

Engineering Truth, Vol. 2: Reading Cracks Like Instruments

by Travis Nech

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Engineering Truth

Volume 2: Reading Cracks Like Instruments

What Walls, Floors, and Foundations Are Telling You Before the Damage Gets Expensive

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The techniques and procedures described in this book reflect the author's field experience in brick, masonry, and foundation work across Texas. They are provided for informational purposes. Foundation and structural work carries real risk. When in doubt, hire a licensed professional — and for structural questions beyond the scope of the methods described here, consult a structural engineer. The author is not a structural engineer and holds no engineering license; this book shares field experience, not a licensed evaluation. All examples in this book are hypothetical or composite examples, labeled as such, drawn from common patterns seen in the field. They are not accounts of named customers.

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Introduction: The House Is Already Telling You

Every house talks. It talks in a language of lines.

A crack opens in the brick over a garage. A door that closed all summer starts to rub in August. A tile line splits clean across a kitchen floor. Most homeowners hear those sounds as bad news, and the first instinct is to make the lines go away — patch them, paint them, fill them, forget them.

This book asks you to do the opposite, at least at first. Read them.

In fifty years of brick, masonry, and foundation work across Texas, I have learned that a crack is rarely the problem. A crack is an instrument reading. Like a gauge on a dashboard, it tells you something moved, how much it moved, which direction it went, and — if you watch it over time — whether it is still moving. Erase the reading before you understand it, and you have thrown away the best free information your house will ever give you.

Volume 1 of this series, *The Refusal Standard*, was about proof in foundation repair: the ground must prove it can hold.

This volume is about the other half of honest work — reading the evidence before anyone sells you a repair. Some cracks in this book will turn out to be shrinkage, age, or a rusting lintel. Some will be the first clear sign that expansive Texas clay is moving a foundation. The skill is telling them apart without panic and without guessing.

You do not need special training to start. You need a pencil, a ruler or coin for scale, dated photographs, a simple log, and the patience to let a house finish its sentence. Where a reading points to real structural concern, this book will tell you plainly to bring in a structural engineer for an independent evaluation — I am a mason and foundation repair contractor, not a structural engineer, and I will not pretend otherwise. Where the reading points to water, a lintel, a tree, or a plumbing leak, it will tell you that too, because not every crack is a foundation crack, and honest diagnosis saves real money.

Read the wall first. Measure second. Decide third. That order is the whole method.

Chapter 1: Instruments, Not Scars — Why Cracks Are Data

Most people see a crack and see damage. A mason who has spent years on Texas houses learns to see something else first: information. A crack is not just a scar on a wall. It is a record. It tells you where a house moved, how far it moved, which direction it went, and — if you watch it over time — whether it is still moving or whether it settled down long ago and stayed put.

That change in how you look changes everything you do next. If a crack is only a scar, the job is to hide it. Grind it out, fill it, paint over it, and hope nobody notices. If a crack is data, the job is to read it first. Measure it. Photograph it with something in the frame for scale. Write down where it starts, where it stops, and what it connects to. Only after you have read it do you decide whether it needs a cosmetic repair, a mortar repair, a drainage fix, a foundation conversation, or simply a note to watch it through the next change of seasons.

This book is built on that habit: read first, repair second. The chapters that follow will walk through brick and mortar, concrete and drywall, doors and windows, floors and foundations. This opening chapter sets the method. Get the

method right and the rest gets a lot clearer, a lot calmer, and a lot cheaper for the homeowner.

A crack has four facts worth capturing

Every crack, no matter how small, carries at least four facts.

First is location. Where exactly is it? Not just "on the back wall," but which wall, which elevation, how high off the ground, and what is near it. A crack that starts at the corner of a window and runs down to the foundation is telling a different story than a crack in the middle of a long, blank wall. A crack above a garage opening is different from a crack beside a downspout. Location ties the crack to the parts of the house that carry weight, shed water, or move with the soil.

Second is direction. Does it run straight up and down? Does it step through the mortar joints like a staircase? Does it run at a diagonal, cut straight across brick, or wander horizontally along one bed joint for ten feet? Direction is the arrow on the record. Houses rarely move in random ways. They heave, they settle, they lean, they expand in summer heat, and they shrink as materials dry. Each kind of movement tends to leave a pattern with a direction you can learn to recognize.

Third is width. Width is where guessing does the most harm. One person calls a crack "big" and another calls the same crack "hairline," and now two people are arguing about an opinion instead of looking at a number. Put a measurement on it. A simple crack gauge, a feeler gauge, a ruler with fine marks, or even the edge of a credit card — which is about three-quarters of a millimeter thick — gives you a starting reference. Write the number down. A crack that is one millimeter wide at the top and three millimeters wide at the bottom is not the same as a crack that is the same width all the way down. Taper matters. Taper often points toward the side that moved.

Fourth is time. Is this crack new, old, or active? Time is the hardest fact to get on the first visit, and it is the most valuable. Paint inside a crack, dirt and cobwebs deep in the opening, and rounded, weathered edges suggest age. Bright, sharp, clean edges suggest recent movement. But the only honest way to know whether a crack is still moving is to mark it and come back. A pencil line across the crack with a date beside it, a small glass tell-tale bonded across it in a lab setting, or a proper crack monitor with a sliding scale — all do the same basic job: they turn "I think it is getting worse" into a yes-or-no answer with a date on it.

Location, direction, width, and time. If you capture those four,

you have already done more useful work than a fresh coat of filler ever will.

Why Texas houses talk louder than most

A house in North or Central Texas sits on ground that does not sit still. Much of the region rests on expansive clay soils. Dry clay shrinks and pulls away. Wet clay swells and pushes up. In a long, hot summer with no rain, the soil around and under a slab can dry out and drop. In a wet spring, that same soil can take on water and lift. The house does not have to be poorly built for this to show. It only has to be built on clay that changes volume with moisture — and that describes a very large share of Texas homes.

Trees add to the conversation. A large oak near a corner drinks a surprising amount of water from the soil in summer. Roots do not have to break a foundation to influence it; they only have to dry the soil on one side more than the other. Flower beds that get watered daily on one elevation and never on another do the same thing in miniature. A downspout that dumps roof water beside one corner, year after year, keeps that corner wetter than the rest of the house. Over seasons, uneven moisture means uneven support, and uneven support is what most residential cracking is really about.

Heat matters too. Brick grows a little in strong sun and strong heat. Long brick walls with no place to relieve that growth will find a place on their own, often near a corner or an opening. Dark brick on a west wall in August lives a different life than shaded brick on the north side. None of this is mysterious once you start looking for it, and none of it can be read from a single photograph sent by text message with no scale, no location, and no history. That is why the reading has to happen on site, with eyes on the whole house, not just on the one spot that caught a homeowner's attention that morning.

The difference between cosmetic, concerning, and urgent

Not every crack needs the same response, and treating them all the same wastes money in both directions — too much spent on harmless cracks, too little attention paid to the ones that matter.

Many cracks are cosmetic in the plain sense: they affect appearance more than function. A short, stable hairline in

mortar that has not changed in years, fine shrinkage lines in a concrete patio that appeared in the first year and then stopped, or a vertical crack at a control joint doing exactly what the joint was placed to do — these are part of how materials age. They may still be worth repairing for looks and for keeping water out, but they do not, by themselves, announce a failing house.

A second group deserves a closer look and a plan to monitor. A stair-step crack in brick that is wider at one end, a door that started sticking in the same season a crack appeared nearby, a gap opening between brick and a window frame, or cracks that show up in several places on the same side of a house — those are patterns. One crack is a sentence. Several cracks on the same elevation, pointing the same way, are a paragraph. When the paragraph agrees — same side, same direction, same season — it is time to look hard at drainage, soil moisture, and foundation support on that side, and to start dated measurements instead of guesses.

A third, smaller group needs prompt attention. Cracks paired with a floor that is clearly out of level from one room to the next, doors and windows that will not close or latch at all, brick that is bowing or leaning away from the house, a chimney pulling away with a widening gap, or water coming in through a crack — those are not watch-and-wait items. Safety and water come first. In those cases a homeowner should also consider a referral to a licensed structural engineer for an independent evaluation of the structure. To be plain about my own role: I am a mason and a field practitioner, not a structural engineer, and this book shares field reading and repair experience — it does not replace a licensed evaluation when a house shows signs of serious structural distress.

Most houses live in the first two groups. Saying so honestly matters. Fear sells big jobs, but fear is a poor measuring tool. The goal of reading cracks like instruments is to replace fear with proportion: small and stable gets a small and stable response; active and patterned gets investigation; serious and worsening gets prompt, qualified help.

How to start reading on your own house

You do not need a truck full of tools to begin. You need a notebook or a phone note you will actually keep, a tape measure, a pencil, a flashlight, and a camera.

Start with a walk-around. Go slowly, in daylight, and look at all four sides — not just the side with the crack that worried you. Note every crack you find, even the small ones, with its

location and a close photo and a wide photo. The wide photo shows context: the window, the corner, the downspout, the tree. The close photo, with a coin or a tape measure in frame, shows width and pattern. Then go inside and do the same: walls, ceilings, tile, and the fit of doors and windows. Outside and inside together tell the fuller story, because the same movement often writes on both sides of the wall.

Then add dates. Draw a light pencil line across the crack at its widest point, write the date beside it in small letters, and photograph it. Do the same at any door that sticks: note whether it sticks in August, in January, or all year. Seasonal movement that opens a crack in a dry summer and closes it in a wet winter is a known Texas pattern; movement that only goes one way, month after month, is a different message.

Finally, look at the water. Walk the house after a hard rain if you can do it safely. Where does roof water land? Where does the yard slope? Which beds stay wet and which stay dry? More residential movement traces back to water management than most people expect, and water is often the part a homeowner can improve soonest and for the least money: extend a downspout, fix a negative slope, keep watering even around the foundation during drought in line with local guidance. Those steps do not fix every crack, but they remove a common cause before anyone talks about larger work.

Hypothetical example: a homeowner finds a stair-step crack over a rear door in late August, about two millimeters wide at the top. Instead of filling it that weekend, she photographs it, dates a pencil mark across it, and notes that the door on that wall has started to rub. In October, after fall rains, the pencil lines still line up and the door swings free. By the next August the crack has opened just past the pencil line and the door rubs again. That dated record — two summers, one pattern — tells a contractor more in one minute than a fresh, unmeasured crack ever could. It says the movement is seasonal, it says which wall, and it says the house returns when the soil recovers. The repair conversation that follows will be a better one because the crack was allowed to speak first.

That is the whole idea of this chapter, and of this book. Cracks are not insults to a house and they are not automatic emergencies. They are instruments the house itself provides — free, honest, and always on site. Learn to read them, write down what they say, and let the repair follow the reading. The next chapter goes one level deeper: how weight travels through a house, how movement travels with it, and why time turns a single crack into a story you can follow from the roofline all the way to the soil.

Chapter 2: How a House Talks — Load Paths, Movement, and Time

If Chapter 1 made the case that a crack is data, this chapter explains where that data comes from. A house is not a stack of separate parts. It is a connected system that carries weight along certain routes, rests on soil that changes with moisture, and answers every change — slowly, in small amounts, in the materials themselves. When you understand how weight travels and how movement travels, the cracks stop looking random. They start lining up with the system that produced them.

You do not need a classroom to follow this. You need a picture you can hold in your head while you walk around a house. This chapter builds that picture in plain language: load paths first, then the main kinds of movement, then the role of time, which is the part most quick opinions leave out.

Load paths: where the weight actually goes

Every part of a house has weight: the roof and its covering, the ceilings, the walls, the floors, the people and furniture, even the brick on the outside. That weight does not float. It travels down through connected materials until it reaches the ground. The route it travels is called a load path.

Picture rain running off a hill. Water follows the low routes, joins into streams, and arrives at the bottom along a path you could trace with a finger. Weight works in a similar way, except it moves through solid material instead of open ground. Roof weight bears on the top plates of walls. Walls carry it down to the floor system or the slab. The slab and its beams pass it to the soil. Brick veneer — the brick skin on most modern Texas homes — mostly carries its own weight down to a brick ledge at the foundation, while the wood or steel framing behind it carries the roof and floors. Two systems, side by side, tied together, moving a little differently. Remember that pairing; it explains a great many brick cracks later in this book.

Breaks or weak spots in the path change where the weight goes. A long span over a garage opening concentrates weight at the ends of that opening. A window or door interrupts a wall, so the weight that would have gone straight down has to travel around the opening and down its sides. That is why

corners of openings are such common places for cracks to start: the path bends there, stress gathers there, and the material answers there first. When you see a diagonal crack leaving the corner of a window at roughly forty-five degrees, you are often looking at the visible edge of that bend in the path.

Openings also explain why the same house can crack in one place and not another that looks identical. Two windows may match, but the roof load above them, the span beside them, or the support below them may not. Reading a crack means asking, for that exact spot: what is above it, what is beside it, and what is under it? Those three questions, asked every time, will carry a reader further than any single rule of thumb.

