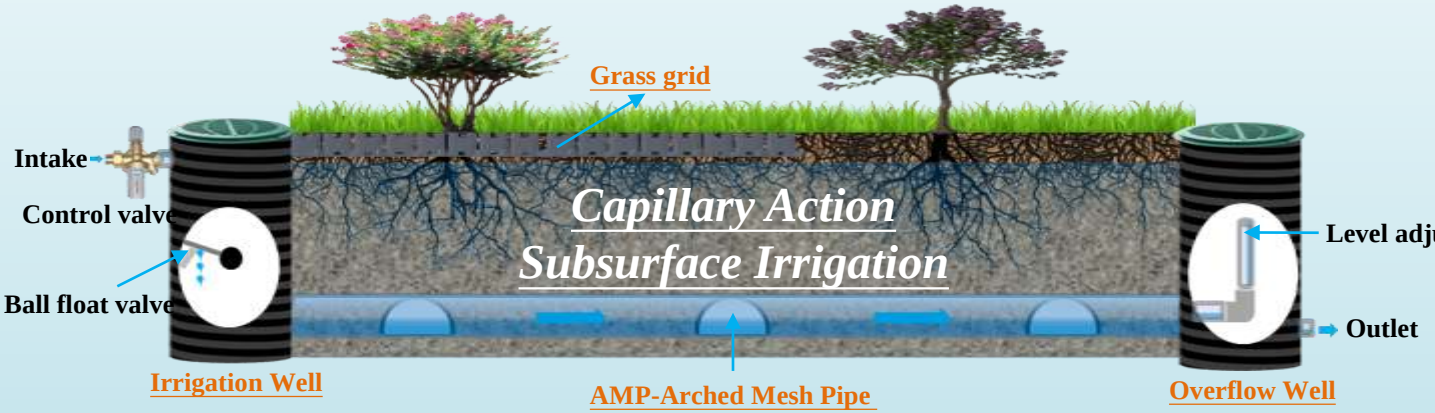
ECO-MESH

Low Impact Development-Stormwater Management
Green Infrastructure Program
AMPS-Arched Mesh Pipe System

What is AMPS



Water Intake "Irrigation Well" and the Wicking of irrigation pipe " *AMP*-Arched Mesh Pipe " and Outlet " Overflow Well" composed "*AMPS-Arched Mesh Pipe system*".

Irrigation Well-Water Intake containing water control valve to control the water level.

AMP-half-moon shape design. The half-moon part is impermeable layer and the flat part is permeable layer. When constructing, the flat part of the mesh lies down. It results in soil particles sinking due to gravity and not going with water into the aqueduct. Therefore Arched Mesh Pipe can solve the problem of underground drainage pipe blocking without filter material and clog-resistant.

Overflow Well-containing water regulator to adjust the permeability of underground irrigation of capillary action of water and height.

Low Impact Development-Stormwater Management
Green Infrastructure Program
AMPS-Arched Mesh Pipe System

Capillary Action
Subsurface Irrigation

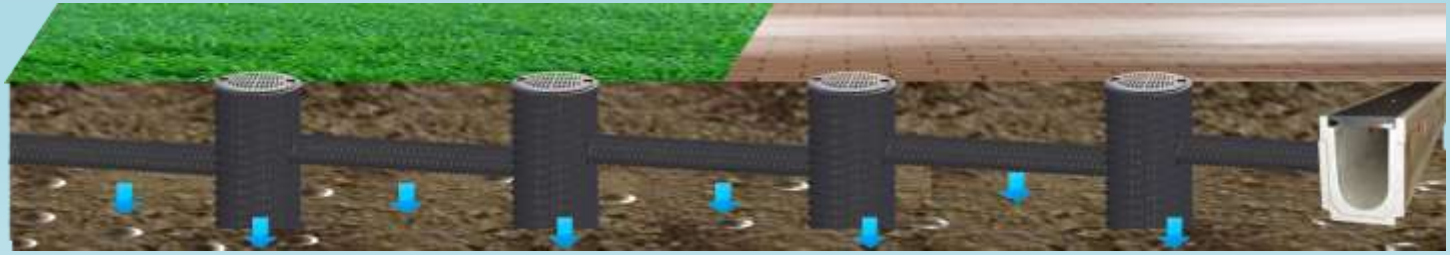
Subsurface Irrigation by Capillary Action

Irrigation water through AMP-Arched Mesh Pipe into the soil, using soil capillary action, supply to the root cluster area. Save 50~80% irrigation water, fertilizer effect increase 40 %, reduction in irrigation manpower 60%.

Underground drainage

- AMP-Arched Mesh Pipe Exclude supersaturated soil water and high water table.
- AMP-Arched Mesh can solve the problem of underground drainage pipe blocking without filter material and clog-resistant.
- AMP-Arched Mesh Pipe High efficiency drainage, soil is not lost.

Drainage



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Low Impact Development-Stormwater Management

Green Infrastructure Program

AMPS-Arched Mesh Pipe System

AMPS- main functions:

Irrigation: Irrigation water through Arched Mesh Pipe into the soil, using soil capillary action, supply to the root cluster area.

Drainage: Arched Mesh Pipe penetration exclude supersaturated soil water and high water table.

Retention: let rainwater penetration temporarily stored in the network, and then slowly infiltrate natural way to penetrate the soil.

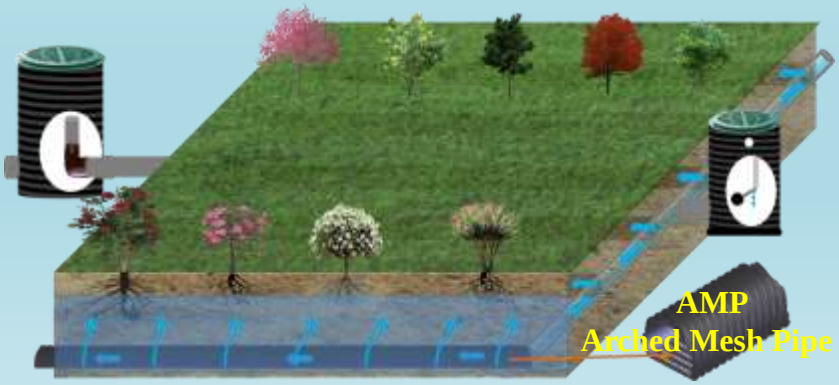
Saving energy: Save 50~80% irrigation water, fertilizer effect increase 40 %, reduction in irrigation manpower 60%.

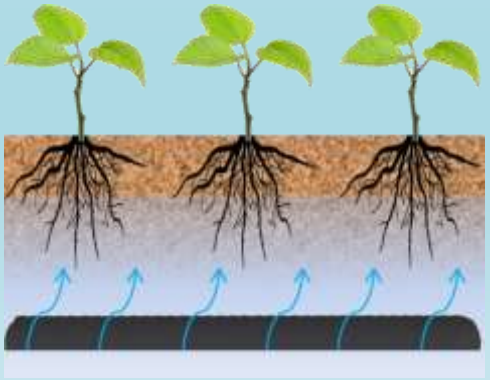
Reduce the heat island effect: AMP- Arched Mesh Pipe provides underground space to allow air convection, reduce surface temperature, reducing heat island effect.

Mitigation subsidence: AMP-Arched Mesh Pipe to promote rainwater infiltration, groundwater recharge, slow subsidence.

