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Development And Performance Evaluation of Interlocking Paver Blocks Using Pet Waste, Coconut Coir Fiber, Chicken Mesh and Geosynthetic Reinforcement- A Review

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Abstract: Interlocking concrete paver blocks are widely used in pavement construction due to their easy installation, durability, aesthetic appearance, and low maintenance requirements. However, conventional paver blocks face limitations such as cracking, abrasion failure, waterlogging issues, and reduced performance under repeated traffic loading. In recent years, researchers have focused on enhancing paver block performance using sustainable waste materials and reinforcement techniques. The present review paper critically summarizes and analyzes existing research on the utilization of industrial wastes and natural fibers such as PET waste, plastic waste, fly ash, construction and demolition waste, and coconut coir fibers for improving the mechanical and durability properties of paver blocks. Additionally, reinforcement methods using polypropylene fibers, nylon fibers, and polyester fibers have been reviewed. Studies on permeable and porous paver blocks for runoff reduction and stormwater management have also been discussed. The reviewed literature indicates that fiber addition improves crack resistance and toughness, while waste material substitution contributes to sustainability and cost reduction. However, very limited studies are available on multi-layer reinforcement techniques such as embedding chicken mesh and geosynthetic layers inside paver blocks to enhance load distribution, flexural performance, and durability. Therefore, this review identifies a clear research gap and highlights the necessity of developing and experimentally evaluating interlocking paver blocks incorporating PET waste, coconut coir fiber, chicken mesh reinforcement, and geosynthetic layers as an innovative approach toward sustainable and high-performance pavement blocks.

Keywords: Interlocking Paver Blocks, PET Waste, Coconut Coir Fiber, Chicken Mesh, Geosynthetics, Plastic Waste, Sustainable Construction.

I. INTRODUCTION

Interlocking concrete paver block pavement is a widely adopted pavement system for footpaths, parking areas, pedestrian zones, industrial yards, and low to medium traffic roads. These paver blocks provide several advantages such as ease of construction, fast repair and replacement, skid resistance, and aesthetic finishing. Unlike conventional asphalt or rigid pavements, interlocking paver blocks consist of individual precast blocks arranged with jointing sand, which provides load transfer through interlocking action. With rapid urbanization and increasing traffic volume, the demand for stronger and more durable paving systems has increased significantly. However, conventional concrete paver blocks face issues such as surface abrasion, cracking under repeated loads, and poor durability in aggressive environments. Additionally, the large-scale consumption of natural aggregates and cement for paver block manufacturing leads to depletion of natural resources and environmental impacts due to CO_2 emissions. To overcome these challenges, researchers have proposed the use of waste materials such as fly ash, recycled aggregates, plastic waste, construction and demolition waste, and fibers like coconut coir fiber, polypropylene fiber, polyester fiber, and nylon fiber.

These materials not only enhance mechanical performance but also improve sustainability by reducing waste disposal problems. Further, advanced reinforcement concepts such as embedding chicken mesh and geosynthetic layers inside concrete elements are widely used in structural applications but have not been extensively explored in paver block manufacturing. Therefore, this review paper focuses on existing literature related to waste utilization and reinforcement in paver blocks and identifies research gaps for future experimental studies.

II. LITERATURE REVIEW

[1] Evaluation of Interlocking Block Pavement Performance under Varying Construction Conditions by Model Chamber Tests (2025) By Inhyun Kim, Choong-Ki Chung, and Jung-Hyun Ryu- carried out an experimental investigation to evaluate the performance of Interlocking Block Pavements (IBPs) under different construction conditions using model chamber tests and repeated loading experiments. The study emphasized that with the increasing demand for interlocking block pavements to withstand different traffic loads, it is essential to understand how construction factors such as block thickness, joint width, and bedding sand thickness influence the overall pavement behavior. In this research, repeated loading tests were performed on model IBPs using different combinations of bedding thickness and joint width. For 100 mm thick general blocks, bedding thicknesses of 30 mm, 50 mm, and 80 mm were tested along with joint widths of 5 mm and 8 mm, while for 160 mm thick heavy-duty blocks, bedding thicknesses of 50 mm, 80 mm, and 110 mm were examined with a constant joint width of 5 mm. The pavement performance was evaluated based on key parameters such as deflection resistance, load dispersion ability, and interlocking effect, where interlocking effect was assessed through the relative deflection between adjacent blocks, which plays an important role in resisting traffic loads. The findings of the study revealed that the optimal interlocking performance for general blocks was achieved when the bedding thickness was 50 mm and joint width was 5 mm, resulting in improved load distribution and enhanced pavement stiffness. For heavy-duty blocks, the study concluded that a bedding thickness of 80 mm was required to achieve a stronger interlocking effect. Under these optimal conditions, block rotation produced an arching effect, leading to better load resistance and increased relative deflection between blocks. However, under inadequate construction conditions, the pavement experienced rutting failure due to excessive stress transmission to the base layer and bedding sand migration, with the maximum block uplift reported as 0.374 mm. Furthermore, the elastic modulus of the paving surface was estimated from transmitted stress results, and the study reported higher modulus values of 5417.06 MPa for general blocks and 2075.45 MPa for heavy-duty blocks under optimal construction conditions. The authors concluded that construction factors significantly affect IBP performance and suggested that both deflection characteristics and interlocking effect should be considered as major performance indicators while designing and constructing interlocking block pavements for long-term durability.

[2] Utilization of Coconut Fibre Waste in Manufacturing of Paver Blocks (2024) By Dr. P. Saravana Kumar, Mr. K. Vallarasu, Mrs. S. Shyamal Gowri, Mr. R. Prakash and Mrs. A. Fathima Darras Gracy- studied the possibility of using coconut coir fiber waste as a sustainable construction material in the production of concrete paver blocks. The study highlights that paver blocks play a major role in the construction sector and the incorporation of natural waste materials such as coconut fiber can enhance sustainability and reduce environmental pollution. The authors emphasized that coconut coir waste is generated in large quantities from coconut husk industries, and the selected case study was based on a real local issue where nearly 50 kg of coconut coir waste is produced daily, creating disposal problems. In their experimental investigation, the authors prepared concrete paver blocks by partially replacing fine aggregate with coconut fiber waste in varying proportions of 0.5%, 0.6% and 0.7% by weight. The study mainly focused on determining the optimal mix proportion of coir fiber waste in concrete, evaluating the strength behavior of paver blocks, and analyzing the environmental impact compared to conventional paver block manufacturing methods. The research findings indicated that the inclusion of coir fiber waste improves the eco-friendly nature of paver blocks and also contributes to better performance by providing improved toughness and crack resistance due to fiber reinforcement action. The study further stated that coconut fiber possesses desirable physical properties which make it suitable for enhancing the durability and sustainability of concrete products. The authors concluded that coconut coir fiber waste can be successfully utilized in manufacturing paver blocks, reducing dependence on natural fine aggregate resources and supporting waste management practices. Overall, the study strongly supports the application of coconut coir fiber waste in paver block production as an innovative sustainable construction approach that helps in minimizing environmental issues while maintaining acceptable strength properties.

