

The Mortar Matcher's Playbook

A Professional's Guide to Mortar Color Matching, Historic
Repointing, and Building a Profitable Masonry Repair
Business

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Introduction: The Invisible Repair

There's a test I've run on every job for going on fifty years, and it's the
simplest one in the book: stand back ten feet. If you can point to where
I worked, I failed.

That's what this book is about. Not patching brick — anybody can smear mortar in a hole. This is about the repair you can't find. The repointed wall that looks like the mason who built it in 1962 came back last Tuesday and touched it up. Color right, texture right, joint profile right. Invisible.

Matching mortar is the highest-paid skill in masonry repair, and it's not close. A crew can lay brick all day. Almost nobody can make a repair disappear. Homeowners can't quite explain why one bid looks right and another doesn't, but they know the difference when they see it. The pro who can match wins the job, charges what it's worth, and gets the neighbor's call the next week.

This isn't a beginner's book. I'm going to assume you know what a struck joint is and how to keep a mixer clean. What we're doing here is the professional layer: reading old mortar like a document, understanding where color actually comes from, working historic lime mortar without wrecking soft old brick, mixing and curing so the match holds, troubleshooting the misses — and then the business side, because a man who can match and can't sell it is just a very talented employee.

Everything in here comes from 50 years of hands-on field experience — Texas brick, Texas heat, Texas clay dust in every joint. The methods are field-developed, meaning they were born on scaffolds and tailgates, not in laboratories. Where a question crosses into structure — load-bearing walls, lintels carrying weight, anything I'm not qualified to judge — I'll tell you to call a structural engineer, because that's what a professional

does.

The stories you'll meet are hypotheticals — made-up houses, made-up situations, labeled as such. I'm not going to borrow real customers' problems to make a point. The techniques, though, are real. Every one of them has been tested on real walls, and most of them were learned the hard way.

Grab your margin trowel. Let's make repairs disappear.

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Chapter 1: What "Matching Mortar" Really Means

Picture this — and I'm making this house up, so don't go looking for it. A two-story brick home outside Fort Worth, built in the late sixties. Nice neighborhood. The owner called me out because a section of the back wall had been repointed by another contractor the year before, and the repair was driving him crazy. "The color's right," he said. "I watched them mix it. It matches. But every time I pull into the driveway, that's all I see."

He was right about the color. I stood there with a scrap of the original mortar in one hand and looked at the new work, and the color was close — real close. So close it didn't make sense that the repair stood out like a sore thumb. But stand out it did. From the curb you could draw a perfect line around every joint they'd touched.

That's the first thing you have to get straight if you want to do this work at a professional level: matching mortar is not about color. Not only about color, anyway. Color is one pillar out of three, and I have watched good, careful masons knock

themselves out on color while completely ignoring the other two — then wonder why the homeowner keeps staring at their repair like it owes them money.

The three pillars are color, texture, and joint profile. Miss any one of them and the eye finds the repair. Get all three right and the repair disappears. Disappears is the standard. Not "close enough." Not "matches when you're standing five feet away." Invisible. The repair should vanish into the wall so completely that a man who knows the house can't find it with a flashlight. That's the bar I'm going to hold you to for this whole book, and I'm going to show you exactly how to clear it.

Pillar One: Color

Color is the pillar everybody thinks about, so it's the one that gets the most attention and the most mistakes. We'll spend a whole chapter on the science of it later, so for now just understand this: mortar color is a moving target. The mortar in a sixty-year-old wall is not the color it was the day it was laid. Sun, rain, soot, sprinkler water, and sixty years of Texas weather have shifted it. The mortar you're matching in the bag is fresh and wet, and fresh wet mortar lies to you about what it's going to look like in a month. You have to match

what the wall *was*, accounting for what time has done to it, and land your fresh mix so it settles into the wall as it cures. That's a skill, not a formula — though I'll give you every shortcut I've learned in fifty years of mixing.

Pillar Two: Texture and Aggregate

This is the pillar that got my Fort Worth fellow in trouble. The color of his repair was fine. The texture wasn't. The original wall was laid with a sand that had character — a pit sand with a mix of grain sizes, some of it a little coarse, a little gritty under the thumb. The contractor who did the repair used a fine, clean, washed masonry sand. Every grain the same size, smooth as cake flour.

Now, up close, each joint told a different story. The original joints were rough and open, with little pebbles and pits that caught the light in a hundred directions. The new joints were smooth and tight and flat. Same color. Completely different face. From the driveway it read as a shadow line — a patch of wall that looked flatter and newer than everything around it, even though the shade was dead on.

Here's the rule I live by: the sand *is* the mortar, visually. Cement and lime are the glue, but sand is seventy to eighty

percent of what's in that joint, and the sand's grain size, shape, and color decide what the eye sees before color even gets a vote. Fine washed sand makes a fine smooth joint. Coarse pit sand makes an open, grainy joint. One won't impersonate the other, no matter what color you mix.

When I walk up to a house now, the first thing I do — before I think about color at all — is run my thumb across an original joint and feel the sand. Coarse? Fine? A mix? Can I see individual grains? I take a little sample home, I look at the sand under a magnifying glass, and I match the sand first. Only then do I start on color. It's saved me more callbacks than anything else I've ever learned, and it's why I built MortarMagic — mortar color matching and the Mortar Bucket — around getting the sand and aggregate right before anything else.

Pillar Three: Joint Profile

The third pillar is the one most repair work gets wrong, and it's the one with the least excuse, because it's right there in front of your eyes.

The joint profile is the shape of the mortar in the joint — how it was finished the day it was laid. Concave, struck, flush,

weathered, raked, extruded, V-joint, grapevine, beaded. A concave joint curves inward like a shallow bowl, tooled with a round jointer. A struck joint is cut at an angle, deep at the top and flush at the bottom, so water sheds off it. A flush joint is struck flat with the face of the brick. A weathered joint is the reverse of struck. And old work, especially on homes built before the war, is full of grapevine and beaded profiles you almost never see in modern repair.

Here's what happens in the real world. The original wall has concave joints — you can see the curve catching light along every bed joint. The repair guy comes along with a pointing trowel, fills the joint, and strikes it flat with the face of the brick. Color might be perfect. Sand might be close. But every repaired joint is a flat gray stripe sitting in a field of curved joints, and the sun hits the flat ones different from the curved ones. From twenty feet away, the repair reads like a checkerboard.

Or the opposite: a beautiful concave joint, tooled to perfection, on a wall where the original was a rough flush joint — now your pretty work is the thing that sticks out. The profile has to match the wall, not your preferences.

I carry a set of jointers in the truck — round, square, and a

couple of homemade ones ground out of old pointing trowels — and I match the profile the same way I match the sand: by looking at the original, up close, before I touch a thing. Run your finger along the original joint. Is it curved? Angled? Flat? Recessed? Then use the same tool the original mason would have used. This is the cheapest part of the whole job and the most skipped, and skipping it is what makes invisible repair impossible.

The Invisible Standard

So here's the standard, and I want you to burn it into your brain: an invisible repair. Three pillars standing together. Color right, texture right, profile right — and the joint you worked on is just another joint in the wall.

Why hold the bar that high? Because the customer's eye goes straight to the repair. Not because they're picky — because the human eye is built to find patterns, and a patch that breaks the pattern screams. A repair that disappears is the difference between a customer who pays you and tells the neighbors, and a customer who pays you and wishes he hadn't. Fifty years in this trade has taught me that the invisible standard is what keeps the phone ringing. Anybody can fill a joint with mortar. The invisible ones get hired again.

Everything in this book — reading the original mortar, the science of color, sampling, test panels, repointing technique, the business of selling this work — all of it serves the three pillars. Get them in your bones and the rest is detail.

Field Notes

- Matching mortar rests on three pillars: color, texture/aggregate, and joint profile — all three must be right for a repair to disappear.
- Sand is 70–80 percent of what's in a joint; its grain size, shape, and color decide what the eye sees before the shade does.
- A perfect color match with the wrong sand or wrong profile still reads as a repair from the curb.
- Match the sand first, then work on color — never the other way around.
- Carry jointers that match the original profile (concave, struck, flush, weathered, raked); run your finger along an original joint before you tool anything.
- The standard is an invisible repair: a joint the homeowner can't find with a flashlight.

Chapter 2: Reading the Original Mortar

Here's the mistake I see every single week, and it costs contractors jobs before they even start mixing. A mason walks up to a wall, looks at the joints, and tries to match what he sees — the face of the mortar as it sits today, weathered, dirty, sixty years old. He's not matching the mortar. He's matching the dirt. He's matching the soot and the sprinkler scale and the mildew and the sun-baked skin that the years laid on top of the mortar. Then he mixes a fresh batch to that dirty color, and when it cures and weathers, it goes *darker still* — and now his repair is darker than the dirty joints he was copying. It's wrong twice over, and it was wrong from the first glance.

You don't match the mortar's dirty present. You match its original state. And to do that, you have to read the original mortar the way a man reads a hunting sign — carefully, up close, and skeptical of first impressions. This chapter is the fieldwork: how to take a clean sample, scrape the weathered skin, read age and hardness, and tell the original bed joints apart from the repairs somebody else already made.

Taking a Clean Sample

First rule of sampling: you don't take it from the face. The face of the joint is the weathered skin — the top eighth of an inch is the part that's been rained on, baked on, and stained for decades. Underneath that skin is the mortar that tells the truth.

I like to pull my sample from a sheltered spot — under an eave, behind a downspout, inside a crack that opened the joint up for me. I'll pop out a loose head joint or dig into a bed joint with an awl where the mortar is already failing. What I'm after is a piece of mortar I can break open, because the interior of a chunk — the part that's been sealed away from the weather — is the original color, the original sand, the original everything.

Take a few pieces from a few spots. One sample is a guess; three is a read. Put them in a baggie, mark where they came from, and don't leave them in a hot truck for a week — heat and sun keep aging the sample after you've pulled it.

Scraping the Weathered Skin

Once you've got your pieces, take a knife or a stiff putty knife and scrape the face off. You're removing that weathered skin

— the darkened, hardened, sometimes crusty outer layer — to expose the fresh interior. Compare the two side by side. On an old wall the difference can be startling: the face might be dark gray or almost brown, and the inside is a pale tan or buff. That pale interior is your target. That is the color the mason mixed in 1962, before the weather got its hands on it.

While you're scraping, pay attention to how the mortar behaves. Does it crumble to powder? Does it hold together in chunks? That behavior is telling you about hardness and age, which is the next thing to read.

Reading Age and Hardness

Old mortar and new mortar are different animals, and you can feel the difference with tools you already own. This is the part where fifty years of thumbs-on experience beats any lab test you could order, because these field tests work in the driveway in thirty seconds.

The screwdriver test. Take a regular flathead screwdriver and try to scratch the mortar in an original joint. If the screwdriver digs in easily and the mortar powders or crumbles, you're dealing with a soft, lime-rich mortar — the kind that went into most residential work before about 1930

and into a lot of work for decades after. If the screwdriver barely scratches it and the mortar rings hard, you're looking at a harder, portland-cement-heavy mix. There's a whole range in between, and learning to feel it is a matter of doing it on a hundred walls.

The knife test. Press a pocketknife blade into a piece of your sample. Soft lime mortar will let the blade cut a groove without much fight. Hard portland mortar will resist and might skate the blade. You can also crush a piece between your fingers — truly old lime mortar will often break apart with hand pressure, while a hard portland mix won't budge.

The vinegar test. This one's a nice confirmation. Put a drop of household vinegar on your sample. Lime mortar will fizz — the acid reacting with the calcium carbonate. The stronger the fizz, the more lime in the mix. A hard portland mix with little lime will barely react. It's not precise, but in the field it's a quick yes-or-no that backs up what your thumb told you.

Why does hardness matter for matching? Because hardness tells you the family of mix you're dealing with — high-lime soft mortars (often called Type O or Type K territory) versus the harder portland-lime blends (Type N, Type S). You don't have to use those names with a homeowner, but you need to

mix in the right family. Patching a soft lime joint with a hard portland mix is one of the oldest sins in masonry repair: the hard patch doesn't move with the soft wall, and it can grind the surrounding original mortar and even damage the brick over time. Match the hardness, not just the look. And if the wall is load-bearing or the joint damage looks structural rather than cosmetic, that's the moment to tell the customer to call a structural engineer — that's their lane, not mine, and a good mason knows where his lane ends.