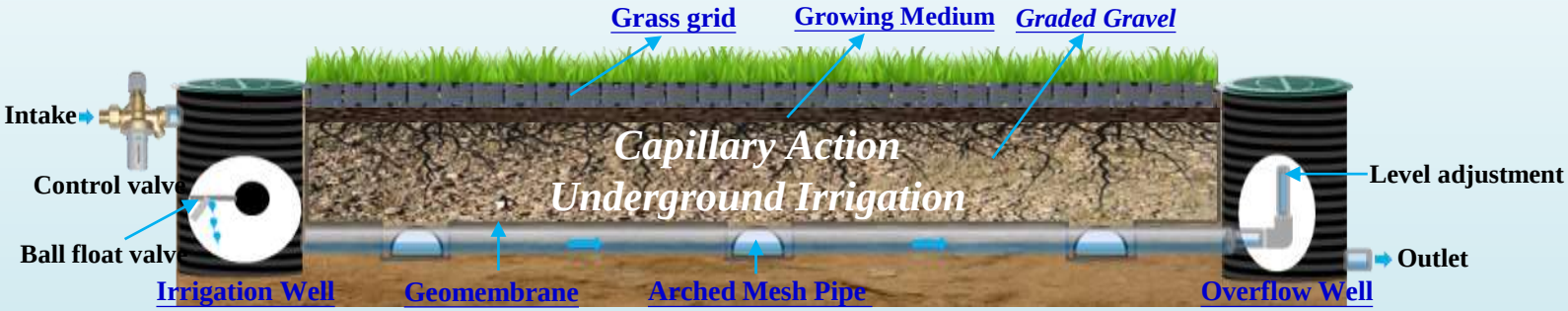
Dengue prevention: Subsurface irrigation, surface is dry, it will not produce mosquito breeding problem

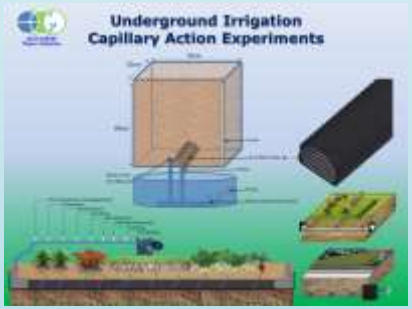
Create a comfortable environment for the growth of plants: AMP-Arched Mesh Pipe underground space in soil moisture management, drainage, irrigation, fertilization, ventilation, temperature control, sterilization, ranked salt and other functions to create a comfortable environment for the growth of plants.



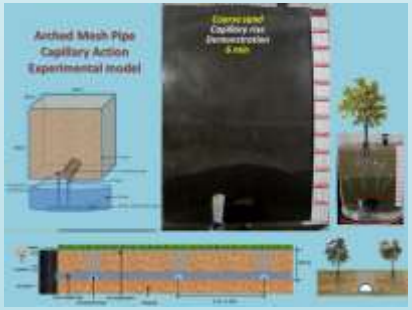


Low Impact Development-Stormwater Management
Green Infrastructure Program
AMPS-Arched Mesh Pipe System Experiment



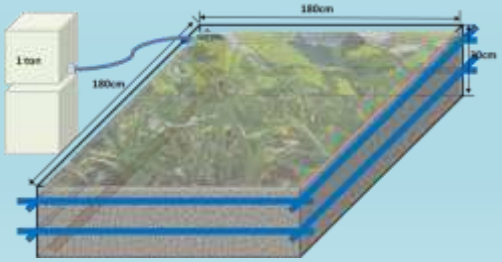


AMPS-Arched Mesh Pipe System
Soil Wicking Experiments

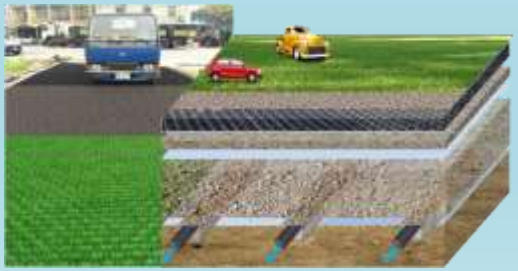


AMPS-Arched Mesh Pipe System
Sand Wicking Experiments

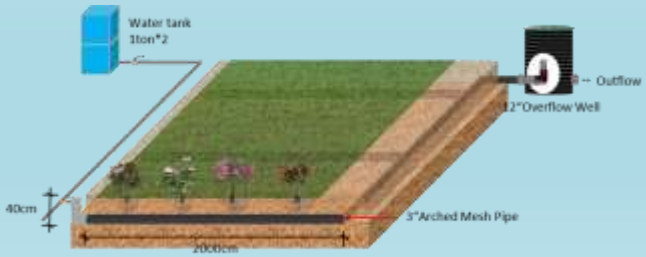
SMPS-Arched Mesh Pipe System
Subsurface Drainage Experiment



AMP-Sub-irrigation Wicking Experiments
Spacing



AMP-Sub-irrigation Wicking Experiments
Cover Area



AMP-Sub-irrigation Wicking Experiments
Length

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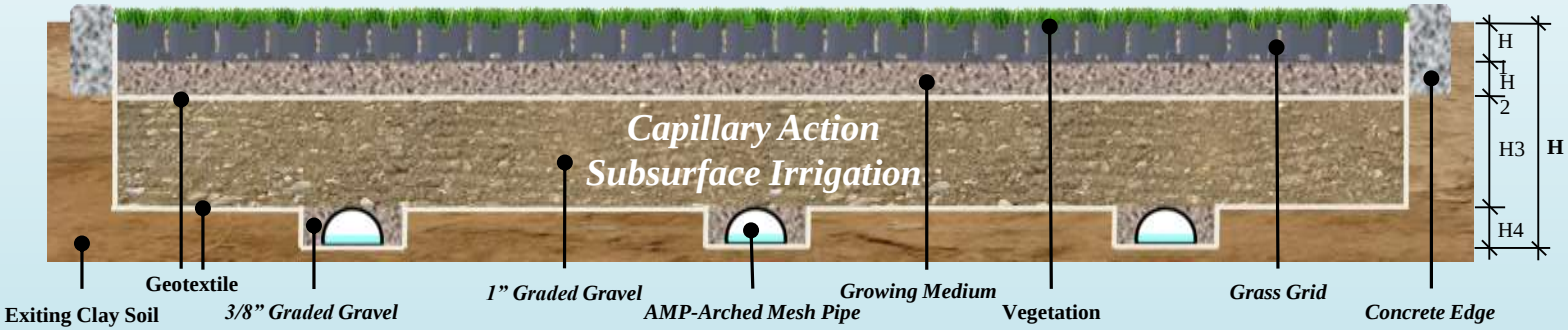
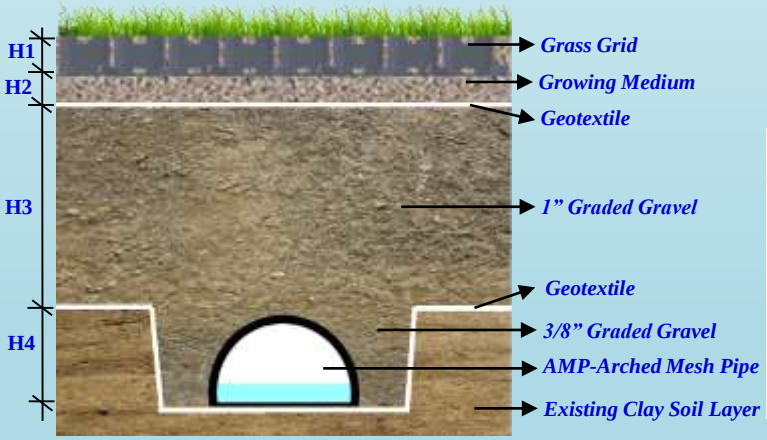
Low Impact Development-Stormwater Management
Green Infrastructure Program
AMPS-Arched Mesh Pipe System