[3] An Experimental Investigation on Concrete Pavers Block by Replacement of Fine Aggregate with Plastic Waste" (2024) published in the **Journal of Emerging Technologies and Innovative Research (JETIR), Volume 11, Issue 5, May 2024, ISSN: 2349-5162**, the authors **Mr. Basavalingappa, Rudagi Diggaja, Shashank R., Chaitanya Kumar M., and Gorakh Bahadur Chand (2024)** conducted an experimental study to examine the feasibility of utilizing plastic waste as a partial replacement of fine aggregate in the manufacturing of concrete paver blocks. The study highlighted that plastic waste has become a serious global environmental problem due to its increasing accumulation in landfills and its slow decomposition nature. To address this challenge, the authors proposed an innovative method of recycling polypropylene (PP) plastic waste for construction applications. In their experimental procedure, the collected plastic waste was melted and converted into 4 mm granules, which were then incorporated into concrete mixtures. The study specifically replaced a portion of fine aggregate particles ranging between 4.75 mm to 2.36 mm with the prepared 4 mm plastic granules in the concrete mix designed for paver block production. After casting, the paver blocks were cured for a standard curing period of 28 days, and compressive strength tests were conducted to evaluate the performance of the modified pavers. The experimental findings indicated that the paver blocks containing plastic granules showed a slight reduction in compressive strength when compared to conventional paver blocks. However, the reduction was found to be within permissible limits as per codal provisions, indicating that the modified pavers still satisfy structural requirements. Additionally, the authors observed a decrease in density of the paver blocks due to the lightweight characteristics of plastic granules, which may contribute to reduced dead weight in pavement applications. The study concluded that plastic waste can be effectively utilized in paver block production, offering a sustainable solution for waste management and reducing dependency on natural fine aggregates. The authors further stated that the research provides valuable insight into the effects of plastic incorporation on mechanical properties, which can support future developments in eco-friendly and sustainable pavement construction.

[4] Review Paper on Design of Permeable Paver Block" (2024) published in the **International Journal of Scientific Development and Research (IJSDR), Volume 9, Issue 4, April 2024, ISSN: 2455-2631**, the authors **Mansi Achle, Neha, Tripti Dhruw, Vandana Gawde, Ajay Kumar Garg, and Bhumika Chandrakar (2024)** presented a review-based experimental analysis on the design and performance of permeable paver blocks aimed at improving stormwater management and reducing surface runoff. The authors highlighted that permeable paver blocks are specially designed pavement units containing gaps and openings that allow rainwater to infiltrate into the ground rather than flowing as surface runoff, thereby supporting groundwater recharge and improving environmental sustainability. The study emphasized that permeable pavers play an important role in reducing flooding risk and improving water infiltration in urban areas. In this work, three different sample paver blocks were prepared using a tri-hexa mould of 60 mm thickness, where the first sample was manufactured using a nominal mix design of M10 grade concrete consisting of cement, sand and coarse aggregate, the second sample was prepared with the addition of admixture, and the third sample was prepared without using fine aggregate to enhance permeability. The performance evaluation was conducted through various laboratory tests such as compressive strength test, flexural strength test, infiltration rate measurement, and permeability test to determine the suitability of each mix proportion. The findings revealed that the sample containing only admixture, cement and coarse aggregate (without fine aggregate) achieved the highest compressive strength compared to the other two samples, indicating that the admixture played a significant role in improving strength while maintaining permeability. The authors concluded that permeable paver blocks are highly suitable for applications such as pedestrian pathways, garden areas and low-traffic pavements, as they enhance infiltration capacity, reduce surface runoff and contribute to sustainable stormwater management and groundwater recharge. Overall, the study supports the use of permeable paver blocks as an eco-friendly and effective solution for sustainable pavement development.

[5] Enhancing the Mechanical Properties' Performances Coconut Fiber and CDW Composite in Paver Block: Multiple AI Techniques with a Performance Analysis" (2024) published in **Scientific Reports (Nature Portfolio), Sci Rep. 2024, Volume 14, Article No. 31886, dated 30 December 2024, DOI: 10.1038/s41598-024-83394-4**, the authors **G. Uday Kiran, G. Nakkeeran, Dipankar Roy, Sumant Nivarutti Shinde and George Uwadiegwu Alaneme (2024)** investigated the improvement of mechanical properties of paver blocks by incorporating coconut fibre and construction and demolition waste (CDW) as a partial replacement of fine aggregate along with the use of advanced artificial intelligence (AI) and machine learning techniques for prediction and optimization. The study highlighted that rapid construction activities in developing countries like India have significantly increased the generation of construction and demolition waste, estimated to be nearly 3 billion metric tons annually, which creates serious environmental problems such as depletion of natural resources, dust and carbon emissions, land damage and

excessive energy consumption. The authors emphasized that paver block manufacturing requires a large quantity of natural aggregates, contributing to resource depletion, and hence utilization of waste materials like CDW is a sustainable solution. In this experimental program, CDW was used as a replacement of fine aggregate in different proportions such as 0%, 20%, 40% and 60%, while coconut fibre was incorporated in proportions of 0.2%, 0.4%, 0.6%, 0.8% and 1% to evaluate mechanical performance. The study reported that CDW replacement significantly enhanced compressive strength up to an optimum level, where strength improvement was observed up to around 40% CDW replacement, while beyond this level the strength reduced. The coconut fibre addition improved ductility, crack resistance and reduced brittleness, thereby improving the overall toughness of paver blocks. A major contribution of this study is the integration of multiple AI and machine learning models such as Response Surface Methodology (RSM), Support Vector Machine (SVM), Gradient Boosting (GB), Artificial Neural Networks (ANN), and Random Forest (RF) for predicting and optimizing compressive strength and performance parameters. The predictive capability of these models was evaluated using performance indicators such as Root Mean Square Error (RMSE), Mean Square Error (MSE), Mean Absolute Error (MAE) and correlation coefficient (R), and the results showed that machine learning models demonstrated strong accuracy in forecasting mechanical properties. The study found that Gradient Boosting and ANN performed better compared to SVM and RF in predicting the testing parameters, while Random Forest also provided high prediction accuracy with strong correlation. The research concluded that the optimum mix combination for improved compressive strength and sustainability was achieved at 60% CDW replacement with 1% coconut fibre addition, which produced paver blocks with enhanced strength, improved durability and cost-effectiveness while promoting environmental sustainability. Overall, the study strongly supports the application of coconut fibre and CDW composite materials in paver blocks and demonstrates that AI-based prediction models can effectively reduce laboratory testing time and assist engineers in selecting optimum mix designs for sustainable pavement construction.

