



**ECO-MESH
Water Solution**

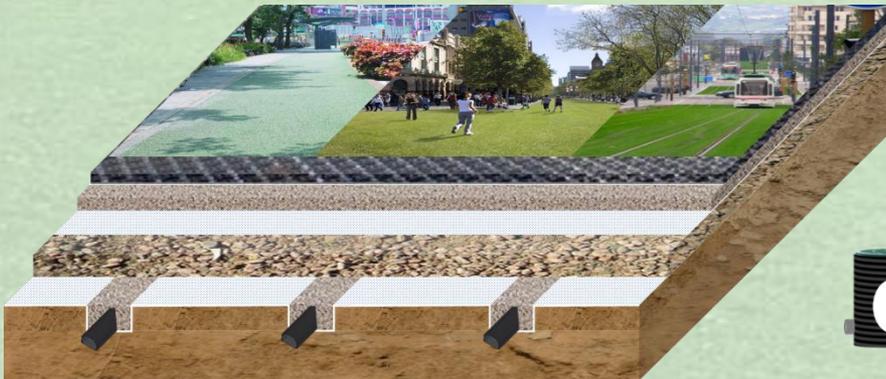
Low Impact Development

Stormwater Management and Solution

Subsurface Conservation, irrigation and Drainage System

Grass Grid Permeable Green Pavement

ECO-MESH is the Simple & Economical Solution

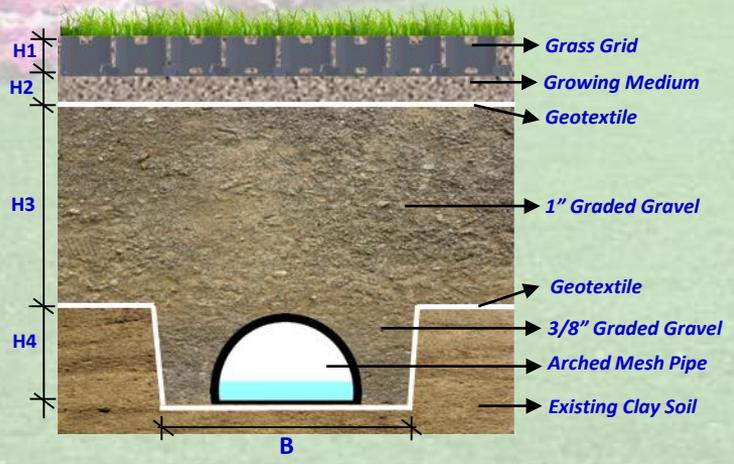
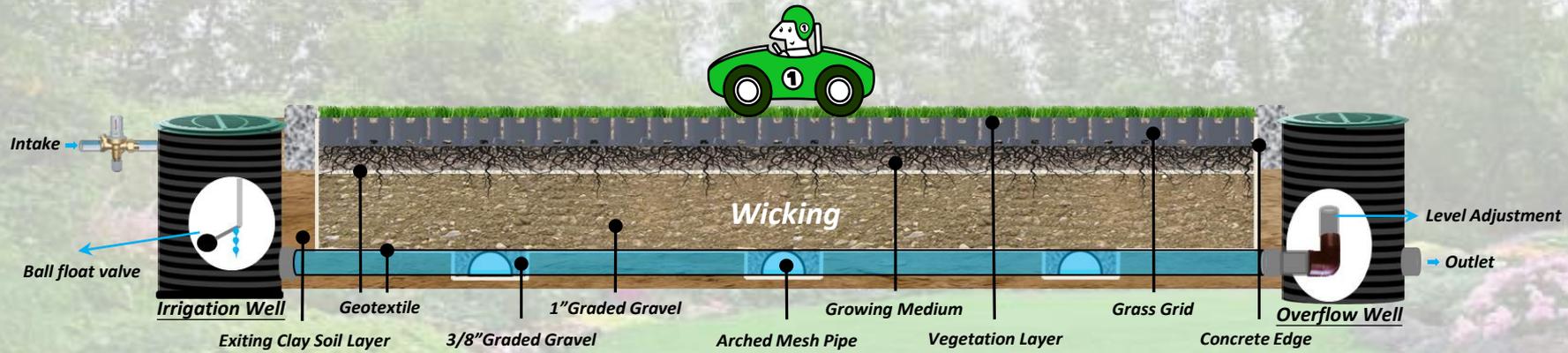


