that are designed for pedestrian traffic only. Garden walks require more maintenance than the park-like and simple landscape of most of the campus. Due to their higher maintenance needs, garden walks must have a dedicated maintenance fund established prior to their approval. Garden walks should be designed with a single theme for pedestrian traffic only.

- **Plant Materials.** *Plant materials should be protected from pedestrian traffic. Plant materials should have a consistent theme.*
- **Paving Materials.** *Pathways should be concrete and/or brick unit pavers only.*
- **Furnishings.** *Plenty of seating should be provided.*

Major Pedestrian Walks. Major pedestrian walks are paved areas defined by buildings or rows of trees. The walks may be formal or curvilinear, depending on the surrounding context. Though designated for pedestrian use, walkways may provide emergency vehicle access. Pedestrian walks must be shaded. Examples of major pedestrian walks include Mrak Mall, the Central Quad walkway, and Peter J. Shields sidewalks.

Paths. Paths are to be made out of asphalt, concrete, or decomposed granite as the location and use dictates. Paths are to be designed to meet the anticipated load requirements. Paths must be shaded.

Parking. Vehicle parking areas are to be paved with asphalt or concrete. Pedestrian pathways in parking areas are to be paved with concrete. At least 50 percent of a parking lot area must be shaded by trees. The perimeter of a parking area may include trees, shrubs, and ground cover. The perimeter planting of a parking lot must screen visibility into the parking lot from the street, while not obstructing views into and out of the parking lot. Access points need to be designed with low vegetation to allow a clear view into and out of the parking lot. Tree wells should be preferably in continuous planters or in a minimum dimension of eight feet square.

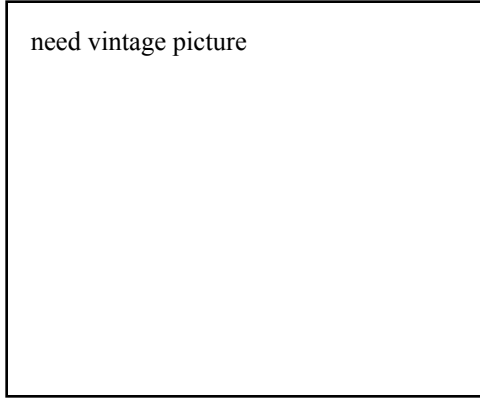
Vehicular Roads. Streets are defined as non-parking areas that are open to motorized vehicle use. Streets should include bicycle paths adjacent to them and be lined with shade trees.



Pedestrian walk outside of the Silo.

Appendix I - History of the UC Davis landscape

The UC Davis landscape has evolved over the past century, with a backbone of heritage trees and prized open spaces, as well as elaborate landscapes by world-renowned architects. It is important to the university community that the historic landscape elements, as well as the generally park-like appearance, remain an integral part of the campus. The following provides a brief history of how the campus landscape has evolved.



Pre-university years: Native Americans and the rise of agriculture

Putah Creek figures prominently in the early settlement of the area now occupied by UC Davis. The native Patwins settled near the creek, above the flood level. The area was rich in natural resources and the Patwins thrived off fish, elk, native grasses, and the rich vegetation the stream provided. The arrival of Spanish settlers in 1806 brought displacement and disease, bringing an end to the Patwins.

Putah Creek flooded frequently, producing exceptional soils nearby and encouraging the establishment of an agricultural economy that remains strong today. The land where the campus lies today was originally owned by Jerome C. Davis, one of the prominent farmers in the area, whose stock farm was a model for western farmers. Davis sold his 2,000-acre ranch to the California Pacific Railroad in 1868. Later that year the railroad established a depot and laid out lots on a section of the former Davis ranch. The new town, then known as Davisville, had 200 homes, a store by 1869.

Early university years: A landscape style emerges

In 1906, 778 acres was selected by the University of California for the University Farm, which was to be used for conducting agricultural research. The area was one of many that were being evaluated for the University Farm site and was chosen because of its proximity to the railroad, prime soils and proximity to Putah Creek. The land was bare except for trees on the creek bank, some fig and olive trees and a small group of ranch buildings.

