

Drainage Is Destiny

by Travis Nech

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Drainage Is Destiny

A Texas Homeowner's Guide to Gutters, Grading, and Water Management Around Your Foundation — Keep the Ground Under Your House Steady for Life

By **Travis Nech**

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Chapter 1: The Ground You Built On: Texas Expansive Clay and Why Water Moves It

Fifty years I've been putting my hands on Texas brick and concrete, and I can tell you the plain truth right up front: almost every cracked foundation I've ever looked at was not a concrete problem. It was a ground problem. And the ground problem was really a water problem. The concrete was just the part that couldn't bend, so it broke.

If you're going to protect your house, you have to understand the dirt it's sitting on. Not in some college-textbook way. In the way a man understands it after half a century of watching what it does to houses in July and what it does to them in March. Texas dirt is alive in a way most folks never think about. It breathes. It swells up when it drinks and shrivels when it goes thirsty. And your house is riding on top of it like a boat on slow water.

What Expansive Clay Actually Is

Under most of Texas — and I mean under the big population centers where most of you live — there's a type of soil called expansive clay. The black stuff folks around Dallas and Fort Worth call black gumbo. Same family of soil stretches down through Waco and Temple, through Austin and San Antonio, and there's a version of it under Houston too. It got there because most of this state used to be seabed, millions of years back, and the fine sediment that settled on that seabed is what we're building on today.

Here's the plain-language version of what makes it expansive. Clay is made of microscopic plate-like minerals — the troublesome family goes by names like montmorillonite, and you'll hear old-timers call the worst of it bentonite. Picture a stack of dinner plates with tiny gaps between them. When water shows up, it slides in between those plates and pushes them apart. The whole mass swells. When the water leaves — baked out by a Texas summer — the plates collapse back together and the whole mass shrinks.

Think of it like a sponge. Soak a dry sponge and it puffs up fat and heavy. Leave it on the counter for a week in August and it shrivels down hard and curled. Now imagine your house

sitting on a sponge the size of your lot. That's not an exaggeration. That's the job description of Texas clay.

The movement isn't small, either. We're not talking about a sixteenth of an inch that nobody would notice. Expansive clay can move inches — two, three, sometimes more — between a soaking wet season and a brutal dry one. A house is a rigid thing. Brick veneer is especially rigid; it has almost no give in it at all. When the ground under one part of your house moves two inches and the ground under another part doesn't move at all, something has to give, and it won't be the dirt.

Why Texas Has So Much of It

Texas is big, and not all of it sits on this stuff, but the cruel joke is that the clay runs right under the places where Texas built its cities. The Blackland Prairie is a band of dark, rich, extremely expansive clay that runs from the Red River country down through Dallas-Fort Worth, Waco, Temple, Austin, and San Antonio. Houston sits on its own gumbo — different name, same appetite for water. Millions of homes across this state are sitting on soil that wants to swell and shrink with every weather cycle.

The Hill Country to the west is rockier — limestone country — and out in West Texas the soils change again. But if you're reading this book, odds are strong you're in the clay belt, because that's where the people are and that's where the foundation trouble is. When somebody tells me they're in Plano or Arlington or Katy or Round Rock and they've got cracks, I already know what kind of dirt we're dealing with before I ever pull in the driveway. I've seen this a thousand times.

Your Foundation Rides on Moisture Uniformity

Here is the single most important concept in this whole book, so let me say it slow: your foundation does not need the ground to stay still. It needs the ground to stay even.

A slab-on-grade foundation — which is what most Texas homes sit on — is essentially a big rigid raft of concrete floating on the soil. If the entire raft rises a half inch because the whole lot got soaked, the house goes up a half inch and nothing cracks. If the entire raft settles a half inch because the whole lot dried out evenly, the house goes down a half inch and nothing cracks. Houses can ride uniform movement just fine.

What breaks houses is differential movement — one part of the ground moving while another part stays put. That's when the rigid raft gets bent, and concrete doesn't bend. It cracks.

Brick veneer cracks even sooner, because brick is about as flexible as a dinner plate.

So the goal was never "keep water away from your house entirely." That's impossible, and honestly it would cause its own problems — we'll get to that. The goal is uniform moisture around the entire perimeter of your home. Same dampness on the north side as the south side. Same on the east as the west. When the moisture is even, the clay swells evenly or shrinks evenly, and the house rides it like that boat on slow water.

There are two directions this movement goes, and you should know both words because you'll hear them. Heave is when wet clay swells and pushes a section of foundation upward. Settlement is when dry clay shrinks and a section of foundation drops downward. Both of them crack houses. Both of them are caused by the same thing: uneven moisture. One side got more water than the other, or one side dried out faster than the other.

Why the Edges Dry First

Now let's talk about what actually happens around a real house through a real Texas year, because this is where most folks get surprised.

The perimeter of your slab — the outer few feet of ground around your foundation — is exposed. Sun hits it. Wind moves across it. In summer, that exposed ring of soil bakes. Meanwhile, the soil under the middle of your house is shaded by the house itself, protected from sun and wind, and it holds its moisture much longer. So in a dry spell, the edges of your lot dry out and shrink while the center stays plump. The edges drop. The middle stays up. Engineers have a word for that shape — they call it dishing or doming depending on which way it goes — but you don't need the word. You need the picture: the ground under your house turning into a shallow bowl or a low mound, season after season, flexing your slab a little more each time.

Trees make this worse, and Texas loves its trees. A big oak or pecan near the house drinks an enormous amount of water every day in summer — hundreds of gallons for a mature tree. Its roots don't politely stay in the front yard; they reach right under your slab edge and pull moisture out of the clay there. So now one corner of your house has a giant straw stuck in the ground next to it, drying that corner faster than the rest. Guess which corner cracks first.

Then the rains come — maybe a wet spring after a brutal summer — and the whole cycle reverses. The dry, shrunken clay drinks deep and swells back up, sometimes with real

force. Clay doesn't swell gently. Wet expansive clay can push upward with tremendous pressure. It heaves. And it doesn't heave evenly, because the edges get wet first and the middle catches up later.

Year after year, your foundation rides this slow swell-and-shrink cycle. Most years it rides it fine. But every cycle is a little workout on the concrete, and the workouts add up.

One Side Wet, One Side Dry: How a House Gets Twisted

Now put the whole picture together, because this is the scenario I see more than any other.

Imagine a house where the back yard slopes a little toward the house — just enough that rain collects along the back foundation. The homeowner also waters the foundation beds on that side, trying to do the right thing. Meanwhile, the front yard has a big tree near the corner, and nobody waters the front because the grass there is dormant in August anyway. So all summer long, the back side of the house sits in damp, swollen clay while the front side — especially that tree corner — sits in dry, shrunken clay.

The back of the house is being pushed up. The front corner is dropping down. The house is being twisted — one corner high, the opposite corner low. A rigid box does not like being twisted.

Brick veneer shows it first, because brick is the least forgiving material on your house. You'll see stair-step cracks — cracks that zigzag up through the mortar joints like a staircase — usually starting at the corners of the house or above and below windows and doors. Openings are the weak points; the brick has to span across them, and that's where the stress concentrates. Inside, you'll see the same story in the sheetrock: thin cracks running diagonally off the corners of door frames and window frames. Doors start to stick — not all the doors, just the ones on the moving side. A door that rubbed fine in April won't latch in September.

None of that means the house is falling down. I want to be clear about that, because folks panic when they see a stair-step crack. It means the house is moving differentially, and the movement has a cause, and the cause is almost always uneven moisture. Find the water imbalance and you've found the problem. That's what the rest of this book teaches you to do.

I should add one honest note here: sometimes the movement

has gone far enough that managing water alone won't bring things back. When a foundation genuinely needs repair in Texas, the method used here is pressed concrete piles — sections of precast concrete cylinder driven down through the unstable clay until they reach stable, load-bearing soil, lifting and supporting the foundation from below. It's the standard Texas approach, and it works. But repair is the last resort, not the first move. Everything in this book is about the first moves — the water management that keeps you from ever needing the last resort. And if you ever do see the kind of cracking that worries you — wide stair-step cracks running across large sections of brick, doors that won't close at all, cracks you can fit a finger into — that's the time to have a structural engineer come look at it in person. No book replaces eyes on the house.

Water Is the Steering Wheel

Here's the idea I want you to carry through every chapter from here on out: you cannot cheaply change the soil under your house. Digging it all out and replacing it isn't realistic for an existing home. But you can control the water around your house — where it goes, where it collects, where it soaks in, and where it doesn't. And because water is what makes the clay move, controlling the water means steering the clay.

Water is the steering wheel. The clay is the car. Your house is riding in the back seat.

Every chapter in this book is a steering technique. How to read what water is doing on your lot right now. How to get your gutters and downspouts to put roof water where it can't hurt you. How to grade the ground so surface water runs away from the house instead of toward it. How to water your foundation in a drought without drowning one side. How to keep trees, beds, and drainage working with you instead of against you.

None of it requires an engineering degree. All of it is stuff you can see with your own eyes, walking your own yard, once somebody shows you what to look at. That's what fifty years in the field buys you — the ability to read a yard the way you'd read a face. By the time you finish this book, you'll be able to do it too.

(This is a hypothetical composite — not a real customer.)

A homeowner I might meet on any August afternoon — let's call this a story stitched together from a hundred real ones — notices a thin crack running diagonally off the top corner of the living room window. It's hairline, nothing dramatic. Then she notices the back door drags a little when she closes it. It didn't do that in the spring. Then her husband spots a

stair-step crack in the brick at the back corner of the house, maybe six feet long, zigzagging up through the mortar joints. Now they're worried, and they're imagining the worst.

If I walked that yard, here's what I'd expect to find, because I've seen this exact pattern a thousand times. The back of the house faces west — full afternoon sun — and the homeowner has been running a soaker hose along the back foundation beds every evening, "to keep the foundation watered," like somebody told her to do. Good intention. But the front of the house has a mature tree near the corner, the front beds never get watered, and the front yard's been bone dry since June. So the back clay is swollen and the front clay is shrunk, and the house is racking between the two. The cracks are all on the moving side. The doors that stick are all on the moving side.

The fix isn't mysterious, and it isn't a foundation repair crew — not yet, and maybe not ever. The fix is evening out the moisture: getting water to the dry side in a controlled way, making sure the wet side isn't getting too much, and checking the gutters and grading while you're at it, because there's usually a drainage story underneath the watering story. Even moisture. That's the whole game. The cracks stop growing, the doors start working again, and the house settles back into riding the seasons the way it was built to.

That's what this book is. It's the whole game, one steering technique at a time. Let's start by learning to read the water.

Chapter 2: Reading the Water: What Your House Is Trying to Tell You

Your house talks to you. Not in words — in stains and salt crusts and little carved channels in the dirt. Water leaves receipts everywhere it goes, and once you learn to read them, your yard becomes an open book. Every wet spot, every white powdery patch, every place the mulch migrated six feet from where you put it is a sentence telling you exactly what the water did during the last rain.

I call it the rain-walk, and it's the single most useful habit in this book. It costs nothing, takes twenty minutes, and it will tell you more about your foundation's future than any gadget you can buy.

The Rain-Walk Habit

Here's the practice. The next time Texas gives you a real rain — not a five-minute sprinkle, a genuine soaker — wait about thirty minutes to an hour after it stops, then walk the entire

perimeter of your house. Slowly. Bring your phone for photos and a little notebook, or just use the notes app. Look at the ground, look at the foundation, look at the bottom two feet of your brick.

Do this twice a year at minimum — once in the spring rainy season and once in the fall. And here's the part most folks skip: photograph the same spots every time. The corner by the garage. The back wall under the big gutter run. The side yard where it always seems damp. Dated photos of the same spots, season after season, turn a vague feeling ("seems wetter back there lately") into hard evidence ("that stain is six inches higher than it was last October").

Walk during the rain too, if you can stand getting wet. There's no better teacher than watching water move in real time — seeing which way it sheets across the patio, where it ponds against the slab, which downspout is shooting water like a fire hose while the gutter overflows three feet away. But the after-rain walk is the one you'll actually do, and it shows you everything that matters.

Here's what you're looking for.

Efflorescence: The White Powder That Tells on Water

Efflorescence is a fancy word for a simple thing: white, powdery, sometimes crusty salt deposits on brick or concrete. You'll see it on the bottom courses of brick near the ground, on the exposed face of your foundation, sometimes along the bottom of a garage slab or on a retaining wall.

Here's what it is. Water moves through masonry — brick, mortar, concrete are all porous, like a hard sponge — and as it travels it dissolves tiny amounts of mineral salts inside the material. When that water reaches the surface and evaporates, it leaves the salts behind as a white crust. So efflorescence is literally a map of where water has been traveling through your masonry and drying out.

A little efflorescence in one spot after a wet season is normal and not alarming. But heavy efflorescence, or efflorescence that's getting worse year over year, or a thick white band running along the bottom of your brick — that's water telling you it lives there. It means that section of wall or foundation stays wet enough, often enough, for water to keep migrating through and evaporating. Ask yourself: what's keeping that spot wet? A downspout dumping nearby? A flower bed that never dries? Negative grade pooling water against the wall? The salt is pointing at the answer; you just have to follow its finger.

One caution: don't confuse efflorescence with mold or mildew. Efflorescence is dry, powdery or crystalline, white or light gray, and it brushes off. Mold is fuzzy or slimy, often darker, and it doesn't brush off clean. If you're unsure, the brush test settles it.

Ponding Stains and Water Lines on the Foundation

Water leaves high-water marks the way a bathtub leaves a ring. After a rain, look at the exposed concrete face of your foundation all the way around the house. You're looking for dark staining, a visible line where the concrete changes color, a film of fine silt, or dirt splashed and dried onto the concrete and the bottom of the brick.

A clean foundation face with maybe a light dusting of dirt is a happy foundation face. A foundation with a dark band six inches tall, or silt caked in the corner where the slab meets the soil, sat in standing water. That dark line is telling you exactly how deep the water got and exactly where it ponds.

Pay special attention to corners and to any place where two slopes meet. Water collects at low points — that's just gravity — and your foundation's low points are where ponding will show up first. If you see ponding stains on the same stretch of foundation every rain-walk, that stretch has a drainage problem, full stop. It doesn't matter whether the yard "looks" sloped right. The stain is the truth. Trust the stain.

Gully-Wash Erosion: The Dirt Drawing You a Map

Soil doesn't lie about water flow. When water runs across bare dirt with any force, it carves. Look for rills — little channels, maybe a finger wide — running through mulch or bare soil. Look for places where mulch has been relocated in a fan shape, like a little delta, pointing downhill. Look for exposed roots, small stones uncovered, or a visible channel cut along the side of the house.

Every one of those is an arrow showing you which way water travels across your lot. Follow the arrows backward to the source and forward to the destination. The source might be a downspout outlet, a gap in the gutter, or just a big roof plane with no gutter shedding water in a sheet. The destination matters more: if those arrows point toward your foundation, you've found a problem with a name and a fix. If they point away, past the house and out to the street or the back of the lot, that section is doing its job.

The worst version of this is the gully that runs right along the

foundation — a trench hugging the slab, carved by water running down the narrow strip between the house and the yard. That trench then holds water against the foundation after the rain stops, which is exactly what you don't want. If you find one, you've found a priority project.

Negative Slope Clues: Mulch Against the Slab, Dirt at the Wall

Sometimes the evidence isn't a stain — it's a pile. Walk your perimeter and look at what's touching the house.

Mulch washed up against the slab or the bottom of the brick is a red flag twice over. First, it means water flowed toward the house with enough force to carry mulch with it — that's negative slope, water running the wrong direction. Second, that mulch is now sitting against your foundation holding moisture there like a wet sponge pressed to the wall.

