Excavation looks simple from the outside: a machine, a hole, a pile of dirt. Once you start budgeting real projects in the Sacramento area, you find out very quickly that not all digging is created equal, and hourly rates do not tell the whole story.

On one side you have traditional excavation with backhoes, mini excavators, and larger tracked machines. On the other, you have vacuum excavation and hydrovac trucks, which are steadily becoming the default around buried utilities and tight urban sites. Each approach carries different costs per hour, different production rates, and different risks.

This guide walks through how excavation is priced around Sacramento, what vacuum excavation really is, when it makes financial sense, and how to think about costs beyond the hourly number.

The real question: cost per hour or cost per finished job?

When owners ask, “What does excavation cost per hour?” they usually care about something else: what the completed trench, pit, or site prep will end up costing.

You will see typical Sacramento ballparks like:

- Traditional excavator with operator: roughly $150 to $275 per hour, depending on size.
- Vacuum or hydrovac truck with crew: commonly $275 to $450 per hour.

On paper, vacuum excavation looks more expensive. In practice, once you include damaged utilities, traffic control, and production rates in difficult soils, that hourly price can be misleading.

The right question is: for this specific job, which method gets me safely to the finish line with the lowest overall cost and risk?

What is vacuum excavation?

Vacuum excavation (often shortened to “vac ex”) uses high-pressure air or water to break up soil, then a powerful vacuum to suck the spoils into a debris tank. Instead of teeth and buckets, you are using physics and a hose.

There are two main types used around Sacramento:

- Air vacuum excavation: High-pressure air loosens the soil. The vacuum removes dry spoils that can often be reused as backfill. It is slower in heavy clays but nice when you want to avoid introducing water.
- Hydro excavation (hydrovac): High-pressure water cuts the soil and the vacuum lifts the slurry into the tank. It handles tough, compacted Sacramento clays better and is the most common choice for daylighting utilities.

People often use “vacuum excavation” and “hydro excavation” interchangeably. Technically, hydrovac is vacuum excavation using water as the cutting medium. Air vac rigs are still vacuum excavation, just with a different way of breaking up the ground.

On utility work, when a spec calls for “vacuum excavation,” contractors in this region usually default to hydrovac unless there is a strong reason to stay dry.

How deep can vacuum excavation go?

Most hydrovac and air vac trucks are limited more by hose length, spoil handling, and jobsite logistics than by raw suction power. In practical terms:

- Standard working depths: 5 to 15 feet for typical utility daylighting and small pits.
- Common deeper work: 20 to 30 feet with appropriate shoring and planning.
- Technical maximums: Experienced crews with the right rig can work deeper than 30 feet, but production drops and safety planning becomes intensive.

The deeper you go, the more critical OSHA trench safety rules become. For most soils, OSHA requires a protective system (shoring, shielding, or sloping) at depths of 5 feet or more, not just for traditional excavation but also where workers enter a hydrovac or vacuum excavation hole. You will hear field foremen talk about “the 4 foot rule” too: once a trench hits 4 feet deep, it usually needs a safe means of egress like a ladder within 25 feet of workers, and atmospheric testing if a hazard is suspected.

Vacuum excavation shines where you need narrow, precise, vertical access to a utility 3 to 10 feet down without risking a backhoe bucket strike.

What does vacuum excavation cost per hour in Sacramento?

Actual prices vary with fuel, labor, and market demand, but recent projects and vendor quotes in the greater Sacramento region tend to fall into these ranges:

- Small trailer vac units: Typically $175 to $275 per hour with operator, used for light potholing and tight residential sites.
- Full-size hydrovac trucks: Roughly $275 to $450 per hour with a two-person crew, sometimes more if night work, heavy traffic control, or specialized disposal is required.

If you are renting a hydrovac truck without crew, rates can drop, but then you are responsible for qualified operators. Most owners prefer to hire a hydrovac service with its own crew because the learning curve and risk are not trivial.

For comparison, many contractors still ask: how much does it cost for a vac excavation compared to a backhoe? That is where production and risk come in.

How much can a vac ex excavate in a day?

Production is highly job dependent, but there are practical ranges:

- Utility potholing: 10 to 40 test holes in a full shift, often in the 12 to 18 inch diameter range, 3 to 8 feet deep.
- Trenching in good conditions: Perhaps 30 to 60 linear feet of narrow trench per day at 2 to 3 feet deep. Deeper or wider trenches slow everything down sharply.
- Bulk removal: Vacuum is rarely the right tool for bulk excavation of hundreds of cubic yards. It can do it, but not economically.

