

AGREEMENT FOR STORM WATER SYSTEM MAINTENANCE

This Agreement is made on January 2, 2013, by Rochester Medical Building, LLC, ("Developer"), whose address is 22039 John R, Hazel Park, Michigan 48030; and the CITY OF ROCHESTER HILLS (the "City"), whose address is 1000 Rochester Hills Drive, Rochester Hills, MI 48309.

WHEREAS, Developer owns and proposes to develop the Property described in attached Exhibit A; and

WHEREAS, the proposed development of the Property will alter the natural flow of surface and storm water drainage; *and*

WHEREAS, Developer has proposed, and the City has approved, a storm water drainage system (the "System") comprised of perforated and non-perforated storm sewer pipe, overflow outlet structure, rainwater harvesting cisterns and pervious (porous) concrete paving, for the Property as described and depicted in the Plan attached as Exhibit A; and

WHEREAS, the parties will benefit from the proper operation, use and maintenance of the System and enter into this agreement to provide for the same.

THEREFORE, the parties agree:

1. Use of the System:

Components of the System, including any and all water conveyance, perforated and non-perforated storm sewer pipe, overflow outlet structure, rainwater harvesting cisterns and pervious (porous) concrete paving, shall be used solely for the purpose of conveying, detaining and treating storm and surface drainage on the property until such time as: (i) The City determines and notifies Developer or Developer's successors, grantees or assigns, in writing, that it is no longer necessary to convey, detain or treat the storm and surface drainage; and (ii) An adequate alternative for conveying, detaining and treating storm and surface drainage has been provided which is acceptable to the City and which includes the granting of any easements to the City or third parties as may be required or necessary for the alternative drainage system.

2. Maintenance:

A. Developer shall be responsible for the proper maintenance, repair and replacement of the System and all parts thereof as detailed in the Maintenance Plan attached as Exhibit B.

B. Proper maintenance of the System shall include, but is not limited to: (i) Removing accumulated sediment, trash and debris from the overflow outlet structure and at inlet pipes; (ii) Managing deleterious vegetative growth; (iii) Maintaining storm sewer, structures, and safety features; (iv) Controlling the effects of erosion; (v) Inspection and cleaning of the rainwater harvesting cisterns; (vi) Inspection of inlet and outlet pipes for structural integrity; (vii) Inspection and cleaning of the pervious (porous) concrete paving; (viii) Any other maintenance that is reasonable and necessary to facilitate and continue the proper operation and use of the System.

3. Action by City:

If, at any time, Developer or Developer's successors, grantees or assigns neglect or fail to properly maintain the System or any part thereof, the City may notify Developer or Developer's successors, grantees or assigns. The notice shall be in writing and shall list and describe maintenance deficiencies and demand that they be corrected within thirty (30) days.

The notice shall further specify a date and place for a hearing to be held at least fourteen (14) days after the date of the notice before the City Council, or such other board or official as the City Council may designate. At the hearing, the City Council (or other designated board or official) may affirm or modify the list and description of maintenance deficiencies and, for good cause shown, may extend the time for the deficiencies to be corrected.

Thereafter, if the maintenance deficiencies are not corrected within the time allowed, the City may undertake the necessary corrective actions, and the City may maintain the System for up to one (1) year. Such maintenance of the System by the City shall not be construed to be a trespass or a taking of the Property, nor shall the City's actions vest in the public any right to enter or use the Property. Thereafter, if Developer or Developer's successors, grantees or assigns do not properly maintain the System, the City may, after providing similar written notice, schedule and hold another hearing to determine whether the City should maintain the System for another year, and subject to a similar notice, hearing and determination in subsequent years.

In the event the City determines an emergency condition caused by or relating to the System threatens the public health, safety or general welfare, the City shall have the right to immediately and without notice enter the Property and undertake appropriate corrective action.

4. Charges:

The City shall charge to the current owner of the Property the cost of maintenance or other corrective action undertaken by the City under this agreement, plus a ten percent (10%) administrative fee. If not timely paid, the City may place the charges on the City's tax roll, which charges shall be a lien on the real property and shall be collectable and enforceable in the same manner general property taxes are collected and enforced.

