



And even before humans first placed one stone atop another to form a crude shelter, they dwell in caves with stone walls that served to protect them from the elements and predators, as well as provide them with a canvas to record their impressions of the world.



Later civilizations in Africa, in Asia, in the Middle East, in Central and South America, and in Europe understood the value and permanence of stone in the construction of roadbeds, buildings and other structures.

Roads, bridges, buildings and whole cities built thousands of years ago still exist in many parts of the world.

Stone is a nearly inexhaustible natural resource that makes up the Earth's crust and mantle. It is found virtually everywhere.

The ancient Egyptians, Greeks and Romans developed sophisticated systems for mining and transporting stone for construction. They used it for building everything from humble dwellings to magnificent tombs and monuments and for the roads that connected city with city, facilitating travel and trade. The Romans built bridgelike structures of stone called aqueducts to bring fresh water from long distances to their cities.

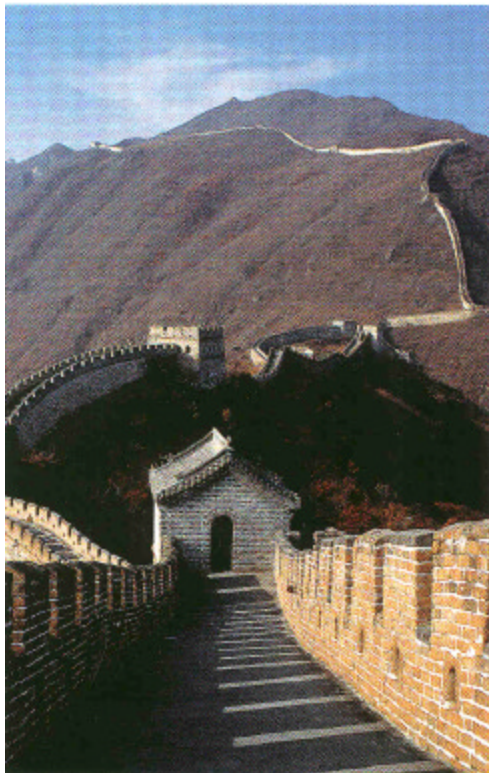
In modern times, we use stone for construction in many of the same ways the ancients did, but our methods of mining and moving it have created new uses for stone that the ancients could never have imagined. Today, stone in various forms is used in the construction of highways, sidewalks, houses, buildings and water and sewage treatment plants. It also is used in the manufacturing of glass, computers, baby powder, cars, toothpaste, fertilizer, household cleansers, film and insulation among many other things.



What makes a stone good for building or construction? It should be attractive and easy to work with—but not crack, crumble or weather too easily.

There are about 9,000 aggregate (crushed stone, or sand and gravel) operations in the U.S., putting one close to every major city. We use about three billion tons of crushed stone, sand and gravel every year—nearly half the natural resources mined in this country. When the useful life of a quarry or mine is over, the site can be converted into another beneficial application, such as a park, a lake or recreation area.

Today, the concrete foundations and facades of homes, schools, offices and stores are built with quarried materials. An average new house in the U.S. is constructed with about 400 tons of sand, gravel and crushed stone (mostly limestone). Marble, sandstone, and granite can be cut, shaped and polished to cover buildings.



An ideal building or construction stone is strong and has few natural fractures and a uniform texture. It should also resist rapid weathering and be economical enough to use in bulk.

Concrete, crushed stone and asphalt are all building materials humans produce from minerals, rocks or petroleum. Construction materials such as brick, tile, plaster, wallboard and steel are also made with rock-derived ingredients.

The Egyptians, Greeks and Romans all used concrete, a synthetic rock. Heating limestone, clay and silica to $1,425^{\circ}\text{C}$ ($2,600^{\circ}\text{F}$) makes cement, the glue in concrete. Combining cement, aggregate and water forms concrete.

Asphalt is a tarlike hydrocarbon mixture that is solid or semisolid at room temperature. It is heated and combined with aggregate to form the familiar material that paves most roads. Most asphalt is made by evaporating crude oil.



Crushed stone (mainly limestone and granite), sand and gravel are so essential to urban life that billions of dollars worth are produced each year. They're used in concrete, roads and virtually all construction sites.