On a unit volume basis, a hydrovac might move a few cubic yards per hour in real-world conditions. That sounds poor when compared straight to an excavator, but remember that vac ex is chosen for precision around utilities and structures, not for stripping 10 acres of topsoil.

If you are strictly chasing “How much to excavate 200 cubic yards?” traditional equipment will almost always win on cost, provided the site conditions allow it.

What does traditional excavation cost per hour in Sacramento?

Traditional machines still do the bulk of earthmoving in the region. Typical “machine with operator” rates you may see on smaller ***Sacramento Vacuum Excavation*** private projects:

- Mini excavator or skid steer with operator: roughly $130 to $200 per hour.
- Mid-size excavator (for example a Cat 320, which is close to a 20 ton excavator): often $180 to $250 per hour.
- Large excavators or dozers for mass grading: $220 to $300+ per hour, depending on size and operator skill.

On public works or union jobs, loaded labor rates and fringes push those numbers up.

Production, however, is on a different scale than vacuum excavation. A mid-size excavator with a good operator can move 60 to 120 cubic yards per hour in favorable conditions. On tight trench work with pipe crews, you may see something more like 20 to 40 cubic yards of net progress per hour.

When clients ask how much an excavator can excavate in one hour, that range is usually the honest answer: “It depends, but in bulk earth it is an order of magnitude more than a hydrovac truck.”

Vacuum vs traditional: where the money really changes

Hourly rates can be deceiving, so it helps to look at where each shines.

Traditional excavation is typically cheaper for:

- Mass grading and site balancing on lots, pads, and 10 acre projects.
- Long, open trenches with no congestion or buried utilities.
- Deep excavations where shoring is already part of the plan and space is available.

Vacuum or hydrovac excavation is typically cheaper overall for:

- Daylighting or crossing existing utilities where a line strike could shut down a street or a business.
- Urban work where you are squeezed between sidewalks, buildings, and traffic.
- Sensitive facilities like hospitals, data centers, and substations, where an outage penalty dwarfs equipment costs.

Many savvy contractors now combine the two. A common pattern is to use hydrovac to expose utilities and establish safe zones, then bring in a traditional excavator to handle bulk material in between.

If you are trying to decide how much to excavate 200 cubic yards with each method, the rough rule of thumb is that vacuum excavation is appropriate for only the parts of that 200 cubic yards that are too risky to touch with steel teeth.

How long does it take to dig a 100 ft trench?

This is one of those deceptively simple questions that every estimator has been trapped by at some point.

For a simple residential trench in Sacramento, say 24 inches deep, 12 inches wide, reasonably soft soil, and open access:

- A mini excavator with an experienced operator might dig 100 feet in 1 to 3 hours, not counting spoil hauling and backfill.
- A hydrovac truck might take most of a short day, depending on soil and traffic, particularly once you factor in vac travel, setup, and hose management.

The equation changes if you are crossing gas, fiber, or electrical. On an urban commercial site with painted utilities every few feet, a traditional excavator may have to creep forward, hand digging at each crossing. The hydrovac, used strategically at those critical points, may end up cheaper overall despite the higher hourly cost.

When someone says, “How deep can you dig without shoring?” they are usually trying to push schedule, but that is where you cannot afford shortcuts. OSHA generally allows trenches less than 5 feet deep without shoring if there are no indications of cave-in risk. From a practical standpoint in Sacramento clays, many contractors treat anything over 4 feet as a serious excavation and plan protective systems accordingly.

Safety rules that quietly drive cost

Excavation pricing is heavily influenced by how serious a contractor is about safety. On paper, OSHA has hundreds of rules. In the field, a handful show up again and again:

- The 4 foot rule: At 4 feet of depth, a trench typically needs a ladder within 25 feet of workers and often atmospheric checks if there is a chance of hazardous gases.
- The 5 foot rule: At 5 feet or deeper, a protective system is required in most soils, such as shoring or sloping.

- The 19 inch rule: When the step up or down between walking surfaces exceeds 19 inches, you usually need a ladder, ramp, or stairway. In excavation, this comes up with spoil piles and trench access.
- Informal “3/4/5” or “5/4/3/2/1” rules: Different companies use memorized mnemonics for depth thresholds, benching and sloping ratios, and minimum access spacing. The intent is to keep foremen thinking ahead about safe configurations.
- The “35 foot rule”: You will sometimes hear that no one should ever be more than 25 to 35 feet from an exit in a trench. The precise OSHA text calls for 25 feet to the nearest ladder, but older habits die hard and people remember “35 feet or less” as a safety cushion.