LID-Stormwater Management and Solution

Grass Grid Permeable Green Pavement

Clay Soil Layer Grass Grid Permeable Green Pavement-Design

AMPS-Arched Mesh Pipe System

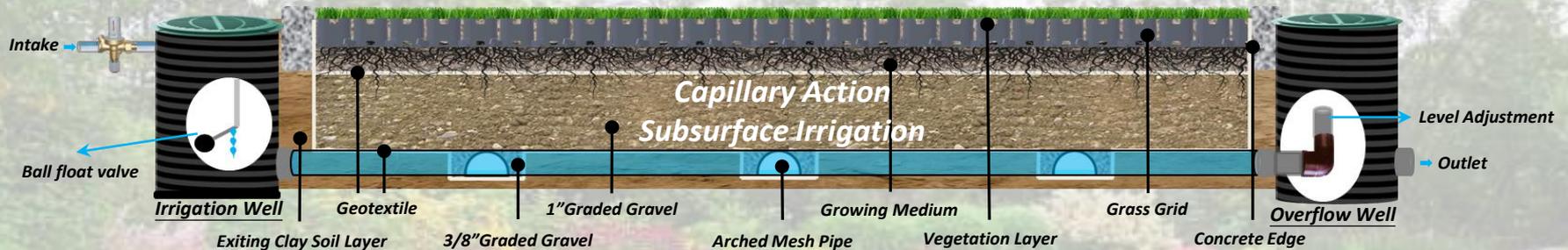


Construction Site	H1	H2	H3	H4	B	D
Sidewalks, bike path	5cm	5cm	10cm	10cm	30cm	250cm
Community parking, driveway	5cm	5cm	20cm	10cm	30cm	250cm
Public parking, driveway	5cm	5cm	30cm	10cm	30cm	250cm
Fire lanes	5cm	5cm	35cm	10cm	30cm	250cm

Arched Mesh Pipe System Subsurface Irrigation and Drainage

Arched Mesh Pipe System (AMPS) - Water Solution

Clay Soil Layer-Green Pavement Irrigation and Drainage System Structure



AMPS-Underground Irrigation & Drainage System

- 「 **Irrigation Well** 」 Water ball float valve to control the water intake .
- 「 **Arched Mesh Pipe** 」 Irrigation water moves through the Arched Mesh Pipes and reaches root cluster areas efficiently by soil capillary action.
- 「 **Overflow Well** 」 Water level regulator to adjust the permeability of the capillary action of underground irrigation water level.
- 「 **Grass Grid** 」 Grass grid load-bearing layer provides a space for grassroots growth, capillary action of underground irrigation, providing load-bearing layer of grass grid lawn growth, roots can grow into the graded gravel layer.





Arched Mesh Pipe System Subsurface Irrigation and Drainage

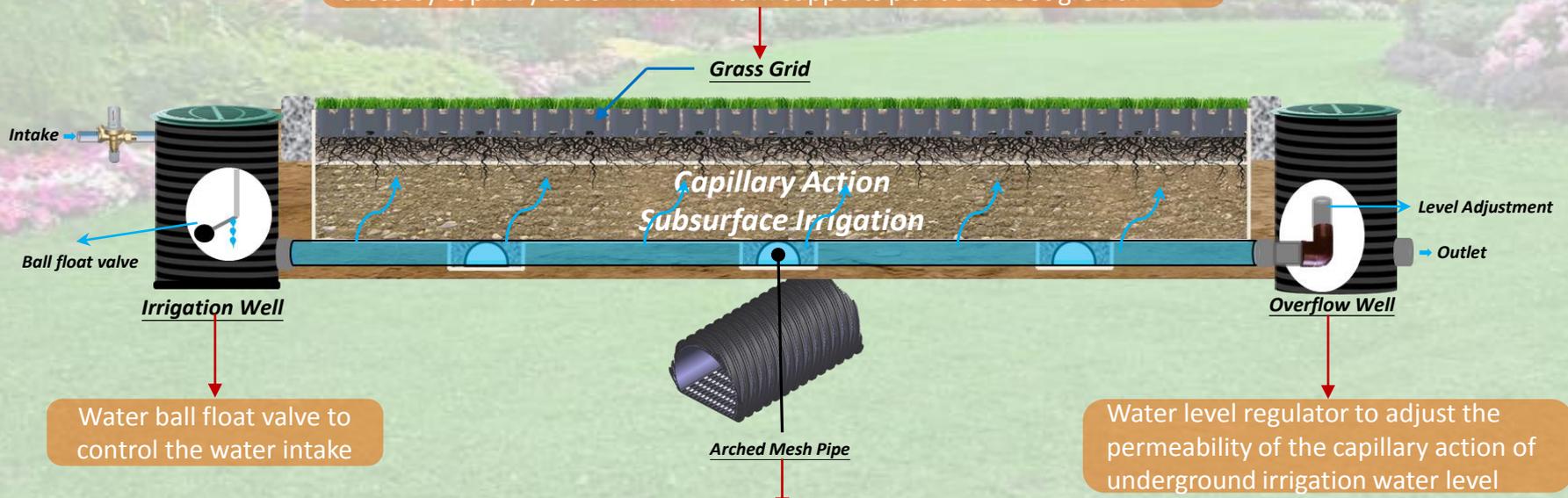
Arched Mesh Pipe System (AMPS) - Water Solution

