



# Stormwater Management Updated: Permeable Pavers Are the Answer



# Contents

---

- 3 Introduction
- 4 Stormwater Management Reinvention
- 5 Reduce Runoff with Permeable Pavers
- 6 TRUEGRID Pavers Go a Step Above
- 7 North Houston Bike Park





We used to get floods sweeping through our cities once every couple of centuries. These “500-year floods” were caused by severe weather events or hurricanes on coasts. Now, though, it seems there’s a 500-year flood every couple of years.

So, what’s changed? It’s true that, since the early ‘90s, rainfall levels have been well above average<sup>1</sup>. But that’s not necessarily the problem.

As people build more and more roads, parking lots, and developments, the ground is covered by concrete, asphalt, and gravel; up to 40 percent of city land is impervious. When it rains, there’s no place for the water to go, meaning that even something as simple as heavy rainfall could cause flooding – no hurricane required.

Natural undeveloped land is able to accept rainfall. However, the moment water hits pavement, it creates runoff. In cities, that runoff picks up automobile pollutants – oil, petroleum products, hydrocarbons, heavy metals – making it problematic in terms of not only water damage, but also water pollution.

This contaminated runoff<sup>2</sup> eventually enters our waterways. When untreated stormwater runoff

enters our streams, it can contaminate the very water we drink, kill aquatic plants and animals, interfere with aquatic recreation, and increase the chances of flooding.

Rain and severe weather won’t stop, and neither will development. But if we want to protect our homes, our drinking water, and our Earth, we have to be smarter about the materials we use to build and the way we manage stormwater.



“If we want to protect our homes, our drinking water, and our Earth, we have to be smarter about the materials we use to build and the way we manage stormwater.”



## Stormwater Management Needs a Reinvention

Traditional stormwater management needs to be updated to cope with current extreme weather patterns as well as the unyielding expanse of developed – that is, impervious – land. A typical stormwater system<sup>3</sup> captures runoff from concrete, asphalt, and other impervious surfaces into underground pipes and sewers that channel it as far away from streets and buildings as possible – as quickly as possible. Then, that runoff may be discharged into a larger body of water.

**“Rather than solving problems with solutions that create more problems, it makes more sense to use paving materials that prevent runoff in the first place.”**

This system leads to a plethora of environmental issues. Large volumes of water can overpower the system, runoff picks up pollutants, and water that would normally recharge groundwater resources

can't reach aquifers, causing subsidence. And as water travels, it picks up speed and causes erosion. Sometimes, the water is deposited into natural waterways so quickly that it changes the temperature of the system and harms the local ecosystem. Historically, cities have used detention ponds to catch the overflow and solve runoff problems. But detention ponds have issues of their own.

Not only are detention ponds a serious drowning hazard, but they're also expensive to maintain – so they're often not maintained at all. This leads to malfunctions, bacteria issues, and mosquito infestations. Detention ponds also take up a lot of land that could be used in more productive ways, such as expanding the parking lot or development area.

Rather than solving problems with solutions that create more problems, it makes more sense to use paving materials that prevent runoff in the first place. Permeable paving systems can help eliminate those problems.

# Reduce Runoff with Permeable Pavers

Permeable paving systems are helping us reestablish a more natural hydrologic balance and reduce runoff volume. It catches, detains, and slowly releases stormwater into the ground rather than pouring into storm drains and pushing it out to receiving waters.

According to the United States Geological Survey, “permeable pavement can reduce the concentration of some pollutants either physically (by trapping it in the pavement or soil), chemically (bacteria and other microbes can break down and utilize some pollutants), or biologically (plants that grow in between some types of pavers can trap and store pollutants).” In addition, because it slows down the process, permeable pavers can cool down urban runoff, reducing the thermal stress on streams and lakes.

Permeable paving systems allow pavement to absorb water, let water drain through, and detains the water, instead of letting runoff gather contaminants as it rolls past streets, homes, and businesses.

## The Problems with Typical Paving Options

**Concrete** is expensive. **Asphalt** is hot, creates a maintenance headache, and requires expensive added drainage elements. Both are impervious. And both of these materials tend to crack and fail to hold up well from season to season.