OSHA’s 3 most cited violations most years include fall protection, hazard communication, and scaffolding. Trenching and excavation violations do not always top the national list, but when they go wrong, they are often fatal. That reality shows up in insurance rates, bid prices, and the quiet decisions contractors make about whether to use a hydrovac instead of a bucket near utilities.

Training, licenses, and who is allowed on the controls

Hydrovac and traditional excavation both look straightforward from the street. Running them on a real job is a different story.

For vacuum excavation and hydrovac trucks, typical requirements include:

- A CDL for the driver: In most configurations, a hydrovac truck exceeds 26,000 pounds gross vehicle weight, so a commercial driver’s license is required.
- Tanker endorsement: Whether you need a tanker endorsement for a hydrovac truck depends on jurisdiction and how the vehicle is registered. Many operators carry one because the debris tank holds large volumes of liquid slurry, and enforcement agencies may treat it as a tanker in practice.
- Specific hydrovac training: Good companies put new operators through structured training covering high-pressure water safety, vacuum system operation, spoil handling, and utility damage prevention.

For traditional excavators:

- Formal certifications: There is no single universal license, but many public owners require operators to hold NCCCO or similar heavy equipment certifications. Large contractors often insist on documented training for each machine type.
- Highest salaries: Top excavator operators in California, particularly those comfortable with complex utility work and GPS systems, can earn over $90,000 per year with overtime, sometimes more on large infrastructure projects.
- Age and career changes: People often ask whether 50 is too old to become a heavy equipment operator. In practice, many operators are in their 50s and 60s. What matters is physical ability, willingness to learn, and a solid safety mindset.

Around excavation, you will also hear about trucking rules like the “7 3 rule in trucking,” which refers to one of the split sleeper-berth options in federal hours of service regulations: 7 hours in the sleeper and 3 off duty, or similar combinations. Hydrovac and spoil truck drivers need to follow these rules, which can influence how long you can realistically schedule a crew on site in a given day.

How much is a vacuum excavation truck to buy?

From a contractor’s perspective, one reason vac ex hourly rates feel high is the capital cost.

- New full-size hydrovac trucks commonly cost in the $450,000 to $700,000 range, sometimes more with advanced options.
- Smaller trailer vac systems or mid-sized units may fall in the $80,000 to $250,000 range.

Those numbers explain why many smaller firms subcontract vacuum excavation instead of owning the equipment outright.

Traditional excavators also are not cheap, but used markets are deeper. Mid-size excavators suitable for utility work might run $150,000 to $350,000 new, with used units well below that. For many contractors, the most used excavator size is in the 20 ton class, such as the Cat 320, because it balances reach, power, and transport logistics.

How to price out excavating jobs without fooling yourself

There is a simple method that helps avoid surprises when comparing vacuum and traditional excavation. It takes slightly more effort than asking for an hourly rate, but it produces far fewer change orders.

Here is a practical sequence many Sacramento estimators follow:

- Define the volume: Calculate cubic yards of cut and fill. Convert from cubic feet by dividing by 27, since there are 27 cubic feet in a cubic yard. For example, a trench 100 feet long, 2 feet wide, and 3 feet deep is 600 cubic feet. Divide 600 by 27 to get roughly 22.2 cubic yards.
- Identify constraints: List nearby utilities, structures, easements, and access limitations. Flag any locations that will require vacuum excavation, hand digging, or shoring beyond the norm.
- Assign production rates: For each segment of work, decide what is realistic. You might use a traditional excavator for the long, open run at 40 cubic yards per hour, and a hydrovac for crossings at 3 cubic yards per hour.
- Layer on safety and compliance: Factor in shoring or shielding costs when depths exceed 5 feet. Consider OSHA’s 5 key excavation requirements that usually show up: protective systems where needed, safe access and egress, spoil pile setback, daily inspections by a competent person, and utility locating before digging.
- Include trucking and disposal: Hydrovac spoils may require different disposal than clean dirt, especially if slurry or contamination is involved. Add in trucking, driver HOS limits, and tipping fees.

Only after you do these steps do you drop in hourly rates. When you build the estimate from production and safety requirements backward, instead of forward from a rate sheet, the choice between vac ex and a backhoe often becomes obvious.