Clay Soil Layer-Green Pavement Irrigation and Drainage - Design

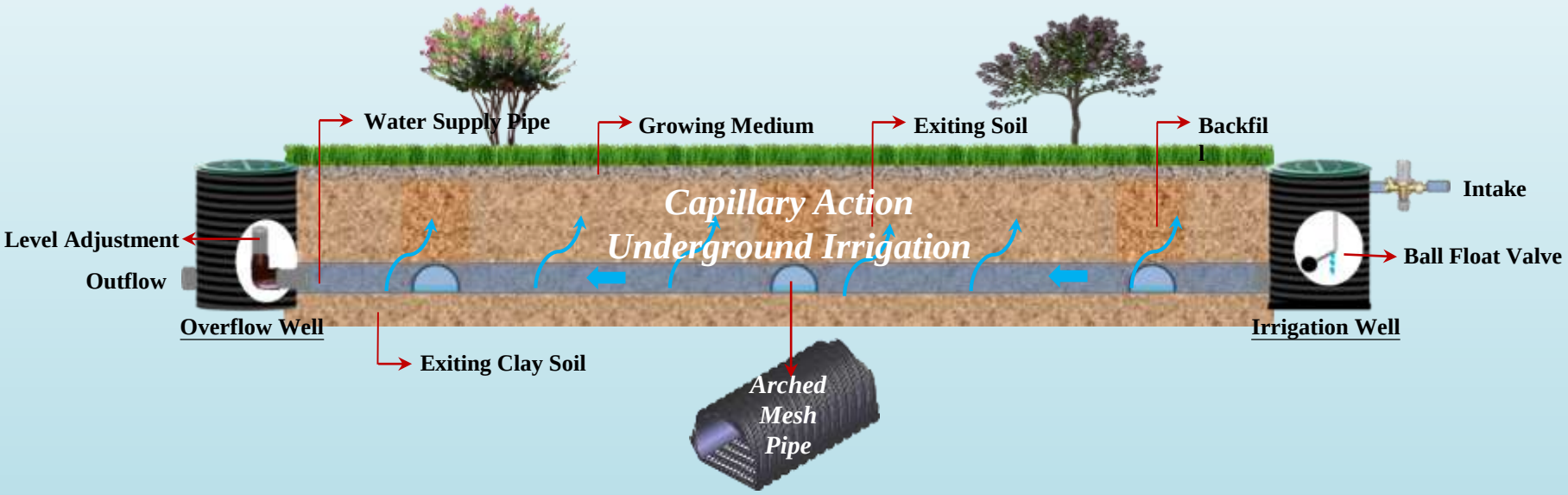




Grass Grid Permeable Green Pavement

Construction Site	H1	H2	H3	H4	H
Sidewalks, bike path	5cm	5cm	10cm	10cm	30cm
Community parking, driveway	5cm	5cm	20cm	10cm	40cm
Public parking, driveway	5cm	5cm	30cm	10cm	50cm
fire lanes	5cm	5cm	35cm	10cm	55cm

Clay Soil Layer-Landscaping Irrigation and Drainage - Structure



AMPS-Underground Irrigation & Drainage System Landscaping-Applications

「Irrigation Well」 Water ball float valve controls the water intake .

「AMP-Arched Mesh Pipe」 Irrigation water reaches root cluster areas through the system by capillary action.

「Overflow Well」 Water level regulator adjusts the capillary action permeability of the underground irrigation water level.

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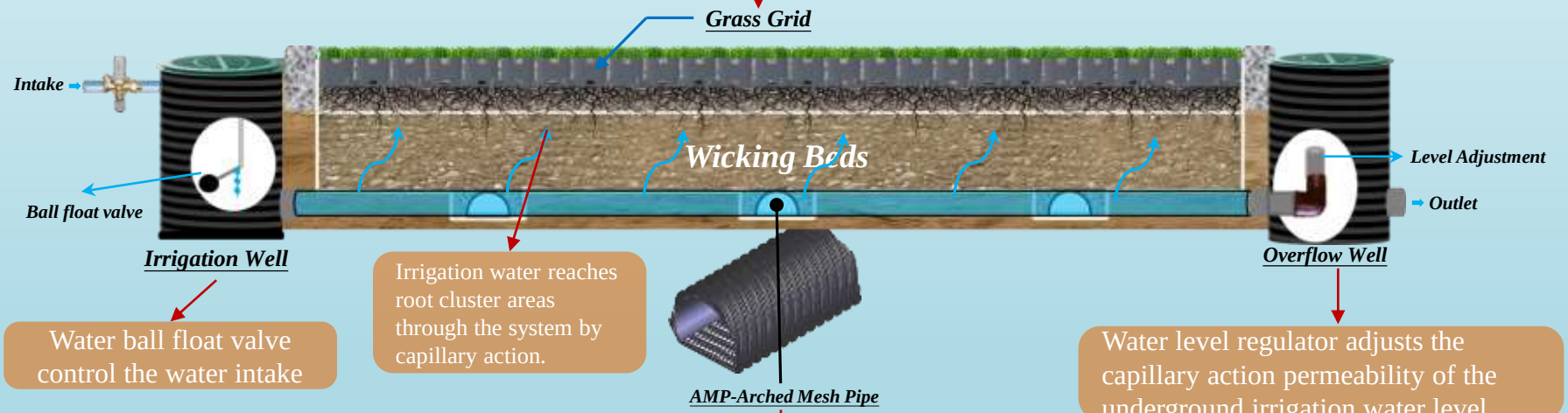
Low Impact Development-Stormwater Management
Green Infrastructure Program
AMPS-Arched Mesh Pipe System

AMPS - Grass Grid Permeable Green Pavement – Features

***AMPS* Water Solutions are water management solutions specializing in water conservation and provide efficient drainage and subsurface wicking irrigation.**

***AMPS* provides the benefits by using the clog-free subsurface pips that do not require additional filter materials but absorb and distribute water to the growing medium by non-pressurized and gravity driven capillary physics.**

The grass grid load-bearing surface layer enables drainage of surface water which then provides their underground irrigation of the grass root cluster areas by capillary action which in turn supports plant and root growth.



Water ball float valve control the water intake

Irrigation water reaches root cluster areas through the system by capillary action.

Water level regulator adjusts the capillary action permeability of the underground irrigation water level.

AMP-Arched Mesh Pipe has a half-moon shape design. The half-moon (top) part is impermeable and the flat (bottom) part is permeable. The soil particles sink due to gravity and does not flow with the water into the aqueduct. Therefore, the clog-resistant Arched Mesh Pipe solves the blocking problems of the underground drainage pipes without an extra layer of filter material.

Low Impact Development-Stormwater Management

Green Infrastructure Program

AMPS-Arched Mesh Pipe System

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Advantages of Arched Mesh Pipe Underground Irrigation and Drainage

- They are water-efficient ,use between 40 ~ 50% less water than a conventional garden bed.
- Watering from the bottom up prevents the evaporation of surface water.
- Harder for weeds to establish as the soil on the surface is drier.
- Very labor-efficient, they are self-watering , so it is possible to go away for two or three weeks at a time without your garden bed drying out.
- They can be watered by a low pressure water system. It can be directly connected to a water tank without the use of a pressure pump.
- They provide a lot of drainage when there is a heavy downpour.
- Large reservoir of water reduces the need for frequent watering.
- Evaporation is reduced to a minimum with thick mulching.
- Harder for weeds to establish as the mulch covered surface is drier.
- Soil life is improved. Nutrients are not flown away to the subsoil when the garden bed is watered.
- No salting and evaporation; no mineral is left in the soil.
- No permanent stale water; there is no mosquito larvae or anaerobic conditions.

