

I went to 461 McKnight and met with Patty McDonald on June 5, 2014. The purpose of the meeting was to look at the stormwater drainage for her property and options for her driveway.

Current conditions

Ms. McDonald explained the drainage problems for her property. During heavy rain storms, water runs into her yard from McKnight and from the Maplewood storm pond across the street. She has created a swale in her gravel driveway to divert water around the house and into the back yard. She said she has to modify the swale from time to time, depending on conditions. Diverting the water into the back yard is not an ideal solution since the volume of water causes problems in her backyard. The county made some improvements about 5 years ago to the back yard drainage, but she said it has not solved all of the problems. *That was a much bigger problem (McKnight/Mailand Gully Project) and they ended up only putting a lip on the end of the driveway—which did nothing and got plowed off.*

Based my observations, I have no reason to doubt that these drainage problems are real.

Currently part of the driveway is paved with asphalt and part of it is paved with gravel. The area that is paved with gravel is about 500 square feet. Ms. McDonald said she would like to keep the gravel because 1) The grade can be adjusted as needed to accommodate drainage as condition change and 2) The gravel allows some of the water to infiltrate into the ground so that it does not go into her back yard.

Paving the driveway

Grading and drainage

I looked at the grades in the yard and it is my professional judgment that if the driveway was paved with asphalt, it could be graded so that stormwater is directed around the house and into the backyard. Grades could be maintained so that stormwater would not enter the garage or house. *To me he said "I think it could..." I asked if he was 100% sure and he said no.*

Infiltration

Gravel allows a very limited amount of stormwater to infiltrate into the ground. When engineers do calculations to model stormwater run-off, they treat gravel as an impervious material, similar to standard asphalt.

Standard asphalt does not allow any stormwater to infiltrate.

At our meeting, I suggested permeable asphalt or pavers as a way to allow some infiltration of stormwater while meeting the City's requirement for paving.

Cost

When we talked about using permeable pavers to replace the gravel, Ms. McDonald said it was very expensive. She said she had found a bid for a paving job using permeable asphalt and the cost was \$10 per square foot. That would be \$5,000 to replace her 500 square feet of gravel.

I have attached a table compiled by the City showing the costs for various paving materials. It shows a cost of \$2.00 to \$6.00 per square foot for porous pavement and \$5.00 to \$10.00 for pervious pavers. The cost per square foot in this case would probably be at the high end of the range because the size of the job is small. *Is this table compiled for city use? Because I couldn't find anyone who does residential porous pavement. I found one company (Bituminous Roadways) who, even though they do industrial/road work, they could probably supply the porous asphalt material, around \$1500, but that doesn't include extensive site work and the labor costs. That is what brings the price up very high. I called around and couldn't find anyone who would do that either—so I couldn't even get an estimate.*

Let Wes (651-266-9112) or me (651-266-9086) know if you have any questions.

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Costs

- > Ranges based on quantities and site conditions
- > Installation capital costs:

Class V ¹	\$1.50 - \$2.00 / sq ft
Asphalt, Standard ¹	\$3.00 - \$4.75 / sq ft
Concrete, Standard ²	\$5.00 - \$7.00 / sq ft
Grass/Gravel Paver ³	\$1.50 - \$5.75 / sq ft
Porous Pavement ^{3,4}	\$2.00 - \$6.50 / sq ft
Pervious Pavers ³	\$5.00 - \$10.00 / sq ft



1. Call ASP for typical driveway (480 sq ft)

2. WholeHouse and Building Journal.com

3. www.asapconnect.com/resources/pavers-costs.html

4. www.kbrwatercenter.net

A photograph of a residential driveway made of asphalt, showing some wear and a dark car parked in front of a white garage.

A photograph of a residential driveway made of grass/gravel pavers, showing a dark car parked in front of a white garage.

A photograph of a residential driveway made of porous pavement, showing a dark car parked in front of a white garage.