

# Green Stormwater Infrastructure

HANDBOOK FOR RESIDENTS



City of Phoenix

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For more information or a copy of this publication in an alternate format, contact the Planning and Development Department at:

(602) 262-7811 voice or TTY use 7-1-1.

For more information on GSI, visit <https://www.phoenix.gov/pdd/gsi>

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## Introduction

Welcome to the **City of Phoenix’s (City’s) Green Stormwater Infrastructure (GSI)** Handbook for Residents! This handbook provides you with valuable information and easy-to-implement recommendations for GSI features on your property. By utilizing GSI features, you can reduce irrigation costs, decrease summertime temperatures around your home, and contribute to a more sustainable environment.

Let’s get started!



**We’d love to hear Green Stormwater Infrastructure success stories!**

## What is stormwater?

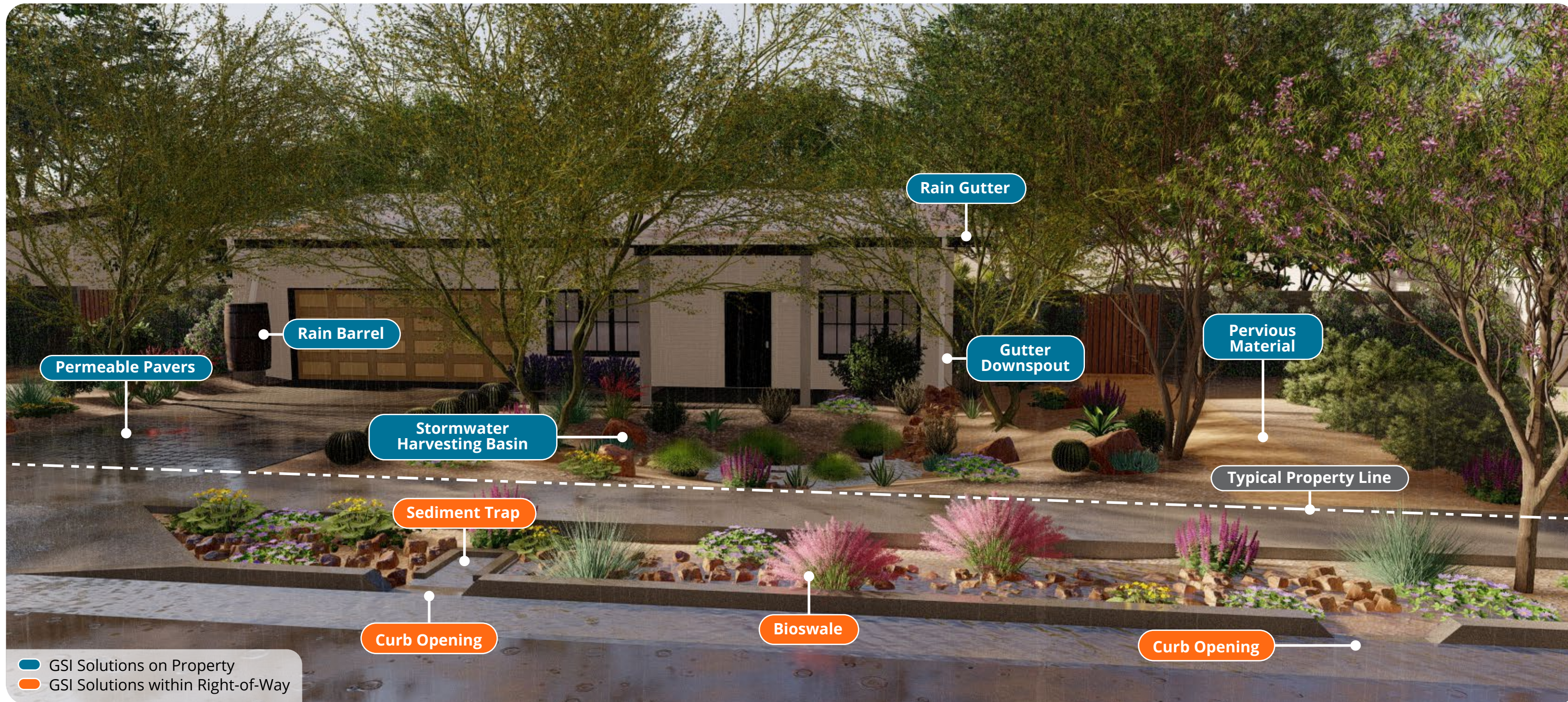
Stormwater is a valuable resource that, when captured by GSI features, can provide multiple benefits. In Phoenix, stormwater is rainwater that flows over impervious surfaces like sidewalks, asphalt, rooftops, etc., and does not soak into the ground. As stormwater flows across roads and parking lots, it picks up pollutants such as oil and pet waste. Unlike the water we use to flush our toilets, stormwater does not go to a treatment plant; rather, it goes directly to our rivers and washes.

**Note:** *The design specifics provided are intended for conceptual understanding only and will always need to be adjusted to accommodate actual site conditions and City requirements.*



## What is GSI, and why is it important?

GSI, also called low-impact development, refers to a range of measures that use plant, soil systems, or permeable materials to store, infiltrate, or evaporate stormwater. Applying these practices to your property provides multiple benefits, including reducing the reliance on potable water irrigation, mitigating localized flooding, reducing the heat island effect, adding to the visual aesthetic of your landscape, and supporting wildlife, like birds and pollinators. Continue reading to learn about easy GSI features for your property or the adjacent right-of-way (the City-owned area from your property line to the road.)



