LECTURE 39

Cement Stabilization

The criteria for cement percentage required for stabilization shall be as follows. The following methodology shall be used for quality control and soil-cement stabilization.

1. Perform the mechanical and physical property tests of the soils.
2. Select the Cement Content based on the following:

AASHTO Classification	Usual Cement Ranges for Stabilization (% by dry weight of soil)
A-1-a	3 – 5
A-1-b	5 – 8
A-2	5 – 9
A-3	7 – 10

Suggested Cement Contents

3. Perform the Standard Proctor on soil-cement mixtures for the change in maximum dry unit weight in accordance with AASTO T 134.
4. Perform the unconfined compression and CBR tests on the pair of specimens molded at 95% of the standard Proctor in case of stabilization. A gain of 100 psi of cement stabilization is adequate enough for stabilization and % cement shall be adjusted. Although, there is no test requirement for the optimum cement content when using cement to modify the subgrade. An amount of cement 4% ± 0.50% by dry weight of the soil should be used for the modification of the subgrade.

THERMAL STABILASTION

iv) *Soil Stabilization by Thermal Process :* It is described above that the method of burning moulded articles of soil was perfected from Vedic period by Indians. Sankalia[1] had stated that from protohistoric period the method of manufacture statues by *cire perdue* technique was known to Indians. The technique requires a mould with inner and outer layers of soil with cavity in between. The outer layer of the mould was prepared of stabilized soil. It is described that for preparing statues of copper, silver and gold from such a mould, the soil to be used should be mixed with rice husk, cotton and salt and must be ground thoroughly. After three days the outer part of the mould is prepared of this stabilized soil[24].

For melting metals like gold, silver, iron etc., it is necessary to place them in a capsule (*mūṣa*). This is placed in a furnace. These capsules were prepared of stabilized soil such that it can bear the intense heat of a furance. More information on this aspect of soil stabilization can be had from Satya Prakasha[25].