The university's first four buildings were grouped together on the eastern side of the campus close to the town. These buildings included the Wyatt Judging Pavillion (now the Wyatt Theater, which has been relocated multiple times), the Creamery Building (since demolished), North Hall, and the University House. These first buildings were located near an agricultural field which is now the Quad. As the campus grew, buildings continued to be placed around the Quad, thereby becoming the campus center.

The landscape in the early days of the University Farm was rather barren except for cultivated crops and orchards. The first shade trees were planted by Professor Clark in 1908. In 1913, Mr Gregg , who served the University of California as a landscape gardener, made a trip to the University Farm and worked out plans for tree planting on the streets abutting farm lands and along the avenues running through the farm.

There was no landscaping around the buildings until horticulture student Harry Shepard proposed doing so in his 1914 thesis, The Landscape Development of the University Farm School Grounds. Some of the early buildings he proposed landscaping included the Horse Barn, Poultry Building, Animal Husbandry, Horticulture Building, Creamery, Wyatt Pavillion, East Hall (combination of infirmary and dining hall), North Hall and South Hall. Many of the landscape plans in subsequent years credit Shepard as the landscape designer, so he must have stayed connected with the university for some time after his graduation. Many of the plants used in the early landscape, such as palms, pampas grass and citrus, were presumed to be experimental and were placed without regard to continuous or formal design. The Horticulture Department would cultivate the plants and plant them around the campus not just for landscaping reasons but for educational reasons as well.

The Quad was the hosting site for picnic day where students and faculty would meet under a fig tree to discuss that year's curriculum. Picnic Day grew into a much larger event where people would come from hundreds of miles to participate in a number of festivities. Students and faculty would construct entry gates from hay bales.

1920s - 1940s: A formal style dominates

During the twenties the university established its first four-year-degree program, and at the same time came the first formal master plan for the university's development. The plan, developed in 1922 by William Hayes, H.G. Newton & J.W. Gregg, had a strong

formal axis running through the Quad, a pattern of formal tree-lined streets, and established a building standard reflected in the Spanish style Walker Hall (1927) and Hart Hall (1928).

The perimeter of the Quad was planted with cork oaks in 1925, which still provides dense shade and a strong thematic backbone for the campus landscape. In 1928 some the campus roads were paved and the first formal entry gates were constructed. These gates at Howard Way were built by students and faculty as a Labor Day project (it was a Labor Day custom for students and faculty to work on a campus grounds improvement project, followed by a barbecue at the end of the day). The gates were demolished in subsequent years. The landscape of this decade favored a formal style, complete with a sunken bosque of London plane trees located on one end of the formal axis directly behind the Classroom Building (where Shields Library is located currently). A formal design was also implemented on The Quad with a water feature and circle of redwood trees in the center (remnants of this design are still visible).

The Great Depression of the 1930s was a slow period for campus growth. An irrigation system was installed on the Quad as part of another Labor Day project in 1932, allowing for the installation of a formal lawn. Hickey Gym was built in 1938 and the Enology Lab was constructed the following year. The landscape for the Enology Lab was an early project of Lawrence Halprin, who became perhaps the campus' most prolific landscape architect.

1940 brought the construction of Young Hall, with a landscape designed by Halprin, as well as construction of Shields Library. In 1941 Professor Weier planted the Redwood Grove on the old north fork of Putah Creek, a major campus landscape feature that remains to this day. Weier first tried growing the redwoods without any supplemental irrigation and failed, learning that a coast redwood needs additional water in Davis' hot dry climate. During World War II the U.S. Army Corps of Engineers took over the campus for use as a training school.

In 1948 the Army Corps of Engineers constructed levees on Putah Creek and diverted the entire flow of water to the South Fork of the creek. The South Fork was a naturalized diversion constructed by Chinese laborers in 1880 to protect the campus from flooding. The north fork, now isolated from the flowing part of the creek is part of the historic channel which now runs through the central campus as the arboretum waterway. The Arboretum waterway now functions as the storm-water basin for the central campus.

In 1949, landscape architect Thomas Church designed landscapes for the newly constructed Veihemeyer Hall and Hunt Hall. The landscape designs at this time were still rather formal and geometric with clipped hedges, street trees, lawns and foundation shrubs. These basic landscapes have stood the test of time, but the next era was to bring a different aesthetic to the campus.