## GSI Applications for Your Property

### STORMWATER HARVESTING BASINS

A stormwater harvesting basin, also known as a rain garden, is a specially designed area that collects and temporarily stores rainwater. These basins typically have sloped sides that create a depressed area that collects stormwater runoff, allows it to infiltrate the soil, and supports native vegetation.

#### BENEFITS

- ✔ Decreases need for irrigation
- ✔ Reduces localized flooding
- ✔ Filters stormwater pollutants
- ✔ Supports native plants and pollinators
- ✔ May reduce heat island effect

Stormwater Harvesting Basin

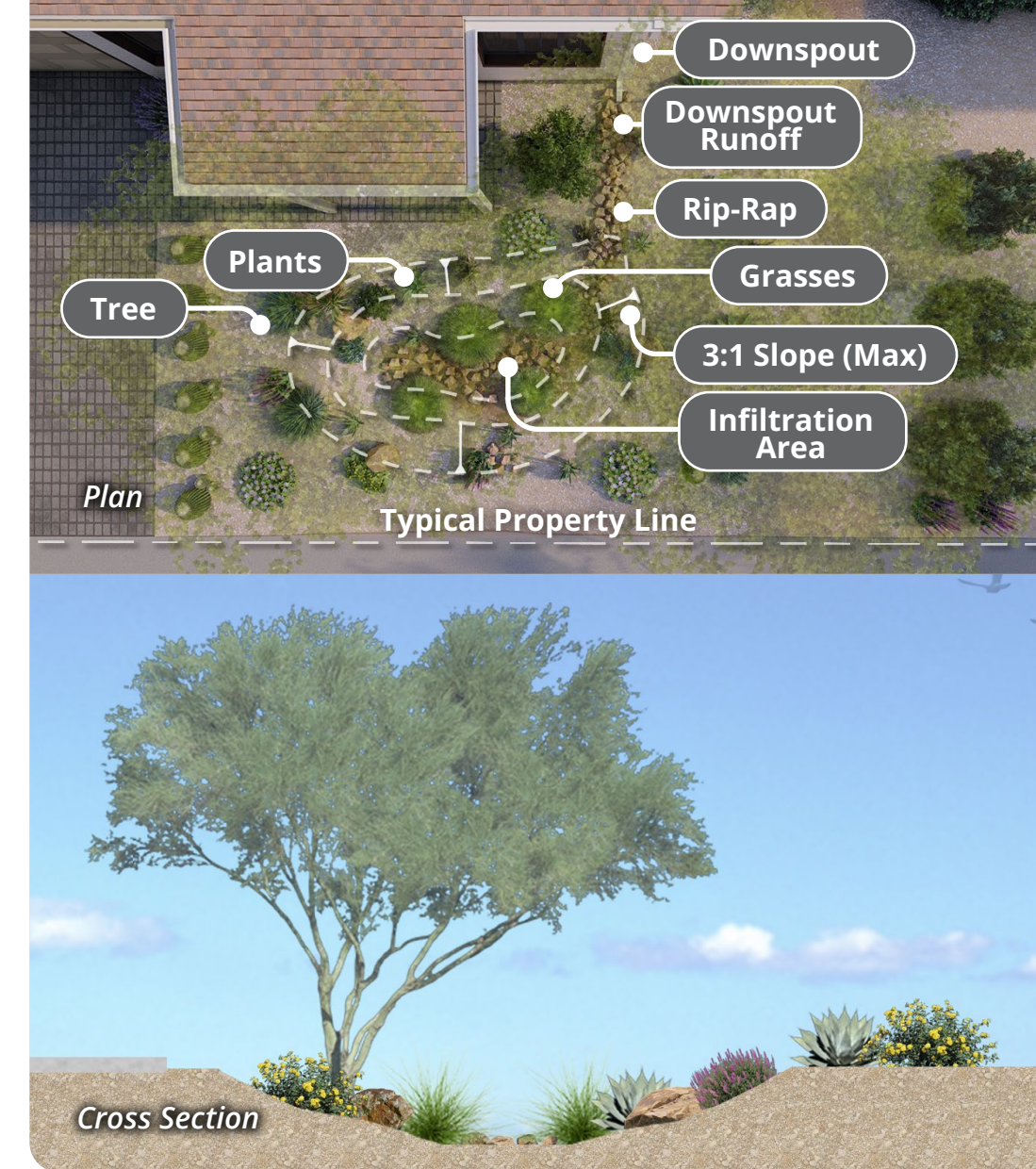
#### Steps to Get Started

- ❑ Create a simple diagram of your yard, including property lines and the location of all structures, hardscape, house, garage, driveway, and walkways.
- ❑ Identify naturally low-lying areas of your yard, particularly those adjacent to discharge points like downspouts or driveways, avoiding places next to your home or other structures.
- ❑ Sketch the boundary of your stormwater harvesting basin. Make sure water drains away from buildings, structures, and adjacent properties to prevent flooding, damage, or safety hazards. If installing features within 10 feet of your home, you may want to contact a professional.
- ❑ Include a sediment trap where the water flows in and gently slope the sides for water retention (see page 15).
- ❑ Select a variety of native plants that are drought tolerant and provide aesthetic value (see our native plant list on pages 20-24 for recommendations). Grasses and low-growing groundcovers are most suitable for basin bottoms. Trees and shrubs can be planted on slopes and directly adjacent to the stormwater harvesting basin. Space plantings according to their mature size to allow for growth into their natural form.
- ❑ Do not line the basin with filter fabric or weed barrier because this prevents the water from infiltrating the ground. Add woodchip mulch to the bottom of the basin.
- ❑ Call Arizona 811 (Bluestake) 800-782-5348 before any digging occurs to locate existing underground utilities.