Clay Soil Layer-Green Pavement Irrigation and Drainage System functions

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.

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 to control the water intake

Irrigation water moves through the Arched Mesh Pipes and reaches root cluster areas efficiently by soil capillary action.

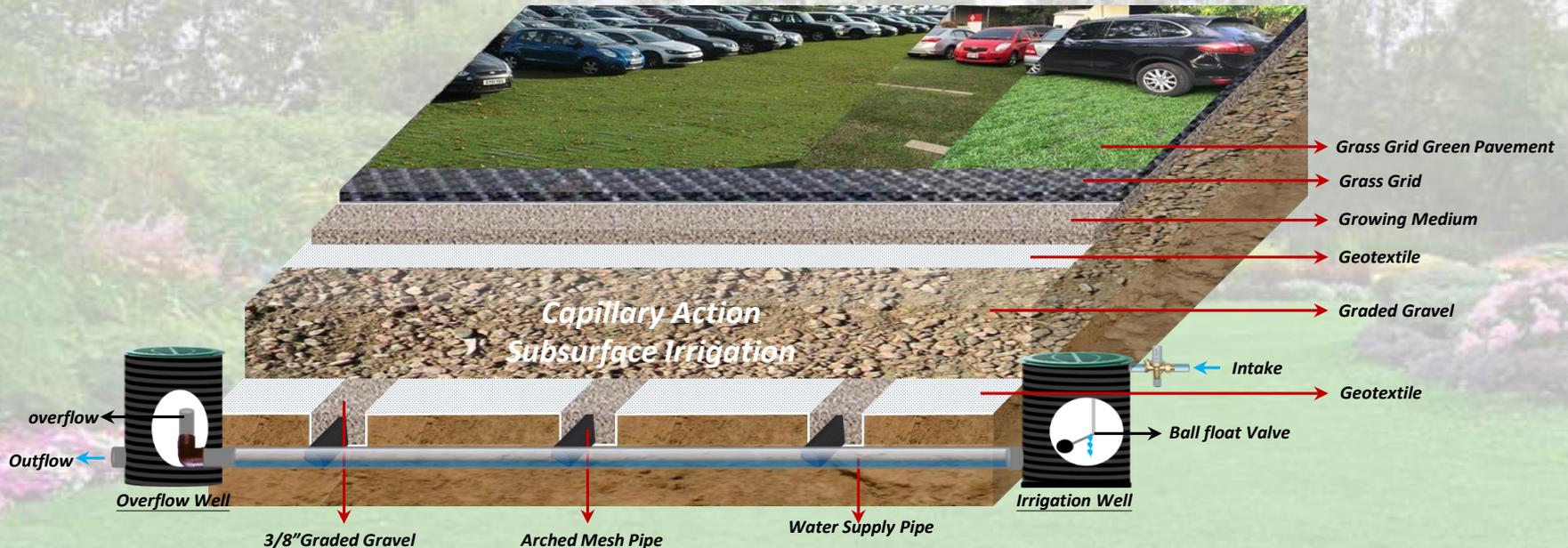
Water level regulator to adjust the permeability of the capillary action of underground irrigation water level



Arched Mesh Pipe System Subsurface Irrigation and Drainage

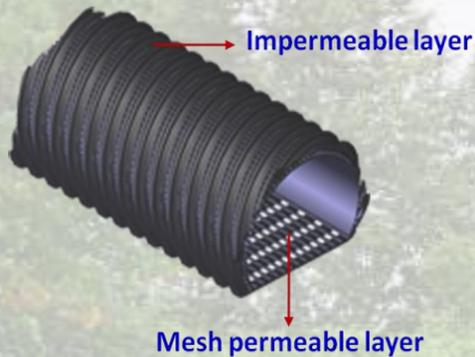
Arched Mesh Pipe System (AMPS) - Water Solution

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.

