



January 25, 2021

To: City Clerk clerks@richmondhill.ca

Copy: Mayor & Council, Richmond Hill

RE: COUNCILLOR TOM MUENCH, MEMBER MOTION, PERMEABLE PAVING SOLUTIONS

Dear Councilors and Officials in Richmond Hill, Ontario

I wish to applaud your January 27, 2021 motion to further advance the need for Storm Water Management on a broader scale.

Storm Water and Advanced Solutions are required with the continual development of lands in order to balance the natural hydrologic cycle, including existing areas that are planning to rebuild and also with the potential expansion / increased density of existing residential properties.

Our company has engineered, developed and installed systems over the last 20+ years, in green roof and porous paving, well before Storm Water Management was in the forefront of municipalities / designers in Canada and the United States.

Times have changed and the need for stormwater management has never been greater given the urban expansions that are evolving which decreases our rural footprint. The planning of our cities must adapt to city landscape changes and climate change in order to maintain the balance of run-off from rain events.

Stormwater impacts not only our storm drains and water treatment plants, but also streams and rivers due to increased impervious surfaces and conservation authorities and cities alike have been moving progressive legislation to address stormwater impacts.

In 2009, The City of Toronto made a historic step forward and implemented the Green Roof Bylaw. This was the first City in North America to require new construction to address the roof tops with benefits such as achieving potentially zero run off from the roofs and lowering the Heat Island Effect, and many more benefits, but certainly, water was one of the driving forces.

For ground applications, across North America, there have been a variety of newer municipal By-laws passed, ranging from an annual tax on what is considered impervious covering to a full requirement of pervious in order to qualify and receive the final Certificate of Occupancy.

We are seeing a real renewed focus at the planning stages throughout North American municipalities requiring a greater emphasis on pervious and eco-friendly approaches to both new construction projects and existing homes. We have seen a dramatic increase in permeable paving in parking lots, parks, pools and driveways the last few years. Many Ontario municipalities such as Toronto, Mississauga, Ottawa, as well as municipalities in the United States such as Key West Florida and the Finger Lakes Areas in upstate New York, to name a few, have prioritized permeable paver use.

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Municipalities, like Richmond Hill are under increase pressure to allow additional parking as street parking is not always possible or permitted. This will especially be the case when a home is split to create an apartment or separated living area that may get rented creating more driveway demand which is a trend that continues to evolve.

The solution put forward in the January 27, motion to move forwards and require pervious / permeable parking for the existing and expansion to accommodate the new apartment makes sense. It will truly address storm water before more impervious areas are created.

Our hydroPAVERS® Permeable Paving "system" is designed to take into consideration a number of issues:

First and foremost, Storm water management, - we achieve the 100-year storm requirements (4" in many geographical regions) based on the total system of hydroPAVERS® and base.

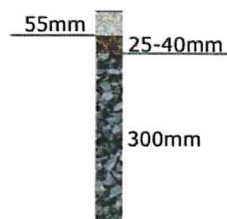
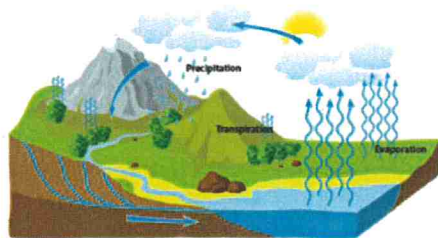
We rely on two factors:

- 1) Absorbing water into the hydroPAVERS and holding it until over saturated.
- 2) Evapotranspiration – wind and sun effect on the surface draws moisture out of the pavers into the atmosphere, with the base rarely getting much water, and capable of 5" of water holding capacity



Why Choose hydroPAVERS®

☑ Water retention and true drainage





Highlights of our HydroPAVERS®

1. Are a True pervious paver

- a. Every square inch of the surface allows water to flow in
- b. Absorbs a ¼" rain event – excellent storm water retention
- c. After fully saturated, over an inch of rain per minute passed through our pavers into the properly prepared base.
- d. Exceeds 100-year storm requirements for retention and drainage
- e. Properly prepared base (12" assumed) can hold up to 5.5" of water which makes the entire area under our pavers like a water storage tank during heavy surges.
- f. In the top of the system, the water will evaporate - Evapotranspiration. By the sun and wind.
- g. In the underside of the system, Water Infiltration and transmissivity. And back into the water table, ultimately
- h. Puddles are eliminated assuming full proper installation. – except extreme conditions such as flooding due to other factors such as hurricanes.

2. Safe with sealed Gaps

- a. The space between pavers is less than 1/8" regardless of paver size in the plans
 - i. Makes it Safe – complies with AODA and ADA
 - ii. Due to no gaps after they are filled with polymeric sand, the system is sealed off so to speak
 1. Dirt does not flow in and clog the system or get into the base
 2. Reduced maintenance cost: only pressure washing required
 3. No vacuuming required ever

3. Reduce Heat Island Effect

- a. Our paver surface is COOLER than other pavers due to Evapotranspiration
- b. And also, because the paver "breathes"
- c. SRI Index 41 for the Off-White

4. Increase Safety of walking and driving

- a. Non slip surface
- b. Excellent around swimming pools
- c. Safe for children to run on



5. Attractive and Durable:
 - a. With 8 colors and 9 sizes, super design flexibility
 - b. Off-white used for lines in parking areas to eliminate painting.
 - c. Reduce painting even further by using for handicap zones. – no slipping / no painting
 - d. NEVER needs to be sealed – save cost annually (sealing would ruin the drainage)
 - e. Compared to concrete, no expansion joints required
6. Color fast
 - a. Manufactured and over cured, color is baked in
 - b. This is due to 12 hours at 1,200 Degrees Centigrade through a 1,500-foot-long oven
7. Strength
 - a. Compressive strength exceeds 9,500 PSI
 - b. Ideal for so many applications
8. Material: Ceramic
 - a. 100% recycled ceramic tiles
 - b. Not from landfill, diverted directly from ceramic tile makers to us, so it's clean
 - c. Cuts very clean with diamond blade
9. Freeze Thaw tested and certified
 - a. Does not crack, expand or contract

We have many successful installations including the Royal Botanical Gardens in Burlington, Ontario and parking pads everywhere including Toronto



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In Toronto, many parks and driveways have implemented permeable paving, including Upper Summerville Park, Rosetta McClains Gardens, and Riverside Park.

In Ontario developers such as Mattamy Homes and Forest Hill Homes have projects using our technology. Furthermore, we can confirm that we have upcoming projects including condominiums in Toronto that will be utilizing our permeable system in order to meet Toronto Tier 1

We can confirm that HydroPAVERS® meet and exceed the tier 1 requirements by absorbing 6mm of water, retaining it, and within 72, the water is gone. Evapotranspiration.

On ground application, evapotranspiration keeps the rain water going back into the atmosphere, an important difference to a system that only is designed for water to drain and saturate the ground. Therefore, consideration should be giving to any surface that is rained upon as is proposed in the motion

I have provided you two additional references below to assist you.

Thank you, and I look forward to working on solutions with the vibrant City of Richmond Hill,

Sincerely,

Walter Hermann

President

walter@hydropavers.ca

Reference: Damaged storm drains and street flooding, City of Guelph, Ontario www.guelph.ca

<https://guelph.ca/how-can-we-help-you/storm-drains-and-street-flooding/>

Reference – U.S. Department of Energy and Environment

Why is Stormwater a Problem? Excess stormwater causes flooding and damage that is difficult and costly to clean up

<https://doee.dc.gov/service/why-stormwater-problem>