#### Maintenance

Like any landscape area, GSI requires regular maintenance to keep it functioning optimally. Below are a few key steps to maintaining your stormwater harvesting basin:

-  Periodically remove plant debris, trash, and sediment
-  Remove any invasive plants, weeds, and unwanted volunteer trees by hand
-  Repair erosion and replace missing soil, rock, or organic mulch
-  Water regularly during the first growing season until vegetation is established
-  Trim any grasses or wildflowers as needed using handheld trimmers
-  Replace any dead native plants as needed



#### References

- 1) City of Phoenix Supplemental Standard Details for Public Works Construction (*Detail No. LID-05.*)
- 2) Desert Landscapes In Your Front Yards, City of Phoenix Water Services Department and Arizona State University
- 3) Greater Phoenix Metro Green Infrastructure Handbook



## PERMEABLE HARDSCAPE

Permeable hardscape refers to hard surfaces that are either porous or designed with void spaces that allow water to infiltrate (pass through) the material and soak into the ground. Examples include permeable pavers, gravel or crushed stone pathways, and open-grid pavement systems.

These materials can be used for your walkway, patio, or driveway, but they are not approved for use in the City right-of-way. To help obtain the best results, always follow the manufacturer's installation recommendations for the material you use.

### Steps to Get Started

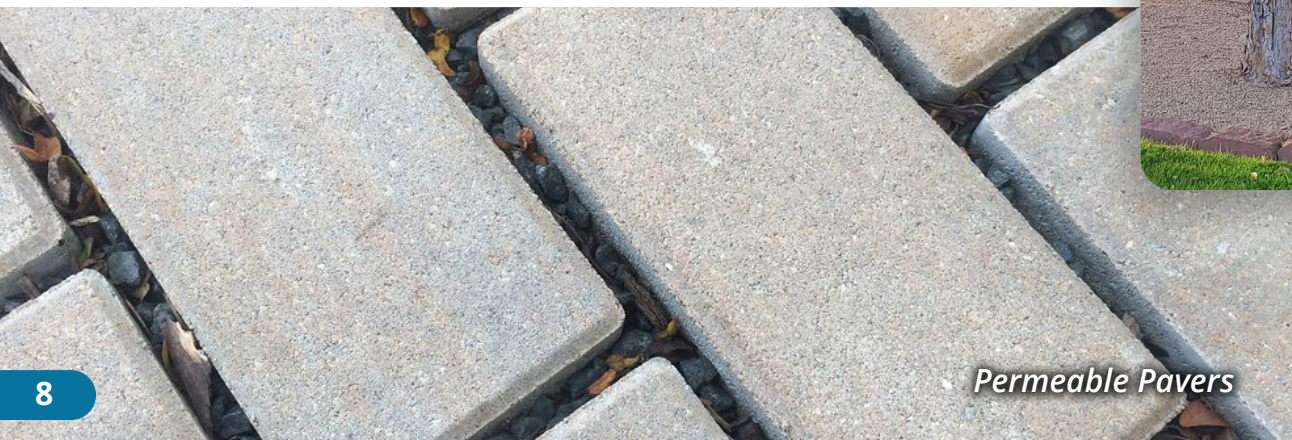
- Determine where you want to install permeable hardscape materials and create a simple plan diagram for the layout.
- Consider factors such as the slope of the area, drainage patterns (where water flows), and any existing utilities or structures.
- Purchase permeable hardscape materials online, through a contractor, or from your local hardware store.
- Hire a trained crew for installation or refer to the manufacturer's guidelines for instructions and recommendations.
- Call Arizona 811 (Bluestake) 800-782-5348 before any digging occurs to locate existing underground utilities.

### BENEFITS

- ✔ Infiltrates stormwater
- ✔ Reduces localized flooding
- ✔ Filters pollutants
- ✔ Allows more air and water to reach plant roots



Stepping Stones with Pervious Material



Permeable Pavers

### Maintenance

Proper maintenance is key to the longevity and effectiveness of permeable hardscapes. Depending on the type of permeable hardscape installed, the maintenance recommendations may vary. Following these general guidelines will help your permeable hardscape GSI features to function optimally and manage stormwater effectively:



Sweep the area at least two times per year



Stabilize areas around the permeable hardscape with plants or riprap to prevent additional sediment from clogging the system



Remove unwanted weeds by hand. Avoid using herbicides to protect your landscape and waterways



Refill any gaps or voids with permeable jointing material



Limit the crossing of heavy equipment, oversized vehicles, or machinery to prevent compaction



Consult with a professional if needed for maintenance and repairs



Permeable Hardscape

### References

- 1) City of Phoenix Supplemental Standard Details for Public Works Construction (*Detail No. LID-01.*)
- 3) Greater Phoenix Metro Green Infrastructure Handbook



## RAIN GUTTER SYSTEM

A rain gutter system, also known as a guttering system or simply gutters, is a network of channels or troughs that collect and redirect rainwater from the roof of your home or garage. It can then be captured into a rain barrel or directed to a stormwater harvesting basin. This prevents water from flowing directly off the roof, causing damage to building foundations, hardscape areas, or landscape.

