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(19) INDIA

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(54) Title of the invention : EXPERIMENTAL STUDY ON SISAL FIBER REINFORCED CONCRETE

(51) International classification :A01K 150200, C04B 033000, E04H 121200, G01M 090600, G01N 170000  
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(57) Abstract :

ANNEXURE-III The project's goal is to assess the compressive, tensile, and flexural strengths of concrete as well as the strength of sisal fibre reinforced concrete (SFRC), which uses sisal fibre as a reinforcement material. Sisal fibre is a material that is widely accessible and can be used to create reinforced concrete. In this project, sisal fibre is added as 0.5%, 1%, or 1.5% of the mass of cement to the nominal M25 grade concrete. The concrete samples underwent standard moist curing at room temperature. At days 7, 14, and 28, the compressive, flexural, and tensile strengths were assessed. The optimal percentage of sisal fibre addition to concrete is discovered by comparing the strengths of regular M25 grade concrete with fibre reinforced concrete. Results indicate that sisal fiber-infused concrete has increased compressive strength and improved concrete durability.

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(21) Application No.202241030766 A

(19) INDIA

(22) Date of filing of Application :30/05/2022

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(54) Title of the invention : MANUFACTURE OF RUBCRETE SLAB

(51) International classification :C04B0018220000, E01C0007260000, C08J0011100000, E01C0011000000, C04B0014020000

(86) International Application No :NA  
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA  
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(57) Abstract :

Rubberized concrete (Rubcrete) is created from scrap rubber tyres with partial replacement of fine aggregates by crumb rubber. Waste rubber tyres are harmful to the environment and it is estimated that only 4% is used in civil engineering applications. As fine aggregates are available in limited quantity, waste tyres can be utilized for partial replacement of fine aggregates in concrete. Preliminary concrete properties with partial replacement of fine aggregates by pre-treated crumb rubber in amounts of 10%, 15%, and 20% of the total weight of fine aggregates and addition of rubber fibres in proportions of 1%, 1.5% and 2% of the total weight of coarse aggregates were examined for M25 grade concrete. Rubberized concrete specimens were tested for workability, compressive strength, split tensile strength and flexural strength. Optimum percentage of fine aggregate replacement with crumb rubber and optimum proportion of rubber fibres were arrived. With the optimum values arrived, specimens of size 300mm x 300mm x 50mm was cast and tested for impact load. The number of blows required for the first crack and total slab collapse was determined. The characteristics were investigated. Hybrid rubberized concrete slab made of two layers, with rubber concrete on top and normal concrete at the bottom was investigated. Rubber concrete is used as the top layer as it absorbs more impact energy and conventional concrete is used as the bottom layer as it has better tensile strength. The energy absorption and ductility index of hybrid rubberized concrete slabs were found to be higher and showed better results. This hybrid rubberized concrete can be used where concrete surfaces are subjected to high impact loads such as roads, machine floors, etc. thereby improving the quality and performance of the surfaces. This reduces the risk of accidents also.

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(12) PATENT APPLICATION PUBLICATION

(21) Application No.202241038504 A

(19) INDIA

(22) Date of filing of Application :05/07/2022

(43) Publication Date : 15/07/2022

(54) Title of the invention : METAL GRINDING DUST IN BRICK MANUFACTURING

(51) International classification :B28B0015000000, B28B0007000000, G06Q0010100000, B29L0031000000, B28B0001087000  
(86) International Application No :NA  
Filing Date :NA  
(87) International Publication No : NA  
(61) Patent of Addition to Application Number :NA  
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(62) Divisional to Application Number :NA  
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(57) Abstract :

Annexure-3 The fundamentals of brick manufacturing have not changed over time.. However, technological advancements have made contemporary brick plants substantially more efficient and have improved the overall quality of the products. A more complete knowledge of raw materials and their properties, better control of firing, improved kiln designs and more advanced mechanization have all contributed to ' advancing the brick industry. Other Technical Notes in this series address the classification and selection of brick considering the use, exposure and required durability of the finished brickwork.

