green

LIVING IN WATERLOO REGION

PLANTING IDEAS

Local campuses catch eco-wave

Better choices for home building

How to outsmart 'greenwashing'

GRASSROOTS

Meet the local leaders who make a difference

SPRING 2011 $4.95

7 72873 00015 8

Canadian Publications Mail Agreement #0005181

SPOTLIGHT ON THE ENVIRONMENT

Don't pave your driveway — plant it!

Green driveways limit storm run-off and can help cool your property

BY JOANNE SHUTTLEWORTH

When Derek Lippert talks about green driveways, you might picture rural laneways, with their worn tire tracks and a strip of green grass running up the middle. But though they give a nod to the past, today's green driveways are environmentally sustainable and Lippert believes they are the wave of the future.

"This fits with our vision of sustainable landscapes in general," says Lippert, owner of Naturally Maintained Ltd., a landscape design and construction business based in Ayr.

His company embraces all things sustainable and as much as possible, builds them into his clients' landscapes: green roofs; rainwater harvesting systems; native plantings; boulevard gardens; driveways and patios made with permeable pavers; and most recently, green driveways.

He's actually offered green driveways for about four years, but didn't get his first client until last August.

Solid surface driveways — asphalt, concrete or interlock — have a number of negative effects on the environment. They hold and radiate heat in the summer, creating urban "heat islands" and increasing the need to run energy-sucking air conditioning.

Rainwater runs off a solid surface, taking whatever is on that surface — road salt, oil drippings, soap suds from washing or windshield washer fluid spills —

A durable micro-clover groundcover has turned this Waterloo driveway into a traffic-stopper. Homeowner Dominic Bellissimo says passersby stop to touch it or ask to walk on it.

PHOTOS COURTESY NATURALLY MAINTAINED INC.

A grid of one-metre plastic squares, made from recycled shrink wrap, are snapped together to form the foundation for the groundcover. The flexible grid isn't as prone to frost-heaving as paving stone driveways.

Loads of a compost-and-sand growing medium are poured onto the plastic grids. If a short groundcover is planted, the grid may be visible from the street.

directly into the stormwater system.

The vast amount of run-off can strain pipes and erode stream banks, requiring costly restorations, and it also costs money to clean and treat the contaminants in the water downstream.

And because of the heat island effect, warm run-off raises the temperature of rivers and streams, affecting river life.

Green driveways are constructed so water soaks into the driveway, through the substrate and eventually filters into the water table. And because green driveways are living, they have a cooling effect and actually create oxygen.

"To me, this is the greatest benefit," Lippert says.

Green driveways still require a stone base, but use a rounder grade of gravel, which doesn't compact as tightly as conventional driveways. Lippert says it's crucial that the foundation be "as level as a table." This goes against common practice of grading the driveway away from the house.

Over the stone base is placed a grid of one-metre squares made from recycled shrink wrap and snapped together to form the flexible structural latticework of the driveway. Within each square are pockets that are filled with a mix of sand, compost and soil and then seeded with a groundcover. Lippert used a fast-growing clover on the green driveway he installed in Waterloo, but clients can choose from a variety of grasses and creeping groundcovers.

It takes two to three weeks for the groundcover to fully establish itself. Installations are best done in spring and fall and not the heat of July.

Green driveways essentially look like lawn, but lawn with structure built into it to support the weight of a vehicle.

Lippert says green driveways can survive shovels and snowblowers and if you use a slow-growing clover seed, you only need to mow two or three times a season.

"After a while you'll see the tracks. That's the character of it. It reminds me of a country laneway," he says.

The green driveways have their drawbacks. There will be weeds, and just like lawns, green driveways need to be overseeded in spring.

You'll start to kill the vegetation if you park a vehicle in the same spot for more than 10 days, and residue that drips from vehicles will probably cause brown spots, too.

Salt will kill your driveway so you need an alternate de-icer if you are used to using one on your driveway in the winter.

"They won't appeal to people who are meticulous about their homes," Lippert acknowledges. "They're not ideal for someone in high heels every day, either."

If you wonder how easy snow-clearing is in the winter, just ask Dominic Bellissimo of Waterloo, who had a green driveway installed last year.

"It's just the same as shovelling a concrete or asphalt driveway with cracks in it," he says. The groundcover dies back in the winter, so the grid shows somewhat. "My neighbour uses his snowblower on it and it's no problem."

Bellissimo says the driveway is a traffic-stopper in his neighbourhood. "Many people stop and look, and bend down to touch it or ask if they can walk on it. It looks like a Chia pet."

But green driveways may not yet be welcome in some municipalities.

In 2007, Franke James of North York had a fight on her hands when she tried to replace an asphalt parking pad with a green alternative. The city balked at first — it would be equivalent to parking on the lawn, which was not allowed. She eventually got permission to implement the innovation as a pilot project.

None of the cities of Kitchener, Cambridge and Waterloo have had an issue over green driveways, but there isn't any specific wording on the books, either.