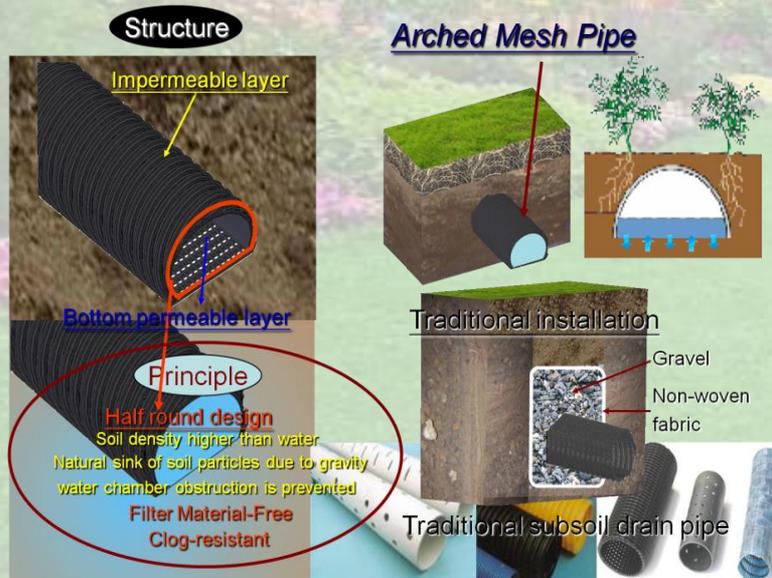
AMPS provides these benefits using clog free subsurface pipe that does not require additional filter material but absorbs and distributes water to the growing medium using non-pressurized, gravity driven, capillary physics.



Arched Mesh Pipe Structure

What Is the *Arched Mesh Pipe* ?

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



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

“Arched Mesh Pipe” is impermeable on the upper arched surface and permeable on the lower surface. Soil particles sink through the permeable layer due gravity rather than traveling with the water into the aqueduct. *“Arched Mesh Pipe”* remains clog resistant and prevents drainage pipe blockage without requiring gravel installation or filter coatings.