Support from below: the soil is part of the structure

A load path does not end at concrete. It ends in the soil, and in Texas that soil is an active partner in the conversation. Expansive clay gains volume when it gets wet and loses volume when it dries. A foundation — most often a slab-on-grade or a shallow beam system in the homes this book discusses — rises and falls in very small amounts as the soil under it changes. In everyday language, this only becomes a problem when it is uneven, and that word, uneven, is the key.

Uniform movement rarely cracks a house. If the whole slab lifted a quarter of an inch evenly, doors would still swing and brick would still sit quiet, because everything moved together. Damage comes from differential movement: one part moves and another part does not, or one part moves more, or moves the other way. A corner dries and drops while the middle stays supported. The center heaves after plumbing moisture collects under it while the edges stay dry. One side is shaded and watered, the other bakes in afternoon sun. The house is stiff enough that it cannot bend to follow the soil, so something has to give — and what gives is usually the most brittle material in the system: mortar, brick, drywall, tile, and concrete flatwork.

This is why two neighbors on the same street can have opposite experiences. Soil varies lot by lot. Drainage varies house by house. A tree on one lot, a pool on another, a leaking line on a third — each changes the moisture map under the slab. The house talks about its own lot, not the whole neighborhood. Read the house in front of you.

The main kinds of movement

Most residential movement you will meet falls into a handful of kinds. Naming them helps, because each tends to leave a different signature.

Settlement is downward movement of a part of the house as soil compresses, washes out, or dries and shrinks beneath it. New construction often settles a small amount in its first years as soils adjust to the new load and the new water patterns around it. Long-term settlement that keeps progressing is different from early adjustment, and only time and measurement separate the two honestly.

Heave is upward movement, most often from clay taking on water and swelling. Heave frequently shows near the interior of a slab when moisture collects there, or along an edge that suddenly receives much more water than it used to — a broken line, a changed drainage pattern, a new bed that traps water against the house.

Shrinkage is a material getting smaller as it dries or cures. Concrete shrinks as it cures; mortar shrinks as it cures; wood framing dries and shrinks in its first seasons. Shrinkage cracks tend to appear early, run straight or follow joints, and then stabilize. They are the house exhaling once, not the house continuing to move.

Thermal movement is expansion and contraction with temperature. Brick, concrete, and metal all change size a little with heat and cold, and long runs of material accumulate that change over their length. Thermal cracks often appear at corners, at changes in material, or where a long wall had no joint to absorb the growth. They may open and close a fraction with the seasons or even with the time of day on an exposed wall.

Lateral movement is sideways pressure or drift: soil pressing on a retaining element, a wall bowing out, a chimney leaning away, brick veneer slipping or separating from its ties. Sideways signatures — horizontal cracks, bulges, gaps that widen toward the top — deserve respect because gravity is no longer the only force in the story.

Real houses often combine two or three of these at once. A corner can be settling from dry soil while the long west wall is also growing in the heat. That is not a failure of the system of reading; it is a reminder to describe what you see before you name a single cause. Good field notes separate observation from conclusion: "stair-step, two to four millimeters, wider at the bottom, east elevation, started at the sill corner" is an observation. What caused it is a conclusion, and conclusions should have to wait for more than one observation.

Time: the missing measurement in most opinions

A single visit gives you a snapshot. Houses need a timeline.

Time sorts cracks into three honest categories. Old and stable cracks have weathered faces, paint or dirt inside them, and dated marks that have not moved across a full cycle of seasons. Active cracks have fresh faces or marks that keep offsetting. Seasonal cracks move back and forth — open in drought, closed after rains, or the reverse — and return roughly to where they started. Each category points to a different response. Stable cracks can be repaired with confidence that the repair will hold. Active cracks should not be buried under hard repair material until the cause is addressed, or the new material will simply become the next crack. Seasonal cracks call for judgment: manage the moisture swing where you can, choose repair materials and joints that tolerate a little movement, and set expectations in plain words before work begins.

Composite example: imagine two identical-looking diagonal cracks at two different houses. At the first house, the homeowner has a dated photo from three years ago showing the crack the same width, with the same paint line unbroken across it. At the second house, a pencil mark dated six weeks ago has already split apart, and a door nearby has gone from rubbing to not latching. Same shape, same wall, same street — completely different meaning, because time is different. Anyone who pronounces on either crack without asking about time is guessing with confidence, which is the most expensive kind of guessing in the repair business.

Time also explains why honest contractors sometimes say, "Let us watch this through one wet season and one dry season." That is not stalling when dated measurements are being taken. It is the fastest honest route to the right size of job. A monitoring period that prevents an unnecessary major repair — or that proves a major repair is truly needed — has paid for itself either way.

Practical note on support work, stated plainly so expectations stay clean: when foundation support is part of a conversation for the homes in this book, the method discussed is pressed concrete piles — sections of concrete driven into the ground at the affected area to reach more stable support and lift or stabilize that portion of the foundation. That is the only foundation support method this book presents as a repair option. If a situation calls for advice beyond field reading and masonry experience — signs of serious structural distress, rapid ongoing movement, or safety concerns — the right next step is a referral to a licensed structural engineer for an

independent evaluation before repair decisions are made. I am not a structural engineer, and no field guide replaces one where one is needed.

Putting the system together on a walk-around

Here is the system in use, in the order an experienced reader tends to work.

Start wide. Look at the roofline for sag or humps, the brick for waves or bulges, and the lot for slope, trees, and water sources. Wide views catch wide problems.

Then follow the weight. At each crack, ask what is above, beside, and below. Check the corresponding place inside. Check the doors and windows near it for fit. Check the floor near it for slope you can feel underfoot or confirm with a level or a rolling ball on hard flooring — a simple observation, noted as such, not a survey.

Then check the water. Gutters, downspouts, yard slope, beds, sprinklers, and any plumbing history the homeowner knows. Water explains more movement than any other single factor in clay country.

Then record and date everything, and decide what category the evidence supports today: repair now, address a cause first, monitor with dates, or refer for a licensed evaluation. A decision to monitor is still a decision, as long as it comes with marks, dates, and a return point.

Hypothetical example: a reader finds brick cracking on the southwest corner, a sticking door on that same corner inside, and a downspout on that corner that ends at the base of the wall, with soil visibly lower against the foundation than it was in an old listing photo. No single item proves a cause.

Together — same corner, same direction, water concentrated in one place and soil dry in another season — they form a coherent story worth acting on in stages: fix the discharge first, even out watering, mark the crack, and recheck on a date. The house talked in several places at once, and the reader listened to all of them before spending serious money.

That is how a house talks: in systems, in patterns, and over time. Learn those three habits and you are ready for the most visible page of the story — the outside brick wall, which is where the next chapter begins.

Chapter 3: Brick and

Mortar Cracks — Reading the Outside Wall First

Start every reading on the outside, and start with the brick. There are practical reasons for that order. The exterior wall is where weather, sun, soil movement, and water all meet the house at once. Brick and mortar are honest materials: they are too stiff to bend quietly, so they record movement that softer materials might hide for a while. And the outside wall can be read without moving furniture, cutting drywall, or disturbing anyone's evening. Walk the brick first, and by the time you go inside you will already have questions worth asking.

This chapter covers how brick veneer is put together, the crack patterns you will meet most often, how to measure and describe them, and how to tell a mortar problem from a movement problem — a distinction that saves homeowners more money than almost any other in masonry repair.

How the outside wall is built, in plain terms

On most modern Texas homes, the brick you see is a veneer: a single thickness of brick standing in front of the framed wall, not the structure that holds the roof up. The framing carries the house loads. The brick carries itself, down to a ledge formed at the top of the foundation. Small metal ties connect the brick back to the framing so the skin stands steady against wind, and a narrow air space behind the brick lets moisture that gets in find its way back out through small openings at the base, called weep holes.

Mortar is the other half of the system, and it is widely misunderstood. Mortar is not glue meant to be stronger than the brick. In good practice it is meant to be the more forgiving partner — the part that seals the joints, sheds most water, accommodates small movements, and, over decades, wears first so the brick does not have to. That is why mortar slowly erodes, powders, or cracks in old joints while the brick around it still looks sound. The mortar is doing the sacrificial part of its job. Repairs respect that relationship: repointing — removing failed mortar to a proper depth and placing new mortar that suits the existing wall — restores the joint without asking the new material to behave like concrete. Hard, dense patch material smeared over a joint looks tidy for a season and often causes the brick edges to suffer next, because the wall lost its forgiving layer.

Above openings, a steel angle called a lintel spans the gap

and carries the brick over doors, windows, and garage openings. A lintel that rusts grows in thickness as the rust forms, and growing metal can lift and crack the brick above it — a slow, powerful process sometimes called rust jacking. A lintel that sags or was undersized for a wide opening lets the brick above settle into a shallow curve or a fan of cracks. When this book discusses lintel repair as a field-developed system — the LintelLOCK approach developed through field practice — it means a practical method for supporting and securing that brick over an opening, described honestly as field experience, not as a laboratory invention. More on lintels comes in a later chapter; for now, remember that cracks over openings always earn a look at what is spanning the opening.

At the base of the wall, look for the brick ledge and the weep holes, and keep them working. Weep holes plugged by mulch, soil, or a careless smear of mortar trap moisture where the wall least wants it. Flower beds built up above the ledge, covering the weeps and holding wet soil against the brick, are one of the most common and most fixable problems on a Texas walk-around.

The patterns you will meet most

Stair-step cracks are the classic brick pattern. The crack follows the mortar joints — across a bed joint, up a head joint, across again — climbing or descending like steps. Mortar joints are the path of least resistance, so a crack that can travel through joints usually does. Stair-steps most often signal differential movement below: one part of the wall is being supported a little differently than the part beside it. Read the taper. A stair-step that is wide at the top and narrow at the bottom is saying something different from one wide at the bottom and narrow at the top. Note where it starts and ends — at an opening corner, at a building corner, at grade — and whether a matching crack exists inside on the same wall. Measured, dated, and paired with interior signs, a stair-step is one of the most informative patterns a house offers.

Vertical cracks come in several kinds that look alike at a glance and mean different things. A straight vertical crack at or near a corner can be thermal growth in a long wall relieving itself at its weakest line. A vertical crack at a regular interval along a very long wall can be the wall asking for a control joint — a planned vertical joint that gives movement a clean place to happen — that was never provided. A vertical crack directly below a window corner, paired with a matching crack above it, can frame an opening that is carrying concentrated load at its sides. The reading questions are always the same: how wide, how tapered, how long, does it pass through brick or only through joints, and what is near it?

Horizontal cracks along a bed joint deserve a slower look. A long horizontal line can be the veneer slipping or being pushed — by a rusting lintel at that height, by a shelf angle issue on taller construction, by lateral soil pressure where brick runs below grade, or by separation between veneer and its support. A horizontal crack paired with outward bulging of the wall is not a cosmetic item. Sight along the wall from a corner, looking for bow or lean, and treat clear lateral movement as a prompt, careful item — and, where the wall is visibly displaced, as a reason to seek a licensed evaluation from a structural engineer before planning cosmetic work. Again, plainly: the author of this book is a mason, not a structural engineer, and displaced walls are exactly the kind of condition where that independent evaluation belongs ahead of any repair proposal.

Cracks that cut through brick units themselves carry a message too. Mortar is the forgiving layer, so movement small enough to be absorbed usually shows in the joints. A crack that splits bricks has generally seen more force, faster movement, or an impact. Vehicle strikes, tree impacts, and severe localized movement all write through units. Note how many bricks are split and whether the crack through the units lines up with a joint pattern on either side — continuity across units and joints suggests one event or one ongoing movement, not a collection of small flaws.

Fine map-like cracking on a brick face, and surface crazing on mortar or stucco-like finishes, usually lives at the surface: shrinkage, weathering, or material aging rather than support movement. It still matters for water entry and appearance, and photos with scale help track whether it is spreading, but it should not be read with the same alarm as a tapered, patterned crack with interior partners.

Measuring and describing a brick crack properly

Good description is a skill, and it is mostly discipline. For each significant crack on the outside wall, capture these items:

The elevation and position: "west elevation, begins at the top corner of the second window from the front, descends to grade." Heights and distances beat adjectives.

The path: stair-step, vertical, diagonal, horizontal, through joints only, or through units as well.

The width at several points: top, middle, and bottom, in millimeters where you can, with the tool you used noted. Record the widest point and where it is.

The offset, if any: run a fingertip lightly across the crack. If one side stands proud of the other, the wall has moved out of plane, not just apart — an important fact that a photo alone often misses. Note it in words.

The condition of the crack faces: clean and bright, dirty and weathered, painted over, previously filled — and, if filled, whether the filler has cracked again, pulled away, or held. A failed prior repair is data, not just a defect: hard filler that split cleanly suggests ongoing or seasonal movement the material could not tolerate.