Dirt piled against the wall tells a similar story. Sometimes it's erosion-deposited — water carried soil to the low spot against the house and dropped it there. Sometimes a well-meaning somebody added soil or mulch to "fill in" a low spot next to the foundation and accidentally built the grade up toward the house instead of sloping it away. Either way, soil touching the bottom of your brick above the foundation line is wrong. We'll talk in Chapter 4 about exactly how much clearance you need and why, but on the rain-walk, just note it: dirt against the wall, mulch against the slab, anywhere the ground seems to climb as it reaches the house.

Also look for the settled trench — a shallow depression running parallel to the foundation, maybe six inches to a foot out from the wall. That's the backfill zone settling. When your house was built, the builders dug wider than the foundation, set the forms, poured, then pushed the dirt back in. That backfill dirt was loose, and over the years it settles — leaving a moat around your house that catches water and holds it against the slab. It's one of the most common things I see, and most homeowners never notice it until somebody points it out, because it develops so gradually.

Soggy Flower Beds That Never Dry

Flower beds against the house are where good intentions go to cause foundation trouble. On the rain-walk, step into the beds — actually press your finger a couple inches into the soil a day or two after rain. If it's still soggy when the rest of the yard has dried out, that bed is holding water against your foundation.

The usual suspects: bed edging — those neat little borders of stone, brick, or plastic — forming a dam that traps water in

the bed. Irrigation heads or drip lines in the bed adding water on a timer regardless of rainfall. Mulch piled deep, holding moisture for days. And the bed soil itself built up over the years until it's level with or above the surrounding grade, so water has no reason to leave.

A bed that never dries is a constant moisture source pressed against one side of your foundation — which takes us right back to Chapter 1's lesson about differential moisture. One side swampy, the other side dry, and the house twists between them.

Downspout Washouts and Driveway Channel Stains

Get down on one knee at every downspout outlet and look at the ground where the water lands. A crater — a scooped-out bowl in the soil or mulch right below the spout — means concentrated roof water is hitting there with real force, storm after storm. A trench leading away from the outlet shows you where that water goes next. If the trench leads toward the house or along the foundation, the downspout is working against you.

Then look at your driveway and sidewalks. Concrete tells on water too. You're looking for channel stains — darker trails where water consistently runs — rust-colored streaks, dirt lines, or a clean washed stripe through dusty concrete showing the water's path. Where does the driveway drain? If the answer is "toward the garage," look at the base of the garage door and the slab edge there for staining and dampness. Driveways are big, hard surfaces that collect a lot of water, and more than one foundation problem I've seen started with a driveway that politely delivered every rainstorm straight to the garage slab.

Writing It Down: Your Water Journal

None of this is complicated, but it is perishable. Memory fades; photos don't. After each rain-walk, jot down three things: where water ponds, where water flows toward the house, and what's changed since last time. Keep the dated photos in an album on your phone. Over a year or two, you'll build a picture of your lot's water behavior that's more valuable than any single inspection — because it's your lot, in your seasons, and you'll start to see patterns.

And here's the payoff: when you do the fixes in the coming chapters — extending a downspout, regrading a bed, adding a drain — your rain-walk journal becomes the report card. Walk the same route after the next rain and see the difference. Ponding gone. Stains fading. Mulch staying where you put it. That's how you know the steering is working.

(This is a hypothetical composite — not a real customer.)

Picture a homeowner doing his very first rain-walk on a Saturday morning after a Friday night soaker. He's lived in the house six years and never once walked the perimeter with the intent to look. Within ten minutes he finds it: a crater in the mulch under the downspout at the back corner, a good eight inches across, and a little gully running from that crater straight along the foundation to the corner of the house — where the brick shows a stair-step crack he's been meaning to ask somebody about. He's been mowing over that spot for years without seeing it, because he never looked right after a rain. One buried drain pipe later — solid pipe from that downspout, run out to daylight in the side yard — the next rain-walk shows the crater filling in, the gully drying up, and the corner staying dry. The crack hasn't grown since. He didn't need an engineer or a repair crew. He needed twenty minutes and a willingness to look.

(This is a hypothetical composite — not a real customer.)

Now picture a different homeowner, same kind of Saturday. Her rain-walk turns up a thick white band of efflorescence along the bottom two courses of brick on the back wall, and a dark ponding stain on the foundation face right below it. The back flower bed is still soggy three days after the rain, and she can see the bed's stone edging is holding water in like the rim of a bowl. When she digs a little with her finger, she finds the mulch and soil in that bed are actually piled above the bottom of the brick — years of topping off the mulch, a bag or two every spring, until the bed grew upward instead of outward. That bed has been pressing wet soil against her brick and foundation for years, and the efflorescence is the receipt. Her fix is in Chapter 4: pull the bed back down, get the soil below the brick line, slope it away, and let that wall breathe. The white band doesn't lie, and neither does the fix.

Your house has been trying to tell you all of this for years. Now you speak the language. Next, we're going to fix the biggest water-delivery system on your property — the one hanging off your roof.

Chapter 3: Gutters and Downspouts Done Right

Your roof is a water-collection machine. Most folks never stop to do the math on that, so let me do it for you, because the number changes how you think about gutters forever.

One inch of rain falling on one thousand square feet of roof produces about 623 gallons of water. Read that again. A modest Texas home with two thousand square feet of roof

sheds well over twelve hundred gallons in a single one-inch rain — and Texas doesn't do gentle one-inch rains. We do gully-washers: three, four inches in an afternoon, the sky opening up like somebody kicked a bucket over. That's thousands of gallons coming off your roof in a few hours.

Now, where does all that water go if you don't have gutters? It sheets off the eaves and lands in a band around your foundation — a concentrated waterfall, every rainstorm, dumping thousands of gallons right where your slab meets the soil. Even with gutters, if the downspouts dump that water two feet from the corner of your house, you've just taken all the water from a huge roof area and injected it into one spot next to your foundation. That's not drainage. That's a pressure washer aimed at your clay.

This is why I tell folks gutters aren't a roofing accessory. They're a foundation-protection system that happens to hang off the roof. Get them right and they quietly move thousands of gallons a year away from your slab. Get them wrong and they concentrate the problem.

Sizing: Five-Inch vs. Six-Inch

The standard gutter on most Texas homes is the five-inch K-style — the one with the decorative curved profile you see everywhere. For a typical roof with reasonable downspout placement, five-inch gutters do the job.

But Texas has a way of finding the limits of "typical." Consider going to six-inch gutters when any of these are true: a long gutter run collects a large roof area with nowhere to split it up; the roof is steep, which means water comes off faster and can overshoot a smaller gutter; or the run feeds a valley where two big roof planes dump together. And if you've ever watched your gutters overflow in a hard rain while the downspouts gurgle helplessly, that's your house voting for bigger capacity.

Match the downspouts to the gutter. A six-inch gutter draining through a dinky two-by-three-inch downspout is like putting a drinking straw on a fire hydrant. The standard upgrade is a three-by-four-inch downspout, which moves roughly twice the water. When you're sizing up, size up the whole system — gutter and downspout together.

Pitch: The Slope of the Gutter Run

Gutters need slope — fall toward the downspout — or water just sits in them. The rule of thumb is about a quarter inch of fall for every ten feet of gutter run. That's not much. On a forty-foot run, the high end sits one inch above the low end. Enough to keep water moving, not enough to look crooked

from the street.

Too flat, and you get standing water: gutters that hold a permanent puddle between rains, which means extra weight pulling on the fasteners, mosquito breeding in summer, and granules and sludge building up into a nice little garden bed in your gutter. Too steep, and the gutter looks visibly tilted, plus water rushes to the low end so fast it can overshoot the downspout opening in a hard rain.

If your gutters hold water after a rain — you can see it sitting there, or you see a dirty residue line inside the gutter well above the outlet — the pitch is wrong or a hanger has sagged. It's a fixable thing. Gutters get re-pitched and re-hung all the time.

Downspout Placement and Count

Downspouts belong at the corners of the house and under valleys — the places where roof water naturally concentrates. The working rule is roughly one downspout for every thirty to forty feet of gutter, but roof area matters more than footage. A forty-foot run collecting a small porch roof is a different animal than a forty-foot run collecting two converging roof planes.

The mistake I see most: a long run with a single downspout at one end. In a Texas cloudburst, the far end of that gutter fills faster than water can travel forty feet to the outlet, and it overflows — usually right at the far corner, which is exactly where you don't want a waterfall. When in doubt, add an outlet in the middle of a long run or at both ends. An extra downspout is cheap. A corner foundation problem is not.

Also watch inside corners — where an L-shaped house creates an inside corner, two roof planes feed one spot. That downspout works twice as hard. Make sure it's full-size and its extension is doing its job, because that corner is getting double water by design.

Extensions: Four to Six Feet Minimum, More Is Better

This is the part that matters most for your foundation, so hear me clearly: a downspout that ends at the ground next to your house is an unfinished job. The water has to get away from the foundation — past the backfill zone, out onto grade that slopes away, or into a buried pipe that carries it out to the yard.

Minimum extension: four to six feet from the foundation wall. More is better. I like to see ten feet when the lot allows it. The goal is simple — get the water past the loose backfill soil

around your foundation and onto undisturbed ground that slopes away from the house.

The simplest extension is a hinged or flip-up extension — a section of downspout material that lies on the ground carrying water out, and flips up when you mow. They work. They're ugly, they get kicked around, and they're better than nothing by a mile. If that's what your budget allows today, do it today. You can upgrade later.

Splash Blocks vs. Buried Solid Pipe

A splash block — that little concrete or plastic tray under the downspout — is the starter version of an extension. It keeps the water from digging a crater directly under the spout and spreads it out a little. Fine as a beginning. But splash blocks wash out, they get buried in mulch, they get tossed aside by the mower, and they don't actually move water away — they just move the dump point a foot or two.

The real fix, the one I recommend to everybody who'll listen, is buried solid pipe. Four-inch solid PVC or corrugated pipe — solid, not perforated, because you're transporting roof water, not collecting groundwater — running underground from each downspout out to a point well away from the house. It terminates either at daylight, where the pipe simply ends on a downhill slope and water flows out onto the grade, or at a pop-up emitter — a little green cap in the lawn that stays closed and flush with the grass until water pressure pops it open during a rain, then closes again. Clean, invisible, mower-friendly, and it puts thousands of gallons exactly where you want them, every storm, without you thinking about it.

A few rules for buried pipe: keep it solid, keep the slope continuous downhill with no bellies where water can sit, and make sure the outlet is lower than the inlet or you'll have a pipe full of standing water. Where the pipe exits, put a little gravel and make sure the water has somewhere to go — don't daylight it into your neighbor's yard or into a low spot that ponds against somebody's fence.

Cleaning and Leaf Guards

A clogged gutter is worse than no gutter in one specific way: it takes all that roof water and pours it over the side in concentrated streams at random points — usually right next to the foundation. I've seen overflow from a clogged gutter carve a trench along a foundation in a single season. Clean your gutters twice a year: once in spring after the pollen and seed drop, once in fall after the leaves. If you've got big trees overhanging the roof, check them quarterly. It takes an hour with a ladder, gloves, and a hose. It's the cheapest foundation

protection you'll ever buy.

Leaf guards — screens, mesh covers, the various inserts — reduce how often you clean, and the good ones work reasonably well against big leaves. But nothing eliminates cleaning entirely. Fine debris, shingle granules, and those little helicopter seeds will get through or pile on top of any guard ever made. If somebody tells you a guard means you'll never touch your gutters again, they're selling you something, not telling you something. Budget for a cleaning even with guards — just less often.

What Happens When Downspouts Dump at the Corner

Let me tie this back to Chapter 1, because this is where theory becomes the crack in your brick.

Corners are where roof water concentrates — two gutter runs often meet at a corner downspout, and inside corners collect double roof area. So the corner downspout is already the hardest-working outlet on the house. Now imagine it has no extension: every rainstorm injects the water from hundreds of square feet of roof into the clay at one corner of your foundation.

That corner stays wetter than the rest of the perimeter. Wet clay swells. The corner heaves — pushes up — while the drier stretches along the walls stay put. The brick veneer at the corner, being brittle, shows the classic signature: a stair-step crack starting at the corner and zigzagging up, sometimes with the corner of the slab visibly lifted relative to the walls on either side. Doors and windows near that corner start to bind.

I've walked up to houses where I could diagnose the whole thing from the curb: corner crack in the brick, downspout at that corner ending two feet from the house, crater in the mulch underneath it. The gutter system created the differential moisture that Chapter 1 warned about. The fix is almost anticlimactic — extend that downspout, or better yet bury a pipe to daylight — and then manage the moisture evenly while the clay settles back toward uniform. The most expensive foundation problems often start with the cheapest missing part: a six-foot extension that nobody ever installed.

(This is a hypothetical composite — not a real customer.)

A homeowner calls about a stair-step crack at the front corner of the house, maybe four feet tall, and a front door that's started sticking in the last few months. He's braced for bad news — he's already imagining foundation repair crews and a

five-figure bill. Walking the property, the story writes itself: the corner downspout serves two converging roof planes, it ends eighteen inches from the foundation, and there's a washed-out crater in the bed below it with a little gully leading right to the corner. Every rain for years has pumped that corner full of water while the rest of the perimeter stayed normal. The fix: a buried solid four-inch pipe from that downspout out to a pop-up emitter twelve feet into the yard, the crater filled and regraded, and a season of even moisture management. The crack stops growing. The door frees up. Total cost: a weekend and a few fittings. The steering wheel works — if you actually turn it.

Your roof will keep collecting thousands of gallons whether you manage them or not. Gutters and downspouts are how you decide where those gallons go. But even a perfect gutter system dumps its water onto the ground — and what the ground does with it is the next chapter.

Chapter 4: Grading: The First Ten Feet

If I had to pick the ten feet of ground that matter most to your foundation, it wouldn't be a contest. It's the first ten feet out from your foundation walls, all the way around the house. That strip of ground decides whether rainwater runs away from your home or sits against it. It decides whether your clay stays evenly moist or turns into a patchwork of swamps and deserts. And in my experience, it's wrong on more houses than it's right — not because anybody did anything foolish, but because grade changes slowly, year after year, in ways nobody notices until the house starts talking.

Grading is just a fancy word for the shape of the ground. Positive grade slopes away from the house. Negative grade slopes toward it. Flat grade does nothing, which in a heavy rain is nearly as bad as negative. The goal is simple and specific, and it's the number I want you to memorize: about six inches of fall in the first ten feet away from the foundation. That's roughly half an inch of drop per foot. Enough that water can't mistake which direction to go.

The Standard in Plain English

Six inches over ten feet. Say it out loud. That's the target for the ground immediately around your house.

Why six inches? Because less than that and a hard Texas rain overwhelms it — water sheets faster than a shallow slope can redirect, and it ponds. Why ten feet? Because that's roughly the backfill zone — the band of disturbed, looser soil around your foundation from when the house was built — plus a

margin. Water that lands inside that zone soaks down fast through the loose soil and gets to your foundation. Water that you carry past it, onto undisturbed ground sloping away, keeps going away. The first ten feet are the moat. Shape them right and the castle stays dry.

Beyond the first ten feet, the standard relaxes — you just need water to keep moving generally away, toward the street, a drainage easement, or the natural fall of the lot. But those first ten feet are non-negotiable. They're the difference between a lot that sheds water and a lot that collects it against the slab.

What Negative Slope Looks Like — and Feels Like

Negative slope means the ground gets lower as it approaches your house — water runs toward the foundation instead of away from it. Here's how to spot it.