Original Bed Joints vs. Somebody Else's Repair

Now here's the detective work. On any wall more than a few decades old, you're probably not the first person to touch it. Previous repairs are everywhere, and if you take your sample from one of them, you're matching somebody else's guess — compounding the error every time.

How do you tell the original from the repair? Look for the breaks in the pattern.

Color shifts in head joints. The original mason laid the wall in one rhythm — bed joints and head joints from the same batch, same day, same sand pile. A repointed section breaks that rhythm. Scan the wall and look for areas where the head

joints are a different shade than the bed joints around them, or where a patch of joints looks just a touch cleaner, smoother, or newer than the field. Repairs often show up as rectangles — somebody repointed a section and stopped at a corner or a downspout.

Tooling inconsistencies. The original work was tooled the same way throughout. If most of the wall has soft, weathered concave joints and one area has crisp, sharp, perfect joints, that area is newer. If the profile changes — flush where everything else is concave — you're looking at somebody else's work.

Sand differences. Run your thumb across the suspect area and then across the untouched field. Different grit, different feel — different batch, different decade.

Edges and overlaps. Look at the borders between the old and the repair. A careful repair feathers in, but most don't. You'll often see a hard line, a slight step, or smears of mortar on the brick face at the boundary.

Your sample has to come from the original, never from a previous repair. When in doubt, sample from the highest, most sheltered, least-touched part of the wall you can reach.

And when you find evidence of an old repair, tell the homeowner — plainly, no drama. "Somebody's been in here before, so I'm matching the original, not their patch." It builds trust, and it sets the right expectation: you're not responsible for the last guy's color, you're responsible for the wall's.

Match the Original State, Not the Dirty Present

This is the point the whole chapter has been driving at. The wall you're looking at is the end of a long story — decades of weather, pollution, sprinklers, and life. The mortar inside that story, the mortar as it was mixed and laid, is what you're matching. You scrape the skin, you read the hardness, you dodge the old repairs, and you mix to the *original* — knowing that your fresh work will weather and darken into the wall over the coming months, the same way the original did over the years.

A good test panel — we'll get to those — will show you the journey: your fresh mix will start a little light and a little clean, and that's correct. If you mix to the dirty face, you're starting dark and going darker, and the repair will never catch up to the wall. It'll always be the odd patch.

Read the mortar first. Mix second. That order has never failed

me.

Field Notes

- Never sample the weathered face of a joint — the outer skin is decades of dirt, not mortar color.
- Pull samples from sheltered spots, break chunks open, and read the interior color, sand, and texture.
- Scrape the weathered skin off your sample with a knife to expose the original state underneath.
- Field-test hardness: the screwdriver scratch test, the knife-pressure test, and the vinegar fizz test tell you the mortar's family (soft lime vs. hard portland).
- Patch soft lime joints with soft lime-rich mixes — never grind a hard portland patch into a soft wall; structural or load-bearing damage means calling a structural engineer.
- Learn to spot previous repairs: color shifts in head joints, tooling inconsistencies, different sand feel, and hard boundary lines — always sample the original, never the repair.
- Mix to the original state, not the dirty present; fresh work starts a touch light and weathers into the wall.

Chapter 3: The Science of Color Without the Lab Coat

Same batch. Same bag. Same bucket of water. I mixed it myself, poured it into two wheelbarrows, and pointed two walls — and when it cured, the two walls were two different colors. The homeowner stood there looking at me like I'd pulled a trick. I hadn't. The only difference was that one wall was in morning sun and the other sat in the shade of a pecan tree, and that was enough to change everything.

Mortar color is chemistry and weather and light, and you don't need a lab coat to understand it — you need a working feel for the handful of things that actually move the needle. That's what this chapter is: the working science of mortar color, in plain language, from a man who's mixed tens of thousands of batches and watched every one of them change.

Gray Cement vs. White Cement

Everything starts with the cement, because the cement sets the floor of your color — the darkest shade your mix can reach without help, and the direction it leans.

Ordinary gray portland cement is what most masonry cement is built on, and it's exactly what it sounds like: gray, leaning toward blue-gray or sometimes a brownish gray depending on the plant and the quarry. A mortar made with gray cement will always carry that gray undertone. You can lighten it, you can warm it with sand, but the gray is in the DNA. Most historic and most ordinary residential mortar in Texas was mixed on gray cement — or on no cement at all, which we'll get to.

White portland cement is the same material with the iron and manganese compounds stripped out — the minerals that give gray cement its color. It's brighter, cleaner, and more expensive, and it gives you a palette that gray cement can't: creams, buffs, pale tans, the light warm tones you see on limestone and light-colored brick. When I need a light, warm match, I reach for white cement. When the original is a mid-gray workhorse joint, gray cement is the honest starting point.

Here's the rookie mistake: trying to mix a light buff mortar on gray cement by just adding more lime. You can get lighter, but you can't get past the gray undertone — the joint will read as a washed-out gray, not a warm buff. And the

opposite: trying to hit a deep charcoal on white cement and wasting pigment fighting the brightness. Start in the right neighborhood. Gray for grays, white for lights. It saves pigment, saves batches, and saves your temper.

Lime's Lightening Effect

Lime lightens a mix — that's the simple version, and it's the reason old mortar looks the way it does. The high-lime mortars of the early twentieth century were pale, soft, and warm, and even in modern mixes, every shovel of hydrated lime you add lifts the shade a step and warms the tone.

But lime does more than lighten. It changes how the mortar behaves and how it cures — more workable, slower setting, more forgiving — and it changes how the joint *ages*. High-lime joints carbonate over time, and that carbonation keeps them pale and soft. This is why an old lime wall has that chalky, luminous quality that a hard portland joint never quite copies. If you're matching an old high-lime wall and you build your mix on gray cement with a dab of lime, you'll get the color in the ballpark but miss the character. Match the lime content and the lightening follows.

The Sand Sets the Base Color

Now the big one — the ingredient that moves color more than anything else in the mix, and the one most color-matchers ignore until they've burned three batches.

Sand is the majority of the mortar by volume, and the sand's own color is the base color of the joint. The cement tints the sand; the sand doesn't tint the cement. Let me say that again because it's the single most important sentence in this chapter: the cement tints the sand. Start with a brown pit sand and you get a warm brown joint no matter what the cement does. Start with a white washed sand and you get a pale, cool joint.

Texas sands run the whole range. The brown and tan pit sands of central Texas give you warm, earthy joints. The pale river sands of the east lean cool and light. The red-brown sands you find in parts of the west give a mortar that almost glows warm in afternoon sun. Two bags of the same cement, two different sand piles, two completely different walls.

This is where most mismatch stories begin. A contractor buys bagged sand — clean, consistent, pale — and tries to match a wall that was laid with local pit sand sixty years ago. The cement is right, the lime is right, the pigment is right, and the

joint still looks wrong, because the base color underneath it all is a different sand. Go back to Chapter 1: match the sand first. Everything in color flows downstream from that decision.

Integral Pigments vs. Surface Stains

Sooner or later you'll need to move a color further than sand and cement can take you, and that's where pigments come in. There's a right way and a wrong way, and the wrong way is all over the big-box shelves.

Integral pigments — iron-oxide mineral pigments mixed into the batch — are the professional's tool. They color the whole joint, through and through, the same way the sand's color runs through it. They don't fade the way dyes do, they're UV-stable, and they weather like the mortar itself. Yellows, reds, browns, blacks — the whole earth-tone family a mason needs — come from iron oxides, and they've been coloring mortar since before any of us were born. You dose by weight, you keep records, and you get the same color batch after batch. That's how real color matching is done.

Surface stains — the acid stains, the tinted sealers, the "just paint it" products — sit on the surface. They can look

convincing for a season, and then they wear, fade, and flake, because the surface of a mortar joint is exactly the part the weather attacks first. I've been called out to more than one house where a previous contractor "matched" the color with a stain, and eighteen months later the joints look leopard-spotted — stained patches worn off at the high spots, original gray showing through. If you want a repair that lasts as long as the wall, the color goes *in* the mix, not *on* the joint. That's the standard, and I don't bend it.

One caution on pigments: more is not better. There's a saturation point where adding more pigment stops deepening the color and starts weakening the mortar — and a little pigment goes a long way. A few percent by weight of cement is the working range for most shades. Measure it, write it down, and test-panel it before you commit to the wall.

Weathering and Why Wet Lies

Here's the thing that humbles every color matcher, beginners and old hands alike: wet mortar lies, and weather keeps lying.

Wet vs. dry. Fresh, wet mortar looks darker and richer than it will when it cures. I've seen a batch that looked perfect in

the wheelbarrow cure out two shades lighter — because drying lightens the joint as the free water leaves. Never judge a color from the wet mix. The only color that matters is the cured, dry color, and the only way to know it is a test panel — a small sample joint, or better, a section of actual wall, mixed exactly the way you'll mix the real work, cured and dried, then compared to the original. We'll cover test panels in their own chapter. For now, tattoo this on your brain: the wheelbarrow is a liar. The cured panel is the truth.

Weather darkening. The flip side: once your fresh work is in the wall, the weather starts aging it. Rain, dust, and time darken and mute a joint. A repair that matches perfectly at six months can look light at six days — because the new joint hasn't lived yet. This is why, on an old wall, I aim my fresh mix a half-step light and a half-step clean: the weather will walk it the rest of the way into the wall. Match the dirty present and you'll overshoot. Match the original, aim a breath light, and let time do the final blending. It's the most counterintuitive thing in this trade, and it's the difference between work that looks right on day one and work that looks right on year five.

Sun and shade. Remember my two walls — same batch,

different sun. Light changes everything. A joint in full afternoon sun reads lighter and warmer than the same joint under an eave. When you're comparing your test panel to the wall, compare it in the same light, at the same time of day, from the same distance the homeowner sees it. Comparing a sunlit panel to a shaded wall is how you talk yourself into a wrong mix.

Putting It Together

So the working science, boiled down: start in the right cement neighborhood — gray for grays, white for lights. Let lime lift and warm the mix the way the original's lime content demands. Let the sand set the base color, because the cement tints the sand and not the other way around. Move color with integral iron-oxide pigments, dosed by weight and written down — never with surface stains that wear off in a season. And respect the lies: judge color only from cured, dry test panels, compare in matching light, and aim a breath light on old walls so weathering can walk your work into the wall.

None of this needs a lab. It needs a notebook, a scale, a test panel, and the patience to let the panel cure before you judge it. That's the whole science. The rest is reps.

And one more thing — this is exactly why I built the MortarMagic line the way I did. Color matching starts with the sand and the aggregate, and the Mortar Bucket system is built around getting the base right first, so the color you add on top is landing on the right foundation. A pigment can't fix the wrong sand. Get the base right, and the color work gets easy.

Field Notes

- Gray cement leans blue-gray or brown-gray; white cement opens up creams, buffs, and pale warm tones — start in the right neighborhood.
- Lime lightens and warms a mix; match the original's lime content and the lightening follows.
- Sand is the majority of the mortar and sets the base color — the cement tints the sand, not the other way around.
- Use integral iron-oxide pigments (dosed by weight, recorded) for lasting color; surface stains wear, fade, and flake.
- Never judge color from the wet mix — wet mortar lies darker; only a cured, dry test panel tells the truth.
- Weather darkens fresh work over time; on old walls,

aim a half-step light and let time walk the repair into the wall.

- Compare test panels in the same light, time of day, and viewing distance the homeowner sees — sun vs. shade changes everything.

Chapter 4: Sand — The Unsung Hero of the Match

Everybody wants to talk about pigments. Everybody wants to reach for the color chart first. I'll tell you what I tell every young mason who walks onto one of my jobs: the sand is the paint. The cement is just the glue. If you get the sand right, you're eighty percent of the way to a match that'll hold up in full daylight. If you get the sand wrong, no amount of pigment in the world is going to save you.

The Sand Is the Color

Here's what took me longer than I care to admit to learn. When you look at a mortar joint — a cured, weathered, ten-year-old mortar joint — what you're actually seeing is sand. Mortar is roughly three parts sand to one part binder. That means three-quarters of what's on the surface of that joint is aggregate, not cement, not pigment. The sand sets the base color, the grain sets the texture, and the combination of the two is what your eye reads as "that mortar."

