

# A Review Study Report on Sustainable Concrete Technology

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## ABSTRACT –

*This is a report on Sustainable Concrete and is done by studying various journal papers on Sustainable concrete and this paper mainly concentrated on how to improve the Sustainability of concrete by using various materials. We live in a world of unite natural resources and sources of energy. Unfortunately, we are currently using these natural resources at a rate that cannot be sustained Indeinitely. Moreover, the energy that we expend in exploiting these resources, and the ways in which we use and consume them, produces pollution and a degradation of the environment. In particular, the so-called greenhouse gas emissions resulting from our use of resources (mainly carbon dioxide, methane, and nitrous oxide), contribute signiicantly to global climate change Thus, if we wish to maintain our current standard of living, and to bring the developing world up to these same standards, we must pay mich more attention to the way in which we deal with our natural environment. This leads inevitably. to the concept of sustainable development, which is most commonly deaned as Development that meets the needs of the present without compromising the ability of future generations to meet their own needs*

**Keywords;** Sustainable development; FRP strengthening recycled aggregate; industrial by- product; FRI reinforcement.

## I. INTRODUCTION

Construction is an inescapable process throughout the world. But the continuous concreting process will negatively affect our environment. Avoiding the concreting process for the protection of our nature is not possible So, the only method to protect our environment is to build a structure in a sustainable way. For this we have to develop sustainable concrete: Sustainable concrete is also known as "Concrete for the environmente.

Sustainable development is a development that meets the needs of the present without compromising Sustainable d the ability of future generations to meet their own needs. It contains two key concepts: The concept of "needs", in particular, the essential needs of the world's poor, to whom absolute priority must be given, and The idea of limitations imposed by the state of technology and social organization on the ability of the environment to meet present and future needs "needs." What is commonly known as the Bruntland environment Commission is the World Commission on United Nations Environment and Development Commission (WCED) The commission was headed by Gro Harlem Bruntland. (It was the Norwegian environment minister, 1974-1979, and the first Norwegian prime minister, 1986-1989 and February- October 1991.) The commission presented its report at the World Earth Summit in Rio de Janeiro, Brazil, in 1992. The work was followed by a new world summit in Kyoto, Japan, also known as the Kyoto Protocol of 11 October. December 1997.

## II. TYPES OF SUSTAINABLE CONCRETE:

Cement is a second large producer of green house gases, so, we have to use environment friendly cement replacement material (CRM) while producing cement, cement kiln dust is a waste material

But we can use it as cement replacement material by certain treatment. 5% by weight of cement used as an activator to replacement is not affect the compressive strength of cement and it can also speed up the hydration process. But if the replacement exceeds 5%, that may corrode the reinforcement by increasing the perability of chloride. But before the cement kiln dust use as a cement replacement material, we have to eliminate the alkali content from the cement kiln dust. For this a pre heater by-pass system is provided. Then we can use it as environment friendly sustainable concrete.

Cellular light weight concrete is produced by mixing cement, fly ash, foam, water. Cellular structure amount of carbon dioxide production. The usage of waste products such as fly ash will environmental quality and

no emission of pollutant will occur during the manufacturing of cellular concrete. But one of the disadvantages of cellular concrete is the reduced ability to dissipate energy. But the fibre reinforced concrete has larger energy absorption capacity. Then the combination of cellular concrete and fiber reinforced concrete will give improved sustainable concrete. Fiber reinforced concrete can be produced by reinforcing the concrete by fibers of glass, aramid, carbon. The cellular concrete can be classified according to their method of production.

Flexural strength of cellular concrete =  $1/3$  to  $1/5$  of compressive strength. So it is indicated that cellular concrete is one of the important sustainable concrete.

Minafoli [1] has studied about Rocking behaviour of multi-block columns subjected to pulse type ground motion accelerations. Ancient columns, made with a variety of materials such as marble, granite, stone or masonry are an important part of the European cultural heritage. In particular, columns of ancient temples in Greece and Sicily which support only the architrave are characterized by small axial load values. This feature together with the slenderness typical of these structural members clearly highlights that the evaluation of the rocking behaviour is a key aspect of their safety assessment and maintenance. It has to be noted that the rocking response of rectangular cross-sectional columns modelled as monolithic rigid elements, has been widely investigated since the first theoretical study carried out by Housner (1963).