Look at it during a rain: water visibly flowing toward the house, or ponding in a band along the foundation while the rest of the yard drains. That's the definitive test. No interpretation needed.

Feel it with your feet: walk slowly away from the foundation. The ground should fall away under your feet — you should feel yourself walking slightly downhill as you leave the house. If you feel yourself walking uphill as you walk away, that's negative grade. Your feet are honest instruments. Trust them.

Look at the evidence after a rain, using everything Chapter 2 taught you: mulch washed against the slab, dirt piled at the wall, ponding stains on the foundation face, the settled trench hugging the house. All of those are negative slope leaving receipts.

Negative grade happens for ordinary reasons. The backfill settles over the years, creating that moat. Somebody adds a flower bed against the house and builds it up. Mulch gets topped off every spring and the bed grows an inch a year. A sidewalk or patio settles toward the house. Nobody did anything wrong on purpose — the ground just drifted, a quarter inch at a time, until water changed its mind about which way to flow.

Flower Beds Against the House: The Trap

I need to spend real time here, because flower beds against the foundation are the single most common self-inflicted drainage problem I see in Texas. And it always comes from love — somebody wanting the front of the house to look beautiful.

Here's how the trap builds, one innocent step at a time. You put in a bed along the front of the house. You edge it — stone, brick, landscape timbers, plastic edging, doesn't matter — and that edging forms a low dam around the bed. You fill it with good soil and mulch. Every spring you top off the mulch, because that's what you're supposed to do. Year after year, the bed gets a little higher. After five or six years, the soil and mulch in that bed are level with — or above — the surrounding yard, and worse, they're piled up against the bottom of your brick.

Now you have three problems stacked on top of each other.

First, the bed is a bowl. The edging dams water in. Rain and irrigation collect in the bed instead of running off, and the bed holds that water against your foundation for days after every storm. You've built a swamp against your slab.

Second, the mulch and soil are above the slab edge. Your foundation was designed with the concrete extending a few inches above the finished grade — that exposed concrete is supposed to stay exposed, so water can't wick straight into the wall and so you can see what's going on. When mulch buries it, moisture sits directly against materials that were meant to stay dry, and you've hidden the evidence from your own rain-walks.

Third — and this is the one that surprises people — you've buried the weep holes. Brick veneer walls have small gaps at regular intervals along the bottom course of brick. Those are weep holes, and they're there on purpose: any water that gets behind the brick — and some always does, driven by wind and rain — drains out through those gaps. When you pile mulch and soil over them, water gets trapped inside the wall cavity with nowhere to go. Trapped water in a brick wall is how you get efflorescence, deteriorating mortar, and moisture finding its way to places it was never meant to reach.

The rule is simple: keep soil and mulch at least four to six inches below the top of the exposed foundation and below the weep holes. If you don't know where your weep holes are, look at the very bottom course of brick — you'll see small vertical gaps in the mortar every couple of feet. Those gaps need daylight. Give it to them.

Build Beds Outward, Not Upward

You don't have to give up the flower bed. You just have to build it correctly: outward, not upward.

Outward means if you want a bigger, more dramatic bed, extend it farther from the house — make it deeper into the yard, not taller against the wall. Upward is what causes every

problem in the last section. Nobody ever needed a flower bed mounded a foot high against their brick. The plants don't care. The foundation does.

Slope the surface of the bed itself away from the house — the bed should follow the same six-inches-in-ten-feet rule as the rest of the grade. Keep the edging low, or better yet, use edging that doesn't dam water — and never let the edging create a rim higher than the bed's overflow point. If water can't get out of the bed, the bed is a bathtub.

And watch the irrigation. Drip lines and sprinkler heads in foundation beds run on timers that don't know it rained yesterday. A bed that gets an inch of irrigation on top of an inch of rain, held in by edging, is Chapter 1's differential-moisture nightmare in miniature — one side of the house swampy, the other side normal. Water the beds for the plants, not on a fixed schedule regardless of weather, and never let bed watering substitute for even moisture management around the whole perimeter.

How to Check Your Slope: A Level and a Tape

You don't need surveying equipment. Here's the homeowner method, and it's accurate enough to make real decisions.

You'll need a ten-foot straight board — a 2x4 works, or a length of PVC pipe — a four-foot carpenter's level, and a tape measure. Set one end of the board against the foundation at ground level. Lay the level on top and raise or lower the far end until the bubble reads level. Now measure the distance from the underside of the far end of the board down to the ground. That number is your fall over ten feet. You want to see about six inches — five at a bare minimum.

No ten-foot board? Use a string line. Drive a small stake at the foundation and another ten feet out, stretch a mason's string tight between them, level the string with a line level — one of those little levels that clips onto the string — and measure down from the string to the ground at the far stake. Same number, same target.

Check every side of the house, and check a few spots per side. Grade isn't uniform — the back corner might be perfect while the stretch by the gate is dead flat. Write the numbers down. Anything under about four inches of fall in ten feet goes on the fix list. Anything sloping toward the house goes to the top of the fix list.

Fixing Small Spots Yourself

For modest corrections — a low spot here, a settled stretch

there — this is honest do-it-yourself work. Bring in fill dirt — clean fill, not sandy topsoil and not straight mulch — and build up the low areas to restore the slope away from the house. Work in thin layers, tamping each one down; a thick loose layer will just settle again and you'll be back where you started. The finished surface should slope away at that half-inch-per-foot rate, and the soil should sit four to six inches below the top of the exposed foundation and below the weep holes — always.

One warning: don't just pile dirt against the house to "fill the moat." Piling soil against the foundation without establishing slope just raises the waterline — now water ponds against a higher point on your wall. The dirt has to slope. Shape matters more than volume.

And before you dig anywhere — even a shallow regrade — call 811 a few days ahead. It's free, it's the law in Texas, and the people who mark your utilities have saved more homeowners from disaster than any other phone call in construction. Gas lines, electric, cable, and water don't care that you were "only digging six inches."

When Regrading Needs a Contractor

Some grading problems are bigger than a few wheelbarrows of fill dirt. Call a professional — a grading or drainage contractor, or a landscaper experienced in drainage work — when:

Your whole lot slopes toward the house from the street or from a neighbor's higher lot. That's a watershed problem, not a flower-bed problem, and fixing it usually means a swale — a shallow, grassy channel that intercepts water uphill and carries it around the house — or a drainage system. Designing a swale that actually works takes an experienced eye.

Water comes onto your lot from neighboring property. Texas law has things to say about diverting water onto neighbors, and the same courtesy runs the other direction — you generally can't just wall off your neighbor's runoff and flood them instead. A contractor who's done this before knows how to handle it without creating a legal mess.

You need a retaining wall, significant soil import, or work near large trees whose roots you'd be cutting. Big dirt work changes how water moves across the whole lot, and getting it wrong can trade one problem for a worse one.

The movement you're seeing goes beyond what water management explains — wide cracks, major sticking doors, visible slab displacement. That's when you bring in a structural engineer for an evaluation before you spend a

dollar on dirt. Grade fixes the water; it doesn't un-break what's already broken. Know which problem you're solving.

(This is a hypothetical composite — not a real customer.)

A homeowner with a beautiful front bed — roses, stone edging, fresh black mulch every spring, the pride of the street — starts noticing efflorescence blooming along the bottom of the brick behind the bed, and a musty smell in the front bedroom after rains. On the rain-walk, the bed is still soggy days later, and a finger dug into the mulch finds the soil level a good two inches above the bottom of the brick — six years of mulch top-offs, each one burying the weep holes a little deeper. The stone edging, so neat and tidy, is holding two inches of water in the bed after every storm like a little reservoir. The fix hurts a little, because the bed is gorgeous: pull the soil and mulch back down to six inches below the brick line, clear every weep hole, lower the edging so water can escape, and re-slope the bed surface away from the house. Keep the roses — they never needed to be that high anyway. By the next rainy season the efflorescence stops spreading, the bedroom dries out, and the bed still looks like a million dollars. It just stopped trying to drown the house.

The First Ten Feet Decide Everything

Step back and look at what these four chapters gave you. Chapter 1: the ground moves with water, and your foundation needs that moisture even. Chapter 2: your house leaves receipts — learn to read them on the rain-walk. Chapter 3: your roof collects thousands of gallons — gutters and downspouts decide where they go. Chapter 4: the first ten feet of ground decide whether that water leaves or stays.

Water is the steering wheel. You've just learned how to turn it. The chapters ahead will take you further — foundation watering in drought, trees and roots, drainage systems for the tough lots, and knowing when to call in help. But everything from here builds on these four ideas: even moisture, read the water, move the roof water away, and slope the ground away. Get those right and you've done more for your foundation than most homeowners ever will.

Chapter 5: French Drains, Surface Drains, and Channel Drains

I've spent 50 years with my hands on Texas brick and Texas foundations, and I can tell you straight: sometimes grading your yard right and getting your gutters hung proper isn't enough. The lot sits low. The neighbor's yard drains toward you. The soil is clay that holds water like a bowl. There's a spring somewhere down in that dirt that keeps one corner of

the house soggy no matter what you do above ground. When that happens, you go underground. You install a drain.

This chapter is about the three workhorses I see around Texas foundations every week of my life: the French drain, the surface drain (catch basin), and the channel drain. They each solve a different problem, they each get installed wrong more often than right by do-it-yourselfers and cheap contractors, and when they're done right, they're quiet heroes — you never think about them again.

The French Drain: What It Really Is

A French drain is a ditch with a purpose. You dig a trench, line the bottom and sides with a landscape fabric (a geotextile — I'll explain what it's for in a minute), fill part of it with gravel, lay a perforated pipe in that gravel with the holes facing DOWN (this matters, keep reading), wrap the fabric up over the gravel like a burrito, and cover it with soil or sod. Water in the saturated ground finds the gravel, drops through the holes in the pipe, and runs downhill through the pipe to somewhere you want it to go.

That's the whole invention. It's simple and it's been working for over a hundred years. The mistakes come in the details.

The fabric. The fabric's job is to keep soil from migrating into the gravel and the pipe. Texas clay is fine — real fine. Without fabric separating the gravel from the surrounding soil, that clay will wash down into the gravel in the first few big rains, fill the air spaces, and choke the pipe. I've dug up failed French drains that were basically a clay-filled ditch with a pipe in the middle doing nothing. The fabric isn't optional. Don't skip it, don't use cheap thin fabric that tears when you look at it, and make sure you wrap it completely — sides, bottom, and folded over the top of the gravel. A gap in the wrap is a gap the clay will find.

The pipe and its slope. The perforated pipe needs slope — fall — toward its exit. A quarter inch of fall per foot is the number I work to, same as a gutter downspout line. Over 20 feet that's 5 inches of drop, and you can measure it with a string line and a level before the pipe goes in the trench. What I see constantly: a trench dug level. Flat as a pool table. Water doesn't run on flat. It sits, and a French drain that's holding water in a flat pipe is just an expensive underground puddle. Slope everything. And keep the slope continuous — no dips, no bellies, no spots where the trench got dug deeper "just because." A dip in a French drain pipe is a pond the pipe can't drain.

Holes down, not up. The perforations — the slots or holes in the pipe — go on the bottom. This is the one that starts

arguments at every supply house in Texas, so let me settle it the way I settle it in the field: the drain's job is to collect water that is rising from below in saturated soil. Water comes up from the bottom, through the gravel, into the pipe. Holes on top let soil and gravel sift down into the pipe and don't collect groundwater worth a flip. The pipe manufacturers stamp the holes one way for a reason. Holes down.

Where the water goes. A French drain that doesn't have an exit is a bathtub. You need a plan for the far end, and there are three real ones in Texas:

1. **Daylight.** The pipe runs downhill and comes out of the ground at a slope, a ditch, a creek bank, or a low spot on your own property where the water can spread out harmlessly. This is the best exit — no moving parts, nothing to fail. Cut the pipe end at an angle, put a little grate or animal guard on it so critters don't nest in it, and make sure it can't erode the soil around the exit.
1. **Pop-up emitter.** Where you can't get daylight — the lot is flat, the exit is in the middle of the yard — you bring the pipe up to a pop-up emitter, which is a little cap at ground level with a lid that lifts when water pressure builds and drops back down when the flow stops. Mowers go right over it. They work fine, but they're a mechanical part — they can stick, and they need to be kept clear of sod and mulch.
1. **Storm tie-in.** In some cities you can tie the drain into the municipal storm system. This is the cleanest exit, and it's also the one with the most paperwork. Your city has rules about it — permits, approved materials, approved connection points. Check with your city before you dig a trench to the curb.

What you absolutely cannot do: dump it on your neighbor. We'll get deep into this in Chapter 6, but I'll say it here because French drains are the number one way people accidentally create a water war. If your drain solves your problem by flooding your neighbor's foundation, you haven't solved anything — you've moved a lawsuit.

Surface Drains and Catch Basins

Sometimes the problem isn't underground water — it's surface water standing in a low spot in the yard, around the air conditioner pad, at the bottom of a slope, in that one corner where the dogs turn into a swamp every spring. That's a surface drain job.

A catch basin is a box — usually plastic, sometimes concrete

— set into the ground so its grate sits flush with the surrounding grade. Water runs across the yard into the grate, drops into the box, and exits through a solid (non-perforated) pipe that carries it downhill to daylight, a pop-up emitter, or a storm tie-in. Solid pipe, not perforated — you're collecting water at the box, not from the ground around the pipe, and perforated pipe in a surface-drain run lets dirt in and water out along the way.

Placement is everything. Put the basin in the actual low spot, and set the grate an inch or two **BELOW** the surrounding grade so water is funneled to it — a basin set proud of the grade is a speed bump that water flows around. I've seen basins set high because the installer didn't want the grate to "look sunk." Looks don't drain yards. Set it low.

Size the basin and the pipe for the water you actually get. A little 9-inch box on 3-inch pipe is fine for a small patio corner. If you're draining half an acre of yard that sheets toward the house in a gully-washer, you need a bigger box and 4-inch pipe, minimum. Undersized drains are the number two cause of "the drain didn't work" — number one is no slope, same as the French drain.

And keep the grate clear. Catch basins collect leaves, grass clippings, and mulch — everything the water carries. Pop the grate twice a year and scoop out the basin. Two minutes. The people who never do it end up with a box full of black muck and a drain that's "mysteriously stopped working."

Channel Drains Across Driveways and Patios

A channel drain is a long, narrow trench drain with a grate on top — the thing you see across the end of sloped driveways, at the bottom of a stairwell, or cutting across a patio that slopes toward the house. Water sheets down the concrete, hits the channel, drops in, and runs out through solid pipe to daylight or a pop-up emitter.

These are the drains I see most often on newer Texas homes, because builders pour a driveway that slopes toward the garage and then somebody has to deal with the water. They work great when three things are true: the channel sits lower than the concrete on both sides (water flows downhill into it), the grate is rated for the traffic (a light-duty plastic grate will crack under a pickup — buy the load rating for what actually drives over it), and the outlet pipe has slope and an exit. The classic failure is a beautiful channel drain across the driveway that ties into a pipe running level, or worse, into a pipe that ends in the flower bed. You've built a really nice-looking water collection system with nowhere to go.

In the field, I test a channel drain by pouring a bucket of water at the uphill end and watching where it goes. It should drop into the channel, run to the outlet, and come out the exit. If it ponds in the channel, the channel isn't sloped or the pipe is flat. Ten-second test, saves a thousand-dollar headache.