5. **Notice:**

Any notices required under this agreement shall be sent by certified mail to the address for each party set forth below, or to such other addresses as such party may notify the other parties in writing:

To Rochester Medical Building, LLC:

22039 John R
Hazel Park, MI 48030

To the City:

City Clerk
City of Rochester Hills
1000 Rochester Hills Drive
Rochester Hills, MI 48309

6. **Successors and Assigns:**

This agreement shall bind and inure to the benefit of the parties and their respective successors, grantees and assigns. The benefits, burdens, rights, obligations and responsibilities hereunder shall run with the land and shall bind all current and future owners of the Property and any divisions thereof.

7. **Recording of Agreement:**

This agreement shall be recorded at the Oakland County Register of Deeds.

*John Staraw
Appd. - 1-7-13*

ROCHESTER MEDICAL BUILDING, LLC



By: _____
Emad Nakkash, Its Managing Member

CITY OF ROCHESTER HILLS

By: _____
Bryan K. Barnett, Mayor

By: _____
Jane Leslie, Clerk

STATE OF MICHIGAN
COUNTY OF MACOMB

Managing Member

This agreement was acknowledged before me on January 2, 2013, by Emad Nakkash, ~~President~~ of Rochester Medical Building, LLC.

Diana J. Holthaus
St. Clair, notary public
County, Michigan
My commission expires: *March 30, 2014*

DIANA J HOLTHAUS
Notary Public, State of Michigan
County of Saint Clair
My Commission Expires 03-30-2014
Acting in the county of *Macomb*

STATE OF MICHIGAN
COUNTY OF OAKLAND

This agreement was acknowledged before me on _____, by Bryan K. Barnett, Mayor, and Jane Leslie, Clerk, of the City of Rochester Hills, on behalf of the City.

Drafted By:
Kevin Brandon
728 Bliss Drive
Rochester Hills, MI 48307

Notary public

My commission expires: _____ County, Michigan

When Recorded Return to:
City Clerk
City of Rochester Hills
1000 Rochester Hills Drive
Rochester Hills, MI 48309

EXHIBIT 'A'

LEGAL DESCRIPTION:

The North 100 feet of the South 300 feet of Lot 1, "Supervisor's Avon Twp. Plat No. 7", a re-subdivision of Lots 53 and 54 of Brooklands, a Subdivision of part of Section 35, Town 3 North, Range 11 East, Avon Township (now City of Rochester Hills), Oakland County, Michigan, as recorded in Liber 12 of Plats, Page 59 of Oakland County Records. Subject to all easements, recorded and unrecorded.

Mike Taunt
Appd. - 1-9-13

EXHIBIT 'B'

OPERATIONS AND MAINTENANCE MANUAL

NAKKASH EYE CLINIC POROUS PAVEMENT AND CISTERN MAINTENANCE PLAN ROCHESTER HILLS, MICHIGAN

PROPERTY OWNER:
ROCHESTER MEDICAL BUILDING, LLC
DR. EMAD NAKKASH
22039 JOHN R
HAZEL PARK, MI 48030

Prepared by:
Preview Architecture + Planning, LLC
728 Bliss Drive
Rochester Hills, MI 48306
248-303-1446
Contact: Kevin M. Brandon

January 02, 2013

OPERATIONS AND MAINTENANCE

PERVIOUS PAVEMENT

General Maintenance

The primary goal of porous pavement maintenance is to prevent the pavement surface and/or the underlying infiltration bed from being clogged with fine sediments. To keep the system clean throughout the year and prolong its lifespan, the pavement surface should be vacuumed biannually with a commercial cleaning unit. All inlet structures within or draining to the infiltration beds should also be cleaned out on a biannual basis.

Planted areas adjacent to porous pavement should be well maintained to prevent soil washout onto the pavement. If any washout does occur it should be cleaned off the pavement immediately to prevent further clogging of the pores. Furthermore, if any bare spots or eroded areas are observed within the planted areas, they should be replanted and/or stabilized at once. Planted areas should be inspected on a semi-annual basis. All trash and other litter that is observed during these inspections should be removed.

