

PLAYHAVEN FARM LLC & GREEN BUILDING PROJECT



GREENOVATION : PLUMBING

PLEASE NOTE:

Everything included in "Greenovation : Plumbing" has been transposed directly from the website. That includes references to the PlayHaven Farm LLC and Green Building Project (PHF&GBP) website pages, external websites, links to documents, etc. Because of how quickly things change on the internet, there are NO links from this document.

SEARCHING FOR A PLUMBER (OCTOBER 2009)

I started the search for a plumber this week. We figure that considering how long everything takes in the world of remodeling/contracting... we better find the best company for our needs and get them booked for the spring. I see from my review of past entries that I didn't tell you the reason we want to update the plumbing. It is because the pipes in this house are polybutylene (which is a form of plastic resin that was used extensively between 1978 and 1995). This is not good piping! There were even class action lawsuits brought in the 1980s because of it.

We knew we would be updating the plumbing early in the renovation and have decided that it will be the next "big" thing. And, since we'll be needing a plumber, we're finding out which ones can also do the job of turning the cistern into a rainwater catchment/storage system that will feed the water into the house for showers and toilets. It will mean making sure the water doesn't "back-up" into the rural water system and also the ability to switch to rural water if the water in the cistern gets low.

REPLACE POLYBUTYLENE WITH PEX (APRIL 2010/UPDATE 5-10-10)

The reason we decided to update the plumbing was because the pipes in this house were polybutylene (which is a form of plastic resin that was used extensively between 1978 and 1995). This is not good piping! There were even class action lawsuits brought in the 1980s because of it.

I started the search for a plumber last fall. We figured that considering how long everything takes in the world of remodeling/contracting... we better find the best company for our needs and get them booked for the spring.

I interviewed several companies in the area and decided on Grain Valley to do the job. (Grain Valley Electric, Heating, Cooling and Plumbing, 408 S Main, PO Box 471, Grain Valley, MO 64029, 816-229-9505) And do you want to know why? It's because Allen spoke to me (a mere woman to most contractors) like a human being and was not put off by our 'greenovation' (a word which, by the way, I did not create -- heard it used recently and sure wish I had!). In fact, Allen was talkin' the talk and walkin' the walk of energy efficiency, etc. from the moment he arrived at our house. Plus, I trust my gut-feelings and (as with KC Roofing) I just knew this was the company to use.

Allen was also not scared off by our idea of turning the cistern into a rainwater catchment/storage system. We discussed using the water for showers and toilets and decided that was not feasible in our situation (the way the bathrooms are spread out, for one thing) and decided instead that the water will be used for outdoor purposes. So Allen gave us a quote for setting it up with several spigots. That is a project that will have to wait.

I was sure we wanted to use PEX tubing throughout the project until I found out how close in price it would be to copper. I was so surprised! Turns out the brass fittings used with PEX have gone up in price, as has PEX generally due to its popularity. So the difference was only about \$800 more for copper. I was expecting it to be about double. I can tell you that I was in a quandry! Which to choose?

I went back to researching... and the winner is (drum roll, please): PEX. I suppose you want to know why... you should want to know why... I'm going to tell you anyway (if you don't want to know why, there are pretty pictures down the page to look at).

The deciding factor was cost. Which is really irritating to me because that is usually the first and only thing that most people look at. Here's what I found out:

- PEX is a non-recyclable petroleum-based product. Copper is a highly recyclable metal/natural product.
- PEX is lightweight and is highly transportable. Copper is very heavy and cumbersome to transport.
- About 50% of the copper in use comes from recycling and the other 50% is mined. Mining practices for copper are generally strip-mining which is horrible for the environment. PEX is 100% mined from petroleum and, especially recently, we know about those environmental problems.
- It takes about the same amount of petroleum to make and transport PEX as it does to mine and transport copper.
- PEX cannot be exposed to sunlight very long without it being compromised. Copper cannot be exposed to highly mineralized water without it being compromised. (We have rural water which is highly mineralized).
- PEX is highly flexible and thereby requires less fittings than most piping. Copper is very rigid and requires soldering of all fittings and is best for straight runs.
- PEX can withstand freezing better than most piping. Copper (like most metal piping) does not withstand freezing.
- Copper is a tried and true product and has few (if any) known health-related problems. PEX has been around for several decades in various presentations and does not appear to leach chemicals; however, there is still some concern about the possibility.

