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EMERGING TRENDS IN CIVIL ENGINEERING

NEC-ICETCE-2K21

06th & 07th August, 2021

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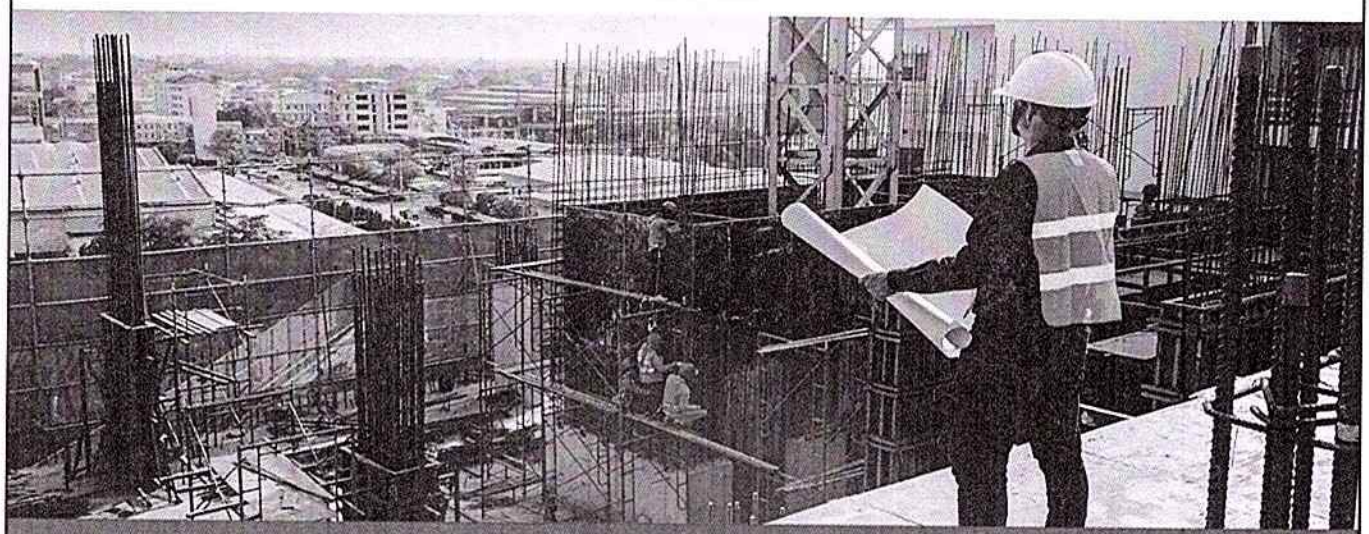

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STUDY ON SEISMIC EFFECT OF L SHAPED FRAME WITH A COMBINATION OF GENERAL& DUAL FRAME IN DIFFERENT SEISMIC ZONES

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Abstract— It is very important to study the effects of lateral displacements induced from earthquakes. Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase in this project two different shapes of frames has been considered and compared the lateral displacement of the frames for L- Shape structure and calculated the storey drift. And how it is varying in the different zones of Zone II, III, and IV &with different storey heights of G+ 10, G+ 15. The study involves the orientation of Shear wall. The buildings are modelled with floor area of 30m x 30m with 10 bays along 30m span and 10 bays along 30m and each bay width of 3m and 3m of L- Shaped frame. The lateral displacement of the structure is compared in general frame, shear wall and bracing frame. The lateral displacement values of current floor level to another floor level should reach storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i.

Keywords— Equivalent static method, shear wall and bracings, lateral displacement, staadproV8

INTRODUCTION

THE TERM 'APARTMENT BUILDING' REFERS TO A MULTI-STOREY BUILDING THAT IS PRIMARILY RESIDENTIAL IN USE AND THAT HAS INDIVIDUAL RESIDENTIAL UNITS (APARTMENTS), ON ALL OR MOST FLOORS. IN CERTAIN LOCATIONS, SUCH AS TOWN AND METRO CENTRES, APARTMENT BUILDINGS MAY HAVE COMMERCIAL USES ON THE GROUND AND LOWER FLOORS. IN PRESENT STUDY, THE EARTHQUAKE ANALYSIS OF G+10, G+15, STORIED BUILDING WAS DONE BY EQUIVALENT STATIC METHOD. THE MAIN PARAMETERS CONSIDERED IN THIS STUDY TO COMPARE THE SEISMIC PERFORMANCE OF DIFFERENT ZONES I.E.III, IV ARE LATERAL DISPLACEMENT. THE BUILDING FRAME IS MODELLED WITH A DIMENSIONS OF 91M X 60M HAVING COLUMNS & BEAMS WITH A SLAB PANEL OF 9M X 6M THE MODEL IS MADE USING STAAD.PRO SOFTWARE. IN CASE OF BUILDING WITH SHEAR WALL THE BUILDING FRAME IS MODELLED AS ABOVE DIMENSIONS ONLY WITH ALTERNATE SHEAR WALL USING 4 NODE PLATE PROPOSED THICKNESS OF 150 MM ALONG THE HALF HEIGHT OF THE STRUCTURE. THE NEW ZONE MAP WILL NOW HAVE ONLY FOUR SEISMIC ZONES – III, AND IV. SEISMIC MICRO ZONATION ACCOUNTS FOR LOCAL VARIATIONS IN GEOLOGY, LOCAL SOIL PROFILE, ETC. IN THIS PAPER TO ANALYSE A MODEL FOR EARTHQUAKE RESISTING STRUCTURE. THE MODEL STRUCTURE IS LOCATED IN ZONE-II, III& IV OF L –SHAPED FRAME. TO CALCULATE THE LATERAL DISPLACEMENT, ON BUILDINGS USING SEISMIC COEFFICIENT METHOD. BY USING STAAD PRO. AND MAKE A COMPARATIVE ANALYSIS BETWEEN GENERAL FRAME & SHEAR WALL AND BRACING FRAME STRUCTURE IN EQUIVALENT STATIC METHOD .COMPARISON BETWEEN G+10, G+15.

1.2 OBJECTIVE

1. THE MODEL OF L –SHAPED STRUCTURE IS LOCATED IN BOTH ZONE-II, III & IV.

2. AND MAKE A COMPARISON BETWEEN GENERAL FRAME & SHEAR WALL AND BRACING FRAME STRUCTURE.

1.3 SCOPE

1. Only RC buildings are considered.
2. Entire analysis is carried out using STAAD.proV8i.
3. Seismic analysis is carried out and orientation of shear walls.
4. We can do the wind analysis for the frames.

2.0 SESMIC COEFFIECIENT METHOD

As per IS 1893 (part1)-2002, Seismic Coefficient analysis Procedure is summarized in following steps

a) Design Seismic Base Shear:- The total design lateral force or design seismic base shear (V_B) along any principal direction of the building shall be determined by the following expression

V_B= Ah W

Where Ah = Design horizontal seismic coefficient

W = Seismic weight of the building.

b) Seismic Weight of Building: - The seismic weight of each floor is its full dead load plus appropriate amount of imposed load as specified. While computing the seismic weight of each floor, the weight of columns and walls in any storey shall be equally distributed to the floors above and below the storey. The seismic weight of the whole building is

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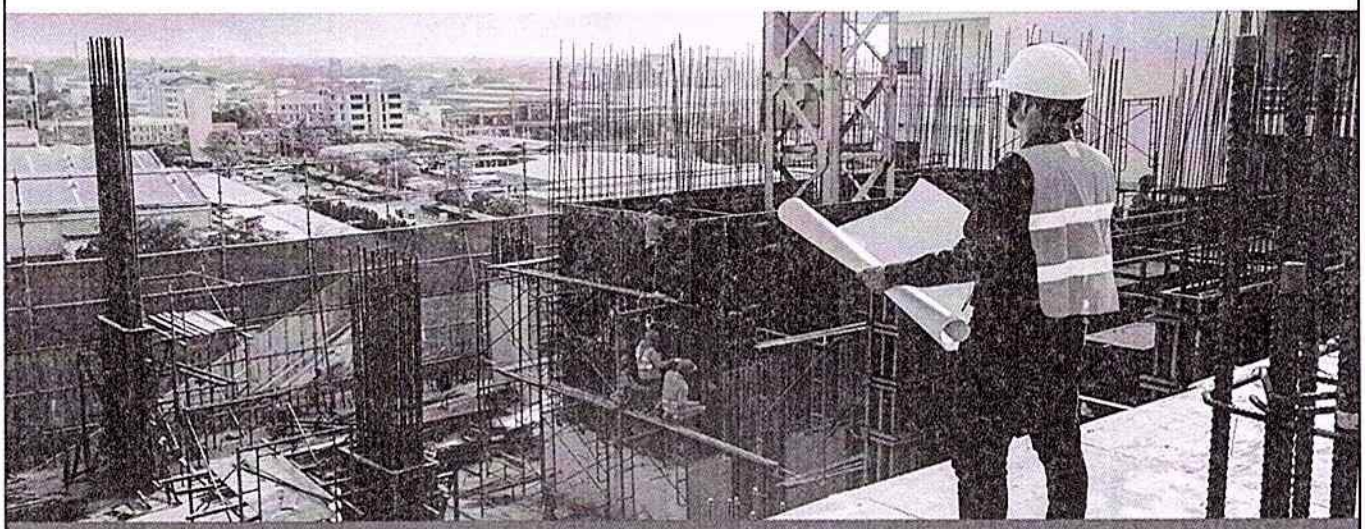

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STUDY ON SEISMIC EFFECT OF L SHAPED STRUCTURE WITH A COMBINATION OF GENERAL FRAME AND SHEAR WALL FRAME IN VARIOUS SEISMIC ZONES

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Abstract— It is very important to study the effects of lateral displacements induced from earthquakes. Concrete shear walls are used to resist the lateral displacement due to earthquake. Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase. In this paper the analytical study on the lateral behavior of the L shaped structure is mainly concentrated and how it is varying in the different zones of Zone II, III, IV & V with different storey heights of G+ 10, G+ 15. The study involves the orientation of Shear wall. The buildings are modelled with floor area of 30m x 30m with 10 bays along 30m span and 10 bays along 30m and each bay width of 3m and 3m The lateral displacement of the structure is compared in general frame, shear wall at corners. The lateral displacement values of current floor level to another floor level should reach storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i.

Keywords— Equivalent static method, shear wall, L shaped frame, lateral displacement, staadproV8

INTRODUCTION

AN EARTHQUAKE IS A SUDDEN MOVEMENT OF THE EARTH, CAUSED BY THE ABRUPT RELEASE OF STRAIN THAT HAS ACCUMULATED OVER A LONG TIME. FOR HUNDREDS OF MILLIONS OF YEARS, THE FORCES OF PLATE TECTONICS HAVE SHAPED THE EARTH AS THE HUGE PLATES THAT FORM THE EARTH'S SURFACE SLOWLY MOVE OVER, UNDER, AND PAST EACH OTHER. AN EARTHQUAKE IS THE SHAKING OF THE SURFACE OF EARTH DUE TO THE SUDDEN RELEASE OF ENERGY IN THE EARTH'S CRUST, AS A RESULT, SEISMIC WAVES (ALSO KNOWN AS S WAVES) ARE CREATED. THE SEISMIC ACTIVITIES IN AN AREA DETERMINE THE TYPE AND INTENSITY OF THE EARTHQUAKE. THERE ARE MANY DIFFERENT TYPES OF EARTHQUAKES: TECTONIC, VOLCANIC, AND EXPLOSION. ... THE MOST COMMON ARE TECTONIC EARTHQUAKES. THESE OCCUR WHEN ROCKS IN THE EARTH'S CRUST BREAK DUE TO GEOLOGICAL FORCES CREATED BY MOVEMENT OF TECTONIC PLATES. ANOTHER TYPE, VOLCANIC EARTHQUAKES, OCCUR IN CONJUNCTION WITH VOLCANIC ACTIVITY THE AREAS FALLING IN SEISMIC ZONE I IN THE CURRENT MAP ARE MERGED WITH THOSE OF SEISMIC ZONE II. ALSO, THE SEISMIC ZONE MAP IN THE PENINSULAR REGION IS BEING MODIFIED. MADRAS WILL COME UNDER SEISMIC ZONE III AS AGAINST ZONE II CURRENTLY. THE NATIONAL SEISMIC ZONE MAP PRESENTS A LARGE SCALE VIEW OF THE SEISMIC ZONES IN THE COUNTRY. LOCAL VARIATIONS IN SOIL TYPE AND GEOLOGY CANNOT BE REPRESENTED AT THAT SCALE. THEREFORE, FOR IMPORTANT PROJECTS, SUCH AS A MAJOR DAM OR A NUCLEAR POWER PLANT, THE SEISMIC HAZARD IS EVALUATED SPECIFICALLY FOR THAT SITE. ALSO, FOR THE PURPOSES OF URBAN PLANNING, METROPOLITAN AREAS ARE MICRO ZONED. SEISMIC MICRO ZONATION ACCOUNTS FOR LOCAL VARIATIONS IN GEOLOGY, LOCAL SOIL PROFILE, ETC. IN THIS PAPER TO ANALYSE A MODEL FOR EARTHQUAKE RESISTING STRUCTURE. THE MODEL STRUCTURE IS LOCATED IN ZONE-II, III, IV & V. TO CALCULATE THE LATERAL DISPLACEMENT, ON BUILDINGS USING EQUIVALENT STATIC METHOD. BY USING STAAD PRO. AND MAKE A COMPARATIVE ANALYSIS BETWEEN GENERAL FRAME & SHEAR WALL AND BRACING FRAME STRUCTURE IN EQUIVALENT STATIC METHOD .COMPARISON BETWEEN G+10, G+15.

1.2 OBJECTIVE

1. To analyze a model for earthquake resisting structure.
2. The model structure is located in both Zone-II, III, IV&V.
3. And make a comparison between L shaped General Frame & L shaped frame of shear wall structure.
4. Comparison between G+10, G+15 storied buildings

1.3 SCOPE

1. Only RC buildings are considered.
2. Entire analysis is carried out using STAAD.proV8i.
3. Linear static analyses are performed on the considered frames.
4. The sizes of the beams, columns and slabs are kept constant for each model.

1.4 MODELING OF L SHAPED FRAME

The L shaped general frame and L shaped shear wall frame structures of G+10, G+15, storied building is shown in Fig 1. The seismic analysis of building is done by Seismic Coefficient with given above procedures for Zone II, III, IV & V. The obtained results of both structures are compared with each other.

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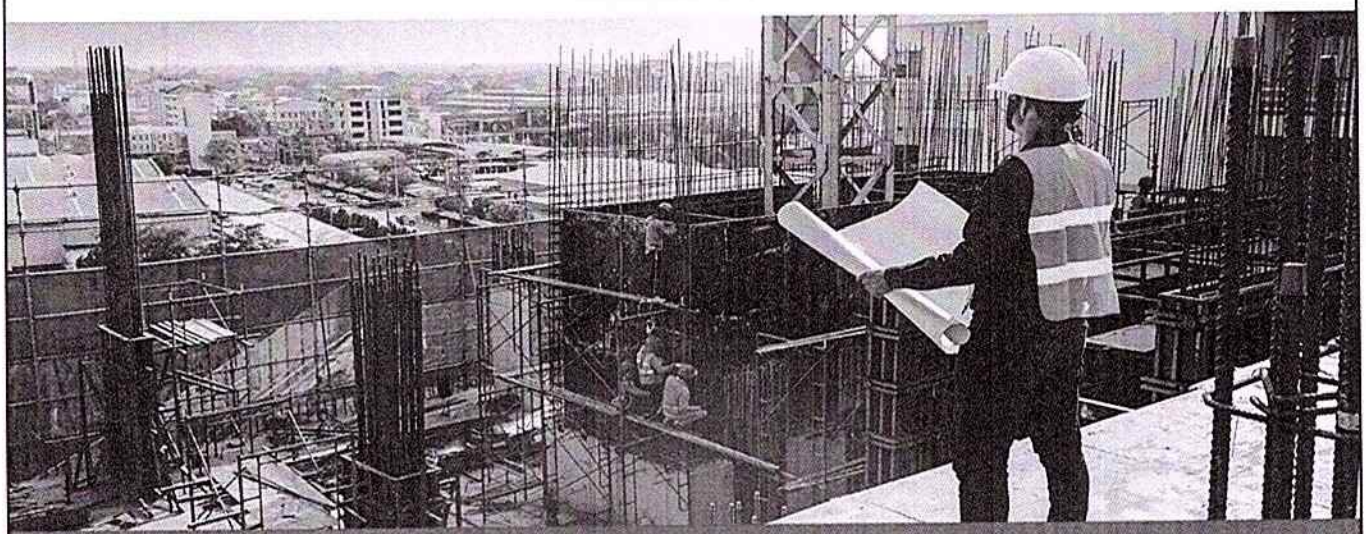

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Compaction and Strength Properties of Stabilized Soil due of Delay Time

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Abstract— Weak and marginal soils are conventionally stabilized with chemical stabilizers like lime and cement. During construction of stabilized soil structures sometimes inevitable delays occurs between mixing the additive with the soil and compaction, which have adverse effect on the geoengineering properties of the stabilized structures. The present study emphases on the effects of delay time on compaction and strength properties of a granular soil stabilized with three different stabilizers i.e. lime, cement and slag based geopolymers. The granular soil is mixed with 2.5, 5, 7.5, 10, and 15% of lime and cement and 5,10,15% of slag based geopolymer by dry weight of the soil. The optimum moisture contents (OMC) and maximum dry densities (MDD) of these mixes were determined after delay periods of 0, 3, 6, 12, 24, 48, 72, 168 hours. As well, cylindrical specimens of size 36mm diameter and 72mm lengths were prepared for all these mixes compacted to MDD at OMC taking into the effects of delay. These specimens were cured at an average temperature of 300 C for 0, 7, and 28 days in closed secure environment for assuring the prevention of moisture loss while curing, after that the unconfined compressive strength (UCS) were determined. It is observed that from the test results the OMC and MDD of mixes are effected by the delay time and it is more understandable for cement and geopolymer binders than the lime. Similarly, delay time effects the strength of cement and geopolymer stabilized mixes more adversely than lime stabilized mixes. XRD is carried out to investigate the changes in constituent compounds due to stabilization and SEM analysis is carried out to observe the microstructural changes in the stabilized granular soil and to correlate the strength properties to the developed chemical compounds and the micro-structure.

Keywords— Soil stabilization, Delay time, Compaction Characteristics, Strength properties

Introduction

When cement added to soil and the saturated sample compacted and cured results into a hard durable soil cement mixture. When the mixture of soil and cement is correctly compacted at the time of construction, resistant to deterioration due to moisture and weather and also it deformation does not happen due to heavy traffic loads. Baghdadi et.al. (1995) found that cement kiln dust (CKD) can significantly decrease the optimum moisture content and significantly increase the maximum dry density of pure kaolinite when the CKD content is less than 50%. Miller and Azad (2000) observed an increase in the optimum moisture con-tent and a decrease in the maximum dry density when CKD was added into three types of soil with different high, medium, and low plasticity and concluded that the effect of CKD on optimum moisture content and maximum dry density is obviously a function of soil and CKD type as well as compaction method. Soil stabilization is a well-established discipline within geotechnical engineering. Cement is preferred for lowly cohesive (sandy) soils but it loses effectiveness for highly plastic soils. Cement is the most commonly used stabilizer and its popularity is due to quick strength gain and the ability to obtain desirable mechanical properties with relatively low amounts of stabilizer.