### BENEFITS

- ✔ Avoids water damage to buildings and landscaping
- ✔ Captures rainwater for later use



### Steps to Get Started

- ▣ Install rock mulch or riprap at the gutter outfall and along the path to the stormwater harvesting basin to direct flow and prevent erosion.
- ▣ Add gutter leaf guards if water will be directed to rain barrels.



### Maintenance

Follow these steps to help your rain gutter system function effectively:

-  Periodically remove debris from the gutters and downspouts
-  Repair cracks, holes, or sagging sections
-  Trim overhanging tree branches
-  Periodically schedule a professional for maintenance and repairs



## RAIN BARRELS






A rain barrel is a container used to collect and store rainwater for later use. They are typically placed beneath a downspout or connected to a rain gutter system to capture rainwater runoff from the roof. Rain barrels typically hold between 50 and 1,000 gallons of water and can be made of plastic or other durable materials. Sealed lids should be used to prevent debris from accumulating, reduce evaporation, and reduce mosquito infestation. When purchasing a rain barrel, choose one with a spigot and a debris filter at the bottom.

### Steps to Get Started

- ▣ Purchase a rain barrel online or from your local hardware store.
- ▣ Install a sturdy stand (concrete blocks or similar) to elevate the rain barrel.
- ▣ Cut your downspout at the appropriate height and attach a diverter elbow to bring the water to the rain barrel.
- ▣ If your downspout previously went into the ground, don't forget to close up the hole.
- ▣ Fill a watering can from the spigot for hand watering or attach drip irrigation tubing directly to the spigot and run directly to the plants.

### Maintenance

Maintenance to promote optimal performance, follow these maintenance guidelines:

-  Remove debris, sediment, or algae if clogging occurs
-  Screen inlet/outlet to reduce the potential for breeding mosquitos
-  Repair cracks, leaks, or damage to the barrel
-  Inspect and repair fittings, spigot, and hose connections
-  Clear clogs or blockages to maintain water flow



### BENEFITS

- ✔ May reduce the need for an irrigation system
- ✔ May prevent localized flooding
- ✔ Avoids damage to structures and landscaping

# GSI Applications in the Right-of-Way

## BIOSWALE

A bioswale is a linear channel designed to collect and store stormwater, allowing it to infiltrate the ground. Bioswales are typically filled with plants that help remove pollutants from the water before being absorbed into the ground or entering a natural water body. They are commonly used in urban areas to reduce localized flooding, improve water quality, and create a more sustainable landscape. *(Note: bioswales are prohibited from being used along arterial classified roadways - see Reference 4).*

### BENEFITS

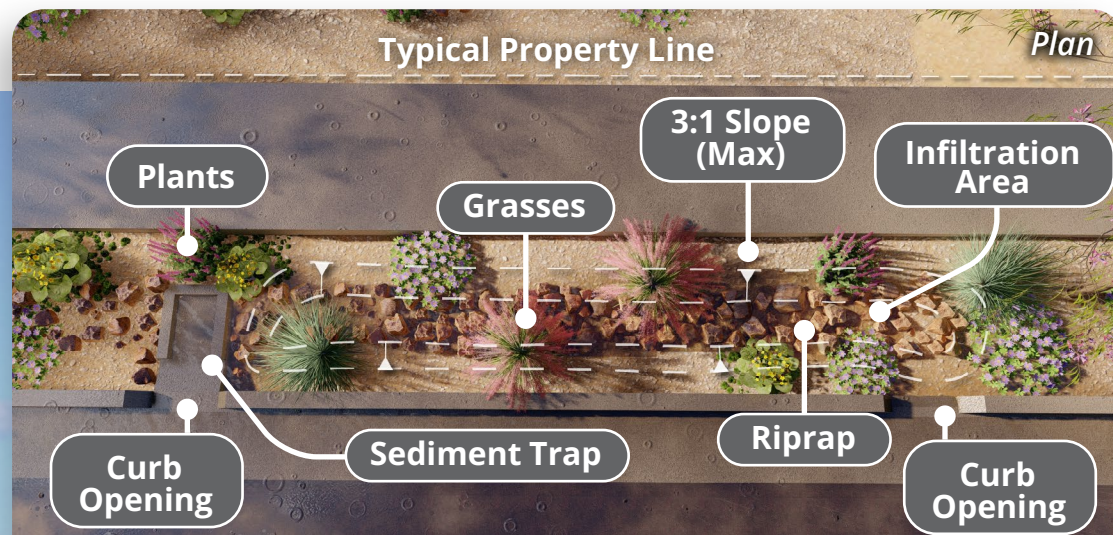
- ✔ Decreases need for irrigation
- ✔ Reduces localized flooding
- ✔ Filters stormwater pollutants
- ✔ Supports native plants and pollinators
- ✔ Adds aesthetic value

Cross Section



### Steps to Get Started

- ❑ Contact the City of Phoenix to determine permitting requirements.
- ❑ Verify that the width of the landscape area between the back of the street curb and sidewalk is a minimum of six feet wide.
- ❑ Create a simple plan diagram of the extents of the bioswale. Note: the side slopes should be no steeper than 3:1 with a 12-inch wide flat bottom.
- ❑ Identify locations of curb openings and sediment traps.
- ❑ Select a variety of native plants that are drought tolerant and provide aesthetic value (see our native plant list for recommendations). Grasses and low-growing groundcovers are most suitable for bioswale bottoms. Trees and shrubs can be planted alongside the bioswale. Space plantings according to their mature size to allow for growth to natural form.
- ❑ Do not line the bioswale with filter fabric or weed barrier so the water can infiltrate into the ground.
- ❑ Hire a landscape contractor for implementation (see page 16 for more information).
- ❑ Call Arizona 811 (Bluestake) 800-782-5348 before any digging occurs to locate existing underground utilities.

