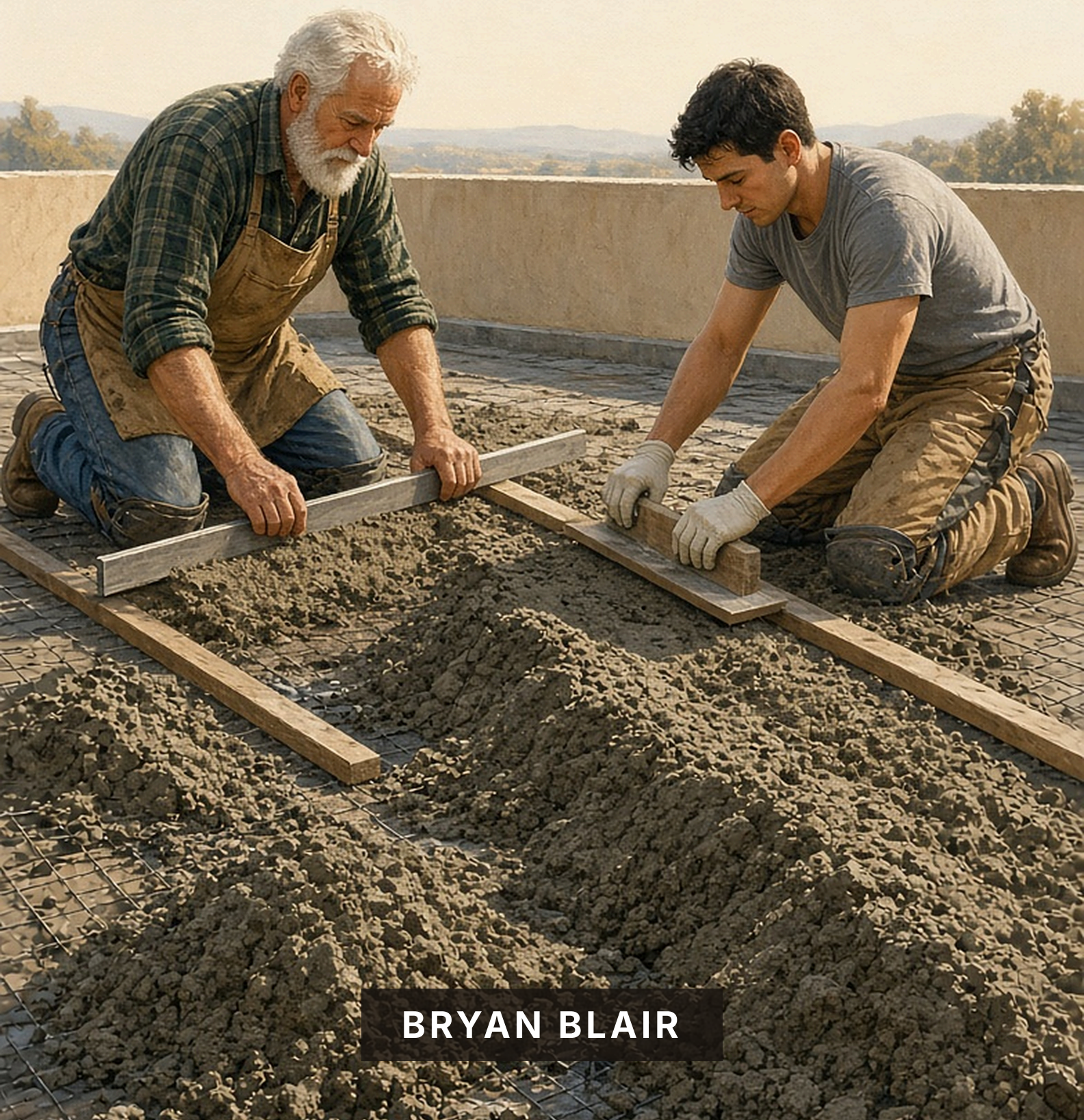


From the Mud Up

A Four-Year Apprenticeship in Three Trades

Tile and Stone · Plumbing · Carpentry · for Kitchens and Baths



BRYAN BLAIR

From the Mud Up

A Four-Year Apprenticeship in Three Trades

Tile and Stone, Plumbing, and Carpentry for Kitchens and Baths

Bryan Blair

From the Mud Up

A Four-Year Apprenticeship in Three Trades

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This book teaches the methods the author has used on the job for four decades. It is not a substitute for the building and plumbing codes, permits, inspections and manufacturers' instructions that apply to your work. Codes change, and every city adds its own rules: check with your building department. Learn and work under a qualified journeyman, and work safely.

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How to use this book

This book is a four-year program. You learn it on the job, every day, next to someone who already knows how. It is not a weekend course, and reading it will not make you a tile setter. Doing the work will. The book tells you what to do, in what order, and how good it has to be before you move on.

An old trade, and a profession

This is an apprenticeship in the oldest sense. For hundreds of years, the building trades have been handed down the same way: an apprentice learns by hand from a master, becomes a journeyman, and one day becomes a master who teaches the next one. This book keeps that tradition. It doesn't replace it.