I learned this the hard way. Early in my career I was chasing a match on a buff-colored joint in Fort Worth, and I kept

reaching for darker pigments to drag my mix down. Nothing worked. An old-timer walked over, rubbed my mix between his fingers, and said, "Son, your sand's wrong. You're trying to paint the wrong sand." He showed me a sand with a natural buff-tan color straight out of the pile. Same recipe, zero pigment, and we were there.

So the first rule of this chapter: choose your sand before you choose anything else. Look at the existing mortar. Look at the color of the sand showing through it. That weathered face is telling you what pit it came from.

Grain Size Is Texture

Color is half the story. The other half is texture, and texture comes from grain size — what the trade calls gradation. A fine, uniform sand makes a smooth, almost creamy joint face. A coarse sand with mixed grain sizes gives you that sandy, granular, slightly rough face that you see on older work and on a lot of Texas brick.

Here's the thing most guys miss: the grain size changes how the joint catches light. Two sands that look identical in the bag can read completely different in the wall if one's fine and the other's coarse. The fine one reads darker and flatter

because it reflects less light. The coarse one reads lighter and more textured because every grain throws a little shadow.

When I'm matching, I always check grain before I check color. I wet the existing joint down — water brings out the true aggregate color — and I look at it with a magnifier, one of those little jeweler's loupes. I'm asking: is this fine, medium, or coarse? Is it uniform, or is it a mixed blend? Then I build my sand choice around that answer.

Washed vs. Unwashed

Now we get into washed versus unwashed sand, and this matters more than most people think.

Washed sand — also called masonry sand in a lot of yards — has been rinsed to remove the very fine silt and clay particles. It's cleaner, it mixes more consistently, and it gives you a more predictable color because there's no clay film coating the grains. For most repair work, washed masonry sand is the right call. It's what the yards sell for a reason.

Unwashed sand still carries its fines. It can look warmer, sometimes richer, and in some old Texas buildings, that clay content is actually part of what you're matching — the original builders used whatever came out of the creek bed.

But unwashed sand is inconsistent. One batch can be full of clay, the next can be nearly clean, and that variation shows up in the joint color. If you're doing a large repointing job with unwashed sand, you're gambling on every delivery.

My rule: for matching work, start with washed sand. If the existing mortar clearly has a clay warmth to it that washed sand can't deliver, then you go hunting for an unwashed sand — but you commit to one pile, one delivery, and you mix your reference batch from the same load.

Texas Sands, Region by Region

Texas is big country, and the sand changes as you cross it. If you're working in the Dallas–Fort Worth area, you're looking at Trinity River sands mostly — a medium, warm-tan masonry sand that does fine work on the brick common to North Texas. Out toward Hamilton and the central Texas country where I do a lot of work, the sands run a little coarser and a little more golden, and a lot of the older buildings were pointed with sand that came off the property itself — creek sand, tank sand, whatever was handy.

Down in Houston and the Gulf Coast, the sands tend to run lighter and finer. West Texas runs toward the red and the

coarse. None of this is a rulebook — it's a starting map. The real answer is always the same: find a masonry supply yard near the job, get your hands in their piles, and look. Buy small bags of two or three candidates. The sand that matches is the sand that matches, wherever it came from.

One more Texas-specific note: our summers bake mortar hard and fast. A sand with a little more moisture retention buys you working time in July heat — and that keeps the joint looking right, because you can tool it properly before it goes off.

Sieving and Blending: Building Your Sand

Here's where it gets fun. Sometimes the yard sand is close but not quite there. That's when you start building your own sand.

A set of soil sieves — the round stacking kind, they run about thirty bucks — lets you separate a sand into its grain sizes. I'll sieve a candidate sand and look at each fraction. Sometimes the fine fraction is the color I want and the coarse fraction is too pale, or the other way around. Then I recombine in the ratio that lands the match. It sounds fussy. It's not. It takes ten minutes, and it beats remixing five batches with pigment.

Blending two sands is the other workhorse technique. Picture this — and I'm making this house up — a 1960s ranch in Arlington with a joint that's a warm gray-tan. My washed masonry sand gives me the right texture but reads a touch too pale; a golden creek sand gives me the right color but the grain is too coarse. So I blend: two parts washed sand, one part golden creek sand. That blend goes on the job ticket as "Arlington blend 2:1" and it never changes for the duration of the job.

Write your blends down. Every time. I'll say it again in the Field Notes.

Reference Jars

This is the simplest, cheapest system in this whole book, and it's the one that separates the guys who match consistently from the guys who start over every job.

Get a case of small mason jars — actual mason jars, the quart size. Every time you dial in a sand for a job, before you mix a single batch for the wall, you fill a jar with the dry blended sand, screw the lid on, and write on the lid with a paint marker: the job, the date, the blend ratio, and what you mixed it against. Keep the jars in the shop.

Those jars are your library. Six months later when the customer calls back about the garage addition, or when you land a house three streets over with the same brick, you pull the jar, look at the sand, and you're not starting from zero. You're starting from a known answer. I have jars in my shop that are ten years old, and I still reference them.

Field Notes

- Sand is the paint; the binder is just the glue. Get the sand right first and pigment becomes the finishing touch, not the crutch.
- Grain size controls texture and how the joint catches light — check grain with a loupe before you chase color.
- Washed masonry sand is the default for matching work; unwashed sand is a special case that you commit to in one load.
- Texas sands vary by region — Trinity River tan in DFW, coarser golden sands in central Texas, lighter finer sands toward the Gulf.
- Sieve and blend: a thirty-dollar sieve set and a 2:1 two-sand blend can land matches that pigment never could.

- Keep reference jars of every dialed-in blend, labeled with job, date, and ratio — your future self will thank you.

Chapter 5: Cement, Lime, and Binders

If sand is the paint, the binder is the skeleton. It's the part of the mortar that actually does the work of holding the wall together, and it's the part most guys know the least about — which is a shame, because picking the wrong binder is how good-looking repairs fail early.

Here's the good news: this subject is simpler than the internet makes it sound. There are four mortar types you'll run into, one rule that governs all of them, and one ingredient — lime — that separates decent work from great work. Let's walk through it plain.

The Four Types, in Plain Language

Mortar types are named by letters — M, S, N, O — and every apprentice asks what the letters stand for. Honest answer: the naming story is murky, but the order goes from strongest (M) to softest (O), and the old-timers remembered it with "Mason's Standard Need Ordering" or any number of sayings. What matters is what each type does, not what the letter means.

Type M is the strongest — high compressive strength, built for below-grade work like foundations and retaining walls where the mortar is under serious load. In above-grade brick repair, you almost never need Type M. It's too hard, too brittle, and too unforgiving for repair joints. If somebody tells you to repoint with Type M, you walk away from that advice.

Type S is strong but more flexible than M — about eighteen hundred pounds of compressive strength. This is the workhorse for structural masonry: new walls that carry real load, veneer work, exterior walls that take wind. A lot of masons default to Type S for everything because it's strong, and that's the mistake this chapter exists to correct. Stronger is not always better. In repair work, mortar that's too strong for the brick it's attached to is a liability, not an asset.

Type N is the middle of the road — medium strength, good workability, the general-purpose above-grade mortar. For the majority of brick repair and repointing on standard modern brick, Type N is the right starting point. It's strong enough to do the job and forgiving enough to move a little with the wall.

Type O is the soft one — low strength, high lime content, made for interior work and, critically, for historic soft brick. Type O and lime-based mixes are what old buildings want. If

you're working on anything pre-1930s, we'll talk about this more in Chapter 6, but file this away: the softer the brick, the softer the mortar needs to be.

When Each Is Appropriate

Let me make this a simple decision tree, the way I'd explain it on the job site.

New construction or structural repair on modern hard-fired brick? Type S or Type N, depending on what the wall carries. (And when I say structural repair, I mean it in the everyday sense — talk to a structural engineer before you touch anything that's actually holding a building up. That's their lane, not mine.)

Routine repointing of modern brick — 1960s through today, good hard brick, no structural questions? Type N. It's the default for a reason.

Historic soft brick, interior brick, anything where the units are delicate? Type O or a lime-based mix. We'll spend all of Chapter 6 here.

Lime's Role: Workability and Color

Now the ingredient that doesn't get the respect it deserves:

lime. When you buy a bag of mortar mix that says Type N, you're usually buying a blend of portland cement and hydrated lime. The cement brings the strength. The lime brings everything else.

Lime does three things for you. First, **workability**. A high-lime mix is buttery. It spreads clean, it sticks to the trowel and the brick instead of falling off, and it gives you more time to tool the joint before it sets. Anybody who's fought a harsh, cement-heavy mix on a hot Texas afternoon knows exactly what I'm talking about — the mortar goes stiff before you can finish the joint, and you end up with a ragged face that'll never match. Lime buys you the time to do it right.

Second, **color**. Lime lightens and warms a mix. A pure portland cement mortar cures to a cold, hard gray. Add lime and the joint goes softer in tone — a warmer, more natural gray that reads better against brick, and that gets closer to what old mortars looked like before high-strength cement took over. When I'm matching, the lime content is one of my levers. More lime, lighter and warmer. Less lime, darker and colder. And lime never looks painted-on the way overdone pigment does.

Third, **durability in the right way** — lime gives mortar the

ability to heal. Small hairline cracks in a lime-rich mortar can actually close themselves up over time through a process the trade calls autogenous healing — free lime in the mix reacts with moisture and carbon dioxide and re-cements the crack. It's not magic, and it doesn't fix structural cracks, but it's one more reason lime-rich mixes outlast brittle ones in real weather.

The Softness Rule: Mortar Must Be Sacrificial

Here is the single most important sentence in this book, and I want you to memorize it:

The mortar must always be softer than the brick.

Not equal. Not close. Softer. Mortar is the sacrificial element of a masonry wall. When the building moves — and every building moves, with heat, with cold, with settling, with moisture cycles — something has to give. If the mortar is softer, the mortar cracks, and cracking mortar is repairable. You repoint it. That's maintenance. If the mortar is harder than the brick, the brick cracks and spalls instead, and cracked brick is not maintenance. It's damage.

This is where the "stronger is better" instinct kills repairs. A guy puts Type S on a 1920s bungalow because he wants it to

last forever, and five years later the faces are popping off the bricks while the joints look brand new. The mortar survived. The wall didn't. That repair failed the moment it was mixed.

So when you choose a binder, you start by looking at the brick. Hard modern brick with a good firing? Type N or S is fine. Medium brick? Type N. Soft brick — and you'll know it by the color variation, the soft edges, the way a key scratches it easily? Then you go softer. Type O, or a lime mix. The brick is telling you what it needs.

Historic Lime-Putty Mortars

On the oldest buildings — and we'll go deep on this in Chapter 6 — you'll find mortars made with lime putty instead of portland cement. Lime putty is slaked lime aged in water, sometimes for months, and it makes a mortar that's soft, breathable, and completely different in character from modern cement mixes.

You can buy lime putty, and you can make lime-putty mortars for historic work. The ratios are different — you're looking at something like one part lime putty to two and a half or three parts sand, no portland cement at all for the softest applications. These mortars cure differently, too.

Portland cement cures by hydration — it needs water and it sets fast. Lime mortar cures by carbonation — it absorbs carbon dioxide from the air and sets slowly, sometimes over weeks. That slow cure is part of why old lime mortar is so forgiving. It keeps accommodating the wall while it hardens.

If you're matching a historic building and the analysis comes back as a pure lime mortar, don't try to fake it with a cement mix and pigment. Use lime putty. It's more work, it's slower, and it's right.

One More Thing About Bags

Quick practical note, because it bites people: the mortar mix in the bag at the supply house is only as good as its age and storage. Mortar mix that sat in a damp warehouse for eight months has already started hydrating in the bag. Buy from yards that move volume, and if a bag feels lumpy or hard in spots, don't use it.

Field Notes

- Know the four types in order of strength: M (strongest, below grade), S (strong structural), N (general above grade), O (soft, historic and interior).
- Stronger is not better in repair work — match the

mortar's strength to the brick, never exceed it.

