

Green Stormwater Infrastructure: Permeable Paving: Residential Driveway

[00:06] Eban Bean: Hi, I'm Eban Bean.

[00:09] Mark Clark: And I'm Mark Clark. We're going to talk about an LID practice called pervious materials, or pervious pavement. Right now, basically we're in a residential area, so this particular pervious pavement is going to talk about a driveway landscape.

[00:21] Typically, if it was impervious, basically whenever rain would hit it, some might enter into the landscape in the lawn and a lot of it would run right out the driveway into the street and get incorporated into the stormwater management infrastructure. But if we can create a pervious system, we can remove that water from the stormwater and essentially make it go somewhere else.

[00:39] Eban Bean: That's right. So permeable pavements, as they're commonly known, allow for water that hits it or lands on it or runs onto it to infiltrate through the subsurface and typically infiltrate into the ground below it. The profile here is typically, you've got a paver, in this case we have what are called interlocking concrete pavers, and then below that you've got maybe 8, 12, 15 inches of stone that allows for water to quickly infiltrate through the pavers into that stone and be stored, and slowly soak into the subsurface.

[01:13] So this acts as a, basically like a filter that allows that water to basically just infiltrate very rapidly through the pavement surface and reduce runoff in that way.

[01:23] Mark Clark: So, one thing, you're actually trying to mimic the pre-development condition, because if we hadn't developed this area, we'd be in the woods, maybe, or out in the open, and rainwater would go straight down, and this allows us to try to mimic that.

[01:35] Eban Bean: That's exactly right. And a lot of times with permeable pavements, it has such a high infiltration rate that the entire permeable surface does not need to be replaced by a pervious surface. So, for example, the rooftop behind us could run off straight onto the pavement, and it could typically accommodate that volume of water and infiltrate that on site as well.

[01:58] Mark Clark: So, a lot of source control. What sort of management or maintenance issues do we have to deal with when we come up with a pervious surface versus an impervious traditional driveway?

[02:07] Eban Bean: That's probably the most common question you get with permeable pavements, is the maintenance side of it. Permeable pavements typically work as a filter. You've got water that's moving through it, and in this case the aggregate stone that's in between the pavers traps particles. Over time, that accumulates and tends to clog that area where the water is flowing through it. So that needs to be removed over time.

[02:32] You might be able to see on this surface that there's some places where vegetation can establish if there's enough sort of organic matter that's in between the rocks and stones. This can be removed. Typically, in a larger application you might have like a vacuum truck. It looks a lot like a street sweeper, that it goes through and basically sucks that material out from the pavement surface. In a smaller application like this, you might just have the resident try to do prevention, keeping grass clippings off, keeping landscape material off the surface, and leaf litter, and if there is anything that establishes, or you get some areas where that material is building up, probably pressure wash it just to get it really out of those gaps.

[03:15] Mark Clark: So, Eban, how exactly does the water or does the pervious pavement affect the rain water and the stormwater runoff?

[03:22] Eban Bean: If you look behind us, we've got sort of a traditional landscape of a lawn or shrubs. Those areas are pervious, they allow water to infiltrate into the ground. Where I'm standing is typical concrete, impervious, doesn't allow any water to move through it. Where you're at is sort of the best of both worlds. You know, we look at this concrete. This is what we typically use to drive and walk on, but it doesn't allow any water to go through the pavement.

[03:48] What you're on, we allow water to go through it and we can also drive on it. So, water is able to seep through the joints of the permeable pavement, in this case, and go into a storage zone below, and then it can infiltrate into the ground.

[04:03] Mark Clark: So, we've got the stable surface for driving but we have the infiltration surface to basically get that water back on the ground where we want it.

[04:10] Eban Bean: It's the best of both worlds. It's my favorite practice.

[04:12] Mark Clark: That's good. I like it.

[04:15] Mark Clark: How does this, what's the cost typically of a pervious sort of paver system versus maybe a more traditional concrete driveway?

[04:24] Eban Bean: Well, it's typically going to be a little bit more expensive, Mark. The issue there is that you've got a little bit more infrastructure here. You've got to excavate down a little bit further. The individual pavers are going to be a little bit more costly than the pavement, and in reality, each site is going to be a little bit unique. But, as permeable pavements have become more and more common, that increase or that markup is coming down, and there's not as much of an expense over traditional pavement.

[04:54] The benefit here is that there's not as much of a need for having stormwater control. You've got this area that can be parked on and driven on, but it's also managing stormwater, so there's some treatment and water quality and volume benefit from this driveway that may not need to be taken up by, for example, a stormwater pond.

[05:15] Mark Clark: It looks like there's a lot of choices you could have, too. I mean, this is pretty attractive in my opinion, as compared to maybe a concrete area. Is there a lot of different types of pervious pavers that you could use in the landscape?

[05:28] Eban Bean: There really are, and these are, you know, of a certain type of color. You know, you said the aesthetics. You can specify it basically the same way that you can get different colors of bricks. The main difference with bricks and permeable pavers is, the permeable pavements have to have a gap between them, so you'll want to look for that. Maybe it's filled with stone, maybe it's open.

[05:49] But besides the pavers, there's also products, porous concrete, which is basically very similar to regular concrete, except that the very small fine particles are taken out. And so, you just have the large aggregate, that are bound together or cemented together, and the voids that would normally be filled by

that fine particles are interlocking and allow water to drain through it. I like to say it looks like a Rice Krispies treat, if you've ever seen it.

[06:15] And then there's porous asphalt, which is similar, it allows water to drain through it, and it usually has a sub base. And then another common practice or common type of permeable pavement, are concrete grid pavers. These are, look lot of times like lattice, and they're typically filled with some type of aggregate or sand, have diamond holes.

[06:37] And then finally, there's other unique types of products, called flexi-pave, which has a little bit more give, a little bit rubberized, a little bit more bounce back.

[06:47] And then there are turf reinforcement mats that can help to stabilize, even just grassed areas that are going to be parked on at a less frequent basis.

[06:57] Mark Clark: This just seems like, one more in the toolbox of practices that we can actually integrate into the landscape and help us manage that first place where stormwater is going to run off the landscape. So, something a homeowner could do in their front yard actually helps us all the way down the line.

[07:12] That's absolutely right. It's another option for how we can better to manage our stormwater and water resources.

[07:17] Cool.