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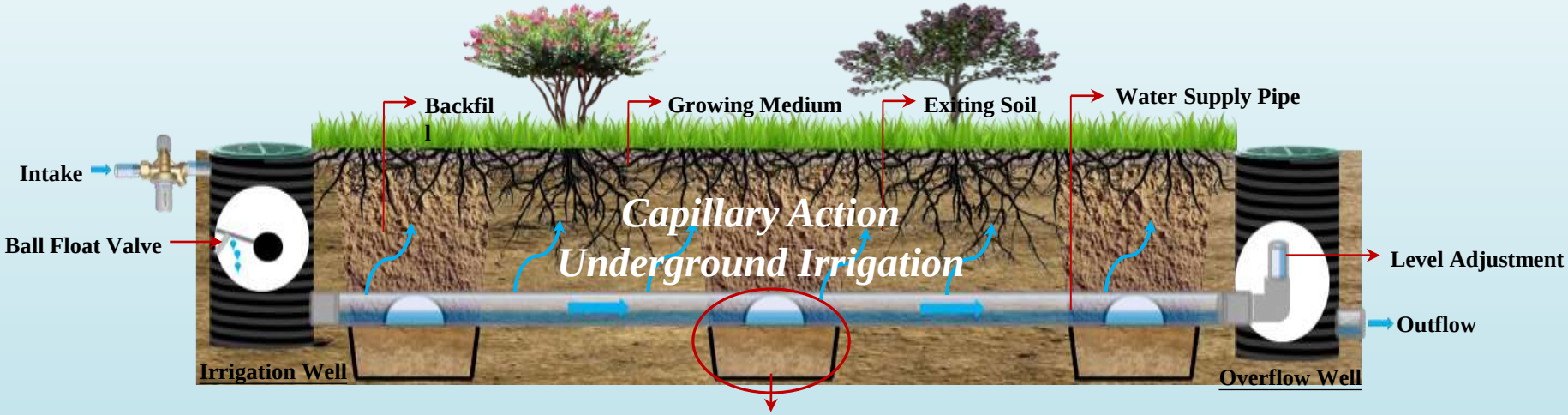
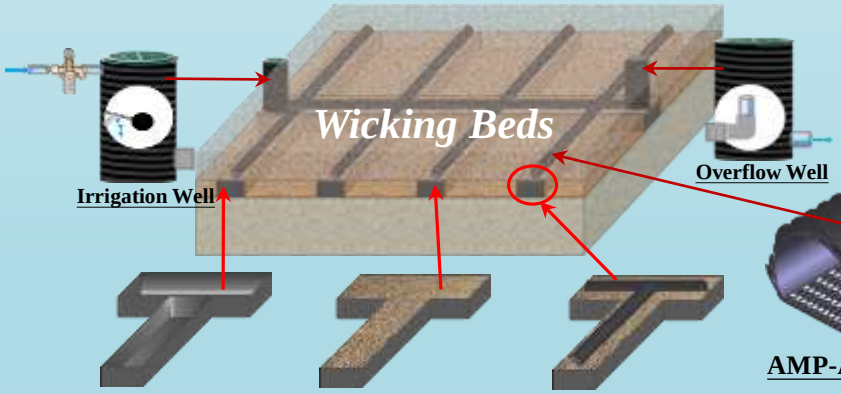
Green Infrastructure Program

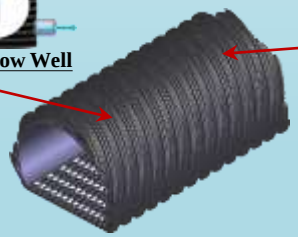
WCID-Water Conservation, Irrigation and Drainage System

WCID-Sandy Soil Layer landscaping application - Structure

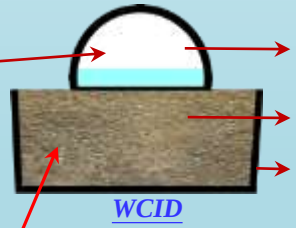


WCID-Water Conservation, Irrigation and Drainage System





AMP-Arched Mesh Pipe



WCID

Porous soil gap

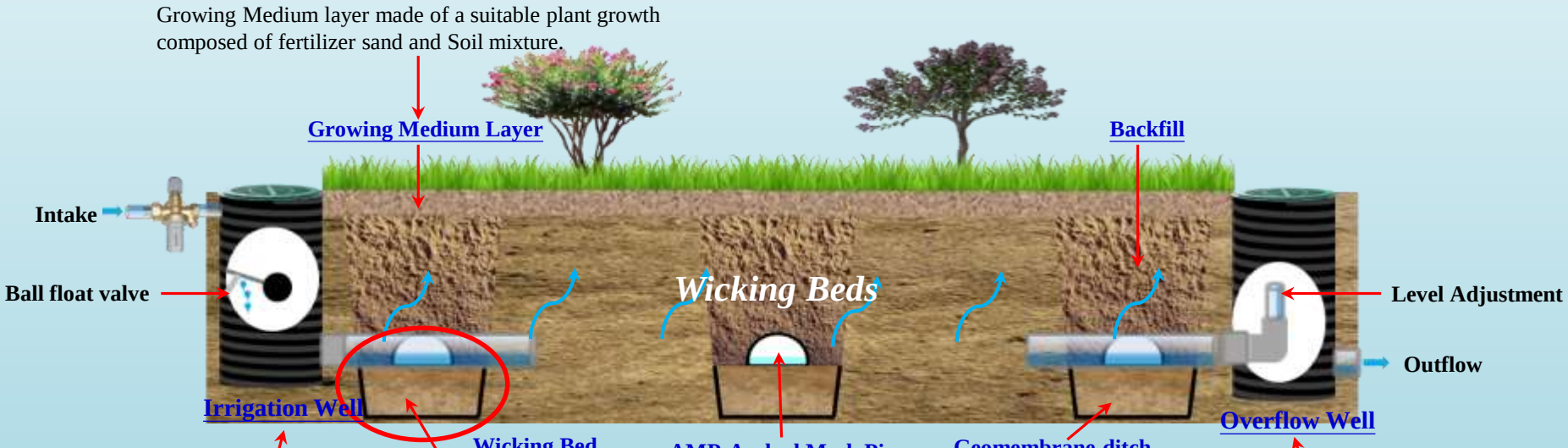
Geomembrane ditch stores irrigation water, 20 ~30% of the soil volume.
Irrigation water reaches root cluster areas through the system by capillary action.

Low Impact Development-Stormwater Management
Green Infrastructure Program
WCID-Water Conservation, Irrigation and Drainage System

WCID-Sandy Soil Layer landscaping application - Features

WCID Water Solutions are water management solutions specializing in water conservation and provide efficient drainage and subsurface wicking irrigation.

WCID provides these benefits using clog free subsurface pipe that does not require additional filter materials but absorb and distribute water to the growing medium by non-pressurized and gravity driven capillary physics.



Wicking bed composed by a PE cloth, fill in the ditches porous soil, the soil generally a gap of 20~ 30% by volume can be stored soil water.

Water stored in the system reduces surface soil saturation during wet weather providing rainwater recycling and underground irrigation during dry season.

Ball float valve is to control the soil saturated and automatic irrigation water supply.

AMP-Arched Mesh Pipe half-moon shape design. The half-moon part is impermeable layer and the flat part is permeable layer. When constructing, the flat part of the mesh lies down. It results in soil particles sinking due to gravity and not going with water into the aqueduct. Therefore Arched Mesh Pipe can solve the problem of underground drainage pipe blocking without filter material and clog-resistant.

Water level regulator to adjust the permeability of the capillary action of underground irrigation water level.

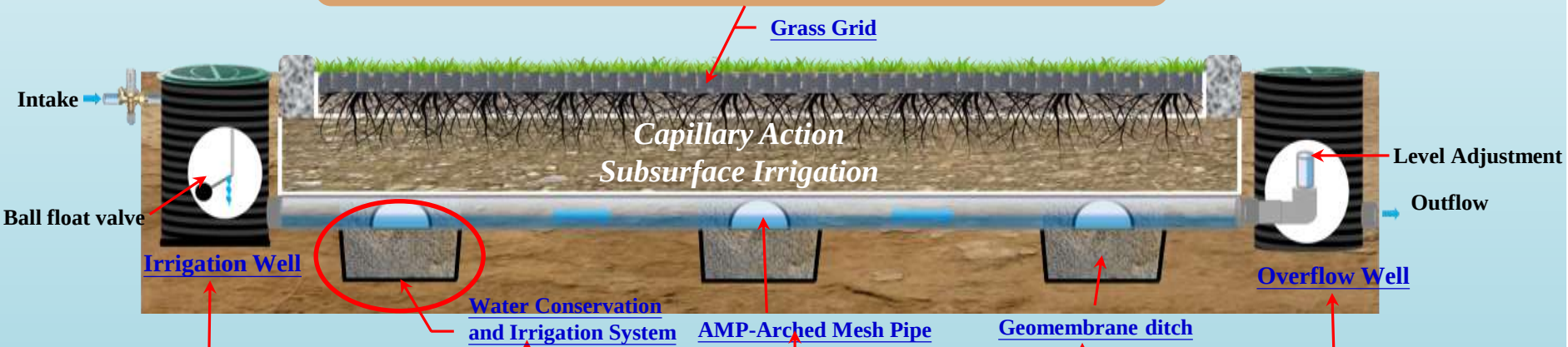
Low Impact Development-Stormwater Management
Green Infrastructure Program
WCID-Water Conservation, Irrigation and Drainage System

WCID-Sandy soil layer grass grid permeable green pavement application - Features

WCID Water Solutions are water management solutions specializing in water conservation and provide efficient drainage and subsurface wicking irrigation.

