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Site Design Excellence for Arid Lands Water Conservation

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RLA, ASLA

## Michael Dollin: RLA, ASLA

- Urban Designer, LANDSCAPE ARCHITECT, and educator
- Professor at Arizona State University
- Career focus on vitality and sustainability within desert cities

## Urban Earth Design, LLC:

- Landscape Architects & Urban Designers & Urban Planners
- Town & Campus Planning & Design
- Research Facilities
- Community Redevelopment and Historic Preservation
- Public & Private spaces including streets, major & minor arterials, local streets, parking, transit oriented design, and plazas
- Urban Revitalization, Environmental Sensitivity, Sustainability

Site Design
Excellence for
Arid Lands Water

Conservation

**Site**
- Context
- Microclimates
- Uses

**Design**
- Functional considerations
- Aesthetics
- Site objectives

**Excellence**
- Meeting site/user requirements
- Beneficial to the community/ecosystem

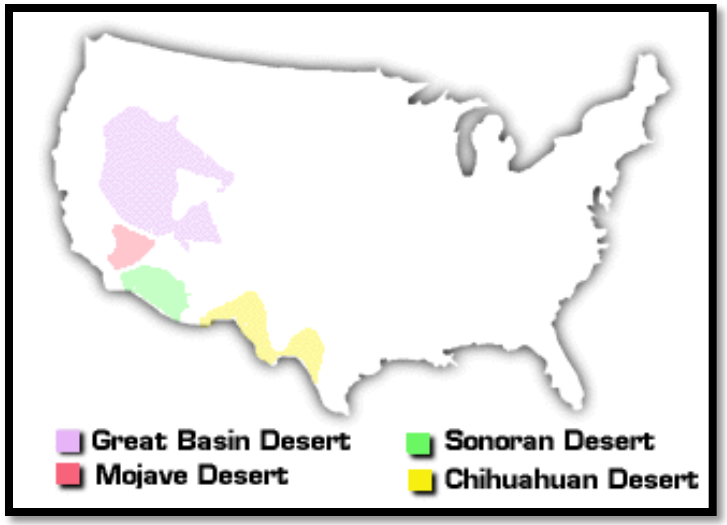
**Arid Lands**
- Environmentally unique
- Diverse flora/fauna
- Water scarcity

**Water**
- Irrigation strategies
- Water quality
- Aesthetic uses

**Conservation**
- Efficiency
- Technology
- Sustainability
- LEED

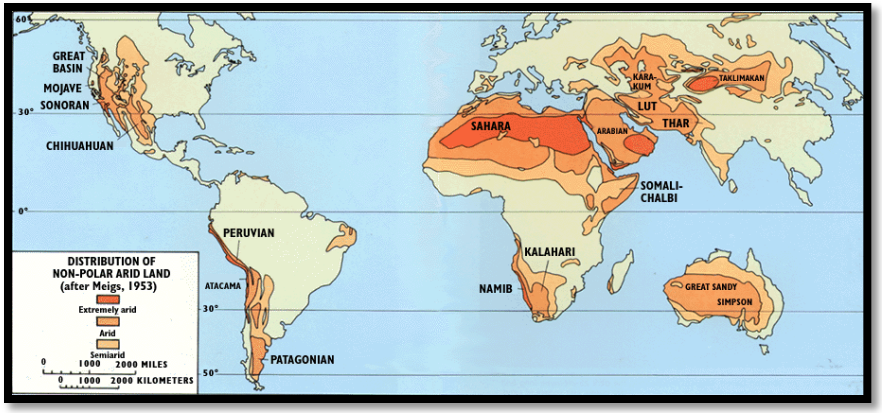
## Deserts of the US

- Mojave Desert
- Sonoran Desert
- Great Basin Desert
- Chihuahaun Desert




## Worlds largest Deserts

| Desert | Location | Square Miles |
|---|---|---|
| Sahara Desert: | North Africa | 3,500,000 |
| Gobi Desert: | Mongolia-China | 500,000 |
| Kalahari Desert: | Southern Africa | 225,000 |
| Great Victoria Desert: | Australia | 150,000 |
| Great Sandy Desert: | Australia | 150,000 |

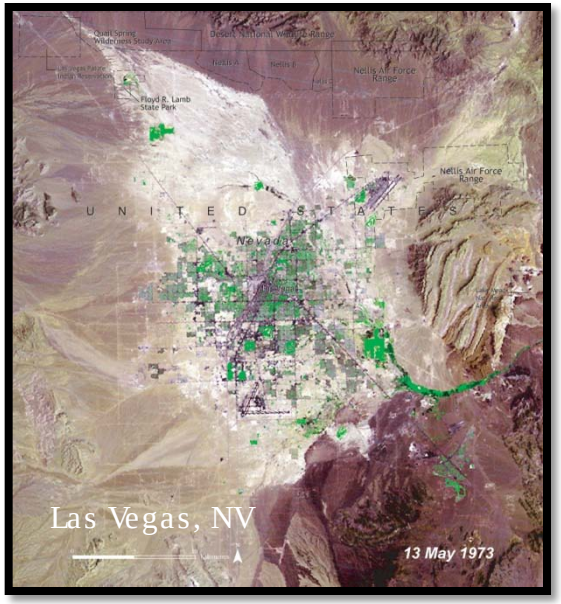


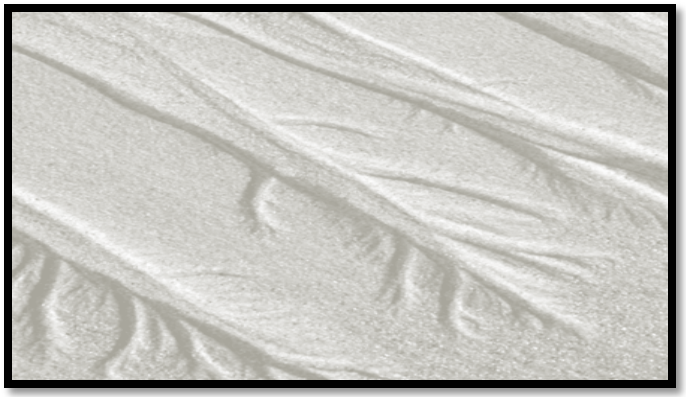
## How we build

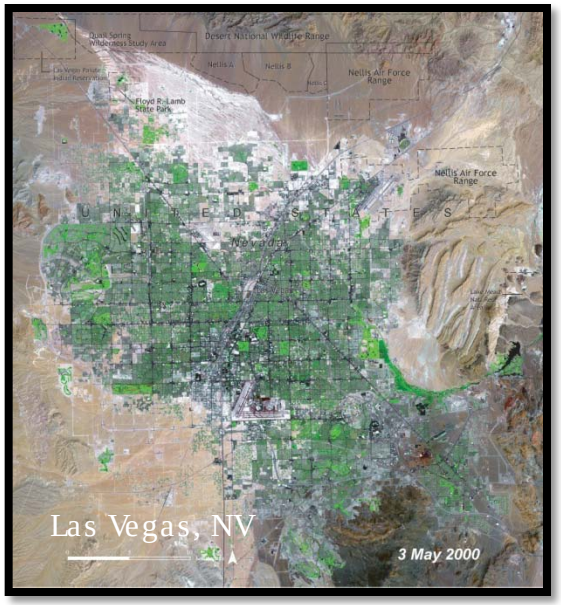
- Growth patterns of the 20th / 21st century
- Environmental considerations of growth

## How we view

- Land
- Ecological infrastructure





## The Mojave Desert

- Basin and Range topography.
- Receives only 4.5 inches of annual precipitation.
- The desert is believed to support between 1,750 and 2,000 species of plants.
- About a quarter of the plant species in the Mojave Desert are found nowhere else.

