



Effect of Geopathic Stress Zone on Soil Properties

R.R.Sorate¹, A.G.Kharat¹ N.P.Dharmadhikari² and Suneeta Bhagwat³

¹Department of Civil Engineering, Sinhgad Academy of Engineering, Kondhwa (Bk.) Pune-48, (MS), India.

²Department of Applied Physics, Sinhgad Academy of Engineering, Kondhwa (Bk.) Pune-48, (MS) India.

³Department of Physics, Abasaheb Garware College Karve Road Pune, (MS) India.

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ABSTRACT

This paper deals with the geotechnical investigation of Geopathic Stress Zone. The energy from the earth at specific locations that have the ability to change the normal functioning of human system is called Geopathic Stress. In Structures, soil is an important component; change in Geotechnical Properties of the soil affects the stability of the structure. Experimental investigations on soil at Geopathic Stress Zone reveal that there is change in the properties of soil, due to the energies emitted by the earth. Investigations carried out by the researchers at mysterious Geopathic stress zones on Mumbai-Pune expressway has confirmed accidents occur due to existence of Geopathic stress, but there is no geotechnical investigations carried out on such locations. This paper aims at finding out the change in soil properties due to presence of Geopathic Stress Zone. The conclusions are justified by carrying out different tests on soil such as, "determination of water-content, specific gravity, density, plastic and liquid limits, conductivity, electrical Resistivity and pH value." The variation in the values of the Geotechnical Properties of soil at Geopathic stress zone is remarkable.

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Introduction

Geopathic stress (GS) is a natural phenomenon which affects certain places and can be damaging to human health [1]. The most usual cause of Geopathic stress is certain minerals concentration, usually an underground water stream, flowing beneath a house [2]. The water rapidly flowing through rock gives rise to an electromagnetic field which can affect the health of those living above it [3]. Geopathic stress can also arise from a geological fault line [4] that is, a deep crack in the bedrock which allows radiation from deep within the earth to come up to the surface. Literature survey reveals that Geopathic stress may be a form of imbalanced electromagnetic energy spectrum or subtle energy.

Kharat [5] et.al (2010) have studied the effect of Geopathic stress on human system by recording blood pressure (BP), heart rate (HR). Detection of geopathic stress zone can be done by using light interference technique; it was observed that on a Geopathic stress location the current sharply decreases. Pimplikar (2011) has conducted empirical investigations and analysis on the human system in motion while travelling at high speeds. He had developed simple models that are expected to identify the relationship of subterranean features and the human system in motion on highways and expressways.

Pimplikar (2010) through his experimental investigations on various mysterious accidental spots on Mumbai-Pune expressways [6], have confirmed 30% of accidents occur due to existence of Geopathic stress. Although moving away from the stress zone is easier in regarding built environment, but it is difficult for the road environment, where it has been showed that accidents takes place. Kharat (2000) through his empirical investigations at some spots on national highway, hinted that Geopathic zones affect the reaction time of drivers, suggesting that Geopathic stress could be one of the factor associated with

the road accidents. The Geo Induced Reaction Time (GIRT) instrument is an electronic instrument specially designed by Kharat (2000) to detect the changes in reaction time of human being, when subjected to Geopathic Stress from the Nadir direction. However, in Structures, soil is an important component; change in Geotechnical Properties of the soil affects the stability of the structure. Therefore, studies related to the effect of Geopathic stress on soil have not been carried out till day; this paper aims at finding out the effect of Geopathic stress on soil below the road pavement.

Fig 1 (c) shows that after one year at the same location, distress have occurred again in the concrete, which was used to repair the earlier distressed asphalt patch. This is possibly due to Geopathic stress.



Fig. 1 (a) Very Strong Geopathic stresses have virtually eaten away the strong concrete at an accident spot on the Mumbai-Pune expressway



Fig. 1 (b) Effect of Geopathic stress zone on the asphaltic surface at an accident spot

Fig. 1 (a) shows that the distresses in the asphalt at Geopathically stressed locations Fig. 1 (b) shows severe distresses in the reinforced concrete section at such spots.



Fig. 1 (c) Figure showing re-occurrence of cracks on the repaired surfaces on a strong stress zone

Aims and Objectives of Study:

Basic aim and objective of this study is to find the change in geotechnical properties of soil, present below the road pavement, in the Geopathic stress zone which in turn will affect the performance of road pavements.