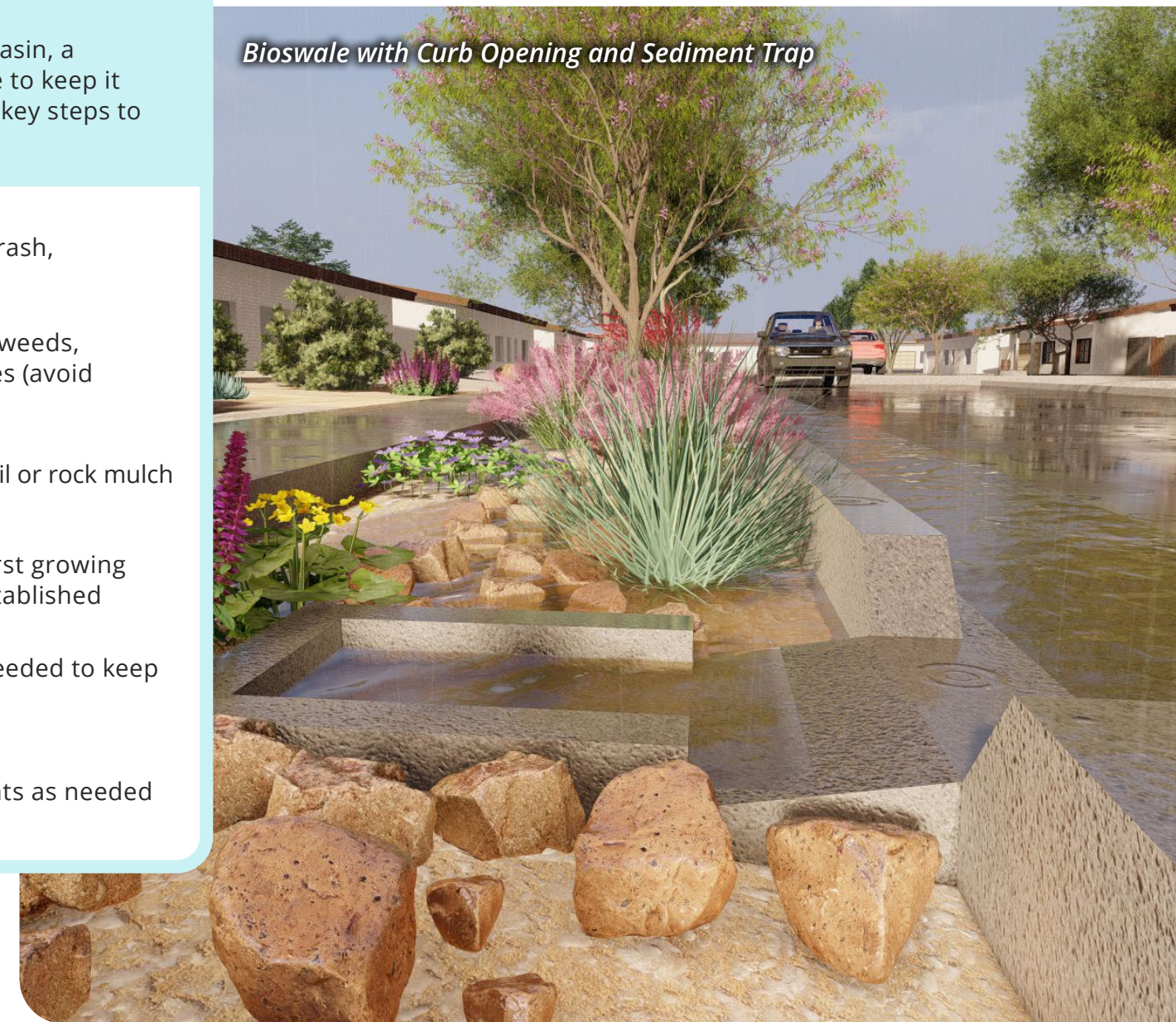


### Maintenance

Similar to the stormwater harvesting basin, a bioswale requires regular maintenance to keep it functioning optimally. Below are a few key steps to maintaining your bioswale:

-  Periodically remove debris, trash, and sediment
-  Remove any invasive plants, weeds, and unwanted volunteer trees (avoid using herbicides)
-  Repair erosion and missing soil or rock mulch
-  Water regularly during the first growing season until vegetation is established
-  Prune trees and shrubs as needed to keep sidewalks clear
-  Replace any dead native plants as needed

Bioswale with Curb Opening and Sediment Trap



### References

- 1) City of Phoenix Supplemental Standard Details for Public Works Construction (Detail No. LID-06.)
- 4) City of Phoenix Street Classification Map



## CURB OPENINGS

Curb openings are cuts created in the concrete curb to allow stormwater from the street to flow into an infiltration area where it can be stored and allowed to infiltrate slowly into the ground. They are located within the City right-of-way and therefore must go through City review. A permit and/or licensed contractor may be required. See page 16 to learn more about what a right-of-way is and what permitting process will need to be followed. *(Note: curb openings are prohibited for use along arterial classified roadways - see Reference 4)*

### Steps to Get Started

- ❑ Contact the City of Phoenix to determine permitting requirements.
- ❑ Verify that your street is crowned (highest point in the middle).
- ❑ Place one curb cut at the upstream point of stormwater flow along the curb to allow stormwater flow and one at the downstream end to allow flow back onto the street.
- ❑ Curb openings should be 24 inches wide with 45-degree side slopes that angle into the bottom of the curb.
- ❑ Curb opening floor should slope away from the street towards the infiltration area.
- ❑ Provide a sediment trap on the back side of the curb opening to prevent erosion.
- ❑ Call Arizona 811 (Bluestake) 800-782-5348 before any digging occurs to locate existing underground utilities.