## Las Vegas Ecological History

- The Las Vegas Springs, or Big Springs, was once the site of three running springs, feeding two large pools of water. The site was historically a gathering place for native Americans, and later pioneers and early settlers of the Las Vegas Valley. When the Las Vegas town-site was laid out in 1905, the springs supplied water for the town and the railroad. Pipe lines were laid, reservoirs constructed and wells were drilled, causing the surface water to recede.

Source: www.lasvegasnevada.gov

## What is Xeriscape?

- Xeriscape is a “strategy” to conserve water in the landscape.

- Xeriscape can promote creative approaches to water conserving landscapes by helping people improve their landscapes and to reduce the need for water, maintenance and other resources.

## Why Xeriscape?

- For most of the western United States over fifty percent of residential water used is applied to landscape and lawns. Xeriscape can reduce landscape water use by 60% or more.

- Efficient water use doesn't mean changing our lifestyle. It means reducing water waste, such as improper irrigation, and finding ways to achieve attractive, comfortable landscapes without excess water use.

- A good Xeriscape will **increase** your **property value** by as much as **15%**. Xeriscape can also **reduce water** and **maintenance costs** by up to **60%**.

- Xeriscape helps extend water supplies. When water use is restricted, inefficient water-thirsty landscapes suffer first. Protect your landscape investment by drought-proofing it.

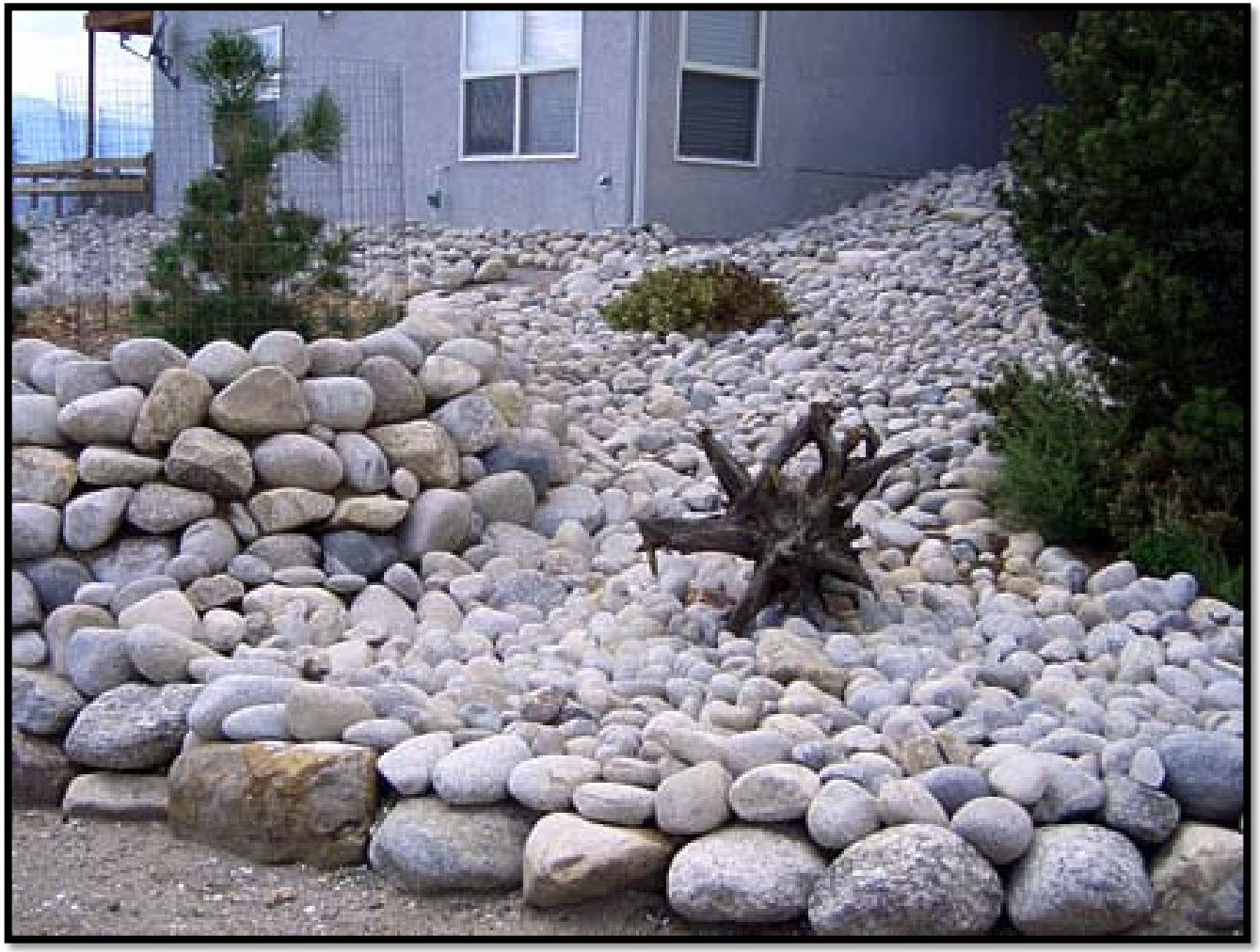
Source: www.xeriscape.org

# Xeriscape misconceptions

## Xeriscape:

- is only rock and cactus
- doesn't allow turf
- is maintenance free
- doesn't allow water features
- is only native plants
- is a minimalist approach
- doesn't fit in contemporary design

What is
environmentally
sensitive design?

