



What are the different design components and how do they work?

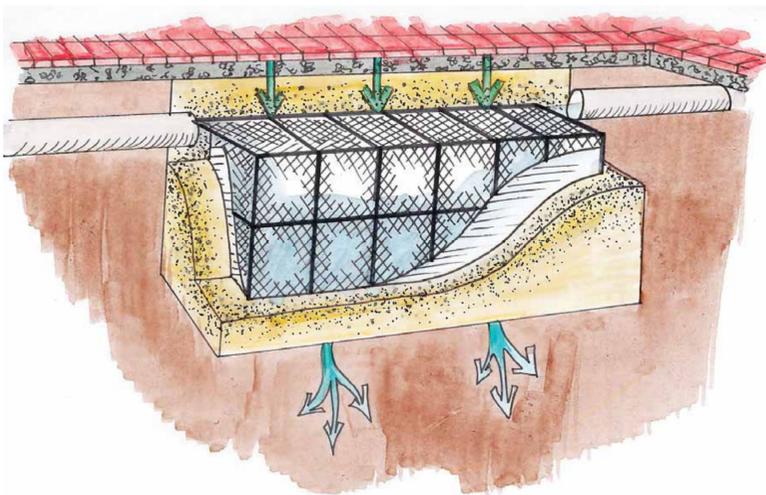
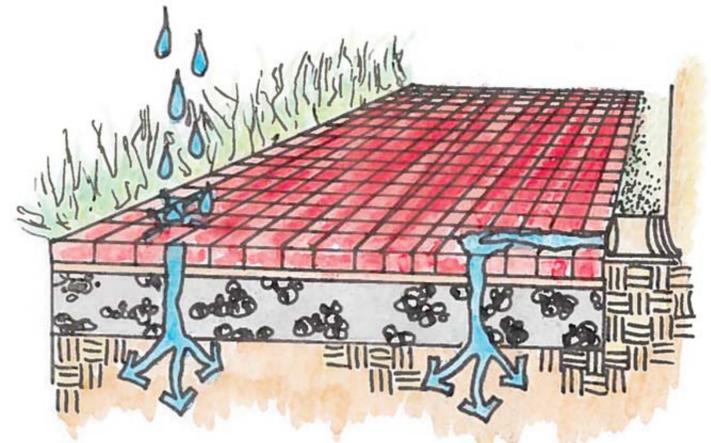
Numbers below are keyed to the adjacent drawing.

1 Pervious pavers (bricks or blocks) - Rainwater quickly drains into gravel base material for infiltration into soil. Here, additional storage is provided by underground tanks.

2 Pervious pavement (poured in place) - Pervious concrete and similar products contain open spaces, allowing rainwater to drain through. This allows more flexible application around irregular areas.

Benefits of pervious paving materials (1 and 2):

- ▶ Less water enters storm drains/combined sewer system
- ▶ Helps recharge ground water
- ▶ Fewer and smaller pipes needed
- ▶ Lighter color materials reduce urban heat island
- ▶ Prevents puddling in winter – less ice and less salt
- ▶ Softens urban environment – better for residents and pedestrians



3 Storage and infiltration - Coarse stone and gravel provide open spaces for infiltration. Extra capacity for high-intensity rain events is provided by underground cisterns (tanks). Water is slowly released into the local ground water system.

The “secondary drain” carries away any water the collects behind the waterproof membrane on the sides (thick black line).

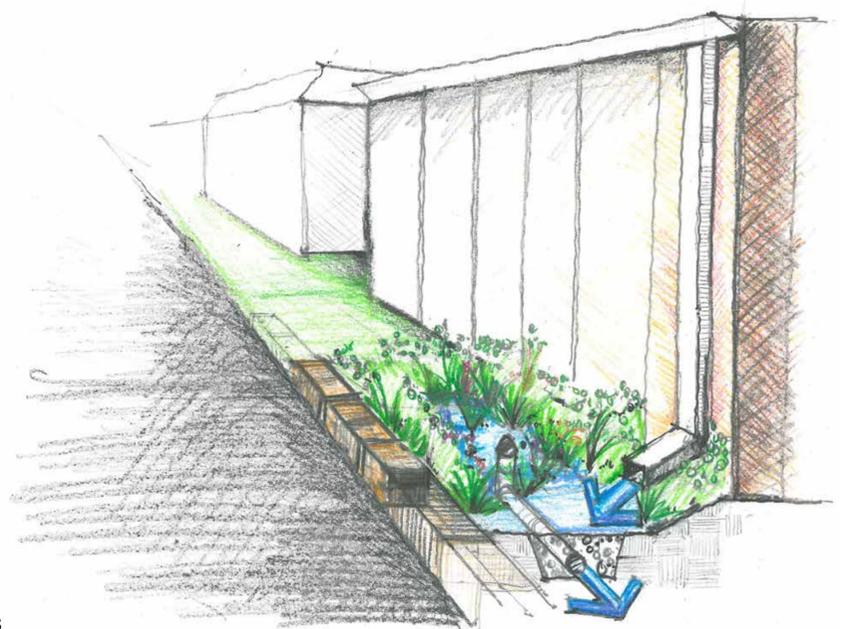
4 Overflow pipe - When infiltration is limited or storms are very intense, overflow water is released to the combined sewer system, albeit more slowly and after the peak of the rain event, reducing combined sewage overflows.

The long-term plan is to redirect overflow water to Lake Elizabeth in Allegheny Commons Park, reducing the need to fill the lake with potable drinking water.

5 Bioswale or rain garden - Planted area that captures stormwater from rooftops and other surfaces.

Benefits:

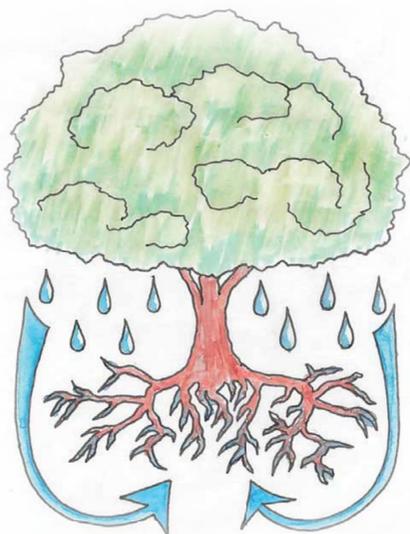
- ▶ Slows water running off of the alley
- ▶ Filters pollutants and sediment
- ▶ Helps recharge ground water
- ▶ Fewer and smaller pipes needed
- ▶ Provides habitat for birds and other wildlife
- ▶ Helps soften and beautify harsh urban environments
- ▶ Attracts residents and visitors; reduces urban blight



6 Trees - Preserve existing and plant new.

Benefits:

- ▶ Shade and transpiration reduce cooling costs and urban heat island effect
- ▶ Improve air quality



7 Green roof - Add where possible on flatter rooftops. Waterproof roof membrane with lightweight soil medium and plants. Soil and plants absorb water, preventing runoff to the street or sewer system.

Benefits:

- ▶ Rainwater capture and storage reduces runoff to streets and sewers
- ▶ Evaporation and transpiration from plants cools the rooftop, reducing energy demand during summer
- ▶ Reduces urban heat island effect
- ▶ Provides insulating layers, reducing energy demand in winter
- ▶ Provides habitat for birds and other wildlife
- ▶ Potential garden space
- ▶ Views overlooking green roofs are more pleasant and valuable