### References

- 1) City of Phoenix Supplemental Standard Details for Public Works Construction *(Detail No. LID-02 & LID-03.)*
- 3) Greater Phoenix Metro Green Infrastructure Handbook
- 4) City of Phoenix Street Classification Map

### BENEFITS

- ✔ Decreases stormwater runoff
- ✔ Reduces localized flooding
- ✔ Easy to maintain



### Maintenance

Follow these steps to maintain your curb cuts' optimal performance:



Regularly clean out any debris that may prevent stormwater flow



Remove weeds

## SEDIMENT TRAP

A sediment trap is a feature designed to capture sediment and other debris before stormwater runoff enters a GSI feature, like a bioswale. A sediment trap can either be a concrete flat pad or an earthen berm placed at a curb opening, at least 2" lower than the curb opening level. By capturing sediment, the trap helps to reduce the amount of pollutants that would otherwise be carried by stormwater into your bioswale. This helps protect water quality, promote plant health, and prevent the accumulation of sediment. *(Note: sediment traps are prohibited for use along arterial classified roadways - see Reference 4)*

### BENEFITS

- ✔ Decreases stormwater runoff
- ✔ Reduces localized flooding
- ✔ Easy to maintain

### Steps to Get Started

- ❑ Contact the City of Phoenix to determine permitting requirements.
- ❑ Designate areas directly adjacent to curb openings for a sediment trap - Sizes may vary but generally should be wider than the width of the curb opening a minimum of 4 inches but 8 inches is recommended.
- ❑ Install a pre-cast or cast-in-place concrete pad or create a well-compacted earthen berm to serve as the trap.
- ❑ Place a course of 4"-8" flat rocks around the top of the sediment trap.
- ❑ Call Arizona 811 (Bluestake) 800-782-5348 before any digging occurs to locate existing underground utilities.

### References

- 1) City of Phoenix Supplemental Standard Details for Public Works Construction *(Detail No. LID-04.)*
- 3) Greater Phoenix Metro Green Infrastructure Handbook
- 4) City of Phoenix Street Classification Map

### Maintenance

Follow these steps to maintain your sediment trap's optimal performance:



Check regularly and after significant rainfall for blockages



Remove sediment using a shovel or blade regularly or as needed



Inspect regularly for erosion and repair as needed





## How to Make this Project a Reality

This section will provide design tips and permitting guidance for installing GSI features on your property. Please note, site conditions vary, and project details are site-specific. If you are unsure about permitting requirements, please contact the City of Phoenix Planning and Development Department. Contacts are listed on page 25.

### KEY DESIGN AND SAFETY TIPS

- ➔ Make sure water drains away from buildings, structures, and adjacent properties to prevent flooding, damage, or safety hazard – If you are installing features within 10 feet of your home, you may want to consult a professional
- ➔ If applicable, verify special landscape requirements through City Historic Preservation office
- ➔ Maintain existing natural washes on your property – they are the best GSI features in the desert
- ➔ Place GSI features on flat or low points of the landscape
- ➔ Obtain any necessary approvals through your homeowner’s association
- ➔ Call Arizona 811 (Bluestake) 800-782-5348 before any digging occurs to locate existing underground utilities

*\*Required permits may include grading & drainage, paving, and/or a concrete permit*

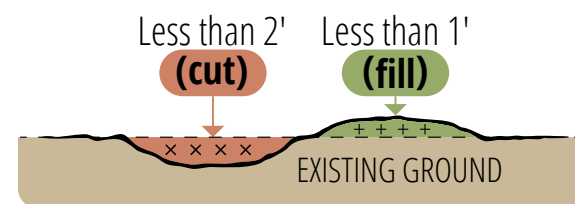
### PERMITS FOR PRIVATE PROPERTY

You will not need a permit when:

- ➔ Less than 2’ deep and less than 1’ of fill is generated during the excavation
- ➔ Less than 100 cubic yards of soil is relocated (about the volume of a one-car garage)
- ➔ Less than 0.10 acres (4,356 square feet) of surface area is disturbed

You will need a permit:

- ➔ If you are a new build
- ➔ If you are in a floodplain
- ➔ If you are impacting a natural wash/drainage way on your property
- ➔ If you are in a hillside development area with a slope of 10% or greater
- ➔ The GSI design element is located within the City right-of-way



### WHAT IS THE RIGHT-OF-WAY?

A City right-of-way is the area of land that is set aside for public transportation, utilities, or other public uses. Neighborhood streets are located within City-owned right-of-way, usually including the street itself and a portion of the land on either side of the street where public sidewalks, utilities, and street trees are often located. For this handbook which describes green stormwater infrastructure applications within the right-of-way, we are focused on the portion of land between the street and private property.

Contractors working in the right-of-way must have either type A, K, or C license and valid, up-to-date insurance.