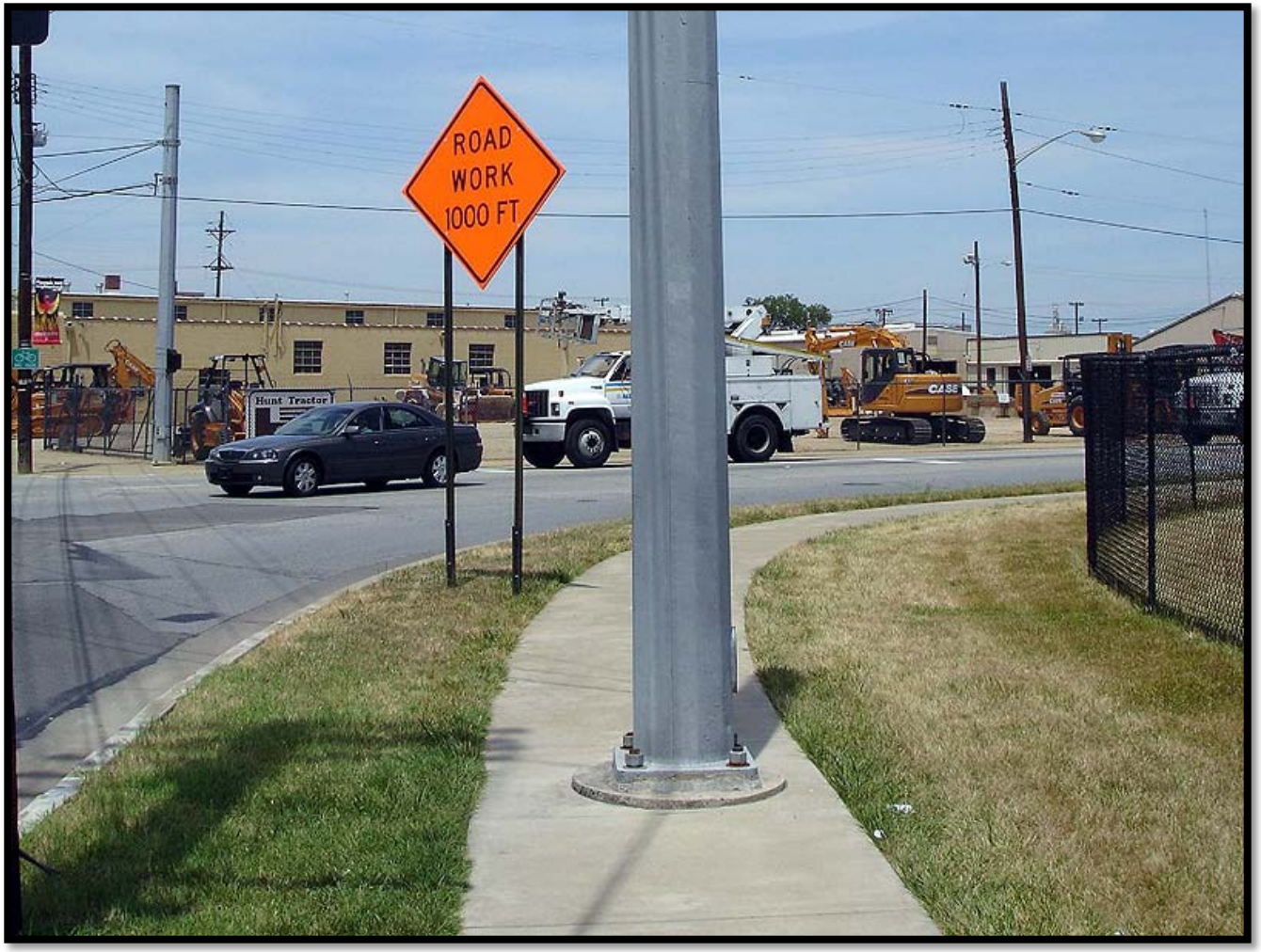



ARIZONA PAINTBALL DEPOT


PARADISE
VILLAGE
Ameriprise

Maintenance Principles?

Sensitive environmental design?



Beyond Xeriscape

Arid Lands can be
Well Designed & Conserve Water

For:

- Residential
- Commercial
- Streets
- Civic & Public Spaces
- Parks
- Ecological Infrastructure
- Green Building
- LEED
- Sustainability