WCID provides these benefits using clog-free subsurface pipe that does not require additional filter materials but absorb and distribute water to the growing medium by non-pressurized and gravity driven capillary physics.

The grass grid load-bearing surface layer enables drainage of surface water which then provides their underground irrigation of the grass root cluster areas by capillary action which in turn supports plant and root growth.



Water stored in the system reduces surface soil saturation during wet weather providing rainwater recycling and underground irrigation during dry season.

Geomembrane ditch is made by a PE cloth, filled with ditches porous soil. The soil stores water around 20~30% of the soil volume.

Ball float valve controls the soil saturated and automatic irrigation water supply.

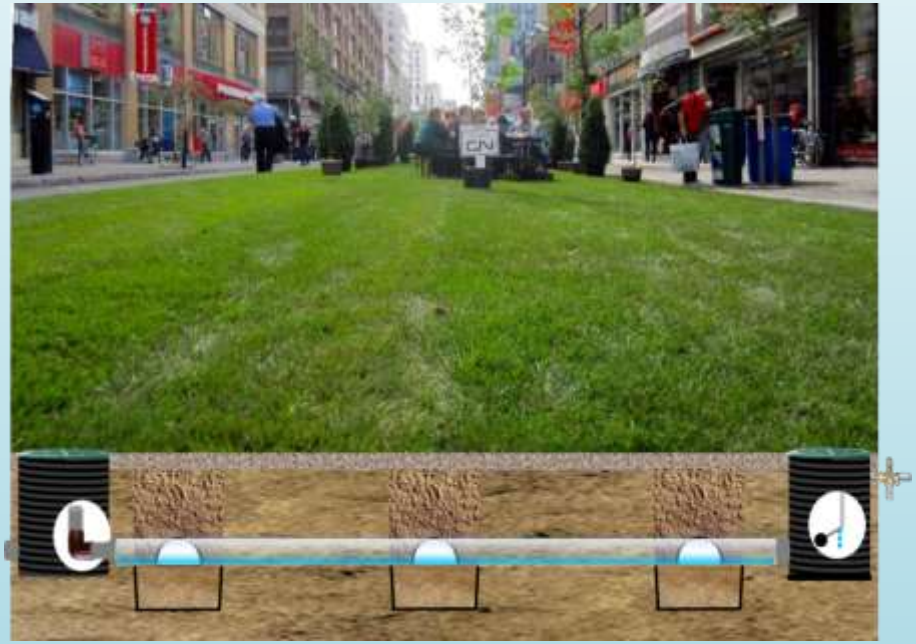
AMP-Arched Mesh Pipe has a half-moon shape design. The half-moon (top) part is impermeable and the flat (bottom) part is permeable. The soil particles sink due to gravity and does not flow with the water into the aqueduct. Therefore, the clog-resistant Arched Mesh Pipe solves the blocking problems of the underground drainage pipes without an extra layer of filter material.

Water level regulator adjusts the permeability of the capillary action of underground irrigation water level.

Low Impact Development-Stormwater Management

Green Infrastructure Program

WCID-Water Conservation, Irrigation and Drainage System



***WCID*-Water Conservation, Irrigation and Drainage System**

The most simple and economic way of storing rainwater.

The most efficient method of irrigation and drainage.

Advantages of underground irrigation and Drainage

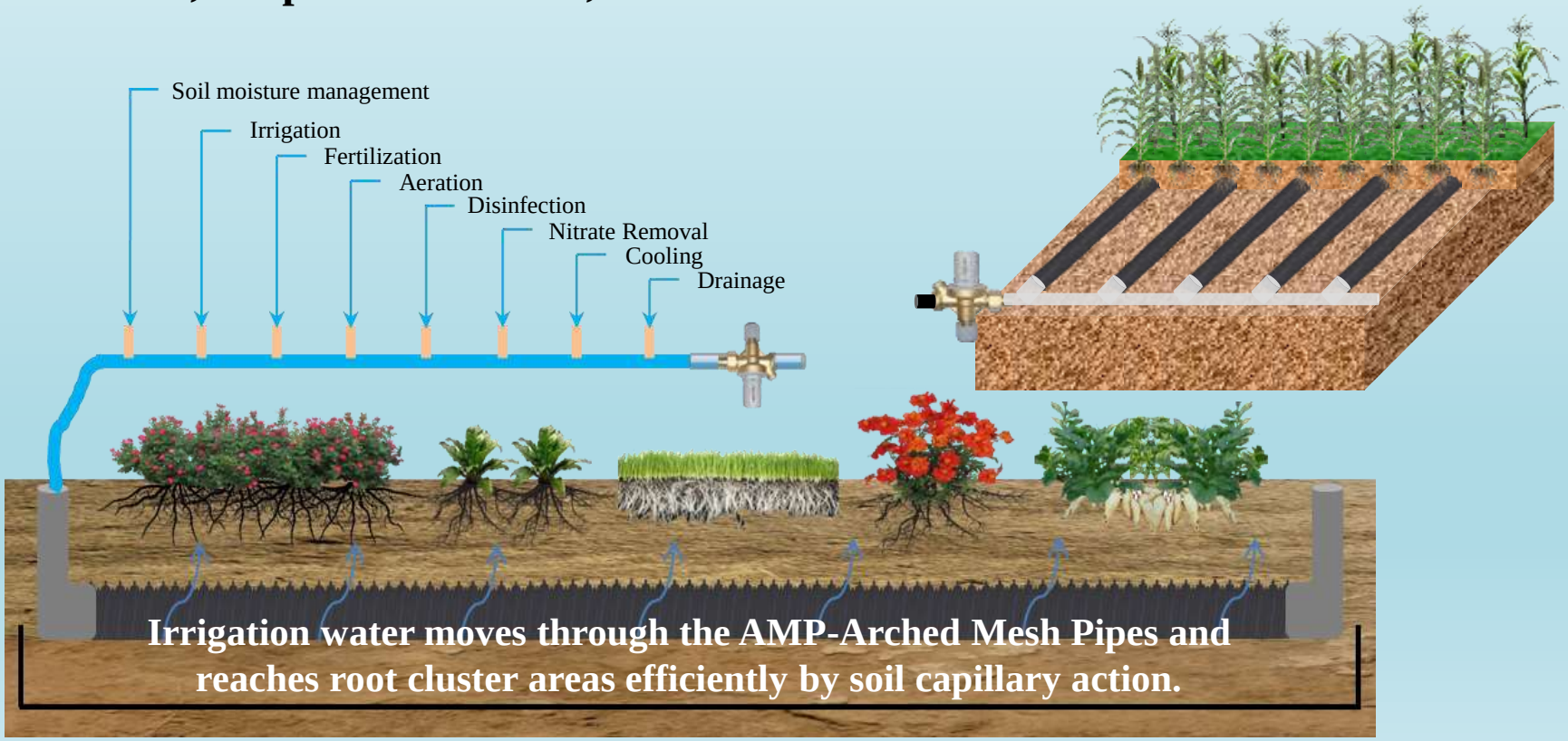
- They are water-efficient ,use between 40 and 50% less water than a conventional garden bed.
- Watering from the bottom up prevents evaporation of surface water
- Harder for weeds to establish as the soil on the surface is drier.
- Very labor efficient, they are self watering, watering is automatic, so it is possible to go away for two or three weeks at a time without your garden bed drying out.
- Can be watered by a low pressure water system, meaning it can be directly connected to a water tank without the use of a pressure pump.
- They provide a lot of drainage in the event of a large downpour.
- Large reservoir of water reduces need for frequent watering.
- Evaporation reduced to a minimum with thick mulching.
- Harder for weeds to establish as the mulch covered surface is drier.
- Improve soil life. Nutrient is not lost to the subsoil when the garden bed is watered.
- No salting. No evaporation means no minerals left behind in the soil.
- No permanent stale water, so no mosquito larvae or anaerobic conditions.