The context: downspouts, trees, beds, slope, sprinklers, and any interior signs on the same wall. A crack description without context is half a description.

Composite example: a note that reads "Crack on back of house, fairly big" gives the next reader nothing to compare against in six months. A note that reads "Rear elevation, stair-step from sill corner of kitchen window down to grade, joints only, 1 millimeter at top to 3.5 millimeters at bottom, no out-of-plane offset, faces weathered, old filler at bottom third split again, downspout discharges at this corner, bed dry and soil pulled away in August" — that note can be rechecked in one visit, a year later, by a different person, and produce a trustworthy answer about whether anything changed. Instruments only work if someone writes down the readings.

Mortar problem or movement problem?

Here is the fork in the road that decides most brick repair estimates.

A mortar problem means the joints themselves are failing — eroding, powdering, cracking in shallow patterns, or losing their bond — while the wall's support and position are sound. It comes with age, weather exposure, hard freezes on saturated joints, prior poor repairs, and sun-baked elevations aging faster than shaded ones. Its signature is distribution: many joints, often across a whole elevation or the most weathered parts of several, failing in a similar shallow way, without tapered, directed cracks, without offset, and without matching distress inside. The remedy is repointing done properly: failed material removed to sound mortar at adequate depth, joints packed in lifts with suitable mortar, tooled to shed water, and cured with care in Texas heat. Done right, it is durable, honest work that protects the brick for years.

A movement problem means the wall is being moved by something — soil, support, lintel failure, lateral pressure,

thermal growth with nowhere to go — and the cracked mortar is the symptom, not the disease. Its signature is concentration: one directed, tapered pattern in a specific place, often with offset, interior partners, sticking doors, or a history of repairs that keep re-cracking in the same line. Repointing a movement crack without addressing its cause produces the most predictable failure in this trade: a neat new joint, split again on the same line, sometimes within one change of season. Homeowners who have paid twice for the same crack have usually bought a mortar repair for a movement problem.

The honest sequence is therefore: read, classify, address causes in order — water management, active movement, support questions, lintel condition — and then repair the masonry to suit what the wall is actually doing now. Where a crack is seasonal and small, the repair may include a properly placed joint or a more forgiving repair approach at that location, explained before work starts, so the homeowner is not surprised by a hairline returning in August.

Hypothetical example: two houses each show cracked mortar across the back wall. At the first, the cracking is shallow, widespread, worst under the sunny eaves line, with no taper, no offset, and quiet doors inside — a mortar problem, answered with repointing. At the second, nearly all the joints are sound except one stair-step at the corner, wide at the bottom, with a crack in the interior drywall on the same line and soil shrinkage visible at that corner — a movement pattern wearing a mortar disguise. Filling the second house's crack first would be the expensive order of operations. Reading it first costs a walk, a tape, and a notebook.

Closing the outside reading

End the outside wall where you began: at the whole house. Stand back at the street and at each corner. Sight along each elevation. Look for the wall that does not look flat, the corner that does not look plumb, the roofline that does not look straight. Then compare what your eyes caught at a distance with what your notebook holds up close. When the wide view and the close readings agree, you have a story you can trust well enough to act on — in stages, in the right order, at the right size of job.

In the next part of this book, the reading moves to concrete flatwork, interior walls, and the doors and windows that act as some of the most sensitive movement gauges in any house. But the habit is already formed here, on the brick: measure it, date it, describe it in numbers, and let the wall say what happened before anyone decides what to do about it. A brick wall keeps excellent records. Most repairs go wrong not

because the wall hid the truth, but because nobody stopped to read it.

Chapter 4: Inside the House — Drywall, Ceilings, Doors, and Windows as Gauges

A house talks to you from the inside first. Long before most folks walk the outside and look at the slab edge, the drywall has already kept a record, the ceiling joints have shifted, and a bedroom door that used to latch with one finger now needs a shoulder. None of those things, by themselves, prove a foundation problem. All of them together, read in the right order, can tell you where the house moved, which way it moved, and whether it is still moving.

Treat the inside like a set of gauges on a dashboard. One gauge can be wrong. A fuel gauge can stick. A temperature gauge can read high on a hot Texas afternoon for reasons that have nothing to do with the motor. But when three gauges point the same way at the same time, you pay attention. That is how to read a living room, a hallway, and a row of doors.

Start with a simple rule: location matters more than size. A short, hairline crack in the middle of a long wall, running straight and showing no offset, is usually telling a different story than a diagonal crack that starts at the top corner of a door frame and climbs toward the ceiling. Both are cracks. Only one is tied to the shape of the opening, and openings are where walls are weakest and where movement shows first.

Drywall Cracks at Corners and Openings

Walk any house in North Texas or Central Texas that has lived through a few dry summers and a few wet winters, and you will find tape joints that have opened and corners that have hairlined. Clay soil shrinks when it dries and swells when it gets wet. The house rides that change a fraction at a time. Drywall does not bend well. It would rather crack than flex, and it cracks at stress points.

The most useful places to look are the top corners of door frames and window frames. A diagonal crack running out

from a corner at roughly forty-five degrees, widening as it goes, and coming back year after year after patching is a gauge worth recording. Note which corner it starts from. A crack at the upper left corner of a door in the northeast bedroom and another crack at the upper left corner of the window in the same room are not two separate problems. They are the same movement read twice.

Horizontal cracks need a different read. A long horizontal line where the wall meets the ceiling often means the ceiling framing and the wall framing are moving apart and coming back together with the seasons. Trusses can lift in cold weather, then settle again. That can open a line at the ceiling joint even when the slab has barely moved. The clue is whether the line is even all the way around the room or worse on one side, and whether it closes in summer. Write that down. A crack that opens every January and closes every July is telling you about a cycle, not a collapse.

Vertical cracks over a joint in the drywall sheets are often the least alarming. Sheets are four feet wide. If a straight vertical line lines up with a sheet joint, shows no step from one side to the other, and has not changed in years, it is often a tape or finish issue. Run your palm flat across it. If one side sits proud of the other, that offset matters. Offset means one piece of wall has moved relative to the next. That is information. A flat hairline with no offset is mostly surface.

Nail and screw pops tell a smaller story. A round bump or a small circle crack over a fastener usually means the framing dried, the board shifted a touch, or the fastener worked loose. Single pops scattered around a house are normal wear. A line of pops along one ceiling beam or one wall, paired with a long crack, can help you trace where the framing is being pulled. Mark them on a sketch. Do not just count cracks. Map them.

Ceilings That Keep Score

Look up, but look with a light held low. A flashlight held flat against a ceiling will throw shadows across low spots, tape ridges, and shallow cracks that overhead light hides. Long cracks that follow a ceiling joint in a straight line are common. Cracks that branch, step across boards, or run from a wall corner out across the ceiling deserve a closer note.

Sag is different from cracking. Stand in the doorway and sight down the ceiling line where it meets the wall. If that line waves, dips in the middle of a room, or drops toward one corner, note the corner. Water can sag a ceiling too, and water leaves other signs: staining, soft spots, paint that bubbles. A dry, hard ceiling that dips toward the same corner where the doors stick and the window cracks is a different

pattern. No single sign decides it. The pattern decides it.

Separation at crown molding or at a ceiling beam works the same way. A clean, even shadow line that opens on one side of a room and stays tight on the other is a directional clue. One side is moving away. Take a photo straight at the gap with a coin or a tape measure in the frame for scale. Memory is a poor gauge. Photos with dates do not argue.

Doors Are the Best Gauges in the House

If you only check one thing inside a house, check the doors. A door hangs in a frame that is supposed to stay square. When the house shifts, the frame racks out of square, and the door tells on it right away. The test takes thirty seconds and needs no special tools.

First, look at the reveal. Close the door slowly and look at the gap between the door and the frame on all three sides. That gap should be fairly even, about the width of a nickel, at the top and down the latch side. If the gap is wide at the top on one side and pinched to nothing at the top on the other side, the frame has racked. Write down which side is pinched. That direction matters when you compare it to the windows and the floor in the next chapters.

Second, check the latch. A door that latches clean should click shut with light pressure. If the latch bolt hits low or high on the strike plate, you will see shiny wear marks where it has been dragging. If a door needs lifting by the knob to latch, the hinge side or the latch side has dropped. Note which way you have to lift.

Third, check the swing. Open the door halfway and let go. A door in a square frame in a level house tends to stay put. A door that swings open on its own or swings shut on its own may be hanging in a frame that is out of plumb. This test is not proof by itself, because hinges and weatherstripping can push a door too, but paired with a bad reveal it adds weight.

Fourth, look at the floor under the door and the trim around it. Rub marks on the threshold, a door bottom that drags on carpet in one season and clears it in another, and casing trim that has opened at a miter joint all belong in your notes. Baseboards pulling away from the wall or opening at inside corners, especially on the same side of the house as the sticking doors, complete the picture.

Bedroom doors, bathroom doors, and the door to the garage are the ones homeowners use every day, so changes there get noticed. Closet doors and little-used guest room doors are

useful too, precisely because nobody has planed them, shimmed them, or forced them for years. An untouched door is an honest gauge. A door that has been trimmed twice has had its record erased. Ask if a door has been planed, rehung, or had its hardware moved. Fresh screw holes and a strike plate that has been moved down a half inch are signs the gauge was reset by hand.

Hypothetical example: A homeowner in a one-story brick house says three doors stick. On inspection, all three are on the east side, all three are pinched at the top on the latch side, all three need lifting to latch, and the two windows on that same east wall have diagonal cracks at their upper corners. The west side doors close clean, with even reveals. That is not three bad doors. That is one side of a house that has moved down or the middle that has moved up. Either way, the inside gauges agree, and the next step is to read the floors and the slab edge on that east side.

The opposite pattern teaches the same lesson. Hypothetical example: One door sticks in a whole house, the reveal is pinched because the top hinge screws are pulling out of soft wood, and every other door, window, and wall in the house reads clean. Fix the hinge. Do not sell a foundation job off one loose hinge.

Windows That Bind, Crack, and Separate

Windows are gauges made of glass, and glass has no give. A wood or vinyl frame can flex a little. Glass cannot. When a frame racks far enough, a window will bind in its tracks, a lock will miss its mate, or a pane will crack from a corner.

Test every window on the suspect side of the house. Raise and lower it. Does it move smooth, or does it bind at one point and free up past it? Does the top sash meet the frame even across the top? Do the locks line up without forcing the sash sideways? A window that binds on one corner and shows a diagonal crack in the drywall above that same corner is talking loud.

Look at the caulk and paint lines around the window trim, inside and out. Separation on one side only, wider at the top than at the bottom, points to racking. Separation all the way around, even and thin, may be old caulk that has shrunk and let go, which is a maintenance job, not a movement record. Again, direction beats size.

Glass cracks need care in the reading. A crack that starts at a corner of the pane and runs in an arc or a diagonal can come from frame stress. A crack with a clear impact point, tiny

chips radiating from a center, usually came from something hitting the glass. Do not lump them together. Photograph the starting point up close.

How to Record the Inside Like You Mean It

Get a notebook and draw the floor plan, rough and square, one room per box. It does not need to be pretty. For each room, write the date, note every crack with its location and direction, mark each door with a simple code — even, pinched top-left, pinched top-right, lifts to latch, drags — and mark each window as smooth or binding. Put an arrow on the plan pointing north if you know it. Patterns that are invisible room by room jump off the page when the whole house is on one sheet.

Then date the ends of the cracks. With a sharp pencil, draw a short line across the end of a crack, write the date next to it in tiny letters, and take a photo. If the crack grows past your line in three months, you have growth you can prove. If it never moves in a full year of seasons, you have stability you can prove. Either result is valuable. Guessing is not.

Finally, respect what the inside cannot tell you. Interior gauges cannot measure how far a slab has moved in inches. They cannot tell you the soil moisture under the middle of the house. They cannot, alone, justify a repair plan. What they can do, better than any other first step, is tell you whether there is a pattern, where it sits, and whether it is changing. Read the floors next. Then read the foundation itself. When all three reads agree, you are no longer guessing.

Chapter 5: Floors That Testify — Slab, Tile, Wood, and the Cracks Underfoot

If the walls and doors are gauges, the floors are witnesses that were standing right where it happened. A floor covers the slab. When the slab moves, the floor covering has to go somewhere, and each kind of covering answers in its own language. Tile cracks. Wood gaps, cups, and buckles. Sheet goods wrinkle or tear at seams. Carpet hides almost everything, which is its own kind of testimony. Learning those languages keeps you from tearing up good flooring on a

hunch and from waving off a real crack because the rug looked fine.

Start with a walk, in socks, early in the day before you have a theory. Walk slow. Feel for high spots, low spots, and the shallow roll you sense in your ankles more than you see with your eyes. Many slab movements are too small to spot standing up but plain as day to bare feet. Mark the spots that feel off with painter's tape on the floor. Then get tools on them and see if your feet were right. Usually, they were close.