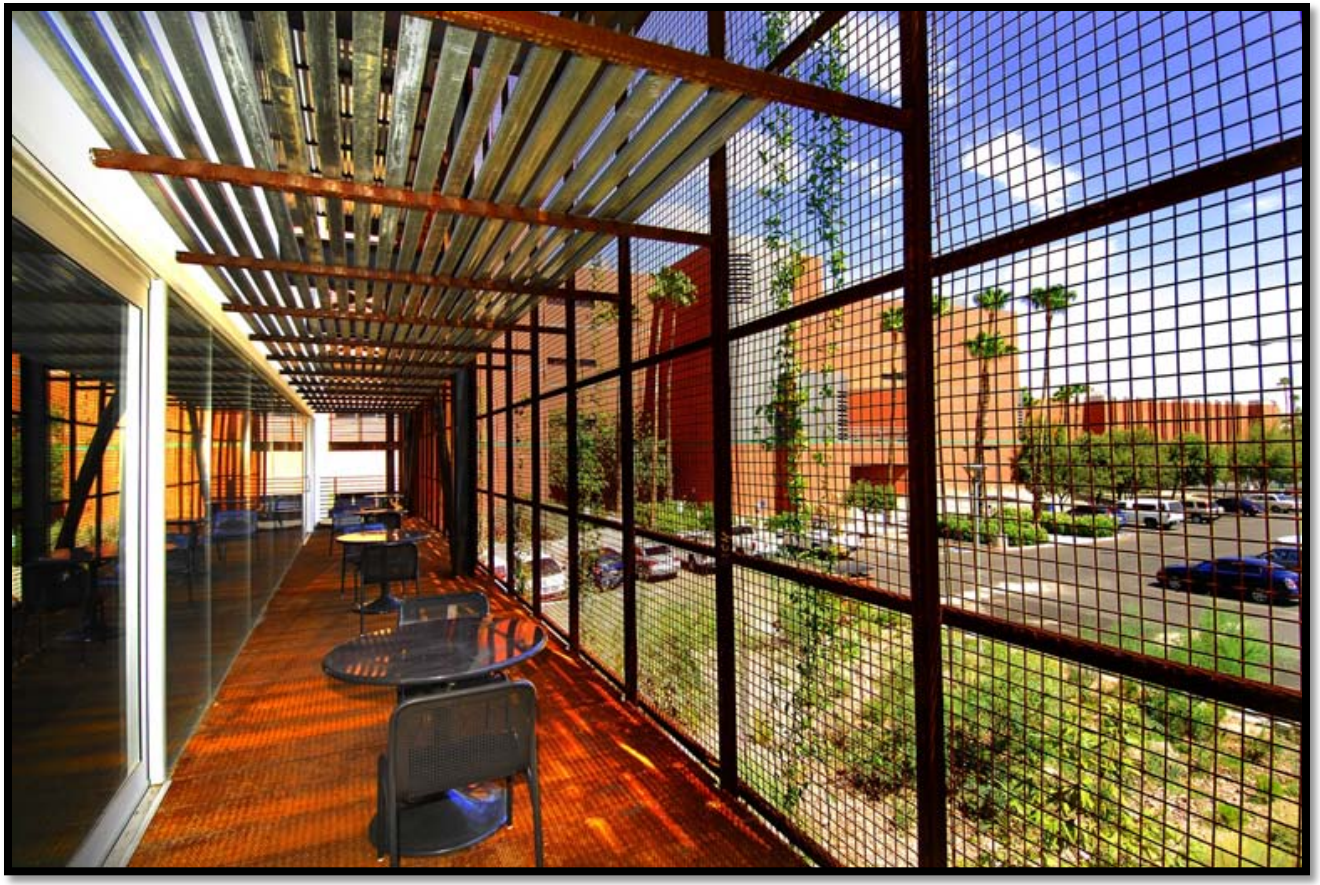
Integration with
architecture

Camelview Optima Phoenix, AZ

Integration of

# building and environment

Air Conditioning condensate utilized for supplemental irrigation



University of Arizona
College of Architecture & Landscape Architecture

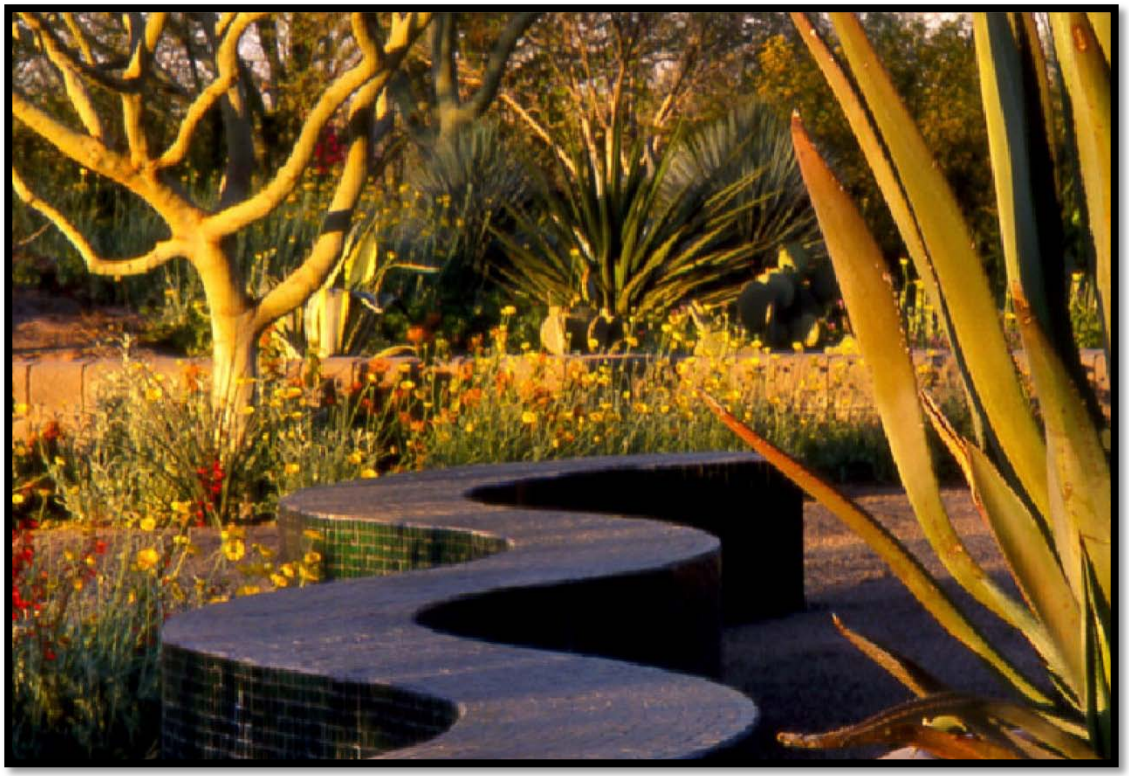
Native
# public spaces

Desert Botanical garden

Desert Botanical garden

Elements in defining

# Space



Arid Zone Trees

Composing Site utilizing

# Layering Principles

vegetation

- Establishment of microclimates

- Skyline trees
- Overstory canopy
- Understory canopy
- Shrub
- Groundcover

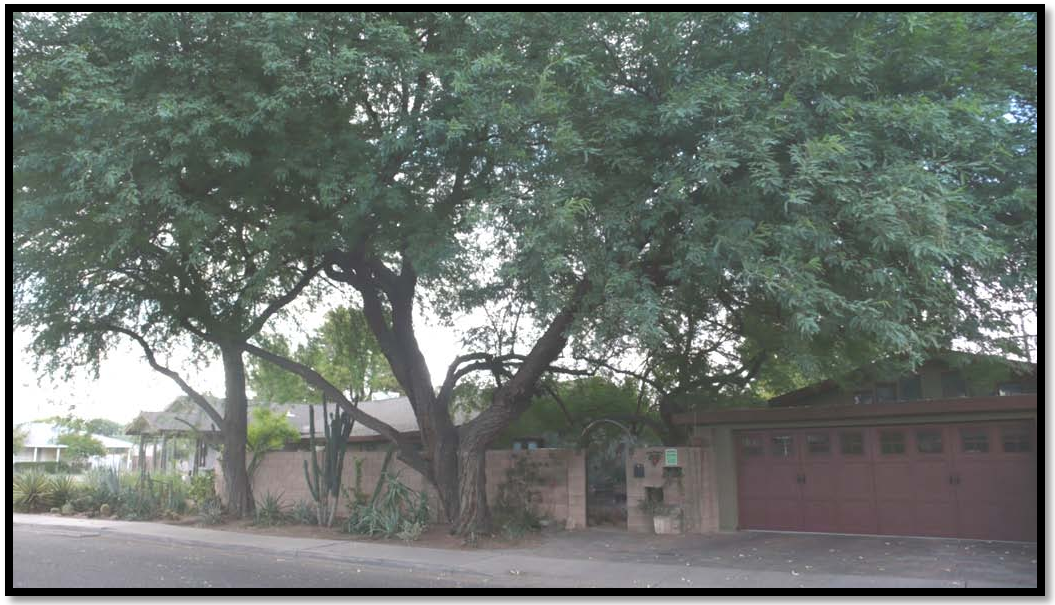
Singh Farms

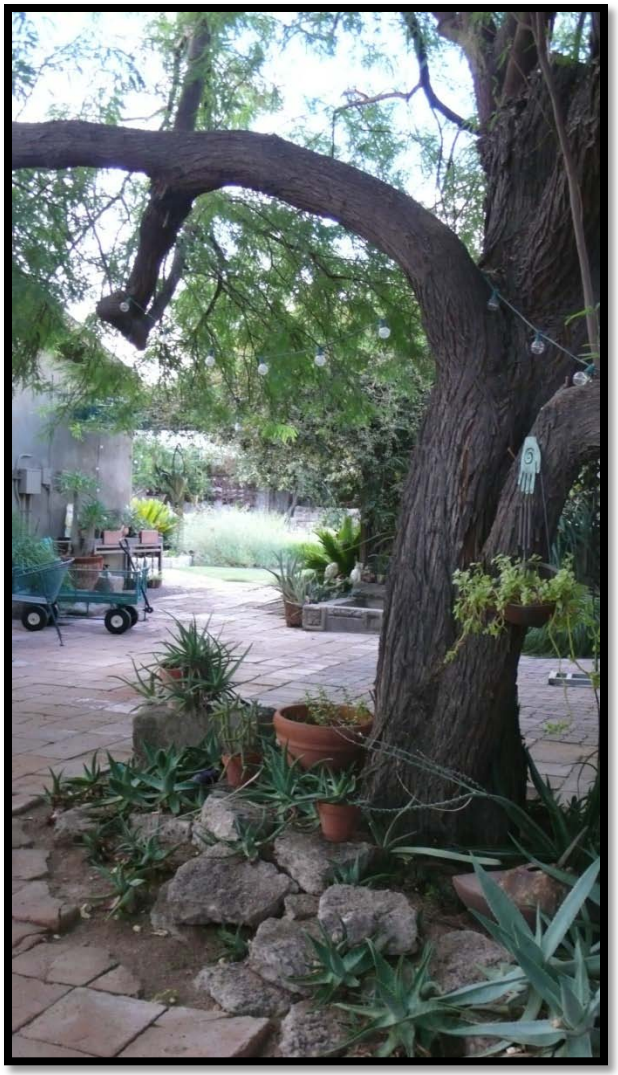
Composing Site utilizing

# Layering Principles

## Outdoor rooms

- Attracting wildlife
- Organized spaces and layers
- Functional pathways
- Efficient and celebratory water utilization
- Shade