In today's terms, becoming a licensed tradesman is also a professional education, the same as becoming a doctor, an accountant or an architect.

- A doctor goes to school, trains for years under supervision, passes board exams and gets a license.
- An accountant studies, works under licensed accountants, passes the CPA exam and gets a license.
- An architect studies, logs thousands of hours of supervised work, passes the licensing exams and gets a license.

A tradesman follows the same path: four years of training on the job and in study, a year working at journey level, the state's licensing exams, and a license. Like those professions, it comes with a code of conduct. And like them, the learning never stops.

How this book lines up with those professions:

- **The eight periods** are your schooling and your residency.
- **The sign-off lists** are your competencies: skills you've proven, not just studied.
- **Your log book** is your record of supervised hours, the proof the state will ask for.
- **The journeyman test** is your boards.
- **The CSLB exams and your license** are your license to practice.
- **The Honor section** is your professional code.

Who it's for

- **Apprentices** starting in tile and stone, or helpers who want to become setters.
- **Contractors** training a helper, who want a program that's already laid out.
- **Journeymen** who learned on board and foam systems and want to learn mortar-bed work.
- **Serious homeowners** who want to know what good work looks like before they hire someone.

How the program is built

The program runs four years, split into **eight periods**. Each period is about six months, or roughly 1,000 hours on the job. You don't skip ahead. Each period builds on the one before it, the same way a brown coat builds on a scratch coat.

Every period has the same parts:

1. **What you'll be able to do** by the end of it.
2. **The lessons:** the knowledge, the numbers and the methods.
3. **On the job:** what your days look like during that period.
4. **Shop rules:** the things I insist on, learned the hard way.
5. **Sign-off list:** the skills your journeyman checks off before you move up.

Your log book

Keep a log from your first day. One page per day is enough:

- Date, job address (or job number) and hours.
- What you did, in plain words.
- What you learned.
- What went wrong, and why.
- Your journeyman's initials.

The log is your proof. It shows a future employer, a union or a licensing board what you've actually done. It also shows *you* how far you've come, which matters on the bad days.

How a skill gets signed off

A skill is signed off when you can do it **alone, three times, to the standard in this book**, without being told how. "I watched it" doesn't count. "I helped" doesn't count. Your journeyman initials and dates the line in the sign-off list and in your log.

Saturday shop: extra credit

Every period ends with a **Saturday shop**: an optional practice build on a mock-up, done on your own time with a journeyman. It's modeled on the required Saturdays from my own union apprenticeship: eight hours of mixing cement by hand, putting it on a wall, setting tile on it right then and there, tearing it all down, cleaning up and starting over.

Each Saturday shop gives you an advanced look at the **next** period's skills and sign-off. It doesn't replace a sign-off, but apprentices who do them move up faster, because the first time they do a skill on a real job isn't the first time they've done it. Log Saturday shop hours separately from your job hours.

Licenses, codes and safety

This book teaches methods. It is not a license, and it is not the code.

- In California, contracting work is done under a contractor licensed by the Contractors State License Board (CSLB). Tile is a C-54 license, plumbing is C-36, carpentry is C-6. As an apprentice, you work under your employer's license.
- **Electrical work is done by a licensed C-10 electrician.** Every time. Heated floors, steam generators, lighted mirrors and drawer outlets in this book all need one. We prepare for the electrician and coordinate with them. We don't do their work.
- Plumbing and building work needs permits and inspections from the local building department. Codes change. Manufacturers change their instructions.
- **When the current code or the maker's written instructions differ from this book, the code and the instructions win.** Read them every time.

Numbers in this book are in inches, feet and square feet. Mortar mixes are by volume unless I say otherwise.

A word on safety

You only get one set of lungs, knees, eyes and hands. Cement burns skin. Cutting tile and stone makes silica dust that scars your lungs for life. Wet saws and grinders take fingers. Period 1 starts with safety for a reason, and the safety rules apply every day for the rest of your career, not just the first six months.

Introduction: it all starts with the mud

I started setting tile in 1983. I learned the old way, from men who floated every floor and every wall in sand and cement, by hand, straight and true. Nobody called it "mortar-bed work" back then. It was just how tile was done.

In 1994 the Northridge earthquake shook the San Fernando Valley apart. I came to the Valley to help put it back together, and I got my contractor's license in 1995. I built a company with a showroom on Ventura Boulevard, a crew and a staff. Today I run Valley Tile & Plumbing, licensed for tile and stone (C-54), plumbing (C-36) and carpentry (C-6). I still do the work.

This book is what I wish someone had handed me in 1983, plus forty years of what I learned the hard way.

A dying art

Mortar-bed work is disappearing. Not because it stopped working. It works better than anything that replaced it. It's disappearing because it can't pass itself on.

