ORANGE COUNTY COASTKEEPER

Low-Impact Development

You can do it anywhere

Mission Statement

"Our mission is to protect and preserve Orange County's marine habitat and watershed through education, restoration, and enforcement".

Orange County Coastkeeper LID Demonstration Project

- Two Year Project funded by MWD Innovative Conservation Grant
- Retrofit at least ten homes with LID elements of owners choosing
- Goal of water savings/pollution reduction
- Provide homeowners support throughout the installation process

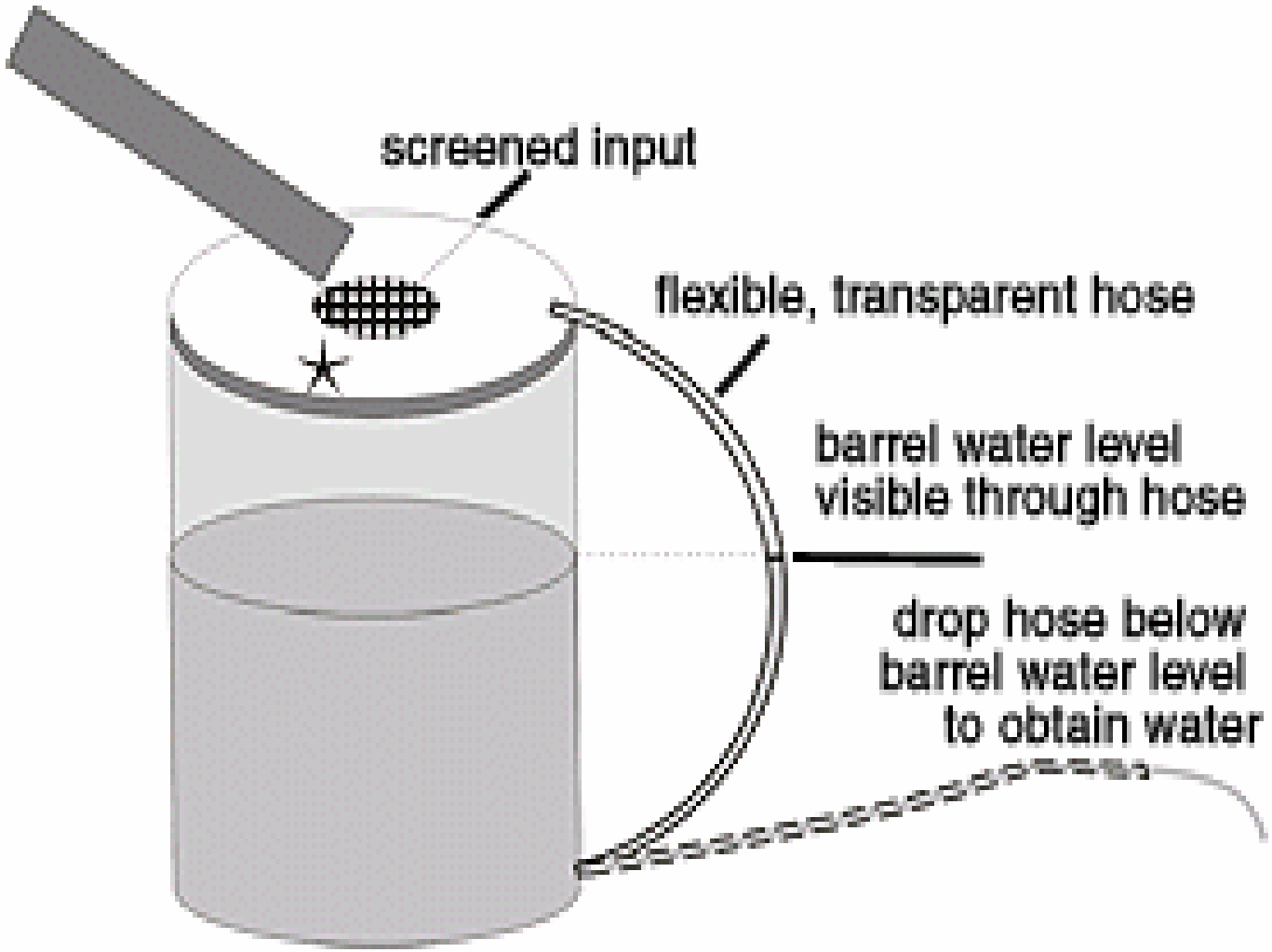
Tasks

1. Review relevant local ordinances and regulations to identify any that impede capture and infiltration of stormwater.
2. Identify candidate residential sites in Orange County for BMP implementation
3. Assist homeowners in identifying and selecting, cost-effective LID BMP retrofits for each site.
4. Assist the land-owner in soliciting bids from qualified contractors to perform the work.
5. Subsidize installation of the BMP retrofit
6. Collect runoff, water quality, water usage, groundwater recharge, and cost data from each site.
7. Analyze data to produce (a) documentation of water savings due to decreased water use and increased infiltration to restore groundwater(b) A rebate/incentive formula (c) recommendations for revision of relevant stormwater regulations