The Mistakes I See Every Week

Let me put the greatest hits in one list, because I fix these constantly:

- **Flat pipe.** Dug level, laid level, water sits level. Slope everything, quarter inch per foot.
- **Fabric skipped.** "To save money." Congratulations, you saved thirty dollars and bought a failed drain.
- **Daylighting uphill.** The pipe exits higher than it starts, or exits into a spot that's wetter than the start. Water doesn't run uphill. Survey your exit before you dig the trench.
- **Dumping on the neighbor.** Your drain, your responsibility, your property. The water has to stay on your side or go to an approved exit.
- **Mixing up the pipes.** Perforated pipe for collecting groundwater along the run (French drain). Solid pipe for carrying collected water to the exit (everything else). Swapping them fails both jobs.
- **No cleanouts.** On any run longer than about 30 feet, put a cleanout — a vertical riser with a cap — at the top end and at corners. That's how you flush the system later. Without cleanouts, the first clog is the last day the drain works.
- **Burying the pop-up emitter.** Emitters under sod, mulch, or landscape timbers can't pop. Keep them clear.

Maintenance: The Part Nobody Talks About

A drain system is not install-and-forget. It's install-and-check-twice-a-year. Here's the program:

- **Spring and fall:** pop every grate, scoop every basin, check every pop-up emitter moves freely, walk every daylight exit to make sure it's open and not eroded.
- **After every big storm:** walk the system. Water should be moving through it, not around it. Standing water near the house means something's clogged or the system is undersized.
- **Flush the pipe:** once a year, run a garden hose down each cleanout for a few minutes. You want to see water coming out the exit, carrying sediment with it. If water backs up out of the cleanout instead of flowing out the exit, you've got a blockage and now's the time to find it — not in the middle of a storm.

(This is a hypothetical composite — not a real customer.) A

few years back I looked at a house where the homeowner had paid good money for a French drain along the back of the house — two hundred feet of it, around both corners. The side yard still flooded every spring. I popped the cleanout and ran a hose down it, and water came right back up out of the cleanout instead of exiting. We dug up one corner and found the problem: the installer had run the pipe level through a section, and at the low corner he'd buried the daylight exit under six inches of topsoil when he regraded the bed. Two mistakes, one system, zero drainage. We re-sloped the pipe through that section, exposed the exit, put an animal guard on it, and that side yard has been dry since. The original installer wasn't a bad guy — he just didn't know the details in this chapter. Now you do.

When to Call In Help

If you've got a straightforward low spot, a handy homeowner can install a catch basin and solid pipe in a weekend. A full French drain around a foundation — trench depth, slope layout, fabric wrapping, exit planning — is a bigger job, and I'd rather see you hire a drainage contractor who's done a hundred of them than learn the mistakes on your own house. And if the water problem is tied to foundation movement — doors sticking, cracks widening, the slab visibly shifting — get a foundation specialist out first. Drains manage water. They don't lift houses. Know which problem you're solving.

Chapter 6: Swales, Lot Lines, and Water That Isn't Yours

Here's a truth about Texas subdivisions that nobody tells you at closing: your house doesn't just sit on your lot. It sits in a water system. The developer graded the whole neighborhood so that water flows in a choreographed path — from the back of each lot, along the side yards, down swales, out to the street or the alley or the detention pond. When everybody leaves that choreography alone, it works. When one homeowner changes their part of it — regrades the yard, builds a pool, pours a new driveway, puts up a fence that dams the flow — the water finds a new path, and the new path is very often through somebody else's living room. Or, in my line of work, under somebody else's slab.

How Subdivision Grading Is Supposed to Work

Most Texas lots are graded with a simple scheme. The high point is the house — the pad the house sits on is built up. From the house, the ground slopes away in all directions, a few inches over the first several feet. Water that lands on

your roof (gutters!) and your yard flows away from the foundation and toward the lot lines. Along the side yards between houses, the developer cuts a swale — a shallow, wide dip in the ground running front to back — that collects water from both lots and carries it forward to the street or backward to the alley or a rear drainage easement. The swale is the gutter of the neighborhood. It's subtle — you might not even notice it — but it's doing a job every time it rains.

That system only works if the swale stays open and keeps its shape. Fill it in, fence across it without leaving a gap underneath, let it silt up over the years, or regrade your yard so water no longer reaches it, and the water backs up. Usually it backs up against the house that's uphill of the blockage. I've seen a lot of "mystery" foundation problems that were really just a swale that somebody's fence or flower bed had dammed shut.

When the Water Isn't Yours

Water has three ways of becoming your problem even though it starts on somebody else's land:

The neighbor's regrade. Your neighbor decides the side yard is too low and brings in fill dirt. Now his yard is higher than yours and his water runs onto you. This is the most common one I see, and it's the hardest to fix physically, because the dirt's already there and nobody wants to move it back.

The pool or the patio. A pool deck, a big new patio, a shop building — anything that covers ground that used to absorb rain turns absorbed water into runoff. A 600-square-foot patio in a Texas thunderstorm sheds a shocking amount of water. If that patio slopes toward your fence, congratulations: you just inherited your neighbor's rainfall.

The new driveway. Wider driveways, circle drives, RV pads — more concrete, more runoff, and concrete always slopes somewhere. Somewhere is often the property line.

None of these people are villains. Ninety percent of the time, the neighbor has no idea the water that used to soak into their yard is now running under your slab. They just wanted a patio.

Diverting Water Legally: Berms and Swales of Your Own

You are allowed to protect your property from water coming at you — but there's a line, and Texas law draws it pretty clearly. The short version: you can defend your land against surface water, but you can't go on offense. You can build a

berm or a swale on YOUR side of the line to intercept water and route it along the lot line to the street or alley, following the natural drainage pattern. You cannot collect water and dump it concentrated onto the neighbor. You cannot change your grading to send MORE water at the neighbor than nature did.

Practical moves that stay on the right side:

- **A shallow swale inside your lot line** that catches the neighbor's runoff and carries it forward to the street. This is the classic fix, and it mirrors what the developer originally built.
- **A low berm** along the problem side, graded so water follows it to the street instead of crossing to your foundation. Keep it low and gentle — a wall of dirt that turns his sheet flow into a concentrated jet is worse than what you started with.
- **Daylighting to the curb or alley.** Your end goal is always the same: get the water to the public drainage system — the street gutter, the alley, the storm inlet. That's what the subdivision was designed to do.
- **French drains along the fence line** (see Chapter 5) to intercept water and carry it forward. Same rules: your pipe, your property, your exit.

What I tell people: mirror nature. The water was always going somewhere. Your fix should help it get there, not send it somewhere new.

HOA and City Rules

Before you move dirt, check two things: your HOA and your city.

HOAs in Texas love to regulate grading, fences, retaining walls, and anything visible from the street. Many of them require approval before you regrade, build a berm, or install drainage that changes how your yard looks. Read the covenants. Submit the form. It's annoying and it's cheaper than a violation letter and a forced tear-out.

Cities regulate drainage too — especially anything that touches the street, the curb, the storm system, or a drainage easement. Tying a drain into the municipal storm system almost always needs a permit. Cutting the curb for a drain exit definitely does. Working in a drainage easement on your property (that strip along the back where the developer reserved rights for water flow) can be restricted even though it's "your" land. Call the city engineering or public works department and ask. The call is free and the fine isn't.

Document Everything

If water from next door is damaging your property, start a paper trail before you start a conversation. This isn't about being hostile — it's about being clear, and it's about having evidence if the friendly route fails.

- **Photos after every rain.** Same spots, same angles, timestamped. Show the water, show where it's coming from, show what it's doing to your property. Phone photos are fine. Take them during the rain AND after — during shows the flow, after shows the damage and the standing water.
- **Dates and notes.** When it rained, how hard, how long the water stood, what it touched. A simple log: "Oct 12 — 2 inches overnight — water 6 inches deep against the garage slab until noon."
- **Keep your own grading proof.** Photos of your swales, your gutters, your drainage — evidence that your own water management is in order and the problem water is coming from elsewhere.
- **Keep receipts.** Anything you spend responding to the problem — the drainage contractor's invoice, the foundation inspection — documents the cost of the harm.

Talk to the Neighbor First

Always. Before the city, before the HOA, before a lawyer — knock on the door. Bring photos, not accusations. Most of the time, this is a five-minute conversation: "Hey, I'm getting a lot of water along my foundation since the new patio went in — I think it's running off the concrete toward my side. Can we look at it together after the next rain?"

In my experience, most neighbors fix it once they see it. Split the cost of a swale or a drain along the fence line. It benefits both properties. Be the reasonable one first — it costs nothing and it works more often than anything else.

When to Get the City or HOA Involved

If the neighbor won't talk, won't act, or the situation is getting worse, escalate in order:

1. **HOA** — if the change violated the covenants (unapproved regrade, fence blocking a swale), the HOA can enforce. File a written complaint with your documentation.
2. **City** — if there's a drainage easement being blocked, an illegal storm tie-in, or grading that violates the city drainage ordinance, the city engineering department is the authority. Many Texas cities take drainage complaints seriously because blocked drainage floods streets.
3. **An attorney** — the last step, not the first. Texas

recognizes that you can't just dump your water on your neighbor, and a letter from a lawyer often moves things that a conversation couldn't. But try everything else first.

(This is a hypothetical composite — not a real customer.) I once looked at a house where the homeowner was convinced his foundation was failing — cracks in the brick, a door that wouldn't latch, the whole scare package. The neighbor uphill had put in a pool the year before, and the pool deck — big, beautiful travertine — sloped gently toward the property line. Every rain, a river ran down the side yard and ponded against this man's foundation. The soil there was saturated year-round; in summer it never got to dry out evenly, in winter it stayed swollen. The "foundation failure" was differential moisture — one side of the house living in a swamp while the other side lived in normal Texas clay. We talked to the neighbor together — the homeowner, me, and the pool builder's foreman — and the fix was a channel drain across the low edge of the pool deck (Chapter 5) tied to solid pipe running to the street, all on the neighbor's side, paid for by the neighbor once he saw the photos of the water against the foundation. Six months later the cracks had stopped moving. The foundation was fine. The drainage was the whole story. That's why this chapter comes before you spend a dime on foundation work: make sure the water isn't somebody else's before you treat it like your own.

The Bottom Line

Your lot is part of a system. Learn where your water is supposed to go, keep your part of the system open, document it when somebody else's water becomes your problem, and start every dispute with a conversation. Most drainage wars end with a swale and a handshake, not a lawsuit.

Chapter 7: Trees, Roots, and the Battle for Moisture

If you want to understand why Texas foundations move, you have to understand two things: clay, and trees. Clay shrinks when it dries and swells when it wets — that's the whole game. And a big Texas tree is a water pump that never turns off. Put the two together next to a house, and you've got a battle for moisture happening under your slab every single day, and the tree usually wins.

How Much Water a Tree Drinks

People underestimate this by an order of magnitude. A mature live oak, a big elm, a pecan tree in full leaf on a hot Texas August day can pull a hundred gallons or more out of the ground in a single day. A hundred gallons. Every day. For

months. That water comes from the soil around the tree — including the soil under the edge of your slab if the tree is close enough.

Now remember what clay does when it loses moisture: it shrinks. It shrinks unevenly, because the tree drinks hardest on its side. So the soil under the corner of the house nearest the tree dries and shrinks while the soil under the far side stays put. The slab edge near the tree settles. The brick cracks at the corner. The door on that side sticks. I've seen this exact pattern — corner drop on the tree side — a thousand times, and when I walk up to a house and see a thirty-foot oak ten feet from the corner with a stair-step crack in the brick right there, I already know the story before I measure anything.

The worst offenders in Texas are the big drinkers: live oaks, red oaks, elms (cedar elm and American elm), pecans, and willows. Willows are the thirstiest of all — a willow near a house is a foundation problem with a trunk. Hackberries and ash drink plenty too. Smaller ornamental trees — crape myrtles, redbuds, desert willow — are minor players by comparison. It's the big canopy trees with the big appetites that move houses.

Roots Don't Need to Touch Your Foundation to Hurt It

Here's the misconception I hear constantly: "The roots aren't under my house, so the tree can't be the problem." Wrong. Roots don't have to touch the foundation. The damage isn't mechanical — it's not roots cracking the slab like in the movies. The damage is moisture theft. A tree's fine feeder roots extend out one and a half to two times the canopy spread — a live oak with a forty-foot canopy is drinking from soil eighty feet across. The roots pull moisture out of the clay, the clay shrinks, the slab settles. The tree never lays a root on your foundation. It just drinks your soil dry from twenty feet away.

This is also why the damage is seasonal and cyclical. In a wet spring, the soil's got plenty for everybody — tree drinks, rain replaces, slab stays happy. In August and September, when it's been 100 degrees for six weeks and it hasn't rained since June, the tree is still drinking a hundred gallons a day and nothing's replacing it. That's when the cracks open. Then the fall rains come, the clay swells back up, and the crack closes halfway. Homeowners call me in October and say "the crack is smaller than it was in August." I tell them: that's not healing. That's the clay breathing. And every breath works the house a little more.

Safe Planting Distances

The rule of thumb I give every homeowner, and the one I wish every builder followed: plant a tree no closer to the house than its mature canopy spread — and for the big drinkers, farther. A live oak that will spread forty feet at maturity should be forty feet from the house, minimum. For willows and other extreme drinkers, I'd double it or just not plant them near a house at all.

I know. The shade is the point. Texas houses need shade — it cuts cooling bills and makes the yard livable. I'm not anti-tree. I'm anti-tree-ten-feet-from-the-corner. If you want shade on the west wall, plant the oak thirty-five feet out and let the canopy reach the house in fifteen years. You'll get your shade and keep your slab. What you can't do is plant a fast-growing thirsty tree at the corner for "quick shade" and act surprised when the corner drops five years later. Fast shade now is foundation work later. Pick one.

For new construction, this conversation should happen before the first tree goes in the ground — which is to say, it almost never happens, and I get called ten years later.

Root Barriers: What They Are and What They Aren't

A root barrier is a physical wall buried in the ground between the tree and the house — usually a heavy plastic or fiberglass panel, installed vertically in a trench, typically two to three feet deep. The idea: roots hit the wall and turn, so the tree drinks from the other directions instead of from under your slab.

Do they work? Sometimes. Here's the honest field report:

- They're most effective when installed BEFORE there's a problem, at planting time or when the tree is young. A barrier between a young tree and a house shapes the root system as it grows.
- They're least effective as a rescue — cutting a trench through the established roots of a mature oak to install a barrier damages the roots you're cutting (which can stress or destabilize the tree) and the tree still has a massive root system on every other side still drinking.
- They don't stop moisture theft completely. Water moves through clay. Even if no root crosses the barrier, the dry zone the tree creates on its side can still pull moisture laterally through the soil. A barrier slows the theft; it doesn't end it.
- Depth matters. A two-foot barrier against an oak whose feeder roots run four feet deep is a speed bump. Most residential barriers are too shallow for the trees they're

supposed to stop.

My advice: if you're planting a big tree within thirty feet of the house, install a deep barrier at planting time as cheap insurance. If the tree is already mature and the foundation is already moving, a barrier is probably not your fix — you're choosing between managing the tree (pruning, watering programs — see Chapter 8) and managing the foundation.

Why Cutting Down the Tree Can Make Things Worse

This is the one that surprises everybody. The tree is killing the foundation, so cut down the tree — problem solved, right? Not so fast.

That big oak has been holding the soil moisture DOWN on its side for years, maybe decades. The clay under that side of the house has settled into its dry, shrunken state. The day you cut the tree, the pump turns off. The next rainy season, all that soil that the tree used to keep dry starts soaking up water with nobody drinking it. The clay swells — and swelling clay pushes UP. That's heave. I've seen houses that settled toward a tree for ten years and then heaved UP after the tree came down, cracking the slab in new places, lifting the corner that used to be the low one.