By adding lime to soils improves the workability and increased the strength of the mixtures, although strength gains are not as great as those due to addition of cement. For clayey soils, lime is generally used as a stabilizing agent because it flocculates the clay and increases the plasticity. Cementation ultimately results to slow Pozzolanic reaction. clay will be flocculated by cement due to free lime content. Both cement and lime added to the soil, the lime to ease mixing, and the cement to give strength and durability. Currently chemical stabilization of soils is most common method, stabilizers like cement and lime are used. But due to more usage of cement, it has given rise to environmental issues like dust generation,

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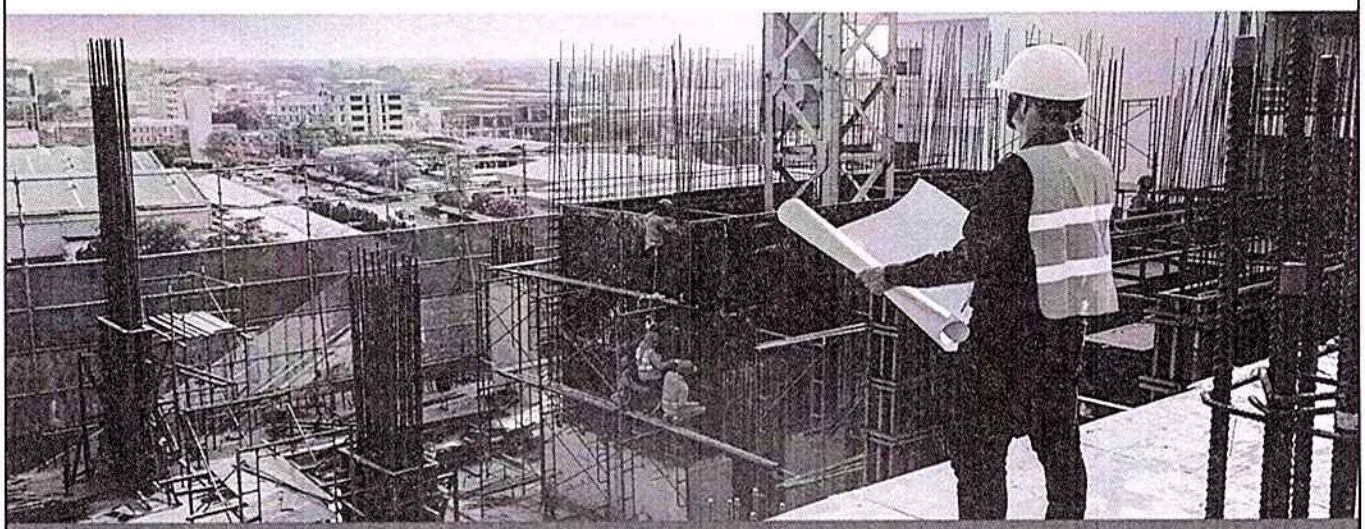

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Compaction and Strength Properties of Stabilized Soil due of Delay Time

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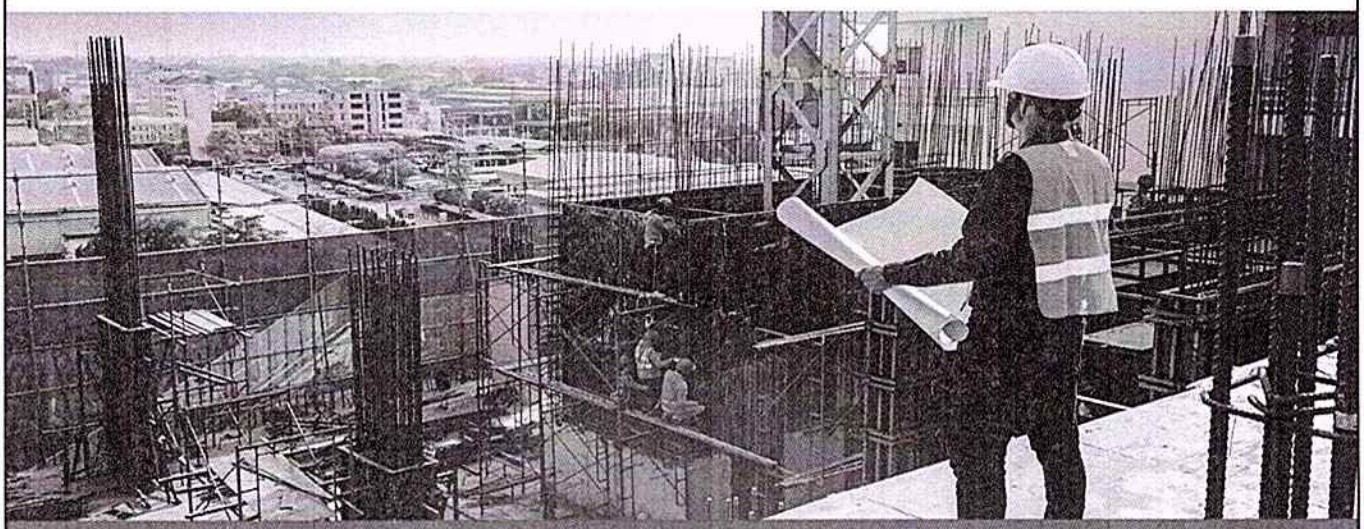

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Stabilizing of Black cotton soils using Fibers and alkali activated rice husk ash

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Abstract

In India, expansive soils popularly known as black cotton soils are highly problematic, as they swell on absorption of water and shrink on evaporation thereof. Because of this alternate swell and shrinkage, distress is caused to the foundations of structures laid on such soils. Understanding the behavior of expansive soil and adopting the appropriate control measures have been great task for the geotechnical engineers. Extensive research is going on to find the solutions to black cotton soils. Stabilization of soil improves its engineering properties. Chemical & Mechanical stabilization processes are used in this research. Use of Agricultural industrial wastes Rice Husk Ash (RHA) &RDFs with alkali activator stabilize the problematic soils; and making it suitable for foundation soils. Here Sodium Hydroxide and Sodium Silicates were used as activators.

A study is carried out for improvement of strength criteria is ascertained by conducting Unconfined Compressive Strength(UCS)&California Bearing Ratio (CBR) tests on samples for the efficiency of Sodium based alkaline activators with Rice Husk Ash and Randomly Distributed Fibers (Nylon).

The results clearly indicates that 30% Rice Husk Ash with 10% alkali activator and 1% fiber dosage have noticeable influence on UCS & CBR values of expansive soils. The effectiveness of this binder is observed by conducting UCS, CBR tests on optimum Results of soil samples at 7, 14, 28 days. Hence this idea gives us a twofold advantage of utilizing an Agricultural Industrial wastes to stabilize the soils and making it as a sustainable stabilization for expansive soils.

Keywords- Alkaliactivated rice husk ash, Compaction factor test, Unconfined compressivestrength, California bearing ratio test.

1. Introduction

Expansive soil is one among the problematic soils that has a high potential for shrinking or swelling due to change of moisture content. Expansive soils can be found on almost all the continents on the Earth. Destructive results caused by this type of soils have been reported in many countries. In India, large tracts are covered by expansive soils known as black cotton soils. The major area of their occurrence is the south Vindhyachal range covering almost the entire Deccan Plateau. These soils cover an area of about 200,000square miles and thus form about 20% of the total area of India. These soils are rich in lime, iron, magnesia and alumina but lack in the phosphorus, nitrogen and organic matter. The primary problem that arises with regard to expansive soils is that deformations are significantly greater than the elastic deformations and they cannot be predicted by the classical elastic or plastic theory. Movement is usually in an uneven pattern and of such a magnitude to cause extensive damage to the structures resting on them.

Proper remedial measures are to be adopted to modify the soil or to reduce its detrimental effects if expansive soils are identified in a project. The remedial measures can be different for planning and designing stages and post construction stages. Many stabilization techniques are in practice for improving the expansive soils in which the characteristics of the soils are altered or the problematic soils are removed and replaced which can be used alone or in conjunction with specific design alternatives. Additives such as lime, cement, calcium chloride, rice husk, fly ash etc. are also used to alter the characteristics of the expansive soils. The effect of the additives and the optimum amount of additives to be used are dependent mainly on the mineralogical composition of the soils. The paper focuses about the various stabilization techniques that are in practice for improving the expansive soil for reducing its swelling potential and the limitations of the method of stabilization there on.

In this work it is attempted to study the effect of additives like "Sodium alkali Activated Rice husk ash" (ARHA) with randomly distributed fibers to improve the properties of expansive soil

1. Literature review

Rajan and Subramanyam (1982) had studied regarding shear strength and consolidation characteristics of expansive soil stabilized with RHA and lime and observed that RHA contributes to the development of strength as a pozzolanic material when used as a secondary additive along with lime and cement. Under soaked conditions, the soil stabilized with rice husk ash had low strength. The RHA, lime combination also decreased the compression index of stabilized soil.

Jain and Jain (2006) studied the effect of addition of stone dust and nylon fibre to Black cottonsoil and found that mixing of stone dust by 20% with 3% randomly distributed nylon fibres decreased the swelling pressure by about 48%. The ultimate bearing capacity increased and settlement decreased by inclusion of fibre to stone dust stabilized expansive soil.

Materials&Methodology

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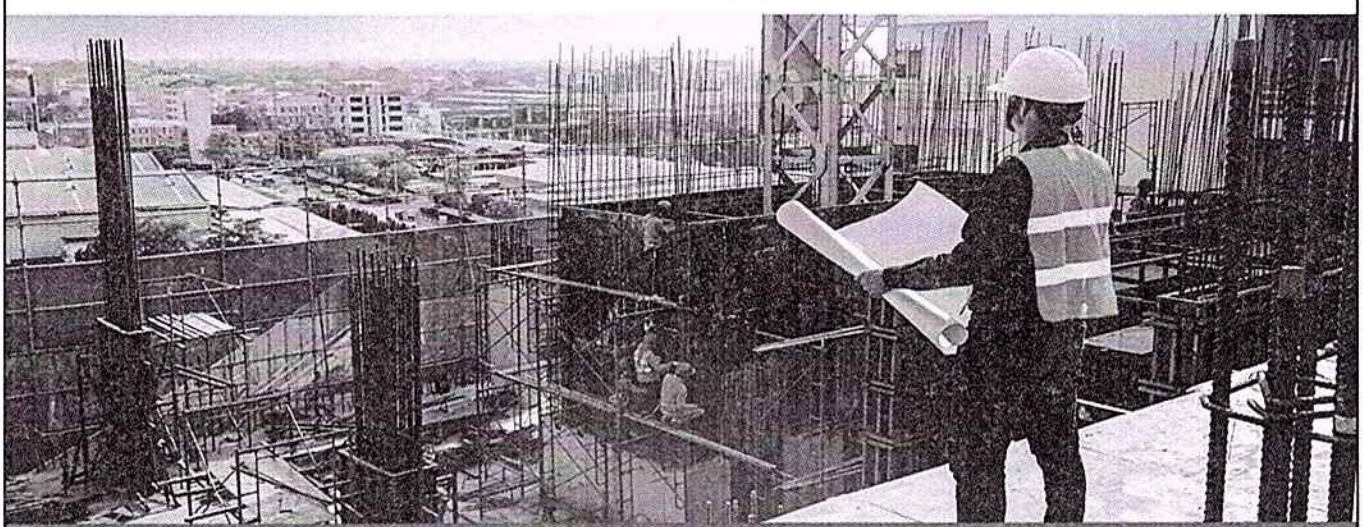

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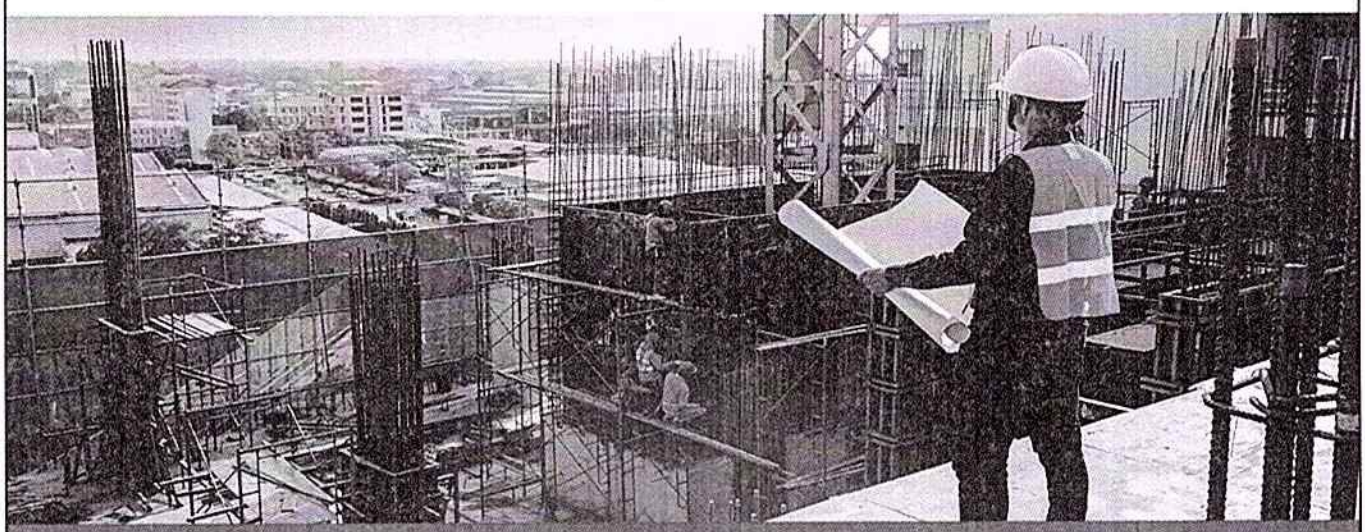

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- Maximum 14 day strength attained by activated sample is 8.05%.
- Maximum 28 day strength attained by activated sample is 8.10%.

Finally, the use of Agricultural industrial wastes Rice Husk Ash (RHA) &Randomly distributed fibres (RDF) with alkali activator add stabilize the problematic expansive soils; and making it suitable for foundation soils. Hence this idea, gives us a twofold advantage of utilising an agricultural industrial waste to solve the problem of expansive soils and also disposal problem.

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COMPARITIVE STUDY ON C-SHAPED FRAME AND V-SHAPED FRAME OF G+10 & G+15 MULTI STORIED BUILDINGS BY USING SHEAR WALL AT VARIOUES LOCATIONS FOR DIFFERENT SEISMIC ZONES

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Abstract— It is very important to study the effects of lateral displacements induced from earthquakes. Concrete shear walls are used to resist the lateral displacement due to earthquake. Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase. In this paper the analytical study on the lateral behavior of the structure is mainly concentrated. In this project two different shapes of frames has been considered and compared the lateral displacement of the frames for V- Shape and C-Shape of the structure and calculated the Storey drift. And how it is varying in the different zones of Zone III, and IV with different Storey heights of G+ 10, G+ 15. The study involves the orientation of Shear wall. The buildings are modelled with floor area of 91m x 60m with 11 bays along 91m span and 11 bays along 60m and each bay width of 9m and 6m of C- Shaped frame and with floor plan area of 48MX30M span of V- Shaped frame. The lateral displacement of the structure is compared in general frame, shear wall and bracing frame. The lateral displacement values of current floor level to another floor level should reach Storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i.

Keywords— Equivalent static method, shear wall, L shaped frame, lateral displacement, staadproV8

I. INTRODUCTION

A LARGE PORTION OF INDIA IS SUSCEPTIBLE TO DAMAGING LEVELS OF SEISMIC HAZARDS. HENCE, IT IS NECESSARY TO TAKE INTO ACCOUNT THE SEISMIC LOAD FOR THE DESIGN OF HIGH-RISE STRUCTURE. IN PRESENT STUDY, THE EARTHQUAKE ANALYSIS OF G+10, G+15, STORIED BUILDING WAS DONE BY EQUIVALENT STATIC

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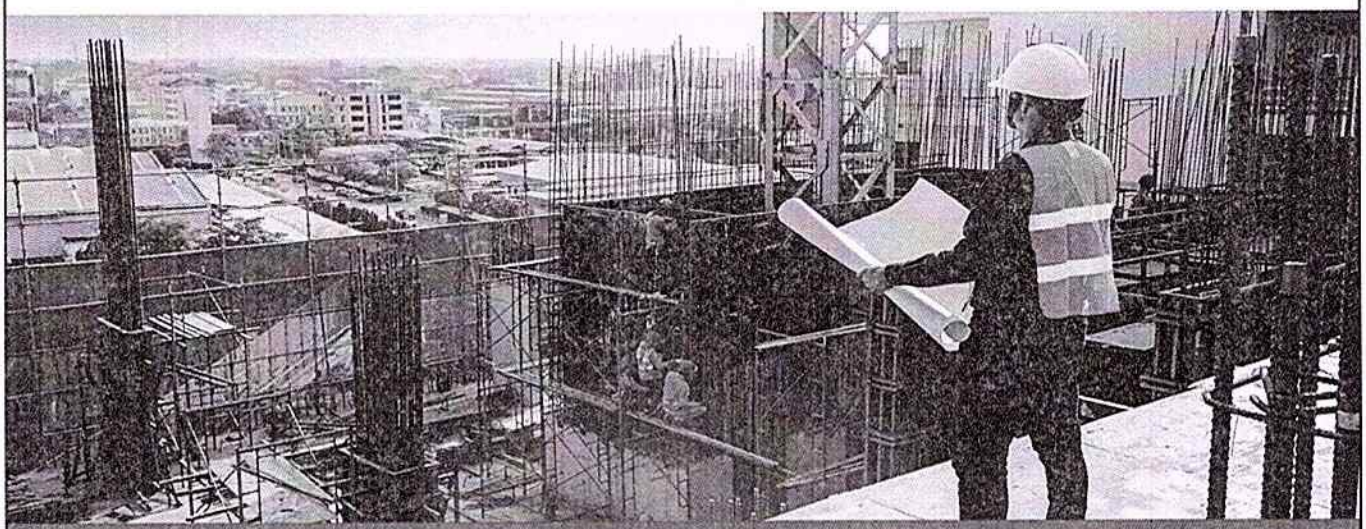

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PARTIAL REPLACEMENT OF COARSE AGGREGATE WITH COCONUT SHELLS IN M30 GRADE OF CONCRETE

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Abstract: **In the construction, the cost of building materials is rising day by day. The use of alternative material is a partial replace of coarse aggregate in solving part of natural aggregate. The various waste materials are used such as coconut shell, cockle shell, periwinkle shell, foundry sand etc. so here in my project I will use coconut shell waste as replacement of coarse aggregate by different percentage for making concrete of different grade like M-30 Concrete made from coconut shell waste as coarse aggregate will be studied for compressive strength, tensile strength and the percentage replacement will be 0%, 10%, 20% and 30% with natural coarse aggregates in concrete. The replacement 10% of coconut shell are added on high temperature. I will prepare cubes, cylinders, and finally slump test, compressive strength test, split tensile strength test will be conducted to obtain the results. A large no. of trial mixes are required to select the desired optimum replacement of coarse natural aggregate by coconut shell waste materials.**

Keywords— **Coconut Shell, Coarse Aggregate, Light Weight Concrete, Light Weight Material, Compressive Strength, Split Tensile Strength**

I.INTRODUCTION

Utilization of agricultural wastes in construction industry has been investigated for many years the impacts have been found to be varying degrees of success. In many countries where abundant agricultural wastes are discharged, these wastes can be used as potential material or replacement material in construction industry. The coconut shell in one of the agricultural wastes, produced in abundance has the potential to be used as coarse aggregate in concrete. Eight of the ten largest producers in Asia Pacific region. The three main producers, Indonesia, the Philippines and India account for 75% of world production. India is the third largest coconut producing country, with an area of 1.9 million hectare and annual production of 2.74 million tonnes copra equivalent within India, 90% of total production of coconut is concentrated in South India. The average annual reduction of coconut is estimated about 15 billion nuts in India. After the coconut is caped out, the shell is usually discarded as waste. The vast amount of this discarded CS resource is yet unutilized commercially.