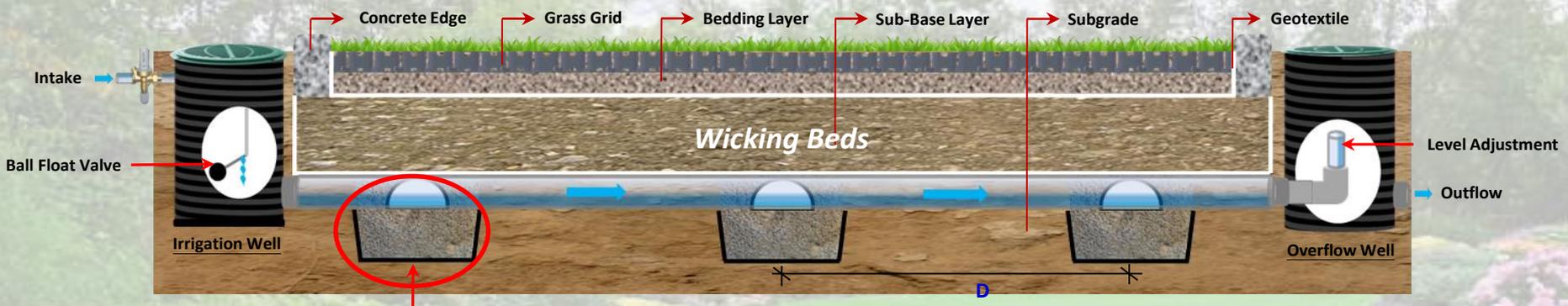
Arched Mesh Pipe Description

LID-Stormwater Management and Solution

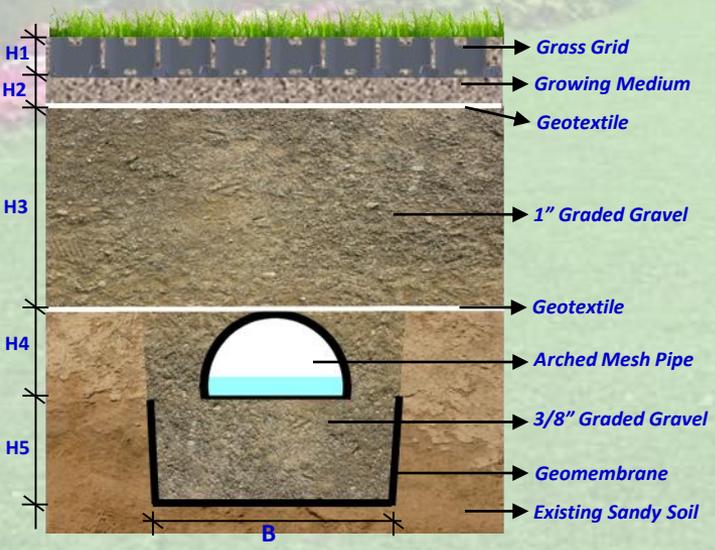
Grass Grid Permeable Green Pavement

Sandy Soil Layer Grass Grid Permeable Green Pavement-Design

WCID-Water Conservation, Irrigation and Drainage System



WCID-Water Conservation, Irrigation and Drainage System

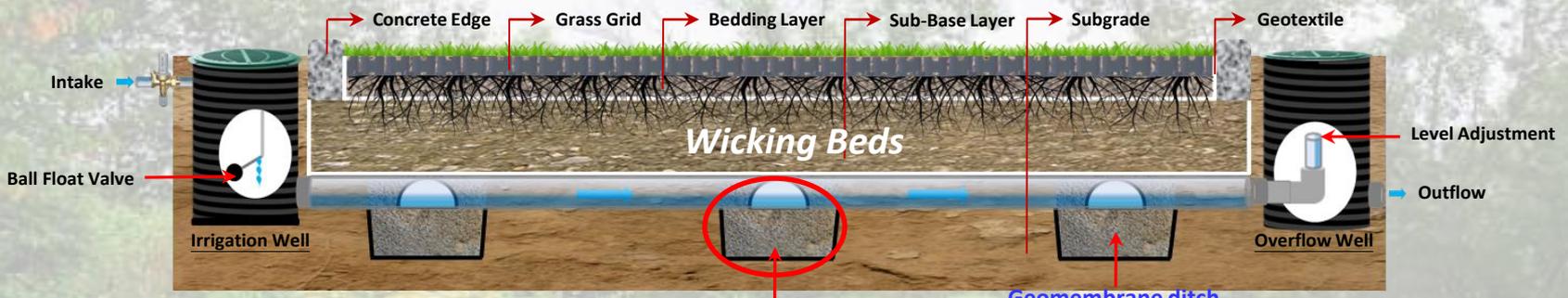


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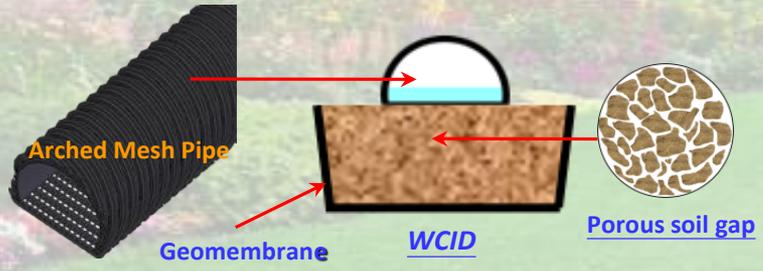
LID-Stormwater Management and Solution