No. of Pages : 6 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202241038506 A

(19) INDIA

(22) Date of filing of Application :05/07/2022

(43) Publication Date : 15/07/2022

(54) Title of the invention : PRECAST BUILDING STEEL TUBLER USING WASTE RECYCLING

(51) International classification :E04B0005040000, G06Q0050080000, G06Q0010060000, G06Q0010000000, B28B0015000000  
(86) International Application No :NA  
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(87) International Publication No : NA  
(61) Patent of Addition to Application Number :NA  
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(57) Abstract :

Annexure-3 The government of Malaysia has introduced Industrialized Building System (IBS) or commonly termed offsite construction in other countries to replace the conventional method of construction, as one of the initiatives to overcome the problems related to waste generation and negative environmental impact in the construction industry. There are few studies of the construction waste generation focus on-the offsite, particularly at precast production plant as compared to the construction site. This study aims to investigate the significant type of construction waste generated at precast concrete plants in Johor. In order to identify the type of waste generated in the process of manufacturing the precast concrete component, this study involved field observation to three precast concrete plants in Johor, together with analysing the selected organization's document on the waste generation and management record. Interviews were also conducted with the production man-ager/engineer to support the data collection process. The findings revealed that, the types of construction waste that commonly found in the precast concrete plants are concrete and steel. The most significant type of waste generated at precast concrete factory is concrete (total 1,298.56 tonnes for 3 factories, followed by 820 tonnes; 350 tonnes and 128.56 tonnes). This study provides useful information concerning waste assessment data to achieve a better understanding of construction waste in the precast concrete manufacturing industry.

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(19) INDIA

(22) Date of filing of Application :05/07/2022

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(54) Title of the invention : INTEGRATION OF PITCHER AND DRIP IRRIGATION SYSTEMS FOR EFFECTIVE WATER MANAGEMENT

(51) International classification :A01G0025020000, C02F0001280000, A61K0038000000, C02F0001000000, A01G0025000000  
(86) International Application No :NA  
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(61) Patent of Addition to Application Number :NA  
Filing Date :NA  
(62) Divisional to Application Number :NA  
Filing Date :NA

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(57) Abstract :

Annexure-3 Integration of drip irrigation with pitcher irrigation can be even more cost and time effective as they reduce the manual work of refilling the pitchers, especially when adopted for large areas. As two or more plants can be planted around the periphery of the pitcher, it can considerably reduce the number of laterals and emitters, thereby reducing the initial cost. Water requirement can be regulated based on the number of pitchers per acre, type of the crop grown-, available quality of water and filling schedule. The laterals of the drip can be drawn below the ground level to reduce the physical damages and to increase the longevity of the pipes. Water stored in small tanks at a higher elevation can be used as a source for the drips to enable gravity flow thereby avoiding the usage of pumps. The pitchers have to be installed in such a way that its openings are at least a few inches above the ground level to prevent the entry of soil into it. The opening must be shut using an earthen lid after filling to prevent any loss of water due to evaporation. Organic fertilizers can be mixed and added along with the water if required.

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(12) PATENT APPLICATION PUBLICATION

(21) Application No.202241038508 A

(19) INDIA

(22) Date of filing of Application :05/07/2022

(43) Publication Date : 15/07/2022

(54) Title of the invention : RUBBERIZED HIGH FRACTURE RESISTANCE CONCRETE BARRIER FOR HIGHWAYS

(51) International classification :C04B0018220000, B60C0001000000, G01N0003300000, B29B0017000000, G01N0003480000  
(86) International Application No :NA  
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(87) International Publication No : NA  
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(57) Abstract :

Annexure-3 Waste tyre disposal is currently a serious waste management issue around the world. It was discovered that there are 1.2 billions of waste tyre rubber generated globally each year, with 11 percent of post-consumer tires being exported, 27 percent being sent to landfill, stockpiled, or illegally discarded, and only 4 percent being utilized for Civil Engineering projects. As a result, attempts have been made to identify waste tyre applications in civil engineering. Rubberized Concrete was created in this study by casting several concrete mixes including varied % substitutions of coarse and fine crumb rubber for normal particles. The mechanical parameters of standard specimens formed of this rubberized concrete, such as compressive strength and elastic modulus values, were determined. It has been projected that the best % replacement of fine and coarse crumb rubber mix will be found. Experiments were carried out till the flexural characteristics of rubberized concrete slab specimens measuring 100 mm x 500 mm were well understood. To determine the influence of rubber on energy dissipation, 500 mm x 500 mm slabs were cast and put through dynamic Impact drop tests. The test findings were validated using an analytical model for flexural and impact strength. The finished product would be ideal for concrete safety barriers that require high strength, fracture resistance, and energy dissipation.