The Slab Under It All

Most houses in this part of Texas sit on a concrete slab poured over soil that moves with moisture. The slab is stiff, but it is not unbreakable, and it does not float free of the ground. One area can settle, another can heave, and the slab can tilt as a whole piece or bend between points. Floor coverings cannot tell you which of those happened by themselves, but the shape of what you feel and measure narrows it down.

Tilt and bend feel different. A whole room that slopes gently toward one wall, with no crack and no sudden step, is a tilt pattern. Furniture may lean, a ball will roll one way, and doors on the low side may stick. A hump in the middle of a room, or a dip between two high spots, is a bend pattern. Tile over a bend complains louder than tile over a gentle tilt, because bending stretches the surface and tile has almost no stretch to give.

Use a long straightedge — a six-foot level or a true piece of straight lumber — laid on the floor in several directions. Shine a flashlight behind it. Light showing under the middle means the floor crowns. Light showing at the ends means the floor dips in the middle. Move the straightedge across the room in a grid and mark highs and lows on your floor plan from the last chapter. A marble or a small ball is a quick check for slope, but it only tells you downhill, not how much. A level with a readable bubble, or a digital level that reads in tenths of a degree, turns a feeling into a number you can write down and compare next season.

Keep perspective on numbers. Very few real floors are dead level, and houses were not built to laboratory standards. A gentle slope that has been there since the house was new, with no cracks, no sticking doors, and no change over time, may be how the house was built. A slope that matches fresh cracks, binding windows, and a gap at the slab edge outside is a record of movement. The floor testifies best alongside the other witnesses.

Tile: The Loudest Witness

Tile is honest because it is brittle. It is bonded to the slab or to a backer board, and when the surface under it moves enough, the tile or the grout gives way in a pattern you can read like a map.

Grout cracks that run in a straight line across a room, tile to tile, joint to joint, often follow a crack or a control joint in the slab below. Hairline grout cracks in one or two joints, with no cracked tile and no hollow sound, can be shrinkage or a weak grout mix. A grout line that keeps opening, stepping across the room in the direction of a wall crack, and leading to cracked tiles at the ends is following something underneath.

Cracked tiles carry more weight. A single cracked tile where a heavy pan was dropped is an accident. A line of cracked tiles, each cracked in the same direction, running across a room and lining up with a door that sticks at one end, is a movement line. Tap those tiles with a knuckle or the handle of a screwdriver. A solid tile rings dull and tight. A tile that has let go of its bond sounds hollow, like tapping a drum. Hollow tiles along a crack line mean the surface moved enough to break the bond as well as the tile.

Tenting is a different event. Tiles that push up into a shallow tent along a joint, sometimes with a pop that the homeowner heard across the house, are usually being squeezed. Heat, moisture, and a floor with no room to expand can tent tile even on a sound slab, often in sunny rooms. Tenting tells you about pressure and expansion space first. Do not read it as settlement until you have checked the rest of the house.

Lippage — one tile edge sitting higher than its neighbor — matters when it is new. Plenty of tile was laid a little uneven from the start. New lippage along a crack, where tiles used to sit flush, means one side of that crack has lifted or dropped. Run your palm across it, then lay the straightedge across it and measure the step. A step you can measure is worth ten opinions.

Composite example: A kitchen floor shows a grout crack running from the pantry door to the back door, four tiles cracked along the same line, and the back door pinched at the top. The pantry door at the other end of the line swings free. The living room on the far side of the house shows no cracks at all. Read together, the floor line, the tile damage, and the doors point to movement along that kitchen axis. The right next step is not new tile. It is a look at the slab edge and drainage on the side the line points to, because fixing the finish before you know whether the slab is still moving just buys the same crack twice.

Wood, Laminate, and Sheet Floors

Solid wood flooring moves with moisture more than with the slab, so read it with that in mind. Gaps between boards that open in winter and close in summer are moisture cycling, especially if they are even across the room. Cupping, where the edges of each board sit higher than its center, points to moisture from above or below. Crowning, the reverse, often follows sanding a cupped floor flat before it dried. Those are wood and moisture stories. A wood floor that separates in one local area, buckles up in a ridge that runs straight across the room, or pulls away from a wall on one side only may be following the slab — but rule out plumbing leaks and wet mopping first. Water swells wood fast and fools a lot of people.

Floating floors — laminate and click-lock planks — are useful in a sneaky way. Because they are not bonded down, they tend to bridge small slab changes and then show them all at once as peaking at the seams, end joints opening, or a spongy, bouncy feel over a low spot. Press your weight along a seam line and feel for flex. Flex over one dip, matched to your straightedge reading, helps you locate a low area without tearing anything up. These floors also hide slab cracks completely, so a clean-looking floating floor proves nothing about the slab underneath. Note the floor type on your plan so you remember which testimony you could not hear.

Sheet goods and older resilient tile telegraph movement through seams and pattern lines. A seam that opens, a wrinkle that runs in a straight line, or a tear that lines up with a crack in the next room's tile all deserve a mark on the plan. Carpet is the quietest witness of all. It stretches, it has pad under it, and it can hide a slab crack for years. Under carpet, use your feet, the straightedge on top will lie because of the pad, and check the tack strip lines at doorways where a slab step, if there is one, will make a door drag and a threshold sit crooked.

In bathrooms and laundry rooms, add water to your thinking before you add movement. Toilets rock, supply lines drip, water heaters weep, and a slow leak under a floor will swell materials, rot subfloor material in pier-style or framed sections where present, stain baseboards, and soften surfaces in a circle around the source. A round, local pattern centered on a fixture is a water pattern until proven otherwise. A straight-line pattern crossing a whole room, dry to the touch and to a moisture meter, is a movement pattern until proven otherwise. Shape and moisture readings separate the two.

Slab Cracks You Can See Indoors

Sometimes you get a direct look: a garage floor, a room where

flooring was pulled for a remodel, or an unfinished closet. When you can see the slab itself indoors, slow down and read it the way the next chapter reads the outside edge.

A straight, fairly even crack that runs across a garage slab and stops at a joint is often a shrinkage or control crack doing the job it was there to do. A crack that offsets — one side higher than the other — has sheared, and shear means differential movement. A crack that widens at one end and disappears at the other has rotated around a point. Trace each indoor crack to the walls at both ends. Does it continue up a wall, line up with a tile crack in the next room, or end at a door frame that sticks? Continuation is corroboration.

Write the width honestly. Use a simple crack gauge card or a set of feeler gauges, the same tools you will use outside, and record the widest point and the point at the wall. Do not write "big crack" in your notes. Write a number and a date. A crack measured at the same marked points in January and again in August tells a seasonal story with facts in it. That discipline is what separates this whole method from worry.

By the end of the floor walk, your plan should show highs, lows, crack lines, hollow tiles, and spongy spots, all dated. Lay it next to the door and window notes from Chapter 4. Where the lines agree — same side, same direction, same end of the house — that is where you go outside and read the foundation itself. That is the next chapter, and it is where the inside story either holds up or falls apart.

Chapter 6: The Foundation Itself — Grade Beams, Slab Edges, and Concrete Cracks

Now go outside and read the source. The interior gauges told you where to look. The floors told you the shape of the movement. The foundation, where you can see it, tells you what the concrete did about it. Most of a slab is buried or covered, but the part you can see — the exposed edge, the grade beam face, the garage slab, the porch and patio joints — carries more honest information per foot than any other part of the house, if you read it slow and in order.

Bring the floor plan from the last two chapters, a tape

measure, a flashlight, a crack gauge card or feeler gauges, a garden trowel, and a camera. Wear gloves. Walk the whole perimeter once without stopping, just to see the house, then walk it again, side by side, and write things down. First impressions pick the side you already suspect. The second, written walk keeps you honest about the other three sides.

The Grade Beam and the Exposed Slab Edge

On a typical slab house in Texas, the perimeter grade beam is the thickened edge of the slab that runs around the outside and carries the walls. The face you see above the soil is the exposed edge. How much of it you see matters. In general, you want some edge showing — a few inches of concrete between the soil and the brick or siding — so water and soil stay off the wall materials and termites have no hidden bridge. Soil, mulch, or flower beds built up until they bury the edge and touch the brick hide the very surface you need to read and invite water trouble at the same time. Note every side where the edge is buried. That is a drainage and maintenance finding on its own.

Now read the soil line. The line where soil meets concrete should be fairly even. A soil line that drops away and exposes more edge than the neighbors show, especially with a gap opening between the soil and the beam, often means the soil has dried and shrunk away — common in a hard Texas summer, and it can recover when moisture returns. A gap you can slide fingers into, running for many feet along the side where the doors stick and the tile cracked, is a stronger signal. Soil that is mounded against one side and pulled away on the opposite side suggests the ground itself is uneven in moisture, which is the most common driver of seasonal slab movement in clay country.

Check the corners with care. Corners carry loads from two directions and show stress early. A vertical crack at or near a corner, brick cracking stepping up from that same corner, and a gap at the corner joint of the beam all belong on the same page of your notes. Porches and patios that are poured against the house often separate at the joint as they settle on their own fill. A porch slab pulling away and tilting down, while the main beam face behind it is straight and uncracked, is the porch moving, not the house. Learn to separate the attached pieces from the main structure before you judge the main structure.

Reading Concrete Cracks Without

Fooling Yourself

Concrete cracks. That sentence alone prevents a lot of bad decisions. Concrete shrinks as it cures, it is cut or tooled at control joints to give it a planned place to crack, and it lives outdoors in heat and cold. The job is not to find cracks. The job is to sort them.

Control joint cracks are the planned kind. They run straight, follow the cut line, stay fairly even in width, and show no offset from one side to the other. On driveways, garage slabs, and patios, they are expected. Darkening in the joint is just dirt and age. Leave these in the "normal" column unless one side has lifted or dropped across the joint — that offset changes the category.

Shrinkage cracks are the unplanned but common kind. They tend to be thin, shallow, sometimes wandering or branching like a spider web on the surface, and they show no offset. On a beam face, a short, thin vertical hairline that does not go through, does not widen over a season of dated photos, and has no matching signs inside is usually in this family. Mark it, date the end of it like you did inside, and let time grade it.

Structural concern starts where pattern, width, and offset arrive together. Pay closest attention to these: a crack that goes through the beam face from top to bottom; a crack that is noticeably wider at the top than at the bottom, or the reverse; a crack with offset, where the face on one side sits out or down from the other; a horizontal crack running along the beam, which can follow reinforcing steel or a cold joint between pours; and any crack that grows past your dated pencil line between checks. None of these alone pronounces a sentence. Each one moves that location to the front of the line for a closer, measured evaluation.

Spalling — concrete flaking or popping off the face, sometimes exposing rusty steel — tells a moisture and steel story. Steel inside concrete swells as it rusts, and that swelling pops the face off from inside. Small, shallow spalls on an old driveway are wear. Spalling along a beam face, with rust staining running down from the crack, means water has been getting to the steel. That area has lost cover and will keep losing it until the water source is dealt with. Note stains too. White, chalky deposits on the concrete, called efflorescence, are mineral salts left by water moving through the concrete and evaporating. They are a record of water travel. Brown and orange streaks are a record of rust. Both tell you where water has been, and water is half of every foundation story in clay soil.

Patch history is evidence. Old patch material smeared over a beam crack, caulk in a joint, or mortar smeared over brick

cracks near the slab tells you someone before you saw the same sign and covered it. A patch that has cracked again, in the same place and the same direction, is the house telling you the movement outlived the patch. Write it down as a re-crack, with a photo. It is one of the most useful facts you can hand to whoever evaluates the house next.

Hypothetical example: On the south side of a ranch-style house, the beam face shows one vertical through-crack below the living room window, wider at the top, with a slight offset. Inside that same wall, the window binds and has a diagonal drywall crack at its upper corner, and the tile line from Chapter 5 runs toward this wall. The soil is pulled away from the beam for twelve feet centered on the crack, while the north side soil is tight to the beam and that side shows no cracks inside or out. Three chapters, three reads, one location. That house does not need panic. It needs a measured evaluation of that south side, drainage correction to even out the soil moisture, and a monitoring record. That is a conclusion the evidence can carry.

Contrast it with this one. Composite example: An older slab shows thin hairline cracks on all four sides of the beam, none offset, none through, all unchanged on dated photos over fourteen months, with even soil contact all the way around, no sticking doors except one with loose hinges, and no floor cracks. The concrete has cracks and the house has no pattern. Monitoring and normal maintenance fit those facts. The method protects this homeowner just as much as it catches the first one, because it refuses to call every crack a failure.