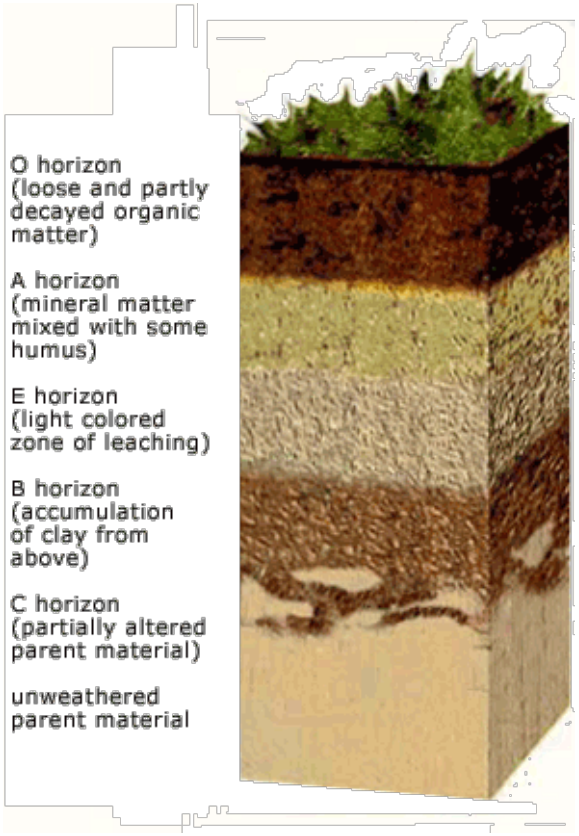


Phoenix residential garden

Composing Site utilizing

# Soil design

- Soil Moisture
- Soil Fertility

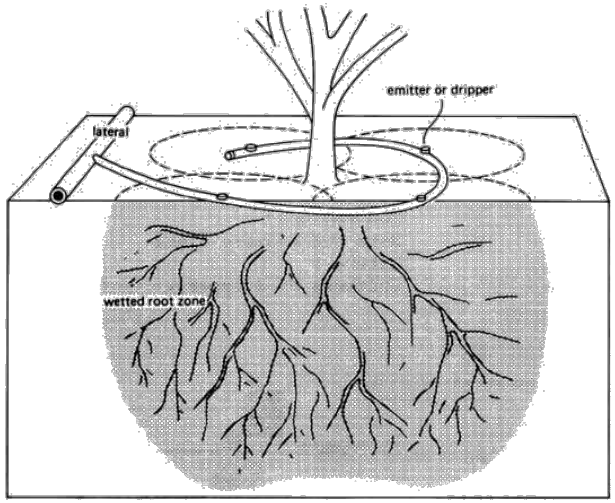



Singh Farms – organic compost mulch

Composing Site utilizing

# Watering Strategies

- Water Quality
- Reclamation
- Solutions




Drip Irrigation

Drip Irrigation

Flood Irrigation

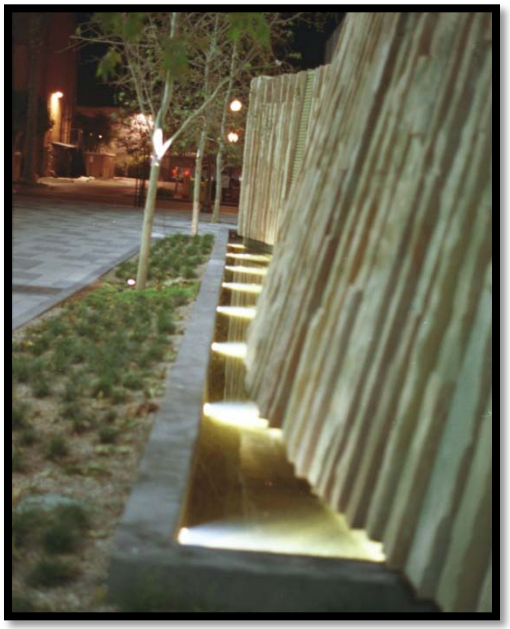
Sensitive
intervention in a
native landscape.

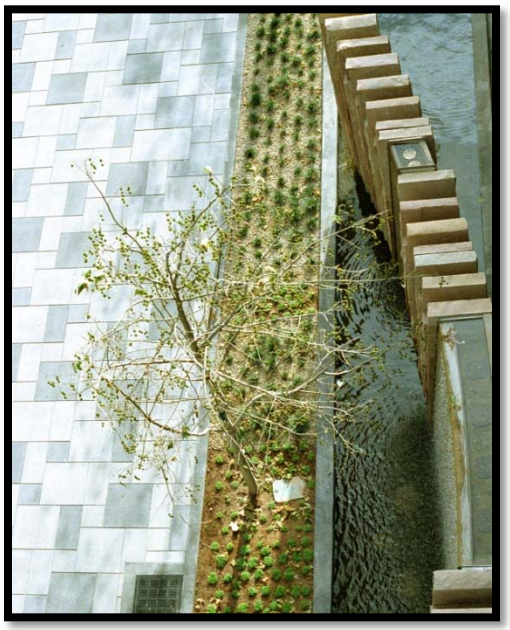
Lost Dog Trailhead

Sensitive design in
an urban context.

ASU Foundation


ASU Foundation



ASU Foundation


ASU Foundation

Heritage Square

Heritage Square

Heritage Square

Sensitive design at
civic venues.


Chase Field


University of Phoenix Stadium

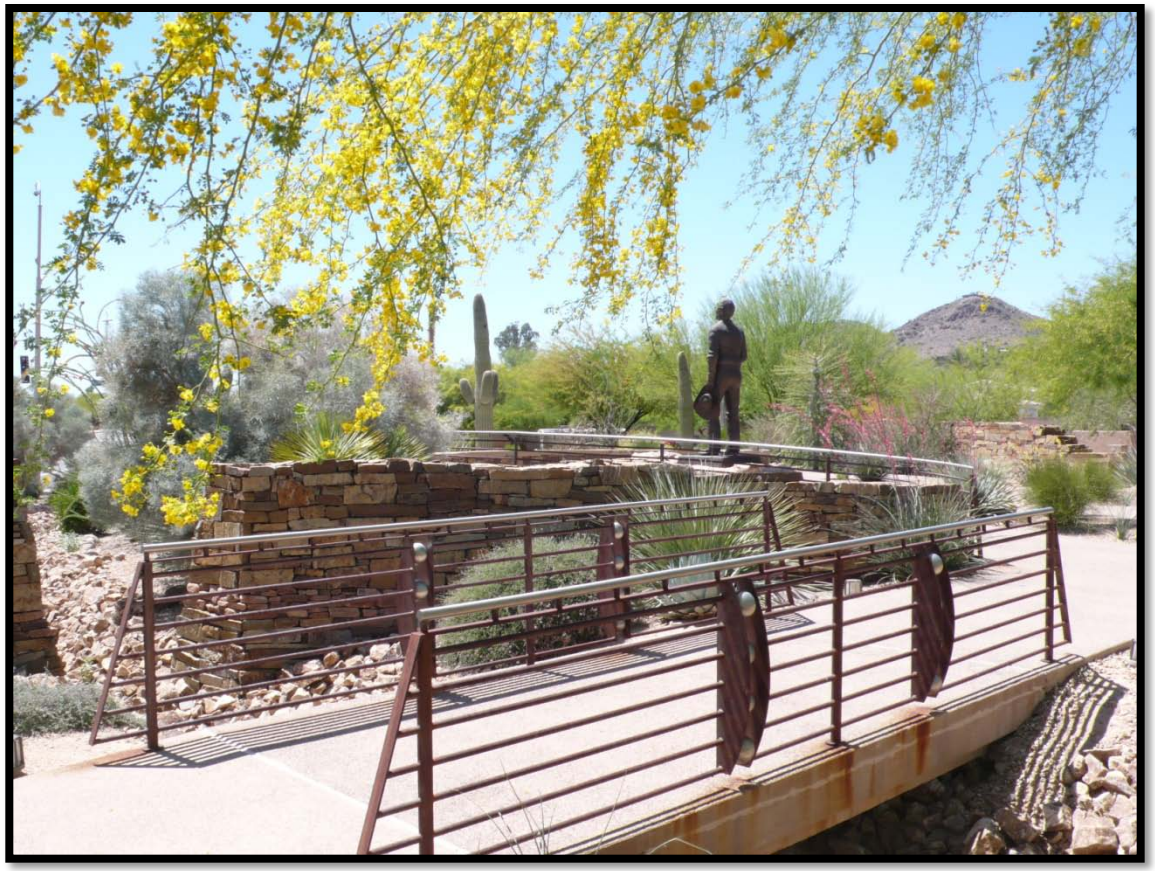
University of Phoenix Stadium Great Lawn




University of Phoenix Stadium Great Lawn

Sensitive design in a
civic memorial park.