Here's why. The big stores and the board makers train installers for free, because every class sells their product. Nobody sponsors sand and cement. There's no logo on a pile of sand. So the free training teaches boards, foam and kits, and the men who knew mud retired without anyone to teach.

A lot of what gets installed today is built to be replaced. Quick systems, glued to the wall, designed around speed and the next sale. When they fail in eight or ten years, the homeowner pays again. I've torn out more of those showers than I can count.

A mud bed, built right, lasts as long as the house. I want that kind of work to have a future, and it only has one if people learn it.

Why it starts with the mud

Everything in this trade sits on something. Tile is only as flat as what's under it. A shower is only as dry as its pan and its drain. A big stone slab is only as solid as the bed it's set in.

When you can float a floor dead flat, pitch a shower pan to the drain without thinking about it, and brown-coat a wall plumb and square, every other skill falls into place. Layout is easier, because your surfaces are true. Setting is easier, because the tile has nothing to fight. The finished job looks better, because the hard part was done before the first tile went down.

That's why this program spends its whole second year on mortar beds.

It's not just a tile job anymore

When I started, a tile setter set tile. Today, a bathroom is a stack of trades that all have to fit:

- Demolition and protection of the rest of the house.
- Framing and blocking for niches, benches, grab bars and glass.
- Plumbing: drain, trap, valve, supply lines, fixtures.
- Waterproofing, from the pan liner to the last corner.
- Mortar beds on floors, walls and pans.
- Tile and stone, and the trim at every edge.
- Linear drains and curbless entries.
- Heated floors, towel warmers, steam, lighting, sound.
- Glass, cabinets and stone countertops.
- Permits, inspections and a flood test.

The electrician, the glass installer and the countertop shop each do their part. But somebody has to understand how all of it fits together, in what order, and where the water goes. When a shower leaks, it almost never leaks through the tile. It leaks at a drain, a valve, a corner, a curb or a screw hole: the places where one trade meets another.

The setter who understands those meeting points is the one who builds showers that never leak. That person is worth more on any job, and that's who this book is meant to make.

What you're signing up for

Four years. Early mornings. Heavy buckets. Sore knees. Days when the mud won't cooperate and the boss is right about what you did wrong.

At the end, you'll have a skill most people in the trade don't have anymore, and you'll understand the whole room, not just the tile. That's a profession, the same as a doctor's or an architect's, not just a job. Let's get started.

Why three trades

Walk into too many kitchen and bathroom remodels today and you'll find a chain of hand-offs. The general contractor hires a tile setter. The tile setter brings in a plumber. Somebody finds a carpenter. Each one is paid to get in and out as fast and as cheap as possible, and none of them is responsible for the place where their work meets the next person's.

That's a problem, because a kitchen or a bathroom is nothing but meeting points. Water lines and drains, gas, electrical circuits, appliances, cabinets, stone and tile all share the same few square feet, and every one of them depends on the others being in the right place. The drain has to land where the tile layout wants it. The valve has to sit at the depth of the finished wall. The cabinets have to be level for the stone top, and the floor has to come up to the right height for the door, the toilet and the dishwasher. When nobody owns those connections, they fail. And in these two rooms they fail with water, waste and sometimes gas, behind walls and under floors, where the damage spreads before anyone sees it. It's freeways crossing with no traffic lights.

These are also the two rooms where a homeowner spends the most and gets the most back. Done right, a kitchen or a bathroom is the best investment in the house. Done wrong, it's the most expensive mistake. The difference usually isn't the materials. It's whether the people doing the work understood the whole room.