Drainage, Trees, and the Ground Around the Beam

Before any repair talk, read the ground. More slab movement in this state traces back to uneven soil moisture than to any defect in the concrete itself. Gutters that dump roof water at one corner, a downspout that ends at the beam, a flower bed that gets daily watering against a side that bakes dry, a leaking hose bib, a slope that runs surface water toward the house — each one wets one part of the soil while the rest stays dry, and clay answers uneven water with uneven lift. Walk the lot after a rain if you can. Where water stands against the beam twenty-four hours later goes to the top of the correction list, ahead of any discussion of lifting anything.

Trees deserve plain talk. A large tree near a house drinks a lot of water from the soil on its side, more in summer, and its roots can dry a zone under the edge of a slab. That does not make every tree a villain or every crack a tree's fault. It means the moisture map around the house includes the tree, and any plan should account for consistent watering and,

where a qualified evaluation supports it, root management. Sudden changes — removing a big tree, or letting a long-watered bed go bone dry for a whole summer — change soil moisture fast. Note recent changes in your record. Houses often start moving right after the water pattern changes, not before.

When the Evidence Says Repair, and What Repair Means Here

Reading cracks like instruments ends in one of three honest places: the house is stable and needs monitoring; the house has a water or drainage problem that needs correcting first; or the house shows a measured pattern of differential movement that calls for lifting and support work. If you reach the third place, get a measured evaluation with elevation readings taken across the floors, plotted on a plan, so the discussion is about numbers and locations rather than feelings.

The author is not a structural engineer, and this book is not a substitute for one. Where an evaluation raises questions about load, safety, or whether a wall or beam has been compromised, the right referral is to a licensed structural engineer for an independent assessment. That referral is a strength, not a dodge: a repair plan and an independent assessment answer different questions, and a homeowner is best served when both are on the table.

Where support work is warranted, the method used in the work described in this book is pressed concrete piles. In plain terms, concrete pile segments are pressed into the ground, one segment at a time, using the weight of the structure as resistance, driven down until they reach stable bearing or refusal, then the structure is lifted in a controlled way and secured on the piles with caps and shims, and the elevations are re-read. There are no shortcuts in that sequence that hold up: drive to bearing, lift slow, measure as you go, and re-check the doors, windows, and crack gauges afterward, because the inside gauges from Chapter 4 are the report card on the work. Any proposal you receive should name the pile locations on a plan, the target elevations, and the cleanup and drainage corrections that go with it. If a proposal cannot show you locations and numbers, it is not yet a plan.

Whatever the outcome, keep the record you started. The plan with its door codes, the dated crack ends, the beam photos with a coin for scale, the soil and drainage notes — that packet is the most valuable thing this method produces. It lets the next set of eyes, whether that is a structural engineer, a repair contractor, or you yourself in two summers, start from facts instead of starting over. A house will keep talking for as

long as it stands. Read in order — inside, floors, then the foundation itself — write down what you actually saw, and let the pattern, not any single crack, make the call.

Chapter 7: Geometry Speaks — Stair-Step, Vertical, Horizontal, and Diagonal Cracks

A crack is not just a crack. Its shape is a sentence. If you learn to read the shape, the width, and the direction it travels, a wall will tell you a lot about what moved, which way it moved, and whether you should watch it or act on it.

This chapter is about geometry — the pattern on the surface. You do not need fancy tools for this part. You need good light, a little patience, and the habit of looking at the whole wall, not just the one spot that caught your eye.

Start every inspection the same way. Stand back ten or fifteen feet if you can. Look at the entire elevation, from the ground line to the roof line, corner to corner. Then walk closer. Then look again from an angle, with the sun low if possible, because raking light makes fine cracks show up that disappear at noon. Many homeowners fixate on a single line in the brick and miss the second line in the mortar, the separation at a window frame, and the slope in the trim that all point to the same movement. The pattern matters more than any single crack.

Stair-Step Cracks

A stair-step crack follows the mortar joints up and across in steps, like a staircase drawn on the wall. It goes horizontal along a bed joint, then vertical up a head joint, then horizontal again. In brick and block walls, this is the most common pattern tied to differential movement — one part of a foundation sitting a little higher or lower than the part next to it.

Why steps? Mortar joints are the weakest path. When a corner settles or a section heaves, the wall does not usually snap straight through the brick. It unzips along the joints first. That is why a stair-step often starts near a corner, a window, or a door — places where the wall is already weaker because of an opening — and runs out and down, or out and

up, at roughly forty-five degrees.

What to note about a stair-step:

First, where does it start and where does it end? A short stair-step that runs three or four courses beside a window and stops is a different story from one that runs from the foundation to the roof line and keeps going around the corner.

Second, does the width change along its length? A crack that is wide at the top and hairline at the bottom, or wide at the bottom and tight at the top, is telling you about rotation. One side is opening like a book. Mark the widest point and the narrowest point. Measure both. Chapter 9 covers exactly how.

Third, is the brick itself cracked, or only the mortar? Mortar-only cracking is common and, on its own, less serious. When the crack cuts straight through brick units as well as the joints, the force was stronger or the movement lasted longer. Note it plainly: "crack passes through brick at courses six through nine" is useful information. "Big crack" is not.

Fourth, is there offset? Run your fingertip lightly across the crack. Does one side sit proud of the other — pushed in or out of plane? Offset across a crack means movement was not just opening and closing. Something shifted sideways or rotated. Write that down too.

Hypothetical example: A homeowner in North Texas notices a stair-step on the east side of a one-story brick home. It starts at the top corner of a bedroom window, runs up and toward the corner in five steps, and is about the width of a dime at its widest. The mortar is cracked, the brick is not, and there is no offset. Inside, the bedroom door still closes clean. That set of facts — location, path, width, material, offset, and interior signs that match or do not match — is what turns a worry into a record someone can actually use.

Vertical Cracks

A straight vertical crack runs up and down, either through the joints in a rough line or straight through the material. Vertical cracks have several common causes, and they are not all foundation movement.

In a long brick wall with no expansion joints, heat and moisture make the brick grow a little over the years. Brick expands. If the wall has nowhere to give, a vertical crack can open near the middle of the run or near a corner to relieve that pressure. These often appear on long, unbroken south and west walls that take a lot of sun.

In concrete — a poured stem wall, a driveway, a patio, a slab edge — a vertical crack is often shrinkage from curing. Concrete shrinks as it dries. A clean, narrow vertical crack that has not changed in years is often just that: the material getting smaller as it cured, early in its life.

Vertical cracks tied to settlement look a little different. They tend to be wider at one end than the other. A vertical crack wide at the top and pinched closed at the bottom suggests the ground under the middle held while the sides dropped, or the middle heaved. Wide at the bottom and tight at the top suggests the center dropped. The taper is the clue. Always measure a vertical crack in at least two places — near the top and near the bottom — and write both numbers down with the date.

Also look at what lines up. Does the vertical crack in the exterior brick line up with a crack in the interior drywall on the same wall? Does a crack in the slab line up with a crack in the tile above it? Alignment across materials means the movement passed through the whole assembly, not just the surface finish.

Horizontal Cracks

A horizontal crack runs level along a mortar bed joint or across a concrete wall. On an exterior brick veneer, a long horizontal crack is less common than a stair-step, and it deserves careful attention because it can point to something other than simple settlement.

In brick veneer, a horizontal crack near the top of a wall or just below the roof line can relate to the lintel or angle support that carries the brick above a wide opening, or to rust expansion on steel supports tucked inside the wall — note that describing a support inside an old wall is not the same as recommending a repair, it is just reading what is there. As steel rusts, it expands, and expanding steel can lift and crack the masonry above it. A horizontal crack that follows the line above a garage door or a wide picture window should make you look hard at what is carrying the brick over that opening.

In a concrete foundation wall or a retaining wall, a horizontal crack partway down, especially with any inward bow or lean you can see with a level or a straight board, can mean soil pressure pushing from the other side. Wet clay pushes hard. A bowed wall is never a "watch it and forget it" item. If you see a horizontal crack plus a bow, a lean, or fresh soil and water pushing through, stop measuring for the season and get a qualified professional to look at it in person.

In interior drywall, a horizontal crack where the wall meets

the ceiling is very common and very often minor. Houses flex a little with temperature, framing dries and shrinks, and that joint opens a hairline. A ceiling-line crack that opens a little every winter and closes every summer, with nothing else changing, is usually the house breathing — Chapter 8 covers that in detail. A ceiling-line crack that keeps getting wider, starts dropping down the wall, or shows up with doors that no longer latch is a different record.

Diagonal Cracks

A diagonal crack runs at an angle straight across the surface — across drywall in a clean slant, across concrete, or in brick when it cuts across both joints and units instead of stepping.

Above doors and windows, short diagonal cracks in drywall are some of the most common cracks in Texas homes. The corner of an opening is a stress point. When a house moves even a small amount, that corner is often the first place the drywall shows it — a slant line running out from the top corner of a door frame at about forty-five degrees. One short diagonal above one door, stable for years, is a watch item. Diagonals above several doors on the same side of the house, all slanting the same general direction, start to read like a map: that side or that corner is the one moving.

Direction matters. Sketch it. Draw a simple box for the wall, mark the windows and doors, and draw the crack where it sits, slanted the way it actually slants. Two minutes with a pencil saves a lot of guessing later, because a photograph taken close up often loses which way the line was leaning.

In concrete slabs, a diagonal crack that runs from a corner — of a room, a control joint, or a plumbing penetration — is often shrinkage or stress relief. A diagonal slab crack that has lifted on one side so a straightedge rocks on it, or that keeps widening, is movement, not just curing.

Reading the Whole Pattern

Single cracks lie a little. Patterns tell the truth better. Ask four questions of every wall:

One, do the cracks agree with each other? Stair-steps on the outside, diagonals over the doors inside on the same side, and a floor that slopes the same direction all agree. That agreement raises confidence that real movement happened there.

Two, do the cracks agree with the doors and windows? A window that sticks on the same wall, at the same end, where the crack is widest, is part of the same sentence.

Three, is the crack fresh or old? Fresh mortar cracks show bright, clean edges and loose grit. Old cracks are dirty, painted over, caulked, spiderwebbed, or filled with years of dust. A crack with three layers of paint in it has been there through three paint jobs. That is history, written on the wall.

Four, has someone already repaired it — and did the repair re-crack? A patched crack that has opened again along the same line is one of the most honest signals a house gives. The house is telling you the movement is still active, or it returned. Note patched-and-reopened cracks in bold in your log.

Geometry will not give you a final answer by itself. It gives you a good first reading — where, which way, how wide, how old, and whether the rest of the house agrees. The next question is timing: is this crack moving with the seasons and then coming back, or is it going one direction and not returning? That is Chapter 8.

Chapter 8: Seasonal or Progressive? — Separating Breathing Houses from Moving Houses

Every house in Texas breathes. That is not poetry. It is clay, heat, and water doing exactly what clay, heat, and water do.

Much of North and Central Texas sits on expansive clay soils. When clay gets wet, it swells. When it dries, it shrinks. A house sits on that soil through wet springs and long, hot, dry summers, and the ground under the edges of the foundation moves up and down a little with the moisture — usually more at the perimeter, where the weather reaches the soil, than in the middle, where the slab covers and protects it. The result is a slow seasonal rhythm: cracks that open a hair in late summer and close a hair in spring, doors that stick in August and swing free in March, a hairline at the ceiling that comes and goes.

That rhythm is normal for a lot of homes. Progressive movement is different. Progressive means one direction, over time, without coming back — a crack that opens a little this year, a little more next year, and never closes; a door that stuck a little last summer and now will not latch at all; a

separation at the trim that you caulked, and the caulk split again, wider.

Learning to separate the two is the single most valuable skill a homeowner can build, because the response is different. A breathing house mostly needs steady moisture habits, drainage that works, and a good log. A progressively moving house needs a closer look, sooner, and records that show the trend clearly enough that any professional you call can see it without guessing.

What Seasonal Movement Looks Like

Seasonal movement tends to be small, slow, and — this is the key word — reversible. Look for these signs:

The crack width changes with the season but returns to about the same place. A stair-step in the brick might measure about one-sixteenth of an inch in October after a dry summer and be nearly closed the following April after spring rain. Next October it is back to about one-sixteenth — not one-eighth. Returning to the same range, year after year, is breathing.

Doors and windows follow the same calendar. A door that rubs the top corner in late summer and clears by winter, in the same pattern two years running, fits the seasonal story.

Several small signs move together and recover together. Hairlines at ceiling joints, a little separation at baseboards, a door rub — all a little worse in the dry season, all better after the rains return. Agreement plus recovery is reassuring.

Nothing new appears. Breathing houses recycle the same small symptoms. They do not invent new ones every season.

What Progressive Movement Looks Like

Progressive movement tends to be one-way and cumulative. Look for these signs:

The crack does not return to where it started. Your log shows it a hairline in March, wider in September, and the next March it closes only halfway. That leftover — the part that did not recover — is the progressive part. Add a few years of leftover and a watch item becomes a repair conversation.