Barry Goldwater Memorial Park



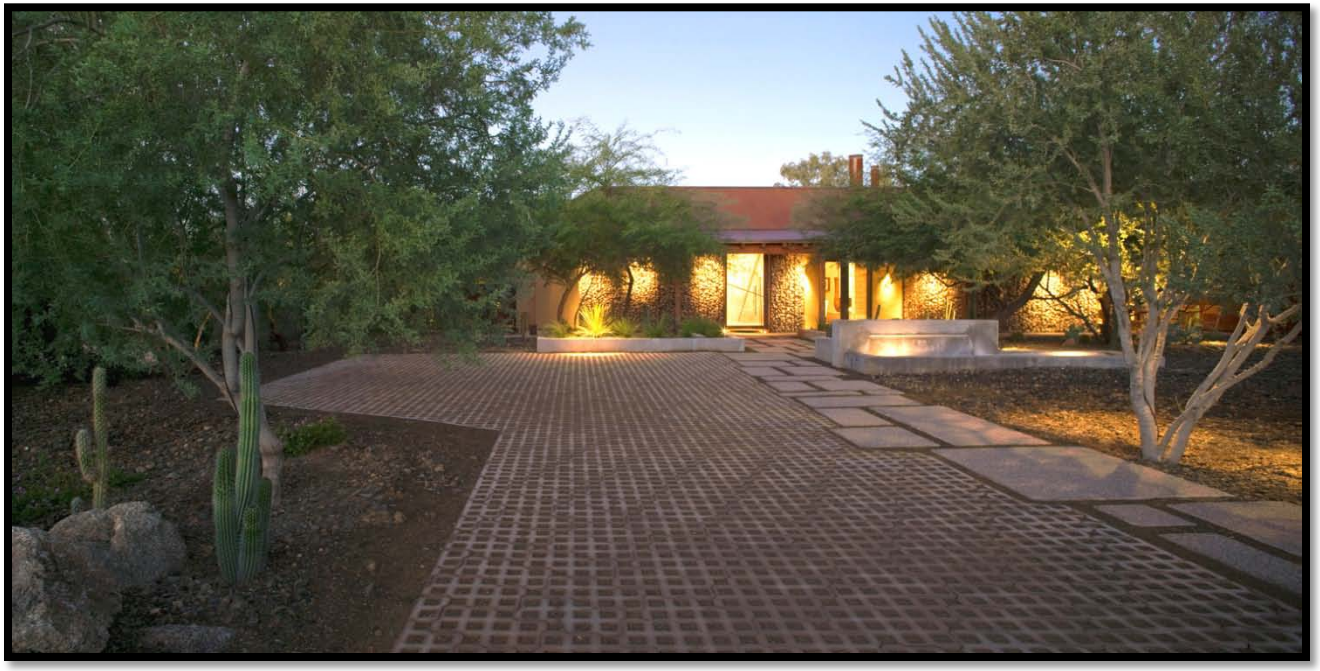
Barry Goldwater Memorial Park

Sensitive residential design.

Becker residence

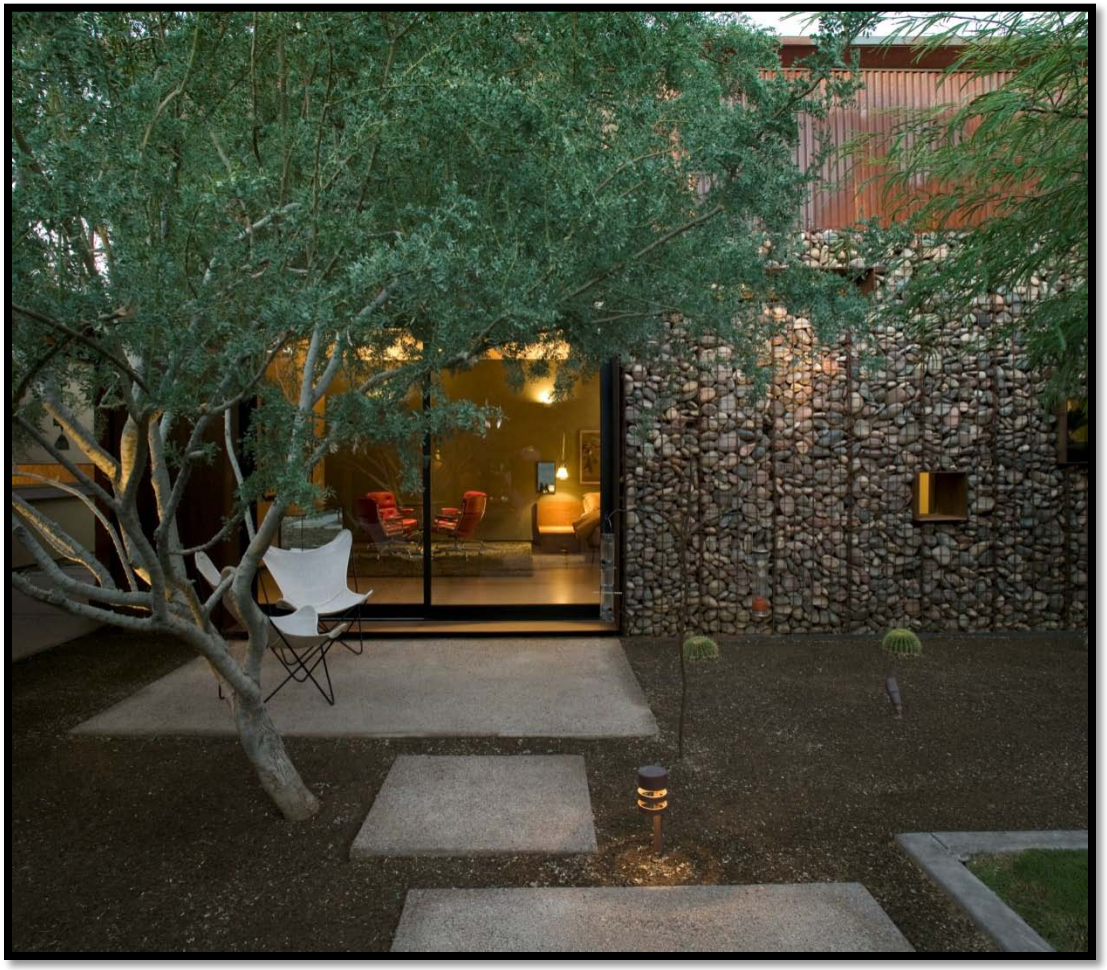
Becker residence

Becker residence



Dillon residence

Dillon residence



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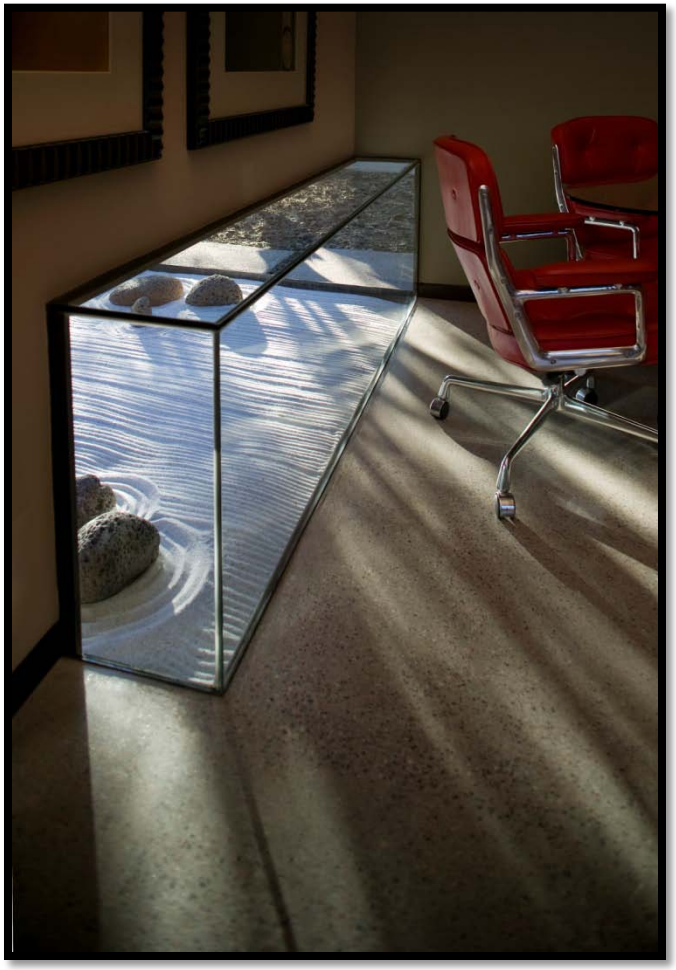