1950s - 1970s: A less formal style emerges

The fifties was a period during which the campus accelerated its growth. An updated campus master plan was developed in 1956 by the firm of Barovetto and Thomas. During this decade a new landscape style emerged, the California Natural Style, which emphasized curvilinear shapes that were less geometric and formal than the style up to that point. The master plan showed curving paths sweeping through the center of the Quad detracting from the powerful central axis that extended from the gates at Howard Way through to the front door of the library. The curving paths on the Quad were never implemented, but from this point forward the landscape tended to spiral outward from buildings without any indication of formal planning.

Among some of the more notable landscapes that went in with new buildings at this time were Cruess Hall & Cowell Student Health Center (Ralph Jones, 1952), Everson Hall (Lawrence Halprin, 1952), Memorial Union (Lawrence Halprin, 1955), Wickson Hall (Lawrence Halprin, 1959), Hoagland Hall, (UC Davis Architects and Engineers, 1959) and Voorhies Hall (UC Davis Architects and Engineers, 1959).

The university was designated a general campus in 1959, accelerating the pace of growth. An updated master plan in 1963 anticipated student enrollment to grow to 15,000 from 5,000. The master plan included the health sciences/veterinary medicine complex and circulation and parking were included for the first time. The university experienced a building boom, summarized in the box that follows, that is unsurpassed in UC Davis' history.

Some of the more notable landscape projects constructed during the decade were Solano Park Apartments and Orchard Park Apartments which had ample open space on the grounds compared to the higher density building we see today. The buildings during this period were much taller due to the popularity of building with concrete. Reagan Hall is a good example of the curvilinear style, which features clumping of plants and asymmetrical shapes. Mrak Mall remains one of the few formal open spaces on the campus today. In 1969 the Arboretum waterway was developed, following Theodore Osmundson's plans to dig out the channel where Putah

Creek’s north fork used to run, build bridges, pave pathways, build the gazebo and landscape the banks. This transformed the Arboretum into a true botanical and recreational resource.

In the seventies the architectural style dominated the landscape, a period of heavy concrete buildings known by some as brutalism. Some building projects at this time included ’71 Briggs Hall landscape designed by Jack Stafford, ’71 Chemistry Addition by EDAW, ’71 Physics Geology by EDAW, ’71 Roessler Hall by EDAW, and ’76 Medical Sciences by Sasaki-Walker.

1980s – Present: Individualistic landscapes emerge

The eighties were a period of slow growth, although several projects were completed, including Meyer Hall (HOK Architects, 1984), Thurman Lab (Robert LaRocca & Assoc., 1986), and Silo (Foothill Design Group, 1988). Both Meyer and the Silo boast urban style plazas and Thurman Lab has a drought-tolerant landscape design.

The nineties was a period of elaborate landscapes and “landscape as arboretum” (in which a building's

landscape would have its own planting theme). The landscapes designs were artistic but often proved labor-intensive to maintain and suffered from incompatible plant selection. Projects included: Engineering II (Wallace Roberts and Todd, 1990), Alumni Center

UC Davis landscape expanded significantly during the 1960s

BUILDING	LANDSCAPE ARCHITECT	YEAR
Robbins Hall	Donald Krump	1960
Segundo Hall	Lawrence Halprin	1960
Solano Park Apartments	Lawrence Halprin	1962
Olson Hall	Lawrence Halprin	1963
Sproul Hall	Lawrence Halprin	1963
Orchard Park	Lawrence Halprin	1964
Ryerson	Gerald Henderson	1964
Rec Lodge	Theodore Osmundson & Assoc.	1964
Crocker Nuclear Lab	Gerald Henderson	1965
Primate Center	Wertheim and Van Der Ploeg	1965
Reagan Hall	Lawrence Halprin	1965
Chemistry	Lawrence Halprin	1965
Mrak Hall	Gerald Henderson/Gardner Dailey	1966
Mrak Mall	Lawrence Halprin	1966
Humanities Complex	Gerald Henderson	1966
King Hall	Theodore Osmundson	1966
Cruess Hall	Ralph Jones	1966
Tercero	Gerald Henderson/Gardner Dailey	1967
Vet Med Teaching	Theodore Osmundson and Assoc.	1969
Hospital		
Arboretum	Theodore Osmundson and Assoc.	1969

(Antonia Bava, 1991) Academic Surge LPA, 1991) Social Sciences (Tsuboi/Mamuyac & Assoc., 1992) and Dutton Hall SWA Group (1997).

