

The difference between the mixtures is, that the dryer the mixture the quicker will the concrete "set up"—but in the long run, when carefully mixed and "placed," the results from any of the above mixtures will be identical. It may be said, however, that a dry mixture is the harder to handle, must be protected with greater care from the sun or from drying too quickly; and lastly, is likely—unless used by more experienced hands—to show voids or stone pockets in the face of the work when the "Forms" are removed. The less the voids in the stone or gravel, the greater will be the volume of the concrete. In general, the amount of concrete will be greater in each instance than is shown in the table—especially when gravel is used.

Materials

Before attempting to describe the actual processes of mixing and placing concrete, it will be well for us to have a pretty clear understanding as to the nature of the materials with which we are to work, and how best these may be selected.

Portland Cement

Portland Cement comes in paper bags, cloth sacks or wooden barrels—but the best way to handle it for the average user, is in cloth sacks. Manufacturers of cement charge more for this kind of package, but allow a rebate for the return of the empty bags. These bags must be kept dry and untorn and shipped back by freight to the manufacturer.

Paper bags tear easily, while barrels are too bulky to handle readily, and are not returned to the manufacturer—thereby necessitating a loss, as compared with cement in bags, of about 45 cents to each barrel.

The weight of the shipping units of cement varies slightly, but in general, the paper or cloth bag contains $87\frac{1}{2}$ lbs. of cement, and four such bags make a barrel of 350 lbs.

It is important that your stock of cement be kept in a dry place.

Once wet, it becomes hard and lumpy, and in such condition, is useless. If, however, the lumps are caused by pressure in the store house, the cement may be used with safety. Lumps thus formed can be easily broken by a blow from the back of a shovel.

In storing cement, throw wooden blocks on the floor. Place boards over them and pile the cement on the boards, covering the pile with a canvas or a piece of roofing paper. Never, under any circumstance, keep cement on the bare ground, or touching or against the sides of buildings.

Sand

Do not use very fine sand. By this is meant that a large proportion of the grains should measure 1-32 to 1-8 of an inch in diameter, and should the grains run up to $\frac{1}{4}$ in., the strength of the concrete is in-