Low Impact Development-Stormwater Management

Green Infrastructure Program

Create a comfortable environment for the growth of plants

During a rain shower or irrigation application, the soil pores will fill with water, soil moisture content 20~30% in volume. Irrigation water moves through the AMP-Arched Mesh Pipes and reaches root cluster areas efficiently by soil capillary action. Irrigation water requirements and irrigation manpower are reduced, Plant growth increase are equivalent to reduce in fertilizer.
AMP-Arched Mesh Pipe provides soil moisture management, drainage, irrigation, fertilization, temperature control, disinfection and other functions.



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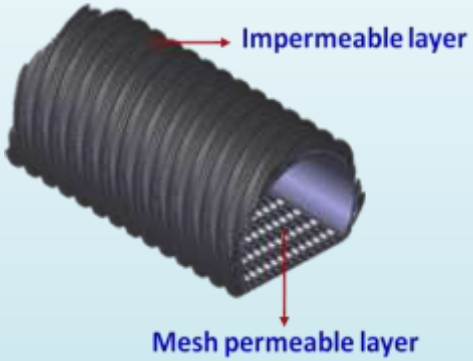
Low Impact Development-Stormwater Management

Green Infrastructure Program

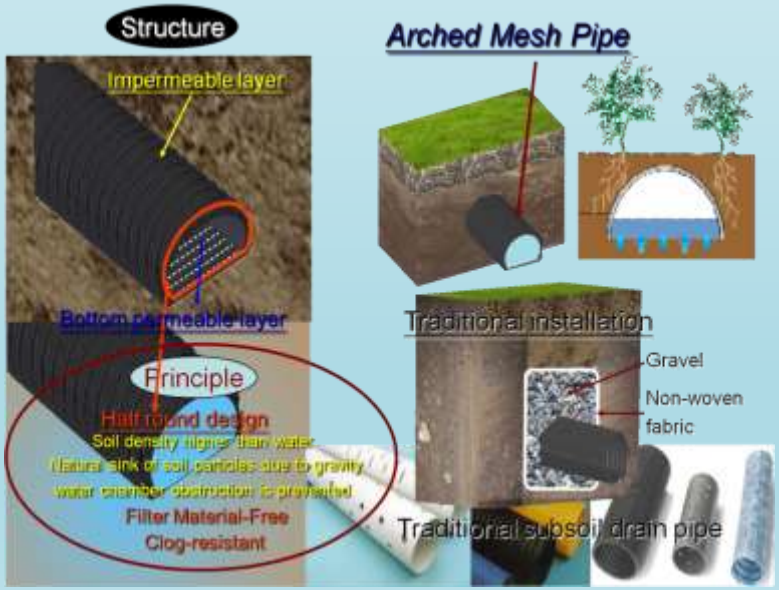
AMPS-Arched Mesh Pipe System



AMP-Arched Mesh Pipe Structure

What Is the AMP-*Arched Mesh Pipe* ?

Subsoil drainage pipe is used to remove excess ground water. AMP-Arched Mesh Pipe is a new type of drainage pipe that remains clog-free without additional filter material required.



AMP-Arched Mesh Pipe Description

Traditional subsoil drainage pipe installations require additional excavation to surround the pipes with gravel to provide sufficient drainage and the addition of filter material to prevent pipe blockages.

"AMP-*Arched Mesh Pipe*" is impermeable on the upper arched surface and permeable on the lower flat surface. Soil particles sink through the permeable layer due to the gravity rather than traveling with the water in the aqueduct.

"AMP-*Arched Mesh Pipe*" remains clog-resistant and prevents drainage pipe blockage without gravel installation or filter coatings required.

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Low Impact Development-Stormwater Management

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Arched Mesh Pipe System-Application

Landscaping

Underground Irrigation and Drainage

Parking Lot、Driveway

Underground Irrigation and Drainage

Green Roof

Underground Irrigation and Drainage

Golf Course

Underground Irrigation and Drainage

Sportfield

Underground Irrigation and Drainage

Agriculture

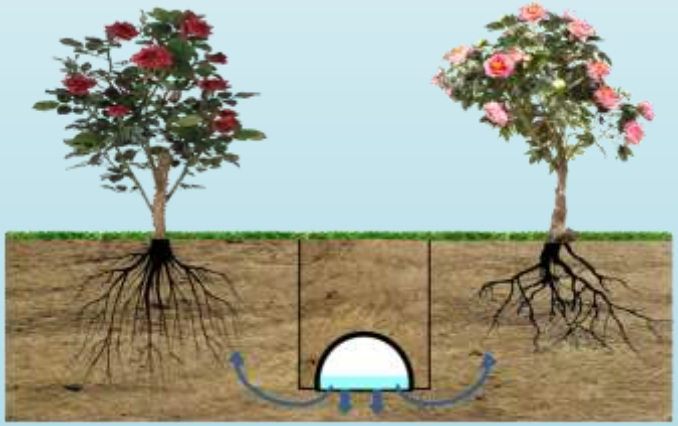
Underground Irrigation and Drainage

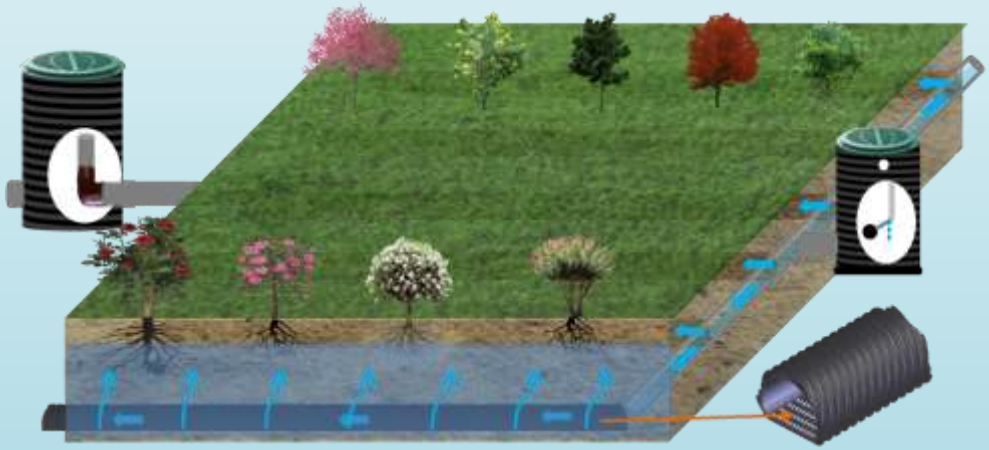
Low Impact Development-Stormwater Management
Green Infrastructure Program
Arched Mesh Pipe System-Application

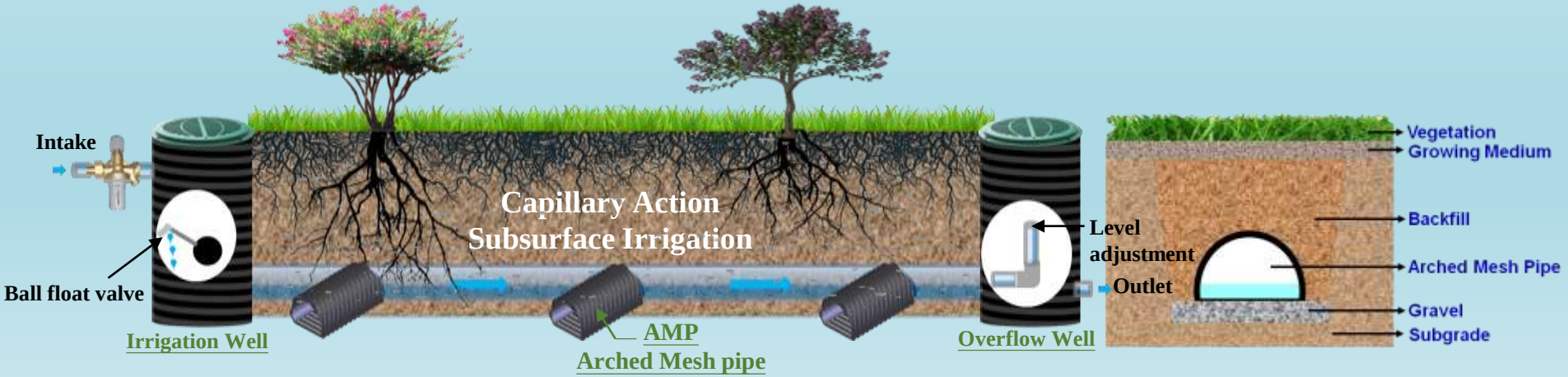
ECO-MESH

AMPS - Landscaping underground irrigation & drainage

AMP-Arched Mesh Pipe combines efficient irrigation and drainage systems using non-pressurized, gravity driven, capillary physics of the growing medium via the direct interface of the *AMPS* subsurface irrigation pipe that remains clog resistant and material free.

