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# Review on Stabilization of Soil by using Admixture

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**ABSTRACT:** The soil often is weak and has no enough stability in heavy loading. Soil types come in many textures colours and compositions. Each type of soil varies according to the region or climate of its location Soil stabilization involves the use of stabilizing agents in weak soils to improve its geotechnical properties such as compressibility, strength, permeability and durability. If good earth is not available at the construction site, it becomes imperative to opt for soil stabilization. If strength of the soil is poor then soil stabilization is normally needed. Soil Stabilization is a process of treating a soil in such a manner as to maintain improve the performance of the soil as a construction material. . In this paper, various articles have been reviewed in order to discuss the various economical and effective ground improvement techniques Searching for the best soil stabilizers to overcome problems occur by the soft soils are still being the main concern, The stabilizing agent improves the strength parameters of sub grade of road pavement and leads to strengthening of embankment.

**KEYWORDS:** Fly ash, Lime, Cement, Waste paper sludge, Rice husk ash

## I. INTRODUCTION

Stabilization of soil is employed for modifying the properties of soil to improve its engineering performance, both in terms of its strength and durability. Stabilization technique controls the unwanted properties in the sub grade soil such as, excessive compressibility, permeability, frost susceptibility, settlement, volume change, etc. Stabilization is technique of improving characteristics of native soil or granular material used for construction of pavement layers .the soil stabilization can be used as to increase shear strength, to improve the stabilization of slope, to reduce settlement of structure, to increase density of soil. Decrease of liquid limit and plastic limit values

Important physical properties due to reaction with cementations agents mixed with the soil. The physical changes may be listed as density and stiffness, with controlled moisture retention capability

By the stabilization better soil gradation, increase in durability, increase in strength, reduction of plasticity index and reduction in swelling potential is achieved. Stabilization improves the properties of construction materials and gives the following attributes

- a) After saturation with water substantial proportion of their strength is retained.
- b) Resistance to erosion.
- c) Surface deflection is reduced
- d) The elastic of layers through the use of admixture to reduce the thickness of the road pavement

## II. RELATED WORK

**Fly Ash:** fly ash is economical each to available and resistance cold weather and give great workability fly ash is add in soil in varying percentage and the soil all properties of the mix in found put in 7 day and 28 days. fly ash giving the desired properties is the optimum of fly ash and can be used based product and fly ash is prime material in many cement. Fly ash is two type class f and class c. Class f fly ash contain cover kind of mated particle. Fly ash itself has less cement value but it reacts chemically and form cement compound in presence of moisture. Cement compound formed improves the strength and compressibility of soil Fly ash is a bio product of coal fired electric power generation facilities it has little. Most of the fly ashes belong to secondary binders cannot produce the desired effect on their own.

However, in the presence of a small amount of activator, it can react chemically to form compound that contributes to improved strength of soft soil. Fly ashes are readily available, cheaper and environmental friendly

**Lime:** lime acts as binding material for clay and gravel lime add to soil is called lime soil stabilization. Lime add to soil it give a various benefits to improving soil various property like density of soil. Bearing capacity of soil. Etc. Lime soil stabilization is give benefits to soil like clay, silty clay, clay gravel and so many. Lime is not suitable used granular soil and or sand soil. Soil stabilization for construction of road airfield and building foundation is improve soil capacity and increase plasticity limit and reduce plasticity index. This reaction results from the formation of calcium silicate hydrates and calcium aluminates as the calcium from the lime reacts with the aluminates and silicates from the clay mineral surface. This reduces the plasticity and increases the friability of the soil.

**Cement:** cement stabilization is used in soil to improve the stability of the sub grade, cement can be used soil stabilization soil high organic. Due to reaction property of soil improve soil strength like. Strength and durability improved. cement is almost always less expensive than other low cost site treatment or pavement methods. Cement, lime and fly ash in combination with cement or lime are used common stabilizing agents may be used for blinding non cohesive soil.

**Waste paper sludge:** Waste paper sludge is a waste material collected from the paper industry. Waste paper sludge increased to better strength and optimum value of strength to soil. The waste paper sludge sample was collected in plastic container from the sludge soil was decreased and optimum moisture content was increased and give optimum value of strength to soil.

**Rice husk ash:** The rice husk ash was collected from rice mills Chennai, which is a solid waste which is disposed in the empty barren land as a solid waste. Rice Husk Ash is by product material produced from the process of manufacturing puffed rice, contains large amount of iron oxide and silicate. It has higher density,

Figure as shows



(a) Fly Ash



b) Lime



(c) Cement



(d) waste paper sludge





(e) Rice husk ash

### III.LITERATURE REVIEW

1. These treatments are generally classified into two processes, soil modification or soil stabilization. The purpose of sub grade modification is to create a working platform for construction
2. It is very important to improve strength of Sub grade soil and done by replacing good soil or by stabilization of existing soil.
3. That admixture is improving the strength properties and dynamic behaviour of clayey soils.
4. the use of highway construction offers technical, economic, and environmental benefits
5. It may be done by replacing good soil or by stabilization of existing soil.

### IV.CONCLUSION

In this paper main motive to find the solution those soil is not suitable or soil is weakness quality is improve. Some admixture mixed in soil to gain soil suitability, like Bearing Capacity Strength Main thing is has economical mixture. Use to this mixture soil property is improve large scale and easy to made construction and other work. In this use a Fly ash, cement, rice husk ash, waste paper sludge, lime. Fly ash improves the strength and compressibility .cement Strength and durability improved and lime is improving soil various property like density of soil .Bearing capacity. Waste paper sludge increased strength and optimum value of strength to soil.also depends upon and importance of structure.

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