Superficial dirt does not necessarily clog the pavement voids. However, dirt that is ground in repeatedly by tires can lead to clogging. Therefore, trucks or other heavy vehicles should be prevented from tracking or spilling dirt onto the pavement. Furthermore, all construction or hazardous materials carriers should be prohibited from entering a porous pavement lot. Descriptive signage is recommended to maintain institutional memory of porous pavement

Vacuuming

Vacuuming concrete pavement with a vacuum sweeper on a biannual basis is necessary. Acceptable types of vacuum sweepers include the Elgin Whirlwind and the Allianz Model 650. Though much less effective than "pure" vacuum sweepers, regenerative air sweepers, such as the Tymco Model 210, Schwarze 348, Victory, and others, are sometimes used. These units contain a blower system that generates a high velocity air column, which forces the air against the pavement at an angle, creating a 'peeling' or 'knifing' effect. The high volume air blast loosens the debris from the pavement surface, then transports it across the width of the sweeping head and lifts it into the containment hopper via a suction tube. Thus, sediment and debris are loosened from the pavement and sucked into the unit. (Note: simple broom sweepers are not recommended for porous pavement maintenance.)

If the pavement surface has become significantly clogged such that routine vacuum sweeping does not restore permeability, then a more intensive level of treatment may be required. Recent studies have revealed the usefulness of washing porous pavements with clean, low pressure water, followed by immediate vacuuming. Combinations of washing and vacuuming techniques have proved effective in cleaning both organic clogging as well as sandy clogging. Research in Florida found that a "power head cone nozzle" that "concentrated the water in a narrowly

rotating cone” worked best. (Note: if the pressure of the washing nozzle is too great, contaminants may be driven further into the porous surface.) Maintenance crews are encouraged to determine the most effective strategy of cleaning their porous installations.

For smaller installations, such as sidewalks, plazas, or small parking lots, “walk behind” vacuum units may prove most effective. Though these units can be loud and somewhat messy to the operator due to the lack of dust suppression, they are also relatively easy to operate and inexpensive. Examples of acceptable “walk behind” units include the Billy Goat models, the 5700 industrial-strength Scrubber by Tennant, and the sidewalk class vacuum sweepers made by Nilfisk, Advance and Hako. If “walk behind” units are used, it is recommended that the scrub pressure be kept relatively low. The dirtiest areas may need to be power washed after scrubbing to get out the dirt that has been deeply ground in.

Winter Maintenance

Winter maintenance for a porous parking lot may be necessary, but is usually less intensive than that required for a standard lot. By its very nature, a porous pavement system with subsurface aggregate bed has superior snow melting characteristics than does standard pavement. Therefore, ice and light snow accumulation are generally not as problematic. However, snow will accumulate during heavier storms. Abrasives such as sand or cinders should not be applied on or adjacent to the porous pavement. Snow plowing is necessary for significant snow accumulation, but should be done carefully (i.e. by setting the blade slightly higher than usual, about an inch). Standard road salt is acceptable for use as a deicer on porous pavement, although a non-toxic, organic deicer, applied either as a blended, magnesium chloride-based liquid product or as pretreated rock salt, is recommended. Acceptable liquid deicers include Magic-O, Ice B' Gone, Ice Ban, and Geomelt, among others. Magic Salt is an example of an acceptable pretreated salt product. Other acceptable deicer alternatives to standard sodium chloride include calcium chloride, magnesium chloride, potassium chloride, urea, and calcium magnesium acetate. Follow supplier recommendations when applying deicers to pavement.

Repairs

Potholes in the porous pavement are extremely unlikely, though settling might occur if a soft spot in the subgrade is not removed during construction. For damaged areas of less than 50 square feet, a declivity could be patched by any means suitable with standard pavement, with the loss of porosity of that area being insignificant. The declivity can also be filled with porous mix. If an area greater than 50 SF is in need of repair, approval of patch type must be sought from either the engineer or owner. Under no circumstance is the pavement surface to ever be seal coated. Any required repair of drainage structures should be done promptly to ensure continued proper functioning of the system.