II. MATERIAL AND ITS PROPERTIES

COCONUT SHELLS: Coconuts are referred to as "man's most useful trees", "king of the tropical flora" and "tree of life". Global production of coconut is 51 billion nuts from an area of 12 million hectares. South East Asia is regarded as the origin of coconut. Although the lignin content is higher and the cellulose content is lower, coconut shells are similar in chemical composition to hard wood. Coconut shell has good durability characteristics, high toughness & abrasion resistant properties

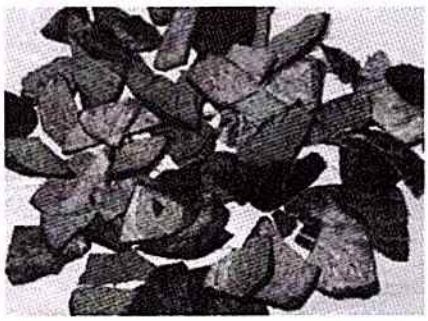

FIG. 1 SNAPSHOT OF CRUSHED COCONUT SHELLS

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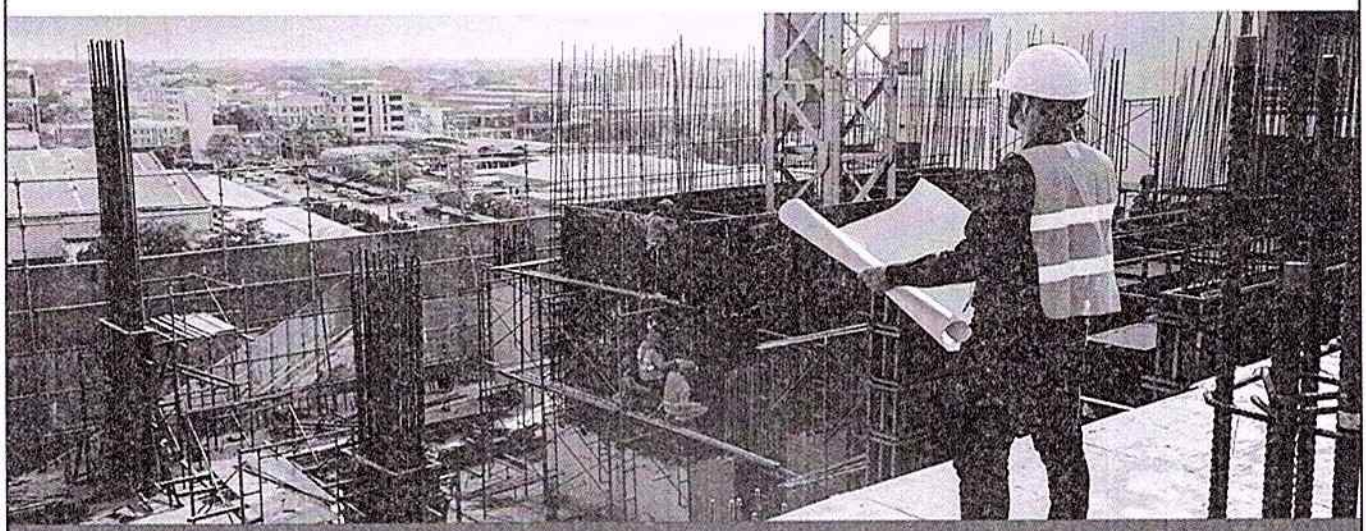

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A Comparative Study on Strength and Durability of Coir Fibre and Sisal Fibre Reinforced Concrete

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[redacted]

ABSTRACT

The need to use sustainable materials for construction is growing. A research study on waste materials used in concrete to get high strength and more durability of reinforced concrete by partial replacement of Coir fibre and Sisal fibre in Concrete. Because of that we shall provide reinforcement to the concrete and generally the steel is used in concrete for increasing of ductile property as well as counteracting of both compression and tension properties. Here the cost steel is more as compared to the natural fibres and many investigations were proposed on artificial fibres substitution of steel reinforcement. In this project we would like to take the naturally available fibre named Coir fibre (coconut fibre) and Sisal fibres a substitutional material as reinforcement and study of their strength properties. The results show that the composites of reinforced with coir fibre and Sisal fibres equal proportions are reliable

Materials to be used in practice to produce structural elements to be used in rural and civil engineering construction. The Coir and Sisal fibre were used as reinforcement which production is a serious hazardous to human and health and it is prohibited in industrialized countries.

In this research work, an experimental investigation has been done to evaluate the strength properties of fibre reinforced concrete with partial replacement of Coir fibre and Sisal fibre equally. The preferable partial replacements of Coir fibre and Sisal fibre of **0.5%, 1%, 1.5% and 2%** by the weight of concrete as previous journals studies. The results obtained the various strength aspects analysed are compressive strength, split tensile strength and flexural strength of Coir and Sisal fibres reinforced concrete at varying percentages are mentioned above.

Key Points-Coir Fibre, Sisal Fibre, Fibre's concrete, Compressive strength, Tensile strength, and Flexural strength.

INTRODUCTION

Liveable is a wide crucial role in modern construction in civil engineering scenario in the world. The construction industry is transfigured in a significant manner in terms of both materials and equipment used, the cost of construction has huge along with the deteriorative impact on environment and globalisation in the world.

Coir Fibre is a natural fibre, and it is extracted from outer husk of coconut and used in products such as floor mats, doormats, brushes, and mattresses. Coir is the fibrous material found between the hard, internal shell and the outer coat of a coconut.

Sisal fibre is a promising reinforcement for use in composites on account of its low cost, easy availability, low density, no health hazards, renewability and high specific strength and modulus. The structure and properties of sisal fibre have been investigated by several researchers previously.

Fig 1: Sisal plant

Coir fibre is natural fibre is obtained and processed from the protective husk of the coconut. This brown fibre is spun in a breath which taking range of textured yarn and oven into a spectrum of colourful floor covering the husks separated from

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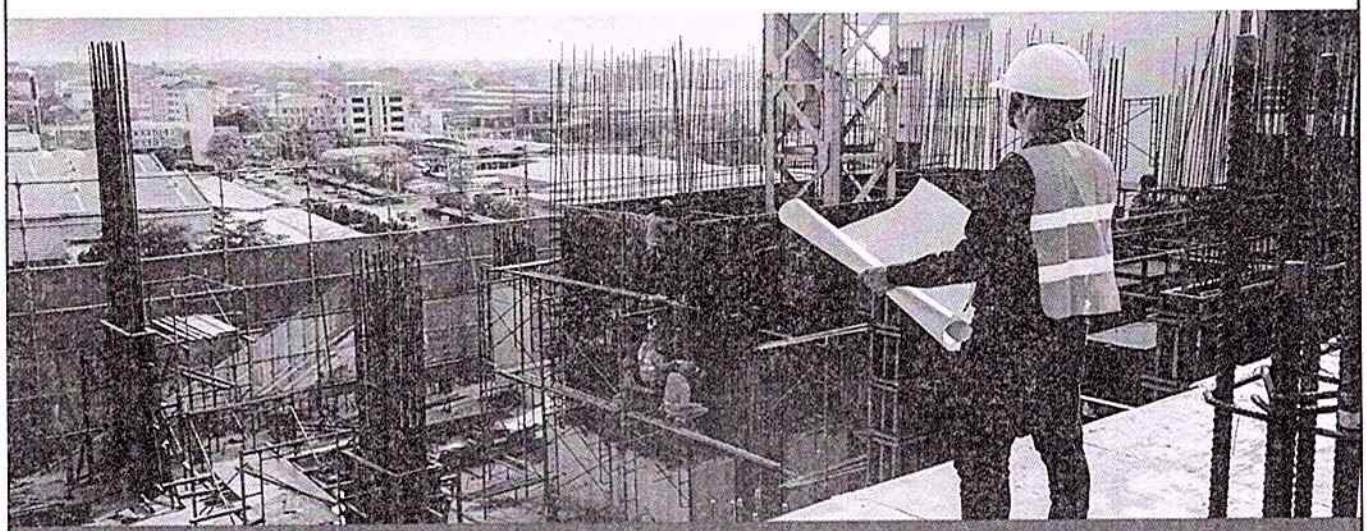

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- It has the great flexibility in the molding shape of concrete and poured into a formwork and took the shape of its formwork. So, the concrete stays of a plastic material.
- It did not require special, skilled labor; therefore, it was cheaper.

By designing the concrete-vault roofing, it was fireproof and unlike the wooden-beamed roofs of traditional systems, so it was harmless.

VII. DISADVANTAGES OF ROMAN CONCRETE

- One of the disadvantages of Roman concrete is that it features less compressive strength compared to modern Portland cement concrete.
- This specific mix of Roman concrete could be used in some construction instances but is unlikely to be utilized as a standard matrix.

VIII CONCLUSION

From this study, it has exposed the secrets of roman concrete. These secrets revealed some reasons for reduction of structural performance. These problems can be rectified with some composite materials for better structural performance. So, it can be possible to make roman concrete stronger than conventional concrete using present. It can be used, where the concrete desires to be free from wear and tear for thousands of years. And we can cut the carbon footprint by using lower temperatures to form the concrete.

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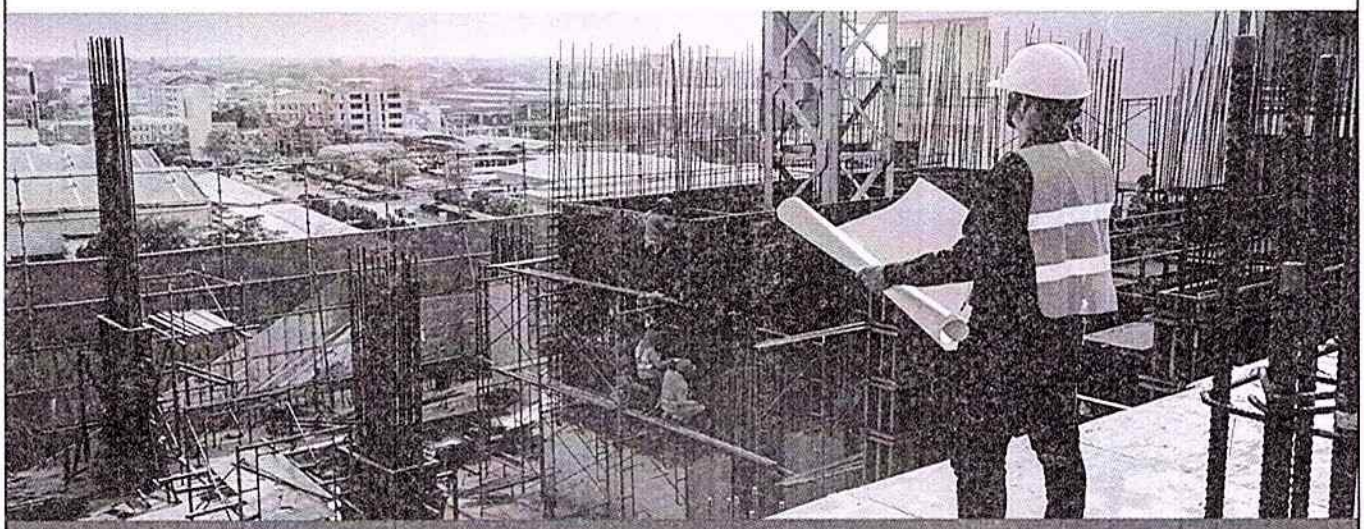

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An Experimental Study on Partial Replacement of Fine Aggregate With Marble Dust in Concrete

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***ABSTRACT*-Concrete is a widely used material in the world. Based on global usage it is placed at second position after water. Common river sand is expensive due to excessive cost of transportation from natural sources. River sand is most commonly used fine aggregate in the production of concrete poses the problem of acute shortage in many areas and continuous usage has started posing serious problems with respect to its availability, cost and environmental impact. So Engineers began to search for alternative for fine aggregate.**

The basic objective of this study was to identify alternative source of good quality aggregates. The present investigation has been undertaken to study the effect of Marble dust on the mechanical properties of concrete, when Marble dust is replaced with fine aggregate in different percentages The main parameter investigate were cube compressive strength. In this work, M25 grade concrete mix was developed using IS method of mix design. Specimens of dimension of 150 x 150 x 150mm cubes were cast for compressive strength of concrete specimens. The test results indicate that with the use of replacing Marble dust by fine aggregates in different percentages i.e. 0%, 5%, 10%, 15%, 20%, 25%, 30%, 30% and 40%. For evaluation of strength parameters each grade of concrete for each proportion in the form of cubes casted for testing at 3 days, 7days and 28 days periods. The compressive strength increases with the increase in percentage of Marble dust up to 30%. Marble dust can be replaced without affecting the target strength.

I INTRODUCTION

Rapid urbanization in developing countries such as India is creating a shortage of adequate housing in cities. Using artificial aggregates for quality concrete is a natural step to mitigating this problem. The worldwide consumption of fine aggregate in concrete production is very high, and several developing countries have been countered difficulties in meeting the supply of natural fine aggregate in order to satisfy the increasing needs of infrastructural development in recent years.

To overcome the stress and demand for river fine aggregate, research sand practitioners in the construction industries have identified some alternative materials such as fly ash, slag, limestone powder and siliceous stone powder. In India attempts have been made to replace river sand with Marble dust.

The successful utilization of Marble dust as fine aggregate would turn this waste materials that causes disposal problem into a valuable resource. The utilization will also reduce the strain on supply of natural fine aggregate, which will also reduce the cost of concrete.

The main objective of the present investigation is to evaluate the possibilities of using Marble dust as a replacement to fine aggregate. Present investigation aimed at to study, 5%, 10%, 15%, 20%, 25%, 30%, 35% and 40% of traditional fine aggregate was replaced with Marble dust. Compressive strengths were found after 3 days7 days and 28 days of curing.

Concrete is an artificial material in which the aggregates both fine and coarse are bonded together by the cement when mixed with water. The concrete has become so popular and indispensable because of its inherent in concrete brought a revolution in applications of concrete. Concrete has unlimited opportunities for innovative applications, design and construction techniques. Its great versatility and relative economy in filling wide range of needs has made it is very competitive building material.

Concrete solidifies and hardens after mixing with water and placement due to a chemical process known as hydration. The water reacts with the cement, which bonds the other components together, eventually creating a stone-like material. Concrete is used to make pavements, architectural structures, foundations, and motorways/roads, bridges/overpasses, parking structures, brick/block walls and footings for gates, fences and poles, reservoirs, pools. Famous concrete structures include the Burj Khalifa (world's tallest building), Hoover Dam, the Canal and the Roman Pantheon

There are many types of concrete available, created by varying the proportions of the main ingredients. By adding or by substitution for the cementations and aggregate phases, the finished product can be tailored to its application with

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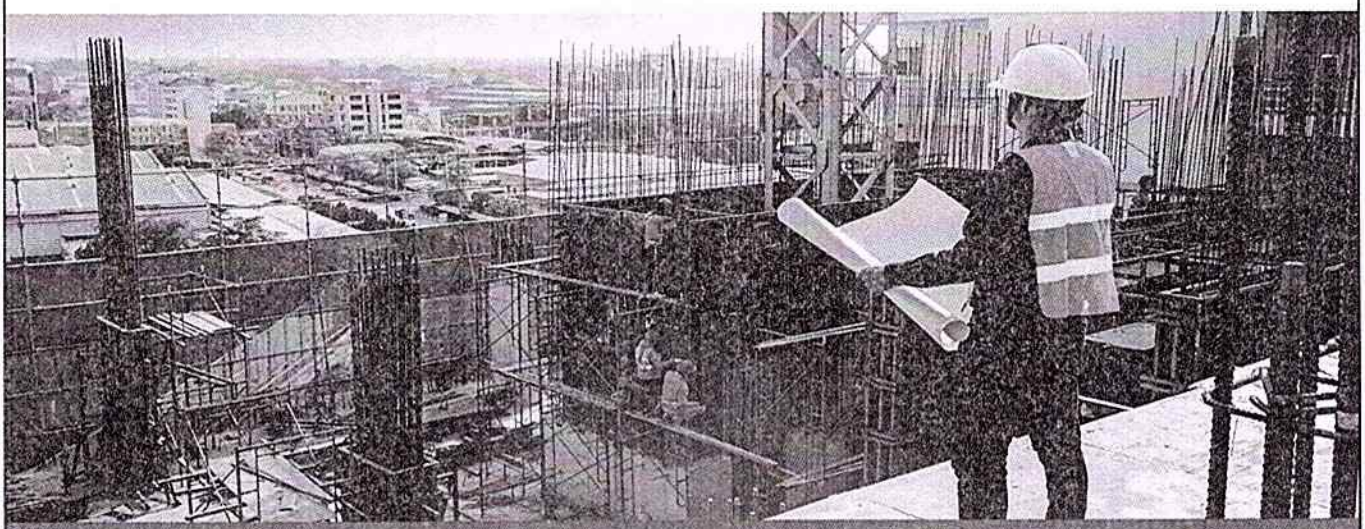

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An Experimental Study on Partial Replacement of Fine Aggregate With Marble Dust in Concrete

L. Satish Kumar[#1], M.N.S.Sambasiva Rao*[2]

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***ABSTRACT*-Concrete is a widely used material in the world. Based on global usage it is placed at second position after water. Common river sand is expensive due to excessive cost of transportation from natural sources. River sand is most commonly used fine aggregate in the production of concrete poses the problem of acute shortage in many areas and continuous usage has started posing serious problems with respect to its availability, cost and environmental impact. So Engineers began to search for alternative for fine aggregate.**

The basic objective of this study was to identify alternative source of good quality aggregates. The present investigation has been undertaken to study the effect of Marble dust on the mechanical properties of concrete, when Marble dust is replaced with fine aggregate in different percentages The main parameter investigate were cube compressive strength. In this work, M25 grade concrete mix was developed using IS method of mix design. Specimens of dimension of 150 x 150 x 150mm cubes were cast for compressive strength of concrete specimens. The test results indicate that with the use of replacing Marble dust by fine aggregates in different percentages i.e. 0%, 5%, 10%, 15%, 20%, 25%, 30%, 30% and 40%. For evaluation of strength parameters each grade of concrete for each proportion in the form of cubes casted for testing at 3 days, 7days and 28 days periods. The compressive strength increases with the increase in percentage of Marble dust up to 30%. Marble dust can be replaced without affecting the target strength.

I INTRODUCTION

Rapid urbanization in developing countries such as India is creating a shortage of adequate housing in cities. Using artificial aggregates for quality concrete is a natural step to mitigating this problem. The worldwide consumption of fine aggregate in concrete production is very high, and several developing countries have been countered difficulties in meeting the supply of natural fine aggregate in order to satisfy the increasing needs of infrastructural development in recent years.

To overcome the stress and demand for river fine aggregate, research sand practitioners in the construction industries have identified some alternative materials such as fly ash, slag, limestone powder and siliceous stone powder. In India attempts have been made to replace river sand with Marble dust.

The successful utilization of Marble dust as fine aggregate would turn this waste materials that causes disposal problem into a valuable resource. The utilization will also reduce the strain on supply of natural fine aggregate, which will also reduce the cost of concrete.

The main objective of the present investigation is to evaluate the possibilities of using Marble dust as a replacement to fine aggregate. Present investigation aimed at to study, 5%, 10%, 15%, 20%, 25%, 30%, 35% and 40% of traditional fine aggregate was replaced with Marble dust. Compressive strengths were found after 3 days7 days and 28 days of curing.

Concrete is an artificial material in which the aggregates both fine and coarse are bonded together by the cement when mixed with water. The concrete has become so popular and indispensable because of its inherent in concrete brought a revolution in applications of concrete. Concrete has unlimited opportunities for innovative applications, design and construction techniques. Its great versatility and relative economy in filling wide range of needs has made it is very competitive building material.

Concrete solidifies and hardens after mixing with water and placement due to a chemical process known as hydration. The water reacts with the cement, which bonds the other components together, eventually creating a stone-like material. Concrete is used to make pavements, architectural structures, foundations, and motorways/roads, bridges/overpasses, parking structures, brick/block walls and footings for gates, fences and poles, reservoirs, pools. Famous concrete structures include the Burj Khalifa (world's tallest building), Hoover Dam, the Canal and the Roman Pantheon

There are many types of concrete available, created by varying the proportions of the main ingredients. By adding or by substitution for the cementations and aggregate phases, the finished product can be tailored to its application with

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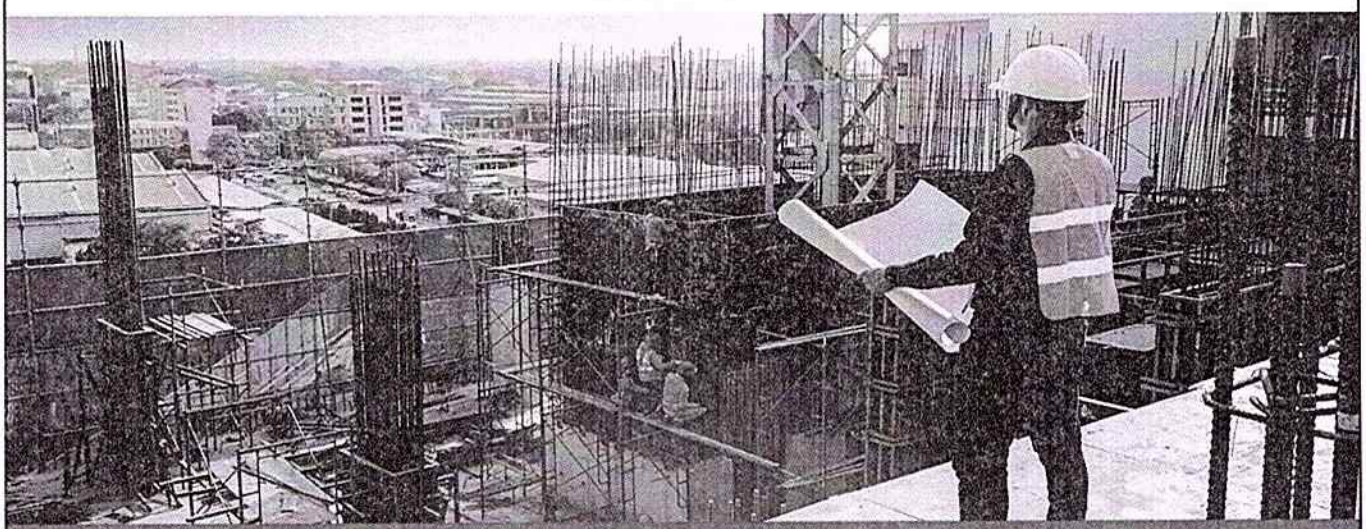

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EFFECT OF BACTERIA ON PERFORMANCE OF CONCRETE/MORTAR: A REVIEW

Nuthalapati Srikanth[1], Surabattuni Murali[2]

Abstract*: Bacterial concrete is a special type of concrete where due to microbial activity mineral precipitation take place which results in self-healing and cracks repairing of concrete. Mineral precipitation due to microbial activity is a process named as Biomineralization in which calcium carbonate precipitation is formed due to microbiologically induced calcite precipitation (MICP) process. This process is natural and eco-friendly. The objective of this study is to discuss the performance of concrete/mortar with respect to self-healing, mechanical properties, and durability properties. The study shows that when bacteria used in cement treatment or during concrete production or mortar curing due to MICP process compressive and split tensile strength increase and both water absorption and porosity reduced and also a reduction in chloride permeability was observed which makes concrete more durable. So it can be concluded that bacterial concrete can be use in construction for self healing, crack repairing and improving durability.

