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A Review Paper OnUtilization of Overburden Dump In Construction Industry.

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Abstract: *Overburden management is an important task in open pit exploitation. To achieve the best reclamation results, site constraints such as slope stability, hauling and dumping issues, and interactions with groundwater must be considered. It illustrates a rational approach applied to a large limestone quarry where the thickness of the overburden is significant and spoil material must be disposed of in a flooded pit the above-mentioned issues. Through a multidisciplinary approach, the most suitable excavation, transportation, and disposal methods were selected. As part of the preliminary study of a large quarrying project, a detailed laboratory and site characterization was performed that determined favorable and adverse factors.*
Keywords*: Fly ash · OB material · Dump stability · California bearing ratio · Unconfined compressive strength·*

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I. INTRODUCTION

Opencast mining involves removing the overlying soil and heaping the fragmented rock as overburden. These dump materials are left over the land, occupy a large amount of land, and generally degrade soil quality. The thickness of soil over a rock or specific bearing stratum. An undesirable top layer covering rock, gravel, or other useful material is wanted for construction.In mining, overburden (also called waste or spoil) is the material that lies above an area that lends itself to economical exploitation, such as the rock, soil, and ecosystem that lies above a coal seam or ore body. Overburden is distinct from tailings, the material that remains after economically valuable components have been extracted from the generally finely milled ore. Overburden is removed during surface mining, but is typically not contaminated with toxic components. Overburden may also be used to restore an exhausted mining site during reclamation.

II. GET PAPER REVIEWED

Shreekant R L, Aruna M And HarshaVardhan April 2016 (1), This paper study to understand the Utilizing waste for the production of building material is considered to be important for conservation of natural resources and reduction of environment pollution.

As India is one of the major producers of iron ore, huge waste from iron ore mines is dumped in large areas in the form of overburden and tailings. The recycling or re-usage of these wastes is very much important in view of restoration of land for its effective utilization. In this regard it is very much necessary to intensify research in this area for making use of these wastes in the form ofbricks/paving blocks/tiles etc.,

Tarun Kumar Rajak · LaxmikantYadu · Sandeep Kumar Chouksey2020(2),In this paper study & discussed about the effect of fly ash on the geotechnical properties and stability of OB-fly ash dump. This paper reviewed the different percentage of flyash-OB mix that can be safely utilized in the mine dump as well as in the construction of mine haul road

Incorporation of fly ash in OB material along with some additives may also provide a suitable sub-base layer material in the construction of mine haul road. Safe and efective mode of utilization of fy ash may be achieved using fy ash-OB mix for mine void flling. Fly ash may also be used to provide the micronutrients which promotes the plant yields by enhancing the soil fertility and neutralizing the soil acidity

Md. Safiuddin,MohdZaminJumaat, M. A. Salam, M. S. Islam and R. Hashim.2010(3),This paper study The use of solid wastes is manifold. They can be used as coarse aggregates, fine aggregates, or supplementary cementing material for the production of construction materials. Many research studies had been conducted utilizing solid wastes. Most of these research works focused the effects of solid wastes on the physical and mechanical properties of construction products. Some of those studies attempted to investigate the durability performance of several construction materials including solid wastes. However, more research is needed to confirm the beneficial effects of solid wastes on the key properties and durability of new construction products.

In this context, the following research needs have been identified for further investigation to enforce the use of solid wastes in construction materials.

SannivShome, ShushilMhaske, K. Pathak, M S Tiwari2019(4),This paper study The ore grades and quality have decreased over the decades. Due to the decreasing grades, more inputs in the form of energy, water, capital and labour are required for the same output and at the same time larger volumes of waste are generated. Total resource utilization, where all of the material mined is put to good use, is a challenging concept for researchers and miners. To achieve near zero waste production circular economy business model has to be employed for sustainable development of mineral resources. Developed nations should make available innovative technologies to under developed nations so that total resource utilization is possible. After all no nation is self sufficient in there mineral needs.