Repairs fail in the same place. Caulk splits again. A mortar patch re-cracks on the same line. Drywall tape bubbles and

splits again after a proper repair. The house is telling you the movement did not stop just because the surface was made pretty.

Function gets worse. A door goes from rubbing, to sticking, to not latching, to showing daylight at the corner. A window goes from stiff to painted-shut tight to visibly out of square — measure corner to corner with a tape; a rectangle that has become a parallelogram has moved.

New signs appear in new places that agree with the old ones. The crack extends a few more courses. A new diagonal shows up over the next door down the same wall. Tile starts cracking in a line. Floors develop a slope you can feel and confirm with a level or a marble that rolls the same way every time, no matter the season.

Water or soil shows where it should not. A foundation crack that lets water in after rain, soil washing out under a slab edge, or gaps opening under the grade beam where soil has pulled away and keeps pulling away — those belong in the log with dates and photos, because they often point to the driver, not just the symptom.

The Usual Drivers in Texas

Movement needs a driver. When you log a crack, log what the water was doing too, because in clay country, water is usually the story.

Uneven watering is the most common one. One side of a house gets flower beds watered three times a week; the other side bakes against a driveway with no beds at all. The wet side swells, the dry side shrinks, and the house twists gently between them. Consistent, even moisture around the whole perimeter — not flooding, not drought right against the foundation — is the goal most soil professionals describe.

Large trees close to the house drink enormous amounts of water in summer, and they drink it from one side. Roots under a slab edge can dry that pocket of clay more than the rest. Note the trees in your log: species if you know it, distance from the foundation, and which side. Do not cut a mature tree down on a guess, though — killing a tree stops the drinking all at once, the clay rehydrates and swells, and that sudden change can heave a foundation. Tree decisions near a house deserve advice in person first.

Plumbing leaks are the quiet driver. A slow leak under a slab keeps one pocket of clay wet and swollen while everything else dries and shrinks. If one corner stays lifted or one area keeps moving while the rest of the house is seasonal and

calm, a leak belongs on the list of things to rule out. A plumber's leak test is far cheaper than guessing wrong about a foundation.

Drainage that dumps water at the foundation — a downspout that ends right at the corner, beds built up above the slab edge, grade that slopes toward the house — concentrates water in one place. After a hard rain, walk the house. Photograph where the water stands, where it runs, and how long it stays. Those photos belong in the same folder as your crack photos.

How Long Do You Watch?

A fair rule of thumb: one full calendar year of dated measurements tells you most of what timing can tell you. That means at least four readings — late winter, late spring, late summer, and fall — taken the same way, at the same marked points, plus photos each time. One reading tells you size. Two readings tell you change. Four readings across the seasons tell you pattern.

There are exceptions where you do not wait a year. Do not wait if a wall is bowing or leaning, if a crack is opening fast enough that you can see change in weeks, if a door or exit will no longer close and secure the house, if you have water coming through a foundation crack, or if a floor has dropped enough to trip on or to pull plumbing apart. Those are get-help-now items. Say so plainly in your log and make the call.

Hypothetical example: A two-story home shows a stair-step on the north wall. In September it measures just under one-eighth of an inch at the widest marked point. In January it measures one-sixteenth. The following May it is hairline. The following September it is just under one-eighth again — the same as the year before. The interior door on that wall rubs in September and frees up by spring, both years. That is a breathing house, well documented. The right move is steady moisture, good drainage, and keep logging once or twice a year.

Composite example: A one-story home shows the same kind of stair-step, but the log reads differently. September, year one: one-eighth of an inch. March: still nearly one-eighth — it never closed. September, year two: three-sixteenths, and the crack now runs two courses farther. The caulk from last spring is split wide. The door that rubbed now needs a lift to latch. That leftover growth, the failed repair, and the worsening door, all agreeing, mark it as progressive. That log, with dates and numbers, is exactly what a professional needs on the first visit — and if foundation support is part of the

conversation for a Texas home like this, the method used in this book's world is pressed concrete piles, discussed honestly for what they can and cannot do, with no promises that any system makes an old house new again.

A Word About Worry

Watching a crack for a year is not doing nothing. It is doing the one thing that guessing can never do: it replaces an opinion with a trend. Write it, date it, measure it the same way every time, and let the house show you which kind of story it is telling. Chapter 9 gives you the exact toolkit and the log format to do that well.

Chapter 9: The Measuring Toolkit — Telltales, Levels, Photographs, and an Honest Crack Log

Opinions about cracks are cheap. Measurements are what count. This chapter builds a simple, honest toolkit out of things you can buy for a few dollars or already have in a kitchen drawer, and shows you how to keep a crack log that any contractor, inspector, or structural engineer you later consult will thank you for. To be plain about my own role: I am a mason and foundation repair contractor writing from field experience. I am not a structural engineer, and nothing in this book takes the place of one when a home needs that level of review. When the signs in Chapters 7 and 8 point to bowing, fast movement, or major distortion, that referral is the right next step, and a good log makes that visit far more productive.

The Basic Kit

You do not need much. Gather these once and keep them together in a box or a zip bag labeled for the house:

A set of common coins for quick comparison, a plastic crack gauge card (sold at hardware stores and online for a few dollars — it has printed lines in fractions of an inch and in millimeters), a fine-tip permanent marker and painter's tape, a pencil, a six-inch ruler and a twenty-five-foot tape measure, a flashlight, a four-foot level if you own one (a two-foot level

works), a long straight board or straightedge, a marble or a round pen for a quick floor check, a phone or camera, and a simple notebook or a folder on your phone for the log. That is the whole shop. Everything below is technique, and technique is free.

Coins and Gauges: Getting a Real Width

"About this wide" is not a measurement. These comparisons are, if you write down which one fit, where, and when:

A standard credit card edge is about one thirty-second of an inch thick — roughly the line between a hairline and a crack worth logging. If a card edge will not slip into the crack, call it hairline and write "less than card thickness." If it slips in easily, keep going.

A dime is about 0.053 inches thick — close to one-eighteenth of an inch. A penny is about 0.059 inches. A nickel is about 0.077 inches, near five sixty-fourths. A quarter is about 0.069 inches thick. Coins are not precision tools, and worn coins vary a little, but a note that reads "Sep 12 — widest point takes a dime, will not take a nickel" is honest, repeatable, and far better than "medium crack."

A crack gauge card is better. It prints graduated lines and slots so you can hold it across the crack and read the width directly, and many cards are made to be photographed right against the crack so the scale is in the picture. Whichever you use, use the same one every time, at the same marked points. Consistency beats precision. A slightly rough measurement taken the same way six times shows a trend. A perfect measurement taken a different way each time shows nothing.

Mark your measuring points. Put a small piece of painter's tape beside the crack — not over it — and write a point number on the tape: P1, P2, P3. Measure at those points every time. Also mark the ends of the crack with a tiny pencil tick across the line and the date beside it in pencil on the mortar or, inside, on a bit of tape on the drywall. If the crack grows past your tick next season, you will see it at a glance and you can date when it happened within your reading interval.

Telltale: Letting the Crack Report Itself

A telltale is anything fixed across a crack that shows whether the two sides moved, and how much. It turns your log from

snapshots into a witness that watches between your visits.

The simplest telltale is a strip of good tape or a small rectangle of stiff paper glued or taped firmly on both sides of the crack with a line drawn straight across it. If the line stays lined up, nothing moved across that spot. If the line breaks into an offset, the sides moved, and the offset is right there to measure.

A classic plaster or mortar telltale is a small patch of brittle material dabbed across a mortar crack so it bridges both sides. Brittle is the point: it cannot stretch, so any new movement cracks the patch. Date the patch in pencil when you set it. If you find it cracked on your next round, movement happened between those two dates. It will not tell you how much on its own, so pair it with your gauge readings.

Commercial two-part telltales are the best of the group and still inexpensive. Two clear plastic plates overlap; one carries a grid, the other a crosshair, and they are fixed on opposite sides of the crack. As the crack opens, closes, or slides, the crosshair moves on the grid and you read the change directly, in two directions. Fit one at the widest point of any crack you are seriously watching, photograph it at each reading, and write both numbers in the log.

A few fitting rules for every telltale: clean the spot so it sticks, fix it to sound material on both sides (not on loose paint or crumbling mortar), write the install date on or beside it, and protect exterior telltales from direct hose spray and string trimmers. And a fair warning from the field: a telltale that has fallen off tells you nothing except that the adhesive failed. Note it, refit it, and do not count the gap in its record as movement or as stillness.

Levels, Lines, and Simple Elevation Notes

You cannot run a full elevation survey with a kitchen level, and this book will not pretend you can. What you can do is collect simple, repeatable notes that show whether floors and walls are changing.

On floors: set a four-foot level on the floor in the same rooms, in the same directions, each time — say, north-south and east-west in the living room and the primary bedroom — and note whether the bubble sits centered, off a little, or off a lot, and which side is high. A marble test is the quick version: place a marble at marked spots and note whether it stays, rolls slowly, or rolls fast, and which way. Photograph the level in place if the bubble position matters.

On walls: hold the level vertically against a wall that concerns you and note any lean or bow. For a bow, stretch a string tight from top to bottom of the wall, or hold your straight board flat against it, and measure the biggest gap between the string or board and the wall with your ruler. Write the number and the height where you found it: "East stem wall — 3/8 in. gap at mid-height, measured at the laundry door" is a note a professional can recheck exactly.

Use honest words for these notes. Write "bubble off-center toward the kitchen, about one bubble width" rather than inventing a slope number you did not measure. If a professional later takes true elevation readings with proper instruments across your floors, your simple notes still help: they show which rooms felt different, and when you first noticed it. Simple elevation notes record change over time; they are not a survey, and your log should never dress them up as one.

Photographs That Actually Help

A good crack photo does four jobs: it shows the width, the location, the pattern, and the date. Most homeowner photos do only one of those, because they are taken too close, in poor light, with nothing for scale.

Take three shots at every point, every time. First, a wide shot from six to ten feet back that shows the whole wall or room corner, so anyone can tell where this crack lives. Second, a middle shot from two to three feet that shows the pattern — the steps, the slant, how it passes windows or doors. Third, a close shot with your gauge card, a coin, or a ruler held right beside the crack for scale, in focus, with the flash off if it washes the line out. Raking light helps: hold your flashlight low and to the side so the crack throws a tiny shadow and shows up clearly.

Stand in the same place each round. Mark your photo spots in the log — "front porch, left of the door, facing east wall" — so September's photo can be laid over March's and compared honestly. Keep the date honest too: phone photos carry a date in the file, but also say the date out loud if you shoot a short video walkthrough, and never rename or edit the originals in a way that strips that information. Make one folder per house-check date and keep the originals untouched. Copies can be marked up; originals stay clean.

Also photograph the context, not just the crack: the downspouts, the grade against the foundation, standing water after rain, the big tree on the moving side, the sticking door showing daylight at the corner. Context photos are what turn a pile of close-ups into a case someone can follow.

The Honest Crack Log

Your log can live in a notebook, a spreadsheet, or a note on your phone. Format matters less than honesty and consistency. For each round of readings, record:

The date, and who measured. The weather note: recent heavy rain, long dry spell, or normal — one line is enough. For each numbered point: location in plain words, width by gauge or coin comparison, telltale reading if you have one, and whether anything changed since last time. Crack end ticks: did any crack pass its last dated tick? Doors and windows: which ones rubbed, stuck, or freed up. Levels: bubble notes room by room. Photos: folder name for this round. And a short "what else" line: plumbing work, a new tree removed, drainage fixed, a leak found — life events that move soil belong in the log next to the numbers they may explain.

Then the rule that makes it honest: write what you measured, not what you hoped. If you forgot a round, leave the gap and write "no reading — missed June." Gaps are honest. Filled-in guesses destroy the value of every real number around them. If a reading surprises you — a crack suddenly much wider — measure it twice, photograph it with the gauge in place, and write it down as measured, with a note of anything that changed at the house. Surprises recorded plainly are often the most important line in the book.

Hypothetical example: A log entry reads — "Oct 3, dry, no rain in five weeks. P1, east wall stair-step, widest at step four: takes a nickel, last March took a dime only. Telltale at P1: crosshair moved about 1/32 in. open since March. End tick at top: crack 2 in. past the March tick. Front bedroom door: now needs a lift to latch; in March it rubbed only. Level, front bedroom floor: bubble off toward the east wall, more than last time. Photos: folder 2025-10-03-cracks. What else: downspout at the east corner found crushed in August, not yet fixed." Nobody has to guess what that entry means. Seasonal or progressive, cause and effect, next step — it is all standing there in plain language, and it took maybe twenty minutes to collect.

Putting the Kit to Work

Walk the house four times a year, same order, same points, same tools. Keep the kit together. Keep the originals clean. Bring the log — the whole log, not a summary — to any professional visit, including a referral visit to a structural engineer when the signs call for one. In this region, when foundation support work is warranted, the crews in these pages install pressed concrete piles only; whatever anyone recommends, ask them to explain it against your log, point by point, and to put in writing what the work will and will not fix.