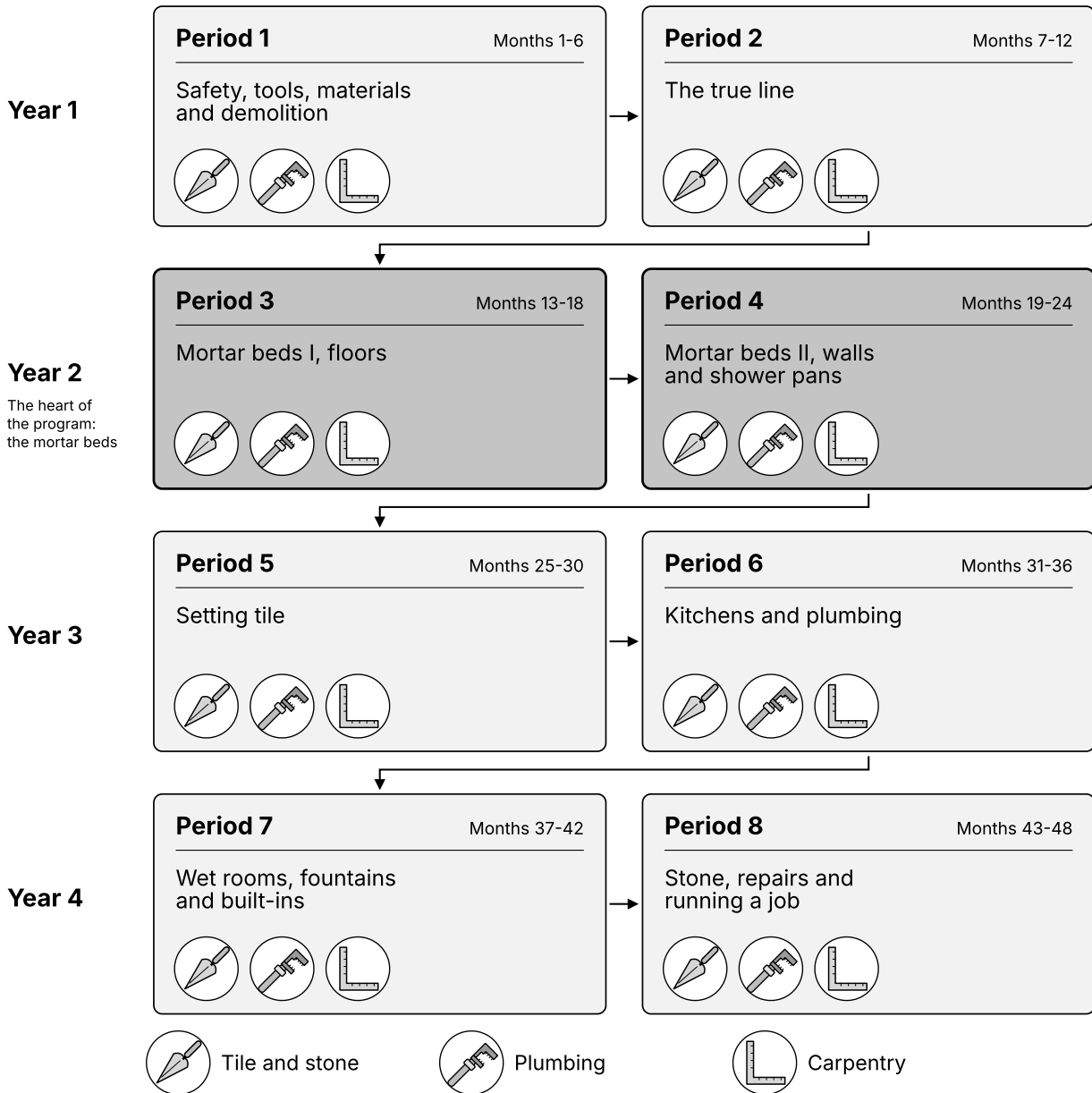
That's why this apprenticeship teaches three trades instead of one: tile and stone, plumbing, and carpentry. A tradesman who knows all three sees how each one affects the others, and moves the work in the right order, without wasted trips, wasted materials or wasted money. Efficiency isn't cutting corners. It's what lets a customer afford the best room their budget can buy.

It's also why these skills need passing on. The industry has drifted toward the cheapest labor it can find, installing simplified products with processes built for speed. Those jobs look fine the day they're finished. They start failing not long after the warranty runs out, and the warranty, when it pays at all, replaces the failed materials with more of the same. The methods in this book are built to last as long as the house. Very few people still use them. This book is meant to change that.

The program at a glance

The program runs four years and about 8,000 hours on the job. It moves from safety and layout, to mortar beds and showers, to setting tile and hanging cabinets, then into kitchens and their plumbing, wet rooms and fountains, and finally stone, finish carpentry and running a job. Tile, plumbing and carpentry run through every year.

Four years, eight periods, three trades in every one



The program at a glance

Two periods a year for four years. All three trades are taught in every period, side by side.
At the end: the journeyman test, then the road to a contractor's license.

Read it left to right, then down. Each period stands on the one before it, and the second year, floors, walls and pans in mud, holds up everything after it.

How time counts

- **Hours on the job:** about 1,000 per period, written in your log every day.

- **Study:** about three hours a week of reading, sketching and job math, outside work hours. That's roughly 150 hours a year.
- **Moving up:** a period ends when the hours are in *and* the sign-off list is complete. Hours alone don't move you up. A fast learner still puts in the hours. A slower learner puts in more.
- **Pay:** a good shop raises pay at each period sign-off, so the apprentice sees the progress in the paycheck as well as the log.

What a journeyman from this program can do

At the end of four years, you can walk into a gutted bathroom or kitchen and build it back, start to finish, with the right trades at the right time:

- Protect the house, demo the old room and leave the job clean every day.
- Lay out any room square, plumb and level, and plan the tile so the cuts land where they should.
- Float floors, walls and shower pans in mortar, flat and pitched to the drain.
- Build a shower that passes a flood test the first time.
- Set any tile, from 1-inch mosaics to large-format porcelain, with full coverage.
- Rough in and finish the plumbing for a bathroom and a kitchen, including the gas for the range, working under a C-36 license.
- Frame for tile, hang cabinets, build bathroom built-ins and trim out a room in finish carpentry, working under a C-6 license.
- Build curbless showers with linear drains, true steam rooms, heated floors and tiled fountains, and coordinate the electrician.
- Set stone floors and walls, and work with the shop that fabricates the countertops.
- Find out why a shower leaks, and fix the cause instead of the symptom.
- Estimate a job, order the materials and lead a helper.
- Pull the permits, pass the inspections and work with the city.
- Be on the road to your own California contractor's license, starting with the C-54.

