

Review on Utilization of Ceramic Waste in Grout

Prof. Supriya Shinde¹, Sainath Naikwadi², Nitesh Shevde³, Farman Ansari⁴

¹Assistant Professor, Department of Civil Engineering, APCOER, SPPU, Pune, India.

^{2,3,4}Graduate student, Department of Civil Engineering, APCOER, SPPU, Pune, India

Abstract - Repair and reinforcing of existing stone work structures by injection grouting is a practical intends to give functional, sturdy, and safe structures without physically modifying outside aesthetics. A trial and analytical program examining the effect of grout injection on the basic conduct of old, unreinforced stone work is currently in progress. A few distinct definitions of cementitious grouts were observed to be helpful for injection of old brick work. These grouts are utilized for injection into cracks in harmed brick work to reestablish basic capacity and can likewise be utilized to fill existing voids to reinforce lacking stone work. A method for infusion of grouting of stone work is described, including specific portrayals of divider arrangement, infusion port area, grout mixing, and the infusion procedure.

Key Words: grout, injection grout, w/c ratio, compressive strength, tensile strength, etc

1. INTRODUCTION

Grout is a particularly fluid form of concrete used to fill gaps. Grout is generally a mixture of water, cement, and sand, and is employed in pressure.

Grouting embedding rebar in masonry walls, connecting sections of pre-cast concrete, filling voids, and sealing joints such as those between tiles.

2. LITERATURE REVIEW

Literature review related to the our project was carried out. The objective was to know the stability and the performance of different retrofitting techniques, grouting materials, methods, methodologies.

2.1) Bearing capacity improvement of loose sandy foundation soil through grouting

In this paper the shear strength of free sandy soil consistently increments with increment in bond content and furthermore with relieving period. Examination shows that the relative thickness of sandy soil can be significantly enhanced by various strategies and among these various procedure are accounted. The shear strength is found to increment with increment in level of aluminum sulfate.

2.2) Performance Evaluating of cement grouting by universal testing machine to improve the bearing capacity of the sandy soil

In this paper, shear disappointment and unreasonable settlement the sandy soil, lessen the sheltered bearing limit with respect to tall structure and dam development purpose. In this examination a few test are connected to research physicochemical properties of sandy soil also to enhance their properties

2.3) Chemical grout for potential use in Bureau of Reclamation Project

Chemical grouting is genuine arrangement made up of responding species that shape gels after infusion. In spite of fact that they are genuine arrangement and will enter soils that would not concede concrete guaranteed. Chemical grout will be restricted by its consistency. Utilization of substance grout has been confined to application where less expensive material proved unable be utilize less expensive material incorporate concrete grouts and potentially, certain caulks or sealants the best interest chemical grouts appears to emerge regarding obvious holes through concrete structure of various type dams, tunnels, retaining wall ,pipeline and so on.

2.4) Ground improvement /Grouting /Dredging

In this paper most of paper in jet grouting are based on case studies. It gives a details view of on the relation between injection pressure, injection debit and periphery advance fluid velocity for one dimensional, axi symmetrical and spatial symmetric penetration. Kasama and Zen have displayed a dependability construct configuration bearing limit concrete treated ground considering the spatial fluctuation of shear force.

2.5) Replacement of portland cement with supplement cementitious materials in masnory grout

From this paper, we were studied that by increasing fly ash, slag for portland cement improve performance of masonry grout. Also high volume fly ash & ground granulated blast furnance slag replacement of OPC was more economical & sustainable.

Grout mixes proportioned either volume or its weight.

2.6) Modification of grout properties in prepacked aggregate concrete incorporating palm oil fuel ash

In this paper, we have studied that by application of super plasticizer was improve workability by reducing w/c. Also POFA along with plasticizer will give more performance to the grout, also it increases the density of it.

2.7) Improvement of Bearing Capacity of sandy soil by grouting

In this paper, we were studied that for manufacturing will require more skill & observation also permeation grouting will improve the engineering properties of it. Also setting time of cement grout increases strength & stiffness.

2.8) Practical model of cement based grout mix design for use into low level radiation waste management

From this paper, we were studied that workability of grout can be determined by the test on marsh funnel according to ASTM-C939(12).The grout mechanical strength depends on sand/cement ratio & also w/c ratio.

2.9) Injection Grouting For Repair and Retrofit of Unreinforced Masonary

In this research work a case study showing the effect of injection grouting on the compressive behaviour of masonry pier is included. A procedure for injection of grouting masonry is described, including specific description of wall preparation, injection port location, grout mixing and the injection process. The technique is capable of strengthening damage masonry and will consistently restore compressive behaviour up to original masonry strength.

2.10) Sealing Foundation of Existing Building by Grouting

This study shows that the proper ground water can cause destructive effects both on concrete and reinforcement material. A reinforced concrete building foundation examined building located in turkey, foundation was below the groundwater level and there was massive water seepage into basement story during winter season water pumping were not enough to drain the seepage water. Soil grouting was minimized soil permeability 1:3 ratio cement water was injected into soil. It was concluded that soil was including 66% gravel and 34% sand and it was very permeable. The grouting was force from bottom to top and 25Kpa pressure was applied for every meter. Evenly distributed to 20 grouting holes were drilled 6 meter in length. Injection material was designed to whole foundation.

2.11) Development in Design and Execution in Grouting Practice

This paper focused on attention on development and understanding that has been generated in India. In first paper includes classification of grouts and their applicability and testing methods. In second part of the paper it deals with the machinery used for grouting. It also shows that the specific mechanical properties of each grout, for specific mechanical performance, penetrability and strength.

METHODOLOGY

- Selection & Design of grouting Material.
- Selection of Sieve Size.
- Selection of Water Ratio
- Casting of blocks
- Laboratory tests
 1. Compressive strength
 2. Tensile strength
- Comparison between grouting formulations

CONCLUDING REMARK

After reviewing whole literature it was seen that extensive research has been carried out for processing of grouting materials, methods and retrofitting techniques. By reading all above research paper it can be conclude that Ceramic waste can be used in grouting applications.

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