- Lime brings workability, warmer color, and self-healing — it's the ingredient that separates decent work from great work.
- The softness rule: mortar must always be softer than the brick. Mortar is sacrificial; cracked mortar is maintenance, cracked brick is damage.
- Historic buildings want lime-putty mortars, which cure slowly by carbonation — don't fake them with cement mixes.
- When load-bearing structure is involved, that's a structural engineer's call — my authority is fifty years of hands-on field experience, not a license.

Chapter 6: Historic Mortar — Do No Harm

There's a saying in the medical world — first, do no harm. Masonry repair on historic buildings needs that saying taped to the inside of every toolbox. Because here's the uncomfortable truth: the majority of damage I've seen on old Texas brick wasn't caused by time, weather, or neglect. It was caused by repairs. Well-meaning, skilled, modern-mortar repairs that the building couldn't survive.

If you work on anything built before about 1930, this chapter is the one that keeps you out of trouble.

What Old Mortar Actually Is

Pre-1930s buildings in Texas — the Victorian storefronts, the early farmhouses, the 1920s bungalows — were almost never built with portland cement mortar. They were built with lime mortar: lime putty or hydrated lime, sand, and water.

These mortars are soft. That's not a flaw. That's the design. A lime mortar on a historic building does three jobs: it holds the units together, it flexes with the building's movement, and — critically — it breathes. Lime mortar is vapor-

permeable. Moisture that gets into a historic wall can get back out through the mortar joints. The mortar is the wall's exhaust system.

Modern portland cement mortar is nearly vapor-impermeable by comparison. It's a dam, not a sponge. And when you put a dam in a wall that was designed with a sponge, the moisture doesn't disappear. It finds another way out — through the bricks themselves.

Why Hard Mortar Destroys Old Brick

Now the mechanism, because when you understand it, you never forget it.

Old brick — hand-made, or early machine-made brick fired at lower temperatures than modern brick — is soft and porous. In a wall with lime mortar, that's fine: the mortar absorbs and releases moisture at roughly the same rate as the brick, and the whole system stays in balance.

Put a hard portland cement joint in that wall, and the balance breaks. The mortar won't absorb moisture. The brick will. Water enters through the brick faces and through any small gaps, and then it can't exit through the sealed-up joints. In Texas, where we get hard freezes every winter — yes, even in

Texas — that trapped water freezes and expands. It has to go somewhere, and the hard mortar joint won't yield. So the brick face pops off. Spalling. Once the face of a historic brick is gone, it's gone. You can't put it back.

I've seen this in small-town courthouses, in farmhouses outside Hamilton, in bungalows all over Fort Worth. The pattern is always the same: beautiful, crisp, hard repointing job, and the brick faces falling off around it. The mason did clean work. The mason also destroyed the wall. Nobody told him about vapor permeability, and nobody told him the mortar had to be softer than the brick.

So here it is again, from Chapter 5, with a historic accent: the mortar must be sacrificial. On a historic building, that's not just good practice. It's the whole philosophy. The mortar fails so the building survives.

Reading the Existing Mortar

Before you touch a historic joint, you read it. And I mean you really read it — with your eyes, your fingers, and your tools.

Look at the color and texture of the existing mortar, weathered face and all. Historic lime mortars in Texas tend to be light — warm grays, tans, buffs — because of the sand and

the lime content. They're often sandy to the touch; you can sometimes crumble a weathered face with your thumbnail. That's not deterioration. That's a lime mortar doing what lime mortars do at the surface.

Take a sample — a loose piece, or a small piece from a discreet spot with the owner's permission — and break it. Look at the inside: lime mortars often show their aggregate plainly, where cement mortars look more homogeneous. Drop a little diluted acid on it — muriatic acid cut way down, or even white vinegar for a gentle test. Lime mortar will fizz and dissolve; a high-cement mortar barely reacts. That test alone will tell you which century your mortar belongs to.

And test the brick hardness while you're at it. Drag a steel key across a brick in an inconspicuous spot. If it scratches easily, you're dealing with soft brick and your mortar needs to be softer still. On a pre-1930s building, I default to a lime-based mix unless the evidence says otherwise.

Joint Prep Without the Grinder

Here's where historic work separates from modern work, and where the most damage gets done in a single afternoon: joint preparation.

On modern brick, guys run an angle grinder with a diamond blade down the joints to rake out old mortar fast. It's efficient. On historic soft brick, it's a crime scene. A grinder in inexperienced hands — or even in experienced hands on a bad day — widens the joint, cuts into the brick edges, and leaves a joint that's too wide for the original profile. Worse, the vibration and the dust can crack soft units. I've seen grinders chew the arrises — the edges — right off hand-made brick, and once that original edge is gone, the building's face is changed forever.

The rule: on historic brick, you rake joints by hand. A plugging chisel, a joint raker, a bent nail, patience. It's slow. That's the job. Where a grinder is genuinely needed because the old mortar is too hard to rake by hand, you use it with a guard, cut only the center of the joint, and stop the instant the blade wants to wander. Hand tools first, always.

Clean the joint out with a soft brush and water — no pressure washer blasting into a 120-year-old wall. You're preparing a bed for new mortar, not stripping paint off a driveway.

The Depth Rule: Two to Two-and-a-Half Times the Joint Width

Repointing depth is one of those details that sounds minor

and isn't. The rule of thumb from the preservation world: rake the joint out to a depth of two to two-and-a-half times the joint width, or down to sound mortar — whichever comes first.

So if the joint is three-eighths of an inch wide — common on old brick — you're raking out roughly three-quarters to a full inch of old mortar. This gives the new mortar enough mass to bond and cure properly, and enough depth to do its sacrificial job.

The "or down to sound mortar" part matters. If the old mortar is sound an inch in, you stop there. If it's crumbling two inches deep, you keep going until it's solid. The number is the target; sound mortar is the rule.

Pack the new mortar in quarter-inch lifts — a deep single fill shrinks, cracks, and bonds poorly. Layer it, compact it, tool it to match the original joint profile. Old joints were often struck flush or slightly concave. Match what was there, not what your trowel wants to do.

Matching Old Sand Colors

Historic matching brings us full circle to Chapter 4, with a twist: the sand you're matching is often not at the modern

yard. Old Texas buildings were frequently pointed with local sand — creek sand, pit sand, sand from the property itself — coarser than modern masonry sand, sometimes carrying a clay warmth no washed sand has.

So you hunt. You visit the older, smaller supply yards. You ask about unwashed sands and local pits. You sieve and blend the way we talked about in Chapter 4. And here's a technique worth its weight: make your test panels on the building itself, in an inconspicuous spot — the back wall, behind a downspout, somewhere shaded the same way as the repair area. Mortar color changes as it cures, and it changes differently in sun and shade. A test panel on the actual wall, cured for a week, is worth more than fifty sample boards in the shop.

The Lime Mortar Recipe, Plain

For the record, here's the kind of mix that serves most historic repointing in Texas: one part high-calcium hydrated lime to two and a half to three parts well-graded sand, by volume. No portland cement, or at most a very small addition if the exposure demands it — and that's a judgment call you make knowing the softness rule, not to speed up the schedule.

Mix it, let it rest — lime mortar likes to be mixed, rested overnight, then remixed before use. Keep it damp while it cures: mist it, tent it in the Texas sun, give it the week it wants. A rushed lime mortar is a failed lime mortar, and the failure shows up years later when nobody remembers the schedule pressure.

Field Notes

- Pre-1930s buildings carry lime mortars and soft brick — modern portland cement mortar in those joints is the leading cause of historic brick damage.
- Lime mortar breathes; cement mortar dams. Trapped moisture plus Texas freezes equals spalled brick faces — irreversible damage.
- Read the existing mortar before touching it: color, texture, thumbnail test, acid fizz test, and a key-scratch test on the brick.
- Prep historic joints by hand — plugging chisel and raker, no aggressive grinders on old faces; clean with brush and water, not a pressure washer.
- Rake to two to two-and-a-half times the joint width, or down to sound mortar; fill in quarter-inch lifts, tool to the original profile.

- Match old sands by hunting local pits and blending — test panels on the actual building, cured a full week, are the only proof that matters.

Chapter 7: Mixing That Holds Up

The most expensive mistake I ever made on a repointing job wasn't a bad color match. It was a perfect color match at nine in the morning. By noon it didn't match anymore. By the next day the homeowner was looking at two different walls. That day taught me the lesson this whole chapter is about: in mortar matching, the color isn't made in the pigment. It's made in the mixing. The same recipe mixed two different ways is two different mortars.

Here's the truth nobody tells you when you start out: batching is where matches live or die. You can have the exact right sand, the exact right cement, the pigment weighed down to the gram — and if you mix batch one for three minutes and batch four for eight, batch four will look like a different wall. Overmixing darkens mortar. Undermixing leaves streaks. A heavy hand on the water lightens it when it dries. And none of that shows up while it's wet in the pan, because wet mortar is always darker and wetter-looking than the finished wall. You won't know you blew it until tomorrow, when it's already in the joints.

So this chapter is about the discipline of the mix — the difference between getting paid and getting called back.

Batch by Volume, Not by Eyeball

Every mason has heard "a shovel of this, two shovels of that." That's fine for a backyard barbecue pit. It is not fine for color-critical repointing. A shovel is not a measuring device. One scoop is heaped, the next is level, and by the third your arm is tired and everything is short. On a long wall, that drift adds up to visible bands of color.

Batch by volume with an actual container. I use a small bucket with a line marked on it — the same bucket, every batch, every job. Coffee cans, cut-down five-gallon pails, whatever you like, as long as it's the same vessel and the fill line is the same. Count the units out loud: "one sand, two sand, three sand," and keep the count honest. If you're using pigment, weigh it. A kitchen scale that reads in grams costs twenty bucks and it will do more for your color consistency than anything else in your trailer. Two grams of iron oxide one way or the other is visible on a finished wall. Don't guess it. Weigh it.

And here's the one that bites people: the sand matters more

than everything else combined. The sand is the color of your mortar, more than the cement, more than the pigment. Switching sand mid-job — even switching to a "similar" sand from a different yard — can shift the finished color noticeably. Buy enough of the same sand for the whole job, from the same pile, and store it dry and covered. If the job is big enough to need a second load of sand, buy it up front. The cheapest insurance you'll ever carry is an extra half-yard of the right sand.

Water: Measure It, Then Leave It Alone

Water is the quietest variable and the most destructive one. Too much water makes weak mortar that dries chalky and light. Too little makes stiff mortar that won't bond and streaks when you tool it. And a wetter batch is always darker in the pan and lighter on the wall — the extra water bleaches the finish as it evaporates, and it washes fines and pigment toward the surface where they lighten unevenly.

Measure your water. Use the same bucket with the same line. And once the batch is mixed, that's the water it gets — you don't splash more in because the pan is getting stiff in the sun. Mortar that has started to set and gets re-wet — retempered — loses strength and dries lighter than the batch

next to it. If a batch is going off, throw it out and mix fresh. It stings to throw out half a pan. Redoing a wall costs more.

One more water rule, and this one is about the brick, not the mix: dampen the masonry before you point. Dry brick sucks the water out of your mortar before the cement has time to hydrate. The joint surface dries first, the inside stays wet, and you get shrinkage cracks at the bond line and a blotchy finish. A light misting of the wall before you start — not soaking, just taking the thirst off the brick — makes everything that follows behave.

Mixing Time Changes Color

This is the one that surprised me when I finally sat down and tested it, and it's the reason for that nine-in-the-morning story at the top. Mix the same recipe for three minutes and for eight minutes, point them side by side, and they will not match when they cure. Longer mixing grinds the fines, entrains more air, works the pigment more thoroughly, and can heat the mix slightly — the net effect is a darker, sometimes greyer finished joint. Short mixing leaves streaks: little veins of unblended lime, pigment, or sand color running through the joint like marble nobody asked for.

Pick a mixing time and hold it like a religion. Mine is five minutes after everything is in the mixer, every batch, timed — not "about five minutes," timed. Use a mechanical mixer if you can. Hand-mixing in a pan introduces a second variable: your arms. By batch six your strokes are slower and shallower than batch one, and the color drifts with them. If you hand-mix the test panel and machine-mix the wall, you've made two different mortars. Whatever method made the approved sample, that's the method for the whole job. Same mixer, same speed, same time, same order of ingredients in. Consistency is the whole game.