I'm not saying never remove the tree. Sometimes it's the right call. But do it with a plan:

- **Remove it in stages if you can.** Crown reduction (a serious professional pruning) reduces the tree's water demand without the shock of full removal. Less pump, less sudden change.
- **Time it with foundation work.** If the house needs piers on the tree side anyway, do the tree work and the foundation work as one coordinated project — stabilize the structure for where the soil is GOING, not where it is today.
- **Keep watering after removal.** This sounds backwards, but a watering program (Chapter 8) around the foundation after tree removal helps the soil moisture transition gradually instead of swinging from desert to swamp. You're weaning the clay off the tree, not going cold turkey.
- **Get an arborist AND a foundation person talking to each other.** The arborist knows the tree; the foundation specialist knows the slab. The plan needs both heads. A tree crew that just cuts and leaves, with nobody thinking about the soil, is how heave happens.

Coordination Between Tree Work and

Foundation Work

This deserves its own emphasis because I see it go wrong so often: tree work and foundation work on the same house need to be one plan, not two contractors who never meet.

If you're installing pressed concrete piles to stabilize a corner that's dropping toward a tree, the pile depths and the expected future soil movement depend on whether that tree stays or goes. Piles set for a dry-soil condition behave differently when the soil swells back up after tree removal. If you're removing the tree, do it **BEFORE** the final foundation elevation survey, or at least tell your foundation contractor the tree is coming down so they can plan for the rebound. And after either job, run the watering program in Chapter 8 — consistent moisture is what keeps both the trees you kept and the foundation you fixed from fighting each other.

One more thing: never let anyone talk you into "just cutting the roots on the house side." Severing half a mature tree's root system on one side can destabilize the tree — I've seen oaks go over in a storm two years after somebody trenched through their roots — and the remaining roots just grow back toward the water. It's the worst of both worlds: a dangerous tree and a temporary fix.

Don't Plant Thirsty Trees at the Corner

I'll close with the simplest rule in this chapter, the one that would prevent half the tree-related foundation calls I get: don't plant a thirsty tree at the corner of the house. Not an oak, not an elm, not a pecan, and especially not a willow. Corners are where slabs are weakest — two edges meeting, less soil support, the first place to move. A big drinker at the corner is a bet against your foundation, and the tree collects every time.

Plant your shade trees out in the yard where they belong. Water them well. Enjoy them for the decades they'll live. Just give your foundation the same thirty or forty feet of respect you'd give a good neighbor's fence line.

(This is a hypothetical composite — not a real customer.) Years ago I was called to a house with a classic corner drop — stair-step crack in the brick at the back corner, back door dragging, the whole picture. Thirty-foot pecan tree, maybe twelve feet from that corner, planted by the homeowner's father when the house was built. Beautiful tree — shaded the whole back patio, dropped pecans every fall, the family loved it. The soil on the tree side was dry as a bone in August; the other side of the house was normal. I laid it out straight: the tree's drinking the corner down, and there were three options — manage it with a serious watering program and crown

reduction, remove it and manage the rebound, or stabilize the foundation with pressed concrete piles and keep the tree with a watering program to hold moisture steady. They chose the middle path with a plan: crown reduction first, watering program around the foundation, then a year of watching the elevations before deciding on piers. The tree lived, the movement stopped, and they never needed the piles. Not every story ends that neatly — but every story starts with understanding that the tree and the slab are drinking from the same glass.

Chapter 8: Summer Watering Programs and Soaker Hoses for Clay

Everything in this book comes down to one sentence: Texas clay moves when its moisture changes, and your foundation moves with it. Gutters manage the wet side. Drainage manages the runoff. Trees steal the dry side. And this chapter is about the tool you control directly, every summer, for the price of a water bill: a watering program that keeps the soil moisture around your foundation even.

Not wet. Even. That's the distinction the whole chapter hangs on, so let me say it again: the goal is not to flood the foundation. The goal is to keep the soil moisture consistent — no feast, no famine — through the months when Texas tries to bake your yard into pottery.

Why Texas Summers Move Foundations

From June through September, most of Texas gets brutal heat and very little rain. The sun bakes the soil, the grass goes dormant, and the clay starts giving up its moisture to the air. It shrinks. As it shrinks, it pulls away from the slab — you can sometimes see the gap, a dark line between the soil and the foundation wall where the dirt has pulled back an inch or two. That gap is the clay telling you it's shrinking.

The shrinkage isn't even, and that's the killer. The south and west sides get hammered by sun all afternoon and dry out fast. The north side stays shaded and holds moisture longer. The corner under the big oak (Chapter 7) dries fastest of all. So the slab settles unevenly — one side drops a half inch, the other doesn't — and the rigid concrete slab and the brick on top of it can't bend. Something gives: a crack, a sticking door, a sloping floor.

Then the fall rains come, the clay swells back, and the house lifts partway back. Every cycle works the structure a little. Ten summers of that is how you get a foundation problem that

"came out of nowhere." It didn't come out of nowhere. It came out of ten Augusts.

A watering program breaks the cycle. You replace the moisture the summer steals, evenly, so the clay never gets to do its big shrink. You're not fighting nature — you're smoothing it out.

The Watering Program Concept

Think of it like this: your foundation wants the soil around it to stay at roughly the same moisture level all year. In spring, rain does the job for you. In summer, you do it. The program is simple:

1. Lay soaker hoses around the foundation.
2. Run them on a schedule through the dry months.
3. Water the sunny sides more than the shady sides.
4. Never let water pond against the house.
5. Shut it down and drain everything when winter comes.

That's it. No engineering degree, no expensive equipment. A few soaker hoses, a timer, and the discipline to run the program from the first hot dry spell until the fall rains take over.

Soaker Hose Placement

Lay the soaker hose in a loop around the house, about 12 to 18 inches out from the foundation wall. That distance matters: right against the foundation, you're dumping water where it can seep down along the wall and create exactly the ponding problem you're trying to avoid; too far out, and you're watering the middle of the yard while the critical soil at the slab edge stays dry. Twelve to eighteen inches puts the moisture where the slab edge lives.

A few placement details from the field:

- **Keep it a continuous loop** around the whole house if you can. The point is even moisture everywhere, and a gap in the loop is a dry spot that will move differently from the watered spots.
- **Pin it down.** Soaker hoses wander. Use landscape staples every few feet so the hose stays at your 12-to-18-inch line and doesn't migrate against the wall or out into the yard.
- **Bury it shallow or mulch over it.** An inch or two of mulch over the hose cuts evaporation, hides the hose, and keeps the water going into the soil instead of the air. Don't bury it deep — you want to be able to find it, check it, and replace sections.
- **Mind the beds.** If you've got planting beds around the house, run the hose through the beds — the plants get

watered and the foundation gets its moisture in one pass. Just don't pile mulch into a mountain against the siding (Chapter 3 covered grade and clearance — the hose doesn't change those rules).

- **Watch the slope.** On a sloped lot, water from the hose runs downhill along the surface before it soaks in. You may need to run the uphill side a little longer, or break the loop into zones (see timers below).

Running Times and Timers

Here's the schedule that works for most Texas clay: run the soaker hoses 2 to 3 times a week, for 30 to 60 minutes per session, during the dry months. That's the starting point — then adjust by watching the soil.

How do you know if it's enough? Walk the loop the day after a watering day and push a long screwdriver into the soil at your 12-to-18-inch line. It should push in easily to 6 or 8 inches. If it hits hard dry clay at 3 inches, you need more time or another day. If the soil is soggy and the screwdriver sinks with no resistance and water's standing, back off. You're aiming for soil that's consistently moist — like a wrung-out sponge — down 6 to 8 inches.

Use a timer. This is non-negotiable in my book. A manual "I'll remember to turn it off" system fails the first time you get busy, and a soaker hose left running for six hours doesn't water the foundation — it floods it, and now you've created the ponding problem that moves foundations the other direction. A twenty-dollar hose timer from the hardware store, set for your schedule, removes human memory from the equation. For bigger houses, use two timers and split the loop into zones — front and back, or sunny side and shady side — so each zone gets what it needs.

Water early morning. Run the program between 4 AM and 8 AM. Less evaporation, less wind, and the water soaks in before the sun starts pulling it back out. Evening watering works too, but morning is better — wet soil sitting overnight against the foundation in the heat is fine, but morning watering gives you the whole day of even drying.

Water the Sunny Side More

Remember the uneven drying: the south and west sides bake, the north side coasts. Your program should match. Practical ways to do it:

- **Zone the timer.** Sunny-side zone runs longer or an extra day; shady-side zone runs the base schedule.
- **Double hose the hot side.** Run two parallel soaker lines on the south and west — 12 inches and 24 inches out — for

the brutal months.

- **Watch the tree side.** If Chapter 7's big oak is drinking the corner dry, that corner's zone needs more water to offset the tree. You're not out-watering the tree — you can't — but you're narrowing the moisture gap between the tree side and the rest of the house, and narrowing the gap is what stops the differential movement.

The screwdriver test is your truth-teller here too. Test all four sides. If the south side is dry at 4 inches and the north side is moist at 8, the program isn't even yet — adjust until all four sides read about the same.

Avoiding Ponding

Everything in this chapter has a shadow side: too much water is as bad as too little. Water ponding against the foundation — standing in the beds, running down along the wall, pooling at the slab edge — saturates the clay, and saturated clay swells, and swelling clay heaves. You've traded settlement for heave. Same cracks, different direction.

Rules to keep the program safe:

- **Never see standing water.** After a watering session, walk the loop. The soil should be damp, not puddled. If water is standing 30 minutes after the timer shuts off, cut the run time.
- **Keep the grade.** The ground still needs to slope away from the house (Chapter 3). The soaker hose doesn't override grading — if your grade is flat or slopes toward the house, fix the grade first, then water.
- **Don't water during or right after rain.** If nature watered this week, skip your days. The program supplements rain; it doesn't compete with it. A rain gauge — five dollars — takes the guessing out.
- **Check downspouts.** If a gutter downspout is dumping roof water into the same zone as your soaker hose, that zone is getting double water. Extend the downspout away (Chapter 4) so the hose zone gets only what the hose gives it.

Drip Systems: The Neater Alternative

Soaker hoses are cheap, simple, and they work. But they have a lifespan — two to four years in Texas sun before they crack and clog — and they look like what they are. The neater alternative is a drip irrigation system: solid tubing around the foundation with individual emitters, on a proper irrigation timer, ideally tied into an existing sprinkler system.

Drip costs more up front — parts and either your weekend or an irrigation contractor's day — but it lasts longer, waters

more precisely (an emitter every 12 inches puts water exactly where you want it), and it's invisible under mulch. If you're already running a sprinkler system, adding a foundation drip zone on its own valve is the cleanest setup I know: same timer, separate schedule, done.

Either way — soaker or drip — the principles are identical: 12 to 18 inches out, even coverage, morning watering, sunny side gets more, never pond, timer always.

Water Restrictions

Texas summers bring water restrictions — sometimes voluntary, sometimes mandatory, sometimes "you can water Tuesday and Saturday before 10 AM and that's it." A foundation watering program has to live inside those rules. Here's how:

- **Know your stage.** Restrictions vary by city and by drought stage. Read your city's current rules — they're posted online and they change. What's allowed in Stage 1 may be banned in Stage 3.
- **Hand watering is often exempt.** Many Texas cities allow hand watering (hose in hand, or a soaker hose you're attending) even when automatic sprinklers are restricted. Check your city's exact language — "hand watering" exemptions are common but not universal.
- **Soaker hoses usually count as efficient.** Drip and soaker systems are often permitted on restricted days when spray sprinklers aren't, because they put water in the soil instead of the air. Again — your city's rules, in writing.
- **Prioritize the foundation over the lawn.** If you're limited to two days a week, the foundation loop gets the water and the lawn goes dormant. Grass comes back. Foundations don't forgive.
- **Document it.** If your city offers a foundation-watering variance or exemption (some do during severe stages), apply for it and keep the paperwork. A dated photo of your soaker setup and a copy of the rules you're following is cheap insurance if a neighbor reports "watering on the wrong day."

I tell people: the restrictions are real, the fines are real, and the foundation still needs water. Work inside the rules — there's almost always a compliant way to keep the program alive.

Winter Shutoff and Hose Draining

When the fall rains arrive and the temperatures drop, the program goes to sleep. Running soaker hoses in winter in Texas is asking for trouble: a hard freeze with water in the hoses splits them, and winter rain usually keeps the clay

moist on its own.

Shutoff procedure, every fall:

1. **Turn off the timer and disconnect it.** Bring battery timers inside — freezing kills the electronics.
2. **Drain the hoses.** Disconnect the soaker loop, lift one end, and walk the line letting gravity drain it. Soaker hose holds water in its pores — get as much out as you can, then coil and store under cover if you want them to last.
3. **Drain drip lines** the same way — open the end caps and let them empty.
4. **Shut off the supply** — the hose bib or the irrigation valve feeding the foundation zone.

In spring, reconnect, check every section for freeze damage (run it and walk the loop looking for geysers — a split hose announces itself), replace what's cracked, and start the program when the first real dry spell hits. Don't wait until August and the gap between the soil and the slab. Start early, stay even, and the summer never gets its hooks into your foundation.

(This is a hypothetical composite — not a real customer.) I'll close with the simplest story in this book. A homeowner called me in September, worried about a crack that had opened over the summer along one wall. I walked the house and found the classic picture: south side baked dry, soil pulled back from the slab a good inch, north side fine. No drainage problem, no tree problem, no neighbor problem — just a Texas summer doing what Texas summers do, to a house with no watering program. We set a soaker loop at 15 inches out, two zones on timers, south zone running an extra day. The next summer, the crack didn't open. The summer after that, same. Three years later the crack — which had never been more than a hairline — was still a hairline, and the homeowner had spent maybe thirty dollars a summer on water for the loop. That's the whole pitch for this chapter: thirty dollars and a timer, against a foundation repair that starts in the thousands. The clay is going to do what clay does. Your job is just to keep it from doing it unevenly.

Chapter 9: Sump Systems and Crawlspace Water

Most of the Texas homes I've worked around in fifty years sit on concrete slabs — that's the standard down here. But there's still a solid number of pier-and-beam houses scattered across East Texas, the older neighborhoods inside the loop in Dallas and Fort Worth, the Hill Country, and up in the piney woods. And if you own one of those houses, you don't have a

drainage problem you can see from the street. Your drainage problem is happening in the dark, under your feet, in a crawlspace you might never go into.

Water that gets under a pier-and-beam house is patient, silent, and expensive. It doesn't announce itself with a big crack in a brick wall the way slab movement does. It announces itself with a musty smell that won't leave, with floors that start cupping or bouncing, with a winter electric bill that creeps up because your insulation is hanging wet under the house like a soaked sweater. By the time most folks call me, the problem has been living down there for years.

What a crawlspace is supposed to do — and what water does to it

A crawlspace is the shallow gap between the ground and the floor of a pier-and-beam house. The house rests on piers — concrete blocks or poured concrete columns sitting on footings — and the floor joists span from pier to pier. The crawlspace gives plumbing and wiring a place to live, and it gives the house a buffer above damp ground.

Here's what the ground under a house looks like in most of Texas: clay. And clay holds water the way a sponge holds dishwater. When grading around the house slopes toward the foundation — and we'll talk about how common that is — rainwater runs under the house and has nowhere to go. It sits. A crawlspace with standing water in it is basically a swimming pool under your floor, and everything down there starts suffering.