Shayne Turner, director of bylaw enforcement for Kitchener, writes in an email the only laws that come close are: the bylaw that disallows parking on front lawns; safety regulations around width and composition of driveways; and bylaws regarding upkeep of property and maintaining neighbourhood appearances.

"It certainly sounds interesting," he writes. "I am sure that this is an issue that we would want to look seriously at, if it arises. . . We would certainly want to review and consider any reasonable environmental initiative brought before us."

That's pretty much the same message from Robyn McMullen, environmental policy planner for the City of Waterloo: "The city doesn't have a bylaw speaking

Long-term research on permeable pavement by University of Guelph professor William James and his graduate students has found:

- Permeable pavement is an efficient means of reducing surface run-off and flooding.
- Downstream drainage-system costs can be reduced significantly through reduction of rainwater run-off.
- Concentrations of suspended solids, oil and grease, heavy metals and other stormwater contaminants can be significantly reduced by infiltration through permeable pavement.
- Rainwater that does enter the storm sewer system, and ultimately the nearby watercourses, is cooler than water that is warmed by conventional impermeable pavement.
- Aging, traffic loading, and base installation affect the capacity of permeable pavement to accommodate rainfall and run-off.
- The capacity to filter rainfall and run-off decreases with the increasing amount of organic and fine matter in the drainage cells between the blocks.
- Sweeping, pressure-washing and vacuuming are effective measures to maintain and restore the ability of permeable pavement to accept rainfall.
- Once clogging does occur, the ability of the pavement to contain rainfall and run-off can be significantly improved by removing 10-20 mm (0.4-0.8 inches) of material from drainage cells in between blocks.
- No fine matter should be used when installing the base aggregate as it decreases the overall capacity for rainfall and run-off, and the ability to regenerate that capacity.

source: www.sustainabletechnologies.ca

The growing medium is spread. The most important factor in this kind of driveway is getting the foundation level to eliminate run-off.

to green driveways. Residential houses need to have a spot that leads from the road to the garage. It should be fairly obvious where the driveway is."

Linda Fegan, director of communications for the City of Cambridge, says her city is looking at ways to provide incentives to citizens who use green initiatives. It's part of the city's strategy to be a leader on the environment.

Cambridge has been thinking more about grey water collection systems and solar panels, but Fegan says she doesn't anticipate trouble with green driveways should it ever come up. "It's more around the site plan and building permits," she says.

Cost for a green driveway depends a lot on the site. Lippert says the most important part is getting the foundation right. Clicking the grid together goes quickly and seed is cheap. Cost is more than asphalt, but less than cement or interlock, he says, about $8 to $12 per square foot.

A driveway doesn't literally have to be green to be "green."

Cheryl Evans, outreach officer for the City of Kitchener's Residential Energy Efficiency Project (REEP House), describes one of her favourite photographs taken at the REEP House, which illustrates why she favours permeable pavers.

The photo shows a business surrounded by a parking lot in a rainstorm. Water is pooling in the parking lot and is "gushing" down the storm sewers.

Beside that building is REEP House with its driveway and parking lot made of permeable pavers. Same rainstorm, but there's no puddling, pooling or run-off.

"Our lot wasn't dry but there was no standing water," says Evans. "Nothing was rushing to the storm sewer."

The century-old home on Mill Street is loaded with energy-efficient innovations. The driveway is one of many ways the project has attempted to reuse and divert water from the municipal stormwater system. Evans said they are finding the permeable driveway is effective, attractive and possible for both the average homeowner and commercial applications.

It looks like a typical interlock driveway, but there are key differences. The blocks are constructed to be porous and the spacers on each block allow water to seep between them as well.

The gravel foundation is of a grade that doesn't bind like traditional applications. It's more akin to pea gravel, allowing water to trickle through.

There is also a layer of filter cloth, a geo-textile that holds water long enough for naturally occurring microbes to decompose oil and other contaminates that drip from motor vehicles.

The result is that water trickles through to the water table and stays out of storm sewers.

Glenn Harold, executive vice-president of Brown's Concrete Products Ltd. of Sudbury, says researchers have studied test sites and the results are convincing.

"Europe is ahead of us. About 20 per cent of their driveways are permeable," Harold says.

"Toronto requires any new front yard parking space be permeable. I don't know where the region stands on this, but it can't be far away."

Brown's Concrete makes the AquaPave Permeable Paver for parking lots, sidewalks, patios, decking around swimming pools, mall entrances and driveways.

Harold says that an additional benefit of permeable pavers is a reduction in ice buildup in the winter. When ice and snow melt on asphalt, it puddles, refreezes and requires some sort of de-icer to be applied. Permeable stone allows the water to infiltrate instead.

Harold says that the Toronto and Region Conservation Authority "found it reduced the amount of de-icing salt that was needed. That reduces the amount of salt that gets into groundwater."

As with green lawns, there's some maintenance involved. Weeds may grow between the pavers and the pores of the concrete need to be open in order to absorb water, so must be swept periodically.

"There's maintenance," Evans says, "but it's not excessive. And we've had no issue with winter."