Research methodology:

To achieve the objective, following procedure was adopted:

- An extensive area with a natural reservoir i.e. a well was selected for the experimental investigation. Details of the location are given in fig.2.
- Grids of 20' X 20' were formed over the area under investigation.
- With the help of dowsing using copper L-rods, underground water veins were detected.
- Dowsing is the method to locate, the position of the ground water below the sub-terrain using copper L-Rods.
- Light Interference Technique was used to confirm the presence of Geopathic Stress.
- Soil samples were collected with the help of core-cutter.
- Soil was collected from different places consisting of Geopathic and Non-Geopathic Stress zones.

This soil was stacked separately & made ready for conducting different Standard Geotechnical tests.

Study Area:

As per Researchers, Geopathic Stress is present at a place where there is presence of a natural reservoir. So, we selected a well present in the area of Pune Distict as shown in Fig.2.

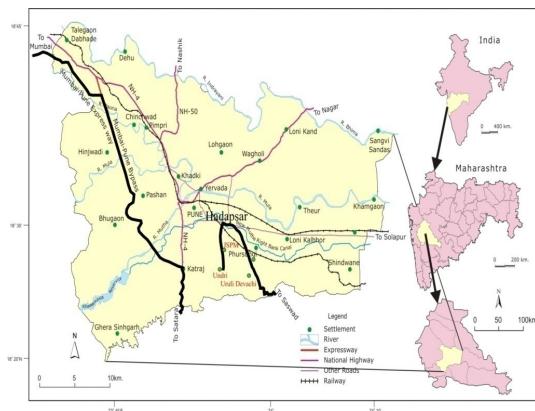


Fig.2. Map of, Pune distict.

The grid of 20 ft. X 20 ft. was formed, and then will the help of Copper L-Rods; dowsing was done to locate the position of ground water vein i.e. the Geopathic Stress Zone. The detailed Drawing is shown in Fig.3. At some specific locations inclusive of Geopathic and Non-Geopathic Stress zones, soil samples were collected with the help of Core-Cutter. The Basic Geotechnical properties of soil were tested by conducting standard tests as per SP-36, such as: "Determination of water-content, specific gravity, density, plastic and liquid limits conductivity and electrical Resistivity.

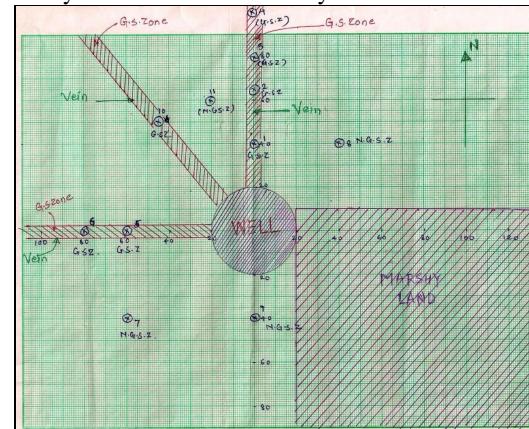


Fig. 3. Graph of the Exact Location of the Ground Water-Veins at the Proposed Site.

Observations & Results:

Table 1: Details of Standard Geotechnical Tests Conducted on Soil [8]

Sr No	Name of the Test	Method	Normal zone	Geopathic Zone
1	Moisture Content (%)	Oven Drying Method	33	35
2	Specific Gravity	Pycnometer Method	2.74	3.067
3	Plastic Limit (%)	3mm Rolls	50	38.89
4	Liquid limit (%)	Casagrande's Apparatus	60	62.5
5	Density (g/cu.cm)	Core-Cutter Method	0.138	0.167
6	Conductivity (micromhos/cm)	Conductivity Meter	0.41	0.3

Result Discussion:

As in table 1,

➤ Moisture Content increases in Geopathic Stress Zone by 3%, which is not that significant.

- Specific Gravity increases in Geopathic Stress Zone by 33%, which is remarkable as to change Specific Gravity of any material requires a span of years.
- Specific Gravity is directly proportional to the Density and as observed (Table 1) Density has also increases in Geopathic Stress Zone by 17%.
- Calculations show that, Void Ratio in the Geopathic Stress Zone is greater than that of Non-Geopathic Stress Zone by 51%, which refers to the compaction efforts required. In road construction, soil is to be compacted at its Maximum Dry Density, but as in Geopathic Stress Zone Volume of Voids is greater i.e. soil is loose and hence requires more compressive efforts than in Normal Zone. But in practice, those spots are not given extra compaction efforts which are required to achieve the desired level of strength and hence the bad performance of the road pavement at those spots (fig.6).
- As Liquid Limit increases, water holding capacity of soil increases and adversely Plastic limit decreases. Hence the soil remains longer in the Plastic State. Though increase in Liquid Limit is acceptable, but it's only by 2% whereas the decrease in Plastic Limit is by 12%. The water holding capacity of soil increases, as it is after Plastic Limit, it starts to deform, increasing the chances of settlement (fig.5).
- Also, the phenomenon in the change of Atterberg's limits, results in formation of cracks at an early stage which has been observed in the soil at Geopathic Stress Zone.
- Conductivity decreases in Geopathic Stress Zone which indicates the presence of less salts in soil, in-turn affecting the agricultural output (Fig.4).

