

# Use of LEGO Concrete: A Review

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**Abstract-** *The volume of construction in both the private and public sectors tends to increase. As a result, as construction materials become more popular, the manufacture of the concrete move and constantly offer all new types that are significantly superior to maintain procedure characteristics. One of these components is Lego brick, which is a high-quality product made by hyper praising without the use of our firing, particle present early analysis of the advantage of Lego concrete in the modern construction commodity technology of its production and especially the use in a stone arc. It is described what natural resources are used in the manufacture of the shape and structure attributes. Concrete is one of the most widely used products on the planet, and it is used for large infrastructure innovation in every country. Because of the high demand, there is always an attempt to enhance the concrete. A concrete masonry block (CMU) is a rectangle masonry block used in building construction. Because of the wide range of aesthetic value that can be achieved with CMUs, they are regarded as one of the most adaptable construction components currently available. The blocks, which can be stacked like giant Legos, can be used to construct sturdy poster putty walls and structures. Concrete Lego bricks are made by pouring concrete into steel molds and leaving them to dry. The creates clutch power.interlocking mechanism comprised of (male) studs and (female) recesses. One of these materials is the Lego brick, which is a high-quality product produced through hyper pressing rather than heat. An examination of the advantages of the Lego piece in modern construction, as well as the technology used in its manufacture and, in particular, its use in masonry. It is explained which raw materials are used in the manufacturing process, as well as the characteristics of the product's form and structure.*

**Keywords-** Lego Blocks, Interlocking, Concrete, Lego-technology.

## I. INTRODUCTION

LEGO concrete is a type of lightweight concrete that is made using LEGO bricks as the aggregate. It was first developed as a research project at the University of Cambridge in the United Kingdom in 2014, and has since gained attention as a potential alternative to traditional building materials.The

main advantage of LEGO concrete is its low density, which makes it significantly lighter than traditional concrete. This can make it easier to transport and handle and can potentially reduce the structural load on buildings and bridges. LEGO concrete is also relatively simple and inexpensive to manufacture, as it uses a waste product (LEGO bricks) as the main ingredient. In addition to its practical benefits, LEGO concrete has also been proposed as a way to promote sustainability and reduce the environmental impact of construction. The use of recycled LEGO bricks in the manufacturing process can reduce the demand for raw materials and the energy required to produce traditional building materials. Despite its potential advantages, LEGO concrete is still in the early stages of development, and further research is needed to fully understand its properties and potential applications. Some of the challenges that need to be addressed include improving the strength and durability of LEGO concrete, and finding ways to scale up production to meet the demands of large construction projects. Lego concrete is a construction material that is made by combining concrete with small, plastic interlocking bricks that are similar in shape and size to Lego toy blocks. This material has gained popularity in recent years due to its versatility, durability, and sustainability. One of the main advantages of Lego concrete is that it allows for the construction of complex, three-dimensional structures without the need for formwork or special tools. The plastic bricks can be easily snapped together and filled with concrete to create a variety of shapes and sizes. This makes Lego concrete a suitable choice for projects that require custom or irregular shapes, such as sculptures or architectural features. Lego concrete is also known for its durability and strength. The plastic bricks add structural integrity to the concrete, making it resistant to cracking and other types of damage. Additionally, Lego concrete is resistant to weathering and can withstand extreme temperatures, making it a suitable choice for outdoor projects. Another key advantage of Lego concrete is its sustainability. The plastic bricks can be recycled or reused, reducing the amount of waste generated during construction. Lego concrete can also be made with recycled concrete and other sustainable materials, further reducing its environmental impact. Despite these benefits, there are also some limitations to using Lego concrete. The material can be more expensive than traditional concrete due to the cost of the plastic bricks. Additionally, the

plastic bricks may not be suitable for projects that require precise tolerances or a high level of precision. Overall, Lego concrete is a versatile and sustainable construction material that offers a number of benefits for a wide range of projects. While there may be some limitations to its use, Lego concrete is an innovative and promising solution for the construction industry.

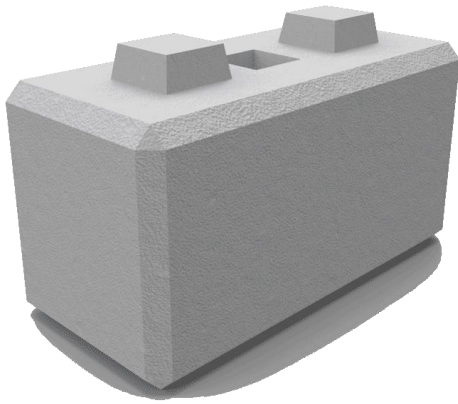


Figure.1 Lego concrete block

## II. LITREATURE REVIEW

A literature review on LEGO concrete would involve researching and summarizing the available information and research on the use of LEGO bricks as a form of lightweight concrete. This could include studying the properties and characteristics of LEGO concrete, as well as its potential applications and benefits. Some possible sources of information for a literature review on LEGO concrete might include academic journals and conference proceedings, technical reports, and online articles and blogs. It may also be helpful to search for patents or research projects related to LEGO concrete.