Lippert thinks new home builders should think about stormwater runoff when building subdivisions. Grey water systems and permeable driveways "are so much easier to install on a new build, it would keep the cost down," he says.

Money down the drain

Watching rainwater run off your driveway is like watching money go down the drain.

That water could be used to nourish shrubs, lawns and trees, rather than paying for costly municipal water from your garden hose. And to add to that, residents of the cities of Kitchener and Waterloo are now being charged for the costs of handling that rainwater – and the effects of the rainwater – before it flows back into the river system.

A green driveway could be one element in keeping that water from running off your property and reducing your stormwater treatment fees.

According to Cheryl Evans, outreach officer for the City of Kitchener's Residential Energy Efficiency Project (REEP House), the costs of dealing with stormwater that flows away from homes and businesses "hasn't been on people's radar before."

She expects some taxpayers will be shocked when they start seeing the extra charge on their bills. But the money is needed to upgrade the city's infrastructure, Evans said. And there are ways businesses and individuals can modify their properties and water use that will make a difference on their bills.

That will be her focus of an educational campaign at REEP House this summer, where the benefits of rainwater harvesting, grey water systems and "green" driveways will be explained and explored.

"There could be fresh incentive to install a green driveway," Evans says. "We're working on rebates for commercial properties that do this. There's some pressure for residential rebates, too."

The timing seems right – there are more options for homeowners and business owners who want to improve their properties without damaging the environment, and appetite is growing. With municipal politicians in Kitchener and Waterloo looking at ways to offer incentives and other cost recoveries to individual homeowners who can reduce water runoff from their properties, these features will pay dividends down the road and add to the value of their homes.

For more ideas on where this trend is heading, see page 22.

What's next?

• None of the local municipalities is working on programs that deal specifically with green driveways or permeable pavers, although Kitchener, Waterloo and Cambridge are each looking at ways to offset urban impacts on the environment, and Kitchener and Waterloo are considering ways to give credits or rebates to property owners who have taken steps to reduce stormwater run-off.

• Cheryl Evans, outreach officer for REEP House in Kitchener (Residential Energy Efficiency Project), is making the argument that commercial properties that divert run-off from the stormwater system should get rebates. Permeable parking lots are one way, but she is also promoting green roofs, rainwater harvesting and using grey water to flush toilets.

• REEP House will feature education programs this spring and summer for homeowners wanting to know more about rainwater harvesting, grey water systems and green driveways. Water Conservation Inside and Out will be held Tuesday, April 19 from 7 p.m. to 9 p.m. and Saturday, May 7, from 1 p.m. to 3 p.m. Contact REEP at 519-744-9799 to register.

• This spring, Derek Lippert is changing his company's name from Naturally Maintained Ltd. to Quiet Nature. The company is introducing a maintenance division and intends to use equipment with zero emissions.

• Permeable pavers from Brown's Concrete Products are available through Adams Landscape Supply, 30 Dumart Place, Kitchener.

Showing through the European micro-clover used as a groundcover at this Waterloo home are the plastic grids that provide support for parked vehicles.

Blue box primer

Ever wondered where your blue box contents go and what they become?

Plastic #1 (PET):
Mostly plastic bottles. **Sent to Sarnia and Cold River, Ont.** Made into plastic bottles, polar fleece material, carpet fibre.

Plastic #2 (HDPE):
Plastic bags, milk jugs, shampoo bottles, laundry detergent bottles, root barrier, pipes. **Sent to Canadian recyclers.** Made into benches, garbage cans, plastic timber, other durable plastic products.

Plastic #3, 4, 5, 6 (includes polyvinyl chloride, LDPE, polystyrene): Food wrap, blister packs, many plastic bags, plastic cutlery, margarine tubs, CD jewel cases. **Sent to EFS-Plastics in Elmira.** Made into plastic pellets; used to make tool boxes, recycling containers, pipes, garbage cans.

Plastic #7:
Anything where two or more plastics are combined. Little or no recycling potential. **Sent to Elmira** for sorting; most goes to landfills.

Aluminum cans:
Sent to the Novelis smelter in Oswego, N.Y. Recycled into new aluminum sheet to make new aluminum cans

Juice and milk cartons:
Recycled into paper towels and toilet paper **at a mill in the Toronto area.** (Support recycling by buying products with recycled content.)

Newspapers, corrugated boxes and boxboard:
Sent to Niagara Recycling in Niagara Falls. Recycled back into pulp to make newsprint, corrugated boxes, boxboard products.

Steel cans, appliances and scrap:
Shipped to Hamilton and made into steel for appliances, cookware, steel cans.

Clear and coloured glass:
Beer bottles can be returned and refilled. Some clear glass also refillable. **Rest sent to NexCycle Industries Ltd. in Guelph.** Made into fibreglass insulation, glass containers, floor tile filler.

Sources: Waterloo Region Waste Management Division; EFS-Plastics; NexCycle; Niagara Recycling; Society of the Plastics Industry; Environmental Communication Options; Recyclemania.org; The Paper and Paperboard Packaging Environmental Council.