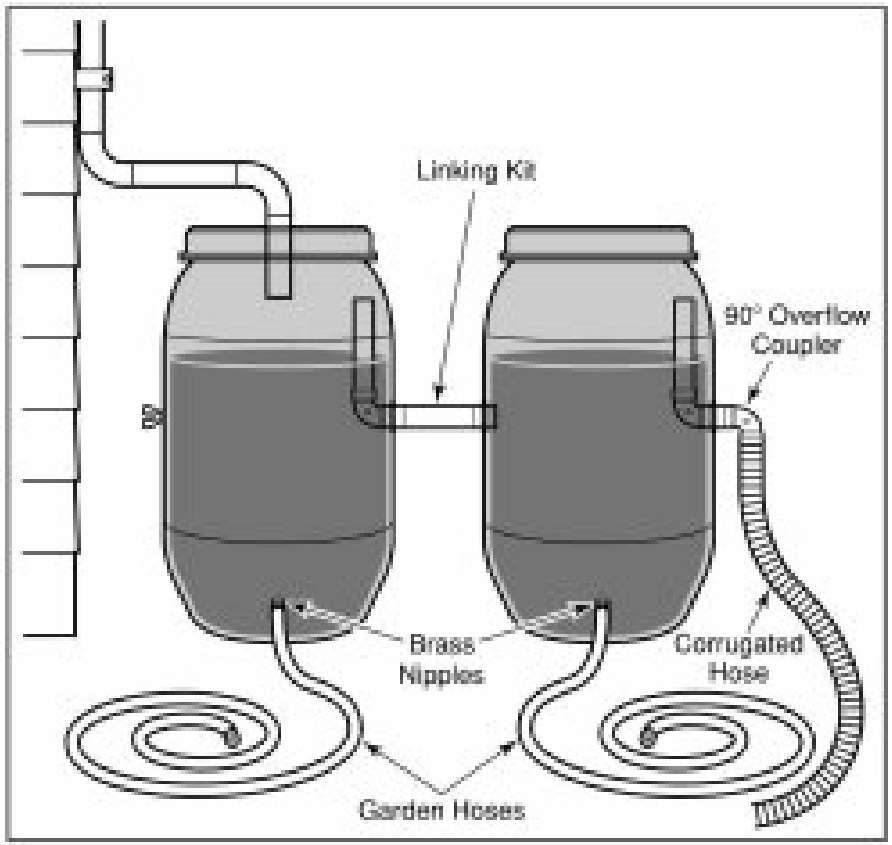
Rain Barrels and Cisterns

- Collect rainwater from rooftops, driveways & patios
- Lower household water consumption.
- A source of water during dry periods