***Index Terms*: Bacterial Concrete, Biomineralization, MICP, Self-healing, Mechanical Properties, Durability.**

INTRODUCTION

Concrete is the second most broadly utilized material in the Earth after water. It is the single construction material utilized most generally all through the world. Portland cement concrete is the most generally utilized construction material, with a yearly generation of around 10 km^3/year and the major part of which being used in the construction of the reinforced concrete structures [1]. Concrete is a composite material which is composed of coarse and fine aggregates bonded together with cement paste. The main constituent of concrete cement has a high environmental impact on global warming because the amount of CO_2 emitted from cement industry is about 10% of total worlds CO_2 emission [2]. In the year 2013 worldwide more or less 4.08 billion metric tons of cement was produced and in 2014 it increases to 4.2 billion metric tons of cement [3]. According to the compound annual growth rate of the cement industry, it is estimated that the cement industry will grow more than 9% by 2020 [4].

However, concrete is used as a most wildly consumed construction material due to its easy availability, low cost, good compressive strength etc.; has some drawback also. The main drawback of concrete is it has low tensile strength due to which micro-cracks occur when the structure is subjected to sustained loading and when exposed to an aggressive environment the life of the structure become degrading. In the current scenario, everyone is concerned about the degradation of concrete and major cost involvement in maintenance and repair of concrete structures. To reduce the cost, attention is given upon the processes of concrete degradation and to the method to retardation or even to get over of concrete degradation [5]. The traditional repairing methods consist of complex technology, excessive cost and have few adverse consequences on the environment, which cannot fulfill the demand of modern perception for concrete materials. The method of using biology development to repair small cracks and pores was first suggested by [6] in year 1995 to got a new solution for the problem. Research in the field of concrete materials suggests that it is feasible to create a smart, cement-based material that has the capability of self-healing by investing the metabolic activity of microorganisms to provide biomineralization [7, 8]. Biomineralization is a biochemical process which includes a chain of biochemical reactions by microorganisms where calcium carbonate precipitation is one of the remedial products. MICP is the process behind it. Using various methods, bacteria can be included into cement-based materials like during cement treatment or during concrete production or during curing or after curing in the form of a spray. After incorporating bacteria the process of bio mineralization occurs inside or outside of the microbial cell and result in a formation of bio minerals (such as $CaCO_3$) which can block the cracks up-to certain extent and reduce the permeability of concrete. This new type of concrete is known as Bacterial concrete. The objective of this study is to discuss the potential of concrete/mortar with respect to self-healing, mechanical and durability properties.

BACTERIAL CONCRETE

Self-healing study

Self-healing is an important criterion for healing micro-cracks or small cracks of concrete and increase structures strength, durability etc. Under certain circumstance, micro-cracks and small cracks in concrete can be healed. For self-healing presence of liquid water is an important because in case of specimens stored at 95%RH no self-

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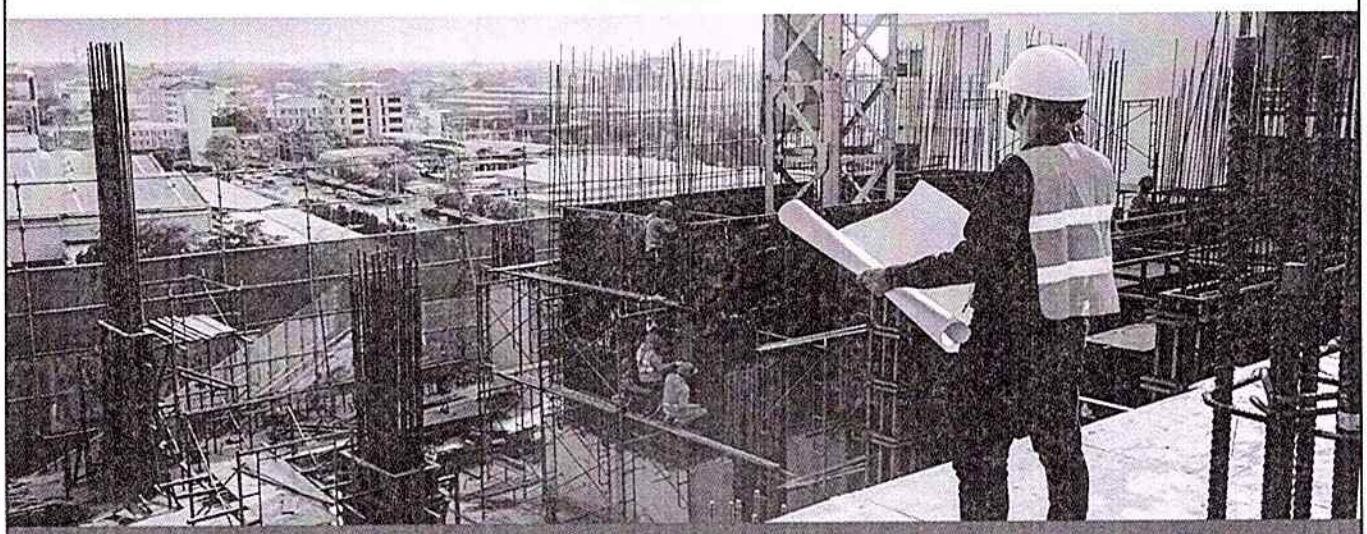

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Experimental Behavior of Beams with Aggregate Interlocking Under Flexure

Surabattuni Murali1[1] Nuthalapati Srikanth[2]

Abstract: *Aggregate interlocking has the ability to transfer the load from one side to other by a narrow irregular crack. Aggregate interlocking and dowel action are the key parameters to transfer the shear strength in reinforced concrete members. In this study, experimental work has been carried out on reinforced concrete beams with and without aggregate interlocking connection through implementing initial crack and simultaneously varying the percentage of longitudinal reinforcement under flexure using four-point loading. The flexural strength of the reinforced concrete beams has been assessed through load-deflection curve, ductility and flexural strength resulted from four-point bending test. From experimental study, it has been observed that by varying the percentage of longitudinal reinforcement, the flexural strength of the beam significantly increased.*

Index Terms: *Aggregate interlock, Dowel action, four-point bending, Flexural strength, longitudinal reinforcement.*

INTRODUCTION

Aggregate interlocking has the capability to transfer the load from one side to other by a small irregular crack. The main work behind this aggregate interlocking connectionhasto transmit the load from one way to another way in the concrete members. Aggregateinterlockingconcept has been first identified generally as a good load transfer system in the past 1990s. It is world widely agreed that the concrete has been used as a favored construction material from many years in the reinforced concrete members. Normally, concrete members have a good load transfer that effects in lesser deflections, minimized the spalling and to avoid the corner breaks in the members. An essential key parameter for transferring load sin members is shear action. In a reinforced concrete beams, a shear resistance was commonly taken by shear reinforcement with a following elements namely as aggregate interlock connecting crack face and the dowel action of the main reinforcement. It is globally facing the challenge of shear-transfer technique in the shear behavior of reinforcing concrete beams. Researchers are still working for developing a detailed understanding of a shear-transfer technique by applicable experimentation and mathematical assumptions. Dowel action in the bottom reinforcement has not been definitely represented its importance in shear resistance. The literature

will be reviewed in the below paragraphs, recognized a work of researchers for explore the range of this present research.

The failure portion has established by crack expand in tensile zone under integrate bending and shear too sliding surface over the compression zone. The position of the initial crack is particularly determined by the concrete tensile strength sharing in the tension zone. Inclination of the first shear crack was successful to decrease the variability of both together, the shape of the failure section and the failure load. If the aggregate interlock is neglecting in the compression zone to the shear resistance is applicable [1]. In the high strength reinforced concrete beams, the aggregate interlock technique is neglected in the members, dowel action was the primary contributor from still its contribution reduces with the growth of concrete strength. In the reinforced members having concrete strength in the domain for 40 to 110 Mpa, optimum dowel force reaches between 53% and 43%.Still, the stress subtracted from shear stress to estimate dowel stress at that portion [2]. While the aggregate interlock reacts with a very important role as a shear carrying technique at small concrete compressive strengths, the shear strength of reinforced concrete beams does not effects at high concrete strengths [3]. Dowel action is more leading at very high strengths, and the shear carried by the concrete compression zone remains impartially association with growing concrete compressive strengths. Aggregate interlock results low with a high quantity of web reinforcement by taking the shear. Importantly cover has the independent effect on the dowel force. By eliminating aggregate interlock the total shear 56% will be determined by dowel force. Dowel action always approvals the more ductile sections and a cover directly decides the dowel action. In the reinforced concrete beams with higher compressive strengths will decreases the dowel action [4]. In the cracked reinforced concrete section dowel action is a practical element in the shear mechanism. In the uncracked concrete sections, the major factors for withstanding the related shear force is shear resistance of sections [5].

In a two phase model, requires integration of sliding and crushing of the crack faces are the most practical one. Still the usage of this model is forecast the integration of shear stiffness was matured to aggregate interlock in cracked reinforced concrete is not simple [6]. A modern type of aggregate interlocking concrete settled with scattering-filling aggregate process, which is newly developed by him. Mainly coarse aggregatessuspended in the mortar even through there may be some contact in the concrete, but the aggregate interlock with each other clearly and act as good bonding of concrete [7]. The moderate stiffness minimized after the existence of diagonal cracks were main in the light weight concrete beams than in normal weight concrete beams and increased with the decrease of maximum aggregate size [8].

The basic tests on aggregate Interlock, are two concrete

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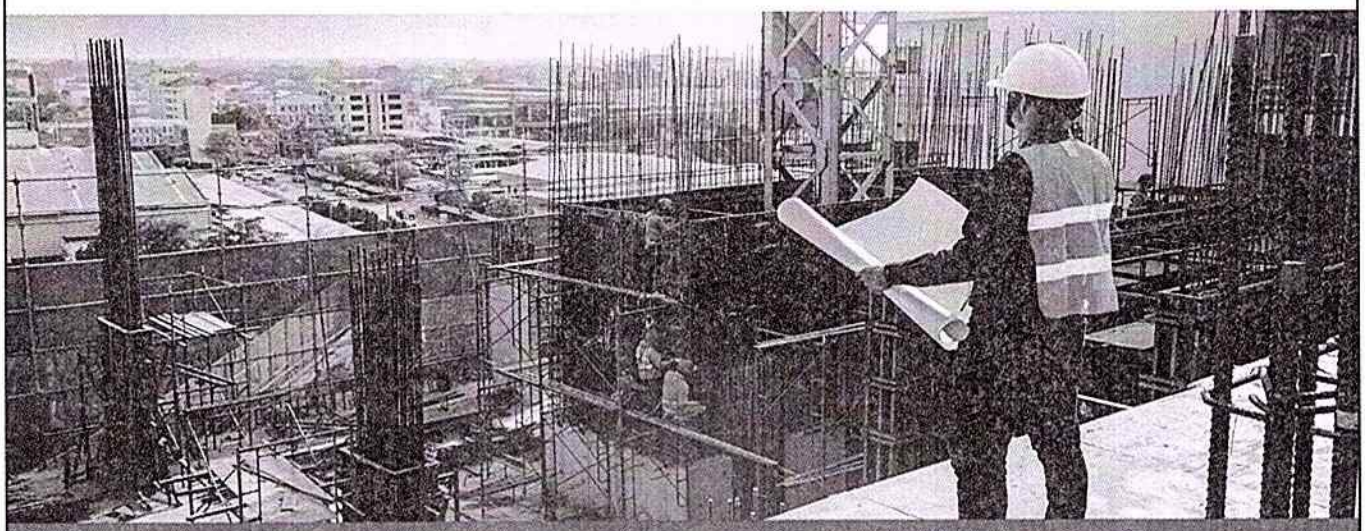

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SELF-CURING CONCRETE BY PARTIAL ADDITION OF POLYETHYLENE GLYCOL AND STEEL FIBERS

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Abstract: **Concrete is recognized as a versatile construction material globally. As water is becoming a scarce material day-by-day, there is an urgent need to do research work pertaining to saving of water in making concrete and in constructions. Concrete is most widely used construction material due to its good compressive strength and durability. Depending upon the nature of work the cement, fine aggregate, coarse aggregate and water are mixed in specific proportions to produce plain concrete. Plain concrete needs congenial atmosphere by providing moisture for a minimum period of 28 days for good hydration and to attain desired strength. Any laxity in curing will badly affect the strength and durability of concrete. Self-curing concrete is one of the special concretes in mitigating insufficient curing due to human negligence and scarcity of water in arid areas, inaccessibility of structures in difficult terrains and in areas where the presence of fluorides in water will badly affect the characteristics of concrete. The present study involves the use of shrinkage reducing admixture polyethylene glycol (PEG400) in concrete which helps in self-curing and helps in better hydration and hence strength. In the present study, the effect of admixture (PEG400) on compressive strength, split tensile strength and modulus of rupture by varying the percentage of PEG by weight of cement from 0% to 2% and standard percentage of Steel fibers by weight of concrete with 1.5% were studied for M30. It was found that PEG400 could help in self-curing by giving strength on par with conventional curing and Steel fibers are helpful in gaining of additional Strength. It was also found that 2% of PEG400 by weight of cement was optimum for M30 grade concrete for achieving maximum strength without compromising workability.**

Keywords— **Compressive Strength, Durability, PEG-400, Steel fibers, Self-Curing Concrete, Split Tensile Strength.**

I.INTRODUCTION

Proper curing provides the desired properties for concrete. Apt curing of concrete structures is important to full fill good performance and durability requirements. In traditional curing this is accomplished by external curing. But curing is not possible in some occasions such as shortage of water, concreting works at greater heights etc., The several advantages of self-curing are, heightened hydration process, strength development, reduced permeability, increased durability, reduced autogenous shrinkage and fissures etc., Proper curing of concrete structure is important to meet performance and durability requirements. In conventional curing this is achieved by external curing applied after mixing, placing and finishing. Self-curing or internal curing is a technique that can be used to provide additional moisture in concrete for more effective hydration of cement and reduced self-desiccation. Self- curing admixtures play a compelling role where water is meagre and ergo unable to spare. The mechanism of self-curing is holding the preserved water content of concrete structures within it. So concrete structures are not required any additional water for curing purpose.

II. OBJECTIVE

The objective is to study the mechanical characteristics of concrete such as compressive strength & split tensile strength by varying the percentage of PEG from 0% to 2% by weight of cement for M30 grade of concrete.

III. MATERIALS

3.1 Cement: Generally, cement can be described as a material with bonding agent and cohesive properties, which it makes it proficient of bonding mineral fragments into a solid hole. Portland cement is hydraulic cement that hardens by interacting with water and forms a water resisting compound when it receives its final set. Portland cements are highly durable and produce high compressive strengths in mortars and concrete. Portland cement is made of finely powdered crystalline minerals composed primarily of calcium and aluminum silicates. The strength of cement paste is the result of a process of hydration. The early strength of Portland cement, is higher with higher percentages of C_3S. If moist curing is continuous, later strength level becomes greater with higher percentages of C_2S. C_3S contributes to the strength developed during first day after placing the concrete because it is the earliest to

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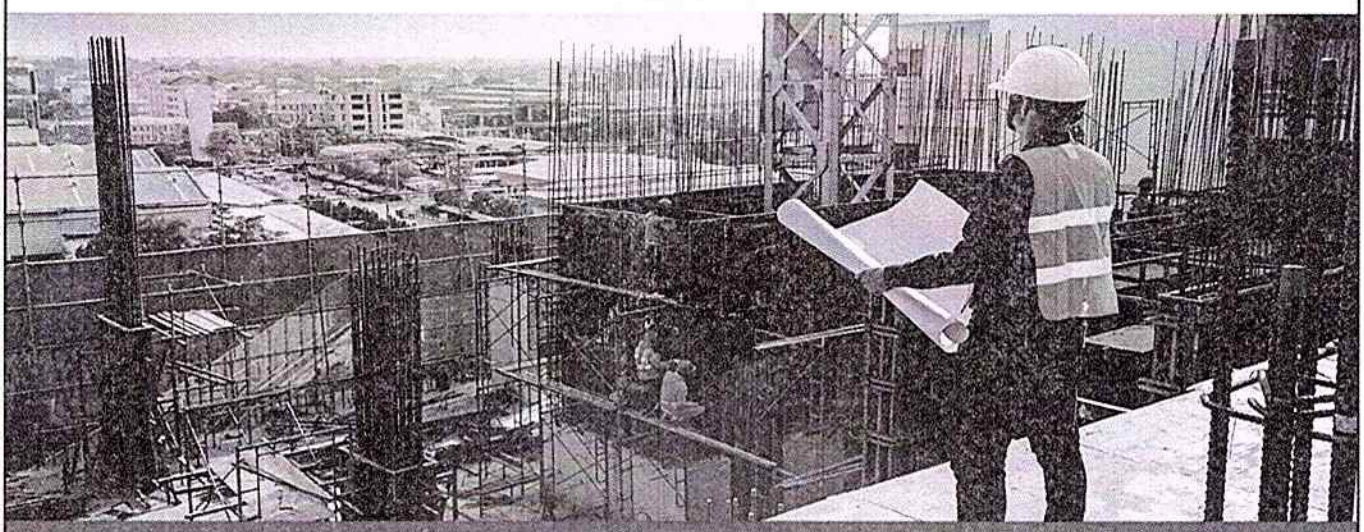

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COMPARITIVE STUDY ON SEISMIC EFFECT OF I SHAPED FRAME WITH SHEAR WALL & WITHOUT SHEAR WALL EFFECT AT DIFFERENT SEISMIC ZONES

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***Abstract*— :** It is most important to study the effect of lateral displacements and behaviour of the frame prompted from earthquakes. Concrete shear walls are cast-off to resist the lateral displacement of the frame due to earthquake. Shear walls can be retained around the structure as boundary walls, around the lift and beside the staircase. In This Paper the Analytical Study on the Lateral displacement and the Behaviour of the Structure Is Mainly Concentrated and How It Is Varying in the Dissimilar Zones of Zone II, III, and IV with Dissimilar Storey Heights of G+ 10, G+ 15, and G+ 20. The Study Involves The Placement Of Shear Wall. The Buildings Are Exhibited with Floor Area Of 30mx30m of equal span width. With 10 Bays Along 30m Span and 10Bays along 30m And Each Bay Width Of 3m and 3m The behaviour and Lateral Displacement of the Structure Is Compared with General frame, dual frame. The Lateral Displacement Values Of Current Floor Level To A different Floor Level Should Reach Storey Drift .The Design Loads Values Are Calculated From The Standard Is Codes Of IS 456-2000, IS 1893- IN 2000.The Analysis Is Done In Staadprov8i.

