Rock characterization provides an important input data for the design of the structures founded on or in the rocks. This paper deals with the characterization of granite obtained from certain locations of Jabalpur and Bundelkhand regions were selected for sampling the physical properties and Unconfined Compressive Strengths were determined for the selected samples. It has been observed that there is a considerable variation in the physical properties like specific gravity, water absorption, dry and saturated densities and Unconfined Compressive Strengths of the rock samples of different locations. The laboratory test results reveal that the specific gravity and water absorption values vary from 2.60 to 2.75 and 0.2 to 0.35 respectively. The dry density vary 2.59 g/cm$^3$ to 2.70 g/cm$^3$. The Unconfined Compressive Strength has a variation from 120 MPa to 175 MPa.

**Keywords:** Granite rocks, Unconfined compressive strengths, Physical properties

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**INTRODUCTION**

Granite is a most widely distributed plutonic rock in the earth crust. These rocks occur in both the peninsular India and extra peninsular India. Ajmer(Raj.), Jhansi(UP), Jabalpur(MP), Kangra(HP), Mysore, Bangalore, Chennai, Secunderabad etc. are the major places where this rocks is found. Jabalpur has a unique position in the matter of its Geology. The entire township of Jabalpur is situated on a very thick slab of granite rock. In the Bundelkhand region granite is outcropped in many areas e.g. Chhatarpur, Khajuraho, Bijawar, Tikamagarh, Jhansi, etc. The engineering characteristics of the rocks are strongly influenced by texture, structure, mineralogy, presence of cracks and fractures and degree of weathering. The present study envisages the geotechnical characterisation of the granite rocks of two major areas and variations in their physical and strength properties.

**LITERATURE REVIEW**

The physical and strength properties of rock depend upon many factors. They include geological, lithological, physical, mechanical and environmental factors, Ramamurthy (2010).
A number of investigators have studied the relationship between petro graphical and engineering behaviour of rocks. Keikha Tayebeh et al. (2013) established correlations between mineralogical characteristic and engineering properties of granitic rocks. They concluded that the grain size and mineralogical compositions influence the strength of granitic rock to a great extent. Ali Z. et al. (2013) studied petrographic characteristics and engineering behaviour of some igneous rocks of Baluchistan. The result of their study revealed that the mechanical properties of rocks can be estimated by using correlational equation between sonic wave velocity and petrographic characteristics. Gupta and Rao (2000) studied the deformational behaviour in terms of variation in tangent modulus and initial modulus due to weathering on Malajkhand granite, Nagpur basalt and Delhi quartzite. Several other researchers have studied the effect of moisture and petrographic features on strength and deformational behaviour of rocks (Broch E, 1974, Gokhale C S, 1994, Akesson U et al., 2001).

METHODOLOGY

The granite rocks samples were collected from granite outcrops near Medical College and Bada Pathar, Ranjhi of Jabalpur city. Some samples were also collected from two locations in Chhatarpur district of Bundelkhand region. The locations are shown in Figure 1. The samples were tested for specific gravity, water absorption, dry density and Unconfined Compressive Strength as per the relevant IS code of practise/ ISRM suggested methods. The physical properties obtained are listed in Table 1.
Granite blocks were taken from the sites and the cores samples of NX size were prepared from these blocks. The test specimen having l/d = 2 were prepared as per the specifications given in ISRM suggested methods. These rock samples were tested in a compression testing machine of 2000 kN capacity. The test results are summarised in Table 2.

**CONCLUSION**

From the laboratory investigations made on granite samples of different locations of Jabalpur and Bundelkhand regions, the following conclusions can be drawn:

1. The physical properties like specific gravity, water absorption and densities of rock samples collected from different locations vary considerably (Figures 2 and 3).
2. The Unconfined Compressive Strength also has remarkable variation (Figure 4).
3. The influence of moisture on unconfined compressive strength is very small.

The possible reasons for such variations in the characteristics of granite are due to geological, lithological, physical and environmental factors. The textural and mineralogical composition, presence of moisture, grain size, etc. influence these properties to a great extent.

**REFERENCES**


