

A Study On Soil Stabilization By Using Lime & Fly Ash

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Abstract:

Soil stabilization is change the property by chemical or physical mean in improvement the engineering quality of soil. For any type of structure, is necessary in foundation and entire structure should be strong in support. Critical role plays soil in around the order of strong foundation. We must have the right information proper study of soil in work about should their properties and components affect their behavior A study is done to check varying percentages improve soil properties with fly ash and lime.

Keywords — Locally available soil, Fly ash, Lime.

INTRODUCTION:

Soil

characteristics and properties determine the components for the growth of plants .It is formed by the living organisms, rocks, water, air and other materials of soil .soil is generally different color.

Soil stabilization can be defined as the different property i.e. Chemical and physical property. It means the engineering quality of soil used for soil stabilization different engineering works, and is most commonly used to build road .

To increase strength or stability of the locally available soil and to reduced expense construction using local available materials For a any kind of structure. one foundation it is very important and the structure has to be strong to strengthen. Improving of soil's engineering properties is called soil stabilization. The soil has various important pages of dirty and clay and it changes geographic features . they bloom and the water is compressed in the presence of water while dry and elongated . Many soils in natural state are very weak against shear load. Due to this bearing capacity is also low. stabilize the soil, power and power retention the ability of pot should be improved . necessity on soil stabilization :

- 1) To increase shear strength.
- 2) To improve the stability of slopes.
- 3) Reduce the balance cost using locally available soil.
- 4) To increase density.
- 5) To reduce permeability.
- 6) To reduce settlement of structures.

Chosen stabilization is adding to a soil lime. It is useful for stabilization of clay soils. When the lime gives feedback with the soil, it is exchange in the water substrate and decried it in the soil.

The liquid lime is a more effective stabilizer than Hydrated lime; but it is more safe and to handle. Usually hydrated lime is used. It is also known as a slaked lime.

The ratio of lime required for stabilization changes to soil 2 to 10% .

The amount of fly ashes is generally 3 to 5 %. The fly ash used is about 10 to 20 % soil .

The fly ash is the product of burning coal in the electric power plant.

fly ash is a combination of other methods.

Fly ash is a bit of value for the Siemens but in the presence of moisture. It has the characteristics of soil strength and compressibility .

LITERATUR REVIEW:

1)Cokca,E.(2001)

In this they described that the square fly is ash is muted and muddy matter .can Fly Ash fly provide of second and third cat ions (Ca^{2+} , Al^{3+} , Fe^{3+} etc) under ionized position that clay particles are dispersed the promote flocculation. Thus , The transformation of the fish was eradicated with the help of phosphate ash. They soil is used with mixed the Soma Fly Ash at 0-25%.The fly ash is cured after 7days and 28 days.. And they result plasticity index, activity and pattern swelling of the samples are low percent with increasing high percent stabilizer and curing that time. The swell potential ash optimum content is decreased at 20%. physical properties and swollen probabilities are changes in results and this results in chemical reaction in the soil immediate flocculation of clay particles due to chemical reactions and puzzolanic and self-sustaining assete ash and flight Fly Ash and It concluded that the stabilized soil with low and high calcium fly ash to improved the soil.

2)Bhuvaneshwari, (2005),

Author In this paper has described that the experiment of soil the results of engineering properties. Both laboratory of the soil and fly ash property are improvement to check in varying trial and filled tests have been calculate. The paper describes on material to obtained the thickness and method adopted for placing

and operate a “Disc Harrow. The constructions of fill the low shed areas and keep the ashes clean, in tests are proved and the bound to test 30 length .0.6m height was successfully .

3) Pandian, N.S. (2002),.

Author in This paper Studied the result of two types of fly ash effect of fly ash Ash that is Class F and Class C black cotton clay CBR features on top effect on the soil characteristics in CBR test of the soil. The soil low strength increased in fly to Ashes from 0 to 100% then the CBR test reducing the area of black cotton soil is a less potent force which is dominated by clay contraction. The optimum level fishery ash in mixed with fly ash due to the frictional resistance. The next pair of fly ash was thrown at 60% up to the optimum level and then increased to the second highest level . fly ash BC soil CBR tests can be emulated by fly ash or BC soil in relation to friction or joined resistance relative to soil resistance .