Poonam D Patil, Yogesh N. Bafna, P. P. Patil2017(5),This paper study From this experimental work the following conclusions are drawn:

1. Addition of fly ash to the silt has shown no significant change in specific gravity values of the mixtures.
2. Addition of a small percentage of fly ash (about 3%) increases plasticity characteristics of silty soil. However increasing ash content tends to decrease plasticity properties. Higher percentage of ash content shows reduction in plasticity of soil. This is undesirable since higher percentage of fly ash failed to render the silty soil binding properties.
3. From the results of Standard Proctor Compaction Test, it was observed that there is an increase in maximum dry density with the increasing ash content. Optimum Moisture Contents (OMC) decreases with the increasing ash content.
4. However specimens prepared has water contents with OMC and OMC -2% seems to be stiffer when compared to that of specimens prepared at OMC+2%.
5. From this experimental work it may be concluded that fly ash is not very effective stabilizer to stabilize in ease of silty soil. This may be due to the following reasons :

1. Both silt and ash have similar grain sizes and specific gravity.
2. Both materials are either non-plastic or low plastic.
3. Similar grain size distribution failed to impart friction.
4. Its low plastic nature failed to cement the particles together.

Saifuddin Ahmad, S.M. Ashraf Husain, Sabih Ahmad 2015(6),In this paper study It is observed that the generation of the Fly Ash is more than its utilization. Moreover, the conventional material in the construction gives desired result as the experiment shows in the above graph. Thus we found that the Fly Ash is not only cost effective but also improved the characteristics of soil to make more stable slopes. It improves the characteristics of both granular and cohesive soil for the actual practice more and more laboratory studies are required to understand long term behaviour of expansive soils treated with Fly Ash and study their engineering properties.

N.Krithiga, D.Pujitha ,T. Palayam , A.revathy2021(7),This paper study From the results of the present study, it is concluded that, the soil stabilization using lime and fly ash is a very effective process for the strengthing of soil. During comparison the clay obtain maximum strength . since lime and fly ash are low cost material it obtains high strength and make the structure strong and durable.The test has been conducted in various soils such as clay soil ,alluvial soil,and red soil among these the clay soil is the best results and it can be used to strength the building and roads. Due to stabilization the soil the bearing capacity of the soil gets increasing and any foundation can be construction in the soil.

S.Z. SharifahZaliha, H. Kamarudin, A.M. Mustafa Al Bakri, M. Binhussain, M.S. SitiSalwa 2013(8),This paper study analysis, it can be concluded that the effectiveness of materials discussed above was already proven can stabilized the soft soils or improved the soil strength. But, further investigation has to be done in order to evaluate their effectiveness in field application rather than focusing in term of experimental studies. Other investigation also needs to be done so that other materials that would be effective as soil stabilizer could be found.

Karthik , Ashok kumar, Gowtham.P, Elango, Gokul, ThangarajMay 2014(9),In this paper study A similar study was carried out by Phanikumar and Sharma and the effect of Fly Ash on engineering properties of expansive soil through an experimental programme. The effect on parameters like free swell index (FSI), swell potential, swelling pressure, plasticity, compaction, strength and hydraulic conductivity of expansive soil was studied. The ash blended expansive soil with FLY ASH contents of 0, 5, 10,15 and 20% on a dry weight basis and they inferred that increase in FLY ASH content reduces plasticity characteristics and the FSI was reduced by about 50% by the addition of 20% Fly Ash. The hydraulic conductivity of expansive soils mixed with Fly

Ash decreases with an increase in Fly Ash content, due to the increase in maximum dry unit weight with an increase in Fly Ash content. When the Fly Ash content increases there is a decrease in the optimum moisture content and the maximum dry unit weight increases. The effect of Fly Ash is akin to the increased compactive effort. Hence the expansive soil is rendered more stable. The untrained shear strength of the expansive soil blended with Fly Ash increases with the increase in the ash content.

The following laboratory tests were carried out as per **IS: 2720.The** test were carried out on both normal soil and stabilized soil.

1. Specific gravity test
2. Grain size analysis
3. Atterbegs limits
4. Proctor compaction test
5. California Bearing Ratio value (CBR) test
6. Un Confined Compressive strength (UCC) test
7. Direct shear test

After removing impurities like vegetation, stones etc. the soil was mixed with Fly Ash in varying proportion by volume. The Mixing was thoroughly carried out manually and the tests were conducted as per standard procedures.

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