[6] Eco-Friendly Paver Block Using Waste Plastic Bottles" (2024) published in the Journal of Emerging Technologies and Innovative Research (JETIR), Volume 11, Issue 4, April 2024, ISSN: 2349-5162, the authors Dr. O. R. Kavitha, Jaishwin S. R., Desingraja S., Dibish J., and Jagadeesan K. (2024) investigated the development of eco-friendly paver blocks by utilizing waste plastic bottles (LDPE waste) along with processed coconut fiber as an alternative sustainable construction material. The study was carried out with the main intention of reducing environmental degradation caused by plastic waste accumulation and to promote the use of renewable natural resources in construction applications. The authors highlighted that plastic composites degrade very slowly due to their chemical bonding and durability, leading to serious environmental problems, especially in landfills and marine ecosystems. The paper emphasized that the rapid growth of construction activity and infrastructure development has increased the demand for low-cost building materials, particularly in developing countries like India where the high cost of construction materials makes housing unaffordable for many people. The authors stated that India consumes around 40 million metric tons of plastics annually, and most of it eventually becomes waste, creating severe environmental pollution, with an increasing growth rate of about 1.5% to 2% per year. In this experimental investigation, the authors used waste LDPE plastic along with coconut fiber to manufacture paver blocks and conducted tests such as compressive strength test, water absorption test, and melting point test to evaluate the performance of the developed paver blocks. The key findings of the study revealed that the addition of coconut fiber resulted in a reduction of compressive strength of the paver blocks; however, the study concluded that the developed eco-friendly paver blocks still provide a sustainable alternative for construction purposes by effectively utilizing waste plastic materials and supporting waste management practices. The authors also emphasized that using waste plastics and coconut fiber helps in minimizing plastic pollution while encouraging the use of renewable natural fibers, thus contributing to environmental conservation. Finally, the study suggested that further research can be conducted by improving the manufacturing process, incorporating additional reinforcements or additives, and conducting life cycle assessment studies to evaluate the overall environmental impact and long-term durability of the eco-friendly paver blocks.

[7] Investigation of Concrete Paving Block Characteristics and Performance across Different Shapes and Thicknesses" (2024) published in **Engineering, Technology & Applied Science Research (ETASR), Volume 14, Issue 6, December 2024, pp. 18429–18438**, the authors **Tommy Iduwin, Sigit Pranowo Hadiwardoyo, R. Jachrizal Sumabrata, Riana Herlina Lumingkewas, and Andri Irfan Rivai (2024)** conducted a detailed experimental investigation to evaluate the characteristics and performance of concrete paving blocks produced in different shapes and thicknesses. The study highlighted that concrete paving blocks (CPBs) are widely used in pavement structures, but variations in block geometry and thickness significantly influence the test results and

mechanical behavior. The authors selected a total of 60 paving block samples collected from five different factories, with standard dimensions of 200 mm length and 100 mm width, while the thickness was varied as 60 mm, 80 mm, and 100 mm to study the effect of block height on strength and durability parameters. The experimental testing program included water absorption, compressive strength, flexural strength, tensile splitting strength, skid resistance, and abrasion resistance, which are essential parameters for evaluating pavement block performance under traffic and environmental exposure. The study findings indicated that the mortar content among samples from different factories showed no major difference, suggesting uniformity in material composition across sources. The results further revealed that weight loss values were strongly dependent on strength, meaning higher strength paving blocks exhibited lower abrasion loss and improved durability. The study also found that tensile splitting strength was influenced by density, where paving blocks with higher density showed higher tensile splitting strength. Additionally, the authors concluded that compressive strength test results are more realistic and reliable when performed on cube-shaped samples, whereas beam-shaped specimens are more suitable for evaluating bending and flexural characteristics. The research also confirmed that flexural strength is significantly affected by density, indicating that higher compaction and better density contribute to improved bending resistance. Overall, the authors concluded that the mechanical and durability performance of concrete paving blocks is highly dependent on thickness and density, and proper selection of block dimensions and test methods is essential to ensure realistic strength assessment and improved pavement performance.

[8] Characterisation of Pervious Interlocking Pavers for Durable Pavements: A Laboratory Study" (2023) published in the **International Journal of Pavement Engineering, Volume 24, Issue 2 (Published online on 07 November 2023)**, the authors **Mudasir Nazeer, Kanish Kapoor and S. P. Singh (2023**) conducted a detailed laboratory investigation to evaluate the strength and durability characteristics of Pervious Interlocking Pavers (PIP) for sustainable pavement applications. The authors explained that pervious concrete is a special type of concrete produced by minimizing or completely excluding fine aggregates from the mix, which allows water infiltration through pavement surfaces and helps in reducing local flooding problems in municipal areas, thereby decreasing the burden on urban drainage systems. In this study, the authors developed pervious interlocking pavers using three different aggregate grades with varying fine aggregate proportions of 0%, 10% and 20%, and additionally studied the effect of partially replacing ordinary Portland cement with 10% silica fume. During the experimentation, the powder-to-aggregate ratio and water-cement ratio were maintained constant at 0.2 and 0.35, respectively, in order to maintain consistency in results. The study primarily focused on evaluating key pavement performance parameters such as compressive strength, flexural strength, abrasion resistance, freeze-thaw resistance, permeability and microstructural characteristics. The findings revealed that the inclusion of 20% fine aggregates significantly improved the strength and durability of pervious interlocking pavers without reducing permeability beyond acceptable limits at 28 days curing period. The results indicated a notable increase in compressive strength of about 15.7% for 10% fine aggregate substitution (PC10) and 35.7% for 20% fine aggregate substitution (PC20) compared to the control mix. The study further concluded that the partial replacement of cement with silica fume helped in compensating the loss of strength and durability in pervious pavers produced without fine aggregates. Overall, the authors concluded that optimum inclusion of fine aggregates and silica fume can produce durable pervious interlocking pavers with improved mechanical properties and acceptable permeability, making them suitable for sustainable pavement construction in urban environments.

