

Survey influence of clay with magnetic water on soil dam

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Abstract: By positive modern technology of Magnetic water in agriculture and concrete construction and its impact on clay soils it is expected that Water ionization technology has significant impact on industry like dam construction. Aim of this research is to review of behavior clay soil with magnetic water effects of magnetic water on management cost, time, quality, behavior of engineering of clay soils in dam according to controlled experiments of soil compaction, shear strength, liquid and plastic limits of samples of clay soils with magnetic water and ordinary water has been determined. This study has been done to review of functional role of magnetic water in dam and its effects on construction. Due to impacts of magnetic water on ordinary water in this study, we concluded that magnetic water causes desirable behavior in soil engineering and this issue results in decrease of water consumption, working time, costs and increase of quality performance in civil, road and dam construction project.

Keywords: Magnetic water, clay soil, dam construction, compaction.

1- Introduction:

In recent years, successful tests have been done on magnetic technology which is important in application of this technology in building, road construction and agriculture such a way that it has used in strengthening and engineering and building.[1]

Nowadays, there are issues that development projects in country was faced with them and they cause to delay in projects and slow construction operations, we could point to different cases including lack of proper and accurate knowledge of the volumes and amounts of activities of projects, incorrect assessment of the resources needed, weakness in controlling planning performance of project activities, weakness in control of project costs and as a whole, weakness in management system of project. It is obviously moving with time and utilizing science and technology and the most advanced techniques will be the guarantor of success in better management of project costs. [2]

Given that, earth dams are often constructed with materials of same area or areas which have clay core.

Earth dams are the best option for unsuitable lands.[3]

Since, behavior of clay core in dam is considered as an impenetrable curtain, due to the impacts of magnetic water on behavior engineering of clay soil, it expected that has important effects on clay core. According to history of magnetic water in this study, it has been addressed to impact of magnetic water on clay core of earth dams.[4]

Since, impact of magnetic water in fields of agriculture[6][5], animal husbandry[7], concrete[10][9][8] make significant progress, it is predicted that makes positive changes in saving cost and time, Increase the compaction and resistance of clay[11]. Where clay soil has important role

as a fine grained in building earth dams and layers of road construction. It is clear that low adhesion between particles, compaction between clay particles, reduced soil resistance, Soil settlement, transvers section are the factors which bring reduction of dam safety[12] , on the other hand mixing of clay with magnetic water make increase the compaction and adhesion between particles which in turn causes increase of resistance, safety and reduction of settlement soil, transverse crack, costs[10] .

We hope that these impacts make a change in the construction and damming process.

According to project management Science which is divided into cost management in civil projects and time management with processes and new technologies, we attempt to save time and cost and promote quality.

2- Discussion:

Parameter of compaction is a criterion which makes increase of density soil. Increasing soil density has effect on more compact grains and decreasing void of inter-particle. Volume of water in the soil doesn't change because of compaction and only the volume of air is reduced (thus, water is main factor in soil compaction).

Specific gravity of the soil that is cracked due to compression is a function of soil type, amount of humidity and condensation force which is for squeezing soil, thus water has important role in soil compaction

Test of soil compaction with ordinary clay soil:

Using ordinary water:

This test has been done with ordinary clay soil which has reddish brown, specific gravity 2.73 and Plasticity index 10. Some clay soil pour in container and add ordinary water in two steps (based on Modified Proctor" test) and compact soil in four steps. Then, Sample weight condensed is measured and its humidity calculated. The results as follows:

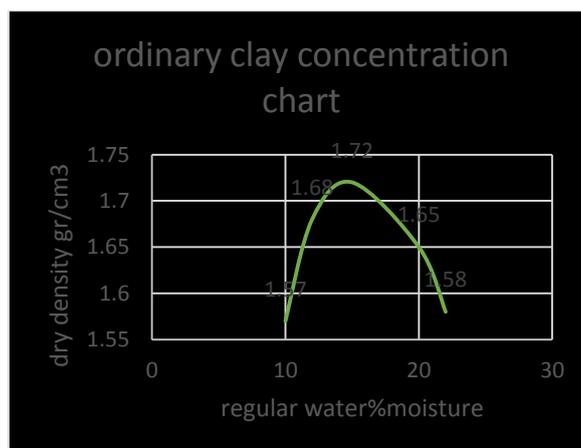


Fig1: the char is indicated that dry density against percent humidity in samples of ordinary clay with ordinary water

Using of magnetic water:

In second test, the steps were taken by using magnetic water. I.e. metal magnet is located in water so that make regular water ions and convert to magnetic water.

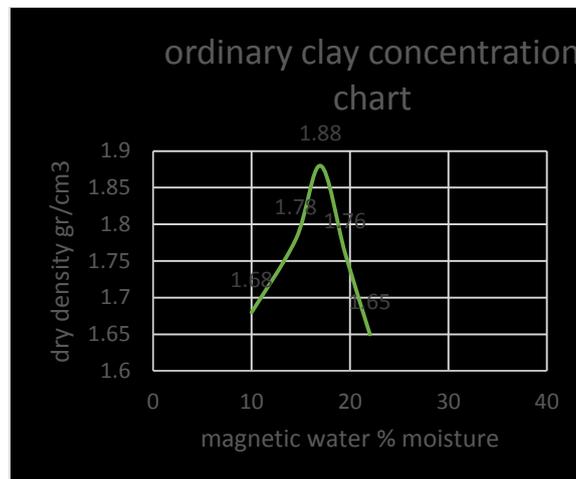


Fig2: the char indicated that dry density against humidity percent in samples of ordinary clay with magnetic water

3:Table is indicated the difference between parameters in clay to magnetic water and ordinary water according to tests

The amount of water consumed	Increase rate γ_{dmax}	Magnetic water	Regular water	sample
About10%	About14%	γ_{dmax} 2.28 W opt 9.48	γ_{dmax} 2.14 W opt 11	Clay

Based on tests with ordinary water, we could recognize the impacts of magnetic water on various properties of clay soil including increase of compaction, adhesion, increase of density, maximum fumidity, optimum humidity, Increase in permeability coefficient of soil, plasticity and fluid limits of clay soil which causes better conditions of dam operations, conditions of soil and clay core in dam.

3- Results:

Based on Atterberg Limits with ordinary water and magnet on clay soil also we can reach following results:

- Magnetic water to ordinary water cause increase of fluid limit and plasticity index of clay soil.
- Magnetic water causes slightly decrease on plasticity limit
- Magnetic water makes increase in permeability coefficient of soil
- Magnetic water causes to increase in distance between plasticity limit and fluid index which increases adhesion. Secondly, sticky soils have ability of high plasticity even with low humidity.
- Magnetic water compare to ordinary water causes increase of Maximum dry density and optimum humidity of ordinary clay.
- Magnetic water causes to increase the compaction and decrease of water consumption.

-Due to maximum dry density and reduced optimum moisture content and increase of adhesion which is a part of shear strength of the soil. It is expected that by using magnetic water in operations of earth dams with more strength, more desirable compaction and thus, saving time and cost.

-As behavior soil is more engineering, causes desirable change in soil. Since, using magnetic water causes more engineering behavior soil; we can cause to decrease of water consumption, time and costs of building dam projects. This subject causes to provide appropriate platform for civil projects.

4- Conclusion

When, we use magnetic water, then we achieve more desirable compaction. More compaction means that appropriate lock of particles thus, makes more adhesion, resistance and friction. Based on earth dams by using of magnetic water, we can process more strength and better compaction. Due to these changes, we can say it saves time and costs.

γ_{dmax} =maximum density

W_{opt}=optimum moisture

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