The Memorial Union and Dutton Hall have courtyards that successfully deal with the increased student population and high-density building. The narrowing of West Quad Street was a project that was designed to pull the street edges away from the mature cork oaks; a similar project was completed in '04 on North Quad Street.

During the 2000s the campus landscapes continue to grow, continuing the trend of garden-like designs with a wide array of plant materials that are more labor-intensive to maintain as opposed to the park-like designs favored in the university's early development. Recent projects include: PES (Tsuboi/Mamuyac & Assoc., 2000), Mondavi Center for the Arts (Walker Macy, 2000), Colleges at LaRue (MIG, 2000), Segundo Infill (Doug Strayer, 2003), and Redwood Grove remodel (Ron Lutsko, 2004).

Learning from the past

A century of experience provides an opportunity to assess the various landscape styles for aesthetic and functional durability. In this regard, the traditional, park-like style that emerged in the 1920s has performed the best. In general, this traditional style should be the reference point for landscape designers.

Some of the landscape styles that were developed beginning in the 1950s have not stood the test of time as well, and some of the most recently developed landscapes require a high level of maintenance that sometimes exceeds resources. Nevertheless, there will always be a place for distinctive landscapes as the university begins its second century, particularly for high-profile sites such as entry ways. These sites must be designed with care to ensure and have a dedicated maintenance budget to ensure the longevity of the landscape.

Appendix II - Plant materials allowed for UC Davis

The information on the following pages summarizes the characteristics and names of commonly used plant materials appropriate for the campus landscape. The following list is abbreviated and can be expanded upon with approval from the campus landscape architect. Plants on this list have been chosen based on the success of existing campus plantings. **Selections in bold are particularly good performers at UC Davis.**

Canopy Trees

Mature Size	30'+ height/spread
Growth Habit	Single-trunk, upright, broad spreading or irregular form
Characteristics	Deciduous or evergreen; provides shade, scale, or interesting branching habits as specimens

Abbreviated List

Acer platanoides / Norway maple
 Albizia (Albizzia) julibrissin / silk tree
 Casuarina stricta (Casuarina verticillata) / mountain or she-oak
 Catalpa speciosa / western catalpa
 Celtis australis / European hackberry
 Celtis occidentalis / common hackberry
 Fraxinus h. 'Moraine'
 Gleditsia tricanthos/ Honey Locust
 Koelreuteria paniculata/Goldenrain Tree
 Liquidambar styraciflua/ Sweet Gum
 Liriodendron tulipifera/Tulip Tree
 Magnolia grandiflora/Grand Magnolia
 Maytenus boaria/Mayten Tree

Morus alba/White Mulberry
Pistacia chinensis/Chinese pistache
Plantanus occidentalis 'Bloodgood'/London Plane
Plantanus racemosa/California Sycamore
Pyrus kawakamii/evergreen pear
Quercus agrifolia/Coast Live Oak
Quercus buckleii/Texas red oak
Quercus ilex/holly oak
Quercus lobata/valley oak
Quercus suber/Cork Oak
Quercus virginiana/Southern Live Oak
Robinia 'Idaho'/Idaho Locust
Robinia pseudoacacia/Black Locust
Schinus molle/California Pepper
Sophora japonica/Pagoda Tree
Tilia cordata/Little Leaf Lindon
Ulmus americana/American Elm
Ulmus parvifolia/Chinese Elm
Ulmus pumila/Siberian Elm

Accent Trees

Mature Size	15'-30' height/spread
Growth Habit	Single-trunk, multi-trunk, columnar, upright or rounded form
Characteristics	Deciduous or evergreen; provides interesting flowers, texture, or leaf color suited for pedestrian scale
Abbreviated List	Arbutus u. 'Marina'