WCID-Water Conservation, Irrigation and Drainage System

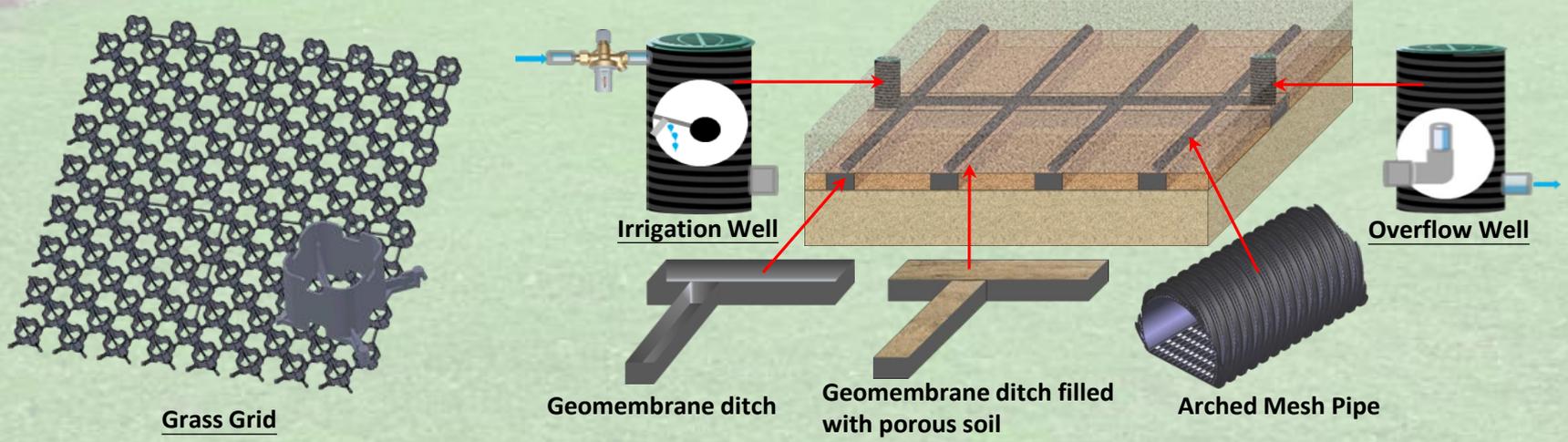
WCID-grass grid permeable green pavement application - Structure



WCID-Water Conservation, Irrigation and Drainage System



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



LID-Stormwater Management and Solution

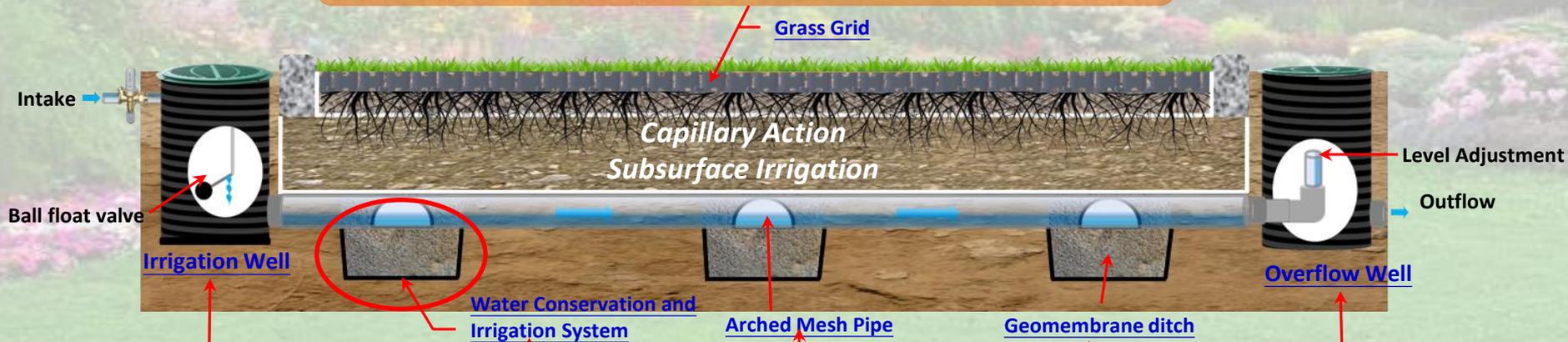
WCID-Water Conservation, Irrigation and Drainage System

WCID-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.