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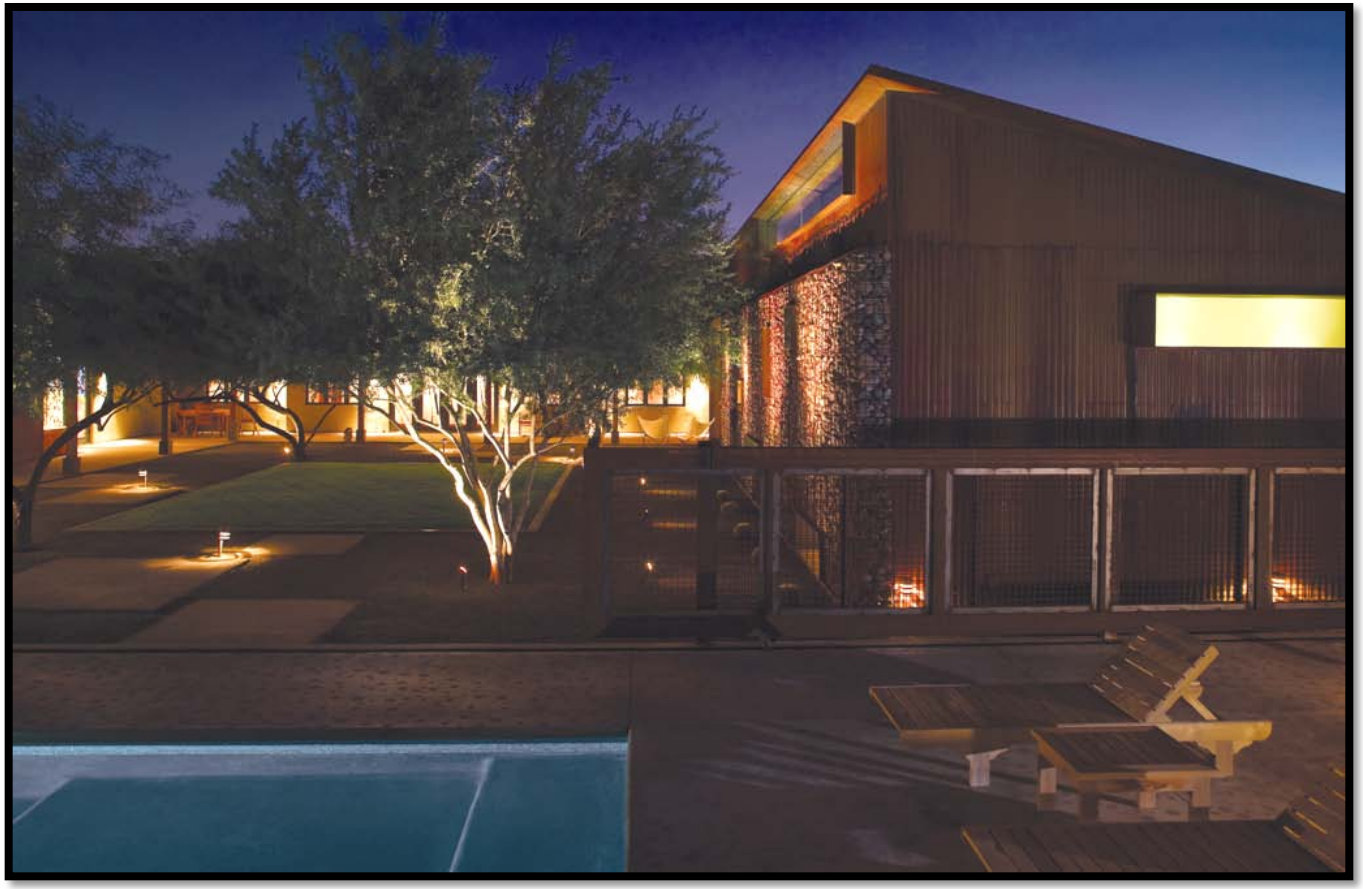
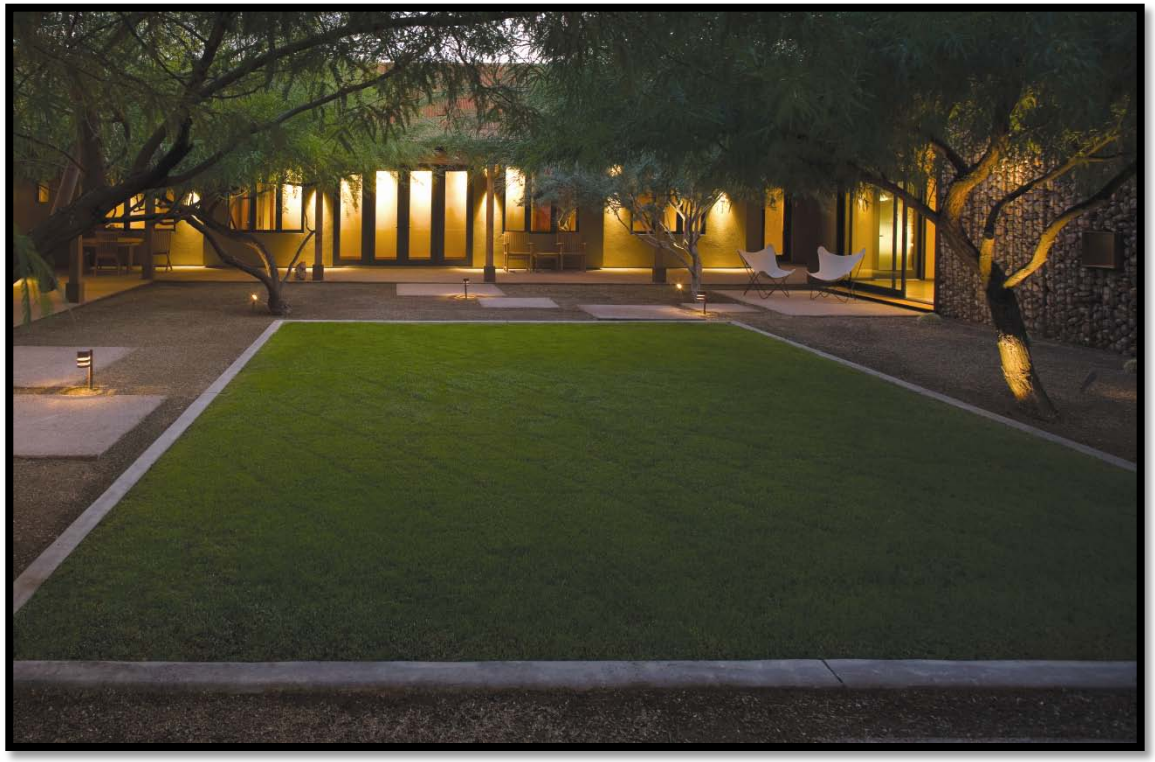