The Bucket Brigade

On a long repointing run, the system matters as much as the recipe. You can't have the mixer also doing the pointing, because every time he walks away from the mixer, the timing breaks. Set up a bucket brigade: one man mixes on a clock, one man runs buckets to the wall, one man points. The mixer never touches the wall. The pointer never touches the mixer. The runner keeps the rhythm.

Stagger the batches so the pointer never stands around waiting and never has to use mortar that's past its working life. On a hot Texas day that working life can be as short as an

hour and a half. Plan your batch size so a batch gets used inside its window. And when a batch goes past it — when it's getting stiff, when it's starting to set — it goes on the ground, not in the joints. Retempering with water weakens the mortar and lightens the color, and one lightened bucket in the middle of a wall reads like a stain forever.

Even with two people, split the roles: one mixes on schedule, one points. The discipline is the point, not the headcount.

Test Panels and the Recipe Card

Never commit a recipe to a wall without a test panel. Not a smear on cardboard — a real panel with real joints, same width and depth, pointed and tooled like the wall. Then let it cure. Wet mortar is always darker. Mortar color changes as it hydrates and dries, and you cannot judge a match on day one. Get the homeowner's approval on a cured panel — I tell folks to give it at least a few days, ideally a week or more — and then mix exactly that recipe for the wall. If you change anything after the panel is approved, the panel is worthless. Make a new one.

And write the recipe down. Every job gets a recipe card in my truck: sand source and type, cement brand and type, lime,

pigment color and weight in grams, water volume, mixing time, mixer type, batch size. Date it, name the job, keep it. That card is worth real money: the neighbor's match starts from the card instead of from scratch, and a callback two years later gets an answer instead of a guess.

Field Notes

- Batch by volume with the same marked container every time — a shovel is not a measuring device.
- Weigh pigment in grams on a cheap kitchen scale; two grams either way shows on the finished wall.
- Buy all your sand up front from the same pile; sand color drives mortar color more than anything else.
- Measure your water and never retemper a setting batch — throw it out and mix fresh.
- Dampen dry brick before pointing so the units don't suck the water out of your joints.
- Mix the same number of minutes every batch, timed; overmixing darkens, undermixing streaks.
- Run a bucket brigade: mixer mixes on a clock, pointer points, nobody crosses roles mid-run.
- Make a real test panel, cure it, get approval on the cured color — then change nothing.

- Write a recipe card for every job: sand, cement, lime, pigment weight, water, mix time. Keep it.

Chapter 8: Joint Profiles and Tooling: The Visual Fingerprint

I once matched a mortar color dead-on — weighed the pigment, tested the panel, got the cured color right — and the homeowner still said it looked wrong. I went back out there ready to argue. The color was right. The joints were wrong. The old work was a weathered profile and my new work was concave, and side by side they read like two different colors even though the mortar in the pan was identical. That day I learned that a joint's shape is a visual fingerprint. The profile controls the shadow line, the shadow line controls how the eye reads the color, and two different profiles in the same mortar will look like two different mortars. Match the color and you have done half the job. Match the profile and the other half takes care of itself.

Every repointing job starts with the same question: what profile is already on this building? Not what profile you like. Not what profile is easiest. What's there. The rule is simple: put back what was there. A house has one joint language, and your repair work should speak it.

The Five Profiles You'll Actually See

Concave. The rounded joint, tooled with a curved jointer. This is the most common profile on modern work, and for good reason: the rounded surface sheds water well, the compressed face is dense and durable, and it gives a clean, finished look. On most houses built in the last forty years, odds are it's concave. When you repoint concave work, the width of your jointer matters as much as anything — a half-inch jointer run through three-eighths joints leaves a radius that doesn't match the original, and the shadow line will be off just enough to bug the eye.

Weathered. Sloped from the top of the joint down and out, so the face of the mortar sits back at the top and flush at the bottom. It sheds water aggressively off the wall. You'll see it on older homes, around windowsills, and anywhere a builder wanted water to get off the brick fast. Tooling it takes a steady hand and a flat striking tool held at the right angle — it's a profile where the angle of your wrist becomes part of the recipe.

V-joint (V-tooled). A crisp V pressed into the joint, giving a sharp, deep shadow line. It's decorative — it dresses up plain brick, and you'll see it on garden walls, veneer accents, and

commercial facades where somebody wanted the brickwork to look sharp. The shadow line is the whole point of a V-joint, so the depth and crispness of the V is what you're matching. A shallow, tired V next to a deep original V reads as a different color because the shadow is weaker.

Flush. Struck flat and even with the face of the brick, usually with a trowel or a piece of wood. It's the modern, minimal look, and it shows up on contemporary homes and commercial work. But flush joints weather faster — the flat face takes the full force of rain and sun — and they don't shed water as well as a tooled profile. When you're matching a flush joint, the finish of the strike matters: a slick steel-trowel finish reads differently than a sponge finish, because the surface texture changes how light scatters off it.

Raked. Recessed back from the face of the brick, usually about a half inch, leaving a deep, dramatic shadow. It's a historic look — you'll see it on old farmhouses, mission-style buildings, and a lot of the older work out here in the country. That deep shadow is beautiful and it is also a water risk: a raked joint holds water on the ledge instead of shedding it, so it needs sound mortar behind it and good drainage. When matching raked work, the depth of the rake is the

measurement that matters. A quarter-inch difference in depth changes the shadow line completely.

Striking Technique and Timing

The profile is set when you strike the joint — and striking is a timing game. Too wet, and the tool smears the mortar, drags sand out of the mix, and leaves a weak, light skin on the surface that will dust off in a year. Too dry, and the mortar crumbles under the tool, the profile breaks up, and you get a rough, open face that won't take a clean edge. There's a window in the middle where the mortar takes the tool like it was made for it, and the whole job is recognizing that window and working inside it.

The test I teach is the thumbprint test. Press your thumb into the joint. If it leaves a clean print without mortar sticking to your thumb, it's ready to strike. If mortar sticks to your thumb, it's too wet — wait. If your thumb barely dents it and the edges crumble, it's too dry — you've missed it, and on a real job that joint needs to be cut out and redone, not tooled harder.

Striking itself should be one steady pass, not a back-and-forth sawing motion. Sawing the tool back and forth works the

surface unevenly, leaves chatter marks, and pulls fines to the surface in streaks. One pass, steady pressure, steady speed, lift clean at the end. And here's the part nobody thinks about: your pressure is part of the color. A heavy hand compresses the surface tighter, making it denser and slightly darker; a light hand leaves it more open and lighter. If you strike the test panel with a light touch and the wall with a heavy one, you've changed the color with your wrist. Same pressure, every joint, every day.

How Profile Affects Perceived Color

This is the physics behind the story at the top of the chapter. The eye doesn't read mortar color in a vacuum — it reads it in the context of light and shadow. A concave joint curves away from the light at the edges, which puts a soft shadow along each side of the joint; that shadow darkens the joint's apparent color. A raked joint, recessed deep, sits mostly in shadow — it reads significantly darker than the same mortar struck flush, which takes full light across its face and reads lightest of all. A V-joint puts one hard dark line down the center.

So when a homeowner looks at your repointing and says "it's too dark," the first question isn't about the pigment — it's

about the profile. Did you tool it deeper than the original? Is your jointer a different width? Same mortar, different profile, different apparent color. I've seen a perfect color match fail an inspection of a picky eye purely because the new concave joints were struck a hair deeper than the old ones, and the extra shadow read as extra darkness. On the flip side, when the profile is exactly right, the eye forgives a surprising amount — the matching shadow lines tell the brain "same wall" before the brain gets around to comparing pigment.

Matching the Original Tool

The original mason's tool left its signature in the joints, and your job is to forge that signature. Look at the width, the radius, and the finish. Measure the joint width — don't eyeball it — and pick a jointer that fits the joint, not the one that's already in your pouch. Look at the radius of the concave curve: a tight radius from a small jointer looks different from the broad, shallow curve of a big one. Look at whether the original was struck once or worked over, whether the edges are crisp or soft.

Where the new work meets the old, feather the profile. Don't end your new joints with a hard stop against the old work — run the tool past the repair line a few joints into the original

so the profile transitions instead of stepping. The eye catches steps. It glides over transitions.

And one practical note for old, soft brick: the building may have been pointed originally in a lime-rich mortar that's softer than what you're tempted to use. The profile you choose has to suit the mortar, and the mortar has to suit the brick. Hard mortar on soft historic brick causes the brick faces to spall while the joints sit there perfect — the joint outlives the wall, which is backwards. If the building is historic or the brick is soft and crumbly, that's the moment in the book where I tell you to bring in someone who does historic masonry for a living, and if there's any question about what's load-bearing or structural, get a structural engineer to look at it before you touch anything. Fifty years in the field taught me what I know; it also taught me where my knowledge stops.

Field Notes

- The rule is "put back what was there" — match the existing profile, don't upgrade it.
- Know your five: concave (modern standard), weathered (sheds water, older homes), V-joint (decorative shadow line), flush (modern, weathers

fastest), raked (historic, deep shadow, water risk).

- Strike in the window: use the thumbprint test — clean print, no sticking, no crumbling.
- One steady pass with the tool, not a back-and-forth saw; steady pressure, steady speed.
- Your striking pressure changes the apparent color — heavy hand reads darker, light hand reads lighter. Keep it constant.
- Profile controls shadow, shadow controls perceived color: same mortar struck differently looks like different mortar.
- Match the original tool's width and radius; measure the joints, don't eyeball them.
- Feather new work into old at the repair line so the profile transitions instead of stepping.
- Soft historic brick needs soft lime-rich mortar — and anything structural goes to a structural engineer, full stop.

Chapter 9: Curing and the Weather Window

Texas will kill your mortar in a single afternoon if you let it. I've watched good mortar die in four hours of a July afternoon — laid up perfect in the morning, and by evening it was chalky, cracked like a dry lake bed, and light enough in color to look like a different mix. The same recipe, cured slow over three days in October, came out hard, tight, and true to the test panel. Nothing about the mixing was different. The difference was the cure. Mortar doesn't dry into strength. It cures into it. And curing takes water, time, and protection — three things a Texas summer is happy to take away from you.

Here's the science in plain English: mortar hardens by hydration. The cement in the mix reacts with water over days and weeks, growing the crystal structure that gives the joint its strength. That reaction needs water present. If the water evaporates before the reaction finishes, the reaction stops, and it doesn't restart later when it rains. Drying is not curing. A joint that dries out fast is not "done sooner" — it's unfinished, permanently. It's weaker, it shrinks, it cracks, and it finishes in a blotchy, uneven color that no amount of pigment can fix after the fact.

So curing is the last step of the color match and the first step of the warranty. Get it right and everything you did in Chapters 7 and 8 pays off. Rush it and you can undo all of it in one hot afternoon.

Slow Cure Is the Whole Game

The goal is simple: keep the mortar damp — not wet, damp — for as long as it takes to cure through. In normal weather that means keeping the joints from drying out for at least three days, longer in heat. The enemy is evaporation, and evaporation has three accelerators: heat, wind, and low humidity. A Texas summer gives you all three at once. A 100-degree day with a 15-mile-an-hour wind will pull the moisture out of a fresh joint faster than the cement can use it. The surface dries, shrinks, and cracks while the inside is still soft — and once those shrinkage cracks open, they're open for good.

Misting is your main weapon. A light fog over the wall — and I mean a fog, not a hose blast — several times through the day. A hard spray drives water into the surface unevenly and can wash fines out of a fresh joint, leaving a sandy, weak face. A gentle mist just replaces what the air is stealing. I mist the wall before I start (takes the thirst off the brick, like I said

in Chapter 7), I mist at lunch, and I mist in the late afternoon, and on brutal days I'll mist again in the evening. You're not watering a garden. You're keeping the surface from ever going bone-dry while the chemistry does its work.

Wind is the silent killer that new guys underestimate. Everybody respects the heat — you can feel it. Wind you don't feel as a threat, but moving air strips moisture off a wall relentlessly. If you're working a windy exposure, you need physical protection: hang tarps or scaffold sheeting to break the wind, or drape the wall in damp burlap or curing blankets between mistings. Burlap is the old mason's trick and it still works — wet it down, hang it over the fresh work, and it holds a humid envelope against the wall that buys the mortar the time it needs.

