

## عنوان مقاله:

Utilization of calcium rich mine wastes and bone ash for the improvement of California Bearing Ratio (CBR) of soft soil

## محل انتشار:

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## خلاصه مقاله:

The aim of this experimental study is to investigate the effects of the addition of mine wastes and bone ash on some geotechnical properties of soft soil. The properties investigated include modified proctor compaction characteristics, California bearing ratio (CBR), uniaxial compression strength (UCS), internal friction angle ( $\phi$ ), maximum high density and maximum moisture contents of a characteristic soft soil. The study evaluated the ability of self-cementing properties of iron ore tailings, steel slag and coal ash which are by-product wastes from mining activities and bone ash at low proportion replacements to soft soil to improve the bearing capacity of the soil. The use of these calcium rich waste materials to stabilise and improve the bearing capacity of soil is a cost efficient and environmentally friendly disposal method of handling wastes. The candidate wastes, coal ash, bone ash, iron ore tailing, and steel slag were used to stabilise the soil separately at ۰.۵%, ۱%, ۱.۵%, ۲% and ۲.۵% replacements with soft soil. Based on performance tests conducted, considerable increase in the soil maximum dry density, compaction, UCS and CBR values were observed at different percentages of the additives. The results show that iron ore tailing is the candidate additive with highest property value of CBR of ۱۱ over the soft soil of ۷.۵. Iron ore tailings also give maximum dry density and maximum moisture content values of ۲۵۰۰.۷۳Kg/m<sup>۳</sup> and ۲۲.۴۵% respectively higher than other additives. All the candidate additives show improvement in properties evaluated over the soft soil. Therefore, these mine wastes can be used to enhance the stability of earthy materials of structural foundation such as highways, railways, embankments, reclamation and backfill etc. at low percentage replacements

## کلمات کلیدی:

calcium rich mine wastes, CBR, compaction and stabilization

## لینک ثابت مقاله در پایگاه سیویلیکا:

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