[9] Assessment of Interlocking Concrete Block Pavement with By-Products and Comparison with an Asphalt Pavement: A Review" (2023) published in the journal **Applied Sciences (MDPI), Volume 13, Issue 10, Article 5846**, on **9 May 2023**, the authors **Webert Silva, Luís Picado-Santos, Suelly Barroso, Antônio Eduardo Cabral, and Ronaldo Stefanutti (2023)** presented a comprehensive review on the performance of Interlocking Concrete Block Pavement (ICBP) incorporating different by-products such as coconut fibers and construction and demolition recycled materials, and compared its performance with conventional asphalt pavement for light-traffic urban road applications. The study mainly focused on reviewing the mechanical behavior of ICBP, influence of mix parameters and by-products on strength, pavement structural design aspects, sustainability performance, permeability and stormwater management characteristics, contaminant concentration behavior during infiltration, and Life Cycle Assessment (LCA) based evaluation. The authors discussed that ICBP consists of concrete paving blocks arranged with jointing materials and bedding layers, which makes its behavior different from asphalt pavements where the surface layer is more homogeneous and stiff. The review highlighted that ICBP offers significant sustainability advantages such as lower heat island effect and improved thermal comfort due to lower surface temperature compared to asphalt pavements. Based on the overall analysis, the authors concluded that interlocking concrete block pavement

is a highly attractive alternative because it was found to be approximately 33–44% cheaper in maintenance costs, cooler by about 2.2°C to 15°C, and more permeable with permeability values in the range of 0.4 cm/s to 0.6 cm/s, thus supporting better drainage and stormwater management compared to asphalt pavements. However, the study also pointed out that asphalt pavement is approximately 35% cheaper in the construction phase, mainly due to differences in energy consumption during material production and construction processes. Additionally, asphalt pavement was found to have about 32% lower nitrogen oxide concentration, indicating reduced pollutant concentration compared to interlocking pavement systems. The authors concluded that both pavement types have advantages and limitations, and the selection between asphalt pavement and ICBP should be made through a detailed decision-making process considering mechanical performance, cost, sustainability, environmental impact, permeability and life cycle performance. Overall, the review strongly supports the growing importance of ICBP with by-products for sustainable urban road infrastructure development.

[10] Construction of Cement Concrete Pavement Using Paver Blocks (2023) By Roshan Kumar Nayak, Uttam Mandal, Biraja Sankar Pradhan, and Prof. Abhijit Mangaraj (Guide)- studied the feasibility and practical importance of using **cement concrete paver blocks** as an alternative pavement system for different traffic categories. The authors described that solid unreinforced precast cement concrete paver blocks are versatile pavement units which are aesthetically attractive, cost effective, functional, and require low maintenance if manufactured and laid properly. The study highlighted that paver blocks can be adopted for multiple traffic conditions such as non-traffic, light traffic, medium traffic, heavy traffic and very heavy traffic areas. The authors discussed that although concrete block pavements have performed satisfactorily in many regions, there are some key concerns such as occasional failure due to excessive surface wear and variability in block strength depending upon material quality and manufacturing process. The study emphasized that paver blocks are widely used in applications such as driveways, footpaths, utility areas, garages, forecourts and roads due to their strong interlocking mechanism and ease of repair. The research also explained that after the service life of paver blocks, demolished blocks can be reused conveniently as recycled aggregate, promoting sustainability in construction. The study strictly followed codal guidelines of IS 15658:2006 for paver block construction, and aggregates passing through 20 mm sieve and retained on 4.75 mm sieve were selected for mix preparation. The authors further mentioned the importance of removing contaminants such as reinforcement steel, paper, wood, plastics, gypsum and other impurities while preparing recycled aggregates, and concrete prepared using recycled concrete aggregates was referred to as Recycled Aggregate Concrete (RAC). The paper highlighted that in rural road development projects, flexible pavements are generally constructed outside village boundaries, while rigid pavements are laid inside village areas; however, rigid pavements have high construction cost compared to flexible pavements. Therefore, the study aimed to replace costly rigid pavements with a more economical paver block pavement system. The authors concluded that paver block pavement construction is a cost-effective and sustainable solution because it reduces redevelopment cost, provides easy maintenance, and allows quick repair without disturbing the entire pavement surface. Additionally, the study emphasized that proper maintenance such as refilling bedding sand and gravel is essential to prevent weed growth and to maintain interlocking stability between blocks.

[11] Experimental Study on Properties of Paver Block using Coconut Fibre & Nylon Fibre (2023) published under Grenze Scientific Society with Grenze ID: 01.GIJET.9.1.644 in the Grenze International Journal of Engineering and Technology (GIJET), January Issue 2023, the authors Dr. M. Harikaran, R. Vijayan, P. Senthil Kumar, R. S. Suganth, R. Nithishkumar and V. Vijay (2023) conducted an experimental investigation to study the influence of coconut fibre (natural fibre) and nylon fibre (synthetic polymer fibre) on the mechanical and durability properties of concrete paver blocks. The study highlighted that paver blocks are widely used in pavement and pathway construction due to their toughness, strength, durability, and ease of maintenance. The authors emphasized that fibre reinforcement in concrete is an effective method to improve performance by enhancing tensile strength, toughness, and crack resistance. Coconut fibre, extracted from coconut husk, is recognized as an eco-friendly natural reinforcement material, while nylon fibre is a synthetic polymer fibre commonly used to improve concrete characteristics. In this study, M40 grade concrete paver blocks were designed and prepared by adding coconut fibre and nylon fibre in different proportions of 0.2%, 0.4%, 0.6% and 0.8% by volume of concrete, and the results were compared to evaluate the best fibre type and optimum dosage. The experimental program included tests such as compressive strength test, water absorption test, and abrasion resistance test, which are important for evaluating the structural performance and durability of paver blocks under pavement conditions. The specimens were tested after 14 days and 28 days of curing to assess strength development and long-term performance. The major findings of the study indicated that the inclusion of fibres improved the overall mechanical behavior of the paver blocks by increasing toughness and resistance to cracking, while also influencing durability parameters such as water absorption and

abrasion resistance. The research concluded that fibre reinforced paver blocks show better performance compared to conventional paver blocks and that the optimum percentage of fibre addition can be selected based on comparative strength and durability results. Overall, the study supports the use of both coconut fibre and nylon fibre as effective reinforcement materials in paver block manufacturing for enhancing pavement performance and promoting sustainable construction practices.