Acer truncatum /
Arbutus unedo / strawberry tree
Betula jacquemontii (Betula utilis jacquemontii) /
Cercis canadensis / eastern redbud
Cercis occidentalis / western redbud
Cornus kousa / kousa dogwood
Cotinus coggygria (Rhus cotinus) 'Purpureus' /
Dalea spinosa/ Smoke Tree
Dicksonia antarctica/Tasmanian Tree Fern
Eriobotrya deflexa / Bronze Loquat
Eriobotrya japonica/ Loquat
Ginkgo biloba/Maidenhair Tree
Jubaea chilensis/ Chilean Wine Palm
Lagerstroemia indica/crape myrtle
Magnolia soulangiana/Tulip Magnolia
Malus/ Crabapple
Olea europaea 'Swan Hill' (fruitless)/Swan Hill fruitless olive
Parkinsonia aculeata/Mexican Palo Verde
Phoenix canariensis/Canary Island Date Palm
Populus nigra 'Italica'/Lombardy Poplar
Priunus caroliniana/Carlina Laurel Cherry
Prosopis chilensis/Chilean Mesquite
Prosopis glandulosa/Texas Mesquite
Prunus ilicifolia/Holleyleaf Cherry
Prunus lyonii/Catalina Cherry
Pyrus calleryana/Ornamental Pear
Rhus lancea/African Sumac
Thuja occidentalis/Arborvitae
Umbellularia californica/California Laurel
Washingtonia robusta/Mexican Fan Palm
Washingtonia filifera/California Fan Palm

Conifer Trees

Mature Size	30'+ height/10'+spread
Growth Habit	Single-trunk, pyramidal form or rounded form
Characteristics	Evergreen (needle or scale type): provides scale, screen effects, or frames views
Abbreviated List	Pinus thunbergiana/Japanese Black Pine Pinus pinea/Italian Stone Pine Pinus eldarica/Afghan Pine Pinus canariensis/Canary Island pine Pinus brutia/Brutia Pine Cupressus sempervirens / Italian cypress Sequoia sempervirens/Coast Redwood

Tall Shrubs

Mature Size	6'+ height/4'+spread
Growth Habit	Clumping or spreading, regular or irregular form
Characteristics	Deciduous or evergreen; provides interesting flowers, texture or leaf color
Abbreviated List	Abelia gaucheri / Edward Goucher abelia Abelia grandiflora / glossy abelia Agave filifera /

Arctostaphylos densiflora 'Howard McMinn' /Howard McMinn
Baccharis species /coyote brush
Bamboo species /
Berberis thunbergii / Japanese barberry
Buddleia davidii / butterfly bush,
Callistemon citrinus (Callistemon lanceolatus) / lemon bottlebrush
Coprosma repens (Coprosma baueri) / mirror plant
Cotoneaster lacteus (Cotoneaster parneyi) /
Dodonea viscosa/Hopseed Bush
Elaeagnus pungens/ Silverberry
Euonymus species
Euphorbia characias/
Fatsia japonica/Japanese Aralia
Heteromeles arbutifolia/Toyon
Hibiscus syriacus/Rose of Sharon
Ilex cornuta/Chinese Holly
Lavatera martima/Tree Mallow
Ligustrum j 'Texanum'/Texas Privet
Mahonia lomariifolia
Myoporum parvifolium
Myrsine africana/African Boxwood
Myrtus communis/True Myrtle
Nerium oleander
Osmanthus fragrans/Sweet Olive
Phormium tenax/New Zealand Flax
Pittosporum t. 'Variegata'/variegated mock orange
Pittosporum tobira/mock orange
Rhamnus alaternus/Italian Buckthorn
Rhamnus californica/Coffeeberry
Rosa species (floribunda, shrub types)
Thuja occidentalis/Arborvitae
Viburnum tinus/laurustinus

Vitex agnus-castus/Chaste Tree
Xylosma congestum/shiny xylosma
Yucca recurvifolia