***Keywords*—** Seismic coefficient method, shear wall and bracings, lateral displacement of the structure, staadproV8.

INTRODUCTION

A HUGE PORTION OF INDIA IS DISPOSED TO DAMAGING LEVELS OF SEISMIC HAZARDS. THE BUILDINGS ARE LOCATED IN ZONE –III VIJAYAWADA, ZONE –II HYDERABAD. HENCE, IT IS ESSENTIAL TO TAKE INTO ACCOUNT THE SEISMIC LOAD FOR THE DESIGN OF HIGH-RISE STRUCTURE. IN PRESENT STUDY, THE EARTHQUAKE ANALYSIS OF G+10, G+15, G+20 STORIED STRUCTURE WAS DONE BY SEISMIC COEFFICIENT METHOD. THE MAIN PARAMETERS MEASURED IN THIS STUDY TO COMPARE THE SEISMIC PERFORMANCE OF DISSIMILAR ZONES I.E. II, III, IV ARE LATERAL DISPLACEMENT. THE BUILDING FRAME IS SCULPTED WITH A DIMENSIONS OF 30M X 30M HAVING COLUMNS & BEAMS WITH A SLAB PANEL OF 3M X 3M THE MODEL IS MADE USING STAAD.PRO SOFTWARE. IN CASE OF STRUCTURE WITH SHEAR WALL THE BUILDING FRAME IS MODELLED AS ABOVE DIMENSIONS ONLY WITH ALTERNATE SHEAR WALL USING 4 NODE PLATE PROPOSED THICKNESS OF 150 MM ALONG THE HALF HEIGHT OF THE STRUCTURE. VIJAYAWADA WILL COME UNDER SEISMIC ZONE III AS AGAINST ZONE II CURRENTLY. THE NATIONAL SEISMIC ZONE MAP PRESENTS A LARGE SCALE VIEW OF THE SEISMIC ZONES IN THE COUNTRY. LOCAL VARIATIONS IN SOIL TYPE AND GEOLOGY CANNOT BE REPRESENTED AT THAT SCALE. ALSO, FOR THE PURPOSES OF URBAN PLANNING, METROPOLITAN AREAS ARE MICRO ZONED. SEISMIC MICRO ZONATION ACCOUNTS FOR LOCAL VARIATIONS IN GEOLOGY, LOCAL SOIL PROFILE, ETC. IN THIS PAPER TO ANALYSE A MODEL FOR EARTHQUAKE RESISTING STRUCTURE. THE MODEL STRUCTURE IS LOCATED IN ZONE-II, III, AND IV. TO CALCULATE THE LATERAL DISPLACEMENT, ON BUILDINGS USING EQUIVALENT STATIC METHOD. BY USING STAAD PRO. AND MAKE A COMPARATIVE ANALYSIS BETWEEN DUAL SYSTEM AND BRACING FRAME STRUCTURE IN EQUIVALENT STATIC METHOD .COMPARISON BETWEEN G+10, G+15, AND G+ 20.

ZONE II,III, IV, V	G+10 L SHAPED GENERAL FRAME	G+15 L-SHAPED GENERAL FRAME	G+10 L SHAPED DUA	G+15 L SHAPED DUA
COLUMN DETAILS	0.65X0.6	0.65X0.6	0.65 X0.6	0.65 X0.6
BEAM DETAILS	0.6X0.55	0.6X0.55	0.6X 0.55	0.6X 0.55

1.2 OBJECTIVE

1. The model of I –shaped structure is located in both Zone-II, III & IV.
2. And make a comparison between General Frame & shear wall and bracing frame structure.

3 SCOPE

1. We can do the wind analysis for the frames.

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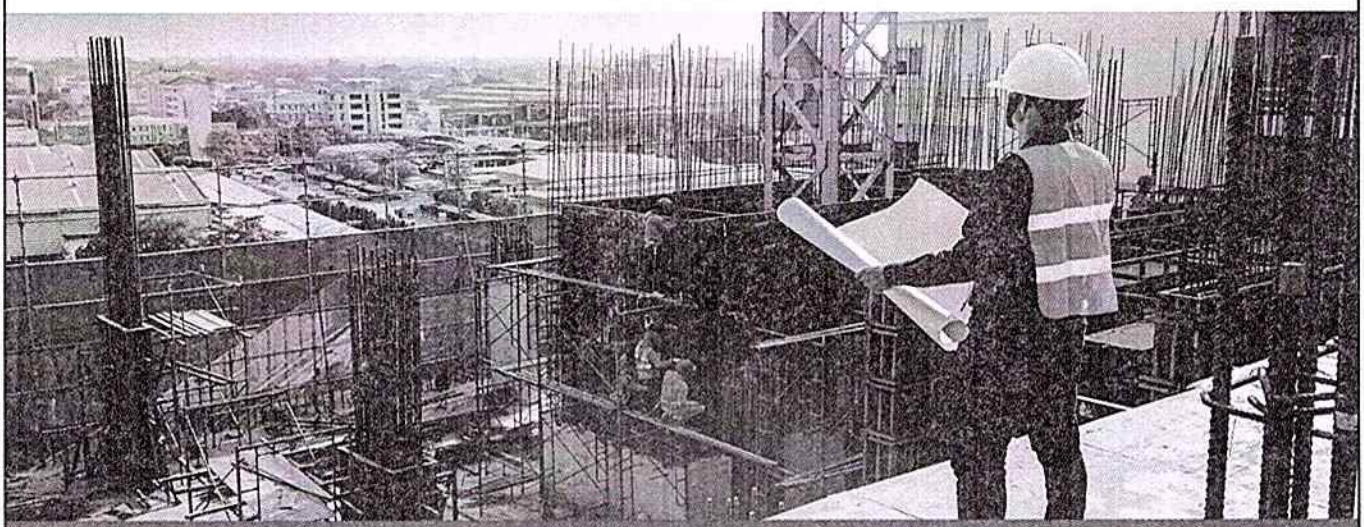

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COMPARITIVE STUDY ON SEISMIC EFFECT OF L SHAPED FRAME AND RECTANGULAR FRAME WITH A COMBINATION OF WITH SHEAR WALL AND WITHOUT SHEAR WALL EFFECT.

Thota Amareswar 2nd K.venkatesh
[1]Student1st, [2]Assistant professor
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Abstract— In the present study we are going to observe the difference between rectangular frame and L-shaped frame .Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase in this project two different shapes of frames has been considered and compared the lateral displacement of the frames for L- Shape structure and rectangular framed structure is calculated the storey drift. And how it is varying in the different zones of Zone II, III&with different storey heights of G+ 10, G+ 15. The buildings are modelled with floor area of for rectangular frames of 30m x 30m with 10 bays along 30m span and 10 bays along 30m and each bay width of 3m and 3m of L- Shaped frame. The lateral displacement of the structure is compared in general frame, shear wall and bracing frame. The lateral displacement values of current floor level to another floor level should reach storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i.

Keywords— Seismic coefficient method, shear wall and bracings, lateral displacement, staadproV8.

INTRODUCTION

THE TERM 'APARTMENT BUILDING' REFERS TO A MULTI-STOREY BUILDING THAT IS PRIMARILY RESIDENTIAL IN USE AND THAT HAS INDIVIDUAL RESIDENTIAL UNITS (APARTMENTS), ON ALL OR MOST FLOORS. IN CERTAIN LOCATIONS, SUCH AS TOWN AND METRO CENTRES, APARTMENT BUILDINGS MAY HAVE COMMERCIAL USES ON THE GROUND AND LOWER FLOORS. IN PRESENT STUDY, THE EARTHQUAKE ANALYSIS OF G+10, G+15, STORIED BUILDING WAS DONE BY EQUIVALENT STATIC METHOD. THE MAIN PARAMETERS CONSIDERED IN THIS STUDY TO COMPARE THE SEISMIC PERFORMANCE OF DIFFERENT ZONES I.E.III, IV ARE LATERAL DISPLACEMENT. THE BUILDING FRAME IS MODELLED WITH A DIMENSIONS OF 91M X 60M HAVING COLUMNS & BEAMS WITH A SLAB PANEL OF 9M X 6M THE MODEL IS MADE USING STAAD.PRO SOFTWARE. IN CASE OF BUILDING WITH SHEAR WALL THE BUILDING FRAME IS MODELLED AS ABOVE DIMENSIONS ONLY WITH ALTERNATE SHEAR WALL USING 4 NODE PLATE PROPOSED THICKNESS OF 150 MM ALONG THE HALF HEIGHT OF THE STRUCTURE. THE NEW ZONE MAP WILL NOW HAVE ONLY FOUR SEISMIC ZONES – III, AND IV. SEISMIC MICRO ZONATION ACCOUNTS FOR LOCAL VARIATIONS IN GEOLOGY, LOCAL SOIL PROFILE, ETC. IN THIS PAPER TO ANALYSE A MODEL FOR EARTHQUAKE RESISTING STRUCTURE. THE MODEL STRUCTURE IS LOCATED IN ZONE-II, III& IV OF L –SHAPED FRAME. TO CALCULATE THE LATERAL DISPLACEMENT, ON BUILDINGS USING SEISMIC COEFFICIENT METHOD. BY USING STAAD PRO. AND MAKE A COMPARATIVE ANALYSIS BETWEEN GENERAL FRAME & SHEAR WALL AND BRACING FRAME STRUCTURE IN EQUIVALENT STATIC METHOD .COMPARISON BETWEEN G+10, G+15.

1.2 OBJECTIVE

1. The model of rectangular frame & L –shaped structure is located in both Zone-II, III & IV.
2. And make a comparison between General Frame & shear wall and bracing frame structure.

1.3 SCOPE

1. Only RC buildings are considered.
2. Entire analysis is carried out using STAAD.proV8i.
3. Seismic analysis is carried out and orientation of shear walls.
4. We can do the wind analysis for the frames.

2.0SESMIC COEFFIECIENT METHOD

As per IS 1893 (part1)-2002, Seismic Coefficient analysis Procedure is summarized in following steps

d) Design Seismic Base Shear:- The total design lateral force or design seismic base shear (V_B) along any principal direction of the building shall be determined by the following expression

$V_B = Ah\ W$

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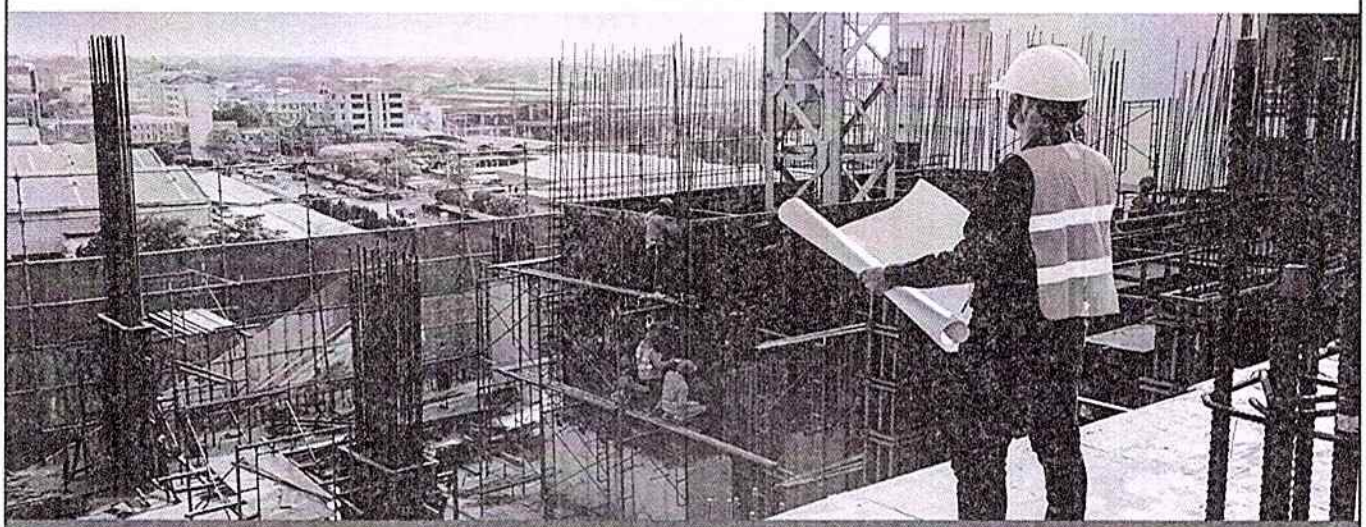

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STUDY ON SEISMIC EFFET ON I SHAPED FRAME & L SHAPED FRAME IN VARIOUS SEISMIC ZONES

[1] Dubisetty venkata pardha sai 2nd K.venkatesh

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Abstract— It is most significant to study the effects of lateral displacements made from earthquakes. Concrete shear walls are used to resist the lateral displacement due to earthquake. Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase. In this paper the investigative study on the lateral behaviour of the structure is mainly focused. In this project two different shapes of frames has been considered and compared the lateral displacement of the frames for L- Shaped frame and I shaped structure and calculated the storey drift. And how it is varying in the different zones of Zone II, III, and IV &with different storey heights of G+ 10, G+ 15. The study involves the orientation of Shear wall. The buildings are modelled with floor area of 30m x 30m with 10 bays along 30m span and 10 bays along 30m and each bay width of 3m and 3m of L- Shaped frame and for I-shaped frame the floor area of 30mx30m with 10 bays along x direction and 10 bays along z direction. And each bay having a length of 3mx3m each. The comparison between the L shaped frame and I shaped frame, of general frame shear wall frame. The lateral displacement of the structure is compared in general frame, shear wall and bracing frame. The lateral displacement values of current floor level to another floor level should reach storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i.

Keywords— Equivalent static method, shear wall and bracings, lateral displacement, staadproV8

INTRODUCTION

THE TERM 'APARTMENT BUILDING' REFERS TO A MULTI-STOREY BUILDING THAT IS PRIMARILY RESIDENTIAL IN USE AND THAT HAS INDIVIDUAL RESIDENTIAL UNITS (APARTMENTS), ON ALL OR MOST FLOORS. IN CERTAIN LOCATIONS, SUCH AS TOWN AND METRO CENTRES, APARTMENT BUILDINGS MAY HAVE COMMERCIAL USES ON THE GROUND AND LOWER FLOORS. IN PRESENT STUDY, THE EARTHQUAKE ANALYSIS OF G+10, G+15, STORIED BUILDING WAS DONE BY EQUIVALENT STATIC METHOD. THE MAIN PARAMETERS CONSIDERED IN THIS STUDY TO COMPARE THE SEISMIC PERFORMANCE OF DIFFERENT ZONES I.E. III, IV ARE LATERAL DISPLACEMENT. THE BUILDING FRAME IS MODELLED WITH A DIMENSIONS OF 91M X 60M HAVING COLUMNS & BEAMS WITH A SLAB PANEL OF 9M X 6M THE MODEL IS MADE USING STAAD.PRO SOFTWARE. IN CASE OF BUILDING WITH SHEAR WALL THE BUILDING FRAME IS MODELLED AS ABOVE DIMENSIONS ONLY WITH ALTERNATE SHEAR WALL USING 4 NODE PLATE PROPOSED THICKNESS OF 150 MM ALONG THE HALF HEIGHT OF THE STRUCTURE. THE NEW ZONE MAP WILL NOW HAVE ONLY FOUR SEISMIC ZONES – III, AND IV. THE AREAS FALLING IN SEISMIC ZONE I IN THE CURRENT MAP ARE MERGED WITH THOSE OF SEISMIC ZONE II. LOCAL VARIATIONS IN SOIL TYPE AND GEOLOGY CANNOT BE REPRESENTED AT THAT SCALE. THEREFORE, FOR IMPORTANT PROJECTS, SUCH AS A MAJOR DAM OR A NUCLEAR POWER PLANT, THE SEISMIC HAZARD IS EVALUATED SPECIFICALLY FOR THAT SITE. ALSO, FOR THE PURPOSES OF URBAN PLANNING, METROPOLITAN AREAS ARE MICRO ZONED. SEISMIC MICRO ZONATION ACCOUNTS FOR LOCAL VARIATIONS IN GEOLOGY, LOCAL SOIL PROFILE, ETC. IN THIS PAPER TO ANALYSE A MODEL FOR EARTHQUAKE RESISTING STRUCTURE. THE MODEL STRUCTURE IS LOCATED IN ZONE-III, IV. TO CALCULATE THE LATERAL DISPLACEMENT, ON BUILDINGS USING SEISMIC COEFFICIENT METHOD. BY USING STAAD PRO. AND MAKE A COMPARATIVE ANALYSIS BETWEEN GENERAL FRAME & SHEAR WALL AND BRACING FRAME STRUCTURE IN EQUIVALENT STATIC METHOD .COMPARISON BETWEEN G+10, G+15.

1.2 OBJECTIVE

1. TO ANALYZE A MODEL FOR EARTHQUAKE RESISTING STRUCTURE.

2. THE MODEL OF L –SHAPED STRUCTURE IS LOCATED IN BOTH ZONE-II, III & IV.

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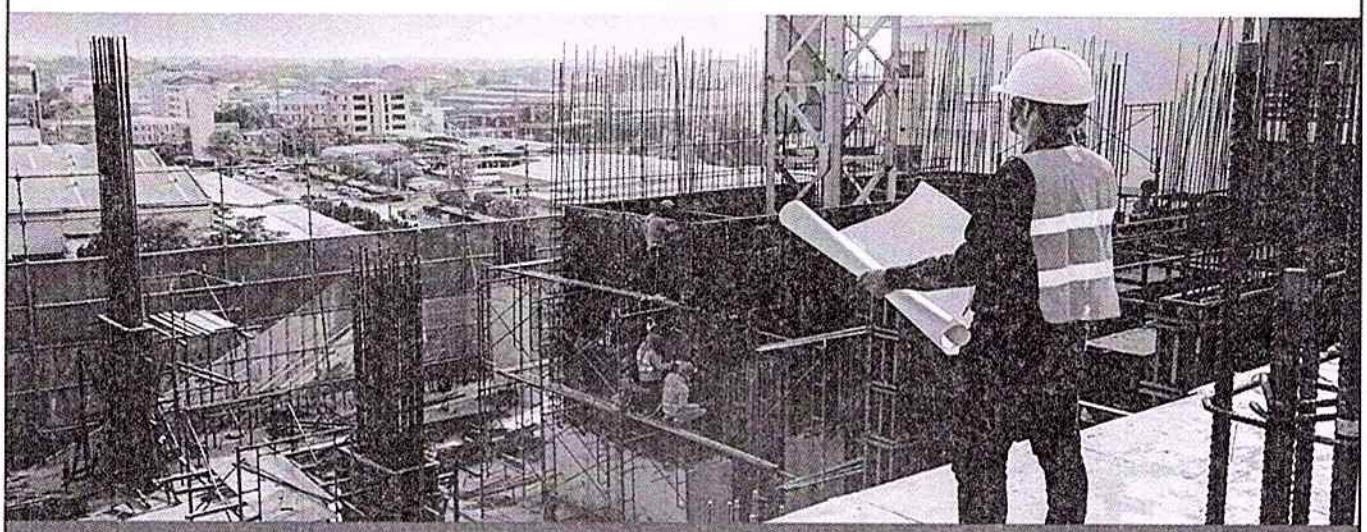

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COMPARITIVE STUDY ON SEISMIC EFFECT OF TWO DIFFERENT FRAMES WITH SHEAR WALL & WITH OUT SHEAR WALL IN VARIOUS SEISMIC ZONES

[1] V.mahendra2nd K.v.pratap,K.Venkatesh

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Keywords— Equivalent static method, shear wall, L shaped frame, lateral displacement, staadproV8

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1.2 OBJECTIVE

1. The model of C –shaped & V- shaped structure is located in both Zone- III & IV.
2. And make a comparison between General Frame & shear wall and bracing frame structure

1.3 SCOPE

1. Only RC buildings are considered.
2. Seismic analysis is carried out and orientation of shear walls.
3. We can do the wind analysis for the frames.