Wood rots. It doesn't rot fast, and that's what makes it dangerous — it rots slow, over seasons, until one day a floor joist that used to carry your kitchen table carries nothing but mush. Insulation batts absorb water, get heavy, and sag away from the floor. Copper and galvanized plumbing corrode faster in constant humidity. And mold finds wet wood the way a dog finds a sandwich.

The Texas twist is this: our clay doesn't just hold water, it changes volume with water. Wet clay swells. So you get standing water under the house pushing humidity up through the floor, and the piers themselves sitting in soil that's swelling and shrinking with every wet-dry cycle. That's differential movement on a pier-and-beam house, and it shows up as doors that won't latch, floors that slope, and cracks in the drywall.

Water entering through crawlspace vents

Most pier-and-beam houses have vents in the perimeter — brick veneer or concrete block with little screened vents

every so often, meant to let air circulate. In a perfect world, they do. In Texas, two things go wrong with them.

First, the ground outside has often been built up over the years — new flower beds, fresh mulch, re-sodded yards — until the soil outside is higher than the vent. Now rain running down the yard goes straight into the vent. I've pulled handfuls of soggy mulch out of crawlspace vents where the homeowner's landscaper had piled beds right up against the house.

Second, in a driving sideways rain — and we get those in spring — water blows right through a screen vent. It's not a design flaw in the original sense; it's just that "circulation" and "stormwater" weren't balanced in a climate that does what Texas does.

The fix isn't complicated but it requires honesty about the grade. Soil, mulch, and bed materials need to sit below the vents, not above them. If a vent is admitting water in storms, a vent cover with a hood helps — but if the ground outside is higher than the vent, you're treating the symptom. Regrade the beds down first.

Sump pits and sump pumps

When water keeps getting under the house and the grade can't fully fix it — high water table, a low-lying lot, a neighbor uphill sending you his runoff — a sump system is the honest answer.

A sump pit is a hole dug in the lowest part of the crawlspace, lined with a basin, into which groundwater collects. A sump pump sits in the basin. When the water rises to the float switch's trip level, the pump kicks on and pushes the water out through a discharge line.

Here's what I tell every homeowner before they buy one: the pump is the easy part. The discharge line is the project.

The discharge line has to carry that water somewhere that isn't under your house. That means out past the foundation, downhill, to daylight — a pop-up emitter, a splash block, a curb drain, somewhere the water can't come right back. I've seen sump systems where the discharge line ended twelve inches from the foundation wall. The pump ran every ten minutes for three years, faithfully recycling the same water, because the water it pumped out ran straight back down the foundation and into the crawlspace. The homeowner had a very expensive, very tired pump doing absolutely nothing.

The discharge line also has to be sized for Texas storms. A 1½-inch line on a pump pushing against head pressure in a

real gully-washer can be the bottleneck. Talk to whoever installs it about the pump's capacity at the actual lift height — how far up it has to push the water — not just the number on the box.

Battery backup — because pumps fail during the storms that need them most

Here's the cruelest fact about sump pumps: they run on electricity, and the storms that fill a crawlspace are the storms that knock out power. If your pump only works when the lights are on, you own a paperweight with a cord.

A battery backup system is a second pump on a separate power source — usually a deep-cycle marine battery — that takes over when the main pump loses power or when water rises faster than the main pump can handle. It's the difference between sleeping through a storm and waking up to a flooded crawlspace at 3 a.m.

But batteries are not install-and-forget. They last three to five years, and they die quietly. I've walked into crawlspaces where the backup battery hadn't held a charge since a summer storm two years back, and the homeowner had no idea — the little indicator light on the charger had been red for eighteen months and nobody looked. Check it every spring before storm season. Replace it on a schedule, not on failure. A dead battery in a backup system is the same as no backup system, except you paid for it.

Some folks ask about water-powered backup pumps — they run off municipal water pressure, so they work in a power outage. They do, and they're a legitimate option where you have city water with good pressure. They use a lot of water per gallon pumped, so your water bill will notice a long outage. That's a trade-off conversation with your installer, not a dealbreaker.

Vapor barriers and encapsulation basics

A vapor barrier is heavy plastic sheeting — usually 6-mil or thicker — laid over the ground in the crawlspace, overlapping and sealed at the seams, to keep ground moisture from rising into the air under the house. On a crawlspace with a dirt floor and no barrier, the ground is constantly breathing moisture upward. A barrier cuts that off at the source.

Encapsulation takes it further: barrier on the ground, sealed up the walls, vents closed off, and usually a dehumidifier running to keep the humidity down. In humid East Texas and the Gulf Coast side of things, encapsulation is becoming standard, and I think it's good practice where the climate supports it.

A word of honesty: encapsulation is not a substitute for drainage. If water is standing in your crawlspace, wrapping the crawlspace in plastic doesn't remove the water — it traps it. Fix the water entry first — grade, vents, sump if needed — then encapsulate. Doing it in the reverse order is putting a raincoat on a drowning man.

Grading around pier-and-beam

The grading rules for pier-and-beam houses are the same ones I preach everywhere in this book, with one extra sting: water doesn't have to crack your foundation to hurt you here. It just has to get under the house and stay there.

You want the ground falling away from the house at least six inches over the first ten feet. Flower beds against the house need to be below the vents and below the beam line — never built up against the siding or brick. Gutters and downspouts matter just as much as on a slab house, because a downspout dumping three feet from the foundation is dumping into the crawlspace. Get every downspout out ten feet minimum, or into a proper underground line that daylights downhill.

And watch the neighbor factor. I've seen more than one crawlspace flood caused by a neighbor who regraded his lot and sent his water across the fence line. If your crawlspace only floods after the house next door did landscaping, that's not a coincidence — that's the cause. It's an awkward conversation, but it's cheaper than a sump pump.

Warning signs inside the house

Your crawlspace is talking to you. Listen for it:

Musty smells that get stronger in summer or after rain. If the house smells like a damp basement, the moisture is coming from underneath. Air moves up through a house — the stack effect — and crawlspace air becomes living-room air.

Cupped or uneven floors. Wood floors absorb moisture from below and the edges swell. If your hardwood is cupping and there's no plumbing leak above, look underneath.

Condensation on ductwork or on the underside of the floor in summer. Cold air conditioning ducts sweating in a hot, humid crawlspace is normal to a degree — but puddles under the ducts mean the humidity is winning.

Doors and windows sticking that get worse in wet months and better in dry months. That's piers moving with soil moisture — seasonal, and a sign the soil under the house is swinging too far between wet and dry.

High energy bills with no other explanation. Wet insulation under the floor is insulation doing nothing. Your HVAC is heating and cooling the outdoors through a damp floor.

A composite story from the field

(This is a hypothetical composite — not a real customer.)

A family in an older pier-and-beam neighborhood had a smell. That's how it started — just a smell, musty, worst in the hallway, and every air freshener in the county couldn't kill it. They called me because they were convinced it was a foundation problem. The floors had a little bounce to them in the living room, and they'd decided the house was sinking.

I put on my headlamp and went under the house. The crawlspace had about two inches of standing water in the low end — you could see the reflection of my light on it — and the vapor barrier, what was left of it, was bunched up and floating like a deflated raft. The insulation batts under the living room were hanging in wet ribbons. I pressed my thumb into a floor joist near the worst of the water and it went in like the wood was made of cork.

The piers, though? The piers were fine. The house wasn't sinking. It was rotting.

The cause was embarrassingly simple once you saw it. The backyard had been regraded by a previous owner — built up a good eight inches, probably to level it for a patio that never got built. That new grade sat above the crawlspace vents on the back of the house. Every rain sent water straight through the vents and under the house, and the sump pump the previous owner had installed — oh, there was one, installed with good intentions years back — had a discharge line that ended eighteen inches from the foundation. It had been recycling the same water for years, running itself to death. The backup battery was dated six years old and held about as much charge as a potato.

The repair order was: regrade the backyard down below the vents, extend the sump discharge out to the alley swale — a good sixty feet of proper line with a pop-up emitter — new pump, new battery on a real maintenance schedule, pull the ruined insulation, let everything dry for a dry season, then lay a new sealed vapor barrier and replace the damaged joist section. The piers never needed touching. The smell was gone by the second dry month.

That family spent real money fixing it. But here's what I told them, and what I'll tell you: if the first owner had walked the grade with a level and a critical eye, and if somebody had checked that battery once a year, none of it would have

happened. Crawlspace water is a maintenance problem that becomes a construction problem. Catch it in the maintenance stage.

The crawlspace checklist

Go under your house — or send someone you trust — twice a year: once in spring before storm season, once in fall. Take a headlamp and look for standing water, wet insulation, rotted wood, and vents that sit below the outside grade. Check the sump pump by pouring a bucket of water in the pit and watching it cycle. Check the backup battery's indicator. Look at where the discharge line ends. An hour under the house twice a year will catch every one of the problems in this chapter while they're still cheap.

Chapter 10: How Bad Drainage Moves a Foundation — and How Fixing Drainage Protects a Pressed-Pile Repair

Everything in this book has been leading to this chapter. Gutters, grading, downspouts, French drains, swales — none of it is really about gutters. It's about the slab. Water is the hand on the lever that moves Texas foundations, and this chapter is where I lay out exactly how that happens, what foundation repair actually does about it, and why the repair only holds if the water problem gets fixed too.

Differential settlement: the two-corner problem

Texas clay doesn't move evenly. That's the whole story in one sentence.

When soil under a slab gets wet, it swells. When it dries, it shrinks. A slab foundation is a big, stiff, heavy rectangle sitting on that soil. If the soil under the whole slab swelled and shrank together, the house would just ride up and down like a boat — annoying, but not damaging. That almost never happens. What happens is one corner gets wet and another corner gets dry, and the slab twists.

Picture a house with a big oak tree on the west side and a flower bed that gets watered daily on the east side. The west corner sits in soil that's been sucked dry by tree roots in a drought summer. The east corner sits in soil that's swollen fat from the irrigation. One corner drops, the other corner heaves, and the slab between them is a rigid beam being bent. Concrete is strong in compression and weak in tension

— it does not like being bent. So it cracks.

Or picture the more common one: the north side of the house stays shaded and damp all winter while the south side bakes dry. Or the corner where two downspouts dump water against the foundation while the other three corners stay dry. Or the side of the house where the grade slopes toward the slab, funneling every rain into one corner.

Every pattern in this book — the downspout with no extension, the flower bed mounded against the brick, the negative grade along the back — creates a wet spot. And a wet spot next to a dry spot is differential settlement waiting to happen.

Why cracks follow water patterns

Once you understand the two-corner problem, cracks stop being mysterious. They become a map.

The classic stair-step crack in brick veneer — following the mortar joints up in a staircase pattern — is the slab bending. One side of that wall is moving relative to the other, and the brick is telling you exactly where the hinge is. A diagonal crack from the corner of a window or door is the same story: the opening is the weak point, and the bending slab concentrates the stress there.

Interior drywall cracks above doors and windows, doors that rub on one side, a gap opening between the baseboard and the floor on one wall while the other wall looks fine — all of it is the house telling you which corner moved and which way. When I walk a house, I read the cracks first and the drainage second, because the cracks tell me where to look. Nine times out of ten, the worst crack in the house points at the worst drainage problem in the yard. The water made the crack. Not the other way around.

Here's the part most folks get backward: they see the crack and think "foundation problem," as if the foundation is the disease. The foundation is the symptom. The water is the disease. You can fix the symptom — and sometimes you must — but if you don't treat the disease, the symptom comes back. I've seen houses with three generations of foundation repair, each one done by a good crew doing honest work, each one followed by new movement, because nobody ever fixed the drainage that was moving the soil in the first place.

Pressed concrete pile foundation repair, in plain language

When a slab has settled enough that the house needs to be brought back to level — doors won't close, floors slope, cracks

are widening — the repair method I trust, the one I've watched work for decades in Texas clay, is pressed concrete piles.

Here's how it works, no jargon. The crew digs small access holes around the perimeter of the foundation, down to the bottom of the grade beam — that's the thickened concrete edge of the slab that carries the load. Then they take solid concrete pile segments — cylinders of concrete, typically about a foot across and a foot tall — and press them into the ground one on top of another using hydraulic rams, using the weight of the house itself as the resistance. Each segment is driven down until it won't go any further — that's called refusal — and then the next segment goes on top. They keep stacking and pressing until the pile hits refusal deep in stable soil, far below the active clay zone that swells and shrinks with the weather.

Once the pile is at refusal, the crew caps it, places shims between the pile cap and the grade beam, and then — carefully, a little at a time — lifts the foundation back toward level. The lift is done in small increments, watching the cracks and the doors, because a slab that settled over years shouldn't be yanked back in an afternoon. After the lift, the shims carry the load from the grade beam down through the piles to the stable soil below.

That's the whole method: concrete piles, pressed to refusal, shimmed, lifted. No gimmicks. The piles don't care whether the surface clay is wet or dry, because they're bearing on soil deep enough that the weather doesn't reach it. That's why the method works in Texas — it gets the house's weight off the moody surface clay and onto something steady.

The honest truth: piles fix elevation, they don't fix water

Now here's the part some foundation companies won't emphasize, and I will, because it's the truth and it's the reason this chapter exists.

Pressed piles fix the elevation problem. They get the settled corner back up and they hold it there. What they do not do is stop the soil around your house from swelling and shrinking. The surface clay is still there. The wet corner is still wet and the dry corner is still dry. The slab is still a rigid beam sitting on soil that's moving underneath it.

A lifted slab on good piles is far more stable than a settled slab with no support — I'm not talking down the repair. But the slab still has spans between the piles, and the soil under those spans still moves with moisture. If the drainage that

caused the first round of settlement is still there, dumping water against the same corner, you can get new movement — new cracks in the brick, new sticking doors, new gaps — in soil and slab sections the piles can't fully protect. The piles hold the points they're under. The water works on everything between and around them.

I've been called back to houses where the piles were perfect — still at refusal, still shimmed tight, holding elevation exactly where the crew left them — and the house still had new cracks. The drainage was never fixed. A downspout was still dumping at the same corner. The flower bed was still mounded against the brick. The water found a new way to express itself, because water always does.

So when I say drainage correction is part of protecting a repair investment, I mean it literally. You wouldn't put a new roof on a house and leave the hole in the gutter that rotted the old one. Don't put piles under a house and leave the water pattern that moved it.

What to ask a foundation company about drainage before signing

If you're getting foundation repair bids, the drainage conversation should happen before you sign anything, not after the crew leaves. Here's what to ask, in plain words:

"What do you think caused this settlement?" A good company will walk the yard with you and point at the downspout, the grade, the tree, the bed. If they can't name a cause — if it's just "settlement happens" — they haven't done the diagnosis, and you should keep shopping.

"Do I need drainage work before, during, or after the pile work?" The honest answer is often "yes, and here's the order." Sometimes the drainage fix comes first, so the soil stabilizes before the lift. Sometimes it comes right after. The order matters less than the fact that it's on the plan.

"Will your warranty cover new movement if the drainage isn't fixed?" Read that warranty. Many foundation warranties have language about maintaining drainage and moisture levels around the foundation. That's not the company weaseling out — that's the company telling you, in writing, that water is your responsibility. Believe them.

"Who does the drainage work — you or someone else?" Some foundation companies do drainage in-house. Some will refer you to a drainage contractor. Either is fine. What's not fine is nobody mentioning it at all.

"What should my watering and maintenance look like after the repair?" This is the question that separates the pros from the installers. A company that cares about your house holding level will tell you about keeping soil moisture consistent around the foundation — not soaking it, not letting it bake, just even. That conversation is worth more than any warranty certificate.