So, when I weighed all these pros and cons and they came out so evenly matched I had to add price to the list. And while the difference in price wasn't as much as I expected it was still a savings to go with PEX.

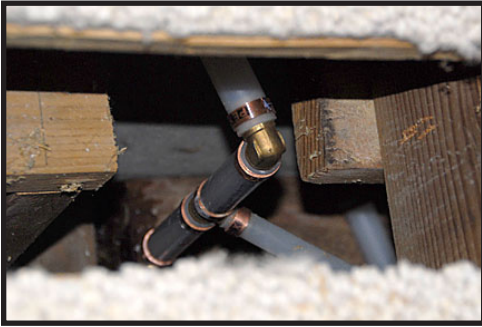
OK, so there are just a few photos of this project because how much can you see during a pipe retrofit anyway?



Most of the project took place in the basement and kitchen and bathrooms on the east side of the house (one above the other), but the master bedroom was a conversion from the garage by the former owner, so the plumbing goes through the crawlspace and there was no access to it.

The first step was to pull back the carpet and cut a hole so the plumber (that would be Cody) could get under the floor.

When we bought the house, we were told that the crawlspace area varied from 6 inches to 18 inches, but it turns out that it's pretty much 18 inches from front to back. The crawlspace is not insulated (yet, anyway) and we were happy to find out that they used insulation around the ductwork. Which just happened to come in right where they cut the access. Luckily, Cody is skinny and had no trouble getting in and out around it.



The water comes into the house in the master bedroom and there is a mock-register opening that allows access to it. The water for the master bathroom splits off before it continues into the basement. So there is now a regulator installed at this location as well as a shut off for just the master bathroom. The shut off for the rest of the house is in the basement.

The project was split into two so we would have toilet and shower and water access at all times: first the master bathroom and then the rest of the house.

After shutting off the water, Cody removed the old piping. Here you can see him cutting the hot water line to the bathtub. Notice the incorrect use of no-pressure PVC for the cold water line. This was something we had discovered after buying the house and we were very happy to get that corrected - showers with minimal pressure aren't very pleasant.



Here is proof that Cody fit in the crawlspace - that is his arm. He is running the new PEX and pulling out the old polybutylene.



These 2 pictures (left and right) show you how nice the new PEX looks when it is installed.



Cody was great at putting things back the way he found them and cleaning up.

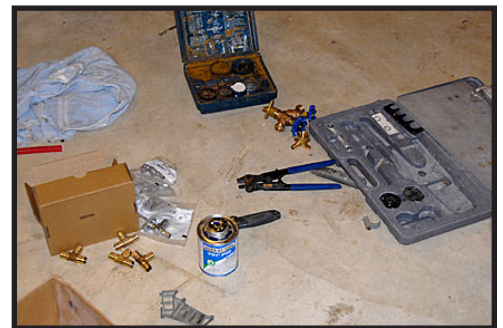


Here is a close-up of the PEX... red is for hot water, white is for cold.

This is the master line into the main part of the house and you can see the red shut off valve just to the left of Cody's hand.



A few tools of the trade.



Like any renovation, there are bound to be problems as you uncover what and how things were previously installed. This job was no different. We discovered places where we thought the piping would be in the wall and easy to replace but it was instead run through the floor and some being run in the exterior wall and some going through vent/ductwork.

Because of these things, Cody had to do some 'creative' plumbing... for example running the PEX at the baseboard in the upstairs bathroom and boxing it in so it would not be exposed.

I asked him to put access panels up wherever he had to cut into the walls instead of taping the drywall. But there were a couple of places that still needed mudding and gives us the opportunity to do some aesthetic greenovation later on.

I also had him move a vanity in one of the bathrooms from opposite the bathtub to into the corner... which required moving the drain... but it added a lot more open space to a small bathroom.

And we did have a minor leak that took a couple of weeks to show itself, but hey, that is not as bad as it could have been. They responded promptly and made the necessary repairs and all is well.

Would we use Grain Valley again? Heck Yes! And We Already Have! The sump pump that AB May put in 2 years ago was already going bad and so we had Cody put in a new one that can handle the amount of water it needs. They also corrected the tubing that takes it out of the house so the pump can work easily. We also used Grain Valley to do our yearly inspection and maintenance on our air conditioner.