On the masonry side, a system like LintelLOCK — a field-developed system from years of lintel repair work in the field, not a laboratory product — should be explained the same plain way: what it does, where it fits, and where it does not.

That is the whole method of this volume. Read the geometry. Separate the seasons from the trend. Measure it the same way, write it down honestly, and let the record — not the worry, and not the sales pitch — make the decision with you.

Chapter 10: Not Every Crack Is Foundation — Water, Lintels, Trees, Plumbing, and Other Causes

A crack is a reading, not a verdict. That is the idea this whole book is built on, and this chapter is where it earns its keep. If every crack meant a foundation job, the work would be simple and a lot of homeowners would spend a lot of money they did not need to spend. In real Texas houses, plenty of cracks come from water moving where it should not, from a rusting piece of metal over a window, from a thirsty oak in August, from a slow plumbing leak under a slab, or from plain heat and age. The house is telling you something. The job is to figure out what, before you decide what to fix.

Think of it in order. First, find the cause. Second, watch whether it is moving. Third, and only then, pick a repair. A crack caused by a leaking gutter will come right back through fresh mortar if the gutter still dumps water in the same spot. A crack caused by a slab leak will keep growing while the soil under the house stays soaked. Treating the crack itself, without treating the cause, is like painting over a warning light.

Water From Above and Water on the Ground

Start with the roof and work down, because water usually starts at the top. A small roof leak may never show up as a stain you notice. It can run down inside a wall, soften the framing and the backing behind brick, and push and pull as

wet material swells and then dries. Brick veneer does not hold the house up — the framing does — but when the wall system gets wet over and over, mortar joints open, ties corrode, and hairline cracks work their way along the weakest line, which is usually the mortar.

Walk outside after a hard rain and look plainly. Are the gutters full of leaves, so water sheets over the edge and falls right against the wall? Is a downspout dumping the whole roof load in one flower bed, two feet from the foundation? Does the yard slope toward the house, so every storm sends water to sit against the slab edge?

Standing water against a Texas slab matters for two reasons. Our clay soils swell when they get wet and shrink when they dry. A bed that stays soaked on one side of the house while the other side bakes dry puts uneven pressure under the footing. Over seasons, that uneven swell and shrink can tilt, heave, or settle a corner — and then a water problem really can become a foundation problem. Second, constant moisture finds every small opening. It works into joints, rusts metal buried in the wall, and feeds the soil movement that opens the next crack.

The fixes for this class of cause are unglamorous, and that is good news. Clean the gutters. Extend downspouts so water lands well away from the house and runs off. Build the soil up, gently, where it has settled against the wall, so the ground falls away from the house. Keep mulch and beds from holding a pond against the brick. None of that requires a crew under your house. All of it can stop a crack from growing, and you can prove it with the monitoring plan in Chapter 12: fix the water, mark the crack, and see if the reading holds still.

Lintels: The Hidden Bar Over Every Opening

Every window, door, and garage opening in a brick wall has a bar across the top that carries the brick above it. That bar is called a lintel. On most homes it is a steel angle, set into the wall, and most homeowners never think about it until it starts to fail.

Steel rusts when water reaches it, and rust takes up more room than the clean metal did. As a lintel rusts, it swells. That swelling lifts and pushes the brick above the opening — a slow, powerful jack working inside your wall. The cracks it makes have a signature. Look for cracks stepping up and away from the top corners of a window or door. Look for the mortar joint right above the opening opening wider than the others. Look for brick that seems pushed out, just a little, over a window, or a horizontal crack running from the top corner

of the garage door — the longest, hardest-working lintel on most houses, and often the first to go.

A lintel crack is not a foundation crack, even when it looks serious. The wall below the opening may be plumb, the floor inside may be level, and the doors may all swing fine, because the problem is local. It lives in that one bar, over that one opening. Replacing or repairing a failing lintel, cleaning out the damaged mortar, and repointing the joint addresses the cause. LintelLOCK, the field-developed system used to support and secure failing lintels, belongs in this same local category: support the opening properly, then do the cosmetic work. Lifting the whole house to chase a crack that starts and ends at a window corner would be the wrong tool for the reading.

Garage lintels deserve a special word. A double garage opening can span sixteen feet or more. That is a long carry for brick, and when that lintel sags or rusts, you may see a crack dropping from the middle of the span, or stepped cracks from both top corners at once. If the crack pattern is centered on the garage opening and the rest of the wall is quiet, read the lintel first.

Trees: Slow Hands on the Soil

A mature oak is a fine thing and a powerful pump. In a Texas summer, a large tree can pull a great deal of water out of the soil every day, and its roots reach well beyond the drip line of the canopy — often right under the edge of a slab. Clay soil that loses water to roots shrinks. Shrinkage under one side or one corner lets that part of the house settle slightly, and the brick, which does not bend, cracks along the mortar to show you where the movement happened.

Tree-related cracks tend to be seasonal, and the season is your clue. They open wider in late summer, after weeks of heat and little rain, and they may close a fraction in a wet spring. Doors near that side of the house may stick in August and free up in March. That rhythm — open in drought, ease in rain — points at soil moisture, and trees are often the hand on the tap.

That does not mean every tree near a house has to come down, and cutting one down can cause its own problem. When a big tree dies or is removed, the soil it was drying out slowly takes on water again and swells. That swell can heave the slab edge back up. So the order matters here too: get the pattern identified first, consider steady watering during drought to keep soil moisture even, consider a root barrier in the right case, and let a full season of records speak before anyone talks about major work. Sudden moves, in either

direction, are how a manageable moisture problem becomes real damage.

Shrubs and beds matter on a smaller scale. A bed planted tight against the wall and watered daily keeps one strip of soil wet while the rest of the yard dries. Even moisture is the goal — not soaked, not bone dry, and as close to the same on all sides of the house as you can keep it.

Plumbing: The Cause You Cannot See

Water supply lines and drain lines run under most Texas slabs. When one leaks, it waters the soil from below, day and night, in one spot. That steady soak can swell clay and heave a section of floor, or wash fine soil away and leave a void that lets a section settle. Either way the house moves, and the cracks that follow can look exactly like the cracks in the last section. The difference is in the details.

Suspect plumbing when a crack or a heaved spot shows up in the middle of the house, near a bathroom, kitchen, or laundry room, rather than at a corner. Suspect it when one room's floor feels raised, when tile cracks in a line over a buried line, when a spot in the floor feels warm from a hot-water leak, or when your water bill climbs with no change in how your family lives. A meter test is simple to understand: with everything in the house off, a water meter that still creeps is telling you water is going somewhere.

Sewer leaks are quieter. They may not raise a bill at all. Signs can be a persistent damp smell, a patch of yard that stays green and soft over the line in a dry month, or slow drains in one part of the house. A plumber can run a camera and pressure tests to confirm or clear a line, and that test result is worth real money, because it decides whose problem this is. If a leak is feeding the movement, the plumbing gets fixed first. No foundation work holds its result on top of soil that is still being soaked or washed away. Stabilize the cause, then the structure, then the surface — that order runs through this whole book.

Hypothetical example: A homeowner finds a crack climbing from the corner of a back bedroom window and a door in the same room starting to rub. A foundation repair is quoted over the phone from a photo. Before signing, the homeowner checks the yard and finds the downspout on that corner crushed flat, dumping roof water into the bed, and a large oak just beyond it. The gutter is fixed, the downspout is extended, and even soaker watering is started. The crack is marked and measured. Over the next two seasons it does not grow. The reading was water and tree, start to finish, and the proof is

not an opinion — it is the record.

Other Honest Causes

Heat moves brick. On a long west wall in full afternoon sun, brick expands, and if a wall was built without room to move, fine cracks can open along joints and then nearly close in cooler months. New mortar and new concrete also shrink as they cure, so a young house can show hairline cracks in its first year or two that never grow again. Wind load, a settled porch or stoop pulling away from the main wall, a driveway slab that has tipped and is pushing or dragging at a joint — each of these leaves its own pattern. A porch separating cleanly at the joint where it meets the house, with a gap that is even from top to bottom, is often the porch moving on its own shallow footing, not the house failing.

Inside the house, drywall cracks at the corners of door frames, nail pops, and a ceiling line opening at a truss are common and usually cosmetic. Wood framing dries and shrinks after construction, and trusses can lift slightly in winter. Those readings live in the finish, not the foundation, and they are repaired at the finish level.

The point of this chapter is not to talk you out of concern. It is to sort the readings. Local pattern, seasonal rhythm, a clear water source, a rusting lintel, a line of tile over a buried pipe — each points somewhere specific. A crack that fits one of these causes gets that cause fixed first, and then it gets watched. The next chapter covers the other side of the line: the readings that say the movement is in the structure itself, and what to do, in the right order, when that is the case.

Chapter 11: When the Instrument Says Act — Engineers, Contractors, and Repair in the Right Order

Some readings are watch-and-wait. Others are act. Learning to tell the difference protects you twice: it keeps you from spending on a house that is only talking, and it keeps you from patching over a house that is genuinely moving. This chapter lays out the signs that mean the movement is structural, who should look at it and in what order, and the sequence a sound repair follows — stabilize first, and

cosmetic patch last, always.

The Readings That Say Act

One hairline crack that has not changed in a year is a story. Several signs arriving together, and growing, are a conclusion. Act when you see a pattern like this: cracks in the brick that are wide enough to slip the edge of a coin into, and getting wider across seasons, not just across one dry month. Cracks that run through the brick itself and not only through the mortar joints, because brick breaking means the force was more than the weakest line could absorb. Separation where the brick pulls away from a window or door frame, leaving a gap you can see daylight or weather stripping fail against. Doors and windows that stick worse every season, in the same part of the house, until a door has to be lifted to latch. Floors that slope enough to roll a marble, crack tile across a whole room, or open a gap between the floor and the baseboard. Inside drywall cracks that return within months after careful patching, in the same place, wider each time.

Act sooner when water is coming in through the crack, when a crack changes quickly over weeks rather than seasons, or when anything feels unsafe — a sagging header, a wall visibly out of plumb, a chimney pulling away from the house with a widening gap. Quick change is its own message. Slow seasonal movement gives you time to gather records. Fast movement takes that time away, and the right response is to move the evaluation up, not to wait for a prettier season.

Also act on the cause readings from the last chapter when they are confirmed. A proven slab leak is an act-now item even before any structural question is settled, because every day it runs, it is changing the soil your house stands on. A rusted-through lintel over a garage door is an act item because the brick above it has lost its support. Acting does not always mean a foundation job. It means the reading has crossed from monitor to fix the cause, in the order below.

The Right People, in the Right Order

Start with your own record, from Chapter 12 — dated photos and measurements. That record turns a sales conversation into a working conversation, because anyone you call can see what changed and when.

For a clear answer on whether a structure has moved, and how, the referral is a structural engineer. To be plain about my own place in this: I am not a structural engineer, and this book is not a substitute for one. I am a mason and a

foundation repair contractor writing from field experience. A structural engineer is licensed to evaluate a structure and put findings and recommendations in a signed report. That report carries weight no contractor opinion carries — with a buyer, with a lender, with an insurer, and between you and anyone who later questions the work. When the signs in the section above are present, when you are buying or selling, or when two contractors give you two opposite stories, that independent report is money well spent. The person writing it does not sell the repair, and that separation is exactly what makes it trustworthy.

With a report — or, for a straightforward case, with your record and a careful on-site evaluation — a foundation contractor measures the floor elevations, reads the crack pattern against those numbers, and tells you what is moving, which direction, and what stabilization would involve. A good evaluation explains the why before the what. If an evaluation jumps straight to a price without showing you elevations or explaining the pattern, slow it down and ask. Masonry work comes after stabilization, not before: brick and mortar are the finish that shows the movement, and they are repaired once the movement has been stopped.

Other trades slot in where the cause lives. A plumber tests and repairs leaks before structural work. A tree professional advises where roots and canopy are part of the picture. Keep the order: independent evaluation where the case calls for it, cause repairs, structural stabilization, then finish work.

What Sound Stabilization Looks Like

For a Texas slab or beam foundation that has settled because the clay beneath it dried and shrank, or because support was lost, the stabilization method used by Metro Foundation Repair is pressed concrete piles, and only pressed concrete piles. The method is direct. Precast concrete segments are pressed into the ground, one segment driving the next, using the weight of the structure itself as resistance, until the pile reaches refusal — the point where the ground will not take another segment. Refusal is the instrument reading of the foundation world: the pile has reached soil firm enough to carry the load, proven by the pressing itself, not guessed from a depth chart. Piles are placed at the points where the structure has settled, the structure is lifted carefully back toward level as far as it safely goes, and the piles carry that weight from then on.