Basic Rain Barrel Design

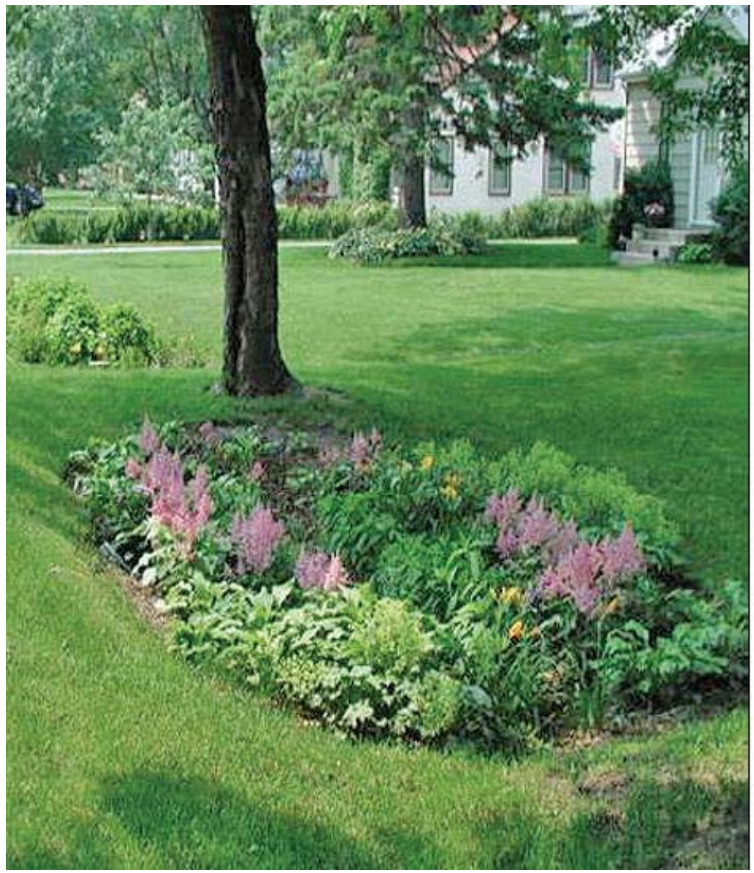


Multiple Water Barrels




Kaveri

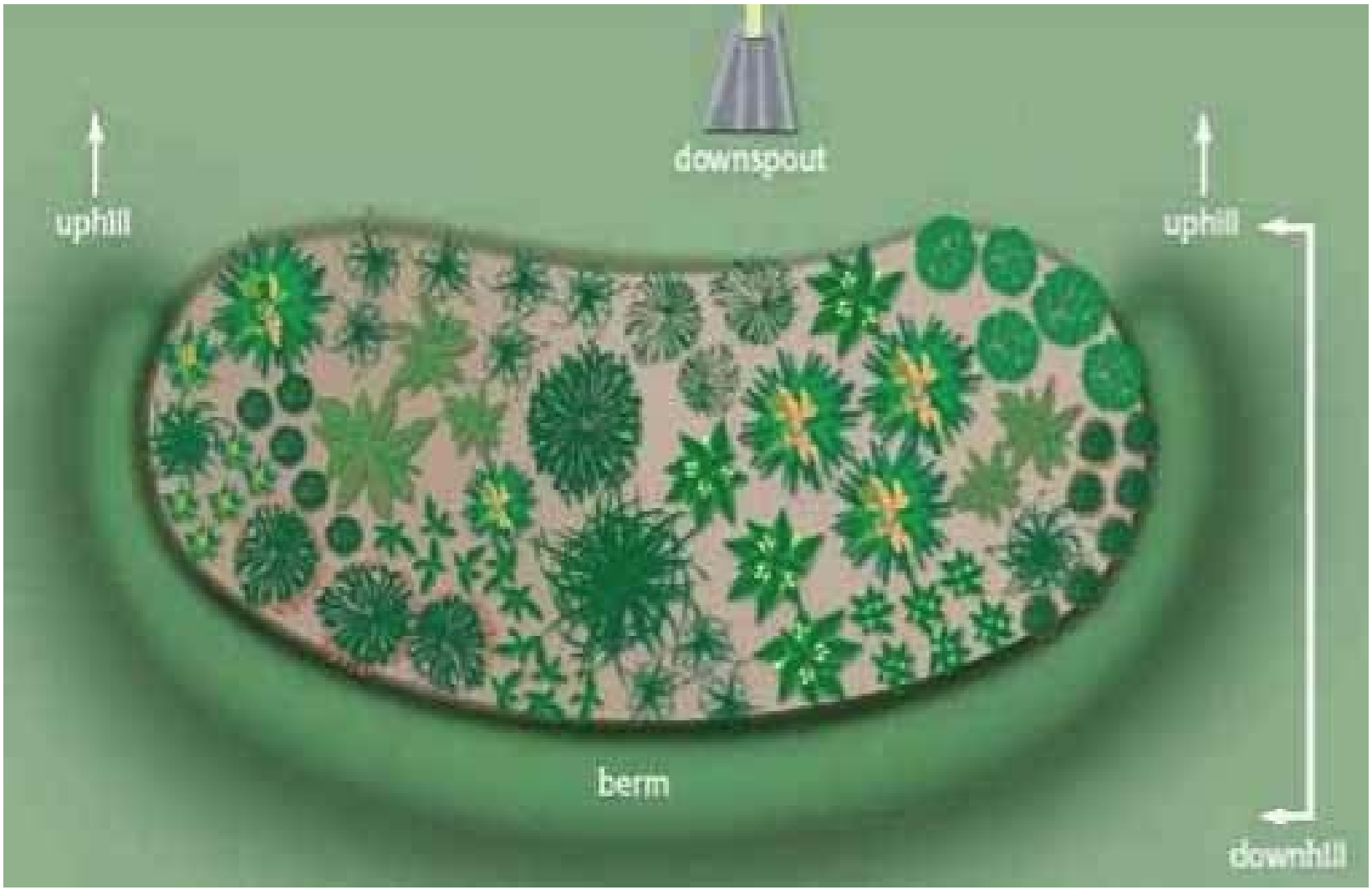
Rain Gardens



- Capacity to treat and store runoff
- Affordable
- Easy to design
- Replicates the natural water cycle
- Low maintenance once established

