

1.1 General

Soil stabilization involves the use of stabilizing agents (binder materials) in weak soils to improve its geotechnical properties such as compressibility, strength, permeability and durability. The components of stabilization technology include soils and or soil minerals and stabilizing agent or binders (cementitious materials). Most of stabilization has to be undertaken in soft soils (silty, clayey peat or organic soils) in order to achieve desirable engineering properties. According to Sherwood (1993) fine-grained granular materials are the easiest to stabilize due to their large surface area in relation to their particle diameter. A clay soil compared to others has a large surface area due to flat and elongated particle shapes. On the other hand, silty materials can be sensitive to small change in moisture and, therefore, may prove difficult during stabilization (Sherwood, 1993). In such soils, successful stabilization has to depend on the proper selection of binder and amount of binder added.

These are hydraulic (primary binders) or non-hydraulic (secondary binders) materials that when in contact with water or in the presence of pozzolanic minerals reacts with water to form cementitious composite materials. The commonly used binders are:

- Cement
- Lime
- Fly ash
- Blast furnace slag

Maintenance and replacement of pavement consumes a large portion of the budgets of transportation departments in every country. Methods for reducing the cost of constructing and maintaining pavements and lengthening pavement life can help transportation departments better maintain the road network on limited budgets. Modern pavements are expected to provide a high level of safety and comfort for their users. Pavements are commonly designed using a combination of mechanistic and empirical approaches. These methods involved in selecting the appropriate soil and pavement parameters. Sub grade materials vary from soft soil to rock. Variations in the sub grade, even over short distances, are inevitable and can occur abruptly or gradually, depending on the geological history of the surface soils. A high variability in sub grade soil characteristics may dictate the use of conservative estimates that may lead to thicker pavements with higher construction costs or poor performance and higher maintenance

costs. In order to alleviate these problems, methods have been developed to try and minimize the variability in sub grade characteristics.

Cashew (*Anacardium occidentale*) is an important plantation crop of India and is one of the well known species of the Anacardiceae family. India has the largest area under cashew (9.23 lakh ha) and stands as the second largest producer of cashew (7.00 lakh MT) in the world [1]. India has a comparative advantage in the production and processing of cashew nuts on account of its skilled labor force. Today, India is the largest processor and exporter of cashew in the world [2]. Maharashtra ranks first in the production (28.78 % of the country) and productivity of cashew nut in India. The fruit (cashew apple) can be used to make juice, jelly, jam, wine and syrup and its waste has been proposed as a feedstock for protein-enriched animal feed or as a high fructose source Using the mixture of Cashew nut shell liquid and Lime the engineering properties of the soil is improved. And also building blocks are prepared by using hydraulic compressed machine.

Compressed earth blocks are cost effective and energy efficient compared to normal burnt bricks used for construction of buildings. Compressed earth blocks are also known as stabilized mud blocks (SMB) or Stabilized Compressed descendent of moulded earth blocks. Laterite has been used in construction of shelter from time immemorial and approximately 30% of world's present population still lives in laterite extensively for wall construction around the world, particularly in developing countries. Laterite is a cheap, environmental friendly and abundantly available building material in the tropical region. Laterite is highly weathered soil which contains large, though extremely variable, prop and aluminium oxides, as well as quartz and other minerals. They are found in abundance in the tropics and sub tropics, where they generally occur just below the surface of grass lands or forest clearing in regions with high rainfall. The soil colour can vary from red, brown, and violet to black depending on the concentration of iron oxides. Laterite compounds in the soil composition. Laterite soil also occurs at lower levels and in valleys.