2.1 SESMIC COEFFIECIENTMETHOD

As per IS 1893 (part1)-2002, Seismic Coefficient analysis Procedure is summarized in following steps

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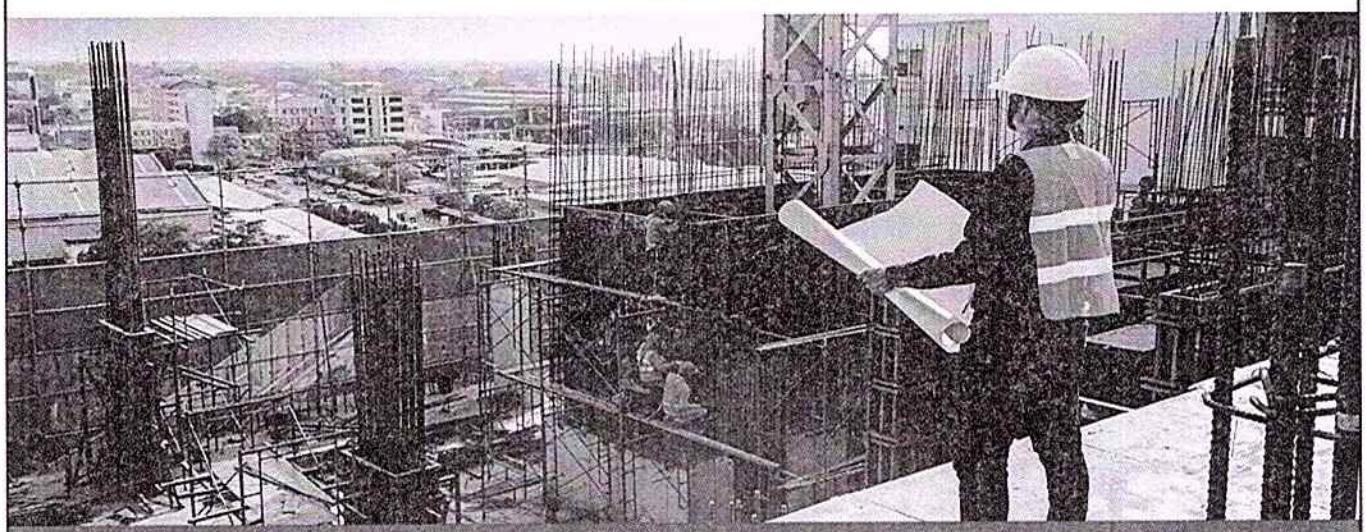

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COMPARITIVE STUDY ON SEISMIC EFFECT OF TWO DIFFERENT FRAMES WITH SHEAR WALL & WITH OUT SHEAR WALL IN VARIOUS SEISMIC ZONES

[1] V.mahendra2nd K.v.pratap,K.Venkatesh

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Abstract— It is most important to study the effects of lateral displacements induced from earthquakes. Concrete shear walls are used to resist the lateral displacement due to earthquake. Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase. In this paper the analytical study on the lateral behaviour of the structure is mainly concentrated. In this project two different shapes of frames has been considered and compared the lateral displacement of the frames for V- Shape and C- Shape of the structure and calculated the storey drift. And how it is varying in the different zones of Zone III and IV with different storey heights of G+ 10, G+ 15. The study involves the orientation of Shear wall. The buildings are modelled with floor area of 91m x 60m with 11 bays along 91m span and 11 bays along 60m and each bay width of 9m and 6m of C-Shaped frame and with floor plan area of 48MX30M span of V- Shaped frame The lateral displacement of the structure is compared in general frame, shear wall and bracing frame. The lateral displacement values of current floor level to another floor level should reach storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i

Keywords— Equivalent static method, shear wall, L shaped frame, lateral displacement, staadproV8

INTRODUCTION

THE TERM 'APARTMENT BUILDING' REFERS TO A MULTI-STOREY BUILDING THAT IS PRIMARILY RESIDENTIAL IN USE AND THAT HAS INDIVIDUAL RESIDENTIAL UNITS (APARTMENTS), ON ALL OR MOST FLOORS. IN CERTAIN LOCATIONS, SUCH AS TOWN AND METRO CENTRES, APARTMENT BUILDINGS MAY HAVE COMMERCIAL USES ON THE GROUND AND LOWER FLOORS. IN PRESENT STUDY, THE EARTHQUAKE ANALYSIS OF G+10, G+15, STORIED BUILDING WAS DONE BY EQUIVALENT STATIC METHOD. THE MAIN PARAMETERS CONSIDERED IN THIS STUDY TO COMPARE THE SEISMIC PERFORMANCE OF DIFFERENT ZONES I.E.III, IV ARE LATERAL DISPLACEMENT. THE BUILDING FRAME IS MODELLED WITH A DIMENSIONS OF 91M X 60M HAVING COLUMNS & BEAMS WITH A SLAB PANEL OF 9M X 6M THE MODEL IS MADE USING STAAD.PRO SOFTWARE. IN CASE OF BUILDING WITH SHEAR WALL THE BUILDING FRAME IS MODELLED AS ABOVE DIMENSIONS ONLY WITH ALTERNATE SHEAR WALL USING 4 NODE PLATE PROPOSED THICKNESS OF 150 MM ALONG THE HALF HEIGHT OF THE STRUCTURE. THE NEW ZONE MAP WILL NOW HAVE ONLY FOUR SEISMIC ZONES – III, AND IV. SEISMIC MICRO ZONATION ACCOUNTS FOR LOCAL VARIATIONS IN GEOLOGY, LOCAL SOIL PROFILE, ETC. IN THIS PAPER TO ANALYSE A MODEL FOR EARTHQUAKE RESISTING STRUCTURE. THE MODEL STRUCTURE IS LOCATED IN ZONE- III& IV OF C & V – SHAPED FRAME. TO CALCULATE THE LATERAL DISPLACEMENT, ON BUILDINGS USING SEISMIC COEFFICIENT METHOD. BY USING STAAD PRO. AND MAKE A COMPARATIVE ANALYSIS BETWEEN GENERAL FRAME & SHEAR WALL AND BRACING FRAME STRUCTURE IN EQUIVALENT STATIC METHOD .COMPARISON BETWEEN G+10, G+15.

1.2 OBJECTIVE

1. The model of C –shaped & V- shaped structure is located in both Zone- III & IV.
2. And make a comparison between General Frame & shear wall and bracing frame structure

1.3 SCOPE

1. Only RC buildings are considered.
2. Seismic analysis is carried out and orientation of shear walls.
3. We can do the wind analysis for the frames.

2.1 SESMIC COEFFIECIENTMETHOD

As per IS 1893 (part1)-2002, Seismic Coefficient analysis Procedure is summarized in following steps

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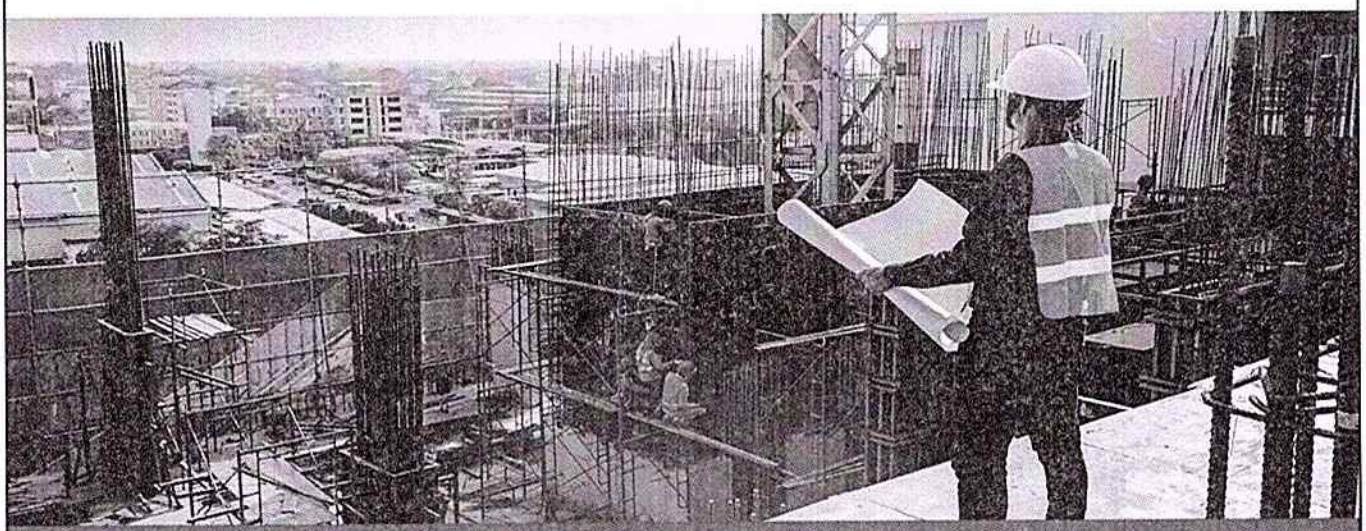

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Abstract — : It is most significant to study the effects of lateral displacements induced from earthquakes. Concrete shear walls are used to resist the lateral displacement due to earthquake. Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase. In this paper the analytical study on the lateral behaviour of the structure is mainly concentrated. In this project two different shapes of frames has been considered and compared the lateral displacement of the frames for I- Shape and C- Shape of the structure and calculated the storey drift. And how it is varying in the different zones of Zone II, III, and IV with different storey heights of G+ 10, G+ 15. The study involves the orientation of Shear wall. The buildings are modelled with floor area of 91m x 60m with 11 bays along 91m span and 11 bays along 60m and each bay width of 9m and 6m of C- Shaped frame and with floor plan area of 30MX30M span of I- Shaped frame The lateral displacement of the structure is compared in general frame, shear wall and bracing frame. The lateral displacement values of current floor level to another floor level should reach storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i.

Keywords— seismic coefficient method, shear wall and bracings, lateral displacement, staadproV8

INTRODUCTION

In present study, the earthquake analysis of G+10, G+15, storied building was done by Equivalent static method. The main parameters considered in this study to compare the seismic performance of different Zones i.e. II, III, IV & V are lateral displacement. The building frame is modelled with a dimensions of 91m x 60m having columns & beams with a slab panel of 9m x 6m the model is made using STAAD.PRO Software. In case of building with shear wall the building frame is modelled as above dimensions only with alternate shear wall using 4 node plate proposed thickness of 150 mm along the half height of the structure. The new zone map will now have only four seismic zones – II, III, IV. The areas falling in seismic zone I in the current map are merged with those of seismic zone II. Also, the seismic zone map in the peninsular region is being modified. Madras will come under seismic zone III as against zone II currently. The national Seismic Zone Map presents a large scale view of the seismic zones in the country. Local variations in soil type and geology cannot be represented at that scale. Therefore, for important projects, such as a major dam or a nuclear power plant, the seismic hazard is evaluated specifically for that site. Also, for the purposes of urban planning, metropolitan areas are micro zoned. Seismic micro zonation accounts for local variations in geology, local soil profile, etc. In this paper to analyse a model for earthquake resisting structure. The model structure is located in Zone-II,III&IV. To calculate the lateral displacement, on buildings using seismic coefficient method. By using STAAD pro. And make a comparative analysis between general Frame & shear wall and bracing frame Structure in

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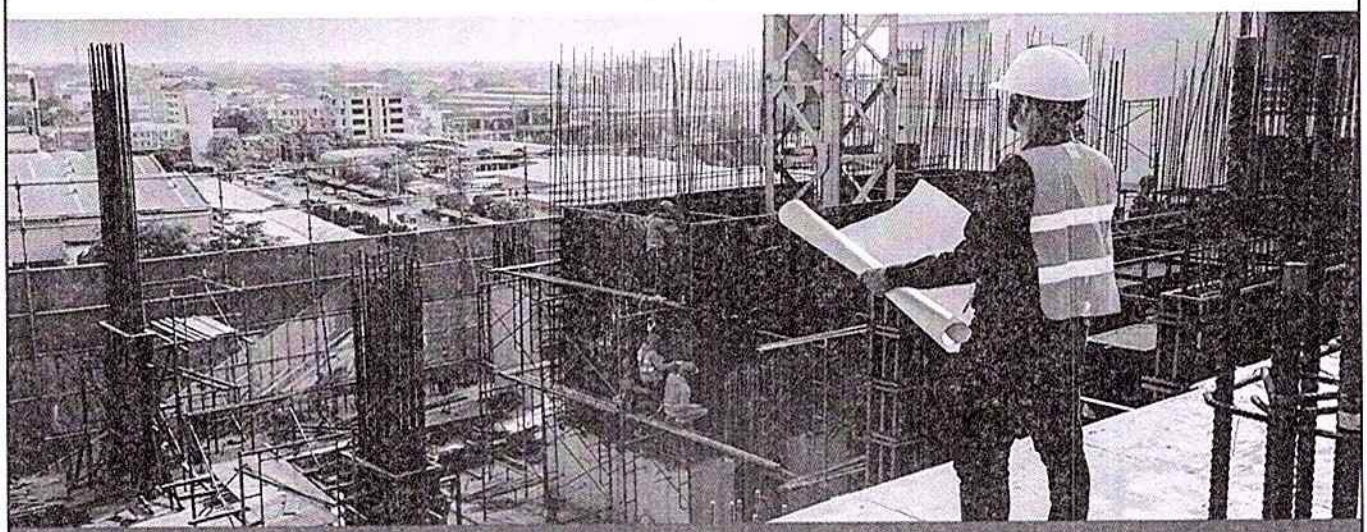

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COMPARITIVE STUDY OF GROUND WATER QUALITY BETWEEN INDUSTRIAL AND AGRICULTURAL AREAS OF GUNTUR DISTRICT

G. BABU RAO
Associate Professor, Department of Civil Engineering, Narasaraopeta Engineering College (Autonomous), Narasaraopet, Guntur-522601, A.P.
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B.Tech Student, Department of Civil Engineering, Narasaraopeta Engineering College (Autonomous), Narasaraopet, Guntur-522601, A.P.

Abstract: Ground water being one of predominant natural resource. In recent decades exploitation and release of industrial and agricultural effluents was defoliated the ground water quality in range location of India. In view of this present context the present study is taken to context the present study is taken to differentiate the groundwater quality in industrial and agricultural areas of Guntur district, Andhra Pradesh. Ten groundwater samples from agricultural and five groundwater samples from industrial areas are collected and analysed for physio-chemical parameters trace elements like Cd, Zn and as were also analysed for Industrial groundwater. Results indicate that pollution is more in both the areas and most of the samples are exceeding the safe limits prescribed by WHO and BIS. It is required to proper treatment of water before utilization.

INTRODUCTION: Groundwater is the most abundant source of fresh water on earth and very crucial to life. It is the resource hidden in the pores and cracks underground, after percolating from the earth's surface or having been trapped due to sedimentation or volcanic activity (1). Groundwater is not only the primary source of drinking water for half of the world's population, but also sustains ecosystems in providing water, nutrients and a relatively stable temperature (2). Humans may rely on such groundwater-related ecosystems for food and energy production, health, and recreation (3). Generally, both ground water and surface water can provide safe drinking water, as long as the sources are not polluted and the water is sufficiently treated. Ground water is preferable over surface water for a number of reasons. First of all, ground water is reliable during droughts, while surface water can be quickly depleted. Ground water is, in general, easier and cheaper to treat than surface water, because it tends to be less polluted. Through wells, ground water can be tapped where it is need, whereas surface waters are concentrated in lakes and streams. Meanwhile, the demand for fresh water continues to increase worldwide—driven by global population growth, the expansion of irrigated agriculture, and economic development (4). This increasing demand is largely met by groundwater, especially in those regions that frequently cope with surface water stress (5).Generally in India groundwater is contaminated due to discharge of toxic elements from industries and landfills and diffused sources of pollution like pesticides and fertilizers over the years. This resulted in high levels of nitrates in groundwater is exceeding the permissible limit in more than 50% of districts of India (6). Apart from nitrate contamination, the presence of fluoride, iron, arsenic and heavy metals has also touched worrying levels in many locations of India.

Overall, the groundwater is contaminated with the presence of excess nitrate in as many as 386 districts followed by fluoride in 335 districts, iron in 301 districts, salinity in 212, arsenic in 153 districts, and lead in 93 districts, Chromium in 30 districts and cadmium in 24 districts of different states of India. Many districts have reported more than one, two or three toxic elements in the groundwater (6). The physical processes of groundwater contamination occur due to naturally existing geogenic sources as well as substances that infiltrate into aquifers. The existence of contaminants and also Groundwater quality varies with time and space. In view of context the present study aims to identify the comparative study of groundwater quality in industrial and agricultural areas of same lithological formation of the same location.

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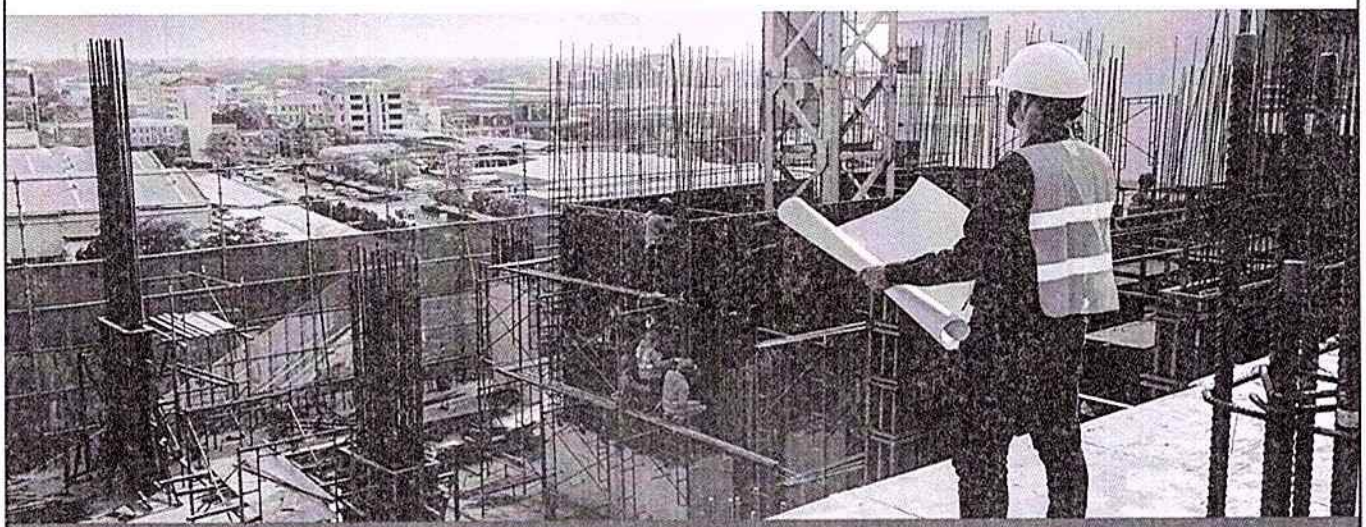

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ANAYSIS OF REGIONAL DROUGHT CHARACTERISTICS IN NAGULUPPALAPADU

M N S Sambasiva Rao[1], I Krishna Chaitanya [2], M Surya Prasanth[3], K Sekhar[4]

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Abstract— : ***A drought is a period of below average precipitation in a given region, resulting in prolonged shortages in water supply. The major causes of drought are late onset of monsoon, less than normal amount of rainfall, long dry spells during rainy seasons and early withdrawal of monsoon. Naguluppalapadu in prakasam district is facing water deficiency as the ground water level is declining at a rapid rate due to the meteorological and hydrological conditions in recent years there by increasing water deficiency. The aim of this work is to analyze drought characteristics in Naguluppalapadu region from 1988 to 2017 for different seasons and crop seasons using Standard precipitation index (SPI). Standard precipitation index is a tool for the investigation of drought by taking into accounts its intensity and duration.***

Precipitation data for Naguluppalapadu region for 30 years (1988 to 2017) is analyzed by SPI method using SPI_SL_6 software. The result revealed that SPI_SL_6 shows the drought condition during winter season as Mild drought(1.49 to 0.52), summer season as Mild drought(0.97 to -0.21), rainy season as Moderate drought(-1.83 to -0.90), autumn season as Moderate drought(-1.78 to -0.90), rabi season as Moderate drought(-1.78 to 0.52),kharif season as Moderate drought(-1.83 to -0.90). The worst drought years are 1988 and 1999. From this study SPI helps to identify the frequency of occurrence of dry and wet seasons and to reveal trends of dry and wet condition severity. Plotting against year and SPI values gives a good indication of drought history of Naguluppalapadu region and serves as good indicator tool for drought analysis.

Keywords— drought , SPI method, Nagalupalapadu, Precipitation

I. INTRODUCTION

Drought is a complex, slow-onset phenomenon of ecological challenge that affects people more than any other natural hazards by causing serious economic, social and environmental losses in both developing and developed countries. The period of unusual dryness (i.e. drought) is a normal feature of the climate and weather system in semi-arid and arid regions of the tropics, which covers more than one-third of the land surface and is vulnerable to drought and desertification. A drought is an extended period where water availability falls below the statistical requirements for a region.

Drought is not a purely physical phenomenon, but instead is interplay between natural water availability and human demands for water supply. There is no universally accepted definition of drought. It is generally considered to be occurring when the principal monsoons, i.e. southwest monsoon and northeast monsoon, fail or are deficient or scanty. Monsoon failure causing crop failure, drying up ecosystems and shortage of drinking water results in undue hardship to the rural and urban communities. Although droughts are still largely unpredictable; they are a recurring feature of the climate.

1) TYPES OF DROUGHTS:

Droughts are classified into different types as follows.

- METEOROLOGICAL DROUGHT: It is defined as the deficiency of precipitation from expected or normal levels over an expected period of time.
- HYDROLOGICAL DROUGHT: It is deficiencies in surface and subsurface water supplies leading lack of water for normal and specific needs.
- AGRICULTURAL DROUGHT: It occurs when a soil moisture and rainfall are inadequate during the crop growing.