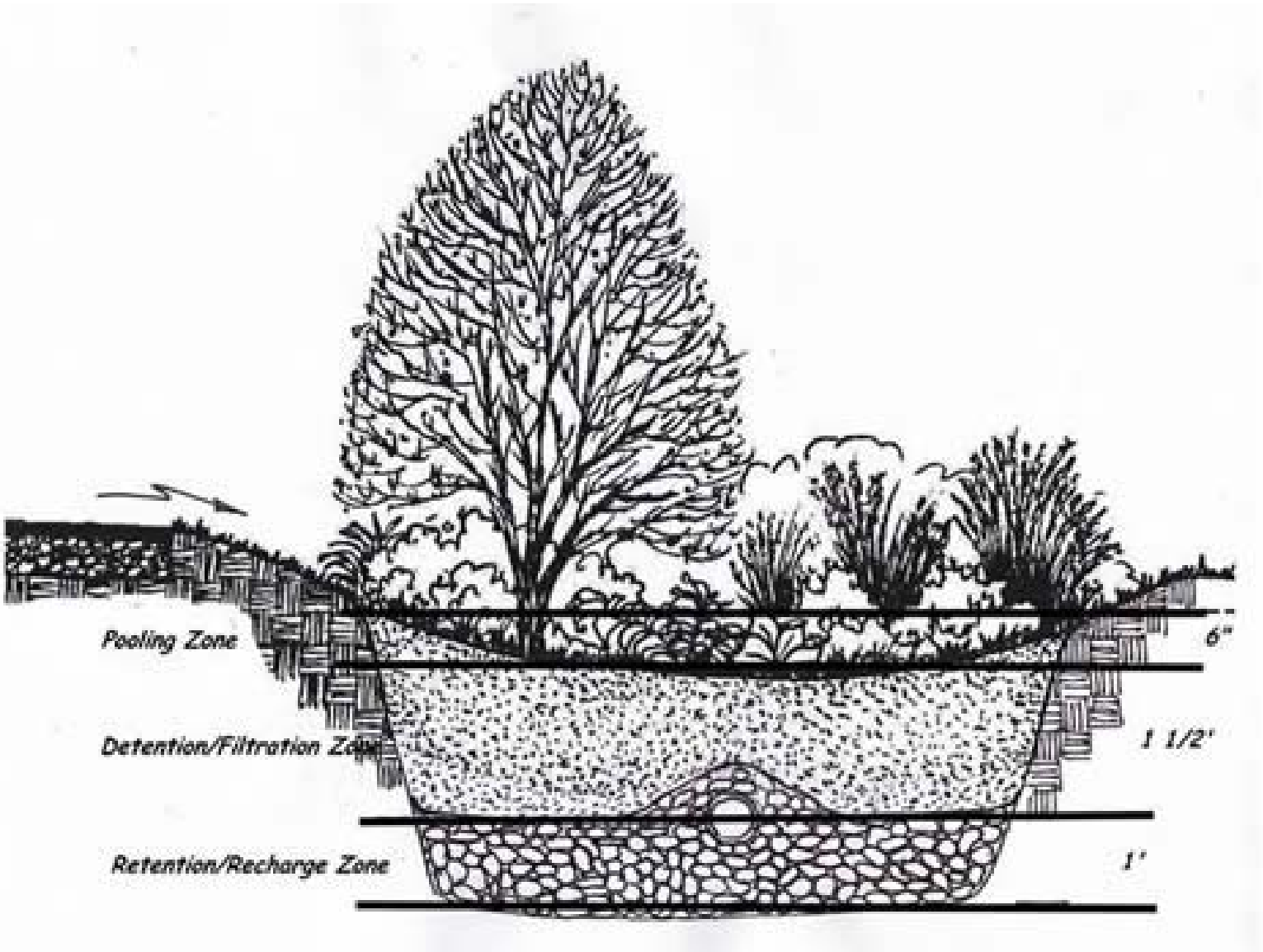
Residential

Landscaping


downspout
uphill
uphill
berm
downhill

Planter box detention tank

Residential tank

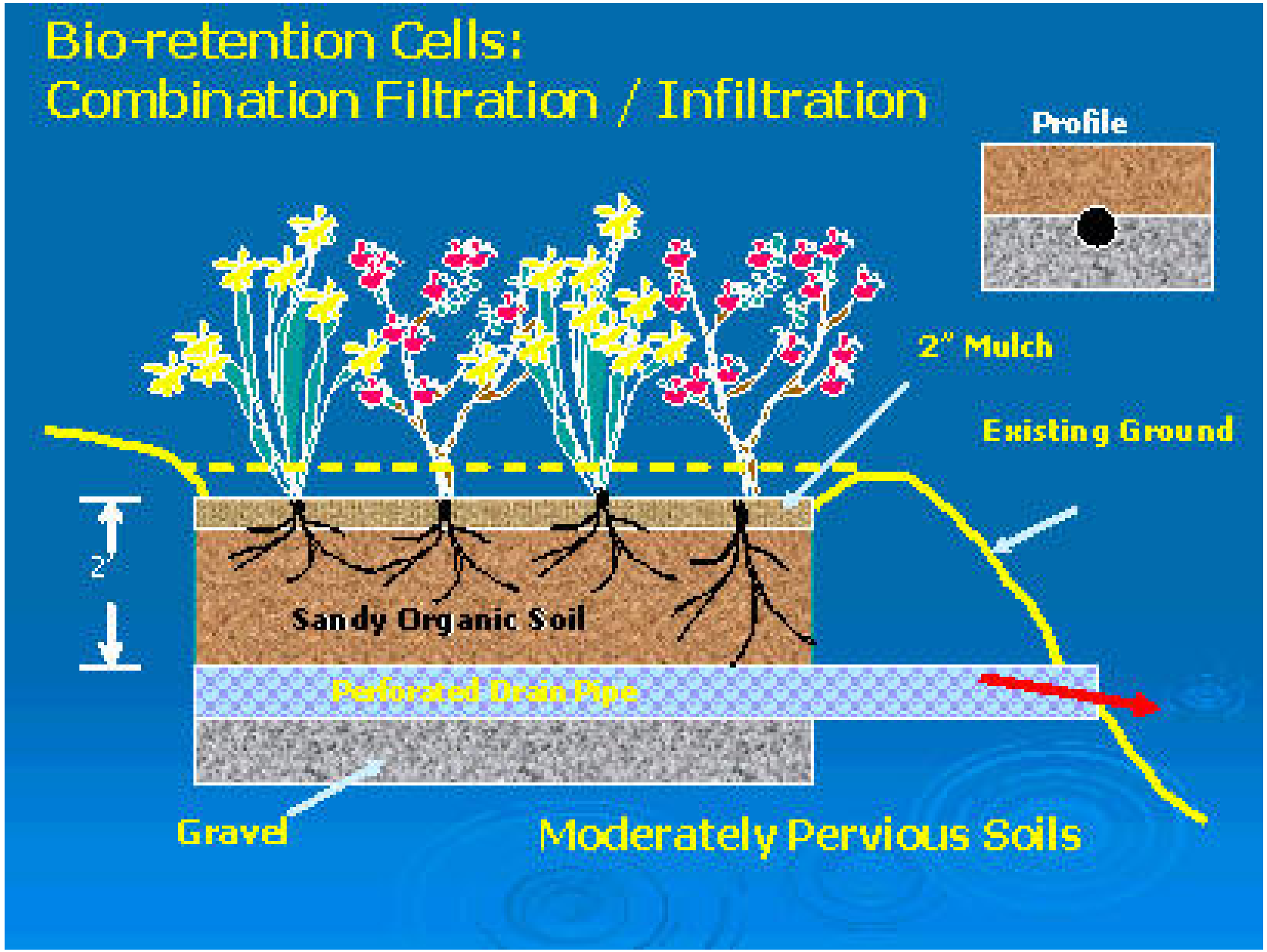

Pooling Zone
6"
Detention/Filtration Zone
1 1/2'
Retention/Recharge Zone
1'

