

RE: 12345 Anystreet, Houston, TX, 77070

Date of inspection: May 24, 2012

Michael and Cathy,

Some notes from the inspection.

You stated that the exterior had been totally pierced.

You have water coming up into your living room floor. I observed efflorescence, a precipitate of calcium salt which occurs due to water in the concrete. You pointed out a previously repaired crack which has deteriorated.

You pointed out several areas of minor damages, including the wall in the breakfast area, a ceiling crack at the upper stair landing, wall cracks at windows, and wall ceiling distress at the second level. Also, some door operation problems at the second level.

The amount of movement at the exterior walls which the damages indicate is minor. It also appears to be mostly uplift, which is unusual for a pier supported wall.

I examined the drainage, and found problems. At the left side, any water next to the foundation is impounded, we even found algae, which indicates the water stays there long after the rain. At all sides, I found river rock over mulch/sand/silt mix, with the natural soil inches below. The natural drainage, determined by the natural soils, is hidden.

I believe the drainage is negative at least at some of the perimeter, and the rain drainage is going underneath your foundation. Remember that repair of the foundation lifts it above the ground, so there is a space for free water to travel.

I also think that water getting under your foundation has carried some soils into this space, and filled up that space, so some parts of your foundation sit on soil again, and are influenced by the wet and dry cycles.

I think almost all of your problems with the house are due to improper drainage around the perimeter of the house. There is also a problem getting the water from the back yard to the street, which is not directly affecting the foundation.

To repair, at all sides of the house, remove the river rock and mulch mixture, until you get to native soil. Add topsoil as needed to bring the level of the soil to within 4 inches of the brick, and slope for drainage away from the house. Then you can replace the mulch mixture and river rock.

If properly done, this should cure the problem with water getting into the living room floor. If not, then I can advise you on either a water barrier underneath the foundation or at floor level.

We discussed the getting the water from the back yard to the street. At the right side of the garage, I recommend a swale going from the back of the garage to intersect the driveway near the street. At the left side of the garage, you brought up a diversion curb to divert the flow onto the driveway, which is meritorious. You might also consider a berm or swale at the back-left yard near where the yard meets the concrete, to divert water to the left side of the house. The garage itself should have the perimeter soils finished like I advise for the residence, terminating in a swale which drains around the garage.

I am attaching a paper I wrote on drainage.

I think the problem with the doors upstairs is due to sagging of the framing or shifting of the foundation of a permanent nature. The sag or movement is within tolerance, but its effects can be addressed. Reset the doors within the rough frames for proper operation.

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Foundation maintenance: Since you have full exterior foundation repair, you need not water for the sake of the foundation.

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Convention regarding directions: Front faces the street, left and right are as seen from the street facing the house. Back-right indicates back side, right end. Right-back indicates right side, back end.

CAVEAT: My approach to the mitigation of foundation problems is to eliminate the source of the problem rather than ignore them and install piers or pilings. The installation of piers or pilings can provide immediate results, but ignoring the causes of the foundation performance problems can result in further foundation problems in future years. Eliminating the cause of the problems can involve years before the foundation has recovered and is stable again, and the foundation may not recover to a level acceptable to the owner or professionals.

I will give you the best advice based on my experience, the experiences provided by other professionals, and the experiences of my clients. I may predict the future performance of a foundation based on generally accepted principles and experience, but factors beyond my control or beyond my ability to observe can affect a foundation in unpredictable ways.

You can have a deeper understanding of foundation performance by reading my information at <http://texashomeengineer.com/why-does-a-foundation-move.html>.

Thank you for your business. Call if you have any questions.