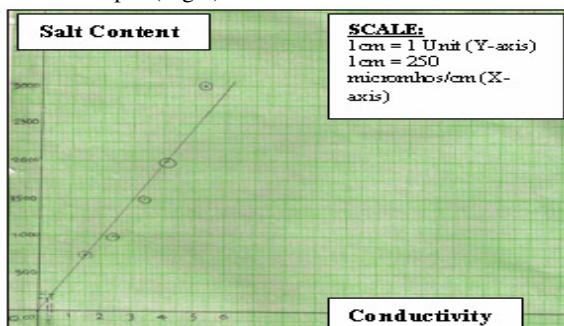


Fig. 4. Graph Showing the Conductivity Test Results

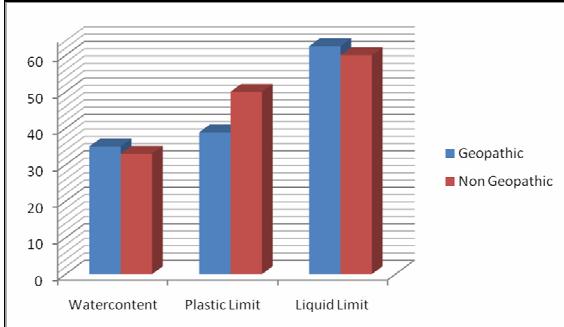


Fig. 5. Bar Chart Showing Comparison of Results of the Performed Geotechnical Tests on Soil

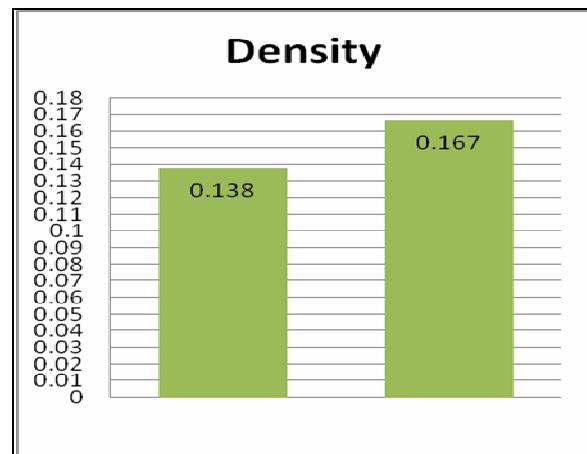


Fig. 6. Comparison between values of density in Geopathic & Non-Geopathic Stress Zone

Conclusions:

From the above results of different Geotechnical Tests carried out (Table 1), we can conclude that,

- In Geopathic Stress Zone we require more compactive efforts to achieve the desired level of strength.
- Soil remains longer in the Plastic State thus, indicating increase in chances of settlement.
- Also as the water holding capacity of soil increases at Geopathic Stress Zone, there is a direct impact on the bearing capacity of soil.
- So Geopathic Stress is one of the parameter that affects the normal functioning of the road pavement (Fig.1a,b,c). There is a remarkable change in the basic properties of soil in Geopathic Stress Zone Since Soil is the Major component of any Civil Engineering Structure, if there is such a remarkable change in the standard geotechnical properties soil, it will directly have an impact on the performance of that structure.

References:

- [1] Freshwater, D., Geopathic Stress. Complement Therapies Nursing Midwifery, 3, 1997, 160-162.
- [2] Croome, D.J., the Effect of Geopathic Stress on Building Occupants. Renewable Energy, vol.5, 1994, part II, 993-996.
- [3] Kharat, A.G., Empirical and Theoretical Investigation on Built Environment. Ph.D. Thesis, University Of Pune,2000
- [4] Pimplikar et.al – Effect of Geopathic Stress on the Performance of Roadways. Research Journal vol-1 No-1,2008,31-41
- [5] Kharat A.G., Effect of geopathic stress on human heart rate and blood pressure, Indian Journal of Science and Technology, Vol. 3 No. 1,2010, 54-57
- [6] Pimplikar S S, Empirical and Theoretical Investigations of Accidents on Expressways and National Highways, Ph.D. Thesis, University Of Pune, 2010.