Shade and Scheduling on Hot Days

Work the shade line. On a hot day, I plan the job around which wall is in shade when. Start on the west wall in the morning while it's still shaded, move to the north, finish on the east and south where the afternoon sun will punish fresh work the least — or better yet, don't lay fresh mortar on a south wall at two in the afternoon in August at all. A south-facing wall in a Texas July can hit 130 degrees on the surface.

Mortar laid onto that doesn't cure. It flash-dries.

On days over about 95 degrees, my rule is simple: point in the morning, protect in the afternoon. Get the mortar in the joints before ten or eleven, then spend the hot hours misting, shading, and covering. No fresh mortar goes in after early afternoon on a scorcher unless that wall is fully shaded and you're committed to misting it all evening. And keep your materials cool too — a pan of mortar sitting in direct sun will go off in half the normal time, and hot mixing water accelerates the set. Mix in the shade, keep the pans covered, and cut your batch sizes so every batch gets used inside its working window.

The Cold Side: The 40-Degree Rule

Cold is the other end of the same problem. Hydration slows down as temperature drops, and somewhere around 40 degrees Fahrenheit it slows to a crawl. Below freezing, water in the fresh mortar turns to ice, expands, and destroys the joint from the inside — mortar that freezes before it cures is ruined, not delayed. Ruined.

My rule of thumb: don't lay mortar when it's below 40 degrees and falling, and make sure it stays above freezing for

several days after. "40 and rising" is the phrase. If the forecast says 38 overnight two days from now, that fresh wall is at risk. For late fall and winter work, that means heated enclosures — tent the work, run heat, keep the wall and the materials above 40 around the clock until the mortar has had time to gain strength. It also means never laying mortar on frozen masonry. A frosty brick sucks heat out of the joint and freezes it from the contact face outward, and you'll get bond failure you won't see until spring. If the wall is frosted, you're not working that day. Full stop.

Rain: The Forecast Is Part of the Job

Rain on fresh mortar is a color-match disaster. A hard rain inside the first day or two washes fines and lime out of the joint surface, leaving a sandy, eroded face that cures lighter and weaker than the protected work around it — blotches and streaks that follow the drip lines. Even a light rain on mortar that's only hours old can spot the finish.

The forecast is part of the job plan, not something you check over coffee. If there's a real chance of rain within 24 hours of striking a wall, you tent it or you don't start. Keep tarps and a way to hang them on the truck during the rainy season — it's cheap insurance. And if rain catches you despite the

planning, be honest about what happened: a washed joint isn't a joint you can "touch up." It needs to come out and go back in. Trying to skim over rain damage just buries a weak, off-color layer under a thin skin that will fail first.

What Rushing the Cure Looks Like

When you rush a cure, the wall tells on you in three ways. First, shrinkage cracks — hairline cracks along the bond line where the mortar meets the brick, caused by the surface drying and shrinking while the joint is still plastic underneath. Too much mixing water plus fast drying is the classic recipe. Second, color blotches — uneven drying across the wall. Half the wall in full sun and half in shade dries at two different rates and finishes in two different tones, and the line between them follows the shadow exactly. Cure evenly or don't be surprised. Third, a dusty, chalky surface that rubs off on your hand — that's mortar that dried before it hydrated, and it's weak all the way through, not just on the surface.

All three are preventable, and all three are permanent once they're in. That's why this chapter exists. Mixing and tooling get the attention because they're the visible craft. Curing is invisible, slow, and boring — and it decides whether the

visible craft survives.

The Curing Routine

Here's the routine, the one I run on every job. Dampen the wall before pointing. Point in the morning on hot days; work the shade line. Mist lightly through the day — fog, not blast. Break the wind with tarps or hang damp burlap on exposed work. Keep fresh work above 40 degrees and never lay on frozen masonry. Watch the forecast and tent ahead of rain, not during it. And tell the homeowner the truth about color: the final color isn't set until the mortar is cured. A wall that's two days old is still changing. Judge the match on cured work, the same way you approved the test panel — cured.

Do that, and the wall you walk away from is the wall that stays. The color holds, the joints stay tight, and nobody's calling you back in six months pointing at cracks. In this business, the cheapest callback is the one you prevented with a garden mister and a cheap tarp.

Field Notes

- Mortar cures by hydration, not by drying — if the water leaves before the chemistry finishes, the joint is permanently weak.

- Mist fresh work with a light fog through the day; never blast it with a hard spray.
- Wind strips moisture as fast as heat — break it with tarps or hang damp burlap over exposed work.
- Work the shade line on hot days: point in the morning, protect in the afternoon; no fresh mortar on a blazing south wall at 2 PM.
- Cold rule of thumb: 40°F and rising to lay, above freezing for days after; never lay mortar on frozen masonry.
- The forecast is part of the job plan — tent ahead of rain; rain-washed joints come out and go back in, no skim-coating over damage.
- Rushing the cure causes shrinkage cracks, color blotches, and chalky weak surfaces — all permanent once they're in.
- Tell the homeowner the final color isn't set until the mortar is cured; judge the match on cured work only.

Chapter 10: When It Doesn't Match: The Troubleshooting Guide

Picture this — and I'm making this house up, but I bet you've stood in front of one just like it. A brick ranch in Fort Worth, built in 1978, with a cracked mortar joint running across the front wall that somebody tried to fix last spring. The repair itself is solid — good bond, clean tooling, no cracks coming back. But from the curb, that new mortar screams. It's a fresh gray stripe cutting right through the warm, weathered tan of the original wall, and every time the homeowner pulls into the driveway, that's all they see.

That's the moment that separates a mason who can lay mortar from a mason who can *match* mortar. Anybody can grind out a joint and pack it full. Making it disappear is the trade. And when it doesn't match — when you step back and that patch is staring at you — you don't panic, and you don't start throwing guesses at it. You troubleshoot, one variable at a time, like you'd troubleshoot anything else in this trade. This chapter is my field guide for doing exactly that.

Name the Miss Before You Fix It

The first thing I do when a match is off is stop and name exactly what's wrong, because "it doesn't match" is not a diagnosis. There are only four things that can be off: the hue, the value, the texture, or the profile. That's the whole list.

Hue is the actual color family. Is the new joint too gray when the old is tan? Too brown when the old is reddish? Too pink, too white, too yellow? Hue misses come from the wrong sand or the wrong pigment — or the right pigment in the wrong amount. Sand is the biggest color contributor in any mortar mix, bigger than most people think. Change the sand, you change the hue. A coarse washed sand from one pit can read three shades different from a fine sand from another, and if you matched with one sand in the shop and mixed with another on the job, you've got a hue miss before you ever add a drop of color.

Value is how light or dark it reads, regardless of the color family. The hue can be dead-on — both joints are gray — but the new one is a shade darker or lighter than the old. Value misses are the most common miss in repointing work, and they're sneaky, because the number-one cause of a value miss is one I built half this chapter around: judging wet

mortar against dry. Fresh mortar, even with zero pigment in it, reads darker than the same mortar will read in a week. I'll come back to that.

Texture is the grit and grain you see and feel in the joint. Old lime mortar from the 1920s is soft and sandy to the touch — you can scratch it with a key. New Portland-cement mortar is hard and tight, and even when the color is right, the new joint can look slick and mechanical next to the old, like a printed photo next to a watercolor. Texture misses come from the wrong sand gradation, too much cement in the mix, or tooling that doesn't replicate the original finish.

Profile is the shape of the joint — concave, V, flush, struck, grapevine. If the original wall is a weathered concave joint and you come in with a flush tooled joint, the light hits it differently and the whole patch stands out even if the color is perfect. The profile of the old joint is set by whoever tooled it fifty years ago, and your job is to copy what they did, not improve on it.

Here's the discipline part: change one variable at a time. If you change the sand, the pigment, and the tooling all at once and the next patch looks better, you don't know which change fixed it — and you'll never be able to repeat it. When

a patch misses, I write down what I mixed, then I change *one thing* in the next test batch. Slow, boring, and it works every time.

Wet Lies. Dry Tells the Truth.

This is the rule I drill into every man I've ever trained, and it's the rule that causes more bad matches than every other cause put together: never judge a match on wet mortar.

Water darkens everything. Take a perfectly matched dry sample, spray it with a hose, and watch it turn a shade darker in ten seconds. Fresh mortar out of the trowel is wet through, and it will read darker than the final cured joint — sometimes a little, sometimes a full value step. I've watched masons add more pigment to a patch because "it looks too light," only to have it cure up two shades darker than the wall. They were chasing a wet read.

The honest comparison is dry to dry. When I put a test patch on a customer's wall, I tell them straight: "That patch will look darker today than it will in three days. Don't judge it till it's dry." I give every test panel a full 48 to 72 hours before I make a call on value. Lime-based mixes can keep lightening as they carbonate over a week or more, so on historic work

I'll sometimes wait longer — but never less than three dry days before I decide a value miss is real.

There's a second trap hiding inside this one: rain re-wets. A joint that matched perfectly in dry weather can read darker than the old mortar after a rain, because the new mortar is denser and holds surface water longer than the old, weathered joints. If your customer calls you after the first rain and says "it looks darker," ask them to check it again when everything's been dry for three days. Nine times out of ten, the match is fine — it just needed to dry. But know this going in, because a weathered old joint and a fresh dense joint will always read a little different when wet. That's not a miss. That's physics.

Let the Test Panel Weather a Week

On any job where the match has to be close — the front of the house, a historic property, anything the customer is going to stare at every day — I don't match from a sample board in the shop. I put test panels directly on the wall, in the same exposure as the work, and I let them weather for a week before I call it.

Sun, dew, and rain all change the read. A south-facing wall in

Texas sun will bleach a patch faster than the shaded north side of the same house. Morning dew lays a thin mineral film on fresh mortar. A week of weather shows you what the patch is actually going to look like when it lives on that wall — which is the only thing that matters.

Pick the least visible spot that still has the same exposure as the repair area. Around the side of the house, behind a shrub, up near the eave — somewhere the customer won't notice a few little test smears. Trowel three or four small patches, each one a slightly different mix, right next to each other on the existing wall. Label them — a scrap of tape with a number, and a matching note in your notebook with the exact recipe for each one. Wait a week. Then compare.

What you're looking for at the end of that week isn't just the closest patch — it's how the patches moved. Did patch number two lighten up to meet the wall? Did number four stay dark? That movement tells you which recipe is going to live right on that wall for the next twenty years, not just look right on day one.

Adjust Pigments in Small Steps

When the miss is a hue or value problem and you're

adjusting with mineral pigments, the rule is small steps, measured amounts, and written notes. Pigment is powerful stuff — a quarter-percent change in iron oxide can shift a whole batch visibly — and once you've over-darkened a batch, you can't un-darken it. You can only dilute it with more unpigmented mix, which throws off your ratios.

I do all my pigment adjustments on small trial batches. A cup of sand, a measured scoop of cement and lime, and the pigment weighed or measured the same way every time — a small kitchen scale is the most valuable tool in color matching, and it costs less than a bag of mortar. Mix the trial batch, trowel it onto the test board or the wall, and write the recipe down. Every batch. No exceptions. The notebook is the match — the mortar is just the proof.

Adjust one thing at a time and give each adjustment room to show itself. If the wall is tan and your patch is gray, add a small measured amount of your brown/yellow pigment to the next trial — don't also change the sand at the same time. And work from your reference library of past matches (I'll lay out the whole reference-jar system in the next chapter), because starting from a recipe that was close on a similar brick three months ago beats starting from scratch every time.

One more discipline point: never scale up a batch you haven't confirmed at small scale. The full batch for the job doesn't get mixed until a small trial patch has been on the wall, dry, for at least three days and you're satisfied with it. I don't care how confident you feel. Mix small, confirm, then mix the working batch at the exact same ratios. Mortar matching rewards the patient and punishes the confident.

Texture and Tooling: The Other Half

A lot of misses that get blamed on color are actually texture or tooling misses. If the color is right but the patch still stands out, run your finger over the old joint and then over your new one. Feel the difference? The old joint is probably softer, sandier, maybe a little pitted from decades of weather. Your new joint is harder and smoother. Even when the hue and value match, that difference in surface makes the light bounce differently, and the eye picks it up.