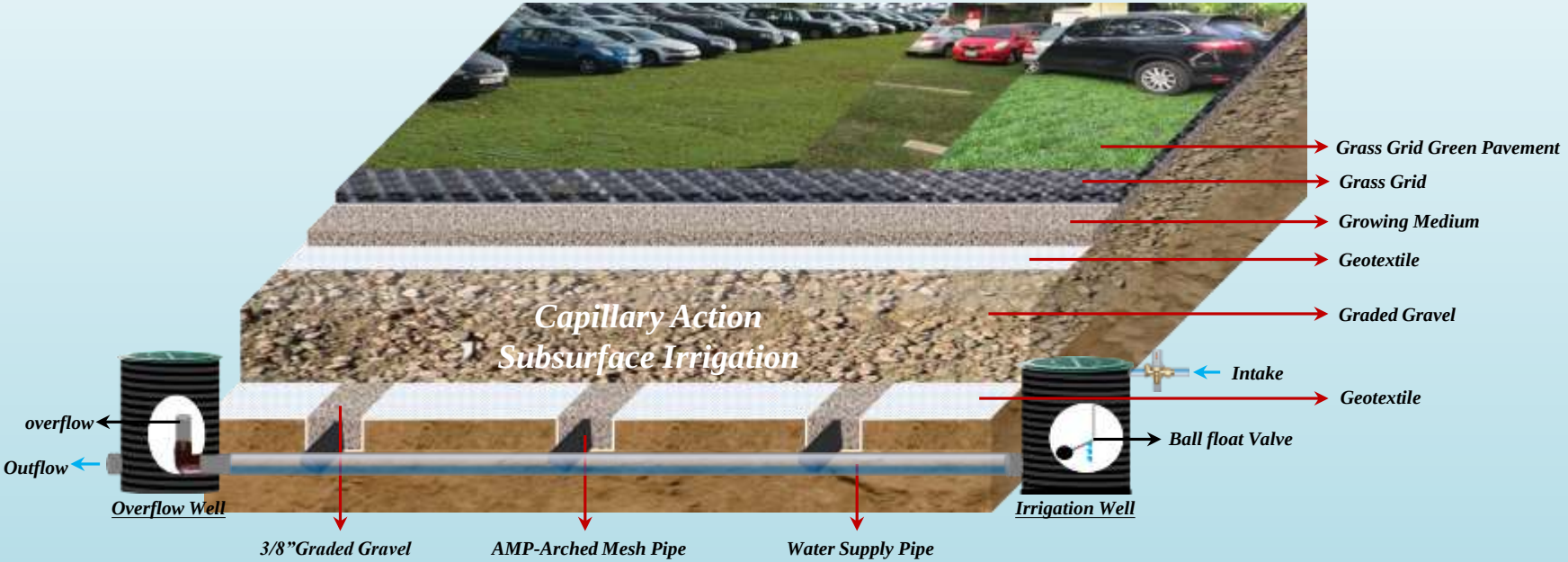






Low Impact Development-Stormwater Management
Green Infrastructure Program
Arched Mesh Pipe System-Application

Clay Soil Layer-Green Pavement Irrigation and Drainage



AMPS **Water Solutions are water management solutions specializing in water conservation and provide efficient drainage and subsurface wicking irrigation.**

AMPS **provides these benefits using clog free subsurface pipe that does not require additional filter material but absorbs and distributes water to the growing medium using non-pressurized, gravity driven, capillary physics.**

Low Impact Development-Stormwater Management
Green Infrastructure Program
Arched Mesh Pipe System-Application

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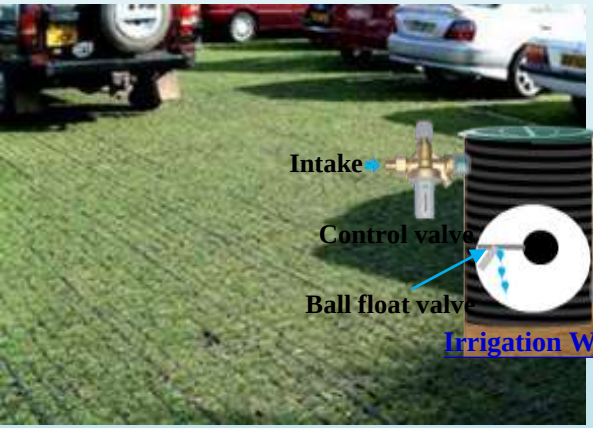
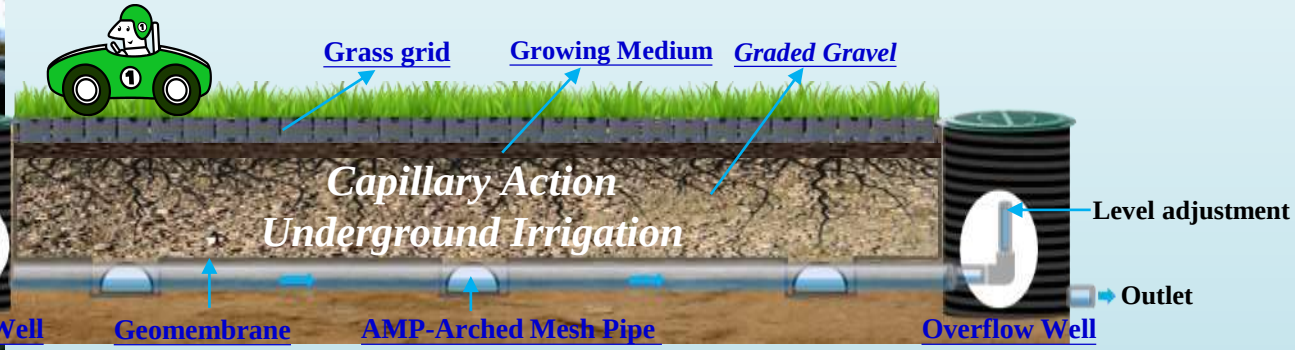
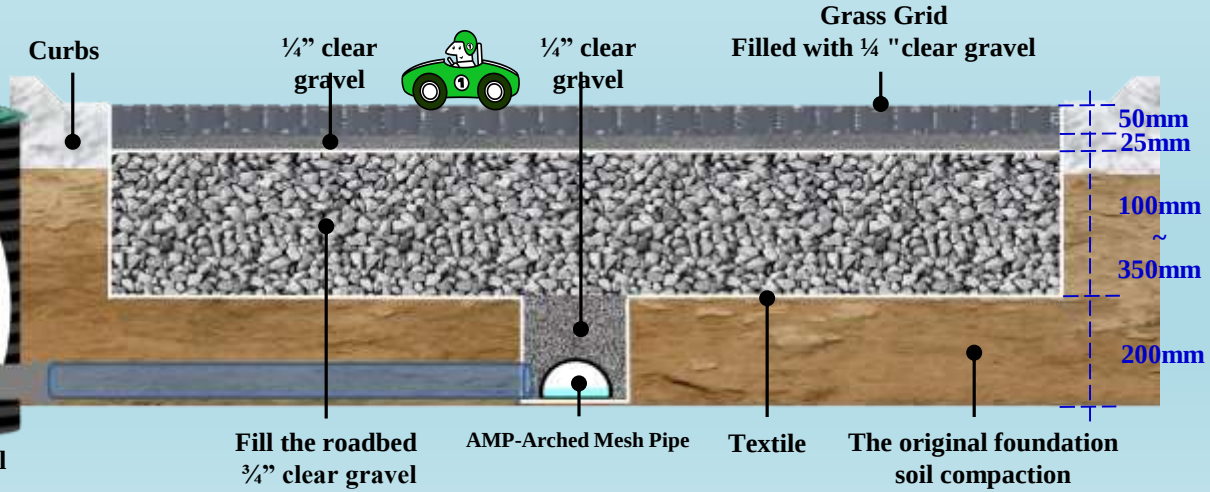
AMPS-Parking lot, Driveway irrigation and drainage