## PERMITTING CONSIDERATIONS

Are you ready to get started on your project but, you’re not sure what to do or when to involve the City? Below are a series of considerations and steps to help guide you! Please reference the [City of Phoenix \(City\) Planning & Development Department GSI Guidelines](#) online for an in-depth description of the necessary steps.

- 1 If your property is along an arterial street, GSI features cannot be in the right-of-way. In that case, keep any GSI features within your property. To know if your street is an arterial, you can reference the City of Phoenix Street Classification map or contact the City for clarification.
- 2 Check the “Permits for Private Property” section (page 16) for various conditions that trigger permits.
- 3 Take a look at the GSI Permit Table below to get an idea of the permits that might be required for your specific project.
- 4 Contact the Phoenix Planning & Development Department to discuss your project. They will guide you on your next steps and tell you of any additional permits or requirements that may be needed.

GSI Permit Table (ON YOUR PROPERTY)			
GSI DETAIL	REFERENCE	CITY PERMIT	MAINTENANCE AGREEMENT
Permeable Pavement	Refer to reference 1	See “Permits for Private Property” on Page 16.	No
Stormwater Harvesting Basins	Refer to reference 1	See “Permits for Private Property” on Page 16.	No
Rain Barrel	N/A	No	No
Gutter System	N/A	No	No

GSI Permit Table (IN THE RIGHT-OF-WAY)			
GSI DETAIL	REFERENCE	CITY PERMIT	MAINTENANCE AGREEMENT
Curb Openings	Refer to reference 1	Yes	Yes
Sediment Traps	Refer to reference 1	Yes	Yes
Vegetated or Rock Bioswales	Refer to reference 1	Yes	Yes

### References

- 1) City of Phoenix Supplemental Standard Details for Public Works Construction
- 2) City of Phoenix Street Classification Map
- 3) City of Phoenix Planning & Development Department GSI Guidelines
- 4) City of Phoenix Special Permits and Maintenance Agreement Information

*Maintenance agreements allow features in the right-of-way to be maintained by the adjacent property owner.*

## Soil, Irrigation, and Plant Choices

### SOIL RECOMMENDATIONS

Maintaining healthy soil is a critical step to prolonging plant health. Native plants are adapted to Arizona's naturally alkaline soils. However, some Arizona soils are also generally low in organic content and may contain clay and caliche (hardened rock).

Check with your local nursery for recommendations on soil amendments if necessary.

Below are easy-to-follow, routine steps to maintain a healthy environment for your native plants.

- ➔ Minimize soil disturbance
- ➔ Keep soil topped with mulch, such as screened decomposed granite or organic hardwood mulch
- ➔ Avoid activities that can lead to compaction
- ➔ Minimize erosion through rock placement or other grade controls
- ➔ Avoid the use of herbicides and pesticides

#### References

- 7) City of Phoenix - Tree Watering Guide
- 8) City of Phoenix - Shrub Watering Guide

### WATERING SCHEDULE RECOMMENDATIONS

#### New

Native plants need supplemental watering for a period of establishment to overcome the shock of being transplanted. Plant establishment timelines vary between one year (shrubs) and three years (trees).

According to *Water - Use It Wisely's Watering by the Numbers* publication, this watering schedule table (right) offers guidelines to help initial plant establishment. You can find more detailed information in the publications referenced on the following page.

#### Long-Term Care

Once your native plants are established (typically within one to three years), they may no longer need regular irrigation and can thrive within the GSI feature, utilizing the captured stormwater. As a part of routine maintenance, monitor plant health for signs of stress or decline, particularly during extended dry periods, and provide supplemental watering.



### Watering Schedule for Newly Planted Native Plants\*

Weeks 1 & 2	Water every 1-2 days in summer, every 3-4 days fall through spring
Weeks 3 & 4	Water every 3-4 days in summer, every 6-7 days fall through spring
Weeks 5 & 6	Water every 4-6 days in summer, every 7-10 days fall through spring
Weeks 7 & 8	Water every 7 days in summer, every 10-14 days fall through spring
After week 8	Gradually extend the time between irrigations until plants are established

Note: After the eighth week, move the drip emitters to the outer edge of the root ball.  
\*High water use plants will require more frequent irrigations.

### RECOMMENDED NATIVE PLANT LIST

Here in the Sonoran Desert, we are fortunate to have a wide variety of native plants that vary in color, texture, form, and function. Pages 20-24 contain examples of trees, shrubs, succulents/cacti, and accents/grasses that can be used in and around the GSI features.

#### WHY NATIVE PLANTS?

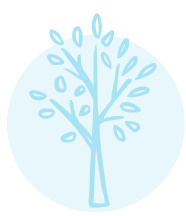
- ✔ Require less watering, fertilizer, and pesticides
- ✔ Prevent stormwater runoff and improve air quality
- ✔ Support a greater abundance and diversity of pollinators, birds, and other wildlife

#### References

- 9) Water - Use It Wisely - Landscape Watering by the Numbers

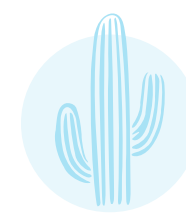
Source: *Water - Use It Wisely, Landscape Watering by the Numbers*










