

Working With Your Blasting Contractor

by Pat Poquette



To avoid blowing your budget sky-high, consult with your blasting sub before the job begins

Here in New England, we have a lot of rock. On many building sites, you can't dig a foundation hole or a utilities trench without blasting out the ledge. But I still meet a builder occasionally who has never run into a situation that requires blasting. The average contractor blasting for the first time will have a lot of worries about safety and cost.

Blasting is not a haphazard business. A qualified blaster can work safely with today's technology, and he can also help you keep the cost down. The key is to get your blasting company's input early, so they can help you with the decisions that will make the job go smoothly.

As a blasting contractor, safety is my first priority — I won't compromise when it comes to that. But my second priority is a happy customer. I always try to save the builder time and money. That's how I get repeat business.

Cost Factors

Drilling and blasting will certainly raise the cost of your site work. There's a lot of work involved, and some heavy equipment, as well as the cost of explosives. On top of that, blasters have to carry expensive insurance, and we spend a lot of time on safety training. In my neck of the woods, it's not unusual for the cost of drilling and blasting on a house site to run between \$3,000 and \$5,000.

In fact, the cost can be even higher. Where the population is denser and there are buildings all around, we might have to shoot fewer holes at a time. Or we might have to keep things quieter to keep a neighbor happy. Also, different local regulations or state insurance requirements might affect the cost.

Money-saving techniques. There are steps we can take to keep costs down, but the builder needs to talk to me before the job starts.

First of all, it's a good idea to blast before there is anything on the property. If there's a well or another house on the site, we have to reduce the size of the charges and we have to place protective mats. That means more time on my clock, and it means paying the excavator by the hour to set the mats (see Figure 1, next page). I usually use the builder's excavating sub, but if the builder wants me to, I'll hire my own excavator, and add his fee to the bill. Either way, if we can avoid some of the excavating cost, it saves the builder money.

Some builders don't realize that we can drill through dirt just as easily as through rock, so they have their excavator unbury the ledge. But we'd rather just drill through the ground: It's quicker and easier if we don't have to walk the drill down into a hole and manage all that rough going. In fact, if the rock is exposed, we often have the excavator bury it back up with any loose fill that is around; otherwise,



Figure 1. To protect nearby houses from flying debris, an excavator places protective mats over the blast site.



Figure 2. A track-mounted drill can quickly and easily locate all the rock on the site.



Figure 3. The author sets up a seismograph to record the force of the blast.

we just have to cover the rock with blasting mats before we set off our charges.

So if you start digging and hit ledge, call a blasting company and have them come look at the site. With the drill, we can mark out your cellar hole, your power lines, and your water lines in just an hour or two — we just punch holes to the grade that you want. That way, you know exactly where the rock is (Figure 2). You don't want to have your house all built before you find out you need to blast for utility lines; the blasting will cost a lot more once there's a house on the property.

Also, by locating the rock in this way, you may be able to avoid some of the blasting. Sometimes I advise the builder to move the foundation one way or another to avoid ledge, or I suggest changing the place where the sewer or the water comes into the house.

Suppose, for instance, you find ledge 6 feet down. Why not consider lifting the house up 2 feet? Taking out just that 2 feet of rock means drilling deeper than that, because it takes a certain depth of hole to hold enough explosives to do the job. And in any case, we always have to "sub-drill" below the final grade. So that little bit

of blasting is still going to be expensive: You're better off avoiding it if you can.

On the other hand, builders who have ledge right on the surface sometimes ask me to stop at the frostline, figuring it will be cheaper that way. In that case, I tell them that if they're going to 4 feet anyway, they might as well go to 8 feet and put in a full basement. Once the drill is drilling, the extra cost isn't even enough to worry about.

Fixed bid vs. time and materials. Because the work is unpredictable, I usually suggest working on a time-and-materials basis. If a customer wants me to bid by the yard, I can do it. But the customer tends to pay a higher price that way, because I have to add something in case the rock is hard. For example, I might base my fixed price on a part of the job where the rock is standing up (if it's standing straight up, it's usually harder to break than if it's lying flat). But once we start, I might do a couple of shots and then be out of that section and into soft rock. A job I bid at \$5,000 could wind up being much cheaper. When we go with time and materials, the customer usually comes out ahead.

Existing Structures

Modern explosives give blasters a lot of control. We can blast very close to existing wells and foundations, but the work goes more slowly.