Bio-Swales & Berms

- Filters out roadway pollutants
- Can be installed almost anywhere
- Reduces storm runoff
- Covered with vegetation or gravel

- Raised areas used to direct water into swales

Bio-retention Cells:
Combination Filtration / Infiltration



Mulches

- Good for low traffic areas
- Cost effective & readily available
- Variety of mulch options: pebbles, barks, gravel

Parks

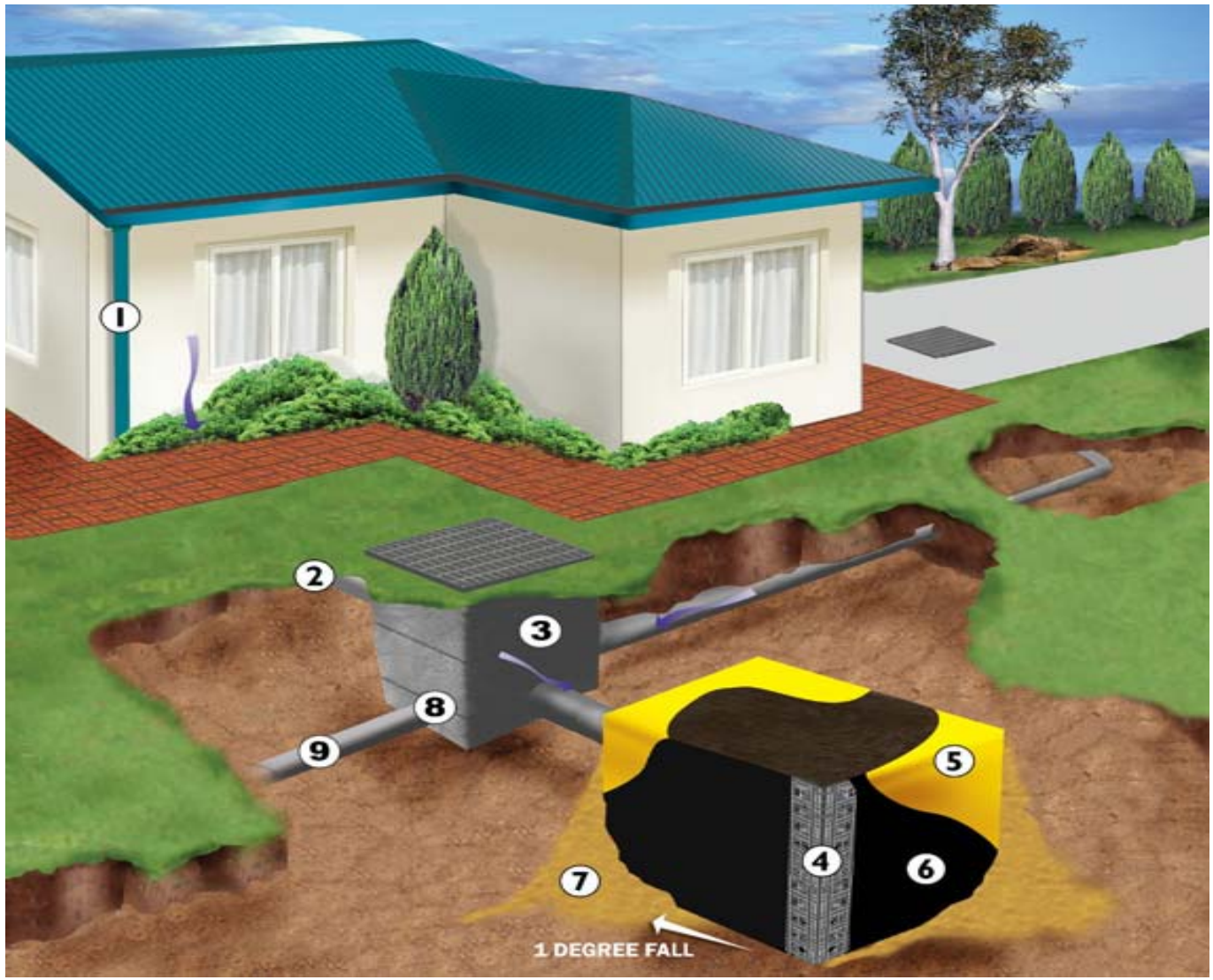
Playgrounds

Residential

Business

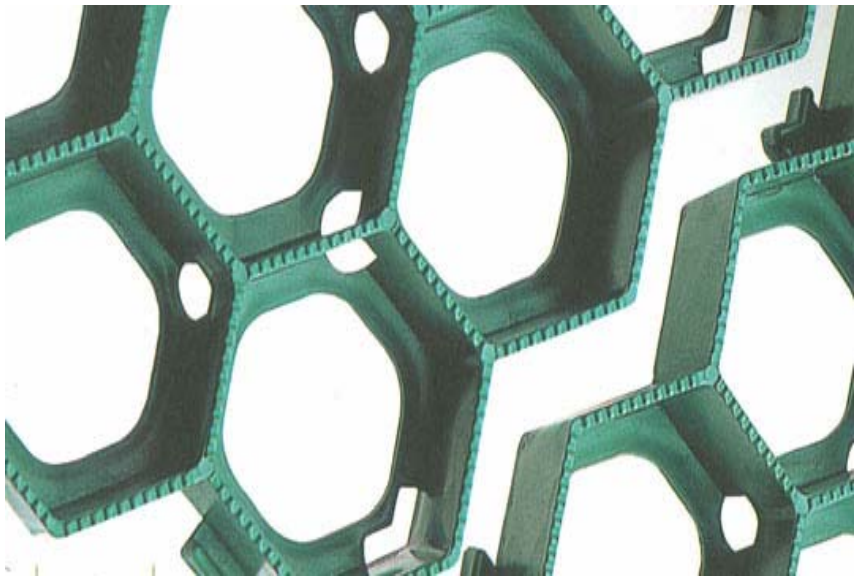
Storm water storage Tanks

- Removes pollutants
- Subsurface location
- Effective in any soil condition


1
2
3
4
5
6
7
8
9
1 DEGREE FALL

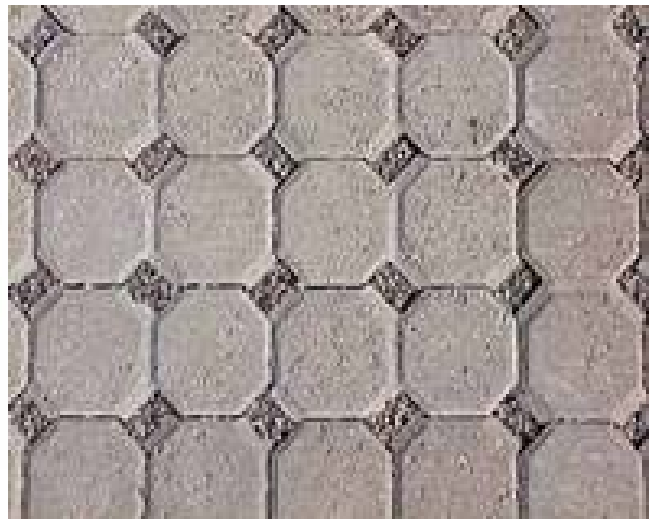

Filtration Unit
Geotextile
Rainwater Harvesting Tank
Impermeable Liner

Permeable Pavers



- Reduce stormwater runoff leaving parking lots & driveways
- A decrease pollutants reaching surface waters
- Recharge & storage of groundwater
- Reduce down-stream flooding

Interlocking Concrete Blocks



- Can be filled with: vegetation, sand, gravel, or mulches.
- Great for heavy traffic areas