[12] Utilization of Industrial Waste Materials in the Construction of Interlocking Paver Blocks for Medium Traffic Areas (2022) By Mr. Manoj S. Nayak, Mr. Karthik M., and Mr. Pramod B. V.- investigated the feasibility of using recycled aggregate as a partial replacement of fine aggregate in the manufacturing of interlocking concrete paver blocks suitable for medium traffic conditions. The study highlighted that the utilization of industrial waste materials and recycled aggregates in paver blocks can contribute to sustainable construction by reducing the consumption of natural resources and lowering the cost of production. In this experimental investigation, the authors designed interlocking paver blocks of 80 mm thickness using M40 grade concrete, with a targeted strength of 48 MPa, and replaced fine aggregate with recycled aggregate in varying proportions of 10%, 20%, and 30%. The concrete mix was prepared for each replacement ratio, and workability was evaluated using the slump cone test to ensure proper consistency for casting. After casting, the paver blocks were cured for 7 days and 28 days, and mechanical performance was assessed through hardened concrete tests, mainly the compressive strength test. The study also included a cost analysis to determine the economic feasibility of using recycled aggregates in interlocking paver blocks. The findings of the research indicated that recycled aggregate can be effectively incorporated into paver block manufacturing within acceptable strength limits, and the use of recycled materials helps in reducing initial production cost as well as long-term maintenance cost. The authors concluded that an optimum percentage of recycled aggregate replacement can produce durable and economical interlocking paver blocks suitable for medium traffic areas while supporting sustainable waste utilization practices.

[13] A Study of Interlocking Behaviour of Concrete Block Used in Pavements (2022) By Viveka Nand and Deepak Kumar- studied the interlocking behaviour and structural performance of Concrete Block Pavement (CBP) systems used in pavement construction. The authors explained that in interlocking concrete block pavements, the blocks form the wearing surface and act as a major load-spreading component of the pavement structure. Unlike conventional rigid or flexible pavements, CBP consists of small concrete paving units embedded and joined using sand rather than a continuous pavement layer. The study also mentioned that the pavement substructure below the bedding sand remains similar to flexible pavements, making it structurally comparable. The authors highlighted that concrete block pavements are gaining popularity in areas where conventional flexible pavements fail due to poor durability and deformation issues. The paper discussed that CBP is widely adopted because of its advantages such as high resistance to deformation, long durability, easy and rapid construction, immediate opening to traffic after laying, environmental compatibility and improved aesthetic appearance. The authors emphasized that although CBP behaves structurally similar to flexible pavements, its performance is highly dependent on construction and design factors such as block shape, block size, block thickness, bedding sand type, jointing sand type, joint width, and laying pattern of blocks. The study particularly highlighted the importance of edge restraints, which are essential to prevent outward movement or migration of blocks under traffic loads. The interlocking mechanism was identified as the most unique feature of CBP, and the authors stated that the overall pavement performance largely depends on the effectiveness of interlock achieved between adjacent blocks. The paper concluded that interlocking helps the blocks to share load transfer, spread stresses effectively to neighboring blocks, and improve overall stability and load carrying capacity of the pavement. The study strongly supports that proper design and construction parameters are crucial to ensure adequate interlocking effect and long-term performance of concrete block pavements.

[14] An Experimental Investigation on Strength of Paver Block Using Dolomite as Partial Replacement of Cement and Addition of Polyester Fiber in Different Proportions (2021) By Shilpa Agrawal and Prof. Anil Kumar Suman- carried out an experimental study on improving the mechanical performance of concrete paver blocks by partially replacing cement with dolomite powder and incorporating polyester fiber in different proportions. The authors highlighted that cement is a binding material having adhesive and cohesive properties, but its high cost and environmental impact encourage the use of alternative materials. Dolomite powder, obtained from sedimentary rock minerals such as dolostone, possesses similar properties to cement and can be used as a partial replacement to reduce cost while maintaining strength. The study also emphasized that polyester fiber is a synthetic man-made fiber produced from long-chain polymer materials and its addition in concrete helps to improve tensile strength, crack resistance and overall durability of paver blocks. In this research, the authors adopted M30 grade concrete mix design

with a constant water-cement ratio of 0.36, and cement was replaced with dolomite powder in proportions of 0%, 10%, 20% and 30%, while polyester fiber was added in proportions of 0%, 0.1%, 0.2% and 0.3%. The mix design was carried out as per IS 15658:2006 and IRC SP:63-2004 guidelines for concrete paver blocks, and 10 mm size coarse aggregate was used in casting. The experimental evaluation included compressive strength testing at 7, 14 and 28 days, and durability-related strength parameters such as split tensile strength and flexural strength tests were conducted at 28 days. The findings of the study indicated that partial replacement of cement with dolomite powder reduced the overall cost of paver block production and the addition of polyester fiber enhanced strength performance by improving crack resistance and mechanical behavior. The authors concluded that the combination of dolomite powder and polyester fiber provides an economical and improved strength solution for fiber reinforced concrete paver blocks, and optimum replacement levels can be selected based on the strength results obtained from laboratory testing.

[15] New High Strength Water Retaining Interlocking Pavers Block for High Mechanical Performing Pavement and Reducing Runoff (2020) By M. A. H. Abdullah, N. A. Rashid, A. L. Abdul Rani, and M. F. Omar- investigated the development of a new type of interlocking paver block aimed at improving both mechanical strength and water retaining performance to reduce surface runoff. The authors explained that interlocking paver blocks are widely used in low-speed traffic roads, especially around building complexes, because they are easy to install, require less construction equipment, and provide an aesthetically attractive pavement surface. However, the study highlighted a major drawback that the large-scale usage of conventional interlocking blocks reduces ground permeability, which results in increased runoff and poor stormwater infiltration. To overcome this issue, the researchers developed and evaluated two innovative types of interlocking paver blocks: one using permeable concrete and another having a central void to enhance infiltration capacity. The experimental investigation focused on analyzing compressive strength, flexural strength, runoff reduction, and infiltration performance. The results indicated that the paver blocks made with permeable concrete exhibited significantly higher compressive strength compared to the blocks with central void, with an average improvement of about 31.5%. The flexural strength of all tested samples was reported within the range of 1.0 to 1.7 MPa, indicating acceptable bending resistance. In terms of runoff reduction, the paver blocks with central void showed the best performance, achieving a runoff reduction of about 25.5%, which was supported by water infiltration test results. The study concluded that water retaining performance increases with an increase in void volume, but the increase in void volume also causes a reduction in compressive strength. Therefore, an optimum balance between strength and void volume is necessary for designing high-performance water retaining interlocking paver blocks. Overall, the authors concluded that innovative paver block designs such as permeable concrete blocks and void-based blocks can be effectively adopted to reduce runoff and enhance sustainable pavement systems while maintaining sufficient mechanical performance.