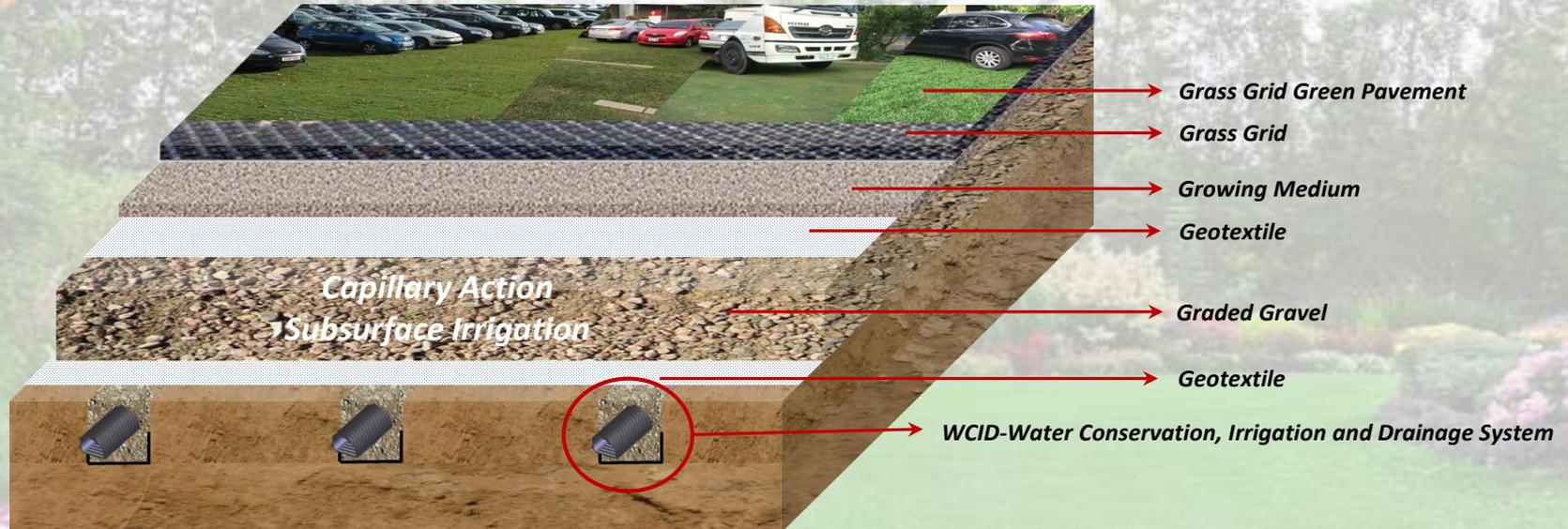
Ball float valve is to control the soil saturated and automatic irrigation water supply.

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

LID-Stormwater Management and Solution Grass Grid Permeable Green Pavement

Sandy Soil Layer-Green Pavement Irrigation and Drainage



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 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.

Arched Mesh Pipe exclude oversaturated soil water and high water table.

Arched Mesh Pipe install without filter coating, clog-resistant.

Arched Mesh Pipe high efficiency drainage, the soil is not discharged.

Easy to install, maintenance and management is simple, It is the best water conservation, irrigation and drainage systems for green parking space and green driveway .

Arched Mesh Pipe System Subsurface Irrigation and Drainage

WCID –Water Conservation, Irrigation and Drainage System

Green Pavement Conservation, Irrigation and Drainage System

The subgrade

The sub-grade is at the bottom of the profile. This is the layer after removal of the existing soils to the required depth which the ability of the existing soils to handle imposed loadings. The sub-grade could finish up 10cm~50cm below the existing surface. It is advisable that the sub-grade is compacted by roller or other method and an even working surface created.

The sub-base layer

On top of the sub-grade a sub-base layer needs to be installed. This sub-base layer needs to be stable and porous graded gravel. The sub-base needs to be compacted to the required depth. At the bottom and the top of the sub-base a geotextile separation layer needs to be installed.

Bedding Layer

On top of the geotextile covering the graded gravel sub-base construction, a layer of approximately 5cm of 60/40 root-zone sandy soil should be placed and compacted. This bedding layer should be no less than 35mm deep to allow good grass root structure to grow and no more than 50mm deep after compaction to avoid possibly compromising the structural integrity of the construction profile. The Root-zone layer will need to be leveled off to provide an even surface for the grass grid to be laid.