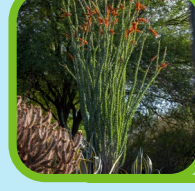

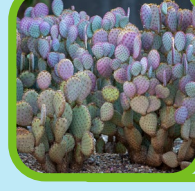


## Trees

	Common Name	Scientific Name		Common Name	Scientific Name
	Blue Palo Verde	<i>Parkinsonia florida</i>		Catclaw Acacia	<i>Senegalia greggii</i>
	Desert Willow	<i>Chilopsis linearis</i>		Feather Bush	<i>Lysiloma watsonii</i>
	Ironwood	<i>Olneya tesota</i>		Smoke Tree	<i>Psoralea argophylla</i>
	Sugar Sumac	<i>Rhus ovata</i>		Sweet Acacia	<i>Vachellia farnesiana</i>
	Velvet Mesquite	<i>Prosopis velutina</i>			












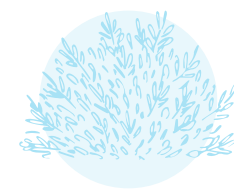
## Succulents and Cacti

	Common Name	Scientific Name		Common Name	Scientific Name
	Banana Yucca	<i>Yucca baccata</i>		Saguaro	<i>Carnegiea gigantea</i>
	Beavertail Prickly Pear	<i>Opuntia basilaris</i>		Desert Agave	<i>Agave deserti</i>
	Engelmann's Hedgehog Cactus	<i>Echinocereus engelmannii</i>		Fishhook Barrel Cactus	<i>Ferocactus wislizeni</i>
	Hohokam Century Plant (Murphey's Agave)	<i>Agave murpheyi</i>		Ocotillo	<i>Fouquieria splendens</i>
	Parry's Agave	<i>Agave parryi</i>		Purple Prickly Pear	<i>Opuntia santa-rita</i>









## Shrubs

	Common Name	Scientific Name		Common Name	Scientific Name
	Arizona Milkweed	<i>Asclepias angustifolia</i>		Brittlebush	<i>Encelia farinosa</i>
	Triangle-Leaf Bursage	<i>Ambrosia deltoidea</i>		Arizona Rosewood	<i>Vauquelinia californica</i>
	Chuparosa (Hummingbird Bush)	<i>Justicia californica</i>		Bush Dalea (Indigo Bush)	<i>Dalea pulchra</i>
	Desert Hackberry	<i>Celtis pallida</i>		Desert Lavender	<i>Hyptis emoryi</i>
	Desert Milkweed	<i>Asclepias subulata</i>		Hopbush	<i>Dodonaea viscosa</i>




## Shrubs

	Common Name	Scientific Name		Common Name	Scientific Name
	Jojoba	<i>Simmondsia chinensis</i>		Superstition Mallow	<i>Abutilon palmeri</i>
	Pink Fairy Duster	<i>Calliandra eriophylla</i>		Fourwing Saltbush	<i>Atriplex canescens</i>
	Creosote	<i>Larrea tridentata</i>		Wolfberry	<i>Lycium fremontii</i>



## Accents and Grasses

	Common Name	Scientific Name		Common Name	Scientific Name
	Side-Oats Grama	<i>Bouteloua curtipendula</i>		Desert Marigold	<i>Baileya multiradiata</i>
	Blackfoot Daisy	<i>Melampodium leucanthum</i>		Six-Weeks Grama	<i>Bouteloua barbata</i>
	Deer Grass	<i>Muhlenbergia rigens</i>		Goodding Verbena	<i>Glandularia gooddingii</i>
	Firecracker Penstemon	<i>Penstemon eatonii</i>		Desert Globemallow	<i>Sphaeralcea ambigua</i>
	Parry's Penstemon	<i>Penstemon parryi</i>		Purple Three-Awn	<i>Aristida purpurea</i>

## Contacts

### Planning & Development Department

200 West Washington Street, 2nd Floor  
 Phoenix, AZ 85003  
 602-262-7811 (main office)  
 602-534-7130 (voice)  
 7-1-1 (TTY)  
[Postconstruction.storm@phoenix.gov](mailto:Postconstruction.storm@phoenix.gov)  
[www.phoenix.gov/pdd/gsi](http://www.phoenix.gov/pdd/gsi)

### Office of Environmental Programs

200 West Washington Street, 14th Floor  
 Phoenix, AZ 85003  
 602-256-5669 (main office)  
 7-1-1 (TTY)  
[oeinfo@phoenix.gov](mailto:oeinfo@phoenix.gov)  
[www.phoenix.gov/oe](http://www.phoenix.gov/oe)

We'd love to hear Green Stormwater Infrastructure success stories!  
 Connect with us through email or social media!

City of Phoenix, AZ on:



#PHXPlanandDev #PHXEnvironment #PHXGSI

## References

1) City of Phoenix Supplemental Standard Details for Public Works Construction

*Permeable Hardscape: Detail No. LID-01.  
Curb Openings: Detail No. LID-02 & LID-03.  
Sediment Trap: Detail No. LID-04.  
Stormwater Harvesting Basins: Detail No. LID-05.  
Bioswale: Detail No. LID-06.*



2) Desert Landscapes In Your Front Yards, City of Phoenix Water Services Department and Arizona State University



3) Greater Phoenix Metro Green Infrastructure Handbook



4) City of Phoenix Street Classification Map



5) City of Phoenix Planning & Development Department GSI Guidelines



6) City of Phoenix Special Permits and Maintenance Agreement Information



7) City of Phoenix - Tree Watering Guide



8) City of Phoenix - Shrub Watering Guide



9) Water - Use It Wisely - Landscape Watering by the Numbers



Click the links or scan the QR codes with your smartphone to access the references above

## Acknowledgments

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**City of Phoenix**