Grass Pavers

- Great permeable qualities.
- Suitable for high traffic areas
- Easy to install

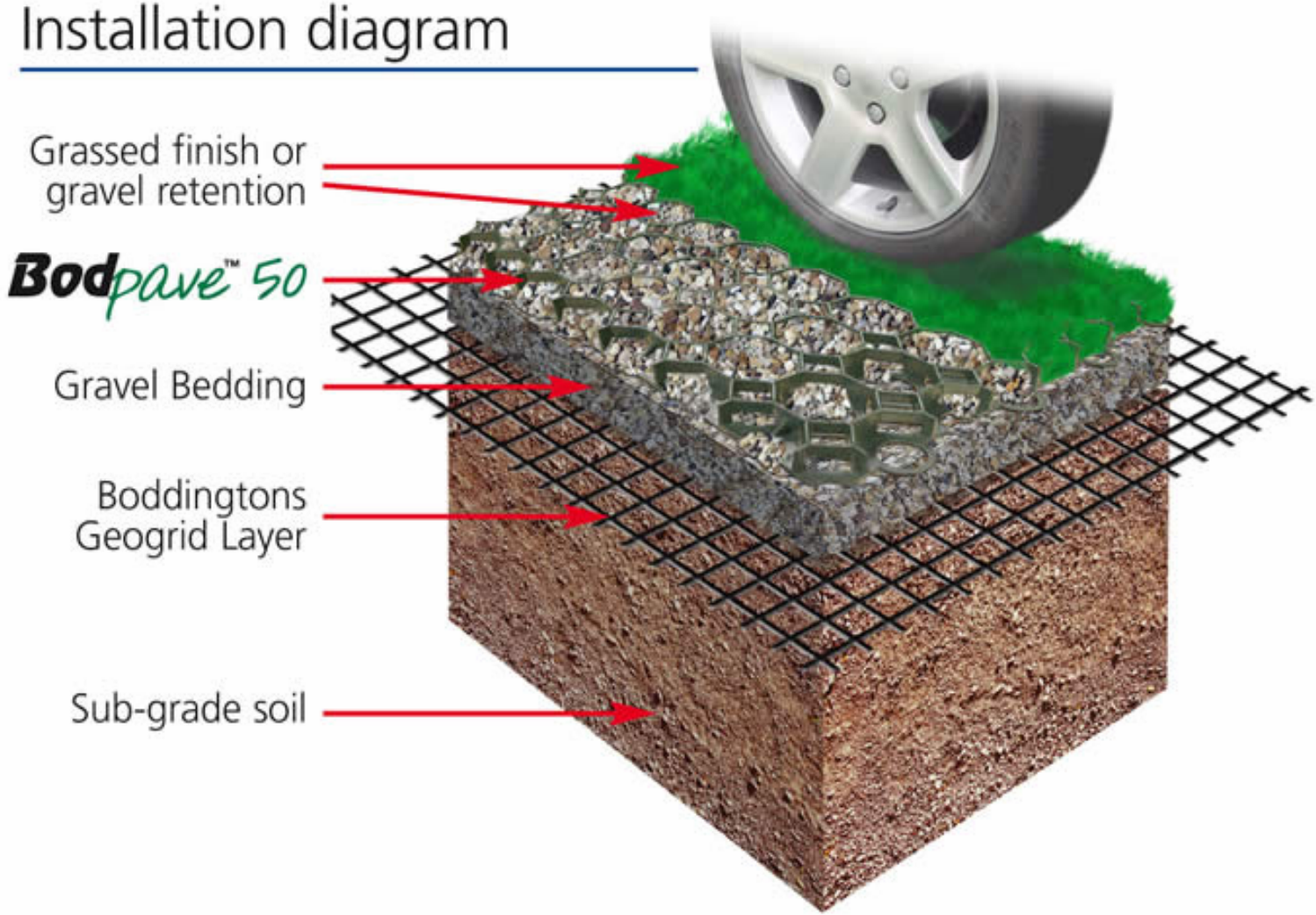
BUILDING AN ECO-FRIENDLY DRIVEWAY

Building green driveway with PermaTURF. Cells will be filled with grass seed and sand/loam mix.
photo by Frankie James

Parking lots

Driveways

Installation diagram



Porous Concrete & Asphalt

Concrete solution

Pervious concrete, widely used in the South, is becoming increasingly popular in northern climes. Tests have shown that the porous concrete, if installed and maintained properly, can hold up under the freeze-thaw cycles experienced in Ohio.

Conventional concrete

1. Strong, good for heavy truck traffic.