Laying the grass grid

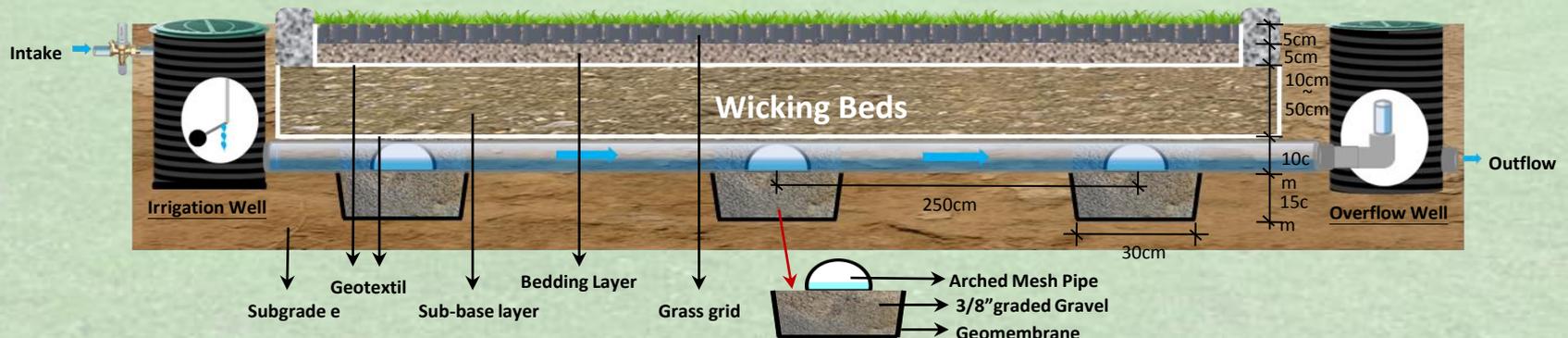
Grass grid should be laid from above onto the prepared rootzone bedding layer, working from one corner laying adjacent paving grids into their connectors. Grass grid plastic paving grids can be cut on-site using a handsaw or other mechanical saw to match site / client requirements, shapes and obstacles.

Filling the Pavers

Grass grid should be filled nearly to the top with the root-zone leaving a gap of approximately 5mm off the top. This layer can be brushed in and not compacted. Overfilling is likely to cause unnecessary compaction of the root-zone when trafficked leading to bad retention of the grass layer. Grass grid grass paver filled surface can then be seeded, fertilized and watered in if necessary. Rolling in turf is not advised.

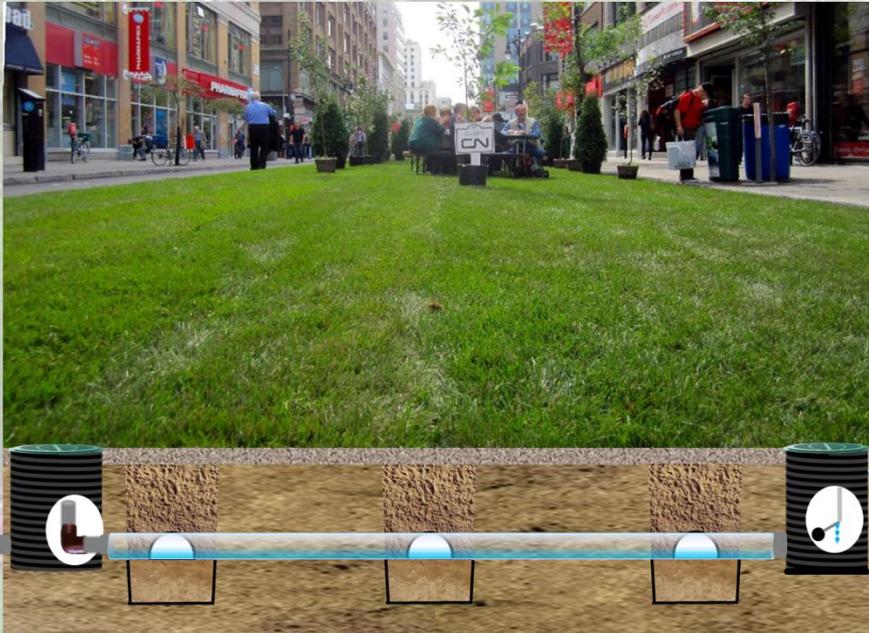
Wicking Bed

A wicking bed is a raised bed with a reservoir built in to provide water for the plants. A waterproof liner is placed in soil, and graded gravel is added inside along with an arched mesh pipe. Then weed block fabric is placed over this to form the reservoir. Soil is then put on top of this, and as the plants grow the water wicks up into the soil. It not only is an excellent way to save water but encourages the plants to send their roots down farther.



LID-Stormwater Management and Solution

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.

LID-Stormwater Management and Solution

Grass Grid Permeable Green Pavement

Green parking lane application examples