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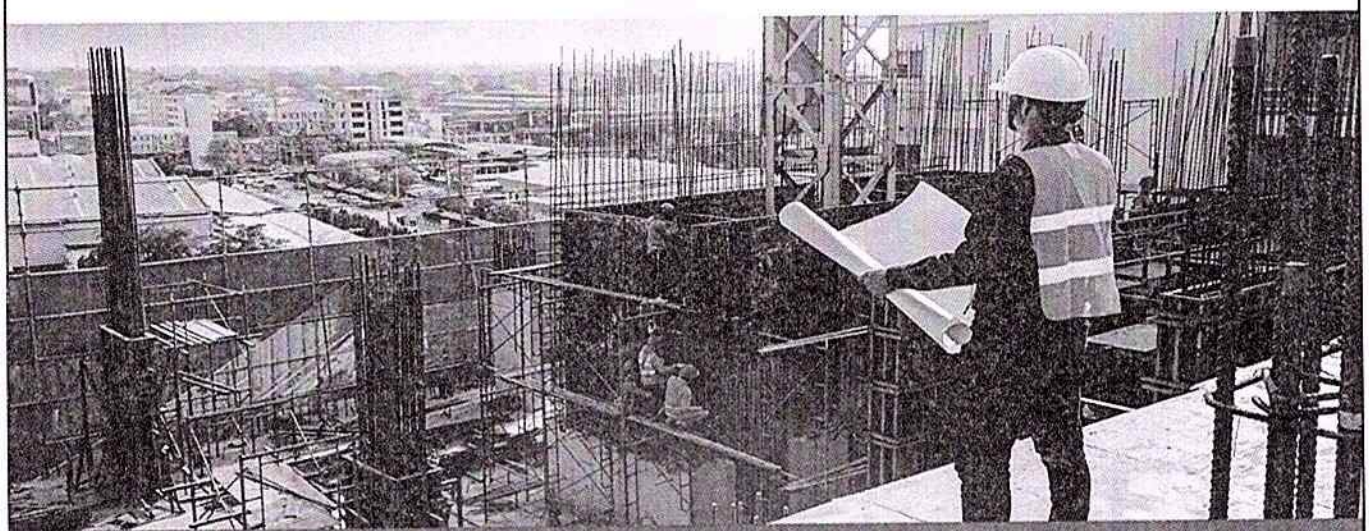

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ECONOMIC AND WORK MANAGEMENT MONITORING FOR RESIDENTIAL CONSTRUCTION: A CASE STUDY

Surabattuni murali[1]

Abstract: *The regular construction process has never been into the scheduling the time and cost management. As a result, there are loss of time, poor material management, cost increments and less quality of construction. In recent years, software's posses major role in resolving such problems in construction industry, which well being of financial and work management. Primavera is one such software which helps in planning the work to its maximum extent and help in improving the quality and productivity of work. It also helps in efficiently changing or recorrecting the project cost. The present study analyzes the comparison of economic and work management of a constructed building (G+4 building, Osmania University, Hyderabad) and implementing the scheduled work and financial management using primavera to the same building and compares the results. The study discusses the pros and cons of the analysis of the above results. It study relieved that the primavera helps in optimization the construction project in scheduling and improves the productivity. The results will project the earned value graph which show the cost performance index and scheduled performance index of resources.*

Keywords: *Construction, Management, Primavera, Quality*

I.INTRODUCTION

Estimation of cost is a major factor in construction industry because of time over runs causes the increase in construction cost at the completion of the project. The success and quality of the project is mainly depends on the project accurate estimation and proper schedule of the project. Estimation and scheduling helps to plan and organize the construction process accurately throughout the time. The estimate is the best source of information about deciding on a price for a project. Cost estimation can be done manually or by using software and manual cost estimation method is depends upon the expertise and also it includes an expert who is familiar with this type of projects.

Examination of the construction and the amount of the materials, works, equipmentsetc, plant prerequisites and overhead costs will relies upon the individual. The assessment models with least task data will give a good guess of the venture and it very well may be isolated the assessment into various parts, similar to structure, completing and so forth Further developed expense assessment project strategy which is accessible to the venture directors will work with more efficacious control of time and cost in development projects.

The model for cost assessment stays hazy and unexploited chiefly as far as simple techniques and furthermore presents smoothing out systems from project work breakdown structure. This assesses the term cycle of the task and either the info costs hour or the fixed expense of the venture and that action are made with speculation testing over the obligation task lattice called (RAM). The expense system approaches offers a worked on choice apparatus for estimating the development cost on the venture troughs choice [1].

The appropriate arranging and booking is vital in any of the development projects like metro rail project, dams, spans, tall structures and so on It is utilized for decreasing expense and controlling deferrals of the task. He says that generous measure of time, cash and numerous assets are squandered each year in a development industry because of inappropriate arranging and booking, with all around the globalization development industry has gotten tremendous and exceptionally complex contrasted with all. Arranging of all such necessities it requires tremendous measure of desk work, which can be decreased by utilizing project arranging programming and furthermore he says that giving a decent wanting to the task and adequate progression of assets can accomplish consequently wanted outcome and this arrangements with the some high expected boundaries in primavera programming which essentially after the undertaking result [2].

The task cost is one of the administering factors in project achievement and venture the executives is utilized to build the usefulness as far as HR and materials. Procured esteem the board (EVM) is a task execution assessment strategy which has been adjusted for an application in project the executives. This method is utilized for the correlation of planned expense of work to genuine expense. This investigation manages the undertaking the executives including procured esteem examination [3]. The undertaking is a coordinated effort to design and accomplish the point. Undertaking includes a few assignments to be finished from project start date to the last date and the point of the venture fruition and he says that the timetable of errand is created in the arranging stage by the task arranging and planning for terms that the plainly expresses that the different task achievements and enactment in project beginning to end and the nature of the task plan is produced from the primavera. It is the one of the generally utilized programming for project arranging, plan and with different norms in the westoid countries [4].

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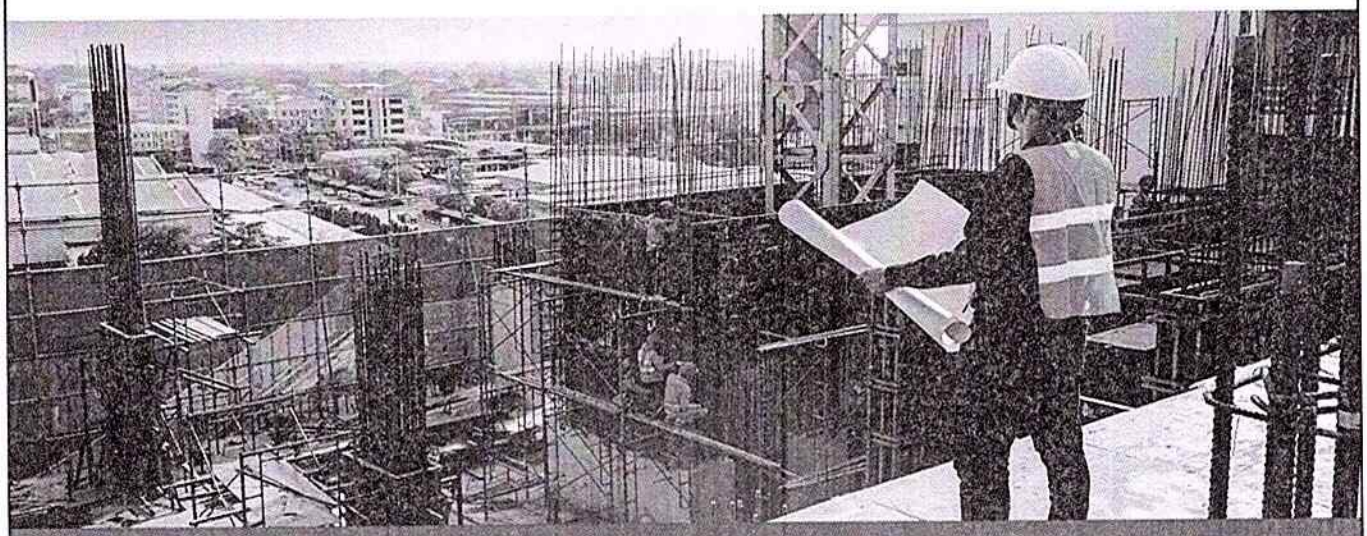

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K ANIL KUMAR [a] B SIVA MANIKANTA KUMAR [b] S V SIVA RAJU [c]

Abstract

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No. of events	41	17	10	2	1

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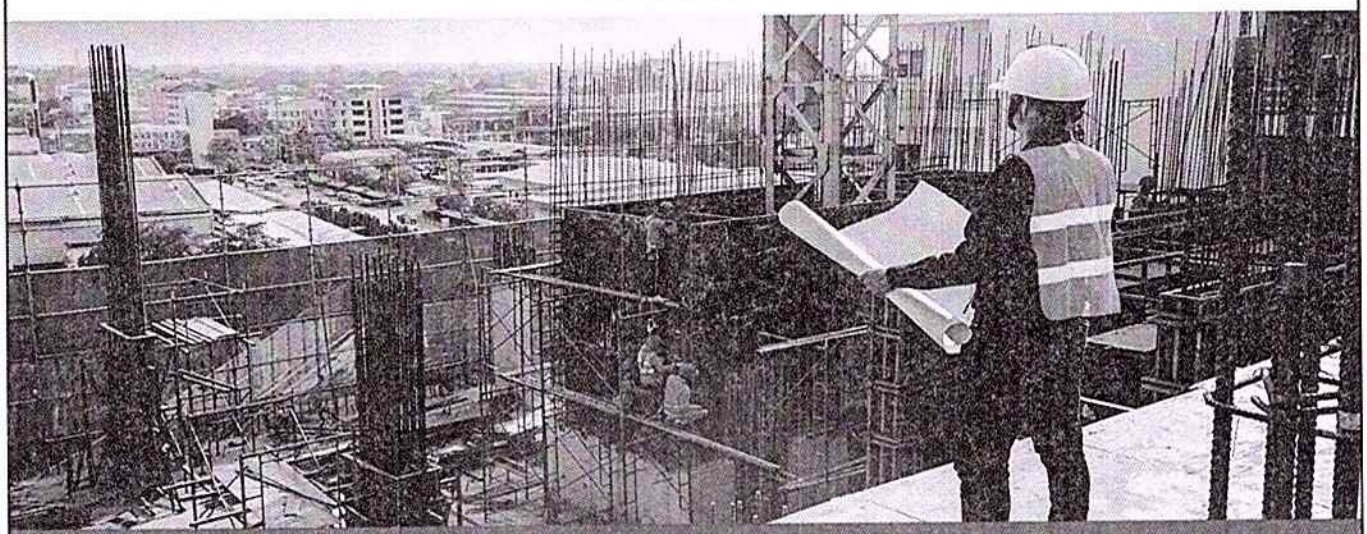

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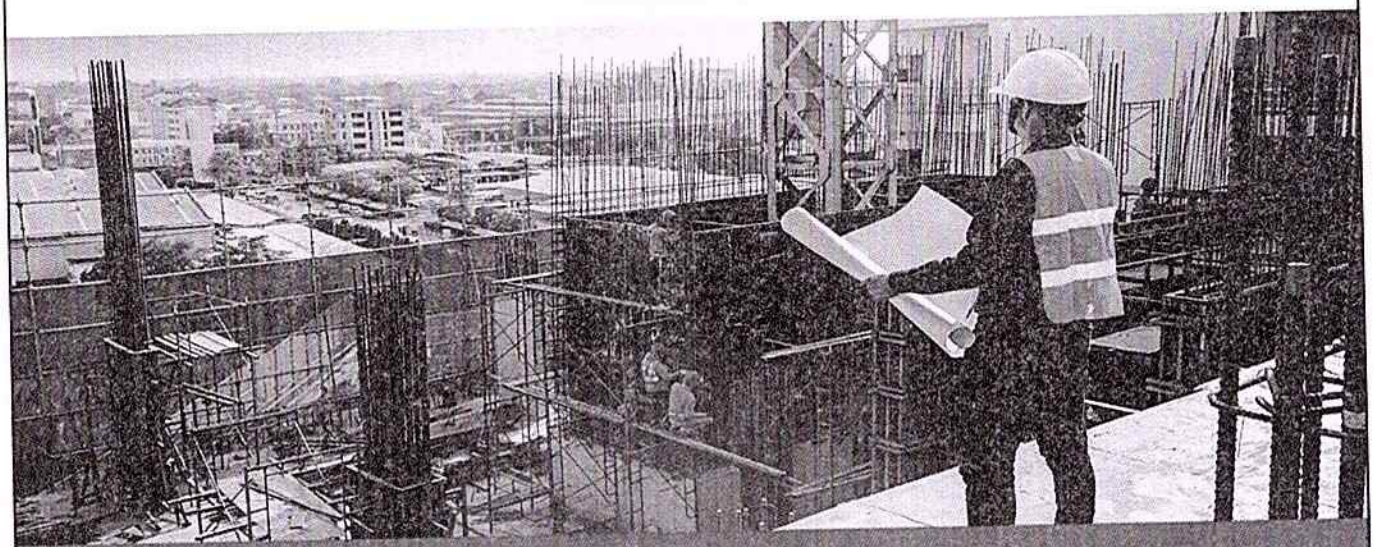

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SEISMIC ANALYSIS OF INDUSTRIAL STRUCTURE USING BRACINGS AND DAMPERS

M.N.Subhani

Abstract*: Resistance of structures against earthquake plays an extensive role in construction industry. A structure should consist of strength, stability and ductility to accommodate both horizontal and vertical loadings. Horizontal loading leads to the production of sway and further results in vibration and storey drift. Strength and stiffness are two major keys for any structure to resist gravity and lateral loads. Provision of bracings or dampers to any structure contributes to lateral stability. After assigning dampers or bracings, the general system changes to lateral load resisting system (LLRS). However, this involves high economy, it is only suitable for high rise, important buildings which are suspected to be affected by lateral load and structures damaged by lateral load. The present work involves in proposing the suitability of type of damper or bracing for controlling the seismic activity on industrial structures in respective seismic zones III and V of India. Industrial structures also associate high dead load as it provides residence to heavy sized members. Therefore, this is necessary to investigate seismic response of buildings with various bracings and dampers to control vibration, lateral displacement and storey drift. Natural time period, frequency, roof displacements are the major parameters considered for observing response of structures. Response spectrum analysis of 3D industrial structure with distinct concentric bracings and dampers using SAP 2000 and ETABS is carryout in this research under respective base shear.

***Index Terms*: bracings, dampers, horizontal load, lateral displacement, response spectrum analysis, storey drift.**

INTRODUCTION

Steel moment resisting frames are susceptible to undergo lateral displacement during earthquake. Horizontal (seismic/wind) load is the unreliable load that is coming on the structure. Any structure should be designed in such a way that, it should resist from both gravity and lateral loads. Gravity loads includes dead load, live load, dust load etc. Whereas lateral load includes seismic load, wind load and blast load. Due to this lateral loads, high stresses are produced which then leads to sway or vibration. So, every structure should contain strength to resist vertical (gravity) loads and stiffness to resist (horizontal). The present experimental investigation involves the analytical investigation of a Pre-Engineered building.

Horizontal or lateral loading results in production of storey drift, overturning moment, storey displacement etc., which are responsible for failure of the structure. To inhibit these responses bracings and dampers are used for high-rise and important structures. Structures with bracings, dampers show better performance in reducing structural parameters (stress ratio) and systematic parameters (time period,

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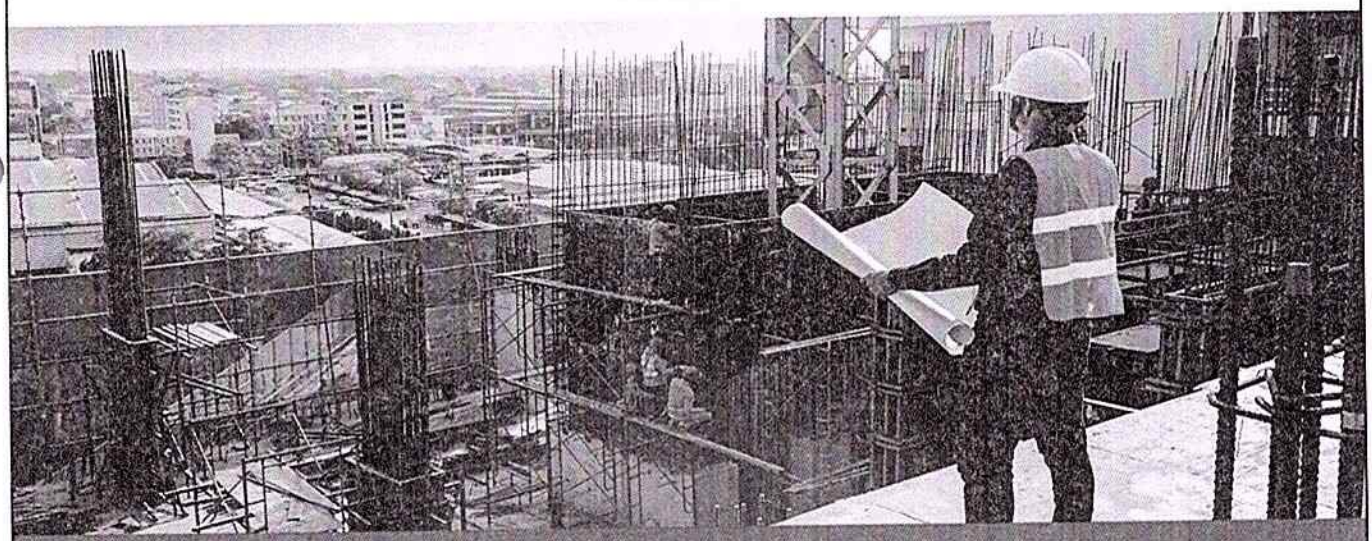

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Investigation on Steel Fiber Composite Beam Using Fracture Mechanics Approach

M.N.Subhani

Abstract: ***Fracture mechanics is the field of mechanics based on energy principles. The crack propagates in a material when energy dissipation is more. The existence of pores and cracks which are stable are not considered while designing a structure under ultimate load in stress-strain criteria, but their presence is included in energy based principles i.e., fracture mechanics. The fracture mechanics study determines the ductile behavior of a particular structure under loading conditions using following parameters such as fracture energy, stress intensity factor, fracture process zone etc., The ductile and toughness nature of a concrete elements will be increased by incorporation of steel fiber in a normal concrete defined as steel fiber reinforced concrete (SFRC). In this present study, the experimental work has been carried out on steel fiber reinforced concrete notched beams by varying notch to depth ratio as recommended by RILEM (fracture test) tested under three point bending test (TPBT). The behavior of notched beams has been assessed through load-deflection curve, crack pattern resulted from three point bending test which are required to find the fracture parameters such as fracture energy and stress intensity factor. It is been observed from the experimental study, the energy dissipation produced by the crack was shortened by the usage of steel fiber.***

Index Terms: Fracture Energy, Notch to Depth ratio,Stress Intensity Factor,Steel Fiber Reinforced Concrete.

I.INTRODUCTION

Concrete is most commonly used material in construction industry due to its load bearing capacity, longerserviceability, ease of construction and economical. In addition to these properties, stillmicro cracks and flaws are present in a concrete structure which progressinto a structural failure under the action of forces acting on the structure.

Failure of a structure occurs only when energy released by a crack is greater than the energy it observes. So, to avoid this failure it is necessary to express an outcome in advance by quantifying the amount of energy absorbed in crack propagation and for the formation of other new cracks. All these energy criteria have not been stated in stress-strain criteria which are basically conducted for all the RC structures. This mechanism can only be stated underfracture mechanics.