2. Smooth surface.
3. Deflects water.
4. Used on roads, parking lots sidewalks and airport runways.

Pervious concrete

1. Not as strong as conventional concrete.
2. Rougher surface.
3. Water seeps through, reducing stormwater runoff.
4. Muffles noise and reduces hydroplaning.
5. Used primarily on parking lots, sidewalks and some roads.

Gravel or crushed stone mixed with cement, water and sand.

Uses stone that is smaller than conventional concrete and cement with little or no sand in the mixture. This creates porous spaces that allow water to pass through.

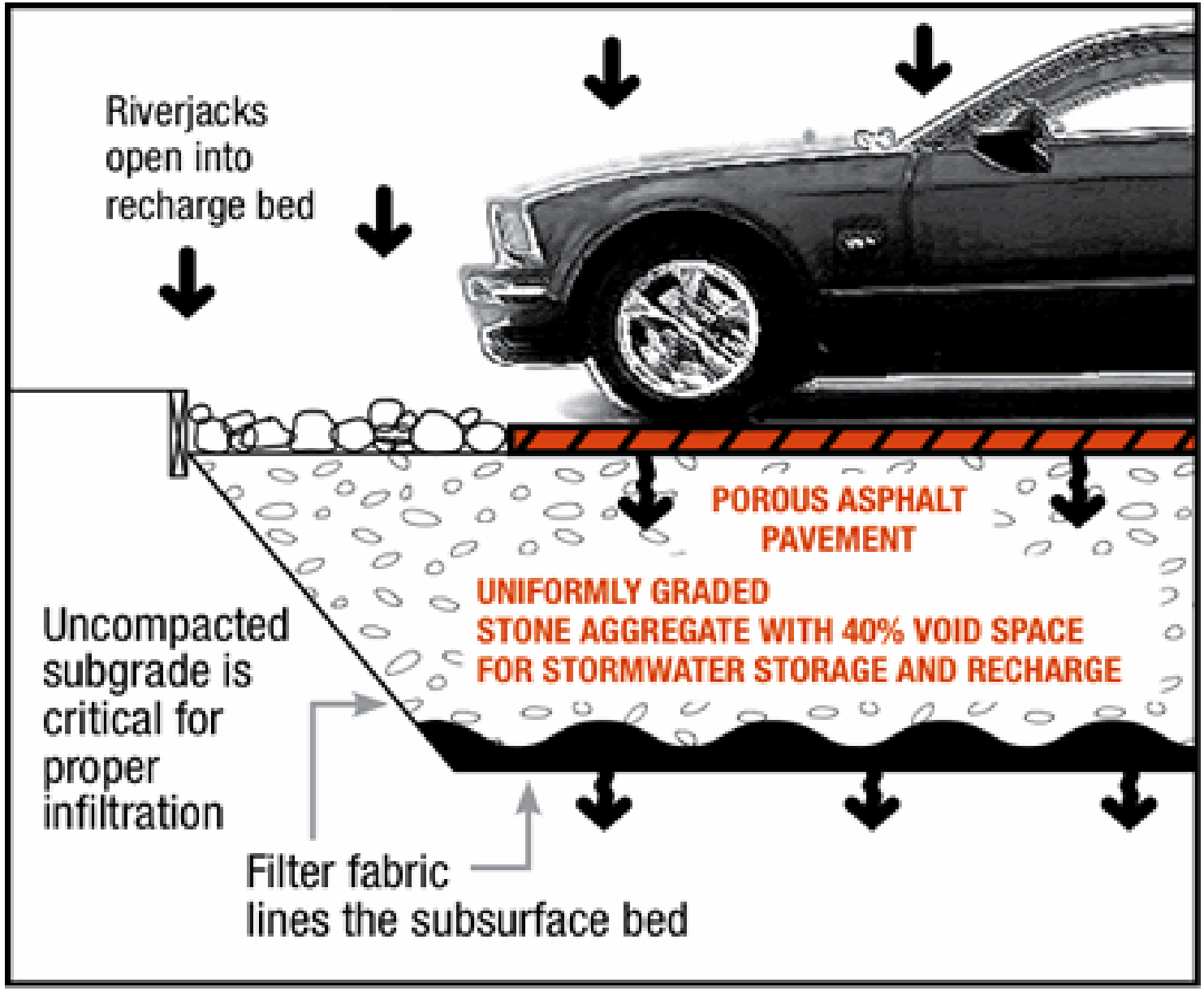
SOURCE: Researchers at Cleveland State University and Iowa State University