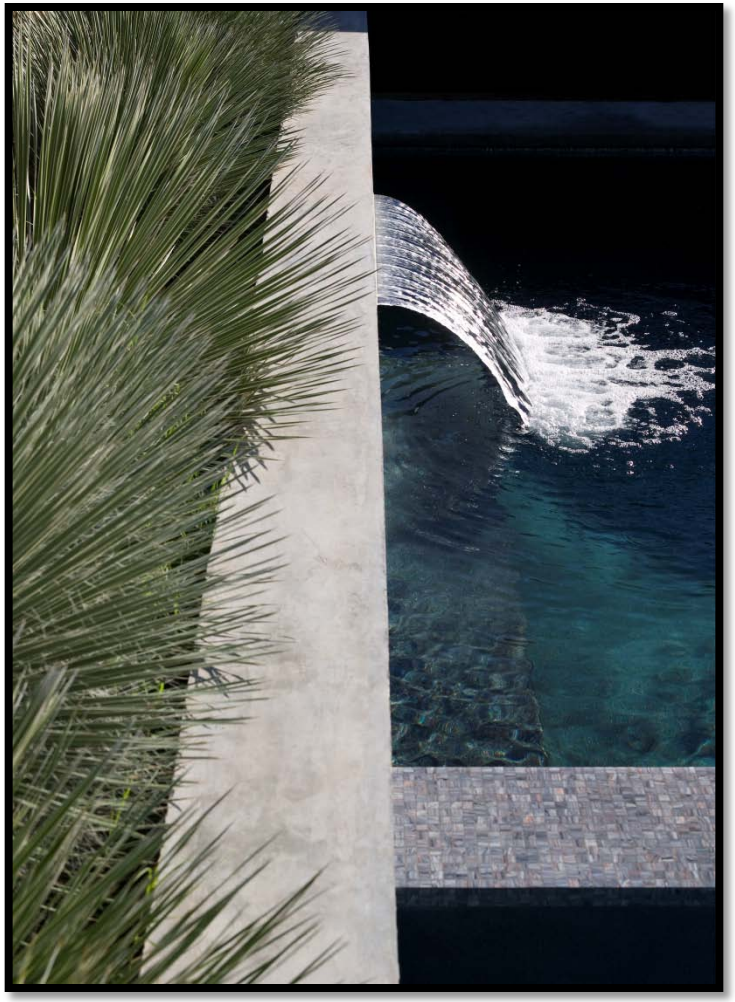
Dillon residence

Creating an oasis at the heart of the site.



Dillon residence

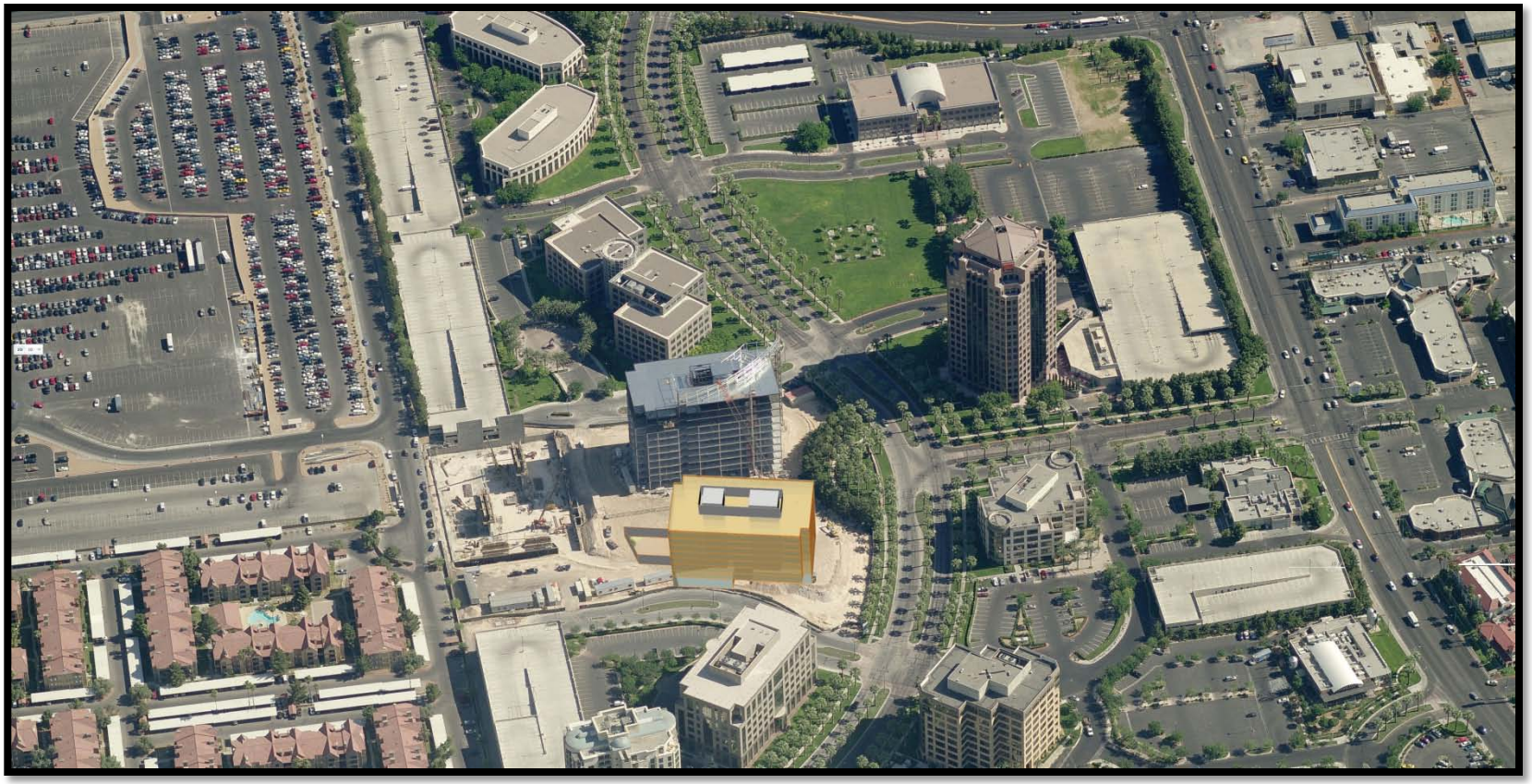
Modest
expression
of water
in the desert.



Dillon residence

# Sensitive design
## case study

Howard Hughes Parkway
Las Vegas, NV

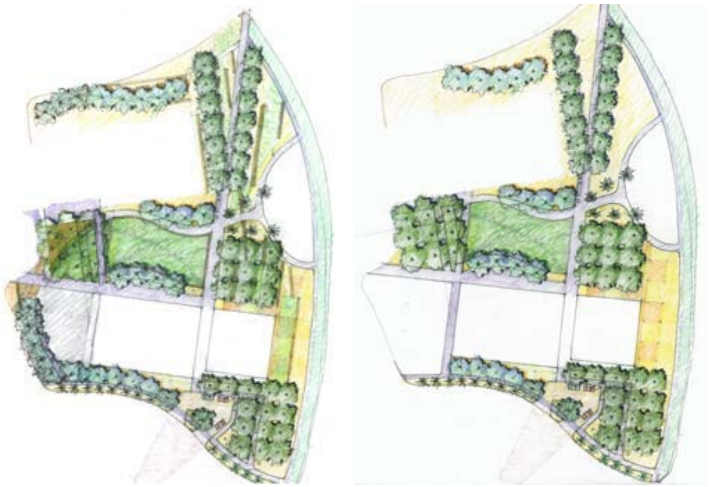


Site Arial

Howard Hughes Parkway – Las Vegas, NV

Existing Site

Existing Site



Proposed site plan

Howard Hughes Parkway – Las Vegas, NV

Renovated Site

Renovated Site

Renovated Site

# In Conclusion

**Site**
- Context
- Microclimates
- Uses

**Design**
- Functional considerations
- Aesthetics
- Site objectives

**Excellence**
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