Although *gravel by itself* is the cheapest option in the short term, the required upkeep and replacement makes it more expensive in the long run. When used on its own, gravel gets compacted as people drive on it, making it impervious. Gravel also gets pulverized, creating dust, and when that dust mixes with rain, parking lots can easily turn into mud pits.



# TRUEGRID Pavers Go a Step Above

TRUEGRID Pavers provide best-in-class strength from a sustainable source. Designed for commercial, residential, and industrial use, TRUEGRID Pavers are ready for heavy loads, high-traffic job sites, and residential projects.

Unlike other permeable plastic grid pavers out there, TRUEGRID provides an 800-inches-per-hour infiltration rate and instant water flow. When the ground expands and contracts throughout the seasons, plastic grid pavers from TRUEGRID utilize patented flex-joint technology to hug the earth, preventing cracks, potholes, and other issues that can be common with other permeable paving systems.

TRUEGRID Pavers are infilled with gravel, and the structure of the system eliminates gravel erosion problems. The plastic grid system contains the gravel and keeps it from compacting. This creates a permeable but durable surface that you can drive anything on.

In fact, a mobile crane rental company needed help stabilizing a gravel lot to prevent potholes, dust, ruts, and shutdowns on rainy days. This lot endures daily traffic of extremely heavy vehicles of up to 260,000 pounds. That weight is no match for TRUEGRID. The company's TRUEGRID PRO PLUS yard is now fully usable for those heavy vehicles – without all the problems associated with a gravel-only lot. The lot is now mud-free and drivable 365 days a year, rain or shine.

The TRUEGRID Pavers have more going for them than permeability and strength – they're also eco-friendly. The plastic grid pavers are made from 100 percent post-consumer recycled high-density polyethylene. Using TRUEGRID permeable pavers in lieu of concrete eliminates the CO2 emissions from the manufacturing of cement. This, in addition to the sustainability boost the area receives from reduced runoffs, more efficient stormwater detention pond systems, and eliminating heat-trapping concrete parking lots.

TRUEGRID has proven to be more cost-effective than other options such as asphalt, concrete, or maintaining gravel, accounting for construction costs and land savings. Don't believe us? Take a look at this case study.

**“TRUEGRID Pavers provide best-in-class strength from a sustainable source. Designed for commercial, residential, and industrial use, TRUEGRID Pavers are ready for heavy loads, high-traffic job sites, and residential projects.”**





## North Houston Bike Park

In 2016, Houston was tapped to host the world's largest BMX racing competition, Union Cyclist International's 2020 UCI BMX World Championships, at the then-unbuilt North Houston Bike Park.

The project planned for a traditional concrete parking lot and detention pond, but it was 100 parking spaces short of meeting the required capacity. Already over budget and in jeopardy, the North Houston Bike Park needed a better solution.

To accommodate the Olympic-level event's spectators, the park turned to TRUEGRID PRO PLUS to build 175,000 square feet of parking lots built with permeable paving systems. The project came in under budget, the park gained 100 new parking spaces, and we still made room for more than 58,000 cubic feet of stormwater detention in the flood-prone area.

### TRUE Impact Scorecard



CO2 saved:  
1,055.83 tons



Equivalent to:  
222,281 trees planted



Plastic recycled:  
231,000 pounds



Equivalent to:  
1.75 million plastic gallon jugs



Stormwater detained:  
340,340 gallons



Equivalent to:  
8,509 large bathtubs

# WORKS IN ALL CLIMATES AND SOILS

## STORMWATER DETENTION

 100% PERVIOUS COVER

 800+ INCHES/HOUR INFILTRATION RATE

 0.0 - 0.05 RUNOFF COEFFICIENT



## CONTACT



Request a quote to find out how much you can save!

Call our sales team at 1-855-355-GRID,

or email us at [info@truegridpaver.com](mailto:info@truegridpaver.com).

1. <https://nca2014.globalchange.gov/report/our-changing-climate/heavy-downpours-increasing>

2. <https://www.pennfuture.org/Blog-Item-Managing-Stormwater-A-Leading-Cause-of-Pollution>

3. [https://www.usgs.gov/science/evaluating-potential-benefits-permeable-pavement-quantity-and-quality-stormwater-runoff?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/science/evaluating-potential-benefits-permeable-pavement-quantity-and-quality-stormwater-runoff?qt-science_center_objects=0#qt-science_center_objects)