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(12) PATENT APPLICATION PUBLICATION

(21) Application No.202241038509 A

(19) INDIA

(22) Date of filing of Application :05/07/2022

(43) Publication Date : 15/07/2022

(54) Title of the invention : FIBER REINFORCED PRE STRESSED CONCRETE BEAM TO REBEL THREE LOAD FACTOR

(51) International classification :E01D0101260000, E04C0005010000, E04C0005070000, F27D0001000000, E04C0005160000

(86) International Application No :NA  
Filing Date :NA

(87) International Publication No : NA

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(57) Abstract :

Annexure-3 In general, prestressed concrete bridge beams are optimized In their cross-section dimensions to limit the dead weight of the structure. The slender web makes it even more difficult to place the. large amount of rebar's required for shear strength, confinement of concrete and anchorage zone reinforcement. Thus the anchorage .zone reinforcement becomes quite congested, which lends to difficulty in consolidating the concrete properly. Hence, the quality of concrete degrades at the end zones, again making it susceptible to cracking.' Moreover, it is also labor-intensive to produce and place the large amount of steel reinforcement in the end zone.

No. of Pages : 5 No. of Claims : 5

(54) Title of the invention : REUSE OF NON-BIODEGRADABLE SOLID WASTE AS A PARTIAL REPLACEMENT OF FINE AGGREGATE IN CONCRETE BLOCKS

(51) International classification :C04B0028020000, C04B0018160000, G01N0033380000, C04B0018220000, B09B0003000000

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(57) Abstract :  
 The disposal of non-biodegradable solid waste is a major problem in developing countries. The non-biodegradable solids (PET, PP, PVC, etc.) which cause considerable environmental impacts are to be recycled and reused. Various researches have been done to reuse the solid waste in various forms. This study includes the reuse of non-biodegradable solid waste as a partial replacement of Fine Aggregate in the manufacturing of Solid Concrete Blocks. The solid waste was crushed to a diameter less than 4.75mm and used as a partial replacement of fine aggregate (m-sand) in different proportions as 5%, 10%, 15%, 20%, and 25% in M15 grade concrete. Conventional mix with and without 10% Alccofine-1203 mineral was tested. Conplast SP430of 1.5% by weight of cement was added as water reducing admixture. In the mix with Alccofine, plastic granules in the proportions mentioned above were added and concrete blocks were cast. The properties of solid waste (Mainly PVC) used as fine aggregates i.e., particle size distribution, specific gravity, etc., and the properties of concrete i.e., workability, compressive strength and flexural strength were determined.

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(54) Title of the invention : EXPERIMENTAL INVESTIGATION OF FLY ASH BRICKS BY USING GRANITE SAW DUST

(51) International classification :A01G 242300, B23D 590000, B27G 030000, C04B 180800, C04B 331320  
(86) International Application No :NA  
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(57) Abstract :

ANNEXUKE-III The backbone of India's infrastructure development is the construction industry. Indian businesses produce a variety of byproducts that contribute to pollution. It significantly contributes to the nation's healthier environment. Different percentages of fly ash, granite dust, and lime are used in different fly ash brick combinations: Large amounts of fly ash and granite dust are produced in India by thermal power stations and the granite industry. Since industrial waste is inherently toxic, its disposal is a big challenge. Recycling such wastes and using them as construction materials is a reasonable approach to the pollution problem. Economy and energy conservation are given a lot of attention. The purpose of this research is to assess and contrast the strength of the blocks utilizing various flyash and granite sawing powder waste percentages. Different mix ratios were used in the inquiry, and laboratory tests like the compression test and water absorption test were used. When comparing the features of strength, the results revealed that blocks' water absorption values were good and that compression strength increased gradually.

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(57) Abstract :

ANNEXURE-III The blocks make up the wearing surface and a significant portion of the pavement's load-spreading structure in interlocking concrete block pavement. The wearing surface is constructed of small paving units embedded and connected in sand as opposed to continuous paving, which is how it varies from other traditional forms of pavement. The substructure underneath the bedding sand resembles a flexible pavement. As an alternative to concrete and asphalt pavements, the interlocking concrete block pavement (ICBP) has quickly gained favour in many international nations. However, due to a lack of established indigenous design and construction knowledge, the obvious benefits of ICBP have not yet been completely realized in India. There are no existing IRC or IS codes for its specification and design. The building ingredients for the blocks included Portland cement, steel Hakes, ash, and fine aggregate. The producer used the necessary amount of water along with a 1:2:3 ratio of the materials. Research on interlocking pavers using 5%. 10%. 15%, and 20% by weight of cement with steel flakes. Compressive strength tests were performed after 7, 14, and 28 days. For testing, a sample of the building blocks and materials were gathered. Paving block compressive strength must be increased in order to produce stronger blocks. To evaluate the behavior of concrete blocks with respect to their shape, thickness, laying pattern, etc., a straightforward laboratory size test setup can be used.

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