The fix starts in the mix. Old lime mortars were sand-rich — often one part binder to two or three parts sand — which is why they're soft and grainy. If you're repointing a historic wall, your mix needs to be sand-rich too, not just for the look but for compatibility: a hard modern mortar on a soft old wall causes more damage than it fixes, because the wall can't

flex and the new joint can't absorb moisture the way the old one did. Match the *system*, not just the color. And when a wall is old enough or important enough that the mix design matters, get the mortar tested or talk to a preservation specialist — that's beyond matching and into materials science, and I say that as a man with fifty years in the field.

Tooling is the other half of texture. Whatever profile the original mason used, copy it with the same kind of tool. A concave joint needs a jointer run when the mortar is thumbprint-hard. A flush joint needs the trowel held flat. And weathered joints have soft, rounded edges from years of erosion — you can fake a little of that by running a soft brush lightly over the finished joint to knock the crisp edges down. It's a small thing, and it closes the gap on a lot of "almost" matches.

The Hard Call: Tear It Out or Let It Weather

Here's the call nobody likes making, and you will make it on real jobs: the patch is in, it's cured, and it's still off. Do you tear it out and redo it, or do you tell the customer to give it time?

My rule is simple and I don't bend it: **if the miss is a full**

value step or a wrong hue, you tear it out now. A joint that's a whole shade too dark, or gray when the wall is tan, is not going to weather its way into a match. Weathering softens edges — it lightens a slightly dark patch as the surface carbonates and the sun bleaches it, it rounds off the crisp "new work" look. What weathering does *not* do is change gray to tan. Hoping time will fix a real miss is how you lose a customer and a reputation in the same move.

But if the color is close and the texture and profile are right, weathering will close the gap more often than not.

A patch that's a hair dark but otherwise right will lighten as it cures and carbonates. The crisp edges will soften. In six months, most people won't be able to find it. In that case, the honest move is to show the customer the match now, explain what weathering will do, and put it in writing — "new mortar typically lightens over the first 60 to 90 days as it cures." Set the expectation before they set it themselves.

And there's a third option most masons forget: blend the transition. If the repair area is a patch of new joints sitting in a field of old, the eye is drawn to the boundary. Sometimes repointing a few extra joints around the repair — feathering the new work out into the old — breaks up the hard line and

makes the whole area read as one wall. It costs you a little extra labor, and on the right job it's the difference between a repair that shows and a repair that disappears.

One thing you never do: you never paint it, you never stain over a bad match to hide it, and you never caulk over mortar joints to fake a color. A coating over a bad match is a confession that the match failed, and coatings fail — they peel, they trap moisture, they turn a small problem into a big one. If the match is wrong, the mortar comes out and the mortar goes back in. That's the trade.

Field Notes

- **Name the miss before you fix it:** hue, value, texture, or profile — change one variable at a time so you know what worked.
- **Wet mortar always reads darker than dry:** give every test patch 48 to 72 hours dry before judging the match, and expect rain to re-darken new work temporarily.
- **Weather your test panels a full week** on the wall, in the same exposure as the repair, before calling a match final.
- **Adjust pigments in small, measured steps on trial**

batches only — write down every recipe, and never scale up a batch you haven't confirmed small.

- **If it's a full shade off or the wrong hue, tear it out now.** If it's close with the right texture and profile, weathering will usually close the gap — set that expectation in writing with the customer.
- **Never paint, stain, or caulk over a bad match.** The mortar comes out and goes back in right. That's the trade, and it's what your reputation is built on.

Chapter 11: The Mortar Bucket Method

Early in my career I did what most masons do: I matched the mortar in the shop. I'd look at a chunk of old mortar the customer brought me, or a photo on my phone, and I'd mix up what I thought was a match on the bench back at the yard. Then I'd drive to the job, trowel it in, and stand back to admire work that looked right in my shop and wrong on their wall. The light was different. The sand looked different against their brick. The old joints were weathered in a way my shop sample wasn't. And there I'd be, standing in somebody's driveway, mixing batch number two with the customer watching.

The Mortar Bucket method is what I built to kill that problem forever. It is my field-developed system for dialing in a mortar match on the customer's wall before I ever mix a full batch. Everything happens at the wall, in daylight, against the actual brick and the actual old joints. It's not a product, it's not engineered — it's a disciplined way of working that I've refined over decades of repointing Texas brick. It goes by the name Mortar Bucket because the whole kit fits in a five-gallon bucket, and because the method lives in the field, not

in a laboratory.

Why the Wall Is the Only Honest Judge

Mortar doesn't live in your shop. It lives on a wall, in Texas sun, next to a specific brick, surrounded by joints that have weathered for thirty, fifty, eighty years. Every one of those things changes how a color reads. The brick itself throws reflected color onto the joint — a dark red brick makes mortar look lighter by contrast, a pale brick makes the same mortar look darker. The lighting on the wall is different every hour of the day. The old joints have patina — mineral deposits, dust worked into the surface, softened edges — that no fresh sample in your shop can replicate.

So the first principle of the Mortar Bucket method is simple: **do the matching at the wall, not before you get there.** Bring your dry ingredients with you. Mix small trial batches on site. Trowel test patches directly onto the existing wall, right next to the area you're going to repair. The wall is the judge, the jury, and the customer, all at once — and it's the only judge whose opinion counts.

This means your truck carries a matching kit, not a pre-mixed guess. In my bucket: a few bags of the sands I use

most, small sealed bags of my mineral pigments, a measuring scoop and a small scale, a margin trowel, a couple of jointers, a spray bottle, a notebook and a pencil, and a stack of small jars. That bucket rides with me on every repointing job, and the matching happens on site, every time, no exceptions.

Small Test Patches First: The Discipline

The second principle is the one most masons skip because it feels slow: **no full batch gets mixed until a small test patch has proven itself on the wall.** This is the discipline from the last chapter, turned into a system.

When I get to the job, before I grind a single joint, I mix three or four tiny trial batches — each one a slightly different recipe, each one written down in the notebook with the exact proportions. I trowel a small patch of each directly onto the wall, right beside an original joint, in the area with the same exposure as the repair. Each patch is maybe the size of my hand. I label them with a strip of tape and a number that matches the notebook entry.

Then I walk away. I do the prep work — the grinding, the cleaning, the setup — while those patches start to cure. By the time the joints are ready for mortar, the test patches have

had hours to start showing their true color, and I come back and compare. The patches tell me which recipe is right, and the notebook tells me how to repeat it at scale. Only then do I mix the working batch.

I know what you're thinking, because every young mason I've trained has thought it: this takes too long. And I'll tell you what I tell them — it takes twenty minutes of mixing and an hour of patience, and it saves you the four hours of grinding out a wrong batch while the customer watches. The fast way is the slow way. The patient way is the fast way.

Working in Daylight — The Right Daylight

The third principle is about light, and it's the one that surprises people: **you match in natural daylight, and not just any daylight.**

Mortar is judged by reflected light, and reflected light changes through the day. The harsh overhead sun at high noon flattens everything out — colors wash, and two different shades can look identical at noon and completely different at four in the afternoon. Porch lights, work lights, and garage fluorescents are worse — they throw their own color cast onto everything, and a match made under a yellow

porch light will be wrong in daylight, guaranteed.

I do my matching in morning light before about ten, or in late afternoon — and I check the patches at both times if I can. The steadiest light is on the north side of a building, where you get even, indirect daylight without the sun hammering the wall. But most of the time you're matching on the side of the house where the damage is, so you work with what you've got: you match at the time of day when the customer is actually going to see the wall. A front-of-house repair gets matched in the light that hits the front of the house.

One practical rule: never finalize a match under artificial light. If the sun goes down before you've called it, you wait till morning. I've had customers ask me to "just pick one" at dusk, and I tell them the same thing every time — I'd rather come back in the morning and get it right than pick it tonight and grind it out next week. That one sentence has saved me more rework than any tool I own.

Arm's Length and the Ten-Foot Rule

The fourth principle is how you look at the patch: **compare at arm's length, then judge at ten feet.**

The arm's-length comparison is the technical read. Hold your

notebook next to the wall, stand close, and look at the test patch against the original joint right beside it. This is where you check hue and value precisely — is the patch grayer, browner, darker, lighter? This close read tells you what to adjust in the next trial batch.

But the close read is not the final verdict, because nobody lives at arm's length from a brick wall. The final verdict is the ten-foot rule: step back ten feet and look at the wall the way the homeowner sees it every day. From ten feet, a good match disappears. You can't find the test patches. The wall reads as one wall. From ten feet, a bad match still shows — the eye goes straight to it, the same way it goes to a picture hanging crooked.

I use both reads every time. The close read tells me what to mix. The ten-foot read tells me whether it's done. And I make the customer do the ten-foot read with me — I walk them back and ask, "Can you find the test patches?" When they can't, the match is sold, and I haven't said a word of sales talk. The wall did the selling.

The Reference-Jar Library

The fifth principle is the one that turns the method from a

technique into an asset: **keep a reference jar of every match you ever make.**

Every time I dial in a match on a job, I fill a small jar — a baby-food jar, a small mason jar, whatever's handy — with the dry mix of the winning recipe: the sand, the cement and lime proportions, the pigment, all dry, sealed with the lid tight. On the label I write the date, the job location (town, not the customer's name — no customer information on the jars), the brick description, and the exact recipe from my notebook. The jar goes on a shelf in my shop, organized by color family.

Over the years, that shelf becomes a library. I've got jars going back decades — warm tans from the 90s subdivisions, the gray-reds of the old Fort Worth brick, the pale buffs of the limestone country out west. When I pull up to a new job and the old mortar looks familiar, I pull the jars that are close, take them to the wall, and hold the dried mixes against the original joints in daylight. Nine times out of ten, I'm starting from a recipe that's already eighty percent right, and the test patches are just fine-tuning instead of starting from zero.

This is what compounds in this trade. The mason who starts every match from scratch is working just as hard on his five-hundredth match as on his first. The mason with a reference

library gets faster and more accurate every year, because every job makes the next job easier. The jars are the memory of every wall I've ever matched, sitting on a shelf, waiting to work for me again.

Putting It All Together

So the Mortar Bucket method, start to finish, on a real job: I arrive with the bucket, not a pre-mixed guess. I mix three or four small trial batches on site and trowel test patches onto the wall beside the repair area, each one labeled and logged in the notebook. I work in natural daylight and refuse to finalize under artificial light. I compare at arm's length to adjust, and I judge at ten feet to decide. I check the patches against my reference jars for a head start. I give the patches time — hours at minimum, and on a front-of-house or historic job, I leave test panels to weather and come back. Only when a patch disappears at ten feet do I mix the working batch, at the exact ratios the notebook says.

That's it. That's the whole method. There's nothing magic in it — it's five disciplines, followed every time, on every job. The magic, if there is any, is in the refusal to skip steps. The wall is the judge. Daylight is the light. Small batches are the discipline. Ten feet is the verdict. And the jars are the

memory.

Folks ask me sometimes whether the Mortar Bucket is something I invented, and I'll tell you straight — I didn't invent mortar, I didn't invent pigment, and I didn't invent the idea of testing before you commit. What I did was put the disciplines together into a system I can teach, a system that works on every wall in Texas, and a system that's made my repointing work disappear into the original wall job after job, year after year. It's field-developed, the hard way, one wall at a time. That's the only credential I'll ever claim for it, and it's the only one that's ever mattered.

Field Notes

- **Match at the wall, not in the shop:** bring dry ingredients and mix trial batches on site — the wall, the brick, and the real light are the only honest judges.
- **No full batch until a small test patch proves itself:** mix three or four labeled trial patches first, log every recipe in the notebook, and let the patches guide the working batch.
- **Match in natural daylight and never finalize under artificial light:** morning or late-afternoon light, and check the patches when the customer will actually see

the wall.

- **Compare at arm's length, judge at ten feet:** the close read tells you what to adjust; the ten-foot read tells you whether the match disappears the way the homeowner will see it.
- **Keep a reference jar of every winning match:** dried mix, sealed, labeled with date, town, brick description, and exact recipe — organized by color family, it's a library that makes every future match faster and more accurate.
- **The system is the discipline:** five simple rules, followed every time. The Mortar Bucket method is field-developed through decades of Texas repointing work — practical, repeatable, and proven one wall at a time.

