

A Quarry Story

Adapted from Information by Vulcan Materials Company

What goes on at the site of a quarry? Unless you've worked at, visited, or toured a quarry, chances are you don't know much about what goes on inside one. In simple terms, a rock quarry is a place where little rocks are made from big rocks. Although the basic process is the same, each quarry is different. Geography, geology, the type of stone mined, how close a quarry is to neighbors, the size of the operation, and the main transportation method used to get the stone products to customers all have an impact on how each quarry is designed and operated.

Vulcan Materials Company primarily does quarry mining. They take big rocks out of quarries and make smaller rocks and sand by crushing them. They mine igneous, metamorphic, and sedimentary rocks to be used for construction.

Before the company can start operating a quarry, many preparations must be made. Their geologists must find a place where there is a large supply of rocks beneath the earth's surface. A quarry is frequently located near a community where the products are needed, to reduce transportation costs on potential customers.



After the quarry location is found, geologists survey the land, then develop a design to make the quarry safe and efficient. A variety of operating permits are needed. After obtaining the proper permits, equipment is purchased, roads are built to the facility, and Vulcan begins to build the processing plant.

To get to the rock beneath the surface, Vulcan must first clear the land they are going to mine. Once the land is prepared,

the operation is ready to begin mining rock. At many sites, the material which is removed is used to begin construction of berms and other buffer areas, or donated for landscaping or construction projects in the community.

Drilling and blasting is a very important part of how the rocks are mined. The process is designed around how much rock is wanted to be broken apart, the type of rock, and the size of the pieces wanted to break off. Vulcan hires experts to help with drilling and blasting because they know exactly how to work with explosives to make sure this part of the process is handled safely, efficiently, and as quietly as possible.

Holes are drilled, then explosives are placed inside. The explosives are detonated to provide the smallest release of energy for the most efficient blast. The entire blasting process occurs in just a few seconds. Larger quarries may blast once a day and smaller quarries may blast once or twice a week. Blasting is monitored with a special machine to record sound and vibrations so the community around the quarry remains protected and safe.

The blasts free the stone from the quarry wall. The big pieces are removed by pit loaders and dumped into large haul trucks. The area which begins to form when these big pieces of rock are blasted away becomes the quarry. Large haul trucks are used to load and move the rocks out of the pit and to the processing plant.

When trucks deliver the big pieces of rock to the processing plant, the rocks are put into a primary crusher which breaks them into smaller pieces. The primary crusher can crush between 300 and 2000 tons per hour. Different kinds and smaller sizes of crushers might be used to break the rocks one or two more times. As rocks pass through the crushers, they are moved around the processing plant on conveyor belts.

Once the rocks are broken down to smaller sizes, Vulcan uses screens to separate them into piles which are the same size. Some screens are larger, allowing the bigger rocks to pass through. The smaller screens let only the small rocks through. Rocks may be crushed and screened many times before being placed in a stockpile with other rocks the same size.

Stockpiles are huge piles of rock, sand, gravel and other materials. Some stockpiles are as much as 30 feet high and 800 feet around. Because the rocks are kept outside where they are exposed to the weather, they have to be carefully maintained so heavy rain doesn't wash them away. Care also has to be taken so other materials don't get mixed in with them. Bulldozers and front end loaders are used to keep the stockpiles in place. Vulcan uses a shipping loader to fill the customer's trucks with the rocks and other aggregates from the stockpile.

As it turns out, making little rocks out of big rocks isn't as easy as it sounds. It takes work on several levels to get the material to the customer, who then uses it to shape the world around us.



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