The goal: a licensed tradesman

This program has one goal. At the end of it, you become a licensed contractor, a professional in the same way a doctor, an accountant or an architect is, and you're set for life, as long as you follow the rules and practice this trade with honor.

The road to a license

In California, the Contractors State License Board (CSLB) licenses contractors. Here's how the road runs:

1. **Four years of experience per license.** Each license (the CSLB calls them classifications) needs at least four years of journey-level experience in that trade, within the last 10 years (CSLB).
2. **An accredited apprenticeship counts.** A certificate of completion from an accredited apprenticeship can count for up to three of those four years. At least one year must be practical experience (CSLB).
3. **That's why the program should be registered.** Apprentice time on its own isn't journey-level experience. In California, apprenticeship programs are approved by the Division of Apprenticeship Standards (DAS). A shop that runs this program should register it with DAS, with an education partner for the classroom part, wage steps for each period and graduation requirements (DAS). This book is built to be that program's backbone.
4. **Then a year at journey level.** After the certificate, work at least one year as a journeyman.
5. **Then apply.** Send the CSLB application (currently a \$450 fee), pass the law and trade exams, complete fingerprinting, and get the bond and the workers' comp or insurance your license type requires.

One license at a time. Start with the C-54, tile and stone. The C-36 (plumbing) and C-6 (carpentry) each need their own experience in that trade. That's why your log book keeps your tile, plumbing and carpentry hours separate, every day, signed by your journeyman. The CSLB can ask you to prove your experience, and your log is the proof.

Period 8 walks through the application step by step.

The law you'll answer to

A doctor answers to a medical board. A licensed contractor answers to the Contractors State License Board and to the Contractors State License Law, the part of California's Business and Professions Code that starts at section 7000. That law is what makes a license worth something. It puts the public first, and says so in plain words: protecting the public is the Board's highest priority (section 7000.6).

What the law expects of every licensed contractor:

- **Good and workmanlike work.** Willfully departing from accepted trade standards for good and workmanlike construction is cause for discipline (7109). This book is those standards.
- **Following the building laws.** Willfully ignoring them, like skipping a permit, is cause for discipline too (7110).
- **Finishing what you start.** Abandoning a job without a legal excuse (7107), or failing to finish it for the contract price (7113), can cost you your license.
- **Honest contracts and fair payments.** A home improvement contract is in writing, with the total price. The down payment can't be more than \$1,000 or 10% of the contract, whichever is less. After that, a contractor can't ask for or accept more than the value of the work done and the materials delivered. Breaking those rules is a crime (B&P 7159.5).
- **A bond behind your word.** Every active license carries a \$25,000 contractor's bond (CSLB).
- **Your license number in public:** on your contracts, your ads, your website and your trucks.

The Registrar can suspend or revoke a license for breaking these rules (7090). Contracting without a license is a crime in itself (7028), and an unlicensed contractor can't even go to court to collect for the work (7031).

None of that should worry a good tradesman. It protects you. The law keeps the shortcut-takers from undercutting the people who do it right, and it tells every customer that a license means a standard.

A good living

The reward for meeting that standard is a good living, and you can take it anywhere. Every house has a kitchen and at least one bathroom. They all wear out, and they all get remodeled. There are never enough people who can rebuild them right. A licensed tradesman who can handle tile, plumbing and carpentry in those two rooms can make a living anywhere people live.

In Los Angeles, I've done this work for everybody: schoolteachers and homeowners, schools and shopping malls, the Cities of Los Angeles and Pasadena, the studio lots at Paramount and Universal, a famous Luis Barragán home in Bel Air, and the Hotel Bel-Air. The rooms were the same everywhere: bathrooms, kitchens, water features, saunas and steam rooms. Everybody needs them, and everybody needs them built right.

Honor

Every licensed profession has a code of conduct. Doctors, accountants and architects all answer to one. So do we. A license is a promise to the public. Keep it.

Follow the rules, practice this trade with honor, and you're set for life. Don't try to screw people over, and don't cut corners. That never works in this kind of business. Word gets around, the work shows, and water always finds the shortcut you took.

Square, level and plumb

Long before there were licenses, masons handed this trade down from master to apprentice. They taught that the tools of the trade are also the rules for how to live:

- **The square:** square your actions with what's right.
- **The level:** every person stands on the same level. Treat the customer, the helper and the inspector with the same respect.
- **The plumb:** stand upright. Be honest when nobody is checking.

They put it this way: meet on the level, act by the plumb, and part on the square.

I believe the world we build on is a gift from God, and that we have to use our skills in service to others. A house is where a family lives. Build it that way.

God gives us gifts and skills. Nobody masters a skill just because they decided to. Mastery is a calling. Without the calling, you don't master a trade; you just get proficient at it.