In the case of a well, our first concern is with the source of water. Most wells are tagged and registered with the state, and the records show how far down the water source is. Usually it's far below the grade we drill to, so our only worry is cracking the casing. As we get closer to the well, we reduce our charges, place them closer together, and just shoot one or two at a time.

Still, it's better if we blast before the well is drilled. Then we can set our first charges right where the customer wants the well to be, and the well driller can start drilling right in the first foot of the ditch.

Blasting near an existing foundation is similar to blasting near a well, but it requires more care — concrete is much weaker than a well casing. Also, there is an extra cost: the pre-blast survey. For our own protection, our insurer requires us to hire a neutral company to take pictures and videos of the house before we start. And if we're very close to the foundation, the insurance company may also require us to have the home-

Modern Explosives

Modern dynamite is made with about 40% to 60% nitroglycerine. However, other ingredients added to the mix make the dynamite very stable — it takes an explosion from the blasting cap to set it off.



Electrical blasting caps, though, can be set off accidentally by stray voltage or radio interference. So for residential work, my company uses only nonelectric blasting caps. The fuse is a hollow plastic tube filled with explosive pow-

der. To trigger the blast, the blaster fires a shotgun primer at the other end of the fuse. The small charge in the primer sounds like a .22-caliber gunshot where the blaster is, and it sends a ball of fire down to the blasting cap.

The nonelectric caps and fuses are a little bit more expensive than electric, but they're safer to work with. It's also quicker to run the nonelectric fuse than to string out electric fuse wire, which tends to break while you're laying it. So the cost of a job using nonelectric equipment is equal to or lower than using electric equipment.

In addition to dynamite and blasting caps, we use an inexpensive explosive powder called ammonium nitrate. This comes in bags, and we pour a measured amount into the hole on top of the dynamite stick. The nitrate doesn't go off easily, but when the dynamite sets it off it delivers the same blast force as dynamite. There is also a similar bagged product that is waterproof, allowing us to blast even when groundwater fills our bore holes.

— P.P.



The author uses nonelectric blasting caps and fuses because they cannot be triggered by radio waves (left). Bagged nitrate poured down the bore hole on top of the dynamite is an inexpensive but powerful explosive (right).

owner sign an easement releasing us from liability.

Working with the neighbors. On top of keeping the customer happy, I have to make sure the neighbors are happy, too. If people are living near the blasting site, I go talk to them. I explain what our whistles mean, and often I give them a written explanation to keep with them. That way, when they hear the whistle, they know what we're up to.

We also set up a seismograph by the closest building (Figure 3). It records all the ground movement and all the air noise from the blast. The machine's memory can hold the records for 31 blasts. Back at the shop, we transfer each file to our computer, with the date, time, and location of the job.

The seismograph data is important in case there's a dispute later on. It helps people understand the difference between ground movement and the decibels of air blast created by our explosions. As I explain to each neighbor, when we blast, the rock that we move makes the air move, and that air

has to go somewhere. Even when you are a long way from the blast, when the air hits the house, it may shake the windows. The neighbors may think their whole house is moving, but it's not — it's just the windows.

With our seismograph set up next to the nearest home, we can record the actual ground movement. We use standard formulas to calculate safe charges based on the distance to the nearest house. The seismograph lets us double-check to make sure that the vibration is within safe limits.

Sometimes someone complains about the noise. If so, we cut down our charges to accommodate them. Because we stay on good terms with the neighbors, we very seldom have any legal problems.

Liability and Insurance

In my years in the blasting business, I can only remember two or three lawsuits, and none of them went anywhere. Still, when you hire a blasting company, you should make sure it carries proper liability insurance. Ask to see

the blaster's certificate of insurance, and make sure that the name is correct and the date is current.

Safety. Injuries are rare on blasting jobs. The companies that supply explosives spend a lot of effort on safety training for blasting contractors, so our workers are very conscious of what they are dealing with. Also, our insurance companies regulate us closely and inspect us every year.

Modern explosives aren't as sensitive as you might think. They can take quite a beating and they won't go off. But it's still a good idea to treat them with great respect. We don't want the builder's people or any other subs — except maybe the excavator — on the site when we blast. It's the blaster's responsibility to move them out of there. If they won't move, we don't blast — it's as simple as that. ■

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