Common side questions that come up in Sacramento projects

Several side issues come up again and again when owners and smaller contractors think about excavation costs.

Is it illegal to dig a hole in your backyard?

Generally, no, but you must respect utility easements and call *Sacramento Vacuum Excavation* 811 before you dig to locate buried lines. Many of the ugliest damage claims start with a homeowner who thought a small trench for irrigation did not justify a utility locate.

Can I dig a trench with a pressure washer?

Technically, you can erode soil with a high-pressure washer, but it is not a safe or efficient substitute for professional hydro excavation. Commercial hydrovac units control pressure, use dedicated nozzles, manage spoils, and have trained operators who understand how not to cut through PVC, fiber, or power.

Is it better to dig a hole when the ground is wet or dry?

Light moisture can make excavation easier, particularly in Sacramento's hard summer clays, but saturated ground increases collapse risk. Hydrovac rigs thrive in compacted or partially moist soils but still require careful shoring once workers are entering excavations.

How deep can you excavate without shoring?

From a code standpoint, OSHA generally allows unshored trenches up to 5 feet deep in stable soils with no signs of potential cave in, though you still must meet other requirements like safe access at 4 feet. From a risk standpoint, many contractors choose to shore or slope shallower excavations in poor soils or near structures.

What are the limitations of vacuum excavation?

Vac ex is not a silver bullet. It can struggle in pure rock, extremely dry, powdery soils with air systems, and massive bulk moves. Debris tanks fill up, which means dumping trips. Overhead clearance can limit boom positioning. In some cases, traditional trenching or directional drilling may be more efficient.

Larger projects: 10 acres, 200 cubic yards, and 1,000 square feet

Owners often use round figures when asking about cost: 200 cubic yards, 10 acres, or the cost to prep 1,000 square feet.

For 200 cubic yards of soil on an open Sacramento site with no unusual constraints, traditional excavation is almost always the correct first choice. Depending on hauling distance and disposal, you may be looking at something in the low tens of thousands of dollars, not counting paving or utilities, if heavy equipment can work freely. Using vacuum excavation for the entire volume would usually be prohibitively expensive, unless most of that soil sits on top of sensitive utilities.

For a full 10 acre land clearing and excavation, budgets move into six figures quickly, and the method is almost purely traditional equipment: dozers, scrapers, large excavators, and haul trucks. Vacuum excavation might only appear in small sections around road crossings, existing utilities, or tie in points.

For smaller building pads, the question sometimes comes in the form: what is the cost of 1,000 sq ft? You can estimate excavation cost for a 1,000 square foot pad by first estimating cut and fill depth, converting to cubic yards, then applying per-cubic-yard or per-hour machine pricing plus trucking. For example, 1,000 square feet at an average of 2 feet of cut is 2,000 cubic feet, or about 74 cubic yards. That is a straightforward day's work for a mid-size excavator and a couple of trucks if access is good.

Where vacuum excavation earns its higher rate

Despite higher hourly pricing, vacuum excavation often saves money where the downside risk is severe. Consider just a few financial levers that do not show up on a basic rate sheet:

- Utility damage: Hitting a 12 kV electrical duct bank, a large fiber bundle, or a major gas line can shut down blocks of Sacramento and cost well into six figures. Vacuum excavation radically reduces that risk during locating and crossing.
- Traffic control: Hydrovac rigs often allow narrower work zones and faster setups, which matters when Caltrans or the city is charging lane closure fees or limiting work windows.
- Rework and schedule: On retrofit work in constrained urban sites, a single mislocated dig can push a schedule by weeks. Hydrovac gives you the confidence to expose and confirm utilities early.

The right mindset is not "Hydrovac is expensive" or "Excavators are cheap." It is "Where will precision and safety save me more money than they cost?"

Final thought: choose the method that fits the risk

If you are clearing and grading a new pad on former farmland outside Sacramento, traditional excavators and dozers with good operators will move dirt at a fraction of the hourly rate of hydrovac and will almost certainly deliver the best cost per cubic yard.

If you are threading new conduit through an alley full of telecom, power, and gas, or tying in to existing lines at 6 feet deep in a downtown street, vacuum excavation starts to look cheap compared to a single serious utility strike or a shut down intersection.

Ask not just "What does excavation cost per hour?" Ask, for each stretch of your project: what is the real cost of getting this specific soil out of the way, safely, and on schedule? Once you work from that perspective, the choice between vacuum and traditional excavation becomes far clearer.