[16] Analysis of Porous Interlocking Concrete Paver Block with Fly Ash & Coconut Fiber (2020) By Yash Chaurasiya and Dr. S. S. Goliya- presented an experimental study on the development and performance evaluation of porous interlocking concrete paver blocks incorporating fly ash and coconut fiber. The study highlighted that in developing countries like India, the rapid population growth increases the demand for economical and durable pavement solutions, and paver blocks are considered a better alternative to conventional concrete and bitumen pavements due to their easy installation, better finishing, improved aesthetics, and low maintenance cost. However, the authors identified a major limitation of conventional concrete paver blocks, which is the issue of water logging during rainy seasons, as traditional paver blocks are non-porous and do not allow water infiltration, leading to surface accumulation of water unless slopes are provided. To overcome this problem, the authors proposed the production of porous concrete paver blocks using locally available materials and fly ash to improve sustainability and reduce cost. The study emphasized that porous paver blocks not only reduce water logging but also help in minimizing surface runoff pollution and prevent mixing of surface waste into surface water. In their experimental investigation, fly ash was used as a partial replacement of cement in proportions of 10%, 15%, 20% and 25% by weight of cement, while coconut fiber was incorporated in different dosages of 0.2%, 0.5%, 0.8% and 1% by volume of concrete, and gypsum was added in 1–2% by weight of cement. The authors performed various tests including compressive strength test, split tensile strength test, and water absorption test on both porous and conventional paver blocks at curing ages of 7, 14 and 28 days. The findings revealed that coconut fiber significantly contributed to reducing cracks and improving flexural behavior, while fly ash replacement enhanced strength and sustainability. The study concluded that the maximum compressive strength was achieved at an optimum combination of 20% cement replacement with fly ash and 0.8% coconut fiber, showing improved mechanical performance compared to conventional paver blocks. Additionally, the authors highlighted that porous paver blocks require around 250–300 kg/m³ of cement, and from an economic point of view, conventional paver blocks cost around 15–25 rupees in the Indian market, whereas

porous/pervious paver blocks cost around 10–20 rupees, indicating that porous paver blocks are more economical as well as environmentally beneficial. Overall, the study strongly supports the development of porous interlocking paver blocks using fly ash and coconut fiber as a sustainable and cost-effective pavement solution for water logging issues in urban areas.

[17] Strength Evaluation of Pre-Cast Concrete Paver Block, Using Steel Slag & PET Fibres (2017) By Rajbir Singh and Dr. Sanjay Goel- investigated the strength performance of precast concrete paver blocks by incorporating steel slag as partial replacement of fine aggregate along with the addition of waste PET fibres in different proportions. The main objective of the study was to evaluate how industrial waste materials such as steel slag and plastic waste PET fibres can be effectively utilized in the manufacturing of concrete paving blocks to enhance mechanical properties and promote sustainable construction practices. In this experimental study, the authors cast standard zigzag type paver blocks of 60 mm thickness using M35 grade concrete and conducted laboratory testing to assess the strength improvement. The performance of the paver blocks was mainly evaluated based on key mechanical parameters such as compressive strength and flexural strength, which are important for pavement applications subjected to traffic loading. The study reported that replacing fine aggregate with steel slag and adding PET fibres improved the overall performance of concrete paver blocks by enhancing strength characteristics due to better bonding and reinforcement action of PET fibres. The inclusion of PET fibres was found to contribute to increased toughness and crack resistance, while steel slag replacement helped in improving load carrying capacity and sustainability by reducing the consumption of natural sand. The authors concluded that the combined use of steel slag and PET fibres can produce durable and strong precast concrete paver blocks, offering an effective solution for waste utilization and environmentally friendly pavement construction.

[18] A Review on Precast Cement Concrete Paver Blocks Using Fly Ash (2017) By Vikas Kumar Patel and V. V. Singh- presented a detailed review on the application of fly ash and other industrial waste materials in the production of precast cement concrete paver blocks. The authors explained that paver blocks are widely used in street roads and various construction applications due to their aesthetic appearance, durability, cost-effectiveness, and low maintenance requirements when properly manufactured and laid. The study highlighted a major environmental issue associated with the construction industry, where the manufacturing of Portland cement produces a large amount of carbon dioxide (CO_2), which contributes significantly to global warming as a greenhouse gas. Therefore, the authors emphasized the importance of using supplementary cementitious materials like fly ash to reduce cement consumption and environmental impact. The review discussed that solid unreinforced precast cement concrete paver blocks can be used for different traffic categories and provide an effective pavement solution. The authors critically analyzed various previous research works where fine aggregate (sand) was replaced partially with different industrial waste materials, and cement was replaced with slurry-based waste materials such as fly ash, rice husk ash, and paper sludge. The findings from reviewed studies indicated that incorporating fly ash and other industrial by-products generally results in improved strength and durability properties of paver blocks while also reducing production cost and encouraging sustainable waste utilization. Additionally, the review emphasized that different types of fibres have also been used in paver block manufacturing to improve strength characteristics. The authors concluded that the utilization of fly ash and other industrial waste materials in precast concrete paver blocks is an effective approach for sustainable construction, cost reduction, and environmental protection, while also ensuring satisfactory mechanical performance and durability.