With minimal maintenance, porous pavement can function effectively for well over 20 years. However, in the event that maintenance of the porous pavement is neglected and it becomes clogged over time, the Owner shall vacuum the lot until the original permeability is restored. (If the original permeability of the lot cannot be restored, the pavement should be removed and

replaced with a new porous mix.) Recent research has shown that one of the most effective ways of restoring porous pavement is applying a pressurized dose of a non-toxic detergent cleaning solution, allowing adequate soak time, and then vacuuming with a high performance unit (Elgin Whirlwind and the Allianz Model 650). Once again, it is important to note that high pressure washing may drive contaminants further into the porous surface and even into the underlying aggregate. It is therefore recommended that, prior to vacuum sweeping, a low performance pressure washer is used to get the solution to break the surface tension and reach into the pores.

RAIN HARVESTING CISTERN

As with other stormwater management practices, these stormwater storage systems require regular maintenance to ensure a prolonged life. The following suggests maintenance activities to perform on rain barrels, cisterns, or vertical storage.

- Occasional cleaning may be necessary to remove debris, such as leaves, coming off the drainage area – As needed.
- Flush to remove sediment – Annually.
- Brush the inside surfaces and thoroughly disinfect – Annually.
- To avoid structural damage, unprotected storage elements should be drained prior to freezing weather – Annually.
- Maintain records of all inspections and maintenance activity – Ongoing.

Regular inspection and maintenance is critical to the effective use of a cistern. It is the responsibility of the property owner to maintain all stormwater facilities in accordance with the minimum design standards required by the City OF Rochester Hills and this Operations & Maintenance Manual. The local jurisdiction has the authority to impose additional maintenance required where deemed necessary. The city has the right to inspect the system and to require replacement if it fails or is a threat to public safety. If maintenance does not correct the problem, full or partial replacement may be required.

Cisterns shall be in accordance with the following inspection and maintenance criteria:

Inspection Activities

Post-construction

- Inspect to ensure that cistern/rain barrel was installed and working properly.
- Certification shall be required that the constructed system meets the conditions specified on the approved plans.

- Certification regarding the water tightness of the underground storage tank is required after its installation.

Annually and after large storm events

- Leaf screens, gutters, and downspouts should be inspected and cleaned to prevent clogging.
- Inspect overflow device for obstructions or debris that would prevent proper drainage when storage capacity is exceeded.
- Inspect to ensure overflow runoff is safely conveyed to a stable outfall that causes no problems to down gradient properties.
- Dewatering in between rain events so that the required storage volume is available.
- Inspect for presence of mosquito larvae.

Monthly

- Inspect all fittings and valves for water tightness seal.

Annually

- Above-ground systems should be disconnected, drained, and cleaned at the start of the Winter season.

Maintenance Activities

Annually, as needed

Clean leaf screens, gutters, and downspouts.

- Replace overflow device if any obstructions or debris prevent proper drainage when storage capacity is exceeded.
- If overflow runoff is not safely conveyed to a stable outfall and/or signs of erosion exist, stabilize and remedy problem.
- Dewater in between rain events so that the required storage volume is available and sediment is removed.
- Replace any system components that are not performing properly.

Annually

- Above-ground systems should be disconnected, drained, and cleaned at the start of the Winter season.

Cistern Maintenance Inspection Checklist

Date:

Time:

Weather: Rainfall over previous 2-3days?

Site Conditions:

Mark items in the table below using the following key:

X Needs immediate attention

- Not Applicable

Okay

? Clarification Required

Items Inspected	Checked		Maintenance Needed		Inspection Frequency
	Y	N	Y	N	
SYSTEM COMPONENTS					A, AMS
1. Signs of clogging (e.g. screens, gutters, downspouts)?					
2. Debris accumulation?					
3. Sediment accumulation?					
4. Standing water present around base?					
5. Are valves and fittings watertight?					
ADJACENT AREAS/OVERFLOW SPILLWAY					A, AMS
6. Is overflow outlet clean of debris?					
7. Erosion from overflow path?					
8. Signs of water ponding?					
DEWATERING					A
10. When was Cistern Last Drained?					
OTHER					A
11. Physical appearance of water, any odor?.					
12. Are mosquito larvae present?					