My mother used to say, "If you're going to do something, you may as well be the best at it." I heard the same thing a lot growing up, sometimes put more bluntly: if you're going to be a s*** shoveler, be the best s*** shoveler the world has ever seen.

When I had my showroom on Ventura Boulevard, we did stonework on the rustic cabins at The Painted Turtle, the camp Paul Newman started for children with serious illnesses. It even has its own helipad. I'd always admired him for his charity, and I wanted to be part of what he was building, so I bid the job at cost. My own crew did the work. When it was done, everything they'd paid us had gone into the job except twenty dollars, which went in my pocket. We did more than we were asked to.

Some jobs you do for a living. A few you do because you can.



The last twenty.

What that means on every job:

- Do the work you said you'd do, the way you said you'd do it.
- Pull the permit. Pass the inspection. Never cover what hasn't been inspected.
- Tell the customer the truth: about hidden damage, about repair or rebuild, about what you don't do.
- Follow California's rules on contracts, deposits and payments.
- Stay inside your license. Electrical work goes to the C-10.
- Fix your own mistakes, on your own time.

Period 1 • Months 1-6: Safety, tools, materials and demolition

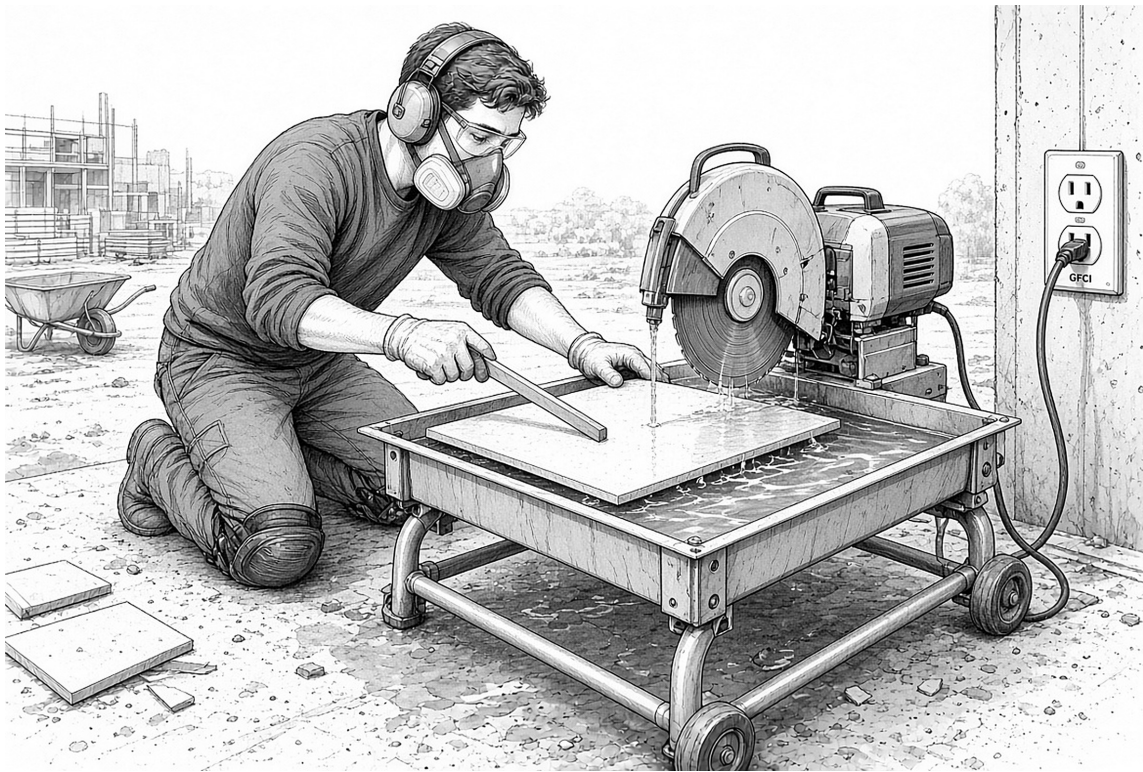
By the end of Period 1, you can protect a house, tear out a bathroom safely, keep a clean job site, and name, use and care for every tool and material on the truck. This period covers all three trades in this book: tile and stone, plumbing, and carpentry. Nobody sets tile, solders a pipe or hangs a cabinet in Period 1. You earn that.

What you'll be able to do

- Work around silica dust, cement, saws, grinders, nail guns and torches without hurting yourself or anyone else.
- Protect a customer's home from dust, water and damage, and leave it cleaner than you found it.
- Demolish a bathroom and a kitchen: tile, mud beds, fixtures, cabinets and countertops, and haul it out the same day.
- Shut off water and gas safely, and know when to stop and call someone.
- Name, use and care for the tools of all three trades.
- Load the truck for a job without being told what to bring.
- Mix and carry materials, and keep them stored right.