Fracture Mechanics is defined as "***The field of mechanics based on energy principles***", because the crack propagates only when energy dissipation is higher. Many researchers [1] have developed experimental and analytical studies to examine the structure under fracture mechanics. The classification of fracture mechanics is defined based on its deformation behaviour, failure behaviour and type of loading [2]. According to deformation behaviour, it is classified a Linear elastic fracture mechanics (LEFM), elastic plastic fracture mechanics (EPFM)

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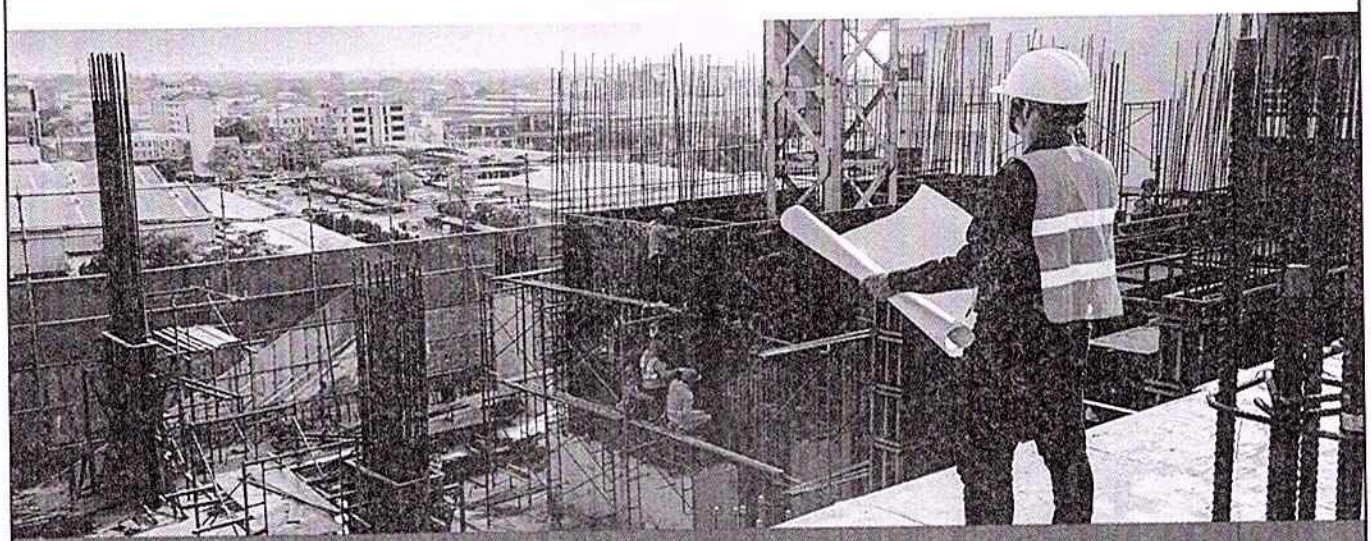

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EXPERIMENTAL ANALYSIS ON UTILIZING PLASTIC WASTE ALONG WITH BITUMEN IN SURFACE COURSE OF FLEXIBLE PAVEMENT

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Abstract: Plastics are user-friendly but not eco-friendly as its disposal is a major threat to the environment, which results in pollution and global warming. Due to their wide comfortability being lightweight, effective cost and strength, people can't avoid using it. So, for making this scrap into profitable material much research is performed in which our project is result of such a research using this waste plastic in construction of road. The basic objective of the test is to find out the optimum percentage of plastic waste which can overrule the bitumen content in the mix for the design of flexible pavements. The main objective of this paper is to discuss the significance of plastic in terms of cost reduction, increase in strength and durability when these plastics are heated and coated upon the aggregates (160°C) to compensate the air voids with plastic and binds with aggregate to provide

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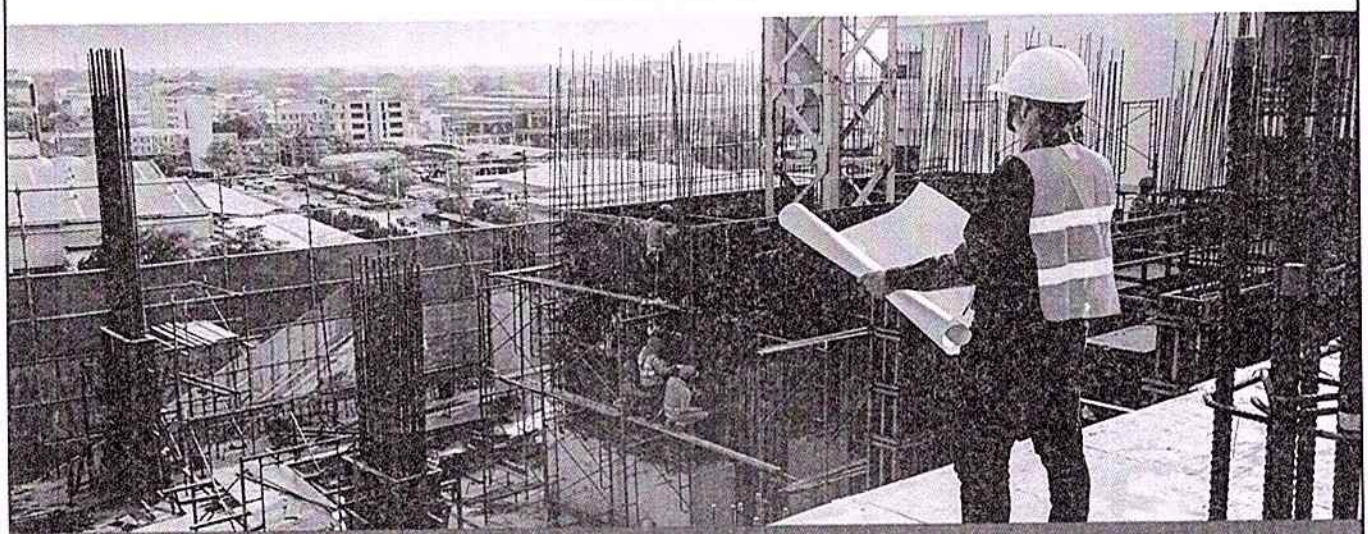

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ESTIMATION OF GROUNDWATER RESOURCES IN ERRVAGU SUB-BASIN

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ABSTRACT: Groundwater has gained relative importance in recent decades due to failure of monsoons and restricted flow of surface water resources. In view of importance of Groundwater, resource estimation was carried out in the Erravagu sub-basin of Guntur district of Andhra Pradesh. The area consists of command and non-command areas. The groundwater resources are evaluated based on Groundwater Estimation Committee (GEC) norms. The total groundwater recharge from various sources is computed. The annual groundwater draft has been estimated. It is observed from the study that net annual groundwater availability for further use in command area is 2398 ha.m and stage of development is only 27% and categorized as safe in the command area where as in the non-command area net groundwater availability for future is 'NIL' and stage of development is 106% and categorized as over exploited. Suggestions have been made for proper groundwater resources augmentation.

1. INTRODUCTION

Water is the elixir of life and plays a major role in the prosperity of agriculture dependent economy country like India. Over exploitation of surface and sub-surface water has led to severe water scarcity and environmental degradation. The spatial-temporal variation in rainfall has further aggravated the problem. To meet the challenges of the scarcity, increasing demand and depletion of groundwater levels, the water resources should be developed and managed in an effective manner. Groundwater is the major source of water for various purposes in many areas including urban and rural areas. Depletion of resources leads to declaration of some areas as dark blocks, where depth of water table is greater than 300 m. It has therefore, become necessary that the annual replenishment of groundwater reserves is to be quantified. The prime objective in this direction is to evaluate the existing resources and stage of development of the area. An attempt is made to assess the groundwater resources and stage of groundwater development of Erravagu sub-basin in this study. Adikari *et al.* (1990), Athavale *et al.* (1992), Kumar *et al.* (2002), Madhuri S. Rishi (2007), Rao (2007), Rao & Ramasastri (2000), Satish Chandra & Saksena (1975), Sudhishri *et al.* (2002), Pradeep Kumar & Srinivas (2009) have carried out groundwater balance studies and quantified groundwater resources. Naga Rajani *et al.* (2006), have used remote sensing and GIS techniques for groundwater exploration and identification of artificial recharge sites. Sharma (2002), have made an attempt for modelling groundwater recharge process in hard rock region.

In the present study IRS P6 LISS III, satellite with pixel resolution of 23.5 mts. geocoded at the scale of 1:50,000 and Survey of India (SOI) toposheet nos. 65D/3 and 56 P/15 have been used for preparation of various thematic maps such as base, drainage, geology, lineament, geomorphology, slope, soil and land use/land cover. Groundwater balance studies have been carried out adopting GEC recommendations. These studies would be useful for overall development of the basin on sustainable basis.

2. STUDY AREA

The Study area is the Erravagu Sub-basin is situated in the Central part of the Guntur District of Andhra Pradesh. It is geographically located in between North latitudes of $16^0 20'20"$-$16^0 27'45"$ and East longitudes of 79^0 52' 06" - 80^0 04' 30" in the central part of the Guntur District of Andhra Pradesh (Fig. 1). The climate of the area is semi-arid with an average annual temperature of 18.5^0C (winter) to 43^0C (in summer). The average annual normal rainfall is 782 mm. The Erravagu originating from hill ranges located in the southwest and northwest flows towards the northeast. The drainage pattern shows dendritic to sub-dendritic. Canal irrigation is common. The study area extends in 78.41 Sq.km. of which17.10 Sq.Km area is covered by forest and hills, and 57.81 Sq.Km of area falls under the command of Nagarjuna Sagar Right Canal and 3.5 Sq.km falls under non-command area. The sub- basin area is spread in Reddygudem, Ganapavaram, Balijepalli, Uppalapadu, Inumetla and Beeravallipaya villages of Rajupalem mandal and Nekarikallu villageof Nekarikallu Mandal situated in Narasaraopet Revenue Division of Guntur District. The study area is accessible from Guntur (via) Piduguralla. It can also be approached from Narasaraopet (via) Nakarikallu. The area is well connected by Road and Railways.

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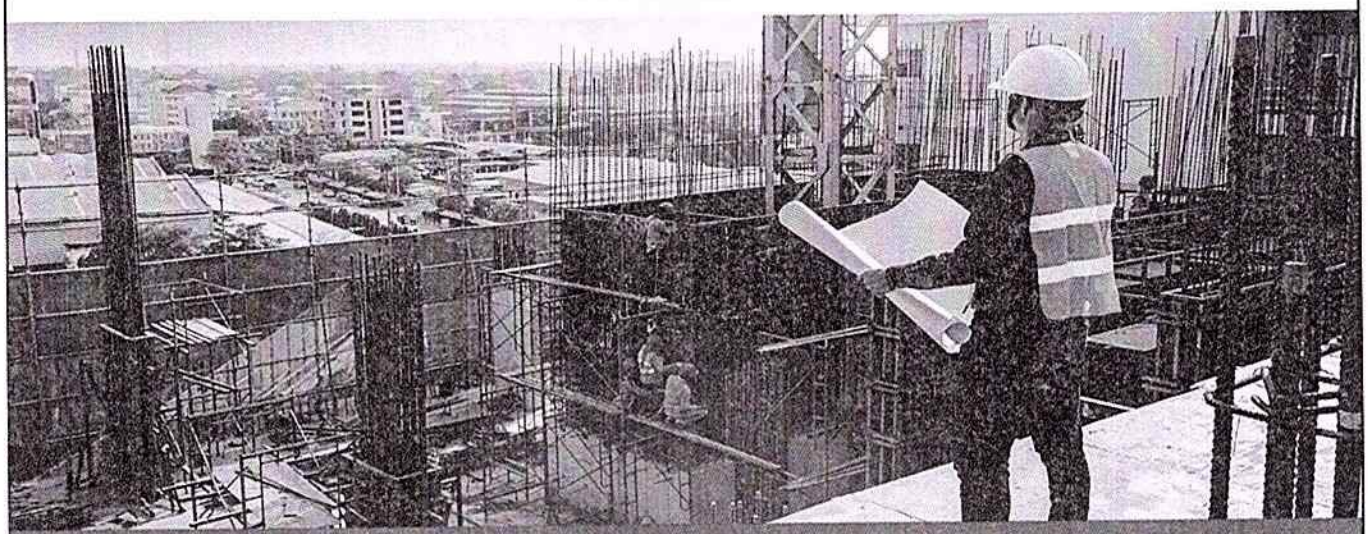

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EXPERIMENTAL STUDY ON MECHANICAL PROPERTIES OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT WITH SILICA FUME

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Abstract: **The use of Silica Fume (SF) in short period of time had one of the most dramatic impacts on the industry's ability to routinely and commercially produce SF modified concrete of flow able in nature but yet remain cohesive, which in turn would develop both high early and high later-age strengths including resistant to aggressive environments. This paper features an experimental study on the nature of SF and its influences on the properties of fresh and hardened concrete. In the present study, an attempt has been made to investigate the strength parameters of concrete made with partial replacement of cement by SF. Very little or no work has been carried out using silica fume as a replacement of cement. Moreover, no such attempt has been made in substituting silica fume with cement for low/medium grade concretes (viz. M20, M25 and M30). Properties of hardened concrete like Ultimate Compressive strength has been determined for different mix combinations of materials and these values are compared with the corresponding values of conventional concrete. The present investigation has been aimed at to bring awareness amongst the practicing civil engineers regarding advantage of these new concrete mixes.**

***Keywords*— Silica Fume, Compressive Strength, Tensile Strength**

INTRODUCTION

Silica fume, also known as micro silica, is an amorphous (non-crystalline) polymorph of silicon dioxide, silica. It is an ultrafine powder collected as a by-product of the silicon and ferrosilicon alloy production and consists of spherical particles with an average particle diameter of 150 nm. The main field of application is as pozzolanic material for high performance concrete. It is sometimes confused with fumed silica. However, the production process, particle characteristics and fields of application of fumed silica are all different from those of silica fume. During the last three decades, great studies have been taken in improving the performance of concrete as a construction material. Particularly Silica Fume (SF) and fly ash individually or in combination are indispensable in production of high strength concrete for practical application. The use of silica fume as a pozzolana has increased worldwide attention over the recent years because when properly used it as certain percent, it can enhance various properties of concrete both in the fresh as well as in hardened states like cohesiveness, strength, permeability and durability. Silica fume concrete may be appropriate in places where high abrasion resistance and low permeability are of utmost importance or where very high cohesive mixes are required to avoid segregation and bleeding.

MATERIAL AND ITS PROPERTIES

SILICA FUME: Silica fume, also known as micro silica, is an amorphous (non-crystalline) polymorph of silicon dioxide, silica. It is an ultrafine powder collected as a by-product of the silicon and ferrosilicon alloy production and consists of spherical particles with an average particle diameter of 150 nm. The main field of application is as pozzolanic material for high performance concrete. It is sometimes confused with fumed silica. However, the production process, particle characteristics and fields of application of fumed silica are all different from those of silica fume. Micro silica range from light to dark gray. Because

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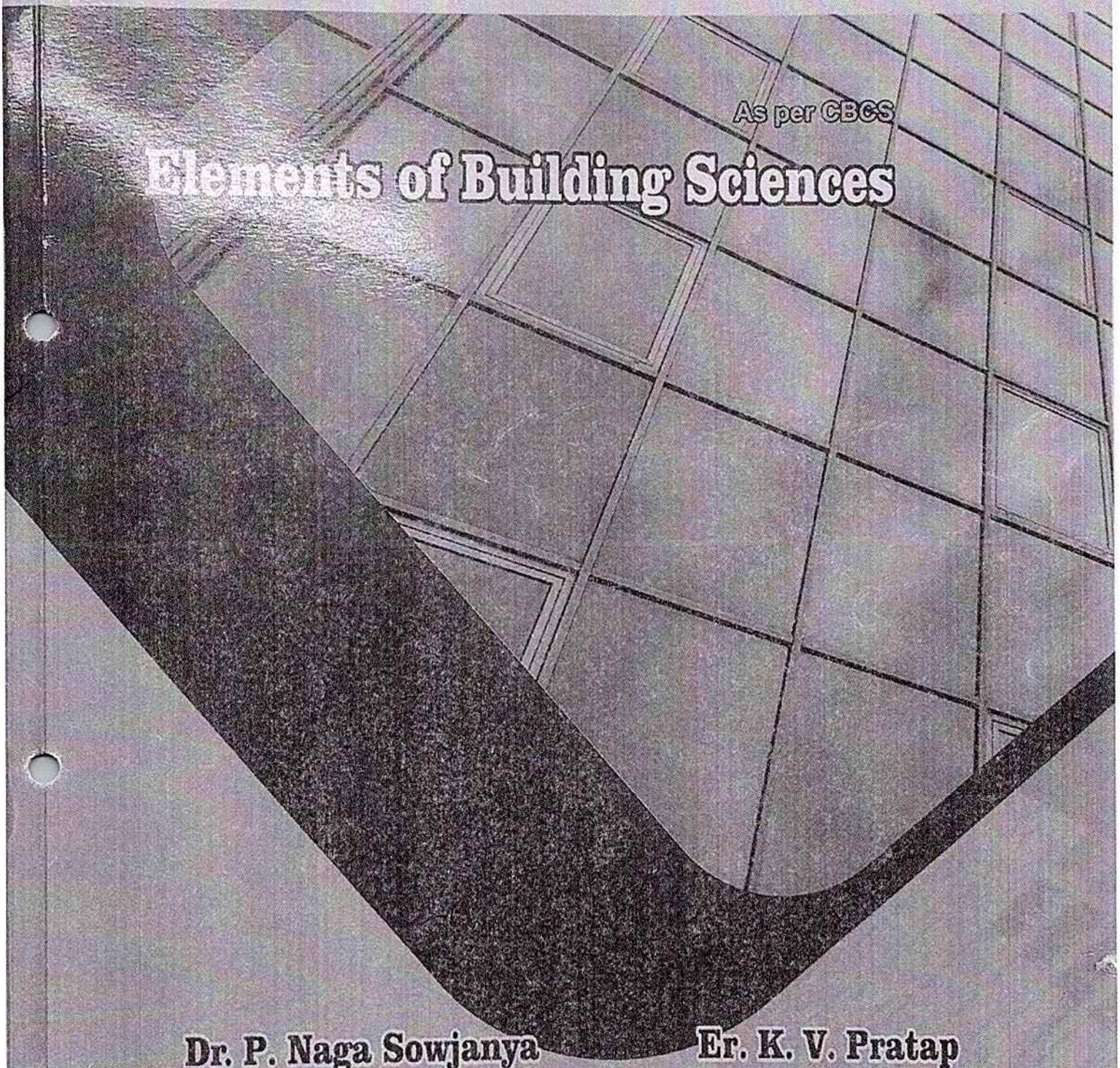

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Elements of Building Sciences

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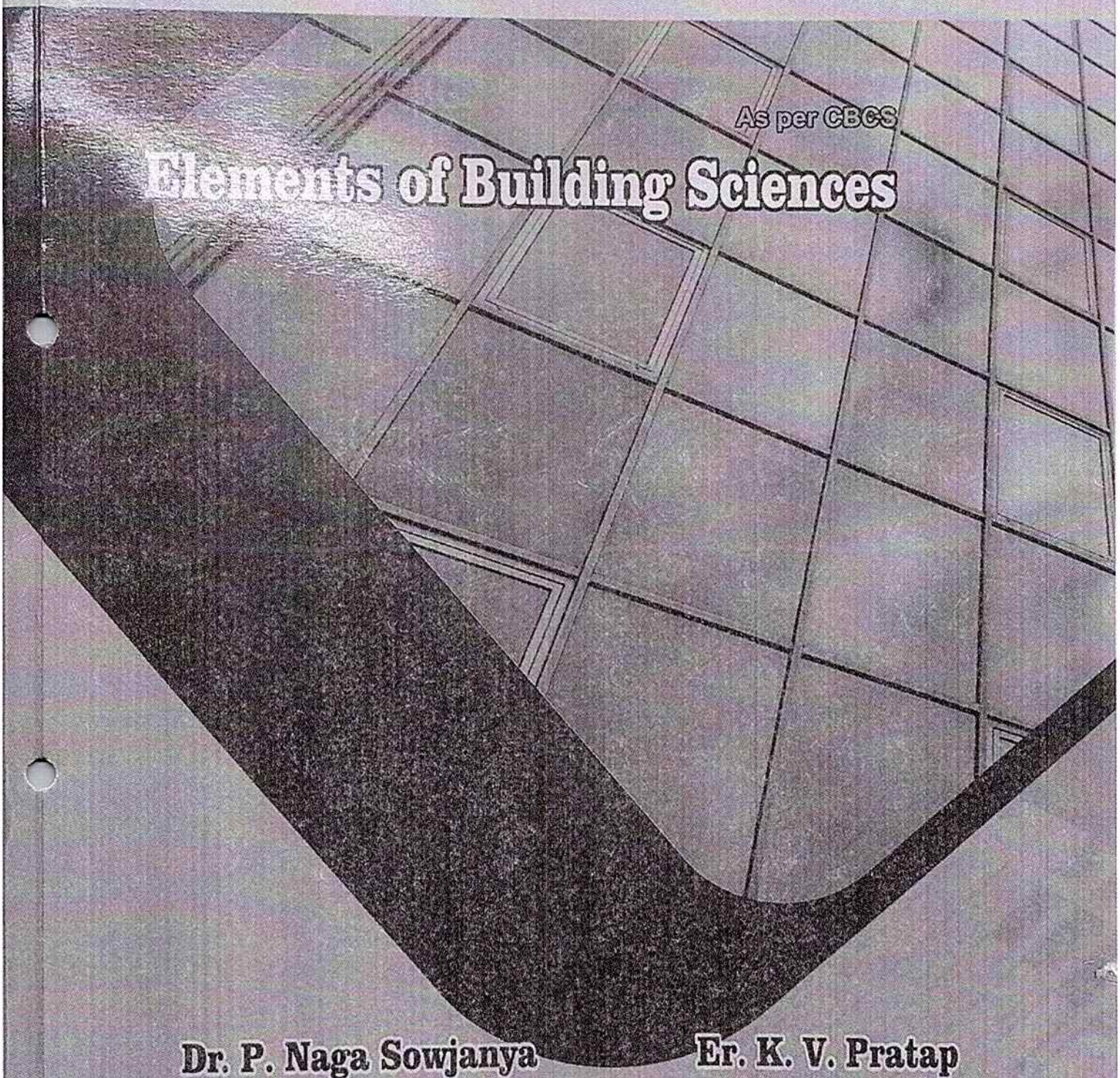

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