That is the whole of the method, and its plainness is a strength. There is no promise that a lift returns every crack to invisible, and you should be wary of anyone who promises

that. The goal of stabilization is first to stop the movement, and second to recover what level can be recovered without damaging the house. Doors that close again, gaps that narrow, a floor that reads closer to flat — those are the honest results. Some cracks close partway on a lift and are then finished by the mason. Some old damage remains as a scar even on a sound house. Stopped movement is the result you are buying. Level is pursued carefully within that goal.

During the lift, the house talks back. Windows are watched, plumbing under the slab is a known consideration, and the crew works in small increments for a reason. Rushed lifts crack things that were not cracked before. A careful lift, pile by pile, with readings taken as it goes, is the standard to expect and to ask about.

Cosmetic Patch Last — and Why Folks Get It Backwards

The most common wasted money in this trade is beautiful mortar work done on a house that is still moving. The patch looks fine for a season. Then the movement that made the first crack makes the same crack again, right through the new work, and now the homeowner has paid twice and trusts nobody. It is an understandable mistake. The crack is what you can see, so the crack is what you want gone. But the crack is the gauge, not the engine.

The sound order is worth memorizing: fix the water or leak that is causing the movement. Stabilize the structure, if the structure has moved. Let it sit through a stretch of weather so the work proves itself. Then do the cosmetic repair — repoint the mortar, reset or replace damaged brick, patch the drywall, adjust the doors, paint. Done in that order, cosmetic work lasts, because nothing underneath it is still pulling it apart.

Composite example: A house shows stepped cracks at two corners, doors sticking on one side, and a floor slope confirmed by elevation readings. Cosmetic bids come in low and tempting. Instead, a structural engineer confirms settlement on one side, a leaking drain line under that side is repaired first, and pressed concrete piles are then driven to refusal along the settled beam. The house is lifted in increments, the doors come back into their frames, and the job sits through two months of rain and dry spells with no new movement in the marks. Only then is the brick repointed and the drywall patched. Two years of records after that show the readings holding still. Every step in that sequence depended on the step before it.

Questions That Keep You in Charge

You do not need to know this trade to hire it well. You need to ask questions whose answers you can check. Ask what the elevation readings are, in plain numbers, and where they were taken. Ask which part of the house has moved, which direction, and what in the crack pattern supports that. Ask what the cause is believed to be, and what happens to the repair if that cause is left alone. Ask what method will be used, how the crew will know the support has reached firm ground, and what is written down about it when the job is done. Ask what the work does not include — homeowners are often surprised that brick repointing, door adjustment, and plumbing are separate lines, so get the scope in writing before the first hole is dug. Ask what record you will receive: pile locations, depths, and the readings before and after.

Write the answers down. A contractor who is telling the truth will not mind, and the notes join your house record. Get more than one evaluation when the job is large — honest readings tend to agree on the pattern, even when prices differ. And hold the order from this chapter against every proposal you receive. Stabilize first. Cosmetic patch last. If a plan reverses that order, the plan, not your house, is the first thing to fix.

When the readings say act, acting in the right order is most of the battle. The last chapter is about the years after — and the years before any problem — because the best version of all of this is a house that is watched well enough that small readings get small answers, on time.

Chapter 12: Your House, Recorded — A Homeowner's Monitoring Plan That Protects Resale and Peace of Mind

Everything in this book comes down to a simple habit: write it down, with dates. A crack you remember is an opinion. A crack you measured, photographed, and dated, across four seasons, is evidence. Evidence is what gets you the right repair, at the right time, for the right cause — or proves you need no repair at all. It is also what a future buyer, a buyer's inspector, and a lender want to see. This chapter gives you a

complete monitoring plan you can start in one afternoon with tools you likely already own, and keep up in a few minutes a few times a year.

The Baseline: Your House on Day One

Pick a calm weekend and walk the whole house, inside and out, slowly, with your phone and a notebook or a notes file. This first pass is the baseline — the reading against which every later reading is judged. Without a baseline, every crack you notice later feels new, even the ones that have been there, unchanged, since before you bought the house.

Outside, photograph each wall in full, then photograph every crack, stain, and separation up close. For close photos, hold a coin or a ruler against the wall beside the crack so the picture carries its own scale. Note which wall it is, and where along the wall — "north wall, three feet left of the kitchen window" beats "back of house" when you come back in six months. Check the corners of every window and door opening, the top of the garage opening, the joint where porches and stoops meet the house, and the line where brick meets the foundation. Look up at the roof edge for gutter overflow marks and down at the ground for soil pulled away from the slab or piled against it.

Inside, go room by room. Note doors that stick, rub, or swing on their own, and how much. Photograph drywall cracks at door corners and ceilings, tile cracks, and any gap between flooring and baseboards. Run a marble or a ball along hard floors in the rooms you are most curious about and note which way it rolls, and how eagerly. You are not diagnosing anything today. You are building the record that will let you diagnose change later, which is a different and far more powerful thing.

Date everything, the same day, in the file names or the notes themselves. A photo with no date is a rumor. A photo with a date is a data point.

Marking and Measuring the Cracks That Matter

From the baseline, choose the handful of cracks that concern you most — usually no more than five or six — and promote them to named, measured marks. Give each a simple code that matches your notes: C-1 for the first crack, C-2 for the second, and so on, with its location written out in full.

For each marked crack, measure the width at its widest point and write the number down in plain fractions or millimeters — whichever you will use consistently. Consistency matters more than the unit. Then make a tell-tale: draw a short, fine line in pencil across the crack, on the brick or on a small piece of tape set firmly across it, and write the date beside it in the photograph. If the two sides of the crack move, the line breaks or offsets, and even movement too small to judge by eye becomes visible at a glance. For a crack in mortar you especially care about, you can also set two small pencil dots, one on each side, and record the distance between them. Future you, holding the same ruler in the same spot, will get a clean yes-or-no answer on growth.

Photograph each marked crack the same way each time: same distance, same angle as best you can, ruler or coin in frame, date in your notes. Matched photos across seasons are the heart of this whole plan. Side by side, they show what memory cannot — the truth about whether anything moved.

The Rhythm: When to Read Your House

A house in Texas clay country lives two lives a year: the wet, swelling season and the hot, shrinking season. Your monitoring rhythm should follow that cycle.

Read your marked cracks at least twice a year — once at the end of the wet season, typically late spring, and once at the end of the dry season, typically early fall after the worst heat. Those two readings catch the full swing of seasonal movement and let you tell a seasonal pattern from a one-way trend. A crack that opens a hair in September and closes it in May, year after year, is breathing with the soil. A crack that opens in September, closes only halfway in May, and opens further the next September is walking in one direction — and one-way walking, confirmed across a full cycle, is the pattern Chapter 11 is about.

Add short checks after big events: a very heavy rain week, a long drought stretch, a plumbing repair, a large tree removed, new landscaping or a new pool next door. Note the event in the record with its date, even if the cracks show no change. "No change after the wettest March on record" is valuable information. So is a water bill spike, a new damp smell, or a door that starts rubbing for the first time — log them the day you notice, not when you get around to it.

Round out the file as life happens. Keep every relevant paper in the same place: plumbing test results and repair invoices, gutter and drainage work, any evaluation or report you have been given, foundation work records showing pile locations

and depths, and brick or mortar repair receipts. One folder, physical or digital, labeled plainly. The record is the house's medical chart, and like a medical chart, it is worth the most when it is complete and in order.

Reading Your Own Record: Green, Yellow, Red

Once or twice a year, sit down with the file and read it like the instrument it is.

Green means the readings are holding. Marked cracks unchanged across a full wet-and-dry cycle, doors behaving the same, no new cracks in new places. Green houses need nothing but the next scheduled reading and steady habits: even soil moisture, working gutters, water directed away from the walls. Most houses, most years, are green, and your record is what lets you believe that with confidence instead of hope.

Yellow means something changed, slowly, or a cause-type sign appeared. A marked crack grew a small amount in one season. A door began to rub that never rubbed before. You found a crushed downspout, a bed ponding against the wall, a lintel showing rust at its ends. Yellow is the fix-the-cause stage: correct the water, watch the tree side through a dry season, get the plumbing test done, repair the local item. Then measure again next season and let the record judge whether yellow returns to green.

Red means the Chapter 11 pattern: growth across a full cycle that does not reverse, several signs together in one part of the house, water coming in, or any change that comes fast. Red is where you stop monitoring and start calling, in the order that chapter sets out. Bring the record with you. It will shorten every conversation and improve every answer you get.

Hypothetical example: A seller lists a house that shows a repaired stepped crack over one corner. The buyer's inspector flags it, as inspectors should. The seller produces a house file: baseline photos from six years earlier showing the same crack before repair, two seasons of measurements showing growth, a plumbing invoice for the leaking line that caused it, foundation records showing pressed concrete piles driven to refusal at that corner, elevation readings before and after, and four years of twice-a-year photos after the repair showing the marks unbroken and the widths unchanged. The flagged crack goes from a question mark to a documented, finished story. That is what a record does at resale. It does not hide the house's history — in Texas, the seller's disclosure asks for that history plainly, and it should be answered plainly — it proves the history was handled, in the right order, and that it

stayed handled.

Peace of Mind Is a File, Not a Feeling

People who worry about their houses are usually not worrying about cracks. They are worrying about not knowing — whether it is moving, whether it is serious, whether it will cost them at sale time, whether they waited too long. A monitoring record answers each of those, with dates and numbers, any time the worry shows up. Open the file. Compare the photos. Read the marks. Either nothing has changed, and you can close the file and sleep, or something has, and you know exactly which chapter of this book you are in and what the next step is.

That is the real promise of reading cracks like instruments. The house was always talking. Brick and mortar report soil and water and rust and weight, faithfully, in a language of lines. A homeowner with a baseline, a few marked cracks, two readings a year, and one honest file is fluent in that language — not at the level of the trades in this book, and you do not need to be. You need to know what changed, when it changed, and who to call, in what order, when the instrument says act. Keep the record, keep the order — cause first, structure second, cosmetic last — and your house will never surprise you with a story it was not already telling you, in writing, all along.

Conclusion: Let the House Finish Its Sentence

A crack is not a verdict. It is a reading.

That is the truth this volume has worked toward, chapter by chapter. Brick and mortar, drywall and ceilings, floors and grade beams — every surface of a house is a gauge connected, through load paths and time, to the ground the house stands on. Read together, over weeks and seasons, those gauges tell a story no single crack can tell alone: whether a house is breathing with the Texas seasons, or moving in one direction and not coming back.

Hold onto the order this book taught. Read first. Measure second. Decide third. Date the ends of a crack before you fill

it. Photograph it with something for scale. Log the doors, the floors, and the sticking windows on the same day, because pattern is what separates a cosmetic line from a foundation signal. Walk the outside for water — gutters, grade, downspouts, plumbing, trees — before you accept any explanation that lives under the slab, because in Texas clay, water is half of every movement story.

And when the instruments say act, act in the right order. Fix the water cause first. Get an independent structural evaluation when the signs call for one. Stabilize a moving foundation with pressed concrete piles driven to refusal — proven support, not a promised depth — before any cosmetic repair. Repoint the brick and patch the drywall last, after the movement has stopped and the records show it holding still. Cosmetic work done before stabilization is not a repair. It is makeup on a moving house, and the cracks will write themselves again.

Just as important, remember what this book refused to do. It did not call every crack a foundation failure. It did not sell fear. Shrinkage happens. Old houses settle a little and stop. Lintels rust, mortar ages, and Texas summers dry the ground every year. A homeowner who can tell those ordinary stories from a progressive one is a homeowner nobody can stampeped into an unnecessary job — and nobody can talk out of a necessary one.

Keep your crack log with your house papers. Update it on the quarterly walk described in Chapter 12. Hand it to the next buyer, the next contractor, or the next structural engineer you consult, and let them start from facts. A house that is recorded is a house that is understood, and a house that is understood holds its value — and its walls — a whole lot better.

The ground always tells the truth. So does the wall. Now you know how to read both.

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 — championbrickrepair.com — (817) 900-6324
- **Metro Foundation Repair** — pressed concrete pile foundation repair — metrofoundationrepair.com — (817)

523-1540

- **LintelLOCK** — the field-developed lintel replacement system — lintlerepair.com — (469) 730-0650
- **MortarMagic** — mortar color matching & the Mortar Bucket — mortarmagic.netlify.app
- **WhiteStone Construction** — stone, ranch & property work, Hamilton TX country — (254) 723-5040

If a crack pattern in your home matches the progressive signs in this book — widening over time, offset, doors and windows that no longer close, or a floor clearly out of level — start with a measured evaluation. Bring your crack log, your dated photographs, and your elevation notes. Good information makes for honest recommendations, whichever company you choose.

About the Author

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Travis writes the Engineering Truth series from field experience: what the ground and the wall really do, learned house by house in Texas clay and brick. He is not a structural engineer, and his books are field guides — for a licensed evaluation of a structure in distress, consult a structural engineer.