OVERALL CONDITION OF FACILITY:

In accordance with approved design plans? Y / N

In accordance with As Built plans? Y / N

Maintenance required as detailed above? Y / N

Compliance with other consent conditions? Y / N

Comments:

Dates by which maintenance must be completed: / /

Dates by which outstanding information as per consent conditions is required by: / /

Inspector's signature:

Consent Holder/Engineer/Agent's signature:

Consent Holder/Engineer/Agent's name printed:

Control Structure

Flow control structures, also known as flow restrictors, direct or restrict flow in to or out of facility components. The flow is regulated by a combination of orifices and/or weirs. Lack of maintenance of the control structure can result in the plugging of an orifice or weir. If these flow controls are damaged, plugged, bypassed, or not working properly, the facility could overtop or release water too quickly potentially damaging streams, habitat, and property.

Control Structure – Recommended Maintenance Protocols

Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Required Maintenance and Expected Results
General	Trash, Debris and Sediment Structural Damage	Material has accumulated to within one foot of below orifice plate or weir.	Remove all sediment and debris.
		Flow control structure is not securely attached to manhole wall.	Repair structure support.
		Structure is not in upright position.	Repair structure to correct position.
		Connections to outlet pipe are not watertight.	Repair connections to outlet pipe to water tight; structure repaired or replaced and works as designed.
Cleanout Gate	Damaged or Missing	Damage to flow control structure.	Repair or replace flow control structure.
		Cleanout gate is not watertight or is missing.	Repair or replace gate to design specifications.
		Gate cannot be moved up and down by one maintenance person.	Repair gate.
Orifice or Weir Plate	Plate Damaged or Missing	Chain/rod leading to gate is missing or damaged.	Repair or replace chain or rod.
		Control device is not working properly due to missing, out of place, or bent plate.	Repair or replace plate to design specifications.
Overflow Pipe	Obstructions	Any trash, debris, sediment, or vegetation blocking the plate.	Remove all sediment and/or debris.
		Any trash or debris blocking (or having the potential of blocking) the overflow pipe.	Remove all trash and debris.

Manhole

A manhole is an underground structure to allow access to conveyance pipes for maintenance and inspection purposes. Manholes are used in storm sewer main lines at any change in direction, slope, pipe material or pipe size.

Storm manholes typically provide a storage volume (sump) below the inlet and outlet pipes to allow sediment and debris to settle out of the stormwater runoff. Some manholes are also fitted with stormwater flow control structures such as orifices or weirs.

Manholes are enclosed spaces where harmful chemicals and vapors can accumulate. Therefore, the inspection and maintenance of these facilities should be conducted by an individual trained and certified to work in hazardous confined spaces.

General

Trash and Debris

Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height.
Remove trash or debris.

Trash or debris has accumulated to within six inches of the invert of the lowest pipe. Remove trash or debris.

Sediment

Sediment has accumulated to within six inches of the invert of the lowest pipe.
Remove sediment.

Structure Damage to Frame and/or Top Slab

Top slab has holes larger than two square inches or cracks wider than 1/4 inch.
Repair or replace top slab.

Frame not sitting flush on top slab. Separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached. Repair or replace frame.

Fractures or Cracks in Structure Walls/ Bottom

Structure is unsound. Repair or replace manhole.

Grout has separated or cracked wider than 1/2 inch and longer than one foot at the joint of any inlet/outlet pipe or any evidence of soil particles or ground water entering manhole through cracks. Re-grout and secure pipe at manhole wall.

Settlement/ Misalignment

Manhole has settled or become misaligned creating a safety, function, or design problem. Repair or replace manhole.

Cover

Cover Not in Place

Cover is missing or only partially in place. Any open manhole requires maintenance. Replace cover.

Locking Mechanism Not Working

Mechanism cannot be opened by one maintenance person with proper tools.
Bolts into frame have less than 1/2 inch of thread (may not apply to self-locking lids). Repair or replace locking mechanism or lid.

Cover Difficult to Remove

One maintenance person cannot remove lid after applying normal lifting pressure. Intent is to keep cover from sealing off access to maintenance.
Repair cover.

Ladder

Ladder Rungs Unsafe

Ladder is corroded or deteriorated, has sharp edges, is not securely attached to structure wall, missing rungs, cracked, or misaligned. Repair or replace ladder to design specifications.