



Sloped Site Drainage

by Michael Lennon

Having sleuthed out the symptoms and causes of wet basements for years, I felt confident to tackle an unusual homeowner request. Another home inspector had been to the job but could not satisfy this person with an adequate explanation. I suggested that if I couldn't figure it out, there would be no charge.

The trouble was with the clues and logic. There I was in the unfinished basement portion of a 20-year-old home looking at the rear foundation wall. It had been coated with one of those products advertised as capable of keeping the basement dry. Much of the material was flaking off in large blisters, and stains were everywhere.

I investigated the outside. The rear yard of the house was a flat section about 12 feet wide cut into the gently sloping hillside. The gutters on the



The basement wall coating, which was supposed to prevent seepage, was blistered and flaking off. The cause was less than obvious.

rear of the house were useless, loaded with tree debris and rusted out in many spots. The downspouts had fallen off. The grading immediately against the foundation had sunk. Like shooting fish in a barrel, I thought, water from the roof was saturating the soil against the house and seeping right in.

The visual symptoms, however, did not line up very closely with the problems the homeowner was describing. The timing did not seem to work out well either.

Rather than confirming my suspicions that water was entering where the rear foundation wall met the slab, the owner walked me to the front of the house (which was finished) and pointed to a single source of entry roughly alongside the front stoop. The paneling prevented any actual exami-

nation of the wall/slab area. The owner stated that only really big rains, not prolonged drizzles, brought on the seepage here.

Examining the foundation area outside the suggested point of entry, I could find very little wrong. The front gutters were in much better shape (since the tree cover was minimal on the front of the house) and the landscape grading at the foundation was adequate.

I was puzzled. I had seen so many similar situations where roof runoff problems and poor grading had combined to allow water to pressure its way into homes. In our area of relatively poor draining soil, it is practically a given: Fail to pipe the roof runoff away from the foundation or fail to maintain a sloped grade away from the foundation and hydrostatic pressure will build, soil will saturate, and water will quickly seep into the basement. I was not ready to give up on the belief that gutters, downspouts, and leader pipes combined with yard grading and swales were the front line of defense for basements. The gutters and grading on this particular house were horrible and, I was certain, had to account for a lot of water during downpours.

Then I remembered something I had observed on first arriving at this house, which sat in the middle of the block. It had been several days since it had rained, yet there were occasional wet spots crossing the sidewalks in front of the houses. There was probably a 6-foot elevation change from the street sidewalk up to the sidewalk immediately in front of each home. This meant the street sidewalk was several feet below the basement slabs of the homes. A more careful examination of the wet spots on the street sidewalk revealed that some spots were alongside the driveways of the houses while others appeared centered on the houses on the hillside above. In this case the wet spot was centered on the house.

Things started to make sense. I remembered seeing the panel cutout for the main water shutoff directly above where the homeowner had indicated the water initially seeped in. Between the curb and the sidewalk was the water meter box, which lined up exactly with the wet spot. Removal of the meter box lid revealed a meter box chock full of water.

I thought I noticed something as I looked back up to the house from the meter box. Along the line of sight was

a slight but continuous depression in the land. This obviously lay immediately above the sewer and main water line. I walked up and down the street and sighted up to the houses from the water spots on the sidewalk. Whenever the water was centered on the house, the depression in the land existed but not when the water was by the driveway. I waked back into the yard behind my client's house and noticed how there was practically no swale where the hillside was cut to form his yard. As I checked the neighbors' yards, those with good swales or even retaining walls behind the houses had either no water on the street sidewalk or had the water alongside the driveway; those without swales or retaining walls had it centered on the house.

With this evidence, I renewed my faith in landscaped grading and roof runoff controls. There was no way the absolutely abysmal drainage behind the house would not saturate the soil and force water in. The evidence along the back wall confirmed that the soil was indeed saturated. The only difference was the unusual point of entry and the timing.

The diagnosis: The water was forced in under pressure, but it was filling up a gravel bed beneath the basement slab and was draining right out again along the sewer and water line trench in the front of the house. It had apparently been doing that for years and accounted for the slight soil consolidation above the trench. A reexamination of those areas in front of the houses also displayed that the grass was growing more vigorously over top of the sewer and water line. The drainage out along that line would also account for the mysterious timing and occurrences. When the water volume was large and occurring quickly, it could not drain out fast enough, so it backed up from the front.

My prescription to the client was the following: add and maintain gutters, spouts, and leader pipes. Build up the landscape grading against the foundation and cut a significant swale in the rear of the rear yard to handle the hillside runoff, and channel it around the home to the street below. As a result, the client was satisfied and paid me. He implemented the work and the problem was resolved. ■

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