The repair-and-drainage order of operations

For most houses, the sequence that works is this: fix the drainage first, or at least at the same time. Get the water patterns corrected — extensions on the downspouts, grade falling away from the slab, beds lowered, the wet corner dried out. Let the soil settle into its new, more even moisture pattern for a few weeks if you can. Then do the pile work on a foundation that's sitting in stable, even soil. Then maintain the drainage and the moisture balance afterward.

Doing it in the other order — piles first, drainage "someday" — is how you get the callback I described above. The piles are holding, the water is working, and the homeowner is confused about why the house is moving again. It's not the piles' fault. It was never the piles' fault. It was the water, still doing what water does.

A composite story from the field

(This is a hypothetical composite — not a real customer.)

A homeowner had the classic pattern: stair-step crack in the brick on the northeast corner, front door rubbing at the top, a gap under the baseboard in the master bedroom. The foundation company — a good one, honest crew — put in pressed concrete piles around the affected area, pressed to refusal, shimmed, lifted the corner back to within a fraction of an inch. Beautiful work. The door closed. The crack stopped growing. Everybody shook hands.

Two years later the crack was back, wider than before, and a new crack had opened on the adjacent wall. The homeowner was furious — at the foundation company. Called me to come look because he was sure the piles had failed.

The piles hadn't failed. I could see the shim stacks in the access points — tight, level, holding. What had failed was the drainage, which nobody had fixed. The northeast corner had a downspout that dumped three feet from the foundation — no extension, never had one. The flower bed along that wall had been rebuilt since the foundation work, mounded a good six inches higher than before, with fresh mulch sloping toward the brick. And the homeowner, trying to be diligent about foundation maintenance, had put a soaker hose along that

wall and run it on a timer all summer — right against the foundation, drowning one corner while the rest of the yard baked.

The soil under that corner was a swamp sitting next to a desert. The piles were holding their points. The slab between them was bending under the moisture differential, and the brick was cracking right on schedule.

The fix was not more piles. The fix was a forty-dollar downspout extension, regrading the bed down away from the wall, moving the soaker hose out to a proper distance and putting it on a sensible schedule, and a French drain along that side to carry the roof water away. The foundation company came back out, confirmed the piles were fine, and adjusted nothing. The house stabilized. The cracks got repaired and stayed repaired.

That homeowner spent good money on a good foundation repair and nearly spent it twice, because the water never got addressed. The piles did their job. The drainage didn't do its. That's the lesson of this chapter in one house: fix the water, protect the repair. Always in that order, always together.

The takeaway

Water moves Texas foundations. Not earthquakes, not bad luck — water, in uneven patterns, swelling and shrinking the clay under your slab. Pressed concrete piles are the right repair when settlement has gone too far, and they work. But they're half the job. The other half is everything this book is about: getting the water away from the house, keeping it even when you can't get it away, and maintaining it for as long as you own the place. Do both, and the house holds. Do one, and you're renting your repair instead of owning it.

Chapter 11: Hiring a Drainage Contractor and Reading a Drainage Estimate

You've read ten chapters of this book. You know what your yard is doing wrong, and you know what it needs. Now comes the part where money changes hands — and where more homeowners get burned than on any other step in this process. Drainage work is invisible when it's done. It's buried in the ground. You can't see whether the contractor put in four inches of gravel or two, whether the pipe has the right slope, whether the fabric is wrapped properly. You're buying work you'll never look at again, which means you're buying the contractor, not the ditch.

Fifty years around job sites has taught me how to tell the good ones from the bad ones. Here's the whole playbook.

How to find a drainage contractor

Start with referrals, and I mean real ones — not stars on a screen. Ask neighbors who had drainage work done, especially anyone whose yard used to flood and doesn't anymore. Ask your realtor, your insurance agent, your home inspector — people who see the aftermath of drainage jobs. A contractor whose name comes up twice from two different people is worth calling.

How long they've been in business matters more in drainage than in almost any other trade. A drainage contractor who's been working the same county for ten years has seen what Texas clay and Texas storms do to every kind of system. They've been called back to their own work and learned from it. A company that's been around eighteen months might do fine work — but they haven't lived through enough storm seasons to know what fails.

Check insurance. Not "do you have insurance" — ask for the certificate, and make sure it's current. General liability at minimum. If a crew is trenching across your yard near gas lines, water lines, and your foundation, you want to know there's coverage when the backhoe finds something unexpected. Workers' comp matters too — if a laborer gets hurt on your property, you don't want to be the deep pocket.

Ask to see past work. Not photos on a phone — though those help — but addresses, if the homeowner agrees. A contractor who's proud of their work will have customers who'll let you look at a pop-up emitter in their yard or a swale that's been through three storm seasons. Drive by. Look at whether the sod restoration took, whether the grade still falls right, whether the emitter is still where it should be. Drainage work that's two years old tells you more than any sales pitch.

One more source people forget: the foundation repair companies. Not to do the drainage — though some do — but to ask who they refer drainage work to. Foundation companies live downstream of drainage failures. They know which drainage contractors' work holds up and which ones' work brings them callbacks. If two different foundation companies name the same drainage contractor, that's a strong signal.

What a good estimate line-items

A drainage estimate should read like a parts list and a plan, not a single number on a letterhead. When a contractor hands you a bid, here's what should be on it, item by item:

Linear feet of pipe, with the pipe type and size. "French drain" is not a line item — "120 linear feet of 4-inch perforated SDR-35 PVC pipe" is a line item. The type matters: corrugated flexible pipe is cheaper and easier to install, but it crushes, clogs, and bellies in Texas clay; rigid PVC costs more and lasts. The estimate should name what's going in your ground. The size matters: 3-inch versus 4-inch versus 6-inch is a capacity decision, and it should match the water load — roof square footage feeding it, slope of the yard, soil type.

Gravel — type and depth. A French drain is a gravel trench with a pipe in it, and the gravel is doing half the work. The estimate should specify the gravel type (washed drainage rock, not limestone fines that pack solid) and the depth of gravel below and around the pipe. A trench with two inches of gravel under the pipe is a different system than one with six, and you should know which one you're buying.

Filter fabric. The fabric wraps the gravel trench to keep clay and silt from migrating in and clogging the system. The estimate should name it — woven or non-woven geotextile, and it should be a real drainage fabric, not landscape weed cloth. This is the line item that separates a drain that works for fifteen years from one that clogs in three.

Catch basins. If the design includes surface collection points — grates set in low spots to catch standing water — each one should be listed with its size (9-inch, 12-inch) and location. A catch basin without a specified location is a promise, not a plan.

Pop-up emitters or daylight outlets. Where does the water come out? The estimate should name every discharge point and how it's finished — pop-up emitter, curb cut, daylight to a swale. "Drains to the back" is not a discharge plan. You want to know exactly where every gallon exits, because that's where you'll be looking after the first big storm.

Trenching depth and slope. The pipe has to fall continuously from the high end to the discharge — water doesn't run uphill. The estimate should show the trench depth at the start and the end, or at minimum state the minimum slope (typically 1% — an eighth of an inch per foot — at the absolute minimum). A drain with a belly in it — a low spot where water sits — is a drain that silts up and dies. Slope is everything underground.

Sod restoration or surface repair. The crew is going to tear up your yard. The estimate should say what it looks like when they leave: sod replaced, seed and straw, or just "rough grade" with you handling the rest. Get this in writing, because "we'll put the yard back" means different things to different people. If sod is included, what kind — matching your existing

grass?

Warranty terms, in writing. What's covered, for how long, and what voids it. A drainage warranty should cover the system functioning — water moving through it as designed — for a stated period. It should say what happens if a section settles or a connection separates. And it should be on paper, not in the salesman's mouth.

Permits and utility locates. In most Texas cities, the contractor should be calling 811 for utility locates before trenching. The estimate should note who's handling that. If the design ties into a municipal storm system or crosses an easement, permits may apply — that should be on the estimate too, with who's pulling them.

Red flags

Now the other side. Walk away — politely, no drama — when you see these:

One price fits all. "We do French drains for \$3,500, any yard." No. Your yard is not any yard. The water load, the soil, the slope, the discharge options — every one of those changes the design and the price. A flat price means they're installing the same system whether you need it or not.

No measurements. If the contractor walks your yard for ten minutes, doesn't pull a tape, doesn't shoot grades with a level, doesn't calculate roof runoff — and then hands you a number — that number is a guess. Drainage is math: how much water, falling how far, going where. No measurements, no math, no deal.

Pressure tactics. "This price is only good today." "We've got a crew in your neighborhood this week." "Your foundation is going to crack if we don't start Monday." Real drainage contractors in Texas stay busy without scaring people. Urgency is a sales tool, and it's the tool of someone who doesn't want you getting a second bid.

No warranty in writing. "We stand behind our work" is a sentence, not a warranty. If it's not on paper with terms and a duration, it doesn't exist. This is non-negotiable. The whole point of paying a professional is that they answer for the work after the check clears.

Cash-only or full payment up front. A deposit is normal — materials cost money, and scheduling a crew has value. Full payment before the first shovel hits the ground is not normal. Standard structure is a deposit to schedule, progress payments as phases complete, and a final payment when the work is done and you've walked it. Anyone who needs all the

money before starting needs your money more than they need your satisfaction.

Can't name a past customer. If every reference is "we respect our customers' privacy" and there are no addresses to drive by, no names to call — that's not privacy, that's a blank resume.

Questions to ask before signing

Sit down with the estimate and ask these, out loud, and write down the answers:

1. "Walk me through where the water goes, start to finish." They should be able to trace every drop from the roof or the low spot to the discharge point, in order. If they can't narrate the water's journey, they haven't designed it.
2. "What happens in a five-inch rain?" Texas gets those. The system should have an answer — overflow paths, capacity limits, where the excess goes. "It'll handle it" is not an answer. "The 4-inch main carries X gallons per minute, and in an event beyond that the swale takes the overflow to the curb" is an answer.
3. "Where exactly does each line discharge, and what keeps water from coming back?" Every discharge point should be downhill of the house, away from the foundation, and not pointed at the neighbor's fence.
4. "What's the maintenance?" Every drainage system needs some — flushing cleanouts, clearing catch basin grates, checking emitters. If they say "no maintenance ever," they're selling, not advising.
5. "Who's doing the actual work — your crew or a subcontractor?" Both can be fine, but you should know. If it's subs, who supervises, and does the warranty still come from the company you're paying?
6. "What do you need from me before you start?" — sprinkler lines marked, pets secured, gate access. A contractor who thinks about this in advance is a contractor who thinks.

Getting two or three bids

Get at least two bids, three if the job is big. Not to play them against each other — to learn. The first bid teaches you what the job might cost. The second bid teaches you what the first bid missed. By the third, you understand your own yard's drainage better than most homeowners ever will, and you can spot the difference between a thorough design and a thin one.

When the bids come back different — and they will — don't just pick the cheapest. Line them up item by item: pipe type, linear feet, gravel depth, number of basins, discharge points, warranty length. The cheapest bid is often the one with corrugated pipe instead of PVC, two basins instead of four,

and a one-year handshake instead of a five-year warranty. Compare systems, not numbers.

And be suspicious of the outlier in either direction. A bid that's half the others is cutting something — materials, depth, warranty, insurance. A bid that's double the others might be gold-plating the job or might just not want it. Ask both of them why.

Payment terms

Normal looks like this: a deposit at signing — typically 25 to 50 percent, enough to cover materials and scheduling. A progress payment when the trenching and pipe are in but before backfill, so you can see the work while it's still visible — this is your inspection moment, and a good contractor will welcome it. Final payment on completion, after you've walked the yard, seen the discharge points, and confirmed the restoration.

Never make the final payment before the work is complete. That last check is your only leverage, and once it's gone, so is your leverage. This isn't distrust — it's business. Good contractors expect it and structure their billing around it.

Get everything in the contract: the line items from the estimate, the payment schedule, the start and completion timeframes, the warranty terms, and who's responsible for utility locates and permits. A handshake is how neighbors borrow tools. A contract is how you buy five thousand dollars of buried pipe.

A composite story from the field

(This is a hypothetical composite — not a real customer.)

A homeowner got three bids for a backyard French drain system. The first contractor walked the yard in eight minutes, never pulled a tape measure, and quoted \$2,800 on the spot — "we can start Thursday." The second bid was \$7,400, with a two-page estimate listing 140 feet of 4-inch perforated PVC, washed gravel, non-woven fabric, three catch basins at marked locations, a pop-up emitter at the curb, trench depths, sod restoration with matching grass, and a five-year written warranty. The third bid was \$4,100 — one page, "French drain system, complete," no pipe type, no linear feet, no discharge location named.

The homeowner was leaning toward the \$4,100 bid. Middle price, felt safe. Called me to ask what I thought — we'd done some brick work for the family years back, and they trusted my eye.

I told them to ask the middle bidder four questions: what pipe, how many feet, where does it discharge, and what's the warranty. The answers came back: corrugated pipe, "about a hundred feet, we'll see when we dig," discharges "out back somewhere past the fence," and "we stand behind our work." No paper warranty. No measurements. The discharge — "out back past the fence" — was uphill of the work area, which meant the line would have had to run uphill, which meant it wouldn't have drained at all. It would have been a \$4,100 gravel-filled decoration.

They went with the \$7,400 bid. The crew shot grades with a laser level, called in the utility locates, trenched to the depths on the estimate, and invited the homeowner to look at the pipe and slope before backfill — that inspection moment I talked about. The pop-up emitter went in at the curb exactly where the drawing showed. First big spring storm after the install, the backyard that used to hold three inches of water for two days drained in under two hours. The homeowner sent me a photo of a dry yard with the caption "worth every penny."

The \$2,800 guy? They saw his truck two streets over a month later, doing the same eight-minute walk at another house. Somebody over there got a Thursday start and a corrugated pipe to nowhere. I hope it worked out. The odds are not good.

The lesson isn't "buy the most expensive bid." The lesson is: buy the bid you can read. If you can't tell from the paper what's going in your ground, you're not buying drainage — you're buying a promise. Promises don't move water. Pipe does.

Chapter 12: The Seasonal Maintenance Calendar

Here's the secret of the whole book, saved for the last chapter: drainage is not a project. It's a habit.

Every drainage system I've ever seen fail — French drains, gutters, swales, sump pumps, all of it — failed from neglect, not from bad design. The pipe was right. The slope was right. Then nobody cleaned the catch basin for four years, the gutter filled with oak leaves, the downspout extension got run over by the lawn mower and never replaced, and the system died a slow, boring, preventable death.

The good news is that the maintenance is simple. It's a few Saturday mornings a year. This chapter is your calendar — what to do, when to do it, and why the timing matters in Texas specifically. Do this and your drainage system will outlive your mortgage.

Spring: storm season prep (March – May)

Spring in Texas is the main event. March through May brings the heaviest, hardest rains of the year — the gully-washers, the hailstorms, the nights where two inches fall in an hour. Everything you do in spring is about being ready for that.

Clean the gutters before the rains. Not after the first big storm — before. Get the winter's accumulation out: leaves, shingle grit, the tennis ball the kids lost in October. Run water through every downspout with a hose and watch it come out the bottom. If a downspout is clogged, you'll find out now, with a hose, instead of during a thunderstorm when it's dumping a waterfall over the gutter right against your foundation.

Check every downspout extension after every big storm. This is the highest-value habit in this entire book. Extensions get knocked loose by wind, crushed by mowers, disconnected by weed eaters, and buried by mulch. After a major rain, walk the perimeter and confirm every downspout is still connected and still discharging where it's supposed to. A disconnected extension during storm season is an open fire hose pointed at your slab.