Chapter 12: The Business of Repointing

Here's a truth about this trade that nobody tells the young masons: the best mortar matcher in the county can still go broke, and a merely good matcher who runs his business right can build something that feeds his family for thirty years. The craft gets you in the door. The business keeps you in business. I've watched talented men lose their shirts because they priced by gut, promised by mouth, and kept their records in their head. And I've watched steady, unspectacular craftsmen build real companies because they priced honestly, wrote everything down, and treated every customer like a future referral. This chapter is the business side of repointing — the part that turns skill into a living.

Pricing Honestly: Square Feet and Linear Feet

Repointing is priced by measurement, not by feeling. Two units cover nearly every job you'll ever bid: the square foot, for area work, and the linear foot, for line work. Learn to measure both, price both, and explain both, and you'll never again stand in a driveway guessing at a number while the customer waits.

Square-foot pricing is for area repointing — a wall, a chimney, a section of the house where you're grinding out and repointing a field of joints. Measure the area: length times height of the section being repointed. Your square-foot price has to carry everything: the grinding and joint prep, the mortar, the repointing labor, the cleanup, the color matching work, and your overhead and profit. Don't price the labor and hope the rest takes care of itself — the matching, the test patches, the return trips are real work, and they go in the price.

Linear-foot pricing is for crack chasing, tuckpointing lines, and isolated joint repair — the crack that runs twenty feet across a wall, the separated joints above a window, the single wythe that needs attention. Measure the actual length of joint you're repairing, and price per linear foot of joint, not per linear foot of wall — a crack that zigzags through the mortar covers more joint length than the straight-line distance suggests, and you price what you work.

Whatever your numbers are — and I'm not going to hand you mine, because your costs are yours and mine are mine, and any price I print in this book would be wrong for half the men reading it — the principle is the same: **build the price**

from the costs up, not from the customer's face down.

Figure your labor hours honestly, add materials, add the matching time, add overhead — insurance, truck, tools, the time you spend bidding jobs you don't get — and add the profit that keeps you in business. Then hold that price. The mason who discounts to get the job teaches the customer that the price was never real, and teaches himself that his work isn't worth what he asked.

A word on how the money moves: I work on thirds — a third to schedule and mobilize, a third at the midpoint or at an agreed draw point, and the balance on completion when the customer is satisfied. It's written into every agreement. No mason should be financing a customer's repair out of his own pocket, and no customer should be paying in full for work that isn't done. Thirds keep both sides honest.

Samples on the Wall Sell the Job

The single best sales tool in repointing work is not a brochure, not a website, not a stack of business cards. It's a test patch on the customer's wall.

When I bid a repointing job, I bring the Mortar Bucket. I mix a small trial patch and trowel it onto the wall right there

during the estimate visit. It takes fifteen minutes. Then I step back with the homeowner and let them see it. I'm not telling them I can match their mortar — I'm showing them, on their wall, in their light. When that patch sits next to their original joints and they can't tell where one ends and the other begins, the job is sold. I didn't pitch. The wall pitched.

This does three things no sales talk can do. First, it proves the capability — the customer doesn't have to take my word for anything. Second, it sets the standard in writing before the job starts — that patch becomes the reference for what "match" means on this job, and I photograph it and note the recipe. Third, it separates you from every competitor who bid the job with words. Anybody can say "yeah, we can match it." Almost nobody shows up and does it before they've been hired. Be the one who shows up and does it.

There's a flip side to this, and it's just as valuable: sometimes the patch shows you that the match is going to be difficult — a heavily weathered wall, an unusual sand, a color that's going to take real work. Finding that out during the bid, with the customer watching, is a gift. You can price the matching work honestly, set the expectation honestly, and if the customer decides it's more than they want to spend, you've

lost an hour instead of losing a week on a job that was wrong from the start. The wall tells the truth early, if you let it.

Expectations in Writing

Every repointing job gets a written agreement. Every one. The handshake deal is how misunderstandings are born, and misunderstandings are how reputations die.

The agreement covers the scope in plain language: what area is being repointed, measured in square feet or linear feet, so there's no argument later about whether "the whole wall" included the chimney. It covers the match standard honestly — and here's where you earn trust by telling the truth: I write that the goal is a close blend with the existing mortar, and that new mortar will cure and weather over the first 60 to 90 days. I do not promise an invisible match, because no honest mason can promise that on a weathered wall, and the customer who was promised invisible will be disappointed by excellent. The customer who was promised a close, professional blend will be delighted by excellent.

The agreement covers the money: the total, the thirds, what's included and what isn't. It covers access and practical matters — water access, where the truck parks, what happens to the

shrubs under the work area. And it covers the guarantee in plain terms, which I'll get to in a moment.

Write it in language a homeowner can understand, not language that needs a lawyer to decode. One or two pages. Both sides sign. The customer gets a copy before you start. This isn't bureaucracy — it's respect. It says: I take your money seriously enough to write down exactly what you're buying.

Before and After: Your Best Marketing

Take photographs of every job. Before you touch a joint, photograph the damage — the cracks, the deteriorated mortar, the whole wall from ten feet and close-ups of the worst of it. When the job is done, photograph the same angles. The before-and-after pair is the most powerful marketing a masonry repair business can own, because it shows the only thing a homeowner actually cares about: what it looked like, and what it looks like now.

A few rules for the photos. Get the customer's permission before you photograph their house for marketing — ask at the estimate, put it in the agreement, and respect a no without a flicker. Shoot in decent light; a finished wall

photographed at dusk does your work no favors. Shoot the same angles before and after so the comparison is honest — the same ten-foot view, the same close-up. And keep them organized: job folder, date, town. In five years you'll have a library of proof that does your selling for you.

Those photos go to work everywhere: on your website, on your social media pages, in the printed leave-behind you hand the customer at the estimate, in the email you send a past customer when you're reminding them you're still in business. A homeowner deciding between three masons will pick the one whose past work they can see. Be the one whose work is visible.

Guarantees on Workmanship

Stand behind your work, in writing, and be precise about what you're standing behind. My guarantee covers workmanship: the joints I repointed will be properly bonded, properly tooled, and free of defects in execution. If a joint I packed fails because of how I packed it, I come back and make it right. That's the deal, and I put it in the agreement with a clear time frame.

What the guarantee does *not* cover is just as important to

state plainly. It doesn't cover new cracking caused by building movement, foundation settlement, or structural issues — mortar is not a structural repair, and if a wall is moving, that's a structural question for a structural engineer, not a repointing warranty. It doesn't cover damage from things outside the work — a sprinkler hammering the wall every morning, a downspout dumping water on the joints, the homeowner's teenager bouncing a basketball off the chimney. And it doesn't cover the natural weathering and aging of mortar, because mortar ages — that's what it does, and pretending otherwise is a lie that will come back on you.

The reason to be this specific isn't to dodge responsibility — it's the opposite. A precise guarantee is a *stronger* guarantee, because the customer can see exactly what they're getting, and they learn that you're a man who says what he means. Vague guarantees — "satisfaction guaranteed!" — sound good and mean nothing, and the first time there's a disagreement, they protect nobody. Say what you cover, say what you don't, put it in writing, and then honor it without argument when the time comes. The guarantee you honor cheerfully is worth ten jobs of advertising.

Building the Repeat-and-Referral Business

Here's the economics of a masonry repair business, and it's the whole game: a repointing customer is never just one job. The homeowner whose front wall you repointed has a chimney, a back wall, a mailbox, a garden bed. Their neighbor watched you work for three days and asked for your card. Their realtor saw the before-and-after and started recommending you to every buyer with a brick house. One well-done job, handled right, is worth five jobs — if you work the relationships instead of just working the wall.

The system is simple and it has four parts. **First, finish clean.** The last hour of every job is cleanup and walkthrough — the site cleaner than you found it, the customer walked around the work with you, every question answered, the final payment collected with a handshake and a thank-you. The last impression is the one they remember when the neighbor asks.

Second, follow up. A short call or message a week or two after the job: "Just checking in — how's the wall looking? Everything curing up the way we talked about?" It takes two minutes. It catches the rare problem while it's small, and it tells the customer you didn't disappear with their check.

Nobody does this. Be the one who does.

Third, ask for the review and the referral directly. When the job is done and the customer is happy — and only then — say it plainly: "If you're happy with the work, a review online would mean a lot to a small business like mine. And if you know anybody with brick that needs attention, I'd be grateful for the introduction." Don't be shy about this and don't be pushy about it. Direct, grateful, once. Most happy customers *want* to help; they just need to be asked.

Fourth, stay in front of past customers without being a pest. A once- or twice-a-year touch — a card, a message, a seasonal reminder that it's a good time to look at the chimney before winter — keeps you as the mason they think of when the next thing comes up. And build the professional referral network deliberately: realtors, property managers, home inspectors, insurance agents — the people who see damaged brick every week and need somebody they trust to send. Take them to lunch. Show them your before-and-afters. Be the name they give out.

That's the business. Price honestly from the costs up. Sell with a sample on the wall. Write everything down. Photograph everything. Guarantee your workmanship precisely and

honor it cheerfully. Then turn every finished job into the next five through follow-up, reviews, referrals, and relationships. The craft gets you in the door — this is what keeps you in business for thirty years.

Field Notes

- **Price from the costs up:** square-foot pricing for area repointing, linear-foot pricing for crack and joint line work — measure honestly, include the matching time and overhead, and hold your price.
- **A test patch on the customer's wall is your best sales tool:** it proves the match before you're hired, sets the standard in writing, and separates you from every competitor who only brought words.
- **Put every job in a written agreement:** scope in measurements, the honest match standard, the money in thirds, and the guarantee in plain language — one or two pages, both sides sign.
- **Photograph every job before and after** (with permission): same angles, decent light, organized by job — your before-and-after library is your most powerful marketing.
- **Guarantee workmanship precisely and honor it**

cheerfully: cover your execution in writing, state plainly what isn't covered (building movement, structural issues, outside damage, natural aging) — and send structural questions to a structural engineer.

- **Turn one job into five:** finish clean with a walkthrough, follow up in a week or two, ask directly for the review and the referral, and build the realtor/inspector/property-manager network deliberately.

Conclusion: The Man Who Can't Be Found

Here's where we end up: you are now the man whose work can't be found.

Stand back ten feet. That's the whole standard. Color, texture, profile, cure — four things, done right, and the repair disappears. No homeowner ever stood in a driveway and wished the patch job was a little more visible.

The matching skill is the rarest thing in this trade. Plenty of people can lay brick. A handful can repoint. Almost nobody can walk away from a wall and leave it looking like the day it was built. That scarcity is your livelihood. Price it like one.

A few things to carry forward:

The match starts before you mix. Reading the original mortar, cleaning it down to its true color, understanding what binder and sand built it — that's where jobs are won. The mixing is the easy part.

Small batches, honest tests. Nobody ever lost money on a test patch. Everybody has lost money skipping one.

Write the recipe down. Memory lies. The notebook doesn't. Your best matches become your library, and your library becomes your speed.

Match soft to soft. New mortar must never be harder than the brick it sits beside. On historic work, this isn't a preference — it's the whole game.

Cure like it matters, because it does. Texas heat is not an excuse to rush. Mist it, shade it, wait on it.

Sell the match, not the mortar. The homeowner buys the wall looking like it did. Show it on their wall before you sell it.

Keep learning every wall. Mortar from 1920, from 1975, from 2010 — each one is a teacher if you read it.

The hypotheticals in this book were invented for teaching.
The work isn't hypothetical. Go put it on a wall.

— Travis

Resources & Next Steps

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

- **Champion Brick Repair** — brick & masonry repair, Dallas–Fort Worth — [championbrickrepair.com] (<https://championbrickrepair.com>) — (817) 900-6324
- **Metro Foundation Repair** — pressed concrete pile foundation repair — [metrofoundationrepair.com] (<https://metrofoundationrepair.com>) — (817) 523-1540
- **LintelLOCK** — the field-developed lintel replacement system — [lintlerepair.com](<https://lintlerepair.com>) — (469) 730-0650
- **MortarMagic** — mortar color matching & the Mortar Bucket — [mortarmagic.netlify.app](<https://mortarmagic.netlify.app>)

- **WhiteStone Construction** — stone, ranch & property work, Hamilton TX country — (254) 723-5040

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