Lesson 1: Silica, the dust that doesn't wash out

Cutting, grinding and drilling tile, stone, concrete, mortar and grout makes **respirable crystalline silica**. The particles are too small to see. They go deep into your lungs and scar them. That disease is silicosis. It has no cure. Silica also causes lung cancer and kidney disease. Men in this trade used to die of it, and some still do.



Dressed for the job: glasses, respirator, hearing protection, gloves and knee pads. Water runs to the blade.

In California, the construction rule is **Cal/OSHA Title 8, section 1532.3**. The main numbers:

- **Exposure limit:** 50 micrograms per cubic meter of air, averaged over an 8-hour day. The **action level** is half that, 25.
- **A tile saw with water fed continuously to the blade**, run and maintained the way the maker says, is a listed control. Used that way, it needs no respirator.
- **A handheld power saw with water to the blade**, used **indoors**, still needs a respirator with an assigned protection factor of 10 (a fitted half-mask, like an N95). Outdoors, it needs one after 4 hours.
- **Dry sweeping and compressed air** are not allowed for cleanup when wet sweeping or a HEPA vacuum would work.
- Your employer needs a **written exposure control plan** and a **competent person** who checks the job.

Engineered stone (most "quartz" countertops) is far more dangerous than natural stone. California has extra rules for shops that cut it, under Title 8, section 5204. We don't fabricate it on site. If a top needs a field cut, it's done wet, with the right controls, or it goes back to the shop.

Safety rules for silica, every day:

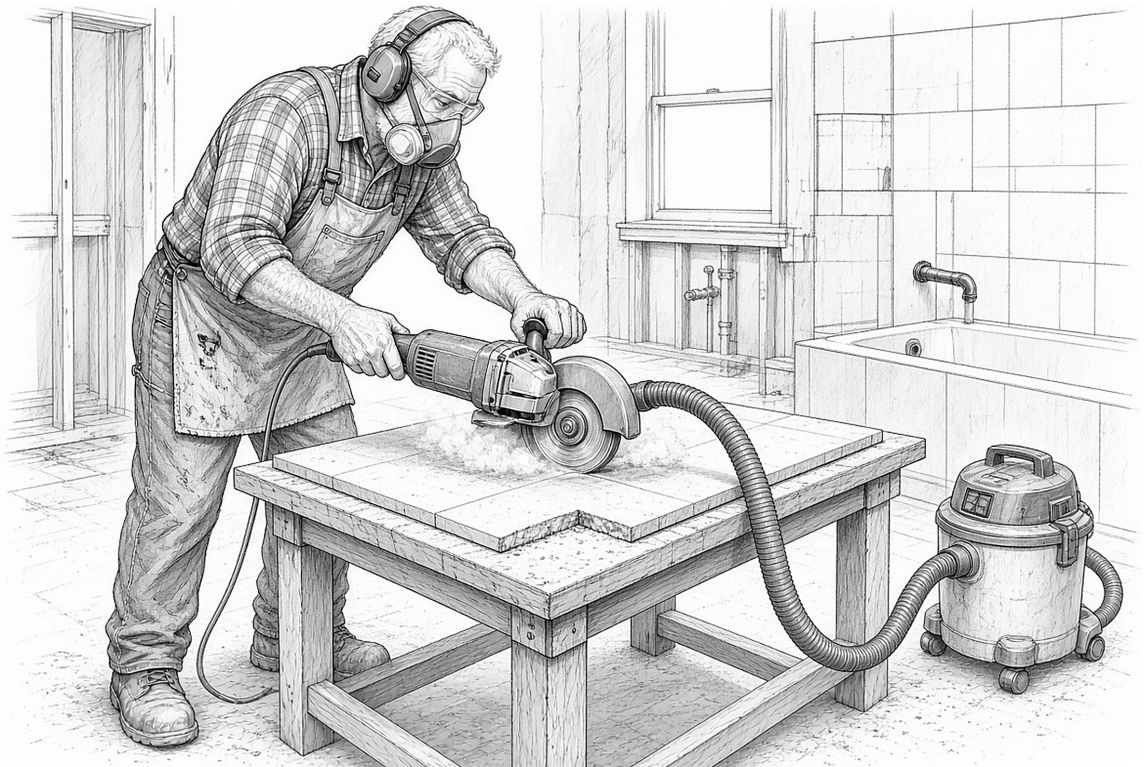
- Cut wet. Cut outside when you can, downwind of the house.
- Grind and drill with a shroud on a HEPA vacuum, or with water.
- Clean up with a HEPA vacuum or wet methods. Never blow dust off with air.

- Wear your respirator when the plan calls for it, and be clean-shaven where it seals.
- Change your shirt and wash your hands and face before you eat or get in your car.

Source: Cal/OSHA, Title 8 section 1532.3 and Cal/OSHA silica FAQ.

Lesson 2: Cement, weight, knees, eyes, ears and fingers

Cement burns. Wet portland cement is strongly alkaline. Kneel in it all day without protection and it will eat through your skin, and you won't feel it until that night. Wear nitrile gloves, long sleeves and knee pads. Wash cement off your skin right away with clean water. Wear goggles when you mix.