THE PLAIN DEALER


Standard
Concrete
Porous
Concrete

Parking lots

Driveways


Riverjacks
open into
recharge bed
POROUS ASPHALT
PAVEMENT
UNIFORMLY GRADED
STONE AGGREGATE WITH 40% VOID SPACE
FOR STORMWATER STORAGE AND RECHARGE
Uncompacted
subgrade is
critical for
proper
infiltration
Filter fabric
lines the subsurface bed

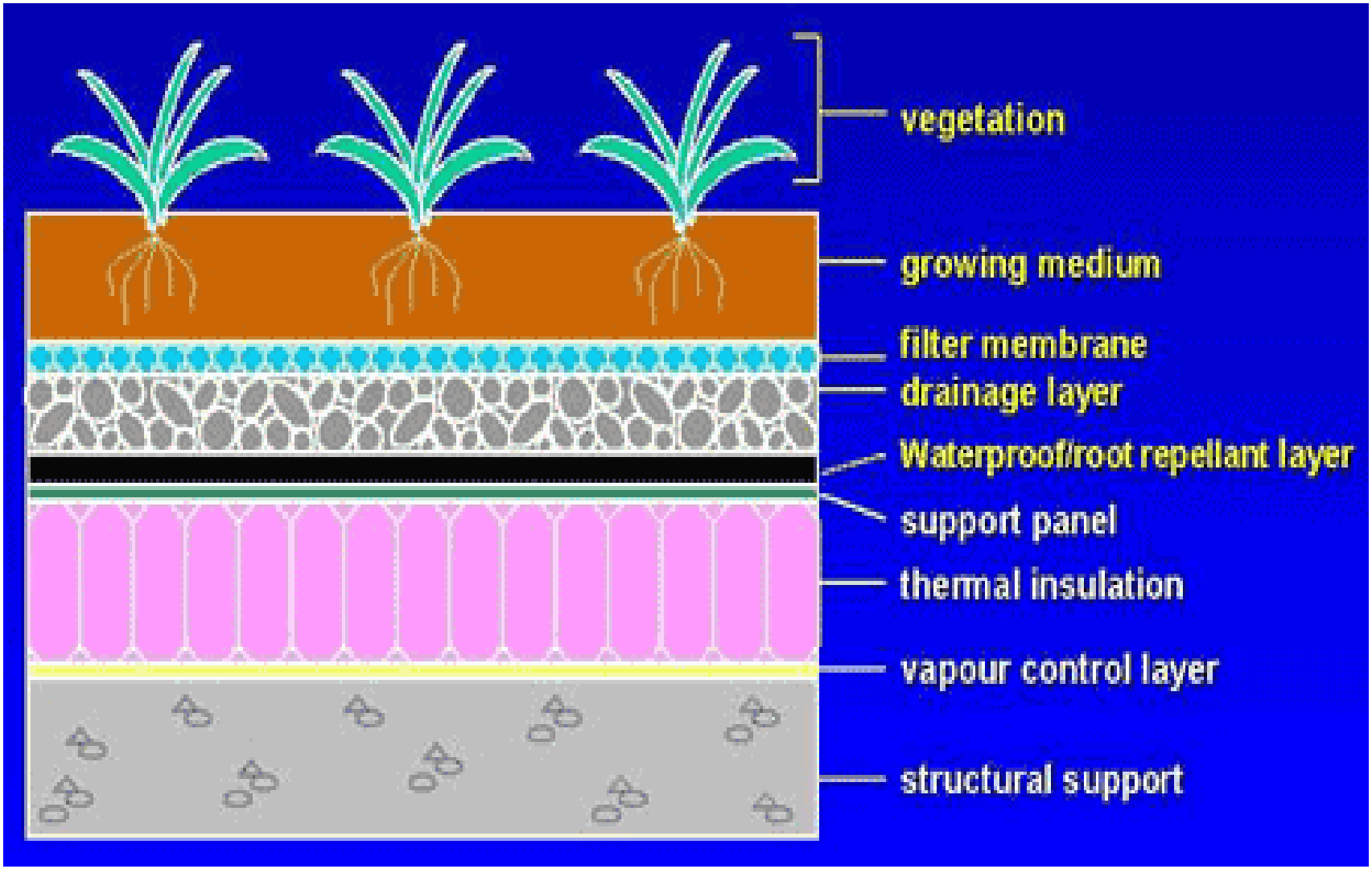
Green Roofs & Walls

Residential

Business & Apartment Building Rooftops

- Reduces urban heat island effect
- Reduces fossil energy use
- Extends roof life

- New techniques do not allow structural damage


vegetation
growing medium
filter membrane
drainage layer
Waterproof/root repellant layer
support panel
thermal insulation
vapour control layer
structural support

Retaining Walls & Fences

Questions?

Contact Information

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ORANGE COUNTY
PROTECT & PRESERVE
OUR HARBORS & COASTLINE
COASTKEEPER