Paola et al. [2] has presented about Impulsive tests on historical structures. The dome of Teatro Massimo in Palermo. Cultural heritage is the set of things, that having particular historical, cultural and aesthetic value are of public interest and constitute the wealth and civilization of a place and its people. Sharpening methodologies aimed at safeguarding of monuments is crucial because the future may have in mind the historical past. Italy is a country that has invested heavily on its historical memory returned in large part by the historical buildings or the monuments. Furthermore, culture represents a fundamental indicator of the growth of the culture of a country.

Asteris et al. [3] has studied about Definition of seismic vulnerability maps for civil protection systems. The case of Lampedusa Island. The opportunity to locate and quantify the major criticalities associated to natural catastrophic events on a territory allows to plan adequate strategies and interventions by civil protection bodies involved in local and international emergencies. Seismic risk depends, most of all, on the vulnerability of buildings belonging to the urban areas. For this reason, the definition, by a deep analysis of the territory, of instruments identifying and locating vulnerability, largely favours the activities of institutions appointed to safeguard the safety of citizens. This paper proposes a procedure for the definition of vulnerability maps in terms of vulnerability indexes and critical peak ground accelerations for mid-small urban centres belonging to Mediterranean areas. The procedure, tested on the city centre of the Island of Lampedusa, is based on a preliminary historical investigation of the urban area and of the main formal and technological features of buildings involved.

Repapis et al. [4] has proposed about Seismic performance evaluation of existing RC buildings without seismic details. Comparison of nonlinear static methods and IDA. The inelastic response of existing reinforced concrete (RC) buildings without seismic details is investigated, presenting the results of more than 1000 nonlinear analyses. The seismic performance is investigated for two buildings, a typical building form of the 60s and a typical form of the 80s. Both structures are designed according to the old Greek codes. These building forms are typical for that period for many Southern European countries. Buildings of the 60s do not have seismic details, while buildings of the 80s have elementary seismic details.

Zhang et al. [5] has studied about Design of automatic positioning equipment for cross beam. By analyzing and summarizing the process and requirements of cross beam installation, an underwater three-direction positioning equipment is developed. Through three sets of hydraulic cylinders and MGE sliders combining hydraulic synchronizing lifting technique and computer communication technology, precise automatic positioning is achieved. The equipment can be used in positioning other similar large structures.

Shuniga et al. [6] has studied about Experimental studies on cohesion of carbon fibre reinforced polymer for reinforcement of bridge deck slabs. Bridge deck slabs reinforced by carbon fibre reinforced polymer (CFRP) are subjected to a number of problems related to cohesion, such as slippage, disengaging and debonding. In order to address such problems, we conducted indoor shear, stretching and debonding tests, analysed the change rule of cohesion in these three different environments, and determined the optimum construction technique for improving the cohesion of CFRP.

Krivoshapko et al [7] has studied about Geometry, static, vibration and buckling analysis and applications to thin elliptic paraboloid shells. A large number of references dealing with the geometry, static vibration and buckling analysis of elliptic paraboloid shells exist in the literature. This review work attempts to organize and summarize the extensive published literature on the basic achievements in investigations of thin-walled structures in the form of elliptic paraboloids. Possibilities of elliptic paraboloids with reference to machine-building and construction designs and to the apparatuses used in theoretical physics are briefly considered. The geometric part of the review is extended due to consideration of optimization of surface's sizes, researches of representation of a surface on the plane and introducing bibliographic material on fractal geometry.

Wang et.al [8] has studied about Experimental study on properties of steel-plastic geogrids and their application in supporting engineering, Steel-plastic geogrid greatly improves the stability of surrounding rock in the supporting project due to the qualities such as high strength high toughness and less creep deformation. Through the geogrid mechanical properties analysis, tensile strength, deformation and creep test and field experiment and so on, we researched and analyzed steel plastic geogrids' characteristics and supporting effect and concluded the influencing factors of steel plastic geogrids' characteristics, load-time curve and the steel-plastic geogrids variation under different temperature

The use of coal sustainability and green concrete are given

### **III. CONCLUSION**

Sustainable concrete is nothing but whose environmental hazards are very less and durability is very high. It can improve the qualities of traditional concrete by various methods as mentioned above to get sustainable concrete.

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