Soil Puddling

G. B. Bodman and J. Rubin

Soil puddling is the process of working clay, loam, pulverized ore, etc., with water, to render it compact, or impervious to liquids; also, the rendering of anything impervious to liquids by means of puddled material.

Physical properties of the soil other than structure and apparent specific volume, meanwhile, have also been altered. For example, the friability (5, 9), shrinkage properties (8), permeability to water (2, 11, 3) and plant roots (14), proportion of bound water, and pore size distribution (4) may be considerably altered by compression. The extent of these changes is probably very complicated, two kinds of deforming stresses are commonly recognizable: normal stresses of compression and tangential stresses causing shear.

The structural part of the apparatus consists of a framework comprising four vertical columns and an upper (12-by-1/2-inch) and a lower (12-by-16-by-1/8-inch) horizontal platform, to which the other parts are attached. There is vertical clearance of 9 inches between the platforms. All work is bolted to an open wooden bench.

The housing of a 60:1 reducing gear, built onto a 1/15 H.P. synchronous motor, is supported by a yoke bolted to the frame. The motor gear in turn may be connected, through a set of external 16:1 reducing gears, to a vertical shaft passing through the middle of the platform. Torque on the shaft is transmitted to the motor frame when in gear, and...