AMPS-parking, driveway green pavement



AMPS-parking, driveway gravel pavement

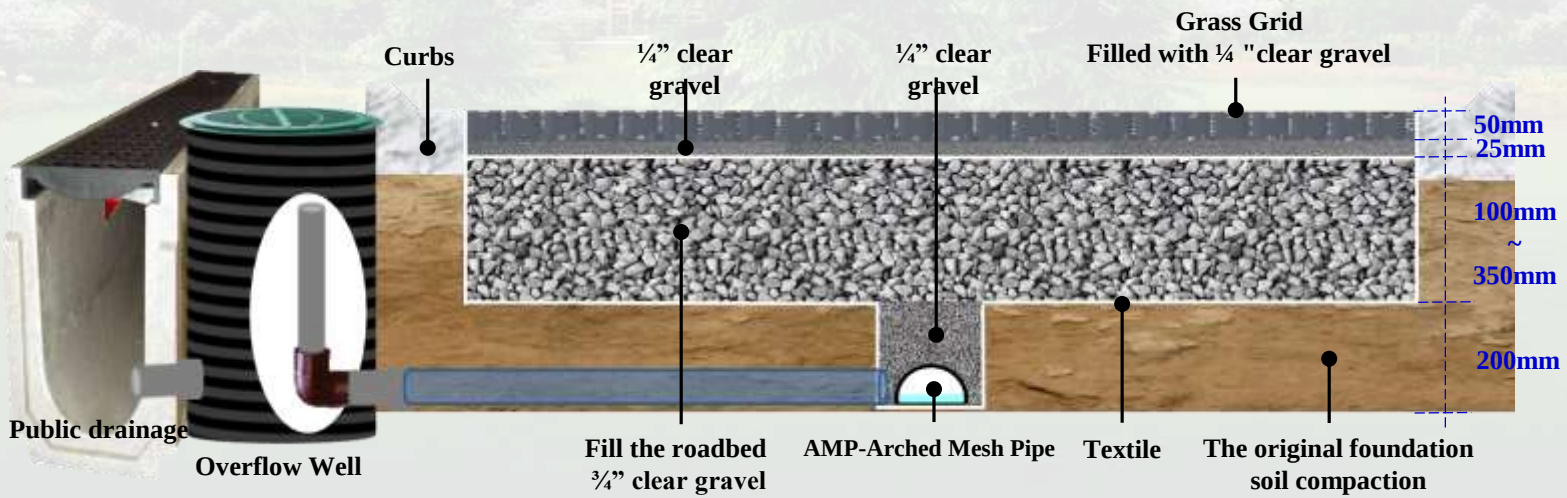
ECO-MESH

Low Impact Development-Stormwater Management

Green Infrastructure Program

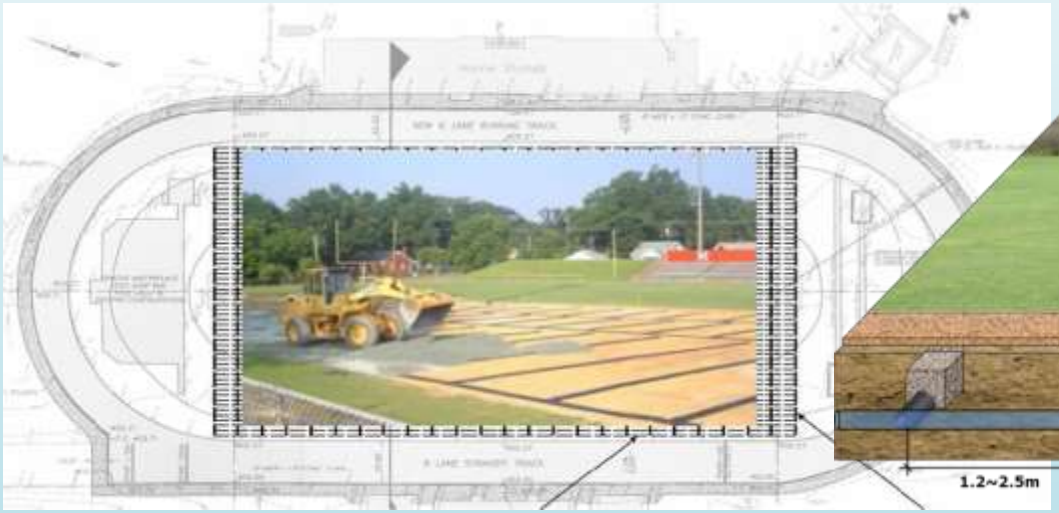
Grass Grid Rain Gravel Pavement

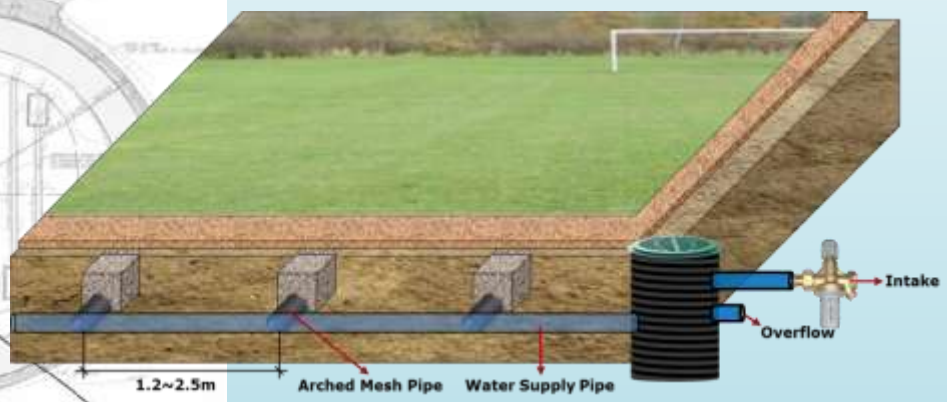
Stormwater Infiltration、Detention、Retention 、Slow runoff and Drainage



Low Impact Development-Stormwater Management
Green Infrastructure Program
Arched Mesh Pipe System-Application

AMPS-Sport Field Underground Irrigation & Drainage





ECO-MESH

Low Impact Development-Stormwater Management

Green Infrastructure Program

Arched Mesh Pipe System-Application

AMPS-Roof Garden Underground Irrigation & Drainage

Low Impact Development-Stormwater Management
Green Infrastructure Program
Arched Mesh Pipe System-Application

ECO-MESH

AMPS-Golf Course Underground Irrigation & Drainage

Bunker Drainage

Bunker Slope Irrigation and Drainage

Green Irrigation and Drainage

Fairway, tee Irrigation and Drainage

Green parking Irrigation and Drainage

Horticulture Garden Irrigation and Drainage

Trees vertical irrigation

Agriculture
Underground Irrigation & Drainage System

- Irrigation water requirements are reduced by 50~85%
- Plant growth increase are equivalent to a 40% increase in fertilizer.
- Save irrigation manpower by 50%
- Soil ventilation
- Water high efficiency