Low Shrubs

Mature Size	2'+ height/6'+spread
Growth Habit	Clumping or spreading, regular or irregular form
Characteristics	Deciduous or evergreen; provides interesting flowers, texture or leaf color
Abbreviated List	

Acanthus mollis / bears breech
Achillea tomentosa / wooly yarrow
Agapanthus africanus /lily of the Nile
Aloe species /
Amaryllis belladonna (Brunsvigia rosea)/ belladonna lily, naked lady
Amsonia tabernaemontana / blue star flower
Artemisia species /
Asparagus densiflorus 'Sprengeri' / sprenger asparagus
Aspidistra elatior (Aspidistra lurida) / cast-iron plant
Buxus microphylla japonica / Japanese boxwood
Buxus microphylla koreana / Korean boxwood
Callistemon c. 'Little John'/dwarf bottlebrush
Canna species /
Cistus hybridus (Cistus corbariensis) / white rockrose
Cistus ladanifer (Cistus ladaniferus maculatus) / crimson-spot rockrose
Cistus purpureus / orchid rockrose
Cistus salviifolius / sageleaf rockrose

Clivia miniata /
Coleonema pulchrum / pink breath of heaven, pink diosma
Cotoneaster dammeri (Cotoneaster humifusus) / bearberry cotoneaster
Cotoneaster microphyllus / rockspray cotoneaster
Dietes bicolor/bicolor fortnight lily
Dietes vegata/ fortnight Lily
Echium fastuosum/ Pride of Madeira
Eriogonum arborescens/Buckwheat
Euphorbia characias/
Euryops pectinatus
Forsythia intermedia
Gaura lindheimeri
Kniphofia uvaria/ Red hot Poker
Limonium perezii/Sea Lavender
Liriope/Lily Turf
Mahonia aquifolium/Oregon Grape
Miscanthus/Eualia Grass
Muhlenbergia rigens/deer grass
Myoporum parvifolium
Nerium oleander 'Dwarf'/red, pink, or salmon dwarf oleander
Pennisetum setaceum/Fountain Grass
Penstemon species
Perovskia 'Blue Spire'/Russian Sage
Pittosporum tobira 'Wheeleri'/dwarf pittosporum
Plumbago auriculata/Cape Plumbago
Polystichum munitum/Sword Fern
Potentilla verna/Spring Cinquefoil
Primula (annual)
Punica granatum 'Nana'/Dwarf Pomegranate
Pyracantha (dwarf forms)
Raphiolepis indica/India hawthorn
Salvia

Sarcococca ruscifolia
Sedum
Spiraea bumalda/Spiraea
Stipa/Needle Grasses
Tulbaghia violacea/Society Garlic

Ground Covers

Mature Size	up to 2' height/2' to 10'spread
Growth Habit	Clumping or spreading, regular or irregular form
Characteristics Abbreviated List	Deciduous or evergreen; provides interesting flowers, texture or leaf color

Ajuga species / carpet bugles
Aptenia cordifolia (Mesembryanthemum cordifolium) / red apple
Arctotheca calendula / cape weed
Erigeron karvinskianus/Santa Barbara Daisy
Gazania
Hedera helix/English ivy
Hypericum calycinum/ aaron's beard
Hypericum moseranum/Gold Flower
Juniperus s 'Broadmoor'
Juniperus s 'Buffalo'
Lantana montevidensis
Liriope/Lily Turf
Rosa species (ground cover types)

Rosmarinus o. Prostratus /dwarf rosemary
Trachelospermum asiaticum/Asain jasmine
Trachelospermum jasminoides/star jasmine
Verbena peruviana
Vinca major/periwinkle

Vines

Mature Size	up to size of support
Growth Habit	Climbing, spreading
Characteristics	Deciduous or evergreen; provides screening, provides interesting flowers, texture or leaf color
Abbreviated List	Campsis radicans (Bignonia radicans) / common trumpet creeper Distictisbuccinatoria/Trumpet Vine Gelsemium sempervirens/Carolina Jessamine Hardenbergia violacea 'Happy Wanderer'/Hardenbergia Vine Jasminum mesnyi Jasminum polyanthum Macfadyena unguis-cati/cats claw Parthenocissus tricuspidata/Boston Ivy Wisteria