4) Phanikumar B.R., (2004)

Author In this paper has investigated that as a result of fly ash on expansive soil engineering properties through an experimental. effect of parameters like free swarm indicator potential swelling pressure plasticity compaction power and expanded soil hydroid conduction . ashes mix expansive soil with FLY ASH content of 0, 5, 10,15 and 20% dry- weight bass and they estimated that increased FLY exposure in fly ash reduces plastic futures and FSI will reduced by 50% in addition to 20% of fly ash.

Hydraulic weightily mixed with fly soils due to increasing fdly ash content due to the increase of maximum dry body weight with increasing fly ash content .

5)Karthik .S. (2014)

Author In this paper the has investigate that calculate result of fly ash from combustion of sub-bituminous coal at electric power plants, soft fine grained soil are stabilization . The Liquid Limit, Plastic Limit and the Specific gravity of the soil range from 32%, 23.37% and 2.7 respectively. The soil and the fly ash were on the ashes conducted 9% optimum humidity. 6% of fly ash are add then ability to change the soil capacity 10kg/mm to 35kg/mm² and CBR value changes from 3.1% to 4.82%. Due to increase in CBR values. The thickness of pavement decreases from 12 inches to 8.5 inches.

6)Ahmed, AfafGhaisAbadi (2014)

Author In this paper as investigated that using the fly ash, the soil of the clay is mixed for the construction of the city . Author it was found that the fly ash height with clay soil is 15% average. The dramatic decrease in soil properties is seen from 0% to 15 % of the fly ash material , but there is no significant reduction in the fly ash contracts between 15% and 20%. Fundamental density and OMC examination for various fly ash amount. The dry density increases by 15%as a fkly ash and increases by 20% of fly ash increases to 1.53 .The liquid limit decreased from 55% to 48% for

increase of fly ash from 0% to 15% by weight. Plasticity Index changes from 30% to 13% for addition of 0%to 15% of fly ash. C.B.R value of soil changes from 3% to 56%.Gyanen et al., (2013) evaluates the compaction of stabilized black cotton soil using two type of fly ash, viz. (1) fine and (2) coarse.The natural black cotton soil was taken from Gadag district of Karnataka. The Liquid Limit, Plastic Limit, Natural water content and Specific gravity of soil were 66%, 37.12%, 8.95% and 2.68. Fine fly ash soil has M.D.D 1.35g/cc for 95% of soil and 5% of fly ash. The M.D.D becomes 1.35g/cc for 95% soil and 5% fly ash mixture and lowest density was 0.6g/cc for 70% soil and 30% fly ash. The coarse fly ash has M.D.D 1.35g/cc for 95% soil and 5% fly ash mixture and lowest density about 1.0g/cc for 70% soil and 30% fly ash.

STABILIZATION OF METHODS

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- (a) The soil in mixing the material existing to improvement and some changes of soil property . Structure and improve the shear power of the soil in the drainage. (mix with improvements in soil properties) .The mixture used in cement , mixing, bitumen, fly ash and chemical stability.

ADVANTAGES

- 1) This is the power increase of soil.
- 2) Stability of volume - moisture changes of Swell-shrink to control characteristics caused.
- 3) Durability – Transportation or hike in weathering ,incense.
- 4) Reduced in pavement thickness and cost.

DISADVANTAGES

- 1) Erosion to resistance in stabilization.
- 2) Reduced in deflection surface of soil.
- 3) Increased level for flexible modular at built layers .
- 4) The Soil layer can grow sharply and strength is increased using the mixture to reduce the thickness of the road.

CONCLUSION:

The results of the soil available locally in this chilli. When lime and fly ash are mixed in the soil, The addition of Plastic lime mixture increases but the fly ashes dissolves with the limit of liquid .The plastic index is decreases by the fly ash. Increasing the amount of fly ash and lime increase their dry density and decreasing free –float index and increase the optimum humidity content. This paper concludes according to the test and the fly ash is mixed with a specific amount of soil available locally.

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