The grinder, done right: guard on, both hands on the tool, a dust shroud to a HEPA vacuum.

Weight. A full bag of portland cement is about 94 pounds. Thinset bags are about 50. A wheelbarrow of mud is more than that. Lift with your legs, keep the load close, and use a dolly or a second person. A back injury in your first year can end a career before it starts.

Knees. Knee pads, every day, from day one. Ask any old setter about his knees.

Ears. Saws, grinders and demo hammers are loud enough to damage hearing in minutes. Wear plugs or muffs.

The wet saw.

- Plug it into a GFCI-protected circuit or cord, and keep the plug off the wet ground.
- Keep the blade guard on and the water running.

- Never reach across or behind a spinning blade. Feed the tile with flat hands, fingers away from the blade.
- Small pieces get a push stick or a jig, not your fingertips.

The angle grinder. It's the most dangerous tool on the truck.

- The guard stays on. Always.
- Two hands, a firm stance, and a blade rated for the grinder's speed.
- Never stand in line with the wheel. Let it stop before you set it down.

Old houses. Homes built before 1978 may have lead paint. Federal rules require lead-safe certified work practices when you disturb it. Older mastics, floor tiles, joint compound and some mud beds can contain asbestos. If you see old black mastic or 9-inch floor tile, **stop and ask**. Testing comes before demolition, not after.

Saws. Table saws, miter saws and circular saws cut fingers as easily as wood. Keep the guards on, keep your hands out of the blade's path, and use a push stick on the table saw. Unplug a saw, or pull its battery, before you change the blade.

Nail guns. A nail gun fires through wood and through hands. Keep your free hand away from where a nail can come out. Never carry it with your finger on the trigger. Disconnect the air or the battery before you clear a jam.

Torches. Soldering copper means an open flame inside a wall. Keep a fire extinguisher within reach and a heat shield behind the joint. Check the area again before you leave, because wood can smolder and catch fire after you're gone.

Gas. If you smell gas, stop. Don't switch lights on or off or do anything that makes a spark. Get everyone out, then call the gas company from outside.

Lesson 3: The tools

Learn every tool by name, what it's for and how to clean it. A tool put away dirty is a tool ruined.

Tile and stone tools

Tool	What it's for	Care
Levels (2, 4 and 6 ft)	Plumb and level	Check against a known line monthly; never drop
Straightedges (6, 8 and 10 ft)	Screeding mud, checking flat	Store flat or hung; keep the edge clean
Framing square	Square corners, layout	Keep it dry; check it against 3-4-5
Chalk line and laser	Layout lines	Dry chalk; protect the laser lens
Wood and magnesium floats	Floating and packing mud	Wash every day

Tool	What it's for	Care
Steel finishing trowel	Hard-troweling mud	Clean and dry; oil if stored
Margin trowel and hawk	Moving and holding mortar	Clean before the mortar sets
Mixing hoe, mortar box, wheelbarrow	Mixing mud	Wash out at day's end
Notched trowels	Spreading thinset	One per notch size; clean the notches
Beating block and rubber mallet	Bedding tile	Keep the block flat
Wet saw	Straight cuts	Change water, clean the tray, check the blade
Snap cutter	Fast straight cuts on ceramic and porcelain	Keep the wheel sharp
Angle grinder with diamond blades	Notches, holes, edges	Guard on; right blade for the material
Grout floats, sponges, buckets	Grouting and cleanup	Rinse out every day
HEPA vacuum and air scrubber	Dust control	Change filters on schedule

Plumbing tools

Tool	What it's for	Care
Tubing cutter	Clean, square cuts on copper	Keep the wheel sharp
PEX crimp or expansion tool	Making PEX connections	Check it with the maker's gauge
Torch, lead-free solder and flux	Soldering copper	Close the valve; store the tank upright
Saw or plastic pipe cutter	Cutting ABS and PVC drain pipe	Keep the blade clean
Pipe wrenches, adjustable wrench, basin wrench	Threaded fittings and faucet nuts	Keep the jaws clean
Test gauge and test plugs	Pressure-testing supply lines and plugging drains	Check them for leaks before each use
Drain auger	Clearing stoppages	Clean and dry it after use

Carpentry tools

Tool	What it's for	Care
Speed square and framing square	Square cuts and layout	Keep them flat and true
Circular saw	Framing cuts and plywood	Sharp blade; guard working
Miter saw	Trim and molding cuts	Check that it cuts a true 90 and 45
Table saw	Ripping fillers, shelves and panels	Guard and riving knife on
Jigsaw and oscillating tool	Cutouts and trimming in place	Right blade for the material

End of the free sample

The full book goes on through all eight periods: tools and materials, the true line, mortar-bed floors, walls and shower pans, setting every kind of tile, kitchens and their plumbing, curbless and steam showers, stone, repairs and running a job.

It ends with the journeyman test and the road to a California contractor's license.

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