[19] Structural Design of Interlocking Concrete Paving Block (2016) By E. Palanikumar and Pothuganti Uday Kumar- studied the structural design aspects and performance parameters of segmented interlocking concrete paving blocks used for pavement construction. The authors described interlocking concrete pavement as a system of individual shaped blocks arranged to form a continuous and hard-wearing surface overlay, which acts as an important load-spreading component of pavement systems. The study emphasized that despite several advantages, the application of interlocking concrete pavements has not been fully utilized in India. The research focused on evaluating various important factors such as interlocking mechanism, block shape, thickness, compressive strength, size, laying pattern and cost analysis to achieve maximum load transfer and pavement stability. The authors compared the interlocking properties of shaped pavers with normal rectangular pavers through compression testing to assess load transfer capacity. The study highlighted that a superior interlocking system improves surface stability and enhances pavement performance under heavy traffic loads. Additionally, the authors discussed key advantages of interlocking pavements such as freeze-thaw resistance, skid resistance, easy maintenance, no requirement of heavy construction equipment and immediate opening to traffic, making it an efficient alternative pavement system. The paper also

discussed design considerations including deformation behavior, load transfer mechanisms, and the influence of environmental factors such as moisture on pavement stability. The authors noted that soil subgrade conditions significantly affect the total pavement thickness and recommended the use of California Bearing Ratio (CBR) testing for evaluating subgrade support, while resilient modulus values can be adopted in absence of laboratory testing. The study also identified disadvantages such as moss formation causing slipperiness, variations in block size requiring separate testing, and higher initial cost compared to conventional concrete pavements. The authors concluded that investigation of block interaction under applied loads is essential for understanding load-spreading ability and structural characteristics, and the study provides useful insights into structural design behavior of interlocking paving blocks by varying block parameters through laboratory-based experimental analysis.

[20] Effect of Polypropylene Fibers on Abrasion Resistance and Flexural Strength for Interlocking Paver Block (2013) By Bhavin K. Kashiyani, Prof. Jayeshkumar Pitroda, and Dr. Bhavnaben K. Shah- studied the influence of **polypropylene fibers (PPF)** on improving the abrasion resistance and flexural strength of interlocking concrete paver blocks. The authors highlighted that paver blocks are widely used in street roads and construction applications because of their ease of replacement, low maintenance cost, and suitability as an alternative pavement surface system. However, abrasion wear and flexural cracking are common issues in paver blocks, particularly under traffic loading and repeated surface friction. Therefore, the study aimed to enhance the durability and service life of paver blocks by incorporating polypropylene fibers into the concrete mix. In this experimental investigation, the authors adopted a two-layer paver block casting method, where the top layer mix proportion was 1:3 (Cement : Dolomite Powder) and the bottom layer mix proportion was 1:1:2:3.75 (Cement : Fine Aggregate : Semi Grit : Quarry Dust). Polypropylene fibers were added in both layers at different dosages of 0.1%, 0.2%, 0.3%, 0.4% and 0.5% by weight of the mix. The paver blocks were cured and tested at 28 days, and the primary tests conducted were abrasion resistance test and flexural strength test, which are important parameters for evaluating pavement block performance. The experimental results revealed that the addition of polypropylene fibers significantly improved both abrasion resistance and flexural strength compared to conventional paver blocks. The findings indicated that 0.3% polypropylene fiber content produced the best improvement in abrasion resistance, while 0.4% polypropylene fiber content resulted in maximum flexural strength enhancement at 28 days. Additionally, the authors carried out a cost comparison per block for each mix proportion, concluding that the inclusion of polypropylene fibers increases initial cost slightly but improves the life span and reduces long-term maintenance cost of paver block pavement. Overall, the study concluded that polypropylene fiber reinforced paver blocks provide improved performance in terms of strength and durability, making them suitable for long-lasting and cost-effective pavement applications.

III. RESEARCH GAP

From the extensive review of existing literature, it is concluded that numerous studies have been conducted on the improvement of paver blocks using single waste materials such as fly ash, recycled aggregates, CDW, plastic waste, PET fibers, and natural fibers like coconut coir fiber. Several studies have also focused on permeable and porous paver blocks for reducing runoff and improving stormwater infiltration. Fiber reinforcement using polypropylene, polyester, and nylon fibers has been explored to enhance flexural strength, abrasion resistance, and crack resistance.

However, the following major research gaps are identified:

1. Limited research is available on multi-reinforcement paver blocks combining PET waste, coconut coir fiber, chicken mesh, and geosynthetic layers together.
2. Most studies focus only on fiber reinforcement, while the concept of embedding chicken mesh reinforcement inside paver blocks has not been sufficiently explored.
3. Very few studies have evaluated the structural contribution of geosynthetic reinforcement layers inside concrete paver blocks for improving load distribution and crack control.
4. There is insufficient literature addressing the combined effect of PET waste as fine aggregate replacement and natural fiber reinforcement on both strength and durability parameters.
5. Most studies emphasize compressive strength and water absorption, but detailed evaluation on flexural strength, abrasion resistance, impact resistance, and durability under repeated loading is limited.
6. Standardized experimental studies following IS 15658:2006 for reinforced paver blocks incorporating layered reinforcements are not adequately available.

Therefore, there is a strong need for experimental development and performance evaluation of interlocking paver blocks using PET waste, coconut coir fiber, chicken mesh reinforcement, and geosynthetic layers to improve mechanical performance, durability, sustainability, and cost effectiveness.

CONCLUSION

This review paper presented a comprehensive analysis of existing research on interlocking paver blocks developed using industrial wastes, recycled materials, and fiber reinforcement techniques. Literature confirms that coconut coir fiber improves crack resistance and toughness, while plastic waste and PET fibers contribute to sustainable waste utilization. Fly ash, CDW, and recycled aggregates improve eco-friendliness and reduce cost while maintaining acceptable strength. Permeable and porous paver blocks provide effective stormwater management solutions by reducing runoff and increasing infiltration capacity. However, it is clearly observed that limited research exists on the combined application of PET waste, coconut coir fiber, chicken mesh reinforcement, and geosynthetic layers in paver blocks. Hence, future experimental research should focus on developing multi-layer reinforced paver blocks and evaluating their mechanical properties and durability performance. Such research will contribute to sustainable pavement development and provide high-strength paver blocks suitable for modern traffic and environmental demands.