UPDATE - OOPS, WE'VE GOT A LEAK.

During the winter, I came home from running errands to find water on the floor in the bathroom next to the kitchen. I had only been gone a couple of hours and there was quite a puddle there. Looking up I saw the ceiling drywall was wet through and dripping. OH, OH!

I called Grain Valley plumbers and left a message (it was, of course, just after 5:30 pm). Emergency!!! Then I went to the basement and turn the water off to that side of the house.

Luckily, Cody was on-call and got my message as he was driving home. He stopped at my house and investigated. As we went through turning the water on, off, etc. He found the problem! It was a Shark Bite connection between the new PEX and the old pipe to the shower in the 2nd floor bathroom directly above the 1st floor bathroom. AND, it burst completely as he was inspecting the leak. That was lucky! Off the water went again. He didn't have a replacement with him, but returned first thing in the morning with the part and fixed the problem in under an hour.

No charge at all. Thank You!

Of course, we ended up with ruined ceiling drywall and that had to come out and has to be replaced.

I suppose we could have put in a claim with the insurance company... but we opted not to since the cost to fix it is not much more than our deductible.

The joys of home ownership.

STANDING WATER IN CRAWLSPACE (SEPTEMBER 2011)

Once again, water informs us of a problem. We discovered the water during Eric Kjelshus' visit (about updating the HVAC); it was where the PRV (pressure reducing valve) was installed when we fixed the plumbing. Couldn't tell how much, but was hoping it was just condensation due to the hot exterior air and cool basement air coming through the opening to the crawlspace. Alas, no. We had standing water over about half of the crawlspace area (mainly at the north end where the garage had ended and the foundation had been extended.

Called the plumber. He was able to stop by the same evening to figure out what tools he was going to need to fix whatever the problem was. It turned out that all he needed was the correct size wrench because we had a slow leak where the main line attached to the regulator at the house. A few minutes and \$100 later, the leak was stopped.

FYI, the pie pan that was used to catch leaks until the plumber could get there was ruined because some kind of plumbing grease got on it and I couldn't get it off. So, I advise you to NOT use your good kitchen pans for this kind of thing.

WHY DID WE HAVE A LEAK?

Isn't that the million dollar question, LOL. Well, in this instance, we think we have an answer. But it requires a little background info... the water pressure at this house was low when we bought it. I assumed it was because we are so far out in the country and probably have lots of farmers irrigating

off the line or simply that we are at the end of the line. After listening to the hubby complain for almost 3 years, I decided to drop off the monthly payment in person and ask if there is anything the water company could do. Which brings us up to May 2011. The water company personnel said there was no reason for us to be getting low water pressure and they would send someone out that same day to determine what the problem was.... which they did. He took a look at the meter where the water line to our house comes off the main line and found that the regulator was rusted and not adjustable (translation: really old and not working correctly). Now, if the problem had not been at their meter (their responsibility), we would have had to pay for a repair. We were lucky this time... their responsibility, they fix it at their own expense. He called in for authorization to do the repair and put in the new regulator (that IS adjustable).

What is a regulator? In plumbing, it is a valve that controls how much water flows through pipes under pressure and is measured in psi (pounds per square inch).

Fortunately, there is a field hydrant on the same line as the water to the house, so he was able to put his water pressure gauge on it to test the psi beyond the meter. I stood at the field hydrant (which was in line site of the meter) and was instructed to signal him when the pressure reached about 65 psi. Generally, the pressure in your home should fall in the 40 to 60 psi range... which is why we have a PRV set to 60 psi where the line comes into the house. The nice man did warn me that we would likely see a higher water bill with the increase of pressure because more water would be coming out of the faucets. And even though there turned out to be a very slow leak, we did not see an increase in our bill because we use aerators and other water conservation products on all our faucets/ shower heads/etc.

So, we figure that it was the increase of pressure on the connection to the PRV that caused it to leak; which is why tightening the connection stopped it.

This shows the PRV where it connects to the main line. The leak was at the threads going into the PRV.

Here's what the crawlspace looked like before it was cleaned up (for after pictures visit the crawlspace section of the Insulation Project page).