Some potential topics that could be covered in a literature review on LEGO concrete include:

- The physical properties of LEGO concrete, such as its density, strength, and durability
- The manufacturing process for LEGO concrete, including the materials and techniques used
- The potential applications for LEGO concrete, such as in construction, architecture, and design
- The environmental benefits of LEGO concrete, including its potential to reduce the carbon footprint of construction projects
- The economic feasibility of using LEGO concrete, including cost comparisons with traditional building materials

It is important to critically evaluate the quality and relevance of the sources used in a literature review, and to synthesize the information in a clear and concise manner. A literature review should provide a comprehensive overview of the current state of knowledge on a particular topic, and highlight any gaps or areas in need of further research.

**Ahmad, Sajad. (2014)** According to Ahmad, Sajad. (2014), the term "masonry" refers to the use of hand-placed clay units, structural clay tile, glass lump, natural stones, and other similar materials in construction. Masonry is another term for the components themselves. Popular masonry unit materials include bricks, stones, marbles, limestone, dolomite, acrylic, plaster, and tiles. Masonry units are frequently built to last a long time. The ingredients used, the quality of the mortar and workmanship, and the pattern in which the units are built all have an impact on the overall durability of the masonry construction. The mortar joint is the weakest part of a brickwork wall because the use of lime instead of aggregate affects the junction's overall stability. The requirement for skilled masons to carefully fit each block must be precisely fit, which necessitates the use of highly paid masons.

**Shankar Rao Santhosh JTalluri R (2015)** stated that for several years, problems associated with construction sites have been recognized. The construction industry must be able to sustain a world that is experiencing continued population growth and economic progress. Interlocked standard concrete blocks are suitable materials for walkways, parking lots, gardens, and other areas because they are easy to lay and have a superior appearance and finish. However, it is now commonly used in a variety of submissions where traditional pavement construction using hot bituminous mix or cement concrete expertise is neither possible nor acceptable. Due to rising construction material prices and the need to adhere to sustainability, alternative building processes and materials are being investigated. To expand the uses of concrete paving blocks, more knowledge of products made from locally available materials as well as indigenously generated mineral intermixtures is required. Masons.

**Vianna Bahiense, Alexandre. (2020)** announced a dose up process for concrete paving pavements containing decorative rock surplus, with the goal of meeting mechanical and moulding standards while also ensuring the mineral industry's long-term viability, despite environmental concerns about waste creation. The concentration of sand, coarse aggregate, and waste fines is determined by the minimal void ratio.

**Bao, Yi. (2020)** The proposed study investigates the possibility of a new building paradigm — Lego-inspired construction. This study proposes flexible concrete blocks that

can be built with dry joints and dismantled for various items, inspired by Lego bricks that can be built and dismantled for various applications. The bricks are used to construct a prototype footbridge in order to demonstrate the assembly method that is compatible with robotic construction systems. Mechanical tests revealed that the footbridge can withstand significant weight.

**Jenson J (2021)** stated that many social policy communities' focus these days is on 'new social hazards.' Despite their strong preference for fiscal austerity, they believe that these threats necessitate "social expenditures." The emphasis on investments, activation, and the future is regarded as the most appropriate anchor for reforming national welfare systems. We can talk about a transition toward that LEGOTM paradigm because three ideas have come together: life-long learning, a future orientation, and the social benefits of an engaged society. However, just as when Keynesianism was paradigmatic, there are differences in how the paradigm is applied.

### III. CONCLUSION

This study introduces a novel building archetype - Lego-inspired creation - and demonstrates its utility with a footbridge and frame made bricks made of flexible concrete:

- Lego-Inspired With advancements in construction techniques, concrete blocks are the new method.
- The reusable properties of this block, as well as the motorless interlocking mechanism, will be essential in low-housing schemes.
- The proposed concept of designing and constructing Lego-style structures, which would provide an alternative to the current structural design and construction paradigm, has the potential to be revolutionary.
- The proposed model of designing and constructing Lego-style structures, that would offer an alternative to the current structural design and construction paradigm, has the potential to be revolutionary. The new paradigm may improve building efficiency, productivity, safety, environmental protection, and economic benefits. It may also encourage the use of electronic manufacturing techniques such as 3D printing.

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