REFERENCES

1. Dr. P. Saravana Kumar, K. Vallarasu, S. Shyamal Gowri, R. Prakash, and A. Fathima Darras Gracy, “Utilization of Coconut Fibre Waste in Manufacturing of Paver Blocks,” International Journal of Innovative Research in Technology (IJIRT), Vol. 11, Issue 6, Nov. 2024, ISSN: 2349-6002.
2. Dr. O. R. Kavitha, Jaishwin S. R., Desingraja S., Dibish J., and Jagadeesan K., “Eco-Friendly Paver Block Using Waste Plastic Bottles,” Journal of Emerging Technologies and Innovative Research (JETIR), Vol. 11, Issue 4, Apr. 2024, ISSN: 2349-5162.
3. Dr. M. Harikaran, R. Vijayan, P. Senthil Kumar, R. S. Suganth, R. Nithishkumar, and V. Vijay, “Experimental Study on Properties of Paver Block using Coconut Fibre & Nylon Fibre,” Grenze International Journal of Engineering and Technology, Vol. 9, Issue 1, 2023, Grenze ID: 01.GIJET.9.1.644.
4. R. Singh and S. Goel, “Strength Evaluation of Pre-Cast Concrete Paver Block, Using Steel Slag & PET Fibres,” International Journal of Civil and Structural Engineering Research, Vol. 5, Issue 1, pp. 125–133, Apr.–Sep. 2017, ISSN: 2348-7607.
5. Y. Chaurasiya and Dr. S. S. Goliya, “Analysis of Porous Interlocking Concrete Paver Block with Fly Ash & Coconut Fiber,” Journal of Emerging Technologies and Innovative Research (JETIR), Vol. 7, Issue 8, Aug. 2020, ISSN: 2349-5162.
6. G. Uday Kiran, G. Nakkeeran, Dipankar Roy, S. N. Shinde, and G. U. Alaneme, “Enhancing the Mechanical Properties’ Performances Coconut Fiber and CDW Composite in Paver Block: Multiple AI Techniques with a Performance Analysis,” Scientific Reports, Vol. 14, Article 31886, Dec. 2024, DOI: 10.1038/s41598-024-83394-4.
7. B. Basavalingappa, R. Diggaja, S. R. Shashank, C. K. M. Chaitanya, and G. B. Chand, “An Experimental Investigation on Concrete Pavers Block by Replacement of Fine Aggregate with Plastic Waste,” Journal of Emerging Technologies and Innovative Research (JETIR), Vol. 11, Issue 5, May 2024, ISSN: 2349-5162.
8. I. Kim, C.-K. Chung, and J.-H. Ryu, “Evaluation of Interlocking Block Pavement Performance under Varying Construction Conditions by Model Chamber Tests,” Case Studies in Construction Materials, Vol. 22, Jul. 2025, Article e04067, DOI: 10.1016/j.cscm.2024.e04067.
9. E. Palanikumar and P. Uday Kumar, “Structural Design of Interlocking Concrete Paving Block,” International Journal of Engineering Research & Technology (IJERT), Vol. 5, Issue 12, Dec. 2016, ISSN: 2278-0181.
10. M. C. Nataraja and Lelin Das, “A Study on the Strength Properties of Paver Blocks Made from Unconventional Materials,” IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE), pp. 01–05, Conference Paper, e-ISSN: 2278-1684, p-ISSN: 2320-334X.
11. V. K. Patel and V. V. Singh, “A Review on Precast Cement Concrete Paver Blocks Using Fly Ash,” International Journal of Advance Research, Ideas and Innovations in Technology (IJARIIT), Vol. 3, Issue 6, 2017, ISSN: 2454-132X.
12. M. Nazeer, K. Kapoor, and S. P. Singh, “Characterisation of Pervious Interlocking Pavers for Durable Pavements: A Laboratory Study,” International Journal of Pavement Engineering, Vol. 24, Issue 2, Nov. 2023, DOI:

10.1080/10298436.2023.2270764.

13. Viveka Nand and Deepak Kumar, "A Study of Interlocking Behaviour of Concrete Block Used in Pavements," International Journal of Innovation in Engineering Research & Management, Vol. 9, Issue 6, pp. 183–192, Dec. 2022.
14. M. A. H. Abdullah, N. A. Rashid, A. L. Abdul Rani, and M. F. Omar, "New High Strength Water Retaining Interlocking Pavers Block for High Mechanical Performing Pavement and Reducing Runoff," IOP Conference Series: Materials Science and Engineering, Vol. 743, 012025, 2020, DOI: 10.1088/1757-899X/743/1/012025.
15. M. S. Nayak, Karthik M., and P. B. V., "Utilization of Industrial Waste Materials in the Construction of Interlocking Paver Blocks for Medium Traffic Areas," International Research Journal of Engineering and Technology (IRJET), Vol. 9, Issue 8, Aug. 2022, ISSN: 2395-0056.
16. W. Silva, L. Picado-Santos, S. Barroso, A. E. Cabral, and R. Stefanutti, "Assessment of Interlocking Concrete Block Pavement with By-Products and Comparison with an Asphalt Pavement: A Review," Applied Sciences, Vol. 13, Issue 10, Article 5846, May 2023, DOI: 10.3390/app13105846.
17. B. K. Kashiyani, J. Pitroda, and B. K. Shah, "Effect of Polypropylene Fibers on Abrasion Resistance and Flexural Strength for Interlocking Paver Block," International Journal of Engineering Trends and Technology (IJETT), Vol. 4, Issue 5, pp. 1837–1843, 2013, DOI: 10.14445/22315381/IJETT-V4I5P103.
18. M. Achle, Neha, T. Dhruw, V. Gawde, A. K. Garg, and B. Chandrakar, "Review Paper on Design of Permeable Paver Block," International Journal of Scientific Development and Research (IJSDR), Vol. 9, Issue 4, Apr. 2024, ISSN: 2455-2631.
19. S. Agrawal and A. K. Suman, "An Experimental Investigation on Strength of Paver Block Using Dolomite as Partial Replacement of Cement and Addition of Polyester Fiber in Different Proportions," Journal of Emerging Technologies and Innovative Research (JETIR), Vol. 8, Issue 9, Sep. 2021, ISSN: 2349-5162.
20. R. K. Nayak, U. Mandal, B. S. Pradhan, and A. Mangaraj, "Construction of Cement Concrete Pavement Using Paver Blocks," International Journal for Research in Applied Science & Engineering Technology (IJRASET), Vol. 11, Issue 6, pp. 2729–2735, Jun. 2023, ISSN: 2321-9653.
21. T. Iduwin, S. P. Hadiwardoyo, R. J. Sumabrata, R. H. Lumingkewas, and A. I. Rivai, "Investigation of Concrete Paving Block Characteristics and Performance across Different Shapes and Thicknesses," Engineering, Technology & Applied Science Research, Vol. 14, Issue 6, pp. 18429–18438, Dec. 2024, DOI: 10.48084/etasr.8880