Inspect catch basins and grates. Pop the grates off your catch basins and French drain cleanouts. Pull out the leaves, mud, and debris. If a basin is half full of silt, that's normal accumulation — clean it out. If it's full to the top after one season, something upstream is eroding and you need to find it.

Walk the swales. Your swales and drainage paths should be clear and flowing the right direction. Winter can deposit sediment, and spring weeds can choke a shallow swale fast. Make sure water still has a clear path from the high side of your lot to the discharge point. If a swale has filled in, re-cut it before the heavy rains — a shovel and an hour beats a flooded patio.

Test the sump pump. If you have one — and if you read Chapter 9, you know whether you should — pour a bucket of water into the pit and watch it cycle. Listen for grinding, check that the float moves freely, and confirm the discharge is actually leaving the property. Check the battery backup indicator. Spring is when you need it most; spring is when you verify it.

Look at the foundation. Walk the slab perimeter and the brick veneer with fresh eyes. New cracks? Cracks that grew over winter? Note them — photograph them with a coin for scale. Spring is your baseline. If something moves during storm season, you'll want to know what it looked like before.

Summer: drought defense (June – August)

Texas summer flips the problem upside down. Now the enemy isn't too much water — it's too little, in the wrong pattern.

Run your watering program. This is the foundation-watering discipline from Chapter 4, and summer is when it matters most. The goal is even soil moisture around the foundation — not soaked, not baked, just consistent. Soaker hoses set 12 to 18 inches from the slab, run on a timer, adjusted to the weather. In a brutal August, that might mean watering the foundation zone the way you'd water a garden bed — regularly and evenly. In a mild summer with scattered rain, less.

Watch for separation cracks. Summer is when the gaps show up — the crack between the brick and the window frame, the baseboard pulling away from the floor, the driveway separating from the garage apron. Some of this is normal seasonal movement in Texas clay. What's not normal is rapid change: a gap that doubles in a month, a door that worked in June and won't latch in August. Photograph and date what you see. If it rebounds when the rains return, it was seasonal. If it doesn't, it's telling you something.

Adjust soaker timers with the weather. A timer set in June and forgotten will drown the foundation zone in a wet July and starve it in a dry August. Check the forecast the way you check it for the lawn — because the foundation zone IS part of the watering plan. After a good rain, skip the cycle. In a two-week dry stretch of 100-degree days, add one.

Keep an eye on trees. Summer drought is when big trees near the house drink the hardest, pulling moisture from under the slab. If you have a large tree within twenty feet of the foundation, summer is when to make sure your watering program accounts for it — the soil on the tree side may need more water to stay even with the rest. This is also the season to have an arborist look at any tree that's declining — a dying tree near a foundation is a root and moisture problem wearing a bark costume.

Don't overwater. I need to say this because the pendulum swings both ways. I've seen homeowners so scared of foundation settlement that they run soaker hoses 24/7 all summer and create the swamp condition from Chapter 10 — one drowned corner next to three dry ones. Even moisture. That's the whole goal. More is not better; even is better.

Fall: leaves and the final grade check (September – November)

Fall is the cleanup season and the prep season. The storms

ease off, the leaves come down, and you get your last good look at everything before winter.

Leaves are the enemy of every drainage system. Gutters, catch basin grates, French drain outlets, swales, pop-up emitters — leaves clog all of them. If you have mature trees, gutters may need cleaning twice in fall: once mid-season and once after the last big drop. A gutter full of wet leaves in a fall thunderstorm is a gutter that overflows straight down the wall. Check the emitters too — a pop-up emitter buried under six inches of leaves can't pop up.

Do the final grade check before winter. Walk the perimeter with a level or just a critical eye. Has mulch built up against the house over the growing season? Have the beds crept up above the vents or the weep holes? Has soil settled anywhere and created a low spot against the slab? Fall is the time to pull beds back down, re-establish the fall away from the house, and fix any low spots. Winter rains on bad grade are worse than summer rains, because the ground stays wet longer and the clay stays swollen.

Service the gutters one more time. After the leaves are done, clean the gutters again and confirm the downspouts run clear. Going into winter with clean gutters means the winter rains — gentler than spring, but persistent — go where they're supposed to.

Drain and store what needs it — or plan to. If you have above-ground soaker hoses, fall is when you decide the winter plan (more on that below). Detach hoses from hose bibs before the first freeze — a hose full of water connected to a bib is a burst pipe waiting for a cold night.

Check the crawlspace (pier-and-beam). Fall is your second under-the-house visit from Chapter 9. Look for standing water after the fall rains, check the vapor barrier, verify the sump discharge is still routed right. Going into winter with a dry crawlspace means going into winter without mold season.

Winter: freeze protection and quiet watching (December – February)

Texas winters are mild until they're not. The February freeze a few years back taught everybody that "it doesn't get that cold here" is a bet you lose eventually. Winter drainage maintenance is mostly about protection and observation.

Freeze protection for exposed pipes and hose bibs. Cover exterior hose bibs with insulated covers — they're cheap and they work. Any exposed water line — to an outdoor kitchen, a

pool equipment pad, an irrigation backflow preventer — needs insulation or heat tape before a hard freeze. A burst pipe doesn't just waste water; it can dump hundreds of gallons against your foundation in the middle of the night. The backflow preventer for your sprinkler system is the most commonly burst item in Texas — get it winterized or cover it.

Drain soaker hoses. If your foundation watering uses above-ground soaker hoses, drain them before the first hard freeze and either store them or leave them disconnected and empty. A soaker hose full of water that freezes will split — and then in spring you'll be watering the foundation with a sprinkler you didn't intend. If your soaker system is buried drip, make sure the lines are blown out or drained per the installer's winterization instructions.

Watch for ice-channel water against the slab. In a hard freeze with precipitation, melting ice follows the grade just like rain does. If your grade slopes toward the house, meltwater runs to the slab, refreezes overnight, and the freeze-thaw cycle works on every tiny crack in the concrete and mortar it touches. It's a slow process, but it's real. The fix is the same as always: grade falling away from the house. Winter just adds urgency to what you should have done in fall.

Keep gutters clear through winter. Winter storms are gentler but the trees aren't done — live oaks drop leaves in spring, cedar drops year-round, and winter wind moves debris into gutters. A quick check after winter storms keeps the system ready for spring, when the real rains return.

This is also planning season. Winter is when you get bids for drainage projects. Contractors are less slammed than in spring, prices are often better, and the work can be done in dry weather. If you've been putting off that French drain or that regrade, January and February are the months to get it designed and scheduled — so it's in the ground before the March storms.

The quarterly checklist: one Saturday morning

Here it is — the whole book distilled into a routine you can do in one Saturday morning, four times a year. Put it on the calendar: first Saturday of March, June, September, and December.

Every quarter, do all of this:

- [] Walk the full perimeter of the house. Look at the grade — does it still fall away from the foundation everywhere? Note any low spots, built-up beds, or mulch against the

house.

- [] Check every downspout. Connected? Extension in place? Discharging at least ten feet out or into its underground line? Run water through any that look suspect.
- [] Clean the gutters — or at least check them. If you can't see in, run a hose at the high end and confirm flow at every downspout.
- [] Open every catch basin grate and cleanout. Pull debris. Confirm water flows through.
- [] Find every discharge point — pop-up emitters, daylight outlets, curb cuts. Confirm they're clear, in place, and discharging away from the house and away from the neighbor's property.
- [] Walk the swales and drainage paths. Clear obstructions. Confirm water still flows the right direction.
- [] Look at the foundation and brick veneer. Photograph any crack with a coin for scale. Compare to last quarter's photos.
- [] Check doors and windows on the suspect walls. Anything new sticking, rubbing, or gapping?
- [] If pier-and-beam: go under the house. Standing water? Wet insulation? Vents clear and above grade? Sump pump cycles? Battery indicator green?
- [] If you have a sump pump: pour a bucket in the pit, watch it pump, confirm the discharge exits the property.
- [] Review the watering program for the season ahead. Timer set right? Soaker hoses positioned 12-18 inches out? Adjusted for the forecast?

Quarter-specific additions:

- **March (spring):** Deep gutter clean before storm season. Test sump and battery backup. Baseline foundation photos.
- **June (summer):** Confirm the drought watering program is running. Watch for separation gaps. Check tree-side soil moisture.
- **September (fall):** Leaf patrol — gutters, grates, emitters. Final grade check: pull beds down below vents and weep holes. Detach hoses from bibs before first freeze.
- **December (winter):** Freeze protection on bibs and exposed pipes. Drain soaker hoses. Get bids for any drainage project you want done before spring.

That's it. Four Saturday mornings a year. Maybe three hours each if you're thorough, less once you know your yard. Compare that to the cost of a French drain installed in a panic after a flood, or a foundation repair that could have been prevented, or a crawlspace rebuild from years of silent water.

A composite story from the field

(This is a hypothetical composite — not a real customer.)

There's a homeowner I think about whenever someone asks me if maintenance really matters. They bought a house with a full drainage system already installed — French drains on two sides, catch basins in the low spots, pop-up emitters at the curb, extensions on every downspout. The previous owner handed over a folder with the install drawings and said "take care of it." And they did. Not obsessively — just the quarterly walk, pretty much exactly like the checklist above.

Year three, on a September Saturday, they found a catch basin grate buried under mulch — the landscaper had redone the beds in spring and covered it. Took five minutes to dig out. Year five, March walk: one downspout extension had been crushed by the mower, disconnected, lying in the grass. Fifteen dollars at the hardware store, ten minutes to replace. Year seven: the pop-up emitter at the curb wasn't popping — pulled it up, found it packed with silt, flushed the line with a hose, working in twenty minutes.

Nothing dramatic ever happened to that yard. No floods, no foundation movement, no emergency calls. The system the previous owner paid good money for just kept working, year after year, because somebody spent three hours a quarter keeping it alive.

Meanwhile, two streets over, a house with the identical system installed by the identical contractor — I know because I saw both installs — had the French drain clog solid by year six. Nobody ever opened a cleanout. The catch basins filled with leaves and became planters. A downspout extension came off in a storm and nobody noticed for two years, and that corner of the slab settled enough to crack the brick. Same system, same soil, same rain. The difference was twelve Saturday mornings.

Twelve Saturday mornings over seven years. That's the cheapest foundation insurance in Texas, and you can't buy it — you can only do it.

The last word

Drainage is destiny. I named this book that because after fifty years, I'm sure of it: the houses that manage their water stand straight, and the houses that don't, don't. It's not about the soil you got or the rain you get — every part of Texas has clay and every part of Texas has storms. It's about what you do with the water.

You now know what to do. You know how gutters work and why extensions matter. You know how to read your grade and how to fix it. You know what a French drain is made of and how to hire someone to put one in. You know how water moves a foundation and how to protect a repair. And you

know that none of it works without the quarterly walk.

Go walk your yard. Today's a good day for it.

Conclusion: What I See Most — The Mistakes That Keep Repeating

If you've read this far, you know more about water and foundations than most homeowners in Texas will ever learn. That's not a small thing. Most folks never think about drainage until something cracks, sticks, or floods — and by then the water has been working on their house for years, quiet as a thief.

I've been doing this work for fifty years. Brick, mortar, foundations, the whole of it. And I can tell you the ending of this story before it starts, because I've watched it play out on thousands of lots across this state. The houses that move are almost always the houses where water was allowed to do whatever it wanted. The houses that stay put are the ones where somebody — the homeowner, a good contractor, sometimes both — decided that water was going to go where they told it to go.

Drainage is destiny. Not luck. Not the soil lottery. Destiny — because the things that decide whether your foundation stays steady for the next forty years are decisions you can make, and most of them don't cost much.

Before you close this book, I want to leave you with the mistakes list. This is the "what I see most" file — the greatest hits of water damage, the things I walk up to on job after job after job, year after year. Read it like a checklist. If you recognize your own house in any of these, that's not bad news. That's the cheapest part of the whole deal — finding out while there's still time to fix it.

Mistake #1: The downspout that dumps at the corner.

Nothing moves a foundation corner faster than a downspout pouring a roof's worth of water onto one square yard of clay, storm after storm. Extensions are cheap. Water at the corner is not.

Mistake #2: Flower beds built like bathtubs. Mulch and soil mounded above the slab edge, hard edging trapping water against the wall, beds that slope toward the house instead of away from it. A flower bed should be decoration, not a reservoir.

Mistake #3: Ignoring the slope because the yard "looks fine." Grading doesn't announce itself. A yard can look perfectly flat and still be sending every drop of rain toward your foundation. The level-and-tape test from Chapter 4 takes twenty minutes. Do it.

Mistake #4: Gutters that haven't been cleaned since the last election. A clogged gutter is worse than no gutter at all, because it concentrates water and then dumps it in one spot — usually right at a corner, usually during the biggest storm of the year.

Mistake #5: Watering the lawn and starving the foundation. Texas homeowners will run sprinklers for the grass and let the clay under the slab edge turn to powder. The lawn is replaceable. The foundation is not. Water the perimeter first.

Mistake #6: Planting a thirsty tree at the corner of the house. That oak is beautiful today. In fifteen years it's drinking hundreds of gallons a day out of the soil your foundation sits on, and the corner nearest to it is dropping while the rest of the house holds still.

Mistake #7: Fixing the foundation without fixing the water. Pressed concrete piles are a fine, honest repair — they hold a house up on solid bearing when the soil can't. But piles don't change what water does to the ground around them. If you repair a foundation and leave the drainage broken, you've bought half a solution. The water will keep working.

Mistake #8: Hiring the cheapest bid without reading what it covers. A drainage estimate that doesn't list pipe type, footage, depth, gravel, fabric, and where the water goes isn't an estimate — it's a wish. Two or three detailed bids beat one cheap one every time.

Mistake #9: Waiting. The crack that was hairline in spring is a finger-width by fall. Water damage compounds. Every one of these mistakes gets cheaper to fix the earlier you catch it and more expensive the longer you wait. The rain-walk costs you nothing. Start there.

Here's the last thing I'll tell you, and it's the thing I tell every homeowner who'll listen: your foundation doesn't need you to be an expert. It needs you to pay attention. Walk the lot after a rain. Look at where the water goes. Keep the gutters clean, the slope falling away from the house, the soil moisture even through the summer. That's ninety percent of it. The other ten percent is calling somebody who knows what they're doing when the water is winning.

You've got the knowledge now. Go use it. Your house is

counting on you — and unlike water, it can't move itself out of the way.

— Travis

Resources & Next Steps

Travis Nech has spent 50 years in brick, masonry, and foundation work across Texas. He owns and operates Champion Brick Repair, Metro Foundation Repair, LintelLOCK, MortarMagic, and WhiteStone Construction.

- Champion Brick Repair — brick & masonry repair, Dallas-Fort Worth — <https://championbrickrepair.com> — (817) 900-6324
 - Metro Foundation Repair — pressed concrete pile foundation repair — <https://metrofoundationrepair.com> — (817) 523-1540
 - LintelLOCK — the field-developed lintel replacement system — <https://lintlerepair.com> — (469) 730-0650
 - MortarMagic — mortar color matching & the Mortar Bucket — <https://mortarmagic.netlify.app>
 - WhiteStone Construction — stone, ranch & property work, Hamilton TX country — (254) 723-5040
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About the Author

Travis Nech has spent 50 years in brick, masonry, and foundation work across Texas. He owns and operates Champion Brick Repair, Metro Foundation Repair, LintelLOCK, MortarMagic, and WhiteStone Construction.

He started in the trades as a young man and never left — five decades of laying brick, matching mortar, reading cracked walls, and keeping Texas houses steady on Texas clay. He writes the way he talks: plain, direct, and from the field, because he believes a homeowner who understands what their house is doing is a homeowner who can protect it.

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