Most of the water was in the northern half of the crawlspace; however, it did also follow the ductwork further south where it was laying on the concrete.



the ductwork as it came in from the basement access (about 1/2 way between the south and north walls) running from east to west and where the 1st "T" divides the run to run north (for 2 registers) and south (for 1 register). FYI, it is placed along side a framed wall in the center of the space that supports the floor joists).

the 2nd "T" and the water line coming into the house.





the water line where it meets the PRV (behind the vertical board, in front of the concrete hip wall).

a close-up of the ductwork resting on the old garage (concrete) floor and where it dips into the area that was added. The lower spot is where most of the standing water was... this is the duct that was filled with water.



HOW WE CLEANED UP THE WATER...

Comfort Solutions (Eric Butler) was scheduled to come out the next week to insulate that crawlspace, so clean up had to be done and the area dried out before that.

Thank goodness my hubby is not afraid of small, dark, wet places and is thin enough to fit on an 'auto creeper' in that area. He hooked up the shop vac (15 cu ft) so it was outside the window (we plugged the open window around the hose with lots of towels) and threaded the hose (we got some extra lengths for the job) into the crawlspace. He had to empty it several times. We had to replace the ductwork in the area anyway, so while down there, he also removed the flexible, insulated tube and found one of them to be filled with water.

After getting out as much water as he could, he spread Feline Pine cat litter in the damp areas and left it overnight to "suck it up". [FYI: This is a great product! When used as cat litter, it reduces the dust you normally get with clay litter; even better is that while the pellets crumble a bit, the product smells nice and it cleans up really easily!] The next day he vacuumed out the cat litter and spread another round. We went through 40 lbs. of Feline Pine.

Thankfully, there wasn't mold to deal with... just a dank mustiness. Nevertheless, he used a pump sprayer and 2 gallons of OXYQUAT® to cover all the wood and concrete. OXYQUAT® is "a phosphate free, one step cleaner, disinfectant and deodorizer consisting of four quaternary ammonium compound chains formulated with a compatible biodegradable detergent system" (I got that directly from the website)... this is not the normal application, but we figured it couldn't hurt.

Gary also discovered a very minor drip under the vent stack to the toilet in the master bathroom; it is waiting to be corrected and in the meantime, there is a pan to catch the drip.



I added a compact, portable dehumidifier in the crawlspace to remove any more moisture. It is an Eva-Dry 500 Mini that holds up to 8 oz. of water and doesn't require electricity to work. It sits there and absorbs the moisture through dessicant beads. Then you remove it, take it to a well ventilated place, plug it in to the electric socket and it dries itself out in 8 to 10 hours. I purchased two so that one can be drying while the other is gathering moisture.

The crawlspace was dry by the time Eric came to put in the insulating foam.

REPAIR SHOWER FAUCET 1ST FLOOR BATH (SEPTEMBER 2012)

Generally, the hubby likes to do his own general repairs at our house. BUT, he travels quite a bit at certain times of the year AND sometimes the repairs/maintenance require the work of a professional.

When I discovered that the shower he uses daily had a drip that I could not stop, I left him a message at work to find out if he knew about it and if there was a “trick” to turning it off completely. There was a trick and it did not work for me. So, in went a 5-gallon bucket to collect the dripping water (to be used on plants outside since we are in drought conditions this summer).

When he got back from his trip, he was able to minimize the drip and took a look at the shower faucet plumbing... and decided he didn't want to attempt it. I put off calling the plumber because the drip was so tiny, but finally had to send for them in September.

Chuck came out and since he was there, I had him also look at the Master Bedroom's toilet. The hubby had found a drip from it last year when he was getting all the water out of the crawlspace (see the story on this page about that). He had purchased the pieces etc. he needed to fix it and HAD done what was needed above the floor; but he kept putting off going back into the crawlspace. Chuck was OK with going into the crawlspace. He took a look and discovered that while there HAD been a leak, it was now bone dry. Yippee!

Chuck thought the shower faucet would be an easy fix. But, like many things about this house, that turned out not to be the case.

I had to go buy a whole new shower unit and Chuck left to do another call and came back in the evening to install it. Of course (being the kind of day it was), I bought the wrong type and had to rush back out to get the right type.

Long story short, with the correct type, it was easily replaced. And Home Depot had a sale on vanities, so I bought one I'd had my eye on for some time at 1/3 the price! I also purchased the faucet for the vanity to match the one for the shower. They are in storage in the basement until I can get to the “remodel the 1st floor bathroom” project.

Some clouds have silver linings.

